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

August 25, 2022

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

RE: **Notice of Exempt Modification for T-Mobile: CTNH541A**
Crown Site#841293
136 Bulls Ridge Road, South Kent, CT 06785
Latitude: 41° 40′ 53.85″ / Longitude: -73° 29′ 11.80″

Dear Ms. Bachman:

T-Mobile currently maintains eight (8) antennas at the 170' level of the 180" monopole tower located at 136 Bulls Ridge Road, South Kent, CT. The property is owned by South Kent School and tower is owned by Crown Castle. T-Mobile to replace four (4) antennas and ancillary equipment at the 170' mount level of the monopole. This modification/proposal includes hardware that is both 4G (LTE) and 5G capable through remote software configuration and either or both services may be turned on or off at various times.

Panned Modification:

Tower:

Installed:
(4) Ericsson – AIR6419 B41 Antennas
(4) Ericsson- 4460 B25+B66 RRH
(3) Hybrid Cable 6x24

Remove:
(4) Ericsson APX16WV-S-E-A20 Antenna
(4) Ericsson RRUS-11-82 RRU
(4) Ericsson RRUS-11-84 RRU
(3) Hybrid Cables 6x12
Remove all Coaxial Cables

Ground:

Install New:
(1) 6160 Cabinet
(1.) B160 Battery Cabinet
(1) RP 6651
(2) PSU 4813 vR2A
(1) CRS IXRc V2

Remove:

(1) PTS 8003 Cabinet
(1.) DUW30

The facility was approved by the Connecticut Siting Council on February 4, 1994, Docket No. 162. This approval was given with conditions which this exempt modification complies with.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies §16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent Jean Speck, First Selectman, Town of Kent, Donna Hayes, Land Use Administrator, Town of Kent and South Kent School, property owner, Crown Castle is the tower owner.

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

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

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

4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communication Commission safety standard.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.

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

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

Sincerely,

Jeffrey Barbadora
Site Acquisition Specialist
1800 W. Park Drive, STE 250
Westborough, MA 01581
(781) 970-0053
Jeff.Barbadora@crowncastle.com

Attachments
cc:

Jean Speck, First Selectman
Kent Town Hall
41 Kent Green Blvd
Kent, CT 06757
860-927-4627

Donna Hayes, Land Use Administrator
Kent Town Hall
41 Kent Green Blvd
Kent, CT 06757
860-927-4625

South Kent School, Property Owner
40 Bulls Bridge Road
Kent, CT 06785

Crown Castle, Property & Tower Owner

DOCKET NO. 162 - An application of Springwich Cellular Limited Partnership for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance, and operation of a cellular telecommunications facility located on the grounds of South Kent School off Bulls Bridge Road in Kent, Connecticut. : Connecticut : Siting : Council : February 24, 1994

ORIGINAL

DECISION AND ORDER

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

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

1. The self-supporting monopole tower shall be no taller than necessary to provide the proposed cellular communications service and in no event shall the tower structure exceed a total height of 197 feet above ground level with antennas and appurtenances.

2. Prior to the commencement of construction, the Certificate holder shall prepare a Development and Management (D&M) Plan for this site in compliance with sections 16-50j-75 through 16-50j-77 of the Regulations of State Agencies. The D&M Plan shall include detailed plans for the tower and tower foundation; the locations of all antennas to be attached to this tower to ensure maximum sharing of the tower; detailed plans for an accessway from a public roadway, including all improvements and gates installed in the accessway; utility line installation; equipment building plans including elevations; detailed plans for site clearing and tree trimming; detailed plans for erosion and sedimentation control; and plans for the installation of the security fence. The D&M Plan shall be submitted to the Council for approval prior to the commencement of tower construction.

3. The Certificate holder shall comply with any existing and future radio frequency (RF) standard promulgated by State or federal regulatory agencies. Upon the establishment of any new governmental RF standards, the facility granted herein shall be brought into compliance with such standards.

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

5. The Certificate holder shall permit public or private entities to share space on the proposed tower for fair consideration, or shall provide any requesting entity with specific legal, technical, environmental, or economic reasons precluding such tower sharing. Should any agreement, including sharing of this tower, be reached prior to construction of the tower, detailed plans for the third party's equipment shall be included in the D&M Plan.

6. If the facility does not initially provide, or permanently ceases to provide, cellular or other services following completion of construction, this Decision and Order shall be void, and the tower and all associated equipment shall be dismantled and removed or re-application for any continued or new use shall be made to the Council before any such use is made.

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

Pursuant to CGS section 16-50p, we hereby direct that a copy of the Findings of Fact, Opinion, and Decision and Order be served on each person listed below, and notice of issuance shall be published in the Litchfield County Times, the Kent Good Times Dispatch, and the Waterbury Republican-American.

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

The parties and intervenors to this proceeding are:

APPLICANT	ITS REPRESENTATIVE
Springwich Cellular Limited Partnership	Peter J. Tyrrell, Esq. Senior Attorney Springwich Cellular Limited Partnership 227 Church Street-Room 1021 New Haven, CT 06506 (203) 771-7381

PARTY	ITS REPRESENTATIVE
Litchfield County Cellular Inc.	Andrew N. Davis, Esq. John J. Russotto, Esq. Brown, Rudnick, Freed & Gesmer, P.C. 90 State House Square Hartford, CT 06103 (203) 525-8008
INTERVENOR	**ITS REPRESENTATIVE**
Bell Atlantic Metro Mobile	Steven R. Humphrey, Esq. Brian C.S. Freeman, Esq. Robinson & Cole One Commercial Plaza Hartford, CT 06103-3597 (203) 275-8200

CERTIFICATION

The undersigned members of the Connecticut Siting Council (Council) hereby certify that they have heard this case, or read the record thereof, in Docket No. 162, and voted as follows to approve the facility located on the grounds of South Kent School off Bulls Bridge Road in Kent, Connecticut:

Council Members	Vote Cast
Mortimer A. Gelston Chairman	Yes
Commissioner Reginald J. Smith Designee: Richard G. Patterson	Abstain
Commissioner Timothy R.E. Keeney Designee: Brian Emerick	Absent
Harry E. Covey	Yes
Daniel P. Lynch, Jr.	Yes
Gloria Dibble Pond	Absent
William H. Smith	Absent
Colin C. Tait	Yes
Dana J. Wright	Yes

Dated at New Britain, Connecticut, February 24, 1994.

7666E-2
TEF:mmb

40 BULLS BRIDGE RD

Location	40 BULLS BRIDGE RD	**Mblu**	6/ 39/ 9/ /
Acct#	00019000	**Owner**	SOUTH KENT SCHOOL CORP
Assessment	$11,138,500	**Appraisal**	$15,911,400
PID	580	**Building Count**	34

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2018	$13,859,300	$2,052,100	$15,911,400
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2018	$9,702,000	$1,436,500	$11,138,500

Owner of Record

Owner SOUTH KENT SCHOOL CORP
Co-Owner

Sale Price $0
Certificate
Book & Page /0
Sale Date

Ownership History

Ownership History				
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Sale Date**
SOUTH KENT SCHOOL CORP	$0		/0	

Building Information

Building 1 : Section 1

Year Built: 1941
Living Area: 689
Replacement Cost: $97,474
Replacement Cost Less Depreciation: $70,200

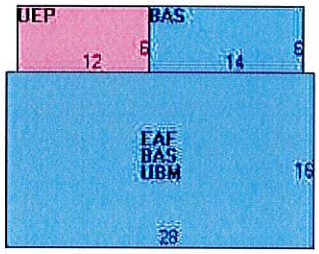
Building Attributes	
Field	**Description**
Style	Cape Cod
Model	Residential

Grade:	
Stories:	1 Story
Occupancy	1
Exterior Wall 1	Clapboard
Exterior Wall 2	
Roof Structure:	Gable/Hip
Roof Cover	Wood Shingle
Interior Wall 1	Drywall
Interior Wall 2	
Interior Flr 1	Hardwood
Interior Flr 2	
Heat Fuel	Gas
Heat Type:	Steam
AC Type:	None
Total Bedrooms:	00
Total Bthrms:	0
Total Half Baths:	0
Total Xtra Fixtrs:	
Total Rooms:	1 Room
Bath Style:	
Kitchen Style:	
Num Kitchens	01
Cndtn	
Usrfld 103	
Usrfld 104	
Usrfld 105	
Usrfld 106	
Usrfld 107	
Num Park	
Fireplaces	
Usrfld 108	
Usrfld 101	
Usrfld 102	
Usrfld 100	
Usrfld 300	
Usrfld 301	

Building 2 : Section 1

Year Built: 1945
Living Area: 2,189
Replacement Cost: $212,765

Building Layout



(http://images.vgsi.com/photos/KentCTPhotos//Sketches/580_58

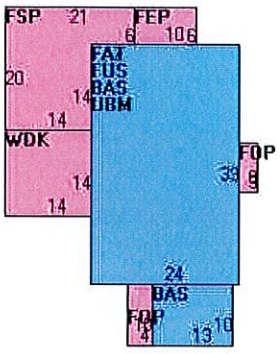
Building Sub-Areas (sq ft) Legend

Code	Description	Gross Area	Living Area
BAS	First Floor	532	532
EAF	Attic, Expansion, Finished	448	157
UBM	Basement, Unfinished	448	0
UEP	Porch, Enclosed, Unfinished	72	0
		1,500	689

Replacement Cost
Less Depreciation: $153,200

Building Attributes : Bldg 2 of 34	
Field	**Description**
Style	Old Style
Model	Residential
Grade:	
Stories:	2 Stories
Occupancy	1
Exterior Wall 1	Wood Shingle
Exterior Wall 2	
Roof Structure:	Gable/Hip
Roof Cover	Asph/F Gls/Cmp
Interior Wall 1	Plastered
Interior Wall 2	
Interior Flr 1	Hardwood
Interior Flr 2	
Heat Fuel	Oil
Heat Type:	Forced Air-Duc
AC Type:	Central
Total Bedrooms:	6 Bedrooms
Total Bthrms:	4
Total Half Baths:	0
Total Xtra Fixtrs:	
Total Rooms:	10 Rooms
Bath Style:	Average
Kitchen Style:	Average
Num Kitchens	01
Cndtn	
Usrfld 103	
Usrfld 104	
Usrfld 105	
Usrfld 106	
Usrfld 107	
Num Park	
Fireplaces	
Usrfld 108	
Usrfld 101	
Usrfld 102	
Usrfld 100	
Usrfld 300	

Building Layout



(http://images.vgsi.com/photos/KentCTPhotos//Sketches/580_1C

Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
BAS	First Floor	1,066	1,066
FUS	Upper Story, Finished	936	936
FAT	Attic, Finished	936	187
FEP	Porch, Enclosed, Finished	60	0
FOP	Porch, Open, Finished	64	0
FSP	Porch, Screen, Finished	322	0
UBM	Basement, Unfinished	936	0
WDK	Deck, Wood	196	0
		4,516	2,189

Usrfld 301	

Building 3 : Section 1

Year Built: 1950
Living Area: 1,820
Replacement Cost: $54,909
Replacement Cost Less Depreciation: $34,000

Building Attributes : Bldg 3 of 34	
Field	**Description**
STYLE	Quonset Bldg
MODEL	Commercial
Grade	Average
Stories:	1
Occupancy	
Exterior Wall 1	Board & Batten
Exterior Wall 2	
Roof Structure	Gable/Hip
Roof Cover	Metal/Tin
Interior Wall 1	Wall Brd/Wood
Interior Wall 2	
Interior Floor 1	Concr-Finished
Interior Floor 2	
Heating Fuel	Coal or Wood
Heating Type	None
AC Type	None
Struct Class	
Bldg Use	Com/Res MDL94
Total Rooms	
Total Bedrms	00
Total Baths	0
Usrfld 218	
Usrfld 219	
1st Floor Use:	1-1C
Heat/AC	NONE
Frame Type	WOOD FRAME
Baths/Plumbing	NONE
Ceiling/Wall	NONE
Rooms/Prtns	LIGHT
Wall Height	10.00
% Comn Wall	

Building Layout

(http://images.vgsi.com/photos/KentCTPhotos//Sketches/580_1C

Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
BAS	First Floor	1,820	1,820
		1,820	1,820

Building 4 : Section 1

Year Built:
Living Area: 0
Replacement Cost: $0
Replacement Cost Less Depreciation: $0

Building Attributes : Bldg 4 of 34	
Field	**Description**
Style	Outbuildings
Model	
Grade:	
Stories:	
Occupancy	
Exterior Wall 1	
Exterior Wall 2	
Roof Structure:	
Roof Cover	
Interior Wall 1	
Interior Wall 2	
Interior Flr 1	
Interior Flr 2	
Heat Fuel	
Heat Type:	
AC Type:	
Total Bedrooms:	
Total Bthrms:	
Total Half Baths:	
Total Xtra Fixtrs:	
Total Rooms:	
Bath Style:	
Kitchen Style:	
Num Kitchens	
Cndtn	
Usrfld 103	
Usrfld 104	
Usrfld 105	
Usrfld 106	
Usrfld 107	
Num Park	
Fireplaces	
Usrfld 108	
Usrfld 101	

Building Layout

Building Layout
(http://images.vgsi.com/photos/KentCTPhotos//Sketches/580_1(

Building Sub-Areas (sq ft)	Legend
No Data for Building Sub-Areas	


Kent Rd
7
S Kent Rd
S Kent Rd
Camps Flat Rd
SOUTH KENT
136 Bulls Bridge Road
Bulls Bridge Rd
Bulls Covered Bridge
Kent Rd
golf channel academy
at golf on the green
7

Barbadora, Jeff

From: TrackingUpdates@fedex.com
Sent: Friday, August 26, 2022 11:00 AM
To: Barbadora, Jeff
Subject: FedEx Shipment 777765061145: Your package has been delivered
Attachments: DeliveryPicture.jpeg

Hi. Your package was delivered Fri, 08/26/2022 at 10:53am.

Delivered to 41 KENT GREEN BLVD, KENT, CT 06757

OBTAIN PROOF OF DELIVERY

Delivery picture not showing? View in browser.

TRACKING NUMBER	777765061145
FROM	Jeff Barbadora 1800 W. Park Drive WESTBOROUGH, MA, US, 01581
TO	Town of Kent Jean Speck, First Selectman 41 Kent Green Blvd KENT, CT, US, 06757
REFERENCE	799001.7680
SHIPPER REFERENCE	799001.7680
SHIP DATE	Thu 8/25/2022 05:43 PM
PACKAGING TYPE	FedEx Envelope
ORIGIN	WESTBOROUGH, MA, US, 01581
DESTINATION	KENT, CT, US, 06757
SPECIAL HANDLING	Deliver Weekday
NUMBER OF PIECES	1
TOTAL SHIPMENT WEIGHT	1.00 LB
SERVICE TYPE	FedEx Priority Overnight

Barbadora, Jeff

From: TrackingUpdates@fedex.com
Sent: Friday, August 26, 2022 11:00 AM
To: Barbadora, Jeff
Subject: FedEx Shipment 777765115366: Your package has been delivered
Attachments: DeliveryPicture.jpeg

Hi. Your package was delivered Fri, 08/26/2022 at 10:53am.

Delivered to 41 KENT GREEN BLVD, KENT, CT 06757

OBTAIN PROOF OF DELIVERY

Delivery picture not showing? View in browser.

TRACKING NUMBER	777765115366
FROM	Jeff Barbadora 1800 W. Park Drive WESTBOROUGH, MA, US, 01581
TO	Town of Kent Donna Hayes, Land Use Administrator 41 Kent Green Blvd KENT, CT, US, 06757
REFERENCE	799001.7680
SHIPPER REFERENCE	799001.7680
SHIP DATE	Thu 8/25/2022 05:43 PM
PACKAGING TYPE	FedEx Envelope
ORIGIN	WESTBOROUGH, MA, US, 01581
DESTINATION	KENT, CT, US, 06757
SPECIAL HANDLING	Deliver Weekday
NUMBER OF PIECES	1
TOTAL SHIPMENT WEIGHT	0.50 LB
SERVICE TYPE	FedEx Priority Overnight

Barbadora, Jeff

From: TrackingUpdates@fedex.com
Sent: Friday, August 26, 2022 10:52 AM
To: Barbadora, Jeff
Subject: FedEx Shipment 777765141146: Your package has been delivered

Hi. Your package was delivered Fri, 08/26/2022 at 10:43am.

Delivered to 40 BULLS BRIDGE RD, SOUTH KENT, CT 06785
Received by K.KATHY

OBTAIN PROOF OF DELIVERY

TRACKING NUMBER 777765141146

FROM	Jeff Barbadora 1800 W. Park Drive WESTBOROUGH, MA, US, 01581
TO	Property Owner South Kent School 40 Bulls Bridge Road SOUTH KENT, CT, US, 06785
REFERENCE	799001.7680
SHIPPER REFERENCE	799001.7680
SHIP DATE	Thu 8/25/2022 05:43 PM
DELIVERED TO	Mailroom
PACKAGING TYPE	FedEx Envelope
ORIGIN	WESTBOROUGH, MA, US, 01581
DESTINATION	SOUTH KENT, CT, US, 06785
SPECIAL HANDLING	Deliver Weekday
NUMBER OF PIECES	1
TOTAL SHIPMENT WEIGHT	1.00 LB
SERVICE TYPE	FedEx Priority Overnight

Date: **June 17, 2022**

Black & Veatch Corp.
11401 Lamar Avenue
Overland Park, KS 66211
(913) 458-6909

Subject:	**Structural Analysis Report**	
Carrier Designation:	***T-Mobile* Co-Locate**	
	Site Number:	CTNH541A
	Site Name:	CTNH541A
Crown Castle Designation:	**BU Number:**	841293
	Site Name:	KENT-BULLS BRIDGE ROAD
	JDE Job Number:	721542
	Work Order Number:	2128185
	Order Number:	621585 Rev. 0
Engineering Firm Designation:	**Black & Veatch Corp. Project Number:**	406642
Site Data:	**136 Bulls Bridge Road, South Kent, Litchfield County, CT**	
	Latitude *41° 40' 53.85"*, Longitude *-73° 29' 11.8"*	
	179.813 Foot - Monopole Tower	

Black & Veatch Corp. 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 - 99%**

This analysis utilizes an ultimate 3-second gust wind speed of 114 mph as required by the 2018 Connecticut State Building Code. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Structural analysis prepared by: Yada Boonsrisuwan

Respectfully submitted by:

Ping Jiang, P.E.
Professional Engineer

STATE OF CONNECTICUT
PING JIANG
30767
PROFESSIONAL ENGINEER

Jun 17, 2022

Digitally signed by Ping Jiang
Date: 2022.06.17 07:38:19-05'00'

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 179.813 ft Monopole tower designed by Engineered Endeavors, Inc.

The tower has been modified per reinforcement drawings prepared by GPD Group, in December of 2012. Reinforcement consists of installing of additional anchor rods. Refer to Post Modification Observation by GPD Group, in August of 2013. This modification has been considered effective in this analysis.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	114 mph
Exposure Category:	C
Topographic Factor:	1
Ice Thickness:	1.000 in
Wind Speed with Ice:	40 mph
Seismic Ss:	0.189
Seismic S1:	0.054
Service Wind Speed:	60 mph
Seismic Loading:	Does not control per engineering judgment

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)
170.0	170.0	1	cci tower mounts (v2.1)	Platform Mount [LP 303-1_HR-1]	4	1-5/8
		4	ericsson	AIR 6419 B41_TMO		
		4	ericsson	RADIO 4460 B2/B25 B66_TMO		
		4	ericsson	Radio 4480_TMOV2		
		4	rfs celwave	APXVAALL24_43-U-NA20_TMO w/ Mount Pipe		

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)
182.0	185.0	3	decibel	ASP-952	2 2 4 15 1	3/8 3/4 7/8 1-5/8 Conduit
		2	raycap	DC6-48-60-0-8C-EV		
		1	raycap	DC6-48-60-18-8F		
	183.0	2	cci antennas	DMP65R-BU4D w/ Mount Pipe		
		1	ericsson	RRUS 4449 B5/B12		
		1	ericsson	RRUS 4478 B14		
		1	ericsson	RRUS 8843 B2/B66A		
		3	powerwave technologies	7770.00 w/ Mount Pipe		
		6	powerwave technologies	LGP21401		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
	182.0	1	cci tower mounts (v2.1)	Miscellaneous [10' NA 507-1]		
		1	cci tower mounts (v2.1)	Platform Mount [10' LP 601-1]		
	181.0	4	cci antennas	DMP65R-BU6D w/ Mount Pipe		
		2	ericsson	RRUS 4449 B5/B12		
		2	ericsson	RRUS 4478 B14		
		2	ericsson	RRUS 8843 B2/B66A		
160.0	160.0	6	antel	LPA-80080-6CF-EDIN w/ Mount Pipe	7	1-5/8
		1	cci tower mounts (v2.1)	Platform Mount [10.83' LP 601-1]		
		6	jma wireless	MX06FRO660-03 w/ Mount Pipe		
		1	raycap	RVZDC-6627-PF-48_CCIV2		
		3	samsung telecommunications	MT6407-77A w/ Mount Pipe		
		3	samsung telecommunications	RF4439D-25A		
		3	samsung telecommunications	RF4440D-13A		
134.0	144.0	2	sinclair	SC442D-HF2LDF	2 6	1/2 1-5/8
	141.0	1	bird technologies group	432E-83I-01-T		
		1	sinclair	SC479-HF1LDF		
	139.0	2	decibel	DB809DK-Y		
	134.0	1	amphenol	WPA-700102-4CF-EDIN-9		
		1	cci tower mounts (v2.1)	T-Arm Mount [TA 702-3]		
		1	tx rx systems	422-86A-99575-18BW		
124.0	124.0	3	alcatel lucent	800MHZ RRH	4	1-1/4
		3	alcatel lucent	TD-RRH8X20-25		
		1	cci tower mounts (v2.1)	Platform Mount [LP 601-1]		
		3	rfs celwave	APXVSPP18-C-A20 w/ Mount Pipe		
		3	rfs celwave	APXVTM14-ALU-I20 w/ Mount Pipe		
120.0	120.0	1	cci tower mounts (v2.1)	Platform Mount [LP 601-1]	1	7/8
		1	eri	100-1		
63.0	63.0	1	cci tower mounts (v2.1)	Side Arm Mount [SO 701-1]	1	1/2
		1	gps	GPS_A		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Reference	Source
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	4456597	CCISITES
4-GEOTECHNICAL REPORTS	4456627	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	4797649	CCISITES
4-TOWER MANUFACTURER DRAWINGS	4456613	CCISITES
4-POST-MODIFICATION INSPECTION	4456621	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. Black & Veatch Corp. should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary) (Monopole Tower)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	179.813 - 132.966	Pole	TP25.5375x15x0.25	1	-12.05	1192.04	97.3	Pass
L2	132.966 - 87.3645	Pole	TP35.1887x24.2069x0.375	2	-26.94	2465.48	96.1	Pass
L3	87.3645 - 42.7915	Pole	TP44.3577x33.3474x0.4375	3	-41.49	3631.49	90.4	Pass
L4	42.7915 - 0	Pole	TP53x42.1375x0.5	4	-45.17	4189.94	82.1	Pass
							Summary	
						Pole (L1)	97.3	Pass
						Rating =	97.3	Pass

Table 5 - Tower Component Stresses vs. Capacity (Monopole Tower) – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods (Original)	0	69.7	Pass
1,2	Anchor Rods (Existing Modification)		64.9	Pass
1	Base Plate		81.4	Pass
1	Base Foundation (Structure)	0	96.2	Pass
	Base Foundation (Soil Interaction)		99.0	Pass

Structure Rating (max from all components) =	99.0%

Notes:
1) See additional documentation in “Appendix C – Additional Calculations” for calculations supporting the % capacity. Rating per TIA-222-H Section 15.5.
2) The anchor rod brackets were analyzed previously and found not govern the design. The anchor rods will control the design.

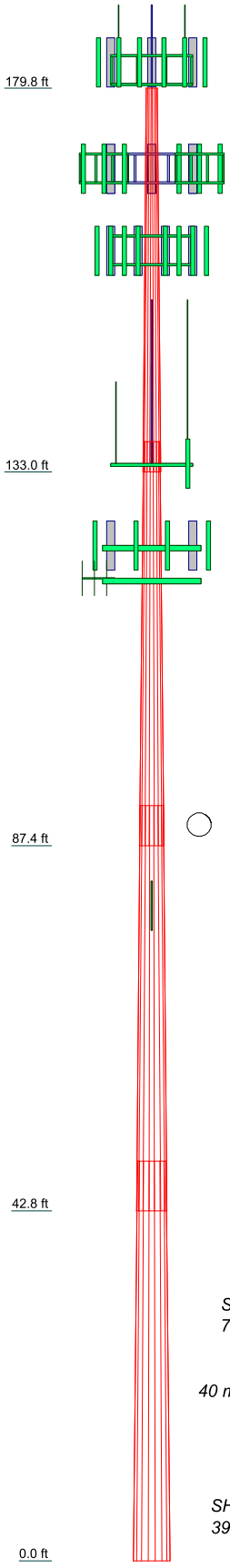
4.1) Recommendations

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	46.85	18	0.2500	3.69	15.0000	25.5375	A572-65	2.5
2	49.29	18	0.3750	4.90	24.2069	35.1887		5.9
3	49.47	18	0.4375	6.04	33.3474	44.3577		9.0
4	48.84	18	0.5000		42.1375	53.0000		12.4
								29.8



ALL REACTIONS ARE FACTORED

AXIAL 89 K

SHEAR 7 K — *MOMENT 1005 kip-ft*

TORQUE 0 kip-ft

40 mph WIND - 1.0000 in ICE

AXIAL 62 K

SHEAR 39 K — *MOMENT 5408 kip-ft*

TORQUE 1 kip-ft

REACTIONS - 114 mph WIND

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in Litchfield County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-H Standard.
3. Tower designed for a 114 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 40 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 97.3%

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Job:	***KENT-BULLS BRIDGE ROAD (BU# 841293***		
Project:	***406642 (841293.2128185)***		
Client: Crown Castle	Drawn by: Yada Boonsrisuwan	App'd:	
Code: TIA-222-H	Date: 06/17/22	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 Litchfield County, Connecticut.
- Tower base elevation above sea level: 781.00 ft.
- Basic wind speed of 114 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 1.0000 in.
- Ice thickness is considered to increase with height.
- Ice density of 56 pcf.
- A wind speed of 40 mph is used in combination with ice.
- Temperature drop of 50 °F.
- Deflections calculated using a wind speed of 60 mph.
- A non-linear (P-delta) analysis was used.
- Pressures are calculated at each section.
- Stress ratio used in pole design is 1.
- Tower analysis based on target reliabilities in accordance with Annex S.
- Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.
- Maximum demand-capacity ratio is: 1.05.
- Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	179.81-132.97	46.85	3.69	18	15.0000	25.5375	0.2500	1.0000	A572-65 (65 ksi)
L2	132.97-87.36	49.29	4.90	18	24.2069	35.1887	0.3750	1.5000	A572-65 (65 ksi)
L3	87.36-42.79	49.47	6.04	18	33.3474	44.3577	0.4375	1.7500	A572-65 (65 ksi)
L4	42.79-0.00	48.84		18	42.1375	53.0000	0.5000	2.0000	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	15.1928	11.7041	321.7069	5.2363	7.6200	42.2188	643.8372	5.8532	2.2000	8.8
	25.8929	20.0656	1621.0711	8.9771	12.9731	124.9568	3244.2753	10.0347	4.0546	16.218
L2	25.3578	28.3659	2035.4022	8.4603	12.2971	165.5190	4073.4826	14.1856	3.6004	9.601
	35.6737	41.4370	6344.9205	12.3589	17.8759	354.9435	12698.1899	20.7224	5.5332	14.755
L3	34.9014	45.6996	6253.2144	11.6830	16.9405	369.1282	12514.6569	22.8541	5.0991	11.655
	44.9745	60.9887	14863.3039	15.5917	22.5337	659.6030	29746.1653	30.5001	7.0370	16.084
L4	44.0756	66.0787	14473.3156	14.7813	21.4058	676.1385	28965.6755	33.0456	6.5362	13.072
	53.7405	83.3175	29012.9766	18.6375	26.9240	1077.5879	58064.1291	41.6667	8.4480	16.896

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 179.81-132.97				1	1	1			
L2 132.97-87.36				1	1	1			
L3 87.36-42.79				1	1	1			
L4 42.79-0.00				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	C	No	Surface Ar (CaAa)	179.81 - 10.00	1	1	-0.090 -0.080	0.3750		0.22
LDF7-50A(1-5/8) ***	A	No	Surface Ar (CaAa)	179.81 - 0.00	3	3	0.000 0.170	1.9800		0.82
HB158-21U6S24-xxM_TMO(1-5/8) ***	B	No	Surface Ar (CaAa)	170.00 - 0.00	4	4	0.250 0.470	1.9960		2.50
LDF4-50A(1/2) ***	C	No	Surface Ar (CaAa)	63.00 - 0.00	1	1	-0.370 -0.360	0.6250		0.15

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)	C	No	No	Inside Pole	179.81 - 0.00	12	No Ice	0.00	0.82
							1/2" Ice	0.00	0.82
							1" Ice	0.00	0.82
WR-VG86ST-BRD(3/4)	C	No	No	Inside Pole	179.81 - 0.00	2	No Ice	0.00	0.58
							1/2" Ice	0.00	0.58
							1" Ice	0.00	0.58
FB-L98B-034-XXX(3/8)	C	No	No	Inside Pole	179.81 - 0.00	2	No Ice	0.00	0.06
							1/2" Ice	0.00	0.06
							1" Ice	0.00	0.06
2" innerduct conduit	C	No	No	Inside Pole	179.81 - 0.00	1	No Ice	0.00	0.20
							1/2" Ice	0.00	0.20
							1" Ice	0.00	0.20
WR-VG66ST-BRD(7/8)	C	No	No	Inside Pole	179.81 - 0.00	4	No Ice	0.00	0.91
							1/2" Ice	0.00	0.91
							1" Ice	0.00	0.91
***									
LDF7-50A(1-5/8)	C	No	No	Inside Pole	160.00 - 0.00	6	No Ice	0.00	0.82
							1/2" Ice	0.00	0.82
							1" Ice	0.00	0.82
HB158-U12S24-XXX-LI(1-5/8)	C	No	No	Inside Pole	160.00 - 0.00	1	No Ice	0.00	3.20
							1/2" Ice	0.00	3.20
							1" Ice	0.00	3.20
***									
AVA7-50(1-5/8)	C	No	No	Inside Pole	134.00 - 0.00	2	No Ice	0.00	0.70
							1/2" Ice	0.00	0.70
							1" Ice	0.00	0.70
LDF4-50A(1/2)	C	No	No	Inside Pole	134.00 - 0.00	2	No Ice	0.00	0.15
							1/2" Ice	0.00	0.15
							1" Ice	0.00	0.15
LDF7-50A(1-5/8)	C	No	No	Inside Pole	134.00 - 0.00	4	No Ice	0.00	0.82
							1/2" Ice	0.00	0.82
							1" Ice	0.00	0.82
***									
HB114-1-08U4-M5J(1-1/4)	C	No	No	Inside Pole	124.00 - 0.00	3	No Ice	0.00	1.08
							1/2" Ice	0.00	1.08
							1" Ice	0.00	1.08
HB114-21U3M12-XXXF(1-1/4)	C	No	No	Inside Pole	124.00 - 0.00	1	No Ice	0.00	1.22
							1/2" Ice	0.00	1.22
							1" Ice	0.00	1.22
***									
LDF5-50A(7/8)	C	No	No	Inside Pole	120.00 - 0.00	1	No Ice	0.00	0.33
							1/2" Ice	0.00	0.33
							1" Ice	0.00	0.33
***									

