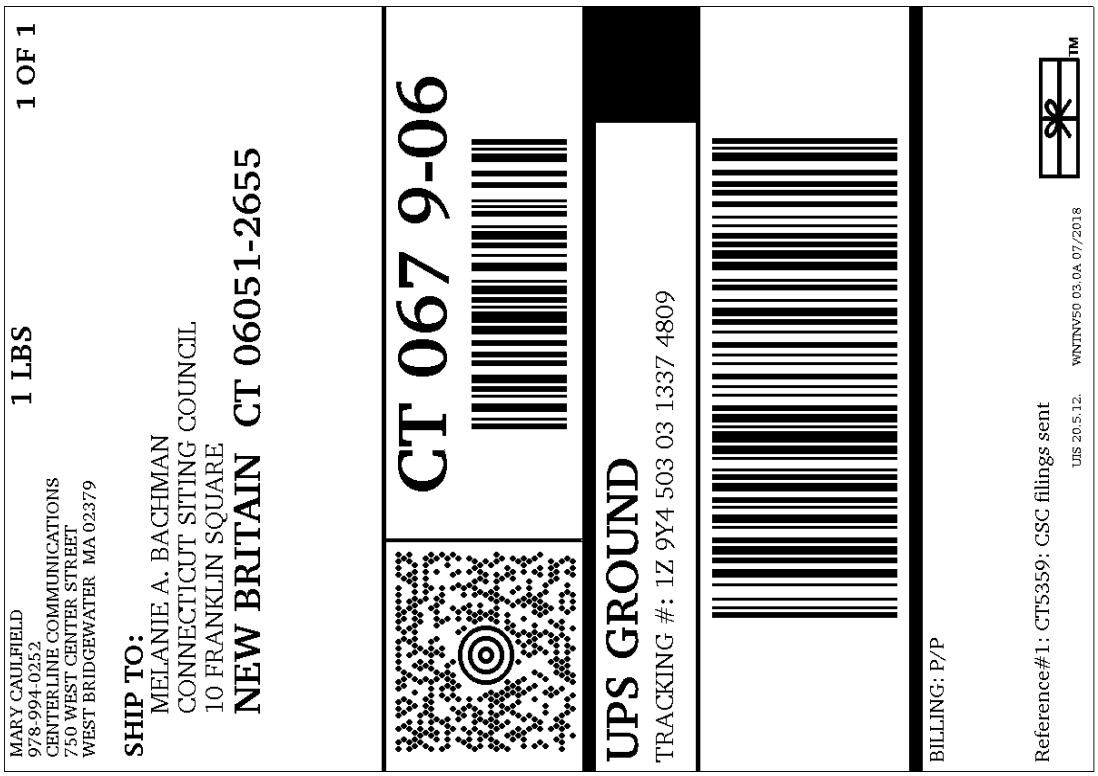
MARY CAULFIELD
978-994-0252
CENTERLINE COMMUNICATIONS
750 WEST CENTER STREET
WEST BRIDGEWATER MA 02379
1 LBS
1 OF 1
SHIP TO:
MELANIE A. BACHMAN
CONNECTICUT SITING COUNCIL
10 FRANKLIN SQUARE
NEW BRITAIN CT 06051-2655
CT 067 9-06
UPS GROUND
TRACKING #: 1Z 9Y4 503 03 1337 4809
BILLING: P/P
Reference#1: CT5359; GSC filings sent
UIS 20.5.12.
WNTNV50 03.0A 07/2018

MARY CAULFIELD
978-994-0252
CENTERLINE COMMUNICATIONS
750 WEST CENTER STREET
WEST BRIDGEWATER MA 02379

1 LBS

1 OF 1

SHIP TO:
JAMES M. HAYDEN - 1ST SELECTMAN
TOWN OF EAST GRANBY
9 CENTER STREET
EAST GRANBY CT 06026-9425

CT 060 9-01

UPS GROUND
TRACKING #: 1Z 9Y4 503 03 0833 7814

BILLING: P/P

Reference#1: CT5359: CSC to 1st Selectman

UIS 20.5.12. WNTNV50 03.0A 07/2018

MARY CAULFIELD
978-994-0252
CENTERLINE COMMUNICATIONS
750 WEST CENTER STREET
WEST BRIDGEWATER MA 02379

1 LBS

1 OF 1

SHIP TO:
GARY HAYNES
TOWN OF EAST GRANBY
PLANNING & ZONING
9 CENTER STREET
EAST GRANBY CT 06026-9425

CT 060 9-01

UPS GROUND
TRACKING #: 1Z 9Y4 503 03 1590 2823

BILLING: P/P

Reference#1: CT5359: CSC to Zoning & Planning

UIS 20.5.12. WNTNV50 03.0A 07/2018

MARY CAULFIELD
978-994-0252
CENTERLINE COMMUNICATIONS
750 WEST CENTER STREET
WEST BRIDGEWATER MA 02379

1 LBS

1 OF 1

SHIP TO:
PAUL PEDICONE
(518) 373-3530
CROWN CASTLE
SUITE 101
3 CORPORATE PARK DRIVE
CLIFTON PARK NY 12065

NY 122 9-02

UPS GROUND
TRACKING #: 1Z 9Y4 503 03 1043 8844

BILLING: P/P

Reference#1: CT5359: CSC filings to Crown

UIS 20.5.12. WNTNV50 03.0A 07/2018

MARY CAULFIELD
978-994-0252
CENTERLINE COMMUNICATIONS
750 WEST CENTER STREET
WEST BRIDGEWATER MA 02379

1 LBS

1 OF 1

SHIP TO:
C/O GALASSO HOLDINGS LLC
GALASSO MATERIALS LLC
60 SOUTH MAIN STREET
EAST GRANBY CT 06026-9550

CT 060 9-01

UPS GROUND
TRACKING #: 1Z 9Y4 503 03 1820 9854

BILLING: P/P

Reference#1: CT5359: CSC filings to Property

UIS 20.5.12. WNTINV50 03.0A 07/2018

Mary Caulfield, Site Acquisition Consultant
c/o New Cingular Wireless, PCS LLC (AT&T)
Centerline Communications, LLC
750 West Center Street, Suite 301
West Bridgewater, MA 02379
Mobile: (978) 994-0252
MCaulfield@centerlinecommunications.com

August 6, 2018

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

RE: Notice of Exempt Modification // Site Number: CT5359 (Name: East Granby S Main St.)
60 South Main Street, East Granby, CT 06026
N 41.94155556 // W -72.73866667

Dear Ms. Bachman:

New Cingular Wireless, PCS, LLC ("AT&T") currently maintains 9 total antennas at the 76-foot mount on the existing 98-foot Monopole Tower, located at 60 South Main Street, East Granby, CT. The tower is owned by Crown Castle and the property is owned by Galasso Holdings LLC. AT&T now intends to replace three (3) existing antennas with three (3) new LTE (1900/2300 band) antennas for its LTE upgrade. AT&T also intends to install six (6) new remote radios; and certain in-cabinet upgrades at the base.

The facility was approved by the Town of East Granby Planning and Zoning Commission on November 29, 2000.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies §16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to James M. Hayden, First Selectman for the Town of Granby, Gary Haynes, Zoning Enforcement Officer, Crown Castle, the tower owner, and Galasso Holdings LLC, the property owner.

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

Attached to accommodate this filing are construction drawings dated July 26, 2018 by Hudson Design Group LLC, a structural analysis dated July 10, 2018 by Black & Veatch, a tower

reinforcement design by Black & Veatch dated July 11, 2018 and an Emissions Analysis Report dated July 25, 2018 by Centerline Communications, LLC.

1. The proposed modifications will not result in an increase in the height of the existing structure.

2. The proposed modifications will not require the extension of the site boundary.

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

4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard.

5. The proposed modifications will not cause an ineligible change or alteration in the physical or environmental characteristics of the site.

6. The existing structure and its foundation can support the proposed loading, pursuant to the structural analysis by Black & Veatch, dated July 10, 2018.

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

Sincerely,

_____

Mary Caulfield, Site Acquisition Consultant
c/o New Cingular Wireless, PCS LLC (AT&T)
Centerline Communications, LLC
750 West Center Street, Suite 301
West Bridgewater, MA 02379
Mobile: (978) 994-0252
MCaulfield@centerlinecommunications.com

cc: James M. Hayden, First Selectman, Town of East Granby
Gary Haynes, Zoning Enforcement Officer, Town of East Granby
Crown Castle, Tower Owner
Galasso Holdings LLC, Property Owner

Date: **July 10, 2018**

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

Black & Veatch, Corp.
6800 W. 115th., Suite 2292
Overland Park, KS 66211
(913) 458-6985

Subject:	**Structural Modification Report**	
Carrier Designation:	***AT&T Mobility* Co-Locate**	
	Carrier Site Number:	CT5359
	Carrier Site Name:	East Granby South Main St
Crown Castle Designation:	**Crown Castle BU Number:**	876399
	Crown Castle Site Name:	(F) E. GRANBY 4Q2000 / GALASSO
	Crown Castle JDE Job Number:	477747
	Crown Castle Work Order Number:	1586583
	Crown Castle Order Number:	420928 Rev. 2
Engineering Firm Designation:	**Black & Veatch, Corp. Project Number:**	194393
Site Data:	**60 South Main St., EAST GRANBY, Hartford County, CT** **Latitude *41° 56' 29.59"*, Longitude *-72° 44' 19.248"*** **98 Foot - Monopole Tower**	

Dear Timothy Howell,

Black & Veatch, Corp. 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 1206861, in accordance with order 420928, 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: Modified Structure w/ Existing + Reserved + Proposed Equipment **Sufficient Capacity**
Note: See Table I and Table II for the proposed and existing/reserved loading, respectively.

This analysis has been performed in accordance with the 2016 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 120 mph converted to a nominal 3-second gust wind speed of 93 mph per Section 1609.3 and Appendix N as required for use in the TIA-222-G Standard per Exception #5 of Section 1609.1.1. Exposure Category C with a maximum topographic factor, Kzt, of 1.0 and Risk Category II were used in this analysis

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 *Black & Veatch, Corp.* 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.

Structural analysis prepared by: Logan M. Meyer
Respectfully submitted by:

Ping Jiang, P.E.
Professional Engineer

Jul 11, 2018

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1) INTRODUCTION

This tower is a 98 ft. Monopole tower designed by Engineered Endeavors, Inc. in September of 2000. The tower was originally designed for a wind speed of 85 mph per TIA/EIA-222-F.

The tower has been modified per reinforcement drawings prepared by IETS Engineering Service in November of 2009. Reinforcement consists of installing base plate stiffeners. Refer to Post Modification Inspection Report by IETS Engineering Service in July of 2010. This modification has been considered effective in this analysis.
The tower has been modified per reinforcement drawings prepared by Paul J. Ford and Company in June of 2012. Reinforcement consists of installing flat plate from 0.5' to 60.5' and installing additional anchor rods. Refer to Post Modification Inspection Report by Paul J. Ford and Company in March of 2013. This modification has been considered effective in this analysis.
The tower has been modified per reinforcement drawings prepared by GPD Engineering and Architecture Professional Corp. in July of 2015. Reinforcement consists of installing steel plate to foundation. Refer to Post Modification Inspection Report by Engineered Tower Solutions, PLLC. in March of 2016. This modification has been considered effective in this analysis.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of TIA-222-G Structural Standard for Antenna Supporting Structures and Antennas using a 3-second gust wind speed of 93 mph with no ice, 50 mph with 1 inch ice thickness and 60 mph under service loads, exposure category C with topographic category 1 and crest height of 0 feet.

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
74.0	77.0	1	andrew	SBNH-1D6565C w/ Mount Pipe	2 1 2	3/4 3/8 Conduit	1
		3	cci antennas	TPA-65R-LCUUUU-H8 w/ Mount Pipe			
		3	ericsson	RRUS 11 B12			
		3	ericsson	RRUS 32 B2			
		3	ericsson	RRUS 32 B30			
		3	kaelus	DBC0061F1V51-2			
		1	raycap	DC6-48-60-18-8F			

Notes:
1) See Appendix B For proposed coax configuration

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
94.0	96.0	1	andrew	HBX-6516DS-VTM w/ Mount Pipe	6 2	1-5/8 7/8	1
		1	antel	BXA-80063/4CF w/ Mount Pipe			
		4	decibel	DB980H65E-M w/ Mount Pipe			
	94.0	1	cci tower mounts	Platform Mount [LP 601-1]			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
89.0	90.0	3	commscope	ATBT-BOTTOM-24V	12	7/8	1
		3	commscope	LNX-6515DS-VTM w/ Mount Pipe			
		3	rfs celwave	APXV18-209014-C w/ Mount Pipe			
		3	rfs celwave	ATMPP1412D-1CWA			
	89.0	1	cci tower mounts	Platform Mount [LP 305-1]			
74.0	77.0	3	powerwave technologies	7770.00 w/ Mount Pipe	12 2 1 1	7/8 3/4 3/8 Conduit	1
		2	powerwave technologies	P65-17-XLH-RR w/ Mount Pipe			
		3	powerwave technologies	TT19-08BP111-001			
		1	raycap	DC6-48-60-18-8F			
	76.0	3	powerwave technologies	7770.00 w/ Mount Pipe	-	-	3
		3	powerwave technologies	TT19-08BP111-001			
	75.0	1	powerwave technologies	P65-17-XLH-RR w/ Mount Pipe			
		3	ericsson	RRUS 11 B12			
	74.0	1	cci tower mounts	Platform Mount [LP 303-1]	-	-	1
67.0	67.0	3	alcatel lucent	B13 RRH 4X30	2	1-3/8	2
		3	alcatel lucent	B66A RRH4X45			
		2	commscope	RC2DC-3315-PF-48			
		6	commscope	SBNHH-1D65B w/ Mount Pipe			
		6	antel	LPA-80063/6CFX2 w/ Mount Pipe	12	1-5/8	1
		1	cci tower mounts	Platform Mount [LP 303-1]			
52.0	54.0	1	lucent	KS24019-L112A	1	7/8	1
	52.0	1	cci tower mounts	Side Arm Mount [SO 701-1]			

Notes:
1) Existing Equipment
2) Reserved Equipment
3) Equipment To Be Removed; Not Considered in This Analysis

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)
-	-	-	-	-	-	-

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	DR. Clarence Welti, P.E., P.C.	1531971	CCISITES
4-POST-MODIFICATION INSPECTION	IETS Engineering Service	2682749	CCISITES
4-POST-MODIFICATION INSPECTION	Paul J. Ford and Company	3713020	CCISITES
4-POST-MODIFICATION INSPECTION	Engineered Tower Solutions, PLLC.	6139057	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Engineered Endeavors, Inc.	2066334	CCISITES
4-TOWER MANUFACTURER DRAWINGS	Engineered Endeavors, Inc.	1613691	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	IETS Engineering Service	2529017	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	Paul J. Ford and Company	3713021	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	GPD Engineering and Architecture Porfessional Corp.	5803194	CCISITES
4-TOWER STRUCTURAL ANALYSIS REPORTS	Black and Veatch, Corp.	7329817	CCISITES

3.1) Analysis Method

tnxTower (version 7.0.5.1), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

tnxTower was used to determine the loads on the modified structure. Additional calculations were performed to determine the stresses in the pole and in the reinforcing elements. These calculations are presented in Appendix C.

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) This analysis was performed under the assumption that all information provided to Black & Veatch is current and correct. This is to include site data, existing/proposed appurtenance loading, tower/foundation details, and geotechnical data. The existing/proposed loading on the structure is based on CAD level drawings and carrier applications provided by the owner. If any of this information is not current and correct, this report should be considered obsolete and further analysis will be required.

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

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Monopole) (Summary)

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
98 - 93	Pole	TP13.078x12x0.1875	Pole	3.7%	Pass
93 - 88	Pole	TP14.156x13.078x0.1875	Pole	14.3%	Pass
88 - 85.21	Pole	TP15.28x14.156x0.1875	Pole	21.8%	Pass
85.21 - 80.21	Pole	TP15.445x14.383x0.25	Pole	26.1%	Pass
80.21 - 75.21	Pole	TP16.507x15.445x0.25	Pole	32.7%	Pass
75.21 - 70.21	Pole	TP17.568x16.507x0.25	Pole	46.2%	Pass
70.21 - 65.21	Pole	TP18.63x17.568x0.25	Pole	57.6%	Pass
65.21 - 60.21	Pole	TP19.692x18.63x0.25	Pole	70.1%	Pass
60.21 - 59.17	Pole	TP19.913x19.692x0.25	Pole	72.4%	Pass
59.17 - 58.9	Pole + Reinf.	TP19.97x19.913x0.5125	Reinf. 10 Compression	65.7%	Pass
58.9 - 58.75	Pole + Reinf.	TP20.002x19.97x0.5125	Reinf. 10 Compression	66.1%	Pass
58.75 - 53.75	Pole + Reinf.	TP21.064x20.002x0.5	Reinf. 10 Compression	76.7%	Pass
53.75 - 52.92	Pole + Reinf.	TP21.24x21.064x0.5	Reinf. 10 Compression	78.3%	Pass
52.92 - 52.67	Pole + Reinf.	TP21.293x21.24x0.5	Reinf. 3 Compression	79.5%	Pass
52.67 - 52.17	Pole + Reinf.	TP21.399x21.293x0.5	Reinf. 3 Compression	80.5%	Pass
52.17 - 51.92	Pole + Reinf.	TP21.452x21.399x0.4375	Reinf. 3 Compression	83.4%	Pass
51.92 - 48.71	Pole + Reinf.	TP22.86x21.452x0.4375	Reinf. 3 Compression	89.5%	Pass
48.71 - 44.29	Pole + Reinf.	TP22.574x21.634x0.5438	Reinf. 8 Compression	85.8%	Pass
44.29 - 39.29	Pole + Reinf.	TP23.638x22.574x0.5313	Reinf. 8 Compression	92.3%	Pass
39.29 - 34.29	Pole + Reinf.	TP24.703x23.638x0.5188	Reinf. 8 Compression	98.0%	Pass
34.29 - 33.5	Pole + Reinf.	TP24.871x24.703x0.5125	Reinf. 8 Compression	98.8%	Pass
33.5 - 33.25	Pole + Reinf.	TP24.924x24.871x0.8125	Reinf. 8 Compression	65.6%	Pass
33.25 - 32	Pole + Reinf.	TP25.19x24.924x0.8	Reinf. 8 Compression	66.7%	Pass
32 - 31.75	Pole + Reinf.	TP25.243x25.19x0.5875	Reinf. 2 Tension Rupture	80.5%	Pass
31.75 - 28.5	Pole + Reinf.	TP25.935x25.243x0.575	Reinf. 2 Tension Rupture	83.2%	Pass
28.5 - 28.25	Pole + Reinf.	TP25.988x25.935x0.8625	Reinf. 2 Tension Rupture	58.0%	Pass
28.25 - 27.5	Pole + Reinf.	TP26.148x25.988x0.85	Reinf. 2 Tension Rupture	58.5%	Pass
27.5 - 27.25	Pole + Reinf.	TP26.201x26.148x0.575	Reinf. 6 Tension Rupture	84.2%	Pass
27.25 - 22.25	Pole + Reinf.	TP27.265x26.201x0.5625	Reinf. 6 Tension Rupture	87.9%	Pass
22.25 - 17.25	Pole + Reinf.	TP28.329x27.265x0.55	Reinf. 6 Tension Rupture	91.1%	Pass
17.25 - 15.5	Pole + Reinf.	TP28.701x28.329x0.55	Reinf. 6 Tension Rupture	92.1%	Pass
15.5 - 15.25	Pole + Reinf.	TP28.755x28.701x0.55	Reinf. 1 Tension Rupture	93.0%	Pass
15.25 - 13.42	Pole + Reinf.	TP29.144x28.755x0.55	Reinf. 1 Tension Rupture	94.0%	Pass
13.42 - 13.17	Pole + Reinf.	TP29.197x29.144x0.5	Reinf. 1 Tension Rupture	96.2%	Pass
13.17 - 13	Pole + Reinf.	TP29.233x29.197x0.5	Reinf. 1 Tension Rupture	96.3%	Pass
13 - 12.75	Pole + Reinf.	TP29.287x29.233x0.6625	Reinf. 1 Tension Rupture	81.1%	Pass
12.75 - 7.75	Pole + Reinf.	TP30.351x29.287x0.65	Reinf. 1 Tension Rupture	83.5%	Pass
7.75 - 6.5	Pole + Reinf.	TP30.617x30.351x0.65	Reinf. 1 Tension Rupture	84.0%	Pass
6.5 - 6.25	Pole + Reinf.	TP30.67x30.617x0.6625	Reinf. 1 Tension Rupture	84.4%	Pass
6.25 - 4.5	Pole + Reinf.	TP31.042x30.67x0.65	Reinf. 1 Tension Rupture	85.1%	Pass
4.5 - 4.25	Pole + Reinf.	TP31.096x31.042x0.65	Reinf. 1 Tension Rupture	86.0%	Pass
4.25 - 2.5	Pole + Reinf.	TP31.468x31.096x0.6375	Reinf. 1 Tension Rupture	86.7%	Pass

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
2.5 - 2.25	Pole + Reinf.	TP31.521x31.468x0.45	Reinf. 15 Tension Rupture	85.9%	Pass
2.25 - 2	Pole + Reinf.	TP31.574x31.521x0.45	Reinf. 15 Tension Rupture	86.0%	Pass
2 - 1.75	Pole + Reinf.	TP31.628x31.574x0.5625	Reinf. 14 Compression	86.0%	Pass
1.75 - 0.5	Pole + Reinf.	TP31.894x31.628x0.5625	Reinf. 14 Compression	86.4%	Pass
0.5 - 0.25	Pole + Reinf.	TP31.947x31.894x0.5313	Reinf. 14 Compression	87.4%	Pass
0.25 - 0	Pole + Reinf.	TP32x31.947x0.525	Reinf. 14 Weldment	90.3%	Pass
				Summary	
			Pole	80.3%	Pass
			Reinforcement	98.8%	Pass
			Overall	98.8%	Pass

Table 6 - Tower Component Stresses vs. Capacity (Monopole) - LC4

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	65.6	Pass
1	Base Plate	0	82.3	Pass
1	Base Foundation	0	86.8	Pass
1	Base Foundation Soil Interaction	0	93.8	Pass

Structure Rating (max from all components) =	98.8%

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

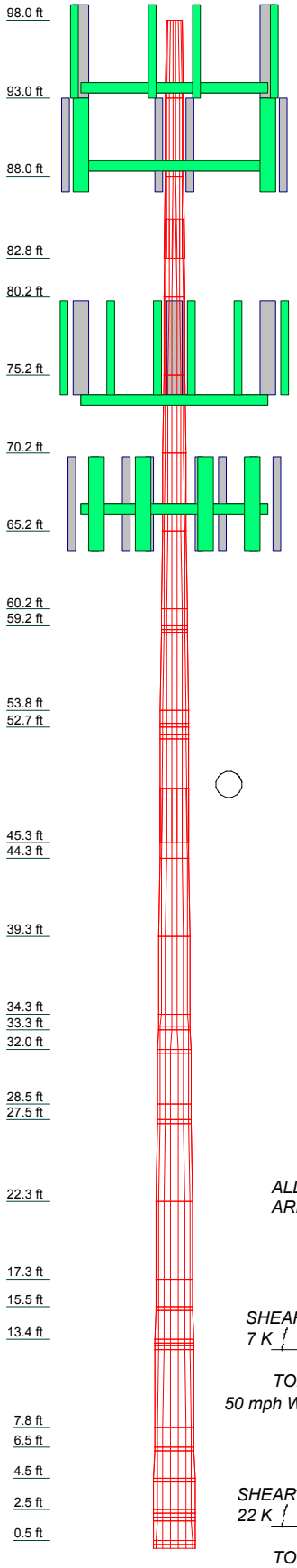
4.1) Recommendations

The tower and its foundation will have sufficient capacity to carry the proposed load configuration after proper installation of the proposed reinforcements as shown in Appendix D.

APPENDIX A

TNXTOWER OUTPUT

Section	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
Length (ft)	5.00	5.00	5.21	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	6.63	4.42	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
Number of Sides	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
Thickness (in)	0.1875	0.1875	0.1875	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.5000	0.3125	0.3125	0.3125	0.3125	0.4375	0.5437	0.5313	0.5188	0.5063	0.4938	0.4813	0.4688	0.4563	0.4438	0.4313	0.4188	0.5625	0.5500	0.5375	0.5250	0.5125	0.5000	0.4875	0.4750	0.6500	0.6375	0.6250	0.6125	0.6000	0.5875
Socket Length (ft)			2.42														3.42																											
Top Dia (in)	12.0000	13.0782	14.1565	14.3831	15.4449	16.5066	17.5683	18.6301	19.6918	20.7536	21.8153	22.8771	23.9388	25.0006	26.0623	27.1241	21.4521	22.5744	21.6338	23.6385	24.7026	25.7667	26.8308	27.8949	28.9590	30.0231	31.0872	32.1513	26.2000	27.2649	28.3289	29.3929	30.4569	31.5209	32.5849	33.6489	29.2866	30.3507	31.4147	32.4787	33.5427	34.6067
Bot Dia (in)	13.0782	14.1565	15.2800	15.4449	16.5066	17.5683	18.6301	19.6918	20.7536	21.8153	22.8771	23.9388	25.0006	26.0623	27.1241	28.1858	22.8600	23.9744	23.6385	24.7026	25.7667	26.8308	27.8949	28.9590	30.0231	31.0872	32.1513	33.2154	27.2649	28.3289	29.3929	30.4569	31.5209	32.5849	33.6489	34.7129	30.3507	31.4147	32.4787	33.5427	34.6067	35.6707
Grade	A572-65																																									
Weight (K)	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.3	0.1	0.1	0.1	0.5	0.1	0.1	0.1	0.1	0.7	0.5	0.6	0.6	0.1	0.1	0.1	0.2	0.5	0.1	0.1	0.1	0.7	0.8	0.3	0.3	0.3	0.3	0.3	0.3	1.0	0.3	0.4	0.4	0.4	0.4



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Platform Mount [LP 601-1]	94	RRUS 32 B30	74
8'x2" Antenna Mount Pipe	94	DBC0061F1V51-2	74
8'x2" Antenna Mount Pipe	94	DBC0061F1V51-2	74
8'x2" Antenna Mount Pipe	94	DBC0061F1V51-2	74
BXA-80063/4CF w/ Mount Pipe	94	RRUS 32 B2	74
HBX-6516DS-VTM w/ Mount Pipe	94	RRUS 32 B2	74
(2) DB980H65E-M w/ Mount Pipe	94	RRUS 32 B2	74
(2) DB980H65E-M w/ Mount Pipe	94	RRUS 11 B12	74
Platform Mount [LP 305-1]	89	RRUS 11 B12	74
6' x 2" Mount Pipe	89	RRUS 11 B12	74
6' x 2" Mount Pipe	89	DC6-48-60-18-8F	74
6' x 2" Mount Pipe	89	TT19-08BP111-001	74
APXV18-209014-C w/ Mount Pipe	89	TT19-08BP111-001	74
APXV18-209014-C w/ Mount Pipe	89	TT19-08BP111-001	74
APXV18-209014-C w/ Mount Pipe	89	DC6-48-60-18-8F	74
LNX-6515DS-VTM w/ Mount Pipe	89	Platform Mount [LP 303-1]	67
LNX-6515DS-VTM w/ Mount Pipe	89	SBNHH-1D65B w/ Mount Pipe	67
LNX-6515DS-VTM w/ Mount Pipe	89	SBNHH-1D65B w/ Mount Pipe	67
ATMPP1412D-1CWA	89	SBNHH-1D65B w/ Mount Pipe	67
ATMPP1412D-1CWA	89	SBNHH-1D65B w/ Mount Pipe	67
ATMPP1412D-1CWA	89	SBNHH-1D65B w/ Mount Pipe	67
ATBT-BOTTOM-24V	89	SBNHH-1D65B w/ Mount Pipe	67
ATBT-BOTTOM-24V	89	(2) LPA-80063/6CFX2 w/ Mount Pipe	67
ATBT-BOTTOM-24V	89	(2) LPA-80063/6CFX2 w/ Mount Pipe	67
Platform Mount [LP 303-1]	74	(2) LPA-80063/6CFX2 w/ Mount Pipe	67
TPA-65R-LCUUUU-H8 w/ Mount Pipe	74	B13 RRH 4X30	67
TPA-65R-LCUUUU-H8 w/ Mount Pipe	74	B13 RRH 4X30	67
TPA-65R-LCUUUU-H8 w/ Mount Pipe	74	B13 RRH 4X30	67
SBNH-1D6565C w/ Mount Pipe	74	B66A RRH4X45	67
7770.00 w/ Mount Pipe	74	B66A RRH4X45	67
7770.00 w/ Mount Pipe	74	B66A RRH4X45	67
7770.00 w/ Mount Pipe	74	RC2DC-3315-PF-48	67
P65-17-XLH-RR w/ Mount Pipe	74	RC2DC-3315-PF-48	67
P65-17-XLH-RR w/ Mount Pipe	74	Side Arm Mount [SO 701-1]	52
RRUS 32 B30	74	KS24019-L112A	52
RRUS 32 B30	74		

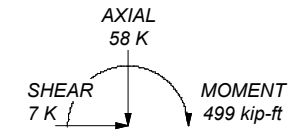
MATERIAL STRENGTH

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

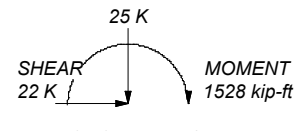
TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-G Standard.
3. Tower designed for a 93 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft

ALL REACTIONS ARE FACTORED



TORQUE 0 kip-ft
50 mph WIND - 1.0000 in ICE



TORQUE 1 kip-ft
REACTIONS - 93 mph WIND

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Black & Veatch, Corp.
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Phone: (913) 458-8145
FAX: (913) 458-8136

Job: *(F) E. GRANBY 4Q2000 / GALASSO (BU#876399*			
Project: *194393 (876399.1586583)*			
Client: Crown Castle	Drawn by: Logan M. Meyer, E.I.T.	App'd:	
Code: TIA-222-G	Date: 06/29/18	Scale: NTS	
Path: C:\Users\MEY94051\Desktop\Projects\876399\876399.1586583 - TSR\Structural\876399.1586583 Structural Analysis - Modified.eri		Dwg No. E-1	

Tower Input Data

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

2) Tower is located in Hartford County, Connecticut.
3) Basic wind speed of 93 mph.
4) Structure Class II.
5) Exposure Category C.
6) Topographic Category 1.
7) Crest Height 0.00 ft.
8) Nominal ice thickness of 1.0000 in.
9) Ice thickness is considered to increase with height.
10) Ice density of 56 pcf.
11) A wind speed of 50 mph is used in combination with ice.
12) Temperature drop of 50 °F.
13) Deflections calculated using a wind speed of 60 mph.
14) A non-linear (P-delta) analysis was used.
15) Pressures are calculated at each section.
16) Stress ratio used in pole design is 1.
17) Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	98.00-93.00	5.00	0.00	18	12.0000	13.0782	0.1875	0.7500	A572-65 (65 ksi)
L2	93.00-88.00	5.00	0.00	18	13.0782	14.1565	0.1875	0.7500	A572-65 (65 ksi)
L3	88.00-82.79	5.21	2.42	18	14.1565	15.2800	0.1875	0.7500	A572-65 (65 ksi)
L4	82.79-80.21	5.00	0.00	18	14.3831	15.4449	0.2500	1.0000	A572-65 (65 ksi)
L5	80.21-75.21	5.00	0.00	18	15.4449	16.5066	0.2500	1.0000	A572-65 (65 ksi)
L6	75.21-70.21	5.00	0.00	18	16.5066	17.5683	0.2500	1.0000	A572-65

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L7	70.21-65.21	5.00	0.00	18	17.5683	18.6301	0.2500	1.0000	(65 ksi) A572-65 (65 ksi)
L8	65.21-60.21	5.00	0.00	18	18.6301	19.6918	0.2500	1.0000	A572-65 (65 ksi)
L9	60.21-59.17	1.04	0.00	18	19.6918	19.9126	0.2500	1.0000	A572-65 (65 ksi)
L10	59.17-58.90	0.27	0.00	18	19.9126	19.9700	0.5125	2.0500	A572-65 (65 ksi)
L11	58.90-58.75	0.15	0.00	18	19.9700	20.0018	0.5125	2.0500	A572-65 (65 ksi)
L12	58.75-53.75	5.00	0.00	18	20.0018	21.0635	0.5000	2.0000	A572-65 (65 ksi)
L13	53.75-52.92	0.83	0.00	18	21.0635	21.2398	0.5000	2.0000	A572-65 (65 ksi)
L14	52.92-52.67	0.25	0.00	18	21.2398	21.2929	0.5000	2.0000	A572-65 (65 ksi)
L15	52.67-52.17	0.50	0.00	18	21.2929	21.3991	0.5000	2.0000	A572-65 (65 ksi)
L16	52.17-51.92	0.25	0.00	18	21.3991	21.4521	0.4375	1.7500	A572-65 (65 ksi)
L17	51.92-45.29	6.63	3.42	18	21.4521	22.8600	0.4375	1.7500	A572-65 (65 ksi)
L18	45.29-44.29	4.42	0.00	18	21.6338	22.5744	0.5437	2.1750	A572-65 (65 ksi)
L19	44.29-39.29	5.00	0.00	18	22.5744	23.6385	0.5313	2.1250	A572-65 (65 ksi)
L20	39.29-34.29	5.00	0.00	18	23.6385	24.7026	0.5188	2.0750	A572-65 (65 ksi)
L21	34.29-33.50	0.79	0.00	18	24.7026	24.8707	0.5125	2.0500	A572-65 (65 ksi)
L22	33.50-33.25	0.25	0.00	18	24.8707	24.9239	0.8125	3.2500	A572-65 (65 ksi)
L23	33.25-32.00	1.25	0.00	18	24.9239	25.1899	0.8000	3.2000	A572-65 (65 ksi)
L24	32.00-31.75	0.25	0.00	18	25.1899	25.2431	0.5875	2.3500	A572-65 (65 ksi)
L25	31.75-28.50	3.25	0.00	18	25.2431	25.9348	0.5750	2.3000	A572-65 (65 ksi)
L26	28.50-28.25	0.25	0.00	18	25.9348	25.9880	0.8625	3.4500	A572-65 (65 ksi)
L27	28.25-27.50	0.75	0.00	18	25.9880	26.1476	0.8500	3.4000	A572-65 (65 ksi)
L28	27.50-27.25	0.25	0.00	18	26.1476	26.2008	0.5750	2.3000	A572-65 (65 ksi)
L29	27.25-22.25	5.00	0.00	18	26.2008	27.2649	0.5625	2.2500	A572-65 (65 ksi)
L30	22.25-17.25	5.00	0.00	18	27.2649	28.3289	0.5500	2.2000	A572-65 (65 ksi)
L31	17.25-15.50	1.75	0.00	18	28.3289	28.7014	0.5500	2.2000	A572-65 (65 ksi)
L32	15.50-15.25	0.25	0.00	18	28.7014	28.7546	0.5500	2.2000	A572-65 (65 ksi)
L33	15.25-13.42	1.83	0.00	18	28.7546	29.1440	0.5500	2.2000	A572-65 (65 ksi)
L34	13.42-13.17	0.25	0.00	18	29.1440	29.1972	0.5000	2.0000	A572-65 (65 ksi)
L35	13.17-13.00	0.17	0.00	18	29.1972	29.2334	0.5000	2.0000	A572-65 (65 ksi)
L36	13.00-12.75	0.25	0.00	18	29.2334	29.2866	0.6625	2.6500	A572-65 (65 ksi)
L37	12.75-7.75	5.00	0.00	18	29.2866	30.3507	0.6500	2.6000	A572-65 (65 ksi)
L38	7.75-6.50	1.25	0.00	18	30.3507	30.6167	0.6500	2.6000	A572-65 (65 ksi)
L39	6.50-6.25	0.25	0.00	18	30.6167	30.6699	0.6625	2.6500	A572-65 (65 ksi)
L40	6.25-4.50	1.75	0.00	18	30.6699	31.0423	0.6500	2.6000	A572-65 (65 ksi)

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L41	4.50-4.25	0.25	0.00	18	31.0423	31.0955	0.6500	2.6000	A572-65 (65 ksi)
L42	4.25-2.50	1.75	0.00	18	31.0955	31.4680	0.6375	2.5500	A572-65 (65 ksi)
L43	2.50-2.25	0.25	0.00	18	31.4680	31.5212	0.4500	1.8000	A572-65 (65 ksi)
L44	2.25-2.00	0.25	0.00	18	31.5212	31.5744	0.4500	1.8000	A572-65 (65 ksi)
L45	2.00-1.75	0.25	0.00	18	31.5744	31.6276	0.5625	2.2500	A572-65 (65 ksi)
L46	1.75-0.50	1.25	0.00	18	31.6276	31.8936	0.5625	2.2500	A572-65 (65 ksi)
L47	0.50-0.25	0.25	0.00	18	31.8936	31.9468	0.5313	2.1250	A572-65 (65 ksi)
L48	0.25-0.00	0.25		18	31.9468	32.0000	0.5250	2.1000	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	12.1851	7.0299	123.9285	4.1934	6.0960	20.3295	248.0200	3.5156	1.7820	9.504
	13.2800	7.6716	161.0568	4.5762	6.6437	24.2419	322.3255	3.8365	1.9718	10.516
L2	13.2800	7.6716	161.0568	4.5762	6.6437	24.2419	322.3255	3.8365	1.9718	10.516
	14.3749	8.3133	204.9460	4.9590	7.1915	28.4984	410.1616	4.1574	2.1615	11.528
L3	14.3749	8.3133	204.9460	4.9590	7.1915	28.4984	410.1616	4.1574	2.1615	11.528
	15.5157	8.9819	258.4813	5.3578	7.7622	33.2998	517.3028	4.4918	2.3593	12.583
L4	15.1268	11.2146	283.0087	5.0173	7.3066	38.7331	566.3897	5.6084	2.0914	8.366
	15.6831	12.0571	351.7021	5.3942	7.8460	44.8257	703.8669	6.0297	2.2783	9.113
L5	15.6831	12.0571	351.7021	5.3942	7.8460	44.8257	703.8669	6.0297	2.2783	9.113
	16.7612	12.8996	430.6984	5.7711	8.3854	51.3632	861.9636	6.4510	2.4652	9.861
L6	16.7612	12.8996	430.6984	5.7711	8.3854	51.3632	861.9636	6.4510	2.4652	9.861
	17.8393	13.7421	520.7176	6.1480	8.9247	58.3456	1042.1204	6.8724	2.6520	10.608
L7	17.8393	13.7421	520.7176	6.1480	8.9247	58.3456	1042.1204	6.8724	2.6520	10.608
	18.9175	14.5846	622.4796	6.5249	9.4641	65.7729	1245.7784	7.2937	2.8389	11.356
L8	18.9175	14.5846	622.4796	6.5249	9.4641	65.7729	1245.7784	7.2937	2.8389	11.356
	19.9956	15.4271	736.7044	6.9018	10.0034	73.6452	1474.3782	7.7150	3.0258	12.103
L9	19.9956	15.4271	736.7044	6.9018	10.0034	73.6452	1474.3782	7.7150	3.0258	12.103
	20.2198	15.6023	762.0954	6.9802	10.1156	75.3385	1525.1936	7.8026	3.0646	12.258
L10	20.2198	31.5577	1500.5563	6.8870	10.1156	148.3406	3003.0871	15.7819	2.6026	5.078
	20.2780	31.6510	1513.8996	6.9074	10.1447	149.2300	3029.7913	15.8285	2.6127	5.098
L11	20.2780	31.6510	1513.8996	6.9074	10.1447	149.2300	3029.7913	15.8285	2.6127	5.098
	20.3104	31.7028	1521.3466	6.9187	10.1609	149.7252	3044.6950	15.8544	2.6183	5.109
L12	20.3104	30.9494	1487.0983	6.9231	10.1609	146.3546	2976.1533	15.4776	2.6403	5.281
	21.3885	32.6344	1743.4466	7.3001	10.7003	162.9346	3489.1873	16.3203	2.8272	5.654
L13	21.3885	32.6344	1743.4466	7.3001	10.7003	162.9346	3489.1873	16.3203	2.8272	5.654
	21.5675	32.9141	1788.6604	7.3626	10.7898	165.7730	3579.6743	16.4602	2.8582	5.716
L14	21.5675	32.9141	1788.6604	7.3626	10.7898	165.7730	3579.6743	16.4602	2.8582	5.716
	21.6214	32.9983	1802.4307	7.3815	10.8168	166.6328	3607.2330	16.5023	2.8675	5.735
L15	21.6214	32.9983	1802.4307	7.3815	10.8168	166.6328	3607.2330	16.5023	2.8675	5.735
	21.7292	33.1668	1830.1827	7.4192	10.8707	168.3589	3662.7736	16.5866	2.8862	5.772
L16	21.7292	29.1077	1615.8202	7.4414	10.8707	148.6397	3233.7666	14.5566	2.9962	6.849
	21.7831	29.1815	1628.1280	7.4602	10.8977	149.4012	3258.3983	14.5935	3.0056	6.87
L17	21.7831	29.1815	1628.1280	7.4602	10.8977	149.4012	3258.3983	14.5935	3.0056	6.87
	23.2127	31.1364	1977.7643	7.9600	11.6129	170.3078	3958.1309	15.5712	3.2534	7.436
L18	22.7066	36.3985	2045.3843	7.4870	10.9900	186.1139	4093.4600	18.2027	2.8505	5.242
	22.9227	38.0219	2331.4529	7.8209	11.4678	203.3042	4665.9735	19.0146	3.0161	5.547
L19	22.9227	37.1689	2281.7358	7.8253	11.4678	198.9688	4566.4739	18.5880	3.0381	5.719
	24.0032	38.9631	2628.3777	8.2031	12.0084	218.8791	5260.2138	19.4853	3.2254	6.071
L20	24.0032	38.0669	2570.7009	8.2075	12.0084	214.0760	5144.7843	19.0371	3.2474	6.26
	25.0836	39.8190	2942.2335	8.5853	12.5489	234.4614	5888.3384	19.9133	3.4347	6.621
L21	25.0836	39.3494	2909.0391	8.5875	12.5489	231.8162	5821.9061	19.6784	3.4457	6.723
	25.2544	39.6229	2970.1162	8.6472	12.6343	235.0833	5944.1406	19.8152	3.4752	6.781
L22	25.2544	62.0431	4536.8744	8.5407	12.6343	359.0915	9079.7185	31.0274	2.9472	3.627
	25.3084	62.1803	4567.0405	8.5595	12.6613	360.7075	9140.0905	31.0960	2.9566	3.639

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L23	25.3084	61.2554	4503.7757	8.5640	12.6613	355.7108	9013.4776	30.6335	2.9786	3.723
	25.5785	61.9309	4654.4168	8.6584	12.7965	363.7264	9314.9580	30.9713	3.0254	3.782
L24	25.5785	45.8767	3508.2095	8.7339	12.7965	274.1543	7021.0351	22.9427	3.3994	5.786
	25.6325	45.9760	3531.0188	8.7527	12.8235	275.3552	7066.6838	22.9923	3.4088	5.802
L25	25.6325	45.0206	3461.1496	8.7572	12.8235	269.9067	6926.8535	22.5146	3.4308	5.967
	26.3349	46.2828	3760.5217	9.0027	13.1749	285.4316	7525.9916	23.1458	3.5525	6.178
L26	26.3349	68.6372	5451.1031	8.9007	13.1749	413.7503	10909.3788	34.3251	3.0465	3.532
	26.3889	68.7829	5485.8789	8.9195	13.2019	415.5374	10978.9762	34.3980	3.0559	3.543
L27	26.3889	67.8197	5414.4465	8.9240	13.2019	410.1266	10836.0174	33.9163	3.0779	3.621
	26.5510	68.2504	5518.2381	8.9806	13.2830	415.4370	11043.7373	34.1317	3.1060	3.654
L28	26.5510	46.6712	3855.9914	9.0783	13.2830	290.2958	7717.0567	23.3401	3.5900	6.243
	26.6050	46.7683	3880.1088	9.0972	13.3100	291.5183	7765.3232	23.3886	3.5993	6.26
L29	26.6050	45.7740	3801.3159	9.1016	13.3100	285.5985	7607.6337	22.8913	3.6213	6.438
	27.6855	47.6737	4294.5339	9.4793	13.8506	310.0623	8594.7186	23.8414	3.8086	6.771
L30	27.6855	46.6361	4204.9997	9.4838	13.8506	303.5980	8415.5324	23.3225	3.8306	6.965
	28.7660	48.4937	4727.7448	9.8615	14.3911	328.5186	9461.7105	24.2515	4.0179	7.305
L31	28.7660	48.4937	4727.7448	9.8615	14.3911	328.5186	9461.7105	24.2515	4.0179	7.305
	29.1441	49.1438	4920.4575	9.9937	14.5803	337.4731	9847.3894	24.5766	4.0834	7.424
L32	29.1441	49.1438	4920.4575	9.9937	14.5803	337.4731	9847.3894	24.5766	4.0834	7.424
	29.1982	49.2367	4948.4076	10.0126	14.6073	338.7622	9903.3264	24.6230	4.0928	7.441
L33	29.1982	49.2367	4948.4076	10.0126	14.6073	338.7622	9903.3264	24.6230	4.0928	7.441
	29.5936	49.9166	5156.2357	10.1509	14.8052	348.2728	10319.2560	24.9630	4.1613	7.566
L34	29.5936	45.4581	4712.1198	10.1686	14.8052	318.2755	9430.4400	22.7333	4.2493	8.499
	29.6476	45.5425	4738.4258	10.1875	14.8322	319.4691	9483.0866	22.7756	4.2587	8.517
L35	29.6476	45.5425	4738.4258	10.1875	14.8322	319.4691	9483.0866	22.7756	4.2587	8.517
	29.6844	45.5999	4756.3693	10.2004	14.8506	320.2820	9518.9972	22.8043	4.2651	8.53
L36	29.6844	60.0782	6195.8680	10.1427	14.8506	417.2142	12399.8886	30.0448	3.9791	6.006
	29.7384	60.1901	6230.5458	10.1616	14.8776	418.7871	12469.2900	30.1007	3.9884	6.02
L37	29.7384	59.0802	6121.0004	10.1660	14.8776	411.4240	12250.0550	29.5457	4.0104	6.17
	30.8189	61.2755	6828.9988	10.5437	15.4181	442.9196	13666.9834	30.6436	4.1977	6.458
L38	30.8189	61.2755	6828.9988	10.5437	15.4181	442.9196	13666.9834	30.6436	4.1977	6.458
	31.0890	61.8243	7014.1424	10.6382	15.5533	450.9750	14037.5141	30.9180	4.2445	6.53
L39	31.0890	62.9869	7140.0872	10.6337	15.5533	459.0726	14289.5696	31.4995	4.2225	6.374
	31.1430	63.0988	7178.2003	10.6526	15.5803	460.7225	14365.8459	31.5554	4.2319	6.388
L40	31.1430	61.9341	7051.5675	10.6571	15.5803	452.5948	14112.4137	30.9729	4.2539	6.544
	31.5212	62.7024	7317.2822	10.7893	15.7695	464.0147	14644.1926	31.3572	4.3195	6.645
L41	31.5212	62.7024	7317.2822	10.7893	15.7695	464.0147	14644.1926	31.3572	4.3195	6.645
	31.5752	62.8122	7355.7778	10.8082	15.7965	465.6578	14721.2345	31.4121	4.3288	6.66
L42	31.5752	61.6296	7223.2101	10.8126	15.7965	457.2656	14455.9247	30.8206	4.3508	6.825
	31.9534	62.3831	7491.4289	10.9448	15.9857	468.6324	14992.7151	31.1975	4.4164	6.928
L43	31.9534	44.3030	5385.1359	11.0114	15.9857	336.8716	10777.3576	22.1557	4.7464	10.547
	32.0074	44.3789	5412.8942	11.0303	16.0128	338.0365	10832.9109	22.1937	4.7557	10.568
L44	32.0074	44.3789	5412.8942	11.0303	16.0128	338.0365	10832.9109	22.1937	4.7557	10.568
	32.0615	44.4549	5440.7478	11.0492	16.0398	339.2034	10888.6547	22.2317	4.7651	10.589
L45	32.0615	55.3678	6727.4544	11.0092	16.0398	419.4231	13463.7610	27.6892	4.5671	8.119
	32.1155	55.4628	6762.1387	11.0281	16.0668	420.8763	13533.175	27.7367	4.5765	8.136

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L46	32.1155	55.4628	6762.1387	11.0281	16.0668	420.8763	13533.1753	27.7367	4.5765	8.136
	32.3856	55.9377	6937.3482	11.1225	16.2019	428.1800	13883.8248	27.9742	4.6233	8.219
L47	32.3856	52.8828	6571.5645	11.1336	16.2019	405.6034	13151.7760	26.4464	4.6783	8.806
	32.4396	52.9725	6605.0659	11.1525	16.2290	406.9922	13218.8228	26.4913	4.6876	8.824
L48	32.4396	52.3597	6531.2558	11.1547	16.2290	402.4442	13071.1055	26.1848	4.6986	8.95
	32.4937	52.4484	6564.4885	11.1736	16.2560	403.8194	13137.6147	26.2292	4.7080	8.968

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 98.00-93.00				1	1	1			
L2 93.00-88.00				1	1	1			
L3 88.00-82.79				1	1	1			
L4 82.79-80.21				1	1	1			
L5 80.21-75.21				1	1	1			
L6 75.21-70.21				1	1	1			
L7 70.21-65.21				1	1	1			
L8 65.21-60.21				1	1	1			
L9 60.21-59.17				1	1	1			
L10 59.17-58.90				1	1	0.920928			
L11 58.90-58.75				1	1	0.920221			
L12 58.75-53.75				1	1	0.919768			
L13 53.75-52.92				1	1	0.916201			
L14 52.92-52.67				1	1	1.05151			
L15 52.67-52.17				1	1	1.04871			
L16 52.17-51.92				1	1	1.03917			
L17 51.92-45.29				1	1	1.02447			
L18 45.29-44.29				1	1	0.935817			
L19 44.29-39.29				1	1	0.940298			
L20 39.29-34.29				1	1	0.946594			
L21 34.29-33.50				1	1	0.955487			
L22 33.50-33.25				1	1	0.899201			
L23 33.25-32.00				1	1	0.907083			
L24 32.00-31.75				1	1	0.929371			
L25 31.75-28.50				1	1	0.938031			

