Crown Castle
3 Corporate Park Drive, Suite 101
Clifton Park, NY 12065

July 18, 2019

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

RE: **Notice of Exempt Modification for Verizon Wireless: 841295**
Verizon Site ID:104335
719 Amity Rd. Bethany, CT 06524
Latitude: 41° -26' 33.93"/ Longitude: -72° -59' 32.86"

Dear Ms. Bachman:

Verizon currently maintains nine (9) antennas at the 95-foot level of the existing 150-foot monopole tower at 719 Amity Road, Bethany CT 06524. The tower is owned by Crown Castle and the Town of Bethany is the property owner. Verizon now intends to replace six (6) antennas with new antennas. Verizon also intends to add three (3) new remote radios, replace three (3) remote radios with new, add one (1) hybrid cable and one (1) OVP box as well as a handrail kit for the antenna mount.

This facility was approved by the Connecticut Siting Council in Docket No. 168 on June 6, 1995. This approval included the condition that:

1. The self-supporting monopole tower shall be no taller than necessary to provide the proposed communication service and the tower shall not exceed a total height of 150 feet above ground level (AGL).

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.S.C.A. § 16-50j-73, a copy of this letter is being sent to First-Selectwoman - Ms. Paula Cofrancesco, Town of Bethany and Land Use Administrator/Zoning Enforcement – Isabel Kearns, Town of Bethany. The property owner is the Town of Bethany and Crown Castle is the tower owner.

1. The proposed modifications will not result in an increase in the height of the existing tower.
2. The proposed modifications will not require the extension of the site boundary.
3. The proposed modification 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 Communication Commission safety standard.

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

6. The existing structure and its foundation can support the proposed loading.

For the foregoing reasons, Verizon respectfully submits that the proposed modifications to the above-reference telecommunications facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2). Please send approval/rejection letter to Attn: Jeffrey Barbadora.

Sincerely,

Jeffrey Barbadora
Real Estate Specialist
12 Gill Street, Suite 5800, Woburn, MA 01801
781-729-0053
Jeff.Barbadora@crowncastle.com

Attachments:

Tab 1: Exhibit-1: Compound plan and elevation depicting the planned changes
Tab 2: Exhibit-2: Structural Modification Report
Tab 3: Exhibit-3: General Power Density Table Report (RF Emissions Analysis Report)

First-Selectwoman - Ms. Paula Cofrancesco
Town of Bethany
40 Peck Road
203-393-2100 ext. 1100

Land Use Administrator/Zoning Enforcement – Isabel Kearns
Town of Bethany
40 Peck Road
203-393-2100 ext. 1135

Town of Bethany, Land Owner

Crown Castle, Tower Owner

DOCKET NO. 168 - An application of Springwich Cellular Limited Partnership for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance, and operation of a cellular telecommunications facility located on the former site of the Bethany Airport, 719 Amity Road (Route 63) in Bethany, Connecticut.	}	Connecticut
	}	Siting
	}	Council
	}	July 6, 1995

DECISION AND ORDER

Pursuant to the foregoing Findings of Fact, and Opinion, the Connecticut Siting Council (Council) finds that the effects associated with the construction, operation, and maintenance of a cellular telecommunications tower and equipment building at the proposed site in Bethany, Connecticut, including effects on the natural environment; ecological integrity and balance; public health and safety; scenic, historic, and recreational values; forests and parks; air and water purity; and fish and wildlife are not disproportionate either alone or cumulatively with other effects when compared to need, are not in conflict with the policies of the State concerning such effects, and are not sufficient reason to deny the application and therefore directs that a Certificate of Environmental Compatibility and Public Need, as provided by General Statutes § 16-50k, be issued to Springwich Cellular Limited Partnership (Springwich), for the construction, operation, and maintenance of a cellular telecommunications tower, associated equipment, and building at the proposed site located at the Bethany Airport, 719 Amity Road, Bethany, Connecticut.

The facility shall be constructed, operated, and maintained substantially as specified in the Council's record in this matter, and subject to the following conditions:

1. The self-supporting monopole tower shall be no taller than necessary to provide the proposed communications service and the tower shall not exceed a total height of 150 feet above ground level (AGL).

2. The Certificate Holder shall prepare a Development and Management (D&M) Plan for this site in compliance with Sections 16-50j-75 through 16-50j-77 of the Regulations of Connecticut State Agencies. The D&M Plan shall be submitted to and approved by the Council prior to the commencement of facility construction and shall include detailed plans for the tower location and tower foundation; the placement of all antennas to be attached to this tower; equipment building, access road, utility line, and security fence; site clearing and tree trimming; and water drainage and erosion and sedimentation controls consistent with the Connecticut Guidelines for Soil Erosion and Sedimentation Control, as amended.

3. Upon the establishment of any new State or federal radio frequency standards applicable to frequencies of this facility, the facility granted herein shall be brought into compliance with such standards.

4. The Certificate Holder shall provide the Council a recalculated report of electromagnetic radio frequency power density if and when circumstances in operation cause a change in power density above the levels originally calculated and provided in the application.

5. The Certificate Holder shall permit public or private entities to share space on the proposed tower for fair consideration, or shall provide any requesting entity with specific legal, technical, environmental, or economic reasons precluding such tower sharing.

6. If the facility does not initially provide, or permanently ceases to provide cellular services following completion of construction, this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapplication for any continued or new use shall be made to the Council before any such use is made.

7. Unless otherwise approved by the Council, this Decision and Order shall be void if all construction authorized herein is not completed within three years of the effective date of this Decision and Order or within three years after all appeals to this Decision and Order have been resolved.

8. The Certificate Holder shall notify the Council upon completion of construction and provide the final cost to construct the facility.

Pursuant to General Statutes § 16-50p, we hereby direct that a copy of the Findings of Fact, Opinion, and Decision and Order be served on each person listed below, and notice of issuance shall be published in The New Haven Register and Beth-Wood News.

By this Decision and Order, the Council disposes of the legal rights, duties, and privileges of each party named or admitted to the proceeding in accordance with Section 16-50j-17 of the Regulations of Connecticut State Agencies.

The parties and intervenors to this proceeding are:

APPLICANT	ITS REPRESENTATIVES
Springwich Cellular Limited Partnership	Peter J. Tyrrell, Esq. Springwich Cellular Limited Partnership 227 Church Street New Haven, CT 06510
INTERVENOR	**ITS REPRESENTATIVES**
Metro Mobile CTS of Hartford, Inc.	Metro Mobile CTS of Hartford, Inc. 20 Alexander Drive Wallingford, CT 06492 Attn: David S. Malko, P.E., Manager Engineering & Regulatory Services Robinson & Cole One Commercial Plaza Hartford, CT 06103-3597 Attn: Brian C.S. Freeman, Esq.

CERTIFICATION

The Undersigned members of the Connecticut Siting Council (Council) hereby certify that they have heard this case, or read the record thereof, in Docket No. 168 - An application of Springwich Cellular Limited Partnership for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance, and operation of a cellular telecommunications facility located on the former site of the Bethany Airport, 719 Amity Road (Route 63) in Bethany, Connecticut, and voted as follows:

Council Members	Vote Cast
Mortimer A. Gelston Chairman	YES
Commissioner Reginald J. Smith Designee: Gerald J. Heffernan	YES
Commissioner Sidney J. Holbrook Designee: Fred Riese	YES
William J. Huber	YES
Gloria Dibble Pond	ABSENT
William H. Smith	YES
Colin C. Tait	ABSTAIN
Edward S. Wilensky	ABSENT
Dana J. Wright	YES

Dated at New Britain, Connecticut, July 6, 1995.

STATE OF CONNECTICUT }

ss. New Britain, Connecticut }
COUNTY OF HARTFORD
STATE OF CONNECTICUT } July 7, 1995

I hereby certify that the foregoing is a true and correct copy of the Findings of Fact, Opinion, and Decision and Order issued by the Connecticut Siting Council, State of Connecticut.

ATTEST:

Joel M. Rinebold
Executive Director
Connecticut Siting Council

I certify that a copy of the Findings of Fact, Opinion, and Decision and Order in Docket No. 168 have been forwarded by Certified First Class Return Receipt Requested mail on July 7, 1995, to all parties and intervenors of record as listed on the attached service list, dated April 10, 1995.

ATTEST:

Gloria B. Owens
Administrative Assistant
Connecticut Siting Council

The Assessor's office is responsible for the maintenance of records on the ownership of properties. Assessments are computed at 70% of the estimated market value of real property at the time of the last revaluation which was 2013.

Information on the Property Records for the Municipality of Bethany was last updated on 9/20/2017.

Property Summary Information

Parcel Data And Values | Building | Outbuildings | Google Map

Parcel Information

Location:	755 AMITY RD	Property Use:	Public Use	Primary Use:	Fire Station - Volunteer
Unique ID:	00016500	Map Block Lot:	117/1	Acres:	138.50
490 Acres:	0.00	Zone:	B&I	Volume / Page:	0044/0306
Developers Map / Lot:		Census:			

Value Information

	Appraised Value	70% Assessed Value
Land	1,476,000	1,033,200
Buildings	1,740,164	1,218,110

	Appraised Value	70% Assessed Value
Detached Outbuildings	159,624	111,740
Total	3,375,788	2,363,050

Owner's Information

Owner's Data

BETHANY TOWN OF
40 PECK RD
BETHANY CT 06524

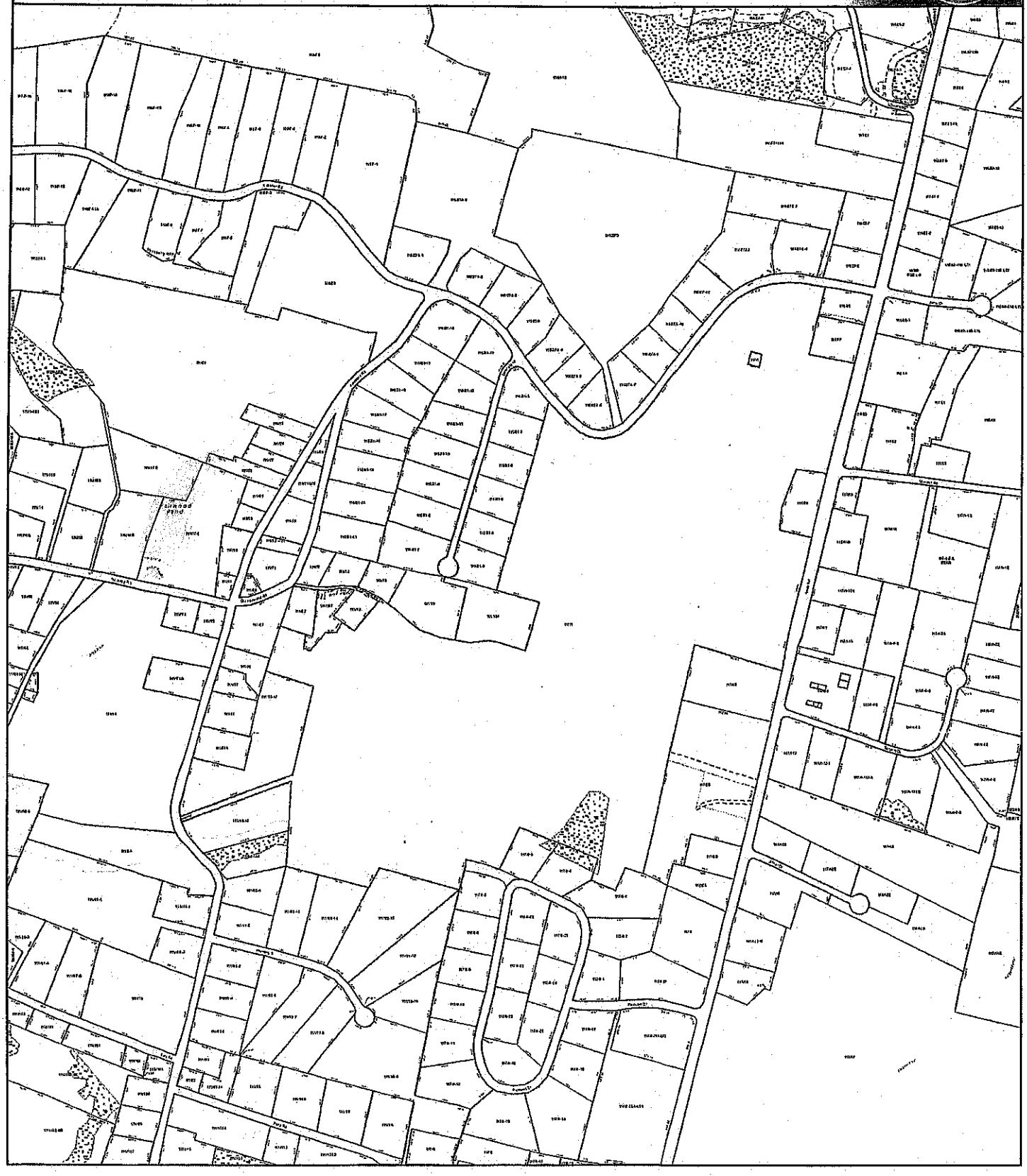
Back To Search (JavaScript:window.history.back(1);)

Print View (PrintPage.aspx?towncode=008&uniqueid=00016500)

Town of Bethany, Connecticut
Assessment Parcel Map

Parcel: **00016500**

Address: **755 AMITY RD**



N
W E
S

Approximate Scale: **1 inch = 750 feet**

0 380 760 1,140 1,520

Feet

Map Produced: Aug 2017

Site Name: Bethany North CT
Cumulative Power Density

Operator	Operating Frequency	Number of Trans.	ERP Per Trans.	Total ERP	Distance to Target	Calculated Power Density
	(MHz)		(watts)	(watts)	(feet)	(mW/cm^2)
VZW PCS	1970	4	1104	4416.28	110	0.1313
VZW Cellular CDMA	869	2	289	578.16	110	0.0172
VZW Cellular LTE	880	4	463	1853.76	110	0.0551
VZW AWS	2145	4	1225	4898.44	110	0.1456
VZW 700	746	4	492	1968	100	0.0708

Total Percentage of Maximum Permissible Exposure

*Guidelines adopted by the FCC on August 1, 1996, 47 CFR Section 1.13101 based on NCRP Report 86, 19

MHz = Megahertz
mW/cm^2 = milliwatts per square centimeter
ERP = Effective Radiated Power

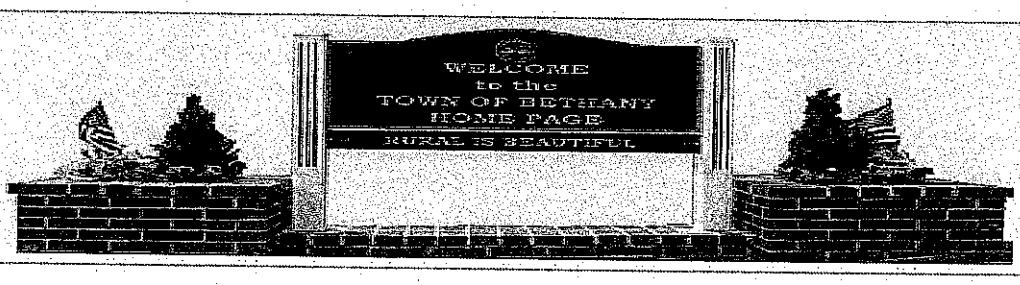
Absolute worst case maximum values used, including the following assumptions:
1. closest accessible point is distance from antenna to base of pole;
2. continuous transmission from all available channels at full power for indefinite time period; and,
3. all RF energy is assumed to be directed solely to the base of the pole.

Maximum Permissible Exposure	Fraction of MPE
(mW/cm^2)	(%)
1.0	13.13%
0.579333333	2.97%
0.586666667	9.39%
1.0	14.56%
0.497333333	14.23%
	54.27%

86 and generally on ANSI/IEEE C95.1-1992

s

The Assessor's office is responsible for the maintenance of records on the ownership of properties. Assessments are computed at 70% of the estimated market value of real property at the time of the last revaluation which was 2018.



Information on the Property Records for the Municipality of Bethany was last updated on 7/18/2019.

Property Summary Information

Parcel Data And Values | Building | Outbuildings

Parcel Information

Location:	755 AMITY RD	Property Use:	Public Use	Primary Use:	Fire Station - Volunteer
Unique ID:	00016500	Map Block Lot:	117/1	Acres:	138.50
490 Acres:	0.00	Zone:	B&I	Volume / Page:	0044/0306
Developers Map / Lot:		Census:			

Value Information

	Appraised Value	Assessed Value
Land	1,421,200	994,840

	Appraised Value	Assessed Value
Buildings	1,878,616	1,315,030
Detached Outbuildings	150,924	105,650
Total	3,450,740	2,415,520

Owner's Information

Owner's Data
BETHANY TOWN OF 40 PECK RD BETHANY, CT 06524

Back To Search (JavaScript:window.history.back(1);)

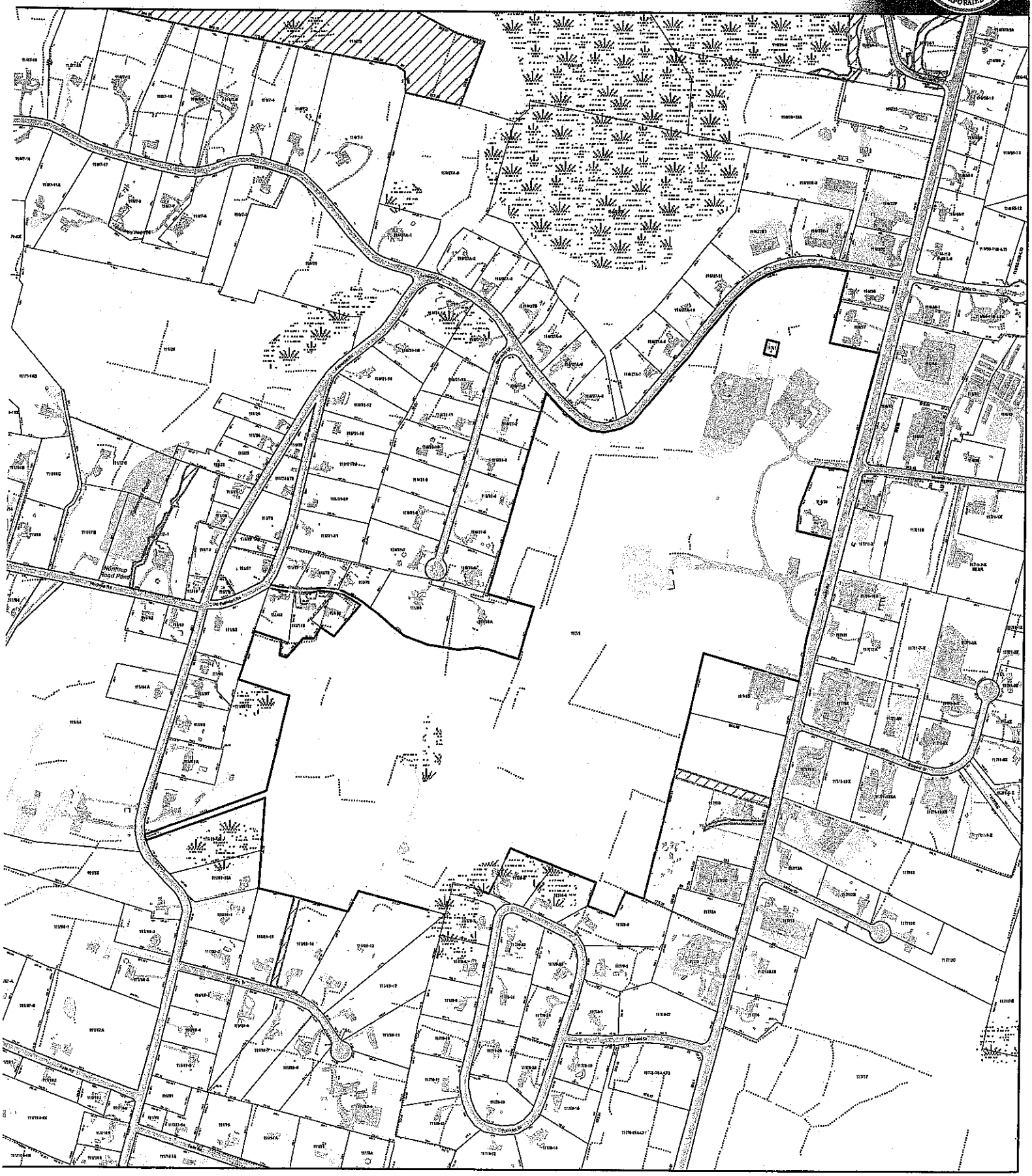
Print View (PrintPage.aspx?towncode=008&uniqueid=00016500)

Information Published With Permission From The Assessor

Town of Bethany, Connecticut
Assessment Parcel Map

Parcel: **00016500**

Address: **755 AMITY RD**

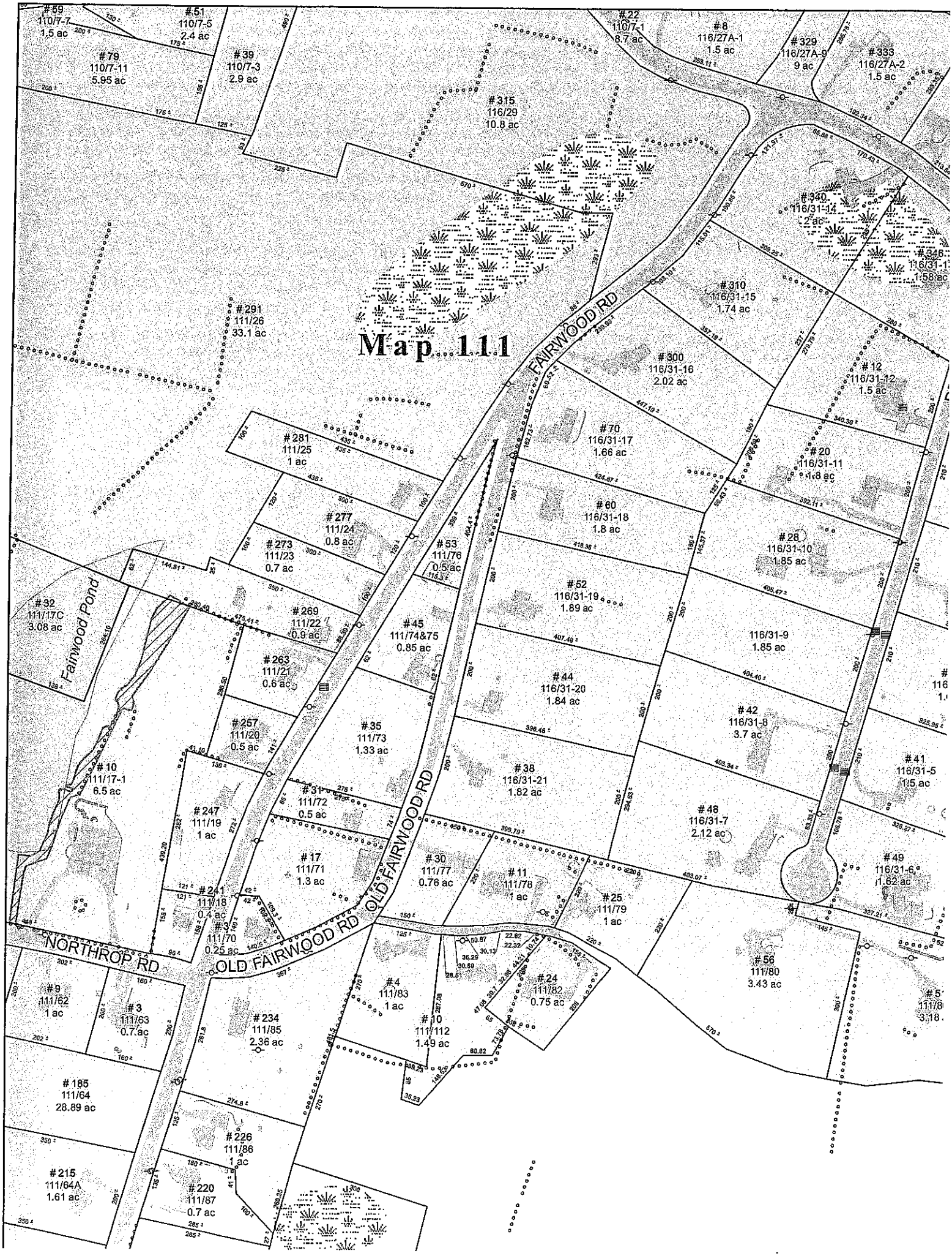


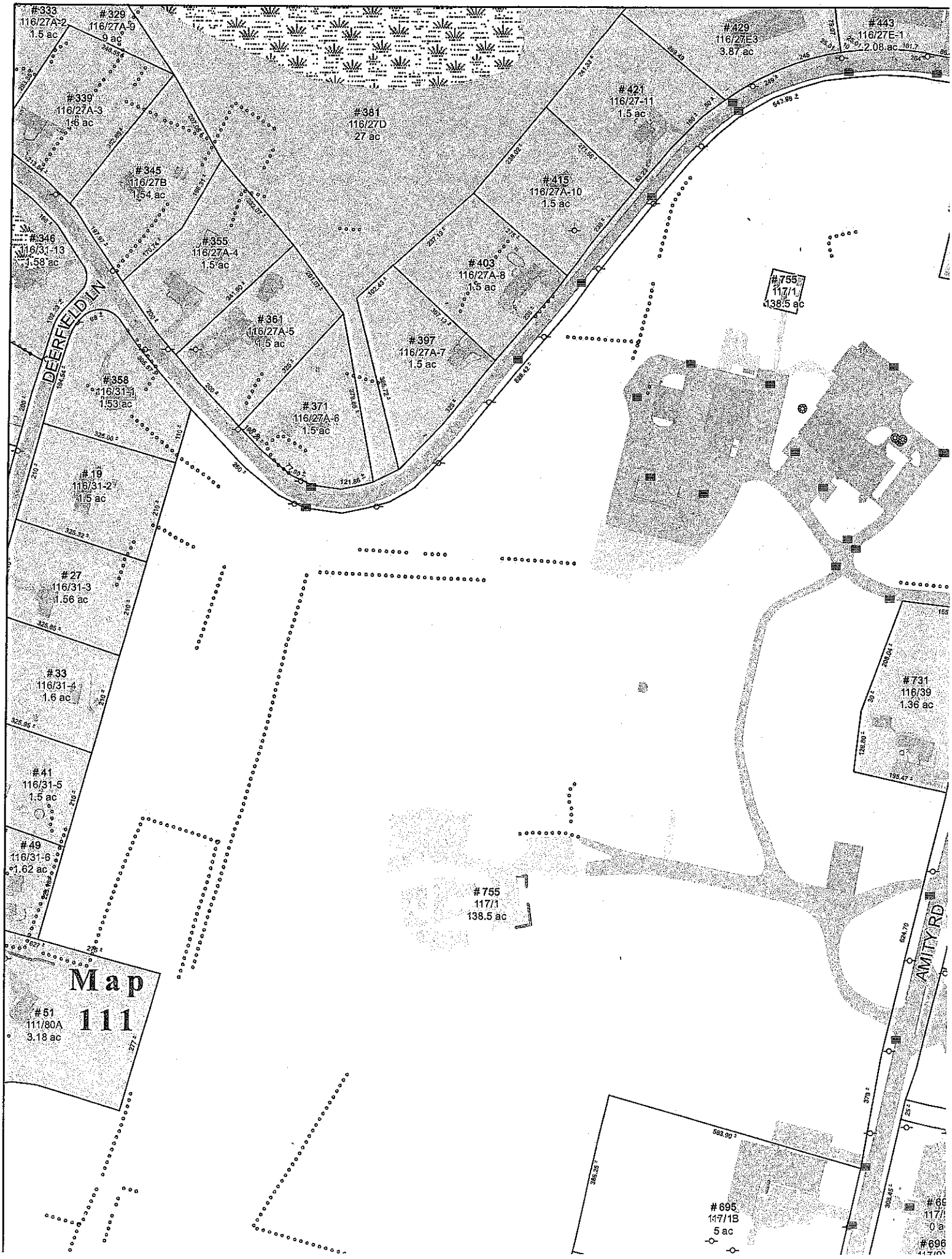
N
W E
S

Approximate Scale: 1 inch = 700 feet

0 360 720 1,080 1,440 Feet

Map Produced: Jul 2019


Map 111
#59
110/7-7
1.5 ac
#51
110/7-5
2.4 ac
#79
110/7-11
5.95 ac
#39
110/7-3
2.9 ac
#22
110/7-1
8.7 ac
#8
116/27A-1
1.5 ac
#329
116/27A-9
9 ac
#333
116/27A-2
1.5 ac
#315
116/29
10.8 ac
#340
116/31-14
2 ac
#346
116/31-1
1.58 ac
#310
116/31-15
1.74 ac
#291
111/26
33.1 ac
FAIRWOOD RD
#300
116/31-16
2.02 ac
#12
116/31-12
1.5 ac
#281
111/25
1 ac
#70
116/31-17
1.66 ac
#20
116/31-11
1.8 ac
#277
111/24
0.8 ac
#60
116/31-18
1.8 ac
#273
111/23
0.7 ac
#53
111/76
0.5 ac
#28
116/31-10
1.85 ac
#32
111/17C
3.08 ac
Fairwood Pond
#52
116/31-19
1.89 ac
#269
111/22
0.9 ac
#45
111/74&75
0.85 ac
116/31-9
1.85 ac
#263
111/21
0.6 ac
#44
116/31-20
1.84 ac
#257
111/20
0.5 ac
#35
111/73
1.33 ac
#42
116/31-8
3.7 ac
#10
111/17-1
6.5 ac
#38
116/31-21
1.82 ac
#41
116/31-5
1.5 ac
#31
111/72
0.5 ac
#247
111/19
1 ac
#48
116/31-7
2.12 ac
#17
111/71
1.3 ac
#30
111/77
0.76 ac
#11
111/78
1 ac
#49
116/31-6
1.62 ac
#241
111/18
0.4 ac
#25
111/79
1 ac
#3
111/70
0.25 ac
NORTHROP RD
OLD FAIRWOOD RD
OLD FAIRWOOD RD
#56
111/80
3.43 ac
#9
111/62
1 ac
#3
111/63
0.7 ac
#4
111/83
1 ac
#24
111/82
0.75 ac
#234
111/85
2.36 ac
#10
111/112
1.49 ac
#185
111/64
28.89 ac
#226
111/86
1 ac
#215
111/64A
1.61 ac
#220
111/87
0.7 ac


#333
116/27A-2
1.5 ac
#329
116/27A-9
0 ac
#339
116/27A-3
1.6 ac
#381
116/27D
27 ac
#429
116/27E3
3.87 ac
#443
116/27E-1
2.08 ac
#421
116/27-11
1.5 ac
#345
116/27B
1.54 ac
#415
116/27A-10
1.5 ac
#346
116/31-13
1.58 ac
#355
116/27A-4
1.5 ac
#403
116/27A-8
1.5 ac
#755
117/1
138.5 ac
#361
116/27A-5
1.5 ac
#397
116/27A-7
1.5 ac
DEERFIELD LN
#358
116/31-1
1.53 ac
#371
116/27A-6
1.5 ac
#19
116/31-2
1.5 ac
#27
116/31-3
1.56 ac
#33
116/31-4
1.6 ac
#731
116/39
1.36 ac
#41
116/31-5
1.5 ac
#49
116/31-6
1.62 ac
#755
117/1
138.5 ac
AMITY RD
Map
111
#51
111/80A
3.18 ac
#695
117/1B
5 ac
#696

ORIGIN ID:BEDA (781) 970-0053
JEFF BARBADORA
CROWN CASTLE
12 GILL STREET
SUITE 5800
WOBURN, MA 01801
UNITED STATES US

SHIP DATE: 18JUL19
ACTWGT: 0.50 LB
CAD: 104924191/INET4160

BILL SENDER

TO LAND USE/ZONE ENF. ISABEL KEARNS
TOWN OF BETHANY
40 PECK ROAD

BETHANY CT 06524
(203) 393-2100 X 1135 REF: 1766.6680
INV:
PO: DEPT:

567J2/A6F9/05A2

FedEx Express

E

J192919062401uv

FRI - 19 JUL 10:30A
PRIORITY OVERNIGHT

TRK# 0201 7757 7707 6160

EB EFBA

06524
CT-US BDL

ORIGIN ID:BEDA (781) 970-0053
JEFF BARBADORA
CROWN CASTLE
12 GILL STREET
SUITE 5800
WOBURN, MA 01801
UNITED STATES US

SHIP DATE: 18JUL19
ACTWGT: 0.50 LB
CAD: 104924191/INET4160

BILL SENDER

TO FIRST SELECTWOMAN PAULA COFRANCESCO
TOWN OF BETHANY
40 PECK ROAD

BETHANY CT 06524
(203) 393-2100 X 1100 REF: 1766.6680
INV:
PO: DEPT:

567 J2/A6F9/05A2

FedEx Express

FRI - 19 JUL 10:30A
PRIORITY OVERNIGHT

TRK# 0201 7757 7705 1682

EB EFBA

06524
CT-US BDL

Date: **May 28, 2019**

Kimley»Horn

Kevin Morrow
Crown Castle
3530 Toringdon Way, Suite 300
Charlotte, NC 28277
(704) 405-6619

Kimley-Horn and Associates, Inc.
421 Fayetteville Street, Suite 600
Raleigh, NC 27601
(919) 677-2000
CrownMounts@kimley-horn.com

Subject:	**Mount Modification Report**	
Carrier Designation:	**Verizon Wireless Equipment Change-Out**	
	Carrier Site Number:	104335
	Carrier Site Name:	Bethany North CT
Crown Castle Designation:	**Crown Castle BU Number:**	841295
	Crown Castle Site Name:	BETHANY
	Crown Castle JDE Job Number:	574490
	Crown Castle Order Number:	492710, Rev. 0
Engineering Firm Designation:	**Kimley-Horn Report Designation:**	019558041
Site Data:	**719 Amity Road, Bethany, New Haven County, CT 06524** **Latitude 41° 26' 33.93" Longitude -72° 59' 32.86"**	
Structure Information:	**Tower Height & Type:**	**150 ft Monopole**
	Mount Elevation:	**140 ft**
	Mount Type:	**12.5 ft Low Profile Platform**

Dear Charles McGuirt,

Kimley-Horn is pleased to submit this **"Mount Modification Report"** to determine the structural integrity of Verizon Wireless's antenna mounting system with the proposed appurtenance and equipment addition on the abovementioned supporting tower structure. Analysis of the existing supporting tower structure is to be completed by others and therefore is not part of this analysis. Analysis of the antenna mounting system as a tie-off point for fall protection or rigging is not part of this document.

The purpose of the analysis is to determine acceptability of the mount stress level. Based on our analysis we have determined the mount stress level to be:

Low Profile Platform **Sufficient**

This analysis utilizes an ultimate 3-second gust wind speed of 125 mph as required by the 2015 International Building Code. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Mount analysis prepared by: Greg VanMaaren, E.I. under the supervision of Steven C. Ball, P.E., S.E.

Respectfully Submitted by:

Steven C. Ball, P.E., S.E.

EXP 1.31.20

5.29.19

TABLE OF CONTENTS

1) INTRODUCTION

2) ANALYSIS CRITERIA
Table 1 - Proposed Equipment Configuration

3) ANALYSIS PROCEDURE
Table 2 - Documents Provided
3.1) Analysis Method
3.2) Assumptions

4) ANALYSIS RESULTS
Table 3 - Mount Component Stresses vs. Capacity
4.1) Recommendations

5) APPENDIX A
Wire Frame and Rendered Models

6) APPENDIX B
Software Input Calculations

7) APPENDIX C
Software Analysis Output

8) APPENDIX D
Additional Calculations

9 APPENDIX E
Mount Modification Design Drawings (MDD)

1) INTRODUCTION

The mounting configuration consists of existing 12.5 ft Low Profile Platform.

2) ANALYSIS CRITERIA

Building Code:	2015 IBC, 2018 Connecticut State Building Code
TIA-222 Revision:	TIA-222-H
Risk Category:	II
Ultimate Wind Speed:	125 mph
Exposure Category:	C
Topographic Factor at Base:	1.0
Topographic Factor at Mount:	1.0
Ice Thickness:	0.75 in
Wind Speed with Ice:	50 mph
Live Loading Wind Speed:	30 mph
Man Live Load at Mount Pipes:	500 lb

Table 1 – Proposed Equipment Configuration

Elevation (ft)		Antennas	
Mount	Centerline	#	Name
140	140	6	CommScope NHH-65C-R2B
		3	decibel (cci) DB854DG65ESX
		1	rfs celwave DB-T1-6Z-8AB-0Z
		3	samsung telecommunications RFV01U-D1A
		3	samsung telecommunications RFV01U-D2A

3) ANALYSIS PROCEDURE

Table 2 - Documents Provided

Document	Remarks	Reference	Source
Photos	-	-	CCISites
Mount Analysis	Kimley-Horn	8418942	CCISites

3.1) Analysis Method

RISA-3D (version 16.00), a commercially available analysis software package, was used to create a three-dimensional model of the antenna mounting system and calculate member stresses for various loading cases.

A proprietary tool internally developed by Kimley-Horn and Associates, Inc. was used to calculate wind loading on all appurtenances, dishes and mount members for various load cases. Selected output from the analysis is included in Appendix B.

This analysis was performed in accordance with Crown Castle's ENG-SOW-10208 *Tower Mount Analysis* (Revision B).

3.2) Assumptions

1) The antenna mounting system was properly fabricated, installed and maintained in good condition in accordance with its original design and manufacturer's specifications.
2) The configuration of antennas, mounts, and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
3) All member connections are assumed to have been designed to meet or exceed the load carrying capacity of the connected member unless otherwise specified in this report.
4) Steel grades have been assumed as follows, unless noted otherwise:

Channel, Solid Round, Angle, Plate	ASTM A36 (Gr. 36)
HSS (Rectangular)	ASTM A36 (Gr. 36)
Pipe	ASTM A53 (Gr. B-35)
Threaded Rods	ASTM A36 (Gr. 36)
Connection Bolts	ASTM A325

This analysis may be affected if any assumptions are not valid or have been made in error. Kimley-Horn should be notified to determine the effect on the structural integrity of the antenna mounting system.

4) ANALYSIS RESULTS

Table 3 - Mount Component Stresses vs. Capacity

Component	% Capacity	Pass / Fail
Connections	87%	Pass
Stand Off Horizontals	53%	Pass
Mount Pipes	39%	Pass
Corner Plates	39%	Pass
Face Horizontals	20%	Pass

Structure Rating (max from all components) =	87%

Notes:
1) See additional documentation in "Appendix C - Software Analysis Output" for calculations supporting the % capacity consumed.

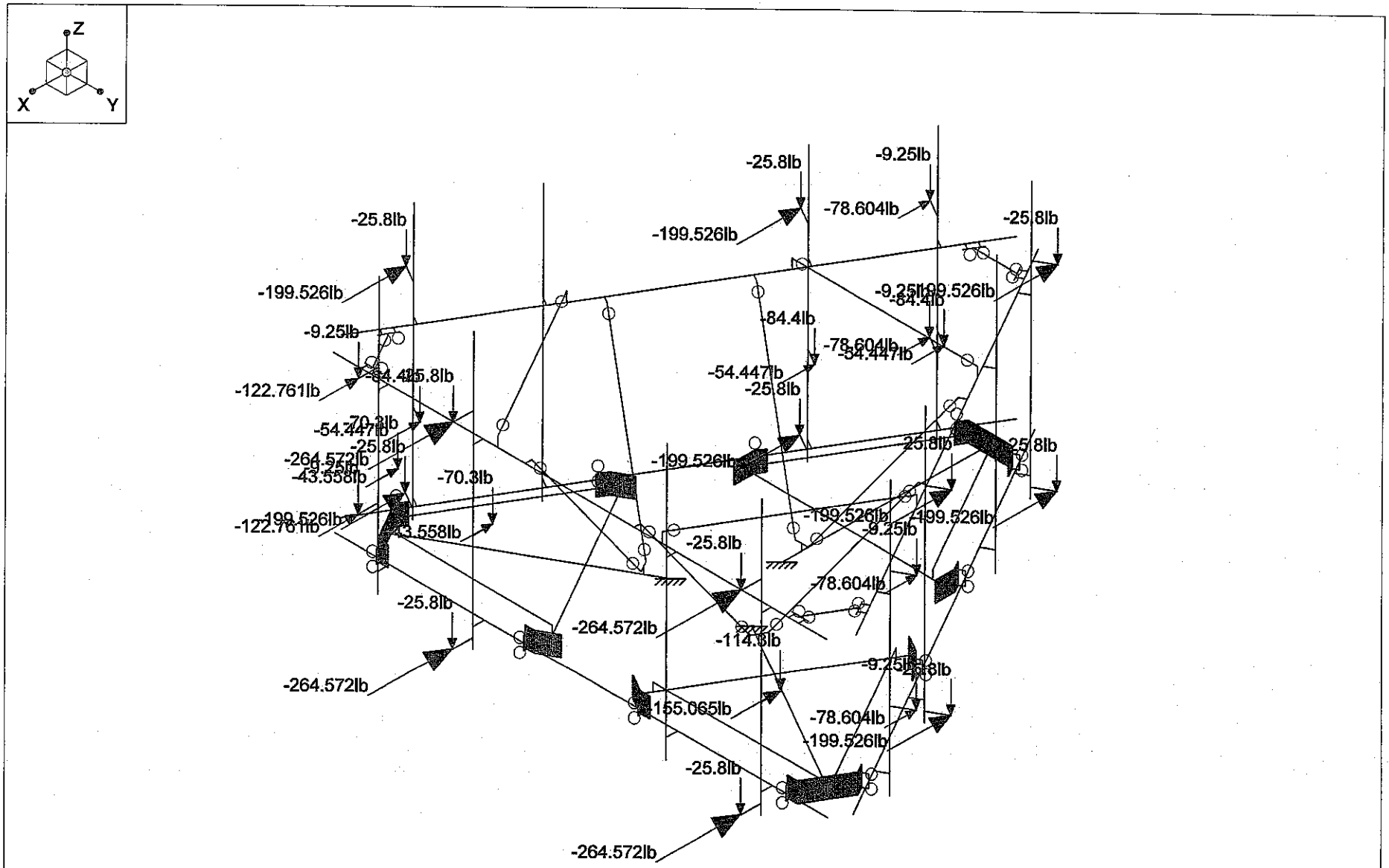
4.1) Recommendations

According to our structural analysis, the mounting configuration has been found to **PASS PENDING MODIFICATIONS**. The mounting configuration considered in this analysis will be capable of supporting the referenced loading pursuant to referenced standards once the referenced modifications are installed.

This analysis incorporates modifications per Kimley-Horn, dated 05/28/19.

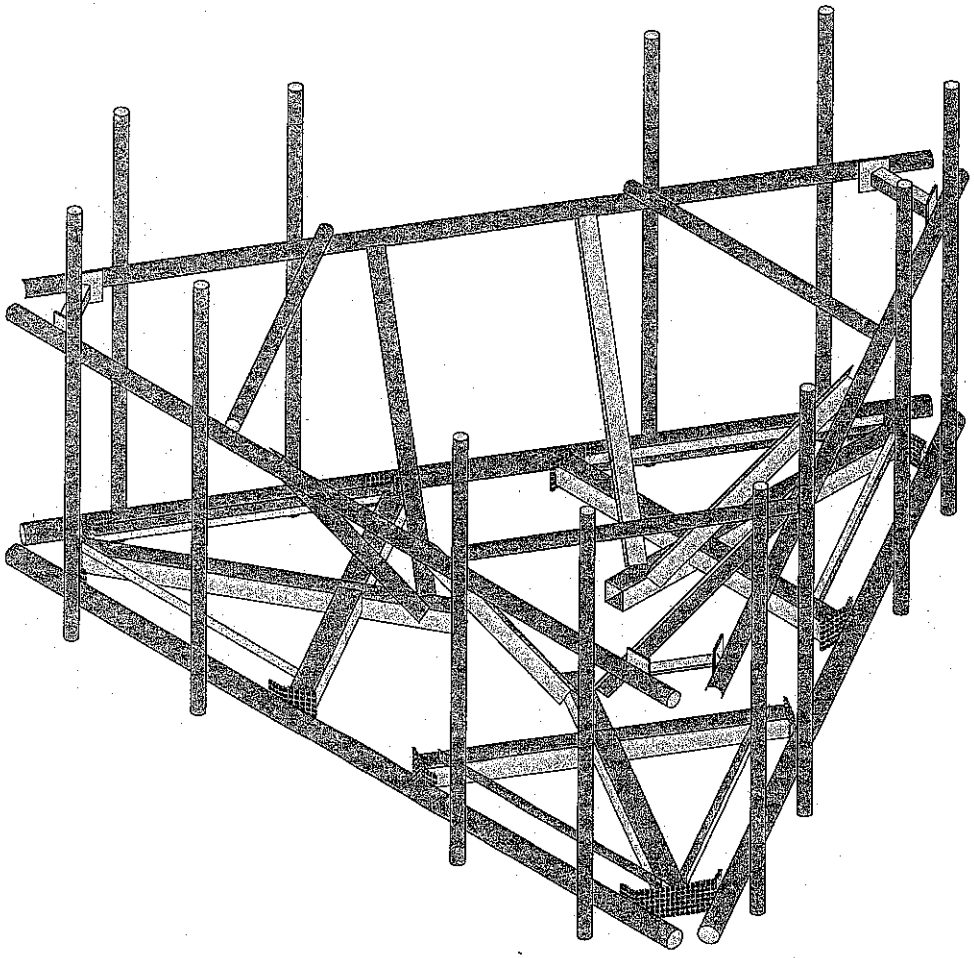
APPENDIX A

WIRE FRAME AND RENDERED MODELS



Loads: LC 1, Summary: 1.0D + 1.0W
Envelope Only Solution

KHA	841295 - BETHANY	SK - 1
GJV		May 28, 2019 at 11:13 AM
019558041		841295.r3d



Envelope Only Solution

KHA	841295 - BETHANY	SK - 2
GJV		May 28, 2019 at 11:14 AM
019558041		841295.r3d

APPENDIX B

SOFTWARE INPUT CALCULATIONS

General Criteria	
TIA Standard	H
IBC Edition	2015
Structure Class	-
Risk Category	II

Site Specific Criteria	
Exposure Category	C
Topographic Factor, K_{zt}	1.00
Structure Base Elev. (AMSL), z_s (ft)	741.00
Ground Effect Factor, K_e	0.97

Mount & Structure Criteria	
Mount Elevation (AGL) (ft)	140.00
Structure Height (ft)	150.00
Structure Type	Monopole

Constants	
Wind Direction Probability Factor, K_d	0.95
Gust Effect Factor, G_h	1
Shielding Factor, K_a (antenna)	0.9
Shielding Factor, K_a (mount)	0.9

Wind Summary	
Basic Wind Speed w/o Ice, V (mph)	125.00
Velocity Pressure Coeff., K_z	1.36
Velocity Pressure, q_z (w/o Ice) (psf)	50.26

Ice Load Summary	
Basic Wind Speed w/ Ice, V_i (mph)	50.00
Design Ice Thick. (ASCE 7-10) , t_i (in)	0.75
Velocity Pressure, q_z (w/ Ice) (psf)	8.04
Escalated Ice Thick. @ Mount, t_{iz} (in)	1.73

Seismic Load Summary	
Spectral Response (Short Periods), S_s	-
Spectral Response (1-Sec. Period), S_1	-
Site Class	-
Seismic Design Category	-
Seismic Risk Category	-

Snow Load Summary	
Ground Snow Load, p_g (psf)	-
Snow Load on Flat Roofs, p_f (psf)	-

Kimley»Horn

Date	May 28, 2019
Client	Crown Castle
Site #	841295
Site Name	BETHANY
Project #	19558041

Antenna Name	Qty.	Shape	Dimensions (in)			Weight (lb)	Joint Labels								EPA (ft²)		Wind Force, F_A (lb)			
			H	W	D		Alpha		Beta		Gamma		Delta				No Ice		With Ice	
															Front	Side	Front	Side	Front	Side
NHH-65C-R2B	3	Flat	96	11.9	7.1	51.6	N1212B	N1210B	N1228B	N1226B	N1220B	N1218B	0	0	11.39	7.66	529.14	355.69	108.62	80.32
NHH-65C-R2B	3	Flat	96	11.9	7.1	51.6	N1211B	N1209B	N1227B	N1225B	N1219B	N1217B	0	0	11.39	7.66	529.14	355.69	108.62	80.32
DB854DG65ESX	3	Flat	48	12.6	5.7	18.5	N1232B	N1231B	N1240C	N1239C	N1236B	N1235B	0	0	5.28	2.75	245.52	127.77	52.56	32.6
DB-T1-6Z-8AB-0Z	1	Flat	24	24	10	44	N1245B	0	0	0	0	0	0	0	2.4	2	111.51	92.92	23.37	22.91
RFV01U-D1A	2	Flat	15	15	10	84.4	0	0	N1251C	N1250C	0	0	0	0	0.94	1.25	43.56	58.08	10.56	15.41
RFV01U-D2A	2	Flat	15	15	8.1	70.3	N1245B	N1244C	0	0	0	0	0	0	0.94	1.01	43.56	47.04	10.56	13.23
RFV01U-D1A	1	Flat	15	15	10	84.4	0	0	N1252A	0	0	0	0	0	0.94	1.25	43.56	58.08	10.56	15.41
RFV01U-D2A	1	Flat	15	15	8.1	70.3	N1246B	0	0	0	0	0	0	0	0.94	1.01	43.56	47.04	10.56	13.23

APPENDIX C

SOFTWARE ANALYSIS OUTPUT

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(P...
1	Dead	DL			-1	25				
2	Dead of Ice	RL				25		51		
4	Structure Wind (0)	None						102		
5	Structure Wind (30)	None						102		
6	Structure Wind (45)	None						102		
7	Structure Wind (60)	None						102		
8	Structure Wind (90)	None						102		
9	Structure Wind (120)	None						102		
10	Structure Wind (135)	None						102		
11	Structure Wind (150)	None						102		
12	Structure Wind w/ Ice ...	None						102		
13	Structure Wind w/ Ice ...	None						102		
14	Structure Wind w/ Ice ...	None						102		
15	Structure Wind w/ Ice ...	None						102		
16	Structure Wind w/ Ice ...	None						102		
17	Structure Wind w/ Ice ...	None						102		
18	Structure Wind w/ Ice ...	None						102		
19	Structure Wind w/ Ice ...	None						102		
20	Antenna Wind (0)	None				50				
21	Antenna Wind (30)	None				50				
22	Antenna Wind (45)	None				50				
23	Antenna Wind (60)	None				50				
24	Antenna Wind (90)	None				50				
25	Antenna Wind (120)	None				50				
26	Antenna Wind (135)	None				50				
27	Antenna Wind (150)	None				50				
28	Antenna Wind w/ Ice (...	None				50				
29	Antenna Wind w/ Ice (...	None				50				
30	Antenna Wind w/ Ice (...	None				50				
31	Antenna Wind w/ Ice (...	None				50				
32	Antenna Wind w/ Ice (...	None				50				
33	Antenna Wind w/ Ice (...	None				50				
34	Antenna Wind w/ Ice (...	None				50				
35	Antenna Wind w/ Ice (...	None				50				
36	Maintenance Live Lm ...	OL1				1				
37	Maintenance Live Lm ...	OL2				1				
38	Maintenance Live Lm ...	OL3				1				
39	Maintenance Live Lm ...	OL4				1				

