Mary Caulfield, Site Acquisition Consultant
c/o New Cingular Wireless, PCS LLC (AT&T)
Centerline Communications, LLC
95 Ryan Drive, Suite 1
Raynham, MA 02767
Mobile: (978) 994-0252
MCaulfield@centerlinecommunications.com

March 7, 2018

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

RE: Notice of Exempt Modification
Site Number: CT2101 (Name: Greenwich North Street)
1081 North Street, Greenwich, CT 06831
N 41.13931 // W -73.6417972

Dear Ms. Bachman:

New Cingular Wireless, PCS, LLC ("AT&T") currently maintains 7 total antennas at the 168-foot level on the existing 175-foot monopole tower, located at 1081 North Street, Greenwich, CT. The property and tower are owned by Crown Castle. AT&T now intends to replace five (5) of its existing antennas with five (5) new LTE (1900/2300 band) antennas and add one (1) new LTE (2300 band) antenna for its LTE upgrade. AT&T also intends to install six (6) new remote radios; and certain in-cabinet upgrades at the base.

Note that this facility was originally approved by the Connecticut Siting Council on February 17, 1988, Docket No. 86.

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 Peter Tesei, First Selectman for the Town of Greenwich, Katie DeLuca, AICP, Director of Planning & Zoning for the Town of Greenwich, as well as the tower owner, Crown Castle, and the ground 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 March 2, 2018 by Hudson Design Group LLC, a structural analysis dated January 29, 2018 by Tectonic Engineering & Surveying Consultants P.C. and an Emissions Analysis Report dated February 28, 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 Crown Castle, dated January 29, 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
95 Ryan Drive, Suite 1
Raynham, MA 02767
Mobile: (978) 994-0252
MCaulfield@centerlinecommunications.com

cc: Peter Tesei, First Selectman, Town of Greenwich
Katie DeLuca, AICP, Director of Planning & Zoning, Town of Greenwich
Crown Castle, Tower & Property Owner

Date: **January 29, 2018**

Tectonic
PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.

Rebecca Klein
Crown Castle
3530 Toringdon Way Suite 300
Charlotte, NC 28277

Tectonic
1279 Route 300
Newburgh, NY 12550
(845) 567-6656

Subject: **Structural Analysis Report**

Carrier Designation:	***AT&T Mobility* Co-Locate**	
	Carrier Site Number:	CT2101
	Carrier Site Name:	Greenwich North Street
Crown Castle Designation:	**Crown Castle BU Number:**	807132
	Crown Castle Site Name:	BRG 133 943050
	Crown Castle JDE Job Number:	476097
	Crown Castle Work Order Number:	1517403
	Crown Castle Application Number:	419481 Rev. 3
Engineering Firm Designation:	**Tectonic Project Number:**	6500.807132, Phase 2
Site Data:	**1081 North Street, Greenwich, Fairfield County, CT** **Latitude *41° 8' 22.91"*, Longitude *-73° 38' 29.58"*** **175 Foot - Monopole Tower**	

Dear Rebecca Klein,

Tectonic Engineering & Surveying Consultants P.C. (Tectonic) is pleased to submit this **"Structural Analysis 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 1133670, in accordance with application 419481, revision 3.

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:

LC7: 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 *Tectonic* 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: Ian Marinaccio / VE

Respectfully submitted by:

Antonio A. Gualtieri, P.E.
Sr. Vice President

tnxTower Report - version 7.0.5.1

TABLE OF CONTENTS

1) INTRODUCTION

2) ANALYSIS CRITERIA

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
				RR			
				RR			
				RR			
				D			
				D 4			
				D 4			
				R M			
				M			

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
				RR 4 4			
				RR			
				D 4			
				R M			
4				D 4 M		4	
				4 M			
	4						

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
162.0	168.0	2	ericsson	RRUS-11	-	-	1
		4	powerwave technologies	LGP2140X			
		1	ericsson	RRUS-11	2	3/4	3
		4	powerwave technologies	LGP2140X			
		1	raycap	DC6-48-60-18-8F			
	162.0	1	kathrein	800 10121 w/ Mount Pipe			
		1	powerwave technologies	7770.00 w/ Mount Pipe			
		3	powerwave technologies	P65-16-XLH-RR w/ Mount Pipe			
		1	powerwave technologies	7770.00 w/ Mount Pipe	1 4 4	3/8 1-1/4 1-5/8	1
		1	kathrein	800 10121 w/ Mount Pipe			
		1	crown mounts	LP 303-1			
144.0	144.0	3	commscope	SBNHH-1D65A w/ Mount Pipe	1	1-1/4	1
		3	ericsson	RRUS 11 B2			
140.0	140.0	1	crown mounts	PM 601-3	-	-	1
		3	ericsson	RRUS 11 B4			
137.0	137.0	3	ericsson	RRUS 11 B12	-	-	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)
174.0	174.0	9	Allgon	7130.16.05.00	-	-
		2	Swedcom	ALP-9212-M		
166.67	166.67	3	Allgon	7130.16.05.00		
158.0	158.0	9	Swedcom	ALP-E 9011-DIN		
144.0	144.0	3	EMS	RR90-17-02DB		
129.0	129.0	1	Generic	10' Whip Antenna		

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]

3.1) Analysis Method

[illegible]

3.2) Assumptions

[illegible] r's specifications.
[illegible] The tower and structures have been maintained in accordance with the manufacturer's [illegible]
[illegible]
4 [illegible]
[illegible] *Tectonic* [illegible] assumed that they are structurally sufficient. It is the carrier's responsibility to [illegible]

[illegible] *Tectonic* [illegible]

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
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[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Section No.	Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
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[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible]

Section No.	Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail

Table 6 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail

Structure Rating (max from all components) =	91.1%

See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity

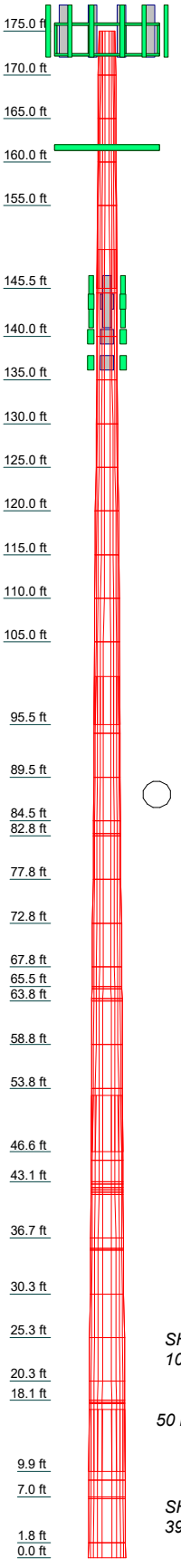
4.1) Recommendations

APPENDIX A

TNXTOWER OUTPUT

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	5.0000	12	0.2190		22.1250	23.0250		0.3
2	5.0000	12	0.2190		23.0250	23.9250		0.3
3	5.0000	12	0.2190		23.9250	24.8250		0.3
4	5.0000	12	0.2190		24.8250	25.7250		0.3
5	5.0000	12	0.2190	4.5000	25.7250	27.4350		0.6
6	5.0000	12	0.2190		27.4350	27.9870		0.3
7	5.0000	12	0.3130		27.9870	27.9870		0.5
8	5.0000	12	0.3130		27.9870	28.8870		0.5
9	5.0000	12	0.3130		28.8870	29.7870		0.5
10	5.0000	12	0.3130		29.7870	30.6870		0.5
11	5.0000	12	0.3130		30.6870	31.5870		0.5
12	5.0000	12	0.3130		31.5870	32.4870		0.5
13	5.0000	12	0.3130		32.4870	33.3870		0.6
14	5.0000	12	0.3130		33.3870	34.2870		0.6
15	6.3906	12	0.3130	5.5000	34.2870	35.9970		1.1
16	5.0000	12	0.3750		35.9970	36.4555		0.9
17	5.0000	12	0.3750		36.4555	37.3513		0.7
18	5.0000	12	0.3750		37.3513	38.2513		0.8
19	5.0000	12	0.3750		38.2513	39.1513		0.8
20	5.0000	12	0.3750		39.1513	40.0513		0.8
21	5.0000	12	0.3750		40.0513	40.9513		0.8
22	5.0000	12	0.3750		40.9513	41.8513		0.8
23	5.0000	12	0.3750		41.8513	42.7513		0.8
24	5.0000	12	0.3750		42.7513	43.6513		0.8
25	5.0000	12	0.3750		43.6513	44.5513		0.8
26	5.0000	12	0.3750		44.5513	45.4513		0.8
27	5.0000	12	0.3750		45.4513	46.3513		0.8
28	5.0000	12	0.3750		46.3513	47.2513		0.8
29	5.0000	12	0.6250		47.2513	48.1513		1.4
30	5.0000	12	0.6125	6.4167	48.1513	49.0513		2.0
31	5.0000	12	0.6125		49.0513	49.9513		2.2
32	5.0000	12	0.6125		49.9513	50.8513		2.2
33	5.0000	12	0.6125		50.8513	51.7513		2.2
34	5.0000	12	0.6125		51.7513	52.6513		2.2
35	5.0000	12	0.6125		52.6513	53.5513		2.2
36	5.0000	12	0.6125		53.5513	54.4513		2.2
37	5.0000	12	0.6125		54.4513	55.3513		2.2
38	5.0000	12	0.6125		55.3513	56.2513		1.6
39	5.0000	12	0.6125		56.2513	57.1513		1.4
40	5.0000	12	0.6125		57.1513	58.0513		1.4
41	5.0000	12	0.7060		58.0513	58.9513		1.7
42	5.0000	12	0.7060		58.9513	59.8513		1.7
43	5.0000	12	0.7060		59.8513	60.7513		1.7
44	5.0000	12	0.7060		60.7513	61.6513		1.8
45	5.0000	12	0.7060		61.6513	62.5513		1.8
46	5.0000	12	0.7060		62.5513	63.4513		1.8
47	5.0000	12	0.7060	7.0833	63.4513	64.3513		2.8
48	5.0000	12	0.7060		64.3513	65.2513		3.2
49	5.0000	12	0.7060		65.2513	66.1513		3.2
50	5.0000	12	0.7060		66.1513	67.0513		3.2
51	5.0000	12	0.7060		67.0513	67.9513		3.2
52	1.7500	12	0.6630		67.9513	68.3513		0.7

A572-65



ALL REACTIONS ARE FACTORED

AXIAL 94 K

SHEAR 10 K *MOMENT 1179 kip-ft*

TORQUE 0 kip-ft
50 mph WIND - 0.7500 in ICE

AXIAL 58 K

SHEAR 39 K *MOMENT 4517 kip-ft*

TORQUE 1 kip-ft
REACTIONS - 93 mph WIND

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
(2) ADA-85408580CF w/ Mount Pipe	174	HPA-65R-BUU-H6 w/ Mount Pipe	162
BXA-80080/4CF w/ Mount Pipe	174	HPA-65R-BUU-H6 w/ Mount Pipe	162
BXA-80080/4CF w/ Mount Pipe	174	QS66512-2 w/ Mount Pipe	162
(2) JAHH-65B-R3B w/ Mount Pipe	174	QS66512-2 w/ Mount Pipe	162
(2) JAHH-65B-R3B w/ Mount Pipe	174	QS66512-2 w/ Mount Pipe	162
(2) JAHH-65B-R3B w/ Mount Pipe	174	RRUS-32 B30	162
DB-C1-12C-24AB-0Z	174	RRUS-32 B30	162
RRH2X60-700	174	RRUS-32 B30	162
RRH2X60-700	174	DBC0061F1V51-2	162
RRH2X60-700	174	DBC0061F1V51-2	162
B66A RRH4X45	174	RRUS 32 B2	162
B66A RRH4X45	174	RRUS 32 B2	162
B66A RRH4X45	174	RRUS 32 B2	162
LP 601-1	174	RRUS 11	162
NA 507-2	174	DC6-48-60-18-8F	162
6' x 2" STD Pipe	174	DC6-48-60-18-8C	162
(2) 6' x 2" STD Pipe	174	SBNHH-1D65A w/ Mount Pipe	144
(2) 6' x 2" STD Pipe	174	SBNHH-1D65A w/ Mount Pipe	144
800 10121 w/ Mount Pipe	162	SBNHH-1D65A w/ Mount Pipe	144
7770.00 w/ Mount Pipe	162	RRUS 11 B2	144
RRUS-11	162	RRUS 11 B2	144
RRUS-11	162	RRUS 11 B2	144
(2) LGP2140X	162	RRUS 11 B4	140
(2) LGP2140X	162	RRUS 11 B4	140
2.375" OD x 5' Mount Pipe	162	RRUS 11 B4	140
2.375" OD x 5' Mount Pipe	162	PM 601-3	140
(2) 2.375" OD x 5' Mount Pipe	162	RRUS 11 B12	137
LP 303-1	162	RRUS 11 B12	137
HPA-65R-BUU-H6 w/ Mount Pipe	162	RRUS 11 B12	137

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in Fairfield County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-G Standard.
3. Tower designed for a 93 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.0000 ft
8. TOWER RATING: 83.4%

Tectonic
PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.