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L26 28.50-28.25				1	1	0.893655			
L27 28.25-27.50				1	1	0.902947			
L28 27.50-27.25				1	1	0.933935			
L29 27.25-22.25				1	1	0.938337			
L30 22.25-17.25				1	1	0.944235			
L31 17.25-15.50				1	1	0.93926			
L32 15.50-15.25				1	1	1.06043			
L33 15.25-13.42				1	1	1.05372			
L34 13.42-13.17				1	1	1.02433			
L35 13.17-13.00				1	1	1.02383			
L36 13.00-12.75				1	1	0.975905			
L37 12.75-7.75				1	1	0.975842			
L38 7.75-6.50				1	1	0.971447			
L39 6.50-6.25				1	1	1.04775			
L40 6.25-4.50				1	1	1.06027			
L41 4.50-4.25				1	1	0.96373			
L42 4.25-2.50				1	1	0.97628			
L43 2.50-2.25				1	1	1.23833			
L44 2.25-2.00				1	1	1.2374			
L45 2.00-1.75				1	1	1.1618			
L46 1.75-0.50				1	1	1.15666			
L47 0.50-0.25				1	1	0.995857			
L48 0.25-0.00				1	1	1.00682			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
Safety Line 3/8 ***	A	Surface Ar (CaAa)	98.00 - 8.00	1	1	0.000 0.017	0.3750		0.22
AVA7-50(1-5/8) ***	B	Surface Ar (CaAa)	67.00 - 8.00	14	7	-0.200 0.400	2.0100		0.70
Faces 17 and 18									
PL1x6 Reinforcement - Wind Area	B	Surface Af (CaAa)	30.50 - 0.50	1	1	-0.500 -0.500	6.0000	14.0000	0.00
PL1x6 Reinforcement - Wind Area	B	Surface Af (CaAa)	35.50 - 25.50	1	1	-0.500 -0.500	6.0000	14.0000	0.00
PL1x4.5 Reinforcement - Wind Area	B	Surface Af (CaAa)	60.50 - 30.50	1	1	-0.500 -0.500	4.5000	11.0000	0.00
Faces 11 and 12									
PL1x6 Reinforcement - Wind Area	C	Surface Af (CaAa)	8.50 - 0.50	1	1	-0.500 -0.500	6.0000	14.0000	0.00
PL1x6 Reinforcement - Wind Area	C	Surface Af (CaAa)	17.50 - 2.50	1	1	-0.500 -0.500	6.0000	14.0000	0.00
PL1x6 Reinforcement - Wind Area	C	Surface Af (CaAa)	30.50 - 11.42	1	1	-0.500 -0.500	6.0000	14.0000	0.00
PL1x6 Reinforcement - Wind	C	Surface Af	35.50 - 25.50	1	1	-0.500	6.0000	14.0000	0.00

Description	Sector	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
Area		(CaAa)				-0.500			
PL1x4.5 Reinforcement - Wind Area	C	Surface Af (CaAa)	49.75 - 30.50	1	1	-0.500 -0.500	4.5000	11.0000	0.00
PL1x4.5 Reinforcement - Wind Area	C	Surface Af (CaAa)	54.92 - 45.92	1	1	-0.500 -0.500	4.5000	11.0000	0.00
PL1x4.5 Reinforcement - Wind Area *Faces 5 and 6*	C	Surface Af (CaAa)	60.67 - 50.67	1	1	-0.500 -0.500	4.5000	11.0000	0.00
PL1x6 Reinforcement - Wind Area	A	Surface Af (CaAa)	30.50 - 0.50	1	1	-0.500 -0.500	6.0000	14.0000	0.00
PL1x6 Reinforcement - Wind Area	A	Surface Af (CaAa)	35.50 - 25.50	1	1	-0.500 -0.500	6.0000	14.0000	0.00
PL1x4.5 Reinforcement - Wind Area *Proposed	A	Surface Af (CaAa)	60.50 - 30.50	1	1	-0.500 -0.500	4.5000	11.0000	0.00
CCI-SFP-060100	A	Surface Af (CaAa)	15.00 - 0.00	1	1	0.000 0.000	6.0000	14.0000	0.00
CCI-SFP-060100	B	Surface Af (CaAa)	15.00 - 0.00	1	1	0.000 0.000	6.0000	14.0000	0.00

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
***								
LDF5-50A(7/8)	B	No	Inside Pole	94.00 - 8.00	2	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.33 0.33 0.33
LDF7-50A(1-5/8)	B	No	Inside Pole	94.00 - 8.00	6	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.82 0.82 0.82
***								
AVA5-50(7/8)	C	No	Inside Pole	89.00 - 3.00	6	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.30 0.30 0.30
LDF5-50A(7/8)	C	No	Inside Pole	89.00 - 3.00	6	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.33 0.33 0.33
***								
2" innerduct conduit	A	No	Inside Pole	74.00 - 8.00	2	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.20 0.20 0.20
FB-L98B-002-75000(3/8)	A	No	Inside Pole	74.00 - 8.00	1	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.06 0.06 0.06
WR-VG86ST-BRD(3/4)	A	No	Inside Pole	74.00 - 8.00	2	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.58 0.58 0.58
LDF5-50A(7/8)	A	No	Inside Pole	74.00 - 8.00	12	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.33 0.33 0.33
2" innerduct conduit	A	No	Inside Pole	74.00 - 8.00	1	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.20 0.20 0.20
WR-VG86ST-BRD(3/4)	A	No	Inside Pole	74.00 - 8.00	2	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.58 0.58 0.58
FB-L98B-002-75000(3/8)	A	No	Inside Pole	74.00 - 8.00	1	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.06 0.06 0.06
***								
LDF5-50A(7/8)	B	No	Inside Pole	52.00 - 8.00	1	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.33 0.33 0.33

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	C_AA_A ft^2/ft	Weight plf
***							

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	98.00-93.00	A	0.000	0.000	0.188	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.01
		C	0.000	0.000	0.000	0.000	0.00
L2	93.00-88.00	A	0.000	0.000	0.188	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.03
		C	0.000	0.000	0.000	0.000	0.00
L3	88.00-82.79	A	0.000	0.000	0.195	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.03
		C	0.000	0.000	0.000	0.000	0.02
L4	82.79-80.21	A	0.000	0.000	0.097	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.01
		C	0.000	0.000	0.000	0.000	0.01
L5	80.21-75.21	A	0.000	0.000	0.188	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.03
		C	0.000	0.000	0.000	0.000	0.02
L6	75.21-70.21	A	0.000	0.000	0.188	0.000	0.03
		B	0.000	0.000	0.000	0.000	0.03
		C	0.000	0.000	0.000	0.000	0.02
L7	70.21-65.21	A	0.000	0.000	0.188	0.000	0.04
		B	0.000	0.000	2.519	0.000	0.05
		C	0.000	0.000	0.000	0.000	0.02
L8	65.21-60.21	A	0.000	0.000	0.405	0.000	0.04
		B	0.000	0.000	7.253	0.000	0.08
		C	0.000	0.000	0.345	0.000	0.02
L9	60.21-59.17	A	0.000	0.000	0.819	0.000	0.01
		B	0.000	0.000	2.243	0.000	0.02
		C	0.000	0.000	0.780	0.000	0.00
L10	59.17-58.90	A	0.000	0.000	0.213	0.000	0.00
		B	0.000	0.000	0.582	0.000	0.00
		C	0.000	0.000	0.203	0.000	0.00
L11	58.90-58.75	A	0.000	0.000	0.118	0.000	0.00
		B	0.000	0.000	0.324	0.000	0.00
		C	0.000	0.000	0.113	0.000	0.00
L12	58.75-53.75	A	0.000	0.000	3.938	0.000	0.04
		B	0.000	0.000	10.785	0.000	0.08
		C	0.000	0.000	4.628	0.000	0.02
L13	53.75-52.92	A	0.000	0.000	0.654	0.000	0.01
		B	0.000	0.000	1.790	0.000	0.01
		C	0.000	0.000	1.245	0.000	0.00
L14	52.92-52.67	A	0.000	0.000	0.197	0.000	0.00
		B	0.000	0.000	0.539	0.000	0.00
		C	0.000	0.000	0.375	0.000	0.00
L15	52.67-52.17	A	0.000	0.000	0.394	0.000	0.00
		B	0.000	0.000	1.079	0.000	0.01
		C	0.000	0.000	0.750	0.000	0.00
L16	52.17-51.92	A	0.000	0.000	0.197	0.000	0.00
		B	0.000	0.000	0.539	0.000	0.00
		C	0.000	0.000	0.375	0.000	0.00
L17	51.92-45.29	A	0.000	0.000	5.221	0.000	0.05
		B	0.000	0.000	14.301	0.000	0.10
		C	0.000	0.000	8.783	0.000	0.03
L18	45.29-44.29	A	0.000	0.000	0.787	0.000	0.01
		B	0.000	0.000	2.157	0.000	0.02
		C	0.000	0.000	0.750	0.000	0.00
L19	44.29-39.29	A	0.000	0.000	3.938	0.000	0.04
		B	0.000	0.000	10.785	0.000	0.08
		C	0.000	0.000	3.750	0.000	0.02
L20	39.29-34.29	A	0.000	0.000	5.148	0.000	0.04
		B	0.000	0.000	11.995	0.000	0.08

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
		C	0.000	0.000	4.960	0.000	0.02
L21	34.29-33.50	A	0.000	0.000	1.412	0.000	0.01
		B	0.000	0.000	2.494	0.000	0.01
		C	0.000	0.000	1.383	0.000	0.00
L22	33.50-33.25	A	0.000	0.000	0.447	0.000	0.00
		B	0.000	0.000	0.789	0.000	0.00
		C	0.000	0.000	0.438	0.000	0.00
L23	33.25-32.00	A	0.000	0.000	2.234	0.000	0.01
		B	0.000	0.000	3.946	0.000	0.02
		C	0.000	0.000	2.188	0.000	0.00
L24	32.00-31.75	A	0.000	0.000	0.447	0.000	0.00
		B	0.000	0.000	0.789	0.000	0.00
		C	0.000	0.000	0.438	0.000	0.00
L25	31.75-28.50	A	0.000	0.000	6.309	0.000	0.02
		B	0.000	0.000	10.760	0.000	0.05
		C	0.000	0.000	6.188	0.000	0.01
L26	28.50-28.25	A	0.000	0.000	0.509	0.000	0.00
		B	0.000	0.000	0.852	0.000	0.00
		C	0.000	0.000	0.500	0.000	0.00
L27	28.25-27.50	A	0.000	0.000	1.528	0.000	0.01
		B	0.000	0.000	2.555	0.000	0.01
		C	0.000	0.000	1.500	0.000	0.00
L28	27.50-27.25	A	0.000	0.000	0.509	0.000	0.00
		B	0.000	0.000	0.852	0.000	0.00
		C	0.000	0.000	0.500	0.000	0.00
L29	27.25-22.25	A	0.000	0.000	6.938	0.000	0.04
		B	0.000	0.000	13.785	0.000	0.08
		C	0.000	0.000	6.750	0.000	0.02
L30	22.25-17.25	A	0.000	0.000	5.188	0.000	0.04
		B	0.000	0.000	12.035	0.000	0.08
		C	0.000	0.000	5.250	0.000	0.02
L31	17.25-15.50	A	0.000	0.000	1.816	0.000	0.01
		B	0.000	0.000	4.212	0.000	0.03
		C	0.000	0.000	3.500	0.000	0.01
L32	15.50-15.25	A	0.000	0.000	0.259	0.000	0.00
		B	0.000	0.000	0.602	0.000	0.00
		C	0.000	0.000	0.500	0.000	0.00
L33	15.25-13.42	A	0.000	0.000	3.479	0.000	0.01
		B	0.000	0.000	5.985	0.000	0.03
		C	0.000	0.000	3.660	0.000	0.01
L34	13.42-13.17	A	0.000	0.000	0.509	0.000	0.00
		B	0.000	0.000	0.852	0.000	0.00
		C	0.000	0.000	0.500	0.000	0.00
L35	13.17-13.00	A	0.000	0.000	0.346	0.000	0.00
		B	0.000	0.000	0.579	0.000	0.00
		C	0.000	0.000	0.340	0.000	0.00
L36	13.00-12.75	A	0.000	0.000	0.509	0.000	0.00
		B	0.000	0.000	0.852	0.000	0.00
		C	0.000	0.000	0.500	0.000	0.00
L37	12.75-7.75	A	0.000	0.000	10.178	0.000	0.03
		B	0.000	0.000	16.683	0.000	0.07
		C	0.000	0.000	7.080	0.000	0.02
L38	7.75-6.50	A	0.000	0.000	2.500	0.000	0.00
		B	0.000	0.000	2.500	0.000	0.00
		C	0.000	0.000	2.500	0.000	0.00
L39	6.50-6.25	A	0.000	0.000	0.500	0.000	0.00
		B	0.000	0.000	0.500	0.000	0.00
		C	0.000	0.000	0.500	0.000	0.00
L40	6.25-4.50	A	0.000	0.000	3.500	0.000	0.00
		B	0.000	0.000	3.500	0.000	0.00
		C	0.000	0.000	3.500	0.000	0.01
L41	4.50-4.25	A	0.000	0.000	0.500	0.000	0.00
		B	0.000	0.000	0.500	0.000	0.00
		C	0.000	0.000	0.500	0.000	0.00
L42	4.25-2.50	A	0.000	0.000	3.500	0.000	0.00
		B	0.000	0.000	3.500	0.000	0.00
		C	0.000	0.000	3.500	0.000	0.00
L43	2.50-2.25	A	0.000	0.000	0.500	0.000	0.00
		B	0.000	0.000	0.500	0.000	0.00

Tower Section	Tower Elevation ft	Face	A_R ft²	A_F ft²	C_AA_A In Face ft²	C_AA_A Out Face ft²	Weight K
		C	0.000	0.000	0.250	0.000	0.00
L44	2.25-2.00	A	0.000	0.000	0.500	0.000	0.00
		B	0.000	0.000	0.500	0.000	0.00
		C	0.000	0.000	0.250	0.000	0.00
L45	2.00-1.75	A	0.000	0.000	0.500	0.000	0.00
		B	0.000	0.000	0.500	0.000	0.00
		C	0.000	0.000	0.250	0.000	0.00
L46	1.75-0.50	A	0.000	0.000	2.500	0.000	0.00
		B	0.000	0.000	2.500	0.000	0.00
		C	0.000	0.000	1.250	0.000	0.00
L47	0.50-0.25	A	0.000	0.000	0.250	0.000	0.00
		B	0.000	0.000	0.250	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L48	0.25-0.00	A	0.000	0.000	0.250	0.000	0.00
		B	0.000	0.000	0.250	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft²	A_F ft²	C_AA_A In Face ft²	C_AA_A Out Face ft²	Weight K
L1	98.00-93.00	A	2.224	0.000	0.000	2.412	0.000	0.04
		B		0.000	0.000	0.000	0.000	0.01
		C		0.000	0.000	0.000	0.000	0.00
L2	93.00-88.00	A	2.212	0.000	0.000	2.400	0.000	0.04
		B		0.000	0.000	0.000	0.000	0.03
		C		0.000	0.000	0.000	0.000	0.00
L3	88.00-82.79	A	2.199	0.000	0.000	2.487	0.000	0.04
		B		0.000	0.000	0.000	0.000	0.03
		C		0.000	0.000	0.000	0.000	0.02
L4	82.79-80.21	A	2.189	0.000	0.000	1.232	0.000	0.02
		B		0.000	0.000	0.000	0.000	0.01
		C		0.000	0.000	0.000	0.000	0.01
L5	80.21-75.21	A	2.179	0.000	0.000	2.366	0.000	0.04
		B		0.000	0.000	0.000	0.000	0.03
		C		0.000	0.000	0.000	0.000	0.02
L6	75.21-70.21	A	2.164	0.000	0.000	2.352	0.000	0.06
		B		0.000	0.000	0.000	0.000	0.03
		C		0.000	0.000	0.000	0.000	0.02
L7	70.21-65.21	A	2.149	0.000	0.000	2.336	0.000	0.07
		B		0.000	0.000	4.110	0.000	0.11
		C		0.000	0.000	0.000	0.000	0.02
L8	65.21-60.21	A	2.133	0.000	0.000	2.661	0.000	0.07
		B		0.000	0.000	11.801	0.000	0.27
		C		0.000	0.000	0.454	0.000	0.03
L9	60.21-59.17	A	2.122	0.000	0.000	1.702	0.000	0.03
		B		0.000	0.000	3.602	0.000	0.07
		C		0.000	0.000	1.026	0.000	0.02
L10	59.17-58.90	A	2.120	0.000	0.000	0.442	0.000	0.01
		B		0.000	0.000	0.935	0.000	0.02
		C		0.000	0.000	0.266	0.000	0.01
L11	58.90-58.75	A	2.119	0.000	0.000	0.245	0.000	0.00
		B		0.000	0.000	0.519	0.000	0.01
		C		0.000	0.000	0.148	0.000	0.00
L12	58.75-53.75	A	2.109	0.000	0.000	8.156	0.000	0.15
		B		0.000	0.000	17.290	0.000	0.35
		C		0.000	0.000	6.043	0.000	0.11
L13	53.75-52.92	A	2.098	0.000	0.000	1.350	0.000	0.02
		B		0.000	0.000	2.866	0.000	0.06
		C		0.000	0.000	1.608	0.000	0.03
L14	52.92-52.67	A	2.096	0.000	0.000	0.406	0.000	0.01
		B		0.000	0.000	0.863	0.000	0.02
		C		0.000	0.000	0.484	0.000	0.01
L15	52.67-52.17	A	2.095	0.000	0.000	0.813	0.000	0.01
		B		0.000	0.000	1.726	0.000	0.03

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	0.968	0.000	0.02
L16	52.17-51.92	A	2.093	0.000	0.000	0.406	0.000	0.01
		B		0.000	0.000	0.863	0.000	0.02
		C		0.000	0.000	0.484	0.000	0.01
L17	51.92-45.29	A	2.079	0.000	0.000	10.734	0.000	0.19
		B		0.000	0.000	22.835	0.000	0.45
		C		0.000	0.000	12.133	0.000	0.20
L18	45.29-44.29	A	2.062	0.000	0.000	1.619	0.000	0.03
		B		0.000	0.000	3.444	0.000	0.07
		C		0.000	0.000	1.166	0.000	0.02
L19	44.29-39.29	A	2.048	0.000	0.000	8.033	0.000	0.14
		B		0.000	0.000	17.151	0.000	0.34
		C		0.000	0.000	5.798	0.000	0.09
L20	39.29-34.29	A	2.022	0.000	0.000	9.346	0.000	0.16
		B		0.000	0.000	18.458	0.000	0.35
		C		0.000	0.000	7.137	0.000	0.11
L21	34.29-33.50	A	2.005	0.000	0.000	2.146	0.000	0.04
		B		0.000	0.000	3.585	0.000	0.07
		C		0.000	0.000	1.799	0.000	0.03
L22	33.50-33.25	A	2.002	0.000	0.000	0.679	0.000	0.01
		B		0.000	0.000	1.134	0.000	0.02
		C		0.000	0.000	0.569	0.000	0.01
L23	33.25-32.00	A	1.998	0.000	0.000	3.390	0.000	0.06
		B		0.000	0.000	5.667	0.000	0.10
		C		0.000	0.000	2.844	0.000	0.04
L24	32.00-31.75	A	1.993	0.000	0.000	0.677	0.000	0.01
		B		0.000	0.000	1.133	0.000	0.02
		C		0.000	0.000	0.568	0.000	0.01
L25	31.75-28.50	A	1.982	0.000	0.000	9.289	0.000	0.15
		B		0.000	0.000	15.205	0.000	0.27
		C		0.000	0.000	7.855	0.000	0.12
L26	28.50-28.25	A	1.970	0.000	0.000	0.737	0.000	0.01
		B		0.000	0.000	1.192	0.000	0.02
		C		0.000	0.000	0.626	0.000	0.01
L27	28.25-27.50	A	1.967	0.000	0.000	2.210	0.000	0.03
		B		0.000	0.000	3.575	0.000	0.06
		C		0.000	0.000	1.878	0.000	0.03
L28	27.50-27.25	A	1.963	0.000	0.000	0.736	0.000	0.01
		B		0.000	0.000	1.191	0.000	0.02
		C		0.000	0.000	0.626	0.000	0.01
L29	27.25-22.25	A	1.943	0.000	0.000	11.034	0.000	0.17
		B		0.000	0.000	20.126	0.000	0.36
		C		0.000	0.000	8.851	0.000	0.13
L30	22.25-17.25	A	1.900	0.000	0.000	8.987	0.000	0.14
		B		0.000	0.000	18.068	0.000	0.33
		C		0.000	0.000	7.175	0.000	0.10
L31	17.25-15.50	A	1.865	0.000	0.000	3.121	0.000	0.05
		B		0.000	0.000	6.296	0.000	0.11
		C		0.000	0.000	4.616	0.000	0.06
L32	15.50-15.25	A	1.853	0.000	0.000	0.445	0.000	0.01
		B		0.000	0.000	0.898	0.000	0.02
		C		0.000	0.000	0.659	0.000	0.01
L33	15.25-13.42	A	1.840	0.000	0.000	5.252	0.000	0.07
		B		0.000	0.000	8.570	0.000	0.14
		C		0.000	0.000	4.815	0.000	0.06
L34	13.42-13.17	A	1.826	0.000	0.000	0.759	0.000	0.01
		B		0.000	0.000	1.212	0.000	0.02
		C		0.000	0.000	0.657	0.000	0.01
L35	13.17-13.00	A	1.823	0.000	0.000	0.516	0.000	0.01
		B		0.000	0.000	0.824	0.000	0.01
		C		0.000	0.000	0.447	0.000	0.01
L36	13.00-12.75	A	1.820	0.000	0.000	0.758	0.000	0.01
		B		0.000	0.000	1.211	0.000	0.02
		C		0.000	0.000	0.657	0.000	0.01
L37	12.75-7.75	A	1.779	0.000	0.000	14.967	0.000	0.20
		B		0.000	0.000	23.566	0.000	0.37
		C		0.000	0.000	8.897	0.000	0.12
L38	7.75-6.50	A	1.716	0.000	0.000	3.251	0.000	0.03
		B		0.000	0.000	3.251	0.000	0.03

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft²	A_F ft²	C_AA_A In Face ft²	C_AA_A Out Face ft²	Weight K
		C		0.000	0.000	2.863	0.000	0.04
L39	6.50-6.25	A	1.697	0.000	0.000	0.649	0.000	0.01
		B		0.000	0.000	0.649	0.000	0.01
		C		0.000	0.000	0.572	0.000	0.01
L40	6.25-4.50	A	1.668	0.000	0.000	4.527	0.000	0.05
		B		0.000	0.000	4.527	0.000	0.05
		C		0.000	0.000	3.991	0.000	0.05
L41	4.50-4.25	A	1.634	0.000	0.000	0.644	0.000	0.01
		B		0.000	0.000	0.644	0.000	0.01
		C		0.000	0.000	0.568	0.000	0.01
L42	4.25-2.50	A	1.592	0.000	0.000	4.487	0.000	0.04
		B		0.000	0.000	4.487	0.000	0.04
		C		0.000	0.000	3.964	0.000	0.05
L43	2.50-2.25	A	1.537	0.000	0.000	0.637	0.000	0.01
		B		0.000	0.000	0.637	0.000	0.01
		C		0.000	0.000	0.253	0.000	0.00
L44	2.25-2.00	A	1.520	0.000	0.000	0.636	0.000	0.01
		B		0.000	0.000	0.636	0.000	0.01
		C		0.000	0.000	0.253	0.000	0.00
L45	2.00-1.75	A	1.501	0.000	0.000	0.634	0.000	0.01
		B		0.000	0.000	0.634	0.000	0.01
		C		0.000	0.000	0.252	0.000	0.00
L46	1.75-0.50	A	1.426	0.000	0.000	3.143	0.000	0.03
		B		0.000	0.000	3.143	0.000	0.03
		C		0.000	0.000	1.253	0.000	0.01
L47	0.50-0.25	A	1.278	0.000	0.000	0.304	0.000	0.00
		B		0.000	0.000	0.304	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
L48	0.25-0.00	A	1.145	0.000	0.000	0.300	0.000	0.00
		B		0.000	0.000	0.300	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	98.00-93.00	-0.0472	-0.0284	-0.3486	-0.2096
L2	93.00-88.00	-0.0472	-0.0284	-0.3596	-0.2162
L3	88.00-82.79	-0.0473	-0.0284	-0.3694	-0.2221
L4	82.79-80.21	-0.0473	-0.0284	-0.3737	-0.2246
L5	80.21-75.21	-0.0473	-0.0284	-0.3788	-0.2278
L6	75.21-70.21	-0.0473	-0.0284	-0.3861	-0.2321
L7	70.21-65.21	0.6131	-0.2324	0.3669	-0.3667
L8	65.21-60.21	1.2065	-0.4123	0.9440	-0.4622
L9	60.21-59.17	0.7269	-0.2502	0.5428	-0.2864
L10	59.17-58.90	0.7295	-0.2511	0.5452	-0.2877
L11	58.90-58.75	0.7304	-0.2514	0.5460	-0.2882
L12	58.75-53.75	0.8327	-0.2750	0.6319	-0.3080
L13	53.75-52.92	1.1090	-0.3367	0.8692	-0.3573
L14	52.92-52.67	1.1126	-0.3378	0.8727	-0.3587
L15	52.67-52.17	1.1151	-0.3386	0.8750	-0.3597
L16	52.17-51.92	1.1176	-0.3394	0.8774	-0.3607
L17	51.92-45.29	1.0616	-0.3293	0.8683	-0.3636
L18	45.29-44.29	0.7754	-0.2671	0.6559	-0.3242
L19	44.29-39.29	0.7864	-0.2710	0.6696	-0.3301
L20	39.29-34.29	0.7140	-0.2461	0.6346	-0.3124
L21	34.29-33.50	0.5366	-0.1850	0.5157	-0.2537
L22	33.50-33.25	0.5380	-0.1855	0.5174	-0.2545
L23	33.25-32.00	0.5402	-0.1862	0.5199	-0.2556
L24	32.00-31.75	0.5423	-0.1870	0.5223	-0.2567
L25	31.75-28.50	0.5201	-0.1794	0.5074	-0.2497
L26	28.50-28.25	0.5092	-0.1756	0.5007	-0.2466
L27	28.25-27.50	0.5105	-0.1761	0.5023	-0.2473
L28	27.50-27.25	0.5118	-0.1765	0.5039	-0.2479

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
L29	27.25-22.25	0.6491	-0.2239	0.6110	-0.3001
L30	22.25-17.25	0.7969	-0.2715	0.7286	-0.3487
L31	17.25-15.50	1.3113	-0.3920	1.1895	-0.4477
L32	15.50-15.25	1.3173	-0.3939	1.1969	-0.4501
L33	15.25-13.42	1.0860	-0.6610	1.0112	-0.6808
L34	13.42-13.17	1.0615	-0.6979	0.9927	-0.7144
L35	13.17-13.00	1.0626	-0.6987	0.9940	-0.7153
L36	13.00-12.75	1.0637	-0.6995	0.9954	-0.7161
L37	12.75-7.75	0.7963	-0.6666	0.7247	-0.6846
L38	7.75-6.50	0.6193	-0.6140	0.4858	-0.5997
L39	6.50-6.25	0.6215	-0.6162	0.4885	-0.6024
L40	6.25-4.50	0.6244	-0.6191	0.4922	-0.6060
L41	4.50-4.25	0.6273	-0.6220	0.4962	-0.6096
L42	4.25-2.50	0.6302	-0.6249	0.5006	-0.6135
L43	2.50-2.25	0.0000	-0.5299	-0.1785	-0.5130
L44	2.25-2.00	0.0000	-0.5305	-0.1780	-0.5139
L45	2.00-1.75	0.0000	-0.5310	-0.1774	-0.5149
L46	1.75-0.50	0.0000	-0.5327	-0.1749	-0.5181
L47	0.50-0.25	0.0000	-0.8753	0.0000	-0.9354
L48	0.25-0.00	0.0000	-0.8759	0.0000	-0.9345

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L1	1	Safety Line 3/8	93.00 - 98.00	1.0000	1.0000
L2	1	Safety Line 3/8	88.00 - 93.00	1.0000	1.0000
L3	1	Safety Line 3/8	82.79 - 88.00	1.0000	1.0000
L5	1	Safety Line 3/8	75.21 - 80.21	1.0000	1.0000
L6	1	Safety Line 3/8	70.21 - 75.21	1.0000	1.0000
L7	1	Safety Line 3/8	65.21 - 70.21	1.0000	1.0000
L7	17	AVA7-50(1-5/8)	65.21 - 67.00	1.0000	1.0000
L8	1	Safety Line 3/8	60.21 - 65.21	1.0000	1.0000
L8	17	AVA7-50(1-5/8)	60.21 - 65.21	1.0000	1.0000
L8	27	PL1x4.5 Reinforcement - Wind Area	60.21 - 60.50	1.0000	1.0000
L8	35	PL1x4.5 Reinforcement - Wind Area	60.21 - 60.67	1.0000	1.0000
L8	39	PL1x4.5 Reinforcement - Wind Area	60.21 - 60.50	1.0000	1.0000
L9	1	Safety Line 3/8	59.17 - 60.21	1.0000	1.0000
L9	17	AVA7-50(1-5/8)	59.17 - 60.21	1.0000	1.0000
L9	27	PL1x4.5 Reinforcement - Wind Area	59.17 - 60.21	1.0000	1.0000
L9	35	PL1x4.5 Reinforcement - Wind Area	59.17 - 60.21	1.0000	1.0000
L9	39	PL1x4.5 Reinforcement - Wind Area	59.17 - 60.21	1.0000	1.0000
L10	1	Safety Line 3/8	58.90 - 59.17	1.0000	1.0000
L10	17	AVA7-50(1-5/8)	58.90 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
			59.17		
L10	27	PL1x4.5 Reinforcement - Wind Area	58.90 - 59.17	1.0000	1.0000
L10	35	PL1x4.5 Reinforcement - Wind Area	58.90 - 59.17	1.0000	1.0000
L10	39	PL1x4.5 Reinforcement - Wind Area	58.90 - 59.17	1.0000	1.0000
L11	1	Safety Line 3/8	58.75 - 58.90	1.0000	1.0000
L11	17	AVA7-50(1-5/8)	58.75 - 58.90	1.0000	1.0000
L11	27	PL1x4.5 Reinforcement - Wind Area	58.75 - 58.90	1.0000	1.0000
L11	35	PL1x4.5 Reinforcement - Wind Area	58.75 - 58.90	1.0000	1.0000
L11	39	PL1x4.5 Reinforcement - Wind Area	58.75 - 58.90	1.0000	1.0000
L12	1	Safety Line 3/8	53.75 - 58.75	1.0000	1.0000
L12	17	AVA7-50(1-5/8)	53.75 - 58.75	1.0000	1.0000
L12	27	PL1x4.5 Reinforcement - Wind Area	53.75 - 58.75	1.0000	1.0000
L12	34	PL1x4.5 Reinforcement - Wind Area	53.75 - 54.92	1.0000	1.0000
L12	35	PL1x4.5 Reinforcement - Wind Area	53.75 - 58.75	1.0000	1.0000
L12	39	PL1x4.5 Reinforcement - Wind Area	53.75 - 58.75	1.0000	1.0000
L13	1	Safety Line 3/8	52.92 - 53.75	1.0000	1.0000
L13	17	AVA7-50(1-5/8)	52.92 - 53.75	1.0000	1.0000
L13	27	PL1x4.5 Reinforcement - Wind Area	52.92 - 53.75	1.0000	1.0000
L13	34	PL1x4.5 Reinforcement - Wind Area	52.92 - 53.75	1.0000	1.0000
L13	35	PL1x4.5 Reinforcement - Wind Area	52.92 - 53.75	1.0000	1.0000
L13	39	PL1x4.5 Reinforcement - Wind Area	52.92 - 53.75	1.0000	1.0000
L14	1	Safety Line 3/8	52.67 - 52.92	1.0000	1.0000
L14	17	AVA7-50(1-5/8)	52.67 - 52.92	1.0000	1.0000
L14	27	PL1x4.5 Reinforcement - Wind Area	52.67 - 52.92	1.0000	1.0000
L14	34	PL1x4.5 Reinforcement - Wind Area	52.67 - 52.92	1.0000	1.0000
L14	35	PL1x4.5 Reinforcement - Wind Area	52.67 - 52.92	1.0000	1.0000
L14	39	PL1x4.5 Reinforcement - Wind Area	52.67 - 52.92	1.0000	1.0000
L15	1	Safety Line 3/8	52.17 - 52.67	1.0000	1.0000
L15	17	AVA7-50(1-5/8)	52.17 - 52.67	1.0000	1.0000
L15	27	PL1x4.5 Reinforcement - Wind Area	52.17 - 52.67	1.0000	1.0000
L15	34	PL1x4.5 Reinforcement - Wind Area	52.17 - 52.67	1.0000	1.0000
L15	35	PL1x4.5 Reinforcement - Wind Area	52.17 - 52.67	1.0000	1.0000
L15	39	PL1x4.5 Reinforcement - Wind Area	52.17 - 52.67	1.0000	1.0000
L16	1	Safety Line 3/8	51.92 - 52.17	1.0000	1.0000
L16	17	AVA7-50(1-5/8)	51.92 - 52.17	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L16	27	PL1x4.5 Reinforcement - Wind Area	51.92 - 52.17	1.0000	1.0000
L16	34	PL1x4.5 Reinforcement - Wind Area	51.92 - 52.17	1.0000	1.0000
L16	35	PL1x4.5 Reinforcement - Wind Area	51.92 - 52.17	1.0000	1.0000
L16	39	PL1x4.5 Reinforcement - Wind Area	51.92 - 52.17	1.0000	1.0000
L17	1	Safety Line 3/8	45.29 - 51.92	1.0000	1.0000
L17	17	AVA7-50(1-5/8)	45.29 - 51.92	1.0000	1.0000
L17	27	PL1x4.5 Reinforcement - Wind Area	45.29 - 51.92	1.0000	1.0000
L17	33	PL1x4.5 Reinforcement - Wind Area	45.29 - 49.75	1.0000	1.0000
L17	34	PL1x4.5 Reinforcement - Wind Area	45.92 - 51.92	1.0000	1.0000
L17	35	PL1x4.5 Reinforcement - Wind Area	50.67 - 51.92	1.0000	1.0000
L17	39	PL1x4.5 Reinforcement - Wind Area	45.29 - 51.92	1.0000	1.0000
L19	1	Safety Line 3/8	39.29 - 44.29	1.0000	1.0000
L19	17	AVA7-50(1-5/8)	39.29 - 44.29	1.0000	1.0000
L19	27	PL1x4.5 Reinforcement - Wind Area	39.29 - 44.29	1.0000	1.0000
L19	33	PL1x4.5 Reinforcement - Wind Area	39.29 - 44.29	1.0000	1.0000
L19	39	PL1x4.5 Reinforcement - Wind Area	39.29 - 44.29	1.0000	1.0000
L20	1	Safety Line 3/8	34.29 - 39.29	1.0000	1.0000
L20	17	AVA7-50(1-5/8)	34.29 - 39.29	1.0000	1.0000
L20	26	PL1x6 Reinforcement - Wind Area	34.29 - 35.50	1.0000	1.0000
L20	27	PL1x4.5 Reinforcement - Wind Area	34.29 - 39.29	1.0000	1.0000
L20	32	PL1x6 Reinforcement - Wind Area	34.29 - 35.50	1.0000	1.0000
L20	33	PL1x4.5 Reinforcement - Wind Area	34.29 - 39.29	1.0000	1.0000
L20	38	PL1x6 Reinforcement - Wind Area	34.29 - 35.50	1.0000	1.0000
L20	39	PL1x4.5 Reinforcement - Wind Area	34.29 - 39.29	1.0000	1.0000
L21	1	Safety Line 3/8	33.50 - 34.29	1.0000	1.0000
L21	17	AVA7-50(1-5/8)	33.50 - 34.29	1.0000	1.0000
L21	26	PL1x6 Reinforcement - Wind Area	33.50 - 34.29	1.0000	1.0000
L21	27	PL1x4.5 Reinforcement - Wind Area	33.50 - 34.29	1.0000	1.0000
L21	32	PL1x6 Reinforcement - Wind Area	33.50 - 34.29	1.0000	1.0000
L21	33	PL1x4.5 Reinforcement - Wind Area	33.50 - 34.29	1.0000	1.0000
L21	38	PL1x6 Reinforcement - Wind Area	33.50 - 34.29	1.0000	1.0000
L21	39	PL1x4.5 Reinforcement - Wind Area	33.50 - 34.29	1.0000	1.0000
L22	1	Safety Line 3/8	33.25 - 33.50	1.0000	1.0000
L22	17	AVA7-50(1-5/8)	33.25 - 33.50	1.0000	1.0000
L22	26	PL1x6 Reinforcement -	33.25 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
		Wind Area	33.50		
L22	27	PL1x4.5 Reinforcement - Wind Area	33.25 - 33.50	1.0000	1.0000
L22	32	PL1x6 Reinforcement - Wind Area	33.25 - 33.50	1.0000	1.0000
L22	33	PL1x4.5 Reinforcement - Wind Area	33.25 - 33.50	1.0000	1.0000
L22	38	PL1x6 Reinforcement - Wind Area	33.25 - 33.50	1.0000	1.0000
L22	39	PL1x4.5 Reinforcement - Wind Area	33.25 - 33.50	1.0000	1.0000
L23	1	Safety Line 3/8	32.00 - 33.25	1.0000	1.0000
L23	17	AVA7-50(1-5/8)	32.00 - 33.25	1.0000	1.0000
L23	26	PL1x6 Reinforcement - Wind Area	32.00 - 33.25	1.0000	1.0000
L23	27	PL1x4.5 Reinforcement - Wind Area	32.00 - 33.25	1.0000	1.0000
L23	32	PL1x6 Reinforcement - Wind Area	32.00 - 33.25	1.0000	1.0000
L23	33	PL1x4.5 Reinforcement - Wind Area	32.00 - 33.25	1.0000	1.0000
L23	38	PL1x6 Reinforcement - Wind Area	32.00 - 33.25	1.0000	1.0000
L23	39	PL1x4.5 Reinforcement - Wind Area	32.00 - 33.25	1.0000	1.0000
L24	1	Safety Line 3/8	31.75 - 32.00	1.0000	1.0000
L24	17	AVA7-50(1-5/8)	31.75 - 32.00	1.0000	1.0000
L24	26	PL1x6 Reinforcement - Wind Area	31.75 - 32.00	1.0000	1.0000
L24	27	PL1x4.5 Reinforcement - Wind Area	31.75 - 32.00	1.0000	1.0000
L24	32	PL1x6 Reinforcement - Wind Area	31.75 - 32.00	1.0000	1.0000
L24	33	PL1x4.5 Reinforcement - Wind Area	31.75 - 32.00	1.0000	1.0000
L24	38	PL1x6 Reinforcement - Wind Area	31.75 - 32.00	1.0000	1.0000
L24	39	PL1x4.5 Reinforcement - Wind Area	31.75 - 32.00	1.0000	1.0000
L25	1	Safety Line 3/8	28.50 - 31.75	1.0000	1.0000
L25	17	AVA7-50(1-5/8)	28.50 - 31.75	1.0000	1.0000
L25	25	PL1x6 Reinforcement - Wind Area	28.50 - 30.50	1.0000	1.0000
L25	26	PL1x6 Reinforcement - Wind Area	28.50 - 31.75	1.0000	1.0000
L25	27	PL1x4.5 Reinforcement - Wind Area	30.50 - 31.75	1.0000	1.0000
L25	31	PL1x6 Reinforcement - Wind Area	28.50 - 30.50	1.0000	1.0000
L25	32	PL1x6 Reinforcement - Wind Area	28.50 - 31.75	1.0000	1.0000
L25	33	PL1x4.5 Reinforcement - Wind Area	30.50 - 31.75	1.0000	1.0000
L25	37	PL1x6 Reinforcement - Wind Area	28.50 - 30.50	1.0000	1.0000
L25	38	PL1x6 Reinforcement - Wind Area	28.50 - 31.75	1.0000	1.0000
L25	39	PL1x4.5 Reinforcement - Wind Area	30.50 - 31.75	1.0000	1.0000
L26	1	Safety Line 3/8	28.25 - 28.50	1.0000	1.0000
L26	17	AVA7-50(1-5/8)	28.25 - 28.50	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L26	25	PL1x6 Reinforcement - Wind Area	28.25 - 28.50	1.0000	1.0000
L26	26	PL1x6 Reinforcement - Wind Area	28.25 - 28.50	1.0000	1.0000
L26	31	PL1x6 Reinforcement - Wind Area	28.25 - 28.50	1.0000	1.0000
L26	32	PL1x6 Reinforcement - Wind Area	28.25 - 28.50	1.0000	1.0000
L26	37	PL1x6 Reinforcement - Wind Area	28.25 - 28.50	1.0000	1.0000
L26	38	PL1x6 Reinforcement - Wind Area	28.25 - 28.50	1.0000	1.0000
L27	1	Safety Line 3/8	27.50 - 28.25	1.0000	1.0000
L27	17	AVA7-50(1-5/8)	27.50 - 28.25	1.0000	1.0000
L27	25	PL1x6 Reinforcement - Wind Area	27.50 - 28.25	1.0000	1.0000
L27	26	PL1x6 Reinforcement - Wind Area	27.50 - 28.25	1.0000	1.0000
L27	31	PL1x6 Reinforcement - Wind Area	27.50 - 28.25	1.0000	1.0000
L27	32	PL1x6 Reinforcement - Wind Area	27.50 - 28.25	1.0000	1.0000
L27	37	PL1x6 Reinforcement - Wind Area	27.50 - 28.25	1.0000	1.0000
L27	38	PL1x6 Reinforcement - Wind Area	27.50 - 28.25	1.0000	1.0000
L28	1	Safety Line 3/8	27.25 - 27.50	1.0000	1.0000
L28	17	AVA7-50(1-5/8)	27.25 - 27.50	1.0000	1.0000
L28	25	PL1x6 Reinforcement - Wind Area	27.25 - 27.50	1.0000	1.0000
L28	26	PL1x6 Reinforcement - Wind Area	27.25 - 27.50	1.0000	1.0000
L28	31	PL1x6 Reinforcement - Wind Area	27.25 - 27.50	1.0000	1.0000
L28	32	PL1x6 Reinforcement - Wind Area	27.25 - 27.50	1.0000	1.0000
L28	37	PL1x6 Reinforcement - Wind Area	27.25 - 27.50	1.0000	1.0000
L28	38	PL1x6 Reinforcement - Wind Area	27.25 - 27.50	1.0000	1.0000
L29	1	Safety Line 3/8	22.25 - 27.25	1.0000	1.0000
L29	17	AVA7-50(1-5/8)	22.25 - 27.25	1.0000	1.0000
L29	25	PL1x6 Reinforcement - Wind Area	22.25 - 27.25	1.0000	1.0000
L29	26	PL1x6 Reinforcement - Wind Area	25.50 - 27.25	1.0000	1.0000
L29	31	PL1x6 Reinforcement - Wind Area	22.25 - 27.25	1.0000	1.0000
L29	32	PL1x6 Reinforcement - Wind Area	25.50 - 27.25	1.0000	1.0000
L29	37	PL1x6 Reinforcement - Wind Area	22.25 - 27.25	1.0000	1.0000
L29	38	PL1x6 Reinforcement - Wind Area	25.50 - 27.25	1.0000	1.0000
L30	1	Safety Line 3/8	17.25 - 22.25	1.0000	1.0000
L30	17	AVA7-50(1-5/8)	17.25 - 22.25	1.0000	1.0000
L30	25	PL1x6 Reinforcement - Wind Area	17.25 - 22.25	1.0000	1.0000
L30	30	PL1x6 Reinforcement - Wind Area	17.25 - 17.50	1.0000	1.0000
L30	31	PL1x6 Reinforcement -	17.25 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
		Wind Area	22.25		
L30	37	PL1x6 Reinforcement - Wind Area	17.25 - 22.25	1.0000	1.0000
L31	1	Safety Line 3/8	15.50 - 17.25	1.0000	1.0000
L31	17	AVA7-50(1-5/8)	15.50 - 17.25	1.0000	1.0000
L31	25	PL1x6 Reinforcement - Wind Area	15.50 - 17.25	1.0000	1.0000
L31	30	PL1x6 Reinforcement - Wind Area	15.50 - 17.25	1.0000	1.0000
L31	31	PL1x6 Reinforcement - Wind Area	15.50 - 17.25	1.0000	1.0000
L31	37	PL1x6 Reinforcement - Wind Area	15.50 - 17.25	1.0000	1.0000
L32	1	Safety Line 3/8	15.25 - 15.50	1.0000	1.0000
L32	17	AVA7-50(1-5/8)	15.25 - 15.50	1.0000	1.0000
L32	25	PL1x6 Reinforcement - Wind Area	15.25 - 15.50	1.0000	1.0000
L32	30	PL1x6 Reinforcement - Wind Area	15.25 - 15.50	1.0000	1.0000
L32	31	PL1x6 Reinforcement - Wind Area	15.25 - 15.50	1.0000	1.0000
L32	37	PL1x6 Reinforcement - Wind Area	15.25 - 15.50	1.0000	1.0000
L33	1	Safety Line 3/8	13.42 - 15.25	1.0000	1.0000
L33	17	AVA7-50(1-5/8)	13.42 - 15.25	1.0000	1.0000
L33	25	PL1x6 Reinforcement - Wind Area	13.42 - 15.25	1.0000	1.0000
L33	30	PL1x6 Reinforcement - Wind Area	13.42 - 15.25	1.0000	1.0000
L33	31	PL1x6 Reinforcement - Wind Area	13.42 - 15.25	1.0000	1.0000
L33	37	PL1x6 Reinforcement - Wind Area	13.42 - 15.25	1.0000	1.0000
L33	41	CCI-SFP-060100	13.42 - 15.00	1.0000	1.0000
L33	42	CCI-SFP-060100	13.42 - 15.00	1.0000	1.0000
L34	1	Safety Line 3/8	13.17 - 13.42	1.0000	1.0000
L34	17	AVA7-50(1-5/8)	13.17 - 13.42	1.0000	1.0000
L34	25	PL1x6 Reinforcement - Wind Area	13.17 - 13.42	1.0000	1.0000
L34	30	PL1x6 Reinforcement - Wind Area	13.17 - 13.42	1.0000	1.0000
L34	31	PL1x6 Reinforcement - Wind Area	13.17 - 13.42	1.0000	1.0000
L34	37	PL1x6 Reinforcement - Wind Area	13.17 - 13.42	1.0000	1.0000
L34	41	CCI-SFP-060100	13.17 - 13.42	1.0000	1.0000
L34	42	CCI-SFP-060100	13.17 - 13.42	1.0000	1.0000
L35	1	Safety Line 3/8	13.00 - 13.17	1.0000	1.0000
L35	17	AVA7-50(1-5/8)	13.00 - 13.17	1.0000	1.0000
L35	25	PL1x6 Reinforcement - Wind Area	13.00 - 13.17	1.0000	1.0000
L35	30	PL1x6 Reinforcement - Wind Area	13.00 - 13.17	1.0000	1.0000
L35	31	PL1x6 Reinforcement - Wind Area	13.00 - 13.17	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L35	37	PL1x6 Reinforcement - Wind Area	13.00 - 13.17	1.0000	1.0000
L35	41	CCI-SFP-060100	13.00 - 13.17	1.0000	1.0000
L35	42	CCI-SFP-060100	13.00 - 13.17	1.0000	1.0000
L36	1	Safety Line 3/8	12.75 - 13.00	1.0000	1.0000
L36	17	AVA7-50(1-5/8)	12.75 - 13.00	1.0000	1.0000
L36	25	PL1x6 Reinforcement - Wind Area	12.75 - 13.00	1.0000	1.0000
L36	30	PL1x6 Reinforcement - Wind Area	12.75 - 13.00	1.0000	1.0000
L36	31	PL1x6 Reinforcement - Wind Area	12.75 - 13.00	1.0000	1.0000
L36	37	PL1x6 Reinforcement - Wind Area	12.75 - 13.00	1.0000	1.0000
L36	41	CCI-SFP-060100	12.75 - 13.00	1.0000	1.0000
L36	42	CCI-SFP-060100	12.75 - 13.00	1.0000	1.0000
L37	1	Safety Line 3/8	8.00 - 12.75	1.0000	1.0000
L37	17	AVA7-50(1-5/8)	8.00 - 12.75	1.0000	1.0000
L37	25	PL1x6 Reinforcement - Wind Area	7.75 - 12.75	1.0000	1.0000
L37	29	PL1x6 Reinforcement - Wind Area	7.75 - 8.50	1.0000	1.0000
L37	30	PL1x6 Reinforcement - Wind Area	7.75 - 12.75	1.0000	1.0000
L37	31	PL1x6 Reinforcement - Wind Area	11.42 - 12.75	1.0000	1.0000
L37	37	PL1x6 Reinforcement - Wind Area	7.75 - 12.75	1.0000	1.0000
L37	41	CCI-SFP-060100	7.75 - 12.75	1.0000	1.0000
L37	42	CCI-SFP-060100	7.75 - 12.75	1.0000	1.0000
L38	25	PL1x6 Reinforcement - Wind Area	6.50 - 7.75	1.0000	1.0000
L38	29	PL1x6 Reinforcement - Wind Area	6.50 - 7.75	1.0000	1.0000
L38	30	PL1x6 Reinforcement - Wind Area	6.50 - 7.75	1.0000	1.0000
L38	37	PL1x6 Reinforcement - Wind Area	6.50 - 7.75	1.0000	1.0000
L38	41	CCI-SFP-060100	6.50 - 7.75	1.0000	1.0000
L38	42	CCI-SFP-060100	6.50 - 7.75	1.0000	1.0000
L39	25	PL1x6 Reinforcement - Wind Area	6.25 - 6.50	1.0000	1.0000
L39	29	PL1x6 Reinforcement - Wind Area	6.25 - 6.50	1.0000	1.0000
L39	30	PL1x6 Reinforcement - Wind Area	6.25 - 6.50	1.0000	1.0000
L39	37	PL1x6 Reinforcement - Wind Area	6.25 - 6.50	1.0000	1.0000
L39	41	CCI-SFP-060100	6.25 - 6.50	1.0000	1.0000
L39	42	CCI-SFP-060100	6.25 - 6.50	1.0000	1.0000
L40	25	PL1x6 Reinforcement - Wind Area	4.50 - 6.25	1.0000	1.0000
L40	29	PL1x6 Reinforcement - Wind Area	4.50 - 6.25	1.0000	1.0000
L40	30	PL1x6 Reinforcement - Wind Area	4.50 - 6.25	1.0000	1.0000
L40	37	PL1x6 Reinforcement - Wind Area	4.50 - 6.25	1.0000	1.0000
L40	41	CCI-SFP-060100	4.50 - 6.25	1.0000	1.0000
L40	42	CCI-SFP-060100	4.50 - 6.25	1.0000	1.0000
L41	25	PL1x6 Reinforcement - Wind Area	4.25 - 4.50	1.0000	1.0000
L41	29	PL1x6 Reinforcement -	4.25 - 4.50	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
		Wind Area			
L41	30	PL1x6 Reinforcement - Wind Area	4.25 - 4.50	1.0000	1.0000
L41	37	PL1x6 Reinforcement - Wind Area	4.25 - 4.50	1.0000	1.0000
L41	41	CCI-SFP-060100	4.25 - 4.50	1.0000	1.0000
L41	42	CCI-SFP-060100	4.25 - 4.50	1.0000	1.0000
L42	25	PL1x6 Reinforcement - Wind Area	2.50 - 4.25	1.0000	1.0000
L42	29	PL1x6 Reinforcement - Wind Area	2.50 - 4.25	1.0000	1.0000
L42	30	PL1x6 Reinforcement - Wind Area	2.50 - 4.25	1.0000	1.0000
L42	37	PL1x6 Reinforcement - Wind Area	2.50 - 4.25	1.0000	1.0000
L42	41	CCI-SFP-060100	2.50 - 4.25	1.0000	1.0000
L42	42	CCI-SFP-060100	2.50 - 4.25	1.0000	1.0000
L43	25	PL1x6 Reinforcement - Wind Area	2.25 - 2.50	1.0000	1.0000
L43	29	PL1x6 Reinforcement - Wind Area	2.25 - 2.50	1.0000	1.0000
L43	37	PL1x6 Reinforcement - Wind Area	2.25 - 2.50	1.0000	1.0000
L43	41	CCI-SFP-060100	2.25 - 2.50	1.0000	1.0000
L43	42	CCI-SFP-060100	2.25 - 2.50	1.0000	1.0000
L44	25	PL1x6 Reinforcement - Wind Area	2.00 - 2.25	1.0000	1.0000
L44	29	PL1x6 Reinforcement - Wind Area	2.00 - 2.25	1.0000	1.0000
L44	37	PL1x6 Reinforcement - Wind Area	2.00 - 2.25	1.0000	1.0000
L44	41	CCI-SFP-060100	2.00 - 2.25	1.0000	1.0000
L44	42	CCI-SFP-060100	2.00 - 2.25	1.0000	1.0000
L45	25	PL1x6 Reinforcement - Wind Area	1.75 - 2.00	1.0000	1.0000
L45	29	PL1x6 Reinforcement - Wind Area	1.75 - 2.00	1.0000	1.0000
L45	37	PL1x6 Reinforcement - Wind Area	1.75 - 2.00	1.0000	1.0000
L45	41	CCI-SFP-060100	1.75 - 2.00	1.0000	1.0000
L45	42	CCI-SFP-060100	1.75 - 2.00	1.0000	1.0000
L46	25	PL1x6 Reinforcement - Wind Area	0.50 - 1.75	1.0000	1.0000
L46	29	PL1x6 Reinforcement - Wind Area	0.50 - 1.75	1.0000	1.0000
L46	37	PL1x6 Reinforcement - Wind Area	0.50 - 1.75	1.0000	1.0000
L46	41	CCI-SFP-060100	0.50 - 1.75	1.0000	1.0000
L46	42	CCI-SFP-060100	0.50 - 1.75	1.0000	1.0000
L47	41	CCI-SFP-060100	0.25 - 0.50	1.0000	1.0000
L47	42	CCI-SFP-060100	0.25 - 0.50	1.0000	1.0000
L48	41	CCI-SFP-060100	0.00 - 0.25	1.0000	1.0000
L48	42	CCI-SFP-060100	0.00 - 0.25	1.0000	1.0000

