



Northeast Site Solutions
Denise Sabo
4 Angela's Way, Burlington CT 06013
203-435-3640
denise@northeastsitesolutions.com

December 1, 2021

Members of the Siting Council
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051

RE: Exempt Modification Application
1218 Cromwell Avenue, Rocky Hill CT 06067
Latitude: 41.637028
Longitude: -72.673333
Site#: 801366_Crown_VZW

Dear Ms. Bachman:

Verizon Wireless is requesting to file an exempt modification for an existing tower located at 1218 Cromwell Avenue, Rocky Hill CT 06067. Verizon Wireless currently maintains nine (9) antennas at the 150-foot level of the existing 173-foot tower. The property is owned by Tabshey Development LLC, and the tower is owned by Crown Castle. Verizon now intends to add three (3) new antenna 700/850/2100 MHz antenna. The new antennas would be installed at the 150-foot level of the tower. This modification includes hardware that is both 4G (LTE), and 5G capable. Mount modifications will be required per the enclosed Mount analysis performed by Maser Consulting dated April 30, 2021.

VZW Planned Modifications:

Remove: (3) RRH

Remove and Replace:

(3) Nokia UHIE RRH (REMOVE) – (3) Samsung B2/B66A -BRO49 – RFV01U-D1A RRU(REPLACE)
(3) Nokia UHFA B25 RRH (REMOVE) – (3) Samsung B5/B13 -BRO4C – RFV01U-D2A RRU (REPLACE)

Install New:

(3) MT6407-77A Antenna MHz
(1) 1-1/4" Hybrid

Existing to Remain:

(3) LNX 8513DS-A1M Antenna MHz
(6) SBNHH-1D65B Antenna MHz
(2) Raycap
(1) 1-1/4" Hybrid
(6) 1-5/8" Coax



The facility was approved by the Town of Rocky Hill Planning and Zoning Commission, the town no longer has the approval on file. Please see attached.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to The Honorable Lisa J. Marotta, Mayor for the Town of Rocky Hill, Kim Ricci, Town Planner, Crown Castle as the tower owner, and Tabshey Development LLC, the property owner.

The planned modifications to the facility fall squarely within those activities explicitly provided for in R.C.S.A. § 16-50j-72(b)(2).

1. The proposed modifications will not result in an increase in the height of the existing structure.
2. The proposed modifications will not require the extension of the site boundary.
3. The proposed modifications 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 Communications Commission safety standard.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The existing structure and its foundation can support the proposed loading.

For the foregoing reasons, Verizon Wireless respectfully submits that the proposed modifications to the above referenced telecommunications facility constitute an exempt modification under R.C.S.A. § 16-50j-72(b)(2).

Sincerely,

Denise Sabo
Mobile: 203-435-3640
Fax: 413-521-0558
Office: 4 Angela's Way, Burlington CT 06013
Email: denise@northeastsitesolutions.com



Attachments

cc:

The Honorable Lisa J. Marotta – Mayor
Town of Rocky Hill 761 Old Main Street Rocky Hill, CT 06067

Kim Ricci, Town Planner
Town of Rocky Hill 761 Old Main Street Rocky Hill, CT 06067

Tabshey Development LLC, Property Owner
1218 Cromwell Avenue, Rocky Hill CT 06067

Crown Castle, Tower Owner

Exhibit A

Original Facility Approval

Denise Sabo

From: Denise Sabo
Sent: Thursday, November 4, 2021 4:19 PM
To: 'David Palmberg'; Victoria Masse; 'Kim Ricci'
Cc: Deborah Chase; 'Kim Ricci'
Subject: RE: 1218 Cromwell Ave, Rocky Hill (Crown/Dish) Request for Original Tower Build Permit

Thank you, David. I appreciate you looking into this matter.

Best regards,
Denise

From: David Palmberg <dpalmberg@rockyhillct.gov>
Sent: Thursday, November 4, 2021 4:06 PM
To: Denise Sabo <denise@northeastsitesolutions.com>; Victoria Masse <victoria@northeastsitesolutions.com>; Kim Ricci <kricci@rockyhillct.gov>
Cc: Deborah Chase <deborah@northeastsitesolutions.com>; Kim Ricci <kricci@rockyhillct.gov>
Subject: RE: 1218 Cromwell Ave, Rocky Hill (Crown/Dish) Request for Original Tower Build Permit

We are unable to locate the original approval other than plans signed by the Chairman of the Planning & Zoning Commission.

David Palmberg
Asst. Town Planner / ZEO
Town of Rocky Hill
761 Old Main Street
Rocky Hill, CT 06067

860-258-7675

From: Denise Sabo <denise@northeastsitesolutions.com>
Sent: Thursday, November 4, 2021 3:38 PM
To: Victoria Masse <victoria@northeastsitesolutions.com>; Kim Ricci <kricci@rockyhillct.gov>; David Palmberg <dpalmberg@rockyhillct.gov>
Cc: Deborah Chase <deborah@northeastsitesolutions.com>
Subject: RE: 1218 Cromwell Ave, Rocky Hill (Crown/Dish) Request for Original Tower Build Permit
Importance: High

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or clicking links, especially from unknown senders.

Good afternoon,

We have been trying to reach you regarding the original approval of the cell tower located at 1218 Cromwell Ave, Rocky Hill.

We have to supply a copy to the CT Siting Council when we submit an application. If the approval is no longer available we just need to know. Please advise so we can complete this application.

Let me know if you have any questions.

Thank you,

Denise

Denise Sabo

Project Manager

Mobile: 203-435-3640

Fax: 413-521-0558

Email: denise@northeastsitesolutions.com



From: Victoria Masse <victoria@northeastsitesolutions.com>

Sent: Wednesday, November 3, 2021 11:02 AM

To: kricci@rockyhillct.gov; dpalmberg@rockyhillct.gov

Cc: Denise Sabo <denise@northeastsitesolutions.com>; Deborah Chase <deborah@northeastsitesolutions.com>

Subject: 1218 Cromwell Ave, Rocky Hill (Crown/Dish) Request for Original Tower Build Permit

Good Morning Kim,

I just left you a voicemail in regards to the Tower located at **1218 Cromwell Ave.**

We are preparing to file for a zoning permit with the Connecticut Siting Council and part of their requirements is that we provide proof of the original tower build that calls out the height of the tower when it was originally constructed.

This original approval is not located on the Siting Council website so we will need a copy of the original permit from your records or a notice stating that you do not have a record of the original tower build.

Attached to this email is the property card for this address.

Please feel free to contact me any time to further discuss, I can be reached at 860-306-2326.

Thank you

--

Victoria Masse

Zoning & Permitting Specialist

Notary Public

Mobile: 860-306-2326

Office: 420 Main Street Unit 1 Box 2 Sturbridge, MA 01566

Email: victoria@northeastsitesolutions.com

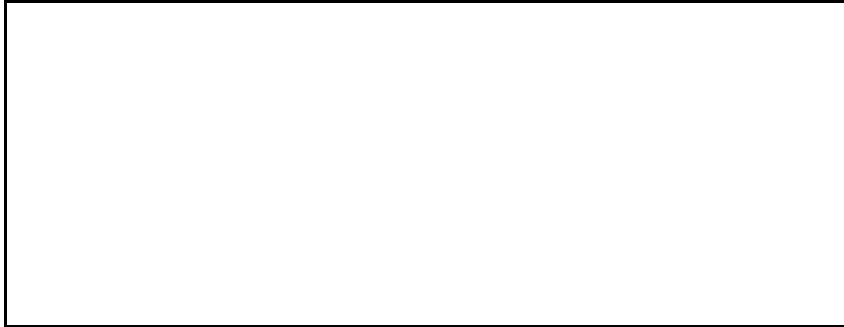


Exhibit B

Property Card

Situs : 1218 CROMWELL AVENUE

PARCEL ID: 2257

Class: 300

Card: 1 of 1

Printed: March 5, 2020

CURRENT OWNER

TABSHEY DEVELOPMENT LLC
1218 CROMWELL AVENUE
ROCKY HILL CT 06067-3741
354/236 02/23/2000

GENERAL INFORMATION

Living Units
Neighborhood I
Alternate ID 002288
Vol / Pg 354/236
Map/Lot 20-016
Zoning BP
Class INDUSTRIAL

20-016-001 11/11/2012

Property Notes

Land Information

Type	Size	Influence Factors	Influence %	Value
Primary	AC	2.0000		375,000
Excess	AC	2.8500		57,000

Total Acres: 4.85
Spot:

Location:

Assessment Information

	Assessed	Appraised	Cost	Income	Market
Land	302,400	432,000	432,000	0	0
Building	312,690	446,700	446,700	0	0
Total	615,090	878,700	878,700	0	0

Manual Override Reason

Base Date of Value

Value Flag COST SUPPRESS INC
Gross Building: Effective Date of Value

Entrance Information

Date	ID	Entry Code	Source
01/09/11	ST	Measured & Listed	From Conversion
05/17/10	CL	Court Decision	From Conversion
04/28/09	CL	Baa Change	From Conversion
02/20/09	ST	Hearing No Change	From Conversion
07/28/08	ST	Reval Inspection	Owner

Permit Information

Date Issued	Number	Price	Purpose	% Complete	
08/09/17	2018-60	15,000	CM	Replacing Antenna Panels And Ad	0
04/05/16	2016-372	15,000	MS	Adding 3 Antenna'S On Existing To	100
10/27/14	2015-181		CM	Adding 3 Antennas On Existing To	100
09/24/13	2014-0120	5,000	CM	Swap Out One Antenna With A Ne	100
08/23/11	2012-0043	4,000	CM	Wire New Addition	100

Sales/Ownership History

Transfer Date	Price	Type	Validity	Deed Reference	Deed Type	Grantee
02/23/00		Vacant - Land Only Sale	No Consideration	354/236	No Consideration	TABSHEY DEVELOPMENT LLC

Inspection Witnessed By _____

Situs : 1218 CROMWELL AVENUE	Parcel Id: 2257	Class: 300	Card: 1 of 1	Printed: March 5, 2020
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Building Information		Building Other Features													
Year Built/Eff Year	1965 /	Line	Type	+/-	Meas1	Meas2	# Stops	Ident Units	Line	Type	+/-	Meas1	Meas2	# Stops	Ident Units
Building #	1	1	Ovrhd Dr 14'		5	1		1							
Structure Type	Warehouse														
Identical Units	1														
Total Units	1														
Grade	C														
# Covered Parking															
# Uncovered Parking															
DBA	CELL TOWER SITE														

Interior/Exterior Information															
Line	Level From - To		Int Fin	Area	Perim	Use Type	Wall Height	Ext Walls	Construction	Partitions	Heating	Cooling	Plumbing	Physical	Functional
1	01	01		5,000	282	Warehouse	12	Concrete Bl	Wood Frame/Joist/B	Normal	Hot Air	None	Normal	2	3
2	01	01		1,525	156	Warehouse	12	Concrete Bl	Wood Frame/Joist/B	Normal	Hot Air	None	Normal	2	3
3	M1	M1		1,000	126	Warehouse	12	Concrete Bl	Wood Frame/Joist/B	Normal	Hot Air	None	Normal	2	3