Load Combinations

	Descripti...	So...	PDelta	S...	BLCFac...	BLCFac...	BLCFac...	BLCFac...	BLCFac...	BLCFac...	BLCFac...	BLCFac...	BLCFac...	BLCFac...
1	Summar...	Yes	Y		DL 1	20 1								
2	1.4D	Yes	Y		DL 1.4									
3	1.2D + 1...	Yes	Y		DL 1.2	4 1	20 1							
4	1.2D + 1...	Yes	Y		DL 1.2	5 1	21 1							
5	1.2D + 1...	Yes	Y		DL 1.2	6 1	22 1							
6	1.2D + 1...	Yes	Y		DL 1.2	7 1	23 1							
7	1.2D + 1...	Yes	Y		DL 1.2	8 1	24 1							
8	1.2D + 1...	Yes	Y		DL 1.2	9 1	25 1							
9	1.2D + 1...	Yes	Y		DL 1.2	10 1	26 1							
10	1.2D + 1...	Yes	Y		DL 1.2	11 1	27 1							
11	1.2D + 1...	Yes	Y		DL 1.2	4 -1	20 -1							
12	1.2D + 1...	Yes	Y		DL 1.2	5 -1	21 -1							
13	1.2D + 1...	Yes	Y		DL 1.2	6 -1	22 -1							

Load Combinations (Continued)

	Descripti...	So...	PDelta	S...	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..
14	1.2D + 1...	Yes	Y		DL	1.2	7	-1	23	-1														
15	1.2D + 1...	Yes	Y		DL	1.2	8	-1	24	-1														
16	1.2D + 1...	Yes	Y		DL	1.2	9	-1	25	-1														
17	1.2D + 1...	Yes	Y		DL	1.2	10	-1	26	-1														
18	1.2D + 1...	Yes	Y		DL	1.2	11	-1	27	-1														
19	1.2D + 1...	Yes	Y		DL	1.2	RL	1	12	1	28	1												
20	1.2D + 1...	Yes	Y		DL	1.2	RL	1	13	1	29	1												
21	1.2D + 1...	Yes	Y		DL	1.2	RL	1	14	1	30	1												
22	1.2D + 1...	Yes	Y		DL	1.2	RL	1	15	1	31	1												
23	1.2D + 1...	Yes	Y		DL	1.2	RL	1	16	1	32	1												
24	1.2D + 1...	Yes	Y		DL	1.2	RL	1	17	1	33	1												
25	1.2D + 1...	Yes	Y		DL	1.2	RL	1	18	1	34	1												
26	1.2D + 1...	Yes	Y		DL	1.2	RL	1	19	1	35	1												
27	1.2D + 1...	Yes	Y		DL	1.2	RL	1	12	-1	28	-1												
28	1.2D + 1...	Yes	Y		DL	1.2	RL	1	13	-1	39	-1												
29	1.2D + 1...	Yes	Y		DL	1.2	RL	1	14	-1	30	-1												
30	1.2D + 1...	Yes	Y		DL	1.2	RL	1	15	-1	31	-1												
31	1.2D + 1...	Yes	Y		DL	1.2	RL	1	16	-1	32	-1												
32	1.2D + 1...	Yes	Y		DL	1.2	RL	1	17	-1	33	-1												
33	1.2D + 1...	Yes	Y		DL	1.2	RL	1	18	-1	34	-1												
34	1.2D + 1...	Yes	Y		DL	1.2	RL	1	19	-1	35	-1												
35	1.2D + 1...	Yes	Y		DL	1.2	4	.058	20	.058	OL1	1.5												
36	1.2D + 1...	Yes	Y		DL	1.2	5	.058	21	.058	OL1	1.5												
37	1.2D + 1...	Yes	Y		DL	1.2	6	.058	22	.058	OL1	1.5												
38	1.2D + 1...	Yes	Y		DL	1.2	7	.058	23	.058	OL1	1.5												
39	1.2D + 1...	Yes	Y		DL	1.2	8	.058	24	.058	OL1	1.5												
40	1.2D + 1...	Yes	Y		DL	1.2	9	.058	25	.058	OL1	1.5												
41	1.2D + 1...	Yes	Y		DL	1.2	10	.058	26	.058	OL1	1.5												
42	1.2D + 1...	Yes	Y		DL	1.2	11	.058	27	.058	OL1	1.5												
43	1.2D + 1...	Yes	Y		DL	1.2	4	-.058	20	-.058	OL1	1.5												
44	1.2D + 1...	Yes	Y		DL	1.2	5	-.058	21	-.058	OL1	1.5												
45	1.2D + 1...	Yes	Y		DL	1.2	6	-.058	22	-.058	OL1	1.5												
46	1.2D + 1...	Yes	Y		DL	1.2	7	-.058	23	-.058	OL1	1.5												
47	1.2D + 1...	Yes	Y		DL	1.2	8	-.058	24	-.058	OL1	1.5												
48	1.2D + 1...	Yes	Y		DL	1.2	9	-.058	25	-.058	OL1	1.5												
49	1.2D + 1...	Yes	Y		DL	1.2	10	-.058	26	-.058	OL1	1.5												
50	1.2D + 1...	Yes	Y		DL	1.2	11	-.058	27	-.058	OL1	1.5												
51	1.2D + 1...	Yes	Y		DL	1.2	4	.058	20	.058	OL2	1.5												
52	1.2D + 1...	Yes	Y		DL	1.2	5	.058	21	.058	OL2	1.5												
53	1.2D + 1...	Yes	Y		DL	1.2	6	.058	22	.058	OL2	1.5												
54	1.2D + 1...	Yes	Y		DL	1.2	7	.058	23	.058	OL2	1.5												
55	1.2D + 1...	Yes	Y		DL	1.2	8	.058	24	.058	OL2	1.5												
56	1.2D + 1...	Yes	Y		DL	1.2	9	.058	25	.058	OL2	1.5												
57	1.2D + 1...	Yes	Y		DL	1.2	10	.058	26	.058	OL2	1.5												
58	1.2D + 1...	Yes	Y		DL	1.2	11	.058	27	.058	OL2	1.5												
59	1.2D + 1...	Yes	Y		DL	1.2	4	-.058	20	-.058	OL2	1.5												
60	1.2D + 1...	Yes	Y		DL	1.2	5	-.058	21	-.058	OL2	1.5												
61	1.2D + 1...	Yes	Y		DL	1.2	6	-.058	22	-.058	OL2	1.5												
62	1.2D + 1...	Yes	Y		DL	1.2	7	-.058	23	-.058	OL2	1.5												
63	1.2D + 1...	Yes	Y		DL	1.2	8	-.058	24	-.058	OL2	1.5												
64	1.2D + 1...	Yes	Y		DL	1.2	9	-.058	25	-.058	OL2	1.5												
65	1.2D + 1...	Yes	Y		DL	1.2	10	-.058	26	-.058	OL2	1.5												
66	1.2D + 1...	Yes	Y		DL	1.2	11	-.058	27	-.058	OL2	1.5												
67	1.2D + 1...	Yes	Y		DL	1.2	4	.058	20	.058	OL3	1.5												
68	1.2D + 1...	Yes	Y		DL	1.2	5	.058	21	.058	OL3	1.5												
69	1.2D + 1...	Yes	Y		DL	1.2	6	.058	22	.058	OL3	1.5												
70	1.2D + 1...	Yes	Y		DL	1.2	7	.058	23	.058	OL3	1.5												

Load Combinations (Continued)

	Descripti...	So...	PDelta	S...	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..
71	1.2D + 1....	Yes	Y		DL	1.2	8	.058	24	.058	OL3	1.5												
72	1.2D + 1....	Yes	Y		DL	1.2	9	.058	25	.058	OL3	1.5												
73	1.2D + 1....	Yes	Y		DL	1.2	10	.058	26	.058	OL3	1.5												
74	1.2D + 1....	Yes	Y		DL	1.2	11	.058	27	.058	OL3	1.5												
75	1.2D + 1....	Yes	Y		DL	1.2	4	-.058	20	-.058	OL3	1.5												
76	1.2D + 1....	Yes	Y		DL	1.2	5	-.058	21	-.058	OL3	1.5												
77	1.2D + 1....	Yes	Y		DL	1.2	6	-.058	22	-.058	OL3	1.5												
78	1.2D + 1....	Yes	Y		DL	1.2	7	-.058	23	-.058	OL3	1.5												
79	1.2D + 1....	Yes	Y		DL	1.2	8	-.058	24	-.058	OL3	1.5												
80	1.2D + 1....	Yes	Y		DL	1.2	9	-.058	25	-.058	OL3	1.5												
81	1.2D + 1....	Yes	Y		DL	1.2	10	-.058	26	-.058	OL3	1.5												
82	1.2D + 1....	Yes	Y		DL	1.2	11	-.058	27	-.058	OL3	1.5												
83	1.2D + 1....	Yes	Y		DL	1.2	4	.058	20	.058	OL4	1.5												
84	1.2D + 1....	Yes	Y		DL	1.2	5	.058	21	.058	OL4	1.5												
85	1.2D + 1....	Yes	Y		DL	1.2	6	.058	22	.058	OL4	1.5												
86	1.2D + 1....	Yes	Y		DL	1.2	7	.058	23	.058	OL4	1.5												
87	1.2D + 1....	Yes	Y		DL	1.2	8	.058	24	.058	OL4	1.5												
88	1.2D + 1....	Yes	Y		DL	1.2	9	.058	25	.058	OL4	1.5												
89	1.2D + 1....	Yes	Y		DL	1.2	10	.058	26	.058	OL4	1.5												
90	1.2D + 1....	Yes	Y		DL	1.2	11	.058	27	.058	OL4	1.5												
91	1.2D + 1....	Yes	Y		DL	1.2	4	-.058	20	-.058	OL4	1.5												
92	1.2D + 1....	Yes	Y		DL	1.2	5	-.058	21	-.058	OL4	1.5												
93	1.2D + 1....	Yes	Y		DL	1.2	6	-.058	22	-.058	OL4	1.5												
94	1.2D + 1....	Yes	Y		DL	1.2	7	-.058	23	-.058	OL4	1.5												
95	1.2D + 1....	Yes	Y		DL	1.2	8	-.058	24	-.058	OL4	1.5												
96	1.2D + 1....	Yes	Y		DL	1.2	9	-.058	25	-.058	OL4	1.5												
97	1.2D + 1....	Yes	Y		DL	1.2	10	-.058	26	-.058	OL4	1.5												
98	1.2D + 1....	Yes	Y		DL	1.2	11	-.058	27	-.058	OL4	1.5												

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (\1E...	Density[k/ft...	Yield[ksi]	Ry	Fu[ksi]	Rt
1	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
2	A572 Gr.50	29000	11154	.3	.65	.49	50	1.1	65	1.1
3	A992	29000	11154	.3	.65	.49	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	.3	.65	.527	42	1.4	58	1.3
5	A500 Gr.B Rect	29000	11154	.3	.65	.527	46	1.4	58	1.3
6	A53 Gr.B	29000	11154	.3	.65	.49	35	1.6	60	1.2
7	A1085	29000	11154	.3	.65	.49	50	1.4	65	1.3

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rules	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Platform Horzont...	PIPE_3.0	Beam	Pipe	A53 Gr.B	Typical	2.07	2.85	2.85	5.69
2	Offsett Tube	HSS4x4x4	Beam	SquareTube	A36 Gr.36	Typical	3.37	7.8	7.8	12.8
3	Offset Side Plate	0.38 X 6 Pla...	Beam	RECT	A36 Gr.36	Typical	2.28	.027	6.84	.105
4	Grating Angle	L2x2x3	Beam	Single Angle	A36 Gr.36	Typical	.722	.271	.271	.009
5	Mount Pipe	PIPE_2.0	Beam	Pipe	A53 Gr.B	Typical	1.02	.627	.627	1.25
6	Offset End Plate	0.5 x 6 Plate	Beam	RECT	A36 Gr.36	Typical	3	.063	9	.237
7	MOD HRK12-3HD	PIPE_2.5	Beam	Pipe	A53 Gr.B	Typical	1.61	1.45	1.45	2.89
8	MOD HRK12-3H...	0.38 X 6 Pla...	Beam	RECT	A36 Gr.36	Typical	2.28	.027	6.84	.105
9	MOD HRK12-3H...	L2.5x2.5x4	Beam	Single Angle	A36 Gr.36	Typical	1.19	.692	.692	.026
10	MOD HRK12-3H...	PIPE_2.0	Beam	Pipe	A53 Gr.B	Typical	1.02	.627	.627	1.25
11	MOD HSRK-35	L3x3x4	Beam	Pipe	A36 Gr.36	Typical	1.44	1.23	1.23	.031

Hot Rolled Steel Design Parameters

	Label	Shape	Length[in]	Lbyy[in]	Lbzz[in]	Lcomp top[in]	Lcomp bot[in]	L-torqu...	Kyy	Kzz	Cb	Function
1	M51	Offsett Tube	63.007									Lateral
2	M60	Offsett Tube	30.438			Lbyy						Lateral
3	M63	Offsett Tube	30.437			Lbyy						Lateral
4	M69	Platform Ho..	150			Lbyy						Lateral
5	M72	Platform Ho..	150			Lbyy						Lateral
6	M75	Platform Ho..	150			Lbyy						Lateral
7	M92	Grating Angle	50.542			Lbyy						Lateral
8	M94	Grating Angle	50.542			Lbyy						Lateral
9	M98	Grating Angle	50.542			Lbyy						Lateral
10	M100	Grating Angle	50.542			Lbyy						Lateral
11	M104	Grating Angle	50.542			Lbyy						Lateral
12	M106	Grating Angle	50.542			Lbyy						Lateral
13	M160	Mount Pipe	84			Lbyy						Lateral
14	M161	Mount Pipe	84			Lbyy						Lateral
15	M162	Mount Pipe	84			Lbyy						Lateral
16	M163	Mount Pipe	84			Lbyy						Lateral
17	M245A	Offsett Tube	30.438			Lbyy						Lateral
18	M246A	Offsett Tube	30.437			Lbyy						Lateral
19	M279	Offsett Tube	30.438			Lbyy						Lateral
20	M280	Offsett Tube	30.437			Lbyy						Lateral
21	M242A	Offsett Tube	63.007									Lateral
22	M243A	Offsett Tube	63.007									Lateral
23	M232A	Mount Pipe	84			Lbyy						Lateral
24	M233A	Mount Pipe	84			Lbyy						Lateral
25	M234A	Mount Pipe	84			Lbyy						Lateral
26	M235A	Mount Pipe	84			Lbyy						Lateral
27	M240A	Mount Pipe	84			Lbyy						Lateral
28	M241A	Mount Pipe	84			Lbyy						Lateral
29	M242B	Mount Pipe	84			Lbyy						Lateral
30	M243B	Mount Pipe	84			Lbyy						Lateral
31	M272A	MOD HRK1..	150			Lbyy						Lateral
32	M275A	MOD HRK1..	5			Lbyy						Lateral
33	M278A	MOD HRK1..	5			Lbyy						Lateral
34	M283A	MOD HRK1..	150			Lbyy						Lateral
35	M286A	MOD HRK1..	5			Lbyy						Lateral
36	M289A	MOD HRK1..	5			Lbyy						Lateral
37	M294A	MOD HRK1..	150			Lbyy						Lateral
38	M297A	MOD HRK1..	5			Lbyy						Lateral
39	M300B	MOD HRK1..	5			Lbyy						Lateral
40	M301B	MOD HRK1..	13.155			Lbyy						Lateral
41	M302B	MOD HRK1..	13.155			Lbyy						Lateral
42	M303B	MOD HRK1..	13.155			Lbyy						Lateral
43	M310B	MOD HRK1..	56.619			Lbyy						Lateral
44	M311B	MOD HRK1..	56.619			Lbyy						Lateral
45	M312B	MOD HRK1..	56.619			Lbyy						Lateral
46	M320	MOD HSRK..	56.759			Lbyy						Lateral
47	M322	MOD HSRK..	56.759			Lbyy						Lateral
48	M324	MOD HSRK..	56.759			Lbyy						Lateral
49	M326	MOD HSRK..	56.759			Lbyy						Lateral
50	M328	MOD HSRK..	56.759			Lbyy						Lateral
51	M330	MOD HSRK..	56.759			Lbyy						Lateral

Envelope Joint Reactions

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
1	N88	max	2363.215	3	1743.592	15	2895.693	19	2091.225	7	6207.49	3	1496.137	7
2		min	-3253.827	11	-1745.306	7	-721.106	11	-2327.94	15	-4303.569	11	-1524.983	15
3	N1203B	max	2233.289	3	2012.2	14	3303.292	30	3419.442	6	2606.576	4	1680.908	18
4		min	-1769.594	11	-2775.58	6	-485.694	6	-5675.354	14	-3951.803	12	-1697.422	10
5	N1205B	max	1897.733	3	2874.979	16	2996.068	24	5291.557	8	2625.067	18	1653.475	12
6		min	-1470.811	11	-2108.08	8	-761.717	16	-3815.503	16	-3678.112	10	-1657.214	4
7	Totals:	max	6494.237	3	6464.203	15	7944.743	20						
8		min	-6494.233	11	-6464.239	7	2355.688	1						

Envelope AISC 14th(360-10): LRFD Steel Code Checks

	Member	Shape	Code Check	Loc[in]	LC	Shear Che...	Loc[in]	Dir	LC	phi*Pnc...	phi*Pnt ...	phi*Mn ...	phi*Mn ...	Cb	Eqn
1	M242A	HSS4x4x4	.532	0	14	.271	0	z	10	99760.9...	109188	12663	12663	2...	H1-1b
2	M243A	HSS4x4x4	.508	0	8	.278	0	z	12	99760.9...	109188	12663	12663	2...	H1-1b
3	M51	HSS4x4x4	.508	0	3	.276	0	z	15	99760.9...	109188	12663	12663	2...	H1-1b
4	M240A	PIPE_2.0	.391	77.368	12	.075	28.7...		6	17855.0...	32130	1871.625	1871.625	2...	H1-1b
5	M160	PIPE_2.0	.380	77.368	7	.075	28.7...		16	17855.0...	32130	1871.625	1871.625	2...	H1-1b
6	M161	PIPE_2.0	.365	77.368	15	.062	77.3...		17	17855.0...	32130	1871.625	1871.625	2...	H1-1b
7	M232A	PIPE_2.0	.360	77.368	18	.075	28.7...		11	17855.0...	32130	1871.625	1871.625	2...	H1-1b
8	M241A	PIPE_2.0	.352	77.368	4	.059	77.3...		6	17855.0...	32130	1871.625	1871.625	2...	H1-1b
9	M233A	PIPE_2.0	.346	77.368	9	.058	77.3...		11	17855.0...	32130	1871.625	1871.625	2...	H1-1b
10	M243B	PIPE_2.0	.301	77.368	13	.073	77.3...		14	17855.0...	32130	1871.625	1871.625	2...	H1-1b
11	M163	PIPE_2.0	.300	77.368	8	.075	77.3...		9	17855.0...	32130	1871.625	1871.625	2...	H1-1b
12	M162	PIPE_2.0	.290	77.368	14	.075	28.7...		6	17855.0...	32130	1871.625	1871.625	2...	H1-1b
13	M235A	PIPE_2.0	.289	77.368	3	.075	77.3...		3	17855.0...	32130	1871.625	1871.625	2...	H1-1b
14	M294A	PIPE_2.5	.276	47.368	11	.146	55.2...		9	14558.7...	50715	3596.25	3596.25	2...	H1-1b
15	M245A	HSS4x4x4	.276	30.438	13	.100	3.204	z	3	106911....	109188	12663	12663	1...	H1-1b
16	M272A	PIPE_2.5	.272	47.368	6	.151	55.2...		4	14558.7...	50715	3596.25	3596.25	2...	H1-1b
17	M242B	PIPE_2.0	.267	77.368	3	.075	28.7...		11	17855.0...	32130	1871.625	1871.625	2...	H1-1b
18	M283A	PIPE_2.5	.266	47.368	16	.146	55.2...		15	14558.7...	50715	3596.25	3596.25	2...	H1-1b
19	M246A	HSS4x4x4	.264	0	15	.095	27.2...	z	9	106911....	109188	12663	12663	1...	H1-1b
20	M60	HSS4x4x4	.263	30.438	18	.094	3.204	z	8	106911....	109188	12663	12663	1...	H1-1b
21	M279	HSS4x4x4	.258	30.438	7	.104	3.204	z	13	106911....	109188	12663	12663	1...	H1-1b
22	M280	HSS4x4x4	.255	0	9	.092	27.2...	z	3	106911....	109188	12663	12663	1...	H1-1b
23	M63	HSS4x4x4	.252	0	4	.095	27.2...	z	14	106911....	109188	12663	12663	1...	H1-1b
24	M234A	PIPE_2.0	.248	77.368	8	.075	28.7...		16	17855.0...	32130	1871.625	1871.625	2...	H1-1b
25	M75	PIPE_3.0	.204	90.789	13	.086	90.7...		12	28250.5...	65205	5748.75	5748.75	2...	H1-1b
26	M72	PIPE_3.0	.191	90.789	3	.085	59.2...		10	28250.5...	65205	5748.75	5748.75	2...	H1-1b
27	M69	PIPE_3.0	.185	90.789	8	.089	134....		3	28250.5...	65205	5748.75	5748.75	2...	H1-1b
28	M104	L2x2x3	.158	0	16	.007	0	z	8	9618.888	23392.8	557.717	1196.213	1...	H2-1
29	M100	L2x2x3	.156	0	11	.008	0	y	3	9618.956	23392.8	557.717	1178.909	1...	H2-1
30	M92	L2x2x3	.152	0	11	.007	0	z	3	9618.888	23392.8	557.717	1163.931	1...	H2-1
31	M98	L2x2x3	.147	0	6	.007	0	z	6	9618.888	23392.8	557.717	1171.417	1...	H2-1
32	M106	L2x2x3	.141	0	6	.007	0	y	14	9618.956	23392.8	557.717	1146.16	1...	H2-1
33	M94	L2x2x3	.141	0	16	.007	0	y	8	9618.956	23392.8	557.717	1133.026	1...	H2-1
34	M301B	L2.5x2.5x4	.130	13.155	18	.044	0	y	4	37073.2...	38556	1113.554	2537.388	1...	H2-1
35	M289A	0.38 X 6 Pl...	.130	2.5	18	.019	1.053	z	18	66218.6...	73872	584.82	9234	1...	H1-1b
36	M302B	L2.5x2.5x4	.128	0	9	.043	0	y	7	37073.2...	38556	1113.554	2537.388	1...	H2-1
37	M286A	0.38 X 6 Pl...	.126	2.5	9	.019	1.053	z	9	66218.6...	73872	584.82	9234	1...	H1-1b
38	M303B	L2.5x2.5x4	.117	0	4	.040	0	y	10	37073.2...	38556	1113.554	2537.388	1...	H2-1
39	M297A	0.38 X 6 Pl...	.116	2.5	4	.018	1.053	z	4	66218.6...	73872	584.82	9234	1...	H1-1b
40	M278A	0.38 X 6 Pl...	.110	2.5	7	.017	1.053	z	7	66218.6...	73872	584.82	9234	1...	H1-1b
41	M275A	0.38 X 6 Pl...	.103	2.5	14	.015	1.053	z	14	66218.6...	73872	584.82	9234	1...	H1-1b
42	M300B	0.38 X 6 Pl...	.102	2.5	13	.016	1.053	z	13	66218.6...	73872	584.82	9234	1...	H1-1b
43	M322	L3x3x4	.066	26.886	3	.009	0	y	15	28423.7...	46656	1688.138	3426.651	1...	H2-1

Envelope AISC 14th(360-10): LRFD Steel Code Checks (Continued)

	Member	Shape	Code Check	Loc[in]	LC	Shear Che..	Loc[in]	Dir	LC	phi*Pnc...	phi*Pnt ...	phi*Mn ...	phi*Mn ...	Cb	Eqn
44	M326	L3x3x4	.064	26.886	14	.009	0	y	10	28423.7...	46656	1688.138	3426.651	1...	H2-1
45	M330	L3x3x4	.063	26.886	8	.009	0	y	4	28423.7...	46656	1688.138	3426.651	1...	H2-1
46	M328	L3x3x4	.062	28.38	11	.010	0	z	12	28423.7...	46656	1688.138	3426.651	1...	H2-1
47	M324	L3x3x4	.061	28.38	17	.010	56.7...	z	18	28423.7...	46656	1688.138	3426.651	1...	H2-1
48	M320	L3x3x4	.059	28.38	6	.010	0	z	15	28423.7...	46656	1688.138	3426.651	1...	H2-1
49	M310B	PIPE_2.0	.036	28.31	22	.022	0		18	24603.0...	32130	1871.625	1871.625	1...	H1-1b
50	M312B	PIPE_2.0	.035	28.31	32	.020	56.6...		4	24603.0...	32130	1871.625	1871.625	1...	H1-1b
51	M311B	PIPE_2.0	.035	28.31	27	.022	0		7	24603.0...	32130	1871.625	1871.625	1...	H1-1b

Envelope Plate/Shell Principal Stresses

	Plate		Surf...	Sigma1 [ksi]	LC	Sigma2 [ksi]	LC	Tau Max [ksi]	LC	Angle [rad]	LC	Von Mises [ksi]	LC
1	P726	max	T	11.178	10	1.103	10	6.016	18	2.081	74	12.718	18
2		min		-1.339	82	-13.308	18	.092	25	-.367	27	.212	25
3		max	B	7.395	18	1.542	18	2.926	18	2.297	53	6.757	18
4		min		-1.328	10	-6.355	10	.097	25	-.771	52	.236	25
5	P531	max	T	14.286	14	4.41	14	4.938	14	2.13	19	12.671	14
6		min		-4.016	6	-12.974	6	.024	50	-.559	28	.042	50
7		max	B	15.002	6	4.351	6	5.841	14	2.307	55	14.67	14
8		min		-4.782	14	-16.464	14	.038	19	-.751	53	.08	53
9	P436	max	T	14.104	3	4.35	3	4.877	3	1.634	24	12.51	3
10		min		-4.099	11	-13.223	11	.02	48	-.195	7	.034	48
11		max	B	15.42	11	4.468	11	5.68	3	1.642	31	14.287	3
12		min		-4.681	3	-16.04	3	.075	65	-.167	15	.131	65
13	P798	max	T	9.64	4	.748	4	5.886	13	2.142	9	12.322	13
14		min		-1.043	12	-12.807	13	.524	18	-.448	8	.951	18
15		max	B	6.76	13	1.316	12	2.725	13	1.901	3	6.21	13
16		min		-.963	4	-5.105	5	.196	69	-.102	18	.413	69
17	P627	max	T	13.098	8	4.037	8	4.76	16	2.298	52	12.216	16
18		min		-4.255	16	-13.775	16	.024	87	-.767	45	.044	87
19		max	B	15.83	16	4.586	16	5.622	16	2.337	35	14.107	16
20		min		-4.401	8	-15.258	8	.022	91	-.686	47	.044	91
21	P515	max	T	13.319	14	4.098	14	4.61	14	2.121	19	11.815	14
22		min		-3.732	6	-12.103	6	.029	54	-.23	28	.07	54
23		max	B	12.798	6	3.905	6	4.879	14	2.204	50	12.473	14
24		min		-4.295	14	-14.053	14	.031	19	-.591	42	.078	19
25	P655	max	T	10.945	15	.946	15	5.557	7	2.201	63	11.77	7
26		min		-1.218	7	-12.332	7	.036	84	-.68	82	.066	84
27		max	B	6.911	7	1.46	7	2.726	7	2.218	83	6.31	7
28		min		-1.179	15	-5.864	15	.006	32	-.75	93	.077	84
29	P526	max	T	13.171	14	4.076	14	4.548	14	2.271	18	11.68	14
30		min		-3.675	6	-11.877	6	.059	35	-.049	17	.116	35
31		max	B	13.972	6	4.014	6	5.478	14	2.163	40	13.742	14
32		min		-4.463	14	-15.419	14	.073	35	-.556	9	.139	35
33	P622	max	T	13.072	8	4.041	8	4.516	8	2.126	12	11.592	8
34		min		-3.717	16	-11.971	16	.021	81	-.693	80	.036	81
35		max	B	14.251	16	4.096	16	5.335	8	2.176	29	13.409	8
36		min		-4.382	8	-15.052	8	.029	90	-.484	86	.066	78
37	P420	max	T	12.974	3	3.994	3	4.49	3	1.6	24	11.509	3
38		min		-3.806	11	-12.355	11	.004	54	-.193	7	.007	54
39		max	B	13.096	11	3.998	11	4.742	3	1.66	31	12.121	3
40		min		-4.173	3	-13.657	3	.023	67	-.321	15	.054	67
41	P611	max	T	12.462	8	3.833	8	4.46	16	2.353	46	11.444	16
42		min		-3.982	16	-12.903	16	.017	68	-.753	54	.032	68
43		max	B	13.604	16	4.15	16	4.727	16	2.31	46	12.076	16
44		min		-4.021	8	-13.156	8	.022	53	-.753	35	.039	53

APPENDIX D

ADDITIONAL CALCUATIONS

CCI Mount Analysis Square Plate Connection 1.0.1

CROWN CASTLE

Location:	A	Select

SITE DATA	
BU Number:	841295
Project Number:	019558041
Order Number:	492710

BOLT DATA		
Quantity:	4	
Diameter:	0.625	in
Material:	A325 (1/2 to 1)	Select
Fy:	92	ksi
Fu:	120	ksi
Bolt Circle:	8.485281374	in

PLATE DATA		
Width:	8.5	in
Thickness:	0.625	in
Fy:	36	ksi

SUPPORT ARM DATA		
Type:	HSST	Select
Diameter/Width:	4	in
Thickness:	0.25	in
Fy:	36	ksi
Number of Sides:	4	

TIA Revision:	TIA-222-H	Select

Applying TIA-222-H Section 15.5

REACTIONS		
Moment:	6.582	kip-ft
Axial:	1.229	kips
Shear:	2.705	kips

Load Combination	14

BOLT RESULTS		
Max Bolt (Cu+ Vu/n):	9.62	kips
Axial Design Strength:	21.70	kips
Stress Ratio	42.21%	

PLATE RESULTS		
Base Plate Stress:	29.51	ksi
Bending Strength:	32.40	ksi
Stress Ratio:	86.74%	

Controlling Load Combination	14

APPENDIX E

MOUNT MODIFICATION DESIGN DRAWINGS (MDD) / SUPPLEMENTAL DRAWINGS

Kimley»Horn
421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, NC 27601
PHONE: 919-677-2000
WWW.KIMLEY-HORN.COM

CROWN CASTLE
1500 CORPORATE DRIVE
CANONSBURG, PA 15317
WWW.CROWNCASTLE.COM

MOUNT MODIFICATION DRAWINGS

BETHANY

CROWN CASTLE BU#: 841295
VERIZON SITE#: 104335

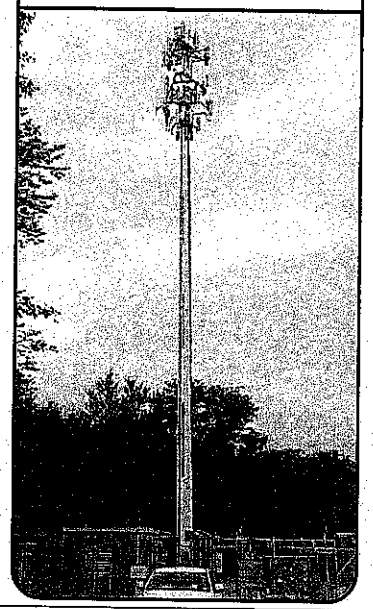
STRUCTURE INFORMATION

150' MONOPOLE TOWER
LOW PROFILE PLATFORM

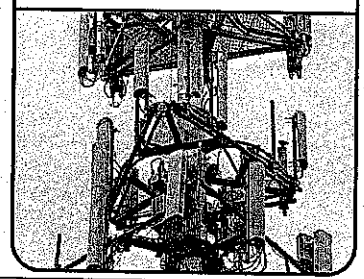
SITE ADDRESS

719 AMITY ROAD
BETHANY, CT 06524
NEW HAVEN COUNTY
LATITUDE: N 41° 26' 33.93"±
LONGITUDE: W 72° 59' 32.86"±

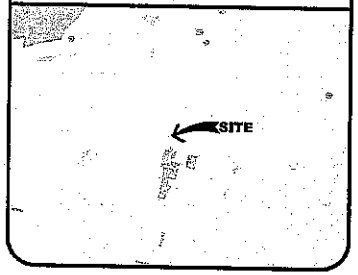
TOWER



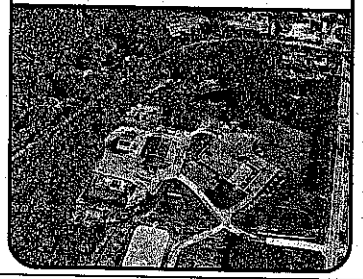
MOUNT



MAP



LOCAL



INDEX OF SHEETS

SHEET	DESCRIPTION	REV
T-1	TITLE SHEET	0
N-1	PROJECT NOTES	0
N-2	INSPECTION NOTES	0
S-1	MOUNT VIEWS & MODIFICATION SCHEDULE	0
S-2	PART DETAILS	0

CROWN CASTLE

PROJECT INFORMATION:
BU: 841295
BETHANY
719 AMITY ROAD
BETHANY, CT 06524
NEW HAVEN COUNTY

PLANS PREPARED BY:
Kimley»Horn
421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, NC 27601 PHONE: 919-677-2000
WWW.KIMLEY-HORN.COM
KHA CoA# PEC.0000738

REV:	DATE:	ISSUED FOR:	BY:
8			
7			
6			
5			
4			
3			
2			
1			
0	05/28/19	CONSTRUCTION	SCB

LICENSER:
EXP 1.31.20
STATE OF CONNECTICUT
STEVEN C. BALL
#20813
LICENSED PROFESSIONAL ENGINEER
5.29.19

KHA PROJECT NUMBER:
019558041

DRAWN BY: JGA | CHECKED BY: GJV

SHEET TITLE:
TITLE SHEET

SHEET NUMBER:
T-1

1.00 GENERAL NOTES

1.01 ALL MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE DRAWINGS AND SPECIFICATIONS. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE LATEST EDITION OF THE STATE, LOCAL AND NATIONAL CODES, ORDINANCES AND OR REGULATIONS APPLICABLE TO THIS PROJECT.
1.02 THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING WITH WORK OF ALL TRADES AND SHALL CHECK ALL DIMENSIONS. ALL DISCREPANCIES SHALL BE CALLED TO THE ATTENTION OF THE PROJECT MANAGER AND/OR ENGINEER AND BE RESOLVED BEFORE PROCEEDING WITH WORK WHERE THERE IS A CONFLICT BETWEEN DRAWING AND SPECIFICATIONS.
1.03 ALL INFORMATION SHOWN ON THE DRAWINGS RELATIVE TO EXISTING CONDITIONS IS GIVEN AS THE BEST PRESENT KNOWLEDGE, BUT WITHOUT GUARANTEE OF ACCURACY. WHERE ACTUAL CONDITIONS CONFLICT WITH THE DRAWINGS, THEY SHALL BE REPORTED TO THE PROJECT MANAGER AND/OR ENGINEER OF RECORD SO THAT PROPER REVISIONS MAY BE MADE. MODIFICATION OF DETAILS OR CONSTRUCTION SHALL NOT BE MADE WITHOUT WRITTEN APPROVAL OF THE PROJECT MANAGER AND/OR ENGINEER OF RECORD.
1.04 CONTRACTOR SHALL REVIEW AND BE FAMILIAR WITH SITE CONDITIONS AS SHOWN ON THE ATTACHED SITE PLAN AND/OR SURVEY DRAWINGS.
1.05 CONTRACTOR TO PROVIDE DUMPSTER AND PORTABLE TOILET FACILITY DURING CONSTRUCTION.
1.06 CONSTRUCTION WASTE MAY NEITHER BE BURNED NOR BURIED AND MUST BE TAKEN TO AN APPROVED LANDFILL.
1.07 SECURITY TO THE SITE SHALL BE MAINTAINED AT ALL TIMES.

2.00 STRUCTURAL STEEL NOTES

2.01 STRUCTURAL STEEL SHALL COMPLY WITH THE FOLLOWING SPECIFICATIONS UNO:

A. STRUCTURAL STEEL SHAPES, PLATES AND BARS. (EXPECT W–SHAPES) – ASTM A36, Fy=36 KSI
B. PIPE – ASTM A53, GRADE B, Fy=35 KSI.
C. HSS–SHAPES – ATSM A500, GRADE B,
Fy = 42 KSI (ROUND)
Fy = 46 KSI (RECTANGLE)
D. ANCHOR RODS – ASTM F1554, GRADE 55
E. ALL THREAD RODS – ASTM F1554, GRADE 105
F. STRUCTURAL BOLTS ½"ø AND LARGER – ASTM A325
G. STRUCTURAL BOLTS SMALLER THAN ½"ø
DIMENSIONS:
ASME B18.2.1
MATERIAL SAE J429 GRADE 5
THREADING: ASME B1.1, UNC, CLASS 2A
FINISH: HOT–DIP GALVANIZED OR ZINC–PLATED
H. NUTS FOR BOLTS/ALL–THREAD – ASTM A563 (THREADING TO MATCH BOLT)
I. WASHERS FOR BOLTS/ALL THREADS – ASTM F436
J. W & WT SHAPES – ASTM A36 – Fy–36 KSI.
ALTERNATE SPEC: ASTM (IF OTHER SPEC IS UNAVAILABLE).

2.02 STRUCTURAL BOLTS SHALL CONFORM TO THIS NOTE. ALL BOLT HOLES SHALL BE STANDARD SIZE BOLT HOLES PER AISC 360, UNLESS OTHERWISE NOTED. ALL HOLES SHALL BE SHOP DRILLED OR SUB–PUNCHED AND REAMED. BURNING OF HOLES IS NOT PERMITTED, WHERE SLOTTED OR OVERSIZE HOLES ARE SPECIFIED ON THE DRAWINGS. EXTRA–THICK ASTM F436 PLATE WASHERS SHALL BE USED (5/16" MINIMUM THICKNESS) WITH A DIAMETER SUITABLE TO COVER THE EXTENTS OF THE SLOT OF HOLE. BOLTS SHALL BE HEAVY–HEX WHERE AVAILABLE IN THE SIZE AND GRADE SPECIFIED.
2.03 ALL STEEL HARDWARE, INCLUDING ADHESIVE OR EMBEDDED ANCHOR BOLTS AND THEIR ACCESSORIES, SHALL BE HOT–DIP GALVANIZED IN ACCORDANCE WITH ASTM A153 (EXCEPT BOLTS SMALL THAN ½" SHALL CONFIRM TO FE/ZN 3 AS PER ASTM F1941 WHERE HOT–DIP GALVANIZED IN ACCORDANCE WITH ASTM A123. REPAIR DAMAGE TO GALVANIZED COATINGS USING ASTM A780 PROCEDURES WITH A ZINC RICH PAINT (SUCH AS ZRC GALVILITE) FOR GALVANIZING DAMAGED BY HANDLING, TRANSPORTING, CUTTING, WELDING, OR BOLTING. DO NOT HEAT SURFACES TO WHICH REPAIR PAINT HAS BEEN APPLIED. CALL OUT HOLES REQUIRED FOR HOT–DIP GALVANIZING ON SHOP DRAWINGS.
2.04 WELDING SHALL BE IN ACCORDANCE WITH AWS D1.1 "STRUCTURAL WELDING CODE – STEEL". WELD ELECTRODES SHALL BE E80XX. UNLESS OTHERWISE NOTED PROVIDE CONTINUOUS FILLET WELDS WITH MINIMUM SIZE OF 3/16" OR OF A SIZE EQUAL TO THE THICKNESS OF THE THINNER WELD LEG SIZE SHALL BE ADJUSTED AS REQUIRED TO MAINTAIN THE EFFECTIVE THROAT OF A 3/16" FILLET WELD IN A 90° JOINT. ALL WELD SIZES SHOWN IN INCHES.
2.05 PRIOR TO WELDING, THE CONTRACTOR SHALL SUBMIT CERTIFICATION FOR EACH WELDER STATING THE TYPE OF WELDING AND POSITIONS QUALIFIED FOR, THE CODE AND PROCEDURE QUALIFIED UNDER, STATE QUALIFIED, AND THE FIRM AND INDIVIDUAL CERTIFYING THE QUALIFICATION TESTS. THIS INFORMATION SHALL BE SUBMIT TO THE MODIFICATION INSPECTOR (SEE SHEET N–3) AS WELL AS ANY THIRD–PARTY CERTIFIED WELD INSPECTOR (CWI).
2.06 MEMBERS SHALL BE SHOP–FABRICATED AND WELDED TO THE EXTENT PRACTICABLE IN ORDER TO REDUCE FIELD INSTALLATION COSTS.

3.00 MODIFICATION NOTES

3.01 THESE MODIFICATIONS HAVE BEEN DESIGNED IN ACCORDANCE WITH THE GOVERNING PROVISIONS OF TIA/EIA–222, ASCE 7, AWS, ACI, AND AISC. MATERIALS AND SERVICES PROVIDED BY THE CONTRACTOR SHALL CONFORM TO THE ABOVE MENTIONED CODES AND CONTRACT SPECIFICATIONS.
3.02 ALL MATERIALS UTILIZED FOR THIS PROJECT MUST BE NEW AND FREE OF ANY DEFECTS.
3.03 ALL PRODUCT OR MATERIAL SUBSTITUTIONS PROPOSED BY THE CONTRACTOR SHALL BE APPROVED IN WRITING BY THE ENGINEER OF RECORD. CONTRACTOR SHALL PROVIDE DOCUMENTATION TO ENGINEER SUITABLE TO DETERMINE IF THE SUBSTITUTE IS ACCEPTABLE FOR USE AND MEETS THE ORIGINAL DESIGN CRITERIA. DIFFERENCES FROM THE ORIGINAL DESIGN, INCLUDING; MAINTENANCE, REPAIR, AND REPLACEMENT, SHALL BE NOTED. ESTIMATES OF COSTS/CREDITS ASSOCIATED WITH THE SUBSTITUTION (INCLUDING RE–DESIGN COSTS AND COSTS TO SUB–CONTRACTORS) SHALL BE PROVIDED TO THE ENGINEER. CONTRACTOR SHALL PROVIDE ADDITIONAL DOCUMENTATION AND/OR SPECIFICATION TO THE ENGINEER AS REQUESTED.
3.04 PROVIDE STRUCTURAL STEEL SHOP DRAWINGS(S) TO THE ENGINEER OF RECORD FOR APPROVAL PRIOR TO FABRICATION.
3.05 UNLESS NOTED OTHERWISE, ALL NEW MEMBERS AND REINFORCING SHALL MAINTAIN THE EXISTING MEMBER WORK AND NOT INTRODUCE ECCENTRICITIES INTO THE STRUCTURE.
3.06 ANY CONTRACTOR–CAUSED DAMAGE TO PROPERTY OF THE LAND OWNER, PROPERTY OF THE CUSTOMER, SITE FENCING OR GATES, ANY AND ALL UTILITY AND/OR SERVICE LINES, SHOWN OR NOT SHOWN ON THE PLANS SHALL BE REPAIRED OR REPLACED AT THE SOLE COST OF THE CONTRACTOR AND SHALL BE ADDRESSED BY THE CONTRACTOR WITH THE COMPANIES THAT OWN THE DAMAGED ITEMS.

4.00 CONTRACTOR NOTES

4.01 PRIOR TO BEGINNING CONSTRUCTION, ALL CONTRACTORS AND SUBCONTRACTORS MUST ACKNOWLEDGE IN WRITING TO STRUCTURE OWNER THAT THEY HAVE OBTAINED, UNDERSTAND, AND WILL FOLLOW STRUCTURE OWNER STANDARDS OF PRACTICE, CONSTRUCTION GUIDELINES, ALL SITE AND STRUCTURE SAFETY PROCEDURES, ALL PRODUCT LIMITATIONS AND INSTALLATION PROCEDURES USED ON SITE, AND PROPOSED MODIFICATION DESCRIBED RECEIPT OF ACKNOWLEDGEMENT MUST OCCUR PRIOR TO BEGINNING CONSTRUCTION OF CLIMBING. IT IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO PROVIDE THE DOCUMENTATION FOR STRUCTURE OWNER ON COMPANY LETTERHEAD AND THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO OBTAIN THIS DOCUMENTATION FROM ANY SUBCONTRACTORS (ON SUBCONTRACTOR LETTERHEAD) AND DELIVER IT TO THE STRUCTURE OWNER.
4.02 IF THE CONTRACTOR DISCOVERS ANY EXISTING CONDITIONS THAT ARE NOT REPRESENTED ON THESE DRAWINGS, OR ANY CONDITIONS THAT WOULD INTERFERE WITH THE INSTALLATION OF THE MODIFICATIONS, THE ENGINEER OF RECORD SHALL BE CONTACTED IMMEDIATELY TO EVALUATE THE SIGNIFICANCE OF THE DEVIATION.
4.03 THE CONTRACTOR SHALL SOLICIT AND HIRE THE SERVICES OF A QUALIFIED MODIFICATIONS INSPECTOR PRIOR TO BEGINNING CONSTRUCTION, THE MODIFICATION INSPECTOR MAY BE AN EMPLOYEE OF THE CONTRACTORS FIRM; HOWEVER, THE INSPECTOR'S ONLY DUTIES SHALL BE INSPECTION, TESTING, AND REPORT CREATION AS REQUIRED ON THE "MODIFICATION INSPECTION NOTES" SHEET. IT IS ALSO ACCEPTABLE FOR THE CONTRACTOR TO SUBCONTRACT THE MODIFICATION INSPECTOR DUTIES TO A THIRD PARTY FIRM MEETING THE ABOVE REQUIREMENTS.
4.04 THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF RECORD AND TOWER OWNER OF THE PLANNED CONSTRUCTION & INSPECTION SCHEDULE, AS WELL AS ANY CHANGES TO THE SCHEDULE, WITHIN TWO BUSINESS DAYS OF COMPLETION OF THE SCHEDULE REVISION BOTH PRIOR TO BEGINNING CONSTRUCTION AND DURING CONSTRUCTION AS THE SCHEDULE CHANGES. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF RECORD WHEN PHASES OF CONSTRUCTION HAVE BEEN MOVED UP AND SHALL GIVE THE ENGINEER ADEQUATE NOTICE SO THE ENGINEER OF RECORD MAY, AT THEIR DISCRETION, INSPECT PORTIONS OF THE WORK DEEMED CRITICAL TO THE INTEGRITY OF THE STRUCTURE. FAILURE TO PROVIDE THIS NOTICE MAY RESULT IN REJECTION OF THE CONTRACTOR'S WORK. THE CONTRACTOR SHALL ALSO NOTIFY THE ENGINEER OF RECORD AND THE STRUCTURE OWNER WHEN THE WORK HAS BEEN COMPLETED WITHIN 2 BUSINESS DAYS OF THE COMPLETION OF THE WORK AND ASSOCIATED MODIFICATION INSPECTIONS & TESTING.
4.05 IT IS ASSUMED THAT ANY STRUCTURAL MODIFICATION WORK SPECIFIED IN THESE PLANS WILL BE ACCOMPLISHED BY KNOWLEDGEABLE WORKMEN WITH TOWER/BUILDING CONSTRUCTION EXPERIENCE. THIS INCLUDES PROVIDING THE NECESSARY CERTIFICATIONS TO THE STRUCTURE OWNER AND ENGINEER INCLUDING BUT NOT LIMITED TO QUALIFIED WELDER CERTIFICATES, CERTIFIED WELDING INSPECTOR CREDENTIALS, ET CETERA.
4.06 THESE DRAWINGS DO NOT INDICATE THE METHOD OF CONSTRUCTION, THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION METHODS, MEANS, TECHNIQUES, SEQUENCES AND PROCEDURES.
4.07 CONTRACTOR SHALL WORK WITHIN THE LIMITS OF THE STRUCTURE OWNER'S PROPERTY OF LEASE AREA AND APPROVED EASEMENT. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY WORK IS WITHIN THESE BOUNDARIES. CONTRACTOR SHALL EMPLOY A SURVEYOR AS REQUIRED. ANY WORK OUTSIDE THESE BOUNDARIES SHALL BE APPROVED IN WRITING BY THE LAND OWNER PRIOR TO MOBILIZATION. CONSTRUCTION STAKING AND BOUNDARY MARKING IS THE RESPONSIBILITY OF THE CONTRACTOR.
4.08 DO NOT SCALE DRAWINGS. CONTRACTOR SHALL VERIFY ALL PLANS, EXISTING DIMENSIONS, CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE ARCHITECT OR ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR THE SAME.

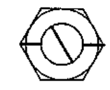
5.00 BOLT TIGHTENING PROCEDURE

5.01 TIGHTEN BOLTS BU AISC– "TURN OF THE NUT" METHOD, USING THE CHART BELOW:

BOLT LENGTHS UP TO & INCLUDING 4 ø
½" BOLTS UP TO & INCLUDING 2" LENGTH +1/3 TURN BEYOND SNUG TIGHT
⅝" BOLTS UP TO & INCLUDING 2½" LENGTH +1/3 TURN BEYOND SNUG TIGHT
¾" BOLTS UP TO & INCLUDING 3" LENGTH +1/3 TURN BEYOND SNUG TIGHT
⅞" BOLTS UP TO & INCLUDING 3½" LENGTH +1/3 TURN BEYOND SNUG TIGHT
1" BOLTS UP TO & INCLUDING 4" LENGTH +1/3 TURN BEYOND SNUG TIGHT
1⅛" BOLTS UP TO & INCLUDING 4½" LENGTH +1/3 TURN BEYOND SNUG TIGHT
1¼" BOLTS UP TO & INCLUDING 5" LENGTH +1/3 TURN BEYOND SNUG TIGHT
1½" BOLTS UP TO & INCLUDING 6" LENGTH +1/3 TURN BEYOND SNUG TIGHT


BEFORE 1/3 TURN

BOLT LENGTH OVER 4 ø BUT NOT EXCEEDING 8 ø
¾" BOLTS 4.25" TO 6.0" LENGTH +1/2 TURN BEYOND SNUG TIGHT
⅞" BOLTS 3.75" TO 7.0" LENGTH +1/2 TURN BEYOND SNUG TIGHT
1" BOLTS 4.25" TO 8.0" LENGTH +1/2 TURN BEYOND SNUG TIGHT
1⅛" BOLTS 4.75" TO 9.0" LENGTH +1/2 TURN BEYOND SNUG TIGHT
1¼" BOLTS 5.25" TO 10.0" LENGTH +1/2 TURN BEYOND SNUG TIGHT
1½" BOLTS 6.25" TO 12.0" LENGTH +1/2 TURN BEYOND SNUG TIGHT

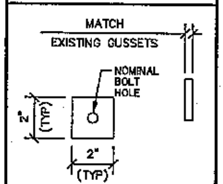

AFTER 1/3 TURN

5.02 SPLICE BOLTS SUBJECT TO DIRECT TENSION SHALL BE INSTALLED AND TIGHTENED AS PER SECTION 8(d)(1) OF THE AISC MANUAL OF STEEL CONSTRUCTION. THE INSTALLATION PROCEDURE IS PARAPHRASED AS FOLLOWS:

"FASTENERS SHALL BE INSTALLED IN PROPERY ALIGHNED HOLES AND BE TIGHTENED BY ONE OF THE METHODS DESCRIBED IN SUBSECTION 8(d)(1) THROUGH 8(d)(4).