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
Platform Mount [LP 601-1]	C	None		0.00	94.00	No Ice 1/2" Ice 1" Ice	28.47 33.59 38.71	28.47 33.59 38.71	1.12 1.51 1.91
8'x2" Antenna Mount Pipe	A	From Leg	4.00 0.00 0.00	0.00	94.00	No Ice 1/2" Ice 1" Ice	1.90 2.73 3.40	1.90 2.73 3.40	0.03 0.04 0.06
8'x2" Antenna Mount Pipe	B	From Leg	4.00 0.00 0.00	0.00	94.00	No Ice 1/2" Ice 1" Ice	1.90 2.73 3.40	1.90 2.73 3.40	0.03 0.04 0.06
8'x2" Antenna Mount Pipe	C	From Leg	4.00 0.00 0.00	0.00	94.00	No Ice 1/2" Ice 1" Ice	1.90 2.73 3.40	1.90 2.73 3.40	0.03 0.04 0.06
BXA-80063/4CF w/ Mount Pipe	A	From Leg	4.00 -6.00 2.00	-40.00	94.00	No Ice 1/2" Ice 1" Ice	4.95 5.32 5.71	3.42 4.02 4.64	0.03 0.07 0.12
HBX-6516DS-VTM w/ Mount Pipe	A	From Leg	4.00 6.00 2.00	-40.00	94.00	No Ice 1/2" Ice 1" Ice	3.60 4.00 4.39	3.24 3.91 4.56	0.03 0.06 0.10
(2) DB980H65E-M w/ Mount Pipe	B	From Leg	4.00 0.00 2.00	0.00	94.00	No Ice 1/2" Ice 1" Ice	4.04 4.50 4.95	3.62 4.48 5.22	0.03 0.07 0.11
(2) DB980H65E-M w/ Mount Pipe	C	From Leg	4.00 0.00 2.00	0.00	94.00	No Ice 1/2" Ice 1" Ice	4.04 4.50 4.95	3.62 4.48 5.22	0.03 0.07 0.11
***									
Platform Mount [LP 305-1]	C	None		0.00	89.00	No Ice 1/2" Ice 1" Ice	18.01 23.33 28.65	18.01 23.33 28.65	1.12 1.35 1.58
6' x 2" Mount Pipe	A	From Face	4.00 6.00 0.00	0.00	89.00	No Ice 1/2" Ice 1" Ice	1.43 1.92 2.29	1.43 1.92 2.29	0.02 0.03 0.05
6' x 2" Mount Pipe	B	From Face	4.00 6.00 0.00	0.00	89.00	No Ice 1/2" Ice 1" Ice	1.43 1.92 2.29	1.43 1.92 2.29	0.02 0.03 0.05
6' x 2" Mount Pipe	C	From Face	4.00 6.00 0.00	0.00	89.00	No Ice 1/2" Ice 1" Ice	1.43 1.92 2.29	1.43 1.92 2.29	0.02 0.03 0.05
APXV18-209014-C w/ Mount Pipe	A	From Face	4.00 -6.00 1.00	0.00	89.00	No Ice 1/2" Ice 1" Ice	3.72 4.13 4.56	3.31 4.02 4.68	0.04 0.07 0.11
APXV18-209014-C w/ Mount Pipe	B	From Face	4.00 -6.00 1.00	0.00	89.00	No Ice 1/2" Ice 1" Ice	3.72 4.13 4.56	3.31 4.02 4.68	0.04 0.07 0.11
APXV18-209014-C w/ Mount Pipe	C	From Face	4.00 -6.00 1.00	0.00	89.00	No Ice 1/2" Ice 1" Ice	3.72 4.13 4.56	3.31 4.02 4.68	0.04 0.07 0.11
LNX-6515DS-VTM w/ Mount Pipe	A	From Face	4.00 6.00 1.00	0.00	89.00	No Ice 1/2" Ice 1" Ice	11.71 12.43 13.16	9.86 11.39 12.94	0.08 0.17 0.27

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	B	From Face	4.00 6.00 1.00	0.00	89.00	No Ice 1/2" Ice 1" Ice	11.71 12.43 13.16	9.86 11.39 12.94	0.08 0.17 0.27
LNX-6515DS-VTM w/ Mount Pipe	C	From Face	4.00 6.00 1.00	0.00	89.00	No Ice 1/2" Ice 1" Ice	11.71 12.43 13.16	9.86 11.39 12.94	0.08 0.17 0.27
ATMPP1412D-1CWA	A	From Face	4.00 0.00 1.00	0.00	89.00	No Ice 1/2" Ice 1" Ice	1.00 1.13 1.27	0.38 0.48 0.58	0.01 0.02 0.03
ATMPP1412D-1CWA	B	From Face	4.00 0.00 1.00	0.00	89.00	No Ice 1/2" Ice 1" Ice	1.00 1.13 1.27	0.38 0.48 0.58	0.01 0.02 0.03
ATMPP1412D-1CWA	C	From Face	4.00 0.00 1.00	0.00	89.00	No Ice 1/2" Ice 1" Ice	1.00 1.13 1.27	0.38 0.48 0.58	0.01 0.02 0.03
ATBT-BOTTOM-24V	A	From Face	4.00 0.00 1.00	0.00	89.00	No Ice 1/2" Ice 1" Ice	0.10 0.15 0.20	0.06 0.10 0.15	0.00 0.00 0.01
ATBT-BOTTOM-24V	B	From Face	4.00 0.00 1.00	0.00	89.00	No Ice 1/2" Ice 1" Ice	0.10 0.15 0.20	0.06 0.10 0.15	0.00 0.00 0.01
ATBT-BOTTOM-24V	C	From Face	4.00 0.00 1.00	0.00	89.00	No Ice 1/2" Ice 1" Ice	0.10 0.15 0.20	0.06 0.10 0.15	0.00 0.00 0.01
***									
Platform Mount [LP 303-1]	C	None		0.00	74.00	No Ice 1/2" Ice 1" Ice	14.66 18.87 23.08	14.66 18.87 23.08	1.25 1.48 1.71
TPA-65R-LCUUUU-H8 w/ Mount Pipe	A	From Leg	4.00 0.00 3.00	0.00	74.00	No Ice 1/2" Ice 1" Ice	13.54 14.24 14.95	10.96 12.49 14.04	0.11 0.22 0.33
TPA-65R-LCUUUU-H8 w/ Mount Pipe	B	From Leg	4.00 0.00 3.00	0.00	74.00	No Ice 1/2" Ice 1" Ice	13.54 14.24 14.95	10.96 12.49 14.04	0.11 0.22 0.33
TPA-65R-LCUUUU-H8 w/ Mount Pipe	C	From Leg	4.00 0.00 3.00	10.00	74.00	No Ice 1/2" Ice 1" Ice	13.54 14.24 14.95	10.96 12.49 14.04	0.11 0.22 0.33
SBNH-1D6565C w/ Mount Pipe	B	From Leg	4.00 6.00 3.00	0.00	74.00	No Ice 1/2" Ice 1" Ice	11.68 12.40 13.14	9.84 11.37 12.91	0.10 0.19 0.29
7770.00 w/ Mount Pipe	A	From Leg	4.00 -6.00 3.00	0.00	74.00	No Ice 1/2" Ice 1" Ice	5.75 6.18 6.61	4.25 5.01 5.71	0.06 0.10 0.16
7770.00 w/ Mount Pipe	B	From Leg	4.00 -6.00 3.00	0.00	74.00	No Ice 1/2" Ice 1" Ice	5.75 6.18 6.61	4.25 5.01 5.71	0.06 0.10 0.16
7770.00 w/ Mount Pipe	C	From Leg	4.00 -6.00 3.00	0.00	74.00	No Ice 1/2" Ice 1" Ice	5.75 6.18 6.61	4.25 5.01 5.71	0.06 0.10 0.16

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
P65-17-XLH-RR w/ Mount Pipe	A	From Leg	4.00 6.00 3.00	10.00	74.00	No Ice 1/2" Ice 1" Ice	11.70 12.42 13.15	8.94 10.45 11.99	0.09 0.18 0.27
P65-17-XLH-RR w/ Mount Pipe	C	From Leg	4.00 6.00 3.00	10.00	74.00	No Ice 1/2" Ice 1" Ice	11.70 12.42 13.15	8.94 10.45 11.99	0.09 0.18 0.27
RRUS 32 B30	A	From Leg	4.00 0.00 3.00	0.00	74.00	No Ice 1/2" Ice 1" Ice	2.69 2.91 3.14	1.57 1.76 1.95	0.06 0.08 0.10
RRUS 32 B30	B	From Leg	4.00 0.00 3.00	0.00	74.00	No Ice 1/2" Ice 1" Ice	2.69 2.91 3.14	1.57 1.76 1.95	0.06 0.08 0.10
RRUS 32 B30	C	From Leg	4.00 0.00 3.00	0.00	74.00	No Ice 1/2" Ice 1" Ice	2.69 2.91 3.14	1.57 1.76 1.95	0.06 0.08 0.10
DBC0061F1V51-2	A	From Leg	4.00 0.00 3.00	0.00	74.00	No Ice 1/2" Ice 1" Ice	0.43 0.51 0.61	0.41 0.50 0.59	0.03 0.03 0.04
DBC0061F1V51-2	B	From Leg	4.00 0.00 3.00	0.00	74.00	No Ice 1/2" Ice 1" Ice	0.43 0.51 0.61	0.41 0.50 0.59	0.03 0.03 0.04
DBC0061F1V51-2	C	From Leg	4.00 0.00 3.00	0.00	74.00	No Ice 1/2" Ice 1" Ice	0.43 0.51 0.61	0.41 0.50 0.59	0.03 0.03 0.04
RRUS 32 B2	A	From Leg	4.00 0.00 3.00	0.00	74.00	No Ice 1/2" Ice 1" Ice	2.73 2.95 3.18	1.67 1.86 2.05	0.05 0.07 0.10
RRUS 32 B2	B	From Leg	4.00 0.00 3.00	0.00	74.00	No Ice 1/2" Ice 1" Ice	2.73 2.95 3.18	1.67 1.86 2.05	0.05 0.07 0.10
RRUS 32 B2	C	From Leg	4.00 0.00 3.00	0.00	74.00	No Ice 1/2" Ice 1" Ice	2.73 2.95 3.18	1.67 1.86 2.05	0.05 0.07 0.10
RRUS 11 B12	A	From Leg	4.00 0.00 3.00	0.00	74.00	No Ice 1/2" Ice 1" Ice	2.83 3.04 3.26	1.18 1.33 1.48	0.05 0.07 0.10
RRUS 11 B12	B	From Leg	4.00 0.00 3.00	0.00	74.00	No Ice 1/2" Ice 1" Ice	2.83 3.04 3.26	1.18 1.33 1.48	0.05 0.07 0.10
RRUS 11 B12	C	From Leg	4.00 0.00 3.00	0.00	74.00	No Ice 1/2" Ice 1" Ice	2.83 3.04 3.26	1.18 1.33 1.48	0.05 0.07 0.10
DC6-48-60-18-8F	A	From Leg	1.00 0.00 3.00	0.00	74.00	No Ice 1/2" Ice 1" Ice	0.92 1.46 1.64	0.92 1.46 1.64	0.02 0.04 0.06
TT19-08BP111-001	A	From Leg	4.00 0.00 3.00	0.00	74.00	No Ice 1/2" Ice 1" Ice	0.55 0.65 0.75	0.45 0.53 0.63	0.02 0.02 0.03
TT19-08BP111-001	B	From Leg	4.00	0.00	74.00	No Ice	0.55	0.45	0.02

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
			0.00			1/2"	0.65	0.53	0.02
			3.00			Ice	0.75	0.63	0.03
						1" Ice			
TT19-08BP111-001	C	From Leg	4.00	0.00	74.00	No Ice	0.55	0.45	0.02
			0.00			1/2"	0.65	0.53	0.02
			3.00			Ice	0.75	0.63	0.03
						1" Ice			
DC6-48-60-18-8F	B	From Leg	1.00	0.00	74.00	No Ice	0.92	0.92	0.02
			0.00			1/2"	1.46	1.46	0.04
			3.00			Ice	1.64	1.64	0.06
						1" Ice			
***									
Platform Mount [LP 303-1]	C	None		0.00	67.00	No Ice	14.66	14.66	1.25
						1/2"	18.87	18.87	1.48
						Ice	23.08	23.08	1.71
						1" Ice			
SBNHH-1D65B w/ Mount Pipe	A	From Face	4.00	-10.00	67.00	No Ice	8.44	7.10	0.07
			-2.00			1/2"	9.00	8.30	0.14
			0.00			Ice	9.53	9.21	0.21
						1" Ice			
SBNHH-1D65B w/ Mount Pipe	A	From Face	4.00	-10.00	67.00	No Ice	8.44	7.10	0.07
			2.00			1/2"	9.00	8.30	0.14
			0.00			Ice	9.53	9.21	0.21
						1" Ice			
SBNHH-1D65B w/ Mount Pipe	B	From Face	4.00	-10.00	67.00	No Ice	8.44	7.10	0.07
			-2.00			1/2"	9.00	8.30	0.14
			0.00			Ice	9.53	9.21	0.21
						1" Ice			
SBNHH-1D65B w/ Mount Pipe	B	From Face	4.00	-10.00	67.00	No Ice	8.44	7.10	0.07
			2.00			1/2"	9.00	8.30	0.14
			0.00			Ice	9.53	9.21	0.21
						1" Ice			
SBNHH-1D65B w/ Mount Pipe	C	From Face	4.00	0.00	67.00	No Ice	8.44	7.10	0.07
			-2.00			1/2"	9.00	8.30	0.14
			0.00			Ice	9.53	9.21	0.21
						1" Ice			
SBNHH-1D65B w/ Mount Pipe	C	From Face	4.00	0.00	67.00	No Ice	8.44	7.10	0.07
			2.00			1/2"	9.00	8.30	0.14
			0.00			Ice	9.53	9.21	0.21
						1" Ice			
(2) LPA-80063/6CFX2 w/ Mount Pipe	A	From Face	4.00	-10.00	67.00	No Ice	10.58	10.67	0.05
			0.00			1/2"	11.24	11.93	0.14
			0.00			Ice	11.87	12.91	0.25
						1" Ice			
(2) LPA-80063/6CFX2 w/ Mount Pipe	B	From Face	4.00	-10.00	67.00	No Ice	10.58	10.67	0.05
			0.00			1/2"	11.24	11.93	0.14
			0.00			Ice	11.87	12.91	0.25
						1" Ice			
(2) LPA-80063/6CFX2 w/ Mount Pipe	C	From Face	4.00	0.00	67.00	No Ice	10.58	10.67	0.05
			0.00			1/2"	11.24	11.93	0.14
			0.00			Ice	11.87	12.91	0.25
						1" Ice			
B13 RRH 4X30	A	From Face	4.00	0.00	67.00	No Ice	2.06	1.32	0.06
			0.00			1/2"	2.24	1.48	0.07
			0.00			Ice	2.43	1.64	0.09
						1" Ice			
B13 RRH 4X30	B	From Face	4.00	0.00	67.00	No Ice	2.06	1.32	0.06
			0.00			1/2"	2.24	1.48	0.07
			0.00			Ice	2.43	1.64	0.09
						1" Ice			
B13 RRH 4X30	C	From Face	4.00	0.00	67.00	No Ice	2.06	1.32	0.06
			0.00			1/2"	2.24	1.48	0.07
			0.00			Ice	2.43	1.64	0.09
						1" Ice			
B66A RRH4X45	A	From Face	4.00	0.00	67.00	No Ice	2.58	1.63	0.06

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00			1/2" Ice	2.79	1.81	0.08
			0.00			1" Ice	3.01	2.00	0.10
B66A RRH4X45	B	From Face	4.00	0.00	67.00	No Ice	2.58	1.63	0.06
			0.00			1/2" Ice	2.79	1.81	0.08
			0.00			1" Ice	3.01	2.00	0.10
B66A RRH4X45	C	From Face	4.00	0.00	67.00	No Ice	2.58	1.63	0.06
			0.00			1/2" Ice	2.79	1.81	0.08
			0.00			1" Ice	3.01	2.00	0.10
RC2DC-3315-PF-48	A	From Face	1.00	0.00	67.00	No Ice	3.79	2.51	0.03
			0.00			1/2" Ice	4.04	2.72	0.06
			0.00			1" Ice	4.30	2.94	0.10
RC2DC-3315-PF-48	B	From Face	1.00	0.00	67.00	No Ice	3.79	2.51	0.03
			0.00			1/2" Ice	4.04	2.72	0.06
			0.00			1" Ice	4.30	2.94	0.10
***									
Side Arm Mount [SO 701-1]	C	From Leg	1.50	0.00	52.00	No Ice	0.85	1.67	0.07
			0.00			1/2" Ice	1.14	2.34	0.08
			0.00			1" Ice	1.43	3.01	0.09
KS24019-L112A	C	From Leg	3.00	15.00	52.00	No Ice	0.14	0.14	0.01
			0.00			1/2" Ice	0.20	0.20	0.01
			2.00			1" Ice	0.26	0.26	0.01

Tower Pressures - No Ice

G_H = 1.100

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft^2	Face	A_F ft^2	A_R ft^2	A_{leg} ft^2	Leg %	C_AA_A In Face ft^2	C_AA_A Out Face ft^2
L1 98.00-93.00	95.46	1.253	26	5.305	A	0.000	5.305	5.305	100.00	0.188	0.000
					B	0.000	5.305		100.00	0.000	0.000
					C	0.000	5.305		100.00	0.000	0.000
L2 93.00-88.00	90.47	1.239	26	5.761	A	0.000	5.761	5.761	100.00	0.188	0.000
					B	0.000	5.761		100.00	0.000	0.000
					C	0.000	5.761		100.00	0.000	0.000
L3 88.00-82.79	85.36	1.224	26	6.489	A	0.000	6.489	6.489	100.00	0.195	0.000
					B	0.000	6.489		100.00	0.000	0.000
					C	0.000	6.489		100.00	0.000	0.000
L4 82.79-80.21	81.49	1.212	25	3.312	A	0.000	3.312	3.312	100.00	0.097	0.000
					B	0.000	3.312		100.00	0.000	0.000
					C	0.000	3.312		100.00	0.000	0.000
L5 80.21-75.21	77.68	1.2	25	6.759	A	0.000	6.759	6.759	100.00	0.188	0.000
					B	0.000	6.759		100.00	0.000	0.000
					C	0.000	6.759		100.00	0.000	0.000
L6 75.21-70.21	72.68	1.183	25	7.208	A	0.000	7.208	7.208	100.00	0.188	0.000
					B	0.000	7.208		100.00	0.000	0.000
					C	0.000	7.208		100.00	0.000	0.000
L7 70.21-65.21	67.69	1.166	25	7.658	A	0.000	7.658	7.658	100.00	0.188	0.000
					B	0.000	7.658		100.00	2.519	0.000
					C	0.000	7.658		100.00	0.000	0.000
L8 65.21-	62.69	1.147	24	8.107	A	0.000	8.107	8.107	100.00	0.405	0.000

Section Elevation	z	K_Z	q_z	A_G	Face	A_F	A_R	A_{leg}	Leg %	C_AA_A In Face	C_AA_A Out Face
ft	ft		psf	ft^2		ft^2	ft^2	ft^2		ft^2	ft^2
60.21					B	0.000	8.107		100.00	7.253	0.000
					C	0.000	8.107		100.00	0.345	0.000
L9 60.21-59.17	59.69	1.135	24	1.743	A	0.000	1.743	1.743	100.00	0.819	0.000
					B	0.000	1.743		100.00	2.243	0.000
					C	0.000	1.743		100.00	0.780	0.000
L10 59.17-58.90	59.03	1.133	24	0.456	A	0.000	0.456	0.456	100.00	0.213	0.000
					B	0.000	0.456		100.00	0.582	0.000
					C	0.000	0.456		100.00	0.203	0.000
L11 58.90-58.75	58.82	1.132	24	0.254	A	0.000	0.254	0.254	100.00	0.118	0.000
					B	0.000	0.254		100.00	0.324	0.000
					C	0.000	0.254		100.00	0.113	0.000
L12 58.75-53.75	56.23	1.121	24	8.687	A	0.000	8.687	8.687	100.00	3.938	0.000
					B	0.000	8.687		100.00	10.785	0.000
					C	0.000	8.687		100.00	4.628	0.000
L13 53.75-52.92	53.33	1.109	23	1.486	A	0.000	1.486	1.486	100.00	0.654	0.000
					B	0.000	1.486		100.00	1.790	0.000
					C	0.000	1.486		100.00	1.245	0.000
L14 52.92-52.67	52.79	1.106	23	0.450	A	0.000	0.450	0.450	100.00	0.197	0.000
					B	0.000	0.450		100.00	0.539	0.000
					C	0.000	0.450		100.00	0.375	0.000
L15 52.67-52.17	52.42	1.105	23	0.903	A	0.000	0.903	0.903	100.00	0.394	0.000
					B	0.000	0.903		100.00	1.079	0.000
					C	0.000	0.903		100.00	0.750	0.000
L16 52.17-51.92	52.04	1.103	23	0.453	A	0.000	0.453	0.453	100.00	0.197	0.000
					B	0.000	0.453		100.00	0.539	0.000
					C	0.000	0.453		100.00	0.375	0.000
L17 51.92-45.29	48.57	1.087	23	12.430	A	0.000	12.430	12.430	100.00	5.221	0.000
					B	0.000	12.430		100.00	14.301	0.000
					C	0.000	12.430		100.00	8.783	0.000
L18 45.29-44.29	44.79	1.069	22	1.901	A	0.000	1.901	1.901	100.00	0.787	0.000
					B	0.000	1.901		100.00	2.157	0.000
					C	0.000	1.901		100.00	0.750	0.000
L19 44.29-39.29	41.77	1.053	22	9.776	A	0.000	9.776	9.776	100.00	3.938	0.000
					B	0.000	9.776		100.00	10.785	0.000
					C	0.000	9.776		100.00	3.750	0.000
L20 39.29-34.29	36.77	1.025	22	10.226	A	0.000	10.226	10.226	100.00	5.148	0.000
					B	0.000	10.226		100.00	11.995	0.000
					C	0.000	10.226		100.00	4.960	0.000
L21 34.29-33.50	33.89	1.008	21	1.657	A	0.000	1.657	1.657	100.00	1.412	0.000
					B	0.000	1.657		100.00	2.494	0.000
					C	0.000	1.657		100.00	1.383	0.000
L22 33.50-33.25	33.37	1.005	21	0.527	A	0.000	0.527	0.527	100.00	0.447	0.000
					B	0.000	0.527		100.00	0.789	0.000
					C	0.000	0.527		100.00	0.438	0.000
L23 33.25-32.00	32.62	1	21	2.650	A	0.000	2.650	2.650	100.00	2.234	0.000
					B	0.000	2.650		100.00	3.946	0.000
					C	0.000	2.650		100.00	2.188	0.000
L24 32.00-31.75	31.87	0.995	21	0.533	A	0.000	0.533	0.533	100.00	0.447	0.000
					B	0.000	0.533		100.00	0.789	0.000
					C	0.000	0.533		100.00	0.438	0.000
L25 31.75-28.50	30.12	0.983	21	7.037	A	0.000	7.037	7.037	100.00	6.309	0.000
					B	0.000	7.037		100.00	10.760	0.000
					C	0.000	7.037		100.00	6.188	0.000
L26 28.50-28.25	28.37	0.971	20	0.549	A	0.000	0.549	0.549	100.00	0.509	0.000
					B	0.000	0.549		100.00	0.852	0.000
					C	0.000	0.549		100.00	0.500	0.000
L27 28.25-27.50	27.87	0.967	20	1.654	A	0.000	1.654	1.654	100.00	1.528	0.000
					B	0.000	1.654		100.00	2.555	0.000
					C	0.000	1.654		100.00	1.500	0.000
L28 27.50-27.25	27.37	0.963	20	0.554	A	0.000	0.554	0.554	100.00	0.509	0.000
					B	0.000	0.554		100.00	0.852	0.000
					C	0.000	0.554		100.00	0.500	0.000
L29 27.25-22.25	24.73	0.943	20	11.311	A	0.000	11.311	11.311	100.00	6.938	0.000
					B	0.000	11.311		100.00	13.785	0.000
					C	0.000	11.311		100.00	6.750	0.000
L30 22.25-17.25	19.73	0.899	19	11.761	A	0.000	11.761	11.761	100.00	5.188	0.000
					B	0.000	11.761		100.00	12.035	0.000
					C	0.000	11.761		100.00	5.250	0.000

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L31 17.25-15.50	16.37	0.865	18	4.223	A	0.000	4.223	4.223	100.00	1.816	0.000
					B	0.000	4.223		100.00	4.212	0.000
					C	0.000	4.223		100.00	3.500	0.000
L32 15.50-15.25	15.37	0.853	18	0.608	A	0.000	0.608	0.608	100.00	0.259	0.000
					B	0.000	0.608		100.00	0.602	0.000
					C	0.000	0.608		100.00	0.500	0.000
L33 15.25-13.42	14.33	0.85	18	4.483	A	0.000	4.483	4.483	100.00	3.479	0.000
					B	0.000	4.483		100.00	5.985	0.000
					C	0.000	4.483		100.00	3.660	0.000
L34 13.42-13.17	13.29	0.85	18	0.617	A	0.000	0.617	0.617	100.00	0.509	0.000
					B	0.000	0.617		100.00	0.852	0.000
					C	0.000	0.617		100.00	0.500	0.000
L35 13.17-13.00	13.08	0.85	18	0.420	A	0.000	0.420	0.420	100.00	0.346	0.000
					B	0.000	0.420		100.00	0.579	0.000
					C	0.000	0.420		100.00	0.340	0.000
L36 13.00-12.75	12.87	0.85	18	0.619	A	0.000	0.619	0.619	100.00	0.509	0.000
					B	0.000	0.619		100.00	0.852	0.000
					C	0.000	0.619		100.00	0.500	0.000
L37 12.75-7.75	10.24	0.85	18	12.616	A	0.000	12.616	12.616	100.00	10.178	0.000
					B	0.000	12.616		100.00	16.683	0.000
					C	0.000	12.616		100.00	7.080	0.000
L38 7.75-6.50	7.12	0.85	18	3.224	A	0.000	3.224	3.224	100.00	2.500	0.000
					B	0.000	3.224		100.00	2.500	0.000
					C	0.000	3.224		100.00	2.500	0.000
L39 6.50-6.25	6.37	0.85	18	0.648	A	0.000	0.648	0.648	100.00	0.500	0.000
					B	0.000	0.648		100.00	0.500	0.000
					C	0.000	0.648		100.00	0.500	0.000
L40 6.25-4.50	5.37	0.85	18	4.569	A	0.000	4.569	4.569	100.00	3.500	0.000
					B	0.000	4.569		100.00	3.500	0.000
					C	0.000	4.569		100.00	3.500	0.000
L41 4.50-4.25	4.37	0.85	18	0.657	A	0.000	0.657	0.657	100.00	0.500	0.000
					B	0.000	0.657		100.00	0.500	0.000
					C	0.000	0.657		100.00	0.500	0.000
L42 4.25-2.50	3.37	0.85	18	4.632	A	0.000	4.632	4.632	100.00	3.500	0.000
					B	0.000	4.632		100.00	3.500	0.000
					C	0.000	4.632		100.00	3.500	0.000
L43 2.50-2.25	2.37	0.85	18	0.666	A	0.000	0.666	0.666	100.00	0.500	0.000
					B	0.000	0.666		100.00	0.500	0.000
					C	0.000	0.666		100.00	0.250	0.000
L44 2.25-2.00	2.12	0.85	18	0.667	A	0.000	0.667	0.667	100.00	0.500	0.000
					B	0.000	0.667		100.00	0.500	0.000
					C	0.000	0.667		100.00	0.250	0.000
L45 2.00-1.75	1.87	0.85	18	0.669	A	0.000	0.669	0.669	100.00	0.500	0.000
					B	0.000	0.669		100.00	0.500	0.000
					C	0.000	0.669		100.00	0.250	0.000
L46 1.75-0.50	1.12	0.85	18	3.359	A	0.000	3.359	3.359	100.00	2.500	0.000
					B	0.000	3.359		100.00	2.500	0.000
					C	0.000	3.359		100.00	1.250	0.000
L47 0.50-0.25	0.37	0.85	18	0.675	A	0.000	0.675	0.675	100.00	0.250	0.000
					B	0.000	0.675		100.00	0.250	0.000
					C	0.000	0.675		100.00	0.000	0.000
L48 0.25-0.00	0.12	0.85	18	0.676	A	0.000	0.676	0.676	100.00	0.250	0.000
					B	0.000	0.676		100.00	0.250	0.000
					C	0.000	0.676		100.00	0.000	0.000

Tower Pressure - With Ice

G_H = 1.100

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1 98.00-93.00	95.46	1.253	8	2.2241	7.159	A	0.000	7.159	7.159	100.00	2.412	0.000
						B	0.000	7.159		100.00	0.000	0.000

Section Elevation	z	K_Z	q_z	t_Z	A_G	Face	A_F	A_R	A_{leg}	Leg %	C_AA_A In Face	C_AA_A Out Face
ft	ft		psf	in	ft^2		ft^2	ft^2	ft^2		ft^2	ft^2
						C	0.000	7.159		100.00	0.000	0.000
L2 93.00-88.00	90.47	1.239	8	2.2122	7.605	A	0.000	7.605	7.605	100.00	2.400	0.000
						B	0.000	7.605		100.00	0.000	0.000
						C	0.000	7.605		100.00	0.000	0.000
L3 88.00-82.79	85.36	1.224	7	2.1994	8.399	A	0.000	8.399	8.399	100.00	2.487	0.000
						B	0.000	8.399		100.00	0.000	0.000
						C	0.000	8.399		100.00	0.000	0.000
L4 82.79-80.21	81.49	1.212	7	2.1892	4.258	A	0.000	4.258	4.258	100.00	1.232	0.000
						B	0.000	4.258		100.00	0.000	0.000
						C	0.000	4.258		100.00	0.000	0.000
L5 80.21-75.21	77.68	1.2	7	2.1788	8.575	A	0.000	8.575	8.575	100.00	2.366	0.000
						B	0.000	8.575		100.00	0.000	0.000
						C	0.000	8.575		100.00	0.000	0.000
L6 75.21-70.21	72.68	1.183	7	2.1643	9.012	A	0.000	9.012	9.012	100.00	2.352	0.000
						B	0.000	9.012		100.00	0.000	0.000
						C	0.000	9.012		100.00	0.000	0.000
L7 70.21-65.21	67.69	1.166	7	2.1490	9.448	A	0.000	9.448	9.448	100.00	2.336	0.000
						B	0.000	9.448		100.00	4.110	0.000
						C	0.000	9.448		100.00	0.000	0.000
L8 65.21-60.21	62.69	1.147	7	2.1325	9.884	A	0.000	9.884	9.884	100.00	2.661	0.000
						B	0.000	9.884		100.00	11.801	0.000
						C	0.000	9.884		100.00	0.454	0.000
L9 60.21-59.17	59.69	1.135	7	2.1221	2.110	A	0.000	2.110	2.110	100.00	1.702	0.000
						B	0.000	2.110		100.00	3.602	0.000
						C	0.000	2.110		100.00	1.026	0.000
L10 59.17-58.90	59.03	1.133	7	2.1198	0.551	A	0.000	0.551	0.551	100.00	0.442	0.000
						B	0.000	0.551		100.00	0.935	0.000
						C	0.000	0.551		100.00	0.266	0.000
L11 58.90-58.75	58.82	1.132	7	2.1190	0.307	A	0.000	0.307	0.307	100.00	0.245	0.000
						B	0.000	0.307		100.00	0.519	0.000
						C	0.000	0.307		100.00	0.148	0.000
L12 58.75-53.75	56.23	1.121	7	2.1095	10.445	A	0.000	10.445	10.445	100.00	8.156	0.000
						B	0.000	10.445		100.00	17.290	0.000
						C	0.000	10.445		100.00	6.043	0.000
L13 53.75-52.92	53.33	1.109	7	2.0984	1.776	A	0.000	1.776	1.776	100.00	1.350	0.000
						B	0.000	1.776		100.00	2.866	0.000
						C	0.000	1.776		100.00	1.608	0.000
L14 52.92-52.67	52.79	1.106	7	2.0962	0.537	A	0.000	0.537	0.537	100.00	0.406	0.000
						B	0.000	0.537		100.00	0.863	0.000
						C	0.000	0.537		100.00	0.484	0.000
L15 52.67-52.17	52.42	1.105	7	2.0947	1.078	A	0.000	1.078	1.078	100.00	0.813	0.000
						B	0.000	1.078		100.00	1.726	0.000
						C	0.000	1.078		100.00	0.968	0.000
L16 52.17-51.92	52.04	1.103	7	2.0932	0.540	A	0.000	0.540	0.540	100.00	0.406	0.000
						B	0.000	0.540		100.00	0.863	0.000
						C	0.000	0.540		100.00	0.484	0.000
L17 51.92-45.29	48.57	1.087	7	2.0788	14.727	A	0.000	14.727	14.727	100.00	10.734	0.000
						B	0.000	14.727		100.00	22.835	0.000
						C	0.000	14.727		100.00	12.133	0.000
L18 45.29-44.29	44.79	1.069	6	2.0620	2.248	A	0.000	2.248	2.248	100.00	1.619	0.000
						B	0.000	2.248		100.00	3.444	0.000
						C	0.000	2.248		100.00	1.166	0.000
L19 44.29-39.29	41.77	1.053	6	2.0477	11.483	A	0.000	11.483	11.483	100.00	8.033	0.000
						B	0.000	11.483		100.00	17.151	0.000
						C	0.000	11.483		100.00	5.798	0.000
L20 39.29-34.29	36.77	1.025	6	2.0218	11.911	A	0.000	11.911	11.911	100.00	9.346	0.000
						B	0.000	11.911		100.00	18.458	0.000
						C	0.000	11.911		100.00	7.137	0.000
L21 34.29-33.50	33.89	1.008	6	2.0054	1.921	A	0.000	1.921	1.921	100.00	2.146	0.000
						B	0.000	1.921		100.00	3.585	0.000
						C	0.000	1.921		100.00	1.799	0.000
L22 33.50-33.25	33.37	1.005	6	2.0023	0.610	A	0.000	0.610	0.610	100.00	0.679	0.000
						B	0.000	0.610		100.00	1.134	0.000
						C	0.000	0.610		100.00	0.569	0.000
L23 33.25-32.00	32.62	1	6	1.9977	3.067	A	0.000	3.067	3.067	100.00	3.390	0.000
						B	0.000	3.067		100.00	5.667	0.000
						C	0.000	3.067		100.00	2.844	0.000
L24 32.00-	31.87	0.995	6	1.9931	0.616	A	0.000	0.616	0.616	100.00	0.677	0.000

Section Elevation	z	K_Z	q_z	t_Z	A_G	Face	A_F	A_R	A_{leg}	Leg %	C_AA_A In Face	C_AA_A Out Face
ft	ft		psf	in	ft^2		ft^2	ft^2	ft^2		ft^2	ft^2
31.75						B	0.000	0.616		100.00	1.133	0.000
						C	0.000	0.616		100.00	0.568	0.000
L25 31.75-28.50	30.12	0.983	6	1.9818	8.111	A	0.000	8.111	8.111	100.00	9.289	0.000
						B	0.000	8.111		100.00	15.205	0.000
						C	0.000	8.111		100.00	7.855	0.000
L26 28.50-28.25	28.37	0.971	6	1.9700	0.631	A	0.000	0.631	0.631	100.00	0.737	0.000
						B	0.000	0.631		100.00	1.192	0.000
						C	0.000	0.631		100.00	0.626	0.000
L27 28.25-27.50	27.87	0.967	6	1.9665	1.900	A	0.000	1.900	1.900	100.00	2.210	0.000
						B	0.000	1.900		100.00	3.575	0.000
						C	0.000	1.900		100.00	1.878	0.000
L28 27.50-27.25	27.37	0.963	6	1.9630	0.635	A	0.000	0.635	0.635	100.00	0.736	0.000
						B	0.000	0.635		100.00	1.191	0.000
						C	0.000	0.635		100.00	0.626	0.000
L29 27.25-22.25	24.73	0.943	6	1.9432	12.930	A	0.000	12.930	12.930	100.00	11.034	0.000
						B	0.000	12.930		100.00	20.126	0.000
						C	0.000	12.930		100.00	8.851	0.000
L30 22.25-17.25	19.73	0.899	5	1.8998	13.344	A	0.000	13.344	13.344	100.00	8.987	0.000
						B	0.000	13.344		100.00	18.068	0.000
						C	0.000	13.344		100.00	7.175	0.000
L31 17.25-15.50	16.37	0.865	5	1.8646	4.766	A	0.000	4.766	4.766	100.00	3.121	0.000
						B	0.000	4.766		100.00	6.296	0.000
						C	0.000	4.766		100.00	4.616	0.000
L32 15.50-15.25	15.37	0.853	5	1.8529	0.685	A	0.000	0.685	0.685	100.00	0.445	0.000
						B	0.000	0.685		100.00	0.898	0.000
						C	0.000	0.685		100.00	0.659	0.000
L33 15.25-13.42	14.33	0.85	5	1.8400	5.044	A	0.000	5.044	5.044	100.00	5.252	0.000
						B	0.000	5.044		100.00	8.570	0.000
						C	0.000	5.044		100.00	4.815	0.000
L34 13.42-13.17	13.29	0.85	5	1.8262	0.693	A	0.000	0.693	0.693	100.00	0.759	0.000
						B	0.000	0.693		100.00	1.212	0.000
						C	0.000	0.693		100.00	0.657	0.000
L35 13.17-13.00	13.08	0.85	5	1.8233	0.472	A	0.000	0.472	0.472	100.00	0.516	0.000
						B	0.000	0.472		100.00	0.824	0.000
						C	0.000	0.472		100.00	0.447	0.000
L36 13.00-12.75	12.87	0.85	5	1.8203	0.695	A	0.000	0.695	0.695	100.00	0.758	0.000
						B	0.000	0.695		100.00	1.211	0.000
						C	0.000	0.695		100.00	0.657	0.000
L37 12.75-7.75	10.24	0.85	5	1.7790	14.099	A	0.000	14.099	14.099	100.00	14.967	0.000
						B	0.000	14.099		100.00	23.566	0.000
						C	0.000	14.099		100.00	8.897	0.000
L38 7.75-6.50	7.12	0.85	5	1.7157	3.582	A	0.000	3.582	3.582	100.00	3.251	0.000
						B	0.000	3.582		100.00	3.251	0.000
						C	0.000	3.582		100.00	2.863	0.000
L39 6.50-6.25	6.37	0.85	5	1.6968	0.719	A	0.000	0.719	0.719	100.00	0.649	0.000
						B	0.000	0.719		100.00	0.649	0.000
						C	0.000	0.719		100.00	0.572	0.000
L40 6.25-4.50	5.37	0.85	5	1.6680	5.056	A	0.000	5.056	5.056	100.00	4.527	0.000
						B	0.000	5.056		100.00	4.527	0.000
						C	0.000	5.056		100.00	3.991	0.000
L41 4.50-4.25	4.37	0.85	5	1.6341	0.725	A	0.000	0.725	0.725	100.00	0.644	0.000
						B	0.000	0.725		100.00	0.644	0.000
						C	0.000	0.725		100.00	0.568	0.000
L42 4.25-2.50	3.37	0.85	5	1.5921	5.097	A	0.000	5.097	5.097	100.00	4.487	0.000
						B	0.000	5.097		100.00	4.487	0.000
						C	0.000	5.097		100.00	3.964	0.000
L43 2.50-2.25	2.37	0.85	5	1.5372	0.730	A	0.000	0.730	0.730	100.00	0.637	0.000
						B	0.000	0.730		100.00	0.637	0.000
						C	0.000	0.730		100.00	0.253	0.000
L44 2.25-2.00	2.12	0.85	5	1.5202	0.731	A	0.000	0.731	0.731	100.00	0.636	0.000
						B	0.000	0.731		100.00	0.636	0.000
						C	0.000	0.731		100.00	0.253	0.000
L45 2.00-1.75	1.87	0.85	5	1.5013	0.731	A	0.000	0.731	0.731	100.00	0.634	0.000
						B	0.000	0.731		100.00	0.634	0.000
						C	0.000	0.731		100.00	0.252	0.000
L46 1.75-0.50	1.12	0.85	5	1.4265	3.657	A	0.000	3.657	3.657	100.00	3.143	0.000
						B	0.000	3.657		100.00	3.143	0.000
						C	0.000	3.657		100.00	1.253	0.000

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L47 0.50-0.25	0.37	0.85	5	1.2781	0.729	A	0.000	0.729	0.729	100.00	0.304	0.000
						B	0.000	0.729		100.00	0.304	0.000
						C	0.000	0.729		100.00	0.000	0.000
L48 0.25-0.00	0.12	0.85	5	1.1451	0.724	A	0.000	0.724	0.724	100.00	0.300	0.000
						B	0.000	0.724		100.00	0.300	0.000
						C	0.000	0.724		100.00	0.000	0.000

Tower Pressure - Service

G_H = 1.100

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1 98.00-93.00	95.46	1.253	10	5.305	A	0.000	5.305	5.305	100.00	0.188	0.000
					B	0.000	5.305		100.00	0.000	0.000
					C	0.000	5.305		100.00	0.000	0.000
L2 93.00-88.00	90.47	1.239	10	5.761	A	0.000	5.761	5.761	100.00	0.188	0.000
					B	0.000	5.761		100.00	0.000	0.000
					C	0.000	5.761		100.00	0.000	0.000
L3 88.00-82.79	85.36	1.224	10	6.489	A	0.000	6.489	6.489	100.00	0.195	0.000
					B	0.000	6.489		100.00	0.000	0.000
					C	0.000	6.489		100.00	0.000	0.000
L4 82.79-80.21	81.49	1.212	9	3.312	A	0.000	3.312	3.312	100.00	0.097	0.000
					B	0.000	3.312		100.00	0.000	0.000
					C	0.000	3.312		100.00	0.000	0.000
L5 80.21-75.21	77.68	1.2	9	6.759	A	0.000	6.759	6.759	100.00	0.188	0.000
					B	0.000	6.759		100.00	0.000	0.000
					C	0.000	6.759		100.00	0.000	0.000
L6 75.21-70.21	72.68	1.183	9	7.208	A	0.000	7.208	7.208	100.00	0.188	0.000
					B	0.000	7.208		100.00	0.000	0.000
					C	0.000	7.208		100.00	0.000	0.000
L7 70.21-65.21	67.69	1.166	9	7.658	A	0.000	7.658	7.658	100.00	0.188	0.000
					B	0.000	7.658		100.00	2.519	0.000
					C	0.000	7.658		100.00	0.000	0.000
L8 65.21-60.21	62.69	1.147	9	8.107	A	0.000	8.107	8.107	100.00	0.405	0.000
					B	0.000	8.107		100.00	7.253	0.000
					C	0.000	8.107		100.00	0.345	0.000
L9 60.21-59.17	59.69	1.135	9	1.743	A	0.000	1.743	1.743	100.00	0.819	0.000
					B	0.000	1.743		100.00	2.243	0.000
					C	0.000	1.743		100.00	0.780	0.000
L10 59.17-58.90	59.03	1.133	9	0.456	A	0.000	0.456	0.456	100.00	0.213	0.000
					B	0.000	0.456		100.00	0.582	0.000
					C	0.000	0.456		100.00	0.203	0.000
L11 58.90-58.75	58.82	1.132	9	0.254	A	0.000	0.254	0.254	100.00	0.118	0.000
					B	0.000	0.254		100.00	0.324	0.000
					C	0.000	0.254		100.00	0.113	0.000
L12 58.75-53.75	56.23	1.121	9	8.687	A	0.000	8.687	8.687	100.00	3.938	0.000
					B	0.000	8.687		100.00	10.785	0.000
					C	0.000	8.687		100.00	4.628	0.000
L13 53.75-52.92	53.33	1.109	9	1.486	A	0.000	1.486	1.486	100.00	0.654	0.000
					B	0.000	1.486		100.00	1.790	0.000
					C	0.000	1.486		100.00	1.245	0.000
L14 52.92-52.67	52.79	1.106	9	0.450	A	0.000	0.450	0.450	100.00	0.197	0.000
					B	0.000	0.450		100.00	0.539	0.000
					C	0.000	0.450		100.00	0.375	0.000
L15 52.67-52.17	52.42	1.105	9	0.903	A	0.000	0.903	0.903	100.00	0.394	0.000
					B	0.000	0.903		100.00	1.079	0.000
					C	0.000	0.903		100.00	0.750	0.000
L16 52.17-51.92	52.04	1.103	9	0.453	A	0.000	0.453	0.453	100.00	0.197	0.000
					B	0.000	0.453		100.00	0.539	0.000
					C	0.000	0.453		100.00	0.375	0.000

