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

August 2, 2022

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

RE: **Tower Share Application-T-Mobile: CTHA134A**
Crown Site ID#842877
750 Rainbow Road, Windsor, CT 06095
Latitude: 41° 55′ 9.43″ / Longitude: -72° 42′ 37.57″

Dear Ms. Bachman:

T-Mobile proposes to install nine (9) antennas, six (6) remote radios, one (1) microwave dish at the 55-foot mount on the existing 101-foot monopole tower located at 750 Rainbow Road, Windsor 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 Town of Windsor 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-4096 Antenna Mount Handrail Kit

Ground:

Install New:

(1) 6160 & (1) B160 Battery Cabinets
(2) PSU 4813 Voltage Booster
(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 Town of Windsor Planning & Zoning on May 15, 2003.

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 Donald Trinks, Mayor, Town of Windsor CT, Eric Barz, Town Planner, Town of Windsor CT. Crown Castle is the tower owner and Town of Windsor is the property 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 101' and T-Mobile antennas will be placed at the 55' 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 Windsor. 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 55-foot level of the existing 101-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 Windsor.

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:

Donald Trinks, Mayor
Town of Windsor
275 Broad Street
Windsor, CT 06095
(860) 285-1981

Eric Barz, Town Planner
Town of Windsor
275 Broad Street
Windsor, CT 06095
(860) 285-1981

Town of Windsor, Property Owner

Crown Castle, Tower Owner

I, Anita M. Mips, Chairperson of the Windsor Town Planning and Zoning Commission, hereby certify that on December 10, 2002 the Planning and Zoning Commission of the Town of Windsor granted approval of a Special Use for a wireless telecommunications tower facility under Zoning Regulations Section 2.2.19E(1) and Section 12.2 as presented by the applicant including a waiver in the amount of 129.9 feet from the fall zone requirement as requested by the applicant subject to the following condition:

> There shall be no lighting or paint striping of the tower as described in an FAA letter to the applicant which letter shall be presented to the Commission as part of the public record.

Said Special Use was granted for the property located at: 750 Rainbow Road

The owner of record of said parcel is: Town of Windsor

Dated at Windsor, Connecticut, this 15th day of May, 2003

_____ Chairperson

Public Act #75-317

Received for Record this _____ day of _____, 2002

_____ Attest: Town Clerk

RECEIVED FOR RECORD
WINDSOR TOWN CLERK
03 OCT 13 AM 10:46
VOL 1417 PG 233
BY Kathleen M. Quinn
TOWN CLERK

009235

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

Daniel F. Caruso
Chairman

October 24, 2007

Steven L. Levine
Real Estate Consultant
New Cingular Wireless PCS, LLC
500 Enterprise Drive
Rocky Hill, CT 06067-3900

RE: **EM-CING-047-052-131-142-164-071004** – New Cingular Wireless PCS, LLC notice of intent to modify existing telecommunications facilities located at 232 South Main Street, East Windsor; 319-321 New Britain Avenue, Farmington; 250 Meriden-Waterbury Turnpike, Southington; 5 Barbara Road, Tolland; and 750 Rainbow Road, Windsor, Connecticut.

Dear Mr. Levine:

At a public meeting held on October 16, 2007, the Connecticut Siting Council (Council) acknowledged your notice to modify these existing telecommunications facilities, pursuant to Section 16-50j-73 of the Regulations of Connecticut State Agencies with the condition that the modifications specified for the Tolland tower in the structural analysis report dated September 27, 2007, and sealed by Jaime Reyes, P.E., be performed prior to the antenna installation and that a signed letter from a Professional Engineer be submitted to the Council to certify that the modifications have been properly completed.

The proposed modifications are to be implemented as specified here and in your notice[s] dated October 4, 2007, including the placement of all necessary equipment and shelters within the tower compounds. The modifications are in compliance with the exception criteria in Section 16-50j-72 (b) of the Regulations of Connecticut State Agencies as changes to existing facility sites that would not increase tower heights, extend the boundaries of the tower sites, increase noise levels at the tower site boundaries by six decibels, and increase the total radio frequencies electromagnetic radiation power densities measured at the tower site boundaries to or above the standard adopted by the State Department of Environmental Protection pursuant to General Statutes § 22a-162. These facilities have also been carefully modeled to ensure that radio frequency emissions are conservatively below State and federal standards applicable to the frequencies now used on these towers.

This decision is under the exclusive jurisdiction of the Council. Please be advised that the validity of this action shall expire one year from the date of this letter. Any additional change to any of these facilities will require explicit notice to this agency pursuant to Regulations of Connecticut State Agencies Section 16-50j-73. Such notice shall include all relevant information regarding the proposed change with cumulative worst-case modeling of radio frequency exposure at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin 65. Any deviation from this format may result in the Council implementing enforcement proceedings pursuant to General Statutes § 16-50u including, without limitation, imposition of expenses resulting from such failure and of civil penalties in an amount not less than one thousand dollars per day for each day of construction or operation in material violation.

Thank you for your attention and cooperation.

Very truly yours,

Daniel F. Caruso For

Daniel F. Caruso
Chairman

DFC/MP/cm

c: The Honorable Linda L. Roberts, First Selectman, Town of East Windsor
Laurie Whitten, Town Planner, Town of East Windsor
The Honorable Donald Trinks, Mayor, Town of Windor
Mario Zavarella, Town Planner, Town of Windsor
The Honorable John Barry, Chairman Town Council, Town of Southington
Mary Hughes, Town Planner, Town of Southington
The Honorable Kathleen W. Bach, Chairman Town Council, Town of Tolland
Linda Farmer, Town Planner, Town of Tolland
The Honorable Mike Clark, Chairman Town Council, Town of Farmington
Jeffrey Ollendorf, Town Planner, Town of Farmington
Balch Communications
John Rogus
American Tower
Christopher B. Fisher, Esq., Cuddy & Feder LLP

New Cingular Wireless PCS, LLC
500 Enterprise Drive
Rocky Hill, Connecticut 06067-3900
Phone: (860) 513-7636
Fax: (860) 513-7190

Steven L. Levine
Real Estate Consultant

EM-CING-047-052-131-142-164-071004

HAND DELIVERED

October 4, 2007

Honorable Daniel F. Caruso, Chairman,
and Members of the Connecticut Siting Council
Connecticut Siting Council
10 Franklin Square
New Britain, Connecticut 06051

Re: New Cingular Wireless PCS, LLC notice of intent to modify 5 existing tele-communications facilities located in East Windsor, Farmington, Southington, Tolland, and Windsor

Dear Chairman Caruso and Members of the Council:

In order to accommodate technological changes, implement Uniform Mobile Telecommunications System ("UMTS") capability, and enhance system performance in the State of Connecticut, New Cingular Wireless PCS, LLC ("Cingular") plans to modify the equipment configurations at many of its existing cell sites. Please accept this letter and attachments as notification, pursuant to R.C.S.A. Section 16-50j-73, of construction which constitutes an exempt modification pursuant to R.C.S.A. Section 16-50j-72(b)(2). In compliance with R.C.S.A. Section 16-50j-73, a copy of this letter and attachments is being sent to the chief elected official of each of the municipalities in which an affected cell site is locate.

UMTS technology offers services to mobile computer and phone users anywhere in the world. Based on the Global System for Mobile (GSM) communication standard, UMTS is the planned worldwide standard for mobile users. UMTS, fully implemented, gives computer and phone users high-speed access to the Internet as they travel. They have the same capabilities even when they roam, through both terrestrial wireless and satellite transmissions.

Attached are summary sheets detailing the planned changes, including power density calculations reflecting the change in the effect of Cingular's operations at each affected site. Also included is documentation of the structural sufficiency of each tower to accommodate the revised antenna configuration.

The changes to the facilities do not constitute modifications as defined in Connecticut General Statutes ("C.G.S.") Section 16-50i(d) because the general physical characteristics of the facilities will not be significantly changed or altered. Rather, the planned changes to the facilities fall squarely within those activities explicitly provided for in R.C.S.A. Section 16-50j-72(b)(2).

1. In each instance, the height of the overall structure will be unaffected. Modifications to the existing sites include all or some of the following as necessary to bring each site into conformance with the plan:

- Replacement of existing panel antennas with new antennas of similar size, shape, and weight, or, installation of additional antennas of similar size, shape, and weight.
- Installation of small tower mount amplifiers ("TMA's") and/or diplexers to the platform on which the panel antennas are mounted to enhance signal reception.
- Installation of additional or larger coaxial cables as required.
- Installation of an additional equipment cabinet in existing shelters, or on existing or enlarged concrete pads.

None of these modifications will extend the height of the tower.

2. The proposed changes will not extend the site boundaries. There will be no effect on the site compound other than some enlarged equipment pads as noted in the following attachments.

3. The proposed changes will not increase the noise level at the existing facility by six decibels or more.

4. Radio frequency power density may increase due to use of one GSM channel for UMTS transmissions. However, the changes will not increase the calculated "worst case" power density for the combined operations at the site to a level at or above the applicable standard for uncontrolled environments as calculated for a mixed frequency site.

For the foregoing reasons, Cingular Wireless respectfully submits that the proposed changes at the referenced sites constitute exempt modifications under R.C.S.A. Section 16-50j-72(b)(2).

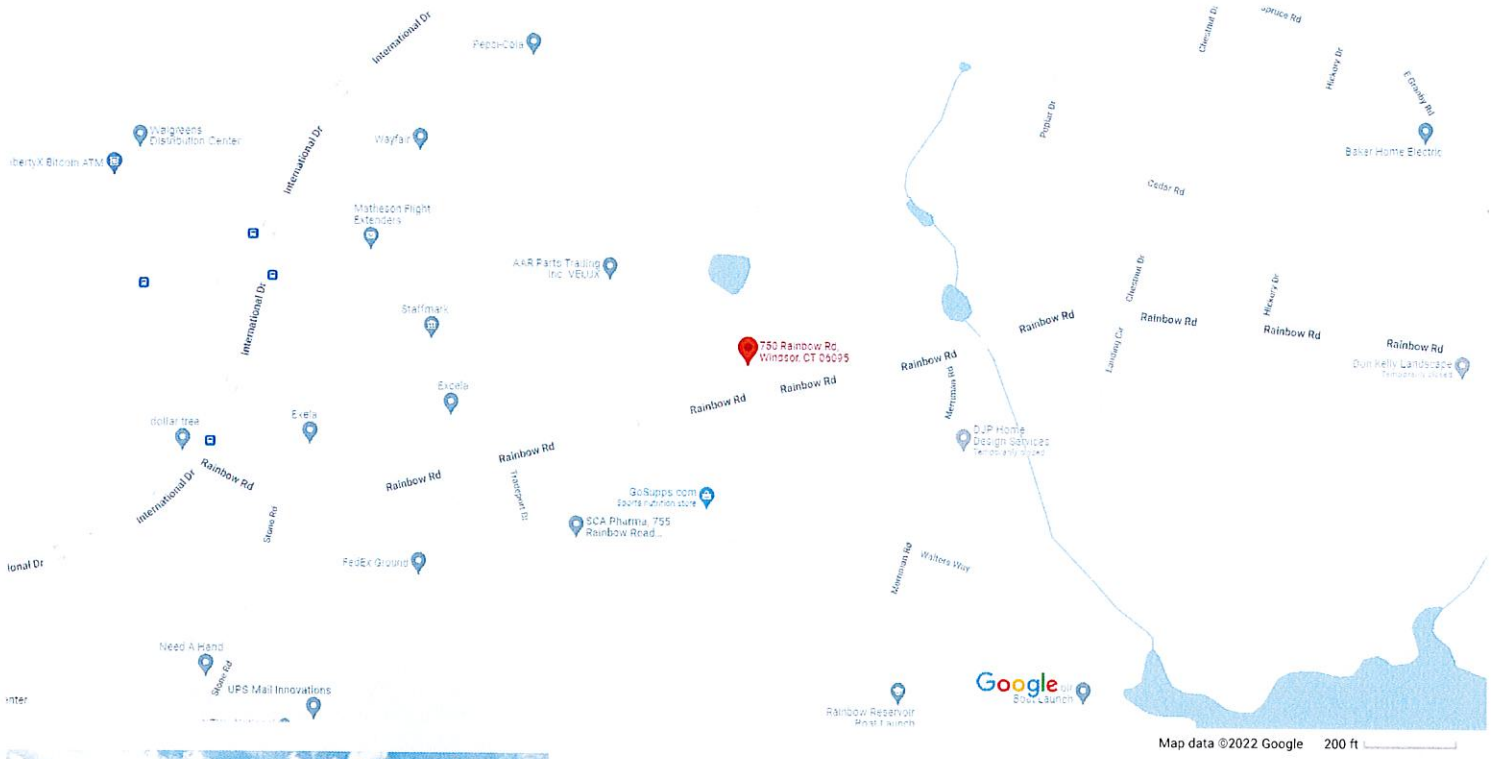
Please feel free to call me at (860) 513-7636 with questions concerning this matter. Thank you for your consideration.

Sincerely,

Steven L. Levine
Real Estate Consultant

Attachments

750 Rainbow Rd

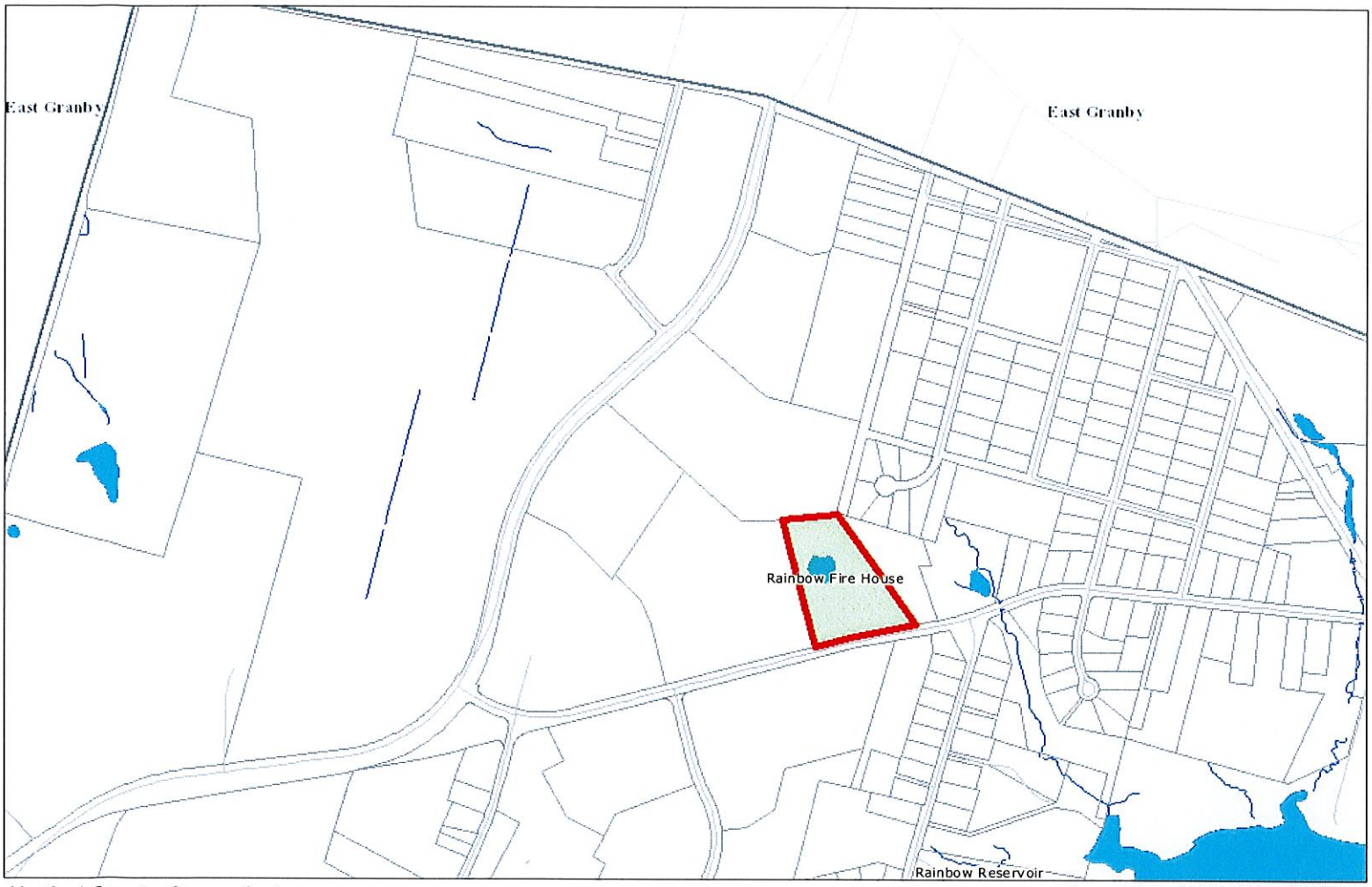


750 Rainbow Rd

Windsor, CT 06095
Building

Directions Save Nearby Send to phone Share

Photos



Hartford County, Connecticut

gis map

Property Boundaries not legally binding for title or zoning purposes.

Horizontal Datum is Connecticut State Plane Feet, NAD83

1 inch = 940 feet

0 390 780 1,560 Feet

The Town of Windsor makes no warranty as to th accuracy, reliability, or completeness of the information and is not responsible for any error or omissions for results obtained from the use of the information.

Property Cards

Address Search : 12534 Submit Clear Search

Your search returned multiple addresses

Additional addresses:
750 RAINBOW RD

750 Rainbow Rd

Property Owner:
Windsor Town Of

Property Co-Owner
C/O At&T Mobility

Mailing Address:
575 Morosgo Dr Suite 13-F
Atlanta, GA
30324

File Code
12534

Map:
8

Block:
140

Lot:
750

Census Tract:
12534.01

Property Type:
Cell Tower

Land Area (Acres):
0.05

Zone:
NZ

Click to Enlarge

Construction Details

Year Built:

Building Style:

Stories:

Living Area:
0 Sq/Ft

Building ID
102171

Grade

Exterior Wall

Total Rooms:

Bedrooms:

Bathrooms:

Half Baths:

Heating Type

Heating Fuel

AC Type

Valuation

Assessed Land Value:
$97,580

Assessed Building Value:
$119,700

Total Assessed Value:
$217,280

Appraised Land Value:
$139,400

Appraised Building Value:
$171,000

Total Appraised Value:
$310,400

Last Sale

Last Sale Date:
Wednesday, September 23rd, 1998

Last Sale Price:
$0

Qualified Sale:
U

Book/Page:
1169/ 11

Prior Owners

Sale Date	Owner Name	Sale Price	Book / Page
1997/6/30	RIVER BEND ASSOCIATES	0	1121/ 400
1976/9/29	CULBRO CORP	0	312/ 1

Parcel Sketch

Sub Area Detail

Code	Gross Area (Sq Ft)	Living Area (Sq Ft)

Outbuildings & Extra Features

Code	Description	Appraised Value	Assessed Value
CB3	PerCastConCel	$131300.00	$91910.00

AOF Office Area
APT Apartment
BAS First Floor
CAN Canopy
CDN Canopy (Det)
CLP Loading Platform (Finished)
EAF Attic (Expan)(Finished)
EAU Attic (Expan)(Unfinished)
FAT Attic (Finished)
FBM Basement (Finished)
FCB Cabana (Encl)(Finished)
FCP Carport (Framed)
FDC Carport (Det)(Framed)
FDS Porch (Scrn)(Det)(Finished)
FDU Utility (Det)(Finished)
FEP Porch (Encl)(Finished)
FGR Garage (Framed)
FHS Half-Story (Finished)
FLL Lower Level (Finished)
FOP Porch (Open)(Finished)
FSP Porch (Screen)(Finished)
FST Utility (Finished)
FUS Upper-Story (Finished)
PTO Patio
SDA Store Display Area
SFB Base (Semi-Finished)
SPA Service Prod Area
TQS Three-Qtr Story
UAT Attic (Unifinished)
UBM Basement (Unfinished)
UCB Cabana (Encl)(Unfinished)
UDS Porch (Scrn)(Dedt)(Unifinished)
UDU Utility (Det)(Unifinished)
UEP Porch (Encl)(Unfinished)
UHS Half-Story (Unfinished)
ULP Loading Platform (Unfinished)
UOP Porch (Open)(Unfinished)
USP Porch (Scrn)(Unfinished)
UST Utility (Strg)(Unfinished)
UUS Upper-Story (Unfinished)
WDK Wood Deck

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 06095

Re: Application for Zoning/Building Permit
Crown Castle telecommunications site at: 750 RAINBOW ROAD, WINDSOR, CT 06095

NCWPCS MPL 31- YEAR SITES TOWER HOLDINGS 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:	**842877/WINDSOR NORTH**
Customer Site ID:	**CTHA134A/Rainbow Rd Windsor Crown**
Site Address:	**750 RAINBOW ROAD, WINDSOR, CT 06095**
APN:	**WIND-000008-000140-000750**

Crown Castle

By: _____ Date: 8/2/2022

Jeff Barbadora
Real Estate Specialist

Barbadora, Jeff

From: TrackingUpdates@fedex.com
Sent: Wednesday, August 3, 2022 9:42 AM
To: Barbadora, Jeff
Subject: FedEx Shipment 777554247979: Your package has been delivered

Hi. Your package was delivered Wed, 08/03/2022 at 9:38am.

Delivered to 275 BROAD ST, WINDSOR, CT 06095
Received by A.POSNIAK

OBTAIN PROOF OF DELIVERY

TRACKING NUMBER 777554247979

FROM	Jeff Barbadora 1800 W. Park Drive WESTBOROUGH, MA, US, 01581
TO	Town of Windsor Donald Trinks, Mayor 275 Broad Street WINDSOR, CT, US, 06095
REFERENCE	799001.7680
SHIPPER REFERENCE	799001.7680
SHIP DATE	Tue 8/02/2022 05:28 PM
DELIVERED TO	Receptionist/Front Desk
PACKAGING TYPE	FedEx Envelope
ORIGIN	WESTBOROUGH, MA, US, 01581
DESTINATION	WINDSOR, CT, US, 06095
SPECIAL HANDLING	Deliver Weekday
NUMBER OF PIECES	1
TOTAL SHIPMENT WEIGHT	0.50 LB
SERVICE TYPE	FedEx Priority Overnight

Barbadora, Jeff

From: TrackingUpdates@fedex.com
Sent: Wednesday, August 3, 2022 9:43 AM
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ORIGIN	WESTBOROUGH, MA, US, 01581
DESTINATION	WINDSOR, CT, US, 06095
SPECIAL HANDLING	Deliver Weekday
NUMBER OF PIECES	1
TOTAL SHIPMENT WEIGHT	0.50 LB
SERVICE TYPE	FedEx Priority Overnight

Date: **May 05, 2022**

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

Subject:	**Structural Analysis Report**	
Carrier Designation:	***T-Mobile* Co-Locate**	
	Site Number:	CTHA134A
	Site Name:	Rainbow Rd Windsor Crown
Crown Castle Designation:	**BU Number:**	842877
	Site Name:	WINDSOR NORTH
	JDE Job Number:	714963
	Work Order Number:	2109472
	Order Number:	614541 Rev. 0
Engineering Firm Designation:	**B+T Group. Project Number:**	101655.009.01
Site Data:	**750 Rainbow Road, Windsor, Hartford County, CT**	
	Latitude *41° 55' 9.43"*, Longitude *-72° 42' 37.57"*	
	101 Foot - Monopole Tower	

B+T Group is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above-mentioned tower.

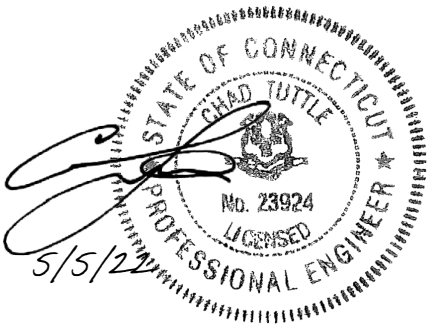
The purpose of the analysis is to determine acceptability of the tower stress level. Based on our analysis we have determined the tower stress level for the structure and foundation, under the following load case, to be:

LC7: Proposed Equipment Configuration **Sufficient Capacity**

This analysis utilizes an ultimate 3-second gust wind speed of 116 mph as required by the 2018 Connecticut State Building Code. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Structural analysis prepared by: Erik Perez

Respectfully submitted by: B+T Engineering, Inc.
COA: PEC.0001564; Expires: 2/1/2023



Chad E. Tuttle, P.E.

tnxTower Report - version 8.1.1.0

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 101 ft. Monopole tower designed by Pennsummit Tubular LLC in March of 2003.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	116 mph
Exposure Category:	C
Topographic Factor:	1
Ice Thickness:	1.5 in
Wind Speed with Ice:	50 mph
Service Wind Speed:	60 mph

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
55.0	55.0	3	Commscope	VV-65A-R1_TMO	3 1	1-5/8 1/2
		3	Ericsson	AIR 6419 B41_TMO		
		3	Ericsson	RADIO 4460 B2/B25 B66_TMO		
		3	Ericsson	Radio 4480_TMOV2		
		3	RFS Celwave	APXVAALL24_43-U-NA20_TMO		
		1	RFS Celwave	SC2-W100BD		
		1	Site Pro1	RMQP-4096K w/ Handrails		

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)
99.0	109.0	2	RFI Antennas	CC807-11	3 2 1	7/8 1/2 EU 90-FR
	100.0	1	Bird Tech.Group	432E-83I-01-T		
		1	RFS Celwave	SC3-W100ASTX		
	99.0	1	--	Pipe Mount [PM 601-1]		
		2	--	Side Arm Mount [SO 303-1]		
	98.0	1	RFS Celwave	SB2-190BB		
	97.0	1	Telewave	ANT450D6-9		
93.0	95.0	1	Raycap	DC6-48-60-18-8F	6 2 1	7/8 3/4 3/8
	94.0	3	Ericsson	RRUS 11 B12		
		6	Kathrein	860 10025		
		6	Powerwave Tech.	LGP21401		
	93.0	1	Cci Antennas	HPA-65R-BUU-H6		
		2	Cci Antennas	HPA-65R-BUU-H8		
		3	Kathrein	800 10121		
		1	--	T-Arm Mount [TA 702-3]		
	91.0	3	Ericsson	RRUS 32 B2		
83.0	85.0	2	Commscope	RC2DC-3315-PF-48	16	1-5/8

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
	83.0	3	Alcatel Lucent	B13 RRH 4X30	2	1-3/8
		3	Alcatel Lucent	RRH4X45-AWS4 B66		
		6	Andrew	SBNHH-1D65B		
		6	Antel	LPA-80063/6CF		
		1	--	Platform Mount [LP 304-1_KCKR-HR-1]		
75.0	75.0	1	RFI Antennas	BPA7496-180-11	1	7/8
		1	--	Side Arm Mount [SO 303-1]		
65.0	65.0	3	Fujitsu	TA08025-B604	1	1-3/8
		3	Fujitsu	TA08025-B605		
		3	JMA Wireless	MX08FRO665-21		
		1	Raycap	RDIDC-9181-PF-48		
		1	Commscope	MC-PK8-DSH Platform		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Reference	Source
Tower Manufacturer Drawing	5936703	CCI Sites
Foundation Drawing	4858945	CCI Sites
Geotech Report	4713263	CCI Sites
Crown CAD Package	Date: 04/28/2022	CCI Sites

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

This analysis may be affected if any assumptions are not valid or have been made in error. B+T Group 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	101 - 72.75	Pole	TP25.481x20x0.188	1	-7.009	901.568	29.6	Pass
L2	72.75 - 36	Pole	TP32.236x24.475x0.25	2	-18.807	1521.198	65.4	Pass
L3	36 - 0	Pole	TP38.72x30.96x0.25	3	-26.311	1875.058	99.6	Pass
							Summary	
						Pole (L3)	99.6	Pass
						Rating =	99.6	Pass

Table 5 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1,2	Anchor Rods	Base	50.4	Pass
1,2	Base Plate	Base	76.0	Pass
1,2	Base Foundation (Structure)	Base	58.6	Pass
1,2	Base Foundation (Soil Interaction)	Base	60.9	Pass

Structure Rating (max from all components) =	99.6%

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

4.1) Recommendations

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

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:

Table 6 – Proposed Equipment Tilt-Sway Results for 60 mph Service Wind – LC7

Elevation (ft)	*Dish Model*	*Diameter (ft)*	*Tilt (°)*	*Twist (°)*
55.0	SC2-W100BD	2.20	0.971	0.007

APPENDIX A

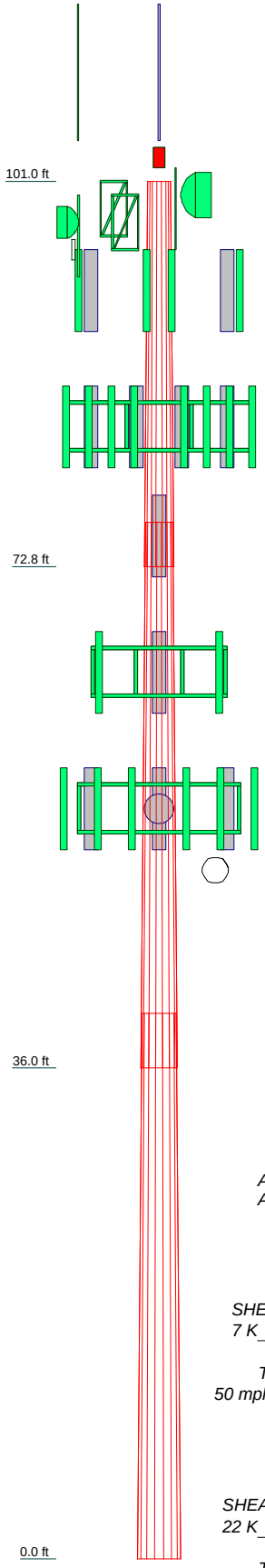
TNXTOWER OUTPUT

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-H Standard.
3. Tower designed for a 116 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 0.000 ft
8. TIA-222-H Annex S
9. TOWER RATING: 99.6%



ALL REACTIONS ARE FACTORED

AXIAL 49 K
SHEAR 7 K
MOMENT 510 kip-ft
TORQUE 2 kip-ft
50 mph WIND - 1.500 in ICE

AXIAL 26 K
SHEAR 22 K
MOMENT 1577 kip-ft
TORQUE 5 kip-ft
REACTIONS - 116 mph WIND

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	28.250	18	0.188	3.250	20.000	25.481		1.3
2	40.000	18	0.250	4.000	24.475	32.236	A607-65	3.0
3	40.000	18	0.250		30.960	38.720		3.7
								8.1

B+T Group.
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Tulsa, OK 74119
Phone: (918) 587-4630
FAX: (918) 295-0265

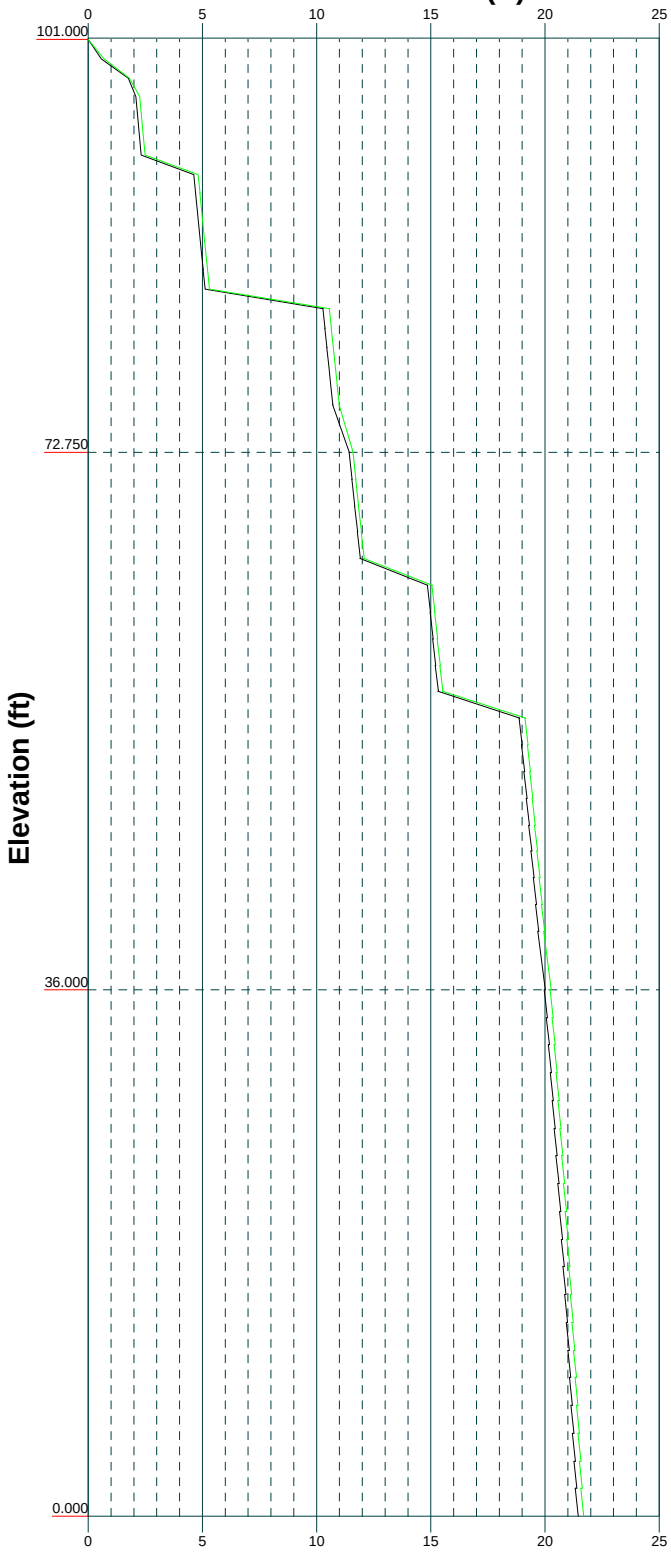
Job: 101655.009.01 - WINDSOR NORTH, CT (BU# 842871			
Project:			
Client: Crown Castle	Drawn by: Rakshak	App'd:	
Code: TIA-222-H	Date: 05/05/22	Scale: NTS	
Path:		Dwg No. E-1	

TIA-222-H - 116 mph/50 mph 1.500 in Ice Exposure C

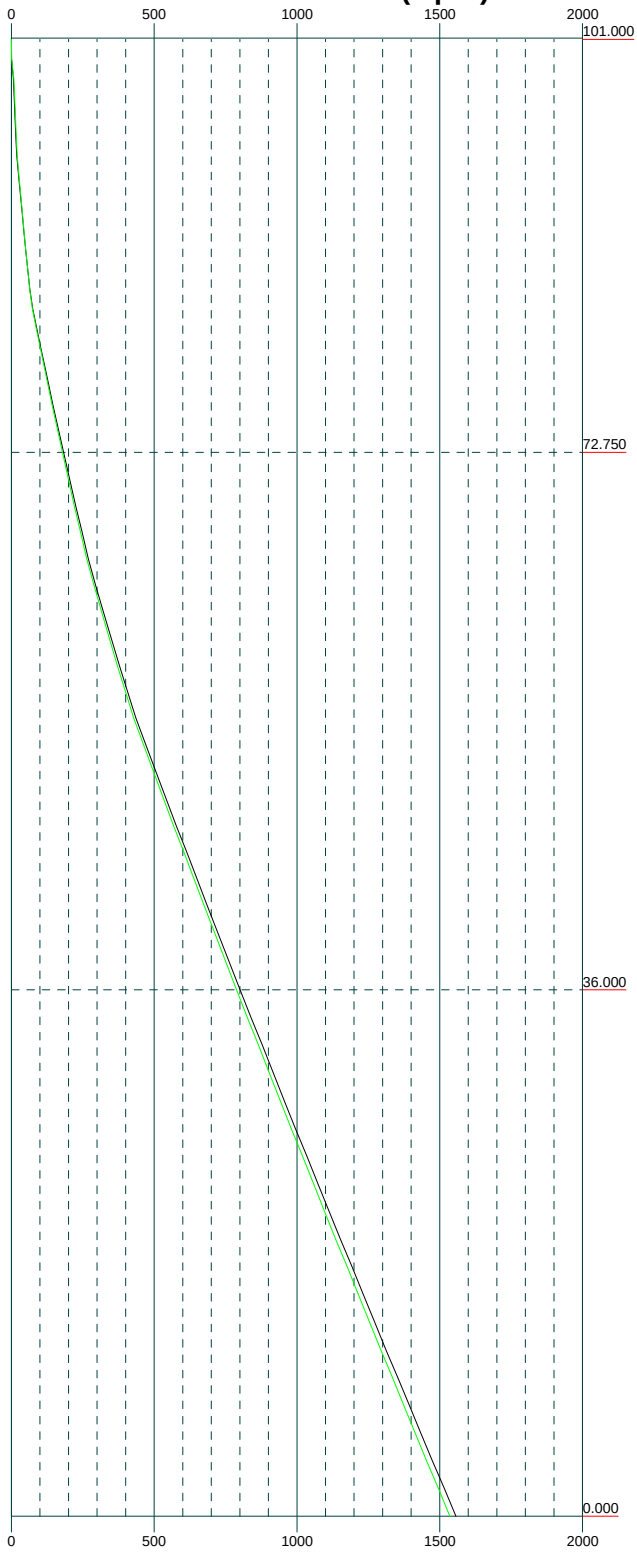
Maximum Values

Vx Vz Mx Mz

Global Mast Shear (K)



