

August 3, 2022

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

RE: **Tower Share Application-T-Mobile: CTHA606A**  
**Crown Site ID#842878**  
**1170 Matianuck Avenue Windsor, CT 06095**  
**Latitude: 41° 50' 25.97" / Longitude: -72° 39' 58.75"**

Dear Ms. Bachman:

T-Mobile proposes to install nine (9) antennas, nine (9) remote radios, one (1) microwave dish at the 87-foot mount level on the existing 100-foot monopole tower located at 1170 Matianuck Avenue, Windsor CT. T-Mobile to also install, five (5) Hybrid cables, one (1) 1/2" coaxial cable, three (3) new antenna mount w/support pipes. 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 Kimberly Hall North RE LLC 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
- (6) Ericsson-Radio 4460 B25+ B66 RRU
- (3) Ericsson-Radio 4480\_B71+B85 RRU
- (5) Hybrid Cable (6x24)
- (1) Coaxial Cable (1/2")
- (3) VFA10-SD-S Antenna Mount W/pipes
- (1) MSFAA – Sector Mount Bracket

**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 Commission on October 26, 2001.

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. Kimberly Hall North RE LLC, Property Owner. Crown Castle is the tower owner.

1. The proposed modifications will not result in an increase in the height of the existing tower. The total Height of the tower is 100' and T-Mobile antennas will be placed at the 87' 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 87-foot level of the existing 100-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, Suite 250  
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

Kimberly Hall North RE LLC, Property Owner  
C/O Next Healthcare Group  
551 5<sup>th</sup> Ave STE 2500  
New York, NY 10176



## Barbadora, Jeff

---

**From:** Planning <planning@townofwindsorct.com>  
**Sent:** Wednesday, August 3, 2022 10:54 AM  
**To:** Barbadora, Jeff  
**Cc:** Planning  
**Subject:** RE: 1170 Matianuck Ave - Map 55, Block 479 Lot 70  
**Attachments:** Decisions for October 25, 2001.pdf; Minutes for October 25, 2001.pdf

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

Hi Jeff,

Thank you for your email. Attached is the legal notice that was published in the Journal Inquirer for the approval of the cell tower and the approved minutes from the October 25, 2001 Town Planning and Zoning Commission meeting. I was unable to find a certificate in the file. I'm not sure what they would have issued at that time. If the minutes can be used, I can provide you with the signed minutes that are kept in our Town Clerk's office.

Let me know if you have any other questions.

Best,  
Andrea

*Andrea D. Marcavitch*



Planning and Zoning Department  
275 Broad Street | Windsor, CT 06095  
860-285-1980(p) | 860-285-1809(f)  
[marcavitch@townofwindsorct.com](mailto:marcavitch@townofwindsorct.com) | [www.townofwindsorct.com](http://www.townofwindsorct.com)

**From:** Barbadora, Jeff [mailto:Jeff.Barbadora@crowncastle.com]  
**Sent:** Monday, August 01, 2022 1:40 PM  
**To:** Planning <planning@townofwindsorct.com>  
**Subject:** 1170 Matianuck Ave - Map 55, Block 479 Lot 70

[ EXTERNAL E-MAIL ]

Good afternoon,

I work for Crown Castle and we own the cell tower at 1170 Matianuck Ave in Windsor, CT. We are in the process of filing with the Connecticut Siting Council and are not in receipt of the original zoning approval. The Connecticut Site Council does require a copy of the original approval when an application is submitted to their office.

This cell tower was proposed by ATT about the year 2002.



I am inquiring with your department to determine if the Town of Windsor has any information in regard to the original approval of the cell tower?)

Thanks and appreciate your time on this matter,

Jeffrey Barbadora  
Site Acquisition Specialist  
781-970-0053

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

This email may contain confidential or privileged material. Use or disclosure of it by anyone other than the recipient is unauthorized. If you are not an intended recipient, please delete this email.

TOWN OF WINDSOR  
PLANNING AND ZONING COMMISSION  
LEGAL NOTICE

Notice is hereby given that this commission made the following decisions at the Special Meeting held on October 25, 2001:

**Special Use #54B** - Wireless Telecommunications Facility, 1170 Matianuck Avenue, Zoning Regulations Sections 2.2.19E(1) and 10.5, AG Zone, AT&T Wireless Services PCS LLC and **Site Plan #107D** – Wireless Telecommunications Facility, Kimberly Hall, 1170 Matianuck Avenue, AG Zone, AT&T Wireless Services. **Approved subject to the following modifications and conditions:** 1) **Tower height shall be no greater than 110 feet;** 2) **Tower design shall be modified to a monopole designed to simulate an evergreen tree, using the best materials and design reasonably available for that purpose, and shall allow co-location of external antennae to the fullest extent feasible;** 3) **Final Staff approval including, but not limited to, final landscaping and screening details, and tree camouflage design;** 4) **The applicant shall allow 15 feet of vertical space for public safety antenna placement at or near the top of the tower. Tower must be designed to accommodate windloading for 15-foot high di-pole antenna and space for 7/8-inch coaxial cable. However, if approvals from town and/or state agencies are required for such installation, it shall be the responsibility of the Town to obtain such approval(s); and 5) This approval is subject to the general requirements and other provisions of Zoning Regulations § 2.2.19.**

Further details on all decisions, including complete texts of conditions, are available for public inspection in the Town Hall, Planning Department, 275 Broad Street, Windsor, CT (860) 285-1980

Dated this 26th day of October 2001  
to appear in the Journal Inquirer  
Saturday, October 27, 2001

Timothy Fitzgerald, Secretary  
Town Planning & Zoning Commission

**MINUTES  
SPECIAL MEETING  
TOWN PLANNING AND ZONING COMMISSION  
October 25, 2001 5:15 PM  
COUNCIL CHAMBERS, BOTTOM FLOOR, TOWN HALL  
275 BROAD STREET, WINDSOR, CONNECTICUT**

**PRESENT:** Commissioners Fitzgerald, Profe, Parker, and Alternate  
Commissioners O'Brien and Chiodo

Commissioner Mips was present, but not seated

**ALSO PRESENT:** Town Planner Zavarella, Assistant Planner Kennedy and Planning  
Secretary Madison

**I. BUSINESS MEETING**

Commissioner Fitzgerald opened the meeting at 5:15 p.m.

**A. Commission decision on applications recessed at the regular meeting on  
October 9, 2001:**

1. **Special Use #54B** - Wireless Telecommunications Facility, 1170 Matianuck Avenue,  
Zoning Regulations Sections 2.2.19E(1) and 10.5, AG Zone, AT&T Wireless  
Services PCS LLC
2. **Site Plan #107D** – Wireless Telecommunications Facility, Kimberly Hall, 1170  
Matianuck Avenue, AG Zone, AT&T Wireless Services

There was a general discussion. Commission Profe said he agreed that there was a need for a tower at the proposed location and that although the proposed flagpole design at first viewing appeared good for aesthetics, the stealth design would not provide as effectively as a conventional tower that was camouflaged. Commissioner Parker said that she also favored the conventional tower with camouflage.

**Motion: Commissioner Fitzgerald moved to adopt the Finding of Facts as follows:**

1. **Pursuant to our locational standards set forth in § 2.2.19D of the Zoning Regulations and pursuant to our general requirements, the applicant has sufficiently demonstrated a need for a new wireless telecommunications tower in the vicinity of Exit 36, Interstate 91.**
2. **Although some residential areas are nearby, a tower height of 110 feet will not have a significant negative impact if the tower design is modified to resemble an evergreen tree.**



3. The site plan for the base equipment satisfies our fall zone and other site standards, provided additional screening by evergreen trees is included if determined advisable by the planning department staff.
4. A monopole design capable of accommodating co-located antennas will more likely facilitate optimal co-location, and is therefore preferred over the applicant's flagpole tower design with internal antennae pursuant to Zoning Regulations § 2.2.19C(1), 2.2.19D(1)(b) and 2.2.19D(3)(e).

Commissioner Profe seconded the motion and it passed unanimously, 5-0-0.

**Motion:** Commissioner Fitzgerald moved to approve Special Use Application #54B for a wireless telecommunications facility at 1170 Matianuck Avenue under Zoning Regulations Sections 2.2.19E(1) and 10.5 as presented by the applicant at the public hearing, but with the following modifications and conditions:

- 1) Tower height shall be no greater than 110 feet.
- 2) Tower design shall be modified to a monopole designed to simulate an evergreen tree, using the best materials and design reasonably available for that purpose, and shall allow co-location of external antennae to the fullest extent feasible.
- 3) Final Staff approval including, but not limited to, final landscaping and screening details, and tree camouflage design.
- 4) The applicant shall allow 15 feet of vertical space for public safety antenna placement at or near the top of the tower. Tower must be designed to accommodate windloading for 15-foot high di-pole antenna and space for 7/8-inch coaxial cable. However, if approvals from town and/or state agencies are required for such installation, it shall be the responsibility of the town to obtain such approval(s).
- 5) This approval is subject to the general requirements and other provisions of Zoning Regulations § 2.2.19.

Commissioner Profe seconded the motion and it passed unanimously, 5-0-0.

**Motion:** Commissioner Fitzgerald moved to approve Site Plan Application #107D for a telecommunications tower at 1170 Matianuck Avenue subject to the same findings, conditions and modifications as the approval for Special Use Application #54B. Commissioner Profe seconded the motion and it passed unanimously, 5-0-0.

## II. ADJOURNMENT

**Motion: Commissioner Profe moved to adjourn. Alternate Commissioner O'Brien seconded the motion and it passed unanimously, 5-0-0.**

The meeting ended at 5:30 p.m.

Respectfully submitted, \_\_\_\_\_, Marian Madison, Recording Secretary

I certify these minutes were adopted on \_\_\_\_\_, 2001.

\_\_\_\_\_  
Anita M. Mips, Chairperson

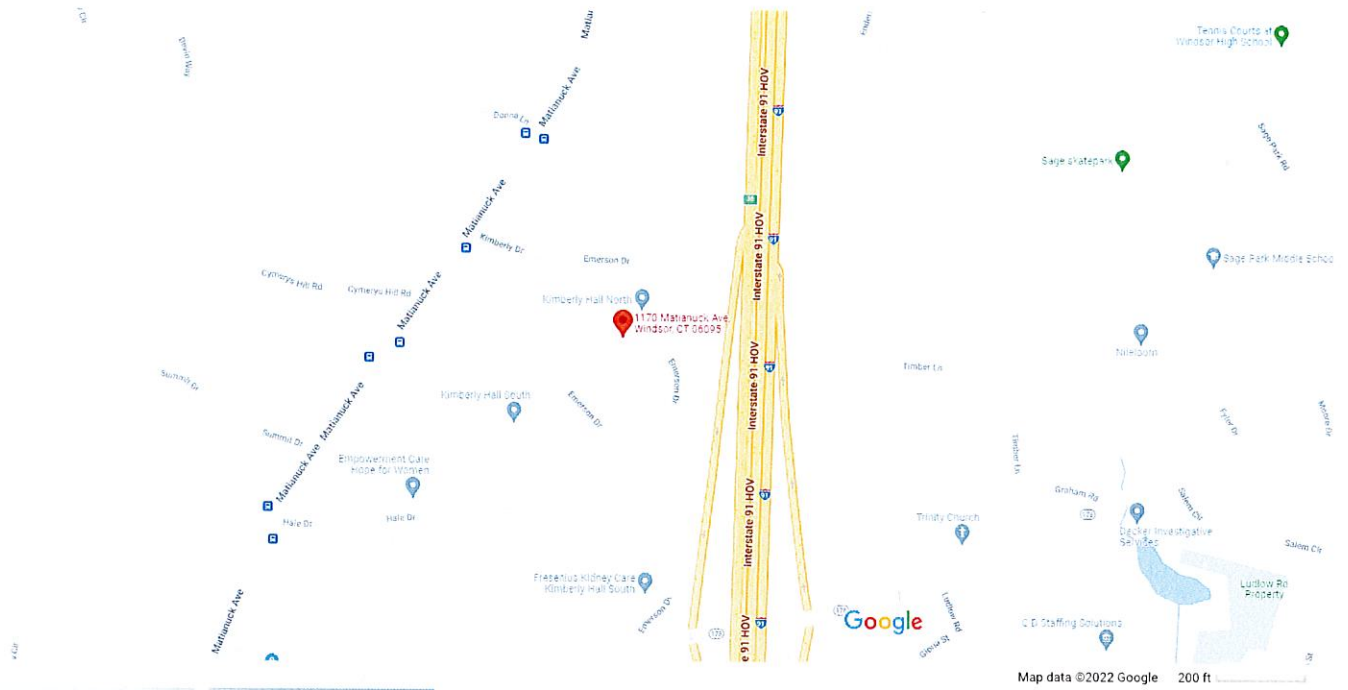




CONSTRUCTION DETAIL		CONSTRUCTION DETAIL (CONTINUED)									
Element	Cd	Description	Element Description								
Style: Model Grade: Stories: Occupancy Exterior Wall 1 Exterior Wall 2 Roof Structure: Roof Cover Interior Wall 1 Interior Wall 2 Interior Flr 1 Interior Flr 2 Heat Fuel Heat Type: AC Type: Total Bedrooms Total Bthrms: Total Half Baths Total Xtra Fixtrs Total Rooms: Bath Style: Kitchen Style:	94 00	Outbuildings Vacant									
<b>CONDO DATA</b>											
Parcel Id	C	Ownr									
Adjust Type	Code	Description	Factor%								
Condo Flr		B	S								
Condo Unit											
<b>COST / MARKET VALUATION</b>											
Building Value New		1									
Year Built											
Effective Year Built											
Depreciation Code											
Remodel Rating											
Year Remodeled											
Depreciation %											
Functional Obsol											
External Obsol											
Trend Factor											
Condition											
Condition %											
Percent Good											
Cns Sect Rcnld											
Dep % Ovr											
Dep Ovr Comment											
Misc Imp Ovr											
Misc Imp Ovr Comment											
Cost to Cure Ovr											
Cost to Cure Ovr Comment											
<b>OB - OUTBUILDING &amp; YARD ITEMS(L) / XF - BUILDING EXTRA FEATURES(B)</b>											
Code	Sub	Sub Ty	L/B	Units	Unit Pric	Yr Blt	Cond. C	% Gd	Grade	Grade A	Appr. V
CB3	PerCast	L		600	350.00	2000		57		0.00	119,70
<b>BUILDING SUB-AREA SUMMARY SECTION</b>											
Code	Description	Living Area	Floor Area	Eff Area	Unit Cost	Undeprec Value					
Ttl Gross Liv / Lease Area		0	0			0					






No Sketch

### 1170 Matianuck Ave



### 1170 Matianuck Ave

Windsor, CT 06095

-   
Directions
-   
Save
-   
Nearby
-   
Send to phone
-   
Share

R8RM+F5 Windsor, Connecticut

### Photos



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, NY 10176

**Re: Application for Zoning/Building Permit**  
**Crown Castle telecommunications site at: 1170 MATIANUCK AVENUE, WINDSOR, CT 06095**

NCWPCS MPL 29 - 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:** 842878/WINDSOR SOUTH  
**Customer Site ID:** CTHA606A/Matianuck Windsor Crown  
**Site Address:** 1170 MATIANUCK AVENUE, WINDSOR, CT 06095  
**APN:** 55/ 479/ 70// a/k/a/ acct # 03188.00

Crown Castle

By: \_\_\_\_\_

Jeff Barbadora  
Real Estate Specialist

Date: \_\_\_\_\_

8/2/22





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<b>TO</b>	Town of Windsor Eric Barz, Town Planner 275 Broad Street WINDSOR, CT, US, 06095
<b>REFERENCE</b>	799001.7680
<b>SHIPPER REFERENCE</b>	799001.7680
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**Barbadora, Jeff**

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FROM Jeff Barbadora  
1800 W. Park Drive  
WESTBOROUGH, MA, US, 01581

TO Kimberly Hall north RE LLC  
C/O Next Healthcare Group  
551 5th Ave STE 2500  
NEW YORK, NY, US, 10176

REFERENCE 799001.7680

SHIPPER REFERENCE 799001.7680

SHIP DATE Wed 8/03/2022 05:27 PM

PACKAGING TYPE FedEx Envelope

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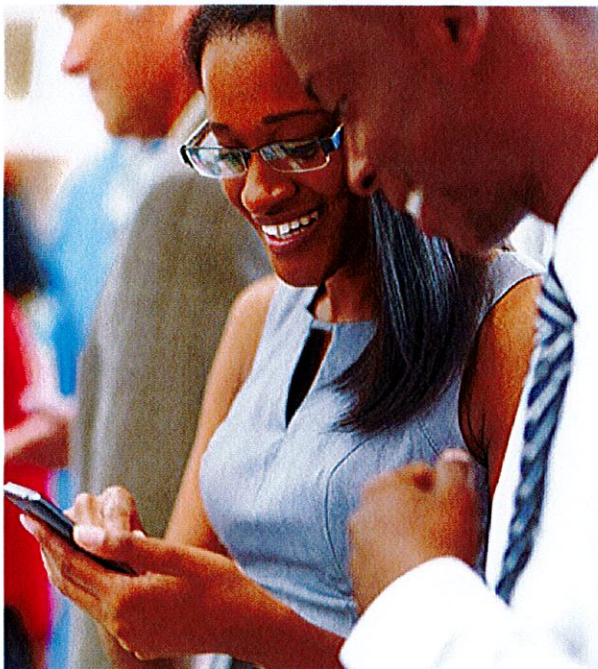
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Date: **May 26, 2022**



Crown Castle  
2000 Corporate Drive  
Canonsburg, PA 15317  
724-416-2000

**Subject:** **Structural Analysis Report**

**Carrier Designation:** **T-Mobile Co-Locate**  
**Site Number:** CTHA606A  
**Site Name:** Matianuck Windsor Crown

**Crown Castle Designation:** **BU Number:** 842878  
**Site Name:** WINDSOR SOUTH  
**JDE Job Number:** 706901  
**Work Order Number:** 2110298  
**Order Number:** 605574 Rev. 0

**Engineering Firm Designation:** **Crown Castle Project Number:** 2110298

**Site Data:** **1170 MATIANUCK AVENUE, WINDSOR, HARTFORD County, CT**  
**Latitude 41° 50' 25.97", Longitude -72° 39' 58.75"**  
**100 Foot - Monopole Tower**

Crown Castle 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:


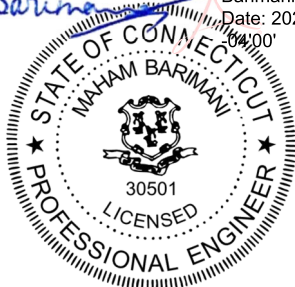
LC5: Proposed Equipment Configuration

**Sufficient Capacity-95.8%**

This analysis utilizes an ultimate 3-second gust wind speed of 117 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: Subhash Mandal

Respectfully submitted by:

  
Digitally signed by Maham Barimani  
Date: 2022.05.27 11:35:09  


Maham Barimani, P.E.  
Senior Project Engineer



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## 1) INTRODUCTION

This tower is a 100 ft Monopole tower designed by EHRESMANN ENGINEERING INC.

## 2) ANALYSIS CRITERIA

<b>TIA-222 Revision:</b>	TIA-222-H
<b>Risk Category:</b>	II
<b>Wind Speed:</b>	117 mph
<b>Exposure Category:</b>	C
<b>Topographic Factor:</b>	1
<b>Ice Thickness:</b>	1.5 in
<b>Wind Speed with Ice:</b>	50 mph
<b>Service Wind Speed:</b>	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)
87.0	87.0	3	-	sitepro 1 VFA10-SD-S	1	1/2 1-5/8
		1	-	sitepro 1 MSFAA		
		3	commscope	VV-65A-R1_TMO w/ Mount Pipe		
		3	ericsson	AIR 6419 B41_TMO		
		6	ericsson	RADIO 4460 B2/B25 B66_TMO		
		3	ericsson	Radio 4480_TMOV2		
		3	rfs celwave	APXVAALL24_43-U-NA20_TMO w/ Mount Pipe		
		1	rfs celwave	SC2-W100BD		

**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)
97.0	97.0	1	andrew	SBNHH-1D65A w/ Mount Pipe	2 4 6 1	3/8 3/4 7/8 RC
		1	cci antennas	HPA-65R-BUU-H6 w/ Mount Pipe		
		1	cci antennas	HPA-65R-BUU-H8 w/ Mount Pipe		
		1	cci antennas	TPA-65R-LCUUUU-H8 w/ Mount Pipe		
		3	ericsson	RRUS 11 B12		
		3	ericsson	RRUS 32 B2		
		3	ericsson	RRUS 32 B30		
		3	kathrein	800 10121 w/ Mount Pipe		
		6	powerwave technologies	LGP21401		
		1	quintel technology	QS46512-2 w/ Mount Pipe		
		1	quintel technology	QS66512-2 w/ Mount Pipe		
		2	raycap	DC6-48-60-18-8F		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
		1	tower mounts	Miscellaneous [NA 507-1]		
		1	tower mounts	T-Arm Mount [TA 602-3]		

### 3) ANALYSIS PROCEDURE

**Table 3 - Documents Provided**

Document	Reference	Source
4-GEOTECHNICAL REPORTS	4713265	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	4858947	CCISITES
4-TOWER MANUFACTURER DRAWINGS	6100542	CCISITES

#### 3.1) Analysis Method

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

#### 3.2) Assumptions

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

This analysis may be affected if any assumptions are not valid or have been made in error. Crown Castle 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	100 - 80.487	Pole	TP21.1099x15x0.1875	1	-10.48	728.91	52.7	Pass
L2	80.487 - 42.779	Pole	TP32.4173x19.7523x0.3125	2	-20.67	1870.02	79.2	Pass
L3	42.779 - 0	Pole	TP45x30.3809x0.375	3	-32.57	3262.58	77.4	Pass
							Summary	
						Pole (L2)	79.2	Pass
						Rating =	79.2	Pass



**Table 5 - Tower Component Stresses vs. Capacity - LC5**

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	77.8	Pass
1	Base Plate	0	95.8	Pass
1	Base Foundation (Structure)	0	67.1	Pass
1	Base Foundation (Soil Interaction)	0	60.2	Pass

<b>Structure Rating (max from all components) =</b>	<b>95.8%</b>
---	--------------

Notes:

- 1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.

#### 4.1) Recommendations

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

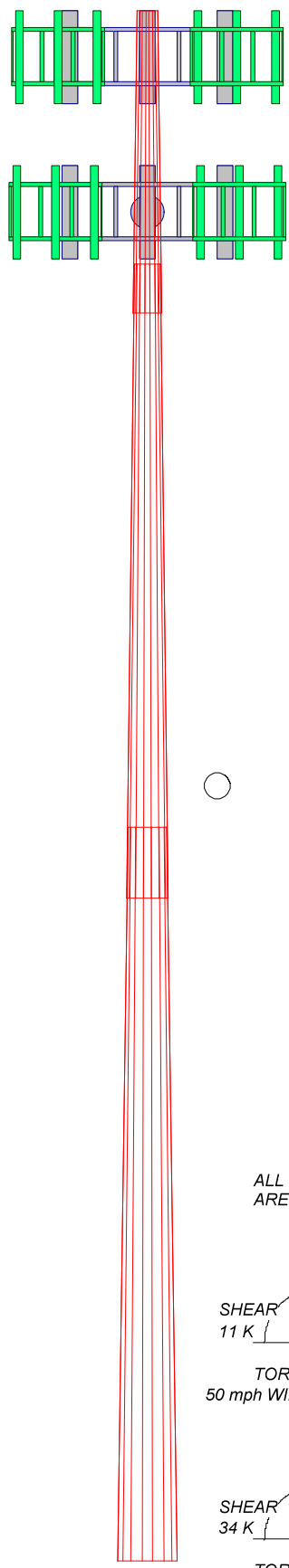
The results of the tilt and twist values for a 60 mph 3-second gust service wind speed per the TIA-222-H Standard are given below:

<b>Critical Deflections and Radius of Curvature - Service Wind</b>						
<i>Elevation</i>	<i>Appurtenance</i>	<i>Gov. Load Comb.</i>	<i>Deflection</i>	<i>Tilt</i>	<i>Twist</i>	<i>Radius of Curvature</i>
<i>ft</i>			<i>in</i>	<i>°</i>	<i>°</i>	<i>ft</i>
87.00	SC2-W100BD	43	13.764	1.5426	0.0063	4180

**APPENDIX A**  
**TNXTOWER OUTPUT**

Section	1	2	3
Length (ft)	19.51	40.85	47.33
Number of Sides	18	18	18
Thickness (in)	0.1875	0.3125	0.3750
Socket Length (ft)	3.14	4.55	
Top Dia (in)	15.0000	19.7523	30.3809
Bot Dia (in)	21.1099	32.4173	45.0000
Grade		A572-65	
Weight (K)	0.7	3.6	7.2

100.0 ft  
80.5 ft  
42.8 ft  
0.0 ft



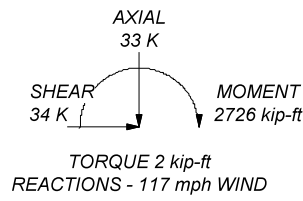
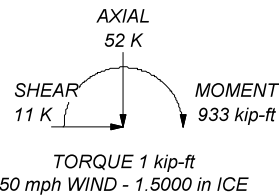
**MATERIAL STRENGTH**


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

**TOWER DESIGN NOTES**

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-H Standard.
3. Tower designed for a 117 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.50 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 79.2%

ALL REACTIONS ARE FACTORED



 <p><b>Crown Castle</b> 2000 Corporate Drive Canonsburg, PA 15317 The Pathway to Possible Phone: 724-416-2000 FAX: -</p>	Job: <b>BU# 842878</b>		
	Project:		
	Client: Crown Castle	Drawn by: S.Mandal	App'd:
	Code: TIA-222-H	Date: 05/26/22	Scale: NTS
	Path: C:\WIP\842878\WO 2110298 - SAIProd\842878.eri	Dwg No. E-1	



## Tower Input Data

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

- Tower is located in Hartford County, Connecticut.
- Tower base elevation above sea level: 115.00 ft.
- Basic wind speed of 117 mph.
- Risk Category II.
- Exposure Category C.
- Simplified Topographic Factor Procedure for wind speed-up calculations is used.
- Topographic Category: 1.
- Crest Height: 0.00 ft.
- Nominal ice thickness of 1.5000 in.
- Ice thickness is considered to increase with height.
- Ice density of 56 pcf.
- A wind speed of 50 mph is used in combination with ice.
- Temperature drop of 50 °F.
- Deflections calculated using a wind speed of 60 mph.
- A non-linear (P-delta) analysis was used.
- Pressures are calculated at each section.
- Stress ratio used in pole design is 1.
- Tower analysis based on target reliabilities in accordance with Annex S.
- Load Modification Factors used:  $K_{es}(F_w) = 0.95$ ,  $K_{es}(t_i) = 0.85$ .
- Maximum demand-capacity ratio is: 1.05.
- Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

## Options

Consider Moments - Legs Consider Moments - Horizontals Consider Moments - Diagonals Use Moment Magnification ✓ Use Code Stress Ratios ✓ Use Code Safety Factors - Guys Escalate Ice Always Use Max Kz Use Special Wind Profile  Include Bolts In Member Capacity  Leg Bolts Are At Top Of Section Secondary Horizontal Braces Leg Use Diamond Inner Bracing (4 Sided) SR Members Have Cut Ends SR Members Are Concentric	Distribute Leg Loads As Uniform Assume Legs Pinned ✓ Assume Rigid Index Plate ✓ Use Clear Spans For Wind Area Use Clear Spans For KL/r Retension Guys To Initial Tension ✓ Bypass Mast Stability Checks ✓ Use Azimuth Dish Coefficients ✓ Project Wind Area of Appurt.  Autocalc Torque Arm Areas  Add IBC .6D+W Combination ✓ Sort Capacity Reports By Component Triangulate Diamond Inner Bracing Treat Feed Line Bundles As Cylinder Ignore KL/ry For 60 Deg. Angle Legs	Use ASCE 10 X-Brace Ly Rules Calculate Redundant Bracing Forces Ignore Redundant Members in FEA SR Leg Bolts Resist Compression All Leg Panels Have Same Allowable Offset Girt At Foundation ✓ Consider Feed Line Torque Include Angle Block Shear Check Use TIA-222-H Bracing Resist. Exemption Use TIA-222-H Tension Splice Exemption  <div style="text-align: center; background-color: #e0e0e0; padding: 2px;"><b>Poles</b></div> ✓ Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets ✓ 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	100.00-80.49	19.51	3.14	18	15.0000	21.1099	0.1875	0.7500	A572-65 (65 ksi)
L2	80.49-42.78	40.85	4.55	18	19.7523	32.4173	0.3125	1.2500	A572-65 (65 ksi)
L3	42.78-0.00	47.33		18	30.3809	45.0000	0.3750	1.5000	A572-65 (65 ksi)

### Tapered Pole Properties

Section	Tip Dia. in	Area in <sup>2</sup>	I in <sup>4</sup>	r in	C in	I/C in <sup>3</sup>	J in <sup>4</sup>	It/Q in <sup>2</sup>	w in	w/t
L1	15.2025	8.8153	244.3603	5.2584	7.6200	32.0683	489.0422	4.4085	2.3100	12.32
	21.4066	12.4514	688.6208	7.4275	10.7238	64.2141	1378.1477	6.2269	3.3853	18.055
L2	20.9968	19.2819	920.6019	6.9011	10.0342	91.7466	1842.4151	9.6428	2.9264	9.365
	32.8692	31.8439	4146.7161	11.3972	16.4680	251.8047	8298.8885	15.9250	5.1554	16.497
L3	32.2194	35.7145	4062.5120	10.6521	15.4335	263.2271	8130.3696	17.8606	4.6870	12.499
	45.6363	53.1149	13363.195	15.8419	22.8600	584.5667	26743.975	26.5625	7.2600	19.36
			7				0			

Tower Elevation ft	Gusset Area (per face) ft <sup>2</sup>	Gusset Thickness in	Gusset Grade	Adjust. Factor A <sub>r</sub>	Adjust. Factor A <sub>r</sub>	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontal in	Double Angle Stitch Bolt Spacing Redundants in
L1 100.00-80.49				1	1	1			
L2 80.49-42.78				1	1	1			
L3 42.78-0.00				1	1	1			

### Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Clear Spacing in	Width or Diameter r in	Perimeter r in	Weight plf
***											

### Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	C <sub>A</sub> A <sub>A</sub> ft <sup>2</sup> /ft	Weight plf
*** 97 ft ***								
LDF5-50A(7/8)	B	No	No	Inside Pole	97.00 - 0.00	6	No Ice	0.33
							1/2" Ice	0.33
							1" Ice	0.33
							2" Ice	0.33
FB-L98B-034-XXX(3/8)	B	No	No	Inside Pole	97.00 - 0.00	1	No Ice	0.06
							1/2" Ice	0.06
							1" Ice	0.06
							2" Ice	0.06
WR-VG86ST-BRD(3/4)	B	No	No	Inside Pole	97.00 - 0.00	2	No Ice	0.58
							1/2" Ice	0.58
							1" Ice	0.58
							2" Ice	0.58

