STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL
Ten Franklin Square, New Britain, CT 06051
Phone: (860) 827-2935 Fax: (860) 827-2950
E-Mail: siting.council@ct.gov
Web Site: portal.ct.gov/csc

VIA ELECTRONIC MAIL

June 5, 2023

Jeffrey Barbadora
Site Acquisition Specialist
Crown Castle
1800 W. Park Drive
Westborough, MA 01581
jeff.barbadora@crowncastle.com

RE: **EM-T-MOBILE-139-220517** – T-Mobile notice of intent to modify an existing telecommunications facility located at 2715 Mountain Road, Suffield, Connecticut.

Dear Jeffrey Barbadora:

The Connecticut Siting Council (Council) is in receipt of the request for an extension of construction time and notification of a change to the antenna mount submitted on behalf of T-Mobile, for the above-referenced exempt modification request, dated May 30, 2023.

Pursuant to Condition No. 8 of the Council's decision letter dated June 27, 2022, the Council hereby grants an extension of time until June 27, 2024, to complete construction.

This extension is granted with the understanding that the Council will be notified should T-Mobile decide not to proceed with construction.

Additionally, pursuant to Regulations of Connecticut State Agencies §16-50j-73, the Council hereby acknowledges notification of the change to the antenna mount consistent with the revised Mount Analysis prepared by B+T Group, dated February 2, 2023. This acknowledgment applies only to the changes described in the May 30, 2023 correspondence.

The antenna mount installation is to be implemented as specified in the revised Mount Analysis prepared by B+T Group, dated February 2, 2023, the revised Structural Analysis prepared by Morrison Hershfield, dated February 14, 2023, and associated Construction Drawings for the above-referenced facility attached to the May 30, 2023 correspondence.

Thank you for your attention and cooperation.

Sincerely,

Melanie A. Bachman
Executive Director

MAB/ANM/dll

From: Barbadora, Jeff <Jeff.Barbadora@crowncastle.com>
Sent: Tuesday, May 30, 2023 2:58 PM
To: Bachman, Melanie <Melanie.Bachman@ct.gov>; CSC-DL Siting Council <Siting.Council@ct.gov>
Subject: FW: Council Decision Letter for EM-T-MOBILE-139-220517 (2715 Mountain Road, Suffield)

Good afternoon,

Construction was to commence a few months ago, however, there was a change with the antenna mount along with a delay in the materials. Attached are the updated SA, MA and CD's which show the antenna mount change.

Now, that T-Mobile is ready to commence construction, it was observed a nest is at the top of the tower so we are requesting an extension to the approval. Construction will not commence until the birds have vacated the nest and that is typically in the fall.

Thanks,

Jeffrey Barbadora
Site Acquisition Specialist
781-970-0053

Crown Castle
1800 W. Park Drive, Suite 250
Westborough, MA 01581

Date: **February 14, 2023**

MORRISON HERSHFIELD

Morrison Hershfield
1455 Lincoln Parkway, Suite 500
Atlanta, GA 30346
(770) 379-8500

Subject:	**Structural Analysis Report**	
Carrier Designation:	***T-Mobile* Co-Locate**	
	Site Number:	CT11545A
	Site Name:	CT545/Crown Suffield
Crown Castle Designation:	**BU Number:**	801485
	Site Name:	CT Suffield 1 CAC 801485
	JDE Job Number:	740921
	Work Order Number:	2203316
	Order Number:	645013 Rev. 0
Engineering Firm Designation:	**Morrison Hershfield Project Number:** CN9-727R3 / 2300001	
Site Data:	**2715 Mountain Rd., Suffield, Hartford County, CT 06093**	
	Latitude *42° 0' 41.8"*, Longitude *-72° 43' 43.6"*	
	190.5 Foot - FWT Monopole Tower	

Morrison Hershfield 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 - 76.6%**

This analysis utilizes an ultimate 3-second gust wind speed of 115 mph as required by the 2022 Connecticut State Building Code. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Respectfully submitted by:

EXP 1/31/2024

G. Lance Cooke, P.E. (CT License No. PEN.0028133)
Senior Engineer

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 190.5 ft monopole tower designed by FWT, Inc.

The tower was modified per reinforcement drawings prepared by Tower Engineering Professionals, Inc., in March of 2013.Modification consists of addition of concrete to the foundation. Per the post modification inspection completed by Tower Engineering Professionals, Inc., in March of 2013, modifications was properly installed and is considered in this analysis.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	115 mph
Exposure Category:	C
Topographic Factor:	1
Ice Thickness:	1.5 in
Wind Speed with Ice:	50 mph
Service Wind Speed:	60 mph

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
180.0	182.0	3	ericsson	AIR 6419 B41_TMO	3	1-5/8
		3	rfs/celwave	APXVAARR24_43-U-NA20		
		3	ericsson	RADIO 4449 B71 B85A_T-MOBILE		
		3	ericsson	RADIO 4460 B2/B25 B66_TMO		
	180.0	1	site pro 1	Low Profile Platform Mount [#RMQP-4126]		
		1	site pro 1	Support Rail [#HRK-12]		

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)
191.0	192.0	12	decibel	DB844H90-XY w/ Mount Pipe	12	1-5/8
	191.0	1	-	Platform Mount [LP 712-1]		
168.0	170.0	2	cci antennas	OPA65R-BU4D	6 2 2 2 1	1-5/8 7/8 3/4 3/8 2C
		4	cci antennas	OPA65R-BU8D		
		1	kmw communications	AM-X-CD-14-65-00T-RET		
		2	powerwave technologies	P65-17-XLH-RR		
		3	ericsson	RRUS 4449 B5/B12		
		3	ericsson	RRUS 4478 B14_CCIV2		
		3	ericsson	RRUS 8843 B2/B66A_CCIV2		
		1	raycap	DC6-48-60-18-8C-EV		
	168.0	1	raycap	DC6-48-60-18-8F		
		1	site pro 1	12' Fotress Mount [#F3P-12-WLL]		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
168.0	168.0	1	site pro 1	Support Rail Kit [#F3P-HRK12]	-	-
160.0	160.0	3	samsung telecommunications	MT6407-77A w/ Mount Pipe	13	1-5/8
		6	commscope	SBNHH-1D65B w/ Mount Pipe		
		3	samsung telecommunications	RF4439D-25A		
		3	samsung telecommunications	RF4440D-13A		
		1	raycap	RVZDC-6627-PF-48_CCIV2		
		1	-	Platform Mount [LP 712-1]		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Reference	Source
4-GEOTECHNICAL REPORTS	2240855	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	1118796	CCISITES
4-TOWER MANUFACTURER DRAWINGS	942443	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	3268394	CCISITES
4-POST-MODIFICATION INSPECTION	3770639	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.

3.2) Assumptions

1) 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. Morrison Hershfield should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	190.5 - 143.17	Pole	TP27.778x14.75x0.25	1	-16.99	1293.66	67.2	Pass
L2	143.17 - 93.753	Pole	TP40.88x26.2917x0.375	2	-27.82	2854.11	61.9	Pass
L3	93.753 - 46.083	Pole	TP53.251x38.6629x0.375	3	-41.95	3726.63	70.1	Pass
L4	46.083 - 0	Pole	TP65.185x50.5971x0.375	4	-61.99	4738.33	76.6	Pass
							Summary	
						Pole (L4)	76.6	Pass
						Rating =	76.6	Pass

Table 5 - Tower Component Stresses vs. Capacity - LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	62.2	Pass
1	Base Plate		33.0	Pass
1	Base Foundation (Structure)	0	59.7	Pass
1	Base Foundation (Soil Interaction)		39.0	Pass

Structure Rating (max from all components) =	76.6%*

Notes:
1) See additional documentation in “Appendix C – Additional Calculations” for calculations supporting the % capacity consumed.
2) *Rating per TIA-222-H, Section 15.5.

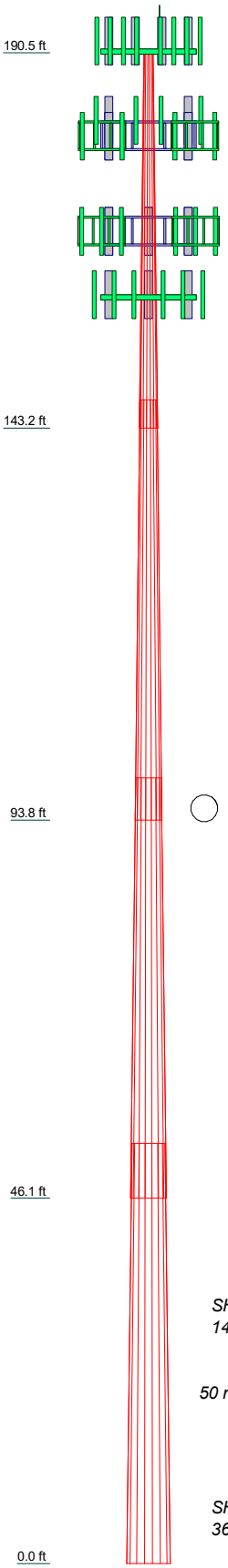
4.1) Recommendations

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

APPENDIX A

TNXTOWER OUTPUT

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	47.33	18	0.2500	3.58	14.7500	27.7780		2.7
2	53.00	18	0.3750	5.33	26.2917	40.8800		7.1
3	53.00	18	0.3750	6.92	38.6629	53.2510		9.8
4	53.00	18	0.3750		50.5971	65.1850		12.3
							A572-65	31.9



ALL REACTIONS ARE FACTORED

AXIAL 104 K
SHEAR 14 K
MOMENT 2104 kip-ft
TORQUE 1 kip-ft
50 mph WIND - 1.5000 in ICE

AXIAL 62 K
SHEAR 36 K
MOMENT 4868 kip-ft
TORQUE 1 kip-ft
REACTIONS - 115 mph WIND

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-H Standard.
3. Tower designed for a 115 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.50 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: 76.6%

Morrison Hershfield
Consulting Engineers
1455 Lincoln Parkway, Suite 500
Atlanta, GA 30346
Phone: (770) 379-8500
FAX: (770) 379-8501

Job:	CN9-727R3 / 2300001		
Project:	801485 / CT Suffield 1 CAC 801485		
Client: Crown Castle USA		Drawn by: RA	App'd:
Code: TIA-222-H		Date: 02/14/23	Scale: NTS
Path:			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 Hartford County, Connecticut.
Tower base elevation above sea level: 371.00 ft.
Basic wind speed of 115 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 1.5000 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*	*Section Length*	*Splice Length*	*Number of Sides*	*Top Diameter*	*Bottom Diameter*	*Wall Thickness*	*Bend Radius*	*Pole Grade*
	ft	*ft*	*ft*		*in*	*in*	*in*	*in*	
L1	190.50-143.17	47.33	3.58	18	14.7500	27.7780	0.2500	1.0000	A572-65 (65 ksi)
L2	143.17-93.75	53.00	5.33	18	26.2917	40.8800	0.3750	1.5000	A572-65 (65 ksi)

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L3	93.75-46.08	53.00	6.92	18	38.6629	53.2510	0.3750	1.5000	A572-65 (65 ksi)
L4	46.08-0.00	53.00		18	50.5971	65.1850	0.3750	1.5000	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	14.9390	11.5057	305.6247	5.1475	7.4930	40.7880	611.6515	5.7540	2.1560	8.624
	28.1680	21.8435	2091.2616	9.7724	14.1112	148.1985	4185.2749	10.9238	4.4489	17.796
L2	27.6409	30.8474	2617.6836	9.2004	13.3562	195.9900	5238.8117	15.4266	3.9673	10.58
	41.4528	48.2111	9993.1303	14.3793	20.7670	481.2015	19999.4098	24.1101	6.5349	17.426
L3	40.6912	45.5722	8440.3578	13.5922	19.6408	429.7368	16891.8217	22.7904	6.1447	16.386
	54.0146	62.9357	22230.6122	18.7710	27.0515	821.7883	44490.4759	31.4738	8.7122	23.232
L4	53.2530	59.7769	19048.4969	17.8289	25.7033	741.0905	38122.0584	29.8941	8.2451	21.987
	66.1327	77.1401	40935.6513	23.0075	33.1140	1236.2045	81925.1668	38.5774	10.8126	28.833

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 190.50-143.17				1	1	1			
L2 143.17-93.75				1	1	1			
L3 93.75-46.08				1	1	1			
L4 46.08-0.00				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
******										
Safety Line 3/8	A	No	Surface Ar (CaAa)	190.50 - 6.00	1	1	0.350 0.350	0.3750		0.22
Climbing Pegs	A	No	Surface Ar (CaAa)	190.50 - 6.00	1	1	0.300 0.400	0.7050		1.80
HCS 6X12 4AWG(1-5/8)	B	No	Surface Ar (CaAa)	180.00 - 3.00	1	1	-0.200 -0.200	1.6600		2.40
******										
HB158-21U6S24-xxM_TMO(1-5/8)	B	No	Surface Ar (CaAa)	180.00 - 3.00	2	1	-0.350 -0.300	1.9960		2.50
FB-L98B-002-75000(3/8)	B	No	Surface Ar (CaAa)	168.00 - 6.00	1	1	0.080 0.080	0.0000		0.06
WR-VG86ST-BRD(3/4)	B	No	Surface Ar (CaAa)	168.00 - 6.00	2	2	0.080 0.080	0.0000		0.58
2" Conduit	B	No	Surface Ar (CaAa)	168.00 - 6.00	1	1	0.080 0.080	2.0000		2.80
******										
FB-L98B-034-XXX(3/8)	B	No	Surface Ar (CaAa)	168.00 - 6.00	1	1	0.380 0.380	0.3937		0.06
WR-VG66ST-BRD_CCIV2(7/8)	B	No	Surface Ar (CaAa)	168.00 - 6.00	2	2	0.350 0.370	0.9570		0.88
LDF7-50A(1-5/8)	C	No	Surface Ar (CaAa)	160.00 - 6.00	5	5	-0.150 0.000	1.9800		0.82
******										

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
******									
LDF7-50A(1-5/8)	B	No	No	Inside Pole	190.50 - 0.00	12	No Ice	0.00	0.82
							1/2" Ice	0.00	0.82
							1" Ice	0.00	0.82
							2" Ice	0.00	0.82
******									
******									
AVA7-50(1-5/8)	B	No	No	Inside Pole	168.00 - 6.00	6	No Ice	0.00	0.70
							1/2" Ice	0.00	0.70
							1" Ice	0.00	0.70
							2" Ice	0.00	0.70
******									
LDF7-50A(1-5/8)	C	No	No	Inside Pole	160.00 - 6.00	6	No Ice	0.00	0.82
							1/2" Ice	0.00	0.82
							1" Ice	0.00	0.82
							2" Ice	0.00	0.82
HB158-1-08U8-S8J18(1-5/8)	C	No	No	Inside Pole	160.00 - 6.00	1	No Ice	0.00	1.30
							1/2" Ice	0.00	1.30
							1" Ice	0.00	1.30
							2" Ice	0.00	1.30
***									
HB158-21U6S12-XXXM-01(1-5/8)	C	No	No	Inside Pole	160.00 - 6.00	1	No Ice	0.00	1.90
							1/2" Ice	0.00	1.90
							1" Ice	0.00	1.90
							2" Ice	0.00	1.90
******									

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	190.50-143.17	A	0.000	0.000	5.112	0.000	0.10
		B	0.000	0.000	24.161	0.000	0.99
		C	0.000	0.000	16.662	0.000	0.21
L2	143.17-93.75	A	0.000	0.000	5.337	0.000	0.10
		B	0.000	0.000	39.354	0.000	1.35
		C	0.000	0.000	48.923	0.000	0.60
L3	93.75-46.08	A	0.000	0.000	5.148	0.000	0.10
		B	0.000	0.000	37.963	0.000	1.30
		C	0.000	0.000	47.193	0.000	0.58
L4	46.08-0.00	A	0.000	0.000	4.329	0.000	0.08
		B	0.000	0.000	33.018	0.000	1.17
		C	0.000	0.000	39.682	0.000	0.49

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	190.50-143.17	A	1.497	0.000	0.000	33.458	0.000	0.45
		B		0.000	0.000	88.302	0.000	2.19
		C		0.000	0.000	27.127	0.000	0.49
L2	143.17-93.75	A	1.447	0.000	0.000	34.933	0.000	0.47
		B		0.000	0.000	152.704	0.000	3.30
		C		0.000	0.000	79.651	0.000	1.44
L3	93.75-46.08	A	1.373	0.000	0.000	32.742	0.000	0.43
		B		0.000	0.000	143.721	0.000	3.09
		C		0.000	0.000	76.238	0.000	1.36

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
L4	46.08-0.00	A	1.231	0.000	0.000	26.343	0.000	0.34
		B		0.000	0.000	119.138	0.000	2.61
		C		0.000	0.000	63.362	0.000	1.11

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	190.50-143.17	2.1208	0.1385	2.6538	-1.4589
L2	143.17-93.75	3.1578	2.4005	4.1672	-0.1553
L3	93.75-46.08	3.5701	2.7207	4.9986	-0.1332
L4	46.08-0.00	3.5177	2.4999	5.1799	-0.1930

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	2	Safety Line 3/8	143.17 - 190.50	1.0000	1.0000
L1	3	Climbing Pegs	143.17 - 190.50	1.0000	1.0000
L1	9	HCS 6X12 4AWG(1-5/8)	143.17 - 180.00	1.0000	1.0000
L1	11	HB158-21U6S24-xxM_TMO(1-5/8)	143.17 - 180.00	1.0000	1.0000
L1	15	FB-L98B-002-75000(3/8)	143.17 - 168.00	1.0000	1.0000
L1	16	WR-VG86ST-BRD(3/4)	143.17 - 168.00	1.0000	1.0000
L1	17	2" Conduit	143.17 - 168.00	1.0000	1.0000
L1	19	FB-L98B-034-XXX(3/8)	143.17 - 168.00	1.0000	1.0000
L1	20	WR-VG66ST-BRD_CCIV2(7/8)	143.17 - 168.00	1.0000	1.0000
L1	24	LDF7-50A(1-5/8)	143.17 - 160.00	1.0000	1.0000
L2	2	Safety Line 3/8	93.75 - 143.17	1.0000	1.0000
L2	3	Climbing Pegs	93.75 - 143.17	1.0000	1.0000
L2	9	HCS 6X12 4AWG(1-5/8)	93.75 - 143.17	1.0000	1.0000
L2	11	HB158-21U6S24-xxM_TMO(1-5/8)	93.75 - 143.17	1.0000	1.0000
L2	15	FB-L98B-002-75000(3/8)	93.75 - 143.17	1.0000	1.0000
L2	16	WR-VG86ST-BRD(3/4)	93.75 - 143.17	1.0000	1.0000
L2	17	2" Conduit	93.75 - 143.17	1.0000	1.0000
L2	19	FB-L98B-034-XXX(3/8)	93.75 - 143.17	1.0000	1.0000
L2	20	WR-VG66ST-BRD_CCIV2(7/8)	93.75 - 143.17	1.0000	1.0000
L2	24	LDF7-50A(1-5/8)	93.75 - 143.17	1.0000	1.0000
L3	2	Safety Line 3/8	46.08 - 93.75	1.0000	1.0000
L3	3	Climbing Pegs	46.08 - 93.75	1.0000	1.0000
L3	9	HCS 6X12 4AWG(1-5/8)	46.08 - 93.75	1.0000	1.0000
L3	11	HB158-21U6S24-xxM_TMO(1-5/8)	46.08 - 93.75	1.0000	1.0000
L3	15	FB-L98B-002-75000(3/8)	46.08 - 93.75	1.0000	1.0000
L3	16	WR-VG86ST-BRD(3/4)	46.08 - 93.75	1.0000	1.0000
L3	17	2" Conduit	46.08 - 93.75	1.0000	1.0000
L3	19	FB-L98B-034-XXX(3/8)	46.08 - 93.75	1.0000	1.0000
L3	20	WR-VG66ST-BRD_CCIV2(7/8)	46.08 - 93.75	1.0000	1.0000
L3	24	LDF7-50A(1-5/8)	46.08 - 93.75	1.0000	1.0000
L4	2	Safety Line 3/8	6.00 - 46.08	1.0000	1.0000
L4	3	Climbing Pegs	6.00 - 46.08	1.0000	1.0000
L4	9	HCS 6X12 4AWG(1-5/8)	3.00 - 46.08	1.0000	1.0000
L4	11	HB158-21U6S24-xxM_TMO(1-5/8)	3.00 - 46.08	1.0000	1.0000
L4	15	FB-L98B-002-75000(3/8)	6.00 - 46.08	1.0000	1.0000
L4	16	WR-VG86ST-BRD(3/4)	6.00 - 46.08	1.0000	1.0000
L4	17	2" Conduit	6.00 - 46.08	1.0000	1.0000
L4	19	FB-L98B-034-XXX(3/8)	6.00 - 46.08	1.0000	1.0000
L4	20	WR-VG66ST-BRD_CCIV2(7/8)	6.00 - 46.08	1.0000	1.0000
L4	24	LDF7-50A(1-5/8)	6.00 - 46.08	1.0000	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Lightning Rod 5/8" x 6'	B	From Leg	1.00 0.00 3.00	0.0000	190.50	No Ice 1/2" Ice 1" Ice 2" Ice	0.38 0.99 1.62 2.46	0.38 0.99 1.62 2.46	0.01 0.01 0.02 0.05
******									
(4) DB844H90-XY w/ Mount Pipe	A	From Leg	4.00 0.00 1.00	0.0000	191.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.24 2.61 2.99 3.78	3.34 3.73 4.13 4.97	0.04 0.07 0.12 0.23
(4) DB844H90-XY w/ Mount Pipe	B	From Leg	4.00 0.00 1.00	0.0000	191.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.24 2.61 2.99 3.78	3.34 3.73 4.13 4.97	0.04 0.07 0.12 0.23
(4) DB844H90-XY w/ Mount Pipe	C	From Leg	4.00 0.00 1.00	0.0000	191.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.24 2.61 2.99 3.78	3.34 3.73 4.13 4.97	0.04 0.07 0.12 0.23
Platform Mount [LP 712-1]	C	None		0.0000	191.00	No Ice 1/2" Ice 1" Ice 2" Ice	24.56 27.92 31.27 37.98	24.56 27.92 31.27 37.98	1.34 1.91 2.55 3.97
*******									
APXVAARR24_43-U-NA20	A	From Leg	4.00 0.00 2.00	0.0000	180.00	No Ice 1/2" Ice 1" Ice 2" Ice	14.67 15.43 16.21 17.81	5.32 5.99 6.68 8.08	0.15 0.27 0.39 0.66
APXVAARR24_43-U-NA20	B	From Leg	4.00 0.00 2.00	0.0000	180.00	No Ice 1/2" Ice 1" Ice 2" Ice	14.67 15.43 16.21 17.81	5.32 5.99 6.68 8.08	0.15 0.27 0.39 0.66
APXVAARR24_43-U-NA20	C	From Leg	4.00 0.00 2.00	0.0000	180.00	No Ice 1/2" Ice 1" Ice 2" Ice	14.67 15.43 16.21 17.81	5.32 5.99 6.68 8.08	0.15 0.27 0.39 0.66
***									
AIR 6419 B41_TMO	A	From Leg	4.00 0.00 2.00	0.0000	180.00	No Ice 1/2" Ice 1" Ice 2" Ice	7.00 7.53 8.07 9.22	2.83 3.24 3.67 4.59	0.10 0.14 0.19 0.30
AIR 6419 B41_TMO	B	From Leg	4.00 0.00 2.00	0.0000	180.00	No Ice 1/2" Ice 1" Ice 2" Ice	7.00 7.53 8.07 9.22	2.83 3.24 3.67 4.59	0.10 0.14 0.19 0.30
AIR 6419 B41_TMO	C	From Leg	4.00 0.00 2.00	0.0000	180.00	No Ice 1/2" Ice 1" Ice 2" Ice	7.00 7.53 8.07 9.22	2.83 3.24 3.67 4.59	0.10 0.14 0.19 0.30
RADIO 4449 B71 B85A_T-MOBILE	A	From Leg	4.00 0.00 2.00	0.0000	180.00	No Ice 1/2" Ice 1" Ice	1.97 2.15 2.33 2.72	1.59 1.75 1.92 2.28	0.07 0.09 0.12 0.17

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" Ice			
RADIO 4449 B71 B85A_T-MOBILE	B	From Leg	4.00 0.00 2.00	0.0000	180.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.97 2.15 2.33 2.72	1.59 1.75 1.92 2.28	0.07 0.09 0.12 0.17
RADIO 4449 B71 B85A_T-MOBILE	C	From Leg	4.00 0.00 2.00	0.0000	180.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.97 2.15 2.33 2.72	1.59 1.75 1.92 2.28	0.07 0.09 0.12 0.17
RADIO 4460 B2/B25 B66_TMO	A	From Leg	4.00 0.00 2.00	0.0000	180.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.14 2.32 2.51 2.91	1.69 1.85 2.02 2.39	0.11 0.13 0.16 0.22
RADIO 4460 B2/B25 B66_TMO	B	From Leg	4.00 0.00 2.00	0.0000	180.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.14 2.32 2.51 2.91	1.69 1.85 2.02 2.39	0.11 0.13 0.16 0.22
RADIO 4460 B2/B25 B66_TMO	C	From Leg	4.00 0.00 2.00	0.0000	180.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.14 2.32 2.51 2.91	1.69 1.85 2.02 2.39	0.11 0.13 0.16 0.22
Low Profile Platform Mount [#RMQP-4126]	C	None		0.0000	180.00	No Ice 1/2" Ice 1" Ice 2" Ice	26.75 34.78 42.81 58.87	25.98 33.78 41.58 57.18	1.37 1.69 2.02 2.68
Support Rail [#HRK-12]	C	None		0.0000	180.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.56 6.39 8.18 11.66	4.56 6.39 8.18 11.66	0.25 0.31 0.40 0.66
******									
P65-17-XLH-RR	A	From Leg	4.00 0.00 2.00	0.0000	168.00	No Ice 1/2" Ice 1" Ice 2" Ice	7.58 8.29 9.02 10.52	3.80 4.48 5.17 6.59	0.06 0.12 0.19 0.36
P65-17-XLH-RR	B	From Leg	4.00 0.00 2.00	0.0000	168.00	No Ice 1/2" Ice 1" Ice 2" Ice	7.58 8.29 9.02 10.52	3.80 4.48 5.17 6.59	0.06 0.12 0.19 0.36
AM-X-CD-14-65-00T-RET	C	From Leg	4.00 0.00 2.00	0.0000	168.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.01 3.33 3.66 4.36	1.50 1.79 2.09 2.73	0.04 0.07 0.10 0.19
DC6-48-60-18-8F	B	From Leg	4.00 0.00 0.00	0.0000	168.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.92 1.46 1.64 2.04	0.92 1.46 1.64 2.04	0.02 0.04 0.06 0.11
******									
(2) OPA65R-BU8D	A	From Leg	4.00 0.00 2.00	0.0000	168.00	No Ice 1/2" Ice 1" Ice 2" Ice	17.42 18.44 19.47 21.59	6.48 7.38 8.30 10.19	0.08 0.18 0.28 0.52
(2) OPA65R-BU8D	B	From Leg	4.00 0.00	0.0000	168.00	No Ice 1/2"	17.42 18.44	6.48 7.38	0.08 0.18

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
			2.00			Ice	19.47	8.30	0.28
						1" Ice	21.59	10.19	0.52
						2" Ice			
(2) OPA65R-BU4D	C	From Leg	4.00	0.0000	168.00	No Ice	8.06	2.99	0.06
			0.00			1/2"	8.62	3.45	0.11
			2.00			Ice	9.19	3.91	0.17
						1" Ice	10.38	4.90	0.30
						2" Ice			
RRUS 4449 B5/B12	A	From Leg	4.00	0.0000	168.00	No Ice	1.97	1.41	0.07
			0.00			1/2"	2.14	1.56	0.09
			2.00			Ice	2.33	1.73	0.11
						1" Ice	2.72	2.07	0.16
						2" Ice			
RRUS 4449 B5/B12	B	From Leg	4.00	0.0000	168.00	No Ice	1.97	1.41	0.07
			0.00			1/2"	2.14	1.56	0.09
			2.00			Ice	2.33	1.73	0.11
						1" Ice	2.72	2.07	0.16
						2" Ice			
RRUS 4449 B5/B12	C	From Leg	4.00	0.0000	168.00	No Ice	1.97	1.41	0.07
			0.00			1/2"	2.14	1.56	0.09
			2.00			Ice	2.33	1.73	0.11
						1" Ice	2.72	2.07	0.16
						2" Ice			
RRUS 4478 B14_CCIV2	A	From Leg	4.00	0.0000	168.00	No Ice	2.02	1.25	0.06
			0.00			1/2"	2.20	1.40	0.08
			2.00			Ice	2.39	1.55	0.10
						1" Ice	2.78	1.89	0.15
						2" Ice			
RRUS 4478 B14_CCIV2	B	From Leg	4.00	0.0000	168.00	No Ice	2.02	1.25	0.06
			0.00			1/2"	2.20	1.40	0.08
			2.00			Ice	2.39	1.55	0.10
						1" Ice	2.78	1.89	0.15
						2" Ice			
RRUS 4478 B14_CCIV2	C	From Leg	4.00	0.0000	168.00	No Ice	2.02	1.25	0.06
			0.00			1/2"	2.20	1.40	0.08
			2.00			Ice	2.39	1.55	0.10
						1" Ice	2.78	1.89	0.15
						2" Ice			
RRUS 8843 B2/B66A_CCIV2	A	From Leg	4.00	0.0000	168.00	No Ice	1.98	1.70	0.08
			0.00			1/2"	2.16	1.86	0.10
			2.00			Ice	2.34	2.04	0.12
						1" Ice	2.73	2.41	0.18
						2" Ice			
RRUS 8843 B2/B66A_CCIV2	B	From Leg	4.00	0.0000	168.00	No Ice	1.98	1.70	0.08
			0.00			1/2"	2.16	1.86	0.10
			2.00			Ice	2.34	2.04	0.12
						1" Ice	2.73	2.41	0.18
						2" Ice			
RRUS 8843 B2/B66A_CCIV2	C	From Leg	4.00	0.0000	168.00	No Ice	1.98	1.70	0.08
			0.00			1/2"	2.16	1.86	0.10
			2.00			Ice	2.34	2.04	0.12
						1" Ice	2.73	2.41	0.18
						2" Ice			
DC6-48-60-18-8C-EV	C	From Leg	4.00	0.0000	168.00	No Ice	2.74	2.74	0.03
			0.00			1/2"	2.96	2.96	0.05
			2.00			Ice	3.20	3.20	0.08
						1" Ice	3.68	3.68	0.15
						2" Ice			
12' Fotress Mount [#F3P-12-WLL]	C	None		0.0000	168.00	No Ice	26.20	25.00	2.79
						1/2"	32.70	31.90	3.21
						Ice	41.30	39.20	3.79
						1" Ice	58.50	53.80	4.96
						2" Ice			
Support Rail Kit [#F3P-HRK12]	C	None		0.0000	168.00	No Ice	5.38	4.64	0.41
						1/2"	7.22	6.35	0.50

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
						Ice	8.88	8.13	0.63
						1" Ice	12.20	11.69	0.88
						2" Ice			
(5) 10' x 2.875" Mount Pipe	A	From Leg	4.00	0.0000	168.00	No Ice	2.88	2.88	0.06
			0.00			1/2"	3.91	3.91	0.08
			0.00			Ice	4.96	4.96	0.11
						1" Ice	6.19	6.19	0.18
						2" Ice			
(5) 10' x 2.875" Mount Pipe	B	From Leg	4.00	0.0000	168.00	No Ice	2.88	2.88	0.06
			0.00			1/2"	3.91	3.91	0.08
			0.00			Ice	4.96	4.96	0.11
						1" Ice	6.19	6.19	0.18
						2" Ice			
(5) 10' x 2.875" Mount Pipe	C	From Leg	4.00	0.0000	168.00	No Ice	2.88	2.88	0.06
			0.00			1/2"	3.91	3.91	0.08
			0.00			Ice	4.96	4.96	0.11
						1" Ice	6.19	6.19	0.18
						2" Ice			
***									
(2) SBNHH-1D65B w/ Mount Pipe	A	From Leg	4.00	0.0000	160.00	No Ice	4.09	3.30	0.07
			0.00			1/2"	4.49	3.68	0.13
			0.00			Ice	4.89	4.07	0.20
						1" Ice	5.72	4.87	0.39
						2" Ice			
(2) SBNHH-1D65B w/ Mount Pipe	B	From Leg	4.00	0.0000	160.00	No Ice	4.09	3.30	0.07
			0.00			1/2"	4.49	3.68	0.13
			0.00			Ice	4.89	4.07	0.20
						1" Ice	5.72	4.87	0.39
						2" Ice			
(2) SBNHH-1D65B w/ Mount Pipe	C	From Leg	4.00	0.0000	160.00	No Ice	4.09	3.30	0.07
			0.00			1/2"	4.49	3.68	0.13
			0.00			Ice	4.89	4.07	0.20
						1" Ice	5.72	4.87	0.39
						2" Ice			
6' x 2" Mount Pipe	A	From Leg	4.00	0.0000	160.00	No Ice	1.43	1.43	0.02
			0.00			1/2"	1.92	1.92	0.03
			0.00			Ice	2.29	2.29	0.05
						1" Ice	3.06	3.06	0.09
						2" Ice			
6' x 2" Mount Pipe	B	From Leg	4.00	0.0000	160.00	No Ice	1.43	1.43	0.02
			0.00			1/2"	1.92	1.92	0.03
			0.00			Ice	2.29	2.29	0.05
						1" Ice	3.06	3.06	0.09
						2" Ice			
6' x 2" Mount Pipe	C	From Leg	4.00	0.0000	160.00	No Ice	1.43	1.43	0.02
			0.00			1/2"	1.92	1.92	0.03
			0.00			Ice	2.29	2.29	0.05
						1" Ice	3.06	3.06	0.09
						2" Ice			
Platform Mount [LP 712-1]	C	None		0.0000	160.00	No Ice	24.56	24.56	1.34
						1/2"	27.92	27.92	1.91
						Ice	31.27	31.27	2.55
						1" Ice	37.98	37.98	3.97
						2" Ice			
***									
MT6407-77A w/ Mount Pipe	A	From Leg	4.00	0.0000	160.00	No Ice	5.94	3.10	0.10
			0.00			1/2"	6.47	3.55	0.13
			0.00			Ice	7.02	4.02	0.18
						1" Ice	8.17	5.01	0.28
						2" Ice			
MT6407-77A w/ Mount Pipe	B	From Leg	4.00	0.0000	160.00	No Ice	5.94	3.10	0.10
			0.00			1/2"	6.47	3.55	0.13
			0.00			Ice	7.02	4.02	0.18
						1" Ice	8.17	5.01	0.28
						2" Ice			

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
MT6407-77A w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.94 6.47 7.02 8.17	3.10 3.55 4.02 5.01	0.10 0.13 0.18 0.28
RF4439D-25A	A	From Leg	4.00 0.00 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.87 2.03 2.21 2.59	1.25 1.39 1.54 1.87	0.07 0.09 0.11 0.17
RF4439D-25A	B	From Leg	4.00 0.00 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.87 2.03 2.21 2.59	1.25 1.39 1.54 1.87	0.07 0.09 0.11 0.17
RF4439D-25A	C	From Leg	4.00 0.00 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.87 2.03 2.21 2.59	1.25 1.39 1.54 1.87	0.07 0.09 0.11 0.17
RF4440D-13A	A	From Leg	4.00 0.00 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.87 2.03 2.21 2.59	1.13 1.27 1.41 1.72	0.07 0.09 0.11 0.16
RF4440D-13A	B	From Leg	4.00 0.00 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.87 2.03 2.21 2.59	1.13 1.27 1.41 1.72	0.07 0.09 0.11 0.16
RF4440D-13A	C	From Leg	4.00 0.00 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.87 2.03 2.21 2.59	1.13 1.27 1.41 1.72	0.07 0.09 0.11 0.16
RVZDC-6627-PF-48_CCIV2	C	From Leg	4.00 0.00 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.06 4.32 4.58 5.14	3.10 3.34 3.58 4.09	0.03 0.07 0.11 0.20
6' x 2" Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.43 1.92 2.29 3.06	1.43 1.92 2.29 3.06	0.02 0.03 0.05 0.09
6' x 2" Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.43 1.92 2.29 3.06	1.43 1.92 2.29 3.06	0.02 0.03 0.05 0.09
6' x 2" Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.43 1.92 2.29 3.06	1.43 1.92 2.29 3.06	0.02 0.03 0.05 0.09
******									