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	179.81-132.97	A	0.000	0.000	27.827	0.000	0.12
		B	0.000	0.000	29.568	0.000	0.37
		C	0.000	0.000	1.757	0.000	0.94
L2	132.97-87.36	A	0.000	0.000	27.087	0.000	0.11
		B	0.000	0.000	36.408	0.000	0.46
		C	0.000	0.000	1.710	0.000	1.46
L3	87.36-42.79	A	0.000	0.000	26.476	0.000	0.11
		B	0.000	0.000	35.587	0.000	0.45

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		C	0.000	0.000	2.935	0.000	1.48
L4	42.79-0.00	A	0.000	0.000	25.418	0.000	0.11
		B	0.000	0.000	34.165	0.000	0.43
		C	0.000	0.000	3.904	0.000	1.42

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	179.81-132.97	A	0.992	0.000	0.000	46.400	0.000	0.46
		B		0.000	0.000	46.143	0.000	0.71
		C		0.000	0.000	11.050	0.000	1.01
L2	132.97-87.36	A	0.958	0.000	0.000	45.167	0.000	0.45
		B		0.000	0.000	56.819	0.000	0.88
		C		0.000	0.000	10.757	0.000	1.54
L3	87.36-42.79	A	0.909	0.000	0.000	43.771	0.000	0.42
		B		0.000	0.000	55.159	0.000	0.84
		C		0.000	0.000	15.347	0.000	1.58
L4	42.79-0.00	A	0.814	0.000	0.000	41.497	0.000	0.39
		B		0.000	0.000	52.430	0.000	0.79
		C		0.000	0.000	17.645	0.000	1.54

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	179.81-132.97	0.8762	-0.8757	0.6016	-0.3900
L2	132.97-87.36	1.6127	-0.8101	1.1882	-0.3207
L3	87.36-42.79	1.8654	-0.7685	1.5461	-0.1302
L4	42.79-0.00	2.0880	-0.7343	1.8812	-0.0526

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	1	Safety Line 3/8	132.97 - 179.81	1.0000	1.0000
L1	7	LDF7-50A(1-5/8)	132.97 - 179.81	1.0000	1.0000
L1	10	HB158-21U6S24-xxM_TMO(1-5/8)	132.97 - 170.00	1.0000	1.0000
L2	1	Safety Line 3/8	87.36 - 132.97	1.0000	1.0000
L2	7	LDF7-50A(1-5/8)	87.36 - 132.97	1.0000	1.0000
L2	10	HB158-21U6S24-xxM_TMO(1-5/8)	87.36 - 132.97	1.0000	1.0000
L3	1	Safety Line 3/8	42.79 - 87.36	1.0000	1.0000
L3	7	LDF7-50A(1-5/8)	42.79 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
			87.36		
L3	10	HB158-21U6S24-xxM_TMO(1-5/8)	42.79 - 87.36	1.0000	1.0000
L3	28	LDF4-50A(1/2)	42.79 - 63.00	1.0000	1.0000
L4	1	Safety Line 3/8	10.00 - 42.79	1.0000	1.0000
L4	7	LDF7-50A(1-5/8)	0.00 - 42.79	1.0000	1.0000
L4	10	HB158-21U6S24-xxM_TMO(1-5/8)	0.00 - 42.79	1.0000	1.0000
L4	28	LDF4-50A(1/2)	0.00 - 42.79	1.0000	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment ° ft	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Level 182									
Platform Mount [10' LP 601-1]	C	None		0.00	182.00	No Ice 1/2" Ice 1" Ice	23.75 26.41 29.06	23.75 26.41 29.06	0.94 1.40 1.90
Miscellaneous [10' NA 507-1]	C	None		0.00	182.00	No Ice 1/2" Ice 1" Ice	3.80 5.33 6.82	3.80 5.33 6.82	0.20 0.26 0.33
Transition Ladder	A	From Leg	2.00 0.00 -4.00	0.00	182.00	No Ice 1/2" Ice 1" Ice	6.00 8.00 10.00	6.00 8.00 10.00	0.16 0.24 0.32
8'6"x2.5" Mount Pipe	A	From Leg	4.00 0.00 0.00	0.00	182.00	No Ice 1/2" Ice 1" Ice	2.44 3.32 4.20	2.44 3.32 4.20	0.05 0.07 0.09
8'6"x2.5" Mount Pipe	B	From Leg	4.00 0.00 0.00	0.00	182.00	No Ice 1/2" Ice 1" Ice	2.44 3.32 4.20	2.44 3.32 4.20	0.05 0.07 0.09
8'6"x2.5" Mount Pipe	C	From Leg	4.00 0.00 0.00	0.00	182.00	No Ice 1/2" Ice 1" Ice	2.44 3.32 4.20	2.44 3.32 4.20	0.05 0.07 0.09
2'x2" Mount Pipe	A	From Leg	3.00 0.00 0.00	0.00	182.00	No Ice 1/2" Ice 1" Ice	0.34 0.47 0.61	0.34 0.47 0.61	0.01 0.01 0.02
2'x2" Mount Pipe	B	From Leg	3.00 0.00 0.00	0.00	182.00	No Ice 1/2" Ice 1" Ice	0.34 0.47 0.61	0.34 0.47 0.61	0.01 0.01 0.02
2'x2" Mount Pipe	B	From Leg	3.00 0.00 0.00	0.00	182.00	No Ice 1/2" Ice 1" Ice	0.34 0.47 0.61	0.34 0.47 0.61	0.01 0.01 0.02
2'x2" Mount Pipe	C	From Leg	4.00 0.00 0.00	0.00	182.00	No Ice 1/2" Ice 1" Ice	0.34 0.47 0.61	0.34 0.47 0.61	0.01 0.01 0.02

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
(2) DMP65R-BU6D w/ Mount Pipe	A	From Leg	4.00 0.00 -1.00	0.00	182.00	No Ice 1/2" Ice 1" Ice	11.96 12.70 13.46	5.97 6.63 7.30	0.11 0.20 0.30
(2) DMP65R-BU6D w/ Mount Pipe	B	From Leg	4.00 0.00 -1.00	0.00	182.00	No Ice 1/2" Ice 1" Ice	11.96 12.70 13.46	5.97 6.63 7.30	0.11 0.20 0.30
(2) DMP65R-BU4D w/ Mount Pipe	C	From Leg	4.00 0.00 1.00	0.00	182.00	No Ice 1/2" Ice 1" Ice	7.53 8.04 8.57	3.79 4.23 4.68	0.09 0.16 0.22
7770.00 w/ Mount Pipe	A	From Leg	4.00 0.00 1.00	0.00	182.00	No Ice 1/2" Ice 1" Ice	3.39 3.75 4.12	2.32 2.66 3.02	0.06 0.10 0.15
7770.00 w/ Mount Pipe	B	From Leg	4.00 0.00 1.00	0.00	182.00	No Ice 1/2" Ice 1" Ice	3.39 3.75 4.12	2.32 2.66 3.02	0.06 0.10 0.15
7770.00 w/ Mount Pipe	C	From Leg	4.00 0.00 1.00	0.00	182.00	No Ice 1/2" Ice 1" Ice	3.39 3.75 4.12	2.32 2.66 3.02	0.06 0.10 0.15
ASP-952	A	From Leg	4.00 0.00 3.00	0.00	182.00	No Ice 1/2" Ice 1" Ice	3.02 4.16 5.30	3.02 4.16 5.30	0.02 0.04 0.07
ASP-952	B	From Leg	4.00 0.00 3.00	0.00	182.00	No Ice 1/2" Ice 1" Ice	3.02 4.16 5.30	3.02 4.16 5.30	0.02 0.04 0.07
ASP-952	C	From Leg	4.00 0.00 3.00	0.00	182.00	No Ice 1/2" Ice 1" Ice	3.02 4.16 5.30	3.02 4.16 5.30	0.02 0.04 0.07
RRUS 4478 B14	A	From Leg	4.00 0.00 -1.00	0.00	182.00	No Ice 1/2" Ice 1" Ice	1.84 2.01 2.19	1.06 1.20 1.34	0.06 0.08 0.09
RRUS 4478 B14	B	From Leg	4.00 0.00 -1.00	0.00	182.00	No Ice 1/2" Ice 1" Ice	1.84 2.01 2.19	1.06 1.20 1.34	0.06 0.08 0.09
RRUS 4478 B14	C	From Leg	4.00 0.00 1.00	0.00	182.00	No Ice 1/2" Ice 1" Ice	1.84 2.01 2.19	1.06 1.20 1.34	0.06 0.08 0.09
RRUS 8843 B2/B66A	A	From Leg	4.00 0.00 -1.00	0.00	182.00	No Ice 1/2" Ice 1" Ice	1.64 1.80 1.97	1.35 1.50 1.65	0.07 0.09 0.11
RRUS 8843 B2/B66A	B	From Leg	4.00 0.00 -1.00	0.00	182.00	No Ice 1/2" Ice 1" Ice	1.64 1.80 1.97	1.35 1.50 1.65	0.07 0.09 0.11
RRUS 8843 B2/B66A	C	From Leg	4.00 0.00 1.00	0.00	182.00	No Ice 1/2" Ice 1" Ice	1.64 1.80 1.97	1.35 1.50 1.65	0.07 0.09 0.11
RRUS 4449 B5/B12	A	From Leg	4.00 0.00 -1.00	0.00	182.00	No Ice 1/2" Ice 1" Ice	1.97 2.14 2.33	1.41 1.56 1.73	0.07 0.09 0.11
RRUS 4449 B5/B12	B	From Leg	4.00	0.00	182.00	No Ice	1.97	1.41	0.07

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00			1/2"	2.14	1.56	0.09
			-1.00			Ice	2.33	1.73	0.11
						1" Ice			
RRUS 4449 B5/B12	C	From Leg	4.00	0.00	182.00	No Ice	1.97	1.41	0.07
			0.00			1/2"	2.14	1.56	0.09
			1.00			Ice	2.33	1.73	0.11
						1" Ice			
(2) LGP21401	A	From Leg	4.00	0.00	182.00	No Ice	1.10	0.35	0.01
			0.00			1/2"	1.24	0.44	0.02
			1.00			Ice	1.38	0.54	0.03
						1" Ice			
(2) LGP21401	B	From Leg	4.00	0.00	182.00	No Ice	1.10	0.35	0.01
			0.00			1/2"	1.24	0.44	0.02
			1.00			Ice	1.38	0.54	0.03
						1" Ice			
(2) LGP21401	C	From Leg	4.00	0.00	182.00	No Ice	1.10	0.35	0.01
			0.00			1/2"	1.24	0.44	0.02
			1.00			Ice	1.38	0.54	0.03
						1" Ice			
DC6-48-60-18-8F	A	From Leg	1.00	0.00	182.00	No Ice	0.92	0.92	0.02
			0.00			1/2"	1.46	1.46	0.04
			3.00			Ice	1.64	1.64	0.06
						1" Ice			
DC6-48-60-0-8C-EV	B	From Leg	1.00	0.00	182.00	No Ice	2.74	4.78	0.03
			0.00			1/2"	2.96	5.06	0.06
			3.00			Ice	3.20	5.35	0.10
						1" Ice			
DC6-48-60-0-8C-EV	C	From Leg	1.00	0.00	182.00	No Ice	2.74	4.78	0.03
			0.00			1/2"	2.96	5.06	0.06
			3.00			Ice	3.20	5.35	0.10
						1" Ice			
Level 170 Platform Mount [LP 303-1_HR-1]	C	None		0.00	170.00	No Ice	17.09	17.09	1.50
						1/2"	21.47	21.47	1.88
						Ice	25.72	25.72	2.35
						1" Ice			
(2) 8'x2" Mount Pipe	A	From Face	4.00	0.00	170.00	No Ice	1.90	1.90	0.03
			0.00			1/2"	2.73	2.73	0.04
			0.00			Ice	3.40	3.40	0.06
						1" Ice			
(2) 8'x2" Mount Pipe	B	From Face	4.00	0.00	170.00	No Ice	1.90	1.90	0.03
			0.00			1/2"	2.73	2.73	0.04
			0.00			Ice	3.40	3.40	0.06
						1" Ice			
(3) 8'x2" Mount Pipe	C	From Face	4.00	0.00	170.00	No Ice	1.90	1.90	0.03
			0.00			1/2"	2.73	2.73	0.04
			0.00			Ice	3.40	3.40	0.06
						1" Ice			
APXVAALL24_43-U-NA20_TMO w/ Mount Pipe	A	From Face	4.00	0.00	170.00	No Ice	14.69	6.87	0.18
			0.00			1/2"	15.46	7.55	0.31
			0.00			Ice	16.23	8.25	0.45
						1" Ice			
(2) APXVAALL24_43-U-NA20_TMO w/ Mount Pipe	B	From Face	4.00	0.00	170.00	No Ice	14.69	6.87	0.18
			0.00			1/2"	15.46	7.55	0.31
			0.00			Ice	16.23	8.25	0.45
						1" Ice			
APXVAALL24_43-U-NA20_TMO w/ Mount Pipe	C	From Face	4.00	0.00	170.00	No Ice	14.69	6.87	0.18
			0.00			1/2"	15.46	7.55	0.31
			0.00			Ice	16.23	8.25	0.45
						1" Ice			
AIR 6419 B41_TMO	A	From Face	4.00	0.00	170.00	No Ice	7.00	2.83	0.10
			0.00			1/2"	7.53	3.24	0.14
			0.00			Ice	8.07	3.67	0.19
						1" Ice			
(2) AIR 6419 B41_TMO	B	From Face	4.00	0.00	170.00	No Ice	7.00	2.83	0.10

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00			1/2"	7.53	3.24	0.14
			0.00			Ice	8.07	3.67	0.19
						1" Ice			
AIR 6419 B41_TMO	C	From Face	4.00	0.00	170.00	No Ice	7.00	2.83	0.10
			0.00			1/2"	7.53	3.24	0.14
			0.00			Ice	8.07	3.67	0.19
						1" Ice			
Radio 4480_TMOV2	A	From Face	4.00	0.00	170.00	No Ice	2.88	1.40	0.08
			0.00			1/2"	3.09	1.56	0.10
			0.00			Ice	3.31	1.73	0.13
						1" Ice			
(2) Radio 4480_TMOV2	B	From Face	4.00	0.00	170.00	No Ice	2.88	1.40	0.08
			0.00			1/2"	3.09	1.56	0.10
			0.00			Ice	3.31	1.73	0.13
						1" Ice			
Radio 4480_TMOV2	C	From Face	4.00	0.00	170.00	No Ice	2.88	1.40	0.08
			0.00			1/2"	3.09	1.56	0.10
			0.00			Ice	3.31	1.73	0.13
						1" Ice			
RADIO 4460 B2/B25 B66_TMO	A	From Face	4.00	0.00	170.00	No Ice	2.14	1.69	0.11
			0.00			1/2"	2.32	1.85	0.13
			0.00			Ice	2.51	2.02	0.16
						1" Ice			
(2) RADIO 4460 B2/B25 B66_TMO	B	From Face	4.00	0.00	170.00	No Ice	2.14	1.69	0.11
			0.00			1/2"	2.32	1.85	0.13
			0.00			Ice	2.51	2.02	0.16
						1" Ice			
RADIO 4460 B2/B25 B66_TMO	C	From Face	4.00	0.00	170.00	No Ice	2.14	1.69	0.11
			0.00			1/2"	2.32	1.85	0.13
			0.00			Ice	2.51	2.02	0.16
						1" Ice			
Level 160 Platform Mount [10.83' LP 601-1]	C	None		0.00	160.00	No Ice	25.72	25.72	1.01
						1/2"	28.60	28.60	1.51
						Ice	31.47	31.47	2.06
						1" Ice			
Mount Reinforcement Specifications	C	None		0.00	160.00	No Ice	28.63	28.63	0.28
						1/2"	37.31	37.31	0.67
						Ice	45.80	45.80	0.94
						1" Ice			
Transition Ladder	A	From Leg	2.00	0.00	160.00	No Ice	6.00	6.00	0.16
			0.00			1/2"	8.00	8.00	0.24
			-4.00			Ice	10.00	10.00	0.32
						1" Ice			
(2) LPA-80080-6CF-EDIN w/ Mount Pipe	A	From Leg	4.00	0.00	160.00	No Ice	4.56	10.64	0.05
			0.00			1/2"	5.11	11.81	0.11
			0.00			Ice	5.61	12.70	0.19
						1" Ice			
(2) LPA-80080-6CF-EDIN w/ Mount Pipe	B	From Leg	4.00	0.00	160.00	No Ice	4.56	10.64	0.05
			0.00			1/2"	5.11	11.81	0.11
			0.00			Ice	5.61	12.70	0.19
						1" Ice			
(2) LPA-80080-6CF-EDIN w/ Mount Pipe	C	From Leg	4.00	0.00	160.00	No Ice	4.56	10.64	0.05
			0.00			1/2"	5.11	11.81	0.11
			0.00			Ice	5.61	12.70	0.19
						1" Ice			
(2) MX06FRO660-03 w/ Mount Pipe	A	From Leg	4.00	0.00	160.00	No Ice	6.54	5.55	0.10
			0.00			1/2"	7.06	6.05	0.18
			0.00			Ice	7.60	6.57	0.28
						1" Ice			
(2) MX06FRO660-03 w/ Mount Pipe	B	From Leg	4.00	0.00	160.00	No Ice	6.54	5.55	0.10
			0.00			1/2"	7.06	6.05	0.18
			0.00			Ice	7.60	6.57	0.28
						1" Ice			
(2) MX06FRO660-03 w/	C	From Leg	4.00	0.00	160.00	No Ice	6.54	5.55	0.10

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
Mount Pipe			0.00			1/2"	7.06	6.05	0.18
			0.00			Ice	7.60	6.57	0.28
						1" Ice			
MT6407-77A w/ Mount Pipe	A	From Leg	4.00	0.00	160.00	No Ice	4.91	2.68	0.10
			0.00			1/2"	5.26	3.14	0.14
			0.00			Ice	5.61	3.62	0.18
						1" Ice			
MT6407-77A w/ Mount Pipe	B	From Leg	4.00	0.00	160.00	No Ice	4.91	2.68	0.10
			0.00			1/2"	5.26	3.14	0.14
			0.00			Ice	5.61	3.62	0.18
						1" Ice			
MT6407-77A w/ Mount Pipe	C	From Leg	4.00	0.00	160.00	No Ice	4.91	2.68	0.10
			0.00			1/2"	5.26	3.14	0.14
			0.00			Ice	5.61	3.62	0.18
						1" Ice			
RVZDC-6627-PF-48_CCIV2	C	From Leg	4.00	0.00	160.00	No Ice	4.06	3.10	0.03
			0.00			1/2"	4.32	3.34	0.07
			0.00			Ice	4.58	3.58	0.11
						1" Ice			
RF4439D-25A	A	From Leg	4.00	0.00	160.00	No Ice	1.87	1.25	0.07
			0.00			1/2"	2.03	1.39	0.09
			0.00			Ice	2.21	1.54	0.11
						1" Ice			
RF4439D-25A	B	From Leg	4.00	0.00	160.00	No Ice	1.87	1.25	0.07
			0.00			1/2"	2.03	1.39	0.09
			0.00			Ice	2.21	1.54	0.11
						1" Ice			
RF4439D-25A	C	From Leg	4.00	0.00	160.00	No Ice	1.87	1.25	0.07
			0.00			1/2"	2.03	1.39	0.09
			0.00			Ice	2.21	1.54	0.11
						1" Ice			
RF4440D-13A	A	From Leg	4.00	0.00	160.00	No Ice	1.87	1.13	0.07
			0.00			1/2"	2.03	1.27	0.09
			0.00			Ice	2.21	1.41	0.11
						1" Ice			
RF4440D-13A	B	From Leg	4.00	0.00	160.00	No Ice	1.87	1.13	0.07
			0.00			1/2"	2.03	1.27	0.09
			0.00			Ice	2.21	1.41	0.11
						1" Ice			
RF4440D-13A	C	From Leg	4.00	0.00	160.00	No Ice	1.87	1.13	0.07
			0.00			1/2"	2.03	1.27	0.09
			0.00			Ice	2.21	1.41	0.11
						1" Ice			
Level 134 T-Arm Mount [TA 702-3]	C	None		0.00	134.00	No Ice	4.75	4.75	0.34
						1/2"	5.82	5.82	0.43
						Ice	6.98	6.98	0.55
						1" Ice			
3.5' Hor 2.5x2.5 Angle	A	From Leg	3.00	90.00	131.00	No Ice	1.26	0.02	0.01
			0.00			1/2"	1.44	0.07	0.02
			0.00			Ice	1.64	0.13	0.03
						1" Ice			
3.5' Hor 2.5x2.5 Angle	B	From Leg	3.00	90.00	131.00	No Ice	1.26	0.02	0.01
			0.00			1/2"	1.44	0.07	0.02
			0.00			Ice	1.64	0.13	0.03
						1" Ice			
3.5' Hor 2.5x2.5 Angle	C	From Leg	3.00	90.00	131.00	No Ice	1.26	0.02	0.01
			0.00			1/2"	1.44	0.07	0.02
			0.00			Ice	1.64	0.13	0.03
						1" Ice			
3.5' Hor 2.5x2.5 Angle	A	From Leg	3.00	0.00	131.00	No Ice	1.26	0.02	0.01
			0.00			1/2"	1.44	0.07	0.02
			0.00			Ice	1.64	0.13	0.03
						1" Ice			
3.5' Hor 2.5x2.5 Angle	B	From Leg	3.00	0.00	131.00	No Ice	1.26	0.02	0.01

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00			1/2"	1.44	0.07	0.02
			0.00			Ice	1.64	0.13	0.03
						1" Ice			
3.5' Hor 2.5x2.5 Angle	C	From Leg	3.00	0.00	131.00	No Ice	1.26	0.02	0.01
			0.00			1/2"	1.44	0.07	0.02
			0.00			Ice	1.64	0.13	0.03
						1" Ice			
(2) 6'x2" Mount Pipe	A	From Leg	3.00	0.00	134.00	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			
(2) 6'x2" Mount Pipe	B	From Leg	3.00	0.00	134.00	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			
(2) 6'x2" Mount Pipe	C	From Leg	3.00	0.00	134.00	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			
(2) DB809DK-Y	C	From Leg	4.00	0.00	134.00	No Ice	3.39	3.39	0.03
			0.00			1/2"	4.55	4.55	0.06
			5.00			Ice	5.73	5.73	0.09
						1" Ice			
SC442D-HF2LDF	A	From Leg	4.00	0.00	134.00	No Ice	7.27	7.27	0.08
			0.00			1/2"	12.20	12.20	0.15
			10.00			Ice	14.29	14.29	0.23
						1" Ice			
SC442D-HF2LDF	B	From Leg	4.00	0.00	134.00	No Ice	7.27	7.27	0.08
			0.00			1/2"	12.20	12.20	0.15
			10.00			Ice	14.29	14.29	0.23
						1" Ice			
SC479-HF1LDF	A	From Leg	4.00	0.00	134.00	No Ice	5.06	5.06	0.03
			0.00			1/2"	6.54	6.54	0.07
			7.00			Ice	8.04	8.04	0.11
						1" Ice			
WPA-700102-4CF-EDIN-9	B	From Leg	4.00	0.00	134.00	No Ice	3.57	2.79	0.01
			0.00			1/2"	3.87	3.10	0.04
			0.00			Ice	4.18	3.41	0.07
						1" Ice			
432E-83I-01-T	A	From Leg	4.00	0.00	134.00	No Ice	1.42	0.87	0.03
			0.00			1/2"	1.57	0.99	0.04
			7.00			Ice	1.73	1.12	0.05
						1" Ice			
422-86A-99575-18BW	B	From Leg	4.00	0.00	134.00	No Ice	2.96	1.20	0.05
			0.00			1/2"	3.17	1.35	0.07
			0.00			Ice	3.39	1.51	0.09
						1" Ice			
Level 124 Platform Mount [LP 601-1]	C	None		0.00	124.00	No Ice	28.50	28.50	1.12
						1/2"	31.69	31.69	1.68
						Ice	34.87	34.87	2.28
						1" Ice			
Transition Ladder	C	From Leg	2.00	0.00	124.00	No Ice	6.00	6.00	0.16
			0.00			1/2"	8.00	8.00	0.24
			-4.00			Ice	10.00	10.00	0.32
						1" Ice			
6'x2" Mount Pipe	A	From Leg	4.00	0.00	124.00	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			
6'x2" Mount Pipe	B	From Leg	4.00	0.00	124.00	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			
(2) 6'x2" Mount Pipe	C	From Leg	4.00	0.00	124.00	No Ice	1.43	1.43	0.02

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00			1/2"	1.92	1.92	0.03
			0.00			Ice	2.29	2.29	0.05
						1" Ice			
APXVSPP18-C-A20 w/	A	From Leg	4.00	0.00	124.00	No Ice	4.60	4.01	0.10
Mount Pipe			0.00			1/2"	5.05	4.45	0.16
			0.00			Ice	5.50	4.89	0.23
						1" Ice			
APXVSPP18-C-A20 w/	B	From Leg	4.00	0.00	124.00	No Ice	4.60	4.01	0.10
Mount Pipe			0.00			1/2"	5.05	4.45	0.16
			0.00			Ice	5.50	4.89	0.23
						1" Ice			
APXVSPP18-C-A20 w/	C	From Leg	4.00	0.00	124.00	No Ice	4.60	4.01	0.10
Mount Pipe			0.00			1/2"	5.05	4.45	0.16
			0.00			Ice	5.50	4.89	0.23
						1" Ice			
APXVTM14-ALU-I20 w/	A	From Leg	4.00	0.00	124.00	No Ice	4.09	2.86	0.08
Mount Pipe			0.00			1/2"	4.48	3.23	0.13
			0.00			Ice	4.88	3.61	0.19
						1" Ice			
APXVTM14-ALU-I20 w/	B	From Leg	4.00	0.00	124.00	No Ice	4.09	2.86	0.08
Mount Pipe			0.00			1/2"	4.48	3.23	0.13
			0.00			Ice	4.88	3.61	0.19
						1" Ice			
APXVTM14-ALU-I20 w/	C	From Leg	4.00	0.00	124.00	No Ice	4.09	2.86	0.08
Mount Pipe			0.00			1/2"	4.48	3.23	0.13
			0.00			Ice	4.88	3.61	0.19
						1" Ice			
800MHZ RRH	A	From Leg	4.00	0.00	124.00	No Ice	2.13	1.77	0.05
			0.00			1/2"	2.32	1.95	0.07
			0.00			Ice	2.51	2.13	0.10
						1" Ice			
800MHZ RRH	B	From Leg	4.00	0.00	124.00	No Ice	2.13	1.77	0.05
			0.00			1/2"	2.32	1.95	0.07
			0.00			Ice	2.51	2.13	0.10
						1" Ice			
800MHZ RRH	C	From Leg	4.00	0.00	124.00	No Ice	2.13	1.77	0.05
			0.00			1/2"	2.32	1.95	0.07
			0.00			Ice	2.51	2.13	0.10
						1" Ice			
TD-RRH8X20-25	A	From Leg	4.00	0.00	124.00	No Ice	4.05	1.53	0.07
			0.00			1/2"	4.30	1.71	0.10
			0.00			Ice	4.56	1.90	0.13
						1" Ice			
TD-RRH8X20-25	B	From Leg	4.00	0.00	124.00	No Ice	4.05	1.53	0.07
			0.00			1/2"	4.30	1.71	0.10
			0.00			Ice	4.56	1.90	0.13
						1" Ice			
TD-RRH8X20-25	C	From Leg	4.00	0.00	124.00	No Ice	4.05	1.53	0.07
			0.00			1/2"	4.30	1.71	0.10
			0.00			Ice	4.56	1.90	0.13
						1" Ice			
Level 120									
Platform Mount [LP 601-1]	B	None		0.00	120.00	No Ice	28.50	28.50	1.12
						1/2"	31.69	31.69	1.68
						Ice	34.87	34.87	2.28
						1" Ice			
Transition Ladder	C	From Leg	2.00	0.00	120.00	No Ice	6.00	6.00	0.16
			0.00			1/2"	8.00	8.00	0.24
			-4.00			Ice	10.00	10.00	0.32
						1" Ice			
(2) 8'x2" Mount Pipe	A	From Leg	3.00	0.00	120.00	No Ice	1.90	1.90	0.03
			0.00			1/2"	2.73	2.73	0.04
			0.00			Ice	3.40	3.40	0.06
						1" Ice			
(2) 8'x2" Mount Pipe	B	From Leg	3.00	0.00	120.00	No Ice	1.90	1.90	0.03

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00			1/2" Ice	2.73	2.73	0.04
			0.00			1" Ice	3.40	3.40	0.06
(2) 8'x2" Mount Pipe	C	From Leg	3.00	0.00	120.00	No Ice	1.90	1.90	0.03
			0.00			1/2" Ice	2.73	2.73	0.04
			0.00			1" Ice	3.40	3.40	0.06
(2) Side Arm Mount [SO 301-1]	C	From Leg	3.00	0.00	120.00	No Ice	0.46	0.91	0.02
			0.00			1/2" Ice	0.65	1.30	0.03
			0.00			1" Ice	0.87	1.71	0.05
100-1	C	From Leg	4.00	0.00	120.00	No Ice	4.80	6.00	0.02
			0.00			1/2" Ice	5.07	6.30	0.08
			0.00			1" Ice	5.35	6.61	0.16
Level 80 Pipe Mount [PM 601-3]	C	None		0.00	80.00	No Ice	3.17	3.17	0.20
						1/2" Ice	3.79	3.79	0.23
						1" Ice	4.42	4.42	0.28
Level 63 Side Arm Mount [SO 701-1]	C	From Leg	0.00	0.00	63.00	No Ice	0.85	1.67	0.07
			0.00			1/2" Ice	1.14	2.34	0.08
			0.00			1" Ice	1.43	3.01	0.09
GPS_A	C	From Leg	4.00	0.00	63.00	No Ice	0.26	0.26	0.00
			0.00			1/2" Ice	0.32	0.32	0.00
			0.00			1" Ice	0.39	0.39	0.01

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

Comb. No.	Description
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	179.813 - 132.966	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-28.63	-5.38	5.25
			Max. Mx	8	-12.26	-707.04	6.76
			Max. My	2	-12.28	-6.85	706.71
			Max. Vy	8	21.82	-707.04	6.76
			Max. Vx	2	-21.75	-6.85	706.71
			Max. Torque	25			-3.08
L2	132.966 - 87.3645	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-50.71	-4.20	5.46
			Max. Mx	8	-27.13	-2000.65	11.38
			Max. My	2	-27.14	-11.17	1997.54
			Max. Vy	8	32.42	-2000.65	11.38
			Max. Vx	2	-32.36	-11.17	1997.54
			Max. Torque	25			-3.82
L3	87.3645 - 42.7915	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-66.55	-4.96	6.64
			Max. Mx	8	-41.58	-3477.62	15.34
			Max. My	2	-41.58	-15.10	3472.05
			Max. Vy	8	35.40	-3477.62	15.34
			Max. Vx	2	-35.35	-15.10	3472.05
			Max. Torque	9			1.19
L4	42.7915 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-89.16	-5.90	7.85
			Max. Mx	8	-62.27	-5271.40	19.19
			Max. My	2	-62.27	-19.02	5263.58
			Max. Vy	8	37.73	-5271.40	19.19
			Max. Vx	2	-37.68	-19.02	5263.58
			Max. Torque	9			1.10

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	28	89.16	-3.43	5.94
	Max. H_x	20	62.31	37.66	-0.06
	Max. H_z	2	62.31	-0.06	37.62
	Max. M_x	2	5263.58	-0.06	37.62
	Max. M_z	8	5271.40	-37.66	0.06
	Max. Torsion	9	1.10	-37.66	0.06
	Min. Vert	5	46.73	-19.32	33.36
	Min. H_x	8	62.31	-37.66	0.06
	Min. H_z	14	62.31	0.06	-37.62
	Min. M_x	14	-5256.04	0.06	-37.62
	Min. M_z	20	-5264.26	37.66	-0.06
	Min. Torsion	21	-1.02	37.66	-0.06