Section Elevation	z	K_Z	q_z	A_G	Face	A_F	A_R	A_{leg}	Leg %	C_AA_A In Face	C_AA_A Out Face
ft	ft		psf	ft^2		ft^2	ft^2	ft^2		ft^2	ft^2
L17 51.92-45.29	48.57	1.087	9	12.430	A	0.000	12.430	12.430	100.00	5.221	0.000
					B	0.000	12.430		100.00	14.301	0.000
					C	0.000	12.430		100.00	8.783	0.000
L18 45.29-44.29	44.79	1.069	8	1.901	A	0.000	1.901	1.901	100.00	0.787	0.000
					B	0.000	1.901		100.00	2.157	0.000
					C	0.000	1.901		100.00	0.750	0.000
L19 44.29-39.29	41.77	1.053	8	9.776	A	0.000	9.776	9.776	100.00	3.938	0.000
					B	0.000	9.776		100.00	10.785	0.000
					C	0.000	9.776		100.00	3.750	0.000
L20 39.29-34.29	36.77	1.025	8	10.226	A	0.000	10.226	10.226	100.00	5.148	0.000
					B	0.000	10.226		100.00	11.995	0.000
					C	0.000	10.226		100.00	4.960	0.000
L21 34.29-33.50	33.89	1.008	8	1.657	A	0.000	1.657	1.657	100.00	1.412	0.000
					B	0.000	1.657		100.00	2.494	0.000
					C	0.000	1.657		100.00	1.383	0.000
L22 33.50-33.25	33.37	1.005	8	0.527	A	0.000	0.527	0.527	100.00	0.447	0.000
					B	0.000	0.527		100.00	0.789	0.000
					C	0.000	0.527		100.00	0.438	0.000
L23 33.25-32.00	32.62	1	8	2.650	A	0.000	2.650	2.650	100.00	2.234	0.000
					B	0.000	2.650		100.00	3.946	0.000
					C	0.000	2.650		100.00	2.188	0.000
L24 32.00-31.75	31.87	0.995	8	0.533	A	0.000	0.533	0.533	100.00	0.447	0.000
					B	0.000	0.533		100.00	0.789	0.000
					C	0.000	0.533		100.00	0.438	0.000
L25 31.75-28.50	30.12	0.983	8	7.037	A	0.000	7.037	7.037	100.00	6.309	0.000
					B	0.000	7.037		100.00	10.760	0.000
					C	0.000	7.037		100.00	6.188	0.000
L26 28.50-28.25	28.37	0.971	8	0.549	A	0.000	0.549	0.549	100.00	0.509	0.000
					B	0.000	0.549		100.00	0.852	0.000
					C	0.000	0.549		100.00	0.500	0.000
L27 28.25-27.50	27.87	0.967	8	1.654	A	0.000	1.654	1.654	100.00	1.528	0.000
					B	0.000	1.654		100.00	2.555	0.000
					C	0.000	1.654		100.00	1.500	0.000
L28 27.50-27.25	27.37	0.963	8	0.554	A	0.000	0.554	0.554	100.00	0.509	0.000
					B	0.000	0.554		100.00	0.852	0.000
					C	0.000	0.554		100.00	0.500	0.000
L29 27.25-22.25	24.73	0.943	7	11.311	A	0.000	11.311	11.311	100.00	6.938	0.000
					B	0.000	11.311		100.00	13.785	0.000
					C	0.000	11.311		100.00	6.750	0.000
L30 22.25-17.25	19.73	0.899	7	11.761	A	0.000	11.761	11.761	100.00	5.188	0.000
					B	0.000	11.761		100.00	12.035	0.000
					C	0.000	11.761		100.00	5.250	0.000
L31 17.25-15.50	16.37	0.865	7	4.223	A	0.000	4.223	4.223	100.00	1.816	0.000
					B	0.000	4.223		100.00	4.212	0.000
					C	0.000	4.223		100.00	3.500	0.000
L32 15.50-15.25	15.37	0.853	7	0.608	A	0.000	0.608	0.608	100.00	0.259	0.000
					B	0.000	0.608		100.00	0.602	0.000
					C	0.000	0.608		100.00	0.500	0.000
L33 15.25-13.42	14.33	0.85	7	4.483	A	0.000	4.483	4.483	100.00	3.479	0.000
					B	0.000	4.483		100.00	5.985	0.000
					C	0.000	4.483		100.00	3.660	0.000
L34 13.42-13.17	13.29	0.85	7	0.617	A	0.000	0.617	0.617	100.00	0.509	0.000
					B	0.000	0.617		100.00	0.852	0.000
					C	0.000	0.617		100.00	0.500	0.000
L35 13.17-13.00	13.08	0.85	7	0.420	A	0.000	0.420	0.420	100.00	0.346	0.000
					B	0.000	0.420		100.00	0.579	0.000
					C	0.000	0.420		100.00	0.340	0.000
L36 13.00-12.75	12.87	0.85	7	0.619	A	0.000	0.619	0.619	100.00	0.509	0.000
					B	0.000	0.619		100.00	0.852	0.000
					C	0.000	0.619		100.00	0.500	0.000
L37 12.75-7.75	10.24	0.85	7	12.616	A	0.000	12.616	12.616	100.00	10.178	0.000
					B	0.000	12.616		100.00	16.683	0.000
					C	0.000	12.616		100.00	7.080	0.000
L38 7.75-6.50	7.12	0.85	7	3.224	A	0.000	3.224	3.224	100.00	2.500	0.000
					B	0.000	3.224		100.00	2.500	0.000
					C	0.000	3.224		100.00	2.500	0.000
L39 6.50-6.25	6.37	0.85	7	0.648	A	0.000	0.648	0.648	100.00	0.500	0.000
					B	0.000	0.648		100.00	0.500	0.000

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
					C	0.000	0.648		100.00	0.500	0.000
L40 6.25-4.50	5.37	0.85	7	4.569	A	0.000	4.569	4.569	100.00	3.500	0.000
					B	0.000	4.569		100.00	3.500	0.000
					C	0.000	4.569		100.00	3.500	0.000
L41 4.50-4.25	4.37	0.85	7	0.657	A	0.000	0.657	0.657	100.00	0.500	0.000
					B	0.000	0.657		100.00	0.500	0.000
					C	0.000	0.657		100.00	0.500	0.000
L42 4.25-2.50	3.37	0.85	7	4.632	A	0.000	4.632	4.632	100.00	3.500	0.000
					B	0.000	4.632		100.00	3.500	0.000
					C	0.000	4.632		100.00	3.500	0.000
L43 2.50-2.25	2.37	0.85	7	0.666	A	0.000	0.666	0.666	100.00	0.500	0.000
					B	0.000	0.666		100.00	0.500	0.000
					C	0.000	0.666		100.00	0.250	0.000
L44 2.25-2.00	2.12	0.85	7	0.667	A	0.000	0.667	0.667	100.00	0.500	0.000
					B	0.000	0.667		100.00	0.500	0.000
					C	0.000	0.667		100.00	0.250	0.000
L45 2.00-1.75	1.87	0.85	7	0.669	A	0.000	0.669	0.669	100.00	0.500	0.000
					B	0.000	0.669		100.00	0.500	0.000
					C	0.000	0.669		100.00	0.250	0.000
L46 1.75-0.50	1.12	0.85	7	3.359	A	0.000	3.359	3.359	100.00	2.500	0.000
					B	0.000	3.359		100.00	2.500	0.000
					C	0.000	3.359		100.00	1.250	0.000
L47 0.50-0.25	0.37	0.85	7	0.675	A	0.000	0.675	0.675	100.00	0.250	0.000
					B	0.000	0.675		100.00	0.250	0.000
					C	0.000	0.675		100.00	0.000	0.000
L48 0.25-0.00	0.12	0.85	7	0.676	A	0.000	0.676	0.676	100.00	0.250	0.000
					B	0.000	0.676		100.00	0.250	0.000
					C	0.000	0.676		100.00	0.000	0.000

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice
4	1.2 Dead+1.6 Wind 30 deg - No Ice
5	0.9 Dead+1.6 Wind 30 deg - No Ice
6	1.2 Dead+1.6 Wind 60 deg - No Ice
7	0.9 Dead+1.6 Wind 60 deg - No Ice
8	1.2 Dead+1.6 Wind 90 deg - No Ice
9	0.9 Dead+1.6 Wind 90 deg - No Ice
10	1.2 Dead+1.6 Wind 120 deg - No Ice
11	0.9 Dead+1.6 Wind 120 deg - No Ice
12	1.2 Dead+1.6 Wind 150 deg - No Ice
13	0.9 Dead+1.6 Wind 150 deg - No Ice
14	1.2 Dead+1.6 Wind 180 deg - No Ice
15	0.9 Dead+1.6 Wind 180 deg - No Ice
16	1.2 Dead+1.6 Wind 210 deg - No Ice
17	0.9 Dead+1.6 Wind 210 deg - No Ice
18	1.2 Dead+1.6 Wind 240 deg - No Ice
19	0.9 Dead+1.6 Wind 240 deg - No Ice
20	1.2 Dead+1.6 Wind 270 deg - No Ice
21	0.9 Dead+1.6 Wind 270 deg - No Ice
22	1.2 Dead+1.6 Wind 300 deg - No Ice
23	0.9 Dead+1.6 Wind 300 deg - No Ice
24	1.2 Dead+1.6 Wind 330 deg - No Ice
25	0.9 Dead+1.6 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp

Comb. No.	Description
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	98 - 93	Pole	Max Tension	3	0.00	-0.00	-0.00
			Max. Compression	26	-5.47	0.22	-0.02
			Max. Mx	20	-1.54	4.98	0.13
			Max. My	2	-1.54	0.10	4.92
			Max. Vy	8	2.82	-4.98	-0.10
			Max. Vx	14	2.80	-0.13	-4.92
			Max. Torque	10			-0.23
L2	93 - 88	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-11.38	0.23	-0.01
			Max. Mx	20	-3.34	24.02	0.32
			Max. My	2	-3.34	0.29	23.86
			Max. Vy	8	5.83	-24.02	-0.29
			Max. Vx	14	5.81	-0.32	-23.85
			Max. Torque	10			-0.23
L3	88 - 82.79	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-11.66	0.24	0.00
			Max. Mx	20	-3.47	40.43	0.43
			Max. My	2	-3.47	0.40	40.21
			Max. Vy	8	5.94	-40.42	-0.40
			Max. Vx	14	5.92	-0.43	-40.21
			Max. Torque	10			-0.23
L4	82.79 - 80.21	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-12.42	0.26	0.02
			Max. Mx	20	-3.85	70.64	0.63
			Max. My	2	-3.85	0.60	70.33
			Max. Vy	8	6.15	-70.64	-0.60
			Max. Vx	14	6.13	-0.63	-70.32
			Max. Torque	10			-0.23
L5	80.21 - 75.21	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-13.01	0.27	0.04
			Max. Mx	20	-4.18	101.87	0.82
			Max. My	2	-4.17	0.79	101.46
			Max. Vy	8	6.35	-101.87	-0.80
			Max. Vx	14	6.33	-0.82	-101.46
			Max. Torque	10			-0.23
L6	75.21 - 70.21	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-23.17	0.07	-0.04
			Max. Mx	8	-7.42	-163.44	-0.98
			Max. My	14	-7.41	-0.99	-162.70
			Max. Vy	8	11.27	-163.44	-0.98

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vx	2	-11.22	0.90	162.56
			Max. Torque	8			-0.43
L7	70.21 - 65.21	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-33.76	0.00	0.37
			Max. Mx	8	-10.36	-229.70	-1.05
			Max. My	2	-10.36	1.00	228.53
			Max. Vy	8	16.73	-229.70	-1.05
			Max. Vx	2	-16.64	1.00	228.53
			Max. Torque	8			-0.43
L8	65.21 - 60.21	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-34.75	-0.23	0.48
			Max. Mx	8	-10.97	-313.74	-1.11
			Max. My	2	-10.95	1.03	312.80
			Max. Vy	8	16.88	-313.74	-1.11
			Max. Vx	2	-17.09	1.03	312.80
			Max. Torque	17			0.33
L9	60.21 - 59.17	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-35.00	-0.28	0.50
			Max. Mx	8	-11.11	-331.31	-1.13
			Max. My	2	-11.08	1.04	330.59
			Max. Vy	8	16.91	-331.31	-1.13
			Max. Vx	2	-17.13	1.04	330.59
			Max. Torque	17			0.34
L10	59.17 - 58.9	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-35.08	-0.29	0.51
			Max. Mx	8	-11.17	-335.88	-1.13
			Max. My	2	-11.14	1.04	335.21
			Max. Vy	8	16.92	-335.88	-1.13
			Max. Vx	2	-17.14	1.04	335.21
			Max. Torque	17			0.34
L11	58.9 - 58.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-35.13	-0.30	0.51
			Max. Mx	8	-11.19	-338.42	-1.13
			Max. My	2	-11.17	1.04	337.78
			Max. Vy	8	16.92	-338.42	-1.13
			Max. Vx	2	-17.14	1.04	337.78
			Max. Torque	17			0.34
L12	58.75 - 53.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-36.65	-0.56	0.62
			Max. Mx	8	-12.02	-423.61	-1.19
			Max. My	2	-11.99	1.06	424.21
			Max. Vy	8	17.14	-423.61	-1.19
			Max. Vx	2	-17.43	1.06	424.21
			Max. Torque	17			0.38
L13	53.75 - 52.92	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-36.92	-0.61	0.65
			Max. Mx	8	-12.17	-437.85	-1.20
			Max. My	2	-12.14	1.06	438.70
			Max. Vy	8	17.17	-437.85	-1.20
			Max. Vx	2	-17.47	1.06	438.70
			Max. Torque	17			0.39
L14	52.92 - 52.67	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-37.00	-0.63	0.65
			Max. Mx	8	-12.22	-442.15	-1.20
			Max. My	2	-12.19	1.06	443.07
			Max. Vy	8	17.18	-442.15	-1.20
			Max. Vx	2	-17.48	1.06	443.07
			Max. Torque	17			0.39
L15	52.67 - 52.17	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-37.17	-0.66	0.67
			Max. Mx	8	-12.31	-450.75	-1.21
			Max. My	2	-12.28	1.06	451.82

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vy	8	17.20	-450.75	-1.21
			Max. Vx	2	-17.51	1.06	451.82
			Max. Torque	17			0.40
L16	52.17 - 51.92	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-37.41	-0.33	0.47
			Max. Mx	8	-12.44	-454.89	-1.31
			Max. My	14	-12.41	-1.30	-456.21
			Max. Vy	8	17.27	-454.89	-1.31
			Max. Vx	2	-17.59	1.24	456.11
			Max. Torque	17			0.40
L17	51.92 - 45.29	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-38.43	-0.53	0.55
			Max. Mx	8	-13.00	-510.54	-1.40
			Max. My	14	-12.97	-1.44	-512.93
			Max. Vy	8	17.40	-510.54	-1.40
			Max. Vx	2	-17.76	1.29	512.85
			Max. Torque	9			-0.35
L18	45.29 - 44.29	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-40.57	-0.81	0.66
			Max. Mx	8	-14.26	-587.99	-1.51
			Max. My	14	-14.23	-1.62	-592.04
			Max. Vy	8	17.63	-587.99	-1.51
			Max. Vx	2	-18.05	1.37	592.00
			Max. Torque	16			0.38
L19	44.29 - 39.29	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-42.22	-1.06	0.77
			Max. Mx	8	-15.25	-676.63	-1.64
			Max. My	2	-15.22	1.45	682.82
			Max. Vy	8	17.82	-676.63	-1.64
			Max. Vx	2	-18.29	1.45	682.82
			Max. Torque	16			0.42
L20	39.29 - 34.29	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-43.95	-1.30	0.88
			Max. Mx	8	-16.27	-766.23	-1.76
			Max. My	2	-16.24	1.53	774.85
			Max. Vy	8	18.01	-766.23	-1.76
			Max. Vx	2	-18.53	1.53	774.85
			Max. Torque	16			0.45
L21	34.29 - 33.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-44.26	-1.34	0.89
			Max. Mx	8	-16.44	-780.47	-1.78
			Max. My	2	-16.41	1.54	789.50
			Max. Vy	8	18.04	-780.47	-1.78
			Max. Vx	2	-18.56	1.54	789.50
			Max. Torque	16			0.45
L22	33.5 - 33.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-44.37	-1.35	0.90
			Max. Mx	8	-16.51	-784.98	-1.79
			Max. My	2	-16.48	1.55	794.14
			Max. Vy	8	18.04	-784.98	-1.79
			Max. Vx	2	-18.57	1.55	794.14
			Max. Torque	16			0.45
L23	33.25 - 32	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-44.95	-1.41	0.92
			Max. Mx	8	-16.85	-807.59	-1.82
			Max. My	2	-16.82	1.57	817.39
			Max. Vy	8	18.11	-807.59	-1.82
			Max. Vx	2	-18.64	1.57	817.39
			Max. Torque	16			0.46
L24	32 - 31.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-45.05	-1.42	0.93
			Max. Mx	8	-16.91	-812.12	-1.82
			Max. My	2	-16.88	1.57	822.06
			Max. Vy	8	18.11	-812.12	-1.82

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vx	2	-18.65	1.57	822.06
			Max. Torque	16			0.46
L25	31.75 - 28.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-46.39	-1.59	1.00
			Max. Mx	8	-17.64	-871.24	-1.90
			Max. My	2	-17.61	1.62	882.92
			Max. Vy	8	18.25	-871.24	-1.90
			Max. Vx	2	-18.81	1.62	882.92
			Max. Torque	16			0.47
L26	28.5 - 28.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-46.51	-1.60	1.00
			Max. Mx	8	-17.72	-875.80	-1.91
			Max. My	2	-17.70	1.62	887.62
			Max. Vy	8	18.26	-875.80	-1.91
			Max. Vx	2	-18.81	1.62	887.62
			Max. Torque	16			0.47
L27	28.25 - 27.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-46.88	-1.64	1.02
			Max. Mx	8	-17.94	-889.51	-1.93
			Max. My	2	-17.91	1.63	901.74
			Max. Vy	8	18.29	-889.51	-1.93
			Max. Vx	2	-18.86	1.63	901.74
			Max. Torque	16			0.48
L28	27.5 - 27.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-46.99	-1.65	1.03
			Max. Mx	8	-18.00	-894.09	-1.93
			Max. My	2	-17.97	1.64	906.46
			Max. Vy	8	18.30	-894.09	-1.93
			Max. Vx	2	-18.86	1.64	906.46
			Max. Torque	16			0.48
L29	27.25 - 22.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-48.92	-1.91	1.14
			Max. Mx	8	-19.15	-986.09	-2.05
			Max. My	2	-19.12	1.71	1001.32
			Max. Vy	8	18.49	-986.09	-2.05
			Max. Vx	2	-19.08	1.71	1001.32
			Max. Torque	16			0.48
L30	22.25 - 17.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-50.78	-2.18	1.25
			Max. Mx	8	-20.32	-1078.94	-2.17
			Max. My	2	-20.31	1.78	1097.19
			Max. Vy	8	18.65	-1078.94	-2.17
			Max. Vx	2	-19.28	1.78	1097.19
			Max. Torque	16			0.48
L31	17.25 - 15.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-51.46	-2.31	1.30
			Max. Mx	8	-20.74	-1111.63	-2.21
			Max. My	2	-20.72	1.80	1130.97
			Max. Vy	8	18.71	-1111.63	-2.21
			Max. Vx	2	-19.35	1.80	1130.97
			Max. Torque	16			0.50
L32	15.5 - 15.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-51.56	-2.33	1.31
			Max. Mx	8	-20.82	-1116.31	-2.22
			Max. My	2	-20.80	1.81	1135.81
			Max. Vy	8	18.70	-1116.31	-2.22
			Max. Vx	2	-19.34	1.81	1135.81
			Max. Torque	16			0.50
L33	15.25 - 13.42	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-52.37	-2.48	1.39
			Max. Mx	8	-21.29	-1150.61	-2.26
			Max. My	2	-21.27	1.83	1171.27
			Max. Vy	8	18.78	-1150.61	-2.26
			Max. Vx	2	-19.43	1.83	1171.27
			Max. Torque	16			0.51
L34	13.42 -	Pole	Max Tension	1	0.00	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
	13.17						
			Max. Compression	26	-52.47	-2.50	1.40
			Max. Mx	8	-21.36	-1155.30	-2.27
			Max. My	2	-21.35	1.83	1176.12
			Max. Vy	8	18.76	-1155.30	-2.27
			Max. Vx	2	-19.42	1.83	1176.12
			Max. Torque	16			0.52
L35	13.17 - 13	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-52.54	-2.51	1.41
			Max. Mx	8	-21.41	-1158.49	-2.27
			Max. My	2	-21.39	1.84	1179.42
			Max. Vy	8	18.77	-1158.49	-2.27
			Max. Vx	2	-19.42	1.84	1179.42
			Max. Torque	16			0.52
L36	13 - 12.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-52.66	-2.53	1.42
			Max. Mx	8	-21.48	-1163.19	-2.28
			Max. My	2	-21.47	1.84	1184.28
			Max. Vy	8	18.78	-1163.19	-2.28
			Max. Vx	2	-19.43	1.84	1184.28
			Max. Torque	16			0.52
L37	12.75 - 7.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-54.92	-2.83	1.63
			Max. Mx	8	-22.91	-1257.56	-2.39
			Max. My	2	-22.90	1.91	1281.91
			Max. Vy	8	18.95	-1257.56	-2.39
			Max. Vx	2	-19.63	1.91	1281.91
			Max. Torque	16			0.54
L38	7.75 - 6.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-55.42	-2.86	1.66
			Max. Mx	8	-23.24	-1281.26	-2.43
			Max. My	2	-23.23	1.94	1306.46
			Max. Vy	8	19.00	-1281.26	-2.43
			Max. Vx	2	-19.67	1.94	1306.46
			Max. Torque	16			0.54
L39	6.5 - 6.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-55.53	-2.87	1.67
			Max. Mx	8	-23.32	-1286.01	-2.44
			Max. My	2	-23.31	1.95	1311.37
			Max. Vy	8	19.00	-1286.01	-2.44
			Max. Vx	2	-19.67	1.95	1311.37
			Max. Torque	16			0.54
L40	6.25 - 4.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-56.26	-2.91	1.71
			Max. Mx	8	-23.82	-1319.30	-2.48
			Max. My	2	-23.81	2.00	1345.84
			Max. Vy	8	19.07	-1319.30	-2.48
			Max. Vx	2	-19.74	2.00	1345.84
			Max. Torque	16			0.54
L41	4.5 - 4.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-56.36	-2.92	1.71
			Max. Mx	8	-23.90	-1324.06	-2.49
			Max. My	2	-23.89	2.01	1350.77
			Max. Vy	8	19.06	-1324.06	-2.49
			Max. Vx	2	-19.73	2.01	1350.77
			Max. Torque	16			0.54
L42	4.25 - 2.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-57.04	-2.96	1.75
			Max. Mx	8	-24.35	-1357.47	-2.54
			Max. My	2	-24.35	2.06	1385.35
			Max. Vy	8	19.14	-1357.47	-2.54
			Max. Vx	2	-19.81	2.06	1385.35
			Max. Torque	16			0.54
L43	2.5 - 2.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-57.13	-2.96	1.76
			Max. Mx	8	-24.42	-1362.25	-2.55
			Max. My	2	-24.42	2.06	1390.30
			Max. Vy	8	19.13	-1362.25	-2.55
			Max. Vx	2	-19.80	2.06	1390.30

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Torque	16			0.54
L44	2.25 - 2	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-57.21	-2.96	1.76
			Max. Mx	8	-24.49	-1367.03	-2.55
			Max. My	2	-24.48	2.07	1395.25
			Max. Vy	8	19.14	-1367.03	-2.55
			Max. Vx	2	-19.81	2.07	1395.25
			Max. Torque	16			0.54
L45	2 - 1.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-57.31	-2.96	1.76
			Max. Mx	8	-24.56	-1371.82	-2.56
			Max. My	2	-24.56	2.08	1400.20
			Max. Vy	8	19.14	-1371.82	-2.56
			Max. Vx	2	-19.81	2.08	1400.20
			Max. Torque	16			0.54
L46	1.75 - 0.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-57.78	-2.96	1.78
			Max. Mx	8	-24.90	-1395.77	-2.60
			Max. My	2	-24.90	2.11	1424.99
			Max. Vy	8	19.19	-1395.77	-2.60
			Max. Vx	2	-19.86	2.11	1424.99
			Max. Torque	16			0.54
L47	0.5 - 0.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-57.85	-2.96	1.78
			Max. Mx	8	-24.97	-1400.56	-2.60
			Max. My	2	-24.97	2.12	1429.95
			Max. Vy	8	19.19	-1400.56	-2.60
			Max. Vx	2	-19.86	2.12	1429.95
			Max. Torque	16			0.54
L48	0.25 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-57.92	-2.96	1.79
			Max. Mx	8	-25.03	-1405.36	-2.61
			Max. My	2	-25.03	2.12	1434.92
			Max. Vy	8	19.20	-1405.36	-2.61
			Max. Vx	2	-19.86	2.12	1434.92
			Max. Torque	16			0.54

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	26	57.92	-0.00	0.00
	Max. H_x	20	25.03	19.19	0.03
	Max. H_z	3	18.77	0.03	19.86
	Max. M_x	2	1434.92	0.03	19.86
	Max. M_z	8	1405.36	-19.19	-0.03
	Max. Torsion	16	0.54	11.24	-19.43
	Min. Vert	19	18.77	16.59	-9.52
	Min. H_x	8	25.03	-19.19	-0.03
	Min. H_z	14	25.03	-0.03	-19.86
	Min. M_x	14	-1434.61	-0.03	-19.86
	Min. M_z	20	-1404.08	19.19	0.03
	Min. Torsion	4	-0.53	-11.24	19.43

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	20.86	0.00	0.00	-0.13	-0.52	0.00

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
1.2 Dead+1.6 Wind 0 deg - No Ice	25.03	-0.03	-19.86	-1434.92	2.12	0.08
0.9 Dead+1.6 Wind 0 deg - No Ice	18.77	-0.03	-19.86	-1422.13	2.26	0.08
1.2 Dead+1.6 Wind 30 deg - No Ice	25.03	11.24	-19.43	-1322.41	-766.01	0.53
0.9 Dead+1.6 Wind 30 deg - No Ice	18.77	11.24	-19.43	-1310.95	-759.24	0.53
1.2 Dead+1.6 Wind 60 deg - No Ice	25.03	16.59	-9.52	-696.31	-1215.36	0.30
0.9 Dead+1.6 Wind 60 deg - No Ice	18.77	16.59	-9.52	-690.04	-1204.32	0.30
1.2 Dead+1.6 Wind 90 deg - No Ice	25.03	19.19	0.03	2.61	-1405.36	0.35
0.9 Dead+1.6 Wind 90 deg - No Ice	18.77	19.19	0.03	2.62	-1392.61	0.35
1.2 Dead+1.6 Wind 120 deg - No Ice	25.03	17.26	9.94	719.04	-1249.73	0.23
0.9 Dead+1.6 Wind 120 deg - No Ice	18.77	17.26	9.94	712.68	-1238.45	0.23
1.2 Dead+1.6 Wind 150 deg - No Ice	25.03	11.07	19.07	1318.61	-767.19	-0.29
0.9 Dead+1.6 Wind 150 deg - No Ice	18.77	11.07	19.07	1307.22	-760.38	-0.29
1.2 Dead+1.6 Wind 180 deg - No Ice	25.03	0.03	19.86	1434.61	-3.41	-0.10
0.9 Dead+1.6 Wind 180 deg - No Ice	18.77	0.03	19.86	1421.90	-3.21	-0.09
1.2 Dead+1.6 Wind 210 deg - No Ice	25.03	-11.24	19.43	1322.10	764.73	-0.54
0.9 Dead+1.6 Wind 210 deg - No Ice	18.77	-11.24	19.43	1310.72	758.28	-0.54
1.2 Dead+1.6 Wind 240 deg - No Ice	25.03	-16.59	9.52	696.00	1214.08	-0.30
0.9 Dead+1.6 Wind 240 deg - No Ice	18.77	-16.59	9.52	689.81	1203.36	-0.30
1.2 Dead+1.6 Wind 270 deg - No Ice	25.03	-19.19	-0.03	-2.92	1404.08	-0.34
0.9 Dead+1.6 Wind 270 deg - No Ice	18.77	-19.19	-0.03	-2.85	1391.65	-0.34
1.2 Dead+1.6 Wind 300 deg - No Ice	25.03	-17.26	-9.94	-719.35	1248.44	-0.23
0.9 Dead+1.6 Wind 300 deg - No Ice	18.77	-17.26	-9.94	-712.91	1237.50	-0.23
1.2 Dead+1.6 Wind 330 deg - No Ice	25.03	-11.07	-19.07	-1318.92	765.91	0.28
0.9 Dead+1.6 Wind 330 deg - No Ice	18.77	-11.07	-19.07	-1307.45	759.42	0.28
1.2 Dead+1.0 Ice+1.0 Temp	57.92	0.00	-0.00	-1.79	-2.96	-0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	57.92	-0.01	-6.53	-490.69	-2.59	-0.12
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	57.92	3.36	-5.84	-431.37	-249.98	0.05
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	57.92	5.34	-3.08	-239.38	-413.54	0.04
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	57.92	6.29	0.01	-1.39	-481.74	0.13
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	57.92	5.58	3.24	241.77	-423.16	0.17
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	57.92	3.28	5.68	421.87	-247.14	0.06
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	57.92	0.01	6.53	487.01	-3.50	0.12
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	57.92	-3.36	5.84	427.70	243.89	-0.05
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	57.92	-5.34	3.08	235.70	407.45	-0.05
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	57.92	-6.29	-0.01	-2.29	475.65	-0.13

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	57.92	-5.58	-3.24	-245.45	417.07	-0.16
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	57.92	-3.28	-5.68	-425.55	241.05	-0.06
Dead+Wind 0 deg - Service	20.86	-0.01	-4.62	-332.53	0.11	0.00
Dead+Wind 30 deg - Service	20.86	2.62	-4.52	-306.52	-177.89	0.04
Dead+Wind 60 deg - Service	20.86	3.86	-2.22	-161.40	-281.94	0.07
Dead+Wind 90 deg - Service	20.86	4.47	0.01	0.51	-325.96	0.08
Dead+Wind 120 deg - Service	20.86	4.02	2.31	166.50	-289.92	0.07
Dead+Wind 150 deg - Service	20.86	2.58	4.44	305.46	-178.16	0.04
Dead+Wind 180 deg - Service	20.86	0.01	4.62	332.28	-1.17	-0.00
Dead+Wind 210 deg - Service	20.86	-2.62	4.52	306.27	176.82	-0.04
Dead+Wind 240 deg - Service	20.86	-3.86	2.22	161.15	280.87	-0.07
Dead+Wind 270 deg - Service	20.86	-4.47	-0.01	-0.77	324.89	-0.08
Dead+Wind 300 deg - Service	20.86	-4.02	-2.31	-166.75	288.86	-0.07
Dead+Wind 330 deg - Service	20.86	-2.58	-4.44	-305.71	177.09	-0.04

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	K	K	K	K	K	K	
1	0.00	-20.86	0.00	0.00	20.86	0.00	0.000%
2	-0.03	-25.03	-19.86	0.03	25.03	19.86	0.000%
3	-0.03	-18.77	-19.86	0.03	18.77	19.86	0.000%
4	11.24	-25.03	-19.43	-11.24	25.03	19.43	0.000%
5	11.24	-18.77	-19.43	-11.24	18.77	19.43	0.000%
6	16.59	-25.03	-9.52	-16.59	25.03	9.52	0.000%
7	16.59	-18.77	-9.52	-16.59	18.77	9.52	0.000%
8	19.19	-25.03	0.03	-19.19	25.03	-0.03	0.000%
9	19.19	-18.77	0.03	-19.19	18.77	-0.03	0.000%
10	17.26	-25.03	9.94	-17.26	25.03	-9.94	0.000%
11	17.26	-18.77	9.94	-17.26	18.77	-9.94	0.000%
12	11.07	-25.03	19.07	-11.07	25.03	-19.07	0.000%
13	11.07	-18.77	19.07	-11.07	18.77	-19.07	0.000%
14	0.03	-25.03	19.86	-0.03	25.03	-19.86	0.000%
15	0.03	-18.77	19.86	-0.03	18.77	-19.86	0.000%
16	-11.24	-25.03	19.43	11.24	25.03	-19.43	0.000%
17	-11.24	-18.77	19.43	11.24	18.77	-19.43	0.000%
18	-16.59	-25.03	9.52	16.59	25.03	-9.52	0.000%
19	-16.59	-18.77	9.52	16.59	18.77	-9.52	0.000%
20	-19.19	-25.03	-0.03	19.19	25.03	0.03	0.000%
21	-19.19	-18.77	-0.03	19.19	18.77	0.03	0.000%
22	-17.26	-25.03	-9.94	17.26	25.03	9.94	0.000%
23	-17.26	-18.77	-9.94	17.26	18.77	9.94	0.000%
24	-11.07	-25.03	-19.07	11.07	25.03	19.07	0.000%
25	-11.07	-18.77	-19.07	11.07	18.77	19.07	0.000%
26	0.00	-57.92	0.00	-0.00	57.92	0.00	0.000%
27	-0.01	-57.92	-6.53	0.01	57.92	6.53	0.000%
28	3.36	-57.92	-5.84	-3.36	57.92	5.84	0.000%
29	5.34	-57.92	-3.08	-5.34	57.92	3.08	0.000%
30	6.29	-57.92	0.01	-6.29	57.92	-0.01	0.000%
31	5.58	-57.92	3.24	-5.58	57.92	-3.24	0.000%
32	3.28	-57.92	5.68	-3.28	57.92	-5.68	0.000%
33	0.01	-57.92	6.53	-0.01	57.92	-6.53	0.000%
34	-3.36	-57.92	5.84	3.36	57.92	-5.84	0.000%
35	-5.34	-57.92	3.08	5.34	57.92	-3.08	0.000%
36	-6.29	-57.92	-0.01	6.29	57.92	0.01	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
37	-5.58	-57.92	-3.24	5.58	57.92	3.24	0.000%
38	-3.28	-57.92	-5.68	3.28	57.92	5.68	0.000%
39	-0.01	-20.86	-4.62	0.01	20.86	4.62	0.000%
40	2.62	-20.86	-4.52	-2.62	20.86	4.52	0.000%
41	3.86	-20.86	-2.22	-3.86	20.86	2.22	0.000%
42	4.47	-20.86	0.01	-4.47	20.86	-0.01	0.000%
43	4.02	-20.86	2.31	-4.02	20.86	-2.31	0.000%
44	2.58	-20.86	4.44	-2.58	20.86	-4.44	0.000%
45	0.01	-20.86	4.62	-0.01	20.86	-4.62	0.000%
46	-2.62	-20.86	4.52	2.62	20.86	-4.52	0.000%
47	-3.86	-20.86	2.22	3.86	20.86	-2.22	0.000%
48	-4.47	-20.86	-0.01	4.47	20.86	0.01	0.000%
49	-4.02	-20.86	-2.31	4.02	20.86	2.31	0.000%
50	-2.58	-20.86	-4.44	2.58	20.86	4.44	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	5	0.00000001	0.00007468
3	Yes	4	0.00000001	0.00081977
4	Yes	6	0.00000001	0.00032063
5	Yes	6	0.00000001	0.00009551
6	Yes	6	0.00000001	0.00029393
7	Yes	6	0.00000001	0.00008936
8	Yes	5	0.00000001	0.00022056
9	Yes	5	0.00000001	0.00009690
10	Yes	6	0.00000001	0.00030993
11	Yes	6	0.00000001	0.00009353
12	Yes	6	0.00000001	0.00031971
13	Yes	6	0.00000001	0.00009493
14	Yes	5	0.00000001	0.00013145
15	Yes	5	0.00000001	0.00005363
16	Yes	6	0.00000001	0.00030966
17	Yes	6	0.00000001	0.00009183
18	Yes	6	0.00000001	0.00030127
19	Yes	6	0.00000001	0.00009197
20	Yes	5	0.00000001	0.00014200
21	Yes	5	0.00000001	0.00006103
22	Yes	6	0.00000001	0.00030455
23	Yes	6	0.00000001	0.00009169
24	Yes	6	0.00000001	0.00031502
25	Yes	6	0.00000001	0.00009342
26	Yes	4	0.00000001	0.00036919
27	Yes	7	0.00000001	0.00015852
28	Yes	7	0.00000001	0.00022105
29	Yes	7	0.00000001	0.00021321
30	Yes	7	0.00000001	0.00015667
31	Yes	7	0.00000001	0.00021646
32	Yes	7	0.00000001	0.00021618
33	Yes	7	0.00000001	0.00015750
34	Yes	7	0.00000001	0.00021675
35	Yes	7	0.00000001	0.00020998
36	Yes	7	0.00000001	0.00015541
37	Yes	7	0.00000001	0.00021440
38	Yes	7	0.00000001	0.00021636
39	Yes	4	0.00000001	0.00042319
40	Yes	5	0.00000001	0.00014311
41	Yes	5	0.00000001	0.00011977
42	Yes	4	0.00000001	0.00050428
43	Yes	5	0.00000001	0.00013538
44	Yes	5	0.00000001	0.00013954
45	Yes	4	0.00000001	0.00042593
46	Yes	5	0.00000001	0.00013635

47	Yes	5	0.00000001	0.00012782
48	Yes	4	0.00000001	0.00048647
49	Yes	5	0.00000001	0.00012698
50	Yes	5	0.00000001	0.00014278

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	98 - 93	15.8153	44	1.44	0.00
L2	93 - 88	14.3073	44	1.44	0.00
L3	88 - 82.79	12.8104	44	1.42	0.00
L4	85.21 - 80.21	11.9905	44	1.39	0.00
L5	80.21 - 75.21	10.5556	44	1.34	0.00
L6	75.21 - 70.21	9.1866	44	1.27	0.00
L7	70.21 - 65.21	7.9027	44	1.18	0.00
L8	65.21 - 60.21	6.7265	44	1.07	0.00
L9	60.21 - 59.17	5.6774	44	0.93	0.00
L10	59.17 - 58.9	5.4771	44	0.91	0.00
L11	58.9 - 58.75	5.4260	44	0.90	0.00
L12	58.75 - 53.75	5.3977	44	0.90	0.00
L13	53.75 - 52.92	4.4965	44	0.82	0.00
L14	52.92 - 52.67	4.3550	44	0.81	0.00
L15	52.67 - 52.17	4.3128	44	0.80	0.00
L16	52.17 - 51.92	4.2290	44	0.80	0.00
L17	51.92 - 45.29	4.1875	44	0.79	0.00
L18	48.71 - 44.29	3.6760	44	0.73	0.00
L19	44.29 - 39.29	3.0188	44	0.68	0.00
L20	39.29 - 34.29	2.3493	44	0.60	0.00
L21	34.29 - 33.5	1.7723	44	0.51	0.00
L22	33.5 - 33.25	1.6897	44	0.49	0.00
L23	33.25 - 32	1.6640	44	0.49	0.00
L24	32 - 31.75	1.5378	44	0.47	0.00
L25	31.75 - 28.5	1.5131	44	0.47	0.00
L26	28.5 - 28.25	1.2105	40	0.42	0.00
L27	28.25 - 27.5	1.1887	40	0.42	0.00
L28	27.5 - 27.25	1.1241	40	0.41	0.00
L29	27.25 - 22.25	1.1029	40	0.40	0.00
L30	22.25 - 17.25	0.7230	40	0.32	0.00
L31	17.25 - 15.5	0.4278	40	0.24	0.00
L32	15.5 - 15.25	0.3442	40	0.21	0.00
L33	15.25 - 13.42	0.3331	40	0.21	0.00
L34	13.42 - 13.17	0.2579	40	0.18	0.00
L35	13.17 - 13	0.2485	40	0.18	0.00
L36	13 - 12.75	0.2423	40	0.17	0.00
L37	12.75 - 7.75	0.2332	40	0.17	0.00
L38	7.75 - 6.5	0.0885	40	0.11	0.00
L39	6.5 - 6.25	0.0630	40	0.09	0.00
L40	6.25 - 4.5	0.0585	40	0.09	0.00
L41	4.5 - 4.25	0.0310	40	0.06	0.00
L42	4.25 - 2.5	0.0278	40	0.06	0.00
L43	2.5 - 2.25	0.0097	40	0.04	0.00
L44	2.25 - 2	0.0078	40	0.03	0.00
L45	2 - 1.75	0.0062	40	0.03	0.00
L46	1.75 - 0.5	0.0047	40	0.03	0.00
L47	0.5 - 0.25	0.0004	40	0.01	0.00
L48	0.25 - 0	0.0001	40	0.00	0.00

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
94.00	Platform Mount [LP 601-1]	44	14.6086	1.44	0.00	26725
89.00	Platform Mount [LP 305-1]	44	13.1075	1.42	0.00	9252
74.00	Platform Mount [LP 303-1]	44	8.8673	1.25	0.00	3323
67.00	Platform Mount [LP 303-1]	44	7.1339	1.11	0.00	2490
52.00	Side Arm Mount [SO 701-1]	44	4.2008	0.79	0.00	3450

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	98 - 93	68.1890	12	6.22	0.01
L2	93 - 88	61.6937	12	6.22	0.01
L3	88 - 82.79	55.2461	12	6.12	0.01
L4	85.21 - 80.21	51.7140	12	6.00	0.01
L5	80.21 - 75.21	45.5320	12	5.80	0.01
L6	75.21 - 70.21	39.6328	12	5.49	0.01
L7	70.21 - 65.21	34.0986	12	5.09	0.00
L8	65.21 - 60.21	29.0266	12	4.61	0.00
L9	60.21 - 59.17	24.5017	12	4.04	0.00
L10	59.17 - 58.9	23.6372	12	3.91	0.00
L11	58.9 - 58.75	23.4169	12	3.89	0.00
L12	58.75 - 53.75	23.2948	12	3.88	0.00
L13	53.75 - 52.92	19.4065	12	3.55	0.00
L14	52.92 - 52.67	18.7956	12	3.49	0.00
L15	52.67 - 52.17	18.6136	12	3.47	0.00
L16	52.17 - 51.92	18.2523	12	3.44	0.00
L17	51.92 - 45.29	18.0730	12	3.42	0.00
L18	48.71 - 44.29	15.8656	12	3.16	0.00
L19	44.29 - 39.29	13.0293	12	2.95	0.00
L20	39.29 - 34.29	10.1399	12	2.57	0.00
L21	34.29 - 33.5	7.6495	12	2.19	0.00
L22	33.5 - 33.25	7.2929	12	2.13	0.00
L23	33.25 - 32	7.1820	12	2.11	0.00
L24	32 - 31.75	6.6373	12	2.05	0.00
L25	31.75 - 28.5	6.5305	12	2.03	0.00
L26	28.5 - 28.25	5.2243	12	1.81	0.00
L27	28.25 - 27.5	5.1301	12	1.79	0.00
L28	27.5 - 27.25	4.8510	12	1.76	0.00
L29	27.25 - 22.25	4.7594	12	1.74	0.00
L30	22.25 - 17.25	3.1190	12	1.39	0.00
L31	17.25 - 15.5	1.8452	4	1.04	0.00
L32	15.5 - 15.25	1.4848	4	0.92	0.00
L33	15.25 - 13.42	1.4368	4	0.91	0.00
L34	13.42 - 13.17	1.1125	4	0.78	0.00
L35	13.17 - 13	1.0719	4	0.77	0.00
L36	13 - 12.75	1.0449	4	0.75	0.00
L37	12.75 - 7.75	1.0058	4	0.74	0.00
L38	7.75 - 6.5	0.3816	4	0.45	0.00
L39	6.5 - 6.25	0.2719	4	0.38	0.00
L40	6.25 - 4.5	0.2521	4	0.37	0.00
L41	4.5 - 4.25	0.1338	4	0.27	0.00
L42	4.25 - 2.5	0.1198	4	0.26	0.00
L43	2.5 - 2.25	0.0418	4	0.16	0.00
L44	2.25 - 2	0.0337	4	0.14	0.00
L45	2 - 1.75	0.0266	4	0.13	0.00
L46	1.75 - 0.5	0.0205	4	0.11	0.00
L47	0.5 - 0.25	0.0017	4	0.03	0.00
L48	0.25 - 0	0.0004	4	0.02	0.00

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
94.00	Platform Mount [LP 601-1]	12	62.9916	6.22	0.01	6348
89.00	Platform Mount [LP 305-1]	12	56.5257	6.15	0.01	2194
74.00	Platform Mount [LP 303-1]	12	38.2566	5.40	0.01	783
67.00	Platform Mount [LP 303-1]	12	30.7839	4.78	0.00	585
52.00	Side Arm Mount [SO 701-1]	12	18.1303	3.42	0.00	805

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	98 - 93 (1)	TP13.0782x12x0.1875	5.00	0.00	0.0	7.6716	-1.53	569.96	0.003
L2	93 - 88 (2)	TP14.1565x13.0782x0.1875	5.00	0.00	0.0	8.3133	-3.33	617.64	0.005
L3	88 - 82.79 (3)	TP15.28x14.1565x0.1875	5.21	0.00	0.0	8.6713	-3.46	644.24	0.005
L4	82.79 - 80.21 (4)	TP15.4449x14.3831x0.25	5.00	0.00	0.0	12.0571	-3.84	895.78	0.004
L5	80.21 - 75.21 (5)	TP16.5066x15.4449x0.25	5.00	0.00	0.0	12.8996	-4.17	958.38	0.004
L6	75.21 - 70.21 (6)	TP17.5683x16.5066x0.25	5.00	0.00	0.0	13.7421	-7.40	1020.97	0.007
L7	70.21 - 65.21 (7)	TP18.6301x17.5683x0.25	5.00	0.00	0.0	14.5846	-10.34	1083.56	0.010
L8	65.21 - 60.21 (8)	TP19.6918x18.6301x0.25	5.00	0.00	0.0	15.4271	-10.94	1146.15	0.010
L9	60.21 - 59.17 (9)	TP19.9126x19.6918x0.25	1.04	0.00	0.0	15.6023	-11.07	1159.17	0.010
L10	59.17 - 58.9 (10)	TP19.97x19.9126x0.5125	0.27	0.00	0.0	31.6510	-11.13	2351.51	0.005
L11	58.9 - 58.75 (11)	TP20.0018x19.97x0.5125	0.15	0.00	0.0	31.7028	-11.15	2355.36	0.005
L12	58.75 - 53.75 (12)	TP21.0635x20.0018x0.5	5.00	0.00	0.0	32.6344	-11.93	2424.57	0.005
L13	53.75 - 52.92 (13)	TP21.2398x21.0635x0.5	0.83	0.00	0.0	32.9141	-12.07	2445.35	0.005
L14	52.92 - 52.67 (14)	TP21.2929x21.2398x0.5	0.25	0.00	0.0	32.9983	-12.13	2451.61	0.005
L15	52.67 - 52.17 (15)	TP21.3991x21.2929x0.5	0.50	0.00	0.0	33.1668	-12.22	2464.13	0.005
L16	52.17 - 51.92 (16)	TP21.4521x21.3991x0.4375	0.25	0.00	0.0	29.1815	-12.34	2168.04	0.006
L17	51.92 - 45.29 (17)	TP22.86x21.4521x0.4375	6.63	0.00	0.0	30.1280	-12.90	2238.36	0.006
L18	45.29 - 44.29 (18)	TP22.5744x21.6338x0.5438	4.42	0.00	0.0	38.0219	-14.14	2824.84	0.005
L19	44.29 - 39.29 (19)	TP23.6385x22.5744x0.5313	5.00	0.00	0.0	38.9631	-15.13	2894.77	0.005
L20	39.29 - 34.29 (20)	TP24.7026x23.6385x0.5188	5.00	0.00	0.0	39.8190	-16.15	2958.35	0.005
L21	34.29 - 33.5 (21)	TP24.8707x24.7026x0.5125	0.79	0.00	0.0	39.6229	-16.32	2943.78	0.006
L22	33.5 - 33.25 (22)	TP24.9239x24.8707x0.8125	0.25	0.00	0.0	62.1803	-16.40	4619.68	0.004
L23	33.25 - 32 (23)	TP25.1899x24.9239x0.8	1.25	0.00	0.0	61.9309	-16.73	4601.15	0.004
L24	32 - 31.75 (24)	TP25.2431x25.1899x0.5875	0.25	0.00	0.0	45.9760	-16.79	3415.78	0.005
L25	31.75 - 28.5 (25)	TP25.9348x25.2431x0.575	3.25	0.00	0.0	46.2828	-17.52	3438.58	0.005

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L26	28.5 - 28.25 (26)	TP25.988x25.9348x0.8625	0.25	0.00	0.0	68.7829	-17.61	5110.22	0.003
L27	28.25 - 27.5 (27)	TP26.1476x25.988x0.85	0.75	0.00	0.0	68.2504	-17.83	5070.66	0.004
L28	27.5 - 27.25 (28)	TP26.2008x26.1476x0.575	0.25	0.00	0.0	46.7683	-17.89	3474.65	0.005
L29	27.25 - 22.25 (29)	TP27.2649x26.2008x0.5625	5.00	0.00	0.0	47.6737	-19.05	3541.92	0.005
L30	22.25 - 17.25 (30)	TP28.3289x27.2649x0.55	5.00	0.00	0.0	48.4937	-20.25	3602.84	0.006
L31	17.25 - 15.5 (31)	TP28.7014x28.3289x0.55	1.75	0.00	0.0	49.1438	-20.67	3651.14	0.006
L32	15.5 - 15.25 (32)	TP28.7546x28.7014x0.55	0.25	0.00	0.0	49.2367	-20.75	3658.04	0.006
L33	15.25 - 13.42 (33)	TP29.144x28.7546x0.55	1.83	0.00	0.0	49.9166	-21.23	3708.55	0.006
L34	13.42 - 13.17 (34)	TP29.1972x29.144x0.5	0.25	0.00	0.0	45.5425	-21.31	3383.58	0.006
L35	13.17 - 13 (35)	TP29.2334x29.1972x0.5	0.17	0.00	0.0	45.5999	-21.35	3387.85	0.006
L36	13 - 12.75 (36)	TP29.2866x29.2334x0.6625	0.25	0.00	0.0	60.1901	-21.42	4471.82	0.005
L37	12.75 - 7.75 (37)	TP30.3507x29.2866x0.65	5.00	0.00	0.0	61.2755	-22.87	4552.46	0.005
L38	7.75 - 6.5 (38)	TP30.6167x30.3507x0.65	1.25	0.00	0.0	61.8243	-23.20	4593.24	0.005
L39	6.5 - 6.25 (39)	TP30.6699x30.6167x0.6625	0.25	0.00	0.0	63.0988	-23.29	4687.93	0.005
L40	6.25 - 4.5 (40)	TP31.0423x30.6699x0.65	1.75	0.00	0.0	62.7024	-23.79	4658.48	0.005
L41	4.5 - 4.25 (41)	TP31.0955x31.0423x0.65	0.25	0.00	0.0	62.8122	-23.87	4666.63	0.005
L42	4.25 - 2.5 (42)	TP31.468x31.0955x0.6375	1.75	0.00	0.0	62.3831	-24.33	4634.75	0.005
L43	2.5 - 2.25 (43)	TP31.5212x31.468x0.45	0.25	0.00	0.0	44.3789	-24.41	3297.13	0.007
L44	2.25 - 2 (44)	TP31.5744x31.5212x0.45	0.25	0.00	0.0	44.4549	-24.48	3302.78	0.007
L45	2 - 1.75 (45)	TP31.6276x31.5744x0.5625	0.25	0.00	0.0	55.4628	-24.55	4120.61	0.006
L46	1.75 - 0.5 (46)	TP31.8936x31.6276x0.5625	1.25	0.00	0.0	55.9377	-24.89	4155.90	0.006
L47	0.5 - 0.25 (47)	TP31.9468x31.8936x0.5313	0.25	0.00	0.0	52.9725	-24.97	3935.59	0.006
L48	0.25 - 0 (48)	TP32x31.9468x0.525	0.25	0.00	0.0	52.4484	-25.03	3896.65	0.006