Load Combinations

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

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	190.5 - 143.17	Pole	Max Tension	42	0.00	0.00	-0.00
			Max. Compression	26	-40.61	-2.87	1.05
			Max. Mx	8	-17.14	-555.29	-5.53
			Max. My	2	-17.19	5.24	552.99
			Max. Vy	8	21.24	-555.29	-5.53
			Max. Vx	2	-21.10	5.24	552.99
			Max. Torque	25			-1.28
L2	143.17 - 93.753	Pole	Max Tension	1	0.00	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	26	-56.89	-6.38	2.06
			Max. Mx	8	-27.93	-1675.29	-16.29
			Max. My	2	-28.02	15.41	1652.40
			Max. Vy	8	25.89	-1675.29	-16.29
			Max. Vx	2	-25.16	15.41	1652.40
			Max. Torque	38			0.95
L3	93.753 - 46.083	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-77.13	-10.41	3.15
			Max. Mx	8	-42.02	-2977.00	-26.41
			Max. My	2	-42.07	24.79	2914.85
			Max. Vy	8	30.49	-2977.00	-26.41
			Max. Vx	2	-29.60	24.79	2914.85
			Max. Torque	38			0.95
L4	46.083 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-104.26	-14.83	4.35
			Max. Mx	8	-61.99	-4723.31	-37.52
			Max. My	2	-61.99	34.98	4613.27
			Max. Vy	8	35.09	-4723.31	-37.52
			Max. Vx	2	-34.22	34.98	4613.27
			Max. Torque	38			0.95

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	30	104.26	-13.78	-0.01
	Max. H_x	20	62.01	35.04	0.21
	Max. H_z	2	62.01	0.21	34.17
	Max. M_x	2	4613.27	0.21	34.17
	Max. M_z	8	4723.31	-35.04	-0.21
	Max. Torsion	38	0.95	6.90	11.96
	Min. Vert	19	46.51	29.28	-16.90
	Min. H_x	8	62.01	-35.04	-0.21
	Min. H_z	14	62.01	-0.21	-34.17
	Min. M_x	14	-4610.44	-0.21	-34.17
	Min. M_z	20	-4715.41	35.04	0.21
	Min. Torsion	32	-0.95	-6.90	-11.96

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	51.68	0.00	0.00	-1.12	-3.12	-0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	62.01	-0.21	-34.17	-4613.27	34.98	0.69
0.9 Dead+1.0 Wind 0 deg - No Ice	46.51	-0.21	-34.17	-4534.88	35.29	0.69
1.2 Dead+1.0 Wind 30 deg - No Ice	62.01	16.78	-29.49	-3976.17	-2253.81	0.50
0.9 Dead+1.0 Wind 30 deg - No Ice	46.51	16.78	-29.49	-3908.56	-2214.80	0.50
1.2 Dead+1.0 Wind 60 deg - No Ice	62.01	29.28	-16.90	-2273.83	-3939.88	0.17
0.9 Dead+1.0 Wind 60 deg - No Ice	46.51	29.28	-16.90	-2235.05	-3872.33	0.17
1.2 Dead+1.0 Wind 90 deg - No Ice	62.01	35.04	0.21	37.52	-4723.31	-0.21
0.9 Dead+1.0 Wind 90 deg - No Ice	46.51	35.04	0.21	37.16	-4642.83	-0.21
1.2 Dead+1.0 Wind 120 deg - No Ice	62.01	31.05	18.17	2464.70	-4197.55	-0.52
0.9 Dead+1.0 Wind 120 deg - No Ice	46.51	31.05	18.17	2423.50	-4125.96	-0.52
1.2 Dead+1.0 Wind 150 deg - No Ice	62.01	17.15	29.70	4011.93	-2321.06	-0.71
0.9 Dead+1.0 Wind 150 deg - No Ice	46.51	17.15	29.70	3944.37	-2280.80	-0.71
1.2 Dead+1.0 Wind 180 deg - No Ice	62.01	0.21	34.17	4610.44	-42.89	-0.70
0.9 Dead+1.0 Wind 180 deg - No Ice	46.51	0.21	34.17	4532.78	-41.12	-0.70
1.2 Dead+1.0 Wind 210 deg - No Ice	62.01	-16.78	29.49	3973.34	2245.91	-0.50
0.9 Dead+1.0 Wind 210 deg - No Ice	46.51	-16.78	29.49	3906.47	2208.97	-0.50

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
1.2 Dead+1.0 Wind 240 deg - No Ice	62.01	-29.28	16.90	2270.99	3931.97	-0.17
0.9 Dead+1.0 Wind 240 deg - No Ice	46.51	-29.28	16.90	2232.96	3866.50	-0.17
1.2 Dead+1.0 Wind 270 deg - No Ice	62.01	-35.04	-0.21	-40.35	4715.41	0.21
0.9 Dead+1.0 Wind 270 deg - No Ice	46.51	-35.04	-0.21	-39.25	4637.01	0.21
1.2 Dead+1.0 Wind 300 deg - No Ice	62.01	-31.05	-18.17	-2467.54	4189.65	0.53
0.9 Dead+1.0 Wind 300 deg - No Ice	46.51	-31.05	-18.17	-2425.60	4120.14	0.53
1.2 Dead+1.0 Wind 330 deg - No Ice	62.01	-17.15	-29.70	-4014.77	2313.16	0.71
0.9 Dead+1.0 Wind 330 deg - No Ice	46.51	-17.15	-29.70	-3946.46	2274.97	0.71
1.2 Dead+1.0 Ice+1.0 Temp	104.26	0.00	-0.00	-4.35	-14.83	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	104.26	-0.01	-13.80	-2096.80	-12.21	-0.78
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	104.26	6.88	-11.94	-1815.04	-1057.14	-0.40
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	104.26	11.93	-6.89	-1048.14	-1822.83	0.08
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	104.26	13.78	0.01	-1.58	-2104.14	0.55
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	104.26	11.94	6.91	1044.23	-1825.69	0.86
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	104.26	6.90	11.96	1809.07	-1062.08	0.95
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	104.26	0.01	13.80	2088.00	-17.90	0.78
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	104.26	-6.88	11.94	1806.27	1027.06	0.40
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	104.26	-11.93	6.89	1039.35	1792.80	-0.08
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	104.26	-13.78	-0.01	-7.27	2074.11	-0.54
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	104.26	-11.94	-6.91	-1053.10	1795.62	-0.86
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	104.26	-6.90	-11.96	-1817.92	1031.97	-0.95
Dead+Wind 0 deg - Service	51.68	-0.05	-8.76	-1172.97	6.60	0.19
Dead+Wind 30 deg - Service	51.68	4.30	-7.56	-1011.06	-574.92	0.13
Dead+Wind 60 deg - Service	51.68	7.51	-4.33	-578.53	-1003.28	0.05
Dead+Wind 90 deg - Service	51.68	8.99	0.05	8.71	-1202.52	-0.05
Dead+Wind 120 deg - Service	51.68	7.96	4.66	625.59	-1069.10	-0.14
Dead+Wind 150 deg - Service	51.68	4.40	7.62	1018.59	-592.04	-0.19
Dead+Wind 180 deg - Service	51.68	0.05	8.76	1170.62	-13.16	-0.19
Dead+Wind 210 deg - Service	51.68	-4.30	7.56	1008.71	568.37	-0.13
Dead+Wind 240 deg - Service	51.68	-7.51	4.33	576.18	996.73	-0.05
Dead+Wind 270 deg - Service	51.68	-8.99	-0.05	-11.06	1195.96	0.05
Dead+Wind 300 deg - Service	51.68	-7.96	-4.66	-627.94	1062.54	0.14
Dead+Wind 330 deg - Service	51.68	-4.40	-7.62	-1020.94	585.48	0.19

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	K	K	K	K	K	K	
1	0.00	-51.68	0.00	0.00	51.68	0.00	0.000%
2	-0.21	-62.01	-34.17	0.21	62.01	34.17	0.000%
3	-0.21	-46.51	-34.17	0.21	46.51	34.17	0.000%
4	16.78	-62.01	-29.49	-16.78	62.01	29.49	0.000%
5	16.78	-46.51	-29.49	-16.78	46.51	29.49	0.000%
6	29.28	-62.01	-16.90	-29.28	62.01	16.90	0.000%
7	29.28	-46.51	-16.90	-29.28	46.51	16.90	0.000%
8	35.04	-62.01	0.21	-35.04	62.01	-0.21	0.000%
9	35.04	-46.51	0.21	-35.04	46.51	-0.21	0.000%
10	31.05	-62.01	18.17	-31.05	62.01	-18.17	0.000%
11	31.05	-46.51	18.17	-31.05	46.51	-18.17	0.000%
12	17.15	-62.01	29.70	-17.15	62.01	-29.70	0.000%
13	17.15	-46.51	29.70	-17.15	46.51	-29.70	0.000%
14	0.21	-62.01	34.17	-0.21	62.01	-34.17	0.000%
15	0.21	-46.51	34.17	-0.21	46.51	-34.17	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
16	-16.78	-62.01	29.49	16.78	62.01	-29.49	0.000%
17	-16.78	-46.51	29.49	16.78	46.51	-29.49	0.000%
18	-29.28	-62.01	16.90	29.28	62.01	-16.90	0.000%
19	-29.28	-46.51	16.90	29.28	46.51	-16.90	0.000%
20	-35.04	-62.01	-0.21	35.04	62.01	0.21	0.000%
21	-35.04	-46.51	-0.21	35.04	46.51	0.21	0.000%
22	-31.05	-62.01	-18.17	31.05	62.01	18.17	0.000%
23	-31.05	-46.51	-18.17	31.05	46.51	18.17	0.000%
24	-17.15	-62.01	-29.70	17.15	62.01	29.70	0.000%
25	-17.15	-46.51	-29.70	17.15	46.51	29.70	0.000%
26	0.00	-104.26	0.00	-0.00	104.26	0.00	0.000%
27	-0.01	-104.26	-13.80	0.01	104.26	13.80	0.000%
28	6.88	-104.26	-11.94	-6.88	104.26	11.94	0.000%
29	11.93	-104.26	-6.89	-11.93	104.26	6.89	0.000%
30	13.78	-104.26	0.01	-13.78	104.26	-0.01	0.000%
31	11.94	-104.26	6.91	-11.94	104.26	-6.91	0.000%
32	6.90	-104.26	11.96	-6.90	104.26	-11.96	0.000%
33	0.01	-104.26	13.80	-0.01	104.26	-13.80	0.000%
34	-6.88	-104.26	11.94	6.88	104.26	-11.94	0.000%
35	-11.93	-104.26	6.89	11.93	104.26	-6.89	0.000%
36	-13.78	-104.26	-0.01	13.78	104.26	0.01	0.000%
37	-11.94	-104.26	-6.91	11.94	104.26	6.91	0.000%
38	-6.90	-104.26	-11.96	6.90	104.26	11.96	0.000%
39	-0.05	-51.68	-8.76	0.05	51.68	8.76	0.000%
40	4.30	-51.68	-7.56	-4.30	51.68	7.56	0.000%
41	7.51	-51.68	-4.33	-7.51	51.68	4.33	0.000%
42	8.99	-51.68	0.05	-8.99	51.68	-0.05	0.000%
43	7.96	-51.68	4.66	-7.96	51.68	-4.66	0.000%
44	4.40	-51.68	7.62	-4.40	51.68	-7.62	0.000%
45	0.05	-51.68	8.76	-0.05	51.68	-8.76	0.000%
46	-4.30	-51.68	7.56	4.30	51.68	-7.56	0.000%
47	-7.51	-51.68	4.33	7.51	51.68	-4.33	0.000%
48	-8.99	-51.68	-0.05	8.99	51.68	0.05	0.000%
49	-7.96	-51.68	-4.66	7.96	51.68	4.66	0.000%
50	-4.40	-51.68	-7.62	4.40	51.68	7.62	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	5	0.00000001	0.00005269
3	Yes	5	0.00000001	0.00002224
4	Yes	6	0.00000001	0.00036483
5	Yes	6	0.00000001	0.00011680
6	Yes	6	0.00000001	0.00036087
7	Yes	6	0.00000001	0.00011549
8	Yes	5	0.00000001	0.00009690
9	Yes	5	0.00000001	0.00004322
10	Yes	6	0.00000001	0.00040280
11	Yes	6	0.00000001	0.00012501
12	Yes	6	0.00000001	0.00037873
13	Yes	6	0.00000001	0.00012029
14	Yes	5	0.00000001	0.00018973
15	Yes	5	0.00000001	0.00008690
16	Yes	6	0.00000001	0.00035890
17	Yes	6	0.00000001	0.00011482
18	Yes	6	0.00000001	0.00036109
19	Yes	6	0.00000001	0.00011578
20	Yes	5	0.00000001	0.00014128
21	Yes	5	0.00000001	0.00006390
22	Yes	6	0.00000001	0.00040704
23	Yes	6	0.00000001	0.00012667
24	Yes	6	0.00000001	0.00037159
25	Yes	6	0.00000001	0.00011777
26	Yes	4	0.00000001	0.00009397

27	Yes	6	0.00000001	0.00032904
28	Yes	6	0.00000001	0.00077669
29	Yes	6	0.00000001	0.00077815
30	Yes	6	0.00000001	0.00032994
31	Yes	6	0.00000001	0.00079063
32	Yes	6	0.00000001	0.00077075
33	Yes	6	0.00000001	0.00032725
34	Yes	6	0.00000001	0.00075738
35	Yes	6	0.00000001	0.00075441
36	Yes	6	0.00000001	0.00032457
37	Yes	6	0.00000001	0.00075672
38	Yes	6	0.00000001	0.00077787
39	Yes	4	0.00000001	0.00023067
40	Yes	5	0.00000001	0.00008823
41	Yes	5	0.00000001	0.00008553
42	Yes	4	0.00000001	0.00023401
43	Yes	5	0.00000001	0.00010206
44	Yes	5	0.00000001	0.00009368
45	Yes	4	0.00000001	0.00024378
46	Yes	5	0.00000001	0.00008349
47	Yes	5	0.00000001	0.00008523
48	Yes	4	0.00000001	0.00023604
49	Yes	5	0.00000001	0.00010478
50	Yes	5	0.00000001	0.00008833

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	190.5 - 143.17	43.477	43	2.2930	0.0026
L2	146.753 - 93.753	24.186	43	1.7545	0.0010
L3	99.083 - 46.083	10.202	43	1.0428	0.0003
L4	53 - 0	2.769	43	0.4902	0.0001

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
191.00	(4) DB844H90-XY w/ Mount Pipe	43	43.477	2.2930	0.0026	25080
190.50	Lightning Rod 5/8" x 6'	43	43.477	2.2930	0.0026	25080
180.00	APXVAARR24_43-U-NA20	43	38.544	2.1720	0.0022	11943
168.00	P65-17-XLH-RR	43	33.049	2.0298	0.0017	5572
160.00	(2) SBNHH-1D65B w/ Mount Pipe	43	29.548	1.9306	0.0014	4110

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	190.5 - 143.17	170.665	10	9.0331	0.0099
L2	146.753 - 93.753	95.092	10	6.9148	0.0052
L3	99.083 - 46.083	40.137	10	4.1078	0.0018
L4	53 - 0	10.890	10	1.9292	0.0006

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
191.00	(4) DB844H90-XY w/ Mount Pipe	10	170.665	9.0331	0.0102	6668
190.50	Lightning Rod 5/8" x 6'	10	170.665	9.0331	0.0102	6668
180.00	APXVAARR24_43-U-NA20	10	151.350	8.5575	0.0084	3173
168.00	P65-17-XLH-RR	10	129.829	7.9986	0.0064	1477
160.00	(2) SBNHH-1D65B w/ Mount Pipe	10	116.113	7.6083	0.0060	1087

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	190.5 - 143.17 (1)	TP27.778x14.75x0.25	47.33	0.00	0.0	21.0609	-16.99	1232.06	0.014
L2	143.17 - 93.753 (2)	TP40.88x26.2917x0.375	53.00	0.00	0.0	46.4649	-27.82	2718.20	0.010
L3	93.753 - 46.083 (3)	TP53.251x38.6629x0.375	53.00	0.00	0.0	60.6696	-41.95	3549.17	0.012
L4	46.083 - 0 (4)	TP65.185x50.5971x0.375	53.00	0.00	0.0	77.1401	-61.99	4512.70	0.014

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	190.5 - 143.17 (1)	TP27.778x14.75x0.25	570.27	828.94	0.688	0.00	828.94	0.000
L2	143.17 - 93.753 (2)	TP40.88x26.2917x0.375	1727.52	2703.68	0.639	0.00	2703.68	0.000
L3	93.753 - 46.083 (3)	TP53.251x38.6629x0.375	3070.91	4242.49	0.724	0.00	4242.49	0.000
L4	46.083 - 0 (4)	TP65.185x50.5971x0.375	4867.67	6161.17	0.790	0.00	6161.17	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	190.5 - 143.17 (1)	TP27.778x14.75x0.25	21.93	369.62	0.059	0.53	859.14	0.001
L2	143.17 - 93.753 (2)	TP40.88x26.2917x0.375	26.75	815.46	0.033	0.53	2787.84	0.000
L3	93.753 - 46.083 (3)	TP53.251x38.6629x0.375	31.45	1064.75	0.030	0.52	4752.93	0.000
L4	46.083 - 0 (4)	TP65.185x50.5971x0.375	36.02	1353.81	0.027	0.52	7683.86	0.000

Pole Interaction Design Data

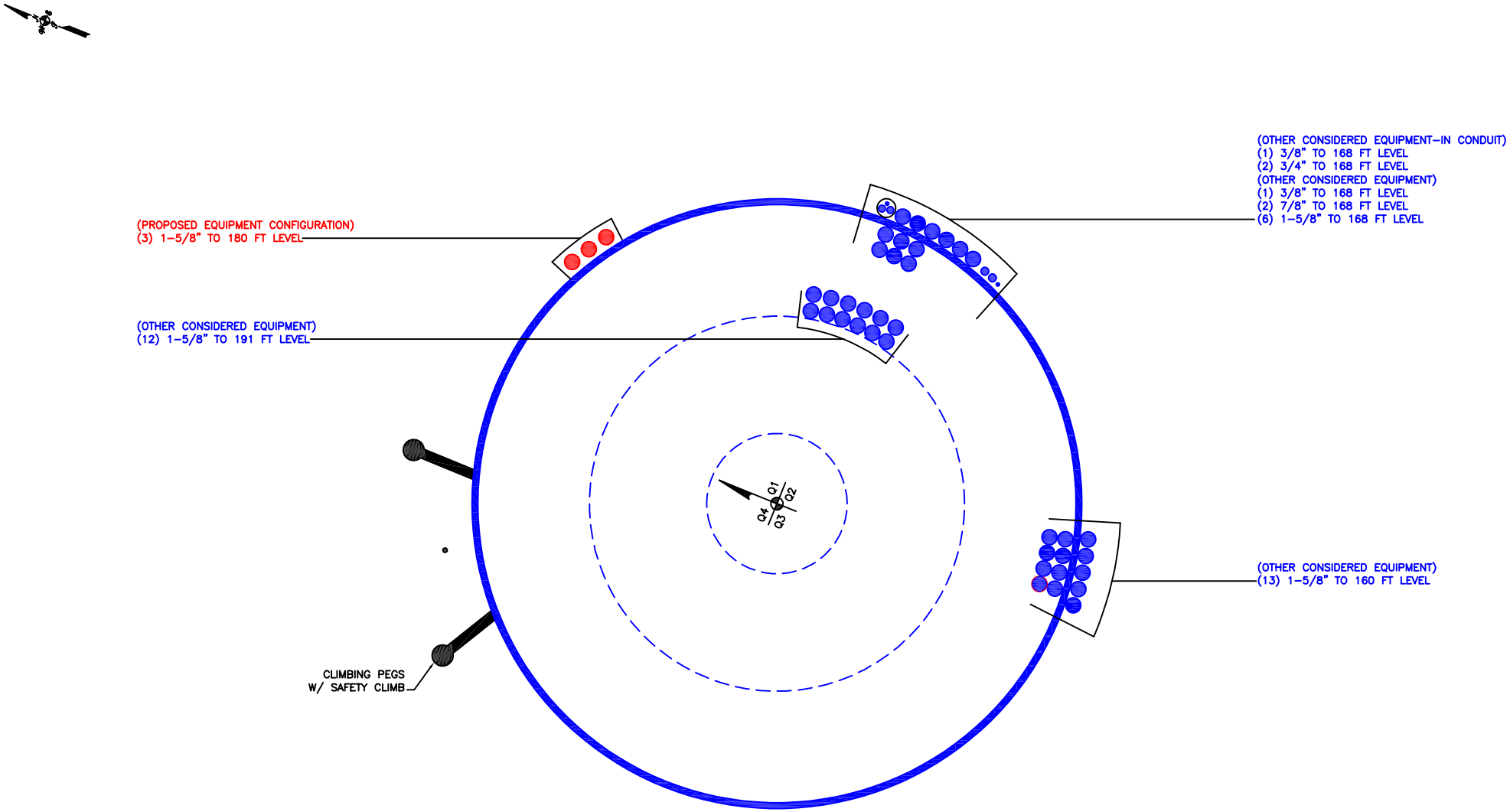
Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	190.5 - 143.17 (1)	0.014	0.688	0.000	0.059	0.001	0.705	1.050	4.8.2
L2	143.17 - 93.753 (2)	0.010	0.639	0.000	0.033	0.000	0.650	1.050	4.8.2
L3	93.753 - 46.083 (3)	0.012	0.724	0.000	0.030	0.000	0.737	1.050	4.8.2
L4	46.083 - 0 (4)	0.014	0.790	0.000	0.027	0.000	0.805	1.050	4.8.2

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	190.5 - 143.17	Pole	TP27.778x14.75x0.25	1	-16.99	1293.66	67.2	Pass
L2	143.17 - 93.753	Pole	TP40.88x26.2917x0.375	2	-27.82	2854.11	61.9	Pass
L3	93.753 - 46.083	Pole	TP53.251x38.6629x0.375	3	-41.95	3726.63	70.1	Pass
L4	46.083 - 0	Pole	TP65.185x50.5971x0.375	4	-61.99	4738.33	76.6	Pass
							Summary	
						Pole (L4)	76.6	Pass
						RATING =	**76.6**	**Pass**

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 801485 TOWER ID: C_BASELEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

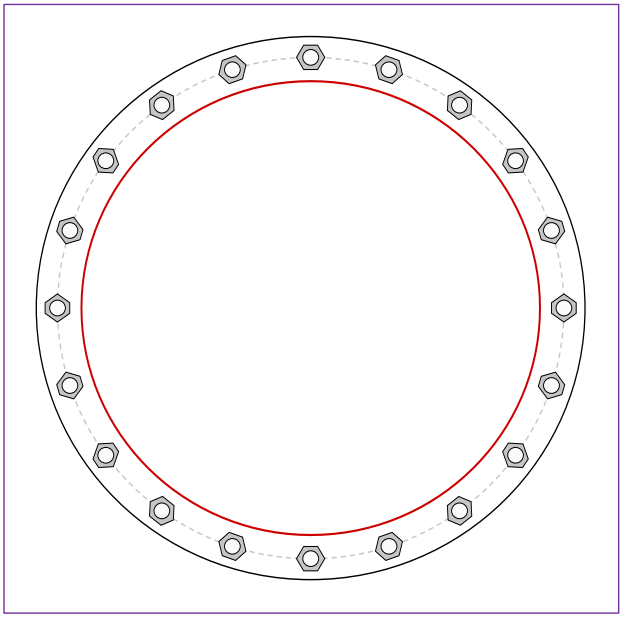
Monopole Base Plate Connection

Site Info	
BU #	801485
Site Name	CT Suffield 1 CAC 80148
Order #	645013 Rev. 0

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	No
l_{ar} (in)	1.5

Applied Loads	
Moment (kip-ft)	4867.66
Axial Force (kips)	61.99
Shear Force (kips)	36.02

**TIA-222-H Section 15.5 Applied*



Connection Properties

Anchor Rod Data

(20) 2-1/4" ø bolts (A615-75 N; Fy=75 ksi, Fu=100 ksi) on 72" BC

Base Plate Data

78" OD x 2.75" Plate (A633 Gr. E; Fy=60 ksi, Fu=70 ksi)

Stiffener Data

N/A

Pole Data

65.185" x 0.375" 18-sided pole (A572-65; Fy=65 ksi, Fu=80 ksi)

Analysis Results

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

Pu_t = 159.09	ϕPn_t = 243.75	**Stress Rating**
Vu = 1.8	ϕVn = 149.1	**62.2%**
Mu = n/a	ϕMn = n/a	**Pass**

Base Plate Summary

Max Stress (ksi):	18.7	(Flexural)
Allowable Stress (ksi):	54	
Stress Rating:	**33.0%**	**Pass**

Pier and Pad Foundation

BU # :	801485
Site Name:	CT Suffield 1 CAC
App. Number:	645013 Rev. 0

TIA-222 Revision:	H
Tower Type:	Monopole

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

Superstructure Analysis Reactions

Compression, P_{comp}:	62.01	kips
Base Shear, Vu_comp:	35.98	kips
Moment, M_u:	4867.67	ft-kips
Tower Height, **H**:	190.5	ft
BP Dist. Above Fdn, bp_{dist}:	3.75	in

Pier Properties

Pier Shape:	Circular	
Pier Diameter, **dpier**:	8	ft
Ext. Above Grade, **E**:	0.5	ft
Pier Rebar Size, **Sc**:	9	
Pier Rebar Quantity, **mc**:	43	
Pier Tie/Spiral Size, **St**:	5	
Pier Tie/Spiral Quantity, **mt**:	9	
Pier Reinforcement Type:	Tie	
Pier Clear Cover, cc_{pier}:	3	in

Pad Properties

Depth, **D**:	6.5	ft
Pad Width, W_1:	32	ft
Pad Thickness, **T**:	5	ft
Pad Rebar Size (Top dir.2), Sp_{top2}:	9	
Pad Rebar Quantity (Top dir. 2), mp_{top2}:	42	
Pad Rebar Size (Bottom dir. 2), Sp_2:	9	
Pad Rebar Quantity (Bottom dir. 2), mp_2:	34	
Pad Clear Cover, cc_{pad}:	3	in

Material Properties

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

Soil Properties

Total Soil Unit Weight, γ:	120	pcf
Ultimate Gross Bearing, Qult:	12.000	ksf
Cohesion, **Cu**:	0.000	ksf
Friction Angle, φ:	30	degrees
SPT Blow Count, N_{blows}:	23	
Base Friction, μ:		
Neglected Depth, **N**:	4.00	ft
Foundation Bearing on Rock?	No	
Groundwater Depth, **gw**:	7	ft

<--Toggle between Gross and Net

Foundation Analysis Checks

	Capacity	Demand	Rating*	Check
Lateral (Sliding) (kips)	361.54	35.98	**9.5%**	**Pass**
Bearing Pressure (ksf)	9.00	1.84	**19.5%**	**Pass**
*Overturning (kip*ft)*	13140.85	5130.77	**39.0%**	**Pass**
*Pier Flexure (Comp.) (kip*ft)*	7884.10	4939.63	**59.7%**	**Pass**
Pier Compression (kip)	23994.73	80.11	**0.3%**	**Pass**
*Pad Flexure (kip*ft)*	8302.75	1779.22	**20.4%**	**Pass**
Pad Shear - 1-way (kips)	1744.90	186.87	**10.2%**	**Pass**
Pad Shear - 2-way (Comp) (ksi)	0.164	0.016	**9.5%**	**Pass**
*Flexural 2-way (Comp) (kip*ft)*	13203.03	2963.78	**21.4%**	**Pass**

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

Structural Rating*:	**59.7%**
Soil Rating*:	**39.0%**

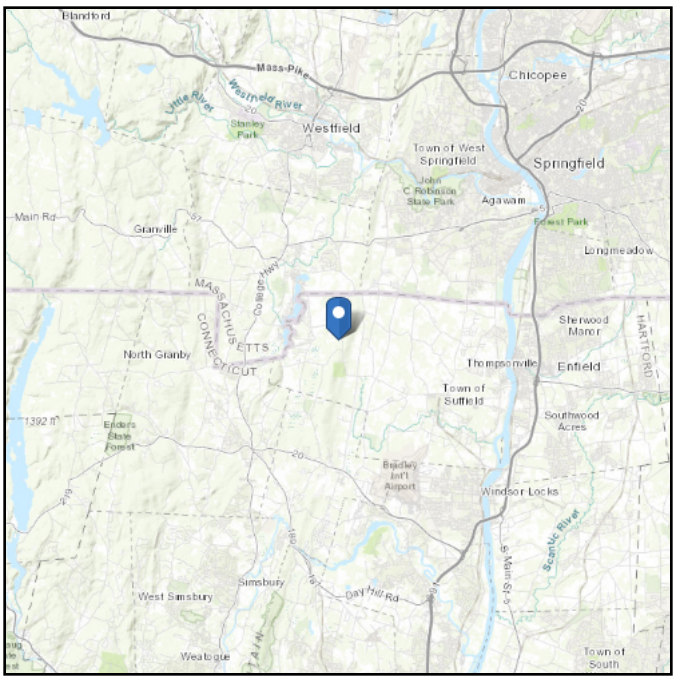
Version 4.1.1

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)

Latitude: 42.011611
Longitude: -72.728778
Elevation: 370.57 ft (NAVD 88)



Wind

Results:

Wind Speed	115 Vmph
10-year MRI	75 Vmph
25-year MRI	83 Vmph
50-year MRI	89 Vmph
100-year MRI	96 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: Tue Feb 14 2023

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 not in a hurricane-prone region as defined in ASCE/SEI 7-16 Section 26.2.

Seismic

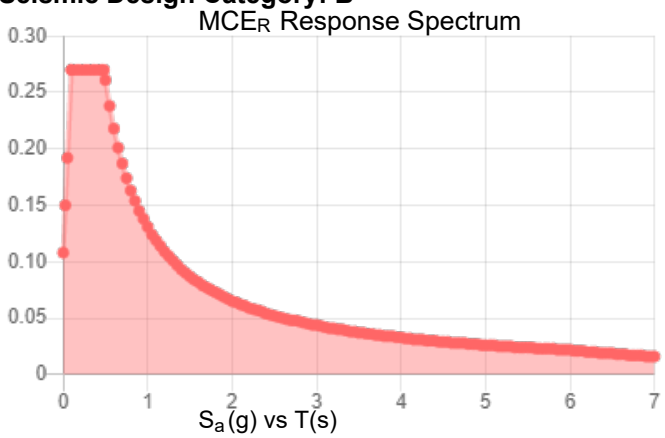
D - Default (see Section 11.4.3)

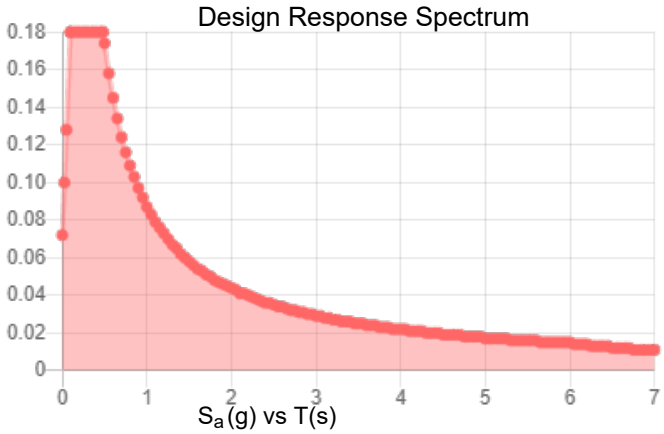
Site Soil Class:

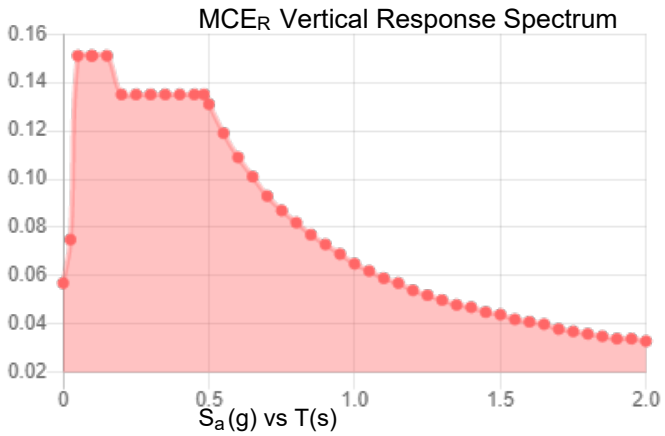
Results:

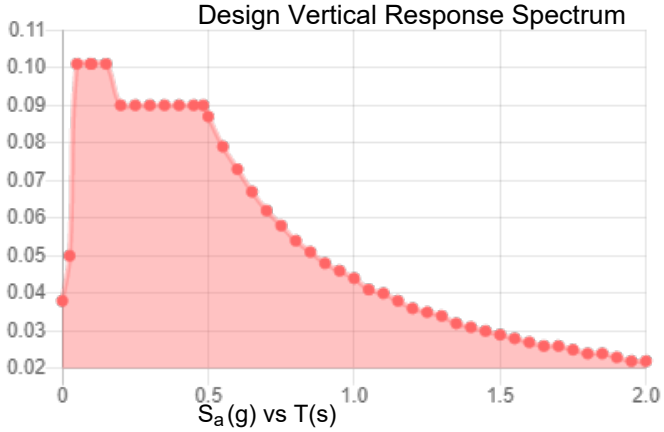
S_S :	0.169	S_{D1} :	0.087
S_1 :	0.054	T_L :	6
F_a :	1.6	PGA :	0.088
F_v :	2.4	PGA_M :	0.141
S_{MS} :	0.27	F_{PGA} :	1.6
S_{M1} :	0.131	I_e :	1
S_{DS} :	0.18	C_v :	0.7

Seismic Design Category: B









Data Accessed: **Tue Feb 14 2023**

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:	1.50 in.
Concurrent Temperature:	5 F
Gust Speed	50 mph
Data Source:	Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8
Date Accessed:	Tue Feb 14 2023

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.

Date: February 2, 2023

MTS Engineering, P.L.L.C.
1717 S. Boulder, Suite 300
Tulsa, OK 74119
(918) 587-4630
towersupport@btgrp.com

Subject:	**Mount Replacement Analysis Report**	
Carrier Designation:	**T-Mobile Equipment Change-Out**	
	Carrier Site Number:	CT545/Crown Suffield
	Carrier Site Name:	CT11545A
Crown Castle Designation:	**BU Number:**	801485
	Site Name:	CT Suffield 1 CAC 801485
	JDE Job Number:	709735
	Order Number:	609060, Rev.0
Engineering Firm Designation:	**Report Designation:**	84855.020.01.0001
Site Data:	**2715 Mountain Rd., Suffield, CT, Hartford County, 06093** **Latitude 42° 0' 41.80" Longitude -72° 43' 43.60"**	
Structure Information:	**Tower Height & Type:**	**190.5 ft. Monopole**
	Mount Elevation:	**180 ft.**
	Mount Type:	**12.5 ft. Platform Mount**

We are pleased to submit this **"Mount Replacement Analysis Report"** to determine the structural integrity of T-Mobile's antenna mounting system with the proposed appurtenance and equipment addition on the above mentioned 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.

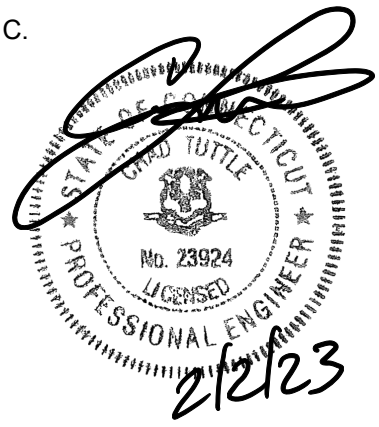
The purpose of the analysis is to determine acceptability of the mount's stress level. Based on our analysis we have determined the stress level to be:

Platform Mount **Sufficient**
***Sufficient upon completion of the changes listed in the 'Recommendations' section of the report**

This analysis utilizes an ultimate 3-second gust wind speed of 115 mph as required by the 2022 Connecticut State Building Code. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Mount structural analysis prepared by: Joseph Variamparampil

Respectfully submitted by: MTS Engineering, P.L.L.C.
COA: BER:2386985 Expires: 03/31/2023



Chad E. Tuttle, P.E.

