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

July 28, 2022

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

RE: **Tower Share Application-T-Mobile: CTHA610A**
Crown Site ID#846293
319 Peter green Road, Tolland, CT 06268
Latitude: 41° 53′ 47.81″ / Longitude: -72° 23′ 37.43″

Dear Ms. Bachman:

T-Mobile proposes to install nine (9) antennas, six (6) remote radios, one (1) microwave dish at the 90-foot mount on the existing 119-foot monopole tower located at 319 Peter Green Road, Tolland CT. T-Mobile to also install, three (3) Hybrid cables, one (1) ½" coaxial cable, One (1) new antenna mount w/ handrail Kit. T-Mobile to add equipment cabinets and one (1) new 50kw Diesel generator on a new 10' x 15' concrete pad within the existing compound space. The property is owned by Krechko Mark ETAL (AT&T Mobility) and the tower is owned by Crown Castle. This modification/proposal includes hardware that is both 4G (LTE) and 5G capable through remote software configuration and either or both services may be turned on or off at various times.

Panned Modification:

Tower:

Installed New:

(3) Ericsson 6419 B41 Antennas
(3) RFS APXVAALL24_43-U-NA20 Antennas
(3) Commscope W-65A-R1 Antennas
(1) RFS SC2-W100BD Microwave Dish
(3) Ericsson-Radio 4460 B25+ B66 RRU
(3) Ericsson-Radio 4480_B71+B85 RRU
(3) Hybrid Cable (6x24)
(1) Coaxial Cable (1/2")
(1) Site Pro RMQP-496 Antenna Mount Handrail Kit

Ground:

Install New:

(1) 6160 & (1) B160 Battery Cabinets
(2) PSU 4813 Voltage Booster
(1.) 6160 Cabinet
(1.) CSR IXRe Router
(2^) RP 6651

(1) 50KW SSM Diesel Generator
(1.) Canopy
(2) H-Frames
(4^) LED Luminare Work Lights
Ice Bridge

The facility was approved by the Connecticut Siting Council, Docket No. 276 on October 26, 2004.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies §16-50aa of T-Mobile intent to share a telecommunication facility pursuant to R.C.S.A. § 16-50j-88. In accordance with R.C.S.A. § 16-50j-88, a copy of this letter is being sent to Brian Foley, Town Manager, Town of Tolland CT, David Corcoran, Director of Planning & Zoning, Town of Tolland CT. Krechko Mark ETAL (AT&T Mobility) is the property owner and Crown Castle is the tower owner.

1. The proposed modifications will not result in an increase in the height of the existing tower. The total Height of the tower is 119' and T-Mobile antennas will be placed at the 90' mount height of the 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.

Connecticut General Statute 16-50aa indicates the Council must approve the share use of telecommunication facility provided it finds the shared use is technically, legally, environmentally and economically feasible and meets public safety concerns.

A. Technical Feasibility. The existing monopole has been deemed structurally capable of supporting the T-Mobile proposed loading. The structural analysis is included in the package.

B. Legal Feasibility. As referenced above, C.G.S. 16-50aa has been authorized to issue orders approving the shared use of an existing tower such as this support tower in Tolland. Under the authority granted to the Council, an order of the Council approving the requested shared use would permit T-Mobile to obtain a building permit for the proposed installation.

C. Environmental Feasibility. The proposed shared use of this facility would have a minimal environmental impact. The installation of T-Mobile equipment at the 90-foot level of the existing 119-foot tower would have an insignificant visual impact on the area around the tower. T-Mobile ground equipment would be installed within the existing facility compound. T-Mobile shared use

would therefore not cause any significant alteration in the physical or environmental characteristics of the existing site. Additionally, as evidenced of the radio frequency emissions would not increase to a level at or above the Federal Communications Commission safety standard.

D. Economic Feasibility. T-Mobile has authorization to collocate their antennas on the cell tower.

E. Public Safety Concerns. As discussed above, the tower is structurally capable of supporting T-Mobile proposed loading. T-Mobile is not aware of any public safety concerns relative to the proposed sharing of the existing tower. T-Mobile intentions of providing new and improved wireless service through the shared use of this facility is expected to enhance the safety and welfare of residents and individuals traveling through Tolland.

For the foregoing reasons, T-Mobile respectfully submits that the proposed Tower Share to the above-reference telecommunications facility. Please send approval/rejection letter to Attn: Jeffrey Barbadora.

Sincerely,

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

Attachments
cc:

Brian Foley, Town Manager
Town of Tolland
21 Tolland Green, 5th Level
Tolland, CT 06084
(860) 871-3600

David Corcoran, Director of Planning & Zoning
Town of Tolland
21 Tolland Green, 3rd Level
Tolland, CT 06084
(860) 871-3601

Mark Krechko, Property Owner
ATTN: ATT Mobility
754 Peachtree Street
Atlanta, GA 30308

Crown Castle – Tower Owner

DOCKET NO. 276 – AT&T Wireless PCS, LLC d/b/a AT&T Wireless application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance and operation of a wireless telecommunications facility at 319 Peter Green Road or 455 Crystal Lake Road, Tolland, Connecticut.	} } }	Connecticut Siting Council October 26, 2004

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 telecommunications facility including effects on the natural environment; ecological integrity and balance; public health and safety; scenic, historic, and recreational values; forests and parks; air and water purity; and fish and wildlife are not disproportionate either alone or cumulatively with other effects when compared to need, are not in conflict with the policies of the State concerning such effects, and are not sufficient reason to deny the application and therefore directs that a Certificate of Environmental Compatibility and Public Need, as provided by General Statutes § 16-50k, be issued to AT&T Wireless PCS, LLC d/b/a AT&T Wireless, hereinafter referred to as the Certificate Holder, for a telecommunications facility at Site A, located at 319 Peter Green Road, Tolland, Connecticut. The Council denies certification of Site B, located at 455 Crystal Lake Road, Tolland, 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 tower shall be constructed as a monopole, no taller than necessary to provide the proposed telecommunications services, sufficient to accommodate the antennas of AT&T Wireless and other entities, both public and private, but such tower shall not exceed a height of 120 feet above ground level. The height at the top of the antennas shall not exceed 123 feet above ground level.

2. The Certificate Holder shall prepare a Development and Management (D&M) Plan for this site in compliance with Sections 16-50j-75 through 16-50j-77 of the Regulations of Connecticut State Agencies. The D&M Plan shall be served on the Town of Tolland for comment, and all parties and intervenors as listed in the service list, and submitted to and approved by the Council prior to the commencement of facility construction and shall include:

   a. a final site plan(s) of site development to include specifications for the tower, tower foundation, antennas, equipment building, access road, utility line, and landscaping; and

   b. construction plans for site clearing, water drainage, and erosion and sedimentation control consistent with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control, as amended.

3. The Certificate Holder shall, prior to the commencement of operation, provide the Council worst-case

modeling of electromagnetic radio frequency power density of all proposed entities' antennas at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin No. 65, August 1997. The Certificate Holder shall ensure a recalculated report of electromagnetic radio frequency power density is submitted to the Council if and when circumstances in operation cause a change in power density above the levels calculated and provided pursuant to this Decision and Order.

4. Upon the establishment of any new State or federal radio frequency standards applicable to frequencies of this facility, the facility granted herein shall be brought into compliance with such standards.
5. The Certificate Holder shall permit public or private entities to share space on the proposed tower for fair consideration, or shall provide any requesting entity with specific legal, technical, environmental, or economic reasons precluding such tower sharing.
6. The Certificate Holder shall provide reasonable space on the tower for no compensation for any municipal antennas, provided such antennas are compatible with the structural integrity of the tower.
7. If the facility does not initially provide wireless services within one year of completion of construction or ceases to provide wireless services for a period of one year, this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made.
8. Any antenna that becomes obsolete and ceases to function shall be removed within 60 days after such antennas become obsolete and cease to function.
9. Unless otherwise approved by the Council, this Decision and Order shall be void if the facility authorized herein is not operational within one year of the effective date of this Decision and Order or within one year after all appeals to this Decision and Order have been resolved. Any request for extension of this period shall be filed with the Council not later than sixty days prior to expiration date of this Certificate and shall be served on all parties and intervenors and the Town of Tolland, as listed in the service list. Any proposed modifications to this Decision and Order shall likewise be so served.

Pursuant to General Statutes § 16-50p, the Council 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 Hartford Courant and the Journal Inquirer.

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

319 PETER GREEN ROAD

Location	319 PETER GREEN ROAD	**Mblu**	9/ I/ 16/ /
Acct#	7099	**Owner**	KRECHKO MARK ETAL
Assessment	$435,200	**Appraisal**	$621,800
PID	184572	**Building Count**	2

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2019	$73,200	$548,600	$621,800
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2019	$51,200	$384,000	$435,200

Owner of Record

Owner	KRECHKO MARK ETAL
Co-Owner	ATTN NREA TAX
Address	AT&T MOBILITY 754 PEACHTREE STREET ATLANTA, GA 30308

Sale Price	$0
Certificate	
Book & Page	1042/0294
Sale Date	09/26/2006

Ownership History

Ownership History				
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Sale Date**
KRECHKO MARK ETAL	$0		1042/0294	09/26/2006

Building Information

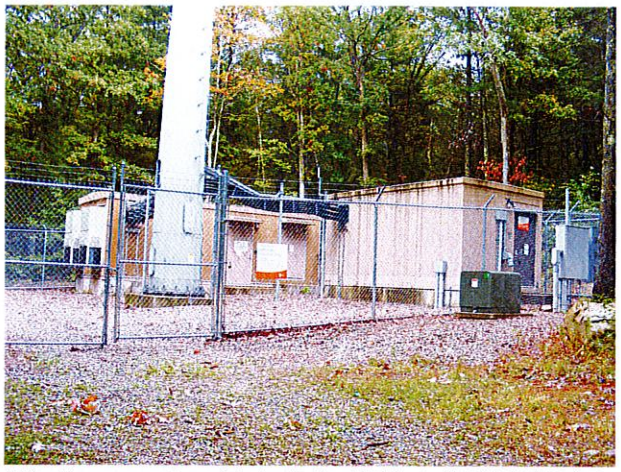
Building 1 : Section 1

Year Built:	2006
Living Area:	240
Replacement Cost:	$29,640
Building Percent Good:	92
Replacement Cost Less Depreciation:	$27,300

Building Attributes

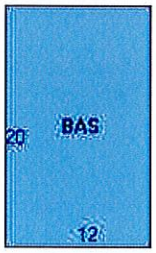
Field	Description
Style:	Communications Bld
Model	Ind/Comm
Grade	Average
Stories:	1
Occupancy	1.00
Ext Wall 1	Poly-Steel/Con
Exterior Wall 2	
Roof Structure	Flat
Roof Cover	Tar & Gravel
Interior Wall 1	Minim/Masonry
Interior Wall 2	
Interior Floor 1	Concr-Finished
Interior Floor 2	
Heating Fuel	Electric
Heating Type	Hot Air-no Duc
AC Type	Heat Pump
Struct Class	
Bldg Use	Industrial
Total Rooms	1
Total Bedrms	0
Total Baths	0
Solar	
1st Floor Use:	
Heat/AC	Heat/AC Pkg
Frame Type	Masonry
Baths/Plumbing	None
Ceiling/Wall	None
Rooms/Prtns	Light
Wall Height	8.00
% Comn Wall	0.00

Building Photo



(https://images.vgsi.com/photos/TollandCTPhotos/\00\00\62\96.jpg)

Building Layout



(https://images.vgsi.com/photos/TollandCTPhotos//Sketches/184572_6674

Building Sub-Areas (sq ft)			Legend
Code	Description	Gross Area	Living Area
BAS	Main Floor	240	240
		240	240

Building 2 : Section 1

Year Built: 2008
Living Area: 360
Replacement Cost: $44,460
Building Percent Good: 92
Replacement Cost Less Depreciation: $40,900

Building Attributes : Bldg 2 of 2	
Field	Description
Style:	Communications Bld

Model	Ind/Comm
Grade	Average
Stories:	1
Occupancy	1.00
Ext Wall 1	Poly-Steel/Con
Exterior Wall 2	
Roof Structure	Flat
Roof Cover	Tar & Gravel
Interior Wall 1	Minim/Masonry
Interior Wall 2	
Interior Floor 1	Concr-Finished
Interior Floor 2	
Heating Fuel	Electric
Heating Type	Hot Air-no Duc
AC Type	Heat Pump
Struct Class	
Bldg Use	Industrial
Total Rooms	
Total Bedrms	
Total Baths	
Solar	
1st Floor Use:	
Heat/AC	Heat/AC Pkg
Frame Type	Masonry
Baths/Plumbing	None
Ceiling/Wall	None
Rooms/Prtns	Light
Wall Height	8.00
% Comn Wall	

Building Photo

(https://images.vgsi.com/photos/TollandCTPhotos//default.jpg)

Building Layout

(https://images.vgsi.com/photos/TollandCTPhotos//Sketches/184572_6831

Building Sub-Areas (sq ft)			Legend
Code	Description	Gross Area	Living Area
BAS	Main Floor	360	360
		360	360

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code	300
Description	Industrial
Zone	RDD

Land Line Valuation

Size (Acres)	0.50
Frontage	
Depth	

Neighborhood	350C	**Assessed Value**	$384,000
Alt Land Appr Category	No	**Appraised Value**	$548,600

Outbuildings

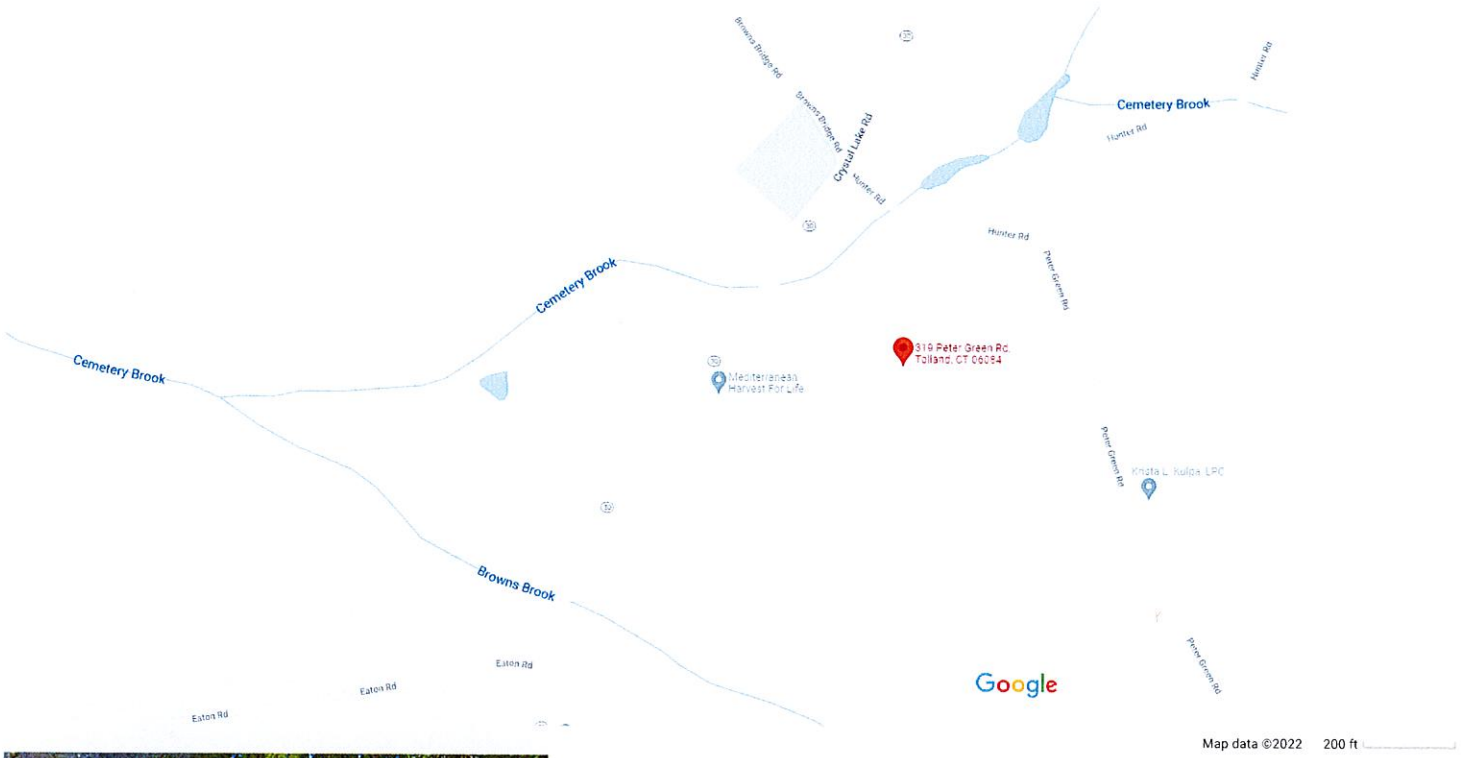
Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
FN	FENCE	CL8	8' Chain Link	250.00 L.F.	$5,000	1

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2021	$73,200	$548,600	$621,800
2020	$73,200	$548,600	$621,800
2019	$73,200	$548,600	$621,800

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2021	$51,200	$384,000	$435,200
2020	$51,200	$384,000	$435,200
2019	$51,200	$384,000	$435,200

319 Peter Green Rd



319 Peter Green Rd

Tolland, CT 06084

Directions Save Nearby Send to phone Share

VJW4+JH Tolland, Connecticut

Photos

CROWN CASTLE

1800 W Park Dr r2nd Floor
Westborough, Town of, MA 01581

Phone: (781) 970-0053
Fax: (724) 416-6120
www.crowncastle.com

Crown Castle Letter of Authorization

CT - CONNECTICUT SITING COUNCIL
Connecticut Siting Council
TEN FRANKLIN SQUARE
NEW BRITAIN, CT 06082

Re: Application for Zoning/Building Permit
Crown Castle telecommunications site at: 319 PETER GREEN ROAD, TOLLAND, CT 06084

CCATT LLC ("Crown Castle") hereby authorizes T-MOBILE, including their Agent, to act as our Agent in the processing of all zoning applications, building permits and approvals through the CT - CONNECTICUT SITING COUNCIL for the existing wireless communications site described below:

Crown Site ID/Name:	**846293/TOLLAND - PETER GREEN RD**
Customer Site ID:	**CTHA610A/Peter Green Rd Tolland Crown**
Site Address:	**319 PETER GREEN ROAD, TOLLAND, CT 06084**
APN:	**TOLL-000009I-000000-001600-001880**

Crown Castle

By: _____ Date: 7/28/2022

Jeff Barbadora
Real Estate Specialist

Barbadora, Jeff

From: TrackingUpdates@fedex.com
Sent: Monday, August 1, 2022 9:47 AM
To: Barbadora, Jeff
Subject: FedEx Shipment 777518250094: Your package has been delivered

Hi. Your package was delivered Mon, 08/01/2022 at 9:37am.

Delivered to 21 TOLLAND GRN, TOLLAND, CT 06084
Received by C.FRIES

OBTAIN PROOF OF DELIVERY

TRACKING NUMBER 777518250094

FROM	Jeff Barbadora 1800 W. Park Drive WESTBOROUGH, MA, US, 01581
TO	Town of Tolland Brian Foley, Town Manager 21 Tolland Green 5th Level TOLLAND, CT, US, 06084
REFERENCE	799001.7680
SHIPPER REFERENCE	799001.7680
SHIP DATE	Thu 7/28/2022 05:28 PM
DELIVERED TO	Receptionist/Front Desk
PACKAGING TYPE	FedEx Envelope
ORIGIN	WESTBOROUGH, MA, US, 01581
DESTINATION	TOLLAND, CT, US, 06084
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: Monday, August 1, 2022 9:41 AM
To: Barbadora, Jeff
Subject: FedEx Shipment 777518272445: Your package has been delivered

Hi. Your package was delivered Mon, 08/01/2022 at 9:37am.

Delivered to 21 TOLLAND GRN, TOLLAND, CT 06084
Received by C.FRIES

OBTAIN PROOF OF DELIVERY

TRACKING NUMBER 777518272445

FROM	Jeff Barbadora 1800 W. Park Drive WESTBOROUGH, MA, US, 01581
TO	Town of Tolland David Corcoran, Director of P&Z 21 Tolland Green 3rd Level TOLLAND, CT, US, 06084
REFERENCE	799001.7680
SHIPPER REFERENCE	799001.7680
SHIP DATE	Thu 7/28/2022 05:28 PM
DELIVERED TO	Receptionist/Front Desk
PACKAGING TYPE	FedEx Envelope
ORIGIN	WESTBOROUGH, MA, US, 01581
DESTINATION	TOLLAND, CT, US, 06084
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, July 29, 2022 10:15 AM
To: Barbadora, Jeff
Subject: FedEx Shipment 777518332455: Your package has been delivered

Hi. Your package was delivered Fri, 07/29/2022 at 10:13am.

Delivered to 754 PEACHTREE ST NE, ATLANTA, GA 30308
Received by T.MOSLEY

OBTAIN PROOF OF DELIVERY

TRACKING NUMBER 777518332455

FROM	Jeff Barbadora 1800 W. Park Drive WESTBOROUGH, MA, US, 01581
TO	ATT Mobility Property/TAX Dept 754 Peachtree Street ATLANTA, GA, US, 30308
REFERENCE	799001.7680
SHIPPER REFERENCE	799001.7680
SHIP DATE	Thu 7/28/2022 05:28 PM
DELIVERED TO	Receptionist/Front Desk
PACKAGING TYPE	FedEx Envelope
ORIGIN	WESTBOROUGH, MA, US, 01581
DESTINATION	ATLANTA, GA, US, 30308
SPECIAL HANDLING	Deliver Weekday
NUMBER OF PIECES	1
TOTAL SHIPMENT WEIGHT	1.00 LB
SERVICE TYPE	FedEx Priority Overnight

Date: **June 15, 2022**

MORRISON HERSHFIELD

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

Subject:	**Structural Analysis Report**	
Carrier Designation:	***T-Mobile* Co-Locate**	
	Site Number:	CTHA610A
	Site Name:	Peter Green Rd Tolland Crown
Crown Castle Designation:	**BU Number:**	846293
	Site Name:	TOLLAND - PETER GREEN RD
	JDE Job Number:	715022
	Work Order Number:	2116147
	Order Number:	614561 Rev. 2
Engineering Firm Designation:	**Morrison Hershfield Project Number:** CN9-765R1 / 2200039	
Site Data:	**319 Peter Green Road, Tolland, Tolland County, CT 06084** **Latitude *41° 53' 47.81"*, Longitude *-72° 23' 37.43"*** **119 Foot – EEI Monopole Tower**	

Morrison Hershfield is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above-mentioned tower.

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

LC7: Proposed Equipment Configuration **Sufficient Capacity – 48.4%**

This analysis utilizes an ultimate 3-second gust wind speed of 118 mph as required by the 2018 Connecticut State Building Code. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Respectfully submitted by:

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

Digitally signed by G. Lance Cooke
Date: 2022.06.15 07:52:55-07'00'

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 119 ft Monopole tower designed by Engineered Endeavors, Inc.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	118 mph
Exposure Category:	B
Topographic Factor:	1
Ice Thickness:	1.5 in
Wind Speed with Ice:	50 mph
Service Wind Speed:	60 mph

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
90.0	90.0	3	commscope	VV-65A-R1_TMO w/ Mount Pipe	3 1	1-5/8 1/2
		3	ericsson	AIR 6419 B41_TMO w/ Mount Pipe		
		3	rfs celwave	APXVAALL24_43-U-NA20_TMO w/ Mount Pipe		
		3	ericsson	RADIO 4460 B2/B25 B66_TMO		
		3	ericsson	Radio 4480_TMOV2		
		1	rfs celwave	SC2-W100BD		
		1	-	Site Pro 1 RMQP-496 w/ HRK12		

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)
119.0	122.0	1	kmw communications	AM-X-CD-16-65-00T-RET w/ Mount Pipe	12 2 1	1-5/8 7/8 1/2
		6	powerwave technologies	7770.00 w/ Mount Pipe		
		2	powerwave technologies	P65-17-XLH-RR w/ Mount Pipe		
		3	commscope	CBC721A-03		
		3	ericsson	RRUS-11		
		3	powerwave technologies	LGP13519		
		6	powerwave technologies	LGP21401		
		1	raycap	DC6-48-60-18-8F		
	119.0	1	-	Platform Mount [LP 712-1]		
110.0	110.0	6	antel	LPA-80063/6CF-2 w/ Mount Pipe	11	1-5/8
		6	commscope	NHH-65B-R2B w/ Mount Pipe		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
110.0	110.0	3	samsung telecommunications	MT6407-77A w/ Mount Pipe	-	-
		3	samsung telecommunications	RF4439D-25A		
		3	samsung telecommunications	RF4440D-13A		
		1	raycap	RVZDC-6627-PF-48		
		1	-	Platform Mount [LP 303-1]		
100.0	100.0	3	jma wireless	MX08FRO665-21 w/ Mount Pipe	1	1-1/2
		3	fujitsu	TA08025-B604		
		3	fujitsu	TA08025-B605		
		1	raycap	RDIDC-9181-PF-48		
		1	-	Commscope MC-PK8-DSH		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Reference	Source
4-GEOTECHNICAL REPORTS	6176222	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	4705338	CCISITES
4-TOWER MANUFACTURER DRAWINGS	4705380	CCISITES

3.1) Analysis Method

tnxTower (version 8.1.1.0), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A. When applicable, Crown Castle has calculated and provided the effective area for panel antennas using approved methods following the intent of the TIA-222 standard.

3.2) Assumptions

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

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

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	119 - 95.11	Pole	TP26.2449x18.5x0.1875	1	-10.29	907.73	25.0	Pass
L2	95.11 - 47.1673	Pole	TP41.3419x24.6441x0.25	2	-21.60	1913.69	48.4	Pass
L3	47.1673 - 0	Pole	TP56x39.0125x0.3125	3	-34.52	3392.81	45.1	Pass
							Summary	
						Pole (L2)	48.4	Pass
						Rating =	48.4	Pass

Table 5 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	30.3	Pass
1	Base Plate		28.5	Pass
1	Base Foundation (Structure)	0	36.2	Pass
1	Base Foundation (Soil Interaction)		34.5	Pass

Structure Rating (max from all components) =	48.4%

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

4.1) Recommendations

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

The results of the tilt and twist values for a 60 mph 3-second gust service wind speed per the TIA-222-H Standard are given below:

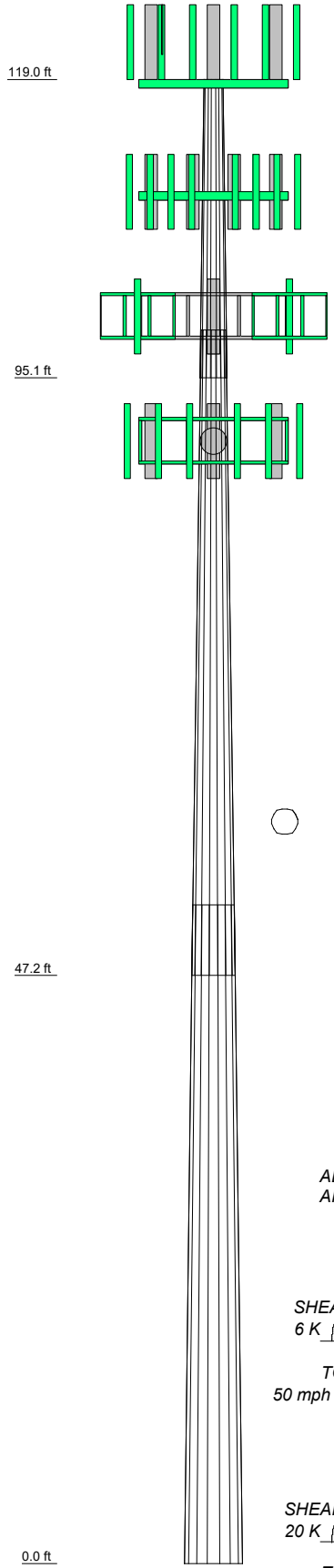
Tilt & Twist Values for Dish (60 mph Service Wind)

Elevation (ft)	Appurtenance	Deflection (in)	Tilt (°)	Twist (°)
90.0	SC2-W100BD	5.604	0.6424	0.0009

APPENDIX A

TNXTOWER OUTPUT

Section	1	2	3
Length (ft)	23.89	51.72	52.83
Number of Sides	18	18	18
Thickness (in)	0.1875	0.2500	0.3125
Socket Length (ft)	3.78	5.67	
Top Dia (in)	18.5000	24.6441	39.0125
Bot Dia (in)	26.2449	41.3419	56.0000
Grade	A572-65		
Weight (K)	1.1	4.6	8.4



MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in Tolland County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-H Standard.
3. Tower designed for a 118 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.50 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 48.4%

ALL REACTIONS ARE FACTORED

AXIAL 59 K
SHEAR 6 K
MOMENT 519 kip-ft
TORQUE 0 kip-ft
50 mph WIND - 1.5000 in ICE

AXIAL 35 K
SHEAR 20 K
MOMENT 1726 kip-ft
TORQUE 1 kip-ft
REACTIONS - 118 mph WIND

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

Job:	***CN9-765R1 / 2200039***		
Project:	***846293 / Tolland - Peter Green Rd***		
Client: Crown Castle USA	Drawn by: MK	App'd:	
Code: TIA-222-H	Date: 06/15/22	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 Tolland County, Connecticut.
Tower base elevation above sea level: 697.00 ft.
Basic wind speed of 118 mph.
Risk Category II.
Exposure Category B.
Simplified Topographic Factor Procedure for wind speed-up calculations is used.
Topographic Category: 1.
Crest Height: 0.00 ft.
Nominal ice thickness of 1.5000 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.
Tower analysis based on target reliabilities in accordance with Annex S.
Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.
Maximum demand-capacity ratio is: 1.05.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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

Tapered Pole Section Geometry

Section	Elevation 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	119.00-95.11	23.89	3.78	18	18.5000	26.2449	0.1875	0.7500	A572-65 (65 ksi)
L2	95.11-47.17	51.72	5.67	18	24.6441	41.3419	0.2500	1.0000	A572-65 (65 ksi)
L3	47.17-0.00	52.83		18	39.0125	56.0000	0.3125	1.2500	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	18.7565	10.8982	461.7305	6.5009	9.3980	49.1307	924.0685	5.4501	2.9260	15.605
	26.6208	15.5074	1330.2672	9.2504	13.3324	99.7770	2662.2848	7.7552	4.2891	22.875
L2	26.2252	19.3567	1455.2461	8.6599	12.5192	116.2413	2912.4071	9.6802	3.8974	15.589
	41.9411	32.6064	6955.8955	14.5876	21.0017	331.2065	13920.9437	16.3063	6.8362	27.345
L3	41.4163	38.3856	7263.2102	13.7385	19.8184	366.4888	14535.9775	19.1964	6.3162	20.212
	56.8157	55.2350	21640.5133	19.7691	28.4480	760.7042	43309.5018	27.6228	9.3060	29.779

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 119.00-95.11				1	1	1			
L2 95.11-47.17				1	1	1			
L3 47.17-0.00				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 5/8"	C	No	Surface Ar (CaAa)	119.00 - 11.00	1	1	0.000 0.000	0.8800		0.40
Climbing Pegs	C	No	Surface Ar (CaAa)	119.00 - 12.00	1	1	-0.050 0.050	0.7050		1.80

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
******									
LDF4-50A(1/2)	B	No	No	Inside Pole	119.00 - 11.00	1	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.15 0.15 0.15

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
							2" Ice	0.00	0.15
LDF5-50A(7/8)	B	No	No	Inside Pole	119.00 - 11.00	2	No Ice	0.00	0.33
							1/2" Ice	0.00	0.33
							1" Ice	0.00	0.33
							2" Ice	0.00	0.33
LDF7-50A(1-5/8)	B	No	No	Inside Pole	119.00 - 11.00	12	No Ice	0.00	0.82
							1/2" Ice	0.00	0.82
							1" Ice	0.00	0.82
							2" Ice	0.00	0.82
*****									
LDF7-50A(1-5/8)	B	No	No	Inside Pole	110.00 - 11.00	10	No Ice	0.00	0.82
							1/2" Ice	0.00	0.82
							1" Ice	0.00	0.82
							2" Ice	0.00	0.82
***									
HB158-U12S24-XXX-LI(1-5/8)	B	No	No	Inside Pole	110.00 - 11.00	1	No Ice	0.00	3.20
							1/2" Ice	0.00	3.20
							1" Ice	0.00	3.20
							2" Ice	0.00	3.20
*****									
CU12PSM9P6XXX (1-1/2)	C	No	No	Inside Pole	100.00 - 11.00	1	No Ice	0.00	2.35
							1/2" Ice	0.00	2.35
							1" Ice	0.00	2.35
							2" Ice	0.00	2.35
*****									
LDF4-50A(1/2)	A	No	No	Inside Pole	90.00 - 11.00	1	No Ice	0.00	0.15
							1/2" Ice	0.00	0.15
							1" Ice	0.00	0.15
							2" Ice	0.00	0.15
HB158-21U6S24-xxM_TMO(1-5/8)	A	No	No	Inside Pole	90.00 - 11.00	3	No Ice	0.00	2.50
							1/2" Ice	0.00	2.50
							1" Ice	0.00	2.50
							2" Ice	0.00	2.50

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	119.00-95.11	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.42
		C	0.000	0.000	3.787	0.000	0.06
L2	95.11-47.17	A	0.000	0.000	0.000	0.000	0.33
		B	0.000	0.000	0.000	0.000	1.06
		C	0.000	0.000	7.599	0.000	0.22
L3	47.17-0.00	A	0.000	0.000	0.000	0.000	0.28
		B	0.000	0.000	0.000	0.000	0.80
		C	0.000	0.000	5.662	0.000	0.16

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	119.00-95.11	A	1.433	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.42
		C		0.000	0.000	17.483	0.000	0.25
L2	95.11-47.17	A	1.374	0.000	0.000	0.000	0.000	0.33
		B		0.000	0.000	0.000	0.000	1.06
		C		0.000	0.000	35.086	0.000	0.59
L3	47.17-0.00	A	1.228	0.000	0.000	0.000	0.000	0.28
		B		0.000	0.000	0.000	0.000	0.80

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
		C		0.000	0.000	25.269	0.000	0.42

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	119.00-95.11	0.0000	1.1936	0.0000	2.5787
L2	95.11-47.17	0.0000	1.2217	0.0000	2.8509
L3	47.17-0.00	0.0000	0.9150	0.0000	2.2288