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C <sub>A</sub> A <sub>A</sub> ft <sup>2</sup> /ft	Weight plf
2" Flex Conduit	B	No	No	Inside Pole	97.00 - 0.00	1	No Ice	0.00	0.36
							1/2" Ice	0.00	0.36
							1" Ice	0.00	0.36
							2" Ice	0.00	0.36
FB-L98B-034-XXX(3/8)	B	No	No	Inside Pole	97.00 - 0.00	1	No Ice	0.00	0.06
							1/2" Ice	0.00	0.06
							1" Ice	0.00	0.06
							2" Ice	0.00	0.06
WR-VG86ST-BRD(3/4)	B	No	No	Inside Pole	97.00 - 0.00	2	No Ice	0.00	0.58
							1/2" Ice	0.00	0.58
							1" Ice	0.00	0.58
							2" Ice	0.00	0.58
***									
LDF4-50A(1/2)	C	No	No	Inside Pole	87.00 - 0.00	1	No Ice	0.00	0.15
							1/2" Ice	0.00	0.15
							1" Ice	0.00	0.15
							2" Ice	0.00	0.15
HB158-21U6S24-xxM_TMO(1-5/8)	C	No	No	Inside Pole	87.00 - 0.00	5	No Ice	0.00	2.50
							1/2" Ice	0.00	2.50
							1" Ice	0.00	2.50
							2" Ice	0.00	2.50
***									

**Feed Line/Linear Appurtenances Section Areas**

Tower Section n	Tower Elevation ft	Face	A <sub>R</sub> ft <sup>2</sup>	A <sub>F</sub> ft <sup>2</sup>	C <sub>A</sub> A <sub>A</sub> In Face ft <sup>2</sup>	C <sub>A</sub> A <sub>A</sub> Out Face ft <sup>2</sup>	Weight K
L1	100.00-80.49	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.08
		C	0.000	0.000	0.000	0.000	0.08
L2	80.49-42.78	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.18
		C	0.000	0.000	0.000	0.000	0.48
L3	42.78-0.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.20
		C	0.000	0.000	0.000	0.000	0.54

**Feed Line/Linear Appurtenances Section Areas - With Ice**

Tower Section n	Tower Elevation ft	Face or Leg	Ice Thickness in	A <sub>R</sub> ft <sup>2</sup>	A <sub>F</sub> ft <sup>2</sup>	C <sub>A</sub> A <sub>A</sub> In Face ft <sup>2</sup>	C <sub>A</sub> A <sub>A</sub> Out Face ft <sup>2</sup>	Weight K
L1	100.00-80.49	A	1.409	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.08
		C		0.000	0.000	0.000	0.000	0.08
L2	80.49-42.78	A	1.355	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.18
		C		0.000	0.000	0.000	0.000	0.48
L3	42.78-0.00	A	1.219	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.20
		C		0.000	0.000	0.000	0.000	0.54

**Feed Line Center of Pressure**



Section	Elevation	CP <sub>x</sub>	CP <sub>z</sub>	CP <sub>x</sub> Ice	CP <sub>z</sub> Ice
	ft	in	in	in	in
L1	100.00-80.49	0.0000	0.0000	0.0000	0.0000
L2	80.49-42.78	0.0000	0.0000	0.0000	0.0000
L3	42.78-0.00	0.0000	0.0000	0.0000	0.0000

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

### Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft
*** BRANCHES ***					
Pine (105)	C	None		0.0000	105.00
Pine (96)	C	None		0.0000	96.00
Pine (88)	C	None		0.0000	88.00
Pine (78)	C	None		0.0000	78.00
Pine (68)	C	None		0.0000	68.00
Pine (58)	C	None		0.0000	58.00
*** 97 ft ***					
T-Arm Mount [TA 602-3]	C	None		0.0000	97.00
Miscellaneous [NA 507-1]	C	None		0.0000	97.00
SBNHH-1D65A w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	97.00
HPA-65R-BUU-H6 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	97.00
HPA-65R-BUU-H8 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	97.00
TPA-65R-LCUUUU-H8 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	97.00
800 10121 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	97.00
800 10121 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	97.00
800 10121 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	97.00
QS46512-2 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	97.00
QS66512-2 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	97.00
RRUS 11 B12	A	From Leg	4.00 0.00 0.00	0.0000	97.00
RRUS 11 B12	B	From Leg	4.00 0.00 0.00	0.0000	97.00
RRUS 11 B12	C	From Leg	4.00 0.00 0.00	0.0000	97.00
RRUS 32 B2	A	From Leg	4.00 0.00	0.0000	97.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft
RRUS 32 B2	B	From Leg	0.00 4.00 0.00	0.0000	97.00
RRUS 32 B2	C	From Leg	0.00 4.00 0.00	0.0000	97.00
RRUS 32 B30	A	From Leg	0.00 4.00 0.00	0.0000	97.00
RRUS 32 B30	B	From Leg	0.00 4.00 0.00	0.0000	97.00
RRUS 32 B30	C	From Leg	0.00 4.00 0.00	0.0000	97.00
(2) LGP21401	A	From Leg	0.00 4.00 0.00	0.0000	97.00
(2) LGP21401	B	From Leg	0.00 4.00 0.00	0.0000	97.00
(2) LGP21401	C	From Leg	0.00 4.00 0.00	0.0000	97.00
(2) DC6-48-60-18-8F	B	From Leg	0.00 4.00 0.00	0.0000	97.00
***					
VV-65A-R1_TMO w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	87.00
VV-65A-R1_TMO w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	87.00
VV-65A-R1_TMO w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	87.00
AIR 6419 B41_TMO	A	From Leg	4.00 0.00 0.00	0.0000	87.00
AIR 6419 B41_TMO	B	From Leg	4.00 0.00 0.00	0.0000	87.00
AIR 6419 B41_TMO	C	From Leg	4.00 0.00 0.00	0.0000	87.00
APXVAALL24_43-U-NA20_TMO w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	87.00
APXVAALL24_43-U-NA20_TMO w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	87.00
APXVAALL24_43-U-NA20_TMO w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	87.00
(2) RADIO 4460 B2/B25 B66_TMO	A	From Leg	4.00 0.00 0.00	0.0000	87.00
(2) RADIO 4460 B2/B25 B66_TMO	B	From Leg	4.00 0.00 0.00	0.0000	87.00
(2) RADIO 4460 B2/B25 B66_TMO	C	From Leg	4.00 0.00 0.00	0.0000	87.00

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement
			Horz Lateral	Vert		
			ft	ft	°	ft
Radio 4480_TMOV2	A	From Leg	4.00	0.00	0.0000	87.00
			0.00	0.00		
Radio 4480_TMOV2	B	From Leg	4.00	0.00	0.0000	87.00
			0.00	0.00		
Radio 4480_TMOV2	C	From Leg	4.00	0.00	0.0000	87.00
			0.00	0.00		
(2) 8' x 2" Mount Pipe	A	From Leg	4.00	0.00	0.0000	87.00
			0.00	0.00		
(2) 8' x 2" Mount Pipe	B	From Leg	4.00	0.00	0.0000	87.00
			0.00	0.00		
(2) 8' x 2" Mount Pipe	C	From Leg	4.00	0.00	0.0000	87.00
			0.00	0.00		
Pipe Mount [PM 601-3]	C	From Leg	1.00	0.00	0.0000	87.00
			0.00	0.00		
sitepro 1 VFA10-SD-S	A	From Leg	0.50	0.00	0.0000	87.00
			0.00	0.00		
sitepro 1 VFA10-SD-S	B	From Leg	0.50	0.00	0.0000	87.00
			0.00	0.00		
sitepro 1 VFA10-SD-S	C	From Leg	0.50	0.00	0.0000	87.00
			0.00	0.00		

**Dishes**

Description	Face or Leg	Dish Type	Offset Type	Offsets:		Azimuth Adjustment	3 dB Beam Width	Elevation	Outside Diameter
				Horz Lateral	Vert				
				ft	°	°	ft	ft	
SC2-W100BD	A	Paraboloid w/o Radome	From Leg	4.00	0.00	0.0000		87.00	2.20
				0.00	0.00				

**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

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

**Maximum Member Forces**

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	100 - 80.487	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-23.70	-0.86	-1.69
			Max. Mx	20	-10.51	184.69	0.54
			Max. My	14	-10.51	-0.77	-183.47
			Max. Vy	20	-19.25	184.69	0.54
			Max. Vx	14	19.27	-0.77	-183.47
			Max. Torque	18			2.29
L2	80.487 - 42.779	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-38.75	-0.89	-1.74
			Max. Mx	20	-20.69	1148.28	3.28
			Max. My	14	-20.69	-3.63	-1147.77
			Max. Vy	20	-32.09	1148.28	3.28
			Max. Vx	14	32.11	-3.63	-1147.77
			Max. Torque	16			2.18
L3	42.779 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-51.94	-0.85	-1.68
			Max. Mx	20	-32.57	2713.60	6.87
			Max. My	14	-32.57	-7.16	-2714.05
			Max. Vy	20	-33.99	2713.60	6.87
			Max. Vx	14	34.01	-7.16	-2714.05



Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Torque	16			2.17

### Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	26	51.94	0.00	0.00
	Max. H <sub>x</sub>	20	32.61	33.95	0.07
	Max. H <sub>z</sub>	2	32.61	0.07	33.89
	Max. M <sub>x</sub>	2	2705.61	0.07	33.89
	Max. M <sub>z</sub>	8	2713.33	-33.95	-0.07
	Max. Torsion	16	2.16	16.88	-29.42
	Min. Vert	21	24.46	33.95	0.07
	Min. H <sub>x</sub>	9	24.46	-33.95	-0.07
	Min. H <sub>z</sub>	15	24.46	-0.07	-33.97
	Min. M <sub>x</sub>	14	-2714.05	-0.07	-33.97
	Min. M <sub>z</sub>	20	-2713.60	33.95	0.07
	Min. Torsion	6	-1.87	-29.39	16.87

### Tower Mast Reaction Summary

Load Combination	Vertical K	Shear <sub>x</sub> K	Shear <sub>z</sub> K	Overtuning Moment, M <sub>x</sub> kip-ft	Overtuning Moment, M <sub>z</sub> kip-ft	Torque kip-ft
Dead Only	27.17	-0.00	-0.00	0.48	0.10	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	32.61	-0.07	-33.89	-2705.61	7.45	1.41
0.9 Dead+1.0 Wind 0 deg - No Ice	24.46	-0.07	-33.89	-2681.09	7.34	1.41
1.2 Dead+1.0 Wind 30 deg - No Ice	32.61	16.95	-29.29	-2337.41	-1353.50	1.79
0.9 Dead+1.0 Wind 30 deg - No Ice	24.46	16.95	-29.29	-2316.29	-1341.21	1.78
1.2 Dead+1.0 Wind 60 deg - No Ice	32.61	29.39	-16.87	-1345.18	-2348.52	1.87
0.9 Dead+1.0 Wind 60 deg - No Ice	24.46	29.39	-16.87	-1333.09	-2327.16	1.86
1.2 Dead+1.0 Wind 90 deg - No Ice	32.61	33.95	0.07	7.74	-2713.33	1.50
0.9 Dead+1.0 Wind 90 deg - No Ice	24.46	33.95	0.07	7.50	-2688.65	1.49
1.2 Dead+1.0 Wind 120 deg - No Ice	32.61	29.43	17.19	1376.38	-2352.63	0.70
0.9 Dead+1.0 Wind 120 deg - No Ice	24.46	29.43	17.19	1363.68	-2331.22	0.70
1.2 Dead+1.0 Wind 150 deg - No Ice	32.61	17.00	29.49	2357.26	-1359.96	-0.27
0.9 Dead+1.0 Wind 150 deg - No Ice	24.46	17.00	29.49	2335.63	-1347.60	-0.27
1.2 Dead+1.0 Wind 180 deg - No Ice	32.61	0.07	33.97	2714.05	-7.16	-1.41
0.9 Dead+1.0 Wind 180 deg - No Ice	24.46	0.07	33.97	2689.19	-7.12	-1.40
1.2 Dead+1.0 Wind 210 deg - No Ice	32.61	-16.88	29.42	2349.99	1347.63	-2.16
0.9 Dead+1.0 Wind 210 deg - No Ice	24.46	-16.88	29.42	2328.44	1335.32	-2.15
1.2 Dead+1.0 Wind 240 deg - No Ice	32.61	-29.35	17.06	1363.74	2345.65	-2.12
0.9 Dead+1.0 Wind 240 deg - No Ice	24.46	-29.35	17.06	1351.18	2324.24	-2.11

Load Combination	Vertical K	Shear <sub>x</sub> K	Shear <sub>z</sub> K	Overturning Moment, M <sub>x</sub> kip-ft	Overturning Moment, M <sub>z</sub> kip-ft	Torque kip-ft
- No Ice						
1.2 Dead+1.0 Wind 270 deg	32.61	-33.95	-0.07	-6.87	2713.60	-1.51
- No Ice						
0.9 Dead+1.0 Wind 270 deg	24.46	-33.95	-0.07	-6.95	2688.79	-1.50
- No Ice						
1.2 Dead+1.0 Wind 300 deg	32.61	-29.46	-17.00	-1357.78	2356.05	-0.46
- No Ice						
0.9 Dead+1.0 Wind 300 deg	24.46	-29.46	-17.00	-1345.57	2334.54	-0.46
- No Ice						
1.2 Dead+1.0 Wind 330 deg	32.61	-17.07	-29.36	-2344.65	1366.41	0.66
- No Ice						
0.9 Dead+1.0 Wind 330 deg	24.46	-17.07	-29.36	-2323.46	1353.91	0.66
- No Ice						
1.2 Dead+1.0 Ice+1.0 Temp	51.94	-0.00	-0.00	1.68	-0.85	-0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	51.94	-0.01	-11.33	-925.46	0.46	0.40
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	51.94	5.67	-9.80	-800.12	-464.71	0.52
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	51.94	9.82	-5.65	-460.37	-804.88	0.54
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	51.94	11.34	0.01	3.26	-929.36	0.43
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	51.94	9.82	5.72	470.58	-805.58	0.20
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	51.94	5.67	9.84	807.91	-465.75	-0.09
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	51.94	0.01	11.35	930.87	-2.38	-0.40
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	51.94	-5.65	9.83	806.49	461.38	-0.60
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	51.94	-9.81	5.69	468.12	802.24	-0.60
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	51.94	-11.34	-0.01	0.42	927.44	-0.43
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	51.94	-9.83	-5.68	-462.83	804.38	-0.14
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	51.94	-5.69	-9.82	-801.53	465.25	0.17
Dead+Wind 0 deg - Service	27.17	-0.02	-8.40	-667.02	1.91	0.36
Dead+Wind 30 deg - Service	27.17	4.20	-7.26	-576.24	-333.81	0.46
Dead+Wind 60 deg - Service	27.17	7.28	-4.18	-331.44	-579.22	0.48
Dead+Wind 90 deg - Service	27.17	8.41	0.02	2.27	-669.22	0.38
Dead+Wind 120 deg - Service	27.17	7.29	4.26	339.90	-580.30	0.18
Dead+Wind 150 deg - Service	27.17	4.21	7.31	581.87	-335.41	-0.08
Dead+Wind 180 deg - Service	27.17	0.02	8.42	669.83	-1.69	-0.36
Dead+Wind 210 deg - Service	27.17	-4.18	7.29	580.02	332.49	-0.55
Dead+Wind 240 deg - Service	27.17	-7.27	4.23	336.78	578.72	-0.54
Dead+Wind 270 deg - Service	27.17	-8.41	-0.02	-1.33	669.44	-0.38
Dead+Wind 300 deg - Service	27.17	-7.30	-4.21	-334.56	581.24	-0.12
Dead+Wind 330 deg - Service	27.17	-4.23	-7.27	-577.99	337.12	0.17

## Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.00	-27.17	0.00	0.00	27.17	0.00	0.000%
2	-0.07	-32.61	-33.89	0.07	32.61	33.89	0.001%

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
3	-0.07	-24.46	-33.89	0.07	24.46	33.89	0.002%
4	16.95	-32.61	-29.29	-16.95	32.61	29.29	0.000%
5	16.95	-24.46	-29.29	-16.95	24.46	29.29	0.000%
6	29.39	-32.61	-16.87	-29.39	32.61	16.87	0.000%
7	29.39	-24.46	-16.87	-29.39	24.46	16.87	0.000%
8	33.95	-32.61	0.07	-33.95	32.61	-0.07	0.001%
9	33.95	-24.46	0.07	-33.95	24.46	-0.07	0.001%
10	29.43	-32.61	17.19	-29.43	32.61	-17.19	0.000%
11	29.43	-24.46	17.19	-29.43	24.46	-17.19	0.000%
12	17.00	-32.61	29.49	-17.00	32.61	-29.49	0.000%
13	17.00	-24.46	29.49	-17.00	24.46	-29.49	0.000%
14	0.07	-32.61	33.97	-0.07	32.61	-33.97	0.001%
15	0.07	-24.46	33.97	-0.07	24.46	-33.97	0.001%
16	-16.88	-32.61	29.42	16.88	32.61	-29.42	0.000%
17	-16.88	-24.46	29.42	16.88	24.46	-29.42	0.000%
18	-29.35	-32.61	17.06	29.35	32.61	-17.06	0.000%
19	-29.35	-24.46	17.06	29.35	24.46	-17.06	0.000%
20	-33.95	-32.61	-0.07	33.95	32.61	0.07	0.001%
21	-33.95	-24.46	-0.07	33.95	24.46	0.07	0.002%
22	-29.46	-32.61	-17.00	29.46	32.61	17.00	0.000%
23	-29.46	-24.46	-17.00	29.46	24.46	17.00	0.000%
24	-17.07	-32.61	-29.36	17.07	32.61	29.36	0.000%
25	-17.07	-24.46	-29.36	17.07	24.46	29.36	0.000%
26	0.00	-51.94	0.00	0.00	51.94	0.00	0.003%
27	-0.01	-51.94	-11.33	0.01	51.94	11.33	0.002%
28	5.67	-51.94	-9.80	-5.67	51.94	9.80	0.001%
29	9.82	-51.94	-5.65	-9.82	51.94	5.65	0.001%
30	11.34	-51.94	0.01	-11.34	51.94	-0.01	0.002%
31	9.83	-51.94	5.72	-9.82	51.94	-5.72	0.001%
32	5.67	-51.94	9.84	-5.67	51.94	-9.84	0.001%
33	0.01	-51.94	11.35	-0.01	51.94	-11.35	0.002%
34	-5.65	-51.94	9.83	5.65	51.94	-9.83	0.001%
35	-9.81	-51.94	5.69	9.81	51.94	-5.69	0.001%
36	-11.34	-51.94	-0.01	11.34	51.94	0.01	0.002%
37	-9.83	-51.94	-5.68	9.83	51.94	5.68	0.001%
38	-5.69	-51.94	-9.82	5.69	51.94	9.82	0.001%
39	-0.02	-27.17	-8.40	0.02	27.17	8.40	0.003%
40	4.20	-27.17	-7.26	-4.20	27.17	7.26	0.001%
41	7.28	-27.17	-4.18	-7.28	27.17	4.18	0.003%
42	8.41	-27.17	0.02	-8.41	27.17	-0.02	0.003%
43	7.29	-27.17	4.26	-7.29	27.17	-4.26	0.001%
44	4.21	-27.17	7.31	-4.21	27.17	-7.31	0.001%
45	0.02	-27.17	8.42	-0.02	27.17	-8.42	0.003%
46	-4.18	-27.17	7.29	4.18	27.17	-7.29	0.003%
47	-7.27	-27.17	4.23	7.27	27.17	-4.23	0.001%
48	-8.41	-27.17	-0.02	8.41	27.17	0.02	0.003%
49	-7.30	-27.17	-4.21	7.30	27.17	4.21	0.003%
50	-4.23	-27.17	-7.27	4.23	27.17	7.27	0.003%

### Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	6	0.00000001	0.00000001
2	Yes	13	0.00000001	0.00005582
3	Yes	12	0.00000001	0.00012707
4	Yes	15	0.00000001	0.00008383
5	Yes	15	0.00000001	0.00005620
6	Yes	15	0.00000001	0.00007669
7	Yes	15	0.00000001	0.00005124
8	Yes	13	0.00000001	0.00007177
9	Yes	13	0.00000001	0.00005236
10	Yes	15	0.00000001	0.00008392
11	Yes	15	0.00000001	0.00005607
12	Yes	15	0.00000001	0.00008230

13	Yes	15	0.00000001	0.00005498
14	Yes	13	0.00000001	0.00006740
15	Yes	13	0.00000001	0.00004941
16	Yes	15	0.00000001	0.00007661
17	Yes	15	0.00000001	0.00005112
18	Yes	15	0.00000001	0.00008569
19	Yes	15	0.00000001	0.00005738
20	Yes	13	0.00000001	0.00006009
21	Yes	12	0.00000001	0.00013554
22	Yes	15	0.00000001	0.00008052
23	Yes	15	0.00000001	0.00005380
24	Yes	15	0.00000001	0.00008021
25	Yes	15	0.00000001	0.00005360
26	Yes	6	0.00000001	0.00002986
27	Yes	12	0.00010474	0.00014206
28	Yes	13	0.00000001	0.00014042
29	Yes	13	0.00000001	0.00012919
30	Yes	12	0.00010484	0.00014481
31	Yes	13	0.00000001	0.00014144
32	Yes	13	0.00000001	0.00013942
33	Yes	12	0.00010485	0.00014423
34	Yes	13	0.00000001	0.00013025
35	Yes	13	0.00000001	0.00014365
36	Yes	12	0.00010477	0.00014349
37	Yes	13	0.00000001	0.00013225
38	Yes	13	0.00000001	0.00013218
39	Yes	11	0.00000001	0.00009888
40	Yes	12	0.00000001	0.00006784
41	Yes	11	0.00000001	0.00012324
42	Yes	11	0.00000001	0.00010158
43	Yes	12	0.00000001	0.00006129
44	Yes	12	0.00000001	0.00005847
45	Yes	11	0.00000001	0.00010046
46	Yes	11	0.00000001	0.00012395
47	Yes	12	0.00000001	0.00007160
48	Yes	11	0.00000001	0.00010065
49	Yes	11	0.00000001	0.00014043
50	Yes	11	0.00000001	0.00013778

### Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	100 - 80.487	18.215	43	1.6842	0.0109
L2	83.625 - 42.779	12.668	43	1.4965	0.0044
L3	47.331 - 0	3.803	43	0.7747	0.0011

### Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
105.00	Pine (105)	43	18.215	1.6842	0.0118	10851
97.00	T-Arm Mount [TA 602-3]	43	17.170	1.6543	0.0105	10851
96.00	Pine (96)	43	16.823	1.6442	0.0100	10851
88.00	Pine (88)	43	14.095	1.5553	0.0067	4521
87.00	SC2-W100BD	43	13.764	1.5426	0.0063	4180
78.00	Pine (78)	43	10.933	1.4064	0.0036	3117
68.00	Pine (68)	43	8.153	1.2144	0.0020	2820
58.00	Pine (58)	43	5.799	1.0009	0.0014	2575

### Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	100 - 80.487	73.711	10	6.8226	0.0423
L2	83.625 - 42.779	51.307	10	6.0707	0.0169
L3	47.331 - 0	15.416	10	3.1426	0.0041

### Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
105.00	Pine (105)	10	73.711	6.8226	0.0470	2767
97.00	T-Arm Mount [TA 602-3]	10	69.492	6.7033	0.0414	2767
96.00	Pine (96)	10	68.090	6.6628	0.0396	2767
88.00	Pine (88)	10	57.073	6.3069	0.0262	1151
87.00	SC2-W100BD	10	55.735	6.2562	0.0247	1064
78.00	Pine (78)	10	44.290	5.7067	0.0142	789
68.00	Pine (68)	10	33.042	4.9286	0.0080	708
58.00	Pine (58)	10	23.507	4.0616	0.0055	642

### Compression Checks

### Pole Design Data

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> K	φP <sub>n</sub> K	Ratio P <sub>u</sub> / φP <sub>n</sub>
L1	100 - 80.487 (1)	TP21.1099x15x0.1875	19.51	0.00	0.0	11.866 7	-10.48	694.20	0.015
L2	80.487 - 42.779 (2)	TP32.4173x19.7523x0.31 25	40.85	0.00	0.0	30.444 0	-20.67	1780.97	0.012
L3	42.779 - 0 (3)	TP45x30.3809x0.375	47.33	0.00	0.0	53.114 9	-32.57	3107.22	0.010

### Pole Bending Design Data

Section No.	Elevation ft	Size	M <sub>ux</sub> kip-ft	φM <sub>nx</sub> kip-ft	Ratio M <sub>ux</sub> / φM <sub>nx</sub>	M <sub>uy</sub> kip-ft	φM <sub>ny</sub> kip-ft	Ratio M <sub>uy</sub> / φM <sub>ny</sub>
L1	100 - 80.487 (1)	TP21.1099x15x0.1875	185.43	350.73	0.529	0.00	350.73	0.000
L2	80.487 - 42.779 (2)	TP32.4173x19.7523x0.31 25	1153.99	1413.02	0.817	0.00	1413.02	0.000
L3	42.779 - 0 (3)	TP45x30.3809x0.375	2725.68	3401.95	0.801	0.00	3401.95	0.000

### Pole Shear Design Data



Section No.	Elevation ft	Size	Actual $V_u$ K	$\phi V_n$ K	Ratio $V_u$ $\phi V_n$	Actual $T_u$ kip-ft	$\phi T_n$ kip-ft	Ratio $T_u$ $\phi T_n$
L1	100 - 80.487 (1)	TP21.1099x15x0.1875	19.39	208.26	0.093	0.71	363.67	0.002
L2	80.487 - 42.779 (2)	TP32.4173x19.7523x0.31 25	32.23	534.29	0.060	0.71	1436.16	0.000
L3	42.779 - 0 (3)	TP45x30.3809x0.375	34.12	932.17	0.037	0.70	3642.94	0.000

### Pole Interaction Design Data

Section No.	Elevation ft	Ratio $P_u$ $\phi P_n$	Ratio $M_{ux}$ $\phi M_{nx}$	Ratio $M_{uy}$ $\phi M_{ny}$	Ratio $V_u$ $\phi V_n$	Ratio $T_u$ $\phi T_n$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	100 - 80.487 (1)	0.015	0.529	0.000	0.093	0.002	0.553	1.050	4.8.2
L2	80.487 - 42.779 (2)	0.012	0.817	0.000	0.060	0.000	0.832	1.050	4.8.2
L3	42.779 - 0 (3)	0.010	0.801	0.000	0.037	0.000	0.813	1.050	4.8.2

### Section Capacity Table

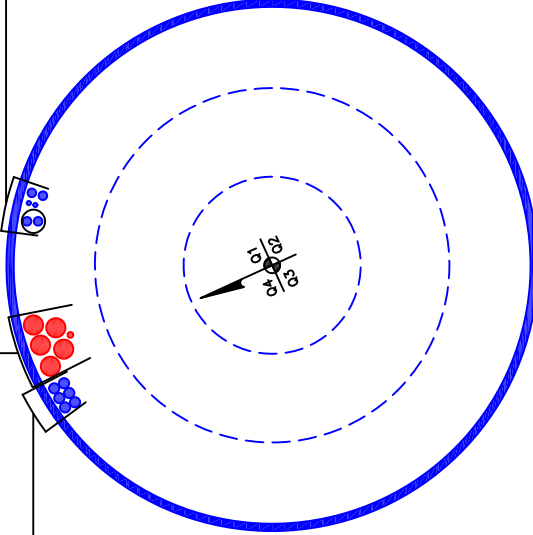
Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$\phi P_{allow}$ K	% Capacity	Pass Fail
L1	100 - 80.487	Pole	TP21.1099x15x0.1875	1	-10.48	728.91	52.7	Pass
L2	80.487 - 42.779	Pole	TP32.4173x19.7523x0.3125	2	-20.67	1870.02	79.2	Pass
L3	42.779 - 0	Pole	TP45x30.3809x0.375	3	-32.57	3262.58	77.4	Pass
Summary								
Pole (L2)							79.2	Pass
<b>RATING =</b>							<b>79.2</b>	<b>Pass</b>

**APPENDIX B**  
**BASE LEVEL DRAWING**



- (PROPOSED EQUIPMENT CONFIGURATION)
- (1) 1/2" TO 87 FT LEVEL
  - (5) 1-5/8" TO 87 FT LEVEL
- (OTHER CONSIDERED EQUIPMENT-IN CONDUIT)
- (2) 3/4" TO 97 FT LEVEL
  - (OTHER CONSIDERED EQUIPMENT)
  - (2) 3/8" TO 97 FT LEVEL
  - (2) 3/4" TO 97 FT LEVEL

- (OTHER CONSIDERED EQUIPMENT)
- (6) 7/8" TO 97 FT LEVEL



**APPENDIX C**  
**ADDITIONAL CALCULATIONS**

# Monopole Base Plate Connection

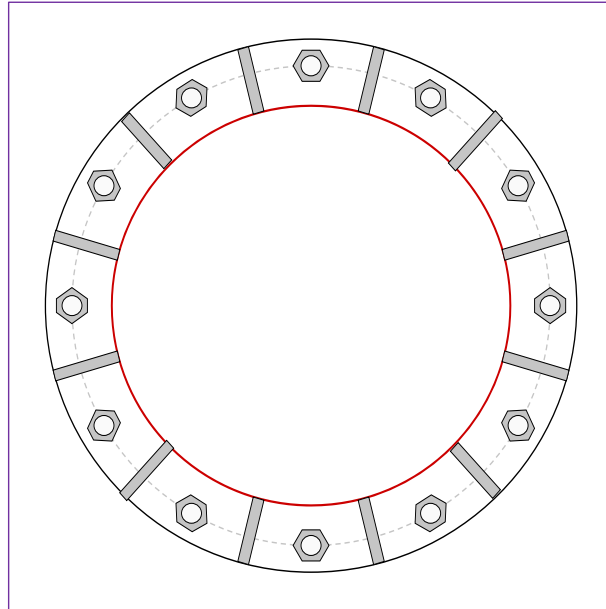


Site Info	
BU #	842878
Site Name	WINDSOR SOUTH
Order #	605574 Rev.0

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	No
$I_{ar}$ (in)	0

Applied Loads	
Moment (kip-ft)	2725.67
Axial Force (kips)	32.57
Shear Force (kips)	34.12

\*TIA-222-H Section 15.5 Applied



Connection Properties	Analysis Results
-----------------------	------------------

Anchor Rod Data	
(12) 2-1/4" $\phi$ bolts (A615-75 N; $F_y=75$ ksi, $F_u=100$ ksi) on 54" BC	

Base Plate Data	
60" OD x 1.75" Plate (A572-60; $F_y=60$ ksi, $F_u=75$ ksi)	

Stiffener Data	
(12) 24"H x 7.5"W x 1.25"T, Notch: 0.5"	
plate: $F_y= 50$ ksi ; weld: $F_y= 70$ ksi	
horiz. weld: 0.5" fillet	
vert. weld: 0.5" fillet	

Pole Data	
45" x 0.375" 18-sided pole (A572-65; $F_y=65$ ksi, $F_u=80$ ksi)	

Anchor Rod Summary		(units of kips, kip-in)
$Pu\_t = 199.04$	$\phi Pn\_t = 243.75$	<b>Stress Rating</b>
$Vu = 2.84$	$\phi Vn = 149.1$	<b>77.8%</b>
$Mu = n/a$	$\phi Mn = n/a$	<b>Pass</b>

Base Plate Summary	
Max Stress (ksi):	40.18 (Roark's Flexural)
Allowable Stress (ksi):	54
Stress Rating:	<b>70.9%</b> <b>Pass</b>

Stiffener Summary	
Horizontal Weld:	<b>95.8%</b> <b>Pass</b>
Vertical Weld:	<b>30.8%</b> <b>Pass</b>
Plate Flexure+Shear:	<b>8.2%</b> <b>Pass</b>
Plate Tension+Shear:	<b>38.8%</b> <b>Pass</b>
Plate Compression:	<b>41.9%</b> <b>Pass</b>

Pole Summary	
Punching Shear:	<b>10.3%</b> <b>Pass</b>



## Drilled Pier Foundation

BU # :	842878
Site Name:	WINDSOR SOUTH
Order Number:	605574 Rev.0
TIA-222 Revision:	H
Tower Type:	Monopole