Global Mast Moment (kip-ft)



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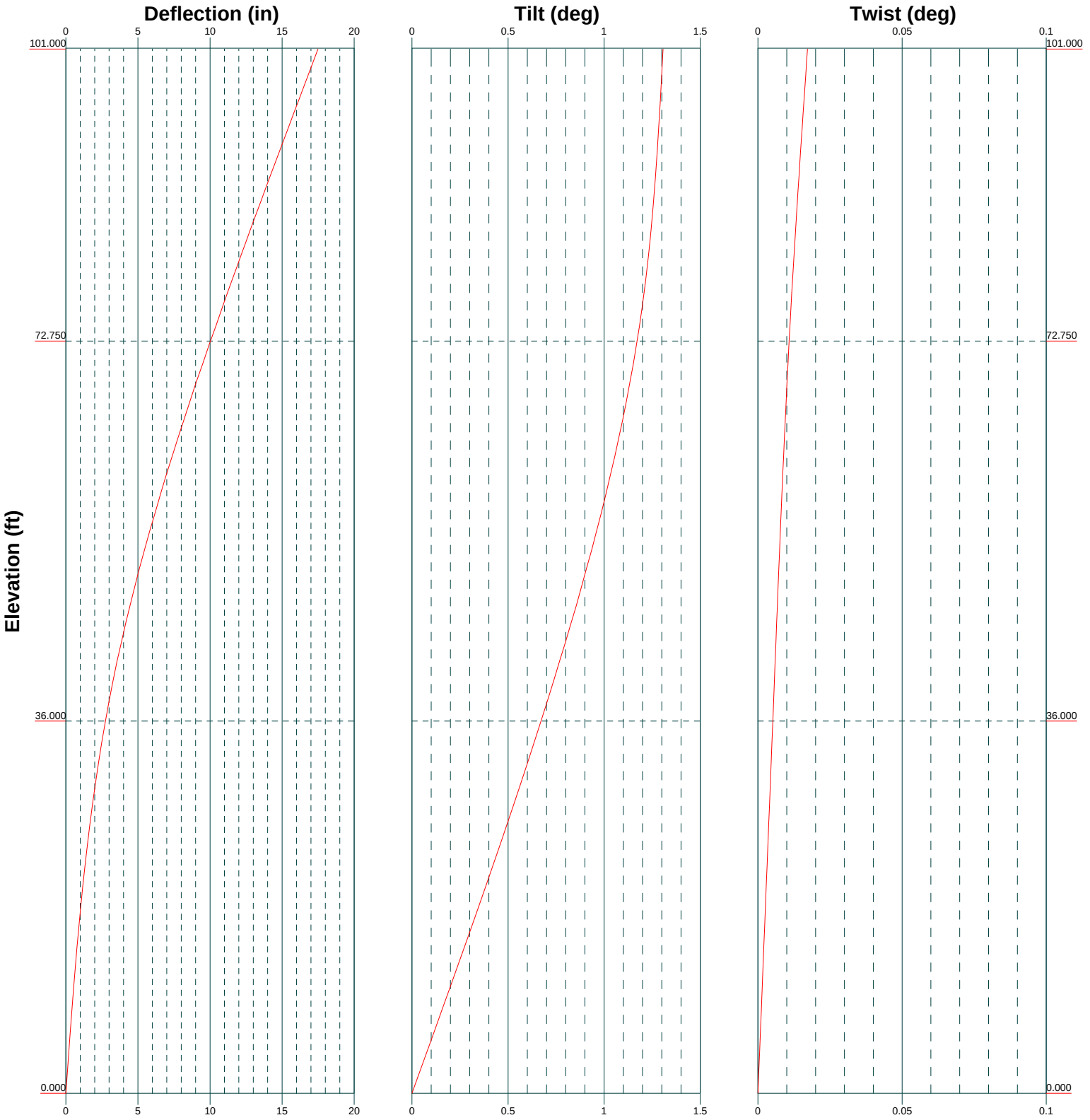
Job: 101655.009.01 - WINDSOR NORTH, CT (BU# 84287			
Project:			
Client: Crown Castle	Drawn by: Rakshak	App'd:	
Code: TIA-222-H	Date: 05/05/22	Scale: NTS	
Path:		Dwg No. E-4	

TIA-222-H - Service - 60 mph

Maximum Values



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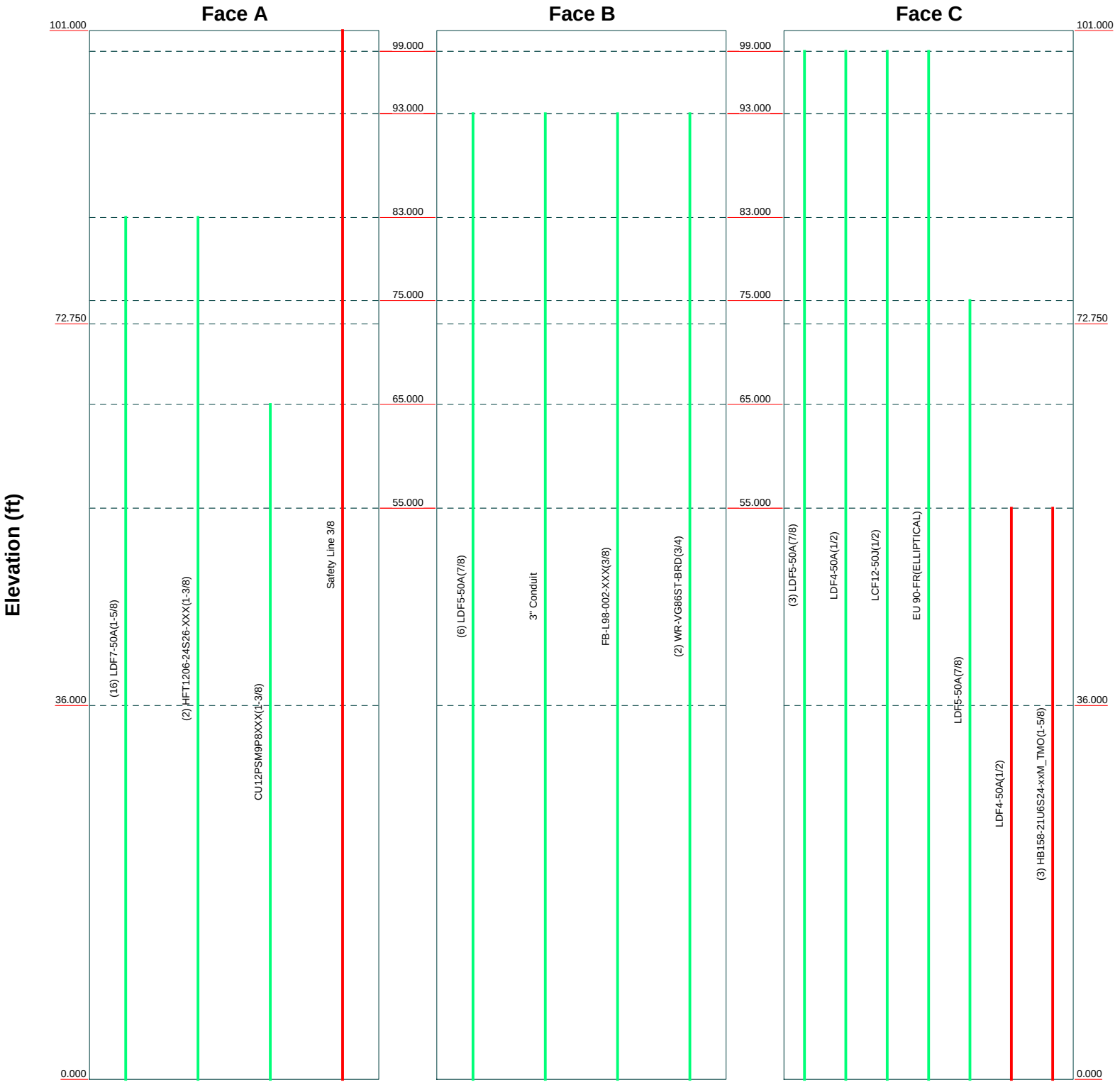
Job: 101655.009.01 - WINDSOR NORTH, CT (BU# 842871			
Project:			
Client: Crown Castle	Drawn by: Rakshak	App'd:	
Code: TIA-222-H	Date: 05/05/22	Scale: NTS	
Path:		Dwg No. E-5	

Feed Line Distribution Chart
0' - 101'

Round | Flat | App In Face | App Out Face | Truss Leg



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Job: 101655.009.01 - WINDSOR NORTH, CT (BU# 842871			
Project:			
Client: Crown Castle	Drawn by: Rakshak	App'd:	
Code: TIA-222-H	Date: 05/05/22	Scale: NTS	
Path:		Dwg No. E-7	

Tower Input Data

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

Tower is located in Hartford County, Connecticut.
Tower base elevation above sea level: 186.000 ft.
Basic wind speed of 116 mph.
Risk Category II.
Exposure Category C.
Simplified Topographic Factor Procedure for wind speed-up calculations is used.
Topographic Category: 1.
Crest Height: 0.000 ft.
Nominal ice thickness of 1.500 in.
Ice thickness is considered to increase with height.
Ice density of 56.000 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50.000 °F.
Deflections calculated using a wind speed of 60 mph.
TIA-222-H Annex S.
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	101.000-72.750	28.250	3.250	18	20.000	25.481	0.188	0.750	A607-65 (65 ksi)
L2	72.750-36.000	40.000	4.000	18	24.475	32.236	0.250	1.000	A607-65 (65 ksi)
L3	36.000-0.000	40.000		18	30.960	38.720	0.250	1.000	A607-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	20.280	11.791	584.741	7.033	10.160	57.553	1170.251	5.897	3.190	17.013
	25.845	15.053	1216.669	8.979	12.944	93.992	2434.939	7.528	4.155	22.158
L2	25.455	19.223	1425.278	8.600	12.434	114.632	2852.431	9.613	3.868	15.471
	32.695	25.381	3280.682	11.355	16.376	200.336	6565.681	12.693	5.234	20.934
L3	32.187	24.368	2903.497	10.902	15.728	184.611	5810.815	12.186	5.009	20.036
	39.279	30.526	5707.566	13.657	19.670	290.170	11422.642	15.266	6.375	25.499

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 101.000-72.750				1	1	1			
L2 72.750-36.000				1	1	1			
L3 36.000-0.000				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 klf
* LDF4-50A(1/2)	C	No	Surface Ar (CaAa)	55.000 - 0.000	1	1	0.180 0.200	0.625		0.000
HB158-21U6S24-xxM_TMO(1-5/8) *	C	No	Surface Ar (CaAa)	55.000 - 0.000	3	3	0.200 0.300	1.996		0.003
Safety Line 3/8 *	A	No	Surface Ar (CaAa)	101.000 - 0.000	1	1	0.100 0.100	0.375		0.000

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 klf
LDF5-50A(7/8)	C	No	No	Inside Pole	99.000 - 0.000	3	No Ice	0.000	0.000
							1/2" Ice	0.000	0.000
							1" Ice	0.000	0.000
							2" Ice	0.000	0.000
LDF4-50A(1/2)	C	No	No	Inside Pole	99.000 - 0.000	1	No Ice	0.000	0.000
							1/2" Ice	0.000	0.000
							1" Ice	0.000	0.000
							2" Ice	0.000	0.000
LCF12-50J(1/2)	C	No	No	Inside Pole	99.000 - 0.000	1	No Ice	0.000	0.000
							1/2" Ice	0.000	0.000
							1" Ice	0.000	0.000
							2" Ice	0.000	0.000
EU 90-FR(ELLIPTICAL)	C	No	No	Inside Pole	99.000 - 0.000	1	No Ice	0.000	0.000
							1/2" Ice	0.000	0.000
							1" Ice	0.000	0.000
							2" Ice	0.000	0.000
*									
LDF5-50A(7/8)	B	No	No	Inside Pole	93.000 - 0.000	6	No Ice	0.000	0.000
							1/2" Ice	0.000	0.000
							1" Ice	0.000	0.000
							2" Ice	0.000	0.000
3" Conduit	B	No	No	Inside Pole	93.000 - 0.000	1	No Ice	0.000	0.003
							1/2" Ice	0.000	0.003
							1" Ice	0.000	0.003
							2" Ice	0.000	0.003
FB-L98-002-XXX(3/8)	B	No	No	Inside Pole	93.000 - 0.000	1	No Ice	0.000	0.000
							1/2" Ice	0.000	0.000
							1" Ice	0.000	0.000
							2" Ice	0.000	0.000
WR-VG86ST-BRD(3/4)	B	No	No	Inside Pole	93.000 - 0.000	2	No Ice	0.000	0.001
							1/2" Ice	0.000	0.001
							1" Ice	0.000	0.001
							2" Ice	0.000	0.001
*									
LDF7-50A(1-5/8)	A	No	No	Inside Pole	83.000 - 0.000	16	No Ice	0.000	0.001
							1/2" Ice	0.000	0.001
							1" Ice	0.000	0.001
							2" Ice	0.000	0.001
HFT1206-24S26-XXX(1-3/8)	A	No	No	Inside Pole	83.000 - 0.000	2	No Ice	0.000	0.002
							1/2" Ice	0.000	0.002
							1" Ice	0.000	0.002
							2" Ice	0.000	0.002
*									
LDF5-50A(7/8)	C	No	No	Inside Pole	75.000 - 0.000	1	No Ice	0.000	0.000
							1/2" Ice	0.000	0.000
							1" Ice	0.000	0.000
							2" Ice	0.000	0.000
*									
CU12PSM9P8XXX(1-3/8)	A	No	No	Inside Pole	65.000 - 0.000	1	No Ice	0.000	0.002
							1/2" Ice	0.000	0.002
							1" Ice	0.000	0.002
							2" Ice	0.000	0.002
*									

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	101.000-72.750	A	0.000	0.000	1.059	0.000	0.174
		B	0.000	0.000	0.000	0.000	0.122
		C	0.000	0.000	0.000	0.000	0.044
L2	72.750-36.000	A	0.000	0.000	1.378	0.000	0.657
		B	0.000	0.000	0.000	0.000	0.221
		C	0.000	0.000	12.565	0.000	0.217
L3	36.000-0.000	A	0.000	0.000	1.350	0.000	0.657
		B	0.000	0.000	0.000	0.000	0.216
		C	0.000	0.000	23.807	0.000	0.346

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	101.000-72.750	A	1.404	0.000	0.000	8.990	0.000	0.260
		B		0.000	0.000	0.000	0.000	0.122
		C		0.000	0.000	0.000	0.000	0.044
L2	72.750-36.000	A	1.339	0.000	0.000	11.695	0.000	0.770
		B		0.000	0.000	0.000	0.000	0.221
		C		0.000	0.000	27.410	0.000	0.490
L3	36.000-0.000	A	1.200	0.000	0.000	10.992	0.000	0.758
		B		0.000	0.000	0.000	0.000	0.216
		C		0.000	0.000	50.891	0.000	0.832

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	101.000-72.750	-0.224	-0.201	-0.941	-0.847
L2	72.750-36.000	-1.446	2.067	-2.001	1.630
L3	36.000-0.000	-2.264	3.564	-2.684	3.153

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	21	Safety Line 3/8	72.75 - 101.00	1.0000	1.0000
L2	18	LDF4-50A(1/2)	36.00 - 55.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L2	19	HB158-21U6S24-xxM_TMO (1-5/8)	36.00 - 55.00	1.0000	1.0000
L2	21	Safety Line 3/8	36.00 - 72.75	1.0000	1.0000
L3	18	LDF4-50A(1/2)	0.00 - 36.00	1.0000	1.0000
L3	19	HB158-21U6S24-xxM_TMO (1-5/8)	0.00 - 36.00	1.0000	1.0000
L3	21	Safety Line 3/8	0.00 - 36.00	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
Strobe	C	None		0.000	102.000	No Ice	4.500	3.000	0.020
						1/2" Ice	4.770	3.237	0.058
						1" Ice	5.048	3.481	0.100
						2" Ice	5.626	3.993	0.198
*									
CC807-11	A	From Leg	6.000 0.000 10.000	0.000	99.000	No Ice 1/2" Ice 1" Ice 2" Ice	5.267 7.039 8.828 12.455	5.267 7.039 8.828 12.455	0.049 0.086 0.135 0.267
CC807-11	C	From Leg	6.000 0.000 10.000	0.000	99.000	No Ice 1/2" Ice 1" Ice 2" Ice	5.267 7.039 8.828 12.455	5.267 7.039 8.828 12.455	0.049 0.086 0.135 0.267
ANT450D6-9	C	From Leg	6.000 0.000 -2.000	0.000	99.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.862 4.370 5.878 8.893	2.862 4.370 5.878 8.893	0.176 0.200 0.224 0.272
432E-83I-01-T	B	From Leg	1.000 0.000 1.000	0.000	99.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.422 1.571 1.728 2.063	0.869 0.993 1.123 1.407	0.025 0.038 0.053 0.092
Side Arm Mount [SO 303-1]	A	From Leg	3.000 0.000 0.000	0.000	99.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.080 1.630 2.210 3.440	5.310 7.570 9.930 15.190	0.115 0.158 0.217 0.379
Side Arm Mount [SO 303-1]	C	From Leg	3.000 0.000 0.000	0.000	99.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.080 1.630 2.210 3.440	5.310 7.570 9.930 15.190	0.115 0.158 0.217 0.379
Pipe Mount [PM 601-1]	B	From Leg	0.500 0.000 0.000	0.000	99.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.320 1.580 1.840 2.400	1.320 1.580 1.840 2.400	0.065 0.077 0.093 0.134
7'X2" Horizontal Pipe	A	From Leg	6.000 0.000 0.000	0.000	99.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.330 2.050 2.640 3.520	0.010 0.040 0.090 0.210	0.019 0.290 0.044 0.089
7'X2" Horizontal Pipe	B	From Leg	6.000	0.000	99.000	No Ice	1.330	0.010	0.019

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.000			1/2" Ice	2.050	0.040	0.290
			0.000			1" Ice	2.640	0.090	0.044
						2" Ice	3.520	0.210	0.089
*									
4' x 2" Pipe Mount	C	From Leg	2.000	0.000	98.000	No Ice	0.785	0.785	0.029
			0.000			1/2" Ice	1.028	1.028	0.035
			0.000			1" Ice	1.281	1.281	0.044
						2" Ice	1.814	1.814	0.072
Side Arm Mount [SO 302-1]	C	From Leg	2.000	0.000	98.000	No Ice	0.810	3.310	0.055
			0.000			1/2" Ice	1.300	5.000	0.083
			0.000			1" Ice	1.810	6.800	0.122
						2" Ice	2.910	10.990	0.233
*									
800 10121 w/ Mount Pipe	A	From Leg	3.000	0.000	93.000	No Ice	3.600	2.950	0.072
			0.000			1/2" Ice	4.000	3.340	0.115
			0.000			1" Ice	4.420	3.740	0.166
						2" Ice	5.290	4.590	0.297
800 10121 w/ Mount Pipe	B	From Leg	3.000	0.000	93.000	No Ice	3.600	2.950	0.072
			0.000			1/2" Ice	4.000	3.340	0.115
			0.000			1" Ice	4.420	3.740	0.166
						2" Ice	5.290	4.590	0.297
800 10121 w/ Mount Pipe	C	From Leg	3.000	0.000	93.000	No Ice	3.600	2.950	0.072
			0.000			1/2" Ice	4.000	3.340	0.115
			0.000			1" Ice	4.420	3.740	0.166
						2" Ice	5.290	4.590	0.297
HPA-65R-BUU-H8 w/ Mount Pipe	A	From Leg	3.000	0.000	93.000	No Ice	12.250	8.330	0.105
			0.000			1/2" Ice	13.190	9.230	0.194
			0.000			1" Ice	14.160	10.150	0.297
						2" Ice	16.140	12.050	0.543
HPA-65R-BUU-H8 w/ Mount Pipe	B	From Leg	3.000	0.000	93.000	No Ice	12.250	8.330	0.105
			0.000			1/2" Ice	13.190	9.230	0.194
			0.000			1" Ice	14.160	10.150	0.297
						2" Ice	16.140	12.050	0.543
HPA-65R-BUU-H6 w/ Mount Pipe	C	From Leg	3.000	0.000	93.000	No Ice	9.220	6.250	0.074
			0.000			1/2" Ice	9.980	6.960	0.143
			0.000			1" Ice	10.760	7.700	0.224
						2" Ice	12.360	9.220	0.420
(2) 860 10025	A	From Leg	3.000	0.000	93.000	No Ice	0.142	0.121	0.001
			0.000			1/2" Ice	0.196	0.173	0.003
			1.000			1" Ice	0.259	0.231	0.005
						2" Ice	0.408	0.376	0.014
(2) 860 10025	B	From Leg	3.000	0.000	93.000	No Ice	0.142	0.121	0.001
			0.000			1/2" Ice	0.196	0.173	0.003
			1.000			1" Ice	0.259	0.231	0.005
						2" Ice	0.408	0.376	0.014
(2) 860 10025	C	From Leg	3.000	0.000	93.000	No Ice	0.142	0.121	0.001
			0.000			1/2" Ice	0.196	0.173	0.003
			1.000			1" Ice	0.259	0.231	0.005
						2" Ice	0.408	0.376	0.014
(2) LGP21401	A	From Leg	3.000	0.000	93.000	No Ice	1.104	0.207	0.014
			0.000			1/2" Ice	1.239	0.274	0.021
			1.000			1" Ice	1.381	0.348	0.030
						2" Ice	1.688	0.521	0.055
(2) LGP21401	B	From Leg	3.000	0.000	93.000	No Ice	1.104	0.207	0.014
			0.000			1/2" Ice	1.239	0.274	0.021
			1.000			1" Ice	1.381	0.348	0.030
						2" Ice	1.688	0.521	0.055

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
(2) LGP21401	C	From Leg	3.000 0.000 1.000	0.000	93.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.104 1.239 1.381 1.688	0.207 0.274 0.348 0.521	0.014 0.021 0.030 0.055
RRUS 11 B12	A	From Leg	3.000 0.000 1.000	0.000	93.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.833 3.043 3.259 3.715	1.182 1.330 1.485 1.826	0.051 0.072 0.095 0.153
RRUS 11 B12	B	From Leg	3.000 0.000 1.000	0.000	93.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.833 3.043 3.259 3.715	1.182 1.330 1.485 1.826	0.051 0.072 0.095 0.153
RRUS 11 B12	C	From Leg	3.000 0.000 1.000	0.000	93.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.833 3.043 3.259 3.715	1.182 1.330 1.485 1.826	0.051 0.072 0.095 0.153
RRUS 32 B2	A	From Leg	3.000 0.000 -2.000	0.000	93.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.731 2.953 3.182 3.663	1.668 1.855 2.049 2.458	0.053 0.074 0.098 0.157
RRUS 32 B2	B	From Leg	3.000 0.000 -2.000	0.000	93.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.731 2.953 3.182 3.663	1.668 1.855 2.049 2.458	0.053 0.074 0.098 0.157
RRUS 32 B2	C	From Leg	3.000 0.000 -2.000	0.000	93.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.731 2.953 3.182 3.663	1.668 1.855 2.049 2.458	0.053 0.074 0.098 0.157
DC6-48-60-18-8F	A	From Leg	3.000 0.000 2.000	0.000	93.000	No Ice 1/2" Ice 1" Ice 2" Ice	0.791 1.274 1.450 1.831	0.791 1.274 1.450 1.831	0.020 0.035 0.053 0.095
T-Arm Mount [TA 702-3]	C	None		0.000	93.000	No Ice 1/2" Ice 1" Ice 2" Ice	4.750 5.820 6.980 9.720	4.750 5.820 6.980 9.720	0.339 0.432 0.550 0.868
*									
(2) LPA-80063/6CF w/ Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	83.000	No Ice 1/2" Ice 1" Ice 2" Ice	9.831 10.400 10.933 12.026	10.215 11.384 12.269 14.086	0.052 0.145 0.246 0.476
(2) LPA-80063/6CF w/ Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	83.000	No Ice 1/2" Ice 1" Ice 2" Ice	9.831 10.400 10.933 12.026	10.215 11.384 12.269 14.086	0.052 0.145 0.246 0.476
(2) LPA-80063/6CF w/ Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	83.000	No Ice 1/2" Ice 1" Ice 2" Ice	9.831 10.400 10.933 12.026	10.215 11.384 12.269 14.086	0.052 0.145 0.246 0.476
(2) SBNHH-1D65B w/ Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	83.000	No Ice 1/2" Ice 1" Ice 2" Ice	4.090 4.490 4.890 5.720	3.300 3.680 4.070 4.870	0.066 0.130 0.204 0.386
(2) SBNHH-1D65B w/ Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	83.000	No Ice 1/2" Ice 1" Ice 2" Ice	4.090 4.490 4.890 5.720	3.300 3.680 4.070 4.870	0.066 0.130 0.204 0.386

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
(2) SBNHH-1D65B w/ Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	83.000	No Ice 1/2" Ice 1" Ice 2" Ice	4.090 4.490 4.890 5.720	3.300 3.680 4.070 4.870	0.066 0.130 0.204 0.386
B13 RRH 4X30	A	From Leg	4.000 0.000 0.000	0.000	83.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.055 2.241 2.433 2.841	1.320 1.475 1.638 1.997	0.056 0.073 0.093 0.142
B13 RRH 4X30	B	From Leg	4.000 0.000 0.000	0.000	83.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.055 2.241 2.433 2.841	1.320 1.475 1.638 1.997	0.056 0.073 0.093 0.142
B13 RRH 4X30	C	From Leg	4.000 0.000 0.000	0.000	83.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.055 2.241 2.433 2.841	1.320 1.475 1.638 1.997	0.056 0.073 0.093 0.142
RRH4X45-AWS4 B66	A	From Leg	4.000 0.000 0.000	0.000	83.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.660 2.878 3.104 3.577	1.586 1.769 1.959 2.359	0.064 0.084 0.108 0.165
RRH4X45-AWS4 B66	B	From Leg	4.000 0.000 0.000	0.000	83.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.660 2.878 3.104 3.577	1.586 1.769 1.959 2.359	0.064 0.084 0.108 0.165
RRH4X45-AWS4 B66	C	From Leg	4.000 0.000 0.000	0.000	83.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.660 2.878 3.104 3.577	1.586 1.769 1.959 2.359	0.064 0.084 0.108 0.165
(2) RC2DC-3315-PF-48	A	From Leg	2.000 0.000 2.000	0.000	83.000	No Ice 1/2" Ice 1" Ice 2" Ice	3.792 4.044 4.303 4.844	2.512 2.725 2.945 3.414	0.032 0.063 0.099 0.181
4' x 2" Pipe Mount	A	From Leg	2.000 0.000 1.000	0.000	83.000	No Ice 1/2" Ice 1" Ice 2" Ice	0.785 1.028 1.281 1.814	0.785 1.028 1.281 1.814	0.029 0.035 0.044 0.072
6' x 2" Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	83.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.425 1.925 2.294 3.060	1.425 1.925 2.294 3.060	0.022 0.033 0.048 0.090
6' x 2" Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	83.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.425 1.925 2.294 3.060	1.425 1.925 2.294 3.060	0.022 0.033 0.048 0.090
6' x 2" Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	83.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.425 1.925 2.294 3.060	1.425 1.925 2.294 3.060	0.022 0.033 0.048 0.090
Platform Mount [LP 304-1_KCKR-HR-1]	C	None		0.000	83.000	No Ice 1/2" Ice 1" Ice 2" Ice	32.630 40.840 49.050 65.620	32.630 40.840 49.050 65.620	1.880 2.472 3.195 5.043
*									
BPA7496-180-11	A	From Leg	6.000 0.000 0.000	0.000	75.000	No Ice 1/2" Ice 1" Ice 2" Ice	5.830 6.213 6.603 7.404	3.750 4.129 4.515 5.309	0.017 0.053 0.095 0.194

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Side Arm Mount [SO 303-1]	A	From Leg	3.000 0.000 0.000	0.000	75.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.080 1.630 2.210 3.440	5.310 7.570 9.930 15.190	0.115 0.158 0.217 0.379
6' x 2" Mount Pipe	C	From Leg	0.500 0.000 0.000	0.000	73.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.425 1.925 2.294 3.060	1.425 1.925 2.294 3.060	0.022 0.033 0.048 0.090
7'X2" Horizontal Pipe	C	From Leg	3.000 0.000 0.000	0.000	73.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.330 2.050 2.640 3.520	0.010 0.040 0.090 0.210	0.019 0.290 0.044 0.089
*									
MX08FRO665-21 w/ Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	65.000	No Ice 1/2" Ice 1" Ice 2" Ice	8.010 8.520 9.040 10.110	4.230 4.690 5.160 6.120	0.108 0.194 0.292 0.522
MX08FRO665-21 w/ Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	65.000	No Ice 1/2" Ice 1" Ice 2" Ice	8.010 8.520 9.040 10.110	4.230 4.690 5.160 6.120	0.108 0.194 0.292 0.522
MX08FRO665-21 w/ Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	65.000	No Ice 1/2" Ice 1" Ice 2" Ice	8.010 8.520 9.040 10.110	4.230 4.690 5.160 6.120	0.108 0.194 0.292 0.522
TA08025-B604	A	From Leg	4.000 0.000 0.000	0.000	65.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.964 2.138 2.320 2.705	0.981 1.112 1.250 1.548	0.064 0.081 0.100 0.148
TA08025-B604	B	From Leg	4.000 0.000 0.000	0.000	65.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.964 2.138 2.320 2.705	0.981 1.112 1.250 1.548	0.064 0.081 0.100 0.148
TA08025-B604	C	From Leg	4.000 0.000 0.000	0.000	65.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.964 2.138 2.320 2.705	0.981 1.112 1.250 1.548	0.064 0.081 0.100 0.148
TA08025-B605	A	From Leg	4.000 0.000 0.000	0.000	65.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.964 2.138 2.320 2.705	1.129 1.267 1.411 1.723	0.075 0.093 0.114 0.164
TA08025-B605	B	From Leg	4.000 0.000 0.000	0.000	65.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.964 2.138 2.320 2.705	1.129 1.267 1.411 1.723	0.075 0.093 0.114 0.164
TA08025-B605	C	From Leg	4.000 0.000 0.000	0.000	65.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.964 2.138 2.320 2.705	1.129 1.267 1.411 1.723	0.075 0.093 0.114 0.164
RDIDC-9181-PF-48	A	From Leg	4.000 0.000 0.000	0.000	65.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.012 2.189 2.373 2.763	1.168 1.311 1.461 1.784	0.022 0.040 0.060 0.110
(2) 8' x 2" Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	65.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.900 2.728 3.401 4.396	1.900 2.728 3.401 4.396	0.029 0.044 0.063 0.119

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
(2) 8' x 2" Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	65.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.900 2.728 3.401 4.396	1.900 2.728 3.401 4.396	0.029 0.044 0.063 0.119
(2) 8' x 2" Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	65.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.900 2.728 3.401 4.396	1.900 2.728 3.401 4.396	0.029 0.044 0.063 0.119
Commscope MC-PK8-DSH	C	None		0.000	65.000	No Ice 1/2" Ice 1" Ice 2" Ice	34.240 62.950 91.660 149.080	34.240 62.950 91.660 149.080	1.749 2.099 2.450 3.151
*									
AIR 6419 B41_TMO w/ Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	55.000	No Ice 1/2" Ice 1" Ice 2" Ice	6.580 7.060 7.570 8.620	3.500 3.900 4.320 5.200	0.111 0.162 0.220 0.359
AIR 6419 B41_TMO w/ Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	55.000	No Ice 1/2" Ice 1" Ice 2" Ice	6.580 7.060 7.570 8.620	3.500 3.900 4.320 5.200	0.111 0.162 0.220 0.359
AIR 6419 B41_TMO w/ Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	55.000	No Ice 1/2" Ice 1" Ice 2" Ice	6.580 7.060 7.570 8.620	3.500 3.900 4.320 5.200	0.111 0.162 0.220 0.359
VV-65A-R1_TMO w/ Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	55.000	No Ice 1/2" Ice 1" Ice 2" Ice	4.460 4.910 5.360 6.320	2.690 3.100 3.520 4.410	0.054 0.097 0.149 0.281
VV-65A-R1_TMO w/ Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	55.000	No Ice 1/2" Ice 1" Ice 2" Ice	4.460 4.910 5.360 6.320	2.690 3.100 3.520 4.410	0.054 0.097 0.149 0.281
VV-65A-R1_TMO w/ Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	55.000	No Ice 1/2" Ice 1" Ice 2" Ice	4.460 4.910 5.360 6.320	2.690 3.100 3.520 4.410	0.054 0.097 0.149 0.281
APXVAALL24_43-U-NA20 _TMO w/ Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	55.000	No Ice 1/2" Ice 1" Ice 2" Ice	14.690 15.460 16.230 17.820	6.870 7.550 8.250 9.670	0.183 0.311 0.453 0.782
APXVAALL24_43-U-NA20 _TMO w/ Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	55.000	No Ice 1/2" Ice 1" Ice 2" Ice	14.690 15.460 16.230 17.820	6.870 7.550 8.250 9.670	0.183 0.311 0.453 0.782
APXVAALL24_43-U-NA20 _TMO w/ Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	55.000	No Ice 1/2" Ice 1" Ice 2" Ice	14.690 15.460 16.230 17.820	6.870 7.550 8.250 9.670	0.183 0.311 0.453 0.782
RADIO 4460 B2/B25 B66_TMO	A	From Leg	4.000 0.000 0.000	0.000	55.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.139 2.321 2.511 2.912	1.686 1.850 2.022 2.387	0.109 0.131 0.156 0.217
RADIO 4460 B2/B25 B66_TMO	B	From Leg	4.000 0.000 0.000	0.000	55.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.139 2.321 2.511 2.912	1.686 1.850 2.022 2.387	0.109 0.131 0.156 0.217

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
RADIO 4460 B2/B25 B66_TMO	C	From Leg	4.000 0.000 0.000	0.000	55.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.139 2.321 2.511 2.912	1.686 1.850 2.022 2.387	0.109 0.131 0.156 0.217
Radio 4480_TMOV2	A	From Leg	4.000 0.000 0.000	0.000	55.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.878 3.091 3.312 3.775	1.397 1.558 1.727 2.090	0.081 0.103 0.128 0.188
Radio 4480_TMOV2	B	From Leg	4.000 0.000 0.000	0.000	55.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.878 3.091 3.312 3.775	1.397 1.558 1.727 2.090	0.081 0.103 0.128 0.188
Radio 4480_TMOV2	C	From Leg	4.000 0.000 0.000	0.000	55.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.878 3.091 3.312 3.775	1.397 1.558 1.727 2.090	0.081 0.103 0.128 0.188
8' x 2" Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	55.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.900 2.728 3.401 4.396	1.900 2.728 3.401 4.396	0.029 0.044 0.063 0.119
8' x 2" Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	55.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.900 2.728 3.401 4.396	1.900 2.728 3.401 4.396	0.029 0.044 0.063 0.119
8' x 2" Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	55.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.900 2.728 3.401 4.396	1.900 2.728 3.401 4.396	0.029 0.044 0.063 0.119
Site Pro1 RMQP-4096K w/ Handrails	C	None		0.000	55.000	No Ice 1/2" Ice 1" Ice 2" Ice	21.170 25.840 30.510 39.850	21.170 25.840 30.510 39.850	1.485 1.825 2.285 3.205
*									