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

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L1	2	Safety Line 5/8"	95.11 - 119.00	1.0000	1.0000
L1	3	Climbing Pegs	95.11 - 119.00	1.0000	1.0000
L2	2	Safety Line 5/8"	47.17 - 95.11	1.0000	1.0000
L2	3	Climbing Pegs	47.17 - 95.11	1.0000	1.0000
L3	2	Safety Line 5/8"	11.00 - 47.17	1.0000	1.0000
L3	3	Climbing Pegs	12.00 - 47.17	1.0000	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
******									
Lightning Rod 5/8" x 8'	C	From Leg	4.00 0.00 4.00	0.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.50 1.31 2.14 3.61	0.50 1.31 2.14 3.61	0.03 0.04 0.05 0.08
******									
(2) 7770.00 w/ Mount Pipe	A	From Leg	4.00 0.00 3.00	0.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.75 6.18 6.61 7.49	4.25 5.01 5.71 7.16	0.06 0.10 0.16 0.29
(2) 7770.00 w/ Mount Pipe	B	From Leg	4.00 0.00 3.00	0.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.75 6.18 6.61 7.49	4.25 5.01 5.71 7.16	0.06 0.10 0.16 0.29
(2) 7770.00 w/ Mount Pipe	C	From Leg	4.00 0.00 3.00	0.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.75 6.18 6.61 7.49	4.25 5.01 5.71 7.16	0.06 0.10 0.16 0.29
P65-17-XLH-RR w/ Mount Pipe	A	From Leg	4.00 0.00 3.00	0.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice	7.48 8.17 8.88 10.33	5.29 5.96 6.64 8.05	0.09 0.17 0.26 0.49

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
P65-17-XLH-RR w/ Mount Pipe	C	From Leg	4.00 0.00 3.00	0.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice	7.48 8.17 8.88 10.33	5.29 5.96 6.64 8.05	0.09 0.17 0.26 0.49
AM-X-CD-16-65-00T-RET w/ Mount Pipe	B	From Leg	4.00 0.00 3.00	0.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.63 5.06 5.51 6.43	3.27 3.69 4.12 5.00	0.07 0.13 0.20 0.38
CBC721A-03	A	From Leg	4.00 0.00 3.00	0.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.28 0.35 0.43 0.61	0.18 0.24 0.31 0.47	0.00 0.01 0.01 0.02
CBC721A-03	B	From Leg	4.00 0.00 3.00	0.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.28 0.35 0.43 0.61	0.18 0.24 0.31 0.47	0.00 0.01 0.01 0.02
CBC721A-03	C	From Leg	4.00 0.00 3.00	0.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.28 0.35 0.43 0.61	0.18 0.24 0.31 0.47	0.00 0.01 0.01 0.02
RRUS-11	A	From Leg	4.00 0.00 3.00	0.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.78 2.99 3.21 3.66	1.19 1.33 1.49 1.83	0.05 0.07 0.09 0.15
RRUS-11	B	From Leg	4.00 0.00 3.00	0.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.78 2.99 3.21 3.66	1.19 1.33 1.49 1.83	0.05 0.07 0.09 0.15
RRUS-11	C	From Leg	4.00 0.00 3.00	0.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.78 2.99 3.21 3.66	1.19 1.33 1.49 1.83	0.05 0.07 0.09 0.15
LGP13519	A	From Leg	4.00 0.00 3.00	0.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.29 0.36 0.44 0.62	0.18 0.24 0.31 0.47	0.01 0.01 0.01 0.02
LGP13519	B	From Leg	4.00 0.00 3.00	0.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.29 0.36 0.44 0.62	0.18 0.24 0.31 0.47	0.01 0.01 0.01 0.02
LGP13519	C	From Leg	4.00 0.00 3.00	0.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.29 0.36 0.44 0.62	0.18 0.24 0.31 0.47	0.01 0.01 0.01 0.02
(2) LGP21401	A	From Leg	4.00 0.00 3.00	0.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.10 1.24 1.38 1.69	0.21 0.27 0.35 0.52	0.01 0.02 0.03 0.05
(2) LGP21401	B	From Leg	4.00 0.00 3.00	0.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.10 1.24 1.38 1.69	0.21 0.27 0.35 0.52	0.01 0.02 0.03 0.05

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) LGP21401	C	From Leg	4.00 0.00 3.00	0.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.10 1.24 1.38 1.69	0.21 0.27 0.35 0.52	0.01 0.02 0.03 0.05
DC6-48-60-18-8F	B	From Leg	4.00 0.00 3.00	0.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.92 1.46 1.64 2.04	0.92 1.46 1.64 2.04	0.02 0.04 0.06 0.11
6' x 2" Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.43 1.92 2.29 3.06	1.43 1.92 2.29 3.06	0.02 0.03 0.05 0.09
6' x 2" Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.43 1.92 2.29 3.06	1.43 1.92 2.29 3.06	0.02 0.03 0.05 0.09
6' x 2" Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.43 1.92 2.29 3.06	1.43 1.92 2.29 3.06	0.02 0.03 0.05 0.09
Platform Mount [LP 712-1]	C	None		0.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice	24.56 27.92 31.27 37.98	24.56 27.92 31.27 37.98	1.34 1.91 2.55 3.97
*****									
(2) LPA-80063/6CF-2 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	9.80 10.37 10.91 12.00	10.19 11.36 12.25 14.06	0.05 0.14 0.25 0.48
(2) LPA-80063/6CF-2 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	9.80 10.37 10.91 12.00	10.19 11.36 12.25 14.06	0.05 0.14 0.25 0.48
(2) LPA-80063/6CF-2 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	9.80 10.37 10.91 12.00	10.19 11.36 12.25 14.06	0.05 0.14 0.25 0.48
Platform Mount [LP 303-1]	C	None		0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	14.69 18.01 21.34 28.08	14.69 18.01 21.34 28.08	1.25 1.57 1.94 2.85
***									
(2) NHH-65B-R2B w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.09 4.48 4.88 5.70	3.29 3.67 4.06 4.86	0.07 0.13 0.21 0.39
(2) NHH-65B-R2B w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.09 4.48 4.88 5.70	3.29 3.67 4.06 4.86	0.07 0.13 0.21 0.39
(2) NHH-65B-R2B w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice	4.09 4.48 4.88	3.29 3.67 4.06	0.07 0.13 0.21

Description	*Face or Leg*	*Offset Type*	*Offsets: Horz Lateral Vert* *ft* *ft* *ft*	*Azimuth Adjustment* *°*	*Placement* *ft*		C_AA_A *Front* *ft²*	C_AA_A *Side* *ft²*	*Weight* *K*
						1" Ice	5.70	4.86	0.39
						2" Ice			
MT6407-77A w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.91 5.26 5.61 6.36	2.68 3.14 3.62 4.63	0.10 0.14 0.18 0.29
MT6407-77A w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.91 5.26 5.61 6.36	2.68 3.14 3.62 4.63	0.10 0.14 0.18 0.29
MT6407-77A w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.91 5.26 5.61 6.36	2.68 3.14 3.62 4.63	0.10 0.14 0.18 0.29
RF4439D-25A	A	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.87 2.03 2.21 2.59	1.25 1.39 1.54 1.87	0.07 0.09 0.11 0.17
RF4439D-25A	B	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.87 2.03 2.21 2.59	1.25 1.39 1.54 1.87	0.07 0.09 0.11 0.17
RF4439D-25A	C	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.87 2.03 2.21 2.59	1.25 1.39 1.54 1.87	0.07 0.09 0.11 0.17
RF4440D-13A	A	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.87 2.03 2.21 2.59	1.13 1.27 1.41 1.72	0.07 0.09 0.11 0.16
RF4440D-13A	B	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.87 2.03 2.21 2.59	1.13 1.27 1.41 1.72	0.07 0.09 0.11 0.16
RF4440D-13A	C	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.87 2.03 2.21 2.59	1.13 1.27 1.41 1.72	0.07 0.09 0.11 0.16
RVZDC-6627-PF-48	A	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.79 4.04 4.30 4.84	2.51 2.73 2.95 3.42	0.03 0.06 0.10 0.18
*****									
MX08FRO665-21 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice 2" Ice	8.01 8.52 9.04 10.11	4.23 4.69 5.16 6.12	0.11 0.19 0.29 0.52
MX08FRO665-21 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice 2" Ice	8.01 8.52 9.04 10.11	4.23 4.69 5.16 6.12	0.11 0.19 0.29 0.52
MX08FRO665-21 w/ Mount Pipe	C	From Leg	4.00 0.00	0.0000	100.00	No Ice	8.01 8.52	4.23 4.69	0.11 0.19

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" Ice	9.04 10.11	5.16 6.12	0.29 0.52
						1" Ice 2" Ice			
TA08025-B604	A	From Leg	4.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.96 2.14 2.32 2.71	0.98 1.11 1.25 1.55	0.06 0.08 0.10 0.15
TA08025-B604	B	From Leg	4.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.96 2.14 2.32 2.71	0.98 1.11 1.25 1.55	0.06 0.08 0.10 0.15
TA08025-B604	C	From Leg	4.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.96 2.14 2.32 2.71	0.98 1.11 1.25 1.55	0.06 0.08 0.10 0.15
TA08025-B605	A	From Leg	4.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.96 2.14 2.32 2.71	1.13 1.27 1.41 1.72	0.08 0.09 0.11 0.16
TA08025-B605	B	From Leg	4.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.96 2.14 2.32 2.71	1.13 1.27 1.41 1.72	0.08 0.09 0.11 0.16
TA08025-B605	C	From Leg	4.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.96 2.14 2.32 2.71	1.13 1.27 1.41 1.72	0.08 0.09 0.11 0.16
RDIDC-9181-PF-48	B	From Leg	4.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.01 2.19 2.37 2.76	1.17 1.31 1.46 1.78	0.02 0.04 0.06 0.11
(2) 8' x 2" Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.90 2.73 3.40 4.40	1.90 2.73 3.40 4.40	0.03 0.04 0.06 0.12
(2) 8' x 2" Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.90 2.73 3.40 4.40	1.90 2.73 3.40 4.40	0.03 0.04 0.06 0.12
(2) 8' x 2" Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.90 2.73 3.40 4.40	1.90 2.73 3.40 4.40	0.03 0.04 0.06 0.12
Commscope MC-PK8-DSH	C	None		0.0000	100.00	No Ice 1/2" Ice 1" Ice 2" Ice	34.24 62.95 91.66 149.08	34.24 62.95 91.66 149.08	1.75 2.10 2.45 3.15
*****									
VV-65A-R1_TMO w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.46 4.91 5.36 6.32	2.69 3.10 3.52 4.41	0.05 0.10 0.15 0.28

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
VV-65A-R1_TMO w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.46 4.91 5.36 6.32	2.69 3.10 3.52 4.41	0.05 0.10 0.15 0.28
VV-65A-R1_TMO w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.46 4.91 5.36 6.32	2.69 3.10 3.52 4.41	0.05 0.10 0.15 0.28
AIR 6419 B41_TMO w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice 2" Ice	6.58 7.06 7.57 8.62	3.50 3.90 4.32 5.20	0.11 0.16 0.22 0.36
AIR 6419 B41_TMO w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice 2" Ice	6.58 7.06 7.57 8.62	3.50 3.90 4.32 5.20	0.11 0.16 0.22 0.36
AIR 6419 B41_TMO w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice 2" Ice	6.58 7.06 7.57 8.62	3.50 3.90 4.32 5.20	0.11 0.16 0.22 0.36
APXVAALL24_43-U-NA20_TMO w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice 2" Ice	14.69 15.46 16.23 17.82	6.87 7.55 8.25 9.67	0.18 0.31 0.45 0.78
APXVAALL24_43-U-NA20_TMO w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice 2" Ice	14.69 15.46 16.23 17.82	6.87 7.55 8.25 9.67	0.18 0.31 0.45 0.78
APXVAALL24_43-U-NA20_TMO w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice 2" Ice	14.69 15.46 16.23 17.82	6.87 7.55 8.25 9.67	0.18 0.31 0.45 0.78
RADIO 4460 B2/B25 B66_TMO	A	From Leg	4.00 0.00 0.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.14 2.32 2.51 2.91	1.69 1.85 2.02 2.39	0.11 0.13 0.16 0.22
RADIO 4460 B2/B25 B66_TMO	B	From Leg	4.00 0.00 0.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.14 2.32 2.51 2.91	1.69 1.85 2.02 2.39	0.11 0.13 0.16 0.22
RADIO 4460 B2/B25 B66_TMO	C	From Leg	4.00 0.00 0.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.14 2.32 2.51 2.91	1.69 1.85 2.02 2.39	0.11 0.13 0.16 0.22
Radio 4480_TMOV2	A	From Leg	4.00 0.00 0.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.88 3.09 3.31 3.78	1.40 1.56 1.73 2.09	0.08 0.10 0.13 0.19
Radio 4480_TMOV2	B	From Leg	4.00 0.00 0.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.88 3.09 3.31 3.78	1.40 1.56 1.73 2.09	0.08 0.10 0.13 0.19

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
Radio 4480_TMOV2	C	From Leg	4.00 0.00 0.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.88 3.09 3.31 3.78	1.40 1.56 1.73 2.09	0.08 0.10 0.13 0.19
8' x 2" Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.90 2.73 3.40 4.40	1.90 2.73 3.40 4.40	0.03 0.04 0.06 0.12
8' x 2" Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.90 2.73 3.40 4.40	1.90 2.73 3.40 4.40	0.03 0.04 0.06 0.12
8' x 2" Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.90 2.73 3.40 4.40	1.90 2.73 3.40 4.40	0.03 0.04 0.06 0.12
Site Pro 1 RMQP-496 w/ HRK12	C	None		0.0000	90.00	No Ice 1/2" Ice 1" Ice 2" Ice	23.14 28.17 33.20 43.26	21.40 26.44 31.48 41.56	1.95 2.34 2.73 3.50

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight K
*****											
SC2-W100BD	A	Paraboloid w/Shroud (HP)	From Leg	4.00 0.00 0.00	0.0000		90.00	2.20	No Ice 1/2" Ice 1" Ice 2" Ice	3.80 4.09 4.39 4.98	0.02 0.04 0.06 0.10

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

Comb. No.	Description
17	0.9 Dead+1.0 Wind 210 deg - No Ice
18	1.2 Dead+1.0 Wind 240 deg - No Ice
19	0.9 Dead+1.0 Wind 240 deg - No Ice
20	1.2 Dead+1.0 Wind 270 deg - No Ice
21	0.9 Dead+1.0 Wind 270 deg - No Ice
22	1.2 Dead+1.0 Wind 300 deg - No Ice
23	0.9 Dead+1.0 Wind 300 deg - No Ice
24	1.2 Dead+1.0 Wind 330 deg - No Ice
25	0.9 Dead+1.0 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	119 - 95.11	Pole	Max Tension	27	0.00	-0.00	-0.00
			Max. Compression	26	-23.67	-0.06	0.12
			Max. Mx	20	-10.30	125.93	-0.32
			Max. My	14	-10.29	0.34	-126.67
			Max. Vy	20	-10.38	125.93	-0.32
			Max. Vx	14	10.42	0.34	-126.67
			Max. Torque	7			0.46
L2	95.11 - 47.1673	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-42.00	-0.06	-0.14
			Max. Mx	20	-21.61	776.85	0.01
			Max. My	14	-21.60	0.50	-782.63
			Max. Vy	20	-16.06	776.85	0.01
			Max. Vx	14	16.19	0.50	-782.63
			Max. Torque	9			0.74
L3	47.1673 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-59.17	-0.06	-0.92
			Max. Mx	20	-34.52	1713.12	0.38
			Max. My	14	-34.52	0.67	-1725.52
			Max. Vy	20	-19.45	1713.12	0.38
			Max. Vx	14	19.57	0.67	-1725.52
			Max. Torque	9			0.74

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	33	59.17	0.00	-5.79
	Max. H_x	20	34.53	19.43	0.01
	Max. H_z	2	34.53	-0.00	19.52
	Max. M_x	2	1722.11	-0.00	19.52
	Max. M_z	8	1713.01	-19.43	0.02
	Max. Torsion	9	0.74	-19.43	0.02
	Min. Vert	23	25.90	16.81	9.78
	Min. H_x	8	34.53	-19.43	0.02
	Min. H_z	14	34.53	0.00	-19.55
	Min. M_x	14	-1725.52	0.00	-19.55
	Min. M_z	20	-1713.12	19.43	0.01
	Min. Torsion	21	-0.74	19.43	0.01

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	28.78	0.00	0.00	0.23	0.04	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	34.53	0.00	-19.52	-1722.11	-0.56	-0.10
0.9 Dead+1.0 Wind 0 deg - No Ice	25.90	0.00	-19.52	-1708.89	-0.57	-0.10
1.2 Dead+1.0 Wind 30 deg - No Ice	34.53	9.70	-16.92	-1492.56	-855.42	-0.37
0.9 Dead+1.0 Wind 30 deg - No Ice	25.90	9.70	-16.92	-1481.11	-848.83	-0.37
1.2 Dead+1.0 Wind 60 deg - No Ice	34.53	16.82	-9.79	-863.81	-1482.61	-0.63
0.9 Dead+1.0 Wind 60 deg - No Ice	25.90	16.82	-9.79	-857.21	-1471.18	-0.63
1.2 Dead+1.0 Wind 90 deg - No Ice	34.53	19.43	-0.02	-1.61	-1713.01	-0.74
0.9 Dead+1.0 Wind 90 deg - No Ice	25.90	19.43	-0.02	-1.66	-1699.81	-0.74
1.2 Dead+1.0 Wind 120 deg - No Ice	34.53	16.80	9.81	866.03	-1481.18	-0.45
0.9 Dead+1.0 Wind 120 deg - No Ice	25.90	16.80	9.81	859.29	-1469.76	-0.45
1.2 Dead+1.0 Wind 150 deg - No Ice	34.53	9.70	16.94	1495.46	-855.04	-0.20
0.9 Dead+1.0 Wind 150 deg - No Ice	25.90	9.70	16.94	1483.85	-848.46	-0.20
1.2 Dead+1.0 Wind 180 deg - No Ice	34.53	-0.00	19.55	1725.52	0.67	0.11
0.9 Dead+1.0 Wind 180 deg - No Ice	25.90	-0.00	19.55	1712.14	0.64	0.11
1.2 Dead+1.0 Wind 210 deg - No Ice	34.53	-9.71	16.95	1496.07	856.20	0.38
0.9 Dead+1.0 Wind 210 deg - No Ice	25.90	-9.71	16.95	1484.46	849.58	0.38
1.2 Dead+1.0 Wind 240 deg - No Ice	34.53	-16.81	9.82	867.09	1481.89	0.55
0.9 Dead+1.0 Wind 240 deg - No Ice	25.90	-16.81	9.82	860.34	1470.44	0.55
1.2 Dead+1.0 Wind 270 deg - No Ice	34.53	-19.43	-0.01	-0.38	1713.12	0.73
0.9 Dead+1.0 Wind 270 deg - No Ice	25.90	-19.43	-0.01	-0.45	1699.89	0.74
1.2 Dead+1.0 Wind 300 deg - No Ice	34.53	-16.81	-9.78	-862.75	1482.10	0.52

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
0.9 Dead+1.0 Wind 300 deg - No Ice	25.90	-16.81	-9.78	-856.16	1470.65	0.52
1.2 Dead+1.0 Wind 330 deg - No Ice	34.53	-9.70	-16.91	-1491.95	854.46	0.19
0.9 Dead+1.0 Wind 330 deg - No Ice	25.90	-9.70	-16.91	-1480.51	847.86	0.19
1.2 Dead+1.0 Ice+1.0 Temp	59.17	0.00	0.00	0.92	-0.06	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	59.17	0.00	-5.78	-516.48	-0.16	-0.07
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	59.17	2.88	-5.01	-447.43	-257.53	-0.10
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	59.17	4.99	-2.90	-258.40	-446.26	-0.12
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	59.17	5.77	-0.00	0.55	-515.52	-0.11
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	59.17	4.99	2.90	260.72	-445.97	-0.03
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	59.17	2.88	5.02	449.87	-257.51	0.02
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	59.17	-0.00	5.79	519.01	0.04	0.07
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	59.17	-2.88	5.02	449.97	257.56	0.10
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	59.17	-4.99	2.90	260.89	445.95	0.10
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	59.17	-5.77	-0.00	0.75	515.39	0.11
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	59.17	-4.99	-2.90	-258.22	446.03	0.05
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	59.17	-2.88	-5.01	-447.33	257.23	-0.02
Dead+Wind 0 deg - Service	28.78	0.00	-4.75	-417.37	-0.11	-0.02
Dead+Wind 30 deg - Service	28.78	2.36	-4.12	-361.71	-207.37	-0.08
Dead+Wind 60 deg - Service	28.78	4.10	-2.38	-209.27	-359.43	-0.15
Dead+Wind 90 deg - Service	28.78	4.73	-0.00	-0.23	-415.29	-0.18
Dead+Wind 120 deg - Service	28.78	4.09	2.39	210.13	-359.08	-0.11
Dead+Wind 150 deg - Service	28.78	2.36	4.13	362.74	-207.28	-0.05
Dead+Wind 180 deg - Service	28.78	-0.00	4.76	418.52	0.19	0.02
Dead+Wind 210 deg - Service	28.78	-2.36	4.13	362.89	207.62	0.09
Dead+Wind 240 deg - Service	28.78	-4.09	2.39	210.39	359.32	0.13
Dead+Wind 270 deg - Service	28.78	-4.73	-0.00	0.07	415.38	0.18
Dead+Wind 300 deg - Service	28.78	-4.10	-2.38	-209.01	359.37	0.13
Dead+Wind 330 deg - Service	28.78	-2.36	-4.12	-361.56	207.20	0.05

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	-28.78	0.00	0.00	28.78	0.00	0.000%
2	0.00	-34.53	-19.52	-0.00	34.53	19.52	0.000%
3	0.00	-25.90	-19.52	-0.00	25.90	19.52	0.000%
4	9.70	-34.53	-16.92	-9.70	34.53	16.92	0.000%
5	9.70	-25.90	-16.92	-9.70	25.90	16.92	0.000%
6	16.82	-34.53	-9.79	-16.82	34.53	9.79	0.000%
7	16.82	-25.90	-9.79	-16.82	25.90	9.79	0.000%
8	19.43	-34.53	-0.02	-19.43	34.53	0.02	0.000%
9	19.43	-25.90	-0.02	-19.43	25.90	0.02	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
10	16.80	-34.53	9.81	-16.80	34.53	-9.81	0.000%
11	16.80	-25.90	9.81	-16.80	25.90	-9.81	0.000%
12	9.70	-34.53	16.94	-9.70	34.53	-16.94	0.000%
13	9.70	-25.90	16.94	-9.70	25.90	-16.94	0.000%
14	-0.00	-34.53	19.55	0.00	34.53	-19.55	0.000%
15	-0.00	-25.90	19.55	0.00	25.90	-19.55	0.000%
16	-9.71	-34.53	16.95	9.71	34.53	-16.95	0.000%
17	-9.71	-25.90	16.95	9.71	25.90	-16.95	0.000%
18	-16.81	-34.53	9.82	16.81	34.53	-9.82	0.000%
19	-16.81	-25.90	9.82	16.81	25.90	-9.82	0.000%
20	-19.43	-34.53	-0.01	19.43	34.53	0.01	0.000%
21	-19.43	-25.90	-0.01	19.43	25.90	0.01	0.000%
22	-16.81	-34.53	-9.78	16.81	34.53	9.78	0.000%
23	-16.81	-25.90	-9.78	16.81	25.90	9.78	0.000%
24	-9.70	-34.53	-16.91	9.70	34.53	16.91	0.000%
25	-9.70	-25.90	-16.91	9.70	25.90	16.91	0.000%
26	0.00	-59.17	0.00	0.00	59.17	0.00	0.000%
27	0.00	-59.17	-5.78	-0.00	59.17	5.78	0.000%
28	2.88	-59.17	-5.01	-2.88	59.17	5.01	0.000%
29	4.99	-59.17	-2.90	-4.99	59.17	2.90	0.000%
30	5.77	-59.17	-0.00	-5.77	59.17	0.00	0.000%
31	4.99	-59.17	2.90	-4.99	59.17	-2.90	0.000%
32	2.88	-59.17	5.02	-2.88	59.17	-5.02	0.000%
33	-0.00	-59.17	5.79	0.00	59.17	-5.79	0.000%
34	-2.88	-59.17	5.02	2.88	59.17	-5.02	0.000%
35	-4.99	-59.17	2.90	4.99	59.17	-2.90	0.000%
36	-5.77	-59.17	-0.00	5.77	59.17	0.00	0.000%
37	-4.99	-59.17	-2.90	4.99	59.17	2.90	0.000%
38	-2.88	-59.17	-5.01	2.88	59.17	5.01	0.000%
39	0.00	-28.78	-4.75	-0.00	28.78	4.75	0.000%
40	2.36	-28.78	-4.12	-2.36	28.78	4.12	0.000%
41	4.10	-28.78	-2.38	-4.10	28.78	2.38	0.000%
42	4.73	-28.78	-0.00	-4.73	28.78	0.00	0.000%
43	4.09	-28.78	2.39	-4.09	28.78	-2.39	0.000%
44	2.36	-28.78	4.13	-2.36	28.78	-4.13	0.000%
45	-0.00	-28.78	4.76	0.00	28.78	-4.76	0.000%
46	-2.36	-28.78	4.13	2.36	28.78	-4.13	0.000%
47	-4.09	-28.78	2.39	4.09	28.78	-2.39	0.000%
48	-4.73	-28.78	-0.00	4.73	28.78	0.00	0.000%
49	-4.10	-28.78	-2.38	4.10	28.78	2.38	0.000%
50	-2.36	-28.78	-4.12	2.36	28.78	4.12	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	4	0.00000001	0.00011485
3	Yes	4	0.00000001	0.00006949
4	Yes	5	0.00000001	0.00017797
5	Yes	5	0.00000001	0.00008492
6	Yes	5	0.00000001	0.00019005
7	Yes	5	0.00000001	0.00009109
8	Yes	4	0.00000001	0.00037308
9	Yes	4	0.00000001	0.00024982
10	Yes	5	0.00000001	0.00017830
11	Yes	5	0.00000001	0.00008510
12	Yes	5	0.00000001	0.00018387
13	Yes	5	0.00000001	0.00008792
14	Yes	4	0.00000001	0.00012673
15	Yes	4	0.00000001	0.00007793
16	Yes	5	0.00000001	0.00018838
17	Yes	5	0.00000001	0.00009013
18	Yes	5	0.00000001	0.00017744
19	Yes	5	0.00000001	0.00008461
20	Yes	4	0.00000001	0.00035901
21	Yes	4	0.00000001	0.00024048
22	Yes	5	0.00000001	0.00018730
23	Yes	5	0.00000001	0.00008972
24	Yes	5	0.00000001	0.00018061
25	Yes	5	0.00000001	0.00008626
26	Yes	4	0.00000001	0.00000001
27	Yes	4	0.00000001	0.00124640
28	Yes	5	0.00000001	0.00013398
29	Yes	5	0.00000001	0.00013486
30	Yes	4	0.00000001	0.00124180
31	Yes	5	0.00000001	0.00013423
32	Yes	5	0.00000001	0.00013424
33	Yes	4	0.00000001	0.00124849
34	Yes	5	0.00000001	0.00013517
35	Yes	5	0.00000001	0.00013404
36	Yes	4	0.00000001	0.00124158
37	Yes	5	0.00000001	0.00013425
38	Yes	5	0.00000001	0.00013449
39	Yes	4	0.00000001	0.00001332
40	Yes	4	0.00000001	0.00007296
41	Yes	4	0.00000001	0.00008793
42	Yes	4	0.00000001	0.00002459
43	Yes	4	0.00000001	0.00007303
44	Yes	4	0.00000001	0.00007995
45	Yes	4	0.00000001	0.00001342
46	Yes	4	0.00000001	0.00008483
47	Yes	4	0.00000001	0.00007235
48	Yes	4	0.00000001	0.00002442
49	Yes	4	0.00000001	0.00008500
50	Yes	4	0.00000001	0.00007562

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	119 - 95.11	10.052	45	0.7902	0.0015
L2	98.8912 - 47.1673	6.864	45	0.7019	0.0011
L3	52.834 - 0	1.781	45	0.3220	0.0003

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
119.00	Lightning Rod 5/8" x 8'	45	10.052	0.7902	0.0016	32184
110.00	(2) LPA-80063/6CF-2 w/ Mount Pipe	45	8.589	0.7558	0.0013	17880
100.00	MX08FRO665-21 w/ Mount Pipe	45	7.029	0.7082	0.0011	8623
90.00	SC2-W100BD	45	5.604	0.6424	0.0009	7541

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	119 - 95.11	41.505	14	3.2632	0.0065
L2	98.8912 - 47.1673	28.339	14	2.9001	0.0045
L3	52.834 - 0	7.348	14	1.3294	0.0011

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
119.00	Lightning Rod 5/8" x 8'	14	41.505	3.2632	0.0069	7846
110.00	(2) LPA-80063/6CF-2 w/ Mount Pipe	14	35.463	3.1222	0.0056	4358
100.00	MX08FRO665-21 w/ Mount Pipe	14	29.023	2.9262	0.0046	2101
90.00	SC2-W100BD	14	23.135	2.6543	0.0037	1834

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	119 - 95.11 (1)	TP26.2449x18.5x0.1875	23.89	0.00	0.0	14.7779	-10.29	864.51	0.012
L2	95.11 - 47.1673 (2)	TP41.3419x24.6441x0.25	51.72	0.00	0.0	31.1548	-21.60	1822.56	0.012
L3	47.1673 - 0 (3)	TP56x39.0125x0.3125	52.83	0.00	0.0	55.2350	-34.52	3231.25	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	119 - 95.11 (1)	TP26.2449x18.5x0.1875	126.76	508.24	0.249	0.00	508.24	0.000
L2	95.11 - 47.1673 (2)	TP41.3419x24.6441x0.25	782.63	1580.63	0.495	0.00	1580.63	0.000
L3	47.1673 - 0 (3)	TP56x39.0125x0.3125	1725.53	3727.85	0.463	0.00	3727.85	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	119 - 95.11 (1)	TP26.2449x18.5x0.1875	10.42	259.35	0.040	0.24	563.99	0.000
L2	95.11 - 47.1673 (2)	TP41.3419x24.6441x0.25	16.19	546.77	0.030	0.11	1880.02	0.000
L3	47.1673 - 0 (3)	TP56x39.0125x0.3125	19.57	969.38	0.020	0.11	4727.48	0.000

Pole Interaction Design Data

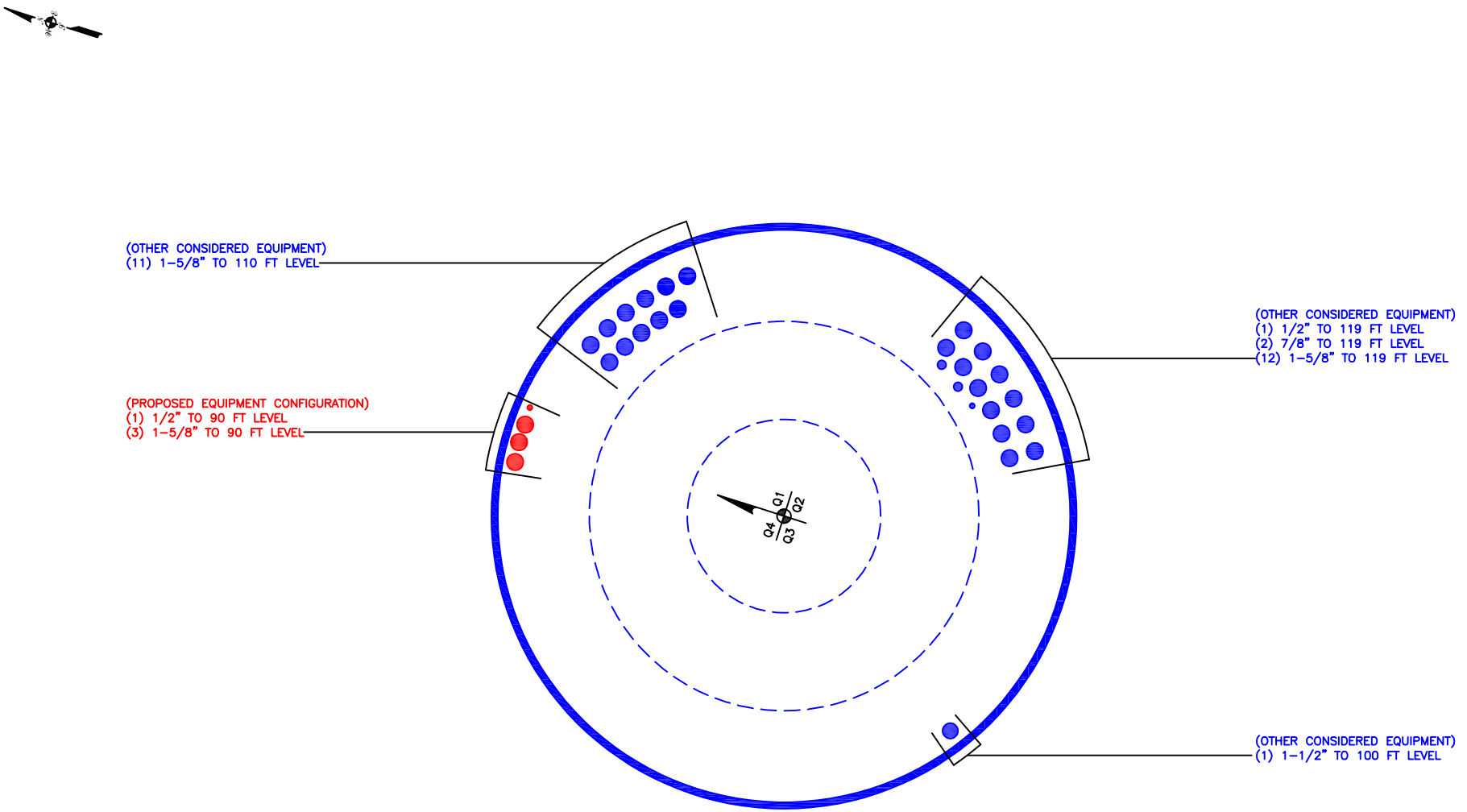
Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	119 - 95.11 (1)	0.012	0.249	0.000	0.040	0.000	0.263	1.050	4.8.2
L2	95.11 - 47.1673 (2)	0.012	0.495	0.000	0.030	0.000	0.508	1.050	4.8.2
L3	47.1673 - 0 (3)	0.011	0.463	0.000	0.020	0.000	0.474	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	119 - 95.11	Pole	TP26.2449x18.5x0.1875	1	-10.29	907.73	25.0	Pass
L2	95.11 - 47.1673	Pole	TP41.3419x24.6441x0.25	2	-21.60	1913.69	48.4	Pass
L3	47.1673 - 0	Pole	TP56x39.0125x0.3125	3	-34.52	3392.81	45.1	Pass
							Summary	
						Pole (L2)	48.4	Pass
						RATING =	**48.4**	**Pass**

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 846293 TOWER ID: C_BASELEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