Interior/Exterior Valuation Detail					
Line	Area	Use Type	% Good	% Complete	Use Value/RCNLD
1	5,000	Warehouse	40		124,740
2	1,525	Warehouse	40		41,050
3	1,000	Warehouse	40		26,170

Outbuilding Data									
Line	Type	Yr Blt	Meas1	Meas2	Qty	Area	Grade	Phy Fun	Value
1	Cell Bldg	1998			1	460	C	A	69,000
2	Tower Cell	1998			1	150	C	G	180,000
3	Asph Pav	1965			1	6,000	C	P	5,780

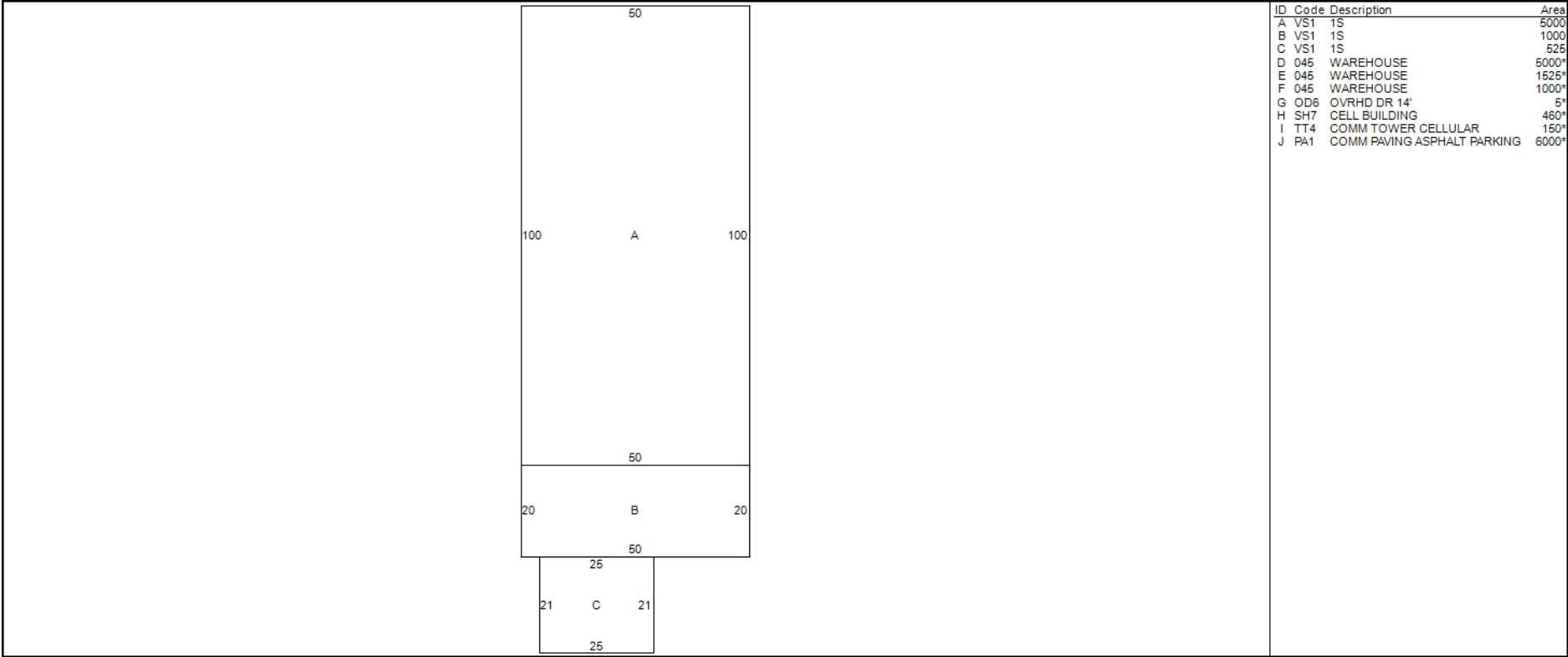
Situs : 1218 CROMWELL AVENUE

Parcel Id: 2257

Class: 300

Card: 1 of 1

Printed: March 5, 2020



Additional Property Photos



Situs : 1218 CROMWELL AVENUE	Parcel Id: 2257	Class: 300	Card: 1 of 1	Printed: March 5, 2020
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Income Detail (Includes all Buildings on Parcel)																		
Use Grp	Mod Type	Inc Mod	Model Description	Units	Net Area	Income Rate	Econ Adjust	Potential Gross Income	Vac Model	Vac Adj	Additional Income	Effective Gross Income	Expense Model %	Expense Adj %	Expense Adj	Other Expenses	Total Expenses	Net Operating Income
07	S	1	Lt Manufacturing	0	7,525	6.00		45,150	5		0	42,893	10			4,289	4,289	38,604

Apartment Detail - Building 1 of 1								Building Cost Detail - Building 1 of 1	
Line	Use Type	Per Bldg	Beds	Baths	Units	Rent	Income		
								Total Gross Building Area	7,525
								Replace, Cost New Less Depr	191,960
								Percent Complete	100
								Number of Identical Units	1
								Economic Condition Factor	
								Final Building Value	191,960
								Value per SF	25.51

Notes - Building 1 of 1								Income Summary (Includes all Building on Parcel)	
								Total Net Income	38,604
								Capitalization Rate	0.100000
								Sub total	386,040
								Residual Land Value	
								Final Income Value	386,040
								Total Gross Rent Area	7,525
								Total Gross Building Area	7,525

Exhibit C

Construction Drawings



VERIZON SITE NUMBER: 675026

VERIZON SITE NAME: ROCKY HILL 2 CT

SITE TYPE: MONOPOLE

TOWER HEIGHT: 173'-0"

BUSINESS UNIT #: 801366

SITE ADDRESS: 1218 CROMWELL AVE
ROCKY HILL, CT 06067

COUNTY: HARTFORD

JURISDICTION: TOWN OF ROCKY HILL

VERIZON 5G L-SUB6 - CARRIER ADD / FUZE ID: 16232037

SITE INFORMATION	
CROWN CASTLE USA INC. SITE NAME:	ROCKY HILL 2
SITE ADDRESS:	1218 CROMWELL AVE ROCKY HILL, CT 06067
COUNTY:	HARTFORD
MAP/PARCEL #:	20-016/2257
AREA OF CONSTRUCTION:	EXISTING
LATITUDE:	41° 38' 16.50" N
LONGITUDE:	72° 40' 24.20" W
LAT/LONG TYPE:	NAD83
GROUND ELEVATION:	----
CURRENT ZONING:	BP
ZONING JURISDICTION:	CONNECTICUT SITING COUNCIL
JURISDICTION:	TOWN OF ROCKY HILL
OCCUPANCY CLASSIFICATION:	CLASS : 300
TYPE OF CONSTRUCTION:	INDUSTRIAL
A.D.A. COMPLIANCE:	FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION
PROPERTY OWNER:	TABSHEY DEVELOPMENT LLC 1218 CROMWELL AVENUE ROCKY HILL CT 06067-3741
TOWER OWNER:	CROWN CASTLE MU LLC 2000 CORPORATE DRIVE CANONSBURG, PA 15317
CARRIER/APPLICANT:	VERIZON WIRELESS 180 WASHINGTON VALLEY ROAD BEDMINSTER, NJ 07921
ELECTRIC PROVIDER:	CL & P (800)286-2000
TELCO PROVIDER:	VERIZON (800) 483-2000

PROJECT TEAM	
A&E FIRM:	TECTONIC ENGINEERING & SURVEYING CONSULTANT P.C. 1279 ROUTE 300 NEWBURGH, NY 12550 PHONE: (845) 567-6656
CROWN CASTLE USA INC. DISTRICT CONTACTS:	1200 MACARTHUR BLVD, SUITE 200 MAHWAH, NJ 07430
	----- PROJECT MANAGER

	----- CONSTRUCTION MANAGER

VERIZON CONTACT:	-----

DRAWING INDEX	
SHEET #	SHEET DESCRIPTION
T-1	TITLE SHEET
T-2	GENERAL NOTES
C-1	SITE PLAN
C-2	TOWER ELEVATION & ANTENNA PLANS
C-3	EQUIPMENT SCHEDULES
C-4	EQUIPMENT DETAILS
C-5	EQUIPMENT DETAILS
C-6	PLUMBING DIAGRAM
G-1	GROUNDING DETAILS
G-2	GROUNDING DETAILS
ALL DRAWINGS CONTAINED HEREIN ARE FORMATTED FOR 11X17. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.	

APPROVALS	
SIGNATURE	DATE
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

CONTRACTOR PMI REQUIREMENTS		
PMI ACCESSED AT	https://pmi.vxwsmart.com	
SMART TOOL VENDOR		
PROJECT NUMBER	10061733	
VzW LOCATION CODE (PSLC)	468294	
*** PMI AND REQUIREMENTS ALSO EMBEDDED IN MOUNT ANALYSIS REPORT		

MOUNT MODIFICATION REQUIRED	Y
VzW APPROVED SMART KIT VENDORS	
REFER TO MOUNT MODIFICATION DRAWINGS PAGE FOR VzW SMART KIT APPROVED VENDORS	

LOCATION MAP

DRIVING DIRECTIONS FROM VERIZON LOCAL OFFICE (180 WASHINGTON VALLEY RD, BEDMINSTER, NJ 07921)
FOLLOW US-202 N/US-206 N AND SCHLEY MOUNTAIN RD TO I-287 N. HEAD NORTHWEST. SLIGHT LEFT. TURN RIGHT ONTO US-202 N/US-206 N. TURN RIGHT ONTO SCHLEY MOUNTAIN RD. TAKE EXIT 9 S-N TOWARD HUTCHINSON PKWY/MERRITT PKWY. MERGE WITH WESTCHESTER AVE. USE THE RIGHT LANE TO TAKE THE RAMP TO WESTCHESTER AVE/NORTH HUTCHINSON PKWY/MERRITT PKWY. MERGE WITH HUTCHINSON RIVER PKWY N. KEEP RIGHT AT THE Y JUNCTION TO STAY ON HUTCHINSON RIVER PKWY N. ENTERING CONNECTICUT. CONTINUE ONTO CT-45 N. TAKE EXIT 68 N-E TO MERGE WITH I-91 N TOWARD CT-66 E/HARTFORD/MIDDLETOWN. TAKE EXIT 23 FOR WEST ST TOWARD STATE ROUTE 3/ROCKY HILL. TURN RIGHT ONTO STATE HWY 411/WEST ST. TURN RIGHT ONTO CAPITAL BLVD. TURN RIGHT ONTO HENKEL WAY. TURN RIGHT ONTO BROOK ST. TURN LEFT. TURN RIGHT.