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight K
SC3-W100ASTX	B	Paraboloid w/Shroud (HP)	From Leg	1.000 0.000 1.000	28.000		99.000	3.292	No Ice 1/2" Ice 1" Ice 2" Ice	8.510 8.946 9.383 10.255	0.040 0.086 0.132 0.224
SB2-190BB	C	Paraboloid w/Shroud (HP)	From Leg	6.000 0.000 -1.000	-90.000		99.000	2.333	No Ice 1/2" Ice 1" Ice 2" Ice	4.280 4.590 4.900 5.520	0.027 0.050 0.074 0.121
*											
Rfs Celwave	A	Paraboloid	From	4.000	0.000		55.000	2.200	No Ice	3.801	0.020

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		w/Shroud (HP)	Leg	0.000 0.000					1/2" Ice 1" Ice 2" Ice	4.095 4.388 4.975	0.041 0.062 0.104
*											

Load Combinations

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

Comb. No.	Description
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	101 - 72.75	Pole	Max Tension	36	0.000	-0.001	-0.000
			Max. Compression	26	-18.399	4.029	1.190
			Max. Mx	20	-7.076	142.304	12.317
			Max. My	2	-7.040	11.307	145.295
			Max. Vy	20	-10.708	142.304	12.317
			Max. Vx	2	-10.989	11.307	145.295
			Max. Torque	3			4.178
L2	72.75 - 36	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-39.212	4.877	3.854
			Max. Mx	20	-18.858	709.228	32.528
			Max. My	2	-18.831	26.424	720.616
			Max. Vy	20	-19.728	709.228	32.528
			Max. Vx	2	-19.983	26.424	720.616
			Max. Torque	5			5.061
L3	36 - 0	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-48.695	5.187	2.718
			Max. Mx	20	-26.313	1535.743	53.442
			Max. My	2	-26.312	42.331	1556.570
			Max. Vy	20	-21.453	1535.743	53.442
			Max. Vx	2	-21.695	42.331	1556.570
			Max. Torque	5			5.052

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	37	48.695	5.806	3.433
	Max. H_x	20	26.340	21.420	0.514
	Max. H_z	2	26.340	0.379	21.661
	Max. M_x	2	1556.570	0.379	21.661
	Max. M_z	8	1527.211	-21.382	-0.355
	Max. Torsion	5	5.041	-10.259	18.683
	Min. Vert	19	19.755	18.340	-10.653
	Min. H_x	8	26.340	-21.382	-0.355
	Min. H_z	14	26.340	-0.335	-21.563
	Min. M_x	14	-1544.436	-0.335	-21.563
	Min. M_z	20	-1535.743	21.420	0.514
	Min. Torsion	17	-4.595	10.363	-18.635

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	21.950	-0.000	0.000	-0.104	1.888	0.000
1.2 Dead+1.0 Wind 0 deg - No Ice	26.340	-0.379	-21.661	-1556.570	42.329	-3.972
0.9 Dead+1.0 Wind 0 deg - No Ice	19.755	-0.379	-21.661	-1539.514	41.207	-3.995
1.2 Dead+1.0 Wind 30 deg - No Ice	26.340	10.259	-18.683	-1339.441	-717.991	-5.020
0.9 Dead+1.0 Wind 30 deg - No Ice	19.755	10.259	-18.683	-1324.779	-710.822	-5.041
1.2 Dead+1.0 Wind 60 deg - No Ice	26.340	18.408	-10.526	-744.874	-1311.475	-4.098
0.9 Dead+1.0 Wind 60 deg - No Ice	19.755	18.408	-10.526	-736.768	-1297.769	-4.111
1.2 Dead+1.0 Wind 90 deg - No Ice	26.340	21.382	0.355	38.169	-1527.211	-2.786
0.9 Dead+1.0 Wind 90 deg - No Ice	19.755	21.382	0.355	37.705	-1511.138	-2.787
1.2 Dead+1.0 Wind 120 deg - No Ice	26.340	18.569	11.106	804.264	-1329.069	-0.638
0.9 Dead+1.0 Wind 120 deg - No Ice	19.755	18.569	11.106	795.469	-1315.140	-0.628
1.2 Dead+1.0 Wind 150 deg - No Ice	26.340	10.889	18.812	1351.204	-783.932	1.600
0.9 Dead+1.0 Wind 150 deg - No Ice	19.755	10.889	18.812	1336.473	-775.921	1.619
1.2 Dead+1.0 Wind 180 deg - No Ice	26.340	0.335	21.563	1544.436	-33.122	3.570
0.9 Dead+1.0 Wind 180 deg - No Ice	19.755	0.335	21.563	1527.619	-33.270	3.592
1.2 Dead+1.0 Wind 210 deg - No Ice	26.340	-10.363	18.635	1332.515	732.962	4.574
0.9 Dead+1.0 Wind 210 deg - No Ice	19.755	-10.363	18.635	1318.019	724.451	4.595
1.2 Dead+1.0 Wind 240 deg - No Ice	26.340	-18.340	10.653	756.225	1309.465	4.238
0.9 Dead+1.0 Wind 240 deg - No Ice	19.755	-18.340	10.653	748.047	1294.626	4.251
1.2 Dead+1.0 Wind 270 deg - No Ice	26.340	-21.420	-0.514	-53.441	1535.743	2.803
0.9 Dead+1.0 Wind 270 deg - No Ice	19.755	-21.420	-0.514	-52.723	1518.398	2.804
1.2 Dead+1.0 Wind 300 deg - No Ice	26.340	-18.678	-11.178	-813.520	1344.554	0.649
0.9 Dead+1.0 Wind 300 deg - No Ice	19.755	-18.678	-11.178	-804.528	1329.267	0.639
1.2 Dead+1.0 Wind 330 deg - No Ice	26.340	-10.951	-18.892	-1361.516	795.452	-1.849
0.9 Dead+1.0 Wind 330 deg - No Ice	19.755	-10.951	-18.892	-1346.569	786.132	-1.869
1.2 Dead+1.0 Ice+1.0 Temp	48.695	-0.000	-0.000	-2.718	5.187	0.000
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	48.695	-0.109	-6.668	-499.150	17.516	-1.491
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	48.695	3.207	-5.745	-429.095	-228.655	-1.766
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	48.695	5.720	-3.245	-240.547	-418.178	-1.429
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	48.695	6.648	0.104	9.171	-488.360	-0.867
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	48.695	5.782	3.418	254.192	-425.353	-0.052
1.2 Dead+1.0 Wind 150	48.695	3.390	5.800	429.525	-249.211	0.759

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
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	48.695	0.100	6.647	490.950	-6.035	1.403
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	48.695	-3.229	5.735	422.099	241.465	1.669
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	48.695	-5.705	3.272	237.760	427.082	1.462
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	48.695	-6.656	-0.139	-18.099	499.690	0.867
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	48.695	-5.806	-3.433	-261.730	438.289	0.052
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	48.695	-3.404	-5.817	-437.307	261.226	-0.815
Dead+Wind 0 deg - Service	21.950	-0.096	-5.459	-390.075	11.942	-1.013
Dead+Wind 30 deg - Service	21.950	2.586	-4.709	-335.653	-178.547	-1.280
Dead+Wind 60 deg - Service	21.950	4.640	-2.653	-186.701	-327.221	-1.048
Dead+Wind 90 deg - Service	21.950	5.389	0.090	9.470	-381.285	-0.714
Dead+Wind 120 deg - Service	21.950	4.680	2.799	201.424	-331.658	-0.165
Dead+Wind 150 deg - Service	21.950	2.744	4.741	338.473	-195.069	0.408
Dead+Wind 180 deg - Service	21.950	0.084	5.435	386.877	-6.940	0.913
Dead+Wind 210 deg - Service	21.950	-2.612	4.697	333.762	184.991	1.170
Dead+Wind 240 deg - Service	21.950	-4.622	2.685	189.382	329.411	1.083
Dead+Wind 270 deg - Service	21.950	-5.399	-0.130	-13.453	386.112	0.715
Dead+Wind 300 deg - Service	21.950	-4.708	-2.817	-203.902	338.232	0.166
Dead+Wind 330 deg - Service	21.950	-2.760	-4.761	-341.214	200.649	-0.471

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
1	0.000	-21.950	0.000	0.000	21.950	0.000	0.000%
2	-0.379	-26.340	-21.661	0.379	26.340	21.661	0.000%
3	-0.379	-19.755	-21.661	0.379	19.755	21.661	0.000%
4	10.259	-26.340	-18.683	-10.259	26.340	18.683	0.000%
5	10.259	-19.755	-18.683	-10.259	19.755	18.683	0.000%
6	18.408	-26.340	-10.526	-18.408	26.340	10.526	0.000%
7	18.408	-19.755	-10.526	-18.408	19.755	10.526	0.000%
8	21.382	-26.340	0.355	-21.382	26.340	-0.355	0.000%
9	21.382	-19.755	0.355	-21.382	19.755	-0.355	0.000%
10	18.569	-26.340	11.106	-18.569	26.340	-11.106	0.000%
11	18.569	-19.755	11.106	-18.569	19.755	-11.106	0.000%
12	10.889	-26.340	18.812	-10.889	26.340	-18.812	0.000%
13	10.889	-19.755	18.812	-10.889	19.755	-18.812	0.000%
14	0.335	-26.340	21.563	-0.335	26.340	-21.563	0.000%
15	0.335	-19.755	21.563	-0.335	19.755	-21.563	0.000%
16	-10.363	-26.340	18.635	10.363	26.340	-18.635	0.000%
17	-10.363	-19.755	18.635	10.363	19.755	-18.635	0.000%
18	-18.340	-26.340	10.653	18.340	26.340	-10.653	0.000%
19	-18.340	-19.755	10.653	18.340	19.755	-10.653	0.000%
20	-21.420	-26.340	-0.514	21.420	26.340	0.514	0.000%
21	-21.420	-19.755	-0.514	21.420	19.755	0.514	0.000%
22	-18.678	-26.340	-11.178	18.678	26.340	11.178	0.000%
23	-18.678	-19.755	-11.178	18.678	19.755	11.178	0.000%
24	-10.951	-26.340	-18.892	10.951	26.340	18.892	0.000%
25	-10.951	-19.755	-18.892	10.951	19.755	18.892	0.000%
26	0.000	-48.695	0.000	0.000	48.695	0.000	0.000%
27	-0.109	-48.695	-6.668	0.109	48.695	6.668	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
28	3.207	-48.695	-5.745	-3.207	48.695	5.745	0.000%
29	5.720	-48.695	-3.245	-5.720	48.695	3.245	0.000%
30	6.648	-48.695	0.104	-6.648	48.695	-0.104	0.000%
31	5.782	-48.695	3.418	-5.782	48.695	-3.418	0.000%
32	3.390	-48.695	5.800	-3.390	48.695	-5.800	0.000%
33	0.100	-48.695	6.647	-0.100	48.695	-6.647	0.000%
34	-3.229	-48.695	5.734	3.229	48.695	-5.735	0.000%
35	-5.705	-48.695	3.272	5.705	48.695	-3.272	0.000%
36	-6.656	-48.695	-0.139	6.656	48.695	0.139	0.000%
37	-5.806	-48.695	-3.433	5.806	48.695	3.433	0.000%
38	-3.404	-48.695	-5.817	3.404	48.695	5.817	0.000%
39	-0.096	-21.950	-5.459	0.096	21.950	5.459	0.000%
40	2.586	-21.950	-4.709	-2.586	21.950	4.709	0.000%
41	4.640	-21.950	-2.653	-4.640	21.950	2.653	0.000%
42	5.389	-21.950	0.090	-5.389	21.950	-0.090	0.000%
43	4.680	-21.950	2.799	-4.680	21.950	-2.799	0.000%
44	2.744	-21.950	4.741	-2.744	21.950	-4.741	0.000%
45	0.084	-21.950	5.435	-0.084	21.950	-5.435	0.000%
46	-2.612	-21.950	4.697	2.612	21.950	-4.697	0.000%
47	-4.622	-21.950	2.685	4.622	21.950	-2.685	0.000%
48	-5.399	-21.950	-0.130	5.399	21.950	0.130	0.000%
49	-4.708	-21.950	-2.817	4.708	21.950	2.817	0.000%
50	-2.760	-21.950	-4.761	2.760	21.950	4.761	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	5	0.00000001	0.00038315
3	Yes	5	0.00000001	0.00017529
4	Yes	5	0.00000001	0.00076148
5	Yes	5	0.00000001	0.00033145
6	Yes	6	0.00000001	0.00005171
7	Yes	5	0.00000001	0.00048473
8	Yes	5	0.00000001	0.00007836
9	Yes	5	0.00000001	0.00003695
10	Yes	6	0.00000001	0.00004764
11	Yes	5	0.00000001	0.00044287
12	Yes	5	0.00000001	0.00094899
13	Yes	5	0.00000001	0.00040880
14	Yes	5	0.00000001	0.00021344
15	Yes	5	0.00000001	0.00009934
16	Yes	6	0.00000001	0.00005460
17	Yes	5	0.00000001	0.00051183
18	Yes	5	0.00000001	0.00082631
19	Yes	5	0.00000001	0.00035884
20	Yes	5	0.00000001	0.00024626
21	Yes	5	0.00000001	0.00011221
22	Yes	6	0.00000001	0.00004928
23	Yes	5	0.00000001	0.00045609
24	Yes	6	0.00000001	0.00005395
25	Yes	5	0.00000001	0.00050180
26	Yes	4	0.00000001	0.00007468
27	Yes	5	0.00000001	0.00044742
28	Yes	5	0.00000001	0.00051586

29	Yes	5	0.00000001	0.00059058
30	Yes	5	0.00000001	0.00034599
31	Yes	5	0.00000001	0.00055359
32	Yes	5	0.00000001	0.00053459
33	Yes	5	0.00000001	0.00040383
34	Yes	5	0.00000001	0.00063157
35	Yes	5	0.00000001	0.00051981
36	Yes	5	0.00000001	0.00037456
37	Yes	5	0.00000001	0.00060941
38	Yes	5	0.00000001	0.00066365
39	Yes	4	0.00000001	0.00052744
40	Yes	4	0.00000001	0.00046483
41	Yes	4	0.00000001	0.00067868
42	Yes	4	0.00000001	0.00020900
43	Yes	4	0.00000001	0.00045129
44	Yes	4	0.00000001	0.00040068
45	Yes	4	0.00000001	0.00041838
46	Yes	4	0.00000001	0.00078925
47	Yes	4	0.00000001	0.00042273
48	Yes	4	0.00000001	0.00027987
49	Yes	4	0.00000001	0.00049608
50	Yes	4	0.00000001	0.00066510

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	101 - 72.75	17.491	50	1.304	0.019
L2	76 - 36	10.850	50	1.197	0.011
L3	40 - 0	3.288	50	0.741	0.004

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
102.000	Strobe	50	17.491	1.304	0.020	44050
100.000	SC3-W100ASTX	50	17.220	1.301	0.020	44050
99.000	CC807-11	50	16.949	1.298	0.020	44050
98.000	SB2-190BB	50	16.677	1.295	0.019	44050
93.000	800 10121 w/ Mount Pipe	50	15.326	1.280	0.017	27531
83.000	(2) LPA-80063/6CF w/ Mount Pipe	50	12.661	1.239	0.014	12236
75.000	BPA7496-180-11	50	10.596	1.189	0.011	8154
73.000	6' x 2" Mount Pipe	50	10.093	1.173	0.011	7302
65.000	MX08FRO665-21 w/ Mount Pipe	50	8.153	1.095	0.009	5030
55.000	Rfs Celwave SC2-W100BD	50	5.946	0.971	0.007	3618

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	101 - 72.75	69.420	24	5.156	0.075
L2	76 - 36	43.131	24	4.753	0.043
L3	40 - 0	13.095	24	2.952	0.016

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
102.000	Strobe	24	69.420	5.156	0.078	11816
100.000	SC3-W100ASTX	24	68.347	5.146	0.077	11816
99.000	CC807-11	24	67.275	5.136	0.075	11816
98.000	SB2-190BB	24	66.202	5.126	0.074	11816
93.000	800 10121 w/ Mount Pipe	24	60.854	5.072	0.067	7384
83.000	(2) LPA-80063/6CF w/ Mount Pipe	24	50.306	4.920	0.053	3280
75.000	BPA7496-180-11	24	42.124	4.724	0.044	2168
73.000	6' x 2" Mount Pipe	24	40.129	4.661	0.041	1929
65.000	MX08FRO665-21 w/ Mount Pipe	24	32.429	4.354	0.034	1300
55.000	Rfs Celwave SC2-W100BD	24	23.665	3.862	0.026	922

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	101 - 72.75 (1)	TP25.481x20x0.188	28.250	0.000	0.0	14.677	-7.009	858.636	0.008
L2	72.75 - 36 (2)	TP32.236x24.475x0.25	40.000	0.000	0.0	24.765	-18.807	1448.760	0.013
L3	36 - 0 (3)	TP38.72x30.96x0.25	40.000	0.000	0.0	30.526	-26.311	1785.770	0.015

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	101 - 72.75 (1)	TP25.481x20x0.188	151.039	502.579	0.301	0.000	502.579	0.000
L2	72.75 - 36 (2)	TP32.236x24.475x0.25	733.503	1092.483	0.671	0.000	1092.483	0.000
L3	36 - 0 (3)	TP38.72x30.96x0.25	1576.858	1531.542	1.030	0.000	1531.542	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	101 - 72.75 (1)	TP25.481x20x0.188	11.187	257.591	0.043	2.965	556.359	0.005
L2	72.75 - 36 (2)	TP32.236x24.475x0.25	20.172	434.627	0.046	1.855	1187.925	0.002
L3	36 - 0 (3)	TP38.72x30.96x0.25	21.871	535.730	0.041	1.849	1804.883	0.001

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	101 - 72.75 (1)	0.008	0.301	0.000	0.043	0.005	0.311 ✔	1.050	4.8.2 ✔
L2	72.75 - 36 (2)	0.013	0.671	0.000	0.046	0.002	0.687 ✔	1.050	4.8.2 ✔
L3	36 - 0 (3)	0.015	1.030	0.000	0.041	0.001	1.046 ✔	1.050	4.8.2 ✔

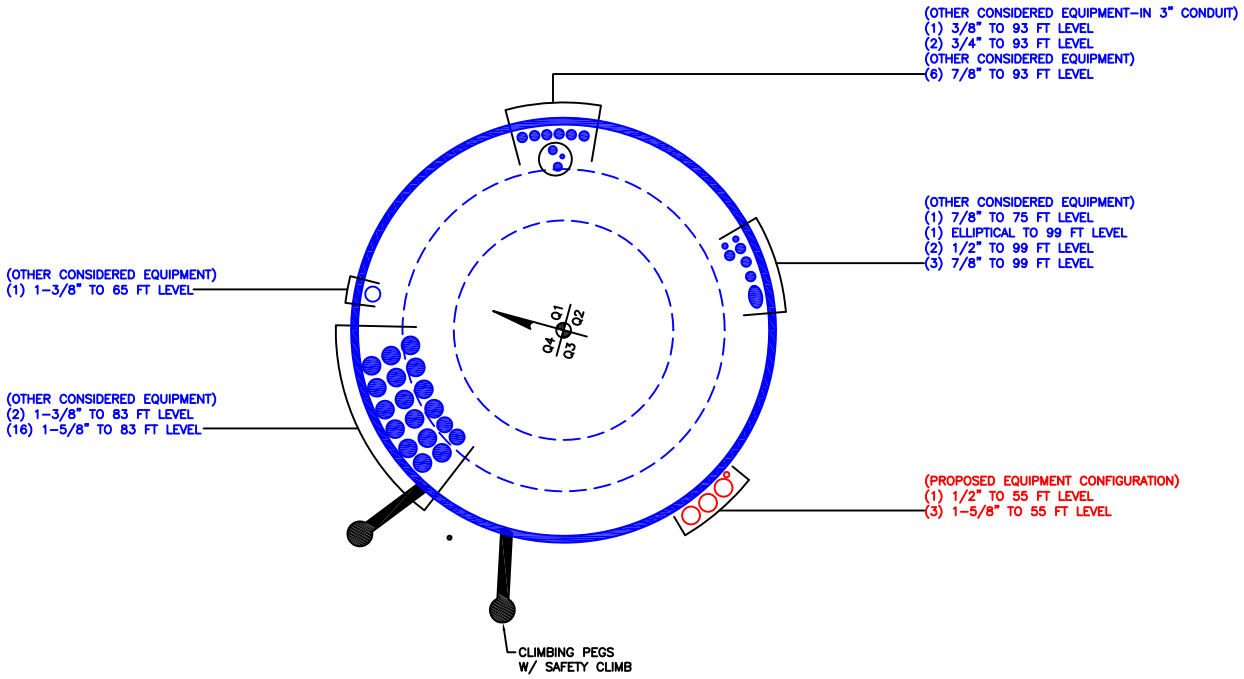
Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	101 - 72.75	Pole	TP25.481x20x0.188	1	-7.009	901.568	29.6	Pass
L2	72.75 - 36	Pole	TP32.236x24.475x0.25	2	-18.807	1521.198	65.4	Pass
L3	36 - 0	Pole	TP38.72x30.96x0.25	3	-26.311	1875.058	99.6	Pass
							Summary	
						Pole (L3)	99.6	Pass
						RATING =	**99.6**	**Pass**

Program Version 8.1.1.0

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 842877

APPENDIX C

ADDITIONAL CALCULATIONS

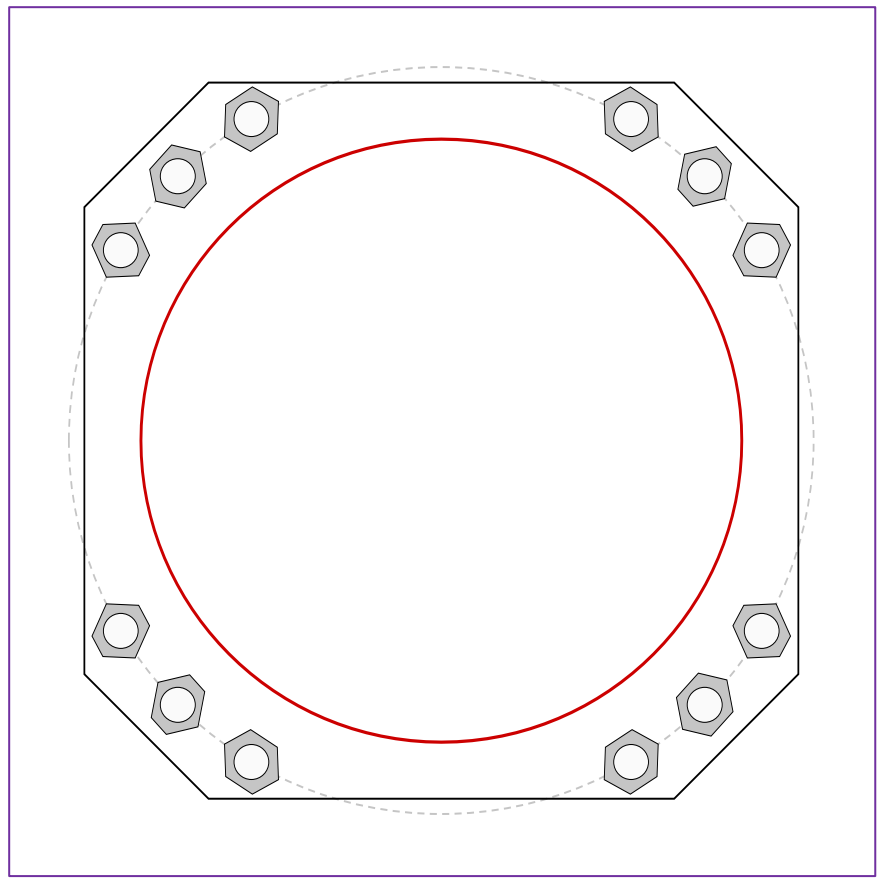
Monopole Base Plate Connection

Site Info	
BU #	842877
Site Name	WINDSOR NORTH, CT
Order #	614541; Rev# 0

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	No
l_{ar} (in)	2

Applied Loads	
Moment (kip-ft)	1576.85
Axial Force (kips)	26.31
Shear Force (kips)	21.87

**TIA-222-H Section 15.5 Applied*



Connection Properties

Anchor Rod Data

(12) 2-1/4" ø bolts (A615-75 N; Fy=75 ksi, Fu=100 ksi) on 48" BC

Anchor Spacing: 6 in

Base Plate Data

46" W x 2.5" Plate (A572-55; Fy=55 ksi, Fu=70 ksi); Clip: 8 in

Stiffener Data

N/A

Pole Data

38.72" x 0.25" 18-sided pole (A607-65; Fy=65 ksi, Fu=80 ksi)

Analysis Results

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

Pu_t = 129.09	ϕPn_t = 243.75	**Stress Rating**
Vu = 1.82	ϕVn = 149.1	**50.4%**
Mu = n/a	ϕMn = n/a	**Pass**

Base Plate Summary

Max Stress (ksi):	39.51	(Flexural)
Allowable Stress (ksi):	49.5	
Stress Rating:	**76.0%**	**Pass**

Drilled Pier Foundation

BU # :	842877
Site Name:	WINDSOR NORTH, CT
Order Number:	614541; Rev.0
TIA-222 Revison:	H
Tower Type:	Monopole

Applied Loads	Comp.	Uplift
Moment (kip-ft)	1577	
Axial Force (kips)	26	
Shear Force (kips)	22	

Material Properties			Rebar 2, Fy Override (ksi)
Concrete Strength, f'c:	3	ksi	
Rebar Strength, Fy:	60	ksi	
Tie Yield Strength, Fyt:	40	ksi	

Pier Design Data		
Depth	18	ft
Ext. Above Grade	0.5	ft
Pier Section 1		
From 0.5' above grade to 18' below grade		
Pier Diameter	6	ft
Rebar Quantity	16	
Rebar Size	11	
Clear Cover to Ties	4	in
Tie Size	5	
Tie Spacing	18	in

Rebar & Pier Options
Embedded Pole Inputs
Belled Pier Inputs

Analysis Results		
Soil Lateral Check	*Compression*	*Uplift*
$D_{v=0}$ (ft from TOC)	5.17	-
Soil Safety Factor	2.08	-
Max Moment (kip-ft)	1677.29	-
Rating*	*60.9%*	-
Soil Vertical Check	*Compression*	*Uplift*
Skin Friction (kips)	209.23	-
End Bearing (kips)	678.58	-
Weight of Concrete (kips)	72.96	-
Total Capacity (kips)	887.81	-
Axial (kips)	98.96	-
Rating*	*10.6%*	-
Reinforced Concrete Flexure	*Compression*	*Uplift*
Critical Depth (ft from TOC)	4.99	-
Critical Moment (kip-ft)	1676.98	-
Critical Moment Capacity	3330.77	-
Rating*	*48.0%*	-
Reinforced Concrete Shear	*Compression*	*Uplift*
Critical Depth (ft from TOC)	13.16	-
Critical Shear (kip)	265.01	-
Critical Shear Capacity	430.68	-
Rating*	*58.6%*	-

Structural Foundation Rating*	**58.6%**
Soil Interaction Rating*	**60.9%**

*Rating per TIA-222-H Section 15.5

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

Go to Soil Calculations

Soil Profile

Groundwater Depth	8	# of Layers	5

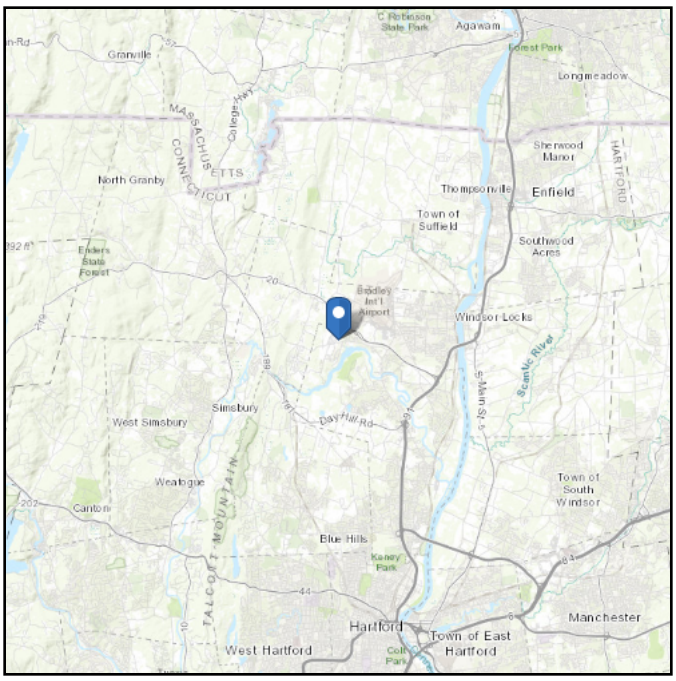
Layer	Top (ft)	Bottom (ft)	Thickness (ft)	γ_{soil} (pcf)	$\gamma_{concrete}$ (pcf)	Cohesion (ksf)	Angle of Friction (degrees)	Calculated Ultimate Skin Friction Comp (ksf)	Calculated Ultimate Skin Friction Uplift (ksf)	Ultimate Skin Friction Comp Override (ksf)	Ultimate Skin Friction Uplift Override (ksf)	Ult. Gross Bearing Capacity (ksf)	SPT Blow Count	Soil Type
1	0	3.333	3.333	135	150	0	0	0.000	0.000	0.00	0.00			Cohesionless
2	3.333	5	1.667	135	150	0	34	0.000	0.000	0.00	0.00			Cohesionless
3	5	8	3	135	150	0	34	0.000	0.000	1.00	1.00			Cohesionless
4	8	15	7	75	87.6	0	34	0.000	0.000	1.00	1.00			Cohesionless
5	15	18	3	75	87.6	0	34	0.000	0.000	1.60	1.60	32		Cohesionless

ASCE 7 Hazards Report

Address:
No Address at This Location

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

Elevation: 185.5 ft (NAVD 88)
Latitude: 41.919286
Longitude: -72.710436



Wind

Results:

Wind Speed	116 Vmph
10-year MRI	75 Vmph
25-year MRI	83 Vmph
50-year MRI	90 Vmph
100-year MRI	96 Vmph

Data Source: ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2
Date Accessed: Mon May 02 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.

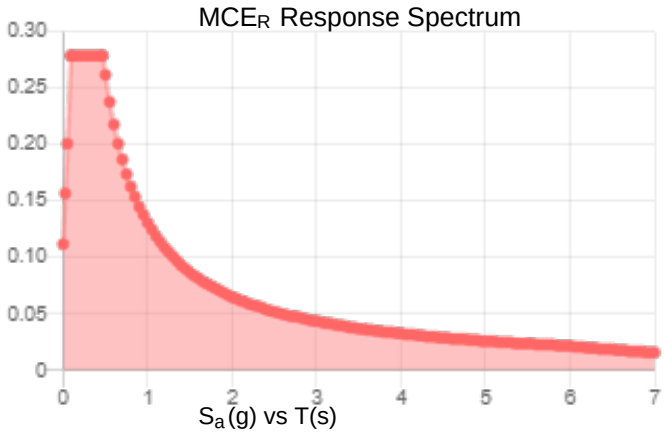
Seismic

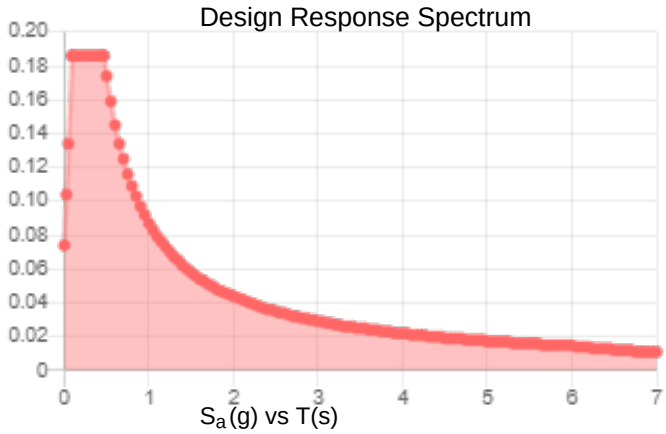
Site Soil Class: D - Default (see Section 11.4.3)

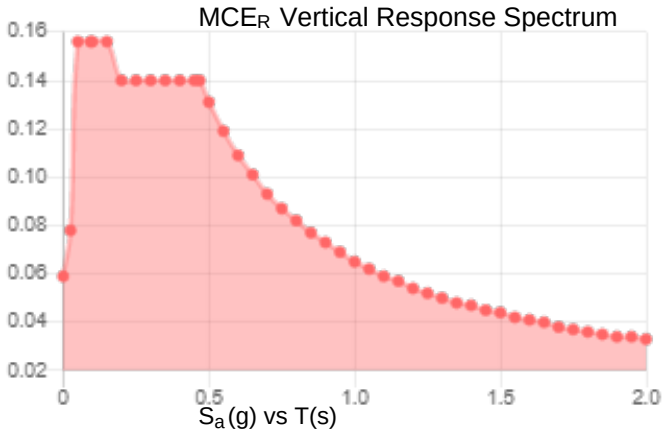
Results:

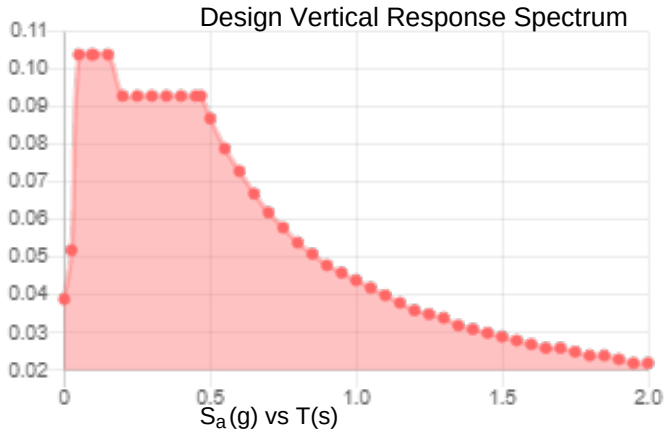
S_S :	0.175	S_{D1} :	0.087
S_1 :	0.054	T_L :	6
F_a :	1.6	PGA :	0.092
F_v :	2.4	PGA_M :	0.147
S_{MS} :	0.279	F_{PGA} :	1.6
S_{M1} :	0.131	I_e :	1
S_{DS} :	0.186	C_v :	0.7

Seismic Design Category B









Data Accessed: **Mon May 02 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:	Mon May 02 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: **May 4, 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:	CTHA134A
	Carrier Site Name:	Rainbow Rd Windsor Crown
Crown Castle Designation:	**BU Number:**	842877
	Site Name:	Windsor North
	JDE Job Number:	714963
	Order Number:	614541 Rev. 0
Engineering Firm Designation:	**Trylon Report Designation:**	208375
Site Data:	**750 Rainbow Road, Windsor, Hartford County, CT, 06095**	
	Latitude 41°55'9.43" Longitude -72°42'37.57"	
Structure Information:	**Tower Height & Type:**	**101.0 ft Monopole**
	Mount Elevation:	**55.0 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 above mentioned supporting tower structure. Analysis of the existing supporting tower structure is to be completed by others and therefore is not part of this analysis. Analysis of the antenna mounting system as a tie-off point for fall protection or rigging is not part of this document.

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

Mount analysis prepared by: Alexandra Chetreanu

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:	2015 IBC
TIA-222 Revision:	TIA-222-H
Risk Category:	II
Ultimate Wind Speed:	125 mph
Exposure Category:	C
Topographic Factor at Base:	1.00
Topographic Factor at Mount:	1.00
Ice Thickness:	2.00 in
Wind Speed with Ice:	50 mph
Seismic S_s:	0.179
Seismic S_1:	0.064
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
55.0	55.0	3	Commscope	VV-65A-R1_TMO	12.5 ft Platform **[Site Pro 1, RMQP-4096-HK]**
		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	614541, Rev. 0	CCI Sites
Structural Analysis Report	Crown Castle	9801163	CCI Sites
Mount Manufacturer Drawings	Site Pro 1	RMQP-4096-HK	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). In addition, this analysis is in accordance with AT&T's Mount Technical Directive.

