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

September 1, 2022

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

RE: **Notice of Exempt Modification for T-Mobile: CTNH107A**
150 North Main Street, Branford, CT 06405
Latitude: 41.288611° / Longitude: -72.813861°

Dear Ms. Bachman:

T-Mobile currently maintains 9 antennas at the 147-foot mount on the existing 147-foot monopole tower located at 150 North Main Street, Branford, CT. The property is owned by Premier Realty Holdings LLC and tower is owned by Crown Castle. T-Mobile now intends to replace six (6) antennas, add three (3) antennas, relocate 3 Dish and ancillary equipment at the 147-foot level. This modification/proposal includes hardware that is both 4G (LTE) and 5G capable through remote software configuration and either or both services may be turned on or off at various times.

Panned Modification:

Tower:

Installed New:

(3) Ericsson – AIR6419 B41 Antennas
(3) RFS-APXVAALL24_43-U-NA20 Antennas
(3) CommScope – W-65B-R1 Antennas
(3) Ericsson- Radio 4480 B71+B85
(3) Ericsson- Radio 4460 B25+B66
(3) 1-5/8" Hybrid Cables
Install Mount Modifications

Remove:

(3) RFS-APXVTM14-C-120 Antennas
(2) RFS-APXVSPP18-C-A20 Antennas
(1) POWERWAVE TECH-P40-16-XLPP-RR-A Antenna
(3) Alcatel Lucent-TD-RRH8X20-25 RRHs
(3) Alcatel Lucent-TME-1900MHZ RRHs
(3) Alcatel Lucent-TME-800MHZ RRHs
(9) RFS-ACU-20-N TMAs
(3) Alcatel Lucent-800 External Notch Filters
(3) 1-1/4" Hybrid Cables
(3) 1-1/4" Coax Cables

Ground:

Install New:

(1) Enclosure 6160 AC V1 Cabinet
(1) B160 Battery Cabinet
(1) RP 6651
(1) PSU 4813 VR4A (Kit)
(1) CSR IXRe V2 (Gen2)
(1) 125-AMP Breaker

Remove:

(2) DUW30
(6) RU22 Radios

The facility was originally approved by the Town of Branford Planning and Zoning Commission on September 18,1997 via a Special Exception (application #97-6.5).

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies §16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to First Selectman James Cosgrove, Town Planner Harry Smith both for the municipality, Premier Realty Holdings LLC for the property owner 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, T-Mobile 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
Site Acquisition Specialist
1800 W. Park Drive, Suite 250
Westborough, MA 01581
(781) 970-0053
Jeff.Barbadora@crowncastle.com

Attachments
cc:

James Cosgrove, First Selectman
Branford Town Hall
1019 Main Street
Branford, CT 06405

Harry Smith, Town Planner
Branford Town Hall
1019 Main Street
Branford, CT 06405

Premiere Realty Holdings LLC (property owner)
150 North Main Street
Branford, CT 06405

Crown Castle – Tower Owner

VOL. 634 PAGE 591

4704

PLANNING AND ZONING COMMISSION
TOWN OF BRANFORD TOWN HALL DRIVE P.O. BOX 150
Branford, Connecticut 06405 488-1255

NOTICE OF DECISION

September 22, 1997

Sprint PCS
% Attorney John Knuff
Harris Beach & Wilcox, L.L.P
147 North Broad Street
Milford, Connecticut 06460

SUBJECT: Special Exception LOCATION: 150 North Main Street

APPLICATION # 97-6.5 OWNER OF RECORD: Irene Maculaitis

Dear Sir:

At a meeting of the Branford Planning & Zoning Commission held on Thursday, September 18, 1997, the Commission voted to:

X Approve your above subject application with the conditions noted below.

Very truly yours,

Shirley Rasmussen

Shirley Rasmussen
Town Planner

NOTE: This Special Exception shall become effective only after it is filed on the Land Records in the office of the Town Clerk.

1. Prior to issuance of a building permit, revise plan to show the following:

   a. Revise width of eastern-most curb cut to 30 feet (Sect. 25.10a) by creating new landscaped island extending 15 feet back from streetline (Sect. 25.8.2) with new sidewalk (Sect. 31.5.3(b)).

   b. Relocate proposed utility pole so that it is not in the access drive.

2. Provide for co-location of communications equipment to be operated by the Town of Branford Sewage Treatment Plant.

3. Change plantings around tower yard to 6' to 7' dark American Arborvitae and rearrange to screen parking area from street.

(OVER)

4. All users of the telecommunications facility must demonstrate compliance with current FCC regulations for electromagnetic frequency emissions and any future changes in these standards.

5. The owner of the telecommunication facility shall provide for and encourage co-location of other antennae on the facility.

NOTE: Special Exception shall become null and void in the event the applicant fails to obtain a building permit within one (1) year of date of approval.
(Per Section 31.7 of the Branford Zoning Regulations)

CC: Scott M. Thomae
Sprint PCS
Irene Maculaitis

RECEIVED FOR RECORD Sept. 25 19 97
at 2 h 03 m P M. AND RECORDED BY
GEORGETTE A. LASKE
BRANFORD TOWN CLERK

SITE PLAN AND SPECIAL EXCEPTION

APPLICATION FOR CERTIFICATE OF ZONING COMPLIANCE
TOWN OF BRANFORD

ADDRESS OF SUBJECT PROPERTY 150 N. MAIN Street Branford, CT 06405

ASSESSOR'S MAP D-6 BLOCK 13 LOT 13 ZONE: IG-1

APPLICANT'S NAME Sprint PCS

TELEPHONE (203) 237-1737 ext.17

ADDRESS 300 RESEARCH Parkway 3rd fl. Meriden, CT 06450

Briefly describe the building, structure or use for which Zoning Compliance Application is made:

The erection of a monopole telecommunications facility and placement of the associated equipment cabinets on property located at 150 N. MAIN Street within the IG-1/ Industrial District.

PLEASE SUBMIT THE FOLLOWING WITH YOUR COMPLETED APPLICATION:

1. $125.00 (which includes $100.00 application fee, $15.00 Zoning Compliance fee, and $10.00 State surcharge)

2. Application materials described in Sect. 31.4 of the Branford Zoning Regulations including:
   - (1) Statement of Use
   - (2) Site Plan Map
   - (3) Erosion Control Plan
   - (4) Tabulation of Standards
   - (5) Staging Plan
   - (6) Building Plans
   - (7) Traffic Report
   - (8) Drainage Report
   - (9) Flood Requirements
   - (10) Agency Reports

3. Sufficient information to determine compliance with special standards listed on attached sheet.

4. Copy of any variance or Wetlands Commission approval pertinent to this application.

5. Additional information which may be necessary to determine compliance, as specified by the Branford Planning & Zoning Commission.

RECEIVED
JUN 11 1997
BRANFORD PLANNING & ZONING COMMISSION

The undersigned states that information submitted with this application is correct and acknowledges that any approval based on erroneous or incomplete information shall be null and void.

SIGNATURE OF APPLICANT Scott M. Young DATE 6/10/97

SIGNATURE OF OWNER [signature] as agent DATE 6/11/97

Property Location 148-160 NO MAIN ST | Map ID D06/E06 001/ 001.1/ / | Bldg Name | State Use 3310
Vision ID 726 | Account # 005520 | Bldg # 2 | Sec # 1 of 1 | Card # 2 of 2 | Print Date 4/29/2022 12:01:25 P

CURRENT OWNER

PREMIER REALTY HOLDINGS LLC

150 NORTH MAIN ST

BRANFORD CT 06405

TOPO	UTILITIES	STRT / ROAD	LOCATION
1 Level	2 Public Water	1 Paved	4 Bus. District
	3 Public Sewer		

SUPPLEMENTAL DATA

Alt Prcl ID	D06/E06/001/001.1/	HLDG TK	
CONDO B		SEPTIC	
CONDO U		SEWER	
CONDO F		DISTRICT	
		CENSUS	1841
PARCEL D			
GIS ID	D06/E06/001/001.1	Assoc Pid#	

CURRENT ASSESSMENT

Description	Code	Appraised	Assessed
COM LAND	2-1	801,000	560,700
COM BLDG	2-2	64,700	45,300
COM OUTBL	2-5	77,800	54,400
UTL LAND	4-1	206,000	144,200
Total		1,149,500	804,600

6014

BRANFORD, CT

VISION

RECORD OF OWNERSHIP

RECORD OF OWNERSHIP	BK-VOL/PAGE		SALE DATE	Q/U	V/I	SALE PRICE	VC
PREMIER REALTY HOLDINGS LLC	0877	0469	07-06-2004	U	I	0	3
PREMIER REALTY HOLDINGS LLC	0877	0467	07-06-2004	U	I	875,000	8
MACULAITIS IRENE	0602	0843	02-26-1996			0	
MACULAITIS ALEXANDER EST + IRENE	0238	0562				0	

PREVIOUS ASSESSMENTS (HISTORY)

Year	Code	Assessed	Year	Code	Assessed V	Year	Code	Assessed
2019	2-1	560,700	2019	2-1	672,900	2018	2-1	653,200
	2-2	45,300		2-2	158,200		2-2	186,400
	2-5	54,400		2-5	54,400		2-5	47,200
	4-1	144,200		4-1	144,200		4-1	140,000
	Total	804600		Total	1029700		Total	1026800

EXEMPTIONS

Year	Code	Description	Amount
		Total	0.00

OTHER ASSESSMENTS

Code	Description	Number	Amount	Comm Int

This signature acknowledges a visit by a Data Collector or Assessor

ASSESSING NEIGHBORHOOD

Nbhd	Nbhd Name	B	Tracing	Batch
500				

NOTES

CELLULAR TOWER 150
SNET
OUTBUILDING CELL EQUIP-
MENT BUILDING
3 ARRAYS ON TOWER

APPRAISED VALUE SUMMARY

Appraised Bldg. Value (Card)	61,400
Appraised Xf (B) Value (Bldg)	3,300
Appraised Ob (B) Value (Bldg)	77,800
Appraised Land Value (Bldg)	1,007,000
Special Land Value	0
Total Appraised Parcel Value	1,149,500
Valuation Method	C
Total Appraised Parcel Value	1,149,500

BUILDING PERMIT RECORD

Permit Id	Issue Date	Type	Description	Amount	Insp Date	% Comp	Date Comp	Comments

VISIT / CHANGE HISTORY

Date	Id	Type	Is	Cd	Purpost/Result

LAND LINE VALUATION SECTION

B	Use Code	Description	Zone	LA	Land Type	Land Units		Unit Price	Size Adj	Site Index	Cond.	Nbhd.	Nbhd. Adj	Notes	Location Adjustmen		Adj Unit P	Land Value
2	331V	AUTO S S&S M				0.000	AC	0	1.00	0	1.00		1.00			0.00		0

Total Card Land Units 0.00 AC | Parcel Total Land Area 2.05 | Total Land Value 0

Property Location 148-160 NO MAIN ST | Map ID D06/E06 001/ 001.1/ / | Bldg Name | State Use 3310
Vision ID 726 | Account # 005520 | Bldg # 2 | Sec # 1 of 1 | Card # 2 of 2 | Print Date 4/29/2022 12:01:25 P

CONSTRUCTION DETAIL

Element	Cd	Description
Style:	94	Outbuildings
Model	00	Vacant
Grade:		
Stories:		
Occupancy		
Exterior Wall 1		
Exterior Wall 2		
Roof Structure:		
Roof Cover		
Interior Wall 1		
Interior Wall 2		
Interior Flr 1		
Interior Flr 2		
Heat Fuel		
Heat Type:		
AC Type:		
Total Bedrooms		
Total Bthrms:		
Total Half Baths		
Total Xtra Fixtrs		
Total Rooms:		
Bath Style:		
Kitchen Style:		
Cottage Cmplx		
Cottage Adj		

CONSTRUCTION DETAIL (CONTINUED)

Element	Cd	Description

MIXED USE

Code	Description	Percentage
331V	AUTO S S&S MDL00	100
		0
		0

COST / MARKET VALUATION

Adjusted Base Rate	0
Building Value New	0
Year Built	0
Effective Year Built	0
Depreciation Code	
Remodel Rating	
Year Remodeled	
Depreciation %	
Functional Obsol	0
External Obsol	0
Condition	
Condition %	
Percent Good	
RCNLD	0
Dep % Ovr	
Dep Ovr Comment	
Misc Imp Ovr	
Misc Imp Ovr Comment	
Cost to Cure Ovr	
Cost to Cure Ovr Comment	

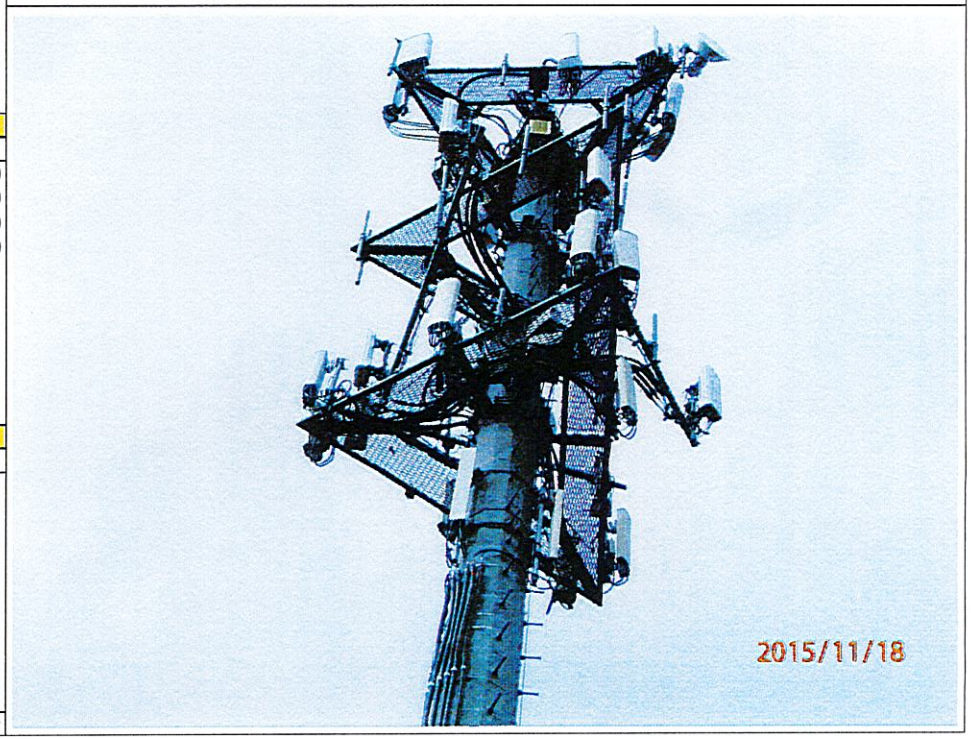
SEE ATTACHED

OB - OUTBUILDING & YARD ITEMS(L) / XF - BUILDING EXTRA FEATURES(B)

Code	Description	L/B	Units	Unit Price	Yr Blt	Cond. Cd	% Gd	Grade	Grade Adj.	Appr. Value
SHD8	COMMUN UT	L	312	50.00	2002		70		0.00	10,900
FN6	W/O TOP RL-	L	170	5.50	2002		70		0.00	700
PAV2	PAVING-CON	L	130	3.30	2002		70		0.00	300
SHD8	COMMUN UT	L	210	50.00	2015		70		0.00	7,400

BUILDING SUB-AREA SUMMARY SECTION

Code	Description	Living Area	Floor Area	Eff Area	Unit Cost	Undeprec Value
	Ttl Gross Liv / Lease Area	0	0	0		0



No Sketch

148 N Main St

148 N Main St

Branford, CT 06405

Directions Save Nearby Send to phone Share

75QP+77 Branford, Connecticut

Photos

Barbadora, Jeff

From: TrackingUpdates@fedex.com
Sent: Friday, September 2, 2022 10:13 AM
To: Barbadora, Jeff
Subject: FedEx Shipment 777829664292: Your package has been delivered

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hi. Your package was delivered Fri, 09/02/2022 at 10:03am.

Delivered to 1019 MAIN ST, BRANFORD, CT 06405
Received by T.MICLA

OBTAIN PROOF OF DELIVERY

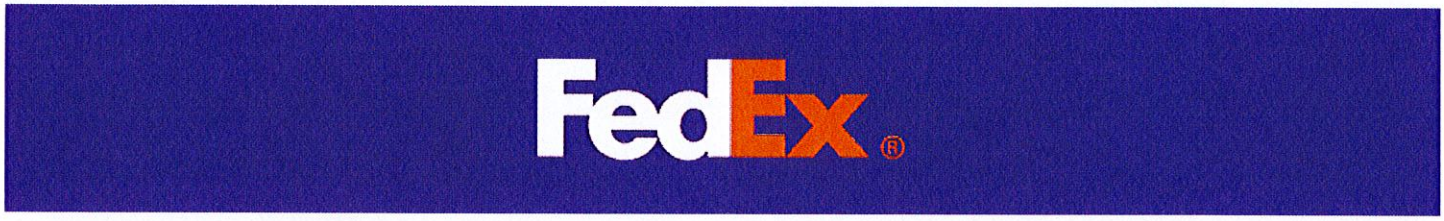
TRACKING NUMBER 777829664292

FROM	Jeff Barbadora 1800 W. Park Drive WESTBOROUGH, MA, US, 01581
TO	Town of Branford James Cosgrove, First Selectman 1019 Main Street BRANFORD, CT, US, 06405
REFERENCE	799001.7680
SHIPPER REFERENCE	799001.7680
SHIP DATE	Thu 9/01/2022 05:09 PM
DELIVERED TO	Receptionist/Front Desk
PACKAGING TYPE	FedEx Envelope
ORIGIN	WESTBOROUGH, MA, US, 01581
DESTINATION	BRANFORD, CT, US, 06405
SPECIAL HANDLING	Deliver Weekday
NUMBER OF PIECES	1
TOTAL SHIPMENT WEIGHT	1.00 LB
SERVICE TYPE	FedEx Priority Overnight

Barbadora, Jeff

From: TrackingUpdates@fedex.com
Sent: Friday, September 2, 2022 10:13 AM
To: Barbadora, Jeff
Subject: FedEx Shipment 777829673930: Your package has been delivered

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.



Hi. Your package was delivered Fri, 09/02/2022 at 10:03am.

Delivered to 1019 MAIN ST, BRANFORD, CT 06405
Received by T.MICLA

OBTAIN PROOF OF DELIVERY

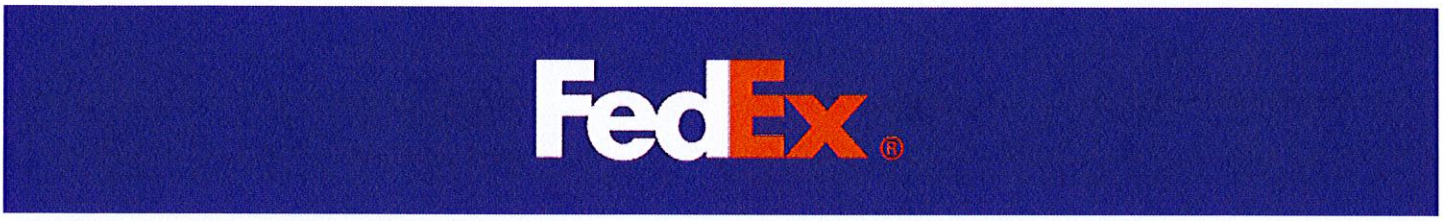
TRACKING NUMBER 777829673930

FROM	Jeff Barbadora 1800 W. Park Drive WESTBOROUGH, MA, US, 01581
TO	Town of Branford Harry Smith, Town Planner 1019 Main Street BRANFORD, CT, US, 06405
REFERENCE	799001.7680
SHIPPER REFERENCE	799001.7680
SHIP DATE	Thu 9/01/2022 05:09 PM
DELIVERED TO	Receptionist/Front Desk
PACKAGING TYPE	FedEx Envelope
ORIGIN	WESTBOROUGH, MA, US, 01581
DESTINATION	BRANFORD, CT, US, 06405
SPECIAL HANDLING	Deliver Weekday
NUMBER OF PIECES	1
TOTAL SHIPMENT WEIGHT	0.50 LB
SERVICE TYPE	FedEx Priority Overnight

Barbadora, Jeff

From: TrackingUpdates@fedex.com
Sent: Friday, September 2, 2022 10:37 AM
To: Barbadora, Jeff
Subject: FedEx Shipment 777829701625: Your package has been delivered

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.



Hi. Your package was delivered Fri, 09/02/2022 at 10:29am.

Delivered to 155 N MAIN ST, BRANFORD, CT 06405
Received by C.RODRIGUEZ

OBTAIN PROOF OF DELIVERY

TRACKING NUMBER 777829701625

FROM	Jeff Barbadora 1800 W. Park Drive WESTBOROUGH, MA, US, 01581
TO	Premiere Realty Holdings LLC Property Owner 150 North Main Street BRANFORD, CT, US, 06405
REFERENCE	799001.7680
SHIPPER REFERENCE	799001.7680
SHIP DATE	Thu 9/01/2022 05:09 PM
DELIVERED TO	Shipping/Receiving
PACKAGING TYPE	FedEx Envelope
ORIGIN	WESTBOROUGH, MA, US, 01581
DESTINATION	BRANFORD, CT, US, 06405
SPECIAL HANDLING	Deliver Weekday
NUMBER OF PIECES	1
TOTAL SHIPMENT WEIGHT	0.50 LB
SERVICE TYPE	FedEx Priority Overnight

Date: **June 29, 2022**

Tower Engineering Professionals
326 Tryon Road
Raleigh, NC 27603
(919) 661-6351

Subject: Structural Analysis Report

Carrier Designation:

Site Number:	CTNH107A
Site Name:	CT03XC040

Crown Castle Designation:

BU Number:	876321
Site Name:	Branford Banm Tower
JDE Job Number:	721889
Work Order Number:	2130518
Order Number:	621880 Rev. 0

Engineering Firm Designation: **TEP Project Number:** 25579.715556

Site Data: **150 North Main Street, Branford, New Haven County, CT 06405**
Latitude *41° 17' 19.00"*, Longitude *-72° 48' 49.90"*
147 Foot - Monopole Tower

Tower Engineering Professionals 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:

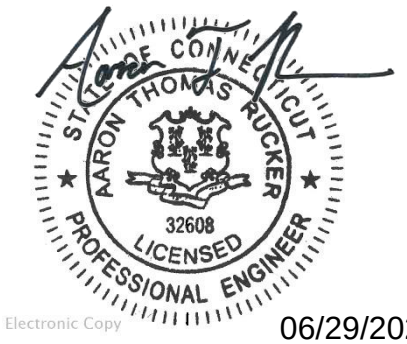
LC7: Proposed Equipment Configuration **Sufficient Capacity - 98.2%**

This analysis utilizes an ultimate 3-second gust wind speed of 121 mph as required by the 2018 Connecticut State Building Code. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Structural analysis prepared by: Mohd Abu Ghazal / PHX

Respectfully submitted by:

Aaron T. Rucker, P.E.



06/29/2022

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 147-ft monopole tower designed by Summit. The tower has been modified multiple times in the past to accommodate additional loading.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	121 mph
Exposure Category:	C
Topographic Factor:	1.0
Ice Thickness:	1.0 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)
147.0	147.0	3	Ericsson	AIR 6419 B41_TMO w/ Mount Pipe	3	1-5/8
		3	RFS Celwave	APXVAALL24_43-U-NA20_TMO w/ Mount Pipe		
		3	Commscope	VV-65B-R1_TMO w/ Mount Pipe		
		3	Ericsson	Radio 4460 B2/B25 B66_TMO		
		3	Ericsson	Radio 4480_TMOV2		
		1	Tower Mounts	Platform Mount [LP 1201-1]		
		1	Site Pro 1	HRK14 Handrail Kit		
49.0	50.0	1	Lucent	KS24019-L112A	1	1/2
	49.0	1	Tower Mounts	Side Arm Mount [SO 701-1]		

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)
149.0	149.0	2	Dragonwave	A-ANT-23G-2-C	6	1/2
		1	Andrew	VHLP2-18		
136.0	136.0	3	JMA Wireless	MX08FRO665-21 w/ Mount Pipe	1	1-1/2
		3	Fujitsu	TA08025-B604		
		3	Fujitsu	TA08025-B605		
		1	Raycap	RDIDC-9181-PF-48		
		1	Tower Mounts	Commscope MC-K6MHDX-9-96 (3)		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
122.0	123.0	3	Ericsson	AIR 21 B2A B4P w/ Mount Pipe	13	1-5/8
		3	RFS Celwave	APXVAARR24_43-U-NA20 w/ Mount Pipe		
		3	Ericsson	AIR 21 B4A B2P w/ Mount Pipe		
		3	Ericsson	KRY 112 144/1		
		3	Ericsson	Radio 4449 B71/B85A		
	122.0	1	Site Pro 1	RMQP-496 w/HRK12		
110.0	113.0	3	Ericsson	AIR 6449 N77 w/ Mount Pipe	6 4 4 3	1-1/4 13/16 7/8 3/8
	112.0	3	CCI Antennas	DMP65R-BU4D w/ Mount Pipe		
		3	Quintel Technology	QD4616-7 w/ Mount Pipe		
		4	Raycap	DC6-48-60-18-8F		
		3	Ericsson	RRUS-32 B30		
		3	Ericsson	RRUS 4478 B14_CCIV2		
		3	Ericsson	RRUS 4449 B5/B12		
		3	Ericsson	RRUS 32 B2		
		3	Ericsson	RRUS 32 B66		
	111.0	3	Ericsson	AIR 6419 B77G w/ Mount Pipe		
	110.0	6	Site Pro 1	MM02 STAND-OFF		
		6	Site Pro 1	MM03 STAND-OFF		
		1	Kenwood	T1542KT12XS-M-H3		
53.0	54.0	1	GPS	GPS_A	1	1/2
	53.0	1	Tower Mounts	Side Arm Mount [SO 701-1]		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Reference	Source
Geotechnical Report	2135657	CCISites
Tower Foundation Drawings	1613620	CCISites
Tower Manufacturer Drawings	1614568	CCISites
Tower Reinforcement Drawings	2431042	CCISites
Post-Modification Inspection	2448190	CCISites
Tower Reinforcement Drawings	3316256	CCISites
Post-Modification Inspection	3890848	CCISites
Tower Reinforcement Drawings	4988798	CCISites
Post-Modification Inspection	4699667	CCISites

3.1) Analysis Method

tnxTower (version 8.1.1.0), 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. When applicable, Crown Castle has calculated and provided the effective area for panel antennas using approved methods following the intent of the TIA-222 Standard.

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) The tower and structures were maintained in accordance with the TIA-222 Standard.
2) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2, and the referenced drawings.

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

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)[1,2]

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
147 - 142	Pole	TP22.875x22x0.25	Pole	7.0%	Pass
142 - 137	Pole	TP23.75x22.875x0.25	Pole	12.8%	Pass
137 - 132	Pole	TP24.625x23.75x0.25	Pole	20.3%	Pass
132 - 127	Pole	TP25.5x24.625x0.25	Pole	27.5%	Pass
127 - 122	Pole	TP26.375x25.5x0.25	Pole	34.4%	Pass
122 - 117	Pole	TP27.25x26.375x0.25	Pole	44.1%	Pass
117 - 112	Pole	TP28.125x27.25x0.25	Pole	52.6%	Pass
112 - 107	Pole	TP29x28.125x0.25	Pole	64.5%	Pass
107 - 103.25	Pole	TP30.313x29x0.25	Pole	73.0%	Pass
103.25 - 98.25	Pole	TP30.032x29.157x0.3125	Pole	59.2%	Pass
98.25 - 93.25	Pole	TP30.907x30.032x0.3125	Pole	66.1%	Pass
93.25 - 88.25	Pole	TP31.782x30.907x0.3125	Pole	72.6%	Pass
88.25 - 83.25	Pole	TP32.657x31.782x0.3125	Pole	78.6%	Pass
83.25 - 78.25	Pole	TP33.531x32.657x0.3125	Pole	84.4%	Pass
78.25 - 73.25	Pole	TP34.406x33.531x0.3125	Pole	89.8%	Pass
73.25 - 69.58	Pole	TP35.049x34.406x0.3125	Pole	93.5%	Pass
69.58 - 69.33	Pole + Reinf.	TP35.092x35.049x0.4375	Reinf. 3 Tension Rupture	89.4%	Pass
69.33 - 64.33	Pole + Reinf.	TP35.967x35.092x0.4313	Reinf. 3 Tension Rupture	93.6%	Pass
64.33 - 63.75	Pole + Reinf.	TP36.9x35.967x0.4313	Reinf. 3 Tension Rupture	94.1%	Pass
63.75 - 58	Pole	TP36.45x35.444x0.375	Pole	83.6%	Pass
58 - 57.83	Pole	TP36.48x36.45x0.375	Pole	83.7%	Pass
57.83 - 57.58	Pole	TP36.523x36.48x0.375	Pole	83.8%	Pass
57.58 - 52.58	Pole	TP37.398x36.523x0.375	Pole	87.1%	Pass

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
52.58 - 50.58	Pole	TP37.748x37.398x0.375	Pole	88.4%	Pass
50.58 - 50.33	Pole + Reinf.	TP37.792x37.748x0.575	Reinf. 5 Tension Rupture	81.5%	Pass
50.33 - 50.17	Pole + Reinf.	TP37.82x37.792x0.575	Reinf. 5 Tension Rupture	81.6%	Pass
50.17 - 49.92	Pole	TP37.864x37.82x0.375	Pole	88.8%	Pass
49.92 - 44.92	Pole	TP38.739x37.864x0.375	Pole	91.9%	Pass
44.92 - 39.92	Pole	TP39.614x38.739x0.375	Pole	94.9%	Pass
39.92 - 34.92	Pole	TP40.489x39.614x0.375	Pole	97.7%	Pass
34.92 - 34.5	Pole	TP41.481x40.489x0.375	Pole	97.9%	Pass
34.5 - 28.25	Pole	TP40.906x39.812x0.4375	Pole	84.6%	Pass
28.25 - 24.08	Pole	TP41.636x40.906x0.4375	Pole	86.2%	Pass
24.08 - 23.83	Pole + Reinf.	TP41.68x41.636x0.625	Reinf. 1 Tension Rupture	87.6%	Pass
23.83 - 18.83	Pole + Reinf.	TP42.555x41.68x0.6125	Reinf. 1 Tension Rupture	89.3%	Pass
18.83 - 13.83	Pole + Reinf.	TP43.43x42.555x0.6125	Reinf. 1 Tension Rupture	90.9%	Pass
13.83 - 8.83	Pole + Reinf.	TP44.305x43.43x0.6125	Reinf. 1 Tension Rupture	92.4%	Pass
8.83 - 3.83	Pole + Reinf.	TP45.18x44.305x0.6	Reinf. 1 Tension Rupture	93.8%	Pass
3.83 - 1.92	Pole + Reinf.	TP45.514x45.18x0.6	Reinf. 1 Tension Rupture	94.3%	Pass
1.92 - 1.67	Pole + Reinf.	TP45.558x45.514x0.7625	Reinf. 6 Compression	71.3%	Pass
1.67 - 0	Pole	TP45.85x45.558x0.4375	Pole	94.5%	Pass
				Summary	
			Pole	97.9%	Pass
			Reinforcement	94.3%	Pass
			Overall	**97.9%**	**Pass**

Table 5 - Tower Component Stresses vs. Capacity - LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1,2	Anchor Rods	-	79.3	Pass
1,2	Base Plate	-	58.6	Pass
1,2	Base Foundation Structural	-	76.9	Pass
1,2	Base Foundation Soil Interaction	-	98.2	Pass

Structure Rating (max from all components) =	**98.2%**

Notes:
1) See additional documentation in "Appendix C - Additional Calculations" for calculations supporting the % capacity listed.
2) Rating per TIA-222-H Section 15.5.

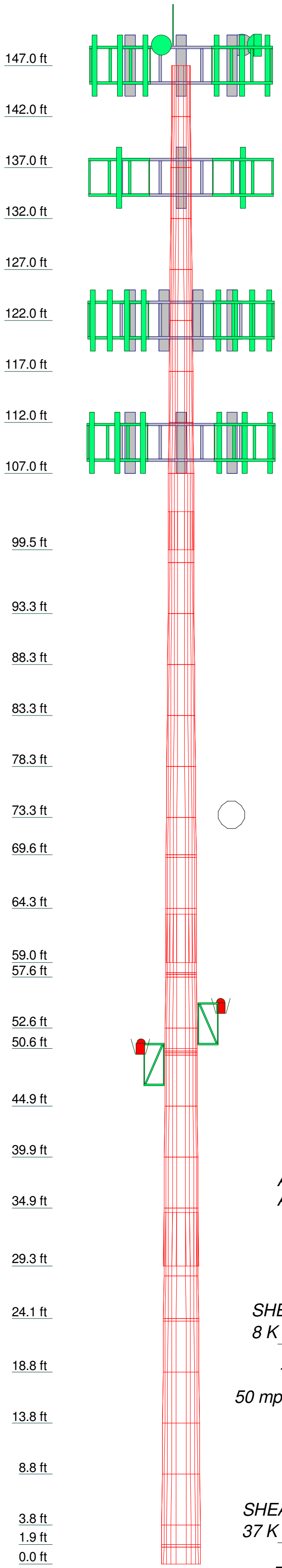
4.1) Recommendations

1) 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	0.250		22.000	22.875	A607-60	0.3
2	5.00	12	0.250		22.875	23.750		0.3
3	5.00	12	0.250		23.750	24.625		0.3
4	5.00	12	0.250		24.625	25.500		0.3
5	5.00	12	0.250		25.500	26.375		0.4
6	5.00	12	0.250		26.375	27.250		0.4
7	5.00	12	0.250		27.250	28.125		0.4
8	5.00	12	0.250		28.125	29.000		0.4
9	5.007.50	12	0.250	3.75	29.000	30.313		0.6
10		12	0.313		29.157	30.032		0.5
11	5.00	12	0.313		30.032	30.907		0.5
12	5.00	12	0.313		30.907	31.782		0.5
13	5.00	12	0.313		31.782	32.657		0.5
14	5.00	12	0.313		32.657	33.531		0.6
15	5.00	12	0.313		33.531	34.406		0.6
16	5.67	12	0.313		34.406	[illegible]		0.4
17	0.25	12	[illegible]		[illegible]	[illegible]		0.0
18	5.00	12	0.431		[illegible]	[illegible]		0.8
19	[illegible]	12	0.431	4.75	35.967	36.900		0.9
20	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]
21	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]
22	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]
23	5.00	12	0.375		[illegible]	[illegible]		0.8
24	[illegible]	12	[illegible]		[illegible]	[illegible]		0.3
25	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	A607-65	[illegible]
26	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]
27	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]
28	5.00	12	0.375		[illegible]	[illegible]		0.8
29	5.00	12	0.375		38.739	39.614		0.8
30	5.00	12	0.375		39.614	40.489		0.8
31	[illegible]	12	0.375	5.25	40.489	41.481		0.9
32		12	0.438		[illegible]	[illegible]		1.2
33	4.17	12	[illegible]		[illegible]	[illegible]		0.8
34	0.25	12	[illegible]		[illegible]	[illegible]		0.1
35	5.00	12	0.613		[illegible]	[illegible]		1.4
36	5.00	12	0.613		42.555	43.430		1.4
37	5.00	12	0.613		43.430	44.305		1.5
38	5.00	12	0.600		44.305	45.180		1.5
39	[illegible]	12	[illegible]		[illegible]	[illegible]		0.6
40	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]
41	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]
								23.1



MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A607-60	60 ksi	75 ksi	A607-65	65 ksi	80 ksi

TOWER DESIGN NOTES

1. Tower is located in New Haven County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-H Standard.
3. Tower designed for a 121 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 97.9%

ALL REACTIONS ARE FACTORED

AXIAL 73 K

SHEAR 8 K — *MOMENT 877 kip-ft*

TORQUE 2 kip-ft
50 mph WIND - 1.000 in ICE

AXIAL 51 K

SHEAR 37 K — *MOMENT 3936 kip-ft*

TORQUE 10 kip-ft
REACTIONS - 121 mph WIND

Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350 Tower Engineering Professionals	Job: **Branford Banm Tower (BU 876321)** Project: **TEP No. 25579.715556** Client: Crown Castle — Drawn by: DAR — App'd: Code: TIA-222-H — Date: 06/29/22 — Scale: NTS Path: C:\Users\dareidenbach\Desktop\In Progress\QA\25579 Branford Banm Tower\P-338161_L-715556_876321_BRANFORD BANM TOWER_Structural Analysis\tnxTower\EQT\EQT_876321_2130518_LC7.eri — 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:

Tower is located in New Haven County, Connecticut.
Tower base elevation above sea level: 58.00 ft.
Basic wind speed of 121 mph.
Risk Category II.
Exposure Category C.
Simplified Topographic Factor Procedure for wind speed-up calculations is used.
Topographic Category: 1.
Crest Height: 0.00 ft.
Nominal ice thickness of 1.000 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.
Tower analysis based on target reliabilities in accordance with Annex S.
Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.
Maximum demand-capacity ratio is: 1.05.
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	147.00-142.00	5.00	0.000	12	22.000	22.875	0.250	1.000	A607-60 (60 ksi)
L2	142.00-137.00	5.00	0.000	12	22.875	23.750	0.250	1.000	A607-60 (60 ksi)
L3	137.00-132.00	5.00	0.000	12	23.750	24.625	0.250	1.000	A607-60 (60 ksi)
L4	132.00-127.00	5.00	0.000	12	24.625	25.500	0.250	1.000	A607-60 (60 ksi)
L5	127.00-122.00	5.00	0.000	12	25.500	26.375	0.250	1.000	A607-60 (60 ksi)
L6	122.00-117.00	5.00	0.000	12	26.375	27.250	0.250	1.000	A607-60 (60 ksi)
L7	117.00-112.00	5.00	0.000	12	27.250	28.125	0.250	1.000	A607-60 (60 ksi)
L8	112.00-107.00	5.00	0.000	12	28.125	29.000	0.250	1.000	A607-60 (60 ksi)
L9	107.00-99.50	7.50	3.750	12	29.000	30.313	0.250	1.000	A607-60 (60 ksi)
L10	99.50-98.25	5.00	0.000	12	29.157	30.032	0.313	1.250	A607-65 (65 ksi)
L11	98.25-93.25	5.00	0.000	12	30.032	30.907	0.313	1.250	A607-65 (65 ksi)
L12	93.25-88.25	5.00	0.000	12	30.907	31.782	0.313	1.250	A607-65 (65 ksi)
L13	88.25-83.25	5.00	0.000	12	31.782	32.657	0.313	1.250	A607-65 (65 ksi)
L14	83.25-78.25	5.00	0.000	12	32.657	33.531	0.313	1.250	A607-65 (65 ksi)
L15	78.25-73.25	5.00	0.000	12	33.531	34.406	0.313	1.250	A607-65 (65 ksi)
L16	73.25-69.58	3.67	0.000	12	34.406	35.049	0.313	1.250	A607-65 (65 ksi)
L17	69.58-69.33	0.25	0.000	12	35.049	35.092	0.438	1.750	A607-65 (65 ksi)
L18	69.33-64.33	5.00	0.000	12	35.092	35.967	0.431	1.725	A607-65 (65 ksi)
L19	64.33-59.00	5.33	4.750	12	35.967	36.900	0.431	1.725	A607-65 (65 ksi)
L20	59.00-58.00	5.75	0.000	12	35.444	36.450	0.375	1.500	A607-65 (65 ksi)
L21	58.00-57.83	0.17	0.000	12	36.450	36.480	0.375	1.500	A607-65 (65 ksi)
L22	57.83-57.58	0.25	0.000	12	36.480	36.523	0.375	1.500	A607-65 (65 ksi)
L23	57.58-52.58	5.00	0.000	12	36.523	37.398	0.375	1.500	A607-65 (65 ksi)
L24	52.58-50.58	2.00	0.000	12	37.398	37.748	0.375	1.500	A607-65 (65 ksi)
L25	50.58-50.33	0.25	0.000	12	37.748	37.792	0.575	2.300	A607-65 (65 ksi)
L26	50.33-50.17	0.16	0.000	12	37.792	37.820	0.575	2.300	A607-65 (65 ksi)
L27	50.17-49.92	0.25	0.000	12	37.820	37.864	0.375	1.500	A607-65 (65 ksi)
L28	49.92-44.92	5.00	0.000	12	37.864	38.739	0.375	1.500	A607-65 (65 ksi)
L29	44.92-39.92	5.00	0.000	12	38.739	39.614	0.375	1.500	A607-65 (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
L30	39.92-34.92	5.00	0.000	12	39.614	40.489	0.375	1.500	A607-65 (65 ksi)
L31	34.92-29.25	5.67	5.250	12	40.489	41.481	0.375	1.500	A607-65 (65 ksi)
L32	29.25-28.25	6.25	0.000	12	39.812	40.906	0.438	1.750	A607-65 (65 ksi)
L33	28.25-24.08	4.17	0.000	12	40.906	41.636	0.438	1.750	A607-65 (65 ksi)
L34	24.08-23.83	0.25	0.000	12	41.636	41.680	0.625	2.500	A607-65 (65 ksi)
L35	23.83-18.83	5.00	0.000	12	41.680	42.555	0.613	2.450	A607-65 (65 ksi)
L36	18.83-13.83	5.00	0.000	12	42.555	43.430	0.613	2.450	A607-65 (65 ksi)
L37	13.83-8.83	5.00	0.000	12	43.430	44.305	0.613	2.450	A607-65 (65 ksi)
L38	8.83-3.83	5.00	0.000	12	44.305	45.180	0.600	2.400	A607-65 (65 ksi)
L39	3.83-1.92	1.91	0.000	12	45.180	45.514	0.600	2.400	A607-65 (65 ksi)
L40	1.92-1.67	0.25	0.000	12	45.514	45.558	0.762	3.050	A607-65 (65 ksi)
L41	1.67-0.00	1.67		12	45.558	45.850	0.438	1.750	A607-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	22.688	17.509	1057.206	7.786	11.396	92.770	2142.186	8.617	5.226	20.904
	23.594	18.213	1190.010	8.100	11.849	100.429	2411.283	8.964	5.461	21.842
L2	23.594	18.213	1190.010	8.100	11.849	100.429	2411.283	8.964	5.461	21.842
	24.500	18.918	1333.495	8.413	12.303	108.392	2702.022	9.311	5.695	22.78
L3	24.500	18.918	1333.495	8.413	12.303	108.392	2702.022	9.311	5.695	22.78
	25.406	19.622	1488.073	8.726	12.756	116.658	3015.239	9.657	5.930	23.718
L4	25.406	19.622	1488.073	8.726	12.756	116.658	3015.239	9.657	5.930	23.718
	26.312	20.326	1654.157	9.040	13.209	125.229	3351.771	10.004	6.164	24.656
L5	26.312	20.326	1654.157	9.040	13.209	125.229	3351.771	10.004	6.164	24.656
	27.217	21.031	1832.162	9.353	13.662	134.103	3712.457	10.351	6.399	25.594
L6	27.217	21.031	1832.162	9.353	13.662	134.103	3712.457	10.351	6.399	25.594
	28.123	21.735	2022.499	9.666	14.116	143.280	4098.132	10.697	6.633	26.532
L7	28.123	21.735	2022.499	9.666	14.116	143.280	4098.132	10.697	6.633	26.532
	29.029	22.440	2225.582	9.979	14.569	152.762	4509.633	11.044	6.868	27.47
L8	29.029	22.440	2225.582	9.979	14.569	152.762	4509.633	11.044	6.868	27.47
	29.935	23.144	2441.825	10.293	15.022	162.548	4947.799	11.391	7.102	28.408
L9	29.935	23.144	2441.825	10.293	15.022	162.548	4947.799	11.391	7.102	28.408
	31.294	24.201	2791.765	10.763	15.702	177.795	5656.872	11.911	7.454	29.816
L10	30.754	29.024	3082.250	10.326	15.103	204.080	6245.473	14.285	6.976	22.325
	30.981	29.905	3371.331	10.639	15.556	216.717	6831.230	14.718	7.211	23.075
L11	30.981	29.905	3371.331	10.639	15.556	216.717	6831.230	14.718	7.211	23.075
	31.887	30.785	3677.944	10.953	16.010	229.733	7452.513	15.152	7.445	23.826
L12	31.887	30.785	3677.944	10.953	16.010	229.733	7452.513	15.152	7.445	23.826
	32.792	31.666	4002.607	11.266	16.463	243.130	8110.366	15.585	7.680	24.576
L13	32.792	31.666	4002.607	11.266	16.463	243.130	8110.366	15.585	7.680	24.576
	33.698	32.546	4345.834	11.579	16.916	256.906	8805.838	16.018	7.914	25.326
L14	33.698	32.546	4345.834	11.579	16.916	256.906	8805.838	16.018	7.914	25.326

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
	34.604	33.427	4708.142	11.892	17.369	271.061	9539.972	16.452	8.149	26.077
L15	34.604	33.427	4708.142	11.892	17.369	271.061	9539.972	16.452	8.149	26.077
	35.510	34.307	5090.047	12.206	17.823	285.596	10313.816	16.885	8.383	26.827
L16	35.510	34.307	5090.047	12.206	17.823	285.596	10313.816	16.885	8.383	26.827
	36.175	34.953	5383.136	12.436	18.155	296.507	10907.694	17.203	8.556	27.378
L17	36.131	48.758	7455.323	12.391	18.155	410.644	15106.506	23.997	8.221	18.79
	36.176	48.820	7483.629	12.406	18.178	411.690	15163.861	24.028	8.232	18.817
L18	36.178	48.131	7380.712	12.409	18.178	406.028	14955.323	23.689	8.249	19.128
	37.084	49.346	7953.872	12.722	18.631	426.915	16116.701	24.287	8.483	19.672
L19	37.084	49.346	7953.872	12.722	18.631	426.915	16116.701	24.287	8.483	19.672
	38.050	50.641	8596.735	13.056	19.114	449.756	17419.317	24.924	8.733	20.251
L20	37.422	42.346	6647.155	12.555	18.360	362.048	13468.937	20.841	8.494	22.651
	37.604	43.561	7235.892	12.915	18.881	383.235	14661.879	21.439	8.764	23.37
L21	37.604	43.561	7235.892	12.915	18.881	383.235	14661.879	21.439	8.764	23.37
	37.634	43.596	7253.808	12.925	18.897	383.870	14698.181	21.457	8.772	23.391
L22	37.634	43.596	7253.808	12.925	18.897	383.870	14698.181	21.457	8.772	23.391
	37.680	43.649	7280.208	12.941	18.919	384.806	14751.675	21.483	8.783	23.422
L23	37.680	43.649	7280.208	12.941	18.919	384.806	14751.675	21.483	8.783	23.422
	38.585	44.706	7821.748	13.254	19.372	403.757	15848.983	22.003	9.018	24.047
L24	38.585	44.706	7821.748	13.254	19.372	403.757	15848.983	22.003	9.018	24.047
	38.948	45.128	8045.669	13.380	19.554	411.466	16302.706	22.211	9.112	24.298
L25	38.877	68.827	12139.694	13.308	19.554	620.839	24598.312	33.874	8.576	14.914
	38.923	68.908	12182.605	13.324	19.576	622.312	24685.260	33.914	8.587	14.934
L26	38.923	68.908	12182.605	13.324	19.576	622.312	24685.260	33.914	8.587	14.934
	38.951	68.959	12210.121	13.334	19.591	623.256	24741.015	33.940	8.595	14.947
L27	39.022	45.215	8092.094	13.405	19.591	413.055	16396.776	22.253	9.131	24.349
	39.067	45.268	8120.489	13.421	19.614	414.025	16454.313	22.279	9.143	24.38
L28	39.067	45.268	8120.489	13.421	19.614	414.025	16454.313	22.279	9.143	24.38
	39.973	46.324	8702.437	13.734	20.067	433.675	17633.496	22.799	9.377	25.005
L29	39.973	46.324	8702.437	13.734	20.067	433.675	17633.496	22.799	9.377	25.005
	40.879	47.381	9311.543	14.048	20.520	453.780	18867.711	23.319	9.612	25.631
L30	40.879	47.381	9311.543	14.048	20.520	453.780	18867.711	23.319	9.612	25.631
	41.785	48.437	9948.428	14.361	20.973	474.340	20158.213	23.839	9.846	26.256
L31	41.785	48.437	9948.428	14.361	20.973	474.340	20158.213	23.839	9.846	26.256
	42.812	49.635	10705.051	14.716	21.487	498.207	21691.336	24.429	10.112	26.965
L32	42.014	55.469	10976.776	14.096	20.623	532.265	22241.925	27.300	9.497	21.708
	42.195	57.010	11917.190	14.488	21.189	562.414	24147.458	28.059	9.790	22.378
L33	42.195	57.010	11917.190	14.488	21.189	562.414	24147.458	28.059	9.790	22.378
	42.950	58.038	12573.598	14.749	21.567	582.992	25477.519	28.565	9.986	22.825
L34	42.884	82.534	17718.150	14.682	21.567	821.526	35901.776	40.621	9.483	15.173
	42.929	82.622	17774.917	14.698	21.590	823.293	36016.802	40.664	9.495	15.192
L35	42.934	80.995	17435.335	14.702	21.590	807.564	35328.716	39.863	9.529	15.557
	43.840	82.720	18573.751	15.015	22.043	842.603	37635.455	40.712	9.763	15.94
L36	43.840	82.720	18573.751	15.015	22.043	842.603	37635.455	40.712	9.763	15.94
	44.746	84.446	19760.673	15.329	22.497	878.386	40040.481	41.562	9.998	16.323
L37	44.746	84.446	19760.673	15.329	22.497	878.386	40040.481	41.562	9.998	16.323
	45.652	86.172	20997.113	15.642	22.950	914.914	42545.843	42.411	10.232	16.706
L38	45.656	84.437	20586.259	15.646	22.950	897.011	41713.342	41.558	10.266	17.109
	46.562	86.128	21847.678	15.960	23.403	933.538	44269.320	42.390	10.500	17.5
L39	46.562	86.128	21847.678	15.960	23.403	933.538	44269.320	42.390	10.500	17.5
	46.908	86.774	22342.818	16.079	23.576	947.683	45272.607	42.707	10.590	17.65
L40	46.851	109.876	28086.921	16.021	23.576	1191.323	56911.716	54.078	10.154	13.317
	46.896	109.984	28169.379	16.037	23.599	1193.673	57078.799	54.131	10.166	13.332
L41	47.011	63.563	16517.111	16.153	23.599	699.910	33468.145	31.284	11.037	25.227
	47.313	63.975	16840.156	16.258	23.750	709.050	34122.722	31.486	11.115	25.406

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

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 147.00-142.00				1	1	1			
L2 142.00-137.00				1	1	1			
L3 137.00-132.00				1	1	1			
L4 132.00-127.00				1	1	1			
L5 127.00-122.00				1	1	1			
L6 122.00-117.00				1	1	1			
L7 117.00-112.00				1	1	1			
L8 112.00-107.00				1	1	1			
L9 107.00-99.50				1	1	1			
L10 99.50-98.25				1	1	1			
L11 98.25-93.25				1	1	1			
L12 93.25-88.25				1	1	1			
L13 88.25-83.25				1	1	1			
L14 83.25-78.25				1	1	1			
L15 78.25-73.25				1	1	1			
L16 73.25-69.58				1	1	1			
L17 69.58-69.33				1	1	0.971015			
L18 69.33-64.33				1	1	0.978502			
L19 64.33-59.00				1	1	0.977779			
L20 59.00-58.00				1	1	1			
L21 58.00-57.83				1	1	1			
L22 57.83-57.58				1	1	1			
L23 57.58-52.58				1	1	1			
L24 52.58-50.58				1	1	1			
L25 50.58-50.33				1	1	0.963051			
L26 50.33-50.17				1	1	0.962818			
L27 50.17-49.92				1	1	1			
L28 49.92-44.92				1	1	1			
L29 44.92-39.92				1	1	1			
L30				1	1	1			

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
39.92-34.92									
L31				1	1	1			
34.92-29.25									
L32				1	1	1			
29.25-28.25									
L33				1	1	1			
28.25-24.08									
L34				1	1	1.00355			
24.08-23.83									
L35				1	1	1.01726			
23.83-18.83									
L36				1	1	1.01107			
18.83-13.83									
L37 13.83-8.83				1	1	1.00512			
L38 8.83-3.83				1	1	1.01995			
L39 3.83-1.92				1	1	1.01778			
L40 1.92-1.67				1	1	0.979136			
L41 1.67-0.00				1	1	1			

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
Misc										
Safety Line 3/8	B	No	Surface Ar (CaAa)	147.00 - 0.00	1	1	0.000 0.000	0.375		0.220
147										
2" Flexible Conduit	A	No	Surface Ar (CaAa)	147.00 - 0.00	2	2	-0.250 -0.250	2.000		0.340
HB158-21U6S24-xxM_TMO(1-5/8)	A	No	Surface Ar (CaAa)	147.00 - 0.00	3	2	0.250 0.250	1.996		2.500
LDF4-50A(1/2)	A	No	Surface Ar (CaAa)	147.00 - 53.00	6	2	0.000 0.000	0.625		0.150
136										
CU12PSM9P6XXX(1-1/2)	A	No	Surface Ar (CaAa)	136.00 - 0.00	1	1	0.500 0.500	1.600		2.350
53										
LDF4-50A(1/2)	A	No	Surface Ar (CaAa)	53.00 - 49.00	7	2	0.000 0.000	0.625		0.150
49										
LDF4-50A(1/2)	A	No	Surface Ar (CaAa)	49.00 - 0.00	8	2	0.000 0.000	0.625		0.150
Modifications										
Aero MP3-04	A	No	Surface Af (CaAa)	25.50 - 0.00	1	1	-0.250 -0.250	1.610	9.454	0.000
Aero MP3-04	B	No	Surface Af (CaAa)	25.50 - 0.00	1	1	-0.250 -0.250	1.610	9.454	0.000
Aero MP3-04	C	No	Surface Af (CaAa)	25.50 - 0.00	1	1	-0.250 -0.250	1.610	9.454	0.000
*										
Aero MP3-04	A	No	Surface Af (CaAa)	52.00 - 32.00	1	1	0.500 0.500	1.610	9.454	0.000
Aero MP3-04	B	No	Surface Af	52.00 -	1	1	0.500	1.610	9.454	0.000

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
			(CaAa)	32.00			0.500			
Aero MP3-04	C	No	Surface Af (CaAa)	52.00 - 32.00	1	1	0.500 0.500	1.610	9.454	0.000
*										
Aero MP3-04	A	No	Surface Af (CaAa)	71.00 - 61.00	1	1	0.500 0.500	1.610	9.454	0.000
Aero MP3-04	B	No	Surface Af (CaAa)	71.00 - 61.00	1	1	0.500 0.500	1.610	9.454	0.000
Aero MP3-04	C	No	Surface Af (CaAa)	71.00 - 61.00	1	1	0.500 0.500	1.610	9.454	0.000
*										
Aero MP3-04	A	No	Surface Af (CaAa)	35.50 - 0.00	1	1	0.000 0.000	1.610	9.454	0.000
Aero MP3-04	B	No	Surface Af (CaAa)	35.50 - 0.00	1	1	0.250 0.250	1.610	9.454	0.000
Aero MP3-04	C	No	Surface Af (CaAa)	35.50 - 0.00	1	1	0.250 0.250	1.610	9.454	0.000
*										
Aero MP3-03	A	No	Surface Af (CaAa)	59.00 - 49.00	1	1	0.250 0.250	1.570	8.990	0.000
Aero MP3-03	B	No	Surface Af (CaAa)	59.00 - 49.00	1	1	0.250 0.250	1.570	8.990	0.000
Aero MP3-03	C	No	Surface Af (CaAa)	59.00 - 49.00	1	1	0.250 0.250	1.570	8.990	0.000
*										
Aero Step Ladder	B	No	Surface Af (CaAa)	26.33 - 12.33	1	1	0.250 0.250	0.000	0.000	4.679
Aero Step Ladder	B	No	Surface Af (CaAa)	35.67 - 26.67	1	1	0.250 0.250	0.000	0.000	4.679
Aero Step Ladder	B	No	Surface Af (CaAa)	58.17 - 49.17	1	1	0.250 0.250	0.000	0.000	4.679
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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
122									
LDF7-50A(1-5/8)	B	No	No	Inside Pole	122.00 - 0.00	9	No Ice	0.00	0.820
							1/2" Ice	0.00	0.820
							1" Ice	0.00	0.820
HCS 6X12 4AWG(1-5/8)	B	No	No	Inside Pole	122.00 - 0.00	3	No Ice	0.00	2.400
							1/2" Ice	0.00	2.400
							1" Ice	0.00	2.400
MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	B	No	No	Inside Pole	122.00 - 0.00	1	No Ice	0.00	1.070
							1/2" Ice	0.00	1.070
							1" Ice	0.00	1.070
110									
LDF6-50A(1-1/4)	C	No	No	Inside Pole	110.00 - 0.00	6	No Ice	0.00	0.600
							1/2" Ice	0.00	0.600
							1" Ice	0.00	0.600
PWRT-608-S(13/16)	C	No	No	Inside Pole	110.00 - 0.00	4	No Ice	0.00	0.620
							1/2" Ice	0.00	0.620
							1" Ice	0.00	0.620