Tectonic
1279 Route 300
Newburgh, NY 12550
Phone: (845) 567-6656
FAX: (845) 567-8703

Job:	***6500.807132, Phase 2***		
Project:	***BU 807132 - BRG 133 943050***		
Client: Crown Castle	Drawn by: Ian Marinaccio		App'd:
Code: TIA-222-G	Date: 01/26/18		Scale: NTS
Path: G:\Newburgh\Secure\Crown\6500 Crown SA\807132\Phase 2\Structural\807132, Phase 2 - Reinforced.eri			Dwg No. E-1

Tower Input Data

Options

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

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

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
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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
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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
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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
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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 klf
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible]

Description	*Sector*	*Component Type*	*Placement* *ft*	*Total Number*	*Number Per Row*	*Start/End Position*	*Width or Diameter* *in*	*Perimeter* *in*	*Weight* *klf*
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
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Feed Line/Linear Appurtenances - Entered As Area

Description	*Face or Leg*	*Allow Shield*	*Component Type*	*Placement* *ft*	*Total Number*		C_AA_A ft^2/ft	*Weight* *klf*
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
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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*
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
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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
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
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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
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
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		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
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		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
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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
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
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		[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
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		[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
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		[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible]

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*
	4							
						4		
						4		
4								
						44		
4			4					
4			4					
						4		
4			44			4		
						4		
								4
44			4					
4			4					
						4		
4			4			4		
4			4					
						4		
4								4
4								
						4		4
						4		
			4					
						4		

Feed Line Center of Pressure

Section	*Elevation ft*	CP_X *in*	CP_Z *in*	CP_X *Ice in*	CP_Z *Ice in*
			4	4	
4		4	4		
		4	4		
	4	4	4		
	4	4	4		
	4		4	4	4

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
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[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
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[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
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[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Shielding Factor Ka

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

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

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

Tower Section	*Feed Line Record No.*	*Description*	*Feed Line Segment Elev.*	*K_a No Ice*	*K_a Ice*
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[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
		M	4		
		D	4		
		" R d d	4		
		" R r	4		
		" R r	4		
		" R r	4		
		M	4		
		M	4		
		M	4		
		M	4		
		M	4		
		D	4		
		" R d d	4		
		" R r	4		
		" R r	4		
		" R r	4		
		M	4		
		M	4		
		M	4		
		D	4		
		" R d d	4		
4		" R r	4 4		
4		" R r	4 4		
4		" R r	4 4		
4		M	4 4		
4		M	4 4		
4		M	4 4		
4		D	4 4		
4		" R d d	4 4		
		" R r	4 4		
		" R r	4 4		
		" R r	4 4		
		M	4 4		
		M	4 4		

r R r r r

Tower Section	*Feed Line Record No.*	*Description*	*Feed Line Segment Elev.*	*K_a No Ice*	*K_a Ice*
			4 4		
		M	4		
			4 4		
		D	4		
			4 4		
		R d d	4		
			4 4		
		R r	4		
			4		
		R r	4		
			4		
		R r	4		
			4		
		M	4		
			4		
		M	4		
			4		
		M	4		
			4		
		D	4		
			4		
		R d d	4		
			4		
		R r	4		
			4		
		R r	4		
			4		
		R r	4		
			4		
		M	4		
			4		
		M	4		
			4		
		M	4		
			4		
		D	4		
			4		
		R d d	4		
			4		
		R r	4		
		R r			
		R r			
		M			
		M			
		M			
		D			

Tower Section	*Feed Line Record No.*	*Description*	*Feed Line Segment Elev.*	K_a *No Ice*	K_a *Ice*
[illegible]	[illegible]	[illegible]"[illegible]R[illegible]d[illegible]d[illegible]	[illegible]	[illegible]	[illegible]
[illegible]4[illegible]	[illegible]	[illegible]4"[illegible]R[illegible]r[illegible]	[illegible]	[illegible]	[illegible]
[illegible]4[illegible]	4[illegible]	[illegible]4"[illegible]R[illegible]r[illegible]	[illegible]	[illegible]	[illegible]
[illegible]4[illegible]	[illegible]	M[illegible]	[illegible]	[illegible]	[illegible]
[illegible]4[illegible]	[illegible]	M[illegible]	[illegible]	[illegible]	[illegible]
[illegible]4[illegible]	[illegible]	M[illegible]	[illegible]	[illegible]	[illegible]
[illegible]4[illegible]	[illegible]	[illegible]D[illegible]	[illegible]	[illegible]	[illegible]
[illegible]4[illegible]	[illegible]	[illegible]"[illegible]R[illegible]d[illegible]d[illegible]	[illegible]	[illegible]	[illegible]
[illegible]4[illegible]	[illegible]	[illegible]4"[illegible]R[illegible]r[illegible]	[illegible]	[illegible]	[illegible]
[illegible]4[illegible]	4[illegible]	[illegible]4"[illegible]R[illegible]r[illegible]	[illegible]	[illegible]	[illegible]
[illegible]4[illegible]	[illegible]	M[illegible]	[illegible]	[illegible]	[illegible]
[illegible]4[illegible]	[illegible]	M[illegible]	[illegible]	[illegible]	[illegible]
[illegible]4[illegible]	[illegible]	M[illegible]	[illegible]	[illegible]	[illegible]
[illegible]4[illegible]	[illegible]	[illegible]D[illegible]	[illegible]	[illegible]	[illegible]
[illegible]4[illegible]	[illegible]	[illegible]"[illegible]R[illegible]d[illegible]d[illegible]	[illegible]	[illegible]	[illegible]
[illegible]4[illegible]	[illegible]	[illegible]4"[illegible]R[illegible]r[illegible]	[illegible]	[illegible]	[illegible]
[illegible]4[illegible]	4[illegible]	[illegible]4"[illegible]R[illegible]r[illegible]	[illegible]	[illegible]	[illegible]
[illegible]4[illegible]	[illegible]	M[illegible]	[illegible]	[illegible]	[illegible]
[illegible]4[illegible]	[illegible]	M[illegible]	[illegible]	[illegible]	[illegible]
[illegible]4[illegible]	[illegible]	M[illegible]	[illegible]	[illegible]	[illegible]
[illegible]4[illegible]	[illegible]	[illegible]D[illegible]	[illegible]	[illegible]	[illegible]
[illegible]4[illegible]	[illegible]	[illegible]"[illegible]R[illegible]d[illegible]d[illegible]	[illegible]	[illegible]	[illegible]
[illegible]4[illegible]	[illegible]	[illegible]4"[illegible]R[illegible]r[illegible]	[illegible]	[illegible]	[illegible]
[illegible]4[illegible]	[illegible]	[illegible]4"[illegible]R[illegible]r[illegible]	[illegible]	[illegible]	[illegible]
[illegible]4[illegible]	4[illegible]	[illegible]4"[illegible]R[illegible]r[illegible]	[illegible]	[illegible]	[illegible]
[illegible]4[illegible]	[illegible]	M[illegible]	[illegible]	[illegible]	[illegible]
[illegible]4[illegible]	[illegible]	M[illegible]	[illegible]	[illegible]	[illegible]
[illegible]4[illegible]	[illegible]	M[illegible]	[illegible]	[illegible]	[illegible]
[illegible]4[illegible]	[illegible]	[illegible]D[illegible]	[illegible]	[illegible]	[illegible]
[illegible]4[illegible]	[illegible]	[illegible]"[illegible]R[illegible]d[illegible]d[illegible]	[illegible]	[illegible]	[illegible]
[illegible]44[illegible]	[illegible]	[illegible]4"[illegible]R[illegible]r[illegible]	[illegible]	[illegible]	[illegible]
[illegible]44[illegible]	[illegible]	[illegible]4"[illegible]R[illegible]r[illegible]	[illegible]	[illegible]	[illegible]
[illegible]44[illegible]	4[illegible]	[illegible]4"[illegible]R[illegible]r[illegible]	[illegible]	[illegible]	[illegible]
[illegible]44[illegible]	[illegible]	M[illegible]	[illegible]	[illegible]	[illegible]
[illegible]44[illegible]	[illegible]	M[illegible]	[illegible]	[illegible]	[illegible]

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
[illegible]44[illegible]	[illegible]	M [illegible]	[illegible]	[illegible]	[illegible]
[illegible]44[illegible]	[illegible]	[illegible]D[illegible]	[illegible]	[illegible]	[illegible]
[illegible]44[illegible]	[illegible]	[illegible]" R [illegible] d [illegible] d [illegible]	[illegible]	[illegible]	[illegible]
[illegible]4[illegible]	[illegible]	[illegible]4" [illegible] R [illegible] r [illegible]	[illegible]	[illegible]	[illegible]
[illegible]4[illegible]	[illegible]	[illegible]4" [illegible] R [illegible] r [illegible]	[illegible]	[illegible]	[illegible]
[illegible]4[illegible]	4[illegible]	[illegible]4" [illegible] R [illegible] r [illegible]	[illegible]	[illegible]	[illegible]
[illegible]4[illegible]	[illegible]	M [illegible]	[illegible]	[illegible]	[illegible]
[illegible]4[illegible]	[illegible]	M [illegible]	[illegible]	[illegible]	[illegible]
[illegible]4[illegible]	[illegible]	M [illegible]	[illegible]	[illegible]	[illegible]
[illegible]4[illegible]	[illegible]	[illegible]D[illegible]	[illegible]	[illegible]	[illegible]
[illegible]4[illegible]	[illegible]	[illegible]" R [illegible] d [illegible] d [illegible]	[illegible]	[illegible]	[illegible]
[illegible]4[illegible]	[illegible]	[illegible]4" [illegible] R [illegible] r [illegible]	[illegible]	[illegible]	[illegible]
[illegible]4[illegible]	[illegible]	[illegible]4" [illegible] R [illegible] r [illegible]	[illegible]	[illegible]	[illegible]
[illegible]4[illegible]	4[illegible]	[illegible]4" [illegible] R [illegible] r [illegible]	[illegible]	[illegible]	[illegible]
[illegible]4[illegible]	[illegible]	M [illegible]	[illegible]	[illegible]	[illegible]
[illegible]4[illegible]	[illegible]	M [illegible]	[illegible]	[illegible]	[illegible]
[illegible]4[illegible]	[illegible]	M [illegible]	[illegible]	[illegible]	[illegible]
[illegible]4[illegible]	[illegible]	[illegible]D[illegible]	[illegible]	[illegible]	[illegible]
[illegible]4[illegible]	[illegible]	[illegible]" R [illegible] d [illegible] d [illegible]	[illegible]	[illegible]	[illegible]
[illegible]4[illegible]	[illegible]	[illegible]4" [illegible] R [illegible] r [illegible]	[illegible]	[illegible]	[illegible]
[illegible]4[illegible]	[illegible]	[illegible]4" [illegible] R [illegible] r [illegible]	[illegible]	[illegible]	[illegible]
[illegible]4[illegible]	4[illegible]	[illegible]4" [illegible] R [illegible] r [illegible]	[illegible]	[illegible]	[illegible]
[illegible]4[illegible]	[illegible]	M [illegible]	[illegible]	[illegible]	[illegible]
[illegible]4[illegible]	[illegible]	M [illegible]	[illegible]	[illegible]	[illegible]
[illegible]4[illegible]	[illegible]	M [illegible]	[illegible]	[illegible]	[illegible]
[illegible]4[illegible]	[illegible]	[illegible]D[illegible]	[illegible]	[illegible]	[illegible]
[illegible]4[illegible]	[illegible]	[illegible]" R [illegible] d [illegible] d [illegible]	[illegible]	[illegible]	[illegible]
[illegible]4[illegible]	[illegible]	[illegible]4" [illegible] R [illegible] r [illegible]	[illegible]	[illegible]	[illegible]
[illegible]4[illegible]	[illegible]	[illegible]4" [illegible] R [illegible] r [illegible]	[illegible]	[illegible]	[illegible]
[illegible]4[illegible]	4[illegible]	[illegible]4" [illegible] R [illegible] r [illegible]	[illegible]	[illegible]	[illegible]
[illegible]4[illegible]	[illegible]	M [illegible]	[illegible]	[illegible]	[illegible]
[illegible]4[illegible]	[illegible]	M [illegible]	[illegible]	[illegible]	[illegible]
[illegible]4[illegible]	[illegible]	M [illegible]	[illegible]	[illegible]	[illegible]
[illegible]4[illegible]	[illegible]	[illegible]D[illegible]	[illegible]	[illegible]	[illegible]
[illegible]4[illegible]	[illegible]	[illegible]" R [illegible] d [illegible] d [illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]4" [illegible] R [illegible] r [illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]4" [illegible] R [illegible] r [illegible]	[illegible]	[illegible]	[illegible]
[illegible]	4[illegible]	[illegible]4" [illegible] R [illegible] r [illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	M [illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	M [illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	M [illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]D[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]" R [illegible] d [illegible] d [illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]4" [illegible] R [illegible] r [illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]4" [illegible] R [illegible] r [illegible]	[illegible]	[illegible]	[illegible]
[illegible]	4[illegible]	[illegible]4" [illegible] R [illegible] r [illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	M [illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	M [illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	M [illegible]	[illegible]	[illegible]	[illegible]

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
		D			
		"R d d			
		4" R r			
		4" R r			
	4	4" R r			
		M			
		M			
		M			
		D			
		"R d d			

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
D 4 M		r	4		4		4 4 4	4 4 4	
4 M		r	4		4		4 4 4	4 4 4	
4 M		r	4		4		4 4 4	4 4 4	
R M		r	4		4		4	4	
R M		r	4		4		4	4	
R M		r	4		4		4	4	
D 4		r	4		4		4 4 4		
RR		r	4		4		4	4	
RR		r	4		4		4	4	
RR		r	4		4		4	4	
RR 4 4		r	4		4				

r R r r r

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*
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft²	C_AA_A Side ft²	Weight K
			[illegible]			[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

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*
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
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[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible]

Tower Pressures - No Ice

G_H = 1.100

Section Elevation ft	z ft	K_z	q_z ksf	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

Section Elevation ft	z ft	K_Z	q_z ksf	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

Section Elevation ft	z ft	K_Z	q_z ksf	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

Tower Pressure - With Ice

G_H = 1.100

Section Elevation ft	z ft	K_Z	q_z ksf	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

Section Elevation ft	z ft	K_Z	q_z ksf	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

Section Elevation ft	z ft	K_Z	q_z ksf	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