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	51.92	0.00	-0.00	-3.13	-2.99	-0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	62.31	0.06	-37.62	-5263.58	-19.02	-0.17
0.9 Dead+1.0 Wind 0 deg - No Ice	46.73	0.06	-37.62	-5146.33	-17.56	-0.12
1.2 Dead+1.0 Wind 30 deg - No Ice	62.31	19.32	-33.36	-4676.95	-2714.61	-0.71
0.9 Dead+1.0 Wind 30 deg - No Ice	46.73	19.32	-33.36	-4572.85	-2653.76	-0.67
1.2 Dead+1.0 Wind 60 deg - No Ice	62.31	32.65	-18.86	-2646.84	-4573.15	-1.06
0.9 Dead+1.0 Wind 60 deg - No Ice	46.73	32.65	-18.86	-2587.31	-4471.16	-1.04
1.2 Dead+1.0 Wind 90 deg - No Ice	62.31	37.66	-0.06	-19.18	-5271.40	-1.09
0.9 Dead+1.0 Wind 90 deg - No Ice	46.73	37.66	-0.06	-17.68	-5154.04	-1.10
1.2 Dead+1.0 Wind 120 deg - No Ice	62.31	32.59	18.76	2612.87	-4558.26	-0.81
0.9 Dead+1.0 Wind 120 deg - No Ice	46.73	32.59	18.76	2556.19	-4456.65	-0.84
1.2 Dead+1.0 Wind 150 deg - No Ice	62.31	18.78	32.55	4543.87	-2624.41	-0.30
0.9 Dead+1.0 Wind 150 deg - No Ice	46.73	18.78	32.55	4444.46	-2565.56	-0.36
1.2 Dead+1.0 Wind 180 deg - No Ice	62.31	-0.06	37.62	5256.04	11.75	0.25
0.9 Dead+1.0 Wind 180 deg - No Ice	46.73	-0.06	37.62	5140.87	12.32	0.19
1.2 Dead+1.0 Wind 210 deg - No Ice	62.31	-19.32	33.36	4669.48	2707.42	0.71
0.9 Dead+1.0 Wind 210 deg - No Ice	46.73	-19.32	33.36	4567.44	2648.56	0.67
1.2 Dead+1.0 Wind 240 deg - No Ice	62.31	-32.65	18.86	2639.32	4566.01	0.97
0.9 Dead+1.0 Wind 240 deg - No Ice	46.73	-32.65	18.86	2581.87	4465.99	0.96
1.2 Dead+1.0 Wind 270 deg - No Ice	62.31	-37.66	0.06	11.59	5264.26	1.01
0.9 Dead+1.0 Wind 270 deg - No Ice	46.73	-37.66	0.06	12.20	5148.87	1.02
1.2 Dead+1.0 Wind 300 deg - No Ice	62.31	-32.59	-18.76	-2620.52	4551.06	0.81
0.9 Dead+1.0 Wind 300 deg - No Ice	46.73	-32.59	-18.76	-2561.71	4451.45	0.85
1.2 Dead+1.0 Wind 330 deg	62.31	-18.78	-32.55	-4551.49	2617.14	0.39

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
- No Ice						
0.9 Dead+1.0 Wind 330 deg - No Ice	46.73	-18.78	-32.55	-4449.97	2560.32	0.44
1.2 Dead+1.0 Ice+1.0 Temp	89.16	0.00	-0.00	-7.85	-5.90	-0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	89.16	0.00	-6.86	-1001.18	-7.95	-0.09
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	89.16	3.43	-5.94	-869.08	-504.68	-0.21
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	89.16	5.94	-3.43	-506.26	-867.78	-0.27
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	89.16	6.86	-0.00	-9.93	-999.98	-0.26
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	89.16	5.94	3.42	486.92	-865.85	-0.18
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	89.16	3.42	5.94	851.16	-501.33	-0.05
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	89.16	-0.00	6.86	985.19	-4.08	0.09
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	89.16	-3.43	5.94	853.10	492.64	0.20
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	89.16	-5.94	3.43	490.27	855.76	0.26
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	89.16	-6.86	0.00	-6.06	987.96	0.25
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	89.16	-5.94	-3.42	-502.92	853.82	0.17
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	89.16	-3.42	-5.94	-867.16	489.29	0.05
Dead+Wind 0 deg - Service	51.92	0.02	-9.82	-1363.72	-7.04	-0.03
Dead+Wind 30 deg - Service	51.92	5.04	-8.70	-1212.39	-704.53	-0.18
Dead+Wind 60 deg - Service	51.92	8.52	-4.92	-686.90	-1185.10	-0.28
Dead+Wind 90 deg - Service	51.92	9.83	-0.02	-7.19	-1365.67	-0.31
Dead+Wind 120 deg - Service	51.92	8.50	4.89	673.60	-1181.13	-0.25
Dead+Wind 150 deg - Service	51.92	4.90	8.49	1173.04	-680.93	-0.12
Dead+Wind 180 deg - Service	51.92	-0.02	9.82	1357.29	0.90	0.03
Dead+Wind 210 deg - Service	51.92	-5.04	8.70	1205.97	698.40	0.18
Dead+Wind 240 deg - Service	51.92	-8.52	4.92	680.48	1178.97	0.28
Dead+Wind 270 deg - Service	51.92	-9.83	0.02	0.76	1359.54	0.30
Dead+Wind 300 deg - Service	51.92	-8.50	-4.89	-680.03	1175.00	0.25
Dead+Wind 330 deg - Service	51.92	-4.90	-8.49	-1179.47	674.79	0.13

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	-51.92	0.00	-0.00	51.92	0.00	0.000%
2	0.06	-62.31	-37.62	-0.06	62.31	37.62	0.000%
3	0.06	-46.73	-37.62	-0.06	46.73	37.62	0.000%
4	19.32	-62.31	-33.36	-19.32	62.31	33.36	0.000%
5	19.32	-46.73	-33.36	-19.32	46.73	33.36	0.000%
6	32.65	-62.31	-18.86	-32.65	62.31	18.86	0.000%
7	32.65	-46.73	-18.86	-32.65	46.73	18.86	0.000%
8	37.66	-62.31	-0.06	-37.66	62.31	0.06	0.000%
9	37.66	-46.73	-0.06	-37.66	46.73	0.06	0.000%
10	32.59	-62.31	18.76	-32.59	62.31	-18.76	0.000%
11	32.59	-46.73	18.76	-32.59	46.73	-18.76	0.000%
12	18.78	-62.31	32.55	-18.78	62.31	-32.55	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
13	18.78	-46.73	32.55	-18.78	46.73	-32.55	0.000%
14	-0.06	-62.31	37.62	0.06	62.31	-37.62	0.000%
15	-0.06	-46.73	37.62	0.06	46.73	-37.62	0.000%
16	-19.32	-62.31	33.36	19.32	62.31	-33.36	0.000%
17	-19.32	-46.73	33.36	19.32	46.73	-33.36	0.000%
18	-32.65	-62.31	18.86	32.65	62.31	-18.86	0.000%
19	-32.65	-46.73	18.86	32.65	46.73	-18.86	0.000%
20	-37.66	-62.31	0.06	37.66	62.31	-0.06	0.000%
21	-37.66	-46.73	0.06	37.66	46.73	-0.06	0.000%
22	-32.59	-62.31	-18.76	32.59	62.31	18.76	0.000%
23	-32.59	-46.73	-18.76	32.59	46.73	18.76	0.000%
24	-18.78	-62.31	-32.55	18.78	62.31	32.55	0.000%
25	-18.78	-46.73	-32.55	18.78	46.73	32.55	0.000%
26	0.00	-89.16	0.00	-0.00	89.16	0.00	0.000%
27	0.00	-89.16	-6.86	-0.00	89.16	6.86	0.000%
28	3.43	-89.16	-5.94	-3.43	89.16	5.94	0.000%
29	5.94	-89.16	-3.43	-5.94	89.16	3.43	0.000%
30	6.86	-89.16	-0.00	-6.86	89.16	0.00	0.000%
31	5.94	-89.16	3.42	-5.94	89.16	-3.42	0.000%
32	3.42	-89.16	5.94	-3.42	89.16	-5.94	0.000%
33	-0.00	-89.16	6.86	0.00	89.16	-6.86	0.000%
34	-3.43	-89.16	5.94	3.43	89.16	-5.94	0.000%
35	-5.94	-89.16	3.43	5.94	89.16	-3.43	0.000%
36	-6.86	-89.16	0.00	6.86	89.16	-0.00	0.000%
37	-5.94	-89.16	-3.42	5.94	89.16	3.42	0.000%
38	-3.42	-89.16	-5.94	3.42	89.16	5.94	0.000%
39	0.02	-51.92	-9.82	-0.02	51.92	9.82	0.000%
40	5.04	-51.92	-8.70	-5.04	51.92	8.70	0.000%
41	8.52	-51.92	-4.92	-8.52	51.92	4.92	0.000%
42	9.83	-51.92	-0.02	-9.83	51.92	0.02	0.000%
43	8.50	-51.92	4.89	-8.50	51.92	-4.89	0.000%
44	4.90	-51.92	8.49	-4.90	51.92	-8.49	0.000%
45	-0.02	-51.92	9.82	0.02	51.92	-9.82	0.000%
46	-5.04	-51.92	8.70	5.04	51.92	-8.70	0.000%
47	-8.52	-51.92	4.92	8.52	51.92	-4.92	0.000%
48	-9.83	-51.92	0.02	9.83	51.92	-0.02	0.000%
49	-8.50	-51.92	-4.89	8.50	51.92	4.89	0.000%
50	-4.90	-51.92	-8.49	4.90	51.92	8.49	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	0.00049950
3	Yes	5	0.00000001	0.00020204
4	Yes	7	0.00000001	0.00015087
5	Yes	6	0.00000001	0.00045988
6	Yes	7	0.00000001	0.00015263
7	Yes	6	0.00000001	0.00046748
8	Yes	5	0.00000001	0.00065559
9	Yes	5	0.00000001	0.00026610
10	Yes	7	0.00000001	0.00014895
11	Yes	6	0.00000001	0.00045466
12	Yes	7	0.00000001	0.00015398
13	Yes	6	0.00000001	0.00047276
14	Yes	5	0.00000001	0.00023539
15	Yes	5	0.00000001	0.00009203
16	Yes	7	0.00000001	0.00015250
17	Yes	6	0.00000001	0.00046367
18	Yes	7	0.00000001	0.00015042
19	Yes	6	0.00000001	0.00045898
20	Yes	5	0.00000001	0.00024667
21	Yes	5	0.00000001	0.00009600
22	Yes	7	0.00000001	0.00015490

23	Yes	6	0.00000001	0.00047545
24	Yes	7	0.00000001	0.00014965
25	Yes	6	0.00000001	0.00045672
26	Yes	4	0.00000001	0.00014309
27	Yes	6	0.00005593	0.00027877
28	Yes	6	0.00005549	0.00044640
29	Yes	6	0.00005549	0.00045144
30	Yes	6	0.00005594	0.00027935
31	Yes	6	0.00005544	0.00041952
32	Yes	6	0.00000001	0.00042789
33	Yes	6	0.00000001	0.00026951
34	Yes	6	0.00000001	0.00041480
35	Yes	6	0.00000001	0.00041053
36	Yes	6	0.00000001	0.00027096
37	Yes	6	0.00000001	0.00043157
38	Yes	6	0.00005543	0.00042299
39	Yes	5	0.00000001	0.00003914
40	Yes	5	0.00000001	0.00064949
41	Yes	5	0.00000001	0.00062308
42	Yes	5	0.00000001	0.00005092
43	Yes	5	0.00000001	0.00056603
44	Yes	5	0.00000001	0.00060117
45	Yes	5	0.00000001	0.00003183
46	Yes	5	0.00000001	0.00062761
47	Yes	5	0.00000001	0.00057695
48	Yes	5	0.00000001	0.00004085
49	Yes	5	0.00000001	0.00060529
50	Yes	5	0.00000001	0.00056931

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	179.813 - 132.966	65.9037	40	3.82	0.02
L2	136.659 - 87.3645	34.9876	40	2.78	0.00
L3	92.2629 - 42.7915	14.4242	40	1.61	0.00
L4	48.8358 - 0	3.7399	40	0.72	0.00

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
182.00	Platform Mount [10' LP 601-1]	40	65.9037	3.82	0.02	13781
170.00	Platform Mount [LP 303-1_HR-1]	40	58.3678	3.59	0.01	7021
160.00	Platform Mount [10.83' LP 601-1]	40	50.8593	3.35	0.01	3476
134.00	T-Arm Mount [TA 702-3]	40	33.3985	2.71	0.00	1638
131.00	3.5' Hor 2.5x2.5 Angle	40	31.6680	2.63	0.00	1682
124.00	Platform Mount [LP 601-1]	40	27.8773	2.44	0.00	1807
120.00	Platform Mount [LP 601-1]	40	25.8593	2.33	0.00	1887
80.00	Pipe Mount [PM 601-3]	40	10.5603	1.33	0.00	2717
63.00	Side Arm Mount [SO 701-1]	40	6.3042	0.98	0.00	2698

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	179.813 - 132.966	251.1543	4	14.61	0.06
L2	136.659 - 87.3645	134.3268	4	10.68	0.01
L3	92.2629 - 42.7915	55.5805	4	6.23	0.00
L4	48.8358 - 0	14.4270	4	2.78	0.00

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
182.00	Platform Mount [10' LP 601-1]	4	251.1543	14.61	0.06	4072
170.00	Platform Mount [LP 303-1_HR-1]	4	222.7365	13.75	0.05	2072
160.00	Platform Mount [10.83' LP 601-1]	4	194.4034	12.86	0.03	1021
134.00	T-Arm Mount [TA 702-3]	4	128.2848	10.42	0.01	468
131.00	3.5' Hor 2.5x2.5 Angle	4	121.6967	10.12	0.01	478
124.00	Platform Mount [LP 601-1]	4	107.2345	9.41	0.01	507
120.00	Platform Mount [LP 601-1]	4	99.5176	9.00	0.01	526
80.00	Pipe Mount [PM 601-3]	4	40.6975	5.13	0.00	713
63.00	Side Arm Mount [SO 701-1]	4	24.3049	3.78	0.00	705

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	179.813 - 132.966 (1)	TP25.5375x15x0.25	46.85	0.00	0.0	19.4065	-12.05	1135.28	0.011
L2	132.966 - 87.3645 (2)	TP35.1887x24.2069x0.375	49.29	0.00	0.0	40.1381	-26.94	2348.08	0.011
L3	87.3645 - 42.7915 (3)	TP44.3577x33.3474x0.4375	49.47	0.00	0.0	59.1207	-41.49	3458.56	0.012
L4	42.7915 - 0 (4)	TP53x42.1375x0.5	48.84	0.00	0.0	68.2123	-45.17	3990.42	0.011

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	179.813 - 132.966 (1)	TP25.5375x15x0.25	722.86	718.39	1.006	0.00	718.39	0.000
L2	132.966 - 87.3645 (2)	TP35.1887x24.2069x0.375	2050.67	2061.22	0.995	0.00	2061.22	0.000
L3	87.3645 - 42.7915 (3)	TP44.3577x33.3474x0.4375	3568.97	3814.57	0.936	0.00	3814.57	0.000
L4	42.7915 - 0 (4)	TP53x42.1375x0.5	3790.10	4462.49	0.849	0.00	4462.49	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	179.813 - 132.966 (1)	TP25.5375x15x0.25	22.45	340.58	0.066	0.75	729.47	0.001
L2	132.966 - 87.3645 (2)	TP35.1887x24.2069x0.375	33.34	704.42	0.047	0.65	2080.33	0.000
L3	87.3645 - 42.7915 (3)	TP44.3577x33.3474x0.4375	36.34	1037.57	0.035	0.71	3868.57	0.000
L4	42.7915 - 0 (4)	TP53x42.1375x0.5	37.03	1211.08	0.031	0.71	4506.15	0.000

Pole Interaction Design Data

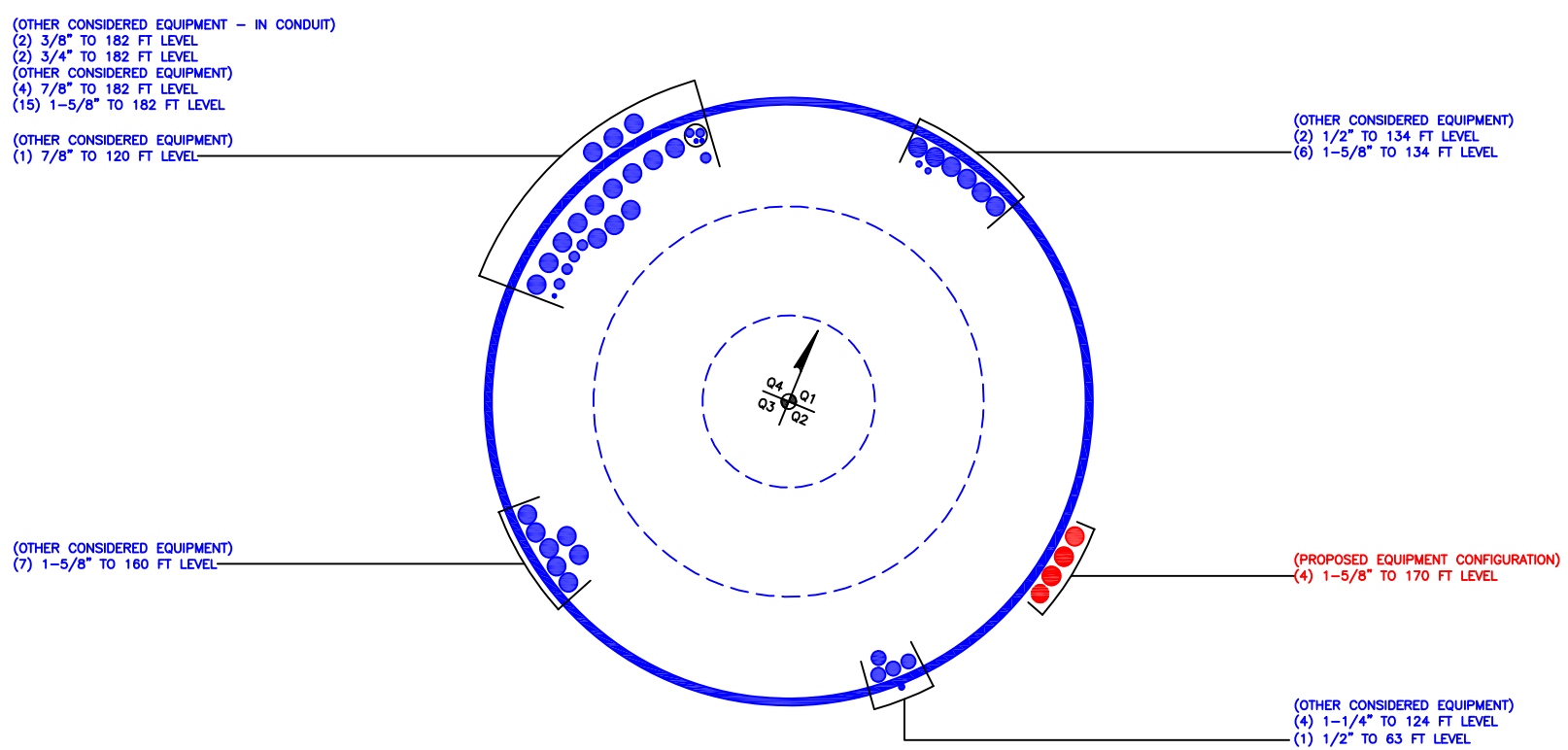
Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	179.813 - 132.966 (1)	0.011	1.006	0.000	0.066	0.001	1.021	1.050	4.8.2
L2	132.966 - 87.3645 (2)	0.011	0.995	0.000	0.047	0.000	1.009	1.050	4.8.2
L3	87.3645 - 42.7915 (3)	0.012	0.936	0.000	0.035	0.000	0.949	1.050	4.8.2
L4	42.7915 - 0 (4)	0.011	0.849	0.000	0.031	0.000	0.862	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	179.813 - 132.966	Pole	TP25.5375x15x0.25	1	-12.05	1192.04	97.3	Pass
L2	132.966 - 87.3645	Pole	TP35.1887x24.2069x0.375	2	-26.94	2465.48	96.1	Pass
L3	87.3645 - 42.7915	Pole	TP44.3577x33.3474x0.4375	3	-41.49	3631.49	90.4	Pass
L4	42.7915 - 0	Pole	TP53x42.1375x0.5	4	-45.17	4189.94	82.1	Pass
							Summary	
						Pole (L1)	97.3	Pass
						RATING =	**97.3**	**Pass**

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 841293 TOWER ID: C_BASELEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

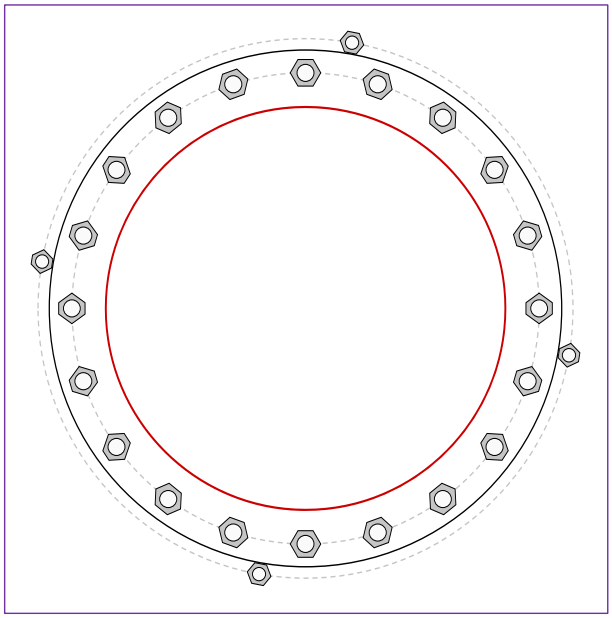
Monopole Base Plate Connection

Site Info	
BU #	841293
Site Name	ENT-BULLS BRIDGE RO/
Order #	621585 Rev. 0

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

Applied Loads	
Moment (kip-ft)	5407.68
Axial Force (kips)	62.27
Shear Force (kips)	38.61

**TIA-222-H Section 15.5 Applied*



Connection Properties

Anchor Rod Data

GROUP 1: (20) 2-1/4" ø bolts (A615-75 N; Fy=75 ksi, Fu=100 ksi) on 62" BC
GROUP 2: (4) 1-3/4" ø bolts (F1554-105 N; Fy=105 ksi, Fu=125 ksi) on 71" BC

Base Plate Data

68" OD x 2.25" Plate (A572-60; Fy=60 ksi, Fu=75 ksi)

Stiffener Data

N/A

Pole Data

53" x 0.5" 18-sided pole (A572-65; Fy=65 ksi, Fu=80 ksi)

Analysis Results

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

GROUP 1:		
Pu_t = 178.3	ϕPn_t = 243.75	**Stress Rating**
Vu = 1.93	ϕVn = 149.1	**69.7%**
Mu = n/a	ϕMn = n/a	**Pass**
GROUP 2:		
Pu_t = 121.45	ϕPn_t = 178.13	**Stress Rating**
Vu = 0	ϕVn = 112.75	**64.9%**
Mu = 0	ϕMn = 84.41	**Pass**

Base Plate Summary

Max Stress (ksi):	46.13	(Flexural)
Allowable Stress (ksi):	54	
Stress Rating:	**81.4%**	**Pass**

CCIplate

Elevation (ft)	0	*(Base)*

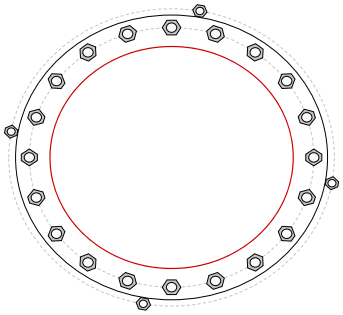
note: Bending interaction not considered when Grout Considered = "Yes"

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

Custom Bolt Connection

Bolt	Bolt Group ID	Location (deg.)	Diameter (in)	Material	Bolt Circle (in)	Eta Factor, n:	l_{ar} (in):	Thread Type	Area Override, in^2	Tension Only
1	1	0	2.25	A615-75	62	0.5	0.8125	N-Included		No
2	1	18	2.25	A615-75	62	0.5	0.8125	N-Included		No
3	1	36	2.25	A615-75	62	0.5	0.8125	N-Included		No
4	1	54	2.25	A615-75	62	0.5	0.8125	N-Included		No
5	1	72	2.25	A615-75	62	0.5	0.8125	N-Included		No
6	1	90	2.25	A615-75	62	0.5	0.8125	N-Included		No
7	1	108	2.25	A615-75	62	0.5	0.8125	N-Included		No
8	1	126	2.25	A615-75	62	0.5	0.8125	N-Included		No
9	1	144	2.25	A615-75	62	0.5	0.8125	N-Included		No
10	1	162	2.25	A615-75	62	0.5	0.8125	N-Included		No
11	1	180	2.25	A615-75	62	0.5	0.8125	N-Included		No
12	1	198	2.25	A615-75	62	0.5	0.8125	N-Included		No
13	1	216	2.25	A615-75	62	0.5	0.8125	N-Included		No
14	1	234	2.25	A615-75	62	0.5	0.8125	N-Included		No
15	1	252	2.25	A615-75	62	0.5	0.8125	N-Included		No
16	1	270	2.25	A615-75	62	0.5	0.8125	N-Included		No
17	1	288	2.25	A615-75	62	0.5	0.8125	N-Included		No
18	1	306	2.25	A615-75	62	0.5	0.8125	N-Included		No
19	1	324	2.25	A615-75	62	0.5	0.8125	N-Included		No
20	1	342	2.25	A615-75	62	0.5	0.8125	N-Included		No
21	2	80	1.75	F1554-105	71	0.5	2.75	N-Included		No
22	2	170	1.75	F1554-105	71	0.5	2.75	N-Included		No
23	2	260	1.75	F1554-105	71	0.5	2.75	N-Included		No
24	2	350	1.75	F1554-105	71	0.5	2.75	N-Included		No

Plot Graphic



Drilled Pier Foundation

BU # :	841293
Site Name:	KENT-BULLS BRIDGE RO/
Order Number:	621585 Rev. 0
TIA-222 Revison:	H
Tower Type:	Monopole

Check Limitation	
Apply TIA-222-H Section 15.5:	☑
N/A	☐
Additional Longitudinal Rebar	
Input Effective Depths (else Actual):	☐
Shear Design Options	
Check Shear along Depth of Pier:	☑
Utilize Shear-Friction Methodology:	☑
Override Critical Depth:	☐

Go to Soil Calculations

Applied Loads	Comp.	Uplift
Moment (kip-ft)	5407.68	
Axial Force (kips)	62.31	
Shear Force (kips)	38.55	

Material Properties		
Concrete Strength, f'c:	3	ksi
Rebar Strength, Fy:	60	ksi
Tie Yield Strength, Fyt:	40	ksi

Pier Design Data		
Depth	19	ft
Ext. Above Grade	1	ft
Pier Section 1		
From 1' above grade to 19' below grade		
Pier Diameter	7.5	ft
Rebar Quantity	42	
Rebar Size	11	
Clear Cover to Ties	5.75	in
Tie Size	5	
Tie Spacing		in

Rebar & Pier Options

Embedded Pole Inputs

Belled Pier Inputs

Analysis Results		
Soil Lateral Check	*Compression*	*Uplift*
$D_{v=0}$ (ft from TOC)	5.62	-
Soil Safety Factor	1.28	-
Max Moment (kip-ft)	5795.55	-
Rating*	*99.0%*	-
Soil Vertical Check	*Compression*	*Uplift*
Skin Friction (kips)	0.00	-
End Bearing (kips)	1062.06	-
Weight of Concrete (kips)	129.27	-
Total Capacity (kips)	1062.06	-
Axial (kips)	191.58	-
Rating*	*17.2%*	-
Reinforced Concrete Flexure	*Compression*	*Uplift*
Critical Depth (ft from TOC)	5.48	-
Critical Moment (kip-ft)	5795.09	-
Critical Moment Capacity	10189.96	-
Rating*	*54.2%*	-
Reinforced Concrete Shear	*Compression*	*Uplift*
Critical Depth (ft from TOC)	14.96	-
Critical Shear (kip)	836.40	-
Critical Shear Capacity	827.80	-
Rating*	*96.2%*	-

Shear-Friction Methodology is Applied

Structural Foundation Rating*	**96.2%**
Soil Interaction Rating*	**99.0%**

*Rating per TIA-222-H Section 15.5

Soil Profile

Groundwater Depth	10	# of Layers	6

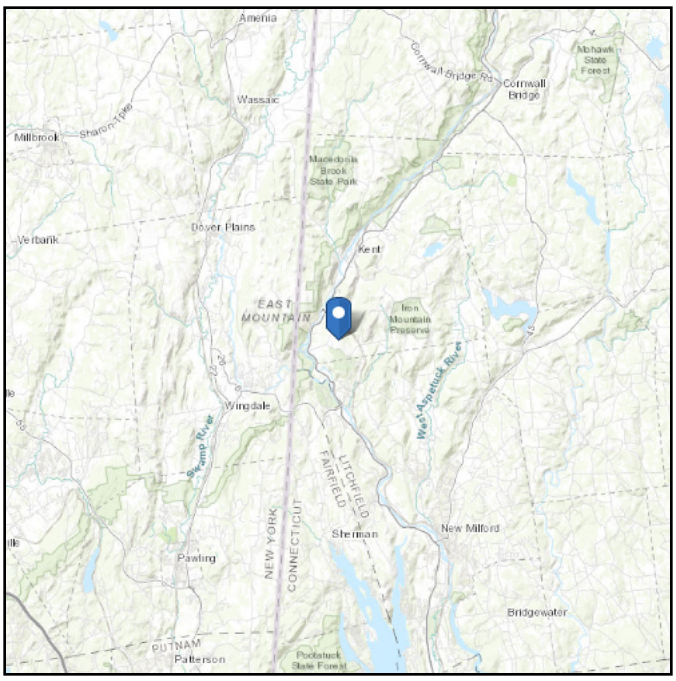
Layer	Top (ft)	Bottom (ft)	Thickness (ft)	γ_{soil} (pcf)	$\gamma_{concrete}$ (pcf)	Cohesion (ksf)	Angle of Friction (degrees)	Calculated Ultimate Skin Friction Comp (ksf)	Calculated Ultimate Skin Friction Uplift (ksf)	Ultimate Skin Friction Comp Override (ksf)	Ultimate Skin Friction Uplift Override (ksf)	Ult. Net Bearing Capacity (ksf)	SPT Blow Count	Soil Type
1	0	3	3	130	150	0	0	0.000	0.000	0.00	0.00			Cohesionless
2	3	3.75	0.75	135	150	0	0	0.000	0.000	0.00	0.00			Cohesionless
3	3.75	10	6.25	135	150	0	40	0.000	0.000	0.00	0.00			Cohesionless
4	10	14	4	72.6	87.6	0	40	0.000	0.000	0.00	0.00			Cohesionless
5	14	18	4	82.6	87.6	0	42	0.000	0.000	0.00	0.00			Cohesionless
6	18	19	1	97.6	87.6	0	44	0.000	0.000	0.00	0.00	30		Cohesionless

ASCE 7 Hazards Report

Address:
No Address at This Location

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

Elevation: 780.6 ft (NAVD 88)
Latitude: 41.681625
Longitude: -73.486611



Wind

Results:

Wind Speed	114 Vmph
10-year MRI	75 Vmph
25-year MRI	84 Vmph
50-year MRI	89 Vmph
100-year MRI	95 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: Fri Jun 17 2022

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-16 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).