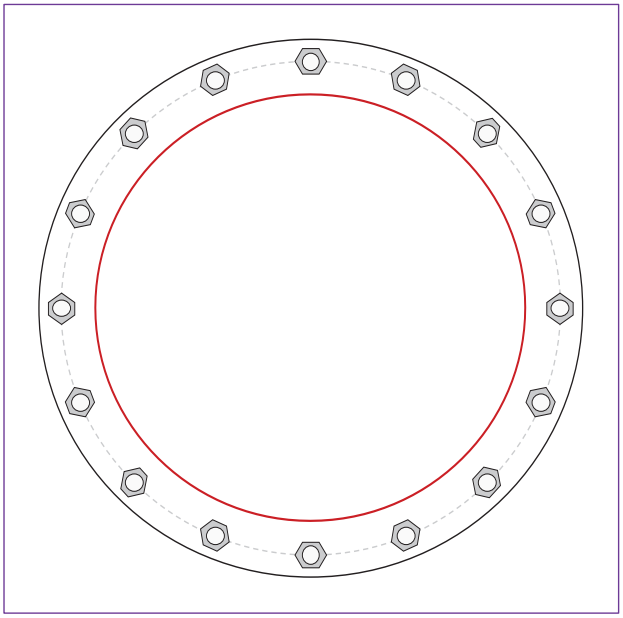
Monopole Base Plate Connection

Site Info	
BU #	846293
Site Name	Tolland - Peter Green Rd
Order #	614561 Rev. 2

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	No
l_{ar} (in)	0.875

Applied Loads	
Moment (kip-ft)	1725.52
Axial Force (kips)	34.52
Shear Force (kips)	19.57

**TIA-222-H Section 15.5 Applied*



Connection Properties

Anchor Rod Data

(16) 2-1/4" ø bolts (A615-75 N; Fy=75 ksi, Fu=100 ksi) on 65" BC

Base Plate Data

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

Stiffener Data

N/A

Pole Data

56" x 0.3125" 18-sided pole (A572-65; Fy=65 ksi, Fu=80 ksi)

Analysis Results

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

Pu_t = 77.44	ϕPn_t = 243.75	**Stress Rating**
Vu = 1.22	ϕVn = 149.1	**30.3%**
Mu = n/a	ϕMn = n/a	**Pass**

Base Plate Summary

Max Stress (ksi):	16.15	(Flexural)
Allowable Stress (ksi):	54	
Stress Rating:	**28.5%**	**Pass**

Pier and Pad Foundation

BU # :	846293
Site Name:	Tolland - Peter Gre
App. Number:	614561 Rev. 2

TIA-222 Revision:	H
Tower Type:	Monopole

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

Superstructure Analysis Reactions		
Compression, P_{comp}:	34.53	kips
Base Shear, Vu_comp:	19.55	kips
Moment, M_u:	1725.52	ft-kips
Tower Height, **H**:	119	ft
BP Dist. Above Fdn, bp_{dist}:	3.125	in

Pier Properties		
Pier Shape:	Square	
Pier Diameter, **dpier**:	7	ft
Ext. Above Grade, **E**:	1	ft
Pier Rebar Size, **Sc**:	8	
Pier Rebar Quantity, **mc**:	36	
Pier Tie/Spiral Size, **St**:	4	
Pier Tie/Spiral Quantity, **mt**:	7	
Pier Reinforcement Type:	Tie	
Pier Clear Cover, cc_{pier}:	3	in

Pad Properties		
Depth, **D**:	5	ft
Pad Width, W_1:	25	ft
Pad Thickness, **T**:	3	ft
Pad Rebar Size (Bottom dir. 2), Sp_2:	8	
Pad Rebar Quantity (Bottom dir. 2), mp_2:	32	
Pad Clear Cover, cc_{pad}:	3	in

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

Soil Properties		
Total Soil Unit Weight, γ:	125	pcf
Ultimate Gross Bearing, Qult:	30.000	ksf
Cohesion, **Cu**:	0.000	ksf
Friction Angle, φ:	35	degrees
SPT Blow Count, N_{blows}:	29	
Base Friction, μ:	0.45	
Neglected Depth, **N**:	3.50	ft
Foundation Bearing on Rock?	No	
Groundwater Depth, **gw**:	8.5	ft

<--Toggle between Gross and Net

Foundation Analysis Checks	Capacity	Demand	Rating*	Check
Lateral (Sliding) (kips)	199.74	19.55	**9.3%**	**Pass**
Bearing Pressure (ksf)	22.50	1.41	**6.0%**	**Pass**
*Overturning (kip*ft)*	5350.75	1847.91	**34.5%**	**Pass**
*Pier Flexure (Comp.) (kip*ft)*	4693.78	1784.17	**36.2%**	**Pass**
Pier Compression (kip)	31187.52	60.99	**0.2%**	**Pass**
*Pad Flexure (kip*ft)*	3498.86	621.03	**16.9%**	**Pass**
Pad Shear - 1-way (kips)	896.51	96.06	**10.2%**	**Pass**
Pad Shear - 2-way (Comp) (ksi)	0.190	0.019	**9.4%**	**Pass**
*Flexural 2-way (Comp) (kip*ft)*	4443.10	1070.50	**22.9%**	**Pass**

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

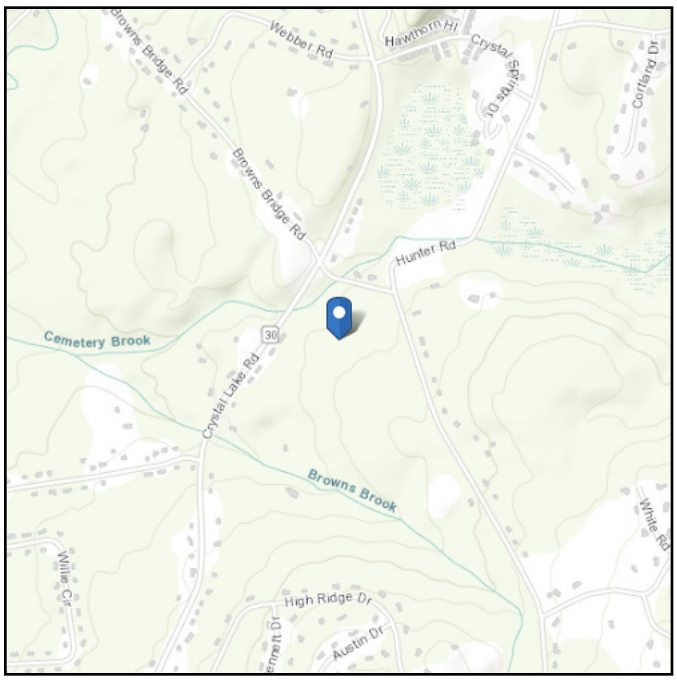
Structural Rating*:	**36.2%**
Soil Rating*:	**34.5%**

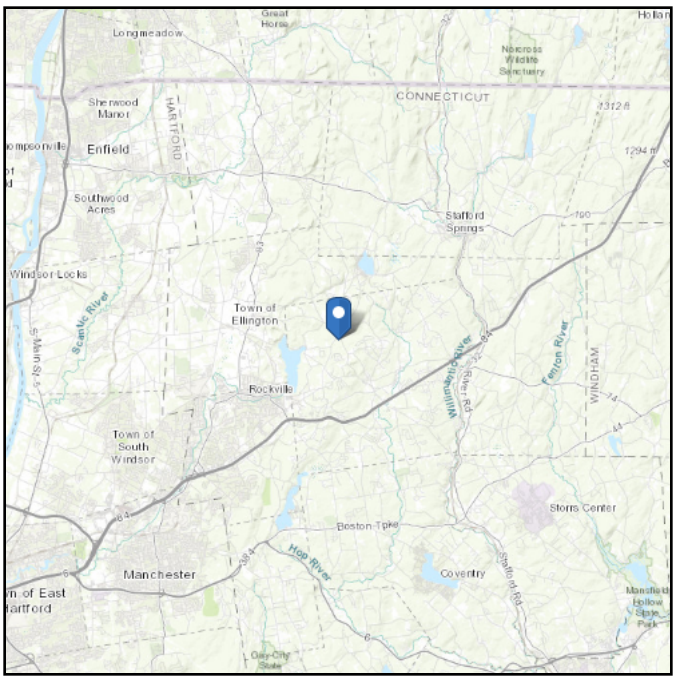
ASCE 7 Hazards Report

Address:
No Address at This Location

Standard: ASCE/SEI 7-16
Risk Category: II
Soil Class: D - Stiff Soil

Elevation: 697.04 ft (NAVD 88)
Latitude: 41.896614
Longitude: -72.393731





Wind

Results:

Wind Speed	118 Vmph
10-year MRI	75 Vmph
25-year MRI	84 Vmph
50-year MRI	90 Vmph
100-year MRI	98 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: Sun Jun 12 2022

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

Site is in a hurricane-prone region as defined in ASCE/SEI 7-16 Section 26.2. Glazed openings need not be protected against wind-borne debris.

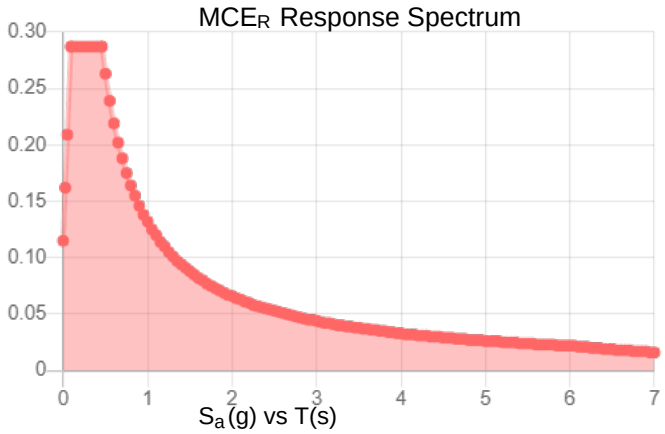
Seismic

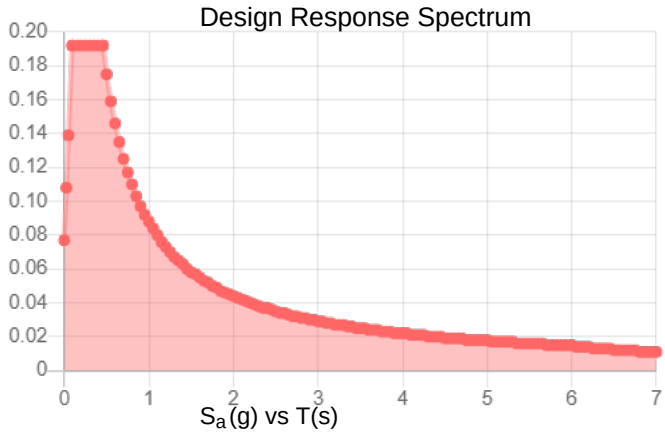
Site Soil Class: D - Stiff Soil

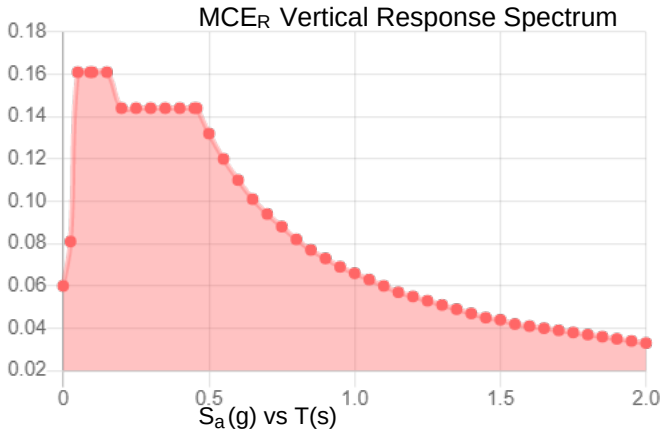
Results:

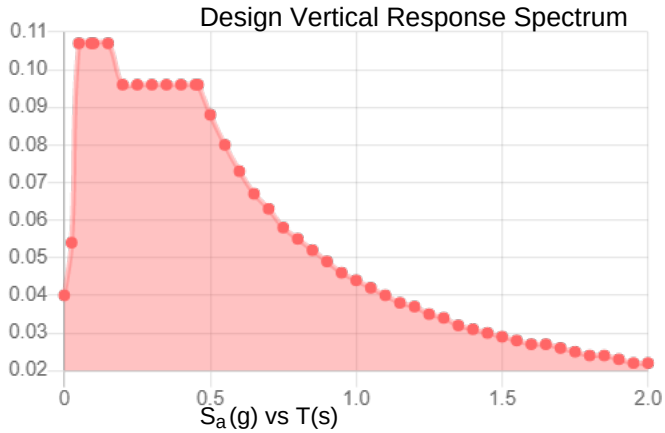
S_S :	0.18	S_{D1} :	0.088
S_1 :	0.055	T_L :	6
F_a :	1.6	PGA :	0.095
F_v :	2.4	PGA_M :	0.153
S_{MS} :	0.287	F_{PGA} :	1.6
S_{M1} :	0.132	I_e :	1
S_{DS} :	0.192	C_v :	0.7

Seismic Design Category B









Data Accessed: **Sun Jun 12 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:	1.50 in.
Concurrent Temperature:	5 F
Gust Speed	50 mph
Data Source:	Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8
Date Accessed:	Sun Jun 12 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 9, 2022**

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

Subject:	**Mount Analysis Report**	
Carrier Designation:	**T-Mobile Equipment Change-Out**	
	Carrier Site Number:	CTHA610A
	Carrier Site Name:	Peter Green Rd Tolland Crown
Crown Castle Designation:	**BU Number:**	846293
	Site Name:	Tolland - Peter Green Rd
	JDE Job Number:	715022
	Order Number:	614561 Rev. 2
Engineering Firm Designation:	**Trylon Report Designation:**	211253
Site Data:	**319 Peter Green Road, Tolland, Tolland County, CT, 06084** **Latitude 41° 53' 47.81" Longitude -72° 23' 37.43"**	
Structure Information:	**Tower Height & Type:**	**119.0 ft Monopole**
	Mount Elevation:	**90.0 ft**
	Mount Width & Type:	**12.5 ft Platform**

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

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

Platform **Sufficient***

***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 118 mph. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Mount analysis prepared by: Ioana Gurgu

Respectfully Submitted by:
Cliff Abernathy, P.E.

TABLE OF CONTENTS

1) INTRODUCTION

This is a proposed 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:	118 mph
Exposure Category:	B
Topographic Factor at Base:	1.00
Topographic Factor at Mount:	1.00
Ice Thickness:	1.50 in
Wind Speed with Ice:	50 mph
Seismic S_s:	0.180
Seismic S_1:	0.055
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
90.0	90.0	3	CommScope	VV-65A-R1_TMO	12.5 ft Platform **[Site Pro 1, RMQP-496 w/ HRK12]**
		3	Ericsson	AIR 6419 B41_TMO	
		3	RFS/Celwave	APXVAALL24_43-U-NA20_TMO	
		1	RFS/Celwave	SC2-W100BD	
		3	Ericsson	RADIO 4460 B2/B25 B66_TMO	
		3	Ericsson	Radio 4480_TMOV2	

3) ANALYSIS PROCEDURE

Table 2 - Documents Provided

Document	Remarks	Reference	Source
Crown Application	T-Mobile Application	614561, Rev.2	CCI Sites
Structural Analysis Report	Morrison Hershfield	10005765	CCI Sites
Mount Manufacturer Drawings	Site Pro 1	RMQP-496	Trylon
Handrail Manufacturer Drawings	Site Pro 1	HRK12	Trylon

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)	MP8	119.0	41.6	Pass
	Horizontal(s)	H3		26.6	Pass
	Standoff(s)	M92D		49.0	Pass
	Bracing(s)	M90		20.9	Pass
	Handrail(s)	M55A		35.0	Pass
	Plate(s)	M40		46.0	Pass
	Mount Connection(s)	-		39.4	Pass

Structure Rating (max from all components) =	**49.0%**

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

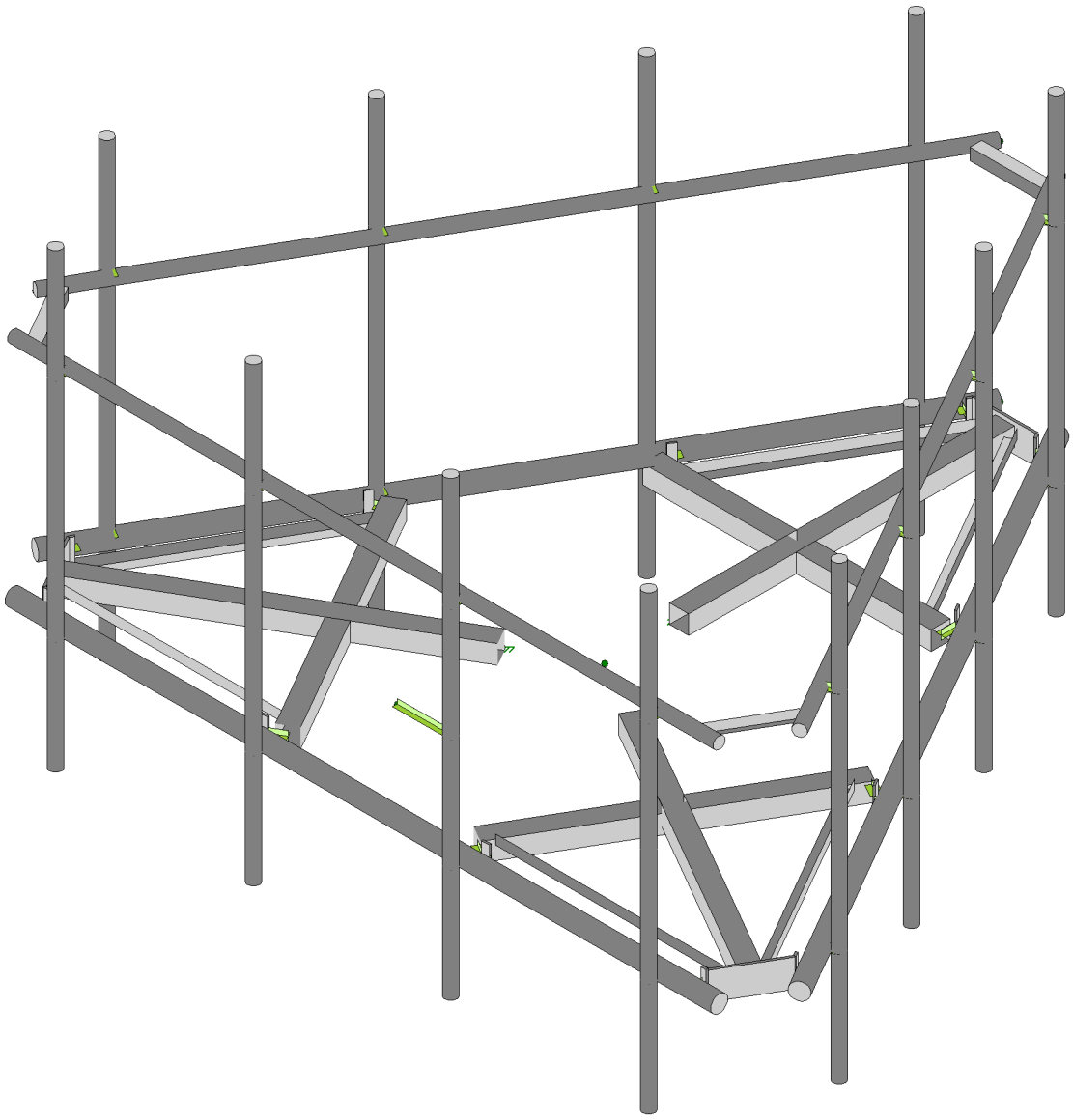
The mount has sufficient capacity to carry the proposed loading configuration. In order for the results of the analysis to be considered valid, the proposed mount listed below must be installed.

1. Install new Site Pro 1, RMQP-496 Platform w/ HRK12 Support Rail. Install handrail at 48” above the platform horizontal elevation.

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

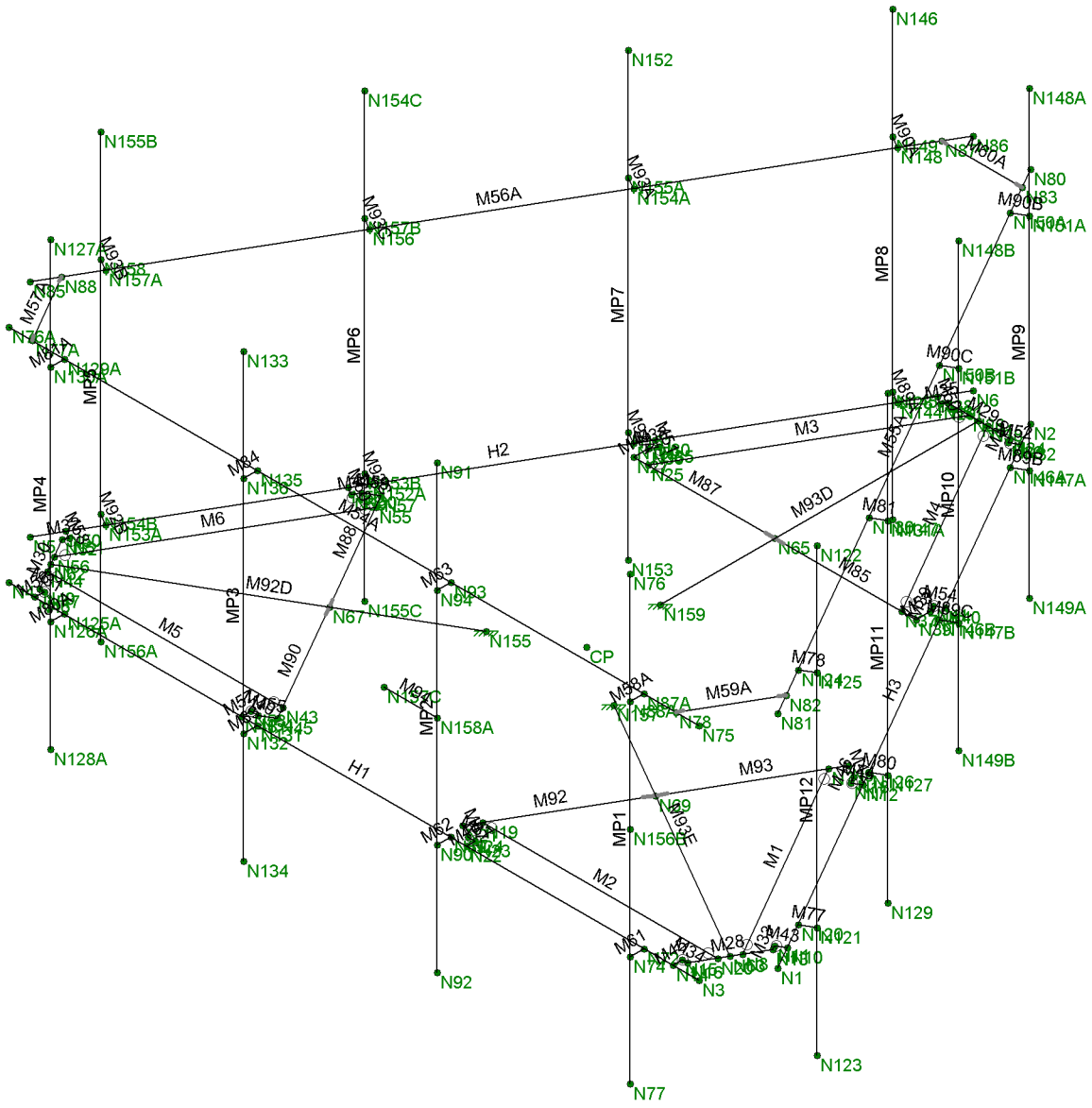
APPENDIX A

WIRE FRAME AND RENDERED MODELS



Envelope Only Solution

Trylon	846293	SK - 1
IG		June 9, 2022 at 2:18 PM
211253		846293_loaded.r3d



Envelope Only Solution

Trylon	846293	SK - 2
IG		June 9, 2022 at 2:18 PM
211253		846293_loaded.r3d

APPENDIX B

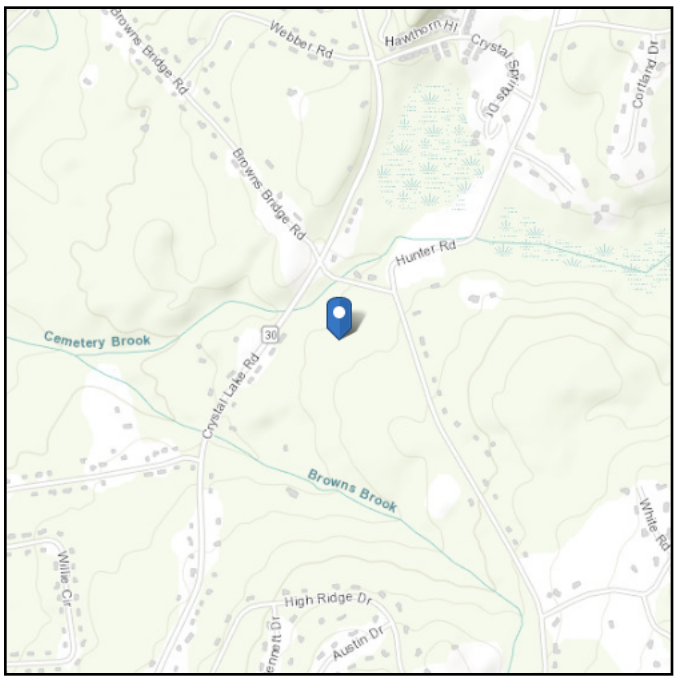
SOFTWARE INPUT CALCULATIONS

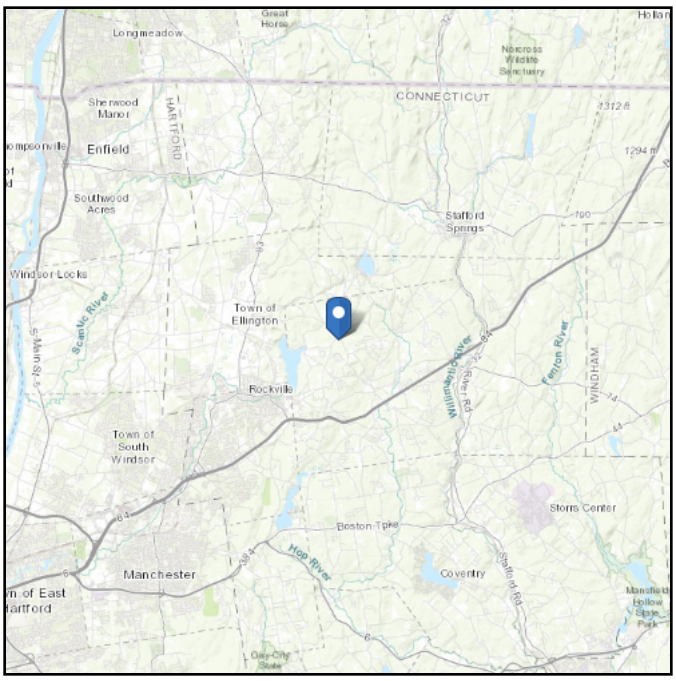
ASCE 7 Hazards Report

Address:
No Address at This Location

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

Elevation: 697.04 ft (NAVD 88)
Latitude: 41.896614
Longitude: -72.393731





Wind

Results:

Wind Speed	118 Vmph
10-year MRI	75 Vmph
25-year MRI	84 Vmph
50-year MRI	90 Vmph
100-year MRI	98 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:	Wed Jun 08 2022

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

Site is in a hurricane-prone region as defined in ASCE/SEI 7-16 Section 26.2. Glazed openings need not be protected against wind-borne debris.

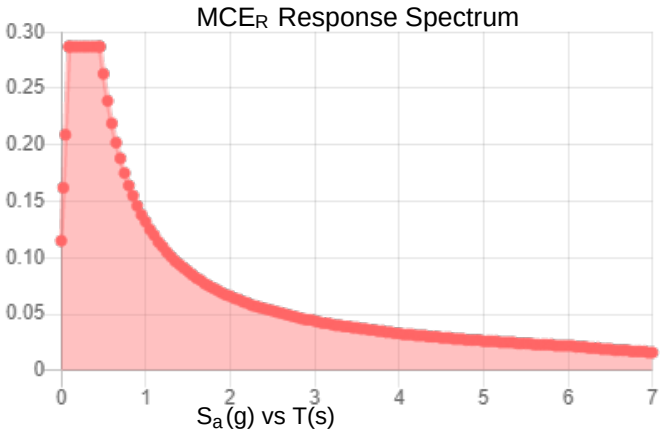
Seismic

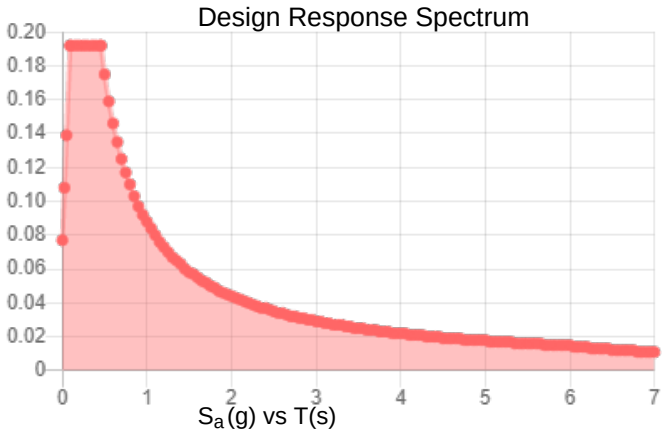
Site Soil Class: D - Default (see Section 11.4.3)

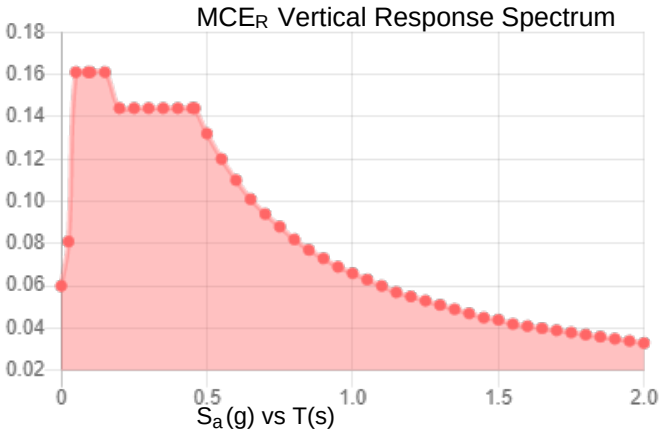
Results:

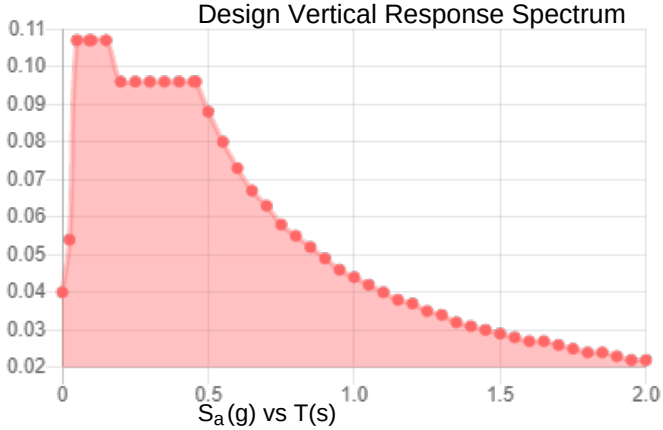
S_S :	0.18	S_{D1} :	0.088
S_1 :	0.055	T_L :	6
F_a :	1.6	PGA :	0.095
F_v :	2.4	PGA_M :	0.153
S_{MS} :	0.287	F_{PGA} :	1.6
S_{M1} :	0.132	I_e :	1
S_{DS} :	0.192	C_v :	0.7

Seismic Design Category B









Data Accessed: **Wed Jun 08 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:	1.50 in.
Concurrent Temperature:	5 F
Gust Speed	50 mph
Data Source:	Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8
Date Accessed:	Wed Jun 08 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:	211253
Carrier Site ID:	CTHA610A
Carrier Site Name:	eter Green Rd Tolland Crow

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

STRUCTURE DETAILS		
Mount Type:	Platform	--
Mount Elevation:	90.0	ft.
Number of Sectors:	3	--
Structure Type:	Monopole	--
Structure Height:	119.0	ft.