Check Limitation	
Apply TIA-222-H Section 15.5:	<input checked="" type="checkbox"/>
	N/A

### Analysis Results

Soil Lateral Check	Compression	Uplift
D <sub>50</sub> (ft from TOC)	7.45	-
Soil Safety Factor	2.55	-
Max Moment (kip-ft)	2975.93	-
Rating*	49.7%	-

Soil Vertical Check	Compression	Uplift
Skin Friction (kips)	179.65	-
End Bearing (kips)	111.62	-
Weight of Concrete (kips)	151.43	-
Total Capacity (kips)	291.27	-
Axial (kips)	184.04	-
Rating*	60.2%	-

Reinforced Concrete Flexure	Compression	Uplift
Critical Depth (ft from TOC)	7.58	-
Critical Moment (kip-ft)	2975.75	-
Critical Moment Capacity	4223.89	-
Rating*	67.1%	-

Reinforced Concrete Shear	Compression	Uplift
Critical Depth (ft from TOC)	18.15	-
Critical Shear (kip)	249.76	-
Critical Shear Capacity	462.82	-
Rating*	51.4%	-

Structural Foundation Rating*	Compression	Uplift
Soil Interaction Rating*	67.1%	60.2%

\*Rating per TIA-222-H Section 15.5

Rebar & Pier Options

Embedded Pole Inputs

Belled Pier Inputs

Pier Design Data	
Depth	39 ft
Ext. Above Grade	0.5 ft
<b>Pier Section 1</b>	
<i>From 0.5' above grade to 39' below grade</i>	
Pier Diameter	6.5 ft
Rebar Quantity	18
Rebar Size	11
Clear Cover to Ties	4 in
Tie Size	5
Tie Spacing	in

### Soil Profile

# of Layers	8
-------------	---

Groundwater Depth	5
-------------------	---

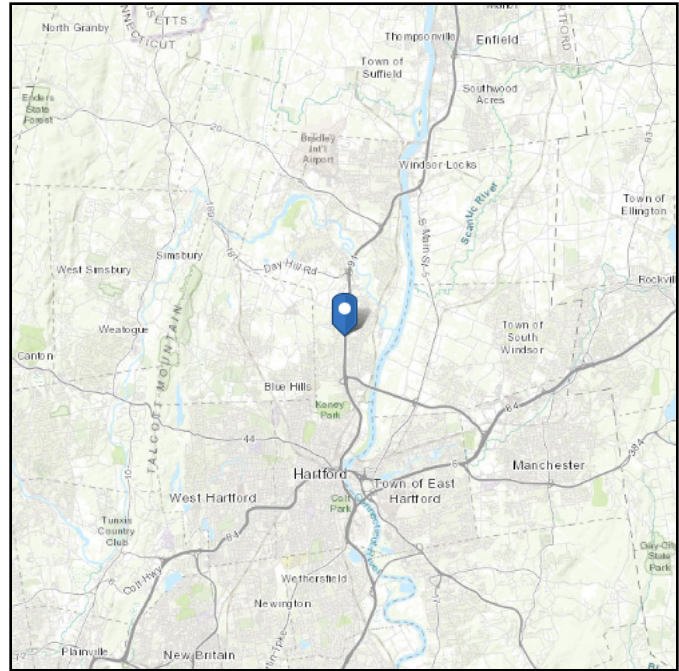
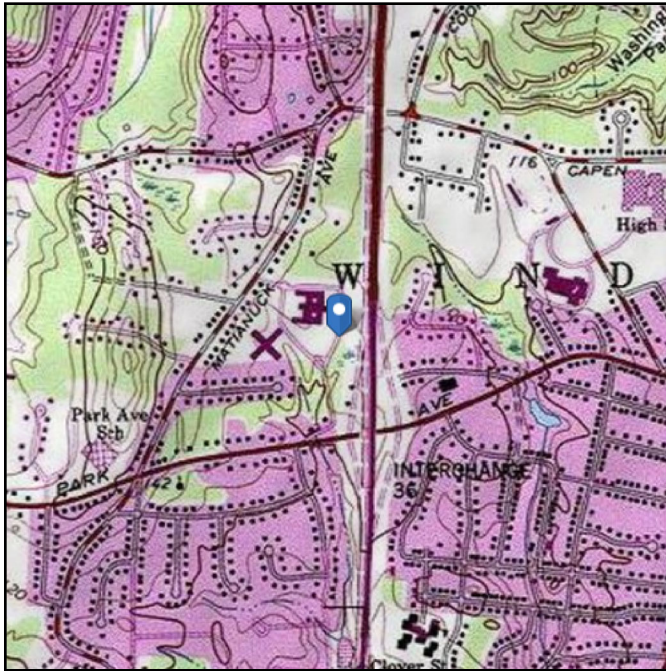
Layer	Top (ft)	Bottom (ft)	Thickness (ft)	γ <sub>soil</sub> (pcf)	γ <sub>concrete</sub> (pcf)	Cohesion (ksf)	Angle of Friction (degrees)	Calculated Ultimate Skin Friction Comp (ksf)	Calculated Ultimate Skin Friction Uplift (ksf)	Ultimate Skin Friction Comp Override (ksf)	Ultimate Skin Friction Uplift Override (ksf)	Ult. Gross Bearing Capacity (ksf)	SPT Blow Count	Soil Type
1	0	2	2	110	150	0	0	0.000	0.000	0.00	0.00			Cohesionless
2	2	5	3	115	150	0	0	0.000	0.000	0.00	0.00			Cohesionless
3	5	12	7	55	87.6		35	0.000	0.000	0.45	0.45			Cohesionless
4	12	23	11	45	87.6		29	0.000	0.000	0.70	0.70			Cohesionless
5	23	28	5	40	87.6	0.4		0.220	0.220	0.14	0.14			Cohesive
6	28	32.5	4.5	40	87.6	0.1		0.055	0.055	0.04	0.04			Cohesive
7	32.5	34	1.5	40	87.6	0.1		0.06	0.06	0.00	0.00			Cohesive
8	34	39	5	40	87.6	0.4		0.22	0.22	0.00	0.00	4.485		Cohesive

# 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:** 115.17 ft (NAVD 88)  
**Latitude:** 41.840547  
**Longitude:** -72.666319



## Wind

### Results:

Wind Speed	117 Vmph
10-year MRI	75 Vmph
25-year MRI	84 Vmph
50-year MRI	90 Vmph
100-year MRI	97 Vmph

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

Date Accessed: Thu May 26 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).

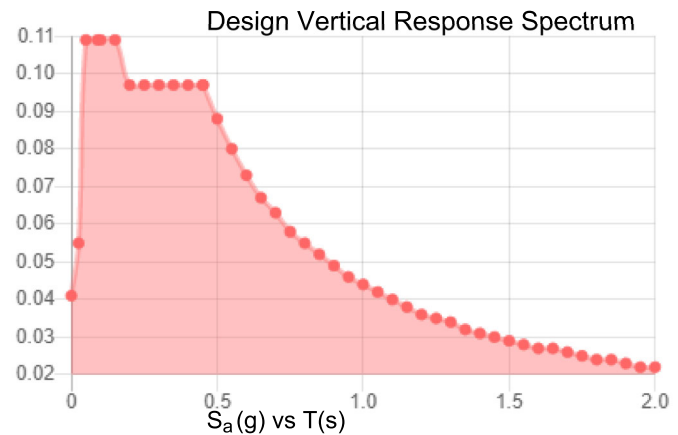
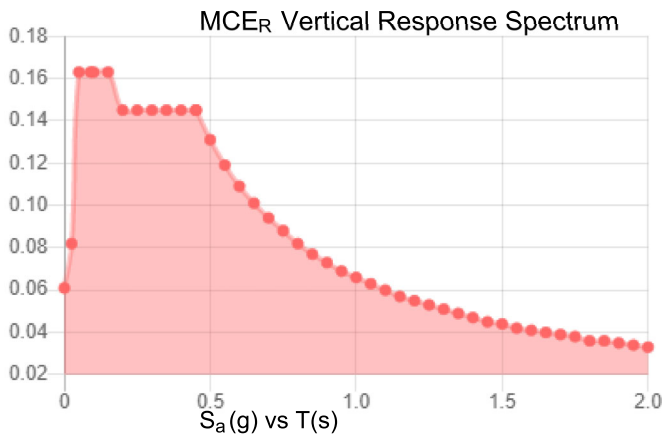
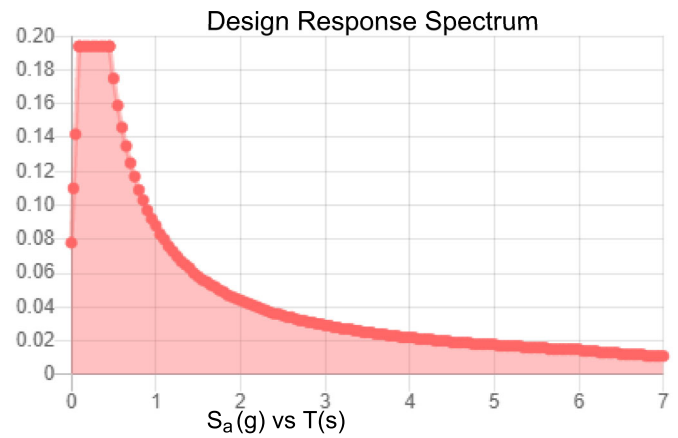
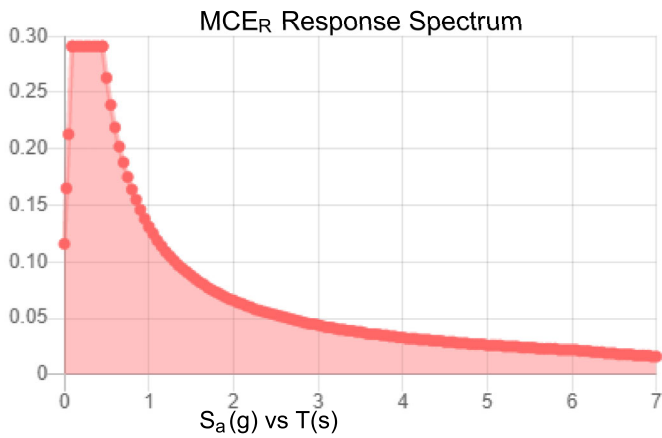
Site is in a hurricane-prone region as defined in ASCE/SEI 7-16 Section 26.2. Glazed openings need not be protected against wind-borne debris.

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

**Results:**

$S_s$ :	0.182	$S_{D1}$ :	0.088
$S_1$ :	0.055	$T_L$ :	6
$F_a$ :	1.6	PGA :	0.097
$F_v$ :	2.4	PGA <sub>M</sub> :	0.155
$S_{MS}$ :	0.291	$F_{PGA}$ :	1.6
$S_{M1}$ :	0.131	$I_e$ :	1
$S_{DS}$ :	0.194	$C_v$ :	0.7

**Seismic Design Category** B



**Data Accessed:** Thu May 26 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:** Thu May 26 2022

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

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

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Date: **May 27, 2022**



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

**Subject:** **Mount Analysis - Conditional Passing Report**

**Carrier Designation:** **T-Mobile Equipment Change Out**  
**Carrier Site Number:** CTNL256A  
**Carrier Site Name:** Lebanon Underserved

**Crown Castle Designation:** **BU Number:** 842865  
**Site Name:** LEBANON WEST  
**JDE Job Number:** 714962  
**Order Number:** 614533 Rev. 2

**Engineering Firm Designation:** **Trylon Report Designation:** 210863

**Site Data:** **1699 Exeter Road, Lebanon, New London County, CT, 06249**  
**Latitude 41°37'40.53" Longitude -72°18'20.34"**

**Structure Information:** **Tower Height & Type:** **149.0 ft Monopole**  
**Mount Elevation:** **131.0 ft**  
**Mount Width & Type:** **12.5 ft Platform**

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

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

**Platform**

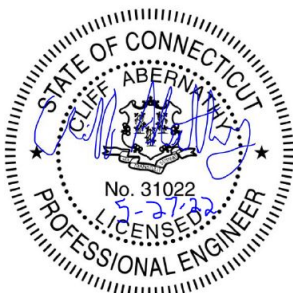
**Sufficient\***

**\*Sufficient upon completion of the changes listed in the ‘Recommendations’ section of this report.**

This analysis has been performed in accordance with the 2018 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 121 mph. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Mount analysis prepared by: Steve Mustaro, P.E.

Respectfully Submitted by:  
Cliff Abernathy, P.E.





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Supplemental Drawings

## 1) INTRODUCTION

This is a proposed three sector 12.5 ft Platform, designed by Site Pro 1.

## 2) ANALYSIS CRITERIA

<b>Building Code:</b>	2018 Connecticut State Building Code
<b>TIA-222 Revision:</b>	TIA-222-H
<b>Risk Category:</b>	II
<b>Ultimate Wind Speed:</b>	121 mph
<b>Exposure Category:</b>	C
<b>Topographic Factor at Base:</b>	1.0
<b>Topographic Factor at Mount:</b>	1.0
<b>Ice Thickness:</b>	1.0 in
<b>Wind Speed with Ice:</b>	50 mph
<b>Seismic S<sub>s</sub>:</b>	0.201
<b>Seismic S<sub>1</sub>:</b>	0.055
<b>Live Loading Wind Speed:</b>	30 mph
<b>Man Live Load at Mid/End-Points:</b>	250 lb
<b>Man Live Load at Mount Pipes:</b>	500 lb

**Table 1 - Proposed Equipment Configuration**

Mount Centerline (ft)	Antenna Centerline (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Mount / Modification Details
131.0	131.0	3	ERICSSON	AIR 6419 B41_TMO	12.5 ft Platform [Site Pro 1 RMQP-4096-HK]
		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	614533 Rev. 2	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).

**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. Tylon 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)	MP10	131.0	49.7	Pass
	Horizontal(s)	H2		10.0	Pass
	Standoff(s)	M3		19.0	Pass
	Bracing(s)	M74		21.0	Pass
	Handrail(s)	M55		29.9	Pass
	Kicker(s)	M90		12.6	Pass
	Mount Connection(s)	-		13.2	Pass

<b>Structure Rating (max from all components) =</b>	<b>49.7%</b>
---	--------------

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.

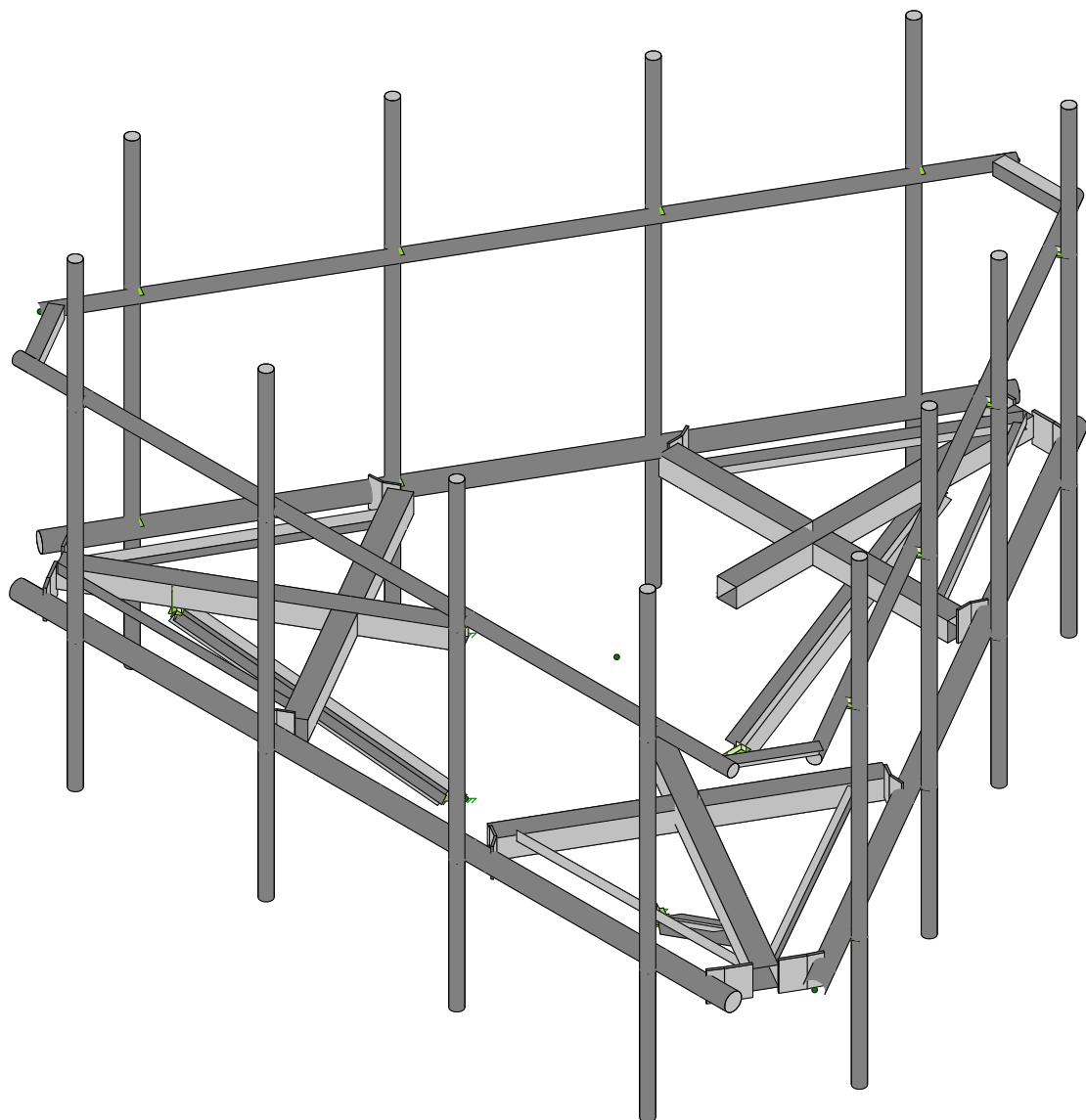
1. Site Pro 1 RMQP-4096-HK.

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

**APPENDIX A**  
**WIRE FRAME AND RENDERED MODELS**







Trylon

SMM

210683

842865

Render

May 27, 2022 at 11:39 AM

842865\_loaded\_loaded.r3d

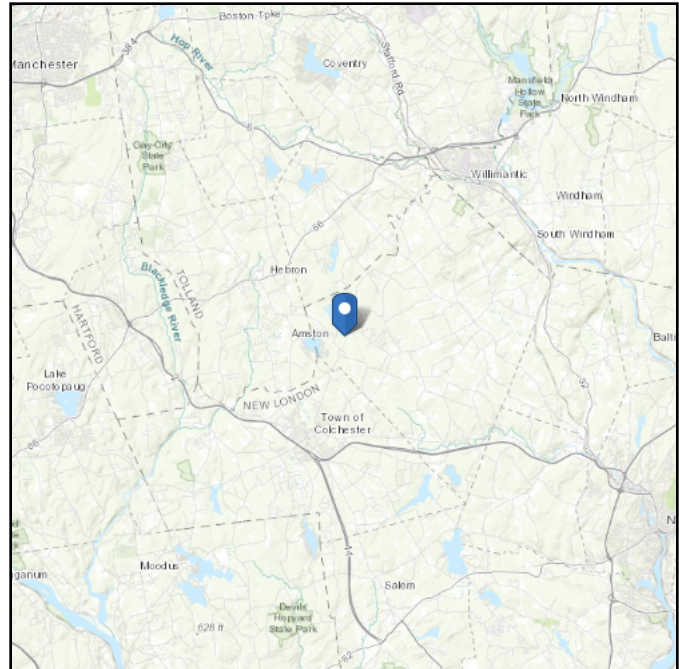
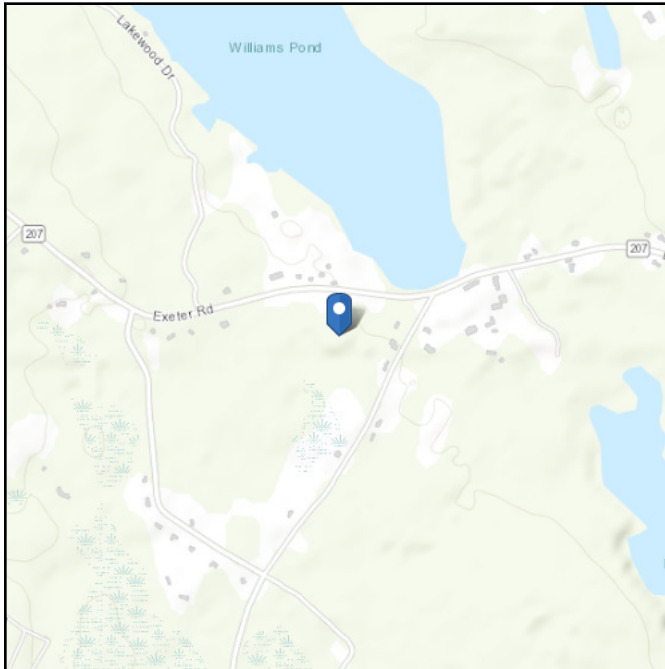
**APPENDIX B**  
**SOFTWARE INPUT CALCULATIONS**

# ASCE 7 Hazards Report

**Address:**  
No Address at This  
Location

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

**Elevation:** 486.64 ft (NAVD 88)  
**Latitude:** 41.627925  
**Longitude:** -72.30565



## Wind

### Results:

Wind Speed	121 Vmph
10-year MRI	75 Vmph
25-year MRI	84 Vmph
50-year MRI	93 Vmph
100-year MRI	99 Vmph

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

Date Accessed: Tue May 03 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).

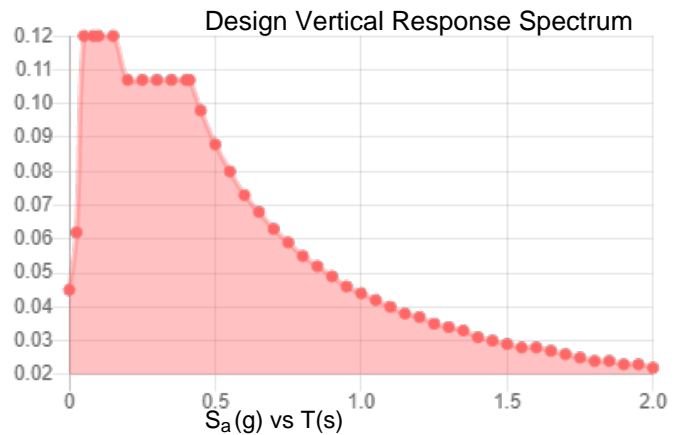
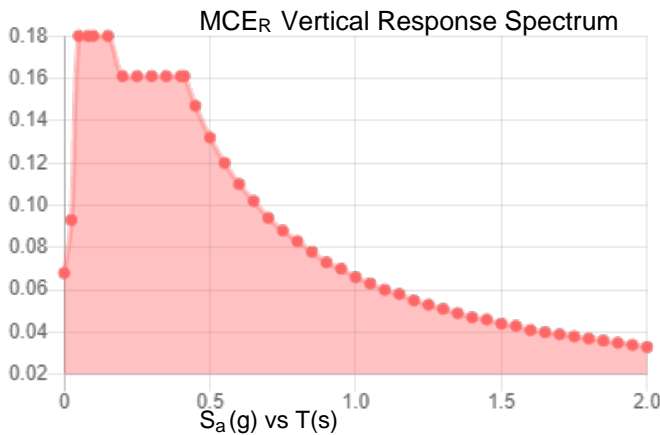
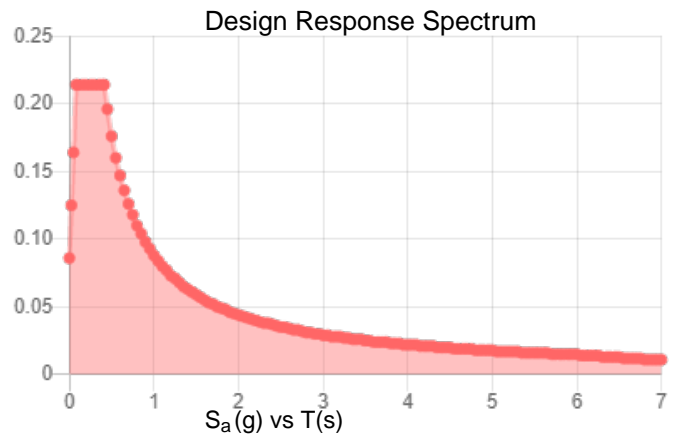
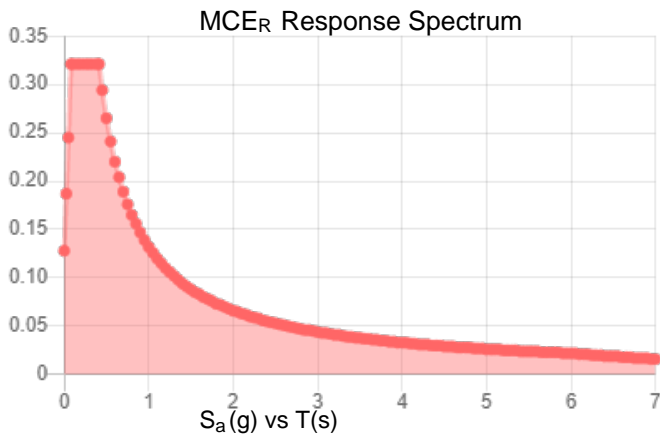
Site is in a hurricane-prone region as defined in ASCE/SEI 7-16 Section 26.2. Glazed openings need not be protected against wind-borne debris.

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

**Results:**

$S_s$ :	0.201	$S_{D1}$ :	0.088
$S_1$ :	0.055	$T_L$ :	6
$F_a$ :	1.6	PGA :	0.111
$F_v$ :	2.4	PGA <sub>M</sub> :	0.175
$S_{MS}$ :	0.321	$F_{PGA}$ :	1.579
$S_{M1}$ :	0.132	$I_e$ :	1
$S_{DS}$ :	0.214	$C_v$ :	0.701

**Seismic Design Category** B



**Data Accessed:** Tue May 03 2022

**Date Source:**

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

## Ice

---

### Results:

Ice Thickness: 1.00 in.  
Concurrent Temperature: 15 F  
Gust Speed 50 mph

**Data Source:** Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8

**Date Accessed:** Tue May 03 2022

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

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

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# Trylon

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

## TIA LOAD CALCULATOR 2.2

PROJECT DATA	
Job Code:	210863
Carrier Site ID:	BU 842865
Carrier Site Name:	LEBANON WEST

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

STRUCTURE DETAILS		
Mount Type:	Platform	--
Mount Elevation:	131.0	ft.
Number of Sectors:	3	--
Structure Type:	Monopole	--
Structure Height:	149.0	ft.

ANALYSIS CRITERIA		
Structure Risk Category:	II	--
Exposure Category:	C	--
Site Class:	D - Default	--
Ground Elevation:	486.64	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:	121	mph
Wind Escalation Factor ( $K_s$ ):	1.00	--
Velocity Coefficient ( $K_z$ ):	1.34	--
Directionality Factor ( $K_d$ ):	0.95	--
Gust Effect Factor (G <sub>h</sub> ):	1.00	--
Shielding Factor ( $K_a$ ):	0.90	--
Velocity Pressure ( $q_z$ ):	46.87	psf
Ground Elevation Factor ( $K_e$ ):	0.98	--

ICE PARAMETERS		
Design Ice Wind Speed:	50	mph
Design Ice Thickness ( $t_i$ ):	1.00	in
Importance Factor ( $I_i$ ):	1.00	--
Ice Velocity Pressure ( $q_{zi}$ ):	6.86	psf
Mount Ice Thickness ( $t_{iz}$ ):	1.15	in

WIND STRUCTURE CALCULATIONS		
Flat Member Pressure:	84.36	psf
Round Member Pressure:	50.62	psf
Ice Wind Pressure:	7.41	psf

SEISMIC PARAMETERS		
Importance Factor ( $I_e$ ):	1.00	--
Short Period Accel. ( $S_s$ ):	0.20	g
1 Second Accel. ( $S_1$ ):	0.06	g
Short Period Des. ( $S_{DS}$ ):	0.21	g
1 Second Des. ( $S_{D1}$ ):	0.09	g
Short Period Coeff. ( $F_a$ ):	1.60	--
1 Second Coeff. ( $F_v$ ):	2.40	--
Response Coefficient ( $C_s$ ):	0.11	--
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







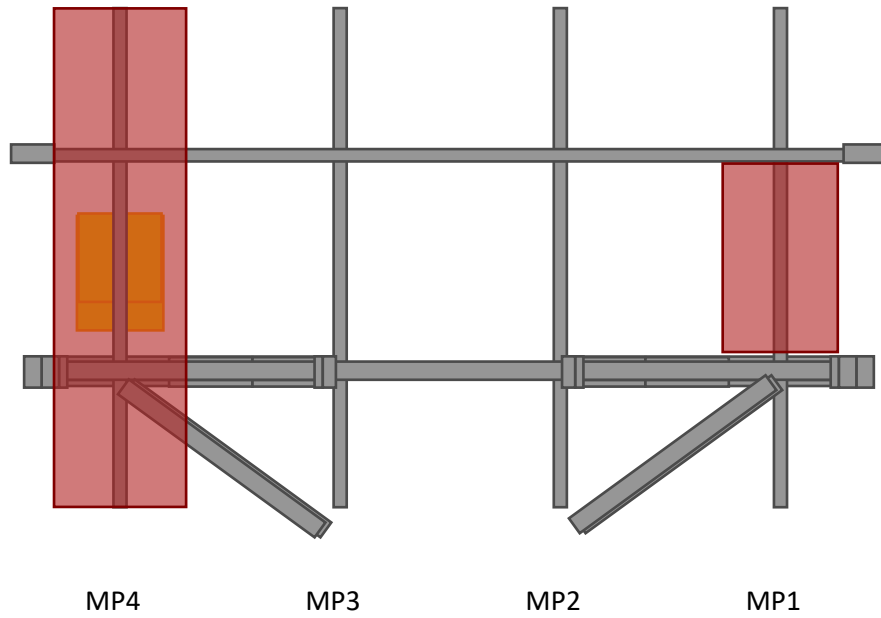








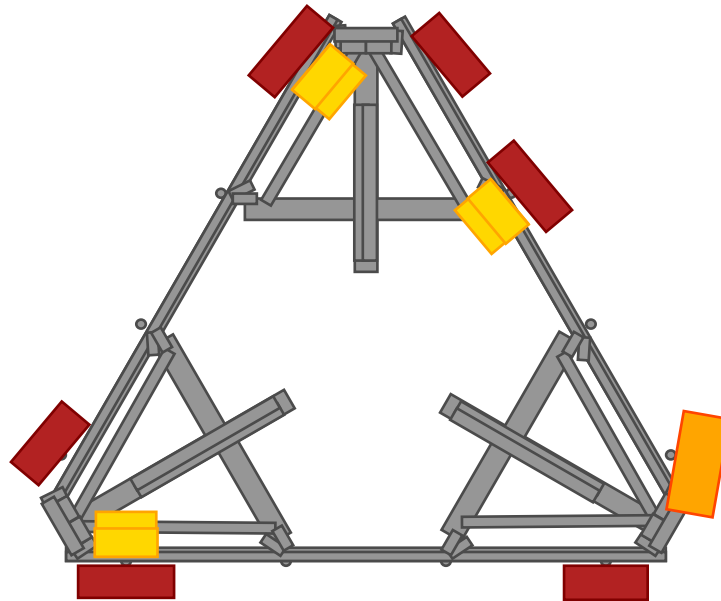
### ELEVATION VIEW



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

\*\*Elevation View Shows Only One Sector

### PLAN VIEW





**APPENDIX C**  
**SOFTWARE ANALYSIS OUTPUT**





























**APPENDIX D**  
**ADDITIONAL CALCULATIONS**

**BOLT TOOL 1.5.2**

Project Data	
Job Code:	210863
Carrier Site ID:	BU 842865
Carrier Site Name:	LEBANON WEST