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
PWRT-606-S(7/8)	C	No	No	Inside Pole	110.00 - 0.00	4	No Ice	0.00	0.890
							1/2" Ice	0.00	0.890
							1" Ice	0.00	0.890
FB-L98B-034-XXX(3/8)	C	No	No	Inside Pole	110.00 - 0.00	2	No Ice	0.00	0.057
							1/2" Ice	0.00	0.057
							1" Ice	0.00	0.057
FB-L98B-034-XXX(3/8)	C	No	No	Inside Pole	110.00 - 0.00	1	No Ice	0.00	0.057
							1/2" Ice	0.00	0.057
							1" Ice	0.00	0.057
2" Flexible Conduit	C	No	No	Inside Pole	110.00 - 0.00	1	No Ice	0.00	0.340
							1/2" Ice	0.00	0.340
							1" Ice	0.00	0.340
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Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	147.00-142.00	A	0.000	0.000	4.621	0.000	0.05
		B	0.000	0.000	0.188	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L2	142.00-137.00	A	0.000	0.000	4.621	0.000	0.05
		B	0.000	0.000	0.188	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L3	137.00-132.00	A	0.000	0.000	5.261	0.000	0.05
		B	0.000	0.000	0.188	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L4	132.00-127.00	A	0.000	0.000	5.421	0.000	0.06
		B	0.000	0.000	0.188	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L5	127.00-122.00	A	0.000	0.000	5.421	0.000	0.06
		B	0.000	0.000	0.188	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L6	122.00-117.00	A	0.000	0.000	5.421	0.000	0.06
		B	0.000	0.000	0.188	0.000	0.08
		C	0.000	0.000	0.000	0.000	0.00
L7	117.00-112.00	A	0.000	0.000	5.421	0.000	0.06
		B	0.000	0.000	0.188	0.000	0.08
		C	0.000	0.000	0.000	0.000	0.00
L8	112.00-107.00	A	0.000	0.000	5.421	0.000	0.06
		B	0.000	0.000	0.188	0.000	0.08
		C	0.000	0.000	0.000	0.000	0.03
L9	107.00-99.50	A	0.000	0.000	8.132	0.000	0.09
		B	0.000	0.000	0.281	0.000	0.12
		C	0.000	0.000	0.000	0.000	0.08
L10	99.50-98.25	A	0.000	0.000	1.355	0.000	0.01
		B	0.000	0.000	0.047	0.000	0.02
		C	0.000	0.000	0.000	0.000	0.01
L11	98.25-93.25	A	0.000	0.000	5.421	0.000	0.06
		B	0.000	0.000	0.188	0.000	0.08
		C	0.000	0.000	0.000	0.000	0.05
L12	93.25-88.25	A	0.000	0.000	5.421	0.000	0.06

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		B	0.000	0.000	0.188	0.000	0.08
		C	0.000	0.000	0.000	0.000	0.05
L13	88.25-83.25	A	0.000	0.000	5.421	0.000	0.06
		B	0.000	0.000	0.188	0.000	0.08
		C	0.000	0.000	0.000	0.000	0.05
L14	83.25-78.25	A	0.000	0.000	5.421	0.000	0.06
		B	0.000	0.000	0.188	0.000	0.08
		C	0.000	0.000	0.000	0.000	0.05
L15	78.25-73.25	A	0.000	0.000	5.421	0.000	0.06
		B	0.000	0.000	0.188	0.000	0.08
		C	0.000	0.000	0.000	0.000	0.05
L16	73.25-69.58	A	0.000	0.000	4.360	0.000	0.04
		B	0.000	0.000	0.519	0.000	0.06
		C	0.000	0.000	0.381	0.000	0.04
L17	69.58-69.33	A	0.000	0.000	0.338	0.000	0.00
		B	0.000	0.000	0.076	0.000	0.00
		C	0.000	0.000	0.067	0.000	0.00
L18	69.33-64.33	A	0.000	0.000	6.763	0.000	0.06
		B	0.000	0.000	1.529	0.000	0.08
		C	0.000	0.000	1.342	0.000	0.05
L19	64.33-59.00	A	0.000	0.000	6.672	0.000	0.06
		B	0.000	0.000	1.093	0.000	0.08
		C	0.000	0.000	0.894	0.000	0.05
L20	59.00-58.00	A	0.000	0.000	1.346	0.000	0.01
		B	0.000	0.000	0.299	0.000	0.02
		C	0.000	0.000	0.262	0.000	0.01
L21	58.00-57.83	A	0.000	0.000	0.229	0.000	0.00
		B	0.000	0.000	0.051	0.000	0.00
		C	0.000	0.000	0.044	0.000	0.00
L22	57.83-57.58	A	0.000	0.000	0.336	0.000	0.00
		B	0.000	0.000	0.075	0.000	0.01
		C	0.000	0.000	0.065	0.000	0.00
L23	57.58-52.58	A	0.000	0.000	6.729	0.000	0.06
		B	0.000	0.000	1.496	0.000	0.10
		C	0.000	0.000	1.308	0.000	0.05
L24	52.58-50.58	A	0.000	0.000	3.073	0.000	0.02
		B	0.000	0.000	0.979	0.000	0.04
		C	0.000	0.000	0.904	0.000	0.02
L25	50.58-50.33	A	0.000	0.000	0.404	0.000	0.00
		B	0.000	0.000	0.142	0.000	0.01
		C	0.000	0.000	0.133	0.000	0.00
L26	50.33-50.17	A	0.000	0.000	0.258	0.000	0.00
		B	0.000	0.000	0.091	0.000	0.00
		C	0.000	0.000	0.085	0.000	0.00
L27	50.17-49.92	A	0.000	0.000	0.404	0.000	0.00
		B	0.000	0.000	0.142	0.000	0.01
		C	0.000	0.000	0.133	0.000	0.00
L28	49.92-44.92	A	0.000	0.000	7.003	0.000	0.06
		B	0.000	0.000	1.770	0.000	0.08
		C	0.000	0.000	1.582	0.000	0.05
L29	44.92-39.92	A	0.000	0.000	6.763	0.000	0.06
		B	0.000	0.000	1.529	0.000	0.08
		C	0.000	0.000	1.342	0.000	0.05
L30	39.92-34.92	A	0.000	0.000	6.918	0.000	0.06
		B	0.000	0.000	1.685	0.000	0.08
		C	0.000	0.000	1.497	0.000	0.05
L31	34.92-29.25	A	0.000	0.000	8.452	0.000	0.07
		B	0.000	0.000	2.518	0.000	0.12
		C	0.000	0.000	2.305	0.000	0.06
L32	29.25-28.25	A	0.000	0.000	1.353	0.000	0.01
		B	0.000	0.000	0.306	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	0.268	0.000	0.01
L33	28.25-24.08	A	0.000	0.000	6.021	0.000	0.05
		B	0.000	0.000	1.656	0.000	0.08
		C	0.000	0.000	1.500	0.000	0.04
L34	24.08-23.83	A	0.000	0.000	0.405	0.000	0.00
		B	0.000	0.000	0.144	0.000	0.01
		C	0.000	0.000	0.134	0.000	0.00
L35	23.83-18.83	A	0.000	0.000	8.104	0.000	0.06
		B	0.000	0.000	2.871	0.000	0.10
		C	0.000	0.000	2.683	0.000	0.05
L36	18.83-13.83	A	0.000	0.000	8.104	0.000	0.06
		B	0.000	0.000	2.871	0.000	0.10
		C	0.000	0.000	2.683	0.000	0.05
L37	13.83-8.83	A	0.000	0.000	8.104	0.000	0.06
		B	0.000	0.000	2.871	0.000	0.09
		C	0.000	0.000	2.683	0.000	0.05
L38	8.83-3.83	A	0.000	0.000	8.104	0.000	0.06
		B	0.000	0.000	2.871	0.000	0.08
		C	0.000	0.000	2.683	0.000	0.05
L39	3.83-1.92	A	0.000	0.000	3.096	0.000	0.02
		B	0.000	0.000	1.097	0.000	0.03
		C	0.000	0.000	1.025	0.000	0.02
L40	1.92-1.67	A	0.000	0.000	0.405	0.000	0.00
		B	0.000	0.000	0.144	0.000	0.00
		C	0.000	0.000	0.134	0.000	0.00
L41	1.67-0.00	A	0.000	0.000	2.707	0.000	0.02
		B	0.000	0.000	0.959	0.000	0.03
		C	0.000	0.000	0.896	0.000	0.02

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	147.00-142.00	A	0.985	0.000	0.000	9.471	0.000	0.13
		B		0.000	0.000	1.173	0.000	0.01
		C		0.000	0.000	0.000	0.000	0.00
L2	142.00-137.00	A	0.982	0.000	0.000	9.458	0.000	0.12
		B		0.000	0.000	1.169	0.000	0.01
		C		0.000	0.000	0.000	0.000	0.00
L3	137.00-132.00	A	0.978	0.000	0.000	10.867	0.000	0.15
		B		0.000	0.000	1.166	0.000	0.01
		C		0.000	0.000	0.000	0.000	0.00
L4	132.00-127.00	A	0.975	0.000	0.000	11.205	0.000	0.15
		B		0.000	0.000	1.162	0.000	0.01
		C		0.000	0.000	0.000	0.000	0.00
L5	127.00-122.00	A	0.971	0.000	0.000	11.187	0.000	0.15
		B		0.000	0.000	1.158	0.000	0.01
		C		0.000	0.000	0.000	0.000	0.00
L6	122.00-117.00	A	0.967	0.000	0.000	11.168	0.000	0.15
		B		0.000	0.000	1.154	0.000	0.09
		C		0.000	0.000	0.000	0.000	0.00
L7	117.00-112.00	A	0.963	0.000	0.000	11.149	0.000	0.15
		B		0.000	0.000	1.150	0.000	0.09
		C		0.000	0.000	0.000	0.000	0.00
L8	112.00-107.00	A	0.958	0.000	0.000	11.128	0.000	0.15
		B		0.000	0.000	1.146	0.000	0.09
		C		0.000	0.000	0.000	0.000	0.03

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L9	107.00-99.50	A	0.953	0.000	0.000	16.652	0.000	0.22
		B		0.000	0.000	1.710	0.000	0.13
		C		0.000	0.000	0.000	0.000	0.08
L10	99.50-98.25	A	0.949	0.000	0.000	2.775	0.000	0.04
		B		0.000	0.000	0.285	0.000	0.02
		C		0.000	0.000	0.000	0.000	0.01
L11	98.25-93.25	A	0.946	0.000	0.000	11.068	0.000	0.15
		B		0.000	0.000	1.133	0.000	0.09
		C		0.000	0.000	0.000	0.000	0.05
L12	93.25-88.25	A	0.940	0.000	0.000	11.043	0.000	0.15
		B		0.000	0.000	1.128	0.000	0.09
		C		0.000	0.000	0.000	0.000	0.05
L13	88.25-83.25	A	0.935	0.000	0.000	11.018	0.000	0.15
		B		0.000	0.000	1.123	0.000	0.09
		C		0.000	0.000	0.000	0.000	0.05
L14	83.25-78.25	A	0.930	0.000	0.000	10.992	0.000	0.15
		B		0.000	0.000	1.117	0.000	0.09
		C		0.000	0.000	0.000	0.000	0.05
L15	78.25-73.25	A	0.924	0.000	0.000	10.964	0.000	0.15
		B		0.000	0.000	1.111	0.000	0.09
		C		0.000	0.000	0.000	0.000	0.05
L16	73.25-69.58	A	0.918	0.000	0.000	8.659	0.000	0.11
		B		0.000	0.000	1.443	0.000	0.07
		C		0.000	0.000	0.631	0.000	0.04
L17	69.58-69.33	A	0.916	0.000	0.000	0.657	0.000	0.01
		B		0.000	0.000	0.166	0.000	0.01
		C		0.000	0.000	0.111	0.000	0.00
L18	69.33-64.33	A	0.912	0.000	0.000	13.126	0.000	0.17
		B		0.000	0.000	3.317	0.000	0.11
		C		0.000	0.000	2.217	0.000	0.07
L19	64.33-59.00	A	0.905	0.000	0.000	13.065	0.000	0.17
		B		0.000	0.000	2.637	0.000	0.11
		C		0.000	0.000	1.473	0.000	0.07
L20	59.00-58.00	A	0.900	0.000	0.000	2.613	0.000	0.03
		B		0.000	0.000	0.688	0.000	0.02
		C		0.000	0.000	0.439	0.000	0.01
L21	58.00-57.83	A	0.899	0.000	0.000	0.443	0.000	0.01
		B		0.000	0.000	0.142	0.000	0.00
		C		0.000	0.000	0.074	0.000	0.00
L22	57.83-57.58	A	0.899	0.000	0.000	0.652	0.000	0.01
		B		0.000	0.000	0.209	0.000	0.01
		C		0.000	0.000	0.109	0.000	0.00
L23	57.58-52.58	A	0.895	0.000	0.000	13.010	0.000	0.16
		B		0.000	0.000	4.161	0.000	0.14
		C		0.000	0.000	2.184	0.000	0.07
L24	52.58-50.58	A	0.889	0.000	0.000	5.824	0.000	0.07
		B		0.000	0.000	2.291	0.000	0.06
		C		0.000	0.000	1.505	0.000	0.04
L25	50.58-50.33	A	0.887	0.000	0.000	0.760	0.000	0.01
		B		0.000	0.000	0.318	0.000	0.01
		C		0.000	0.000	0.220	0.000	0.00
L26	50.33-50.17	A	0.887	0.000	0.000	0.486	0.000	0.01
		B		0.000	0.000	0.204	0.000	0.01
		C		0.000	0.000	0.141	0.000	0.00
L27	50.17-49.92	A	0.886	0.000	0.000	0.759	0.000	0.01
		B		0.000	0.000	0.318	0.000	0.01
		C		0.000	0.000	0.220	0.000	0.00
L28	49.92-44.92	A	0.881	0.000	0.000	13.386	0.000	0.17
		B		0.000	0.000	3.824	0.000	0.12
		C		0.000	0.000	2.623	0.000	0.08
L29	44.92-39.92	A	0.872	0.000	0.000	12.930	0.000	0.17

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
		B		0.000	0.000	3.272	0.000	0.11
		C		0.000	0.000	2.213	0.000	0.07
L30	39.92-34.92	A	0.861	0.000	0.000	13.123	0.000	0.17
		B		0.000	0.000	3.635	0.000	0.11
		C		0.000	0.000	2.458	0.000	0.07
L31	34.92-29.25	A	0.848	0.000	0.000	15.784	0.000	0.20
		B		0.000	0.000	5.896	0.000	0.17
		C		0.000	0.000	3.761	0.000	0.09
L32	29.25-28.25	A	0.838	0.000	0.000	2.558	0.000	0.03
		B		0.000	0.000	0.814	0.000	0.03
		C		0.000	0.000	0.438	0.000	0.01
L33	28.25-24.08	A	0.830	0.000	0.000	11.203	0.000	0.14
		B		0.000	0.000	3.914	0.000	0.12
		C		0.000	0.000	2.428	0.000	0.07
L34	24.08-23.83	A	0.823	0.000	0.000	0.741	0.000	0.01
		B		0.000	0.000	0.308	0.000	0.01
		C		0.000	0.000	0.216	0.000	0.00
L35	23.83-18.83	A	0.814	0.000	0.000	14.752	0.000	0.18
		B		0.000	0.000	6.126	0.000	0.15
		C		0.000	0.000	4.311	0.000	0.09
L36	18.83-13.83	A	0.792	0.000	0.000	14.607	0.000	0.17
		B		0.000	0.000	6.040	0.000	0.15
		C		0.000	0.000	4.268	0.000	0.09
L37	13.83-8.83	A	0.764	0.000	0.000	14.415	0.000	0.17
		B		0.000	0.000	5.391	0.000	0.13
		C		0.000	0.000	4.211	0.000	0.09
L38	8.83-3.83	A	0.721	0.000	0.000	14.123	0.000	0.16
		B		0.000	0.000	5.032	0.000	0.12
		C		0.000	0.000	4.124	0.000	0.08
L39	3.83-1.92	A	0.666	0.000	0.000	5.254	0.000	0.06
		B		0.000	0.000	1.860	0.000	0.04
		C		0.000	0.000	1.534	0.000	0.03
L40	1.92-1.67	A	0.635	0.000	0.000	0.677	0.000	0.01
		B		0.000	0.000	0.239	0.000	0.01
		C		0.000	0.000	0.198	0.000	0.00
L41	1.67-0.00	A	0.588	0.000	0.000	4.419	0.000	0.05
		B		0.000	0.000	1.548	0.000	0.04
		C		0.000	0.000	1.289	0.000	0.03

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	147.00-142.00	-3.032	-1.984	-2.680	-2.067
L2	142.00-137.00	-3.059	-1.999	-2.731	-2.105
L3	137.00-132.00	-2.956	-2.470	-2.657	-2.621
L4	132.00-127.00	-2.953	-2.599	-2.676	-2.780
L5	127.00-122.00	-2.979	-2.621	-2.722	-2.827
L6	122.00-117.00	-3.003	-2.641	-2.767	-2.872
L7	117.00-112.00	-3.027	-2.661	-2.810	-2.916
L8	112.00-107.00	-3.050	-2.680	-2.853	-2.958
L9	107.00-99.50	-3.077	-2.703	-2.904	-3.009
L10	99.50-98.25	-3.085	-2.710	-2.917	-3.023
L11	98.25-93.25	-3.098	-2.721	-2.941	-3.045
L12	93.25-88.25	-3.117	-2.737	-2.980	-3.082
L13	88.25-83.25	-3.137	-2.754	-3.017	-3.119

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
L14	83.25-78.25	-3.155	-2.769	-3.053	-3.153
L15	78.25-73.25	-3.173	-2.784	-3.088	-3.187
L16	73.25-69.58	-2.955	-2.593	-2.915	-3.006
L17	69.58-69.33	-2.660	-2.333	-2.658	-2.740
L18	69.33-64.33	-2.671	-2.343	-2.675	-2.757
L19	64.33-59.00	-2.870	-2.517	-2.869	-2.953
L20	59.00-58.00	-2.555	-2.241	-2.637	-2.747
L21	58.00-57.83	-2.559	-2.244	-2.297	-2.553
L22	57.83-57.58	-2.560	-2.245	-2.298	-2.554
L23	57.58-52.58	-2.578	-2.260	-2.314	-2.569
L24	52.58-50.58	-2.339	-2.049	-2.124	-2.350
L25	50.58-50.33	-2.254	-1.974	-2.053	-2.271
L26	50.33-50.17	-2.255	-1.975	-2.054	-2.272
L27	50.17-49.92	-2.255	-1.975	-2.054	-2.272
L28	49.92-44.92	-2.666	-2.335	-2.646	-2.736
L29	44.92-39.92	-2.761	-2.418	-2.808	-2.870
L30	39.92-34.92	-2.829	-2.314	-2.818	-2.740
L31	34.92-29.25	-3.264	-1.586	-3.016	-1.930
L32	29.25-28.25	-3.514	-1.708	-3.228	-2.065
L33	28.25-24.08	-3.226	-1.567	-3.132	-1.993
L34	24.08-23.83	-2.793	-1.357	-2.867	-1.826
L35	23.83-18.83	-2.803	-1.361	-2.885	-1.833
L36	18.83-13.83	-2.829	-1.374	-2.919	-1.847
L37	13.83-8.83	-2.864	-1.390	-3.204	-1.986
L38	8.83-3.83	-2.898	-1.406	-3.335	-2.040
L39	3.83-1.92	-2.921	-1.416	-3.342	-2.024
L40	1.92-1.67	-2.929	-1.420	-3.342	-2.012
L41	1.67-0.00	-2.933	-1.422	-3.331	-1.987

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
L1	3	Safety Line 3/8	142.00 - 147.00	1.0000	1.0000
L1	8	2" Flexible Conduit	142.00 - 147.00	1.0000	1.0000
L1	9	HB158-21U6S24-xxM_TMO (1-5/8)	142.00 - 147.00	1.0000	1.0000
L1	10	LDF4-50A(1/2)	142.00 - 147.00	1.0000	1.0000
L2	3	Safety Line 3/8	137.00 - 142.00	1.0000	1.0000
L2	8	2" Flexible Conduit	137.00 - 142.00	1.0000	1.0000
L2	9	HB158-21U6S24-xxM_TMO (1-5/8)	137.00 - 142.00	1.0000	1.0000
L2	10	LDF4-50A(1/2)	137.00 - 142.00	1.0000	1.0000
L3	3	Safety Line 3/8	132.00 - 137.00	1.0000	1.0000
L3	8	2" Flexible Conduit	132.00 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L3	9	HB158-21U6S24-xxM_TMO (1-5/8)	137.00 132.00 - 137.00	1.0000	1.0000
L3	10	LDF4-50A(1/2)	132.00 - 137.00	1.0000	1.0000
L3	12	CU12PSM9P6XXX(1-1/2)	132.00 - 136.00	1.0000	1.0000
L4	3	Safety Line 3/8	127.00 - 132.00	1.0000	1.0000
L4	8	2" Flexible Conduit	127.00 - 132.00	1.0000	1.0000
L4	9	HB158-21U6S24-xxM_TMO (1-5/8)	127.00 - 132.00	1.0000	1.0000
L4	10	LDF4-50A(1/2)	127.00 - 132.00	1.0000	1.0000
L4	12	CU12PSM9P6XXX(1-1/2)	127.00 - 132.00	1.0000	1.0000
L5	3	Safety Line 3/8	122.00 - 127.00	1.0000	1.0000
L5	8	2" Flexible Conduit	122.00 - 127.00	1.0000	1.0000
L5	9	HB158-21U6S24-xxM_TMO (1-5/8)	122.00 - 127.00	1.0000	1.0000
L5	10	LDF4-50A(1/2)	122.00 - 127.00	1.0000	1.0000
L5	12	CU12PSM9P6XXX(1-1/2)	122.00 - 127.00	1.0000	1.0000
L6	3	Safety Line 3/8	117.00 - 122.00	1.0000	1.0000
L6	8	2" Flexible Conduit	117.00 - 122.00	1.0000	1.0000
L6	9	HB158-21U6S24-xxM_TMO (1-5/8)	117.00 - 122.00	1.0000	1.0000
L6	10	LDF4-50A(1/2)	117.00 - 122.00	1.0000	1.0000
L6	12	CU12PSM9P6XXX(1-1/2)	117.00 - 122.00	1.0000	1.0000
L7	3	Safety Line 3/8	112.00 - 117.00	1.0000	1.0000
L7	8	2" Flexible Conduit	112.00 - 117.00	1.0000	1.0000
L7	9	HB158-21U6S24-xxM_TMO (1-5/8)	112.00 - 117.00	1.0000	1.0000
L7	10	LDF4-50A(1/2)	112.00 - 117.00	1.0000	1.0000
L7	12	CU12PSM9P6XXX(1-1/2)	112.00 - 117.00	1.0000	1.0000
L8	3	Safety Line 3/8	107.00 - 112.00	1.0000	1.0000
L8	8	2" Flexible Conduit	107.00 - 112.00	1.0000	1.0000
L8	9	HB158-21U6S24-xxM_TMO (1-5/8)	107.00 - 112.00	1.0000	1.0000
L8	10	LDF4-50A(1/2)	107.00 - 112.00	1.0000	1.0000
L8	12	CU12PSM9P6XXX(1-1/2)	107.00 - 112.00	1.0000	1.0000
L9	3	Safety Line 3/8	99.50 - 107.00	1.0000	1.0000
L9	8	2" Flexible Conduit	99.50 - 107.00	1.0000	1.0000
L9	9	HB158-21U6S24-xxM_TMO (1-5/8)	99.50 - 107.00	1.0000	1.0000
L9	10	LDF4-50A(1/2)	99.50 - 107.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L9	12	CU12PSM9P6XXX(1-1/2)	99.50 - 107.00	1.0000	1.0000
L10	3	Safety Line 3/8	98.25 - 99.50	1.0000	1.0000
L10	8	2" Flexible Conduit	98.25 - 99.50	1.0000	1.0000
L10	9	HB158-21U6S24-xxM_TMO (1-5/8)	98.25 - 99.50	1.0000	1.0000
L10	10	LDF4-50A(1/2)	98.25 - 99.50	1.0000	1.0000
L10	12	CU12PSM9P6XXX(1-1/2)	98.25 - 99.50	1.0000	1.0000
L11	3	Safety Line 3/8	93.25 - 98.25	1.0000	1.0000
L11	8	2" Flexible Conduit	93.25 - 98.25	1.0000	1.0000
L11	9	HB158-21U6S24-xxM_TMO (1-5/8)	93.25 - 98.25	1.0000	1.0000
L11	10	LDF4-50A(1/2)	93.25 - 98.25	1.0000	1.0000
L11	12	CU12PSM9P6XXX(1-1/2)	93.25 - 98.25	1.0000	1.0000
L12	3	Safety Line 3/8	88.25 - 93.25	1.0000	1.0000
L12	8	2" Flexible Conduit	88.25 - 93.25	1.0000	1.0000
L12	9	HB158-21U6S24-xxM_TMO (1-5/8)	88.25 - 93.25	1.0000	1.0000
L12	10	LDF4-50A(1/2)	88.25 - 93.25	1.0000	1.0000
L12	12	CU12PSM9P6XXX(1-1/2)	88.25 - 93.25	1.0000	1.0000
L13	3	Safety Line 3/8	83.25 - 88.25	1.0000	1.0000
L13	8	2" Flexible Conduit	83.25 - 88.25	1.0000	1.0000
L13	9	HB158-21U6S24-xxM_TMO (1-5/8)	83.25 - 88.25	1.0000	1.0000
L13	10	LDF4-50A(1/2)	83.25 - 88.25	1.0000	1.0000
L13	12	CU12PSM9P6XXX(1-1/2)	83.25 - 88.25	1.0000	1.0000
L14	3	Safety Line 3/8	78.25 - 83.25	1.0000	1.0000
L14	8	2" Flexible Conduit	78.25 - 83.25	1.0000	1.0000
L14	9	HB158-21U6S24-xxM_TMO (1-5/8)	78.25 - 83.25	1.0000	1.0000
L14	10	LDF4-50A(1/2)	78.25 - 83.25	1.0000	1.0000
L14	12	CU12PSM9P6XXX(1-1/2)	78.25 - 83.25	1.0000	1.0000
L15	3	Safety Line 3/8	73.25 - 78.25	1.0000	1.0000
L15	8	2" Flexible Conduit	73.25 - 78.25	1.0000	1.0000
L15	9	HB158-21U6S24-xxM_TMO (1-5/8)	73.25 - 78.25	1.0000	1.0000
L15	10	LDF4-50A(1/2)	73.25 - 78.25	1.0000	1.0000
L15	12	CU12PSM9P6XXX(1-1/2)	73.25 - 78.25	1.0000	1.0000
L16	3	Safety Line 3/8	69.58 - 73.25	1.0000	1.0000
L16	8	2" Flexible Conduit	69.58 - 73.25	1.0000	1.0000
L16	9	HB158-21U6S24-xxM_TMO (1-5/8)	69.58 - 73.25	1.0000	1.0000
L16	10	LDF4-50A(1/2)	69.58 - 73.25	1.0000	1.0000
L16	12	CU12PSM9P6XXX(1-1/2)	69.58 - 73.25	1.0000	1.0000
L16	37	Aero MP3-04	69.58 - 71.00	1.0000	1.0000
L16	38	Aero MP3-04	69.58 - 71.00	1.0000	1.0000
L16	39	Aero MP3-04	69.58 - 71.00	1.0000	1.0000
L17	3	Safety Line 3/8	69.33 - 69.58	1.0000	1.0000
L17	8	2" Flexible Conduit	69.33 - 69.58	1.0000	1.0000
L17	9	HB158-21U6S24-xxM_TMO (1-5/8)	69.33 - 69.58	1.0000	1.0000
L17	10	LDF4-50A(1/2)	69.33 - 69.58	1.0000	1.0000
L17	12	CU12PSM9P6XXX(1-1/2)	69.33 - 69.58	1.0000	1.0000
L17	37	Aero MP3-04	69.33 - 69.58	1.0000	1.0000
L17	38	Aero MP3-04	69.33 - 69.58	1.0000	1.0000
L17	39	Aero MP3-04	69.33 - 69.58	1.0000	1.0000
L18	3	Safety Line 3/8	64.33 - 69.33	1.0000	1.0000
L18	8	2" Flexible Conduit	64.33 - 69.33	1.0000	1.0000
L18	9	HB158-21U6S24-xxM_TMO (1-5/8)	64.33 - 69.33	1.0000	1.0000
L18	10	LDF4-50A(1/2)	64.33 - 69.33	1.0000	1.0000
L18	12	CU12PSM9P6XXX(1-1/2)	64.33 - 69.33	1.0000	1.0000
L18	37	Aero MP3-04	64.33 - 69.33	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L18	38	Aero MP3-04	64.33 - 69.33	1.0000	1.0000
L18	39	Aero MP3-04	64.33 - 69.33	1.0000	1.0000
L19	3	Safety Line 3/8	59.00 - 64.33	1.0000	1.0000
L19	8	2" Flexible Conduit	59.00 - 64.33	1.0000	1.0000
L19	9	HB158-21U6S24-xxM_TMO (1-5/8)	59.00 - 64.33	1.0000	1.0000
L19	10	LDF4-50A(1/2)	59.00 - 64.33	1.0000	1.0000
L19	12	CU12PSM9P6XXX(1-1/2)	59.00 - 64.33	1.0000	1.0000
L19	37	Aero MP3-04	61.00 - 64.33	1.0000	1.0000
L19	38	Aero MP3-04	61.00 - 64.33	1.0000	1.0000
L19	39	Aero MP3-04	61.00 - 64.33	1.0000	1.0000
L20	3	Safety Line 3/8	58.00 - 59.00	1.0000	1.0000
L20	8	2" Flexible Conduit	58.00 - 59.00	1.0000	1.0000
L20	9	HB158-21U6S24-xxM_TMO (1-5/8)	58.00 - 59.00	1.0000	1.0000
L20	10	LDF4-50A(1/2)	58.00 - 59.00	1.0000	1.0000
L20	12	CU12PSM9P6XXX(1-1/2)	58.00 - 59.00	1.0000	1.0000
L20	45	Aero MP3-03	58.00 - 59.00	1.0000	1.0000
L20	46	Aero MP3-03	58.00 - 59.00	1.0000	1.0000
L20	47	Aero MP3-03	58.00 - 59.00	1.0000	1.0000
L20	51	Aero Step Ladder	58.00 - 58.17	1.0000	1.0000
L21	3	Safety Line 3/8	57.83 - 58.00	1.0000	1.0000
L21	8	2" Flexible Conduit	57.83 - 58.00	1.0000	1.0000
L21	9	HB158-21U6S24-xxM_TMO (1-5/8)	57.83 - 58.00	1.0000	1.0000
L21	10	LDF4-50A(1/2)	57.83 - 58.00	1.0000	1.0000
L21	12	CU12PSM9P6XXX(1-1/2)	57.83 - 58.00	1.0000	1.0000
L21	45	Aero MP3-03	57.83 - 58.00	1.0000	1.0000
L21	46	Aero MP3-03	57.83 - 58.00	1.0000	1.0000
L21	47	Aero MP3-03	57.83 - 58.00	1.0000	1.0000
L21	51	Aero Step Ladder	57.83 - 58.00	1.0000	1.0000
L22	3	Safety Line 3/8	57.58 - 57.83	1.0000	1.0000
L22	8	2" Flexible Conduit	57.58 - 57.83	1.0000	1.0000
L22	9	HB158-21U6S24-xxM_TMO (1-5/8)	57.58 - 57.83	1.0000	1.0000
L22	10	LDF4-50A(1/2)	57.58 - 57.83	1.0000	1.0000
L22	12	CU12PSM9P6XXX(1-1/2)	57.58 - 57.83	1.0000	1.0000
L22	45	Aero MP3-03	57.58 - 57.83	1.0000	1.0000
L22	46	Aero MP3-03	57.58 - 57.83	1.0000	1.0000
L22	47	Aero MP3-03	57.58 - 57.83	1.0000	1.0000
L22	51	Aero Step Ladder	57.58 - 57.83	1.0000	1.0000
L23	3	Safety Line 3/8	52.58 - 57.58	1.0000	1.0000
L23	8	2" Flexible Conduit	52.58 - 57.58	1.0000	1.0000
L23	9	HB158-21U6S24-xxM_TMO (1-5/8)	52.58 - 57.58	1.0000	1.0000
L23	10	LDF4-50A(1/2)	53.00 - 57.58	1.0000	1.0000
L23	12	CU12PSM9P6XXX(1-1/2)	52.58 - 57.58	1.0000	1.0000
L23	25	LDF4-50A(1/2)	52.58 - 53.00	1.0000	1.0000
L23	45	Aero MP3-03	52.58 - 57.58	1.0000	1.0000
L23	46	Aero MP3-03	52.58 - 57.58	1.0000	1.0000
L23	47	Aero MP3-03	52.58 - 57.58	1.0000	1.0000
L23	51	Aero Step Ladder	52.58 - 57.58	1.0000	1.0000
L24	3	Safety Line 3/8	50.58 - 52.58	1.0000	1.0000
L24	8	2" Flexible Conduit	50.58 - 52.58	1.0000	1.0000
L24	9	HB158-21U6S24-xxM_TMO (1-5/8)	50.58 - 52.58	1.0000	1.0000
L24	12	CU12PSM9P6XXX(1-1/2)	50.58 - 52.58	1.0000	1.0000
L24	25	LDF4-50A(1/2)	50.58 - 52.58	1.0000	1.0000
L24	33	Aero MP3-04	50.58 - 52.00	1.0000	1.0000
L24	34	Aero MP3-04	50.58 - 52.00	1.0000	1.0000
L24	35	Aero MP3-04	50.58 - 52.00	1.0000	1.0000
L24	45	Aero MP3-03	50.58 - 52.58	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L24	46	Aero MP3-03	50.58 - 52.58	1.0000	1.0000
L24	47	Aero MP3-03	50.58 - 52.58	1.0000	1.0000
L24	51	Aero Step Ladder	50.58 - 52.58	1.0000	1.0000
L25	3	Safety Line 3/8	50.33 - 50.58	1.0000	1.0000
L25	8	2" Flexible Conduit	50.33 - 50.58	1.0000	1.0000
L25	9	HB158-21U6S24-xxM_TMO (1-5/8)	50.33 - 50.58	1.0000	1.0000
L25	12	CU12PSM9P6XXX(1-1/2)	50.33 - 50.58	1.0000	1.0000
L25	25	LDF4-50A(1/2)	50.33 - 50.58	1.0000	1.0000
L25	33	Aero MP3-04	50.33 - 50.58	1.0000	1.0000
L25	34	Aero MP3-04	50.33 - 50.58	1.0000	1.0000
L25	35	Aero MP3-04	50.33 - 50.58	1.0000	1.0000
L25	45	Aero MP3-03	50.33 - 50.58	1.0000	1.0000
L25	46	Aero MP3-03	50.33 - 50.58	1.0000	1.0000
L25	47	Aero MP3-03	50.33 - 50.58	1.0000	1.0000
L25	51	Aero Step Ladder	50.33 - 50.58	1.0000	1.0000
L26	3	Safety Line 3/8	50.17 - 50.33	1.0000	1.0000
L26	8	2" Flexible Conduit	50.17 - 50.33	1.0000	1.0000
L26	9	HB158-21U6S24-xxM_TMO (1-5/8)	50.17 - 50.33	1.0000	1.0000
L26	12	CU12PSM9P6XXX(1-1/2)	50.17 - 50.33	1.0000	1.0000
L26	25	LDF4-50A(1/2)	50.17 - 50.33	1.0000	1.0000
L26	33	Aero MP3-04	50.17 - 50.33	1.0000	1.0000
L26	34	Aero MP3-04	50.17 - 50.33	1.0000	1.0000
L26	35	Aero MP3-04	50.17 - 50.33	1.0000	1.0000
L26	45	Aero MP3-03	50.17 - 50.33	1.0000	1.0000
L26	46	Aero MP3-03	50.17 - 50.33	1.0000	1.0000
L26	47	Aero MP3-03	50.17 - 50.33	1.0000	1.0000
L26	51	Aero Step Ladder	50.17 - 50.33	1.0000	1.0000
L27	3	Safety Line 3/8	49.92 - 50.17	1.0000	1.0000
L27	8	2" Flexible Conduit	49.92 - 50.17	1.0000	1.0000
L27	9	HB158-21U6S24-xxM_TMO (1-5/8)	49.92 - 50.17	1.0000	1.0000
L27	12	CU12PSM9P6XXX(1-1/2)	49.92 - 50.17	1.0000	1.0000
L27	25	LDF4-50A(1/2)	49.92 - 50.17	1.0000	1.0000
L27	33	Aero MP3-04	49.92 - 50.17	1.0000	1.0000
L27	34	Aero MP3-04	49.92 - 50.17	1.0000	1.0000
L27	35	Aero MP3-04	49.92 - 50.17	1.0000	1.0000
L27	45	Aero MP3-03	49.92 - 50.17	1.0000	1.0000
L27	46	Aero MP3-03	49.92 - 50.17	1.0000	1.0000
L27	47	Aero MP3-03	49.92 - 50.17	1.0000	1.0000
L27	51	Aero Step Ladder	49.92 - 50.17	1.0000	1.0000
L28	3	Safety Line 3/8	44.92 - 49.92	1.0000	1.0000
L28	8	2" Flexible Conduit	44.92 - 49.92	1.0000	1.0000
L28	9	HB158-21U6S24-xxM_TMO (1-5/8)	44.92 - 49.92	1.0000	1.0000
L28	12	CU12PSM9P6XXX(1-1/2)	44.92 - 49.92	1.0000	1.0000
L28	25	LDF4-50A(1/2)	49.00 - 49.92	1.0000	1.0000
L28	27	LDF4-50A(1/2)	44.92 - 49.00	1.0000	1.0000
L28	33	Aero MP3-04	44.92 - 49.92	1.0000	1.0000
L28	34	Aero MP3-04	44.92 - 49.92	1.0000	1.0000
L28	35	Aero MP3-04	44.92 - 49.92	1.0000	1.0000
L28	45	Aero MP3-03	49.00 - 49.92	1.0000	1.0000
L28	46	Aero MP3-03	49.00 - 49.92	1.0000	1.0000
L28	47	Aero MP3-03	49.00 - 49.92	1.0000	1.0000
L28	51	Aero Step Ladder	49.17 - 49.92	1.0000	1.0000
L29	3	Safety Line 3/8	39.92 - 44.92	1.0000	1.0000
L29	8	2" Flexible Conduit	39.92 - 44.92	1.0000	1.0000
L29	9	HB158-21U6S24-xxM_TMO (1-5/8)	39.92 - 44.92	1.0000	1.0000
L29	12	CU12PSM9P6XXX(1-1/2)	39.92 - 44.92	1.0000	1.0000
L29	27	LDF4-50A(1/2)	39.92 - 44.92	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L29	33	Aero MP3-04	39.92 - 44.92	1.0000	1.0000
L29	34	Aero MP3-04	39.92 - 44.92	1.0000	1.0000
L29	35	Aero MP3-04	39.92 - 44.92	1.0000	1.0000
L30	3	Safety Line 3/8	34.92 - 39.92	1.0000	1.0000
L30	8	2" Flexible Conduit	34.92 - 39.92	1.0000	1.0000
L30	9	HB158-21U6S24-xxM_TMO (1-5/8)	34.92 - 39.92	1.0000	1.0000
L30	12	CU12PSM9P6XXX(1-1/2)	34.92 - 39.92	1.0000	1.0000
L30	27	LDF4-50A(1/2)	34.92 - 39.92	1.0000	1.0000
L30	33	Aero MP3-04	34.92 - 39.92	1.0000	1.0000
L30	34	Aero MP3-04	34.92 - 39.92	1.0000	1.0000
L30	35	Aero MP3-04	34.92 - 39.92	1.0000	1.0000
L30	41	Aero MP3-04	34.92 - 35.50	1.0000	1.0000
L30	42	Aero MP3-04	34.92 - 35.50	1.0000	1.0000
L30	43	Aero MP3-04	34.92 - 35.50	1.0000	1.0000
L30	50	Aero Step Ladder	34.92 - 35.67	1.0000	1.0000
L31	3	Safety Line 3/8	29.25 - 34.92	1.0000	1.0000
L31	8	2" Flexible Conduit	29.25 - 34.92	1.0000	1.0000
L31	9	HB158-21U6S24-xxM_TMO (1-5/8)	29.25 - 34.92	1.0000	1.0000
L31	12	CU12PSM9P6XXX(1-1/2)	29.25 - 34.92	1.0000	1.0000
L31	27	LDF4-50A(1/2)	29.25 - 34.92	1.0000	1.0000
L31	33	Aero MP3-04	32.00 - 34.92	1.0000	1.0000
L31	34	Aero MP3-04	32.00 - 34.92	1.0000	1.0000
L31	35	Aero MP3-04	32.00 - 34.92	1.0000	1.0000
L31	41	Aero MP3-04	29.25 - 34.92	1.0000	1.0000
L31	42	Aero MP3-04	29.25 - 34.92	1.0000	1.0000
L31	43	Aero MP3-04	29.25 - 34.92	1.0000	1.0000
L31	50	Aero Step Ladder	29.25 - 34.92	1.0000	1.0000
L32	3	Safety Line 3/8	28.25 - 29.25	1.0000	1.0000
L32	8	2" Flexible Conduit	28.25 - 29.25	1.0000	1.0000
L32	9	HB158-21U6S24-xxM_TMO (1-5/8)	28.25 - 29.25	1.0000	1.0000
L32	12	CU12PSM9P6XXX(1-1/2)	28.25 - 29.25	1.0000	1.0000
L32	27	LDF4-50A(1/2)	28.25 - 29.25	1.0000	1.0000
L32	41	Aero MP3-04	28.25 - 29.25	1.0000	1.0000
L32	42	Aero MP3-04	28.25 - 29.25	1.0000	1.0000
L32	43	Aero MP3-04	28.25 - 29.25	1.0000	1.0000
L32	50	Aero Step Ladder	28.25 - 29.25	1.0000	1.0000
L33	3	Safety Line 3/8	24.08 - 28.25	1.0000	1.0000
L33	8	2" Flexible Conduit	24.08 - 28.25	1.0000	1.0000
L33	9	HB158-21U6S24-xxM_TMO (1-5/8)	24.08 - 28.25	1.0000	1.0000
L33	12	CU12PSM9P6XXX(1-1/2)	24.08 - 28.25	1.0000	1.0000
L33	27	LDF4-50A(1/2)	24.08 - 28.25	1.0000	1.0000
L33	29	Aero MP3-04	24.08 - 25.50	1.0000	1.0000
L33	30	Aero MP3-04	24.08 - 25.50	1.0000	1.0000
L33	31	Aero MP3-04	24.08 - 25.50	1.0000	1.0000
L33	41	Aero MP3-04	24.08 - 28.25	1.0000	1.0000
L33	42	Aero MP3-04	24.08 - 28.25	1.0000	1.0000
L33	43	Aero MP3-04	24.08 - 28.25	1.0000	1.0000
L33	49	Aero Step Ladder	24.08 - 26.33	1.0000	1.0000
L33	50	Aero Step Ladder	26.67 - 28.25	1.0000	1.0000
L34	3	Safety Line 3/8	23.83 - 24.08	1.0000	1.0000
L34	8	2" Flexible Conduit	23.83 - 24.08	1.0000	1.0000
L34	9	HB158-21U6S24-xxM_TMO (1-5/8)	23.83 - 24.08	1.0000	1.0000
L34	12	CU12PSM9P6XXX(1-1/2)	23.83 - 24.08	1.0000	1.0000
L34	27	LDF4-50A(1/2)	23.83 - 24.08	1.0000	1.0000
L34	29	Aero MP3-04	23.83 - 24.08	1.0000	1.0000
L34	30	Aero MP3-04	23.83 - 24.08	1.0000	1.0000
L34	31	Aero MP3-04	23.83 - 24.08	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L34	41	Aero MP3-04	23.83 - 24.08	1.0000	1.0000
L34	42	Aero MP3-04	23.83 - 24.08	1.0000	1.0000
L34	43	Aero MP3-04	23.83 - 24.08	1.0000	1.0000
L34	49	Aero Step Ladder	23.83 - 24.08	1.0000	1.0000
L35	3	Safety Line 3/8	18.83 - 23.83	1.0000	1.0000
L35	8	2" Flexible Conduit	18.83 - 23.83	1.0000	1.0000
L35	9	HB158-21U6S24-xxM_TMO (1-5/8)	18.83 - 23.83	1.0000	1.0000
L35	12	CU12PSM9P6XXX(1-1/2)	18.83 - 23.83	1.0000	1.0000
L35	27	LDF4-50A(1/2)	18.83 - 23.83	1.0000	1.0000
L35	29	Aero MP3-04	18.83 - 23.83	1.0000	1.0000
L35	30	Aero MP3-04	18.83 - 23.83	1.0000	1.0000
L35	31	Aero MP3-04	18.83 - 23.83	1.0000	1.0000
L35	41	Aero MP3-04	18.83 - 23.83	1.0000	1.0000
L35	42	Aero MP3-04	18.83 - 23.83	1.0000	1.0000
L35	43	Aero MP3-04	18.83 - 23.83	1.0000	1.0000
L35	49	Aero Step Ladder	18.83 - 23.83	1.0000	1.0000
L36	3	Safety Line 3/8	13.83 - 18.83	1.0000	1.0000
L36	8	2" Flexible Conduit	13.83 - 18.83	1.0000	1.0000
L36	9	HB158-21U6S24-xxM_TMO (1-5/8)	13.83 - 18.83	1.0000	1.0000
L36	12	CU12PSM9P6XXX(1-1/2)	13.83 - 18.83	1.0000	1.0000
L36	27	LDF4-50A(1/2)	13.83 - 18.83	1.0000	1.0000
L36	29	Aero MP3-04	13.83 - 18.83	1.0000	1.0000
L36	30	Aero MP3-04	13.83 - 18.83	1.0000	1.0000
L36	31	Aero MP3-04	13.83 - 18.83	1.0000	1.0000
L36	41	Aero MP3-04	13.83 - 18.83	1.0000	1.0000
L36	42	Aero MP3-04	13.83 - 18.83	1.0000	1.0000
L36	43	Aero MP3-04	13.83 - 18.83	1.0000	1.0000
L36	49	Aero Step Ladder	13.83 - 18.83	1.0000	1.0000
L37	3	Safety Line 3/8	8.83 - 13.83	1.0000	1.0000
L37	8	2" Flexible Conduit	8.83 - 13.83	1.0000	1.0000
L37	9	HB158-21U6S24-xxM_TMO (1-5/8)	8.83 - 13.83	1.0000	1.0000
L37	12	CU12PSM9P6XXX(1-1/2)	8.83 - 13.83	1.0000	1.0000
L37	27	LDF4-50A(1/2)	8.83 - 13.83	1.0000	1.0000
L37	29	Aero MP3-04	8.83 - 13.83	1.0000	1.0000
L37	30	Aero MP3-04	8.83 - 13.83	1.0000	1.0000
L37	31	Aero MP3-04	8.83 - 13.83	1.0000	1.0000
L37	41	Aero MP3-04	8.83 - 13.83	1.0000	1.0000
L37	42	Aero MP3-04	8.83 - 13.83	1.0000	1.0000
L37	43	Aero MP3-04	8.83 - 13.83	1.0000	1.0000
L37	49	Aero Step Ladder	12.33 - 13.83	1.0000	1.0000
L38	3	Safety Line 3/8	3.83 - 8.83	1.0000	1.0000
L38	8	2" Flexible Conduit	3.83 - 8.83	1.0000	1.0000
L38	9	HB158-21U6S24-xxM_TMO (1-5/8)	3.83 - 8.83	1.0000	1.0000
L38	12	CU12PSM9P6XXX(1-1/2)	3.83 - 8.83	1.0000	1.0000
L38	27	LDF4-50A(1/2)	3.83 - 8.83	1.0000	1.0000
L38	29	Aero MP3-04	3.83 - 8.83	1.0000	1.0000
L38	30	Aero MP3-04	3.83 - 8.83	1.0000	1.0000
L38	31	Aero MP3-04	3.83 - 8.83	1.0000	1.0000
L38	41	Aero MP3-04	3.83 - 8.83	1.0000	1.0000
L38	42	Aero MP3-04	3.83 - 8.83	1.0000	1.0000
L38	43	Aero MP3-04	3.83 - 8.83	1.0000	1.0000
L39	3	Safety Line 3/8	1.92 - 3.83	1.0000	1.0000
L39	8	2" Flexible Conduit	1.92 - 3.83	1.0000	1.0000
L39	9	HB158-21U6S24-xxM_TMO (1-5/8)	1.92 - 3.83	1.0000	1.0000
L39	12	CU12PSM9P6XXX(1-1/2)	1.92 - 3.83	1.0000	1.0000
L39	27	LDF4-50A(1/2)	1.92 - 3.83	1.0000	1.0000
L39	29	Aero MP3-04	1.92 - 3.83	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L39	30	Aero MP3-04	1.92 - 3.83	1.0000	1.0000
L39	31	Aero MP3-04	1.92 - 3.83	1.0000	1.0000
L39	41	Aero MP3-04	1.92 - 3.83	1.0000	1.0000
L39	42	Aero MP3-04	1.92 - 3.83	1.0000	1.0000
L39	43	Aero MP3-04	1.92 - 3.83	1.0000	1.0000
L40	3	Safety Line 3/8	1.67 - 1.92	1.0000	1.0000
L40	8	2" Flexible Conduit	1.67 - 1.92	1.0000	1.0000
L40	9	HB158-21U6S24-xxM_TMO (1-5/8)	1.67 - 1.92	1.0000	1.0000
L40	12	CU12PSM9P6XXX(1-1/2)	1.67 - 1.92	1.0000	1.0000
L40	27	LDF4-50A(1/2)	1.67 - 1.92	1.0000	1.0000
L40	29	Aero MP3-04	1.67 - 1.92	1.0000	1.0000
L40	30	Aero MP3-04	1.67 - 1.92	1.0000	1.0000
L40	31	Aero MP3-04	1.67 - 1.92	1.0000	1.0000
L40	41	Aero MP3-04	1.67 - 1.92	1.0000	1.0000
L40	42	Aero MP3-04	1.67 - 1.92	1.0000	1.0000
L40	43	Aero MP3-04	1.67 - 1.92	1.0000	1.0000
L41	3	Safety Line 3/8	0.00 - 1.67	1.0000	1.0000
L41	8	2" Flexible Conduit	0.00 - 1.67	1.0000	1.0000
L41	9	HB158-21U6S24-xxM_TMO (1-5/8)	0.00 - 1.67	1.0000	1.0000
L41	12	CU12PSM9P6XXX(1-1/2)	0.00 - 1.67	1.0000	1.0000
L41	27	LDF4-50A(1/2)	0.00 - 1.67	1.0000	1.0000
L41	29	Aero MP3-04	0.00 - 1.67	1.0000	1.0000
L41	30	Aero MP3-04	0.00 - 1.67	1.0000	1.0000
L41	31	Aero MP3-04	0.00 - 1.67	1.0000	1.0000
L41	41	Aero MP3-04	0.00 - 1.67	1.0000	1.0000
L41	42	Aero MP3-04	0.00 - 1.67	1.0000	1.0000
L41	43	Aero MP3-04	0.00 - 1.67	1.0000	1.0000