Tower Pressure - Service

G_H = 1.100

Section Elevation ft	z ft	K_z	q_z ksf	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

Section Elevation ft	z ft	K_Z	q_z ksf	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

Section Elevation ft	z ft	K_Z	q_z ksf	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
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Load Combinations

Comb. No.	Description
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Comb. No.	Description
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4	D d d d d r
4	D d d d d r
4	D d d d d r
4	D d d d d r
44	D d d d d r
4	D d d d d r
4	D d d d d r
4	D d d 4 d r
4	D d d d d r
4	D d d d d r
	D d d d d r

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
			M r	4			
			M r				4
			M M			4	
			M M				
			M			4	
			M				
			M r				
			M				
			M r				
			M M				
			M M				4
			M		4		
			M				4
			M r				
			M				
			M r			4	
			M M				
			M M				4
			M		4		
			M		4		4
			M r				
4			M				
			M r				
			M M		4		
			M M		4	4	
			M		4	4	4
			M		4	4	
			M r				
	4		M				
			M r				
			M M				
			M M				4
			M				
			M				4
			M r				
	4	4	M				
			M r				
			M M			44	
			M M			4	4
			M		4	44	
			M	4		4	4
			M r				

r R r r r

Section No.	*Elevation ft*	*Component Type*	*Condition*	*Gov. Load Comb.*	*Axial K*	*Major Axis Moment kip-ft*	*Minor Axis Moment kip-ft*
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Section No.	*Elevation ft*	*Component Type*	*Condition*	*Gov. Load Comb.*	*Axial K*	*Major Axis Moment kip-ft*	*Minor Axis Moment kip-ft*
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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft

Section No.	*Elevation ft*	*Component Type*	*Condition*	*Gov. Load Comb.*	*Axial K*	*Major Axis Moment kip-ft*	*Minor Axis Moment kip-ft*
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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
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Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft

Load Combination	Vertical K	Shear$_x$ K	Shear$_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
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Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
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[illegible]

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	*PX K*	*PY K*	*PZ K*	*PX K*	*PY K*	*PZ K*	*% Error*
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
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Non-Linear Convergence Results

Load Combination	*Converged?*	*Number of Cycles*	*Displacement Tolerance*	*Force Tolerance*
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Maximum Tower Deflections - Service Wind

Section No.	*Elevation* *ft*	*Horz. Deflection* *in*	*Gov. Load Comb.*	*Tilt* °	*Twist* °
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Section No.	*Elevation* ft	*Horz. Deflection* in	*Gov. Load Comb.*	*Tilt* °	*Twist* °
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Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	*Appurtenance*	*Gov. Load Comb.*	*Deflection* in	*Tilt* °	*Twist* °	*Radius of Curvature* ft
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Maximum Tower Deflections - Design Wind

Section No.	*Elevation* ft	*Horz. Deflection* in	*Gov. Load Comb.*	*Tilt* °	*Twist* °
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[illegible]

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
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[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
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[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
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[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Critical Deflections and Radius of Curvature - Design Wind

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

[illegible]

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 $\frac{P_u}{\phi P_n}$

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
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[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
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[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

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 $\frac{M_{uy}}{\phi M_{ny}}$
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
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[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

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 $\frac{M_{uy}}{\phi M_{ny}}$
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
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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 $\frac{M_{uy}}{\phi M_{ny}}$
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
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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 $\frac{T_u}{\phi T_n}$
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
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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 $\frac{T_u}{\phi T_n}$
	4							
	4	44 44				4		
	4							
4	4	44 44		4		4		
	4 4 4 4							
	4 4	44 44		4		4	4	
	4							
	4	44 44		4 4		4	4	
	4							
	4	44 44				4	4	
	4							
	4	4 44				4	44	
		4 4 4 4		4		4		
4		4 4 4 4 4				4	4 4	
	4							
4		4 4 4				4	4	
	4							
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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
					4				4
			4				44		4
							4		4
4	4		44						4
	4		44				44		4
	4 4 4						44		4
	4								4
	4								4
	4						4		4
	4						4		4
	4								4
	4								4
4	4		4				44		4
	4								4

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
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[illegible]

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

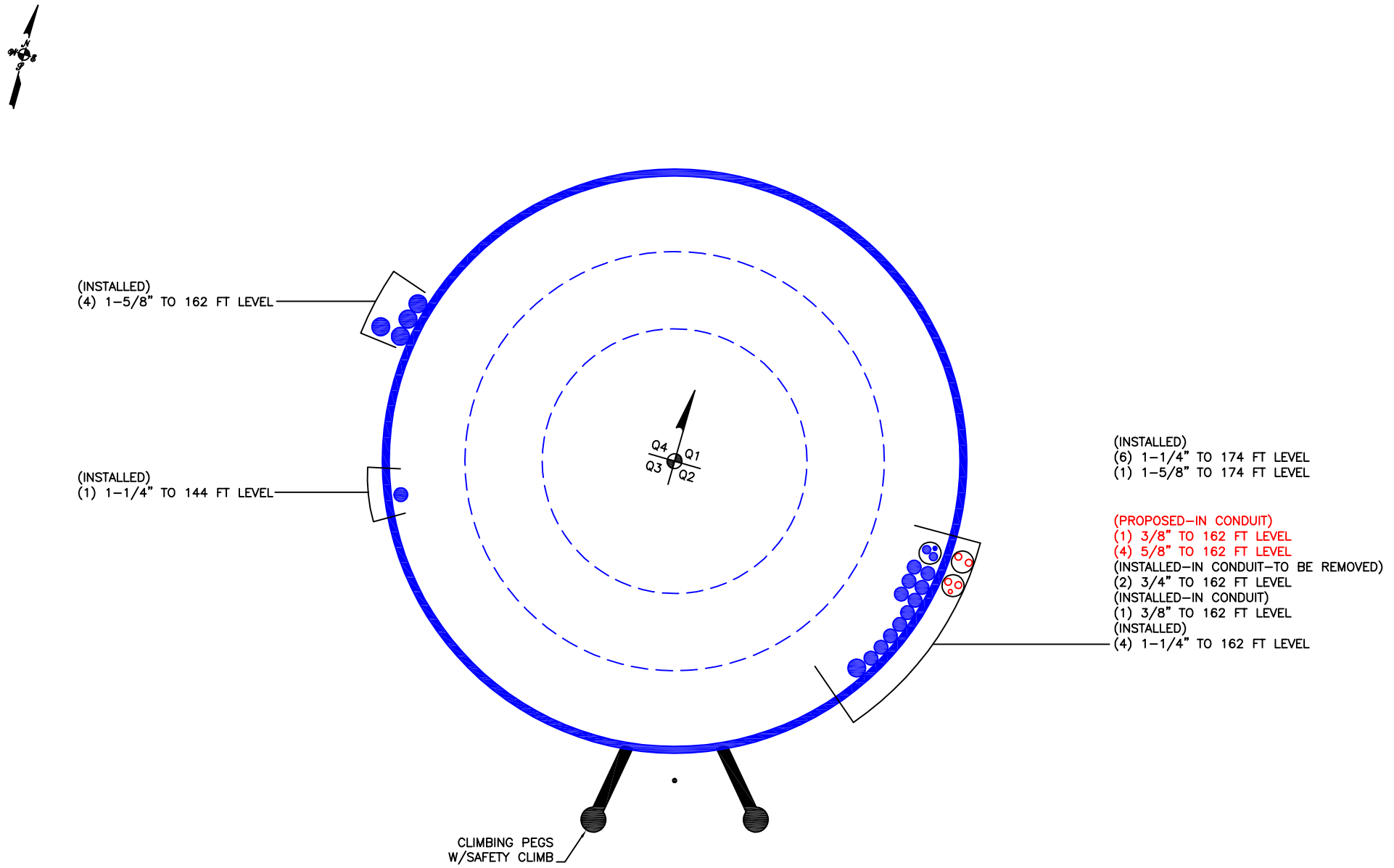
Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
						RATING =	**83.6**	**Pass**

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 807132 TOWER ID: C_BASELEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

CCIpole

per TIA-222- G

□□□□□□□□ 807132

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CROWN CASTLE

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	175	29.5	4.5	12	22.125	27.435	0.219	0.876	A572-65
2	150	54.5	5.5	12	26.19	35.997	0.313	1.252	A572-65
3	101	54.42	6.41667	12	34.38	44.177	0.375	1.5	A572-65
4	52.99667	43.08	7.08333	12	42.27	50.027	0.406	1.624	A572-65
5	17	17	0	12	47.94	51	0.438	1.752	A572-65

Reinforcement Configuration

	Bottom Effective Elevation (ft)	Top Effective Elevation (ft)	Type	Model	Number	1	2	3	4	5	6	7	8	9	10	11	12
1	0	18.08333333	channel	MP3-05 (1.1875")	3		x				x				x		
2	17.91666667	43.08333333	channel	MP3-05 (1.1875")	2				x								x
3	17.91666667	42.41333333	channel	MP3-05 (1.1875")	1								x				
4	41.91666667	64.08333333	channel	MP3-04 (1.1875")	3		x				x				x		
5	0	17	plate	CCI-AFP-065125	1												x
6	7	35.5	plate	CCI-AFP-065125	1											x	
7	0	35.5	plate	CCI-AFP-065125	2			x				x					
8	35.5	65.5	plate	CCI-AFP-060100	3			x				x				x	
9	65.5	83	plate	CCI-AFP-060100	3			x				x				x	
10																	

Reinforcement Details

	B (in)	H (in)	Gross Area (in^2)	Pole Face to Centroid (in)	Bottom Termination Length (in)	Top Termination Length (in)	L_u (in)	Net Area (in^2)	Bolt Hole Size (in)	Reinforcement Material
1	5.33	2.09	5.65	0.79	29.000	29.000	18.000	5.025	1.1875	A572-65
2	5.33	2.09	5.65	0.79	29.000	29.000	18.000	5.025	1.1875	A572-65
3	5.33	2.09	5.65	0.79	29.000	29.000	18.000	5.025	1.1875	A572-65
4	4.78	1.61	4.13	0.61	17.000	17.000	18.000	3.593	1.1875	A572-65
5	6.5	1.25	8.125	0.625	42.000	42.000	19.000	6.563	1.1875	A572-65
6	6.5	1.25	8.125	0.625	42.000	42.000	19.000	6.563	1.1875	A572-65
7	6.5	1.25	8.125	0.625	42.000	42.000	19.000	6.563	1.1875	A572-65
8	6	1	6	0.5	30.000	30.000	16.000	4.750	1.1875	A572-65
9	6	1	6	0.5	30.000	30.000	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	175 - 170	5		12	22.125	23.025	0.219	A572-65	1.000
2	170 - 165	5		12	23.025	23.925	0.219	A572-65	1.000
3	165 - 160	5		12	23.925	24.825	0.219	A572-65	1.000
4	160 - 155	5		12	24.825	25.725	0.219	A572-65	1.000
5	155 - 150	9.5	4.5	12	25.725	27.435	0.219	A572-65	1.000
6	150 - 145	5		12	26.187	27.087	0.313	A572-65	1.000
7	145 - 140	5		12	27.087	27.987	0.313	A572-65	1.000
8	140 - 135	5		12	27.987	28.887	0.313	A572-65	1.000
9	135 - 130	5		12	28.887	29.787	0.313	A572-65	1.000
10	130 - 125	5		12	29.787	30.687	0.313	A572-65	1.000
11	125 - 120	5		12	30.687	31.587	0.313	A572-65	1.000
12	120 - 115	5		12	31.587	32.487	0.313	A572-65	1.000
13	115 - 110	5		12	32.487	33.387	0.313	A572-65	1.000
14	110 - 105	5		12	33.387	34.287	0.313	A572-65	1.000
15	105 - 101	9.5	5.5	12	34.287	35.997	0.313	A572-65	1.000
16	101 - 94.5	6.5		12	34.381	35.551	0.375	A572-65	1.000
17	94.5 - 89.5	5		12	35.551	36.451	0.375	A572-65	1.000
18	89.5 - 84.5	5		12	36.451	37.351	0.375	A572-65	1.000
19	84.5 - 83	1.5		12	37.351	37.621	0.375	A572-65	1.000
20	83 - 82.75	0.25		12	37.621	37.666	0.375	A572-65	1.000
21	82.75 - 77.75	5		12	37.666	38.566	0.375	A572-65	1.000
22	77.75 - 72.75	5		12	38.566	39.466	0.375	A572-65	1.000
23	72.75 - 67.75	5		12	39.466	40.366	0.375	A572-65	1.000
24	67.75 - 65.5	2.25		12	40.366	40.771	0.375	A572-65	1.000
25	65.5 - 65.25	0.25		12	40.771	40.816	0.375	A572-65	1.000
26	65.25 - 64.0833	1.166666667		12	40.816	41.026	0.375	A572-65	1.000
27	64.0833 - 63.8333	0.25		12	41.026	41.071	0.625	A572-65	0.978
28	63.8333 - 58.8333	5		12	41.071	41.971	0.625	A572-65	0.969
29	58.8333 - 53.8333	5		12	41.971	42.871	0.625	A572-65	0.962
30	53.8333 - 52.9967	7.253333333	6.41667	12	42.871	44.177	0.6125	A572-65	0.980
31	52.9967 - 45.58	7.41667		12	42.272	43.607	0.6435	A572-65	0.976
32	45.58 - 43.0833	2.496666667		12	43.607	44.057	0.6435	A572-65	0.973
33	43.0833 - 42.8333	0.25		12	44.057	44.102	0.706	A572-65	1.002
34	42.8333 - 42.4133	0.42		12	44.102	44.177	0.706	A572-65	1.002
35	42.4133 - 42.1633	0.25		12	44.177	44.222	0.781	A572-65	0.958
36	42.1633 - 41.9167	0.246666667		12	44.222	44.267	0.781	A572-65	0.958
37	41.9167 - 41.6667	0.25		12	44.267	44.312	0.681	A572-65	0.966
38	41.6667 - 36.6667	5		12	44.312	45.212	0.681	A572-65	0.958
39	36.6667 - 35.5	1.166666667		12	45.212	45.422	0.6685	A572-65	0.974
40	35.5 - 35.25	0.25		12	45.422	45.467	0.731	A572-65	0.952
41	35.25 - 30.25	5		12	45.467	46.367	0.7185	A572-65	0.961
42	30.25 - 25.25	5		12	46.367	47.267	0.706	A572-65	0.970
43	25.25 - 20.25	5		12	47.267	48.167	0.706	A572-65	0.962
44	20.25 - 18.0833	2.166666667		12	48.167	48.557	0.706	A572-65	0.959
45	18.0833 - 17.8167	0.266666667		12	48.557	48.605	0.706	A572-65	0.959
46	17.8167 - 17.6667	0.15		12	48.605	48.632	0.706	A572-65	0.959
47	17.6667 - 17	7.749996667	7.08333	12	48.632	50.027	0.706	A572-65	0.958
48	17 - 8.91667	8.08333		12	47.940	49.395	0.7255	A572-65	1.043
49	8.91667 - 7	1.91667		12	49.395	49.740	0.7255	A572-65	1.040
50	7 - 6.75	0.25		12	49.740	49.785	0.663	A572-65	1.058
51	6.75 - 1.75	5		12	49.785	50.685	0.663	A572-65	1.051
52	1.75 - 0	1.75		12	50.685	51.000	0.663	A572-65	1.049