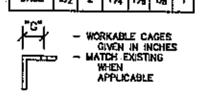
8(d)(1) TURN–OF–THE–NUT TIGHTENING
BOLTS SHALL BE INSTALLED IN ALL HOLES OF THE CONNECTION AND BROUGHT TO A SNUG TIGHT CONDITION. SNUG TIGHT IS DEFINED AS THE TIGHTNESS THAT EXISTS WHEN THE PLIES OF A JOINT ARE IN FIRM CONTACT. THIS MAY BE OBTAINED BY A FEW IMPACTS OF AN IMPACT WRENCH OR THE FULL EFFORT OF A MAN USING AN ORDINARY SPUD WRENCH. SNUG TIGHTENING SHALL PROGRESS SYSTEMATICALLY UNTIL ALL THE BOLTS ARE SIMULTANEOUSLY SNUG TIGHT AND THE CONNECTION IS FULLY COMPACTED. FOLLOW THIS INITIAL OPERATION ALL BOLTS IN THE CONNECTION SHALL BE TIGHTENED FURTHER BY THE APPLICABLE AMOUNT OF ROTATION OF THE PART NOT TURNED BY THE WRENCH. TIGHTENING SHALL PROGRESS SYSTEMATICALLY

SPACER PLATE



WORKABLE GAGES

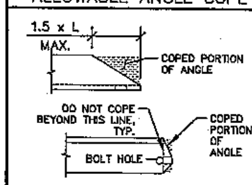
LEG	4	3½	3	½	2	1¾
GAGE	2½	2	1¾	1⅜	1⅛	1



NOMINAL HOLE DIM'S

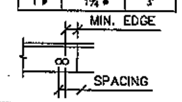
BOLT ø	STANDARD HOLE ø	SHORT SLOT
½"ø	9/16"ø	9/16" x 11/16"
⅝"ø	11/16"ø	11/16" x ⅞"
¾"ø	13/16"ø	13/16" x 1"
⅞"ø	15/16"ø	15/16" x 1⅛"
1"ø	1 1/16"ø	1 1/16" x 1 5/16"

ALLOWABLE ANGLE COPE



BOLT EDGE & SPACING

BOLT ø	STANDARD HOLE ø	SHORT SLOT
½"ø	⅞"ø	1½"
⅝"ø	1⅛"ø	1⅞"
¾"ø	1¼"ø	2¼"
⅞"ø	1½"ø	2⅝"
1"ø	1¾"ø	3"

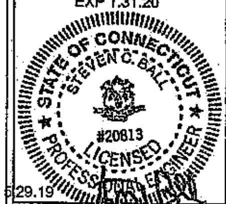


CROWN CASTLE

PROJECT INFORMATION:
BU: 841295
BETHANY
719 AMITY ROAD
BETHANY, CT 06524
NEW HAVEN COUNTY

PLANS PREPARED BY:
Kimley»Horn
421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, NC 27601 PHONE:
919–677–2000
WWW.KIMLEY–HORN.COM
KHA COA# PEC.0000738

REV:	DATE:	ISSUED FOR:	BY:
8			
7			
6			
5			
4			
3			
2			
1			
0	05/28/19	CONSTRUCTION	SCB

LICENSER:
EXP 1.31.20


5.29.19

KHA PROJECT NUMBER:
019558041

DRAWN BY:	CHECKED BY:
JGA	GJV

SHEET TITLE:
PROJECT NOTES

SHEET NUMBER:
N-1

1.00 GENERAL INSPECTION NOTES

1.01 THE POST-MODIFICATION INSPECTION IS A VISUAL EXAMINATION OF STRUCTURE MODIFICATIONS AND A REVIEW OF ANY REQUIRED CONSTRUCTION INSPECTIONS, TESTING, AND OTHER DATA TO VERIFY THAT THE MODIFICATIONS ARE INSTALLED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AS DESIGNED BY THE ENGINEER OF RECORD. THE CONTRACTOR DOCUMENTS INCLUDE THESE MODIFICATION DRAWINGS, ANY PROJECT SPECIFICATION REFERENCED TO IN THE PROJECT NOTES OR OTHERWISE PROVIDED WITH THE DRAWINGS, AND OTHER DOCUMENTS OR DRAWINGS PROVIDED WITH THE MODIFICATION DRAWINGS WITH THE INTENT THEY BE USED AS A DESIGN AID OR GUIDELINE FOR CONSTRUCTION.

1.02 THE POST-MODIFICATION INSPECTION SHALL CONFIRM INSTALLATION CONFIGURATION AND WORKMANSHIP ONLY AND IS NOT A QUALITATIVE REVIEW OF THE ENGINEERING ASPECTS OF THE DESIGN OR THE DESIGN DRAWINGS. THE MODIFICATION INSPECTOR IS NOT TAKING OWNERSHIP OF THE MODIFICATION DESIGN IN THE PERFORMANCE OF THEIR DUTIES. OWNERSHIP OF THE MODIFICATION DESIGN'S EFFECTIVENESS AND INTENT, AS WELL AS ALL ASSOCIATED RISK, LIED WITH THE ENGINEER OF RECORD AT ALL TIMES.

1.03 TO ENSURE THE REQUIREMENTS OF THE POST-MODIFICATION INSPECTION ARE MET, IT IS ESSENTIAL COORDINATION BETWEEN THE PRIME CONTRACTOR AND THE MODIFICATION INSPECTOR BEING AS SOON AS THE PROJECT IS FUNDED AND WORK ENTERS THE PLANNING STAGE. THE PRIME CONTRACTOR AND MODIFICATION INSPECTOR SHALL BE PROACTIVE IN IDENTIFYING CONSTRUCTION ISSUES AND COMMUNICATE THESE ISSUES TO EACH OTHER AND THE ENGINEER OF RECORD AND STRUCTURE OWNER & CUSTOMER, AS REQUIRED.

2.00 INSPECTION & REPORT RECOM'S

2.01 THE FOLLOWING ARE PROVIDED WITH THE INTENT OF ENHANCING THE EFFECTIVENESS OF THE MODIFICATION INSPECTIONS AND IMPROVING THE EFFICIENCY OF THE PROCESS OF COLLECTING AND COMPILING THE INFORMATION INTO A USEABLE REPORT:

- 2.01.1 IT IS RECOMMENDED THE PRIME CONTRACTOR PROVIDE THE MODIFICATION INSPECTOR AT LEAST 5 BUSINESS DAYS NOTICE FOR WHEN THE SITE WILL BE READY FOR THE MODIFICATION INSPECTION.
- 2.01.2 THE PRIME CONTRACTOR AND THE MODIFICATION INSPECTOR SHALL COORDINATE CLOSELY THROUGHOUT THE ENTIRE PROJECT.
- 2.01.3 THE PRIME CONTRACTOR AND MODIFICATION INSPECTION SHALL BOTH BE PRESENT DURING THE INITIAL INSPECTIONS IN ORDER TO ALLOW FOR THE REMEDIATION OF DEFICIENCIES DURING THE INSPECTIONS, AS PRACTICABLE. IT MAY BE PREFERABLE TO KEEP WORK CREWS AND THEIR EQUIPMENT ON-SITE TO REMEDIATE DEFICIENCIES DURING INSPECTIONS.

3.00 INSPECTION RESCHEDULE & CANCEL

3.01 IF THE PRIME CONTRACTOR AND MODIFICATION INSPECTOR HAVE AGREED UPON A TIME AND DATE FOR A GIVEN INSPECTION AND EITHER PARTY RESCHEDULES OR CANCELS THE INSPECTION, THE STRUCTURE OWNER SHALL NOT BE RESPONSIBLE FOR COSTS, FEES, LOST DEPOSITS, OR OTHER EXPENSES INCURRED BY THE PRIME CONTRACTOR, THEIR SUBCONTRACTOR(S), OR THE MODIFICATION INSPECTOR DUE TO THESE SCHEDULING CHANGES. EXCEPTIONS MAY BE MADE IN THE EVENT OF UNCONTROLLABLE SITUATIONS SUCH AS NATURAL DISASTERS, SEVERE WEATHER, OR OTHER CONDITIONS THAT COMPROMISE THE SAFETY OF THE PARTIES INVOLVED.

4.00 REMEDIATION OF FAILING INSPECTION

4.01 IN THE EVENT ANY PORTION OF THE MODIFICATION WORK IS DETERMINED TO BE UNSATISFACTORY BY THE MODIFICATION INSPECTOR, THE PRIME CONTRACTOR SHALL WORK WITH THE MODIFICATION INSPECTOR TO CREATE A PLAN OF ACTION THAT WILL EITHER:

- 4.01.1 REPAIR THE DEFICIENT WORK TO SATISFACTORY CONDITION AND INCLUDE A SUBSEQUENT RE-INSPECTION OF THE WORK TO VERIFY IT IS SATISFACTORY.
- 4.01.2 OR, WITH THE PERMISSION OF THE STRUCTURE OWNER AND/OR CUSTOMER, THE PRIME CONTRACTOR MAY WORK WITH THE ENGINEER OF RECORD TO REVIEW THE AS-BUILT CONDITION OF THE MODIFICATION TO DETERMINE IF IT IS STRUCTURALLY ACCEPTABLE. IF THE ACTION US NOT ACCEPTABLE TO ANY PARTY, THE PRIME CONTRACTOR SHALL PROCEED TO REPAIR THE DEFICIENT WORK TO A SATISFACTORY CONDITION.

5.00 OWNER INSPECTIONS

5.01 THE STRUCTURE OWNER MAY CONDUCT INSPECTIONS TO VERIFY THE QUALITY AND COMPLETENESS OF THE PREVIOUSLY COMPLETED MODIFICATION INSPECTIONS REPORTS OR THE MODIFICATION INSTALLATION WORK.

5.02 INSPECTIONS MAY BE COMPLETED BY A 3RD-PARTY FIRM OF THE STRUCTURE OWNER'S CHOOSING AFTER A MODIFICATION PROJECT IS COMPLETED AND A PASSING MODIFICATION INSPECTION REPORT IS ISSUED.

6.00 MOD INSPECTOR'S RESPONSIBILITIES

6.01 THE MODIFICATION INSPECTOR SHALL CONTACT THE PRIME CONTRACTOR AS SOON AS THE HAVE RECEIVED A PURCHASE ORDER OR PAYMENT FOR THIS INSPECTION. THE MODIFICATION INSPECTOR SHALL REVIEW THE REQUIREMENTS OF THE INSPECTION CHECKLIST, SHALL WORK WITH THE PRIME CONTRACTOR TO DEVELOP A SCHEDULE OF NECESSARY ON-SITE INSPECTIONS, AND SHALL DISCUSS ANY SITE-SPECIFIC INSPECTION REQUIREMENTS OF OTHER CONCERNS.

6.02 THE MODIFICATION INSPECTOR IS RESPONSIBLE FOR COLLECTION ALL PRIME CONTRACTOR INSPECTION AND TEST REPORTS (INCLUDING THOSE OF ASSIGNED SUB-CONTRACTORS), SHALL REVIEW THE REPORTS FOR COMPLIANCE WITH THE CONTRACT DOCUMENTS, SHALL CONDUCT THE NECESSARY ON-SITE INSPECTIONS, AND SHALL COMPILE AND SUBMIT THE MODIFICATION INSPECTION REPORT.

7.00 PRIME CONTRACTOR RESPONSIBILITIES

7.01 THE PRIME CONTRACTOR SHALL CONTACT THE MODIFICATION INSPECTOR AS SOON AS THEY HAVE RECEIVED A PURCHASE ORDER OR PAYMENT FOR THE MODIFICATION INSTALLATION. THE PRIME CONTRACTOR SHALL REVIEW THE REQUIREMENTS OF THE MODIFICATION INSPECTION CHECKLIST, SHALL WORK WITH THE MODIFICATION INSPECTOR TO DEVELOP A SCHEDULE TO CONDUCT ON-SITE INSPECTIONS, AND SHALL DISCUSS SPECIFIC INSPECTION AND TESTING REQUIREMENTS WITH THE MODIFICATION INSPECTOR IN DETAIL TO OBTAIN A FULL UNDERSTANDING OF THE REQUIRED INSPECTION AND TESTING.

7.02 THE PRIME CONTRACTOR SHALL PERFORM AND RECORD THE TESTING AND INSPECTION RESULTS IN ACCORDANCE WITH THE REQUIREMENTS OF THE MODIFICATION INSPECTION CHECKLIST.

8.00 PHOTOGRAPHY REQUIREMENTS

8.01 THE PRIME CONTRACTOR AND MODIFICATION INSPECTOR SHALL, BETWEEN THE EFFORTS OF BOTH PARTIES AND THEIR EMPLOYED PERSONNEL, PROVIDED PHOTOGRAPHS WITH THE INSPECTION REPORT TO INCLUDE THE FOLLOWING:

A GENERAL SITE PHOTOGRAPHS PRE-CONSTRUCTION

B MODIFICATION INSTALLATION PHOTOGRAPHS DURING CONSTRUCTION/ERECTION OPERATIONS AND INSPECTIONS.

- B.1 RAW MATERIALS
- B.2 PHOTOS OF DETAILED WORK REQUIRED ON THE DRAWINGS (CONNECTIONS, WELDMENTS, FIELD/FABRICATED MEMBERS, ETC.)
- B.3 WELD PREPARATION AND COMPLETED WELD INSPECTION (INCLUDING A FILLET WELD SIZE GAUGE, AS APPLICABLE)
- B.4 BOLT INSTALLATION AND TORQUE/PRETENSION.
- B.5 FINAL INSTALLED CONDITION (AFTER DEFICIENT CONDITIONS, IF ANY, ARE REMEDIATED).
- B.6 REPAIR OF SURFACE COATINGS (INCLUDING GALVANIZING AND/OR PAINT COATING).

C. POST-MODIFICATION PHOTOGRAPHS OF THE SITE & WORK.

D. PHOTOGRAPHS OF THE FINAL STATE OF THE SITE AT CONCLUSION OF THE WORK BY THE PRIME CONTRACTOR, ASSOCIATED SUBCONTRACTORS, AND THE MODIFICATION INSPECTOR.

E. OTHER PHOTOS MAY BE INCLUDED AT PRIME CONTRACTOR & MODIFICATION INSPECTOR'S DISCRETION.

NOTE: PHOTOS OF MODIFICATIONS INSTALLED ON THE STRUCTURE ABOVE AN ELEVATION OF 20' SHALL REQUIRE PHOTOS TAKE FROM THE STRUCTURE AS WELL AS OVERALL PHOTOGRAPHS OF THE MODIFICATIONS TAKEN FROM THE GROUND.

PRE-CONSTRUCTION INSPECTION CHECKLIST

CONSTRUCTION AND/OR INSTALLATION INSPECTIONS REQUIRED FOR REPORT?	INSPECTION REPORT ITEM
YES	MODIFICATION INSPECTION CHECKLIST
YES	SHOP DRAWINGS APPROVED BY EOR (LATEST REVISION)
YES	FABRICATION INSPECTION
YES	FABRICATOR'S CERTIFIED WELD INSPECTION (CWI)
YES	FABRICATOR'S QUALIFIED PERSONNEL FOR WELDING
YES	MATERIAL TEST REPORT(S) / MILL CERTIFICATE(S)
YES	FABRICATOR'S NON-DESTRUCTIVE TESTING (NDT) TECHNICIAN
YES	PACKING SLIPS FOR STRUCTURAL MATERIALS

CONSTRUCTION INSPECTION CHECKLIST

CONSTRUCTION AND/OR INSTALLATION INSPECTIONS REQUIRED FOR REPORT?	INSPECTION REPORT ITEM
YES	CONSTRUCTION INSPECTION
	FOUNDATION INSPECTION
	CONCRETE COMPRESSIVE STRENGTH AND SLUMP TESTING RESULTS/CERTIFICATES
	ADHESIVE ANCHOR ROD(S) INSTALLATION INSPECTION
	BASE PLATE GROUT INSPECTION
	THIRD-PARTY CERTIFIED WELD INSPECTION (INCLUDING IBC SPECIAL INSPECTIONS)
	SOIL EXCAVATION-DENSITY TESTING, COMPACTION INSPECTION/VERIFICATION, USE OF SUITABLE FILL
YES	GALVANIZING REPAIR MATERIAL PREPARATION, INSPECTION & PAINT APPLICATION
	GUY WIRE (RE-)TENSION REPORT AND INSPECTION
YES	PRIME CONTRACTOR'S AS-BUILT DOCUMENTS (SIGNED & DATED)

POST-CONS. INSPECTION CHECKLIST

CONSTRUCTION AND/OR INSTALLATION INSPECTIONS REQUIRED FOR REPORT?	INSPECTION REPORT ITEM
YES	MODIFICATION INSPECTOR'S ISSUE LIST (INCLUDING CORRECTIVE ACTIONS TAKEN) AND/OR REDLINED RECORD DRAWINGS.
	POST-INSTALLED ADHESIVE ANCHOR ROD PULL-OUT TESTING
YES	PHOTOGRAPHS OF MODIFICATIONS (INCLUDE PHOTOS OF BOTH SIDES OF WELDED OR BOLTED CONNECTIONS, OF OVERALL AND DETAIL VIEWS OF INSTALLED MODIFICATIONS, AND BEFORE/AFTER PHOTOS OF ANY ISSUES IDENTIFIED BY THE INSPECTOR)

CROWN CASTLE

PROJECT INFORMATION:

BU: 841295
BETHANY

719 AMITY ROAD
BETHANY, CT 06524
NEW HAVEN COUNTY

PLANS PREPARED BY:

Kimley»Horn
421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, NC 27601 PHONE:
919-677-2000
WWW.KIMLEY-HORN.COM
KHA COA# PEC.0000738

REV:	DATE:	ISSUED FOR:	BY:
8			
7			
6			
5			
4			
3			
2			
1			
0	05/28/19	CONSTRUCTION	SCB

LICENSER:

EXP 1.31.20
STATE OF CONNECTICUT
STEVEN C. BALL
#20813
LICENSED
PROFESSIONAL ENGINEER
5/29/19

KHA PROJECT NUMBER:
019558041

DRAWN BY:	CHECKED BY:
JGA	GJV

SHEET TITLE:
INSPECTION NOTES

SHEET NUMBER:
N-2

K:\RAL_Wireless\Crown\841295\CAD\Mount MOD\841295_MOD_R.dwg ----- 05/28/19 3:40 PM by: Jenny.Adams

MODIFICATION SCHEDULE

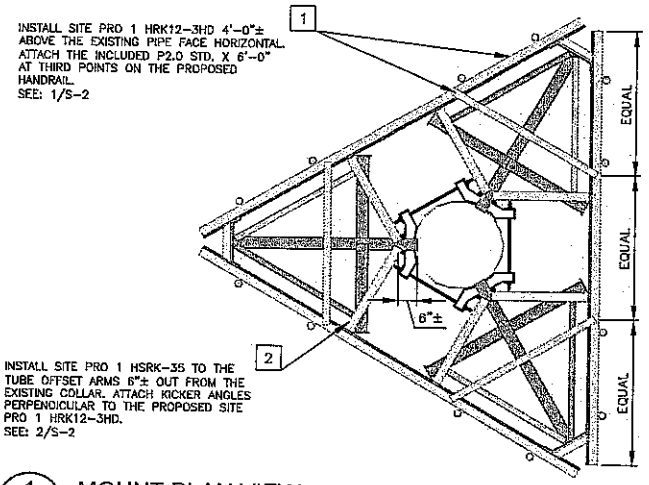
NO.	ELEVATION	SCOPE	MATERIAL	NOTES
1	140'-0"	INSTALL SITE PRO 1 HRK12-3HD 4'-0"± ABOVE THE EXISTING PIPE FACE HORIZONTAL. ATTACH THE INCLUDED P2.0 STD. X 6'-0" AT THIRD POINTS ON THE PROPOSED HANDRAIL.	(1) SITE PRO 1 HRK12-3HD	S-2
2	140'-0"	INSTALL SITE PRO 1 HSRK-35 TO THE TUBE OFFSET ARMS 6"± OUT FROM THE EXISTING COLLAR. ATTACH KICKER ANGLES PERPENDICULAR TO THE PROPOSED SITE PRO 1 HRK12-3HD.	(3) SITE PRO 1 HSRK-35	S-2

DO NOT SCALE DRAWINGS

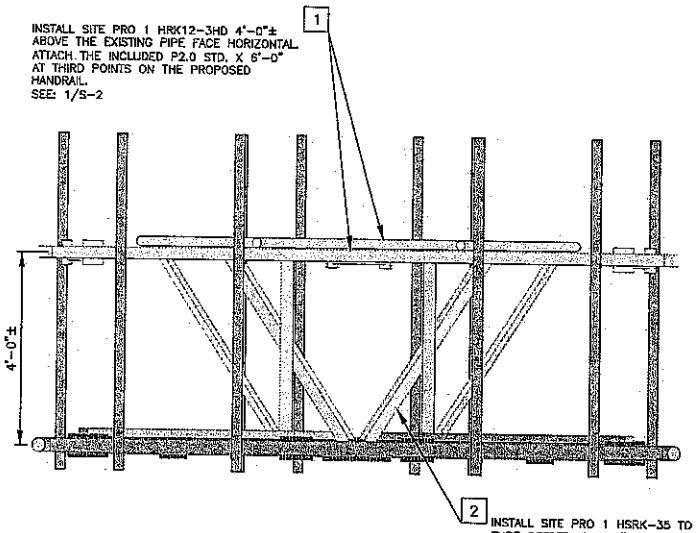
CONTRACTOR SHALL VERIFY ALL PLANS, EXISTING DIMENSIONS, CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE ARCHITECT OF ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR THE SAME.

CONSTRUCTION NOTES

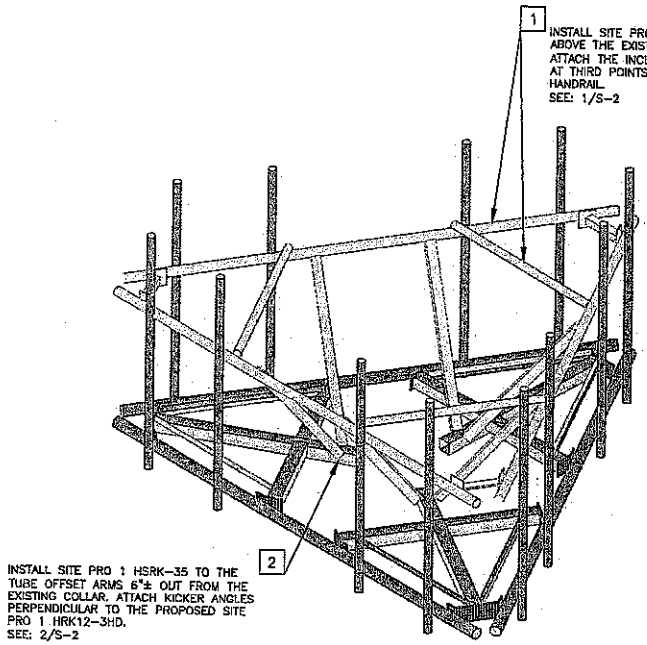
1. SCOPE OF WORK MUST BE COMPLETED AT WIND SPEEDS < 20 MPH.
2. ALL DIMENSIONS ARE APPROXIMATE, CONTRACTOR SHOULD FIELD VERIFY ALL DIMENSIONS BEFORE FABRICATION OF STEEL AND COMMENCEMENT OF WORK. FIELD CUT MEMBERS AS REQUIRED.



1 S-1 MOUNT PLAN VIEW
SCALE: N.T.S.



2 S-1 MOUNT ELEVATION VIEW
SCALE: N.T.S.



3 S-1 MOUNT ISOMETRIC VIEW
SCALE: N.T.S.

CROWN CASTLE

PROJECT INFORMATION:

BU: 841295
BETHANY

719 AMITY ROAD
BETHANY, CT 06524
NEW HAVEN COUNTY

PLANS PREPARED BY:

Kimley»Horn
421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, NC 27601 PHONE:
919-677-2000
WWW.KIMLEY-HORN.COM
KHA CoA# PEC.0000738

REV:	DATE:	ISSUED FOR:	BY:
8			
7			
6			
5			
4			
3			
2			
1			
0	05/28/19	CONSTRUCTION	SCB

LICENSER:

EXP 1.31.20
STATE OF CONNECTICUT
STEVEN C. BALL
#20813
LICENSED PROFESSIONAL ENGINEER
5.29.19

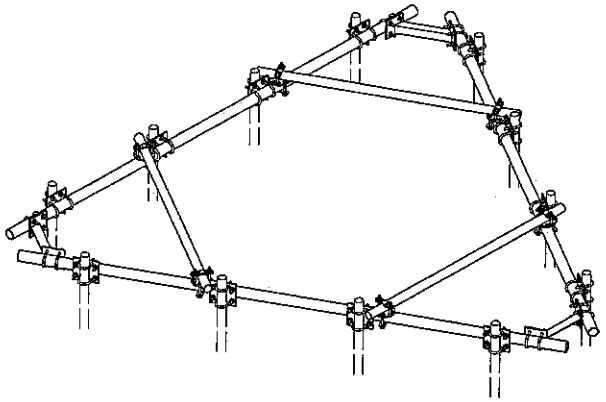
KHA PROJECT NUMBER:
019558041

DRAWN BY:	CHECKED BY:
JGA	GJV

SHEET TITLE:
MOUNT VIEWS & MODIFICATION SCHEDULE

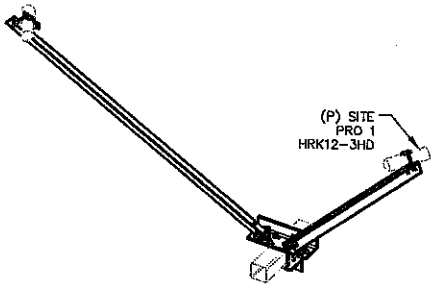
SHEET NUMBER:
S-1

K:\RAL_Wireless\Crown\841295\CAD\Mount MOD\841295_MOD_R.dwg — 05/28/19 3:37 PM by: Jimmy.Adams



1 / S-2 SITE PRO 1 HRK12-3HD

SCALE: N.T.S.



2 / S-2 SITE PRO 1 HSRK-35

SCALE: N.T.S.

CROWN CASTLE

PROJECT INFORMATION:

BU: 841295
BETHANY

719 AMITY ROAD
BETHANY, CT 06524
NEW HAVEN COUNTY

PLANS PREPARED BY:

Kimley»Horn
421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, NC 27601 PHONE:
919-677-2000
WWW.KIMLEY-HORN.COM
KHA CoA# PEC.0000735

REV:	DATE:	ISSUED FOR:	BY:
8			
7			
6			
5			
4			
3			
2			
1			
0	05/28/19	CONSTRUCTION	SCB

LICENSER:

EXP 1.31.20
STATE OF CONNECTICUT
STEVEN C. BALL
#20813
LICENSED PROFESSIONAL ENGINEER
5.29.19

KHA PROJECT NUMBER:

019558041

DRAWN BY:	CHECKED BY:
JGA	GJV

SHEET TITLE:

PART DETAILS

SHEET NUMBER:

S-2

K:\TAL_Wireless\Crown\841295\CAD\Mount_MOD\841295_MOD_R.dwg ----- 05/28/19 3:40 PM by: Jenny.Adams

PAUL J. FORD & COMPANY

Date: **June 06, 2019**

Denice Nicholson
Crown Castle
3 Corporate Dr, Suite 101
Clifton Park, NY 12065

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

Subject:	**Structural Analysis Report**	
Carrier Designation:	***Verizon Wireless* Co-Locate**	
	Carrier Site Number:	104335
	Carrier Site Name:	Bethany North CT
Crown Castle Designation:	**Crown Castle BU Number:**	841295
	Crown Castle Site Name:	BETHANY
	Crown Castle JDE Job Number:	574490
	Crown Castle Work Order Number:	1740548
	Crown Castle Order Number:	492710 Rev. 0
Engineering Firm Designation:	**Paul J. Ford and Company Project Number:**	37519-2490.001.7805
Site Data:	**719 AMITY ROAD, BETHANY, New Haven County, CT** **Latitude *41° 26' 33.93"*, Longitude *-72° 59' 32.86"*** **151 Foot - Monopole Tower**	

Dear Denice Nicholson,

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

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

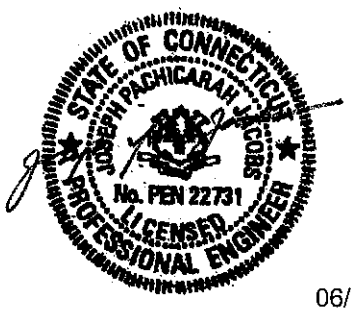
LC7: Proposed Equipment Configuration **Sufficient Capacity (73.9%)**

This analysis utilizes an ultimate 3-second gust wind speed of 125 mph as required by the 2018 Connecticut State Building Code and Appendix N. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Respectfully submitted by:

Aaron E. Pike, E.I.
Structural Designer
apike@pauljford.com

C.J.P.



06/07/2019

TABLE OF CONTENTS

1) INTRODUCTION

2) ANALYSIS CRITERIA
Table 1 - Proposed Equipment Configuration
Table 2 - Other Considered Equipment

3) ANALYSIS PROCEDURE
Table 3 - Documents Provided
3.1) Analysis Method
3.2) Assumptions

4) ANALYSIS RESULTS
Table 4 - Section Capacity (Summary)
Table 5 – Tower Component Stresses vs. Capacity
4.1) Recommendations

5) APPENDIX A
tnxTower Output

6) APPENDIX B
Base Level Drawing

7) APPENDIX C
Additional Calculations

1) INTRODUCTION

This tower is a 151 ft Monopole tower designed by VALMONT and mapped by FDH in March of 2016.

The tower has been modified per reinforcement drawings prepared by B+T in February of 2012. Reinforcement consist of flat plate reinforcing, post-installed anchor rods, and foundation augmentation.

The tower has been modified per reinforcement drawings prepared by B+T in July of 2012. Reinforcement consist of shaft reinforcing.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	125 mph
Exposure Category:	B
Topographic Factor:	1
Ice Thickness:	1.5 in
Wind Speed with Ice:	50 mph
Service Wind Speed:	60 mph

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
140.0	140.0	6	commscope	NHH-65C-R2B w/ Mount Pipe	13	1-5/8
		3	decibel	DB854DG65ESX w/ Mount Pipe		
		1	rfs celwave	DB-T1-6Z-8AB-0Z		
		3	samsung telecommunications	RFV01U-D1A		
		3	samsung telecommunications	RFV01U-D2A		
		1	tower mounts	12.5 ft Low Profile Platform		
		1	site pro 1	Handrail Kit [HRK12-3HD]		
		3	site pro 1	Kicker Kit [HSRK-35]		

Table 2 - Other Considered Equipment

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
148.0	160.0	1	dbspectra	DS1F03F36D-N	12 2 2 2 1	1-5/8 7/8 5/8 3/8 2" cond.
	149.0	6	adc	CG-1900DD-FULL-DIN		
		6	communication components inc.	DTMABP7819VG12A		
		6	ericsson	RRUS-11		
		3	kathrein	800 10121 w/ Mount Pipe		
		3	kathrein	860 10025		
		6	kmw communications	AM-X-CD-16-65-00T-RET w/ Mount Pipe		
		12	powerwave technologies	LGP21901		
		1	raycap	DC6-48-60-18-8F		
	148.0	1	tower mounts	Platform Mount [LP 602-1]		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
132.0	132.0	1	tower mounts	Pipe Mount [PM 601-3]	--	--
	131.0	3	alcatel lucent	800 EXTERNAL NOTCH FILTER		
		3	alcatel lucent	800MHZ RRH		
		3	alcatel lucent	TME-1900MHZ RRH		
130.0	133.0	1	pctel	GPS-TMG-HR-26NCM	1 3 1	1/2 1-5/8 1-1/4
	130.0	3	alcatel lucent	TD-RRH8X20-25		
		3	rfs celwave	APXVSPP18-C-A20 w/ Mount Pipe		
		3	rfs celwave	APXVTM14-C-120 w/ Mount Pipe		
		1	tower mounts	T-Arm Mount [TA 602-3]		
122.0	123.0	3	ericsson	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	7	1-5/8
		3	ericsson	RADIO 4449 B12/B71		
		3	rfs celwave	APXVAARR24_43-U-NA20 w/ Mount Pipe		
	122.0	1	tower mounts	T-Arm Mount [TA 702-3]		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	FDH, 15BBNL1600, 2/18/2016	6133952	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	FDH, 16BBMT1500, 2/17/2016 (mapped)	6133920	CCISITES
4-TOWER MANUFACTURER DRAWINGS	FDH, 16BBMW1500, 3/11/2016 (mapped)	6133951	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	B+T, 83154.003A, 2/21/2012	5135907	CCISITES
4-POST-MODIFICATION INSPECTION	B+T, 83154.004, 8/3/2012	5135928	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	B+T, 84427.0002, 7/19/2012	4945157	CCISITES

3.1) Analysis Method

tnxTower (version 8.0.5.0), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

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

3.2) Assumptions

1) Tower and structures were built in accordance with the manufacturer's specifications.
2) The tower and structures have been maintained in accordance with the manufacturer's specification.
3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
4) Tower was modified in accordance with the referenced modification documents.
5) The rebar in the pad portion of the original foundation is unknown. In this analysis, it is assumed that the rebar at the top and bottom of the pad is consistent with the rebar added per PMI document #5135928 (#7 spaced 12" O.C.).
6) The monopole manufacturer drawings are not available at the time of this analysis. Therefore, we have assumed the steel yield strength(s) (Fy) as per the following:
   a) Anchor rods: ASTM A615 (Fu = 100 ksi, Fy = 75 ksi)
   b) Pole Shaft: ASTM A572 Gr 65
   c) Base Plate: ASTM A572 Gr 50
7) The existing base plate grout was considered in this analysis. Grout must be maintained and inspected periodically and must be replaced if damaged or cracked. Refer to Crown Castle document ENG-PRC-10012, Base Plate Grout Repair.

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

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
151 - 146	Pole	TP18.526x17.59x0.2188	Pole	5.6%	Pass
146 - 141	Pole	TP19.461x18.526x0.2188	Pole	11.9%	Pass
141 - 136	Pole	TP20.397x19.461x0.2188	Pole	23.1%	Pass
136 - 131	Pole	TP21.332x20.397x0.2188	Pole	33.7%	Pass
131 - 126	Pole	TP22.268x21.332x0.2188	Pole	45.6%	Pass
126 - 125.5	Pole	TP22.361x22.268x0.2188	Pole	46.7%	Pass
125.5 - 125.25	Pole + Reinf.	TP22.408x22.361x0.3626	Reinf. 11 Tension Rupture	40.8%	Pass
125.25 - 120.25	Pole + Reinf.	TP23.343x22.408x0.3563	Reinf. 11 Tension Rupture	51.2%	Pass
120.25 - 118.5	Pole + Reinf.	TP23.671x23.343x0.3563	Reinf. 11 Tension Rupture	54.8%	Pass
118.5 - 118.25	Pole + Reinf.	TP23.718x23.671x0.6438	Reinf. 9 Bolt-Shaft Bearing	33.5%	Pass
118.25 - 117.5	Pole + Reinf.	TP23.858x23.718x0.6438	Reinf. 9 Tension Rupture	33.7%	Pass
117.5 - 117.25	Pole + Reinf.	TP23.905x23.858x0.4938	Reinf. 9 Tension Rupture	42.9%	Pass
117.25 - 112.25	Pole + Reinf.	TP24.84x23.905x0.4813	Reinf. 9 Tension Rupture	50.4%	Pass
112.25 - 107.25	Pole + Reinf.	TP25.776x24.84x0.4688	Reinf. 9 Tension Rupture	57.4%	Pass
107.25 - 102.25	Pole + Reinf.	TP26.711x25.776x0.4563	Reinf. 9 Tension Rupture	63.8%	Pass
102.25 - 100.92	Pole + Reinf.	TP27.6x26.711x0.4563	Reinf. 9 Tension Rupture	65.4%	Pass
100.92 - 95.92	Pole + Reinf.	TP27.459x26.523x0.55	Reinf. 9 Tension Rupture	60.5%	Pass
95.92 - 92.5	Pole + Reinf.	TP28.098x27.459x0.55	Reinf. 9 Tension Rupture	63.6%	Pass
92.5 - 92.25	Pole + Reinf.	TP28.145x28.098x0.55	Reinf. 8 Tension Rupture	63.8%	Pass
92.25 - 87.25	Pole + Reinf.	TP29.08x28.145x0.5375	Reinf. 8 Tension Rupture	67.9%	Pass
87.25 - 87	Pole + Reinf.	TP29.127x29.08x0.625	Reinf. 7 Tension Rupture	58.4%	Pass
87 - 82	Pole + Reinf.	TP30.063x29.127x0.6125	Reinf. 7 Tension Rupture	61.9%	Pass
82 - 77	Pole + Reinf.	TP30.998x30.063x0.6	Reinf. 7 Tension Rupture	65.2%	Pass
77 - 72	Pole + Reinf.	TP31.934x30.998x0.5875	Reinf. 7 Tension Rupture	68.2%	Pass
72 - 67	Pole + Reinf.	TP32.869x31.934x0.575	Reinf. 7 Tension Rupture	71.1%	Pass

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
67 - 63.25	Pole + Reinf.	TP33.571x32.869x0.575	Reinf. 7 Tension Rupture	73.1%	Pass
63.25 - 63	Pole + Reinf.	TP33.618x33.571x0.575	Reinf. 6 Tension Rupture	73.3%	Pass
63 - 58	Pole + Reinf.	TP34.553x33.618x0.5625	Reinf. 6 Tension Rupture	75.8%	Pass
58 - 56.75	Pole + Reinf.	TP34.787x34.553x0.5625	Reinf. 6 Tension Rupture	76.4%	Pass
56.75 - 56.5	Pole + Reinf.	TP34.834x34.787x0.6375	Reinf. 5 Bolt Shear	66.4%	Pass
56.5 - 52	Pole + Reinf.	TP36.518x34.834x0.6375	Reinf. 5 Compression	66.1%	Pass
52 - 47	Pole + Reinf.	TP35.987x35.051x0.7	Reinf. 5 Compression	63.6%	Pass
47 - 42	Pole + Reinf.	TP36.922x35.987x0.6875	Reinf. 5 Compression	65.4%	Pass
42 - 37	Pole + Reinf.	TP37.858x36.922x0.675	Reinf. 5 Compression	67.0%	Pass
37 - 34.25	Pole + Reinf.	TP38.372x37.858x0.675	Reinf. 5 Bolt Shear	70.3%	Pass
34.25 - 34	Pole + Reinf.	TP38.419x38.372x0.675	Reinf. 4 Bolt Shear	70.4%	Pass
34 - 29	Pole + Reinf.	TP39.354x38.419x0.6625	Reinf. 4 Compression	69.4%	Pass
29 - 26.75	Pole + Reinf.	TP39.775x39.354x0.6625	Reinf. 4 Bolt Shear	72.6%	Pass
26.75 - 26.5	Pole + Reinf.	TP39.822x39.775x0.6625	Reinf. 1 Bolt Shear	72.7%	Pass
26.5 - 21.5	Pole + Reinf.	TP40.757x39.822x0.65	Reinf. 1 Compression	71.5%	Pass
21.5 - 16.75	Pole + Reinf.	TP41.646x40.757x0.65	Reinf. 1 Compression	72.8%	Pass
16.75 - 16.5	Pole + Reinf.	TP41.693x41.646x0.7625	Reinf. 2 Compression	66.9%	Pass
16.5 - 14.25	Pole + Reinf.	TP42.114x41.693x0.7625	Reinf. 2 Compression	67.5%	Pass
14.25 - 14	Pole + Reinf.	TP42.161x42.114x0.725	Reinf. 2 Compression	67.9%	Pass
14 - 9	Pole + Reinf.	TP43.096x42.161x0.7125	Reinf. 2 Compression	69.1%	Pass
9 - 4.25	Pole + Reinf.	TP43.985x43.096x0.7125	Reinf. 2 Bolt Shear	72.7%	Pass
4.25 - 4	Pole + Reinf.	TP44.032x43.985x0.6	Reinf. 10 Connection	74.0%	Pass
4 - 0	Pole + Reinf.	TP44.78x44.032x0.6	Reinf. 10 Connection	74.8%	Pass
				Summary	
			Pole	64.6%	Pass
			Reinforcement	76.4%	Pass
			Overall	76.4%	Pass

Table 5 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	60.6	Pass
1	Base Plate	0	56.6	Pass
1	Base Foundation Steel	0	47.2	Pass
1	Base Foundation Soil Interaction	0	32.3	Pass
Structure Rating (max from all components) =				**76.4%**

Notes:

- All structural ratings are per TIA-222-H Section 15.5

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

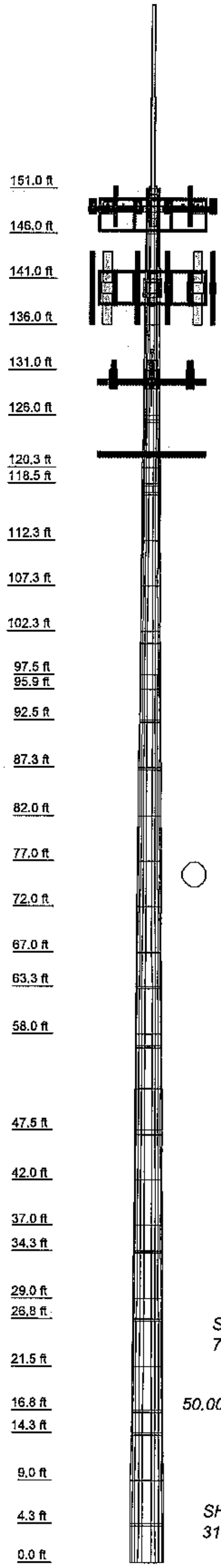
4.1) Recommendations

The tower and its foundation have sufficient capacity to carry the proposed load configuration. No modifications are required at this time.

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	5.00	12	0.2188		17.5900	18.5255	A572-65	0.2
2	5.00	12	0.2188		18.5255	19.4610		0.2
3	5.00	12	0.2188		19.4610	20.3965		0.2
4	5.00	12	0.2188		20.3965	21.3321		0.2
5	[illegible]	12	[illegible]		[illegible]	[illegible]		0.3
[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]
8	5.000	12	[illegible]		[illegible]	[illegible]		0.4
[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]
13	5.000	12	[illegible]		[illegible]	[illegible]		0.6
14	5.00	12	0.4688		24.8402	25.7757		0.6
15	5.00	12	0.4563		25.7757	26.7113		0.6
16	[illegible]	12	[illegible]	3.42	[illegible]	[illegible]		0.6
17	[illegible]	12	[illegible]		[illegible]	[illegible]		[illegible]
18	[illegible]	12	[illegible]		[illegible]	[illegible]		0.5
[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]
20	5.000	12	[illegible]		[illegible]	[illegible]		0.8
21	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]
22	5.000	12	[illegible]		[illegible]	[illegible]		0.9
23	5.00	12	0.6000		30.0626	30.9981		0.9
24	5.00	12	0.5875		30.9981	31.9337		0.9
25	5.00	12	0.5750		31.9337	32.8692		1.0
26	[illegible]	12	[illegible]		[illegible]	[illegible]		0.7
27	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]
28	5.000	12	[illegible]		[illegible]	[illegible]		1.0
[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]
31	[illegible]	12	0.6375	4.50	[illegible]	[illegible]		2.1
32	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]
33	5.00	12	[illegible]		[illegible]	[illegible]		1.3
34	5.00	12	0.6750		[illegible]	[illegible]		1.3
35	[illegible]	12	[illegible]		[illegible]	[illegible]		0.7
[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]
37	5.000	12	[illegible]		[illegible]	[illegible]		1.3
38	[illegible]	12	[illegible]		[illegible]	[illegible]		0.6
[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]
40	5.000	12	[illegible]		[illegible]	[illegible]		1.4
41	[illegible]	12	[illegible]		[illegible]	[illegible]		1.3
[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]
45	5.000	12	[illegible]		[illegible]	[illegible]		1.6
46	[illegible]	12	[illegible]		[illegible]	[illegible]		1.5
47	[illegible]	12	[illegible]		[illegible]	[illegible]		[illegible]
48	[illegible]	12	[illegible]		[illegible]	[illegible]		1.1
								29.0



MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in New Haven County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-H Standard.
3. Tower designed for a 125.00 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50.00 mph basic wind with 1.50 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60.00 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TIA-222-H Annex S

ALL REACTIONS ARE FACTORED

AXIAL 82 K
SHEAR 7 K
MOMENT 835 kip-ft
TORQUE 1 kip-ft
50.00 mph WIND - 1.5000 in ICE

AXIAL 51 K
SHEAR 31 K
MOMENT 3232 kip-ft
TORQUE 4 kip-ft
REACTIONS - 125.00 mph WIND

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

Job: **151 Ft. Monopole | Bethany, CT**		
Project: **PJF 37519-2490.001.7805 | BU 841295**		
Client: Crown Castle	Drawn by: apike	App'd:
Code: TIA-222-H	Date: 06/07/19	Scale: NTS
Path: [illegible]		Dwg No. E-1

Tower Input Data

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

1) Tower is located in New Haven County, Connecticut.
2) Tower base elevation above sea level: 741.00 ft.
3) Basic wind speed of 125.00 mph.
4) Risk Category II.
5) Exposure Category B.
6) Simplified Topographic Factor Procedure for wind speed-up calculations is used.
7) Topographic Category: 1.
8) Crest Height: 0.00 ft.
9) Nominal ice thickness of 1.5000 in.
10) Ice thickness is considered to increase with height.
11) Ice density of 56.00 pcf.
12) A wind speed of 50.00 mph is used in combination with ice.
13) Temperature drop of 50.00 °F.
14) Deflections calculated using a wind speed of 60.00 mph.
15) TIA-222-H Annex S.
16) A non-linear (P-delta) analysis was used.
17) Pressures are calculated at each section.
18) Stress ratio used in pole design is 1.05.
19) Tower analysis based on target reliabilities in accordance with Annex S.
20) Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.
21) Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

Consider Moments - Legs	Distribute Leg Loads As Uniform	Use ASCE 10 X-Brace Ly Rules
Consider Moments - Horizontals	Assume Legs Pinned	Calculate Redundant Bracing Forces
Consider Moments - Diagonals	√ Assume Rigid Index Plate	Ignore Redundant Members in FEA
Use Moment Magnification	√ Use Clear Spans For Wind Area	SR Leg Bolts Resist Compression
Use Code Stress Ratios	Use Clear Spans For KL/r	All Leg Panels Have Same Allowable
√ Use Code Safety Factors - Guys	Retension Guys To Initial Tension	Offset Girt At Foundation
Escalate Ice	√ Bypass Mast Stability Checks	√ Consider Feed Line Torque
Always Use Max Kz	√ Use Azimuth Dish Coefficients	Include Angle Block Shear Check
Use Special Wind Profile	√ Project Wind Area of Appurt.	Use TIA-222-H Bracing Resist. Exemption
Include Bolts In Member Capacity	Autocalc Torque Arm Areas	Use TIA-222-H Tension Splice Exemption
Leg Bolts Are At Top Of Section	Add IBC .6D+W Combination	Poles
Secondary Horizontal Braces Leg	Sort Capacity Reports By Component	√ Include Shear-Torsion Interaction
Use Diamond Inner Bracing (4 Sided)	Triangulate Diamond Inner Bracing	Always Use Sub-Critical Flow
SR Members Have Cut Ends	Treat Feed Line Bundles As Cylinder	Use Top Mounted Sockets
SR Members Are Concentric	Ignore KL/ry For 60 Deg. Angle Legs	Pole Without Linear Attachments
		Pole With Shroud Or No Appurtenances
		Outside and Inside Corner Radii Are Known

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	151.00-146.00	5.00	0.00	12	17.5900	18.5255	0.2188	0.8752	A572-65 (65 ksi)
L2	146.00-141.00	5.00	0.00	12	18.5255	19.4610	0.2188	0.8752	A572-65 (65 ksi)
L3	141.00-136.00	5.00	0.00	12	19.4610	20.3965	0.2188	0.8752	A572-65 (65 ksi)
L4	136.00-131.00	5.00	0.00	12	20.3965	21.3321	0.2188	0.8752	A572-65 (65 ksi)

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L5	131.00-126.00	5.00	0.00	12	21.3321	22.2676	0.2188	0.8752	A572-65 (65 ksi)
L6	126.00-125.50	0.50	0.00	12	22.2676	22.3611	0.2188	0.8752	A572-65 (65 ksi)
L7	125.50-125.25	0.25	0.00	12	22.3611	22.4079	0.3625	1.4502	A572-65 (65 ksi)
L8	125.25-120.25	5.00	0.00	12	22.4079	23.3434	0.3563	1.4252	A572-65 (65 ksi)
L9	120.25-118.50	1.75	0.00	12	23.3434	23.6708	0.3563	1.4252	A572-65 (65 ksi)
L10	118.50-118.25	0.25	0.00	12	23.6708	23.7176	0.6438	2.5752	A572-65 (65 ksi)
L11	118.25-117.50	0.75	0.00	12	23.7176	23.8579	0.6438	2.5752	A572-65 (65 ksi)
L12	117.50-117.25	0.25	0.00	12	23.8579	23.9047	0.4938	1.9752	A572-65 (65 ksi)
L13	117.25-112.25	5.00	0.00	12	23.9047	24.8402	0.4813	1.9252	A572-65 (65 ksi)
L14	112.25-107.25	5.00	0.00	12	24.8402	25.7757	0.4688	1.8752	A572-65 (65 ksi)
L15	107.25-102.25	5.00	0.00	12	25.7757	26.7113	0.4563	1.8252	A572-65 (65 ksi)
L16	102.25-97.50	4.75	3.42	12	26.7113	27.6000	0.4563	1.8252	A572-65 (65 ksi)
L17	97.50-95.92	5.00	0.00	12	26.5233	27.4588	0.5500	2.2000	A572-65 (65 ksi)
L18	95.92-92.50	3.42	0.00	12	27.4588	28.0980	0.5500	2.2000	A572-65 (65 ksi)
L19	92.50-92.25	0.25	0.00	12	28.0980	28.1447	0.5500	2.2000	A572-65 (65 ksi)
L20	92.25-87.25	5.00	0.00	12	28.1447	29.0803	0.5375	2.1500	A572-65 (65 ksi)
L21	87.25-87.00	0.25	0.00	12	29.0803	29.1271	0.6250	2.5000	A572-65 (65 ksi)
L22	87.00-82.00	5.00	0.00	12	29.1271	30.0626	0.6125	2.4500	A572-65 (65 ksi)
L23	82.00-77.00	5.00	0.00	12	30.0626	30.9981	0.6000	2.4000	A572-65 (65 ksi)
L24	77.00-72.00	5.00	0.00	12	30.9981	31.9337	0.5875	2.3500	A572-65 (65 ksi)
L25	72.00-67.00	5.00	0.00	12	31.9337	32.8692	0.5750	2.3000	A572-65 (65 ksi)
L26	67.00-63.25	3.75	0.00	12	32.8692	33.5709	0.5750	2.3000	A572-65 (65 ksi)
L27	63.25-63.00	0.25	0.00	12	33.5709	33.6176	0.5750	2.3000	A572-65 (65 ksi)
L28	63.00-58.00	5.00	0.00	12	33.6176	34.5532	0.5625	2.2500	A572-65 (65 ksi)
L29	58.00-56.75	1.25	0.00	12	34.5532	34.7871	0.5625	2.2500	A572-65 (65 ksi)
L30	56.75-56.50	0.25	0.00	12	34.7871	34.8338	0.6375	2.5500	A572-65 (65 ksi)
L31	56.50-47.50	9.00	4.50	12	34.8338	36.5180	0.6375	2.5500	A572-65 (65 ksi)
L32	47.50-47.00	5.00	0.00	12	35.0510	35.9865	0.7000	2.8000	A572-65 (65 ksi)
L33	47.00-42.00	5.00	0.00	12	35.9865	36.9220	0.6875	2.7500	A572-65 (65 ksi)
L34	42.00-37.00	5.00	0.00	12	36.9220	37.8575	0.6750	2.7000	A572-65 (65 ksi)
L35	37.00-34.25	2.75	0.00	12	37.8575	38.3718	0.6750	2.7000	A572-65 (65 ksi)
L36	34.25-34.00	0.25	0.00	12	38.3718	38.4186	0.6750	2.7000	A572-65 (65 ksi)
L37	34.00-29.00	5.00	0.00	12	38.4186	39.3541	0.6625	2.6500	A572-65 (65 ksi)
L38	29.00-26.75	2.25	0.00	12	39.3541	39.7751	0.6625	2.6500	A572-65 (65 ksi)
L39	26.75-26.50	0.25	0.00	12	39.7751	39.8219	0.6625	2.6500	A572-65