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	98 - 93 (1)	TP13.0782x12x0.1875	5.07	150.09	0.034	0.00	150.09	0.000
L2	93 - 88 (2)	TP14.1565x13.0782x0.1875	24.25	176.44	0.137	0.00	176.44	0.000
L3	88 - 82.79 (3)	TP15.28x14.1565x0.1875	40.75	192.07	0.212	0.00	192.07	0.000
L4	82.79 - 80.21 (4)	TP15.4449x14.3831x0.25	71.12	277.53	0.256	0.00	277.53	0.000
L5	80.21 - 75.21 (5)	TP16.5066x15.4449x0.25	102.52	318.00	0.322	0.00	318.00	0.000
L6	75.21 - 70.21 (6)	TP17.5683x16.5066x0.25	164.16	361.23	0.454	0.00	361.23	0.000
L7	70.21 - 65.21 (7)	TP18.6301x17.5683x0.25	230.44	407.22	0.566	0.00	407.22	0.000
L8	65.21 - 60.21	TP19.6918x18.6301x0.25	315.19	455.96	0.691	0.00	455.96	0.000

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L9	60.21 - 59.17 (8)	TP19.9126x19.6918x0.25	333.07	466.44	0.714	0.00	466.44	0.000
L10	59.17 - 58.9 (9)	TP19.97x19.9126x0.5125	337.72	923.92	0.366	0.00	923.92	0.000
L11	58.9 - 58.75 (10)	TP20.0018x19.97x0.5125	340.30	926.98	0.367	0.00	926.98	0.000
L12	58.75 - 53.75 (11)	TP21.0635x20.0018x0.5	427.51	1008.77	0.424	0.00	1008.77	0.000
L13	53.75 - 52.92 (12)	TP21.2398x21.0635x0.5	442.35	1026.34	0.431	0.00	1026.34	0.000
L14	52.92 - 52.67 (13)	TP21.2929x21.2398x0.5	446.83	1031.67	0.433	0.00	1031.67	0.000
L15	52.67 - 52.17 (14)	TP21.3991x21.2929x0.5	455.82	1042.35	0.437	0.00	1042.35	0.000
L16	52.17 - 51.92 (15)	TP21.4521x21.3991x0.4375	460.34	924.98	0.498	0.00	924.98	0.000
L17	51.92 - 45.29 (16)	TP22.86x21.4521x0.4375	518.99	986.59	0.526	0.00	986.59	0.000
L18	45.29 - 44.29 (17)	TP22.5744x21.6338x0.5438	601.70	1258.71	0.478	0.00	1258.71	0.000
L19	44.29 - 39.29 (18)	TP23.6385x22.5744x0.5313	697.87	1355.13	0.515	0.00	1355.13	0.000
L20	39.29 - 34.29 (19)	TP24.7026x23.6385x0.5188	796.66	1451.61	0.549	0.00	1451.61	0.000
L21	34.29 - 33.5 (20)	TP24.8707x24.7026x0.5125	812.51	1455.46	0.558	0.00	1455.46	0.000
L22	33.5 - 33.25 (21)	TP24.9239x24.8707x0.8125	817.54	2233.23	0.366	0.00	2233.23	0.000
L23	33.25 - 32 (22)	TP25.1899x24.9239x0.8	842.79	2251.93	0.374	0.00	2251.93	0.000
L24	32 - 31.75 (23)	TP25.2431x25.1899x0.5875	847.87	1704.79	0.497	0.00	1704.79	0.000
L25	31.75 - 28.5 (24)	TP25.9348x25.2431x0.575	914.43	1767.18	0.517	0.00	1767.18	0.000
L26	28.5 - 28.25 (25)	TP25.988x25.9348x0.8625	919.61	2572.70	0.357	0.00	2572.70	0.000
L27	28.25 - 27.5 (26)	TP26.1476x25.988x0.85	935.15	2572.07	0.364	0.00	2572.07	0.000
L28	27.5 - 27.25 (27)	TP26.2008x26.1476x0.575	940.35	1804.87	0.521	0.00	1804.87	0.000
L29	27.25 - 22.25 (28)	TP27.2649x26.2008x0.5625	1044.97	1919.68	0.544	0.00	1919.68	0.000
L30	22.25 - 17.25 (29)	TP28.3289x27.2649x0.55	1150.77	2033.94	0.566	0.00	2033.94	0.000
L31	17.25 - 15.5 (30)	TP28.7014x28.3289x0.55	1188.04	2089.38	0.569	0.00	2089.38	0.000
L32	15.5 - 15.25 (31)	TP28.7546x28.7014x0.55	1193.38	2097.36	0.569	0.00	2097.36	0.000
L33	15.25 - 13.42 (32)	TP29.144x28.7546x0.55	1232.60	2156.24	0.572	0.00	2156.24	0.000
L34	13.42 - 13.17 (33)	TP29.1972x29.144x0.5	1237.98	1977.92	0.626	0.00	1977.92	0.000
L35	13.17 - 13 (34)	TP29.2334x29.1972x0.5	1241.65	1982.95	0.626	0.00	1982.95	0.000
L36	13 - 12.75 (35)	TP29.2866x29.2334x0.6625	1247.04	2592.82	0.481	0.00	2592.82	0.000
L37	12.75 - 7.75 (36)	TP30.3507x29.2866x0.65	1355.55	2742.22	0.494	0.00	2742.22	0.000
L38	7.75 - 6.5 (37)	TP30.6167x30.3507x0.65	1382.97	2792.10	0.495	0.00	2792.10	0.000
L39	6.5 - 6.25 (38)	TP30.6699x30.6167x0.6625	1388.53	2852.45	0.487	0.00	2852.45	0.000
L40	6.25 - 4.5 (39)	TP31.0423x30.6699x0.65	1427.53	2872.83	0.497	0.00	2872.83	0.000
L41	4.5 - 4.25 (40)	TP31.0955x31.0423x0.65	1433.11	2883.00	0.497	0.00	2883.00	0.000
L42	4.25 - 2.5 (41)	TP31.468x31.0955x0.6375	1472.22	2901.42	0.507	0.00	2901.42	0.000
L43	2.5 - 2.25 (42)	TP31.5212x31.468x0.45	1477.82	2092.87	0.706	0.00	2092.87	0.000
L44	2.25 - 2 (43)	TP31.5744x31.5212x0.45	1483.41	2100.09	0.706	0.00	2100.09	0.000
L45	2 - 1.75 (44)	TP31.6276x31.5744x0.56	1489.01	2605.75	0.571	0.00	2605.75	0.000

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L46	1.75 - 0.5 (46)	TP31.8936x31.6276x0.5625	1517.03	2650.97	0.572	0.00	2650.97	0.000
L47	0.5 - 0.25 (47)	TP31.9468x31.8936x0.5313	1522.63	2519.79	0.604	0.00	2519.79	0.000
L48	0.25 - 0 (48)	TP32x31.9468x0.525	1528.24	2500.15	0.611	0.00	2500.15	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	98 - 93 (1)	TP13.0782x12x0.1875	2.85	284.98	0.010	0.23	300.54	0.001
L2	93 - 88 (2)	TP14.1565x13.0782x0.1875	5.86	308.82	0.019	0.23	353.31	0.001
L3	88 - 82.79 (3)	TP15.28x14.1565x0.1875	5.97	322.12	0.019	0.23	384.61	0.001
L4	82.79 - 80.21 (4)	TP15.4449x14.3831x0.25	6.18	447.89	0.014	0.22	555.73	0.000
L5	80.21 - 75.21 (5)	TP16.5066x15.4449x0.25	6.38	479.19	0.013	0.22	636.78	0.000
L6	75.21 - 70.21 (6)	TP17.5683x16.5066x0.25	11.29	510.48	0.022	0.32	723.35	0.000
L7	70.21 - 65.21 (7)	TP18.6301x17.5683x0.25	16.73	541.78	0.031	0.14	815.43	0.000
L8	65.21 - 60.21 (8)	TP19.6918x18.6301x0.25	17.18	573.08	0.030	0.09	913.02	0.000
L9	60.21 - 59.17 (9)	TP19.9126x19.6918x0.25	17.22	579.59	0.030	0.08	934.02	0.000
L10	59.17 - 58.9 (10)	TP19.97x19.9126x0.5125	17.23	1175.75	0.015	0.08	1850.10	0.000
L11	58.9 - 58.75 (11)	TP20.0018x19.97x0.5125	17.23	1177.68	0.015	0.08	1856.24	0.000
L12	58.75 - 53.75 (12)	TP21.0635x20.0018x0.5	17.83	1212.28	0.015	0.17	2020.01	0.000
L13	53.75 - 52.92 (13)	TP21.2398x21.0635x0.5	17.92	1222.68	0.015	0.18	2055.19	0.000
L14	52.92 - 52.67 (14)	TP21.2929x21.2398x0.5	17.94	1225.80	0.015	0.19	2065.85	0.000
L15	52.67 - 52.17 (15)	TP21.3991x21.2929x0.5	18.00	1232.06	0.015	0.19	2087.25	0.000
L16	52.17 - 51.92 (16)	TP21.4521x21.3991x0.4375	18.10	1084.02	0.017	0.19	1852.22	0.000
L17	51.92 - 45.29 (17)	TP22.86x21.4521x0.4375	18.45	1119.18	0.016	0.06	1975.59	0.000
L18	45.29 - 44.29 (18)	TP22.5744x21.6338x0.5438	18.98	1412.42	0.013	0.11	2520.49	0.000
L19	44.29 - 39.29 (19)	TP23.6385x22.5744x0.5313	19.51	1447.38	0.013	0.16	2713.58	0.000
L20	39.29 - 34.29 (20)	TP24.7026x23.6385x0.5188	20.03	1479.17	0.014	0.21	2906.77	0.000
L21	34.29 - 33.5 (21)	TP24.8707x24.7026x0.5125	20.11	1471.89	0.014	0.21	2914.48	0.000
L22	33.5 - 33.25 (22)	TP24.9239x24.8707x0.8125	20.13	2309.84	0.009	0.22	4471.93	0.000
L23	33.25 - 32 (23)	TP25.1899x24.9239x0.8	20.29	2300.58	0.009	0.23	4509.35	0.000
L24	32 - 31.75 (24)	TP25.2431x25.1899x0.5875	20.31	1707.89	0.012	0.23	3413.76	0.000
L25	31.75 - 28.5 (25)	TP25.9348x25.2431x0.575	20.67	1719.29	0.012	0.25	3538.68	0.000
L26	28.5 - 28.25 (26)	TP25.988x25.9348x0.8625	20.69	2555.11	0.008	0.25	5151.68	0.000
L27	28.25 - 27.5 (27)	TP26.1476x25.988x0.85	20.78	2535.33	0.008	0.25	5150.44	0.000
L28	27.5 - 27.25	TP26.2008x26.1476x0.57	20.80	1737.33	0.012	0.26	3614.14	0.000

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
	(28)	5						
L29	27.25 - 22.25	TP27.2649x26.2008x0.56	21.06	1770.96	0.012	0.26	3844.04	0.000
	(29)	25						
L30	22.25 - 17.25	TP28.3289x27.2649x0.55	21.28	1801.42	0.012	0.26	4072.86	0.000
	(30)							
L31	17.25 - 15.5	TP28.7014x28.3289x0.55	21.36	1825.57	0.012	0.26	4183.88	0.000
	(31)							
L32	15.5 - 15.25	TP28.7546x28.7014x0.55	21.35	1829.02	0.012	0.26	4199.85	0.000
	(32)							
L33	15.25 - 13.42	TP29.144x28.7546x0.55	21.54	1854.28	0.012	0.28	4317.76	0.000
	(33)							
L34	13.42 - 13.17	TP29.1972x29.144x0.5	21.54	1691.79	0.013	0.28	3960.67	0.000
	(34)							
L35	13.17 - 13	TP29.2334x29.1972x0.5	21.56	1693.92	0.013	0.28	3970.74	0.000
	(35)							
L36	13 - 12.75	TP29.2866x29.2334x0.66	21.58	2235.91	0.010	0.29	5191.98	0.000
	(36)	25						
L37	12.75 - 7.75	TP30.3507x29.2866x0.65	21.83	2276.23	0.010	0.29	5491.16	0.000
	(37)							
L38	7.75 - 6.5 (38)	TP30.6167x30.3507x0.65	22.26	2296.62	0.010	0.53	5591.02	0.000
L39	6.5 - 6.25 (39)	TP30.6699x30.6167x0.66	22.26	2343.96	0.009	0.53	5711.87	0.000
		25						
L40	6.25 - 4.5 (40)	TP31.0423x30.6699x0.65	22.33	2329.24	0.010	0.53	5752.69	0.000
L41	4.5 - 4.25 (41)	TP31.0955x31.0423x0.65	22.32	2333.32	0.010	0.53	5773.06	0.000
L42	4.25 - 2.5 (42)	TP31.468x31.0955x0.637	22.40	2317.38	0.010	0.53	5809.94	0.000
		5						
L43	2.5 - 2.25 (43)	TP31.5212x31.468x0.45	22.39	1648.57	0.014	0.53	4190.86	0.000
L44	2.25 - 2 (44)	TP31.5744x31.5212x0.45	22.39	1651.39	0.014	0.53	4205.32	0.000
L45	2 - 1.75 (45)	TP31.6276x31.5744x0.56	22.40	2060.30	0.011	0.53	5217.88	0.000
		25						
L46	1.75 - 0.5 (46)	TP31.8936x31.6276x0.56	22.45	2077.95	0.011	0.53	5308.43	0.000
		25						
L47	0.5 - 0.25 (47)	TP31.9468x31.8936x0.53	22.44	1967.80	0.011	0.53	5045.74	0.000
		13						
L48	0.25 - 0 (48)	TP32x31.9468x0.525	22.45	1948.33	0.012	0.53	5006.41	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	98 - 93 (1)	0.003	0.034	0.000	0.010	0.001	0.037	1.000	4.8.2
L2	93 - 88 (2)	0.005	0.137	0.000	0.019	0.001	0.143	1.000	4.8.2
L3	88 - 82.79 (3)	0.005	0.212	0.000	0.019	0.001	0.218	1.000	4.8.2
L4	82.79 - 80.21	0.004	0.256	0.000	0.014	0.000	0.261	1.000	4.8.2
	(4)								
L5	80.21 - 75.21	0.004	0.322	0.000	0.013	0.000	0.327	1.000	4.8.2
	(5)								
L6	75.21 - 70.21	0.007	0.454	0.000	0.022	0.000	0.462	1.000	4.8.2
	(6)								
L7	70.21 - 65.21	0.010	0.566	0.000	0.031	0.000	0.576	1.000	4.8.2
	(7)								
L8	65.21 - 60.21	0.010	0.691	0.000	0.030	0.000	0.702	1.000	4.8.2
	(8)								
L9	60.21 - 59.17	0.010	0.714	0.000	0.030	0.000	0.724	1.000	4.8.2
	(9)								
L10	59.17 - 58.9	0.005	0.366	0.000	0.015	0.000	0.370	1.000	4.8.2
	(10)								
L11	58.9 - 58.75	0.005	0.367	0.000	0.015	0.000	0.372	1.000	4.8.2
	(11)								
L12	58.75 - 53.75	0.005	0.424	0.000	0.015	0.000	0.429	1.000	4.8.2
	(12)								
L13	53.75 - 52.92	0.005	0.431	0.000	0.015	0.000	0.436	1.000	4.8.2

Section No.	Elevation ft	Ratio P_u / ϕP_n	Ratio M_{ux} / ϕM_{nx}	Ratio M_{uy} / ϕM_{ny}	Ratio V_u / ϕV_n	Ratio T_u / ϕT_n	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
	(13)								
L14	52.92 - 52.67	0.005	0.433	0.000	0.015	0.000	0.438	1.000	4.8.2
	(14)								
L15	52.67 - 52.17	0.005	0.437	0.000	0.015	0.000	0.442	1.000	4.8.2
	(15)								
L16	52.17 - 51.92	0.006	0.498	0.000	0.017	0.000	0.504	1.000	4.8.2
	(16)								
L17	51.92 - 45.29	0.006	0.526	0.000	0.016	0.000	0.532	1.000	4.8.2
	(17)								
L18	45.29 - 44.29	0.005	0.478	0.000	0.013	0.000	0.483	1.000	4.8.2
	(18)								
L19	44.29 - 39.29	0.005	0.515	0.000	0.013	0.000	0.520	1.000	4.8.2
	(19)								
L20	39.29 - 34.29	0.005	0.549	0.000	0.014	0.000	0.554	1.000	4.8.2
	(20)								
L21	34.29 - 33.5	0.006	0.558	0.000	0.014	0.000	0.564	1.000	4.8.2
	(21)								
L22	33.5 - 33.25	0.004	0.366	0.000	0.009	0.000	0.370	1.000	4.8.2
	(22)								
L23	33.25 - 32	0.004	0.374	0.000	0.009	0.000	0.378	1.000	4.8.2
	(23)								
L24	32 - 31.75	0.005	0.497	0.000	0.012	0.000	0.502	1.000	4.8.2
	(24)								
L25	31.75 - 28.5	0.005	0.517	0.000	0.012	0.000	0.523	1.000	4.8.2
	(25)								
L26	28.5 - 28.25	0.003	0.357	0.000	0.008	0.000	0.361	1.000	4.8.2
	(26)								
L27	28.25 - 27.5	0.004	0.364	0.000	0.008	0.000	0.367	1.000	4.8.2
	(27)								
L28	27.5 - 27.25	0.005	0.521	0.000	0.012	0.000	0.526	1.000	4.8.2
	(28)								
L29	27.25 - 22.25	0.005	0.544	0.000	0.012	0.000	0.550	1.000	4.8.2
	(29)								
L30	22.25 - 17.25	0.006	0.566	0.000	0.012	0.000	0.572	1.000	4.8.2
	(30)								
L31	17.25 - 15.5	0.006	0.569	0.000	0.012	0.000	0.574	1.000	4.8.2
	(31)								
L32	15.5 - 15.25	0.006	0.569	0.000	0.012	0.000	0.575	1.000	4.8.2
	(32)								
L33	15.25 - 13.42	0.006	0.572	0.000	0.012	0.000	0.578	1.000	4.8.2
	(33)								
L34	13.42 - 13.17	0.006	0.626	0.000	0.013	0.000	0.632	1.000	4.8.2
	(34)								
L35	13.17 - 13	0.006	0.626	0.000	0.013	0.000	0.633	1.000	4.8.2
	(35)								
L36	13 - 12.75	0.005	0.481	0.000	0.010	0.000	0.486	1.000	4.8.2
	(36)								
L37	12.75 - 7.75	0.005	0.494	0.000	0.010	0.000	0.499	1.000	4.8.2
	(37)								
L38	7.75 - 6.5 (38)	0.005	0.495	0.000	0.010	0.000	0.500	1.000	4.8.2
L39	6.5 - 6.25 (39)	0.005	0.487	0.000	0.009	0.000	0.492	1.000	4.8.2
L40	6.25 - 4.5 (40)	0.005	0.497	0.000	0.010	0.000	0.502	1.000	4.8.2
L41	4.5 - 4.25 (41)	0.005	0.497	0.000	0.010	0.000	0.502	1.000	4.8.2
L42	4.25 - 2.5 (42)	0.005	0.507	0.000	0.010	0.000	0.513	1.000	4.8.2
L43	2.5 - 2.25 (43)	0.007	0.706	0.000	0.014	0.000	0.714	1.000	4.8.2
L44	2.25 - 2 (44)	0.007	0.706	0.000	0.014	0.000	0.714	1.000	4.8.2
L45	2 - 1.75 (45)	0.006	0.571	0.000	0.011	0.000	0.578	1.000	4.8.2
L46	1.75 - 0.5 (46)	0.006	0.572	0.000	0.011	0.000	0.578	1.000	4.8.2
L47	0.5 - 0.25 (47)	0.006	0.604	0.000	0.011	0.000	0.611	1.000	4.8.2
L48	0.25 - 0 (48)	0.006	0.611	0.000	0.012	0.000	0.618	1.000	4.8.2

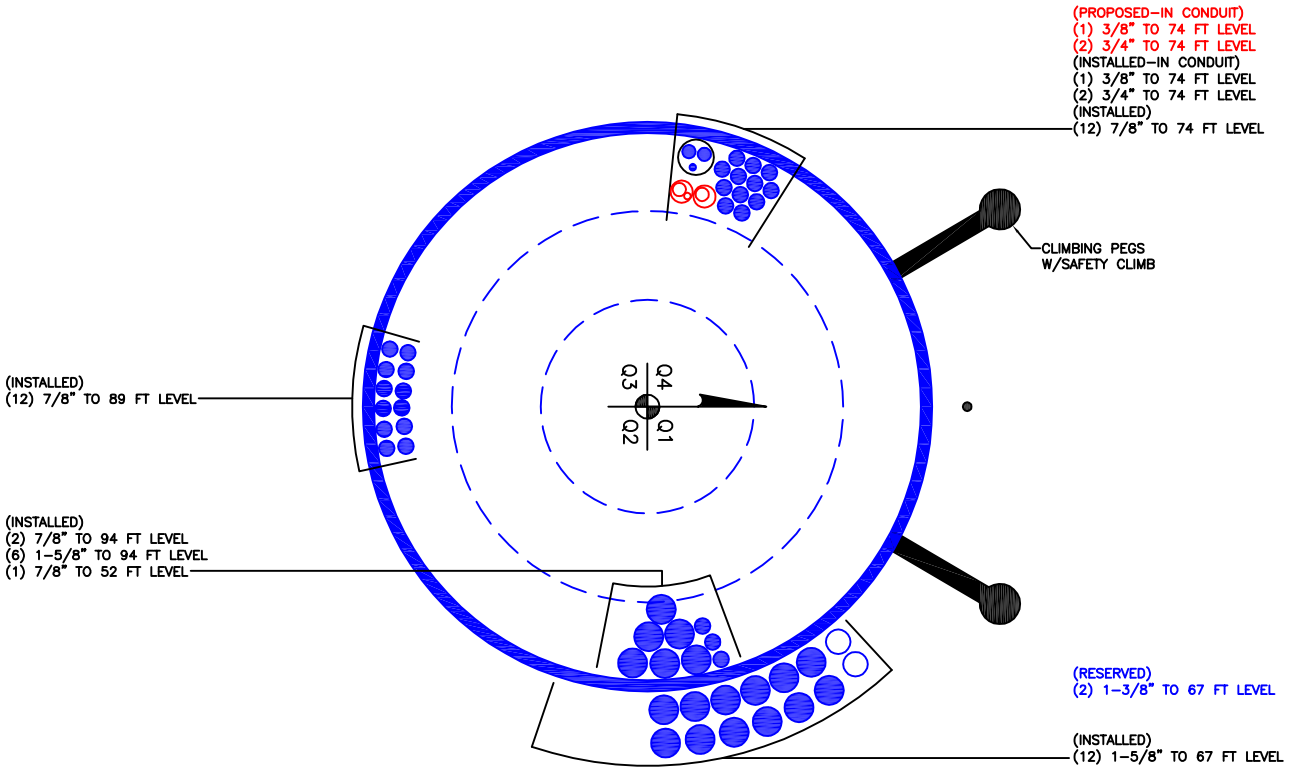
Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	98 - 93	Pole	TP13.0782x12x0.1875	1	-1.53	569.96	3.7	Pass
L2	93 - 88	Pole	TP14.1565x13.0782x0.1875	2	-3.33	617.64	14.3	Pass
L3	88 - 82.79	Pole	TP15.28x14.1565x0.1875	3	-3.46	644.24	21.8	Pass
L4	82.79 - 80.21	Pole	TP15.4449x14.3831x0.25	4	-3.84	895.78	26.1	Pass
L5	80.21 - 75.21	Pole	TP16.5066x15.4449x0.25	5	-4.17	958.38	32.7	Pass
L6	75.21 - 70.21	Pole	TP17.5683x16.5066x0.25	6	-7.40	1020.97	46.2	Pass
L7	70.21 - 65.21	Pole	TP18.6301x17.5683x0.25	7	-10.34	1083.56	57.6	Pass
L8	65.21 - 60.21	Pole	TP19.6918x18.6301x0.25	8	-10.94	1146.15	70.2	Pass
L9	60.21 - 59.17	Pole	TP19.9126x19.6918x0.25	9	-11.07	1159.17	72.4	Pass
L10	59.17 - 58.9	Pole	TP19.97x19.9126x0.5125	10	-11.13	2351.51	37.0	Pass
L11	58.9 - 58.75	Pole	TP20.0018x19.97x0.5125	11	-11.15	2355.36	37.2	Pass
L12	58.75 - 53.75	Pole	TP21.0635x20.0018x0.5	12	-11.93	2424.57	42.9	Pass
L13	53.75 - 52.92	Pole	TP21.2398x21.0635x0.5	13	-12.07	2445.35	43.6	Pass
L14	52.92 - 52.67	Pole	TP21.2929x21.2398x0.5	14	-12.13	2451.61	43.8	Pass
L15	52.67 - 52.17	Pole	TP21.3991x21.2929x0.5	15	-12.22	2464.13	44.2	Pass
L16	52.17 - 51.92	Pole	TP21.4521x21.3991x0.4375	16	-12.34	2168.04	50.4	Pass
L17	51.92 - 45.29	Pole	TP22.86x21.4521x0.4375	17	-12.90	2238.36	53.2	Pass
L18	45.29 - 44.29	Pole	TP22.5744x21.6338x0.5438	18	-14.14	2824.84	48.3	Pass
L19	44.29 - 39.29	Pole	TP23.6385x22.5744x0.5313	19	-15.13	2894.77	52.0	Pass
L20	39.29 - 34.29	Pole	TP24.7026x23.6385x0.5188	20	-16.15	2958.35	55.4	Pass
L21	34.29 - 33.5	Pole	TP24.8707x24.7026x0.5125	21	-16.32	2943.78	56.4	Pass
L22	33.5 - 33.25	Pole	TP24.9239x24.8707x0.8125	22	-16.40	4619.68	37.0	Pass
L23	33.25 - 32	Pole	TP25.1899x24.9239x0.8	23	-16.73	4601.15	37.8	Pass
L24	32 - 31.75	Pole	TP25.2431x25.1899x0.5875	24	-16.79	3415.78	50.2	Pass
L25	31.75 - 28.5	Pole	TP25.9348x25.2431x0.575	25	-17.52	3438.58	52.3	Pass
L26	28.5 - 28.25	Pole	TP25.988x25.9348x0.8625	26	-17.61	5110.22	36.1	Pass
L27	28.25 - 27.5	Pole	TP26.1476x25.988x0.85	27	-17.83	5070.66	36.7	Pass
L28	27.5 - 27.25	Pole	TP26.2008x26.1476x0.575	28	-17.89	3474.65	52.6	Pass
L29	27.25 - 22.25	Pole	TP27.2649x26.2008x0.5625	29	-19.05	3541.92	55.0	Pass
L30	22.25 - 17.25	Pole	TP28.3289x27.2649x0.55	30	-20.25	3602.84	57.2	Pass
L31	17.25 - 15.5	Pole	TP28.7014x28.3289x0.55	31	-20.67	3651.14	57.4	Pass
L32	15.5 - 15.25	Pole	TP28.7546x28.7014x0.55	32	-20.75	3658.04	57.5	Pass
L33	15.25 - 13.42	Pole	TP29.144x28.7546x0.55	33	-21.23	3708.55	57.8	Pass
L34	13.42 - 13.17	Pole	TP29.1972x29.144x0.5	34	-21.31	3383.58	63.2	Pass
L35	13.17 - 13	Pole	TP29.2334x29.1972x0.5	35	-21.35	3387.85	63.3	Pass
L36	13 - 12.75	Pole	TP29.2866x29.2334x0.6625	36	-21.42	4471.82	48.6	Pass
L37	12.75 - 7.75	Pole	TP30.3507x29.2866x0.65	37	-22.87	4552.46	49.9	Pass
L38	7.75 - 6.5	Pole	TP30.6167x30.3507x0.65	38	-23.20	4593.24	50.0	Pass
L39	6.5 - 6.25	Pole	TP30.6699x30.6167x0.6625	39	-23.29	4687.93	49.2	Pass
L40	6.25 - 4.5	Pole	TP31.0423x30.6699x0.65	40	-23.79	4658.48	50.2	Pass
L41	4.5 - 4.25	Pole	TP31.0955x31.0423x0.65	41	-23.87	4666.63	50.2	Pass
L42	4.25 - 2.5	Pole	TP31.468x31.0955x0.6375	42	-24.33	4634.75	51.3	Pass
L43	2.5 - 2.25	Pole	TP31.5212x31.468x0.45	43	-24.41	3297.13	71.4	Pass
L44	2.25 - 2	Pole	TP31.5744x31.5212x0.45	44	-24.48	3302.78	71.4	Pass
L45	2 - 1.75	Pole	TP31.6276x31.5744x0.5625	45	-24.55	4120.61	57.8	Pass
L46	1.75 - 0.5	Pole	TP31.8936x31.6276x0.5625	46	-24.89	4155.90	57.8	Pass
L47	0.5 - 0.25	Pole	TP31.9468x31.8936x0.5313	47	-24.97	3935.59	61.1	Pass
L48	0.25 - 0	Pole	TP32x31.9468x0.525	48	-25.03	3896.65	61.8	Pass
							Summary	
						Pole (L9)	72.4	Pass
						RATING =	**72.4**	**Pass**

***NOTE: Above stress ratios for reinforced sections are approximate. More exact calculations are presented in Appendix C.**

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 876399 TOWER ID: C_BASELEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

CCIpole

per TIA-222- G

Site BU: 876399

Work Order: 1586583

Pole Geometry

	Pole Height Above Base (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Bend Radius (in)	Pole Material
1	98	15.21	2.42	18	12	15.28	0.1875	0.75	A572-65
2	85.21	39.92	3.42	18	14.38	22.86	0.25	1	A572-65
3	48.71	48.71	0	18	21.63	32	0.3125	1.25	A572-65

Reinforcement Configuration

	Bottom Effective Elevation (ft)	Top Effective Elevation (ft)	Type	Model	Pole Flat Width (in)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	2.5	28.5	plate	MS-600 (1.1875")	4.57						E												
2	27.5	33.5	plate	MS-600 (1.1875")	4.39					E													
3	32	59	plate	MS-450 (1.1875")	3.52						E												
4	0.5	6.5	plate	MS-600 (Welded)	5.4												E						
5	4.5	15.5	plate	MS-600 (1.1875")	5.06											E							
6	13.42	28.5	plate	MS-600 (1.1875")	4.57												E						
7	27.5	33.5	plate	MS-600 (1.1875")	4.39											E							
8	32	48.25	plate	MS-450 (1.1875")	3.92												E						
9	47.42	52.92	plate	MS-450 (1.1875")	3.75											E							
10	52.17	59.17	plate	MS-450 (1.1875")	3.51												E						
11	0.5	28.5	plate	MS-600 (Welded)	4.57																		E
12	27.5	33.5	plate	MS-600 (1.1875")	4.39																	E	
13	32	59	plate	MS-450 (1.1875")	3.52																		E
14	0	2	plate	TS 1.25x2.5	5.57						E						E						E
15	0	13	plate	CCI-WSFP-060100	5.15		P													P			
16																							

Reinforcement Details

	B (in)	H (in)	Gross Area (in^2)	Pole Face to Centroid (in)	Bottom Termination Length (in)	Top Termination Length (in)	L_u (in)	Net Area (in^2)	Bolt Hole Size (in)	Reinforcement Material
1	6	1	6	0.5	24.000	24.000	16.375	4.750	1.1875	A572-65
2	6	1	6	0.5	24.000	24.000	16.375	4.750	1.1875	A572-65
3	4.5	1	4.5	0.5	18.000	18.000	20.625	3.250	1.1875	A572-65
4	6	1	6	0.5	n/a	24.000	16.375	4.750	1.1875	A572-65
5	6	1	6	0.5	24.000	24.000	16.375	4.750	1.1875	A572-65
6	6	1	6	0.5	24.000	24.000	16.375	4.750	1.1875	A572-65
7	6	1	6	0.5	24.000	24.000	16.375	4.750	1.1875	A572-65
8	4.5	1	4.5	0.5	18.000	18.000	20.625	3.250	1.1875	A572-65
9	4.5	1	4.5	0.5	18.000	18.000	20.625	3.250	1.1875	A572-65
10	4.5	1	4.5	0.5	18.000	18.000	20.625	3.250	1.1875	A572-65
11	6	1	6	0.5	n/a	24.000	16.375	4.750	1.1875	A572-65
12	6	1	6	0.5	24.000	24.000	16.375	4.750	1.1875	A572-65
13	4.5	1	4.5	0.5	18.000	18.000	20.625	3.250	1.1875	A572-65
14	1.25	2.5	3.125	1.25	n/a	n/a	0.000	3.125	0.0000	A572-65
15	6	1	6	0.5	n/a	24.000	16.000	4.750	1.1875	A572-65

TNX Geometry Input

Increment (ft): 5

	Section Height (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Tapered Pole Grade	Weight Multiplier
1	98 - 93	5		18	12.000	13.078	0.1875	A572-65	1.000
2	93 - 88	5		18	13.078	14.156	0.1875	A572-65	1.000
3	88 - 85.21	5.21	2.42	18	14.156	15.280	0.1875	A572-65	1.000
4	85.21 - 80.21	5		18	14.383	15.445	0.25	A572-65	1.000
5	80.21 - 75.21	5		18	15.445	16.507	0.25	A572-65	1.000
6	75.21 - 70.21	5		18	16.507	17.568	0.25	A572-65	1.000
7	70.21 - 65.21	5		18	17.568	18.630	0.25	A572-65	1.000
8	65.21 - 60.21	5		18	18.630	19.692	0.25	A572-65	1.000
9	60.21 - 59.17	1.04		18	19.692	19.913	0.25	A572-65	1.000
10	59.17 - 58.9	0.27		18	19.913	19.970	0.5125	A572-65	0.921
11	58.9 - 58.75	0.15		18	19.970	20.002	0.5125	A572-65	0.920
12	58.75 - 53.75	5		18	20.002	21.064	0.5	A572-65	0.920
13	53.75 - 52.92	0.83		18	21.064	21.240	0.5	A572-65	0.916
14	52.92 - 52.67	0.25		18	21.240	21.293	0.5	A572-65	1.052
15	52.67 - 52.17	0.5		18	21.293	21.399	0.5	A572-65	1.049
16	52.17 - 51.92	0.25		18	21.399	21.452	0.4375	A572-65	1.039
17	51.92 - 48.71	6.63	3.42	18	21.452	22.860	0.4375	A572-65	1.024
18	48.71 - 44.29	4.42		18	21.634	22.574	0.54375	A572-65	0.936
19	44.29 - 39.29	5		18	22.574	23.638	0.53125	A572-65	0.940
20	39.29 - 34.29	5		18	23.638	24.703	0.51875	A572-65	0.947
21	34.29 - 33.5	0.79		18	24.703	24.871	0.5125	A572-65	0.955
22	33.5 - 33.25	0.25		18	24.871	24.924	0.8125	A572-65	0.899
23	33.25 - 32	1.25		18	24.924	25.190	0.8	A572-65	0.907
24	32 - 31.75	0.25		18	25.190	25.243	0.5875	A572-65	0.929
25	31.75 - 28.5	3.25		18	25.243	25.935	0.575	A572-65	0.938
26	28.5 - 28.25	0.25		18	25.935	25.988	0.8625	A572-65	0.894
27	28.25 - 27.5	0.75		18	25.988	26.148	0.85	A572-65	0.903
28	27.5 - 27.25	0.25		18	26.148	26.201	0.575	A572-65	0.934
29	27.25 - 22.25	5		18	26.201	27.265	0.5625	A572-65	0.938
30	22.25 - 17.25	5		18	27.265	28.329	0.55	A572-65	0.944
31	17.25 - 15.5	1.75		18	28.329	28.701	0.55	A572-65	0.939
32	15.5 - 15.25	0.25		18	28.701	28.755	0.55	A572-65	1.060
33	15.25 - 13.42	1.83		18	28.755	29.144	0.55	A572-65	1.054
34	13.42 - 13.17	0.25		18	29.144	29.197	0.5	A572-65	1.024
35	13.17 - 13	0.17		18	29.197	29.233	0.5	A572-65	1.024
36	13 - 12.75	0.25		18	29.233	29.287	0.6625	A572-65	0.976
37	12.75 - 7.75	5		18	29.287	30.351	0.65	A572-65	0.976
38	7.75 - 6.5	1.25		18	30.351	30.617	0.65	A572-65	0.971
39	6.5 - 6.25	0.25		18	30.617	30.670	0.6625	A572-65	1.048
40	6.25 - 4.5	1.75		18	30.670	31.042	0.65	A572-65	1.060
41	4.5 - 4.25	0.25		18	31.042	31.096	0.65	A572-65	0.964
42	4.25 - 2.5	1.75		18	31.096	31.468	0.6375	A572-65	0.976
43	2.5 - 2.25	0.25		18	31.468	31.521	0.45	A572-65	1.238
44	2.25 - 2	0.25		18	31.521	31.574	0.45	A572-65	1.237
45	2 - 1.75	0.25		18	31.574	31.628	0.5625	A572-65	1.162
46	1.75 - 0.5	1.25		18	31.628	31.894	0.5625	A572-65	1.157
47	0.5 - 0.25	0.25		18	31.894	31.947	0.53125	A572-65	0.996
48	0.25 - 0	0.25		18	31.947	32.000	0.525	A572-65	1.007

TNX Section Forces

Increment (ft): 5

	Section Height (ft)	TNX Output P_u (K)	M_{ux} (kip-ft)	V_u (K)
1	98 - 93	1.53	5.07	2.85
2	93 - 88	3.33	24.25	5.86
3	88 - 85.21	3.46	40.75	5.97
4	85.21 - 80.21	3.84	71.12	6.18
5	80.21 - 75.21	4.17	102.52	6.38
6	75.21 - 70.21	7.40	164.16	11.29
7	70.21 - 65.21	10.34	230.44	16.73
8	65.21 - 60.21	10.94	315.18	17.18
9	60.21 - 59.17	11.07	333.07	17.22
10	59.17 - 58.9	11.13	337.72	17.23
11	58.9 - 58.75	11.15	340.30	17.23
12	58.75 - 53.75	11.93	427.52	17.83
13	53.75 - 52.92	12.07	442.35	17.92
14	52.92 - 52.67	12.13	446.83	17.94
15	52.67 - 52.17	12.22	455.82	18.00
16	52.17 - 51.92	12.34	460.34	18.10
17	51.92 - 48.71	12.90	518.99	18.45
18	48.71 - 44.29	14.14	601.70	18.98
19	44.29 - 39.29	15.13	697.87	19.51
20	39.29 - 34.29	16.15	796.66	20.03
21	34.29 - 33.5	16.32	812.51	20.11
22	33.5 - 33.25	16.40	817.54	20.13
23	33.25 - 32	16.73	842.79	20.29
24	32 - 31.75	16.79	847.87	20.31
25	31.75 - 28.5	17.52	914.44	20.67
26	28.5 - 28.25	17.61	919.61	20.69
27	28.25 - 27.5	17.83	935.15	20.78
28	27.5 - 27.25	17.89	940.35	20.80
29	27.25 - 22.25	19.05	1044.98	21.06
30	22.25 - 17.25	20.25	1150.76	21.28
31	17.25 - 15.5	20.67	1188.04	21.36
32	15.5 - 15.25	20.75	1193.38	21.35
33	15.25 - 13.42	21.23	1232.60	21.54
34	13.42 - 13.17	21.31	1237.99	21.54
35	13.17 - 13	21.35	1241.65	21.56
36	13 - 12.75	21.42	1247.04	21.58
37	12.75 - 7.75	22.87	1355.55	21.83
38	7.75 - 6.5	23.20	1382.97	22.26
39	6.5 - 6.25	23.29	1388.54	22.26
40	6.25 - 4.5	23.79	1427.53	22.33
41	4.5 - 4.25	23.87	1433.11	22.32
42	4.25 - 2.5	24.33	1472.22	22.40
43	2.5 - 2.25	24.41	1477.82	22.39
44	2.25 - 2	24.48	1483.41	22.39
45	2 - 1.75	24.55	1489.01	22.40
46	1.75 - 0.5	24.89	1517.02	22.45
47	0.5 - 0.25	24.97	1522.63	22.44
48	0.25 - 0	25.03	1528.24	22.45

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
98 - 93	Pole	TP13.078x12x0.1875	Pole	3.7%	Pass
93 - 88	Pole	TP14.156x13.078x0.1875	Pole	14.3%	Pass
88 - 85.21	Pole	TP15.28x14.156x0.1875	Pole	21.8%	Pass
85.21 - 80.21	Pole	TP15.445x14.383x0.25	Pole	26.1%	Pass
80.21 - 75.21	Pole	TP16.507x15.445x0.25	Pole	32.7%	Pass
75.21 - 70.21	Pole	TP17.568x16.507x0.25	Pole	46.2%	Pass
70.21 - 65.21	Pole	TP18.63x17.568x0.25	Pole	57.6%	Pass
65.21 - 60.21	Pole	TP19.692x18.63x0.25	Pole	70.1%	Pass
60.21 - 59.17	Pole	TP19.913x19.692x0.25	Pole	72.4%	Pass
59.17 - 58.9	Pole + Reinf.	TP19.97x19.913x0.5125	Reinf. 10 Compression	65.7%	Pass
58.9 - 58.75	Pole + Reinf.	TP20.002x19.97x0.5125	Reinf. 10 Compression	66.1%	Pass
58.75 - 53.75	Pole + Reinf.	TP21.064x20.002x0.5	Reinf. 10 Compression	76.7%	Pass
53.75 - 52.92	Pole + Reinf.	TP21.24x21.064x0.5	Reinf. 10 Compression	78.3%	Pass
52.92 - 52.67	Pole + Reinf.	TP21.293x21.24x0.5	Reinf. 3 Compression	79.5%	Pass
52.67 - 52.17	Pole + Reinf.	TP21.399x21.293x0.5	Reinf. 3 Compression	80.5%	Pass
52.17 - 51.92	Pole + Reinf.	TP21.452x21.399x0.4375	Reinf. 3 Compression	83.4%	Pass
51.92 - 48.71	Pole + Reinf.	TP22.86x21.452x0.4375	Reinf. 3 Compression	89.5%	Pass
48.71 - 44.29	Pole + Reinf.	TP22.574x21.634x0.5438	Reinf. 8 Compression	85.8%	Pass
44.29 - 39.29	Pole + Reinf.	TP23.638x22.574x0.5313	Reinf. 8 Compression	92.3%	Pass
39.29 - 34.29	Pole + Reinf.	TP24.703x23.638x0.5188	Reinf. 8 Compression	98.0%	Pass
34.29 - 33.5	Pole + Reinf.	TP24.871x24.703x0.5125	Reinf. 8 Compression	98.8%	Pass
33.5 - 33.25	Pole + Reinf.	TP24.924x24.871x0.8125	Reinf. 8 Compression	65.6%	Pass
33.25 - 32	Pole + Reinf.	TP25.19x24.924x0.8	Reinf. 8 Compression	66.7%	Pass
32 - 31.75	Pole + Reinf.	TP25.243x25.19x0.5875	Reinf. 2 Tension Rupture	80.5%	Pass
31.75 - 28.5	Pole + Reinf.	TP25.935x25.243x0.575	Reinf. 2 Tension Rupture	83.2%	Pass
28.5 - 28.25	Pole + Reinf.	TP25.988x25.935x0.8625	Reinf. 2 Tension Rupture	58.0%	Pass
28.25 - 27.5	Pole + Reinf.	TP26.148x25.988x0.85	Reinf. 2 Tension Rupture	58.5%	Pass
27.5 - 27.25	Pole + Reinf.	TP26.201x26.148x0.575	Reinf. 6 Tension Rupture	84.2%	Pass
27.25 - 22.25	Pole + Reinf.	TP27.265x26.201x0.5625	Reinf. 6 Tension Rupture	87.9%	Pass
22.25 - 17.25	Pole + Reinf.	TP28.329x27.265x0.55	Reinf. 6 Tension Rupture	91.1%	Pass
17.25 - 15.5	Pole + Reinf.	TP28.701x28.329x0.55	Reinf. 6 Tension Rupture	92.1%	Pass
15.5 - 15.25	Pole + Reinf.	TP28.755x28.701x0.55	Reinf. 1 Tension Rupture	93.0%	Pass
15.25 - 13.42	Pole + Reinf.	TP29.144x28.755x0.55	Reinf. 1 Tension Rupture	94.0%	Pass
13.42 - 13.17	Pole + Reinf.	TP29.197x29.144x0.5	Reinf. 1 Tension Rupture	96.2%	Pass
13.17 - 13	Pole + Reinf.	TP29.233x29.197x0.5	Reinf. 1 Tension Rupture	96.3%	Pass
13 - 12.75	Pole + Reinf.	TP29.287x29.233x0.6625	Reinf. 1 Tension Rupture	81.1%	Pass
12.75 - 7.75	Pole + Reinf.	TP30.351x29.287x0.65	Reinf. 1 Tension Rupture	83.5%	Pass
7.75 - 6.5	Pole + Reinf.	TP30.617x30.351x0.65	Reinf. 1 Tension Rupture	84.0%	Pass
6.5 - 6.25	Pole + Reinf.	TP30.67x30.617x0.6625	Reinf. 1 Tension Rupture	84.4%	Pass
6.25 - 4.5	Pole + Reinf.	TP31.042x30.67x0.65	Reinf. 1 Tension Rupture	85.1%	Pass
4.5 - 4.25	Pole + Reinf.	TP31.096x31.042x0.65	Reinf. 1 Tension Rupture	86.0%	Pass
4.25 - 2.5	Pole + Reinf.	TP31.468x31.096x0.6375	Reinf. 1 Tension Rupture	86.7%	Pass
2.5 - 2.25	Pole + Reinf.	TP31.521x31.468x0.45	Reinf. 15 Tension Rupture	85.9%	Pass
2.25 - 2	Pole + Reinf.	TP31.574x31.521x0.45	Reinf. 15 Tension Rupture	86.0%	Pass
2 - 1.75	Pole + Reinf.	TP31.628x31.574x0.5625	Reinf. 14 Compression	86.0%	Pass
1.75 - 0.5	Pole + Reinf.	TP31.894x31.628x0.5625	Reinf. 14 Compression	86.4%	Pass
0.5 - 0.25	Pole + Reinf.	TP31.947x31.894x0.5313	Reinf. 14 Compression	87.4%	Pass
0.25 - 0	Pole + Reinf.	TP32x31.947x0.525	Reinf. 14 Weldment	90.3%	Pass
				Summary	
			Pole	80.3%	Pass
			Reinforcement	98.8%	Pass
			Overall	98.8%	Pass

Additional Calculations

Section Elevation (ft)	Moment of Inertia (in^4)			Area (in^2)			% Capacity														
	Pole	Reinf.	Total	Pole	Reinf.	Total	Pole	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15
98 - 93	161	n/a	161	7.67	n/a	7.67	3.7%															
93 - 88	205	n/a	205	8.31	n/a	8.31	14.3%															
88 - 85.21	233	n/a	233	8.67	n/a	8.67	21.8%															
85.21 - 80.21	352	n/a	352	12.06	n/a	12.06	26.1%															
80.21 - 75.21	431	n/a	431	12.90	n/a	12.90	32.7%															
75.21 - 70.21	521	n/a	521	13.74	n/a	13.74	46.2%															
70.21 - 65.21	622	n/a	622	14.58	n/a	14.58	57.6%															
65.21 - 60.21	736	n/a	736	15.43	n/a	15.43	70.1%															
60.21 - 59.17	762	n/a	762	15.60	n/a	15.60	72.4%															
59.17 - 58.9	769	754	1523	15.65	13.50	29.15	36.4%			65.7%							65.7%			65.7%		
58.9 - 58.75	772	756	1529	15.67	13.50	29.17	36.6%			66.1%							66.1%			66.1%		
58.75 - 53.75	904	833	1737	16.51	13.50	30.01	42.6%			76.7%							76.7%			76.7%		
53.75 - 52.92	927	847	1773	16.65	13.50	30.15	43.5%			78.3%							78.3%			78.3%		
52.92 - 52.67	935	872	1806	16.70	18.00	34.70	44.2%			79.5%						54.0%	57.3%			75.4%		
52.67 - 52.17	949	880	1829	16.78	18.00	34.78	44.7%			80.5%						54.7%	58.1%			76.4%		
52.17 - 51.92	959	685	1644	16.82	13.50	30.32	52.2%			83.4%						79.3%				76.1%		
51.92 - 48.71	1055	726	1781	17.36	13.50	30.86	56.0%			89.5%						85.2%				81.8%		
48.71 - 44.29	1382	950	2332	22.08	13.50	35.58	47.7%			85.8%					85.8%					85.8%		
44.29 - 39.29	1590	1036	2626	23.14	13.50	36.64	51.4%			92.3%					92.3%					92.3%		
39.29 - 34.29	1818	1127	2944	24.19	13.50	37.69	54.7%			98.0%					98.0%					98.0%		
34.29 - 33.5	1855	1141	2997	24.36	13.50	37.86	55.2%			98.8%					98.8%					98.8%		
33.5 - 33.25	1868	2686	4553	24.41	31.50	55.91	36.7%		59.3%	65.6%				59.3%	65.6%				59.3%	65.6%		
33.25 - 32	1929	2740	4669	24.67	31.50	56.17	37.2%		60.2%	66.7%				60.2%	66.7%				60.2%	66.7%		
32 - 31.75	1941	1577	3518	24.73	18.00	42.73	49.8%		80.5%					80.5%					80.5%			
31.75 - 28.5	2107	1660	3767	25.41	18.00	43.41	51.5%		83.2%					83.2%					83.2%			
28.5 - 28.25	2120	3333	5453	25.47	36.00	61.47	35.9%	58.0%	58.0%				58.0%	58.0%				58.0%	58.0%			
28.25 - 27.5	2160	3372	5532	25.62	36.00	61.62	36.2%	58.5%	58.5%				58.5%	58.5%				58.5%	58.5%			
27.5 - 27.25	2174	1692	3866	25.68	18.00	43.68	52.1%	84.2%					84.2%					84.2%				
27.25 - 22.25	2453	1825	4278	26.73	18.00	44.73	54.5%	87.9%					87.9%					87.9%				
22.25 - 17.25	2755	1963	4718	27.79	18.00	45.79	56.5%	91.1%					91.1%					91.1%				
17.25 - 15.5	2866	2013	4879	28.16	18.00	46.16	57.2%	92.1%					92.1%					92.1%				
15.5 - 15.25	2885	2070	4955	28.21	24.00	52.21	57.7%	93.0%				66.0%	69.3%					88.6%				
15.25 - 13.42	3005	2124	5128	28.60	24.00	52.60	58.4%	94.0%				66.8%	70.2%					89.6%				
13.42 - 13.17	3030	1698	4727	28.65	18.00	46.65	65.8%	96.2%				92.0%						89.1%				
13.17 - 13	3041	1702	4743	28.68	18.00	46.68	65.8%	96.3%				92.1%						89.2%				
13 - 12.75	3070	3185	6255	28.74	30.00	58.74	51.2%	81.1%				78.0%						65.3%				73.6%
12.75 - 7.75	3419	3410	6829	29.79	30.00	59.79	52.7%	83.5%				80.3%						67.5%				75.9%
7.75 - 6.5	3511	3467	6978	30.06	30.00	60.06	53.1%	84.0%				80.9%						68.0%				76.4%
6.5 - 6.25	3566	3640	7206	30.11	36.00	66.11	53.3%	84.4%			60.8%	63.3%						68.1%				70.4%
6.25 - 4.5	3698	3725	7423	30.48	36.00	66.48	53.8%	85.1%			61.5%	64.0%						68.8%				71.1%
4.5 - 4.25	3729	3640	7369	30.53	30.00	60.53	55.2%	86.0%			80.5%							72.5%				71.7%
4.25 - 2.5	3865	3724	7589	30.90	30.00	60.90	55.6%	86.7%			81.2%							73.2%				72.4%
2.5 - 2.25	4133	1570	5703	30.95	24.00	54.95	80.3%				80.5%							76.1%				85.9%
2.25 - 2	4154	1575	5729	31.01	24.00	55.01	80.3%				80.6%							76.2%				86.0%
2 - 1.75	4125	2954	7079	31.06	33.38	64.43	65.4%				68.4%							64.3%			86.0%	71.3%
1.75 - 0.5	4228	3003	7231	31.32	33.38	64.70	65.9%				68.8%							64.8%			86.4%	71.7%
0.5 - 0.25	4088	2617	6705	31.38	21.38	52.75	67.5%														87.4%	83.6%
0.25 - 0	4108	2626	6734	31.43	21.38	52.80	67.6%														90.3%	83.7%

Note: Section capacity checked in 5 degree increments.