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)	MP7	55.0	24.5	Pass
	Horizontal(s)	H1		11.9	Pass
	Standoff(s)	M70		27.8	Pass
	Bracing(s)	M69		16.0	Pass
	Handrail(s)	M75		51.8	Pass
	Kicker(s)	M101A		12.5	Pass
	Plate(s)	M41		35.0	Pass
	Mount Connection(s)	-		20.5	Pass

Structure Rating (max from all components) =	51.8%

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

4.1) Recommendations

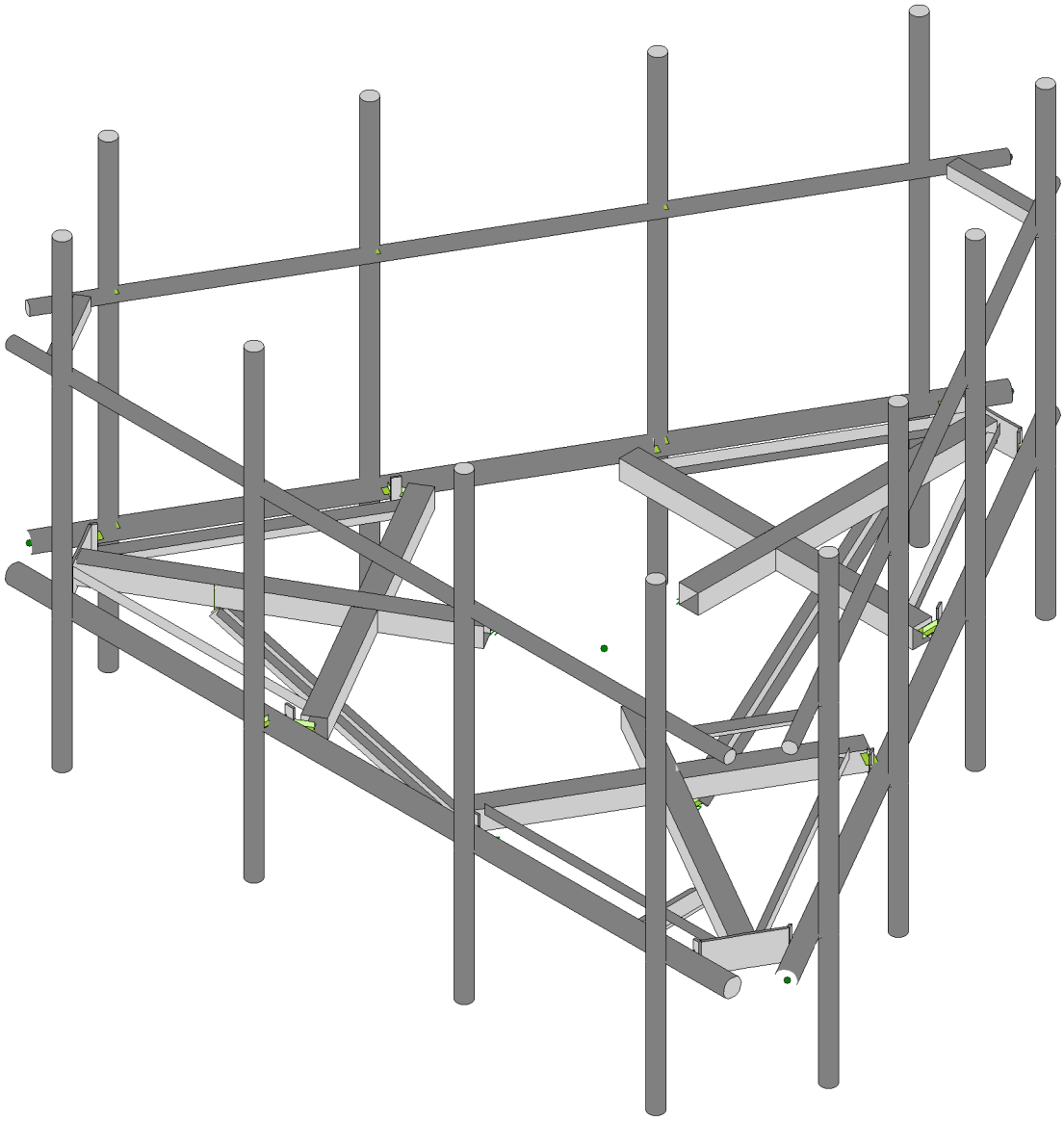
The mount has sufficient capacity to carry the proposed loading configuration. In order for the results of the analysis to be considered valid, the proposed mount listed below must be installed.

1. Site Pro 1, RMQP-4096-HK.
2. The handrail will be installed at approx. 42” from bottom face horizontal.

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

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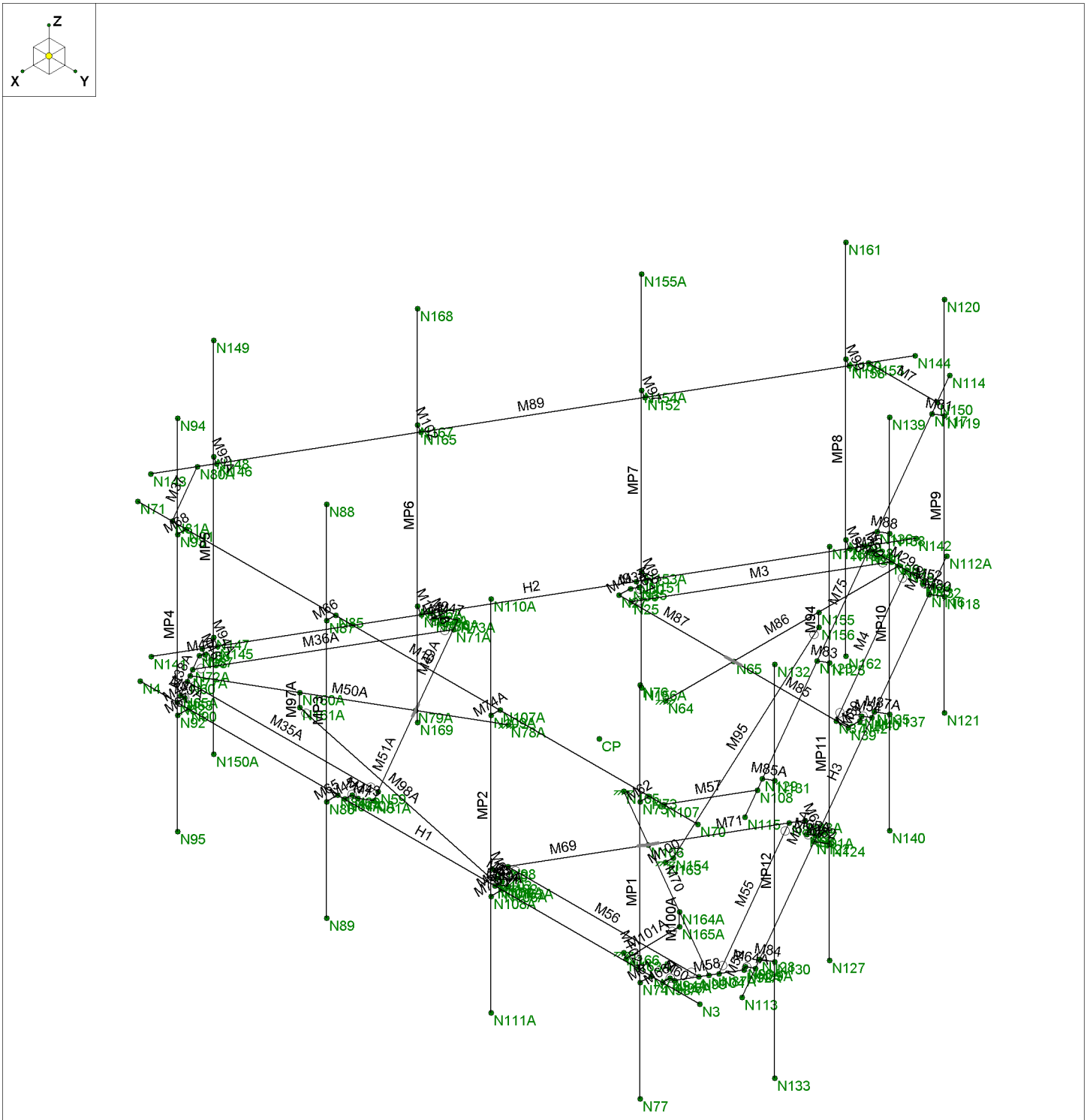

Envelope Only Solution

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APPENDIX B

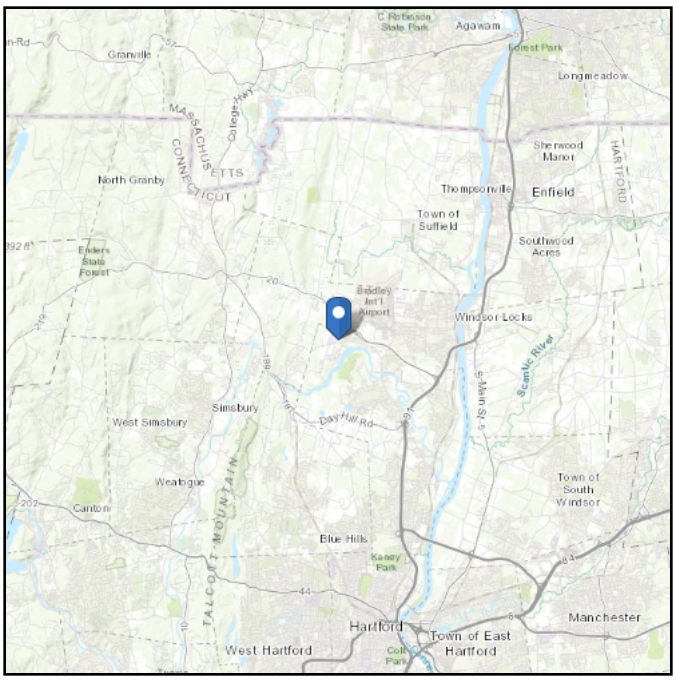
SOFTWARE INPUT CALCULATIONS

ASCE 7 Hazards Report

Address:
No Address at This Location

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

Elevation: 185.5 ft (NAVD 88)
Latitude: 41.919286
Longitude: -72.710436



Ice

Results:

Ice Thickness:	1.00 in.
Concurrent Temperature:	5 F
Gust Speed	50 mph

Data Source: Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8

Date Accessed: Wed May 04 2022

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

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

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

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

TIA LOAD CALCULATOR 2.2

PROJECT DATA	
Job Code:	208375
Carrier Site ID:	CTHA134A
Carrier Site Name:	Rainbow Rd Windsor Crown

CODES AND STANDARDS	
Building Code:	2015 IBC
Local Building Code:	-
Design Standard:	TIA-222-H

STRUCTURE DETAILS		
Mount Type:	Platform	--
Mount Elevation:	55.0	ft.
Number of Sectors:	3	--
Structure Type:	Monopole	--
Structure Height:	101.0	ft.

ANALYSIS CRITERIA		
Structure Risk Category:	II	--
Exposure Category:	C	--
Site Class:	D - Stiff Soil	--
Ground Elevation:	128.32	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:	125	mph
Wind Escalation Factor (K_s):	1.00	--
Velocity Coefficient (K_z):	1.12	--
Directionality Factor (K_d):	0.95	--
Gust Effect Factor (Gh):	1.00	--
Shielding Factor (K_a):	0.90	--
Velocity Pressure (q_z):	42.21	psf
Ground Elevation Factor (K_e):	1.00	--

ICE PARAMETERS		
Design Ice Wind Speed:	50	mph
Design Ice Thickness (t_i):	2.00	in
Importance Factor (I_i):	1.00	--
Ice Velocity Pressure (q_{zi}):	6.37	psf
Mount Ice Thickness (t_{iz}):	2.10	in

WIND STRUCTURE CALCULATIONS		
Flat Member Pressure:	75.98	psf
Round Member Pressure:	45.59	psf
Ice Wind Pressure:	6.88	psf

SEISMIC PARAMETERS		
Importance Factor (I_e):	1.00	--
Short Period Accel .(S_s):	0.179	g
1 Second Accel (S_1):	0.064	g
Short Period Des. (S_{DS}):	0.19	g
1 Second Des. (S_{D1}):	0.10	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)
VV-65A-R1_TMO	3	55	No Ice	4.48	1.74	33.30
--	--	--	w/ Ice	6.46	3.51	174.77
AIR 6419 B41_TMO	3	55	No Ice	7	2.83	96.50
--	--	--	w/ Ice	9.29	4.66	214.17
APXVAALL24_43-U-NA20_TMO	3	55	No Ice	14.67	5.32	149.90
--	--	--	w/ Ice	17.86	8.13	529.19
SC2-W100BD	1	55	No Ice	5.81	2.57	20.00
--	--	--	w/ Ice	6.67	3.22	218.82
RADIO 4460B2/B25 B66_TMO	3	55	No Ice	2.14	1.69	109.00
--	--	--	w/ Ice	2.69	2.19	114.82
Radio4480_TMOV2	3	55	No Ice	2.88	1.40	81.00
--	--	--	w/ Ice	3.51	1.92	114.07
			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]
VV-65A-R1_TMO	3	55	1.00	1.12	0.95	2.10	42.21	6.75
AIR 6419 B41_TMO	3	55	1.00	1.12	0.95	2.10	42.21	6.75
XVAALL24_43-U-NA20_TI	3	55	1.00	1.12	0.95	2.10	42.21	6.75
SC2-W100BD	1	55	1.00	1.12	0.95	2.10	42.21	6.75
DIO 4460B2/B25 B66_TM	3	55	1.00	1.12	0.95	2.10	42.21	6.75
Radio4480_TMOV2	3	55	1.00	1.12	0.95	2.10	42.21	6.75

EQUIPMENT LATERAL WIND FORCE CALCULATIONS

Appurtenance Name	Qty.	--	0° 180°	30° 210°	60° 240°	90° 270°	120° 300°	150° 330°
VV-65A-R1_TMO	3	No Ice	170.19	92.12	144.17	66.10	144.17	92.12
--	--	w/ Ice	39.26	25.84	34.79	21.36	34.79	25.84
AIR 6419 B41_TMO	3	No Ice	265.92	147.11	226.32	107.51	226.32	147.11
--	--	w/ Ice	56.45	35.34	49.42	28.31	49.42	35.34
APXVAALL24_43-U-NA20_TMO	3	No Ice	557.29	290.90	468.49	202.10	468.49	290.90
--	--	w/ Ice	108.54	64.19	93.76	49.40	93.76	64.19
SC2-W100BD	1	No Ice	240.31	110.85	197.15	67.70	197.15	110.85
--	--	w/ Ice	40.54	24.82	35.30	19.58	35.30	24.82
RADIO 4460B2/B25 B66_TMO	3	No Ice	81.26	68.35	76.96	64.04	76.96	68.35
--	--	w/ Ice	16.34	14.06	15.58	13.30	15.58	14.06
Radio4480_TMOV2	3	No Ice	109.34	67.14	95.28	53.07	95.28	67.14
--	--	w/ Ice	21.36	14.07	18.93	11.65	18.93	14.07
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ 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						
		No Ice						
--	--	w/ Ice						

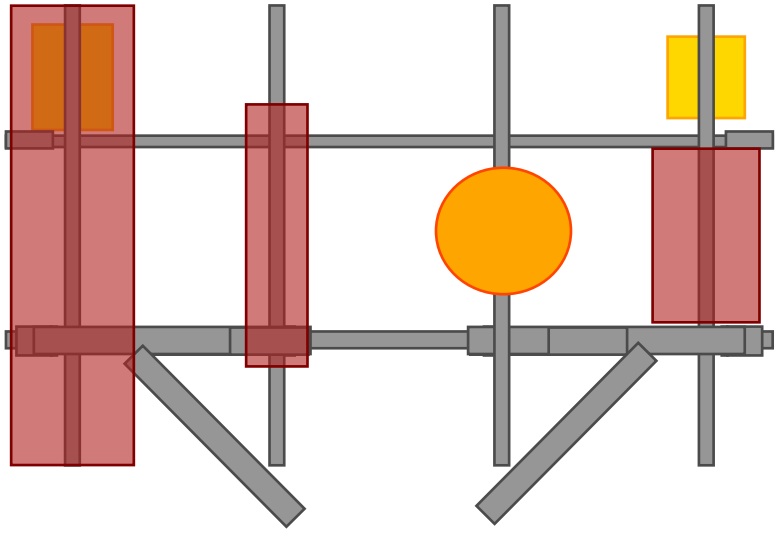
EQUIPMENT LATERAL WIND FORCE CALCULATIONS [CONT.]

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]
VV-65A-R1_TMO	3	55	33.3	3.81
AIR 6419 B41_TMO	3	55	96.5	11.06
APXVAALL24_43-U-NA20_TMO	3	55	149.9	17.17
SC2-W100BD	1	55	20	2.29
RADIO 4460B2/B25 B66_TMO	3	55	109	12.49
Radio4480_TMOV2	3	55	81	9.28

ELEVATION VIEW

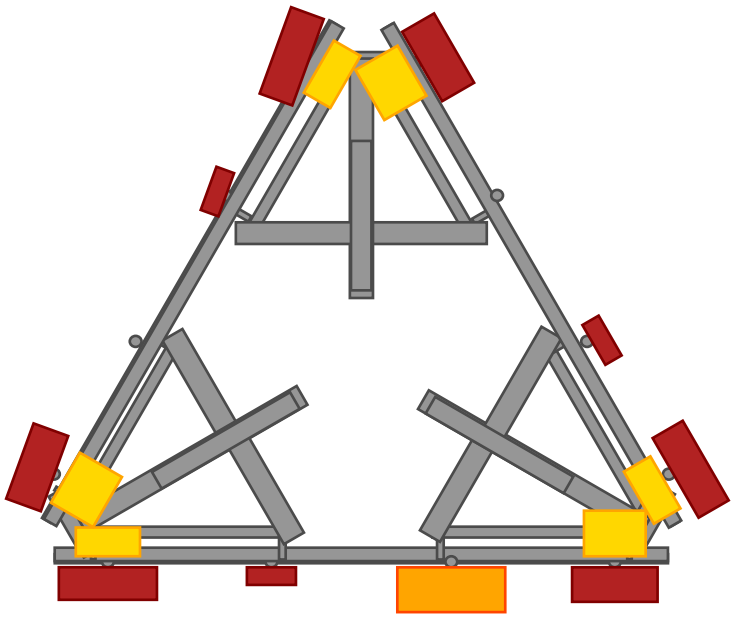


MP4 MP3 MP2 MP1

*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



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

Equipment Name	Total Quantity	Antenna Centerline	Mount Pipe Positions	Equipment Azimuths
VV-65A-R1_TMO	3	55	MP3/MP7/MP11	0/110/240
AIR 6419 B41_TMO	3	55	MP1/MP5/MP9	0/110/240
APXVAALL24_43-U-NA20_TMO	3	55	MP4/MP8/MP12	0/110/240
SC2-W100BD	1	55	MP2	0
RADIO 4460B2/B25 B66_TMO	3	55	MP1/MP5/MP9	0/120/240
Radio4480_TMOV2	3	55	MP4/MP8/MP12	0/120/240

APPENDIX C

SOFTWARE ANALYSIS OUTPUT

(Global) Model Settings

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

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

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

(Global) Model Settings, Continued

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

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (/1...	Density[k/f...	Yield[ksi]	Ry	Fu[ksi]	Rt
1	A992	29000	11154	.3	.65	.49	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	.3	.65	.49	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	.3	.65	.527	42	1.4	58	1.3
5	A500 Gr.B Rect	29000	11154	.3	.65	.527	46	1.4	58	1.3
6	A53 Gr.B	29000	11154	.3	.65	.49	35	1.6	60	1.2
7	A1085	29000	11154	.3	.65	.49	50	1.4	65	1.3
8	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 List	Material	Design ...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	PIPE_2.0	PIPE_2.0	Beam	Pipe	A53 Gr.B	Typical	1.02	.627	.627	1.25
2	HSS4X4X4	HSS4X4X4	Beam	Tube	A53 Gr.B	Typical	3.37	7.8	7.8	12.8
3	L2x2x3	L2x2x3	Beam	Single Angle	A36 Gr.36	Typical	.722	.271	.271	.009
4	L2.5x2.5x4	L2.5x2.5x4	Beam	Single Angle	A36 Gr.36	Typical	1.19	.692	.692	.026
5	Plate 6"x0.5"	Pl 6"x0.5"	Beam	RECT	A36 Gr.36	Typical	3	.063	9	.237
6	Plate 6"x0.375"	PL 6x0.375	Beam	RECT	A36 Gr.36	Typical	2.25	.026	6.75	.101

Hot Rolled Steel Section Sets (Continued)

	Label	Shape	Type	Design List	Material	Design ...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
7	PIPE_3.0	PIPE_3.0	Beam	Pipe	A53 Gr.B	Typical	2.07	2.85	2.85	5.69
8	PIPE_2.5	PIPE_2.5	Beam	Pipe	A53 Gr.B	Typical	1.61	1.45	1.45	2.89
9	PRK 1245	LL2.5x2.5x3x0	Beam	Double Angle (3/8 Gap)	A36 Gr.36	Typical	1.8	1.91	1.07	.023

Cold Formed Steel Section Sets

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

Joint Boundary Conditions

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
1	N64	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
2	N154						
3	N155						
4	N156						
5	N163	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
6	N78A	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
7	N105	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
8	N159A						
9	N160A						
10	N161A						
11	N162A	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
12	N163A						
13	N164A						
14	N165A						
15	N166	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						102		
3	Structure Wind Y	WLY						102		
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	102	3	
13	Ice Structure Wind X	OL2						102		
14	Ice Structure Wind Y	OL3						102		
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			

Basic Load Cases (Continued)

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(...
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			
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 Loa...	None						54		

Load Combinations

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

Load Combinations (Continued)

	Description	S...	P...	S...	B...	Factor	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...
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														
34	1.2DL + 1DLi + 1WLi 0 A...	Yes	Y		DL	1.2	O...	1	13	1	14		15	1												
35	1.2DL + 1DLi + 1WLi 30 ...	Yes	Y		DL	1.2	O...	1	13	.866	14	.5	16	1												
36	1.2DL + 1DLi + 1WLi 45 ...	Yes	Y		DL	1.2	O...	1	13	.707	14	.707	17	1												
37	1.2DL + 1DLi + 1WLi 60 ...	Yes	Y		DL	1.2	O...	1	13	.5	14	.866	18	1												
38	1.2DL + 1DLi + 1WLi 90 ...	Yes	Y		DL	1.2	O...	1	13		14	1	19	1												
39	1.2DL + 1DLi + 1WLi 12...	Yes	Y		DL	1.2	O...	1	13	-.5	14	.866	20	1												
40	1.2DL + 1DLi + 1WLi 13...	Yes	Y		DL	1.2	O...	1	13	-.707	14	.707	21	1												
41	1.2DL + 1DLi + 1WLi 15...	Yes	Y		DL	1.2	O...	1	13	-.866	14	.5	22	1												
42	1.2DL + 1DLi + 1WLi 18...	Yes	Y		DL	1.2	O...	1	13	-1	14		15	-1												
43	1.2DL + 1DLi + 1WLi 21...	Yes	Y		DL	1.2	O...	1	13	-.866	14	-.5	16	-1												
44	1.2DL + 1DLi + 1WLi 22...	Yes	Y		DL	1.2	O...	1	13	-.707	14	-.707	17	-1												
45	1.2DL + 1DLi + 1WLi 24...	Yes	Y		DL	1.2	O...	1	13	-.5	14	-.866	18	-1												
46	1.2DL + 1DLi + 1WLi 27...	Yes	Y		DL	1.2	O...	1	13		14	-1	19	-1												
47	1.2DL + 1DLi + 1WLi 30...	Yes	Y		DL	1.2	O...	1	13	.5	14	-.866	20	-1												
48	1.2DL + 1DLi + 1WLi 31...	Yes	Y		DL	1.2	O...	1	13	.707	14	-.707	21	-1												
49	1.2DL + 1DLi + 1WLi 33...	Yes	Y		DL	1.2	O...	1	13	.866	14	-.5	22	-1												
50	(1.2+0.2Sds)DL + 1E 0 A...	Yes	Y		DL	1.238	23	1	24																	
51	(1.2+0.2Sds)DL + 1E 30 ...	Yes	Y		DL	1.238	23	.866	24	.5																
52	(1.2+0.2Sds)DL + 1E 45 ...	Yes	Y		DL	1.238	23	.707	24	.707																
53	(1.2+0.2Sds)DL + 1E 60 ...	Yes	Y		DL	1.238	23	.5	24	.866																
54	(1.2+0.2Sds)DL + 1E 90 ...	Yes	Y		DL	1.238	23		24	1																
55	(1.2+0.2Sds)DL + 1E 12...	Yes	Y		DL	1.238	23	-.5	24	.866																
56	(1.2+0.2Sds)DL + 1E 13...	Yes	Y		DL	1.238	23	-.707	24	.707																
57	(1.2+0.2Sds)DL + 1E 15...	Yes	Y		DL	1.238	23	-.866	24	.5																
58	(1.2+0.2Sds)DL + 1E 18...	Yes	Y		DL	1.238	23	-1	24																	
59	(1.2+0.2Sds)DL + 1E 21...	Yes	Y		DL	1.238	23	-.866	24	-.5																
60	(1.2+0.2Sds)DL + 1E 22...	Yes	Y		DL	1.238	23	-.707	24	-.707																
61	(1.2+0.2Sds)DL + 1E 24...	Yes	Y		DL	1.238	23	-.5	24	-.866																
62	(1.2+0.2Sds)DL + 1E 27...	Yes	Y		DL	1.238	23		24	-1																
63	(1.2+0.2Sds)DL + 1E 30...	Yes	Y		DL	1.238	23	.5	24	-.866																
64	(1.2+0.2Sds)DL + 1E 31...	Yes	Y		DL	1.238	23	.707	24	-.707																
65	(1.2+0.2Sds)DL + 1E 33...	Yes	Y		DL	1.238	23	.866	24	-.5																
66	(0.9-0.2Sds)DL + 1E 0 AZI	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 120...	Yes	Y		DL	.862	23	-.5	24	.866																

Load Combinations (Continued)

	Description	S...	P...	S...	B...	Factor	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac...
72	(0.9-0.2Sds)DL + 1E 135..	Yes	Y		DL	.862	23	-.707	24	.707																		
73	(0.9-0.2Sds)DL + 1E 150..	Yes	Y		DL	.862	23	-.866	24	.5																		
74	(0.9-0.2Sds)DL + 1E 180..	Yes	Y		DL	.862	23	-1	24																			
75	(0.9-0.2Sds)DL + 1E 210..	Yes	Y		DL	.862	23	-.866	24	-.5																		
76	(0.9-0.2Sds)DL + 1E 225..	Yes	Y		DL	.862	23	-.707	24	-.707																		
77	(0.9-0.2Sds)DL + 1E 240..	Yes	Y		DL	.862	23	-.5	24	-.866																		
78	(0.9-0.2Sds)DL + 1E 270..	Yes	Y		DL	.862	23		24	-1																		
79	(0.9-0.2Sds)DL + 1E 300..	Yes	Y		DL	.862	23	.5	24	-.866																		
80	(0.9-0.2Sds)DL + 1E 315..	Yes	Y		DL	.862	23	.707	24	-.707																		
81	(0.9-0.2Sds)DL + 1E 330..	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																				
86	1.2DL + 1Lv5	Yes	Y		DL	1.2	29	1.5																				
87	1.2DL + 1Lv6	Yes	Y		DL	1.2	30	1.5																				
88	1.2DL + 1Lv7	Yes	Y		DL	1.2	31	1.5																				
89	1.2DL + 1Lv8	Yes	Y		DL	1.2	32	1.5																				
90	1.2DL + 1Lv9	Yes	Y		DL	1.2	33	1.5																				
91	1.2DL + 1.5Lm + 1Wm 0..	Yes	Y		DL	1.2	34	1.5	2	.058	3		4	.058														
92	1.2DL + 1.5Lm + 1Wm 3..	Yes	Y		DL	1.2	34	1.5	2	.05	3	.029	5	.058														
93	1.2DL + 1.5Lm + 1Wm 4..	Yes	Y		DL	1.2	34	1.5	2	.041	3	.041	6	.058														
94	1.2DL + 1.5Lm + 1Wm 6..	Yes	Y		DL	1.2	34	1.5	2	.029	3	.05	7	.058														
95	1.2DL + 1.5Lm + 1Wm 9..	Yes	Y		DL	1.2	34	1.5	2		3	.058	8	.058														
96	1.2DL + 1.5Lm + 1Wm 1..	Yes	Y		DL	1.2	34	1.5	2	-.029	3	.05	9	.058														
97	1.2DL + 1.5Lm + 1Wm 1..	Yes	Y		DL	1.2	34	1.5	2	-.041	3	.041	10	.058														
98	1.2DL + 1.5Lm + 1Wm 1..	Yes	Y		DL	1.2	34	1.5	2	-.05	3	.029	11	.058														
99	1.2DL + 1.5Lm + 1Wm 1..	Yes	Y		DL	1.2	34	1.5	2	-.058	3		4	-.058														
100	1.2DL + 1.5Lm + 1Wm 2..	Yes	Y		DL	1.2	34	1.5	2	-.05	3	-.029	5	-.058														
101	1.2DL + 1.5Lm + 1Wm 2..	Yes	Y		DL	1.2	34	1.5	2	-.041	3	-.041	6	-.058														
102	1.2DL + 1.5Lm + 1Wm 2..	Yes	Y		DL	1.2	34	1.5	2	-.029	3	-.05	7	-.058														
103	1.2DL + 1.5Lm + 1Wm 2..	Yes	Y		DL	1.2	34	1.5	2		3	-.058	8	-.058														
104	1.2DL + 1.5Lm + 1Wm 3..	Yes	Y		DL	1.2	34	1.5	2	.029	3	-.05	9	-.058														
105	1.2DL + 1.5Lm + 1Wm 3..	Yes	Y		DL	1.2	34	1.5	2	.041	3	-.041	10	-.058														
106	1.2DL + 1.5Lm + 1Wm 3..	Yes	Y		DL	1.2	34	1.5	2	.05	3	-.029	11	-.058														
107	1.2DL + 1.5Lm + 1Wm 0..	Yes	Y		DL	1.2	35	1.5	2	.058	3		4	.058														
108	1.2DL + 1.5Lm + 1Wm 3..	Yes	Y		DL	1.2	35	1.5	2	.05	3	.029	5	.058														
109	1.2DL + 1.5Lm + 1Wm 4..	Yes	Y		DL	1.2	35	1.5	2	.041	3	.041	6	.058														
110	1.2DL + 1.5Lm + 1Wm 6..	Yes	Y		DL	1.2	35	1.5	2	.029	3	.05	7	.058														
111	1.2DL + 1.5Lm + 1Wm 9..	Yes	Y		DL	1.2	35	1.5	2		3	.058	8	.058														
112	1.2DL + 1.5Lm + 1Wm 1..	Yes	Y		DL	1.2	35	1.5	2	-.029	3	.05	9	.058														
113	1.2DL + 1.5Lm + 1Wm 1..	Yes	Y		DL	1.2	35	1.5	2	-.041	3	.041	10	.058														
114	1.2DL + 1.5Lm + 1Wm 1..	Yes	Y		DL	1.2	35	1.5	2	-.05	3	.029	11	.058														
115	1.2DL + 1.5Lm + 1Wm 1..	Yes	Y		DL	1.2	35	1.5	2	-.058	3		4	-.058														
116	1.2DL + 1.5Lm + 1Wm 2..	Yes	Y		DL	1.2	35	1.5	2	-.05	3	-.029	5	-.058														
117	1.2DL + 1.5Lm + 1Wm 2..	Yes	Y		DL	1.2	35	1.5	2	-.041	3	-.041	6	-.058														
118	1.2DL + 1.5Lm + 1Wm 2..	Yes	Y		DL	1.2	35	1.5	2	-.029	3	-.05	7	-.058														
119	1.2DL + 1.5Lm + 1Wm 2..	Yes	Y		DL	1.2	35	1.5	2		3	-.058	8	-.058														
120	1.2DL + 1.5Lm + 1Wm 3..	Yes	Y		DL	1.2	35	1.5	2	.029	3	-.05	9	-.058														
121	1.2DL + 1.5Lm + 1Wm 3..	Yes	Y		DL	1.2	35	1.5	2	.041	3	-.041	10	-.058														
122	1.2DL + 1.5Lm + 1Wm 3..	Yes	Y		DL	1.2	35	1.5	2	.05	3	-.029	11	-.058														
123	1.2DL + 1.5Lm + 1Wm 0..	Yes	Y		DL	1.2	36	1.5	2	.058	3		4	.058														

Load Combinations (Continued)

	Description	S...	P...	S...	B...	Factor	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...
124	1.2DL + 1.5Lm + 1Wm 3..	Yes	Y		DL	1.2	36	1.5	2	.05	3	.029	5	.058										
125	1.2DL + 1.5Lm + 1Wm 4..	Yes	Y		DL	1.2	36	1.5	2	.041	3	.041	6	.058										
126	1.2DL + 1.5Lm + 1Wm 6..	Yes	Y		DL	1.2	36	1.5	2	.029	3	.05	7	.058										
127	1.2DL + 1.5Lm + 1Wm 9..	Yes	Y		DL	1.2	36	1.5	2		3	.058	8	.058										
128	1.2DL + 1.5Lm + 1Wm 1..	Yes	Y		DL	1.2	36	1.5	2	-.029	3	.05	9	.058										
129	1.2DL + 1.5Lm + 1Wm 1..	Yes	Y		DL	1.2	36	1.5	2	-.041	3	.041	10	.058										
130	1.2DL + 1.5Lm + 1Wm 1..	Yes	Y		DL	1.2	36	1.5	2	-.05	3	.029	11	.058										
131	1.2DL + 1.5Lm + 1Wm 1..	Yes	Y		DL	1.2	36	1.5	2	-.058	3		4	-.058										
132	1.2DL + 1.5Lm + 1Wm 2..	Yes	Y		DL	1.2	36	1.5	2	-.05	3	-.029	5	-.058										
133	1.2DL + 1.5Lm + 1Wm 2..	Yes	Y		DL	1.2	36	1.5	2	-.041	3	-.041	6	-.058										
134	1.2DL + 1.5Lm + 1Wm 2..	Yes	Y		DL	1.2	36	1.5	2	-.029	3	-.05	7	-.058										
135	1.2DL + 1.5Lm + 1Wm 2..	Yes	Y		DL	1.2	36	1.5	2		3	-.058	8	-.058										
136	1.2DL + 1.5Lm + 1Wm 3..	Yes	Y		DL	1.2	36	1.5	2	.029	3	-.05	9	-.058										
137	1.2DL + 1.5Lm + 1Wm 3..	Yes	Y		DL	1.2	36	1.5	2	.041	3	-.041	10	-.058										
138	1.2DL + 1.5Lm + 1Wm 3..	Yes	Y		DL	1.2	36	1.5	2	.05	3	-.029	11	-.058										
139	1.2DL + 1.5Lm + 1Wm 0..	Yes	Y		DL	1.2	37	1.5	2	.058	3		4	.058										
140	1.2DL + 1.5Lm + 1Wm 3..	Yes	Y		DL	1.2	37	1.5	2	.05	3	.029	5	.058										
141	1.2DL + 1.5Lm + 1Wm 4..	Yes	Y		DL	1.2	37	1.5	2	.041	3	.041	6	.058										
142	1.2DL + 1.5Lm + 1Wm 6..	Yes	Y		DL	1.2	37	1.5	2	.029	3	.05	7	.058										
143	1.2DL + 1.5Lm + 1Wm 9..	Yes	Y		DL	1.2	37	1.5	2		3	.058	8	.058										
144	1.2DL + 1.5Lm + 1Wm 1..	Yes	Y		DL	1.2	37	1.5	2	-.029	3	.05	9	.058										
145	1.2DL + 1.5Lm + 1Wm 1..	Yes	Y		DL	1.2	37	1.5	2	-.041	3	.041	10	.058										
146	1.2DL + 1.5Lm + 1Wm 1..	Yes	Y		DL	1.2	37	1.5	2	-.05	3	.029	11	.058										
147	1.2DL + 1.5Lm + 1Wm 1..	Yes	Y		DL	1.2	37	1.5	2	-.058	3		4	-.058										
148	1.2DL + 1.5Lm + 1Wm 2..	Yes	Y		DL	1.2	37	1.5	2	-.05	3	-.029	5	-.058										
149	1.2DL + 1.5Lm + 1Wm 2..	Yes	Y		DL	1.2	37	1.5	2	-.041	3	-.041	6	-.058										
150	1.2DL + 1.5Lm + 1Wm 2..	Yes	Y		DL	1.2	37	1.5	2	-.029	3	-.05	7	-.058										
151	1.2DL + 1.5Lm + 1Wm 2..	Yes	Y		DL	1.2	37	1.5	2		3	-.058	8	-.058										
152	1.2DL + 1.5Lm + 1Wm 3..	Yes	Y		DL	1.2	37	1.5	2	.029	3	-.05	9	-.058										
153	1.2DL + 1.5Lm + 1Wm 3..	Yes	Y		DL	1.2	37	1.5	2	.041	3	-.041	10	-.058										
154	1.2DL + 1.5Lm + 1Wm 3..	Yes	Y		DL	1.2	37	1.5	2	.05	3	-.029	11	-.058										
155	1.2DL + 1.5Lm + 1Wm 0..	Yes	Y		DL	1.2	38	1.5	2	.058	3		4	.058										
156	1.2DL + 1.5Lm + 1Wm 3..	Yes	Y		DL	1.2	38	1.5	2	.05	3	.029	5	.058										
157	1.2DL + 1.5Lm + 1Wm 4..	Yes	Y		DL	1.2	38	1.5	2	.041	3	.041	6	.058										
158	1.2DL + 1.5Lm + 1Wm 6..	Yes	Y		DL	1.2	38	1.5	2	.029	3	.05	7	.058										
159	1.2DL + 1.5Lm + 1Wm 9..	Yes	Y		DL	1.2	38	1.5	2		3	.058	8	.058										
160	1.2DL + 1.5Lm + 1Wm 1..	Yes	Y		DL	1.2	38	1.5	2	-.029	3	.05	9	.058										
161	1.2DL + 1.5Lm + 1Wm 1..	Yes	Y		DL	1.2	38	1.5	2	-.041	3	.041	10	.058										
162	1.2DL + 1.5Lm + 1Wm 1..	Yes	Y		DL	1.2	38	1.5	2	-.05	3	.029	11	.058										
163	1.2DL + 1.5Lm + 1Wm 1..	Yes	Y		DL	1.2	38	1.5	2	-.058	3		4	-.058										
164	1.2DL + 1.5Lm + 1Wm 2..	Yes	Y		DL	1.2	38	1.5	2	-.05	3	-.029	5	-.058										
165	1.2DL + 1.5Lm + 1Wm 2..	Yes	Y		DL	1.2	38	1.5	2	-.041	3	-.041	6	-.058										
166	1.2DL + 1.5Lm + 1Wm 2..	Yes	Y		DL	1.2	38	1.5	2	-.029	3	-.05	7	-.058										
167	1.2DL + 1.5Lm + 1Wm 2..	Yes	Y		DL	1.2	38	1.5	2		3	-.058	8	-.058										
168	1.2DL + 1.5Lm + 1Wm 3..	Yes	Y		DL	1.2	38	1.5	2	.029	3	-.05	9	-.058										
169	1.2DL + 1.5Lm + 1Wm 3..	Yes	Y		DL	1.2	38	1.5	2	.041	3	-.041	10	-.058										
170	1.2DL + 1.5Lm + 1Wm 3..	Yes	Y		DL	1.2	38	1.5	2	.05	3	-.029	11	-.058										
171	1.2DL + 1.5Lm + 1Wm 0..	Yes	Y		DL	1.2	39	1.5	2	.058	3		4	.058										
172	1.2DL + 1.5Lm + 1Wm 3..	Yes	Y		DL	1.2	39	1.5	2	.05	3	.029	5	.058										
173	1.2DL + 1.5Lm + 1Wm 4..	Yes	Y		DL	1.2	39	1.5	2	.041	3	.041	6	.058										
174	1.2DL + 1.5Lm + 1Wm 6..	Yes	Y		DL	1.2	39	1.5	2	.029	3	.05	7	.058										
175	1.2DL + 1.5Lm + 1Wm 9..	Yes	Y		DL	1.2	39	1.5	2		3	.058	8	.058										