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

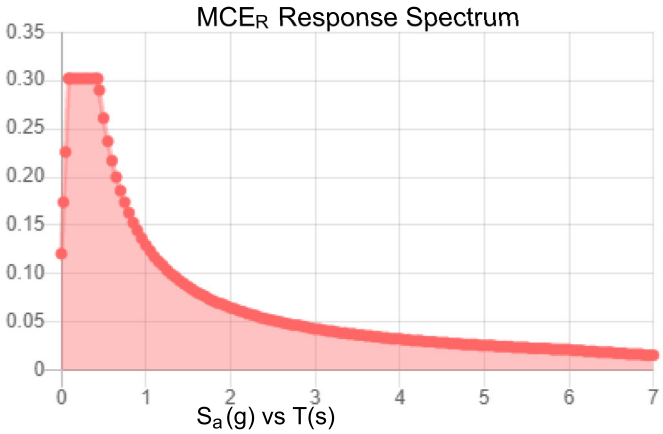
Seismic

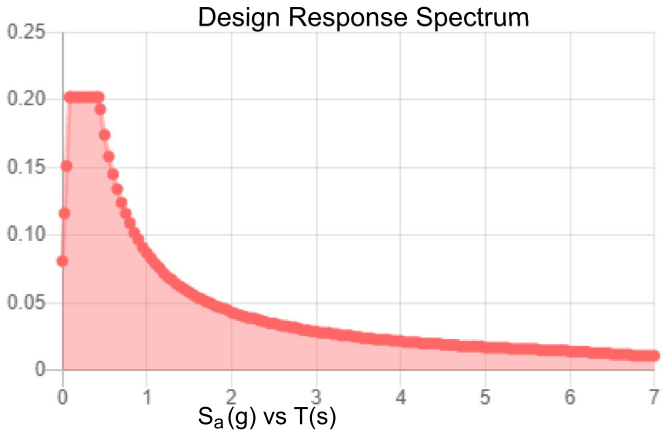
Site Soil Class: D - Default (see Section 11.4.3)

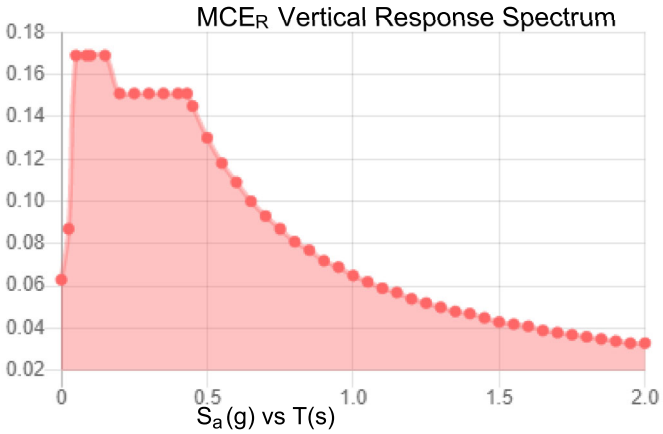
Results:

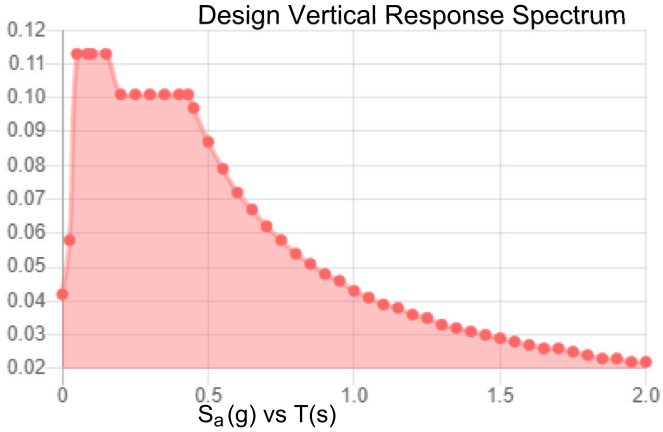
S_S :	0.189	S_{D1} :	0.087
S_1 :	0.054	T_L :	6
F_a :	1.6	PGA :	0.103
F_v :	2.4	PGA_M :	0.165
S_{MS} :	0.302	F_{PGA} :	1.593
S_{M1} :	0.13	I_e :	1
S_{DS} :	0.202	C_v :	0.7

Seismic Design Category B









Data Accessed: **Fri Jun 17 2022**

Date Source:

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

Ice

Results:

Ice Thickness:	1.00 in.
Concurrent Temperature:	15 F
Gust Speed	40 mph
Data Source:	Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8
Date Accessed:	Fri Jun 17 2022

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

Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 500-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from local meteorological studies. Ice thicknesses in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

Date: **June 15, 2022**

Trylon
1825 W. Walnut Hill Lane,
Suite 302
Irving, TX 75038
214-930-1730

Subject:	**Mount Analysis - Conditional Passing Report**	
Carrier Designation:	**T-Mobile Equipment Change-Out**	
	Carrier Site Number:	CTNH541A
	Carrier Site Name:	CTNH541A
Crown Castle Designation:	**BU Number:**	841293
	Site Name:	Kent-Bulls Bridge Road
	JDE Job Number:	721542
	Order Number:	621585 Rev. 0
Engineering Firm Designation:	**Trylon Report Designation:**	211632
Site Data:	**136 Bulls Bridge Road, South Kent, Litchfield County, CT, 06785** **Latitude 41°40'53.85" Longitude -73°29'11.80"**	
Structure Information:	**Tower Height & Type:**	**179.7 ft Monopole**
	Mount Elevation:	**170.0 ft**
	Mount Width & Type:	**12.5 ft Platform**

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

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

Platform **Sufficient***

***Sufficient upon completion of the changes listed in the 'Recommendations' section of this report.**

This analysis has been performed in accordance with the 2018 International Building Code based upon an ultimate 3-second gust wind speed of 114 mph. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Mount analysis prepared by: Teodor Nitescu

Respectfully Submitted by:
Cliff Abernathy, P.E.

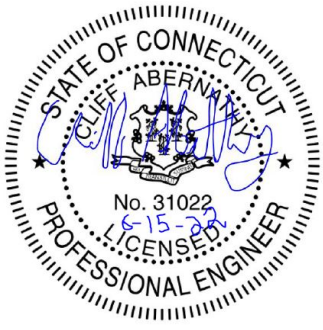


TABLE OF CONTENTS

1) INTRODUCTION

This is an existing 3 sector 12.5 ft Platform, designed by Site Pro 1.

2) ANALYSIS CRITERIA

Building Code:	2018 IBC
TIA-222 Revision:	TIA-222-H
Risk Category:	II
Ultimate Wind Speed:	114 mph
Exposure Category:	C
Topographic Factor at Base:	1.00
Topographic Factor at Mount:	1.00
Ice Thickness:	1.00 in
Wind Speed with Ice:	40 mph
Seismic S_s:	0.189
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 Equipment Configuration

Mount Centerline (ft)	Antenna Centerline (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Mount / Modification Details
170.0	170.0	4	Ericsson	AIR 6419 B41_TMO	12.5 ft Platform
		4	RFS/Celwave	APXVAALL24_43-U-NA20_TMO	
		4	Ericsson	RADIO 4460 B2/B25 B66_TMO	
		4	Ericsson	Radio 4480_TMOV2	

3) ANALYSIS PROCEDURE

Table 2 - Documents Provided

Document	Remarks	Reference	Source
Crown Application	T-Mobile Application	621585 Rev.0	CCI Sites
Structural Analysis Report	Black&Veatch	10292302	CCI Sites
Mount Manufacturer Drawings	Site Pro 1	10285100	CCI Sites

3.1) Analysis Method

RISA-3D (Version 17.0.4), a commercially available analysis software package, was used to create a three-dimensional model of the antenna mounting system and calculate member stresses for various loading cases.

A tool internally developed, using Microsoft Excel, by Trylon was used to calculate wind loading on all appurtenances, dishes, and mount members for various load cases. Selected output from the analysis is included in Appendix B.

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

3.2) Assumptions

1) The antenna mounting system was properly fabricated, installed and maintained in good condition in accordance with its original design and manufacturer's specifications.
2) The configuration of antennas, mounts, and other appurtenances are as specified in Table 1 and the referenced drawings.
3) All member connections are assumed to have been designed to meet or exceed the load carrying capacity of the connected member unless otherwise specified in this report.
4) The analysis will be required to be revised if the existing conditions in the field differ from those shown in the above-referenced documents or assumed in this analysis. No allowance was made for any damaged, missing, or rusted members.
5) Prior structural modifications to the tower mounting system are assumed to be installed as shown per available data.
6) Steel grades have been assumed as follows, unless noted otherwise:

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

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

4) ANALYSIS RESULTS

Table 3 - Mount Component Stresses vs. Capacity (Platform, All Sectors)

Notes	Component	Critical Member	Centerline (ft)	% Capacity	Pass / Fail
1,2,3	Mount Pipe(s)	M76	170.0	58.3	Pass
	Horizontal(s)	H2		24.0	Pass
	Standoff(s)	M26		54.3	Pass
	Bracing(s)	M28		25.5	Pass
	Handrail(s)	M24		47.3	Pass
	Plate(s)	M38		45.0	Pass
	Threaded Rod(s)	M98		65.0	Pass
	Mount Connection(s)	-		33.2	Pass

Structure Rating (max from all components) =	65.0%

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

4.1) Recommendations

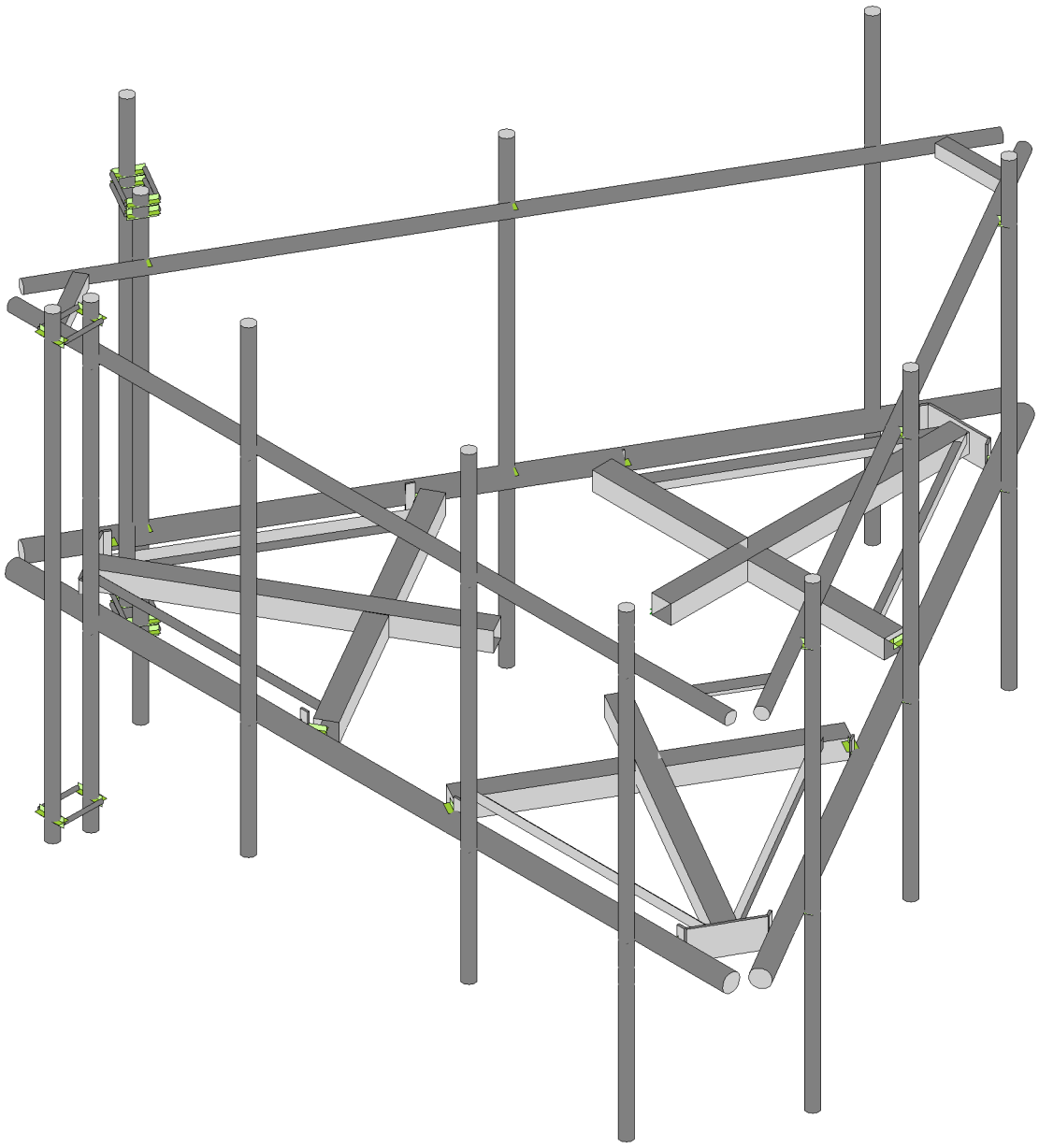
The mount has sufficient capacity to carry the proposed loading configuration. In order for the results of the analysis to be considered valid, the structural modifications listed below must be completed.

1. Install a new 2.375'' O.D., Sch.40, 8-ft long antenna pipe on Aplha sector on position #2 in order to install RFS/Celwave APXVAALL24_43-UNA20_TMO antenna. Connect the new pipe to the existing face horizontals using new Site Pro 1, SCX7-U, crossover plates.

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

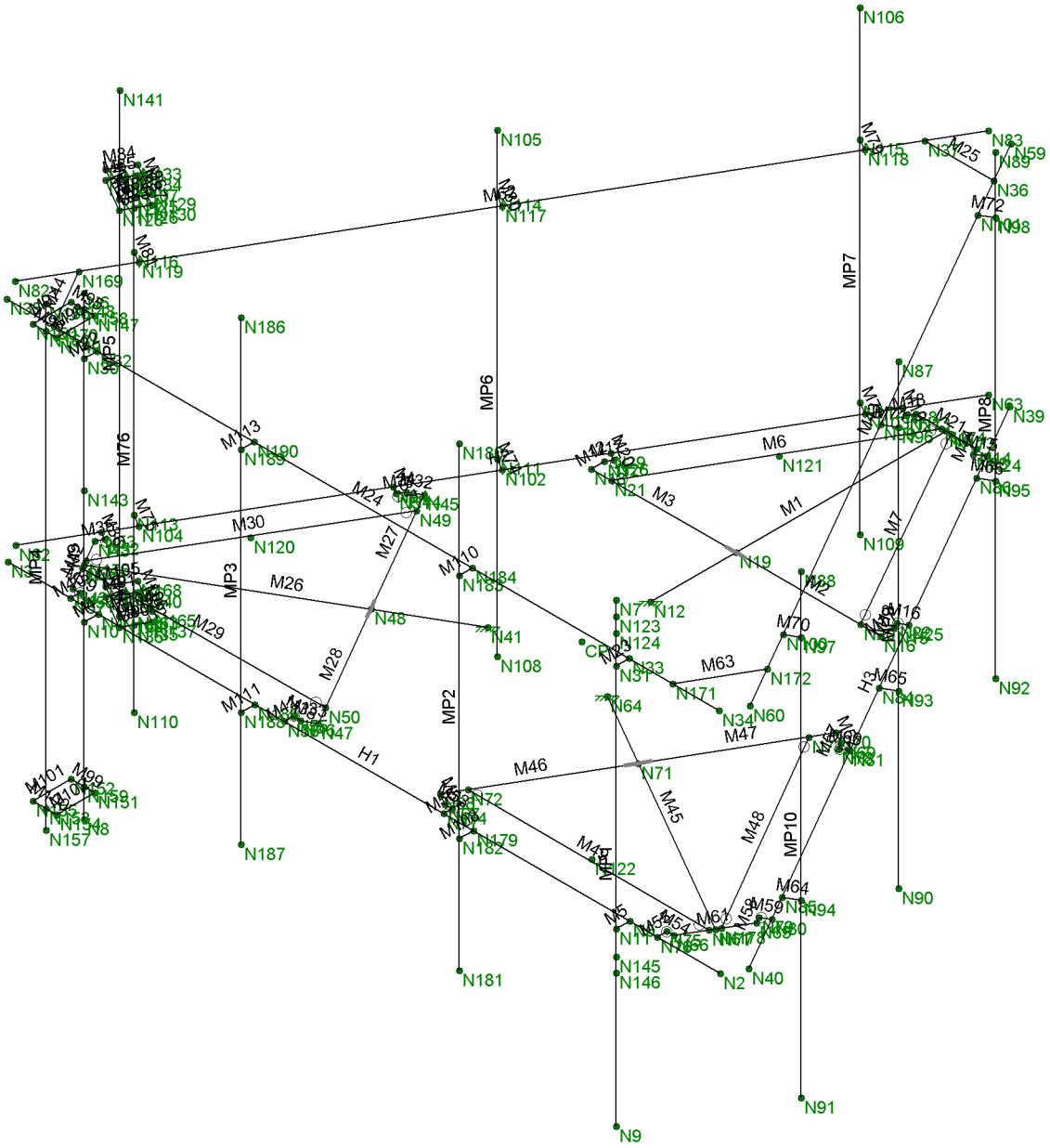
APPENDIX A

WIRE FRAME AND RENDERED MODELS



Envelope Only Solution

Trylon	841293	SK - 1
TN		June 15, 2022 at 1:17 PM
211632		841293_loaded.r3d



Envelope Only Solution

Trylon	841293	SK - 2
TN		June 15, 2022 at 1:17 PM
211632		841293_loaded.r3d

APPENDIX B

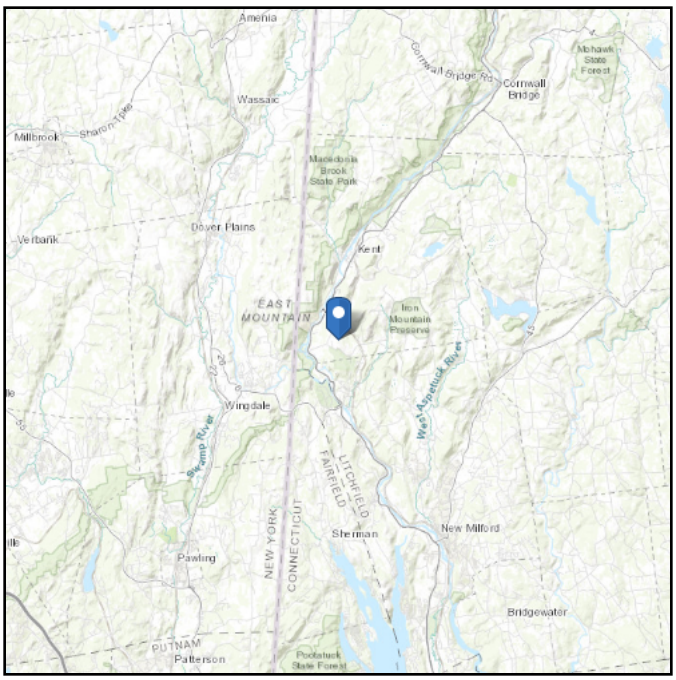
SOFTWARE INPUT CALCULATIONS

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)

Elevation: 780.6 ft (NAVD 88)
Latitude: 41.681625
Longitude: -73.486611



Wind

Results:

Wind Speed	114 Vmph
10-year MRI	75 Vmph
25-year MRI	84 Vmph
50-year MRI	89 Vmph
100-year MRI	95 Vmph

Data Source: ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2
Date Accessed: Mon Jun 06 2022

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-16 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).

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

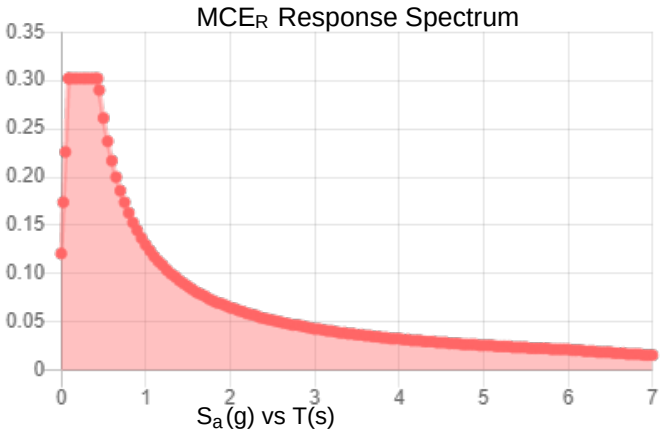
Seismic

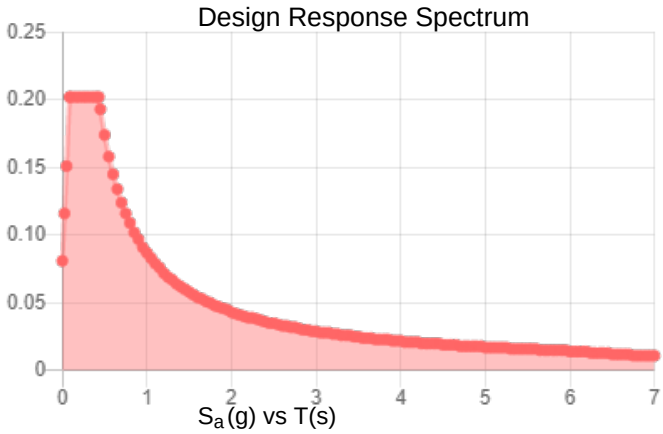
Site Soil Class: D - Default (see Section 11.4.3)

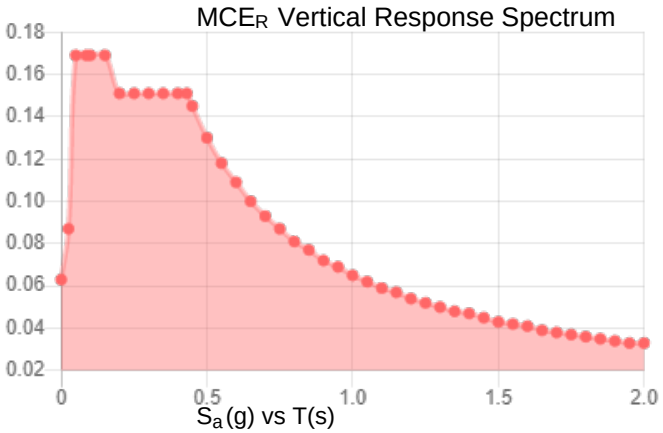
Results:

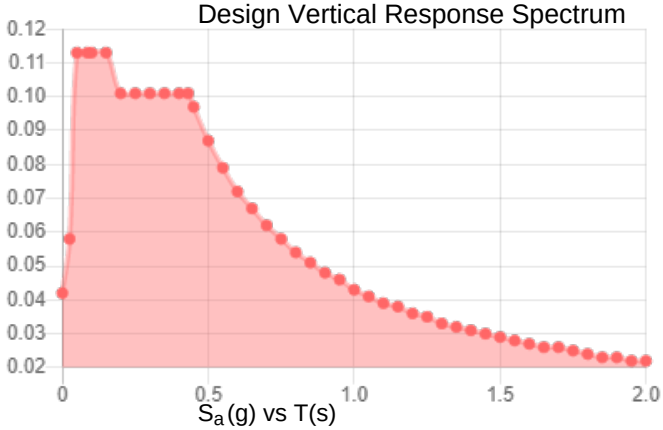
S_S :	0.189	S_{D1} :	0.087
S_1 :	0.054	T_L :	6
F_a :	1.6	PGA :	0.103
F_v :	2.4	PGA_M :	0.165
S_{MS} :	0.302	F_{PGA} :	1.593
S_{M1} :	0.13	I_e :	1
S_{DS} :	0.202	C_v :	0.7

Seismic Design Category B









Data Accessed: **Mon Jun 06 2022**

Date Source:

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

Ice

Results:

Ice Thickness:	1.00 in.
Concurrent Temperature:	15 F
Gust Speed	40 mph
Data Source:	Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8
Date Accessed:	Mon Jun 06 2022

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

Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 500-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from local meteorological studies. Ice thicknesses in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

Trylon
1825 W. Walnut Hill Lane Suite 120
Irving, TX 75038

TIA LOAD CALCULATOR 2.2

PROJECT DATA	
Job Code:	211632
Carrier Site ID:	CTNH541A
Carrier Site Name:	CTNH541A

CODES AND STANDARDS	
Building Code:	2018 IBC
Local Building Code:	-
Design Standard:	TIA-222-H

STRUCTURE DETAILS		
Mount Type:	Platform	--
Mount Elevation:	170.0	ft.
Number of Sectors:	3	--
Structure Type:	Monopole	--
Structure Height:	179.8	ft.

ANALYSIS CRITERIA		
Structure Risk Category:	II	--
Exposure Category:	C	--
Site Class:	D - Default	--
Ground Elevation:	780.6	ft.

TOPOGRAPHIC DATA		
Topographic Category:	1.00	--
Topographic Feature:	N/A	--
Crest Point Elevation:	0.00	ft.
Base Point Elevation:	0.00	ft.
Crest to Mid-Height (L/2):	0.00	ft.
Distance from Crest (x):	0.00	ft.
Base Topo Factor (K_{zt}):	1.00	--
Mount Topo Factor (K_{zt}):	1.00	--

WIND PARAMETERS		
Design Wind Speed:	114	mph
Wind Escalation Factor (K_s):	1.00	--
Velocity Coefficient (K_z):	1.42	--
Directionality Factor (K_d):	0.95	--
Gust Effect Factor (Gh):	1.00	--
Shielding Factor (K_a):	0.90	--
Velocity Pressure (q_z):	43.48	psf
Ground Elevation Factor (K_e):	0.97	--

ICE PARAMETERS		
Design Ice Wind Speed:	40	mph
Design Ice Thickness (t_i):	1.00	in
Importance Factor (I_i):	1.00	--
Ice Velocity Pressure (q_{zi}):	4.46	psf
Mount Ice Thickness (t_{iz}):	1.18	in

WIND STRUCTURE CALCULATIONS		
Flat Member Pressure:	78.27	psf
Round Member Pressure:	46.96	psf
Ice Wind Pressure:	4.81	psf

SEISMIC PARAMETERS		
Importance Factor (I_e):	1.00	--
Short Period Accel .(S_s):	0.189	g
1 Second Accel (S_1):	0.054	g
Short Period Des. (S_{DS}):	0.20	g
1 Second Des. (S_{D1}):	0.09	g
Short Period Coeff. (F_a):	1.60	--
1 Second Coeff. (F_v):	2.40	--
Response Coefficient (Cs):	0.10	--
Amplification Factor (A_S):	1.20	--

LOAD COMBINATIONS [LRFD]

#	Description
1	1.4DL
2	1.2DL + 1WL 0 AZI
3	1.2DL + 1WL 30 AZI
4	1.2DL + 1WL 45 AZI
5	1.2DL + 1WL 60 AZI
6	1.2DL + 1WL 90 AZI
7	1.2DL + 1WL 120 AZI
8	1.2DL + 1WL 135 AZI
9	1.2DL + 1WL 150 AZI
10	1.2DL + 1WL 180 AZI
11	1.2DL + 1WL 210 AZI
12	1.2DL + 1WL 225 AZI
13	1.2DL + 1WL 240 AZI
14	1.2DL + 1WL 270 AZI
15	1.2DL + 1WL 300 AZI
16	1.2DL + 1WL 315 AZI
17	1.2DL + 1WL 330 AZI
18	0.9DL + 1WL 0 AZI
19	0.9DL + 1WL 30 AZI
20	0.9DL + 1WL 45 AZI
21	0.9DL + 1WL 60 AZI
22	0.9DL + 1WL 90 AZI
23	0.9DL + 1WL 120 AZI
24	0.9DL + 1WL 135 AZI
25	0.9DL + 1WL 150 AZI
26	0.9DL + 1WL 180 AZI
27	0.9DL + 1WL 210 AZI
28	0.9DL + 1WL 225 AZI
29	0.9DL + 1WL 240 AZI
30	0.9DL + 1WL 270 AZI
31	0.9DL + 1WL 300 AZI
32	0.9DL + 1WL 315 AZI
33	0.9DL + 1WL 330 AZI
34	1.2DL + 1DLi + 1WLi 0 AZI
35	1.2DL + 1DLi + 1WLi 30 AZI
36	1.2DL + 1DLi + 1WLi 45 AZI
37	1.2DL + 1DLi + 1WLi 60 AZI
38	1.2DL + 1DLi + 1WLi 90 AZI
39	1.2DL + 1DLi + 1WLi 120 AZI
40	1.2DL + 1DLi + 1WLi 135 AZI
41	1.2DL + 1DLi + 1WLi 150 AZI

#	Description
42	1.2DL + 1DLi + 1WLi 180 AZI
43	1.2DL + 1DLi + 1WLi 210 AZI
44	1.2DL + 1DLi + 1WLi 225 AZI
45	1.2DL + 1DLi + 1WLi 240 AZI
46	1.2DL + 1DLi + 1WLi 270 AZI
47	1.2DL + 1DLi + 1WLi 300 AZI
48	1.2DL + 1DLi + 1WLi 315 AZI
49	1.2DL + 1DLi + 1WLi 330 AZI
50	(1.2+0.2Sds) + 1.0E 0 AZI
51	(1.2+0.2Sds) + 1.0E 30 AZI
52	(1.2+0.2Sds) + 1.0E 45 AZI
53	(1.2+0.2Sds) + 1.0E 60 AZI
54	(1.2+0.2Sds) + 1.0E 90 AZI
55	(1.2+0.2Sds) + 1.0E 120 AZI
56	(1.2+0.2Sds) + 1.0E 135 AZI
57	(1.2+0.2Sds) + 1.0E 150 AZI
58	(1.2+0.2Sds) + 1.0E 180 AZI
59	(1.2+0.2Sds) + 1.0E 210 AZI
60	(1.2+0.2Sds) + 1.0E 225 AZI
61	(1.2+0.2Sds) + 1.0E 240 AZI
62	(1.2+0.2Sds) + 1.0E 270 AZI
63	(1.2+0.2Sds) + 1.0E 300 AZI
64	(1.2+0.2Sds) + 1.0E 315 AZI
65	(1.2+0.2Sds) + 1.0E 330 AZI
66	(0.9-0.2Sds) + 1.0E 0 AZI
67	(0.9-0.2Sds) + 1.0E 30 AZI
68	(0.9-0.2Sds) + 1.0E 45 AZI
69	(0.9-0.2Sds) + 1.0E 60 AZI
70	(0.9-0.2Sds) + 1.0E 90 AZI
71	(0.9-0.2Sds) + 1.0E 120 AZI
72	(0.9-0.2Sds) + 1.0E 135 AZI
73	(0.9-0.2Sds) + 1.0E 150 AZI
74	(0.9-0.2Sds) + 1.0E 180 AZI
75	(0.9-0.2Sds) + 1.0E 210 AZI
76	(0.9-0.2Sds) + 1.0E 225 AZI
77	(0.9-0.2Sds) + 1.0E 240 AZI
78	(0.9-0.2Sds) + 1.0E 270 AZI
79	(0.9-0.2Sds) + 1.0E 300 AZI
80	(0.9-0.2Sds) + 1.0E 315 AZI
81	(0.9-0.2Sds) + 1.0E 330 AZI
82-88	1.2D + 1.5 Lv1