Effective Width of Flat Linear Attachments / Feed Lines

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L16	37	Aero MP3-04	69.58 - 71.00	Auto	0.0000
L16	38	Aero MP3-04	69.58 - 71.00	Auto	0.0000
L16	39	Aero MP3-04	69.58 - 71.00	Auto	0.0000
L17	37	Aero MP3-04	69.33 - 69.58	Auto	0.0000
L17	38	Aero MP3-04	69.33 - 69.58	Auto	0.0000
L17	39	Aero MP3-04	69.33 - 69.58	Auto	0.0000
L18	37	Aero MP3-04	64.33 - 69.33	Auto	0.0000
L18	38	Aero MP3-04	64.33 - 69.33	Auto	0.0000
L18	39	Aero MP3-04	64.33 - 69.33	Auto	0.0000
L19	37	Aero MP3-04	61.00 - 64.33	Auto	0.0000
L19	38	Aero MP3-04	61.00 - 64.33	Auto	0.0000
L19	39	Aero MP3-04	61.00 - 64.33	Auto	0.0000
L20	45	Aero MP3-03	58.00 - 59.00	Auto	0.0000
L20	46	Aero MP3-03	58.00 - 59.00	Auto	0.0000
L20	47	Aero MP3-03	58.00 - 59.00	Auto	0.0000
L20	51	Aero Step Ladder	58.00 - 58.17	Manual	1.0000
L21	45	Aero MP3-03	57.83 - 58.00	Auto	0.0000
L21	46	Aero MP3-03	57.83 - 58.00	Auto	0.0000
L21	47	Aero MP3-03	57.83 - 58.00	Auto	0.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L21	51	Aero Step Ladder	57.83 - 58.00	Manual	1.0000
L22	45	Aero MP3-03	57.58 - 57.83	Auto	0.0000
L22	46	Aero MP3-03	57.58 - 57.83	Auto	0.0000
L22	47	Aero MP3-03	57.58 - 57.83	Auto	0.0000
L22	51	Aero Step Ladder	57.58 - 57.83	Manual	1.0000
L23	45	Aero MP3-03	52.58 - 57.58	Auto	0.0000
L23	46	Aero MP3-03	52.58 - 57.58	Auto	0.0000
L23	47	Aero MP3-03	52.58 - 57.58	Auto	0.0000
L23	51	Aero Step Ladder	52.58 - 57.58	Manual	1.0000
L24	33	Aero MP3-04	50.58 - 52.00	Auto	0.0000
L24	34	Aero MP3-04	50.58 - 52.00	Auto	0.0000
L24	35	Aero MP3-04	50.58 - 52.00	Auto	0.0000
L24	45	Aero MP3-03	50.58 - 52.58	Auto	0.0000
L24	46	Aero MP3-03	50.58 - 52.58	Auto	0.0000
L24	47	Aero MP3-03	50.58 - 52.58	Auto	0.0000
L24	51	Aero Step Ladder	50.58 - 52.58	Manual	1.0000
L25	33	Aero MP3-04	50.33 - 50.58	Auto	0.0000
L25	34	Aero MP3-04	50.33 - 50.58	Auto	0.0000
L25	35	Aero MP3-04	50.33 - 50.58	Auto	0.0000
L25	45	Aero MP3-03	50.33 - 50.58	Auto	0.0000
L25	46	Aero MP3-03	50.33 - 50.58	Auto	0.0000
L25	47	Aero MP3-03	50.33 - 50.58	Auto	0.0000
L25	51	Aero Step Ladder	50.33 - 50.58	Manual	1.0000
L26	33	Aero MP3-04	50.17 - 50.33	Auto	0.0000
L26	34	Aero MP3-04	50.17 - 50.33	Auto	0.0000
L26	35	Aero MP3-04	50.17 - 50.33	Auto	0.0000
L26	45	Aero MP3-03	50.17 - 50.33	Auto	0.0000
L26	46	Aero MP3-03	50.17 - 50.33	Auto	0.0000
L26	47	Aero MP3-03	50.17 - 50.33	Auto	0.0000
L26	51	Aero Step Ladder	50.17 - 50.33	Manual	1.0000
L27	33	Aero MP3-04	49.92 - 50.17	Auto	0.0000
L27	34	Aero MP3-04	49.92 - 50.17	Auto	0.0000
L27	35	Aero MP3-04	49.92 - 50.17	Auto	0.0000
L27	45	Aero MP3-03	49.92 - 50.17	Auto	0.0000
L27	46	Aero MP3-03	49.92 - 50.17	Auto	0.0000
L27	47	Aero MP3-03	49.92 - 50.17	Auto	0.0000
L27	51	Aero Step Ladder	49.92 - 50.17	Manual	1.0000
L28	33	Aero MP3-04	44.92 - 49.92	Auto	0.0000
L28	34	Aero MP3-04	44.92 - 49.92	Auto	0.0000
L28	35	Aero MP3-04	44.92 - 49.92	Auto	0.0000
L28	45	Aero MP3-03	49.00 - 49.92	Auto	0.0000
L28	46	Aero MP3-03	49.00 - 49.92	Auto	0.0000
L28	47	Aero MP3-03	49.00 - 49.92	Auto	0.0000
L28	51	Aero Step Ladder	49.17 - 49.92	Manual	1.0000
L29	33	Aero MP3-04	39.92 - 44.92	Auto	0.0000
L29	34	Aero MP3-04	39.92 - 44.92	Auto	0.0000
L29	35	Aero MP3-04	39.92 - 44.92	Auto	0.0000
L30	33	Aero MP3-04	34.92 - 39.92	Auto	0.0000
L30	34	Aero MP3-04	34.92 - 39.92	Auto	0.0000
L30	35	Aero MP3-04	34.92 - 39.92	Auto	0.0000
L30	41	Aero MP3-04	34.92 - 35.50	Auto	0.0000
L30	42	Aero MP3-04	34.92 - 35.50	Auto	0.0000
L30	43	Aero MP3-04	34.92 - 35.50	Auto	0.0000
L30	50	Aero Step Ladder	34.92 - 35.67	Manual	1.0000
L31	33	Aero MP3-04	32.00 - 34.92	Auto	0.0000
L31	34	Aero MP3-04	32.00 - 34.92	Auto	0.0000
L31	35	Aero MP3-04	32.00 - 34.92	Auto	0.0000
L31	41	Aero MP3-04	29.25 - 34.92	Auto	0.0000
L31	42	Aero MP3-04	29.25 - 34.92	Auto	0.0000
L31	43	Aero MP3-04	29.25 - 34.92	Auto	0.0000
L31	50	Aero Step Ladder	29.25 - 34.92	Manual	1.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L32	41	Aero MP3-04	28.25 - 29.25	Auto	0.0000
L32	42	Aero MP3-04	28.25 - 29.25	Auto	0.0000
L32	43	Aero MP3-04	28.25 - 29.25	Auto	0.0000
L32	50	Aero Step Ladder	28.25 - 29.25	Manual	1.0000
L33	29	Aero MP3-04	24.08 - 25.50	Auto	0.0000
L33	30	Aero MP3-04	24.08 - 25.50	Auto	0.0000
L33	31	Aero MP3-04	24.08 - 25.50	Auto	0.0000
L33	41	Aero MP3-04	24.08 - 28.25	Auto	0.0000
L33	42	Aero MP3-04	24.08 - 28.25	Auto	0.0000
L33	43	Aero MP3-04	24.08 - 28.25	Auto	0.0000
L33	49	Aero Step Ladder	24.08 - 26.33	Manual	1.0000
L33	50	Aero Step Ladder	26.67 - 28.25	Manual	1.0000
L34	29	Aero MP3-04	23.83 - 24.08	Auto	0.0000
L34	30	Aero MP3-04	23.83 - 24.08	Auto	0.0000
L34	31	Aero MP3-04	23.83 - 24.08	Auto	0.0000
L34	41	Aero MP3-04	23.83 - 24.08	Auto	0.0000
L34	42	Aero MP3-04	23.83 - 24.08	Auto	0.0000
L34	43	Aero MP3-04	23.83 - 24.08	Auto	0.0000
L34	49	Aero Step Ladder	23.83 - 24.08	Manual	1.0000
L35	29	Aero MP3-04	18.83 - 23.83	Auto	0.0000
L35	30	Aero MP3-04	18.83 - 23.83	Auto	0.0000
L35	31	Aero MP3-04	18.83 - 23.83	Auto	0.0000
L35	41	Aero MP3-04	18.83 - 23.83	Auto	0.0000
L35	42	Aero MP3-04	18.83 - 23.83	Auto	0.0000
L35	43	Aero MP3-04	18.83 - 23.83	Auto	0.0000
L35	49	Aero Step Ladder	18.83 - 23.83	Manual	1.0000
L36	29	Aero MP3-04	13.83 - 18.83	Auto	0.0000
L36	30	Aero MP3-04	13.83 - 18.83	Auto	0.0000
L36	31	Aero MP3-04	13.83 - 18.83	Auto	0.0000
L36	41	Aero MP3-04	13.83 - 18.83	Auto	0.0000
L36	42	Aero MP3-04	13.83 - 18.83	Auto	0.0000
L36	43	Aero MP3-04	13.83 - 18.83	Auto	0.0000
L36	49	Aero Step Ladder	13.83 - 18.83	Manual	1.0000
L37	29	Aero MP3-04	8.83 - 13.83	Auto	0.0000
L37	30	Aero MP3-04	8.83 - 13.83	Auto	0.0000
L37	31	Aero MP3-04	8.83 - 13.83	Auto	0.0000
L37	41	Aero MP3-04	8.83 - 13.83	Auto	0.0000
L37	42	Aero MP3-04	8.83 - 13.83	Auto	0.0000
L37	43	Aero MP3-04	8.83 - 13.83	Auto	0.0000
L37	49	Aero Step Ladder	12.33 - 13.83	Manual	1.0000
L38	29	Aero MP3-04	3.83 - 8.83	Auto	0.0000
L38	30	Aero MP3-04	3.83 - 8.83	Auto	0.0000
L38	31	Aero MP3-04	3.83 - 8.83	Auto	0.0000
L38	41	Aero MP3-04	3.83 - 8.83	Auto	0.0000
L38	42	Aero MP3-04	3.83 - 8.83	Auto	0.0000
L38	43	Aero MP3-04	3.83 - 8.83	Auto	0.0000
L39	29	Aero MP3-04	1.92 - 3.83	Auto	0.0000
L39	30	Aero MP3-04	1.92 - 3.83	Auto	0.0000
L39	31	Aero MP3-04	1.92 - 3.83	Auto	0.0000
L39	41	Aero MP3-04	1.92 - 3.83	Auto	0.0000
L39	42	Aero MP3-04	1.92 - 3.83	Auto	0.0000
L39	43	Aero MP3-04	1.92 - 3.83	Auto	0.0000
L40	29	Aero MP3-04	1.67 - 1.92	Auto	0.0000
L40	30	Aero MP3-04	1.67 - 1.92	Auto	0.0000
L40	31	Aero MP3-04	1.67 - 1.92	Auto	0.0000
L40	41	Aero MP3-04	1.67 - 1.92	Auto	0.0000
L40	42	Aero MP3-04	1.67 - 1.92	Auto	0.0000
L40	43	Aero MP3-04	1.67 - 1.92	Auto	0.0000
L41	29	Aero MP3-04	0.00 - 1.67	Auto	0.0000
L41	30	Aero MP3-04	0.00 - 1.67	Auto	0.0000
L41	31	Aero MP3-04	0.00 - 1.67	Auto	0.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L41	41	Aero MP3-04	0.00 - 1.67	Auto	0.0000
L41	42	Aero MP3-04	0.00 - 1.67	Auto	0.0000
L41	43	Aero MP3-04	0.00 - 1.67	Auto	0.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
2.4" Dia x 8-ft Mount Pipe	C	From Leg	0.00 0.000 4.000	0.000	147.00	No Ice 1/2" Ice 1" Ice	1.90 2.73 3.40	1.90 2.73 3.40	0.03 0.04 0.06
147									
AIR 6419 B41_TMO w/ Mount Pipe	A	From Centroid-Face	4.00 6.000 0.000	-10.000	147.00	No Ice 1/2" Ice 1" Ice	6.58 7.06 7.57	3.50 3.90 4.32	0.11 0.16 0.22
AIR 6419 B41_TMO w/ Mount Pipe	B	From Centroid-Face	4.00 -2.000 0.000	0.000	147.00	No Ice 1/2" Ice 1" Ice	6.58 7.06 7.57	3.50 3.90 4.32	0.11 0.16 0.22
AIR 6419 B41_TMO w/ Mount Pipe	C	From Centroid-Face	4.00 -6.000 0.000	20.000	147.00	No Ice 1/2" Ice 1" Ice	6.58 7.06 7.57	3.50 3.90 4.32	0.11 0.16 0.22
APXVAALL24_43-U-NA20 _TMO w/ Mount Pipe	A	From Centroid-Face	4.00 -6.000 0.000	-10.000	147.00	No Ice 1/2" Ice 1" Ice	14.69 15.46 16.23	6.87 7.55 8.25	0.18 0.31 0.45
APXVAALL24_43-U-NA20 _TMO w/ Mount Pipe	B	From Centroid-Face	4.00 2.000 0.000	0.000	147.00	No Ice 1/2" Ice 1" Ice	14.69 15.46 16.23	6.87 7.55 8.25	0.18 0.31 0.45
APXVAALL24_43-U-NA20 _TMO w/ Mount Pipe	C	From Centroid-Face	4.00 -2.000 0.000	20.000	147.00	No Ice 1/2" Ice 1" Ice	14.69 15.46 16.23	6.87 7.55 8.25	0.18 0.31 0.45
VV-65B-R1_TMO w/ Mount Pipe	A	From Centroid-Face	4.00 2.000 0.000	-10.000	147.00	No Ice 1/2" Ice 1" Ice	8.15 8.70 9.22	5.42 6.56 7.41	0.07 0.13 0.20
VV-65B-R1_TMO w/ Mount Pipe	B	From Centroid-Face	4.00 6.000 0.000	0.000	147.00	No Ice 1/2" Ice 1" Ice	8.15 8.70 9.22	5.42 6.56 7.41	0.07 0.13 0.20
VV-65B-R1_TMO w/ Mount Pipe	C	From Centroid-Face	4.00 -6.000 0.000	20.000	147.00	No Ice 1/2" Ice 1" Ice	8.15 8.70 9.22	5.42 6.56 7.41	0.07 0.13 0.20
RADIO 4460 B2/B25 B66_TMO	A	From Centroid-Face	4.00 2.000 0.000	-10.000	147.00	No Ice 1/2" Ice 1" Ice	2.14 2.32 2.51	1.69 1.85 2.02	0.11 0.13 0.16
RADIO 4460 B2/B25 B66_TMO	B	From Centroid-Face	4.00 -6.000 0.000	0.000	147.00	No Ice 1/2" Ice 1" Ice	2.14 2.32 2.51	1.69 1.85 2.02	0.11 0.13 0.16
RADIO 4460 B2/B25 B66_TMO	C	From Centroid-Face	4.00 6.000 0.000	20.000	147.00	No Ice 1/2" Ice 1" Ice	2.14 2.32 2.51	1.69 1.85 2.02	0.11 0.13 0.16
Radio 4480_TMOV2	A	From	4.00	-10.000	147.00	No Ice	2.88	1.40	0.08

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Description	*Face or Leg*	*Offset Type*	*Offsets: Horz Lateral Vert* ft ft ft	*Azimuth Adjustment* °	*Placement* ft		C_AA_A *Front* ft^2	C_AA_A *Side* ft^2	*Weight* K
		Centroid-Face	6.000			1/2" Ice	3.09	1.56	0.10
			0.000			1" Ice	3.31	1.73	0.13
Radio 4480_TMOV2	B	From Centroid-Face	4.00	0.000	147.00	No Ice	2.88	1.40	0.08
			-6.000			1/2" Ice	3.09	1.56	0.10
			0.000			1" Ice	3.31	1.73	0.13
Radio 4480_TMOV2	C	From Centroid-Face	4.00	20.000	147.00	No Ice	2.88	1.40	0.08
			-2.000			1/2" Ice	3.09	1.56	0.10
			0.000			1" Ice	3.31	1.73	0.13
(2) 2.4" Dia. x 6' Mount Pipe	A	From Centroid-Face	4.00	0.000	147.00	No Ice	1.43	1.43	0.02
			0.000			1/2" Ice	1.93	1.93	0.04
			0.000			1" Ice	2.31	2.31	0.06
(2) 2.4" Dia. x 6' Mount Pipe	B	From Centroid-Face	4.00	0.000	147.00	No Ice	1.43	1.43	0.02
			0.000			1/2" Ice	1.93	1.93	0.04
			0.000			1" Ice	2.31	2.31	0.06
(2) 2.4" Dia. x 6' Mount Pipe	C	From Centroid-Face	4.00	0.000	147.00	No Ice	1.43	1.43	0.02
			0.000			1/2" Ice	1.93	1.93	0.04
			0.000			1" Ice	2.31	2.31	0.06
Platform Mount [LP 1201-1_HR-1]	C	None		0.000	147.00	No Ice	26.39	26.39	2.36
						1/2" Ice	31.40	31.40	3.06
						1" Ice	36.20	36.20	3.86
145 **136**									
MX08FRO665-21 w/ Mount Pipe	A	From Centroid-Leg	4.00	0.000	136.00	No Ice	8.01	4.23	0.11
			-3.000			1/2" Ice	8.52	4.69	0.19
			0.000			1" Ice	9.04	5.16	0.29
MX08FRO665-21 w/ Mount Pipe	B	From Centroid-Leg	4.00	0.000	136.00	No Ice	8.01	4.23	0.11
			-3.000			1/2" Ice	8.52	4.69	0.19
			0.000			1" Ice	9.04	5.16	0.29
MX08FRO665-21 w/ Mount Pipe	C	From Centroid-Leg	4.00	0.000	136.00	No Ice	8.01	4.23	0.11
			-3.000			1/2" Ice	8.52	4.69	0.19
			0.000			1" Ice	9.04	5.16	0.29
TA08025-B604	A	From Centroid-Leg	4.00	0.000	136.00	No Ice	1.96	0.98	0.06
			-3.000			1/2" Ice	2.14	1.11	0.08
			0.000			1" Ice	2.32	1.25	0.10
TA08025-B604	B	From Centroid-Leg	4.00	0.000	136.00	No Ice	1.96	0.98	0.06
			-3.000			1/2" Ice	2.14	1.11	0.08
			0.000			1" Ice	2.32	1.25	0.10
TA08025-B604	C	From Centroid-Leg	4.00	0.000	136.00	No Ice	1.96	0.98	0.06
			-3.000			1/2" Ice	2.14	1.11	0.08
			0.000			1" Ice	2.32	1.25	0.10
TA08025-B605	A	From Centroid-Leg	4.00	0.000	136.00	No Ice	1.96	1.13	0.08
			-3.000			1/2" Ice	2.14	1.27	0.09
			0.000			1" Ice	2.32	1.41	0.11
TA08025-B605	B	From Centroid-Leg	4.00	0.000	136.00	No Ice	1.96	1.13	0.08
			-3.000			1/2" Ice	2.14	1.27	0.09
			0.000			1" Ice	2.32	1.41	0.11
TA08025-B605	C	From Centroid-Leg	4.00	0.000	136.00	No Ice	1.96	1.13	0.08
			-3.000			1/2" Ice	2.14	1.27	0.09
			0.000			1" Ice	2.32	1.41	0.11
RDIDC-9181-PF-48	A	From Centroid-Leg	4.00	0.000	136.00	No Ice	2.01	1.17	0.02
			-3.000			1/2" Ice	2.19	1.31	0.04
			0.000			1" Ice	2.37	1.46	0.06
(2) 2.4" Dia x 8-ft Mount Pipe	A	From Centroid-Leg	4.00	0.000	136.00	No Ice	1.90	1.90	0.03
			1.500			1/2" Ice	2.73	2.73	0.04
			0.000			1" Ice	3.40	3.40	0.06
(2) 2.4" Dia x 8-ft Mount Pipe	B	From Centroid-Leg	4.00	0.000	136.00	No Ice	1.90	1.90	0.03
			1.500			1/2" Ice	2.73	2.73	0.04

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
		g	0.000			1" Ice	3.40	3.40	0.06
(2) 2.4" Dia x 8-ft Mount Pipe	C	From	4.00	0.000	136.00	No Ice	1.90	1.90	0.03
		Centroid-Le	1.500			1/2" Ice	2.73	2.73	0.04
		g	0.000			1" Ice	3.40	3.40	0.06
Commscope	C	None		0.000	136.00	No Ice	15.30	15.30	1.19
MC-K6MHDX-9-96 (3)						1/2" Ice	20.48	20.48	1.71
						1" Ice	25.66	25.66	2.22
122									
ERICSSON AIR 21 B2A	A	From	3.00	-10.000	122.00	No Ice	3.14	2.59	0.11
B4P w/ Mount Pipe		Centroid-Fa	-6.000			1/2" Ice	3.45	2.88	0.16
		ce	1.000			1" Ice	3.77	3.19	0.23
ERICSSON AIR 21 B2A	B	From	3.00	0.000	122.00	No Ice	3.14	2.59	0.11
B4P w/ Mount Pipe		Centroid-Fa	-6.000			1/2" Ice	3.45	2.88	0.16
		ce	1.000			1" Ice	3.77	3.19	0.23
ERICSSON AIR 21 B2A	C	From	3.00	20.000	122.00	No Ice	3.14	2.59	0.11
B4P w/ Mount Pipe		Centroid-Fa	-6.000			1/2" Ice	3.45	2.88	0.16
		ce	1.000			1" Ice	3.77	3.19	0.23
APXVAARR24_43-U-NA20	A	From	4.00	-10.000	122.00	No Ice	14.69	6.87	0.19
w/ Mount Pipe		Centroid-Fa	0.000			1/2" Ice	15.46	7.55	0.31
		ce	1.000			1" Ice	16.23	8.25	0.46
APXVAARR24_43-U-NA20	B	From	4.00	0.000	122.00	No Ice	14.69	6.87	0.19
w/ Mount Pipe		Centroid-Fa	0.000			1/2" Ice	15.46	7.55	0.31
		ce	1.000			1" Ice	16.23	8.25	0.46
APXVAARR24_43-U-NA20	C	From	4.00	20.000	122.00	No Ice	14.69	6.87	0.19
w/ Mount Pipe		Centroid-Fa	0.000			1/2" Ice	15.46	7.55	0.31
		ce	1.000			1" Ice	16.23	8.25	0.46
ERICSSON AIR 21 B4A	A	From	3.00	-10.000	122.00	No Ice	3.14	2.59	0.11
B2P w/ Mount Pipe		Centroid-Fa	6.000			1/2" Ice	3.45	2.88	0.16
		ce	1.000			1" Ice	3.77	3.19	0.22
ERICSSON AIR 21 B4A	B	From	3.00	0.000	122.00	No Ice	3.14	2.59	0.11
B2P w/ Mount Pipe		Centroid-Fa	6.000			1/2" Ice	3.45	2.88	0.16
		ce	1.000			1" Ice	3.77	3.19	0.22
ERICSSON AIR 21 B4A	C	From	3.00	20.000	122.00	No Ice	3.14	2.59	0.11
B2P w/ Mount Pipe		Centroid-Fa	6.000			1/2" Ice	3.45	2.88	0.16
		ce	1.000			1" Ice	3.77	3.19	0.22
KRY 112 144/1	A	From	3.00	-10.000	122.00	No Ice	0.35	0.17	0.01
		Centroid-Fa	-6.000			1/2" Ice	0.43	0.23	0.01
		ce	1.000			1" Ice	0.51	0.30	0.02
KRY 112 144/1	B	From	3.00	0.000	122.00	No Ice	0.35	0.17	0.01
		Centroid-Fa	-6.000			1/2" Ice	0.43	0.23	0.01
		ce	1.000			1" Ice	0.51	0.30	0.02
KRY 112 144/1	C	From	3.00	20.000	122.00	No Ice	0.35	0.17	0.01
		Centroid-Fa	-6.000			1/2" Ice	0.43	0.23	0.01
		ce	1.000			1" Ice	0.51	0.30	0.02
RADIO 4449 B71/B85A	A	From	4.00	-10.000	122.00	No Ice	1.64	1.31	0.07
		Centroid-Fa	0.000			1/2" Ice	1.80	1.46	0.09
		ce	1.000			1" Ice	1.97	1.61	0.11
RADIO 4449 B71/B85A	B	From	4.00	0.000	122.00	No Ice	1.64	1.31	0.07
		Centroid-Fa	0.000			1/2" Ice	1.80	1.46	0.09
		ce	1.000			1" Ice	1.97	1.61	0.11
RADIO 4449 B71/B85A	C	From	4.00	20.000	122.00	No Ice	1.64	1.31	0.07
		Centroid-Fa	0.000			1/2" Ice	1.80	1.46	0.09
		ce	1.000			1" Ice	1.97	1.61	0.11
Site Pro 1 RMQP-496	C	None		0.000	122.00	No Ice	23.14	21.40	1.95
w/HRK12						1/2" Ice	28.17	26.44	2.34
						1" Ice	33.23	31.60	2.85
110									

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
DMP65R-BU4D w/ Mount Pipe	A	From Centroid-Face	4.00 -6.000 2.000	-16.000	110.00	No Ice 1/2" Ice 1" Ice	7.53 8.04 8.57	3.79 4.23 4.68	0.09 0.16 0.22
DMP65R-BU4D w/ Mount Pipe	B	From Centroid-Face	4.00 -6.000 2.000	30.000	110.00	No Ice 1/2" Ice 1" Ice	7.53 8.04 8.57	3.79 4.23 4.68	0.09 0.16 0.22
DMP65R-BU4D w/ Mount Pipe	C	From Centroid-Face	4.00 -6.000 2.000	20.000	110.00	No Ice 1/2" Ice 1" Ice	7.53 8.04 8.57	3.79 4.23 4.68	0.09 0.16 0.22
QD4616-7 w/ Mount Pipe	A	From Centroid-Face	4.00 -2.000 2.000	-16.000	110.00	No Ice 1/2" Ice 1" Ice	8.88 9.45 10.04	4.92 5.42 5.93	0.13 0.20 0.28
QD4616-7 w/ Mount Pipe	B	From Centroid-Face	4.00 -2.000 2.000	0.000	110.00	No Ice 1/2" Ice 1" Ice	8.88 9.45 10.04	4.92 5.42 5.93	0.13 0.20 0.28
QD4616-7 w/ Mount Pipe	C	From Centroid-Face	4.00 -2.000 2.000	0.000	110.00	No Ice 1/2" Ice 1" Ice	8.88 9.45 10.04	4.92 5.42 5.93	0.13 0.20 0.28
AIR 6449 N77 w/ Mount Pipe	A	From Centroid-Face	4.00 6.000 3.000	-16.000	110.00	No Ice 1/2" Ice 1" Ice	3.65 3.99 4.35	2.72 3.03 3.36	0.11 0.15 0.20
AIR 6449 N77 w/ Mount Pipe	B	From Centroid-Face	4.00 6.000 3.000	0.000	110.00	No Ice 1/2" Ice 1" Ice	3.65 3.99 4.35	2.72 3.03 3.36	0.11 0.15 0.20
AIR 6449 N77 w/ Mount Pipe	C	From Centroid-Face	4.00 6.000 3.000	0.000	110.00	No Ice 1/2" Ice 1" Ice	3.65 3.99 4.35	2.72 3.03 3.36	0.11 0.15 0.20
AIR 6419 B77G w/ Mount Pipe	A	From Centroid-Face	4.00 6.000 1.000	-16.000	110.00	No Ice 1/2" Ice 1" Ice	4.32 4.74 5.17	2.49 2.84 3.21	0.08 0.11 0.15
AIR 6419 B77G w/ Mount Pipe	B	From Centroid-Face	4.00 6.000 1.000	0.000	110.00	No Ice 1/2" Ice 1" Ice	4.32 4.74 5.17	2.49 2.84 3.21	0.08 0.11 0.15
AIR 6419 B77G w/ Mount Pipe	C	From Centroid-Face	4.00 6.000 1.000	0.000	110.00	No Ice 1/2" Ice 1" Ice	4.32 4.74 5.17	2.49 2.84 3.21	0.08 0.11 0.15
DC6-48-60-18-8F	A	From Centroid-Face	4.00 -2.000 2.000	0.000	110.00	No Ice 1/2" Ice 1" Ice	1.21 1.89 2.11	1.21 1.89 2.11	0.03 0.05 0.08
DC6-48-60-18-8F	B	From Centroid-Face	4.00 -6.000 2.000	0.000	110.00	No Ice 1/2" Ice 1" Ice	1.21 1.89 2.11	1.21 1.89 2.11	0.03 0.05 0.08
DC6-48-60-18-8F	C	From Centroid-Face	4.00 -4.000 2.000	0.000	110.00	No Ice 1/2" Ice 1" Ice	1.21 1.89 2.11	1.21 1.89 2.11	0.03 0.05 0.08
DC6-48-60-18-8F	C	From Centroid-Face	4.00 -4.000 2.000	0.000	110.00	No Ice 1/2" Ice 1" Ice	1.21 1.89 2.11	1.21 1.89 2.11	0.03 0.05 0.08
RRUS-32 B30	A	From Centroid-Face	4.00 -2.000 2.000	-16.000	110.00	No Ice 1/2" Ice 1" Ice	3.31 3.56 3.81	2.42 2.64 2.86	0.08 0.10 0.14
RRUS-32 B30	B	From Centroid-Face	4.00 -2.000 2.000	0.000	110.00	No Ice 1/2" Ice 1" Ice	3.31 3.56 3.81	2.42 2.64 2.86	0.08 0.10 0.14
RRUS-32 B30	C	From Centroid-Face	4.00 -2.000 2.000	0.000	110.00	No Ice 1/2" Ice 1" Ice	3.31 3.56 3.81	2.42 2.64 2.86	0.08 0.10 0.14

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
RRUS 4478 B14_CCIV2	A	From Centroid-Face	4.00 2.000 2.000	-16.000	110.00	No Ice 1/2" Ice 1" Ice	2.02 2.20 2.39	1.25 1.40 1.55	0.06 0.08 0.10
RRUS 4478 B14_CCIV2	B	From Centroid-Face	4.00 2.000 2.000	0.000	110.00	No Ice 1/2" Ice 1" Ice	2.02 2.20 2.39	1.25 1.40 1.55	0.06 0.08 0.10
RRUS 4478 B14_CCIV2	C	From Centroid-Face	4.00 2.000 2.000	0.000	110.00	No Ice 1/2" Ice 1" Ice	2.02 2.20 2.39	1.25 1.40 1.55	0.06 0.08 0.10
RRUS 4449 B5/B12	A	From Centroid-Face	4.00 6.000 2.000	-16.000	110.00	No Ice 1/2" Ice 1" Ice	1.97 2.14 2.33	1.41 1.56 1.73	0.07 0.09 0.11
RRUS 4449 B5/B12	B	From Centroid-Face	4.00 6.000 2.000	0.000	110.00	No Ice 1/2" Ice 1" Ice	1.97 2.14 2.33	1.41 1.56 1.73	0.07 0.09 0.11
RRUS 4449 B5/B12	C	From Centroid-Face	4.00 6.000 2.000	0.000	110.00	No Ice 1/2" Ice 1" Ice	1.97 2.14 2.33	1.41 1.56 1.73	0.07 0.09 0.11
RRUS 32 B2	A	From Centroid-Face	4.00 6.000 2.000	-16.000	110.00	No Ice 1/2" Ice 1" Ice	2.73 2.95 3.18	1.67 1.86 2.05	0.05 0.07 0.10
RRUS 32 B2	B	From Centroid-Face	4.00 6.000 2.000	0.000	110.00	No Ice 1/2" Ice 1" Ice	2.73 2.95 3.18	1.67 1.86 2.05	0.05 0.07 0.10
RRUS 32 B2	C	From Centroid-Face	4.00 6.000 2.000	0.000	110.00	No Ice 1/2" Ice 1" Ice	2.73 2.95 3.18	1.67 1.86 2.05	0.05 0.07 0.10
RRUS 32 B66	A	From Centroid-Face	4.00 2.000 2.000	-16.000	110.00	No Ice 1/2" Ice 1" Ice	2.74 2.96 3.19	1.67 1.86 2.05	0.05 0.07 0.10
RRUS 32 B66	B	From Centroid-Face	4.00 2.000 2.000	0.000	110.00	No Ice 1/2" Ice 1" Ice	2.74 2.96 3.19	1.67 1.86 2.05	0.05 0.07 0.10
RRUS 32 B66	C	From Centroid-Face	4.00 2.000 2.000	0.000	110.00	No Ice 1/2" Ice 1" Ice	2.74 2.96 3.19	1.67 1.86 2.05	0.05 0.07 0.10
2.4" Dia x 6-ft Pipe	A	From Centroid-Leg	2.00 0.000 0.000	0.000	110.00	No Ice 1/2" Ice 1" Ice	1.44 1.93 2.30	1.44 1.93 2.30	0.02 0.03 0.05
2.4" Dia x 6-ft Pipe	B	From Centroid-Leg	2.00 0.000 0.000	0.000	110.00	No Ice 1/2" Ice 1" Ice	1.44 1.93 2.30	1.44 1.93 2.30	0.02 0.03 0.05
2.4" Dia x 6-ft Pipe	B	From Centroid-Leg	2.00 0.000 0.000	0.000	110.00	No Ice 1/2" Ice 1" Ice	1.44 1.93 2.30	1.44 1.93 2.30	0.02 0.03 0.05
2.4" Dia. x 10-ft Mount Pipe	A	From Centroid-Face	4.00 0.000 0.000	0.000	110.00	No Ice 1/2" Ice 1" Ice	2.38 3.40 4.45	2.38 3.40 4.45	0.04 0.05 0.08
2.4" Dia. x 10-ft Mount Pipe	B	From Centroid-Face	4.00 0.000 0.000	0.000	110.00	No Ice 1/2" Ice 1" Ice	2.38 3.40 4.45	2.38 3.40 4.45	0.04 0.05 0.08
2.4" Dia. x 10-ft Mount Pipe	C	From Centroid-Face	4.00 0.000 0.000	0.000	110.00	No Ice 1/2" Ice 1" Ice	2.38 3.40 4.45	2.38 3.40 4.45	0.04 0.05 0.08
Side Arm Mount [SO 202-3]	C	None		0.000	110.00	No Ice 1/2" Ice 1" Ice	5.70 6.97 8.33	5.70 6.97 8.33	0.33 0.40 0.49

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Side Arm Mount [SO 203-3]	C	None		0.000	110.00	No Ice	6.68	6.68	0.38
						1/2" Ice	8.05	8.05	0.46
						1" Ice	9.55	9.55	0.57
Platform Mount [LP 602-1]	C	None		0.000	110.00	No Ice	31.07	31.07	1.34
						1/2" Ice	34.82	34.82	1.97
						1" Ice	38.48	38.48	2.67
53									
GPS_A	B	From Leg	3.00 0.000 1.000	0.000	53.00	No Ice 1/2" Ice 1" Ice	0.12 0.21 0.28	0.12 0.21 0.28	0.00 0.00 0.01
Side Arm Mount [SO 701-1]	B	From Leg	1.50 0.000 0.000	0.000	53.00	No Ice 1/2" Ice 1" Ice	0.85 1.14 1.43	1.67 2.34 3.01	0.07 0.08 0.09
49									
KS24019-L112A	C	From Leg	3.00 0.000 1.000	0.000	49.00	No Ice 1/2" Ice 1" Ice	0.08 0.13 0.19	0.08 0.13 0.19	0.01 0.01 0.01
Side Arm Mount [SO 701-1]	C	From Leg	1.50 0.000 0.000	0.000	49.00	No Ice 1/2" Ice 1" Ice	0.85 1.14 1.43	1.67 2.34 3.01	0.07 0.08 0.09
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Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight K
A-ANT-23G-2-C	A	Paraboloid w/Shroud (HP)	From Centroid -Leg	4.00 6.000 2.000	0.000		147.00	2.17	No Ice 1/2" Ice 1" Ice	3.72 4.01 4.30	0.01 0.02 0.03
VHLP2-18	C	Paraboloid w/Shroud (HP)	From Centroid -Face	4.00 2.000 2.000	0.000		147.00	2.00	No Ice 1/2" Ice 1" Ice	3.14 3.41 3.68	0.03 0.05 0.07
A-ANT-23G-2-C	B	Paraboloid w/Shroud (HP)	From Centroid -Leg	4.00 -6.000 2.000	0.000		147.00	2.17	No Ice 1/2" Ice 1" Ice	3.72 4.01 4.30	0.01 0.02 0.03
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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

Comb. No.	Description
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	147 - 142	Pole	Max Tension	26	0.00	0.00	-0.00
			Max. Compression	26	-9.29	-2.96	0.29
			Max. Mx	8	-4.57	-36.72	2.43
			Max. My	2	-4.62	-0.75	35.90
			Max. Vy	20	-7.20	34.91	0.12
			Max. Vx	2	-6.94	-0.75	35.90

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Torque	14			8.91
L2	142 - 137	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-9.96	-2.85	0.38
			Max. Mx	8	-4.94	-73.74	3.77
			Max. My	2	-4.99	-1.74	71.94
			Max. Vy	20	-7.73	72.28	-1.04
			Max. Vx	2	-7.47	-1.74	71.94
			Max. Torque	14			8.91
L3	137 - 132	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-15.23	-2.54	0.75
			Max. Mx	8	-7.58	-124.12	5.22
			Max. My	2	-7.63	-2.73	121.62
			Max. Vy	20	-10.96	123.17	-2.16
			Max. Vx	2	-10.72	-2.73	121.62
			Max. Torque	14			8.91
L4	132 - 127	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-15.97	-2.40	0.87
			Max. Mx	8	-8.01	-179.99	6.62
			Max. My	2	-8.07	-3.76	176.62
			Max. Vy	20	-11.52	179.42	-3.36
			Max. Vx	2	-11.27	-3.76	176.62
			Max. Torque	14			8.66
L5	127 - 122	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-16.73	-2.25	0.99
			Max. Mx	8	-8.46	-238.65	8.02
			Max. My	2	-8.52	-4.79	234.38
			Max. Vy	20	-12.08	238.47	-4.56
			Max. Vx	2	-11.82	-4.79	234.38
			Max. Torque	14			8.66
L6	122 - 117	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-24.16	-2.10	1.12
			Max. Mx	20	-12.68	321.90	-6.78
			Max. My	2	-12.78	-6.77	315.33
			Max. Vy	20	-16.51	321.90	-6.78
			Max. Vx	2	-16.06	-6.77	315.33
			Max. Torque	14			9.18
L7	117 - 112	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-25.04	-1.94	1.25
			Max. Mx	20	-13.29	405.90	-8.83
			Max. My	2	-13.40	-8.65	397.03
			Max. Vy	20	-17.07	405.90	-8.83
			Max. Vx	2	-16.62	-8.65	397.03
			Max. Torque	14			9.18
L8	112 - 107	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-35.31	-2.29	1.34
			Max. Mx	20	-18.63	520.69	-11.48
			Max. My	2	-18.79	-11.15	508.08
			Max. Vy	20	-24.52	520.69	-11.48
			Max. Vx	2	-23.73	-11.15	508.08
			Max. Torque	14			10.26
L9	107 - 99.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-36.05	-2.17	1.45
			Max. Mx	20	-19.20	613.43	-13.42
			Max. My	2	-19.36	-12.97	597.82
			Max. Vy	20	-24.93	613.43	-13.42
			Max. Vx	2	-24.14	-12.97	597.82
			Max. Torque	14			10.25
L10	99.5 - 98.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-37.66	-2.00	1.59
			Max. Mx	20	-20.41	739.73	-16.01
			Max. My	2	-20.57	-15.39	720.11

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vy	20	-25.56	739.73	-16.01
			Max. Vx	2	-24.77	-15.39	720.11
			Max. Torque	14			10.24
L11	98.25 - 93.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-38.79	-1.83	1.74
			Max. Mx	20	-21.34	868.93	-18.60
			Max. My	2	-21.49	-17.79	845.30
			Max. Vy	20	-26.11	868.93	-18.60
			Max. Vx	2	-25.31	-17.79	845.30
			Max. Torque	14			10.24
L12	93.25 - 88.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-39.94	-1.64	1.88
			Max. Mx	20	-22.30	1000.84	-21.18
			Max. My	2	-22.44	-20.18	973.20
			Max. Vy	20	-26.65	1000.84	-21.18
			Max. Vx	2	-25.85	-20.18	973.20
			Max. Torque	14			10.23
L13	88.25 - 83.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-41.11	-1.46	2.03
			Max. Mx	20	-23.29	1135.42	-23.76
			Max. My	2	-23.43	-22.55	1103.79
			Max. Vy	20	-27.18	1135.42	-23.76
			Max. Vx	2	-26.39	-22.55	1103.79
			Max. Torque	14			10.22
L14	83.25 - 78.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-42.30	-1.26	2.18
			Max. Mx	20	-24.32	1272.65	-26.32
			Max. My	2	-24.44	-24.90	1237.01
			Max. Vy	20	-27.71	1272.65	-26.32
			Max. Vx	2	-26.91	-24.90	1237.01
			Max. Torque	14			10.21
L15	78.25 - 73.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-43.52	-1.07	2.31
			Max. Mx	20	-25.37	1412.48	-28.88
			Max. My	2	-25.49	-27.23	1372.85
			Max. Vy	20	-28.22	1412.48	-28.88
			Max. Vx	2	-27.43	-27.23	1372.85
			Max. Torque	14			10.20
L16	73.25 - 69.58	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-44.44	-0.92	2.41
			Max. Mx	20	-26.16	1516.78	-30.74
			Max. My	2	-26.27	-28.94	1474.20
			Max. Vy	20	-28.62	1516.78	-30.74
			Max. Vx	2	-27.81	-28.94	1474.20
			Max. Torque	14			10.19
L17	69.58 - 69.33	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-44.52	-0.91	2.41
			Max. Mx	20	-26.24	1523.93	-30.87
			Max. My	2	-26.35	-29.05	1481.15
			Max. Vy	20	-28.63	1523.93	-30.87
			Max. Vx	2	-27.82	-29.05	1481.15
			Max. Torque	14			10.19
L18	69.33 - 64.33	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-46.09	-0.70	2.54
			Max. Mx	20	-27.53	1668.86	-33.40
			Max. My	2	-27.64	-31.36	1621.72
			Max. Vy	20	-29.32	1668.86	-33.40
			Max. Vx	2	-28.40	-31.36	1621.72
			Max. Torque	14			10.19
L19	64.33 - 59	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-46.27	-0.68	2.56

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	20	-27.69	1685.89	-33.69
			Max. My	2	-27.80	-31.62	1638.21
			Max. Vy	20	-29.38	1685.89	-33.69
			Max. Vx	2	-28.46	-31.62	1638.21
			Max. Torque	14			10.18
L20	59 - 58	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-49.09	-0.44	2.71
			Max. Mx	20	-29.96	1857.29	-36.60
			Max. My	2	-30.07	-34.27	1804.09
			Max. Vy	20	-30.19	1857.29	-36.60
			Max. Vx	2	-29.22	-34.27	1804.09
			Max. Torque	14			10.18
L21	58 - 57.83	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-49.14	-0.44	2.72
			Max. Mx	20	-30.02	1862.42	-36.69
			Max. My	2	-30.13	-34.35	1809.06
			Max. Vy	20	-30.19	1862.42	-36.69
			Max. Vx	2	-29.23	-34.35	1809.06
			Max. Torque	14			10.18
L22	57.83 - 57.58	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-49.22	-0.43	2.73
			Max. Mx	20	-30.09	1869.97	-36.81
			Max. My	2	-30.19	-34.47	1816.38
			Max. Vy	20	-30.21	1869.97	-36.81
			Max. Vx	2	-29.26	-34.47	1816.38
			Max. Torque	14			10.18
L23	57.58 - 52.58	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-50.86	-0.58	2.69
			Max. Mx	20	-31.46	2022.11	-39.45
			Max. My	2	-31.55	-37.01	1963.99
			Max. Vy	20	-30.77	2022.11	-39.45
			Max. Vx	2	-29.89	-37.01	1963.99
			Max. Torque	14			10.36
L24	52.58 - 50.58	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-51.50	-0.51	2.75
			Max. Mx	20	-31.99	2083.85	-40.48
			Max. My	2	-32.08	-37.96	2023.98
			Max. Vy	20	-30.99	2083.85	-40.48
			Max. Vx	2	-30.11	-37.96	2023.98
			Max. Torque	14			10.36
L25	50.58 - 50.33	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-51.60	-0.51	2.75
			Max. Mx	20	-32.09	2091.60	-40.61
			Max. My	2	-32.18	-38.08	2031.51
			Max. Vy	20	-31.01	2091.60	-40.61
			Max. Vx	2	-30.12	-38.08	2031.51
			Max. Torque	14			10.36
L26	50.33 - 50.17	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-51.66	-0.50	2.76
			Max. Mx	20	-32.15	2096.57	-40.69
			Max. My	2	-32.24	-38.16	2036.33
			Max. Vy	20	-31.03	2096.57	-40.69
			Max. Vx	2	-30.14	-38.16	2036.33
			Max. Torque	14			10.36
L27	50.17 - 49.92	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-51.75	-0.49	2.77
			Max. Mx	20	-32.21	2104.33	-40.82
			Max. My	2	-32.30	-38.27	2043.87
			Max. Vy	20	-31.06	2104.33	-40.82
			Max. Vx	2	-30.17	-38.27	2043.87
			Max. Torque	14			10.36

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L28	49.92 - 44.92	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-53.41	0.03	2.73
			Max. Mx	20	-33.61	2261.53	-43.46
			Max. My	2	-33.69	-40.32	2196.10
			Max. Vy	20	-31.69	2261.53	-43.46
			Max. Vx	2	-30.73	-40.32	2196.10
			Max. Torque	14			10.36
L29	44.92 - 39.92	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-54.97	0.25	2.87
			Max. Mx	20	-34.97	2421.30	-45.94
			Max. My	2	-35.04	-42.55	2350.85
			Max. Vy	20	-32.23	2421.30	-45.94
			Max. Vx	2	-31.19	-42.55	2350.85
			Max. Torque	14			10.15
L30	39.92 - 34.92	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-56.56	0.47	3.01
			Max. Mx	20	-36.37	2583.70	-48.40
			Max. My	2	-36.43	-44.76	2507.84
			Max. Vy	20	-32.74	2583.70	-48.40
			Max. Vx	2	-31.63	-44.76	2507.84
			Max. Torque	14			10.15
L31	34.92 - 29.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-56.70	0.49	3.03
			Max. Mx	20	-36.50	2597.45	-48.60
			Max. My	2	-36.56	-44.95	2521.13
			Max. Vy	20	-32.76	2597.45	-48.60
			Max. Vx	2	-31.65	-44.95	2521.13
			Max. Torque	14			10.14
L32	29.25 - 28.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-60.24	0.71	3.19
			Max. Mx	20	-39.42	2804.46	-51.65
			Max. My	2	-39.47	-47.76	2721.38
			Max. Vy	20	-33.46	2804.46	-51.65
			Max. Vx	2	-32.40	-47.76	2721.38
			Max. Torque	14			10.14
L33	28.25 - 24.08	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-61.76	0.86	3.31
			Max. Mx	20	-40.76	2944.64	-53.67
			Max. My	2	-40.80	-49.61	2857.30
			Max. Vy	20	-33.79	2944.64	-53.67
			Max. Vx	2	-32.81	-49.61	2857.30
			Max. Torque	14			10.14
L34	24.08 - 23.83	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-61.88	0.87	3.31
			Max. Mx	20	-40.88	2953.09	-53.80
			Max. My	2	-40.92	-49.72	2865.50
			Max. Vy	20	-33.80	2953.09	-53.80
			Max. Vx	2	-32.82	-49.72	2865.50
			Max. Torque	14			10.14
L35	23.83 - 18.83	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-64.26	1.04	3.45
			Max. Mx	20	-42.95	3123.22	-56.21
			Max. My	2	-42.98	-51.94	3031.14
			Max. Vy	20	-34.25	3123.22	-56.21
			Max. Vx	2	-33.43	-51.94	3031.14
			Max. Torque	14			10.14
L36	18.83 - 13.83	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-66.66	1.22	3.58
			Max. Mx	20	-45.07	3295.47	-58.60
			Max. My	2	-45.09	-54.13	3199.67
			Max. Vy	20	-34.66	3295.47	-58.60

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vx	2	-33.99	-54.13	3199.67
			Max. Torque	14			10.14
L37	13.83 - 8.83	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-69.05	1.44	3.72
			Max. Mx	20	-47.19	3469.76	-60.98
			Max. My	2	-47.21	-56.27	3370.94
			Max. Vy	20	-35.05	3469.76	-60.98
			Max. Vx	2	-34.53	-56.27	3370.94
			Max. Torque	14			10.14
L38	8.83 - 3.83	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-71.43	1.68	3.85
			Max. Mx	20	-49.34	3646.03	-63.35
			Max. My	2	-49.34	-58.38	3544.87
			Max. Vy	20	-35.44	3646.03	-63.35
			Max. Vx	2	-35.06	-58.38	3544.87
			Max. Torque	14			10.13
L39	3.83 - 1.92	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-72.34	1.77	3.90
			Max. Mx	20	-50.15	3713.87	-64.25
			Max. My	2	-50.16	-59.18	3612.00
			Max. Vy	20	-35.61	3713.87	-64.25
			Max. Vx	2	-35.27	-59.18	3612.00
			Max. Torque	14			10.13
L40	1.92 - 1.67	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-72.48	1.78	3.90
			Max. Mx	20	-50.31	3722.77	-64.36
			Max. My	2	-50.31	-59.28	3620.82
			Max. Vy	20	-35.59	3722.77	-64.36
			Max. Vx	2	-35.27	-59.28	3620.82
			Max. Torque	14			10.13
L41	1.67 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-73.09	1.85	3.94
			Max. Mx	20	-50.85	3782.34	-65.15
			Max. My	2	-50.85	-59.97	3679.86
			Max. Vy	20	-35.74	3782.34	-65.15
			Max. Vx	2	-35.46	-59.97	3679.86
			Max. Torque	14			10.13

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	29	73.09	-6.83	3.95
	Max. H_x	20	50.88	35.69	-0.48
	Max. H_z	3	38.16	-0.44	35.41
	Max. M_x	2	3679.86	-0.44	35.41
	Max. M_z	8	3772.68	-35.65	0.50
	Max. Torsion	14	10.13	0.49	-35.41
	Min. Vert	7	38.16	-32.28	18.68
	Min. H_x	9	38.16	-35.65	0.50
	Min. H_z	14	50.88	0.49	-35.41
	Min. M_x	14	-3674.08	0.49	-35.41
	Min. M_z	20	-3782.34	35.69	-0.48
	Min. Torsion	2	-9.93	-0.44	35.41

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	42.40	0.00	-0.00	-2.07	0.88	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	50.88	0.44	-35.41	-3679.86	-59.97	9.93
0.9 Dead+1.0 Wind 0 deg - No Ice	38.16	0.44	-35.41	-3622.97	-59.26	9.90
1.2 Dead+1.0 Wind 30 deg - No Ice	50.88	18.81	-31.53	-3277.41	-1972.04	8.88
0.9 Dead+1.0 Wind 30 deg - No Ice	38.16	18.81	-31.53	-3226.79	-1942.17	8.87
1.2 Dead+1.0 Wind 60 deg - No Ice	50.88	32.28	-18.68	-1977.39	-3402.37	5.61
0.9 Dead+1.0 Wind 60 deg - No Ice	38.16	32.28	-18.68	-1946.38	-3350.60	5.63
1.2 Dead+1.0 Wind 90 deg - No Ice	50.88	35.65	-0.50	-73.81	-3772.68	1.20
0.9 Dead+1.0 Wind 90 deg - No Ice	38.16	35.65	-0.50	-71.87	-3715.22	1.24
1.2 Dead+1.0 Wind 120 deg - No Ice	50.88	30.40	17.04	1778.26	-3201.41	-4.10
0.9 Dead+1.0 Wind 120 deg - No Ice	38.16	30.40	17.04	1751.75	-3152.64	-4.05
1.2 Dead+1.0 Wind 150 deg - No Ice	50.88	17.10	29.63	3131.61	-1805.12	-8.11
0.9 Dead+1.0 Wind 150 deg - No Ice	38.16	17.10	29.63	3084.28	-1777.81	-8.07
1.2 Dead+1.0 Wind 180 deg - No Ice	50.88	-0.49	35.41	3674.08	69.78	-10.13
0.9 Dead+1.0 Wind 180 deg - No Ice	38.16	-0.49	35.41	3618.61	68.28	-10.10
1.2 Dead+1.0 Wind 210 deg - No Ice	50.88	-18.77	31.56	3276.49	1969.07	-9.48
0.9 Dead+1.0 Wind 210 deg - No Ice	38.16	-18.77	31.56	3227.24	1938.66	-9.48
1.2 Dead+1.0 Wind 240 deg - No Ice	50.88	-32.31	18.66	1967.60	3409.42	-5.76
0.9 Dead+1.0 Wind 240 deg - No Ice	38.16	-32.31	18.66	1938.14	3356.98	-5.78
1.2 Dead+1.0 Wind 270 deg - No Ice	50.88	-35.69	0.48	65.15	3782.34	-0.59
0.9 Dead+1.0 Wind 270 deg - No Ice	38.16	-35.69	0.48	64.69	3724.21	-0.63
1.2 Dead+1.0 Wind 300 deg - No Ice	50.88	-30.44	-17.06	-1785.98	3210.38	4.23
0.9 Dead+1.0 Wind 300 deg - No Ice	38.16	-30.44	-17.06	-1758.05	3160.93	4.18
1.2 Dead+1.0 Wind 330 deg - No Ice	50.88	-17.14	-29.66	-3140.84	1813.04	8.02
0.9 Dead+1.0 Wind 330 deg - No Ice	38.16	-17.14	-29.66	-3092.08	1785.01	7.98
1.2 Dead+1.0 Ice+1.0 Temp	73.09	0.00	-0.00	-3.94	1.85	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	73.09	0.07	-7.73	-857.77	-8.49	2.02
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	73.09	3.99	-6.74	-750.48	-443.11	1.80
1.2 Dead+1.0 Wind 60 deg+1.0	73.09	6.83	-3.95	-444.06	-755.93	1.13

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
Ice+1.0 Temp 1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	73.09	7.83	-0.08	-16.57	-866.40	0.23
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	73.09	6.73	3.81	414.14	-741.76	-0.85
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	73.09	3.84	6.65	728.98	-420.33	-1.66
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	73.09	-0.08	7.73	849.39	13.80	-2.06
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	73.09	-3.98	6.75	743.14	445.76	-1.92
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	73.09	-6.83	3.95	434.88	760.70	-1.16
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	73.09	-7.84	0.08	7.64	871.74	-0.10
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	73.09	-6.74	-3.81	-422.94	746.94	0.88
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	73.09	-3.84	-6.66	-738.11	425.27	1.64
Dead+Wind 0 deg - Service	42.40	0.10	-8.21	-847.60	-13.16	2.35
Dead+Wind 30 deg - Service	42.40	4.36	-7.31	-755.20	-452.84	2.10
Dead+Wind 60 deg - Service	42.40	7.48	-4.33	-456.30	-781.85	1.34
Dead+Wind 90 deg - Service	42.40	8.26	-0.12	-18.50	-866.82	0.29
Dead+Wind 120 deg - Service	42.40	7.04	3.95	407.27	-735.37	-0.96
Dead+Wind 150 deg - Service	42.40	3.96	6.87	718.35	-414.36	-1.91
Dead+Wind 180 deg - Service	42.40	-0.11	8.21	843.14	16.63	-2.39
Dead+Wind 210 deg - Service	42.40	-4.35	7.31	751.90	453.39	-2.25
Dead+Wind 240 deg - Service	42.40	-7.49	4.32	450.97	784.74	-1.37
Dead+Wind 270 deg - Service	42.40	-8.27	0.11	13.40	870.35	-0.15
Dead+Wind 300 deg - Service	42.40	-7.05	-3.95	-412.20	738.72	0.99
Dead+Wind 330 deg - Service	42.40	-3.97	-6.87	-723.64	417.43	1.89

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	-42.40	0.00	0.00	42.40	0.00	0.000%
2	0.44	-50.88	-35.41	-0.44	50.88	35.41	0.000%
3	0.44	-38.16	-35.41	-0.44	38.16	35.41	0.000%
4	18.81	-50.88	-31.53	-18.81	50.88	31.53	0.000%
5	18.81	-38.16	-31.53	-18.81	38.16	31.53	0.000%
6	32.28	-50.88	-18.68	-32.28	50.88	18.68	0.000%
7	32.28	-38.16	-18.68	-32.28	38.16	18.68	0.000%
8	35.65	-50.88	-0.50	-35.65	50.88	0.50	0.000%
9	35.65	-38.16	-0.50	-35.65	38.16	0.50	0.000%
10	30.40	-50.88	17.04	-30.40	50.88	-17.04	0.000%
11	30.40	-38.16	17.04	-30.40	38.16	-17.04	0.000%
12	17.10	-50.88	29.63	-17.10	50.88	-29.63	0.000%
13	17.10	-38.16	29.63	-17.10	38.16	-29.63	0.000%
14	-0.49	-50.88	35.41	0.49	50.88	-35.41	0.000%
15	-0.49	-38.16	35.41	0.49	38.16	-35.41	0.000%
16	-18.77	-50.88	31.56	18.77	50.88	-31.56	0.000%
17	-18.77	-38.16	31.56	18.77	38.16	-31.56	0.000%
18	-32.31	-50.88	18.66	32.31	50.88	-18.66	0.000%
19	-32.31	-38.16	18.66	32.31	38.16	-18.66	0.000%
20	-35.69	-50.88	0.48	35.69	50.88	-0.48	0.000%
21	-35.69	-38.16	0.48	35.69	38.16	-0.48	0.000%