ANALYSIS CRITERIA		
Structure Risk Category:	II	--
Exposure Category:	B	--
Site Class:	D - Default	--
Ground Elevation:	697.04	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:	118	mph
Wind Escalation Factor (K_s):	1.00	--
Velocity Coefficient (K_z):	0.96	--
Directionality Factor (K_d):	0.95	--
Gust Effect Factor (Gh):	1.00	--
Shielding Factor (K_a):	0.90	--
Velocity Pressure (q_z):	31.66	psf
Ground Elevation Factor (K_e):	0.98	--

ICE PARAMETERS		
Design Ice Wind Speed:	50	mph
Design Ice Thickness (t_i):	1.50	in
Importance Factor (I_i):	1.00	--
Ice Velocity Pressure (q_{zi}):	6.55	psf
Mount Ice Thickness (t_{iz}):	1.66	in

WIND STRUCTURE CALCULATIONS		
Flat Member Pressure:	56.99	psf
Round Member Pressure:	34.20	psf
Ice Wind Pressure:	7.08	psf

SEISMIC PARAMETERS		
Importance Factor (I_e):	1.00	--
Short Period Accel .(S_s):	0.180	g
1 Second Accel (S_1):	0.055	g
Short Period Des. (S_{DS}):	0.19	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	90	No Ice	6.32	2.88	96.50
--	--	--	w/ Ice	7.04	3.48	161.66
SC2-W100BD	1	90	No Ice	5.81	2.57	20.00
--	--	--	w/ Ice	6.48	3.07	165.48
APXVAALL24_43-U-NA20_TMO	3	90	No Ice	14.67	5.32	149.90
--	--	--	w/ Ice	17.04	7.41	403.88
VV-65A-R1_TMO	3	90	No Ice	4.48	1.74	33.30
--	--	--	w/ Ice	5.94	3.05	130.13
Radio 4480_TMOV2	3	90	No Ice	2.88	1.40	81.00
--	--	--	w/ Ice	3.37	1.80	84.81
RADIO 4460 B2/B25 B66_TMO	3	90	No Ice	2.14	1.69	109.00
--	--	--	w/ Ice	2.56	2.07	85.52
			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			
			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	90	1.00	0.96	0.95	1.66	31.66	5.68
SC2-W100BD	1	90	1.00	0.96	0.95	1.66	31.66	5.68
XVAALL24_43-U-NA20_TI	3	90	1.00	0.96	0.95	1.66	31.66	5.68
VV-65A-R1_TMO	3	90	1.00	0.96	0.95	1.66	31.66	5.68
Radio 4480_TMOV2	3	90	1.00	0.96	0.95	1.66	31.66	5.68
ADIO 4460 B2/B25 B66_TM	3	90	1.00	0.96	0.95	1.66	31.66	5.68

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	180.00	106.51	155.51	82.02	155.51	106.51
--	--	w/ Ice	36.04	22.35	31.47	17.78	31.47	22.35
SC2-W100BD	1	No Ice	180.26	83.15	147.89	50.78	147.89	83.15
--	--	w/ Ice	33.13	20.08	28.78	15.73	28.78	20.08
APXVAALL24_43-U-NA20_TMO	3	No Ice	418.05	218.21	351.44	151.60	351.44	218.21
--	--	w/ Ice	87.17	50.21	74.85	37.89	74.85	50.21
VV-65A-R1_TMO	3	No Ice	127.67	69.10	108.15	49.58	108.15	69.10
--	--	w/ Ice	30.40	19.29	26.70	15.59	26.70	19.29
Radio 4480_TMOV2	3	No Ice	82.02	50.36	71.47	39.81	71.47	50.36
--	--	w/ Ice	17.24	11.20	15.22	9.19	15.22	11.20
RADIO 4460 B2/B25 B66_TMO	3	No Ice	60.96	51.27	57.73	48.04	57.73	51.27
--	--	w/ Ice	13.10	11.22	12.48	10.60	12.48	11.22
		No Ice						
--	--	w/ Ice						
		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						
		No Ice						
--	--	w/ Ice						

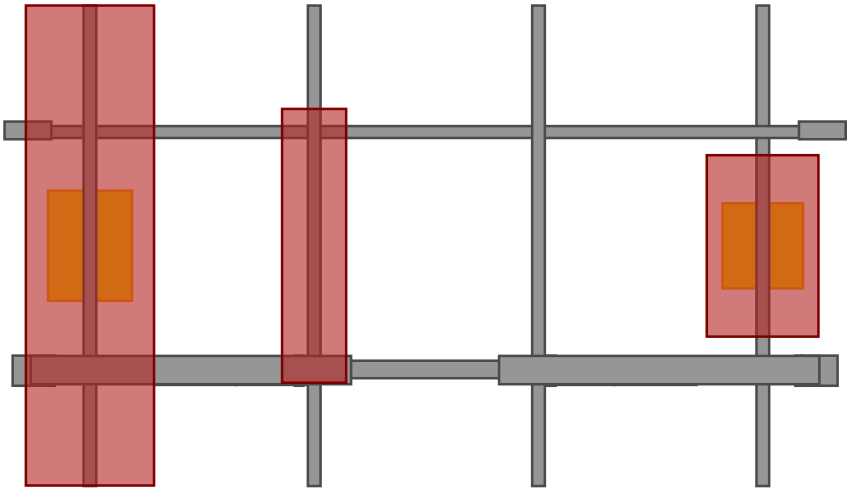
EQUIPMENT LATERAL WIND FORCE CALCULATIONS [CONT.]

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	90	96.5	11.12
SC2-W100BD	1	90	20	2.30
APXVAALL24_43-U-NA20_TMO	3	90	149.9	17.27
VV-65A-R1_TMO	3	90	33.3	3.84
Radio 4480_TMOV2	3	90	81	9.33
RADIO 4460 B2/B25 B66_TMO	3	90	109	12.56

ELEVATION VIEW

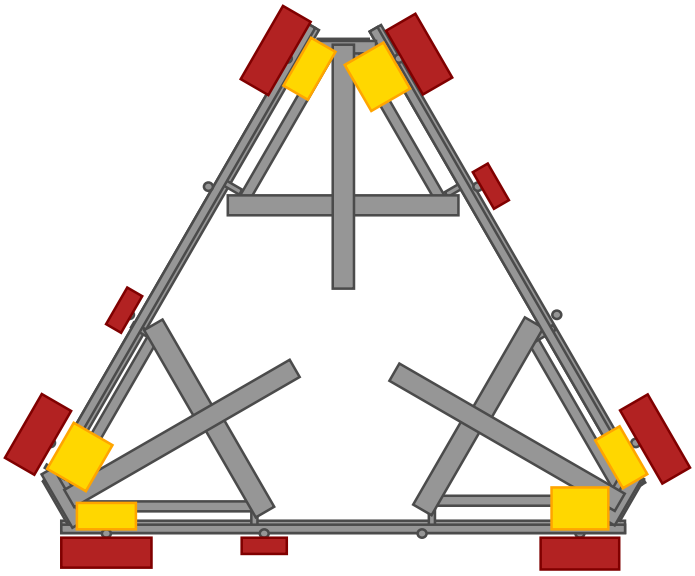


MP4 MP3 MP2 MP1

*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



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Equipment Name	Total Quantity	Antenna Centerline	Mount Pipe Positions	Equipment Azimuths
AIR 6419 B41_TMO	3	90	MP1/MP5/MP9	0/120/240
SC2-W100BD	1	90	M94	0
APXVAALL24_43-U-NA20_TMO	3	90	MP4/MP8/MP12	0/120/240
VV-65A-R1_TMO	3	90	MP3/MP6/MP10	0/120/240
Radio 4480_TMOV2	3	90	MP4/MP8/MP12	0/120/240
RADIO 4460 B2/B25 B66_TMO	3	90	MP1/MP5/MP9	0/120/240

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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	None

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 (/1E5 F)	Density[k/ft^3]	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	A913 Gr.65	29000	11154	.3	.65	.49	65	1.1	80	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 L...	Material	Design ...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	HSS4X4X4	HSS4X4X4	Beam	Tube	A500 Gr.B Rect	Typical	3.37	7.8	7.8	12.8
2	L2x2x3	L2x2x3	Beam	Single A...	A36 Gr.36	Typical	.722	.271	.271	.009
3	L2.5x2.5x4	L2.5x2.5x4	Beam	Single A...	A36 Gr.36	Typical	1.19	.692	.692	.026
4	Pl 6"x0.5"	Pl 6"x0.5"	Beam	RECT	A36 Gr.36	Typical	3	.063	9	.237
5	PL 6x0.375	PL 6x0.375	Beam	RECT	A36 Gr.36	Typical	2.25	.026	6.75	.101
6	PIPE_3.0	PIPE_3.0	Beam	Pipe	A53 Gr.B	Typical	2.07	2.85	2.85	5.69

Hot Rolled Steel Section Sets (Continued)

	Label	Shape	Type	Design L...	Material	Design ...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
7	PIPE_2.0	PIPE_2.0	Beam	Pipe	A53 Gr.B	Typical	1.02	.627	.627	1.25

Cold Formed Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Ru...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	CF1A	8CU1.25X057	Beam	None	A653 SS ...	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	N159	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
2	N155	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
3	N157	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(...
1	Self Weight	DL			-1		25		3	
2	Structure Wind X	WLX						94		
3	Structure Wind Y	WLY						94		
4	Wind Load 0 AZI	WLX					50			
5	Wind Load 30 AZI	None					50			
6	Wind Load 45 AZI	None					50			
7	Wind Load 60 AZI	None					50			
8	Wind Load 90 AZI	WLY					50			
9	Wind Load 120 AZI	None					50			
10	Wind Load 135 AZI	None					50			
11	Wind Load 150 AZI	None					50			
12	Ice Weight	OL1					25	94	3	
13	Ice Structure Wind X	OL2						94		
14	Ice Structure Wind Y	OL3						94		
15	Ice Wind Load 0 AZI	OL2					50			
16	Ice Wind Load 30 AZI	None					50			
17	Ice Wind Load 45 AZI	None					50			
18	Ice Wind Load 60 AZI	None					50			
19	Ice Wind Load 90 AZI	OL3					50			
20	Ice Wind Load 120 AZI	None					50			
21	Ice Wind Load 135 AZI	None					50			
22	Ice Wind Load 150 AZI	None					50			
23	Seismic Load X	ELX	-.115				25			
24	Seismic Load Y	ELY		-.115			25			
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			
31	Live Load 7 (Lv)	None					1			
32	Live Load 8 (Lv)	None					1			
33	Live Load 9 (Lv)	None					1			

Basic Load Cases (Continued)

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(...
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	Maintenance Load 11 (Lm)	None					1			
45	Maintenance Load 12 (Lm)	None					1			
46	BLC 1 Transient Area Loads	None						54		
47	BLC 12 Transient Area Loads	None						54		

Load Combinations

	Description	So..	P...	S...	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	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												
33	0.9DL + 1WL 330 AZI	Yes	Y		DL	.9	2	.866	3	-.5	11	-1												

Load Combinations (Continued)

	Description	So..	P...	S...	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac...
34	1.2DL + 1DLi + 1WLi 0 ...	Yes	Y		DL	1.2	OL1	1	13	1	14		15	1												
35	1.2DL + 1DLi + 1WLi 30...	Yes	Y		DL	1.2	OL1	1	13	.866	14	.5	16	1												
36	1.2DL + 1DLi + 1WLi 45...	Yes	Y		DL	1.2	OL1	1	13	.707	14	.707	17	1												
37	1.2DL + 1DLi + 1WLi 60...	Yes	Y		DL	1.2	OL1	1	13	.5	14	.866	18	1												
38	1.2DL + 1DLi + 1WLi 90...	Yes	Y		DL	1.2	OL1	1	13		14	1	19	1												
39	1.2DL + 1DLi + 1WLi 12...	Yes	Y		DL	1.2	OL1	1	13	-.5	14	.866	20	1												
40	1.2DL + 1DLi + 1WLi 13...	Yes	Y		DL	1.2	OL1	1	13	-.707	14	.707	21	1												
41	1.2DL + 1DLi + 1WLi 15...	Yes	Y		DL	1.2	OL1	1	13	-.866	14	.5	22	1												
42	1.2DL + 1DLi + 1WLi 18...	Yes	Y		DL	1.2	OL1	1	13	-1	14		15	-1												
43	1.2DL + 1DLi + 1WLi 21...	Yes	Y		DL	1.2	OL1	1	13	-.866	14	-.5	16	-1												
44	1.2DL + 1DLi + 1WLi 22...	Yes	Y		DL	1.2	OL1	1	13	-.707	14	-.707	17	-1												
45	1.2DL + 1DLi + 1WLi 24...	Yes	Y		DL	1.2	OL1	1	13	-.5	14	-.866	18	-1												
46	1.2DL + 1DLi + 1WLi 27...	Yes	Y		DL	1.2	OL1	1	13		14	-1	19	-1												
47	1.2DL + 1DLi + 1WLi 30...	Yes	Y		DL	1.2	OL1	1	13	.5	14	-.866	20	-1												
48	1.2DL + 1DLi + 1WLi 31...	Yes	Y		DL	1.2	OL1	1	13	.707	14	-.707	21	-1												
49	1.2DL + 1DLi + 1WLi 33...	Yes	Y		DL	1.2	OL1	1	13	.866	14	-.5	22	-1												
50	(1.2+0.2Sds)DL + 1E 0 ...	Yes	Y		DL	1.2...	23	1	24																	
51	(1.2+0.2Sds)DL + 1E 3...	Yes	Y		DL	1.2...	23	.866	24	.5																
52	(1.2+0.2Sds)DL + 1E 4...	Yes	Y		DL	1.2...	23	.707	24	.707																
53	(1.2+0.2Sds)DL + 1E 6...	Yes	Y		DL	1.2...	23	.5	24	.866																
54	(1.2+0.2Sds)DL + 1E 9...	Yes	Y		DL	1.2...	23		24	1																
55	(1.2+0.2Sds)DL + 1E 1...	Yes	Y		DL	1.2...	23	-.5	24	.866																
56	(1.2+0.2Sds)DL + 1E 1...	Yes	Y		DL	1.2...	23	-.707	24	.707																
57	(1.2+0.2Sds)DL + 1E 1...	Yes	Y		DL	1.2...	23	-.866	24	.5																
58	(1.2+0.2Sds)DL + 1E 1...	Yes	Y		DL	1.2...	23	-1	24																	
59	(1.2+0.2Sds)DL + 1E 2...	Yes	Y		DL	1.2...	23	-.866	24	-.5																
60	(1.2+0.2Sds)DL + 1E 2...	Yes	Y		DL	1.2...	23	-.707	24	-.707																
61	(1.2+0.2Sds)DL + 1E 2...	Yes	Y		DL	1.2...	23	-.5	24	-.866																
62	(1.2+0.2Sds)DL + 1E 2...	Yes	Y		DL	1.2...	23		24	-1																
63	(1.2+0.2Sds)DL + 1E 3...	Yes	Y		DL	1.2...	23	.5	24	-.866																
64	(1.2+0.2Sds)DL + 1E 3...	Yes	Y		DL	1.2...	23	.707	24	-.707																
65	(1.2+0.2Sds)DL + 1E 3...	Yes	Y		DL	1.2...	23	.866	24	-.5																
66	(0.9-0.2Sds)DL + 1E 0 ...	Yes	Y		DL	.862	23	1	24																	
67	(0.9-0.2Sds)DL + 1E 30...	Yes	Y		DL	.862	23	.866	24	.5																
68	(0.9-0.2Sds)DL + 1E 45...	Yes	Y		DL	.862	23	.707	24	.707																
69	(0.9-0.2Sds)DL + 1E 60...	Yes	Y		DL	.862	23	.5	24	.866																
70	(0.9-0.2Sds)DL + 1E 90...	Yes	Y		DL	.862	23		24	1																
71	(0.9-0.2Sds)DL + 1E 12...	Yes	Y		DL	.862	23	-.5	24	.866																
72	(0.9-0.2Sds)DL + 1E 13...	Yes	Y		DL	.862	23	-.707	24	.707																
73	(0.9-0.2Sds)DL + 1E 15...	Yes	Y		DL	.862	23	-.866	24	.5																
74	(0.9-0.2Sds)DL + 1E 18...	Yes	Y		DL	.862	23	-1	24																	
75	(0.9-0.2Sds)DL + 1E 21...	Yes	Y		DL	.862	23	-.866	24	-.5																
76	(0.9-0.2Sds)DL + 1E 22...	Yes	Y		DL	.862	23	-.707	24	-.707																
77	(0.9-0.2Sds)DL + 1E 24...	Yes	Y		DL	.862	23	-.5	24	-.866																
78	(0.9-0.2Sds)DL + 1E 27...	Yes	Y		DL	.862	23		24	-1																
79	(0.9-0.2Sds)DL + 1E 30...	Yes	Y		DL	.862	23	.5	24	-.866																
80	(0.9-0.2Sds)DL + 1E 31...	Yes	Y		DL	.862	23	.707	24	-.707																
81	(0.9-0.2Sds)DL + 1E 33...	Yes	Y		DL	.862	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																		
85	1.2DL + 1Lv4	Yes	Y		DL	1.2	28	1.5																		

Load Combinations (Continued)

	Description	So..	P...	S...	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac...
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 ...	Yes	Y		DL	1.2	34	1.5	2	.065	3		4	.065										
92	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	34	1.5	2	.056	3	.032	5	.065										
93	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	34	1.5	2	.046	3	.046	6	.065										
94	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	34	1.5	2	.032	3	.056	7	.065										
95	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	34	1.5	2		3	.065	8	.065										
96	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	34	1.5	2	-.032	3	.056	9	.065										
97	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	34	1.5	2	-.046	3	.046	10	.065										
98	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	34	1.5	2	-.056	3	.032	11	.065										
99	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	34	1.5	2	-.065	3		4	-.065										
100	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	34	1.5	2	-.056	3	-.032	5	-.065										
101	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	34	1.5	2	-.046	3	-.046	6	-.065										
102	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	34	1.5	2	-.032	3	-.056	7	-.065										
103	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	34	1.5	2		3	-.065	8	-.065										
104	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	34	1.5	2	.032	3	-.056	9	-.065										
105	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	34	1.5	2	.046	3	-.046	10	-.065										
106	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	34	1.5	2	.056	3	-.032	11	-.065										
107	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	35	1.5	2	.065	3		4	.065										
108	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	35	1.5	2	.056	3	.032	5	.065										
109	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	35	1.5	2	.046	3	.046	6	.065										
110	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	35	1.5	2	.032	3	.056	7	.065										
111	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	35	1.5	2		3	.065	8	.065										
112	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	35	1.5	2	-.032	3	.056	9	.065										
113	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	35	1.5	2	-.046	3	.046	10	.065										
114	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	35	1.5	2	-.056	3	.032	11	.065										
115	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	35	1.5	2	-.065	3		4	-.065										
116	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	35	1.5	2	-.056	3	-.032	5	-.065										
117	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	35	1.5	2	-.046	3	-.046	6	-.065										
118	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	35	1.5	2	-.032	3	-.056	7	-.065										
119	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	35	1.5	2		3	-.065	8	-.065										
120	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	35	1.5	2	.032	3	-.056	9	-.065										
121	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	35	1.5	2	.046	3	-.046	10	-.065										
122	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	35	1.5	2	.056	3	-.032	11	-.065										
123	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	36	1.5	2	.065	3		4	.065										
124	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	36	1.5	2	.056	3	.032	5	.065										
125	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	36	1.5	2	.046	3	.046	6	.065										
126	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	36	1.5	2	.032	3	.056	7	.065										
127	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	36	1.5	2		3	.065	8	.065										
128	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	36	1.5	2	-.032	3	.056	9	.065										
129	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	36	1.5	2	-.046	3	.046	10	.065										
130	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	36	1.5	2	-.056	3	.032	11	.065										
131	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	36	1.5	2	-.065	3		4	-.065										
132	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	36	1.5	2	-.056	3	-.032	5	-.065										
133	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	36	1.5	2	-.046	3	-.046	6	-.065										
134	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	36	1.5	2	-.032	3	-.056	7	-.065										
135	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	36	1.5	2		3	-.065	8	-.065										
136	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	36	1.5	2	.032	3	-.056	9	-.065										
137	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	36	1.5	2	.046	3	-.046	10	-.065										

Load Combinations (Continued)

	Description	So..	P...	S...	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac...
138	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	36	1.5	2	.056	3	-.032	11	-.065										
139	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	37	1.5	2	.065	3		4	.065										
140	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	37	1.5	2	.056	3	.032	5	.065										
141	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	37	1.5	2	.046	3	.046	6	.065										
142	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	37	1.5	2	.032	3	.056	7	.065										
143	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	37	1.5	2		3	.065	8	.065										
144	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	37	1.5	2	-.032	3	.056	9	.065										
145	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	37	1.5	2	-.046	3	.046	10	.065										
146	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	37	1.5	2	-.056	3	.032	11	.065										
147	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	37	1.5	2	-.065	3		4	-.065										
148	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	37	1.5	2	-.056	3	-.032	5	-.065										
149	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	37	1.5	2	-.046	3	-.046	6	-.065										
150	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	37	1.5	2	-.032	3	-.056	7	-.065										
151	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	37	1.5	2		3	-.065	8	-.065										
152	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	37	1.5	2	.032	3	-.056	9	-.065										
153	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	37	1.5	2	.046	3	-.046	10	-.065										
154	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	37	1.5	2	.056	3	-.032	11	-.065										
155	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	38	1.5	2	.065	3		4	.065										
156	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	38	1.5	2	.056	3	.032	5	.065										
157	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	38	1.5	2	.046	3	.046	6	.065										
158	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	38	1.5	2	.032	3	.056	7	.065										
159	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	38	1.5	2		3	.065	8	.065										
160	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	38	1.5	2	-.032	3	.056	9	.065										
161	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	38	1.5	2	-.046	3	.046	10	.065										
162	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	38	1.5	2	-.056	3	.032	11	.065										
163	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	38	1.5	2	-.065	3		4	-.065										
164	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	38	1.5	2	-.056	3	-.032	5	-.065										
165	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	38	1.5	2	-.046	3	-.046	6	-.065										
166	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	38	1.5	2	-.032	3	-.056	7	-.065										
167	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	38	1.5	2		3	-.065	8	-.065										
168	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	38	1.5	2	.032	3	-.056	9	-.065										
169	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	38	1.5	2	.046	3	-.046	10	-.065										
170	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	38	1.5	2	.056	3	-.032	11	-.065										
171	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	39	1.5	2	.065	3		4	.065										
172	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	39	1.5	2	.056	3	.032	5	.065										
173	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	39	1.5	2	.046	3	.046	6	.065										
174	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	39	1.5	2	.032	3	.056	7	.065										
175	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	39	1.5	2		3	.065	8	.065										
176	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	39	1.5	2	-.032	3	.056	9	.065										
177	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	39	1.5	2	-.046	3	.046	10	.065										
178	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	39	1.5	2	-.056	3	.032	11	.065										
179	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	39	1.5	2	-.065	3		4	-.065										
180	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	39	1.5	2	-.056	3	-.032	5	-.065										
181	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	39	1.5	2	-.046	3	-.046	6	-.065										
182	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	39	1.5	2	-.032	3	-.056	7	-.065										
183	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	39	1.5	2		3	-.065	8	-.065										
184	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	39	1.5	2	.032	3	-.056	9	-.065										
185	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	39	1.5	2	.046	3	-.046	10	-.065										
186	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	39	1.5	2	.056	3	-.032	11	-.065										
187	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	40	1.5	2	.065	3		4	.065										
188	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	40	1.5	2	.056	3	.032	5	.065										
189	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	40	1.5	2	.046	3	.046	6	.065										

Load Combinations (Continued)

	Description	So..	P...	S...	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac...
190	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	40	1.5	2	.032	3	.056	7	.065										
191	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	40	1.5	2		3	.065	8	.065										
192	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	40	1.5	2	-.032	3	.056	9	.065										
193	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	40	1.5	2	-.046	3	.046	10	.065										
194	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	40	1.5	2	-.056	3	.032	11	.065										
195	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	40	1.5	2	-.065	3		4	-.065										
196	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	40	1.5	2	-.056	3	-.032	5	-.065										
197	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	40	1.5	2	-.046	3	-.046	6	-.065										
198	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	40	1.5	2	-.032	3	-.056	7	-.065										
199	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	40	1.5	2		3	-.065	8	-.065										
200	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	40	1.5	2	.032	3	-.056	9	-.065										
201	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	40	1.5	2	.046	3	-.046	10	-.065										
202	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	40	1.5	2	.056	3	-.032	11	-.065										
203	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	41	1.5	2	.065	3		4	.065										
204	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	41	1.5	2	.056	3	.032	5	.065										
205	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	41	1.5	2	.046	3	.046	6	.065										
206	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	41	1.5	2	.032	3	.056	7	.065										
207	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	41	1.5	2		3	.065	8	.065										
208	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	41	1.5	2	-.032	3	.056	9	.065										
209	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	41	1.5	2	-.046	3	.046	10	.065										
210	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	41	1.5	2	-.056	3	.032	11	.065										
211	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	41	1.5	2	-.065	3		4	-.065										
212	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	41	1.5	2	-.056	3	-.032	5	-.065										
213	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	41	1.5	2	-.046	3	-.046	6	-.065										
214	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	41	1.5	2	-.032	3	-.056	7	-.065										
215	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	41	1.5	2		3	-.065	8	-.065										
216	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	41	1.5	2	.032	3	-.056	9	-.065										
217	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	41	1.5	2	.046	3	-.046	10	-.065										
218	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	41	1.5	2	.056	3	-.032	11	-.065										
219	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	42	1.5	2	.065	3		4	.065										
220	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	42	1.5	2	.056	3	.032	5	.065										
221	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	42	1.5	2	.046	3	.046	6	.065										
222	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	42	1.5	2	.032	3	.056	7	.065										
223	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	42	1.5	2		3	.065	8	.065										
224	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	42	1.5	2	-.032	3	.056	9	.065										
225	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	42	1.5	2	-.046	3	.046	10	.065										
226	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	42	1.5	2	-.056	3	.032	11	.065										
227	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	42	1.5	2	-.065	3		4	-.065										
228	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	42	1.5	2	-.056	3	-.032	5	-.065										
229	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	42	1.5	2	-.046	3	-.046	6	-.065										
230	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	42	1.5	2	-.032	3	-.056	7	-.065										
231	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	42	1.5	2		3	-.065	8	-.065										
232	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	42	1.5	2	.032	3	-.056	9	-.065										
233	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	42	1.5	2	.046	3	-.046	10	-.065										
234	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	42	1.5	2	.056	3	-.032	11	-.065										
235	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	43	1.5	2	.065	3		4	.065										
236	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	43	1.5	2	.056	3	.032	5	.065										
237	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	43	1.5	2	.046	3	.046	6	.065										
238	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	43	1.5	2	.032	3	.056	7	.065										
239	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	43	1.5	2		3	.065	8	.065										
240	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	43	1.5	2	-.032	3	.056	9	.065										
241	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	43	1.5	2	-.046	3	.046	10	.065										

Load Combinations (Continued)

	Description	So..	P...	S...	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac...
242	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	43	1.5	2	-.056	3	.032	11	.065												
243	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	43	1.5	2	-.065	3		4	-.065												
244	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	43	1.5	2	-.056	3	-.032	5	-.065												
245	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	43	1.5	2	-.046	3	-.046	6	-.065												
246	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	43	1.5	2	-.032	3	-.056	7	-.065												
247	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	43	1.5	2		3	-.065	8	-.065												
248	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	43	1.5	2	.032	3	-.056	9	-.065												
249	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	43	1.5	2	.046	3	-.046	10	-.065												
250	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	43	1.5	2	.056	3	-.032	11	-.065												
251	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	44	1.5	2	.065	3		4	.065												
252	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	44	1.5	2	.056	3	.032	5	.065												
253	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	44	1.5	2	.046	3	.046	6	.065												
254	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	44	1.5	2	.032	3	.056	7	.065												
255	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	44	1.5	2		3	.065	8	.065												
256	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	44	1.5	2	-.032	3	.056	9	.065												
257	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	44	1.5	2	-.046	3	.046	10	.065												
258	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	44	1.5	2	-.056	3	.032	11	.065												
259	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	44	1.5	2	-.065	3		4	-.065												
260	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	44	1.5	2	-.056	3	-.032	5	-.065												
261	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	44	1.5	2	-.046	3	-.046	6	-.065												
262	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	44	1.5	2	-.032	3	-.056	7	-.065												
263	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	44	1.5	2		3	-.065	8	-.065												
264	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	44	1.5	2	.032	3	-.056	9	-.065												
265	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	44	1.5	2	.046	3	-.046	10	-.065												
266	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	44	1.5	2	.056	3	-.032	11	-.065												
267	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	45	1.5	2	.065	3		4	.065												
268	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	45	1.5	2	.056	3	.032	5	.065												
269	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	45	1.5	2	.046	3	.046	6	.065												
270	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	45	1.5	2	.032	3	.056	7	.065												
271	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	45	1.5	2		3	.065	8	.065												
272	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	45	1.5	2	-.032	3	.056	9	.065												
273	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	45	1.5	2	-.046	3	.046	10	.065												
274	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	45	1.5	2	-.056	3	.032	11	.065												
275	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	45	1.5	2	-.065	3		4	-.065												
276	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	45	1.5	2	-.056	3	-.032	5	-.065												
277	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	45	1.5	2	-.046	3	-.046	6	-.065												
278	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	45	1.5	2	-.032	3	-.056	7	-.065												
279	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	45	1.5	2		3	-.065	8	-.065												
280	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	45	1.5	2	.032	3	-.056	9	-.065												
281	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	45	1.5	2	.046	3	-.046	10	-.065												
282	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	45	1.5	2	.056	3	-.032	11	-.065												

Envelope Joint Reactions

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
1	N159	max	1702.506	18	787.368	22	3033.643	34	615.72	263	7715.558	34	1339.209	30
2		min	-1747.09	10	-786.749	30	56.905	26	-609.459	207	-680.935	26	-1341.557	22
3	N155	max	1141.921	2	1521.794	23	3262.969	39	405.827	31	342.728	32	1325.446	19
4		min	-1119.883	26	-1559.482	15	118.618	31	-7090.936	39	-4283.452	40	-1325.437	27
5	N157	max	985.529	4	1515.279	5	3148.65	45	6802.076	45	312.08	20	1223.534	25
6		min	-963.233	28	-1477.98	29	94.91	21	-507.577	21	-4056.196	44	-1225.792	33

Envelope Joint Reactions (Continued)

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
7	Totals:	max	3762.423	18	3543.906	22	8759.365	42						
8		min	-3762.431	10	-3543.908	14	2343.138	66						

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

	Member	Shape	Code Check	Loc[in]	LC	She...	Loc[in]	Dir	L...	phi*Pn...	phi*Pn...	phi*M...	phi*M...	...	Eqn
1	M92D	HSS4X4X4	.515	0	39	.102	0	y	42	75454...	139518	16180.5	16180.5	1	H1-1b
2	M93E	HSS4X4X4	.495	0	45	.095	0	y	42	75454...	139518	16180.5	16180.5	1	H1-1b
3	M93D	HSS4X4X4	.480	0	34	.091	0	y	2...	75454...	139518	16180.5	16180.5	1	H1-1b
4	MP8	PIPE_2.0	.437	72	39	.129	24		5	14916...	32130	1871.6...	1871.6...	1	H1-1b
5	MP5	PIPE_2.0	.436	72	34	.133	72		3	14916...	32130	1871.6...	1871.6...	1...	H1-1b
6	MP1	PIPE_2.0	.434	72	39	.142	24		10	14916...	32130	1871.6...	1871.6...	1	H1-1b
7	MP9	PIPE_2.0	.420	72	45	.126	72		14	14916...	32130	1871.6...	1871.6...	1...	H1-1b
8	MP12	PIPE_2.0	.419	72	34	.130	72		16	14916...	32130	1871.6...	1871.6...	1	H1-1b
9	MP4	PIPE_2.0	.406	72	45	.156	24		10	14916...	32130	1871.6...	1871.6...	1...	H1-1b
10	MP7	PIPE_2.0	.391	72	9	.066	72		10	14916...	32130	1871.6...	1871.6...	1	H1-1b
11	MP2	PIPE_2.0	.388	72	7	.135	72		10	14916...	32130	1871.6...	1871.6...	1	H1-1b
12	MP6	PIPE_2.0	.386	72	2	.058	72		15	14916...	32130	1871.6...	1871.6...	1...	H1-1b
13	MP11	PIPE_2.0	.385	72	3	.062	72		5	14916...	32130	1871.6...	1871.6...	1	H1-1b
14	MP10	PIPE_2.0	.383	72	12	.060	72		10	14916...	32130	1871.6...	1871.6...	1...	H1-1b
15	MP3	PIPE_2.0	.372	72	14	.065	72		16	14916...	32130	1871.6...	1871.6...	1...	H1-1b
16	M55A	PIPE_2.0	.367	139.063	9	.279	143.75		8	6295.4...	32130	1871.6...	1871.6...	4...	H3-6
17	M54A	PIPE_2.0	.355	139.063	3	.273	143.75		3	6295.4...	32130	1871.6...	1871.6...	4...	H3-6
18	M56A	PIPE_2.0	.341	139.063	14	.263	143.75		14	6295.4...	32130	1871.6...	1871.6...	4...	H3-6
19	M57A	L2.5x2.5x4	.295	15.108	2	.112	0	z	2	35968...	38556	1113.5...	2537.3...	1	H2-1
20	M46	PL 6x0.375	.287	0	6	.446	1.625	y	45	72040...	72900	569.533	9112.5	1...	H1-1b
21	M40	PL 6x0.375	.286	0	17	.483	1.625	y	40	72040...	72900	569.533	9112.5	1...	H1-1b
22	M38	PL 6x0.375	.285	0	11	.431	1.625	y	34	72040...	72900	569.533	9112.5	1...	H1-1b
23	M59A	L2.5x2.5x4	.284	15.108	8	.107	0	z	8	35968...	38556	1113.5...	2537.3...	1	H2-1
24	H3	PIPE_3.0	.279	51.563	48	.078	50		15	28250...	65205	5748.75	5748.75	1	H1-1b
25	H2	PIPE_3.0	.277	51.563	37	.082	100		4	28250...	65205	5748.75	5748.75	1	H1-1b
26	M60A	L2.5x2.5x4	.275	15.108	13	.103	15.108	z	5	35968...	38556	1113.5...	2537.3...	1	H2-1
27	H1	PIPE_3.0	.270	51.563	42	.091	100		10	28250...	65205	5748.75	5748.75	1	H1-1b
28	M41	PL 6x0.375	.269	0	6	.471	1.625	y	39	72040...	72900	569.533	9112.5	1...	H1-1b
29	M37	PL 6x0.375	.266	0	11	.472	1.625	y	44	72040...	72900	569.533	9112.5	1...	H1-1b
30	M39	PL 6x0.375	.265	0	17	.438	1.625	y	34	72040...	72900	569.533	9112.5	1...	H1-1b
31	M90	HSS4X4X4	.219	0	41	.040	0	y	40	13709...	139518	16180.5	16180.5	1	H1-1b
32	M88	HSS4X4X4	.218	28.688	38	.038	28.688	y	43	13709...	139518	16180.5	16180.5	1	H1-1b
33	M92	HSS4X4X4	.217	28.687	43	.037	28.687	y	37	13709...	139518	16180.5	16180.5	1	H1-1b
34	M93	HSS4X4X4	.205	0	46	.037	0	y	1...	13709...	139518	16180.5	16180.5	1	H1-1b
35	M28	Pl 6"x0.5"	.204	6.81	14	.115	6.668	y	42	96256...	97200	1012.5	12150	1...	H1-1b
36	M29	Pl 6"x0.5"	.203	6.81	3	.111	6.81	y	47	96256...	97200	1012.5	12150	1...	H1-1b
37	M30	Pl 6"x0.5"	.203	6.81	8	.119	6.81	y	37	96256.5	97200	1012.5	12150	1...	H1-1b
38	M85	HSS4X4X4	.203	28.687	49	.037	28.687	y	2...	13709...	139518	16180.5	16180.5	1	H1-1b
39	M87	HSS4X4X4	.198	0	35	.037	0	y	2...	13709...	139518	16180.5	16180.5	1	H1-1b
40	M5	L2x2x3	.121	25.584	9	.010	51.168	y	35	15920...	23392.8	557.717	1066.1...	1...	H2-1
41	M2	L2x2x3	.118	25.584	11	.011	51.168	z	48	15920...	23392.8	557.717	1033.3...	1	H2-1
42	M6	L2x2x3	.116	25.051	38	.011	51.168	z	42	15920...	23392.8	557.717	1072.6...	1...	H2-1
43	M1	L2x2x3	.116	25.051	46	.009	51.168	y	40	15920...	23392.8	557.717	1033.3...	1	H2-1
44	M3	L2x2x3	.115	25.051	35	.009	51.168	y	46	15920...	23392.8	557.717	1033.3...	1	H2-1
45	M4	L2x2x3	.114	25.051	49	.010	51.168	z	37	15920...	23392.8	557.717	1072.48	1...	H2-1

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

	Member	Shape	Code Check	Loc[in]	LC	She...	Loc[in]	Dir	L...	phi*Pn...	phi*Pn...	phi*M...	phi*M...	...	Eqn
46	M35	Pl 6"x0.5"	.021	0	17	.103	1.108	y	1...	96901...	97200	1012.5	12150	1...	H1-1b
47	M31	Pl 6"x0.5"	.021	0	6	.104	1.108	y	1...	96901...	97200	1012.5	12150	1...	H1-1b
48	M33	Pl 6"x0.5"	.021	0	11	.103	1.108	y	1...	96901...	97200	1012.5	12150	1...	H1-1b
49	M34	Pl 6"x0.5"	.019	0	13	.099	1.108	y	1...	96901...	97200	1012.5	12150	1...	H1-1b
50	M32	Pl 6"x0.5"	.019	0	8	.099	1.108	y	2...	96901...	97200	1012.5	12150	1...	H1-1b
51	M36	Pl 6"x0.5"	.019	0	3	.099	1.108	y	2...	96901...	97200	1012.5	12150	1...	H1-1b

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

Member	Shape	Code ...	Loc[in]	LC	Shear ...	Loc[in]	Dir	LC	phi*Pn[lb]	phi*Tn[lb]	phi*Mny...	phi*Mnz...	phi*V...	phi*V...	Cb	Eqn
No Data to Print ...																