#	Description
89	1.2D + 1.5Lm + 1.0Wm 0 AZI - MP1
90	1.2D + 1.5Lm + 1.0Wm 30 AZI - MP1
91	1.2D + 1.5Lm + 1.0Wm 45 AZI - MP1
92	1.2D + 1.5Lm + 1.0Wm 60 AZI - MP1
93	1.2D + 1.5Lm + 1.0Wm 90 AZI - MP1
94	1.2D + 1.5Lm + 1.0Wm 120 AZI - MP1
95	1.2D + 1.5Lm + 1.0Wm 135 AZI - MP1
96	1.2D + 1.5Lm + 1.0Wm 150 AZI - MP1
97	1.2D + 1.5Lm + 1.0Wm 180 AZI - MP1
98	1.2D + 1.5Lm + 1.0Wm 210 AZI - MP1
99	1.2D + 1.5Lm + 1.0Wm 225 AZI - MP1
100	1.2D + 1.5Lm + 1.0Wm 240 AZI - MP1
101	1.2D + 1.5Lm + 1.0Wm 270 AZI - MP1
102	1.2D + 1.5Lm + 1.0Wm 300 AZI - MP1
103	1.2D + 1.5Lm + 1.0Wm 315 AZI - MP1
104	1.2D + 1.5Lm + 1.0Wm 330 AZI - MP1
105	1.2D + 1.5Lm + 1.0Wm 0 AZI - MP2
106	1.2D + 1.5Lm + 1.0Wm 30 AZI - MP2
107	1.2D + 1.5Lm + 1.0Wm 45 AZI - MP2
108	1.2D + 1.5Lm + 1.0Wm 60 AZI - MP2
109	1.2D + 1.5Lm + 1.0Wm 90 AZI - MP2
110	1.2D + 1.5Lm + 1.0Wm 120 AZI - MP2
111	1.2D + 1.5Lm + 1.0Wm 135 AZI - MP2
112	1.2D + 1.5Lm + 1.0Wm 150 AZI - MP2
113	1.2D + 1.5Lm + 1.0Wm 180 AZI - MP2
114	1.2D + 1.5Lm + 1.0Wm 210 AZI - MP2
115	1.2D + 1.5Lm + 1.0Wm 225 AZI - MP2
116	1.2D + 1.5Lm + 1.0Wm 240 AZI - MP2
117	1.2D + 1.5Lm + 1.0Wm 270 AZI - MP2
118	1.2D + 1.5Lm + 1.0Wm 300 AZI - MP2
119	1.2D + 1.5Lm + 1.0Wm 315 AZI - MP2
120	1.2D + 1.5Lm + 1.0Wm 330 AZI - MP2

#	Description
121	1.2D + 1.5Lm + 1.0Wm 0 AZI - MP3
122	1.2D + 1.5Lm + 1.0Wm 30 AZI - MP3
123	1.2D + 1.5Lm + 1.0Wm 45 AZI - MP3
124	1.2D + 1.5Lm + 1.0Wm 60 AZI - MP3
125	1.2D + 1.5Lm + 1.0Wm 90 AZI - MP3
126	1.2D + 1.5Lm + 1.0Wm 120 AZI - MP3
127	1.2D + 1.5Lm + 1.0Wm 135 AZI - MP3
128	1.2D + 1.5Lm + 1.0Wm 150 AZI - MP3
129	1.2D + 1.5Lm + 1.0Wm 180 AZI - MP3
130	1.2D + 1.5Lm + 1.0Wm 210 AZI - MP3
131	1.2D + 1.5Lm + 1.0Wm 225 AZI - MP3
132	1.2D + 1.5Lm + 1.0Wm 240 AZI - MP3
133	1.2D + 1.5Lm + 1.0Wm 270 AZI - MP3
134	1.2D + 1.5Lm + 1.0Wm 300 AZI - MP3
135	1.2D + 1.5Lm + 1.0Wm 315 AZI - MP3
136	1.2D + 1.5Lm + 1.0Wm 330 AZI - MP3
137	1.2D + 1.5Lm + 1.0Wm 0 AZI - MP4
138	1.2D + 1.5Lm + 1.0Wm 30 AZI - MP4
139	1.2D + 1.5Lm + 1.0Wm 45 AZI - MP4
140	1.2D + 1.5Lm + 1.0Wm 60 AZI - MP4
141	1.2D + 1.5Lm + 1.0Wm 90 AZI - MP4
142	1.2D + 1.5Lm + 1.0Wm 120 AZI - MP4
143	1.2D + 1.5Lm + 1.0Wm 135 AZI - MP4
144	1.2D + 1.5Lm + 1.0Wm 150 AZI - MP4
145	1.2D + 1.5Lm + 1.0Wm 180 AZI - MP4
146	1.2D + 1.5Lm + 1.0Wm 210 AZI - MP4
147	1.2D + 1.5Lm + 1.0Wm 225 AZI - MP4
148	1.2D + 1.5Lm + 1.0Wm 240 AZI - MP4
149	1.2D + 1.5Lm + 1.0Wm 270 AZI - MP4
150	1.2D + 1.5Lm + 1.0Wm 300 AZI - MP4
151	1.2D + 1.5Lm + 1.0Wm 315 AZI - MP4
152	1.2D + 1.5Lm + 1.0Wm 330 AZI - MP4

*This page shows an example of maintenance loads for (4) pipes, the number of mount pipe LCs may vary per site

EQUIPMENT LOADING

Appurtenance Name	Qty.	Elevation [ft]	--	EPA $_N$ (ft2)	EPA $_T$ (ft2)	Weight (lbs)
AIR 6419 B41_TMO	3	170	No Ice	7	2.83	96.50
--	--	--	w/ Ice	8.08	3.68	109.58
APXVAALL24_43-U-NA20_TMO	3	170	No Ice	14.67	5.32	149.90
--	--	--	w/ Ice	16.22	6.68	277.10
RADIO 4460 B2/B25 B66_TMO	3	170	No Ice	2.14	1.69	109.00
--	--	--	w/ Ice	2.43	1.95	57.11
Radio 4480_TMOV2	3	170	No Ice	2.88	1.40	81.00
--	--	--	w/ Ice	3.22	1.67	56.52
AIR 6419 B41_TMO	1	170	No Ice	7	2.83	96.50
--	--	--	w/ Ice	8.08	3.68	109.58
APXVAALL24_43-U-NA20_TMO	1	170	No Ice	14.67	5.32	149.90
--	--	--	w/ Ice	16.22	6.68	277.10
RADIO 4460 B2/B25 B66_TMO	1	170	No Ice	2.14	1.69	109.00
--	--	--	w/ Ice	2.43	1.95	57.11
Radio 4480_TMOV2	1	170	No Ice	2.88	1.40	81.00
--	--	--	w/ Ice	3.22	1.67	56.52
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			

EQUIPMENT LOADING [CONT.]

Appurtenance Name	Qty.	Elevation [ft]	--	EPA $_N$ (ft2)	EPA $_T$ (ft2)	Weight (lbs)
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			

EQUIPMENT WIND CALCULATIONS

Appurtenance Name	Qty.	Elevation [ft]	K_{zt}	K_z	K_d	t_d	q_z [psf]	q_{zi} [psf]
AIR 6419 B41_TMO	3	170	1.00	1.42	0.95	1.18	43.48	5.35
XVAALL24_43-U-NA20_TI	3	170	1.00	1.42	0.95	1.18	43.48	5.35
ADIO 4460 B2/B25 B66_TM	3	170	1.00	1.42	0.95	1.18	43.48	5.35
Radio 4480_TMOV2	3	170	1.00	1.42	0.95	1.18	43.48	5.35
AIR 6419 B41_TMO	1	170	1.00	1.42	0.95	1.18	43.48	5.35
XVAALL24_43-U-NA20_TI	1	170	1.00	1.42	0.95	1.18	43.48	5.35
ADIO 4460 B2/B25 B66_TM	1	170	1.00	1.42	0.95	1.18	43.48	5.35
Radio 4480_TMOV2	1	170	1.00	1.42	0.95	1.18	43.48	5.35

EQUIPMENT LATERAL WIND FORCE CALCULATIONS

Appurtenance Name	Qty.	--	0° 180°	30° 210°	60° 240°	90° 270°	120° 300°	150° 330°
AIR 6419 B41_TMO	3	No Ice	273.94	151.55	233.15	110.75	233.15	151.55
--	--	w/ Ice	38.94	23.04	33.64	17.73	33.64	23.04
APXVAALL24_43-U-NA20_TMO	3	No Ice	574.11	299.67	482.63	208.20	482.63	299.67
--	--	w/ Ice	78.13	43.68	66.65	32.20	66.65	43.68
RADIO 4460 B2/B25 B66_TMO	3	No Ice	83.72	70.41	79.28	65.97	79.28	70.41
--	--	w/ Ice	11.71	9.98	11.14	9.40	11.14	9.98
Radio 4480_TMOV2	3	No Ice	112.64	69.17	98.15	54.67	98.15	69.17
--	--	w/ Ice	15.51	9.92	13.65	8.06	13.65	9.92
AIR 6419 B41_TMO	1	No Ice	273.94	151.55	233.15	110.75	233.15	151.55
--	--	w/ Ice	38.94	23.04	33.64	17.73	33.64	23.04
APXVAALL24_43-U-NA20_TMO	1	No Ice	574.11	299.67	482.63	208.20	482.63	299.67
--	--	w/ Ice	78.13	43.68	66.65	32.20	66.65	43.68
RADIO 4460 B2/B25 B66_TMO	1	No Ice	83.72	70.41	79.28	65.97	79.28	70.41
--	--	w/ Ice	11.71	9.98	11.14	9.40	11.14	9.98
Radio 4480_TMOV2	1	No Ice	112.64	69.17	98.15	54.67	98.15	69.17
--	--	w/ Ice	15.51	9.92	13.65	8.06	13.65	9.92
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
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		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						

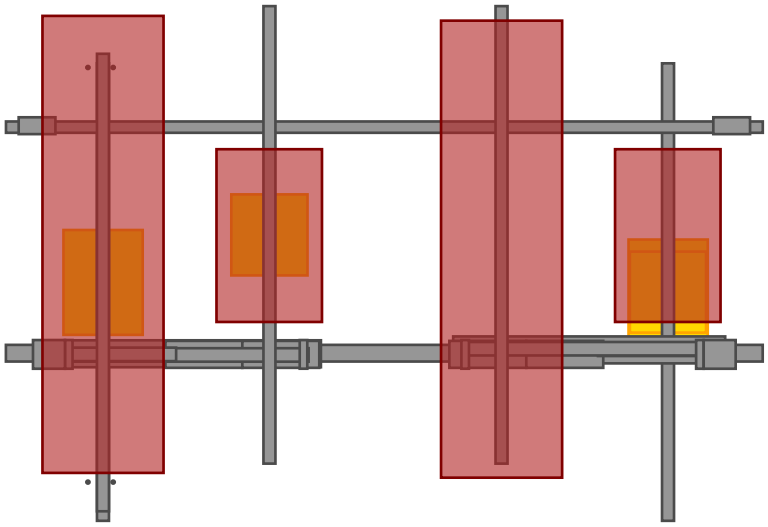
EQUIPMENT LATERAL WIND FORCE CALCULATIONS [CONT.]

Appurtenance Name	*Qty.*	*--*	*0° 180°*	*30° 210°*	*60° 240°*	*90° 270°*	*120° 300°*	*150° 330°*
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						

EQUIPMENT SEISMIC FORCE CALCULATIONS

Appurtenance Name	*Qty.*	*Elevation [ft]*	*Weight [lbs]*	F_p [lbs]
AIR 6419 B41_TMO	3	170	96.5	11.67
APXVAALL24_43-U-NA20_TMO	3	170	149.9	18.13
RADIO 4460 B2/B25 B66_TMO	3	170	109	13.18
Radio 4480_TMOV2	3	170	81	9.80
AIR 6419 B41_TMO	1	170	96.5	11.67
APXVAALL24_43-U-NA20_TMO	1	170	149.9	18.13
RADIO 4460 B2/B25 B66_TMO	1	170	109	13.18
Radio 4480_TMOV2	1	170	81	9.80

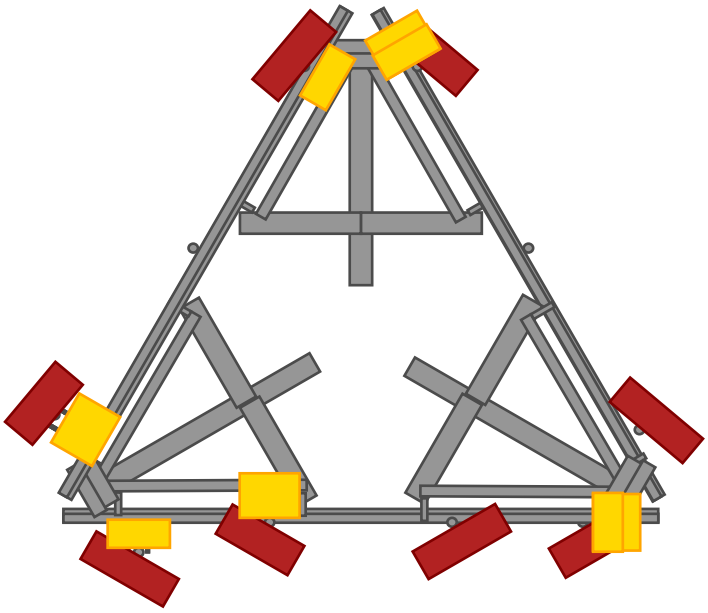
ELEVATION VIEW



*these drawings are intended to show approximate locations of equipment on the mount and should not be used to determine exact placement of equipment or additional hardware

**Elevation View Shows Only One Sector

PLAN VIEW



1825 W. Walnut Hill Lane, Suite 120
Irving, Texas 75038

Equipment Name	Total Quantity	Antenna Centerline	Mount Pipe Positions	Equipment Azimuths
AIR 6419 B41_TMO	3	170	MP1/MP5/MP8	330/130/220
APXVAALL24_43-U-NA20_TMO	3	170	MP2/MP7/MP10	330/130/220
RADIO 4460 B2/B25 B66_TMO	3	170	MP1/MP5/MP8	90/120/330
Radio 4480_TMOV2	3	170	MP1/MP7/MP8	90/120/330
AIR 6419 B41_TMO	1	170	MP3	30
APXVAALL24_43-U-NA20_TMO	1	170	MP4	30
RADIO 4460 B2/B25 B66_TMO	1	170	MP3	0
Radio 4480_TMOV2	1	170	MP4	0

APPENDIX C

SOFTWARE ANALYSIS OUTPUT

(Global) Model Settings

Display Sections for Member Calcs	5
Max Internal Sections for Member Calcs	97
Include Shear Deformation?	Yes
Increase Nailing Capacity for Wind?	Yes
Include Warping?	Yes
Trans Load Btwn Intersecting Wood Wall?	Yes
Area Load Mesh (in^2)	144
Merge Tolerance (in)	.12
P-Delta Analysis Tolerance	0.50%
Include P-Delta for Walls?	Yes
Automatically Iterate Stiffness for Walls?	Yes
Max Iterations for Wall Stiffness	3
Gravity Acceleration (in/sec^2)	386.4
Wall Mesh Size (in)	24
Eigensolution Convergence Tol. (1.E-)	4
Vertical Axis	Z
Global Member Orientation Plane	XY
Static Solver	Sparse Accelerated
Dynamic Solver	Accelerated Solver

Hot Rolled Steel Code	AISC 15th(360-16): LRFD
Adjust Stiffness?	Yes(Iterative)
RISAConnection Code	AISC 15th(360-16): LRFD
Cold Formed Steel Code	AISI S100-16: LRFD
Wood Code	None
Wood Temperature	< 100F
Concrete Code	None
Masonry Code	None
Aluminum Code	None - Building
Stainless Steel Code	AISC 14th(360-10): LRFD
Adjust Stiffness?	Yes(Iterative)

Number of Shear Regions	4
Region Spacing Increment (in)	4
Biaxial Column Method	Exact Integration
Parme Beta Factor (PCA)	.65
Concrete Stress Block	Rectangular
Use Cracked Sections?	Yes
Use Cracked Sections Slab?	No
Bad Framing Warnings?	No
Unused Force Warnings?	Yes
Min 1 Bar Diam. Spacing?	No
Concrete Rebar Set	REBAR_SET_ASTMA615
Min % Steel for Column	1
Max % Steel for Column	8

(Global) Model Settings, Continued

Seismic Code	ASCE 7-16
Seismic Base Elevation (in)	Not Entered
Add Base Weight?	Yes
Ct X	.02
Ct Z	.02
T X (sec)	Not Entered
T Z (sec)	Not Entered
R X	3
R Z	3
Ct Exp. X	.75
Ct Exp. Z	.75
SD1	1
SDS	1
S1	1
TL (sec)	5
Risk Cat	I or II
Drift Cat	Other
Om Z	1
Om X	1
Cd Z	1
Cd X	1
Rho Z	1
Rho X	1

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (/1...	Density[k/f...	Yield[ksi]	Ry	Fu[ksi]	Rt
1	A992	29000	11154	.3	.65	.49	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	.3	.65	.49	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	.3	.65	.527	42	1.4	58	1.3
5	A500 Gr.B Rect	29000	11154	.3	.65	.527	46	1.4	58	1.3
6	A53 Gr.B	29000	11154	.3	.65	.49	35	1.6	60	1.2
7	A1085	29000	11154	.3	.65	.49	50	1.4	65	1.3
8	Q235-GB	29000	11154	.3	.65	.49	35	1.5	58	1.2
9	Q345	29000	11154	.3	.65	.49	36	1.1	58	1.1
10	SAE J429 Grade 2	29000	11154	.3	.65	.49	57	1.1	74	1.1

Cold Formed Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (/1E5 F)	Density[k/ft^3]	Yield[ksi]	Fu[ksi]
1	A653 SS Gr33	29500	11346	.3	.65	.49	33	45
2	A653 SS Gr50/1	29500	11346	.3	.65	.49	50	65

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design ...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	HSS4X4X4	HSS4X4X4	Beam	Tube	A53 Gr.B	Typical	3.37	7.8	7.8	12.8
2	PIPE_3.0	PIPE_3.0	Beam	Pipe	A53 Gr.B	Typical	2.07	2.85	2.85	5.69
3	L2x2x3	L2x2x3	Beam	Single Angle	A36 Gr.36	Typical	.722	.271	.271	.009
4	PIPE_2.0	PIPE_2.0	Beam	Pipe	A53 Gr.B	Typical	1.02	.627	.627	1.25

Hot Rolled Steel Section Sets (Continued)

	Label	Shape	Type	Design List	Material	Design ...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
5	Plate 6"x0.5"	Pl 6"x0.5"	Beam	RECT	A36 Gr.36	Typical	3	.063	9	.237
6	L2.5x2.5x4	L2.5x2.5x4	Beam	Single Angle	A36 Gr.36	Typical	1.19	.692	.692	.026
7	Plate 6"x0.375"	Pl 6"x0.375"	Beam	RECT	A36 Gr.36	Typical	2.25	.026	6.75	.101
8	Threaded Rod(s)	SR 5/8	Beam	BAR	SAE J429 Gr...	Typical	.307	.007	.007	.015

Cold Formed Steel Section Sets

	Label	Shape	Type	Design List	Material	Design R...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	CF1A	8CU1.25X057	Beam	None	A653 SS Gr33	Typical	.581	.057	4.41	.00063

Joint Boundary Conditions

	Joint 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	N12	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
2	N41	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
3	N64	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distribut...	Area(Member)	Surface(...
1	Self Weight	DL			-1		24		3	
2	Structure Wind X	WLX						113		
3	Structure Wind Y	WLY						113		
4	Wind Load 0 AZI	WLX					48			
5	Wind Load 30 AZI	None					48			
6	Wind Load 45 AZI	None					48			
7	Wind Load 60 AZI	None					48			
8	Wind Load 90 AZI	WLY					48			
9	Wind Load 120 AZI	None					48			
10	Wind Load 135 AZI	None					48			
11	Wind Load 150 AZI	None					48			
12	Ice Weight	OL1					24	113	3	
13	Ice Structure Wind X	OL2						113		
14	Ice Structure Wind Y	OL3						113		
15	Ice Wind Load 0 AZI	OL2					48			
16	Ice Wind Load 30 AZI	None					48			
17	Ice Wind Load 45 AZI	None					48			
18	Ice Wind Load 60 AZI	None					48			
19	Ice Wind Load 90 AZI	OL3					48			
20	Ice Wind Load 120 AZI	None					48			
21	Ice Wind Load 135 AZI	None					48			
22	Ice Wind Load 150 AZI	None					48			
23	Seismic Load X	ELX	-.121				24			
24	Seismic Load Y	ELY		-.121			24			
25	Live Load 1 (Lv)	None					1			
26	Live Load 2 (Lv)	None					1			
27	Live Load 3 (Lv)	None					1			
28	Live Load 4 (Lv)	None					1			
29	Live Load 5 (Lv)	None					1			
30	Live Load 6 (Lv)	None					1			

Basic Load Cases (Continued)

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distribut...	Area(Member)	Surface(...
31	Live Load 7 (Lv)	None					1			
32	Live Load 8 (Lv)	None					1			
33	Live Load 9 (Lv)	None					1			
34	Maintenance Load 1 (Lm)	None					1			
35	Maintenance Load 2 (Lm)	None					1			
36	Maintenance Load 3 (Lm)	None					1			
37	Maintenance Load 4 (Lm)	None					1			
38	Maintenance Load 5 (Lm)	None					1			
39	Maintenance Load 6 (Lm)	None					1			
40	Maintenance Load 7 (Lm)	None					1			
41	Maintenance Load 8 (Lm)	None					1			
42	Maintenance Load 9 (Lm)	None					1			
43	Maintenance Load 10 (Lm)	None					1			
44	BLC 1 Transient Area Loads	None						54		
45	BLC 12 Transient Area Lo...	None						54		

Load Combinations

	Description	S...	P...	S...	B...	Factor	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...
1	1.4DL	Yes	Y		DL	1.4																		
2	1.2DL + 1WL 0 AZI	Yes	Y		DL	1.2	2	1	3		4	1												
3	1.2DL + 1WL 30 AZI	Yes	Y		DL	1.2	2	.866	3	.5	5	1												
4	1.2DL + 1WL 45 AZI	Yes	Y		DL	1.2	2	.707	3	.707	6	1												
5	1.2DL + 1WL 60 AZI	Yes	Y		DL	1.2	2	.5	3	.866	7	1												
6	1.2DL + 1WL 90 AZI	Yes	Y		DL	1.2	2		3	1	8	1												
7	1.2DL + 1WL 120 AZI	Yes	Y		DL	1.2	2	-.5	3	.866	9	1												
8	1.2DL + 1WL 135 AZI	Yes	Y		DL	1.2	2	-.707	3	.707	10	1												
9	1.2DL + 1WL 150 AZI	Yes	Y		DL	1.2	2	-.866	3	.5	11	1												
10	1.2DL + 1WL 180 AZI	Yes	Y		DL	1.2	2	-1	3		4	-1												
11	1.2DL + 1WL 210 AZI	Yes	Y		DL	1.2	2	-.866	3	-.5	5	-1												
12	1.2DL + 1WL 225 AZI	Yes	Y		DL	1.2	2	-.707	3	-.707	6	-1												
13	1.2DL + 1WL 240 AZI	Yes	Y		DL	1.2	2	-.5	3	-.866	7	-1												
14	1.2DL + 1WL 270 AZI	Yes	Y		DL	1.2	2		3	-1	8	-1												
15	1.2DL + 1WL 300 AZI	Yes	Y		DL	1.2	2	.5	3	-.866	9	-1												
16	1.2DL + 1WL 315 AZI	Yes	Y		DL	1.2	2	.707	3	-.707	10	-1												
17	1.2DL + 1WL 330 AZI	Yes	Y		DL	1.2	2	.866	3	-.5	11	-1												
18	0.9DL + 1WL 0 AZI	Yes	Y		DL	.9	2	1	3		4	1												
19	0.9DL + 1WL 30 AZI	Yes	Y		DL	.9	2	.866	3	.5	5	1												
20	0.9DL + 1WL 45 AZI	Yes	Y		DL	.9	2	.707	3	.707	6	1												
21	0.9DL + 1WL 60 AZI	Yes	Y		DL	.9	2	.5	3	.866	7	1												
22	0.9DL + 1WL 90 AZI	Yes	Y		DL	.9	2		3	1	8	1												
23	0.9DL + 1WL 120 AZI	Yes	Y		DL	.9	2	-.5	3	.866	9	1												
24	0.9DL + 1WL 135 AZI	Yes	Y		DL	.9	2	-.707	3	.707	10	1												
25	0.9DL + 1WL 150 AZI	Yes	Y		DL	.9	2	-.866	3	.5	11	1												
26	0.9DL + 1WL 180 AZI	Yes	Y		DL	.9	2	-1	3		4	-1												
27	0.9DL + 1WL 210 AZI	Yes	Y		DL	.9	2	-.866	3	-.5	5	-1												
28	0.9DL + 1WL 225 AZI	Yes	Y		DL	.9	2	-.707	3	-.707	6	-1												
29	0.9DL + 1WL 240 AZI	Yes	Y		DL	.9	2	-.5	3	-.866	7	-1												
30	0.9DL + 1WL 270 AZI	Yes	Y		DL	.9	2		3	-1	8	-1												
31	0.9DL + 1WL 300 AZI	Yes	Y		DL	.9	2	.5	3	-.866	9	-1												
32	0.9DL + 1WL 315 AZI	Yes	Y		DL	.9	2	.707	3	-.707	10	-1												

Load Combinations (Continued)

	Description	S...	P...	S...	B...	Factor	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...
33	0.9DL + 1WL 330 AZI	Yes	Y		DL	.9	2	.866	3	-.5	11	-1														
34	1.2DL + 1DLi + 1W Li 0 A...	Yes	Y		DL	1.2	O...	1	13	1	14		15	1												
35	1.2DL + 1DLi + 1W Li 30 ...	Yes	Y		DL	1.2	O...	1	13	.866	14	.5	16	1												
36	1.2DL + 1DLi + 1W Li 45 ...	Yes	Y		DL	1.2	O...	1	13	.707	14	.707	17	1												
37	1.2DL + 1DLi + 1W Li 60 ...	Yes	Y		DL	1.2	O...	1	13	.5	14	.866	18	1												
38	1.2DL + 1DLi + 1W Li 90 ...	Yes	Y		DL	1.2	O...	1	13		14	1	19	1												
39	1.2DL + 1DLi + 1W Li 12...	Yes	Y		DL	1.2	O...	1	13	-.5	14	.866	20	1												
40	1.2DL + 1DLi + 1W Li 13...	Yes	Y		DL	1.2	O...	1	13	-.707	14	.707	21	1												
41	1.2DL + 1DLi + 1W Li 15...	Yes	Y		DL	1.2	O...	1	13	-.866	14	.5	22	1												
42	1.2DL + 1DLi + 1W Li 18...	Yes	Y		DL	1.2	O...	1	13	-1	14		15	-1												
43	1.2DL + 1DLi + 1W Li 21...	Yes	Y		DL	1.2	O...	1	13	-.866	14	-.5	16	-1												
44	1.2DL + 1DLi + 1W Li 22...	Yes	Y		DL	1.2	O...	1	13	-.707	14	-.707	17	-1												
45	1.2DL + 1DLi + 1W Li 24...	Yes	Y		DL	1.2	O...	1	13	-.5	14	-.866	18	-1												
46	1.2DL + 1DLi + 1W Li 27...	Yes	Y		DL	1.2	O...	1	13		14	-1	19	-1												
47	1.2DL + 1DLi + 1W Li 30...	Yes	Y		DL	1.2	O...	1	13	.5	14	-.866	20	-1												
48	1.2DL + 1DLi + 1W Li 31...	Yes	Y		DL	1.2	O...	1	13	.707	14	-.707	21	-1												
49	1.2DL + 1DLi + 1W Li 33...	Yes	Y		DL	1.2	O...	1	13	.866	14	-.5	22	-1												
50	(1.2+0.2Sds)DL + 1E 0 A...	Yes	Y		DL	1.24	23	1	24																	
51	(1.2+0.2Sds)DL + 1E 30 ...	Yes	Y		DL	1.24	23	.866	24	.5																
52	(1.2+0.2Sds)DL + 1E 45 ...	Yes	Y		DL	1.24	23	.707	24	.707																
53	(1.2+0.2Sds)DL + 1E 60 ...	Yes	Y		DL	1.24	23	.5	24	.866																
54	(1.2+0.2Sds)DL + 1E 90 ...	Yes	Y		DL	1.24	23		24	1																
55	(1.2+0.2Sds)DL + 1E 12...	Yes	Y		DL	1.24	23	-.5	24	.866																
56	(1.2+0.2Sds)DL + 1E 13...	Yes	Y		DL	1.24	23	-.707	24	.707																
57	(1.2+0.2Sds)DL + 1E 15...	Yes	Y		DL	1.24	23	-.866	24	.5																
58	(1.2+0.2Sds)DL + 1E 18...	Yes	Y		DL	1.24	23	-1	24																	
59	(1.2+0.2Sds)DL + 1E 21...	Yes	Y		DL	1.24	23	-.866	24	-.5																
60	(1.2+0.2Sds)DL + 1E 22...	Yes	Y		DL	1.24	23	-.707	24	-.707																
61	(1.2+0.2Sds)DL + 1E 24...	Yes	Y		DL	1.24	23	-.5	24	-.866																
62	(1.2+0.2Sds)DL + 1E 27...	Yes	Y		DL	1.24	23		24	-1																
63	(1.2+0.2Sds)DL + 1E 30...	Yes	Y		DL	1.24	23	.5	24	-.866																
64	(1.2+0.2Sds)DL + 1E 31...	Yes	Y		DL	1.24	23	.707	24	-.707																
65	(1.2+0.2Sds)DL + 1E 33...	Yes	Y		DL	1.24	23	.866	24	-.5																
66	(0.9-0.2Sds)DL + 1E 0 AZI	Yes	Y		DL	.86	23	1	24																	
67	(0.9-0.2Sds)DL + 1E 30 ...	Yes	Y		DL	.86	23	.866	24	.5																
68	(0.9-0.2Sds)DL + 1E 45 ...	Yes	Y		DL	.86	23	.707	24	.707																
69	(0.9-0.2Sds)DL + 1E 60 ...	Yes	Y		DL	.86	23	.5	24	.866																
70	(0.9-0.2Sds)DL + 1E 90 ...	Yes	Y		DL	.86	23		24	1																
71	(0.9-0.2Sds)DL + 1E 120...	Yes	Y		DL	.86	23	-.5	24	.866																
72	(0.9-0.2Sds)DL + 1E 135...	Yes	Y		DL	.86	23	-.707	24	.707																
73	(0.9-0.2Sds)DL + 1E 150...	Yes	Y		DL	.86	23	-.866	24	.5																
74	(0.9-0.2Sds)DL + 1E 180...	Yes	Y		DL	.86	23	-1	24																	
75	(0.9-0.2Sds)DL + 1E 210...	Yes	Y		DL	.86	23	-.866	24	-.5																
76	(0.9-0.2Sds)DL + 1E 225...	Yes	Y		DL	.86	23	-.707	24	-.707																
77	(0.9-0.2Sds)DL + 1E 240...	Yes	Y		DL	.86	23	-.5	24	-.866																
78	(0.9-0.2Sds)DL + 1E 270...	Yes	Y		DL	.86	23		24	-1																
79	(0.9-0.2Sds)DL + 1E 300...	Yes	Y		DL	.86	23	.5	24	-.866																
80	(0.9-0.2Sds)DL + 1E 315...	Yes	Y		DL	.86	23	.707	24	-.707																
81	(0.9-0.2Sds)DL + 1E 330...	Yes	Y		DL	.86	23	.866	24	-.5																
82	1.2DL + 1Lv1	Yes	Y		DL	1.2	25	1.5																		
83	1.2DL + 1Lv2	Yes	Y		DL	1.2	26	1.5																		
84	1.2DL + 1Lv3	Yes	Y		DL	1.2	27	1.5																		

Load Combinations (Continued)