Load Combinations (Continued)

	Description	S...	P...	S...	B...	Factor	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...
176	1.2DL + 1.5Lm + 1Wm 1..	Yes	Y		DL	1.2	39	1.5	2	-.029	3	.05	9	.058										
177	1.2DL + 1.5Lm + 1Wm 1..	Yes	Y		DL	1.2	39	1.5	2	-.041	3	.041	10	.058										
178	1.2DL + 1.5Lm + 1Wm 1..	Yes	Y		DL	1.2	39	1.5	2	-.05	3	.029	11	.058										
179	1.2DL + 1.5Lm + 1Wm 1..	Yes	Y		DL	1.2	39	1.5	2	-.058	3		4	-.058										
180	1.2DL + 1.5Lm + 1Wm 2..	Yes	Y		DL	1.2	39	1.5	2	-.05	3	-.029	5	-.058										
181	1.2DL + 1.5Lm + 1Wm 2..	Yes	Y		DL	1.2	39	1.5	2	-.041	3	-.041	6	-.058										
182	1.2DL + 1.5Lm + 1Wm 2..	Yes	Y		DL	1.2	39	1.5	2	-.029	3	-.05	7	-.058										
183	1.2DL + 1.5Lm + 1Wm 2..	Yes	Y		DL	1.2	39	1.5	2		3	-.058	8	-.058										
184	1.2DL + 1.5Lm + 1Wm 3..	Yes	Y		DL	1.2	39	1.5	2	.029	3	-.05	9	-.058										
185	1.2DL + 1.5Lm + 1Wm 3..	Yes	Y		DL	1.2	39	1.5	2	.041	3	-.041	10	-.058										
186	1.2DL + 1.5Lm + 1Wm 3..	Yes	Y		DL	1.2	39	1.5	2	.05	3	-.029	11	-.058										
187	1.2DL + 1.5Lm + 1Wm 0..	Yes	Y		DL	1.2	40	1.5	2	.058	3		4	.058										
188	1.2DL + 1.5Lm + 1Wm 3..	Yes	Y		DL	1.2	40	1.5	2	.05	3	.029	5	.058										
189	1.2DL + 1.5Lm + 1Wm 4..	Yes	Y		DL	1.2	40	1.5	2	.041	3	.041	6	.058										
190	1.2DL + 1.5Lm + 1Wm 6..	Yes	Y		DL	1.2	40	1.5	2	.029	3	.05	7	.058										
191	1.2DL + 1.5Lm + 1Wm 9..	Yes	Y		DL	1.2	40	1.5	2		3	.058	8	.058										
192	1.2DL + 1.5Lm + 1Wm 1..	Yes	Y		DL	1.2	40	1.5	2	-.029	3	.05	9	.058										
193	1.2DL + 1.5Lm + 1Wm 1..	Yes	Y		DL	1.2	40	1.5	2	-.041	3	.041	10	.058										
194	1.2DL + 1.5Lm + 1Wm 1..	Yes	Y		DL	1.2	40	1.5	2	-.05	3	.029	11	.058										
195	1.2DL + 1.5Lm + 1Wm 1..	Yes	Y		DL	1.2	40	1.5	2	-.058	3		4	-.058										
196	1.2DL + 1.5Lm + 1Wm 2..	Yes	Y		DL	1.2	40	1.5	2	-.05	3	-.029	5	-.058										
197	1.2DL + 1.5Lm + 1Wm 2..	Yes	Y		DL	1.2	40	1.5	2	-.041	3	-.041	6	-.058										
198	1.2DL + 1.5Lm + 1Wm 2..	Yes	Y		DL	1.2	40	1.5	2	-.029	3	-.05	7	-.058										
199	1.2DL + 1.5Lm + 1Wm 2..	Yes	Y		DL	1.2	40	1.5	2		3	-.058	8	-.058										
200	1.2DL + 1.5Lm + 1Wm 3..	Yes	Y		DL	1.2	40	1.5	2	.029	3	-.05	9	-.058										
201	1.2DL + 1.5Lm + 1Wm 3..	Yes	Y		DL	1.2	40	1.5	2	.041	3	-.041	10	-.058										
202	1.2DL + 1.5Lm + 1Wm 3..	Yes	Y		DL	1.2	40	1.5	2	.05	3	-.029	11	-.058										
203	1.2DL + 1.5Lm + 1Wm 0..	Yes	Y		DL	1.2	41	1.5	2	.058	3		4	.058										
204	1.2DL + 1.5Lm + 1Wm 3..	Yes	Y		DL	1.2	41	1.5	2	.05	3	.029	5	.058										
205	1.2DL + 1.5Lm + 1Wm 4..	Yes	Y		DL	1.2	41	1.5	2	.041	3	.041	6	.058										
206	1.2DL + 1.5Lm + 1Wm 6..	Yes	Y		DL	1.2	41	1.5	2	.029	3	.05	7	.058										
207	1.2DL + 1.5Lm + 1Wm 9..	Yes	Y		DL	1.2	41	1.5	2		3	.058	8	.058										
208	1.2DL + 1.5Lm + 1Wm 1..	Yes	Y		DL	1.2	41	1.5	2	-.029	3	.05	9	.058										
209	1.2DL + 1.5Lm + 1Wm 1..	Yes	Y		DL	1.2	41	1.5	2	-.041	3	.041	10	.058										
210	1.2DL + 1.5Lm + 1Wm 1..	Yes	Y		DL	1.2	41	1.5	2	-.05	3	.029	11	.058										
211	1.2DL + 1.5Lm + 1Wm 1..	Yes	Y		DL	1.2	41	1.5	2	-.058	3		4	-.058										
212	1.2DL + 1.5Lm + 1Wm 2..	Yes	Y		DL	1.2	41	1.5	2	-.05	3	-.029	5	-.058										
213	1.2DL + 1.5Lm + 1Wm 2..	Yes	Y		DL	1.2	41	1.5	2	-.041	3	-.041	6	-.058										
214	1.2DL + 1.5Lm + 1Wm 2..	Yes	Y		DL	1.2	41	1.5	2	-.029	3	-.05	7	-.058										
215	1.2DL + 1.5Lm + 1Wm 2..	Yes	Y		DL	1.2	41	1.5	2		3	-.058	8	-.058										
216	1.2DL + 1.5Lm + 1Wm 3..	Yes	Y		DL	1.2	41	1.5	2	.029	3	-.05	9	-.058										
217	1.2DL + 1.5Lm + 1Wm 3..	Yes	Y		DL	1.2	41	1.5	2	.041	3	-.041	10	-.058										
218	1.2DL + 1.5Lm + 1Wm 3..	Yes	Y		DL	1.2	41	1.5	2	.05	3	-.029	11	-.058										
219	1.2DL + 1.5Lm + 1Wm 0..	Yes	Y		DL	1.2	42	1.5	2	.058	3		4	.058										
220	1.2DL + 1.5Lm + 1Wm 3..	Yes	Y		DL	1.2	42	1.5	2	.05	3	.029	5	.058										
221	1.2DL + 1.5Lm + 1Wm 4..	Yes	Y		DL	1.2	42	1.5	2	.041	3	.041	6	.058										
222	1.2DL + 1.5Lm + 1Wm 6..	Yes	Y		DL	1.2	42	1.5	2	.029	3	.05	7	.058										
223	1.2DL + 1.5Lm + 1Wm 9..	Yes	Y		DL	1.2	42	1.5	2		3	.058	8	.058										
224	1.2DL + 1.5Lm + 1Wm 1..	Yes	Y		DL	1.2	42	1.5	2	-.029	3	.05	9	.058										
225	1.2DL + 1.5Lm + 1Wm 1..	Yes	Y		DL	1.2	42	1.5	2	-.041	3	.041	10	.058										
226	1.2DL + 1.5Lm + 1Wm 1..	Yes	Y		DL	1.2	42	1.5	2	-.05	3	.029	11	.058										
227	1.2DL + 1.5Lm + 1Wm 1..	Yes	Y		DL	1.2	42	1.5	2	-.058	3		4	-.058										

Load Combinations (Continued)

	Description	S...	P...	S...	B...	Factor	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...
228	1.2DL + 1.5Lm + 1Wm 2..	Yes	Y		DL	1.2	42	1.5	2	-.05	3	-.029	5	-.058										
229	1.2DL + 1.5Lm + 1Wm 2..	Yes	Y		DL	1.2	42	1.5	2	-.041	3	-.041	6	-.058										
230	1.2DL + 1.5Lm + 1Wm 2..	Yes	Y		DL	1.2	42	1.5	2	-.029	3	-.05	7	-.058										
231	1.2DL + 1.5Lm + 1Wm 2..	Yes	Y		DL	1.2	42	1.5	2		3	-.058	8	-.058										
232	1.2DL + 1.5Lm + 1Wm 3..	Yes	Y		DL	1.2	42	1.5	2	.029	3	-.05	9	-.058										
233	1.2DL + 1.5Lm + 1Wm 3..	Yes	Y		DL	1.2	42	1.5	2	.041	3	-.041	10	-.058										
234	1.2DL + 1.5Lm + 1Wm 3..	Yes	Y		DL	1.2	42	1.5	2	.05	3	-.029	11	-.058										
235	1.2DL + 1.5Lm + 1Wm 0..	Yes	Y		DL	1.2	43	1.5	2	.058	3		4	.058										
236	1.2DL + 1.5Lm + 1Wm 3..	Yes	Y		DL	1.2	43	1.5	2	.05	3	.029	5	.058										
237	1.2DL + 1.5Lm + 1Wm 4..	Yes	Y		DL	1.2	43	1.5	2	.041	3	.041	6	.058										
238	1.2DL + 1.5Lm + 1Wm 6..	Yes	Y		DL	1.2	43	1.5	2	.029	3	.05	7	.058										
239	1.2DL + 1.5Lm + 1Wm 9..	Yes	Y		DL	1.2	43	1.5	2		3	.058	8	.058										
240	1.2DL + 1.5Lm + 1Wm 1..	Yes	Y		DL	1.2	43	1.5	2	-.029	3	.05	9	.058										
241	1.2DL + 1.5Lm + 1Wm 1..	Yes	Y		DL	1.2	43	1.5	2	-.041	3	.041	10	.058										
242	1.2DL + 1.5Lm + 1Wm 1..	Yes	Y		DL	1.2	43	1.5	2	-.05	3	.029	11	.058										
243	1.2DL + 1.5Lm + 1Wm 1..	Yes	Y		DL	1.2	43	1.5	2	-.058	3		4	-.058										
244	1.2DL + 1.5Lm + 1Wm 2..	Yes	Y		DL	1.2	43	1.5	2	-.05	3	-.029	5	-.058										
245	1.2DL + 1.5Lm + 1Wm 2..	Yes	Y		DL	1.2	43	1.5	2	-.041	3	-.041	6	-.058										
246	1.2DL + 1.5Lm + 1Wm 2..	Yes	Y		DL	1.2	43	1.5	2	-.029	3	-.05	7	-.058										
247	1.2DL + 1.5Lm + 1Wm 2..	Yes	Y		DL	1.2	43	1.5	2		3	-.058	8	-.058										
248	1.2DL + 1.5Lm + 1Wm 3..	Yes	Y		DL	1.2	43	1.5	2	.029	3	-.05	9	-.058										
249	1.2DL + 1.5Lm + 1Wm 3..	Yes	Y		DL	1.2	43	1.5	2	.041	3	-.041	10	-.058										
250	1.2DL + 1.5Lm + 1Wm 3..	Yes	Y		DL	1.2	43	1.5	2	.05	3	-.029	11	-.058										
251	1.2DL + 1.5Lm + 1Wm 0..	Yes	Y		DL	1.2	44	1.5	2	.058	3		4	.058										
252	1.2DL + 1.5Lm + 1Wm 3..	Yes	Y		DL	1.2	44	1.5	2	.05	3	.029	5	.058										
253	1.2DL + 1.5Lm + 1Wm 4..	Yes	Y		DL	1.2	44	1.5	2	.041	3	.041	6	.058										
254	1.2DL + 1.5Lm + 1Wm 6..	Yes	Y		DL	1.2	44	1.5	2	.029	3	.05	7	.058										
255	1.2DL + 1.5Lm + 1Wm 9..	Yes	Y		DL	1.2	44	1.5	2		3	.058	8	.058										
256	1.2DL + 1.5Lm + 1Wm 1..	Yes	Y		DL	1.2	44	1.5	2	-.029	3	.05	9	.058										
257	1.2DL + 1.5Lm + 1Wm 1..	Yes	Y		DL	1.2	44	1.5	2	-.041	3	.041	10	.058										
258	1.2DL + 1.5Lm + 1Wm 1..	Yes	Y		DL	1.2	44	1.5	2	-.05	3	.029	11	.058										
259	1.2DL + 1.5Lm + 1Wm 1..	Yes	Y		DL	1.2	44	1.5	2	-.058	3		4	-.058										
260	1.2DL + 1.5Lm + 1Wm 2..	Yes	Y		DL	1.2	44	1.5	2	-.05	3	-.029	5	-.058										
261	1.2DL + 1.5Lm + 1Wm 2..	Yes	Y		DL	1.2	44	1.5	2	-.041	3	-.041	6	-.058										
262	1.2DL + 1.5Lm + 1Wm 2..	Yes	Y		DL	1.2	44	1.5	2	-.029	3	-.05	7	-.058										
263	1.2DL + 1.5Lm + 1Wm 2..	Yes	Y		DL	1.2	44	1.5	2		3	-.058	8	-.058										
264	1.2DL + 1.5Lm + 1Wm 3..	Yes	Y		DL	1.2	44	1.5	2	.029	3	-.05	9	-.058										
265	1.2DL + 1.5Lm + 1Wm 3..	Yes	Y		DL	1.2	44	1.5	2	.041	3	-.041	10	-.058										
266	1.2DL + 1.5Lm + 1Wm 3..	Yes	Y		DL	1.2	44	1.5	2	.05	3	-.029	11	-.058										
267	1.2DL + 1.5Lm + 1Wm 0..	Yes	Y		DL	1.2	45	1.5	2	.058	3		4	.058										
268	1.2DL + 1.5Lm + 1Wm 3..	Yes	Y		DL	1.2	45	1.5	2	.05	3	.029	5	.058										
269	1.2DL + 1.5Lm + 1Wm 4..	Yes	Y		DL	1.2	45	1.5	2	.041	3	.041	6	.058										
270	1.2DL + 1.5Lm + 1Wm 6..	Yes	Y		DL	1.2	45	1.5	2	.029	3	.05	7	.058										
271	1.2DL + 1.5Lm + 1Wm 9..	Yes	Y		DL	1.2	45	1.5	2		3	.058	8	.058										
272	1.2DL + 1.5Lm + 1Wm 1..	Yes	Y		DL	1.2	45	1.5	2	-.029	3	.05	9	.058										
273	1.2DL + 1.5Lm + 1Wm 1..	Yes	Y		DL	1.2	45	1.5	2	-.041	3	.041	10	.058										
274	1.2DL + 1.5Lm + 1Wm 1..	Yes	Y		DL	1.2	45	1.5	2	-.05	3	.029	11	.058										
275	1.2DL + 1.5Lm + 1Wm 1..	Yes	Y		DL	1.2	45	1.5	2	-.058	3		4	-.058										
276	1.2DL + 1.5Lm + 1Wm 2..	Yes	Y		DL	1.2	45	1.5	2	-.05	3	-.029	5	-.058										
277	1.2DL + 1.5Lm + 1Wm 2..	Yes	Y		DL	1.2	45	1.5	2	-.041	3	-.041	6	-.058										
278	1.2DL + 1.5Lm + 1Wm 2..	Yes	Y		DL	1.2	45	1.5	2	-.029	3	-.05	7	-.058										
279	1.2DL + 1.5Lm + 1Wm 2..	Yes	Y		DL	1.2	45	1.5	2		3	-.058	8	-.058										

Load Combinations (Continued)

	Description	S...	P...	S...	B...	Factor	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...
280	1.2DL + 1.5Lm + 1Wm 3..	Yes	Y		DL	1.2	45	1.5	2	.029	3	-.05	9	-.058										
281	1.2DL + 1.5Lm + 1Wm 3..	Yes	Y		DL	1.2	45	1.5	2	.041	3	-.041	10	-.058										
282	1.2DL + 1.5Lm + 1Wm 3..	Yes	Y		DL	1.2	45	1.5	2	.05	3	-.029	11	-.058										

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	N64	max	4900.346	2	1197.656	22	289.774	10	499.453	215	314.421	211	1734.057	30
2		min	-2760.098	26	-1197.261	14	-240.985	18	-534.371	239	-118.864	18	-1736.495	22
3	N163	max	292.779	26	33.272	22	3789.204	34	.228	165	631.534	34	5.466	30
4		min	-4271.994	34	-33.375	30	-282.811	26	-.254	253	-47.135	26	-5.433	22
5	N78A	max	1581.674	33	4369.041	7	294.723	15	281.097	26	277.954	19	1512.235	19
6		min	-2657.936	9	-2502.974	31	-232.888	23	-522.05	267	-621.556	116	-1513.147	27
7	N105	max	1521.403	20	2424.778	21	298.763	37	530.159	171	402.095	32	1642.696	25
8		min	-2607.61	12	-4307.42	13	-229.741	29	-194.409	99	-608.526	145	-1647.206	33
9	N162A	max	2174.184	39	238.423	31	3857.061	39	40	31	23.122	31	8.606	19
10		min	-139.621	31	-3765.514	39	-277.211	31	-556.646	39	-321.549	39	-8.572	27
11	N166	max	2228.761	45	3859.206	45	3951.625	45	570.398	45	20.389	21	8.587	25
12		min	-121.356	21	-206.899	21	-245.413	21	-35.458	21	-329.25	45	-8.568	33
13	Totals:	max	5433.529	18	5296.06	6	11260.116	46						
14		min	-5433.53	10	-5296.059	30	2540.656	70						

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

	Member	Shape	Code Check	Loc[in]	LC	Shear Check	Lo...	...	...	phi*P...	phi*P...	phi*M...	phi*M...	...	Eqn
1	M75	PIPE_2.0	.544	137.5	33	.373	14...		8	6295....	32130	1871....	1871....	....	H3-6
2	M89	PIPE_2.0	.516	137.5	22	.365	14...		14	6295....	32130	1871....	1871....	....	H3-6
3	M10	PIPE_2.0	.494	137.5	27	.350	14...		3	6295....	32130	1871....	1871....	....	H3-6
4	M57	L2.5x2.5x4	.374	0	8	.091	18....	y	8	3572....	38556	1113....	2537....	....	H2-1
5	M7	L2.5x2.5x4	.372	0	14	.085	18....	y	13	3572....	38556	1113....	2537....	....	H2-1
6	M41	PL 6x0.375	.368	0	16	.270	1.6...	y	39	7202....	72900	569.7	9112.5	...	H1-1b
7	M61A	PL 6x0.375	.364	0	6	.265	1.6...	y	45	7202....	72900	569.7	9112.5	...	H1-1b
8	M37	L2.5x2.5x4	.353	0	3	.089	18....	y	2	3572....	38556	1113....	2537....	....	H2-1
9	M42	PL 6x0.375	.345	0	14	.249	1.6...	y	38	7202....	72900	569.7	9112.5	...	H1-1b
10	M38	PL 6x0.375	.343	0	11	.243	1.6...	y	34	7202....	72900	569.7	9112.5	...	H1-1b
11	M62A	PL 6x0.375	.341	0	4	.282	1.6...	y	44	7202....	72900	569.7	9112.5	...	H1-1b
12	M39	PL 6x0.375	.335	0	9	.231	1.6...	y	49	7202....	72900	569.7	9112.5	...	H1-1b
13	M38A	Pl 6"x0.5"	.298	6.81	8	.166	6.81	y	42	9625....	97200	1012.5	12150	...	H1-1b
14	M58	Pl 6"x0.5"	.295	6.81	14	.168	6.81	y	47	9625....	97200	1012.5	12150	...	H1-1b
15	M70	HSS4X4X4	.292	21.484	45	.093	21....	y	47	1010....	106155	1231....	1231....	1	H1-1b
16	M50A	HSS4X4X4	.287	21.484	39	.095	21....	y	42	1010....	106155	1231....	1231....	1	H1-1b
17	M86	HSS4X4X4	.282	21.484	34	.093	21....	y	37	1010....	106155	1231....	1231....	1	H1-1b
18	M29	Pl 6"x0.5"	.281	6.81	3	.162	6.81	y	37	9625....	97200	1012.5	12150	...	H1-1b
19	MP7	PIPE_2.5	.258	69	9	.061	69		2	3003....	50715	3596....	3596....	1	H1-1b
20	MP11	PIPE_2.5	.254	69	3	.060	69		13	3003....	50715	3596....	3596....	1	H1-1b
21	MP2	PIPE_2.5	.252	69	6	.071	69		11	3003....	50715	3596....	3596....	1	H1-1b
22	MP6	PIPE_2.5	.251	69	17	.061	69		6	3003....	50715	3596....	3596....	....	H1-1b
23	MP3	PIPE_2.5	.248	69	14	.064	69		8	3003....	50715	3596....	3596....	....	H1-1b
24	MP10	PIPE_2.5	.247	69	11	.062	69		17	3003....	50715	3596....	3596....	....	H1-1b
25	MP4	PIPE_2.5	.241	27	10	.156	27		10	3003....	50715	3596....	3596....	1	H1-1b
26	MP8	PIPE_2.5	.229	27	6	.140	27		5	3003....	50715	3596....	3596....	1	H1-1b

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

	Member	Shape	Code Check	Loc[in]	LC	Shear Check	Lo...	...	...	phi*P...	phi*P...	phi*M...	phi*M...	...	Eqn
27	MP12	PIPE_2.5	.226	27	15	.143	27		15	3003...	50715	3596...	3596...	...	H1-1b
28	MP9	PIPE_2.5	.180	69	12	.114	69		14	3003...	50715	3596...	3596...	...	H1-1b
29	MP1	PIPE_2.5	.179	69	7	.131	27		10	3003...	50715	3596...	3596...	1	H1-1b
30	MP5	PIPE_2.5	.179	69	2	.112	69		3	3003...	50715	3596...	3596...	...	H1-1b
31	M69	HSS4X4X4	.168	28.687	43	.072	28...	y	43	1051...	106155	1231...	1231...	...	H1-1b
32	M51A	HSS4X4X4	.157	0	40	.079	0	y	41	1051...	106155	1231...	1231...	...	H1-1b
33	M71	HSS4X4X4	.156	0	46	.077	0	y	46	1051...	106155	1231...	1231...	...	H1-1b
34	M35A	L2x2x3	.156	25.584	9	.008	0	z	2	1592...	2339...	557.7...	1066...	...	H2-1
35	M49A	HSS4X4X4	.155	28.687	38	.060	2.9...	z	6	1051...	106155	1231...	1231...	...	H1-1b
36	M56	L2x2x3	.151	25.584	11	.010	51...	z	49	1592...	2339...	557.7...	1066...	...	H2-1
37	M55	L2x2x3	.147	25.584	14	.008	51...	y	40	1592...	2339...	557.7...	1066...	...	H2-1
38	M85	HSS4X4X4	.144	28.687	49	.060	2.9...	z	17	1051...	106155	1231...	1231...	...	H1-1b
39	M36A	L2x2x3	.143	25.584	6	.010	51...	z	43	1592...	2339...	557.7...	1066...	...	H2-1
40	M87	HSS4X4X4	.141	0	35	.077	0	y	35	1051...	106155	1231...	1231...	...	H1-1b
41	M3	L2x2x3	.140	25.051	42	.008	51...	y	37	1592...	2339...	557.7...	1071...	...	H2-1
42	M4	L2x2x3	.138	25.051	42	.009	51...	z	38	1592...	2339...	557.7...	1071...	...	H2-1
43	M101A	LL2.5x2.5x3x0	.132	0	45	.005	51...	z	15	4523...	58320	3300...	2549...	...	H1-...
44	M98A	LL2.5x2.5x3x0	.128	0	39	.005	0	z	13	4523...	58320	3300...	2549...	...	H1-...
45	M95	LL2.5x2.5x3x0	.126	0	34	.003	51...	y	35	4523...	58320	3300...	2549...	1	H1-...
46	H1	PIPE_3.0	.125	95.313	7	.102	98...		10	2825...	65205	5748...	5748...	1	H1-1b
47	H3	PIPE_3.0	.124	95.313	13	.085	98...		15	2825...	65205	5748...	5748...	1	H1-1b
48	H2	PIPE_3.0	.123	95.313	2	.084	98...		5	2825...	65205	5748...	5748...	1	H1-1b
49	M35	Pl 6"x0.5"	.033	0	17	.260	1.1...	y	36	9690...	97200	1012.5	12150	...	H1-1b
50	M39A	Pl 6"x0.5"	.032	0	6	.265	1.1...	y	41	9690...	97200	1012.5	12150	...	H1-1b
51	M59	Pl 6"x0.5"	.032	0	12	.264	1.1...	y	46	9690...	97200	1012.5	12150	...	H1-1b
52	M60	Pl 6"x0.5"	.030	0	13	.217	1.1...	y	43	9690...	97200	1012.5	12150	...	H1-1b
53	M36	Pl 6"x0.5"	.030	0	2	.203	1.1...	y	49	9690...	97200	1012.5	12150	...	H1-1b
54	M40	Pl 6"x0.5"	.030	0	8	.206	1.1...	y	38	9690...	97200	1012.5	12150	...	H1-1b

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

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

APPENDIX D

ADDITIONAL CALCULATIONS

Trylon

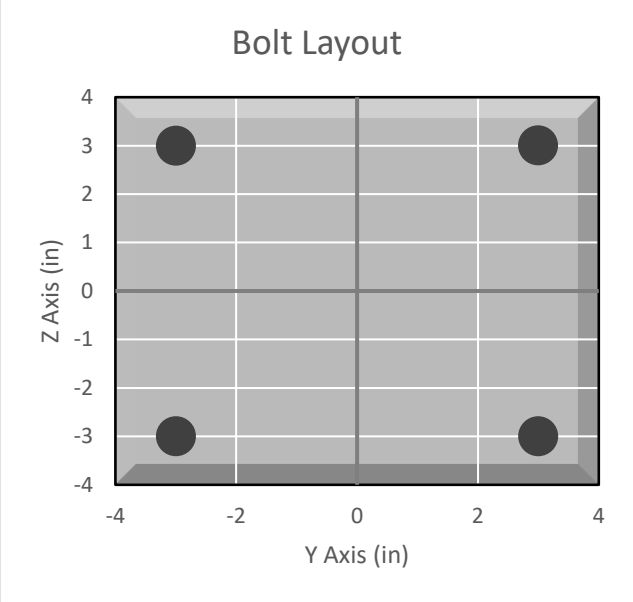
Analysis date: 5/4/2022

BOLT TOOL 1.5.2

Project Data	
Job Code:	208375
Carrier Site ID:	CTHA134A
Carrier Site Name:	Rainbow Rd Windsor Crown

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 Collar

Bolt Check*		
Tensile Capacity (ϕT_n):	20340.1	lbs
Shear Capacity (ϕV_n):	13805.8	lbs
Tension Force (T_u):	2129.2	lbs
Shear Force (V_u):	548.6	lbs
Tension Usage:	10.0%	--
Shear Usage:	3.8%	--
Interaction:	10.0%	Pass
Controlling Member:	M86	--
Controlling LC:	14	--

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

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

Trylon

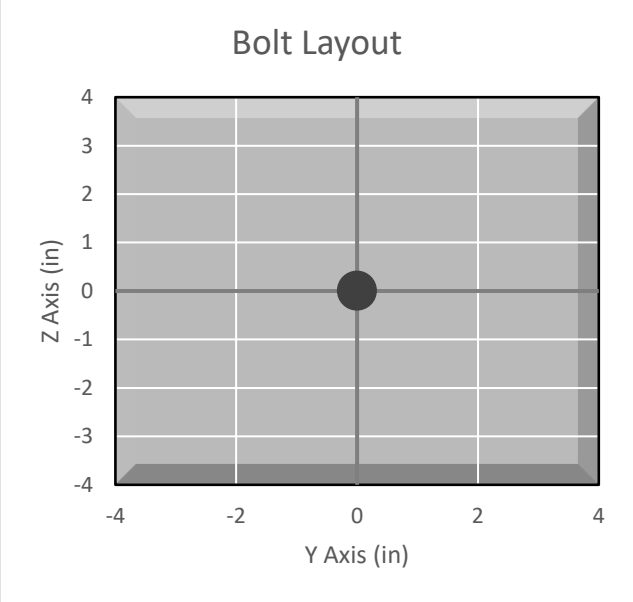
Analysis date: 5/4/2022

BOLT TOOL 1.5.2

Project Data	
Job Code:	208375
Carrier Site ID:	CTHA134A
Carrier Site Name:	Rainbow Rd Windsor Crown

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:	1	--
Threads Included:	Yes	--
Double Shear:	Yes	--
Connection Pipe Size:	-	in



Connection Description
Kicker 1 Bolt

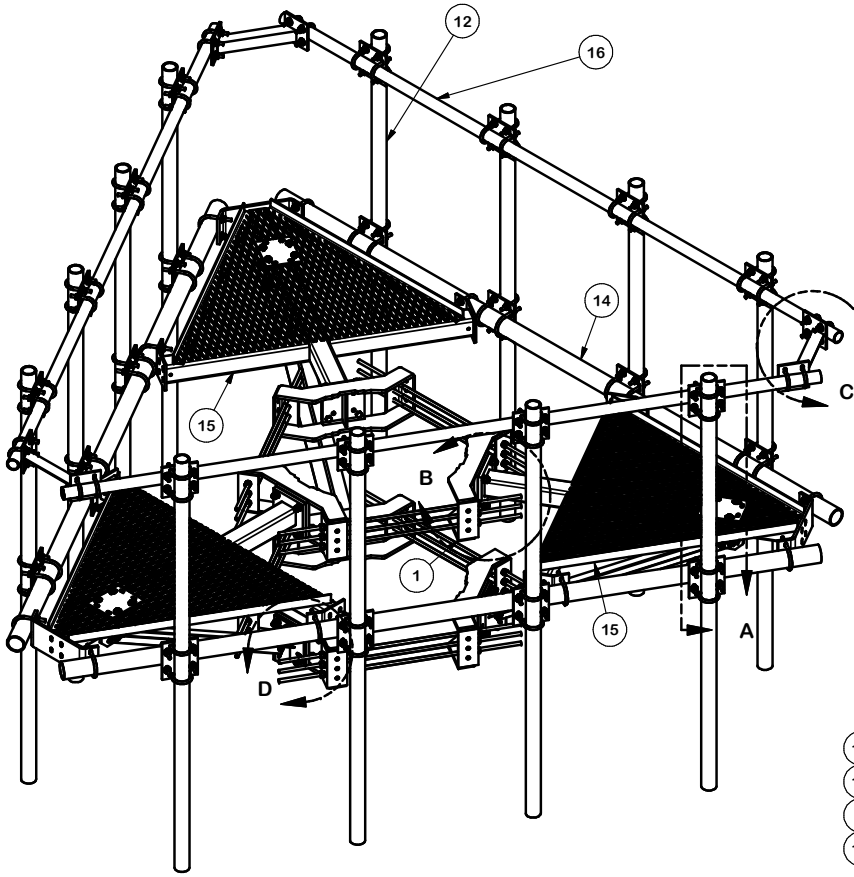
Bolt Check*		
Tensile Capacity (ϕT_n):	20340.1	lbs
Shear Capacity (ϕV_n):	13805.8	lbs
Tension Force (T_u):	0.0	lbs
Shear Force (V_u):	2978.1	lbs
Tension Usage:	0.0%	--
Shear Usage:	20.5%	--
Interaction:	20.5%	Pass
Controlling Member:	M102A	--
Controlling LC:	45	--

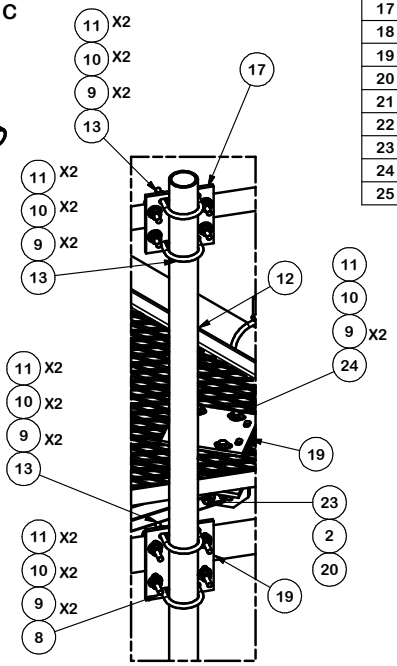
**Rating per TIA-222-H Section 15.5*

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

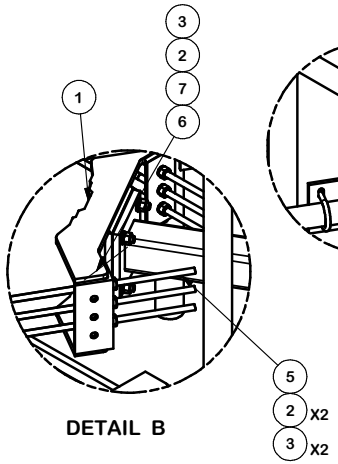
APPENDIX E

SUPPLEMENTAL DRAWINGS





DETAIL A



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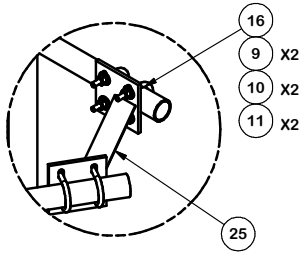
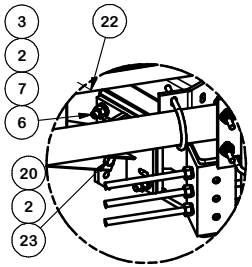