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
22	-30.44	-50.88	-17.06	30.44	50.88	17.06	0.000%
23	-30.44	-38.16	-17.06	30.44	38.16	17.06	0.000%
24	-17.14	-50.88	-29.66	17.14	50.88	29.66	0.000%
25	-17.14	-38.16	-29.66	17.14	38.16	29.66	0.000%
26	0.00	-73.09	0.00	-0.00	73.09	0.00	0.000%
27	0.07	-73.09	-7.73	-0.07	73.09	7.73	0.000%
28	3.99	-73.09	-6.74	-3.99	73.09	6.74	0.000%
29	6.83	-73.09	-3.95	-6.83	73.09	3.95	0.000%
30	7.83	-73.09	-0.08	-7.83	73.09	0.08	0.000%
31	6.73	-73.09	3.81	-6.73	73.09	-3.81	0.000%
32	3.84	-73.09	6.65	-3.84	73.09	-6.65	0.000%
33	-0.08	-73.09	7.73	0.08	73.09	-7.73	0.000%
34	-3.98	-73.09	6.75	3.98	73.09	-6.75	0.000%
35	-6.83	-73.09	3.95	6.83	73.09	-3.95	0.000%
36	-7.84	-73.09	0.08	7.84	73.09	-0.08	0.000%
37	-6.74	-73.09	-3.81	6.74	73.09	3.81	0.000%
38	-3.84	-73.09	-6.66	3.84	73.09	6.66	0.000%
39	0.10	-42.40	-8.21	-0.10	42.40	8.21	0.000%
40	4.36	-42.40	-7.31	-4.36	42.40	7.31	0.000%
41	7.48	-42.40	-4.33	-7.48	42.40	4.33	0.000%
42	8.26	-42.40	-0.12	-8.26	42.40	0.12	0.000%
43	7.04	-42.40	3.95	-7.04	42.40	-3.95	0.000%
44	3.96	-42.40	6.87	-3.96	42.40	-6.87	0.000%
45	-0.11	-42.40	8.21	0.11	42.40	-8.21	0.000%
46	-4.35	-42.40	7.31	4.35	42.40	-7.31	0.000%
47	-7.49	-42.40	4.32	7.49	42.40	-4.32	0.000%
48	-8.27	-42.40	0.11	8.27	42.40	-0.11	0.000%
49	-7.05	-42.40	-3.95	7.05	42.40	3.95	0.000%
50	-3.97	-42.40	-6.87	3.97	42.40	6.87	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000739
2	Yes	7	0.00000001	0.00009756
3	Yes	6	0.00000001	0.00044501
4	Yes	7	0.00000001	0.00040655
5	Yes	7	0.00000001	0.00009080
6	Yes	7	0.00000001	0.00034614
7	Yes	7	0.00000001	0.00007328
8	Yes	6	0.00000001	0.00016510
9	Yes	5	0.00000001	0.00088540
10	Yes	7	0.00000001	0.00031396
11	Yes	7	0.00000001	0.00007004
12	Yes	7	0.00000001	0.00037709
13	Yes	7	0.00000001	0.00008701
14	Yes	6	0.00000001	0.00089630
15	Yes	6	0.00000001	0.00030616
16	Yes	7	0.00000001	0.00032490
17	Yes	7	0.00000001	0.00006961
18	Yes	7	0.00000001	0.00039971
19	Yes	7	0.00000001	0.00008735
20	Yes	6	0.00000001	0.00030916
21	Yes	6	0.00000001	0.00010110
22	Yes	7	0.00000001	0.00035823

23	Yes	7	0.00000001	0.00008132
24	Yes	7	0.00000001	0.00030194
25	Yes	7	0.00000001	0.00006698
26	Yes	4	0.00000001	0.00093613
27	Yes	7	0.00000001	0.00033557
28	Yes	7	0.00000001	0.00040407
29	Yes	7	0.00000001	0.00039936
30	Yes	7	0.00000001	0.00033614
31	Yes	7	0.00000001	0.00037869
32	Yes	7	0.00000001	0.00038185
33	Yes	7	0.00000001	0.00033079
34	Yes	7	0.00000001	0.00039089
35	Yes	7	0.00000001	0.00039844
36	Yes	7	0.00000001	0.00033483
37	Yes	7	0.00000001	0.00038590
38	Yes	7	0.00000001	0.00037965
39	Yes	5	0.00000001	0.00096509
40	Yes	6	0.00000001	0.00012192
41	Yes	6	0.00000001	0.00008576
42	Yes	5	0.00000001	0.00024747
43	Yes	5	0.00000001	0.00099881
44	Yes	6	0.00000001	0.00010436
45	Yes	5	0.00000001	0.00089519
46	Yes	6	0.00000001	0.00008458
47	Yes	6	0.00000001	0.00011409
48	Yes	5	0.00000001	0.00025701
49	Yes	6	0.00000001	0.00009113
50	Yes	6	0.00000001	0.00007120

Maximum Tower Deflections - Service Wind

Section No.	*Elevation*	*Horz. Deflection*	*Gov. Load Comb.*	*Tilt*	*Twist*
	ft	*in*		°	°
L1	147 - 142	31.465	41	1.864	0.031
L2	142 - 137	29.516	41	1.857	0.028
L3	137 - 132	27.579	41	1.841	0.025
L4	132 - 127	25.664	41	1.817	0.023
L5	127 - 122	23.778	41	1.783	0.020
L6	122 - 117	21.933	41	1.742	0.018
L7	117 - 112	20.135	41	1.691	0.016
L8	112 - 107	18.395	41	1.632	0.015
L9	107 - 99.5	16.721	41	1.564	0.013
L10	103.25 - 98.25	15.515	41	1.506	0.012
L11	98.25 - 93.25	13.959	41	1.459	0.011
L12	93.25 - 88.25	12.471	41	1.381	0.010
L13	88.25 - 83.25	11.068	41	1.298	0.008
L14	83.25 - 78.25	9.755	41	1.211	0.007
L15	78.25 - 73.25	8.535	41	1.120	0.006
L16	73.25 - 69.58	7.411	41	1.026	0.006
L17	69.58 - 69.33	6.649	41	0.956	0.005
L18	69.33 - 64.33	6.599	41	0.953	0.005
L19	64.33 - 59	5.638	41	0.882	0.004
L20	63.75 - 58	5.531	41	0.874	0.004
L21	58 - 57.83	4.507	41	0.819	0.004
L22	57.83 - 57.58	4.478	41	0.816	0.004
L23	57.58 - 52.58	4.436	41	0.811	0.004
L24	52.58 - 50.58	3.632	41	0.724	0.003
L25	50.58 - 50.33	3.336	41	0.688	0.003
L26	50.33 - 50.17	3.300	41	0.686	0.003

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L27	50.17 - 49.92	3.277	41	0.684	0.003
L28	49.92 - 44.92	3.241	41	0.679	0.003
L29	44.92 - 39.92	2.576	41	0.591	0.003
L30	39.92 - 34.92	2.004	41	0.502	0.002
L31	34.92 - 29.25	1.524	41	0.414	0.002
L32	34.5 - 28.25	1.488	41	0.407	0.002
L33	28.25 - 24.08	0.991	41	0.346	0.001
L34	24.08 - 23.83	0.717	41	0.280	0.001
L35	23.83 - 18.83	0.703	41	0.277	0.001
L36	18.83 - 13.83	0.443	41	0.220	0.001
L37	13.83 - 8.83	0.243	41	0.163	0.001
L38	8.83 - 3.83	0.102	41	0.106	0.000
L39	3.83 - 1.92	0.021	41	0.049	0.000
L40	1.92 - 1.67	0.006	41	0.028	0.000
L41	1.67 - 0	0.004	41	0.025	0.000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
149.00	A-ANT-23G-2-C	41	31.465	1.864	0.032	25039
147.00	2.4" Dia x 8-ft Mount Pipe	41	31.465	1.864	0.032	25039
136.00	MX08FRO665-21 w/ Mount Pipe	41	27.194	1.837	0.025	13199
122.00	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	41	21.933	1.742	0.019	6253
110.00	DMP65R-BU4D w/ Mount Pipe	41	17.716	1.607	0.014	4189
53.00	GPS_A	41	3.696	0.732	0.003	3301
49.00	KS24019-L112A	41	3.112	0.662	0.003	3312

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	147 - 142	136.408	6	8.090	0.133
L2	142 - 137	127.995	6	8.064	0.119
L3	137 - 132	119.629	6	8.000	0.106
L4	132 - 127	111.349	6	7.897	0.096
L5	127 - 122	103.196	6	7.753	0.086
L6	122 - 117	95.210	6	7.574	0.077
L7	117 - 112	87.428	6	7.356	0.069
L8	112 - 107	79.890	6	7.101	0.061
L9	107 - 99.5	72.636	6	6.807	0.054
L10	103.25 - 98.25	67.407	6	6.556	0.049
L11	98.25 - 93.25	60.658	6	6.351	0.045
L12	93.25 - 88.25	54.205	6	6.012	0.040
L13	88.25 - 83.25	48.115	6	5.650	0.035
L14	83.25 - 78.25	42.413	18	5.270	0.031
L15	78.25 - 73.25	37.113	18	4.875	0.027
L16	73.25 - 69.58	32.230	18	4.468	0.024
L17	69.58 - 69.33	28.918	18	4.164	0.021

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L18	69.33 - 64.33	28.700	18	4.148	0.021
L19	64.33 - 59	24.524	18	3.839	0.019
L20	63.75 - 58	24.060	18	3.803	0.018
L21	58 - 57.83	19.607	18	3.565	0.017
L22	57.83 - 57.58	19.480	18	3.552	0.017
L23	57.58 - 52.58	19.295	18	3.533	0.017
L24	52.58 - 50.58	15.799	18	3.150	0.014
L25	50.58 - 50.33	14.513	18	2.997	0.013
L26	50.33 - 50.17	14.356	18	2.984	0.013
L27	50.17 - 49.92	14.256	18	2.976	0.013
L28	49.92 - 44.92	14.101	18	2.957	0.013
L29	44.92 - 39.92	11.208	18	2.572	0.011
L30	39.92 - 34.92	8.718	18	2.187	0.009
L31	34.92 - 29.25	6.630	18	1.801	0.007
L32	34.5 - 28.25	6.473	18	1.769	0.007
L33	28.25 - 24.08	4.310	18	1.507	0.006
L34	24.08 - 23.83	3.121	18	1.217	0.004
L35	23.83 - 18.83	3.057	18	1.205	0.004
L36	18.83 - 13.83	1.927	18	0.955	0.003
L37	13.83 - 8.83	1.057	18	0.707	0.002
L38	8.83 - 3.83	0.445	18	0.461	0.002
L39	3.83 - 1.92	0.092	18	0.213	0.001
L40	1.92 - 1.67	0.025	18	0.120	0.000
L41	1.67 - 0	0.019	18	0.110	0.000

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
149.00	A-ANT-23G-2-C	6	136.408	8.090	0.138	6605
147.00	2.4" Dia x 8-ft Mount Pipe	6	136.408	8.090	0.138	6605
136.00	MX08FRO665-21 w/ Mount Pipe	6	117.965	7.982	0.109	3293
122.00	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	6	95.210	7.574	0.081	1510
110.00	DMP65R-BU4D w/ Mount Pipe	6	76.951	6.992	0.061	999
53.00	GPS_A	18	16.077	3.185	0.015	763
49.00	KS24019-L112A	18	13.539	2.881	0.013	765

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	147 - 142 (1)	TP22.875x22x0.25	5.00	0.00	0.0	18.213	-4.48	983.51	0.005
L2	142 - 137 (2)	TP23.75x22.875x0.25	5.00	0.00	0.0	18.918	-4.84	1021.55	0.005
L3	137 - 132 (3)	TP24.625x23.75x0.25	5.00	0.00	0.0	19.622	-7.44	1059.59	0.007
L4	132 - 127 (4)	TP25.5x24.625x0.25	5.00	0.00	0.0	20.326	-7.87	1097.63	0.007

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L5	127 - 122 (5)	TP26.375x25.5x0.25	5.00	0.00	0.0	21.031	-8.31	1135.67	0.007
L6	122 - 117 (6)	TP27.25x26.375x0.25	5.00	0.00	0.0	21.735	-12.49	1173.70	0.011
L7	117 - 112 (7)	TP28.125x27.25x0.25	5.00	0.00	0.0	22.440	-13.10	1211.74	0.011
L8	112 - 107 (8)	TP29x28.125x0.25	5.00	0.00	0.0	23.144	-18.41	1249.78	0.015
L9	107 - 99.5 (9)	TP30.313x29x0.25	7.50	0.00	0.0	23.672	-18.98	1278.31	0.015
L10	99.5 - 98.25 (10)	TP30.032x29.157x0.313	5.00	0.00	0.0	29.905	-20.19	1749.44	0.012
L11	98.25 - 93.25 (11)	TP30.907x30.032x0.313	5.00	0.00	0.0	30.785	-21.12	1800.94	0.012
L12	93.25 - 88.25 (12)	TP31.782x30.907x0.313	5.00	0.00	0.0	31.666	-22.09	1852.45	0.012
L13	88.25 - 83.25 (13)	TP32.657x31.782x0.313	5.00	0.00	0.0	32.546	-23.09	1903.95	0.012
L14	83.25 - 78.25 (14)	TP33.531x32.657x0.313	5.00	0.00	0.0	33.427	-24.13	1955.45	0.012
L15	78.25 - 73.25 (15)	TP34.406x33.531x0.313	5.00	0.00	0.0	34.307	-25.19	2006.96	0.013
L16	73.25 - 69.58 (16)	TP35.049x34.406x0.313	3.67	0.00	0.0	34.953	-25.99	2044.76	0.013
L17	69.58 - 69.33 (17)	TP35.092x35.049x0.438	0.25	0.00	0.0	48.820	-26.08	2855.97	0.009
L18	69.33 - 64.33 (18)	TP35.967x35.092x0.431	5.00	0.00	0.0	49.346	-27.38	2886.76	0.009
L19	64.33 - 59 (19)	TP36.9x35.967x0.431	5.33	0.00	0.0	49.487	-27.54	2895.00	0.010
L20	59 - 58 (20)	TP36.45x35.444x0.375	5.75	0.00	0.0	43.561	-29.82	2548.29	0.012
L21	58 - 57.83 (21)	TP36.48x36.45x0.375	0.17	0.00	0.0	43.597	-29.88	2550.39	0.012
L22	57.83 - 57.58 (22)	TP36.523x36.48x0.375	0.25	0.00	0.0	43.649	-29.94	2553.48	0.012
L23	57.58 - 52.58 (23)	TP37.398x36.523x0.375	5.00	0.00	0.0	44.706	-31.32	2615.29	0.012
L24	52.58 - 50.58 (24)	TP37.748x37.398x0.375	2.00	0.00	0.0	45.128	-31.86	2640.01	0.012
L25	50.58 - 50.33 (25)	TP37.792x37.748x0.575	0.25	0.00	0.0	68.908	-31.96	4031.10	0.008
L26	50.33 - 50.17 (26)	TP37.82x37.792x0.575	0.16	0.00	0.0	68.960	-32.02	4034.13	0.008
L27	50.17 - 49.92 (27)	TP37.864x37.82x0.375	0.25	0.00	0.0	45.268	-32.08	2648.17	0.012
L28	49.92 - 44.92 (28)	TP38.739x37.864x0.375	5.00	0.00	0.0	46.324	-33.50	2709.98	0.012
L29	44.92 - 39.92 (29)	TP39.614x38.739x0.375	5.00	0.00	0.0	47.381	-34.88	2771.78	0.013
L30	39.92 - 34.92 (30)	TP40.489x39.614x0.375	5.00	0.00	0.0	48.437	-36.29	2833.59	0.013
L31	34.92 - 29.25 (31)	TP41.481x40.489x0.375	5.67	0.00	0.0	48.526	-36.43	2838.78	0.013
L32	29.25 - 28.25 (32)	TP40.906x39.812x0.438	6.25	0.00	0.0	57.010	-39.35	3335.09	0.012
L33	28.25 - 24.08 (33)	TP41.636x40.906x0.438	4.17	0.00	0.0	58.038	-40.70	3395.23	0.012
L34	24.08 - 23.83 (34)	TP41.68x41.636x0.625	0.25	0.00	0.0	82.622	-40.83	4833.41	0.008
L35	23.83 - 18.83 (35)	TP42.555x41.68x0.613	5.00	0.00	0.0	82.720	-42.91	4839.14	0.009
L36	18.83 - 13.83 (36)	TP43.43x42.555x0.613	5.00	0.00	0.0	84.446	-45.04	4940.10	0.009
L37	13.83 - 8.83 (37)	TP44.305x43.43x0.613	5.00	0.00	0.0	86.172	-47.17	5041.06	0.009
L38	8.83 - 3.83 (38)	TP45.18x44.305x0.6	5.00	0.00	0.0	86.128	-49.33	5038.49	0.010
L39	3.83 - 1.92 (39)	TP45.514x45.18x0.6	1.91	0.00	0.0	86.774	-50.14	5076.27	0.010

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
L40	1.92 - 1.67 (40)	TP45.558x45.514x0.763	0.25	0.00	0.0	109.984	-50.30	6434.04	0.008
L41	1.67 - 0 (41)	TP45.85x45.558x0.438	1.67	0.00	0.0	63.975	-50.85	3742.53	0.014

Pole Bending Design Data

Section No.	Elevation	Size	M_{ux}	ϕM_{nx}	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy}	ϕM_{ny}	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
	ft		kip-ft	kip-ft		kip-ft	kip-ft	
L1	147 - 142 (1)	TP22.875x22x0.25	38.46	559.16	0.069	0.00	559.16	0.000
L2	142 - 137 (2)	TP23.75x22.875x0.25	77.32	596.12	0.130	0.00	596.12	0.000
L3	137 - 132 (3)	TP24.625x23.75x0.25	130.15	633.65	0.205	0.00	633.65	0.000
L4	132 - 127 (4)	TP25.5x24.625x0.25	188.85	671.68	0.281	0.00	671.68	0.000
L5	127 - 122 (5)	TP26.375x25.5x0.25	250.71	710.15	0.353	0.00	710.15	0.000
L6	122 - 117 (6)	TP27.25x26.375x0.25	337.97	749.00	0.451	0.00	749.00	0.000
L7	117 - 112 (7)	TP28.125x27.25x0.25	426.04	788.17	0.541	0.00	788.17	0.000
L8	112 - 107 (8)	TP29x28.125x0.25	545.70	827.59	0.659	0.00	827.59	0.000
L9	107 - 99.5 (9)	TP30.313x29x0.25	642.00	857.29	0.749	0.00	857.29	0.000
L10	99.5 - 98.25 (10)	TP30.032x29.157x0.313	773.28	1269.20	0.609	0.00	1269.20	0.000
L11	98.25 - 93.25 (11)	TP30.907x30.032x0.313	907.70	1331.33	0.682	0.00	1331.33	0.000
L12	93.25 - 88.25 (12)	TP31.782x30.907x0.313	1045.05	1394.04	0.750	0.00	1394.04	0.000
L13	88.25 - 83.25 (13)	TP32.657x31.782x0.313	1185.26	1457.26	0.813	0.00	1457.26	0.000
L14	83.25 - 78.25 (14)	TP33.531x32.657x0.313	1328.26	1520.92	0.873	0.00	1520.92	0.000
L15	78.25 - 73.25 (15)	TP34.406x33.531x0.313	1473.98	1584.94	0.930	0.00	1584.94	0.000
L16	73.25 - 69.58 (16)	TP35.049x34.406x0.313	1582.66	1632.13	0.970	0.00	1632.13	0.000
L17	69.58 - 69.33 (17)	TP35.092x35.049x0.438	1590.12	2528.80	0.629	0.00	2528.80	0.000
L18	69.33 - 64.33 (18)	TP35.967x35.092x0.431	1740.84	2619.07	0.665	0.00	2619.07	0.000
L19	64.33 - 59 (19)	TP36.9x35.967x0.431	1758.53	2631.92	0.668	0.00	2631.92	0.000
L20	59 - 58 (20)	TP36.45x35.444x0.375	1936.36	2235.18	0.866	0.00	2235.18	0.000
L21	58 - 57.83 (21)	TP36.48x36.45x0.375	1941.69	2238.22	0.868	0.00	2238.22	0.000
L22	57.83 - 57.58 (22)	TP36.523x36.48x0.375	1949.53	2242.68	0.869	0.00	2242.68	0.000
L23	57.58 - 52.58 (23)	TP37.398x36.523x0.375	2108.23	2332.48	0.904	0.00	2332.48	0.000
L24	52.58 - 50.58 (24)	TP37.748x37.398x0.375	2172.69	2368.60	0.917	0.00	2368.60	0.000
L25	50.58 - 50.33 (25)	TP37.792x37.748x0.575	2180.78	3822.55	0.571	0.00	3822.55	0.000
L26	50.33 - 50.17 (26)	TP37.82x37.792x0.575	2185.97	3828.35	0.571	0.00	3828.35	0.000
L27	50.17 - 49.92 (27)	TP37.864x37.82x0.375	2194.07	2380.53	0.922	0.00	2380.53	0.000
L28	49.92 - 44.92 (28)	TP38.739x37.864x0.375	2357.39	2471.33	0.954	0.00	2471.33	0.000
L29	44.92 - 39.92 (29)	TP39.614x38.739x0.375	2523.47	2562.69	0.985	0.00	2562.69	0.000
L30	39.92 - 34.92 (30)	TP40.489x39.614x0.375	2691.83	2654.54	1.014	0.00	2654.54	0.000

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L31	34.92 - 29.25 (31)	TP41.481x40.489x0.375	2706.07	2662.28	1.016	0.00	2662.28	0.000
L32	29.25 - 28.25 (32)	TP40.906x39.812x0.438	2920.22	3325.84	0.878	0.00	3325.84	0.000
L33	28.25 - 24.08 (33)	TP41.636x40.906x0.438	3065.20	3426.21	0.895	0.00	3426.21	0.000
L34	24.08 - 23.83 (34)	TP41.68x41.636x0.625	3073.93	5057.07	0.608	0.00	5057.07	0.000
L35	23.83 - 18.83 (35)	TP42.555x41.68x0.613	3250.15	5175.69	0.628	0.00	5175.69	0.000
L36	18.83 - 13.83 (36)	TP43.43x42.555x0.613	3429.00	5395.48	0.636	0.00	5395.48	0.000
L37	13.83 - 8.83 (37)	TP44.305x43.43x0.613	3610.35	5619.86	0.642	0.00	5619.86	0.000
L38	8.83 - 3.83 (38)	TP45.18x44.305x0.6	3794.11	5734.26	0.662	0.00	5734.26	0.000
L39	3.83 - 1.92 (39)	TP45.514x45.18x0.6	3864.93	5821.14	0.664	0.00	5821.14	0.000
L40	1.92 - 1.67 (40)	TP45.558x45.514x0.763	3874.22	7332.13	0.528	0.00	7332.13	0.000
L41	1.67 - 0 (41)	TP45.85x45.558x0.438	3936.44	4017.32	0.980	0.00	4017.32	0.000

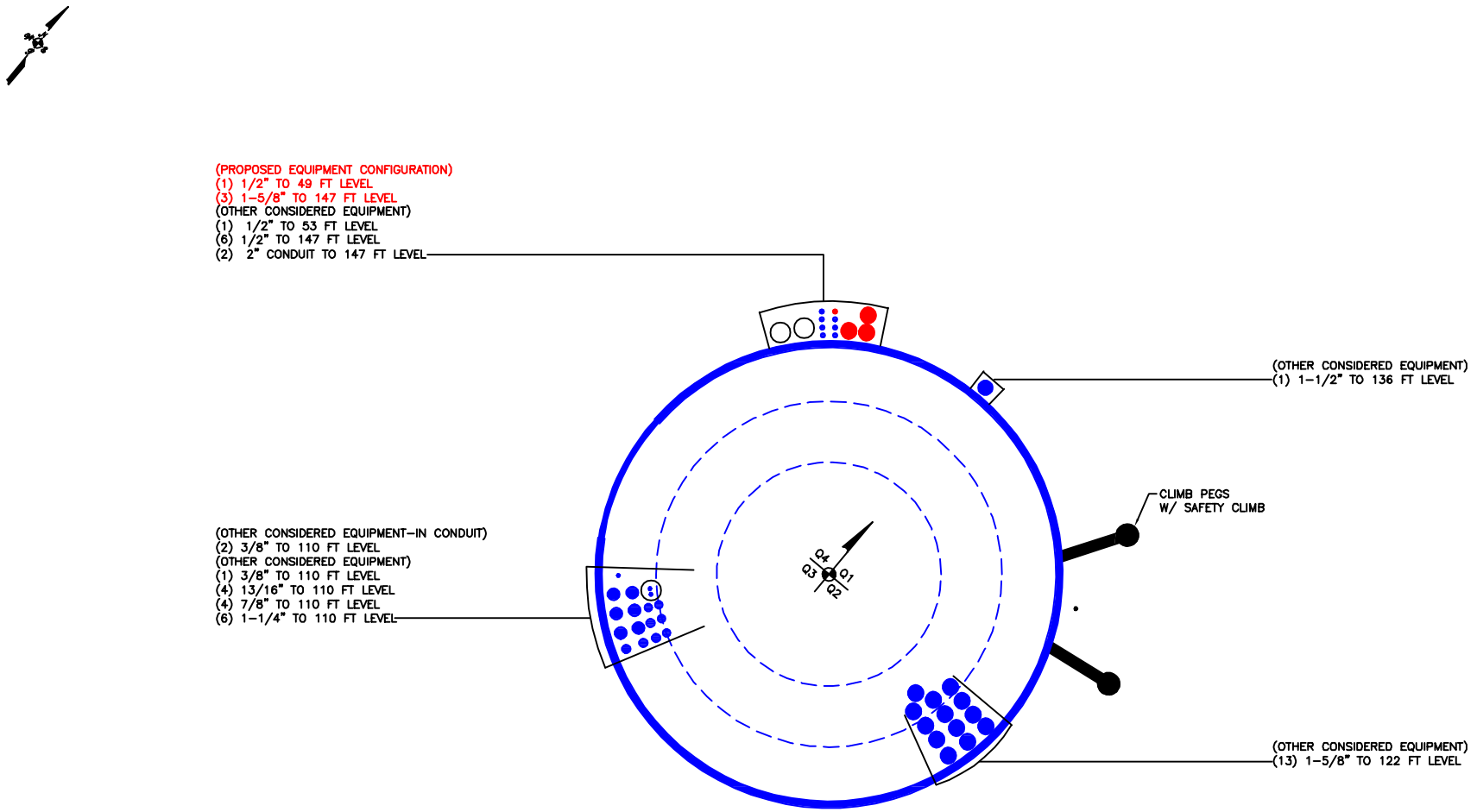
Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	147 - 142 (1)	TP22.875x22x0.25	7.47	295.05	0.025	5.45	587.21	0.009
L2	142 - 137 (2)	TP23.75x22.875x0.25	8.09	306.46	0.026	5.45	633.51	0.009
L3	137 - 132 (3)	TP24.625x23.75x0.25	11.44	317.88	0.036	5.15	681.56	0.008
L4	132 - 127 (4)	TP25.5x24.625x0.25	12.07	329.29	0.037	5.15	731.38	0.007
L5	127 - 122 (5)	TP26.375x25.5x0.25	12.70	340.70	0.037	5.15	782.95	0.007
L6	122 - 117 (6)	TP27.25x26.375x0.25	17.31	352.11	0.049	5.37	836.27	0.006
L7	117 - 112 (7)	TP28.125x27.25x0.25	17.94	363.52	0.049	5.37	891.36	0.006
L8	112 - 107 (8)	TP29x28.125x0.25	25.48	374.93	0.068	5.49	948.20	0.006
L9	107 - 99.5 (9)	TP30.313x29x0.25	25.92	383.49	0.068	5.49	991.98	0.006
L10	99.5 - 98.25 (10)	TP30.032x29.157x0.313	26.61	524.83	0.051	5.48	1372.01	0.004
L11	98.25 - 93.25 (11)	TP30.907x30.032x0.313	27.20	540.28	0.050	5.48	1453.98	0.004
L12	93.25 - 88.25 (12)	TP31.782x30.907x0.313	27.78	555.73	0.050	5.47	1538.33	0.004
L13	88.25 - 83.25 (13)	TP32.657x31.782x0.313	28.35	571.18	0.050	5.47	1625.07	0.003
L14	83.25 - 78.25 (14)	TP33.531x32.657x0.313	28.90	586.64	0.049	5.46	1714.18	0.003
L15	78.25 - 73.25 (15)	TP34.406x33.531x0.313	29.44	602.09	0.049	5.45	1805.66	0.003
L16	73.25 - 69.58 (16)	TP35.049x34.406x0.313	29.84	613.43	0.049	5.45	1874.33	0.003
L17	69.58 - 69.33 (17)	TP35.092x35.049x0.438	29.86	856.79	0.035	5.45	2611.79	0.002
L18	69.33 - 64.33 (18)	TP35.967x35.092x0.431	30.48	866.03	0.035	5.45	2707.07	0.002
L19	64.33 - 59 (19)	TP36.9x35.967x0.431	30.54	868.50	0.035	5.44	2722.56	0.002
L20	59 - 58 (20)	TP36.45x35.444x0.375	31.36	764.49	0.041	5.44	2425.93	0.002
L21	58 - 57.83 (21)	TP36.48x36.45x0.375	31.37	765.12	0.041	5.44	2429.93	0.002
L22	57.83 - 57.58 (22)	TP36.523x36.48x0.375	31.40	766.04	0.041	5.44	2435.82	0.002

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L23	57.58 - 52.58 (23)	TP37.398x36.523x0.375	32.12	784.59	0.041	5.63	2555.16	0.002
L24	52.58 - 50.58 (24)	TP37.748x37.398x0.375	32.38	792.00	0.041	5.63	2603.69	0.002
L25	50.58 - 50.33 (25)	TP37.792x37.748x0.575	32.40	1209.33	0.027	5.63	3959.02	0.001
L26	50.33 - 50.17 (26)	TP37.82x37.792x0.575	32.42	1210.24	0.027	5.63	3964.97	0.001
L27	50.17 - 49.92 (27)	TP37.864x37.82x0.375	32.45	794.45	0.041	5.63	2619.81	0.002
L28	49.92 - 44.92 (28)	TP38.739x37.864x0.375	33.01	812.99	0.041	5.63	2743.53	0.002
L29	44.92 - 39.92 (29)	TP39.614x38.739x0.375	33.47	831.53	0.040	5.77	2870.10	0.002
L30	39.92 - 34.92 (30)	TP40.489x39.614x0.375	33.90	850.08	0.040	5.77	2999.52	0.002
L31	34.92 - 29.25 (31)	TP41.481x40.489x0.375	33.92	851.63	0.040	5.77	3010.53	0.002
L32	29.25 - 28.25 (32)	TP40.906x39.812x0.438	34.61	1000.53	0.035	5.77	3561.62	0.002
L33	28.25 - 24.08 (33)	TP41.636x40.906x0.438	34.96	1018.57	0.034	5.77	3691.22	0.002
L34	24.08 - 23.83 (34)	TP41.68x41.636x0.625	34.97	1450.02	0.024	5.77	5236.45	0.001
L35	23.83 - 18.83 (35)	TP42.555x41.68x0.613	35.53	1451.74	0.024	5.76	5355.99	0.001
L36	18.83 - 13.83 (36)	TP43.43x42.555x0.613	36.04	1482.03	0.024	5.76	5581.81	0.001
L37	13.83 - 8.83 (37)	TP44.305x43.43x0.613	36.52	1512.32	0.024	5.76	5812.28	0.001
L38	8.83 - 3.83 (38)	TP45.18x44.305x0.6	37.00	1511.55	0.024	5.76	5927.32	0.001
L39	3.83 - 1.92 (39)	TP45.514x45.18x0.6	37.19	1522.88	0.024	5.76	6016.55	0.001
L40	1.92 - 1.67 (40)	TP45.558x45.514x0.763	37.18	1930.21	0.019	5.76	7605.65	0.001
L41	1.67 - 0 (41)	TP45.85x45.558x0.438	37.36	1122.76	0.033	5.76	4484.99	0.001

APPENDIX B

BASE LEVEL DRAWING


(PROPOSED EQUIPMENT CONFIGURATION)
(1) 1/2" TO 49 FT LEVEL
(3) 1-5/8" TO 147 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 1/2" TO 53 FT LEVEL
(6) 1/2" TO 147 FT LEVEL
(2) 2" CONDUIT TO 147 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 1-1/2" TO 136 FT LEVEL
CLIMB PEGS
W/ SAFETY CLIMB
(OTHER CONSIDERED EQUIPMENT-IN CONDUIT)
(2) 3/8" TO 110 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 3/8" TO 110 FT LEVEL
(4) 13/16" TO 110 FT LEVEL
(4) 7/8" TO 110 FT LEVEL
(6) 1-1/4" TO 110 FT LEVEL
Q4
Q3
Q1
Q2
(OTHER CONSIDERED EQUIPMENT)
(13) 1-5/8" TO 122 FT LEVEL

APPENDIX C

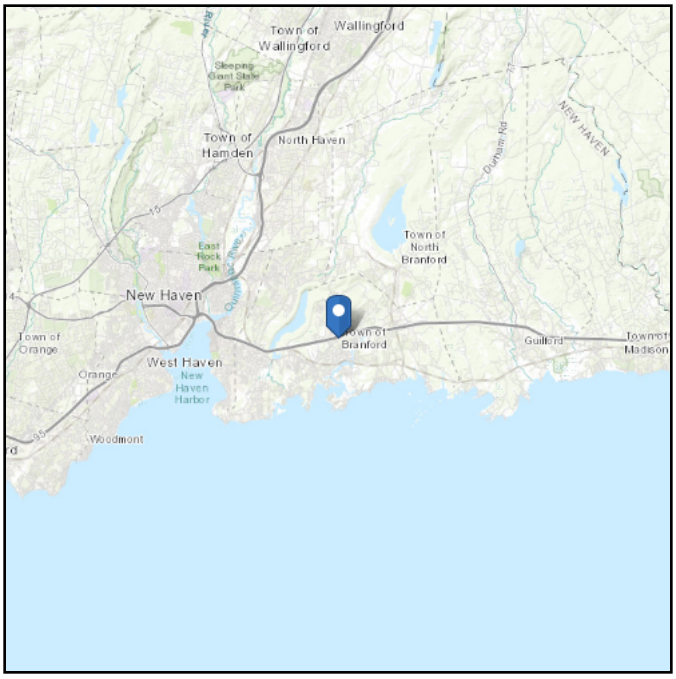
ADDITIONAL CALCULATIONS

ASCE 7 Hazards Report

Address:
No Address at This Location

Standard: ASCE/SEI 7-16
Risk Category: II
Soil Class: D - Default (see Section 11.4.3)

Elevation: 57.7 ft (NAVD 88)
Latitude: 41.288611
Longitude: -72.813861



Wind

Results:

Wind Speed	121 Vmph
10-year MRI	75 Vmph
25-year MRI	85 Vmph
50-year MRI	92 Vmph
100-year MRI	99 Vmph

Data Source:	ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2
Date Accessed:	Mon Jun 27 2022

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 7-16 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 7-16 Section 26.2. Glazed openings need not be protected against wind-borne debris.

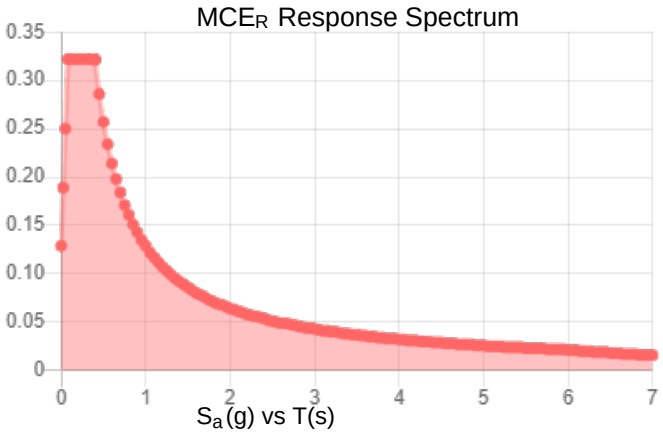
Seismic

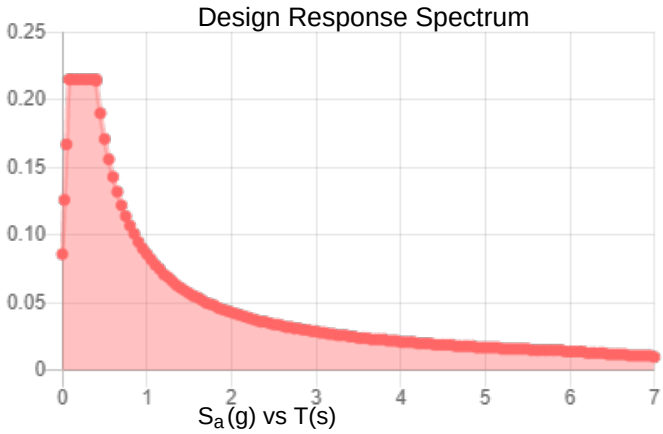
Site Soil Class: D - Default (see Section 11.4.3)

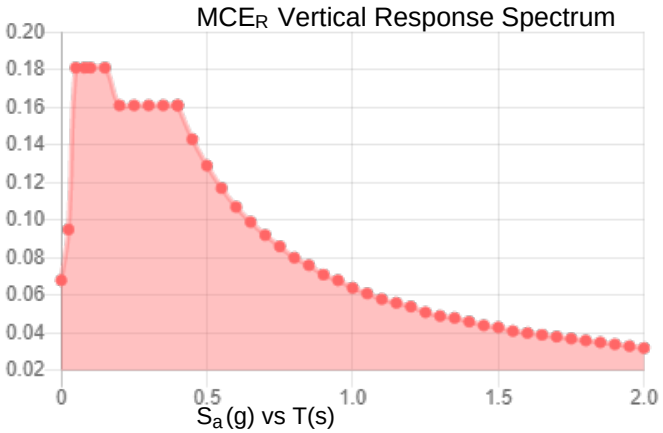
Results:

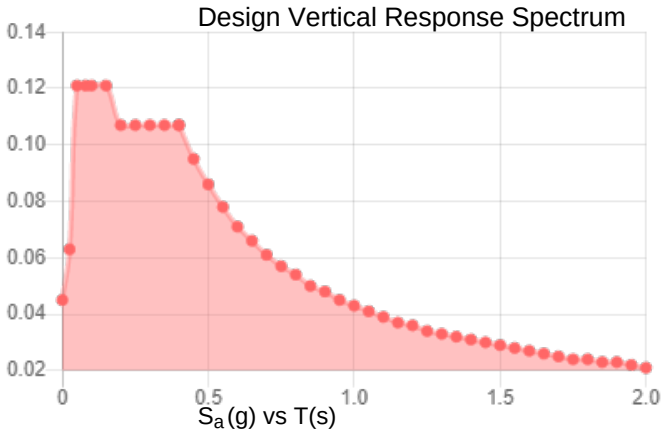
S_S :	0.201	S_{D1} :	0.086
S_1 :	0.054	T_L :	6
F_a :	1.6	PGA :	0.113
F_v :	2.4	PGA_M :	0.177
S_{MS} :	0.322	F_{PGA} :	1.575
S_{M1} :	0.129	I_e :	1
S_{DS} :	0.215	C_v :	0.703

Seismic Design Category B









Data Accessed: **Mon Jun 27 2022**

Date Source:

USGS Seismic Design Maps based on ASCE/SEI 7-16 and ASCE/SEI 7-16 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-16 Ch. 21 are available from USGS.

Ice

Results:

Ice Thickness:	1.00 in.
Concurrent Temperature:	15 F
Gust Speed	50 mph
Data Source:	Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8
Date Accessed:	Mon Jun 27 2022

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 500-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.

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CCIpole

per TIA-222- H

Site BU: 876321

Work Order: 2130518

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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	147	47.5	3.75	12	22	30.313	0.25	Auto	A607-60
2	103.25	44.25	4.75	12	29.16	36.9	0.3125	Auto	A607-65
3	63.75	34.5	5.25	12	35.44	41.481	0.375	Auto	A607-65
4	34.5	34.5	0	12	39.81	45.85	0.4375	Auto	A607-65

Reinforcement Configuration

	Bottom Effective Elevation (ft)	Top Effective Elevation (ft)	Type	Model	Number	1	2	3	4	5	6	7	8	9	10	11	12
1	1.92	24.08	channel	MP3-04 (1.1875in)-W	3		x				x				x		
2	33.42	50.58	channel	MP3-04 (1.1875in)	3			x				x				x	
3	62.42	69.58	channel	MP3-04 (1.1875in)	3			x				x				x	
4	1.92	34.08	channel	MP3-04 (1.1875in)	3					x			x				x
5	50.17	57.83	channel	MP3-03 (1.1875in)	3				x				x				x
6	0	1.92	plate	(TS) 1.25"x4"	6	c	c			c	c			c	c		
7	0	1.92	plate	(TS) 1.25"x6"	3				c					x		c	
8																	
9																	
10																	

Reinforcement Details

	B (in)	H (in)	Gross Area (in^2)	Pole Face to Centroid (in)	Bottom Termination Type	Bottom Termination Length (in)	Top Termination Type	Top Termination Length (in)	Lu (in)	Net Area (in2)	Bolt Hole Size (in)	Reinforcement Material
1	4.78	1.61	4.13	0.61	Welded	n/a	PC 8.8 - M20 (100)	17.000	18.000	3.593	1.1875	A572-65
2	4.78	1.61	4.13	0.61	PC 8.8 - M20 (100)	17	PC 8.8 - M20 (100)	17.000	18.000	3.593	1.1875	A572-65
3	4.78	1.61	4.13	0.61	PC 8.8 - M20 (100)	17	PC 8.8 - M20 (100)	17.000	18.000	3.593	1.1875	A572-65
4	4.78	1.61	4.13	0.61	PC 8.8 - M20 (100)	17	PC 8.8 - M20 (100)	17.000	18.000	3.593	1.1875	A572-65
5	4.06	1.57	2.92	0.59	PC 8.8 - M20 (100)	14	PC 8.8 - M20 (100)	14.000	18.000	2.545	1.1875	A572-65
6	1.25	3.25	4.0625	2.375	Capacity Input	n/a	None	n/a	0.750	4.063	0.0000	A572-65
7	1.25	5.25	6.5625	3.375	Capacity Input	n/a	None	n/a	0.750	6.563	0.0000	A572-65

Connection Details for Custom Reinforcements

Reinforcement	End	# Bolts	N or X	Bolt Spacing (in)	Edge Dist (in)	Weld Grade (ksi)	Transverse (Horiz.) Weld Type	Horiz. Weld Length (in)	Horiz. Groove Depth (in)	Horiz. Groove Angle (deg)	Horiz. Fillet Size (in)	Vertical Weld Length (in)	Vertical Fillet Size (in)	Rev H Connection Capacity (kip)
(TS) 1.25"x4"	Top	0	0	0	0	-	-	-	-	-	-	-	-	-
	Bottom	-	-	-	-	0	0	0	-	-	0	-	-	136.5
(TS) 1.25"x6"	Top	0	0	0	0	-	-	-	-	-	-	-	-	-
	Bottom	-	-	-	-	0	0	0	-	-	0	-	-	322.72
MP3-04 (1.1875in)-W	Top	6	N	3	2	-	-	-	-	-	-	-	-	-
	Bottom	-	-	-	-	70	None	-	-	-	-	20	0.375	-

TNX Geometry Input

Increment (ft): 5 Export to TNX

	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	147 - 142	5		12	22.000	22.875	0.25	A607-60	1.000
2	142 - 137	5		12	22.875	23.750	0.25	A607-60	1.000
3	137 - 132	5		12	23.750	24.625	0.25	A607-60	1.000
4	132 - 127	5		12	24.625	25.500	0.25	A607-60	1.000
5	127 - 122	5		12	25.500	26.375	0.25	A607-60	1.000
6	122 - 117	5		12	26.375	27.250	0.25	A607-60	1.000
7	117 - 112	5		12	27.250	28.125	0.25	A607-60	1.000
8	112 - 107	5		12	28.125	29.000	0.25	A607-60	1.000
9	107 - 103.25	7.5	3.75	12	29.000	30.313	0.25	A607-60	1.000
10	103.25 - 98.25	5		12	29.157	30.032	0.3125	A607-65	1.000
11	98.25 - 93.25	5		12	30.032	30.907	0.3125	A607-65	1.000
12	93.25 - 88.25	5		12	30.907	31.782	0.3125	A607-65	1.000
13	88.25 - 83.25	5		12	31.782	32.657	0.3125	A607-65	1.000
14	83.25 - 78.25	5		12	32.657	33.531	0.3125	A607-65	1.000
15	78.25 - 73.25	5		12	33.531	34.406	0.3125	A607-65	1.000
16	73.25 - 69.58	3.67		12	34.406	35.049	0.3125	A607-65	1.000
17	69.58 - 69.33	0.25		12	35.049	35.092	0.4375	A607-65	0.971
18	69.33 - 64.33	5		12	35.092	35.967	0.43125	A607-65	0.979
19	64.33 - 63.75	5.33	4.75	12	35.967	36.900	0.43125	A607-65	0.978
20	63.75 - 58	5.75		12	35.444	36.450	0.375	A607-65	1.000
21	58 - 57.83	0.17		12	36.450	36.480	0.375	A607-65	1.000
22	57.83 - 57.58	0.25		12	36.480	36.523	0.375	A607-65	1.000
23	57.58 - 52.58	5		12	36.523	37.398	0.375	A607-65	1.000
24	52.58 - 50.58	2		12	37.398	37.748	0.375	A607-65	1.000
25	50.58 - 50.33	0.25		12	37.748	37.792	0.575	A607-65	0.963
26	50.33 - 50.17	0.16		12	37.792	37.820	0.575	A607-65	0.963
27	50.17 - 49.92	0.25		12	37.820	37.864	0.375	A607-65	1.000
28	49.92 - 44.92	5		12	37.864	38.739	0.375	A607-65	1.000
29	44.92 - 39.92	5		12	38.739	39.614	0.375	A607-65	1.000
30	39.92 - 34.92	5		12	39.614	40.489	0.375	A607-65	1.000
31	34.92 - 34.5	5.67	5.25	12	40.489	41.481	0.375	A607-65	1.000
32	34.5 - 28.25	6.25		12	39.812	40.906	0.4375	A607-65	1.000
33	28.25 - 24.08	4.17		12	40.906	41.636	0.4375	A607-65	1.000
34	24.08 - 23.83	0.25		12	41.636	41.680	0.625	A607-65	1.004
35	23.83 - 18.83	5		12	41.680	42.555	0.6125	A607-65	1.017
36	18.83 - 13.83	5		12	42.555	43.430	0.6125	A607-65	1.011
37	13.83 - 8.83	5		12	43.430	44.305	0.6125	A607-65	1.005
38	8.83 - 3.83	5		12	44.305	45.180	0.6	A607-65	1.020
39	3.83 - 1.92	1.91		12	45.180	45.514	0.6	A607-65	1.018
40	1.92 - 1.67	0.25		12	45.514	45.558	0.7625	A607-65	0.979
41	1.67 - 0	1.67		12	45.558	45.850	0.4375	A607-65	1.000

TNX Section Forces

Increment (ft): 5

	Section Height (ft)	TNX Output P_u (K)	M_{ux} (kip-ft)	V_u (K)
1	147 - 142	4.48	38.46	7.47
2	142 - 137	4.84	77.32	8.09
3	137 - 132	7.44	130.15	11.44
4	132 - 127	7.87	188.85	12.07
5	127 - 122	8.31	250.71	12.70
6	122 - 117	12.49	337.97	17.31
7	117 - 112	13.10	426.04	17.94
8	112 - 107	18.41	545.70	25.48
9	107 - 103.25	18.98	642.00	25.92
10	103.25 - 98.25	20.19	773.28	26.61
11	98.25 - 93.25	21.12	907.70	27.20
12	93.25 - 88.25	22.09	1045.05	27.78
13	88.25 - 83.25	23.09	1185.26	28.35
14	83.25 - 78.25	24.13	1328.26	28.90
15	78.25 - 73.25	25.19	1473.98	29.44
16	73.25 - 69.58	25.99	1582.66	29.84
17	69.58 - 69.33	26.08	1590.11	29.86
18	69.33 - 64.33	27.38	1740.84	30.48
19	64.33 - 63.75	27.54	1758.52	30.54
20	63.75 - 58	29.82	1936.36	31.36
21	58 - 57.83	29.88	1941.69	31.37
22	57.83 - 57.58	29.94	1949.53	31.40
23	57.58 - 52.58	31.32	2108.24	32.12
24	52.58 - 50.58	31.86	2172.69	32.38
25	50.58 - 50.33	31.96	2180.78	32.40
26	50.33 - 50.17	32.02	2185.96	32.42
27	50.17 - 49.92	32.08	2194.07	32.45
28	49.92 - 44.92	33.50	2357.39	33.01
29	44.92 - 39.92	34.88	2523.48	33.47
30	39.92 - 34.92	36.29	2691.83	33.90
31	34.92 - 34.5	36.43	2706.07	33.92
32	34.5 - 28.25	39.35	2920.23	34.61
33	28.25 - 24.08	40.70	3065.20	34.96
34	24.08 - 23.83	40.83	3073.94	34.97
35	23.83 - 18.83	42.91	3250.15	35.53
36	18.83 - 13.83	45.04	3429.00	36.04
37	13.83 - 8.83	47.17	3610.35	36.52
38	8.83 - 3.83	49.33	3794.11	37.00
39	3.83 - 1.92	50.14	3864.93	37.19
40	1.92 - 1.67	50.30	3874.22	37.18
41	1.67 - 0	50.85	3936.44	37.36

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
147 - 142	Pole	TP22.875x22x0.25	Pole	7.0%	Pass
142 - 137	Pole	TP23.75x22.875x0.25	Pole	12.8%	Pass
137 - 132	Pole	TP24.625x23.75x0.25	Pole	20.3%	Pass
132 - 127	Pole	TP25.5x24.625x0.25	Pole	27.5%	Pass
127 - 122	Pole	TP26.375x25.5x0.25	Pole	34.4%	Pass
122 - 117	Pole	TP27.25x26.375x0.25	Pole	44.1%	Pass
117 - 112	Pole	TP28.125x27.25x0.25	Pole	52.6%	Pass
112 - 107	Pole	TP29x28.125x0.25	Pole	64.5%	Pass
107 - 103.25	Pole	TP30.313x29x0.25	Pole	73.0%	Pass
103.25 - 98.25	Pole	TP30.032x29.157x0.3125	Pole	59.2%	Pass
98.25 - 93.25	Pole	TP30.907x30.032x0.3125	Pole	66.1%	Pass
93.25 - 88.25	Pole	TP31.782x30.907x0.3125	Pole	72.6%	Pass
88.25 - 83.25	Pole	TP32.657x31.782x0.3125	Pole	78.6%	Pass
83.25 - 78.25	Pole	TP33.531x32.657x0.3125	Pole	84.4%	Pass
78.25 - 73.25	Pole	TP34.406x33.531x0.3125	Pole	89.8%	Pass
73.25 - 69.58	Pole	TP35.049x34.406x0.3125	Pole	93.5%	Pass
69.58 - 69.33	Pole + Reinf.	TP35.092x35.049x0.4375	Reinf. 3 Tension Rupture	89.4%	Pass
69.33 - 64.33	Pole + Reinf.	TP35.967x35.092x0.4313	Reinf. 3 Tension Rupture	93.6%	Pass
64.33 - 63.75	Pole + Reinf.	TP36.9x35.967x0.4313	Reinf. 3 Tension Rupture	94.1%	Pass
63.75 - 58	Pole	TP36.45x35.444x0.375	Pole	83.6%	Pass
58 - 57.83	Pole	TP36.48x36.45x0.375	Pole	83.7%	Pass
57.83 - 57.58	Pole	TP36.523x36.48x0.375	Pole	83.8%	Pass
57.58 - 52.58	Pole	TP37.398x36.523x0.375	Pole	87.1%	Pass
52.58 - 50.58	Pole	TP37.748x37.398x0.375	Pole	88.4%	Pass
50.58 - 50.33	Pole + Reinf.	TP37.792x37.748x0.575	Reinf. 5 Tension Rupture	81.5%	Pass
50.33 - 50.17	Pole + Reinf.	TP37.82x37.792x0.575	Reinf. 5 Tension Rupture	81.6%	Pass
50.17 - 49.92	Pole	TP37.864x37.82x0.375	Pole	88.8%	Pass
49.92 - 44.92	Pole	TP38.739x37.864x0.375	Pole	91.9%	Pass
44.92 - 39.92	Pole	TP39.614x38.739x0.375	Pole	94.9%	Pass
39.92 - 34.92	Pole	TP40.489x39.614x0.375	Pole	97.7%	Pass
34.92 - 34.5	Pole	TP41.481x40.489x0.375	Pole	97.9%	Pass
34.5 - 28.25	Pole	TP40.906x39.812x0.4375	Pole	84.6%	Pass
28.25 - 24.08	Pole	TP41.636x40.906x0.4375	Pole	86.2%	Pass
24.08 - 23.83	Pole + Reinf.	TP41.68x41.636x0.625	Reinf. 1 Tension Rupture	87.6%	Pass
23.83 - 18.83	Pole + Reinf.	TP42.555x41.68x0.6125	Reinf. 1 Tension Rupture	89.3%	Pass
18.83 - 13.83	Pole + Reinf.	TP43.43x42.555x0.6125	Reinf. 1 Tension Rupture	90.9%	Pass
13.83 - 8.83	Pole + Reinf.	TP44.305x43.43x0.6125	Reinf. 1 Tension Rupture	92.4%	Pass
8.83 - 3.83	Pole + Reinf.	TP45.18x44.305x0.6	Reinf. 1 Tension Rupture	93.8%	Pass
3.83 - 1.92	Pole + Reinf.	TP45.514x45.18x0.6	Reinf. 1 Tension Rupture	94.3%	Pass
1.92 - 1.67	Pole + Reinf.	TP45.558x45.514x0.7625	Reinf. 6 Compression	71.3%	Pass
1.67 - 0	Pole	TP45.85x45.558x0.4375	Pole	94.5%	Pass
				Summary	
			Pole	97.9%	Pass
			Reinforcement	94.3%	Pass
			Overall	97.9%	Pass

Additional Calculations

Section Elevation (ft)	Moment of Inertia (in^4)			Area (in^2)			% Capacity* (100% Max. Allowable)							
	Pole	Reinf.	Total	Pole	Reinf.	Total	Pole	R1	R2	R3	R4	R5	R6	R7
147 - 142	1192	n/a	1192	18.19	n/a	18.19	7.0%							
142 - 137	1335	n/a	1335	18.89	n/a	18.89	12.8%							
137 - 132	1490	n/a	1490	19.59	n/a	19.59	20.3%							
132 - 127	1656	n/a	1656	20.30	n/a	20.30	27.5%							
127 - 122	1835	n/a	1835	21.00	n/a	21.00	34.4%							
122 - 117	2025	n/a	2025	21.70	n/a	21.70	44.1%							
117 - 112	2229	n/a	2229	22.41	n/a	22.41	52.6%							
112 - 107	2445	n/a	2445	23.11	n/a	23.11	64.5%							
107 - 103.25	2616	n/a	2616	23.64	n/a	23.64	73.0%							
103.25 - 98.25	3376	n/a	3376	29.86	n/a	29.86	59.2%							
98.25 - 93.25	3683	n/a	3683	30.74	n/a	30.74	66.1%							
93.25 - 88.25	4008	n/a	4008	31.62	n/a	31.62	72.6%							
88.25 - 83.25	4352	n/a	4352	32.50	n/a	32.50	78.6%							
83.25 - 78.25	4714	n/a	4714	33.38	n/a	33.38	84.4%							
78.25 - 73.25	5097	n/a	5097	34.26	n/a	34.26	89.8%							
73.25 - 69.58	5390	n/a	5390	34.90	n/a	34.90	93.5%							
69.58 - 69.33	5411	2049	7460	34.95	12.39	47.34	65.8%			89.4%				
69.33 - 64.33	5829	2148	7978	35.83	12.39	48.22	69.7%			93.6%				
64.33 - 63.75	5879	2160	8040	35.93	12.39	48.32	70.2%			94.1%				
63.75 - 58	7246	n/a	7246	43.50	n/a	43.50	83.6%							
58 - 57.83	7264	n/a	7264	43.53	n/a	43.53	83.7%							
57.83 - 57.58	7290	n/a	7290	43.59	n/a	43.59	83.8%							
57.58 - 52.58	7832	n/a	7832	44.64	n/a	44.64	87.1%							
52.58 - 50.58	8057	n/a	8057	45.06	n/a	45.06	88.4%							
50.58 - 50.33	8085	4030	12115	45.12	21.15	66.27	57.2%		81.0%			81.5%		
50.33 - 50.17	8103	4035	12138	45.15	21.15	66.30	57.2%		81.1%			81.6%		
50.17 - 49.92	8131	n/a	8131	45.20	n/a	45.20	88.8%							
49.92 - 44.92	8714	n/a	8714	46.26	n/a	46.26	91.9%							
44.92 - 39.92	9324	n/a	9324	47.31	n/a	47.31	94.9%							
39.92 - 34.92	9962	n/a	9962	48.37	n/a	48.37	97.7%							
34.92 - 34.5	10017	n/a	10017	48.46	n/a	48.46	97.9%							
34.5 - 28.25	11933	n/a	11933	56.93	n/a	56.93	84.6%							
28.25 - 24.08	12591	n/a	12591	57.96	n/a	57.96	86.2%							
24.08 - 23.83	12647	5066	17713	58.02	24.78	82.80	62.1%	87.6%			83.5%			
23.83 - 18.83	13468	5275	18743	59.25	24.78	84.03	63.8%	89.3%			85.1%			
18.83 - 13.83	14325	5488	19812	60.48	24.78	85.26	65.5%	90.9%			86.7%			
13.83 - 8.83	15217	5705	20922	61.71	24.78	86.49	67.1%	92.4%			88.2%			
8.83 - 3.83	16145	5926	22071	62.94	24.78	87.72	68.6%	93.8%			89.6%			
3.83 - 1.92	16509	6012	22521	63.41	24.78	88.19	69.2%	94.3%			90.1%			
1.92 - 1.67	16545	11658	28203	63.47	44.06	107.53	55.8%						71.3%	62.5%
1.67 - 0	16863	n/a	16863	63.88	n/a	63.88	94.5%							

Note: Section capacity checked using 5 degree increments.