TABLE OF CONTENTS

1) INTRODUCTION

This is a proposed 3 - sector 12.5' Platform Mount, designed by SitePro1 Part# RMQP-4126 w/HRK-12.

2) ANALYSIS CRITERIA

Building Code:	2022 Connecticut State Building Code
TIA-222 Revision:	TIA-222-H
Risk Category:	II
Ultimate Wind Speed:	115 mph
Exposure Category:	C
Topographic Factor at Base:	1
Topographic Factor at Mount:	1
Ice Thickness:	1.5 in
Wind Speed with Ice:	50 mph
Seismic S_s:	0.169
Seismic S_1:	0.054
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 and Existing Equipment Configuration

Mount Centerline (ft.)	Antenna Centerline (ft.)	Number of Antennas	Manufacturer	Model/Type	Mount / Modification Details
180	182	3	Ericsson	AIR 6419 B41_TMO	12.5' Platform Mount
		3	RFS/Celwave	APXVAARR24_43-U-NA20	
		3	Ericsson	RADIO 4449 B71 B85A_T-MOBILE	
		3	Ericsson	RADIO 4460 B2/B25 B66_TMO	

Table 2 – Documents Provided

Document	Remarks	Reference	Source
CCI Order	Proposed and Existing Loading	Date: 03/28/2022	Crown Castle
RFDS		Date: 03/10/2022	
Mount Manufacturer Drawing	SitePro1 (Part# RMQP-4126)	Date: 07/09/2015	SitePro1
Previous MA	MTS Engineering, P.L.L.C.	Date: 03/30/2022	On File

3) ANALYSIS PROCEDURE

3.1) Analysis Method

RISA-3D (Version 20.0.6), a commercially available analysis software package, was used to create a three-dimensional model of the antenna mounting system and calculate member stresses for various loading cases.

A tool internally developed by MTS Engineering, P.L.L.C., 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.

This analysis was performed in accordance with Crown Castle's ENG-SOW-10208 *Mount Analysis* (Revision E). In addition, this analysis is in accordance with OTHER SOW.

Manufacturers drawing were used to create the model.

3.2) Assumptions

1. The antenna mounting system was properly fabricated, installed and maintained in good condition in accordance with its original design, TIA Standards, and/or manufacturer's specifications.
2. The configuration of antennas, mounts, and other appurtenances are as specified in Table-1.
3. All member connections are assumed to have been designed to meet or exceed the load carrying capacity of the connected members unless otherwise specified in this report.
4. Mount areas and weights are determined from field measurements, standard material properties, and/or manufacturer product data.
5. Serviceability with respect to antenna twist, tilt, roll or lateral translation is not checked and is left to the carrier or tower owner to ensure conformance.
6. Prior structural modifications to the tower mounting system are assumed to be installed as shown per available data.
7. 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.
8. The following material grades were assumed (Unless Noted Otherwise):
   (a) Connection Bolts : ASTM A325
   (b) Steel Pipe : ASTM A53 (GR. 35)
   (c) HSS (Round) : ASTM 500 (GR. B-42)
   (d) HSS (Rectangular) : ASTM 500 (GR. B-46)
   (e) Channel : ASTM A36 (GR. 36)
   (f) Steel Solid Rod : ASTM A36 (GR. 36)
   (g) Steel Plate : ASTM A36 (GR. 36)
   (h) Steel Angle : ASTM A36 (GR. 36)
   (i) UNISTRUT : ASTM A570 (GR. 33)

This analysis may be affected if any assumptions are not valid or have been made in error. MTS Engineering, P.L.L.C. 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 Mount)

Notes	Component	Centerline (ft.)	Critical Member	% Capacity	Pass / Fail
1	Main Horizontals	180	107	25.0	Pass
	Support Rails		118	85.8	Pass
	Support Tubes		19	76.2	Pass
	Mount Pipes		89	77.6	Pass
	Connection Plates		51	49.8	Pass
	Support Angles		48	20.5	Pass
	Connection Angles		92	63.3	Pass
3	Mount to Tower Connection		--	59.3	Pass

Structure Rating with Recommendation (max from all components) =	85.8%

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 calculations supporting the % capacity reported.

4.1) Recommendations

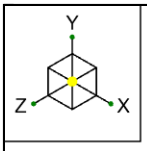
The proposed mount has sufficient capacity to support the proposed loading configuration. In order for the results of this analysis to be considered valid, the mount listed below shall be installed.

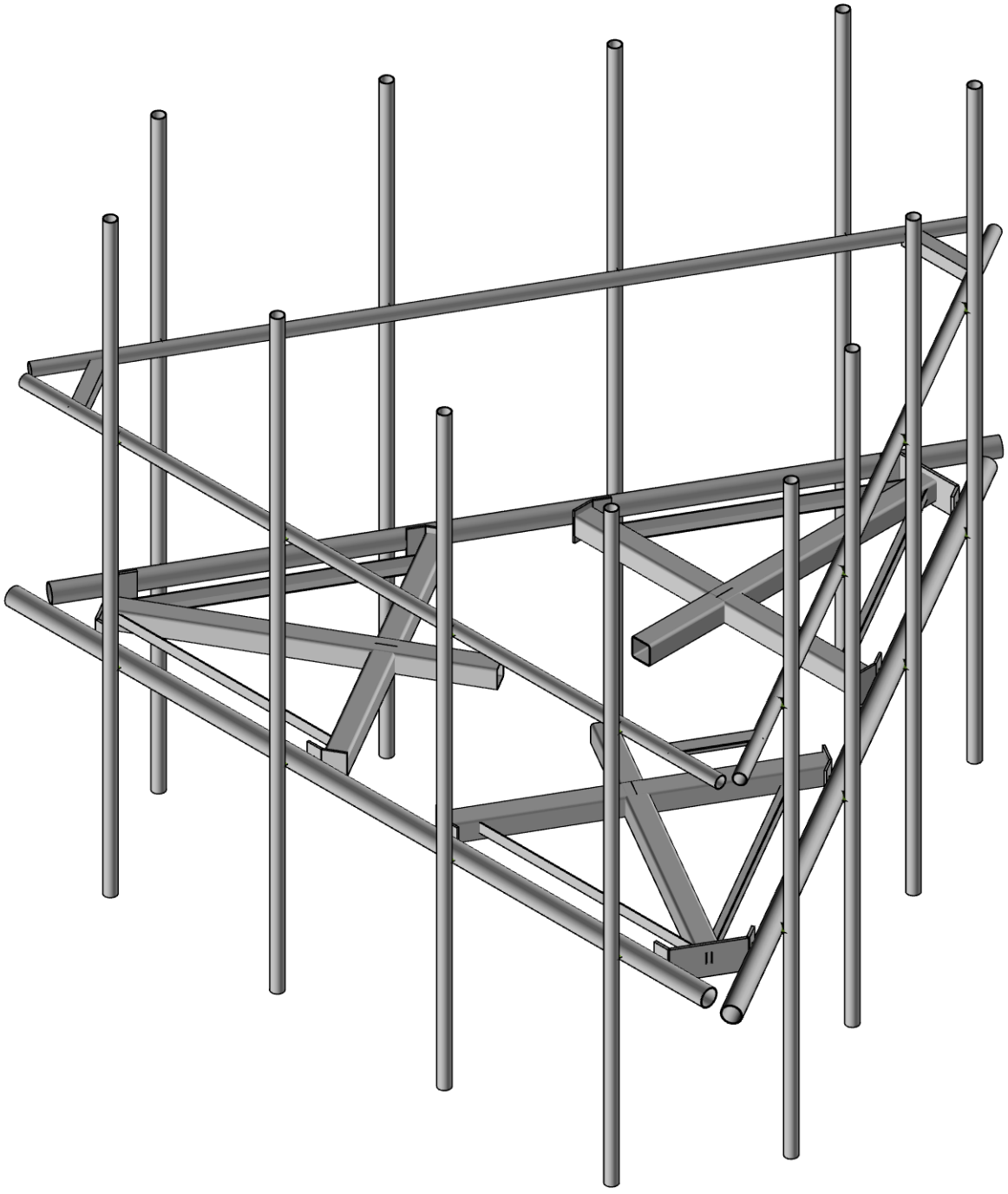
1. Mount replacement, SitePro1 Part# RMQP-4126 with HRK-12.

Beyond the mount replacement, no structural modifications are required at this time, provided that the above-listed changes are implemented.

APPENDIX A

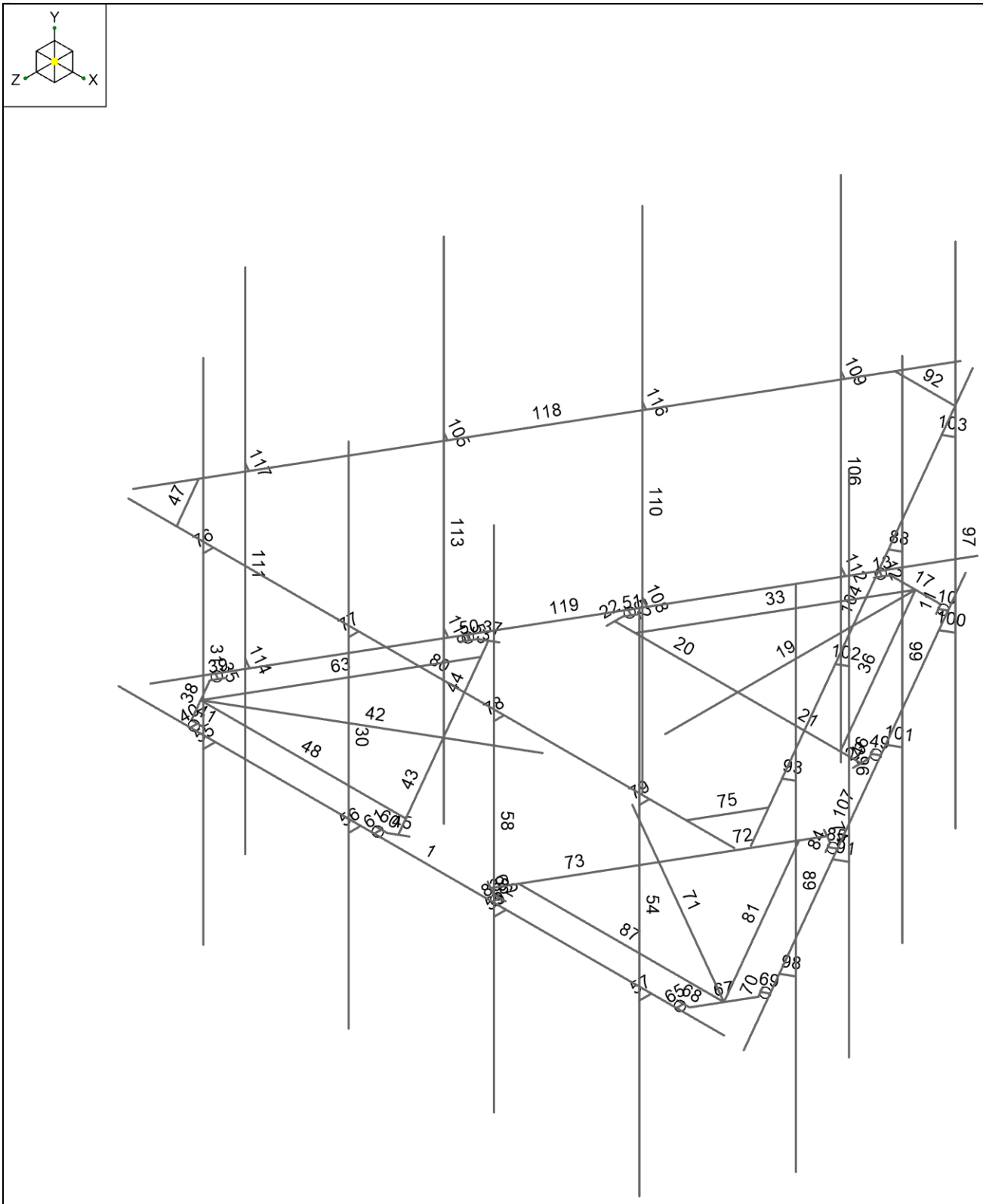
WIRE FRAME AND RENDERED MODELS





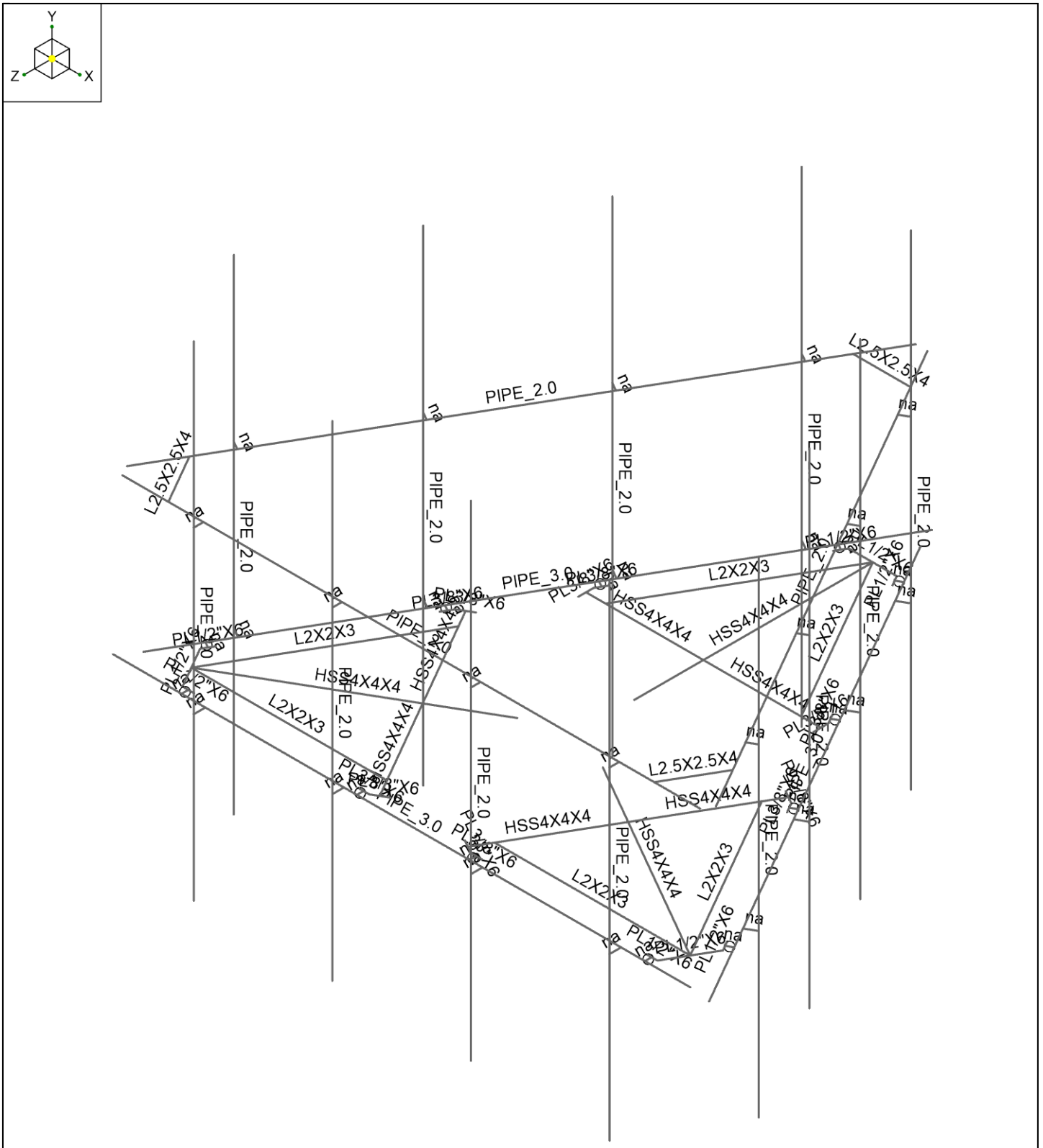
Envelope Only Solution

MTS Engineering, P.L.L.C.	801485 - CT Suffield 1 CAC 801485	SK-1
NK		Feb 02, 2023
84855.020.01.0001		84855_020_01_0001_CT Suffield …



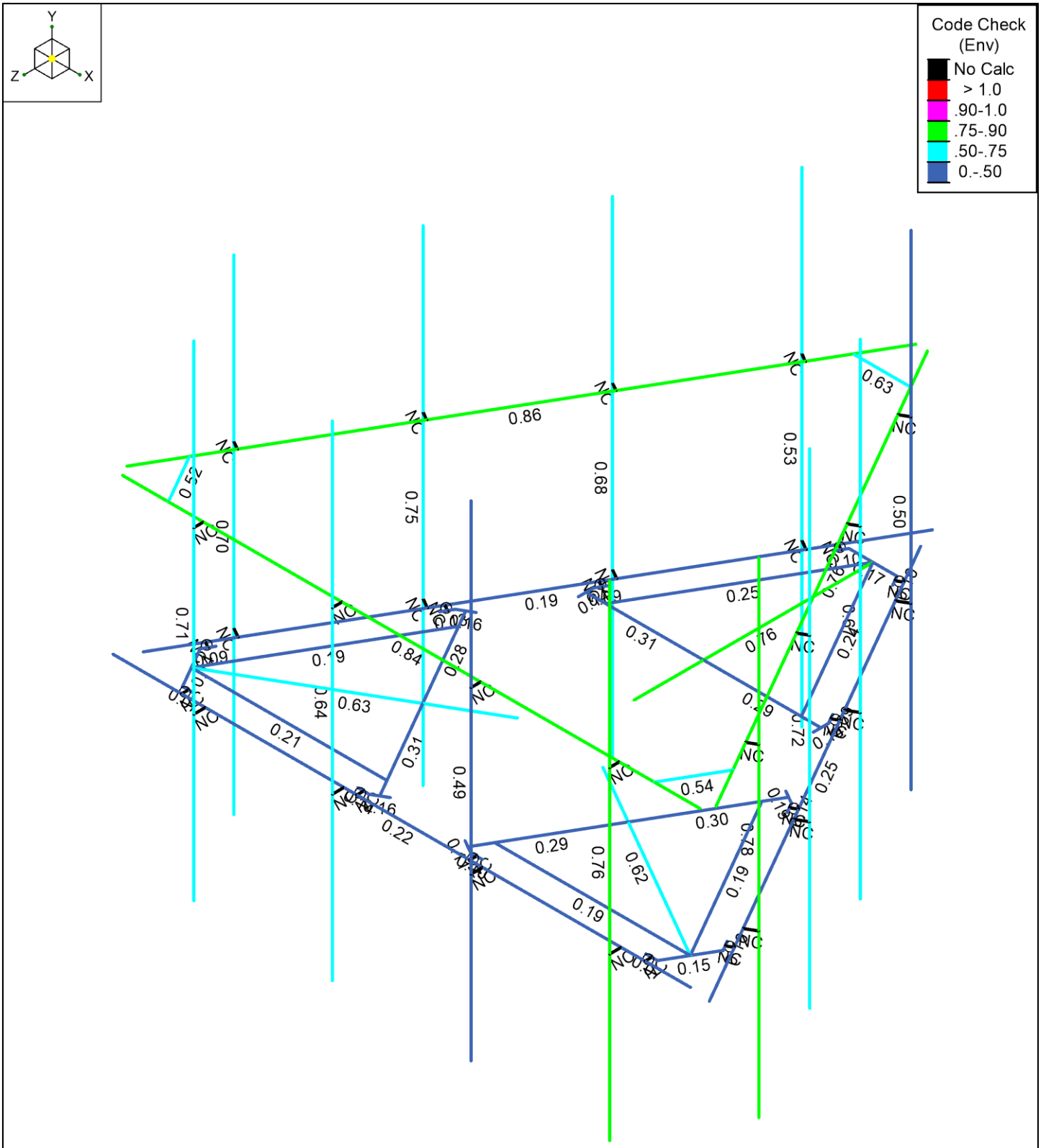
Envelope Only Solution

MTS Engineering, P.L.L.C.	801485 - CT Suffield 1 CAC 801485	SK-2
NK		Feb 02, 2023
84855.020.01.0001		84855_020_01_0001_CT Suffield …



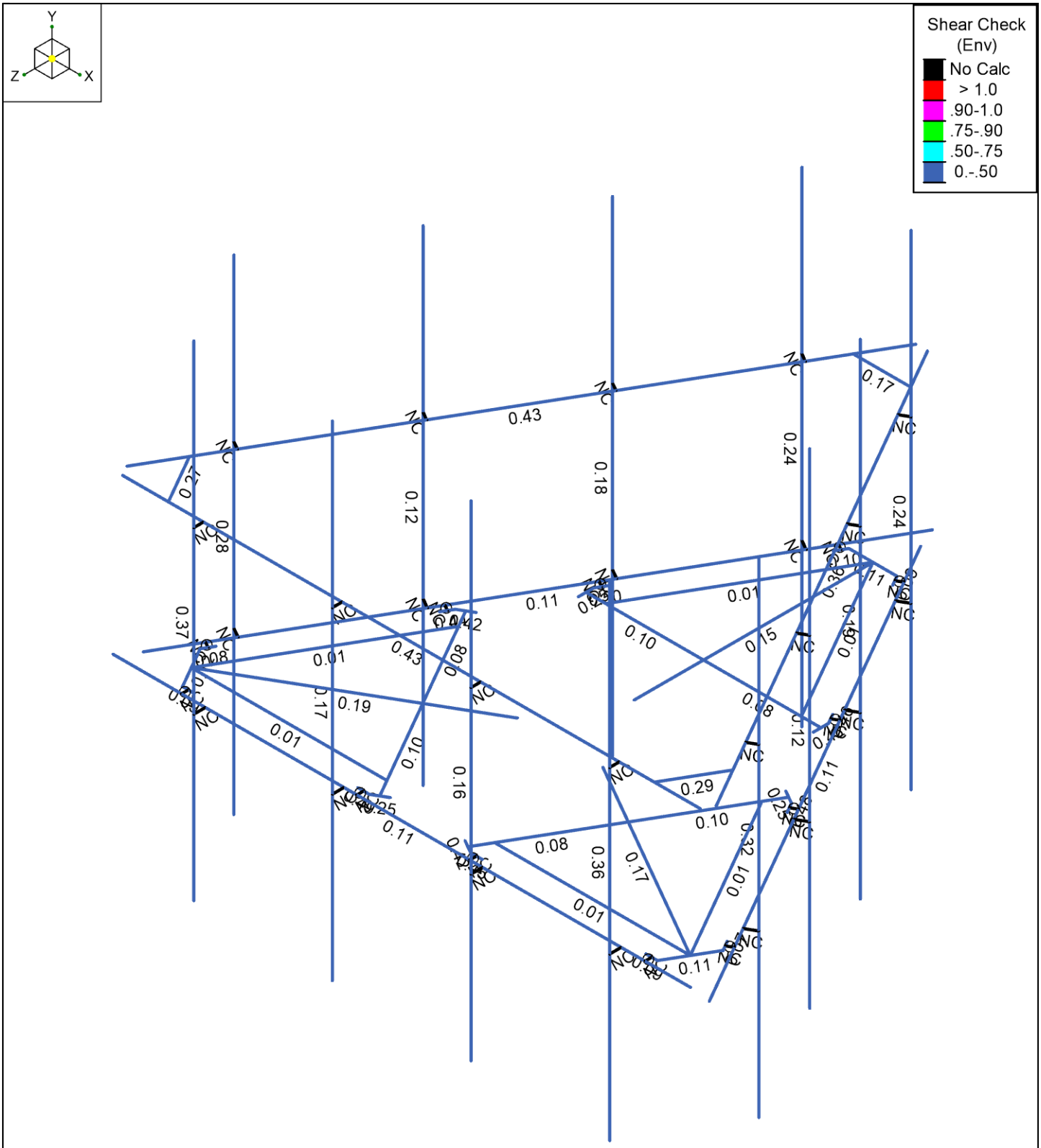
Envelope Only Solution

MTS Engineering, P.L.L.C.	801485 - CT Suffield 1 CAC 801485	SK-3
NK		Feb 02, 2023
84855.020.01.0001		84855_020_01_0001_CT Suffield …



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

MTS Engineering, P.L.L.C.	801485 - CT Suffield 1 CAC 801485	SK-4
NK		Feb 02, 2023
84855.020.01.0001		84855_020_01_0001_CT Suffield …



Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

MTS Engineering, P.L.L.C.	801485 - CT Suffield 1 CAC 801485	SK-5
NK		Feb 02, 2023
84855.020.01.0001		84855_020_01_0001_CT Suffield …

APPENDIX B

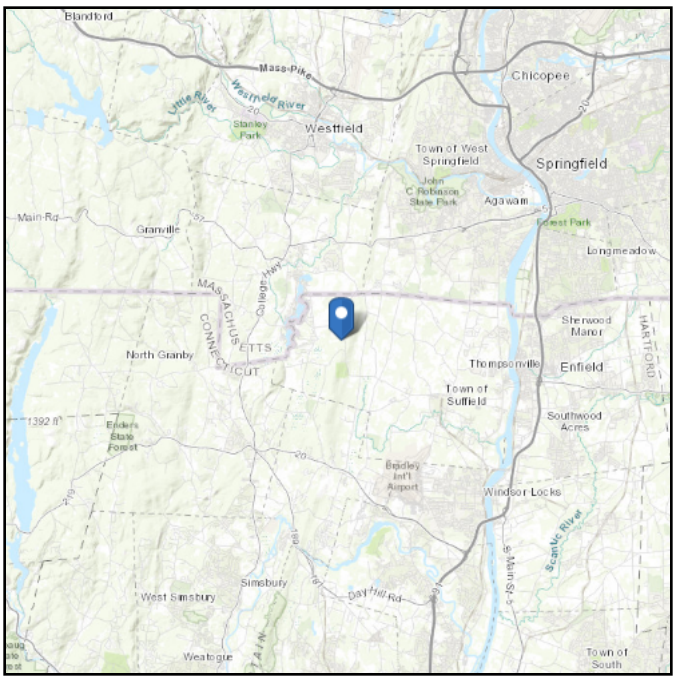
SOFTWARE INPUT CALCULATIONS

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)

Latitude: 42.011611
Longitude: -72.728778
Elevation: 370.57 ft (NAVD 88)



Wind

Results:

Wind Speed	115 Vmph
10-year MRI	75 Vmph
25-year MRI	83 Vmph
50-year MRI	89 Vmph
100-year MRI	96 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: Thu Feb 02 2023

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 not in a hurricane-prone region as defined in ASCE/SEI 7-16 Section 26.2.

ASCE
AMERICAN SOCIETY OF CIVIL ENGINEERS

Seismic

D - Default (see Section 11.4.3)

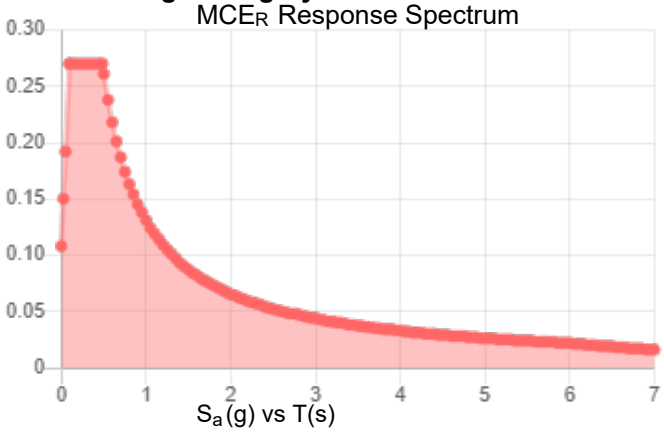
Site Soil Class:

Results:

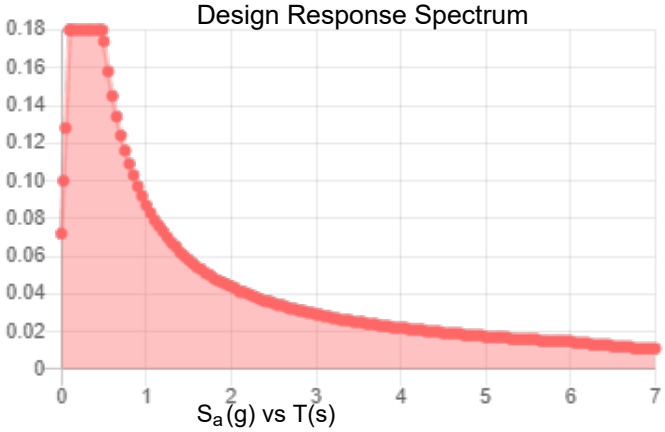
S_S :	0.169	S_{D1} :	0.087
S_1 :	0.054	T_L :	6
F_a :	1.6	PGA :	0.088
F_v :	2.4	PGA_M :	0.141
S_{MS} :	0.27	F_{PGA} :	1.6
S_{M1} :	0.131	I_e :	1
S_{DS} :	0.18	C_v :	0.7

Seismic Design Category: B

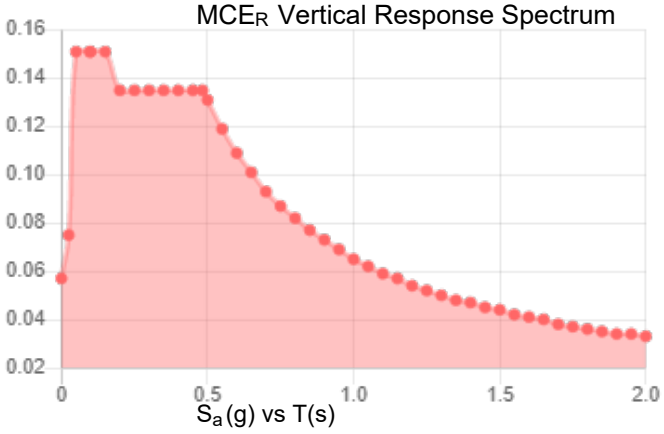
MCE_R Response Spectrum



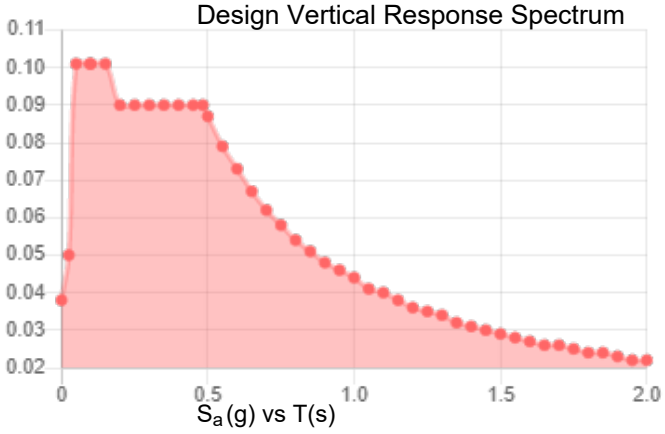
Design Response Spectrum



MCE_R Vertical Response Spectrum



Design Vertical Response Spectrum



Data Accessed: **Thu Feb 02 2023**

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:	1.50 in.
Concurrent Temperature:	5 F
Gust Speed	50 mph
Data Source:	Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8
Date Accessed:	Thu Feb 02 2023

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.