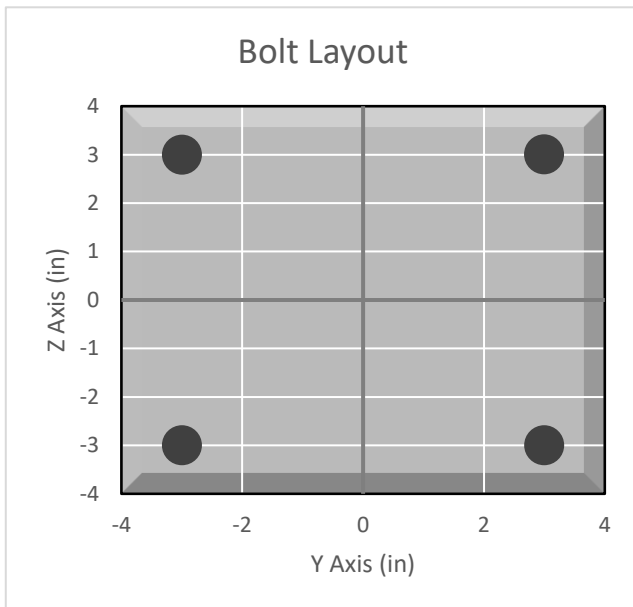
Code	
Design Standard:	TIA-222-H
Slip Check:	No
Pretension Standard:	TIA-222-H

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

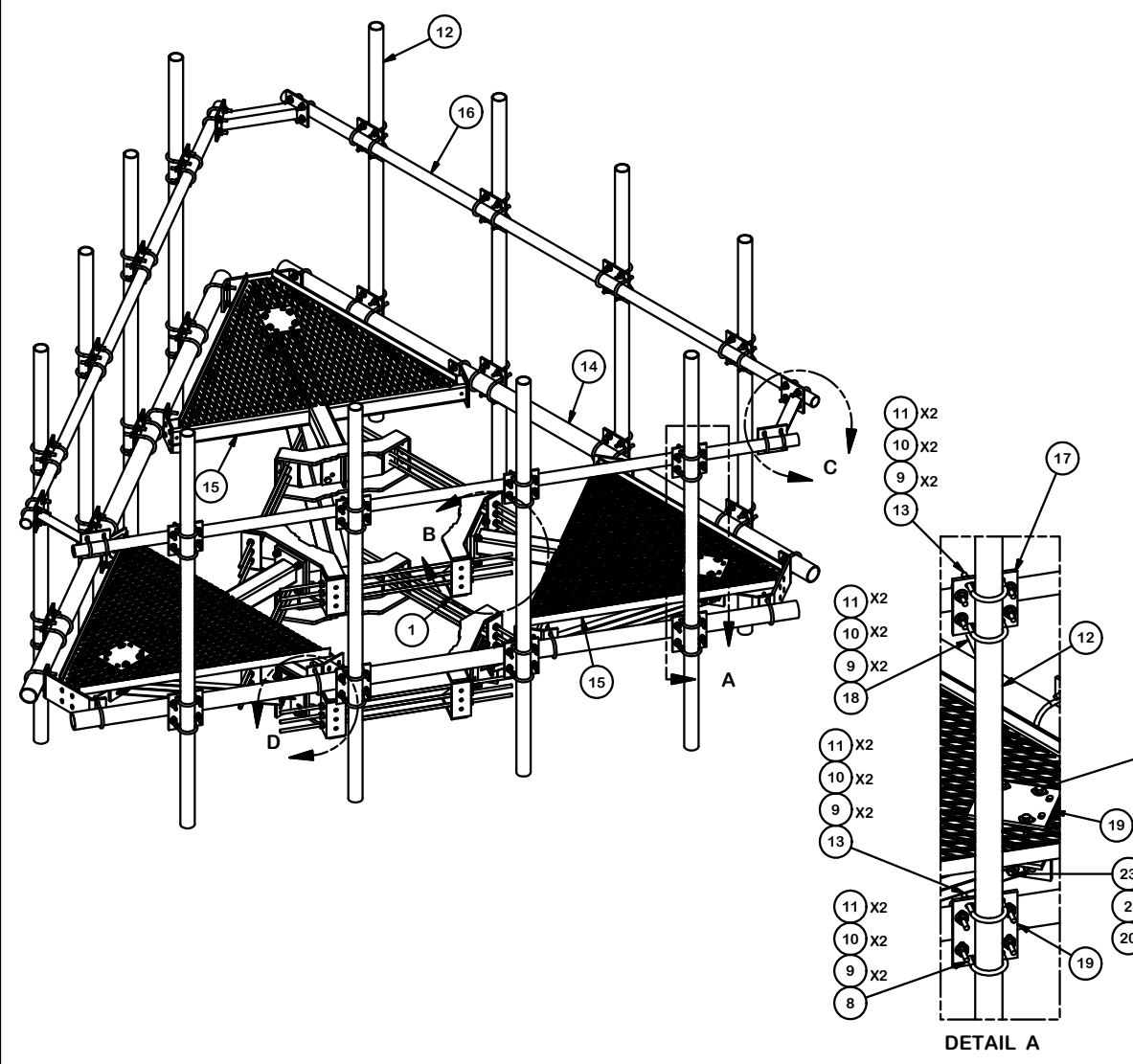
Connection Description
Standoff to Collar

Bolt Check*		
Tensile Capacity ( $\phi T_n$ ):	20340.1	lbs
Shear Capacity ( $\phi V_n$ ):	13805.8	lbs
Tension Force ( $T_u$ ):	2820.0	lbs
Shear Force ( $V_u$ ):	242.7	lbs
Tension Usage:	13.2%	--
Shear Usage:	1.7%	--
Interaction:	13.2%	Pass
Controlling Member:	M3	--
Controlling LC:	15	--

\*Rating per TIA-222-H Section 15.5



**APPENDIX E**  
**SUPPLEMENTAL DRAWINGS**



PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	6	X-LWRM	RING MOUNT WELDMNT		68.16	408.95
2	66	G58LW	5/8" HDG LOCKWASHER		0.03	1.72
3	60	A58NUT	5/8" HDG A325 HEX NUT		0.13	7.78
4	18	G58R-24	5/8" x 24" THREADED ROD (HDG.)		0.55	9.88
5	18	G58R-48	5/8" x 48" THREADED ROD (HDG.)		0.55	9.88
6	24	A58234	5/8" x 2-3/4" HDG A325 HEX BOLT	2 3/4 in	0.36	8.53
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.)		0.73	26.34
9	264	G12FW	1/2" HDG USS FLATWASHER		0.03	8.99
10	252	G12LW	1/2" HDG LOCKWASHER		0.01	3.50
11	252	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	18.03
12	12	P3096	2-7/8" OD X 96" Sch 40 Galvanized Pipe		46.45	557.43
13	48	X-UB1300	1/2" X 3" X 5" X 2" U-BOLT (HDG.)		0.73	35.12
14	3	P3150	3-1/2" X 150" 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" OD X 150" SCH 40 GALVANIZED PIPE	150 in	48.06	144.17
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.)		0.73	26.34
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-253992	T-BRACKET FOR REINFORCEMENT KIT		13.55	81.27
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. #	2645.84

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

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

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

CPD NO. 4488 DRAWN BY CEK 3/24/2014 ENG. APPROVAL  
 CLASS SUB 81 02 DRAWING USAGE CUSTOMER CHECKED BY BMC 7/14/2014

**SITE PRO 1**  
 Engineering Support Team:  
 1-888-753-7446

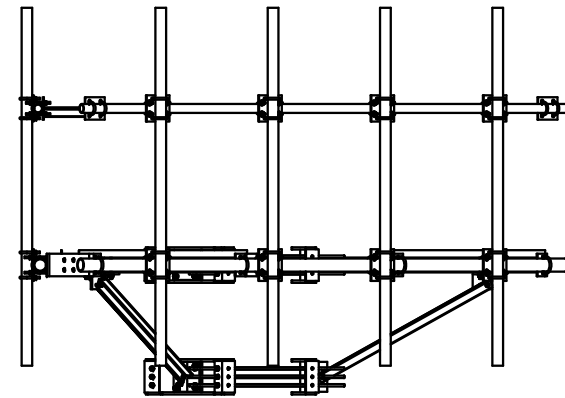
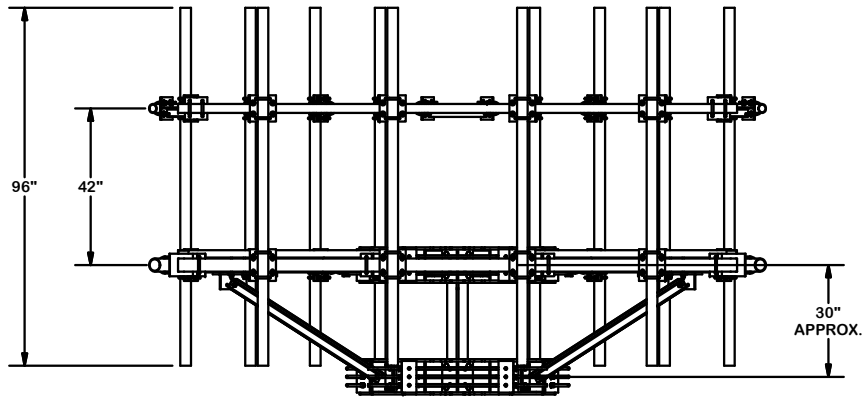
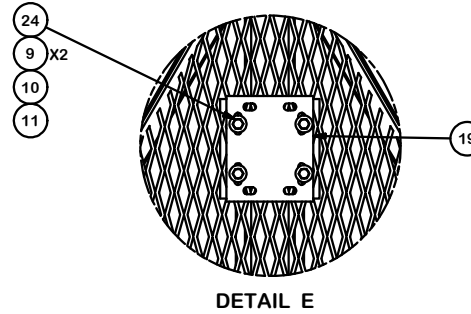
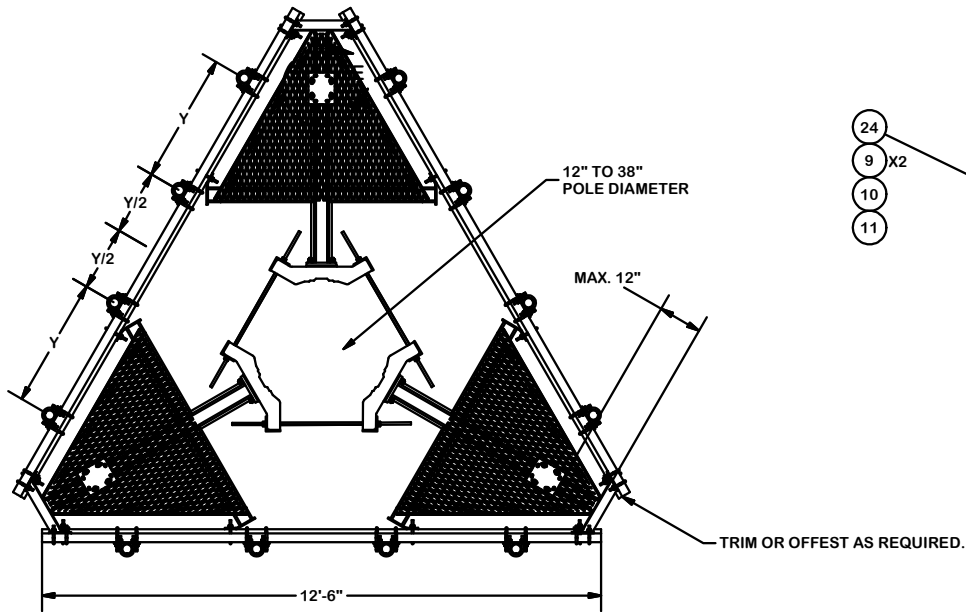
Locations:  
 New York, NY  
 Atlanta, GA  
 Los Angeles, CA  
 Plymouth, IN  
 Salem, OR  
 Dallas, TX

A valmont COMPANY

PART NO. RMQP-4096-HK  
 DWG. NO. RMQP-4096-HK

1 OF 3

REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
A	REPLACED HCP WITH X-AHCP	4488	CEK	7/14/2014
REVISION HISTORY				



**TOLERANCE NOTES**

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

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DESCRIPTION  
 12' 6" LOW PROFILE PLATFORM  
 WITH TWELVE 2-7/8" ANTENNA MOUTING  
 PIPES, AND HANDRAIL



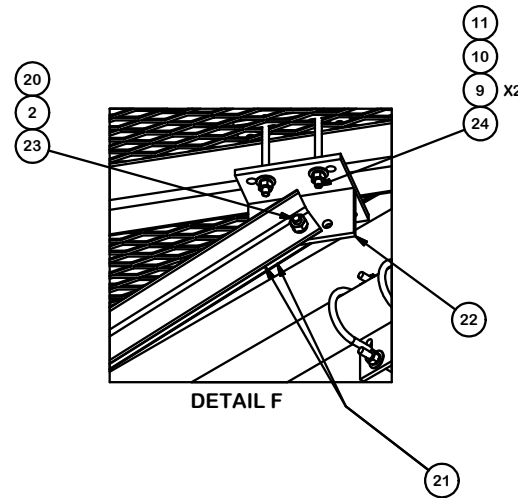
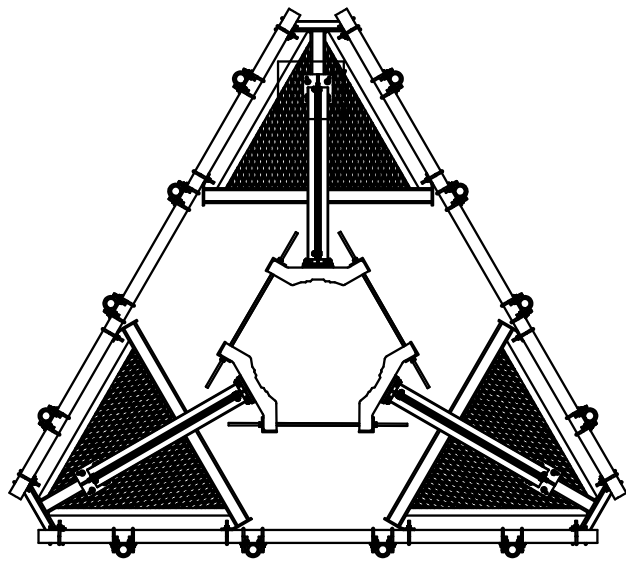
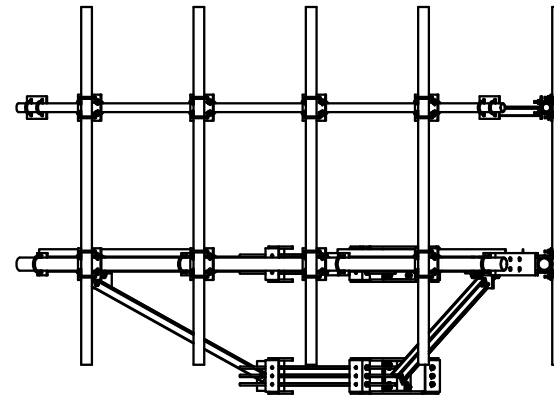
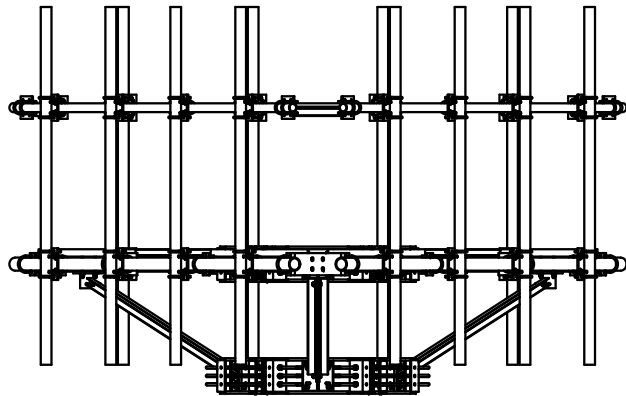
Engineering Support Team:  
 1-888-753-7446

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

CPD NO. 4488	DRAWN BY CEK 3/24/2014	ENG. APPROVAL
CLASS 81	SUB 02	DRAWING USAGE CUSTOMER
CHECKED BY BMC 7/14/2014		

PART NO. RMQP-4096-HK	PAGE 2 OF 3
DWG. NO. RMQP-4096-HK	

REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
A	REPLACED HCP WITH X-AHCP	4488	CEK	7/14/2014
REVISION HISTORY				



DETAIL F

**TOLERANCE NOTES**

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

PROPRIETARY NOTE:  
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DESCRIPTION  
 12' 6" LOW PROFILE PLATFORM  
 WITH TWELVE 2-7/8" ANTENNA MOUTING  
 PIPES, AND HANDRAIL



Engineering  
 Support Team:  
 1-888-753-7446

Locations:  
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CPD NO. 4488	DRAWN BY CEK 3/24/2014	ENG. APPROVAL
CLASS 81	SUB 02	DRAWING USAGE CUSTOMER
CHECKED BY BMC 7/14/2014		

PART NO. RMQP-4096-HK	PAGE 3 OF 3
DWG. NO. RMQP-4096-HK	

REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
A	REPLACED HCP WITH X-AHCP	4488	CEK	7/14/2014
REVISION HISTORY				



# Radio Frequency Emissions Analysis Report



**Site ID: CTHA606A**

Matianuck Windsor Crown  
1170 Matianuck Avenue  
Windsor, CT 06095

**July 19, 2022**

**Fox Hill Telecom Project Number: 221454**

Site Compliance Summary	
Compliance Status:	<b>COMPLIANT</b>
Site total MPE% of FCC general population allowable limit:	<b>30.17 %</b>

July 19, 2022

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

### Emissions Analysis for Site: **CTHA606A – Matianuck Windsor Crown**

Fox Hill Telecom, Inc (“Fox Hill”) was directed to analyze the proposed upgrades to the T-MOBILE facility located at **1170 Matianuck Avenue, 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 97-01 and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter ( $\mu\text{W}/\text{cm}^2$ ). The number of  $\mu\text{W}/\text{cm}^2$  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 ( $\mu\text{W}/\text{cm}^2$ ). The general population exposure limits for the 600 MHz & 700 MHz bands are approximately  $400 \mu\text{W}/\text{cm}^2$  and  $467 \mu\text{W}/\text{cm}^2$  respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS), 2500 MHz (BRS) and 11 GHz microwave bands is  $1000 \mu\text{W}/\text{cm}^2$ . 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 **1170 Matianuck Avenue, 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 and 20 dB for highly focused parabolic microwave dishes, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

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

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

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

Technology	Frequency Band	Channel Count	Transmit Power per Channel (W)
LTE / 5G NR	600 MHz	2	40
LTE	700 MHz	2	20
LTE	1900 MHz (PCS)	4	40
GSM	1900 MHz (PCS)	1	15
LTE	2100 MHz (AWS)	4	40
LTE / 5G NR	2500 MHz (BRS)	8	20
Microwave (Sector A)	11 GHz	1	1

*Table 1: Channel Data Table*

The following antennas listed in *Table 2* were used in the modeling for transmission in the 600 MHz, 700 MHz, 1900 MHz (PCS), 2100 MHz (AWS), 2500 MHz (BRS) and 11 GHz microwave frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

Sector	Antenna Number	Antenna Make / Model	Antenna Centerline (ft)
A	1	RFS APXVAALL24_43-U-NA20	87
A	2	Commscope VV-65A-R1	87
A	3	Ericsson AIR6419 B41	87
A	4	RFS SC2-W100BD	87
B	1	RFS APXVAALL24_43-U-NA20	87
B	2	Commscope VV-65A-R1	87
B	3	Ericsson AIR6419 B41	87
C	1	RFS APXVAALL24_43-U-NA20	87
C	2	Commscope VV-65A-R1	87
C	3	Ericsson AIR6419 B41	87

*Table 2: Antenna Data*

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



## RESULTS

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

Antenna ID	Antenna Make / Model	Frequency Bands	Antenna Gain (dBd)	Channel Count	Total TX Power (W)	ERP (W)	MPE %
Antenna A1	RFS APXVAALL24_43-U-NA20	600 MHz / 700 MHz / 1900 MHz (PCS)	13.65 / 13.85 / 16.65	9	295	10,916.23	8.11
Antenna A2	Commscope VV-65A-R1	2100 MHz (AWS)	16.05	4	160	6,443.47	3.53
Antenna A3	Ericsson AIR6419 B41	2500 MHz (BRS)	21.5	8	160	22,600.60	12.38
Antenna A4	RFS SC2-W100BD	11 GHz	32.35	1	1	1,717.91	0.09
<b>Sector A Composite MPE%</b>							<b>24.11</b>
Antenna B1	RFS APXVAALL24_43-U-NA20	600 MHz / 700 MHz / 1900 MHz (PCS)	13.65 / 13.85 / 16.65	4	120	2,824.56	3.68
Antenna B2	Commscope VV-65A-R1	2100 MHz (AWS)	16.05	10	375	14,335.47	7.86
Antenna B3	Ericsson AIR6419 B41	2500 MHz (BRS)	21.5	8	160	22,600.60	12.38
<b>Sector B Composite MPE%</b>							<b>23.92</b>
Antenna C1	RFS APXVAALL24_43-U-NA20	600 MHz / 700 MHz / 1900 MHz (PCS)	13.65 / 13.85 / 16.65	4	120	2,824.56	3.68
Antenna C2	Commscope VV-65A-R1	2100 MHz (AWS)	16.05	10	375	14,335.47	7.86
Antenna C3	Ericsson AIR6419 B41	2500 MHz (BRS)	21.5	8	160	22,600.60	12.38
<b>Sector C Composite MPE%</b>							<b>23.92</b>

*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.

<b>Site Composite MPE%</b>	
<b>Carrier</b>	<b>MPE%</b>
T-MOBILE – Max at Sector A	<b>24.11 %</b>
AT&T	5.78 %
Clearwire	0.28 %
<b>Site Total MPE %:</b>	<b>30.17 %</b>

*Table 4: All Carrier MPE Contributions*

T-MOBILE Sector A Total:	24.11 %
T-MOBILE Sector B Total:	23.92 %
T-MOBILE Sector C Total:	23.92 %
Site Total:	30.17 %

*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 ( $\mu\text{W}/\text{cm}^2$ )	Frequency (MHz)	Allowable MPE ( $\mu\text{W}/\text{cm}^2$ )	Calculated % MPE
T-Mobile 600 MHz LTE / 5G NR	2	926.96	87	10.16	600 MHz	400	2.54%
T-Mobile 700 MHz LTE	2	485.32	87	5.32	700 MHz	467	1.14%
T-Mobile 1900 MHz (PCS) LTE	4	1,849.52	87	40.54	1900 MHz (PCS)	1000	4.05%
T-Mobile 1900 MHz (PCS) GSM	1	693.57	87	3.80	1900 MHz (PCS)	1000	0.38%
T-Mobile 2100 MHz (AWS) LTE	4	1,610.87	87	35.31	2100 MHz (AWS)	1000	3.53%
T-Mobile 2500 MHz (BRS) LTE / 5G NR	8	2,825.08	87	123.84	2500 MHz (BRS)	1000	12.38%
T-Mobile 11 GHz Microwave	1	1,717.91	87	0.94	11 GHz	1000	0.09%
						<b>Total:</b>	<b>24.11%</b>

*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:	24.11 %
Sector B:	23.92 %
Sector C:	23.92 %
T-MOBILE Maximum Total (per sector):	24.11 %
Site Total:	30.17 %
Site Compliance Status:	<b>COMPLIANT</b>

The anticipated composite MPE value for this site assuming all carriers present is **30.17 %** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

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



**T-MOBILE SITE NUMBER: CTHA606A** **BUSINESS UNIT #: 842878**  
**T-MOBILE SITE NAME: MATIANUCK WINDSOR CROWN** **SITE ADDRESS: 1170 MATIANUCK AVENUE**  
**SITE TYPE: MONOPOLE** **COUNTY: HARTFORD**  
**TOWER HEIGHT: 100'-0"** **JURISDICTION: TOWN OF HARTFORD**  
**CTHA606A\_COVERAGE STRATEGY: 67E5998C\_1xAIR+1QP+1OP**

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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 Suite 150 | Fort Washington, PA 19034  
 www.infinigy.com

T-MOBILE SITE NUMBER:  
**CTHA606A**  
 BU #: **842878**  
**WINDSOR SOUTH**  
 1170 MATIANUCK AVENUE  
 WINDSOR, CT 06095  
 EXISTING 100'-0" MONOPOLE

**ISSUED FOR:**

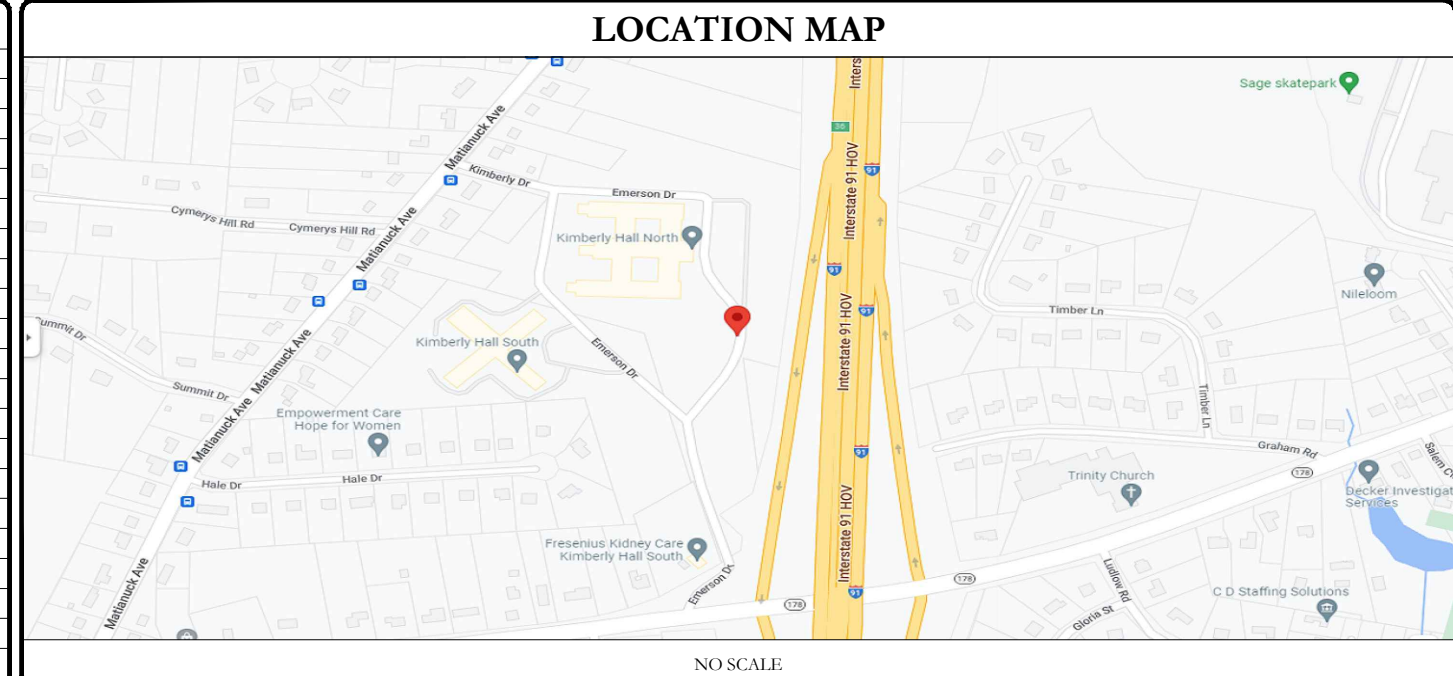
REV	DATE	DRWN	DESCRIPTION	DES./QA
A	06/23/22	RCD	PRELIMINARY	SS
0	07/22/22	RCD	100% FINALS	SS
1	07/28/22	FP	100% FINALS	--

**SITE INFORMATION**

CROWN CASTLE USA INC. SITE NAME:	WINDSOR SOUTH
SITE ADDRESS:	1170 MATIANUCK AVENUE WINDSOR, CT 06095
COUNTY:	HARTFORD
MAP/PARCEL #:	TBD
AREA OF CONSTRUCTION:	EXISTING
LATITUDE:	41.84050000° (41° 50' 25.97")
LONGITUDE:	72.66650000° (-72° 39' 58.75")
LAT/LONG TYPE:	NAD83
GROUND ELEVATION:	120 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:	----

**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.

**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:	CROWN CASTLE
DATED:	05/26/2022
MOUNT ANALYSIS:	POD GROUP
DATED:	05/04/2022
RFDS REVISION:	1
DATED:	3/1/2022
ORDER ID:	605574
REVISION:	0

**APPROVALS**

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

**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

**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 (9) RRHS
- INSTALL (5) 6X24 HYBRID CABLES
- INSTALL (1) 1/2" COAX CABLES
- INSTALL (3) VFA10-SD-S ANTENNA MOUNT
- INSTALL (1) MSFAA
- INSTALL 8'-0" P2 STD LONG ANTENNA PIPES

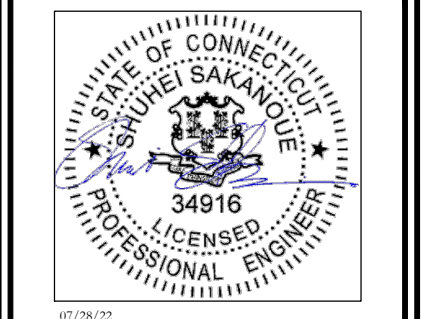
**GROUND SCOPE OF WORK:**

- 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.

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

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.



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

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



**CROWN CASTLE USA INC. SITE ACTIVITY REQUIREMENTS:**

- 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.
- "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 FUNCTIONALITY 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.
- 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.
- 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-1025, 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).
- 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." 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.
- 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.
- THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
- THE CONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES PRIOR TO THE START OF CONSTRUCTION.
- 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.
- ALL SITE WORK SHALL BE AS INDICATED ON THE STAMPED CONSTRUCTION DRAWINGS AND PROJECT SPECIFICATIONS, LATEST APPROVED REVISION.
- 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.
- 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.
- 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.
- THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE CARRIER'S EQUIPMENT AND TOWER AREAS.
- THE SUB GRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION.
- 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.
- 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.
- 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.
- 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.
- CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION. TRASH AND DEBRIS SHOULD BE REMOVED FROM SITE ON A DAILY BASIS.
- 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.

**GREENFIELD GROUNDING NOTES:**

- 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.
- THE CONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR GROUND ELECTRODE SYSTEMS, THE CONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.
- 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.
- 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.
- 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.
- 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.
- 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.
- ALL EXTERIOR GROUND CONDUCTORS BETWEEN EQUIPMENT/GROUND BARS AND THE GROUND RING SHALL BE #2 SOLID TINNED COPPER UNLESS OTHERWISE INDICATED.
- ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
- USE OF 90° BENDS IN THE PROTECTION GROUNDING CONDUCTORS SHALL BE AVOIDED WHEN 45° BENDS CAN BE ADEQUATELY SUPPORTED.
- EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
- ALL GROUND CONNECTIONS ABOVE GRADE (INTERIOR AND EXTERIOR) SHALL BE FORMED USING HIGH PRESS CRIMPS.
- COMPRESSION GROUND CONNECTIONS MAY BE REPLACED BY EXOTHERMIC WELD CONNECTIONS.
- ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO THE BRIDGE AND THE TOWER GROUND BAR.
- APPROVED ANTIOXIDANT COATINGS (i.e. CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
- ALL EXTERIOR GROUND CONNECTIONS SHALL BE COATED WITH A CORROSION RESISTANT MATERIAL.
- MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
- BOND ALL METALLIC OBJECTS WITHIN 6 FT OF MAIN GROUND RING WITH (1) #2 BARE SOLID TINNED COPPER GROUND CONDUCTOR.
- 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.
- 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).
- 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).