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

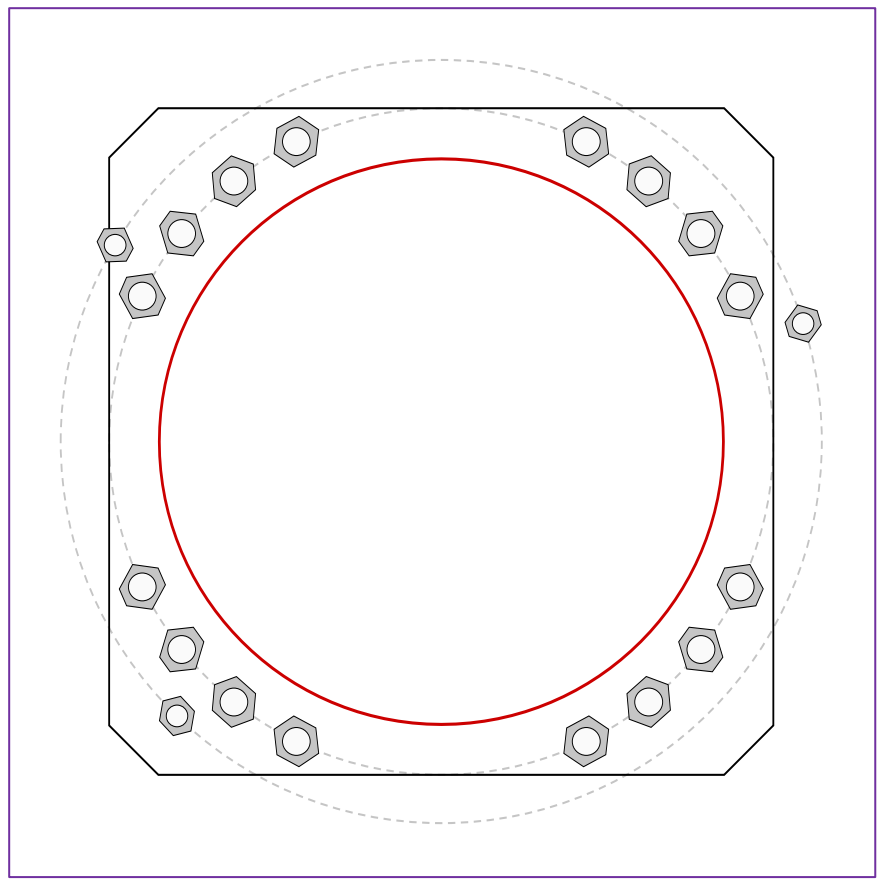
Monopole Base Plate Connection

Site Info	
BU #	876321
Site Name	Branford Banm Tower
Order #	621880 Rev. 0

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	See Custom Sheet
l_{ar} (in)	See Custom Sheet

Applied Loads	
Moment (kip-ft)	3952.70
Axial Force (kips)	48.01
Shear Force (kips)	37.21

**TIA-222-H Section 15.5 Applied*



Connection Properties

Anchor Rod Data

GROUP 1: (16) 2-1/4" ø bolts (A615-75 N; Fy=75 ksi, Fu=100 ksi) on 54" BC
Anchor Spacing: 6 in
GROUP 2: (3) 1-3/4" ø bolts (A193 Gr. B7 N; Fy=105 ksi, Fu=125 ksi) on 61.85" BC
pos. (deg): 18, 149, 226

Base Plate Data

54" W x 3.5" Plate (A572-50; Fy=50 ksi, Fu=65 ksi); Clip: 4 in

Stiffener Data

N/A

Pole Data

45.85" x 0.4375" 12-sided pole (A607-65; Fy=65 ksi, Fu=80 ksi)

Analysis Results

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

GROUP 1:		
Pu_t = 202.98	ϕPn_t = 243.75	**Stress Rating**
Vu = 2.33	ϕVn = 149.1	**79.3%**
Mu = n/a	ϕMn = n/a	**Pass**
GROUP 2:		
Pu_t = 127.3	ϕPn_t = 178.13	**Stress Rating**
Vu = 0	ϕVn = 112.75	**68.1%**
Mu = n/a	ϕMn = n/a	**Pass**

Base Plate Summary

Max Stress (ksi):	27.7	(Flexural)
Allowable Stress (ksi):	45	
Stress Rating:	**58.6%**	**Pass**

CCIplate

Elevation (ft)	0	*(Base)*

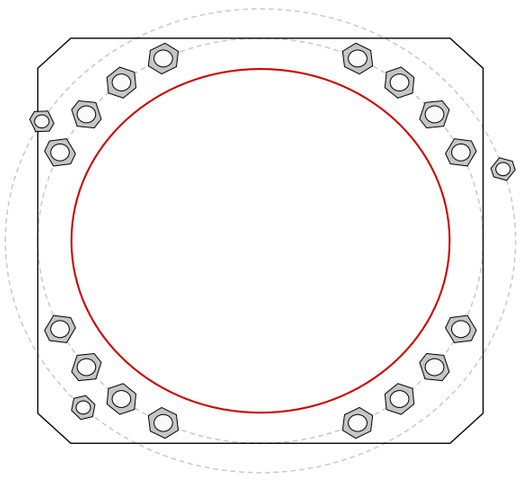
note: Bending interaction not considered when Grout Considered = "Yes"

Bolt Group	Resist Axial	Resist Shear	Induce Plate Bending	Grout Considered	Apply at BARB Elevation	BARB CL Elevation (ft)
1	Yes	Yes	Yes	Yes	No	
2	No	No	No	Yes	No	

Custom Bolt Connection

Bolt	Bolt Group ID	Location (deg.)	Diameter (in)	Material	Bolt Circle (in)	Eta Factor, η:	l_{ar} (in):	Thread Type	Area Override, in^2	Tension Only
1	1	25.861889	2.25	A615-75	54	0.5	1.25	N-Included		No
2	1	38.62063	2.25	A615-75	54	0.5	1.25	N-Included		No
3	1	51.37937	2.25	A615-75	54	0.5	1.25	N-Included		No
4	1	64.138111	2.25	A615-75	54	0.5	1.25	N-Included		No
5	1	115.86189	2.25	A615-75	54	0.5	1.25	N-Included		No
6	1	128.62063	2.25	A615-75	54	0.5	1.25	N-Included		No
7	1	141.37937	2.25	A615-75	54	0.5	1.25	N-Included		No
8	1	154.13811	2.25	A615-75	54	0.5	1.25	N-Included		No
9	1	205.86189	2.25	A615-75	54	0.5	1.25	N-Included		No
10	1	218.62063	2.25	A615-75	54	0.5	1.25	N-Included		No
11	1	231.37937	2.25	A615-75	54	0.5	1.25	N-Included		No
12	1	244.13811	2.25	A615-75	54	0.5	1.25	N-Included		No
13	1	295.86189	2.25	A615-75	54	0.5	1.25	N-Included		No
14	1	308.62063	2.25	A615-75	54	0.5	1.25	N-Included		No
15	1	321.37937	2.25	A615-75	54	0.5	1.25	N-Included		No
16	1	334.13811	2.25	A615-75	54	0.5	1.25	N-Included		No
17	2	18	1.75	A193 Gr. B7	61.85	0.5	1.25	N-Included		No
18	2	149	1.75	A193 Gr. B7	61.85	0.5	1.25	N-Included		No
19	2	226	1.75	A193 Gr. B7	61.85	0.5	1.25	N-Included		No

Plot Graphic



Pier and Pad Foundation

BU # :	876321
Site Name:	Branford Banm Tov
App. Number:	621880 Rev. 0

TIA-222 Revision:	H
Tower Type:	Monopole

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

Superstructure Analysis Reactions

Compression, P_{comp}:	50.88	kips
Base Shear, Vu_comp:	37.31	kips
Moment, M_u:	3936.44	ft-kips
Tower Height, **H**:	147	ft
BP Dist. Above Fdn, bp_{dist}:	2.5	in

Pier Properties

Pier Shape:	Square	
Pier Diameter, **dpier**:	7	ft
Ext. Above Grade, **E**:	0.5	ft
Pier Rebar Size, **Sc**:	11	
Pier Rebar Quantity, **mc**:	16	
Pier Tie/Spiral Size, **St**:	5	
Pier Tie/Spiral Quantity, **mt**:	12	
Pier Reinforcement Type:	Tie	
Pier Clear Cover, cc_{pier}:	3	in

Pad Properties

Depth, **D**:	11	ft
Pad Width, W_1:	20.5	ft
Pad Thickness, **T**:	3	ft
Pad Rebar Size (Bottom dir. 2), Sp_2:	11	
Pad Rebar Quantity (Bottom dir. 2), mp_2:	21	
Pad Clear Cover, cc_{pad}:	3	in

Material Properties

Rebar Grade, **Fy**:	60	ksi
Concrete Compressive Strength, **F'c**:	3	ksi
Dry Concrete Density, δ**c**:	150	pcf

Soil Properties

Total Soil Unit Weight, γ:	125	pcf
Ultimate Net Bearing, Qnet:	8.000	ksf
Cohesion, **Cu**:	0.000	ksf
Friction Angle, φ:	35	degrees
SPT Blow Count, N_{blows}:	60	
Base Friction, μ:		
Neglected Depth, **N**:	3.33	ft
Foundation Bearing on Rock?	Yes	
Groundwater Depth, **gw**:	4.5	ft

<--Toggle between Gross and Net

Foundation Analysis Checks

	Capacity	Demand	Rating*	Check
Lateral (Sliding) (kips)	349.72	37.31	**10.2%**	**Pass**
Bearing Pressure (ksf)	6.73	6.60	**98.2%**	**Pass**
*Overturning (kip*ft)*	4536.12	4373.28	**96.4%**	**Pass**
*Pier Flexure (Comp.) (kip*ft)*	5266.18	4253.58	**76.9%**	**Pass**
Pier Compression (kip)	23390.64	113.01	**0.5%**	**Pass**
*Pad Flexure (kip*ft)*	4322.10	2375.73	**52.3%**	**Pass**
Pad Shear - 1-way (kips)	624.22	364.83	**55.7%**	**Pass**
Pad Shear - 2-way (Comp) (ksi)	0.164	0.000	**0.0%**	**Pass**
*Flexural 2-way (Comp) (kip*ft)*	6631.37	2552.15	**36.7%**	**Pass**

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

Structural Rating*:	**76.9%**
Soil Rating*:	**98.2%**

Date: **August 15, 2022**

Infinigy
500 West Office Center Drive, Suite 150
Fort Washington, PA 19034
(518) 690-0790
structural@infinigy.com

Subject:	**Mount Analysis Report**	
Carrier Designation:	**T-Mobile Equipment Change-Out**	
	Carrier Site Number:	CTNH107A
	Carrier Site Name:	NH107/Global/Cherry Hill
Crown Castle Designation:	**Crown Castle BU Number:**	876321
	Crown Castle Site Name:	BRANFORD BANM TOWER
	Crown Castle JDE Job Number:	721889
	Crown Castle Order Number:	621880 Rev.0
Engineering Firm Designation:	**Infinigy Report Designation:**	1039-Z0001-B
Site Data:	**150 North Main Street, Branford, New Haven County, CT, 06405** **Latitude 41°17'19.00" Longitude -72°48'49.90"**	
Structure Information:	**Tower Height & Type:**	**147.0 ft Monopole**
	Mount Elevation:	**147.0 ft**
	Mount Type:	**14.0 ft Platform**

Infinigy is pleased to submit this **"Mount Analysis Report"** to determine the structural integrity of T-Mobile'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:

Platform **Sufficient**

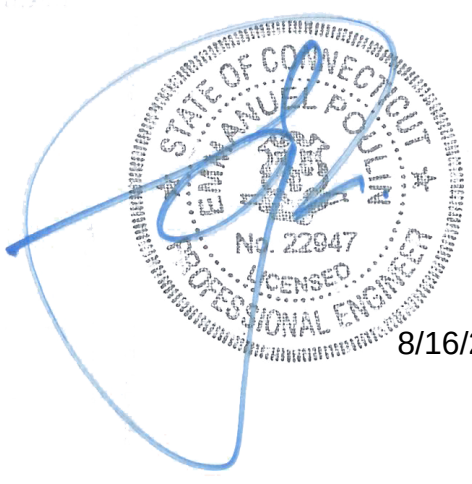
***See Section 4.1 of this report for the loading and structural modifications required in order for the mount to support the loading listed in Table 1.**

This analysis utilizes an ultimate 3-second gust wind speed of 121 mph as required by the 2018 Connecticut State Building Code. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Mount analysis prepared by: Alex Mercado, E.I.T.

Respectfully Submitted by: Emmanuel Poulin, P.E.

structural@infinigy.com



8/16/22

TABLE OF CONTENTS

1) INTRODUCTION

This is an existing 3 sector 14.0 ft 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:	121 mph
Exposure Category:	C
Topographic Factor at Base:	1.0
Topographic Factor at Mount:	1.0
Ice Thickness:	1.5 in
Wind Speed with Ice:	50 mph
Seismic S_s:	0.180
Seismic S_1:	0.061
Live Loading Wind Speed:	30 mph
Man Live Load at Mid/End-Points:	250 lb
Man Live Load at Mount Pipes:	500 lb

Table 1 - Proposed Equipment Configuration

Mount Centerline (ft)	Antenna Centerline (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Mount / Modification Details
147.0	147.0	3	COMMSCOPE	VV-65B-R1_TMO	14.0 ft Platform
		3	ERICSSON	AIR 6419 B41_TMO	
		3	RFS/CELWAVE	APXVAALL24_43-U-NA20_TMO	
		3	ERICSSON	RADIO 4460 B2/B25 B66_TMO	
		3	ERICSSON	RADIO 4480_TMOV2	

3) ANALYSIS PROCEDURE

Table 2 - Documents Provided

Document	Remarks	Reference	Source
Crown Application	T-Mobile Application	621880 Rev.0	CCI Sites
Previous Mount Analysis	Infinigy	10433160	CCI Sites
Loading Documents	T-Mobile	RFDS Version 10	TSA

3.1) Analysis Method

RISA-3D (Version 17.0.4), 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.

Infinigy Mount Analysis Tool V2.3.2, a tool internally developed by Infinigy, was used to calculate wind loading on all appurtenances, dishes and mount members for various loading cases. Selected output from the analysis is included in Appendix B “Software Input Calculations”.

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

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 Table 1 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) The analysis will be required to be revised if the existing conditions in the field differ from those shown in the above-referenced documents or assumed in this analysis. No allowance was made for any damaged, missing, or rusted members.
5) Prior structural modifications to the tower mounting system are assumed to be installed as shown per available data.
6) Steel grades have been assumed as follows, unless noted otherwise:

Channel, Solid Round, Angle, Plate	ASTM A36 (GR 36)
HSS (Rectangular)	ASTM A500 (GR B-46)
Pipe	ASTM A53 (GR 35)
Connection Bolts	ASTM A325

This analysis may be affected if any assumptions are not valid or have been made in error. Infinigy 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 (Platform, All Sectors)

Notes	Component	Critical Member	Centerline (ft)	% Capacity	Pass / Fail
1,2,3,4	Mount Pipe(s)	MP5	147.0	64.6	Pass
	Horizontal(s)	H1		98.1	Pass
	Standoff(s)	S1		73.1	Pass
	Handrail(s)	HR2		37.7	Pass
	Corner Plate(s)	CP1		45.5	Pass
	Grating Angle(s)	G4		52.1	Pass
	Mount Connection(s)	--		47.1	Pass

Structure Rating (max from all components) =	98.1%

Notes:
1) See additional documentation in "Appendix C - Software Analysis Output" for calculations supporting the % capacity consumed.
2) See additional documentation in “Appendix D – Additional Calculations” for detailed mount connection calculations.
3) All sectors are typical
4) Rating per TIA-222-H, Section 15.5

4.1) Recommendations

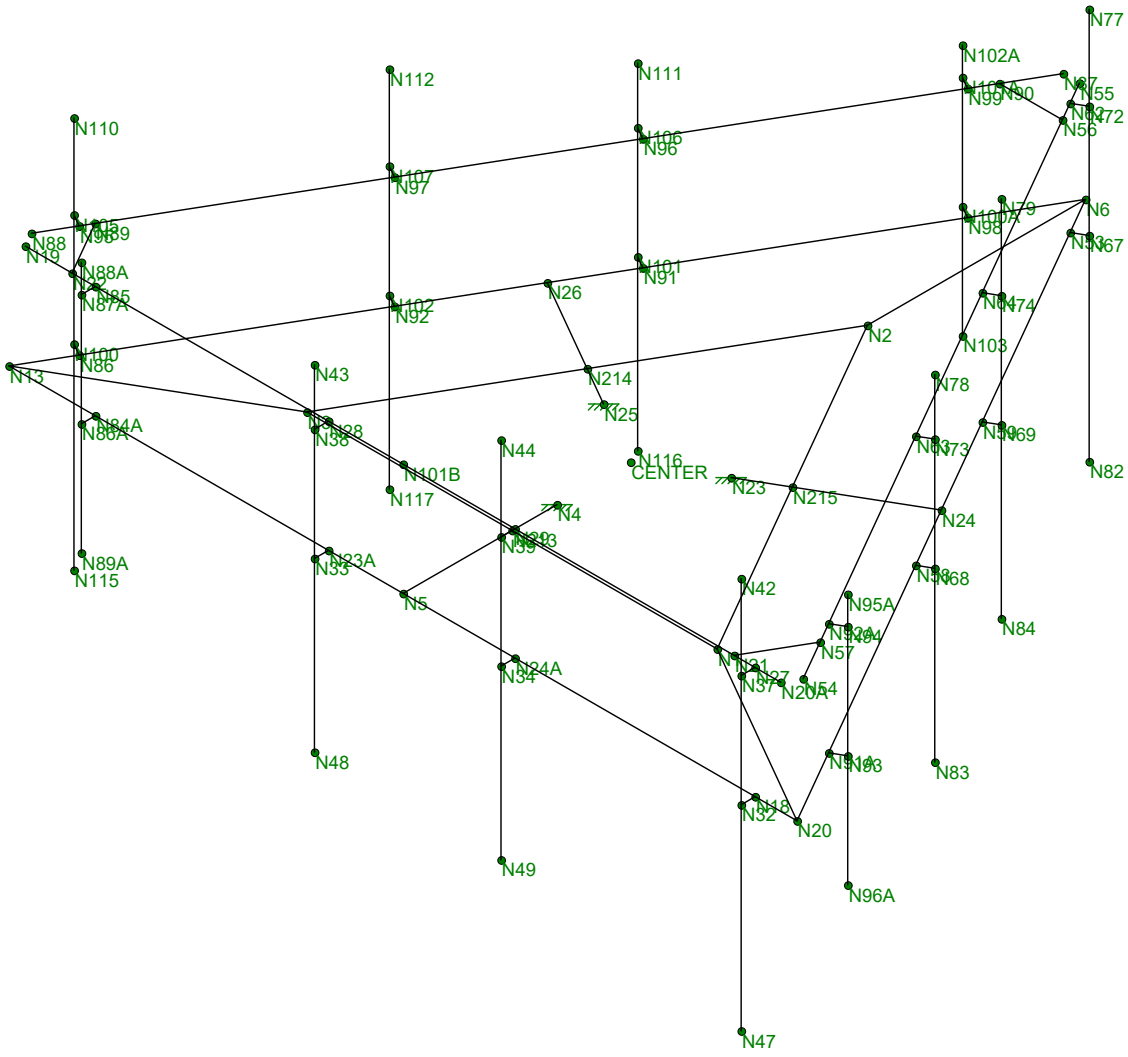
The mount has sufficient capacity to carry the proposed loading configuration. In order for the results of the analysis to be considered valid, the structural modifications listed below must be completed.

1. Installation of (1) Site Pro 1 HRK14 Handrail Kit. Trim proposed handrail pipes to fit existing platform and install proposed Site Pro 1 HRK14 24” above existing platform horizontal face.

No structural modifications are required at this time, provided that the above-listed changes are implemented.

APPENDIX A

WIRE FRAME AND RENDERED MODELS



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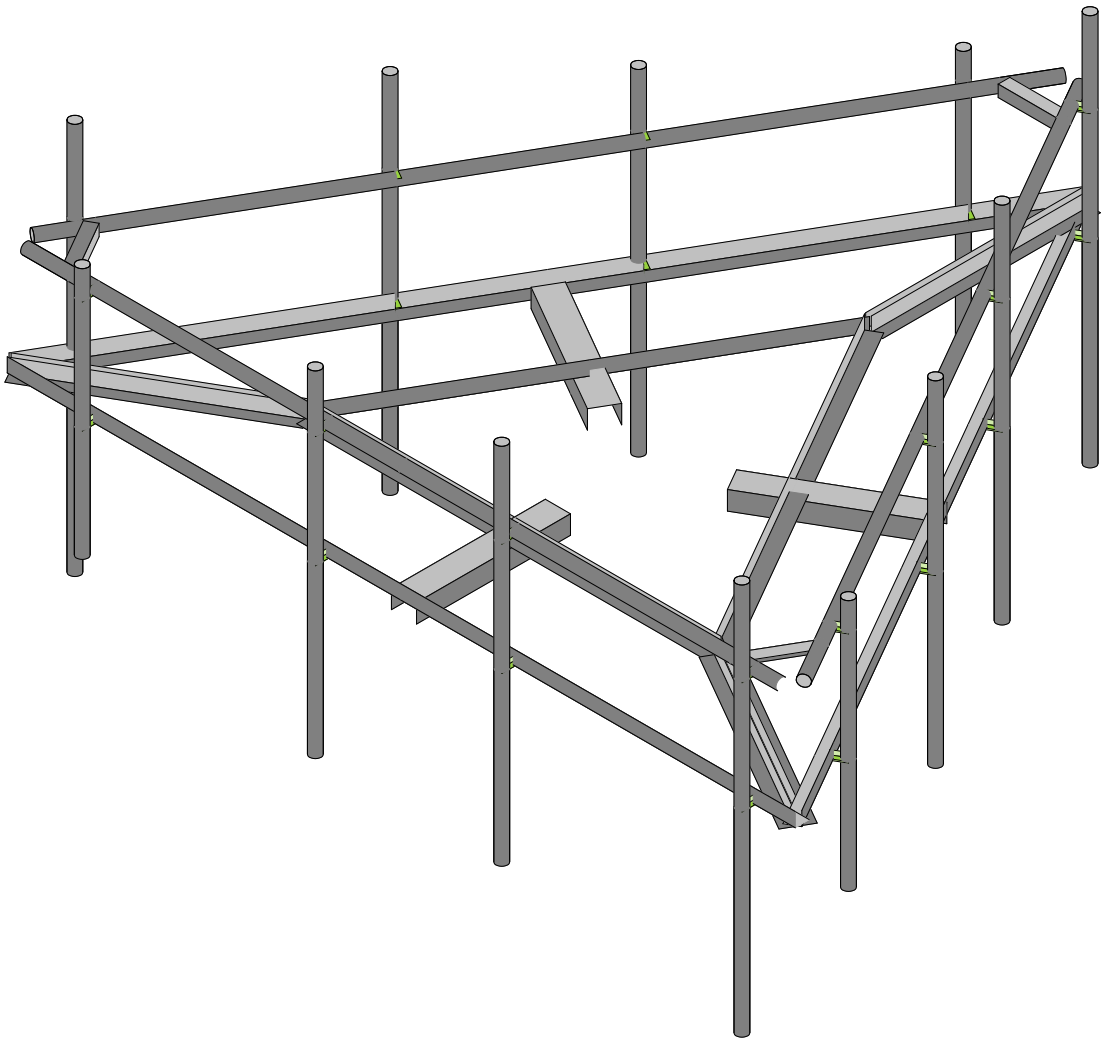

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APPENDIX B

SOFTWARE INPUT CALCULATIONS

Program Inputs

INFINIGY

Infinigy Load Calculator V2.3.2

PROJECT INFORMATION	
Site Name:	BRANFORD BANM TOWER
Carrier:	T-Mobile
Engineer:	Alex Mercado

SITE INFORMATION		
Risk Category:	II	
Exposure Category:	C	
Topo Factor Procedure:	Method 1, Category 1	
Site Class:	D - Stiff Soil (Assumed)	
Ground Elevation:	57.70	ft *Rev H

MOUNT INFORMATION		
Mount Type:	Platform	
Num Sectors:	3	
Centerline AGL:	147.00	ft
Tower Height AGL:	147.00	ft

TOPOGRAPHIC DATA		
Topo Feature:	N/A	
Slope Distance:	N/A	ft
Crest Distance:	N/A	ft
Crest Height:	N/A	ft

FACTORS		
Directionality Fact. (K_d):	0.950	
Ground Ele. Factor (K_e):	0.998	*Rev H Only
Rooftop Speed-Up (K_s):	1.000	*Rev H Only
Topographic Factor (K_{zt}):	1.000	
Height Esc. Fact. (K_{iz}):	1.161	
Gust Effect Factor (G_h):	1.000	
Shielding Factor (K_a):	0.900	
Velocity Pressure Co.(K_z):	1.373	(Mount Elev)

CODE STANDARDS		
Building Code:	2018 IBC	
TIA Standard:	TIA-222-H	
ASCE Standard:	ASCE 7-16	

WIND AND ICE DATA		
Ultimate Wind (V_{ult}):	121	mph
Design Wind (V):	N/A	mph
Ice Wind (V_{ice}):	50	mph
Base Ice Thickness (t_i):	1.5	in
Radial Ice Thickness (t_{iz}):	1.742	in
Flat Pressure:	97.540	psf
Round Pressure:	58.524	psf
Ice Wind Pressure:	9.993	psf

SEISMIC DATA		
Short-Period Accel. (S_s):	0.180	g
1-Second Accel. (S_1):	0.061	g
Short-Period Design (S_{DS}):	0.192	
1-Second Design (S_{D1}):	0.098	
Short-Period Coeff. (F_a):	1.600	
1-Second Coeff. (F_v):	2.400	
Amplification Factor (A_s):	3.000	
Response Mod. Coeff. (R):	2.000	
Seismic Importance (I_e):	1.000	
Seismic Response Co. (C_s):	0.096	
Total App. Weight:	478.070	lb
Total Shear Force (V_s):	45.895	lb
Hor. Seismic Load (E_h):	45.895	lb
Vert. Seismic Load (E_v):	18.358	lb *

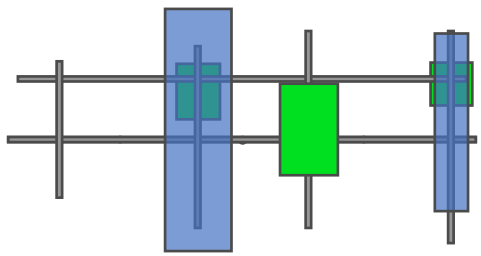
*For reference only. Per TIA rev H section 16.7, Ev is not applicable to mounts

Program Inputs

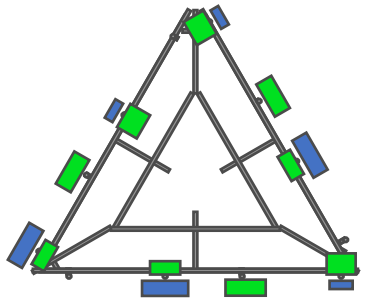
INFINIGY

Infinigy Load Calculator V2.3.2

ELEVATION VIEW



PLAN VIEW



APPURTENANCE INFORMATION

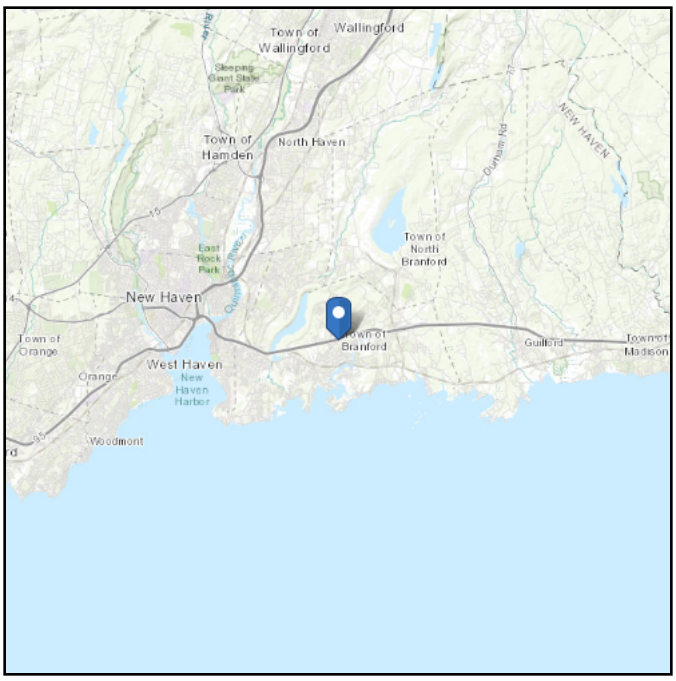
Appurtenance Name	Elevation	Qty.	Height (in)	Width (in)	Depth (in)	Weight (lbs)	EPA_N (ft^2)	EPA_T (ft^2)	Member (α sector)
COMMSCOPE VV-65B-R1_TMO	147.0	3	70.35	12.01	4.65	41.67	5.86	2.27	MP1
ERICSSON AIR 6419 B41_TMO	147.0	3	36.25	20.91	9.02	96.50	7.00	2.83	MP2
/CELWAVE APXVAALL24_43-U-NA20_TI	147.0	3	95.90	24.00	8.50	149.90	14.67	5.32	MP3
RICSSON RADIO 4460 B2/B25 B66_TMC	147.0	3	17.00	15.10	11.90	109.00	2.14	1.69	MP1
ERICSSON RADIO 4480_TMOV2	147.0	3	22.00	15.70	7.50	81.00	2.88	1.40	MP3

ASCE 7 Hazards Report

Address:
No Address at This Location

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

Elevation: 57.7 ft (NAVD 88)
Latitude: 41.288611
Longitude: -72.813861



Wind

Results:

Wind Speed	121 Vmph per the State of Connecticut allowing ASCE 7-16 wind speeds
10-year MRI	78 Vmph
25-year MRI	88 Vmph
50-year MRI	95 Vmph
100-year MRI	103 Vmph

Data Source: ASCE/SEI 7-10, Fig. 26.5-1A and Figs. CC-1–CC-4, and Section 26.5.2, incorporating errata of March 12, 2014

Date Accessed: Thu Jun 23 2022

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.

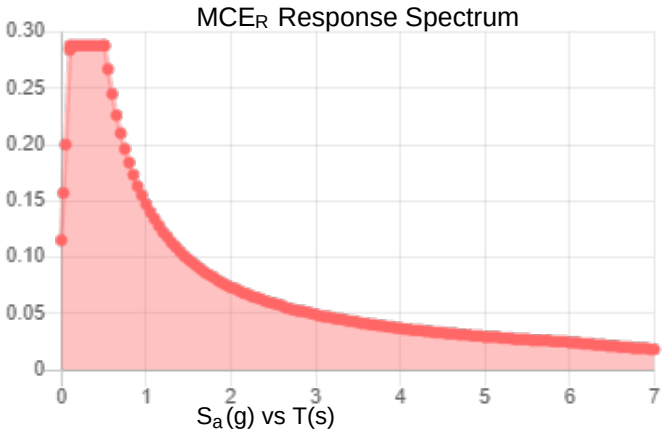
Seismic

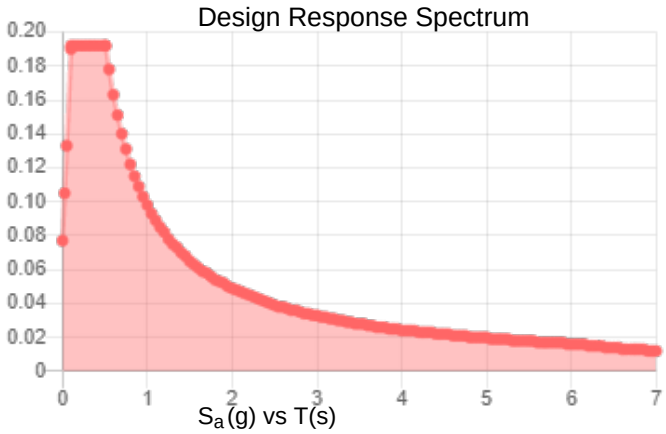
Site Soil Class: D - Stiff Soil

Results:

S_S :	0.18	S_{DS} :	0.192
S_1 :	0.061	S_{D1} :	0.098
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.093
S_{MS} :	0.288	PGA_M :	0.149
S_{M1} :	0.147	F_{PGA} :	1.6
		I_e :	1

Seismic Design Category B





Data Accessed: **Thu Jun 23 2022**

Date Source:

USGS Seismic Design Maps based on ASCE/SEI 7-10, incorporating Supplement 1 and errata of March 31, 2013, and ASCE/SEI 7-10 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-10 Ch. 21 are available from USGS.

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:	Thu Jun 23 2022

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.

The ASCE 7 Hazard Tool is provided for your convenience, for informational purposes only, and is provided “as is” and without warranties of any kind. The location data included herein has been obtained from information developed, produced, and maintained by third party providers; or has been extrapolated from maps incorporated in the ASCE 7 standard. While ASCE has made every effort to use data obtained from reliable sources or methodologies, ASCE does not make any representations or warranties as to the accuracy, completeness, reliability, currency, or quality of any data provided herein. Any third-party links provided by this Tool should not be construed as an endorsement, affiliation, relationship, or sponsorship of such third-party content by or from ASCE.

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In using this Tool, you expressly assume all risks associated with your use. Under no circumstances shall ASCE or its officers, directors, employees, members, affiliates, or agents be liable to you or any other person for any direct, indirect, special, incidental, or consequential damages arising from or related to your use of, or reliance on, the Tool or any information obtained therein. To the fullest extent permitted by law, you agree to release and hold harmless ASCE from any and all liability of any nature arising out of or resulting from any use of data provided by the ASCE 7 Hazard Tool.

APPENDIX C

SOFTWARE ANALYSIS OUTPUT

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(d...	Section/Shape	Type	Design List	Material	Design Ru...
1	H1	N13	N20		270	Face Horizontal	Beam	Single Angle	A36 Gr.36	Typical
2	H2	N13	N6			Face Horizontal	Beam	Single Angle	A36 Gr.36	Typical
3	H3	N20	N6		270	Face Horizontal	Beam	Single Angle	A36 Gr.36	Typical
4	G4	N3	N1			Grating Angle	Beam	Single Angle	A36 Gr.36	Typical
5	G5	N3	N2		270	Grating Angle	Beam	Single Angle	A36 Gr.36	Typical
6	G6	N1	N2			Grating Angle	Beam	Single Angle	A36 Gr.36	Typical
7	G3	N20	N1		180	Corner Angle	Beam	Double Angl...	A36 Gr.36	Typical
8	G2	N6	N2		180	Corner Angle	Beam	Double Angl...	A36 Gr.36	Typical
9	G1	N13	N3		180	Corner Angle	Beam	Double Angl...	A36 Gr.36	Typical
10	S1	N4	N5		90	Standoff	Beam	Channel	A36 Gr.36	Typical
11	S3	N23	N24		90	Standoff	Beam	Channel	A36 Gr.36	Typical
12	S2	N25	N26		90	Standoff	Beam	Channel	A36 Gr.36	Typical
13	HR1	N19	N20A			Handrail	Beam	Pipe	A53 Gr.B	Typical
14	M16	N28	N38			RIGID	None	None	RIGID	Typical
15	M19	N23A	N33			RIGID	None	None	RIGID	Typical
16	M20	N29	N39			RIGID	None	None	RIGID	Typical
17	M21A	N27	N37			RIGID	None	None	RIGID	Typical
18	M22A	N18	N32			RIGID	None	None	RIGID	Typical
19	M23	N34	N24A			RIGID	None	None	RIGID	Typical
20	MP3	N43	N48			2.0 STD Mount Pipe	Column	Pipe	A53 Gr.B	Typical
21	MP2	N44	N49			2.0 STD Mount Pipe	Column	Pipe	A53 Gr.B	Typical
22	MP1	N42	N47			2.0 STD Mount Pipe	Column	Pipe	A53 Gr.B	Typical
23	HR3	N54	N55			Handrail	Beam	Pipe	A53 Gr.B	Typical
24	M32	N63	N73			RIGID	None	None	RIGID	Typical
25	M35	N58	N68			RIGID	None	None	RIGID	Typical
26	M36	N64	N74			RIGID	None	None	RIGID	Typical
27	M37	N62	N72			RIGID	None	None	RIGID	Typical
28	M38	N53	N67			RIGID	None	None	RIGID	Typical
29	M39	N69	N59			RIGID	None	None	RIGID	Typical
30	MP11	N78	N83			2.0 STD Mount Pipe	Column	Pipe	A53 Gr.B	Typical
31	MP10	N79	N84			2.0 STD Mount Pipe	Column	Pipe	A53 Gr.B	Typical
32	MP9	N77	N82			2.0 STD Mount Pipe	Column	Pipe	A53 Gr.B	Typical
33	HR2	N87	N88			Handrail	Beam	Pipe	A53 Gr.B	Typical
34	M48	N96	N106			RIGID	None	None	RIGID	Typical
35	M51	N91	N101			RIGID	None	None	RIGID	Typical
36	M52	N97	N107			RIGID	None	None	RIGID	Typical
37	M53	N95	N105			RIGID	None	None	RIGID	Typical
38	M54	N86	N100			RIGID	None	None	RIGID	Typical
39	M55	N102	N92			RIGID	None	None	RIGID	Typical
40	MP7	N111	N116			2.0 STD Mount Pipe	Column	Pipe	A53 Gr.B	Typical
41	MP6	N112	N117			2.0 STD Mount Pipe	Column	Pipe	A53 Gr.B	Typical
42	MP5	N110	N115			2.0 STD Mount Pipe	Column	Pipe	A53 Gr.B	Typical
43	CP1	N22	N89		180	Handrail Corner Plate	Beam	Single Angle	A36 Gr.36	Typical
44	CP2	N56	N90		90	Handrail Corner Plate	Beam	Single Angle	A36 Gr.36	Typical
45	CP3	N21	N57		90	Handrail Corner Plate	Beam	Single Angle	A36 Gr.36	Typical
46	M46	N85	N87A			RIGID	None	None	RIGID	Typical
47	M47	N84A	N86A			RIGID	None	None	RIGID	Typical
48	MP4	N88A	N89A			2.0 STD Mount Pipe	Column	Pipe	A53 Gr.B	Typical
49	MP12	N95A	N96A			2.0 STD Mount Pipe	Column	Pipe	A53 Gr.B	Typical
50	MP8	N102A	N103			2.0 STD Mount Pipe	Column	Pipe	A53 Gr.B	Typical
51	M51A	N92A	N94			RIGID	None	None	RIGID	Typical
52	M52A	N91A	N93			RIGID	None	None	RIGID	Typical
53	M53A	N99	N101A			RIGID	None	None	RIGID	Typical
54	M54A	N98	N100A			RIGID	None	None	RIGID	Typical

Material Takeoff

	Material	Size	Pieces	Length[in]	Weight[LB]
1	General				
2	RIGID		24	72	0
3	Total General		24	72	0
4					
5	Hot Rolled Steel				
6	A36 Gr.36	BPL 5.375x4x0.375	3	99	132.908
7	A36 Gr.36	L2.5x2.5x3	3	40.5	10.347
8	A36 Gr.36	L3X3X4	6	771	314.825
9	A36 Gr.36	LL3x3x4x0	3	140.3	114.575
10	A53 Gr.B	PIPE_2.0	15	1350	390.469
11	Total HR Steel		30	2400.8	963.125

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distribut...	Area(M...	Surface(Plate/Wall)
1	Self Weight	DL		-1			21		3	
2	Wind Load AZI 0	WLZ					42			
3	Wind Load AZI 30	None					42			
4	Wind Load AZI 60	None					42			
5	Wind Load AZI 90	WLX					42			
6	Wind Load AZI 120	None					42			
7	Wind Load AZI 150	None					42			
8	Wind Load AZI 180	None					42			
9	Wind Load AZI 210	None					42			
10	Wind Load AZI 240	None					42			
11	Wind Load AZI 270	None					42			
12	Wind Load AZI 300	None					42			
13	Wind Load AZI 330	None					42			
14	Distr. Wind Load Z	WLZ						54		
15	Distr. Wind Load X	WLX						54		
16	Ice Weight	OL1					21	54	3	
17	Ice Wind Load AZI 0	OL2					42			
18	Ice Wind Load AZI ...	None					42			
19	Ice Wind Load AZI ...	None					42			
20	Ice Wind Load AZI ...	OL3					42			
21	Ice Wind Load AZI ...	None					42			
22	Ice Wind Load AZI ...	None					42			
23	Ice Wind Load AZI ...	None					42			
24	Ice Wind Load AZI ...	None					42			
25	Ice Wind Load AZI ...	None					42			
26	Ice Wind Load AZI ...	None					42			
27	Ice Wind Load AZI ...	None					42			
28	Ice Wind Load AZI ...	None					42			
29	Distr. Ice Wind Loa...	OL2						54		
30	Distr. Ice Wind Loa...	OL3						54		
31	Seismic Load Z	ELZ			-.288		21			
32	Seismic Load X	ELX	-.288				21			
33	Service Live Loads	LL				3				
34	Maintenance Load ...	LL				1				
35	Maintenance Load ...	LL				1				
36	Maintenance Load ...	LL				1				
37	Maintenance Load ...	LL				1				
38	Maintenance Load ...	LL				1				
39	Maintenance Load ...	LL				1				
40	Maintenance Load ...	LL				1				

Basic Load Cases (Continued)

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distribut...	Area(M...	Surface(Plate/Wall)
41	Maintenance Load ...	LL				1				
42	Maintenance Load ...	LL				1				
43	Maintenance Load ...	LL				1				
44	Maintenance Load ...	LL				1				
45	Maintenance Load ...	LL				1				
46	BLC 1 Transient Ar...	None						100		
47	BLC 16 Transient ...	None						100		

Load Combinations

	Description	Solve	PDelta	SRSS	BLC	Factor	BLC	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
1	1.4DL	Yes	Y		1	1.4																		
2	1.2DL + 1WL AZI 0	Yes	Y		1	1.2	2	1	14	1	15													
3	1.2DL + 1WL AZI 30	Yes	Y		1	1.2	3	1	14	.866	15	.5												
4	1.2DL + 1WL AZI 60	Yes	Y		1	1.2	4	1	14	.5	15	.866												
5	1.2DL + 1WL AZI 90	Yes	Y		1	1.2	5	1	14		15	1												
6	1.2DL + 1WL AZI 120	Yes	Y		1	1.2	6	1	14	-.5	15	.866												
7	1.2DL + 1WL AZI 150	Yes	Y		1	1.2	7	1	14	-.8...	15	.5												
8	1.2DL + 1WL AZI 180	Yes	Y		1	1.2	8	1	14	-1	15													
9	1.2DL + 1WL AZI 210	Yes	Y		1	1.2	9	1	14	-.8...	15	-.5												
10	1.2DL + 1WL AZI 240	Yes	Y		1	1.2	10	1	14	-.5	15	-.8...												
11	1.2DL + 1WL AZI 270	Yes	Y		1	1.2	11	1	14		15	-1												
12	1.2DL + 1WL AZI 300	Yes	Y		1	1.2	12	1	14	.5	15	-.8...												
13	1.2DL + 1WL AZI 330	Yes	Y		1	1.2	13	1	14	.866	15	-.5												
14	0.9DL + 1WL AZI 0	Yes	Y		1	.9	2	1	14	1	15													
15	0.9DL + 1WL AZI 30	Yes	Y		1	.9	3	1	14	.866	15	.5												
16	0.9DL + 1WL AZI 60	Yes	Y		1	.9	4	1	14	.5	15	.866												
17	0.9DL + 1WL AZI 90	Yes	Y		1	.9	5	1	14		15	1												
18	0.9DL + 1WL AZI 120	Yes	Y		1	.9	6	1	14	-.5	15	.866												
19	0.9DL + 1WL AZI 150	Yes	Y		1	.9	7	1	14	-.8...	15	.5												
20	0.9DL + 1WL AZI 180	Yes	Y		1	.9	8	1	14	-1	15													
21	0.9DL + 1WL AZI 210	Yes	Y		1	.9	9	1	14	-.8...	15	-.5												
22	0.9DL + 1WL AZI 240	Yes	Y		1	.9	10	1	14	-.5	15	-.8...												
23	0.9DL + 1WL AZI 270	Yes	Y		1	.9	11	1	14		15	-1												
24	0.9DL + 1WL AZI 300	Yes	Y		1	.9	12	1	14	.5	15	-.8...												
25	0.9DL + 1WL AZI 330	Yes	Y		1	.9	13	1	14	.866	15	-.5												
26	1.2D + 1.0Di	Yes	Y		1	1.2	16	1																
27	1.2D + 1.0Di +1.0Wi A...	Yes	Y		1	1.2	16	1	17	1	29	1	30											
28	1.2D + 1.0Di +1.0Wi A...	Yes	Y		1	1.2	16	1	18	1	29	.866	30	.5										
29	1.2D + 1.0Di +1.0Wi A...	Yes	Y		1	1.2	16	1	19	1	29	.5	30	.866										
30	1.2D + 1.0Di +1.0Wi A...	Yes	Y		1	1.2	16	1	20	1	29		30	1										
31	1.2D + 1.0Di +1.0Wi A...	Yes	Y		1	1.2	16	1	21	1	29	-.5	30	.866										
32	1.2D + 1.0Di +1.0Wi A...	Yes	Y		1	1.2	16	1	22	1	29	-.8...	30	.5										
33	1.2D + 1.0Di +1.0Wi A...	Yes	Y		1	1.2	16	1	23	1	29	-1	30											
34	1.2D + 1.0Di +1.0Wi A...	Yes	Y		1	1.2	16	1	24	1	29	-.8...	30	-.5										
35	1.2D + 1.0Di +1.0Wi A...	Yes	Y		1	1.2	16	1	25	1	29	-.5	30	-.8...										
36	1.2D + 1.0Di +1.0Wi A...	Yes	Y		1	1.2	16	1	26	1	29		30	-1										
37	1.2D + 1.0Di +1.0Wi A...	Yes	Y		1	1.2	16	1	27	1	29	.5	30	-.8...										
38	1.2D + 1.0Di +1.0Wi A...	Yes	Y		1	1.2	16	1	28	1	29	.866	30	-.5										
39	(1.2 + 0.2Sds)DL + 1.0...	Yes	Y		1	1.238	31	1	32															
40	(1.2 + 0.2Sds)DL + 1.0...	Yes	Y		1	1.238	31	.866	32	.5														
41	(1.2 + 0.2Sds)DL + 1.0...	Yes	Y		1	1.238	31	.5	32	.866														
42	(1.2 + 0.2Sds)DL + 1.0...	Yes	Y		1	1.238	31		32	1														
43	(1.2 + 0.2Sds)DL + 1.0...	Yes	Y		1	1.238	31	-.5	32	.866														
44	(1.2 + 0.2Sds)DL + 1.0...	Yes	Y		1	1.238	31	-.8...	32	.5														
45	(1.2 + 0.2Sds)DL + 1.0...	Yes	Y		1	1.238	31	-1	32															

Load Combinations (Continued)

	Description	Solve	PDelta	SRSS	BLC	Factor	BLC	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
46	(1.2 + 0.2Sds)DL + 1.0...	Yes	Y		1	1.238	31	-.8...	32	-.5																
47	(1.2 + 0.2Sds)DL + 1.0...	Yes	Y		1	1.238	31	-.5	32	-.8...																
48	(1.2 + 0.2Sds)DL + 1.0...	Yes	Y		1	1.238	31		32	-1																
49	(1.2 + 0.2Sds)DL + 1.0...	Yes	Y		1	1.238	31	.5	32	-.8...																
50	(1.2 + 0.2Sds)DL + 1.0...	Yes	Y		1	1.238	31	.866	32	-.5																
51	(0.9 - 0.2Sds)DL + 1.0...	Yes	Y		1	.862	31	1	32																	
52	(0.9 - 0.2Sds)DL + 1.0...	Yes	Y		1	.862	31	.866	32	.5																
53	(0.9 - 0.2Sds)DL + 1.0...	Yes	Y		1	.862	31	.5	32	.866																
54	(0.9 - 0.2Sds)DL + 1.0...	Yes	Y		1	.862	31		32	1																
55	(0.9 - 0.2Sds)DL + 1.0...	Yes	Y		1	.862	31	-.5	32	.866																
56	(0.9 - 0.2Sds)DL + 1.0...	Yes	Y		1	.862	31	-.8...	32	.5																
57	(0.9 - 0.2Sds)DL + 1.0...	Yes	Y		1	.862	31	-1	32																	
58	(0.9 - 0.2Sds)DL + 1.0...	Yes	Y		1	.862	31	-.8...	32	-.5																
59	(0.9 - 0.2Sds)DL + 1.0...	Yes	Y		1	.862	31	-.5	32	-.8...																
60	(0.9 - 0.2Sds)DL + 1.0...	Yes	Y		1	.862	31		32	-1																
61	(0.9 - 0.2Sds)DL + 1.0...	Yes	Y		1	.862	31	.5	32	-.8...																
62	(0.9 - 0.2Sds)DL + 1.0...	Yes	Y		1	.862	31	.866	32	-.5																
63	1.0DL + 1.5LL + 1.0SW...	Yes	Y		1	1	2	.246	14	.246	15		33	1.5												
64	1.0DL + 1.5LL + 1.0SW...	Yes	Y		1	1	3	.246	14	.213	15	.123	33	1.5												
65	1.0DL + 1.5LL + 1.0SW...	Yes	Y		1	1	4	.246	14	.123	15	.213	33	1.5												
66	1.0DL + 1.5LL + 1.0SW...	Yes	Y		1	1	5	.246	14		15	.246	33	1.5												
67	1.0DL + 1.5LL + 1.0SW...	Yes	Y		1	1	6	.246	14	-.1...	15	.213	33	1.5												
68	1.0DL + 1.5LL + 1.0SW...	Yes	Y		1	1	7	.246	14	-.2...	15	.123	33	1.5												
69	1.0DL + 1.5LL + 1.0SW...	Yes	Y		1	1	8	.246	14	-.2...	15		33	1.5												
70	1.0DL + 1.5LL + 1.0SW...	Yes	Y		1	1	9	.246	14	-.2...	15	-.1...	33	1.5												
71	1.0DL + 1.5LL + 1.0SW...	Yes	Y		1	1	10	.246	14	-.1...	15	-.2...	33	1.5												
72	1.0DL + 1.5LL + 1.0SW...	Yes	Y		1	1	11	.246	14		15	-.2...	33	1.5												
73	1.0DL + 1.5LL + 1.0SW...	Yes	Y		1	1	12	.246	14	.123	15	-.2...	33	1.5												
74	1.0DL + 1.5LL + 1.0SW...	Yes	Y		1	1	13	.246	14	.213	15	-.1...	33	1.5												
75	1.2DL + 1.5LL	Yes	Y		1	1.2	33	1.5																		
76	1.2DL + 1.5LM-MP1 + ...	Yes	Y		1	1.2	34	1.5	2	.061	14	.061	15													
77	1.2DL + 1.5LM-MP1 + ...	Yes	Y		1	1.2	34	1.5	3	.061	14	.053	15	.031												
78	1.2DL + 1.5LM-MP1 + ...	Yes	Y		1	1.2	34	1.5	4	.061	14	.031	15	.053												
79	1.2DL + 1.5LM-MP1 + ...	Yes	Y		1	1.2	34	1.5	5	.061	14		15	.061												
80	1.2DL + 1.5LM-MP1 + ...	Yes	Y		1	1.2	34	1.5	6	.061	14	-.0...	15	.053												
81	1.2DL + 1.5LM-MP1 + ...	Yes	Y		1	1.2	34	1.5	7	.061	14	-.0...	15	.031												
82	1.2DL + 1.5LM-MP1 + ...	Yes	Y		1	1.2	34	1.5	8	.061	14	-.0...	15													
83	1.2DL + 1.5LM-MP1 + ...	Yes	Y		1	1.2	34	1.5	9	.061	14	-.0...	15	-.0...												
84	1.2DL + 1.5LM-MP1 + ...	Yes	Y		1	1.2	34	1.5	10	.061	14	-.0...	15	-.0...												
85	1.2DL + 1.5LM-MP1 + ...	Yes	Y		1	1.2	34	1.5	11	.061	14		15	-.0...												
86	1.2DL + 1.5LM-MP1 + ...	Yes	Y		1	1.2	34	1.5	12	.061	14	.031	15	-.0...												
87	1.2DL + 1.5LM-MP1 + ...	Yes	Y		1	1.2	34	1.5	13	.061	14	.053	15	-.0...												
88	1.2DL + 1.5LM-MP2 + ...	Yes	Y		1	1.2	35	1.5	2	.061	14	.061	15													
89	1.2DL + 1.5LM-MP2 + ...	Yes	Y		1	1.2	35	1.5	3	.061	14	.053	15	.031												
90	1.2DL + 1.5LM-MP2 + ...	Yes	Y		1	1.2	35	1.5	4	.061	14	.031	15	.053												
91	1.2DL + 1.5LM-MP2 + ...	Yes	Y		1	1.2	35	1.5	5	.061	14		15	.061												
92	1.2DL + 1.5LM-MP2 + ...	Yes	Y		1	1.2	35	1.5	6	.061	14	-.0...	15	.053												
93	1.2DL + 1.5LM-MP2 + ...	Yes	Y		1	1.2	35	1.5	7	.061	14	-.0...	15	.031												
94	1.2DL + 1.5LM-MP2 + ...	Yes	Y		1	1.2	35	1.5	8	.061	14	-.0...	15													
95	1.2DL + 1.5LM-MP2 + ...	Yes	Y		1	1.2	35	1.5	9	.061	14	-.0...	15	-.0...												
96	1.2DL + 1.5LM-MP2 + ...	Yes	Y		1	1.2	35	1.5	10	.061	14	-.0...	15	-.0...												
97	1.2DL + 1.5LM-MP2 + ...	Yes	Y		1	1.2	35	1.5	11	.061	14		15	-.0...												
98	1.2DL + 1.5LM-MP2 + ...	Yes	Y		1	1.2	35	1.5	12	.061	14	.031	15	-.0...												
99	1.2DL + 1.5LM-MP2 + ...	Yes	Y		1	1.2	35	1.5	13	.061	14	.053	15	-.0...												
100	1.2DL + 1.5LM-MP3 + ...	Yes	Y		1	1.2	36	1.5	2	.061	14	.061	15													
101	1.2DL + 1.5LM-MP3 + ...	Yes	Y		1	1.2	36	1.5	3	.061	14	.053	15	.031												
102	1.2DL + 1.5LM-MP3 + ...	Yes	Y		1	1.2	36	1.5	4	.061	14	.031	15	.053												

Load Combinations (Continued)

	Description	Solve	PDelta	SRSS	BLC	Factor	BLC	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
103	1.2DL + 1.5LM-MP3 + ...	Yes	Y		1	1.2	36	1.5	5	.061	14		15	.061												
104	1.2DL + 1.5LM-MP3 + ...	Yes	Y		1	1.2	36	1.5	6	.061	14	-.0...	15	.053												
105	1.2DL + 1.5LM-MP3 + ...	Yes	Y		1	1.2	36	1.5	7	.061	14	-.0...	15	.031												
106	1.2DL + 1.5LM-MP3 + ...	Yes	Y		1	1.2	36	1.5	8	.061	14	-.0...	15													
107	1.2DL + 1.5LM-MP3 + ...	Yes	Y		1	1.2	36	1.5	9	.061	14	-.0...	15	-.0...												
108	1.2DL + 1.5LM-MP3 + ...	Yes	Y		1	1.2	36	1.5	10	.061	14	-.0...	15	-.0...												
109	1.2DL + 1.5LM-MP3 + ...	Yes	Y		1	1.2	36	1.5	11	.061	14		15	-.0...												
110	1.2DL + 1.5LM-MP3 + ...	Yes	Y		1	1.2	36	1.5	12	.061	14	.031	15	-.0...												
111	1.2DL + 1.5LM-MP3 + ...	Yes	Y		1	1.2	36	1.5	13	.061	14	.053	15	-.0...												
112	1.2DL + 1.5LM-MP4 + ...	Yes	Y		1	1.2	37	1.5	2	.061	14	.061	15													
113	1.2DL + 1.5LM-MP4 + ...	Yes	Y		1	1.2	37	1.5	3	.061	14	.053	15	.031												
114	1.2DL + 1.5LM-MP4 + ...	Yes	Y		1	1.2	37	1.5	4	.061	14	.031	15	.053												
115	1.2DL + 1.5LM-MP4 + ...	Yes	Y		1	1.2	37	1.5	5	.061	14		15	.061												
116	1.2DL + 1.5LM-MP4 + ...	Yes	Y		1	1.2	37	1.5	6	.061	14	-.0...	15	.053												
117	1.2DL + 1.5LM-MP4 + ...	Yes	Y		1	1.2	37	1.5	7	.061	14	-.0...	15	.031												
118	1.2DL + 1.5LM-MP4 + ...	Yes	Y		1	1.2	37	1.5	8	.061	14	-.0...	15													
119	1.2DL + 1.5LM-MP4 + ...	Yes	Y		1	1.2	37	1.5	9	.061	14	-.0...	15	-.0...												
120	1.2DL + 1.5LM-MP4 + ...	Yes	Y		1	1.2	37	1.5	10	.061	14	-.0...	15	-.0...												
121	1.2DL + 1.5LM-MP4 + ...	Yes	Y		1	1.2	37	1.5	11	.061	14		15	-.0...												
122	1.2DL + 1.5LM-MP4 + ...	Yes	Y		1	1.2	37	1.5	12	.061	14	.031	15	-.0...												
123	1.2DL + 1.5LM-MP4 + ...	Yes	Y		1	1.2	37	1.5	13	.061	14	.053	15	-.0...												
124	1.2DL + 1.5LM-MP5 + ...	Yes	Y		1	1.2	38	1.5	2	.061	14	.061	15													
125	1.2DL + 1.5LM-MP5 + ...	Yes	Y		1	1.2	38	1.5	3	.061	14	.053	15	.031												
126	1.2DL + 1.5LM-MP5 + ...	Yes	Y		1	1.2	38	1.5	4	.061	14	.031	15	.053												
127	1.2DL + 1.5LM-MP5 + ...	Yes	Y		1	1.2	38	1.5	5	.061	14		15	.061												
128	1.2DL + 1.5LM-MP5 + ...	Yes	Y		1	1.2	38	1.5	6	.061	14	-.0...	15	.053												
129	1.2DL + 1.5LM-MP5 + ...	Yes	Y		1	1.2	38	1.5	7	.061	14	-.0...	15	.031												
130	1.2DL + 1.5LM-MP5 + ...	Yes	Y		1	1.2	38	1.5	8	.061	14	-.0...	15													
131	1.2DL + 1.5LM-MP5 + ...	Yes	Y		1	1.2	38	1.5	9	.061	14	-.0...	15	-.0...												
132	1.2DL + 1.5LM-MP5 + ...	Yes	Y		1	1.2	38	1.5	10	.061	14	-.0...	15	-.0...												
133	1.2DL + 1.5LM-MP5 + ...	Yes	Y		1	1.2	38	1.5	11	.061	14		15	-.0...												
134	1.2DL + 1.5LM-MP5 + ...	Yes	Y		1	1.2	38	1.5	12	.061	14	.031	15	-.0...												
135	1.2DL + 1.5LM-MP5 + ...	Yes	Y		1	1.2	38	1.5	13	.061	14	.053	15	-.0...												
136	1.2DL + 1.5LM-MP6 + ...	Yes	Y		1	1.2	39	1.5	2	.061	14	.061	15													
137	1.2DL + 1.5LM-MP6 + ...	Yes	Y		1	1.2	39	1.5	3	.061	14	.053	15	.031												
138	1.2DL + 1.5LM-MP6 + ...	Yes	Y		1	1.2	39	1.5	4	.061	14	.031	15	.053												
139	1.2DL + 1.5LM-MP6 + ...	Yes	Y		1	1.2	39	1.5	5	.061	14		15	.061												
140	1.2DL + 1.5LM-MP6 + ...	Yes	Y		1	1.2	39	1.5	6	.061	14	-.0...	15	.053												
141	1.2DL + 1.5LM-MP6 + ...	Yes	Y		1	1.2	39	1.5	7	.061	14	-.0...	15	.031												
142	1.2DL + 1.5LM-MP6 + ...	Yes	Y		1	1.2	39	1.5	8	.061	14	-.0...	15													
143	1.2DL + 1.5LM-MP6 + ...	Yes	Y		1	1.2	39	1.5	9	.061	14	-.0...	15	-.0...												
144	1.2DL + 1.5LM-MP6 + ...	Yes	Y		1	1.2	39	1.5	10	.061	14	-.0...	15	-.0...												
145	1.2DL + 1.5LM-MP6 + ...	Yes	Y		1	1.2	39	1.5	11	.061	14		15	-.0...												
146	1.2DL + 1.5LM-MP6 + ...	Yes	Y		1	1.2	39	1.5	12	.061	14	.031	15	-.0...												
147	1.2DL + 1.5LM-MP6 + ...	Yes	Y		1	1.2	39	1.5	13	.061	14	.053	15	-.0...												
148	1.2DL + 1.5LM-MP7 + ...	Yes	Y		1	1.2	40	1.5	2	.061	14	.061	15													
149	1.2DL + 1.5LM-MP7 + ...	Yes	Y		1	1.2	40	1.5	3	.061	14	.053	15	.031												
150	1.2DL + 1.5LM-MP7 + ...	Yes	Y		1	1.2	40	1.5	4	.061	14	.031	15	.053												
151	1.2DL + 1.5LM-MP7 + ...	Yes	Y		1	1.2	40	1.5	5	.061	14		15	.061												
152	1.2DL + 1.5LM-MP7 + ...	Yes	Y		1	1.2	40	1.5	6	.061	14	-.0...	15	.053												
153	1.2DL + 1.5LM-MP7 + ...	Yes	Y		1	1.2	40	1.5	7	.061	14	-.0...	15	.031												
154	1.2DL + 1.5LM-MP7 + ...	Yes	Y		1	1.2	40	1.5	8	.061	14	-.0...	15													
155	1.2DL + 1.5LM-MP7 + ...	Yes	Y		1	1.2	40	1.5	9	.061	14	-.0...	15	-.0...												
156	1.2DL + 1.5LM-MP7 + ...	Yes	Y		1	1.2	40	1.5	10	.061	14	-.0...	15	-.0...												
157	1.2DL + 1.5LM-MP7 + ...	Yes	Y		1	1.2	40	1.5	11	.061	14		15	-.0...												
158	1.2DL + 1.5LM-MP7 + ...	Yes	Y		1	1.2	40	1.5	12	.061	14	.031	15	-.0...												
159	1.2DL + 1.5LM-MP7 + ...	Yes	Y		1	1.2	40	1.5	13	.061	14	.053	15	-.0...												