PROJECT	**84855.020.01.0001 - CT Suffield 1 CA(**	**KSC**
SUBJECT	**Platform Mount Analysis**	
DATE	**02-02-23**	

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

Tower Type		:	Monopole		
Ground Elevation	z_s	:	371	ft	[ASCE7 Hazard Tool]
Tower Height		:	190.50	ft	
Mount Elevation		:	180.00	ft	
Antenna Elevation		:	182.00	ft	
Crest Height		:	0	ft	
Risk Category		:	II		[Table 2-1]
Exposure Category		:	C		[Sec. 2.6.5.1.2]
Topography Category		:	1.00		[Sec. 2.6.6.2]
Wind Velocity	V	:	115	mph	[ASCE7 Hazard Tool]
Ice wind Velocity	V_i	:	50	mph	[ASCE7 Hazard Tool]
Service Velocity	V_s	:	30	mph	[ASCE7 Hazard Tool]
Base Ice thickness	t_i	:	1.50	in	[ASCE7 Hazard Tool]
Seismic Design Cat.		:	B		[ASCE7 Hazard Tool]
	S_S	:	0.17		
	S_1	:	0.05		
	S_{DS}	:	0.18		
	S_{D1}	:	0.09		

Gust Factor	G_h	:	1.00		[Sec. 16.6]
Pressure Coefficient	K_z	:	1.44		[Sec. 2.6.5.2]
Topography Facto	K_{zt}	:	1.00		[Sec. 2.6.6]
Elevation Factor	K_e	:	0.99		[Sec. 2.6.8]
Directionality Factor	K_d	:	0.95		[Sec. 16.6]
Shielding Factor	K_a	:	0.90		[Sec. 16.6]
Design Ice Thickness	t_{iz}	:	1.78	in	[Sec. 2.6.10]

Importance Factor	I_e	:	1		[Table 2-3]
Response Coefficient	C_s	:	0.090		[Sec. 2.7.7.1]
Amplification	A_s	:	2.779528		[Sec. 16.7]

	q_z	:	45.45	psf

PROJECT	**84855.020.01.0001 - CT Suffield 1 CA(KSC**	
SUBJECT	**Platform Mount Analysis**	
DATE	**02-02-23**	

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

Manufacturer	Model	Qty	Height (in^2)	Width (in^2)	Depth (in^2)	Weight (lbs)	C_aA_a (N) (ft^2)	C_aA_a (T) (ft^2)	C_aA_a (N) Ice (ft^2)	C_aA_a (T) Ice (ft^2)	$F_{A (N)}$ (k)	$F_{A (T)}$ (k)	$F_{A (N)}$ Ice (k)	$F_{A (T)}$ Ice (k)
ERICSSON	AIR 6419 B41_TMO	0.5	36.3	20.9	9.0	96.5	3.50	1.42	4.32	2.07	0.16	0.06	0.04	0.02
ERICSSON	AIR 6419 B41_TMO	0.5					3.50	1.42	4.32	2.07	0.16	0.06	0.04	0.02
RFS/CELWAVE	APXVAARR24_43-U-NA20	0.5	95.9	24.0	8.7	128.0	7.34	2.66	8.51	3.69	0.33	0.12	0.07	0.03
RFS/CELWAVE	APXVAARR24_43-U-NA20	0.5					7.34	2.66	8.51	3.69	0.33	0.12	0.07	0.03
ERICSSON	DIO 4449 B71 B85A_T-MOE	1	17.9	13.2	10.6	73.2	1.97	1.59	3.00	2.54	0.08	0.07	0.02	0.01
ERICSSON	ADIO 4460 B2/B25 B66_TM	1	17.0	15.1	11.9	109.0	2.14	1.69	3.20	2.65	0.09	0.07	0.02	0.01
ERICSSON	AIR 6419 B41_TMO	0.5	36.3	20.9	9.0	96.5	3.50	1.42	4.32	2.07	0.16	0.06	0.04	0.02
ERICSSON	AIR 6419 B41_TMO	0.5					3.50	1.42	4.32	2.07	0.16	0.06	0.04	0.02
RFS/CELWAVE	APXVAARR24_43-U-NA20	0.5	95.9	24.0	8.7	128.0	7.34	2.66	8.51	3.69	0.33	0.12	0.07	0.03
RFS/CELWAVE	APXVAARR24_43-U-NA20	0.5					7.34	2.66	8.51	3.69	0.33	0.12	0.07	0.03
ERICSSON	DIO 4449 B71 B85A_T-MOE	1	17.9	13.2	10.6	73.2	1.97	1.59	3.00	2.54	0.08	0.07	0.02	0.01
ERICSSON	ADIO 4460 B2/B25 B66_TM	1	17.0	15.1	11.9	109.0	2.14	1.69	3.20	2.65	0.09	0.07	0.02	0.01
ERICSSON	AIR 6419 B41_TMO	0.5	36.3	20.9	9.0	96.5	3.50	1.42	4.32	2.07	0.16	0.06	0.04	0.02
ERICSSON	AIR 6419 B41_TMO	0.5					3.50	1.42	4.32	2.07	0.16	0.06	0.04	0.02
RFS/CELWAVE	APXVAARR24_43-U-NA20	0.5	95.9	24.0	8.7	128.0	7.34	2.66	8.51	3.69	0.33	0.12	0.07	0.03
RFS/CELWAVE	APXVAARR24_43-U-NA20	0.5					7.34	2.66	8.51	3.69	0.33	0.12	0.07	0.03
ERICSSON	DIO 4449 B71 B85A_T-MOE	1	17.9	13.2	10.6	73.2	1.97	1.59	3.00	2.54	0.08	0.07	0.02	0.01
ERICSSON	ADIO 4460 B2/B25 B66_TM	1	17.0	15.1	11.9	109.0	2.14	1.69	3.20	2.65	0.09	0.07	0.02	0.01

PROJECT	**84855.020.01.0001 - CT Suffield 1 CA(KSC**
SUBJECT	**Platform Mount Analysis**
DATE	**02-02-23**

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

Manufacturer	Model	Qty	Height (in^2)	Width (in^2)	Depth (in^2)	Weight (lbs)	C_aA_a (N) (ft^2)	C_aA_a (T) (ft^2)	C_aA_a (N) Ice (ft^2)	C_aA_a (T) Ice (ft^2)	$F_{A\,(N)}$ (k)	$F_{A\,(T)}$ (k)	$F_{A\,(N)}$ Ice (k)	$F_{A\,(T)}$ Ice (k)

PROJECT	**84855.020.01.0001 - CT Suffield 1 CA(KSC**
SUBJECT	**Platform Mount Analysis**
DATE	**02-02-23**

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

Manufacturer	Model	Qty	Height (in^2)	Width (in^2)	Depth (in^2)	Weight (lbs)	C_aA_a (N) (ft^2)	C_aA_a (T) (ft^2)	C_aA_a (N) Ice (ft^2)	C_aA_a (T) Ice (ft^2)	$F_{A\,(N)}$ (k)	$F_{A\,(T)}$ (k)	$F_{A\,(N)}$ Ice (k)	$F_{A\,(T)}$ Ice (k)

APPENDIX C

SOFTWARE ANALYSIS OUTPUT

Node Coordinates

	Label	X [ft]	Y [ft]	Z [ft]	Detach From Diaphragm
1	1	-6.49964	0	3.713205	
2	2	6.00036	0	3.713205	
3	36	-4.5	0	3.963205	
4	37	-1.5	0	3.963205	
5	19	0.70815	0	-6.199858	
6	20	0.581858	0	-6.126943	
7	50	-4.5	7	3.963205	
8	21	0.644358	0	-6.01869	
9	51	-1.5	7	3.963205	
10	22	0.519358	0	-6.235196	
11	52	-4.5	-3.4997	3.963205	
12	23	-0.70815	0	-6.199858	
13	53	-1.5	-3.5	3.963205	
14	24	-0.581858	0	-6.126943	
15	25	-0.644358	0	-6.01869	
16	26	-0.519358	0	-6.235196	
17	31	0	0	-6.235196	
18	32	0	0	-1.068496	
19	33	0	0	-2.568496	
20	34	-2.54129	0	-2.568496	
21	88	4.5	0	3.963205	
22	35	2.54129	0	-2.568496	
23	89	4.5	7	3.963205	
24	90	4.5	-3.4997	3.963205	
25	91	-4.5	0	3.713205	
26	38	-2.54129	0	-2.401796	
27	92	-1.5	0	3.713205	
28	39	2.54129	0	-2.401796	
29	93	4.5	0	3.713205	
30	94	1.5	0	3.963205	
31	95	1.5	7	3.963205	
32	96	1.5	-3.5	3.963205	
33	97	1.5	0	3.713205	
34	130	-4.5	3.5	3.963205	
35	131	-1.5	3.5	3.963205	
36	132	4.5	3.5	3.963205	
37	133	1.5	3.5	3.963205	
38	134	-6.25	3.5	3.754875	
39	135	6.25	3.5	3.754875	
40	136	-4.5	3.5	3.754875	
41	137	-1.5	3.5	3.754875	
42	138	4.5	3.5	3.754875	
43	139	1.5	3.5	3.754875	
44	54	-2.11697	0	-2.568496	
45	59	2.11697	0	-2.568496	
46	175	0	0	0	
47	60	2.54129	0	-2.733106	
48	61	-2.54129	0	-2.733106	
49	76	2.41629	0	-2.949612	
50	78	2.47879	0	-2.841359	
51	80	2.605083	0	-2.914274	
52	83	-2.41629	0	-2.949612	
53	85	-2.47879	0	-2.841359	
54	87	-2.605083	0	-2.914274	
55	163	0.622557	3.5	-6.431449	

Node Coordinates (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Detach From Diaphragm
56	164	-0.622557	3.5	-6.431449	
57	62	-5.597017	0	2.559568	
58	65	-0.809371	0	3.40172	
59	66	-5.534517	0	2.451315	
60	67	-5.72331	0	2.486653	
61	68	-3.637584	0	-0.834269	
62	69	-5.659517	0	2.667821	
63	70	-5.01516	0	3.713205	
64	72	-5.258519	3.5	3.754875	
65	73	-5.01516	0	3.567375	
66	74	-4.89016	0	3.567375	
67	75	-1.346294	0	3.567375	
68	77	-3.700084	0	-0.726016	
69	79	-5.14016	0	3.567375	
70	81	-5.399838	0	3.117598	
71	82	-0.925345	0	0.534248	
72	84	-2.224383	0	1.284248	
73	86	-0.953738	0	3.48507	
74	98	-3.495028	0	-0.916574	
75	99	-1.096294	0	3.567375	
76	100	-3.350662	0	-0.999924	
77	101	-3.826377	0	-0.798931	
78	102	-1.165898	0	3.117598	
79	103	-3.762584	0	-0.617763	
80	104	-1.221294	0	3.567375	
81	105	-1.221294	0	3.713205	
82	106	-5.881077	3.5	2.676574	
83	107	-3.282868	0	-0.549102	
84	108	5.01516	0	3.567375	
85	111	3.350662	0	-0.999924	
86	112	4.89016	0	3.567375	
87	113	5.01516	0	3.713205	
88	114	1.096294	0	3.567375	
89	115	5.14016	0	3.567375	
90	116	5.72331	0	2.486653	
91	118	5.881077	3.5	2.676574	
92	119	5.597017	0	2.559568	
93	120	5.534517	0	2.451315	
94	121	3.762584	0	-0.617763	
95	122	1.221294	0	3.567375	
96	123	5.659517	0	2.667821	
97	124	5.399838	0	3.117598	
98	125	0.925345	0	0.534248	
99	126	2.224383	0	1.284248	
100	127	3.495028	0	-0.916574	
101	128	0.953738	0	3.48507	
102	129	3.637584	0	-0.834269	
103	140	0.809371	0	3.40172	
104	141	1.221294	0	3.713205	
105	142	3.282868	0	-0.549102	
106	143	1.346294	0	3.567375	
107	144	3.700084	0	-0.726016	
108	145	3.826377	0	-0.798931	
109	146	5.258519	3.5	3.754875	
110	147	1.165898	0	3.117598	

Node Coordinates (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Detach From Diaphragm
111	149	4.182236	0	-0.682564	
112	150	3.96573	0	-0.557564	
113	151	1.001817	3.5	-5.774552	
114	152	5.46573	0	2.040512	
115	153	2.682236	7	-3.280641	
116	154	0.96573	0	-5.753717	
117	155	5.501817	3.5	2.019677	
118	157	5.682236	0	1.915512	
119	158	4.182236	-3.5	-0.682564	
120	159	0.126817	3.5	-7.290096	
121	160	5.682236	7	1.915512	
122	161	4.001817	3.5	-0.578399	
123	162	2.682236	3.5	-3.280641	
124	165	4.182236	7	-0.682564	
125	167	5.682236	-3.4997	1.915512	
126	168	2.682236	0	-3.280641	
127	171	1.182236	0	-5.878717	
128	172	1.182236	3.5	-5.878717	
129	173	2.46573	0	-3.155641	
130	174	1.182236	7	-5.878717	
131	176	1.182236	-3.4997	-5.878717	
132	177	2.682236	-3.5	-3.280641	
133	178	5.682236	3.5	1.915512	
134	179	4.182236	3.5	-0.682564	
135	180	6.376817	3.5	3.535221	
136	181	2.501817	3.5	-3.176476	
137	183	-2.682236	0	-3.280641	
138	184	-2.46573	0	-3.155641	
139	185	-5.501817	3.5	2.019677	
140	186	-0.96573	0	-5.753717	
141	187	-4.182236	7	-0.682564	
142	188	-5.46573	0	2.040512	
143	189	-1.001817	3.5	-5.774552	
144	191	-1.182236	0	-5.878717	
145	192	-2.682236	-3.5	-3.280641	
146	193	-6.376817	3.5	3.535221	
147	194	-1.182236	7	-5.878717	
148	195	-2.501817	3.5	-3.176476	
149	196	-4.182236	3.5	-0.682564	
150	197	-2.682236	7	-3.280641	
151	198	-1.182236	-3.4997	-5.878717	
152	199	-4.182236	0	-0.682564	
153	200	-5.682236	0	1.915512	
154	201	-5.682236	3.5	1.915512	
155	202	-3.96573	0	-0.557564	
156	203	-5.682236	7	1.915512	
157	204	-5.682236	-3.4997	1.915512	
158	205	-4.182236	-3.5	-0.682564	
159	206	-1.182236	3.5	-5.878717	
160	207	-2.682236	3.5	-3.280641	
161	208	-0.126817	3.5	-7.290096	
162	209	-4.001817	3.5	-0.578399	
163	182	0.21555	0	-7.053066	
164	190	6.46555	0	3.772251	
165	210	-6.21591	0	3.339861	

Node Coordinates (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Detach From Diaphragm
166	211	0.03409	0	-7.485456	

Node Boundary Conditions

	Node Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot [k-ft/rad]	Y Rot [k-ft/rad]	Z Rot [k-ft/rad]
1	32	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
2	82	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
3	125	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [1e⁵°F⁻¹]	Density [k/ft³]	Yield [ksi]	Ry	Fu [ksi]	Rt
1	A992	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	0.3	0.65	0.49	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	0.3	0.65	0.527	42	1.4	58	1.3
5	A500 Gr.B Rect	29000	11154	0.3	0.65	0.527	46	1.4	58	1.3
6	A53 Gr.B	29000	11154	0.3	0.65	0.49	35	1.6	60	1.2
7	A1085	29000	11154	0.3	0.65	0.49	50	1.4	65	1.3

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rule	Area [in²]	Iyy [in⁴]	Izz [in⁴]	J [in⁴]
1	MF-H1	PIPE_3.0	Beam	Pipe	A53 Gr.B	Typical	2.07	2.85	2.85	5.69
2	MF-H2	PIPE_2.0	Beam	Pipe	A53 Gr.B	Typical	1.02	0.627	0.627	1.25
3	SF-H1	HSS4X4X4	Beam	Tube	A53 Gr.B	Typical	3.37	7.8	7.8	12.8
4	MF-P1	PIPE_2.0	Column	Pipe	A53 Gr.B	Typical	1.02	0.627	0.627	1.25
5	MF-CP1	PL3/8"X6	Beam	RECT	A36 Gr.36	Typical	2.25	0.026	6.75	0.101
6	MF-CP2	PL1/2"X6	Beam	RECT	A36 Gr.36	Typical	3	0.062	9	0.237
7	SF-H2	L2X2X3	Beam	Single Angle	A36 Gr.36	Typical	0.722	0.271	0.271	0.009
8	SF-H3	L2.5X2.5X4	Beam	Single Angle	A36 Gr.36	Typical	1.19	0.692	0.692	0.026

Member Primary Data

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
1	1	2	1		MF-H1	Beam	Pipe	A53 Gr.B	Typical
2	10	19	20		RIGID	None	None	RIGID	Typical
3	11	21	22		MF-CP2	Beam	RECT	A36 Gr.36	Typical
4	12	23	24		RIGID	None	None	RIGID	Typical
5	30	51	53		MF-P1	Column	Pipe	A53 Gr.B	Typical
6	13	25	26		MF-CP2	Beam	RECT	A36 Gr.36	Typical
7	31	50	52		MF-P1	Column	Pipe	A53 Gr.B	Typical
8	17	26	22		MF-CP2	Beam	RECT	A36 Gr.36	Typical
9	19	32	31		SF-H1	Beam	Tube	A53 Gr.B	Typical
10	54	89	90		MF-P1	Column	Pipe	A53 Gr.B	Typical
11	20	34	33		SF-H1	Beam	Tube	A53 Gr.B	Typical
12	55	36	91		RIGID	None	None	RIGID	Typical
13	21	33	35		SF-H1	Beam	Tube	A53 Gr.B	Typical
14	22	38	61		MF-CP1	Beam	RECT	A36 Gr.36	Typical
15	56	37	92		RIGID	None	None	RIGID	Typical
16	23	39	60		MF-CP1	Beam	RECT	A36 Gr.36	Typical
17	57	88	93		RIGID	None	None	RIGID	Typical
18	58	95	96		MF-P1	Column	Pipe	A53 Gr.B	Typical
19	59	94	97		RIGID	None	None	RIGID	Typical

Member Primary Data (Continued)

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
20	76	130	136		RIGID	None	None	RIGID	Typical
21	77	131	137		RIGID	None	None	RIGID	Typical
22	78	133	139		RIGID	None	None	RIGID	Typical
23	79	132	138		RIGID	None	None	RIGID	Typical
24	80	135	134		MF-H2	Beam	Pipe	A53 Gr.B	Typical
25	33	54	31		SF-H2	Beam	Single Angle	A36 Gr.36	Typical
26	36	31	59		SF-H2	Beam	Single Angle	A36 Gr.36	Typical
27	46	60	76		MF-CP1	Beam	RECT	A36 Gr.36	Typical
28	49	80	78		RIGID	None	None	RIGID	Typical
29	51	61	83		MF-CP1	Beam	RECT	A36 Gr.36	Typical
30	52	87	85		RIGID	None	None	RIGID	Typical
31	92	164	163	180	SF-H3	Beam	Single Angle	A36 Gr.36	Typical
32	35	67	62		RIGID	None	None	RIGID	Typical
33	37	100	68		MF-CP1	Beam	RECT	A36 Gr.36	Typical
34	38	79	69		MF-CP2	Beam	RECT	A36 Gr.36	Typical
35	39	66	69		MF-CP2	Beam	RECT	A36 Gr.36	Typical
36	40	70	73		RIGID	None	None	RIGID	Typical
37	41	74	79		MF-CP2	Beam	RECT	A36 Gr.36	Typical
38	42	82	81		SF-H1	Beam	Tube	A53 Gr.B	Typical
39	43	86	84		SF-H1	Beam	Tube	A53 Gr.B	Typical
40	44	84	98		SF-H1	Beam	Tube	A53 Gr.B	Typical
41	45	65	99		MF-CP1	Beam	RECT	A36 Gr.36	Typical
42	47	72	106	180	SF-H3	Beam	Single Angle	A36 Gr.36	Typical
43	48	102	81		SF-H2	Beam	Single Angle	A36 Gr.36	Typical
44	50	68	103		MF-CP1	Beam	RECT	A36 Gr.36	Typical
45	53	101	77		RIGID	None	None	RIGID	Typical
46	60	99	75		MF-CP1	Beam	RECT	A36 Gr.36	Typical
47	61	105	104		RIGID	None	None	RIGID	Typical
48	63	81	107		SF-H2	Beam	Single Angle	A36 Gr.36	Typical
49	65	113	108		RIGID	None	None	RIGID	Typical
50	66	140	114		MF-CP1	Beam	RECT	A36 Gr.36	Typical
51	67	123	115		MF-CP2	Beam	RECT	A36 Gr.36	Typical
52	68	112	115		MF-CP2	Beam	RECT	A36 Gr.36	Typical
53	69	116	119		RIGID	None	None	RIGID	Typical
54	70	120	123		MF-CP2	Beam	RECT	A36 Gr.36	Typical
55	71	125	124		SF-H1	Beam	Tube	A53 Gr.B	Typical
56	72	127	126		SF-H1	Beam	Tube	A53 Gr.B	Typical
57	73	126	128		SF-H1	Beam	Tube	A53 Gr.B	Typical
58	74	111	129		MF-CP1	Beam	RECT	A36 Gr.36	Typical
59	75	118	146	180	SF-H3	Beam	Single Angle	A36 Gr.36	Typical
60	81	142	124		SF-H2	Beam	Single Angle	A36 Gr.36	Typical
61	82	114	143		MF-CP1	Beam	RECT	A36 Gr.36	Typical
62	83	141	122		RIGID	None	None	RIGID	Typical
63	84	129	121		MF-CP1	Beam	RECT	A36 Gr.36	Typical
64	85	145	144		RIGID	None	None	RIGID	Typical
65	87	124	147		SF-H2	Beam	Single Angle	A36 Gr.36	Typical
66	88	162	181		RIGID	None	None	RIGID	Typical
67	89	160	167		MF-P1	Column	Pipe	A53 Gr.B	Typical
68	91	149	150		RIGID	None	None	RIGID	Typical
69	93	178	155		RIGID	None	None	RIGID	Typical
70	96	165	158		MF-P1	Column	Pipe	A53 Gr.B	Typical
71	97	174	176		MF-P1	Column	Pipe	A53 Gr.B	Typical
72	98	157	152		RIGID	None	None	RIGID	Typical
73	99	153	177		MF-P1	Column	Pipe	A53 Gr.B	Typical
74	100	171	154		RIGID	None	None	RIGID	Typical

Member Primary Data (Continued)

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
75	101	168	173		RIGID	None	None	RIGID	Typical
76	102	179	161		RIGID	None	None	RIGID	Typical
77	103	172	151		RIGID	None	None	RIGID	Typical
78	104	159	180		MF-H2	Beam	Pipe	A53 Gr.B	Typical
79	105	196	209		RIGID	None	None	RIGID	Typical
80	106	194	198		MF-P1	Column	Pipe	A53 Gr.B	Typical
81	108	183	184		RIGID	None	None	RIGID	Typical
82	109	206	189		RIGID	None	None	RIGID	Typical
83	110	197	192		MF-P1	Column	Pipe	A53 Gr.B	Typical
84	111	203	204		MF-P1	Column	Pipe	A53 Gr.B	Typical
85	112	191	186		RIGID	None	None	RIGID	Typical
86	113	187	205		MF-P1	Column	Pipe	A53 Gr.B	Typical
87	114	200	188		RIGID	None	None	RIGID	Typical
88	115	199	202		RIGID	None	None	RIGID	Typical
89	116	207	195		RIGID	None	None	RIGID	Typical
90	117	201	185		RIGID	None	None	RIGID	Typical
91	118	193	208		MF-H2	Beam	Pipe	A53 Gr.B	Typical
92	107	182	190		MF-H1	Beam	Pipe	A53 Gr.B	Typical
93	119	210	211		MF-H1	Beam	Pipe	A53 Gr.B	Typical

Member Advanced Data

	Label	I Release	Physical	Deflection Ratio Options	Seismic DR
1	1		Yes	N/A	None
2	10	OOOOOX	Yes	** NA **	None
3	11		Yes	N/A	None
4	12	OOOOOX	Yes	** NA **	None
5	30		Yes	** NA **	None
6	13		Yes	N/A	None
7	31		Yes	** NA **	None
8	17		Yes	N/A	None
9	19		Yes	N/A	None
10	54		Yes	** NA **	None
11	20		Yes	N/A	None
12	55		Yes	** NA **	None
13	21		Yes	N/A	None
14	22		Yes	Default	None
15	56		Yes	** NA **	None
16	23		Yes	Default	None
17	57		Yes	** NA **	None
18	58		Yes	** NA **	None
19	59		Yes	** NA **	None
20	76		Yes	** NA **	None
21	77		Yes	** NA **	None
22	78		Yes	** NA **	None
23	79		Yes	** NA **	None
24	80		Yes	N/A	None
25	33		Yes	N/A	None
26	36		Yes	N/A	None
27	46		Yes	N/A	None
28	49	OOOOOX	Yes	** NA **	None
29	51		Yes	N/A	None
30	52	OOOOOX	Yes	** NA **	None
31	92		Yes	Default	None
32	35	OOOOOX	Yes	** NA **	None
33	37		Yes	Default	None

Member Advanced Data (Continued)

	Label	I Release	Physical	Deflection Ratio Options	Seismic DR
34	38		Yes	N/A	None
35	39		Yes	N/A	None
36	40	OOOOOX	Yes	** NA **	None
37	41		Yes	N/A	None
38	42		Yes	N/A	None
39	43		Yes	N/A	None
40	44		Yes	N/A	None
41	45		Yes	Default	None
42	47		Yes	N/A	None
43	48		Yes	N/A	None
44	50		Yes	N/A	None
45	53	OOOOOX	Yes	** NA **	None
46	60		Yes	N/A	None
47	61	OOOOOX	Yes	** NA **	None
48	63		Yes	N/A	None
49	65	OOOOOX	Yes	** NA **	None
50	66		Yes	Default	None
51	67		Yes	N/A	None
52	68		Yes	N/A	None
53	69	OOOOOX	Yes	** NA **	None
54	70		Yes	N/A	None
55	71		Yes	N/A	None
56	72		Yes	N/A	None
57	73		Yes	N/A	None
58	74		Yes	Default	None
59	75		Yes	N/A	None
60	81		Yes	N/A	None
61	82		Yes	N/A	None
62	83	OOOOOX	Yes	** NA **	None
63	84		Yes	N/A	None
64	85	OOOOOX	Yes	** NA **	None
65	87		Yes	N/A	None
66	88		Yes	** NA **	None
67	89		Yes	** NA **	None
68	91		Yes	** NA **	None
69	93		Yes	** NA **	None
70	96		Yes	** NA **	None
71	97		Yes	** NA **	None
72	98		Yes	** NA **	None
73	99		Yes	** NA **	None
74	100		Yes	** NA **	None
75	101		Yes	** NA **	None
76	102		Yes	** NA **	None
77	103		Yes	** NA **	None
78	104		Yes	N/A	None
79	105		Yes	** NA **	None
80	106		Yes	** NA **	None
81	108		Yes	** NA **	None
82	109		Yes	** NA **	None
83	110		Yes	** NA **	None
84	111		Yes	** NA **	None
85	112		Yes	** NA **	None
86	113		Yes	** NA **	None
87	114		Yes	** NA **	None
88	115		Yes	** NA **	None

Member Advanced Data (Continued)

	Label	I Release	Physical	Deflection Ratio Options	Seismic DR
89	116		Yes	** NA **	None
90	117		Yes	** NA **	None
91	118		Yes	N/A	None
92	107		Yes	N/A	None
93	119		Yes	N/A	None

Hot Rolled Steel Design Parameters

	Label	Shape	Length [ft]	Lcomp top [ft]	Channel Conn.	a [ft]	Function
1	1	MF-H1	12.5	Lbyy	N/A	N/A	Lateral
2	11	MF-CP2	0.25	Lbyy	N/A	N/A	Lateral
3	30	MF-P1	10.5	Lbyy	N/A	N/A	Lateral
4	13	MF-CP2	0.25	Lbyy	N/A	N/A	Lateral
5	31	MF-P1	10.5	Lbyy	N/A	N/A	Lateral
6	17	MF-CP2	1.039	Lbyy	N/A	N/A	Lateral
7	19	SF-H1	5.167	Lbyy	N/A	N/A	Lateral
8	54	MF-P1	10.5	Lbyy	N/A	N/A	Lateral
9	20	SF-H1	2.541	Lbyy	N/A	N/A	Lateral
10	21	SF-H1	2.541	Lbyy	N/A	N/A	Lateral
11	22	MF-CP1	0.331	Lbyy	N/A	N/A	Lateral
12	23	MF-CP1	0.331	Lbyy	N/A	N/A	Lateral
13	58	MF-P1	10.5	Lbyy	N/A	N/A	Lateral
14	80	MF-H2	12.5	Lbyy	N/A	N/A	Lateral
15	33	SF-H2	4.234	Lbyy	N/A	N/A	Lateral
16	36	SF-H2	4.234	Lbyy	N/A	N/A	Lateral
17	46	MF-CP1	0.25	Lbyy	N/A	N/A	Lateral
18	51	MF-CP1	0.25	Lbyy	N/A	N/A	Lateral
19	92	SF-H3	1.245	Lbyy	N/A	N/A	Lateral
20	37	MF-CP1	0.331	Lbyy	N/A	N/A	Lateral
21	38	MF-CP2	1.039	Lbyy	N/A	N/A	Lateral
22	39	MF-CP2	0.25	Lbyy	N/A	N/A	Lateral
23	41	MF-CP2	0.25	Lbyy	N/A	N/A	Lateral
24	42	SF-H1	5.167	Lbyy	N/A	N/A	Lateral
25	43	SF-H1	2.541	Lbyy	N/A	N/A	Lateral
26	44	SF-H1	2.541	Lbyy	N/A	N/A	Lateral
27	45	MF-CP1	0.331	Lbyy	N/A	N/A	Lateral
28	47	SF-H3	1.245	Lbyy	N/A	N/A	Lateral
29	48	SF-H2	4.234	Lbyy	N/A	N/A	Lateral
30	50	MF-CP1	0.25	Lbyy	N/A	N/A	Lateral
31	60	MF-CP1	0.25	Lbyy	N/A	N/A	Lateral
32	63	SF-H2	4.234	Lbyy	N/A	N/A	Lateral
33	66	MF-CP1	0.331	Lbyy	N/A	N/A	Lateral
34	67	MF-CP2	1.039	Lbyy	N/A	N/A	Lateral
35	68	MF-CP2	0.25	Lbyy	N/A	N/A	Lateral
36	70	MF-CP2	0.25	Lbyy	N/A	N/A	Lateral
37	71	SF-H1	5.167	Lbyy	N/A	N/A	Lateral
38	72	SF-H1	2.541	Lbyy	N/A	N/A	Lateral
39	73	SF-H1	2.541	Lbyy	N/A	N/A	Lateral
40	74	MF-CP1	0.331	Lbyy	N/A	N/A	Lateral
41	75	SF-H3	1.245	Lbyy	N/A	N/A	Lateral
42	81	SF-H2	4.234	Lbyy	N/A	N/A	Lateral
43	82	MF-CP1	0.25	Lbyy	N/A	N/A	Lateral
44	84	MF-CP1	0.25	Lbyy	N/A	N/A	Lateral
45	87	SF-H2	4.234	Lbyy	N/A	N/A	Lateral
46	89	MF-P1	10.5	Lbyy	N/A	N/A	Lateral
47	96	MF-P1	10.5	Lbyy	N/A	N/A	Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length [ft]	Lcomp top [ft]	Channel Conn.	a [ft]	Function
48	97	MF-P1	10.5	Lbyy	N/A	N/A	Lateral
49	99	MF-P1	10.5	Lbyy	N/A	N/A	Lateral
50	104	MF-H2	12.5	Lbyy	N/A	N/A	Lateral
51	106	MF-P1	10.5	Lbyy	N/A	N/A	Lateral
52	110	MF-P1	10.5	Lbyy	N/A	N/A	Lateral
53	111	MF-P1	10.5	Lbyy	N/A	N/A	Lateral
54	113	MF-P1	10.5	Lbyy	N/A	N/A	Lateral
55	118	MF-H2	12.5	Lbyy	N/A	N/A	Lateral
56	107	MF-H1	12.5	Lbyy	N/A	N/A	Lateral
57	119	MF-H1	12.5	Lbyy	N/A	N/A	Lateral

Member Point Loads (BLC 1 : Dead)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	54	Y	-0.048	%5
2	54	Y	-0.048	%30
3	54	Y	0	0
4	54	Y	0	0
5	54	Y	0	0
6	30	Y	-0.064	%5
7	30	Y	-0.064	%75
8	30	Y	-0.073	%25
9	30	Y	-0.109	%50
10	30	Y	0	0
11	111	Y	-0.048	%5
12	111	Y	-0.048	%30
13	111	Y	0	0
14	111	Y	0	0
15	111	Y	0	0
16	110	Y	-0.064	%5
17	110	Y	-0.064	%75
18	110	Y	-0.073	%25
19	110	Y	-0.109	%50
20	110	Y	0	0
21	97	Y	-0.048	%5
22	97	Y	-0.048	%30
23	97	Y	0	0
24	97	Y	0	0
25	97	Y	0	0
26	96	Y	-0.064	%5
27	96	Y	-0.064	%75
28	96	Y	-0.073	%25
29	96	Y	-0.109	%50
30	96	Y	0	0

Member Point Loads (BLC 2 : 0 Wind - No Ice)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	54	Z	-0.16	%5
2	54	Z	-0.16	%30
3	54	Z	0	0
4	54	Z	0	0
5	54	Z	0	0
6	30	Z	-0.334	%5
7	30	Z	-0.334	%75

Member Point Loads (BLC 2 : 0 Wind - No Ice) (Continued)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
8	30	Z	-0.081	%25
9	30	Z	-0.088	%50
10	30	Z	0	0
11	111	Z	-0.16	%5
12	111	Z	-0.16	%30
13	111	Z	0	0
14	111	Z	0	0
15	111	Z	0	0
16	110	Z	-0.334	%5
17	110	Z	-0.334	%75
18	110	Z	-0.081	%25
19	110	Z	-0.088	%50
20	110	Z	0	0
21	97	Z	-0.16	%5
22	97	Z	-0.16	%30
23	97	Z	0	0
24	97	Z	0	0
25	97	Z	0	0
26	96	Z	-0.334	%5
27	96	Z	-0.334	%75
28	96	Z	-0.081	%25
29	96	Z	-0.088	%50
30	96	Z	0	0

Member Point Loads (BLC 3 : 90 Wind - No Ice)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	54	X	-0.065	%5
2	54	X	-0.065	%30
3	54	X	0	0
4	54	X	0	0
5	54	X	0	0
6	30	X	-0.121	%5
7	30	X	-0.121	%75
8	30	X	-0.065	%25
9	30	X	-0.069	%50
10	30	X	0	0
11	111	X	-0.065	%5
12	111	X	-0.065	%30
13	111	X	0	0
14	111	X	0	0
15	111	X	0	0
16	110	X	-0.121	%5
17	110	X	-0.121	%75
18	110	X	-0.065	%25
19	110	X	-0.069	%50
20	110	X	0	0
21	97	X	-0.065	%5
22	97	X	-0.065	%30
23	97	X	0	0
24	97	X	0	0
25	97	X	0	0
26	96	X	-0.121	%5
27	96	X	-0.121	%75
28	96	X	-0.065	%25
29	96	X	-0.069	%50

Member Point Loads (BLC 3 : 90 Wind - No Ice) (Continued)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
30	96	X	0	0

Member Point Loads (BLC 4 : 0 Wind - Ice)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	54	Z	-0.037	%5
2	54	Z	-0.037	%30
3	54	Z	0	0
4	54	Z	0	0
5	54	Z	0	0
6	30	Z	-0.073	%5
7	30	Z	-0.073	%75
8	30	Z	-0.015	%25
9	30	Z	-0.017	%50
10	30	Z	0	0
11	111	Z	-0.037	%5
12	111	Z	-0.037	%30
13	111	Z	0	0
14	111	Z	0	0
15	111	Z	0	0
16	110	Z	-0.073	%5
17	110	Z	-0.073	%75
18	110	Z	-0.015	%25
19	110	Z	-0.017	%50
20	110	Z	0	0
21	97	Z	-0.037	%5
22	97	Z	-0.037	%30
23	97	Z	0	0
24	97	Z	0	0
25	97	Z	0	0
26	96	Z	-0.073	%5
27	96	Z	-0.073	%75
28	96	Z	-0.015	%25
29	96	Z	-0.017	%50
30	96	Z	0	0

Member Point Loads (BLC 5 : 90 Wind - Ice)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	54	X	-0.018	%5
2	54	X	-0.018	%30
3	54	X	0	0
4	54	X	0	0
5	54	X	0	0
6	30	X	-0.032	%5
7	30	X	-0.032	%75
8	30	X	-0.012	%25
9	30	X	-0.013	%50
10	30	X	0	0
11	111	X	-0.018	%5
12	111	X	-0.018	%30
13	111	X	0	0
14	111	X	0	0
15	111	X	0	0
16	110	X	-0.032	%5

Member Point Loads (BLC 5 : 90 Wind - Ice) (Continued)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
17	110	X	-0.032	%75
18	110	X	-0.012	%25
19	110	X	-0.013	%50
20	110	X	0	0
21	97	X	-0.018	%5
22	97	X	-0.018	%30
23	97	X	0	0
24	97	X	0	0
25	97	X	0	0
26	96	X	-0.032	%5
27	96	X	-0.032	%75
28	96	X	-0.012	%25
29	96	X	-0.013	%50
30	96	X	0	0

Member Point Loads (BLC 6 : 0 Wind - Service)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	54	Z	-0.011	%5
2	54	Z	-0.011	%30
3	54	Z	0	0
4	54	Z	0	0
5	54	Z	0	0
6	30	Z	-0.023	%5
7	30	Z	-0.023	%75
8	30	Z	-0.005	%25
9	30	Z	-0.006	%50
10	30	Z	0	0
11	111	Z	-0.011	%5
12	111	Z	-0.011	%30
13	111	Z	0	0
14	111	Z	0	0
15	111	Z	0	0
16	110	Z	-0.023	%5
17	110	Z	-0.023	%75
18	110	Z	-0.005	%25
19	110	Z	-0.006	%50
20	110	Z	0	0
21	97	Z	-0.011	%5
22	97	Z	-0.011	%30
23	97	Z	0	0
24	97	Z	0	0
25	97	Z	0	0
26	96	Z	-0.023	%5
27	96	Z	-0.023	%75
28	96	Z	-0.005	%25
29	96	Z	-0.006	%50
30	96	Z	0	0

Member Point Loads (BLC 7 : 90 Wind - Service)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	54	X	-0.004	%5
2	54	X	-0.004	%30
3	54	X	0	0

Member Point Loads (BLC 7 : 90 Wind - Service) (Continued)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
4	54	X	0	0
5	54	X	0	0
6	30	X	-0.008	%5
7	30	X	-0.008	%75
8	30	X	-0.004	%25
9	30	X	-0.005	%50
10	30	X	0	0
11	111	X	-0.004	%5
12	111	X	-0.004	%30
13	111	X	0	0
14	111	X	0	0
15	111	X	0	0
16	110	X	-0.008	%5
17	110	X	-0.008	%75
18	110	X	-0.004	%25
19	110	X	-0.005	%50
20	110	X	0	0
21	97	X	-0.004	%5
22	97	X	-0.004	%30
23	97	X	0	0
24	97	X	0	0
25	97	X	0	0
26	96	X	-0.008	%5
27	96	X	-0.008	%75
28	96	X	-0.004	%25
29	96	X	-0.005	%50
30	96	X	0	0

Member Point Loads (BLC 8 : Ice)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	54	Y	-0.121	%5
2	54	Y	-0.121	%30
3	54	Y	0	0
4	54	Y	0	0
5	54	Y	0	0
6	30	Y	-0.261	%5
7	30	Y	-0.261	%75
8	30	Y	-0.061	%25
9	30	Y	-0.065	%50
10	30	Y	0	0
11	111	Y	-0.121	%5
12	111	Y	-0.121	%30
13	111	Y	0	0
14	111	Y	0	0
15	111	Y	0	0
16	110	Y	-0.261	%5
17	110	Y	-0.261	%75
18	110	Y	-0.061	%25
19	110	Y	-0.065	%50
20	110	Y	0	0
21	97	Y	-0.121	%5
22	97	Y	-0.121	%30
23	97	Y	0	0
24	97	Y	0	0
25	97	Y	0	0

Member Point Loads (BLC 8 : Ice) (Continued)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
26	96	Y	-0.261	%5
27	96	Y	-0.261	%75
28	96	Y	-0.061	%25
29	96	Y	-0.065	%50
30	96	Y	0	0