TNX Section Forces

Increment (ft):	5	TNX Output		
	Section Height (ft)	P_u (K)	M_{ux} (kip-ft)	V_u (K)
1	175 - 170	2.57	36.02	8.00
2	170 - 165	2.87	77.41	8.56
3	165 - 160	5.95	139.24	14.28
4	160 - 155	6.40	212.08	14.87
5	155 - 150	6.88	287.92	15.48
6	150 - 145	7.85	367.04	16.17
7	145 - 140	8.72	453.92	18.00
8	140 - 135	9.93	548.71	19.48
9	135 - 130	10.66	647.83	20.20
10	130 - 125	11.43	750.52	20.91
11	125 - 120	12.22	856.75	21.62
12	120 - 115	13.05	966.53	22.33
13	115 - 110	13.91	######	23.03
14	110 - 105	14.79	######	23.74
15	105 - 101	15.53	######	24.29
16	101 - 94.5	17.62	######	25.32
17	94.5 - 89.5	18.71	######	26.02
18	89.5 - 84.5	19.83	######	26.71
19	84.5 - 83	20.16	######	26.94
20	83 - 82.75	20.24	######	26.96
21	82.75 - 77.75	21.39	######	27.70
22	77.75 - 72.75	22.58	######	28.43
23	72.75 - 67.75	23.80	######	29.14
24	67.75 - 65.5	24.35	######	29.46
25	65.5 - 65.25	24.43	######	29.49
26	65.25 - 64.08333	24.71	######	29.69
27	64.08333 - 63.83333	24.81	######	29.72
28	63.83333 - 58.83333	26.63	######	30.57
29	58.83333 - 53.83333	28.48	######	31.41
30	53.83333 - 52.99667	28.79	######	31.54
31	52.99667 - 45.58	33.80	######	32.87
32	45.58 - 43.08333	34.79	######	33.28
33	43.08333 - 42.83333	34.91	######	33.31
34	42.83333 - 42.41333	35.09	######	33.38
35	42.41333 - 42.16333	35.21	######	33.42
36	42.16333 - 41.91667	35.33	######	33.46
37	41.91667 - 41.66667	35.43	######	33.50
38	41.66667 - 36.66667	37.53	######	34.29
39	36.66667 - 35.5	38.02	######	34.47
40	35.5 - 35.25	38.15	######	34.50
41	35.25 - 30.25	40.40	######	35.22
42	30.25 - 25.25	42.70	######	35.90
43	25.25 - 20.25	45.02	######	36.56
44	20.25 - 18.08333	46.03	######	36.85
45	18.08333 - 17.81667	46.17	######	36.87
46	17.81667 - 17.66667	46.24	######	36.89
47	17.66667 - 17	46.55	######	36.98
48	17 - 8.91667	53.76	######	38.12
49	8.91667 - 7	54.77	######	38.37
50	7 - 6.75	54.91	######	38.38
51	6.75 - 1.75	57.42	######	38.98
52	1.75 - 0	58.30	######	39.20

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
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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
175 - 170	1069	n/a	1069	16.06	n/a	16.06	7.2%									
170 - 165	1201	n/a	1201	16.69	n/a	16.69	14.3%									
165 - 160	1343	n/a	1343	17.33	n/a	17.33	24.4%									
160 - 155	1496	n/a	1496	17.96	n/a	17.96	34.9%									
155 - 150	1659	n/a	1659	18.59	n/a	18.59	44.8%									
150 - 145	2472	n/a	2472	26.95	n/a	26.95	34.3%									
145 - 140	2730	n/a	2730	27.85	n/a	27.85	39.8%									
140 - 135	3005	n/a	3005	28.76	n/a	28.76	45.6%									
135 - 130	3298	n/a	3298	29.66	n/a	29.66	51.1%									
130 - 125	3610	n/a	3610	30.57	n/a	30.57	56.3%									
125 - 120	3940	n/a	3940	31.47	n/a	31.47	61.2%									
120 - 115	4290	n/a	4290	32.38	n/a	32.38	65.9%									
115 - 110	4660	n/a	4660	33.29	n/a	33.29	70.4%									
110 - 105	5051	n/a	5051	34.19	n/a	34.19	74.8%									
105 - 101	5379	n/a	5379	34.92	n/a	34.92	78.1%									
101 - 94.5	6717	n/a	6717	42.41	n/a	42.41	67.0%									
94.5 - 89.5	7246	n/a	7246	43.50	n/a	43.50	69.9%									
89.5 - 84.5	7802	n/a	7802	44.58	n/a	44.58	72.7%									
84.5 - 83	7975	n/a	7975	44.91	n/a	44.91	73.6%									
83 - 82.75	8003	n/a	8003	44.96	n/a	44.96	73.7%									
82.75 - 77.75	8597	n/a	8597	46.05	n/a	46.05	76.4%									
77.75 - 72.75	9219	n/a	9219	47.14	n/a	47.14	79.0%									
72.75 - 67.75	9871	n/a	9871	48.22	n/a	48.22	81.5%									
67.75 - 65.5	10174	n/a	10174	48.71	n/a	48.71	82.7%									
65.5 - 65.25	10208	n/a	10208	48.76	n/a	48.76	82.8%									
65.25 - 64.08	10368	n/a	10368	49.02	n/a	49.02	83.4%									
64.08 - 63.83	10402	6787	17189	49.07	30.39	79.46	48.9%				68.3%				71.5%	
63.83 - 58.83	11108	7078	18186	50.16	30.39	80.55	50.8%				70.2%				73.6%	
58.83 - 53.83	11844	7376	19220	51.24	30.39	81.63	52.7%				72.1%				75.6%	
53.83 - 53	11971	7426	19397	51.42	30.39	81.81	53.1%				72.5%				76.0%	
53 - 45.58	13472	7624	21096	56.40	30.39	86.79	52.5%				73.7%				77.3%	
45.58 - 43.08	13897	7777	21674	56.98	30.39	87.37	53.3%				74.5%				78.1%	
43.08 - 42.83	14020	9583	23603	57.04	41.69	98.73	52.7%		60.6%		66.6%				75.5%	
42.83 - 42.41	14093	9615	23708	57.14	41.69	98.83	52.8%		60.7%		66.8%				75.6%	
42.41 - 42.16	14056	12290	26345	57.20	47.34	104.54	44.6%		60.6%	60.6%	62.2%				65.2%	
42.16 - 41.92	14099	12313	26412	57.26	47.34	104.60	44.7%		60.7%	60.7%	62.3%				65.3%	
41.92 - 41.67	14142	9120	23262	57.32	34.95	92.27	50.9%		69.1%	69.1%					74.4%	
41.67 - 36.67	15030	9482	24512	58.49	34.95	93.44	52.5%		70.7%	70.7%					76.1%	
36.67 - 35.5	15242	9568	24810	58.77	34.95	93.72	52.9%		71.1%	71.1%					76.5%	
35.5 - 35.25	15288	11395	26682	58.82	41.33	100.15	49.4%		66.3%	66.3%			70.4%	70.4%		
35.25 - 30.25	16222	11834	28057	60.00	41.33	101.32	51.0%		67.8%	67.8%			71.9%	71.9%		
30.25 - 25.25	17194	12283	29477	61.17	41.33	102.50	52.5%		69.2%	69.2%			73.4%	73.4%		
25.25 - 20.25	18204	12739	30943	62.35	41.33	103.67	54.1%		70.6%	70.6%			74.9%	74.9%		
20.25 - 18.08	18654	12940	31593	62.86	41.33	104.18	54.7%		71.1%	71.1%			75.5%	75.5%		
18.08 - 17.82	18709	12964	31674	62.92	41.33	104.25	54.8%	71.2%					75.6%	75.6%		
17.82 - 17.67	18741	12978	31719	62.96	41.33	104.28	54.9%	71.2%					75.6%	75.6%		
17.67 - 17	18881	13040	31922	63.11	41.33	104.44	55.1%	71.4%					75.8%	75.8%		
17 - 8.92	21153	13439	34593	68.95	49.45	118.40	55.3%	68.2%				62.6%	66.0%	76.6%		
8.92 - 7	21604	13621	35225	69.43	49.45	118.88	55.8%	68.6%				63.1%	66.4%	77.0%		
7 - 6.75	21694	10865	32559	69.50	41.33	110.82	60.7%	80.7%				74.8%		78.0%		
6.75 - 1.75	22902	11249	34150	70.76	41.33	112.09	62.1%	81.8%				75.9%		79.2%		
1.75 - 0	23335	11385	34719	71.21	41.33	112.53	62.6%	82.2%				76.3%		79.6%		

Note: Section capacity checked in 5 degree increments.

ANCHOR BOLTS - Distribution of Base Reactions

Base Reactions:		
Moment	4517	k-ft
Axial	58	k
Shear	39	k

Combined MOI 34122.87 in^4

Original Bolts		
Quantity	16	
Diameter	2.25	in
Material	A615 Gr 75	
Fy	75	ksi
Fu	100	ksi
Bolt Circle	59.3	in
Bolt Group MOI	27984	in^4

Reactions Taken by Bolt Group

Moment	3704.34	k-ft
Axial	46.40	k
Shear	31.20	k

Reinforcing Bolts		
Quantity	4	
Diameter	2	in
Material	A193 B7	
Fy	105	ksi
Fu	125	ksi
Bolt Circle	62.5	in
Bolt Group MOI	6139	in^4

Reactions Taken by Bolt Group

Moment	812.66	k-ft
Axial	11.60	k
Shear	7.80	k

Moment of Inertia Values from AutoCAD

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

TIA Rev G [illegible] **not** [illegible]

Site Data

[illegible]	*807132*
[illegible]	[illegible]
[illegible]	*419481 Rev 3*
[illegible]	*Other*

Reactions

M[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
Eta Factor, η	[illegible]	[illegible]

[illegible]	[illegible]	[illegible]

Original Anchor Rod Data

[illegible]	[illegible]	
D[illegible]	[illegible]	[illegible]
R[illegible]d M[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]

Orignal Anchor Rod Results

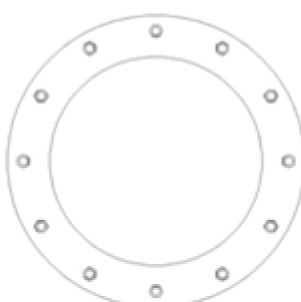
Max Rod (Cu+ Vu/ή):	[illegible]	
Allowable Axial, Φ*Fu*Anet:	[illegible]	
[illegible]	[illegible]	**Pass**

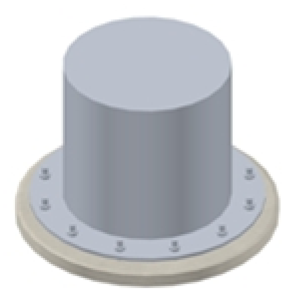
[illegible]

[illegible]
[illegible]
φ*Tn

Pole Data

D[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	"[illegible]" [illegible]
[illegible]	[illegible]	[illegible]
R[illegible]	[illegible]	"[illegible]" [illegible]





[illegible]

[illegible]

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

TIA Rev G [illegible] **not** [illegible]

Site Data

[illegible]	*807132*
[illegible]	[illegible]
[illegible]	*419481 Rev 3*
[illegible]	*Other*

Reactions

Reactions		
M[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
Eta Factor, η	[illegible]	[illegible]

[illegible]	[illegible]	[illegible]

Reinforced Anchor Rod Data

[illegible]	4	
D[illegible]	[illegible]	[illegible]
R[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]

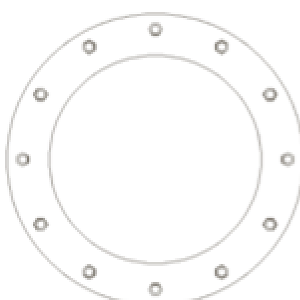
Reinforced Anchor Rod Results

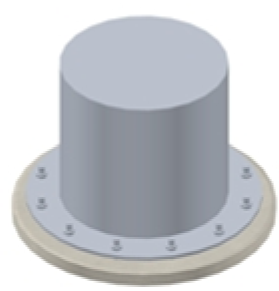
Max Rod (Cu+ Vu/ή):	[illegible]	[illegible]
Allowable Axial, Φ*Fu*Anet:	[illegible]	[illegible]
[illegible]	[illegible]	**Pass**