Load Combinations (Continued)

	Description	Solve	PDelta	SRSS	BLC	Factor	BLC	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
160	1.2DL + 1.5LM-MP8 + ...	Yes	Y		1	1.2	41	1.5	2	.061	14	.061	15											
161	1.2DL + 1.5LM-MP8 + ...	Yes	Y		1	1.2	41	1.5	3	.061	14	.053	15	.031										
162	1.2DL + 1.5LM-MP8 + ...	Yes	Y		1	1.2	41	1.5	4	.061	14	.031	15	.053										
163	1.2DL + 1.5LM-MP8 + ...	Yes	Y		1	1.2	41	1.5	5	.061	14		15	.061										
164	1.2DL + 1.5LM-MP8 + ...	Yes	Y		1	1.2	41	1.5	6	.061	14	-.0...	15	.053										
165	1.2DL + 1.5LM-MP8 + ...	Yes	Y		1	1.2	41	1.5	7	.061	14	-.0...	15	.031										
166	1.2DL + 1.5LM-MP8 + ...	Yes	Y		1	1.2	41	1.5	8	.061	14	-.0...	15											
167	1.2DL + 1.5LM-MP8 + ...	Yes	Y		1	1.2	41	1.5	9	.061	14	-.0...	15	-.0...										
168	1.2DL + 1.5LM-MP8 + ...	Yes	Y		1	1.2	41	1.5	10	.061	14	-.0...	15	-.0...										
169	1.2DL + 1.5LM-MP8 + ...	Yes	Y		1	1.2	41	1.5	11	.061	14		15	-.0...										
170	1.2DL + 1.5LM-MP8 + ...	Yes	Y		1	1.2	41	1.5	12	.061	14	.031	15	-.0...										
171	1.2DL + 1.5LM-MP8 + ...	Yes	Y		1	1.2	41	1.5	13	.061	14	.053	15	-.0...										
172	1.2DL + 1.5LM-MP9 + ...	Yes	Y		1	1.2	42	1.5	2	.061	14	.061	15											
173	1.2DL + 1.5LM-MP9 + ...	Yes	Y		1	1.2	42	1.5	3	.061	14	.053	15	.031										
174	1.2DL + 1.5LM-MP9 + ...	Yes	Y		1	1.2	42	1.5	4	.061	14	.031	15	.053										
175	1.2DL + 1.5LM-MP9 + ...	Yes	Y		1	1.2	42	1.5	5	.061	14		15	.061										
176	1.2DL + 1.5LM-MP9 + ...	Yes	Y		1	1.2	42	1.5	6	.061	14	-.0...	15	.053										
177	1.2DL + 1.5LM-MP9 + ...	Yes	Y		1	1.2	42	1.5	7	.061	14	-.0...	15	.031										
178	1.2DL + 1.5LM-MP9 + ...	Yes	Y		1	1.2	42	1.5	8	.061	14	-.0...	15											
179	1.2DL + 1.5LM-MP9 + ...	Yes	Y		1	1.2	42	1.5	9	.061	14	-.0...	15	-.0...										
180	1.2DL + 1.5LM-MP9 + ...	Yes	Y		1	1.2	42	1.5	10	.061	14	-.0...	15	-.0...										
181	1.2DL + 1.5LM-MP9 + ...	Yes	Y		1	1.2	42	1.5	11	.061	14		15	-.0...										
182	1.2DL + 1.5LM-MP9 + ...	Yes	Y		1	1.2	42	1.5	12	.061	14	.031	15	-.0...										
183	1.2DL + 1.5LM-MP9 + ...	Yes	Y		1	1.2	42	1.5	13	.061	14	.053	15	-.0...										
184	1.2DL + 1.5LM-MP10 +...	Yes	Y		1	1.2	43	1.5	2	.061	14	.061	15											
185	1.2DL + 1.5LM-MP10 +...	Yes	Y		1	1.2	43	1.5	3	.061	14	.053	15	.031										
186	1.2DL + 1.5LM-MP10 +...	Yes	Y		1	1.2	43	1.5	4	.061	14	.031	15	.053										
187	1.2DL + 1.5LM-MP10 +...	Yes	Y		1	1.2	43	1.5	5	.061	14		15	.061										
188	1.2DL + 1.5LM-MP10 +...	Yes	Y		1	1.2	43	1.5	6	.061	14	-.0...	15	.053										
189	1.2DL + 1.5LM-MP10 +...	Yes	Y		1	1.2	43	1.5	7	.061	14	-.0...	15	.031										
190	1.2DL + 1.5LM-MP10 +...	Yes	Y		1	1.2	43	1.5	8	.061	14	-.0...	15											
191	1.2DL + 1.5LM-MP10 +...	Yes	Y		1	1.2	43	1.5	9	.061	14	-.0...	15	-.0...										
192	1.2DL + 1.5LM-MP10 +...	Yes	Y		1	1.2	43	1.5	10	.061	14	-.0...	15	-.0...										
193	1.2DL + 1.5LM-MP10 +...	Yes	Y		1	1.2	43	1.5	11	.061	14		15	-.0...										
194	1.2DL + 1.5LM-MP10 +...	Yes	Y		1	1.2	43	1.5	12	.061	14	.031	15	-.0...										
195	1.2DL + 1.5LM-MP10 +...	Yes	Y		1	1.2	43	1.5	13	.061	14	.053	15	-.0...										
196	1.2DL + 1.5LM-MP11 +...	Yes	Y		1	1.2	44	1.5	2	.061	14	.061	15											
197	1.2DL + 1.5LM-MP11 +...	Yes	Y		1	1.2	44	1.5	3	.061	14	.053	15	.031										
198	1.2DL + 1.5LM-MP11 +...	Yes	Y		1	1.2	44	1.5	4	.061	14	.031	15	.053										
199	1.2DL + 1.5LM-MP11 +...	Yes	Y		1	1.2	44	1.5	5	.061	14		15	.061										
200	1.2DL + 1.5LM-MP11 +...	Yes	Y		1	1.2	44	1.5	6	.061	14	-.0...	15	.053										
201	1.2DL + 1.5LM-MP11 +...	Yes	Y		1	1.2	44	1.5	7	.061	14	-.0...	15	.031										
202	1.2DL + 1.5LM-MP11 +...	Yes	Y		1	1.2	44	1.5	8	.061	14	-.0...	15											
203	1.2DL + 1.5LM-MP11 +...	Yes	Y		1	1.2	44	1.5	9	.061	14	-.0...	15	-.0...										
204	1.2DL + 1.5LM-MP11 +...	Yes	Y		1	1.2	44	1.5	10	.061	14	-.0...	15	-.0...										
205	1.2DL + 1.5LM-MP11 +...	Yes	Y		1	1.2	44	1.5	11	.061	14		15	-.0...										
206	1.2DL + 1.5LM-MP11 +...	Yes	Y		1	1.2	44	1.5	12	.061	14	.031	15	-.0...										
207	1.2DL + 1.5LM-MP11 +...	Yes	Y		1	1.2	44	1.5	13	.061	14	.053	15	-.0...										
208	1.2DL + 1.5LM-MP12 +...	Yes	Y		1	1.2	45	1.5	2	.061	14	.061	15											
209	1.2DL + 1.5LM-MP12 +...	Yes	Y		1	1.2	45	1.5	3	.061	14	.053	15	.031										
210	1.2DL + 1.5LM-MP12 +...	Yes	Y		1	1.2	45	1.5	4	.061	14	.031	15	.053										
211	1.2DL + 1.5LM-MP12 +...	Yes	Y		1	1.2	45	1.5	5	.061	14		15	.061										
212	1.2DL + 1.5LM-MP12 +...	Yes	Y		1	1.2	45	1.5	6	.061	14	-.0...	15	.053										
213	1.2DL + 1.5LM-MP12 +...	Yes	Y		1	1.2	45	1.5	7	.061	14	-.0...	15	.031										
214	1.2DL + 1.5LM-MP12 +...	Yes	Y		1	1.2	45	1.5	8	.061	14	-.0...	15											
215	1.2DL + 1.5LM-MP12 +...	Yes	Y		1	1.2	45	1.5	9	.061	14	-.0...	15	-.0...										
216	1.2DL + 1.5LM-MP12 +...	Yes	Y		1	1.2	45	1.5	10	.061	14	-.0...	15	-.0...										

Load Combinations (Continued)

	Description	Solve	PDelta	SRSS	BLC	Factor	BLC	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
217	1.2DL + 1.5LM-MP12 +...	Yes	Y		1	1.2	45	1.5	11	.061	14		15	-.0...										
218	1.2DL + 1.5LM-MP12 +...	Yes	Y		1	1.2	45	1.5	12	.061	14	.031	15	-.0...										
219	1.2DL + 1.5LM-MP12 +...	Yes	Y		1	1.2	45	1.5	13	.061	14	.053	15	-.0...										

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	N4	max	2439.7	4	3457.343	33	1447.72	2	-1010.8...	136	2127.265	16	303.932	101
2		min	-2426.643	22	405.445	136	-1380.7...	20	-8229.5...	33	-2215.1...	10	-391.66	180
3	N23	max	1799.369	5	2755.702	37	2120.244	14	3250.556	37	1698.94	20	5703.263	37
4		min	-1747.058	23	233.338	176	-2165.9...	8	302.918	176	-1738.8...	2	518.874	176
5	N25	max	1502.669	18	3118.332	29	2029.504	14	3516.748	29	2023.215	12	-702.755	108
6		min	-1566.803	12	315.98	108	-2052.0...	8	330.629	108	-1951.26	18	-6460.2...	29
7	Totals:	max	5449.766	17	9091.861	37	5588.398	2						
8		min	-5449.778	11	2159.912	55	-5588.3...	20						

Envelope AISC 15th(360-16): LRFD Steel Code Checks

	Member	Shape	Code Check	Loc[in]	LC	Shear Check	Loc[in]	Dir	LC	phi*...	phi*...	phi*...	phi*...	...	Eqn
1	H1	L3X3X4	1.030	84.5	33	.133	84.5	z	33	4269...	46656	1688...	3755...		H2-1
2	H2	L3X3X4	.905	84.5	29	.177	0	z	4	4269...	46656	1688...	3755...		H2-1
3	S1	BPL 5.375...	.767	0	31	.160	9.281	z	175	1387...	1533...	1237...	2566...		H1-...
4	H3	L3X3X4	.763	84.5	37	.118	84.5	z	31	4506...	46656	1688...	3755...		H2-1
5	S2	BPL 5.375...	.720	0	31	.160	9.281	z	177	1387...	1533...	1237...	2566...		H1-...
6	MP5	PIPE_2.0	.678	42	4	.109	42		3	1785...	32130	1871...	1871...		H1-...
7	MP11	PIPE_2.0	.655	36	12	.172	36		12	2086...	32130	1871...	1871...		H1-...
8	MP3	PIPE_2.0	.624	36	8	.191	36		8	2086...	32130	1871...	1871...		H1-...
9	MP6	PIPE_2.0	.612	41.438	27	.176	18.688		29	1936...	32130	1871...	1871...		H1-...
10	MP2	PIPE_2.0	.608	41.438	32	.186	18.688		33	1936...	32130	1871...	1871...		H1-...
11	S3	BPL 5.375...	.584	0	35	.150	9.281	z	107	1387...	1533...	1237...	2566...		H1-...
12	G4	L3X3X4	.547	44	35	.025	44	y	31	1437...	46656	1688...	3137...		H2-1
13	G5	L3X3X4	.531	44	27	.025	44	z	31	1437...	46656	1688...	3145...		H2-1
14	MP7	PIPE_2.0	.493	36	31	.155	36		30	2086...	32130	1871...	1871...		H1-...
15	CP1	L2.5x2.5x3	.478	13.5	10	.079	0	y	10	2756...	2919...	872....	1971...		H2-1
16	MP1	PIPE_2.0	.460	42	31	.107	42		32	1785...	32130	1871...	1871...		H1-...
17	MP8	PIPE_2.0	.422	29.813	31	.104	29.813		30	2520...	32130	1871...	1871...		H1-...
18	MP4	PIPE_2.0	.419	29.813	36	.105	29.813		34	2520...	32130	1871...	1871...		H1-...
19	MP10	PIPE_2.0	.401	41.438	35	.141	41.438		11	1936...	32130	1871...	1871...		H1-...
20	HR2	PIPE_2.0	.396	65.813	30	.257	153.563		9	5397...	32130	1871...	1871...		H1-...
21	HR1	PIPE_2.0	.388	64.125	34	.172	153.562		111	5397...	32130	1871...	1871...		H1-...
22	CP2	L2.5x2.5x3	.384	13.5	38	.063	13.5	z	5	2756...	2919...	872....	1971...		H2-1
23	G6	L3X3X4	.376	44	27	.019	44	y	108	1437...	46656	1688...	3148...		H2-1
24	MP12	PIPE_2.0	.319	29.813	100	.082	29.813		13	2520...	32130	1871...	1871...		H1-...
25	MP9	PIPE_2.0	.319	42	144	.085	42		11	1785...	32130	1871...	1871...		H1-...
26	HR3	PIPE_2.0	.288	65.812	207	.204	153.562		30	5397...	32130	1871...	1871...		H1-...
27	CP3	L2.5x2.5x3	.279	13.5	107	.060	0	z	7	2756...	2919...	872....	1971...		H2-1
28	G1	LL3x3x4x0	.209	0	10	.023	46.765	z	4	7639...	93312	6480	4361...		H1-...
29	G3	LL3x3x4x0	.143	0	13	.018	46.765	z	8	7639...	93312	6480	4361...		H1-...
30	G2	LL3x3x4x0	.143	0	6	.015	46.765	z	12	7639...	93312	6480	4361...		H1-...

APPENDIX D

ADDITIONAL CALCUATIONS

INFINIGY

Bolt Calculation Tool, V1.6.2

PROJECT DATA	
Site Name:	BRANFORD BANM TOWER
Site Number:	876321
Connection Description:	Platform to Tower

ENVELOPE BOLT LOADS		
(LC10 S1) Bolt Tension:	6872.12	lbs
(LC33 S1) Bolt Shear:	16651.95	lbs

MAX BOLT USAGE LOADS[1]		
Bolt Tension:	159.09	lbs
Bolt Shear:	16651.95	lbs

BOLT PROPERTIES		
Bolt Type:	Bolt	-
Bolt Diameter:	1	in
Bolt Grade:	A325	-
# of Bolts:	2	-
Threads Excluded?	No	-

[1] *Max bolt usage loads correspond to Load combination #33 on member S1 in RISA-3D, which causes the maximum demand on the bolts.*

Member Information
I nodes of S1, S3, S2,

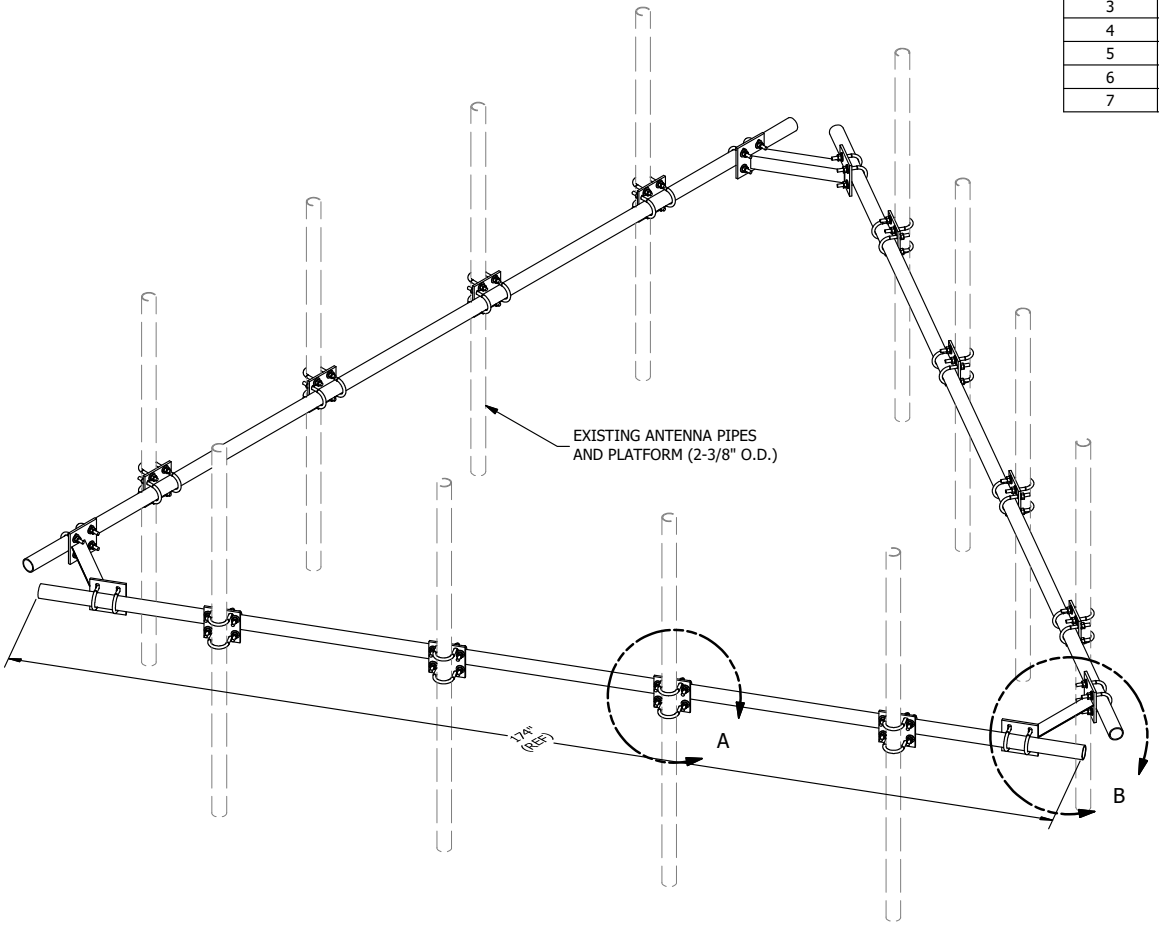
BOLT CHECK		
Tensile Strength	54516.96	
Shear Strength	35342.92	
Max Tensile Usage*	12.0%	
Max Shear Usage*	47.1%	
Interaction Check (Max Usage)*	0.21	***≤1.0***
Result	Pass	

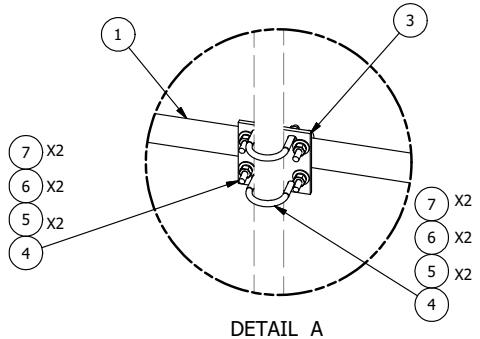
**Usage per TIA-222-H Section 15.5*

APPENDIX E

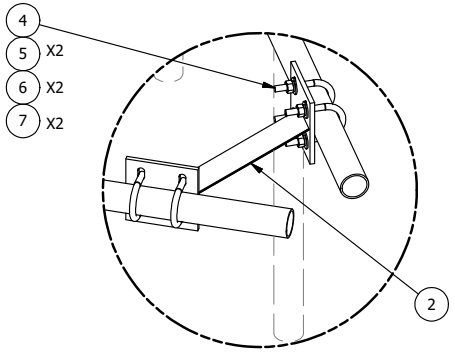
MOUNT MODIFICATION DESIGN DRAWINGS (MDD) / SUPPLEMENTAL DRAWINGS

PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	3	P2174	2-3/8" OD X 174" SCH 40 GALVANIZED PIPE	174 in	55.75	167.24
2	3	X-AHCP	ANGLE HANDRAIL CORNER PLATE		12.92	38.76
3	12	SCX1	CROSSOVER PLATE 2-3/8" X 2-3/8"	6 in	3.71	44.50
4	60	X-UB1212	1/2" X 2-1/2" X 4-1/2" X 2" U-BOLT (HDG.)		0.63	37.51
5	120	G12FW	1/2" HDG USS FLATWASHER	3/32 in	0.03	4.09
6	120	G12LW	1/2" HDG LOCKWASHER	1/8 in	0.01	1.67
7	120	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	8.60
					TOTAL WT. #	302.36





DETAIL A



DETAIL B

TOLERANCE NOTES

TOLERANCES ON DIMENSIONS, UNLESS OTHERWISE NOTED ARE:
SAWED, SHEARED AND GAS CUT EDGES *(± 0.030")*
DRILLED AND GAS CUT HOLES *(± 0.030")* - NO CONING OF HOLES
LASER CUT EDGES AND HOLES *(± 0.010")* - NO CONING OF HOLES
BENDS ARE ± 1/2 DEGREE
ALL OTHER MACHINING *(± 0.030")*
ALL OTHER ASSEMBLY *(± 0.060")*

PROPRIETARY NOTE:
THE DATA AND TECHNIQUES CONTAINED IN THIS DRAWING ARE PROPRIETARY INFORMATION OF VALMONT INDUSTRIES AND CONSIDERED A TRADE SECRET. ANY USE OR DISCLOSURE WITHOUT THE CONSENT OF VALMONT INDUSTRIES IS STRICTLY PROHIBITED.

REVISION HISTORY				
REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
A	REPLACED HCP WITH X-AHCP		CEK	7/11/2014

DESCRIPTION: **HANDRAIL KIT FOR 14'-6" FACE**

CPD NO.	DRAWN BY	ENG. APPROVAL	PART NO.
	KC8 5/30/2012		HRK14

CLASS	SUB	DRAWING USAGE	CHECKED BY	DWG. NO.
81	01	CUSTOMER	BMC 7/13/2014	HRK14

SITE PRO 1
A valmont COMPANY
Engineering Support Team: 1-888-753-7446
Locations: New York, NY; Atlanta, GA; Los Angeles, CA; Plymouth, IN; Salem, OR; Dallas, TX

FOX HILL TELECOM

Radio Frequency Emissions Analysis Report

T-Mobile

Site ID: CTNH107A

NH107/Global/Cherry Hill
150 North Main Street
Branford, CT 06405

August 24, 2022

Fox Hill Telecom Project Number: 221569

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	38.75 %

FOX HILL TELECOM

August 24, 2022

T-MOBILE
Attn: RF Manager
35 Griffin Road South
Bloomfield, CT 06009

Emissions Analysis for Site: **CTNH107A – NH107/Global/Cherry Hill**

Fox Hill Telecom, Inc ("Fox Hill") was directed to analyze the proposed upgrades to the T-MOBILE facility located at **150 North Main Street, Branford, CT**, for the purpose of determining whether the emissions from the Proposed T-MOBILE Antenna Installation located on this property are within specified federal limits.

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

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

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

General population exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limits for the 600 MHz & 700 MHz bands are approximately 400 $\mu W/cm^2$ and 467 $\mu W/cm^2$ respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 2500 MHz (BRS) bands is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were performed for the proposed upgrades to the T-MOBILE antenna facility located at **150 North Main Street, Branford, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-MOBILE is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB for directional panel antennas, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

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

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

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

Technology	Frequency Band	Channel Count	Transmit Power per Channel (W)
LTE / 5G NR	600 MHz	2	40
LTE	700 MHz	2	20
LTE	1900 MHz (PCS)	4	40
LTE	2100 MHz (AWS)	4	40
LTE / 5G NR	2500 MHz (BRS)	8	20

Table 1: Channel Data Table

The following antennas listed in *Table 2* were used in the modeling for transmission in the 600 MHz, 700 MHz, 1900 MHz (PCS), 2100 MHz (AWS) and 2500 MHz (BRS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB for directional panel antennas, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

Sector	Antenna Number	Antenna Make / Model	Antenna Centerline (ft)
A	1	RFS APXVAALL24_43-U-NA20	147
A	2	Commscope VV-65B-R1	147
A	3	Ericsson AIR6419 B41	147
B	1	RFS APXVAALL24_43-U-NA20	147
B	2	Commscope VV-65B-R1	147
B	3	Ericsson AIR6419 B41	147
C	1	RFS APXVAALL24_43-U-NA20	147
C	2	Commscope VV-65B-R1	147
C	3	Ericsson AIR6419 B41	147

Table 2: Antenna Data

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

RESULTS

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

Antenna ID	Antenna Make / Model	Frequency Bands	Antenna Gain (dBd)	Channel Count	Total TX Power (W)	ERP (W)	MPE %
Antenna A1	RFS APXVAALL24_43-U-NA20	600 MHz / 700 MHz	13.65 / 13.85	4	120	2,824.56	1.22
Antenna A2	Commscope VV-65B-R1	1900 MHz (PCS) / 2100 MHz (AWS)	16.55 / 16.85	8	320	14,976.45	2.71
Antenna A3	Ericsson AIR6419 B41	2500 MHz (BRS)	21.5	8	160	22,600.60	4.09
						Sector A Composite MPE%	**8.02**
Antenna B1	RFS APXVAALL24_43-U-NA20	600 MHz / 700 MHz	13.65 / 13.85	4	120	2,824.56	1.22
Antenna B2	Commscope VV-65B-R1	1900 MHz (PCS) / 2100 MHz (AWS)	16.55 / 16.85	8	320	14,976.45	2.71
Antenna B3	Ericsson AIR6419 B41	2500 MHz (BRS)	21.5	8	160	22,600.60	4.09
						Sector B Composite MPE%	**8.02**
Antenna C1	RFS APXVAALL24_43-U-NA20	600 MHz / 700 MHz	13.65 / 13.85	4	120	2,824.56	1.22
Antenna C2	Commscope VV-65B-R1	1900 MHz (PCS) / 2100 MHz (AWS)	16.55 / 16.85	8	320	14,976.45	2.71
Antenna C3	Ericsson AIR6419 B41	2500 MHz (BRS)	21.5	8	160	22,600.60	4.09
						Sector C Composite MPE%	**8.02**

Table 3: T-MOBILE Emissions Levels

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

Site Composite MPE%	
Carrier	**MPE%**
T-MOBILE – Max Per Sector Value	**8.02 %**
DISH	1.40 %
AT&T	28.59 %
MetroPCS	0.53 %
Pagenet	0.11 %
Clearwire	0.10 %
Site Total MPE %:	**38.75 %**

Table 4: All Carrier MPE Contributions

T-MOBILE Sector A Total:	8.02 %
T-MOBILE Sector B Total:	8.02 %
T-MOBILE Sector C Total:	8.02 %
Site Total:	38.75 %

Table 5: Site MPE Summary

FCC OET 65 specifies that for carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. *Table 6* below details a breakdown by frequency band and technology for the MPE power values for the maximum calculated T-MOBILE sector(s). For this site, all three sectors have the same configuration yielding the same results on all three sectors.

T-MOBILE _ Frequency Band / Technology Max Power Values (Per Sector)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
T-Mobile 600 MHz LTE / 5G NR	2	926.96	147	3.35	600 MHz	400	0.84%
T-Mobile 700 MHz LTE	2	485.32	147	1.76	700 MHz	467	0.38%
T-Mobile 1900 MHz (PCS) LTE	4	1,807.42	147	13.07	1900 MHz (PCS)	1000	1.31%
T-Mobile 2100 MHz (AWS) LTE	4	1,936.69	147	14.01	2100 MHz (AWS)	1000	1.40%
T-Mobile 2500 MHz (BRS) LTE / 5G NR	8	2,825.08	147	40.87	2500 MHz (BRS)	1000	4.09%
						Total:	**8.02 %**

Table 6: T-MOBILE Maximum Sector MPE Power Values

Summary

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

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

T-MOBILE Sector	Power Density Value (%)
Sector A:	8.02 %
Sector B:	8.02 %
Sector C:	8.02 %
T-MOBILE Maximum Total (per sector):	8.02 %
Site Total:	38.75 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **38.75 %** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

Scott Heffernan
Principal RF Engineer
Fox Hill Telecom, Inc
Holden, MA 01520
(978)660-3998

T-MOBILE SITE NUMBER: CTNH107A
T-MOBILE SITE NAME: NH107/GLOBAL/CHERRY HILL
SITE TYPE: MONOPOLE
TOWER HEIGHT: 147'-0"

BUSINESS UNIT #: 876321
SITE ADDRESS: 150 NORTH MAIN STREET BRANFORD, CT 06405
COUNTY: NEW HAVEN
JURISDICTION: CONNECTICUT SITING COUNCIL

T-MOBILE ANCHOR SITE CONFIGURATION: 67E5D998E OUTDOOR

SITE INFORMATION

CROWN CASTLE USA INC. SITE NAME:	BRANFORD BANM TOWER
SITE ADDRESS:	150 NORTH MAIN STREET BRANFORD, CT 06405
COUNTY:	NEW HAVEN
MAP/PARCEL #:	D06/E06/001/001.1
AREA OF CONSTRUCTION:	EXISTING
LATITUDE:	41.288611°
LONGITUDE:	-72.813861°
LAT/LONG TYPE:	NAD83
GROUND ELEVATION:	57'
CURRENT ZONING:	IG-1 GENERAL INDUSTRIAL
JURISDICTION:	CONNECTICUT SITING COUNCIL
OCCUPANCY CLASSIFICATION:	U
TYPE OF CONSTRUCTION:	IIB
A.D.A. COMPLIANCE:	FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION
PROPERTY OWNER:	PREMIER REALTY HOLDINGS LLC 150 NORTH MAIN ST BRANFORD, CT 06405
TOWER OWNER:	CROWN CASTLE 2000 CORPORATE DRIVE CANONSBURG, PA 15317
CARRIER/APPLICANT:	T-MOBILE 4 SYLVAN WAY PARSIPPANY, NJ 07054
ELECTRIC PROVIDER:	CONNECTICUT LIGHT & POWER CO 800-286-2000
TELCO PROVIDER:	LIGHTOWER 312-930-1000

PROJECT TEAM

A&E FIRM:	B+T GROUP 1717 S. BOULDER AVE. TULSA, OK 74119 MARVIN PHILLIPS marvin.phillips@btgrp.com
CROWN CASTLE USA INC. DISTRICT CONTACTS:	3530 TORINGDON WAY, SUITE 300 CHARLOTTE, NC 28277 TRICIA PELON - PROJECT MANAGER TRICIA.PELON@CROWNCASTLE.COM JASON D'AMICO - CONSTRUCTION MANAGER JASON.DAMICO@CROWNCASTLE.COM

NOTE:
PRIOR TO ACCESSING/ENTERING THE SITE YOU MUST CONTACT THE CROWN NOC AT (800) 788-7011 & CROWN CONSTRUCTION MANAGER.

DRAWING INDEX

SHEET #	SHEET DESCRIPTION
T-1	TITLE SHEET
T-2	GENERAL NOTES
C-1.1	OVERALL SITE PLAN
C-1.2	SITE PLAN & ENLARGED SITE PLAN
C-2	FINAL ELEVATION & ANTENNA PLANS
C-3	ANTENNA & CABLE SCHEDULE
C-4	PLUMBING DIAGRAM
C-5	EQUIPMENT SPECS
E-1	AC PANEL SCHEDULES & ONE LINE DIAGRAM
G-1	ANTENNA GROUNDING DIAGRAM
G-2	GROUNDING DETAILS
G-3	GROUNDING DETAILS
ATTACHED	HRK14 HANDRAIL KIT

ALL DRAWINGS CONTAINED HEREIN ARE FORMATTED FOR FULL SIZE. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

PROJECT DESCRIPTION

THE PURPOSE OF THIS PROJECT IS TO ENHANCE BROADBAND CONNECTIVITY AND CAPACITY TO THE EXISTING ELIGIBLE WIRELESS FACILITY.

TOWER SCOPE OF WORK:
- REMOVE (9) ANTENNAS
- REMOVE (9) RRHs
- REMOVE (9) TMAs
- REMOVE (3) FILTERs
- REMOVE (3) 1-1/4" HYBRID CABLES
- REMOVE (3) 1-1/4" COAX CABLES
- INSTALL MOUNT MODIFICATIONS REQUIRED PER MOUNT ANALYSIS BY INFINIGY DATED JUNE 24, 2022.
- INSTALL (9) ANTENNAS
- INSTALL (6) RRHs
- INSTALL (3) 1-5/8" HYBRID CABLES

GROUND SCOPE OF WORK:
- REMOVE (2) DUW30
- REMOVE (6) RU22 RADIOS
- INSTALL (1) ENCLOSURE 6160 AC V1 CABINET
- INSTALL (1) B160 BATTERY CABINET
- INSTALL (1) RP 6651
- INSTALL (2) PSU 4813 VR4A (KIT)
- INSTALL (1) CSR IXRe V2 (Gen2)
- INSTALL (1) 125 AMP BREAKER

NOTE:
THE POWER DESIGN FOR ANY AC ELECTRICAL POWER CHANGES IS TO BE PERFORMED BY OTHERS AND IS SHOWN HERE FOR REFERENCE PURPOSES ONLY. T-MOBILE IS SOLELY RESPONSIBLE FOR THE ELECTRICAL POWER DESIGN.

LOCATION MAP

NO SCALE

APPLICABLE CODES/REFERENCE DOCUMENTS

ALL WORK SHALL BE PERFORMED AND MATERIALS INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THESE CODES:

CODE TYPE	CODE
BUILDING	2015 IBC
MECHANICAL	2015 IMC
ELECTRICAL	2017 NEC

REFERENCE DOCUMENTS:

STRUCTURAL ANALYSIS:	TEP
DATED:	6/29/22
MOUNT ANALYSIS:	INFINIGY
DATED:	8/15/22
AC ELECTRICAL POWER DESIGN:	N/A
DATED:	N/A
RFDS REVISION:	10
DATED:	4/26/22
ORDER ID:	621880
REVISION:	0

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(800) 922-4455 CBYD.COM
CALL 2 WORKING DAYS BEFORE YOU DIG!

APPROVALS

APPROVAL	SIGNATURE	DATE
PROPERTY OWNER OR REP.		
LAND USE PLANNER		
T-MOBILE		
OPERATIONS		
RF		
NETWORK		
BACKHAUL		
CONSTRUCTION MANAGER		

THE PARTIES ABOVE HEREBY APPROVE AND ACCEPT THESE DOCUMENTS AND AUTHORIZE THE CONTRACTOR TO PROCEED WITH THE CONSTRUCTION DESCRIBED HEREIN. ALL CONSTRUCTION DOCUMENTS ARE SUBJECT TO REVIEW BY THE LOCAL BUILDING DEPARTMENT AND ANY CHANGES AND MODIFICATIONS THEY MAY IMPOSE.

T-Mobile
4 SYLVAN WAY
PARSIPPANY, NJ 07054

CROWN CASTLE
3530 TORINGDON WAY, SUITE 300
CHARLOTTE, NC 28277

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

T-MOBILE SITE NUMBER: **CTNH107A**

BU #: **876321**
BRANFORD BANM TOWER

150 NORTH MAIN STREET
BRANFORD, CT 06405

EXISTING
147'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	7/13/22	MEH	PRELIMINARY REVIEW	MTJ
0	8/9/22	DAS	CONSTRUCTION	MTJ
1	8/22/22	DAS	CONSTRUCTION	MTJ

STATE OF CONNECTICUT
GREG M. CHASE
No. 23024
LICENSED
PROFESSIONAL ENGINEER
8/22/22

MTS ENGINEERING P.L.L.C.
BER:2386985
Expires 3/31/23

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

SHEET NUMBER: T-1

REVISION: 1

136457.015.01_BRANFORD_BANM_TOWER.dwg – Sheet:T-1 – User: mjones – Aug 22, 2022 – 9:24am

CROWN CASTLE USA INC. SITE ACTIVITY REQUIREMENTS:

1. NOTICE TO PROCEED– NO WORK SHALL COMMENCE PRIOR TO CROWN CASTLE USA INC. WRITTEN NOTICE TO PROCEED (NTP) AND THE ISSUANCE OF A PURCHASE ORDER. PRIOR TO ACCESSING/ENTERING THE SITE YOU MUST CONTACT THE CROWN CASTLE USA INC. NOC AT 800–788–7011 & THE CROWN CASTLE USA INC. CONSTRUCTION MANAGER.
2. "LOOK UP" – CROWN CASTLE USA INC. SAFETY CLIMB REQUIREMENT:
   THE INTEGRITY OF THE SAFETY CLIMB AND ALL COMPONENTS OF THE CLIMBING FACILITY SHALL BE CONSIDERED DURING ALL STAGES OF DESIGN, INSTALLATION, AND INSPECTION. TOWER MODIFICATION, MOUNT REINFORCEMENTS, AND/OR EQUIPMENT INSTALLATIONS SHALL NOT COMPROMISE THE INTEGRITY OR FUNCTIONAL USE OF THE SAFETY CLIMB OR ANY COMPONENTS OF THE CLIMBING FACILITY ON THE STRUCTURE. THIS SHALL INCLUDE, BUT NOT BE LIMITED TO: PINCHING OF THE WIRE ROPE, BENDING OF THE WIRE ROPE FROM ITS SUPPORTS, DIRECT CONTACT OR CLOSE PROXIMITY TO THE WIRE ROPE WHICH MAY CAUSE FRICTIONAL WEAR, IMPACT TO THE ANCHORAGE POINTS IN ANY WAY, OR TO IMPEDE/BLOCK ITS INTENDED USE. ANY COMPROMISED SAFETY CLIMB, INCLUDING EXISTING CONDITIONS MUST BE TAGGED OUT AND REPORTED TO YOUR CROWN CASTLE USA INC. POC OR CALL THE NOC TO GENERATE A SAFETY CLIMB MAINTENANCE AND CONTRACTOR NOTICE TICKET.
3. PRIOR TO THE START OF CONSTRUCTION, ALL REQUIRED JURISDICTIONAL PERMITS SHALL BE OBTAINED. THIS INCLUDES, BUT IS NOT LIMITED TO, BUILDING, ELECTRICAL, MECHANICAL, FIRE, FLOOD ZONE, ENVIRONMENTAL, AND ZONING. AFTER ONSITE ACTIVITIES AND CONSTRUCTION ARE COMPLETED, ALL REQUIRED PERMITS SHALL BE SATISFIED AND CLOSED OUT ACCORDING TO LOCAL JURISDICTIONAL REQUIREMENTS.
4. ALL CONSTRUCTION MEANS AND METHODS; INCLUDING BUT NOT LIMITED TO, ERECTION PLANS, RIGGING PLANS, CLIMBING PLANS, AND RESCUE PLANS SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR RESPONSIBLE FOR THE EXECUTION OF THE WORK CONTAINED HEREIN, AND SHALL MEET ANSI/ASSE A10.48 (LATEST EDITION); FEDERAL, STATE, AND LOCAL REGULATIONS; AND ANY APPLICABLE INDUSTRY CONSENSUS STANDARDS RELATED TO THE CONSTRUCTION ACTIVITIES BEING PERFORMED. ALL RIGGING PLANS SHALL ADHERE TO ANSI/ASSE A10.48 (LATEST EDITION) AND CROWN CASTLE USA INC. STANDARD CED–STD–10253, INCLUDING THE REQUIRED INVOLVEMENT OF A QUALIFIED ENGINEER FOR CLASS IV CONSTRUCTION, TO CERTIFY THE SUPPORTING STRUCTURE(S) IN ACCORDANCE WITH ANSI/TIA–322 (LATEST EDITION).
5. ALL SITE WORK TO COMPLY WITH QAS–STD–10068 "INSTALLATION STANDARDS FOR CONSTRUCTION ACTIVITIES ON CROWN CASTLE USA INC. TOWER SITE," CED–STD–10294 "STANDARD FOR INSTALLATION OF MOUNTS AND APPURTENANCES," AND LATEST VERSION OF ANSI/TIA–1019–A–2012 "STANDARD FOR INSTALLATION, ALTERATION, AND MAINTENANCE OF ANTENNA SUPPORTING STRUCTURES AND ANTENNAS."
6. IF THE SPECIFIED EQUIPMENT CAN NOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY CROWN CASTLE USA INC. PRIOR TO PROCEEDING WITH ANY SUCH CHANGE OF INSTALLATION.
7. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES. CONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
8. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
9. THE CONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES PRIOR TO THE START OF CONSTRUCTION.
10. ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY CONTRACTOR. EXTREME CAUTION SHOULD BE USED BY THE CONTRACTOR WHEN EXCAVATING OR DRILLING PIERS AROUND OR NEAR UTILITIES. CONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS WILL INCLUDE BUT NOT BE LIMITED TO A) FALL PROTECTION B) CONFINED SPACE C) ELECTRICAL SAFETY D) TRENCHING AND EXCAVATION E) CONSTRUCTION SAFETY PROCEDURES.
11. ALL SITE WORK SHALL BE AS INDICATED ON THE STAMPED CONSTRUCTION DRAWINGS AND PROJECT SPECIFICATIONS, LATEST APPROVED REVISION.
12. CONTRACTOR SHALL KEEP THE SITE FREE FROM ACCUMULATING WASTE MATERIAL, DEBRIS, AND TRASH AT THE COMPLETION OF THE WORK. IF NECESSARY, RUBBISH, STUMPS, DEBRIS, STICKS, STONES AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.
13. ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, SUBJECT TO THE APPROVAL OF CONTRACTOR, TOWER OWNER, CROWN CASTLE USA INC., AND/OR LOCAL UTILITIES.
14. THE CONTRACTOR SHALL PROVIDE SITE SIGNAGE IN ACCORDANCE WITH THE TECHNICAL SPECIFICATION FOR SITE SIGNAGE REQUIRED BY LOCAL JURISDICTION AND SIGNAGE REQUIRED ON INDIVIDUAL PIECES OF EQUIPMENT, ROOMS, AND SHELTERS.
15. THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE CARRIER'S EQUIPMENT AND TOWER AREAS.
16. THE SUB GRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION.
17. THE AREAS OF THE OWNERS PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE TOWER, EQUIPMENT OR DRIVEWAY, SHALL BE GRADED TO A UNIFORM SLOPE, AND STABILIZED TO PREVENT EROSION AS SPECIFIED ON THE CONSTRUCTION DRAWINGS AND/OR PROJECT SPECIFICATIONS.
18. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.
19. THE CONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.
20. CONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
21. CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION. TRASH AND DEBRIS SHOULD BE REMOVED FROM SITE ON A DAILY BASIS.
22. NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUND. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.

GENERAL NOTES:

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:
   CONTRACTOR: GENERAL CONTRACTOR RESPONSIBLE FOR CONSTRUCTION
   CARRIER: T–MOBILE
   TOWER OWNER: CROWN CASTLE USA INC.
2. THESE DRAWINGS HAVE BEEN PREPARED USING STANDARDS OF PROFESSIONAL CARE AND COMPLETENESS NORMALLY EXERCISED UNDER SIMILAR CIRCUMSTANCES BY REPUTABLE ENGINEERS IN THIS OR SIMILAR LOCALITIES. IT IS ASSUMED THAT THE WORK DEPICTED WILL BE PERFORMED BY AN EXPERIENCED CONTRACTOR AND/OR WORKPEOPLE WHO HAVE A WORKING KNOWLEDGE OF THE APPLICABLE CODE STANDARDS AND REQUIREMENTS AND OF INDUSTRY ACCEPTED STANDARD GOOD PRACTICE. AS NOT EVERY CONDITION OR ELEMENT IS (OR CAN BE) EXPLICITLY SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL USE INDUSTRY ACCEPTED STANDARD GOOD PRACTICE FOR MISCELLANEOUS WORK NOT EXPLICITLY SHOWN.
3. THESE DRAWINGS REPRESENT THE FINISHED STRUCTURE. THEY DO NOT INDICATE THE MEANS OR METHODS OF CONSTRUCTION. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES. THE CONTRACTOR SHALL PROVIDE ALL MEASURES NECESSARY FOR PROTECTION OF LIFE AND PROPERTY DURING CONSTRUCTION. SUCH MEASURES SHALL INCLUDE, BUT NOT BE LIMITED TO, BRACING, FORMWORK, SHORING, ETC. SITE VISITS BY THE ENGINEER OR HIS REPRESENTATIVE WILL NOT INCLUDE INSPECTION OF THESE ITEMS AND IS FOR STRUCTURAL OBSERVATION OF THE FINISHED STRUCTURE ONLY.
4. NOTES AND DETAILS IN THE CONSTRUCTION DRAWINGS SHALL TAKE PRECEDENCE OVER GENERAL NOTES AND TYPICAL DETAILS. WHERE NO DETAILS ARE SHOWN, CONSTRUCTION SHALL CONFORM TO SIMILAR WORK ON THE PROJECT, AND/OR AS PROVIDED FOR IN THE CONTRACT DOCUMENTS. WHERE DISCREPANCIES OCCUR BETWEEN PLANS, DETAILS, GENERAL NOTES, AND SPECIFICATIONS, THE GREATER, MORE STRICT REQUIREMENTS, SHALL GOVERN. IF FURTHER CLARIFICATION IS REQUIRED CONTACT THE ENGINEER OF RECORD.
5. SUBSTANTIAL EFFORT HAS BEEN MADE TO PROVIDE ACCURATE DIMENSIONS AND MEASUREMENTS ON THE DRAWINGS TO ASSIST IN THE FABRICATION AND/OR PLACEMENT OF CONSTRUCTION ELEMENTS BUT IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY THE DIMENSIONS, MEASUREMENTS, AND/OR CLEARANCES SHOWN IN THE CONSTRUCTION DRAWINGS PRIOR TO FABRICATION OR CUTTING OF ANY NEW OR EXISTING CONSTRUCTION ELEMENTS. IF IT IS DETERMINED THAT THERE ARE DISCREPANCIES AND/OR CONFLICTS WITH THE CONSTRUCTION DRAWINGS THE ENGINEER OF RECORD IS TO BE NOTIFIED AS SOON AS POSSIBLE.
6. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING CONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CROWN CASTLE.
7. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES. CONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
8. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
9. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
10. IF THE SPECIFIED EQUIPMENT CAN NOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY THE CARRIER AND CROWN CASTLE PRIOR TO PROCEEDING WITH ANY SUCH CHANGE OF INSTALLATION.
11. CONTRACTOR IS TO PERFORM A SITE INVESTIGATION AND IS TO DETERMINE THE BEST ROUTING OF ALL CONDUITS FOR POWER, AND TELCO AND FOR GROUNDING CABLES AS SHOWN IN THE POWER, TELCO, AND GROUNDING PLAN DRAWINGS.
12. THE CONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE TO THE SATISFACTION OF CROWN CASTLE USA INC.
13. CONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
14. CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION. TRASH AND DEBRIS SHOULD BE REMOVED FROM SITE ON A DAILY BASIS.