**GENERAL NOTES:**

- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
- THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
- 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.
- 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.
- 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.
- 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.
- CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION. TRASH AND DEBRIS SHOULD BE REMOVED FROM SITE ON A DAILY BASIS.

**CONCRETE, FOUNDATIONS, AND REINFORCING STEEL:**

- 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.
- UNLESS NOTED OTHERWISE, SOIL BEARING PRESSURE USED FOR DESIGN OF SLABS AND FOUNDATIONS IS ASSUMED TO BE 1000 psf.
- 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° AT TIME OF PLACEMENT.
- 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.
- 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
- 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"
- A TOOLED EDGE OR A 3/4" CHAMFER SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE, UNLESS NOTED OTHERWISE, IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.

**ELECTRICAL INSTALLATION NOTES:**

- ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC AND ALL APPLICABLE FEDERAL, STATE, AND LOCAL CODES/ORDINANCES.
- CONDUIT ROUTINGS ARE SCHEMATIC. CONTRACTOR SHALL INSTALL CONDUITS SO THAT ACCESS TO EQUIPMENT IS NOT BLOCKED AND TRIP HAZARDS ARE ELIMINATED.
- WIRING, RACEWAY AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC.
- ALL CIRCUITS SHALL BE SEGREGATED AND MAINTAIN MINIMUM CABLE SEPARATION AS REQUIRED BY THE NEC.
- ALL EQUIPMENT SHALL BEAR THE UNDERWRITERS LABORATORIES LABEL OF APPROVAL, AND SHALL CONFORM TO REQUIREMENT OF THE NATIONAL ELECTRICAL CODE.
- 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. VERIFY 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.
- 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.
- 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).
- PANEL BOARDS (ID NUMBERS) SHALL BE CLEARLY LABELED WITH PLASTIC LABELS.
- ALL TIE WRAPS SHALL BE CUT FLUSH WITH APPROVED CUTTING TOOL TO REMOVE SHARP EDGES.
- ALL POWER AND EQUIPMENT GROUND WIRING IN TUBING OR CONDUIT SHALL BE SINGLE COPPER CONDUCTOR (#14 OR LARGER) WITH TYPE THW, THWN, THWN-2, XHHW, XHHW-2, THW, THW-2, RHW, OR RHW-2 INSULATION UNLESS OTHERWISE SPECIFIED.
- SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED INDOORS SHALL BE SINGLE COPPER CONDUCTOR (#6 OR LARGER) WITH TYPE THW, THWN, THWN-2, XHHW, XHHW-2, THW, THW-2, RHW, OR RHW-2 INSULATION UNLESS OTHERWISE SPECIFIED.
- POWER AND CONTROL WIRING IN FLEXIBLE CORD SHALL BE MULTI-CONDUCTOR, TYPE SOOW CORD (#14 OR LARGER) UNLESS OTHERWISE SPECIFIED.
- POWER AND CONTROL WIRING FOR USE IN CABLE TRAY SHALL BE MULTI-CONDUCTOR, TYPE TC CABLE (#14 OR LARGER), WITH TYPE THW, THWN, THWN-2, XHHW, XHHW-2, THW, THW-2, RHW, OR RHW-2 INSULATION UNLESS OTHERWISE SPECIFIED.
- 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).
- RACEWAY AND CABLE TRAY SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND NEC.
- ELECTRICAL METALLIC TUBING (EMT), INTERMEDIATE METAL CONDUIT (IMC), OR RIGID METAL CONDUIT (RMC) SHALL BE USED FOR EXPOSED INDOOR LOCATIONS.
- ELECTRICAL METALLIC TUBING (EMT) OR METAL-CLAD CABLE (MC) SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.
- SCHEDULE 40 PVC UNDERGROUND ON STRAIGHTS AND SCHEDULE 80 PVC FOR ALL ELBOWS/90s AND ALL APPROVED ABOVE GRADE PVC CONDUIT.
- LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID-TITE FLEX) SHALL BE USED INDOORS AND OUTDOORS, WHERE VIBRATION OCCURS OR FLEXIBILITY IS NEEDED.
- CONDUIT AND TUBING FITTINGS SHALL BE THREADED OR COMPRESSION-TYPE AND APPROVED FOR THE LOCATION USED. SET SCREW FITTINGS ARE NOT ACCEPTABLE.
- CABINETS, BOXES AND WIRE WAYS SHALL BE LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND THE NEC.
- WIREWAYS SHALL BE METAL WITH AN ENAMEL FINISH AND INCLUDE A HINGED COVER, DESIGNED TO SWING OPEN DOWNWARDS (WIREFOLD SPECMATE WIREWAY).
- SLOTTED WIRING CADD SHALL BE PVC AND INCLUDE COVER (PANDUIT TYPE E OR EQUAL).
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- INSTALL LAMICOID LABEL ON THE METER CENTER TO SHOW "T-MOBILE".
- 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
	DC VOLTAGE	NEG (-)
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

\* 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

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**T-MOBILE SITE NUMBER:**  
**CTHA606A**  
**BU #: 842878**  
**WINDSOR SOUTH**  
1170 MATIANUCK AVENUE  
WINDSOR, CT 06095

EXISTING 100'-0" MONOPOLE

**ISSUED FOR:**

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	06/23/22	RCD	PRELIMINARY	SS
0	07/22/22	RCD	100% FINALS	SS
1	07/28/22	FP	100% FINALS	--

STATE OF CONNECTICUT  
SHUIHEI SAKANOU  
34916  
LICENSED PROFESSIONAL ENGINEER

07/28/22

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**





NOTES:

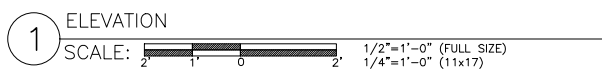
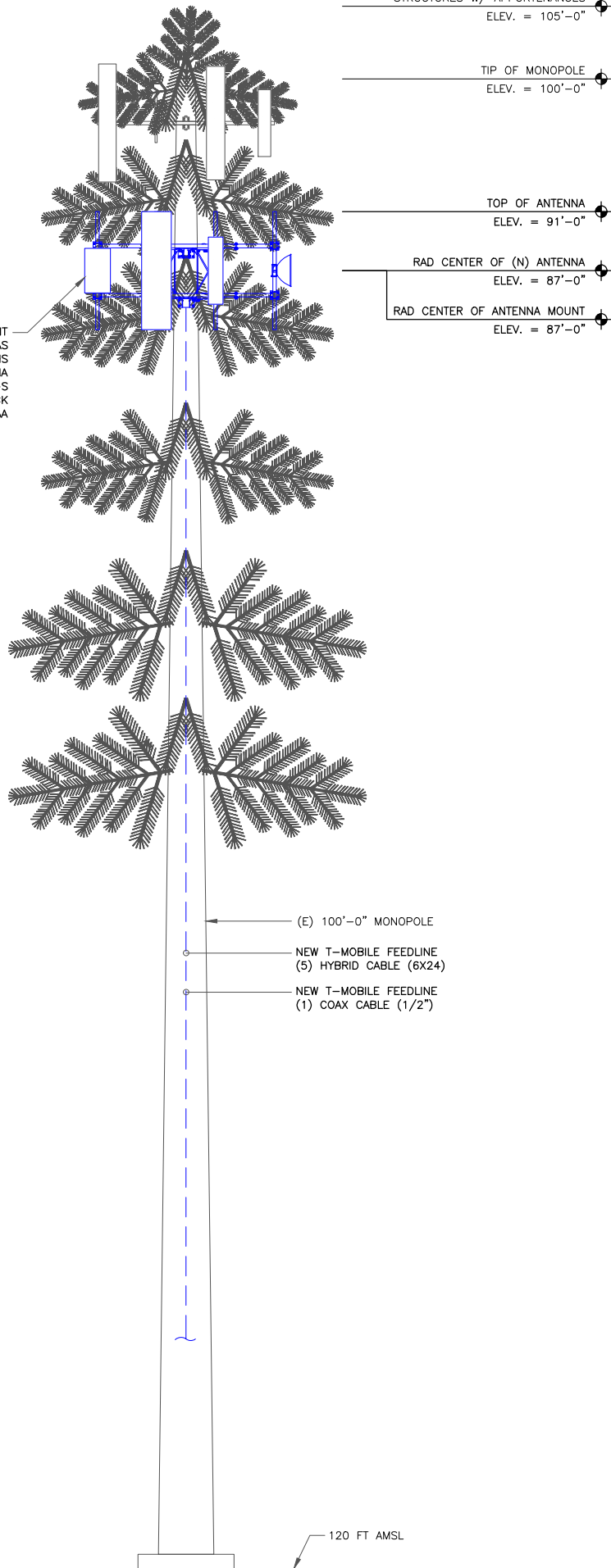
- ELEVATION BASED ON DRAWING PROVIDED BY TOWER OWNER. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND LOCATION/ORIENTATION OF EXISTING EQUIPMENT.
- INFINIGY HAS NOT EVALUATED THE TOWER OR MOUNT STRUCTURE AND ASSUMES NO RESPONSIBILITY FOR THEIR STRUCTURAL INTEGRITY REGARDING PROPOSED LOADINGS. FINAL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

T-MOBILE EQUIPMENT

ANTENNA CL: 87'-0"  
MOUNT CL: 87'-0"

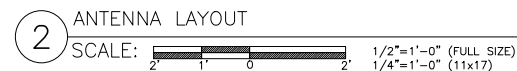
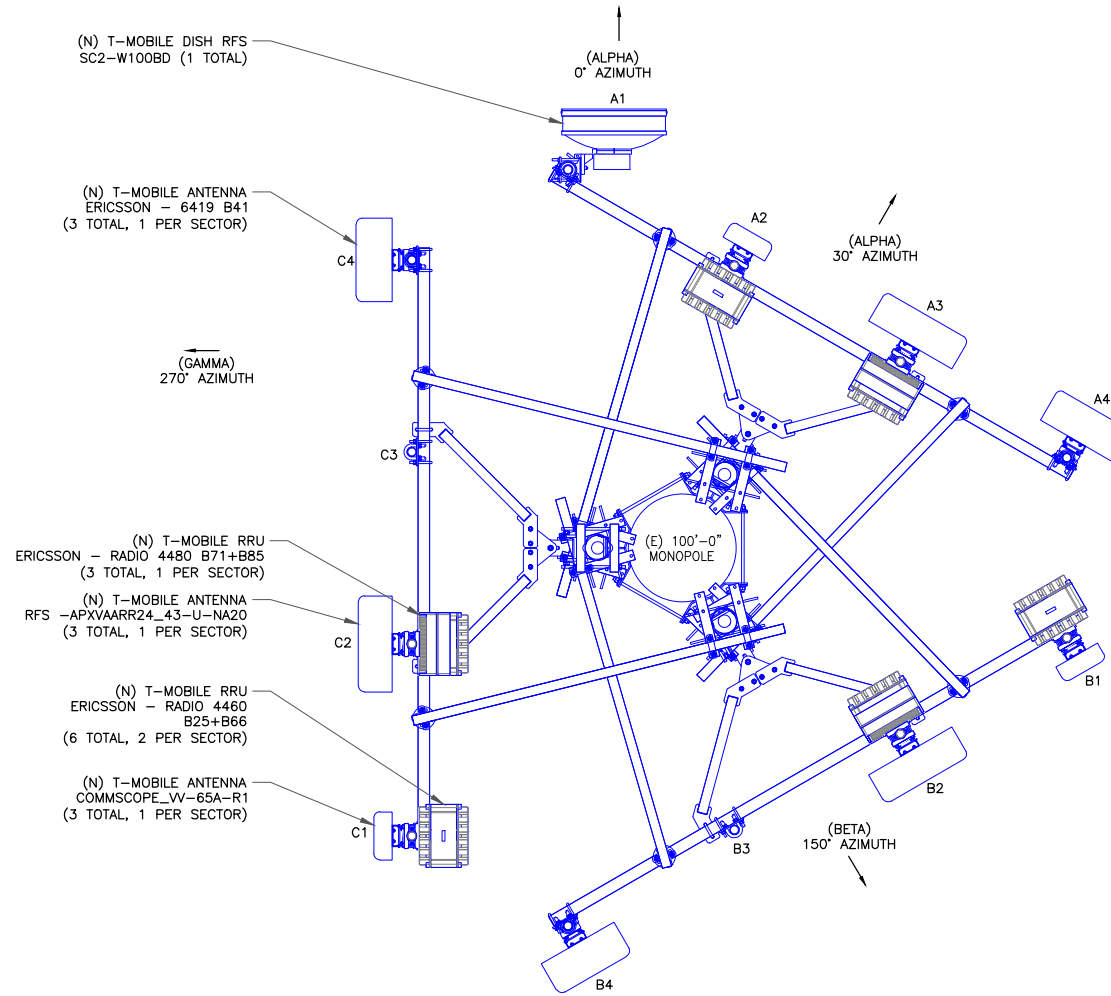
ANY AND ALL TOWER MOUNTED EQUIPMENT MUST NOT TRAP OR INTERFERE W/ EXISTING SAFETY CLIMB

- NEW T-MOBILE EQUIPMENT
- (9) ANTENNAS
  - (9) RRHS
  - (1) DISH ANTENNA
  - (3) SITE PRO 1, VFA10-SD-S
  - (6) TIE-BACK
  - (1) MSFAA



NOTES:

- A STRUCTURAL EVALUATION OF THE T-MOBILE ANTENNA MOUNTS HAS BEEN PERFORMED BY POD GROUP. REFER TO ANTENNA MOUNT STRUCTURAL ANALYSIS DATED 05/04/2022 PRIOR TO CONSTRUCTION.
- THE SITEPRO1 SECTOR MOUNT (PART# VFA10-SD-S) HAS SUFFICIENT CAPACITY TO CARRY THE PROPOSED LOADING CONFIGURATION.
- 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.



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T-MOBILE SITE NUMBER:  
CTHA606A

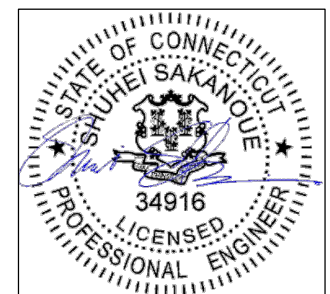
BU #: 842878  
WINDSOR SOUTH

1170 MATIANUCK AVENUE  
WINDSOR, CT 06095

EXISTING 100'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	06/23/22	RCD	PRELIMINARY	SS
0	07/22/22	RCD	100% FINALS	SS
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07/28/22

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SHEET NUMBER:

C-2

REVISION:

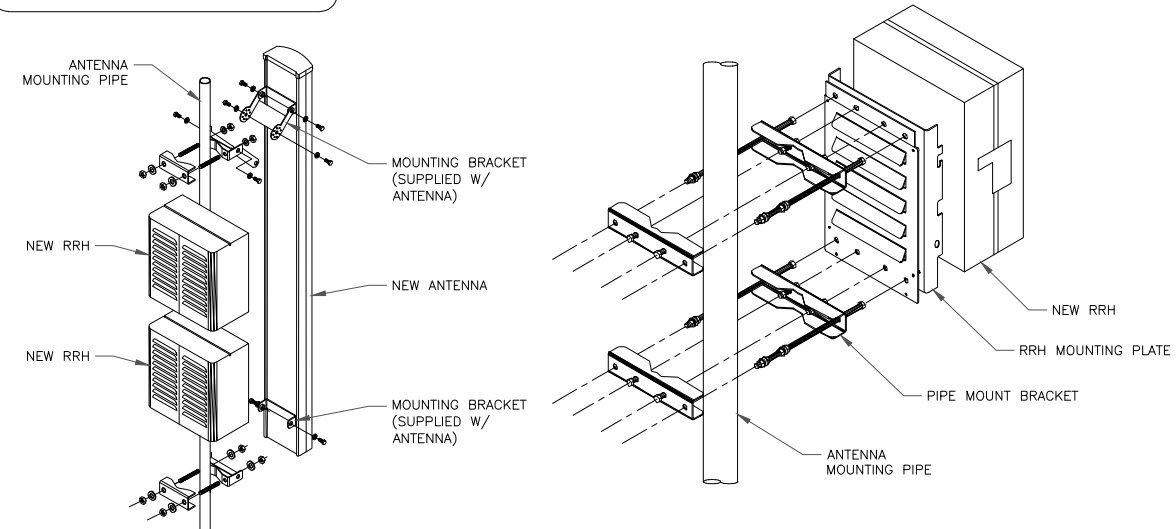
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350' ANTENNA SCHEDULE										
SECTOR	POS.	TECHNOLOGY	RAD CENTER	AZIMUTH	ANTENNA MANUFACTURER	ANTENNA MODEL	MECH. TILT	ELECT. TILT	TOWER MOUNTED EQUIPMENT	FEEDLINE TYPE
ALPHA	A1	--	87'-0"	0°	RFS	SC2-W100BD	--	--	--	(5) HYBRID CABLE (6X24) (1) COAX CABLE (1/2")
ALPHA	A2	L2100	87'-0"	30°	COMMSCOPE	COMMSCOPE - VV-65A-R1	0	--	(1) ERICSSON - RRUS 4460 B25+B66	
ALPHA	A3	L700, L600, N600, L1900, G1900	87'-0"	30°	RFS	APXVAARR24_43-U-NA20	0	--	(1) ERICSSON - RRUS 4480 B71+B85 (1) ERICSSON - RRUS 4460 B25+B66	
ALPHA	A4	L2500, N2500	87'-0"	30°	ERICSSON	ERICSSON - AIR6419 B41	0	--	--	
BETA	B1	L2100	87'-0"	150°	COMMSCOPE	COMMSCOPE - VV-65A-R1	0	--	(1) ERICSSON - RRUS 4460 B25+B66	HYBRID CABLE (SHARED)
BETA	B2	L700, L600, N600, L1900, G1900	87'-0"	150°	RFS	APXVAARR24_43-U-NA20	0	--	(1) ERICSSON - RRUS 4480 B71+B85 (1) ERICSSON - RRUS 4460 B25+B66	
BETA	B3	--	--	--	--	--	--	--	--	COAX CABLE (SHARED)
BETA	B4	L2500, N2500	87'-0"	150°	ERICSSON	ERICSSON - AIR6419 B41	0	--	--	
GAMMA	C1	L2100	87'-0"	270°	COMMSCOPE	COMMSCOPE - VV-65A-R1	0	--	(1) ERICSSON - RRUS 4460 B25+B66	HYBRID CABLE (SHARED)
GAMMA	C2	L700, L600, N600, L1900, G1900	87'-0"	270°	RFS	APXVAARR24_43-U-NA20	0	--	(1) ERICSSON - RRUS 4480 B71+B85 (1) ERICSSON - RRUS 4460 B25+B66	
GAMMA	C3	--	--	--	--	--	--	--	--	COAX CABLE (SHARED)
GAMMA	C4	L2500, N2500	87'-0"	270°	ERICSSON	ERICSSON - AIR6419 B41	0	--	--	

1 ANTENNA AND CABLE SCHEDULE  
SCALE: NOT TO SCALE

**INSTALLER NOTES:**

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



**NOTE:**

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

2 ANTENNA WITH RRHs MOUNTING DETAIL  
SCALE: NOT TO SCALE

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BU #: 842878  
**WINDSOR SOUTH**

1170 MATIANUCK AVENUE  
WINDSOR, CT 06095

EXISTING 100'-0" MONOPOLE

**ISSUED FOR:**

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	06/23/22	RCD	PRELIMINARY	SS
0	07/22/22	RCD	100% FINALS	SS
1	07/28/22	FP	100% FINALS	--

07/28/22

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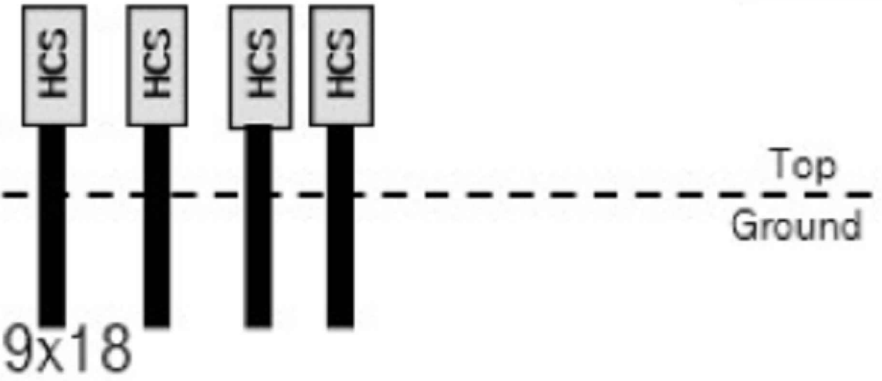
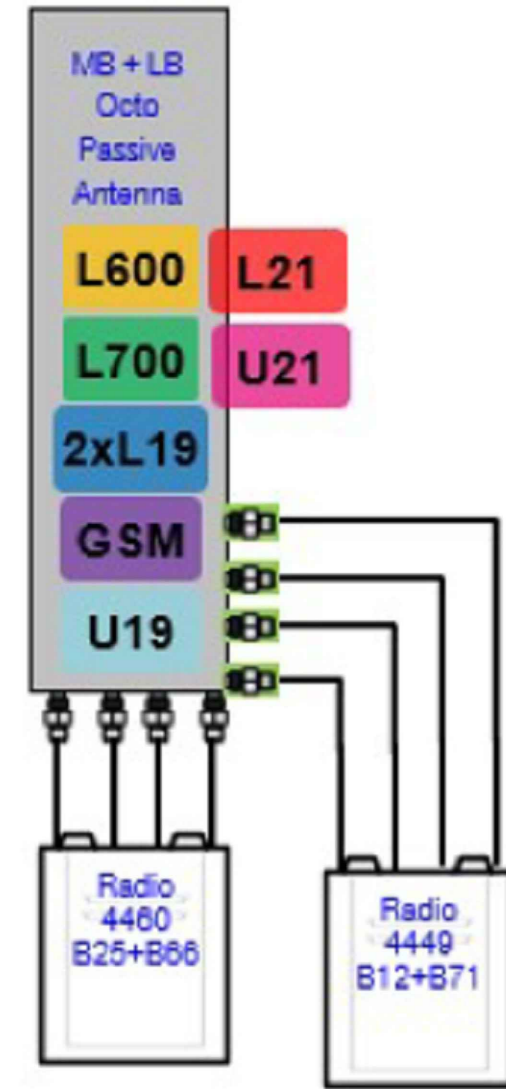
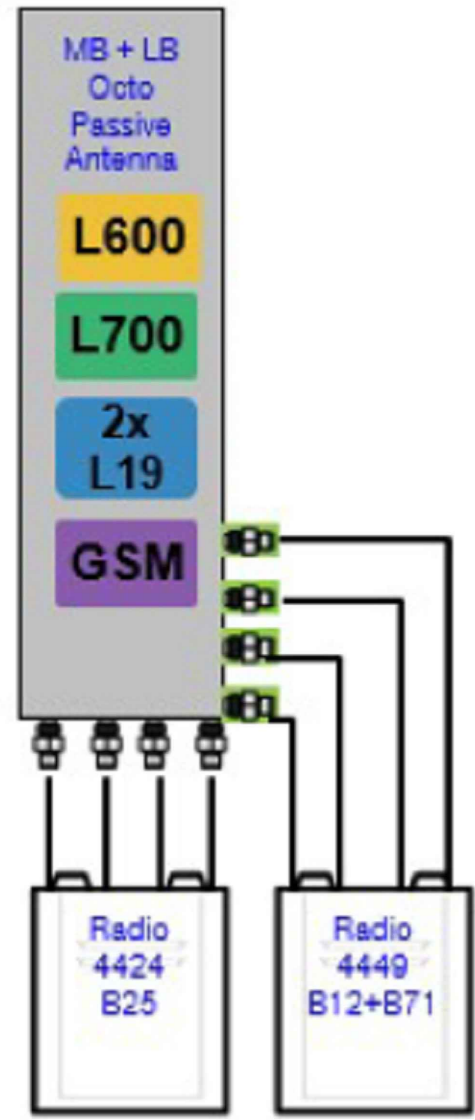
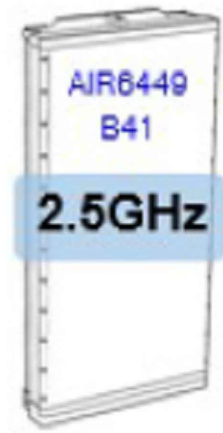
SHEET NUMBER: **C-3**      REVISION: **1**



67D5A998C\_1xAIR+1xQP+1xOP.jpg

67D5A998E.jpg

# Final Config: 67D5A998E



Notes:

Notes:

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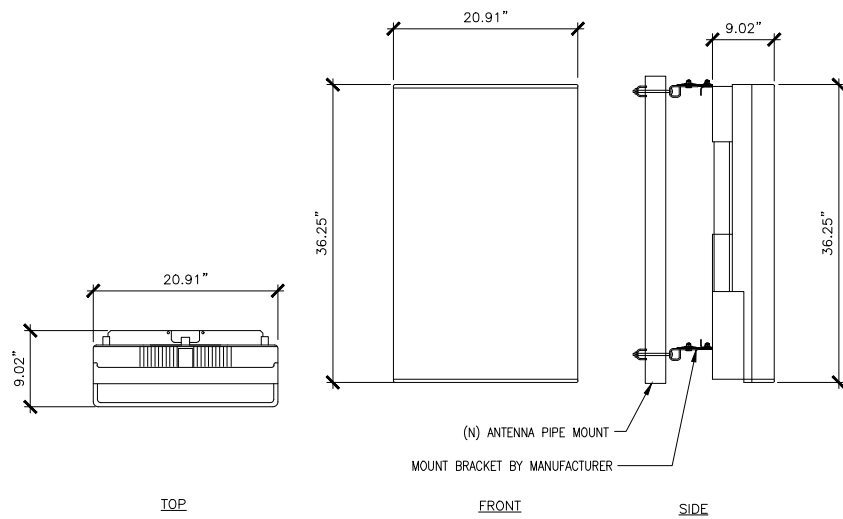
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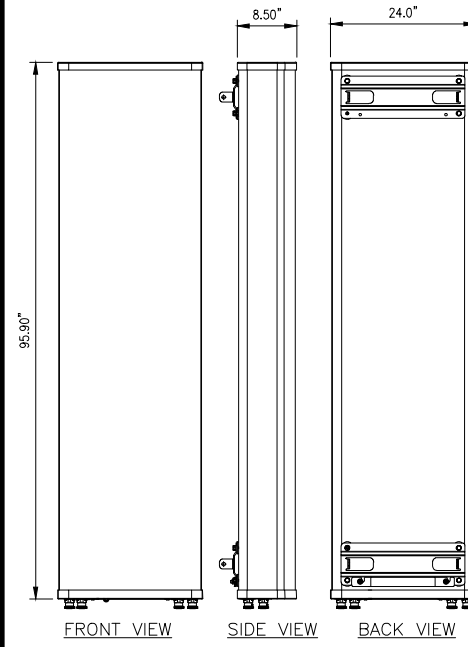
SHEET NUMBER: **C-4** REVISION: **1**

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



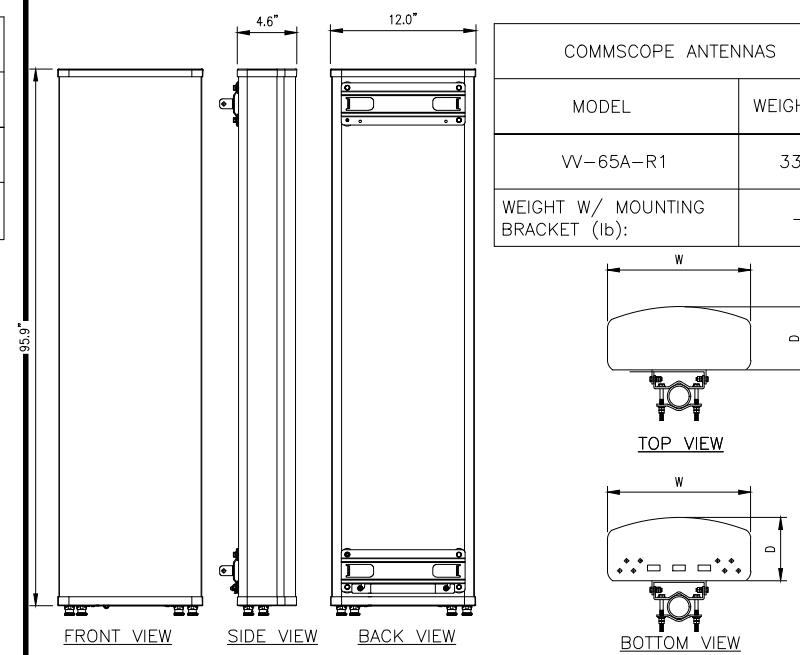
1 (N) AIR6419 B41 ANTENNA SPEC  
 SCALE: NOT TO SCALE

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

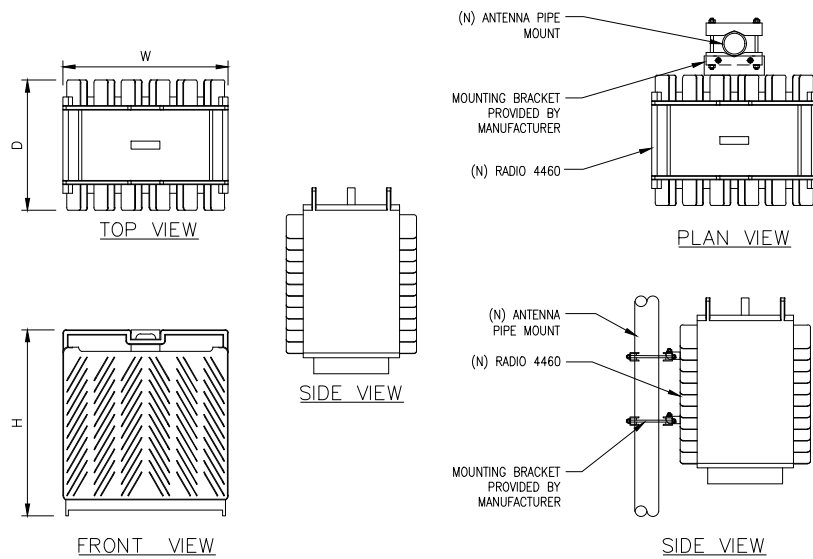
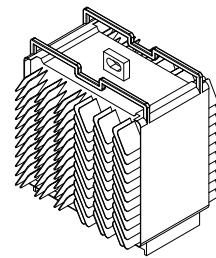
COMMSCOPE ANTENNAS	
MODEL	WEIGHT (lb)
VV-65A-R1	33.3
WEIGHT W/ MOUNTING BRACKET (lb):	-