APPENDIX D

ADDITIONAL CALCULATIONS

Trylon

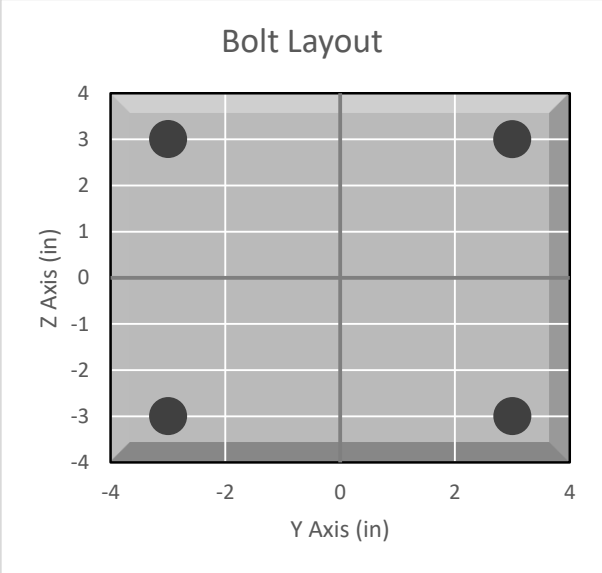
Analysis date: 6/9/2022

BOLT TOOL 1.5.2

Project Data	
Job Code:	211253
Carrier Site ID:	CTHA610A
Carrier Site Name:	Peter Green Rd Tolland Ct

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
Standoff to Monopole Collar

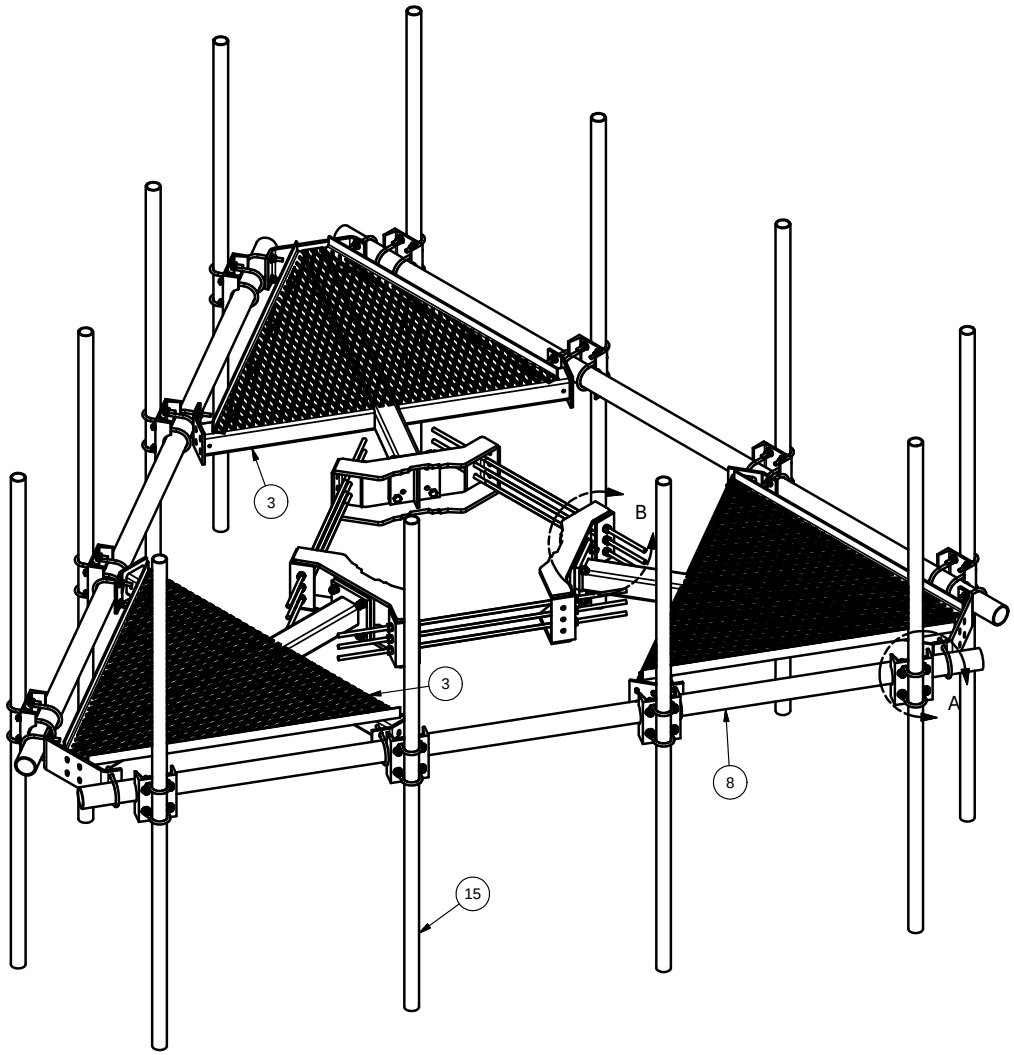
Bolt Check*		
Tensile Capacity (ϕT_n):	20340.1	lbs
Shear Capacity (ϕV_n):	13805.8	lbs
Tension Force (T_u):	8421.3	lbs
Shear Force (V_u):	745.5	lbs
Tension Usage:	39.4%	--
Shear Usage:	5.1%	--
Interaction:	39.4%	Pass
Controlling Member:	M92D	--
Controlling LC:	39	--

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

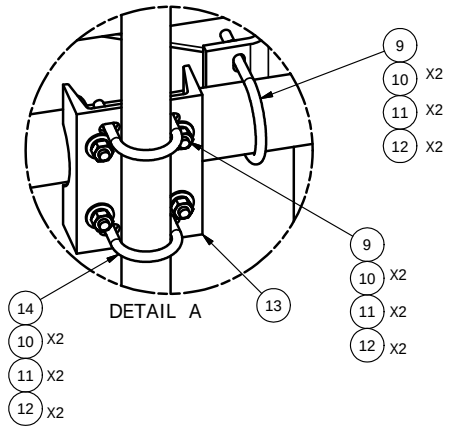
1825 W. Walnut Hill Lane, Suite 120
Irving, Texas 75038

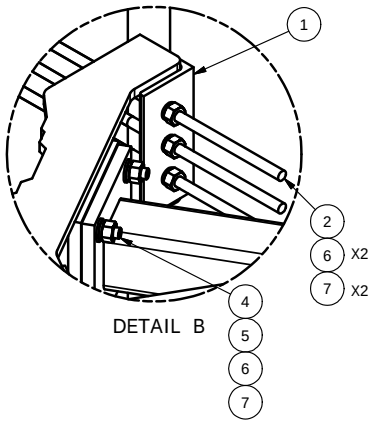
APPENDIX E

SUPPLEMENTAL DRAWINGS



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





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

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

TOLERANCE NOTE

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

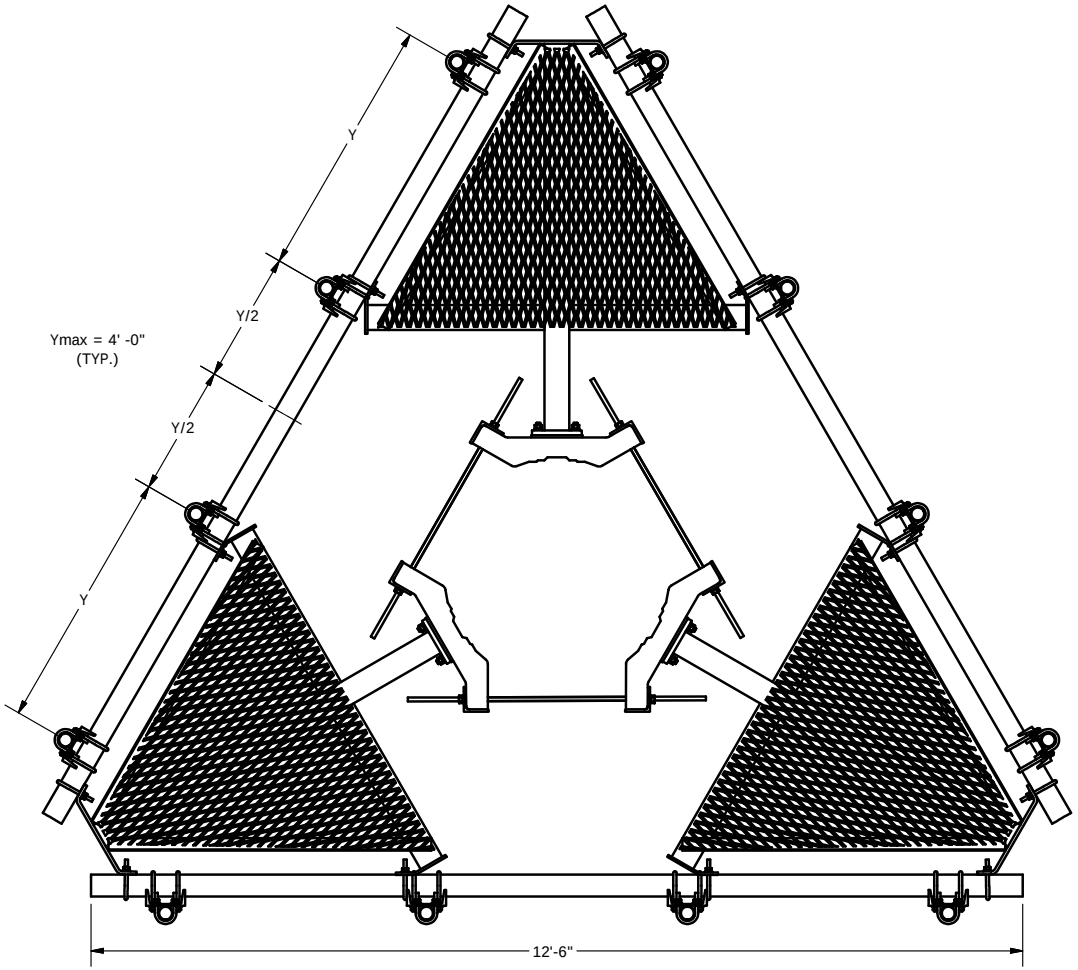
DESCRIPTION
LOW PROFILE CO-LOCATION PLATFORM
FOR 12 ANTENNAS WITH 12' 6" FACE WIDTH
FOR 12" - 38" DIAMETER POLES

SITE PRO 1
A valmont COMPANY

Engineering Support Team:
1-888-753-7446

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

DRAWN BY	CPD NO.	DRAWING USAGE	PART NO.
CEK 1/20/2012	semb	CUSTOMER	SEE ASSEMBLY NO. "A"
ENG. APPROVAL	CHECKED BY		DWG. NO.
	BMC 7/9/2015		RMQP-4XX



TOLERANCE NOTE

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

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

REVISION HISTORY

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

SITE PRO 1
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New York, NY
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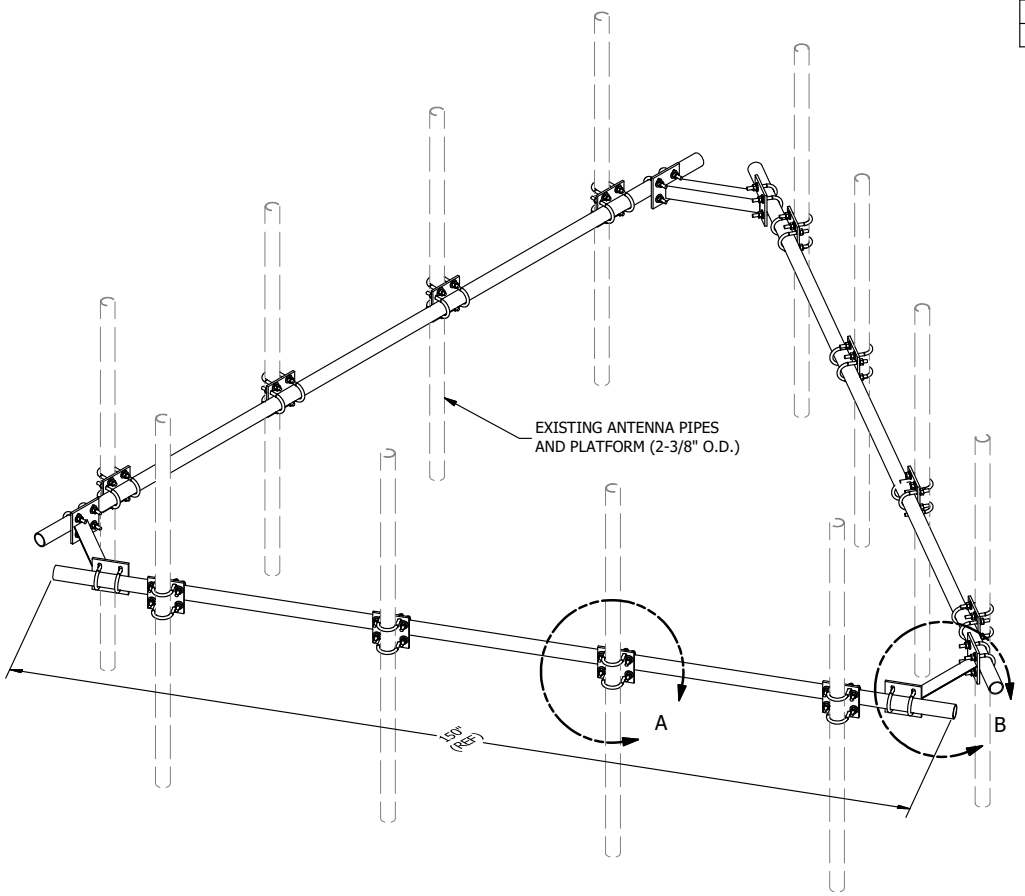
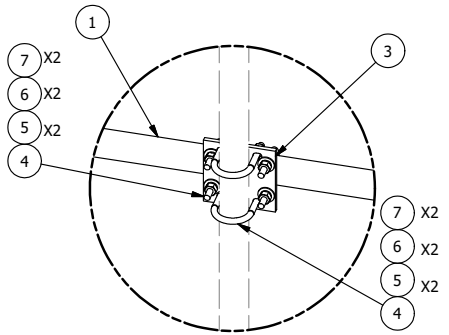
Dallas, TX

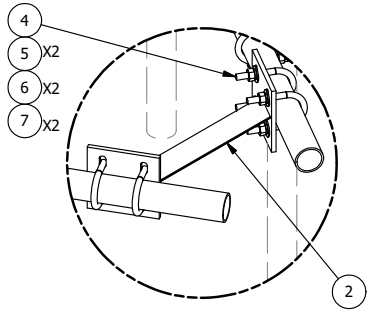
DRAWN BY	CPD NO.	DRAWING USAGE	PART NO.
CEK 1/20/2012	semb	CUSTOMER	SEE ASSEMBLY NO. "A"
ENG. APPROVAL	CHECKED BY	DWG. NO.	PAGE
	BMC 7/9/2015	RMQP-4XX	2 OF 2

PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	3	P2150	2-3/8" O.D. X 150" SCH 40 GALVANIZED PIPE	150 in	45.77	137.31
2	3	X-AHCP	ANGLE HANDRAIL CORNER PLATE		12.92	38.76
3	12	SCX1	CROSSOVER PLATE 2-3/8" X 2-3/8"	6 in	3.71	44.50
4	60	X-UB1212	1/2" X 2-1/2" X 4-1/2" X 2" U-BOLT (HDG.)		0.63	37.51
5	120	G12FW	1/2" HDG USS FLATWASHER	3/32 in	0.03	4.09
6	120	G12LW	1/2" HDG LOCKWASHER	1/8 in	0.01	1.67
7	120	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	8.60
					TOTAL WT. #	272.43





DETAIL A



DETAIL B

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

REVISION HISTORY

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

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

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

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

Fox Hill Telecom

Radio Frequency Emissions Analysis Report

T-Mobile

Site ID: CTHA610A

Peter Green Rd Tolland Crown
319 Peter Green Road
Tolland, CT 06084

July 19, 2022

Fox Hill Telecom Project Number: 221455

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**42.47 %**

Fox Hill Telecom

July 19, 2022

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

Emissions Analysis for Site: **CTHA610A – Peter Green Rd Tolland Crown**

Fox Hill Telecom, Inc ("Fox Hill") was directed to analyze the proposed upgrades to the T-MOBILE facility located at **319 Peter Green Road, Tolland, 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), 2500 MHz (BRS) and 11 GHz microwave 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 **319 Peter Green Road, Tolland, 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 and 20 dB for highly focused parabolic microwave dishes, 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
GSM	1900 MHz (PCS)	1	15
LTE	2100 MHz (AWS)	4	40
LTE / 5G NR	2500 MHz (BRS)	8	20
Microwave (Sector A)	11 GHz	1	1

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), 2500 MHz (BRS) and 11 GHz microwave 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 and 20 dB for highly focused parabolic microwave dishes, 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	90
A	2	Commscope VV-65A-R1	90
A	3	Ericsson AIR6419 B41	90
A	4	RFS SC2-W100BD	90
B	1	RFS APXVAALL24_43-U-NA20	90
B	2	Commscope VV-65A-R1	90
B	3	Ericsson AIR6419 B41	90
C	1	RFS APXVAALL24_43-U-NA20	90
C	2	Commscope VV-65A-R1	90
C	3	Ericsson AIR6419 B41	90

Table 2: Antenna Data

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

RESULTS

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

Antenna ID	Antenna Make / Model	Frequency Bands	Antenna Gain (dBd)	Channel Count	Total TX Power (W)	ERP (W)	MPE %
Antenna A1	RFS APXVAALL24_43-U-NA20	600 MHz / 700 MHz	13.65 / 13.85	4	120	2,824.56	3.42
Antenna A2	Commscope VV-65A-R1	1900 MHz (PCS) / 2100 MHz (AWS)	15.55 / 16.05	9	335	12,724.61	6.48
Antenna A3	Ericsson AIR6419 B41	2500 MHz (BRS)	21.5	8	160	22,600.60	11.52
Antenna A4	RFS SC2-W100BD	11 GHz	32.35	1	1	1,717.91	0.09
						Sector A Composite MPE%	**21.51**
Antenna B1	RFS APXVAALL24_43-U-NA20	600 MHz / 700 MHz	13.65 / 13.85	4	120	2,824.56	3.42
Antenna B2	Commscope VV-65A-R1	1900 MHz (PCS) / 2100 MHz (AWS)	15.55 / 16.05	9	335	12,724.61	6.48
Antenna B3	Ericsson AIR6419 B41	2500 MHz (BRS)	21.5	8	160	22,600.60	11.52
						Sector B Composite MPE%	**21.42**
Antenna C1	RFS APXVAALL24_43-U-NA20	600 MHz / 700 MHz	13.65 / 13.85	4	120	2,824.56	3.42
Antenna C2	Commscope VV-65A-R1	1900 MHz (PCS) / 2100 MHz (AWS)	15.55 / 16.05	9	335	12,724.61	6.48
Antenna C3	Ericsson AIR6419 B41	2500 MHz (BRS)	21.5	8	160	22,600.60	11.52
						Sector C Composite MPE%	**21.42**

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, the sector with the largest calculated MPE% is Sector A. *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	**21.51 %**
Dish	1.80 %
AT&T	2.55 %
Verizon Wireless	16.61 %
Site Total MPE %:	**42.47 %**

Table 4: All Carrier MPE Contributions

T-MOBILE Sector A Total:	21.51 %
T-MOBILE Sector B Total:	21.42 %
T-MOBILE Sector C Total:	21.42 %
Site Total:	42.47 %

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, the sector with the largest calculated MPE% is Sector A.

T-MOBILE _ Frequency Band / Technology Max Power Values (Sector A)	# 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	90	9.45	600 MHz	400	2.36%
T-Mobile 700 MHz LTE	2	485.32	90	4.95	700 MHz	467	1.06%
T-Mobile 1900 MHz (PCS) LTE	4	1,435.69	90	29.26	1900 MHz (PCS)	1000	2.93%
T-Mobile 1900 MHz (PCS) GSM	1	538.38	90	2.74	1900 MHz (PCS)	1000	0.27%
T-Mobile 2100 MHz (AWS) LTE	4	1,610.87	90	32.83	2100 MHz (AWS)	1000	3.28%
T-Mobile 2500 MHz (BRS) LTE / 5G NR	8	2,825.08	90	115.15	2500 MHz (BRS)	1000	11.52%
T-Mobile 11 GHz Microwave	1	1,717.91	90	0.88	11 GHz	1000	0.09%
						Total:	**21.51%**

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:	21.51 %
Sector B:	21.42 %
Sector C:	21.42 %
T-MOBILE Maximum Total (per sector):	21.51 %
Site Total:	42.47 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **42.47 %** 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: CTHA610A
T-MOBILE SITE NAME: PETER GREEN RD TOLLAND CROWN
SITE TYPE: MONOPOLE
TOWER HEIGHT: 119'-0"

BUSINESS UNIT #: 846293
SITE ADDRESS: 319 PETER GREEN ROAD TOLLAND, CT 06084
COUNTY: TOLLAND
JURISDICTION: CITY OF TOLLAND

UP30819A_COVERAGE STRATEGY: 67E5998E_1xAIR+1OP+1QP

SITE INFORMATION

CROWN CASTLE USA INC. SITE NAME:	TOLLAND - PETER GREEN
SITE ADDRESS:	319 PETER GREEN ROAD TOLLAND, CT 06084
COUNTY:	TOLLAND
MAP/PARCEL #:	TBD
AREA OF CONSTRUCTION:	EXISTING
LATITUDE:	41.89661000° (41° 53' 47.81")
LONGITUDE:	-72.39373000° (-72° 23' 37.43")
LAT/LONG TYPE:	NAD83
GROUND ELEVATION:	810 FT
CURRENT ZONING:	TBD
JURISDICTION:	CITY OF TOLLAND
OCCUPANCY CLASSIFICATION:	U
TYPE OF CONSTRUCTION:	IIB
A.D.A. COMPLIANCE:	FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION
PROPERTY OWNER:	DAVID & AUDREY MANCHESTER 62 BEACON LN. HORSEHEADS, NY 14845
TOWER OWNER:	CROWN CASTLE 2000 CORPORATE DRIVE CANONSBURG, PA 15317
CARRIER/APPLICANT:	T-MOBILE 12920 SE 38TH STREET BELLEVUE, WA 98006
ELECTRIC PROVIDER:	---- ----
TELCO PROVIDER:	---- ----

PROJECT TEAM

A&E FIRM:	INFINIGY 500 WEST OFFICE CENTER DR. SUITE 150, FORT WASHINGTON, PA 19034
CROWN CASTLE USA INC. DISTRICT CONTACTS:	3 CORPORATE PARK DRIVE, SUITE 101 CLIFTON PARK, NY 12065
	TRICIA PELON - PROJECT MANAGER TRICIA.PELON@CROWNCASTLE.COM
	CHRISTOPHER P MILLER - CONSTRUCTION MANAGER CHRISP.MILLER@CROWNCASTLE.COM

DRAWING INDEX

SHEET #	SHEET DESCRIPTION
T-1	TITLE SHEET
T-2	GENERAL NOTES
C-1	SITE PLAN & ENLARGED SITE PLAN
C-2	ELEVATION & ANTENNA PLANS
C-3	ANTENNA & CABLE SCHEDULE
C-4	PLUMBING DIAGRAM
C-5	ANTENNA EQUIPMENT SPECS
C-6	RAN EQUIPMENT SPECS & DETAILS
C-7	GENERATOR INSTALLATION DETAILS
C-8	GROUND EQUIPMENT SUPPORT DETAILS
C-9	CANOPY DETAILS
C-10	ANTENNA MOUNTING DETAIL
C-11	GENERATOR SPECS
E-1	AC PANEL SCHEDULES & ONE LINE DIAGRAM
E-2	UTILITY ROUTING
G-1	TYPICAL GROUNDING SCHEMATIC
G-2	ANTENNA GROUNDING DIAGRAM
G-3	GROUNDING DETAILS I
G-4	GROUNDING DETAILS II

ALL DRAWINGS CONTAINED HEREIN ARE FORMATTED FOR 22X34. 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

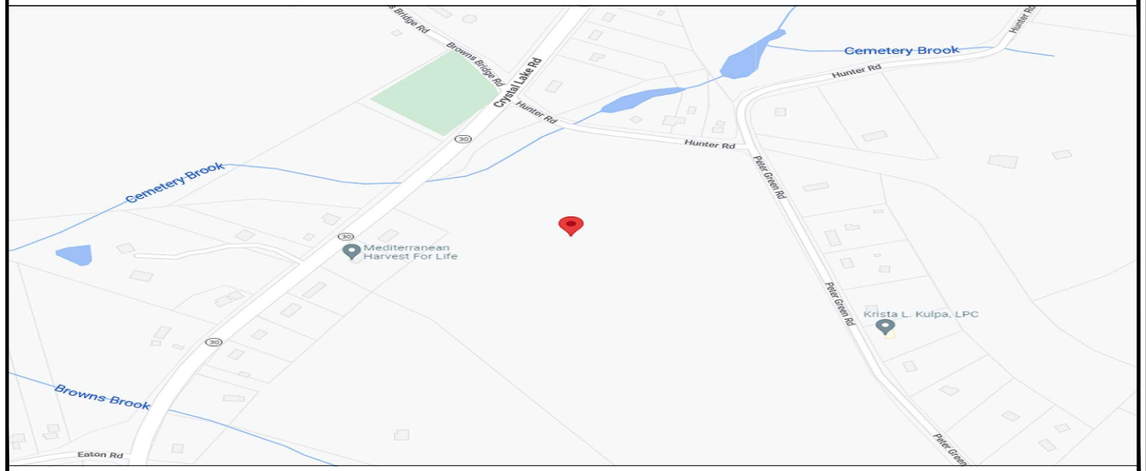
THE PURPOSE OF THIS PROJECT IS TO ENHANCE BROADBAND CONNECTIVITY AND CAPACITY TO THE EXISTING ELIGIBLE WIRELESS FACILITY.

TOWER SCOPE OF WORK:
- INSTALL (9) ANTENNAS
- INSTALL (1) DISH ANTENNA
- INSTALL (6) RRHs
- INSTALL (3) 6X24 HYBRID CABLES
- INSTALL (1) 1/2" COAX CABLE
- INSTALL ANTENNA MOUNT PLATFORM WITH HANDRAIL KIT

GROUND SCOPE OF WORK:
- INSTALL 10'x15' CONCRETE PAD
- INSTALL (1) 6160 & (1) B160 BATTERY CABINET
- INSTALL (1) iXRe ROUTER IN (P) CABINET
- INSTALL (2) PSU4813 BOOSTER IN (P) CABINET
- INSTALL (2) RP 6651 IN (P) CABINET
- INSTALL (1) 50KW SSM DIESEL GENERATOR
- INSTALL ICE BRIDGE
- INSTALL (2) H-FRAMES W/ ASSOCIATED EQUIPMENT
- INSTALL (1) CANOPY
- INSTALL (4) LED LUMINARE WORK LIGHTS

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 CT STATE BUILDING CODE
MECHANICAL	2015 IMC
ELECTRICAL	2017 NEC

REFERENCE DOCUMENTS:

STRUCTURAL ANALYSIS:	MORRISON HERSHFIELD
DATED:	06/15/2022
MOUNT ANALYSIS:	TRYLON
DATED:	06/09/2022
RFDS REVISION:	1
DATED:	2/3/2022
ORDER ID:	614561
REVISION:	1

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

APPROVALS

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

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

T-Mobile
12920 SE 38TH STREET
BELLEVUE, WA 98006

CROWN CASTLE
3 CORPORATE PARK DRIVE, SUITE 101
CLIFTON PARK, NY 12065

INFINIGY
FROM ZERO TO INFINIGY
the solutions are endless
500 West Office Center Dr.
Suite 150 | Fort Washington, PA 19034
www.infinigy.com

T-MOBILE SITE NUMBER:
CTHA610A

BU #: **846293**
TOLLAND - PETER GREEN

319 PETER GREEN ROAD
TOLLAND, CT 06084

EXISTING 119'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	06/20/2022	RCD	PRELIMINARY	SS
0	07/18/2022	RCD	100% FINALS	SS

STATE OF CONNECTICUT
SHUHEI SAKAMOTO
34916
LICENSED PROFESSIONAL ENGINEER

07/18/2022

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–POTENTIAL 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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BU #: **846293**
TOLLAND - PETER GREEN

319 PETER GREEN ROAD
TOLLAND, CT 06084

EXISTING 119'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	06/20/2022	RCD	PRELIMINARY	SS
0	07/18/2022	RCD	100% FINALS	SS

STATE OF CONNECTICUT
SHUHEI SAKANOUE
34916
LICENSED PROFESSIONAL ENGINEER

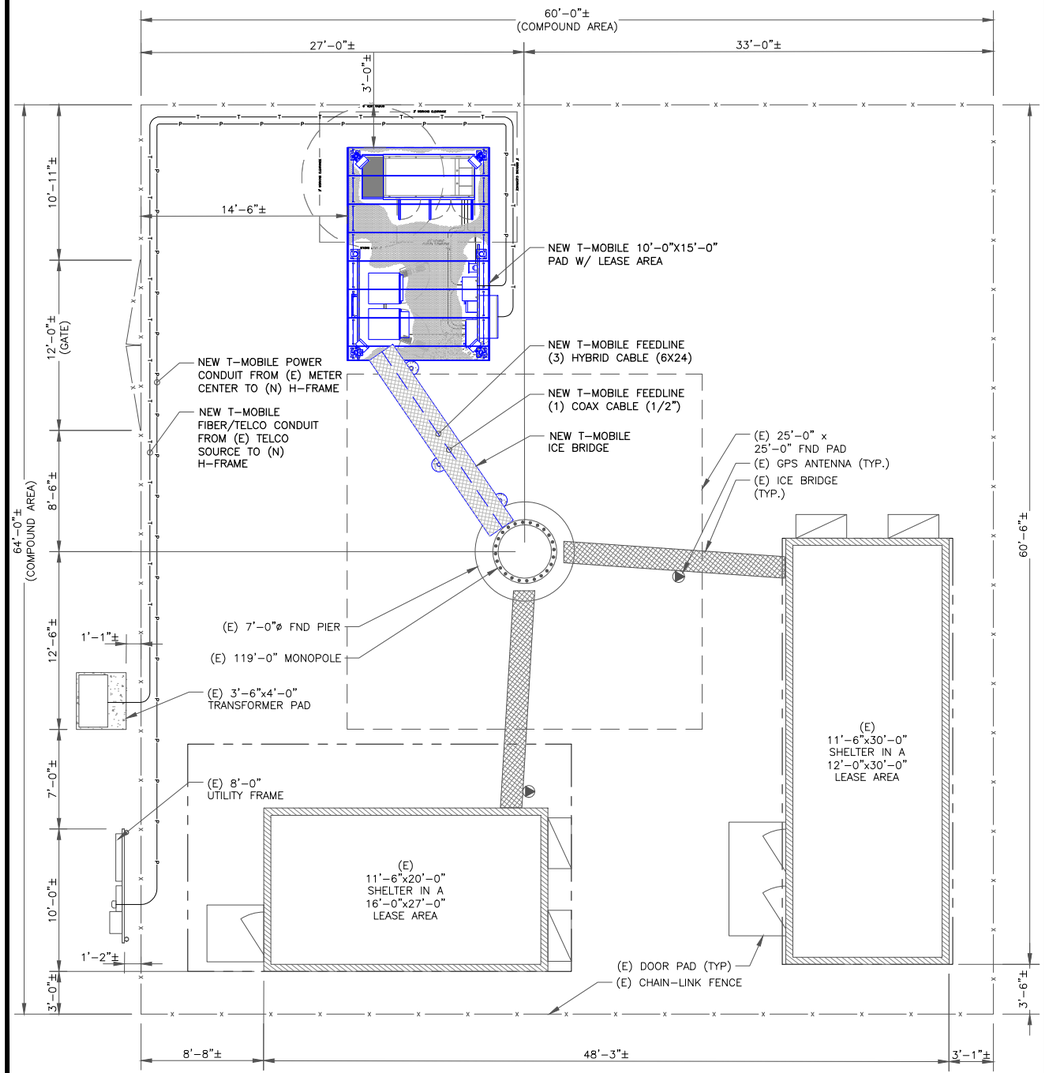
07/18/2022

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

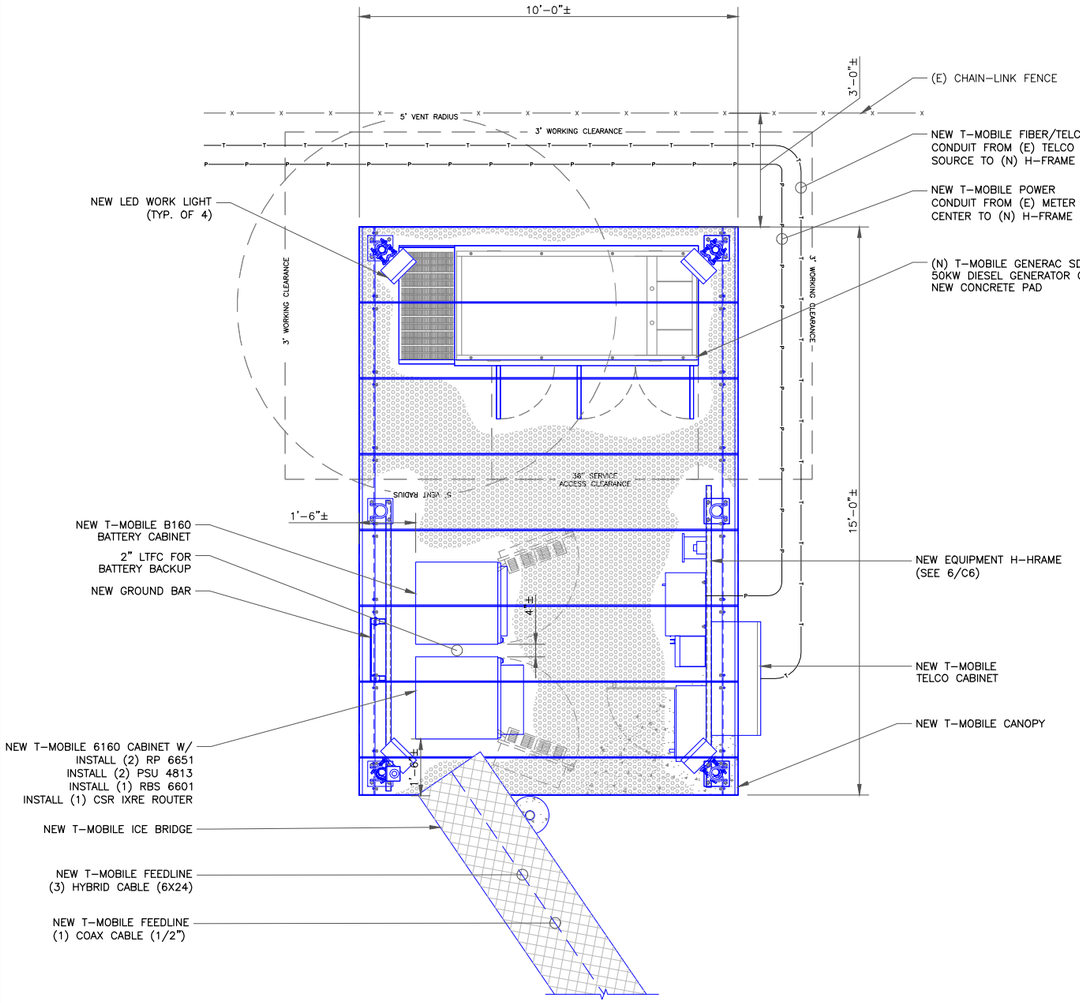
NOTE:

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: 4' 2' 0 4' 3/16"=1'–0" (FULL SIZE)
3/32"=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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SHUHEI SAKAMOTO
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PROFESSIONAL ENGINEER

07/18/2022

SHEET NUMBER: C-1

REVISION: 0

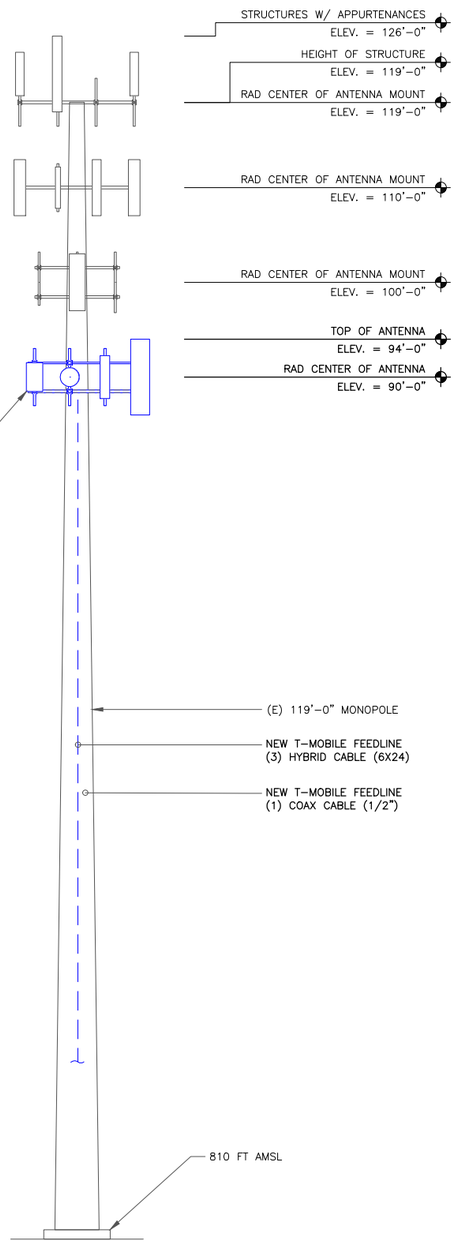
NOTES:

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: 90'-0"
MOUNT CL: 90'-0"

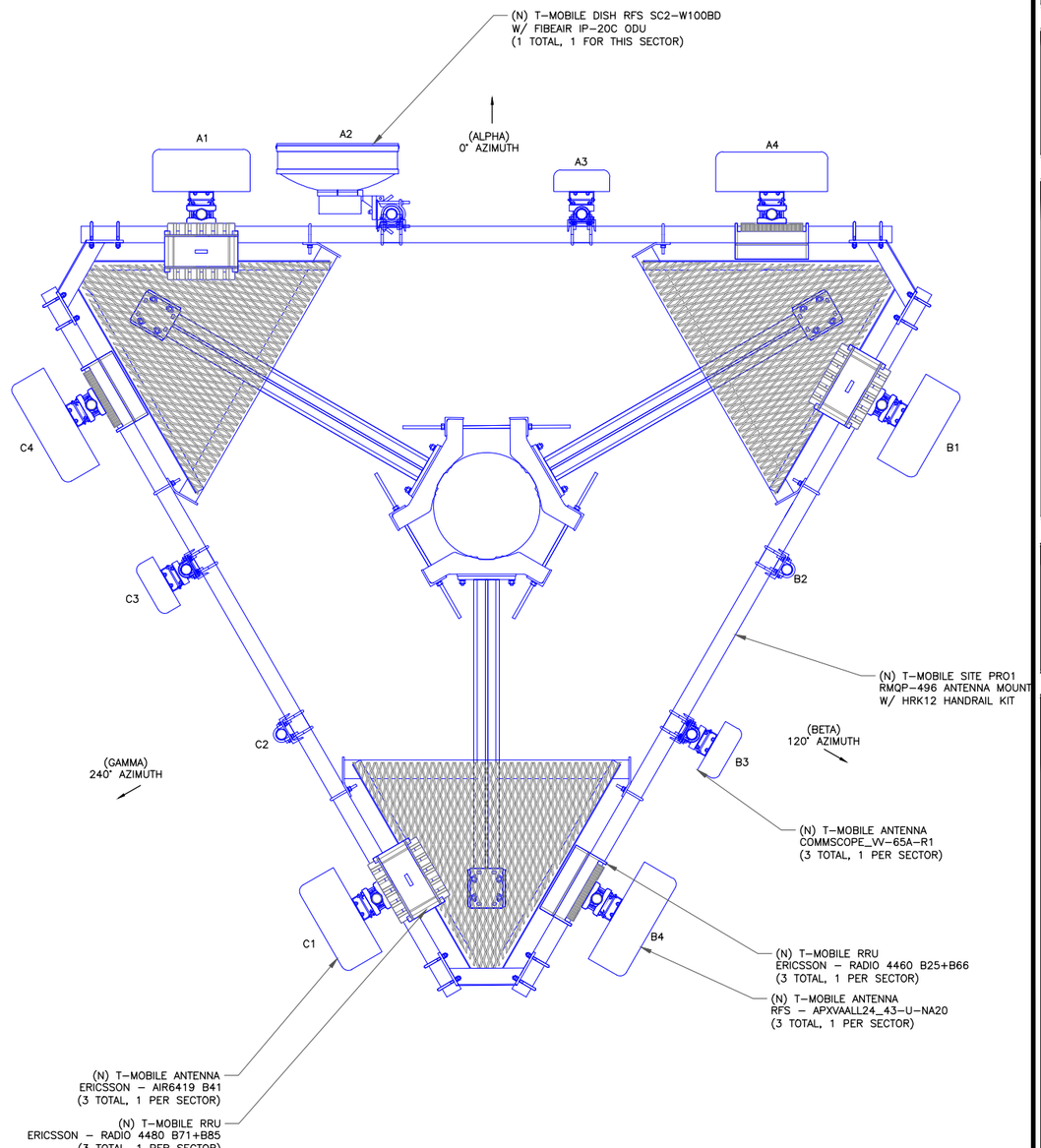
ANY AND ALL TOWER MOUNTED EQUIPMENT MUST NOT TRAP OR INTERFERE W/ EXISTING SAFETY CLIMB



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

NOTES:

1. *A STRUCTURAL EVALUATION OF THE T-MOBILE ANTENNA MOUNTS HAS BEEN PERFORMED BY MORRISON HERSHFIELD. REFER TO ANTENNA MOUNT STRUCTURAL ANALYSIS DATED 06/15/2022 PRIOR TO CONSTRUCTION.*
2. *THE SITEPRO1 PLATFORM MOUNT (PART# RMQP-496 WITH HRK12 HANDRAIL KIT) HAS SUFFICIENT CAPACITY TO CARRY THE PROPOSED LOADING CONFIGURATION.*
3. *INFINIGY HAS NOT EVALUATED THE TOWER FOR THIS SITE AND ASSUMES NO RESPONSIBILITY FOR ITS STRUCTURAL INTEGRITY. CONTRACTOR TO COORDINATE LOADING WITH RF ENGINEER. REFER TO STRUCTURAL ANALYSIS PERFORMED BY OTHERS PRIOR TO CONSTRUCTION.*



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

N

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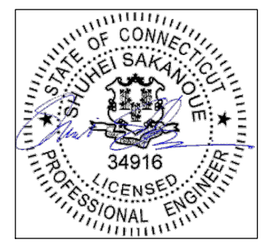


07/18/2022

SHEET NUMBER: C-2

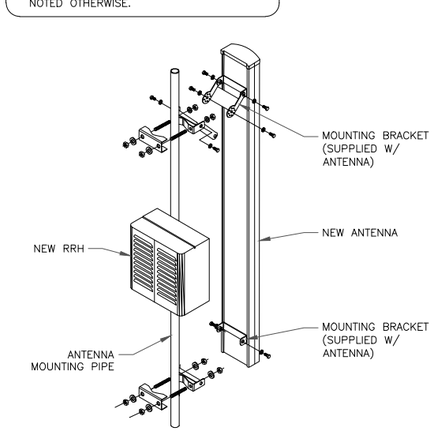
REVISION: 0

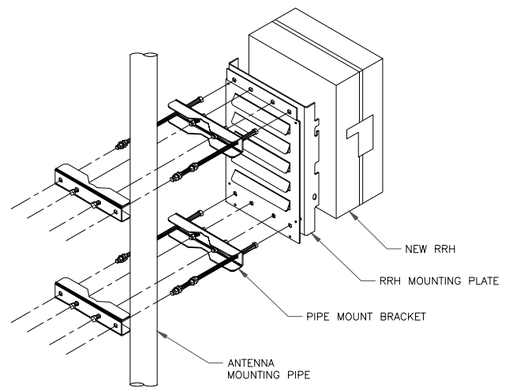
ANTENNA SCHEDULE										
SECTOR	POS.	TECHNOLOGY	RAD CENTER	AZIMUTH	ANTENNA MANUFACTURER	ANTENNA MODEL	MECH. TILT	ELECT. TILT	TOWER MOUNTED EQUIPMENT	FEEDLINE TYPE
ALPHA	A1	L2500, N2500	90'–0"	0°	ERICSSON	ERICSSON – AIR6419 B41	0	--	(1) ERICSSON – RRUS 4460 B25+B66	(1) HYBRID CABLE (6X24") (1) COAX CABLE (1/2")
ALPHA	A2	--	90'–0"	0°	ANDREW	VHLP2–11–2GR	0	--	(1) FIBEAIR IP–20C ODU	
ALPHA	A3	L2100, L1900, G1900	90'–0"	0°	COMMSCOPE	COMMSCOPE – VV–65A–R1	0	--	--	
ALPHA	A4	L700, L600, N600	90'–0"	0°	RFS	APXVAALL24_43–U–NA20	0	--	(1) ERICSSON – RRUS 4480 B71+B85	
BETA	B1	L2500, N2500	90'–0"	120°	ERICSSON	ERICSSON – AIR6419 B41	0	--	(1) ERICSSON – RRUS 4460 B25+B66	(1) HYBRID CABLE (6X24")
BETA	B2	--	--	--	--	--	--	--	--	
BETA	B3	L2100, L1900, G1900	90'–0"	120°	COMMSCOPE	COMMSCOPE – VV–65A–R1	0	--	--	
BETA	B4	L700, L600, N600	90'–0"	120°	RFS	APXVAALL24_43–U–NA20	0	--	(1) ERICSSON – RRUS 4480 B71+B85	
GAMMA	C1	L2500, N2500	90'–0"	240°	ERICSSON	ERICSSON – AIR6419 B41	0	--	(1) ERICSSON – RRUS 4460 B25+B66	(1) HYBRID CABLE (6X24")
GAMMA	C2	--	--	--	--	--	--	--	--	
GAMMA	C3	L2100, L1900, G1900	90'–0"	240°	COMMSCOPE	COMMSCOPE – VV–65A–R1	0	--	--	
GAMMA	C4	L700, L600, N600	90'–0"	240°	RFS	APXVAALL24_43–U–NA20	0	--	(1) ERICSSON – RRUS 4480 B71+B85	

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.





NOTE:

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

2 ANTENNA WITH RRH MOUNTING DETAIL
SCALE: NOT TO SCALE

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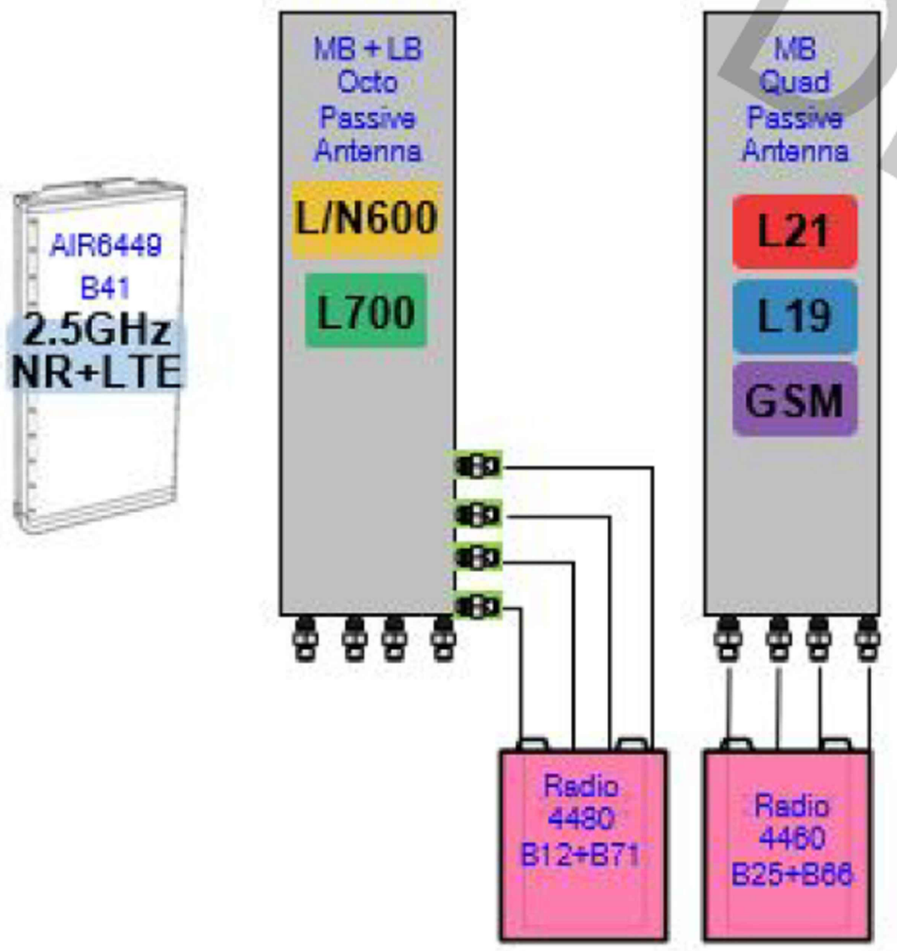
SHEET NUMBER: C-3

REVISION: 0

67E5A998E.JPG



1 PLUMBING DIAGRAM
SCALE: NOT TO SCALE

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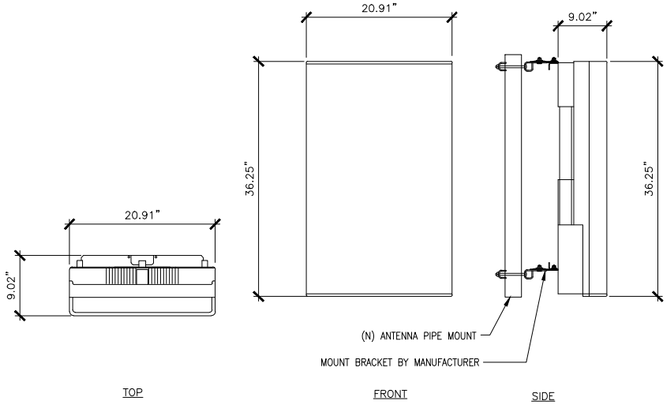
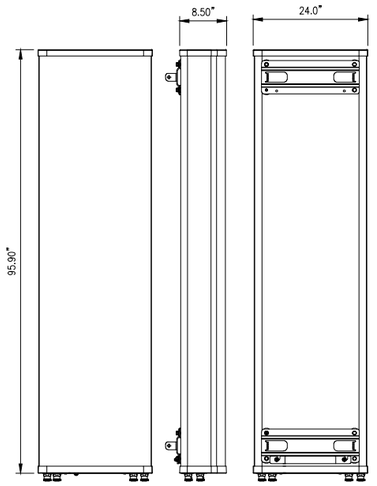
SHEET NUMBER: C-4

REVISION: 0

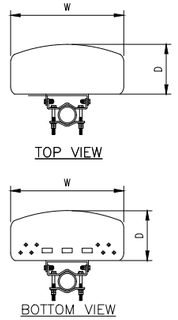
MANUFACTURER: ERICSSON
MODEL: AIR6419 B41
WEIGHT: 96.50 LBS (W/ MOUNT BRACKET 113)
DIMENSIONS: 36.25"H. X 20.91"W. X 9.02"D.
FREQUENCY: REFER TO RF DATA SHEET



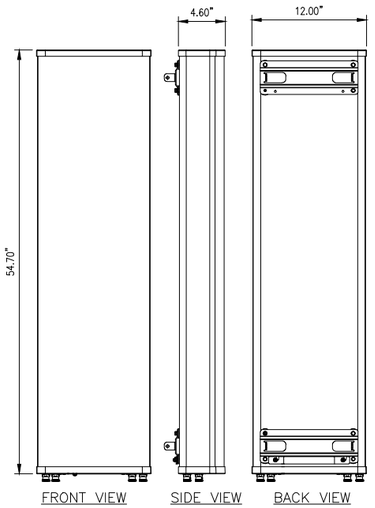
1 (N) AIR6419 B41 ANTENNA SPEC
SCALE: NOT TO SCALE



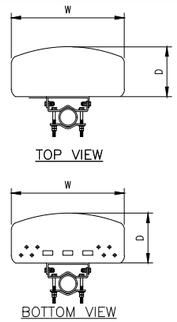
700MHz RFS ANTENNAS	
MODEL	WEIGHT (lb)
(8') APXVAALL24_43-UNA20	149.90
WEIGHT W/ MOUNTING BRACKET (lb):	154



2 (N) APXVAALL24_43-UNA20 ANTENNA SPEC
SCALE: NOT TO SCALE



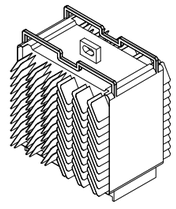
COMMSCOPE ANTENNAS	
MODEL	WEIGHT (lb)
VV-65A-R1	33.30
WEIGHT W/ MOUNTING BRACKET (lb):	–

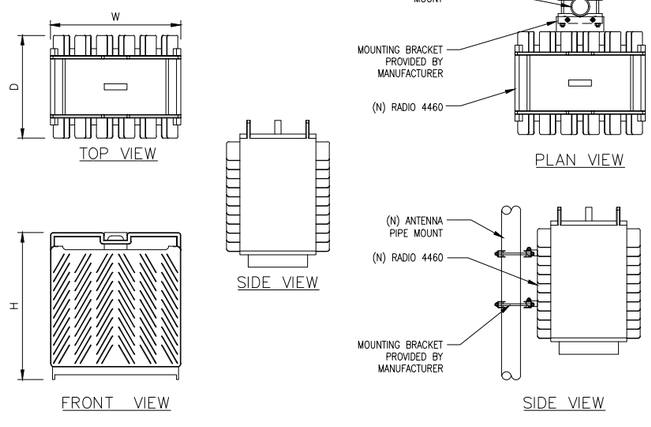


3 (N) VV-65A-R1 ANTENNA SPEC
SCALE: NOT TO SCALE

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

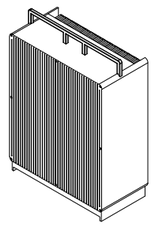


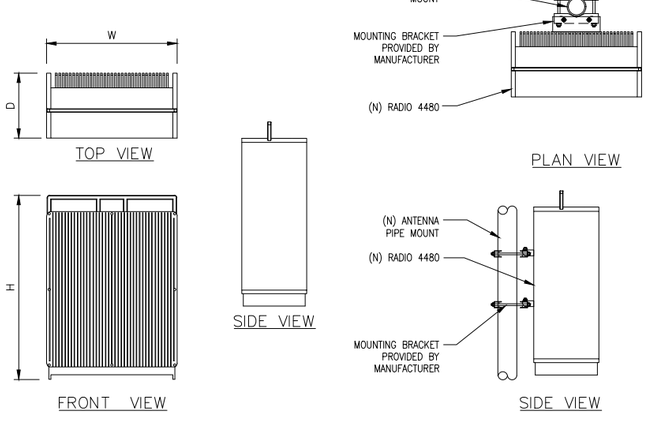


4 (N) RADIO 4460 SPEC
SCALE: NOT TO SCALE

ERICSSON RADIO-4480 B71 B85

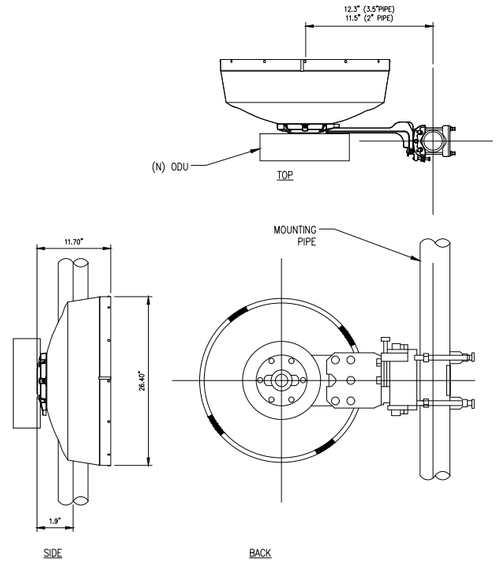
DIMENSIONS, WxDxH:	21.8"x15.7"x7.5"
MAX OUTPUT POWER:	4x80W (2x(2x80W))
TOTAL WEIGHT:	93 lbs
TEMPERATURE:	-40° TO 55° C





5 (N) RADIO 4480 SPEC
SCALE: NOT TO SCALE

MW MANUFACTURER: RFS
MODEL: SC2-W100BD
DIMENSIONS: HxWxD: 26.40"x26.40"x11.70"
WEIGHT:20.0 LBS



6 (N) SC2-W100BD MW DISH
SCALE: NOT TO SCALE

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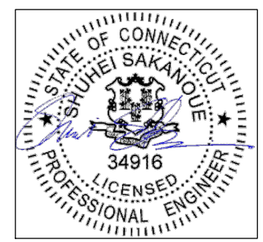

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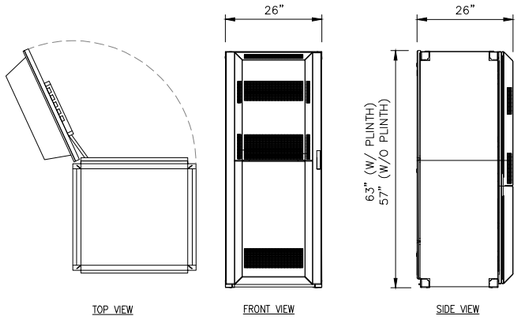
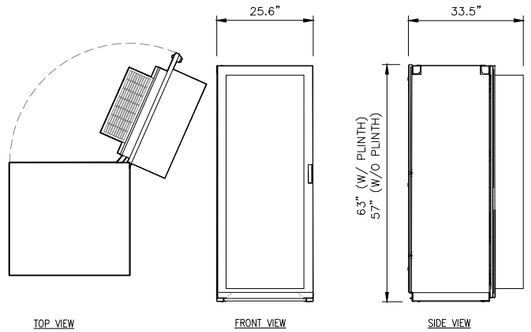
SHEET NUMBER: C-5
REVISION: 0



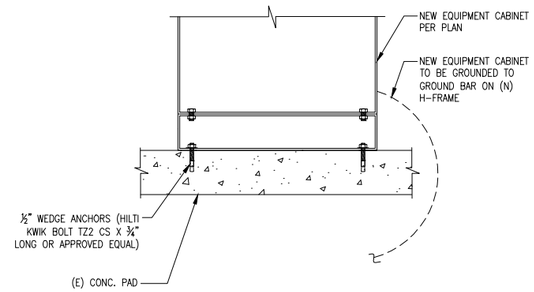
ERICSSON MODEL NO.:	B160
RACK SPACE:	19U
DIMENSIONS, HxWxD:	63"x26"x26" (W/ 6" PLINTH)
CABINET WEIGHT, EMPTY:	485 LBS
MAXIMUM WEIGHT:	2100± LBS

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

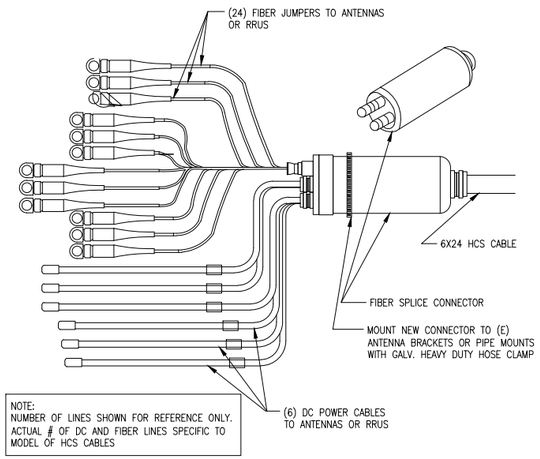


ERICSSON MODEL NO.:	6160
RACK SPACE:	19U
DIMENSIONS, HxWxD:	63"x25.6"x25.6" (W/ 6" PLINTH)
CABINET WEIGHT, EMPTY:	410 LBS
MAXIMUM WEIGHT:	770± LBS

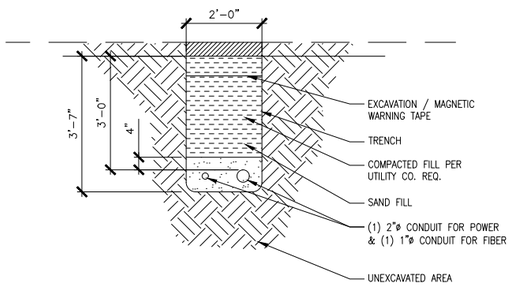
2 (N) 6160 CABINET DETAIL
SCALE: NOT TO SCALE



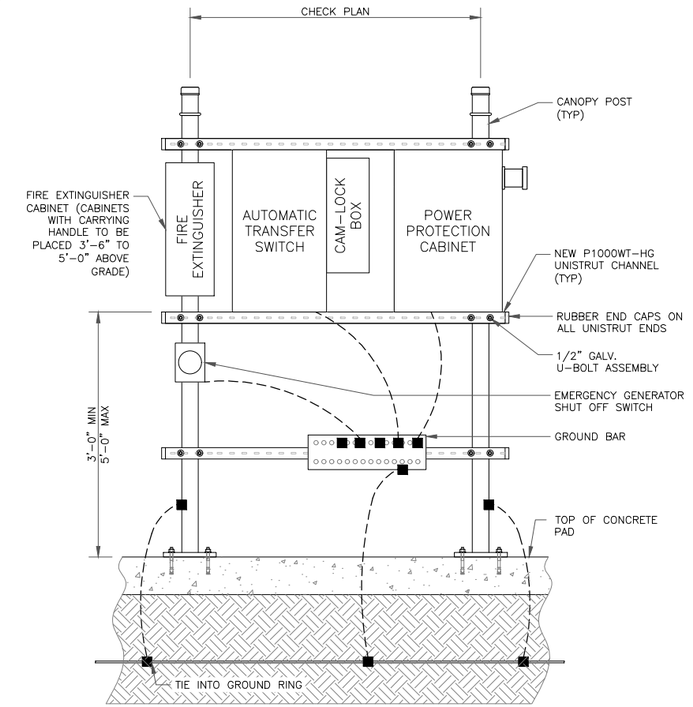
3 (N) EQUIPMENT CABINET MOUNTING DETAIL
SCALE: NOT TO SCALE



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



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



6 H-FRAME DETAIL
SCALE: NOT TO SCALE

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CTHA610A

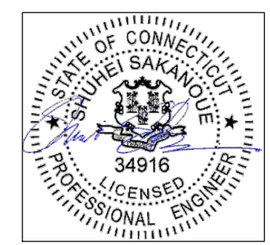
BU #: **846293**
TOLLAND - PETER GREEN

319 PETER GREEN ROAD
TOLLAND, CT 06084

EXISTING 119'-0" MONOPOLE

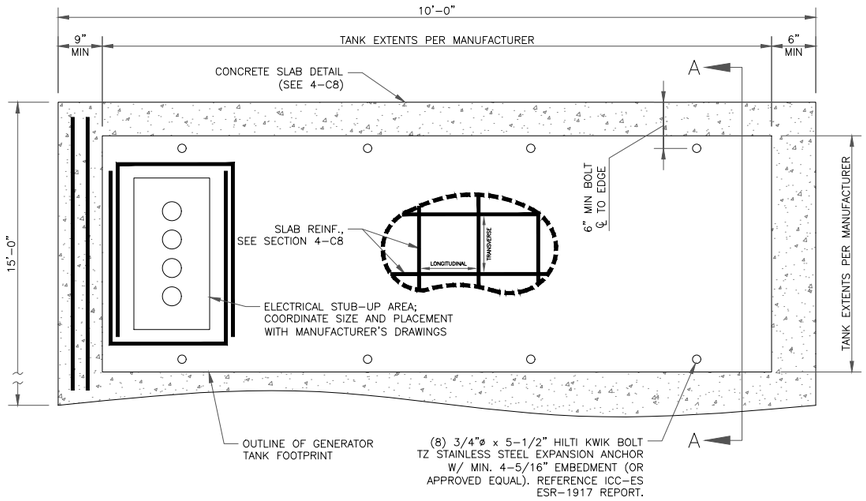
ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	06/20/2022	RCD	PRELIMINARY	SS
0	07/18/2022	RCD	100% FINALS	SS



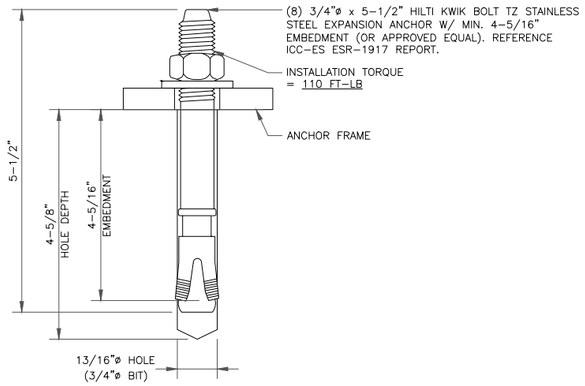
07/18/2022

SHEET NUMBER: C-6
REVISION: 0



1 GENERATOR PAD DETAIL
SCALE: NOT TO SCALE

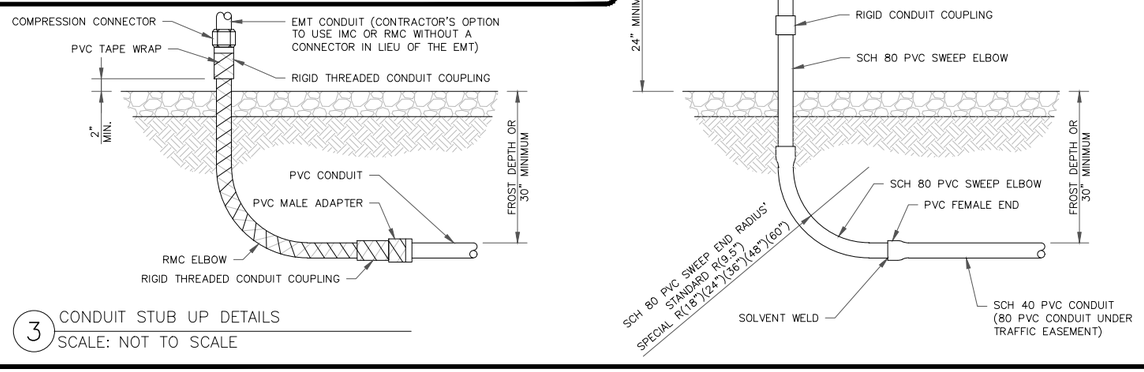
INSTALLER NOTE:
PER CBC 1705.12.6, PERIODIC SPECIAL INSPECTION OF ANCHORAGE FOR STANDBY POWER SYSTEMS IS REQUIRED



2 TYPICAL ANCHOR DETAIL
SCALE: NOT TO SCALE

INSTALLER NOTES:

ALL METAL CONDUIT INSTALLED IN DIRECT CONTACT WITH THE EARTH SHALL BE CONSIDERED TO BE INSTALLED IN A SEVERELY CORROSIVE ENVIRONMENT AND IS REQUIRED TO HAVE SUPPLEMENTAL PROTECTION AGAINST CORROSION (NEC ARTICLE 342.10(B) & 344.10(B)(1)). THIS PROTECTION SHALL EITHER BE AN APPROVED MANUFACTURER INSTALLED PROTECTIVE COATING ON THE CONDUIT OR SHALL BE (2) LAYERS OF 10 MIL PVC PIPE WRAP TAPE INSTALLED USING OPPOSING SPIRAL WRAPS. ON VERTICAL PIPE THE OUTSIDE LAYER OF TAPE SHALL BE WRAPPED SO AS TO PROVIDE SHEDDING OF WATER (i.e. TAPE SHOULD WRAP IN AN UPWARD DIRECTION WITH LOWER WRAP BEING BENEATH THE WRAP ABOVE). SPIRAL WRAPS SHALL HAVE A MINIMUM OF 1/4" OVERLAP WITH THE PRECEDING TAPE WRAP. ANY OTHER METHODS OF CORROSION PROTECTION SHALL REQUIRE APPROVAL BY THE ENGINEER OF RECORD PRIOR TO BEING USED.