APPLICABLE CODES/REFERENCE DOCUMENTS

ALL WORK SHALL BE PERFORMED AND MATERIALS INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THESE CODES:

CODE TYPE	CODE
BUILDING	2018 CT IBC
MECHANICAL	2018 CT IMC
ELECTRICAL	2017 NEC

REFERENCE DOCUMENTS:

STRUCTURAL ANALYSIS:	TOWER ENGINEERING PROFESSIONALS (PASSING)
DATED:	05/06/2021
MOUNT ANALYSIS:	MASER CONSULTING (MODIFICATION)
DATED:	07/13/2021
RFDS REVISION:	-
DATED:	09/28/2021
ORDER ID:	552687
REVISION:	0

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

PROJECT DESCRIPTION

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

TOWER SCOPE OF WORK:

- REMOVE (9) RRHS
- REMOVE (1) OVP
- REMOVE (1) HYBRIFLEX
- INSTALL (3) ANTENNAS
- INSTALL (6) RRHS
- INSTALL (1) OVP
- INSTALL (1) HYBRIFLEX

GROUND SCOPE OF WORK:

NONE

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

180 WASHINGTON VALLEY ROAD
BEDMINSTER, NJ 07921

CROWN CASTLE

1200 MACARTHUR BLVD, SUITE 200
MAHWAH, NJ 07430

PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.

Tectonic Engineering & Surveying Consultants P.C.
70 Pleasant Hill Road
P.O. Box 37
Mountainville, NY 10953
Phone: (845) 534-8888
(800) 528-8531
www.tectonicengineering.com

Project Contact Info
1279 Route 300
Newburgh, NY 12550
Phone: (845) 567-8866

TECTONIC WO#: 10545.ROCKY HILL 2 CT

VERIZON SITE NUMBER: 675026

BU #: 801366
ROCKY HILL 2

1218 CROMWELL AVE
ROCKY HILL, CT 06067

EXISTING
173'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES/QA
0	06/01/21	VS	PRELIMINARY	----
1	06/28/21	JT	REVISED CENTERLINE	----
2	10/26/21	TL	PER COMMENTS	----

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: 2

CROWN CASTLE USA INC. SITE ACTIVITY REQUIREMENTS:

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

GREENFIELD GROUNDING NOTES:

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

GENERAL NOTES:

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

CONCRETE, FOUNDATIONS, AND REINFORCING STEEL:

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

ELECTRICAL INSTALLATION NOTES:

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

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

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

ABBREVIATIONS:

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



TECTONIC WO#: 10545.ROCKY HILL 2 CT

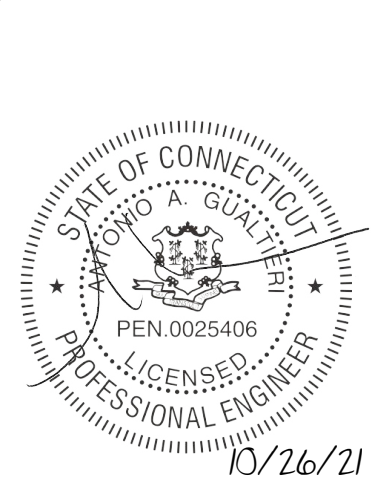
VERIZON SITE NUMBER:
675026

BU #: 801366
ROCKY HILL 2

1218 CROMWELL AVE
ROCKY HILL, CT 06067

EXISTING
173'-0" MONOPOLE

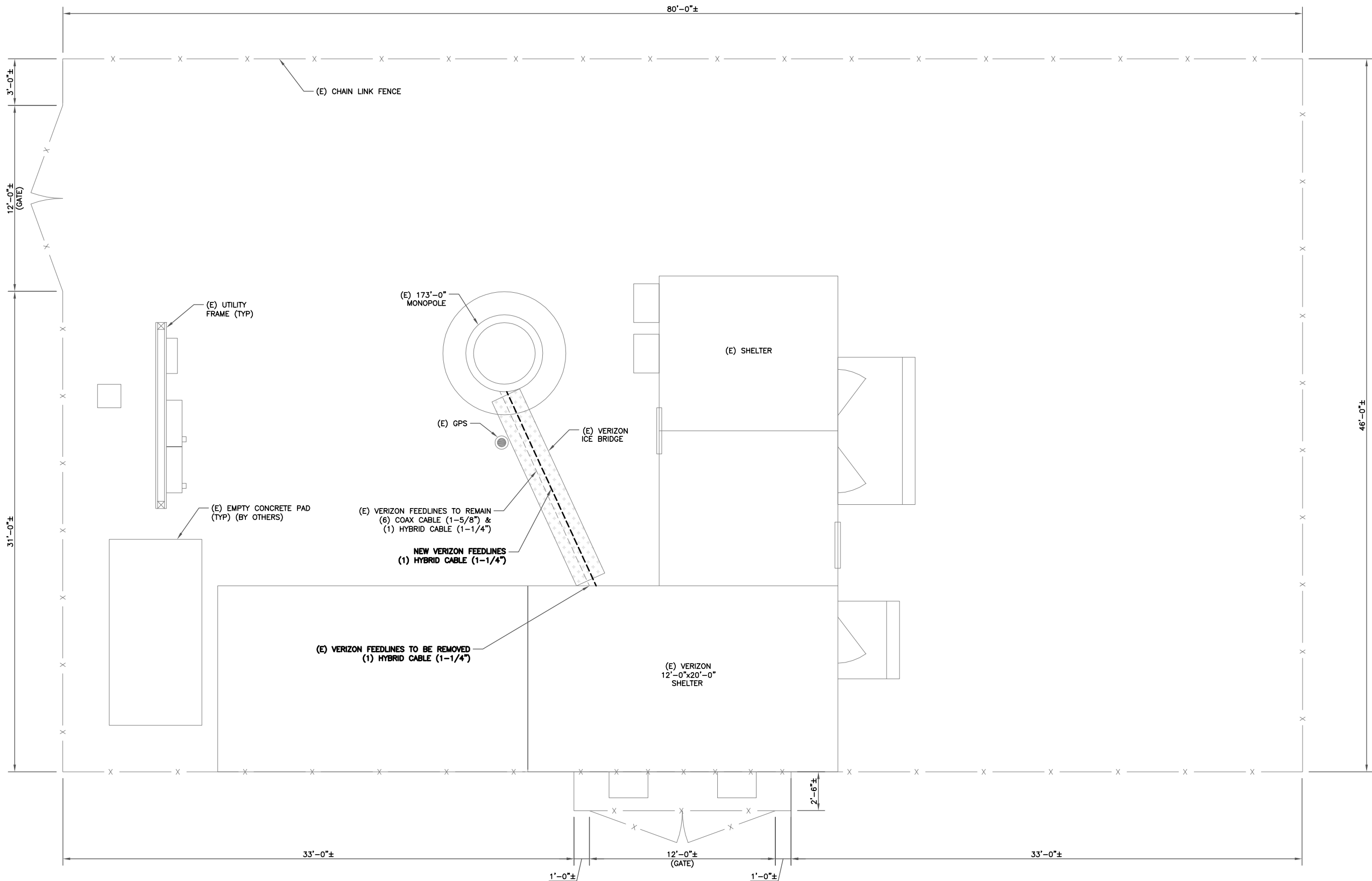
ISSUED FOR:				
REV	DATE	DRWN	DESCRIPTION	DES./QA
0	06/01/21	VS	PRELIMINARY	----
1	06/28/21	JT	REVISED CENTERLINE	----
2	10/26/21	TL	PER COMMENTS	----



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:
2



1 SITE PLAN
SCALE: 1"=30'-0" (FULL SIZE)
1"=60'-0" (11x17)



verizon
180 WASHINGTON VALLEY ROAD
BEDMINSTER, NJ 07921

CROWN CASTLE
1200 MACARTHUR BLVD, SUITE 200
MAHWAH, NJ 07430

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TECTONIC WO#: 10545.ROCKY HILL 2 CT