Member Point Loads (BLC 9 : 0 Seismic)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	54	Z	-0.024	%5
2	54	Z	-0.024	%30
3	54	Z	0	0
4	54	Z	0	0
5	54	Z	0	0
6	30	Z	-0.032	%5
7	30	Z	-0.032	%75
8	30	Z	-0.018	%25
9	30	Z	-0.027	%50
10	30	Z	0	0
11	111	Z	-0.024	%5
12	111	Z	-0.024	%30
13	111	Z	0	0
14	111	Z	0	0
15	111	Z	0	0
16	110	Z	-0.032	%5
17	110	Z	-0.032	%75
18	110	Z	-0.018	%25
19	110	Z	-0.027	%50
20	110	Z	0	0
21	97	Z	-0.024	%5
22	97	Z	-0.024	%30
23	97	Z	0	0
24	97	Z	0	0
25	97	Z	0	0
26	96	Z	-0.032	%5
27	96	Z	-0.032	%75
28	96	Z	-0.018	%25
29	96	Z	-0.027	%50
30	96	Z	0	0

Member Point Loads (BLC 10 : 90 Seismic)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	54	X	-0.024	%5
2	54	X	-0.024	%30
3	54	X	0	0
4	54	X	0	0
5	54	X	0	0
6	30	X	-0.032	%5
7	30	X	-0.032	%75
8	30	X	-0.018	%25
9	30	X	-0.027	%50
10	30	X	0	0
11	111	X	-0.024	%5
12	111	X	-0.024	%30

Member Point Loads (BLC 10 : 90 Seismic) (Continued)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
13	111	X	0	0
14	111	X	0	0
15	111	X	0	0
16	110	X	-0.032	%5
17	110	X	-0.032	%75
18	110	X	-0.018	%25
19	110	X	-0.027	%50
20	110	X	0	0
21	97	X	-0.024	%5
22	97	X	-0.024	%30
23	97	X	0	0
24	97	X	0	0
25	97	X	0	0
26	96	X	-0.032	%5
27	96	X	-0.032	%75
28	96	X	-0.018	%25
29	96	X	-0.027	%50
30	96	X	0	0

Member Point Loads (BLC 15 : Maint LL 1)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	80	Y	-0.25	%5

Member Point Loads (BLC 16 : Maint LL 2)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	1	Y	-0.25	%5

Member Point Loads (BLC 17 : Maint LL 3)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	104	Y	-0.25	%5

Member Point Loads (BLC 18 : Maint LL 4)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	107	Y	-0.25	%5

Member Point Loads (BLC 19 : Maint LL 5)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	118	Y	-0.25	%5

Member Point Loads (BLC 20 : Maint LL 6)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	119	Y	-0.25	%5

Member Point Loads (BLC 21 : Maint LL 7)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	80	Y	-0.25	%95

Member Point Loads (BLC 22 : Maint LL 8)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	1	Y	-0.25	%95

Member Point Loads (BLC 23 : Maint LL 9)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	104	Y	-0.25	%95

Member Point Loads (BLC 24 : Maint LL 10)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	107	Y	-0.25	%95

Member Point Loads (BLC 25 : Maint LL 11)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	118	Y	-0.25	%95

Member Point Loads (BLC 26 : Maint LL 12)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	119	Y	-0.25	%95

Member Point Loads (BLC 27 : Maint LL 13)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	42	Y	-0.25	%95

Member Point Loads (BLC 28 : Maint LL 14)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	71	Y	-0.25	%95

Member Point Loads (BLC 29 : Maint LL 15)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	19	Y	-0.25	%95

Member Distributed Loads (BLC 2 : 0 Wind - No Ice)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	Z	-0.014	-0.014	0	%100
2	11	Z	-0.025	-0.025	0	%100
3	30	Z	-0.01	-0.01	0	%100
4	13	Z	-0.025	-0.025	0	%100
5	31	Z	-0.01	-0.01	0	%100
6	17	Z	-0.025	-0.025	0	%100

Member Distributed Loads (BLC 2 : 0 Wind - No Ice) (Continued)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
7	19	Z	-0.023	-0.023	0	%100
8	54	Z	-0.01	-0.01	0	%100
9	20	Z	-0.019	-0.019	0	%100
10	21	Z	-0.019	-0.019	0	%100
11	22	Z	-0.025	-0.025	0	%100
12	23	Z	-0.025	-0.025	0	%100
13	58	Z	-0.01	-0.01	0	%100
14	80	Z	-0.01	-0.01	0	%100
15	33	Z	-0.014	-0.014	0	%100
16	36	Z	-0.014	-0.014	0	%100
17	46	Z	-0.025	-0.025	0	%100
18	51	Z	-0.025	-0.025	0	%100
19	92	Z	-0.011	-0.011	0	%100
20	37	Z	-0.025	-0.025	0	%100
21	38	Z	-0.025	-0.025	0	%100
22	39	Z	-0.025	-0.025	0	%100
23	41	Z	-0.025	-0.025	0	%100
24	42	Z	-0.023	-0.023	0	%100
25	43	Z	-0.019	-0.019	0	%100
26	44	Z	-0.019	-0.019	0	%100
27	45	Z	-0.025	-0.025	0	%100
28	47	Z	-0.011	-0.011	0	%100
29	48	Z	-0.014	-0.014	0	%100
30	50	Z	-0.025	-0.025	0	%100
31	60	Z	-0.025	-0.025	0	%100
32	63	Z	-0.014	-0.014	0	%100
33	66	Z	-0.025	-0.025	0	%100
34	67	Z	-0.025	-0.025	0	%100
35	68	Z	-0.025	-0.025	0	%100
36	70	Z	-0.025	-0.025	0	%100
37	71	Z	-0.023	-0.023	0	%100
38	72	Z	-0.019	-0.019	0	%100
39	73	Z	-0.019	-0.019	0	%100
40	74	Z	-0.025	-0.025	0	%100
41	75	Z	-0.011	-0.011	0	%100
42	81	Z	-0.014	-0.014	0	%100
43	82	Z	-0.025	-0.025	0	%100
44	84	Z	-0.025	-0.025	0	%100
45	87	Z	-0.014	-0.014	0	%100
46	89	Z	-0.01	-0.01	0	%100
47	96	Z	-0.01	-0.01	0	%100
48	97	Z	-0.01	-0.01	0	%100
49	99	Z	-0.01	-0.01	0	%100
50	104	Z	-0.01	-0.01	0	%100
51	106	Z	-0.01	-0.01	0	%100
52	110	Z	-0.01	-0.01	0	%100
53	111	Z	-0.01	-0.01	0	%100
54	113	Z	-0.01	-0.01	0	%100
55	118	Z	-0.01	-0.01	0	%100
56	107	Z	-0.014	-0.014	0	%100
57	119	Z	-0.014	-0.014	0	%100

Member Distributed Loads (BLC 3 : 90 Wind - No Ice)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	X	-0.014	-0.014	0	%100
2	11	X	-0.025	-0.025	0	%100
3	30	X	-0.01	-0.01	0	%100
4	13	X	-0.025	-0.025	0	%100
5	31	X	-0.01	-0.01	0	%100
6	17	X	-0.025	-0.025	0	%100
7	19	X	-0.023	-0.023	0	%100
8	54	X	-0.01	-0.01	0	%100
9	20	X	-0.019	-0.019	0	%100
10	21	X	-0.019	-0.019	0	%100
11	22	X	-0.025	-0.025	0	%100
12	23	X	-0.025	-0.025	0	%100
13	58	X	-0.01	-0.01	0	%100
14	80	X	-0.01	-0.01	0	%100
15	33	X	-0.014	-0.014	0	%100
16	36	X	-0.014	-0.014	0	%100
17	46	X	-0.025	-0.025	0	%100
18	51	X	-0.025	-0.025	0	%100
19	92	X	-0.011	-0.011	0	%100
20	37	X	-0.025	-0.025	0	%100
21	38	X	-0.025	-0.025	0	%100
22	39	X	-0.025	-0.025	0	%100
23	41	X	-0.025	-0.025	0	%100
24	42	X	-0.023	-0.023	0	%100
25	43	X	-0.019	-0.019	0	%100
26	44	X	-0.019	-0.019	0	%100
27	45	X	-0.025	-0.025	0	%100
28	47	X	-0.011	-0.011	0	%100
29	48	X	-0.014	-0.014	0	%100
30	50	X	-0.025	-0.025	0	%100
31	60	X	-0.025	-0.025	0	%100
32	63	X	-0.014	-0.014	0	%100
33	66	X	-0.025	-0.025	0	%100
34	67	X	-0.025	-0.025	0	%100
35	68	X	-0.025	-0.025	0	%100
36	70	X	-0.025	-0.025	0	%100
37	71	X	-0.023	-0.023	0	%100
38	72	X	-0.019	-0.019	0	%100
39	73	X	-0.019	-0.019	0	%100
40	74	X	-0.025	-0.025	0	%100
41	75	X	-0.011	-0.011	0	%100
42	81	X	-0.014	-0.014	0	%100
43	82	X	-0.025	-0.025	0	%100
44	84	X	-0.025	-0.025	0	%100
45	87	X	-0.014	-0.014	0	%100
46	89	X	-0.01	-0.01	0	%100
47	96	X	-0.01	-0.01	0	%100
48	97	X	-0.01	-0.01	0	%100
49	99	X	-0.01	-0.01	0	%100
50	104	X	-0.01	-0.01	0	%100
51	106	X	-0.01	-0.01	0	%100
52	110	X	-0.01	-0.01	0	%100
53	111	X	-0.01	-0.01	0	%100
54	113	X	-0.01	-0.01	0	%100
55	118	X	-0.01	-0.01	0	%100

Member Distributed Loads (BLC 3 : 90 Wind - No Ice) (Continued)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
56	107	X	-0.014	-0.014	0	%100
57	119	X	-0.014	-0.014	0	%100

Member Distributed Loads (BLC 4 : 0 Wind - Ice)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	Z	-0.003	-0.003	0	%100
2	11	Z	-0.016	-0.016	0	%100
3	30	Z	-0.002	-0.002	0	%100
4	13	Z	-0.016	-0.016	0	%100
5	31	Z	-0.002	-0.002	0	%100
6	17	Z	-0.009	-0.009	0	%100
7	19	Z	-0.009	-0.009	0	%100
8	54	Z	-0.002	-0.002	0	%100
9	20	Z	-0.007	-0.007	0	%100
10	21	Z	-0.007	-0.007	0	%100
11	22	Z	-0.014	-0.014	0	%100
12	23	Z	-0.014	-0.014	0	%100
13	58	Z	-0.002	-0.002	0	%100
14	80	Z	-0.002	-0.002	0	%100
15	33	Z	-0.008	-0.008	0	%100
16	36	Z	-0.008	-0.008	0	%100
17	46	Z	-0.016	-0.016	0	%100
18	51	Z	-0.016	-0.016	0	%100
19	92	Z	-0.006	-0.006	0	%100
20	37	Z	-0.014	-0.014	0	%100
21	38	Z	-0.009	-0.009	0	%100
22	39	Z	-0.016	-0.016	0	%100
23	41	Z	-0.016	-0.016	0	%100
24	42	Z	-0.009	-0.009	0	%100
25	43	Z	-0.007	-0.007	0	%100
26	44	Z	-0.007	-0.007	0	%100
27	45	Z	-0.014	-0.014	0	%100
28	47	Z	-0.006	-0.006	0	%100
29	48	Z	-0.008	-0.008	0	%100
30	50	Z	-0.016	-0.016	0	%100
31	60	Z	-0.016	-0.016	0	%100
32	63	Z	-0.008	-0.008	0	%100
33	66	Z	-0.014	-0.014	0	%100
34	67	Z	-0.009	-0.009	0	%100
35	68	Z	-0.016	-0.016	0	%100
36	70	Z	-0.016	-0.016	0	%100
37	71	Z	-0.009	-0.009	0	%100
38	72	Z	-0.007	-0.007	0	%100
39	73	Z	-0.007	-0.007	0	%100
40	74	Z	-0.014	-0.014	0	%100
41	75	Z	-0.006	-0.006	0	%100
42	81	Z	-0.008	-0.008	0	%100
43	82	Z	-0.016	-0.016	0	%100
44	84	Z	-0.016	-0.016	0	%100
45	87	Z	-0.008	-0.008	0	%100
46	89	Z	-0.002	-0.002	0	%100
47	96	Z	-0.002	-0.002	0	%100
48	97	Z	-0.002	-0.002	0	%100
49	99	Z	-0.002	-0.002	0	%100
50	104	Z	-0.002	-0.002	0	%100

Member Distributed Loads (BLC 4 : 0 Wind - Ice) (Continued)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
51	106	Z	-0.002	-0.002	0	%100
52	110	Z	-0.002	-0.002	0	%100
53	111	Z	-0.002	-0.002	0	%100
54	113	Z	-0.002	-0.002	0	%100
55	118	Z	-0.002	-0.002	0	%100
56	107	Z	-0.003	-0.003	0	%100
57	119	Z	-0.003	-0.003	0	%100

Member Distributed Loads (BLC 5 : 90 Wind - Ice)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	X	-0.003	-0.003	0	%100
2	11	X	-0.016	-0.016	0	%100
3	30	X	-0.002	-0.002	0	%100
4	13	X	-0.016	-0.016	0	%100
5	31	X	-0.002	-0.002	0	%100
6	17	X	-0.009	-0.009	0	%100
7	19	X	-0.009	-0.009	0	%100
8	54	X	-0.002	-0.002	0	%100
9	20	X	-0.007	-0.007	0	%100
10	21	X	-0.007	-0.007	0	%100
11	22	X	-0.014	-0.014	0	%100
12	23	X	-0.014	-0.014	0	%100
13	58	X	-0.002	-0.002	0	%100
14	80	X	-0.002	-0.002	0	%100
15	33	X	-0.008	-0.008	0	%100
16	36	X	-0.008	-0.008	0	%100
17	46	X	-0.016	-0.016	0	%100
18	51	X	-0.016	-0.016	0	%100
19	92	X	-0.006	-0.006	0	%100
20	37	X	-0.014	-0.014	0	%100
21	38	X	-0.009	-0.009	0	%100
22	39	X	-0.016	-0.016	0	%100
23	41	X	-0.016	-0.016	0	%100
24	42	X	-0.009	-0.009	0	%100
25	43	X	-0.007	-0.007	0	%100
26	44	X	-0.007	-0.007	0	%100
27	45	X	-0.014	-0.014	0	%100
28	47	X	-0.006	-0.006	0	%100
29	48	X	-0.008	-0.008	0	%100
30	50	X	-0.016	-0.016	0	%100
31	60	X	-0.016	-0.016	0	%100
32	63	X	-0.008	-0.008	0	%100
33	66	X	-0.014	-0.014	0	%100
34	67	X	-0.009	-0.009	0	%100
35	68	X	-0.016	-0.016	0	%100
36	70	X	-0.016	-0.016	0	%100
37	71	X	-0.009	-0.009	0	%100
38	72	X	-0.007	-0.007	0	%100
39	73	X	-0.007	-0.007	0	%100
40	74	X	-0.014	-0.014	0	%100
41	75	X	-0.006	-0.006	0	%100
42	81	X	-0.008	-0.008	0	%100
43	82	X	-0.016	-0.016	0	%100
44	84	X	-0.016	-0.016	0	%100
45	87	X	-0.008	-0.008	0	%100

Member Distributed Loads (BLC 5 : 90 Wind - Ice) (Continued)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
46	89	X	-0.002	-0.002	0	%100
47	96	X	-0.002	-0.002	0	%100
48	97	X	-0.002	-0.002	0	%100
49	99	X	-0.002	-0.002	0	%100
50	104	X	-0.002	-0.002	0	%100
51	106	X	-0.002	-0.002	0	%100
52	110	X	-0.002	-0.002	0	%100
53	111	X	-0.002	-0.002	0	%100
54	113	X	-0.002	-0.002	0	%100
55	118	X	-0.002	-0.002	0	%100
56	107	X	-0.003	-0.003	0	%100
57	119	X	-0.003	-0.003	0	%100

Member Distributed Loads (BLC 6 : 0 Wind - Service)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	Z	-0.0005	-0.0005	0	%100
2	11	Z	-0.002	-0.002	0	%100
3	30	Z	-0.0003	-0.0003	0	%100
4	13	Z	-0.002	-0.002	0	%100
5	31	Z	-0.0003	-0.0003	0	%100
6	17	Z	-0.002	-0.002	0	%100
7	19	Z	-0.002	-0.002	0	%100
8	54	Z	-0.0003	-0.0003	0	%100
9	20	Z	-0.001	-0.001	0	%100
10	21	Z	-0.001	-0.001	0	%100
11	22	Z	-0.002	-0.002	0	%100
12	23	Z	-0.002	-0.002	0	%100
13	58	Z	-0.0003	-0.0003	0	%100
14	80	Z	-0.0003	-0.0003	0	%100
15	33	Z	-0.0009	-0.0009	0	%100
16	36	Z	-0.0009	-0.0009	0	%100
17	46	Z	-0.002	-0.002	0	%100
18	51	Z	-0.002	-0.002	0	%100
19	92	Z	-0.0008	-0.0008	0	%100
20	37	Z	-0.002	-0.002	0	%100
21	38	Z	-0.002	-0.002	0	%100
22	39	Z	-0.002	-0.002	0	%100
23	41	Z	-0.002	-0.002	0	%100
24	42	Z	-0.002	-0.002	0	%100
25	43	Z	-0.001	-0.001	0	%100
26	44	Z	-0.001	-0.001	0	%100
27	45	Z	-0.002	-0.002	0	%100
28	47	Z	-0.0008	-0.0008	0	%100
29	48	Z	-0.0009	-0.0009	0	%100
30	50	Z	-0.002	-0.002	0	%100
31	60	Z	-0.002	-0.002	0	%100
32	63	Z	-0.0009	-0.0009	0	%100
33	66	Z	-0.002	-0.002	0	%100
34	67	Z	-0.002	-0.002	0	%100
35	68	Z	-0.002	-0.002	0	%100
36	70	Z	-0.002	-0.002	0	%100
37	71	Z	-0.002	-0.002	0	%100
38	72	Z	-0.001	-0.001	0	%100
39	73	Z	-0.001	-0.001	0	%100
40	74	Z	-0.002	-0.002	0	%100

Member Distributed Loads (BLC 6 : 0 Wind - Service) (Continued)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
41	75	Z	-0.0008	-0.0008	0	%100
42	81	Z	-0.0009	-0.0009	0	%100
43	82	Z	-0.002	-0.002	0	%100
44	84	Z	-0.002	-0.002	0	%100
45	87	Z	-0.0009	-0.0009	0	%100
46	89	Z	-0.0003	-0.0003	0	%100
47	96	Z	-0.0003	-0.0003	0	%100
48	97	Z	-0.0003	-0.0003	0	%100
49	99	Z	-0.0003	-0.0003	0	%100
50	104	Z	-0.0003	-0.0003	0	%100
51	106	Z	-0.0003	-0.0003	0	%100
52	110	Z	-0.0003	-0.0003	0	%100
53	111	Z	-0.0003	-0.0003	0	%100
54	113	Z	-0.0003	-0.0003	0	%100
55	118	Z	-0.0003	-0.0003	0	%100
56	107	Z	-0.0005	-0.0005	0	%100
57	119	Z	-0.0005	-0.0005	0	%100

Member Distributed Loads (BLC 7 : 90 Wind - Service)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	X	-0.0005	-0.0005	0	%100
2	11	X	-0.002	-0.002	0	%100
3	30	X	-0.0003	-0.0003	0	%100
4	13	X	-0.002	-0.002	0	%100
5	31	X	-0.0003	-0.0003	0	%100
6	17	X	-0.002	-0.002	0	%100
7	19	X	-0.002	-0.002	0	%100
8	54	X	-0.0003	-0.0003	0	%100
9	20	X	-0.001	-0.001	0	%100
10	21	X	-0.001	-0.001	0	%100
11	22	X	-0.002	-0.002	0	%100
12	23	X	-0.002	-0.002	0	%100
13	58	X	-0.0003	-0.0003	0	%100
14	80	X	-0.0003	-0.0003	0	%100
15	33	X	-0.0009	-0.0009	0	%100
16	36	X	-0.0009	-0.0009	0	%100
17	46	X	-0.002	-0.002	0	%100
18	51	X	-0.002	-0.002	0	%100
19	92	X	-0.0008	-0.0008	0	%100
20	37	X	-0.002	-0.002	0	%100
21	38	X	-0.002	-0.002	0	%100
22	39	X	-0.002	-0.002	0	%100
23	41	X	-0.002	-0.002	0	%100
24	42	X	-0.002	-0.002	0	%100
25	43	X	-0.001	-0.001	0	%100
26	44	X	-0.001	-0.001	0	%100
27	45	X	-0.002	-0.002	0	%100
28	47	X	-0.0008	-0.0008	0	%100
29	48	X	-0.0009	-0.0009	0	%100
30	50	X	-0.002	-0.002	0	%100
31	60	X	-0.002	-0.002	0	%100
32	63	X	-0.0009	-0.0009	0	%100
33	66	X	-0.002	-0.002	0	%100
34	67	X	-0.002	-0.002	0	%100
35	68	X	-0.002	-0.002	0	%100

Member Distributed Loads (BLC 7 : 90 Wind - Service) (Continued)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
36	70	X	-0.002	-0.002	0	%100
37	71	X	-0.002	-0.002	0	%100
38	72	X	-0.001	-0.001	0	%100
39	73	X	-0.001	-0.001	0	%100
40	74	X	-0.002	-0.002	0	%100
41	75	X	-0.0008	-0.0008	0	%100
42	81	X	-0.0009	-0.0009	0	%100
43	82	X	-0.002	-0.002	0	%100
44	84	X	-0.002	-0.002	0	%100
45	87	X	-0.0009	-0.0009	0	%100
46	89	X	-0.0003	-0.0003	0	%100
47	96	X	-0.0003	-0.0003	0	%100
48	97	X	-0.0003	-0.0003	0	%100
49	99	X	-0.0003	-0.0003	0	%100
50	104	X	-0.0003	-0.0003	0	%100
51	106	X	-0.0003	-0.0003	0	%100
52	110	X	-0.0003	-0.0003	0	%100
53	111	X	-0.0003	-0.0003	0	%100
54	113	X	-0.0003	-0.0003	0	%100
55	118	X	-0.0003	-0.0003	0	%100
56	107	X	-0.0005	-0.0005	0	%100
57	119	X	-0.0005	-0.0005	0	%100

Member Distributed Loads (BLC 8 : Ice)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	Y	-0.011	-0.011	0	%100
2	11	Y	-0.017	-0.017	0	%100
3	30	Y	-0.009	-0.009	0	%100
4	13	Y	-0.017	-0.017	0	%100
5	31	Y	-0.009	-0.009	0	%100
6	17	Y	-0.017	-0.017	0	%100
7	19	Y	-0.016	-0.016	0	%100
8	54	Y	-0.009	-0.009	0	%100
9	20	Y	-0.016	-0.016	0	%100
10	21	Y	-0.016	-0.016	0	%100
11	22	Y	-0.017	-0.017	0	%100
12	23	Y	-0.017	-0.017	0	%100
13	58	Y	-0.009	-0.009	0	%100
14	80	Y	-0.009	-0.009	0	%100
15	33	Y	-0.01	-0.01	0	%100
16	36	Y	-0.01	-0.01	0	%100
17	46	Y	-0.017	-0.017	0	%100
18	51	Y	-0.017	-0.017	0	%100
19	92	Y	-0.012	-0.012	0	%100
20	37	Y	-0.017	-0.017	0	%100
21	38	Y	-0.017	-0.017	0	%100
22	39	Y	-0.017	-0.017	0	%100
23	41	Y	-0.017	-0.017	0	%100
24	42	Y	-0.016	-0.016	0	%100
25	43	Y	-0.016	-0.016	0	%100
26	44	Y	-0.016	-0.016	0	%100
27	45	Y	-0.017	-0.017	0	%100
28	47	Y	-0.012	-0.012	0	%100
29	48	Y	-0.01	-0.01	0	%100
30	50	Y	-0.017	-0.017	0	%100

Member Distributed Loads (BLC 8 : Ice) (Continued)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
31	60	Y	-0.017	-0.017	0	%100
32	63	Y	-0.01	-0.01	0	%100
33	66	Y	-0.017	-0.017	0	%100
34	67	Y	-0.017	-0.017	0	%100
35	68	Y	-0.017	-0.017	0	%100
36	70	Y	-0.017	-0.017	0	%100
37	71	Y	-0.016	-0.016	0	%100
38	72	Y	-0.016	-0.016	0	%100
39	73	Y	-0.016	-0.016	0	%100
40	74	Y	-0.017	-0.017	0	%100
41	75	Y	-0.012	-0.012	0	%100
42	81	Y	-0.01	-0.01	0	%100
43	82	Y	-0.017	-0.017	0	%100
44	84	Y	-0.017	-0.017	0	%100
45	87	Y	-0.01	-0.01	0	%100
46	89	Y	-0.009	-0.009	0	%100
47	96	Y	-0.009	-0.009	0	%100
48	97	Y	-0.009	-0.009	0	%100
49	99	Y	-0.009	-0.009	0	%100
50	104	Y	-0.009	-0.009	0	%100
51	106	Y	-0.009	-0.009	0	%100
52	110	Y	-0.009	-0.009	0	%100
53	111	Y	-0.009	-0.009	0	%100
54	113	Y	-0.009	-0.009	0	%100
55	118	Y	-0.009	-0.009	0	%100
56	107	Y	-0.011	-0.011	0	%100
57	119	Y	-0.011	-0.011	0	%100

Member Distributed Loads (BLC 9 : 0 Seismic)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	Z	-0.002	-0.002	0	%100
2	11	Z	-0.002	-0.002	0	%100
3	30	Z	-0.0009	-0.0009	0	%100
4	13	Z	-0.002	-0.002	0	%100
5	31	Z	-0.0009	-0.0009	0	%100
6	17	Z	-0.002	-0.002	0	%100
7	19	Z	-0.003	-0.003	0	%100
8	54	Z	-0.0009	-0.0009	0	%100
9	20	Z	-0.003	-0.003	0	%100
10	21	Z	-0.003	-0.003	0	%100
11	22	Z	-0.002	-0.002	0	%100
12	23	Z	-0.002	-0.002	0	%100
13	58	Z	-0.0009	-0.0009	0	%100
14	80	Z	-0.0009	-0.0009	0	%100
15	33	Z	-0.0006	-0.0006	0	%100
16	36	Z	-0.0006	-0.0006	0	%100
17	46	Z	-0.002	-0.002	0	%100
18	51	Z	-0.002	-0.002	0	%100
19	92	Z	-0.001	-0.001	0	%100
20	37	Z	-0.002	-0.002	0	%100
21	38	Z	-0.002	-0.002	0	%100
22	39	Z	-0.002	-0.002	0	%100
23	41	Z	-0.002	-0.002	0	%100
24	42	Z	-0.003	-0.003	0	%100
25	43	Z	-0.003	-0.003	0	%100

Member Distributed Loads (BLC 9 : 0 Seismic) (Continued)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
26	44	Z	-0.003	-0.003	0	%100
27	45	Z	-0.002	-0.002	0	%100
28	47	Z	-0.001	-0.001	0	%100
29	48	Z	-0.0006	-0.0006	0	%100
30	50	Z	-0.002	-0.002	0	%100
31	60	Z	-0.002	-0.002	0	%100
32	63	Z	-0.0006	-0.0006	0	%100
33	66	Z	-0.002	-0.002	0	%100
34	67	Z	-0.002	-0.002	0	%100
35	68	Z	-0.002	-0.002	0	%100
36	70	Z	-0.002	-0.002	0	%100
37	71	Z	-0.003	-0.003	0	%100
38	72	Z	-0.003	-0.003	0	%100
39	73	Z	-0.003	-0.003	0	%100
40	74	Z	-0.002	-0.002	0	%100
41	75	Z	-0.001	-0.001	0	%100
42	81	Z	-0.0006	-0.0006	0	%100
43	82	Z	-0.002	-0.002	0	%100
44	84	Z	-0.002	-0.002	0	%100
45	87	Z	-0.0006	-0.0006	0	%100
46	89	Z	-0.0009	-0.0009	0	%100
47	96	Z	-0.0009	-0.0009	0	%100
48	97	Z	-0.0009	-0.0009	0	%100
49	99	Z	-0.0009	-0.0009	0	%100
50	104	Z	-0.0009	-0.0009	0	%100
51	106	Z	-0.0009	-0.0009	0	%100
52	110	Z	-0.0009	-0.0009	0	%100
53	111	Z	-0.0009	-0.0009	0	%100
54	113	Z	-0.0009	-0.0009	0	%100
55	118	Z	-0.0009	-0.0009	0	%100
56	107	Z	-0.002	-0.002	0	%100
57	119	Z	-0.002	-0.002	0	%100

Member Distributed Loads (BLC 10 : 90 Seismic)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	X	-0.002	-0.002	0	%100
2	11	X	-0.002	-0.002	0	%100
3	30	X	-0.0009	-0.0009	0	%100
4	13	X	-0.002	-0.002	0	%100
5	31	X	-0.0009	-0.0009	0	%100
6	17	X	-0.002	-0.002	0	%100
7	19	X	-0.003	-0.003	0	%100
8	54	X	-0.0009	-0.0009	0	%100
9	20	X	-0.003	-0.003	0	%100
10	21	X	-0.003	-0.003	0	%100
11	22	X	-0.002	-0.002	0	%100
12	23	X	-0.002	-0.002	0	%100
13	58	X	-0.0009	-0.0009	0	%100
14	80	X	-0.0009	-0.0009	0	%100
15	33	X	-0.0006	-0.0006	0	%100
16	36	X	-0.0006	-0.0006	0	%100
17	46	X	-0.002	-0.002	0	%100
18	51	X	-0.002	-0.002	0	%100
19	92	X	-0.001	-0.001	0	%100
20	37	X	-0.002	-0.002	0	%100

Member Distributed Loads (BLC 10 : 90 Seismic) (Continued)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
21	38	X	-0.002	-0.002	0	%100
22	39	X	-0.002	-0.002	0	%100
23	41	X	-0.002	-0.002	0	%100
24	42	X	-0.003	-0.003	0	%100
25	43	X	-0.003	-0.003	0	%100
26	44	X	-0.003	-0.003	0	%100
27	45	X	-0.002	-0.002	0	%100
28	47	X	-0.001	-0.001	0	%100
29	48	X	-0.0006	-0.0006	0	%100
30	50	X	-0.002	-0.002	0	%100
31	60	X	-0.002	-0.002	0	%100
32	63	X	-0.0006	-0.0006	0	%100
33	66	X	-0.002	-0.002	0	%100
34	67	X	-0.002	-0.002	0	%100
35	68	X	-0.002	-0.002	0	%100
36	70	X	-0.002	-0.002	0	%100
37	71	X	-0.003	-0.003	0	%100
38	72	X	-0.003	-0.003	0	%100
39	73	X	-0.003	-0.003	0	%100
40	74	X	-0.002	-0.002	0	%100
41	75	X	-0.001	-0.001	0	%100
42	81	X	-0.0006	-0.0006	0	%100
43	82	X	-0.002	-0.002	0	%100
44	84	X	-0.002	-0.002	0	%100
45	87	X	-0.0006	-0.0006	0	%100
46	89	X	-0.0009	-0.0009	0	%100
47	96	X	-0.0009	-0.0009	0	%100
48	97	X	-0.0009	-0.0009	0	%100
49	99	X	-0.0009	-0.0009	0	%100
50	104	X	-0.0009	-0.0009	0	%100
51	106	X	-0.0009	-0.0009	0	%100
52	110	X	-0.0009	-0.0009	0	%100
53	111	X	-0.0009	-0.0009	0	%100
54	113	X	-0.0009	-0.0009	0	%100
55	118	X	-0.0009	-0.0009	0	%100
56	107	X	-0.002	-0.002	0	%100
57	119	X	-0.002	-0.002	0	%100

Member Distributed Loads (BLC 30 : BLC 1 Transient Area Loads)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	71	Y	-0.011	-0.011	2.424	4.115
2	72	Y	-0.009	-0.009	1.573	2.541
3	73	Y	-0.009	-0.009	0	0.969
4	81	Y	-0.009	-0.005	0	2.117
5	81	Y	-0.005	-0.001	2.117	4.234
6	87	Y	-0.001	-0.005	0	2.117
7	87	Y	-0.005	-0.008	2.117	4.234
8	19	Y	-0.011	-0.011	2.424	4.115
9	20	Y	-0.009	-0.009	1.573	2.541
10	21	Y	-0.009	-0.009	0	0.969
11	33	Y	-0.009	-0.005	0	2.117
12	33	Y	-0.005	-0.001	2.117	4.234
13	36	Y	-0.001	-0.005	0	2.117
14	36	Y	-0.005	-0.008	2.117	4.234
15	42	Y	-0.011	-0.011	2.426	4.111

Member Distributed Loads (BLC 30 : BLC 1 Transient Area Loads) (Continued)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
16	43	Y	-0.009	-0.009	1.573	2.541
17	44	Y	-0.009	-0.009	0	0.969
18	48	Y	-0.008	-0.005	0	2.117
19	48	Y	-0.005	-0.001	2.117	4.234
20	63	Y	-0.001	-0.005	0	2.117
21	63	Y	-0.005	-0.008	2.117	4.234

Member Distributed Loads (BLC 31 : BLC 8 Transient Area Loads)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	42	Y	-0.009	-0.009	2.426	4.111
2	43	Y	-0.007	-0.007	1.573	2.541
3	44	Y	-0.007	-0.007	0	0.969
4	48	Y	-0.007	-0.004	0	2.117
5	48	Y	-0.004	-0.001	2.117	4.234
6	63	Y	-0.001	-0.004	0	2.117
7	63	Y	-0.004	-0.007	2.117	4.234
8	71	Y	-0.009	-0.009	2.424	4.115
9	72	Y	-0.007	-0.007	1.573	2.541
10	73	Y	-0.007	-0.007	0	0.969
11	81	Y	-0.007	-0.004	0	2.117
12	81	Y	-0.004	-0.001	2.117	4.234
13	87	Y	-0.001	-0.004	0	2.117
14	87	Y	-0.004	-0.007	2.117	4.234
15	19	Y	-0.009	-0.009	2.424	4.115
16	20	Y	-0.007	-0.007	1.573	2.541
17	21	Y	-0.007	-0.007	0	0.969
18	33	Y	-0.007	-0.004	0	2.117
19	33	Y	-0.004	-0.001	2.117	4.234
20	36	Y	-0.001	-0.004	0	2.117
21	36	Y	-0.004	-0.007	2.117	4.234

Member Area Loads (BLC 1 : Dead)

	Node A	Node B	Node C	Direction	Load Direction	Magnitude [ksf]
1	54	31	59	Y	Two Way	-0.01
2	81	107	102	Y	Two Way	-0.01
3	147	142	124	Y	Two Way	-0.01

Member Area Loads (BLC 8 : Ice)

	Node A	Node B	Node C	Direction	Load Direction	Magnitude [ksf]
1	81	102	107	Y	Two Way	-0.008
2	147	142	124	Y	Two Way	-0.008
3	54	31	59	Y	Two Way	-0.008

Node Loads and Enforced Displacements (BLC 11 : Live Load a)

	Node Label	L, D, M	Direction	Magnitude [(k, k-ft), (in, rad), (k*s²/ft, k*s²*ft)]
1	91	L	Y	-0.5
2	152	L	Y	-0.5
3	186	L	Y	-0.5

Node Loads and Enforced Displacements (BLC 12 : Live Load b)

	Node Label	L, D, M	Direction	Magnitude [(k, k-ft), (in, rad), (k*s²/ft, k*s²*ft)]
1	92	L	Y	-0.5
2	150	L	Y	-0.5
3	184	L	Y	-0.5

Node Loads and Enforced Displacements (BLC 13 : Live Load c)

	Node Label	L, D, M	Direction	Magnitude [(k, k-ft), (in, rad), (k*s²/ft, k*s²*ft)]
1	202	L	Y	-0.5
2	97	L	Y	-0.5
3	173	L	Y	-0.5

Node Loads and Enforced Displacements (BLC 14 : Live Load d)

	Node Label	L, D, M	Direction	Magnitude [(k, k-ft), (in, rad), (k*s²/ft, k*s²*ft)]
1	93	L	Y	-0.5
2	154	L	Y	-0.5
3	188	L	Y	-0.5