3 CONDUIT STUB UP DETAILS
SCALE: NOT TO SCALE

STRUCTURAL DESIGN NOTES:

ALL LOADS DERIVED FROM REQUIREMENTS OF THE INTERNATIONAL BUILDING CODE, ASCE 7.

BUILDING & COMMUNICATION STRUCTURES:

1. WIND LOADS: IBC 2018 & ASCE 7-16
   V = 94 MPH ULTIMATE WIND SPEED
   EXPOSURE CATEGORY = C; TOPOGRAPHIC CATEGORY = 1.
   IMPORTANCE FACTOR = 1.0.
2. SEISMIC LOADS: IBC 2018 & ASCE 7-16
   STRUCTURE CLASS = II; SITE CLASS = D.
   SS = 0.36 ; S1 = 0.188 ; SDS = 0.363

CONCRETE NOTES:

1. PRIOR TO EXCAVATION, CHECK THE AREA FOR UNDERGROUND FACILITIES.
2. ALL CONCRETE SHALL BE IN ACCORDANCE WITH CHAPTER 19 OF THE IBC & ACI 318, "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE", LATEST EDITION & HAVE THE FOLLOWING PROPERTIES:
   A MINIMUM 7-DAY COMPRESSIVE STRENGTH (f'c) OF 2,500 PSI.
   B CEMENT SHALL BE "LOW-ALKALI" TYPE IIA (MODERATE SULFATE RESISTANCE, AIR ENTRAINING) CONFORMING TO ASTM C150.
   C MAXIMUM WATER/CEMENT RATIO OF 0.45 AND AIR-ENTRAINED 4% TO 7%.
   D CONCRETE PROPORTIONING SHALL BE DESIGNED BY AN APPROVED LABORATORY. TOLERANCES IN ACCORDANCE WITH ACI 117. COPIES OF CONCRETE MIX SHALL BE SUBMITTED TO THE CROWN CASTLE CONSTRUCTION MANAGER FOR REVIEW PRIOR TO PLACEMENT.
   E ALL AGGREGATE USED IN CONCRETE SHALL CONFORM TO ASTM C33. USE ONLY AGGREGATES KNOWN NOT TO CAUSE EXCESSIVE SHRINKAGE. MAXIMUM AGGREGATE SIZE TO BE 3/4".
   F MAXIMUM SLUMP: REFER TO GEOTECHNICAL REPORT FOR CONFIRMATION OF ANY ASSUMPTIONS MADE DURING DESIGN.
3. FORMWORK FOR CONCRETE SHALL CONFORM TO ACI 347. TOLERANCES FOR FINISHED CONCRETE SURFACES SHALL MEET CLASS-C REQUIREMENTS. IN NO CASE SHALL FINISHED CONCRETE SURFACES EXCEED THE FOLLOWING VALUES AS MEASURED FROM NEAT PLAN LINES AND FINISHED GRADES: ± 1/4" VERTICAL, ± 1" HORIZONTAL.
4. CHAMFER ALL EXPOSED CORNERS AND FILLET ENTRANT ANGLES 3/4" U.N.O.
5. CONCRETE FINISHING: CONCRETE SURFACES SHALL BE FINISHED IN ACCORDANCE WITH ACI. PROVIDE ROUGH FINISH FOR ALL SURFACES NOT EXPOSED TO VIEW AND SMOOTH FINISH FOR ALL OTHERS, U.N.O.
6. STEEL REINFORCEMENT AND CONCRETE SHOULD BE PLACED IMMEDIATELY UPON COMPLETION OF THE FOUNDATION EXCAVATION. CONTRACTOR SHALL NOT ALLOW A COLD JOINT TO FORM IN THE CONCRETE. PORTION AT GRADE SHOULD BE FORMED. TEMPORARY CASING MAY BE REQUIRED TO PREVENT CAVING PRIOR TO CONCRETE PLACEMENT.

REINFORCING STEEL NOTES:

1. ALL REINFORCING STEEL SHALL CONFORM TO ASTM A615. VERTICAL/HORIZONTAL BARS SHALL BE GRADE 60; TIES OR STIRRUPS SHALL BE A MINIMUM OF GRADE 40. ALL REINFORCING STEEL SHALL HAVE 3" (± 3/8") OF CONCRETE COVER, U.N.O.
2. ALL BAR BENDS, HOOKS, SPLICES AND OTHER REINFORCING STEEL SHALL CONFORM TO THE REQUIREMENTS OF ACI 315.
3. ALL BARS SHALL BE SPLICED WITH A MINIMUM LAP OF 48 BAR DIAMETERS. LAP SPLICES OF DEFORMED BARS IN TENSION ZONES SHALL BE CLASS-B SPLICES. WELDING OF BARS IS NOT PERMITTED.
4. AT ALL CORNERS AND WALL INTERSECTIONS, PROVIDE BENT HORIZONTAL BARS TO MATCH THE HORIZONTAL REINFORCING STEEL.
5. PROVIDE VERTICAL DOWELS IN FOOTINGS AND AT CONSTRUCTION JOINTS TO MATCH VERTICAL REINFORCING BAR SIZE AND SPACING.
6. ACI-APPROVED PLASTIC-COATED BAR CHAIRS OR PRECAST CONCRETE BLOCKS SHALL BE PROVIDED FOR SUPPORT OF ALL GRADE-CAST REINFORCING STEEL & SHALL BE SUFFICIENT IN NUMBER TO PREVENT SAGGING. METAL CLIPS OR SUPPORTS SHALL NOT BE PLACED IN CONTACT WITH THE FORMS OR THE SUB-GRADE.
7. DOWELS AND ANCHOR BOLTS SHALL BE WIRED OR OTHERWISE HELD IN CORRECT POSITION PRIOR TO PLACING CONCRETE. IN NO CASE SHALL DOWELS OR ANCHOR BOLTS BE "STABBED" INTO FRESHLY-POURED CONCRETE.

FOUNDATION NOTES:

1. THE CONTRACTOR SHALL READ THE GEOTECHNICAL REPORT AND SHALL CONSULT THE GEOTECHNICAL ENGINEER AS NECESSARY PRIOR TO CONSTRUCTION.
2. THE GEOTECHNICAL ENGINEER (OR INSPECTOR) SHALL INSPECT THE EXCAVATION PRIOR TO THE PLACEMENT OF CONCRETE AND SHALL PROVIDE A NOTICE OF INSPECTION FOR THE BUILDING INSPECTOR FOR REVIEW AND RECORDS PURPOSES.
3. THE CONTRACTOR SHALL DETERMINE THE MEANS AND METHODS NECESSARY TO SUPPORT THE EXCAVATION DURING CONSTRUCTION.
4. REBAR AT BOTTOM OF FOUNDATIONS SHALL BE BONDED TO SITE GROUNDING SYSTEM (WHEN APPLICABLE). SEE ADDITIONAL DETAILS ON APPROVED A&E CONSTRUCTION DRAWINGS.
5. ALL FOOTINGS TO BE PLACED ON FIRM, UNDISTURBED, INORGANIC MATERIAL. PROOF ROLL SUB-GRADE PRIOR TO PLACING CONCRETE WHERE THE MATERIAL HAS BEEN DISTURBED BY EQUIPMENT. UNACCEPTABLE/DISTURBED MATERIAL SHALL BE OVER-EXCAVATED AND REPLACED WITH "LEAN CONCRETE FILL". THE GEOTECHNICAL REPORT SHALL BE REVIEWED AND ADHERED TO FOR SPECIFIC RECOMMENDATIONS.
6. STRUCTURAL BACKFILL SHALL BE GRANULAR FREE-DRAINING MATERIAL FREE OF DEBRIS, ORGANICS, REFUSE AND OTHERWISE DELETERIOUS MATERIALS. MATERIAL SHALL BE PLACED IN LIFTS NO GREATER THAN 6" IN DEPTH AND COMPACTED TO 95% OF MAXIMUM DENSITY AS DETERMINED PER ASTM D1557 (MODIFIED PROCTOR). THE GEOTECHNICAL REPORT SHALL BE REVIEWED AND ADHERED TO FOR SPECIFIC RECOMMENDATIONS.

SOIL NOTES:

1. FOUNDATION DESIGN BASED ON THE PRESUMPTIVE MINIMUM SOIL PARAMETERS IN ACCORDANCE WITH THE IBC, CBC AND TIA. WHEN A SITE SPECIFIC GEOTECHNICAL REPORT IS AVAILABLE ON CCISITES AND THE ENGINEER AND THE CONTRACTOR SHALL ADHERE TO ALL RECOMMENDATIONS PROVIDED THEREIN.
2. ALL FOUNDATIONS TO BE PLACED ON FIRM, UNDISTURBED, INORGANIC MATERIAL. PROOF ROLL SUB-GRADE PRIOR TO PLACING CONCRETE WHERE THE MATERIAL HAS BEEN DISTURBED BY EQUIPMENT. UNACCEPTABLE/DISTURBED MATERIAL SHALL BE OVER-EXCAVATED AND REPLACED WITH STRUCTURAL BACKFILL.
3. STRUCTURAL BACKFILL SHALL BE GRANULAR FREE-DRAINING MATERIAL FREE OF DEBRIS, ORGANICS, REFUSE AND OTHERWISE DELETERIOUS MATERIALS. MATERIAL SHALL BE PLACED IN LIFTS NO GREATER THAN 6" IN DEPTH AND COMPACTED TO 95% OF MAXIMUM DENSITY AS DETERMINED PER ASTM D1557 (MODIFIED PROCTOR). THE GEOTECHNICAL REPORT SHALL BE REVIEWED AND ADHERED TO FOR SPECIFIC RECOMMENDATIONS.

MECHANICAL ANCHOR NOTES:

1. HILTI PRODUCTS MUST BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS, AS INCLUDED IN THE ADHESIVE PACKAGING.
2. CONTRACTOR SHALL AVOID DRILLING HOLES IN VERTICAL/HORIZONTAL REINFORCING BARS.
3. HOLES MUST BE WIRE BRUSHED AND BLASTED WITH COMPRESSED AIR PRIOR TO INSTALLATION.
   TEMPERATURES/METHODS/WORKING TIME/ETC. ARE TO BE IN ACCORDANCE WITH MANUFACTURER SPECIFICATIONS.
4. REFERENCE ICC-ES ESR-1917 REPORT.

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T-MOBILE SITE NUMBER:
CTHA610A

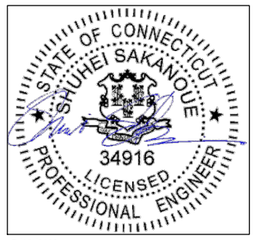
BU #: **846293**
TOLLAND - PETER GREEN

319 PETER GREEN ROAD
TOLLAND, CT 06084

EXISTING 119'-0" MONOPOLE

ISSUED FOR:

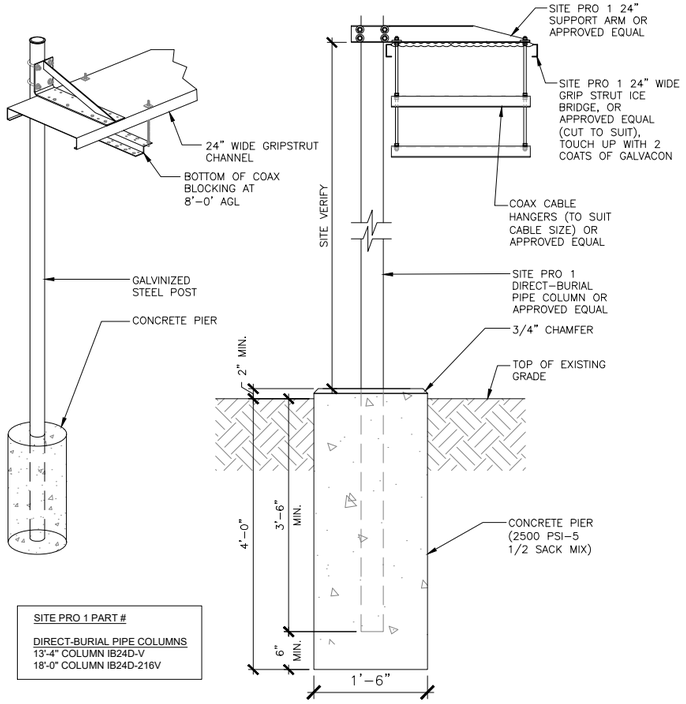
REV	DATE	DRWN	DESCRIPTION	DES./QA
A	06/20/2022	RCD	PRELIMINARY	SS
0	07/18/2022	RCD	100% FINALS	SS



07/18/2022

SHEET NUMBER: C-7

REVISION: 0

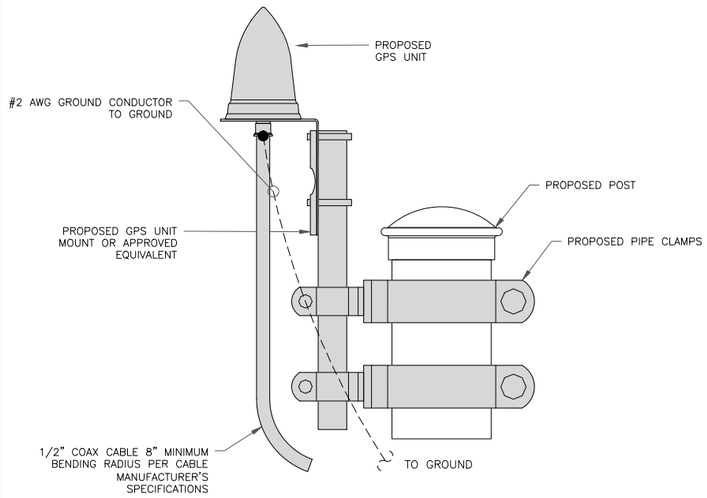


1 CABLE BRIDGE DETAIL
SCALE: NOT TO SCALE

2 NOT USED
SCALE: NOT TO SCALE

INSTALLER NOTES:

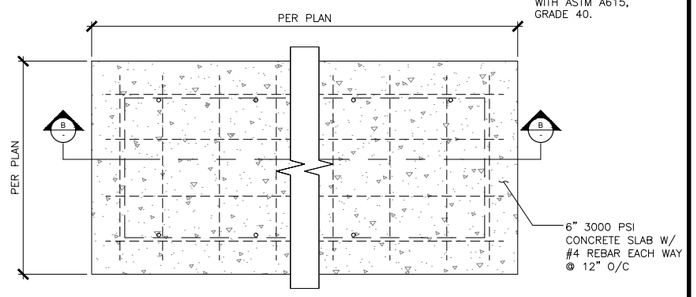
CABLE GROUNDING NOT REQUIRED WHEN ANTENNA IS LESS THAN 10' FROM CABINET



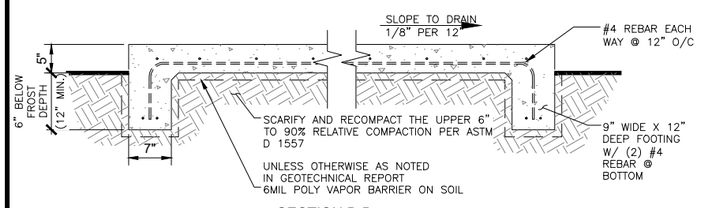
3 GPS DETAILS
SCALE: NOT TO SCALE

NOTES:

1. CONCRETE SHALL ATTAIN A COMPRESSIVE STRENGTH OF f'c=3,000 PSI MINIMUM AT 28 DAYS.
2. ALL REINFORCING STEEL SHALL COMPLY WITH ASTM A615, GRADE 40.



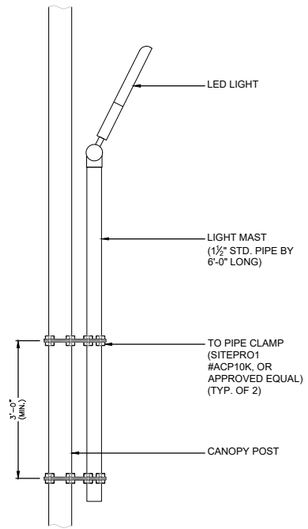
PLAN VIEW



SECTION B-B

4 (N) CONCRETE PAD DETAIL
SCALE: NOT TO SCALE

5 NOT USED
SCALE: NOT TO SCALE



6 LED LIGHT DETAIL
SCALE: NOT TO SCALE

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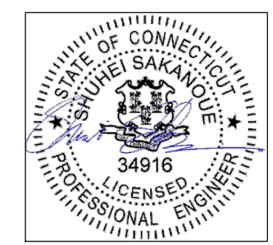
EXISTING 119'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	06/20/2022	RCD	PRELIMINARY	SS
0	07/18/2022	RCD	100% FINALS	SS



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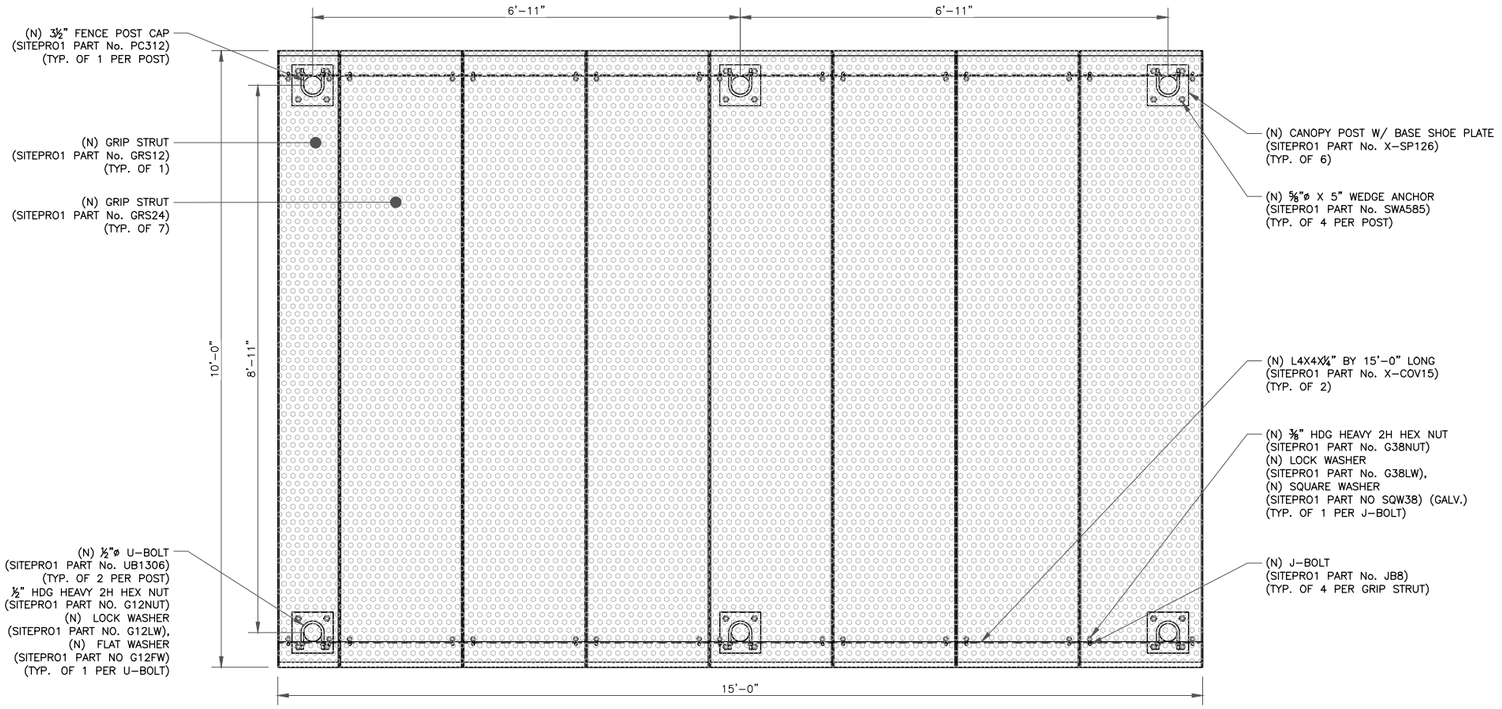
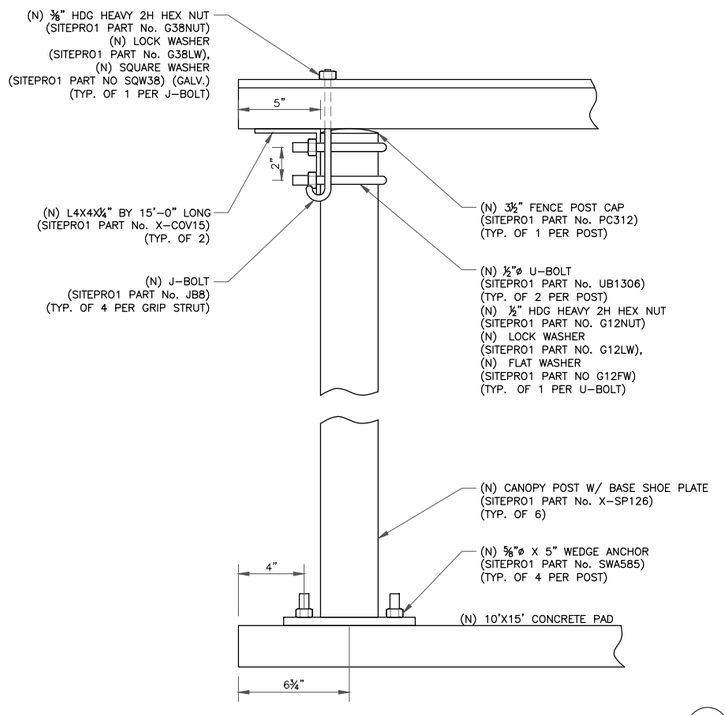
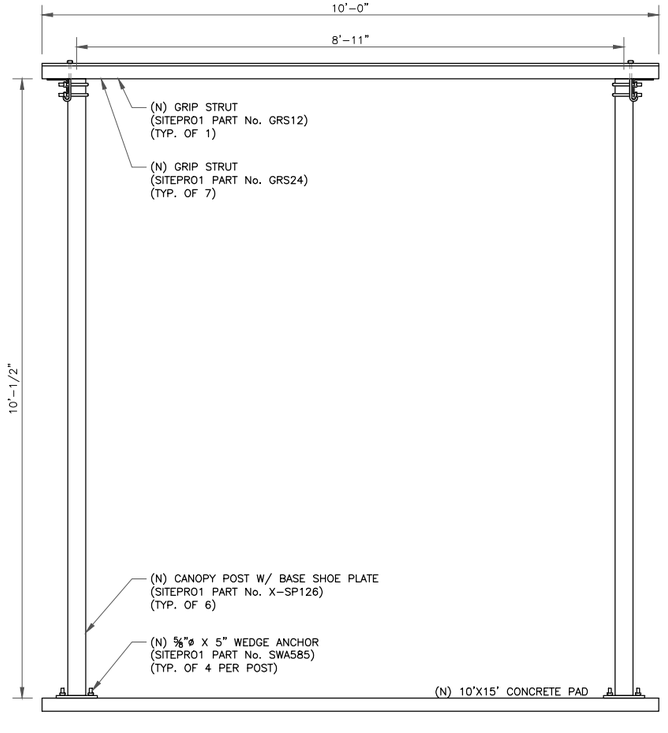
SHEET NUMBER: C-8

REVISION: 0





1 CANOPY DETAIL
SCALE: NOT TO SCALE



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EXISTING 119'-0" MONOPOLE

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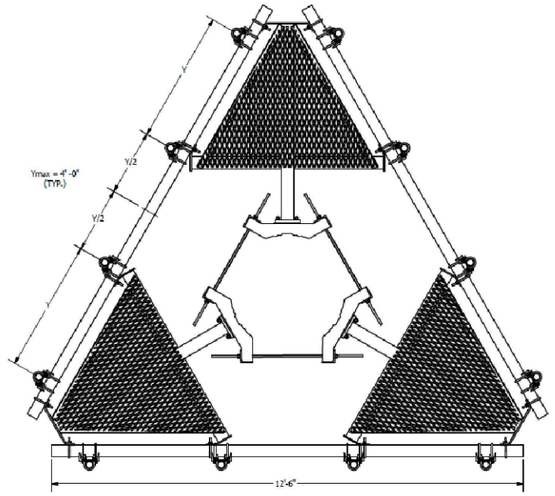
0	07/18/2022	RCD	100% FINALS	SS

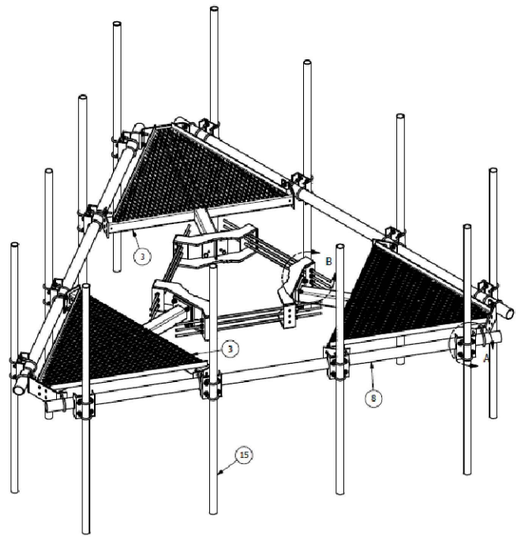
STATE OF CONNECTICUT
SHUHEI SAKANOUE
34916
LICENSED PROFESSIONAL ENGINEER

07/18/2022

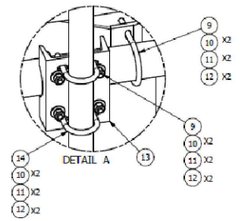
SHEET NUMBER: C-9

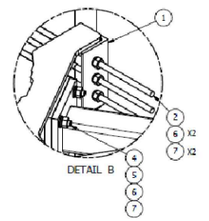
REVISION: 0





PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	3	X-LWRM	RING MOUNT WELDMENT		68.81	206.42
2	9	GS8R-48	5/8" x 48" THREADED ROD (HDG.)		0.40	3.59
2	9	GS8R-24	5/8" x 24" THREADED ROD (HDG.)		0.40	3.59
3	3	X-SV196	LAW PROFILE PLATFORM CORNER		212.10	636.31
4	12	A8G2H	5/8" x 2-3/4" HDG A325 HEX BOLT	2.75	0.36	4.27
5	12	A58FW	5/8" HDG A325 FLATWASHER		0.03	0.41
6	30	G58LW	5/8" HDG LOCKWASHER		0.03	0.78
7	30	A58NUT	5/8" HDG A325 HEX NUT		0.13	3.90
8	3	P3150	3-1/2" X 150" SCH 40 GALVANIZED PIPE	150.000 in	94.80	284.40
9	36	X-UB1306	1/2" X 3-5/8" X 6" X 3" U-BOLT (HDG.)		0.26	9.35
10	120	G12FW	1/2" HDG USS FLATWASHER		0.03	4.05
11	120	G12LW	1/2" HDG LOCKWASHER		0.01	1.67
12	120	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	8.60
13	12	X-SP219	SMALL SUPPORT CROSS PLATE	8.250 in	8.61	103.33
14	24	X-UB1212	1/2" X 2-1/2" X 4-1/2" X 2" U-BOLT (HDG.)		0.26	6.17
15	12	B	ANTENNA MOUNTING PIPE	C	D	E





2-3/8" O.D. VERTICAL MOUNTING PIPES					
ASSEMBLY NO. "A"	PART NO. "B"	LENGTH, "C"	UNIT WEIGHT, "D"	NET WEIGHT, "E"	TOTAL WEIGHT
RMQP-463	P263	63"	20.18	242.16	1591.11
RMQP-472	P272	72"	22.07	276.84	1625.79
RMQP-484	P284	84"	26.91	322.92	1671.87
RMQP-496	P296	96"	30.76	369.12	1718.07
RMQP-4126	P2126	126"	40.75	489.00	1837.95

TOLERANCE NOTE

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

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

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

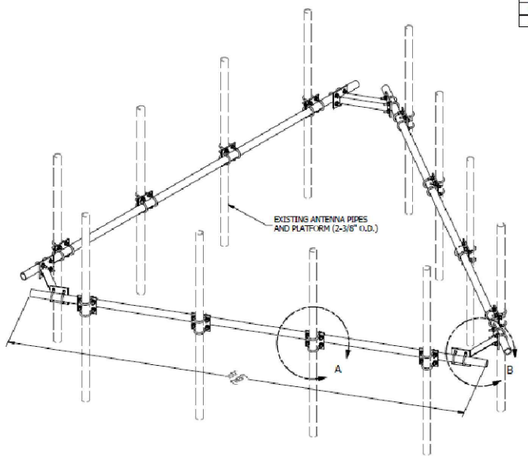
REVISION HISTORY

DESCRIPTION: LOW PROFILE CO-LOCATION PLATFORM FOR 12 ANTENNAS WITH 12' 6" FACE WIDTH FOR 12" - 36" DIAMETER POLES

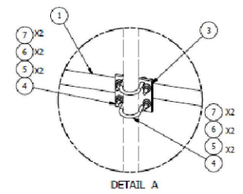
SITE PRO 1 — Engineering Support Team: 1-888-753-7446 — Locations: New York, NY; Atlanta, GA; Los Angeles, CA; Plymouth, IN; Salem, OR; Dallas, TX — A valmont / COMM

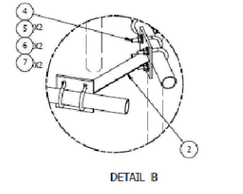
DRAWN BY	CPD NO.	DRAWING USAGE	PART NO.
CEK 1/20/2012	somb	CUSTOMER	SEE ASSEMBLY NO. "A"
ENG. APPROVAL	CHECKED BY		DWG. NO.
	BMC 7/9/2015		RMQP-4XX

1 OF 2 SHEETS



PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	3	P2150	2-3/8" O.D. X 150" SCH 40 GALVANIZED PIPE	150 in	45.77	137.31
2	3	X-AHCP	ANGLE HANDRAIL CORNER PLATE		12.92	38.76
3	12	SCX1	CROSSOVER PLATE 2-3/8" X 2-3/8"	6 in	3.71	44.50
4	60	X-UB1212	1/2" X 2-1/2" X 4-1/2" X 2" U-BOLT (HDG.)		0.63	37.51
5	120	G12FW	1/2" HDG USS FLATWASHER	1/32 in	0.03	4.09
6	120	G12LW	1/2" HDG LOCKWASHER	1/8 in	0.01	1.67
7	120	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	8.60
					TOTAL WT. #	271.43





TOLERANCE NOTES

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

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

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

REVISION HISTORY

DESCRIPTION: HANDRAIL KIT FOR 12'-6" FACE

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

CPD NO.	DRAWN BY	ENG. APPROVAL	PART NO.
	KCB 5/30/2012		HRK12
CLASS / SUB	DRAWING USAGE	CHECKED BY	DWG. NO.
81 / 01	CUSTOMER	BMC 7/13/2014	HRK12

1 OF 1 SHEETS

1 MOUNTING DETAIL
SCALE: NOT TO SCALE

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CTHA610A

BU #: **846293**
TOLLAND - PETER GREEN

319 PETER GREEN ROAD
TOLLAND, CT 06084

EXISTING 119'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
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0	07/18/2022	RCD	100% FINALS	SS

STATE OF CONNECTICUT
SHUHEI SAKAMOTO
34916
LICENSED PROFESSIONAL ENGINEER

07/18/2022

SHEET NUMBER: C-10
REVISION: 0

GENERAC | INDUSTRIAL POWER

SD050

CUSTOM MODEL

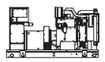
Industrial Diesel Generator Set

EPA Emissions Certification: Tier III

50 kW Diesel

1 of 5

Standby Power Rating
50KW 60 Hz



features	benefits
Generator Set	
PROTOTYPE & TORSIONALLY TESTED	PROVIDES A PROVEN UNIT
UL2200 TESTED	ENSURES A QUALITY PRODUCT
RHINOCOAT PAINT SYSTEM	IMPROVES RESISTANCE TO ELEMENTS
SOUND LEVEL 2 ENCLOSURE	71dbA @ 7 METERS (23FT)
Engine	
EPA TIER CERTIFIED	ENVIRONMENTALLY FRIENDLY
INDUSTRIAL TESTED, GENERAC APPROVED	ENSURES INDUSTRIAL STANDARDS
POWER-MATCHED OUTPUT	ENSURES PERFORMANCE
INDUSTRIAL GRADE	IMPROVES LONGEVITY AND RELIABILITY
Alternator	
TWO-THIRDS PITCH	ELIMINATES HARMFUL 3RD HARMONIC
LAYER WOUND ROTOR & STATOR	IMPROVES COOLING
CLASS H MATERIALS	HEAT TOLERANT DESIGN
DIGITAL 3-PHASE VOLTAGE CONTROL	FAST AND ACCURATE RESPONSE
Controls	
ENCAPSULATED BOARD W/ SEALED HARNESS	EASY, AFFORDABLE REPLACEMENT
4-20mA VOLTAGE-TO-CURRENT SENSORS	NOISE RESISTANT 24/7 MONITORING
SURFACE-MOUNT TECHNOLOGY	PROVIDES VIBRATION RESISTANCE
ADVANCED DIAGNOSTICS & COMMUNICATIONS	HARDENED RELIABILITY

primary codes and standards

NEMA

GENERAC | INDUSTRIAL POWER

SD050 application and engineering data

50 kW Diesel

2 of 5

ENGINE SPECIFICATIONS

General	
Make	Iveco / F PT
EPA Emissions Compliance	Tier III
EPA Emissions Reference	See Emissions Data Sheet
Cylinder #	4
Type	Diesel
Displacement - L (cu. in.)	4.5 (274)
Bore - mm (in.)	105 (4.1)
Stroke - mm (in.)	132 (5.2)
Compression Ratio	17.5:1
Intake Air Method	Turbocharged
Cylinder Head Type	2 Valve
Piston Type	Aluminum
Crankshaft Type	Forged Steel
Engine Block Type	Cast Iron / Wet Sleeve

Engine Governing	
Governor	Electronic Isochronous
Frequency Regulation (Steady State)	+/- 0.25%

Lubrication System	
Oil Pump Type	Gear
Oil Filter Type	Full Flow
Crankcase Capacity - L (gal)(qts)	13.6 (3.6) (14.4)

Cooling System	
Cooling System Type	Closed
Water Pump	Belt Driven Centrifugal
Fan Type	Pusher
Fan Blade Number	2538 (10)
Fan Diameter (in.)	26
Coolant Heater Wattage	1500
Coolant Heater Standard Voltage	120

Fuel System	
Fuel Type	Ultra Low Sulfur Diesel Fuel
Fuel Specifications	ASTM
Fuel Filtering (microns)	5
Fuel Inject Pump Make	Standyne
Fuel Pump Type	Engine Driven Gear
Injector Type	Mechanical
Engine Type	Direct Injection
Fuel Supply Line - mm (in.)	1/4 inch Npt
Fuel Return Line - mm (in.)	1/4 inch Npt

Engine Electrical System	
System Voltage	12VDC
Battery Charging Alternator	90 Amp
Battery Size (at 0 oC)	Optima Redtop
Battery Group	34
Battery Voltage	12VC
Ground Polarity	Negative

ALTERNATOR SPECIFICATIONS

Standard Model	390
Poles	4
Field Type	Revolving
Insulation Class - Rotor	H
Insulation Class - Stator	H
Total Harmonic Distortion	< 3.5%
Telephone Interference Factor (TIF)	< 50
Standard Excitation	PMG
Bearings	Single Sealed Cartridge
Coupling	Direct, Flexible Disc
Load Capacity - Standby	100%
Load Capacity - Prime	100%
Prototype Short Circuit Test	Y

Voltage Regulator Type	Digital
Number of Sensed Phases	All
Regulation Accuracy (Steady State)	+/- 0.25%

CODES AND STANDARDS COMPLIANCE (WHERE APPLICABLE)

NFPA 99
NFPA 110
ISO 8528-5
ISO 1208A.5
ISO 3046
BS5514
SAE J1349
DIN6271
IEEE C62.41 TESTING
NEMA ICS 1

Rating Definitions:
Standby – Applicable for a varying emergency load for the duration of a utility power outage with no overload capability. (Max. load factor = 70%)
Prime – Applicable for supplying power to a varying load in lieu of utility for an unlimited amount of running time. (Max. load factor = 60%) A 10% overload capacity is available for 1 out of every 12 hours.