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

**ERICSSON RADIO-4460 B25 B66**

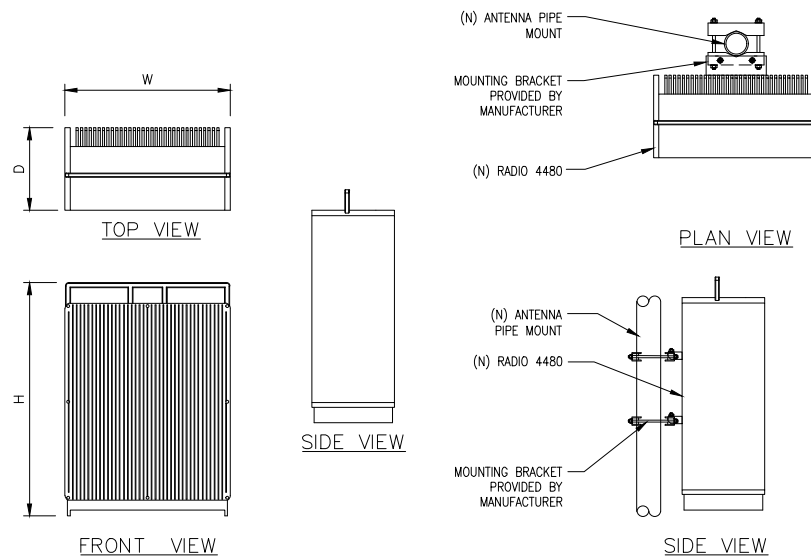
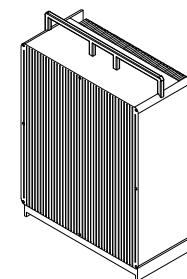
DIMENSIONS, WxDxH: 17.0"x15.1"x11.9"  
 MAX OUTPUT POWER: 4x80W (2x(2x80W))  
 TOTAL WEIGHT: 109 lbs  
 TEMPERATURE: -40° TO 55° C



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

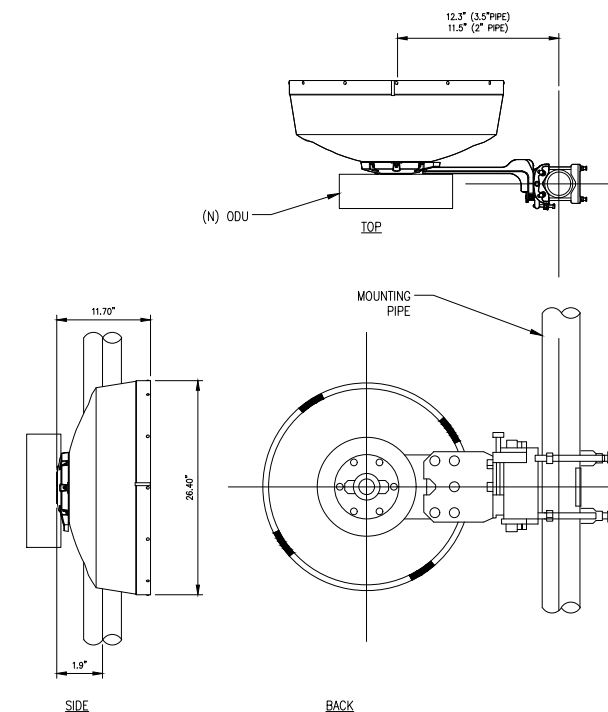
**ERICSSON RADIO-4480 B71 B85**

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 DISH SPEC  
 SCALE: NOT TO SCALE

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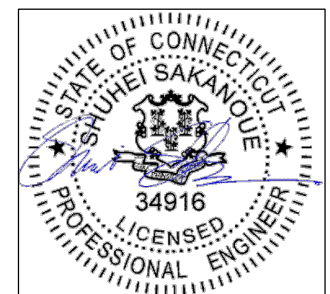
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07/28/22

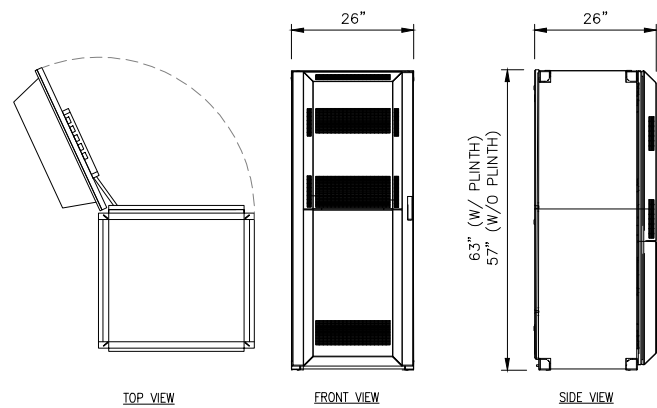
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C-5

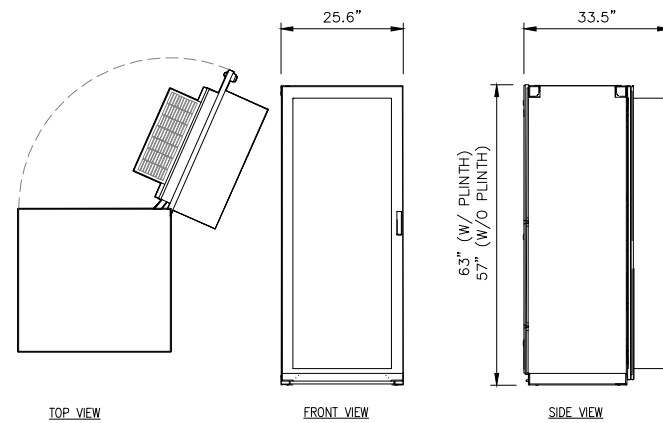
REVISION:

1



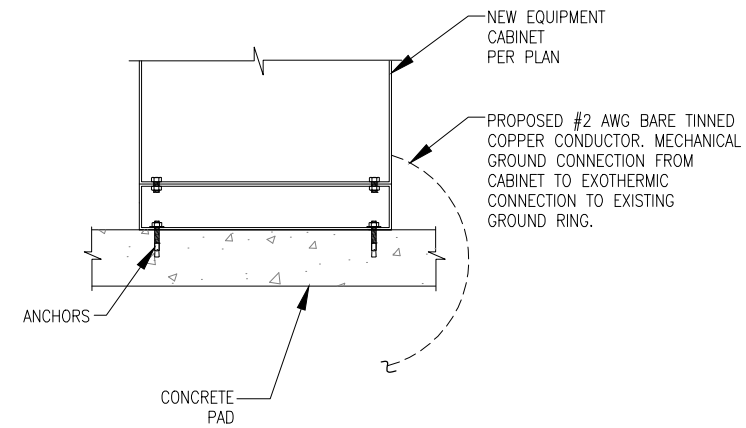
ERICSSON MODEL NO.:	B160
RACK SPACE:	19U
DIMENSIONS, HxWxD:	63"x26"x26" (W/ 6" PLINTH)
CABINET WEIGHT, EMPTY:	485 LBS
MAXIMUM WEIGHT:	2100± LBS

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

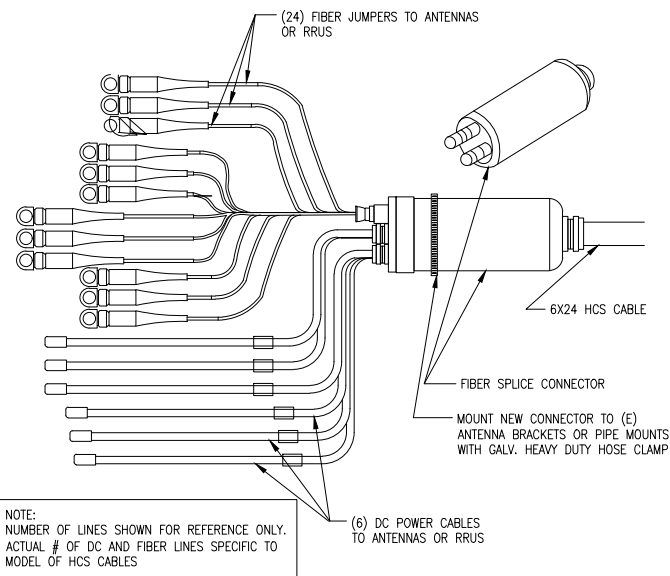


ERICSSON MODEL NO.:	6160
RACK SPACE:	19U
DIMENSIONS, HxWxD:	63"x25.6"x25.6" (W/ 6" PLINTH)
CABINET WEIGHT, EMPTY:	410 LBS
MAXIMUM WEIGHT:	770± LBS

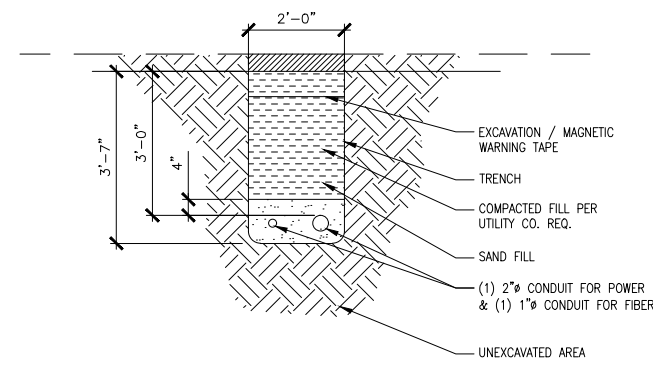
2 (N) 6160 CABINET DETAIL  
SCALE: NOT TO SCALE



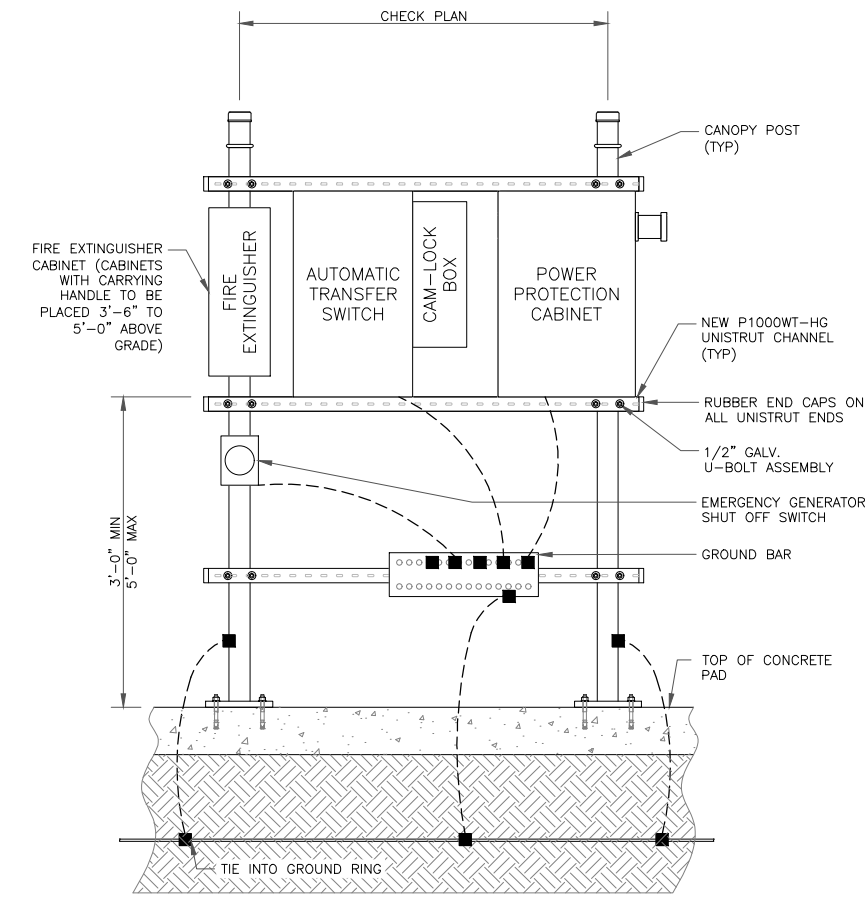
3 (N) EQUIPMENT CABINET MOUNTING DETAIL  
SCALE: NOT TO SCALE



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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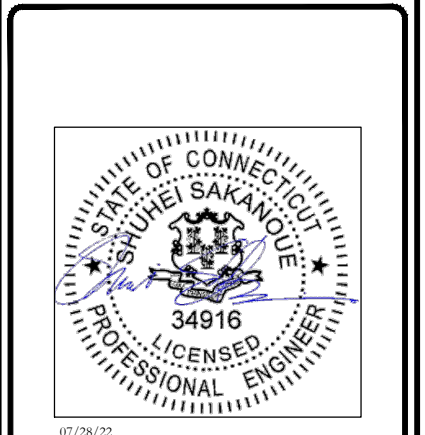
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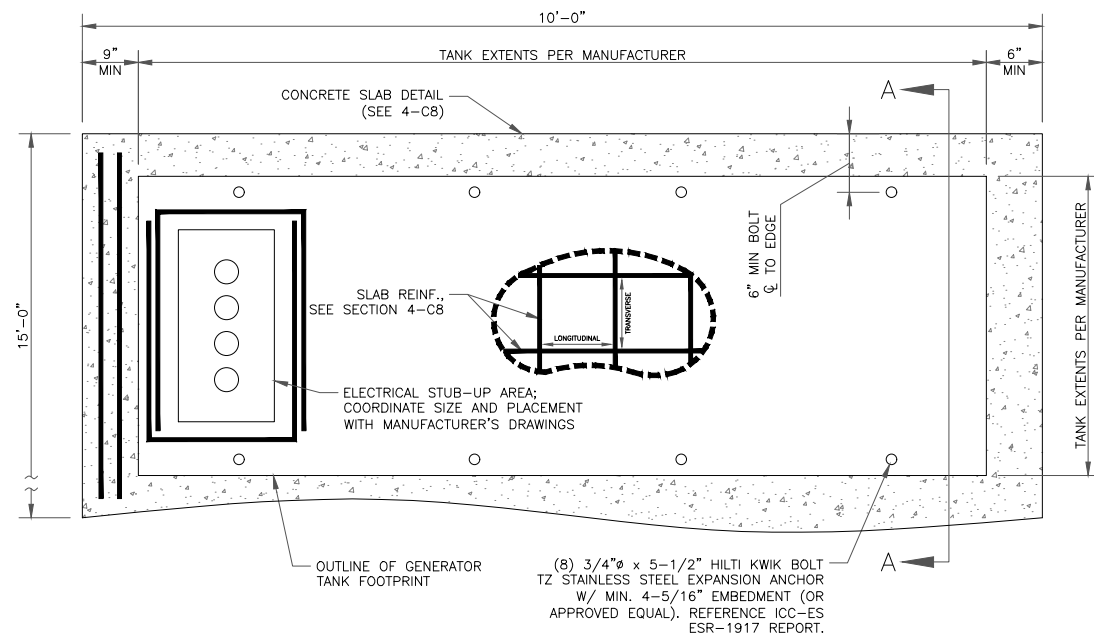
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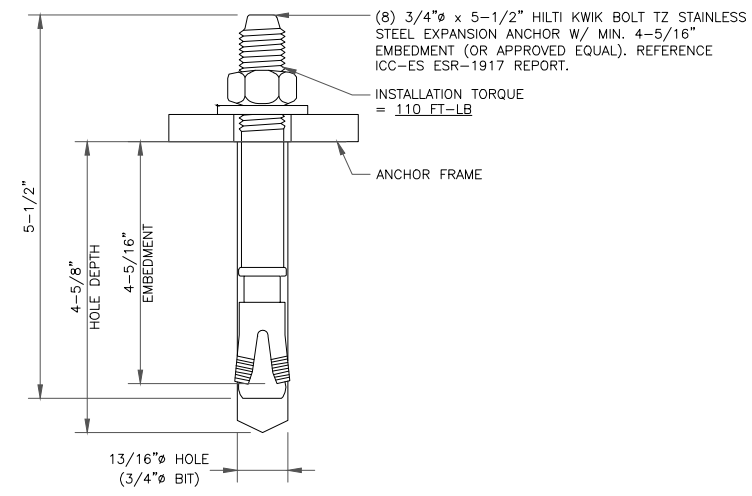
SHEET NUMBER: **C-6** REVISION: **1**





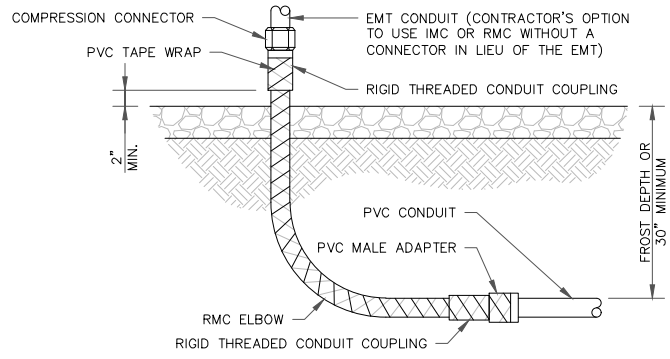
1 GENERATOR PAD DETAIL  
SCALE: NOT TO SCALE

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

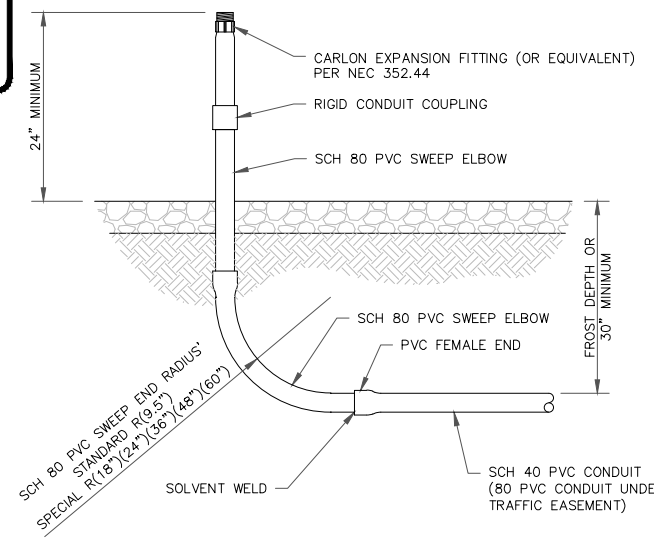


2 TYPICAL ANCHOR DETAIL  
SCALE: NOT TO SCALE

**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:**

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

**CONCRETE NOTES:**

- PRIOR TO EXCAVATION, CHECK THE AREA FOR UNDERGROUND FACILITIES.
- 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:
  - MINIMUM 7-DAY COMPRESSIVE STRENGTH (f'c) OF 2,500 PSI.
  - CEMENT SHALL BE "LOW-ALKALI" TYPE IIA (MODERATE SULFATE RESISTANCE, AIR ENTRAINING) CONFORMING TO ASTM C150.
  - MAXIMUM WATER/CEMENT RATIO OF 0.45 AND AIR-ENTRAINED 4% TO 7%.
  - 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.
  - 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".
  - MAXIMUM SLUMP: REFER TO GEOTECHNICAL REPORT FOR CONFIRMATION OF ANY ASSUMPTIONS MADE DURING DESIGN.
- 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.
- CHAMFER ALL EXPOSED CORNERS AND FILLET ENTRANT ANGLES 3/4" U.N.O.
- 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.
- 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:**

- 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.
- ALL BAR BENDS, HOOKS, SPLICES AND OTHER REINFORCING STEEL SHALL CONFORM TO THE REQUIREMENTS OF ACI 315.
- 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.
- AT ALL CORNERS AND WALL INTERSECTIONS, PROVIDE BENT HORIZONTAL BARS TO MATCH THE HORIZONTAL REINFORCING STEEL.
- PROVIDE VERTICAL DOWELS IN FOOTINGS AND AT CONSTRUCTION JOINTS TO MATCH VERTICAL REINFORCING BAR SIZE AND SPACING.
- 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.
- 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:**

- THE CONTRACTOR SHALL READ THE GEOTECHNICAL REPORT AND SHALL CONSULT THE GEOTECHNICAL ENGINEER AS NECESSARY PRIOR TO CONSTRUCTION.
- 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.
- THE CONTRACTOR SHALL DETERMINE THE MEANS AND METHODS NECESSARY TO SUPPORT THE EXCAVATION DURING CONSTRUCTION.
- REBAR AT BOTTOM OF FOUNDATIONS SHALL BE BONDED TO SITE GROUNDING SYSTEM (WHEN APPLICABLE). SEE ADDITIONAL DETAILS ON APPROVED A&E CONSTRUCTION DRAWINGS.
- 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.
- 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:**

- 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 CCSITES AND THE ENGINEER AND THE CONTRACTOR SHALL ADHERE TO ALL RECOMMENDATIONS PROVIDED THEREIN.
- 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.
- 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:**

- HILTI PRODUCTS MUST BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS, AS INCLUDED IN THE ADHESIVE PACKAGING.
- CONTRACTOR SHALL AVOID DRILLING HOLES IN VERTICAL/HORIZONTAL REINFORCING BARS.
- 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.
- REFERENCE ICC-ES ESR-1917 REPORT.

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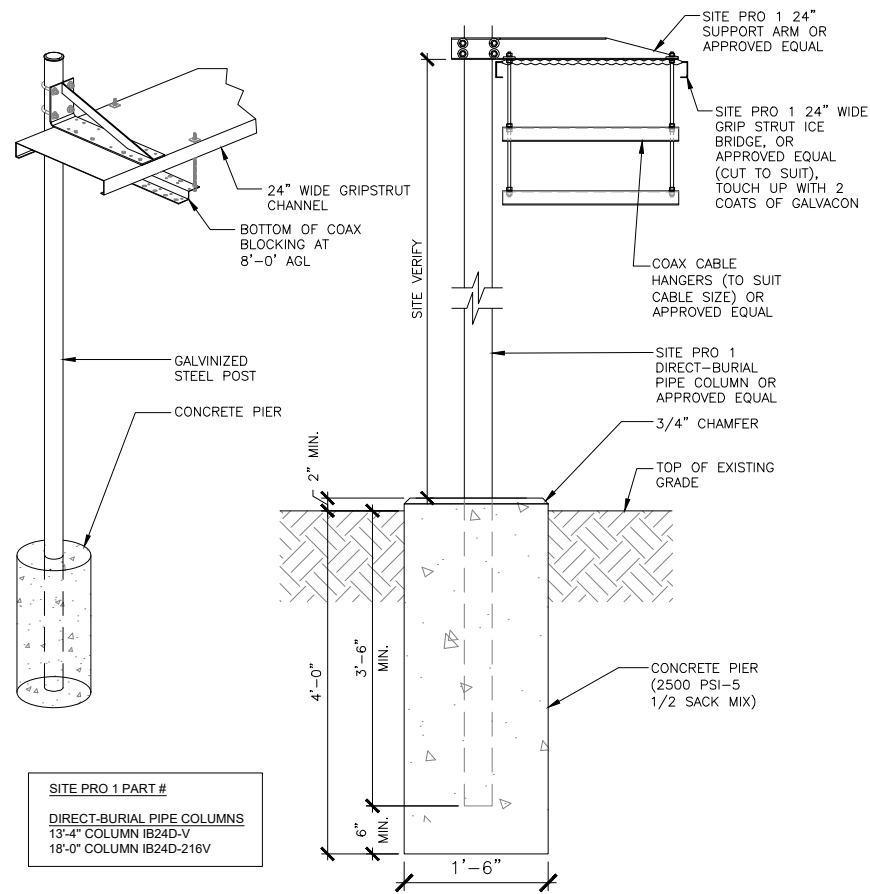
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STATE OF CONNECTICUT  
SHUHEI SAKANoue  
34916  
LICENSED PROFESSIONAL ENGINEER  
07/28/22

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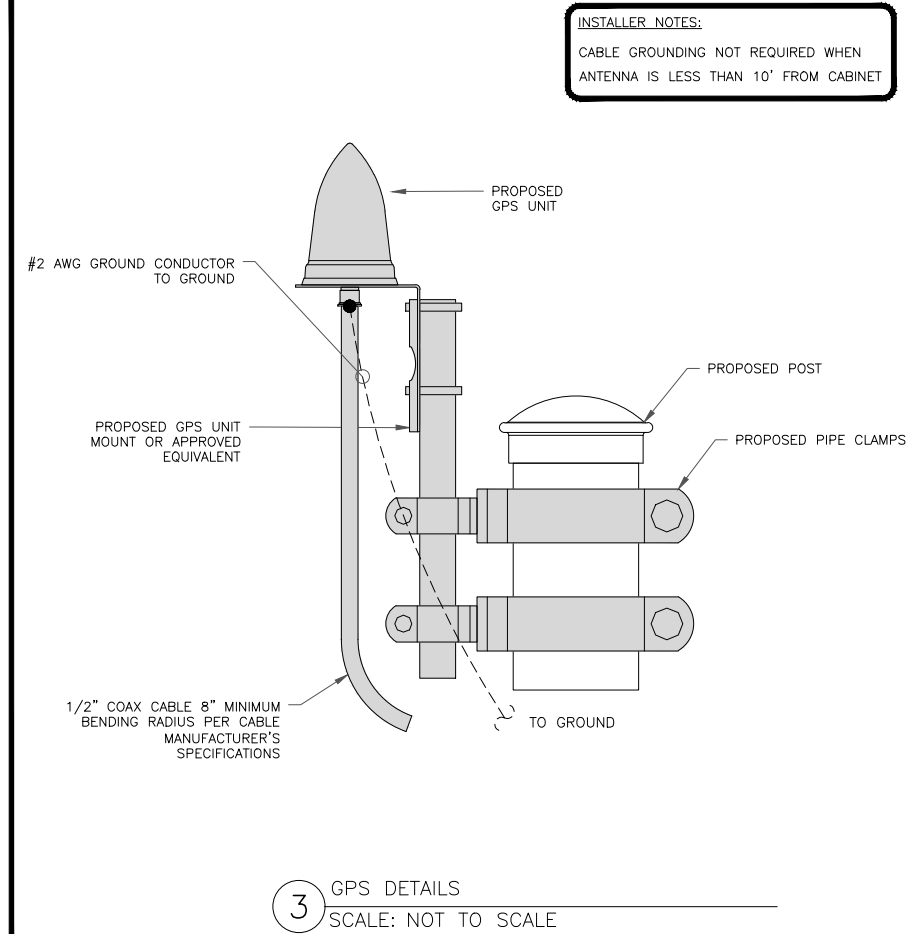
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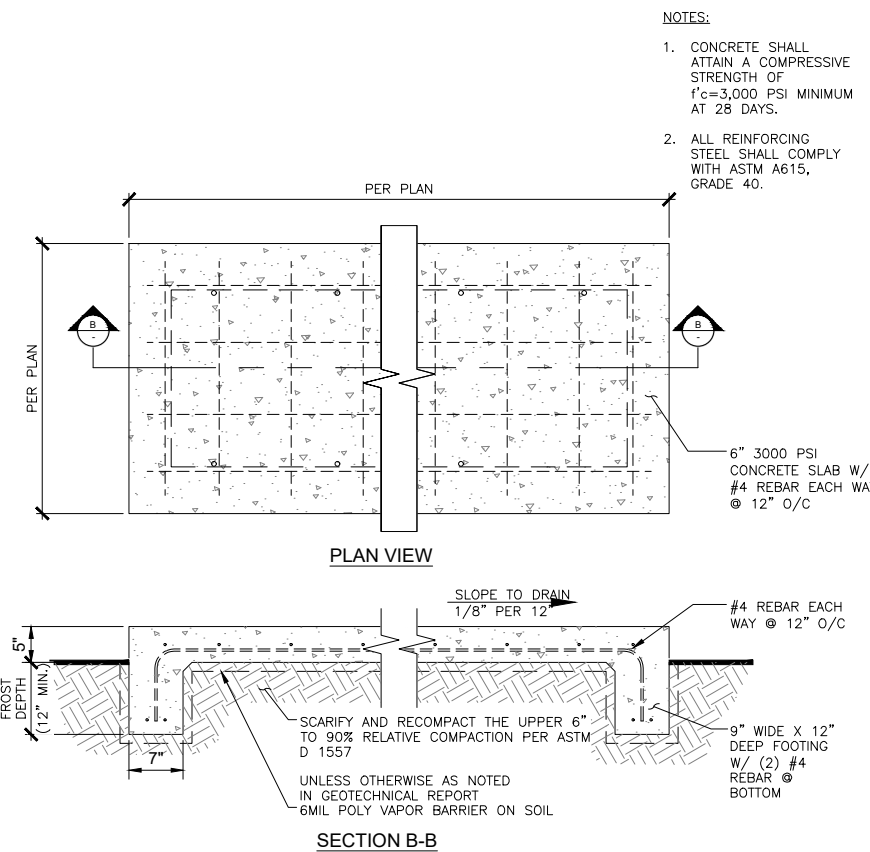