ANCHOR ROD ANALYSIS

Anchor Rod Information

TIA Code	G
eta Factor	0.5
Number of Bolt Circles	2
Base Plate Type	Circular

Reactions

Moment	1528.24	kip-ft
Axial	25.03	kip
Shear	22.45	kip

	1st BC	2nd BC	
Anchor Rod Quantity	8	3	
Anchor Rod Diameter	2.25	2.5	in
Anchor Rod Material	#18J	Dywidag	ksi
Bolt Circle Diameter	40	44	in
Base Plate or Bracketed Connection?		Bracket*	

Bolt #	Orientation of Anchor Bolts (Degrees)	
1	0.0	23
2	45.0	120
3	90.0	253
4	135.0	
5	180.0	
6	225.0	
7	270.0	
8	315.0	

Anchor Rod Results

	1st BC	2nd BC	
Moment on Bolt Group	1066.2	462.0	kip-ft
Axial on Bolt Group	25.0	0.0	kip
Shear on Bolt Group	22.5	0.0	kip
Combined Load per Anchor Rod	170.5	202.1	kip
Anchor Rod Capacity	259.8	479.9	kip
Max Stress Ratio	**65.6%**	**42.1%**	

(it is assumed that all Axial and Shear loads will go to the original anchor rods)

*Bracket Calculations & Results are on the following pages.

ANCHOR ROD BRACKET CALCULATIONS

TIA-222-G Reference

Tower & Foundation Properties			
Monopole Thickness at Base	0.3125	in	
Monopole Material	A572 Gr.65		
Yield Stress, Fy	65	ksi	
Ultimate Stress, Fu	80	ksi	
Base Plate Material	Manual Input		
Yield Stress, Fy	60	ksi	
Ultimate Stress, Fu	80	ksi	
Pier Foundation Diameter	5	ft	
Rebar Yield Stress	60	ksi	
Concrete Strength	3000	psi	
Clear Cover	4	in	
Rebar Size	8		
Tie Size	4		
Vertical Rebar Quantity	20		
	2nd BC		
Analysis or Design of Bracket?	Analysis		
Bracket Loading Information			
Moment on Bolt Group	462.0	kip-ft	
Axial Load on Anchor Rod	202.1	kip	
Anchor Rod Capacity	479.9	kip	
Tube Properties			
Tube Section	HSS5x5x0.5		
Length	18	in	AISCM Table 1-12
Gap Between Base Plate and Tube	0	in	
Outside Width/Diameter	5	in	
Thickness	0.5	in	
Area	7.88	in^2	
Moment of Inertia	26	in^4	
Radius of Gyration	1.82	in	
Material	A500 Gr.B (Rect)		
Yield Stress	46	ksi	
Ultimate Stress	58	ksi	
Gusset Plate Properties			
Width	2.5	in	
Thickness	1.25	in	
Height of Plate at Pole, L_{plate1}	36	in	
Height of Plate at Tube, L_{plate2}	36	in	
Notch Size	0.75	in	
Material	A572 Gr. 65		
Yield Stress	65	ksi	
Ultimate Stress	80	ksi	
Weld Properties			
Plate to Monopole Weld Size	0.375	in	
Plate to Tube Weld Size	0.625	in	
Plate to Base Plate Weld Size	0.625	in	
Electrode	E80		
Material Grade, F_{EXX}	80	ksi	
Anchor Rod Embedment Properties			
Embedment Depth	4.666666667	ft	
Epoxy Material	Hilti RE 500 V3		
Bond Strength	1.11	ksi	

ANCHOR ROD BRACKET CALCULATIONS

TIA-222-G Reference

Tube Analysis

Bearing Check

ϕ_b =	0.75		
$\phi P_n = \phi_b 1.8 F_y A_g$ =	489.35	kip	AISCM Eq (J7-1)
Stress Ratio	41.3%		

Compression Check

ϕ_c =	0.90		
K =	1		
KL/r =	9.89		
$4.71\sqrt{(E/F_y)}$ =	118.26		
$F_e = \pi^2 E/(KL/r)^2$ =	2926.14	ksi	AISCM Eq (E3-4)
$F_{cr} = 0.658^{(Fy/Fe)} F_y$ =	45.70	ksi	AISCM Eq (E3-2)
$\phi P_n = \phi_c F_y A_g$ =	326.23	kip	AISCM Eq (J4-6)
Stress Ratio	62.0%		

Gusset Plate Analysis

Plate Shear Yielding Check

ϕ_v =	1		
$A_{nv} = A_g = t_{plate} * L_{tube}$ =	45	in^2	
$\phi V_n = \phi_v 0.6 A_g F_y$ =	1755	kip	AISCM Eq (J4-3)
Stress Ratio	11.5%		

Plate Shear Rupture Check

ϕ_v =	0.75		
$\phi V_n = \phi_v 0.6 A_{nv} F_u$ =	1620.00	kip	AISCM Eq (J4-4)
Stress Ratio	12.5%		

Plate to Monopole Punching Shear Check

ϕ_v =	0.90		
$e = w_{plate} + d_{tube} - t_{tube} - D_b/2$ =	5.75	in	
M = P * e =	1161.82	kip-in	
$f_v = 6M/L_{plate1}^2$ =	5.38	kip/in	
$\phi F_v = \phi_v 0.6 F_{ymp} (2t_{mp})$ =	21.94	kip/in	
Stress Ratio	24.5%		

Plate to Tube Punching Shear Check

$e = d_{tube} - t_{tube} - D_b/2$ =	3.25	in	
M = P * e =	656.68	kip-in	
$f_v = 6M/L_{plate2}^2$ =	3.04	kip/in	
$\phi F_v = \phi_v 0.6 F_{ytube} (2t_{tube})$ =	24.84	kip/in	
Stress Ratio	12.2%		

Gusset Plate to Monopole Weld Analysis

ϕ_{wg} =	0.75		
$\phi R_{nweld} = \phi_{wg} 0.6 F_{EXX}$ =	36.0	ksi	
$\phi R_{nplate} = \phi_{wg} 0.6 F_{uplate}$ =	36.0	ksi	
$\phi R_{npole} = \phi_{wg} 0.6 F_{upole}$ =	36.0	ksi	
Stress Ratio	36.0%		

Gusset Plate to Tube Weld Analysis

ϕ_w =	0.75		
$a = (d_{tube} - t_{tube} - D_b/2)/L_{plate2}$ =	0.09		
C =	1.03		
C_1 =	3.71		
$\phi R_n = \phi_w C C_1 D L_{plate2}$ =	1031.75	kip	
Stress Ratio	19.6%		

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

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

Site Data

BU#:	*876399*
Site Name:	*(F) E. Granby 4Q2000 / Galasso*
App #:	*420928 Rev 2*
Pole Manufacturer:	*Other*

Reactions		
Mu:	1066	ft-kips
Axial, Pu:	25	kips
Shear, Vu:	22	kips
Eta Factor, η	0.5	TIA G (Fig. 4-4)

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

Anchor Rod Data		
Qty:	8	
Diam:	2.25	in
Rod Material:	A615-J	
Strength (Fu):	100	ksi
Yield (Fy):	75	ksi
Bolt Circle:	40	in

Plate Data		
Diam:	46	in
Thick:	1.5	in
Grade:	60	ksi
Single-Rod B-eff:	12.70	in

Stiffener Data (Welding at both sides)		
Config:	3	*
Weld Type:	Fillet	
Groove Depth:	0.25	<-- Disregard
Groove Angle:	45	<-- Disregard
Fillet H. Weld:	0.375	in
Fillet V. Weld:	0.375	in
Width:	6	in
Height:	18	in
Thick:	0.5	in
Notch:	0.5	in
Grade:	50	ksi
Weld str.:	70	ksi
Clear Space between	10.4	in

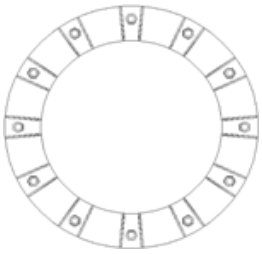
Pole Data		
Diam:	32	in
Thick:	0.3125	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None

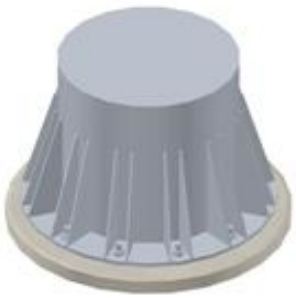
Base Plate Results	Flexural Check
Base Plate Stress:	44.4 ksi
Allowable Plate Stress:	54.0 ksi
Base Plate Stress Ratio:	82.3% **Pass**

Stiffened
AISC LRFD
φ*Fy
Y.L. Length: N/A, Roark

Stiffener Results	
Horizontal Weld :	63.7% **Pass**
Vertical Weld:	21.8% **Pass**
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	13.3% **Pass**
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	49.9% **Pass**
Plate Comp. (AISC Bracket):	53.0% **Pass**

Pole Results	
Pole Punching Shear Check:	7.7% **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

Pier and Pad Foundation

BU # :	876399
Site Name:	(F) E. Granby 4Q2(
App. Number:	420928 Rev 2

TIA-222 Revision:	G
Tower Type:	Monopole

Block Foundation?:	☐

Superstructure Analysis Reactions		
Compression, P_{comp}:	60.52	kips
Base Shear, Vu_comp:	22	kips
Moment, M_u:	1528	ft-kips
Tower Height, **H**:	98	ft
BP Dist. Above Fdn, bp_{dist}:	4	in

Pier Properties		
Pier Shape:	Square	
Pier Diameter, **dpier**:	5.0	ft
Ext. Above Grade, **E**:	1.00	ft
Pier Rebar Size, **Sc**:	8	
Pier Rebar Quantity, **mc**:	20	
Pier Tie/Spiral Size, **St**:	4	
Pier Tie/Spiral Quantity, **mt**:	4	
Pier Reinforcement Type:	Tie	
Pier Clear Cover, cc_{pier}:	3	in

Pad Properties		
Depth, **D**:	5.0	ft
Pad Width, **W**:	17.0	ft
Pad Thickness, **T**:	3.0	ft
Pad Rebar Size, **Sp**:	8	
Pad Rebar Quantity, **mp**:	16	
Pad Clear Cover, cc_{pad}:	3	in

Material Properties		
Rebar Grade, **Fy**:	60000	psi
Concrete Compressive Strength, **F'c**:	3000	psi
Dry Concrete Density, δ**c**:	150	pcf

Soil Properties		
Total Soil Unit Weight, γ:	120	pcf
Ultimate Gross Bearing, Qult:	8.000	ksf
Cohesion, **Cu**:		ksf
Friction Angle, φ:	34	degrees
SPT Blow Count, N_{blows}:	15	
Base Friction, μ:	0.35	
Neglected Depth, **N**:	3.50	ft
Foundation Bearing on Rock?	No	
Groundwater Depth, **gw**:	7	ft

<--Toggle between Gross and Net

Foundation Analysis Checks				
	Capacity	**Demand**	**Rating**	**Check**
Lateral (Sliding) (kips)	94.77	22.00	**23.2%**	**Pass**
Bearing Pressure (ksf)	6.00	4.50	**75.0%**	**Pass**
*Overturning (kip*ft)*	1777.83	1667.33	**93.8%**	**Pass**
*Pier Flexure (Comp.) (kip*ft)*	1836.51	1594.00	**86.8%**	**Pass**
Pier Compression (kip)	11934.00	74.02	**0.6%**	**Pass**
*Pad Flexure (kip*ft)*	1750.26	903.35	**51.6%**	**Pass**
Pad Shear - 1-way (kips)	527.95	192.05	**36.4%**	**Pass**
Pad Shear - 2-way (ksi)	0.16	0.00	**0.0%**	**Pass**

Soil Rating:	**93.8%**
Structural Rating:	**86.8%**

Weight of Steel added to Compression.
25kips + 1.2*48*(.490-.120)*4*4*1.25/12 = 60.52kips

APPENDIX D

STRUCTURAL DESIGN DRAWINGS

MONOPOLE REINFORCEMENT DRAWINGS

SITE NAME: (F) E. GRANBY 4Q2000 / GALASSO
BU NUMBER: 876399

SITE ADDRESS:
60 SOUTH MAIN STREET
EAST GRANBY, CT 06026
HARTFORD COUNTY, USA

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

CODE COMPLIANCE

THIS REINFORCEMENT DESIGN IS BASED ON THE REQUIREMENTS OF THE 2016 CONNECTICUT BUILDING CODE AND THE TIA-222-G STRUCTURAL STANDARD FOR ANTENNA SUPPORTING STRUCTURES AND ANTENNAS USING A NOMINAL 3-SECOND GUST WIND SPEED OF 93 MPH WITH NO ICE, 50 MPH WITH 1 INCH ICE THICKNESS AND 60 MPH UNDER SERVICE LOADS, EXPOSURE CATEGORY C.

TOWER INFORMATION

TOWER MANUFACTURER / CCI DOC #:	EEI / CCI DOC #1613691
TOWER HEIGHT / TYPE:	98 FT MONOPOLE TOWER
TOWER LOCATION: DATUM: NAD 1983	LATITUDE 41° 56' 29.59" LONGITUDE -72° 44' 19.25"
STRUCTURAL DESIGN DRAWING:	B&V / WO #1586583
STRUCTURAL ANALYSIS REPORT:	B&V / WO #1515674
ORDER ID:	420928 REV #2

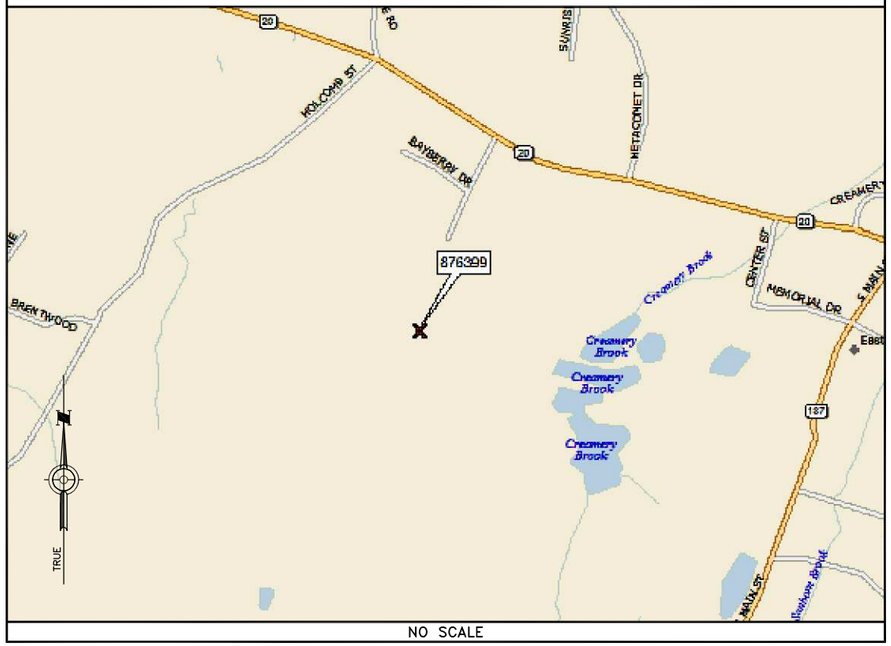
PROJECT CONTACTS

CROWN PROJECT MANAGER
DAN VADNEY
(518) 373-3510
DAN.VADNEY@CROWNCASTLE.COM

CROWN CONSTRUCTION MANAGER
JASON D'AMICO
(860) 209-0104
JASON.DAMICO@CROWNCASTLE.COM

BLACK & VEATCH CONTACTS
CROWNCASTLERFI@BV.COM
PATRICK DAVIS
(913) 458-6984

LOCATION MAP



NO SCALE

DRIVING DIRECTIONS

91 NORTH TO EXIT 40 (20 WEST). FOLLOW 20 WEST TO HILLCREST STREET ON LEFT, FOLLOW HILLCREST TO THE GATE. THE ADDRESS FOR THIS SITE WILL TAKE YOU TO THE MAIN ENTRANCE FOR TILCON ON SOUTH MAIN STREET. USE THE HILLCREST GATE TO ACCESS THE SITE.

ATTENTION ALL CONTRACTORS

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

DRAWING INDEX

SHEET NO:	SHEET TITLE
TM-1	TITLE PAGE
TM-2	MODIFICATION INSPECTION CHECKLIST
TM-3	NOTES
TM-4	NEXGEN2 BOLT SPECIFICATIONS & TIGHTENING PROCEDURE
TM-5	FORGBOLT BOLT SPECIFICATIONS & TIGHTENING PROCEDURE
TM-6	AJAX ONESIDE BOLT SPECIFICATIONS & TIGHTENING PROCEDURE
TM-7	TOWER ELEVATION
TM-8	TOWER SECTIONS
TM-9	BASE PLATE WELD DETAILS
TM-10	BASE PLATE WELD DETAILS

DO NOT SCALE DRAWINGS

CONTRACTOR SHALL VERIFY ALL PLANS & EXISTING DIMENSIONS & CONDITIONS ON THE JOB SITE & SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME

PREPARED FOR:

CROWN CASTLE

BLACK & VEATCH
6800 W 115TH ST, SUITE 2292
OVERLAND PARK, KS 66211

PROJECT NO:	194393
DRAWN BY:	TCG
CHECKED BY:	THM

REV	DATE	DESCRIPTION
0	07/11/18	ISSUED FOR CONSTRUCTION

STATE OF CONNECTICUT
PING JIANG
30767
LICENSED PROFESSIONAL ENGINEER
Jul 11, 2018

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

BU #876399
WO #1586583
(F) E. GRANBY 4Q2000 / GALASSO
60 SOUTH MAIN STREET
EAST GRANBY, CT 06026
HARTFORD COUNTY, USA

SHEET TITLE
TITLE PAGE

SHEET NUMBER
TM-1

MI CHECKLIST

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

MODIFICATION INSPECTION NOTES

GENERAL

1. THE MI IS AN ON–SITE VISUAL AND HANDS–ON INSPECTION OF TOWER MODIFICATIONS INCLUDING A REVIEW OF CONSTRUCTION REPORTS AND ADDITIONAL PERTINENT DOCUMENTATION PROVIDED BY THE GENERAL CONTRACTOR (GC), AS WELL AS ANY INSPECTION DOCUMENTS PROVIDED BY 3RD PARTY INSPECTORS. THE MI IS TO ENSURE THE INSTALLATION WAS CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, NAMELY THE MODIFICATION DRAWINGS; IN ACCORDANCE WITH APPLICABLE CROWN STANDARDS; AND AS DESIGNED BY THE ENGINEER OF RECORD (EOR).
2. NO DOCUMENT, CODE OR POLICY CAN ANTICIPATE EVERY SITUATION THAT MAY ARISE. ACCORDINGLY, THIS CHECKLIST IS INTENDED TO SERVE AS A SOURCE OF GUIDING PRINCIPLES IN ESTABLISHING GUIDELINES FOR MODIFICATION INSPECTION.
3. THE MI IS TO CONFIRM INSTALLATION CONFIGURATION AND WORKMANSHIP ONLY AND IS NOT A REVIEW OF THE MODIFICATION DESIGN ITSELF, AND THE MI INSPECTOR DOES NOT TAKE OWNERSHIP OF THE MODIFICATION DESIGN. OWNERSHIP OF THE STRUCTURAL MODIFICATION DESIGN EFFECTIVENESS AND INTEGRITY RESIDES WITH THE EOR AT ALL TIMES. THE MI INSPECTOR SHALL INSPECT AND NOTE CONFORMANCE/NONCONFORMANCE AND PROVIDE TO THE CROWN POINT OF CONTACT (CROWN POC) FOR EVALUATION.
4. ALL MI'S SHALL BE CONDUCTED BY A CROWN APPROVED MI INSPECTOR, WORKING FOR A CROWN APPROVED MI VENDOR. SEE CROWN CED–LST–10173, "APPROVED MI VENDORS".
5. TO ENSURE THAT THE REQUIREMENTS OF THE MI ARE MET, IT IS VITAL THAT THE GENERAL CONTRACTOR (GC) AND THE MI INSPECTOR BEGIN COMMUNICATING AND COORDINATING AS SOON AS A PURCHASE ORDER (PO) IS RECEIVED. IT IS EXPECTED THAT EACH PARTY WILL BE PROACTIVE IN REACHING OUT TO THE OTHER PARTY. IF CONTACT INFORMATION IS NOT KNOWN THE GC AND/OR INSPECTOR SHALL CONTACT THE CROWN POINT OF CONTACT (POC).
6. REFER TO CROWN CED–SOW–10007, "MODIFICATION INSPECTION SOW", FOR FURTHER DETAILS AND REQUIREMENTS.

SERVICE LEVEL COMMITMENT

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

REQUIRED PHOTOS

1. BETWEEN THE GC AND THE MI INSPECTOR THE FOLLOWING PHOTOGRAPHS, AT A MINIMUM, ARE TO BE TAKEN AND INCLUDED IN THE MI REPORT:
   - PRE–CONSTRUCTION GENERAL SITE CONDITION
   - PHOTOGRAPHS DURING THE REINFORCEMENT MODIFICATION CONSTRUCTION/ERECTION AND INSPECTION
     - RAW MATERIALS
     - PHOTOS OF ALL CRITICAL DETAILS
     - FOUNDATION MODIFICATIONS
     - WELD PREPARATION
     - BOLT INSTALLATION
     - FINAL INSTALLED CONDITION
     - SURFACE COATING REPAIR
   - POST CONSTRUCTION PHOTOGRAPHS
     - FINAL INFIELD CONDITION
2. PHOTOS OF ELEVATED MODIFICATIONS TAKEN ONLY FROM THE GROUND SHALL BE CONSIDERED INADEQUATE.
3. THIS IS NOT A COMPLETE LIST OF REQUIRED PHOTOS, PLEASE REFER TO CROWN DOCUMENT # CED–SOW–10007.

PREPARED FOR:

CROWN CASTLE

BLACK & VEATCH

6800 W 115TH ST, SUITE 2292
OVERLAND PARK, KS 66211

PROJECT NO:	194393
DRAWN BY:	TCG
CHECKED BY:	THM

REV	DATE	DESCRIPTION
0	07/11/18	ISSUED FOR CONSTRUCTION

STATE OF CONNECTICUT
PING JIANG
30767
LICENSED PROFESSIONAL ENGINEER

Jul 11, 2018

BU #876399
WO #1586583
(F) E. GRANBY 4Q2000 / GALASSO
60 SOUTH MAIN STREET
EAST GRANBY, CT 06026
HARTFORD COUNTY, USA

SHEET TITLE

MODIFICATION INSPECTION CHECKLIST

SHEET NUMBER

TM-2

GENERAL NOTES

1. ALL WORK PRESENTED ON THESE DRAWINGS MUST BE COMPLETED BY THE CONTRACTOR UNLESS NOTED OTHERWISE. THE CONTRACTOR MUST BE EXPERIENCED IN THE PERFORMANCE OF WORK SIMILAR TO THAT DESCRIBED HEREIN. BY ACCEPTANCE OF THIS ASSIGNMENT, THE CONTRACTOR IS ATTESTING THAT HE DOES HAVE SUFFICIENT EXPERIENCE AND ABILITY, THAT HE IS KNOWLEDGEABLE OF THE WORK TO BE PERFORMED, THAT HE IS PROPERLY LICENSED, AND THAT HE IS PROPERLY REGISTERED TO DO THIS WORK IN THE STATE AND/OR COUNTY IN WHICH IT IS TO BE PERFORMED.

2. THE GENERAL NOTES AND TYPICAL DETAILS ARE APPLICABLE TO ALL PARTS OF THE STRUCTURE AND SHALL BE READ IN CONJUNCTION WITH THE STRUCTURAL DRAWINGS AND PROJECT SPECIFICATIONS.

3. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING APPROVALS FROM ALL AUTHORITIES HAVING JURISDICTION FOR THIS PROJECT AND SHALL NOTIFY THE APPLICABLE JURISDICTIONAL (STATE, COUNTY, OR CITY) ENGINEER 24 HOURS PRIOR TO THE BEGINNING OF CONSTRUCTION.

4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ABIDING BY ALL CONDITIONS AND REQUIREMENTS OF THE PERMITS.

5. ERECT GUARDS AND BARRIERS PER APPLICABLE LABOR AND CONSTRUCTION SAFETY REGULATIONS.

6. THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS, POSSIBLE INTERFERENCES, AND DIMENSIONS BEFORE PROCEEDING WITH THE WORK. REPORT ANY AND ALL DISCREPANCIES TO THE ENGINEER OF RECORD (EOR) AND FIELD PERSONNEL IMMEDIATELY. ANY AND ALL FIELD CHANGES SHALL BE APPROVED AND DOCUMENTED BY THE EOR PRIOR TO FIELD IMPLEMENTATION.

7. ALL MATERIALS AND WORKMANSHIP SHALL BE WARRANTED FOR TWO (2) YEARS FROM THE DATE OF COMPLETED CONSTRUCTION.

8. USE ONLY THE LATEST ISSUES OF ANY APPLICABLE CODES, STANDARDS, OR REGULATIONS MENTIONED IN THE FOLLOWING NOTES AND SPECIFICATIONS, UNO.

9. ALL WORKMANSHIP SHALL BE IN ACCORDANCE WITH ANSI, ASTM, ACI, TIA, AND AISC STANDARDS AS REFERENCED IN THE APPLICABLE CODE.

10. STRUCTURAL ELEMENTS SHOWN ON THESE DRAWINGS ARE DESIGNED IN ACCORDANCE WITH APPLICABLE BUILDING CODES/STANDARDS. ALL CONSTRUCTION, EXCEPT WHERE NOTED OTHERWISE, SHALL COMPLY WITH THOSE CODES/STANDARDS.

11. ALL MATERIALS AND EQUIPMENT FURNISHED SHALL BE NEW AND OF GOOD QUALITY, FREE FROM FAULTS AND DEFECTS, AND IN CONFORMANCE WITH THE DRAWINGS. ANY AND ALL SUBSTITUTIONS MUST BE DULY APPROVED AND AUTHORIZED IN WRITING BY THE OWNER AND ENGINEER OF RECORD PRIOR TO FABRICATION AND INSTALLATION. THE CONTRACTOR SHALL FURNISH SATISFACTORY EVIDENCE AS TO THE KIND AND QUALITY OF THE MATERIALS AND EQUIPMENT BEING SUBSTITUTED.

12. ALL MANUFACTURER'S HARDWARE ASSEMBLY INSTRUCTIONS SHALL BE FOLLOWED EXACTLY AND SHALL SUPERSEDE ANY CONFLICTING NOTES ENCLOSED HEREIN.

13. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INITIATING, MAINTAINING, AND SUPERVISING ALL SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK. THE CONTRACTOR IS ALSO RESPONSIBLE FOR ENSURING THAT ALL CONSTRUCTION PROCEDURES MEET THE REQUIREMENTS OF OSHA, THE OWNER, AND ALL OTHER APPLICABLE LOCAL, STATE, AND FEDERAL SAFETY REGULATIONS. CONSTRUCTION SHALL BE PERFORMED ONLY IN "GOOD WEATHER". "GOOD WEATHER" MEANS LITTLE OR NO WIND AND RAIN AND MINIMUM TEMPERATURE OF 50 DEGREES F. CONTACT ENGINEER FOR ADDITIONAL INSTRUCTIONS IF "GOOD WEATHER" CANNOT BE ACHIEVED.

14. ACCESS TO THE PROPOSED WORK SITE MAY BE RESTRICTED. THE CONTRACTOR SHALL COORDINATE INTENDED CONSTRUCTION ACTIVITY, INCLUDING WORK SCHEDULE AND MATERIAL ACCESS, WITH THE RESIDENT LEASING AGENT.

15. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO SAFEGUARD ALL EXISTING STRUCTURES OR BURIED SERVICES AFFECTED BY THIS CONSTRUCTION. CONTRACTOR IS ALSO RESPONSIBLE FOR TEMPORARILY RELOCATING ANY LINES OR STRUTS AS NECESSARY TO COMPLETE THE REQUIRED WORK.

16. STRUCTURAL DESIGN IS FOR THE COMPLETE CONDITION ONLY. THE CONTRACTOR MUST BE COGNIZANT THAT THE REMOVAL OF ANY STRUCTURAL COMPONENT OF AN EXISTING TOWER HAS THE POTENTIAL TO CAUSE THE PARTIAL OR COMPLETE COLLAPSE OF THE STRUCTURE. ALL NECESSARY PRECAUTIONS MUST BE TAKEN TO ENSURE STRUCTURAL INTEGRITY, INCLUDING, BUT NOT LIMITED TO, ENGINEERING ASSESSMENT OF CONSTRUCTION STRESSES WITH INSTALLATION MAXIMUM WIND SPEED AND/OR TEMPORARY BRACING AND SHORING.

17. DO NOT SCALE DRAWINGS.

18. FOR THIS ANALYSIS AND MODIFICATION, THE TOWER HAS BEEN ASSUMED TO BE IN GOOD CONDITION WITHOUT ANY DEFECTS. IF THE CONTRACTOR DISCOVERS ANY INDICATION OF AN EXISTING STRUCTURAL DEFECT, CONTACT THE ENGINEER OF RECORD IMMEDIATELY.

19. MODIFICATION WORK SHALL BE COMPLETED IN CALM WIND CONDITIONS / OR APPROPRIATE WIND SPEED FOR THE TYPE OF MODIFICATION WORK TO BE INSTALLED.

20. THE CLIMBING FACILITIES, SAFETY CLIMB AND ALL PARTS THEREOF SHALL NOT BE IMPEDED, MODIFIED OR ALTERED WITHOUT THE EXPRESS APPROVAL OF THE CROWN POC. ALL ALTERATIONS TO A SAFETY CLIMB'S ORIGINAL MANUFACTURER'S CONFIGURATION MUST BE DESIGNED BY THE ENGINEER OF RECORD. IF THE GENERAL CONTRACTOR FINDS THAT THE CLIMBING FACILITIES ARE IMPEDED, EITHER DURING BIDDING, DURING PRE-FABRICATION MAPPING, OR WHILE ON-SITE, THE GENERAL CONTRACTOR SHALL CONTACT THE CROWN POC TO DETERMINE A METHOD OF RESOLUTION.

21. CONTRACTOR TO VERIFY REQUIRED STEEL PLATE LENGTHS FROM BOTTOM OF SECTION TO BOTTOM OF NEXT SECTION.

22. THESE DRAWINGS DO NOT INDICATE THE METHOD OF CONSTRUCTION. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION METHODS, MEANS, TECHNIQUES, SEQUENCES AND PROCEDURES.

23. ALL CHANGES/ALTERNATES/REVISIONS TO THESE DRAWINGS SHALL BE DOCUMENTED BY REQUEST FOR INFORMATION (RFI) FORM APPROVED BY ENGINEER OF RECORD. FINAL WORK AUTHORIZATION AND ALL CHANGE ORDERS SHALL BE APPROVED BY CLIENT AND/OR CLIENT REPRESENTATIVE PRIOR TO PROCEEDING WITH ANY WORK THAT DEVIATES FROM THE ORIGINAL DESIGN, SCOPE, PRICE AND/OR SCHEDULE.

24. ALL CONSTRUCTION MEANS AND METHODS; INCLUDING BUT NOT LIMITED TO, ERECTION PLANS, RIGGING PLANS, CLIMBING PLANS, AND RESCUE PLANS SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR RESPONSIBLE FOR THE EXECUTION OF THE WORK CONTAINED HEREIN AND SHALL MEET ANSI/ASSE A10.48 (LATEST EDITION); FEDERAL, STATE, AND LOCAL REGULATIONS; AND ANY APPLICABLE INDUSTRY CONSENSUS STANDARDS RELATED TO THE CONSTRUCTION ACTIVITIES BEING PERFORMED. ALL RIGGING PLANS SHALL ADHERE TO ANSI/ASSE A10.48 (LATEST EDITION) AND CROWN STANDARD CED-STD-10253 INCLUDING THE REQUIRED INVOLVEMENT OF A QUALIFIED ENGINEER FOR CLASS IV CONSTRUCTION TO CERTIFY THE SUPPORTING STRUCTURE(S) IN ACCORDANCE WITH ANSI/TIA-322 (LATEST EDITION).

25. IN THE EVENT OF AN EMERGENCY, CONTRACTOR SHALL CONTACT BLACK & VEATCH AND CROWN CASTLE PERSONNEL TO REPORT ANY EVENT OR EMERGENCY INCIDENT AT ANY CROWN CASTLE TOWER SITE PER THE CONTACT INFORMATION PROVIDED ON SHEET TM-1.

26. ANY WORK PERFORMED WITHOUT A PREFABRICATION MAPPING IS DONE AT THE RISK OF THE GC AND/OR FABRICATOR.

27. IF, DURING THE COURSE OF A FOUNDATION MODIFICATION, THE GC ENCOUNTERS EXISTING CONDUIT LOCATED WITHIN THE CONFINES OF THE EXISTING OR PROPOSED FOUNDATION CONCRETE, AND THIS CONDUIT IS NOT IN A LOCATION THAT IS SPECIFIED WITHIN THESE DESIGN DRAWINGS, THE GC SHALL IMMEDIATELY CONTACT THE EOR FOR GUIDANCE BEFORE PROCEEDING WITH THE INSTALLATION OF THE PROPOSED FOUNDATION MODIFICATIONS. IF CONDUIT IS TO BE INSTALLED THROUGH THE EXISTING FOUNDATION OR PROPOSED FOUNDATION MODIFICATION AND HASN'T BEEN SPECIFIED WITHIN THESE DESIGN DRAWINGS THEN THE GC SHALL IMMEDIATELY CONTACT THE EOR FOR GUIDANCE PRIOR TO PROCEEDING WITH THE INSTALLATION OF THE PROPOSED FOUNDATION MODIFICATIONS.

STRUCTURAL STEEL NOTES

1. DESIGN, FABRICATION, ERECTION, ALTERATION AND MAINTENANCE SHALL CONFORM TO THE FOLLOWING, UNLESS NOTED OTHERWISE (UNO).
   A. TIA-222: STRUCTURAL STANDARD FOR ANTENNA SUPPORTING STRUCTURES AND ANTENNAS
   B. TIA-1019-A: INSTALLATION, ALTERATION, AND MAINTENANCE OF ANTENNA SUPPORTING STRUCTURES AND ANTENNAS
   C. AISC: MANUAL OF STEEL CONSTRUCTION

2. ALL STRUCTURAL ELEMENTS SHALL CONFORM TO THE FOLLOWING REQUIREMENTS, UNO.
   A. STRUCTURAL STEEL, ASTM A572 GRADE 65 (FY = 65 KSI).
   B. ALL BOLTS, ASTM A325 TYPE 1 GALVANIZED HIGH STRENGTH BOLTS.
   C. ALL NUTS, ASTM A563 CARBON AND ALLOY STEEL NUTS.
   D. ALL WASHERS, ASTM F436 HARDENED STEEL WASHERS.

3. ALL HOLES SHALL BE CUT WITH A GRINDER OR DRILLED. HOLES SHALL NOT BE FLAME CUT THRU STEEL UNLESS APPROVED BY THE ENGINEER OF RECORD.

4. ALL FASTENERS SHALL NOT BE REUSED.

5. A NUT LOCKING DEVICE SHALL BE INSTALLED ON ALL PROPOSED AND/OR REPLACED ASTM A325 BOLTS.

6. ALL PROPOSED AND/OR REPLACED BOLTS SHALL BE OF SUFFICIENT LENGTH SUCH THAT THE END OF THE BOLT BE AT LEAST FLUSH WITH THE FACE OF THE NUT. IT IS NOT PERMITTED FOR THE BOLT END TO BE BELOW THE FACE OF THE NUT AFTER TIGHTENING IS COMPLETED.

7. HOT-DIP GALVANIZE ALL ITEMS, UNO.
   GALVANIZE PER ASTM A123, ASTM A153/A153M OR ASTM A653 G90, AS APPLICABLE.

8. FOR A LIST OF CROWN APPROVED COLD GALVANIZING COMPOUNDS, REFER TO CROWN ENG-BUL-10149, "TOWER PROTECTIVE COATINGS BULLETIN".

9. AFTER FINAL INSPECTION, ALL EXPOSED STRUCTURAL STEEL AS THE RESULT OF THIS SCOPE OF WORK INCLUDING WELDS, FIELD DRILLED HOLES, AND SHAFT INTERIORS (WHERE ACCESSIBLE), SHALL BE CLEANED AND COLD GALVANIZING APPLIED BY BRUSH IN ACCORDANCE WITH CROWN ENG-BUL-10149, "TOWER PROTECTIVE COATINGS BULLETIN". PHOTO DOCUMENTATION IS REQUIRED TO BE SUBMITTED TO THE MI INSPECTOR.

BASE PLATE GROUT REMOVAL NOTES

1. WHEN BASE PLATE GROUT REMOVAL IS SPECIFIED IN THE POLE MODIFICATION TABLE, THE CONTRACTOR SHALL TAKE THE FOLLOWING STEPS:
   A. THE GC SHALL BEGIN THIS PROCEDURE AS EARLY AS POSSIBLE DURING THE MODIFICATION PROCESS SO THAT IF ISSUES ARISE, THEY CAN BE RESOLVED WITHIN THE ANTICIPATED MODIFICATION TIMELINE.
   B. IF ANY DETERIORATED GROUT EXISTS, BEGIN AT THIS LOCATION. REMOVE DETERIORATED GROUT AND THE GROUT AROUND THE NEAREST ONE OR TWO ANCHOR RODS TO FULLY EXPOSE THE LEVELING NUT. IF THE GC DISCOVERS THAT A HALF NUT OR JAM NUT WAS USED AS A LEVELING NUT, OR IF NO LEVELING NUT IS PRESENT, IMMEDIATELY CONTACT CED AND THE CROWN POC (TYPICALLY THE MOD PM) FOR A RESOLUTION. DO NOT REMOVE ANY ADDITIONAL GROUT UNTIL DIRECTED TO BY CROWN.
   C. OTHERWISE, CHECK THE LEVELING NUT FOR TIGHTNESS IN ACCORDANCE WITH SECTION 1.3.2.3 OF ENG-PRC-10012 "BASE PLATE GROUT REPAIR". IF SEVERE CORROSION / MATERIAL LOSS IS FOUND OR CORROSION EXISTS TO THE POINT WHERE THE LEVELING NUT IS UNABLE TO BE TIGHTENED WHEN OBVIOUSLY LOOSE, IMMEDIATELY NOTIFY THE CROWN POC (TYPICALLY THE MOD PM). REFERENCE ENG-BUL-10114 "RUST CLASSIFICATION" FOR EXAMPLES OF MATERIAL LOSS. DO NOT REMOVE ANY ADDITIONAL GROUT UNTIL DIRECTED TO BY CROWN.
   D. IN THE EVENT THAT SEVERE CORROSION IS NOT ENCOUNTERED, AND BEING SURE TO CHECK EACH ANCHOR ROD FOR CORROSION PER ENG-BUL-10114 "RUST CLASSIFICATION", REMOVE ALL EXISTING BASEPLATE GROUT WHILE CHECKING EACH LEVELING NUT FOR TIGHTNESS IN ACCORDANCE WITH SECTION 1.3.2.3 OF ENG-PRC-10012 "BASE PLATE GROUT REPAIR".
   E. CONSISTENT WITH SECTION 1.3.2.4 OF ENG-PRC-10012 "BASE PLATE GROUT REPAIR", HAND TOOL CLEAN TO SSPC-SP2 AND SOLVENT CLEAN TO SSPC-SP1, ALL EXPOSED STRUCTURAL STEEL ELEMENTS, INCLUDING ANCHOR RODS, LEVELING NUTS, AND UNDERSIDE OF BASE PLATE TO THE GREATEST EXTENT POSSIBLE. ENSURE THAT ALL OLD GROUT IS REMOVED TO ALLOW COLD GALVANIZING TO ADHERE TO THE STEEL.
   F. APPLY BY BRUSH TWO COATS OF A CROWN-APPROVED COLD-GALVANIZING COMPOUND TO ALL EXPOSED STRUCTURAL STEEL ELEMENTS BENEATH THE BASE PLATE, AND ALLOW CURING IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION. A LIST OF CROWN-APPROVED DIRECT APPLICATION COLD-GALVANIZING COMPOUNDS CAN BE FOUND IN ENG-STD-10149 "TOWER PROTECTIVE COATINGS GUIDELINES" SECTION 2.1.1.
   G. THE GC SHALL PROVIDE PHOTOS OF EACH ANCHOR ROD WITH LEVELING NUT AFTER CLEANING BUT BEFORE COLD-GALVANIZATION, AND ALSO AGAIN AFTER COLD-GALVANIZATION, FOR INCLUSION IN THE MI REPORT.

DETAIL DRAWINGS SHALL GOVERN OVER ANY VARIANCE FROM THIS SHEET

WELDING NOTES

1. ALL WELDING SHALL BE IN ACCORDANCE WITH THE AWS D1.1/D1.1M, "STRUCTURAL WELDING CODE-STEEL".

2. ALL WELDING SHALL BE PERFORMED BY AWS CERTIFIED WELDERS.

3. ALL ARC WELDING ON CROWN STRUCTURES SHALL BE DONE IN ACCORDANCE WITH THE CROWN ENG-PLN-10015, "CUTTING AND WELDING SAFETY PLAN" AND AWS D1.1 (LATEST EDITION). THIS SHALL INCLUDE A CERTIFIED WELDING INSPECTOR (CWI) FOR ACCEPTANCE OR REJECTION OF ALL WELDING OPERATIONS, PRE-DURING-POST, USING THE ACCEPTANCE CRITERIA OF AWS D1.1. THE CWI SHALL WORK WITH THE GC ON THE LEVEL OF INTERACTION NEEDED TO CONDUCT THE WELDING INSPECTION. THE CERTIFIED WELDING INSPECTION IS THE RESPONSIBILITY OF THE GC.

4. FOR ALL WELDING, USE E80XX ELECTRODES FOR SMAW PROCESS AND E8XT-XX ELECTRODES FOR FCAW PROCESS, UNO.

5. SURFACES TO BE WELDED SHALL BE FREE FROM SCALE, SLAG, RUST, MOISTURE, GREASE OR ANY OTHER FOREIGN MATERIAL THAT WOULD PREVENT PROPER WELDING. GRIND THE SURFACE ADJACENT TO THE WELD FOR A DISTANCE OF 2" MINIMUM ALL AROUND. ENSURE BOTH AREAS ARE 100% FREE OF ALL GALVANIZING.

6. REPAIR THE GALVANIZED COATING. ALL AREAS AFFECTED BY THE FIELD DRILLING, FIELD GRINDING AND FIELD WELDING, BOTH INSIDE AND OUTSIDE THE MONOPOLE, SHALL BE REPAIRED PER CROWN DOCUMENT ENG-STD-10149. PRODUCTS TO BE APPLIED IN STRICT ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. AREAS THAT HAVE BEEN TOUCHED UP SHOULD BE INSPECTED AS PART OF THE ROUTINE MAINTENANCE OF THE STRUCTURE. NO SPRAY PAINT IS ALLOWED. AFTER ZINC-RICH PAINT IS DRY, OVERCOAT WITH OWNER'S PAINT SPECIFICATIONS, APPLIED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

7. DO NOT WELD IF THE TEMPERATURE OF THE STEEL IN THE VICINITY OF THE WELD AREA IS BELOW 0° F. WHEN THE TEMPERATURE IS BETWEEN 0° F AND 32° F, PREHEAT AND MAINTAIN THE STEEL IN THE VICINITY OF THE WELD AREA AT 70° F DURING THE WELDING PROCESS.

8. DO NOT WELD ON WET OR FROST-COVERED SURFACES & PROVIDE ADEQUATE PROTECTION FROM HIGH WINDS.

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

10. MOVE ALL COAX AND OTHER FLAMMABLE MATERIALS FROM ANY AREA THAT MAY BE HEATED DURING CONSTRUCTION.

11. CONTRACTOR SHALL MAKE PROPER PRECAUTIONS AND PROCEDURES TO PROTECT THE STRUCTURE FROM CATCHING FIRE DURING ALL WELDING OPERATIONS. THE FOLLOWING FIRE SAFETY PREVENTION PROTOCOL IS THE MINIMUM REQUIREMENTS DURING WELDING OPERATIONS. ALSO REFERENCE CROWN DOCUMENT ENG-BUL-10172 FOR ADDITIONAL WELDING REQUIREMENTS.
   - 500 GALLON WATER TANK WITH PUMP TO BE ON SITE AT ALL TIMES.
   - 2 FIRE EXTINGUISHERS ON SITE AT ALL TIMES.
   - 2 MAN FIRE WATCH ON ANY ADJACENT STRUCTURES, FIELDS AND POLE.
   - INTERMITTENT COOLING OF WELDED SURFACE TO REDUCE HEAT IN STRUCTURE.

PREPARED FOR:

CROWN CASTLE

BLACK & VEATCH

6800 W 115TH ST, SUITE 2292
OVERLAND PARK, KS 66211

PROJECT NO:	194393
DRAWN BY:	TCG
CHECKED BY:	THM

REV	DATE	DESCRIPTION
0	07/11/18	ISSUED FOR CONSTRUCTION

STATE OF CONNECTICUT
PING JIANG
30767
LICENSED
PROFESSIONAL ENGINEER
Jul 11, 2018

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

BU #876399
WO #1586583
(F) E. GRANBY 4Q2000 / GALASSO
60 SOUTH MAIN STREET
EAST GRANBY, CT 06026
HARTFORD COUNTY, USA

SHEET TITLE

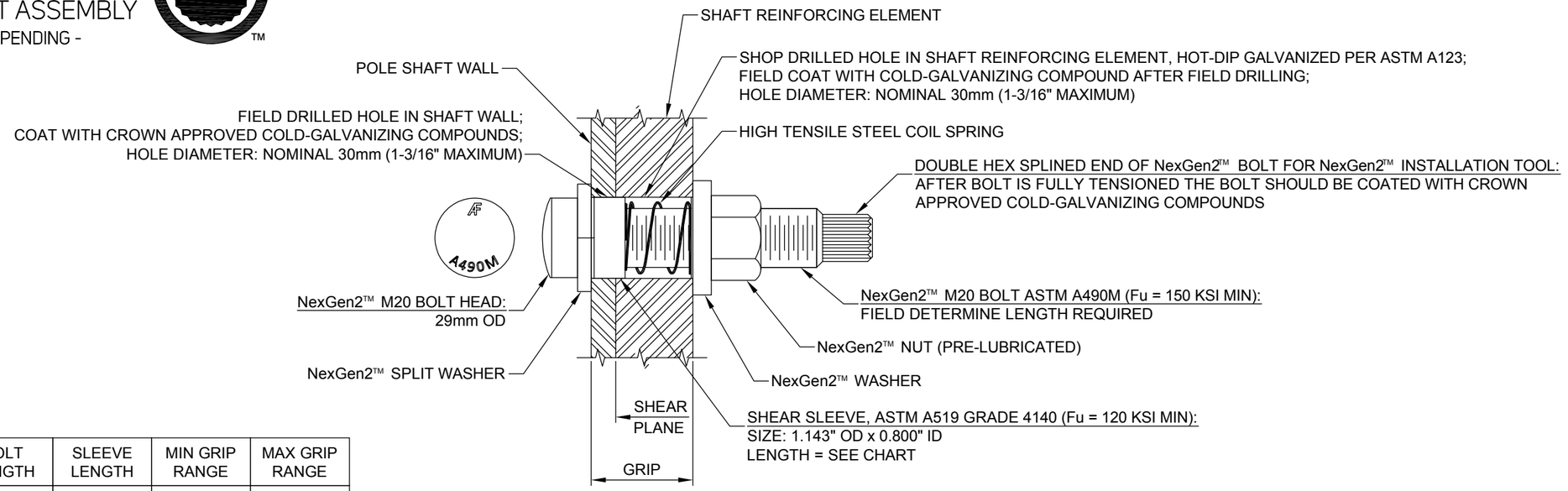
NOTES

SHEET NUMBER

TM-3

NEXGEN2 BLIND BOLT ASSEMBLY

- PATENT PENDING -



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

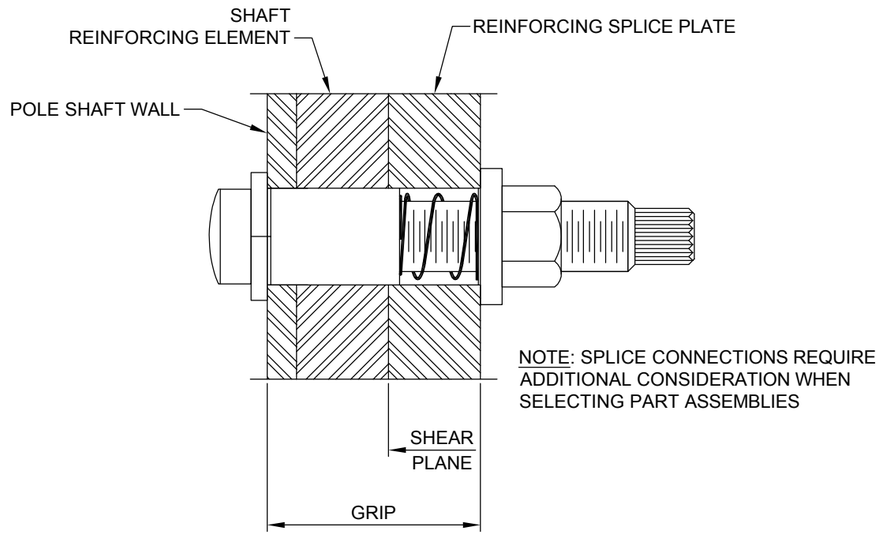
MANUFACTURER:
ALLFASTENERS
959 LAKE ROAD, MEDINA, OHIO, USA 44256
PHONE: 440-232-6060 | FAX: 440-232-60625
WEBSITE: WWW.ALLFASTENERS.COM | WWW.AFTOWER.COM

NOTE: ALL SHOP AND FIELD DRILLED HOLES SHALL BE NOMINAL 30mm DIAMETER. THE MAXIMUM HOLE DIAMETER PERMITTED IS 1-3/16".