	Description	S...	P...	S...	B...	Factor	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...
85	1.2DL + 1Lv4	Yes	Y		DL	1.2	28	1.5																
86	1.2DL + 1Lv5	Yes	Y		DL	1.2	29	1.5																
87	1.2DL + 1Lv6	Yes	Y		DL	1.2	30	1.5																
88	1.2DL + 1Lv7	Yes	Y		DL	1.2	31	1.5																
89	1.2DL + 1Lv8	Yes	Y		DL	1.2	32	1.5																
90	1.2DL + 1Lv9	Yes	Y		DL	1.2	33	1.5																
91	1.2DL + 1.5Lm + 1Wm 0...	Yes	Y		DL	1.2	34	1.5	2	.069	3		4	.069										
92	1.2DL + 1.5Lm + 1Wm 3...	Yes	Y		DL	1.2	34	1.5	2	.06	3	.035	5	.069										
93	1.2DL + 1.5Lm + 1Wm 4...	Yes	Y		DL	1.2	34	1.5	2	.049	3	.049	6	.069										
94	1.2DL + 1.5Lm + 1Wm 6...	Yes	Y		DL	1.2	34	1.5	2	.035	3	.06	7	.069										
95	1.2DL + 1.5Lm + 1Wm 9...	Yes	Y		DL	1.2	34	1.5	2		3	.069	8	.069										
96	1.2DL + 1.5Lm + 1Wm 1...	Yes	Y		DL	1.2	34	1.5	2	-.035	3	.06	9	.069										
97	1.2DL + 1.5Lm + 1Wm 1...	Yes	Y		DL	1.2	34	1.5	2	-.049	3	.049	10	.069										
98	1.2DL + 1.5Lm + 1Wm 1...	Yes	Y		DL	1.2	34	1.5	2	-.06	3	.035	11	.069										
99	1.2DL + 1.5Lm + 1Wm 1...	Yes	Y		DL	1.2	34	1.5	2	-.069	3		4	-.069										
100	1.2DL + 1.5Lm + 1Wm 2...	Yes	Y		DL	1.2	34	1.5	2	-.06	3	-.035	5	-.069										
101	1.2DL + 1.5Lm + 1Wm 2...	Yes	Y		DL	1.2	34	1.5	2	-.049	3	-.049	6	-.069										
102	1.2DL + 1.5Lm + 1Wm 2...	Yes	Y		DL	1.2	34	1.5	2	-.035	3	-.06	7	-.069										
103	1.2DL + 1.5Lm + 1Wm 2...	Yes	Y		DL	1.2	34	1.5	2		3	-.069	8	-.069										
104	1.2DL + 1.5Lm + 1Wm 3...	Yes	Y		DL	1.2	34	1.5	2	.035	3	-.06	9	-.069										
105	1.2DL + 1.5Lm + 1Wm 3...	Yes	Y		DL	1.2	34	1.5	2	.049	3	-.049	10	-.069										
106	1.2DL + 1.5Lm + 1Wm 3...	Yes	Y		DL	1.2	34	1.5	2	.06	3	-.035	11	-.069										
107	1.2DL + 1.5Lm + 1Wm 0...	Yes	Y		DL	1.2	35	1.5	2	.069	3		4	.069										
108	1.2DL + 1.5Lm + 1Wm 3...	Yes	Y		DL	1.2	35	1.5	2	.06	3	.035	5	.069										
109	1.2DL + 1.5Lm + 1Wm 4...	Yes	Y		DL	1.2	35	1.5	2	.049	3	.049	6	.069										
110	1.2DL + 1.5Lm + 1Wm 6...	Yes	Y		DL	1.2	35	1.5	2	.035	3	.06	7	.069										
111	1.2DL + 1.5Lm + 1Wm 9...	Yes	Y		DL	1.2	35	1.5	2		3	.069	8	.069										
112	1.2DL + 1.5Lm + 1Wm 1...	Yes	Y		DL	1.2	35	1.5	2	-.035	3	.06	9	.069										
113	1.2DL + 1.5Lm + 1Wm 1...	Yes	Y		DL	1.2	35	1.5	2	-.049	3	.049	10	.069										
114	1.2DL + 1.5Lm + 1Wm 1...	Yes	Y		DL	1.2	35	1.5	2	-.06	3	.035	11	.069										
115	1.2DL + 1.5Lm + 1Wm 1...	Yes	Y		DL	1.2	35	1.5	2	-.069	3		4	-.069										
116	1.2DL + 1.5Lm + 1Wm 2...	Yes	Y		DL	1.2	35	1.5	2	-.06	3	-.035	5	-.069										
117	1.2DL + 1.5Lm + 1Wm 2...	Yes	Y		DL	1.2	35	1.5	2	-.049	3	-.049	6	-.069										
118	1.2DL + 1.5Lm + 1Wm 2...	Yes	Y		DL	1.2	35	1.5	2	-.035	3	-.06	7	-.069										
119	1.2DL + 1.5Lm + 1Wm 2...	Yes	Y		DL	1.2	35	1.5	2		3	-.069	8	-.069										
120	1.2DL + 1.5Lm + 1Wm 3...	Yes	Y		DL	1.2	35	1.5	2	.035	3	-.06	9	-.069										
121	1.2DL + 1.5Lm + 1Wm 3...	Yes	Y		DL	1.2	35	1.5	2	.049	3	-.049	10	-.069										
122	1.2DL + 1.5Lm + 1Wm 3...	Yes	Y		DL	1.2	35	1.5	2	.06	3	-.035	11	-.069										
123	1.2DL + 1.5Lm + 1Wm 0...	Yes	Y		DL	1.2	36	1.5	2	.069	3		4	.069										
124	1.2DL + 1.5Lm + 1Wm 3...	Yes	Y		DL	1.2	36	1.5	2	.06	3	.035	5	.069										
125	1.2DL + 1.5Lm + 1Wm 4...	Yes	Y		DL	1.2	36	1.5	2	.049	3	.049	6	.069										
126	1.2DL + 1.5Lm + 1Wm 6...	Yes	Y		DL	1.2	36	1.5	2	.035	3	.06	7	.069										
127	1.2DL + 1.5Lm + 1Wm 9...	Yes	Y		DL	1.2	36	1.5	2		3	.069	8	.069										
128	1.2DL + 1.5Lm + 1Wm 1...	Yes	Y		DL	1.2	36	1.5	2	-.035	3	.06	9	.069										
129	1.2DL + 1.5Lm + 1Wm 1...	Yes	Y		DL	1.2	36	1.5	2	-.049	3	.049	10	.069										
130	1.2DL + 1.5Lm + 1Wm 1...	Yes	Y		DL	1.2	36	1.5	2	-.06	3	.035	11	.069										
131	1.2DL + 1.5Lm + 1Wm 1...	Yes	Y		DL	1.2	36	1.5	2	-.069	3		4	-.069										
132	1.2DL + 1.5Lm + 1Wm 2...	Yes	Y		DL	1.2	36	1.5	2	-.06	3	-.035	5	-.069										
133	1.2DL + 1.5Lm + 1Wm 2...	Yes	Y		DL	1.2	36	1.5	2	-.049	3	-.049	6	-.069										
134	1.2DL + 1.5Lm + 1Wm 2...	Yes	Y		DL	1.2	36	1.5	2	-.035	3	-.06	7	-.069										
135	1.2DL + 1.5Lm + 1Wm 2...	Yes	Y		DL	1.2	36	1.5	2		3	-.069	8	-.069										
136	1.2DL + 1.5Lm + 1Wm 3...	Yes	Y		DL	1.2	36	1.5	2	.035	3	-.06	9	-.069										

Load Combinations (Continued)

	Description	S...	P...	S...	B...	Factor	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...
137	1.2DL + 1.5Lm + 1Wm 3..	Yes	Y		DL	1.2	36	1.5	2	.049	3	-.049	10	-.069										
138	1.2DL + 1.5Lm + 1Wm 3..	Yes	Y		DL	1.2	36	1.5	2	.06	3	-.035	11	-.069										
139	1.2DL + 1.5Lm + 1Wm 0..	Yes	Y		DL	1.2	37	1.5	2	.069	3		4	.069										
140	1.2DL + 1.5Lm + 1Wm 3..	Yes	Y		DL	1.2	37	1.5	2	.06	3	.035	5	.069										
141	1.2DL + 1.5Lm + 1Wm 4..	Yes	Y		DL	1.2	37	1.5	2	.049	3	.049	6	.069										
142	1.2DL + 1.5Lm + 1Wm 6..	Yes	Y		DL	1.2	37	1.5	2	.035	3	.06	7	.069										
143	1.2DL + 1.5Lm + 1Wm 9..	Yes	Y		DL	1.2	37	1.5	2		3	.069	8	.069										
144	1.2DL + 1.5Lm + 1Wm 1..	Yes	Y		DL	1.2	37	1.5	2	-.035	3	.06	9	.069										
145	1.2DL + 1.5Lm + 1Wm 1..	Yes	Y		DL	1.2	37	1.5	2	-.049	3	.049	10	.069										
146	1.2DL + 1.5Lm + 1Wm 1..	Yes	Y		DL	1.2	37	1.5	2	-.06	3	.035	11	.069										
147	1.2DL + 1.5Lm + 1Wm 1..	Yes	Y		DL	1.2	37	1.5	2	-.069	3		4	-.069										
148	1.2DL + 1.5Lm + 1Wm 2..	Yes	Y		DL	1.2	37	1.5	2	-.06	3	-.035	5	-.069										
149	1.2DL + 1.5Lm + 1Wm 2..	Yes	Y		DL	1.2	37	1.5	2	-.049	3	-.049	6	-.069										
150	1.2DL + 1.5Lm + 1Wm 2..	Yes	Y		DL	1.2	37	1.5	2	-.035	3	-.06	7	-.069										
151	1.2DL + 1.5Lm + 1Wm 2..	Yes	Y		DL	1.2	37	1.5	2		3	-.069	8	-.069										
152	1.2DL + 1.5Lm + 1Wm 3..	Yes	Y		DL	1.2	37	1.5	2	.035	3	-.06	9	-.069										
153	1.2DL + 1.5Lm + 1Wm 3..	Yes	Y		DL	1.2	37	1.5	2	.049	3	-.049	10	-.069										
154	1.2DL + 1.5Lm + 1Wm 3..	Yes	Y		DL	1.2	37	1.5	2	.06	3	-.035	11	-.069										
155	1.2DL + 1.5Lm + 1Wm 0..	Yes	Y		DL	1.2	38	1.5	2	.069	3		4	.069										
156	1.2DL + 1.5Lm + 1Wm 3..	Yes	Y		DL	1.2	38	1.5	2	.06	3	.035	5	.069										
157	1.2DL + 1.5Lm + 1Wm 4..	Yes	Y		DL	1.2	38	1.5	2	.049	3	.049	6	.069										
158	1.2DL + 1.5Lm + 1Wm 6..	Yes	Y		DL	1.2	38	1.5	2	.035	3	.06	7	.069										
159	1.2DL + 1.5Lm + 1Wm 9..	Yes	Y		DL	1.2	38	1.5	2		3	.069	8	.069										
160	1.2DL + 1.5Lm + 1Wm 1..	Yes	Y		DL	1.2	38	1.5	2	-.035	3	.06	9	.069										
161	1.2DL + 1.5Lm + 1Wm 1..	Yes	Y		DL	1.2	38	1.5	2	-.049	3	.049	10	.069										
162	1.2DL + 1.5Lm + 1Wm 1..	Yes	Y		DL	1.2	38	1.5	2	-.06	3	.035	11	.069										
163	1.2DL + 1.5Lm + 1Wm 1..	Yes	Y		DL	1.2	38	1.5	2	-.069	3		4	-.069										
164	1.2DL + 1.5Lm + 1Wm 2..	Yes	Y		DL	1.2	38	1.5	2	-.06	3	-.035	5	-.069										
165	1.2DL + 1.5Lm + 1Wm 2..	Yes	Y		DL	1.2	38	1.5	2	-.049	3	-.049	6	-.069										
166	1.2DL + 1.5Lm + 1Wm 2..	Yes	Y		DL	1.2	38	1.5	2	-.035	3	-.06	7	-.069										
167	1.2DL + 1.5Lm + 1Wm 2..	Yes	Y		DL	1.2	38	1.5	2		3	-.069	8	-.069										
168	1.2DL + 1.5Lm + 1Wm 3..	Yes	Y		DL	1.2	38	1.5	2	.035	3	-.06	9	-.069										
169	1.2DL + 1.5Lm + 1Wm 3..	Yes	Y		DL	1.2	38	1.5	2	.049	3	-.049	10	-.069										
170	1.2DL + 1.5Lm + 1Wm 3..	Yes	Y		DL	1.2	38	1.5	2	.06	3	-.035	11	-.069										
171	1.2DL + 1.5Lm + 1Wm 0..	Yes	Y		DL	1.2	39	1.5	2	.069	3		4	.069										
172	1.2DL + 1.5Lm + 1Wm 3..	Yes	Y		DL	1.2	39	1.5	2	.06	3	.035	5	.069										
173	1.2DL + 1.5Lm + 1Wm 4..	Yes	Y		DL	1.2	39	1.5	2	.049	3	.049	6	.069										
174	1.2DL + 1.5Lm + 1Wm 6..	Yes	Y		DL	1.2	39	1.5	2	.035	3	.06	7	.069										
175	1.2DL + 1.5Lm + 1Wm 9..	Yes	Y		DL	1.2	39	1.5	2		3	.069	8	.069										
176	1.2DL + 1.5Lm + 1Wm 1..	Yes	Y		DL	1.2	39	1.5	2	-.035	3	.06	9	.069										
177	1.2DL + 1.5Lm + 1Wm 1..	Yes	Y		DL	1.2	39	1.5	2	-.049	3	.049	10	.069										
178	1.2DL + 1.5Lm + 1Wm 1..	Yes	Y		DL	1.2	39	1.5	2	-.06	3	.035	11	.069										
179	1.2DL + 1.5Lm + 1Wm 1..	Yes	Y		DL	1.2	39	1.5	2	-.069	3		4	-.069										
180	1.2DL + 1.5Lm + 1Wm 2..	Yes	Y		DL	1.2	39	1.5	2	-.06	3	-.035	5	-.069										
181	1.2DL + 1.5Lm + 1Wm 2..	Yes	Y		DL	1.2	39	1.5	2	-.049	3	-.049	6	-.069										
182	1.2DL + 1.5Lm + 1Wm 2..	Yes	Y		DL	1.2	39	1.5	2	-.035	3	-.06	7	-.069										
183	1.2DL + 1.5Lm + 1Wm 2..	Yes	Y		DL	1.2	39	1.5	2		3	-.069	8	-.069										
184	1.2DL + 1.5Lm + 1Wm 3..	Yes	Y		DL	1.2	39	1.5	2	.035	3	-.06	9	-.069										
185	1.2DL + 1.5Lm + 1Wm 3..	Yes	Y		DL	1.2	39	1.5	2	.049	3	-.049	10	-.069										
186	1.2DL + 1.5Lm + 1Wm 3..	Yes	Y		DL	1.2	39	1.5	2	.06	3	-.035	11	-.069										
187	1.2DL + 1.5Lm + 1Wm 0..	Yes	Y		DL	1.2	40	1.5	2	.069	3		4	.069										
188	1.2DL + 1.5Lm + 1Wm 3..	Yes	Y		DL	1.2	40	1.5	2	.06	3	.035	5	.069										

Load Combinations (Continued)

	Description	S...	P...	S...	B...	Factor	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...
189	1.2DL + 1.5Lm + 1Wm 4..	Yes	Y		DL	1.2	40	1.5	2	.049	3	.049	6	.069										
190	1.2DL + 1.5Lm + 1Wm 6..	Yes	Y		DL	1.2	40	1.5	2	.035	3	.06	7	.069										
191	1.2DL + 1.5Lm + 1Wm 9..	Yes	Y		DL	1.2	40	1.5	2		3	.069	8	.069										
192	1.2DL + 1.5Lm + 1Wm 1..	Yes	Y		DL	1.2	40	1.5	2	-.035	3	.06	9	.069										
193	1.2DL + 1.5Lm + 1Wm 1..	Yes	Y		DL	1.2	40	1.5	2	-.049	3	.049	10	.069										
194	1.2DL + 1.5Lm + 1Wm 1..	Yes	Y		DL	1.2	40	1.5	2	-.06	3	.035	11	.069										
195	1.2DL + 1.5Lm + 1Wm 1..	Yes	Y		DL	1.2	40	1.5	2	-.069	3		4	-.069										
196	1.2DL + 1.5Lm + 1Wm 2..	Yes	Y		DL	1.2	40	1.5	2	-.06	3	-.035	5	-.069										
197	1.2DL + 1.5Lm + 1Wm 2..	Yes	Y		DL	1.2	40	1.5	2	-.049	3	-.049	6	-.069										
198	1.2DL + 1.5Lm + 1Wm 2..	Yes	Y		DL	1.2	40	1.5	2	-.035	3	-.06	7	-.069										
199	1.2DL + 1.5Lm + 1Wm 2..	Yes	Y		DL	1.2	40	1.5	2		3	-.069	8	-.069										
200	1.2DL + 1.5Lm + 1Wm 3..	Yes	Y		DL	1.2	40	1.5	2	.035	3	-.06	9	-.069										
201	1.2DL + 1.5Lm + 1Wm 3..	Yes	Y		DL	1.2	40	1.5	2	.049	3	-.049	10	-.069										
202	1.2DL + 1.5Lm + 1Wm 3..	Yes	Y		DL	1.2	40	1.5	2	.06	3	-.035	11	-.069										
203	1.2DL + 1.5Lm + 1Wm 0..	Yes	Y		DL	1.2	41	1.5	2	.069	3		4	.069										
204	1.2DL + 1.5Lm + 1Wm 3..	Yes	Y		DL	1.2	41	1.5	2	.06	3	.035	5	.069										
205	1.2DL + 1.5Lm + 1Wm 4..	Yes	Y		DL	1.2	41	1.5	2	.049	3	.049	6	.069										
206	1.2DL + 1.5Lm + 1Wm 6..	Yes	Y		DL	1.2	41	1.5	2	.035	3	.06	7	.069										
207	1.2DL + 1.5Lm + 1Wm 9..	Yes	Y		DL	1.2	41	1.5	2		3	.069	8	.069										
208	1.2DL + 1.5Lm + 1Wm 1..	Yes	Y		DL	1.2	41	1.5	2	-.035	3	.06	9	.069										
209	1.2DL + 1.5Lm + 1Wm 1..	Yes	Y		DL	1.2	41	1.5	2	-.049	3	.049	10	.069										
210	1.2DL + 1.5Lm + 1Wm 1..	Yes	Y		DL	1.2	41	1.5	2	-.06	3	.035	11	.069										
211	1.2DL + 1.5Lm + 1Wm 1..	Yes	Y		DL	1.2	41	1.5	2	-.069	3		4	-.069										
212	1.2DL + 1.5Lm + 1Wm 2..	Yes	Y		DL	1.2	41	1.5	2	-.06	3	-.035	5	-.069										
213	1.2DL + 1.5Lm + 1Wm 2..	Yes	Y		DL	1.2	41	1.5	2	-.049	3	-.049	6	-.069										
214	1.2DL + 1.5Lm + 1Wm 2..	Yes	Y		DL	1.2	41	1.5	2	-.035	3	-.06	7	-.069										
215	1.2DL + 1.5Lm + 1Wm 2..	Yes	Y		DL	1.2	41	1.5	2		3	-.069	8	-.069										
216	1.2DL + 1.5Lm + 1Wm 3..	Yes	Y		DL	1.2	41	1.5	2	.035	3	-.06	9	-.069										
217	1.2DL + 1.5Lm + 1Wm 3..	Yes	Y		DL	1.2	41	1.5	2	.049	3	-.049	10	-.069										
218	1.2DL + 1.5Lm + 1Wm 3..	Yes	Y		DL	1.2	41	1.5	2	.06	3	-.035	11	-.069										
219	1.2DL + 1.5Lm + 1Wm 0..	Yes	Y		DL	1.2	42	1.5	2	.069	3		4	.069										
220	1.2DL + 1.5Lm + 1Wm 3..	Yes	Y		DL	1.2	42	1.5	2	.06	3	.035	5	.069										
221	1.2DL + 1.5Lm + 1Wm 4..	Yes	Y		DL	1.2	42	1.5	2	.049	3	.049	6	.069										
222	1.2DL + 1.5Lm + 1Wm 6..	Yes	Y		DL	1.2	42	1.5	2	.035	3	.06	7	.069										
223	1.2DL + 1.5Lm + 1Wm 9..	Yes	Y		DL	1.2	42	1.5	2		3	.069	8	.069										
224	1.2DL + 1.5Lm + 1Wm 1..	Yes	Y		DL	1.2	42	1.5	2	-.035	3	.06	9	.069										
225	1.2DL + 1.5Lm + 1Wm 1..	Yes	Y		DL	1.2	42	1.5	2	-.049	3	.049	10	.069										
226	1.2DL + 1.5Lm + 1Wm 1..	Yes	Y		DL	1.2	42	1.5	2	-.06	3	.035	11	.069										
227	1.2DL + 1.5Lm + 1Wm 1..	Yes	Y		DL	1.2	42	1.5	2	-.069	3		4	-.069										
228	1.2DL + 1.5Lm + 1Wm 2..	Yes	Y		DL	1.2	42	1.5	2	-.06	3	-.035	5	-.069										
229	1.2DL + 1.5Lm + 1Wm 2..	Yes	Y		DL	1.2	42	1.5	2	-.049	3	-.049	6	-.069										
230	1.2DL + 1.5Lm + 1Wm 2..	Yes	Y		DL	1.2	42	1.5	2	-.035	3	-.06	7	-.069										
231	1.2DL + 1.5Lm + 1Wm 2..	Yes	Y		DL	1.2	42	1.5	2		3	-.069	8	-.069										
232	1.2DL + 1.5Lm + 1Wm 3..	Yes	Y		DL	1.2	42	1.5	2	.035	3	-.06	9	-.069										
233	1.2DL + 1.5Lm + 1Wm 3..	Yes	Y		DL	1.2	42	1.5	2	.049	3	-.049	10	-.069										
234	1.2DL + 1.5Lm + 1Wm 3..	Yes	Y		DL	1.2	42	1.5	2	.06	3	-.035	11	-.069										
235	1.2DL + 1.5Lm + 1Wm 0..	Yes	Y		DL	1.2	43	1.5	2	.069	3		4	.069										
236	1.2DL + 1.5Lm + 1Wm 3..	Yes	Y		DL	1.2	43	1.5	2	.06	3	.035	5	.069										
237	1.2DL + 1.5Lm + 1Wm 4..	Yes	Y		DL	1.2	43	1.5	2	.049	3	.049	6	.069										
238	1.2DL + 1.5Lm + 1Wm 6..	Yes	Y		DL	1.2	43	1.5	2	.035	3	.06	7	.069										
239	1.2DL + 1.5Lm + 1Wm 9..	Yes	Y		DL	1.2	43	1.5	2		3	.069	8	.069										
240	1.2DL + 1.5Lm + 1Wm 1..	Yes	Y		DL	1.2	43	1.5	2	-.035	3	.06	9	.069										

Load Combinations (Continued)

	Description	S...	P...	S...	B...	Factor	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...
241	1.2DL + 1.5Lm + 1Wm 1...	Yes	Y		DL	1.2	43	1.5	2	-.049	3	.049	10	.069										
242	1.2DL + 1.5Lm + 1Wm 1...	Yes	Y		DL	1.2	43	1.5	2	-.06	3	.035	11	.069										
243	1.2DL + 1.5Lm + 1Wm 1...	Yes	Y		DL	1.2	43	1.5	2	-.069	3		4	-.069										
244	1.2DL + 1.5Lm + 1Wm 2...	Yes	Y		DL	1.2	43	1.5	2	-.06	3	-.035	5	-.069										
245	1.2DL + 1.5Lm + 1Wm 2...	Yes	Y		DL	1.2	43	1.5	2	-.049	3	-.049	6	-.069										
246	1.2DL + 1.5Lm + 1Wm 2...	Yes	Y		DL	1.2	43	1.5	2	-.035	3	-.06	7	-.069										
247	1.2DL + 1.5Lm + 1Wm 2...	Yes	Y		DL	1.2	43	1.5	2		3	-.069	8	-.069										
248	1.2DL + 1.5Lm + 1Wm 3...	Yes	Y		DL	1.2	43	1.5	2	.035	3	-.06	9	-.069										
249	1.2DL + 1.5Lm + 1Wm 3...	Yes	Y		DL	1.2	43	1.5	2	.049	3	-.049	10	-.069										
250	1.2DL + 1.5Lm + 1Wm 3...	Yes	Y		DL	1.2	43	1.5	2	.06	3	-.035	11	-.069										

Envelope Joint Reactions

Joint	X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb...	LC	MZ [lb...	LC
No Data to Print ...												

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

	Member	Shape	Code C...	Loc[in]	LC	Shea...	Loc[in]	Dir	LC	phi*Pnc [lb]	phi*Pn...	phi*M...	phi*M...	Cb	Eqn
1	M98	SR 5/8	.683	8	203	.096	8		8	12463.711	15749.1	153.216	153.216	2.258	H1-1b
2	M97	SR 5/8	.671	8	218	.093	8		16	12463.711	15749.1	153.216	153.216	2.258	H1-1b
3	M76	PIPE 2.0	.613	60	2	.154	12		2	14916.096	32130	1871.6...	1871.6...	2.24	H1-1b
4	MP10	PIPE 2.0	.607	60	2	.132	60		17	14916.096	32130	1871.6...	1871.6...	1	H1-1b
5	M102	SR 5/8	.597	0	217	.196	8		15	12463.711	15749.1	153.216	153.216	2.236	H1-1b
6	MP8	PIPE 2.0	.587	60	12	.118	60		13	14916.096	32130	1871.6...	1871.6...	2.386	H1-1b
7	M26	HSS4X4X4	.571	0	38	.179	0	y	42	72748.316	106155	12311...	12311...	2.618	H1-1b
8	MP6	PIPE 2.0	.570	60	10	.081	60		10	14916.096	32130	1871.6...	1871.6...	1	H1-1b
9	MP7	PIPE 2.0	.567	72	9	.137	24		4	14916.096	32130	1871.6...	1871.6...	1	H1-1b
10	M101	SR 5/8	.552	0	204	.185	8		15	12463.711	15749.1	153.216	153.216	2.233	H1-1b
11	MP9	PIPE 2.0	.541	60	11	.082	60		11	14916.096	32130	1871.6...	1871.6...	2.127	H1-1b
12	MP3	PIPE 2.0	.528	72	13	.127	72		10	14916.096	32130	1871.6...	1871.6...	1.59	H1-1b
13	M45	HSS4X4X4	.499	0	45	.175	0	y	42	72748.316	106155	12311...	12311...	2.707	H1-1b
14	M24	PIPE 2.0	.497	18.75	3	.303	10.938		2	6295.422	32130	1871.6...	1871.6...	1	H3-6
15	M9	PIPE 2.0	.487	60	12	.213	12		10	14916.096	32130	1871.6...	1871.6...	1.931	H1-1b
16	MP2	PIPE 2.0	.486	72	6	.129	72		10	14916.096	32130	1871.6...	1871.6...	1	H1-1b
17	M1	HSS4X4X4	.485	0	2	.105	0	y	157	72748.316	106155	12311...	12311...	2.187	H1-1b
18	MP1	PIPE 2.0	.479	60	6	.218	12		10	14916.096	32130	1871.6...	1871.6...	1	H1-1b
19	M44	L2.5x2.5x4	.477	14.562	9	.173	0	y	11	36747.182	38556	1113.5...	2537.3...	1.787	H2-1
20	M62	PIPE 2.0	.451	131.25	3	.261	131.25		3	6295.422	32130	1871.6...	1871.6...	1.892	H1-1b
21	M43	PIPE 2.0	.436	18.75	9	.262	10.937		9	6295.422	32130	1871.6...	1871.6...	1	H3-6
22	M63	L2.5x2.5x4	.405	0	11	.155	14.562	y	9	36747.182	38556	1113.5...	2537.3...	1.622	H2-1
23	M38	Pl 6"x0.375"	.384	0	16	.473	1.5	y	40	72156.557	72900	569.7	9112.5	1	H1-1b
24	M53	Pl 6"x0.375"	.372	1.5	4	.449	0	y	43	72156.557	72900	569.7	9112.5	1	H1-1b
25	M17	Pl 6"x0.375"	.359	0	11	.239	1.5	y	155	72156.557	72900	569.7	9112.5	1	H1-1b
26	M87	SR 5/8	.339	8	191	.049	8		6	12463.711	15749.1	153.216	153.216	2.273	H1-1b
27	M88	SR 5/8	.336	8	188	.044	8		6	12463.711	15749.1	153.216	153.216	2.274	H1-1b
28	M57	Pl 6"x0.375"	.334	0	6	.325	1.5	y	45	72156.557	72900	569.7	9112.5	1	H1-1b
29	M13	Pl 6"x0.375"	.333	1.5	9	.233	0	y	123	72156.557	72900	569.7	9112.5	1	H1-1b
30	M86	SR 5/8	.326	8	191	.047	8		6	12463.711	15749.1	153.216	153.216	2.273	H1-1b
31	M89	SR 5/8	.325	8	187	.041	8		6	12463.711	15749.1	153.216	153.216	2.274	H1-1b
32	M34	Pl 6"x0.375"	.310	1.5	6	.357	0	y	39	72156.557	72900	569.7	9112.5	1	H1-1b

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

	Member	Shape	Code C...	Loc[in]	LC	Shea...	Loc[in]	Dir	LC	phi*Pnc [lb]	phi*Pn...	phi*M...	phi*M...	Cb	Eqn
33	M25	L2.5x2.5x4	.295	0	13	.127	0	y	5	36747.182	38556	1113.5...	2537.3...	2.223	H2-1
34	M106	SR 5/8	.292	0	199	.112	8		2	12463.711	15749.1	153.216	153.216	2.261	H1-1b
35	M92	SR 5/8	.279	0	200	.107	8		2	12463.711	15749.1	153.216	153.216	2.264	H1-1b
36	M28	HSS4X4X4	.268	0	41	.089	0	y	241	103993.605	106155	12311...	12311...	1.629	H1-1b
37	M46	HSS4X4X4	.260	28.5	43	.082	28.5	y	228	103993.605	106155	12311...	12311...	1.617	H1-1b
38	M107	SR 5/8	.253	0	10	.110	8		2	12463.711	15749.1	153.216	153.216	2.257	H1-1b
39	H2	PIPE_3.0	.252	90.625	37	.084	75		11	28250.554	65205	5748.75	5748.75	2.114	H1-1b
40	M61	Pl 6"x0.5"	.250	6.338	12	.120	6.338	y	143	64972.437	97200	1012.5	12150	1.387	H1-1b
41	M42	Pl 6"x0.5"	.246	6.338	8	.133	6.338	y	192	64972.437	97200	1012.5	12150	1.328	H1-1b
42	M21	Pl 6"x0.5"	.233	6.338	3	.114	6.338	y	108	64972.437	97200	1012.5	12150	1.259	H1-1b
43	M93	SR 5/8	.231	0	195	.105	0		2	12463.711	15749.1	153.216	153.216	2.261	H1-1b
44	H3	PIPE_3.0	.231	59.375	47	.094	57.812		15	28250.554	65205	5748.75	5748.75	2.141	H1-1b
45	M27	HSS4X4X4	.218	28.5	38	.056	28.5	y	191	103993.605	106155	12311...	12311...	1.575	H1-1b
46	M47	HSS4X4X4	.201	0	45	.060	24.344	z	6	103993.605	106155	12311...	12311...	1.569	H1-1b
47	H1	PIPE_3.0	.184	57.812	7	.120	51.562		10	28250.554	65205	5748.75	5748.75	2.392	H1-1b
48	M29	L2x2x3	.179	25.476	9	.009	0	y	2	15851.707	23392.8	557.717	1034.52	1	H2-1
49	M49	L2x2x3	.178	25.476	11	.008	0	z	2	15851.707	23392.8	557.717	1065.7...	1.135	H2-1
50	M48	L2x2x3	.161	25.476	14	.007	50.952	z	41	15851.707	23392.8	557.717	1034.52	1	H2-1
51	MP4	PIPE_2.0	.160	49	2	.092	92		10	14916.096	32130	1871.6...	1871.6...	1.43	H1-1b
52	M30	L2x2x3	.157	25.476	6	.007	50.952	y	43	15851.707	23392.8	557.717	1065.6...	1.134	H2-1
53	M3	HSS4X4X4	.155	0	3	.063	24.344	z	3	103993.605	106155	12311...	12311...	1.649	H1-1b
54	M6	L2x2x3	.154	25.476	4	.006	0	y	13	15851.707	23392.8	557.717	1034.52	1	H2-1
55	M7	L2x2x3	.146	25.476	17	.005	50.952	y	42	15851.707	23392.8	557.717	1065.4...	1.133	H2-1
56	MP5	PIPE_2.0	.144	90	198	.146	90		13	14916.096	32130	1871.6...	1871.6...	2.067	H1-1b
57	M2	HSS4X4X4	.139	28.5	17	.054	28.5	y	122	103993.605	106155	12311...	12311...	1.629	H1-1b
58	M39	Pl 6"x0.5"	.046	1.5	6	.123	0	y	210	96653.289	97200	1012.5	12150	1.14	H1-1b
59	M35	Pl 6"x0.5"	.038	0	8	.134	1.5	y	190	96653.289	97200	1012.5	12150	1.182	H1-1b
60	M58	Pl 6"x0.5"	.038	1.5	10	.110	0	y	154	96653.289	97200	1012.5	12150	1.086	H1-1b
61	M18	Pl 6"x0.5"	.035	0	3	.117	0	y	173	96653.289	97200	1012.5	12150	1.227	H1-1b
62	M54	Pl 6"x0.5"	.032	1.5	4	.118	1.5	y	101	96653.289	97200	1012.5	12150	1.215	H1-1b
63	M14	Pl 6"x0.5"	.032	1.5	17	.128	1.5	y	107	96653.289	97200	1012.5	12150	1.41	H1-1b

Envelope AISI S100-16: LRFD Cold Formed Steel Code Checks

Member	Shape	Code Check	Loc[in]	LC	Shea...	Loc[i...	Dir	LC	phi*Pn[...	phi*Tn[...	phi*Mn...	phi*Mn...	phi*...	phi*...	Cb	Eqn
No Data to Print ...																