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L40	26.50-21.50	5.00	0.00	12	39.8219	40.7574	0.6500	2.6000	(65 ksi) A572-65 (65 ksi)
L41	21.50-16.75	4.75	0.00	12	40.7574	41.6461	0.6500	2.6000	A572-65 (65 ksi)
L42	16.75-16.50	0.25	0.00	12	41.6461	41.6929	0.7625	3.0500	A572-65 (65 ksi)
L43	16.50-14.25	2.25	0.00	12	41.6929	42.1138	0.7625	3.0500	A572-65 (65 ksi)
L44	14.25-14.00	0.25	0.00	12	42.1138	42.1606	0.7250	2.9000	A572-65 (65 ksi)
L45	14.00-9.00	5.00	0.00	12	42.1606	43.0961	0.7125	2.8500	A572-65 (65 ksi)
L46	9.00-4.25	4.75	0.00	12	43.0961	43.9848	0.7125	2.8500	A572-65 (65 ksi)
L47	4.25-4.00	0.25	0.00	12	43.9848	44.0316	0.6000	2.4000	A572-65 (65 ksi)
L48	4.00-0.00	4.00		12	44.0316	44.7800	0.6000	2.4000	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	18.1333	12.2386	471.3881	6.2189	9.1116	51.7348	955.1601	6.0235	4.1277	18.865
	19.1018	12.8977	551.7220	6.5538	9.5962	57.4937	1117.9384	6.3479	4.3785	20.011
L2	19.1018	12.8977	551.7220	6.5538	9.5962	57.4937	1117.9384	6.3479	4.3785	20.011
	20.0704	13.5568	640.7007	6.8887	10.0808	63.5565	1298.2334	6.6723	4.6292	21.157
L3	20.0704	13.5568	640.7007	6.8887	10.0808	63.5565	1298.2334	6.6723	4.6292	21.157
	21.0389	14.2159	738.7659	7.2236	10.5654	69.9231	1496.9400	6.9967	4.8799	22.303
L4	21.0389	14.2159	738.7659	7.2236	10.5654	69.9231	1496.9400	6.9967	4.8799	22.303
	22.0074	14.8750	846.3593	7.5585	11.0500	76.5936	1714.9535	7.3210	5.1306	23.449
L5	22.0074	14.8750	846.3593	7.5585	11.0500	76.5936	1714.9535	7.3210	5.1306	23.449
	22.9759	15.5342	963.9228	7.8935	11.5346	83.5679	1953.1689	7.6454	5.3813	24.595
L6	22.9759	15.5342	963.9228	7.8935	11.5346	83.5679	1953.1689	7.6454	5.3813	24.595
	23.0728	15.6001	976.2445	7.9270	11.5831	84.2821	1978.1360	7.6779	5.4064	24.709
L7	23.0220	25.6814	1586.3287	7.8755	11.5831	136.9525	3214.3320	12.6396	5.0211	13.85
	23.0705	25.7360	1596.4693	7.8922	11.6073	137.5402	3234.8795	12.6665	5.0337	13.884
L8	23.0727	25.2995	1570.2825	7.8945	11.6073	135.2842	3181.8181	12.4516	5.0504	14.175
	24.0412	26.3728	1778.7333	8.2294	12.0919	147.1014	3604.1959	12.9799	5.3012	14.878
L9	24.0412	26.3728	1778.7333	8.2294	12.0919	147.1014	3604.1959	12.9799	5.3012	14.878
	24.3802	26.7484	1855.8303	8.3466	12.2615	151.3543	3760.4153	13.1648	5.3889	15.125
L10	24.2787	47.7359	3230.7786	8.2437	12.2615	263.4898	6546.4334	23.4942	4.6184	7.174
	24.3272	47.8329	3250.5071	8.2604	12.2857	264.5759	6586.4086	23.5419	4.6309	7.193
L11	24.3272	47.8329	3250.5071	8.2604	12.2857	264.5759	6586.4086	23.5419	4.6309	7.193
	24.4725	48.1238	3310.1739	8.3107	12.3584	267.8478	6707.3098	23.6850	4.6685	7.252
L12	24.5254	37.1498	2588.4664	8.3644	12.3584	209.4497	5244.9346	18.2840	5.0705	10.268
	24.5738	37.2242	2604.0441	8.3811	12.3826	210.2979	5276.4993	18.3206	5.0831	10.294
L13	24.5782	36.3013	2542.1934	8.3856	12.3826	205.3029	5151.1730	17.8664	5.1166	10.631
	25.5467	37.7511	2859.1208	8.7205	12.8672	222.2015	5793.3538	18.5800	5.3673	11.152
L14	25.5511	36.7896	2789.1550	8.7250	12.8672	216.7640	5651.5843	18.1067	5.4008	11.52
	26.5196	38.2017	3122.8328	9.0599	13.3518	233.8879	6327.7058	18.8017	5.6515	12.055
L15	26.5241	37.2015	3044.0724	9.0644	13.3518	227.9890	6168.1159	18.3095	5.6850	12.459
	27.4926	38.5760	3394.1142	9.3993	13.8364	245.3027	6877.3957	18.9860	5.9357	13.008
L16	27.4926	38.5760	3394.1142	9.3993	13.8364	245.3027	6877.3957	18.9860	5.9357	13.008
	28.4127	39.8819	3750.5886	9.7174	14.2968	262.3376	7599.7094	19.6286	6.1739	13.53
L17	27.9266	45.9986	3960.8075	9.2984	13.7390	288.2884	8025.6699	22.6391	5.6342	10.244
	28.2334	47.6555	4404.4058	9.6333	14.2237	309.6536	8924.5203	23.4546	5.8850	10.7
L18	28.2334	47.6555	4404.4058	9.6333	14.2237	309.6536	8924.5203	23.4546	5.8850	10.7
	28.8951	48.7874	4725.7713	9.8622	14.5547	324.6895	9575.6939	24.0117	6.0563	11.011
L19	28.8951	48.7874	4725.7713	9.8622	14.5547	324.6895	9575.6939	24.0117	6.0563	11.011
	28.9436	48.8703	4749.8856	9.8789	14.5790	325.8039	9624.5559	24.0525	6.0688	11.034
L20	28.9480	47.7812	4648.2446	9.8834	14.5790	318.8321	9418.6039	23.5165	6.1023	11.353
	29.9165	49.4004	5136.9910	10.2183	15.0636	341.0206	10408.936 5	24.3134	6.3530	11.82
L21	29.8856	57.2662	5918.4793	10.1870	15.0636	392.8999	11992.443 6	28.1847	6.1185	9.79

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
	29.9341	57.3604	5947.7151	10.2037	15.0878	394.2066	12051.6832	28.2310	6.1310	9.81
L22	29.9385	56.2378	5836.4330	10.2082	15.0878	386.8310	11826.1956	27.6785	6.1645	10.065
	30.9070	58.0829	6429.9530	10.5431	15.5724	412.9064	13028.8279	28.5867	6.4153	10.474
L23	30.9114	56.9217	6306.7533	10.5476	15.5724	404.9950	12779.1919	28.0151	6.4488	10.748
	31.8800	58.7292	6926.8161	10.8825	16.0570	431.3883	14035.6074	28.9047	6.6995	11.166
L24	31.8844	57.5293	6790.8780	10.8870	16.0570	422.9224	13760.1599	28.3142	6.7330	11.46
	32.8529	59.2991	7437.0912	11.2219	16.5416	449.5982	15069.5632	29.1852	6.9837	11.887
L25	32.8573	58.0606	7287.5666	11.2264	16.5416	440.5589	14766.5856	28.5756	7.0172	12.204
	33.8259	59.7927	7959.4601	11.5613	17.0263	467.4817	16128.0240	29.4282	7.2679	12.64
L26	33.8259	59.7927	7959.4601	11.5613	17.0263	467.4817	16128.0240	29.4282	7.2679	12.64
	34.5523	61.0918	8489.6181	11.8125	17.3897	488.1979	17202.2679	30.0675	7.4560	12.967
L27	34.5523	61.0918	8489.6181	11.8125	17.3897	488.1979	17202.2679	30.0675	7.4560	12.967
	34.6007	61.1784	8525.7755	11.8293	17.4139	489.5949	17275.5327	30.1102	7.4685	12.989
L28	34.6051	59.8711	8349.9017	11.8337	17.4139	479.4953	16919.1646	29.4667	7.5020	13.337
	35.5737	61.5656	9079.1230	12.1687	17.8985	507.2547	18396.7647	30.3007	7.7528	13.783
L29	35.5737	61.5656	9079.1230	12.1687	17.8985	507.2547	18396.7647	30.3007	7.7528	13.783
	35.8158	61.9892	9267.8319	12.2524	18.0197	514.3167	18779.1401	30.5092	7.8154	13.894
L30	35.7893	70.1005	10434.6414	12.2255	18.0197	579.0686	21143.4125	34.5013	7.6144	11.944
	35.8378	70.1965	10477.5793	12.2423	18.0439	580.6706	21230.4162	34.5486	7.6270	11.964
L31	35.8378	70.1965	10477.5793	12.2423	18.0439	580.6706	21230.4162	34.5486	7.6270	11.964
	37.5813	73.6537	12103.1236	12.8452	18.9163	639.8243	24524.2098	36.2501	8.0783	12.672
L32	36.9122	77.4272	11661.6113	12.2977	18.1564	642.2856	23629.5861	38.1073	7.5177	10.74
	37.0090	79.5358	12640.5522	12.6326	18.6410	678.1044	25613.1859	39.1451	7.7684	11.098
L33	37.0135	78.1432	12428.0264	12.6370	18.6410	666.7034	25182.5508	38.4597	7.8019	11.348
	37.9820	80.2141	13442.5504	12.9720	19.1256	702.8564	27238.2515	39.4790	8.0526	11.713
L34	37.9864	78.7829	13211.8042	12.9764	19.1256	690.7916	26770.6971	38.7745	8.0861	11.979
	38.9549	80.8162	14261.3810	13.3113	19.6102	727.2434	28897.4244	39.7753	8.3368	12.351
L35	38.9549	80.8162	14261.3810	13.3113	19.6102	727.2434	28897.4244	39.7753	8.3368	12.351
	39.4873	81.9341	14861.4278	13.4955	19.8766	747.6841	30113.2819	40.3255	8.4747	12.555
L36	39.4873	81.9341	14861.4278	13.4955	19.8766	747.6841	30113.2819	40.3255	8.4747	12.555
	39.5358	82.0358	14916.8174	13.5122	19.9008	749.5570	30225.5162	40.3755	8.4872	12.574
L37	39.5402	80.5432	14655.1310	13.5167	19.9008	736.4075	29695.2685	39.6409	8.5207	12.861
	40.5087	82.5389	15771.6919	13.8516	20.3854	773.6747	31957.7238	40.6231	8.7714	13.24
L38	40.5087	82.5389	15771.6919	13.8516	20.3854	773.6747	31957.7238	40.6231	8.7714	13.24
	40.9445	83.4369	16292.1125	14.0023	20.6035	790.7450	33012.2369	41.0651	8.8842	13.41

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
L39	40.9445	83.4369	16292.1125	14.0023	20.6035	790.7450	33012.2369	41.0651	8.8842	13.41
	40.9929	83.5367	16350.6338	14.0191	20.6277	792.6533	33130.8169	41.1142	8.8968	13.429
L40	40.9973	81.9867	16057.4985	14.0235	20.6277	778.4425	32536.8453	40.3514	8.9303	13.739
	41.9658	83.9447	17235.6414	14.3584	21.1123	816.3786	34924.0822	41.3150	9.1810	14.125
L41	41.9658	83.9447	17235.6414	14.3584	21.1123	816.3786	34924.0822	41.3150	9.1810	14.125
	42.8859	85.8048	18406.9696	14.6766	21.5727	853.2541	37297.5108	42.2305	9.4192	14.491
L42	42.8462	100.3794	21415.5161	14.6363	21.5727	992.7151	43393.6417	49.4037	9.1177	11.958
	42.8946	100.4943	21489.1046	14.6531	21.5969	995.0087	43542.7520	49.4602	9.1302	11.974
L43	42.8946	100.4943	21489.1046	14.6531	21.5969	995.0087	43542.7520	49.4602	9.1302	11.974
	43.3305	101.5279	22159.0019	14.8038	21.8150	1015.7707	44900.1456	49.9689	9.2430	12.122
L44	43.3437	96.6222	21126.5876	14.8172	21.8150	968.4447	42808.1943	47.5545	9.3435	12.888
	43.3921	96.7314	21198.2962	14.8339	21.8392	970.6538	42953.4952	47.6083	9.3560	12.905
L45	43.3965	95.0923	20851.6681	14.8384	21.8392	954.7819	42251.1327	46.8015	9.3895	13.178
	44.3650	97.2386	22295.6615	15.1733	22.3238	998.7403	45177.0549	47.8579	9.6403	13.53
L46	44.3650	97.2386	22295.6615	15.1733	22.3238	998.7403	45177.0549	47.8579	9.6403	13.53
	45.2851	99.2775	23727.7987	15.4915	22.7841	1041.4173	48078.9530	48.8614	9.8784	13.864
L47	45.3248	83.8195	20137.5527	15.5318	22.7841	883.8408	40804.1413	41.2534	10.1799	16.967
	45.3732	83.9099	20202.7561	15.5485	22.8084	885.7606	40936.2612	41.2979	10.1925	16.987
L48	45.3732	83.9099	20202.7561	15.5485	22.8084	885.7606	40936.2612	41.2979	10.1925	16.987
	46.1480	85.3558	21265.2360	15.8164	23.1960	916.7615	43089.1334	42.0095	10.3930	17.322

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 151.00-146.00				1	1	1			
L2 146.00-141.00				1	1	1			
L3 141.00-136.00				1	1	1			
L4 136.00-131.00				1	1	1			
L5 131.00-126.00				1	1	1			
L6 126.00-125.50				1	1	1			
L7 125.50-125.25				1	1	0.948306			
L8 125.25-120.25				1	1	0.950399			
L9 120.25-118.50				1	1	0.945676			
L10 118.50-118.25				1	1	0.906367			
L11 118.25-117.50				1	1	0.902943			

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
L12 117.50-117.25				1	1	0.932549			
L13 117.25-112.25				1	1	0.936991			
L14 112.25-107.25				1	1	0.943192			
L15 107.25-102.25				1	1	0.951126			
L16 102.25-97.50				1	1	0.946685			
L17 97.50-95.92				1	1	0.951449			
L18 95.92-92.50				1	1	0.942557			
L19 92.50-92.25				1	1	0.941922			
L20 92.25-87.25				1	1	0.95087			
L21 87.25-87.00				1	1	0.931036			
L22 87.00-82.00				1	1	0.935662			
L23 82.00-77.00				1	1	0.941395			
L24 77.00-72.00				1	1	0.948222			
L25 72.00-67.00				1	1	0.956139			
L26 67.00-63.25				1	1	0.947363			
L27 63.25-63.00				1	1	0.946792			
L28 63.00-58.00				1	1	0.956128			
L29 58.00-56.75				1	1	0.953391			
L30 56.75-56.50				1	1	0.949588			
L31 56.50-47.50				1	1	0.938546			
L32 47.50-47.00				1	1	0.941986			
L33 47.00-42.00				1	1	0.948102			
L34 42.00-37.00				1	1	0.955017			
L35 37.00-34.25				1	1	0.949567			
L36 34.25-34.00				1	1	0.949078			
L37 34.00-29.00				1	1	0.956979			
L38 29.00-26.75				1	1	0.952771			
L39 26.75-26.50				1	1	0.952309			
L40 26.50-21.50				1	1	0.961137			
L41 21.50-16.75				1	1	0.952808			
L42 16.75-16.50				1	1	1.02585			
L43 16.50-14.25				1	1	1.02042			
L44 14.25-14.00				1	1	0.961601			

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_r	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
L45 14.00-9.00				1	1	0.968203			
L46 9.00-4.25				1	1	0.959127			
L47 4.25-4.00				1	1	1.0012			
L48 4.00-0.00				1	1	0.994823			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
***										
AL7-50(1-5/8)	B	No	Surface Ar (CaAa)	122.00 - 0.00	7	4	0.042 0.167	1.9600		0.52
**********										
****										
MS-850 (L)	A	No	Surface Af (CaAa)	30.50 - 10.50	1	1	0.250 0.250	8.5000	19.5000	0.00
MS-850 (L)	C	No	Surface Af (CaAa)	30.50 - 0.50	1	1	0.250 0.250	8.5000	19.5000	0.00
MS-850 (L)	B	No	Surface Af (CaAa)	30.50 - 0.50	1	1	0.250 0.250	8.5000	19.5000	0.00
MS-850 (L)	B	No	Surface Af (CaAa)	20.50 - 0.50	1	1	-0.500 -0.500	8.5000	19.5000	0.00
MS-850 (L)	A	No	Surface Af (CaAa)	20.50 - 0.50	1	1	0.000 0.000	8.5000	19.5000	0.00
MS-850 (L)	C	No	Surface Af (CaAa)	40.00 - 21.00	1	1	0.000 0.000	8.5000	19.5000	0.00
MS-850 (L)	B	No	Surface Af (CaAa)	40.00 - 21.00	1	1	0.000 0.000	8.5000	19.5000	0.00
MS-850 (L)	A	No	Surface Af (CaAa)	40.00 - 21.00	1	1	0.000 0.000	8.5000	19.5000	0.00
MS-850 (L)	C	No	Surface Af (CaAa)	60.50 - 30.50	1	1	0.250 0.250	8.5000	19.5000	0.00
MS-850 (L)	B	No	Surface Af (CaAa)	60.50 - 30.50	1	1	0.250 0.250	8.5000	19.5000	0.00
MS-850 (L)	A	No	Surface Af (CaAa)	60.50 - 30.50	1	1	0.250 0.250	8.5000	19.5000	0.00
MS-650 (L)	C	No	Surface Af (CaAa)	69.67 - 51.33	1	1	0.000 0.000	6.5000	15.5000	0.00
MS-650 (L)	B	No	Surface Af (CaAa)	69.67 - 51.33	1	1	0.000 0.000	6.5000	15.5000	0.00
MS-650 (L)	A	No	Surface Af (CaAa)	69.67 - 51.33	1	1	0.000 0.000	6.5000	15.5000	0.00
MS-650 (L)	C	No	Surface Af (CaAa)	90.50 - 60.50	1	1	0.250 0.250	6.5000	15.5000	0.00
MS-650 (L)	B	No	Surface Af (CaAa)	90.50 - 60.50	1	1	0.250 0.250	6.5000	15.5000	0.00
MS-650 (L)	A	No	Surface Af (CaAa)	90.50 - 60.50	1	1	0.250 0.250	6.5000	15.5000	0.00
MS-600 (L)	C	No	Surface Af (CaAa)	98.58 - 82.42	1	1	0.000 0.000	6.0000	14.0000	0.00
MS-600 (L)	B	No	Surface Af (CaAa)	98.58 - 82.42	1	1	0.000 0.000	6.0000	14.0000	0.00
MS-600 (L)	A	No	Surface Af (CaAa)	98.58 - 82.42	1	1	0.000 0.000	6.0000	14.0000	0.00
MS-600 (L)	C	No	Surface Af (CaAa)	120.50 - 90.50	1	1	0.250 0.250	6.0000	14.0000	0.00
MS-600 (L)	B	No	Surface Af (CaAa)	120.50 - 90.50	1	1	0.250 0.250	6.0000	14.0000	0.00
MS-600 (L)	A	No	Surface Af (CaAa)	120.50 - 90.50	1	1	0.250 0.250	6.0000	14.0000	0.00
*										
MP3-03 (L)	C	No	Surface Af (CaAa)	125.00 - 115.00	1	1	-0.250 -0.250	4.0600	11.2600	0.00

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
MP3-03 (L)	B	No	Surface Af (CaAa)	125.00 - 115.00	1	1	-0.250 -0.250	4.0600	11.2600	0.00
MP3-03 (L)	A	No	Surface Af (CaAa)	125.00 - 115.00	1	1	-0.250 -0.250	4.0600	11.2600	0.00

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
*** ********** *********									
LDF2-50(3/8)	C	No	No	Inside Pole	148.00 - 0.00	2	No Ice	0.00	0.08
							1/2" Ice	0.00	0.08
							1" Ice	0.00	0.08
							2" Ice	0.00	0.08
9776(5/8)	C	No	No	Inside Pole	148.00 - 0.00	2	No Ice	0.00	0.28
							1/2" Ice	0.00	0.28
							1" Ice	0.00	0.28
							2" Ice	0.00	0.28
LDF7-50A(1-5/8)	C	No	No	Inside Pole	148.00 - 0.00	12	No Ice	0.00	0.82
							1/2" Ice	0.00	0.82
							1" Ice	0.00	0.82
							2" Ice	0.00	0.82
2" (Nominal) Conduit	C	No	No	Inside Pole	148.00 - 0.00	1	No Ice	0.00	0.72
							1/2" Ice	0.00	0.72
							1" Ice	0.00	0.72
							2" Ice	0.00	0.72
*									
810921-001(7/8)	C	No	No	Inside Pole	148.00 - 0.00	2	No Ice	0.00	0.40
							1/2" Ice	0.00	0.40
							1" Ice	0.00	0.40
							2" Ice	0.00	0.40
***									
LDF7-50A(1-5/8)	C	No	No	Inside Pole	140.00 - 0.00	12	No Ice	0.00	0.82
							1/2" Ice	0.00	0.82
							1" Ice	0.00	0.82
							2" Ice	0.00	0.82
HB158-1-08U8-S8J18(1-5/8)	C	No	No	Inside Pole	140.00 - 0.00	1	No Ice	0.00	1.30
							1/2" Ice	0.00	1.30
							1" Ice	0.00	1.30
							2" Ice	0.00	1.30
***									
LDF4-50A(1/2)	C	No	No	Inside Pole	130.00 - 0.00	1	No Ice	0.00	0.15
							1/2" Ice	0.00	0.15
							1" Ice	0.00	0.15
							2" Ice	0.00	0.15
LDF7-50A(1-5/8)	C	No	No	Inside Pole	130.00 - 0.00	3	No Ice	0.00	0.82
							1/2" Ice	0.00	0.82
							1" Ice	0.00	0.82
							2" Ice	0.00	0.82
HB114-21U3M12-XXXF(1-1/4)	C	No	No	Inside Pole	130.00 - 0.00	1	No Ice	0.00	1.22
							1/2" Ice	0.00	1.22
							1" Ice	0.00	1.22
							2" Ice	0.00	1.22

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	151.00-146.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		C	0.000	0.000	0.000	0.000	0.02
L2	146.00-141.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.06
L3	141.00-136.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.10
L4	136.00-131.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.12
L5	131.00-126.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.13
L6	126.00-125.50	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.01
L7	125.50-125.25	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.01
L8	125.25-120.25	A	0.000	0.000	3.464	0.000	0.00
		B	0.000	0.000	4.836	0.000	0.01
		C	0.000	0.000	3.464	0.000	0.14
L9	120.25-118.50	A	0.000	0.000	2.934	0.000	0.00
		B	0.000	0.000	4.306	0.000	0.01
		C	0.000	0.000	2.934	0.000	0.05
L10	118.50-118.25	A	0.000	0.000	0.419	0.000	0.00
		B	0.000	0.000	0.615	0.000	0.00
		C	0.000	0.000	0.419	0.000	0.01
L11	118.25-117.50	A	0.000	0.000	1.258	0.000	0.00
		B	0.000	0.000	1.846	0.000	0.00
		C	0.000	0.000	1.258	0.000	0.02
L12	117.50-117.25	A	0.000	0.000	0.419	0.000	0.00
		B	0.000	0.000	0.615	0.000	0.00
		C	0.000	0.000	0.419	0.000	0.01
L13	117.25-112.25	A	0.000	0.000	6.523	0.000	0.00
		B	0.000	0.000	10.443	0.000	0.02
		C	0.000	0.000	6.523	0.000	0.14
L14	112.25-107.25	A	0.000	0.000	5.000	0.000	0.00
		B	0.000	0.000	8.920	0.000	0.02
		C	0.000	0.000	5.000	0.000	0.14
L15	107.25-102.25	A	0.000	0.000	5.000	0.000	0.00
		B	0.000	0.000	8.920	0.000	0.02
		C	0.000	0.000	5.000	0.000	0.14
L16	102.25-97.50	A	0.000	0.000	5.830	0.000	0.00
		B	0.000	0.000	9.554	0.000	0.02
		C	0.000	0.000	5.830	0.000	0.13
L17	97.50-95.92	A	0.000	0.000	3.168	0.000	0.00
		B	0.000	0.000	4.410	0.000	0.01
		C	0.000	0.000	3.168	0.000	0.04
L18	95.92-92.50	A	0.000	0.000	6.832	0.000	0.00
		B	0.000	0.000	9.510	0.000	0.01
		C	0.000	0.000	6.832	0.000	0.09
L19	92.50-92.25	A	0.000	0.000	0.500	0.000	0.00
		B	0.000	0.000	0.696	0.000	0.00
		C	0.000	0.000	0.500	0.000	0.01
L20	92.25-87.25	A	0.000	0.000	10.271	0.000	0.00
		B	0.000	0.000	14.191	0.000	0.02
		C	0.000	0.000	10.271	0.000	0.14
L21	87.25-87.00	A	0.000	0.000	0.521	0.000	0.00
		B	0.000	0.000	0.717	0.000	0.00
		C	0.000	0.000	0.521	0.000	0.01
L22	87.00-82.00	A	0.000	0.000	9.997	0.000	0.00
		B	0.000	0.000	13.917	0.000	0.02
		C	0.000	0.000	9.997	0.000	0.14
L23	82.00-77.00	A	0.000	0.000	5.417	0.000	0.00
		B	0.000	0.000	9.337	0.000	0.02
		C	0.000	0.000	5.417	0.000	0.14
L24	77.00-72.00	A	0.000	0.000	5.417	0.000	0.00
		B	0.000	0.000	9.337	0.000	0.02

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		C	0.000	0.000	5.417	0.000	0.14
L25	72.00-67.00	A	0.000	0.000	8.309	0.000	0.00
		B	0.000	0.000	12.229	0.000	0.02
		C	0.000	0.000	8.309	0.000	0.14
L26	67.00-63.25	A	0.000	0.000	8.125	0.000	0.00
		B	0.000	0.000	11.065	0.000	0.01
		C	0.000	0.000	8.125	0.000	0.10
L27	63.25-63.00	A	0.000	0.000	0.542	0.000	0.00
		B	0.000	0.000	0.738	0.000	0.00
		C	0.000	0.000	0.542	0.000	0.01
L28	63.00-58.00	A	0.000	0.000	11.667	0.000	0.00
		B	0.000	0.000	15.587	0.000	0.02
		C	0.000	0.000	11.667	0.000	0.14
L29	58.00-56.75	A	0.000	0.000	3.125	0.000	0.00
		B	0.000	0.000	4.105	0.000	0.00
		C	0.000	0.000	3.125	0.000	0.03
L30	56.75-56.50	A	0.000	0.000	0.625	0.000	0.00
		B	0.000	0.000	0.821	0.000	0.00
		C	0.000	0.000	0.625	0.000	0.01
L31	56.50-47.50	A	0.000	0.000	18.352	0.000	0.00
		B	0.000	0.000	25.409	0.000	0.03
		C	0.000	0.000	18.352	0.000	0.24
L32	47.50-47.00	A	0.000	0.000	0.708	0.000	0.00
		B	0.000	0.000	1.100	0.000	0.00
		C	0.000	0.000	0.708	0.000	0.01
L33	47.00-42.00	A	0.000	0.000	7.083	0.000	0.00
		B	0.000	0.000	11.003	0.000	0.02
		C	0.000	0.000	7.083	0.000	0.14
L34	42.00-37.00	A	0.000	0.000	11.335	0.000	0.00
		B	0.000	0.000	15.255	0.000	0.02
		C	0.000	0.000	11.335	0.000	0.14
L35	37.00-34.25	A	0.000	0.000	7.789	0.000	0.00
		B	0.000	0.000	9.944	0.000	0.01
		C	0.000	0.000	7.789	0.000	0.07
L36	34.25-34.00	A	0.000	0.000	0.708	0.000	0.00
		B	0.000	0.000	0.904	0.000	0.00
		C	0.000	0.000	0.708	0.000	0.01
L37	34.00-29.00	A	0.000	0.000	14.167	0.000	0.00
		B	0.000	0.000	18.087	0.000	0.02
		C	0.000	0.000	14.167	0.000	0.14
L38	29.00-26.75	A	0.000	0.000	6.375	0.000	0.00
		B	0.000	0.000	8.139	0.000	0.01
		C	0.000	0.000	6.375	0.000	0.06
L39	26.75-26.50	A	0.000	0.000	0.708	0.000	0.00
		B	0.000	0.000	0.904	0.000	0.00
		C	0.000	0.000	0.708	0.000	0.01
L40	26.50-21.50	A	0.000	0.000	14.167	0.000	0.00
		B	0.000	0.000	18.087	0.000	0.02
		C	0.000	0.000	14.167	0.000	0.14
L41	21.50-16.75	A	0.000	0.000	12.750	0.000	0.00
		B	0.000	0.000	16.474	0.000	0.02
		C	0.000	0.000	7.438	0.000	0.13
L42	16.75-16.50	A	0.000	0.000	0.708	0.000	0.00
		B	0.000	0.000	0.904	0.000	0.00
		C	0.000	0.000	0.354	0.000	0.01
L43	16.50-14.25	A	0.000	0.000	6.375	0.000	0.00
		B	0.000	0.000	8.139	0.000	0.01
		C	0.000	0.000	3.188	0.000	0.06
L44	14.25-14.00	A	0.000	0.000	0.708	0.000	0.00
		B	0.000	0.000	0.904	0.000	0.00
		C	0.000	0.000	0.354	0.000	0.01
L45	14.00-9.00	A	0.000	0.000	12.042	0.000	0.00
		B	0.000	0.000	18.087	0.000	0.02
		C	0.000	0.000	7.083	0.000	0.14
L46	9.00-4.25	A	0.000	0.000	6.729	0.000	0.00
		B	0.000	0.000	17.182	0.000	0.02
		C	0.000	0.000	6.729	0.000	0.13
L47	4.25-4.00	A	0.000	0.000	0.354	0.000	0.00
		B	0.000	0.000	0.904	0.000	0.00

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		C	0.000	0.000	0.354	0.000	0.01
L48	4.00-0.00	A	0.000	0.000	4.958	0.000	0.00
		B	0.000	0.000	13.053	0.000	0.01
		C	0.000	0.000	4.958	0.000	0.11

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	151.00-146.00	A	1.482	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.02
L2	146.00-141.00	A	1.477	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.06
L3	141.00-136.00	A	1.472	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.10
L4	136.00-131.00	A	1.466	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.12
L5	131.00-126.00	A	1.461	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.13
L6	126.00-125.50	A	1.458	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.01
L7	125.50-125.25	A	1.457	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.01
L8	125.25-120.25	A	1.454	0.000	0.000	4.411	0.000	0.05
		B		0.000	0.000	6.762	0.000	0.08
		C		0.000	0.000	4.411	0.000	0.18
L9	120.25-118.50	A	1.450	0.000	0.000	3.763	0.000	0.04
		B		0.000	0.000	6.112	0.000	0.07
		C		0.000	0.000	3.763	0.000	0.08
L10	118.50-118.25	A	1.449	0.000	0.000	0.537	0.000	0.01
		B		0.000	0.000	0.873	0.000	0.01
		C		0.000	0.000	0.537	0.000	0.01
L11	118.25-117.50	A	1.448	0.000	0.000	1.612	0.000	0.02
		B		0.000	0.000	2.619	0.000	0.03
		C		0.000	0.000	1.612	0.000	0.04
L12	117.50-117.25	A	1.447	0.000	0.000	0.537	0.000	0.01
		B		0.000	0.000	0.873	0.000	0.01
		C		0.000	0.000	0.537	0.000	0.01
L13	117.25-112.25	A	1.444	0.000	0.000	8.378	0.000	0.08
		B		0.000	0.000	15.084	0.000	0.18
		C		0.000	0.000	8.378	0.000	0.21
L14	112.25-107.25	A	1.438	0.000	0.000	6.438	0.000	0.05
		B		0.000	0.000	13.135	0.000	0.15
		C		0.000	0.000	6.438	0.000	0.19
L15	107.25-102.25	A	1.431	0.000	0.000	6.431	0.000	0.05
		B		0.000	0.000	13.120	0.000	0.15
		C		0.000	0.000	6.431	0.000	0.19
L16	102.25-97.50	A	1.424	0.000	0.000	7.465	0.000	0.06
		B		0.000	0.000	13.812	0.000	0.16
		C		0.000	0.000	7.465	0.000	0.19
L17	97.50-95.92	A	1.420	0.000	0.000	4.034	0.000	0.03
		B		0.000	0.000	6.150	0.000	0.07
		C		0.000	0.000	4.034	0.000	0.08
L18	95.92-92.50	A	1.416	0.000	0.000	8.690	0.000	0.07
		B		0.000	0.000	13.247	0.000	0.14
		C		0.000	0.000	8.690	0.000	0.17
L19	92.50-92.25	A	1.413	0.000	0.000	0.636	0.000	0.01
		B		0.000	0.000	0.969	0.000	0.01
		C		0.000	0.000	0.636	0.000	0.01
L20	92.25-87.25	A	1.409	0.000	0.000	12.980	0.000	0.11

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft²	A_F ft²	C_AA_A In Face ft²	C_AA_A Out Face ft²	Weight K
		B		0.000	0.000	19.641	0.000	0.21
		C		0.000	0.000	12.980	0.000	0.24
L21	87.25-87.00	A	1.405	0.000	0.000	0.656	0.000	0.01
		B		0.000	0.000	0.989	0.000	0.01
		C		0.000	0.000	0.656	0.000	0.01
L22	87.00-82.00	A	1.401	0.000	0.000	12.584	0.000	0.10
		B		0.000	0.000	19.235	0.000	0.20
		C		0.000	0.000	12.584	0.000	0.24
L23	82.00-77.00	A	1.392	0.000	0.000	6.809	0.000	0.06
		B		0.000	0.000	13.449	0.000	0.15
		C		0.000	0.000	6.809	0.000	0.19
L24	77.00-72.00	A	1.383	0.000	0.000	6.800	0.000	0.06
		B		0.000	0.000	13.429	0.000	0.15
		C		0.000	0.000	6.800	0.000	0.19
L25	72.00-67.00	A	1.374	0.000	0.000	10.400	0.000	0.08
		B		0.000	0.000	17.017	0.000	0.18
		C		0.000	0.000	10.400	0.000	0.22
L26	67.00-63.25	A	1.365	0.000	0.000	10.150	0.000	0.08
		B		0.000	0.000	15.104	0.000	0.15
		C		0.000	0.000	10.150	0.000	0.18
L27	63.25-63.00	A	1.360	0.000	0.000	0.676	0.000	0.01
		B		0.000	0.000	1.006	0.000	0.01
		C		0.000	0.000	0.676	0.000	0.01
L28	63.00-58.00	A	1.355	0.000	0.000	14.348	0.000	0.11
		B		0.000	0.000	20.941	0.000	0.21
		C		0.000	0.000	14.348	0.000	0.25
L29	58.00-56.75	A	1.348	0.000	0.000	3.792	0.000	0.03
		B		0.000	0.000	5.438	0.000	0.05
		C		0.000	0.000	3.792	0.000	0.06
L30	56.75-56.50	A	1.346	0.000	0.000	0.758	0.000	0.01
		B		0.000	0.000	1.087	0.000	0.01
		C		0.000	0.000	0.758	0.000	0.01
L31	56.50-47.50	A	1.334	0.000	0.000	22.108	0.000	0.17
		B		0.000	0.000	33.931	0.000	0.34
		C		0.000	0.000	22.108	0.000	0.41
L32	47.50-47.00	A	1.322	0.000	0.000	0.842	0.000	0.01
		B		0.000	0.000	1.499	0.000	0.02
		C		0.000	0.000	0.842	0.000	0.02
L33	47.00-42.00	A	1.314	0.000	0.000	8.397	0.000	0.06
		B		0.000	0.000	14.939	0.000	0.15
		C		0.000	0.000	8.397	0.000	0.20
L34	42.00-37.00	A	1.298	0.000	0.000	13.154	0.000	0.10
		B		0.000	0.000	19.677	0.000	0.19
		C		0.000	0.000	13.154	0.000	0.23
L35	37.00-34.25	A	1.285	0.000	0.000	8.969	0.000	0.07
		B		0.000	0.000	12.546	0.000	0.12
		C		0.000	0.000	8.969	0.000	0.14
L36	34.25-34.00	A	1.279	0.000	0.000	0.815	0.000	0.01
		B		0.000	0.000	1.140	0.000	0.01
		C		0.000	0.000	0.815	0.000	0.01
L37	34.00-29.00	A	1.269	0.000	0.000	16.214	0.000	0.12
		B		0.000	0.000	22.776	0.000	0.21
		C		0.000	0.000	16.290	0.000	0.26
L38	29.00-26.75	A	1.254	0.000	0.000	7.210	0.000	0.05
		B		0.000	0.000	10.230	0.000	0.09
		C		0.000	0.000	7.320	0.000	0.11
L39	26.75-26.50	A	1.248	0.000	0.000	0.801	0.000	0.01
		B		0.000	0.000	1.136	0.000	0.01
		C		0.000	0.000	0.813	0.000	0.01
L40	26.50-21.50	A	1.235	0.000	0.000	16.003	0.000	0.12
		B		0.000	0.000	22.682	0.000	0.20
		C		0.000	0.000	16.238	0.000	0.25
L41	21.50-16.75	A	1.207	0.000	0.000	14.508	0.000	0.10
		B		0.000	0.000	20.807	0.000	0.18
		C		0.000	0.000	8.667	0.000	0.19
L42	16.75-16.50	A	1.191	0.000	0.000	0.806	0.000	0.01
		B		0.000	0.000	1.136	0.000	0.01
		C		0.000	0.000	0.414	0.000	0.01
L43	16.50-14.25	A	1.181	0.000	0.000	7.250	0.000	0.05

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft²	A_F ft²	C_AA_A In Face ft²	C_AA_A Out Face ft²	Weight K
		B		0.000	0.000	10.213	0.000	0.09
		C		0.000	0.000	3.719	0.000	0.09
L44	14.25-14.00	A	1.171	0.000	0.000	0.805	0.000	0.01
		B		0.000	0.000	1.133	0.000	0.01
		C		0.000	0.000	0.413	0.000	0.01
L45	14.00-9.00	A	1.147	0.000	0.000	13.665	0.000	0.09
		B		0.000	0.000	22.603	0.000	0.19
		C		0.000	0.000	8.231	0.000	0.19
L46	9.00-4.25	A	1.086	0.000	0.000	7.606	0.000	0.05
		B		0.000	0.000	21.311	0.000	0.17
		C		0.000	0.000	7.761	0.000	0.18
L47	4.25-4.00	A	1.036	0.000	0.000	0.399	0.000	0.00
		B		0.000	0.000	1.115	0.000	0.01
		C		0.000	0.000	0.406	0.000	0.01
L48	4.00-0.00	A	0.963	0.000	0.000	5.561	0.000	0.03
		B		0.000	0.000	16.076	0.000	0.12
		C		0.000	0.000	5.632	0.000	0.14

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	151.00-146.00	0.0000	0.0000	0.0000	0.0000
L2	146.00-141.00	0.0000	0.0000	0.0000	0.0000
L3	141.00-136.00	0.0000	0.0000	0.0000	0.0000
L4	136.00-131.00	0.0000	0.0000	0.0000	0.0000
L5	131.00-126.00	0.0000	0.0000	0.0000	0.0000
L6	126.00-125.50	0.0000	0.0000	0.0000	0.0000
L7	125.50-125.25	0.0000	0.0000	0.0000	0.0000
L8	125.25-120.25	0.8201	-0.2585	1.0168	-0.3205
L9	120.25-118.50	1.2210	-0.3849	1.5547	-0.4901
L10	118.50-118.25	1.2281	-0.3871	1.5640	-0.4930
L11	118.25-117.50	1.2309	-0.3880	1.5680	-0.4943
L12	117.50-117.25	1.2330	-0.3887	1.5713	-0.4953
L13	117.25-112.25	1.4506	-0.4573	1.8337	-0.5780
L14	112.25-107.25	1.7041	-0.5372	2.1397	-0.6745
L15	107.25-102.25	1.7340	-0.5466	2.1849	-0.6887
L16	102.25-97.50	1.5879	-0.5005	2.0217	-0.6373
L17	97.50-95.92	1.1925	-0.3759	1.5437	-0.4866
L18	95.92-92.50	1.2047	-0.3798	1.5607	-0.4920
L19	92.50-92.25	1.2137	-0.3826	1.5734	-0.4960
L20	92.25-87.25	1.2053	-0.3799	1.5702	-0.4950
L21	87.25-87.00	1.2070	-0.3805	1.5770	-0.4971
L22	87.00-82.00	1.2519	-0.3946	1.6353	-0.5155
L23	82.00-77.00	1.7937	-0.5654	2.3132	-0.7292
L24	77.00-72.00	1.8193	-0.5735	2.3523	-0.7415
L25	72.00-67.00	1.4749	-0.4649	1.9307	-0.6086
L26	67.00-63.25	1.2744	-0.4017	1.6801	-0.5296
L27	63.25-63.00	1.2830	-0.4044	1.6923	-0.5334
L28	63.00-58.00	1.2344	-0.3891	1.6453	-0.5186
L29	58.00-56.75	1.1924	-0.3759	1.6046	-0.5058
L30	56.75-56.50	1.1957	-0.3769	1.6091	-0.5072
L31	56.50-47.50	1.3803	-0.4351	1.8562	-0.5851
L32	47.50-47.00	1.7003	-0.5360	2.2817	-0.7192
L33	47.00-42.00	1.7124	-0.5398	2.2972	-0.7241
L34	42.00-37.00	1.3295	-0.4191	1.8264	-0.5757
L35	37.00-34.25	1.1648	-0.3672	1.6161	-0.5094
L36	34.25-34.00	1.1702	-0.3689	1.6233	-0.5117
L37	34.00-29.00	1.1796	-0.3718	1.6389	-0.4952
L38	29.00-26.75	1.1925	-0.3759	1.6626	-0.4542
L39	26.75-26.50	1.1969	-0.3773	1.6682	-0.4564
L40	26.50-21.50	1.2061	-0.3802	1.6797	-0.4612
L41	21.50-16.75	-2.2376	-3.4202	-1.5447	-3.3731
L42	16.75-16.50	-3.4048	-4.4732	-2.4634	-4.1150
L43	16.50-14.25	-3.4203	-4.4922	-2.4769	-4.1323
L44	14.25-14.00	-3.4354	-4.5108	-2.4905	-4.1494
L45	14.00-9.00	-3.5337	-3.7808	-2.5467	-3.4886

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L46	9.00-4.25	-3.7736	-1.7841	-2.6823	-1.7114
L47	4.25-4.00	-3.8044	-1.7970	-2.7225	-1.7294
L48	4.00-0.00	-3.3723	-1.7824	-2.2882	-1.7233