Basic Load Cases

	BLC Description	Category	Y Gravity	Nodal	Point	Distributed	Area(Member)
1	Dead	DL	-1		30		3
2	0 Wind - No Ice	WLZ			30	57	
3	90 Wind - No Ice	WLX			30	57	
4	0 Wind - Ice	WLZ			30	57	
5	90 Wind - Ice	WLX			30	57	
6	0 Wind - Service	WLZ			30	57	
7	90 Wind - Service	WLX			30	57	
8	Ice	OL1			30	57	3
9	0 Seismic	ELZ			30	57	
10	90 Seismic	ELX			30	57	
11	Live Load a	LL		3			
12	Live Load b	LL		3			
13	Live Load c	LL		3			
14	Live Load d	LL		3			
15	Maint LL 1	LL			1		
16	Maint LL 2	LL			1		
17	Maint LL 3	LL			1		
18	Maint LL 4	LL			1		
19	Maint LL 5	LL			1		
20	Maint LL 6	LL			1		
21	Maint LL 7	LL			1		
22	Maint LL 8	LL			1		
23	Maint LL 9	LL			1		
24	Maint LL 10	LL			1		
25	Maint LL 11	LL			1		
26	Maint LL 12	LL			1		
27	Maint LL 13	LL			1		
28	Maint LL 14	LL			1		
29	Maint LL 15	LL			1		
30	BLC 1 Transient Area Loads	None				21	
31	BLC 8 Transient Area Loads	None				21	

Load Combinations

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	1.4 Dead	Yes	Y	1	1.4						
2	1.2 D + 1.0 - 0 W	Yes	Y	1	1.2	2	1				
3	1.2 D + 1.0 - 30 W	Yes	Y	1	1.2	2	0.866	3	0.5		
4	1.2 D + 1.0 - 60 W	Yes	Y	1	1.2	3	0.866	2	0.5		
5	1.2 D + 1.0 - 90 W	Yes	Y	1	1.2	3	1				
6	1.2 D + 1.0 - 120 W	Yes	Y	1	1.2	3	0.866	2	-0.5		
7	1.2 D + 1.0 - 150 W	Yes	Y	1	1.2	2	-0.866	3	0.5		
8	1.2 D + 1.0 - 180 W	Yes	Y	1	1.2	2	-1				
9	1.2 D + 1.0 - 210 W	Yes	Y	1	1.2	2	-0.866	3	-0.5		
10	1.2 D + 1.0 - 240 W	Yes	Y	1	1.2	3	-0.866	2	-0.5		
11	1.2 D + 1.0 - 270 W	Yes	Y	1	1.2	3	-1				
12	1.2 D + 1.0 - 300 W	Yes	Y	1	1.2	3	-0.866	2	0.5		
13	1.2 D + 1.0 - 330 W	Yes	Y	1	1.2	2	0.866	3	-0.5		
14	1.2 D + 1.0 - 0 W/Ice	Yes	Y	1	1.2	4	1			8	1
15	1.2 D + 1.0 - 30 W/Ice	Yes	Y	1	1.2	4	0.866	5	0.5	8	1
16	1.2 D + 1.0 - 60 W/Ice	Yes	Y	1	1.2	5	0.866	4	0.5	8	1
17	1.2 D + 1.0 - 90 W/Ice	Yes	Y	1	1.2	5	1			8	1
18	1.2 D + 1.0 - 120 W/Ice	Yes	Y	1	1.2	5	0.866	4	-0.5	8	1
19	1.2 D + 1.0 - 150 W/Ice	Yes	Y	1	1.2	4	-0.866	5	0.5	8	1
20	1.2 D + 1.0 - 180 W/Ice	Yes	Y	1	1.2	4	-1			8	1
21	1.2 D + 1.0 - 210 W/Ice	Yes	Y	1	1.2	4	-0.866	5	-0.5	8	1
22	1.2 D + 1.0 - 240 W/Ice	Yes	Y	1	1.2	5	-0.866	4	-0.5	8	1
23	1.2 D + 1.0 - 270 W/Ice	Yes	Y	1	1.2	5	-1			8	1
24	1.2 D + 1.0 - 300 W/Ice	Yes	Y	1	1.2	5	-0.866	4	0.5	8	1
25	1.2 D + 1.0 - 330 W/Ice	Yes	Y	1	1.2	4	0.866	5	-0.5	8	1
26	1.2 D + 1.0 E - 0	Yes	Y	1	1.2	9	1				
27	1.2 D + 1.0 E - 30	Yes	Y	1	1.2	9	0.866	10	0.5		
28	1.2 D + 1.0 E - 60	Yes	Y	1	1.2	10	0.866	9	0.5		
29	1.2 D + 1.0 E - 90	Yes	Y	1	1.2	10	1				
30	1.2 D + 1.0 E - 120	Yes	Y	1	1.2	10	0.866	9	-0.5		
31	1.2 D + 1.0 E - 150	Yes	Y	1	1.2	9	-0.866	10	0.5		
32	1.2 D + 1.0 E - 180	Yes	Y	1	1.2	9	-1				
33	1.2 D + 1.0 E - 210	Yes	Y	1	1.2	9	-0.866	10	-0.5		
34	1.2 D + 1.0 E - 240	Yes	Y	1	1.2	10	-0.866	9	-0.5		
35	1.2 D + 1.0 E - 270	Yes	Y	1	1.2	10	-1				
36	1.2 D + 1.0 E - 300	Yes	Y	1	1.2	10	-0.866	9	0.5		
37	1.2 D + 1.0 E - 330	Yes	Y	1	1.2	9	0.866	10	-0.5		
38	1.2 D + 1.5 LL a + Service - 0 W	Yes	Y	1	1.2	6	1			11	1.5
39	1.2 D + 1.5 LL a + Service - 30 W	Yes	Y	1	1.2	6	0.866	7	0.5	11	1.5
40	1.2 D + 1.5 LL a + Service - 60 W	Yes	Y	1	1.2	7	0.866	6	0.5	11	1.5
41	1.2 D + 1.5 LL a + Service - 90 W	Yes	Y	1	1.2	7	1			11	1.5
42	1.2 D + 1.5 LL a + Service - 120 W	Yes	Y	1	1.2	7	0.866	6	-0.5	11	1.5
43	1.2 D + 1.5 LL a + Service - 150 W	Yes	Y	1	1.2	6	-0.866	7	0.5	11	1.5
44	1.2 D + 1.5 LL a + Service - 180 W	Yes	Y	1	1.2	6	-1			11	1.5
45	1.2 D + 1.5 LL a + Service - 210 W	Yes	Y	1	1.2	6	-0.866	7	-0.5	11	1.5
46	1.2 D + 1.5 LL a + Service - 240 W	Yes	Y	1	1.2	7	-0.866	6	-0.5	11	1.5
47	1.2 D + 1.5 LL a + Service - 270 W	Yes	Y	1	1.2	7	-1			11	1.5
48	1.2 D + 1.5 LL a + Service - 300 W	Yes	Y	1	1.2	7	-0.866	6	0.5	11	1.5
49	1.2 D + 1.5 LL a + Service - 330 W	Yes	Y	1	1.2	6	0.866	7	-0.5	11	1.5
50	1.2 D + 1.5 LL b + Service - 0 W	Yes	Y	1	1.2	6	1			12	1.5
51	1.2 D + 1.5 LL b + Service - 30 W	Yes	Y	1	1.2	6	0.866	7	0.5	12	1.5
52	1.2 D + 1.5 LL b + Service - 60 W	Yes	Y	1	1.2	7	0.866	6	0.5	12	1.5
53	1.2 D + 1.5 LL b + Service - 90 W	Yes	Y	1	1.2	7	1			12	1.5
54	1.2 D + 1.5 LL b + Service - 120 W	Yes	Y	1	1.2	7	0.866	6	-0.5	12	1.5
55	1.2 D + 1.5 LL b + Service - 150 W	Yes	Y	1	1.2	6	-0.866	7	0.5	12	1.5

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
56	1.2 D + 1.5 LL b + Service - 180 W	Yes	Y	1	1.2	6	-1			12	1.5
57	1.2 D + 1.5 LL b + Service - 210 W	Yes	Y	1	1.2	6	-0.866	7	-0.5	12	1.5
58	1.2 D + 1.5 LL b + Service - 240 W	Yes	Y	1	1.2	7	-0.866	6	-0.5	12	1.5
59	1.2 D + 1.5 LL b + Service - 270 W	Yes	Y	1	1.2	7	-1			12	1.5
60	1.2 D + 1.5 LL b + Service - 300 W	Yes	Y	1	1.2	7	-0.866	6	0.5	12	1.5
61	1.2 D + 1.5 LL b + Service - 330 W	Yes	Y	1	1.2	6	0.866	7	-0.5	12	1.5
62	1.2 D + 1.5 LL c + Service - 0 W	Yes	Y	1	1.2	6	1			13	1.5
63	1.2 D + 1.5 LL c + Service - 30 W	Yes	Y	1	1.2	6	0.866	7	0.5	13	1.5
64	1.2 D + 1.5 LL c + Service - 60 W	Yes	Y	1	1.2	7	0.866	6	0.5	13	1.5
65	1.2 D + 1.5 LL c + Service - 90 W	Yes	Y	1	1.2	7	1			13	1.5
66	1.2 D + 1.5 LL c + Service - 120 W	Yes	Y	1	1.2	7	0.866	6	-0.5	13	1.5
67	1.2 D + 1.5 LL c + Service - 150 W	Yes	Y	1	1.2	6	-0.866	7	0.5	13	1.5
68	1.2 D + 1.5 LL c + Service - 180 W	Yes	Y	1	1.2	6	-1			13	1.5
69	1.2 D + 1.5 LL c + Service - 210 W	Yes	Y	1	1.2	6	-0.866	7	-0.5	13	1.5
70	1.2 D + 1.5 LL c + Service - 240 W	Yes	Y	1	1.2	7	-0.866	6	-0.5	13	1.5
71	1.2 D + 1.5 LL c + Service - 270 W	Yes	Y	1	1.2	7	-1			13	1.5
72	1.2 D + 1.5 LL c + Service - 300 W	Yes	Y	1	1.2	7	-0.866	6	0.5	13	1.5
73	1.2 D + 1.5 LL c + Service - 330 W	Yes	Y	1	1.2	6	0.866	7	-0.5	13	1.5
74	1.2 D + 1.5 LL d + Service - 0 W	Yes	Y	1	1.2	6	1			14	1.5
75	1.2 D + 1.5 LL d + Service - 30 W	Yes	Y	1	1.2	6	0.866	7	0.5	14	1.5
76	1.2 D + 1.5 LL d + Service - 60 W	Yes	Y	1	1.2	7	0.866	6	0.5	14	1.5
77	1.2 D + 1.5 LL d + Service - 90 W	Yes	Y	1	1.2	7	1			14	1.5
78	1.2 D + 1.5 LL d + Service - 120 W	Yes	Y	1	1.2	7	0.866	6	-0.5	14	1.5
79	1.2 D + 1.5 LL d + Service - 150 W	Yes	Y	1	1.2	6	-0.866	7	0.5	14	1.5
80	1.2 D + 1.5 LL d + Service - 180 W	Yes	Y	1	1.2	6	-1			14	1.5
81	1.2 D + 1.5 LL d + Service - 210 W	Yes	Y	1	1.2	6	-0.866	7	-0.5	14	1.5
82	1.2 D + 1.5 LL d + Service - 240 W	Yes	Y	1	1.2	7	-0.866	6	-0.5	14	1.5
83	1.2 D + 1.5 LL d + Service - 270 W	Yes	Y	1	1.2	7	-1			14	1.5
84	1.2 D + 1.5 LL d + Service - 300 W	Yes	Y	1	1.2	7	-0.866	6	0.5	14	1.5
85	1.2 D + 1.5 LL d + Service - 330 W	Yes	Y	1	1.2	6	0.866	7	-0.5	14	1.5
86	1.2 D + 1.5 LL Maint (1)	Yes	Y	1	1.2					15	1.5
87	1.2 D + 1.5 LL Maint (2)	Yes	Y	1	1.2					16	1.5
88	1.2 D + 1.5 LL Maint (3)	Yes	Y	1	1.2					17	1.5
89	1.2 D + 1.5 LL Maint (4)	Yes	Y	1	1.2					18	1.5
90	1.2 D + 1.5 LL Maint (5)	Yes	Y	1	1.2					19	1.5
91	1.2 D + 1.5 LL Maint (6)	Yes	Y	1	1.2					20	1.5
92	1.2 D + 1.5 LL Maint (7)	Yes	Y	1	1.2					21	1.5
93	1.2 D + 1.5 LL Maint (8)	Yes	Y	1	1.2					22	1.5
94	1.2 D + 1.5 LL Maint (9)	Yes	Y	1	1.2					23	1.5
95	1.2 D + 1.5 LL Maint (10)	Yes	Y	1	1.2					24	1.5
96	1.2 D + 1.5 LL Maint (11)	Yes	Y	1	1.2					25	1.5
97	1.2 D + 1.5 LL Maint (12)	Yes	Y	1	1.2					26	1.5
98	1.2 D + 1.5 LL Maint (13)	Yes	Y	1	1.2					27	1.5
99	1.2 D + 1.5 LL Maint (14)	Yes	Y	1	1.2					28	1.5
100	1.2 D + 1.5 LL Maint (15)	Yes	Y	1	1.2					29	1.5

Envelope Node Reactions

	Node Label		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	32	max	0.944	5	3.502	14	3.194	2	9.076	2	0.869	11	0.655	11
2		min	-0.946	11	-1.003	8	-3.231	8	-4.856	8	-0.869	5	-0.785	5
3	82	max	2.075	6	3.362	18	1.982	13	1.944	13	1.151	3	2.117	12
4		min	-2.101	12	-0.327	13	-1.959	7	-4.198	7	-1.145	9	-6.006	18
5	125	max	2.127	4	3.36	22	1.731	3	1.998	3	1.092	7	6.176	22
6		min	-2.101	10	-0.309	3	-1.713	9	-4.033	9	-1.095	13	-2.06	4
7	Totals:	max	4.853	5	9.015	19	6.804	2						

Envelope Node Reactions (Continued)

Node Label		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
8	min	-4.853	11	3.347	13	-6.804	8						

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

	Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc[ft]	Dir	LC	phi*Pnc [k]	phi*Pnt [k]	phi*Mn y-y [k-ft]	phi*Mn z-z [k-ft]	Cb	Eqn
1	1	PIPE_3.0	0.217	4.818	9	0.109	4.427		8	28.251	65.205	5.749	5.749	1	H1-1b
2	11	PL1/2"X6	0.105	0.25	2	0.09	0.25	y	2	95.014	97.2	1.012	12.15	1.845	H1-1b
3	30	PIPE_2.0	0.639	3.5	8	0.17	3.5		7	8.922	32.13	1.872	1.872	1	H1-1b
4	13	PL1/2"X6	0.103	0.25	2	0.1	0.125	y	8	95.014	97.2	1.012	12.15	1.995	H1-1b
5	31	PIPE_2.0	0.708	3.5	9	0.374	3.5		8	8.923	32.13	1.872	1.872	1	H3-6
6	17	PL1/2"X6	0.166	0.519	2	0.114	0.519	y	15	65.639	97.2	1.012	12.15	1.213	H1-1b
7	19	HSS4X4X4	0.762	0	2	0.145	0	y	3	97.504	106.155	12.311	12.311	2.299	H1-1b
8	54	PIPE_2.0	0.762	3.5	7	0.363	3.5		8	8.923	32.13	1.872	1.872	1	H3-6
9	20	HSS4X4X4	0.311	2.541	15	0.101	2.541	y	14	103.994	106.155	12.311	12.311	1.667	H1-1b
10	21	HSS4X4X4	0.294	0	25	0.082	0	y	2	103.994	106.155	12.311	12.311	1.648	H1-1b
11	22	PL3/8"X6	0.137	0.169	13	0.254	0.169	y	66	67.903	72.9	0.57	9.113	2.516	H1-1b
12	23	PL3/8"X6	0.145	0.169	3	0.417	0.169	y	21	67.903	72.9	0.57	9.113	2.529	H1-1b
13	58	PIPE_2.0	0.49	7	6	0.163	7		8	8.922	32.13	1.872	1.872	1	H1-1b
14	80	PIPE_2.0	0.839	1.693	7	0.433	1.042		13	6.295	32.13	1.872	1.872	1	H3-6
15	33	L2X2X3	0.247	0	2	0.013	4.234	y	20	9.529	23.393	0.558	1.082	1.194	H2-1
16	36	L2X2X3	0.236	4.234	2	0.012	0	y	19	9.529	23.393	0.558	1.072	1.149	H2-1
17	46	PL3/8"X6	0.092	0.125	10	0.459	0	y	14	70.011	72.9	0.57	9.113	1.342	H1-1b
18	51	PL3/8"X6	0.089	0.125	11	0.498	0	y	14	70.011	72.9	0.57	9.113	2.416	H1-1b
19	92	L2.5X2.5X4	0.633	0	2	0.173	1.245	y	11	36.654	38.556	1.114	2.537	1.051	H2-1
20	37	PL3/8"X6	0.161	0.169	8	0.425	0.169	y	14	67.903	72.9	0.57	9.113	2.515	H1-1b
21	38	PL1/2"X6	0.145	0.519	7	0.115	0.509	y	20	65.639	97.2	1.012	12.15	1.334	H1-1b
22	39	PL1/2"X6	0.091	0.25	7	0.077	0.25	y	77	95.014	97.2	1.012	12.15	1.729	H1-1b
23	41	PL1/2"X6	0.068	0.25	6	0.09	0.125	y	13	95.014	97.2	1.012	12.15	1.837	H1-1b
24	42	HSS4X4X4	0.631	0	7	0.191	0	y	8	97.504	106.155	12.311	12.311	2.382	H1-1b
25	43	HSS4X4X4	0.31	2.541	19	0.099	2.541	y	19	103.994	106.155	12.311	12.311	1.666	H1-1b
26	44	HSS4X4X4	0.284	0	17	0.078	0	y	18	103.994	106.155	12.311	12.311	1.646	H1-1b
27	45	PL3/8"X6	0.159	0.169	9	0.254	0.169	y	70	67.903	72.9	0.57	9.113	2.606	H1-1b
28	47	L2.5X2.5X4	0.524	1.245	7	0.271	1.245	y	3	36.654	38.556	1.114	2.537	1.5	H2-1
29	48	L2X2X3	0.205	0	7	0.013	4.234	y	25	9.529	23.393	0.558	1.062	1.104	H2-1
30	50	PL3/8"X6	0.128	0.125	2	0.442	0	y	18	70.011	72.9	0.57	9.113	1.347	H1-1b
31	60	PL3/8"X6	0.137	0.125	2	0.492	0	y	19	70.011	72.9	0.57	9.113	1.407	H1-1b
32	63	L2X2X3	0.19	0	6	0.012	0	y	22	9.529	23.393	0.558	1.103	1.302	H2-1
33	66	PL3/8"X6	0.106	0.169	12	0.416	0.169	y	18	67.903	72.9	0.57	9.113	2.595	H1-1b
34	67	PL1/2"X6	0.151	0.519	9	0.111	0.519	y	23	65.639	97.2	1.012	12.15	1.32	H1-1b
35	68	PL1/2"X6	0.071	0.25	10	0.086	0.25	y	9	95.014	97.2	1.012	12.15	1.81	H1-1b
36	70	PL1/2"X6	0.097	0.25	9	0.075	0.25	y	46	95.014	97.2	1.012	12.15	1.948	H1-1b
37	71	HSS4X4X4	0.616	0	9	0.174	0	y	8	97.504	106.155	12.311	12.311	2.363	H1-1b
38	72	HSS4X4X4	0.3	2.541	23	0.097	2.541	y	22	103.994	106.155	12.311	12.311	1.666	H1-1b
39	73	HSS4X4X4	0.292	0	21	0.079	0	y	21	103.994	106.155	12.311	12.311	1.646	H1-1b
40	74	PL3/8"X6	0.192	0.169	8	0.255	0.169	y	62	67.903	72.9	0.57	9.113	2.512	H1-1b
41	75	L2.5X2.5X4	0.537	0	9	0.286	1.245	y	7	36.654	38.556	1.114	2.537	1.5	H2-1
42	81	L2X2X3	0.193	4.234	10	0.013	4.234	y	17	9.529	23.393	0.558	1.112	1.351	H2-1
43	82	PL3/8"X6	0.097	0.125	7	0.452	0	y	21	70.011	72.9	0.57	9.113	1.539	H1-1b
44	84	PL3/8"X6	0.143	0.125	8	0.48	0	y	22	70.011	72.9	0.57	9.113	1.843	H1-1b
45	87	L2X2X3	0.194	4.234	9	0.012	0	y	14	9.529	23.393	0.558	1.041	1.022	H2-1
46	89	PIPE_2.0	0.776	3.5	13	0.316	7		13	8.923	32.13	1.872	1.872	1	H3-6
47	96	PIPE_2.0	0.724	7	2	0.122	7		4	8.922	32.13	1.872	1.872	1	H1-1b
48	97	PIPE_2.0	0.501	7	9	0.24	3.5		12	8.923	32.13	1.872	1.872	1	H1-1b
49	99	PIPE_2.0	0.667	7	9	0.19	7		8	8.922	32.13	1.872	1.872	1	H1-1b
50	104	PIPE_2.0	0.758	10.807	2	0.364	11.458		7	6.295	32.13	1.872	1.872	1	H3-6
51	106	PIPE_2.0	0.533	7	7	0.236	3.5		4	8.923	32.13	1.872	1.872	1	H1-1b

Envelope AISC 15TH (360-16): LRFD Member Steel Code Checks (Continued)

	Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc[ft]	Dir	LC	phi*Pnc [k]	phi*Pnt [k]	phi*Mn y-y [k-ft]	phi*Mn z-z [k-ft]	Cb	Eqn
52	110	PIPE_2.0	0.683	3.5	8	0.184	7		8	8.922	32.13	1.872	1.872	1	H1-1b
53	111	PIPE_2.0	0.704	7	3	0.281	7		3	8.923	32.13	1.872	1.872	1	H3-6
54	113	PIPE_2.0	0.748	7	2	0.122	7		12	8.922	32.13	1.872	1.872	1	H1-1b
55	118	PIPE_2.0	0.858	1.693	2	0.43	1.042		9	6.295	32.13	1.872	1.872	1	H3-6
56	107	PIPE_3.0	0.25	4.818	2	0.108	7.292		2	28.251	65.205	5.749	5.749	1	H1-1b
57	119	PIPE_3.0	0.193	4.818	18	0.112	4.818		8	28.251	65.205	5.749	5.749	1	H1-1b

APPENDIX D

ADDITIONAL CALCULATIONS

PROJECT	**84855.020.01.0001 - CT Suffield 1 CA(**				**KSC**
SUBJECT	**Platform Mount Analysis**				
DATE	**02/02/23**	PAGE	1	OF	1

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

[REF: AISC 360-05]

Reactions at Bolted Connection

Tension	:	3.231	k
Vertical Shear	:	3.502	k
Horizontal Shear	:	0.946	k
Torsion	:	0.785	k.ft
Moment from Horizontal Forces	:	0.869	k.ft
Moment from Vertical Forces	:	9.076	k.ft

Bolt Parameters

Bolt Grade	:	A325	
Bolt Diameter	:	0.625	in
Nominal Bolt Area	:	0.307	in^2
Bolt spacing, Horizontal	:	6	in
Bolt spacing, Vertical	:	6	in
Bolt edge distance, plate height	:	1.5	in
Bolt edge distance, plate width	:	1.5	in
Total Number of Bolts	:	4	bolts

Summary of Forces

Shear Resultant Force	:	3.63	k
Force from Horz. Moment	:	1.57	k
Force from Vert. Moment	:	16.44	k
Shear Load / Bolt	:	0.91	k
Tension Load / Bolt	:	0.81	k
Resultant from Moments / Bolt	:	8.26	k

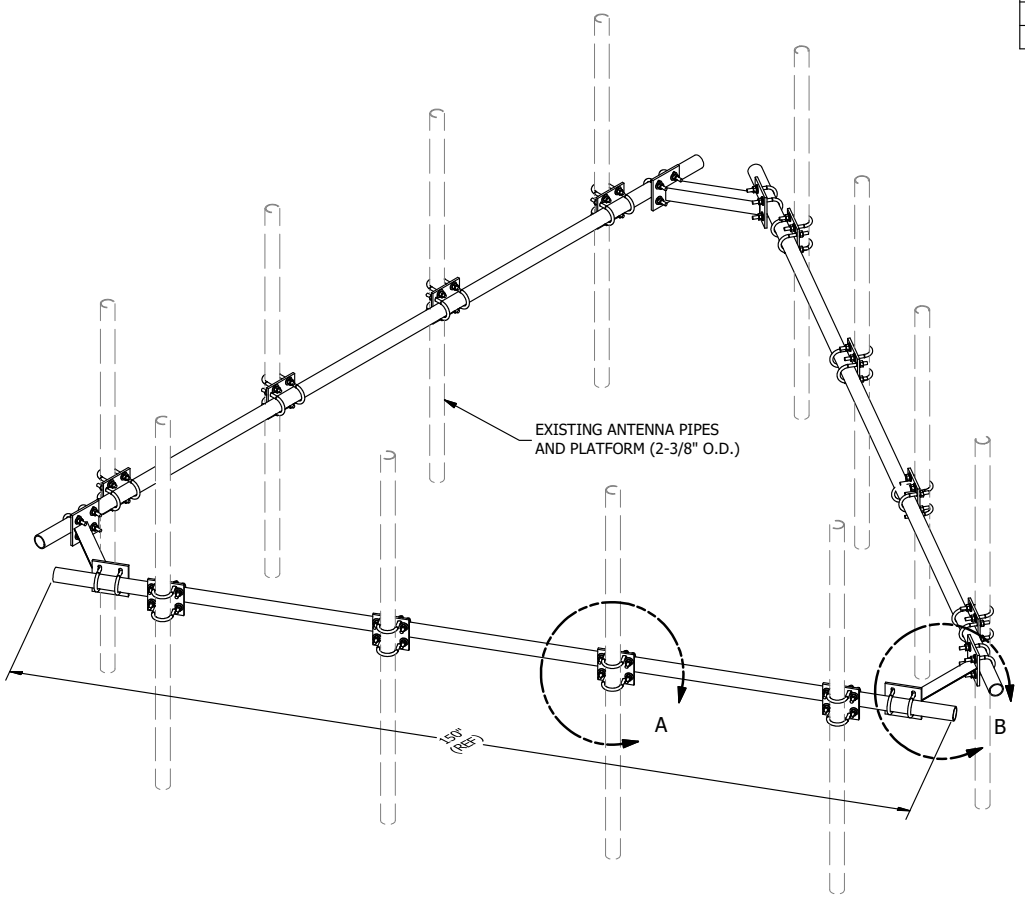
Bolt Checks

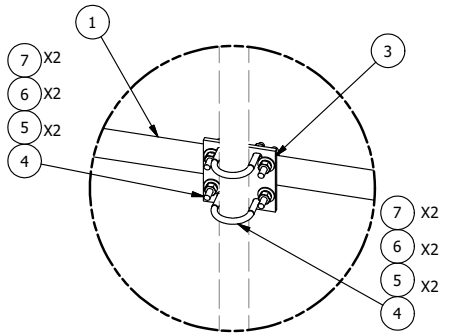
Nominal Tensile Stress, F_{nt}	:	90.00	ksi	[AISC Table J3.2]
Available Tensile Stress, ΦR_{nt}	:	20.72	k/bolt	[Eq. J3-1]
Unity Check, Bolt Tension	:	**43.75%**		**OKAY**
Nominal Shear Stress, F_{nv}	:	48.00	ksi	[AISC Table J3.2]
Available Shear Stress, ΦR_{nv}	:	11.05	k/bolt	[Eq. J3-1]
Unity Check, Bolt Shear	:	**15.51%**		**OKAY**
Unity Check, Combined	:	**59.26%**		**OKAY**
Available Bearing Strength, ΦR_n	:	34.66	k/bolt	
Unity Check, Bolt Bearing	:	**2.62%**		**OKAY**

APPENDIX E

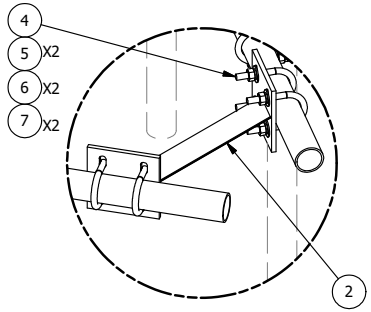
SUPPLEMENTAL DRAWINGS

PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	3	P2150	2-3/8" O.D. X 150" SCH 40 GALVANIZED PIPE	150 in	45.77	137.31
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. #	272.43





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")*

REVISION HISTORY				
REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
A	REPLACED HCP WITH X-AHCP		CEK	7/10/2014

DESCRIPTION: **HANDRAIL KIT FOR 12'-6" FACE**

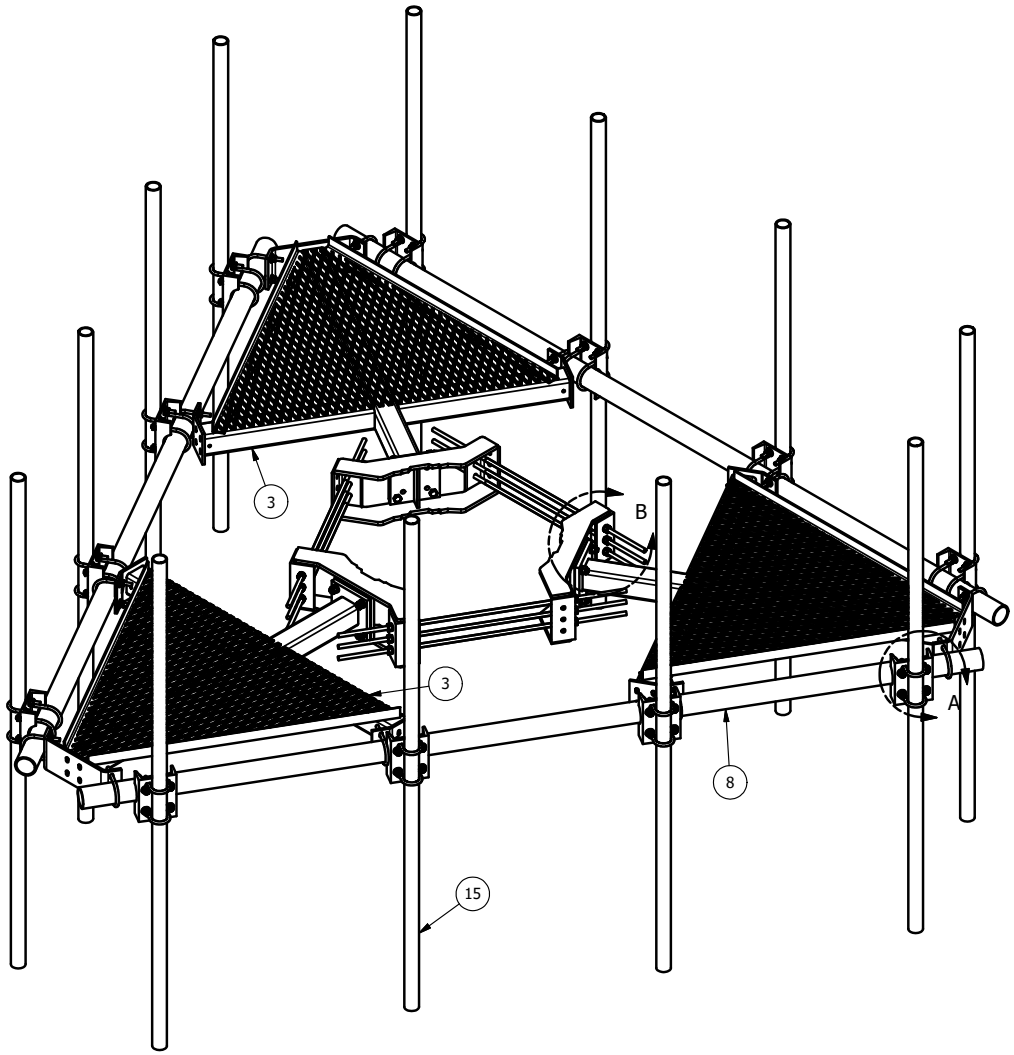
SITE PRO 1 — A valmont COMPANY

Engineering Support Team: 1-888-753-7446

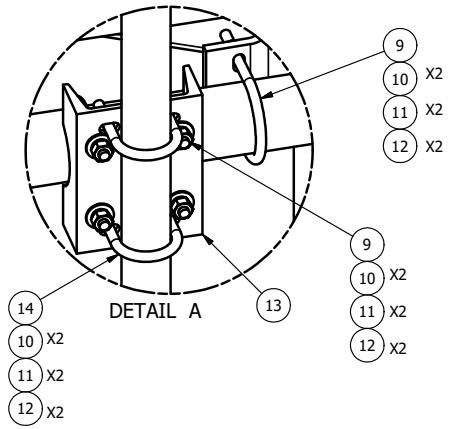
Locations:
New York, NY
Atlanta, GA
Los Angeles, CA
Plymouth, IN
Salem, OR
Dallas, TX

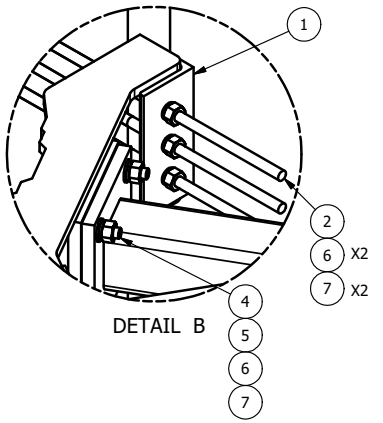
CPD NO.	DRAWN BY	ENG. APPROVAL	PART NO.
	KC8 5/30/2012		HRK12

CLASS	SUB	DRAWING USAGE	CHECKED BY	DWG. NO.
81	01	CUSTOMER	BMC 7/13/2014	HRK12



PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	3	X-LWRM	RING MOUNT WELDMENT		68.81	206.42
2	9	G58R-48	5/8" x 48" THREADED ROD (HDG.)		0.40	3.59
2	9	G58R-24	5/8" x 24" THREADED ROD (HDG.)		0.40	3.59
3	3	X-SV196	LOW PROFILE PLATFORM CORNER		212.10	636.31
4	12	A58234	5/8" x 2-3/4" HDG A325 HEX BOLT	2.75	0.36	4.27
5	12	A58FW	5/8" HDG A325 FLATWASHER		0.03	0.41
6	30	G58LW	5/8" HDG LOCKWASHER		0.03	0.78
7	30	A58NUT	5/8" HDG A325 HEX NUT		0.13	3.90
8	3	P3150	3-1/2" X 150" SCH 40 GALVANIZED PIPE	150.000 in	94.80	284.40
9	36	X-UB1306	1/2" X 3-5/8" X 6" X 3" U-BOLT (HDG.)		0.26	9.25
10	120	G12FW	1/2" HDG USS FLATWASHER		0.03	4.09
11	120	G12LW	1/2" HDG LOCKWASHER		0.01	1.67
12	120	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	8.60
13	12	X-SP219	SMALL SUPPORT CROSS PLATE	8.250 in	8.61	103.33
14	24	X-UB1212	1/2" X 2-1/2" X 4-1/2" X 2" U-BOLT (HDG.)		0.26	6.17
15	12	B	ANTENNA MOUNTING PIPE	C	D	E





2-3/8" O.D. VERTICAL MOUNTING PIPES					
ASSEMBLY NO. "A"	PART NO. "B"	LENGTH, "C"	UNIT WEIGHT, "D"	NET WEIGHT, "E"	TOTAL WEIGHT
RMQP-463	P263	63"	20.18	242.16	1591.11
RMQP-472	P272	72"	23.07	276.84	1625.79
RMQP-484	P284	84"	26.91	322.92	1671.87
RMQP-496	P296	96"	30.76	369.12	1718.07
RMQP-4126	P2126	126"	40.75	489.00	1837.95

REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
A	ADDED 10' 6" ANTENNA MOUNTING PIPES		CEK	7/9/2015

REVISION HISTORY

TOLERANCE NOTE

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")