DETAIL C



DETAIL D

PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	6	X-LWRM	RING MOUNT WELDMENT		68.81	412.85
2	66	G58LW	5/8" HDG LOCKWASHER		0.03	1.72
3	60	A58NUT	5/8" HDG A325 HEX NUT		0.13	7.79
4	18	G58R-24	5/8" x 24" THREADED ROD (HDG.)		2.09	37.63
5	18	G58R-48	5/8" x 48" THREADED ROD (HDG.)		4.18	75.27
6	24	A58234	5/8" x 2-3/4" HDG A325 HEX BOLT	2 3/4 in	0.36	8.54
7	24	A58FW	5/8" HDG A325 FLATWASHER		0.03	0.82
8	36	X-UB1306	1/2" X 3-5/8" X 6" X 3" U-BOLT (HDG.)		0.83	29.82
9	264	G12FW	1/2" HDG USS FLATWASHER	3/32 in	0.03	9.00
10	252	G12LW	1/2" HDG LOCKWASHER	1/8 in	0.01	3.50
11	252	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	18.05
12	12	P3096	2-7/8" X 96" (2-1/2" SCH 40) GALVANIZED PIPE	96 in	49.24	590.88
13	48	X-UB1300	1/2" X 3" X 5" X 2" U-BOLT (HDG.)		0.70	33.45
14	3	P3150	3-1/2" X 150" (3" SCH 40) GALVANIZED PIPE	150 in	94.80	284.40
15	3	X-SV196	LOW PROFILE PLATFORM CORNER		212.10	636.31
16	3	P2150	2-3/8" O.D. X 150" SCH 40 GALVANIZED PIPE	150 in	45.77	137.31
17	12	SCX2	CROSSOVER PLATE	7 in	4.80	57.56
18	36	X-UB1212	1/2" X 2-1/2" X 4-1/2" X 2" U-BOLT (HDG.)		0.63	22.51
19	15	SCX4	CROSSOVER PLATE	8 1/2 in	6.02	90.32
20	6	G58NUT	5/8" HDG HEAVY 2H HEX NUT		0.13	0.78
21	6	X-253993	PLATFORM REINFORCEMENT KIT ANGLE	52 25/32 in	14.33	85.99
22	6	X-TBW	T-BRACKET WELDMENT		13.60	81.60
23	6	G5802	5/8" x 2" HDG HEX BOLT GR5		0.27	1.62
24	12	G12065	1/2" x 6-1/2" HDG HEX BOLT GR5 FULL THREAD	5 1/2 in	0.41	4.91
25	3	X-AHCP	ANGLE HANDRAIL CORNER PLATE		12.92	38.76
					TOTAL WT. #	2669.03

REVISION HISTORY				
REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
C	RELOCATED MOUNT PIPE POSITIONS	4488	JET	5/23/2021
B	CHANGED X-253992 TO X-TBW		CEK	9/20/2018
A	REPLACED HCP WITH X-AHCP	4488	CEK	7/14/2014

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
12' 6" LOW PROFILE PLATFORM
WITH TWELVE 2-7/8" ANTENNA MOUNTING
PIPES, AND SUPPORT RAIL

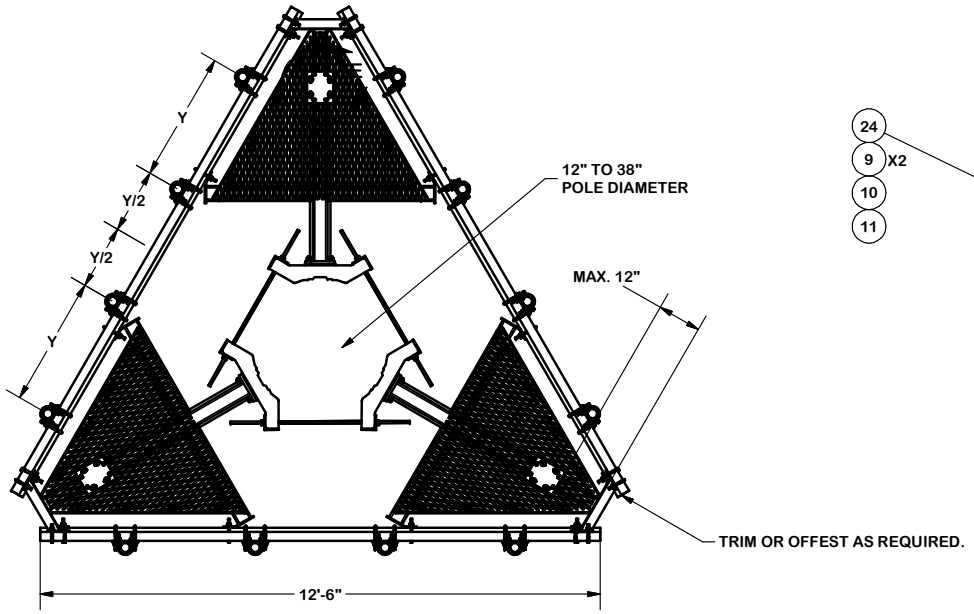
SITE PRO 1
A valmont COMPANY

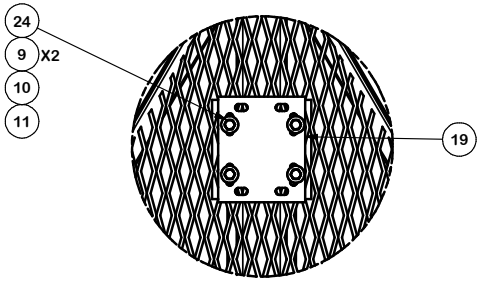
Engineering Support Team:
1-888-753-7446

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

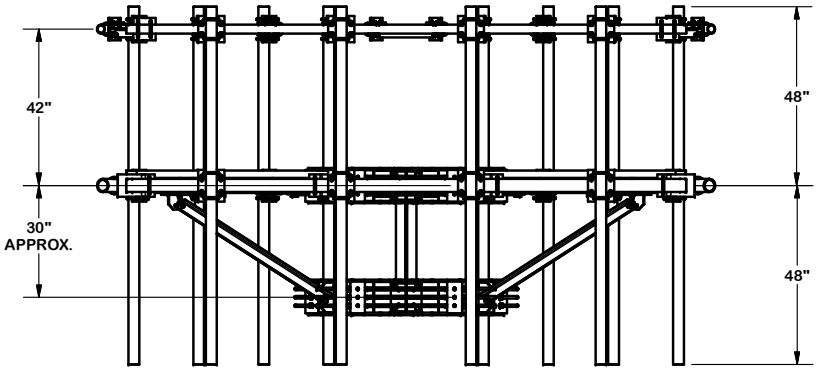
CPD NO.	DRAWN BY	ENG. APPROVAL	PART NO.	PAGE
4488	CEK 3/24/2014		RMQP-4096-HK	1 OF 3

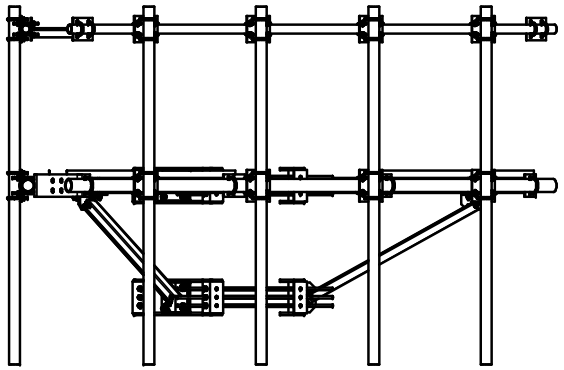
CLASS	SUB	DRAWING USAGE	CHECKED BY	DWG. NO.
81	02	CUSTOMER	BMC 7/14/2014	RMQP-4096-HK





DETAIL E





REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
C	RELOCATED MOUNT PIPE POSITIONS	4488	JET	5/23/2021
B	CHANGED X-253992 TO X-TBW		CEK	9/20/2018
A	REPLACED HCP WITH X-AHCP	4488	CEK	7/14/2014

REVISION HISTORY

TOLERANCE NOTES

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LASER CUT EDGES AND HOLES *(± 0.010")* - NO CONING OF HOLES
BENDS ARE ± 1/2 DEGREE
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ALL OTHER ASSEMBLY *(± 0.060")*

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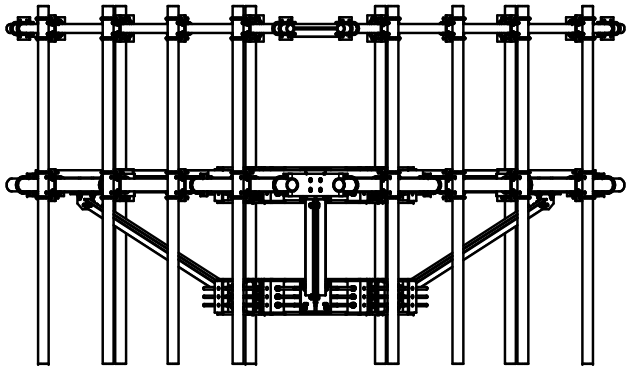
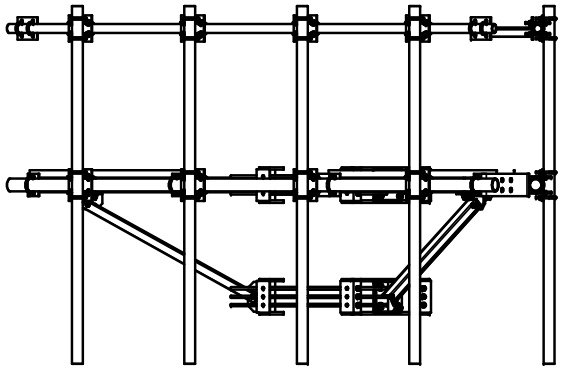
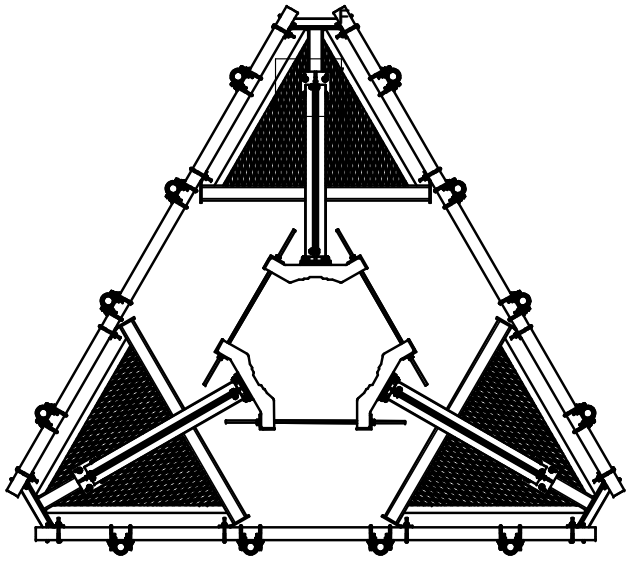
Dallas, TX

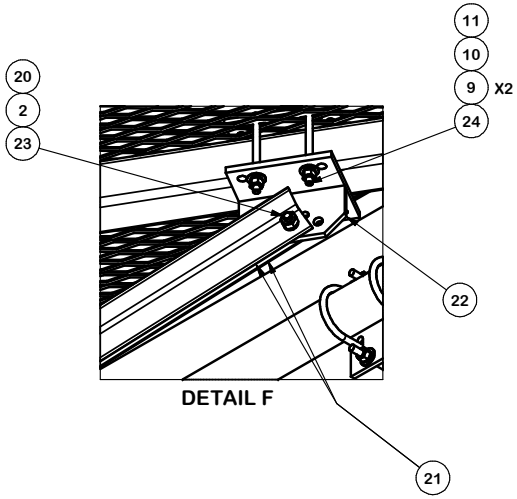
CPD NO.	DRAWN BY	ENG. APPROVAL	PART NO.
4488	CEK 3/24/2014		RMQP-4096-HK

CLASS	SUB	DRAWING USAGE	CHECKED BY	DWG. NO.
81	02	CUSTOMER	BMC 7/14/2014	RMQP-4096-HK









DETAIL F

REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
C	RELOCATED MOUNT PIPE POSITIONS	4488	JET	5/23/2021
B	CHANGED X-253992 TO X-TBW		CEK	9/20/2018
A	REPLACED HCP WITH X-AHCP	4488	CEK	7/14/2014

REVISION HISTORY

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BENDS ARE ± 1/2 DEGREE
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ALL OTHER ASSEMBLY *(± 0.060")*

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CPD NO.	DRAWN BY	ENG. APPROVAL	PART NO.
4488	CEK 3/24/2014		RMQP-4096-HK

CLASS	SUB	DRAWING USAGE	CHECKED BY	DWG. NO.
81	02	CUSTOMER	BMC 7/14/2014	RMQP-4096-HK

Fox Hill Telecom

Radio Frequency Emissions Analysis Report

T-Mobile

Site ID: CTHA134A

Rainbow Rd Windsor Crown
750 Rainbow Road
Windsor, CT 06095

July 19, 2022

Fox Hill Telecom Project Number: 221453

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**86.11 %**

Fox Hill Telecom

July 19, 2022

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

Emissions Analysis for Site: **CTHA134A – Rainbow Rd Windsor Crown**

Fox Hill Telecom, Inc ("Fox Hill") was directed to analyze the proposed upgrades to the T-MOBILE facility located at **750 Rainbow Road, Windsor, 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 **750 Rainbow Road, Windsor, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-MOBILE is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB for directional panel antennas, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

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

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

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

Technology	Frequency Band	Channel Count	Transmit Power per Channel (W)
LTE / 5G NR	600 MHz	2	40
LTE	700 MHz	2	20
LTE	1900 MHz (PCS)	4	40
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, 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	55
A	2	Commscope VV-65A-R1	55
A	3	Ericsson AIR6419 B41	55
A	4	RFS SC2-W100BD	55
B	1	RFS APXVAALL24_43-U-NA20	55
B	2	Commscope VV-65A-R1	55
B	3	Ericsson AIR6419 B41	55
C	1	RFS APXVAALL24_43-U-NA20	55
C	2	Commscope VV-65A-R1	55
C	3	Ericsson AIR6419 B41	55

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	10.05
Antenna A2	Commscope VV-65A-R1	1900 MHz (PCS) / 2100 MHz (AWS)	15.55 / 16.05	9	335	12,724.61	19.06
Antenna A3	Ericsson AIR6419 B41	2500 MHz (BRS)	21.5	8	160	22,600.60	33.84
Antenna A4	RFS SC2-W100BD	11 GHz	32.35	1	1	1,717.91	0.26
						Sector A Composite MPE%	**63.21**
Antenna B1	RFS APXVAALL24_43-U-NA20	600 MHz / 700 MHz	13.65 / 13.85	4	120	2,824.56	10.05
Antenna B2	Commscope VV-65A-R1	1900 MHz (PCS) / 2100 MHz (AWS)	15.55 / 16.05	9	335	12,724.61	19.06
Antenna B3	Ericsson AIR6419 B41	2500 MHz (BRS)	21.5	8	160	22,600.60	33.84
						Sector B Composite MPE%	**62.95**
Antenna C1	RFS APXVAALL24_43-U-NA20	600 MHz / 700 MHz	13.65 / 13.85	4	120	2,824.56	10.05
Antenna C2	Commscope VV-65A-R1	1900 MHz (PCS) / 2100 MHz (AWS)	15.55 / 16.05	9	335	12,724.61	19.06
Antenna C3	Ericsson AIR6419 B41	2500 MHz (BRS)	21.5	8	160	22,600.60	33.84
						Sector C Composite MPE%	**62.95**

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 at Sector A	**63.21 %**
AT&T	7.26 %
Windsor FD	0.00 %
Verizon Wireless	15.64 %
Site Total MPE %:	**86.11 %**

Table 4: All Carrier MPE Contributions

T-MOBILE Sector A Total:	63.21 %
T-MOBILE Sector B Total:	62.95 %
T-MOBILE Sector C Total:	62.95 %
Site Total:	86.11 %

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	55	27.76	600 MHz	400	6.94%
T-Mobile 700 MHz LTE	2	485.32	55	14.53	700 MHz	467	3.11%
T-Mobile 1900 MHz (PCS) LTE	4	1,435.69	55	85.99	1900 MHz (PCS)	1000	8.60%
T-Mobile 1900 MHz (PCS) GSM	1	538.38	55	8.06	1900 MHz (PCS)	1000	0.81%
T-Mobile 2100 MHz (AWS) LTE	4	1,610.87	55	96.48	2100 MHz (AWS)	1000	9.65%
T-Mobile 2500 MHz (BRS) LTE / 5G NR	8	2,825.08	55	338.40	2500 MHz (BRS)	1000	33.84%
T-Mobile 11 GHz Microwave	1	1,717.91	55	2.57	11 GHz	1000	0.26%
						Total:	**63.21%**

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:	63.21 %
Sector B:	62.95 %
Sector C:	62.95 %
T-MOBILE Maximum Total (per sector):	63.21 %
Site Total:	86.11 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **86.11 %** 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: CTHA134A
T-MOBILE SITE NAME: RAINBOW RD WINDSOR CROWN
SITE TYPE: MONOPOLE
TOWER HEIGHT: 101'-0"

BUSINESS UNIT #: 842877
SITE ADDRESS: 750 RAINBOW ROAD WINDSOR, CT 06095
COUNTY: HARTFORD
JURISDICTION: TOWN OF HARTFORD

CTHA134A_COVERAGE STRATEGY: 67E5998E_1xAIR+1OP+1QP

SITE INFORMATION

CROWN CASTLE USA INC. SITE NAME:	WINDSOR NORTH
SITE ADDRESS:	750 RAINBOW ROAD WINDSOR, CT 06095
COUNTY:	HARTFORD
MAP/PARCEL #:	TBD
AREA OF CONSTRUCTION:	EXISTING
LATITUDE:	41.91925000° (41° 55' 9.43")
LONGITUDE:	-72.71046000° (-72° 42' 37.57")
LAT/LONG TYPE:	NAD83
GROUND ELEVATION:	185 FT
CURRENT ZONING:	TBD
JURISDICTION:	TOWN OF HARTFORD
OCCUPANCY CLASSIFICATION:	U
TYPE OF CONSTRUCTION:	IIB
A.D.A. COMPLIANCE:	FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION
PROPERTY OWNER:	TBD
TOWER OWNER:	CROWN CASTLE 2000 CORPORATE DRIVE CANONSBURG, PA 15317
CARRIER/APPLICANT:	T-MOBILE 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

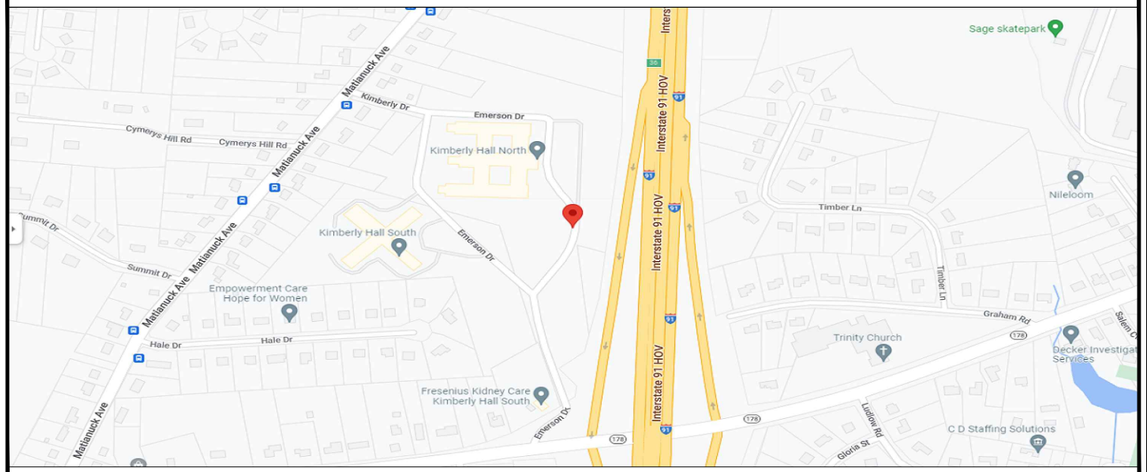
THE PURPOSE OF THIS PROJECT IS TO ENHANCE BROADBAND CONNECTIVITY AND CAPACITY TO THE EXISTING ELIGIBLE WIRELESS FACILITY.

TOWER SCOPE OF WORK:
- INSTALL (9) ANTENNAS
- INSTALL (1) DISH ANTENNA
- INSTALL (6) RRHS
- INSTALL (3) 6X24 HYBRID CABLES
- INSTALL (1) 1/2" COAX CABLES
- 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 IBC
MECHANICAL	2015 IMC
ELECTRICAL	2017 NEC

REFERENCE DOCUMENTS:

STRUCTURAL ANALYSIS:	B+T GROUP.
DATED:	05/09/2022
MOUNT ANALYSIS:	TRYLON
DATED:	05/04/2022
RFDS REVISION:	1
DATED:	3/4/2022
ORDER ID:	614541
REVISION:	0

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APPROVALS

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

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

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

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

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T-MOBILE SITE NUMBER:
CTHA134A

BU #: **842877**
WINDSOR NORTH

750 RAINBOW ROAD
WINDSOR, CT 06095

EXISTING 101'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	06/23/2022	RCD	PRELIMINARY	SS
0	07/21/2022	RCD	100% FINALS	SS
1	07/28/2022	FP	100% FINALS	--

STATE OF CONNECTICUT
SHUHEI SAKAMOTO
34916
LICENSED PROFESSIONAL ENGINEER

07/28/2022

SHEET NUMBER: T-1
REVISION: 1

CROWN CASTLE USA INC. SITE ACTIVITY REQUIREMENTS:

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

GENERAL NOTES:

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

CONCRETE, FOUNDATIONS, AND REINFORCING STEEL:

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

GREENFIELD GROUNDING NOTES:

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

ELECTRICAL INSTALLATION NOTES:

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

CONDUCTOR COLOR CODE

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

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

APWA UNIFORM COLOR CODE:

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

ABBREVIATIONS:

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

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T-MOBILE SITE NUMBER:
CTHA134A

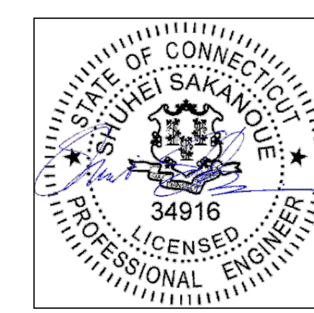
BU #: **842877**
WINDSOR NORTH

750 RAINBOW ROAD
WINDSOR, CT 06095

EXISTING 101'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	06/23/2022	RCD	PRELIMINARY	SS
0	07/21/2022	RCD	100% FINALS	SS
1	07/28/2022	FP	100% FINALS	--



07/28/2022

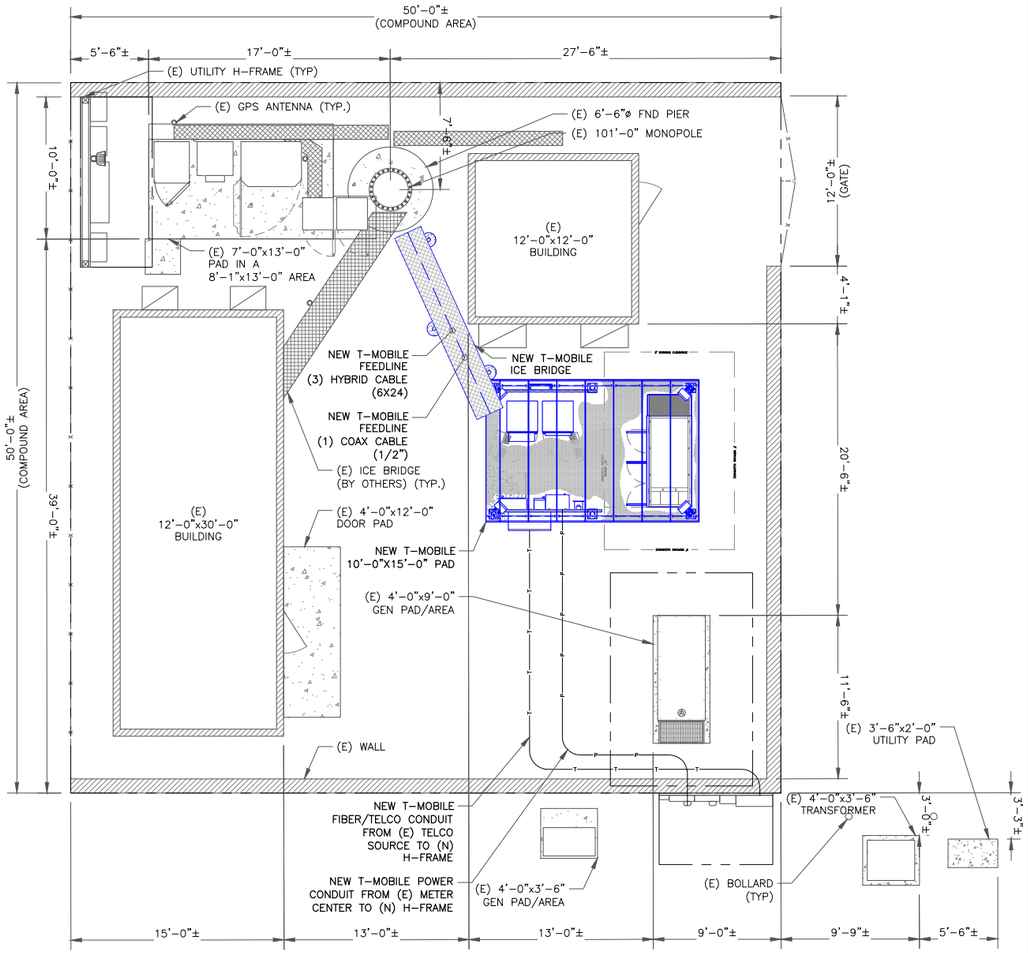
IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

SHEET NUMBER: T-2

REVISION: 1

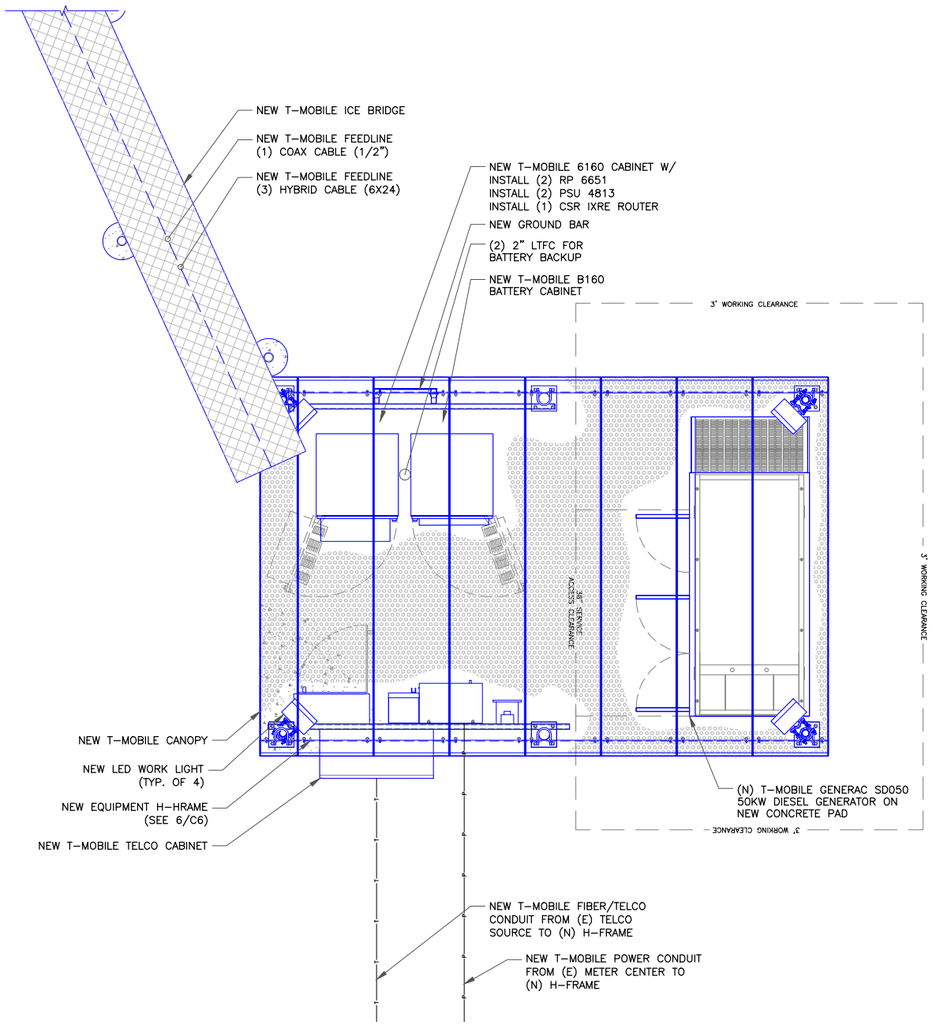
NOTE:

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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1	07/28/2022	FP	100% FINALS	--

STATE OF CONNECTICUT
SHUHEI SAKANOUE
34916
LICENSED
PROFESSIONAL ENGINEER

07/28/2022

SHEET NUMBER: C-1

REVISION: 1

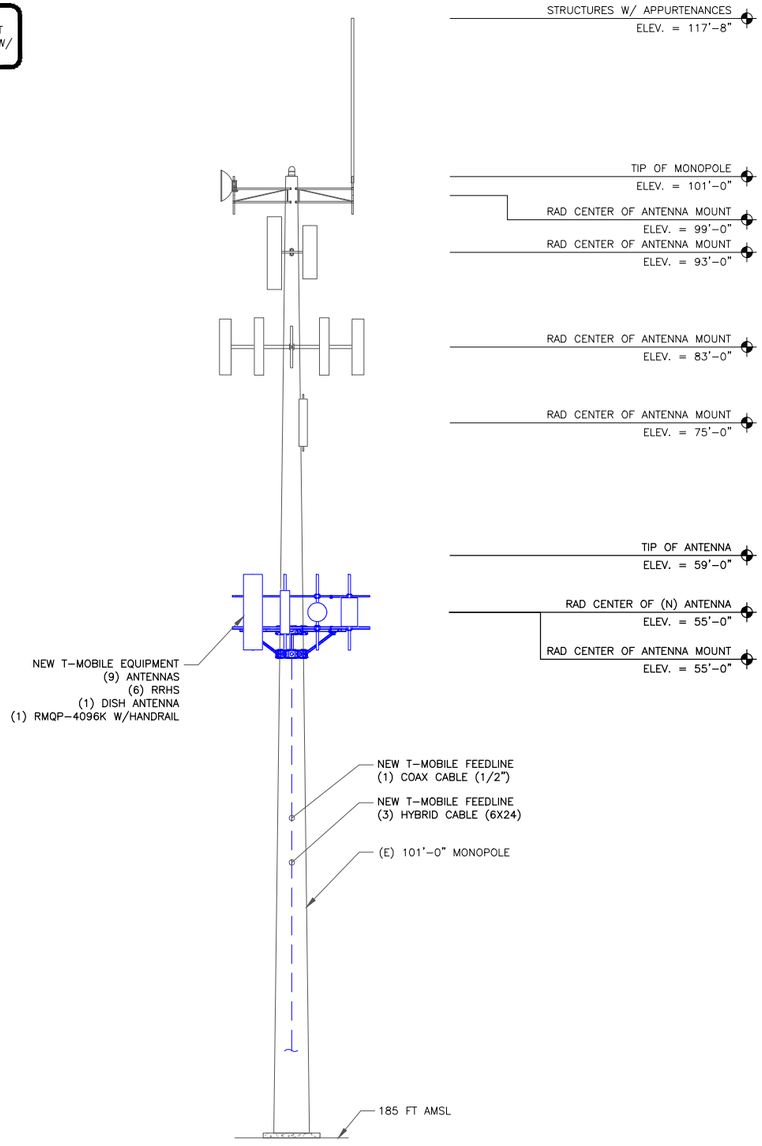
NOTES:

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: 55'-0"
MOUNT CL: 55'-0"

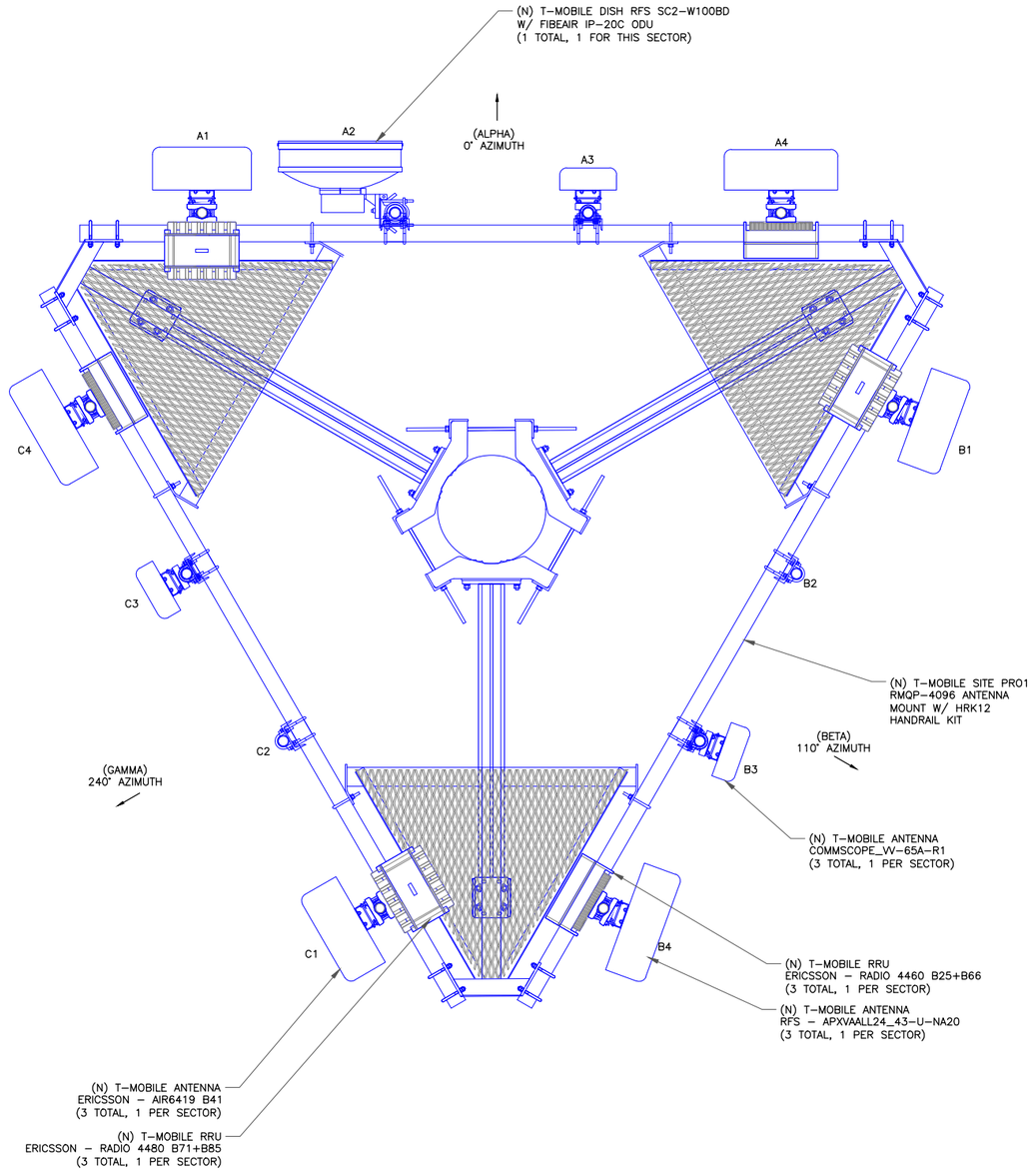
ANY AND ALL TOWER MOUNTED EQUIPMENT MUST NOT TRAP OR INTERFERE W/ EXISTING SAFETY CLIMB



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 TRYLON. REFER TO ANTENNA MOUNT STRUCTURAL ANALYSIS DATED 05/04/2022 PRIOR TO CONSTRUCTION.*
2. *THE SITEPRO1 PLATFORM MOUNT (PART# RMQP-4096 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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STATE OF CONNECTICUT
SHUHEI SAKANOUE
34916
LICENSED PROFESSIONAL ENGINEER

07/28/2022

SHEET NUMBER: C-2

REVISION: 1

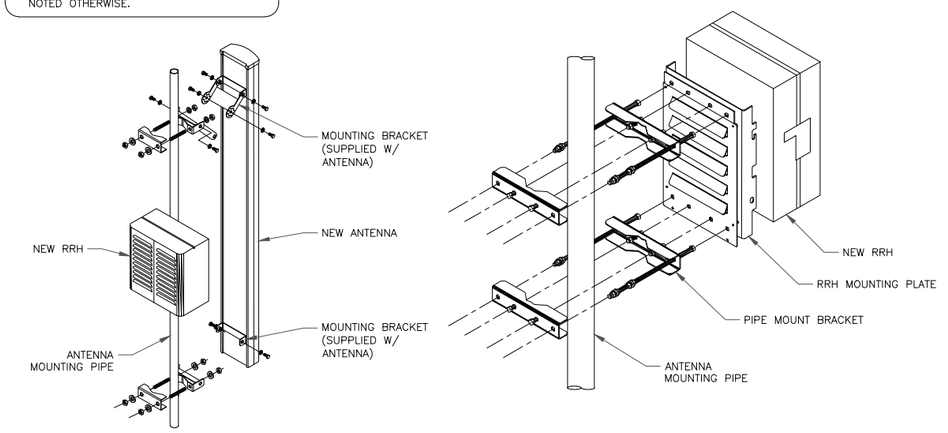
ANTENNA SCHEDULE

SECTOR	POS.	TECHNOLOGY	RAD CENTER	AZIMUTH	ANTENNA MANUFACTURER	ANTENNA MODEL	MECH. TILT	ELECT. TILT	TOWER MOUNTED EQUIPMENT	FEEDLINE TYPE
ALPHA	A1	L2500, N2500	55'-0"	0°	ERICSSON	ERICSSON – AIR6419 B41	0	--	(1) ERICSSON – RRUS 4460 B25+B66	(1) HYBRID CABLE (6X24) (1) COAX CABLE (1/2")
ALPHA	A2	--	55'-0"	0°	ANDREW	VHLP2-11-2GR	0	--	(1) FIBEAIR IP-20C ODU	
ALPHA	A3	L2100, L1900, G1900	55'-0"	0°	COMMSCOPE	COMMSCOPE – VV-65A-R1	0	--	--	
ALPHA	A4	L700, L600, N600	55'-0"	0°	RFS	APXVAALL24_43-U-NA20	0	--	(1) ERICSSON – RRUS 4480 B71+B85	
BETA	B1	L2500, N2500	55'-0"	110°	ERICSSON	ERICSSON – AIR6419 B41	0	--	(1) ERICSSON – RRUS 4460 B25+B66	(1) HYBRID CABLE (6X24)
BETA	B2	--	--	--	--	--	--	--	--	
BETA	B3	L2100, L1900, G1900	55'-0"	110°	COMMSCOPE	COMMSCOPE – VV-65A-R1	0	--	--	
BETA	B4	L700, L600, N600	55'-0"	110°	RFS	APXVAALL24_43-U-NA20	0	--	(1) ERICSSON – RRUS 4480 B71+B85	
GAMMA	C1	L2500, N2500	55'-0"	240°	ERICSSON	ERICSSON – AIR6419 B41	0	--	(1) ERICSSON – RRUS 4460 B25+B66	(1) HYBRID CABLE (6X24)
GAMMA	C2	--	--	--	--	--	--	--	--	
GAMMA	C3	L2100, L1900, G1900	55'-0"	240°	COMMSCOPE	COMMSCOPE – VV-65A-R1	0	--	--	
GAMMA	C4	L700, L600, N600	55'-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.