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

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L8	24	AL7-50(1-5/8)	120.25 - 122.00	1.0000	1.0000
L8	46	MS-600 (L)	120.25 - 120.50	1.0000	1.0000
L8	47	MS-600 (L)	120.25 - 120.50	1.0000	1.0000
L8	48	MS-600 (L)	120.25 - 120.50	1.0000	1.0000
L8	50	MP3-03 (L)	120.25 - 125.00	1.0000	1.0000
L8	51	MP3-03 (L)	120.25 - 125.00	1.0000	1.0000
L8	52	MP3-03 (L)	120.25 - 125.00	1.0000	1.0000
L9	24	AL7-50(1-5/8)	118.50 - 120.25	1.0000	1.0000
L9	46	MS-600 (L)	118.50 - 120.25	1.0000	1.0000
L9	47	MS-600 (L)	118.50 - 120.25	1.0000	1.0000
L9	48	MS-600 (L)	118.50 - 120.25	1.0000	1.0000
L9	50	MP3-03 (L)	118.50 - 120.25	1.0000	1.0000
L9	51	MP3-03 (L)	118.50 - 120.25	1.0000	1.0000
L9	52	MP3-03 (L)	118.50 - 120.25	1.0000	1.0000
L10	24	AL7-50(1-5/8)	118.25 - 118.50	1.0000	1.0000
L10	46	MS-600 (L)	118.25 - 118.50	1.0000	1.0000
L10	47	MS-600 (L)	118.25 - 118.50	1.0000	1.0000
L10	48	MS-600 (L)	118.25 - 118.50	1.0000	1.0000
L10	50	MP3-03 (L)	118.25 - 118.50	1.0000	1.0000
L10	51	MP3-03 (L)	118.25 - 118.50	1.0000	1.0000
L10	52	MP3-03 (L)	118.25 - 118.50	1.0000	1.0000
L11	24	AL7-50(1-5/8)	117.50 - 118.25	1.0000	1.0000
L11	46	MS-600 (L)	117.50 - 118.25	1.0000	1.0000
L11	47	MS-600 (L)	117.50 - 118.25	1.0000	1.0000
L11	48	MS-600 (L)	117.50 - 118.25	1.0000	1.0000
L11	50	MP3-03 (L)	117.50 - 118.25	1.0000	1.0000
L11	51	MP3-03 (L)	117.50 - 118.25	1.0000	1.0000
L11	52	MP3-03 (L)	117.50 - 118.25	1.0000	1.0000
L12	24	AL7-50(1-5/8)	117.25 - 117.50	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L12	46	MS-600 (L)	117.25 - 117.50	1.0000	1.0000
L12	47	MS-600 (L)	117.25 - 117.50	1.0000	1.0000
L12	48	MS-600 (L)	117.25 - 117.50	1.0000	1.0000
L12	50	MP3-03 (L)	117.25 - 117.50	1.0000	1.0000
L12	51	MP3-03 (L)	117.25 - 117.50	1.0000	1.0000
L12	52	MP3-03 (L)	117.25 - 117.50	1.0000	1.0000
L13	24	AL7-50(1-5/8)	112.25 - 117.25	1.0000	1.0000
L13	46	MS-600 (L)	112.25 - 117.25	1.0000	1.0000
L13	47	MS-600 (L)	112.25 - 117.25	1.0000	1.0000
L13	48	MS-600 (L)	112.25 - 117.25	1.0000	1.0000
L13	50	MP3-03 (L)	115.00 - 117.25	1.0000	1.0000
L13	51	MP3-03 (L)	115.00 - 117.25	1.0000	1.0000
L13	52	MP3-03 (L)	115.00 - 117.25	1.0000	1.0000
L14	24	AL7-50(1-5/8)	107.25 - 112.25	1.0000	1.0000
L14	46	MS-600 (L)	107.25 - 112.25	1.0000	1.0000
L14	47	MS-600 (L)	107.25 - 112.25	1.0000	1.0000
L14	48	MS-600 (L)	107.25 - 112.25	1.0000	1.0000
L15	24	AL7-50(1-5/8)	102.25 - 107.25	1.0000	1.0000
L15	46	MS-600 (L)	102.25 - 107.25	1.0000	1.0000
L15	47	MS-600 (L)	102.25 - 107.25	1.0000	1.0000
L15	48	MS-600 (L)	102.25 - 107.25	1.0000	1.0000
L16	24	AL7-50(1-5/8)	97.50 - 102.25	1.0000	1.0000
L16	43	MS-600 (L)	97.50 - 98.58	1.0000	1.0000
L16	44	MS-600 (L)	97.50 - 98.58	1.0000	1.0000
L16	45	MS-600 (L)	97.50 - 98.58	1.0000	1.0000
L16	46	MS-600 (L)	97.50 - 102.25	1.0000	1.0000
L16	47	MS-600 (L)	97.50 - 102.25	1.0000	1.0000
L16	48	MS-600 (L)	97.50 - 102.25	1.0000	1.0000
L18	24	AL7-50(1-5/8)	92.50 - 95.92	1.0000	1.0000
L18	43	MS-600 (L)	92.50 - 95.92	1.0000	1.0000
L18	44	MS-600 (L)	92.50 - 95.92	1.0000	1.0000
L18	45	MS-600 (L)	92.50 - 95.92	1.0000	1.0000
L18	46	MS-600 (L)	92.50 - 95.92	1.0000	1.0000
L18	47	MS-600 (L)	92.50 - 95.92	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L18	48	MS-600 (L)	92.50 - 95.92	1.0000	1.0000
L19	24	AL7-50(1-5/8)	92.25 - 92.50	1.0000	1.0000
L19	43	MS-600 (L)	92.25 - 92.50	1.0000	1.0000
L19	44	MS-600 (L)	92.25 - 92.50	1.0000	1.0000
L19	45	MS-600 (L)	92.25 - 92.50	1.0000	1.0000
L19	46	MS-600 (L)	92.25 - 92.50	1.0000	1.0000
L19	47	MS-600 (L)	92.25 - 92.50	1.0000	1.0000
L19	48	MS-600 (L)	92.25 - 92.50	1.0000	1.0000
L20	24	AL7-50(1-5/8)	87.25 - 92.25	1.0000	1.0000
L20	40	MS-650 (L)	87.25 - 90.50	1.0000	1.0000
L20	41	MS-650 (L)	87.25 - 90.50	1.0000	1.0000
L20	42	MS-650 (L)	87.25 - 90.50	1.0000	1.0000
L20	43	MS-600 (L)	87.25 - 92.25	1.0000	1.0000
L20	44	MS-600 (L)	87.25 - 92.25	1.0000	1.0000
L20	45	MS-600 (L)	87.25 - 92.25	1.0000	1.0000
L20	46	MS-600 (L)	90.50 - 92.25	1.0000	1.0000
L20	47	MS-600 (L)	90.50 - 92.25	1.0000	1.0000
L20	48	MS-600 (L)	90.50 - 92.25	1.0000	1.0000
L21	24	AL7-50(1-5/8)	87.00 - 87.25	1.0000	1.0000
L21	40	MS-650 (L)	87.00 - 87.25	1.0000	1.0000
L21	41	MS-650 (L)	87.00 - 87.25	1.0000	1.0000
L21	42	MS-650 (L)	87.00 - 87.25	1.0000	1.0000
L21	43	MS-600 (L)	87.00 - 87.25	1.0000	1.0000
L21	44	MS-600 (L)	87.00 - 87.25	1.0000	1.0000
L21	45	MS-600 (L)	87.00 - 87.25	1.0000	1.0000
L22	24	AL7-50(1-5/8)	82.00 - 87.00	1.0000	1.0000
L22	40	MS-650 (L)	82.00 - 87.00	1.0000	1.0000
L22	41	MS-650 (L)	82.00 - 87.00	1.0000	1.0000
L22	42	MS-650 (L)	82.00 - 87.00	1.0000	1.0000
L22	43	MS-600 (L)	82.42 - 87.00	1.0000	1.0000
L22	44	MS-600 (L)	82.42 - 87.00	1.0000	1.0000
L22	45	MS-600 (L)	82.42 - 87.00	1.0000	1.0000
L23	24	AL7-50(1-5/8)	77.00 - 82.00	1.0000	1.0000
L23	40	MS-650 (L)	77.00 - 82.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L23	41	MS-650 (L)	77.00 - 82.00	1.0000	1.0000
L23	42	MS-650 (L)	77.00 - 82.00	1.0000	1.0000
L24	24	AL7-50(1-5/8)	72.00 - 77.00	1.0000	1.0000
L24	40	MS-650 (L)	72.00 - 77.00	1.0000	1.0000
L24	41	MS-650 (L)	72.00 - 77.00	1.0000	1.0000
L24	42	MS-650 (L)	72.00 - 77.00	1.0000	1.0000
L25	24	AL7-50(1-5/8)	67.00 - 72.00	1.0000	1.0000
L25	37	MS-650 (L)	67.00 - 69.67	1.0000	1.0000
L25	38	MS-650 (L)	67.00 - 69.67	1.0000	1.0000
L25	39	MS-650 (L)	67.00 - 69.67	1.0000	1.0000
L25	40	MS-650 (L)	67.00 - 72.00	1.0000	1.0000
L25	41	MS-650 (L)	67.00 - 72.00	1.0000	1.0000
L25	42	MS-650 (L)	67.00 - 72.00	1.0000	1.0000
L26	24	AL7-50(1-5/8)	63.25 - 67.00	1.0000	1.0000
L26	37	MS-650 (L)	63.25 - 67.00	1.0000	1.0000
L26	38	MS-650 (L)	63.25 - 67.00	1.0000	1.0000
L26	39	MS-650 (L)	63.25 - 67.00	1.0000	1.0000
L26	40	MS-650 (L)	63.25 - 67.00	1.0000	1.0000
L26	41	MS-650 (L)	63.25 - 67.00	1.0000	1.0000
L26	42	MS-650 (L)	63.25 - 67.00	1.0000	1.0000
L27	24	AL7-50(1-5/8)	63.00 - 63.25	1.0000	1.0000
L27	37	MS-650 (L)	63.00 - 63.25	1.0000	1.0000
L27	38	MS-650 (L)	63.00 - 63.25	1.0000	1.0000
L27	39	MS-650 (L)	63.00 - 63.25	1.0000	1.0000
L27	40	MS-650 (L)	63.00 - 63.25	1.0000	1.0000
L27	41	MS-650 (L)	63.00 - 63.25	1.0000	1.0000
L27	42	MS-650 (L)	63.00 - 63.25	1.0000	1.0000
L28	24	AL7-50(1-5/8)	58.00 - 63.00	1.0000	1.0000
L28	34	MS-850 (L)	58.00 - 60.50	1.0000	1.0000
L28	35	MS-850 (L)	58.00 - 60.50	1.0000	1.0000
L28	36	MS-850 (L)	58.00 - 60.50	1.0000	1.0000
L28	37	MS-650 (L)	58.00 - 63.00	1.0000	1.0000
L28	38	MS-650 (L)	58.00 - 63.00	1.0000	1.0000
L28	39	MS-650 (L)	58.00 - 63.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L28	40	MS-650 (L)	60.50 - 63.00	1.0000	1.0000
L28	41	MS-650 (L)	60.50 - 63.00	1.0000	1.0000
L28	42	MS-650 (L)	60.50 - 63.00	1.0000	1.0000
L29	24	AL7-50(1-5/8)	56.75 - 58.00	1.0000	1.0000
L29	34	MS-850 (L)	56.75 - 58.00	1.0000	1.0000
L29	35	MS-850 (L)	56.75 - 58.00	1.0000	1.0000
L29	36	MS-850 (L)	56.75 - 58.00	1.0000	1.0000
L29	37	MS-650 (L)	56.75 - 58.00	1.0000	1.0000
L29	38	MS-650 (L)	56.75 - 58.00	1.0000	1.0000
L29	39	MS-650 (L)	56.75 - 58.00	1.0000	1.0000
L30	24	AL7-50(1-5/8)	56.50 - 56.75	1.0000	1.0000
L30	34	MS-850 (L)	56.50 - 56.75	1.0000	1.0000
L30	35	MS-850 (L)	56.50 - 56.75	1.0000	1.0000
L30	36	MS-850 (L)	56.50 - 56.75	1.0000	1.0000
L30	37	MS-650 (L)	56.50 - 56.75	1.0000	1.0000
L30	38	MS-650 (L)	56.50 - 56.75	1.0000	1.0000
L30	39	MS-650 (L)	56.50 - 56.75	1.0000	1.0000
L31	24	AL7-50(1-5/8)	47.50 - 56.50	1.0000	1.0000
L31	34	MS-850 (L)	47.50 - 56.50	1.0000	1.0000
L31	35	MS-850 (L)	47.50 - 56.50	1.0000	1.0000
L31	36	MS-850 (L)	47.50 - 56.50	1.0000	1.0000
L31	37	MS-650 (L)	51.33 - 56.50	1.0000	1.0000
L31	38	MS-650 (L)	51.33 - 56.50	1.0000	1.0000
L31	39	MS-650 (L)	51.33 - 56.50	1.0000	1.0000
L33	24	AL7-50(1-5/8)	42.00 - 47.00	1.0000	1.0000
L33	34	MS-850 (L)	42.00 - 47.00	1.0000	1.0000
L33	35	MS-850 (L)	42.00 - 47.00	1.0000	1.0000
L33	36	MS-850 (L)	42.00 - 47.00	1.0000	1.0000
L34	24	AL7-50(1-5/8)	37.00 - 42.00	1.0000	1.0000
L34	31	MS-850 (L)	37.00 - 40.00	1.0000	1.0000
L34	32	MS-850 (L)	37.00 - 40.00	1.0000	1.0000
L34	33	MS-850 (L)	37.00 - 40.00	1.0000	1.0000
L34	34	MS-850 (L)	37.00 - 42.00	1.0000	1.0000
L34	35	MS-850 (L)	37.00 - 42.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L34	36	MS-850 (L)	37.00 - 42.00	1.0000	1.0000
L35	24	AL7-50(1-5/8)	34.25 - 37.00	1.0000	1.0000
L35	31	MS-850 (L)	34.25 - 37.00	1.0000	1.0000
L35	32	MS-850 (L)	34.25 - 37.00	1.0000	1.0000
L35	33	MS-850 (L)	34.25 - 37.00	1.0000	1.0000
L35	34	MS-850 (L)	34.25 - 37.00	1.0000	1.0000
L35	35	MS-850 (L)	34.25 - 37.00	1.0000	1.0000
L35	36	MS-850 (L)	34.25 - 37.00	1.0000	1.0000
L36	24	AL7-50(1-5/8)	34.00 - 34.25	1.0000	1.0000
L36	31	MS-850 (L)	34.00 - 34.25	1.0000	1.0000
L36	32	MS-850 (L)	34.00 - 34.25	1.0000	1.0000
L36	33	MS-850 (L)	34.00 - 34.25	1.0000	1.0000
L36	34	MS-850 (L)	34.00 - 34.25	1.0000	1.0000
L36	35	MS-850 (L)	34.00 - 34.25	1.0000	1.0000
L36	36	MS-850 (L)	34.00 - 34.25	1.0000	1.0000
L37	24	AL7-50(1-5/8)	29.00 - 34.00	1.0000	1.0000
L37	26	MS-850 (L)	29.00 - 30.50	1.0000	1.0000
L37	27	MS-850 (L)	29.00 - 30.50	1.0000	1.0000
L37	28	MS-850 (L)	29.00 - 30.50	1.0000	1.0000
L37	31	MS-850 (L)	29.00 - 34.00	1.0000	1.0000
L37	32	MS-850 (L)	29.00 - 34.00	1.0000	1.0000
L37	33	MS-850 (L)	30.50 - 34.00	1.0000	1.0000
L37	34	MS-850 (L)	30.50 - 34.00	1.0000	1.0000
L37	35	MS-850 (L)	30.50 - 34.00	1.0000	1.0000
L37	36	MS-850 (L)	30.50 - 34.00	1.0000	1.0000
L38	24	AL7-50(1-5/8)	26.75 - 29.00	1.0000	1.0000
L38	26	MS-850 (L)	26.75 - 29.00	1.0000	1.0000
L38	27	MS-850 (L)	26.75 - 29.00	1.0000	1.0000
L38	28	MS-850 (L)	26.75 - 29.00	1.0000	1.0000
L38	31	MS-850 (L)	26.75 - 29.00	1.0000	1.0000
L38	32	MS-850 (L)	26.75 - 29.00	1.0000	1.0000
L38	33	MS-850 (L)	26.75 - 29.00	1.0000	1.0000
L39	24	AL7-50(1-5/8)	26.50 - 26.75	1.0000	1.0000
L39	26	MS-850 (L)	26.50 - 26.75	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L39	27	MS-850 (L)	26.50 - 26.75	1.0000	1.0000
L39	28	MS-850 (L)	26.50 - 26.75	1.0000	1.0000
L39	31	MS-850 (L)	26.50 - 26.75	1.0000	1.0000
L39	32	MS-850 (L)	26.50 - 26.75	1.0000	1.0000
L39	33	MS-850 (L)	26.50 - 26.75	1.0000	1.0000
L40	24	AL7-50(1-5/8)	21.50 - 26.50	1.0000	1.0000
L40	26	MS-850 (L)	21.50 - 26.50	1.0000	1.0000
L40	27	MS-850 (L)	21.50 - 26.50	1.0000	1.0000
L40	28	MS-850 (L)	21.50 - 26.50	1.0000	1.0000
L40	31	MS-850 (L)	21.50 - 26.50	1.0000	1.0000
L40	32	MS-850 (L)	21.50 - 26.50	1.0000	1.0000
L40	33	MS-850 (L)	21.50 - 26.50	1.0000	1.0000
L41	24	AL7-50(1-5/8)	16.75 - 21.50	1.0000	1.0000
L41	26	MS-850 (L)	16.75 - 21.50	1.0000	1.0000
L41	27	MS-850 (L)	16.75 - 21.50	1.0000	1.0000
L41	28	MS-850 (L)	16.75 - 21.50	1.0000	1.0000
L41	29	MS-850 (L)	16.75 - 20.50	1.0000	1.0000
L41	30	MS-850 (L)	16.75 - 20.50	1.0000	1.0000
L41	31	MS-850 (L)	21.00 - 21.50	1.0000	1.0000
L41	32	MS-850 (L)	21.00 - 21.50	1.0000	1.0000
L41	33	MS-850 (L)	21.00 - 21.50	1.0000	1.0000
L42	24	AL7-50(1-5/8)	16.50 - 16.75	1.0000	1.0000
L42	26	MS-850 (L)	16.50 - 16.75	1.0000	1.0000
L42	27	MS-850 (L)	16.50 - 16.75	1.0000	1.0000
L42	28	MS-850 (L)	16.50 - 16.75	1.0000	1.0000
L42	29	MS-850 (L)	16.50 - 16.75	1.0000	1.0000
L42	30	MS-850 (L)	16.50 - 16.75	1.0000	1.0000
L43	24	AL7-50(1-5/8)	14.25 - 16.50	1.0000	1.0000
L43	26	MS-850 (L)	14.25 - 16.50	1.0000	1.0000
L43	27	MS-850 (L)	14.25 - 16.50	1.0000	1.0000
L43	28	MS-850 (L)	14.25 - 16.50	1.0000	1.0000
L43	29	MS-850 (L)	14.25 - 16.50	1.0000	1.0000
L43	30	MS-850 (L)	14.25 - 16.50	1.0000	1.0000
L44	24	AL7-50(1-5/8)	14.00 - 14.25	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L44	26	MS-850 (L)	14.00 - 14.25	1.0000	1.0000
L44	27	MS-850 (L)	14.00 - 14.25	1.0000	1.0000
L44	28	MS-850 (L)	14.00 - 14.25	1.0000	1.0000
L44	29	MS-850 (L)	14.00 - 14.25	1.0000	1.0000
L44	30	MS-850 (L)	14.00 - 14.25	1.0000	1.0000
L45	24	AL7-50(1-5/8)	9.00 - 14.00	1.0000	1.0000
L45	26	MS-850 (L)	10.50 - 14.00	1.0000	1.0000
L45	27	MS-850 (L)	9.00 - 14.00	1.0000	1.0000
L45	28	MS-850 (L)	9.00 - 14.00	1.0000	1.0000
L45	29	MS-850 (L)	9.00 - 14.00	1.0000	1.0000
L45	30	MS-850 (L)	9.00 - 14.00	1.0000	1.0000
L46	24	AL7-50(1-5/8)	4.25 - 9.00	1.0000	1.0000
L46	27	MS-850 (L)	4.25 - 9.00	1.0000	1.0000
L46	28	MS-850 (L)	4.25 - 9.00	1.0000	1.0000
L46	29	MS-850 (L)	4.25 - 9.00	1.0000	1.0000
L46	30	MS-850 (L)	4.25 - 9.00	1.0000	1.0000
L47	24	AL7-50(1-5/8)	4.00 - 4.25	1.0000	1.0000
L47	27	MS-850 (L)	4.00 - 4.25	1.0000	1.0000
L47	28	MS-850 (L)	4.00 - 4.25	1.0000	1.0000
L47	29	MS-850 (L)	4.00 - 4.25	1.0000	1.0000
L47	30	MS-850 (L)	4.00 - 4.25	1.0000	1.0000
L48	24	AL7-50(1-5/8)	0.00 - 4.00	1.0000	1.0000
L48	27	MS-850 (L)	0.50 - 4.00	1.0000	1.0000
L48	28	MS-850 (L)	0.50 - 4.00	1.0000	1.0000
L48	29	MS-850 (L)	0.50 - 4.00	1.0000	1.0000
L48	30	MS-850 (L)	0.50 - 4.00	1.0000	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
(2) AM-X-CD-16-65-00T-RET w/ Mount Pipe	A	From Leg	4.00 0.00 1.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.63 5.06 5.51 6.43	3.27 3.69 4.12 5.00	0.07 0.13 0.20 0.38
(2) AM-X-CD-16-65-00T-RET w/ Mount Pipe	B	From Leg	4.00 0.00 1.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.63 5.06 5.51 6.43	3.27 3.69 4.12 5.00	0.07 0.13 0.20 0.38
(2) AM-X-CD-16-65-00T-RET w/ Mount Pipe	C	From Leg	4.00 0.00 1.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.63 5.06 5.51 6.43	3.27 3.69 4.12 5.00	0.07 0.13 0.20 0.38
800 10121 w/ Mount Pipe	A	From Leg	4.00 0.00 1.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.74 6.34 6.86 7.91	4.95 6.02 6.81 8.41	0.07 0.12 0.18 0.32
800 10121 w/ Mount Pipe	B	From Leg	4.00 0.00 1.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.74 6.34 6.86 7.91	4.95 6.02 6.81 8.41	0.07 0.12 0.18 0.32
800 10121 w/ Mount Pipe	C	From Leg	4.00	0.0000	148.00	No Ice	5.74	4.95	0.07

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00			1/2"	6.34	6.02	0.12
			1.00			Ice	6.86	6.81	0.18
						1" Ice	7.91	8.41	0.32
						2" Ice			
(4) LGP21901	A	From Leg	4.00	0.0000	148.00	No Ice	0.23	0.16	0.01
			0.00			1/2"	0.29	0.21	0.01
			1.00			Ice	0.36	0.28	0.01
						1" Ice	0.53	0.42	0.02
						2" Ice			
(4) LGP21901	B	From Leg	4.00	0.0000	148.00	No Ice	0.23	0.16	0.01
			0.00			1/2"	0.29	0.21	0.01
			1.00			Ice	0.36	0.28	0.01
						1" Ice	0.53	0.42	0.02
						2" Ice			
(4) LGP21901	C	From Leg	4.00	0.0000	148.00	No Ice	0.23	0.16	0.01
			0.00			1/2"	0.29	0.21	0.01
			1.00			Ice	0.36	0.28	0.01
						1" Ice	0.53	0.42	0.02
						2" Ice			
DC6-48-60-18-8F	A	From Leg	4.00	0.0000	148.00	No Ice	1.21	1.21	0.03
			0.00			1/2"	1.89	1.89	0.05
			1.00			Ice	2.11	2.11	0.08
						1" Ice	2.57	2.57	0.14
						2" Ice			
(2) CG-1900DD-FULL-DIN	A	From Leg	4.00	0.0000	148.00	No Ice	1.10	0.29	0.01
			0.00			1/2"	1.23	0.37	0.02
			1.00			Ice	1.37	0.46	0.03
						1" Ice	1.67	0.66	0.05
						2" Ice			
(2) CG-1900DD-FULL-DIN	B	From Leg	4.00	0.0000	148.00	No Ice	1.10	0.29	0.01
			0.00			1/2"	1.23	0.37	0.02
			1.00			Ice	1.37	0.46	0.03
						1" Ice	1.67	0.66	0.05
						2" Ice			
(2) CG-1900DD-FULL-DIN	C	From Leg	4.00	0.0000	148.00	No Ice	1.10	0.29	0.01
			0.00			1/2"	1.23	0.37	0.02
			1.00			Ice	1.37	0.46	0.03
						1" Ice	1.67	0.66	0.05
						2" Ice			
(2) DTMABP7819VG12A	A	From Leg	4.00	0.0000	148.00	No Ice	0.98	0.34	0.02
			0.00			1/2"	1.10	0.42	0.03
			1.00			Ice	1.23	0.51	0.04
						1" Ice	1.52	0.71	0.06
						2" Ice			
(2) DTMABP7819VG12A	B	From Leg	4.00	0.0000	148.00	No Ice	0.98	0.34	0.02
			0.00			1/2"	1.10	0.42	0.03
			1.00			Ice	1.23	0.51	0.04
						1" Ice	1.52	0.71	0.06
						2" Ice			
(2) DTMABP7819VG12A	C	From Leg	4.00	0.0000	148.00	No Ice	0.98	0.34	0.02
			0.00			1/2"	1.10	0.42	0.03
			1.00			Ice	1.23	0.51	0.04
						1" Ice	1.52	0.71	0.06
						2" Ice			
(2) RRUS-11	A	From Leg	4.00	0.0000	148.00	No Ice	2.79	1.19	0.05
			0.00			1/2"	3.00	1.34	0.07
			1.00			Ice	3.21	1.50	0.09
						1" Ice	3.67	1.84	0.15
						2" Ice			
(2) RRUS-11	B	From Leg	4.00	0.0000	148.00	No Ice	2.79	1.19	0.05
			0.00			1/2"	3.00	1.34	0.07
			1.00			Ice	3.21	1.50	0.09
						1" Ice	3.67	1.84	0.15
						2" Ice			
(2) RRUS-11	C	From Leg	4.00	0.0000	148.00	No Ice	2.79	1.19	0.05

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00 1.00			1/2" Ice 1" Ice 2" Ice	3.00 3.21 3.67	1.34 1.50 1.84	0.07 0.09 0.15
860 10025	A	From Leg	4.00 0.00 1.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.14 0.19 0.25 0.40	0.12 0.17 0.23 0.37	0.00 0.00 0.01 0.01
860 10025	B	From Leg	4.00 0.00 1.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.14 0.19 0.25 0.40	0.12 0.17 0.23 0.37	0.00 0.00 0.01 0.01
860 10025	C	From Leg	4.00 0.00 1.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.14 0.19 0.25 0.40	0.12 0.17 0.23 0.37	0.00 0.00 0.01 0.01
*									
OG-4	A	From Leg	4.00 0.00 7.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.33 7.14 7.86 9.34	4.33 7.14 7.86 9.34	0.02 0.06 0.11 0.23
DB286-B	B	From Leg	4.00 0.00 6.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.99 8.98 12.97 20.96	4.99 8.98 12.97 20.96	0.08 0.11 0.13 0.18
DS1F03F36D-N	A	From Leg	4.00 0.00 12.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	6.69 8.95 11.23 15.84	6.69 8.95 11.23 15.84	0.06 0.11 0.17 0.34
*									
Platform Mount [LP 602-1]	C	None		0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	32.03 38.71 45.39 58.75	32.03 38.71 45.39 58.75	1.34 1.80 2.26 3.17
***									
DB854DG65ESX w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.55 5.94 6.34 7.17	4.10 4.73 5.36 6.64	0.04 0.08 0.14 0.26
DB854DG65ESX w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.55 5.94 6.34 7.17	4.10 4.73 5.36 6.64	0.04 0.08 0.14 0.26
DB854DG65ESX w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.55 5.94 6.34 7.17	4.10 4.73 5.36 6.64	0.04 0.08 0.14 0.26
(2) NHH-65C-R2B w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice 2" Ice	11.63 12.35 13.07 14.44	9.79 11.31 12.85 15.19	0.08 0.17 0.27 0.51
(2) NHH-65C-R2B w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice	11.63 12.35 13.07	9.79 11.31 12.85	0.08 0.17 0.27

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						1" Ice	14.44	15.19	0.51
						2" Ice			
(2) NHH-65C-R2B w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	140.00	No Ice	11.63	9.79	0.08
						1/2" Ice	12.35	11.31	0.17
						1" Ice	13.07	12.85	0.27
						2" Ice	14.44	15.19	0.51
DB-T1-6Z-8AB-0Z	A	From Leg	4.00 0.00 0.00	0.0000	140.00	No Ice	4.80	2.00	0.04
						1/2" Ice	5.07	2.19	0.08
						1" Ice	5.35	2.39	0.12
						2" Ice	5.93	2.81	0.21
(3) RFV01U-D2A	A	From Leg	4.00 0.00 0.00	0.0000	140.00	No Ice	1.88	1.01	0.07
						1/2" Ice	2.05	1.14	0.09
						1" Ice	2.22	1.28	0.11
						2" Ice	2.60	1.59	0.15
(3) RFV01U-D1A	B	From Leg	4.00 0.00 0.00	0.0000	140.00	No Ice	1.88	1.25	0.08
						1/2" Ice	2.05	1.39	0.10
						1" Ice	2.22	1.54	0.12
						2" Ice	2.60	1.86	0.18
Platform Mount [LP 303-1]	C	None		0.0000	140.00	No Ice	14.66	14.66	1.25
						1/2" Ice	18.87	18.87	1.48
						1" Ice	23.08	23.08	1.71
						2" Ice	31.50	31.50	2.18
Miscellaneous [NA 507-1]	C	None		0.0000	140.00	No Ice	4.80	4.80	0.25
						1/2" Ice	6.70	6.70	0.29
						1" Ice	8.60	8.60	0.34
						2" Ice	12.40	12.40	0.44
(2) Miscellaneous [NA 509-3]	C	None		0.0000	140.00	No Ice	11.84	11.84	0.28
						1/2" Ice	16.96	16.96	0.30
						1" Ice	22.08	22.08	0.32
						2" Ice	32.32	32.32	0.36
***									
TME-1900MHZ RRH	A	From Leg	4.00 0.00 -1.00	0.0000	132.00	No Ice	2.49	3.26	0.04
						1/2" Ice	2.70	3.48	0.08
						1" Ice	2.91	3.72	0.11
						2" Ice	3.35	4.21	0.19
TME-1900MHZ RRH	B	From Leg	4.00 0.00 -1.00	0.0000	132.00	No Ice	2.49	3.26	0.04
						1/2" Ice	2.70	3.48	0.08
						1" Ice	2.91	3.72	0.11
						2" Ice	3.35	4.21	0.19
TME-1900MHZ RRH	C	From Leg	4.00 0.00 -1.00	0.0000	132.00	No Ice	2.49	3.26	0.04
						1/2" Ice	2.70	3.48	0.08
						1" Ice	2.91	3.72	0.11
						2" Ice	3.35	4.21	0.19
800 EXTERNAL NOTCH FILTER	A	From Leg	4.00 0.00 -1.00	0.0000	132.00	No Ice	0.66	0.32	0.01
						1/2" Ice	0.76	0.40	0.02
						1" Ice	0.87	0.48	0.02
						2" Ice	1.11	0.67	0.04
800 EXTERNAL NOTCH FILTER	B	From Leg	4.00 0.00 -1.00	0.0000	132.00	No Ice	0.66	0.32	0.01
						1/2" Ice	0.76	0.40	0.02
						1" Ice	0.87	0.48	0.02
						2" Ice	1.11	0.67	0.04
800 EXTERNAL NOTCH FILTER	C	From Leg	4.00 0.00	0.0000	132.00	No Ice	0.66	0.32	0.01
							0.76	0.40	0.02

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			-1.00			1/2" Ice	0.87	0.48	0.02
						1" Ice	1.11	0.67	0.04
						2" Ice			
800MHZ RRH	A	From Leg	4.00 0.00 -1.00	0.0000	132.00	No Ice	2.13	1.77	0.05
						1/2" Ice	2.32	1.95	0.07
						1" Ice	2.51	2.13	0.10
						2" Ice	2.92	2.51	0.16
800MHZ RRH	B	From Leg	4.00 0.00 -1.00	0.0000	132.00	No Ice	2.13	1.77	0.05
						1/2" Ice	2.32	1.95	0.07
						1" Ice	2.51	2.13	0.10
						2" Ice	2.92	2.51	0.16
800MHZ RRH	C	From Leg	4.00 0.00 -1.00	0.0000	132.00	No Ice	2.13	1.77	0.05
						1/2" Ice	2.32	1.95	0.07
						1" Ice	2.51	2.13	0.10
						2" Ice	2.92	2.51	0.16
Pipe Mount [PM 601-3]	C	None		0.0000	132.00	No Ice	4.39	4.39	0.20
						1/2" Ice	5.48	5.48	0.24
						1" Ice	6.57	6.57	0.28
						2" Ice	8.75	8.75	0.36
***									
GPS-TMG-HR-26NCM	A	From Leg	4.00 0.00 3.00	0.0000	130.00	No Ice	0.13	0.13	0.00
						1/2" Ice	0.18	0.18	0.00
						1" Ice	0.24	0.24	0.01
						2" Ice	0.37	0.37	0.01
APXVSPP18-C-A20 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	130.00	No Ice	4.60	4.01	0.10
						1/2" Ice	5.05	4.45	0.16
						1" Ice	5.50	4.89	0.23
						2" Ice	6.44	5.82	0.42
APXVSPP18-C-A20 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	130.00	No Ice	4.60	4.01	0.10
						1/2" Ice	5.05	4.45	0.16
						1" Ice	5.50	4.89	0.23
						2" Ice	6.44	5.82	0.42
APXVSPP18-C-A20 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	130.00	No Ice	4.60	4.01	0.10
						1/2" Ice	5.05	4.45	0.16
						1" Ice	5.50	4.89	0.23
						2" Ice	6.44	5.82	0.42
APXVTM14-C-120 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	130.00	No Ice	4.09	2.86	0.08
						1/2" Ice	4.48	3.23	0.13
						1" Ice	4.88	3.61	0.19
						2" Ice	5.71	4.40	0.33
APXVTM14-C-120 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	130.00	No Ice	4.09	2.86	0.08
						1/2" Ice	4.48	3.23	0.13
						1" Ice	4.88	3.61	0.19
						2" Ice	5.71	4.40	0.33
APXVTM14-C-120 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	130.00	No Ice	4.09	2.86	0.08
						1/2" Ice	4.48	3.23	0.13
						1" Ice	4.88	3.61	0.19
						2" Ice	5.71	4.40	0.33
TD-RRH8X20-25	A	From Leg	4.00 0.00 0.00	0.0000	130.00	No Ice	4.05	1.53	0.07
						1/2" Ice	4.30	1.71	0.10
						1" Ice	4.56	1.90	0.13
						2" Ice	5.10	2.30	0.20

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
TD-RRH8X20-25	B	From Leg	4.00 0.00 0.00		0.0000	130.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.05 4.30 4.56 5.10	1.53 1.71 1.90 2.30	0.07 0.10 0.13 0.20
TD-RRH8X20-25	C	From Leg	4.00 0.00 0.00		0.0000	130.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.05 4.30 4.56 5.10	1.53 1.71 1.90 2.30	0.07 0.10 0.13 0.20
2.375" OD x 6' Mount Pipe	A	None			0.0000	130.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.43 1.92 2.29 3.06	1.43 1.92 2.29 3.06	0.03 0.04 0.05 0.09
2.375" OD x 6' Mount Pipe	B	None			0.0000	130.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.43 1.92 2.29 3.06	1.43 1.92 2.29 3.06	0.03 0.04 0.05 0.09
2.375" OD x 6' Mount Pipe	C	None			0.0000	130.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.43 1.92 2.29 3.06	1.43 1.92 2.29 3.06	0.03 0.04 0.05 0.09
T-Arm Mount [TA 602-3]	C	None			0.0000	130.00	No Ice 1/2" Ice 1" Ice 2" Ice	11.59 15.44 19.29 26.99	11.59 15.44 19.29 26.99	0.77 0.99 1.21 1.64
***										
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	A	From Leg	4.00 0.00 1.00		0.0000	122.00	No Ice 1/2" Ice 1" Ice 2" Ice	6.33 6.78 7.21 8.12	5.64 6.43 7.13 8.59	0.11 0.17 0.23 0.38
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	B	From Leg	4.00 0.00 1.00		0.0000	122.00	No Ice 1/2" Ice 1" Ice 2" Ice	6.33 6.78 7.21 8.12	5.64 6.43 7.13 8.59	0.11 0.17 0.23 0.38
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	C	From Leg	4.00 0.00 1.00		0.0000	122.00	No Ice 1/2" Ice 1" Ice 2" Ice	6.33 6.78 7.21 8.12	5.64 6.43 7.13 8.59	0.11 0.17 0.23 0.38
APXVAARR24_43-U-NA20 w/ Mount Pipe	A	From Leg	4.00 0.00 1.00		0.0000	122.00	No Ice 1/2" Ice 1" Ice 2" Ice	14.69 15.46 16.23 17.82	6.87 7.55 8.25 9.67	0.19 0.31 0.46 0.79
APXVAARR24_43-U-NA20 w/ Mount Pipe	B	From Leg	4.00 0.00 1.00		0.0000	122.00	No Ice 1/2" Ice 1" Ice 2" Ice	14.69 15.46 16.23 17.82	6.87 7.55 8.25 9.67	0.19 0.31 0.46 0.79
APXVAARR24_43-U-NA20 w/ Mount Pipe	C	From Leg	4.00 0.00 1.00		0.0000	122.00	No Ice 1/2" Ice 1" Ice 2" Ice	14.69 15.46 16.23 17.82	6.87 7.55 8.25 9.67	0.19 0.31 0.46 0.79
(3) RADIO 4449 B12/B71	A	From Leg	4.00 0.00 1.00		0.0000	122.00	No Ice 1/2" Ice 1" Ice	1.65 1.81 1.98 2.34	1.16 1.30 1.45 1.76	0.07 0.09 0.11 0.16

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
T-Arm Mount [TA 702-3]	C	None		0.0000	122.00	2" Ice			
						No Ice	5.64	5.64	0.34
						1/2" Ice	6.55	6.55	0.43
						1" Ice	7.46	7.46	0.52
						2" Ice	9.28	9.28	0.70

Tower Pressures - No Ice

G_H = 1.100

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft^2	Face	A_F ft^2	A_R ft^2	A_{leg} ft^2	Leg %	C_AA_A In Face ft^2	C_AA_A Out Face ft^2
L1 151.00-146.00	148.48	1.106	38.88	7.757	A	0.000	7.757	7.757	100.00	0.000	0.000
					B	0.000	7.757		100.00	0.000	0.000
					C	0.000	7.757		100.00	0.000	0.000
L2 146.00-141.00	143.48	1.096	38.50	8.161	A	0.000	8.161	8.161	100.00	0.000	0.000
					B	0.000	8.161		100.00	0.000	0.000
					C	0.000	8.161		100.00	0.000	0.000
L3 141.00-136.00	138.48	1.085	38.12	8.564	A	0.000	8.564	8.564	100.00	0.000	0.000
					B	0.000	8.564		100.00	0.000	0.000
					C	0.000	8.564		100.00	0.000	0.000
L4 136.00-131.00	133.48	1.073	37.72	8.968	A	0.000	8.968	8.968	100.00	0.000	0.000
					B	0.000	8.968		100.00	0.000	0.000
					C	0.000	8.968		100.00	0.000	0.000
L5 131.00-126.00	128.48	1.062	37.31	9.372	A	0.000	9.372	9.372	100.00	0.000	0.000
					B	0.000	9.372		100.00	0.000	0.000
					C	0.000	9.372		100.00	0.000	0.000
L6 126.00-125.50	125.75	1.055	37.08	0.959	A	0.000	0.959	0.959	100.00	0.000	0.000
					B	0.000	0.959		100.00	0.000	0.000
					C	0.000	0.959		100.00	0.000	0.000
L7 125.50-125.25	125.37	1.054	37.05	0.480	A	0.000	0.480	0.480	100.00	0.000	0.000
					B	0.000	0.480		100.00	0.000	0.000
					C	0.000	0.480		100.00	0.000	0.000
L8 125.25-120.25	122.73	1.048	36.82	9.815	A	0.000	9.815	9.815	100.00	3.464	0.000
					B	0.000	9.815		100.00	4.836	0.000
					C	0.000	9.815		100.00	3.464	0.000
L9 120.25-118.50	119.37	1.04	36.53	3.531	A	0.000	3.531	3.531	100.00	2.934	0.000
					B	0.000	3.531		100.00	4.306	0.000
					C	0.000	3.531		100.00	2.934	0.000
L10 118.50-118.25	118.37	1.037	36.45	0.506	A	0.000	0.506	0.506	100.00	0.419	0.000
					B	0.000	0.506		100.00	0.615	0.000
					C	0.000	0.506		100.00	0.419	0.000
L11 118.25-117.50	117.87	1.036	36.40	1.525	A	0.000	1.525	1.525	100.00	1.258	0.000
					B	0.000	1.525		100.00	1.846	0.000
					C	0.000	1.525		100.00	1.258	0.000
L12 117.50-117.25	117.37	1.035	36.36	0.511	A	0.000	0.511	0.511	100.00	0.419	0.000
					B	0.000	0.511		100.00	0.615	0.000
					C	0.000	0.511		100.00	0.419	0.000
L13 117.25-112.25	114.73	1.028	36.12	10.443	A	0.000	10.443	10.443	100.00	6.523	0.000
					B	0.000	10.443		100.00	10.443	0.000
					C	0.000	10.443		100.00	6.523	0.000
L14 112.25-107.25	109.73	1.015	35.67	10.848	A	0.000	10.848	10.848	100.00	5.000	0.000
					B	0.000	10.848		100.00	8.920	0.000
					C	0.000	10.848		100.00	5.000	0.000
L15 107.25-102.25	104.74	1.001	35.19	11.253	A	0.000	11.253	11.253	100.00	5.000	0.000
					B	0.000	11.253		100.00	8.920	0.000
					C	0.000	11.253		100.00	5.000	0.000
L16 102.25-97.50	99.86	0.988	34.72	11.065	A	0.000	11.065	11.065	100.00	5.830	0.000
					B	0.000	11.065		100.00	9.554	0.000
					C	0.000	11.065		100.00	5.830	0.000

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L17 97.50-95.92	96.71	0.979	34.40	3.707	A	0.000	3.707	3.707	100.00	3.168	0.000
					B	0.000	3.707		100.00	4.410	0.000
					C	0.000	3.707		100.00	3.168	0.000
L18 95.92-92.50	94.20	0.972	34.14	8.131	A	0.000	8.131	8.131	100.00	6.832	0.000
					B	0.000	8.131		100.00	9.510	0.000
					C	0.000	8.131		100.00	6.832	0.000
L19 92.50-92.25	92.37	0.966	33.95	0.602	A	0.000	0.602	0.602	100.00	0.500	0.000
					B	0.000	0.602		100.00	0.696	0.000
					C	0.000	0.602		100.00	0.500	0.000
L20 92.25-87.25	89.74	0.958	33.67	12.263	A	0.000	12.263	12.263	100.00	10.271	0.000
					B	0.000	12.263		100.00	14.191	0.000
					C	0.000	12.263		100.00	10.271	0.000
L21 87.25-87.00	87.12	0.95	33.39	0.623	A	0.000	0.623	0.623	100.00	0.521	0.000
					B	0.000	0.623		100.00	0.717	0.000
					C	0.000	0.623		100.00	0.521	0.000
L22 87.00-82.00	84.49	0.942	33.10	12.676	A	0.000	12.676	12.676	100.00	9.997	0.000
					B	0.000	12.676		100.00	13.917	0.000
					C	0.000	12.676		100.00	9.997	0.000
L23 82.00-77.00	79.49	0.925	32.53	13.082	A	0.000	13.082	13.082	100.00	5.417	0.000
					B	0.000	13.082		100.00	9.337	0.000
					C	0.000	13.082		100.00	5.417	0.000
L24 77.00-72.00	74.49	0.908	31.93	13.487	A	0.000	13.487	13.487	100.00	5.417	0.000
					B	0.000	13.487		100.00	9.337	0.000
					C	0.000	13.487		100.00	5.417	0.000
L25 72.00-67.00	69.49	0.891	31.30	13.892	A	0.000	13.892	13.892	100.00	8.309	0.000
					B	0.000	13.892		100.00	12.229	0.000
					C	0.000	13.892		100.00	8.309	0.000
L26 67.00-63.25	65.12	0.874	30.72	10.684	A	0.000	10.684	10.684	100.00	8.125	0.000
					B	0.000	10.684		100.00	11.065	0.000
					C	0.000	10.684		100.00	8.125	0.000
L27 63.25-63.00	63.12	0.867	30.45	0.720	A	0.000	0.720	0.720	100.00	0.542	0.000
					B	0.000	0.720		100.00	0.738	0.000
					C	0.000	0.720		100.00	0.542	0.000
L28 63.00-58.00	60.49	0.856	30.08	14.621	A	0.000	14.621	14.621	100.00	11.667	0.000
					B	0.000	14.621		100.00	15.587	0.000
					C	0.000	14.621		100.00	11.667	0.000
L29 58.00-56.75	57.37	0.843	29.63	3.718	A	0.000	3.718	3.718	100.00	3.125	0.000
					B	0.000	3.718		100.00	4.105	0.000
					C	0.000	3.718		100.00	3.125	0.000
L30 56.75-56.50	56.62	0.84	29.52	0.746	A	0.000	0.746	0.746	100.00	0.625	0.000
					B	0.000	0.746		100.00	0.821	0.000
					C	0.000	0.746		100.00	0.625	0.000
L31 56.50-47.50	51.96	0.82	28.81	27.535	A	0.000	27.535	27.535	100.00	18.352	0.000
					B	0.000	27.535		100.00	25.409	0.000
					C	0.000	27.535		100.00	18.352	0.000
L32 47.50-47.00	47.25	0.798	28.03	1.540	A	0.000	1.540	1.540	100.00	0.708	0.000
					B	0.000	1.540		100.00	1.100	0.000
					C	0.000	1.540		100.00	0.708	0.000
L33 47.00-42.00	44.49	0.784	27.56	15.624	A	0.000	15.624	15.624	100.00	7.083	0.000
					B	0.000	15.624		100.00	11.003	0.000
					C	0.000	15.624		100.00	7.083	0.000
L34 42.00-37.00	39.49	0.758	26.63	16.029	A	0.000	16.029	16.029	100.00	11.335	0.000
					B	0.000	16.029		100.00	15.255	0.000
					C	0.000	16.029		100.00	11.335	0.000
L35 37.00-34.25	35.62	0.736	25.86	8.985	A	0.000	8.985	8.985	100.00	7.789	0.000
					B	0.000	8.985		100.00	9.944	0.000
					C	0.000	8.985		100.00	7.789	0.000
L36 34.25-34.00	34.12	0.727	25.55	0.823	A	0.000	0.823	0.823	100.00	0.708	0.000
					B	0.000	0.823		100.00	0.904	0.000
					C	0.000	0.823		100.00	0.708	0.000
L37 34.00-29.00	31.49	0.71	24.97	16.677	A	0.000	16.677	16.677	100.00	14.167	0.000
					B	0.000	16.677		100.00	18.087	0.000
					C	0.000	16.677		100.00	14.167	0.000
L38 29.00-26.75	27.87	0.7	24.60	7.636	A	0.000	7.636	7.636	100.00	6.375	0.000
					B	0.000	7.636		100.00	8.139	0.000
					C	0.000	7.636		100.00	6.375	0.000
L39 26.75-26.50	26.62	0.7	24.60	0.854	A	0.000	0.854	0.854	100.00	0.708	0.000
					B	0.000	0.854		100.00	0.904	0.000

Section Elevation ft	z ft	K_z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
					C	0.000	0.854		100.00	0.708	0.000
L40 26.50-21.50	23.99	0.7	24.60	17.284	A	0.000	17.284	17.284	100.00	14.167	0.000
					B	0.000	17.284		100.00	18.087	0.000
					C	0.000	17.284		100.00	14.167	0.000
L41 21.50-16.75	19.12	0.7	24.60	16.794	A	0.000	16.794	16.794	100.00	12.750	0.000
					B	0.000	16.794		100.00	16.474	0.000
					C	0.000	16.794		100.00	7.438	0.000
L42 16.75-16.50	16.62	0.7	24.60	0.893	A	0.000	0.893	0.893	100.00	0.708	0.000
					B	0.000	0.893		100.00	0.904	0.000
					C	0.000	0.893		100.00	0.354	0.000
L43 16.50-14.25	15.37	0.7	24.60	8.084	A	0.000	8.084	8.084	100.00	6.375	0.000
					B	0.000	8.084		100.00	8.139	0.000
					C	0.000	8.084		100.00	3.188	0.000
L44 14.25-14.00	14.12	0.7	24.60	0.903	A	0.000	0.903	0.903	100.00	0.708	0.000
					B	0.000	0.903		100.00	0.904	0.000
					C	0.000	0.903		100.00	0.354	0.000
L45 14.00-9.00	11.49	0.7	24.60	18.284	A	0.000	18.284	18.284	100.00	12.042	0.000
					B	0.000	18.284		100.00	18.087	0.000
					C	0.000	18.284		100.00	7.083	0.000
L46 9.00-4.25	6.62	0.7	24.60	17.743	A	0.000	17.743	17.743	100.00	6.729	0.000
					B	0.000	17.743		100.00	17.182	0.000
					C	0.000	17.743		100.00	6.729	0.000
L47 4.25-4.00	4.12	0.7	24.60	0.945	A	0.000	0.945	0.945	100.00	0.354	0.000
					B	0.000	0.945		100.00	0.904	0.000
					C	0.000	0.945		100.00	0.354	0.000
L48 4.00-0.00	1.99	0.7	24.60	15.254	A	0.000	15.254	15.254	100.00	4.958	0.000
					B	0.000	15.254		100.00	13.053	0.000
					C	0.000	15.254		100.00	4.958	0.000

Tower Pressure - With Ice

$G_H = 1.100$

Section Elevation ft	z ft	K_z	q_z psf	t_z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1 151.00-146.00	148.48	1.106	6.22	1.4819	8.992	A	0.000	8.992	8.992	100.00	0.000	0.000
						B	0.000	8.992		100.00	0.000	0.000
						C	0.000	8.992		100.00	0.000	0.000
L2 146.00-141.00	143.48	1.096	6.16	1.4769	9.392	A	0.000	9.392	9.392	100.00	0.000	0.000
						B	0.000	9.392		100.00	0.000	0.000
						C	0.000	9.392		100.00	0.000	0.000
L3 141.00-136.00	138.48	1.085	6.10	1.4716	9.791	A	0.000	9.791	9.791	100.00	0.000	0.000
						B	0.000	9.791		100.00	0.000	0.000
						C	0.000	9.791		100.00	0.000	0.000
L4 136.00-131.00	133.48	1.073	6.03	1.4662	10.190	A	0.000	10.190	10.190	100.00	0.000	0.000
						B	0.000	10.190		100.00	0.000	0.000
						C	0.000	10.190		100.00	0.000	0.000
L5 131.00-126.00	128.48	1.062	5.97	1.4606	10.589	A	0.000	10.589	10.589	100.00	0.000	0.000
						B	0.000	10.589		100.00	0.000	0.000
						C	0.000	10.589		100.00	0.000	0.000
L6 126.00-125.50	125.75	1.055	5.93	1.4575	1.081	A	0.000	1.081	1.081	100.00	0.000	0.000
						B	0.000	1.081		100.00	0.000	0.000
						C	0.000	1.081		100.00	0.000	0.000
L7 125.50-125.25	125.37	1.054	5.93	1.4571	0.541	A	0.000	0.541	0.541	100.00	0.000	0.000
						B	0.000	0.541		100.00	0.000	0.000
						C	0.000	0.541		100.00	0.000	0.000
L8 125.25-120.25	122.73	1.048	5.89	1.4540	11.027	A	0.000	11.027	11.027	100.00	4.411	0.000
						B	0.000	11.027		100.00	6.762	0.000
						C	0.000	11.027		100.00	4.411	0.000
L9 120.25-118.50	119.37	1.04	5.85	1.4499	3.954	A	0.000	3.954	3.954	100.00	3.763	0.000
						B	0.000	3.954		100.00	6.112	0.000
						C	0.000	3.954		100.00	3.763	0.000
L10 118.50-118.25	118.37	1.037	5.83	1.4487	0.567	A	0.000	0.567	0.567	100.00	0.537	0.000
						B	0.000	0.567		100.00	0.873	0.000
						C	0.000	0.567		100.00	0.537	0.000

Section Elevation ft	z ft	K_z	q_z psf	t_z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L11 118.25-117.50	117.87	1.036	5.82	1.4481	1.706	A	0.000	1.706	1.706	100.00	1.612	0.000
						B	0.000	1.706		100.00	2.619	0.000
						C	0.000	1.706		100.00	1.612	0.000
L12 117.50-117.25	117.37	1.035	5.82	1.4475	0.572	A	0.000	0.572	0.572	100.00	0.537	0.000
						B	0.000	0.572		100.00	0.873	0.000
						C	0.000	0.572		100.00	0.537	0.000
L13 117.25-112.25	114.73	1.028	5.78	1.4442	11.646	A	0.000	11.646	11.646	100.00	8.378	0.000
						B	0.000	11.646		100.00	15.084	0.000
						C	0.000	11.646		100.00	8.378	0.000
L14 112.25-107.25	109.73	1.015	5.71	1.4378	12.046	A	0.000	12.046	12.046	100.00	6.438	0.000
						B	0.000	12.046		100.00	13.135	0.000
						C	0.000	12.046		100.00	6.438	0.000
L15 107.25-102.25	104.74	1.001	5.63	1.4311	12.446	A	0.000	12.446	12.446	100.00	6.431	0.000
						B	0.000	12.446		100.00	13.120	0.000
						C	0.000	12.446		100.00	6.431	0.000
L16 102.25-97.50	99.86	0.988	5.55	1.4243	12.192	A	0.000	12.192	12.192	100.00	7.465	0.000
						B	0.000	12.192		100.00	13.812	0.000
						C	0.000	12.192		100.00	7.465	0.000
L17 97.50-95.92	96.71	0.979	5.50	1.4197	4.083	A	0.000	4.083	4.083	100.00	4.034	0.000
						B	0.000	4.083		100.00	6.150	0.000
						C	0.000	4.083		100.00	4.034	0.000
L18 95.92-92.50	94.20	0.972	5.46	1.4160	8.937	A	0.000	8.937	8.937	100.00	8.690	0.000
						B	0.000	8.937		100.00	13.247	0.000
						C	0.000	8.937		100.00	8.690	0.000
L19 92.50-92.25	92.37	0.966	5.43	1.4132	0.661	A	0.000	0.661	0.661	100.00	0.636	0.000
						B	0.000	0.661		100.00	0.969	0.000
						C	0.000	0.661		100.00	0.636	0.000
L20 92.25-87.25	89.74	0.958	5.39	1.4091	13.438	A	0.000	13.438	13.438	100.00	12.980	0.000
						B	0.000	13.438		100.00	19.641	0.000
						C	0.000	13.438		100.00	12.980	0.000
L21 87.25-87.00	87.12	0.95	5.34	1.4050	0.682	A	0.000	0.682	0.682	100.00	0.656	0.000
						B	0.000	0.682		100.00	0.989	0.000
						C	0.000	0.682		100.00	0.656	0.000
L22 87.00-82.00	84.49	0.942	5.30	1.4007	13.843	A	0.000	13.843	13.843	100.00	12.584	0.000
						B	0.000	13.843		100.00	19.235	0.000
						C	0.000	13.843		100.00	12.584	0.000
L23 82.00-77.00	79.49	0.925	5.20	1.3922	14.242	A	0.000	14.242	14.242	100.00	6.809	0.000
						B	0.000	14.242		100.00	13.449	0.000
						C	0.000	14.242		100.00	6.809	0.000
L24 77.00-72.00	74.49	0.908	5.11	1.3831	14.640	A	0.000	14.640	14.640	100.00	6.800	0.000
						B	0.000	14.640		100.00	13.429	0.000
						C	0.000	14.640		100.00	6.800	0.000
L25 72.00-67.00	69.49	0.891	5.01	1.3736	15.037	A	0.000	15.037	15.037	100.00	10.400	0.000
						B	0.000	15.037		100.00	17.017	0.000
						C	0.000	15.037		100.00	10.400	0.000
L26 67.00-63.25	65.12	0.874	4.92	1.3647	11.537	A	0.000	11.537	11.537	100.00	10.150	0.000
						B	0.000	11.537		100.00	15.104	0.000
						C	0.000	11.537		100.00	10.150	0.000
L27 63.25-63.00	63.12	0.867	4.87	1.3604	0.777	A	0.000	0.777	0.777	100.00	0.676	0.000
						B	0.000	0.777		100.00	1.006	0.000
						C	0.000	0.777		100.00	0.676	0.000
L28 63.00-58.00	60.49	0.856	4.81	1.3546	15.749	A	0.000	15.749	15.749	100.00	14.348	0.000
						B	0.000	15.749		100.00	20.941	0.000
						C	0.000	15.749		100.00	14.348	0.000
L29 58.00-56.75	57.37	0.843	4.74	1.3475	3.999	A	0.000	3.999	3.999	100.00	3.792	0.000
						B	0.000	3.999		100.00	5.438	0.000
						C	0.000	3.999		100.00	3.792	0.000
L30 56.75-56.50	56.62	0.84	4.72	1.3457	0.802	A	0.000	0.802	0.802	100.00	0.758	0.000
						B	0.000	0.802		100.00	1.087	0.000
						C	0.000	0.802		100.00	0.758	0.000
L31 56.50-47.50	51.96	0.82	4.61	1.3342	29.537	A	0.000	29.537	29.537	100.00	22.108	0.000
						B	0.000	29.537		100.00	33.931	0.000
						C	0.000	29.537		100.00	22.108	0.000
L32 47.50-47.00	47.25	0.798	4.49	1.3216	1.651	A	0.000	1.651	1.651	100.00	0.842	0.000
						B	0.000	1.651		100.00	1.499	0.000
						C	0.000	1.651		100.00	0.842	0.000
L33 47.00-42.00	44.49	0.784	4.41	1.3137	16.719	A	0.000	16.719	16.719	100.00	8.397	0.000
						B	0.000	16.719		100.00	14.939	0.000

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
						C	0.000	16.719		100.00	8.397	0.000
L34 42.00-37.00	39.49	0.758	4.26	1.2981	17.111	A	0.000	17.111	17.111	100.00	13.154	0.000
						B	0.000	17.111		100.00	19.677	0.000
						C	0.000	17.111		100.00	13.154	0.000
L35 37.00-34.25	35.62	0.736	4.14	1.2848	9.574	A	0.000	9.574	9.574	100.00	8.969	0.000
						B	0.000	9.574		100.00	12.546	0.000
						C	0.000	9.574		100.00	8.969	0.000
L36 34.25-34.00	34.12	0.727	4.09	1.2793	0.876	A	0.000	0.876	0.876	100.00	0.815	0.000
						B	0.000	0.876		100.00	1.140	0.000
						C	0.000	0.876		100.00	0.815	0.000
L37 34.00-29.00	31.49	0.71	3.99	1.2690	17.734	A	0.000	17.734	17.734	100.00	16.214	0.000
						B	0.000	17.734		100.00	22.776	0.000
						C	0.000	17.734		100.00	16.290	0.000
L38 29.00-26.75	27.87	0.7	3.94	1.2537	8.106	A	0.000	8.106	8.106	100.00	7.210	0.000
						B	0.000	8.106		100.00	10.230	0.000
						C	0.000	8.106		100.00	7.320	0.000
L39 26.75-26.50	26.62	0.7	3.94	1.2479	0.906	A	0.000	0.906	0.906	100.00	0.801	0.000
						B	0.000	0.906		100.00	1.136	0.000
						C	0.000	0.906		100.00	0.813	0.000
L40 26.50-21.50	23.99	0.7	3.94	1.2350	18.313	A	0.000	18.313	18.313	100.00	16.003	0.000
						B	0.000	18.313		100.00	22.682	0.000
						C	0.000	18.313		100.00	16.238	0.000
L41 21.50-16.75	19.12	0.7	3.94	1.2073	17.749	A	0.000	17.749	17.749	100.00	14.508	0.000
						B	0.000	17.749		100.00	20.807	0.000
						C	0.000	17.749		100.00	8.667	0.000
L42 16.75-16.50	16.62	0.7	3.94	1.1905	0.943	A	0.000	0.943	0.943	100.00	0.806	0.000
						B	0.000	0.943		100.00	1.136	0.000
						C	0.000	0.943		100.00	0.414	0.000
L43 16.50-14.25	15.37	0.7	3.94	1.1812	8.527	A	0.000	8.527	8.527	100.00	7.250	0.000
						B	0.000	8.527		100.00	10.213	0.000
						C	0.000	8.527		100.00	3.719	0.000
L44 14.25-14.00	14.12	0.7	3.94	1.1713	0.952	A	0.000	0.952	0.952	100.00	0.805	0.000
						B	0.000	0.952		100.00	1.133	0.000
						C	0.000	0.952		100.00	0.413	0.000
L45 14.00-9.00	11.49	0.7	3.94	1.1473	19.240	A	0.000	19.240	19.240	100.00	13.665	0.000
						B	0.000	19.240		100.00	22.603	0.000
						C	0.000	19.240		100.00	8.231	0.000
L46 9.00-4.25	6.62	0.7	3.94	1.0857	18.603	A	0.000	18.603	18.603	100.00	7.606	0.000
						B	0.000	18.603		100.00	21.311	0.000
						C	0.000	18.603		100.00	7.761	0.000
L47 4.25-4.00	4.12	0.7	3.94	1.0356	0.988	A	0.000	0.988	0.988	100.00	0.399	0.000
						B	0.000	0.988		100.00	1.115	0.000
						C	0.000	0.988		100.00	0.406	0.000
L48 4.00-0.00	1.99	0.7	3.94	0.9630	15.896	A	0.000	15.896	15.896	100.00	5.561	0.000
						B	0.000	15.896		100.00	16.076	0.000
						C	0.000	15.896		100.00	5.632	0.000