VERIZON SITE NUMBER:
675026

BU #: 801366
ROCKY HILL 2

1218 CROMWELL AVE
ROCKY HILL, CT 06067

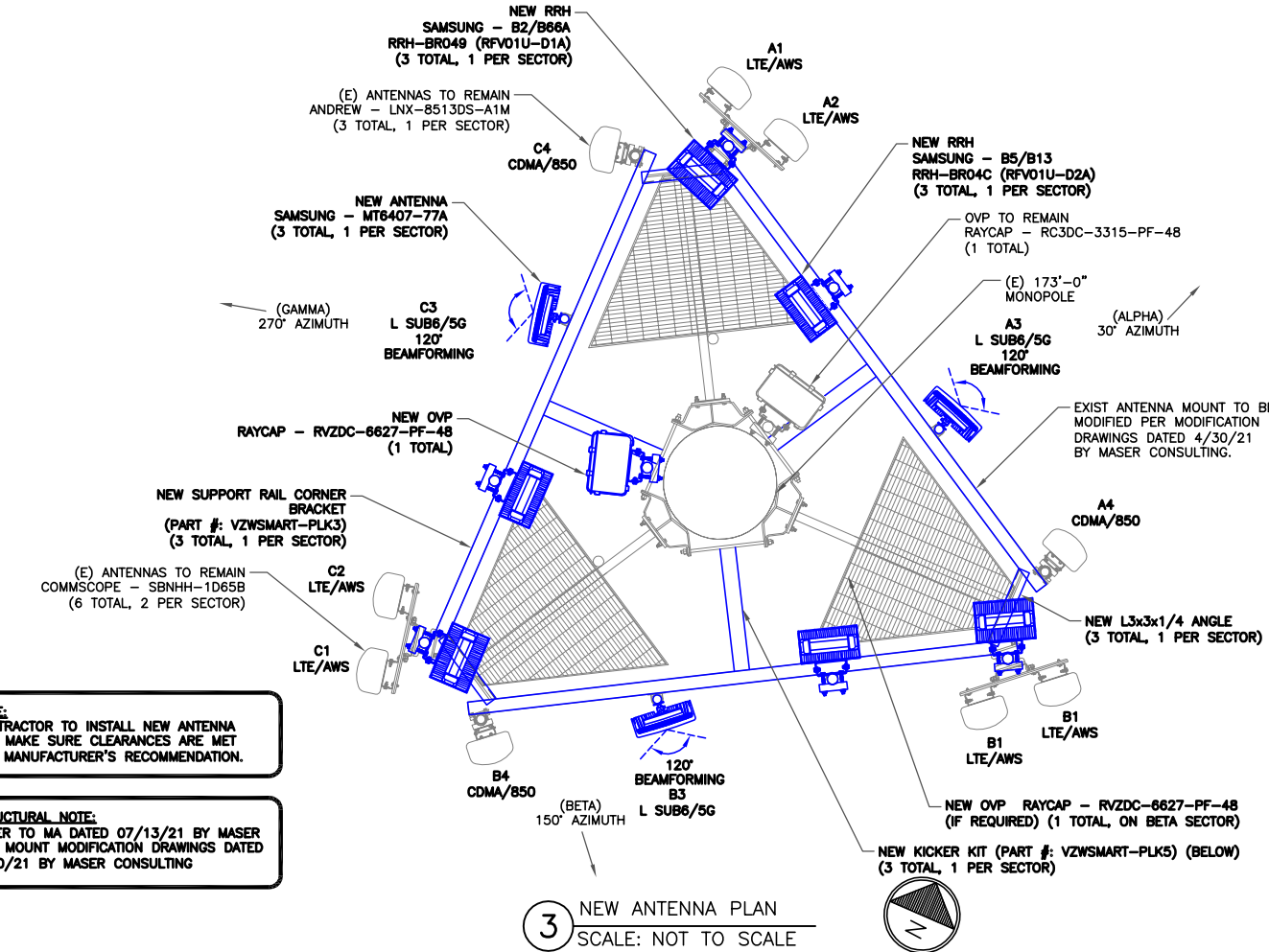
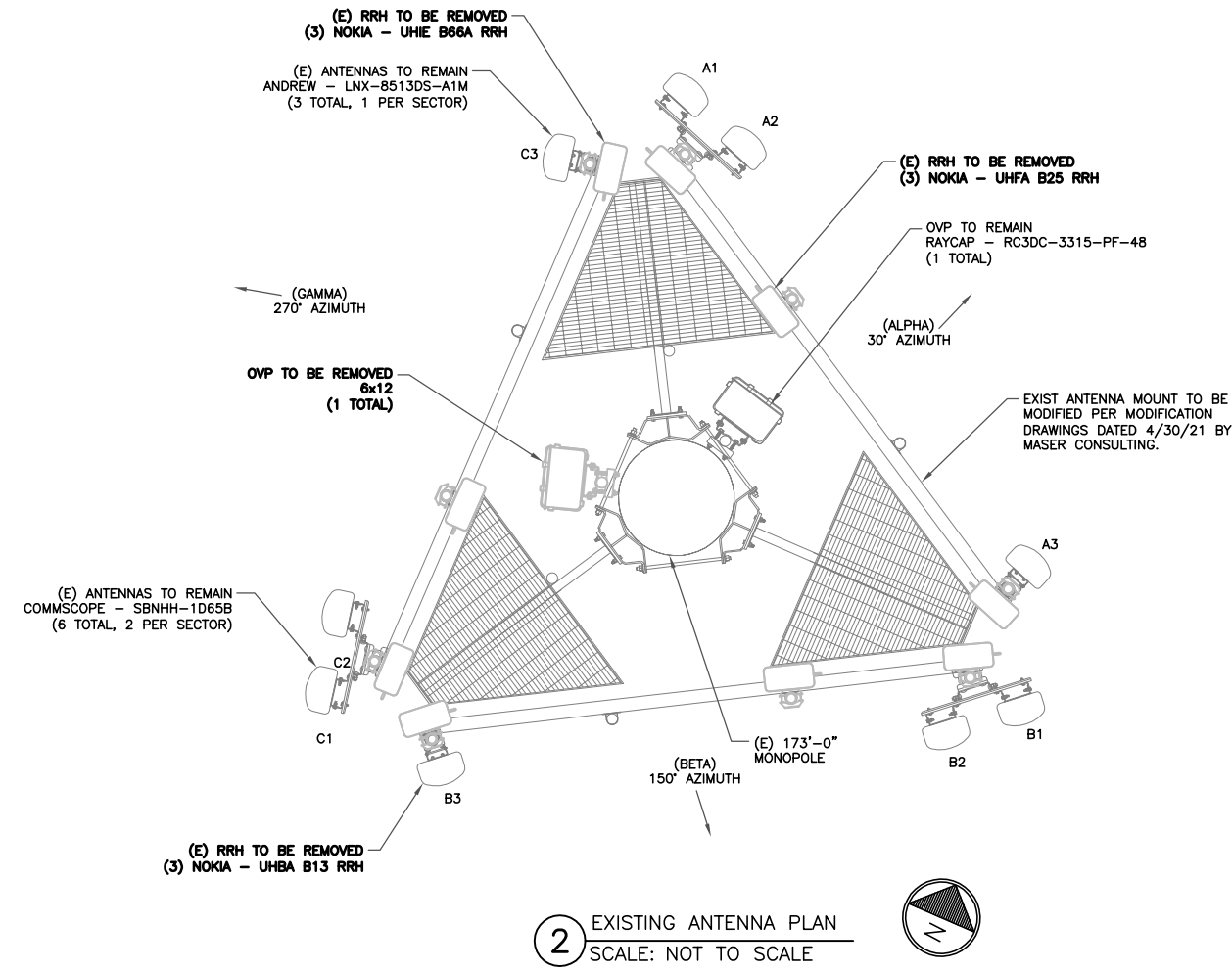
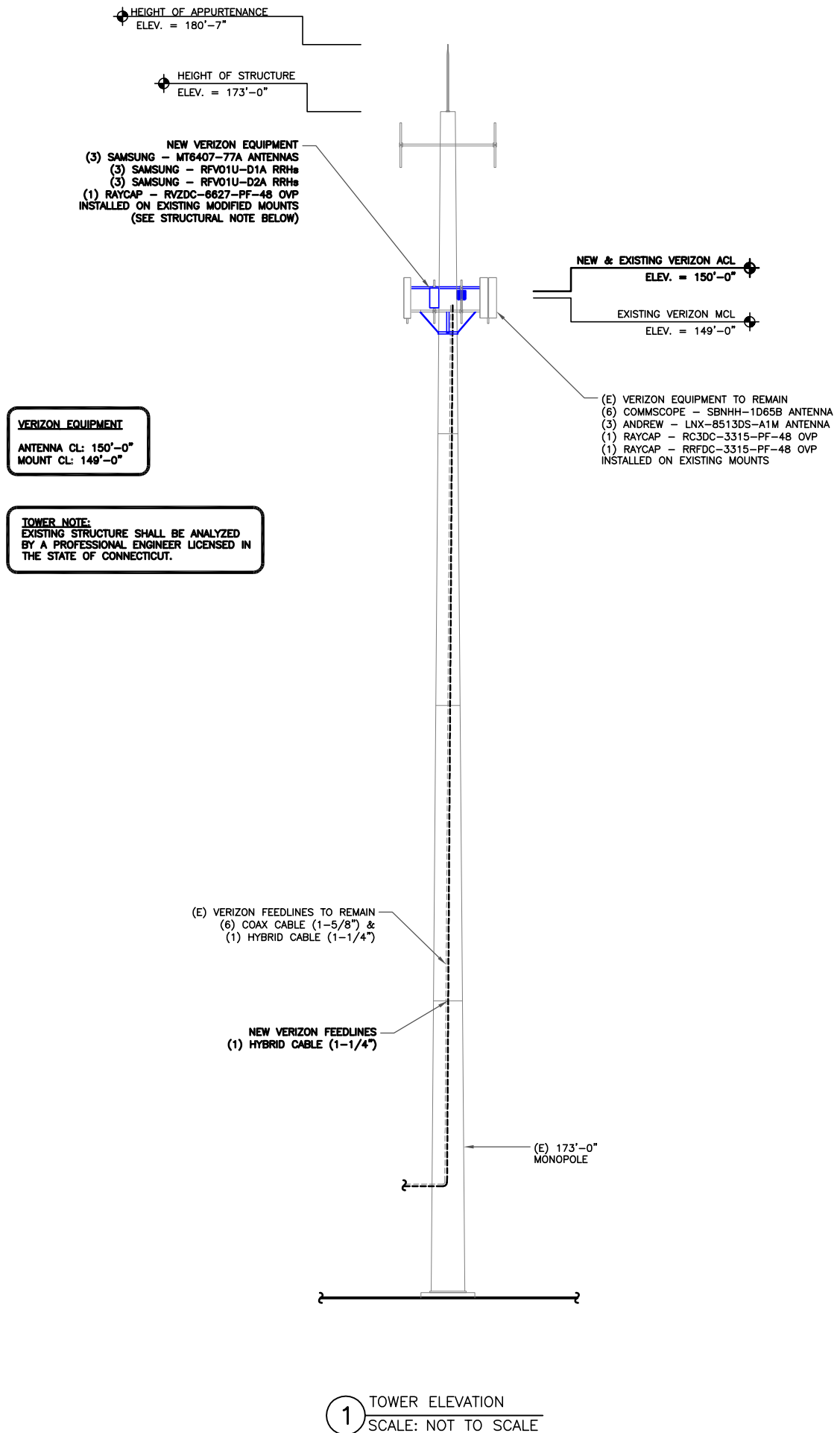
EXISTING
173'-0" MONOPOLE

ISSUED FOR:				
REV	DATE	DRWN	DESCRIPTION	DES./QA
0	06/01/21	VS	PRELIMINARY	----
1	06/28/21	JT	REVISED CENTERLINE	----
2	10/26/21	TL	PER COMMENTS	----

10/26/21

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TO ALTER THIS DOCUMENT.

SHEET NUMBER: **C-1** REVISION: **2**



NOTE:
CONTRACTOR TO INSTALL NEW ANTENNA
AND MAKE SURE CLEARANCES ARE MET
PER MANUFACTURER'S RECOMMENDATION.

STRUCTURAL NOTE:
REFER TO MA DATED 07/13/21 BY MASER
AND MOUNT MODIFICATION DRAWINGS DATED
4/30/21 BY MASER CONSULTING

verizon

180 WASHINGTON VALLEY ROAD
BEDMINSTER, NJ 07921

CROWN CASTLE

1200 MACARTHUR BLVD, SUITE 200
MAHWAH, NJ 07430

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TECTONIC WO#: 10545.ROCKY HILL 2 CT

VERIZON SITE NUMBER:
675026

BU #: 801366
ROCKY HILL 2

1218 CROMWELL AVE
ROCKY HILL, CT 06067

EXISTING
173'-0" MONOPOLE

ISSUED FOR:

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0	06/01/21	VS	PRELIMINARY	----
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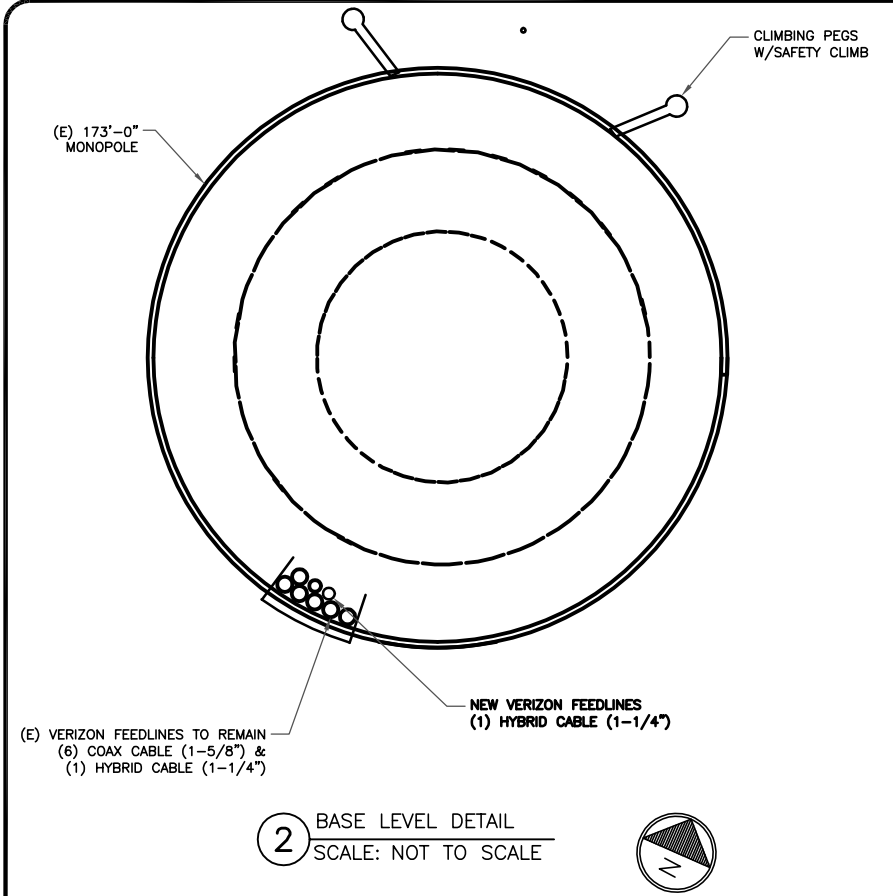
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ANTENNA/RRH SCHEDULE										
SECTOR	STATUS	ANTENNA MANUFACTURER	ANTENNA MODEL	ANTENNA CENTERLINE	AZIMUTH	MECHANICAL DOWNTILTS	ELECTRICAL DOWNTILTS	TOWER EQUIPMENT MANUFACTURER	TOWER EQUIPMENT QTY/MODEL	CABLE DETAILS
A1	EXISTING	ANDREW	SBNHH-1D65B	150'-0"	30°	1"	7°/7"	SAMSUNG SAMSUNG	(1) B5/B13 RRH-BR04C (RFV01U-D2A) (1) B2/B66A RRH-BR049 (RFV01U-D1A)	
A2	EXISTING	ANDREW	SBNHH-1D65B	150'-0"	30°	1"	7°/7"			
A3	NEW	SAMSUNG	MT6407-77A	150'-0"	30°	0°	3°	RAYCAP	(1) RC3DC-3315-PF-48	(1) 6X12 HYBRID CABLE
A4	EXISTING	ANDREW	LNx-8513DS-A1M	150'-0"	30°	0°	0°/0°			(2) COAX CABLE
B1	EXISTING	ANDREW	SBNHH-1D65B	150'-0"	150°	1"	8°/8"	SAMSUNG SAMSUNG	(1) B5/B13 RRH-BR04C (RFV01U-D2A) (1) B2/B66A RRH-BR049 (RFV01U-D1A)	
B2	EXISTING	ANDREW	SBNHH-1D65B	150'-0"	150°	1"	8°/8"			
B3	NEW	SAMSUNG	MT6407-77A	150'-0"	150°	0°	3°			
B4	EXISTING	ANDREW	LNx-8513DS-A1M	150'-0"	150°	0°	7°/7"			(2) COAX CABLE
C1	EXISTING	ANDREW	SBNHH-1D65B	150'-0"	270°	1"	6°/6"	SAMSUNG SAMSUNG	(1) B5/B13 RRH-BR04C (RFV01U-D2A) (1) B2/B66A RRH-BR049 (RFV01U-D1A)	
C2	EXISTING	ANDREW	SBNHH-1D65B	150'-0"	270°	1"	6°/6"			
C3	NEW	SAMSUNG	MT6407-77A	150'-0"	270°	0°	3°	RAYCAP	(1) RVZDC-3315-PF-48	(1) 6X12 HYBRID CABLE
C4	EXISTING	ANDREW	LNx-8513DS-A1M	150'-0"	270°	0°	8°/8"			(2) COAX CABLE

1 VERIZON TOWER EQUIPMENT SCHEDULE
SCALE: NOT TO SCALE

CABLE SCHEDULE				
STATUS	CABLE TYPE	SIZE	LENGTH	QTY
EXISTING	COAX	1-5/8"	200'-0"±	6
EXISTING	HYBRID	1-1/4"	200'-0"±	1
NEW	HYBRID	1-1/4"	200'-0"±	1
TOTAL CABLE QTY:				8



2 BASE LEVEL DETAIL
SCALE: NOT TO SCALE



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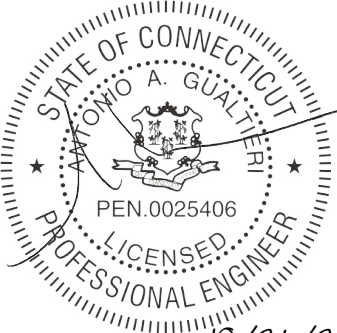
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BU #: 801366
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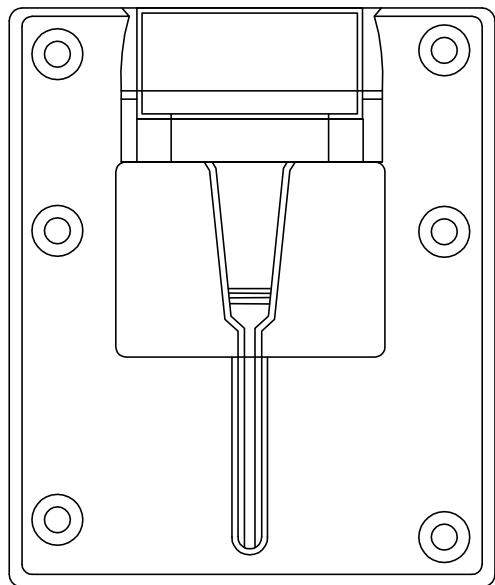
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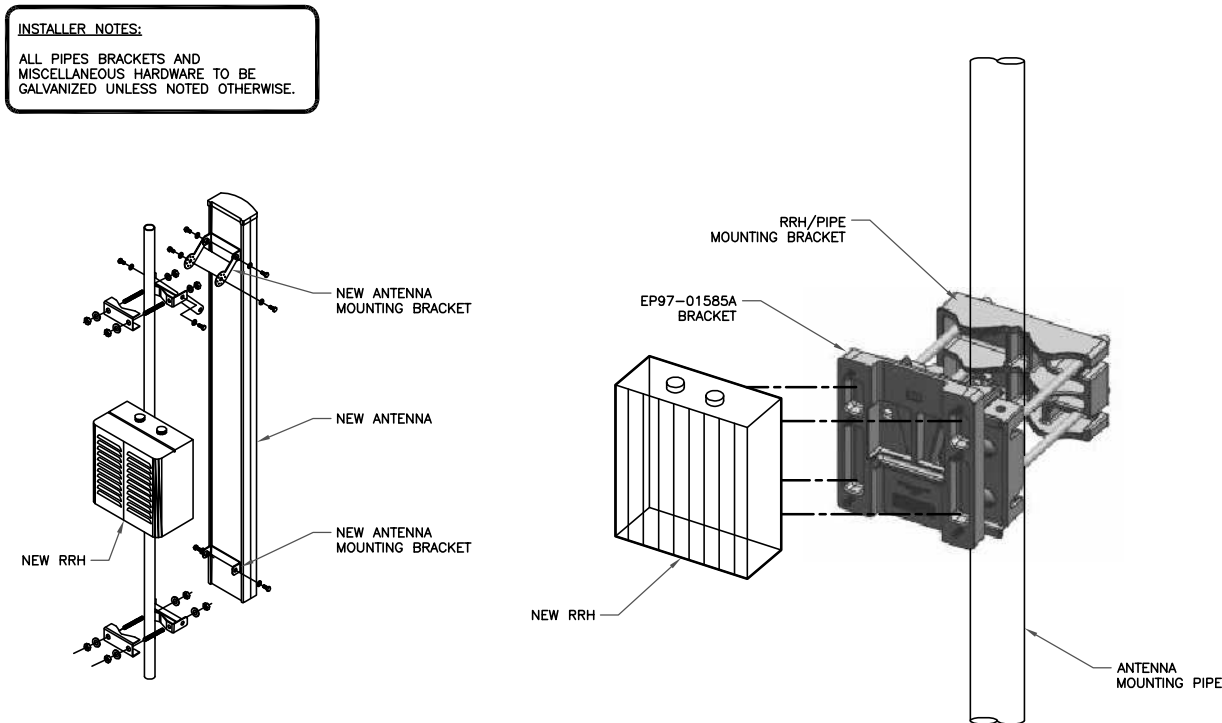
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SCALE: NOT TO SCALE

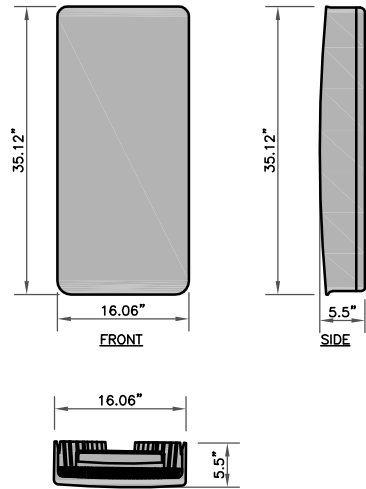
2 NOT USED
SCALE: NOT TO SCALE



3 SAMSUNG – EP97–01585A BRACKET DETAIL
SCALE: NOT TO SCALE

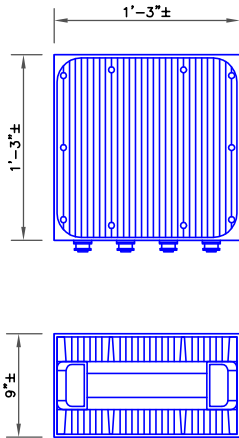


4 ANTENNA & RRH MOUNTING DETAIL
SCALE: NOT TO SCALE



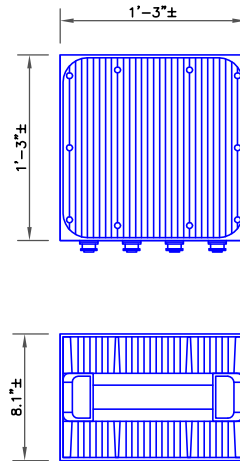
SAMSUNG – MT6407-77A
WEIGHT : 87.1 LBS
SIZE (HXWXD): 35.12 X 16.06 X 5.51 IN.

1 SAMSUNG – MT6407-77A
SCALE: NOT TO SCALE



SAMSUNG – B2/B66A RRH-BR049 (RFV01U-D1A)
WEIGHT(W/O EQUIPMENT): 84.4 LBS
SIZE (HxWxD): 15x15x10 IN.

2 SAMSUNG – B2/B66A RRH-BR049 (RFV01U-D1A)
SCALE: NOT TO SCALE



SAMSUNG – B5/B13 RRH-BR04C (RFV01U-D2A)
WEIGHT (W/O EQUIPMENT): 31.9 LBS
SIZE (HxWxD): 15x15x8.1 IN.