APPENDIX D

ADDITIONAL CALCULATIONS

Trylon

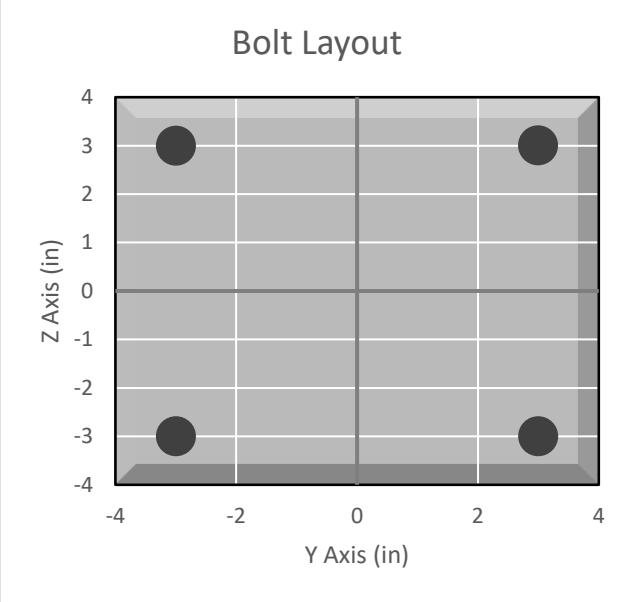
Analysis date: 6/15/2022

BOLT TOOL 1.5.2

Project Data	
Job Code:	211632
Carrier Site ID:	CTNH541A
Carrier Site Name:	CTNH541A

Code	
Design Standard:	TIA-222-H
Slip Check:	No
Pretension Standard:	AISC

Bolt Properties		
Connection Type:	Bolt	
Diameter:	0.625	in
Grade:	A325	--
Yield Strength (Fy):	92	ksi
Ultimate Strength (Fu):	120	ksi
Number of Bolts:	4	--
Threads Included:	Yes	--
Double Shear:	No	--
Connection Pipe Size:	-	in



Connection Description
Mount to Collar

Bolt Check*		
Tensile Capacity (ϕT_n):	20340.1	lbs
Shear Capacity (ϕV_n):	13805.8	lbs
Tension Force (T_u):	7096.3	lbs
Shear Force (V_u):	1176.1	lbs
Tension Usage:	33.2%	--
Shear Usage:	8.1%	--
Interaction:	33.2%	Pass
Controlling Member:	M26	--
Controlling LC:	39	--

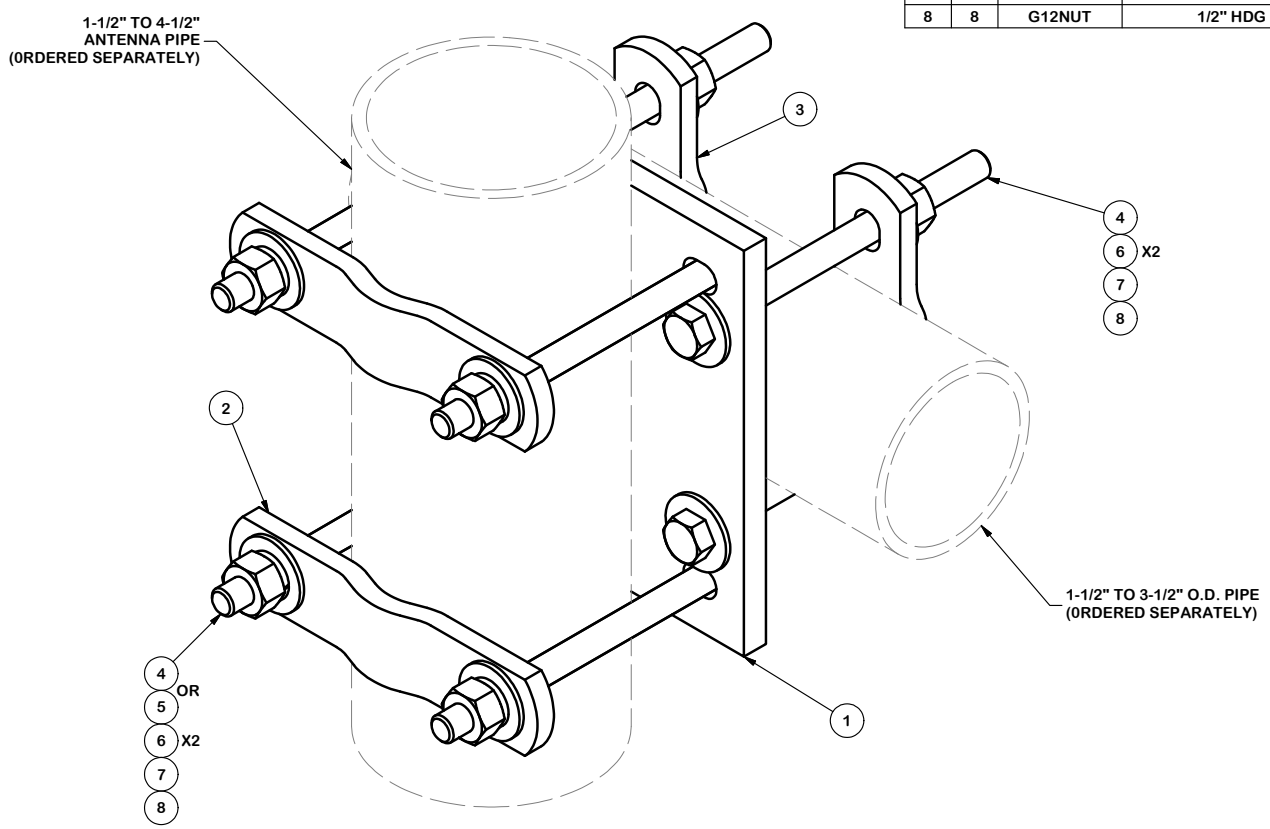
**Rating per TIA-222-H Section 15.5*

1825 W. Walnut Hill Lane, Suite 120
Irving, Texas 75038

APPENDIX E

SUPPLEMENTAL DRAWINGS

PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	1	SCX7	CROSSOVER PLATE	8 in	7.55	7.55
2	2	X-115765	5" V-CLAMP		1.02	2.04
3	2	X-100064	CLAMP (S) (4" V-CLAMP) GALVANIZED		0.91	1.83
4	8	G12065	1/2" x 6-1/2" HDG HEX BOLT GR5 FULL THREAD	6 1/2 in	0.41	3.28
5	4	G12045	1/2" x 4.5" HDG HEX BOLT GR5 FULL THREAD	4 1/2 in	0.30	1.19
6	16	G12FW	1/2" HDG USS FLATWASHER		0.03	0.54
7	8	G12LW	1/2" HDG LOCKWASHER		0.01	0.11
8	8	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	0.57
					TOTAL WT. #	16.98



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")*

DESCRIPTION: CROSSOVER PLATE (V-CLAMP STYLE)

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.	PAGE
	CEK 10/7/2010		SCX7-U	1 OF 1
CLASS / SUB: 81 / 01	DRAWING USAGE: CUSTOMER	CHECKED BY: BMC 10/8/2010	DWG. NO.: SCX7-U	

Fox Hill Telecom

Radio Frequency Emissions Analysis Report

T-Mobile

Site ID: CTNH541A

136 Bulls Bridge Road
South Kent, CT 06785

August 22, 2022

Fox Hill Telecom Project Number: 221615

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**31.40 %**

Fox Hill Telecom

August 22, 2022

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

Emissions Analysis for Site: **CTNH541A**

Fox Hill Telecom, Inc ("Fox Hill") was directed to analyze the proposed upgrades to the T-MOBILE facility located at **136 Bulls Bridge Road, South Kent, CT**, for the purpose of determining whether the emissions from the Proposed T-MOBILE Antenna Installation located on this property are within specified federal limits.

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

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

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

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

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were performed for the proposed upgrades to the T-MOBILE antenna facility located at **136 Bulls Bridge Road, South Kent, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-MOBILE is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB for directional panel antennas, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

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

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

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

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

Table 1: Channel Data Table

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

Sector	Antenna Number	Antenna Make / Model	Antenna Centerline (ft)
A	1	RFS APXVAALL24_43-U-NA20	170
A	2	Ericsson AIR6419 B41	170
B	1	RFS APXVAALL24_43-U-NA20	170
B	2	Ericsson AIR6419 B41	170
C	1	RFS APXVAALL24_43-U-NA20	170
C	2	Ericsson AIR6419 B41	170

Table 2: Antenna Data

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

RESULTS

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

Antenna ID	Antenna Make / Model	Frequency Bands	Antenna Gain (dBd)	Channel Count	Total TX Power (W)	ERP (W)	MPE %
Antenna A1	RFS APXVAALL24_43-U-NA20	600 MHz / 700 MHz / 1900 MHz (PCS) / 2100 MHz (AWS)	13.65 / 13.85 / 16.65 / 16.95	12	440	18,149.86	2.95
Antenna A2	Ericsson AIR6419 B41	2500 MHz (BRS)	21.5	8	160	22,600.60	3.02
						Sector A Composite MPE%	**5.97**
Antenna B1	RFS APXVAALL24_43-U-NA20	600 MHz / 700 MHz / 1900 MHz (PCS) / 2100 MHz (AWS)	13.65 / 13.85 / 16.65 / 16.95	12	440	18,149.86	2.95
Antenna B2	Ericsson AIR6419 B41	2500 MHz (BRS)	21.5	8	160	22,600.60	3.02
						Sector B Composite MPE%	**5.97**
Antenna C1	RFS APXVAALL24_43-U-NA20	600 MHz / 700 MHz / 1900 MHz (PCS) / 2100 MHz (AWS)	13.65 / 13.85 / 16.65 / 16.95	12	440	18,149.86	2.95
Antenna C2	Ericsson AIR6419 B41	2500 MHz (BRS)	21.5	8	160	22,600.60	3.02
						Sector C Composite MPE%	**5.97**

Table 3: T-MOBILE Emissions Levels

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

Site Composite MPE%	
Carrier	**MPE%**
T-MOBILE – Max Per Sector Value	**5.97 %**
AT&T	3.03 %
Nextel	1.41 %
CT State Police	4.03 %
WMNR	0.05 %
Sprint	3.81 %
Verizon Wireless	13.10 %
Site Total MPE %:	**31.40 %**

Table 4: All Carrier MPE Contributions

T-MOBILE Sector A Total:	5.97 %
T-MOBILE Sector B Total:	5.97 %
T-MOBILE Sector C Total:	5.97 %
Site Total:	31.40 %

Table 5: Site MPE Summary

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

T-MOBILE _ Frequency Band / Technology Max Power Values (Per Sector)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
T-Mobile 600 MHz LTE / 5G NR	2	926.96	170	2.48	600 MHz	400	0.62%
T-Mobile 700 MHz LTE	2	485.32	170	1.30	700 MHz	467	0.28%
T-Mobile 1900 MHz (PCS) LTE	4	1,849.52	170	9.89	1900 MHz (PCS)	1000	0.99%
T-Mobile 2100 MHz (AWS) LTE	4	1,981.80	170	10.60	2100 MHz (AWS)	1000	1.06%
T-Mobile 2500 MHz (BRS) LTE / 5G NR	8	2,825.08	170	30.21	2500 MHz (BRS)	1000	3.02%
						Total:	**5.97%**

Table 6: T-MOBILE Maximum Sector MPE Power Values

Summary

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

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

T-MOBILE Sector	Power Density Value (%)
Sector A:	5.97 %
Sector B:	5.97 %
Sector C:	5.97 %
T-MOBILE Maximum Total (per sector):	5.97 %
Site Total:	31.40 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **31.40 %** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

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

T-Mobile

T-MOBILE SITE NUMBER: CTNH541A
T-MOBILE SITE NAME: CTNH541A
SITE TYPE: MONOPOLE
TOWER HEIGHT: 179'-8"

BUSINESS UNIT #: 841293
SITE ADDRESS: 136 BULLS BRIDGE ROAD SOUTH KENT, CT 06785
COUNTY: LITCHFIELD
JURISDICTION: LITCHFIELD COUNTY

CTNH541A_ANCHOR: **4SEC-67E5998E_1XAIR+1OP**

SITE INFORMATION

CROWN CASTLE USA INC. SITE NAME:	KENT-BULLS BRIDGE ROAD
SITE ADDRESS:	136 BULLS BRIDGE ROAD SOUTH KENT, CT 06785
COUNTY:	LITCHFIELD
MAP/PARCEL #:	VERIFY
AREA OF CONSTRUCTION:	EXISTING
LATITUDE:	41.681625° (41° 40' 53.85")
LONGITUDE:	-73.486611° (-73° 29' 11.80")
LAT/LONG TYPE:	NAD83
GROUND ELEVATION:	±784 FT
CURRENT ZONING:	TBD
JURISDICTION:	LITCHFIELD COUNTY
OCCUPANCY CLASSIFICATION:	TBD
TYPE OF CONSTRUCTION:	TBD
A.D.A. COMPLIANCE:	FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION
PROPERTY OWNER:	TBD ---- ----
TOWER OWNER:	CROWN CASTLE 2000 CORPORATE DRIVE CANONSBURG, PA 15317
CARRIER/APPLICANT:	T-MOBILE 35 GRIFFIN ROAD BLOOMFIELD, CT 06002
ELECTRIC PROVIDER:	TBD
TELCO PROVIDER:	TBD

PROJECT TEAM

A&E FIRM:	INFINIGY 500 WEST OFFICE CENTER DR. SUITE 150, FORT WASHINGTON, PA 19034
CROWN CASTLE USA INC. DISTRICT CONTACTS:	1500 CORPORATE DRIVE CANONSBURG, PA 15317
	TBD - PROJECT MANAGER -
	TBD - CONSTRUCTION MANAGER -

DRAWING INDEX

ALL DRAWINGS CONTAINED HEREIN ARE FORMATTED FOR 11X17. 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

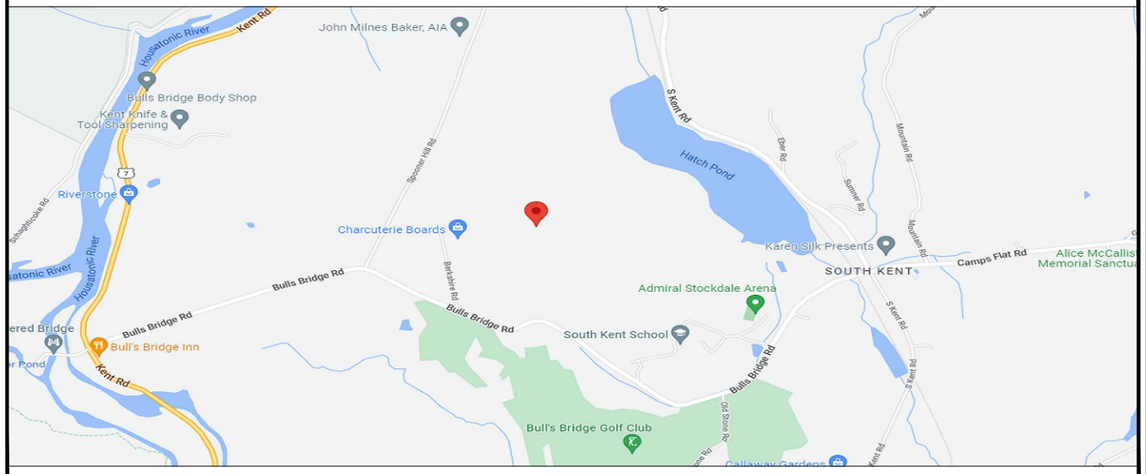
THE PURPOSE OF THIS PROJECT IS TO ENHANCE BROADBAND CONNECTIVITY AND CAPACITY TO THE EXISTING ELIGIBLE WIRELESS FACILITY.

TOWER SCOPE OF WORK:
- REMOVE (4) ANTENNAS
- REMOVE (8) RRHS
- RELOCATE (2) RRHS
- REMOVE ALL COAX CABLES
- REMOVE (3) HYBRID CABLES
- INSTALL (4) ANTENNAS
- INSTALL (4) RRHS
- INSTALL (3) HYBRID CABLES

GROUND SCOPE OF WORK:
- REMOVE (1) PTS 8003 CABINET
- REMOVE (1) DUW30
- INSTALL (1) 6160 & (1) B160 BATTERY CABINET
- INSTALL (2) PSU4813 VOLTAGE BOOSTER IN (P) CABINET
- INSTALL (1) CSR IXRE ROUTER IN (P) CABINET
- INSTALL (1) RP 6651 IN (P) CABINET

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

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	2015 IMC
ELECTRICAL	2017 NEC

REFERENCE DOCUMENTS:

STRUCTURAL ANALYSIS:	BLACK & VEATCH CORP.
DATED:	06/17/2022
MOUNT ANALYSIS:	TRYLON
DATED:	06/15/2022
RFDS REVISION:	4
DATED:	05/26/2022
ORDER ID:	621585
REVISION:	0

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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
1500 CORPORATE DRIVE
CANONSBURG, PA 15317

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T-MOBILE SITE NUMBER:
CTNH541A

BU #: **841293**
KENT-BULLS BRIDGE ROAD

136 BULLS BRIDGE ROAD
SOUTH KENT, CT 06785

EXISTING 179'-8" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	07/12/21	RCD	PRELIMINARY	SS
0	08/12/2022	RCD	100% FINALS	SS

STATE OF CONNECTICUT
SHUHEI SAKAMOTO
34916
LICENSED PROFESSIONAL ENGINEER

08/12/2022

SHEET NUMBER: T-1
REVISION: 0

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

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T-MOBILE SITE NUMBER:
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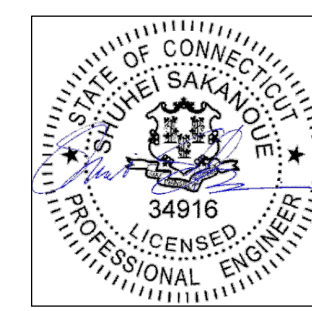
BU #: **841293**
KENT-BULLS BRIDGE ROAD

136 BULLS BRIDGE ROAD
SOUTH KENT, CT 06785

EXISTING 179'-8" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	07/12/21	RCD	PRELIMINARY	SS
0	08/12/2022	RCD	100% FINALS	SS



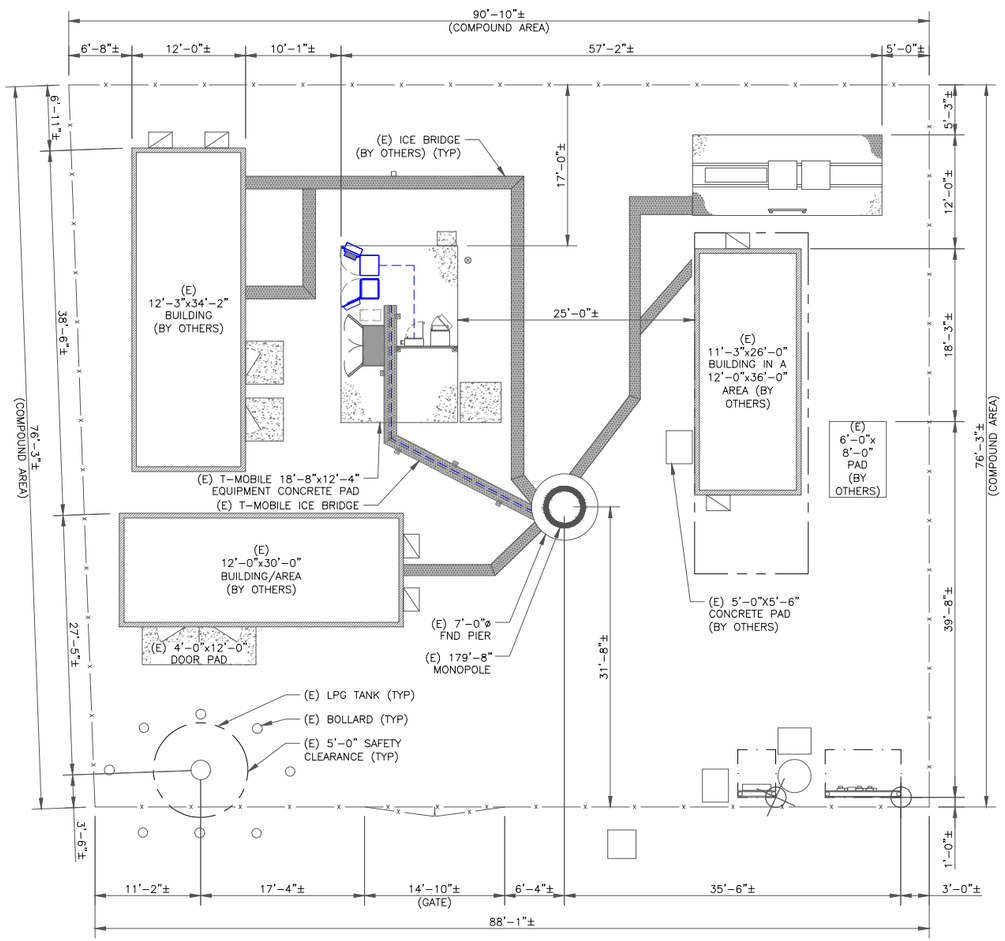
08/12/2022

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

SHEET NUMBER: T-2
REVISION: 0

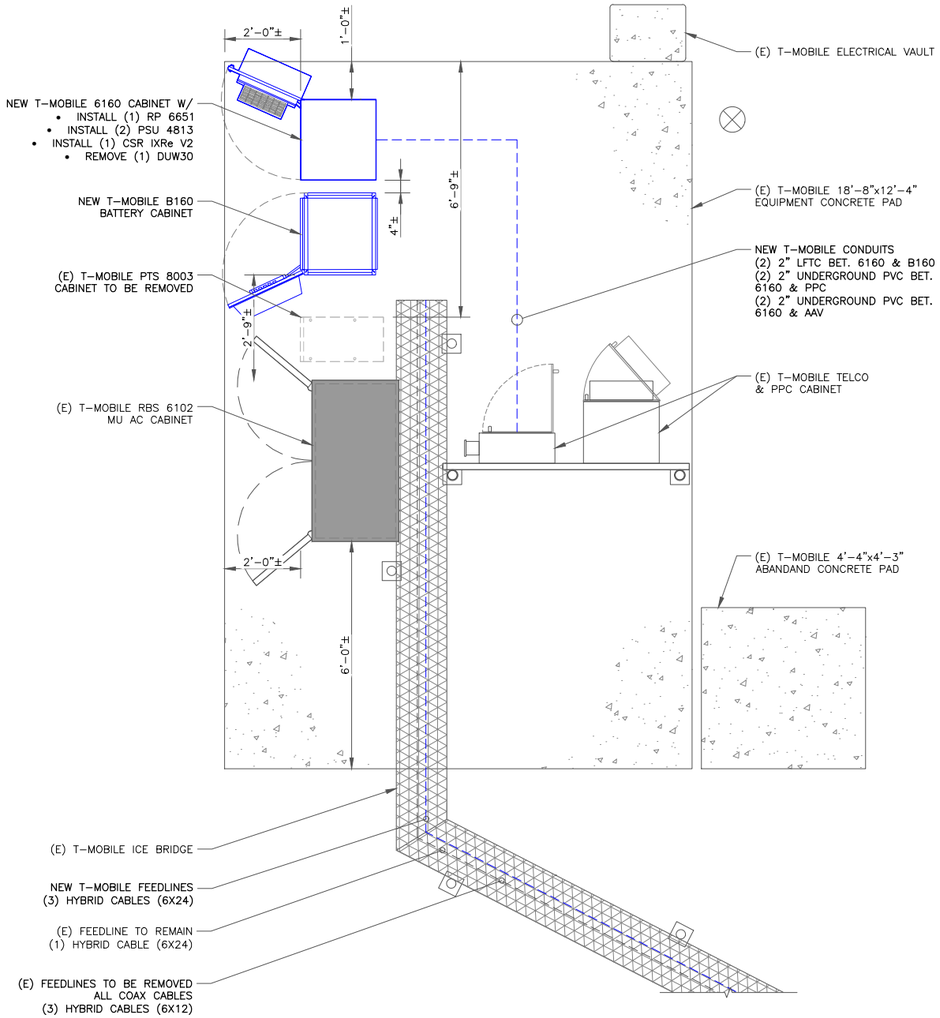
NOTE:

1. PLANS BASED ON SITE PLAN PROVIDED BY TOWER OWNER AND SITE VISIT PERFORMED BY INFINIGY. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND LOCATION/ORIENTATION OF EXISTING T-MOBILE EQUIPMENT.



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

N



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

N

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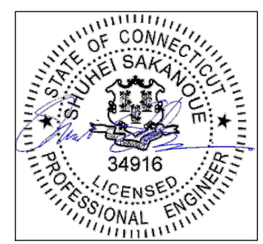


08/12/2022

SHEET NUMBER: C-1

REVISION: 0

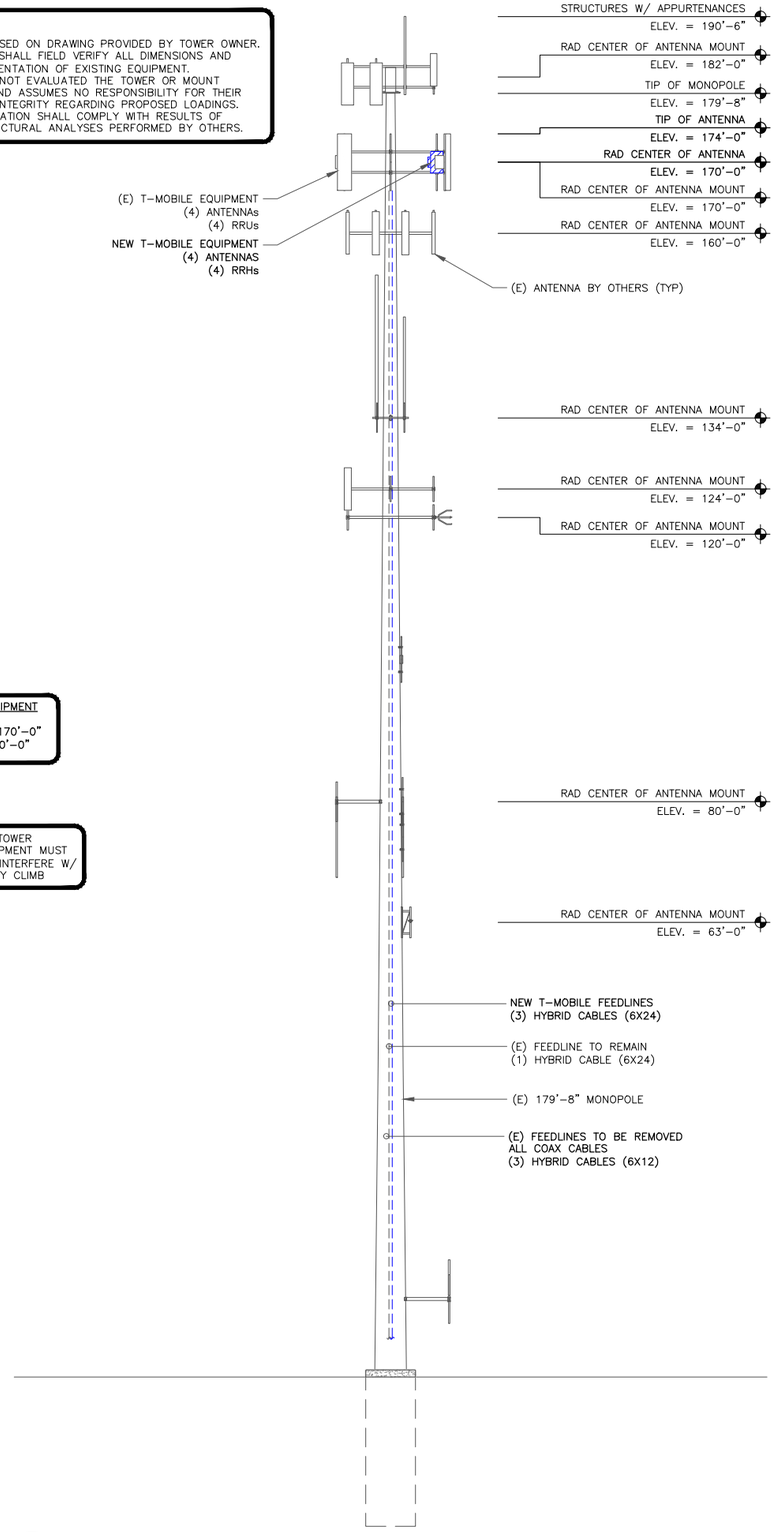
NOTES:

1. ELEVATION BASED ON DRAWING PROVIDED BY TOWER OWNER. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND LOCATION/ORIENTATION OF EXISTING EQUIPMENT.
2. INFINIGY HAS NOT EVALUATED THE TOWER OR MOUNT STRUCTURE AND ASSUMES NO RESPONSIBILITY FOR THEIR STRUCTURAL INTEGRITY REGARDING PROPOSED LOADINGS. FINAL INSTALLATION SHALL COMPLY WITH RESULTS OF PASSING STRUCTURAL ANALYSES PERFORMED BY OTHERS.