[illegible]
[illegible]
φ*Tn

Pole Data

D[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
R[illegible]	[illegible]	[illegible]





[illegible]

[illegible]

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

TIA Rev G [illegible] not [illegible]

Site Data

[illegible]	*807132*
[illegible]	[illegible]
[illegible]	*419481 Rev 3*
[illegible]	*Other*

Reactions

[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
Eta Factor, η	[illegible]	[illegible]

Effective Anchor Rod Data

[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]

Effective Rod Results

Max Rod (Cu+ Vu/ή): [illegible]

[illegible]
[illegible]
φ*Tn

Plate Data

[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]

Base Plate Results

[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible] **Pass**

[illegible]
[illegible]
φ*Fy
[illegible]

Stiffener Data

[illegible]

n/a

Stiffener Results

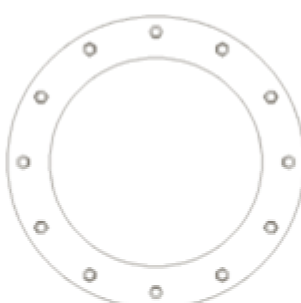
[illegible]

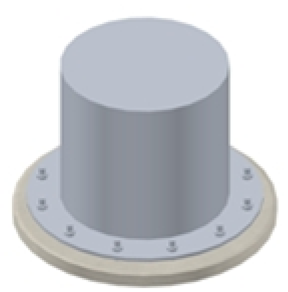
Pole Data

[illegible]

Pole Results

[illegible]





[illegible]

CCIplate 1.5 - Circular Base G 1.3, Effective March 19, 2012

ROCK ANCHOR FOUNDATION CALCULATION

Tower Loads

Rock Anchor (Embedded Rebar)

Pad and Pier Information

Pier							
Pad							
Soil							

Loads acting on base

Force acting on the anchor

Foundation Capacity

			Percentage

Moment Capacity of Drilled Concrete Shaft (Caisson) for TIA Rev F or G

Note: **Shaft assumed to have ties, not spiral, transverse reinforcing**

Site Data

[illegible] *807132*

[illegible] *BRG 133 943050*

[illegible] *419481 Rev 3*

Maximum Shaft Superimposed Forces

[illegible]	[illegible]	
[illegible]	4[illegible]	[illegible] **(* Note)**
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	

(*) Note [illegible]

[illegible]	
[illegible]	[illegible]
[illegible]	[illegible]

[illegible]	Shaft Factored Loads	
[illegible]	[illegible] 4[illegible]	[illegible]
[illegible]	[illegible]	[illegible]

Pier Properties

Concrete:

[illegible]	[illegible]	[illegible]
[illegible]	[illegible]4[illegible]	[illegible]

Reinforcement:

[illegible] Tie [illegible]	[illegible]	[illegible]
[illegible] Tie [illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	4[illegible]	[illegible]
Vertical [illegible]	4	
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	4	
[illegible]	4	[illegible]
[illegible]	[illegible]	[illegible]

Material Properties

[illegible]	4[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	
[illegible]	[illegible]	

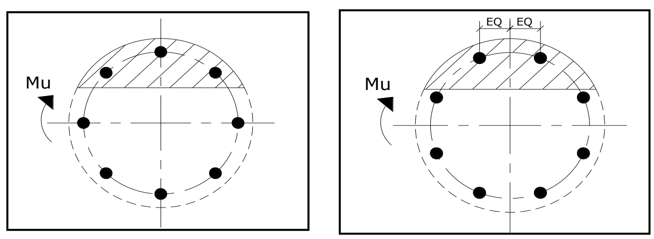
ACI 318 Code

[illegible]	[illegible]

[illegible]

Results:

[illegible] **1**



[illegible]

[illegible]	**15.13**	[illegible]
[illegible] εt:	**0.0127**	
	εt > 0.0050, Tension Controlled	
Reduction Factor,φ:	**0.900**	

[illegible]4[illegible]

[illegible]

[illegible]	[illegible]
[illegible]	[illegible]

[illegible]

[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	**OK**

[illegible]

For Axial Compression, φ Pn = Pu:	[illegible]	[illegible]
Drilled Shaft Moment Capacity, φMn:	**8342.64**	[illegible]
[illegible]	**4926.50**	[illegible]

(Mu/φMn, Drilled Shaft Flexure CSR:	**59.1%**

[illegible] φ [illegible]		
Max Pu = (φ=0.65) Pn.		
[illegible]	[illegible]	[illegible]
[illegible] ϕ=0.65)M[illegible]	[illegible]	[illegible]
Max Tu, (φ=0.9) Tn =	[illegible]	[illegible]
[illegible] ϕ=(0.90)M[illegible]	[illegible]	[illegible]

Radio Frequency Emissions Analysis Report

AT&T Existing Facility

Site ID: CT2101
FA#: 10035069

Banksville
1081 North Street
Greenwich, CT 06831

February 28, 2018

Centerline Communications Project Number: 950012-038

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**6.13 %**

February 28, 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: **CT2101 – Banksville**

Centerline Communications, LLC ("Centerline") was directed to analyze the proposed AT&T facility located at **1081 North Street, Greenwich, 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 **1081 North Street, Greenwich, 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 (Sectors A & B)	850 MHz	1	30
LTE	2300 MHz (WCS)	4	30
LTE	700 MHz	2	40
LTE	1900 MHz (PCS)	4	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	165
A	2	Quintel QS66512-2	165
A	3	CCI HPA-65R-BUU-H6	165
B	1	Kathrein 800-10121	165
B	2	Quintel QS66512-2	165
B	3	CCI HPA-65R-BUU-H6	165
C	1	Quintel QS66512-2	165
C	2	CCI HPA-65R-BUU-H6	165

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	11.4	1	30	414.12	0.10
Antenna A2	Quintel QS66512-2	2300 MHz (WCS)	14.85	4	120	3,665.91	0.52
Antenna A3	CCI HPA-65R-BUU-H6	700 MHz / 1900 MHz (PCS)	11.95 / 14.75	6	240	6,030.01	1.06
						Sector A Composite MPE%	**1.69**
Antenna B1	Kathrein 800-10121	850 MHz	11.45	1	30	418.91	0.11
Antenna B2	Quintel QS66512-2	2300 MHz (WCS)	14.85	4	120	3,665.91	0.52
Antenna B3	CCI HPA-65R-BUU-H6	700 MHz / 1900 MHz (PCS)	11.95 / 14.75	6	240	6,030.01	1.06
						Sector B Composite MPE%	**1.69**
Antenna C1	Quintel QS66512-2	2300 MHz (WCS)	14.85	4	120	3,665.91	0.52
Antenna C2	CCI HPA-65R-BUU-H6	700 MHz / 1900 MHz (PCS)	11.95 / 14.75	6	240	6,030.01	1.06
						Sector C Composite MPE%	**1.58**

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 & B. *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 – Max Sector Value	**1.69 %**
RAM Mobile	0.27 %
Verizon Wireless	1.56 %
Sprint	1.12 %
T-Mobile	1.49 %
Site Total MPE %:	**6.13 %**

Table 4: All Carrier MPE Contributions

AT&T Sector A Total:	1.69 %
AT&T Sector B Total:	1.69 %
AT&T Sector C Total:	1.58 %
Site Total:	6.13 %

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 & B.

AT&T _ Frequency Band / Technology Max Power Values (Sector A & B)	# 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) – **Sectors A & B	1	418.91	165	0.60	850 MHz	567	0.11%
AT&T 2300 MHz (WCS) LTE (Antenna 2)	4	916.48	165	5.21	2300 MHz (WCS)	1000	0.52%
AT&T 700 MHz LTE (Antenna 3)	2	626.70	165	1.78	700 MHz	467	0.38%
AT&T 1900 MHz (PCS) LTE (Antenna 3)	4	1,194.15	165	6.79	1900 MHz (PCS)	1000	0.68%
						Total:	1.69%

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:	1.69 %
Sector B:	1.69 %
Sector C:	1.58 %
AT&T Maximum Total (per sector):	1.69 %
Site Total:	6.13 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **6.13 %** 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

222

223

151

152

188

224

BANKSVILLE RD

THE AVE

NORTH ST

SCOTT LN

SCOTT RD

COWDRAY PARK DR

11-1524
0.095

11-1502
0.764

11-1184
0.788

11-1243
0.758

11-1523
0.404

11-1412
0.667

11-1307
0.415

11-1285
0.415

11-1318
0.349

11-1712
0.321

11-1306
0.937

11-1239
0.597

11-1322
0.349

11-1005
2.124

11-1070
0.962

11-1445
0.344

11-2760
0.509

11-2265
0.344

11-2783
0.413

11-4007
1.21

11-2654
0.553

11-2656
0.474

11-2845
0.39

11-1967
0.548

11-2655
0.466

11-1794
5.66

11-1240
1.28

11-1135
0.471

11-1966
0.487

11-1414
0.298

11-1965
0.492

11-1927
0.538

11-3150
0.503

11-1968
0.496

11-3100
0.546

11-1166
0.464

11-1071
0.258

11-3149
0.538

11-1266
0.194

11-1184
0.258

11-1434
0.482

11-1349
0.281

11-1165
0.321

11-1185
0.258

11-3128
0.52

11-1147
0.068

11-1441
0.258

11-1431
0.482

11-1256
0.262

11-1440
0.258

11-1036
0.258

11-1267
0.258

11-1397
0.258

11-1322
0.523

11-1430
0.258

11-1396
0.258

11-1429
0.258

11-1517
0.258

11-1426
0.267

11-1435
0.427

11-1425
0.218

11-1233
0.568

11-1505
0.218

11-1468
0.207

11-1286
1.85

11-3085
13.344

11-3086
12.66

11-1343
0

11-3087
8.82

11-3088
0.67

0

TOWN OF GREENWICH TAX MAP 187 VOL 3

200 100 0 200 Feet

N
W E
S

Tax ID 187/017 Printed 03/06/2018 Card No. 1 of 1

ADMINISTRATIVE INFORMATION

PARCEL NUMBER
11-1794

Parent Parcel Number

Property Address
NORTH STREET 1081

Neighborhood
2900 BANKSVILLE

Property Class
270 Telecommunications

TAXING DISTRICT INFORMATION

Jurisdiction	57	Greenwich, CT
Area	001	
Corporation	057	
District	11	
Section & Plat	399	
Routing Number	5830W0113	

Site Description

Topography:

Public Utilities:
Electric

Street or Road:

Neighborhood:

Zoning:
RA-4 Single Family 4 acre

Legal Acres:
5.6600

OWNERSHIP

CROWN ATLANTIC COMPANY LLC
PMB 353
4017 WASHINGTON ROAD
MCMURRAY, PA 15317

LOT NO 52B & 52C NORTH ST W 113

COMMERCIAL

TRANSFER OF OWNERSHIP

Date		
04/19/1999	CELLCO PARTNERSHIP	Bk/Pg: 3256, 203 $875000
03/30/1998	METRO MOBILE CTS OF FFLD	Bk/Pg: 3053, 308 $816885
09/14/1990	PENCHO GOSPODINOFF	Bk/Pg: 2068, 233 $875000
10/14/1987	GOSPODINOFF NEDA, PENCHO & KALINKA G	Bk/Pg: 1767, 253 $0
04/21/1983	GOSPODINOFF NEDA	Bk/Pg: 1306, 65&67 $0

VALUATION RECORD

Assessment Year		10/01/2005	10/01/2010	10/01/2015	10/01/2015	10/01/2016	10/01/2017
Reason for Change		2005 Reval	2010 Reval	2015 Prelim	2015 Final	2016 List	2017 List
VALUATION	L	3006200	2301600	2071800	2071800	2071800	2071800
Market	B	95000	213200	610500	610500	556300	556300
	T	3101200	2514800	2682300	2682300	2628100	2628100
VALUATION	L	2104340	1611120	1450260	1450260	1450260	1450260
70% Assessed	B	66500	149240	427350	427350	389410	389410
	T	2170840	1760360	1877610	1877610	1839670	1839670

LAND DATA AND CALCULATIONS

Land Type	Rating Soil ID -or- Actual Frontage	Measured Acreage -or- Effective Frontage	Table Effective Depth	Prod. Factor -or- Depth Factor -or- Square Feet	Base Rate	Adjusted Rate	Extended Value	Influence Factor	Value
1 Primary Commercial				246549.60	14.01	14.01	3453000 B	-40%	2071800

BP14: 14-1010 nvc $29,000 demo house 2016 GL
GEN: Boarded up dwlg depr @ 95% and telecommunications tower w/ ancillary improvements. Real estate owner owns tower.
LAND: V2068 P233 9/14/90 30k+- sf sold to 11-1240 reducing acreage to 5.66+-acres.