3 SAMSUNG – B5/B13 RRH-BR04C (RFV01U-D2A)
SCALE: NOT TO SCALE

4 NOT USED
SCALE: NOT TO SCALE

5 NOT USED
SCALE: NOT TO SCALE

6 NOT USED
SCALE: NOT TO SCALE



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VERIZON SITE NUMBER:
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BU #: **801366**
ROCKY HILL 2

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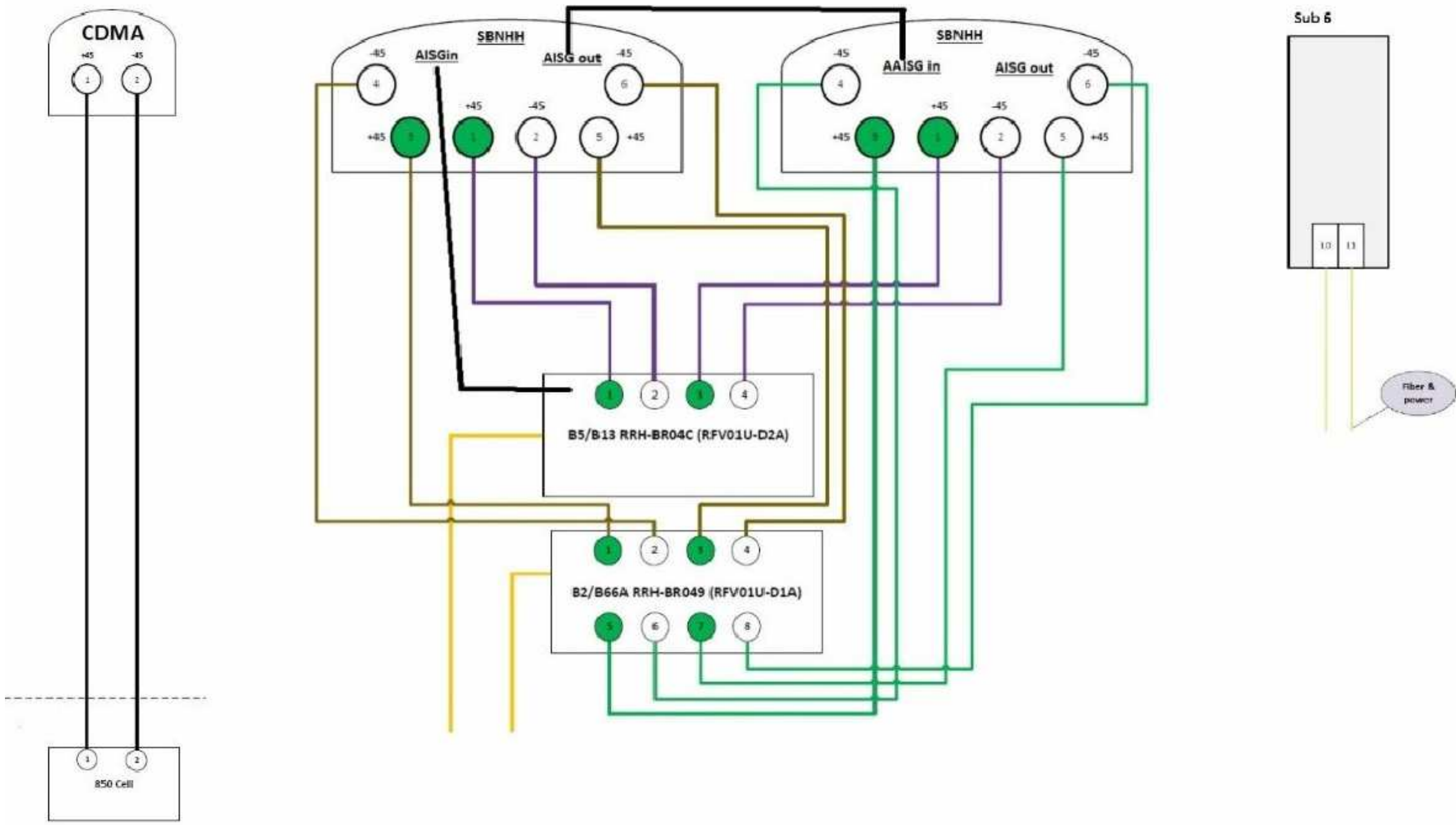


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1 PLUMBING DIAGRAM
SCALE: NOT TO SCALE

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ROCKY HILL 2

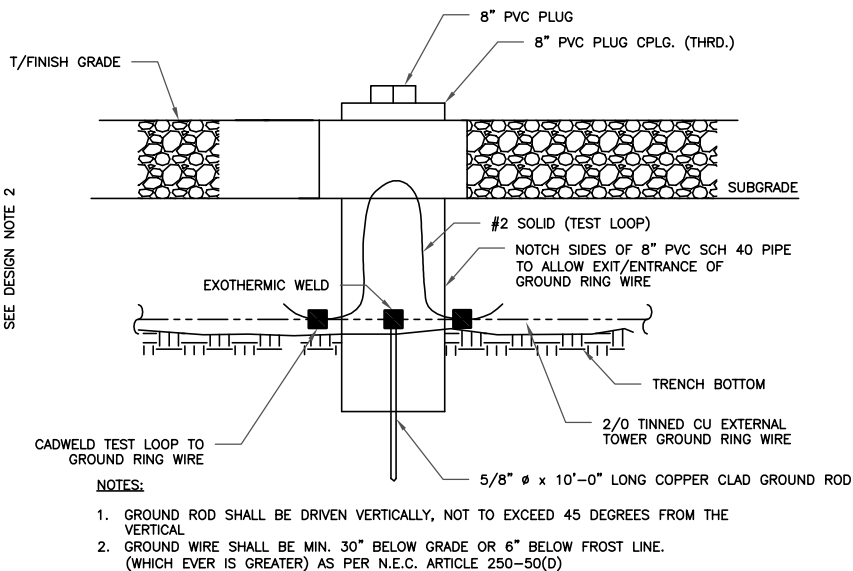
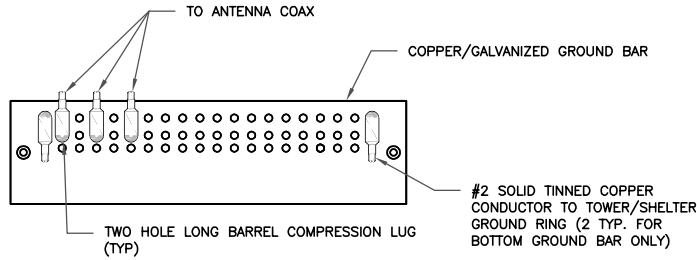
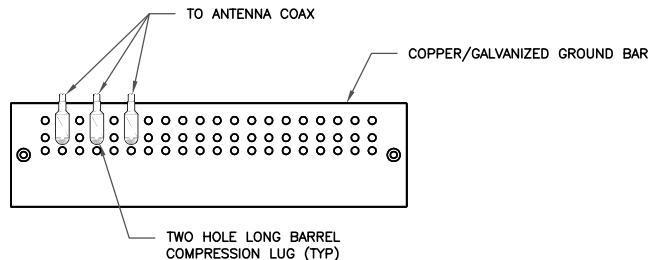
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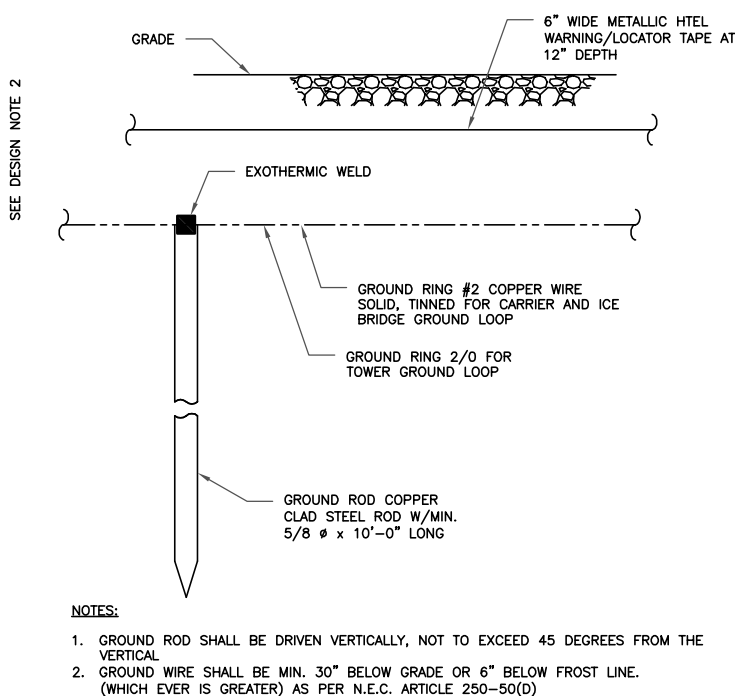
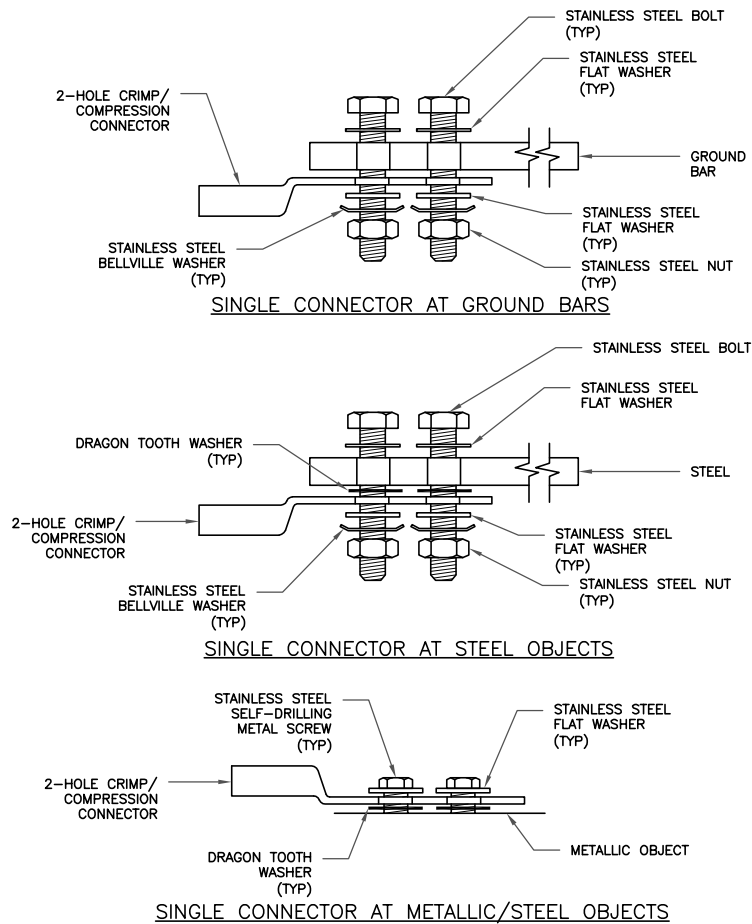
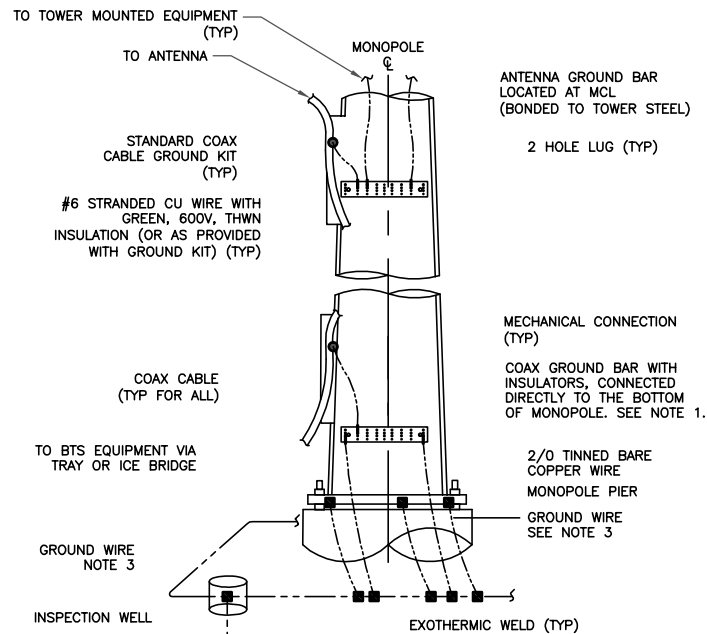
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1 ANTENNA SECTOR GROUND BAR DETAIL
SCALE: NOT TO SCALE