Tower Pressure - Service

G_H = 1.100

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1 151.00-146.00	148.48	1.106	8.44	7.757	A	0.000	7.757	7.757	100.00	0.000	0.000
					B	0.000	7.757		100.00	0.000	0.000
					C	0.000	7.757		100.00	0.000	0.000
L2 146.00-141.00	143.48	1.096	8.36	8.161	A	0.000	8.161	8.161	100.00	0.000	0.000
					B	0.000	8.161		100.00	0.000	0.000
					C	0.000	8.161		100.00	0.000	0.000
L3 141.00-136.00	138.48	1.085	8.27	8.564	A	0.000	8.564	8.564	100.00	0.000	0.000
					B	0.000	8.564		100.00	0.000	0.000
					C	0.000	8.564		100.00	0.000	0.000
L4 136.00-131.00	133.48	1.073	8.18	8.968	A	0.000	8.968	8.968	100.00	0.000	0.000
					B	0.000	8.968		100.00	0.000	0.000
					C	0.000	8.968		100.00	0.000	0.000

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L5 131.00-126.00	128.48	1.062	8.10	9.372	A	0.000	9.372	9.372	100.00	0.000	0.000
					B	0.000	9.372		100.00	0.000	0.000
					C	0.000	9.372		100.00	0.000	0.000
L6 126.00-125.50	125.75	1.055	8.05	0.959	A	0.000	0.959	0.959	100.00	0.000	0.000
					B	0.000	0.959		100.00	0.000	0.000
					C	0.000	0.959		100.00	0.000	0.000
L7 125.50-125.25	125.37	1.054	8.04	0.480	A	0.000	0.480	0.480	100.00	0.000	0.000
					B	0.000	0.480		100.00	0.000	0.000
					C	0.000	0.480		100.00	0.000	0.000
L8 125.25-120.25	122.73	1.048	7.99	9.815	A	0.000	9.815	9.815	100.00	3.464	0.000
					B	0.000	9.815		100.00	4.836	0.000
					C	0.000	9.815		100.00	3.464	0.000
L9 120.25-118.50	119.37	1.04	7.93	3.531	A	0.000	3.531	3.531	100.00	2.934	0.000
					B	0.000	3.531		100.00	4.306	0.000
					C	0.000	3.531		100.00	2.934	0.000
L10 118.50-118.25	118.37	1.037	7.91	0.506	A	0.000	0.506	0.506	100.00	0.419	0.000
					B	0.000	0.506		100.00	0.615	0.000
					C	0.000	0.506		100.00	0.419	0.000
L11 118.25-117.50	117.87	1.036	7.90	1.525	A	0.000	1.525	1.525	100.00	1.258	0.000
					B	0.000	1.525		100.00	1.846	0.000
					C	0.000	1.525		100.00	1.258	0.000
L12 117.50-117.25	117.37	1.035	7.89	0.511	A	0.000	0.511	0.511	100.00	0.419	0.000
					B	0.000	0.511		100.00	0.615	0.000
					C	0.000	0.511		100.00	0.419	0.000
L13 117.25-112.25	114.73	1.028	7.84	10.443	A	0.000	10.443	10.443	100.00	6.523	0.000
					B	0.000	10.443		100.00	10.443	0.000
					C	0.000	10.443		100.00	6.523	0.000
L14 112.25-107.25	109.73	1.015	7.74	10.848	A	0.000	10.848	10.848	100.00	5.000	0.000
					B	0.000	10.848		100.00	8.920	0.000
					C	0.000	10.848		100.00	5.000	0.000
L15 107.25-102.25	104.74	1.001	7.64	11.253	A	0.000	11.253	11.253	100.00	5.000	0.000
					B	0.000	11.253		100.00	8.920	0.000
					C	0.000	11.253		100.00	5.000	0.000
L16 102.25-97.50	99.86	0.988	7.53	11.065	A	0.000	11.065	11.065	100.00	5.830	0.000
					B	0.000	11.065		100.00	9.554	0.000
					C	0.000	11.065		100.00	5.830	0.000
L17 97.50-95.92	96.71	0.979	7.46	3.707	A	0.000	3.707	3.707	100.00	3.168	0.000
					B	0.000	3.707		100.00	4.410	0.000
					C	0.000	3.707		100.00	3.168	0.000
L18 95.92-92.50	94.20	0.972	7.41	8.131	A	0.000	8.131	8.131	100.00	6.832	0.000
					B	0.000	8.131		100.00	9.510	0.000
					C	0.000	8.131		100.00	6.832	0.000
L19 92.50-92.25	92.37	0.966	7.37	0.602	A	0.000	0.602	0.602	100.00	0.500	0.000
					B	0.000	0.602		100.00	0.696	0.000
					C	0.000	0.602		100.00	0.500	0.000
L20 92.25-87.25	89.74	0.958	7.31	12.263	A	0.000	12.263	12.263	100.00	10.271	0.000
					B	0.000	12.263		100.00	14.191	0.000
					C	0.000	12.263		100.00	10.271	0.000
L21 87.25-87.00	87.12	0.95	7.25	0.623	A	0.000	0.623	0.623	100.00	0.521	0.000
					B	0.000	0.623		100.00	0.717	0.000
					C	0.000	0.623		100.00	0.521	0.000
L22 87.00-82.00	84.49	0.942	7.18	12.676	A	0.000	12.676	12.676	100.00	9.997	0.000
					B	0.000	12.676		100.00	13.917	0.000
					C	0.000	12.676		100.00	9.997	0.000
L23 82.00-77.00	79.49	0.925	7.06	13.082	A	0.000	13.082	13.082	100.00	5.417	0.000
					B	0.000	13.082		100.00	9.337	0.000
					C	0.000	13.082		100.00	5.417	0.000
L24 77.00-72.00	74.49	0.908	6.93	13.487	A	0.000	13.487	13.487	100.00	5.417	0.000
					B	0.000	13.487		100.00	9.337	0.000
					C	0.000	13.487		100.00	5.417	0.000
L25 72.00-67.00	69.49	0.891	6.79	13.892	A	0.000	13.892	13.892	100.00	8.309	0.000
					B	0.000	13.892		100.00	12.229	0.000
					C	0.000	13.892		100.00	8.309	0.000
L26 67.00-63.25	65.12	0.874	6.67	10.684	A	0.000	10.684	10.684	100.00	8.125	0.000
					B	0.000	10.684		100.00	11.065	0.000
					C	0.000	10.684		100.00	8.125	0.000
L27 63.25-63.00	63.12	0.867	6.61	0.720	A	0.000	0.720	0.720	100.00	0.542	0.000
					B	0.000	0.720		100.00	0.738	0.000

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
					C	0.000	0.720		100.00	0.542	0.000
L28 63.00-58.00	60.49	0.856	6.53	14.621	A	0.000	14.621	14.621	100.00	11.667	0.000
					B	0.000	14.621		100.00	15.587	0.000
					C	0.000	14.621		100.00	11.667	0.000
L29 58.00-56.75	57.37	0.843	6.43	3.718	A	0.000	3.718	3.718	100.00	3.125	0.000
					B	0.000	3.718		100.00	4.105	0.000
					C	0.000	3.718		100.00	3.125	0.000
L30 56.75-56.50	56.62	0.84	6.41	0.746	A	0.000	0.746	0.746	100.00	0.625	0.000
					B	0.000	0.746		100.00	0.821	0.000
					C	0.000	0.746		100.00	0.625	0.000
L31 56.50-47.50	51.96	0.82	6.25	27.535	A	0.000	27.535	27.535	100.00	18.352	0.000
					B	0.000	27.535		100.00	25.409	0.000
					C	0.000	27.535		100.00	18.352	0.000
L32 47.50-47.00	47.25	0.798	6.08	1.540	A	0.000	1.540	1.540	100.00	0.708	0.000
					B	0.000	1.540		100.00	1.100	0.000
					C	0.000	1.540		100.00	0.708	0.000
L33 47.00-42.00	44.49	0.784	5.98	15.624	A	0.000	15.624	15.624	100.00	7.083	0.000
					B	0.000	15.624		100.00	11.003	0.000
					C	0.000	15.624		100.00	7.083	0.000
L34 42.00-37.00	39.49	0.758	5.78	16.029	A	0.000	16.029	16.029	100.00	11.335	0.000
					B	0.000	16.029		100.00	15.255	0.000
					C	0.000	16.029		100.00	11.335	0.000
L35 37.00-34.25	35.62	0.736	5.61	8.985	A	0.000	8.985	8.985	100.00	7.789	0.000
					B	0.000	8.985		100.00	9.944	0.000
					C	0.000	8.985		100.00	7.789	0.000
L36 34.25-34.00	34.12	0.727	5.54	0.823	A	0.000	0.823	0.823	100.00	0.708	0.000
					B	0.000	0.823		100.00	0.904	0.000
					C	0.000	0.823		100.00	0.708	0.000
L37 34.00-29.00	31.49	0.71	5.42	16.677	A	0.000	16.677	16.677	100.00	14.167	0.000
					B	0.000	16.677		100.00	18.087	0.000
					C	0.000	16.677		100.00	14.167	0.000
L38 29.00-26.75	27.87	0.7	5.34	7.636	A	0.000	7.636	7.636	100.00	6.375	0.000
					B	0.000	7.636		100.00	8.139	0.000
					C	0.000	7.636		100.00	6.375	0.000
L39 26.75-26.50	26.62	0.7	5.34	0.854	A	0.000	0.854	0.854	100.00	0.708	0.000
					B	0.000	0.854		100.00	0.904	0.000
					C	0.000	0.854		100.00	0.708	0.000
L40 26.50-21.50	23.99	0.7	5.34	17.284	A	0.000	17.284	17.284	100.00	14.167	0.000
					B	0.000	17.284		100.00	18.087	0.000
					C	0.000	17.284		100.00	14.167	0.000
L41 21.50-16.75	19.12	0.7	5.34	16.794	A	0.000	16.794	16.794	100.00	12.750	0.000
					B	0.000	16.794		100.00	16.474	0.000
					C	0.000	16.794		100.00	7.438	0.000
L42 16.75-16.50	16.62	0.7	5.34	0.893	A	0.000	0.893	0.893	100.00	0.708	0.000
					B	0.000	0.893		100.00	0.904	0.000
					C	0.000	0.893		100.00	0.354	0.000
L43 16.50-14.25	15.37	0.7	5.34	8.084	A	0.000	8.084	8.084	100.00	6.375	0.000
					B	0.000	8.084		100.00	8.139	0.000
					C	0.000	8.084		100.00	3.188	0.000
L44 14.25-14.00	14.12	0.7	5.34	0.903	A	0.000	0.903	0.903	100.00	0.708	0.000
					B	0.000	0.903		100.00	0.904	0.000
					C	0.000	0.903		100.00	0.354	0.000
L45 14.00-9.00	11.49	0.7	5.34	18.284	A	0.000	18.284	18.284	100.00	12.042	0.000
					B	0.000	18.284		100.00	18.087	0.000
					C	0.000	18.284		100.00	7.083	0.000
L46 9.00-4.25	6.62	0.7	5.34	17.743	A	0.000	17.743	17.743	100.00	6.729	0.000
					B	0.000	17.743		100.00	17.182	0.000
					C	0.000	17.743		100.00	6.729	0.000
L47 4.25-4.00	4.12	0.7	5.34	0.945	A	0.000	0.945	0.945	100.00	0.354	0.000
					B	0.000	0.945		100.00	0.904	0.000
					C	0.000	0.945		100.00	0.354	0.000
L48 4.00-0.00	1.99	0.7	5.34	15.254	A	0.000	15.254	15.254	100.00	4.958	0.000
					B	0.000	15.254		100.00	13.053	0.000
					C	0.000	15.254		100.00	4.958	0.000

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice
3	0.9 Dead+1.0 Wind 0 deg - No Ice
4	1.2 Dead+1.0 Wind 30 deg - No Ice
5	0.9 Dead+1.0 Wind 30 deg - No Ice
6	1.2 Dead+1.0 Wind 60 deg - No Ice
7	0.9 Dead+1.0 Wind 60 deg - No Ice
8	1.2 Dead+1.0 Wind 90 deg - No Ice
9	0.9 Dead+1.0 Wind 90 deg - No Ice
10	1.2 Dead+1.0 Wind 120 deg - No Ice
11	0.9 Dead+1.0 Wind 120 deg - No Ice
12	1.2 Dead+1.0 Wind 150 deg - No Ice
13	0.9 Dead+1.0 Wind 150 deg - No Ice
14	1.2 Dead+1.0 Wind 180 deg - No Ice
15	0.9 Dead+1.0 Wind 180 deg - No Ice
16	1.2 Dead+1.0 Wind 210 deg - No Ice
17	0.9 Dead+1.0 Wind 210 deg - No Ice
18	1.2 Dead+1.0 Wind 240 deg - No Ice
19	0.9 Dead+1.0 Wind 240 deg - No Ice
20	1.2 Dead+1.0 Wind 270 deg - No Ice
21	0.9 Dead+1.0 Wind 270 deg - No Ice
22	1.2 Dead+1.0 Wind 300 deg - No Ice
23	0.9 Dead+1.0 Wind 300 deg - No Ice
24	1.2 Dead+1.0 Wind 330 deg - No Ice
25	0.9 Dead+1.0 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	151 - 146	Pole	Max Tension	39	0.00	0.00	0.00
			Max. Compression	26	-8.36	-0.72	2.26
			Max. Mx	8	-3.02	-19.53	0.19
			Max. My	2	-3.02	-0.31	19.53
			Max. Vy	8	5.20	-19.53	0.19
			Max. Vx	2	-5.20	-0.31	19.53
			Max. Torque	10			2.22
L2	146 - 141	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-8.89	-0.75	2.31

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	8	-3.33	-46.41	0.21
			Max. My	2	-3.33	-0.33	46.42
			Max. Vy	8	5.56	-46.41	0.21
			Max. Vx	2	-5.56	-0.33	46.42
			Max. Torque	10			2.22
L3	141 - 136	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-17.00	-2.85	4.08
			Max. Mx	8	-6.95	-97.05	0.83
			Max. My	2	-6.92	-1.38	97.24
			Max. Vy	8	11.11	-97.05	0.83
			Max. Vx	2	-11.27	-1.38	97.24
			Max. Torque	10			3.05
L4	136 - 131	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-18.98	-2.90	4.16
			Max. Mx	8	-7.91	-153.75	0.72
			Max. My	2	-7.88	-1.26	154.72
			Max. Vy	8	12.25	-153.75	0.72
			Max. Vx	2	-12.40	-1.26	154.72
			Max. Torque	10			3.05
L5	131 - 126	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-23.81	-2.95	4.30
			Max. Mx	8	-10.14	-223.28	0.62
			Max. My	2	-10.11	-1.14	225.04
			Max. Vy	8	14.46	-223.28	0.62
			Max. Vx	2	-14.62	-1.14	225.04
			Max. Torque	10			3.07
L6	126 - 125.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-23.88	-2.95	4.31
			Max. Mx	8	-10.19	-230.51	0.61
			Max. My	2	-10.16	-1.12	232.36
			Max. Vy	8	14.49	-230.51	0.61
			Max. Vx	2	-14.65	-1.12	232.36
			Max. Torque	10			3.07
L7	125.5 - 125.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-23.92	-2.96	4.31
			Max. Mx	8	-10.23	-234.14	0.60
			Max. My	2	-10.20	-1.12	236.02
			Max. Vy	8	14.51	-234.14	0.60
			Max. Vx	2	-14.67	-1.12	236.02
			Max. Torque	10			3.07
L8	125.25 - 120.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-28.99	-3.04	6.56
			Max. Mx	8	-12.45	-313.13	1.69
			Max. My	2	-12.41	-1.00	317.24
			Max. Vy	20	-17.15	310.04	2.84
			Max. Vx	2	-17.26	-1.00	317.24
			Max. Torque	10			3.54
L9	120.25 - 118.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-29.45	-3.09	6.61
			Max. Mx	8	-12.70	-343.11	1.66
			Max. My	2	-12.66	-0.96	347.65
			Max. Vy	20	-17.34	340.20	2.91
			Max. Vx	2	-17.51	-0.96	347.65
			Max. Torque	10			3.54
L10	118.5 - 118.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-29.54	-3.10	6.62
			Max. Mx	8	-12.76	-347.42	1.66
			Max. My	2	-12.72	-0.96	352.03
			Max. Vy	20	-17.36	344.54	2.92
			Max. Vx	2	-17.53	-0.96	352.03
			Max. Torque	10			3.54
L11	118.25 - 117.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-29.79	-3.12	6.64
			Max. Mx	8	-12.92	-360.40	1.64

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. My	2	-12.88	-0.94	365.22
			Max. Vy	20	-17.46	357.59	2.95
			Max. Vx	2	-17.65	-0.94	365.22
			Max. Torque	10			3.54
L12	117.5 - 117.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-29.87	-3.13	6.65
			Max. Mx	8	-12.97	-364.74	1.64
			Max. My	2	-12.92	-0.94	369.64
			Max. Vy	20	-17.48	361.96	2.96
			Max. Vx	2	-17.68	-0.94	369.64
			Max. Torque	10			3.54
L13	117.25 - 112.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-31.30	-3.28	6.79
			Max. Mx	8	-13.87	-453.10	1.54
			Max. My	2	-13.82	-0.83	459.72
			Max. Vy	20	-18.04	450.73	3.15
			Max. Vx	2	-18.36	-0.83	459.72
			Max. Torque	10			3.54
L14	112.25 - 107.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-32.69	-3.44	6.94
			Max. Mx	8	-14.80	-544.31	1.44
			Max. My	2	-14.76	-0.73	552.80
			Max. Vy	20	-18.57	542.20	3.34
			Max. Vx	2	-18.89	-0.73	552.80
			Max. Torque	10			3.54
L15	107.25 - 102.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-34.10	-3.59	7.08
			Max. Mx	8	-15.76	-638.36	1.33
			Max. My	2	-15.72	-0.62	648.54
			Max. Vy	20	-19.10	636.32	3.53
			Max. Vx	2	-19.42	-0.62	648.54
			Max. Torque	10			3.54
L16	102.25 - 97.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-34.49	-3.64	7.11
			Max. Mx	8	-16.01	-663.93	1.30
			Max. My	2	-15.98	-0.60	674.52
			Max. Vy	8	19.25	-663.93	1.30
			Max. Vx	14	19.56	-2.87	-669.54
			Max. Torque	10			3.53
L17	97.5 - 95.916	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-36.85	-3.79	7.25
			Max. Mx	8	-17.63	-761.84	1.20
			Max. My	2	-17.60	-0.49	773.89
			Max. Vy	8	19.91	-761.84	1.20
			Max. Vx	14	20.21	-3.06	-768.92
			Max. Torque	10			3.53
L18	95.916 - 92.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-38.06	-3.90	7.34
			Max. Mx	8	-18.43	-830.54	1.12
			Max. My	2	-18.40	-0.42	843.49
			Max. Vy	8	20.32	-830.54	1.12
			Max. Vx	14	20.62	-3.19	-838.60
			Max. Torque	10			3.53
L19	92.5 - 92.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-38.15	-3.91	7.35
			Max. Mx	8	-18.49	-835.62	1.12
			Max. My	2	-18.46	-0.42	848.63
			Max. Vy	8	20.35	-835.62	1.12
			Max. Vx	14	20.64	-3.20	-843.76
			Max. Torque	10			3.53
L20	92.25 - 87.25	Pole	Max Tension	1	0.00	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	26	-39.95	-4.06	7.48
			Max. Mx	8	-19.66	-938.89	1.01
			Max. My	2	-19.63	-0.31	953.05
			Max. Vy	8	20.96	-938.89	1.01
			Max. Vx	14	21.26	-3.38	-948.45
			Max. Torque	10			3.53
L21	87.25 - 87	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-40.05	-4.07	7.49
			Max. Mx	8	-19.73	-944.13	1.01
			Max. My	2	-19.71	-0.30	958.34
			Max. Vy	8	20.99	-944.13	1.01
			Max. Vx	14	21.28	-3.39	-953.77
			Max. Torque	10			3.53
L22	87 - 82	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-41.99	-4.23	7.62
			Max. Mx	8	-21.05	-1050.63	0.89
			Max. My	2	-21.03	-0.20	1065.79
			Max. Vy	8	21.61	-1050.63	0.89
			Max. Vx	14	21.90	-3.58	-1061.68
			Max. Torque	10			3.53
L23	82 - 77	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-43.81	-4.39	7.74
			Max. Mx	8	-22.39	-1160.14	0.78
			Max. My	2	-22.38	-0.09	1176.07
			Max. Vy	8	22.20	-1160.14	0.78
			Max. Vx	14	22.45	-3.76	-1172.49
			Max. Torque	10			3.53
L24	77 - 72	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-45.65	-4.55	7.87
			Max. Mx	8	-23.77	-1272.56	0.67
			Max. My	2	-23.76	0.02	1289.07
			Max. Vy	8	22.78	-1272.56	0.67
			Max. Vx	14	22.99	-3.95	-1286.04
			Max. Torque	10			3.53
L25	72 - 67	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-47.61	-4.71	7.99
			Max. Mx	8	-25.17	-1387.90	0.56
			Max. My	2	-25.16	0.12	1404.81
			Max. Vy	8	23.37	-1387.90	0.56
			Max. Vx	14	23.56	-4.13	-1402.36
			Max. Torque	10			3.52
L26	67 - 63.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-49.15	-4.83	8.08
			Max. Mx	8	-26.23	-1476.34	0.47
			Max. My	2	-26.23	0.20	1493.44
			Max. Vy	8	23.82	-1476.34	0.47
			Max. Vx	14	24.01	-4.27	-1491.51
			Max. Torque	10			3.52
L27	63.25 - 63	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-49.25	-4.84	8.09
			Max. Mx	8	-26.32	-1482.29	0.47
			Max. My	2	-26.31	0.21	1499.40
			Max. Vy	8	23.84	-1482.29	0.47
			Max. Vx	14	24.04	-4.28	-1497.51
			Max. Torque	10			3.52
L28	63 - 58	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-51.34	-5.00	8.21
			Max. Mx	8	-27.75	-1602.97	0.35
			Max. My	2	-27.75	0.32	1620.15
			Max. Vy	8	24.44	-1602.97	0.35
			Max. Vx	14	24.63	-4.46	-1619.11
			Max. Torque	10			3.52
L29	58 - 56.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-51.87	-5.04	8.24
			Max. Mx	8	-28.12	-1633.60	0.32
			Max. My	2	-28.11	0.34	1650.77
			Max. Vy	8	24.59	-1633.60	0.32
			Max. Vx	14	24.78	-4.51	-1649.98
			Max. Torque	10			3.52

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L30	56.75 - 56.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-51.99	-5.05	8.25
			Max. Mx	8	-28.21	-1639.75	0.32
			Max. My	2	-28.21	0.35	1656.91
			Max. Vy	8	24.61	-1639.75	0.32
			Max. Vx	14	24.80	-4.52	-1656.17
			Max. Torque	10			3.52
L31	56.5 - 47.499	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-53.98	-5.20	8.35
			Max. Mx	8	-29.66	-1751.73	0.21
			Max. My	14	-29.64	-4.68	-1768.90
			Max. Vy	8	25.15	-1751.73	0.21
			Max. Vx	14	25.32	-4.68	-1768.90
			Max. Torque	10			3.52
L32	47.499 - 46.999	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-57.86	-5.36	8.46
			Max. Mx	8	-32.64	-1879.19	0.10
			Max. My	14	-32.63	-4.86	-1897.09
			Max. Vy	8	25.83	-1879.19	0.10
			Max. Vx	14	25.97	-4.86	-1897.09
			Max. Torque	10			3.52
L33	46.999 - 41.999	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-60.15	-5.52	8.57
			Max. Mx	8	-34.43	-2009.70	-0.02
			Max. My	14	-34.42	-5.05	-2028.16
			Max. Vy	8	26.38	-2009.70	-0.02
			Max. Vx	14	26.48	-5.05	-2028.16
			Max. Torque	10			3.52
L34	41.999 - 36.999	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-62.57	-5.68	8.68
			Max. Mx	8	-36.25	-2142.93	-0.13
			Max. My	14	-36.24	-5.23	-2161.80
			Max. Vy	8	26.93	-2142.93	-0.13
			Max. Vx	14	27.01	-5.23	-2161.80
			Max. Torque	10			3.52
L35	36.999 - 34.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-63.96	-5.77	8.74
			Max. Mx	8	-37.26	-2217.34	-0.20
			Max. My	14	-37.25	-5.33	-2236.42
			Max. Vy	8	27.23	-2217.34	-0.20
			Max. Vx	14	27.32	-5.33	-2236.42
			Max. Torque	10			3.52
L36	34.25 - 34	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-64.08	-5.78	8.75
			Max. Mx	8	-37.36	-2224.15	-0.20
			Max. My	14	-37.36	-5.34	-2243.25
			Max. Vy	8	27.24	-2224.15	-0.20
			Max. Vx	14	27.33	-5.34	-2243.25
			Max. Torque	10			3.52
L37	34 - 29	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-66.61	-5.92	8.83
			Max. Mx	8	-39.22	-2361.68	-0.32
			Max. My	14	-39.22	-5.52	-2381.14
			Max. Vy	8	27.77	-2361.68	-0.32
			Max. Vx	14	27.86	-5.52	-2381.14
			Max. Torque	10			3.52
L38	29 - 26.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-67.75	-5.98	8.87
			Max. Mx	8	-40.07	-2424.42	-0.37
			Max. My	14	-40.07	-5.60	-2444.04
			Max. Vy	8	28.01	-2424.42	-0.37
			Max. Vx	14	28.09	-5.60	-2444.04
			Max. Torque	10			3.52
L39	26.75 - 26.5	Pole	Max Tension	1	0.00	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	26	-67.88	-5.99	8.88
			Max. Mx	8	-40.18	-2431.42	-0.38
			Max. My	14	-40.17	-5.61	-2451.06
			Max. Vy	8	28.02	-2431.42	-0.38
			Max. Vx	14	28.11	-5.61	-2451.06
			Max. Torque	10			3.52
L40	26.5 - 21.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-70.43	-6.13	8.95
			Max. Mx	8	-42.07	-2572.81	-0.50
			Max. My	14	-42.07	-5.78	-2592.80
			Max. Vy	8	28.54	-2572.81	-0.50
			Max. Vx	14	28.62	-5.78	-2592.80
			Max. Torque	10			3.52
L41	21.5 - 16.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-72.81	-6.24	9.17
			Max. Mx	8	-43.91	-2709.49	-0.61
			Max. My	14	-43.91	-5.95	-2729.81
			Max. Vy	8	29.03	-2709.49	-0.61
			Max. Vx	14	29.11	-5.95	-2729.81
			Max. Torque	10			3.52
L42	16.75 - 16.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-72.96	-6.24	9.19
			Max. Mx	8	-44.04	-2716.75	-0.61
			Max. My	14	-44.03	-5.96	-2737.08
			Max. Vy	8	29.04	-2716.75	-0.61
			Max. Vx	14	29.12	-5.96	-2737.08
			Max. Torque	10			3.51
L43	16.5 - 14.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-74.28	-6.28	9.30
			Max. Mx	8	-45.10	-2782.37	-0.67
			Max. My	14	-45.09	-6.04	-2802.85
			Max. Vy	8	29.29	-2782.37	-0.67
			Max. Vx	14	29.37	-6.04	-2802.85
			Max. Torque	10			3.51
L44	14.25 - 14	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-74.42	-6.29	9.32
			Max. Mx	8	-45.21	-2789.69	-0.67
			Max. My	14	-45.21	-6.05	-2810.19
			Max. Vy	8	29.31	-2789.69	-0.67
			Max. Vx	14	29.39	-6.05	-2810.19
			Max. Torque	10			3.51
L45	14 - 9	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-77.13	-6.40	9.55
			Max. Mx	8	-47.38	-2937.55	-0.79
			Max. My	14	-47.38	-6.23	-2958.37
			Max. Vy	8	29.84	-2937.55	-0.79
			Max. Vx	14	29.91	-6.23	-2958.37
			Max. Torque	10			3.51
L46	9 - 4.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-79.67	-6.55	9.71
			Max. Mx	8	-49.47	-3080.35	-0.90
			Max. My	14	-49.47	-6.39	-3101.48
			Max. Vy	8	30.31	-3080.35	-0.90
			Max. Vx	14	30.39	-6.39	-3101.48
			Max. Torque	10			3.51
L47	4.25 - 4	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-79.79	-6.56	9.72
			Max. Mx	8	-49.58	-3087.93	-0.91
			Max. My	14	-49.58	-6.40	-3109.07
			Max. Vy	8	30.32	-3087.93	-0.91
			Max. Vx	14	30.39	-6.40	-3109.07
			Max. Torque	10			3.51
L48	4 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-81.70	-6.67	9.83
			Max. Mx	8	-51.19	-3209.95	-1.00
			Max. My	14	-51.19	-6.54	-3231.34
			Max. Vy	8	30.70	-3209.95	-1.00
			Max. Vx	14	30.77	-6.54	-3231.34
			Max. Torque	10			3.51

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

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	26	81.70	0.00	-0.00
	Max. H_x	21	38.40	29.46	0.03
	Max. H_z	2	51.20	0.03	29.79
	Max. M_x	2	3209.26	0.03	29.79
	Max. M_z	8	3209.95	-30.68	-0.03
	Max. Torsion	10	3.51	-25.94	-15.09
	Min. Vert	3	38.40	0.03	29.79
	Min. H_x	8	51.20	-30.68	-0.03
	Min. H_z	15	38.40	-0.03	-30.75
	Min. M_x	14	-3231.34	-0.03	-30.75
	Min. M_z	20	-3163.87	29.46	0.03
	Min. Torsion	22	-3.51	25.72	14.96

Tower Mast Reaction Summary

Load Combination	Vertical K	Shear$_x$ K	Shear$_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	42.67	-0.00	0.00	-2.31	-1.92	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	51.20	-0.03	-29.79	-3209.26	1.52	1.60
0.9 Dead+1.0 Wind 0 deg - No Ice	38.40	-0.03	-29.79	-3169.51	2.13	1.56
1.2 Dead+1.0 Wind 30 deg - No Ice	51.20	14.70	-25.67	-2767.59	-1582.21	-0.21
0.9 Dead+1.0 Wind 30 deg - No Ice	38.40	14.70	-25.67	-2733.20	-1562.37	-0.24
1.2 Dead+1.0 Wind 60 deg - No Ice	51.20	26.17	-15.19	-1601.24	-2750.31	-1.94
0.9 Dead+1.0 Wind 60 deg - No Ice	38.40	26.17	-15.19	-1581.10	-2716.43	-1.94
1.2 Dead+1.0 Wind 90 deg - No Ice	51.20	30.68	0.03	1.00	-3209.95	-3.15
0.9 Dead+1.0 Wind 90 deg - No Ice	38.40	30.68	0.03	1.75	-3170.61	-3.12
1.2 Dead+1.0 Wind 120 deg - No Ice	51.20	25.94	15.09	1591.45	-2735.79	-3.51
0.9 Dead+1.0 Wind 120 deg - No Ice	38.40	25.94	15.09	1572.92	-2702.00	-3.47
1.2 Dead+1.0 Wind 150 deg - No Ice	51.20	15.06	26.24	2770.78	-1592.20	-2.93
0.9 Dead+1.0 Wind 150 deg - No Ice	38.40	15.06	26.24	2737.95	-1572.27	-2.88
1.2 Dead+1.0 Wind 180 deg - No Ice	51.20	0.03	30.75	3231.34	-6.54	-1.60
0.9 Dead+1.0 Wind 180 deg - No Ice	38.40	0.03	30.75	3193.07	-5.82	-1.56
1.2 Dead+1.0 Wind 210 deg - No Ice	51.20	-15.32	26.73	2797.04	1597.68	0.22
0.9 Dead+1.0 Wind 210 deg - No Ice	38.40	-15.32	26.73	2764.08	1579.07	0.25
1.2 Dead+1.0 Wind 240 deg - No Ice	51.20	-25.85	15.01	1583.93	2725.78	1.95
0.9 Dead+1.0 Wind 240 deg - No Ice	38.40	-25.85	15.01	1565.49	2693.39	1.95
1.2 Dead+1.0 Wind 270 deg - No Ice	51.20	-29.46	-0.03	-7.06	3163.87	3.15

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
0.9 Dead+1.0 Wind 270 deg - No Ice	38.40	-29.46	-0.03	-6.20	3126.12	3.12
1.2 Dead+1.0 Wind 300 deg - No Ice	51.20	-25.72	-14.96	-1605.71	2744.97	3.51
0.9 Dead+1.0 Wind 300 deg - No Ice	38.40	-25.72	-14.96	-1585.49	2712.39	3.46
1.2 Dead+1.0 Wind 330 deg - No Ice	51.20	-15.33	-26.69	-2806.17	1604.11	2.93
0.9 Dead+1.0 Wind 330 deg - No Ice	38.40	-15.33	-26.69	-2771.53	1585.40	2.88
1.2 Dead+1.0 Ice+1.0 Temp	81.70	-0.00	0.00	-9.83	-6.67	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	81.70	-0.01	-6.77	-835.35	-5.79	0.72
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	81.70	3.33	-5.82	-718.60	-412.05	0.14
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	81.70	5.85	-3.39	-420.11	-712.43	-0.46
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	81.70	6.83	0.01	-8.99	-828.02	-0.94
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	81.70	5.81	3.38	399.96	-710.08	-1.17
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	81.70	3.36	5.85	700.04	-413.93	-1.08
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	81.70	0.01	6.87	819.87	-7.71	-0.72
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	81.70	-3.41	5.95	706.49	403.05	-0.14
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	81.70	-5.79	3.36	398.20	695.45	0.47
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	81.70	-6.68	-0.01	-10.92	805.49	0.95
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	81.70	-5.84	-3.39	-421.65	699.67	1.17
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	81.70	-3.42	-5.95	-727.20	404.62	1.08
Dead+Wind 0 deg - Service	42.67	-0.01	-6.46	-693.42	-1.21	0.35
Dead+Wind 30 deg - Service	42.67	3.19	-5.57	-598.38	-342.56	-0.05
Dead+Wind 60 deg - Service	42.67	5.68	-3.30	-347.00	-594.34	-0.43
Dead+Wind 90 deg - Service	42.67	6.66	0.01	-1.65	-693.35	-0.69
Dead+Wind 120 deg - Service	42.67	5.63	3.27	341.13	-591.17	-0.77
Dead+Wind 150 deg - Service	42.67	3.27	5.69	595.35	-344.73	-0.64
Dead+Wind 180 deg - Service	42.67	0.01	6.67	694.47	-2.95	-0.35
Dead+Wind 210 deg - Service	42.67	-3.32	5.80	601.03	342.84	0.05
Dead+Wind 240 deg - Service	42.67	-5.61	3.26	339.50	585.93	0.43
Dead+Wind 270 deg - Service	42.67	-6.39	-0.01	-3.39	680.31	0.69
Dead+Wind 300 deg - Service	42.67	-5.58	-3.25	-347.96	590.11	0.77
Dead+Wind 330 deg - Service	42.67	-3.33	-5.79	-606.74	344.22	0.64

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
1	0.00	-42.67	0.00	0.00	42.67	-0.00	0.003%
2	-0.03	-51.20	-29.79	0.03	51.20	29.79	0.001%
3	-0.03	-38.40	-29.79	0.03	38.40	29.79	0.001%
4	14.70	-51.20	-25.67	-14.70	51.20	25.67	0.000%
5	14.70	-38.40	-25.67	-14.70	38.40	25.67	0.000%
6	26.17	-51.20	-15.19	-26.17	51.20	15.19	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
7	26.17	-38.40	-15.19	-26.17	38.40	15.19	0.000%
8	30.68	-51.20	0.03	-30.68	51.20	-0.03	0.000%
9	30.68	-38.40	0.03	-30.68	38.40	-0.03	0.001%
10	25.94	-51.20	15.09	-25.94	51.20	-15.09	0.000%
11	25.94	-38.40	15.09	-25.94	38.40	-15.09	0.000%
12	15.06	-51.20	26.24	-15.06	51.20	-26.24	0.000%
13	15.06	-38.40	26.24	-15.06	38.40	-26.24	0.000%
14	0.03	-51.20	30.75	-0.03	51.20	-30.75	0.001%
15	0.03	-38.40	30.75	-0.03	38.40	-30.75	0.001%
16	-15.32	-51.20	26.73	15.32	51.20	-26.73	0.000%
17	-15.32	-38.40	26.73	15.32	38.40	-26.73	0.000%
18	-25.85	-51.20	15.01	25.85	51.20	-15.01	0.000%
19	-25.85	-38.40	15.01	25.85	38.40	-15.01	0.000%
20	-29.46	-51.20	-0.03	29.46	51.20	0.03	0.000%
21	-29.46	-38.40	-0.03	29.46	38.40	0.03	0.000%
22	-25.72	-51.20	-14.96	25.72	51.20	14.96	0.000%
23	-25.72	-38.40	-14.96	25.72	38.40	14.96	0.000%
24	-15.33	-51.20	-26.69	15.33	51.20	26.69	0.000%
25	-15.33	-38.40	-26.69	15.33	38.40	26.69	0.000%
26	0.00	-81.70	0.00	0.00	81.70	-0.00	0.000%
27	-0.01	-81.70	-6.77	0.01	81.70	6.77	0.000%
28	3.33	-81.70	-5.82	-3.33	81.70	5.82	0.000%
29	5.85	-81.70	-3.39	-5.85	81.70	3.39	0.000%
30	6.83	-81.70	0.01	-6.83	81.70	-0.01	0.000%
31	5.81	-81.70	3.38	-5.81	81.70	-3.38	0.000%
32	3.36	-81.70	5.85	-3.36	81.70	-5.85	0.000%
33	0.01	-81.70	6.87	-0.01	81.70	-6.87	0.000%
34	-3.41	-81.70	5.95	3.41	81.70	-5.95	0.000%
35	-5.79	-81.70	3.36	5.79	81.70	-3.36	0.000%
36	-6.68	-81.70	-0.01	6.68	81.70	0.01	0.000%
37	-5.84	-81.70	-3.39	5.84	81.70	3.39	0.000%
38	-3.42	-81.70	-5.95	3.42	81.70	5.95	0.000%
39	-0.01	-42.67	-6.46	0.01	42.67	6.46	0.004%
40	3.19	-42.67	-5.57	-3.19	42.67	5.57	0.001%
41	5.68	-42.67	-3.30	-5.68	42.67	3.30	0.001%
42	6.66	-42.67	0.01	-6.66	42.67	-0.01	0.002%
43	5.63	-42.67	3.27	-5.63	42.67	-3.27	0.001%
44	3.27	-42.67	5.69	-3.27	42.67	-5.69	0.001%
45	0.01	-42.67	6.67	-0.01	42.67	-6.67	0.004%
46	-3.32	-42.67	5.80	3.32	42.67	-5.80	0.001%
47	-5.61	-42.67	3.26	5.61	42.67	-3.26	0.001%
48	-6.39	-42.67	-0.01	6.39	42.67	0.01	0.002%
49	-5.58	-42.67	-3.25	5.58	42.67	3.25	0.001%
50	-3.33	-42.67	-5.79	3.33	42.67	5.79	0.001%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	6	0.00000001	0.00001463
2	Yes	21	0.00000001	0.00009815
3	Yes	20	0.00000001	0.00013660
4	Yes	26	0.00000001	0.00008232
5	Yes	25	0.00000001	0.00011116
6	Yes	26	0.00000001	0.00008416
7	Yes	25	0.00000001	0.00011385
8	Yes	22	0.00000001	0.00010202
9	Yes	21	0.00000001	0.00014525
10	Yes	25	0.00000001	0.00014896
11	Yes	25	0.00000001	0.00010451
12	Yes	26	0.00000001	0.00008642
13	Yes	25	0.00000001	0.00011706
14	Yes	21	0.00000001	0.00011144
15	Yes	21	0.00000001	0.00008209
16	Yes	26	0.00000001	0.00008222
17	Yes	25	0.00000001	0.00011132
18	Yes	25	0.00000001	0.00014993
19	Yes	25	0.00000001	0.00010540
20	Yes	22	0.00000001	0.00010900
21	Yes	22	0.00000001	0.00008142
22	Yes	26	0.00000001	0.00008643
23	Yes	25	0.00000001	0.00011716
24	Yes	26	0.00000001	0.00007981
25	Yes	25	0.00000001	0.00010768
26	Yes	15	0.00000001	0.00014859
27	Yes	23	0.00000001	0.00008508
28	Yes	23	0.00000001	0.00010860
29	Yes	23	0.00000001	0.00010917
30	Yes	23	0.00000001	0.00008402
31	Yes	23	0.00000001	0.00010201
32	Yes	23	0.00000001	0.00010637
33	Yes	22	0.00000001	0.00014614
34	Yes	23	0.00000001	0.00010124
35	Yes	23	0.00000001	0.00009945
36	Yes	22	0.00000001	0.00014562
37	Yes	23	0.00000001	0.00010845
38	Yes	23	0.00000001	0.00010525
39	Yes	16	0.00014670	0.00013332
40	Yes	19	0.00000001	0.00009556
41	Yes	19	0.00000001	0.00010833
42	Yes	17	0.00000001	0.00013208
43	Yes	18	0.00000001	0.00014859
44	Yes	19	0.00000001	0.00011465
45	Yes	16	0.00014645	0.00013443
46	Yes	19	0.00000001	0.00009387
47	Yes	18	0.00000001	0.00014854
48	Yes	17	0.00000001	0.00013168
49	Yes	19	0.00000001	0.00011846
50	Yes	19	0.00000001	0.00008491

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	151 - 146	22.3859	39	1.3829	0.0120
L2	146 - 141	20.9386	39	1.3793	0.0114
L3	141 - 136	19.5025	39	1.3619	0.0099
L4	136 - 131	18.0915	39	1.3298	0.0083
L5	131 - 126	16.7238	39	1.2800	0.0069
L6	126 - 125.5	15.4161	39	1.2150	0.0056
L7	125.5 - 125.25	15.2892	39	1.2078	0.0054
L8	125.25 - 120.25	15.2261	39	1.2055	0.0054
L9	120.25 - 118.5	13.9897	39	1.1544	0.0047

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L10	118.5 - 118.25	13.5701	39	1.1348	0.0044
L11	118.25 - 117.5	13.5107	39	1.1332	0.0044
L12	117.5 - 117.25	13.3332	39	1.1281	0.0043
L13	117.25 - 112.25	13.2742	39	1.1259	0.0043
L14	112.25 - 107.25	12.1198	39	1.0781	0.0038
L15	107.25 - 102.25	11.0184	39	1.0250	0.0033
L16	102.25 - 97.5	9.9750	39	0.9672	0.0029
L17	100.916 - 95.916	9.7070	39	0.9514	0.0028
L18	95.916 - 92.5	8.7269	39	0.9149	0.0026
L19	92.5 - 92.25	8.0857	39	0.8775	0.0024
L20	92.25 - 87.25	8.0398	39	0.8748	0.0024
L21	87.25 - 87	7.1553	50	0.8180	0.0021
L22	87 - 82	7.1126	50	0.8155	0.0021
L23	82 - 77	6.2870	50	0.7646	0.0019
L24	77 - 72	5.5149	50	0.7125	0.0017
L25	72 - 67	4.7977	50	0.6591	0.0015
L26	67 - 63.25	4.1364	50	0.6048	0.0013
L27	63.25 - 63	3.6775	50	0.5641	0.0012
L28	63 - 58	3.6480	50	0.5614	0.0012
L29	58 - 56.75	3.0889	50	0.5066	0.0010
L30	56.75 - 56.5	2.9580	50	0.4931	0.0010
L31	56.5 - 47.499	2.9322	50	0.4907	0.0009
L32	51.999 - 46.999	2.4902	50	0.4473	0.0008
L33	46.999 - 41.999	2.0341	50	0.4215	0.0008
L34	41.999 - 36.999	1.6171	50	0.3750	0.0007
L35	36.999 - 34.25	1.2488	50	0.3283	0.0006
L36	34.25 - 34	1.0672	50	0.3029	0.0005
L37	34 - 29	1.0514	50	0.3005	0.0005
L38	29 - 26.75	0.7611	50	0.2539	0.0004
L39	26.75 - 26.5	0.6463	50	0.2332	0.0004
L40	26.5 - 21.5	0.6341	50	0.2309	0.0004
L41	21.5 - 16.75	0.4167	50	0.1844	0.0003
L42	16.75 - 16.5	0.2550	50	0.1409	0.0002
L43	16.5 - 14.25	0.2476	50	0.1389	0.0002
L44	14.25 - 14	0.1863	50	0.1214	0.0002
L45	14 - 9	0.1800	50	0.1194	0.0002
L46	9 - 4.25	0.0765	50	0.0783	0.0001
L47	4.25 - 4	0.0177	50	0.0399	0.0001
L48	4 - 0	0.0157	50	0.0376	0.0001

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
148.00	(2) AM-X-CD-16-65-00T-RET w/ Mount Pipe	39	21.5168	1.3819	0.0117	26203
140.00	DB854DG65ESX w/ Mount Pipe	39	19.2177	1.3568	0.0096	10242
132.00	TME-1900MHZ RRH	39	16.9930	1.2910	0.0071	5215
130.00	GPS-TMG-HR-26NCM	39	16.4569	1.2687	0.0066	4705
122.00	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	39	14.4163	1.1749	0.0050	5466

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	151 - 146	103.2916	2	6.3641	0.0551
L2	146 - 141	96.6437	2	6.3487	0.0522
L3	141 - 136	90.0449	2	6.2709	0.0455
L4	136 - 131	83.5713	14	6.1279	0.0381
L5	131 - 126	77.2976	14	5.9029	0.0313
L6	126 - 125.5	71.2913	14	5.6063	0.0254
L7	125.5 - 125.25	70.7083	14	5.5730	0.0248

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L8	125.25 - 120.25	70.4179	14	5.5626	0.0247
L9	120.25 - 118.5	64.7326	14	5.3294	0.0213
L10	118.5 - 118.25	62.8017	14	5.2402	0.0201
L11	118.25 - 117.5	62.5284	14	5.2325	0.0200
L12	117.5 - 117.25	61.7108	14	5.2094	0.0197
L13	117.25 - 112.25	61.4392	14	5.1994	0.0196
L14	112.25 - 107.25	56.1214	14	4.9811	0.0173
L15	107.25 - 102.25	51.0424	14	4.7376	0.0153
L16	102.25 - 97.5	46.2268	14	4.4722	0.0133
L17	100.916 - 95.916	44.9890	14	4.3993	0.0129
L18	95.916 - 92.5	40.4608	14	4.2316	0.0119
L19	92.5 - 92.25	37.4969	14	4.0605	0.0109
L20	92.25 - 87.25	37.2848	14	4.0479	0.0109
L21	87.25 - 87	33.1851	14	3.7873	0.0096
L22	87 - 82	32.9873	14	3.7759	0.0095
L23	82 - 77	29.1579	14	3.5422	0.0085
L24	77 - 72	25.5763	14	3.3020	0.0076
L25	72 - 67	22.2489	14	3.0561	0.0067
L26	67 - 63.25	19.1813	14	2.8052	0.0059
L27	63.25 - 63	17.0525	14	2.6175	0.0053
L28	63 - 58	16.9159	14	2.6050	0.0053
L29	58 - 56.75	14.3220	14	2.3506	0.0045
L30	56.75 - 56.5	13.7150	14	2.2879	0.0044
L31	56.5 - 47.499	13.5955	14	2.2766	0.0043
L32	51.999 - 46.999	11.5450	14	2.0749	0.0038
L33	46.999 - 41.999	9.4299	14	1.9553	0.0035
L34	41.999 - 36.999	7.4959	14	1.7394	0.0030
L35	36.999 - 34.25	5.7889	24	1.5224	0.0026
L36	34.25 - 34	4.9466	24	1.4042	0.0023
L37	34 - 29	4.8734	24	1.3935	0.0023
L38	29 - 26.75	3.5277	24	1.1774	0.0019
L39	26.75 - 26.5	2.9956	24	1.0811	0.0017
L40	26.5 - 21.5	2.9393	24	1.0704	0.0017
L41	21.5 - 16.75	1.9315	24	0.8549	0.0013
L42	16.75 - 16.5	1.1817	24	0.6530	0.0010
L43	16.5 - 14.25	1.1477	24	0.6440	0.0010
L44	14.25 - 14	0.8634	24	0.5627	0.0008
L45	14 - 9	0.8342	24	0.5533	0.0008
L46	9 - 4.25	0.3546	24	0.3630	0.0005
L47	4.25 - 4	0.0822	24	0.1850	0.0003
L48	4 - 0	0.0728	24	0.1741	0.0002

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
148.00	(2) AM-X-CD-16-65-00T-RET w/ Mount Pipe	2	99.2999	6.3600	0.0539	6214
140.00	DB854DG65ESX w/ Mount Pipe	2	88.7361	6.2481	0.0442	2400
132.00	TME-1900MHZ RRH	14	78.5334	5.9526	0.0329	1190
130.00	GPS-TMG-HR-26NCM	14	76.0724	5.8515	0.0304	1065
122.00	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	14	66.6950	5.4225	0.0228	1223

Compression Checks
Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K
L1	151 - 146 (1)	TP18.5255x17.59x0.2188	5.00	0.00	0.0	12.8977	-3.02
L2	146 - 141 (2)	TP19.461x18.5255x0.2188	5.00	0.00	0.0	13.5568	-3.33