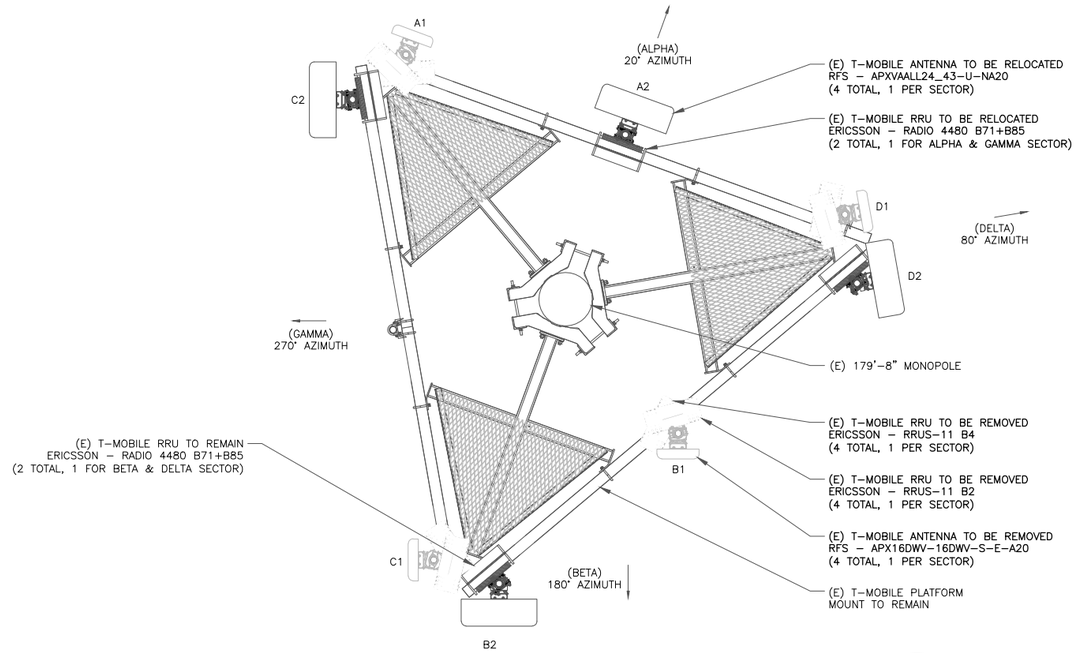
T-MOBILE EQUIPMENT

ANTENNA CL: 170'-0"
MOUNT CL: 170'-0"

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



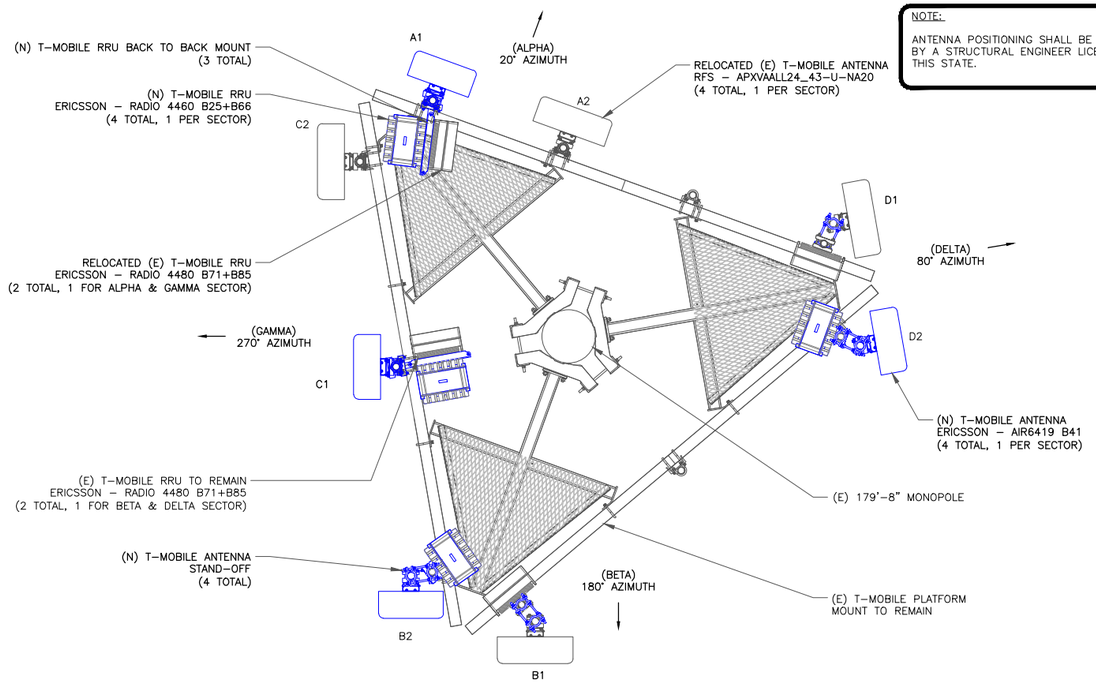
1 FINAL ELEVATION
SCALE: 8' 4' 0 8' 3/32"=1'-0" (FULL SIZE) 3/64"=1'-0" (11x17)



2 EXISTINGL ANTENNA LAYOUT
SCALE: 2' 1' 0 2' 1/2"=1'-0" (FULL SIZE) 1/4"=1'-0" (11x17)

NOTE:

ANTENNA POSITIONING SHALL BE REVIEWED BY A STRUCTURAL ENGINEER LICENSED IN THIS STATE.



3 FINAL ANTENNA LAYOUT
SCALE: 2' 1' 0 2' 1/2"=1'-0" (FULL SIZE) 1/4"=1'-0" (11x17)

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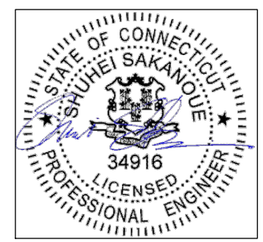


08/12/2022

SHEET NUMBER: C-2

REVISION: 0

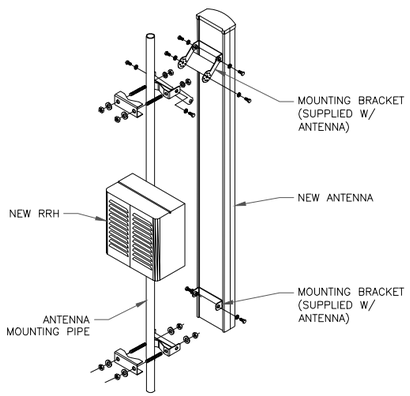
ANTENNA SCHEDULE

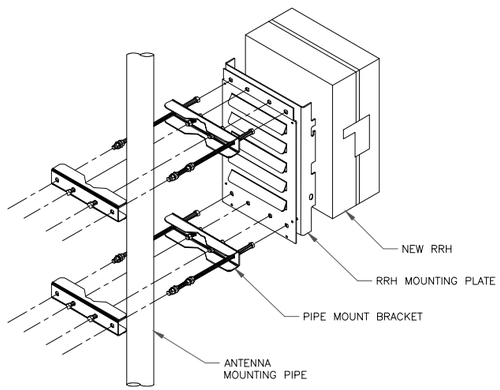
SECTOR	POS.	TECHNOLOGY	RAD CENTER	AZIMUTH	ANTENNA MANUFACTURER	ANTENNA MODEL	MECH. TILT	ELECT. TILT	TOWER MOUNTED EQUIPMENT	FEEDLINE TYPE
ALPHA	A1	L2500. N2500	170'-0"	20°	ERICSSON	ERICSSON – AIR6419 B41	0	–	(1) ERICSSON – RRUS 4480 B71+B85 (1) ERICSSON – RRUS 4460 B25+B66	(1) 6X24 HYBRID 70M IN LENGTH
ALPHA	A2	L700, N600, L600, L1900, L2100	170'-0"	20°	RFS	APXVAALL24_43-U-NA20	0	–	–	–
BETA	B1	L700, N600, L600, L1900, L2100	170'-0"	180°	RFS	APXVAALL24_43-U-NA20	0	–	(1) ERICSSON – RRUS 4480 B71+B85	–
BETA	B2	L2500. N2500	170'-0"	180°	ERICSSON	ERICSSON – AIR6419 B41	0	–	(1) ERICSSON – RRUS 4460 B25+B65	(1) 6X24 HYBRID 70M IN LENGTH
GAMMA	C1	L700, N600, L600, L1900, L2100	170'-0"	270°	RFS	APXVAALL24_43-U-NA20	0	–	–	–
GAMMA	C2	L2500. N2500	170'-0"	270°	ERICSSON	ERICSSON – AIR6419 B41	0	–	(1) ERICSSON – RRUS 4480 B71+B85 (1) ERICSSON – RRUS 4460 B25+B66	(1) 6X24 HYBRID 70M IN LENGTH
DELTA	D1	L2500. N2500	170'-0"	80°	ERICSSON	ERICSSON – AIR6419 B41	0	–	(1) ERICSSON – RRUS 4460 B25+B66	(1) 6X24 HYBRID 70M IN LENGTH
DELTA	D2	L700, N600, L600, L1900, L2100	170'-0"	80°	RFS	APXVAALL24_43-U-NA20	0	–	(1) ERICSSON – RRUS 4480 B71+B85	(1) 6X24 HYBRID

1 ANTENNA AND CABLE SCHEDULE
SCALE: NOT TO SCALE

INSTALLER NOTES:

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





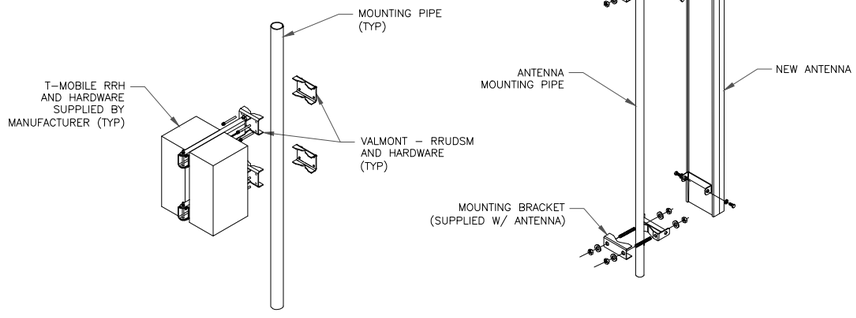
2 ANTENNA WITH RRH MOUNTING DETAIL
SCALE: NOT TO SCALE

NOTE:

1. CONTRACTOR SHALL INSTALL 3RD DUAL RRH MOUNT TO ACCOMMODATE ALL RRH BRACKETS HOLES IF NECESSARY.

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.



3 ANTENNA WITH RRHs MOUNTING DETAIL
SCALE: NOT TO SCALE

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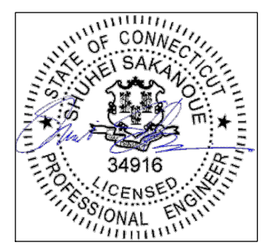
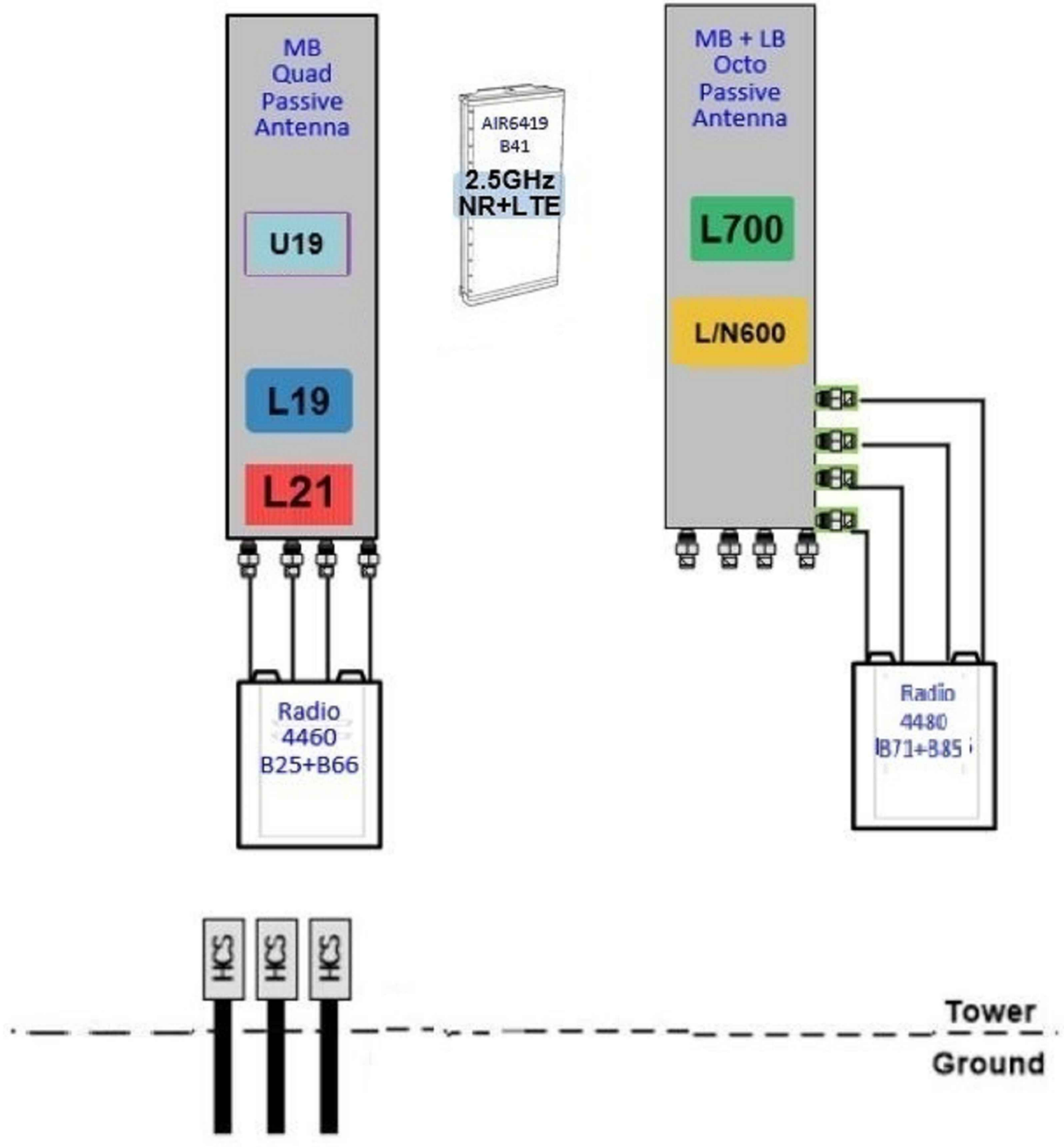


08/12/2022

SHEET NUMBER: C-3

REVISION: 0



1 PLUMBING DIAGRAM
SCALE: NOT TO SCALE

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T-MOBILE SITE NUMBER:
CTNH541A

BU #: **841293**
KENT-BULLS BRIDGE ROAD

136 BULLS BRIDGE ROAD
SOUTH KENT, CT 06785

EXISTING 179'-8" MONOPOLE

ISSUED FOR:

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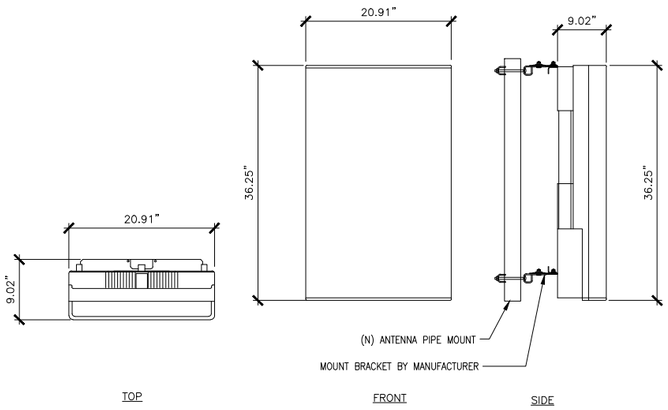
STATE OF CONNECTICUT
SHUHEI SAKANOUE
34916
LICENSED PROFESSIONAL ENGINEER

08/12/2022

SHEET NUMBER: C-4

REVISION: 0

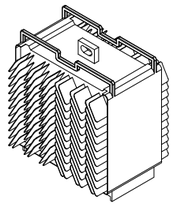
MANUFACTURER: ERICSSON
MODEL: AIR6419 B41
WEIGHT: 96.5 LBS (W/ MOUNT BRACKET 113)
DIMENSIONS: 36.25"H. X 20.91"W. X 9.02"D.
FREQUENCY: REFER TO RF DATA SHEET

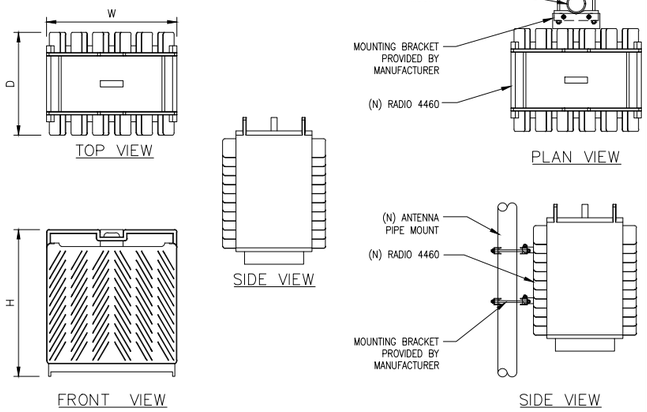


1 (N) AIR6419 B41 ANTENNA SPEC
SCALE: NOT TO SCALE

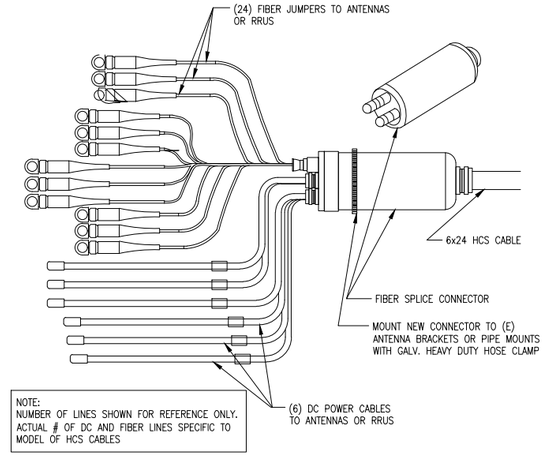
ERICSSON RADIO-4460 B25 B66

DIMENSIONS, WxDxH:	17.0"x15.1"x11.9"
MAX OUTPUT POWER:	4x80W (2x(2x80W))
TOTAL WEIGHT:	109 lbs
TEMPERATURE:	-40° TO 55° C





2 (N) RADIO 4460 SPEC
SCALE: NOT TO SCALE



3 (N) 6X24 HCS CABLE DETAIL
SCALE: NOT TO SCALE

4 NOT USED
SCALE: NOT TO SCALE

5 NOT USED
SCALE: NOT TO SCALE

6 NOT USED
SCALE: NOT TO SCALE

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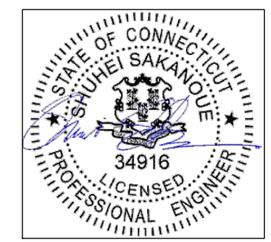
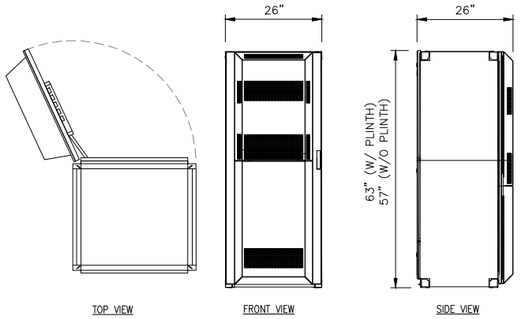


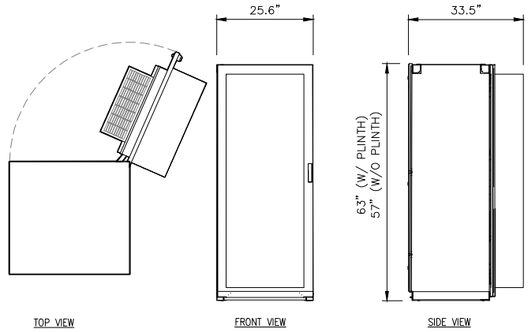
08/12/2022

SHEET NUMBER: C-5
REVISION: 0



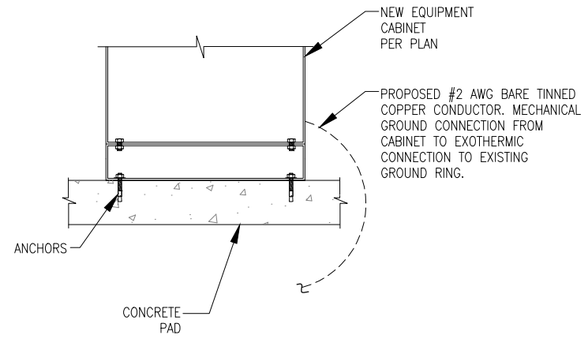
ERICSSON MODEL NO.:	B160
RACK SPACE:	19U
DIMENSIONS, HxWxD:	63"x26"x26" (W/ 6" PLINTH)
CABINET WEIGHT, EMPTY:	485 LBS
MAXIMUM WEIGHT:	2100± LBS

1 (N) B160 CABINET DETAIL
SCALE: NOT TO SCALE

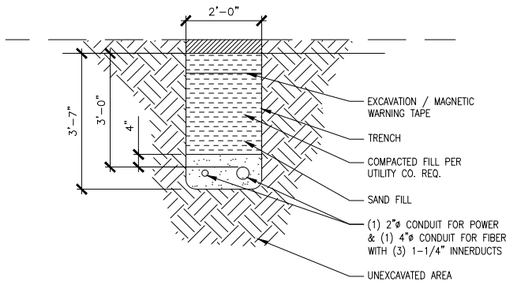


ERICSSON MODEL NO.:	6160
RACK SPACE:	19U
DIMENSIONS, HxWxD:	63"x25.6"x25.6" (W/ 6" PLINTH)
CABINET WEIGHT, EMPTY:	410 LBS
MAXIMUM WEIGHT:	770± LBS

2 (N) 6160 CABINET DETAIL
SCALE: NOT TO SCALE



3 (N) EQUIPMENT CABINET MOUNTING DETAIL
SCALE: NOT TO SCALE



4 (N) CONDUIT TRENCH DETAIL
SCALE: NOT TO SCALE

5 NOT USED
SCALE: NOT TO SCALE

6 NOT USED
SCALE: NOT TO SCALE

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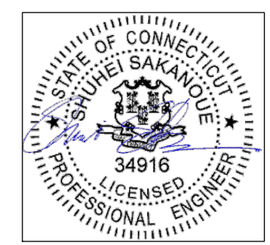


08/12/2022

SHEET NUMBER: C-6

REVISION: 0

NOTES:

1. EXISTING DISTRIBUTION PANEL WAS NOT ACCESSIBLE DURING SITE VISIT PERFORMED BY INFINIGY. CONTRACTOR SHALL INFORM ENGINEER IF THERE ARE ANY DISCREPANCIES IN PANEL SCHEDULE.

T-MOBILE PANEL SCHEDULE

MAIN: 200A MAIN BREAKER			**VOTAGE/PHASE:** 120/240V, 1-PHASE, 3-WIRE					**SHORT CIRCUIT CURRENT RATING:** --			
MOUNTING: INSIDE PPC ENCLOSURE			**ENCLOSURE:** NEMA 3R					**SURGE PROTECTION DEVICE:** YES			
					PHASE LOADS (VA)						
DESCRIPTION	LOAD (VA)	C or NC	C/B	CIR No.	A	B	CIR No.	C/B	C or NC	LOAD (VA)	DESCRIPTION
6160	**8750**	**C**	**100**	**1**	8751		7	60	NC	1	SURGE ARRESTOR
	8750	**C**		**2**		8751	8		NC	1	
6160 GFI	**180**	**NC**	**20**	**3**	180		9	20	NC	0	OFF
TELCO FAN	200	NC	10	4		200	10	20	NC	0	OFF
MMBS (TO BE OFF)	0	C	100	5	180		11	20	NC	180	EXTERNAL RECEPTACLE
	0	C		6		180	12	20	NC	180	INTERNAL RECEPTACLE
BASE LOAD (VA) =					9111	9131					
25% OF CONTINUOUS LOAD (VA) =					2188	2188					
TOTAL LOAD (VA) =					11299	11319					
TOTAL LOAD (A) =					94	94					

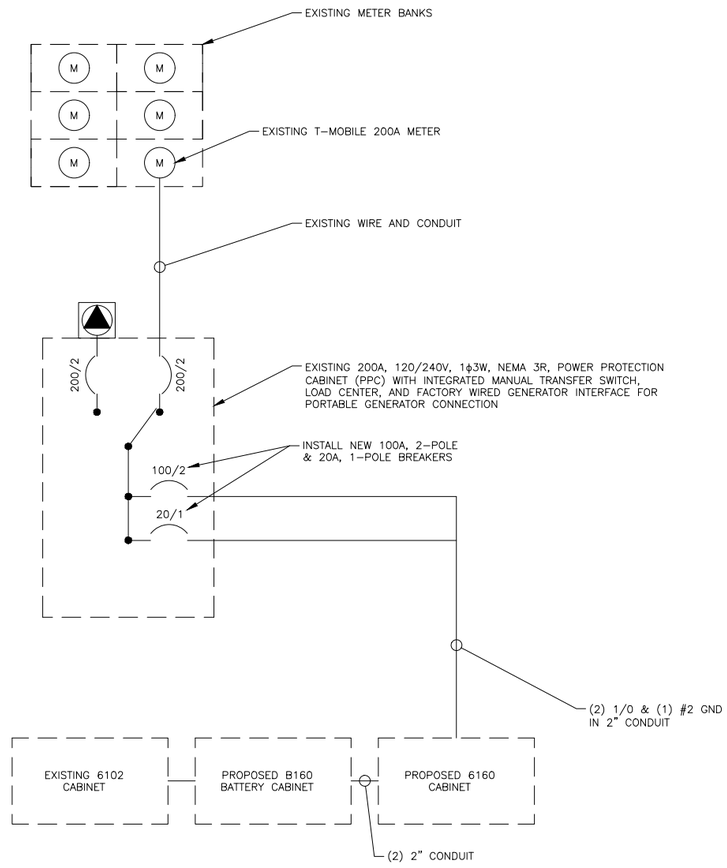
C = CONTINUOUS LOAD; NC = NON-CONTINUOUS LOAD

NEW BREAKER TO BE SAME TYPE AND HAVE SAME AIC RATING AS EXISTING. CUSTOMER HAS NOT PROVIDED LOADS FOR EQUIPMENT CABINETS THEREFORE THE CABINET LOADS SHOWN ARE ESTIMATED VALUES.

1 AC PANEL SCHEDULE
SCALE: NOT TO SCALE

NOTES:

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



2 ONE LINE DIAGRAM
SCALE: NOT TO SCALE

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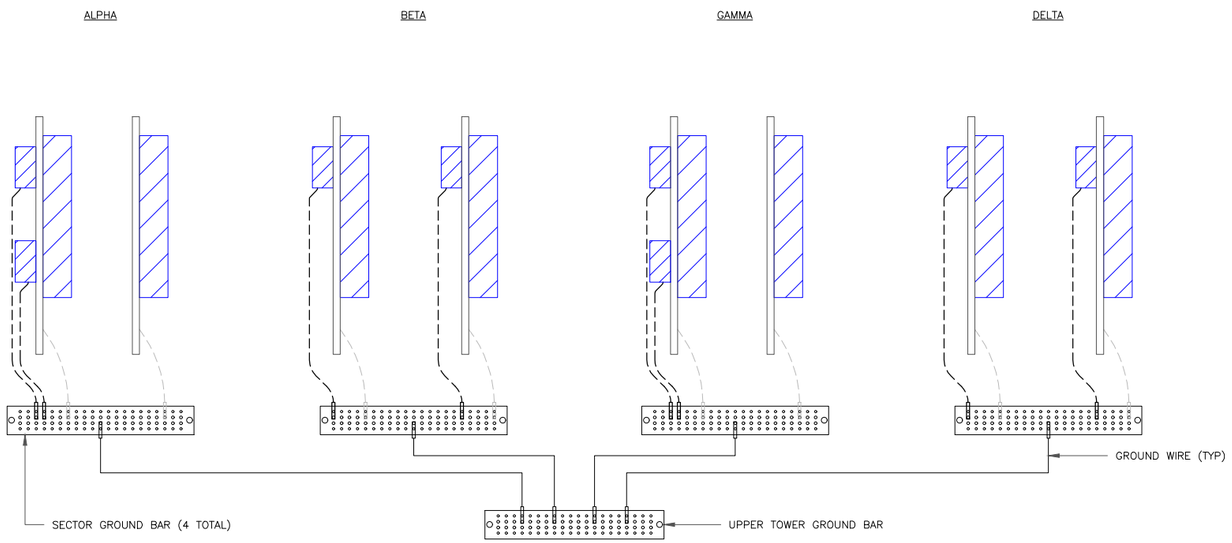
LICENSED PROFESSIONAL ENGINEER

08/12/2022

SHEET NUMBER: E-1
REVISION: 0



NOTE:

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

1 ANTENNA GROUNDING DIAGRAM
SCALE: NOT TO SCALE

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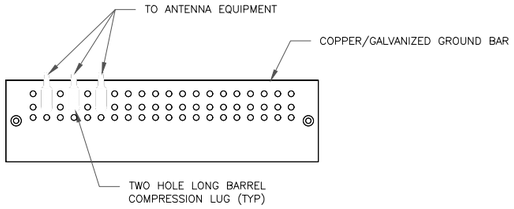
STATE OF CONNECTICUT
SHUHEI SAKANOUE
34916
LICENSED
PROFESSIONAL ENGINEER

08/12/2022

SHEET NUMBER: G-1

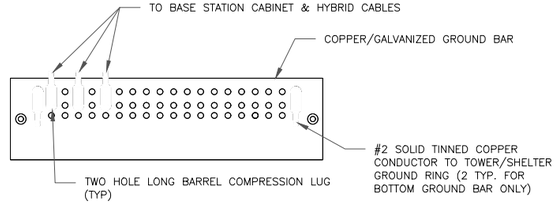
REVISION: 0



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.

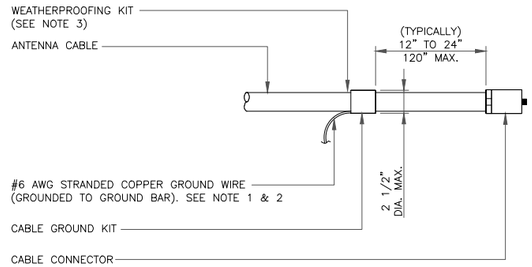
1 ANTENNA SECTOR GROUND BAR DETAIL
SCALE: NOT TO SCALE



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.

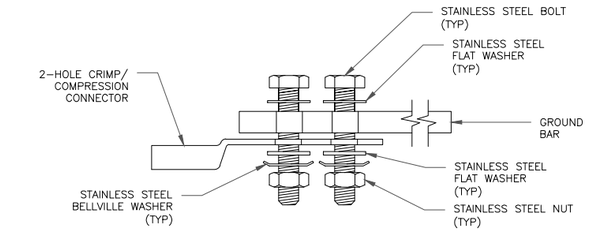
2 TOWER/SHELTER GROUND BAR DETAIL
SCALE: NOT TO SCALE



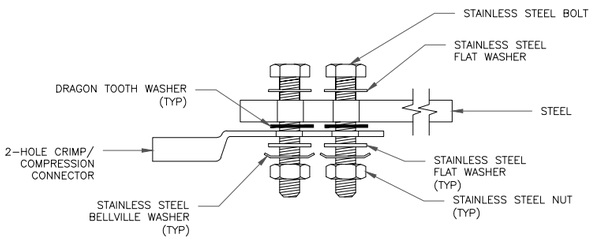
NOTES:

1. 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.

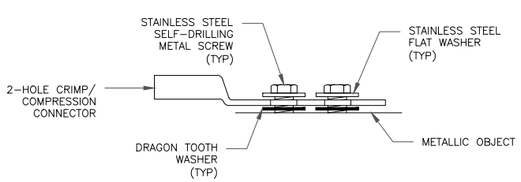
3 CABLE GROUND KIT CONNECTION
SCALE: NOT TO SCALE



SINGLE CONNECTOR AT GROUND BARS



SINGLE CONNECTOR AT STEEL OBJECTS



SINGLE CONNECTOR AT METALLIC/STEEL OBJECTS

4 HARDWARE DETAIL FOR EXTERIOR CONNECTIONS
SCALE: NOT TO SCALE

5 NOT USED
SCALE: NOT TO SCALE

6 NOT USED
SCALE: NOT TO SCALE

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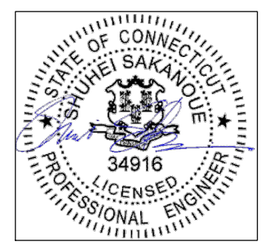

08/12/2022

SHEET NUMBER: G-2

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