Permit Number / Type	FilingDate	Est. Cost / Est. SqFt	Field Visit

Supplemental Cards

TRUE TAX VALUE 2071800

Supplemental Cards
TOTAL LAND VALUE 2071800

IMPROVEMENT DATA

PHYSICAL CHARACTERISTICS

ROOFING

Built-up

WALLS

	B	1	2	U
Frame		Yes		
Brick				
Metal				
Guard				

FRAMING

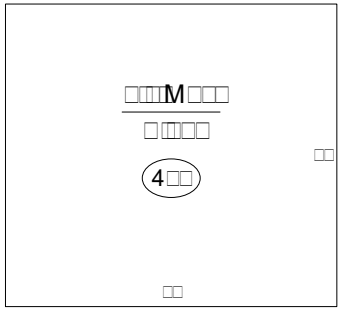
	B	1	2	U
F Prf	0	483	0	0

FINISH

	UF	SF	FO	FD
1	483	0	0	0
Total	483	0	0	0

HEATING AND AIR CONDITIONING

B	1	2	U



(LCM: 150.00)

SPECIAL FEATURES

Description	Value

SUMMARY OF IMPROVEMENTS

ID	Use	Stry Hgt	Const Type	Grade	Year Const	Eff Year	Cond	Base Rate	Feat-ures	Adj Rate	Size or Area	Computed Value	Phys Depr	Obsol Depr	Market Adj	% Comp	Value
C	UTLSTOR	0.00		S2	1990	2005	VG	0.00	N	0.00	483	0	0	0	150	100	183300
01	COMCNPYA	0.00	1	Avg	1990	2000	GD	27.60	N	41.40	96	3970	0	0	100	100	4000
02	PAVING	0.00	6	Avg	1990	2000	GD	6.30	N	9.45	96	910	0	0	100	100	900
03	FENCECL	10.00	51E	Avg	1990	2000	GD	25.75	N	38.63	186	7180	0	0	100	100	7200
04	TOWERMON	0.00	5PF	Good	2001	2001	GD	916.50	N	2062	175	360870	0	0	100	100	360900

Data Collector/Date
JLT 06/14/2000

Appraiser/Date
TOG 10/01/2015

Neighborhood
Neigh 2900 AV

Supplemental Cards
TOTAL IMPROVEMENT VALUE 556300

PROJECT INFORMATION

SCOPE OF WORK:	ITEMS TO BE MOUNTED ON THE MONOPOLE: • NEW AT&T ANTENNA (QS66512-2) @ POS 2 ON EXISTING PIPE MOUNT (TYP. OF 1 PER SECTOR, TOTAL OF 3). • NEW AT&T ANTENNA (HPA-65R-BUU-H6) @ POS 4 ON EXISTING PIPE MOUNT (TYP. OF 1 PER SECTOR, TOTAL OF 3). • NEW AT&T RRUS-32 (WCS) (TYP. OF 1 PER SECTOR, TOTAL OF 3). • NEW AT&T RRUS-32 B2 (PCS) (TYP. OF 1 PER SECTOR, TOTAL OF 3). • COAX JUMPERS (2) PER SECTOR, FROM EACH RRU (TOTAL OF 6). • FIBER JUMPERS (3) PER SECTOR, FROM THE SQUID TO EACH RRU (TOTAL OF 9). • NEW SURGE ARRESTOR (DC6-48-60-18-8F) (TOTAL OF 1) WITH (2) DC POWER, (1) FIBER, & (1) ALARM CABLE. • NEW LOW BAND COMBINERS (DBC0061F1V51-2) @ POS. 2 (TYP. OF 2 PER ALPHA AND BETA SECTORS, TOTAL OF 4). ITEMS TO BE MOUNTED @ EXISTING EQUIPMENT PLATFORM: • PROPOSED UPGRADE BB TO 5216, & ADD (1) XMU. ITEMS TO REMAIN: • (2) ANTENNAS, (3) RRU'S, (1) SURGE ARRESTOR, (4) TMAS, (8) COAX, (2) DC POWER CABLES, & (1) FIBER RUN. ITEMS TO BE REMOVED: • (5) ANTENNAS. 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:	1081 NORTH ST. GREENWICH, CT 06831
SITE OWNER	CROWN CASTLE 500 CUMMINGS PARK DR, #3600 WOBURN, MA 01801
FA LOCATION CODE:	10035069
LATITUDE:	41.139298° N 41° 8' 21.47" N
LONGITUDE:	73.641805° W 73° 38' 30.5" W
TYPE OF SITE:	MONOPOLE, OUTDOOR EQUIPMENT
MONOPOLE HEIGHT:	175'-0"± A.G.L
RAD CENTER:	165'-0"± A.G.L
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 PLANS	B
A-2	ANTENNA PLANS & ELEVATION	B
A-3	DETAILS	B
G-1	GROUNDING DETAILS	B
RF-1	RF PLUMBING DIAGRAM	B

CROWN CASTLE SITE #: 807132
CROWN CASTLE SITE NAME: BANKSVILLE

SITE NUMBER: CT2101

SITE NAME: BANKSVILLE

PROJECT: LTE 2C/3C 2018 UPGRADE

VICINITY MAP

DIRECTIONS TO SITE:

START OUT GOING NORTHEAST ON ENTERPRISE DR TOWARD CAPITOL BLVD. 0.4 MI, TURN LEFT ONTO CAPITOL BLVD. 0.3 MI, TURN LEFT ONTO WEST ST. 0.3 MI, MERGE ONTO I-91 S VIA THE RAMP ON THE LEFT TOWARD NEW HAVEN 9.7 MI, MERGE ONTO CT-15 S VIA EXIT 17 59.2 MI, | TAKE THE NORTH ST EXIT, EXIT 31 0.1 MI, TURN LEFT ONTO NORTH ST. 3.3 MI, 1081 NORTH ST IS ON THE 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

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

UNDERGROUND SERVICE ALERT

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

CENTERLINE COMMUNICATIONS
95 RYAN DRIVE
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SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: SG

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

AT&T

TITLE SHEET
(LTE 2C/3C)

SITE NUMBER	DRAWING NUMBER	REV
CT2101	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		

HUDSON Design Group LLC
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CENTERLINE COMMUNICATIONS
95 RYAN DRIVE
RAYNHAM, MA 02767

SITE NUMBER: CT2101
SITE NAME: BANKSVILLE
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FAIRFIELD COUNTY

at&t
500 ENTERPRISE DRIVE, SUITE 3A
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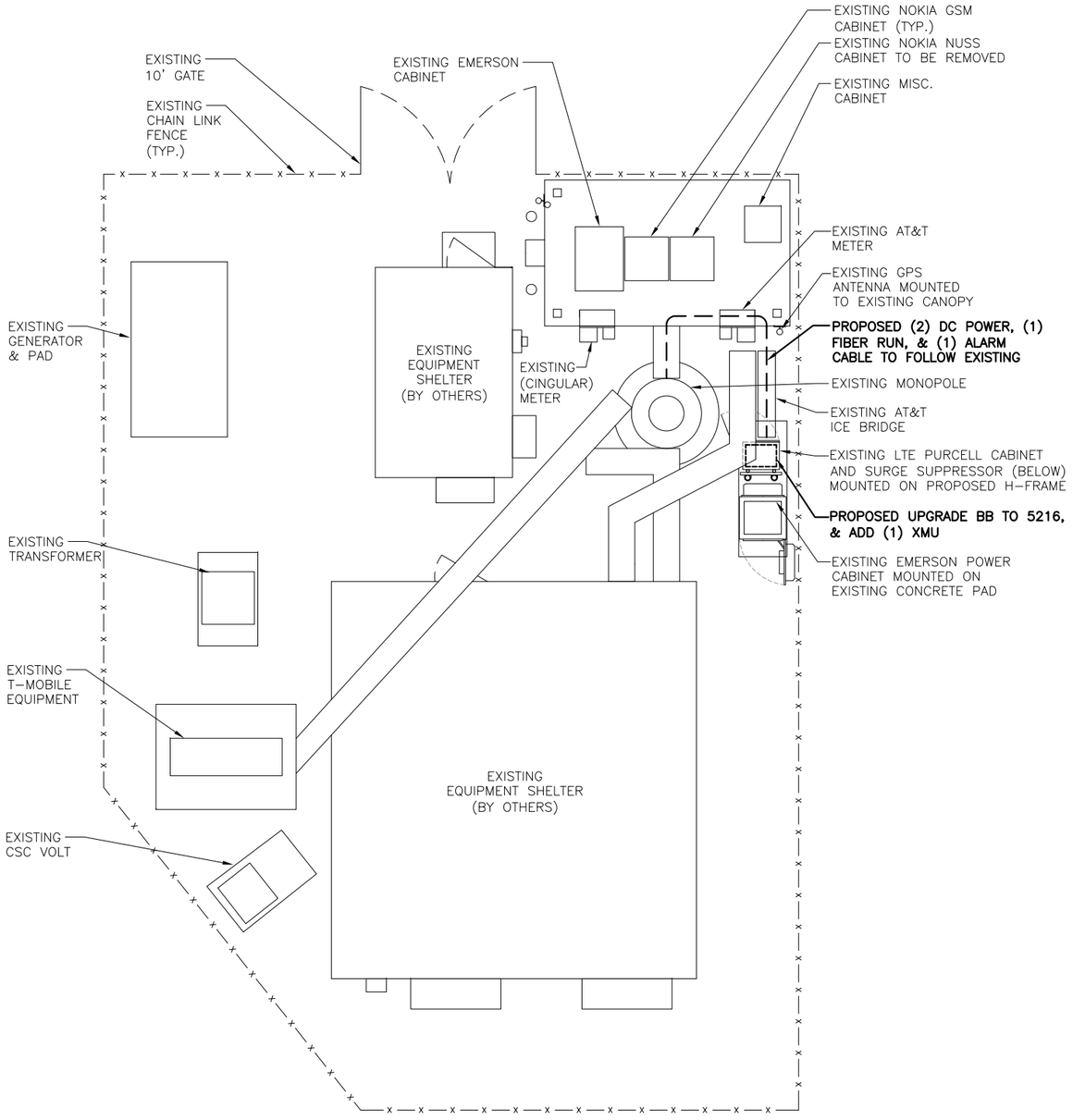
SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: SG

STATE OF CONNECTICUT
DEREK J. CREASEY
18,235
LICENSED PROFESSIONAL ENGINEER

AT&T

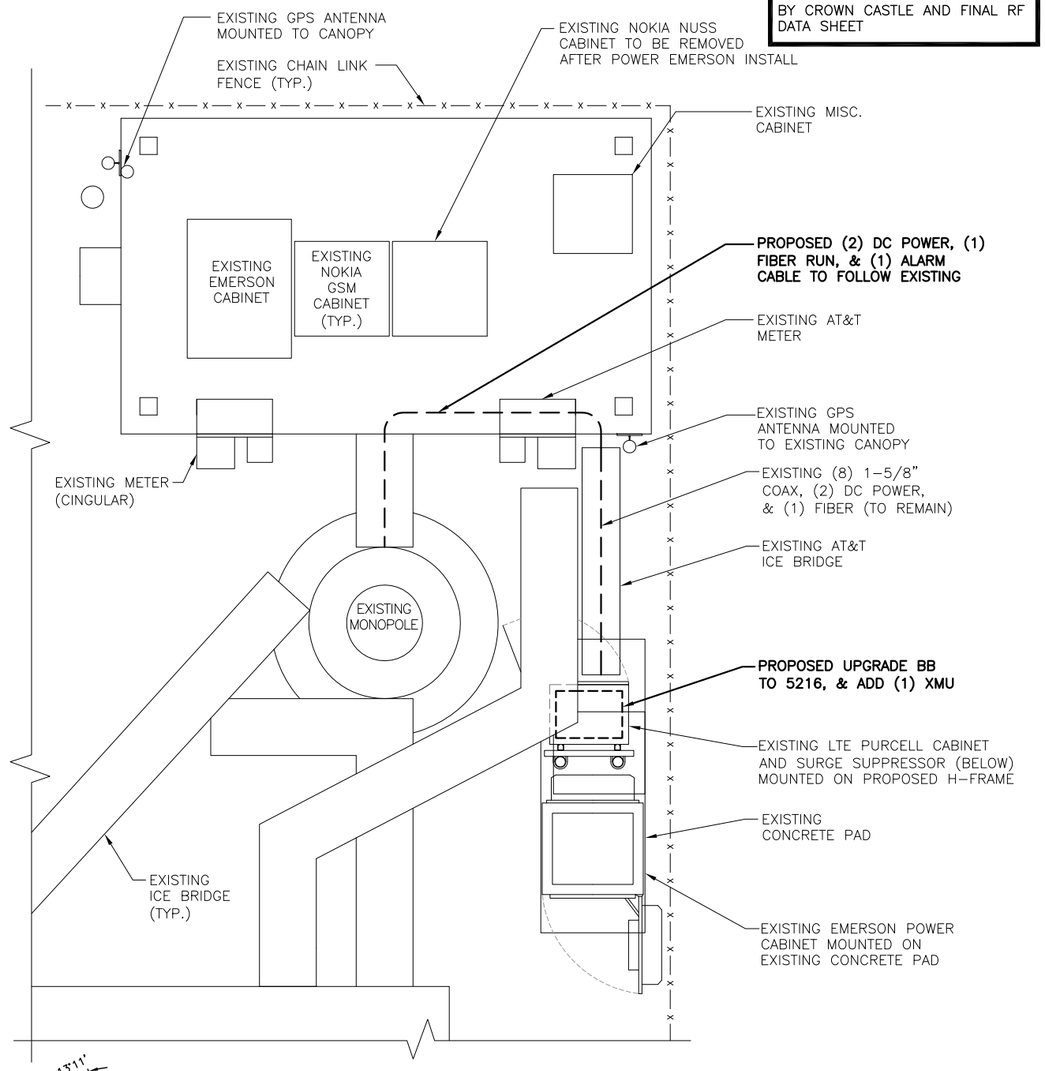
GENERAL NOTES
(LTE 2C/3C)

SITE NUMBER	DRAWING NUMBER	REV
CT2101	GN-1	B



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

0 2'-0" 4'-0" 8'-0" 12'-0"



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

0 1'-0" 2'-0" 4'-0" 6'-0"

NOTE:
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING MOUNT TO SUPPORT THE PROPOSED EQUIPMENT SHALL BE DETERMINED PRIOR TO CONSTRUCTION.