CONCRETE, FOUNDATIONS, AND REINFORCING STEEL:

1. ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE ACI 301, ACI 318, ACI 336, ASTM A184, ASTM A185 AND THE DESIGN AND CONSTRUCTION SPECIFICATION FOR CAST–IN–PLACE CONCRETE.
2. UNLESS NOTED OTHERWISE, SOIL BEARING PRESSURE USED FOR DESIGN OF SLABS AND FOUNDATIONS IS ASSUMED TO BE 1000 psf.
3. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH (f'c) OF 3000 psi AT 28 DAYS, UNLESS NOTED OTHERWISE. NO MORE THAN 90 MINUTES SHALL ELAPSE FROM BATCH TIME TO TIME OF PLACEMENT UNLESS APPROVED BY THE ENGINEER OF RECORD. TEMPERATURE OF CONCRETE SHALL NOT EXCEED 90°f AT TIME OF PLACEMENT.
4. CONCRETE EXPOSED TO FREEZE–THAW CYCLES SHALL CONTAIN AIR ENTRAINING ADMIXTURES. AMOUNT OF AIR ENTRAINMENT TO BE BASED ON SIZE OF AGGREGATE AND F3 CLASS EXPOSURE (VERY SEVERE). CEMENT USED TO BE TYPE II PORTLAND CEMENT WITH A MAXIMUM WATER–TO–CEMENT RATIO (W/C) OF 0.45.
5. ALL STEEL REINFORCING SHALL CONFORM TO ASTM A615. ALL WELDED WIRE FABRIC (WWF) SHALL CONFORM TO ASTM A185. ALL SPLICES SHALL BE CLASS "B" TENSION SPLICES, UNLESS NOTED OTHERWISE. ALL HOOKS SHALL BE STANDARD 90 DEGREE HOOKS, UNLESS NOTED OTHERWISE. YIELD STRENGTH (Fy) OF STANDARD DEFORMED BARS ARE AS FOLLOWS:
   #4 BARS AND SMALLER.......................................40 ksi
   #5 BARS AND LARGER...60 ksi
6. THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCING STEEL UNLESS SHOWN OTHERWISE ON DRAWINGS:
   CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH.....................3"
   CONCRETE EXPOSED TO EARTH OR WEATHER:
   #6 BARS AND LARGER..2"
   #5 BARS AND SMALLER...1–1/2"
   CONCRETE NOT EXPOSED TO EARTH OR WEATHER:
   SLAB AND WALLS..3/4"
   BEAMS AND COLUMNS...1–1/2"
7. A TOOLED EDGE OR A 3/4" CHAMFER SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE, UNLESS NOTED OTHERWISE, IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.

ELECTRICAL INSTALLATION NOTES:

1. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC AND ALL APPLICABLE FEDERAL, STATE, AND LOCAL CODES/ORDINANCES.
2. CONDUIT ROUTINGS ARE SCHEMATIC. CONTRACTOR SHALL INSTALL CONDUITS SO THAT ACCESS TO EQUIPMENT IS NOT BLOCKED AND TRIP HAZARDS ARE ELIMINATED.
3. WIRING, RACEWAY AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC.
4. ALL CIRCUITS SHALL BE SEGREGATED AND MAINTAIN MINIMUM CABLE SEPARATION AS REQUIRED BY THE NEC.
   4.1. ALL EQUIPMENT SHALL BEAR THE UNDERWRITERS LABORATORIES LABEL OF APPROVAL, AND SHALL CONFORM TO REQUIREMENT OF THE NATIONAL ELECTRICAL CODE.
   4.2. ALL OVERCURRENT DEVICES SHALL HAVE AN INTERRUPTING CURRENT RATING THAT SHALL BE GREATER THAN THE SHORT CIRCUIT CURRENT TO WHICH THEY ARE SUBJECTED, 22,000 AIC MINIMUM. VERYIFY AVAILABLE SHORT CIRCUIT CURRENT DOES NOT EXCEED THE RATING OF ELECTRICAL EQUIPMENT IN ACCORDANCE WITH ARTICLE 110.24 NEC OR THE MOST CURRENT ADOPTED CODE PRE THE GOVERNING JURISDICTION.
5. EACH END OF EVERY POWER PHASE CONDUCTOR, GROUNDING CONDUCTOR, AND TELCO CONDUCTOR OR CABLE SHALL BE LABELED WITH COLOR–CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, 1/2" PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL). THE IDENTIFICATION METHOD SHALL CONFORM WITH NEC AND OSHA.
6. ALL ELECTRICAL COMPONENTS SHALL BE CLEARLY LABELED WITH LAMICOID TAGS SHOWING THEIR RATED VOLTAGE, PHASE CONFIGURATION, WIRE CONFIGURATION, POWER OR AMPACITY RATING AND BRANCH CIRCUIT ID NUMBERS (i.e. PANEL BOARD AND CIRCUIT ID'S).
7. PANEL BOARDS (ID NUMBERS) SHALL BE CLEARLY LABELED WITH PLASTIC LABELS.
8. ALL TIE WRAPS SHALL BE CUT FLUSH WITH APPROVED CUTTING TOOL TO REMOVE SHARP EDGES.
9. ALL POWER AND EQUIPMENT GROUND WIRING IN TUBING OR CONDUIT SHALL BE SINGLE COPPER CONDUCTOR (#14 OR LARGER) WITH TYPE THHW, THWN, THWN–2, XHHW, XHHW–2, THW, THW–2, RHW, OR RHW–2 INSULATION UNLESS OTHERWISE SPECIFIED.
10. SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED INDOORS SHALL BE SINGLE COPPER CONDUCTOR (#6 OR LARGER) WITH TYPE THHW, THWN, THWN–2, XHHW, XHHW–2, THW, THW–2, RHW, OR RHW–2 INSULATION UNLESS OTHERWISE SPECIFIED.
11. POWER AND CONTROL WIRING IN FLEXIBLE CORD SHALL BE MULTI–CONDUCTOR, TYPE SOOW CORD (#14 OR LARGER) UNLESS OTHERWISE SPECIFIED.
12. POWER AND CONTROL WIRING FOR USE IN CABLE TRAY SHALL BE MULTI–CONDUCTOR, TYPE TC CABLE (#14 OR LARGER), WITH TYPE THHW, THWN, THWN–2, XHHW, XHHW–2, THW, THW–2, RHW, OR RHW–2 INSULATION UNLESS OTHERWISE SPECIFIED.
13. ALL POWER AND GROUNDING CONNECTIONS SHALL BE CRIMP–STYLE, COMPRESSION WIRE LUGS AND WIRE NUTS BY THOMAS AND BETTS (OR EQUAL). LUGS AND WIRE NUTS SHALL BE RATED FOR OPERATION NOT LESS THAN 75° C (90° C IF AVAILABLE).
14. RACEWAY AND CABLE TRAY SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND NEC.
15. ELECTRICAL METALLIC TUBING (EMT), INTERMEDIATE METAL CONDUIT (IMC), OR RIGID METAL CONDUIT (RMC) SHALL BE USED FOR EXPOSED INDOOR LOCATIONS.
16. ELECTRICAL METALLIC TUBING (EMT) OR METAL–CLAD CABLE (MC) SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.
17. SCHEDULE 40 PVC UNDERGROUND ON STRAIGHTS AND SCHEDULE 80 PVC FOR ALL ELBOWS/90s AND ALL APPROVED ABOVE GRADE PVC CONDUIT.
18. LIQUID–TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID–TITE FLEX) SHALL BE USED INDOORS AND OUTDOORS, WHERE VIBRATION OCCURS OR FLEXIBILITY IS NEEDED.
19. CONDUIT AND TUBING FITTINGS SHALL BE THREADED OR COMPRESSION–TYPE AND APPROVED FOR THE LOCATION USED. SET SCREW FITTINGS ARE NOT ACCEPTABLE.
20. CABINETS, BOXES AND WIRE WAYS SHALL BE LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND THE NEC.
21. WIREWAYS SHALL BE METAL WITH AN ENAMEL FINISH AND INCLUDE A HINGED COVER, DESIGNED TO SWING OPEN DOWNWARDS (WIREMOLD SPECMATE WIREWAY).
22. SLOTTED WIRING DUCT SHALL BE PVC AND INCLUDE COVER (PANDUIT TYPE E OR EQUAL).
23. CONDUITS SHALL BE FASTENED SECURELY IN PLACE WITH APPROVED NON–PERFORATED STRAPS AND HANGERS. EXPLOSIVE DEVICES (i.e. POWDER–ACTUATED) FOR ATTACHING HANGERS TO STRUCTURE WILL NOT BE PERMITTED. CLOSELY FOLLOW THE LINES OF THE STRUCTURE, MAINTAIN CLOSE PROXIMITY TO THE STRUCTURE AND KEEP CONDUITS IN TIGHT ENVELOPES. CHANGES IN DIRECTION TO ROUTE AROUND OBSTACLES SHALL BE MADE WITH CONDUIT OUTLET BODIES. CONDUIT SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER. PARALLEL AND PERPENDICULAR TO STRUCTURE WALL AND CEILING LINES. ALL CONDUIT SHALL BE FISHED TO CLEAR OBSTRUCTIONS. ENDS OF CONDUITS SHALL BE TEMPORARILY CAPPED FLUSH TO FINISH GRADE TO PREVENT CONCRETE, PLASTER OR DIRT FROM ENTERING. CONDUITS SHALL BE RIGIDLY CLAMPED TO BOXES BY GALVANIZED MALLEABLE IRON BUSHING ON INSIDE AND GALVANIZED MALLEABLE IRON LOCKNUT ON OUTSIDE AND INSIDE.
24. EQUIPMENT CABINETS, TERMINAL BOXES, JUNCTION BOXES AND PULL BOXES SHALL BE GALVANIZED OR EPOXY–COATED SHEET STEEL. SHALL MEET OR EXCEED UL 50 AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND NEMA 3R (OR BETTER) FOR EXTERIOR LOCATIONS.
25. METAL RECEPTACLE, SWITCH AND DEVICE BOXES SHALL BE GALVANIZED, EPOXY–COATED OR NON–CORRODING; SHALL MEET OR EXCEED UL 514A AND NEMA OS 1 AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND WEATHER PROTECTED (WP OR BETTER) FOR EXTERIOR LOCATIONS.
26. NONMETALLIC RECEPTACLE, SWITCH AND DEVICE BOXES SHALL MEET OR EXCEED NEMA OS 2 (NEWEST REVISION) AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND WEATHER PROTECTED (WP OR BETTER) FOR EXTERIOR LOCATIONS.
27. THE CONTRACTOR SHALL NOTIFY AND OBTAIN NECESSARY AUTHORIZATION FROM THE CARRIER AND/OR CROWN CASTLE USA INC. BEFORE COMMENCING WORK ON THE AC POWER DISTRIBUTION PANELS.
28. THE CONTRACTOR SHALL PROVIDE NECESSARY TAGGING ON THE BREAKERS, CABLES AND DISTRIBUTION PANELS IN ACCORDANCE WITH THE APPLICABLE CODES AND STANDARDS TO SAFEGUARD LIFE AND PROPERTY.
29. INSTALL LAMICOID LABEL ON THE METER CENTER TO SHOW "T–MOBILE".
30. ALL EMPTY/SPARE CONDUITS THAT ARE INSTALLED ARE TO HAVE A METERED MULE TAPE PULL CORD INSTALLED.

CONDUCTOR COLOR CODE		
SYSTEM	CONDUCTOR	COLOR
120/240V, 1Ø	A PHASE	BLACK
	B PHASE	RED
	NEUTRAL	WHITE
	GROUND	GREEN
120/208V, 3Ø	A PHASE	BLACK
	B PHASE	RED
	C PHASE	BLUE
	NEUTRAL	WHITE
	GROUND	GREEN
277/480V, 3Ø	A PHASE	BROWN
	B PHASE	ORANGE OR PURPLE
	C PHASE	YELLOW
	NEUTRAL	GREY
	GROUND	GREEN
DC VOLTAGE	POS (+)	RED**
	NEG (–)	BLACK**

* SEE NEC 210.5(C)(1) AND (2)
** POLARITY MARKED AT TERMINATION

APWA UNIFORM COLOR CODE:

WHITE	PROPOSED EXCAVATION
PINK	TEMPORARY SURVEY MARKINGS
RED	ELECTRIC POWER LINES, CABLES, CONDUIT, AND LIGHTING CABLES
YELLOW	GAS, OIL, STEAM, PETROLEUM, OR GASEOUS MATERIALS
ORANGE	COMMUNICATION, ALARM OR SIGNAL LINES, CABLES, OR CONDUIT AND TRAFFIC LOOPS
BLUE	POTABLE WATER
PURPLE	RECLAIMED WATER, IRRIGATION, AND SLURRY LINES
GREEN	SEWERS AND DRAIN LINES

GREENFIELD GROUNDING NOTES:

1. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION AND AC POWER GES'S) SHALL BE BONDED TOGETHER AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.
2. THE CONTRACTOR SHALL PERFORM IEEE FALL–OF–POTENTAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR GROUND ELECTRODE SYSTEMS, THE CONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.
3. THE CONTRACTOR IS RESPONSIBLE FOR PROPERLY SEQUENCING GROUNDING AND UNDERGROUND CONDUIT INSTALLATION AS TO PREVENT ANY LOSS OF CONTINUITY IN THE GROUNDING SYSTEM OR DAMAGE TO THE CONDUIT AND PROVIDE TESTING RESULTS.
4. METAL CONDUIT AND TRAY SHALL BE GROUNDED AND MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH #6 COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
5. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.
6. EACH CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, #6 STRANDED COPPER OR LARGER FOR INDOOR BTS; #2 BARE SOLID TINNED COPPER FOR OUTDOOR BTS.
7. CONNECTIONS TO THE GROUND BUS SHALL NOT BE DOUBLED UP OR STACKED BACK TO BACK CONNECTIONS ON OPPOSITE SIDE OF THE GROUND BUS ARE PERMITTED.
8. ALL EXTERIOR GROUND CONDUCTORS BETWEEN EQUIPMENT/GROUND BARS AND THE GROUND RING SHALL BE #2 SOLID TINNED COPPER UNLESS OTHERWISE INDICATED.
9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
10. USE OF 90° BENDS IN THE PROTECTION GROUNDING CONDUCTORS SHALL BE AVOIDED WHEN 45° BENDS CAN BE ADEQUATELY SUPPORTED.
11. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
12. ALL GROUND CONNECTIONS ABOVE GRADE (INTERIOR AND EXTERIOR) SHALL BE FORMED USING HIGH PRESS CRIMPS.
13. COMPRESSION GROUND CONNECTIONS MAY BE REPLACED BY EXOTHERMIC WELD CONNECTIONS.
14. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO THE BRIDGE AND THE TOWER GROUND BAR.
15. APPROVED ANTIOXIDANT COATINGS (i.e. CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
16. ALL EXTERIOR GROUND CONNECTIONS SHALL BE COATED WITH A CORROSION RESISTANT MATERIAL.
17. MISCELLANEOUS ELECTRICAL AND NON–ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
18. BOND ALL METALLIC OBJECTS WITHIN 6 ft OF MAIN GROUND RING WITH (1) #2 BARE SOLID TINNED COPPER GROUND CONDUCTOR.
19. GROUND CONDUCTORS USED FOR THE FACILITY GROUNDING AND LIGHTNING PROTECTION SYSTEMS SHALL NOT BE ROUTED THROUGH METALLIC OBJECTS THAT FORM A RING AROUND THE CONDUCTOR, SUCH AS METALLIC CONDUITS, METAL SUPPORT CLIPS OR SLEEVES THROUGH WALLS OR FLOORS. WHEN IT IS REQUIRED TO BE HOUSED IN CONDUIT TO MEET CODE REQUIREMENTS OR LOCAL CONDITIONS, NON–METALLIC MATERIAL SUCH AS PVC CONDUIT SHALL BE USED. WHERE USE OF METAL CONDUIT IS UNAVOIDABLE (i.e., NONMETALLIC CONDUIT PROHIBITED BY LOCAL CODE) THE GROUND CONDUCTOR SHALL BE BONDED TO EACH END OF THE METAL CONDUIT.
20. ALL GROUNDS THAT TRANSITION FROM BELOW GRADE TO ABOVE GRADE MUST BE #2 BARE SOLID TINNED COPPER IN 3/4" NON–METALLIC, FLEXIBLE CONDUIT FROM 24" BELOW GRADE TO WITHIN 3" TO 6" OF CAD–WELD TERMINATION POINT. THE EXPOSED END OF THE CONDUIT MUST BE SEALED WITH SILICONE CAULK. (ADD TRANSITIONING GROUND STANDARD DETAIL AS WELL).
21. BUILDINGS WHERE THE MAIN GROUNDING CONDUCTORS ARE REQUIRED TO BE ROUTED TO GRADE, THE CONTRACTOR SHALL ROUTE TWO GROUNDING CONDUCTORS FROM THE ROOFTOP, TOWERS, AND WATER TOWERS GROUNDING RING, TO THE EXISTING GROUNDING SYSTEM, THE GROUNDING CONDUCTORS SHALL NOT BE SMALLER THAN 2/0 COPPER. ROOFTOP GROUNDING RING SHALL BE BONDED TO THE EXISTING GROUNDING SYSTEM, THE BUILDING STEEL COLUMNS, LIGHTNING PROTECTION SYSTEM, AND BUILDING MAIN WATER LINE (FERROUS OR NONFERROUS METAL PIPING ONLY).

ABBREVIATIONS:

ANT	ANTENNA
(E)	EXISTING
FIF	FACILITY INTERFACE FRAME
GEN	GENERATOR
GPS	GLOBAL POSITIONING SYSTEM
GSM	GLOBAL SYSTEM FOR MOBILE
LTE	LONG TERM EVOLUTION
MGB	MASTER GROUND BAR
MW	MICROWAVE
(N)	NEW
NEC	NATIONAL ELECTRIC CODE
(P)	PROPOSED
PP	POWER PLANT
QTY	QUANTITY
RECT	RECTIFIER
RBS	RADIO BASE STATION
RET	REMOTE ELECTRIC TILT
RFDS	RADIO FREQUENCY DATA SHEET
RRH	REMOTE RADIO HEAD
RRU	REMOTE RADIO UNIT
SIAD	SMART INTEGRATED DEVICE
TMA	TOWER MOUNTED AMPLIFIER
TYP	TYPICAL
UMTS	UNIVERSAL MOBILE TELECOMMUNICATIONS SYSTEM
W.P.	WORK POINT

T-Mobile
4 SYLVAN WAY
PARSIPPANY, NJ 07054

CROWN CASTLE
3530 TORINGDON WAY, SUITE 300
CHARLOTTE, NC 28277

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

T-MOBILE SITE NUMBER: **CTNH107A**

BU #: **876321**
BRANFORD BANM TOWER

150 NORTH MAIN STREET
BRANFORD, CT 06405

EXISTING
147'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	7/13/22	MEH	PRELIMINARY REVIEW	MTJ
0	8/9/22	DAS	CONSTRUCTION	MTJ
1	8/22/22	DAS	CONSTRUCTION	MTJ

STATE OF CONNECTICUT CHAD TUTTLE No. 23924 LICENSED PROFESSIONAL ENGINEER
8/22/22

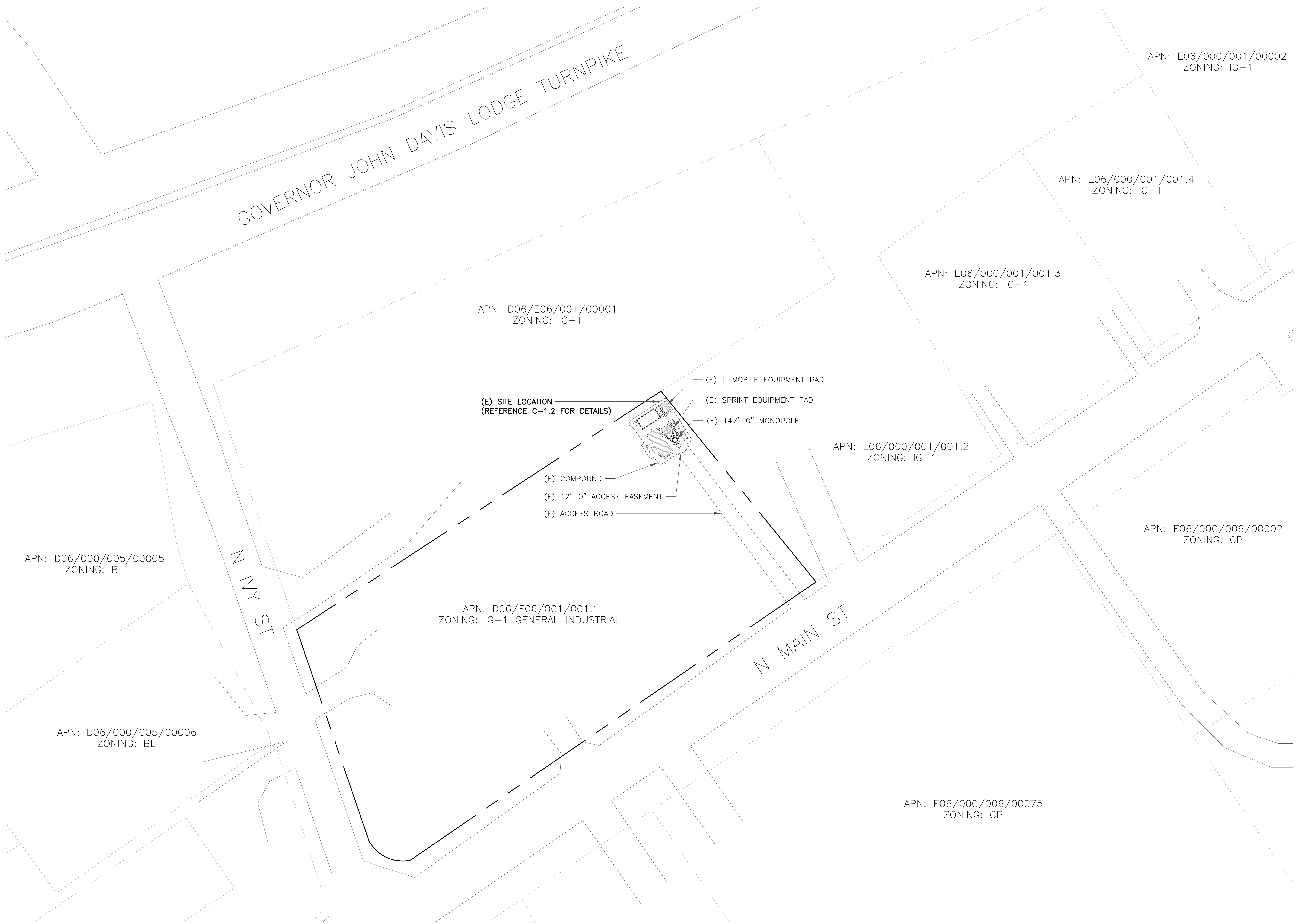
MTS ENGINEERING P.L.L.C.
BER:2386985
Expires 3/31/23

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

SHEET NUMBER: **T-2**
REVISION: **1**

SITE PLAN DISCLAIMER:

PROPERTY LINES AND STRUCTURES HAVE BEEN DIGITIZED FROM GOOGLE MAPS. CROWN CASTLE USA INC. HAS NOT COMPLETED A SITE SURVEY AND THEREFORE MAKES NO CLAIMS AS TO THE ACCURACY OF INFORMATION DEPICTED ON THIS SHEET.



1 OVERALL SITE PLAN
SCALE: 50' 25' 0 50' 1" = 50'−0" (FULL SIZE) 1" = 100'−0" (11x17)

N

T-Mobile

4 SYLVAN WAY
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0	8/9/22	DAS	CONSTRUCTION	MTJ
1	8/22/22	DAS	CONSTRUCTION	MTJ

STATE OF CONNECTICUT
CHAD TITLE
No. 23924
LICENSED
PROFESSIONAL ENGINEER
8/22/22

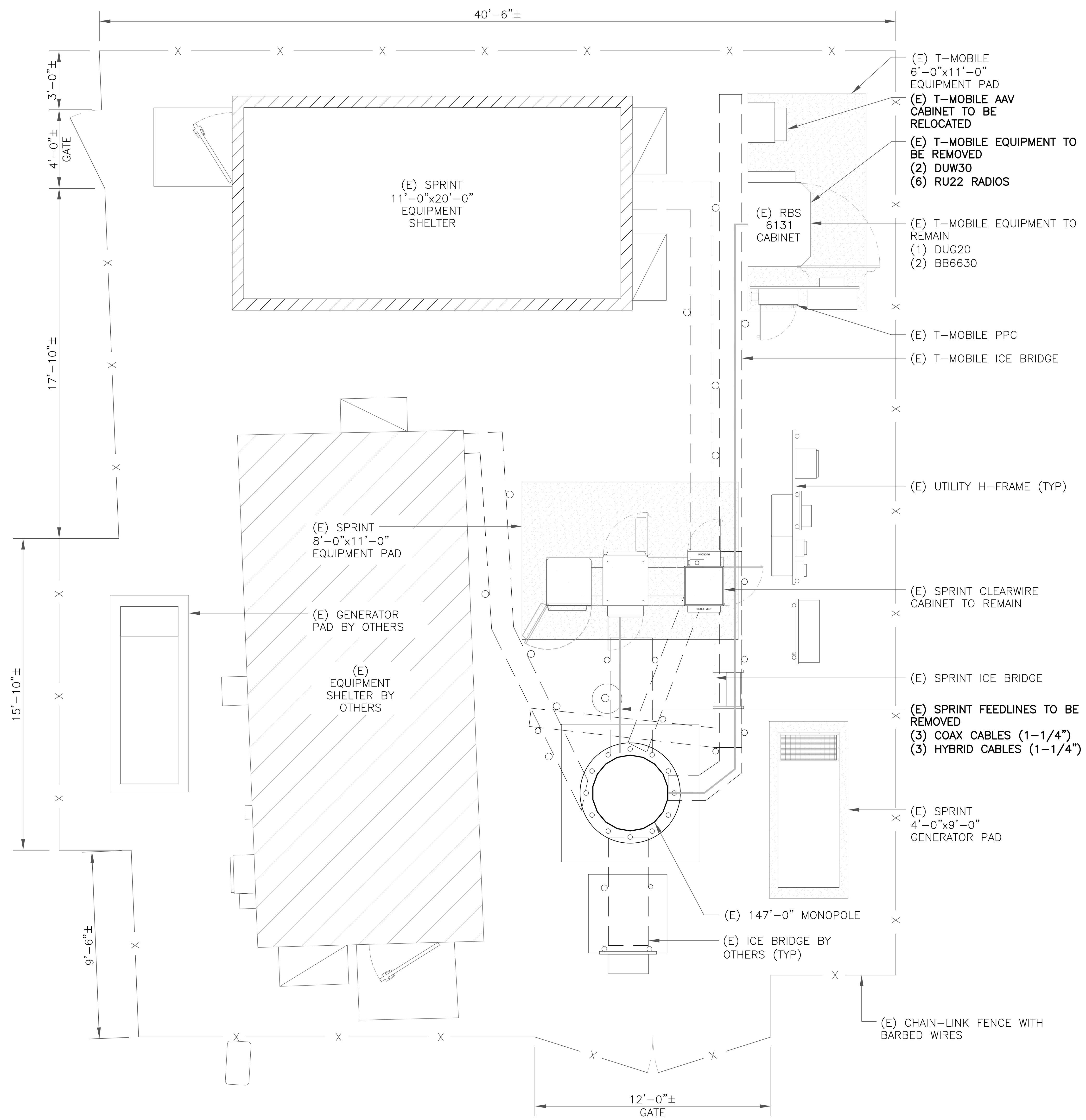
MTS ENGINEERING P.L.L.C.
BER:2386985
Expires 3/31/23

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

SHEET NUMBER: C-1.1

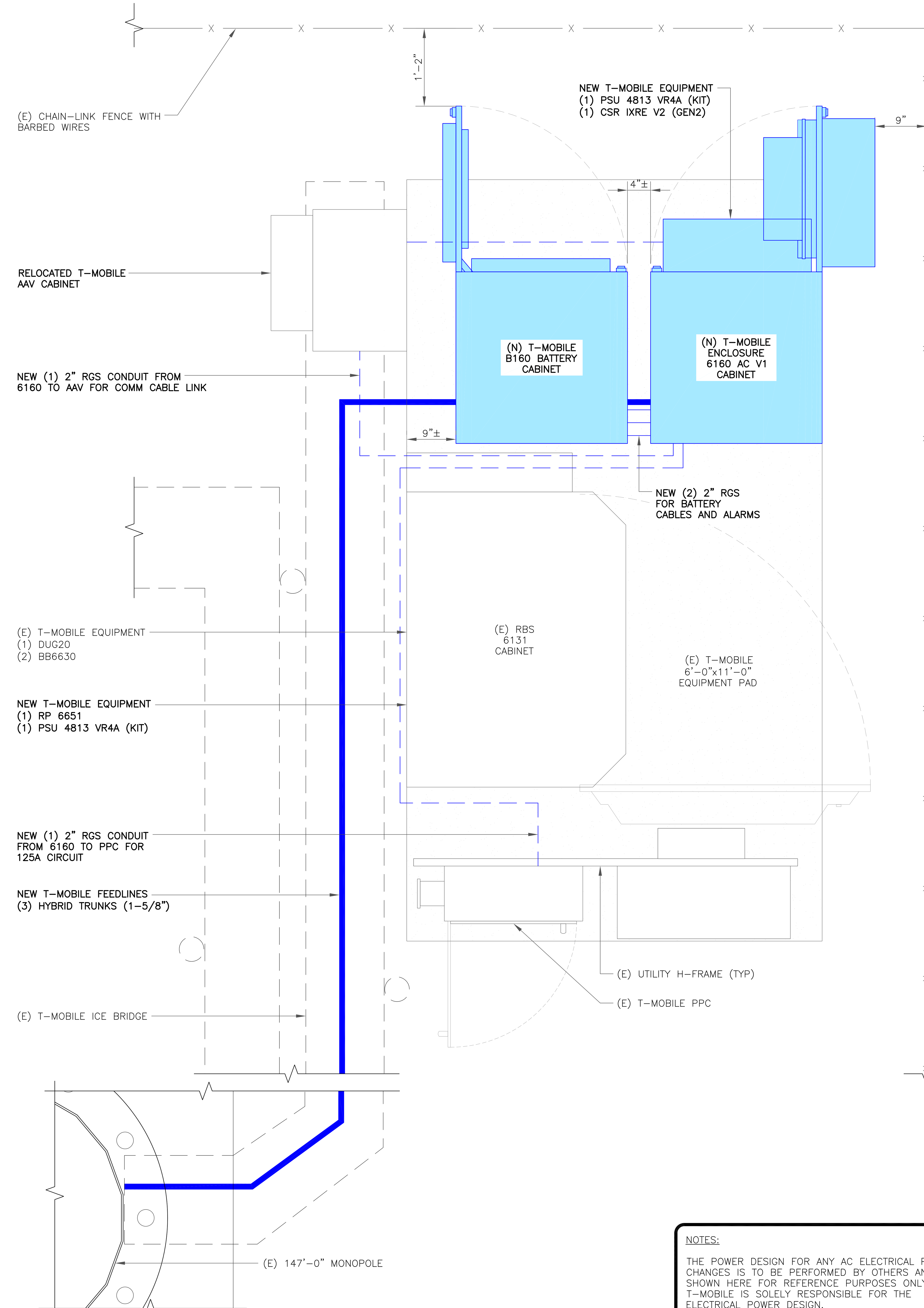
REVISION: 1

136457.015.01_BRANFORD BANM TOWER.dwg – Sheet:C–1.1 – User: mjones – Aug 22, 2022 – 9:26am



1 SITE PLAN

SCALE: 4' 3' 2' 1' 0 4' — 1/4"=1'-0" (FULL SIZE) 1/8"=1'-0" (11x17)



2 ENLARGED SITE PLAN

SCALE: 1' 6" 0 1' — 1"=1'-0" (FULL SIZE) 1/2"=1'-0" (11x17)

NOTES:

THE POWER DESIGN FOR ANY AC ELECTRICAL POWER CHANGES IS TO BE PERFORMED BY OTHERS AND IS SHOWN HERE FOR REFERENCE PURPOSES ONLY. T-MOBILE IS SOLELY RESPONSIBLE FOR THE ELECTRICAL POWER DESIGN.

T-Mobile
4 SYLVAN WAY
PARSIPPANY, NJ 07054

CROWN CASTLE
3530 TORINGDON WAY, SUITE 300
CHARLOTTE, NC 28277

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

T-MOBILE SITE NUMBER: **CTNH107A**

BU #: **876321**
BRANFORD BANM TOWER

150 NORTH MAIN STREET
BRANFORD, CT 06405

EXISTING
147'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
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STATE OF CONNECTICUT — CHAD TUTTLE — No. 23924 — LICENSED PROFESSIONAL ENGINEER
8/22/22

MTS ENGINEERING P.L.L.C.
BER:2386985
Expires 3/31/23

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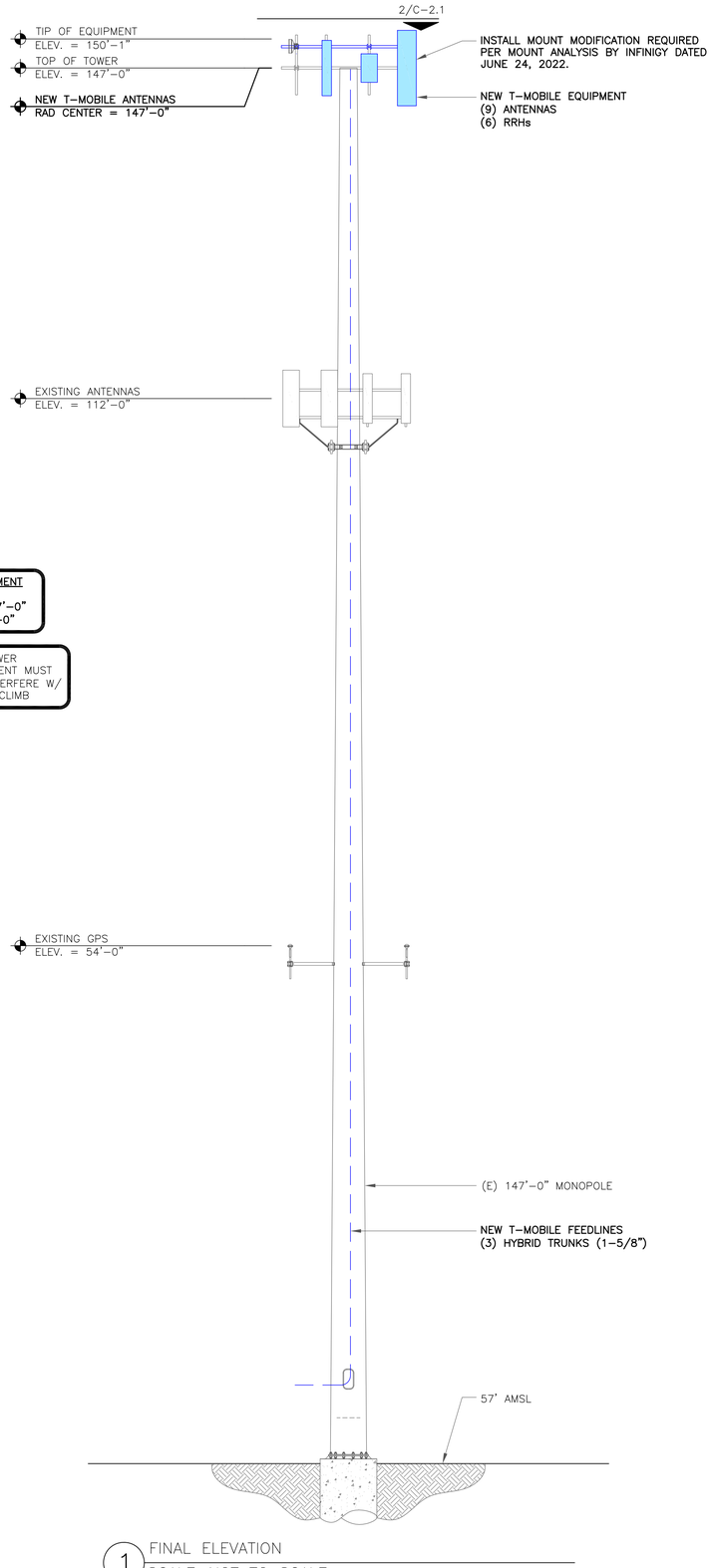
SHEET NUMBER: C-1.2

REVISION: 1

136457.015.01_BRANFORD BANM TOWER.dwg - Sheet:C-1.2 - User: mjones - Aug 22, 2022 - 9:27am

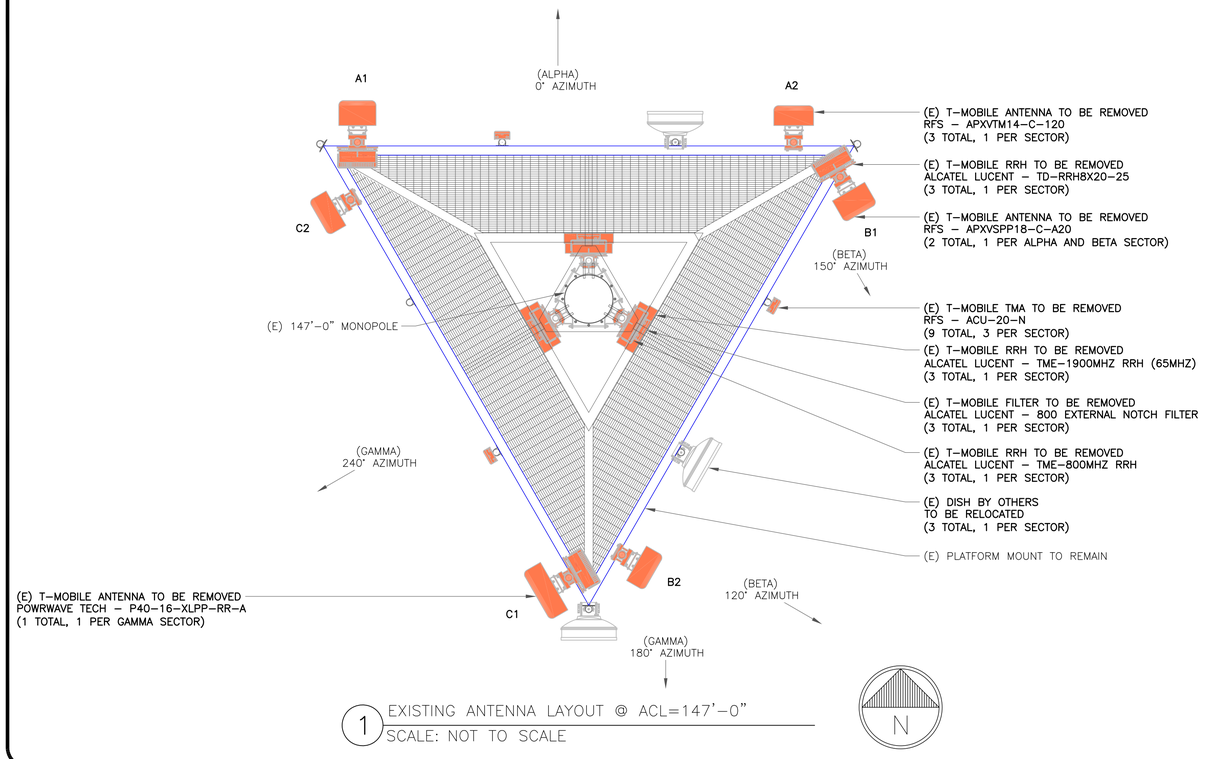


T-MOBILE EQUIPMENT

ANTENNA CL: 147'-0"
MOUNT CL: 147'-0"

ANY AND ALL TOWER MOUNTED EQUIPMENT MUST NOT TRAP OR INTERFERE W/ EXISTING SAFETY CLIMB

1 FINAL ELEVATION
SCALE: NOT TO SCALE



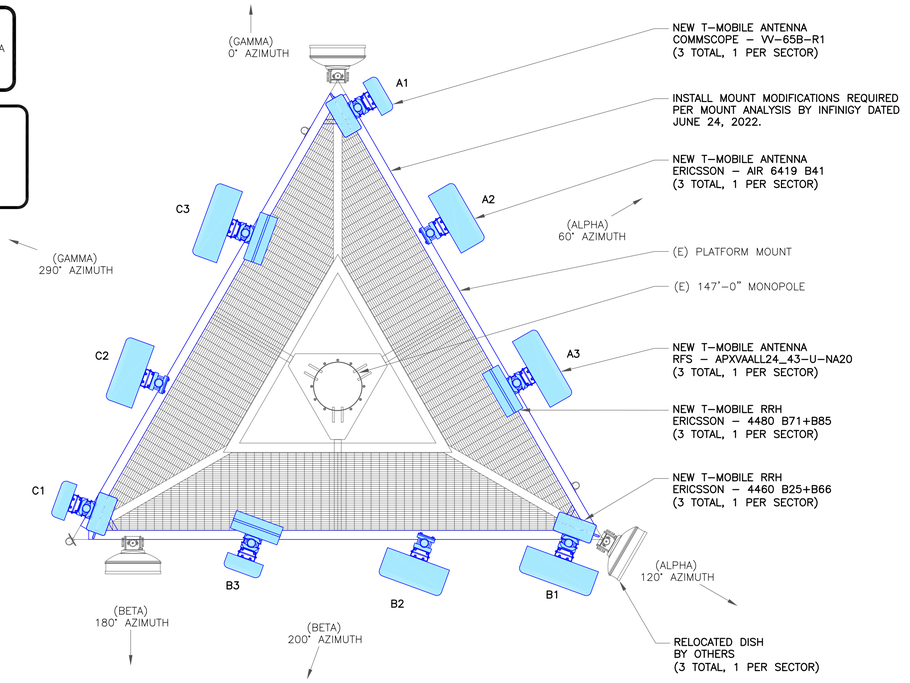
1 EXISTING ANTENNA LAYOUT @ ACL=147'-0"
SCALE: NOT TO SCALE

INSTALLER NOTES:

CONTRACTOR SHALL RE-ORIENT ANTENNA MOUNT(s) AS NECESSARY TO ACHIEVE PROPOSED ANTENNA AZIMUTHS

INSTALLER NOTE:

NO PROPOSED LOADING TO BE ADDED UNTIL MOUNT MODIFICATIONS ARE INSTALLED PER MOUNT MODIFICATION DESIGN BY INFINIGY DATED JUNE 24, 2022.



2 FINAL ANTENNA LAYOUT @ ACL=147'-0"
SCALE: NOT TO SCALE

T-Mobile
4 SYLVAN WAY
PARSIPPANY, NJ 07054

CROWN CASTLE
3530 TORINGDON WAY, SUITE 300
CHARLOTTE, NC 28277

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

T-MOBILE SITE NUMBER: **CTNH107A**

BU #: **876321**
BRANFORD BANM TOWER

150 NORTH MAIN STREET
BRANFORD, CT 06405

EXISTING
147'-0" MONOPOLE

ISSUED FOR:

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MTS ENGINEERING P.L.L.C.
BER:2386985
Expires 3/31/23

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SHEET NUMBER: C-2

REVISION: 1

136457.015.01_BRANFORD BANM TOWER.dwg - Sheet:C-2 - User: mjones - Aug 22, 2022 - 9:27am

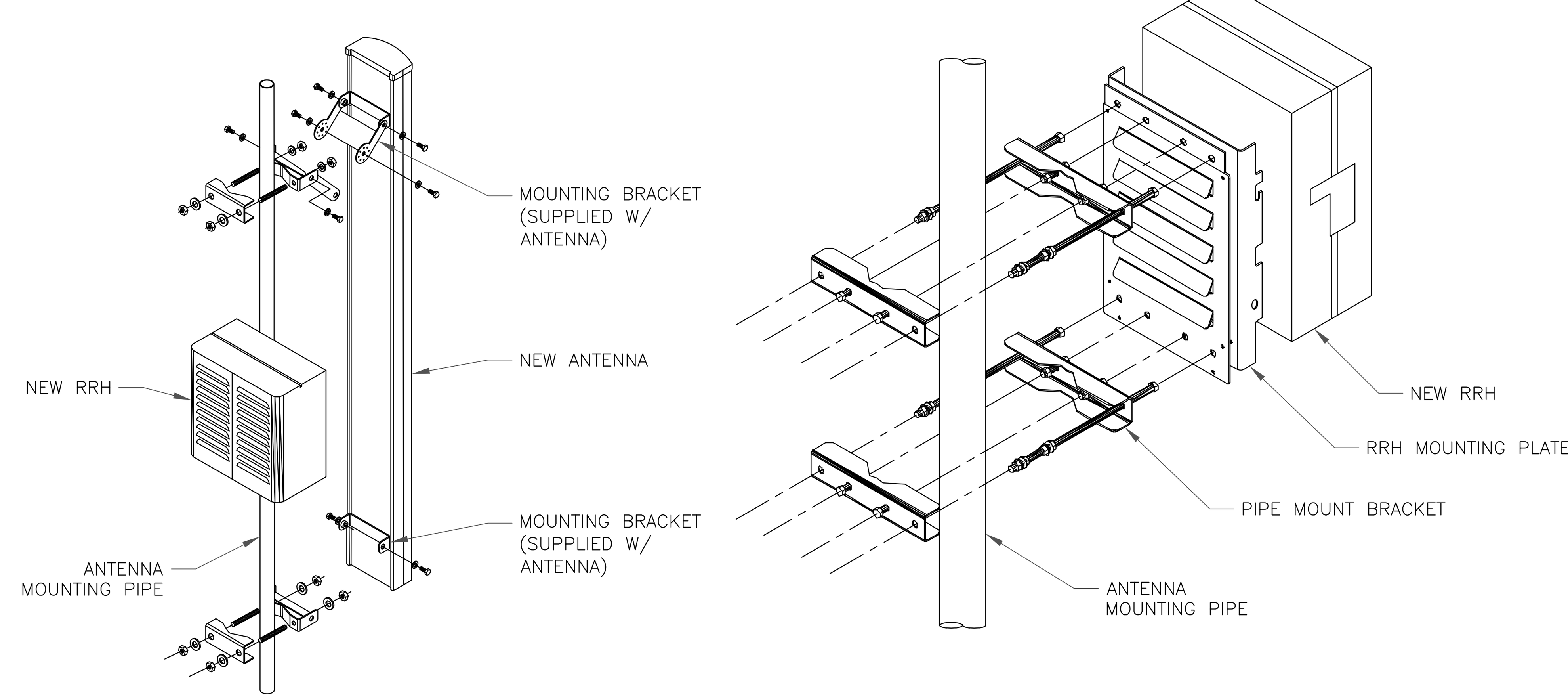
RF SYSTEM SCHEDULE

SECTOR	ANTENNA	TECH	MANUFACTURER	ANTENNA MODEL	AZIMUTH	M-TILT	E-TILT	RAD CENTER	TMA/RRU	FEEDLINE TYPE
ALPHA	A1	L2100/L1900 /G1900	COMMSCOPE	VV-65B-R1	60°	0°	2°/2°	147'-0"	4460 B25+B66	–
	A2	L2500/N2500	ERICSSON	AIR 6419 B41	60°	0°	2°/2°	147'-0"	–	(1) 1 5/8" HYBRID
	A3	L700/L600/N600	RFS	APXVAALL24_43-U-NA20	60°	0°	2°/2°	147'-0"	4480 B71+B85	–
	–	–	–	DISH BY OTHERS	120°	–	–	149'-0"	–	–
BETA	B1	L700/L600/N600	RFS	APXVAALL24_43-U-NA20	200°	0°	2°/2°	147'-0"	4460 B25+B66	–
	B2	L2500/N2500	ERICSSON	AIR 6419 B41	200°	0°	2°/2°	147'-0"	–	(1) 1 5/8" HYBRID
	B3	L2100/L1900 /G1900	COMMSCOPE	VV-65B-R1	200°	0°	2°/2°	147'-0"	4480 B71+B85	–
	–	–	–	DISH BY OTHERS	180°	–	–	149'-0"	–	–
GAMMA	C1	L2100/L1900 /G1900	COMMSCOPE	VV-65B-R1	290°	0°	2°/2°	147'-0"	4460 B25+B66	–
	C2	L2500/N2500	ERICSSON	AIR 6419 B41	290°	0°	2°/2°	147'-0"	–	(1) 1 5/8" HYBRID
	C3	L700/L600/N600	RFS	APXVAALL24_43-U-NA20	290°	0°	2°/2°	147'-0"	4480 B71+B85	–
	–	–	–	DISH BY OTHERS	0°	–	–	149'-0"	–	–

1 ANTENNA AND CABLE SCHEDULE
SCALE: NOT TO SCALE

INSTALLER NOTES:

1. COMPLY WITH MANUFACTURERS INSTRUCTIONS TO ENSURE THAT ALL RRHs RECEIVE ELECTRICAL POWER WITHIN 24 HOURS OF BEING REMOVED FROM THE MANUFACTURER'S PACKAGING.
2. DO NOT OPEN RRH PACKAGES IN THE RAIN.
3. ALL PIPES, BRACKETS, AND MISCELLANEOUS HARDWARE TO BE GALVANIZED UNLESS NOTED OTHERWISE.