2 ANTENNA WITH RRH MOUNTING DETAIL
SCALE: NOT TO SCALE

NOTE:

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

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BU #: **842877**
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750 RAINBOW ROAD
WINDSOR, CT 06095

EXISTING 101'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	06/23/2022	RCD	PRELIMINARY	SS
0	07/21/2022	RCD	100% FINALS	SS
1	07/28/2022	FP	100% FINALS	--

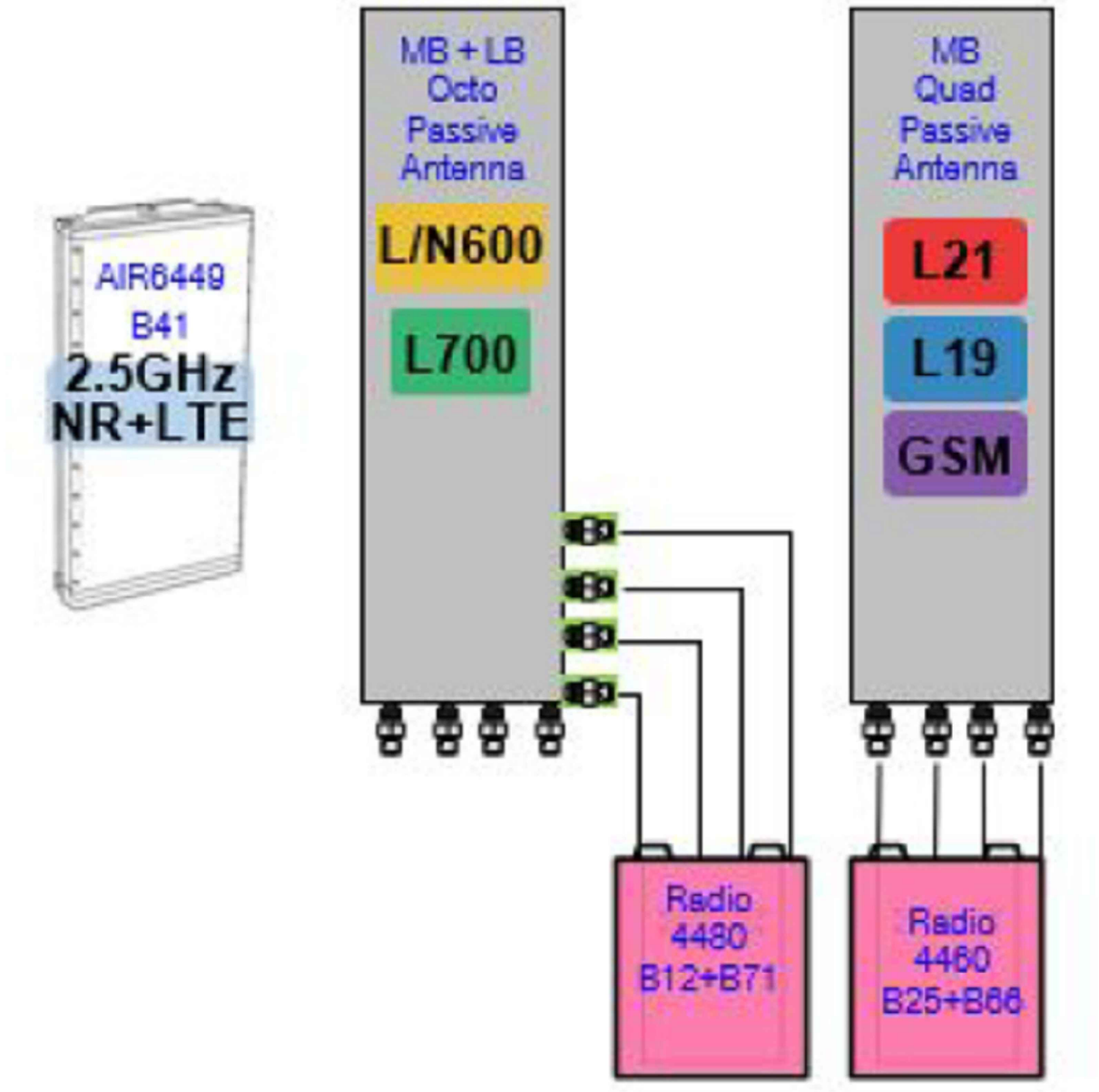
STATE OF CONNECTICUT
SHUHEI SAKAMOTO
34916
LICENSED PROFESSIONAL ENGINEER

07/28/2022

SHEET NUMBER: C-3

REVISION: 1

67E5A998E.JPG



1 PLUMBING DIAGRAM
SCALE: NOT TO SCALE

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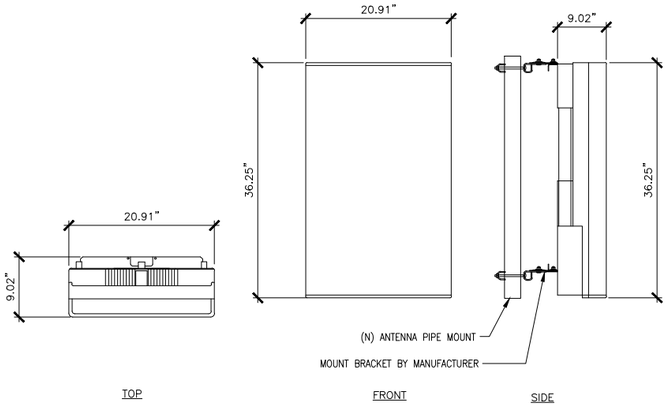
STATE OF CONNECTICUT
SHUHEI SAKANOUE
34916
LICENSED PROFESSIONAL ENGINEER

07/28/2022

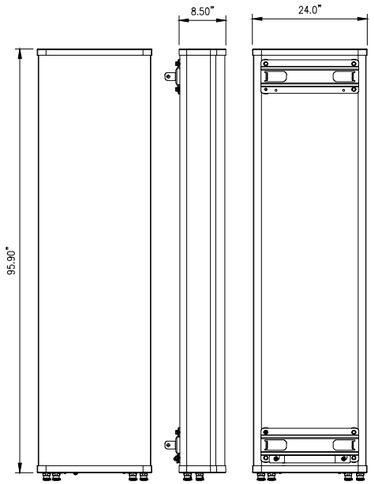
SHEET NUMBER: C-4

REVISION: 1

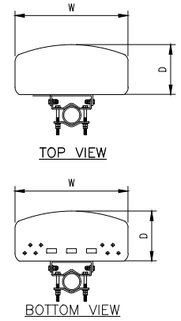
MANUFACTURER: ERICSSON
MODEL: AIR6419 B41
WEIGHT: 96.50 LBS (W/ MOUNT BRACKET 113)
DIMENSIONS: 36.25"H. X 20.91"W. X 9.02"D.
FREQUENCY: REFER TO RF DATA SHEET



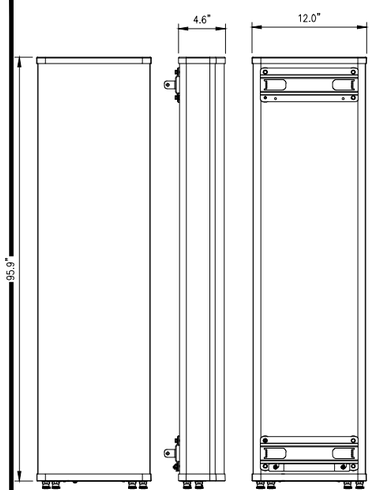
1 (N) AIR6419 B41 ANTENNA SPEC
SCALE: NOT TO SCALE



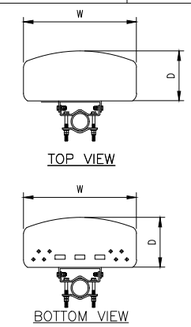
700MHz RFS ANTENNAS	
MODEL	WEIGHT (lb)
(8') APXVAARR24_43-U-NA20	149.90
WEIGHT W/ MOUNTING BRACKET (lb):	154



2 (N) APXVAARR24_43-U-NA20 ANTENNA SPEC
SCALE: NOT TO SCALE



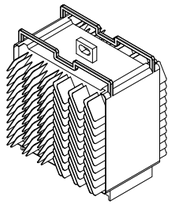
COMMSCOPE ANTENNAS	
MODEL	WEIGHT (lb)
VV-65A-R1	33.3
WEIGHT W/ MOUNTING BRACKET (lb):	–

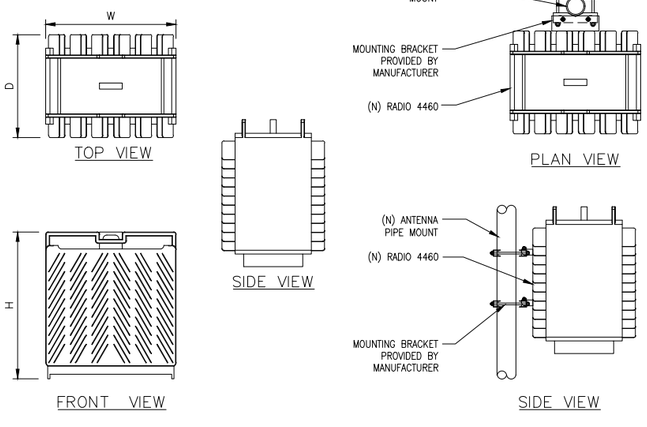


3 (N) COMMSCOPE – VV-65A-R1 ANTENNA SPEC
SCALE: NOT TO SCALE

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

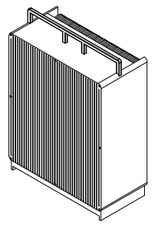


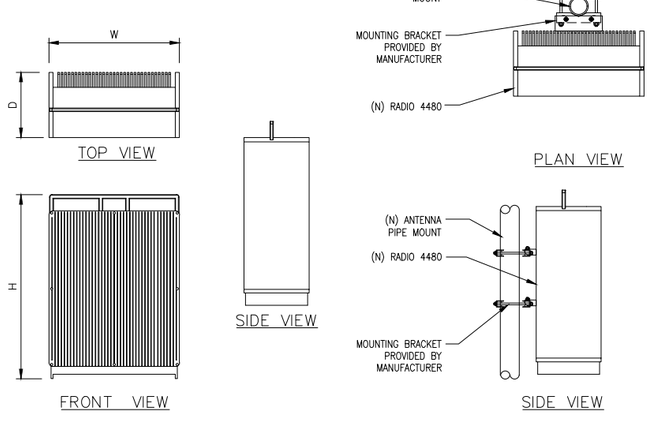


4 (N) RADIO 4460 SPEC
SCALE: NOT TO SCALE

ERICSSON RADIO-4480 B71 B85

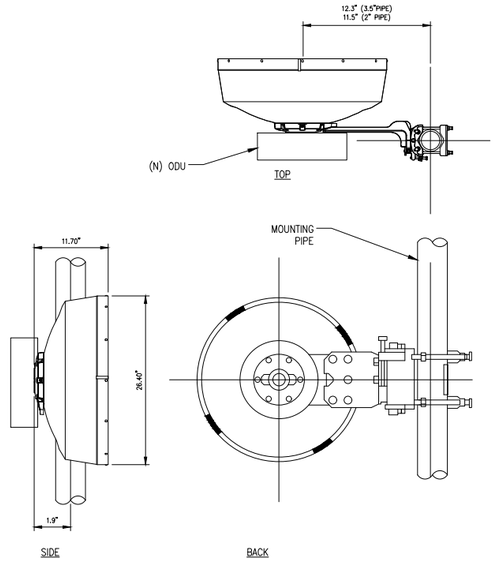
DIMENSIONS, WxDxH:	21.8"x15.7"x7.5"
MAX OUTPUT POWER:	4x80W (2x(2x80W))
TOTAL WEIGHT:	93 lbs
TEMPERATURE:	-40° TO 55° C





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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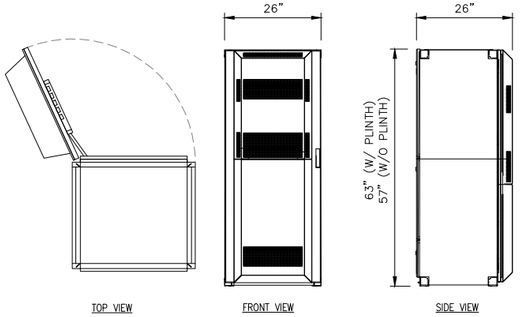
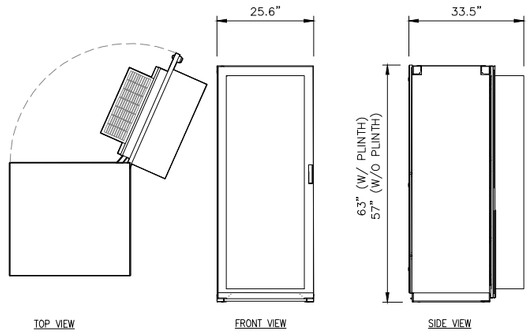
STATE OF CONNECTICUT
SHUHEI SAKANOUE
34916
LICENSED PROFESSIONAL ENGINEER
07/28/2022

SHEET NUMBER: C-5
REVISION: 1



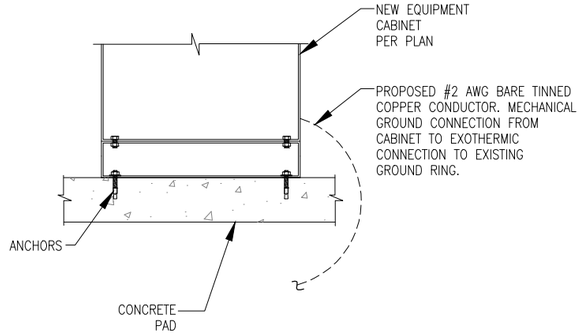
ERICSSON MODEL NO.:	B160
RACK SPACE:	19U
DIMENSIONS, HxWxD:	63"x26"x26" (W/ 6" PLINTH)
CABINET WEIGHT, EMPTY:	485 LBS
MAXIMUM WEIGHT:	2100± LBS

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

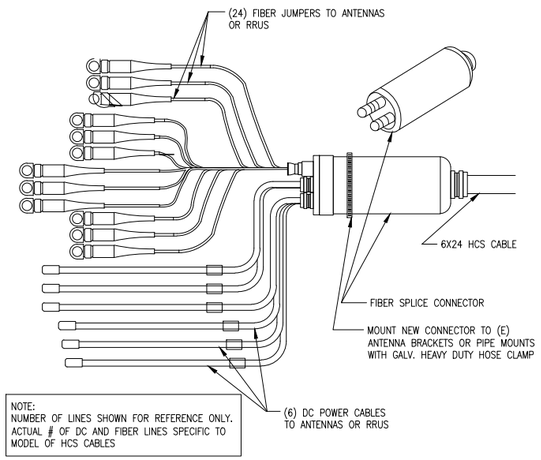


ERICSSON MODEL NO.:	6160
RACK SPACE:	19U
DIMENSIONS, HxWxD:	63"x25.6"x25.6" (W/ 6" PLINTH)
CABINET WEIGHT, EMPTY:	410 LBS
MAXIMUM WEIGHT:	770± LBS

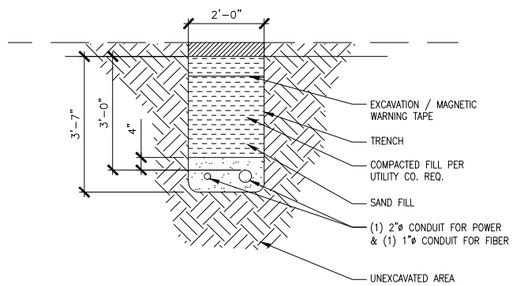
2 (N) 6160 CABINET DETAIL
SCALE: NOT TO SCALE



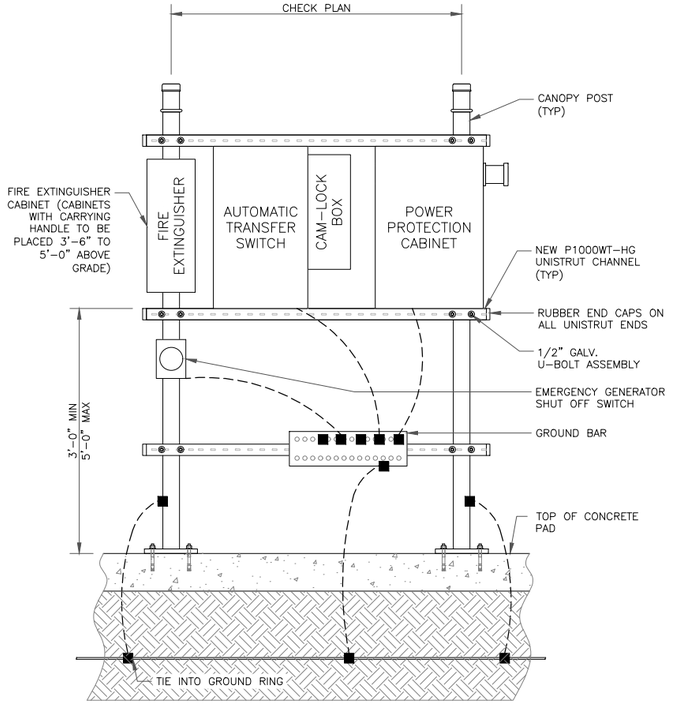
3 (N) EQUIPMENT CABINET MOUNTING DETAIL
SCALE: NOT TO SCALE



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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EXISTING 101'-0" MONOPOLE

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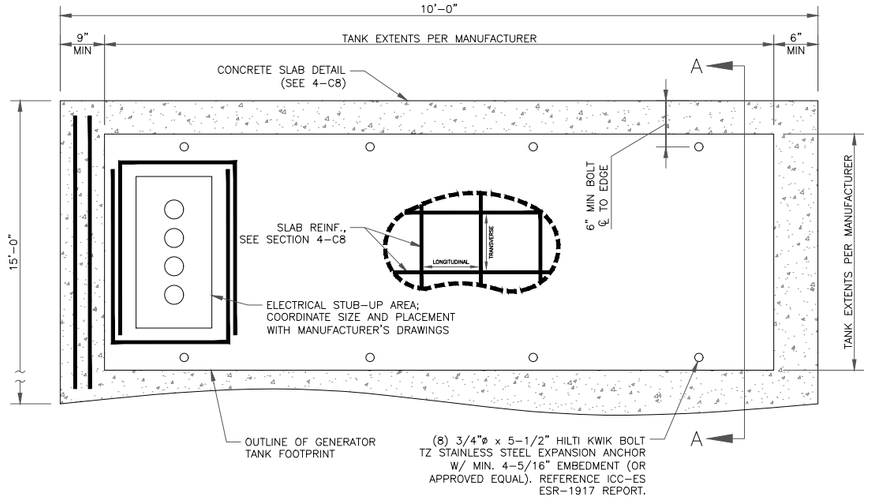
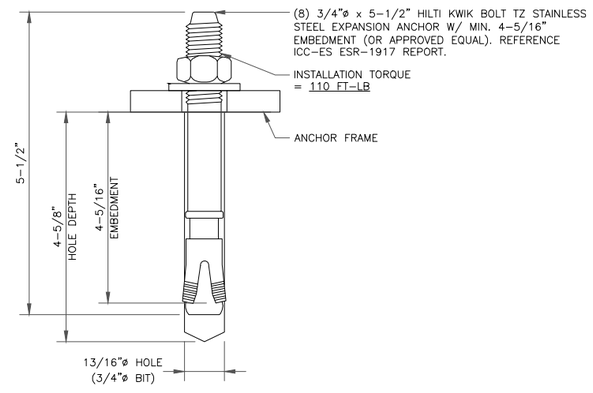
STATE OF CONNECTICUT
SHUHEI SAKAMOTO
34916
LICENSED PROFESSIONAL ENGINEER
07/28/2022

SHEET NUMBER: C-6
REVISION: 1



1 GENERATOR PAD DETAIL
SCALE: NOT TO SCALE

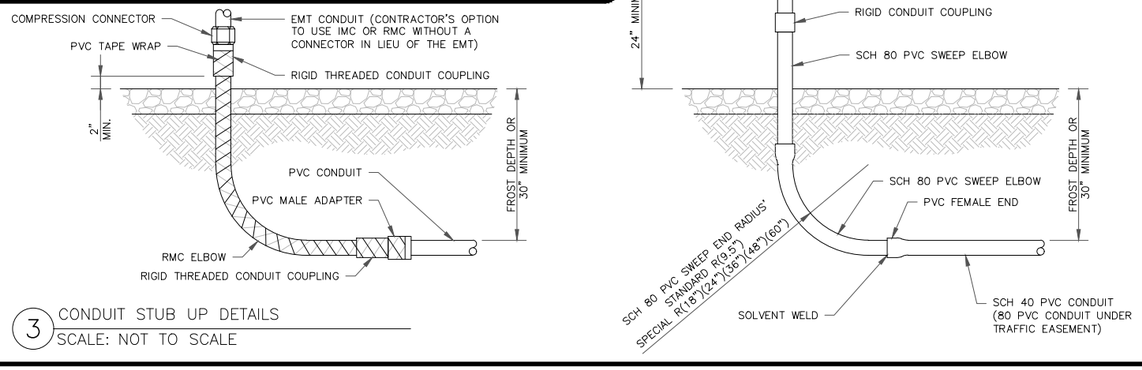
INSTALLER NOTE:
PER CBC 1705.12.6, PERIODIC SPECIAL INSPECTION OF ANCHORAGE FOR STANDBY POWER SYSTEMS IS REQUIRED



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:
CTHA134A

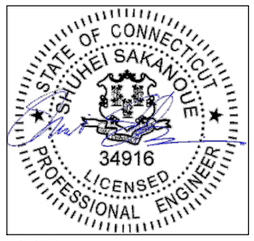
BU #: **842877**
WINDSOR NORTH

750 RAINBOW ROAD
WINDSOR, CT 06095

EXISTING 101'-0" MONOPOLE

ISSUED FOR:

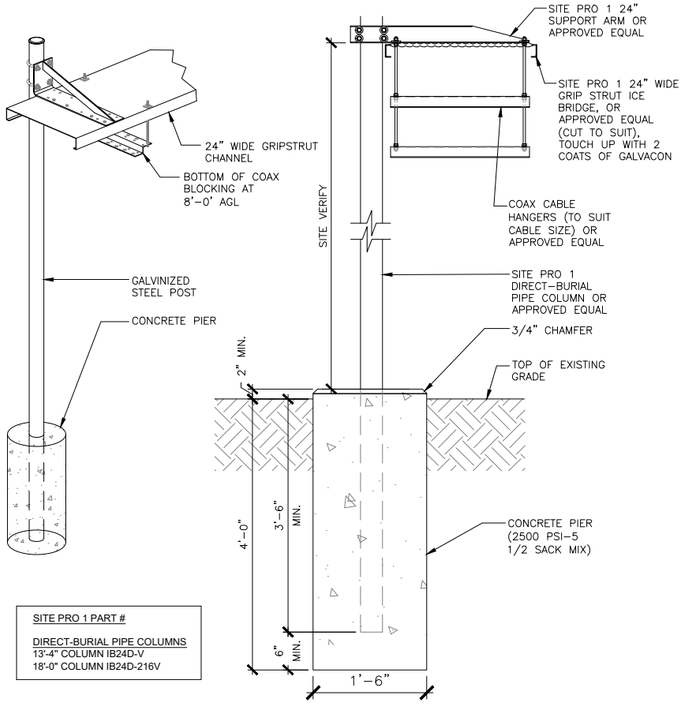
REV	DATE	DRWN	DESCRIPTION	DES./QA
A	06/23/2022	RCD	PRELIMINARY	SS
0	07/21/2022	RCD	100% FINALS	SS
1	07/28/2022	FP	100% FINALS	--



07/28/2022

SHEET NUMBER: C-7

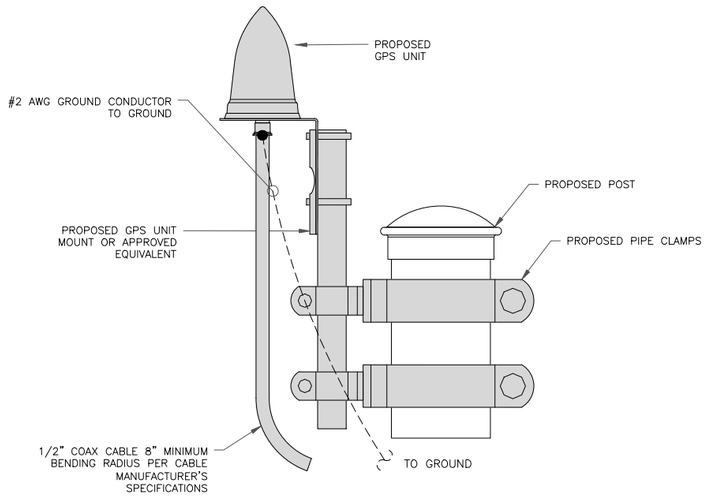
REVISION: 1



1 CABLE BRIDGE DETAIL
SCALE: NOT TO SCALE

2 NOT USED
SCALE: NOT TO SCALE

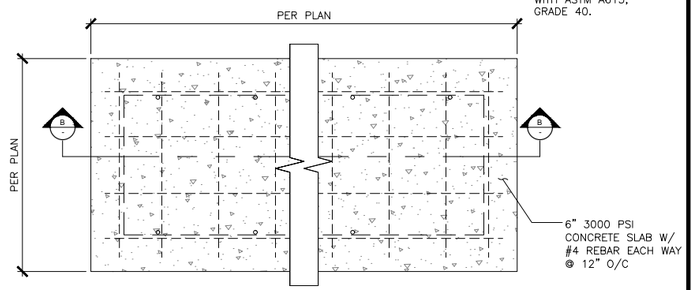
INSTALLER NOTES:
CABLE GROUNDING NOT REQUIRED WHEN ANTENNA IS LESS THAN 10' FROM CABINET



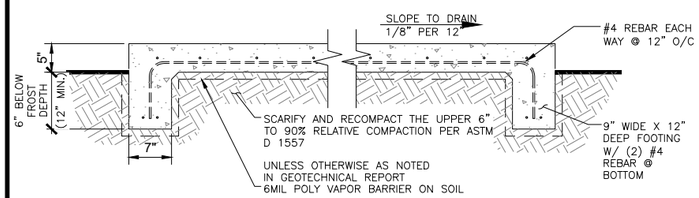
3 GPS DETAILS
SCALE: NOT TO SCALE

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.



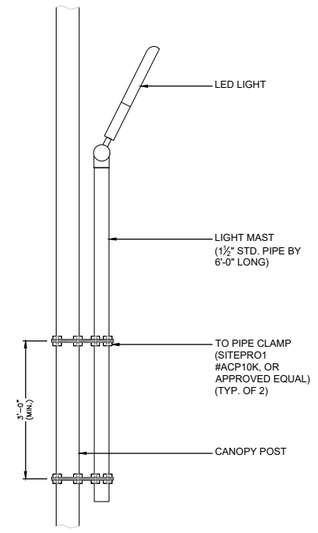
PLAN VIEW



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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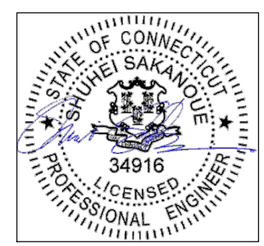
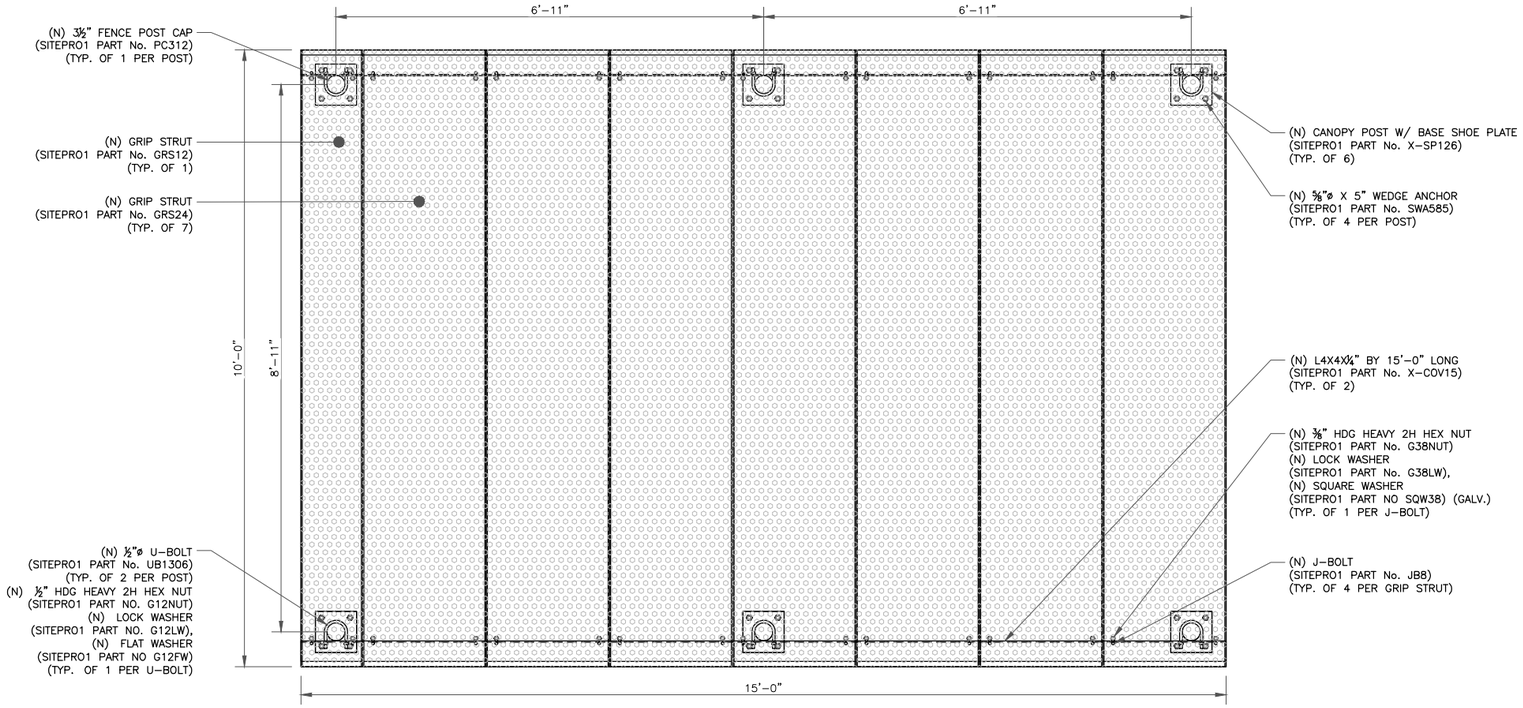
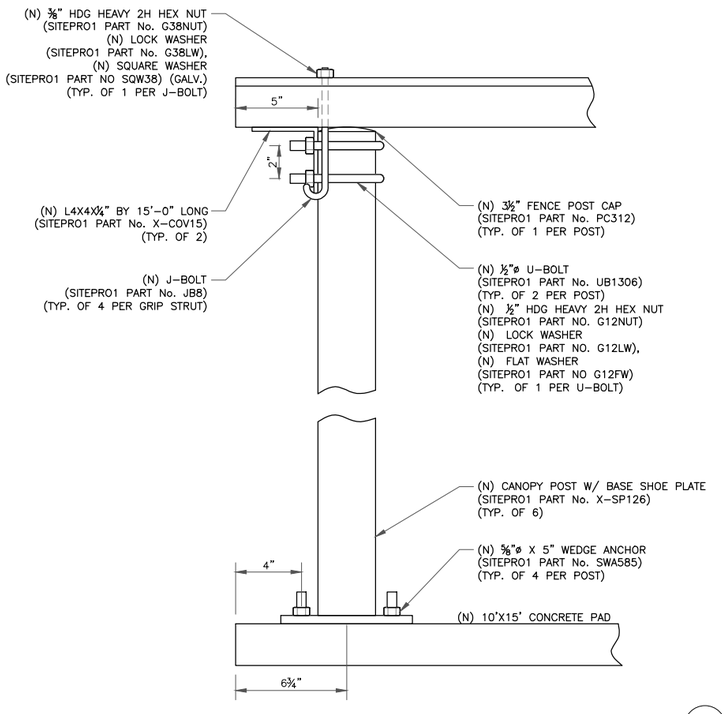