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

NOTE:
ALL ANTENNAS AND RRHS TO BE INSTALLED IN ACCORDANCE WITH STRUCTURAL ANALYSIS PROVIDED BY CROWN CASTLE AND FINAL RF DATA SHEET

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NORTH ANDOVER, MA 01845
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CENTERLINE COMMUNICATIONS
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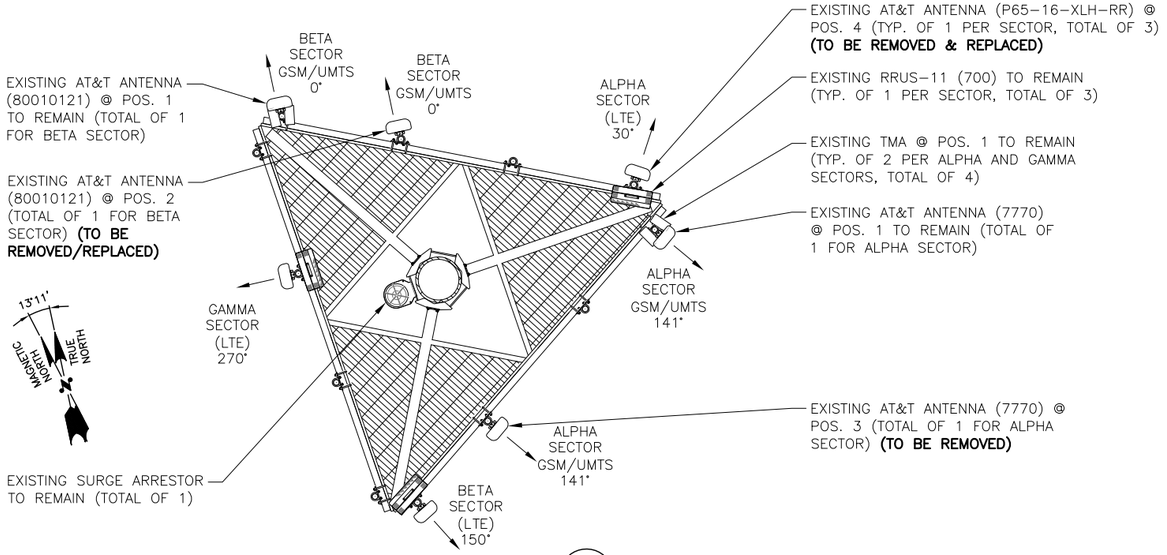
SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: SG

STATE OF CONNECTICUT
DEREK J. CREASEY
No. 23551
LICENSED PROFESSIONAL ENGINEER

AT&T

COMPOUND & EQUIPMENT PLANS (LTE 2C/3C)

SITE NUMBER	DRAWING NUMBER	REV
CT2101	A-1	B



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

NOTE:

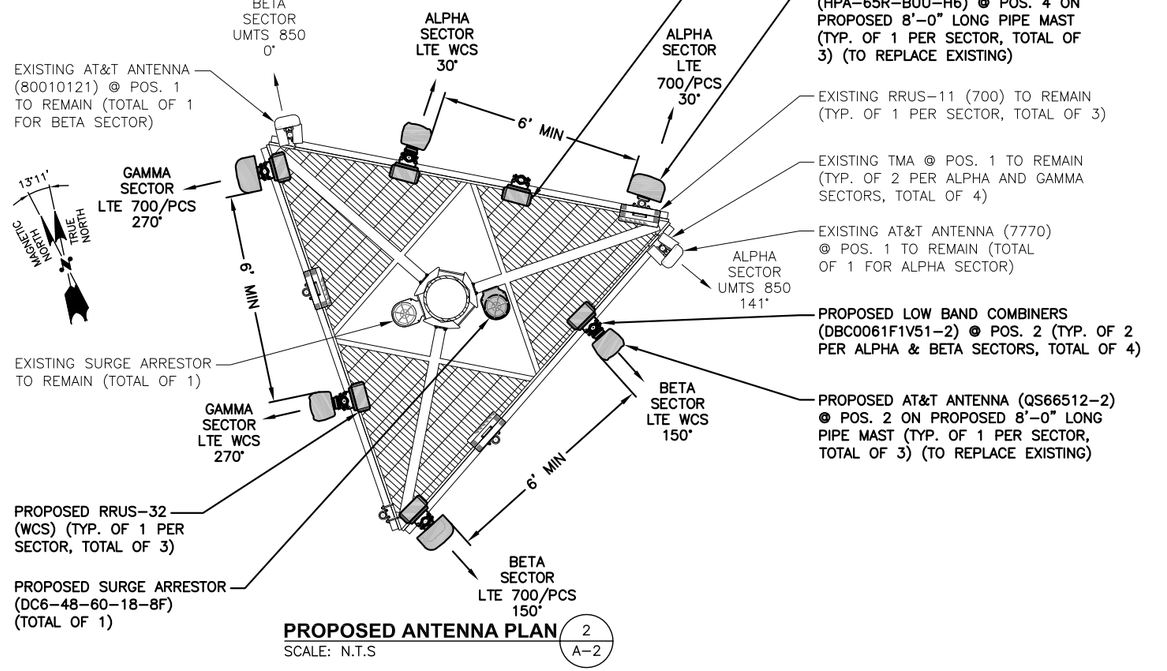
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

NOTE:

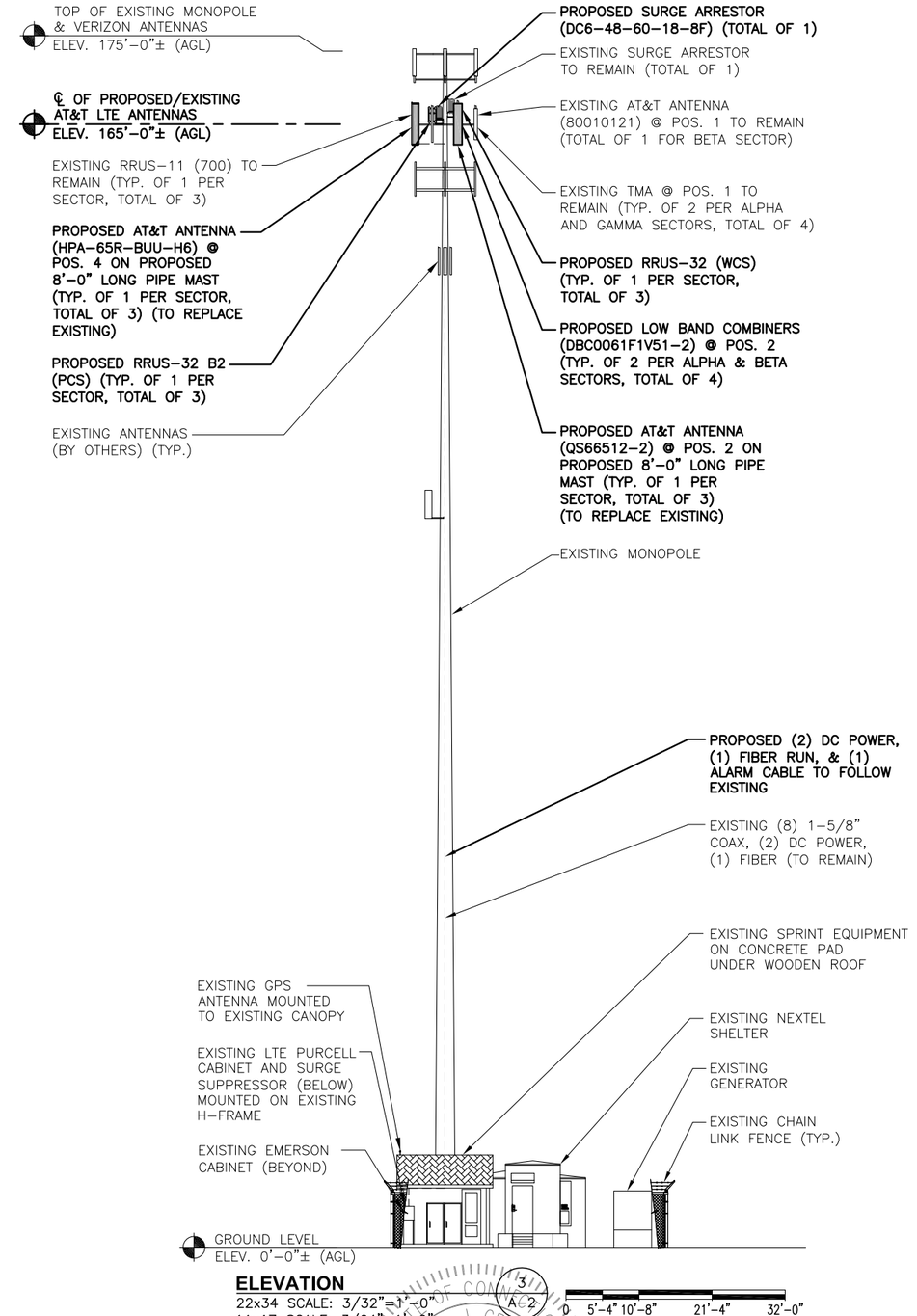
ALL ANTENNAS AND RRHS TO BE INSTALLED IN ACCORDANCE WITH STRUCTURAL ANALYSIS PROVIDED BY CROWN CASTLE AND FINAL RF DATA SHEET

NOTE:

AN ANALYSIS FOR THE CAPACITY OF THE EXISTING MOUNT TO SUPPORT THE PROPOSED EQUIPMENT SHALL BE DETERMINED PRIOR TO CONSTRUCTION.



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



ELEVATION (3 / A-2)
22x34 SCALE: 3/32"=1'-0"
11x17 SCALE: 3/64"=1'-0"
0 5'-4" 10'-8" 21'-4" 32'-0"

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SITE NUMBER: CT2101
SITE NAME: BANKSVILLE
CCI SITE #: 807132
1081 NORTH ST.
GREENWICH, CT 06831
FAIRFIELD COUNTY

NO.	DATE	REVISIONS	BY	CHK	APP'D
B	03/02/18	ISSUED FOR PERMITTING	EB	AT	DJC
A	01/18/18	ISSUED FOR REVIEW	ET	AT	DJC

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

STATE OF CONNECTICUT · DEREK J. CREASEY · No. 24556 · LICENSED PROFESSIONAL ENGINEER

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ANTENNA PLANS & ELEVATION (LTE 2C/3C)

SITE NUMBER	DRAWING NUMBER	REV
CT2101	A-2	B

NOTE:

ALL ANTENNAS AND RRHS TO BE INSTALLED IN ACCORDANCE WITH STRUCTURAL ANALYSIS PROVIDED BY CROWN CASTLE AND FINAL RF DATA SHEET

NOTE:

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

NOTE:

AN ANALYSIS FOR THE CAPACITY OF THE EXISTING MOUNT TO SUPPORT THE PROPOSED EQUIPMENT SHALL BE DETERMINED PRIOR TO CONSTRUCTION.

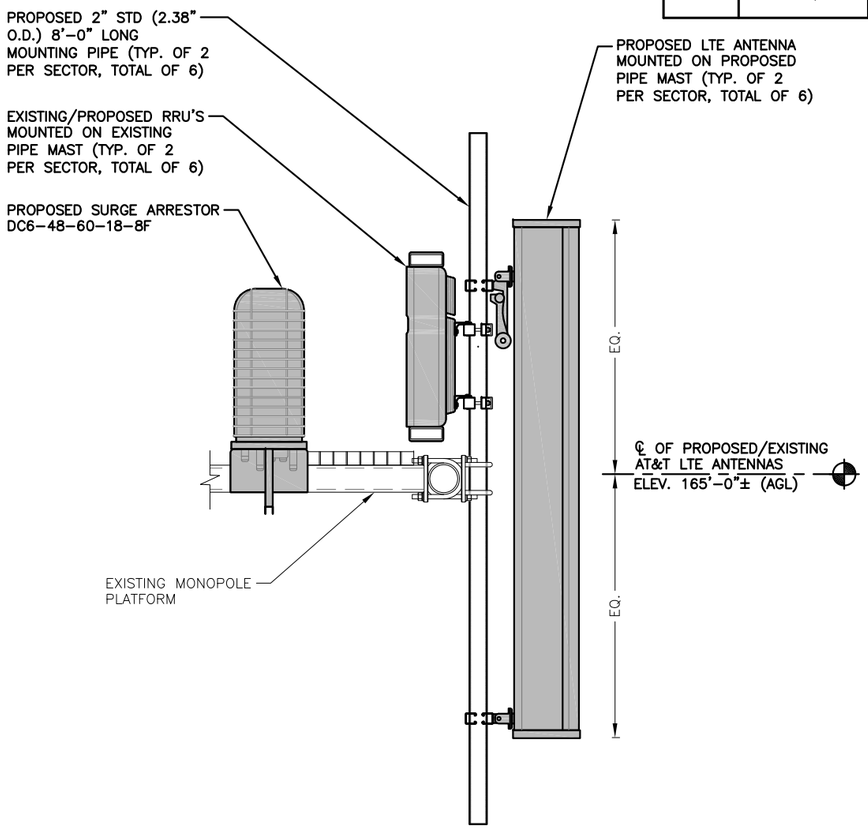
FINAL ANTENNA SCHEDULE

SECTOR	BAND	ANTENNA		SIZE (INCHES) (L X W X D)	RAD CENTER	AZIMUTH	DIPLEXERS		TMA'S / COMBINERS		RRU'S		SIZE (INCHES) (L X W X D)	COAX JUMPERS	FIBER JUMPERS	COAX
ALPHA	UMTS 850	EXISTING	7770	55X11X5	165'–0"±	141°	–	–	EXISTING EXISTING	LGP21401 LGP21401	–	–	–	–	–	(2) 1–5/8"
	LTE WCS	PROPOSED	QS66512–2	72X12X9.6	165'–0"±	30°	–	–	PROPOSED PROPOSED	DBC0061F1V51–2 DBC0061F1V51–2	PROPOSED	RRUS–32 (WCS)	27.2X12.1X7.0	1*	1**	(2) 1–5/8"
	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
	LTE 700 / PCS	PROPOSED	HPA–65R–BUU–H6	72X14.8X9	165'–0"±	30°	–	–	–	–	PROPOSED EXISTING	RRUS–32 B2 (PCS) RRUS–11 (700)	27.2X12.1X7.0 –	1* –	2** –	
BETA	UMTS 850	EXISTING	80010121	54.5X10.3X6.6	165'–0"±	0°	–	–	EXISTING EXISTING	LGP21401 LGP21401	–	–	–	–	–	(2) 1–5/8"
	LTE WCS	PROPOSED	QS66512–2	72X12X9.6	165'–0"±	150°	–	–	PROPOSED PROPOSED	DBC0061F1V51–2 DBC0061F1V51–2	PROPOSED	RRUS–32 (WCS)	27.2X12.1X7.0	1*	1**	(2) 1–5/8"
	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
	LTE 700 / PCS	PROPOSED	HPA–65R–BUU–H6	72X14.8X9	165'–0"±	150°	–	–	–	–	PROPOSED EXISTING	RRUS–32 B2 (PCS) RRUS–11 (700)	27.2X12.1X7.0 –	1* –	2** –	
GAMMA	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
	LTE WCS	PROPOSED	QS66512–2	72X12X9.6	165'–0"±	270°	–	–	–	–	PROPOSED	RRUS–32 (WCS)	27.2X12.1X7.0	1*	1**	
	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
	LTE 700 / PCS	PROPOSED	HPA–65R–BUU–H6	72X14.8X9	165'–0"±	270°	–	–	–	–	PROPOSED EXISTING	RRUS–32 B2 (PCS) RRUS–11 (700)	27.2X12.1X7.0 –	1* –	2** –	