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K
L3	141 - 136 (3)	TP20.3965x19.461x0.2188	5.00	0.00	0.0	14.2159	-6.93
L4	136 - 131 (4)	TP21.3321x20.3965x0.2188	5.00	0.00	0.0	14.8750	-7.88
L5	131 - 126 (5)	TP22.2676x21.3321x0.2188	5.00	0.00	0.0	15.5342	-10.11
L6	126 - 125.5 (6)	TP22.3611x22.2676x0.2188	0.50	0.00	0.0	15.6001	-10.16
L7	125.5 - 125.25 (7)	TP22.4079x22.3611x0.3626	0.25	0.00	0.0	25.7360	-10.20
L8	125.25 - 120.25 (8)	TP23.3434x22.4079x0.3563	5.00	0.00	0.0	26.3728	-12.41
L9	120.25 - 118.5 (9)	TP23.6708x23.3434x0.3563	1.75	0.00	0.0	26.7484	-12.66
L10	118.5 - 118.25 (10)	TP23.7176x23.6708x0.6438	0.25	0.00	0.0	47.8329	-12.72
L11	118.25 - 117.5 (11)	TP23.8579x23.7176x0.6438	0.75	0.00	0.0	48.1238	-12.88
L12	117.5 - 117.25 (12)	TP23.9047x23.8579x0.4938	0.25	0.00	0.0	37.2242	-12.92
L13	117.25 - 112.25 (13)	TP24.8402x23.9047x0.4813	5.00	0.00	0.0	37.7511	-13.82
L14	112.25 - 107.25 (14)	TP25.7757x24.8402x0.4688	5.00	0.00	0.0	38.2017	-14.76
L15	107.25 - 102.25 (15)	TP26.7113x25.7757x0.4563	5.00	0.00	0.0	38.5760	-15.72
L16	102.25 - 97.5 (16)	TP27.6x26.7113x0.4563	4.75	0.00	0.0	38.9428	-15.98
L17	97.5 - 95.916 (17)	TP27.4588x26.5233x0.55	5.00	0.00	0.0	47.6555	-17.60
L18	95.916 - 92.5 (18)	TP28.098x27.4588x0.55	3.42	0.00	0.0	48.7874	-18.40
L19	92.5 - 92.25 (19)	TP28.1447x28.098x0.55	0.25	0.00	0.0	48.8703	-18.46
L20	92.25 - 87.25 (20)	TP29.0803x28.1447x0.5375	5.00	0.00	0.0	49.4004	-19.63
L21	87.25 - 87 (21)	TP29.1271x29.0803x0.625	0.25	0.00	0.0	57.3604	-19.71
L22	87 - 82 (22)	TP30.0626x29.1271x0.6125	5.00	0.00	0.0	58.0829	-21.03
L23	82 - 77 (23)	TP30.9981x30.0626x0.6	5.00	0.00	0.0	58.7292	-22.38
L24	77 - 72 (24)	TP31.9337x30.9981x0.5875	5.00	0.00	0.0	59.2991	-23.76
L25	72 - 67 (25)	TP32.8692x31.9337x0.575	5.00	0.00	0.0	59.7927	-25.16
L26	67 - 63.25 (26)	TP33.5709x32.8692x0.575	3.75	0.00	0.0	61.0918	-26.23
L27	63.25 - 63 (27)	TP33.6176x33.5709x0.575	0.25	0.00	0.0	61.1784	-26.31
L28	63 - 58 (28)	TP34.5532x33.6176x0.5625	5.00	0.00	0.0	61.5656	-27.75
L29	58 - 56.75 (29)	TP34.7871x34.5532x0.5625	1.25	0.00	0.0	61.9892	-28.11
L30	56.75 - 56.5 (30)	TP34.8338x34.7871x0.6375	0.25	0.00	0.0	70.1965	-28.21
L31	56.5 - 47.499 (31)	TP36.518x34.8338x0.6375	9.00	0.00	0.0	71.9253	-29.64
L32	47.499 - 46.999 (32)	TP35.9865x35.051x0.7	5.00	0.00	0.0	79.5358	-32.63
L33	46.999 - 41.999 (33)	TP36.922x35.9865x0.6875	5.00	0.00	0.0	80.2141	-34.42
L34	41.999 - 36.999 (34)	TP37.8575x36.922x0.675	5.00	0.00	0.0	80.8162	-36.24
L35	36.999 - 34.25 (35)	TP38.3718x37.8575x0.675	2.75	0.00	0.0	81.9341	-37.25
L36	34.25 - 34 (36)	TP38.4186x38.3718x0.675	0.25	0.00	0.0	82.0358	-37.36
L37	34 - 29 (37)	TP39.3541x38.4186x0.6625	5.00	0.00	0.0	82.5389	-39.22

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K
L38	29 - 26.75 (38)	TP39.7751x39.3541x0.6625	2.25	0.00	0.0	83.4369	-40.07
L39	26.75 - 26.5 (39)	TP39.8219x39.7751x0.6625	0.25	0.00	0.0	83.5367	-40.17
L40	26.5 - 21.5 (40)	TP40.7574x39.8219x0.65	5.00	0.00	0.0	83.9447	-42.07
L41	21.5 - 16.75 (41)	TP41.6461x40.7574x0.65	4.75	0.00	0.0	85.8048	-43.90
L42	16.75 - 16.5 (42)	TP41.6929x41.6461x0.7625	0.25	0.00	0.0	100.4940	-44.03
L43	16.5 - 14.25 (43)	TP42.1138x41.6929x0.7625	2.25	0.00	0.0	101.5280	-45.09
L44	14.25 - 14 (44)	TP42.1606x42.1138x0.725	0.25	0.00	0.0	96.7314	-45.21
L45	14 - 9 (45)	TP43.0961x42.1606x0.7125	5.00	0.00	0.0	97.2386	-47.38
L46	9 - 4.25 (46)	TP43.9848x43.0961x0.7125	4.75	0.00	0.0	99.2775	-49.47
L47	4.25 - 4 (47)	TP44.0316x43.9848x0.6	0.25	0.00	0.0	83.9099	-49.58
L48	4 - 0 (48)	TP44.78x44.0316x0.6	4.00	0.00	0.0	85.3558	-51.19

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft
L1	151 - 146 (1)	TP18.5255x17.59x0.2188	19.68
L2	146 - 141 (2)	TP19.461x18.5255x0.2188	46.55
L3	141 - 136 (3)	TP20.3965x19.461x0.2188	97.62
L4	136 - 131 (4)	TP21.3321x20.3965x0.2188	154.72
L5	131 - 126 (5)	TP22.2676x21.3321x0.2188	225.05
L6	126 - 125.5 (6)	TP22.3611x22.2676x0.2188	232.36
L7	125.5 - 125.25 (7)	TP22.4079x22.3611x0.3626	236.03
L8	125.25 - 120.25 (8)	TP23.3434x22.4079x0.3563	317.24
L9	120.25 - 118.5 (9)	TP23.6708x23.3434x0.3563	347.65
L10	118.5 - 118.25 (10)	TP23.7176x23.6708x0.6438	352.03
L11	118.25 - 117.5 (11)	TP23.8579x23.7176x0.6438	365.22
L12	117.5 - 117.25 (12)	TP23.9047x23.8579x0.4938	369.64
L13	117.25 - 112.25 (13)	TP24.8402x23.9047x0.4813	459.72
L14	112.25 - 107.25 (14)	TP25.7757x24.8402x0.4688	552.80
L15	107.25 - 102.25 (15)	TP26.7113x25.7757x0.4563	648.54
L16	102.25 - 97.5 (16)	TP27.6x26.7113x0.4563	674.52
L17	97.5 - 95.916 (17)	TP27.4588x26.5233x0.55	773.89
L18	95.916 - 92.5 (18)	TP28.098x27.4588x0.55	843.48
L19	92.5 - 92.25 (19)	TP28.1447x28.098x0.55	848.63
L20	92.25 - 87.25 (20)	TP29.0803x28.1447x0.5375	953.05
L21	87.25 - 87 (21)	TP29.1271x29.0803x0.625	958.34

Section No.	Elevation ft	Size	M_{ux} kip-ft
L22	87 - 82 (22)	TP30.0626x29.1271x0.6125	1065.79
L23	82 - 77 (23)	TP30.9981x30.0626x0.6	1176.07
L24	77 - 72 (24)	TP31.9337x30.9981x0.5875	1289.08
L25	72 - 67 (25)	TP32.8692x31.9337x0.575	1404.81
L26	67 - 63.25 (26)	TP33.5709x32.8692x0.575	1493.43
L27	63.25 - 63 (27)	TP33.6176x33.5709x0.575	1499.40
L28	63 - 58 (28)	TP34.5532x33.6176x0.5625	1620.15
L29	58 - 56.75 (29)	TP34.7871x34.5532x0.5625	1650.77
L30	56.75 - 56.5 (30)	TP34.8338x34.7871x0.6375	1656.92
L31	56.5 - 47.499 (31)	TP36.518x34.8338x0.6375	1768.91
L32	47.499 - 46.999 (32)	TP35.9865x35.051x0.7	1897.10
L33	46.999 - 41.999 (33)	TP36.922x35.9865x0.6875	2028.17
L34	41.999 - 36.999 (34)	TP37.8575x36.922x0.675	2161.81
L35	36.999 - 34.25 (35)	TP38.3718x37.8575x0.675	2236.43
L36	34.25 - 34 (36)	TP38.4186x38.3718x0.675	2243.25
L37	34 - 29 (37)	TP39.3541x38.4186x0.6625	2381.14
L38	29 - 26.75 (38)	TP39.7751x39.3541x0.6625	2444.04
L39	26.75 - 26.5 (39)	TP39.8219x39.7751x0.6625	2451.07
L40	26.5 - 21.5 (40)	TP40.7574x39.8219x0.65	2592.81
L41	21.5 - 16.75 (41)	TP41.6461x40.7574x0.65	2730.09
L42	16.75 - 16.5 (42)	TP41.6929x41.6461x0.7625	2737.38
L43	16.5 - 14.25 (43)	TP42.1138x41.6929x0.7625	2803.30
L44	14.25 - 14 (44)	TP42.1606x42.1138x0.725	2810.66
L45	14 - 9 (45)	TP43.0961x42.1606x0.7125	2959.05
L46	9 - 4.25 (46)	TP43.9848x43.0961x0.7125	3102.31
L47	4.25 - 4 (47)	TP44.0316x43.9848x0.6	3109.91
L48	4 - 0 (48)	TP44.78x44.0316x0.6	3232.29

Pole Shear Design Data

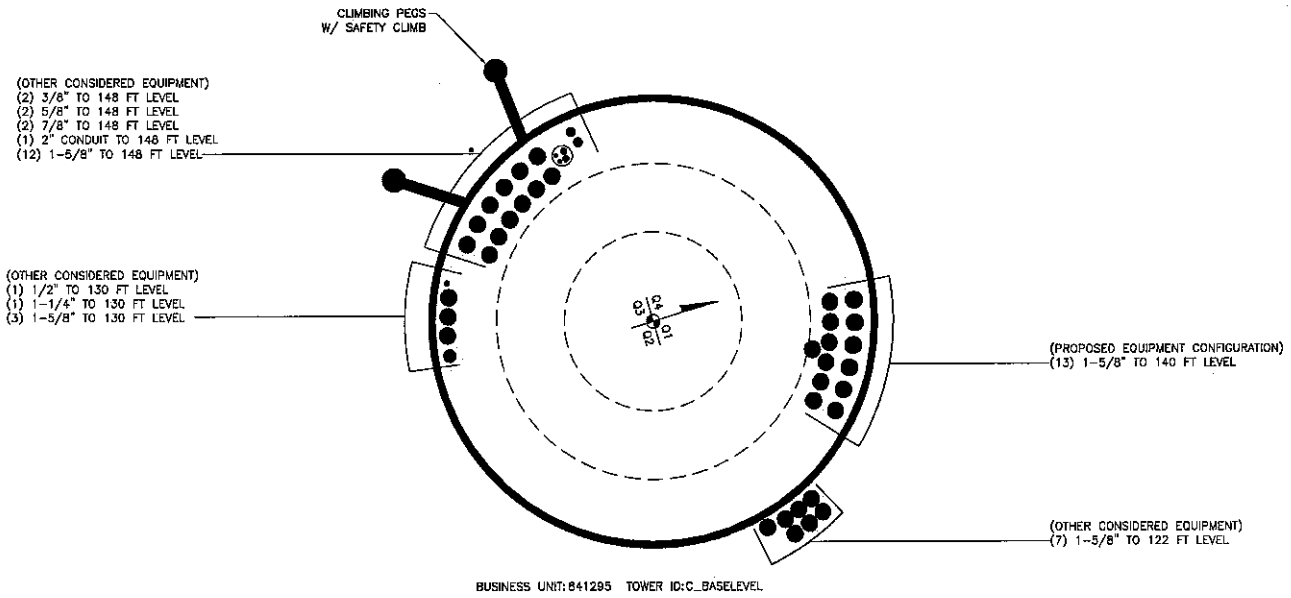
Section No.	Elevation ft	Size	Actual V_u K	Actual T_u kip-ft
L1	151 - 146 (1)	TP18.5255x17.59x0.2188	5.20	1.28
L2	146 - 141 (2)	TP19.461x18.5255x0.2188	5.56	1.28
L3	141 - 136 (3)	TP20.3965x19.461x0.2188	11.20	0.07
L4	136 - 131 (4)	TP21.3321x20.3965x0.2188	12.40	1.58
L5	131 - 126 (5)	TP22.2676x21.3321x0.2188	14.62	1.58
L6	126 - 125.5 (6)	TP22.3611x22.2676x0.2188	14.65	1.58

Section No.	Elevation ft	Size	Actual V_u K	Actual T_u kip-ft
L7	125.5 - 125.25 (7)	TP22.4079x22.3611x0.3626	14.67	1.58
L8	125.25 - 120.25 (8)	TP23.3434x22.4079x0.3563	17.26	1.58
L9	120.25 - 118.5 (9)	TP23.6708x23.3434x0.3563	17.51	1.59
L10	118.5 - 118.25 (10)	TP23.7176x23.6708x0.6438	17.53	1.59
L11	118.25 - 117.5 (11)	TP23.8579x23.7176x0.6438	17.65	1.59
L12	117.5 - 117.25 (12)	TP23.9047x23.8579x0.4938	17.68	1.59
L13	117.25 - 112.25 (13)	TP24.8402x23.9047x0.4813	18.36	1.62
L14	112.25 - 107.25 (14)	TP25.7757x24.8402x0.4688	18.89	1.61
L15	107.25 - 102.25 (15)	TP26.7113x25.7757x0.4563	19.42	1.61
L16	102.25 - 97.5 (16)	TP27.6x26.7113x0.4563	19.56	1.61
L17	97.5 - 95.916 (17)	TP27.4588x26.5233x0.55	20.19	1.61
L18	95.916 - 92.5 (18)	TP28.098x27.4588x0.55	20.58	1.61
L19	92.5 - 92.25 (19)	TP28.1447x28.098x0.55	20.60	1.61
L20	92.25 - 87.25 (20)	TP29.0803x28.1447x0.5375	21.18	1.61
L21	87.25 - 87 (21)	TP29.1271x29.0803x0.625	21.20	1.61
L22	87 - 82 (22)	TP30.0626x29.1271x0.6125	21.79	1.61
L23	82 - 77 (23)	TP30.9981x30.0626x0.6	22.34	1.61
L24	77 - 72 (24)	TP31.9337x30.9981x0.5875	22.88	1.61
L25	72 - 67 (25)	TP32.8692x31.9337x0.575	23.43	1.61
L26	67 - 63.25 (26)	TP33.5709x32.8692x0.575	23.86	1.61
L27	63.25 - 63 (27)	TP33.6176x33.5709x0.575	23.88	1.61
L28	63 - 58 (28)	TP34.5532x33.6176x0.5625	24.44	1.61
L29	58 - 56.75 (29)	TP34.7871x34.5532x0.5625	24.58	1.61
L30	56.75 - 56.5 (30)	TP34.8338x34.7871x0.6375	24.60	1.61
L31	56.5 - 47.499 (31)	TP36.518x34.8338x0.6375	25.32	1.60
L32	47.499 - 46.999 (32)	TP35.9865x35.051x0.7	25.97	1.60
L33	46.999 - 41.999 (33)	TP36.922x35.9865x0.6875	26.48	1.60
L34	41.999 - 36.999 (34)	TP37.8575x36.922x0.675	27.01	1.60
L35	36.999 - 34.25 (35)	TP38.3718x37.8575x0.675	27.32	1.60
L36	34.25 - 34 (36)	TP38.4186x38.3718x0.675	27.33	1.60
L37	34 - 29 (37)	TP39.3541x38.4186x0.6625	27.86	1.60
L38	29 - 26.75 (38)	TP39.7751x39.3541x0.6625	28.09	1.60
L39	26.75 - 26.5 (39)	TP39.8219x39.7751x0.6625	28.11	1.60
L40	26.5 - 21.5 (40)	TP40.7574x39.8219x0.65	28.62	1.60
L41	21.5 - 16.75 (41)	TP41.6461x40.7574x0.65	29.18	2.93

Section No.	Elevation ft	Size	Actual V_u K	Actual T_u kip-ft
L42	16.75 - 16.5 (42)	TP41.6929x41.6461x0.7625	29.19	2.93
L43	16.5 - 14.25 (43)	TP42.1138x41.6929x0.7625	29.42	2.93
L44	14.25 - 14 (44)	TP42.1606x42.1138x0.725	29.44	2.93
L45	14 - 9 (45)	TP43.0961x42.1606x0.7125	29.94	2.93
L46	9 - 4.25 (46)	TP43.9848x43.0961x0.7125	30.41	2.93
L47	4.25 - 4 (47)	TP44.0316x43.9848x0.6	30.42	2.93
L48	4 - 0 (48)	TP44.78x44.0316x0.6	30.80	2.93

APPENDIX B

BASE LEVEL DRAWING


CLIMBING PEGS
W/ SAFETY CLIMB
(OTHER CONSIDERED EQUIPMENT)
(2) 3/8" TO 148 FT LEVEL
(2) 5/8" TO 148 FT LEVEL
(2) 7/8" TO 148 FT LEVEL
(1) 2" CONDUIT TO 148 FT LEVEL
(12) 1-5/8" TO 148 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 1/2" TO 130 FT LEVEL
(1) 1-1/4" TO 130 FT LEVEL
(3) 1-5/8" TO 130 FT LEVEL
(PROPOSED EQUIPMENT CONFIGURATION)
(13) 1-5/8" TO 140 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(7) 1-5/8" TO 122 FT LEVEL
BUSINESS UNIT: 841295 TOWER ID:C_BASELEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

CCIpole

per TIA-222- H

Site BU: 841295

Work Order: _____

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	151	53.5	3.416	12	17.59	27.6	0.2188	Auto	A572-65
2	100.916	53.417	4.5	12	26.52	36.518	0.3125	Auto	A572-65
3	51.999	51.999	0	12	35.05	44.78	0.375	Auto	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	14.25	26.75	plate	MS-850 (1.1875")	1										o		
2	4.25	26.75	plate	MS-850 (1.1875")	2		o				o						
3	4.25	16.75	plate	MS-850 (1.1875")	2									o		o	
4	26.75	34.25	plate	MS-850 (1.1875")	3			o				o				o	
5	34.25	56.75	plate	MS-850 (1.1875")	3		o				o				o		
6	56.75	63.25	plate	MS-650 (1.1875")	3			o				o				o	
7	63.25	87.25	plate	MS-650 (1.1875")	3		o				o				o		
8	87.25	92.5	plate	MS-600 (1.1875")	3			o				o				o	
9	92.5	118.5	plate	MS-600 (1.1875")	3		o				o				o		
10	0	4.25	plate	FP 1.25 x 3.125_1	8	o	o	o	o	o			o	o		o	
11	117.5	125.5	channel	MP3-03 (1.1875")	3				o				o				o
12																	

Reinforcement Details

	B (in)	H (in)	Gross Area (in^2)	Pole Face to Centroid (in)	Bottom Termination Length (in)	Top Termination Length (in)	L_H (in)	Net Area (in^2)	Bolt Hole Size (in)	Reinforcement Material
1	8.5	1.25	10.625	0.625	45.000	45.000	17.250	9.063	1.1875	A572-65
2	8.5	1.25	10.625	0.625	45.000	45.000	17.250	9.063	1.1875	A572-65
3	8.5	1.25	10.625	0.625	45.000	45.000	17.250	9.063	1.1875	A572-65
4	8.5	1.25	10.625	0.625	45.000	45.000	17.250	9.063	1.1875	A572-65
5	8.5	1.25	10.625	0.625	45.000	45.000	17.250	9.063	1.1875	A572-65
6	6.5	1.25	8.125	0.625	33.000	33.000	19.250	6.563	1.1875	A572-65
7	6.5	1.25	8.125	0.625	33.000	33.000	19.250	6.563	1.1875	A572-65
8	6	1	6	0.5	24.000	24.000	16.375	4.750	1.1875	A572-65
9	6	1	6	0.5	24.000	24.000	16.375	4.750	1.1875	A572-65
10	1.25	3.125	3.90625	1.5625	n/a	n/a	0.000	3.906	0.0000	A572-65
11	4.06	1.57	2.92	0.59	14.000	14.000	18.000	2.545	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	151 - 146	5		12	17.590	18.526	0.2188	A572-65	1.000
2	146 - 141	5		12	18.526	19.461	0.2188	A572-65	1.000
3	141 - 136	5		12	19.461	20.397	0.2188	A572-65	1.000
4	136 - 131	5		12	20.397	21.332	0.2188	A572-65	1.000
5	131 - 126	5		12	21.332	22.268	0.2188	A572-65	1.000
6	126 - 125.5	0.5		12	22.268	22.361	0.2188	A572-65	1.000
7	125.5 - 125.25	0.25		12	22.361	22.408	0.36255	A572-65	0.948
8	125.25 - 120.25	5		12	22.408	23.343	0.3563	A572-65	0.950
9	120.25 - 118.5	1.75		12	23.343	23.671	0.3563	A572-65	0.946
10	118.5 - 118.25	0.25		12	23.671	23.718	0.6438	A572-65	0.906
11	118.25 - 117.5	0.75		12	23.718	23.858	0.6438	A572-65	0.903
12	117.5 - 117.25	0.25		12	23.858	23.905	0.4938	A572-65	0.933
13	117.25 - 112.25	5		12	23.905	24.840	0.4813	A572-65	0.937
14	112.25 - 107.25	5		12	24.840	25.776	0.4688	A572-65	0.943
15	107.25 - 102.25	5		12	25.776	26.711	0.4563	A572-65	0.951
16	102.25 - 100.916	4.75	3.416	12	26.711	27.600	0.4563	A572-65	0.947
17	100.916 - 95.916	5		12	26.523	27.459	0.55	A572-65	0.951
18	95.916 - 92.5	3.416		12	27.459	28.098	0.55	A572-65	0.943
19	92.5 - 92.25	0.25		12	28.098	28.145	0.55	A572-65	0.942
20	92.25 - 87.25	5		12	28.145	29.080	0.5375	A572-65	0.951
21	87.25 - 87	0.25		12	29.080	29.127	0.625	A572-65	0.931
22	87 - 82	5		12	29.127	30.063	0.6125	A572-65	0.936
23	82 - 77	5		12	30.063	30.998	0.6	A572-65	0.941
24	77 - 72	5		12	30.998	31.934	0.5875	A572-65	0.948
25	72 - 67	5		12	31.934	32.869	0.575	A572-65	0.956
26	67 - 63.25	3.75		12	32.869	33.571	0.575	A572-65	0.947
27	63.25 - 63	0.25		12	33.571	33.618	0.575	A572-65	0.947
28	63 - 58	5		12	33.618	34.553	0.5625	A572-65	0.956
29	58 - 56.75	1.25		12	34.553	34.787	0.5625	A572-65	0.953
30	56.75 - 56.5	0.25		12	34.787	34.834	0.6375	A572-65	0.950
31	56.5 - 51.999	9.001	4.5	12	34.834	36.518	0.6375	A572-65	0.939
32	51.999 - 46.999	5		12	35.051	35.987	0.7	A572-65	0.942
33	46.999 - 41.999	5		12	35.987	36.922	0.6875	A572-65	0.948
34	41.999 - 36.999	5		12	36.922	37.858	0.675	A572-65	0.955
35	36.999 - 34.25	2.749		12	37.858	38.372	0.675	A572-65	0.950
36	34.25 - 34	0.25		12	38.372	38.419	0.675	A572-65	0.949
37	34 - 29	5		12	38.419	39.354	0.6625	A572-65	0.957
38	29 - 26.75	2.25		12	39.354	39.775	0.6625	A572-65	0.953
39	26.75 - 26.5	0.25		12	39.775	39.822	0.6625	A572-65	0.952
40	26.5 - 21.5	5		12	39.822	40.757	0.65	A572-65	0.961
41	21.5 - 16.75	4.75		12	40.757	41.646	0.65	A572-65	0.953
42	16.75 - 16.5	0.25		12	41.646	41.693	0.7625	A572-65	1.026
43	16.5 - 14.25	2.25		12	41.693	42.114	0.7625	A572-65	1.020
44	14.25 - 14	0.25		12	42.114	42.161	0.725	A572-65	0.962
45	14 - 9	5		12	42.161	43.096	0.7125	A572-65	0.968
46	9 - 4.25	4.75		12	43.096	43.985	0.7125	A572-65	0.959
47	4.25 - 4	0.25		12	43.985	44.032	0.6	A572-65	1.001
48	4 - 0	4		12	44.032	44.780	0.6	A572-65	0.995

TNX Section Forces

Increment (ft):	5	TNX Output		
	Section Height (ft)	P_u (K)	M_{ux} (kip-ft)	V_u (K)
1	151 - 146	3.02	19.68	5.20
2	146 - 141	3.33	46.56	5.56
3	141 - 136	6.93	97.62	11.20
4	136 - 131	7.89	154.77	12.34
5	131 - 126	10.11	225.05	14.62
6	126 - 125.5	10.16	232.36	14.65
7	125.5 - 125.25	10.20	236.03	14.67
8	125.25 - 120.25	12.41	317.24	17.26
9	120.25 - 118.5	12.66	347.65	17.51
10	118.5 - 118.25	12.72	352.03	17.53
11	118.25 - 117.5	12.88	365.22	17.65
12	117.5 - 117.25	12.92	369.64	17.68
13	117.25 - 112.25	13.82	459.72	18.36
14	112.25 - 107.25	14.76	552.80	18.89
15	107.25 - 102.25	15.72	648.54	19.42
16	102.25 - 100.916	15.98	674.52	19.56
17	100.916 - 95.916	17.60	773.89	20.19
18	95.916 - 92.5	18.40	843.49	20.58
19	92.5 - 92.25	18.46	848.63	20.60
20	92.25 - 87.25	19.63	953.05	21.18
21	87.25 - 87	19.71	958.34	21.20
22	87 - 82	21.03	1065.79	21.79
23	82 - 77	22.38	1176.07	22.34
24	77 - 72	23.76	1289.07	22.88
25	72 - 67	25.16	1404.81	23.43
26	67 - 63.25	26.23	1493.44	23.86
27	63.25 - 63	26.31	1499.40	23.88
28	63 - 58	27.75	1620.15	24.44
29	58 - 56.75	28.11	1650.77	24.58
30	56.75 - 56.5	28.21	1656.91	24.60
31	56.5 - 51.999	29.64	1768.90	25.32
32	51.999 - 46.999	32.63	1897.10	25.97
33	46.999 - 41.999	34.42	2028.16	26.48
34	41.999 - 36.999	36.24	2161.81	27.01
35	36.999 - 34.25	37.25	2236.42	27.32
36	34.25 - 34	37.36	2243.25	27.33
37	34 - 29	39.22	2381.15	27.86
38	29 - 26.75	40.07	2444.04	28.09
39	26.75 - 26.5	40.17	2451.06	28.11
40	26.5 - 21.5	42.07	2592.81	28.62
41	21.5 - 16.75	43.90	2730.09	29.18
42	16.75 - 16.5	44.03	2737.39	29.19
43	16.5 - 14.25	45.09	2803.30	29.42
44	14.25 - 14	45.21	2810.66	29.44
45	14 - 9	47.38	2959.05	29.94
46	9 - 4.25	49.47	3102.30	30.41
47	4.25 - 4	49.58	3109.91	30.42
48	4 - 0	51.19	3232.30	30.80

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
151 - 146	Pole	TP18.526x17.59x0.2188	Pole	5.6%	Pass
146 - 141	Pole	TP19.461x18.526x0.2188	Pole	11.9%	Pass
141 - 136	Pole	TP20.397x19.461x0.2188	Pole	23.1%	Pass
136 - 131	Pole	TP21.332x20.397x0.2188	Pole	33.7%	Pass
131 - 126	Pole	TP22.268x21.332x0.2188	Pole	45.6%	Pass
126 - 125.5	Pole	TP22.361x22.268x0.2188	Pole	46.7%	Pass
125.5 - 125.25	Pole + Reinf.	TP22.408x22.361x0.3626	Reinf. 11 Tension Rupture	40.8%	Pass
125.25 - 120.25	Pole + Reinf.	TP23.343x22.408x0.3563	Reinf. 11 Tension Rupture	51.2%	Pass
120.25 - 118.5	Pole + Reinf.	TP23.671x23.343x0.3563	Reinf. 11 Tension Rupture	54.8%	Pass
118.5 - 118.25	Pole + Reinf.	TP23.718x23.671x0.6438	Reinf. 9 Bolt-Shaft Bearing	33.5%	Pass
118.25 - 117.5	Pole + Reinf.	TP23.858x23.718x0.6438	Reinf. 9 Tension Rupture	33.7%	Pass
117.5 - 117.25	Pole + Reinf.	TP23.905x23.858x0.4938	Reinf. 9 Tension Rupture	42.9%	Pass
117.25 - 112.25	Pole + Reinf.	TP24.84x23.905x0.4813	Reinf. 9 Tension Rupture	50.4%	Pass
112.25 - 107.25	Pole + Reinf.	TP25.776x24.84x0.4688	Reinf. 9 Tension Rupture	57.4%	Pass
107.25 - 102.25	Pole + Reinf.	TP26.711x25.776x0.4563	Reinf. 9 Tension Rupture	63.8%	Pass
102.25 - 100.92	Pole + Reinf.	TP27.6x26.711x0.4563	Reinf. 9 Tension Rupture	65.4%	Pass
100.92 - 95.92	Pole + Reinf.	TP27.459x26.523x0.55	Reinf. 9 Tension Rupture	60.5%	Pass
95.92 - 92.5	Pole + Reinf.	TP28.098x27.459x0.55	Reinf. 9 Tension Rupture	63.6%	Pass
92.5 - 92.25	Pole + Reinf.	TP28.145x28.098x0.55	Reinf. 8 Tension Rupture	63.8%	Pass
92.25 - 87.25	Pole + Reinf.	TP29.08x28.145x0.5375	Reinf. 8 Tension Rupture	67.9%	Pass
87.25 - 87	Pole + Reinf.	TP29.127x29.08x0.625	Reinf. 7 Tension Rupture	58.4%	Pass
87 - 82	Pole + Reinf.	TP30.063x29.127x0.6125	Reinf. 7 Tension Rupture	61.9%	Pass
82 - 77	Pole + Reinf.	TP30.998x30.063x0.6	Reinf. 7 Tension Rupture	65.2%	Pass
77 - 72	Pole + Reinf.	TP31.934x30.998x0.5875	Reinf. 7 Tension Rupture	68.2%	Pass
72 - 67	Pole + Reinf.	TP32.869x31.934x0.575	Reinf. 7 Tension Rupture	71.1%	Pass
67 - 63.25	Pole + Reinf.	TP33.571x32.869x0.575	Reinf. 7 Tension Rupture	73.1%	Pass
63.25 - 63	Pole + Reinf.	TP33.618x33.571x0.575	Reinf. 6 Tension Rupture	73.3%	Pass
63 - 58	Pole + Reinf.	TP34.553x33.618x0.5625	Reinf. 6 Tension Rupture	75.8%	Pass
58 - 56.75	Pole + Reinf.	TP34.787x34.553x0.5625	Reinf. 6 Tension Rupture	76.4%	Pass
56.75 - 56.5	Pole + Reinf.	TP34.834x34.787x0.6375	Reinf. 5 Bolt Shear	66.4%	Pass
56.5 - 52	Pole + Reinf.	TP36.518x34.834x0.6375	Reinf. 5 Compression	66.1%	Pass
52 - 47	Pole + Reinf.	TP35.987x35.051x0.7	Reinf. 5 Compression	63.6%	Pass
47 - 42	Pole + Reinf.	TP36.922x35.987x0.6875	Reinf. 5 Compression	65.4%	Pass
42 - 37	Pole + Reinf.	TP37.858x36.922x0.675	Reinf. 5 Compression	67.0%	Pass
37 - 34.25	Pole + Reinf.	TP38.372x37.858x0.675	Reinf. 5 Bolt Shear	70.3%	Pass
34.25 - 34	Pole + Reinf.	TP38.419x38.372x0.675	Reinf. 4 Bolt Shear	70.4%	Pass
34 - 29	Pole + Reinf.	TP39.354x38.419x0.6625	Reinf. 4 Compression	69.4%	Pass
29 - 26.75	Pole + Reinf.	TP39.775x39.354x0.6625	Reinf. 4 Bolt Shear	72.6%	Pass
26.75 - 26.5	Pole + Reinf.	TP39.822x39.775x0.6625	Reinf. 1 Bolt Shear	72.7%	Pass
26.5 - 21.5	Pole + Reinf.	TP40.757x39.822x0.65	Reinf. 1 Compression	71.5%	Pass
21.5 - 16.75	Pole + Reinf.	TP41.646x40.757x0.65	Reinf. 1 Compression	72.8%	Pass
16.75 - 16.5	Pole + Reinf.	TP41.693x41.646x0.7625	Reinf. 2 Compression	66.9%	Pass
16.5 - 14.25	Pole + Reinf.	TP42.114x41.693x0.7625	Reinf. 2 Compression	67.5%	Pass
14.25 - 14	Pole + Reinf.	TP42.161x42.114x0.725	Reinf. 2 Compression	67.9%	Pass
14 - 9	Pole + Reinf.	TP43.096x42.161x0.7125	Reinf. 2 Compression	69.1%	Pass
9 - 4.25	Pole + Reinf.	TP43.985x43.096x0.7125	Reinf. 2 Bolt Shear	72.7%	Pass
4.25 - 4	Pole + Reinf.	TP44.032x43.985x0.6	Reinf. 10 Connection	74.0%	Pass
4 - 0	Pole + Reinf.	TP44.78x44.032x0.6	Reinf. 10 Connection	74.8%	Pass
				Summary	
			Pole	64.6%	Pass
			Reinforcement	76.4%	Pass
			Overall	76.4%	Pass

Additional Calculations

Section Elevation (ft)	Moment of Inertia (in^4)			Area (in^2)			% Capacity*										
	Pole	Reinf.	Total	Pole	Reinf.	Total	Pole	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11
151 - 146	552	n/a	552	12.88	n/a	12.88	5.6%											
146 - 141	642	n/a	642	13.54	n/a	13.54	11.9%											
141 - 136	740	n/a	740	14.20	n/a	14.20	23.1%											
136 - 131	848	n/a	848	14.85	n/a	14.85	33.7%											
131 - 126	965	n/a	965	15.51	n/a	15.51	45.6%											
126 - 125.5	978	n/a	978	15.58	n/a	15.58	46.7%											
125.5 - 125.25	984	612	1596	15.61	8.76	24.37	28.3%											40.8%
125.25 - 120.25	1114	661	1775	16.27	8.76	25.03	36.1%											51.2%
120.25 - 118.5	1161	679	1840	16.50	8.76	25.26	38.9%											54.8%
118.5 - 118.25	1168	2084	3252	16.53	26.76	43.29	22.4%									33.5%		31.5%
118.25 - 117.5	1180	2107	3297	16.63	26.76	43.39	23.1%									33.7%		32.4%
117.5 - 117.25	1197	1423	2620	16.66	18.00	34.66	29.5%									42.9%		
117.25 - 112.25	1344	1530	2874	17.32	18.00	35.32	35.2%									50.4%		
112.25 - 107.25	1503	1641	3144	17.98	18.00	35.98	40.8%									57.4%		
107.25 - 102.25	1674	1756	3430	18.64	18.00	36.64	46.2%									63.8%		
102.25 - 100.92	1722	1787	3509	18.81	18.00	36.81	47.7%									65.4%		
100.92 - 95.92	2573	1850	4423	27.28	18.00	45.28	38.5%									60.5%		
95.92 - 92.5	2759	1933	4692	27.92	18.00	45.92	40.8%									63.6%		
92.5 - 92.25	2773	1939	4712	27.97	18.00	45.97	40.9%								63.8%			
92.25 - 87.25	3062	2064	5126	28.91	18.00	46.91	44.1%								67.9%			
87.25 - 87	3077	2856	5933	28.95	24.38	53.33	38.4%							58.4%				
87 - 82	3386	3032	6418	29.89	24.38	54.27	41.2%							61.9%				
82 - 77	3716	3213	6929	30.83	24.38	55.21	43.9%							65.2%				
77 - 72	4066	3400	7466	31.77	24.38	56.15	46.6%							68.2%				
72 - 67	4438	3591	8030	32.71	24.38	57.09	49.1%							71.1%				
67 - 63.25	4731	3739	8470	33.42	24.38	57.79	51.0%							73.1%				
63.25 - 63	4751	3749	8500	33.47	24.38	57.84	51.1%						73.3%					
63 - 58	5163	3950	9113	34.41	24.38	58.78	53.6%						75.8%					
58 - 56.75	5270	4001	9271	34.64	24.38	59.02	54.2%						76.4%					
56.75 - 56.5	5291	5286	10577	34.69	31.88	66.56	47.8%					66.4%						
56.5 - 52	5688	5531	11219	35.53	31.88	67.41	49.8%					66.1%						
52 - 47	6970	5623	12593	42.94	31.88	74.81	44.7%					63.6%						
47 - 42	7534	5904	13438	44.07	31.88	75.94	46.4%					65.4%						
42 - 37	8127	6192	14319	45.20	31.88	77.07	48.1%					67.0%						
37 - 34.25	8466	6353	14820	45.82	31.88	77.69	49.0%					70.3%						
34.25 - 34	8498	6368	14866	45.87	31.88	77.75	49.0%				70.4%							
34 - 29	9140	6667	15807	47.00	31.88	78.87	50.6%				69.4%							
29 - 26.75	9440	6804	16244	47.51	31.88	79.38	51.3%				72.6%							
26.75 - 26.5	9473	6819	16292	47.56	31.88	79.44	51.4%	72.7%	72.7%									
26.5 - 21.5	10163	7129	17292	48.69	31.88	80.57	53.0%	71.5%	71.5%									
21.5 - 16.75	10849	7430	18279	49.76	31.88	81.64	54.4%	72.8%	72.8%									
16.75 - 16.5	11070	10638	21707	49.82	53.13	102.94	50.2%	45.5%	66.9%	51.6%								
16.5 - 14.25	11409	10846	22255	50.33	53.13	103.45	50.8%	47.6%	67.5%	50.3%								
14.25 - 14	11315	9986	21301	50.38	42.50	92.88	52.3%		67.9%	60.8%								
14 - 9	12090	10417	22507	51.51	42.50	94.01	53.8%		69.1%	61.9%								
9 - 4.25	12859	10835	23694	52.58	42.50	95.08	55.2%		72.7%	65.2%								
4.25 - 4	12848	7526	20374	52.64	31.25	83.89	63.3%										74.0%	
4 - 0	13520	7767	21287	53.54	31.25	84.79	64.6%										74.8%	

Note: Section capacity checked in 5 degree increments.
Rating per TIA-222-H Section 15.5.

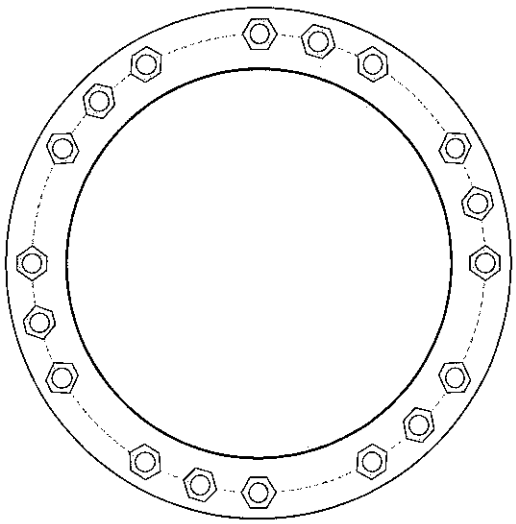
Monopole Base Plate Connection

Site Info	
BU #	841295
Site Name	Bethany
Order #	

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	No
l_{gr} (in)	0

Applied Loads	
Moment (kip-ft)	3232.30
Axial Force (kips)	51.19
Shear Force (kips)	30.80

**TIA-222-H Section 15.5 Applied*



Connection Properties

Anchor Rod Data

GROUP 1: (12) 2-1/4" ø bolts (A615-75 N; Fy=75 ksi, Fu=100 ksi) on 52.75" BC
GROUP 2: (6) 2-1/4" ø bolts (Williams N; Fy=120 ksi, Fu=125 ksi) on 52.75" BC

Base Plate Data

58.75" OD x 3" Plate (A572-50; Fy=50 ksi, Fu=65 ksi)

Stiffener Data

N/A

Pole Data

44.78" x 0.375" 12-sided pole (A572-65; Fy=65 ksi, Fu=80 ksi)

Analysis Results

Anchor Rod Summary *(units of kips, kip-in)*

GROUP 1:		
Pu_c = 154.73	ϕPn_c = 243.75	**Stress Rating**
Vu = 2.57	ϕVn = 73.13	**60.6%**
Mu = n/a	ϕMn = n/a	**Pass**
GROUP 2:		
Pu_c = 188.89	ϕPn_c = 489.6	**Stress Rating**
Vu = 0	ϕVn = 146.88	**36.7%**
Mu = n/a	ϕMn = n/a	**Pass**

Base Plate Summary

Max Stress (ksi):	26.72	(Flexural)
Allowable Stress (ksi):	45	
Stress Rating:	**56.6%**	**Pass**

Pier and Pad Foundation

BU # :	841295
Site Name:	Bethany
App. Number:	

TIA-222 Revision:	H
Tower Type:	Monopole

Top & Bot. Pad Rein. Different?:	☐
Block Foundation?:	☐

Superstructure Analysis Reactions		
Compression, P_{comp}:	51.19	kips
Base Shear, Vu_comp:	30.8	kips
Moment, M_u:	3232.3	ft-kips
Tower Height, H:	150	ft
BP Dist. Above Fdn, bp_{dist}:	3.75	in

Pier Properties		
Pier Shape:	Square	
Pier Diameter, **dpier**:	6	ft
Ext. Above Grade, **E**:	0.4	ft
Pier Rebar Size, **Sc**:	10	
Pier Rebar Quantity, **mc**:	40	
Pier Tie/Spiral Size, **St**:	4	
Pier Tie/Spiral Quantity, **mt**:		
Pier Reinforcement Type:	Tie	
Pier Clear Cover, cc_{pier}:	2.5	in

Pad Properties		
Depth, **D**:	9.1	ft
Pad Width, **W**:	29	ft
Pad Thickness, **T**:	8.5	ft
Pad Rebar Size (Bottom), **Sp**:	7	
Pad Rebar Quantity (Bottom), **mp**:	29	
Pad Clear Cover, cc_{pad}:	3	in

Material Properties		
Rebar Grade, **Fy**:	60	ksi
Concrete Compressive Strength, **F'c**:	4	ksi
Dry Concrete Density, δc:	150	pcf

Soil Properties		
Total Soil Unit Weight, γ:	110	pcf
Ultimate Gross Bearing, Qult:	30.000	ksf
Cohesion, **Cu**:	0.000	ksf
Friction Angle, φ:	30	degrees
SPT Blow Count, N_{blows}:	69	
Base Friction, μ:	0.5	
Neglected Depth, **N**:	3.30	ft
Foundation Bearing on Rock?	No	
Groundwater Depth, **gw**:	3.3	ft

<--Toggle between Gross and Net

Foundation Analysis Checks	Capacity	Demand	Rating*	Check
Lateral (Sliding) (kips)	482.94	30.80	**6.1%**	**Pass**
Bearing Pressure (ksf)	22.50	1.84	**7.8%**	**Pass**
*Overturning (kip*ft)*	10947.31	3534.53	**32.3%**	**Pass**
*Pier Flexure (Comp.) (kip*ft)*	6585.19	3263.10	**47.2%**	**Pass**
Pier Compression (kip)	22913.28	57.67	**0.2%**	**Pass**
*Pad Flexure (kip*ft)*	7614.39	1351.62	**16.9%**	**Pass**
Pad Shear - 1-way (kips)	3225.07	81.25	**2.4%**	**Pass**
Pad Shear - 2-way (Comp) (ksi)	0.190	0.005	**2.4%**	**Pass**
*Flexural 2-way (Comp) (kip*ft)*	15228.77	1957.86	**12.2%**	**Pass**

**Rating per TIA-222-H Section 15.5*

Soil Rating*:	**32.3%**
Structural Rating*:	**47.2%**

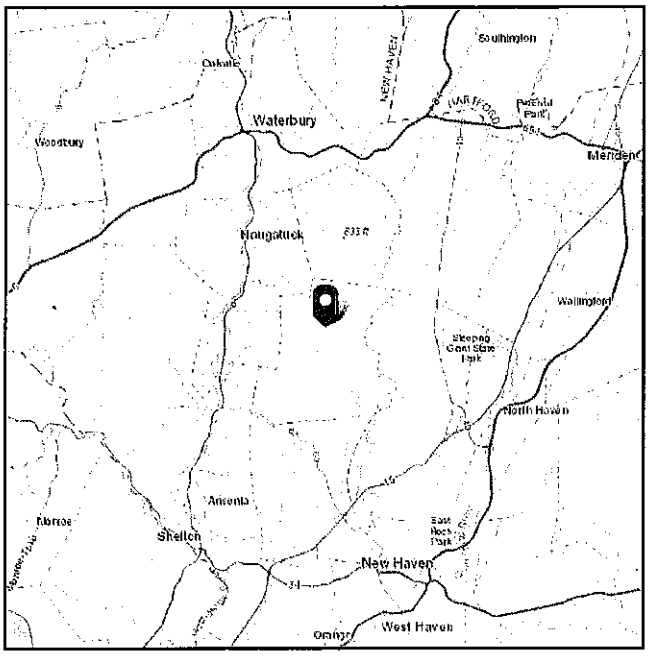
Version 3.2.0

ASCE 7 Hazards Report

Address:
No Address at This Location

Standard: ASCE/SEI 7-10
Risk Category: II
Soil Class: D - Stiff Soil

Elevation: 741.6 ft (NAVD 88)
Latitude: 41.442758
Longitude: -72.992461



Wind

Results:

Wind Speed:	122 Vmph
10-year MRI	76 Vmph
25-year MRI	86 Vmph
50-year MRI	93 Vmph
100-year MRI	99 Vmph
Data Source:	ASCE/SEI 7-10, Fig. 26.5-1A and Figs. CC-1–CC-4, incorporating errata of March 12, 2014
Date Accessed:	Wed Jun 05 2019

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-10 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).

Site is in a hurricane-prone region as defined in ASCE/SEI 7-10 Section 26.2. Glazed openings need not be protected against wind-borne debris.

Mountainous terrain, gorges, ocean promontories, and special wind regions should be examined for unusual wind conditions.