GENERAC | INDUSTRIAL POWER

SD050 operating data (60Hz)

50 kW Diesel

3 of 5

POWER RATINGS (kW)

	STANDBY
Single-Phase 120/240VAC @1.0pf	50 Amps: 208
Three-Phase 120/208VAC @0.8pf	- Amps: -
Three-Phase 120/240VAC @0.8pf	- Amps: -
Three-Phase 277/480VAC @0.8pf	- Amps: -
Three-Phase 346/600VAC @0.8pf	- Amps: -

NOTE: Generator output limited to 100%

STARTING CAPABILITIES (sKVA)

sKVA vs. Voltage Dip

Alternator*	kW	480VAC 30%	35%	40%	45%	50%	55%	208/240VAC 20%	25%	30%	35%	40%	45%
Standard	50	-	-	-	-	-	-	26	39	52	65	77	90
Upsize 1		-	-	-	-	-	-	-	-	-	-	-	-
Upsize 2		-	-	-	-	-	-	-	-	-	-	-	-

*All Generac industrial alternators utilize Class H insulation materials. Standard alternator provides less than or equal to Class B temperature rise. Upsize 1 provides less than or equal to Class B temperature rise. Upsize 2 provides less than, or equal

FUEL

Fuel Pump Lift - in (m)
36(.9)

Fuel Consumption Rates

	STANDBY	
Percent Load	gph	lph
25%	1.52	5.75
50%	2.33	8.82
75%	3.08	11.65
100%	4.15	15.71

COOLING

Coolant System Capacity - Gal (L)
4.5 (17.44)

Maximum Radiator Backpressure
1.5" H2O Column

		STANDBY
Coolant Flow per Minute	gpm (lpm)	32.7(123.8)
Heat rejection to Coolant	BTU/min	123,000
Inlet Air	cfm (m3/min)	6,360 (180.0)
Max. Operating Radiator Air Temp	°F (°C)	122(50)
Max. Operating Ambient Temperature	°F (°C)	122(50)

COMBUSTION AIR REQUIREMENTS

		STANDBY
Intake Flow at Rated Power	cfm (m3/min)	247 (7.00)

EXHAUST

Exhaust Outlet Size (Open Set)
3.0"

Maximum Backpressure (Post-Silencer)
1.5" Hg

		STANDBY
Exhaust Flow (Rated Output)	cfm (m3/hr)	534(906.7)
Maximum Backpressure	inHg (Kpa)	1.5 (5.1)
Exhaust Temp (Rated Output)	°F (°C)	930(498.8)

ENGINE

		STANDBY
Rated Engine Speed	rpm	1800
Horsepower at Rated kW	hp	93
Temperature Deration		Consult Factory
Altitude Deration		Consult Factory

* DA units include aftertreatment

Deration – Operational characteristics consider maximum ambient conditions. Derate factors may apply under atypical site conditions. Please consult a Generac Power Systems Industrial Dealer for additional details. All performance ratings in accordance with ISO3046, BS5514, ISO8528 and DIN6271 standards.

GENERAC | INDUSTRIAL POWER

SD050 standard features and options

50 kW Diesel

4 of 5

GENERATOR SET

Genset Vibration Isolation	Std
Factory Testing	Std
Extended warranty	Std
Padlockable Doors	Std
Steel Enclosure (Enclosed Models)	Std
Remote Emergency Shutdown	Opt

ENGINE SYSTEM

General

Oil Drain Extension	Std
Air Cleaner	Std
Industrial Exhaust Silencer (Open Sets, ship loose)	Std
Critical Exhaust Silencer (Enclosed Sets)	Std
Stainless steel flexible exhaust connection	Std

Fuel System

Primary Fuel Filter with Water Separator	Std
Flexible Fuel Lines	Std
UL142 Fuel Tank, 48 Hr Runtime	Std
2 Gal Overflow Containment with Alarm	Std

Cooling System

120VAC Coolant Heater (3-wire connection cord)	Std
50%/50% Coolant	Std
Level 1 Guarding (Open Sets)	Std
Closed Coolant Recovery System	Std
UV/Ozone resistant hoses	Std
Factory-Installed Radiator	Std
Radiator Drain Extension	Std
Fan guard	Std
Radiator duct adapter (Open Sets)	Std

Engine Electrical System

Battery charging alternator	Std
Battery cables	Std
Battery tray	Std
75W 120VAC Battery heater	Std
Solenoid activated starter motor	Std
10A UL float/equalize battery charger	Std
Weather Resistant electrical connections	Std
Duplex GFCI Convenience Outlet	Std

ALTERNATOR SYSTEM

UL2200 GENprotect™	Std
100% Rated 200A Main Line Circuit Breaker	Std

CONTROL SYSTEM

Control Panel

Digital H Control Panel - Dual 4x20 Display	Std
Programmable Crank Limiter	Std
7-Day Programmable Exerciser (requires H-Transfer Switch)	Std
Special Applications Programmable PLC	Std
RS-232	Std
RS-485	Std
All-Phase Sensing DVR	Std
Full System Status	Std
Utility Monitoring (Req. H-Transfer Switch)	Std
2-Wire Start Compatible	Std
Power Output (kW)	Std
Power Factor	Std
Reactive Power	Std
All phase AC Voltage	Std
All phase Currents	Std
Oil Pressure	Std
Coolant Temperature	Std
Coolant Level	Std
Low Fuel Pressure Indication	Std
Engine Speed	Std
Battery Voltage	Std
Frequency	Std
Date/Time Fault History (Event Log)	Std
UL2200 GENprotect™	Std
Low-Speed Exercise	Opt
Isochronous Governor Control	Std
-40deg C - 70deg C Operation	Std
Weather Resistant Electrical Connections	Std
Audible Alarms and Shutdowns	Std
Not In Auto (Flashing Light)	Std
On/Off/Manual Switch	Std
E-Stop (Red Mushroom-Type)	Std
Remote E-Stop (Break Glass-Type, Surface Mount)	-
Remote E-Stop (Red Mushroom-Type, Surface Mount)	-
Remote E-Stop (Red Mushroom-Type, Flush Mount)	-
NFPA 110 Level 1 and II (Programmable)	Std
Remote Communication - RS232	Std

Alarms (Programmable Tolerances, Pre-Alarms and Shutdowns).

Low Fuel	Std
Oil Pressure (Pre-programmed Low Pressure Shutdown)	Std
Coolant Temperature (Pre-programmed High Temp Shutdo	Std
Coolant Level (Pre-programmed Low Level Shutdown)	Std
Engine Speed (Pre-programmed Overspeed Shutdown)	Std
Voltage (Pre-programmed Overvoltage Shutdown)	Std
Battery Voltage	Std

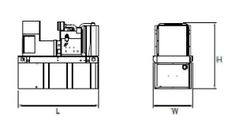
Other Options
- Single Side Service
-
-

GENERAC | INDUSTRIAL POWER

SD050 dimensions, weights and sound levels

50 kW Diesel

5 of 5



OPEN SET

TANK SIZE RUNTIME HOURS	CAPACITY (GAL)	TANK VOLUME	L	W	H	WT	dBA*
-	-	-	-	-	-	-	84
-	-	-	-	-	-	-	
-	-	-	-	-	-	-	
-	-	-	-	-	-	-	
-	-	-	-	-	-	-	
48	210	210	76	38	87	3400	
-	-	-	-	-	-	-	
-	-	-	-	-	-	-	

LEVEL 2 SOUND ENCLOSURE

TANK SIZE RUNTIME HOURS	CAPACITY (GAL)	TANK VOLUME	L	W	H	WT	dBA*
-	-	-	-	-	-	-	71
-	-	-	-	-	-	-	
-	-	-	-	-	-	-	
-	-	-	-	-	-	-	
-	-	-	-	-	-	-	
48	210	210	94.8	38	99	3935	
-	-	-	-	-	-	-	
-	-	-	-	-	-	-	

*Required gallons based on 100% of standby rating. Weights consider steel enclosure and are without fuel in tank. Sound levels measured at 23ft (7m) and does not account for ambient site conditions.

YOUR FACTORY RECOGNIZED GENERAC INDUSTRIAL DEALER

Specification characteristics may change without notice. Dimensions and weights are for preliminary purposes only. Please consult a Generac Power Systems Industrial Dealer for detailed installation drawings.

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BU #: **846293**
TOLLAND - PETER GREEN

319 PETER GREEN ROAD
TOLLAND, CT 06084

EXISTING 119'-0" MONOPOLE

ISSUED FOR:

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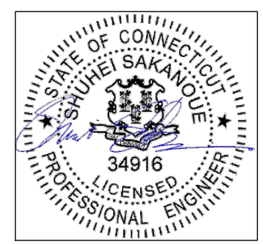
A	06/20/2022	RCD	PRELIMINARY	SS
0	07/18/2022	RCD	100% FINALS	SS



07/18/2022

SHEET NUMBER: C-11

REVISION: 0

PANELBOARD "T-MOBILE" SCHEDULE

MAIN: 200 AMP MAIN BREAKER			**VOLTAGE/PHASE**: 120/240V, 1-PHASE, 3-WIRE									
MOUNTING: H-FRAME			**ENCLOSURE**: NEMA 3R							**SURGE PROTECTION DEVICE**: YES		
BUS: 200 AMP			**MANUFACTURER**: V.I.F.							**MODEL NUMBER**: V.I.F.		
DESCRIPTION	LOAD (VA)	C or NC	C/B	CIR No.	LOAD (VA) A-PHASE	LOAD (VA) B-PHASE	CIR No.	C/B	C or NC	LOAD (VA)	DESCRIPTION
SURGE SUPPRESSION	1	NC	60	1	1921		2	20	NC	1920	GEN BLOCK HEATER
	1			3		1921	4	20	NC	1920	GEN BATT CHARGER
6160	7000	C	100	5	7200		6	20	NC	200	LIGHT
	7000			7		7180	8	20	NC	180	GFI
6161 GFI	180	NC	20	9	360		10	20	NC	180	TELCO GFI
				11		0	12				
				13	0		14				
				15		0	16				
				17	0		18				
				19		0	20				
				21	0		22				
				23		0	24				
BASE LOAD (VA) =					9481	9101					
25% OF CONTINUOUS LOAD (VA) =					1750	1750					
TOTAL LOAD (VA) =					11231	10851					
TOTAL LOAD (A) =					94	90					

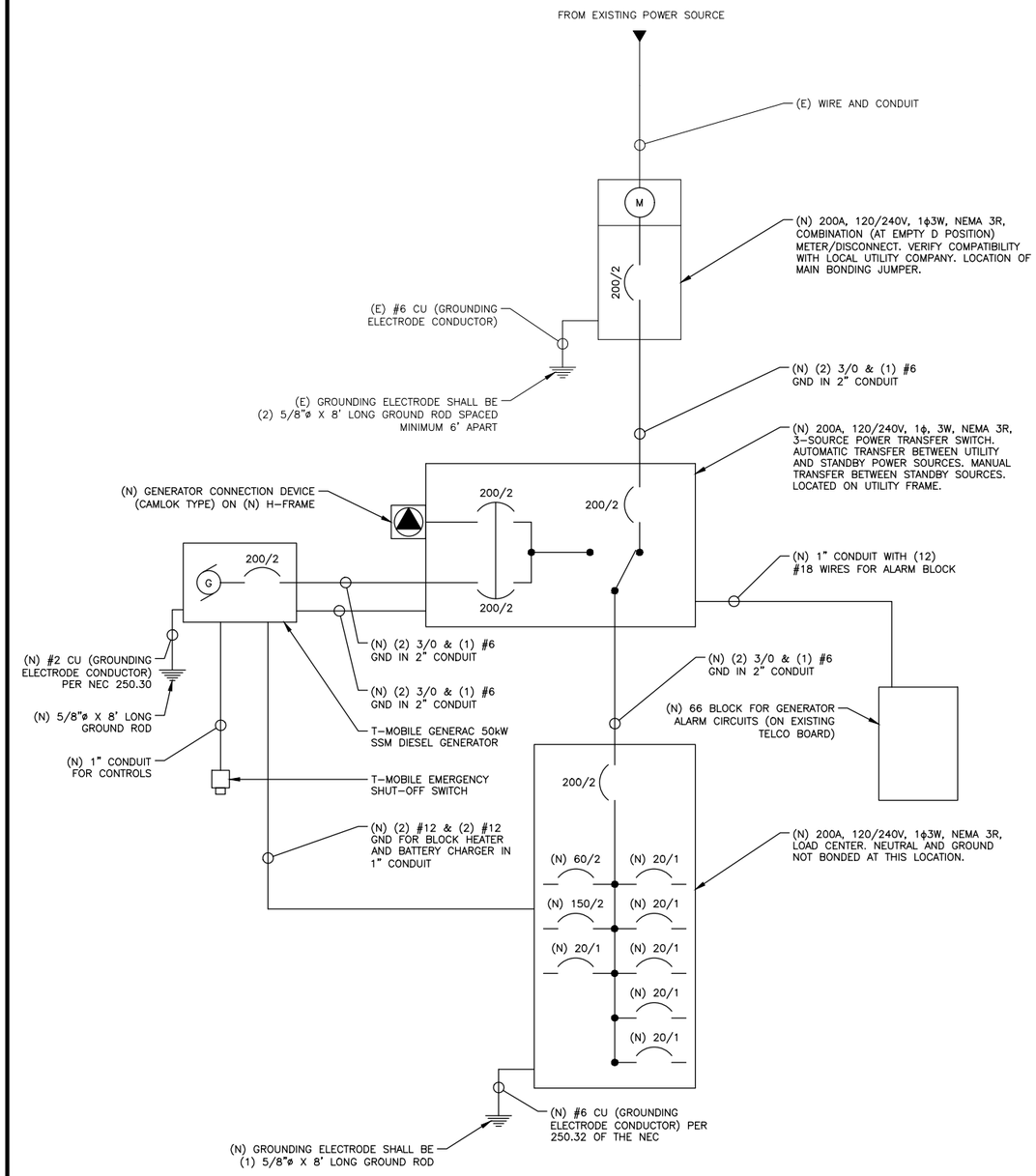
C = CONTINUOUS LOAD; NC = NON-CONTINUOUS LOAD

ALL LOADS ARE EXISTING UNLESS NOTED OTHERWISE.

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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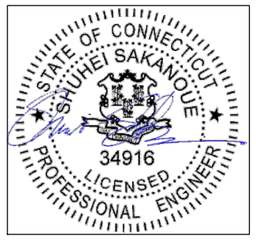
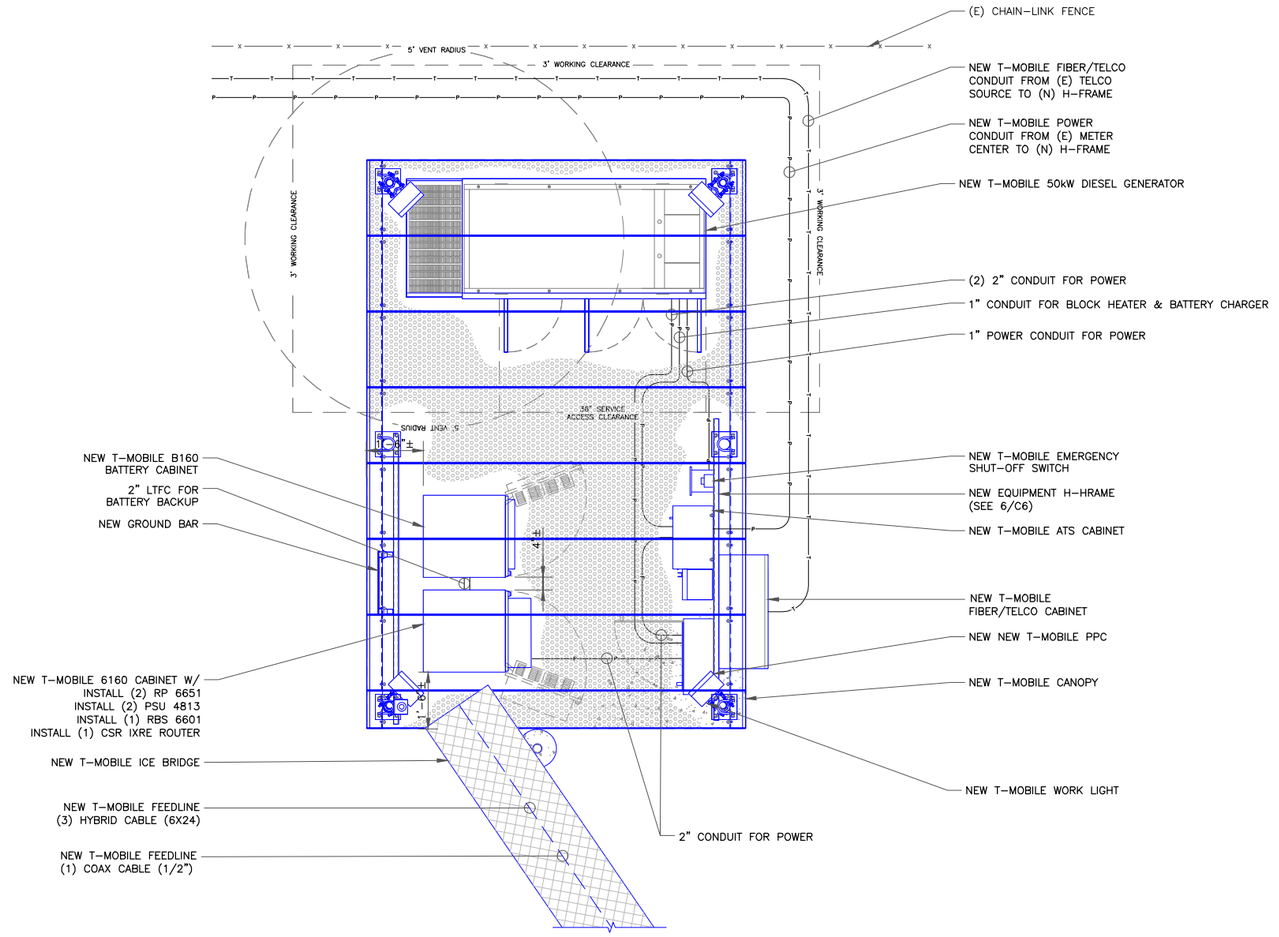


07/18/2022

SHEET NUMBER: E-1

REVISION: 0



NOTE:

NEW CONDUIT ROUTING IS SCHEMATIC ONLY, CONTRACTOR SHALL DETERMINE SUITABLE ROUTING IN FIELD.

ELECTRICAL DISTRIBUTION:	TELCO DISTRIBUTION:
• (1) 2" FROM POWER SOURCE TO ATS (FOR POWER) • (2) 2" FROM ATS TO GEN (FOR POWER) • (1) 2" FROM ATS TO PPC (FOR POWER) • (1) 1" FROM PPC TO GEN (FOR GEN BATT CHARGER & GEN BLOCK HEATER) • (1) 2" FROM PPC TO 6160 (FOR POWER) • (1) 2" FROM 6160 TO B160 (FOR DISTRIBUTION) • (1) 1" FROM GEN TO EMERGENCY STOP (FOR CONTROLS)	• (1) 2" FROM TELCO SOURCE TO TELCO CAB (FOR TELCO) • (1) 1" FROM ATS TO TELCO CAB (FOR ALARM) • (1) 1" FROM TELCO CAB TO 6160 (FOR TELCO)

1 UTILITY ROUTING
SCALE: NOT TO SCALE

N

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STATE OF CONNECTICUT
SHUHEI SAKANOUE
34916
LICENSED PROFESSIONAL ENGINEER

07/18/2022

SHEET NUMBER: E-2

REVISION: 0

GROUNDING PLAN LEGEND:

--- GROUND WIRE

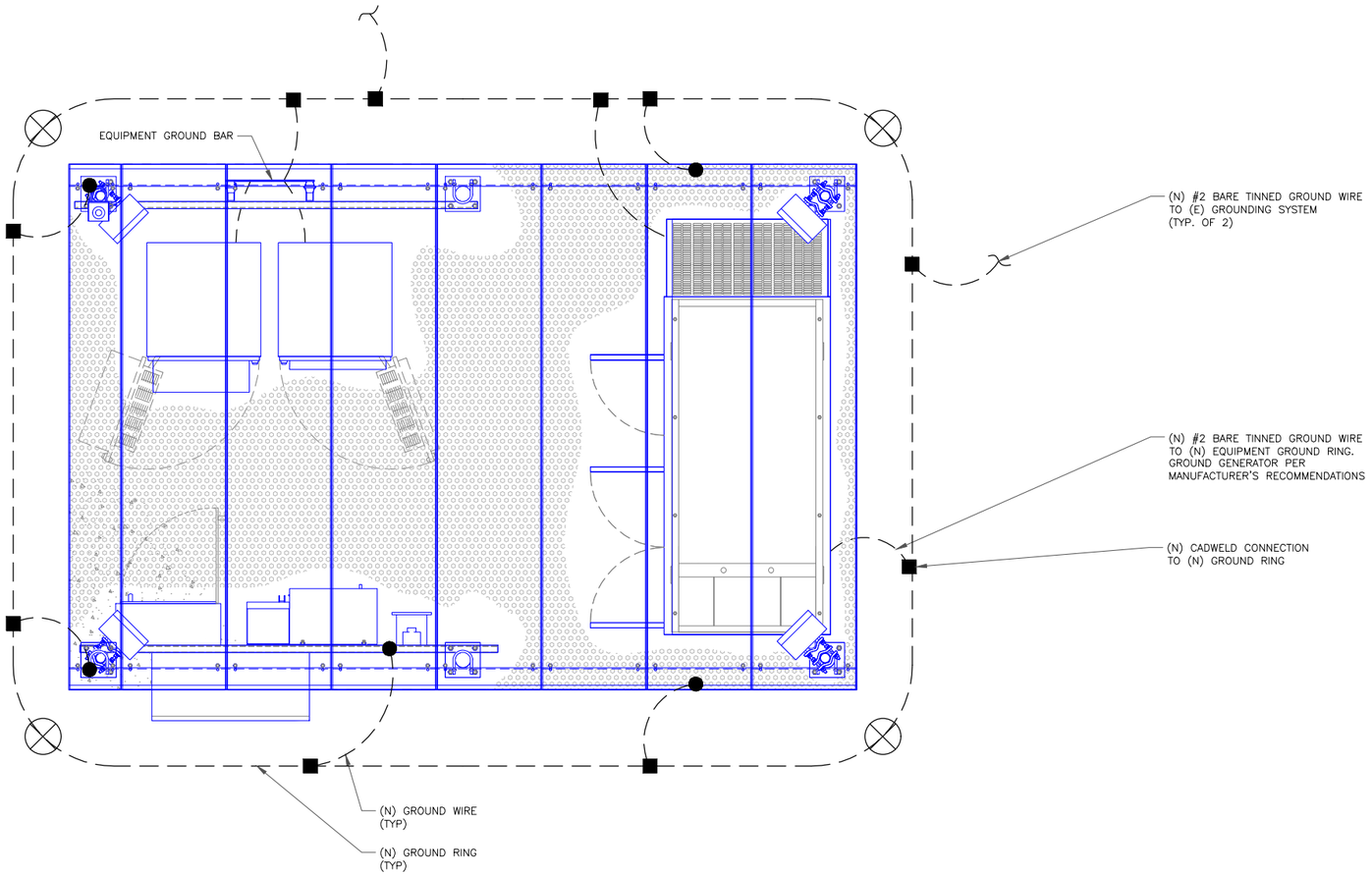
■ EXOTHERMIC WELD

● MECHANICAL CONNECTION

⊗ NEW GROUND ROD, 5/8"ø x10'

GROUNDING NOTES:

1. IF MORE THAN 20' FROM EXISTING GROUND RING, INSTALL GROUND ROD (5/8" x 10'). ROD SPACING: 8' MAX. TOP OF ROD AND GROUND WIRE TO BE AT GROUND RING DEPTH BELOW FROST LINE.
2. ALL GROUND CONDUCTORS SHALL BE COPPER, 75 DEGREES C RATED, AND CONDUCTOR INSULATION BE THWN OR THHN.
3. GROUND FAULT PROTECTION REQUIRED FOR UTILITY RECEPTACLES.
4. GENERATOR NEUTRAL SHALL NOT BE GROUNDED AT THE GENERATOR. REFER TO SINGLE LINE DETAIL
5. EQUIPMENT LOCATED OUTSIDE OR EXPOSED TO MOISTURE SHALL BE NEMA 3R RATED.



1 TYPICAL GROUNDING SCHEMATIC
SCALE: NOT TO SCALE

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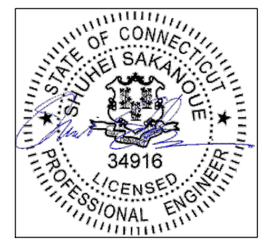
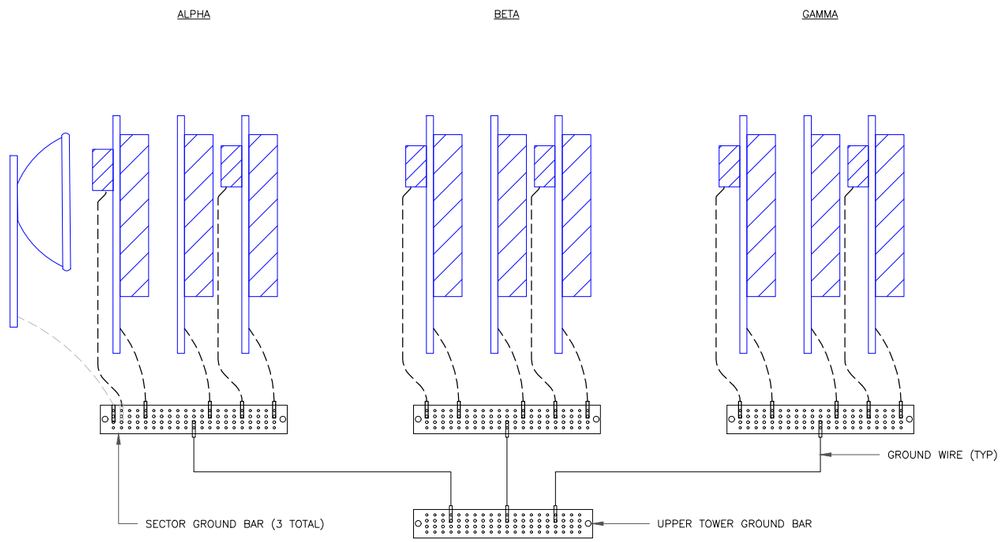


07/18/2022

SHEET NUMBER: G-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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EXISTING 119'-0" MONOPOLE

ISSUED FOR:

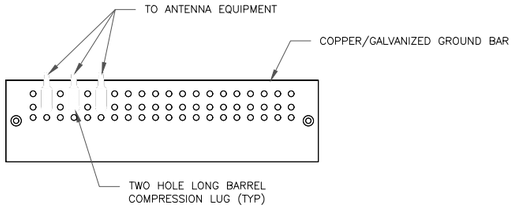
REV	DATE	DRWN	DESCRIPTION	DES./QA
A	06/20/2022	RCD	PRELIMINARY	SS
0	07/18/2022	RCD	100% FINALS	SS

STATE OF CONNECTICUT
SHUHEI SAKANOUE
34916
LICENSED PROFESSIONAL ENGINEER

07/18/2022

SHEET NUMBER: G-2

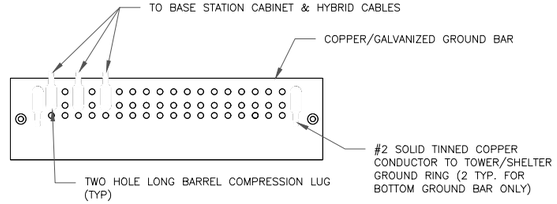
REVISION: 0



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.

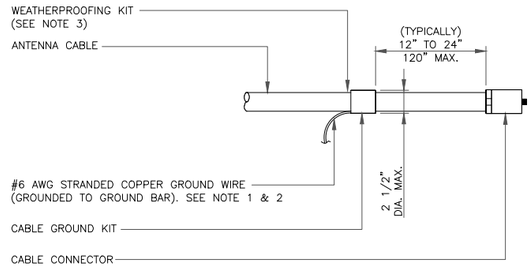
1 ANTENNA SECTOR GROUND BAR DETAIL
SCALE: NOT TO SCALE



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.

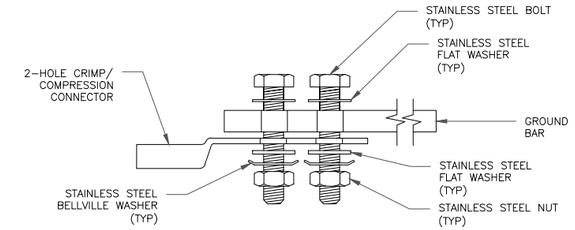
2 TOWER/SHELTER GROUND BAR DETAIL
SCALE: NOT TO SCALE



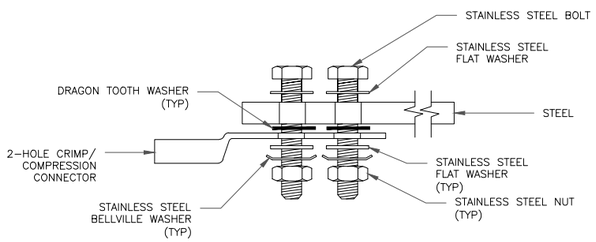
NOTES:

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.

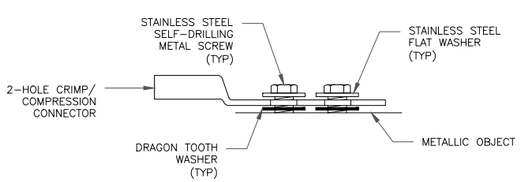
3 CABLE GROUND KIT CONNECTION
SCALE: NOT TO SCALE



SINGLE CONNECTOR AT GROUND BARS

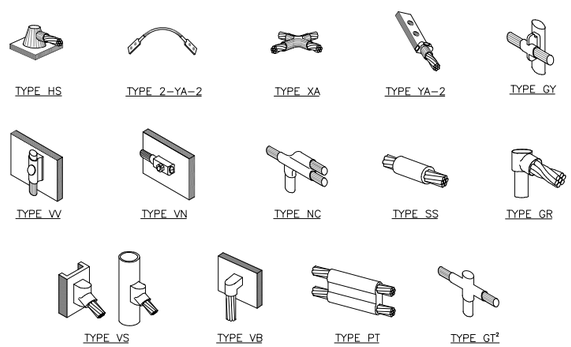


SINGLE CONNECTOR AT STEEL OBJECTS



SINGLE CONNECTOR AT METALLIC/STEEL OBJECTS

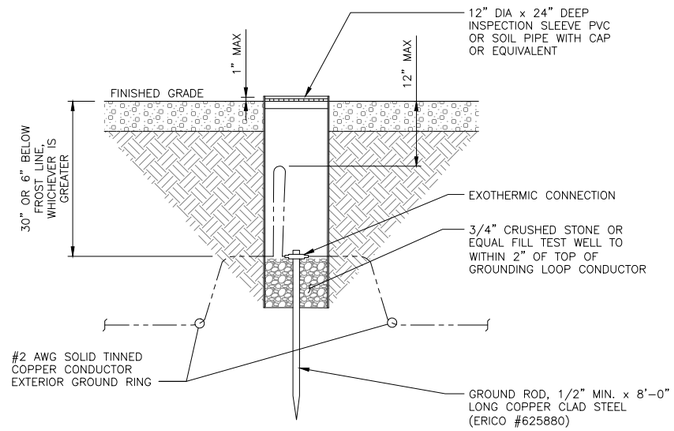
4 HARDWARE DETAIL FOR EXTERIOR CONNECTIONS
SCALE: NOT TO SCALE



NOTE:

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

5 CADWELD GROUNDING CONNECTIONS
SCALE: NOT TO SCALE



6 GROUND ROD DETAIL
SCALE: NOT TO SCALE

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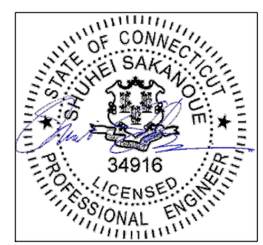
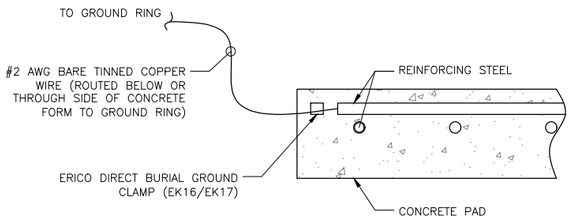
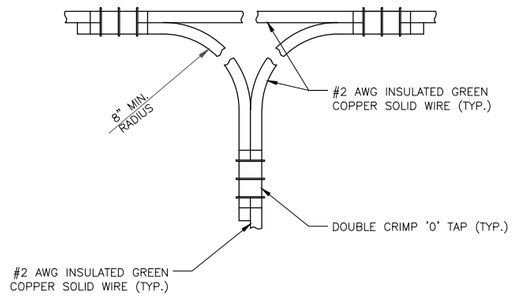


07/18/2022

SHEET NUMBER: G-3
REVISION: 0



1 REBAR GROUNDING DETAIL
SCALE: NOT TO SCALE



2 CONNECTION TO GROUND RING
SCALE: NOT TO SCALE

3 NOT USED
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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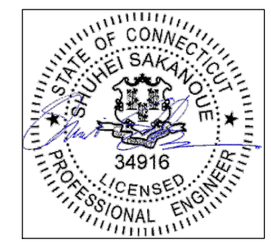

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