1 CABLE BRIDGE DETAIL  
SCALE: NOT TO SCALE

2 NOT USED  
SCALE: NOT TO SCALE

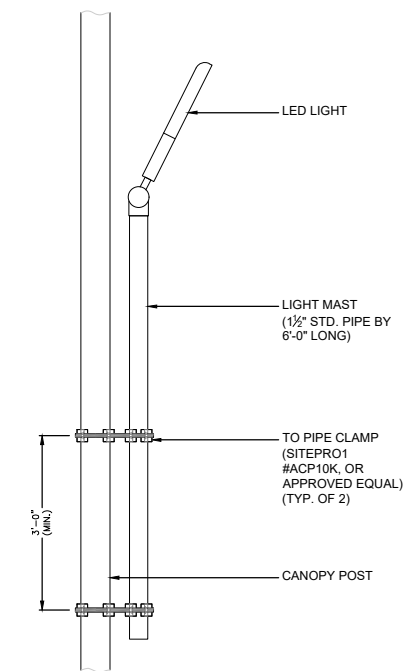


3 GPS DETAILS  
SCALE: NOT TO SCALE



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

5 NOT USED  
SCALE: NOT TO SCALE



6 LED LIGHT DETAIL  
SCALE: NOT TO SCALE

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

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WINDSOR, CT 06095  
  
EXISTING 100'-0" MONOPOLE

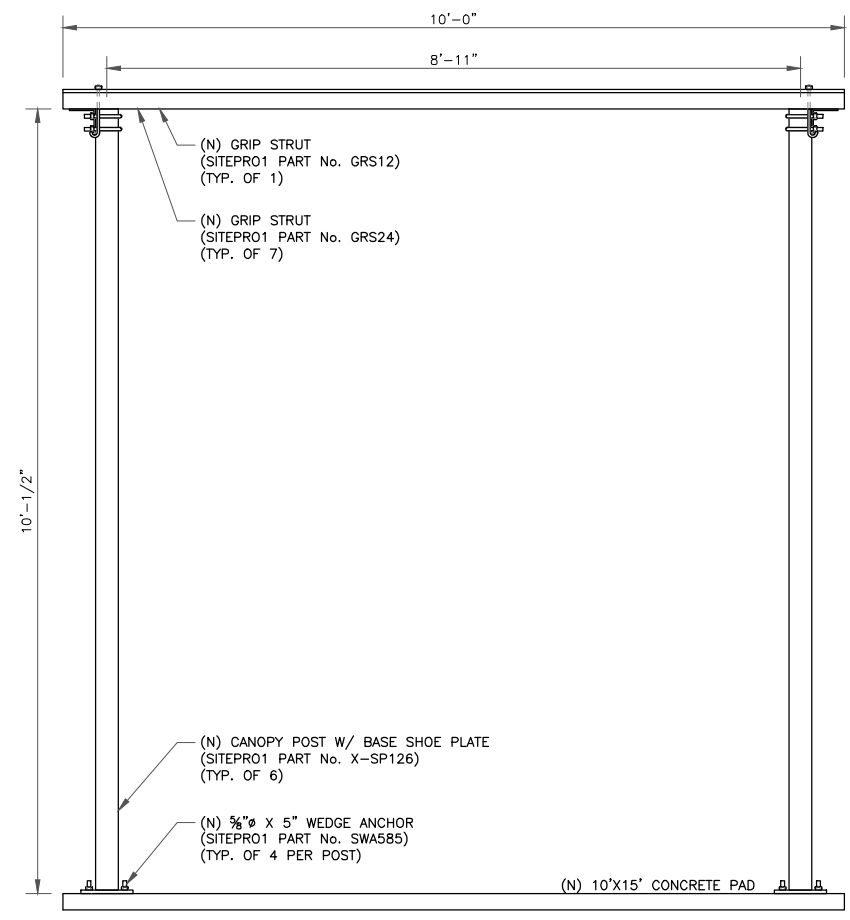
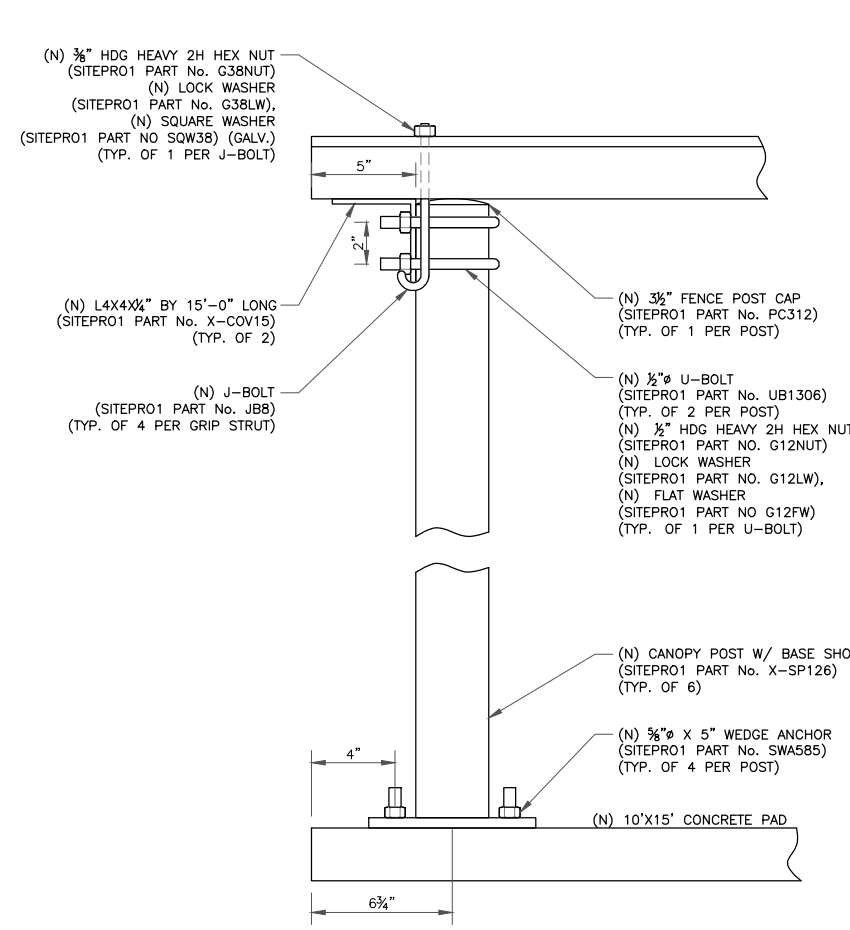
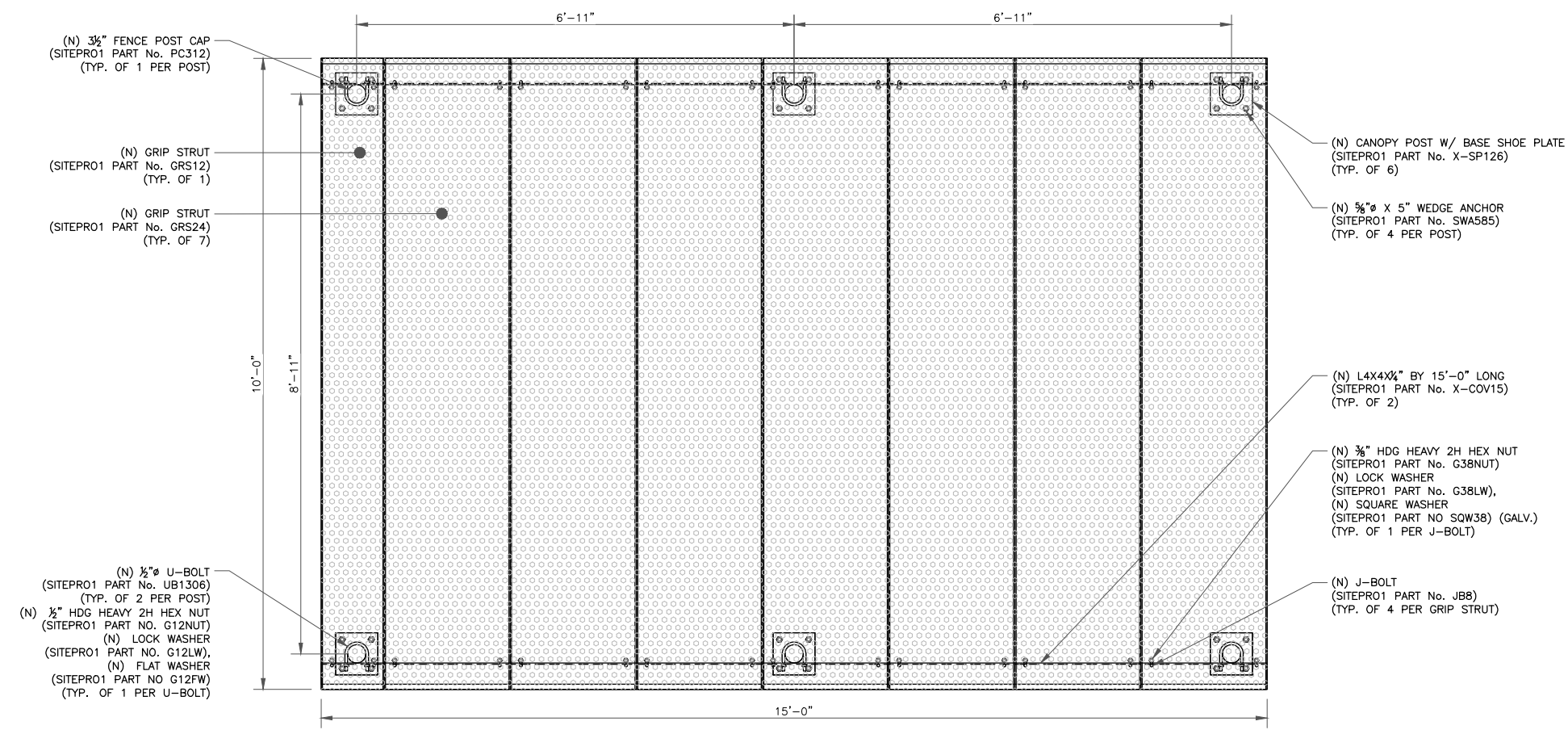
**ISSUED FOR:**

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	06/23/22	RCD	PRELIMINARY	SS
0	07/22/22	RCD	100% FINALS	SS
1	07/28/22	FP	100% FINALS	--

07/28/22

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SHEET NUMBER: **C-8** REVISION: **1**



1 CANOPY DETAIL  
SCALE: NOT TO SCALE

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BU #: 842878  
**WINDSOR SOUTH**  
  
1170 MATIANUCK AVENUE  
WINDSOR, CT 06095  
  
EXISTING 100'-0" MONOPOLE

**ISSUED FOR:**

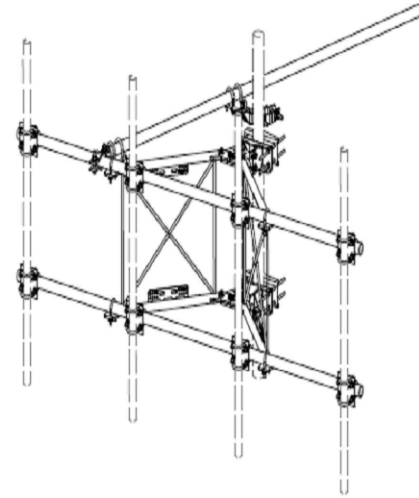
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07/28/22

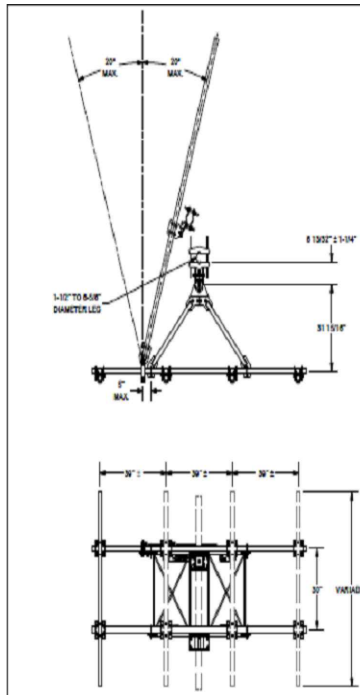
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SHEET NUMBER: **C-9** REVISION: **1**

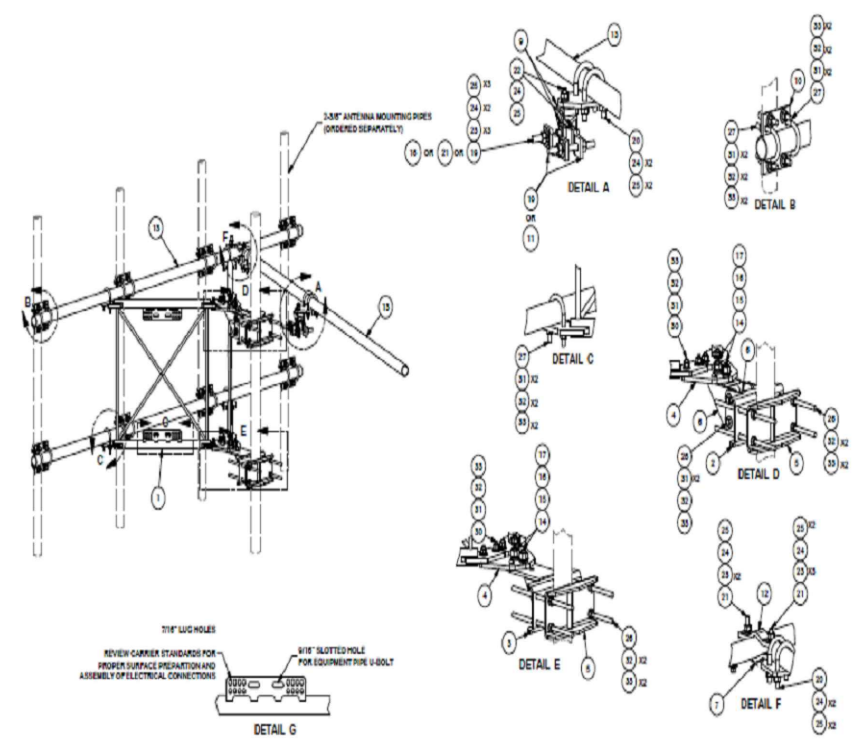
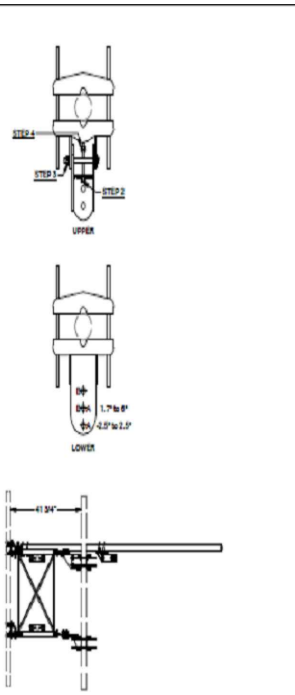




ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.	
1	2	44P432	SUPPORT ARM FOR STANDARD DUTY V-FRAME ASSEMBLY	45.34	36.89		
2	1	44D7143	DIAGONAL SLOT WELDMENT FOR BEAM SD	15.06	15.09		
3	1	44D8117	MULTI-HOLE TAPER PLATE WELDMENT	18.83	18.83		
4	2	44D8117	PIVOT PLATE	11.10	9.26	18.32	
5	2	34C015	BEET BACKING PLATE	12.00	6.88	13.73	
6	1	44D8117	STRAIGHT SLOT WELDMENT FOR BEAM	6.46	6.46		
7	2	34P115	SLIDING RING THE BACK PLATE	6.10	6.87	13.74	
8	1	44D8117	POSITIONING PLATE WELDMENT FOR BEAM	1.48	1.48		
9	2	44T811	TEE BACK CLIP ANGLE	2.81	4.01		
10	8	SC01	CROSSOVER PLATE 3.5" X 3.5"	8.00	5.71	38.67	
11	2	WCF	CLAMP HALF 1/2" THICK, 13.5" LONG	12.10	5.36	10.72	
12	4	DCP	1/2" THICK, 5.5" CENTER TO CENTER CLAMP HALF	8.18	2.36	9.46	
13	3	32118	3.5" X 1/2" (3" SCL. 40) GALVANIZED PIPE	128.00	42.75	122.26	
14	4	44M14	3/4" X 1/2" 3.5" Z519 BOLT	2.18	0.27	1.08	
15	4	Q4M14	3/4" HDG USS PLATWASHER	0.28	0.28	1.12	
16	4	Q4M14	3/4" HDG LOCKWASHER	0.24	0.17	0.72	
17	4	Q4M17	3/4" HDG HEAVY DR HDG NUT	0.21	0.25	1.00	
18	2	Q2M12	5/8" X 1/2" THREADED ROD (HDG.)	1.25	2.08		
19	2	Q2M14	5/8" X 1/2" THREADED ROD (HDG.)	0.70	1.28		
20	4	44D8117	5/8" X 3.5" (4" X 1/2" S.T. V-BOLT) HDG.	1.80	4.00		
21	4	Q2M14	5/8" X 1/2" HDG HEX BOLT GR5	0.44	1.76		
22	2	Q2M12	5/8" X 1/2" HDG HEX BOLT GR5	0.27	0.54		
23	10	Q2M14	5/8" HDG USS PLATWASHER	18.00	0.27	2.70	
24	10	Q2M14	5/8" HDG LOCKWASHER	0.28	0.42		
25	10	Q2M17	5/8" HDG HEAVY DR HDG NUT	0.23	2.30		
26	8	Q12111	1/2" X 1/2" THREADED ROD (HDG.)	0.84	6.80		
27	8	44B1111	1/2" X 3.5" (4" X 1/2" S.T. SCL. 40) GALV. BOLT	0.88	10.88		
28	2	Q12M11	1/2" X 4.5" HDG HEX BOLT GR5 FULL THREAD	4.10	0.41	0.82	
29	1	Q12M11	1/2" X 4.5" HDG HEX BOLT GR5 FULL THREAD	4.10	0.50	0.50	
30	8	Q1202	1/2" X 2" HDG HEX BOLT GR5	2.00	0.18	1.44	
31	8	Q12M11	1/2" HDG USS PLATWASHER	5.50	0.25	2.00	
32	8	Q12M11	1/2" HDG LOCKWASHER	18.00	0.21	1.68	
33	8	Q12M11	1/2" HDG HEAVY DR HDG NUT	0.27	2.16		
						TOTAL WT. #	413.20



- ANGLE CALIBRATING PROCEDURE:**
1. MEASURE TOWER TAPER AND PICK LOWER BRACKET HOLE:
    - HOLE A - 2.5° TO 2.5°
    - HOLE B - 1.7° TO 0°
  2. USE CALIBRATING BOLT TO ADJUST FRAME TO DESIRED TAPER
  3. TORQUE LOCKING BOLTS TO 50 LB.-IN.
  4. ADVANCE LOCKING NUT TO POSITIONING PLATE, THEN TIGHTEN.



**TOLERANCE NOTES**

TOLERANCES ON DIMENSIONS, UNLESS OTHERWISE NOTED ARE: BARE, BEADED AND GAS CUT EDGES (P.A.P.P.) DRILLED AND GAS CUT HOLES (P.A.P.P.)-NO CORNING OF HOLES LASER CUT EDGES AND HOLES (P.A.P.P.)-NO CORNING OF HOLES BENDS ARE ±1.0 DEGREE ALL OTHER ASSEMBLY (P.A.P.P.)

DESCRIPTION: 10" STANDARD DUTY V-FRAME ASSEMBLY W/1 STIFF ARMS

DATE: 01/02/2017

REV: 01/02 CUSTOMER

DATE: 01/02/2017

REV: 01/02 CUSTOMER

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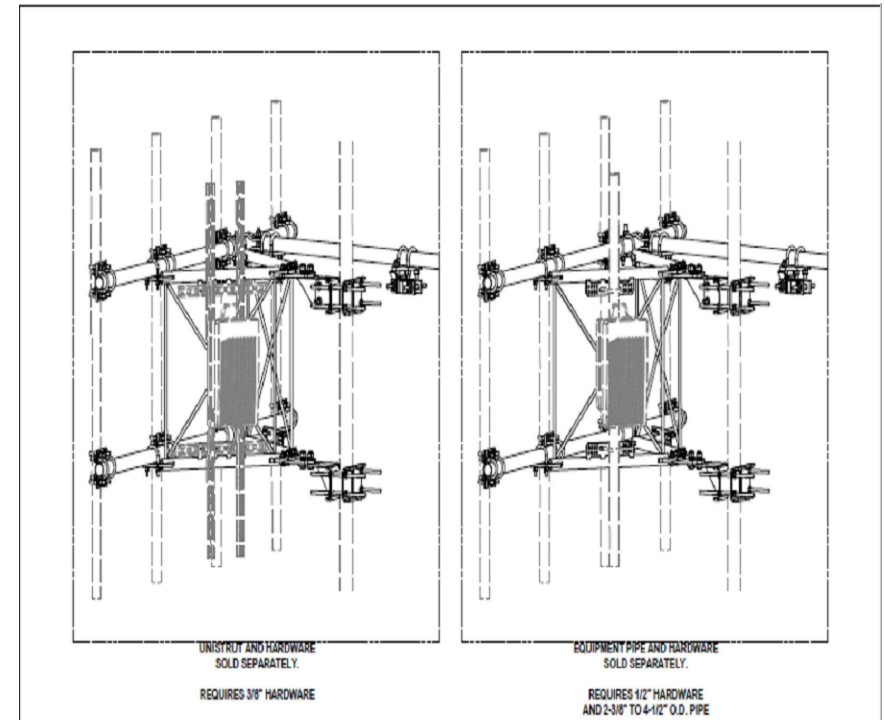
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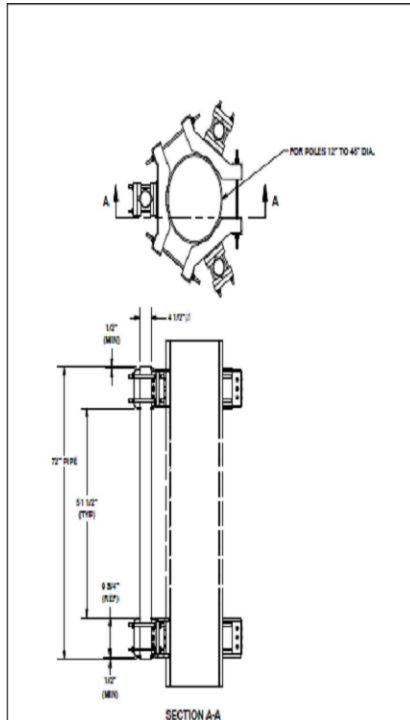
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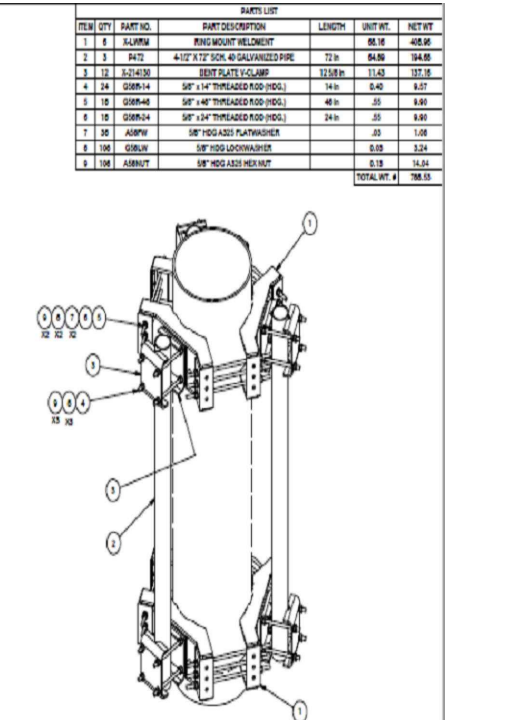
DESCRIPTION: MONOPOLE SECTOR FRAME ATTACHMENT ASSEMBLY

DATE: 01/02/2016

REV: 01/01 CUSTOMER

DATE: 02/02/2016

REV: 02/02/2016



**TOLERANCE NOTES**

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DESCRIPTION: MONOPOLE SECTOR FRAME ATTACHMENT ASSEMBLY

DATE: 01/02/2016

REV: 01/01 CUSTOMER

DATE: 02/02/2016

REV: 02/02/2016

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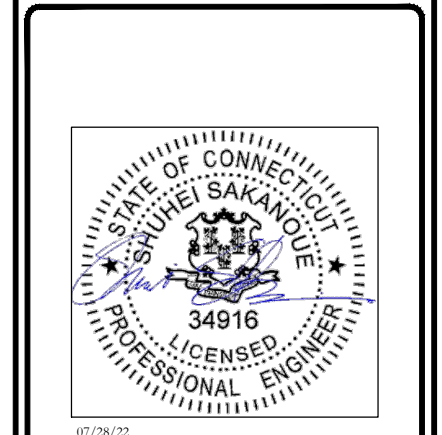
BU #: 842878  
**WINDSOR SOUTH**

1170 MATIANUCK AVENUE  
WINDSOR, CT 06095

EXISTING 100'-0" MONOPOLE

**ISSUED FOR:**

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	06/23/22	RCD	PRELIMINARY	SS
0	07/22/22	RCD	100% FINALS	SS
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SHEET NUMBER: **C-10** REVISION: **1**

1 MOUNTING DETAIL  
SCALE: NOT TO SCALE

# SD050

CUSTOM MODEL

Standby Power Rating  
50KW 60 Hz

**GENERAC** INDUSTRIAL POWER

## Industrial Diesel Generator Set

EPA Emissions Certification: Tier III



### features

#### Generator Set

- PROTOTYPE & TORSIONALLY TESTED
- UL2200 TESTED
- RHINOCAST PAINT SYSTEM
- SOUND LEVEL 1 ENCLOSURE

### benefits

- PROVIDES A PROVEN UNIT
- ENSURES A QUALITY PRODUCT
- IMPROVES RESISTANCE TO ELEMENTS
- 75dBA @ 7 METERS (25FT)

#### Engine

- EPA TIER CERTIFIED
- INDUSTRIAL TESTED, GENERAC APPROVED
- POWER-MATCHED OUTPUT
- INDUSTRIAL GRADE

- ENVIRONMENTALLY FRIENDLY
- ENSURES INDUSTRIAL STANDARDS
- ENGINEERED FOR PERFORMANCE
- IMPROVES LONGEVITY AND RELIABILITY

#### Alternator

- TWO-THIRDS FITCH
- LAYER WOUND ROTOR & STATOR
- CLASS H MATERIALS
- DIGITAL 3-PHASE VOLTAGE CONTROL

- ELIMINATES HARMFUL BIRD HARMONIC
- IMPROVES COOLING
- HEAT TOLERANT DESIGN
- FAST AND ACCURATE RESPONSE

#### Controls

- ENCAPSULATED BOARD W/ SEALED HARNESS
- 4-20mA VOLTAGE TO CURRENT SENSORS
- SURFACE MOUNT TECHNOLOGY
- ADVANCED DIAGNOSTICS & COMMUNICATIONS

- EASY, AFFORDABLE REPLACEMENT
- NOISE RESISTANT 24/7 MONITORING
- PROVIDES VIBRATION RESISTANCE
- HARDENED RELIABILITY

primary codes and standards



## SD050

### application and engineering data

#### ENGINE SPECIFICATIONS

<b>General</b>		<b>Cooling System</b>	
Model	TR60 / FFI	Cooling System Type	Closed
EPA Emissions Compliance	Tier III	Water Pump	Belts Driven Centrifugal
EPA Emissions Reference	See Emissions Data Sheet	Fan Type	Pusher
Generator #	4	Fan Blade Number	2538 (10)
Type	Diesel	Fan Diameter (in.)	44
Displacement - L (cu. in.)	4.5 (27.6)	Coolant Heater Wattage	1500
Bore - mm (in.)	105 (4.1)	Coolant Heater Standard Voltage	120
Stroke - mm (in.)	130 (5.1)	<b>Fuel System</b>	
Compression Ratio	17.5:1	Fuel Type	Ultra Low Sulfur Diesel Fuel
Intake Air Method	Turbocharged	Fuel Specifications	ASTM
Cylinder Head Type	Aluminum	Fuel Filtration (microns)	5
Crankshaft Type	Forged Steel	Fuel Inject Pump Make	Stantyne
Engine Block Type	Cast Iron / Wet Sleeve	Fuel Pump Type	Engine Driven Gear
<b>Engine Governor</b>		Injector Type	Mechanical
Governor	Electronic Isochronous	Engine Type	Direct Injection
Frequency Regulation (Steady State)	±0.25%	Fuel Supply Line - mm (in.)	1/4 Inch Std
<b>Lubrication System</b>		Fuel Return Line - mm (in.)	1/4 Inch Std
Oil Pump Type	Gear	<b>Engine Electrical System</b>	
Oil Filter Type	Full Flow	System Voltage	12VDC
Crankcase Capacity - L (gal)(qt)	13.6 (3.6) (3.4)	Battery Charging Alternator	90 Amp
<b>ALTERNATOR SPECIFICATIONS</b>		Battery Size (at 0°C)	Optima RedTop
Standard Model	390	Battery Group	Full Flow
Style	4	Ground Polarity	Negative
Field Type	Rectifying	Voltage Regulator Type	Digital
Insulation Class - Rotor	H	Number of Senses Phases	4/4
Insulation Class - Stator	F	Regulation Accuracy (Steady State)	±0.25%
Total Harmonic Distortion	< 5.5%	<b>Codes and Standards Compliance (Where Applicable)</b>	
Telephone Interference Factor (TIF)	< 50	NFPA 99	
Standard Excitation	PMG	NFPA 110	
Excitation	Single Sealed Cartridge	ISO 8528-5	
Excitation	Direct, Adjustable Exc.	ISO 1708A-5	
Load Capacity - Standby	100%	ISO 2045	
Load Capacity - Prime	100%	ISO 3046	
Prototype Short Circuit Test	Y	ISO 5534	
		SAE J1349	
		ISO 271	
		IEEE C57.42 TESTING	
		NEMA ICS 1	

#### ALTERNATOR SPECIFICATIONS

Standard Model	390	Voltage Regulator Type	Digital
Style	4	Number of Senses Phases	4/4
Field Type	Rectifying	Regulation Accuracy (Steady State)	±0.25%
Insulation Class - Rotor	H	<b>Codes and Standards Compliance (Where Applicable)</b>	
Insulation Class - Stator	F	NFPA 99	
Total Harmonic Distortion	< 5.5%	NFPA 110	
Telephone Interference Factor (TIF)	< 50	ISO 8528-5	
Standard Excitation	PMG	ISO 1708A-5	
Excitation	Single Sealed Cartridge	ISO 2045	
Excitation	Direct, Adjustable Exc.	ISO 3046	
Load Capacity - Standby	100%	ISO 5534	
Load Capacity - Prime	100%	SAE J1349	
Prototype Short Circuit Test	Y	ISO 271	
		IEEE C57.42 TESTING	
		NEMA ICS 1	

#### CODES AND STANDARDS COMPLIANCE (WHERE APPLICABLE)

NFPA 99	
NFPA 110	
ISO 8528-5	
ISO 1708A-5	
ISO 2045	
ISO 3046	
SAE J1349	
ISO 271	
IEEE C57.42 TESTING	
NEMA ICS 1	

Rating Definitions:  
Standby - Applicable for a varying emergency load for the duration of a utility power outage with no overload capacity. (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.

## SD050

### operating data (60Hz)

#### POWER RATINGS (KW)

Single-Phase 120/240VAC @ 1.0pf	STANDBY	50	Amps	208
Three-Phase 200/208VAC @ 0.8pf				
Three-Phase 200/240VAC @ 0.8pf				
Three-Phase 277/480VAC @ 0.8pf				
Three-Phase 340/600VAC @ 0.8pf				

#### STARTING CAPABILITIES (kVA)

Alternator**	kW	480VAC					300/340VAC				
		20%	25%	30%	35%	40%	20%	25%	30%	35%	
Standard	50	-	-	-	-	26	39	52	65	77	90
Module 1	-	-	-	-	-	-	-	-	-	-	-
Module 2	-	-	-	-	-	-	-	-	-	-	-

#### FUEL

Fuel Pump Lift - (m)	STANDBY	Percent Load		
		gph	lph	
30.9		25%	2.52	5.35
		50%	2.13	4.62
		100%	3.99	11.65

#### COOLING

Coolant System Capacity - Gal (L)	4.5 (17.4)	Coolant Flow per Minute	STANDBY	32.7(123.8)
Maximum Radiator Backpressure	1.5" H <sub>2</sub> O Column	Heat rejection to Coolant	BTU/min	123,000
		Inlet Air	cfm (m <sup>3</sup> /min)	6,360 (180.0)
		Max. Operating Radiator Air Temp	°F (°C)	222(83)
		Max. Operating Ambient Temperature	°F (°C)	122(50)

#### COMBUSTION AIR REQUIREMENTS

Inlet Air at Rated Power	cfm (m <sup>3</sup> /min)	STANDBY	247	(7.00)
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#### EXHAUST

Exhaust Outlet Size (Open Set)	3.0"	Exhaust Flow (Rated Output)	cfm (m <sup>3</sup> /hr)	534(906.7)
Maximum Backpressure (Post-Stack)	1.5" Hg	Minimum Backpressure	INHG (kPa)	1.5 (0.2)
Exhaust Temp (Rated Output)	°F (°C)	Exhaust Temp (Rated Output)	°F (°C)	930(499.0)

#### ENGINE

Rated Engine Speed	rpm	1800
Minimum Power at Rated kW	hp	65
Temperature Deration		Consult Factory
Altitude Deration		Consult Factory

Deration - Operational characteristics consider maximum ambient conditions. Deration factors may apply under atypical site conditions. Please consult a Generac Power Systems Industrial Dealer for additional details. All performance ratings in accordance with ISO 8528-5, ISO 1708A-5 and IEC 60026-1 standards.