ASCE
AMERICAN SOCIETY OF CIVIL ENGINEERS

Ice

Results:

Ice Thickness:	0.75 in.
Concurrent Temperature:	15 F
Gust Speed:	50 mph
Data Source:	Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8
Date Accessed:	Wed Jun 05 2019

Ice thicknesses on structures in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 50-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from local meteorological studies. Ice thicknesses in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

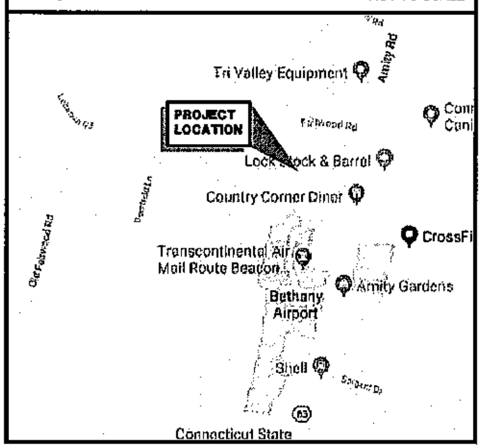
veriz

BETHANY N(

CROWN CASTLE B
719 AMITY R
BETHANY, CT

VICINITY MAP

NOT TO SCALE



DO NOT SCALE DRAWINGS

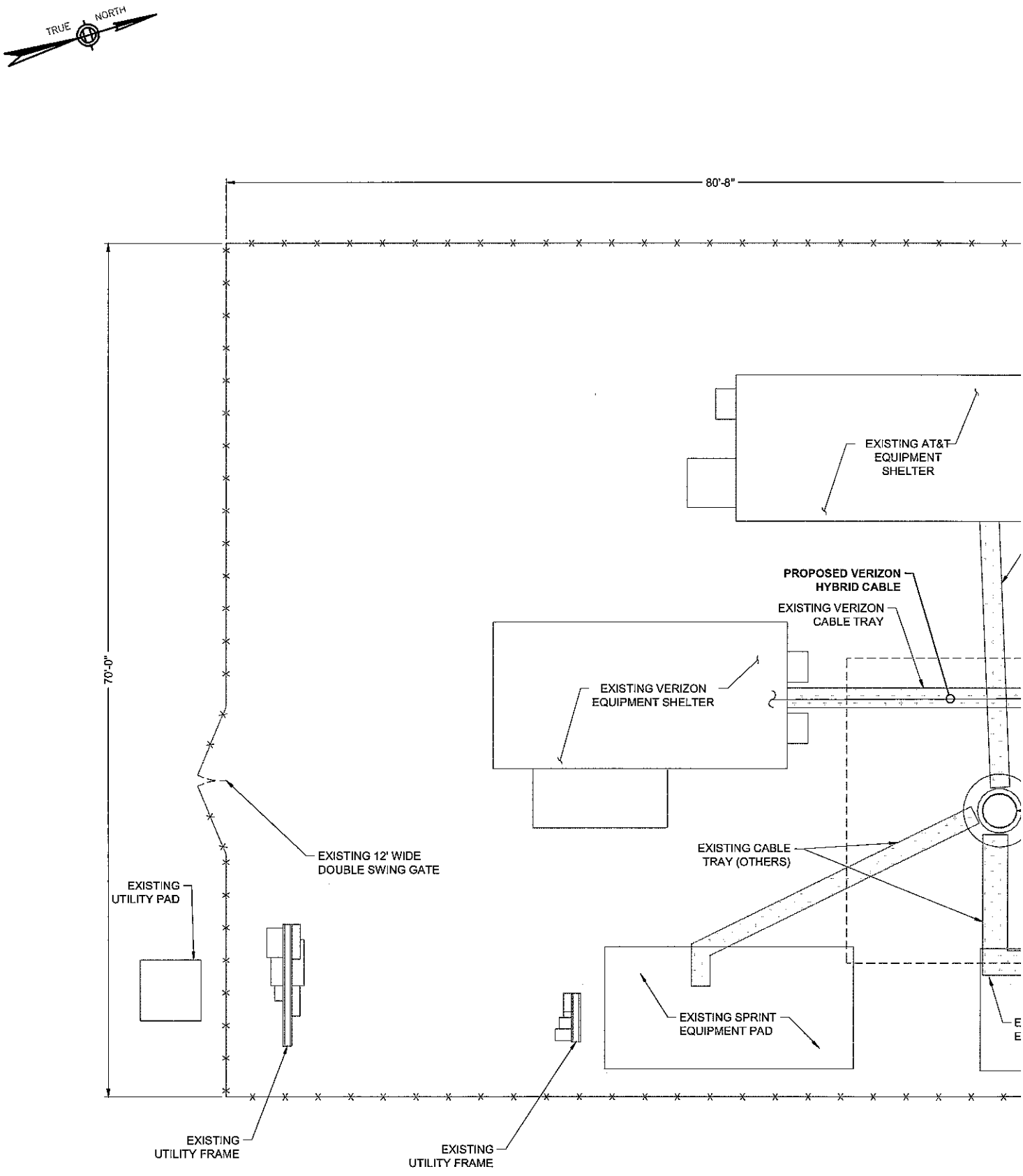
CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE LESSEE/LICENSEE REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

CONSULTANT TEAM

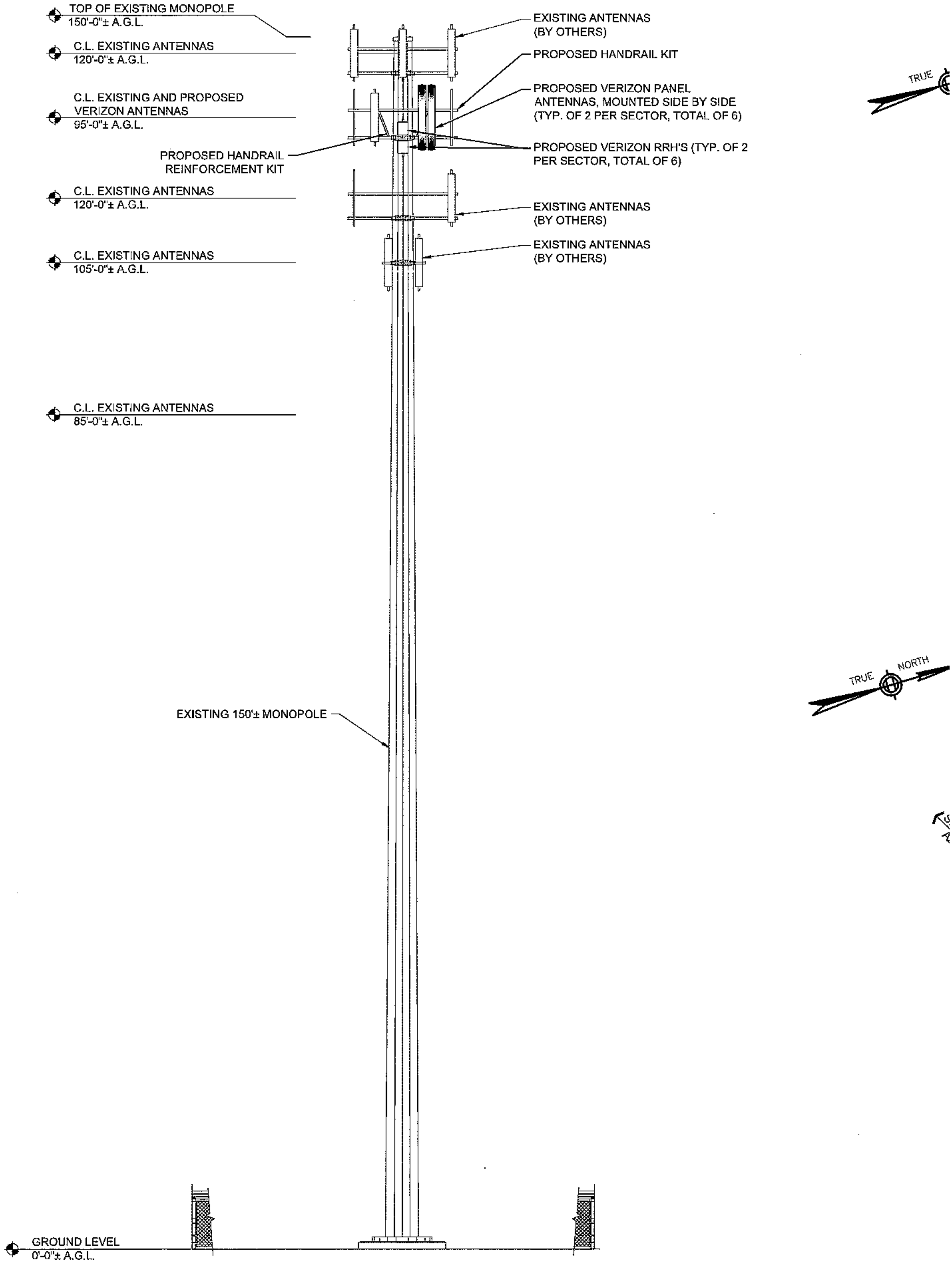
APPLICANT:	VERIZON WIRELESS 20 ALEXANDER DRIVE WALLINGFORD, CT 06492 CONTACT: JAMES O'DONNELL
APPLICANT'S CONTACT:	JAMES O'DONNELL (413) 575-2626
ARCHITECT:	JACOBS ENGINEERING GROUP, INC. 120 SAINT JAMES AVENUE 5TH FLOOR BOSTON, MA 02116
STRUCTURAL ENGINEER:	JACOBS ENGINEERING GROUP, INC. 120 SAINT JAMES AVENUE 5TH FLOOR BOSTON, MA 02116
ELECTRICAL ENGINEER:	JACOBS ENGINEERING GROUP, INC. 120 SAINT JAMES AVENUE 5TH FLOOR BOSTON, MA 02116

PROJECT SUMMARY

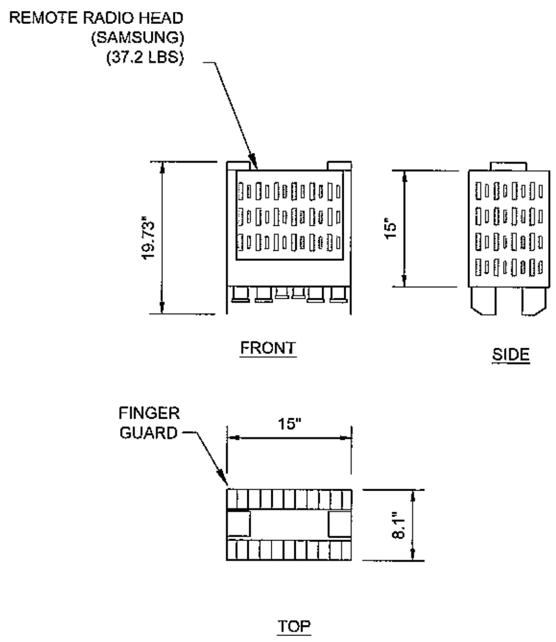
VERIZON SITE NAME:	BETHANY NORTH C
CROWN CASTLE SITE NAME:	BETHANY
TOWER OWNER:	CROWN CASTLE LL 67 SHARP STREET HINGHAM, MA 0204:
COORDINATES:	N 41° 26' 33.93" W 72° 59' 32.86"
APPLICANT:	VERIZON WIRELES: 20 ALEXANDER DRI' WALLINGFORD, CT


TRUE NORTH
80'-8"
70'-0"
EXISTING AT&T EQUIPMENT SHELTER
PROPOSED VERIZON HYBRID CABLE
EXISTING VERIZON CABLE TRAY
EXISTING VERIZON EQUIPMENT SHELTER
EXISTING 12' WIDE DOUBLE SWING GATE
EXISTING UTILITY PAD
EXISTING CABLE TRAY (OTHERS)
EXISTING SPRINT EQUIPMENT PAD
EXISTING UTILITY FRAME
EXISTING UTILITY FRAME

1 SITE PLAN

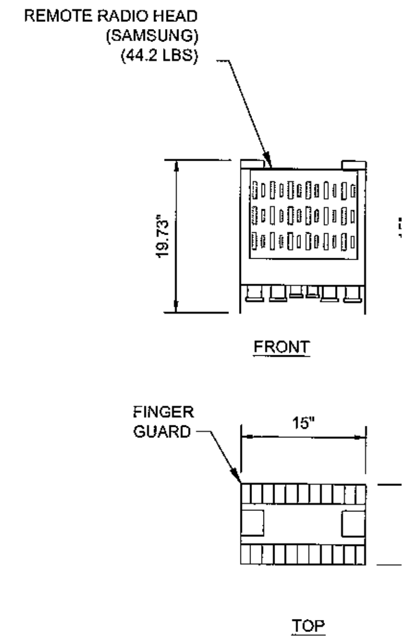


1 SITE ELEVATION

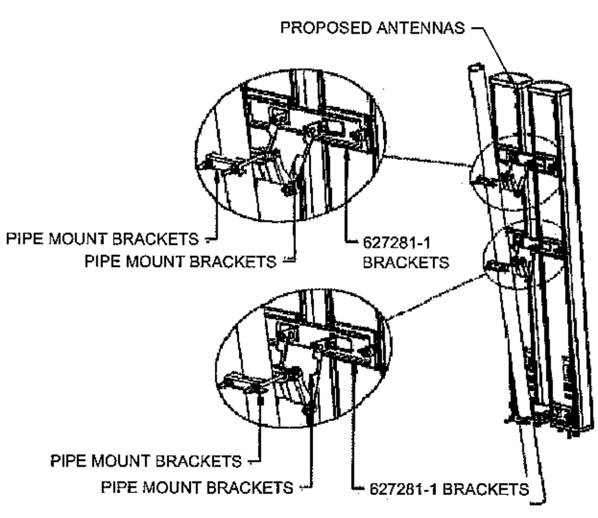


1 SAMSUNG 700/850 RRH - RFV01U-D2A

SCALE: NONE



2 SAMSUNG 1900/2100 RRH - RFV01U-D

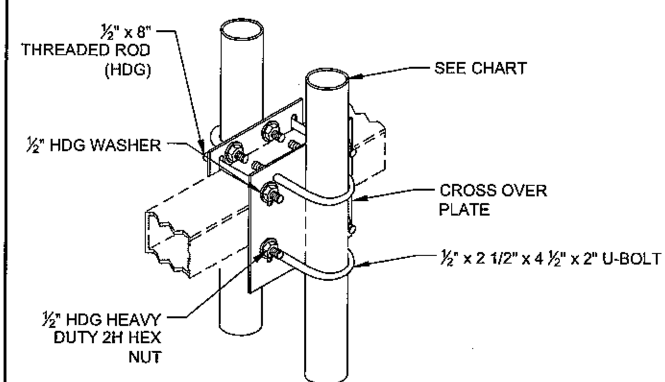


COMMSCOPE SIDE-BY-SIDE MOUNTING KIT
P/N: BSAMNT-SBS-2-2

4 SIDE BY SIDE ANTENNA MOUNT

SCALE: NONE

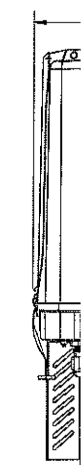
MAKER	PART #	PIPE SIZE	STAND-OFF ARM
SITEPRO1	BBPM-K1	2-3/8"	3-1/2" - 4-1/2"
	BBPM-K2	2-7/8"	3-1/2" - 4-1/2"
	BBPM-K3	2-3/8"	3-1/2" - 6"
	BBPM-U	2-3/8" - 4-1/2"	2-3/8" - 4-1/2"



5 OVP PIPE MOUNTING DETAIL

SCALE: NONE

MANUF.
MODEL
DIMENS
WEIGHT
POWER
TEMP. \



RVZI

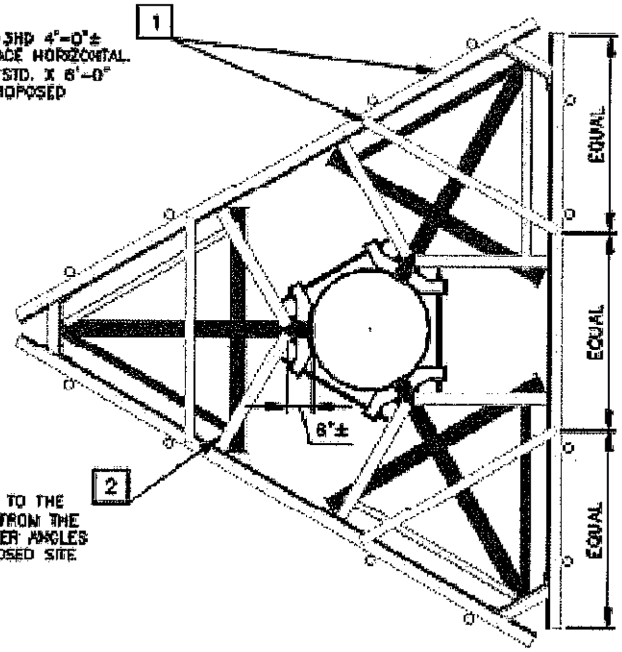
6 OV

NO.	ELEVATION	
1	140'-0"	
2	140'-0"	

DO NOT

CONTRACTOR SHALL VERIF
CONDITIONS ON THE JOB
ARCHITECT OF ENGINEER
PROCEEDING WITH THE WO

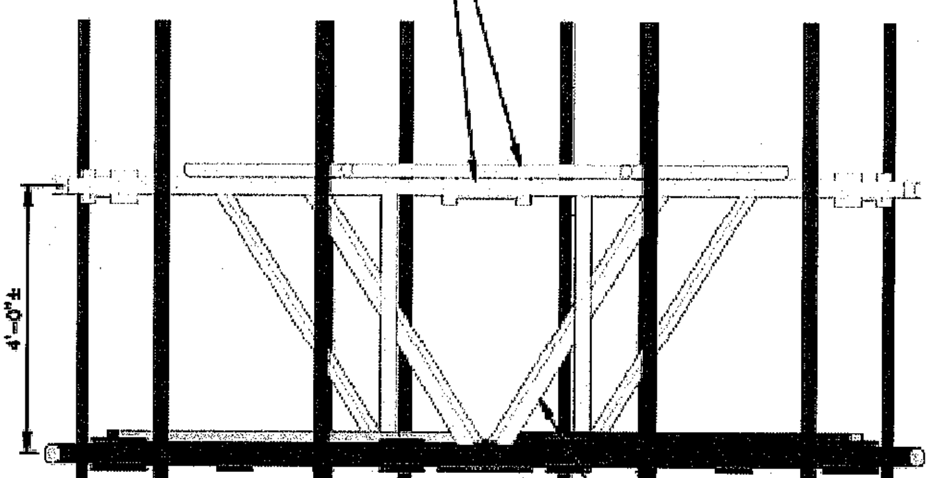
1 INSTALL SITE PRO 1 HRK12-3HD 4'-0"± ABOVE THE EXISTING PIPE FACE HORIZONTAL. ATTACH THE INCLUDED P2.0 STD. X 6'-0" AT THIRD POINTS ON THE PROPOSED HANDRAIL.
SEE: 1/S-2



2 INSTALL SITE PRO 1 HSRK-35 TO THE TUBE OFFSET ARMS 6"± OUT FROM THE EXISTING COLLAR. ATTACH KICKER ANGLES PERPENDICULAR TO THE PROPOSED SITE PRO 1 HRK12-3HD.
SEE: 2/S-2

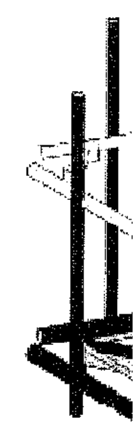
1/S-1 MOUNT PLAN VIEW
SCALE: N.T.S.

1 INSTALL SITE PRO 1 HRK12-3HD 4'-0"± ABOVE THE EXISTING PIPE FACE HORIZONTAL. ATTACH THE INCLUDED P2.0 STD. X 6'-0" AT THIRD POINTS ON THE PROPOSED HANDRAIL.
SEE: 1/S-2



2 INSTALL SITE PRO 1 HSRK-35 TO THE TUBE OFFSET ARMS 6"± OUT FROM THE EXISTING COLLAR. ATTACH KICKER ANGLES PERPENDICULAR TO THE PROPOSED SITE PRO 1 HRK12-3HD.
SEE: 2/S-2

2/S-1 MOUNT ELEVATION VIEW
SCALE: N.T.S.



INSTALL SITE PRO 1 HSRK-35
TUBE OFFSET ARMS 6"± OUT
EXISTING COLLAR. ATTACH KICK
PERPENDICULAR TO THE PROPO
PRO 1 HRK12-3HD.
SEE: 2/S-2

3/S-1 MOU
SCALE:

Kimley»Horn
421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, NC 27601
PHONE: 919-677-2000
WWW.KIMLEY-HORN.COM

MOUNT MODIF
DRAWIN

BETHANY

CROWN CASTLE BU#: 8
VERIZON SITE#: 1043

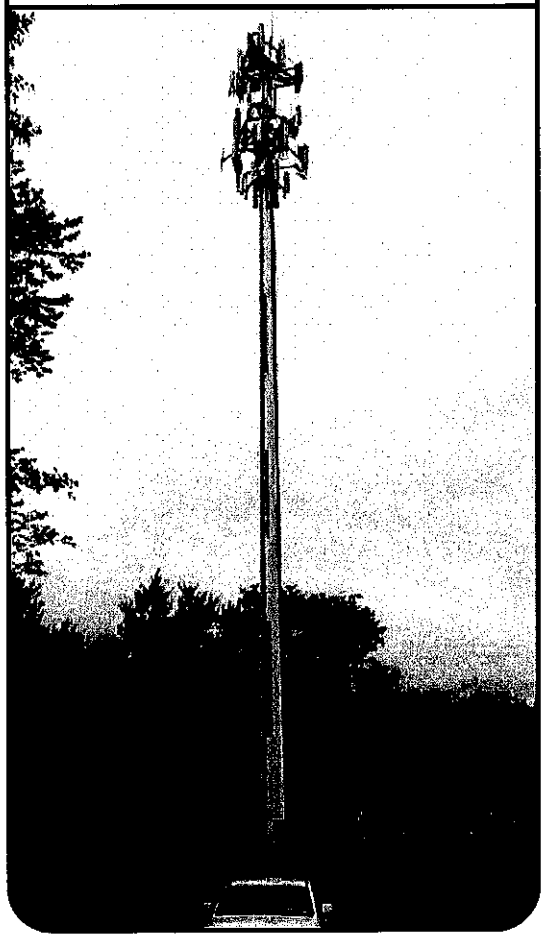
STRUCTURE INFORM

150' MONOPOLE TOW
LOW PROFILE PLATF

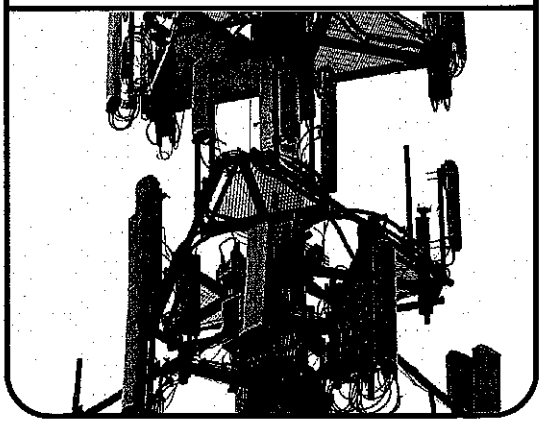
SITE ADDRESS

719 AMITY ROAD
BETHANY, CT 0652
NEW HAVEN COUNT
LATITUDE: N 41° 26' 33
LONGITUDE: W 72° 59' 3

TOWER



MOUNT



K:\RAL_Wireless\Crown\841295\CAD\Mount MOD\841295_MOD_R.dwg ----- 05/28/19 3:39 PM by: Jenny.Adams

1.00 GENERAL NOTES

1.01 ALL MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE DRAWINGS AND SPECIFICATIONS. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE LATEST EDITION OF THE STATE, LOCAL AND NATIONAL CODES, ORDINANCES AND OR REGULATIONS APPLICABLE TO THIS PROJECT.
1.02 THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING WITH WORK OF ALL TRADES AND SHALL CHECK ALL DIMENSIONS. ALL DISCREPANCIES SHALL BE CALLED TO THE ATTENTION OF THE PROJECT MANAGER AND/OR ENGINEER AND BE RESOLVED BEFORE PROCEEDING WITH WORK WHERE THERE IS A CONFLICT BETWEEN DRAWING AND SPECIFICATIONS.
1.03 ALL INFORMATION SHOWN ON THE DRAWINGS RELATIVE TO EXISTING CONDITIONS IS GIVEN AS THE BEST PRESENT KNOWLEDGE, BUT WITHOUT GUARANTEE OF ACCURACY. WHERE ACTUAL CONDITIONS CONFLICT WITH THE DRAWINGS, THEY SHALL BE REPORTED TO THE PROJECT MANAGER AND/OR ENGINEER OF RECORD SO THAT PROPER REVISIONS MAY BE MADE. MODIFICATION OF DETAILS OR CONSTRUCTION SHALL NOT BE MADE WITHOUT WRITTEN APPROVAL OF THE PROJECT MANAGER AND/OR ENGINEER OF RECORD.
1.04 CONTRACTOR SHALL REVIEW AND BE FAMILIAR WITH SITE CONDITIONS AS SHOWN ON THE ATTACHED SITE PLAN AND/OR SURVEY DRAWINGS.
1.05 CONTRACTOR TO PROVIDE DUMPSTER AND PORTABLE TOILET FACILITY DURING CONSTRUCTION.
1.06 CONSTRUCTION WASTE MAY NEITHER BE BURNED NOR BURIED AND MUST BE TAKEN TO AN APPROVED LANDFILL.
1.07 SECURITY TO THE SITE SHALL BE MAINTAINED AT ALL TIMES.

2.00 STRUCTURAL STEEL NOTES

2.01 STRUCTURAL STEEL SHALL COMPLY WITH THE FOLLOWING SPECIFICATIONS UNO:

A. STRUCTURAL STEEL SHAPES, PLATES AND BARS.
(EXPECT W-SHAPES) – ASTM A36, Fy=36 KSI
B. PIPE – ASTM A53, GRADE B, Fy=35 KSI.
C. HSS-SHAPES – ATSM A500, GRADE B,
Fy = 42 KSI (ROUND)
Fy = 46 KSI (RECTANGLE)
D. ANCHOR RODS – ASTM F1554, GRADE 55
E. ALL THREAD RODS – ASTM F1554, GRADE 105
F. STRUCTURAL BOLTS ½"ø AND LARGER – ASTM A325
G. STRUCTURAL BOLTS SMALLER THAN ½"ø
DIMENSIONS:
ASME B18.2.1
MATERIAL SAE J429 GRADE 5
THREADING: ASME B1.1, UNC, CLASS 2A
FINISH: HOT-DIP GALVANIZED OR ZINC-PLATED
H. NUTS FOR BOLTS/ALL-THREAD – ASTM A563 (THREADING TO MATCH BOLT)
I. WASHERS FOR BOLTS/ALL THREADS – ASTM F436
J. W & WT SHAPES – ASTM A36 – Fy=36 KSI.
ALTERNATE SPEC: ASTM (IF OTHER SPEC IS UNAVAILABLE).

2.02 STRUCTURAL BOLTS SHALL CONFORM TO THIS NOTE. ALL BOLT HOLES SHALL BE STANDARD SIZE BOLT HOLES PER AISC 360, UNLESS OTHERWISE NOTED. ALL HOLES SHALL BE SHOP DRILLED OR SUB-PUNCHED AND REAMED. BURNING OF HOLES IS NOT PERMITTED, WHERE SLOTTED OR OVERSIZE HOLES ARE SPECIFIED ON THE DRAWINGS, EXTRA-THICK ASTM F436 PLATE WASHERS SHALL BE USED (5/16" MINIMUM THICKNESS) WITH A DIAMETER SUITABLE TO COVER THE EXTENTS OF THE SLOT OF HOLE. BOLTS SHALL BE HEAVY-HEX WHERE AVAILABLE IN THE SIZE AND GRADE SPECIFIED.
2.03 ALL STEEL HARDWARE, INCLUDING ADHESIVE OR EMBEDDED ANCHOR BOLTS AND THEIR ACCESSORIES, SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH ASTM A153 (EXCEPT BOLTS SMALL THAN ½" SHALL CONFIRM TO FE/ZN 3 AS PER ASTM F1941 WHERE HOT-DIP GALVANIZED IN ACCORDANCE WITH ASTM A123. REPAIR DAMAGE TO GALVANIZED COATINGS USING ASTM A780 PROCEDURES WITH A ZINC RICH PAINT (SUCH AS ZRC GALVILITE) FOR GALVANIZING DAMAGED BY HANDLING, TRANSPORTING, CUTTING, WELDING, OR BOLTING. DO NOT HEAT SURFACES TO WHICH REPAIR PAINT HAS BEEN APPLIED. CALL OUT HOLES REQUIRED FOR HOT-DIP GALVANIZING ON SHOP DRAWINGS.
2.04 WELDING SHALL BE IN ACCORDANCE WITH AWS D1.1 "STRUCTURAL WELDING CODE – STEEL". WELD ELECTRODES SHALL BE E80XX. UNLESS OTHERWISE NOTED PROVIDE CONTINUOUS FILLET WELDS WITH MINIMUM SIZE OF 3/16" OR OF A SIZE EQUAL TO THE THICKNESS OF THE THINNER WELD LEG SIZE SHALL BE ADJUSTED AS REQUIRED TO MAINTAIN THE EFFECTIVE THROAT OF A 3/16" FILLET WELD IN A 90° JOINT. ALL WELD SIZES SHOWN IN INCHES.
2.05 PRIOR TO WELDING, THE CONTRACTOR SHALL SUBMIT CERTIFICATION FOR EACH WELDER STATING THE TYPE OF WELDING AND POSITIONS QUALIFIED FOR, THE CODE AND PROCEDURE QUALIFIED UNDER, STATE QUALIFIED, AND THE FIRM AND INDIVIDUAL CERTIFYING THE QUALIFICATION TESTS. THIS INFORMATION SHALL BE SUBMIT TO THE MODIFICATION INSPECTOR (SEE SHEET N-3) AS WELL AS ANY THIRD-PARTY CERTIFIED WELD INSPECTOR (CWI).
2.06 MEMBERS SHALL BE SHOP-FABRICATED AND WELDED TO THE EXTENT PRACTICABLE IN ORDER TO REDUCE FIELD INSTALLATION COSTS.

3.00 MODIFICATION NOTES

3.01 THESE MODIFICATIONS HAVE BEEN DESIGNED IN ACCORDANCE WITH GOVERNING PROVISIONS OF TIA/EIA-222, ASCE 7, AWS, ACI, AND MATERIALS AND SERVICES PROVIDED BY THE CONTRACTOR SHALL C TO THE ABOVE MENTIONED CODES AND CONTRACT SPECIFICATIONS.
3.02 ALL MATERIALS UTILIZED FOR THIS PROJECT MUST BE NEW AND FR ANY DEFECTS.
3.03 ALL PRODUCT OR MATERIAL SUBSTITUTIONS PROPOSED BY THE CONTRACTOR SHALL BE APPROVED IN WRITING BY THE ENGINEER C RECORD. CONTRACTOR SHALL PROVIDE DOCUMENTATION TO ENGINEI SUITABLE TO DETERMINE IF THE SUBSTITUTE IS ACCEPTABLE FOR U MEETS THE ORIGINAL DESIGN CRITERIA. DIFFERENCES FROM THE OR DESIGN, INCLUDING; MAINTENANCE, REPAIR, AND REPLACEMENT, SH NOTED. ESTIMATES OF COSTS/CREDITS ASSOCIATED WITH THE SUBS (INCLUDING RE-DESIGN COSTS AND COSTS TO SUB-CONTRACTORS) BE PROVIDED TO THE ENGINEER. CONTRACTOR SHALL PROVIDE ADD DOCUMENTATION AND/OR SPECIFICATION TO THE ENGINEER AS REQ
3.04 PROVIDE STRUCTURAL STEEL SHOP DRAWINGS(S) TO THE ENGINEER RECORD FOR APPROVAL PRIOR TO FABRICATION.
3.05 UNLESS NOTED OTHERWISE, ALL NEW MEMBERS AND REINFORCING S MAINTAIN THE EXISTING MEMBER WORK AND NOT INTRODUCE ECCENTRICITIES INTO THE STRUCTURE.
3.06 ANY CONTRACTOR-CAUSED DAMAGE TO PROPERTY OF THE LAND C PROPERTY OF THE CUSTOMER, SITE FENCING OR GATES, ANY AND UTILITY AND/OR SERVICE LINES, SHOWN OR NOT SHOWN ON THE P SHALL BE REPAIRED OR REPLACED AT THE SOLE COST OF THE CONTRACTOR AND SHALL BE ADDRESSED BY THE CONTRACTOR WIT COMPANIES THAT OWN THE DAMAGED ITEMS.

4.00 CONTRACTOR NOTES

4.01 PRIOR TO BEGINNING CONSTRUCTION, ALL CONTRACTORS AND SUBCONTRACTORS MUST ACKNOWLEDGE IN WRITING TO STRUCTURE O THAT THEY HAVE OBTAINED, UNDERSTAND, AND WILL FOLLOW STRUC OWNER STANDARDS OF PRACTICE, CONSTRUCTION GUIDELINES, ALL S STRUCTURE SAFETY PROCEDURES, ALL PRODUCT LIMITATIONS AND INSTALLATION PROCEDURES USED ON SITE, AND PROPOSED MODIFICA DESCRIBED RECEIPT OF ACKNOWLEDGEMENT MUST OCCUR PRIOR TO BEGINNING CONSTRUCTION OF CLIMBING. IT IS THE RESPONSIBILITY O GENERAL CONTRACTOR TO PROVIDE THE DOCUMENTATION FOR STRUC OWNER ON COMPANY LETTERHEAD AND THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO OBTAIN THIS DOCUMENTATION FROM ANY SUBCONTRACTORS (ON SUBCONTRACTOR LETTERHEAD) AND DELIVER THE STRUCTURE OWNER.
4.02 IF THE CONTRACTOR DISCOVERS ANY EXISTING CONDITIONS THAT AR REPRESENTED ON THESE DRAWINGS, OR ANY CONDITIONS THAT WOUL INTERFERE WITH THE INSTALLATION OF THE MODIFICATIONS, THE ENG RECORD SHALL BE CONTACTED IMMEDIATELY TO EVALUATE THE SIGNI OF THE DEVIATION.
4.03 THE CONTRACTOR SHALL SOLICIT AND HIRE THE SERVICES OF A QUA MODIFICATIONS INSPECTOR PRIOR TO BEGINNING CONSTRUCTION, THE MODIFICATION INSPECTOR MAY BE AN EMPLOYEE OF THE CONTRACTO HOWEVER, THE INSPECTOR'S ONLY DUTIES SHALL BE INSPECTION, TES AND REPORT CREATION AS REQUIRED ON THE "MODIFICATION INSPEC NOTES" SHEET. IT IS ALSO ACCEPTABLE FOR THE CONTRACTOR TO SUBCONTRACT THE MODIFICATION INSPECTOR DUTIES TO A THIRD PA MEETING THE ABOVE REQUIREMENTS.
4.04 THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF RECORD AND TO OWNER OF THE PLANNED CONSTRUCTION & INSPECTION SCHEDULE, A AS ANY CHANGES TO THE SCHEDULE, WITHIN TWO BUSINESS DAYS O COMPLETION OF THE SCHEDULE REVISION BOTH PRIOR TO BEGINNING CONSTRUCTION AND DURING CONSTRUCTION AS THE SCHEDULE CHAN THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF RECORD WHEN PI OF CONSTRUCTION HAVE BEEN MOVED UP AND SHALL GIVE THE ENG ADEQUATE NOTICE SO THE ENGINEER OF RECORD MAY, AT THEIR DIS INSPECT PORTIONS OF THE WORK DEEMED CRITICAL TO THE INTEGRIT THE STRUCTURE. FAILURE TO PROVIDE THIS NOTICE MAY RESULT IN REJECTION OF THE CONTRACTOR'S WORK. THE CONTRACTOR SHALL A NOTIFY THE ENGINEER OF RECORD AND THE STRUCTURE OWNER WHE WORK HAS BEEN COMPLETED WITHIN 2 BUSINESS DAYS OF THE COM OF THE WORK AND ASSOCIATED MODIFICATION INSPECTIONS & TESTIN
4.05 IT IS ASSUMED THAT ANY STRUCTURAL MODIFICATION WORK SPECIFIE THESE PLANS WILL BE ACCOMPLISHED BY KNOWLEDGEABLE WORKMEN TOWER/BUILDING CONSTRUCTION EXPERIENCE. THIS INCLUDES PROVID NECESSARY CERTIFICATIONS TO THE STRUCTURE OWNER AND ENGINE INCLUDING BUT NOT LIMITED TO QUALIFIED WELDER CERTIFICATES, CE WELDING INSPECTOR CREDENTIALS, ET CETERA.
4.06 THESE DRAWINGS DO NOT INDICATE THE METHOD OF CONSTRUCTION, CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL SOLELY RESPONSIBLE FOR ALL CONSTRUCTION METHODS, MEANS, TECHNIQUES, SEQUENCES AND PROCEDURES.
4.07 CONTRACTOR SHALL WORK WITHIN THE LIMITS OF THE STRUCTURE O PROPERTY OF LEASE AREA AND APPROVED EASEMENT. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY WORK IS WITHIN TH BOUNDARIES. CONTRACTOR SHALL EMPLOY A SURVEYOR AS REQUIRE WORK OUTSIDE THESE BOUNDARIES SHALL BE APPROVED IN WRITING LAND OWNER PRIOR TO MOBILIZATION. CONSTRUCTION STAKING AND BOUNDARY MARKING IS THE RESPONSIBILITY OF THE CONTRACTOR.
4.08 DO NOT SCALE DRAWINGS. CONTRACTOR SHALL VERIFY ALL PLANS, DIMENSIONS, CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY THE ARCHITECT OR ENGINEER IN WRITING OF ANY DISCREPANCIES BE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR THE SAME.

1.00 GENERAL INSPECTION NOTES

1.01 THE POST-MODIFICATION INSPECTION IS A VISUAL EXAMINATION OF STRUCTURE MODIFICATIONS AND A REVIEW OF ANY REQUIRED CONSTRUCTION INSPECTIONS, TESTING, AND OTHER DATA TO VERITY THAT THE MODIFICATIONS ARE INSTALLED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AS DESIGNED BY THE ENGINEER OF RECORD. THE CONTRACTOR DOCUMENTS INCLUDE THESE MODIFICATION DRAWINGS, ANY PROJECT SPECIFICATION REFERENCED TO IN THE PROJECT NOTES OR OTHERWISE PROVIDED WITH THE DRAWINGS, AND OTHER DOCUMENTS OR DRAWINGS PROVIDED WITH THE MODIFICATION DRAWINGS WITH THE INTENT THEY BE USED AS A DESIGN AID OR GUIDELINE FOR CONSTRUCTION.

1.02 THE POST-MODIFICATION INSPECTION SHALL CONFIRM INSTALLATION CONFIGURATION AND WORKMANSHIP ONLY AND IS NOT A QUALITATIVE REVIEW OF THE ENGINEERING ASPECTS OF THE DESIGN OR THE DESIGN DRAWINGS. THE MODIFICATION INSPECTOR IS NOT TAKING OWNERSHIP OF THE MODIFICATION DESIGN IN THE PERFORMANCE OF THEIR DUTIES. OWNERSHIP OF THE MODIFICATION DESIGN'S EFFECTIVENESS AND INTENT, AS WELL AS ALL ASSOCIATED RISK, LIED WITH THE ENGINEER OF RECORD AT ALL TIMES.

1.03 TO ENSURE THE REQUIREMENTS OF THE POST-MODIFICATION INSPECTION ARE MET, IT IS ESSENTIAL COORDINATION BETWEEN THE PRIME CONTRACTOR AND THE MODIFICATION INSPECTOR BEING AS SOON AS THE PROJECT IS FUNDED AND WORK ENTERS THE PLANNING STAGE. THE PRIME CONTRACTOR AND MODIFICATION INSPECTOR SHALL BE PROACTIVE IN IDENTIFYING CONSTRUCTION ISSUES AND COMMUNICATE THESE ISSUES TO EACH OTHER AND THE ENGINEER OF RECORD AND STRUCTURE OWNER & CUSTOMER, AS REQUIRED.

2.00 INSPECTION & REPORT RECOM'S

2.01 THE FOLLOWING ARE PROVIDED WITH THE INTENT OF ENHANCING THE EFFECTIVENESS OF THE MODIFICATION INSPECTIONS AND IMPROVING THE EFFICIENCY OF THE PROCESS OF COLLECTING AND COMPILING THE INFORMATION INTO A USEABLE REPORT:

- 2.01.1 IT IS RECOMMENDED THE PRIME CONTRACTOR PROVIDE THE MODIFICATION INSPECTOR AT LEAST 5 BUSINESS DAYS NOTICE FOR WHEN THE SITE WILL BE READY FOR THE MODIFICATION INSPECTION.
- 2.01.2 THE PRIME CONTRACTOR AND THE MODIFICATION INSPECTOR SHALL COORDINATE CLOSELY THROUGHOUT THE ENTIRE PROJECT.
- 2.01.3 THE PRIME CONTRACTOR AND MODIFICATION INSPECTION SHALL BOTH BE PRESENT DURING THE INITIAL INSPECTIONS IN ORDER TO ALLOW FOR THE REMEDIATION OF DEFICIENCIES DURING THE INSPECTIONS, AS PRACTICABLE. IT MAY BE PREFERABLE TO KEEP WORK CREWS AND THEIR EQUIPMENT ON-SITE TO REMEDIATE DEFICIENCIES DURING INSPECTIONS.

3.00 INSPECTION RESCHEDULE & CANCEL

3.01 IF THE PRIME CONTRACTOR AND MODIFICATION INSPECTOR HAVE AGREED UPON A TIME AND DATE FOR A GIVEN INSPECTION AND EITHER PARTY RESCHEDULES OR CANCELS THE INSPECTION, THE STRUCTURE OWNER SHALL NOT BE RESPONSIBLE FOR COSTS, FEES, LOST DEPOSITS, OR OTHER EXPENSES INCURRED BY THE PRIME CONTRACTOR, THEIR SUBCONTRACTOR(S), OR THE MODIFICATION INSPECTOR DUE TO THESE SCHEDULING CHANGES. EXCEPTIONS MAY BE MADE IN THE EVENT OF UNCONTROLLABLE SITUATIONS SUCH AS NATURAL DISASTERS, SEVERE WEATHER, OR OTHER CONDITIONS THAT COMPROMISE THE SAFETY OF THE PARTIES INVOLVED.

4.00 REMEDIATION OF FAILING INSPECTION

4.01 IN THE EVENT ANY PORTION OF THE MODIFICATION WORK IS DETERMINED TO BE UNSATISFACTORY BY THE MODIFICATION INSPECTOR, THE PRIME CONTRACTOR SHALL WORK WITH THE MODIFICATION INSPECTOR TO CREATE A PLAN OF ACTION THAT WILL EITHER:

- 4.01.1 REPAIR THE DEFICIENT WORK TO SATISFACTORY CONDITION AND INCLUDE A SUBSEQUENT RE-INSPECTION OF THE WORK TO VERIFY IT IS SATISFACTORY.
- 4.01.2 OR, WITH THE PERMISSION OF THE STRUCTURE OWNER AND/OR CUSTOMER, THE PRIME CONTRACTOR MAY WORK WITH THE ENGINEER OF RECORD TO REVIEW THE AS-BUILT CONDITION OF THE MODIFICATION TO DETERMINE IF IT IS STRUCTURALLY ACCEPTABLE, IF THE ACTION US NOT ACCEPTABLE TO ANY PARTY, THE PRIME CONTRACTOR SHALL PROCEED TO REPAIR THE DEFICIENT WORK TO A SATISFACTORY CONDITION.

5.00 OWNER INSPECTIONS

5.01 THE STRUCTURE OWNER MAY CONDUCT INSPECTIONS TO VERIFY THE QUALITY AND COMPLETENESS OF THE PREVIOUSLY COMPLETED MODIFICATION INSPECTIONS REPORTS OR THE MODIFICATION INSTALLATION WORK.

5.02 INSPECTIONS MAY BE COMPLETED BY A 3RD-PARTY FIRM OF THE STRUCTURE OWNER'S CHOOSING AFTER A MODIFICATION PROJECT IS COMPLETED AND A PASSING MODIFICATION INSPECTION REPORT IS ISSUED.

6.00 MOD INSPECTOR'S RESPONSIBILITIES

6.01 THE MODIFICATION INSPECTOR SHALL CONTACT THE P
AS THE HAVE RECEIVED A PURCHASE ORDER OR PA
THE MODIFICATION INSPECTOR SHALL REVIEW THE RE
INSPECTION CHECKLIST, SHALL WORK WITH THE PRIME
SCHEDULE OF NECESSARY ON-SITE INSPECTIONS, AN
SITE-SPECIFIC INSPECTION REQUIREMENTS OF OTHER

6.02 THE MODIFICATION INSPECTOR IS RESPONSIBLE FOR
CONTRACTOR INSPECTION AND TEST REPORTS (INCLU
SUB-CONTRACTORS), SHALL REVIEW THE REPORTS FO
CONTRACT DOCUMENTS, SHALL CONDUCT THE NECESS
AND SHALL COMPILE AND SUBMIT THE MODIFICATION

7.00 PRIME CONTRACTOR RESPONSIBILIT

7.01 THE PRIME CONTRACTOR SHALL CONTACT THE MODIFI
AS THEY HAVE RECEIVED A PURCHASE ORDER OR PA
MODIFICATION INSTALLATION. THE PRIME CONTRACTOR
REQUIREMENTS OF THE MODIFICATION INSPECTION CHI
THE MODIFICATION INSPECTOR TO DEVELOP A SCHEDU
INSPECTIONS, AND SHALL DISCUSS SPECIFIC INSPECTI
REQUIREMENTS WITH THE MODIFICATION INSPECTOR IN
UNDERSTANDING OF THE REQUIRED INSPECTION AND

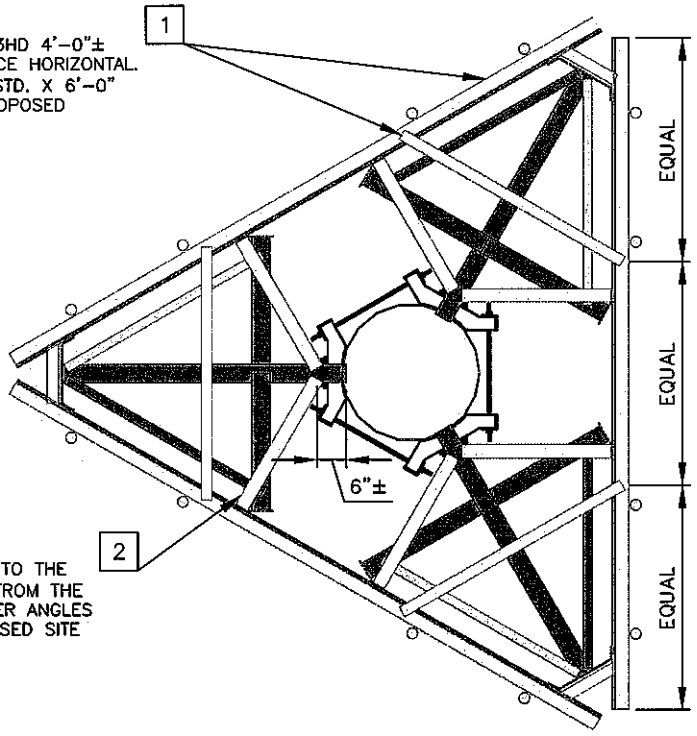
7.02 THE PRIME CONTRACTOR SHALL PERFORM AND RECOI
INSPECTION RESULTS IN ACCORDANCE WITH THE REQU
MODIFICATION INSPECTION CHECKLIST.

8.00 PHOTOGRAPHY REQUIREMENTS

8.01 THE PRIME CONTRACTOR AND MODIFICATION INSPECTO
EFFORTS OF BOTH PARTIES AND THEIR EMPLOYED PE
PHOTOGRAPHS WITH THE INSPECTION REPORT TO INC
A GENERAL SITE PHOTOGRAPHS PRE-CONSTRUCTION
B MODIFICATION INSTALLATION PHOTOGRAPHS DURING
CONSTRUCTION/ERECTION OPERATIONS AND INSPECTIO
B.1 RAW MATERIALS
B.2 PHOTOS OF DETAILED WORK REQUIRED ON THE
DRAWINGS (CONNECTIONS, WELDMENTS,
FIELD/FABRICATED MEMBERS, ETC.)
B.3 WELD PREPARATION AND COMPLETED WELD
INSPECTION (INCLUDING A FILLET WELD SIZE GA
B.4 BOLT INSTALLATION AND TORQUE/PRETENSION.
B.5 FINAL INSTALLED CONDITION (AFTER DEFICIENT
CONDITIONS, IF ANY, ARE REMEDIATED).
B.6 REPAIR OF SURFACE COATINGS (INCLUDING
GALVANIZING AND/OR PAINT COATING).
C. POST-MODIFICATION PHOTOGRAPHS OF THE SITE &
D. PHOTOGRAPHS OF THE FINAL STATE OF THE SITE
WORK BY THE PRIME CONTRACTOR, ASSOCIATED SI
THE MODIFICATION INSPECTOR.
E. OTHER PHOTOS MAY BE INCLUDED AT PRIME CONT
INSPECTOR'S DISCRETION.

NOTE: PHOTOS OF MODIFICATIONS INSTALLED ON THE STR
ELEVATION OF 20' SHALL REQUIRE PHOTOS TAKE FR
WELL AS OVERALL PHOTOGRAPHS OF THE MODIFICATI
GROUND.

INSTALL SITE PRO 1 HRK12-3HD 4'-0"± ABOVE THE EXISTING PIPE FACE HORIZONTAL. ATTACH THE INCLUDED P2.0 STD. X 6'-0" AT THIRD POINTS ON THE PROPOSED HANDRAIL.
SEE: 1/S-2

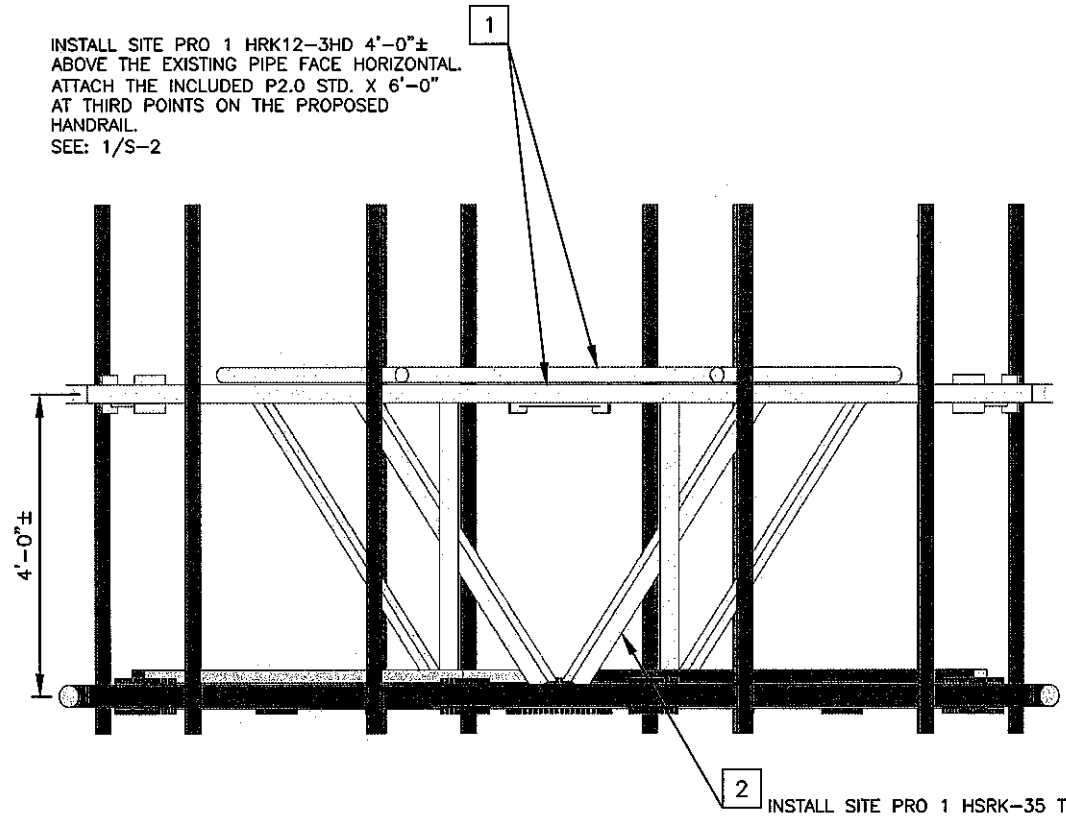


INSTALL SITE PRO 1 HSRK-35 TO THE TUBE OFFSET ARMS 6"± OUT FROM THE EXISTING COLLAR. ATTACH KICKER ANGLES PERPENDICULAR TO THE PROPOSED SITE PRO 1 HRK12-3HD.
SEE: 2/S-2

1 / S-1 MOUNT PLAN VIEW

SCALE: N.T.S.

INSTALL SITE PRO 1 HRK12-3HD 4'-0"± ABOVE THE EXISTING PIPE FACE HORIZONTAL. ATTACH THE INCLUDED P2.0 STD. X 6'-0" AT THIRD POINTS ON THE PROPOSED HANDRAIL.
SEE: 1/S-2



INSTALL SITE PRO 1 HSRK-35 TO THE TUBE OFFSET ARMS 6"± OUT FROM THE EXISTING COLLAR. ATTACH KICKER ANGLES PERPENDICULAR TO THE PROPOSED SITE PRO 1 HRK12-3HD.
SEE: 2/S-2

2 / S-1 MOUNT ELEVATION VIEW

SCALE: N.T.S.

NO.

1

2

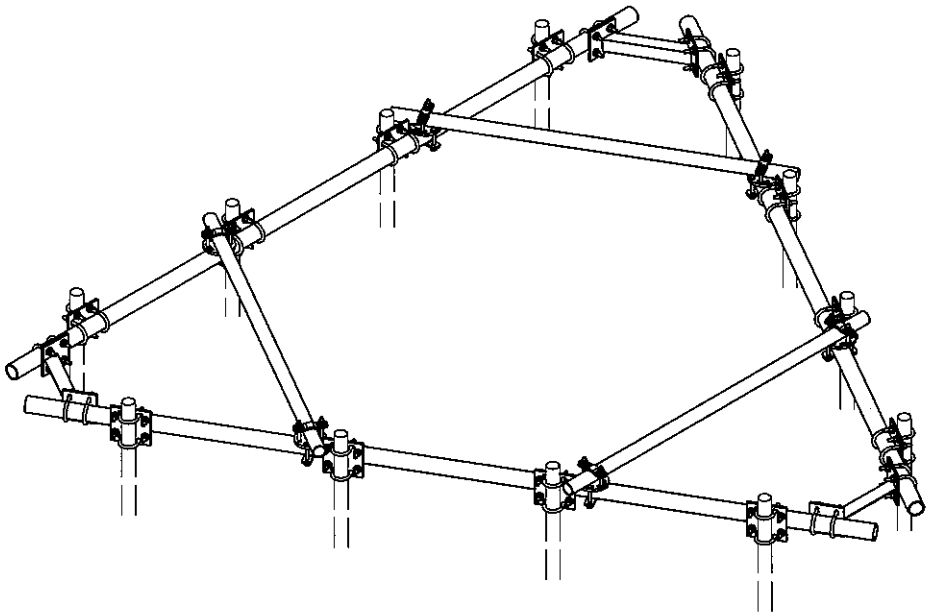
D

CONTRACT
CONDITION
ARCHITEC
PROCEEDI

INSTALL SITE PR
TUBE OFFSET A
EXISTING COLLA
PERPENDICULAR
PRO 1 HRK12-
SEE: 2/S-2

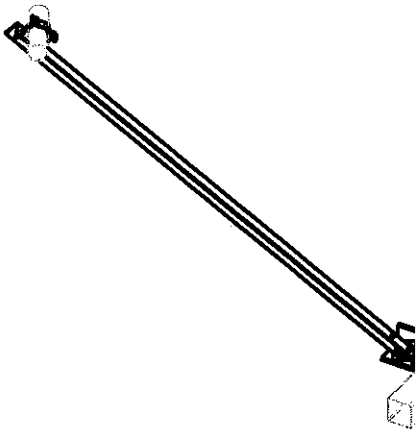
3 / S-1

K:\RAL_Wireless\Crown\841295\CAD\Mount MOD\841295_MOD_R.dwg ---- 05/28/19 3:37 PM by: Jenny.Adams



1 / S-2 SITE PRO 1 HRK12-3HD

SCALE: N.T.S.



2 / S-2 SITE PR

SCALE: N.T

K:\RAL_Wireless\Crown\841295\CAD\Mount MOD\841295_MOD_R.dwg ---- 05/28/19 3:40 PM by: Jenny.Adams