2 ANTENNA WITH RRH MOUNTING DETAIL
SCALE: NOT TO SCALE

136457.015.01_BRANFORD BANM TOWER.dwg – Sheet:C-3 – User: mjones – Aug 22, 2022 – 9:27am

T-Mobile
4 SYLVAN WAY
PARSIPPANY, NJ 07054

CROWN CASTLE
3530 TORINGDON WAY, SUITE 300
CHARLOTTE, NC 28277

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

T-MOBILE SITE NUMBER: **CTNH107A**

BU #: **876321**
BRANFORD BANM TOWER

150 NORTH MAIN STREET
BRANFORD, CT 06405

EXISTING
147'-0" MONOPOLE

ISSUED FOR:

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STATE OF CONNECTICUT CHAD ... TITLE No. 23924 LICENSED PROFESSIONAL ENGINEER 8/22/22

MTS ENGINEERING P.L.L.C.
BER:2386985
Expires 3/31/23

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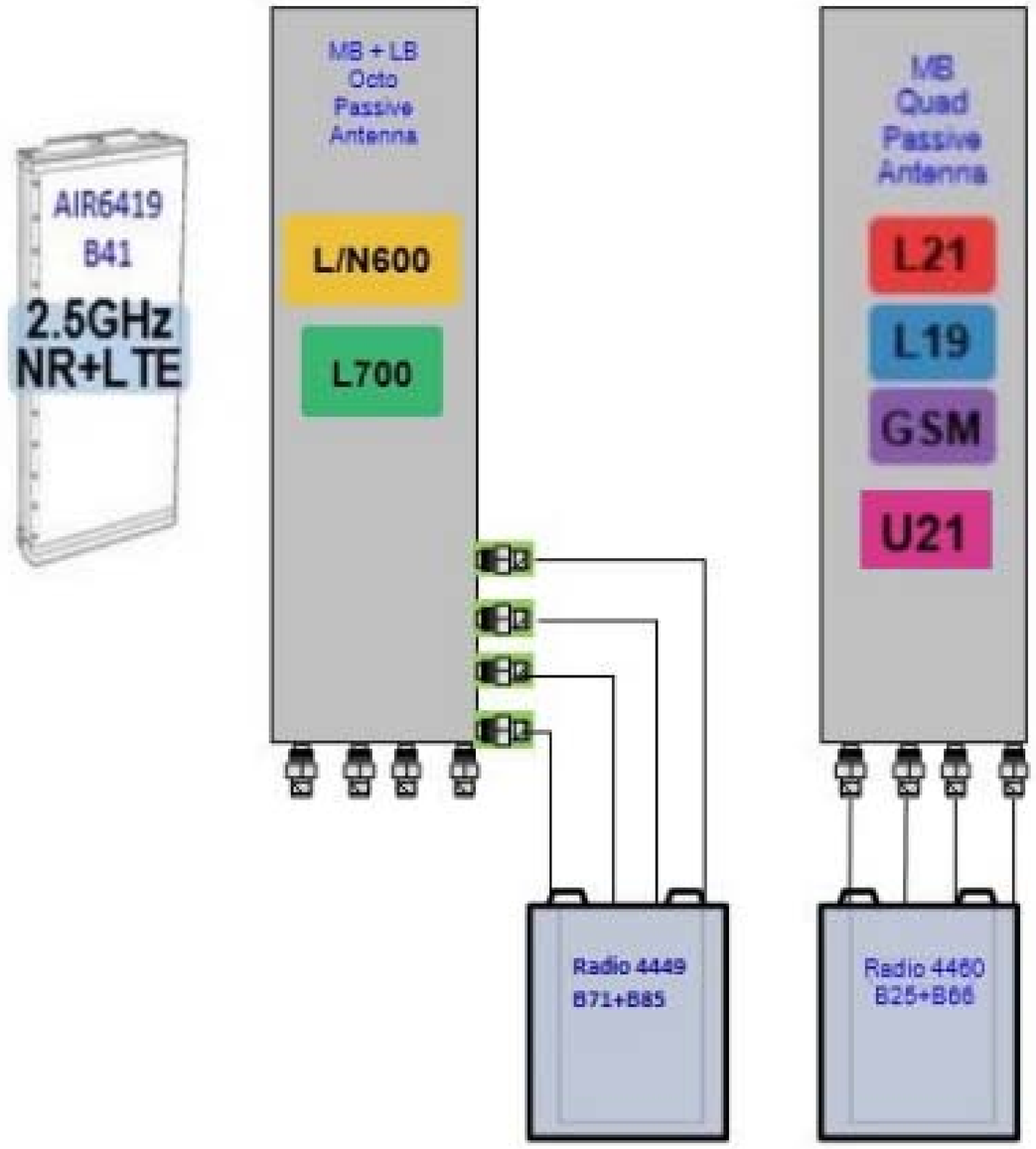
SHEET NUMBER: C-3

REVISION: 1



1 PLUMBING DIAGRAM
SCALE: NOT TO SCALE

T-Mobile
4 SYLVAN WAY
PARSIPPANY, NJ 07054

CROWN CASTLE
3530 TORINGDON WAY, SUITE 300
CHARLOTTE, NC 28277

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T-MOBILE SITE NUMBER: **CTNH107A**

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BRANFORD BANM TOWER

150 NORTH MAIN STREET
BRANFORD, CT 06405

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STATE OF CONNECTICUT
CHRISTOPHER T. CLOUTIER
No. 23924
LICENSED PROFESSIONAL ENGINEER
8/22/22

MTS ENGINEERING P.L.L.C.
BER:2386985
Expires 3/31/23

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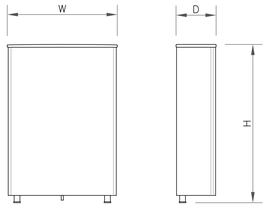
SHEET NUMBER: C-4

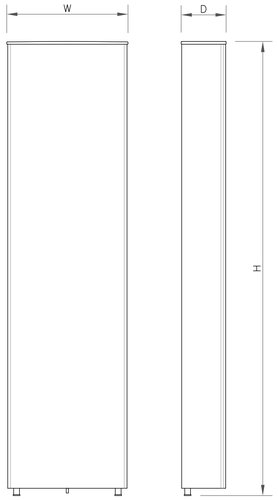
REVISION: 1

136457.015.01_BRANFORD BANM TOWER.dwg – Sheet:C-4 – User: mjones – Aug 22, 2022 – 9:27am



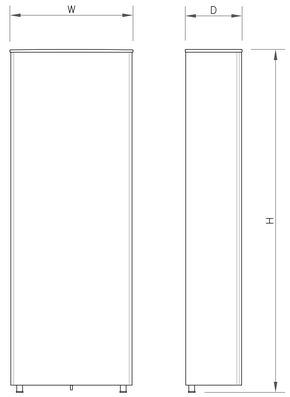
ANTENNA SPECS	
MANUFACTURER	ERICSSON
MODEL #	AIR 6419 B41
WIDTH	20.91"
DEPTH	9.02"
HEIGHT	36.25"
WEIGHT	96.50 LBS

1 ANTENNA SPECS
SCALE: NOT TO SCALE



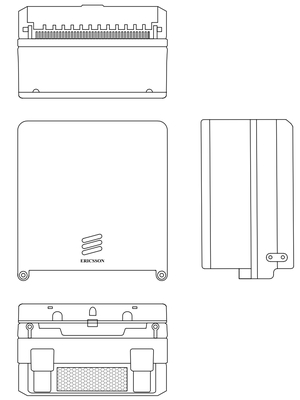
ANTENNA SPECS	
MANUFACTURER	RFS
MODEL #	APXVAALL24_43-U-NA20
WIDTH	24.0"
DEPTH	8.50"
HEIGHT	95.90"
WEIGHT	149.90 LBS

2 ANTENNA SPECS
SCALE: NOT TO SCALE



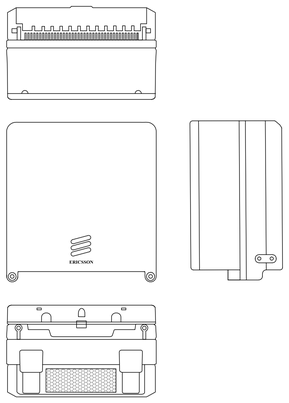
ANTENNA SPECS	
MANUFACTURER	COMMSCOPE
MODEL #	VV-65B-R1
WIDTH	12.01"
DEPTH	4.65"
HEIGHT	70.35"
WEIGHT	41.67 LBS

3 ANTENNA SPECS
SCALE: NOT TO SCALE



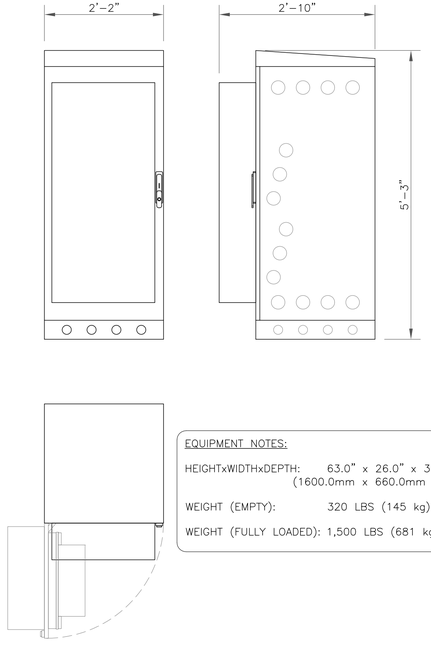
RRU SPECIFICATIONS	
MANUFACTURER	ERICSSON
MODEL #	4460 B2/B25 B66
WIDTH	15.10"
DEPTH	11.90"
HEIGHT	17.0"
WEIGHT	109.0 LBS

4 RRU SPECS
SCALE: NOT TO SCALE



RRU SPECIFICATIONS	
MANUFACTURER	ERICSSON
MODEL #	4480 B71+B85
WIDTH	15.70"
DEPTH	7.50"
HEIGHT	22.0"
WEIGHT	81.0 LBS

5 RRU SPECS
SCALE: NOT TO SCALE



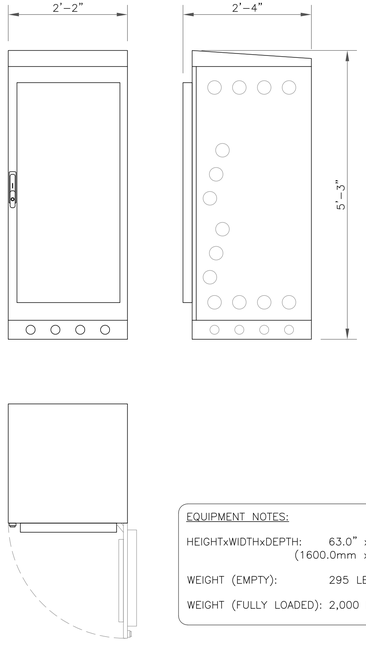
EQUIPMENT NOTES:

HEIGHTxWIDTHxDEPTH: 63.0" x 26.0" x 34.0"
(1600.0mm x 660.0mm x 864.0mm)

WEIGHT (EMPTY): 320 LBS (145 kg)

WEIGHT (FULLY LOADED): 1,500 LBS (681 kg)

6 ERICSSON - 6160
SCALE: NOT TO SCALE



EQUIPMENT NOTES:

HEIGHTxWIDTHxDEPTH: 63.0" x 26.0" x 28.0"
(1600.0mm x 660.0mm x 711.0mm)

WEIGHT (EMPTY): 295 LBS (134 kg)

WEIGHT (FULLY LOADED): 2,000 LBS (908 kg)

7 ERICSSON - B160
SCALE: NOT TO SCALE

8 NOT USED
SCALE: NOT TO SCALE

T-Mobile
4 SYLVAN WAY
PARSIPPANY, NJ 07054

CROWN CASTLE
3530 TORINGDON WAY, SUITE 300
CHARLOTTE, NC 28277

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SUITE 300
TULSA, OK 74119
PH: (918) 587-4630
www.btgrp.com

T-MOBILE SITE NUMBER: **CTNH107A**

BU #: **876321**
BRANFORD BANM TOWER

150 NORTH MAIN STREET
BRANFORD, CT 06405

EXISTING
147'-0" MONOPOLE

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BER:2386985
Expires 3/31/23

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SHEET NUMBER: C-5

REVISION: 1

136457.015.01_BRANFORD BANM TOWER.dwg - Sheet:C-5 - User: mjones - Aug 22, 2022 - 9:27am

NOTES:

1. PANEL SCHEDULE PENDING FIELD VERIFICATION.

FINAL PANEL SCHEDULE							
LOAD	POLES	AMPS	BUS L1	BUS L2	AMPS	POLES	LOAD
TVSS	2	50A	1	2	20A	1	PLUG
			3	4	125A	2	6131
BTS	2	60A	5	6			
			7	8	**125A**	**2**	**6160**
LED LIGHT	1	60A	9	10			
			11	12	**20A**	1	**GFCI**
			13	14			
			15	16			
			17	18			
			19	20			
			21	22			
			23	24			

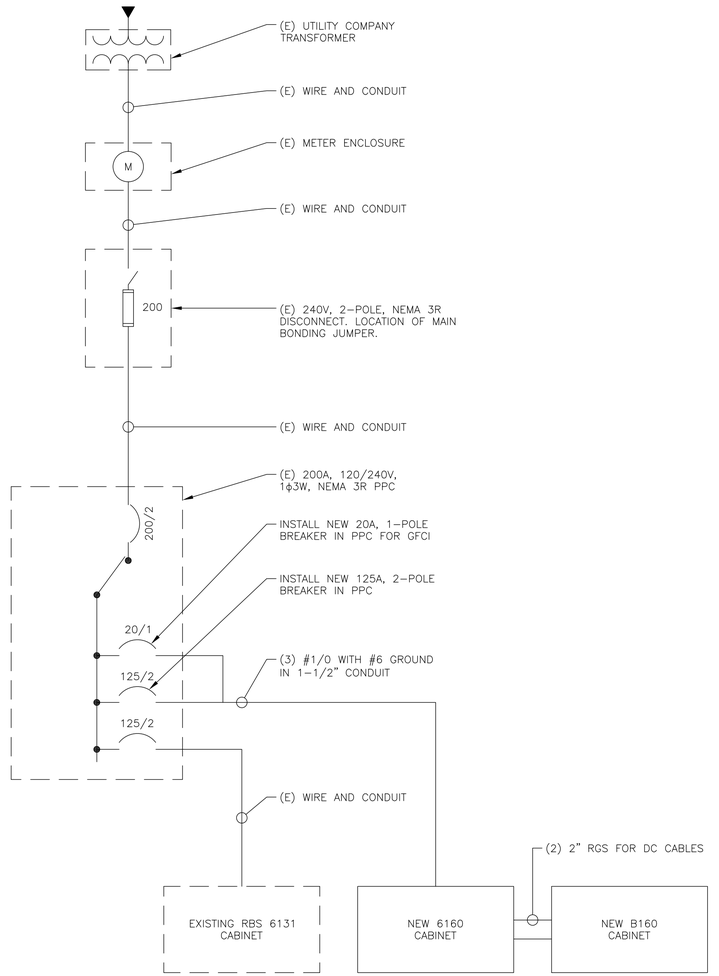
RATED VOLTAGE: ■120/240 □_____, 1 PHASE, 3 WIRE	BRANCH POLES: □12 ■24 □30 □42	APPROVED MF'RS
RATED AMPS: □100 ■200 □400 □_____,	CABINET: ■SURFACE □FLUSH	NEMA □1 ■3R □4X
□MAIN LUGS ONLY MAIN 200 AMPS ■BREAKER □FUSED SWITCH	■HINGED DOOR	■KEYED DOOR LATCH
□FUSED ■CIRCUIT BREAKER BRANCH DEVICES	□_____ TO BE GFCI BREAKERS	FULL NEUTRAL BUS GROUND BAR
ALL BREAKERS MUST BE RATED TO INTERRUPT A SHORT CIRCUIT ISC OF 10,000 AMPS SYMMETRICAL		

INSTALL NEW 2P 125A BREAKER IN POSITIONS 8 AND 10
INSTALL NEW 1P 20A BREAKER IN POSITION 12
IF 125A BREAKER WILL NOT PROPERLY FIT IN EXISTING PANEL, REPLACE (E) PANEL WITH SQUARE D PANEL QO12040M200RB (OR APPROVED EQUAL).
UPGRADE FEEDER WIRES TO MEET AMPACITY IF NEW PANEL IS REQUIRED.
FINAL PANEL DESIGN AND CALCULATIONS FOR WIRE SIZE WERE BASED OFF OF EXISTING DOCUMENTS AND PHOTOS

1 FINAL T-MOBILE PANEL DETAIL
SCALE: NOT TO SCALE

NOTES:

1. ALL NEW CONDUCTORS TO BE INSTALLED SHALL BE COPPER. ALL CONDUCTORS SHALL BE THHW, THWN, THWN-2, XHHW, OR XHHW-2 UNLESS NOTED OTHERWISE.
2. CONTRACTOR IS TO FIELD VERIFY ALL EXISTING ITEMS SHOWN ON THE ELECTRICAL ONE-LINE DIAGRAM AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES.
3. ALL GROUNDING AND BONDING PER THE NEC.



2 ONE LINE DIAGRAM
SCALE: NOT TO SCALE

T-Mobile
4 SYLVAN WAY
PARSIPPANY, NJ 07054

CROWN CASTLE
3530 TORINGDON WAY, SUITE 300
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T-MOBILE SITE NUMBER: **CTNH107A**

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BRANFORD BANM TOWER

150 NORTH MAIN STREET
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STATE OF CONNECTICUT
MICHAEL T. JONES
No. 23924
LICENSED PROFESSIONAL ENGINEER
8/22/22

MTS ENGINEERING P.L.L.C.
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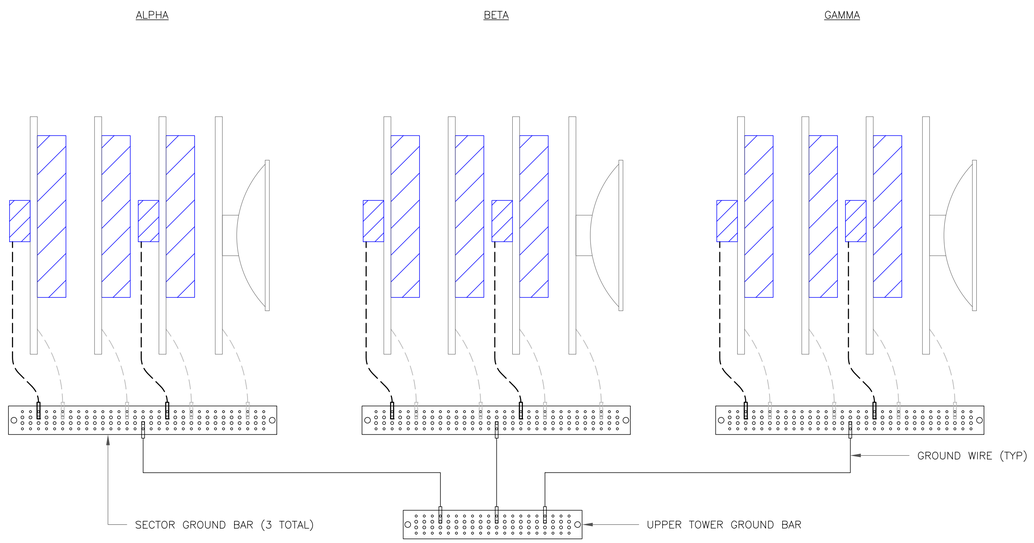
SHEET NUMBER: E-1
REVISION: 1

136457.015.01_BRANFORD BANM TOWER.dwg – Sheet:E-1 – User: mjones – Aug 22, 2022 – 9:27am



NOTE:

ALL NEW GROUNDS TO BE #6 STRANDED COPPER WITH GREEN INSULATION UNLESS NOTED OTHERWISE.

1 ANTENNA GROUNDING DIAGRAM
SCALE: NOT TO SCALE

T-Mobile
4 SYLVAN WAY
PARSIPPANY, NJ 07054

CROWN CASTLE
3530 TORINGDON WAY, SUITE 300
CHARLOTTE, NC 28277

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BRANFORD BANM TOWER

150 NORTH MAIN STREET
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STATE OF CONNECTICUT
MICHAEL T. JONES
No. 23924
LICENSED PROFESSIONAL ENGINEER
8/22/22

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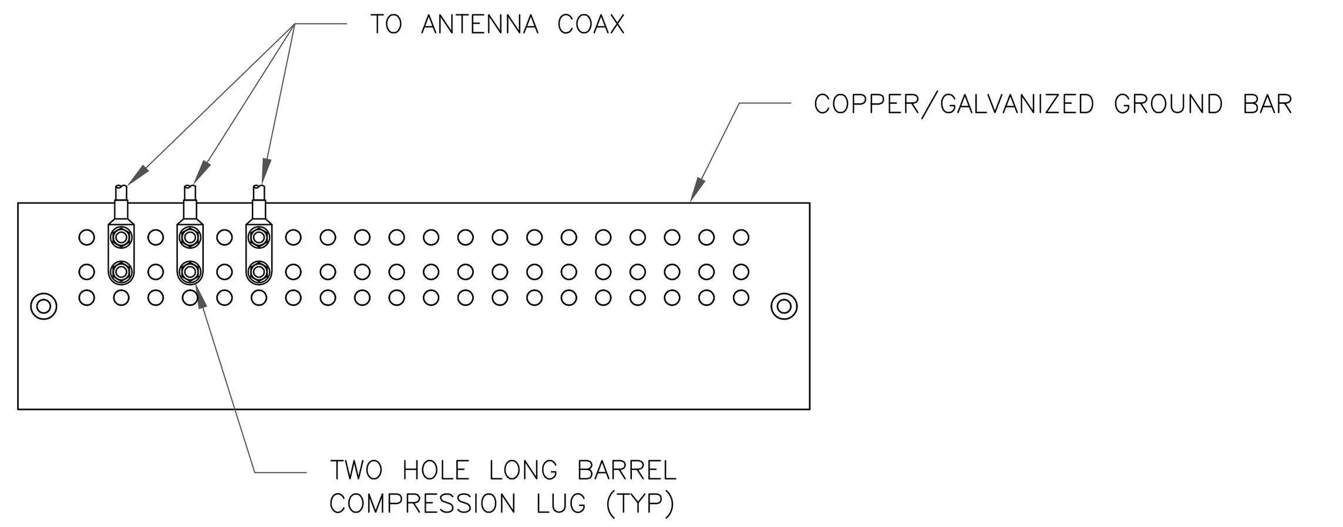
SHEET NUMBER: G-1

REVISION: 1

136457.015.01_BRANFORD BANM TOWER.dwg – Sheet:G-1 – User: mjones – Aug 22, 2022 – 9:27am

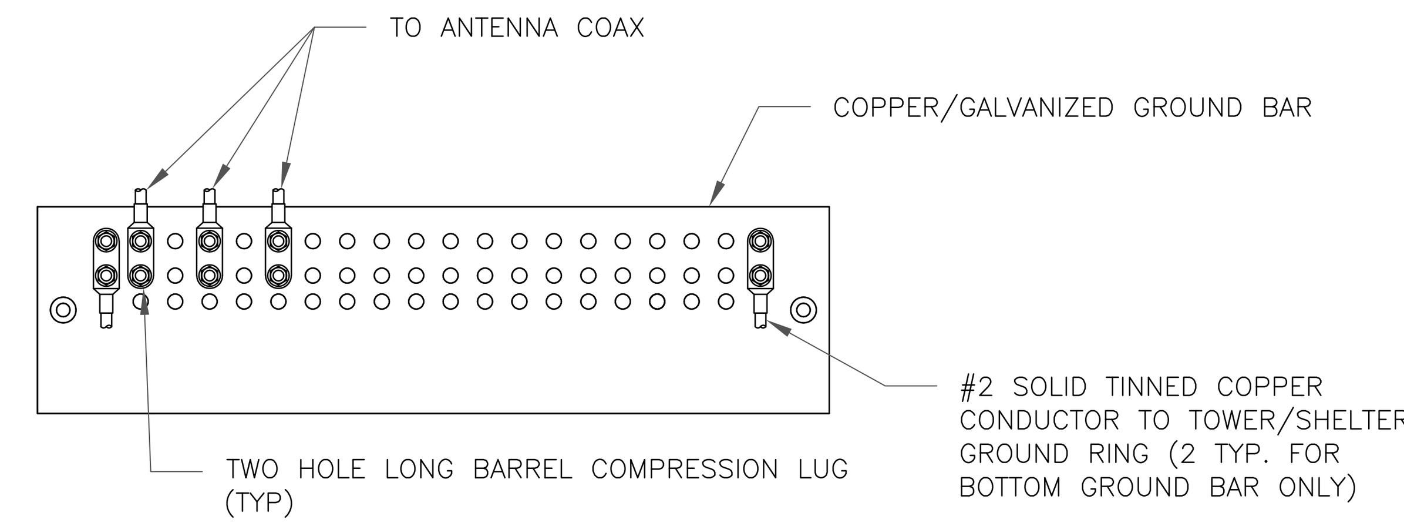


NOTES:

1. DOUBLING UP "OR STACKING" OF CONNECTIONS IS NOT PERMITTED.
2. EXTERIOR ANTIOXIDANT JOINT COMPOUND TO BE USED ON ALL EXTERIOR CONNECTIONS.
3. GROUND BAR SHALL NOT BE ISOLATED FROM TOWER. MOUNT DIRECTLY TO ANTENNA MOUNT STEEL.

1 ANTENNA SECTOR GROUND BAR DETAIL

SCALE: NOT TO SCALE

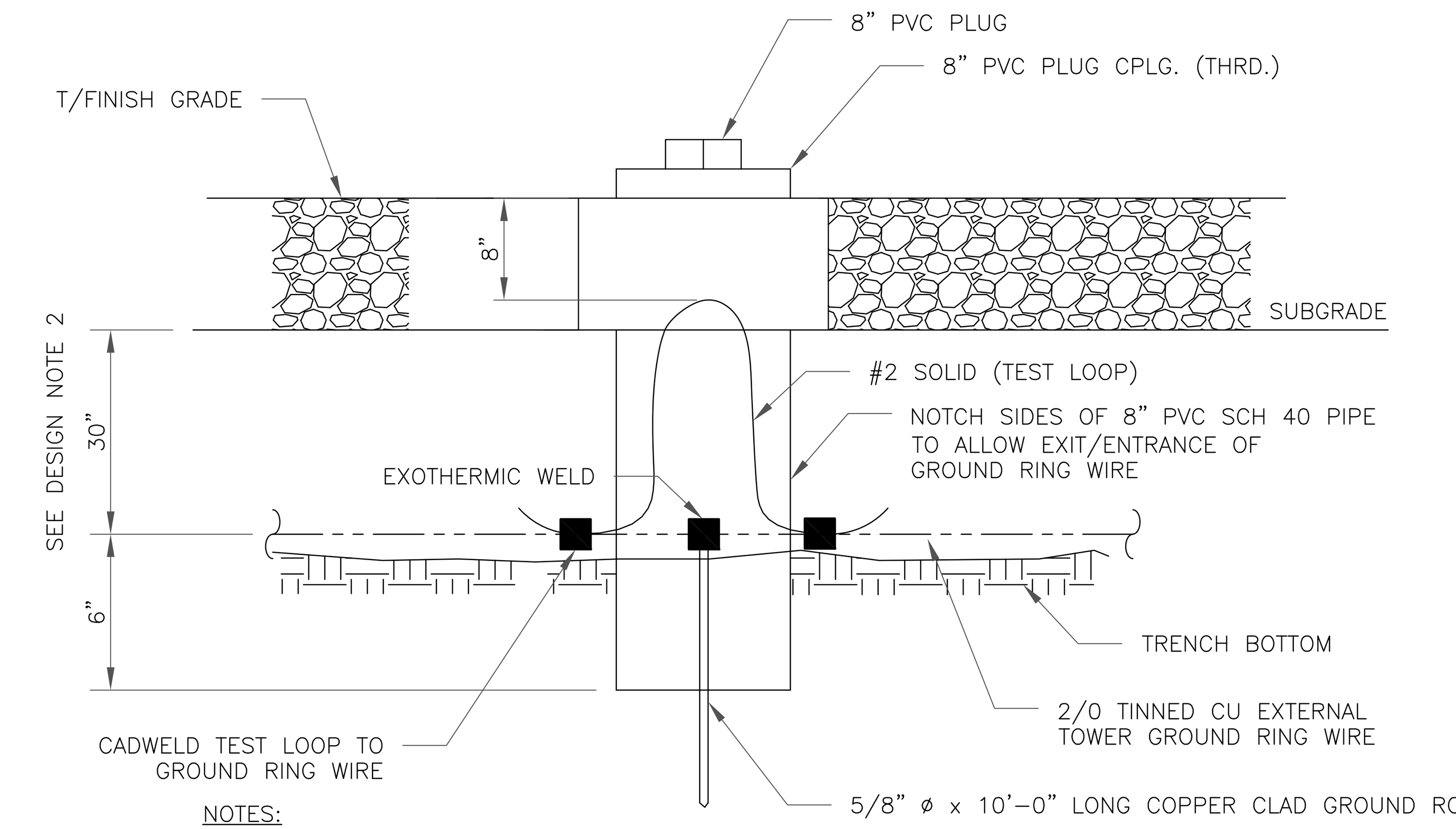


NOTES:

1. EXTERIOR ANTIOXIDANT JOINT COMPOUND TO BE USED ON ALL EXTERIOR CONNECTIONS.
2. GROUND BAR SHALL NOT BE ISOLATED FROM TOWER. MOUNT DIRECTLY TO TOWER STEEL (TOWER ONLY).
3. GROUND BAR SHALL BE ISOLATED FROM BUILDING OR SHELTER.

2 TOWER/SHELTER GROUND BAR DETAIL

SCALE: NOT TO SCALE

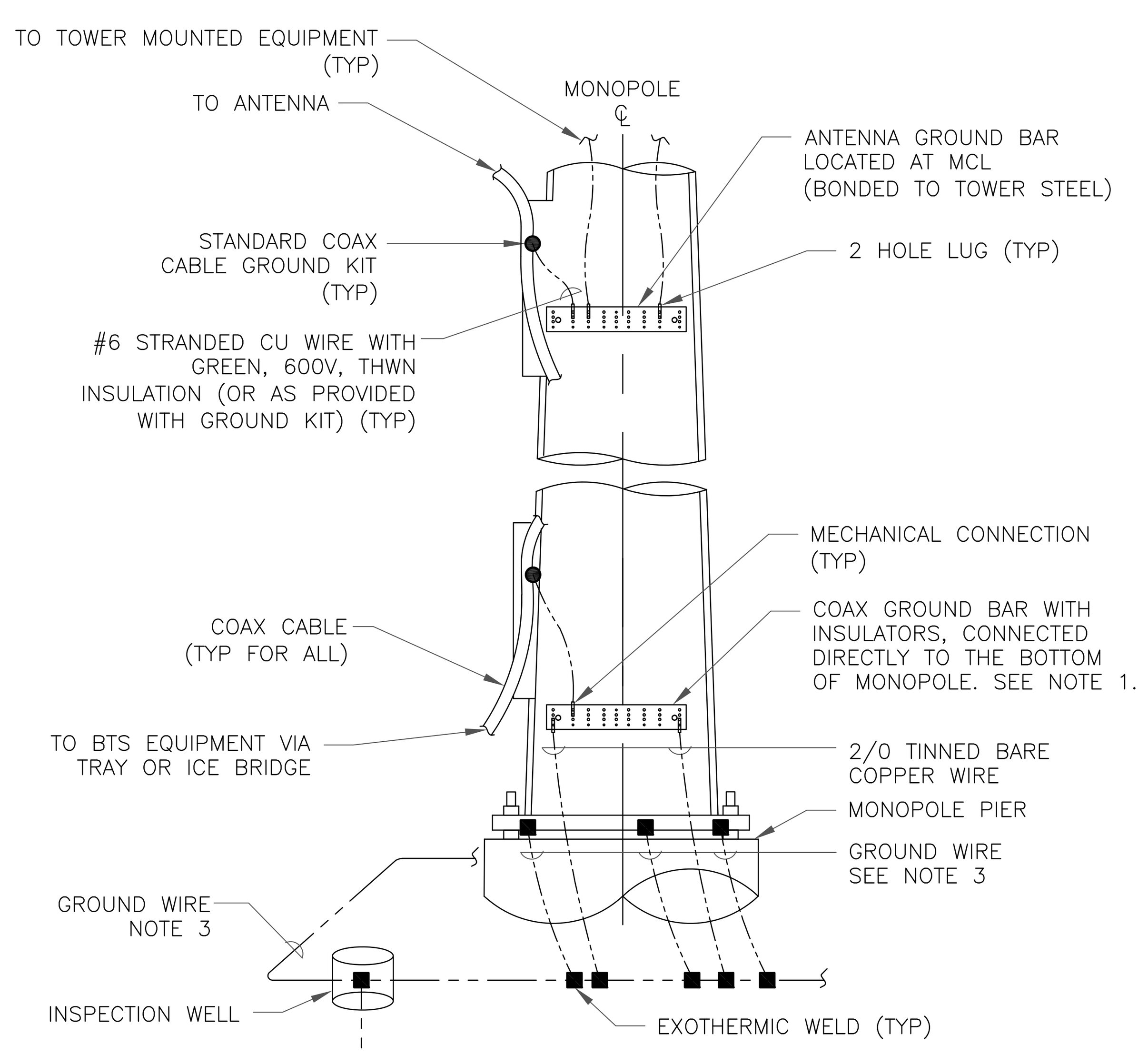


NOTES:

1. GROUND ROD SHALL BE DRIVEN VERTICALLY, NOT TO EXCEED 45 DEGREES FROM THE VERTICAL
2. GROUND WIRE SHALL BE MIN. 30" BELOW GRADE OR 6" BELOW FROST LINE. (WHICH EVER IS GREATER) AS PER N.E.C. ARTICLE 250–50(D)

3 INSPECTION WELL DETAIL

SCALE: NOT TO SCALE

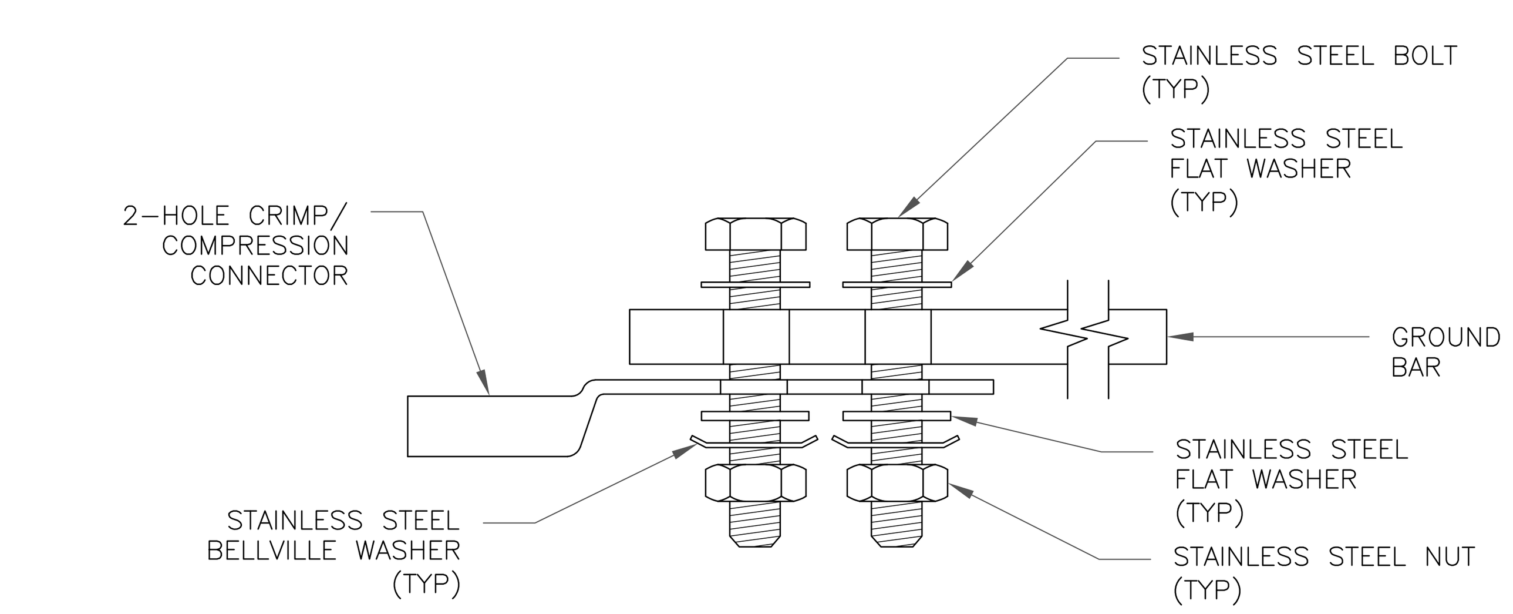


NOTES:

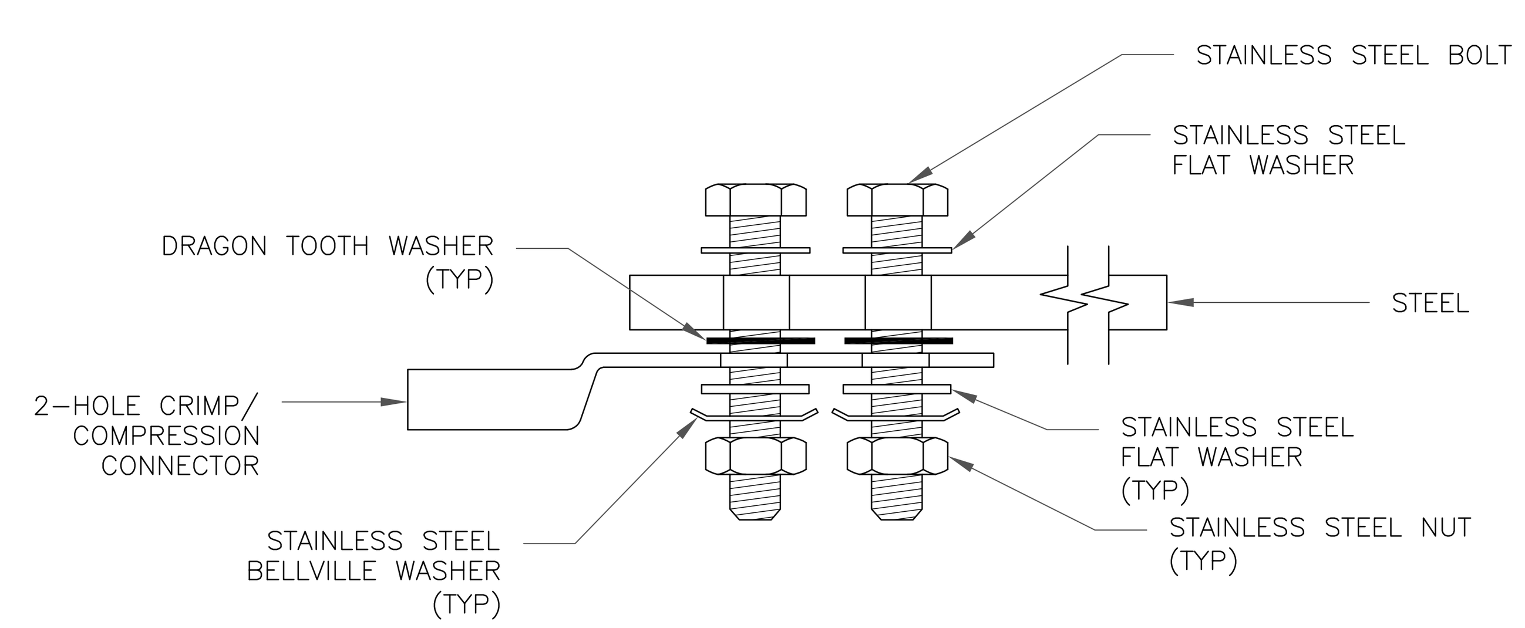
1. NUMBER OF GROUNDING BARS MAY VARY DEPENDING ON THE TYPE OF TOWER, ANTENNA LOCATIONS AND CONNECTION ORIENTATION. COAXIAL CABLES EXCEEDING 200 FEET ON THE TOWER SHALL HAVE GROUND KITS AT THE MIDPOINT. PROVIDE AS REQUIRED.
2. ONLY MECHANICAL CONNECTIONS ARE ALLOWED TO BE MADE TO CROWN CASTLE USA INC. TOWERS. ALL MECHANICAL CONNECTIONS SHALL BE TREATED WITH AN ANTI–OXIDANT COATING.
3. ALL TOWER GROUNDING SYSTEMS SHALL COMPLY WITH THE REQUIREMENTS OF THE RECOGNIZED EDITION OF ANSI/TIA 222 AND NFPA 780.

4 TYPICAL ANTENNA CABLE GROUNDING

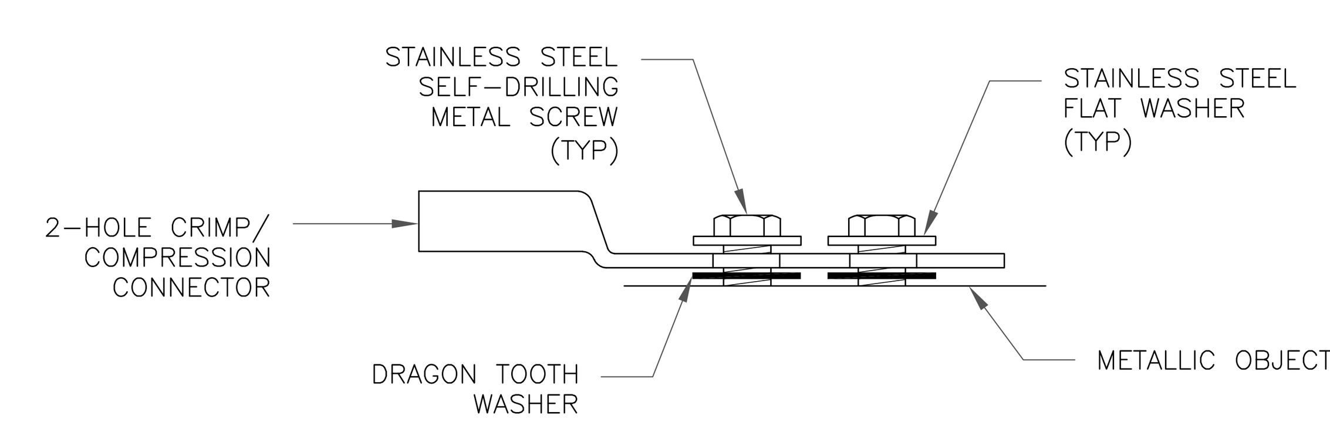
SCALE: NOT TO SCALE



SINGLE CONNECTOR AT GROUND BARS



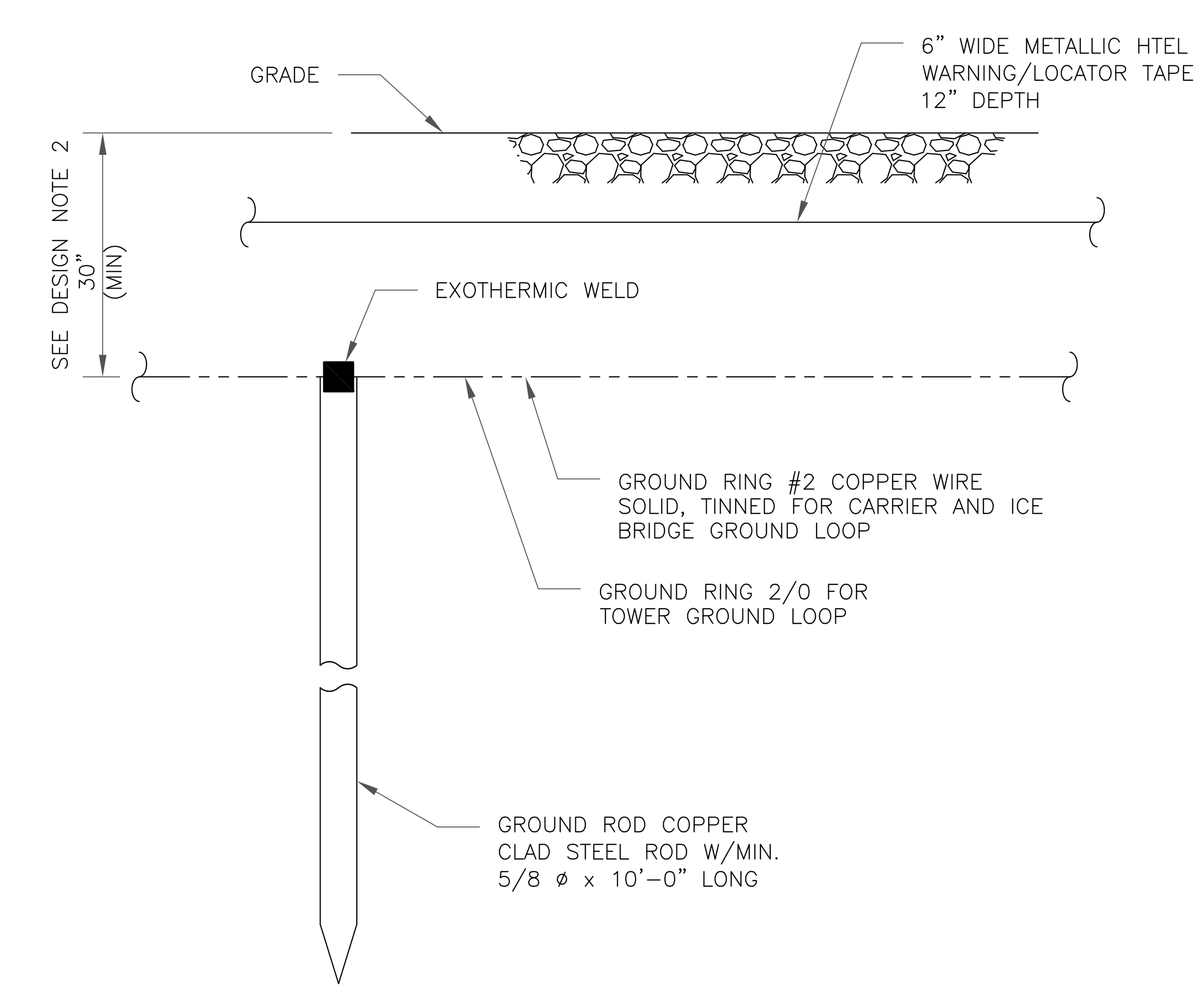
SINGLE CONNECTOR AT STEEL OBJECTS



SINGLE CONNECTOR AT METALLIC/STEEL OBJECTS

5 HARDWARE DETAIL FOR EXTERIOR CONNECTIONS

SCALE: NOT TO SCALE



NOTES:

1. GROUND ROD SHALL BE DRIVEN VERTICALLY, NOT TO EXCEED 45 DEGREES FROM THE VERTICAL
2. GROUND WIRE SHALL BE MIN. 30" BELOW GRADE OR 6" BELOW FROST LINE. (WHICH EVER IS GREATER) AS PER N.E.C. ARTICLE 250–50(D)

6 GROUND ROD DETAIL

SCALE: NOT TO SCALE

T-Mobile
4 SYLVAN WAY
PARSIPPANY, NJ 07054

CROWN CASTLE
3530 TORINGDON WAY, SUITE 300
CHARLOTTE, NC 28277

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

T-MOBILE SITE NUMBER: **CTNH107A**

BU #: **876321**
BRANFORD BANM TOWER

150 NORTH MAIN STREET
BRANFORD, CT 06405

EXISTING
147'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	7/13/22	MEH	PRELIMINARY REVIEW	MTJ
0	8/9/22	DAS	CONSTRUCTION	MTJ
1	8/22/22	DAS	CONSTRUCTION	MTJ

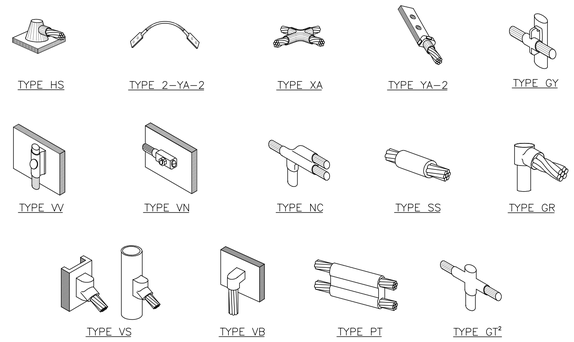
STATE OF CONNECTICUT · CHAD TUTTLE · No. 23924 · LICENSED · PROFESSIONAL ENGINEER
8/22/22

MTS ENGINEERING P.L.L.C.
BER:2386985
Expires 3/31/23

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

SHEET NUMBER:	REVISION:
G-2	1

136457.015.01_BRANFORD BANM TOWER.dwg – Sheet:G-2 – User: mjones – Aug 22, 2022 – 9:27am

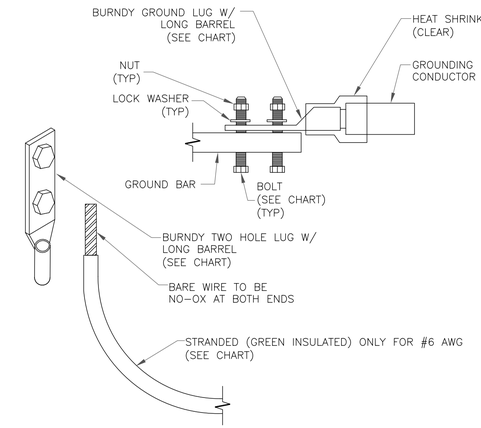


NOTE:

1. ERICO EXOTHERMIC "MOLD TYPES" SHOWN HERE ARE EXAMPLES. CONSULT WITH CONSTRUCTION MANAGER FOR SPECIFIC MOLDS TO BE USED FOR THIS PROJECT.
2. MOLD TYPE ONLY TO BE USED BELOW GRADE WHEN CONNECTING GROUND RING TO GROUND ROD.

1 CADWELD GROUNDING CONNECTIONS
SCALE: NOT TO SCALE

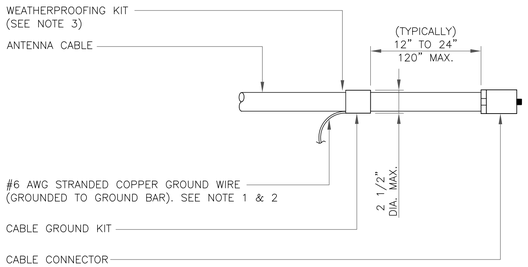
WIRE SIZE	BURNDY LUG	BOLT SIZE
#6 AWG GREEN INSULATED	YA6C-2TC38	3/8" - 16 NC S 2 BOLT
#2 AWG SOLID TINNED	YA3C-2TC38	3/8" - 16 NC S 2 BOLT
#2 AWG STRANDED	YA2C-2TC38	3/8" - 16 NC S 2 BOLT
#2/0 AWG STRANDED	YA26-2TC38	3/8" - 16 NC S 2 BOLT
#4/0 AWG STRANDED	YA28-2N	1/2" - 16 NC S 2 BOLT



NOTES:

1. ALL GROUNDING LUGS ARE TO BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS. ALL HARDWARE BOLTS, NUTS, LOCK WASHERS SHALL BE STAINLESS STEEL. ALL HARDWARE ARE TO BE AS FOLLOWS: BOLT, FLAT WASHER,GROUND BAR, GROUND LUG, FLAT WASHER AND NUT.

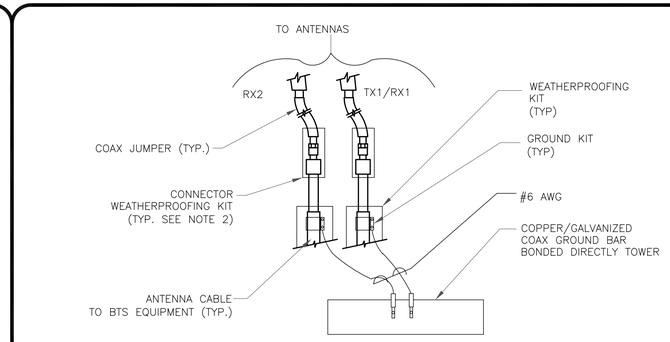
2 MECHANICAL LUG CONNECTION
SCALE: NOT TO SCALE



NOTES:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.
2. GROUNDING KIT SHALL BE TYPE AND PART NUMBER AS SUPPLIED OR RECOMMENDED BY CABLE MANUFACTURER.
3. WEATHER PROOFING SHALL BE TWO-PART TAPE KIT, COLD SHRINK SHALL NOT BE USED.

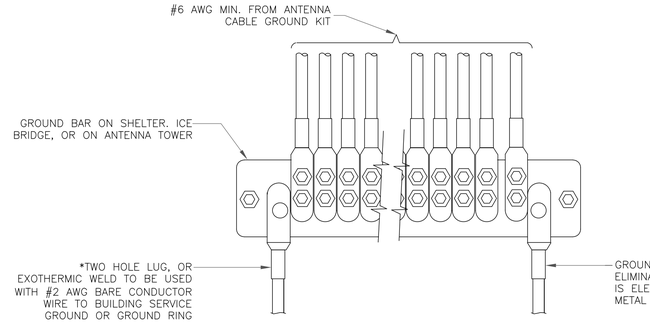
3 CABLE GROUND KIT CONNECTION
SCALE: NOT TO SCALE



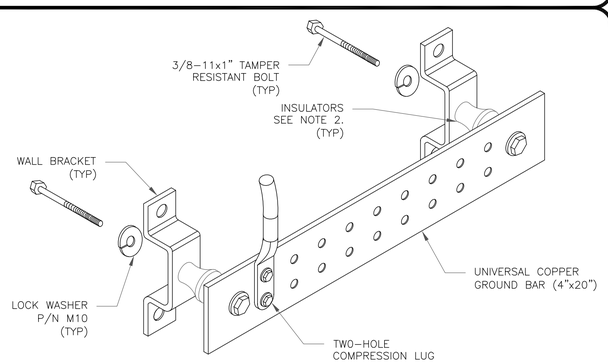
NOTES:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO ANTENNA GROUND BAR.
2. WEATHER PROOFING SHALL BE TWO-PART TAPE KIT. COLD SHRINK SHALL NOT BE USED.

4 GROUND CABLE CONNECTION
SCALE: NOT TO SCALE



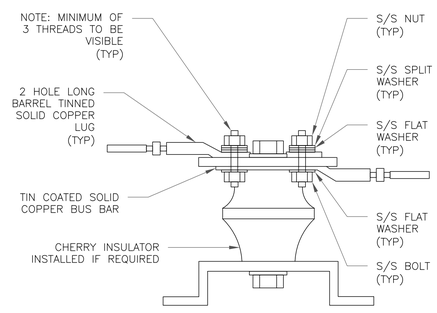
5 GROUNDWIRE INSTALLATION
SCALE: NOT TO SCALE



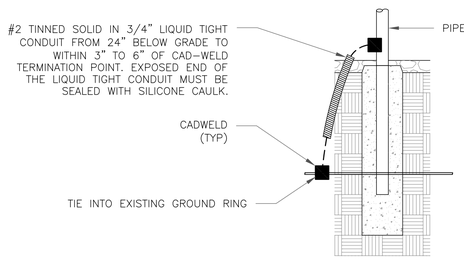
NOTES:

1. DOWN LEAD (HOME RUN) CONDUCTORS ARE NOT TO BE INSTALLED ON CROWN CASTLE USA INC. TOWER, PER THE GROUNDING DOWN CONDUCTOR POLICY QAS-STD-10091. NO MODIFICATION OR DRILLING TO TOWER STEEL IS ALLOWED IN ANY FORM OR FASHION, CAD-WELDING ON THE TOWER AND/OR IN THE AIR ARE NOT PERMITTED.
2. OMIT INSULATOR WHEN MOUNTING TO TOWER STEEL OR PLATFORM STEEL USE INSULATORS WHEN ATTACHING TO BUILDING OR SHELTERS.

6 GROUND BAR DETAIL
SCALE: NOT TO SCALE



7 LUG DETAIL
SCALE: NOT TO SCALE



8 TRANSITIONING GROUND DETAIL
SCALE: NOT TO SCALE

T-Mobile
4 SYLVAN WAY
PARSIPPANY, NJ 07054

CROWN CASTLE
3530 TORINGDON WAY, SUITE 300
CHARLOTTE, NC 28277

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

T-MOBILE SITE NUMBER: **CTNH107A**

BU #: **876321**
BRANFORD BANM TOWER

150 NORTH MAIN STREET
BRANFORD, CT 06405

EXISTING
147'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	7/13/22	MEH	PRELIMINARY REVIEW	MTJ
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MTS ENGINEERING P.L.L.C.
BER:2386985
Expires 3/31/23

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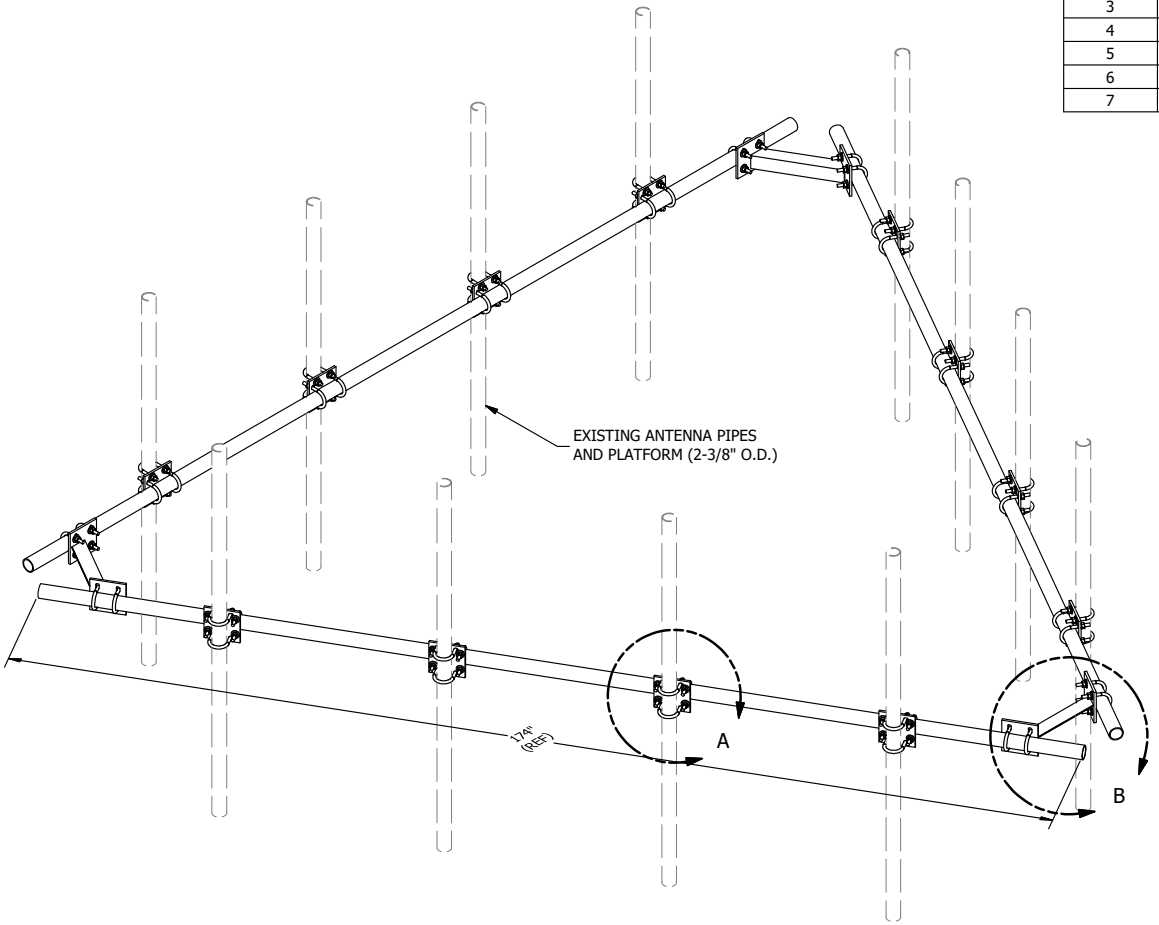
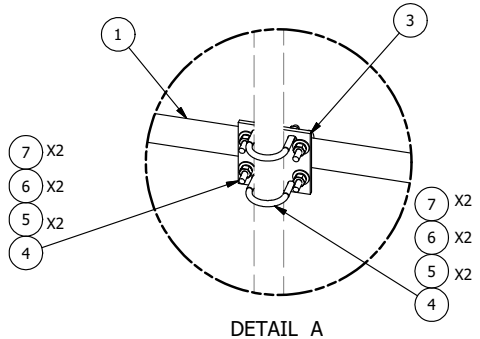
SHEET NUMBER: G-3

REVISION: 1

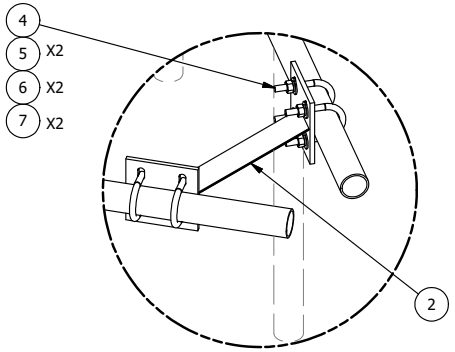
136457.015.01_BRANFORD BANM TOWER.dwg - Sheet:G-3 - User: mjones - Aug 22, 2022 - 9:27am

PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	3	P2174	2-3/8" OD X 174" SCH 40 GALVANIZED PIPE	174 in	55.75	167.24
2	3	X-AHCP	ANGLE HANDRAIL CORNER PLATE		12.92	38.76
3	12	SCX1	CROSSOVER PLATE 2-3/8" X 2-3/8"	6 in	3.71	44.50
4	60	X-UB1212	1/2" X 2-1/2" X 4-1/2" X 2" U-BOLT (HDG.)		0.63	37.51
5	120	G12FW	1/2" HDG USS FLATWASHER	3/32 in	0.03	4.09
6	120	G12LW	1/2" HDG LOCKWASHER	1/8 in	0.01	1.67
7	120	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	8.60
					TOTAL WT. #	302.36





DETAIL A



DETAIL B

TOLERANCE NOTES

TOLERANCES ON DIMENSIONS, UNLESS OTHERWISE NOTED ARE:
SAWED, SHEARED AND GAS CUT EDGES *(± 0.030")*
DRILLED AND GAS CUT HOLES *(± 0.030")* - NO CONING OF HOLES
LASER CUT EDGES AND HOLES *(± 0.010")* - NO CONING OF HOLES
BENDS ARE ± 1/2 DEGREE
ALL OTHER MACHINING *(± 0.030")*
ALL OTHER ASSEMBLY *(± 0.060")*

PROPRIETARY NOTE:
THE DATA AND TECHNIQUES CONTAINED IN THIS DRAWING ARE PROPRIETARY INFORMATION OF VALMONT INDUSTRIES AND CONSIDERED A TRADE SECRET. ANY USE OR DISCLOSURE WITHOUT THE CONSENT OF VALMONT INDUSTRIES IS STRICTLY PROHIBITED.

REVISION HISTORY				
REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
A	REPLACED HCP WITH X-AHCP		CEK	7/11/2014

DESCRIPTION: **HANDRAIL KIT FOR 14'-6" FACE**

CPD NO.	DRAWN BY	ENG. APPROVAL	PART NO.
	KC8 5/30/2012		HRK14

CLASS	SUB	DRAWING USAGE	CHECKED BY	DWG. NO.
81	01	CUSTOMER	BMC 7/13/2014	HRK14

SITE PRO 1
A valmont COMPANY
Engineering Support Team: 1-888-753-7446
Locations: New York, NY; Atlanta, GA; Los Angeles, CA; Plymouth, IN; Salem, OR; Dallas, TX