07/28/2022

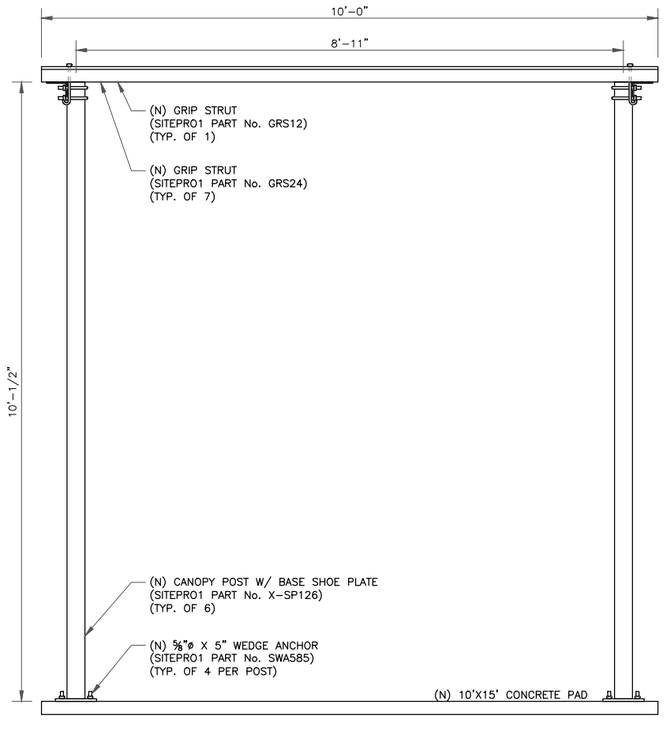
SHEET NUMBER: C-8

REVISION: 1





1 CANOPY DETAIL
SCALE: NOT TO SCALE



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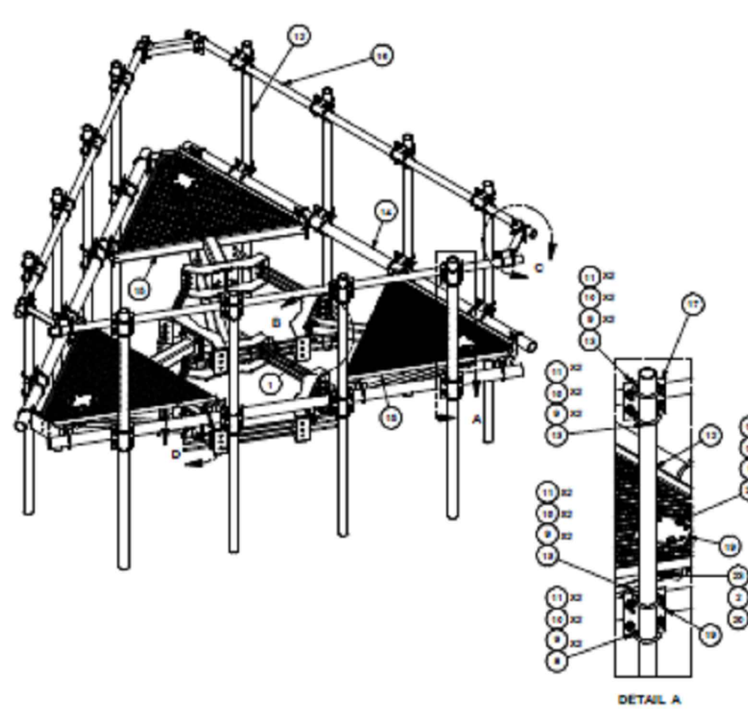
STATE OF CONNECTICUT
SHUHEI SAKAMOTO
34916
LICENSED PROFESSIONAL ENGINEER

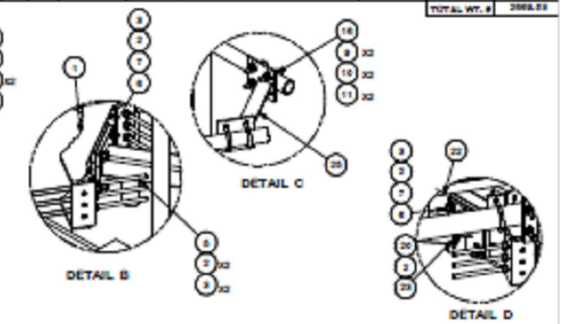
07/28/2022

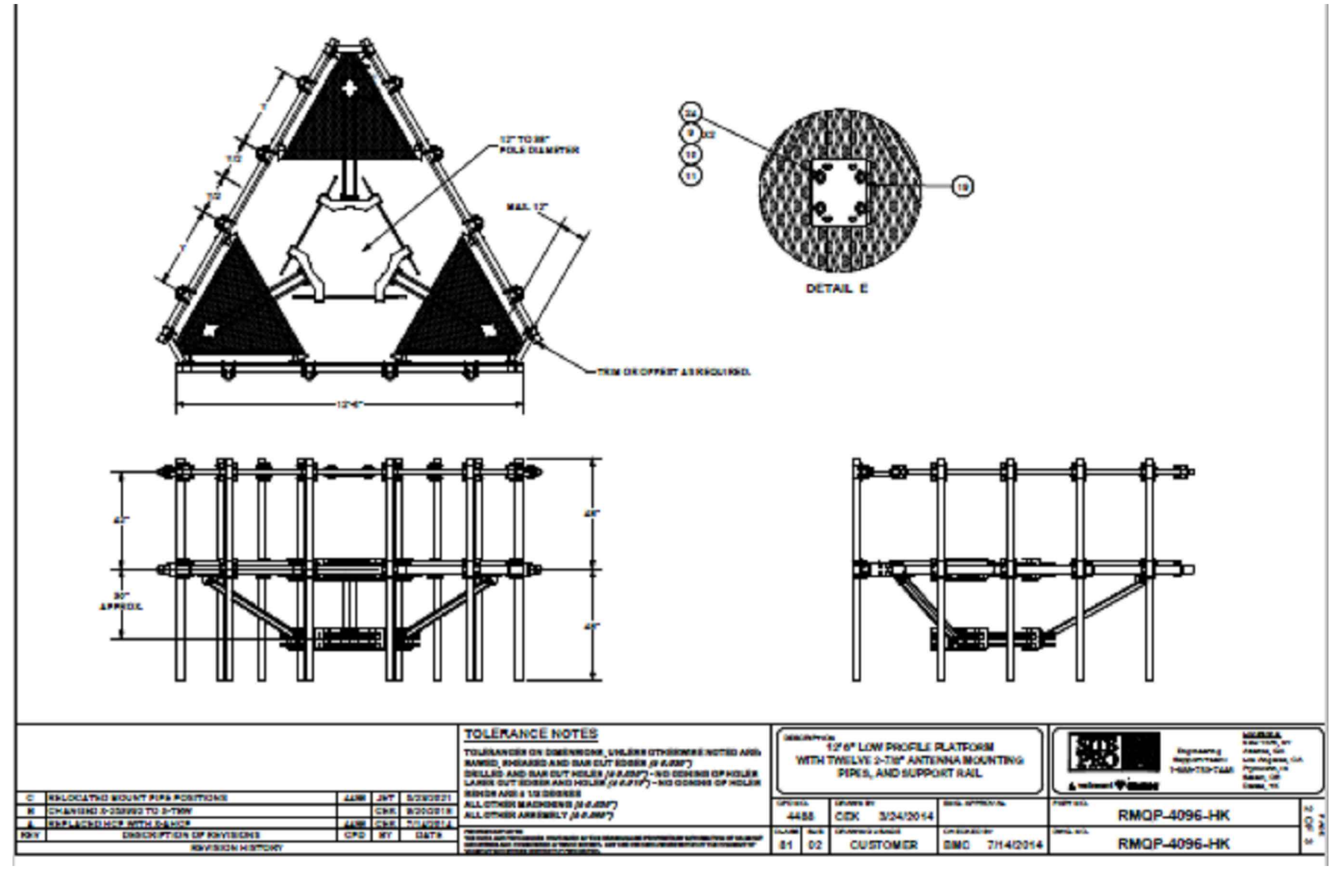
SHEET NUMBER: C-9

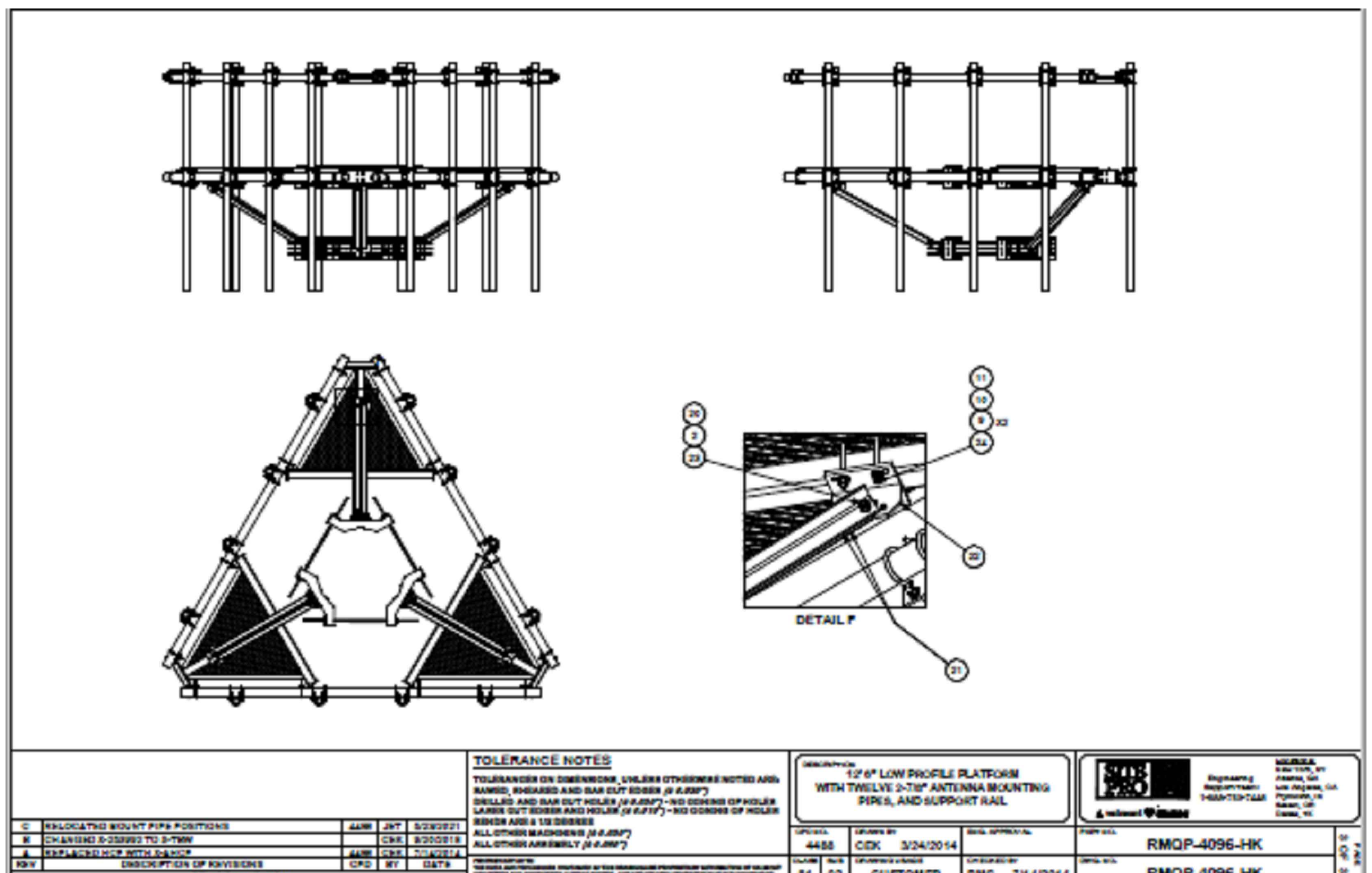
REVISION: 1



PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	6	X-LWKM	KING MOUNT WELDMENT		68.81	412.86
2	60	G58LW	5/8" HDG LOCKWASHER		0.03	1.72
3	60	A58NUT	5/8" HDG A325 HEX NUT		0.13	7.79
4	18	G58R-24	5/8" x 24" THREADED ROD (HDG)		2.09	37.63
5	18	G58R-48	5/8" x 48" THREADED ROD (HDG)		4.18	75.27
6	24	A58234	5/8" x 2-3/4" HDG A325 HEX BOLT	2 3/4 in	0.36	8.64
7	24	A58FW	5/8" HDG A325 FLATWASHER		0.03	0.82
8	36	X-UB1306	1/2" X 3-5/8" 3.6" X 3" U-BOLT (HDG)		0.83	29.82
9	264	G12FW	1/2" HDG USS FLATWASHER	3/32 in	0.03	8.00
10	252	G12LW	1/2" HDG LOCKWASHER	1/8 in	0.01	3.50
11	252	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	18.65
12	12	P3096	2-7/8" X 96" (2-1/2" SCH 40) GALVANIZED PIPE	96 in	49.24	590.88
13	48	X-UB1300	1/2" X 3" 3.5" X 3" U-BOLT (HDG)		0.70	33.45
14	3	P3100	3-1/2" X 100" (3" SCH 40) GALVANIZED PIPE	100 in	64.80	194.40
15	3	X-SV190	LOW PROFILE PLATFORM CORNER		212.10	636.31
16	3	P2100	2-3/8" O.D. X 100" SCH 40 GALVANIZED PIPE	100 in	45.77	137.31
17	12	SCX2	CROSSOVER PLATE	7 in	4.80	57.56
18	36	X-UB1212	1/2" X 2-1/2" 3.4-1/2" X 2" U-BOLT (HDG)		0.63	22.61
19	15	SCX4	CROSSOVER PLATE	8 1/2 in	6.02	90.32
20	6	G58NUT	5/8" HDG HEAVY 2H HEX NUT		0.13	0.78
21	6	X-CSK603	PLATFORM REINFORCEMENT KIT ANGLE	52 23/32 in	14.33	85.99
22	6	X-TMW	T-BRACKET WELDMENT		13.60	81.60
23	6	G5802	5/8" x 2" HDG HEX BOLT GR5		0.27	1.62
24	12	G12065	1/2" x 6-1/2" HDG HEX BOLT GR5 FULL THREAD	6 1/2 in	0.41	4.91
25	3	X-AHCP	ANGLE HANDRAIL CORNER PLATE		12.92	38.76
					TOTAL WT. #	2563.53







1 MOUNTING DETAIL
SCALE: NOT TO SCALE

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STATE OF CONNECTICUT
SHUHEI SAKANOUE
34916
LICENSED PROFESSIONAL ENGINEER
07/28/2022

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: C-10
REVISION: 1

SD050

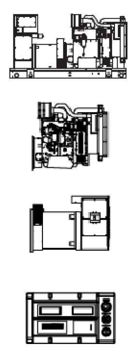
CUSTOM MODEL

GENERAC | INDUSTRIAL POWER

Industrial Diesel Generator Set

EPA Emissions Certification: Tier III

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	ENGINEERED FOR 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 UL NFPA ISO

GENERAC | INDUSTRIAL POWER

SD050 application and engineering data

ENGINE SPECIFICATIONS

General		
Make	Iveco / FPT	
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 1708A.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 = 80%) A 10% overload capacity is available for 1 out of every 12 hours.

GENERAC | INDUSTRIAL POWER

SD050 operating data (60Hz)

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 200A.

STARTING CAPABILITIES (sKVA)

sKVA vs. Voltage Dip

		480VAC						208/240VAC					
Alternator*	kW	10%	15%	20%	25%	30%	35%	10%	15%	20%	25%	30%	35%
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" H_2O 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

* CA 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

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

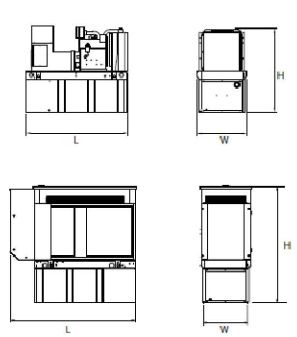
Control Panel
- Digital H Control Panel - Dual 4x20 Display — Std
- Programmable Crank Limiter — Std
- 7-Day Programmable Exerciser (requires H-Transfer Switch) — Std
- Special Applications Programmable PLC — Std
- RS-232 — Std
- RS-485 — Std
- All-Phase Sensing DVR — Std
- Full System Status — Std
- 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 I 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



OPEN SET

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

LEVEL 2 SOUND ENCLOSURE

RUNTIME HOURS	TANK SIZE 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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T-MOBILE SITE NUMBER:
CTHA134A

BU #: **842877**
WINDSOR NORTH

750 RAINBOW ROAD
WINDSOR, CT 06095

EXISTING 101'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	06/23/2022	RCD	PRELIMINARY	SS
0	07/21/2022	RCD	100% FINALS	SS
1	07/28/2022	FP	100% FINALS	--

STATE OF CONNECTICUT
SHUHEI SAKANOUE
34916
LICENSED PROFESSIONAL ENGINEER
07/28/2022

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: C-11
REVISION: 1

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					

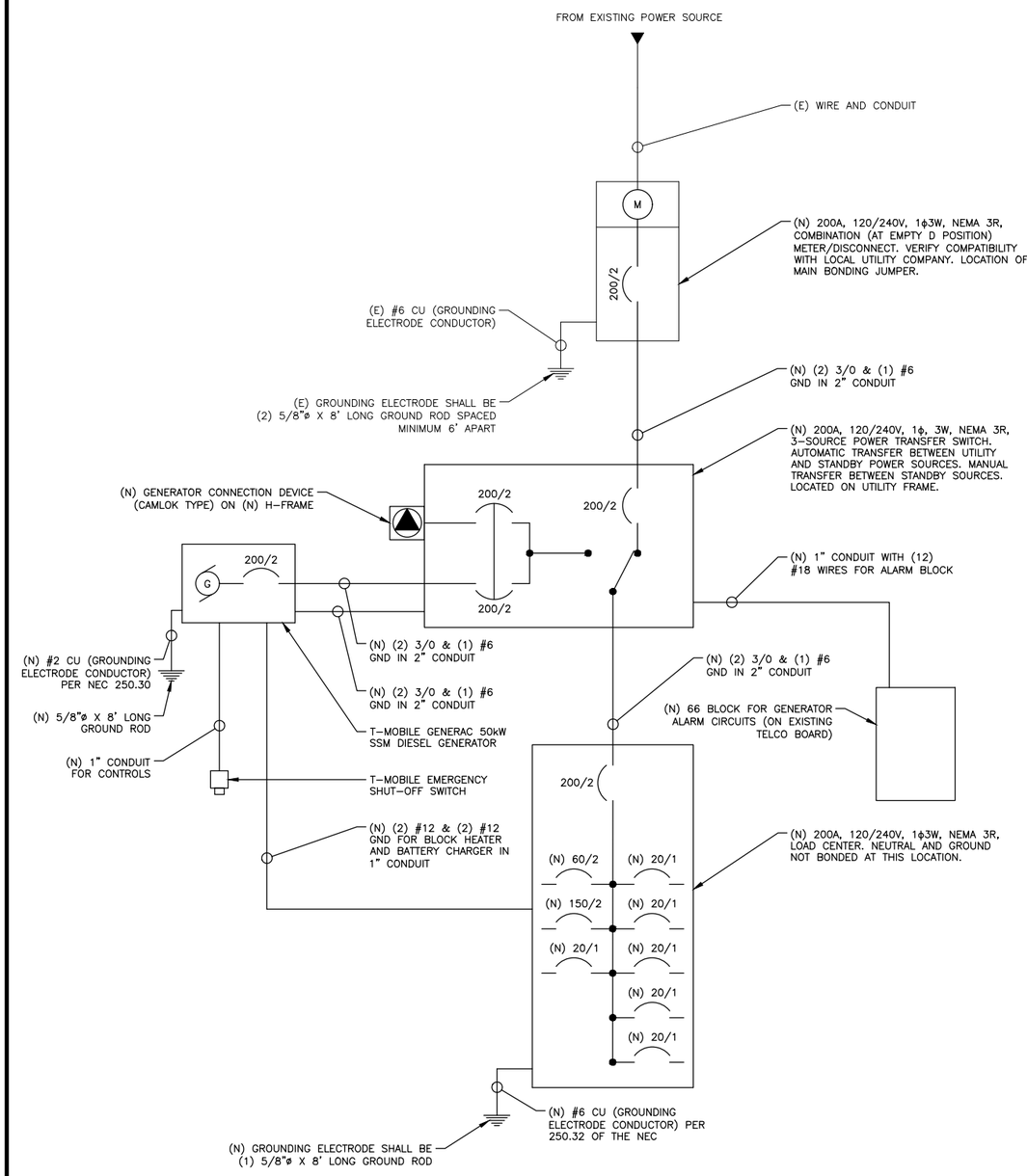
C = CONTINUOUS LOAD; NC = NON-CONTINUOUS LOAD

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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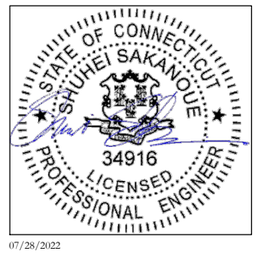
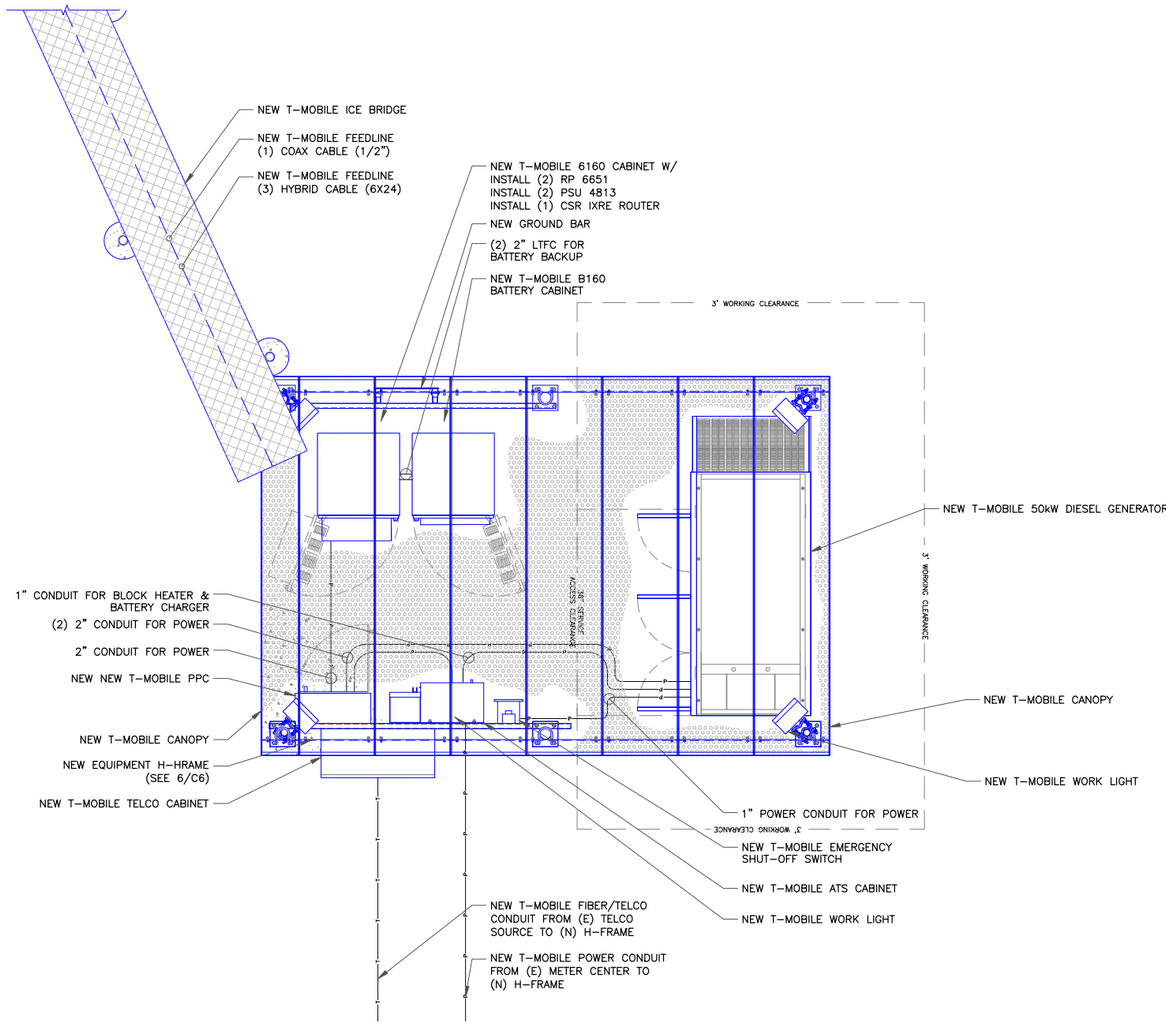


07/28/2022

SHEET NUMBER: E-1

REVISION: 1



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
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LICENSED PROFESSIONAL ENGINEER

07/28/2022

SHEET NUMBER: E-2

REVISION: 1

GROUNDING PLAN LEGEND:

--- GROUND WIRE

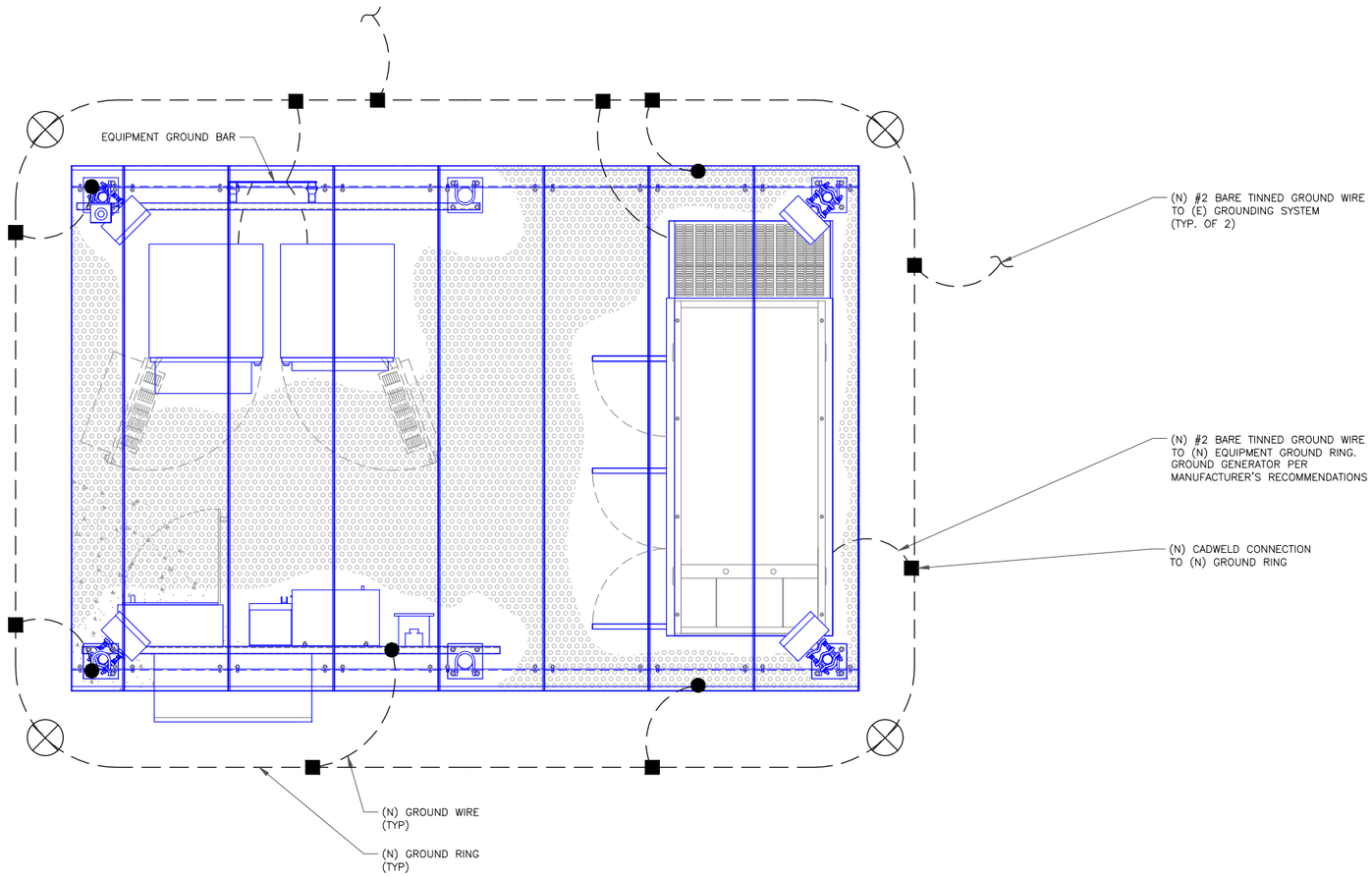
■ EXOTHERMIC WELD

● 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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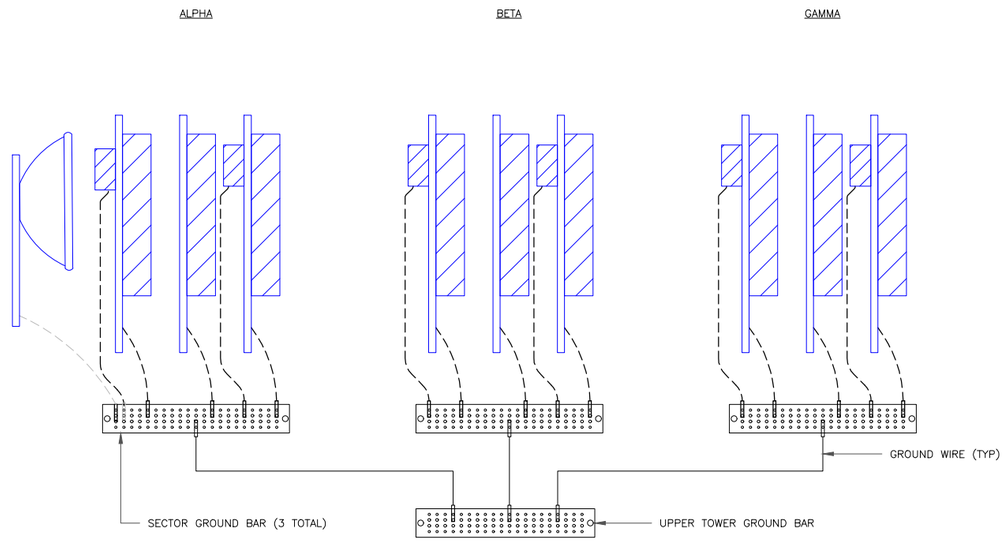
SHEET NUMBER: G-1

REVISION: 1



NOTE:

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

1 ANTENNA GROUNDING DIAGRAM
SCALE: NOT TO SCALE

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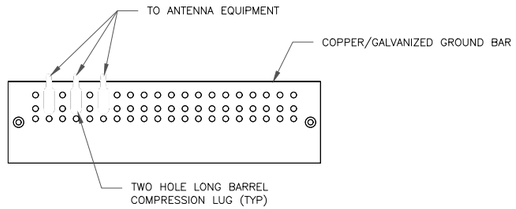
SHEET NUMBER: G-2

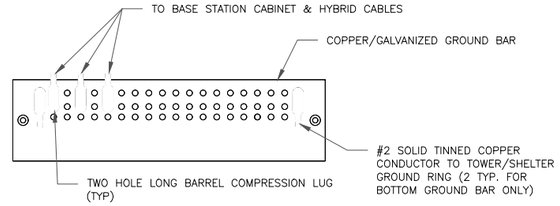
REVISION: 1



NOTES:

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

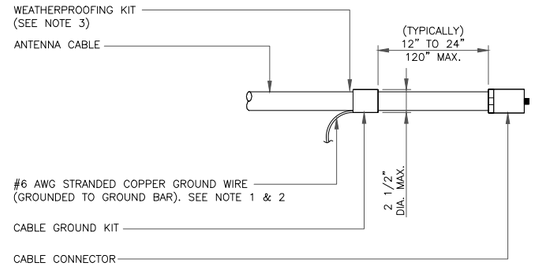
1 ANTENNA SECTOR GROUND BAR DETAIL
SCALE: NOT TO SCALE



NOTES:

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

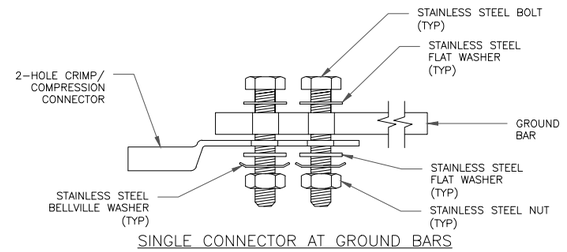
2 TOWER/SHELTER GROUND BAR DETAIL
SCALE: NOT TO SCALE



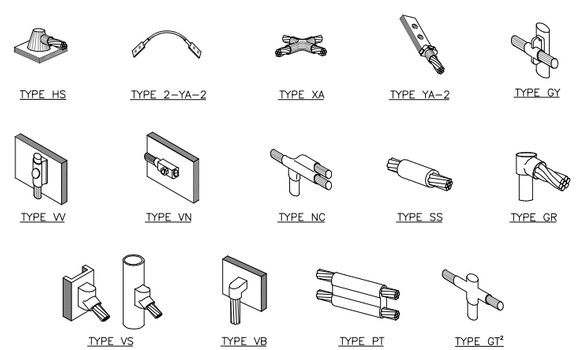
NOTES:

1. 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



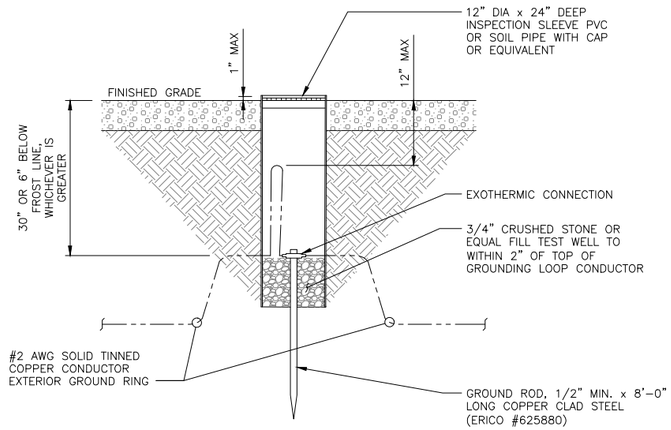
4 HARDWARE DETAIL FOR EXTERIOR CONNECTIONS
SCALE: NOT TO SCALE



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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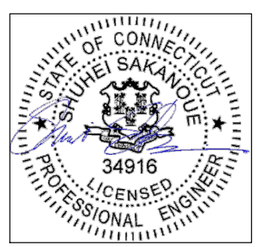
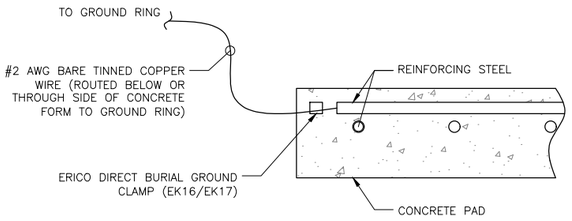


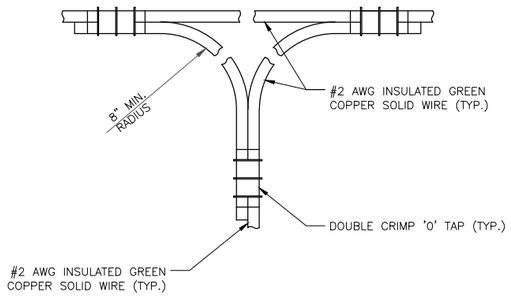
07/28/2022

SHEET NUMBER: G-3

REVISION: 1



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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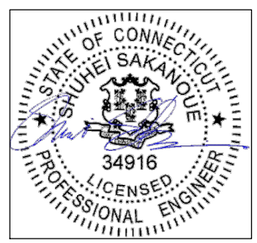

07/28/2022

SHEET NUMBER: G-4

REVISION: 1