NOTE: NexGen2™ COMPLETE ASSEMBLY SHALL BE MAGNI 565 COATED PER ASTM F2833 AS APPROPRIATE.

NOTE: INSTALL PER MANUFACTURER'S INSTRUCTIONS.

TYPICAL NG2™ BOLT DETAIL



NOTE: SPLICE CONNECTIONS REQUIRE ADDITIONAL CONSIDERATION WHEN SELECTING PART ASSEMBLIES

PREPARED FOR:

CROWN CASTLE

BLACK & VEATCH

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OVERLAND PARK, KS 66211

PROJECT NO:	194393
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STATE OF CONNECTICUT
PING JIANG
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LICENSED PROFESSIONAL ENGINEER

Jul 11, 2018

BU #876399
WO #1586583
(F) E. GRANBY 4Q2000 / GALASSO
60 SOUTH MAIN STREET
EAST GRANBY, CT 06026
HARTFORD COUNTY, USA

SHEET TITLE

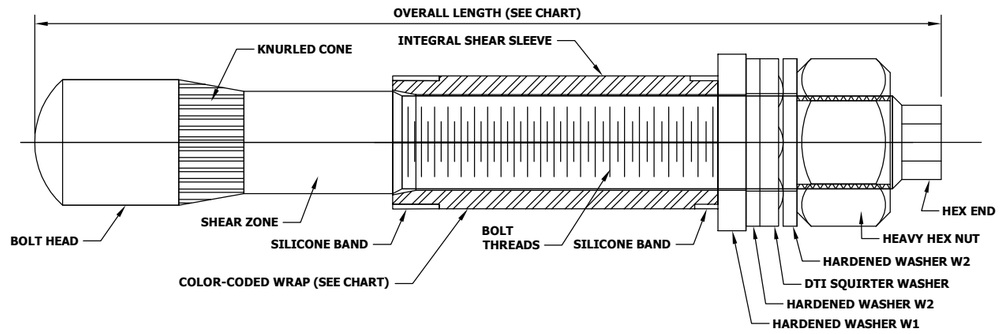
NEXGEN2 BOLT SPECS & TIGHTENING PROCEDURE

SHEET NUMBER

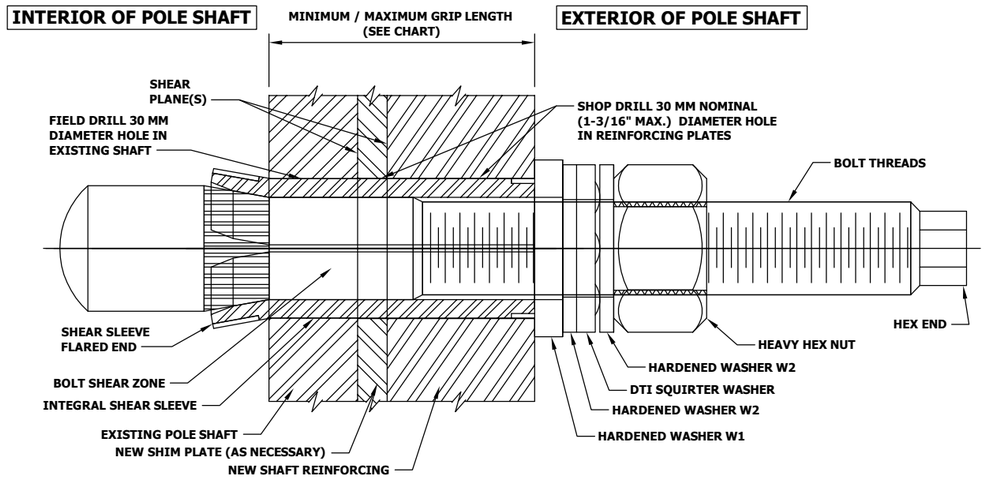
TM-4

FORGBolt™ NOTE SHEET: A325/PC8.8 LANDSCAPE VERSION DATE 01/29/2015; Rev. 1.0 04/23/2015

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



PRE-INSTALLED FORGBolt™ ASSEMBLY DETAIL 1



INSTALLED FORGBolt™ ASSEMBLY DETAIL 2

BOLT HOLE NOTES:

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

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

CONTAINS PROPRIETARY INFORMATION
PATENT PENDING

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

FORGBolt™ Installation

Follow all Manufacturer/Distributer Recommendations for Installation, Tightening, and Inspection.

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

PREPARED FOR:

CROWN CASTLE

BLACK & VEATCH
6800 W 115TH ST, SUITE 2292
OVERLAND PARK, KS 66211

PROJECT NO:	194393
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CHECKED BY:	THM

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STATE OF CONNECTICUT
PING JIANG
30767
LICENSED PROFESSIONAL ENGINEER
Jul 11, 2018

BU #876399
WO #1586583
(F) E. GRANBY 4Q2000 / GALASSO
60 SOUTH MAIN STREET
EAST GRANBY, CT 06026
HARTFORD COUNTY, USA

SHEET TITLE
FORGBOLT BOLT SPECS & TIGHTENING PROCEDURE

SHEET NUMBER
TM-5

AJAX FASTENERS

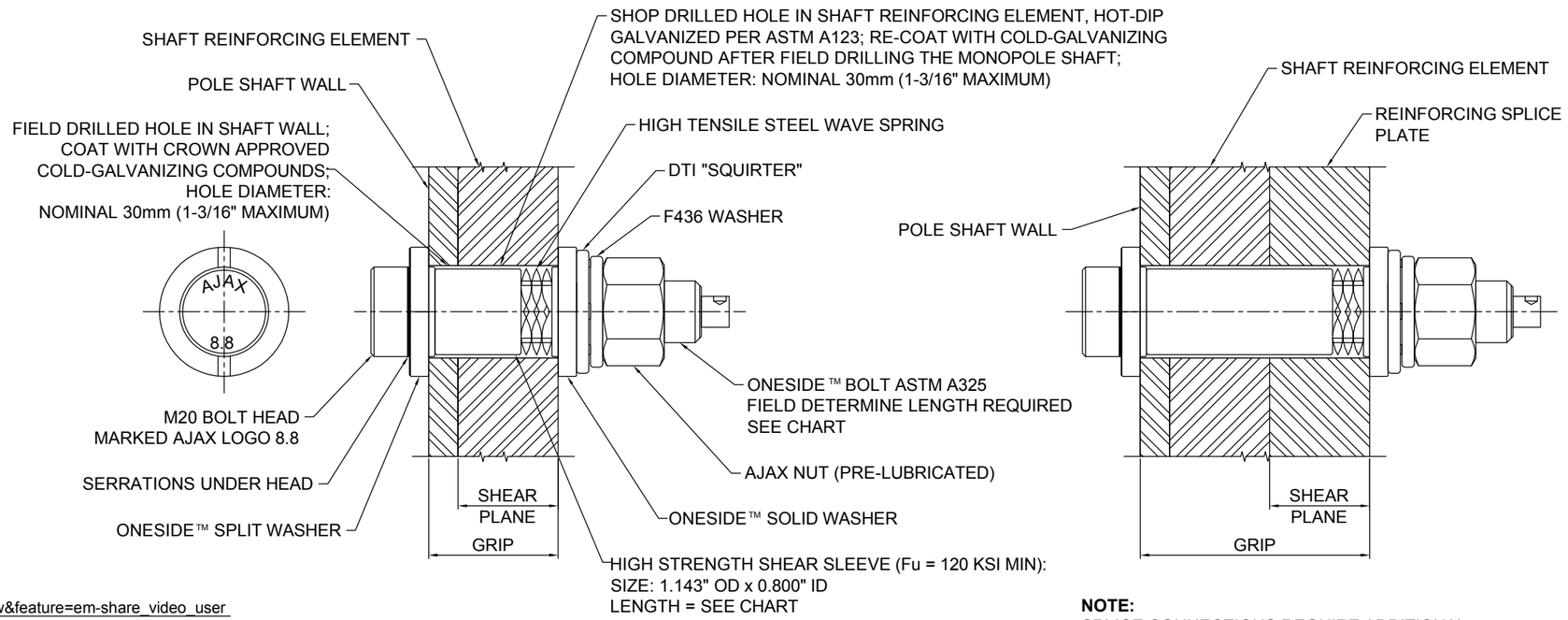
ONESIDE™

PATENT US 7,373,709B2

MANUFACTURER INSTALLATION VIDEO

https://www.youtube.com/watch?v=ZGBS0eLrZsw&feature=em-share_video_user

INTERIOR OF POLE SHAFT | EXTERIOR OF POLE SHAFT



NOTE:
SPLICE CONNECTIONS REQUIRE ADDITIONAL CONSIDERATION WHEN SELECTING PART ASSEMBLIES

AJAX ONESIDE™ BOLT DETAIL

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

MANUFACTURER
AJAX FASTENERS
SALES + TECH: ONESIDE@AJAXFAST.COM.AU

DISTRIBUTOR
IRA SVENSGAARD AND ASSOCIATES
PETER SVENDSGAARD - PETERS@IRASVENS.COM
JOHN KILLAM - JOHN@IRASVENS.COM
PHONE (530) 647-8225
FAX (530) 647-8229

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

INSPECTION:
1. A MINIMUM OF 4 OUT OF 5 SQUIRTER® DTI PROTRUSIONS SHALL BE ENGAGED IN ANY AJAX/DTI BOLT ASSEMBLY IN THE REINFORCING MEMBERS. A FEELER GAGE MAY BE USED TO VERIFY PROTRUSION COMPRESSION.
2. INSPECTIONS SHALL BE IN ACCORDANCE WITH THE MANUFACTURERS REQUIREMENTS AND CROWN DOCUMENT ENG-SOW-10007: *MODIFICATION INSPECTION SOW*.

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CROWN CASTLE

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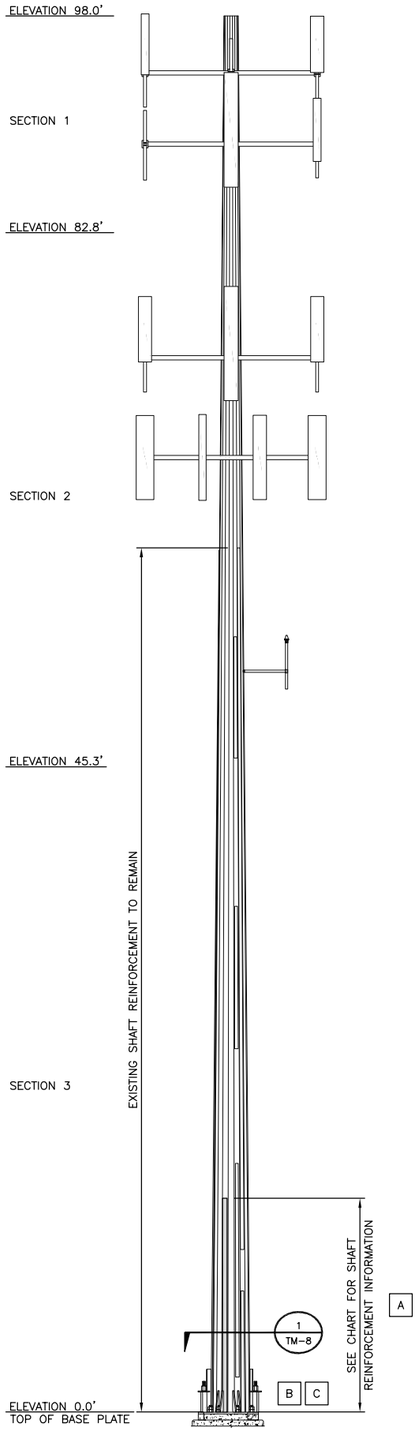
HARTFORD COUNTY, USA

SHEET TITLE

AJAX ONESIDE BOLT SPECS & TIGHTENING PROCEDURE

SHEET NUMBER

TM-6



TOWER ELEVATION

NO SCALE

POLE MODIFICATION SCHEDULE			
CALLOUT	ELEVATION (FT)	MODIFICATION	REFERENCE SHEET
A	0.0 – 15.0	INSTALL NEW FLAT PLATE REINFORCEMENT	TM-8, TM-9, & TM-10
B	0.0	REMOVED EXISTING BASE PLATE GROUT SEE BASE PLATE GROUT REMOVAL NOTES	TM-3
C	0.0	CLIMBING PATH MAY BECOME OBSTRUCTED AFTER INSTALLATION OF THE PROPOSED MODIFICATIONS. IF NOT ALREADY EXISTING ON THIS TOWER, CONTRACTOR TO PROVIDE NEW SIGNAGE PER CROWN CASTLE REQUIREMENTS.	–

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

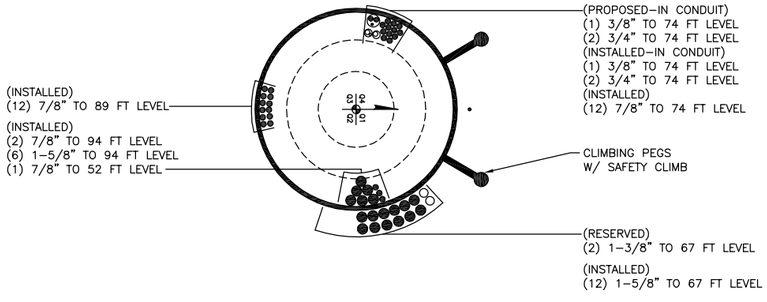
CCI FLAT PLATE (65 KSI) REINFORCEMENT SCHEDULE										
BOTTOM ELEVATION	TOP ELEVATION	PART NUMBER	FLATS / DEGREES (°)	TERMINATION BOLTS (BOTTOM)	TERMINATION BOLTS (TOP)	MAX INTERMEDIATE BOLT SPACING	BOLT QUANTITY PER PLATE	STEEL WEIGHT PER PLATE (BLACK)	TOTAL BOLT QUANTITY	TOTAL STEEL WEIGHT (BLACK)
0'–0"	15'–0"	CCI–WSFP–06010015	2, 15	0	8	1'–4"	17	306	34	612
								TOTAL	34	612

NOTES FOR CROWN REINFORCING (65 KSI) MATERIAL

1. DO NOT WELD WITHOUT APPROVAL FROM THE EOR.
2. 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 THICKNESS SHALL BE NO LESS THAN 1/16". STACKING OF SHIMS IS PERMITTED. FINGER SHIMS AND HORSESHOE SHIMS ARE PERMITTED. STACKED SHIMS SHALL BE NO GREATER THAN 1/4" WITHOUT EOR APPROVAL.
3. ALL FLAT PLATE REINFORCEMENT IS TO BE INSTALLED CENTERED ON ITS DESIGNATED FLAT, UNO.
4. SEE CMRP 65 KSI PARTS CATALOG 2nd EDITION FOR PART DETAILS.
5. TOWER SHAFT REINFORCEMENTS MAY BE INSTALLED WITH ALLFASTENERS NEXGEN2 BLIND BOLT ASSEMBLY, AS DETAILED ON SHEET TM–4, FORGBOLTS, AS DETAILED ON SHEET TM–5, OR AJAX ONESIDE BOLTS, AS DETAILED ON SHEET TM–6.
6. THE FOLLOWING ELEVATION TOLERANCES ARE ACCEPTABLE. ANY FURTHER DEVIATIONS REQUIRE EOR REVIEW AND APPROVAL.
   - FOR PLATE STARTING AT 6", THE BOTTOM OF THE FLAT PLATE SHALL BEGIN AT 6" ± 1". FOR SINGLE PLATES OR MULTIPLE PLATES SPLICED TOGETHER, THE BOTTOM OF THE FLAT PLATE RUN SHALL BEGIN AT THE PROPOSED ELEVATION ± 3".
   - FOR MULTIPLE PLATES SPLICED TOGETHER, THE TOP OF THE FLAT PLATE IS TO BE PLACED SUCH THAT THERE IS NO MORE THAN 3" DIFFERENCE BETWEEN THE ACTUAL OVERALL LENGTH OF THE SPAN AND THE PROPOSED OVERALL LENGTH OF THE SPAN, FROM THE BOTTOM OF THE BOTTOM PLATE TO THE TOP OF THE TOP PLATE.
7. PRIOR TO FABRICATION AND INSTALLATION, CONTRACTOR SHALL FIELD VERIFY ALL LENGTHS AND QUANTITIES GIVEN. LENGTH AND QUANTITIES PROVIDED ARE FOR QUOTING PURPOSES ONLY, AND SHALL NOT BE USED FOR FABRICATION.

MANUFACTURER POLE SPECIFICATIONS	
POLE SHAFT TYPE	18 SIDED POLYGON
SHAFT STEEL	ASTM A572 GRADE 65
BASE PLATE STEEL	ASTM A871 GRADE 60
ANCHOR RODS	2 1/4"ø #18J ASTM A615 GRADE 75

MANUFACTURER SHAFT SECTION DATA					
SHAFT SECTION	SHAFT LENGTH (FT)	THICKNESS (IN)	LAP SPLICE (IN)	DIAMETER ACROSS FLAT (IN) @ TOP	DIAMETER ACROSS FLAT (IN) @ BOTTOM
1	15.21	0.1875	29	15.28	12.00
2	39.92	0.2500		22.86	14.26
3	48.71	0.3125	41	32.00	21.50
NOTE: DIMENSIONS SHOWN DO NOT INCLUDE GALVANIZING TOLERANCES					



COAX FEEDLINE PLAN

NO SCALE

EXISTING FEEDLINE PLAN SHOWN ON THIS DRAWING IS BASED ON CURRENT BEST KNOWLEDGE OF THE EXISTING CONDITION. IF THE EXISTING FEEDLINE LAYOUT IS NOT AS SHOWN ON THIS DRAWING CONTRACTOR SHALL NOTIFY ENGINEER.

PREPARED FOR:

CROWN CASTLE

BLACK & VEATCH

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Jul 11, 2018

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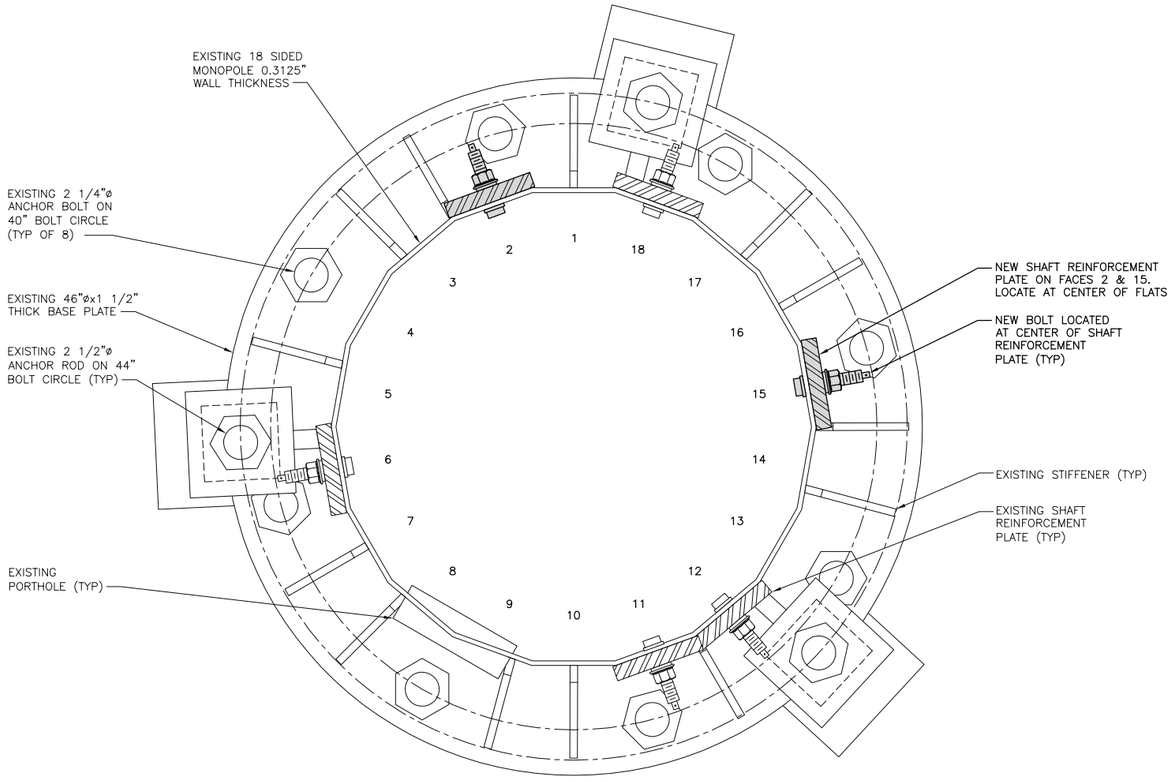
60 SOUTH MAIN STREET
EAST GRANBY, CT 06026
HARTFORD COUNTY, USA

SHEET TITLE

TOWER ELEVATION

SHEET NUMBER

TM-7



SECTION 1

NO SCALE

PREPARED FOR:

CROWN CASTLE

BLACK & VEATCH

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SHEET TITLE

TOWER SECTIONS

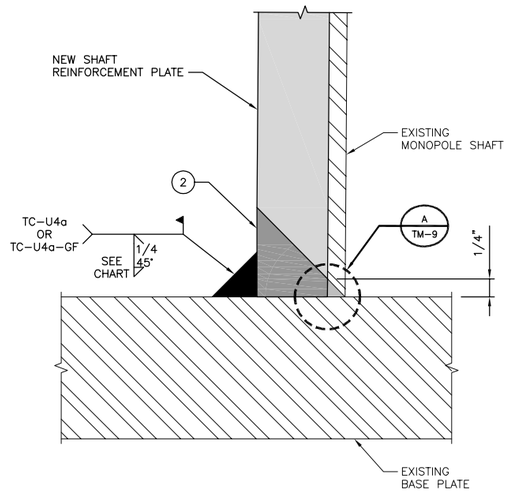
SHEET NUMBER

TM-8

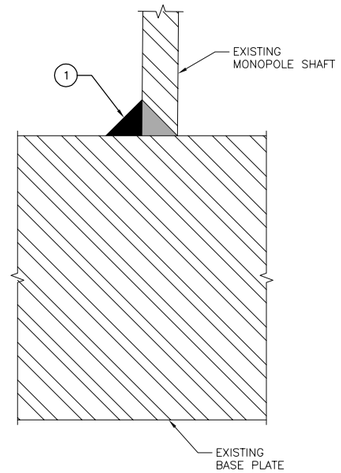
OPTION 1

NOTES

1. GRIND EXISTING FILLET WELD FLUSH TO BASE PLATE & POLE FOR THE WIDTH OF THE REINFORCEMENT PLATE PLUS 1/4" ON EACH SIDE (DO NOT OVER GRIND).
2. PERFORM CJP WELD WITH REINFORCING FILLET WELD USING POLE AS BACKING BAR.



WELD DETAIL
NO SCALE



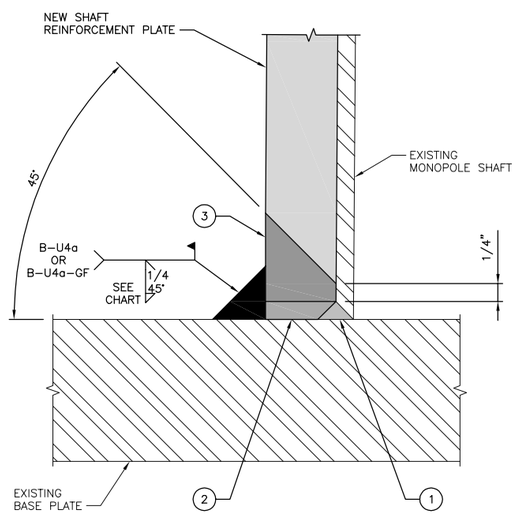
DETAIL A
EXISTING WELD
NO SCALE

PART NUMBER	PLATE SIZE	MINIMUM REINFORCING WELD
CCI-WSFP-040075 CCI-WAFP-040075	3/4" x 4"	1/4"
CCI-WSFP-045100 CCI-WAFP-045100	1" x 4 1/2"	1/4"
CCI-WSFP-060100 CCI-WAFP-060100	1" x 6"	3/8"
CCI-WSFP-065125 CCI-WAFP-065125	1 1/4" x 6 1/2"	1/2"
CCI-WSFP-085125 CCI-WAFP-085125	1 1/4" x 8 1/2"	5/8"

OPTION 2

NOTES

1. CLEAN EXISTING WELD FROM GALVANIZING
2. BUILD A PLATFORM WITH WELD AT THE SAME HEIGHT OF THE EXISTING FILLET WELD (TO REDUCE THE AMOUNT OF WELD TO BUILD THE PLATFORM, IT IS ALLOWABLE TO PARTIALLY GRIND THE HEIGHT OF THE EXISTING FILLET WELD TO A 1/4" MINIMUM).
3. PERFORM CJP WELD WITH REINFORCING FILLET WELD USING POLE AS BACKING BAR.



WELD DETAIL
NO SCALE

PREPARED FOR:

CROWN CASTLE

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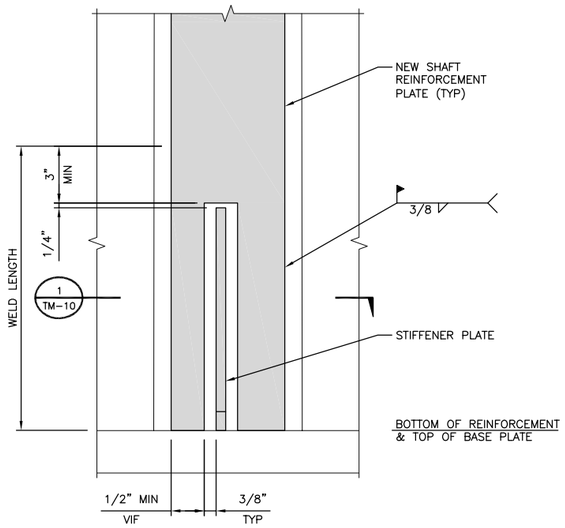
SHEET TITLE

BASE PLATE
WELD DETAILS

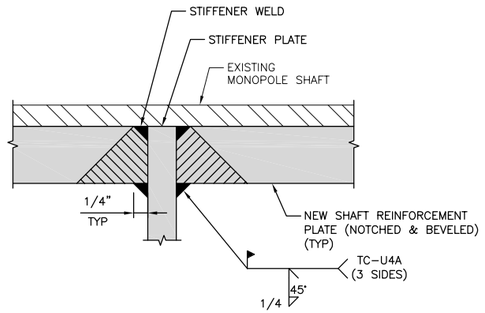
SHEET NUMBER

TM-9

OPTION 1

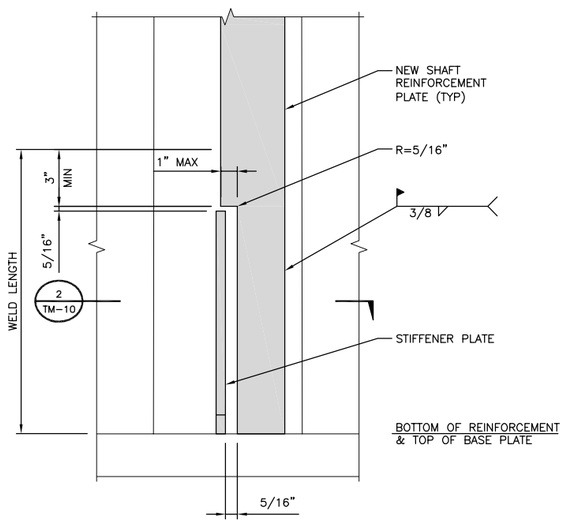


TYPICAL WELDED
REINFORCEMENT PLATE AROUND
STIFFENER PLATE DETAIL
NO SCALE

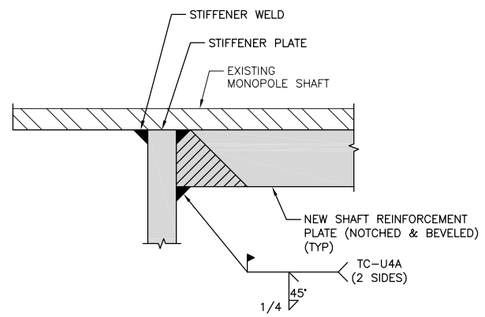


SECTION 1
NO SCALE

OPTION 2



TYPICAL WELDED
REINFORCEMENT PLATE AROUND
STIFFENER PLATE DETAIL
NO SCALE



SECTION 2
NO SCALE

PREPARED FOR:

CROWN CASTLE

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SHEET TITLE

BASE PLATE
WELD DETAILS

SHEET NUMBER

TM-10

Radio Frequency Emissions Analysis Report

AT&T Existing Facility

Site ID: CT5359

FA#: 10090913

Granby East
60 South Main Street
East Granby, CT 06026

July 25, 2018

Centerline Communications Project Number: 950012-132

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**37.17 %**

July 25, 2018

AT&T Mobility – New England
Attn: John Benedetto, RF Manager
550 Cochituate Road
Suite 550 – 13&14
Framingham, MA 06040

Emissions Analysis for Site: **CT5359 – Granby East**

Centerline Communications, LLC ("Centerline") was directed to analyze the proposed AT&T facility located at **60 South Main Street, East Granby, CT**, for the purpose of determining whether the emissions from the Proposed AT&T Antenna Installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter (μW/cm2). The number of $\mu W/cm^2$ calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

All results were compared to the FCC (Federal Communications Commission) radio frequency exposure rules, 47 CFR 1.1307(b)(1) – (b)(3), to determine compliance with the Maximum Permissible Exposure (MPE) limits for General Population/Uncontrolled environments as defined below.

General population/uncontrolled exposure limits apply to situations in which the general population may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Therefore, members of the general population would always be considered under this category when exposure is not employment related, for example, in the case of a telecommunications tower that exposes persons in a nearby residential area.

Population exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limits for the 700 and 850 MHz Bands are approximately 467 $\mu W/cm^2$ and 567 $\mu W/cm^2$ respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 2300 MHz (WCS) bands is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

Occupational/controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully aware of the potential for exposure and can exercise control over their exposure. Occupational/controlled exposure limits also apply where exposure is of a transient nature as a result of incidental passage through a location where exposure levels may be above general population/uncontrolled limits (see below), as long as the exposed person has been made fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were performed for the proposed AT&T Wireless antenna facility located at **60 South Main Street, East Granby, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since AT&T is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. All power values expressed and analyzed are maximum power levels expected to be used on all radios.

All emissions values for additional carriers were taken from the Connecticut Siting Council (CSC) active MPE database. Values in this database are provided by the individual carriers themselves

For each sector the following channel counts, frequency bands and power levels were utilized as shown in *Table 1*:

Technology	Frequency Band	Channel Count	Transmit Power per Channel (W)
UMTS	850 MHz	2	30
UMTS	1900 MHz (PCS)	2	30
LTE	1900 MHz (PCS)	4	40
LTE	2300 MHz (WCS)	4	30
LTE	700 MHz	2	40

Table 1: Channel Data Table

The following antennas listed in *Table 2* were used in the modeling for transmission in the 700 MHz, 850 MHz, 1900 MHz (PCS) and 2300 MHz (WCS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

Sector	Antenna Number	Antenna Make / Model	Antenna Centerline (ft)
A	1	Powerwave 7770	76
A	2	CCI TPA-65R-LCUUUU-H8	76
A	3	Powerwave P65-17-XLH-RR	76
B	1	Powerwave 7770	76
B	2	CCI TPA-65R-LCUUUU-H8	76
B	3	Powerwave SBNH-1D6565C	76
C	1	Powerwave 7770	76
C	2	CCI TPA-65R-LCUUUU-H8	76
C	3	Powerwave P65-17-XLH-RR	76

Table 2: Antenna Data

All calculations were done with respect to uncontrolled / general population threshold limits.

RESULTS

Per the calculations completed for the proposed AT&T configurations *Table 3* shows resulting emissions power levels and percentages of the FCC's allowable general population limit.

Antenna ID	Antenna Make / Model	Frequency Bands	Antenna Gain (dBd)	Channel Count	Total TX Power (W)	ERP (W)	MPE %
Antenna A1	Powerwave 7770	850 MHz / 1900 MHz (PCS)	11.4 / 13.4	4	120	2,140.89	2.03
Antenna A2	CCI TPA-65R-LCUUUU-H8	1900 MHz (PCS) / 2300 MHz (WCS)	13.75 / 14.45	8	280	7,137.54	5.24
Antenna A3	Powerwave P65-17-XLH-RR	700 MHz	14.3	2	80	2,153.23	3.38
						Sector A Composite MPE%	**10.65**
Antenna B1	Powerwave 7770	850 MHz / 1900 MHz (PCS)	11.4 / 13.4	4	120	2,140.89	2.03
Antenna B2	CCI TPA-65R-LCUUUU-H8	1900 MHz (PCS) / 2300 MHz (WCS)	13.75 / 14.45	8	280	7,137.54	5.24
Antenna B3	Powerwave SBNH-1D6565C	700 MHz	14.3	2	80	1,853.92	2.91
						Sector B Composite MPE%	**10.18**
Antenna C1	Powerwave 7770	850 MHz / 1900 MHz (PCS)	11.4 / 13.4	4	120	2,140.89	2.03
Antenna C2	CCI TPA-65R-LCUUUU-H8	1900 MHz (PCS) / 2300 MHz (WCS)	13.75 / 14.45	8	280	7,137.54	5.24
Antenna C3	Powerwave P65-17-XLH-RR	700 MHz	14.3	2	80	2,153.23	3.38
						Sector C Composite MPE%	**10.65**

Table 3: AT&T Emissions Levels

The Following table (*table 4*) shows all additional carriers on site and their MPE% as recorded in the CSC active MPE database for this facility along with the newly calculated maximum AT&T MPE contributions per this report. FCC OET 65 specifies that for carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. For this site, the sectors with the largest calculated MPE% are Sectors A & C. *Table 5* below shows a summary for each AT&T Sector as well as the composite MPE value for the site.

Site Composite MPE%	
Carrier	**MPE%**
AT&T – Sectors A & C	**10.65 %**
MetroPCS	1.36 %
Verizon Wireless	17.97 %
Sprint	2.88 %
T-Mobile	4.31 %
Site Total MPE %:	**37.17 %**

Table 4: All Carrier MPE Contributions

AT&T Sector A Total:	10.65 %
AT&T Sector B Total:	10.18 %
AT&T Sector C Total:	10.65 %
Site Total:	37.17 %

Table 5: Site MPE Summary

FCC OET 65 specifies that for carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. *Table 6* below details a breakdown by frequency band and technology for the MPE power values for the maximum calculated AT&T sector(s). For this site, the sectors with the largest calculated MPE% are Sectors A & C.

AT&T _ Frequency Band / Technology Max Power Values (Sectors A &C)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
AT&T 850 MHz UMTS – Antenna 1	2	414.12	76	6.08	850 MHz	567	1.07%
AT&T 1900 MHz (PCS) UMTS – Antenna 1	2	656.33	76	9.63	1900 MHz (PCS)	1000	0.96%
AT&T 1900 MHz (PCS) LTE – Antenna 2	4	948.55	76	27.84	1900 MHz (PCS)	1000	2.78%
AT&T 2300 MHz (WCS) LTE – Antenna 2	4	835.84	76	24.53	2300 MHz (WCS)	1000	2.45%
AT&T 700 MHz LTE – Antenna 3	2	1,076.61	76	15.80	700 MHz	467	3.38%
						Total:	**10.65%**

Table 6: AT&T Maximum Sector MPE Power Values

Summary

All calculations performed for this analysis yielded results that were **within** the allowable limits for general population exposure to RF Emissions.

The anticipated maximum composite contributions from the AT&T facility as well as the site composite emissions value with regards to compliance with FCC's allowable limits for general population exposure to RF Emissions are shown here:

AT&T Sector	Power Density Value (%)
Sector A:	10.65 %
Sector B:	10.18 %
Sector C:	10.65 %
AT&T Maximum Total (Sectors A & C):	10.65 %
Site Total:	37.17 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **37.17 %** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

FCC guidelines state that if a site is found to be out of compliance (over allowable thresholds), that carriers over a 5% contribution to the composite value will require measures to bring the site into compliance. For this facility, the composite values calculated were well within the allowable 100% threshold standard per the federal government.

Scott Heffernan
RF Engineering Director
Centerline Communications, LLC
95 Ryan Drive, Suite 1
Raynham, MA 02767

60 SOUTH MAIN STREET

Location	60 SOUTH MAIN STREET	**Mblu**	11/ 11/ / /
Acct#		**Owner**	GALASSO HOLDINGS LLC
Assessment	$1,281,200	**Appraisal**	$1,830,100
PID	341	**Building Count**	3

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2013	$1,293,500	$536,600	$1,830,100
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2013	$905,600	$375,600	$1,281,200

Owner of Record

Owner	GALASSO HOLDINGS LLC	**Sale Price**	$0
Co-Owner		**Certificate**	
Address	PO BOX 1776 EAST GRANBY, CT 06026	**Book & Page**	0112/0814
		Sale Date	03/06/1997
		Instrument	

Ownership History

Ownership History					
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Instrument**	**Sale Date**
GALASSO HOLDINGS LLC	$0		0112/0814		03/06/1997

Building Information

Building 1 : Section 1

Year Built:	1969
Living Area:	43,230
Replacement Cost:	$933,768
Building Percent Good:	80
Replacement Cost Less Depreciation:	$747,000

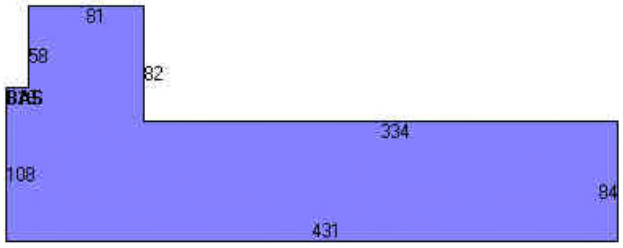
Building Attributes	
Field	**Description**

STYLE	Garage
MODEL	Commercial
Grade	Average
Stories:	1
Occupancy	1
Exterior Wall A	Concr/Cinder
Exterior Wall B	
Roof Structure	Gable/Hip
Roof Cover	Tar & Gravel
Interior Wall A	Unfin/Minimum
Interior Wall B	
Interior Floor A	Concr-Finished
Interior Floor B	
Heating Fuel	Oil
Heating Type	Steam
AC Type	None
Bldg Use	Industrial MDL-94
Total Rooms	
Total Bedrms	00
Total Baths	0
1st Floor Use:	3-1C
Heat/AC	NONE
Frame Type	MASONRY
Baths/Plumbing	AVERAGE
Ceiling/Wall	NONE
Rooms/Prtns	AVERAGE
Wall Height	16
% Comn Wall	0

Building Photo

(http://images.vgsi.com/photos/EastGranbyCTPhotos//\00\00\20

Building Layout



(http://images.vgsi.com/photos/EastGranbyCTPhotos//Sketches/

Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
BAS	First Floor	43,230	43,230
		43,230	43,230

Building 2 : Section 1

Year Built: 1969
Living Area: 5,720
Replacement Cost: $242,083
Building Percent Good: 80
Replacement Cost Less Depreciation: $193,700

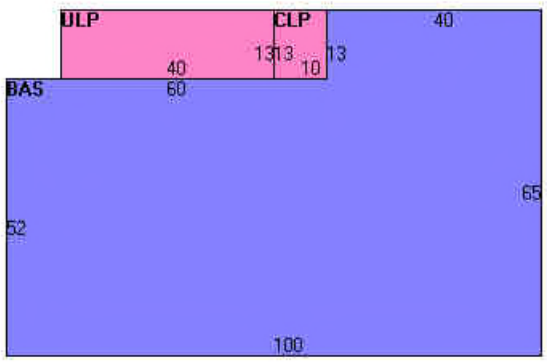
Building Attributes : Bldg 2 of 3	
Field	**Description**
STYLE	Light Indust
MODEL	Industrial
Grade	Average

Stories:	1
Occupancy	1
Exterior Wall A	Concr/Cinder
Exterior Wall B	
Roof Structure	Gable/Hip
Roof Cover	Asphalt
Interior Wall A	Unfin/Minimum
Interior Wall B	
Interior Floor A	Concr-Finished
Interior Floor B	Minimum/Plywd
Heating Fuel	Oil
Heating Type	Forced Air-Duc
AC Type	None
Bldg Use	Industrial MDL-96
Total Rooms	
Total Bedrms	00
Total Baths	0
1st Floor Use:	3-1
Heat/AC	NONE
Frame Type	MASONRY
Baths/Plumbing	AVERAGE
Ceiling/Wall	NONE
Rooms/Prtns	AVERAGE
Wall Height	10
% Comn Wall	0

Building Photo

(http://images.vgsi.com/photos/EastGranbyCTPhotos//\00\00\20

Building Layout



(http://images.vgsi.com/photos/EastGranbyCTPhotos//Sketches/

Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
BAS	First Floor	5,720	5,720
CLP	Loading Platform, Finished	130	0
ULP	Loading Platform, Unfinished	520	0
		6,370	5,720

Building 3 : Section 1

Year Built: 1972
Living Area: 8,000
Replacement Cost: $347,440
Building Percent Good: 80
Replacement Cost Less Depreciation: $278,000

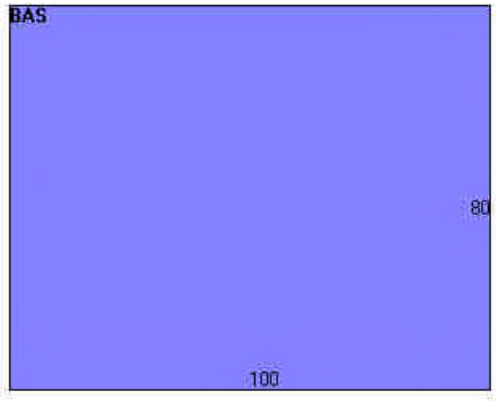
Building Attributes : Bldg 3 of 3	
Field	**Description**
STYLE	Light Indust

MODEL	Industrial
Grade	Average
Stories:	1
Occupancy	1
Exterior Wall A	Concr/Cinder
Exterior Wall B	
Roof Structure	Flat
Roof Cover	Rolled Compos
Interior Wall A	Unfin/Minimum
Interior Wall B	
Interior Floor A	Concr-Finished
Interior Floor B	
Heating Fuel	Oil
Heating Type	Steam
AC Type	None
Bldg Use	Industrial MDL-96
Total Rooms	0
Total Bedrms	0
Total Baths	0
1st Floor Use:	
Heat/AC	NONE
Frame Type	MASONRY
Baths/Plumbing	AVERAGE
Ceiling/Wall	NONE
Rooms/Prtns	AVERAGE
Wall Height	16
% Comn Wall	0

Building Photo

(http://images.vgsi.com/photos/EastGranbyCTPhotos//default.jpg

Building Layout



(http://images.vgsi.com/photos/EastGranbyCTPhotos//Sketches/

Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
BAS	First Floor	8,000	8,000
		8,000	8,000

Extra Features

Extra Features				Legend
Code	**Description**	**Size**	**Value**	**Bldg #**
MEZ	Mezzanine	960 S.F.	$11,500	3

Land

Land Use

Use Code	3-1C
Description	Industrial MDL-94
Zone	I

Land Line Valuation

Size (Acres)	89.97
Frontage	0
Depth	0

Neighborhood		**Assessed Value**	$375,600
Alt Land Appr	No	**Appraised Value**	$536,600
Category			

Outbuildings

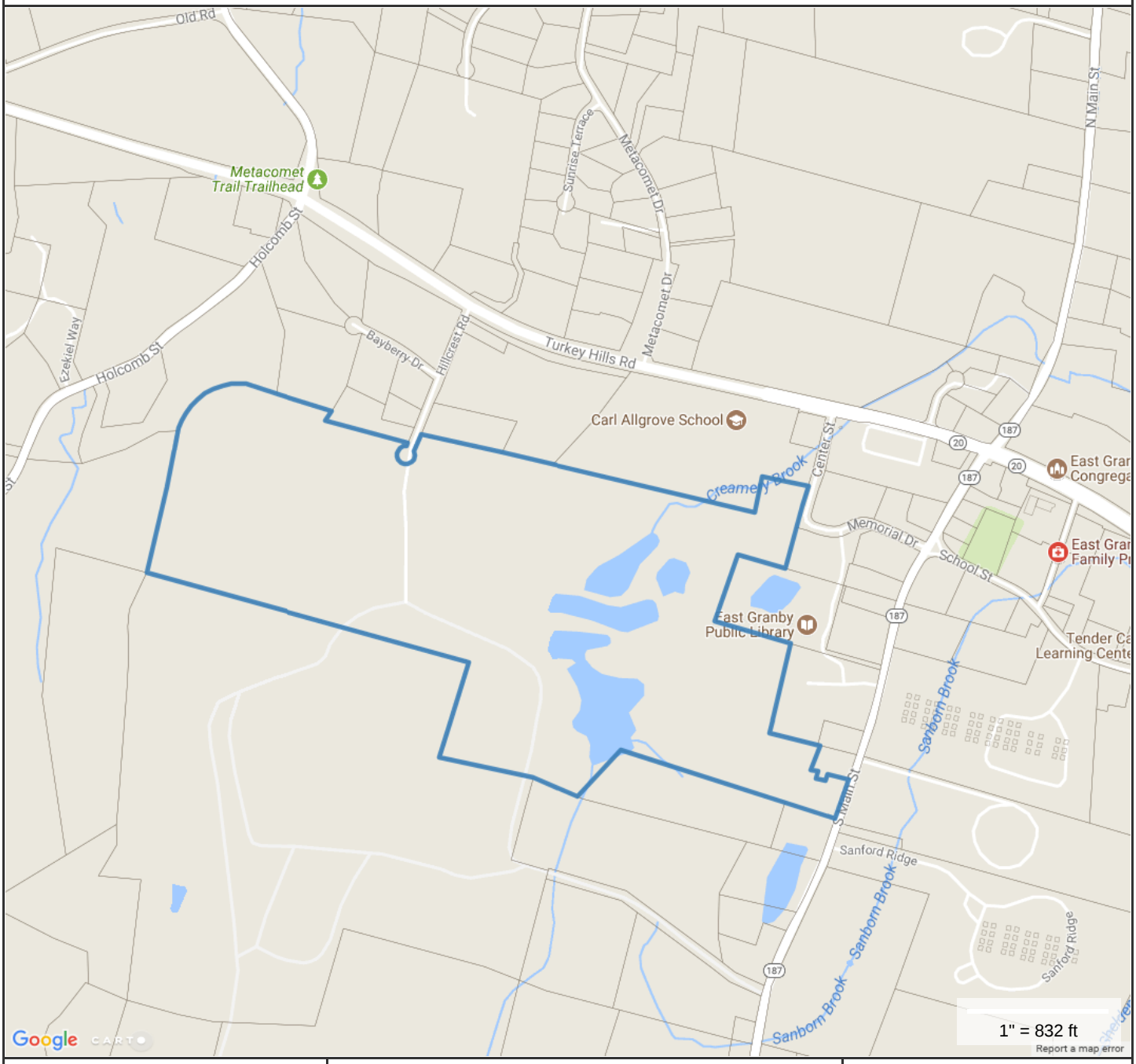
Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
SHED	Shed	A	Average	180 S.F.	$1,300	1
SHED	Shed	A	Average	640 S.F.	$3,500	2
LNT	Lean-To			350 S.F.	$1,400	1
SHED	Shed	A	Average	100 S.F.	$500	2
SHED	Shed	A	Average	200 S.F.	$3,600	3
LNT	Lean-To			240 S.F.	$1,000	2
SHED	Shed	A	Average	1250 S.F.	$11,300	1
GAR1	Garage	A	Average	1280 S.F.	$19,200	2
LNT	Lean-To			1472 S.F.	$8,800	1
SHED	Shed	A	Average	160 S.F.	$1,700	1
SHED	Shed	A	Average	252 S.F.	$1,400	2
SHED	Shed	A	Average	140 S.F.	$1,000	2
SHED	Shed	G	Good	360 S.F.	$8,600	1

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2012	$1,409,400	$359,400	$1,768,800
2007	$818,700	$429,800	$1,248,500
2003	$1,010,400	$367,100	$1,377,500

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2012	$986,700	$251,600	$1,238,300
2007	$573,100	$300,900	$874,000
2003	$707,300	$256,900	$964,200

60 South Main Street, East Granby, CT



Property Information

Property ID	09003040-341
Location	60 SOUTH MAIN STREET
Owner	GALASSO HOLDINGS LLC

CRCOG CAPITOL REGION COUNCIL OF GOVERNMENTS
Working together for a better region.

MAP FOR REFERENCE ONLY
NOT A LEGAL DOCUMENT

PROJECT INFORMATION

SCOPE OF WORK:

ITEMS TO BE MOUNTED ON THE EXISTING MONOPOLE:

BIRD SITE

- NEW AT&T ANTENNAS: (TPA-65R-LCUUUU-H8) (TYP. OF 1 PER SECTOR, TOTAL OF 3)
- NEW AT&T RRUS: RRUS 32 (WCS) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T RRUS: RRUS 32 B2 (PCS) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T SURGE ARRESTOR: SURGE ARRESTOR (DC6-48-60-18-8F) (TOTAL OF 1)
- NEW LOW BAND COMBINERS (DBC0061F1V51-2) (TOTAL OF 3)
- INSTALL (2) DC TRUNKS, (1) FIBER & (1) ALARM

ITEMS TO BE MOUNTED AT EQUIPMENT LOCATION:

- NEW LOW BAND COMBINERS (DBC0061F1V51-2) (TOTAL OF 3)
- REPLACE EXISTING OUTDOOR POWERPLANT AND INSTALL (1) NEW OUTDOOR EMERSON 5216 POWERPLANT IN ITS PLACE,
- REMOVE EXISTING CABINET WITH BBU AND INSTALL (1) FLEX PURCELL CABINET IN ITS PLACE; REWIRE OLD POWERSYSTEM FROM EXISTING CABINET BACK TO NEW POWERPLANT.
- INSTALL (1) 5216 AND (1) XMU TO NEW PURCELL CABINET.
- RELOCATE SIAD AND PDU TO NEW PURCELL CABINET.
- INSTALL (2) FIBER TRAYS IN NEW PURCELL CABINET.