## SD050

### standard features and options

#### GENERATOR SET

- Genset Vibration Isolation
- Factory Testing
- Extendable Warranty
- Padlockable Doors
- Steel Enclosure (Enclosed Models)
- Remote Emergency Shutdown

#### ENGINE SYSTEM

- General**
- Oil Drain Extension
- Air Cleaner
- Industrial Exhaust Silencer (Open Sets, ship loose)
- Critical Exhaust Silencer (Enclosed Sets)
- Stainless steel flexible exhaust connection
- Fuel System**
- Primary Fuel Filter with Water Separator
- Flexible Fuel Lines
- 14.5L Fuel Tank, 48 Hr Runtime
- 2 Gal Overflow Containment with Alarm

#### Cooling System

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

#### Engine Electrical System

- Battery charging alternator
- Battery cables
- Battery tray
- 75W 120VAC Battery heater
- Solenoid activated starter motor
- USA UL listed/Regulatory battery charger
- Weather Resistant electrical connections
- Duplex GFCI Convenience Outlet

#### ALTERNATOR SYSTEM

- UL2200 GILProtect™
- 100% Rated 200A Main Line Circuit Breaker

#### CONTROL SYSTEM

- Control Panel**
- Digital In Control Panel - Dual 4x20 Display
- Programmable Crank Limiter
- 7-Day Programmable Exerciser (requires H-Transfer Switch)
- Special Applications Programmable PLC
- RS-232
- RS-485
- All-Phase Sensing DVR
- Full System Status
- Utility Monitoring (Bus, H-Transfer Switch)
- 2-Wire Start Compatible
- Power Output (kW)
- Power Factor
- Reactive Power
- All phase AC Voltage
- All phase Currents
- Oil Pressure
- Coolant Temperature
- Coolant Level
- Low Fuel Pressure Indication
- Engine Speed
- Battery Voltage
- Frequency
- Data/Time Fault History (Event Log)
- UL2200 GILProtect™
- Low-Speed Exercise
- Isynchronous Governor Control
- 4kVdc C - 70dVdc C Operation
- Weather-Resistant Electrical Connections
- Audible Alarms and Shutdowns
- Hot In Auto (Flashing Light)
- On/Off/Manual Switch
- E-Stop (Red Mushroom-Type)
- 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 120 Level 1 and II (Programmable)
- Remote Communication - RS232

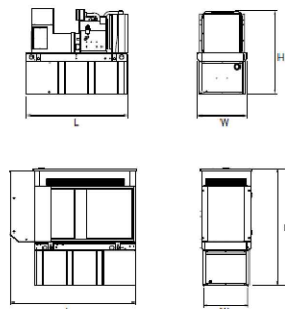
#### Alarms (Programmable Tolerances, Pre-Alarms and Shutdowns)

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

- Other Options
- Single Side Service

## SD050

### dimensions, weights and sound levels



OPEN SET		TANK SIZE	
RUNTIME HOURS	CAPACITY (GAL)	VOLUMES	L W H WT (kwt)
48	210	210	70 38 87 8400

LEVEL 2 SOUND ENCLOSURE		TANK SIZE	
RUNTIME HOURS	CAPACITY (GAL)	VOLUMES	L W H WT (kwt)
48	210	210	34.8 38 95 8935

\*Required gallons based on 100% of standby rating. Weights consider steel enclosure and are without fuel in tank. Sound levels measured at 20% (70%) and does not account for ambient site conditions.

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T-MOBILE SITE NUMBER:  
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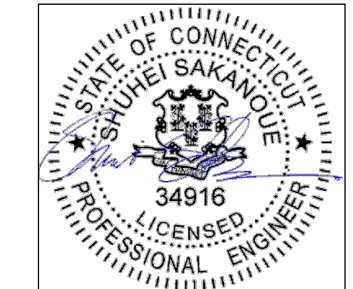
BU #: 842878  
WINDSOR SOUTH

1170 MATIANUCK AVENUE  
WINDSOR, CT 06095

EXISTING 100'-0" MONOPOLE

### ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	06/23/22	RCD	PRELIMINARY	SS
0	07/22/22	RCD	100% FINALS	SS
1	07/28/22	FP	100% FINALS	--



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SHEET NUMBER: C-11  
REVISION: 1



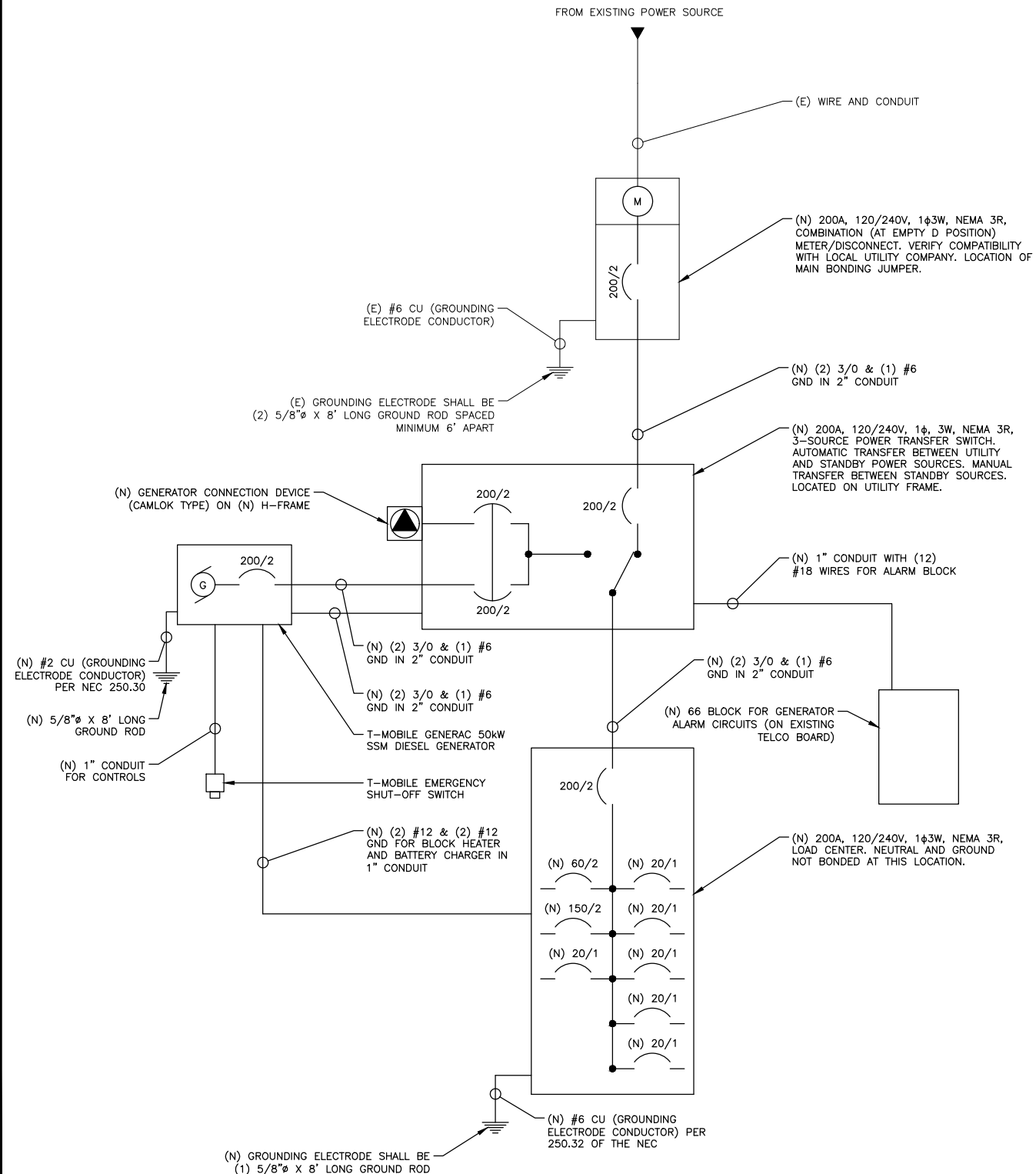
PANELBOARD "T-MOBILE" SCHEDULE											
MAIN: 200 AMP MAIN BREAKER				VOLTAGE/PHASE: 120/240V, 1-PHASE, 3-WIRE							
MOUNTING: H-FRAME				ENCLOSURE: NEMA 3R				SURGE PROTECTION DEVICE: YES			
BUS: 200 AMP				MANUFACTURER: V.I.F.				MODEL NUMBER: V.I.F.			
DESCRIPTION	LOAD (VA)	C or NC	C/B	CIR No.	LOAD (VA)		CIR No.	C/B	C or NC	LOAD (VA)	DESCRIPTION
					A-PHASE	B-PHASE					
SURGE SUPPRESSION	1	NC	60	1	1921		2	20	NC	1920	GEN BLOCK HEATER
	1				3		1921	4	20	NC	1920
6160	7000	C	100	5	7200		6	20	NC	200	LIGHT
	7000				7		7180	8	20	NC	180
6161 GFI	180	NC	20	9	360		10	20	NC	180	TELCO GFI
				11			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	C = CONTINUOUS LOAD; NC = NON-CONTINUOUS LOAD				
TOTAL LOAD (VA) =					11231	10851					
TOTAL LOAD (A) =					94	90					

ALL LOADS ARE EXISTING UNLESS NOTED OTHERWISE.

1 AC PANEL SCHEDULE  
SCALE: NOT TO SCALE

NOTES:

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



2 ONE LINE DIAGRAM  
SCALE: NOT TO SCALE

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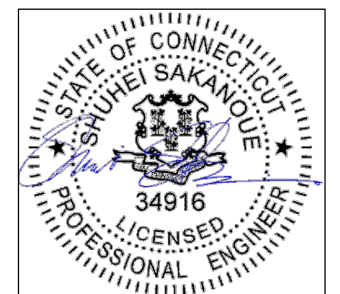
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SHEET NUMBER:

E-1

REVISION:

1

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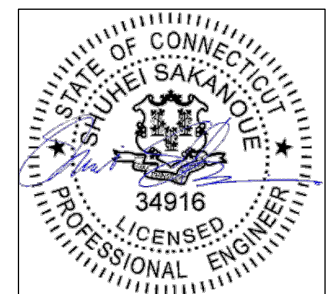
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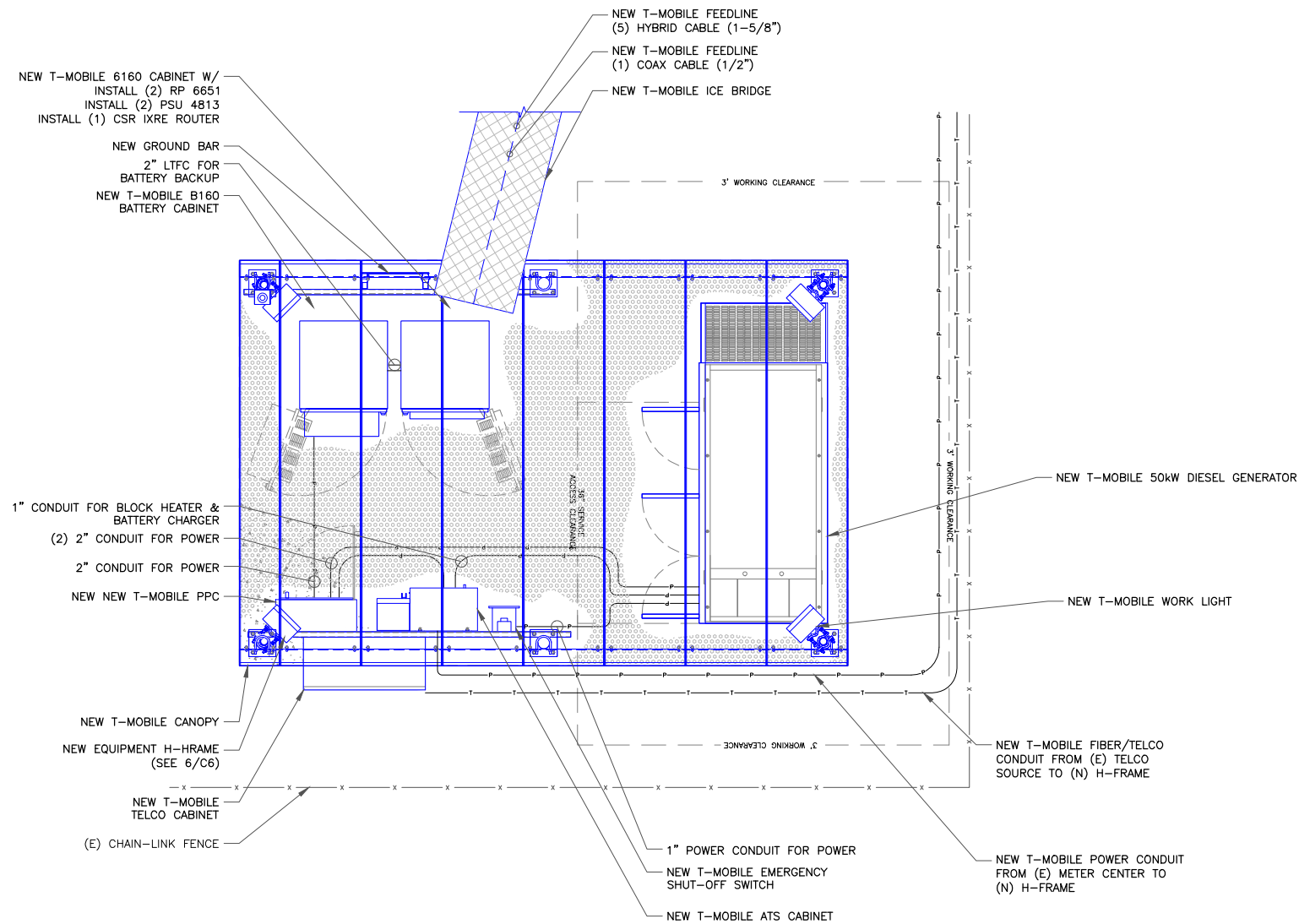
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SHEET NUMBER:

**E-2**

REVISION:

**1**



**NOTE:**

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

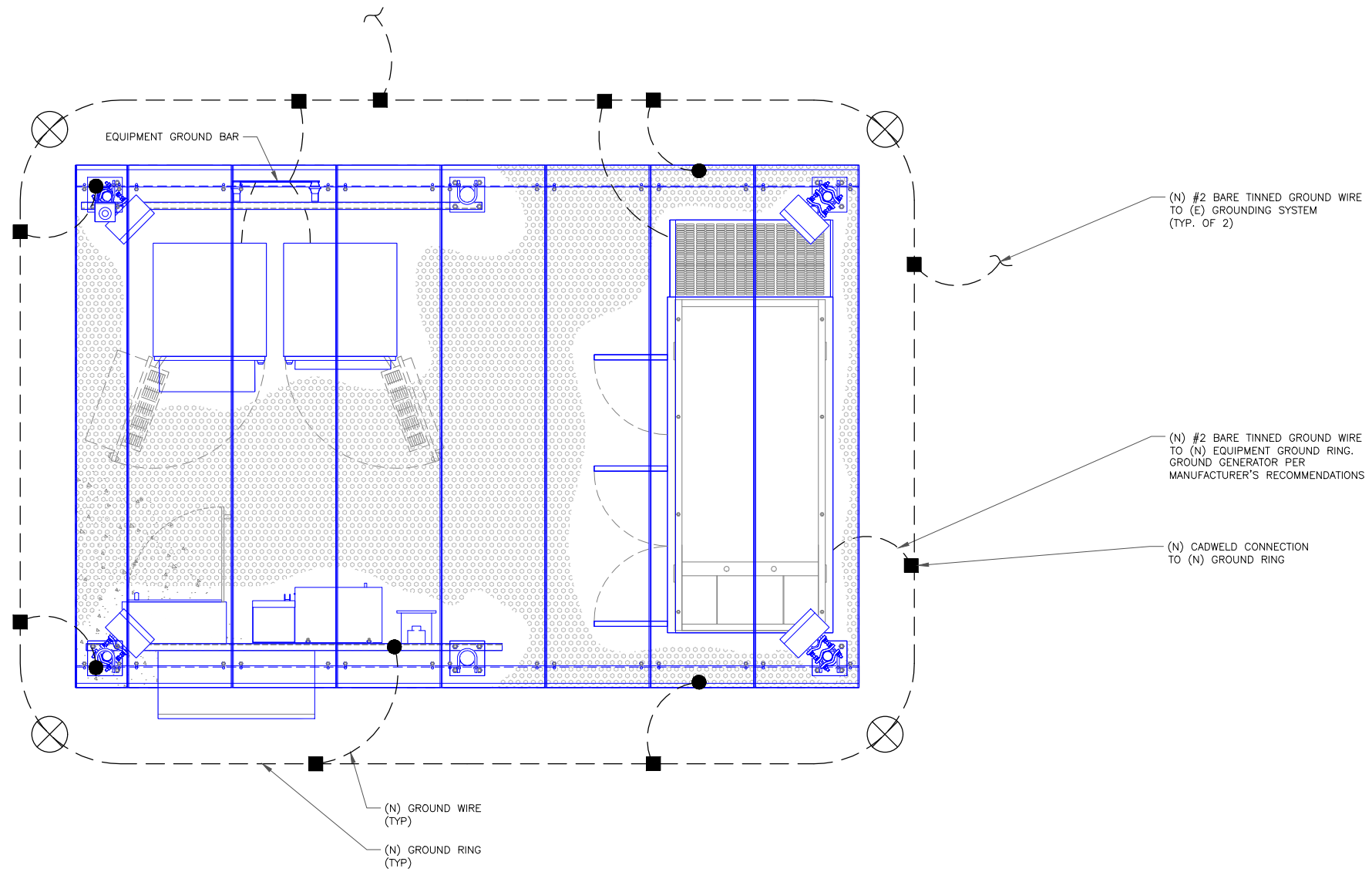
ELECTRICAL DISTRIBUTION:	TELCO DISTRIBUTION:
<ul style="list-style-type: none"> <li>(1) 2" FROM POWER SOURCE TO ATS (FOR POWER)</li> <li>(2) 2" FROM ATS TO GEN (FOR POWER)</li> <li>(1) 2" FROM ATS TO PPC (FOR POWER)</li> <li>(1) 1" FROM PPC TO GEN (FOR GEN BATT CHARGER &amp; GEN BLOCK HEATER)</li> <li>(1) 2" FROM PPC TO 6160 (FOR POWER)</li> <li>(1) 2" FROM 6160 TO B160 (FOR DISTRIBUTION)</li> <li>(1) 1" FROM GEN TO EMERGENCY STOP (FOR CONTROLS)</li> </ul>	<ul style="list-style-type: none"> <li>(1) 2" FROM TELCO SOURCE TO TELCO CAB (FOR TELCO)</li> <li>(1) 1" FROM ATS TO TELCO CAB (FOR ALARM)</li> <li>(1) 1" FROM TELCO CAB TO 6160 (FOR TELCO)</li> </ul>

1 UTILITY ROUTING  
SCALE: NOT TO SCALE



- GROUNDING PLAN LEGEND:**
- GROUND WIRE
  - EXOTHERMIC WELD
  - MECHANICAL CONNECTION
  - ⊗ NEW GROUND ROD, 5/8" x 10'

- 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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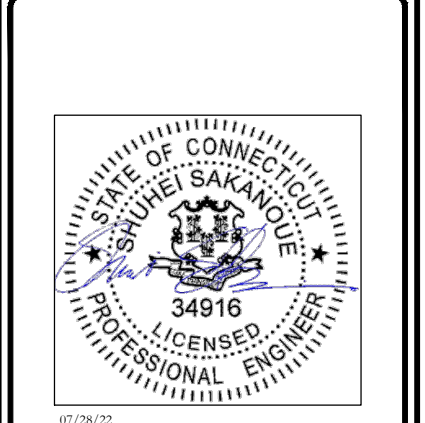
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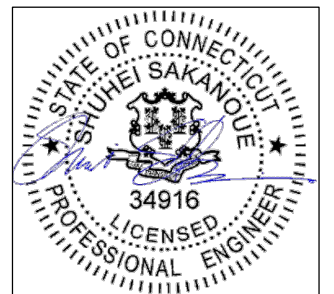
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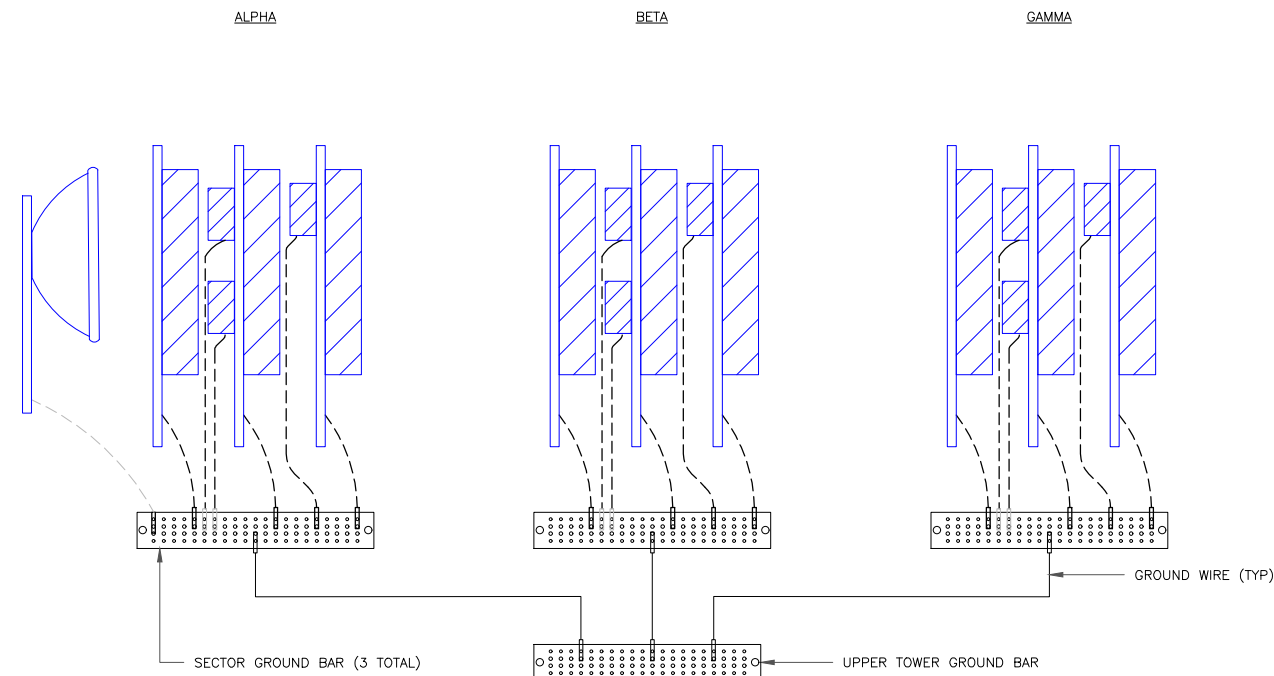
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**G-2**

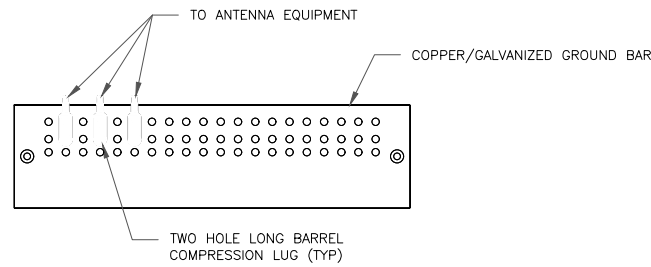
REVISION:

**1**



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

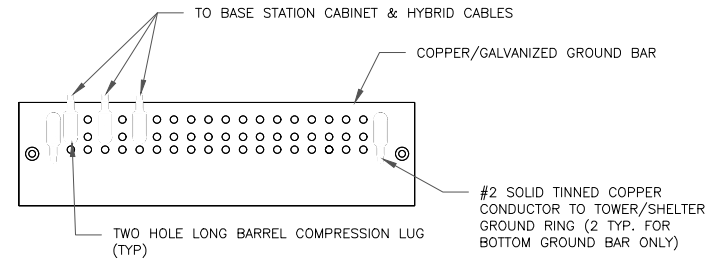
**1** ANTENNA GROUNDING DIAGRAM  
SCALE: NOT TO SCALE



**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.

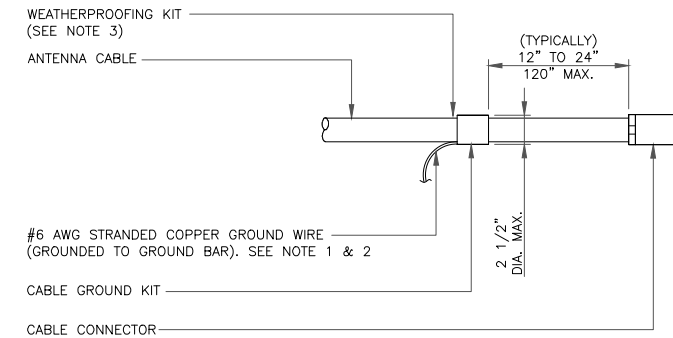
1 ANTENNA SECTOR GROUND BAR DETAIL  
SCALE: NOT TO SCALE



**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.

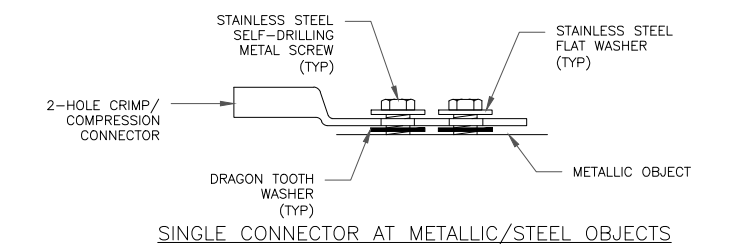
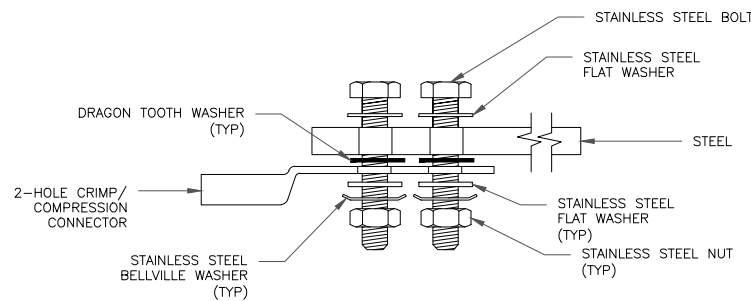
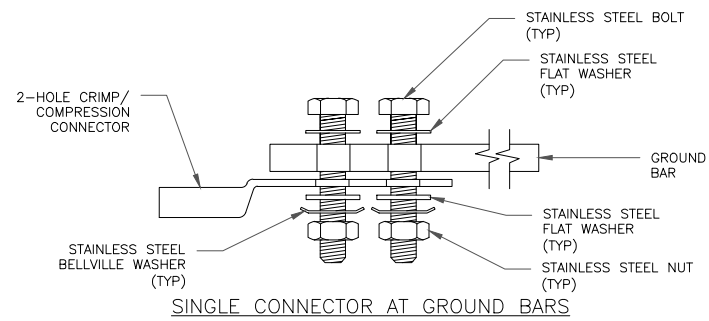
2 TOWER/SHELTER GROUND BAR DETAIL  
SCALE: NOT TO SCALE



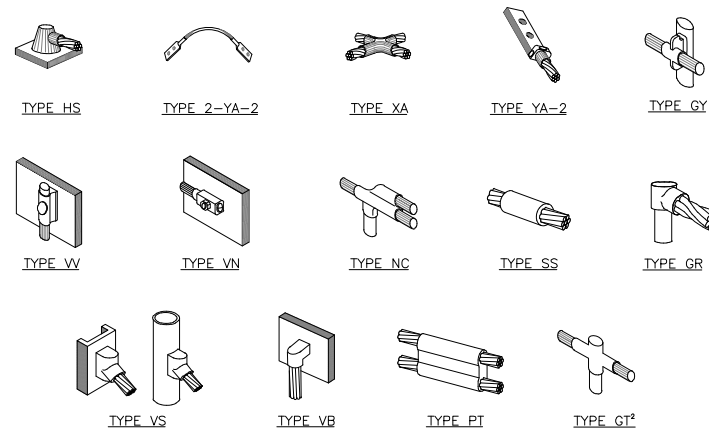
**NOTES:**

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



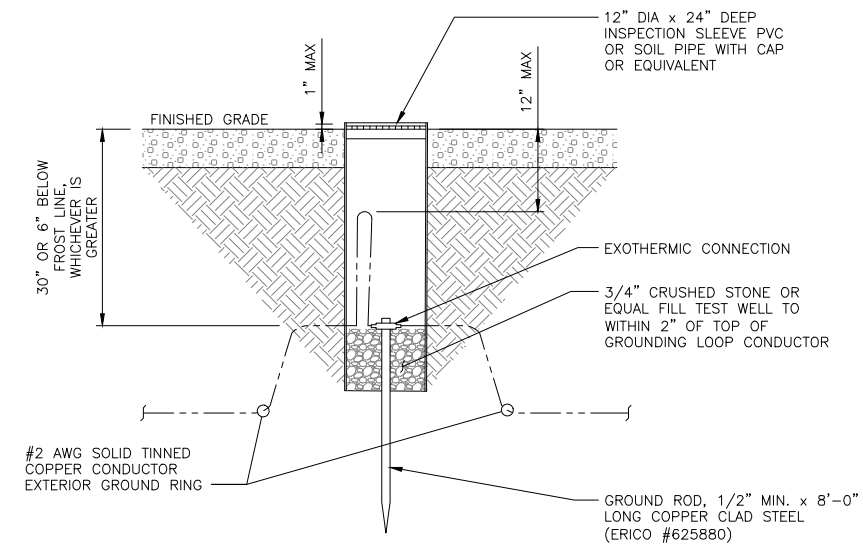
4 HARDWARE DETAIL FOR EXTERIOR CONNECTIONS  
SCALE: NOT TO SCALE



**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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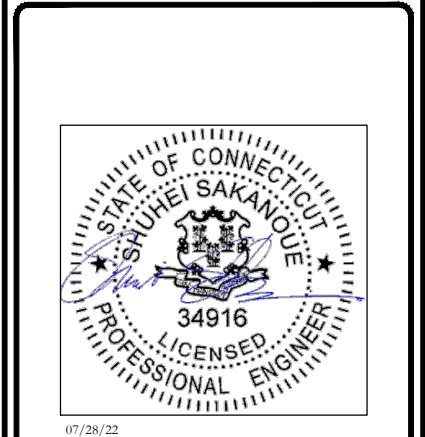
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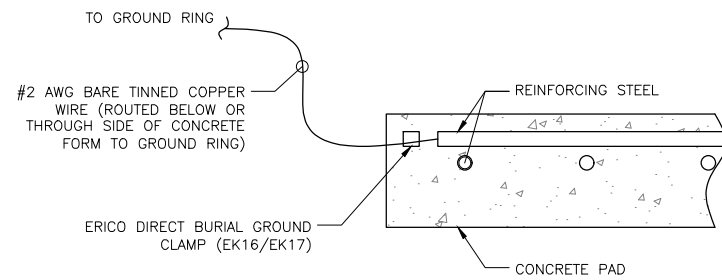
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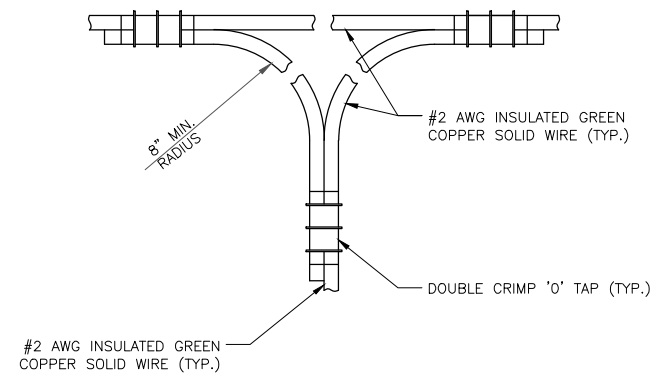
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SHEET NUMBER: **G-3** REVISION: **1**



1 REBAR GROUNDING DETAIL  
SCALE: NOT TO SCALE



2 CONNECTION TO GROUND RING  
SCALE: NOT TO SCALE

3 NOT USED  
SCALE: NOT TO SCALE

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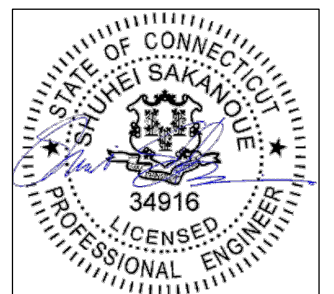
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4 NOT USED  
SCALE: NOT TO SCALE

5 NOT USED  
SCALE: NOT TO SCALE

6 NOT USED  
SCALE: NOT TO SCALE