DESCRIPTION
LOW PROFILE CO-LOCATION PLATFORM
FOR 12 ANTENNAS WITH 12' 6" FACE WIDTH
FOR 12" - 38" DIAMETER POLES

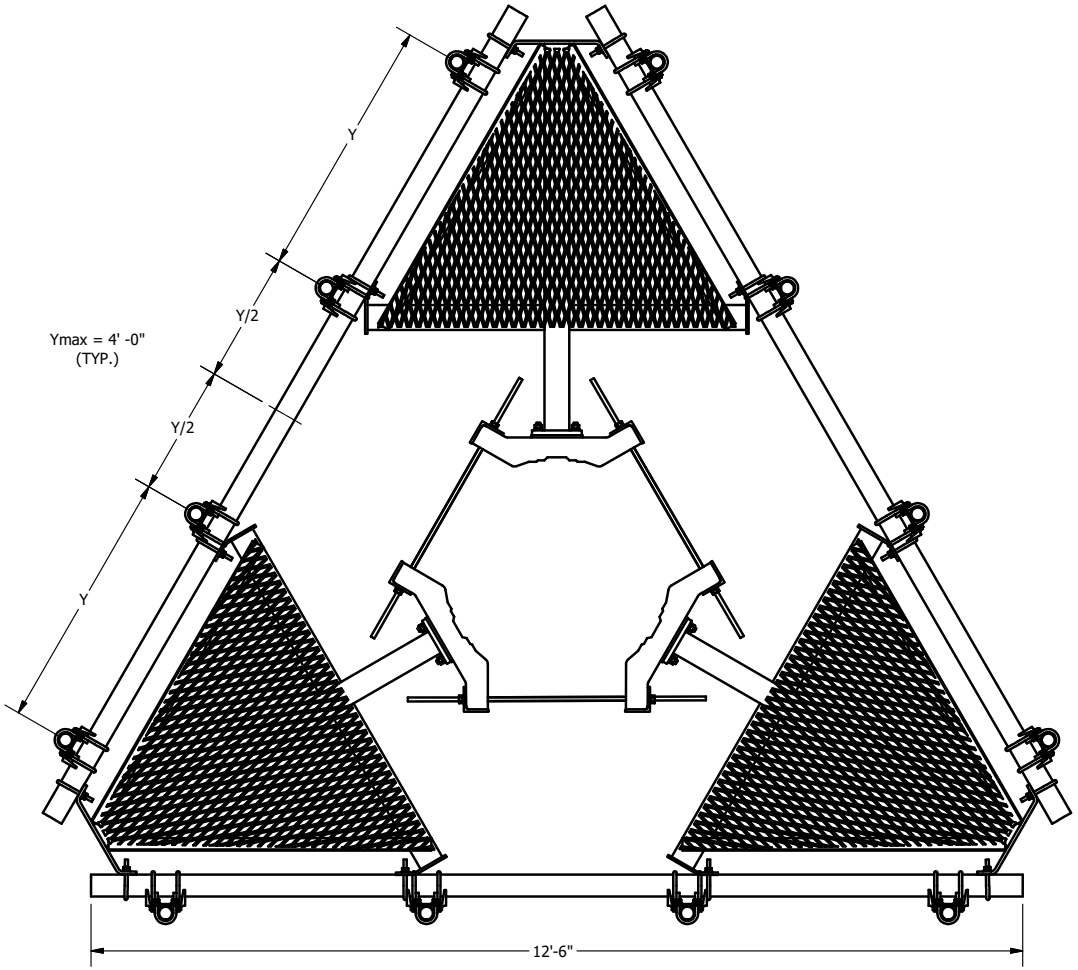
SITE PRO 1 — A valmont COMPANY

Engineering Support Team: 1-888-753-7446

Locations:
New York, NY
Atlanta, GA
Los Angeles, CA
Plymouth, IN
Salem, OR
Dallas, TX

DRAWN BY	CPD NO.	DRAWING USAGE	PART NO.
CEK 1/20/2012	semb	CUSTOMER	SEE ASSEMBLY NO. "A"

ENG. APPROVAL	CHECKED BY	DWG. NO.
	BMC 7/9/2015	RMQP-4XX



TOLERANCE NOTE

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")

REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
A	ADDED 10' 6" ANTENNA MOUNTING PIPES		CEK	7/9/2015

REVISION HISTORY

DESCRIPTION
LOW PROFILE CO-LOCATION PLATFORM
FOR 12 ANTENNAS WITH 12' 6" FACE WIDTH
FOR 12" - 38" DIAMETER POLES

DRAWN BY	CPD NO.	DRAWING USAGE
CEK 1/20/2012	semb	CUSTOMER

ENG. APPROVAL

CHECKED BY: BMC 7/9/2015

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

PART NO.: SEE ASSEMBLY NO. "A"

DWG. NO.: RMQP-4XX

T-Mobile

T-MOBILE SITE NUMBER: CT11545A
T-MOBILE SITE NAME: CT545/CROWN SUFFIELD
SITE TYPE: MONOPOLE
TOWER HEIGHT: 190'-6"

BUSINESS UNIT #: 801485
SITE ADDRESS: 2715 MOUNTAIN RD. SUFFIELD, CT 06093
COUNTY: HARTFORD
JURISDICTION: CONNECTICUT SITING COUNCIL

T-MOBILE ANCHOR SITE CONFIGURATION: 67D5D998E ODE+6160

SITE INFORMATION

CROWN CASTLE USA INC. SITE NAME:	CT SUFFIELD 1 CAC 801485
SITE ADDRESS:	2715 MOUNTAIN RD. SUFFIELD, CT 06093
COUNTY:	HARTFORD
MAP/PARCEL #:	9-9-9-X
AREA OF CONSTRUCTION:	EXISTING
LATITUDE:	42.011611°
LONGITUDE:	-72.728778°
LAT/LONG TYPE:	NAD83
GROUND ELEVATION:	426'
CURRENT ZONING:	R-90
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:	CROWN ATLANTIC COMPANY LLC 4017 WASHINGTON RD MCMURRAY, PA 15317
TOWER OWNER:	CROWN CASTLE 2000 CORPORATE DRIVE CANONSBURG, PA 15317
CARRIER/APPLICANT:	T-MOBILE 35 GRIFFIN ROAD BLOOMFIELD, CT 06002
ELECTRIC PROVIDER:	CONNECTICUT LIGHT & POWER CO (860) 947-2000
TELCO PROVIDER:	AT&T (855) 637-9527

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:	1505 WESTLAKE AVENUE NORTH, SUITE 800 SEATTLE, WA 98109 TRICIA PELON - PROJECT MANAGER TRICIA.PELON@CROWNCASTLE.COM JASON D'AMICO - CONSTRUCTION MANAGER JASON.D'AMICO@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	CODE SUMMARY
T-3	CODE SUMMARY
T-4	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
G-1	ANTENNA GROUNDING DIAGRAM
G-2	GROUNDING DETAILS
G-3	GROUNDING DETAILS
ATTACHED	MOUNT SPECS

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 (13) COAX (1-5/8")
- REMOVE (3) ANTENNAS
- REMOVE (3) TMAs
- REMOVE (3) EXISTING SECTOR MOUNTS
- INSTALL (3) ANTENNAS
- INSTALL (3) RRHS
- INSTALL (2) HYBRID CABLES
- INSTALL PLATFORM MOUNT, SITEPRO1 - RMQP-4126 W/ HRK-12

GROUND SCOPE OF WORK:
- REMOVE (3) RUS01 B2 RADIO FROM RBS 6201
- INSTALL (1) 6160 AC V1
- INSTALL (1) B160 BATTERY CABINET
- INSTALL (1) RP 6651 IN 6160 CABINET
- INSTALL (1) PSU 4813 VR4A (KIT) IN 6160 CABINET
- INSTALL (1) CSR IXRE V2 (GEN2) IN 6160 CABINET
- INSTALL (1) 100AMP BREAKERS IN RBS 6201
- INSTALL (1) 100AMP BREAKERS IN 6160 CABINET
- INSTALL (1) DCDU KIT TO 6160 FOR RP6651
- INSTALL (6) 40 AMP BREAKERSNAND (3) 50 AMP SPD'S FOR POWER UP OF 4460 TO 6160.
- INSTALL (1) CSR IXRE V2 (GEN2) ROUTER TO ENCLOSURE 6160

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	2018 IBC
MECHANICAL	2018 IMC
ELECTRICAL	2017 NEC

REFERENCE DOCUMENTS:

STRUCTURAL ANALYSIS:	MORRISON HERSHFIELD
DATED:	2/14/23
MOUNT ANALYSIS:	B+T GROUP
DATED:	2/2/23
RFDS REVISION:	4
DATED:	3/10/22
ORDER ID:	609060
REVISION:	0

INSTALLER NOTE:

NO PROPOSED LOADING TO BE ADDED UNTIL MOUNT SWAP IS COMPLETE. CONTRACTOR TO INSTALL MOUNT PER MANUFACTURER'S SPECIFICATIONS.

CALL CONNECTICUT ONE CALL
(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
35 GRIFFIN ROAD
BLOOMFIELD, CT 06002

CROWN CASTLE
1505 WESTLAKE AVENUE NORTH, SUITE 800
SEATTLE, WA 98109

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

T-MOBILE SITE NUMBER:
CT11545A

BU #: **801485**
CT SUFFIELD 1 CAC 801485

2715 MOUNTAIN RD.
SUFFIELD, CT 06093

EXISTING
190'-6" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	4/28/22	MEH	PRELIMINARY REVIEW	KT
0	5/12/22	MEX	CONSTRUCTION	LR
0	2/21/23	GAC	CONSTRUCTION	MTJ
1	2/24/23	GAC	CONSTRUCTION	MTJ

STATE OF CONNECTICUT
MARVIN T. JOHNSON
No. 23924
LICENSED PROFESSIONAL ENGINEER
2/24/23

B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/24

SHEET NUMBER: T-1
REVISION: 1

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.

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).

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

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
35 GRIFFIN ROAD
BLOOMFIELD, CT 06002

CROWN CASTLE
1505 WESTLAKE AVENUE NORTH, SUITE 800
SEATTLE, WA 98109

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

T-MOBILE SITE NUMBER:
CT11545A

BU #: **801485**
CT SUFFIELD 1 CAC 801485

2715 MOUNTAIN RD.
SUFFIELD, CT 06093

EXISTING
190'-6" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	4/28/22	MEH	PRELIMINARY REVIEW	KT
0	5/12/22	MEX	CONSTRUCTION	LR
0	2/21/23	GAC	CONSTRUCTION	MTJ
1	2/24/23	GAC	CONSTRUCTION	MTJ

STATE OF CONNECTICUT · CHAD TUTTLE · No. 23924 · LICENSED · PROFESSIONAL ENGINEER
2/24/23

B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/24

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: 100' 50' 0 100' 1" = 100'-0" (FULL SIZE) 1" = 200'-0" (11x17)

N

T-Mobile
35 GRIFFIN ROAD
BLOOMFIELD, CT 06002

CROWN CASTLE
1505 WESTLAKE AVENUE NORTH, SUITE 800
SEATTLE, WA 98109

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

T-MOBILE SITE NUMBER:
CT11545A

BU #: **801485**
CT SUFFIELD 1 CAC 801485

2715 MOUNTAIN RD.
SUFFIELD, CT 06093

EXISTING
190'-6" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	4/28/22	MEH	PRELIMINARY REVIEW	KT
0	5/12/22	MEX	CONSTRUCTION	LR
0	2/21/23	GAC	CONSTRUCTION	MTJ
1	2/24/23	GAC	CONSTRUCTION	MTJ

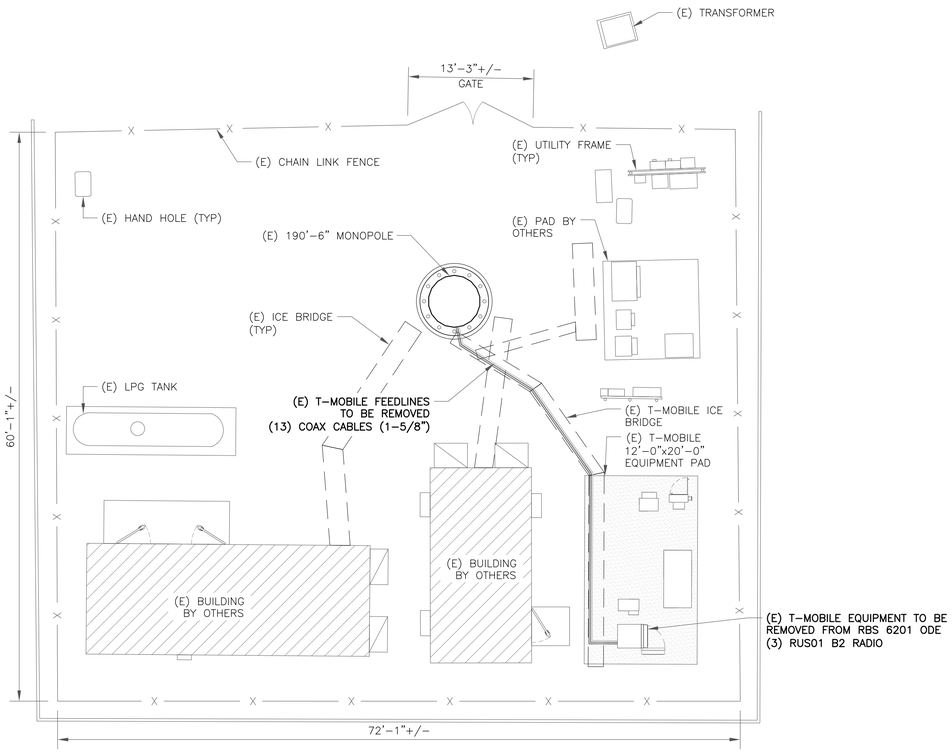
2/24/23

B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/24

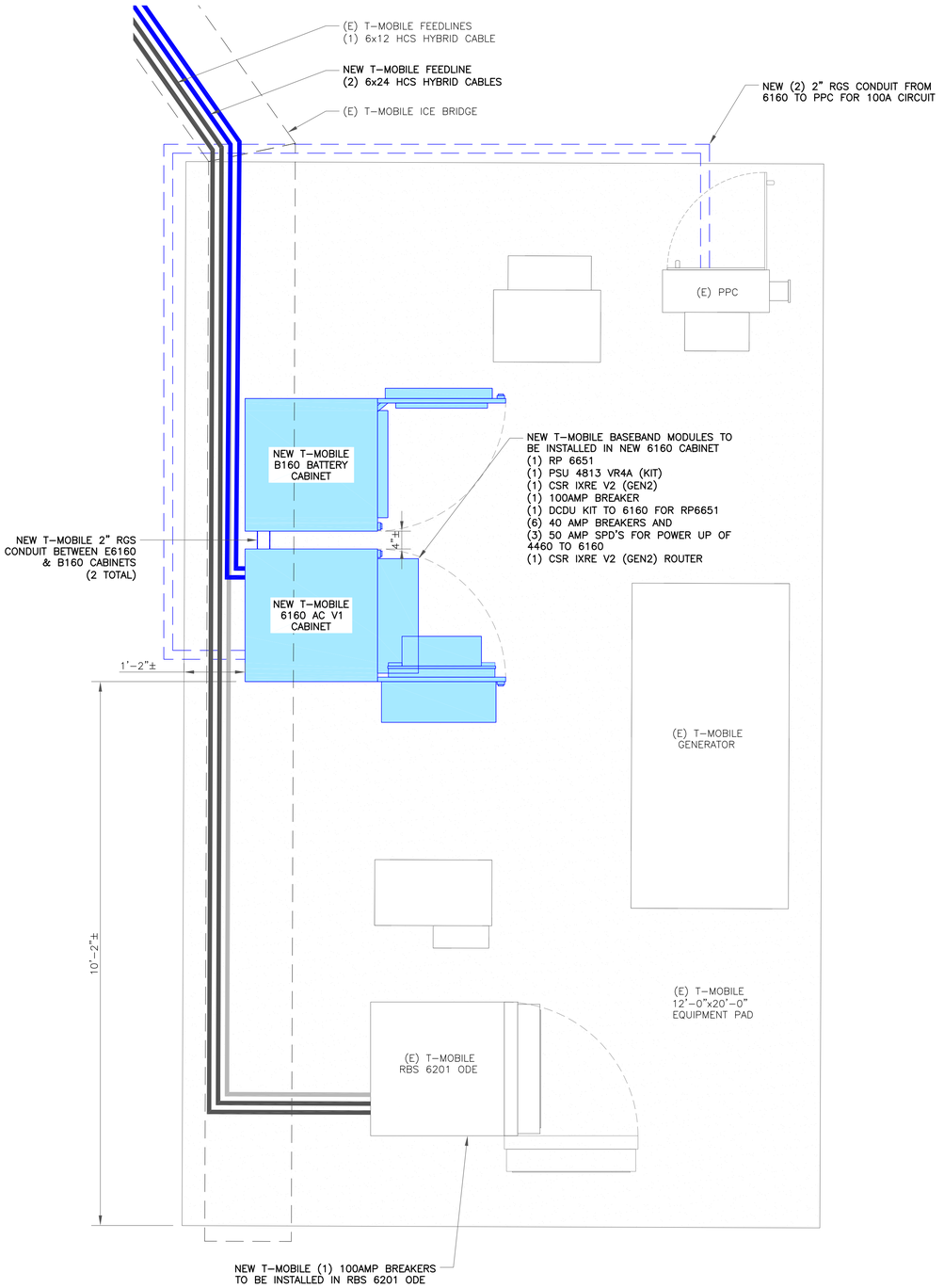
SHEET NUMBER: C-1.1

REVISION: 1

84855.018.01_CT SUFFIELD 1 CAC 801485.dwg - Sheet:C-1.1 - User: mjones - Feb 24, 2023 - 9:47am



1 SITE PLAN
SCALE: 8' 6' 4' 2' 0 8'
1/8"=1'-0" (FULL SIZE)
1/16"=1'-0" (11x17)



2 ENLARGED SITE PLAN
SCALE: 1' 6" 0 1'
3/4"=1'-0" (FULL SIZE)
3/8"=1'-0" (11x17)

T-Mobile
35 GRIFFIN ROAD
BLOOMFIELD, CT 06002

CROWN CASTLE
1505 WESTLAKE AVENUE NORTH, SUITE 800
SEATTLE, WA 98109

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

T-MOBILE SITE NUMBER:
CT11545A

BU #: **801485**
CT SUFFIELD 1 CAC 801485

2715 MOUNTAIN RD.
SUFFIELD, CT 06093

EXISTING
190'-6" MONOPOLE

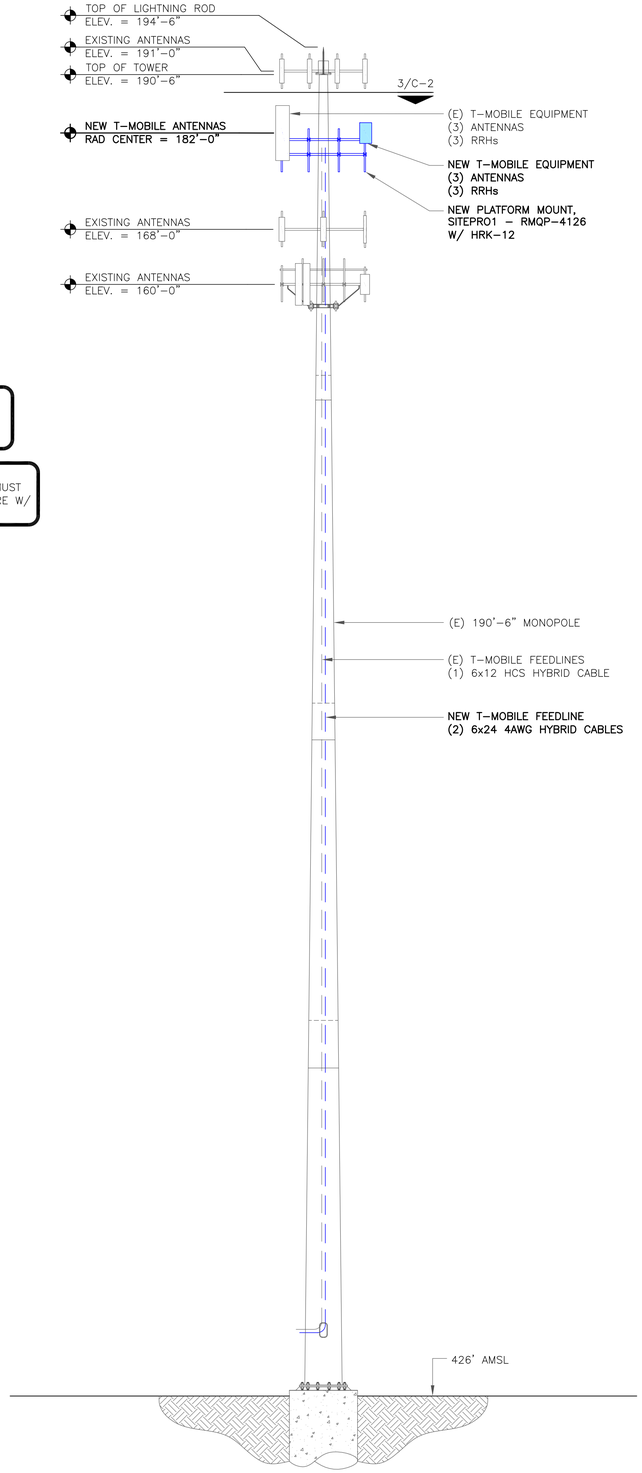
ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	4/28/22	MEH	PRELIMINARY REVIEW	KT
0	5/12/22	MEX	CONSTRUCTION	LR
0	2/21/23	GAC	CONSTRUCTION	MTJ
1	2/24/23	GAC	CONSTRUCTION	MTJ

2/24/23

B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/24

SHEET NUMBER: C-1.2
REVISION: 1

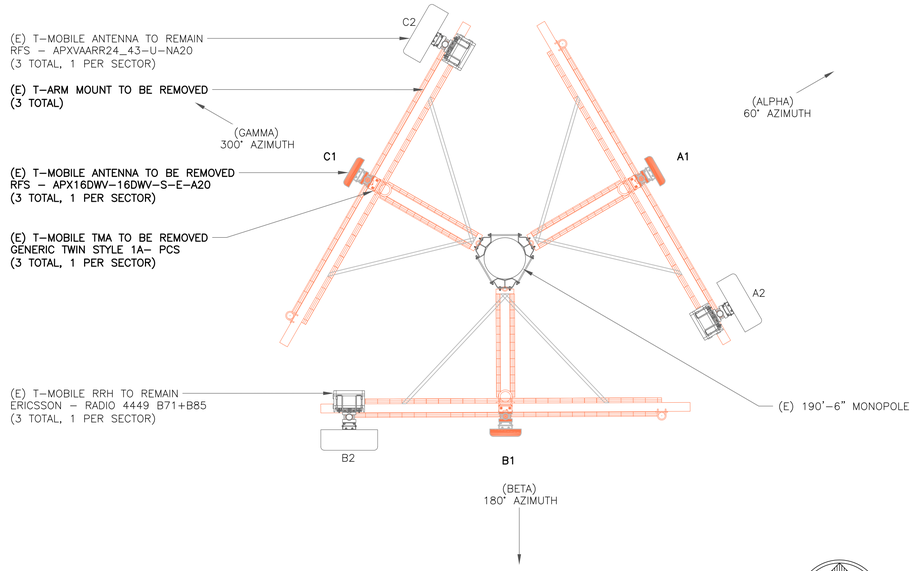


T-MOBILE EQUIPMENT

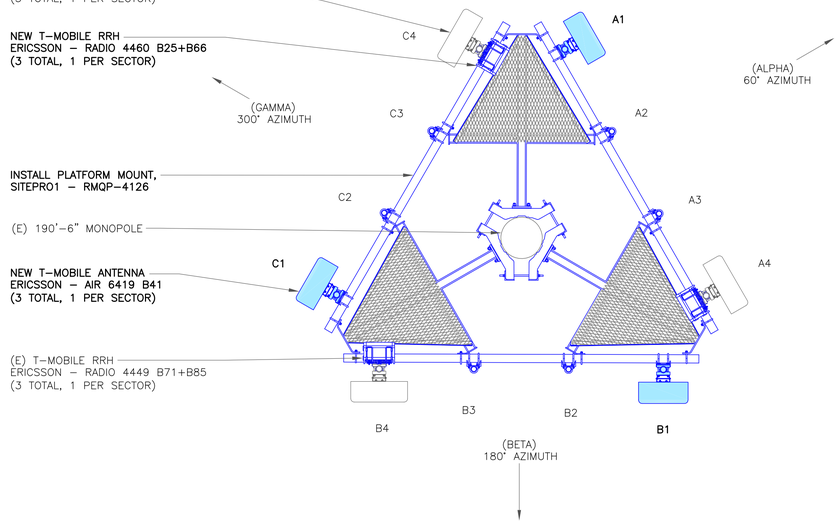
ANTENNA CL: 182'-0"
MOUNT CL: 180'-0"

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

1 FINAL ELEVATION
SCALE: NOT TO SCALE



2 EXISTING ANTENNA LAYOUT
SCALE: NOT TO SCALE



3 FINAL ANTENNA LAYOUT
SCALE: NOT TO SCALE

T-Mobile
35 GRIFFIN ROAD
BLOOMFIELD, CT 06002

CROWN CASTLE
1505 WESTLAKE AVENUE NORTH, SUITE 800
SEATTLE, WA 98109

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

T-MOBILE SITE NUMBER:
CT11545A

BU #: **801485**
CT SUFFIELD 1 CAC 801485

2715 MOUNTAIN RD.
SUFFIELD, CT 06093

EXISTING
190'-6" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	4/28/22	MEH	PRELIMINARY REVIEW	KT
0	5/12/22	MEX	CONSTRUCTION	LR
0	2/21/23	GAC	CONSTRUCTION	MTJ
1	2/24/23	GAC	CONSTRUCTION	MTJ

2/24/23

B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/24

SHEET NUMBER: C-2

REVISION: 1

RF SYSTEM SCHEDULE

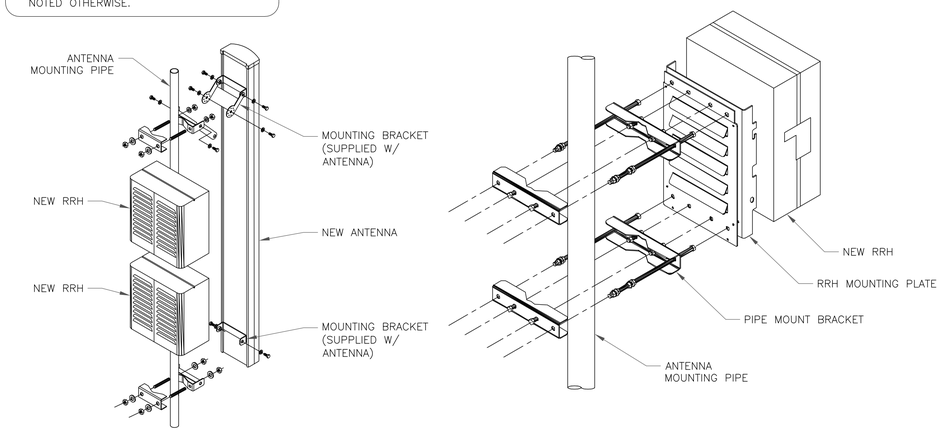
SECTOR	ANTENNA	TECH	MANUFACTURER	ANTENNA MODEL	AZIMUTH	M-TILT	E-TILT	RAD CENTER	TMA/RRU	FEEDLINE TYPE
ALPHA	A1	L2500/N2500	ERICSSON	AIR 6419 B41	60°	0°	2°/2°	182'-0"	–	(1) 6X12 HYBRID
	A2	–	–	–	–	–	–	–	–	–
	A3	–	–	–	–	–	–	–	–	–
	A4	L700/L600/N600/L2100/L1900/G1900	RFS	APXVAARR24_43-U-NA20	60°	0°	2°/2°/2°/2°	182'-0"	(1) 4449 B71+B85 (1) 4460 B25+B66	–
BETA	B1	L2500/N2500	ERICSSON	AIR 6419 B41	180°	0°	2°/2°	182'-0"	–	(1) 6/24 HYBRID
	B2	–	–	–	–	–	–	–	–	–
	B3	–	–	–	–	–	–	–	–	–
	B4	L700/L600/N600/L2100/L1900/G1900	RFS	APXVAARR24_43-U-NA20	180°	0°	2°/2°/2°/2°	182'-0"	(1) 4449 B71+B85 (1) 4460 B25+B66	–
GAMMA	C1	L2500/N2500	ERICSSON	AIR 6419 B41	300°	0°	2°/2°	182'-0"	–	(1) 6/24 HYBRID
	C2	–	–	–	–	–	–	–	–	–
	C3	–	–	–	–	–	–	–	–	–
	C4	L700/L600/N600/L2100/L1900/G1900	RFS	APXVAARR24_43-U-NA20	300°	0°	2°/2°/2°/2°	182'-0"	(1) 4449 B71+B85 (1) 4460 B25+B66	–

HYBRIDS TO RUN ON OUTSIDE OF TOWER PER SA

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 RRHs MOUNTING DETAIL
SCALE: NOT TO SCALE

T-Mobile
35 GRIFFIN ROAD
BLOOMFIELD, CT 06002

CROWN CASTLE
1505 WESTLAKE AVENUE NORTH, SUITE 800
SEATTLE, WA 98109

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

T-MOBILE SITE NUMBER:
CT11545A

BU #: **801485**
CT SUFFIELD 1 CAC 801485

2715 MOUNTAIN RD.
SUFFIELD, CT 06093

EXISTING
190'-6" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	4/28/22	MEH	PRELIMINARY REVIEW	KT
0	5/12/22	MEX	CONSTRUCTION	LR
0	2/21/23	GAC	CONSTRUCTION	MTJ
1	2/24/23	GAC	CONSTRUCTION	MTJ

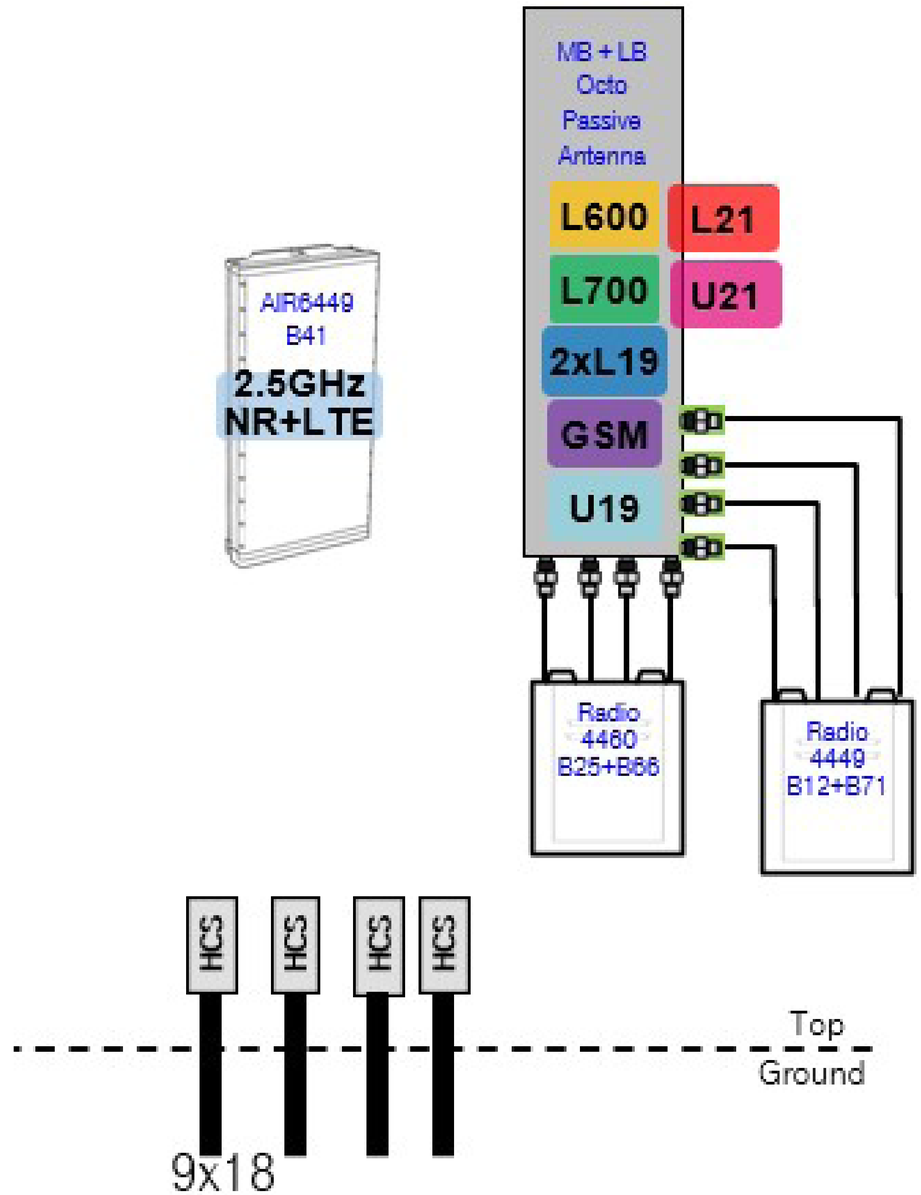
2/24/23

B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/24

SHEET NUMBER: C-3

REVISION: 1

Final Config: 67D5A998E



1 PLUMBING DIAGRAM
SCALE: NOT TO SCALE

T-Mobile
35 GRIFFIN ROAD
BLOOMFIELD, CT 06002

CROWN CASTLE
1505 WESTLAKE AVENUE NORTH, SUITE 800
SEATTLE, WA 98109

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

T-MOBILE SITE NUMBER:
CT11545A

BU #: **801485**
CT SUFFIELD 1 CAC 801485

2715 MOUNTAIN RD.
SUFFIELD, CT 06093

EXISTING
190'-6" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	4/28/22	MEH	PRELIMINARY REVIEW	KT
0	5/12/22	MEX	CONSTRUCTION	LR
0	2/21/23	GAC	CONSTRUCTION	MTJ
1	2/24/23	GAC	CONSTRUCTION	MTJ

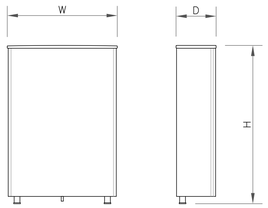
STATE OF CONNECTICUT
No. 23924
LICENSED
PROFESSIONAL ENGINEER

2/24/23

B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/24

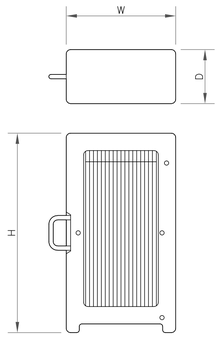
SHEET NUMBER: C-4

REVISION: 1



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

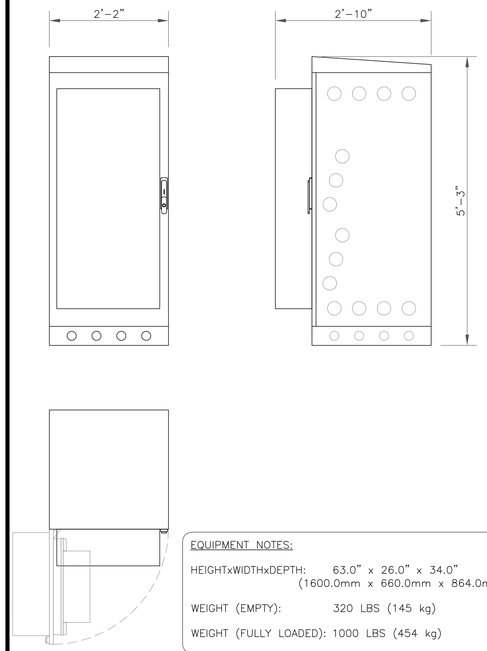


RRU SPECIFICATIONS	
MANUFACTURER	ERICSSON
MODEL #	RADIO 4460 B25+B66
WIDTH	15.10"
DEPTH	11.90"
HEIGHT	17.00"
WEIGHT	109 LBS