ITEMS TO REMAIN:

- (6) ANTENNAS, (3) RRU'S, (1) SURGE ARRESTOR (12) COAX CABLES, (2) DC POWER & (1) FIBER.

SQUID ALARMING (NOT TO BE DAISY CHAINED).

- THE 1ST SQUID INSTALLED WILL BE ALARMED TO THE LOWEST BAND (OR FIRST INSTALLED RRH/RRU ON THE ALPHA SECTOR, IN THE EVENT THE ALARM CABLE CANNOT BE CONNECTED TO ALPHA IT WILL BE ACCEPTABLE TO ALARM TO THE CLOSEST PHYSICAL SECTOR ON AN EXCEPTION BASIS.
- 2ND SQUID INSTALLED WILL BE ALARMED TO THE LOWEST BAND (OR FIRST INSTALLED) RRH/RRU ON THE BETA SECTOR.
- 3RD SQUID INSTALLED WILL BE ALARMED TO THE LOWEST BAND (OR FIRST INSTALLED) RRH/RRU ON THE GAMMA SECTOR.

SITE ADDRESS:	60 SOUTH MAIN STREET EAST GRANBY, CT 06026
LATITUDE:	41.94149° N 41° 56' 29.4" N
LONGITUDE:	72.73869° W 72° 44' 19.3" W
TYPE OF SITE:	MONOPOLE/INDOOR EQUIPMENT
TOWER HEIGHT:	98'-0"±
RAD CENTER:	76'-0"±
CURRENT USE:	TELECOMMUNICATIONS FACILITY
PROPOSED USE:	TELECOMMUNICATIONS FACILITY

DRAWING INDEX

SHEET NO.	DESCRIPTION	REV.
T-1	TITLE SHEET	B
GN-1	GENERAL NOTES	B
A-1	COMPOUND & EQUIPMENT PLAN	B
A-2	ANTENNA LAYOUTS & ELEVATION	B
A-3	DETAILS	B
A-4	SCHEMATIC AND NOTES	B
G-1	GROUNDING DETAILS	B
RF-1	RF PLUMBING DIAGRAM	B

CCI SITE NAME:NEWINGTON 1
CCI SITE #: 826217

SITE NUMBER: CT5359

SITE NAME: EAST GRANBY EAST

FA CODE: 10071028

PACE ID: MRCTB024344, MRCTB024539

PROJECT: LTE 2C/3C 2018 UPGRADE

VICINITY MAP

DIRECTIONS TO SITE:
HEAD EAST ON RYAN DR TOWARD MA-138 N. TURN RIGHT ONTO MA-138 S. TURN RIGHT TO MERGE ONTO I-495 N TOWARD MANSFIELD N.MARLBORO N. MERGE ONTO I-495 N. TAKE EXIT 22 FOR I-90 TOWARD MASS/PIKE/BOSTON/ALBANY NY. KEEP LEFT AT THE FORK, FOLLOW SIGNS FOR I-90 W/SPRINGFIELD/ALBANY AND MERGE ONTO I-90 W. TAKE EXIT 9 FOR I-84 TOWARD US-20/HARTFORD/ NEW YORK CITY. CONTINUE ONTO I-84. TAKE EXIT 61 FOR I-291 W TOWARD WINDSOR. CONTINUE ONTO I-291 W. TAKE EXIT 2B TO MERGE ONTO I-91 N TOWARD SPRINGFIELD. TAKE EXIT 40 FOR CT-20 TOWARD BRADLEY INTERNATIONAL AIRPORT. CONTINUE ONTO CT-20 W. TAKE THE CT-20 W EXIT TOWARD E GRANDBY/GRANBY. CONTINUE ONTO CT-20 W. TURN LEFT ONTO CT-187 S. TURN RIGHT. TURN LEFT.

GENERAL NOTES

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

72 HOURS

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OR CALL 811

UNDERGROUND SERVICE ALERT

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

CENTERLINE COMMUNICATIONS
750 WEST CENTER STREET., SUITE #301
WEST BRIDGEWATER, MA 02379

SITE NUMBER: CT5359
SITE NAME: EAST GRANBY EAST
CROWN CASTLE # 876399
60 SOUTH MAIN STREET
EAST BRANBY, CT 06026
HARTFORD COUNTY

at&t
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
B	07/26/18	ISSUED FOR PERMITTING	AM	AT	DJC
A	06/14/18	ISSUED FOR REVIEW	MR	AT	DJC

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

STATE OF CONNECTICUT · DEREK J. CREASER · No. 25... · LICENSED PROFESSIONAL ENGINEER

AT&T

TITLE SHEET
(LTE-2C/3C)

SITE NUMBER	DRAWING NUMBER	REV
CT5359	T-1	B

GROUNDING NOTES

1. THE SUBCONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM AND LIGHTNING PROTECTION SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ), THE SITE-SPECIFIC (UL, LPI, OR NFPA) LIGHTING PROTECTION CODE, AND GENERAL COMPLIANCE WITH TELCORDIA AND TIA GROUNDING STANDARDS. THE SUBCONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVERSE FINDINGS TO THE CONTRACTOR FOR RESOLUTION.
2. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION, AND AC POWER GES'S) SHALL BE BONDED TOGETHER, AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.
3. THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR NEW GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.
4. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.
5. EACH BTS CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, 6 AWG STRANDED COPPER OR LARGER FOR INDOOR BTS 2 AWG STRANDED COPPER FOR OUTDOOR BTS.
6. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
7. APPROVED ANTIOXIDANT COATINGS (I.E., CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
8. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO GROUND BAR.
9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
10. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
11. METAL CONDUIT SHALL BE MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH 6 AWS COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
12. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE OF 1/2 IN. OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID BARE TINNED COPPER GROUND WIRE, PER NEC 250.50

GENERAL NOTES

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:

   CONTRACTOR – CENTERLINE
   SUBCONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)
   OWNER – AT&T MOBILITY
2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CONTRACTOR.
3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
4. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.
5. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
6. "KITTING LIST" SUPPLIED WITH THE BID PACKAGE IDENTIFIES ITEMS THAT WILL BE SUPPLIED BY CONTRACTOR. ITEMS NOT INCLUDED IN THE BILL OF MATERIALS AND KITTING LIST SHALL BE SUPPLIED BY THE SUBCONTRACTOR.
7. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
8. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE CONTRACTOR.
9. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR.
10. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.
11. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
12. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.
13. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.
14. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL BE AIR-ENTRAINED AND SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS. ALL CONCRETE WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.
15. ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A36 (Fy = 36 ksi) UNLESS OTHERWISE NOTED. PIPES SHALL BE ASTM A53 TYPE E (Fy = 36 ksi). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCHUP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.
16. CONSTRUCTION SHALL COMPLY WITH LTE SPECIFICATIONS AND "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T SITES."
17. SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.
18. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK SHOULD BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.
19. SINCE THE CELL SITE IS ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE ADVISED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.
20. APPLICABLE BUILDING CODES:
   SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.
   - BUILDING CODE: IBC 2012 WITH 2016 CT BUILDING CODE AMENDMENTS
   - ELECTRICAL CODE: REFER TO ELECTRICAL DRAWINGS
   - LIGHTENING CODE: REFER TO ELECTRICAL DRAWINGS

   SUBCONTRACTOR'S WORK SHALL COMPLY WITH THE LATEST EDITION OF THE FOLLOWING STANDARDS:

   - AMERICAN CONCRETE INSTITUTE (ACI) 318; BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE;
   - AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC)
   - MANUAL OF STEEL CONSTRUCTION, ASD, FOURTEENTH EDITION;
   - TELECOMMUNICATIONS INDUSTRY ASSOCIATION (TIA) 222-G, STRUCTURAL STANDARDS FOR STEEL
   - EQUIPMENT AND ANTENNA SUPPORTING STRUCTURES; REFER TO ELECTRICAL DRAWINGS FOR SPECIFIC ELECTRICAL STANDARDS.

   FOR ANY CONFLICTS BETWEEN SECTIONS OF LISTED CODES AND STANDARDS REGARDING MATERIAL, METHODS OF CONSTRUCTION, OR OTHER REQUIREMENTS, THE MOST RESTRICTIVE REQUIREMENT SHALL GOVERN. WHERE THERE IS CONFLICT BETWEEN A GENERAL REQUIREMENT AND A SPECIFIC REQUIREMENT, THE SPECIFIC REQUIREMENT SHALL GOVERN.

ABBREVIATIONS

AGL	ABOVE GRADE LEVEL	EQ	EQUAL	REQ	REQUIRED
AWG	AMERICAN WIRE GAUGE	GC	GENERAL CONTRACTOR	RF	RADIO FREQUENCY
BBU	BATTERY BACKUP UNIT	GRC	GALVANIZED RIGID CONDUIT	TBD	TO BE DETERMINED
BTCW	BARE TINNED SOLID COPPER WIRE	MGB	MASTER GROUND BAR	TBR	TO BE REMOVED
BGR	BURIED GROUND RING	MIN	MINIMUM	TBRR	TO BE REMOVED AND REPLACED
BTS	BASE TRANSCEIVER STATION	P	PROPOSED	TYP	TYPICAL
E	EXISTING	NTS	NOT TO SCALE	UG	UNDER GROUND
EGB	EQUIPMENT GROUND BAR	RAD	RADIATION CENTER LINE (ANTENNA)	VIF	VERIFY IN FIELD
EGR	EQUIPMENT GROUND RING	REF	REFERENCE		

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SITE NUMBER: CT5359
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EAST BRANBY, CT 06026
HARTFORD COUNTY

at&t
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

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

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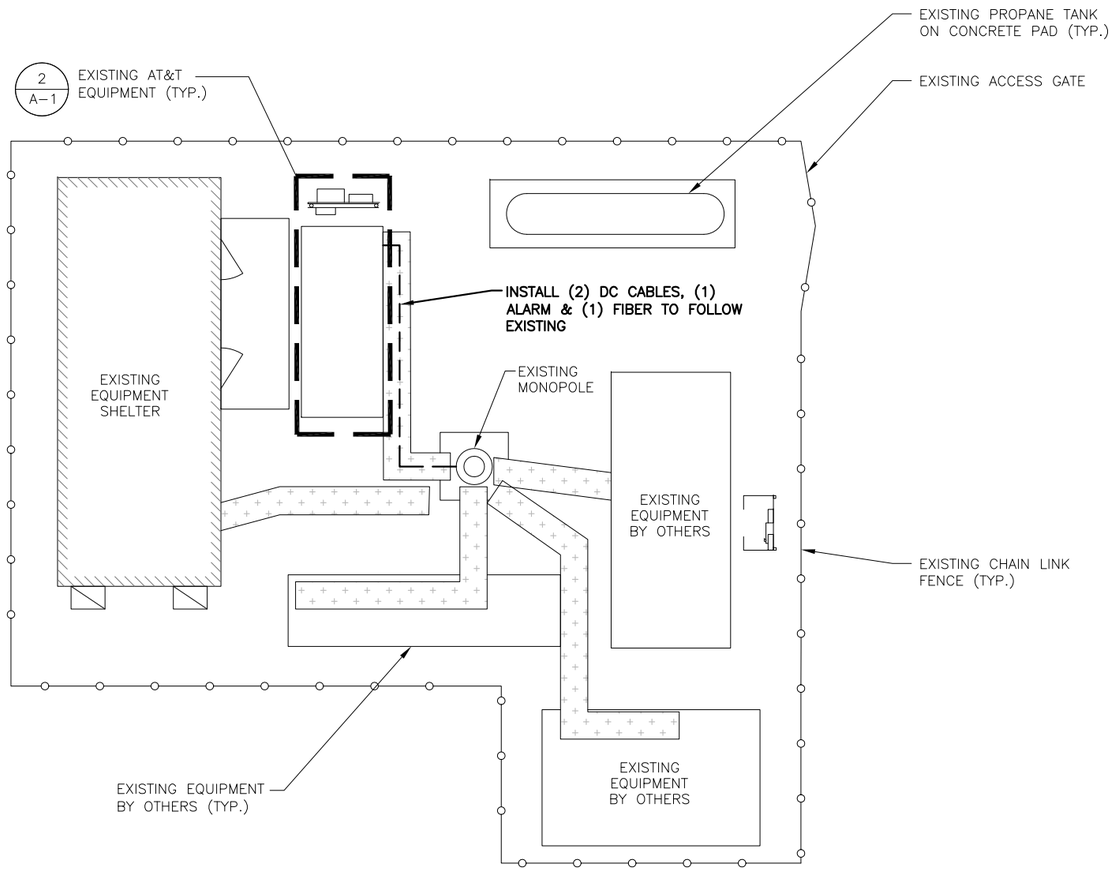
AT&T
GENERAL NOTES (LTE-2C/3C)

SITE NUMBER	DRAWING NUMBER	REV
CT5359	GN-1	B



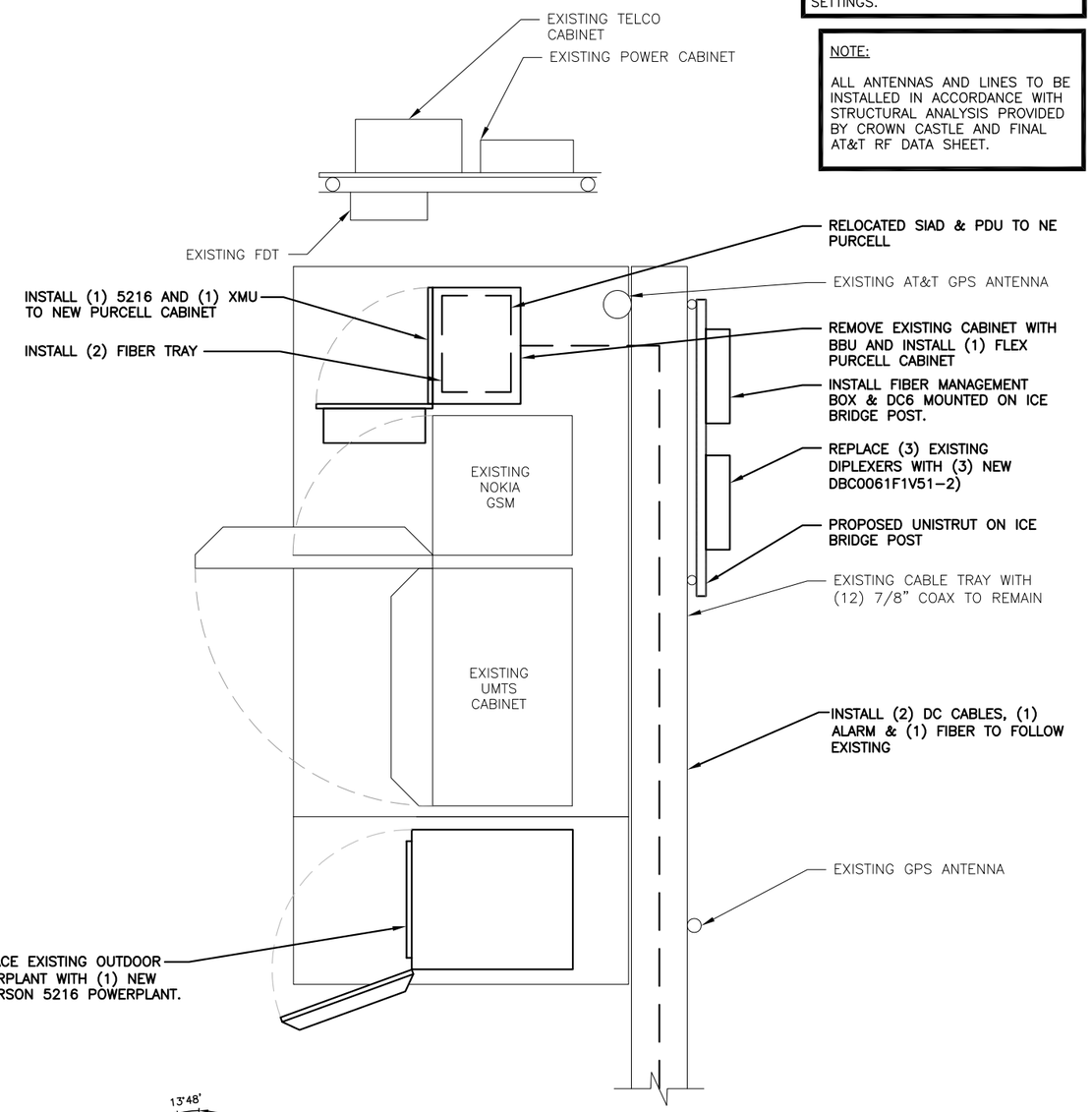
COMPOUND PLAN (1 / A-1)
22x34 SCALE: 3/16"=1'-0"
11x17 SCALE: 3/32"=1'-0"
0 2'-8" 5'-4" 10'-8" 16'-0"

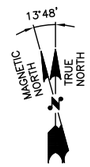
NOTE:

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

NOTE:

ALL ANTENNAS AND LINES TO BE INSTALLED IN ACCORDANCE WITH STRUCTURAL ANALYSIS PROVIDED BY CROWN CASTLE AND FINAL AT&T RF DATA SHEET.





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

POWER PANEL NOTE:

1.) ADD (9) 30AMP & (4) 25AMP DC BREAKER FOR NEW RRU ADDS, IF NEEDED

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HARTFORD COUNTY

at&t
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FRAMINGHAM, MA 01701

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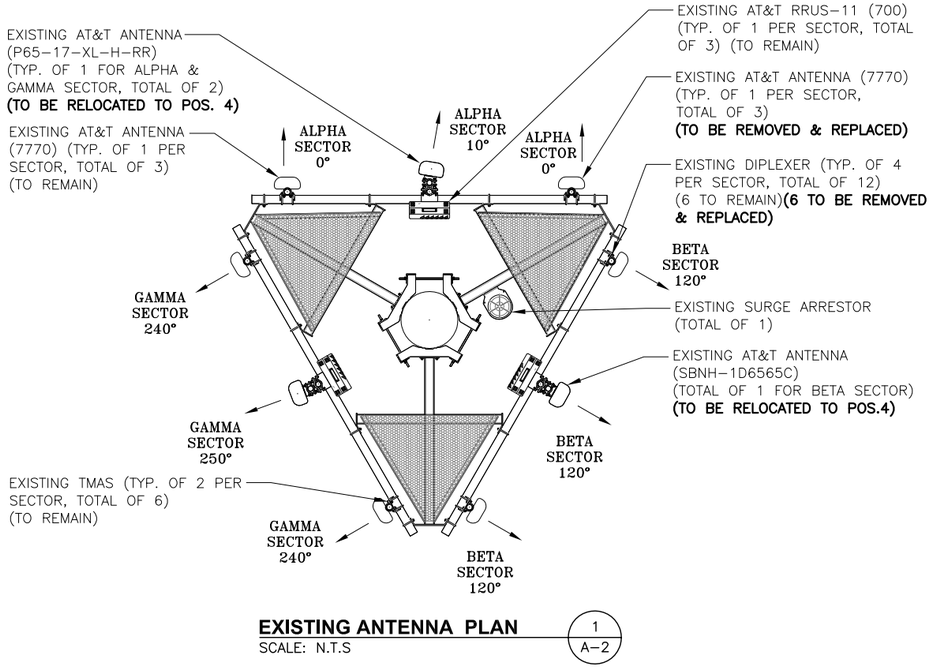
STATE OF CONNECTICUT
DEREK J. CREASER
NO. 28355
LICENSED PROFESSIONAL ENGINEER

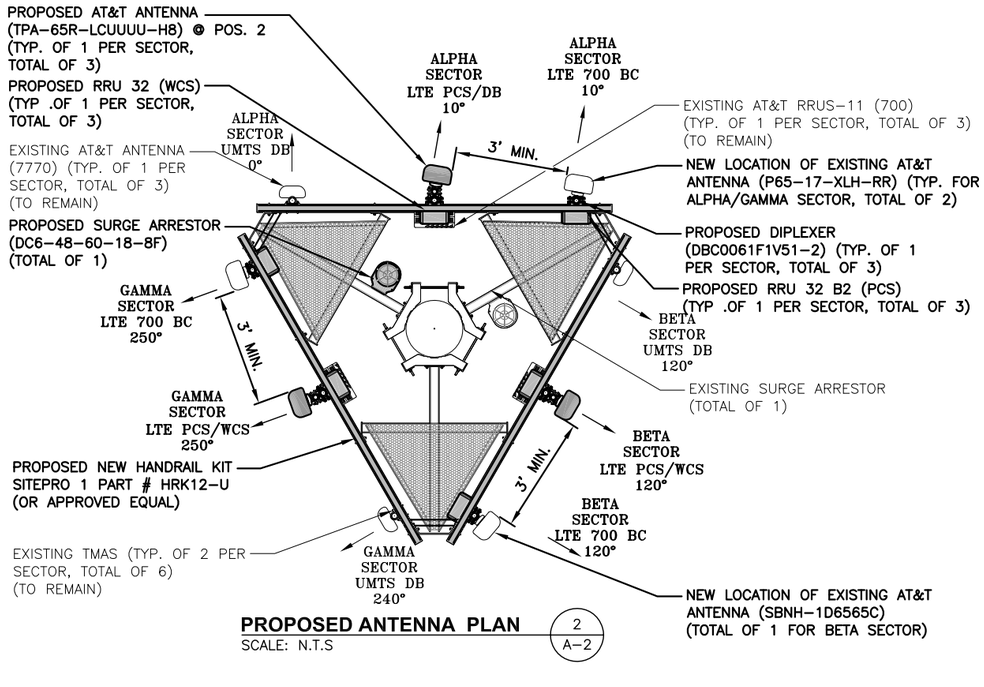
AT&T

COMPOUND & EQUIPMENT PLAN (LTE-2C/3C)

SITE NUMBER	DRAWING NUMBER	REV
CT5359	A-1	B



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



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

NOTE:

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NOTE:

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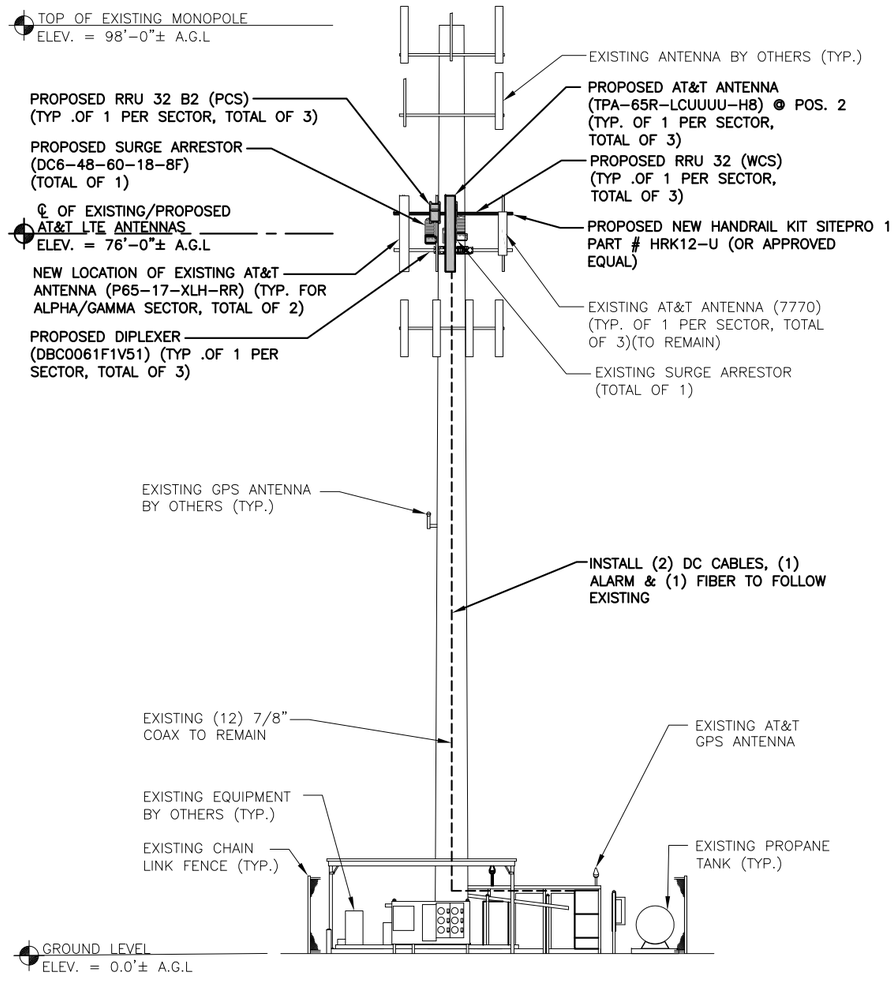

ELEVATION (3 / A-2)
22x34 SCALE: 1/8"=1'-0"
11x17 SCALE: 1/16"=1'-0"

0 4'-0" 8'-0" 16'-0" 24'-0"

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ANTENNA LAYOUTS & ELEVATION (LTE-2C/3C)

SITE NUMBER	DRAWING NUMBER	REV
CT5359	A-2	B

NOTE:

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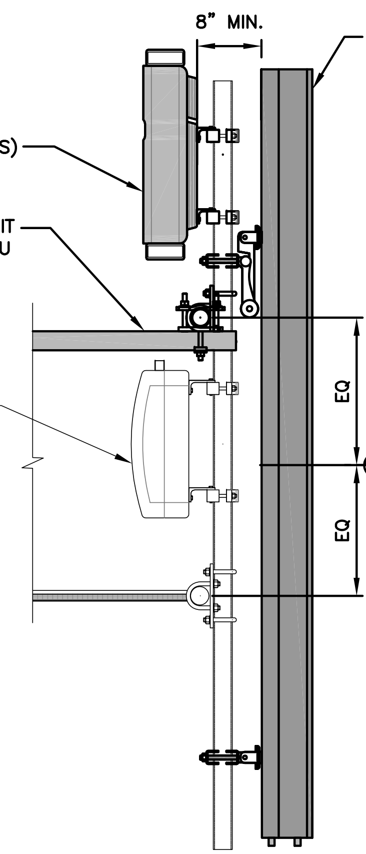
NOTE:

ALL ANTENNAS AND LINES TO BE INSTALLED IN ACCORDANCE WITH STRUCTURAL ANALYSIS PROVIDED BY CROWN CASTLE AND FINAL AT&T RF DATA SHEET.

ANTENNA SCHEDULE

SECTOR	EXISTING/ PROPOSED	BAND	ANTENNA	SIZE (INCHES) (L x W x D)	ANTENNA ℄ HEIGHT	AZIMUTH	TMA/ DIPLEXER	RRU	SIZE (INCHES) (L x W x D)	FEEDER	RAYCAP
A1	EXISTING	UMTS DB	7770	55X11X5	±76'	0°	(2) POWERWAVE LGP21901 (1) POWERWAVE TT19-08BP111-001	--	--	(2) 7/8" COAX (±110' LENGTH)	--
A2	PROPOSED	LTE PCS/WCS	TPA-65R-LCUUUU-H8	96x14.4x8.6	±76'	10°	(1)(P) DBC0061F1V51-2	(P) RRUS-32 B2 (P) RRUS-32	27.2X12.1X7.0 27.2x12.1x7.0	(2) 7/8" COAX (±110' LENGTH)	(E) (1) RAYCAP DC6-48-60-18-8C
A3	–	–	–	–	–	–	--	--	--	--	
A4	EXISTING	LTE 700 BC	P65-17-XLH-RR	96x12x6	±76'	10°	--	(E) RRUS-11	--	--	
B1	EXISTING	UMTS DB	7770	55X11X5	±76'	120°	(2) POWERWAVE LGP21901 (1) POWERWAVE TT19-08BP111-001	--	--	(2) 7/8" COAX (±110' LENGTH)	--
B2	PROPOSED	LTE PCS/WCS	TPA-65R-LCUUUU-H8	96x14.4x8.6	±76'	120°	(1)(P) DBC0061F1V51-2	(P) RRUS-32 B2 (P) RRUS-32	27.2X12.1X7.0 27.2x12.1x7.0	(2) 7/8" COAX (±110' LENGTH)	(P) (1) RAYCAP DC6-48-60-0-8C
B3	–	–	–	–	–	–	--	--	--	--	
B4	EXISTING	LTE 700 BC	SBNH-1D6565C	96.4x11.9x7.1	±76'	120°	--	(E) RRUS-11	--	--	
C1	EXISTING	UMTS DB	7770	55X11X5	±76'	240°	(2) POWERWAVE LGP21901 (1) POWERWAVE TT19-08BP111-001	--	--	(2) 7/8" COAX (±110' LENGTH)	--
C2	PROPOSED	LTE PCS/WCS	TPA-65R-LCUUUU-H8	96x14.4x8.6	±76'	250°	(1)(P) DBC0061F1V51-2	(P) RRUS-32 B2 (P) RRUS-32	27.2X12.1X7.0 27.2x12.1x7.0	(2) 7/8" COAX (±110' LENGTH)	SHARE
C3	–	–	–	–	–	--	--	--	--	--	
C4	EXISTING	LTE 700 BC	P65-17-XLH-RR	96x12x6	±76'	250°	--	(E) RRUS-11	--	--	

FINAL ANTENNA CONFIGURATION TABLE (3 / A-3)



PROPOSED ANTENNA & RRU'S MOUNTING DETAIL (1 / A-3)

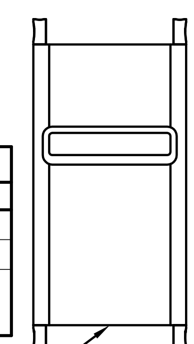
22x34 SCALE: 1"=1'-0"
11x17 SCALE: 1/2"=1'-0"

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

RRU CHART

QUANTITY	MODEL	L	W	D
3(E)	RRUS-11	19.7"	17.0"	7.2"
6(P)	RRUS-32	27.2"	12.1"	7.0"

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS



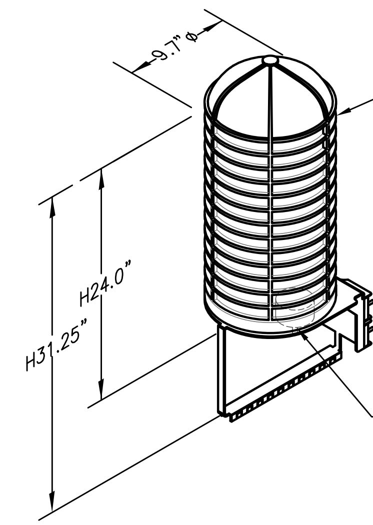
PROPOSED RRU REFER TO THE FINAL RFDS AND CHART FOR QUANTITY, MODEL AND DIMENSIONS

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

NOTE:
SEE RFDS FOR RRH FREQUENCY AND MODEL NUMBER

RRU DETAIL (2 / A-3)

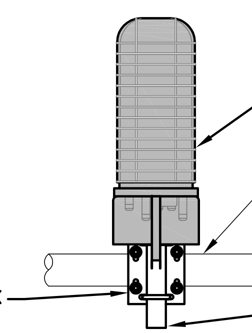
SCALE: N.T.S



NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

DC SURGE SUPPRESSOR DETAIL (4 / A-3)

SCALE: N.T.S



PROPOSED SURGE ARRESTOR MOUNTING DETAIL (5 / A-3)

SCALE: N.T.S

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at&t
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DETAILS (LTE-2C/3C)

SITE NUMBER	DRAWING NUMBER	REV
CT5359	A-3	B

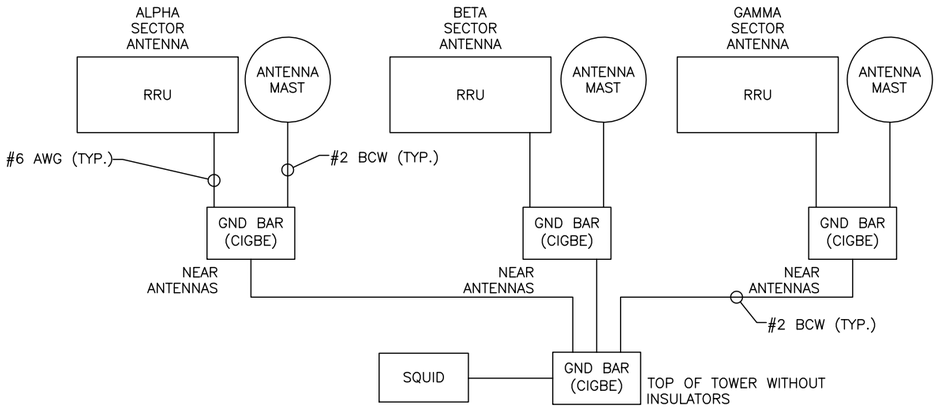
COAX COLOR CODING AND IDENTIFICATION NOTES

1. SECTOR ORIENTATION/AZIMUTH WILL VARY FROM REGION TO REGION AND IS SITE SPECIFIC. REFER TO RF REPORT FOR EACH SITE TO DETERMINE THE ANTENNA LOCATION AND FUNCTION OF EACH TOWER SECTOR FACE.
2. THE ANTENNA SYSTEM COAX SHALL BE LABELED WITH VINYL TAPE EXCEPT IN LOCATIONS WHERE ENVIRONMENTAL CONDITIONS CAUSE PHYSICAL DAMAGE, THE PHYSICAL TAGS ARE PREFERRED.
3. THE STANDARD IS BASED ON 8 COLORED TAPES–RED, BLUE, GREEN, YELLOW, ORANGE, BROWN, WHITE, AND VIOLET. THESE TAPES MUST BE 3/4" WIDE & UV RESISTANT SUCH AS SCOTCH 35 VINYL ELECTIRCAL COLOR CODING TAPE AND SHOULD BE READILY AVALIBLE TO THE ELECTRICIAN OR SUBCONTRACTOR ON SITE.
4. USING COLOR BANDS ON THE CABLES, MARK ALL RF CABLE BY SECTOR AND CABLE NUMBER AS SHOWN ON "CABLE MARKING COLOR CONVENTION TABLE".
5. WHEN AN EXISTING COAXIAL LINE THAT IS INTENDED TO BE A SHARED LINE BETWEEN GSM/3G AND IS–136/TDMA IS ENCOUNTERED, THE SUBCONTRACTOR SHALL REMOVE THE EXISTING COLOR CODING SCHEME AND REPLACE IT WITH THE COLOR CODING AND TAGGING STANDARD THAT IS OUTLINED IN THE CURRENT VERSION OF ND–00027. IN THE ABSENCE OF AN EXISTING COLOR CODING AND TAGGING SCHEME, OR WHEN INSTALLING PROPOSED COAXIAL CABLES, THE GUIDELINE SHALL BE IMPLEMENTED AT THE SITE REGARDLESS OF TECHNOLOGY.
6. ALL COLOR CODE TAPE SHALL BE 3M–35 AND SHALL BE INSTALLED USING A MINIMUM OF 3 WRAPS OF TAPE AND SHALL BE NEATLY TRIMMED AND SMOOTHED OUT SI AS TO AVOID UNRAVELING.
7. ALL COLOR BANDS INSTALLED AT THE TOP OF THE TOWER SHALL BE A MINIMUM OF 3" WIDE, AND SHALL HAVE A MINIMUM OF 3/4" OF SPACE BETWEEN EACH COLOR.
8. ALL COLOR CODES SHALL BE INSTALLED SO AS TO ALIGN NEATLY WITH ONE ANOTHER FROM SIDE TO SIDE.
9. IF EXISTING CABLES AT THE SITE ALREADY HAVE A COLOR CODING SCHEME AND THEY ARE NOT INTENDED TO BE REUSED OR SHARED WITH THE GSM TECHNOLOGY, THE EXISTING COLOR CODING SCHEME SHALL REMAIN UNTOUCHED.

CABLE MARKING TAGS

WHEN USING THE ALTERNATIVE LABELING METHOD, EACH RF CABLE SHALL BE IDENTIFIED WITH A METAL ID TAG MADE OF STAINLESS STEEL OR BRASS, THE TAG SHALL BE 1 1/2" IN DIAMETER WITH 1/4" STAMPED LETTERS AND NUMBERS INDICATING THE SECTOR, ANTENNA POSITION, AND CABLE NUMBER. THE ID MARKING LOCATIONS SHOULD BE AS PER CABLING MARKING LOCATIONS TABLE. THE TAG SHOULD BE ATTACHED WITH CORROSION PROOF WIRE AROUND THE CABLE AT THE SAME LOCATION AS DEFINED ABOVE. THE TAG SHOULD BE LABELED AS SHOWN ON THE GSM AND UMTS LINE TAG DETAIL.

CABLE MARKING LOCATIONS TABLE	
NO.	LOCATIONS
①	EACH TOP JUMPER SHALL BE COLOR CODED WITH 1 SET OF 3" WIDE BANDS
②	EACH MAIN COAX SHALL BE COLORED RED WITH 1 SET OF 3" WIDE BANDS NEAR THE TOP JUMPER CONNECTION AND WITH 1 SET OF 3/4" WIDE COLOR BANDS. JUST PRIOR TO ENTERING THE BTS FOR THE TRANSMITTER BUILDING.
③	CABLE ENTRY PORT ON THE INTERIOR OF THE SHELTER.
④	ALL BOTTOM JUMPERS SHALL BE COLORED WITH 1 SET OF 3/4" WIDE BANDS ON EACH END OF THE BOTTOM JUMPERS.
⑤	ALL BOTTOM JUMPERS SHALL BE COLORED WITH 1 SET OF 3/4" WIDE BANDS ON EACH END OF THE BOTTOM JUMPERS.



SCHEMATIC DIAGRAM GROUNDING SYSTEM

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

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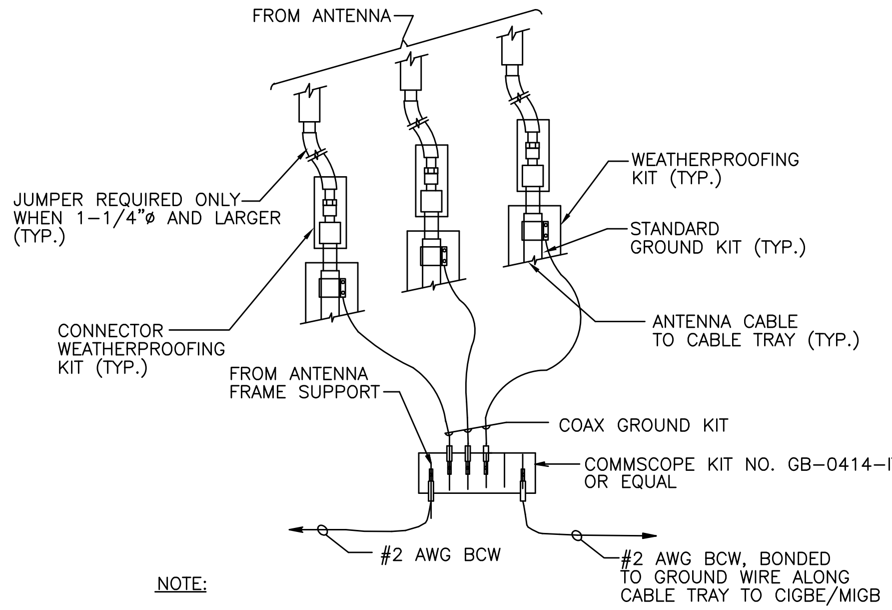
SCHEMATIC AND NOTES (LTE–2C/3C)

SITE NUMBER	DRAWING NUMBER	REV
CT5359	A–4	B

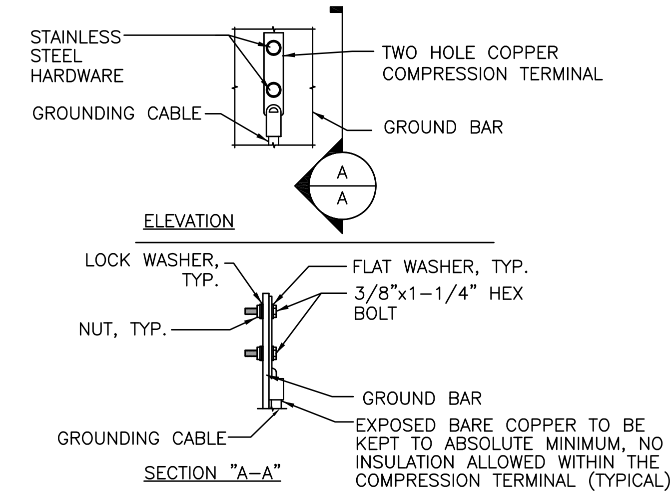


NOTE:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO CIGBE.

GROUND WIRE TO GROUND BAR CONNECTION DETAIL (1 / G-1)

SCALE: N.T.S

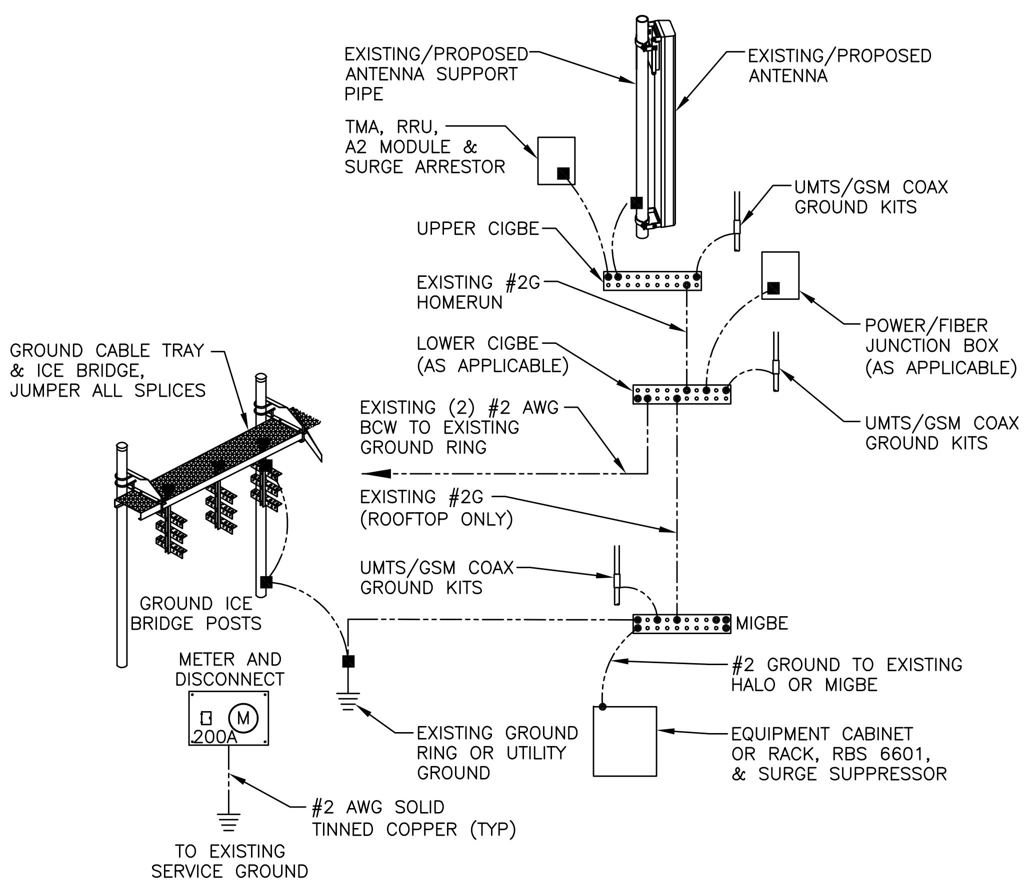


NOTE:

1. "DOUBLING UP" OR "STACKING" OF CONNECTION IS NOT PERMITTED.
2. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATION.
3. CADWELD DOWNLEADS FROM UPPER EGB, LOWER EGB, AND MGB

TYPICAL GROUND BAR CONNECTION DETAIL (3 / G-1)

SCALE: N.T.S



GROUNDING RISER DIAGRAM (2 / G-1)

SCALE: N.T.S

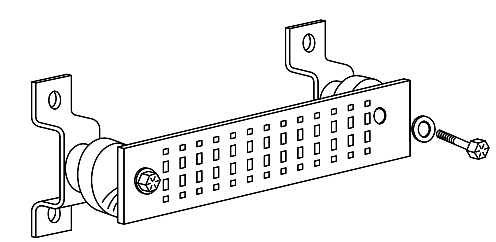
EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

SECTION "P" – SURGE PRODUCERS

CABLE ENTRY PORTS (HATCH PLATES) (#2)
GENERATOR FRAMEWORK (IF AVAILABLE) (#2)
TELCO GROUND BAR
COMMERCIAL POWER COMMON NEUTRAL/GROUND BOND (#2)
+24V POWER SUPPLY RETURN BAR (#2)
–48V POWER SUPPLY RETURN BAR (#2)
RECTIFIER FRAMES.

SECTION "A" – SURGE ABSORBERS

INTERIOR GROUND RING (#2)
EXTERNAL EARTH GROUND FIELD (BURIED GROUND RING) (#2)
METALLIC COLD WATER PIPE (IF AVAILABLE) (#2)
BUILDING STEEL (IF AVAILABLE) (#2)



GROUND BAR - DETAIL (4 / G-1)

SCALE: N.T.S

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

CENTERLINE COMMUNICATIONS
750 WEST CENTER STREET., SUITE #301 WEST BRIDGEWATER, MA 02379

SITE NUMBER: CT5359
SITE NAME: EAST GRANBY EAST
CROWN CASTLE # 876399
60 SOUTH MAIN STREET
EAST BRANBY, CT 06026
HARTFORD COUNTY

at&t
550 COCHITUATE ROAD FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
B	07/26/18	ISSUED FOR PERMITTING	AM	AT	DJC
A	06/14/18	ISSUED FOR REVIEW	MR	AT	DJC

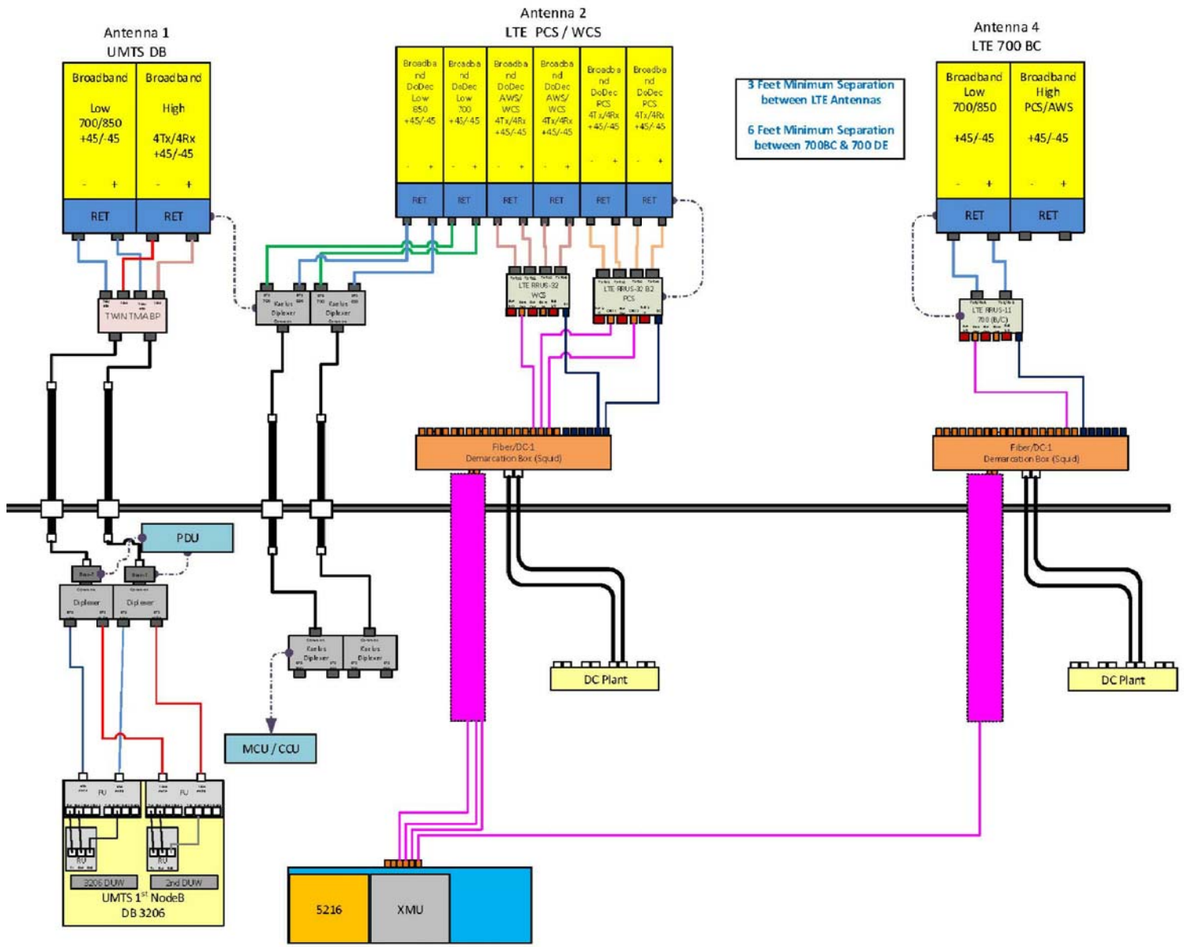
SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: MR

STATE OF CONNECTICUT · DEREK J. CREASER · LICENSED PROFESSIONAL ENGINEER

AT&T

GROUNDING DETAILS (LTE-2C/3C)

SITE NUMBER	DRAWING NUMBER	REV
CT5359	G-1	B



RF PLUMBING DIAGRAM (1 / RF–1)
SCALE: N.T.S

NOTE:
1. CONTRACTOR TO CONFIRM ALL PARTS.
2. INSTALL ALL EQUIPMENT TO MANUFACTURER'S RECOMMENDATIONS.

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

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AT&T

RF PLUMBING DIAGRAM
(LTE–2C/3C)

SITE NUMBER	DRAWING NUMBER	REV
CT5359	RF–1	B