FINAL ANTENNA CONFIGURATION TABLE 1 / A–3

*COAX JUMPER NOTE:
COAX JUMPERS (2) PER SECTOR, FROM EACH RRU (TOTAL OF 6)

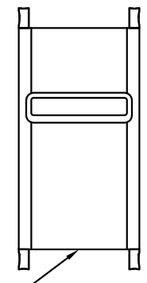
**FIBER JUMPER NOTE:
FIBER JUMPERS (3) PER SECTOR, FROM THE SQUID TO EACH RRU (TOTAL OF 9).



PROPOSED LTE ANTENNA & RRH MOUNTING DETAIL 2 / A–3
SCALE: N.T.S

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



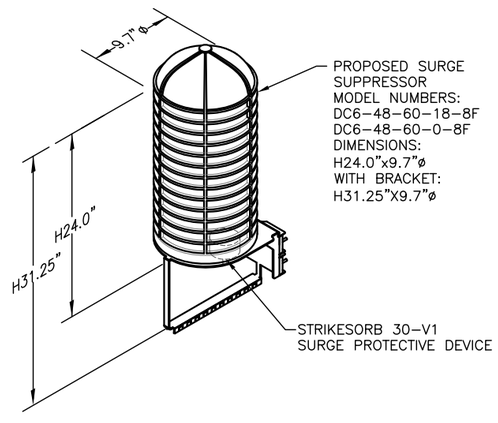
PROPOSED RRU REFER TO THE FINAL RFDS AND CHART FOR QUANTITY, MODEL AND DIMENSIONS

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

NOTE:

SEE RFDS FOR RRH FREQUENCY AND MODEL NUMBER

PROPOSED RRUS DETAIL 3 / A–3
SCALE: N.T.S



NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

SURGE SUPPRESSOR DETAIL 4 / A–3
SCALE: N.T.S

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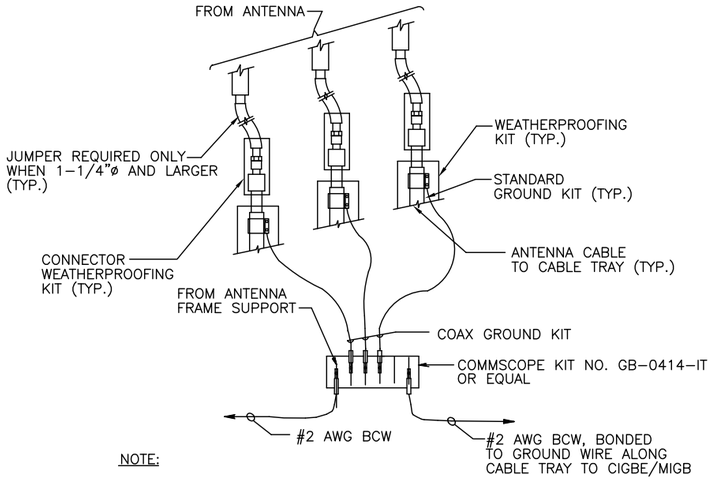
DETAILS (LTE 2C/3C)

SITE NUMBER	DRAWING NUMBER	REV
CT2101	A–3	B



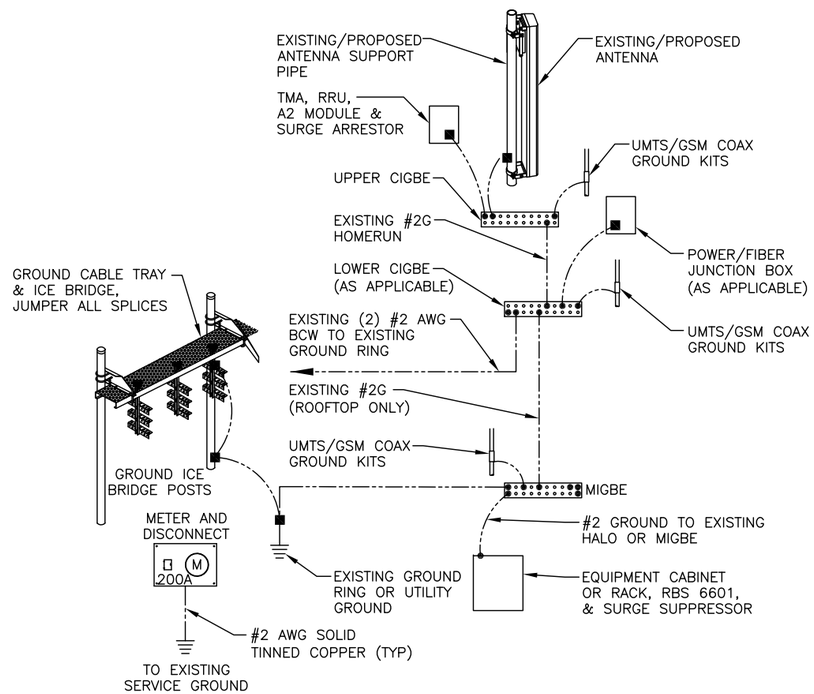
NOTE:

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

SCALE: N.T.S

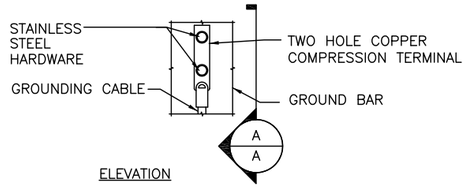
1 / G-1



GROUNDING RISER DIAGRAM

SCALE: N.T.S

2 / G-1



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

SCALE: N.T.S

3 / G-1

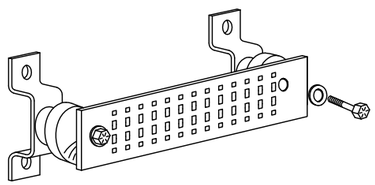
EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

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

SCALE: N.T.S

4 / G-1

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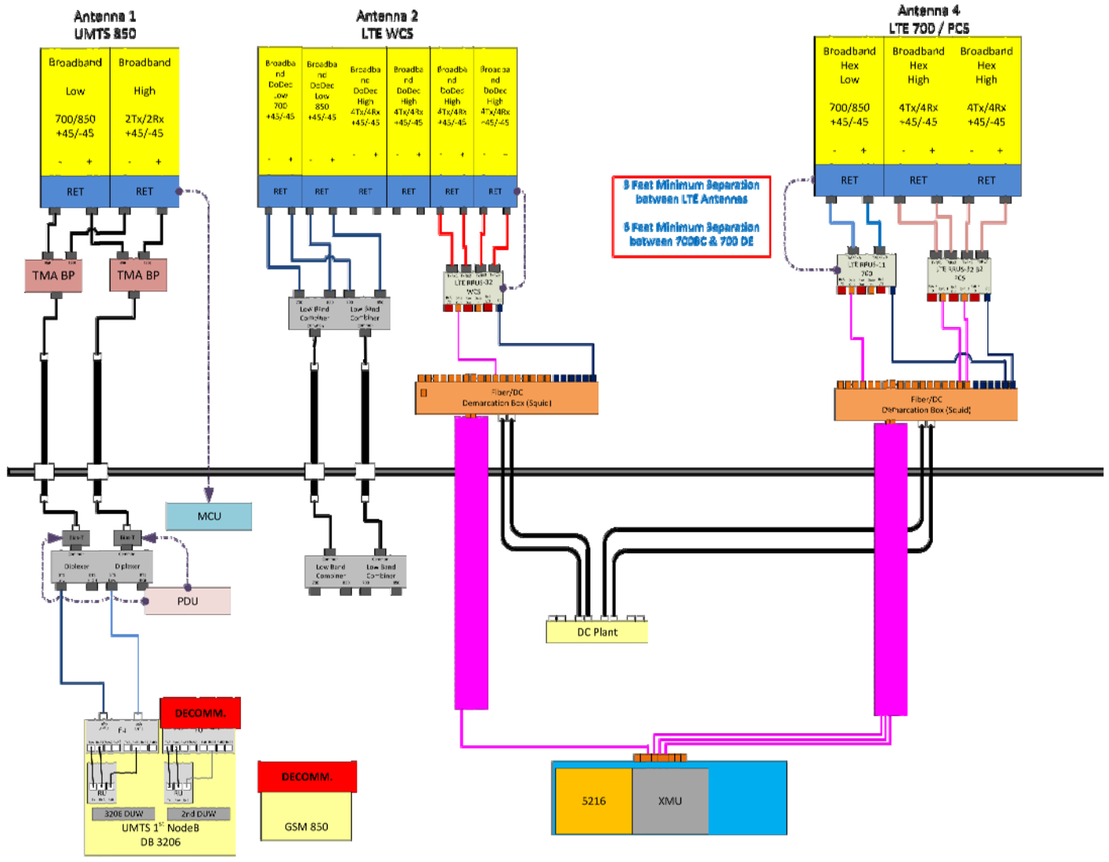
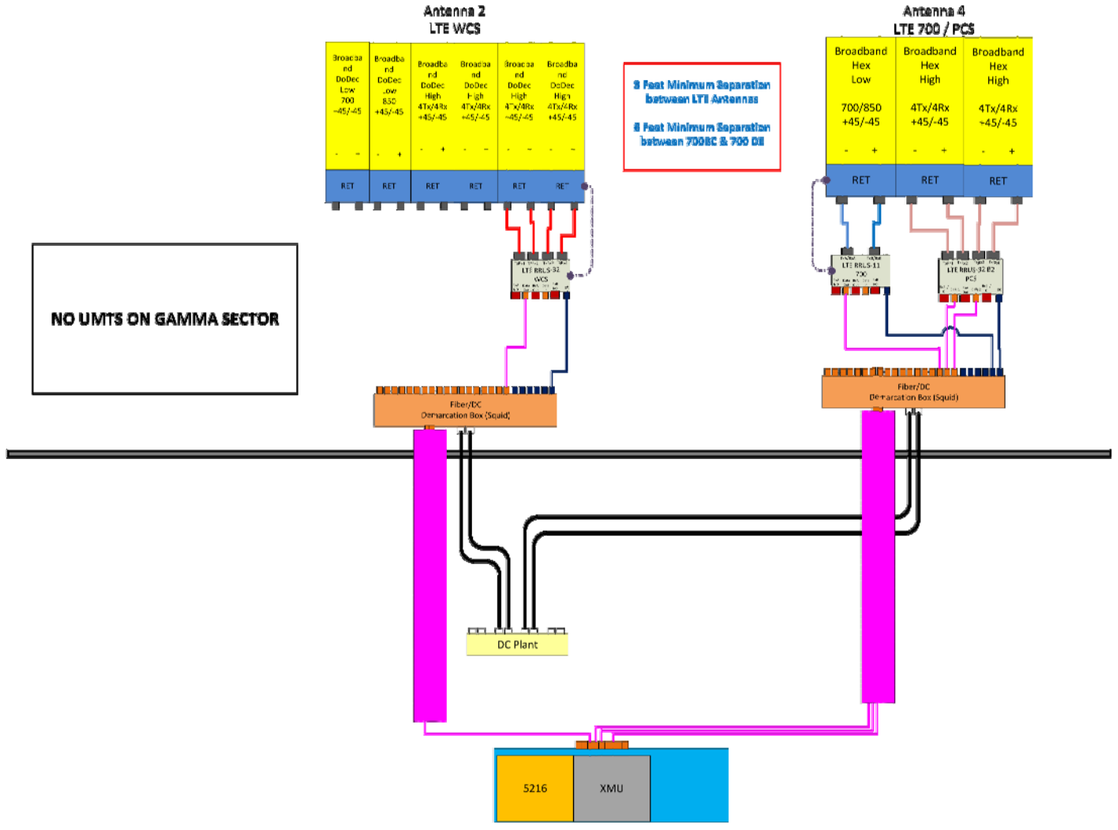
GROUNDING DETAILS (LTE 2C/3C)

SITE NUMBER	DRAWING NUMBER	REV
CT2101	G-1	B



ALPHA & BETA SECTORS



GAMMA SECTOR

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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DEREK J. CREASEY
No. 25351
LICENSED PROFESSIONAL ENGINEER

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RF PLUMBING DIAGRAM
(LTE 2C/3C)

SITE NUMBER	DRAWING NUMBER	REV
CT2101	RF–1	B