2 RRU SPECS
SCALE: NOT TO SCALE

3 NOT USED
SCALE: NOT TO SCALE

4 NOT USED
SCALE: NOT TO SCALE



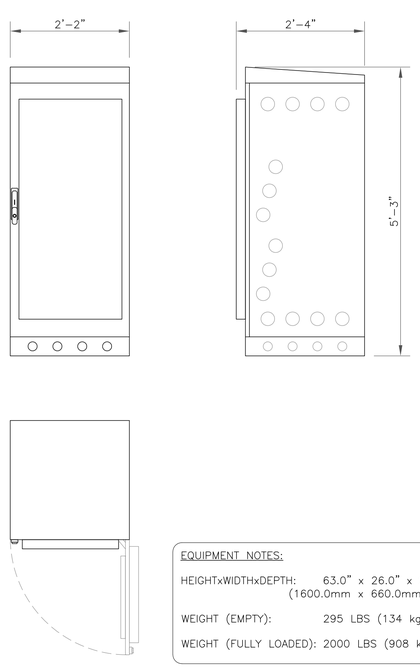
EQUIPMENT NOTES:

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): 1000 LBS (454 kg)

5 ERICSSON 6160 SSC
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): 2000 LBS (908 kg)

6 ERICSSON B160 BATTERY CABINET
SCALE: NOT TO SCALE

7 NOT USED
SCALE: NOT TO SCALE

8 NOT USED
SCALE: NOT TO SCALE

T-Mobile
35 GRIFFIN ROAD
BLOOMFIELD, CT 06002

CROWN CASTLE
1505 WESTLAKE AVENUE NORTH, SUITE 800
SEATTLE, WA 98109

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

T-MOBILE SITE NUMBER:
CT11545A

BU #: **801485**
CT SUFFIELD 1 CAC 801485

2715 MOUNTAIN RD.
SUFFIELD, CT 06093

EXISTING
190'-6" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	4/28/22	MEH	PRELIMINARY REVIEW	KT
0	5/12/22	MEX	CONSTRUCTION	LR
0	2/21/23	GAC	CONSTRUCTION	MTJ
1	2/24/23	GAC	CONSTRUCTION	MTJ

2/24/23

B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/24

SHEET NUMBER: C-5

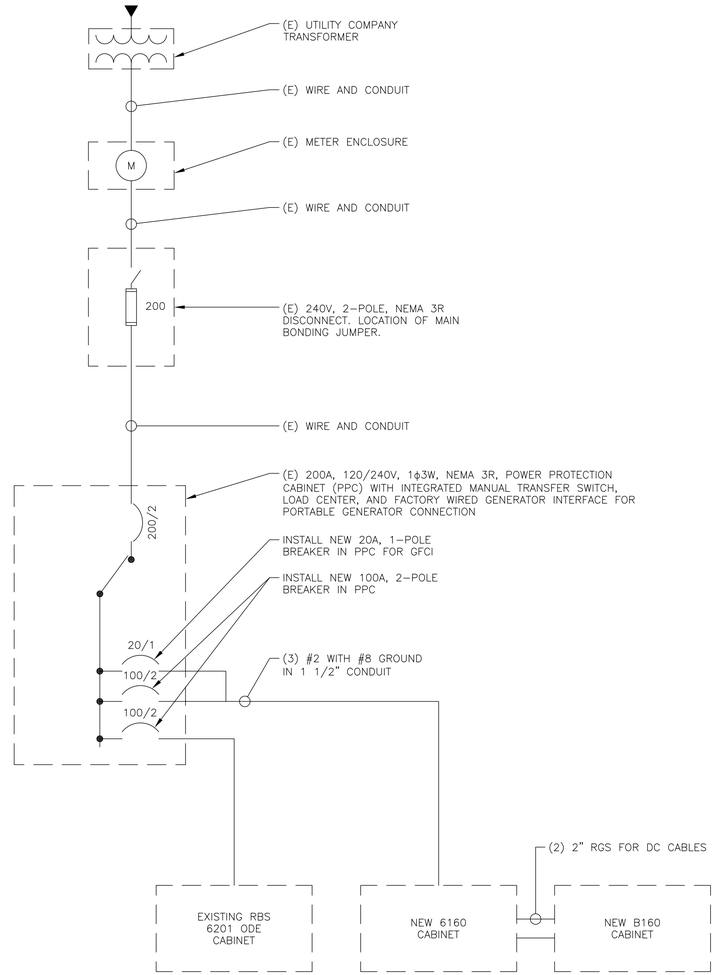
REVISION: 1

FINAL PANEL SCHEDULE							
LOAD	POLES	AMPS	BUS L1	BUS L2	AMPS	POLES	LOAD
PANEL GFCI	1	15	1	2	30	2	REC 1
CABINET GFCI	1	15	3	4			
E6160	2	100	5	6	30	2	REC 2
			7	8			
GFI	1	20	9	10	30	2	REC 3
RBS 6201 ODE	2	100	11	12			
			13	14	30	2	REC 4
			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		

REPLACE EXISTING BREAKER IN POSITION 5 AND 7 WITH A NEW 2P 100A BREAKER
REPLACE EXISTING BREAKER IN POSITION 11 AND 13 WITH A NEW 2P 100A BREAKER
REPLACE EXISTING BREAKER IN POSITION 9 WITH A NEW 1P 20A BREAKER

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, XHHW-2, THW, THW-2, RHW, OR RHW-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
35 GRIFFIN ROAD
BLOOMFIELD, CT 06002

CROWN CASTLE
1505 WESTLAKE AVENUE NORTH, SUITE 800
SEATTLE, WA 98109

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

T-MOBILE SITE NUMBER:
CT11545A

BU #: **801485**
CT SUFFIELD 1 CAC 801485

2715 MOUNTAIN RD.
SUFFIELD, CT 06093

EXISTING
190'-6" MONOPOLE

ISSUED FOR:

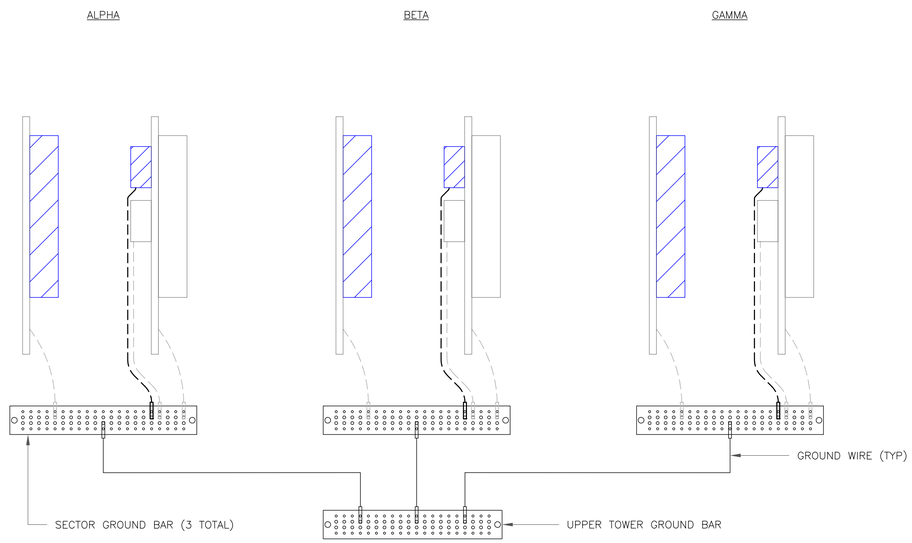
REV	DATE	DRWN	DESCRIPTION	DES./QA
A	4/28/22	MEH	PRELIMINARY REVIEW	KT
0	5/12/22	MEX	CONSTRUCTION	LR
0	2/21/23	GAC	CONSTRUCTION	MTJ
1	2/24/23	GAC	CONSTRUCTION	MTJ

STATE OF CONNECTICUT
No. 23924
LICENSED
PROFESSIONAL ENGINEER

2/24/23

B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/24

SHEET NUMBER: E-1
REVISION: 1



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
35 GRIFFIN ROAD
BLOOMFIELD, CT 06002

CROWN CASTLE
1505 WESTLAKE AVENUE NORTH, SUITE 800
SEATTLE, WA 98109

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

T-MOBILE SITE NUMBER:
CT11545A

BU #: **801485**
CT SUFFIELD 1 CAC 801485

2715 MOUNTAIN RD.
SUFFIELD, CT 06093

EXISTING
190'-6" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	4/28/22	MEH	PRELIMINARY REVIEW	KT
0	5/12/22	MEX	CONSTRUCTION	LR
0	2/21/23	GAC	CONSTRUCTION	MTJ
1	2/24/23	GAC	CONSTRUCTION	MTJ

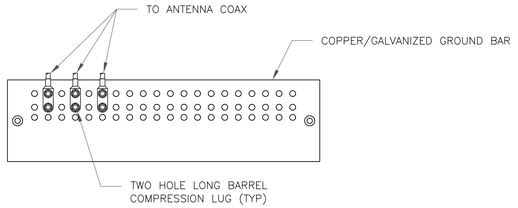
STATE OF CONNECTICUT
GREGORY A. CHASE
No. 23924
LICENSED
PROFESSIONAL ENGINEER

2/24/23

B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/24

SHEET NUMBER: G-1

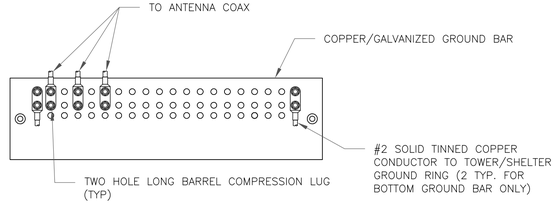
REVISION: 1



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.

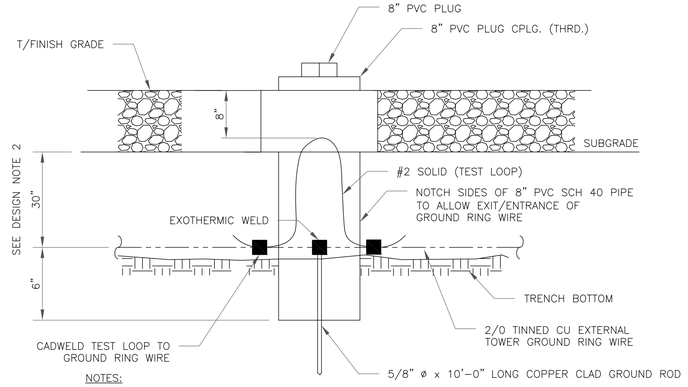
1 ANTENNA SECTOR GROUND BAR DETAIL
SCALE: NOT TO SCALE



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.

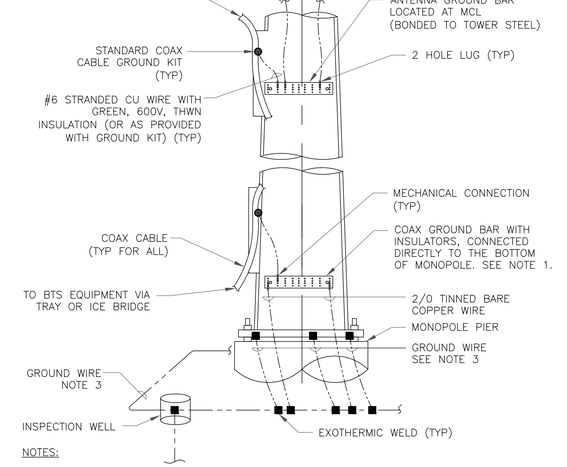
2 TOWER/SHELTER GROUND BAR DETAIL
SCALE: NOT TO SCALE



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)

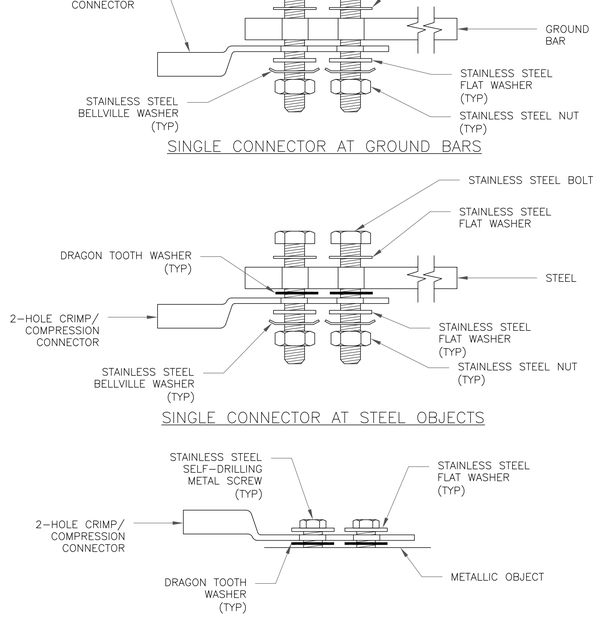
3 INSPECTION WELL DETAIL
SCALE: NOT TO SCALE



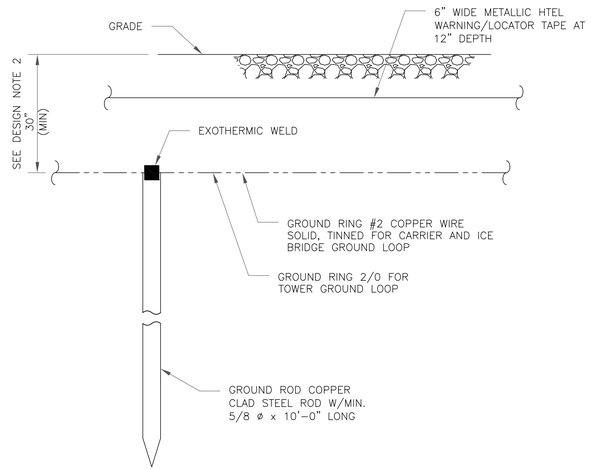
NOTES:

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



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
35 GRIFFIN ROAD
BLOOMFIELD, CT 06002

CROWN CASTLE
1505 WESTLAKE AVENUE NORTH, SUITE 800
SEATTLE, WA 98109

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

T-MOBILE SITE NUMBER:
CT11545A

BU #: **801485**
CT SUFFIELD 1 CAC 801485

2715 MOUNTAIN RD.
SUFFIELD, CT 06093

EXISTING
190'-6" MONOPOLE

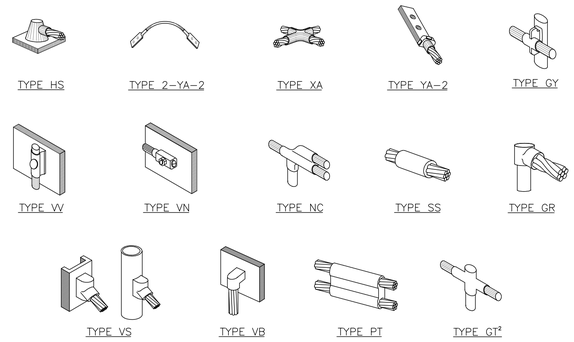
ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	4/28/22	MEH	PRELIMINARY REVIEW	KT
0	5/12/22	MEX	CONSTRUCTION	LR
0	2/21/23	GAC	CONSTRUCTION	MTJ
1	2/24/23	GAC	CONSTRUCTION	MTJ

2/24/23

B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/24

SHEET NUMBER: G-2
REVISION: 1

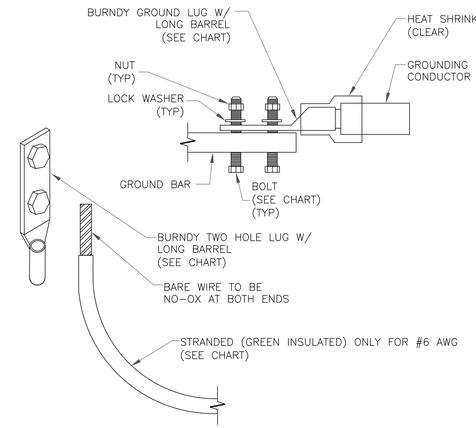


NOTE:

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

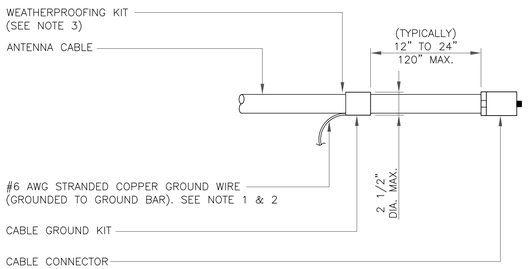
WIRE SIZE	BURNDY LUG	BOLT SIZE
#6 AWG GREEN INSULATED	YA6C-2TC38	3/8" - 16 NC S 2 BOLT
#2 AWG SOLID TINNED	YA3C-2TC38	3/8" - 16 NC S 2 BOLT
#2 AWG STRANDED	YA2C-2TC38	3/8" - 16 NC S 2 BOLT
#2/0 AWG STRANDED	YA26-2TC38	3/8" - 16 NC S 2 BOLT
#4/0 AWG STRANDED	YA28-2N	1/2" - 16 NC S 2 BOLT



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.

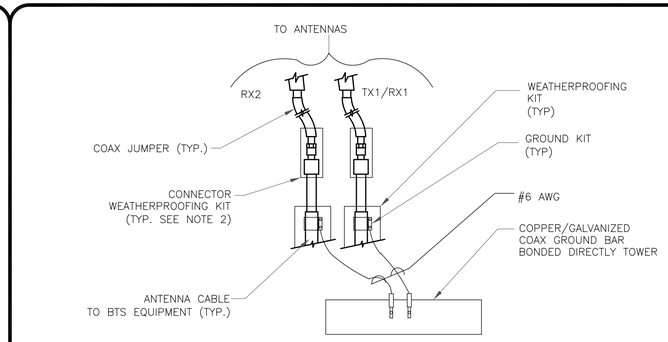
2 MECHANICAL LUG CONNECTION
SCALE: NOT TO SCALE



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.

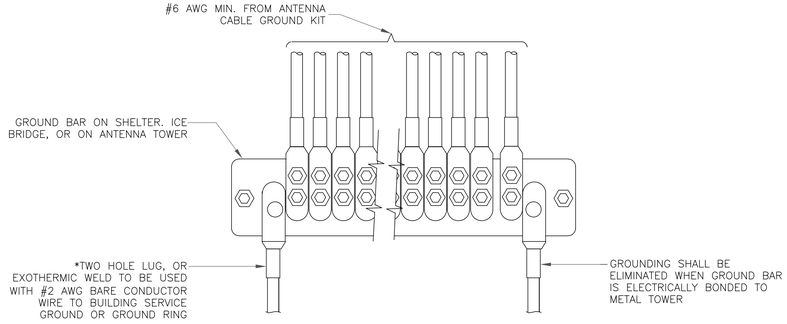
3 CABLE GROUND KIT CONNECTION
SCALE: NOT TO SCALE



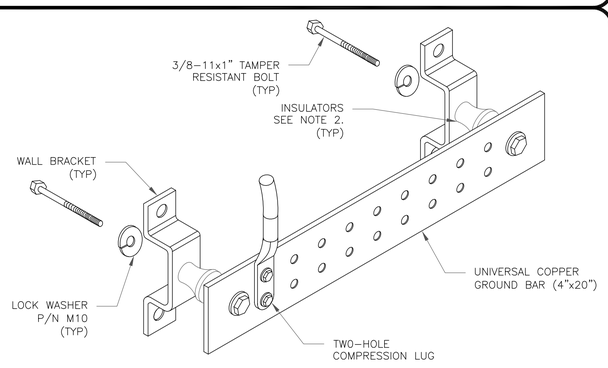
NOTES:

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



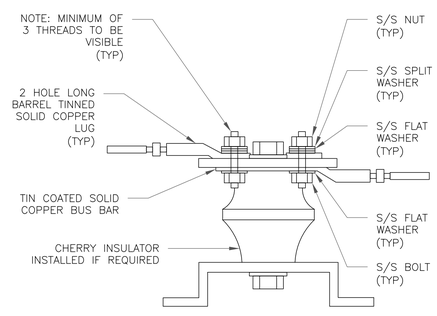
5 GROUNDWIRE INSTALLATION
SCALE: NOT TO SCALE



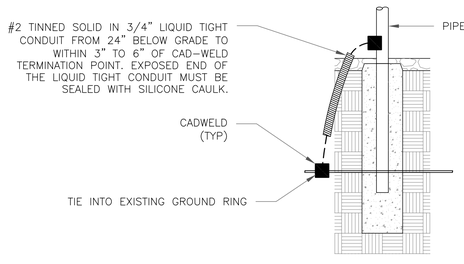
NOTES:

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
35 GRIFFIN ROAD
BLOOMFIELD, CT 06002

CROWN CASTLE
1505 WESTLAKE AVENUE NORTH, SUITE 800
SEATTLE, WA 98109

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

T-MOBILE SITE NUMBER:
CT11545A

BU #: **801485**
CT SUFFIELD 1 CAC 801485

2715 MOUNTAIN RD.
SUFFIELD, CT 06093

EXISTING
190'-6" MONOPOLE

ISSUED FOR:

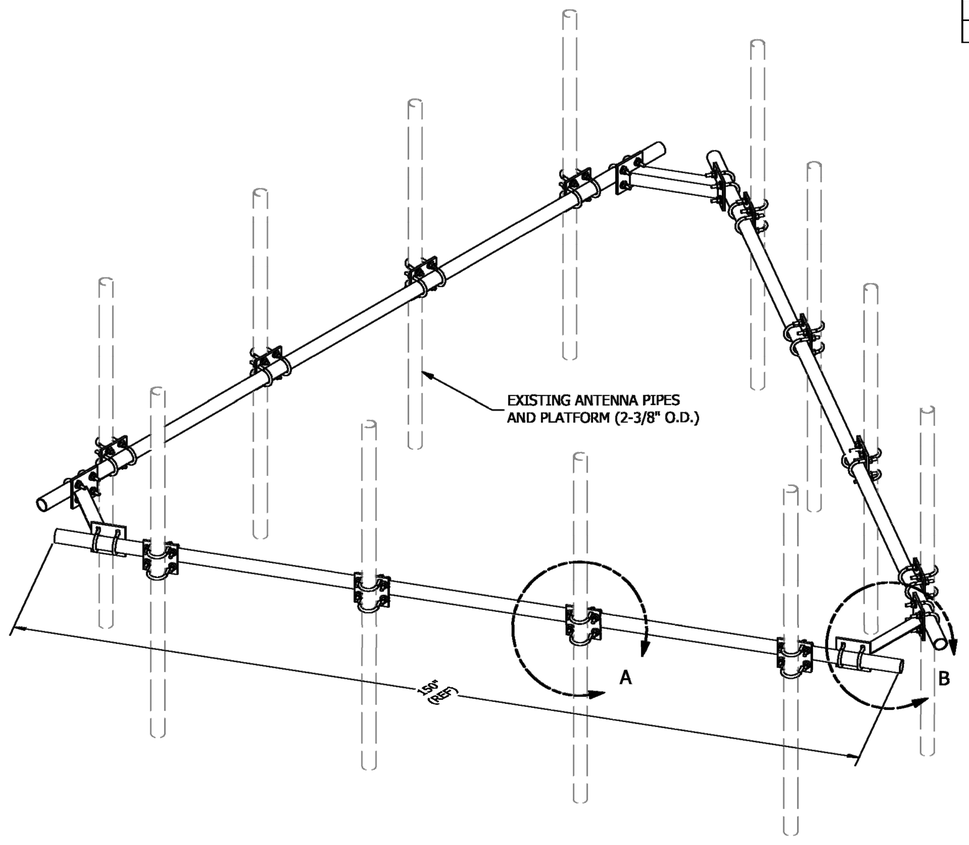
REV	DATE	DRWN	DESCRIPTION	DES./QA
A	4/28/22	MEH	PRELIMINARY REVIEW	KT
0	5/12/22	MEX	CONSTRUCTION	LR
0	2/21/23	GAC	CONSTRUCTION	MTJ
1	2/24/23	GAC	CONSTRUCTION	MTJ

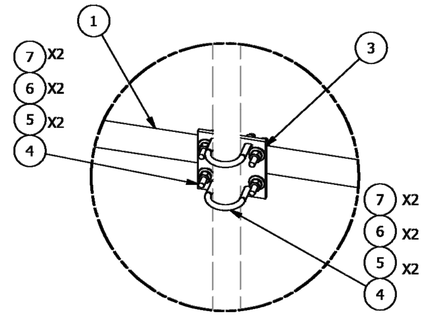
2/24/23

B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/24

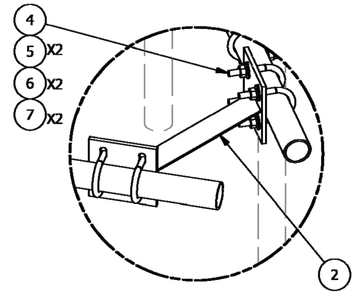
SHEET NUMBER: G-3
REVISION: 1

PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	3	P2150	2-3/8" O.D. X 150" SCH 40 GALVANIZED PIPE	150 in	45.77	137.31
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. #	272.43





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")*

REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
A	REPLACED HCP WITH X-AHCP		CEK	7/10/2014

REVISION HISTORY

DESCRIPTION: HANDRAIL KIT FOR 12'-6" FACE

CPD NO.

DRAWN BY: KC8 5/30/2012

ENG. APPROVAL

CLASS: 81 | SUB: 01

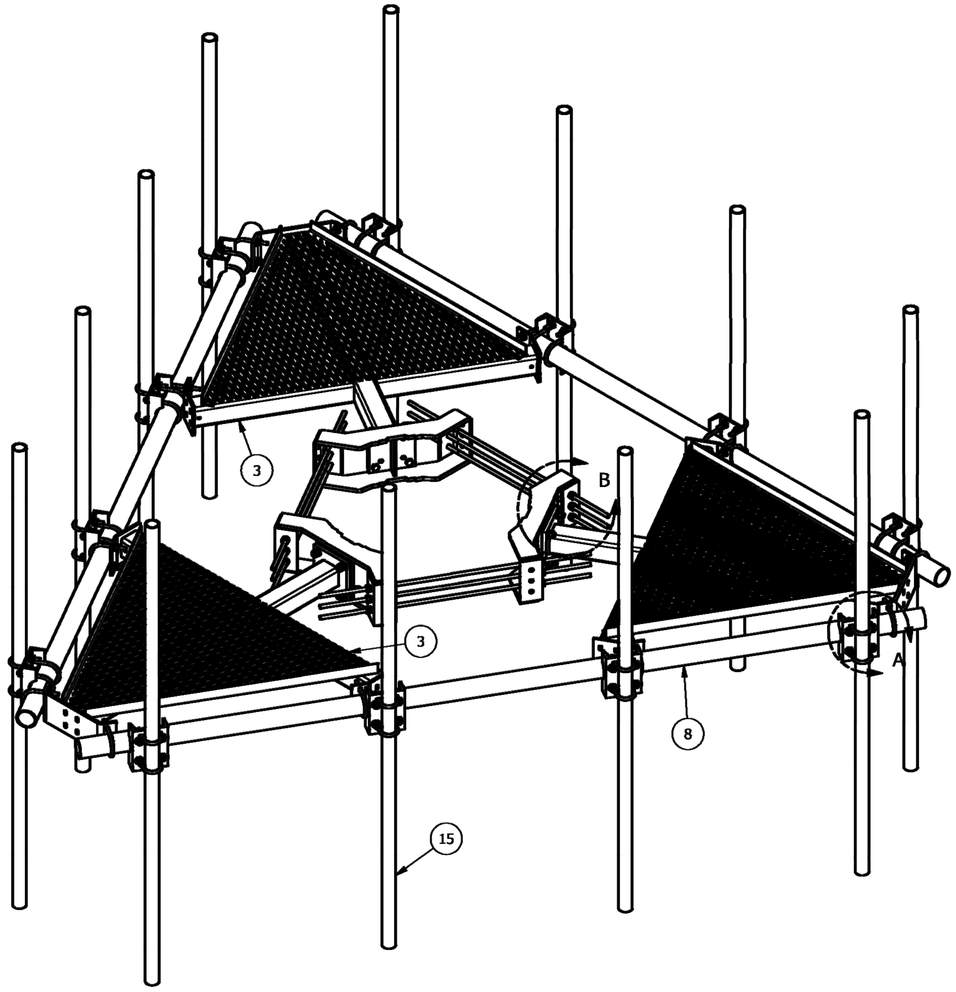
DRAWING USAGE: CUSTOMER

CHECKED BY: BMC 7/13/2014

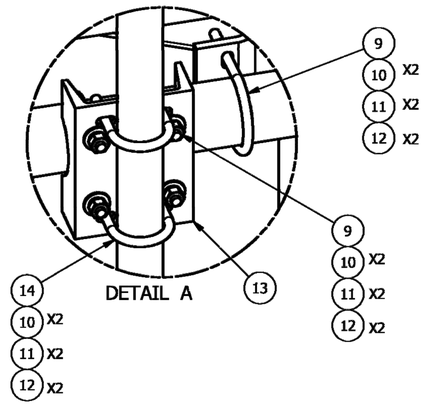
PART NO.: HRK12

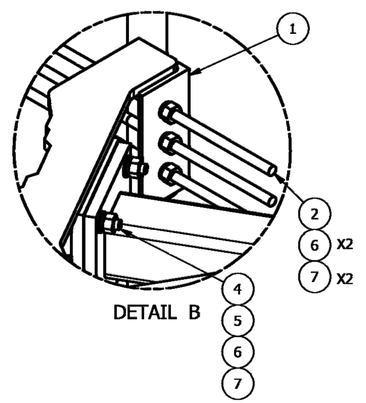
DWG. NO.: HRK12

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



PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	3	X-LWRM	RING MOUNT WELDMENT		68.81	206.42
2	9	G58R-48	5/8" x 48" THREADED ROD (HDG.)		0.40	3.59
2	9	G58R-24	5/8" x 24" THREADED ROD (HDG.)		0.40	3.59
3	3	X-SV196	LOW PROFILE PLATFORM CORNER		212.10	636.31
4	12	A58234	5/8" x 2-3/4" HDG A325 HEX BOLT	2.75	0.36	4.27
5	12	A58FW	5/8" HDG A325 FLATWASHER		0.03	0.41
6	30	G58LW	5/8" HDG LOCKWASHER		0.03	0.78
7	30	A58NUT	5/8" HDG A325 HEX NUT		0.13	3.90
8	3	P3150	3-1/2" X 150" SCH 40 GALVANIZED PIPE	150.000 in	94.80	284.40
9	36	X-UB1306	1/2" X 3-5/8" X 6" X 3" U-BOLT (HDG.)		0.26	9.25
10	120	G12FW	1/2" HDG USS FLATWASHER		0.03	4.09
11	120	G12LW	1/2" HDG LOCKWASHER		0.01	1.67
12	120	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	8.60
13	12	X-SP219	SMALL SUPPORT CROSS PLATE	8.250 in	8.61	103.33
14	24	X-UB1212	1/2" X 2-1/2" X 4-1/2" X 2" U-BOLT (HDG.)		0.26	6.17
15	12	B	ANTENNA MOUNTING PIPE	C	D	E





2-3/8" O.D. VERTICAL MOUNTING PIPES					
ASSEMBLY NO. "A"	PART NO. "B"	LENGTH, "C"	UNIT WEIGHT, "D"	NET WEIGHT, "E"	TOTAL WEIGHT
RMQP-463	P263	63"	20.18	242.16	1591.11
RMQP-472	P272	72"	23.07	276.84	1625.79
RMQP-484	P284	84"	26.91	322.92	1671.87
RMQP-496	P296	96"	30.76	369.12	1718.07
RMQP-4126	P2126	126"	40.75	489.00	1837.95

REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
A	ADDED 10' 6" ANTENNA MOUNTING PIPES		CEK	7/9/2015

REVISION HISTORY

TOLERANCE NOTE

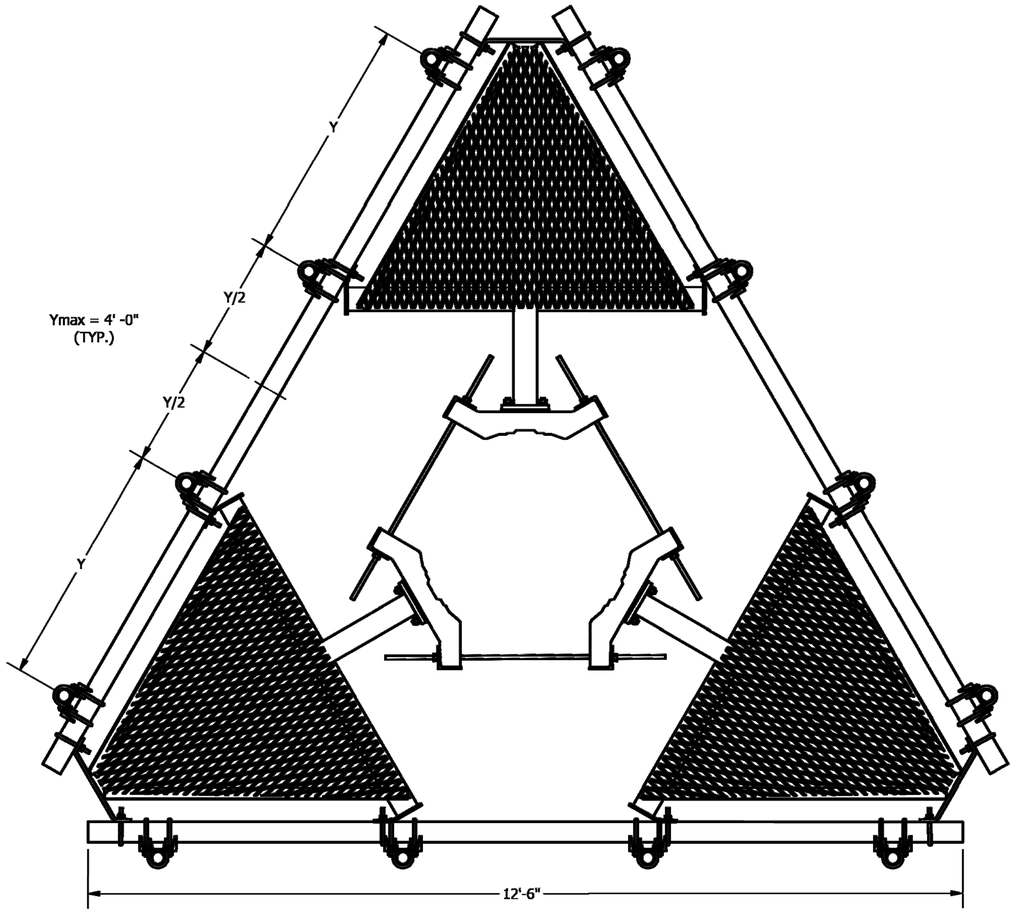
TOLERANCES ON DIMENSIONS, UNLESS OTHERWISE NOTED ARE:
SAWED, SHEARED AND GAS CUT EDGES (± 0.030")
DRILLED AND GAS CUT HOLES (± 0.030") - NO CONING OF HOLES
LASER CUT EDGES AND HOLES (± 0.010") - NO CONING OF HOLES
BENDS ARE ± 1/2 DEGREE - ALL OTHER MACHINING (± 0.030")
ALL OTHER ASSEMBLY (± 0.060")

DESCRIPTION
LOW PROFILE CO-LOCATION PLATFORM
FOR 12 ANTENNAS WITH 12' 6" FACE WIDTH
FOR 12" - 38" DIAMETER POLES

DRAWN BY: CEK 1/20/2012 | CPD NO.: semb | DRAWING USAGE: CUSTOMER
ENG. APPROVAL:
CHECKED BY: BMC 7/9/2015

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

PART NO.: SEE ASSEMBLY NO. "A"
DWG. NO.: RMQP-4XX



REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
A	ADDED 10' 6" ANTENNA MOUNTING PIPES		CEK	7/9/2015

REVISION HISTORY

TOLERANCE NOTE

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")

DESCRIPTION
LOW PROFILE CO-LOCATION PLATFORM
FOR 12 ANTENNAS WITH 12' 6" FACE WIDTH
FOR 12" - 38" DIAMETER POLES

DRAWN BY	CPD NO.	DRAWING USAGE
CEK 1/20/2012	semb	CUSTOMER

ENG. APPROVAL

CHECKED BY: BMC 7/9/2015

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

PART NO. SEE ASSEMBLY NO. "A"

DWG. NO. RMQP-4XX