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

3 INSPECTION WELL DETAIL
SCALE: NOT TO SCALE



4 TYPICAL ANTENNA CABLE GROUNDING
SCALE: NOT TO SCALE

5 HARDWARE DETAIL FOR EXTERIOR CONNECTIONS
SCALE: NOT TO SCALE

6 GROUND ROD DETAIL
SCALE: NOT TO SCALE

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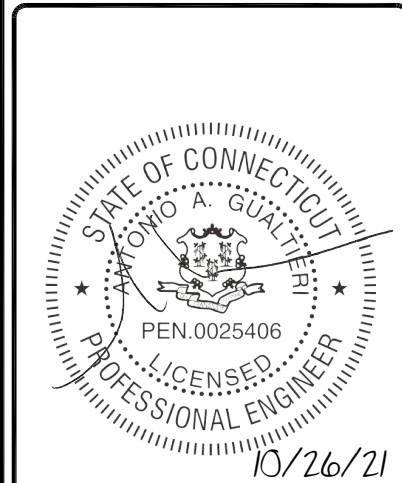
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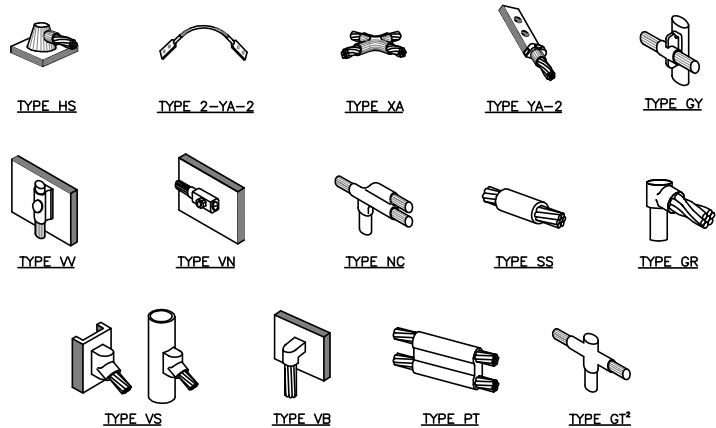
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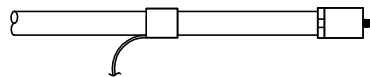


NOTE:

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

1 CADWELD GROUNDING CONNECTIONS
SCALE: NOT TO SCALE

WEATHERPROOFING KIT
(SEE NOTE 3)
ANTENNA CABLE



#6 AWG STRANDED COPPER GROUND WIRE
(GROUNDED TO GROUND BAR). SEE NOTE 1 & 2

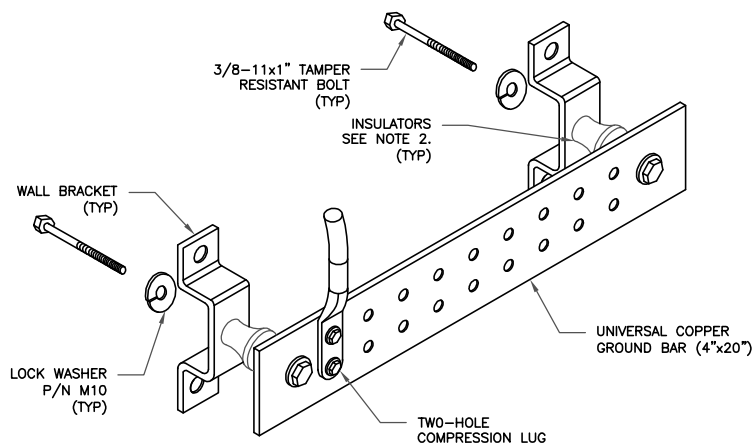
CABLE GROUND KIT

CABLE CONNECTOR

NOTES:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.
2. GROUNDING KIT SHALL BE TYPE AND PART NUMBER AS SUPPLIED OR RECOMMENDED BY CABLE MANUFACTURER.
3. WEATHER PROOFING SHALL BE TWO-PART TAPE KIT, COLD SHRINK SHALL NOT BE USED.

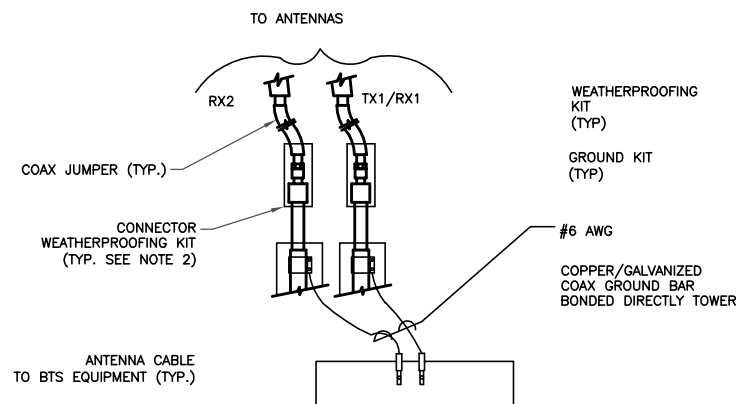
3 CABLE GROUND KIT CONNECTION
SCALE: NOT TO SCALE



NOTES:

1. DOWN LEAD (HOME RUN) CONDUCTORS ARE NOT TO BE INSTALLED ON CROWN CASTLE USA INC. TOWER, PER THE GROUNDING DOWN CONDUCTOR POLICY QAS-STD-10091. NO MODIFICATION OR DRILLING TO TOWER STEEL IS ALLOWED IN ANY FORM OR FASHION, CAD-WELDING ON THE TOWER AND/OR IN THE AIR ARE NOT PERMITTED.
2. OMIT INSULATOR WHEN MOUNTING TO TOWER STEEL OR PLATFORM STEEL. USE INSULATORS WHEN ATTACHING TO BUILDING OR SHELTERS.

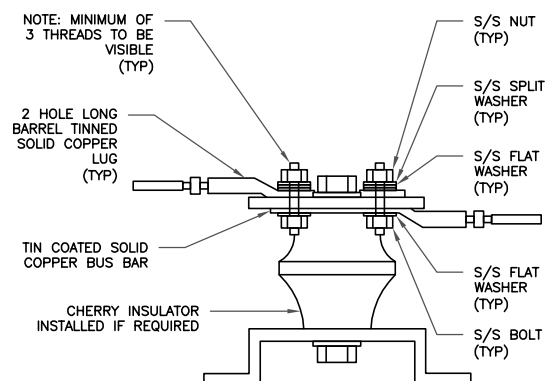
6 GROUND BAR DETAIL
SCALE: NOT TO SCALE



NOTES:

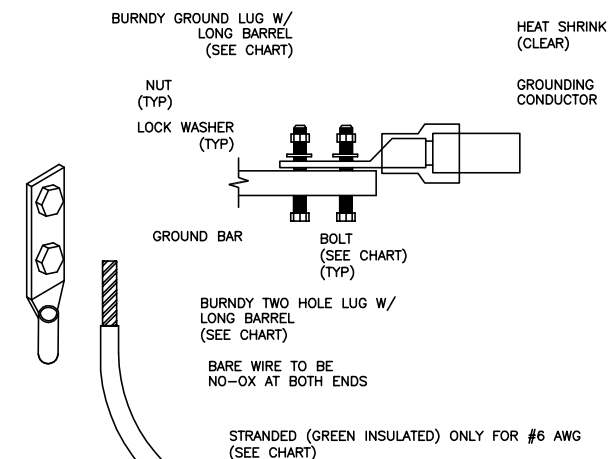
1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO ANTENNA GROUND BAR.
2. WEATHER PROOFING SHALL BE TWO-PART TAPE KIT. COLD SHRINK SHALL NOT BE USED.

4 GROUND CABLE CONNECTION
SCALE: NOT TO SCALE



7 LUG DETAIL
SCALE: NOT TO SCALE

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



NOTES:

1. ALL GROUNDING LUGS ARE TO BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS. ALL HARDWARE BOLTS, NUTS, LOCK WASHERS SHALL BE STAINLESS STEEL. ALL HARDWARE ARE TO BE AS FOLLOWS: BOLT, FLAT WASHER, GROUND BAR, GROUND LUG, FLAT WASHER AND NUT.

2 MECHANICAL LUG CONNECTION
SCALE: NOT TO SCALE

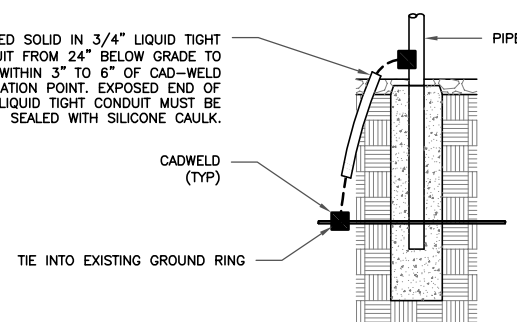
#6 AWG MIN. FROM ANTENNA
CABLE GROUND KIT

GROUND BAR ON SHELTER, ICE
BRIDGE, OR ON ANTENNA TOWER

*TWO HOLE LUG, OR
EXOTHERMIC WELD TO BE USED
WITH #2 AWG BARE CONDUCTOR
WIRE TO BUILDING SERVICE
GROUND OR GROUND RING

5 GROUNDWIRE INSTALLATION
SCALE: NOT TO SCALE

#2 TINNED SOLID IN 3/4" LIQUID TIGHT
CONDUIT FROM 24" BELOW GRADE TO
WITHIN 3" TO 6" OF CAD-WELD
TERMINATION POINT. EXPOSED END OF
THE LIQUID TIGHT CONDUIT MUST BE
SEALED WITH SILICONE CAULK.



8 TRANSITIONING GROUND DETAIL
SCALE: NOT TO SCALE

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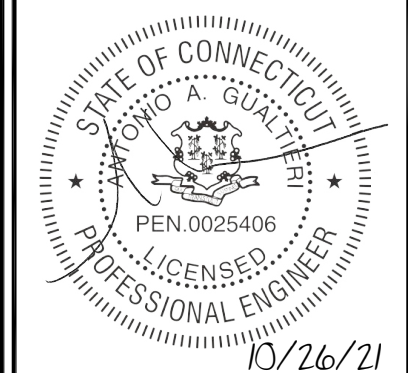
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Exhibit D

Structural Analysis Report

Date: **May 7, 2021**



Tower Engineering Professionals
326 Tryon Road
Raleigh, NC 27603
(919) 661-6351

Subject: Structural Analysis Report

Carrier Designation: **Verizon Wireless Co-Locate**
Site Number: 468294
Site Name: ROCKY HILL 2 CT

Crown Castle Designation: **BU Number:** 801366
Site Name: ROCKY HILL 2
JDE Job Number: 644584
Work Order Number: 1957740
Order Number: 552687 Rev. 0

Engineering Firm Designation: **TEP Project Number:** 217983.537661

Site Data: **1218 Cromwell Ave, Rocky Hill, Hartford County, CT 06067**
Latitude 41° 38' 16.50", Longitude -72° 40' 24.20"
173 Foot - Monopole Tower

Tower Engineering Professionals 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 – 41.4%

This analysis utilizes an ultimate 3-second gust wind speed of 125 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: Alix Hyppolite / CLT

Respectfully submitted by:

Aaron T. Rucker, P.E.



Electronic Copy

05/07/2021

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3.2) Assumptions

4) ANALYSIS RESULTS

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4.1) Recommendations

5) APPENDIX A

tnxTower Output

6) APPENDIX B

Base Level Drawing

7) APPENDIX C

Additional Calculations

1) INTRODUCTION

This tower is a 173-ft monopole tower designed by Paul J. Ford and Company.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	125 mph
Exposure Category:	C
Topographic Factor:	1.0
Ice Thickness:	2.0 in
Wind Speed with Ice:	50 mph
Service Wind Speed:	60 mph

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
150.0	152.0	3	Andrew	LNK-8513DS-A1M w/ Mount Pipe	6 2	1-5/8 1-1/4
		6	Commscope	SBNHH-1D65B w/ Mount Pipe		
		3	Samsung Telecom.	MT6407-77A w/ Mount Pipe		
		3	Samsung Telecom.	RFV01U-D1A		
		3	Samsung Telecom.	RFV01U-D2A		
	150.0	2	Commscope	RC2DC-3315-PF-48		
		1	Tower Mounts	Platform Mount [LP 601-1]		

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)
171.0	171.0	1	Tower Mounts	Platform Mount [LP 1201-1]	-	-

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Reference	Source
Geotechnical Report	639257	CCISites
Tower Foundation Drawings	679665	CCISites
Tower Manufacturer Drawings	639263	CCISites

3.1) Analysis Method

tnxTower (version 8.0.9.0), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A. When applicable, Crown Castle has calculated and provided the effective area for panel antennas using approved methods following the intent of the TIA-222 Standard.

3.2) Assumptions

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

This analysis may be affected if any assumptions are not valid or have been made in error. Tower Engineering Professionals 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)	ΦP_{allow} (k)	% Capacity	Pass / Fail
L1	173 - 127	Pole	TP35.568x26x0.25	1	-9.737	1546.891	20.6	Pass
L2	127 - 86.5	Pole	TP43.493x34.132x0.313	2	-16.695	2561.107	30.3	Pass
L3	86.5 - 42.5	Pole	TP52.02x41.724x0.375	3	-27.802	3676.974	35.1	Pass
L4	42.5 - 0	Pole	TP60.11x49.918x0.438	4	-45.393	5089.843	37.4	Pass
							Summary	
						Pole (L4)	37.4	Pass
						RATING =	37.4	Pass

Table 5 - Tower Component Stresses vs. Capacity - LC5

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1,2	Anchor Rods	-	33.8	Pass
1,2	Base Plate	-	28.5	Pass
1,2,3	Base Foundation Soil Interaction (Pier and Pad Foundation)	-	33.9	Pass
1,2,3	Base Foundation Structural (Pier and Pad Foundation)	-	23.7	Pass
1,2,3	Base Foundation Soil Interaction (Drilled Pier Foundation)	-	33.6	Pass
1,2,3	Base Foundation Structural (Drilled Pier Foundation)	-	41.4	Pass

Structure Rating (max from all components) =	41.4%
---	--------------

Notes:

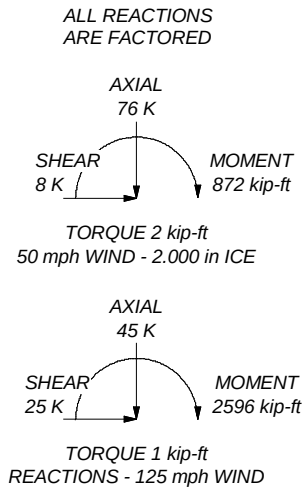
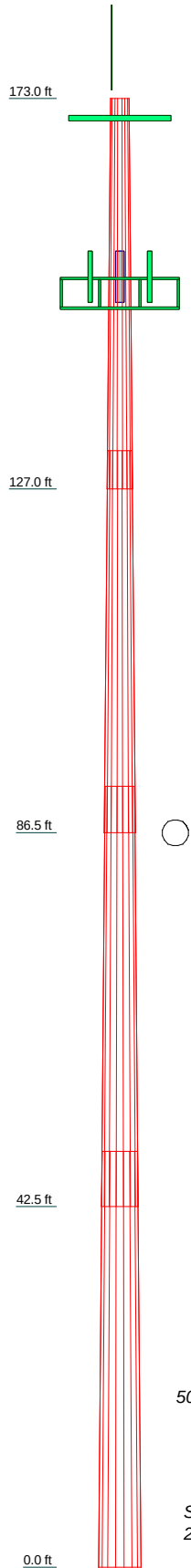
- 1) See additional documentation in "Appendix C - Additional Calculations" for calculations supporting the % capacity listed.
- 2) Rating per TIA-222-H Section 15.5
- 3) It is unknown whether the foundation is a pier and pad or drilled pier. Both designs were analyzed and determined to be sufficient.

4.1) Recommendations

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

APPENDIX A
TNXTOWER OUTPUT

Section	1	2	3	4	
Length (ft)	46.000	45.000	49.500	49.000	
Number of Sides	18	18	18	18	
Thickness (in)	0.250	0.313	0.375	0.438	
Socket Length (ft)	4.500	5.500	6.500		
Top Dia (in)	26.000	34.132	41.724	49.918	
Bot Dia (in)	35.568	43.493	52.020	60.110	
Grade	A607-60		A607-65		
Weight (K)	3.8	5.8	9.3	12.6	31.6



MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A607-60	60 ksi	75 ksi	A607-65	65 ksi	80 ksi

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-H Standard.
3. Tower designed for a 125 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 2.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.000 ft
8. TOWER RATING: 37.4%

Tower Engineering Professionals
326 Tryon Road
Raleigh, NC 27603
Phone: (919) 661-6351
FAX: (919) 661-6350

Job: **Rocky Hill 2 (BU 801366)**
Project: **TEP No. 217983.537661**
Client: **Crown Castle** Drawn by: **JSC** App'd:
Code: **TIA-222-H** Date: **05/07/21** Scale: **NTS**
Path: **C:\Users\jcoopedgel\Desktop\IP\Rocky Hill 2\tnv801366_1957740_LCS.dwg** Dwg No. **E-1**

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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: 148.000 ft.
 Basic wind speed of 125 mph.
 Risk Category II.
 Exposure Category C.
 Simplified Topographic Factor Procedure for wind speed-up calculations is used.
 Topographic Category: 1.
 Crest Height: 0.000 ft.
 Nominal ice thickness of 2.000 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 Poles ✓ 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
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Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C _A A _A ft ² /ft	Weight klf
****150****									
Safety Line 3/8	A	No	No	CaAa (Out Of Face)	173.000 - 0.000	1	No Ice	0.037	0.000
							1/2" Ice	0.137	0.001
							1" Ice	0.238	0.001
							2" Ice	0.437	0.002
Step Pegs (5/8" SR) 7-in. w/30" step	A	No	No	CaAa (Out Of Face)	173.000 - 0.000	1	No Ice	0.035	0.000
							1/2" Ice	0.135	0.001
							1" Ice	0.235	0.002
							2" Ice	0.435	0.006
****150****									
LDF7-50A(1-5/8)	C	No	No	Inside Pole	150.000 - 0.000	6	No Ice	0.000	0.001
							1/2" Ice	0.000	0.001
							1" Ice	0.000	0.001
							2" Ice	0.000	0.001
RFF-24SM-1206-61 8-APE(1-1/4")	C	No	No	Inside Pole	150.000 - 0.000	2	No Ice	0.000	0.001
							1/2" Ice	0.000	0.001
							1" Ice	0.000	0.001
							2" Ice	0.000	0.001

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
L1	173.000-127.000	A	0.000	0.000	0.000	3.335	0.033
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000	0.181
L2	127.000-86.500	A	0.000	0.000	0.000	2.936	0.029
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000	0.319
L3	86.500-42.500	A	0.000	0.000	0.000	3.190	0.031
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000	0.346
L4	42.500-0.000	A	0.000	0.000	0.000	3.081	0.030
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000	0.335

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
L1	173.000-127.000	A	1.977	0.000	0.000	0.000	39.704	0.382
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.000	0.181
L2	127.000-86.500	A	1.911	0.000	0.000	0.000	34.957	0.336

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Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft ²	A_F ft ²	$C_A A_A$ In Face ft ²	$C_A A_A$ Out Face ft ²	Weight K
L3	86.500-42.500	B	1.817	0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.000	0.319
		A		0.000	0.000	0.000	36.821	0.351
		B		0.000	0.000	0.000	0.000	0.000
L4	42.500-0.000	C	1.629	0.000	0.000	0.000	0.000	0.346
		A		0.000	0.000	0.000	33.969	0.319
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.000	0.335

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	173.000-127.000	0.000	-0.652	0.000	-3.250
L2	127.000-86.500	0.000	-0.658	0.000	-3.484
L3	86.500-42.500	0.000	-0.662	0.000	-3.557
L4	42.500-0.000	0.000	-0.665	0.000	-3.547

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		C _A A _A Front ft ²	C _A A _A Side ft ²	Weight K
Lightning Rod 1"x10'	C	From Leg	0.000 0.000 5.000	0.000	174.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.000 2.017 3.050 5.148	1.000 2.017 3.050 5.148	0.040 0.049 0.065 0.116

(4) 6' x 2" Mount Pipe	A	From Centroid-Le g	4.000 0.000 0.000	0.000	171.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.425 1.925 2.294 3.060	1.425 1.925 2.294 3.060	0.022 0.033 0.048 0.090
(4) 6' x 2" Mount Pipe	B	From Centroid-Le g	4.000 0.000 0.000	0.000	171.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.425 1.925 2.294 3.060	1.425 1.925 2.294 3.060	0.022 0.033 0.048 0.090
(4) 6' x 2" Mount Pipe	C	From Centroid-Le g	4.000 0.000 0.000	0.000	171.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.425 1.925 2.294 3.060	1.425 1.925 2.294 3.060	0.022 0.033 0.048 0.090
Platform Mount [LP 1201-1]	C	None		0.000	171.000	No Ice 1/2" Ice 1" Ice 2" Ice	18.380 22.110 25.870 33.470	18.380 22.110 25.870 33.470	2.100 2.652 3.263 4.662

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Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C _A A _A Front ft ²	C _A A _A Side ft ²	Weight K

LNX-8513DS-A1M w/ Mount Pipe	A	From Centroid-Le g	4.000	0.000	150.000	No Ice	4.090	3.300	0.065
			0.000			1/2" Ice	4.490	3.680	0.128
			2.000			1" Ice	4.890	4.060	0.202
						2" Ice	5.710	4.870	0.384
LNX-8513DS-A1M w/ Mount Pipe	B	From Centroid-Le g	4.000	0.000	150.000	No Ice	4.090	3.300	0.065
			0.000			1/2" Ice	4.490	3.680	0.128
			2.000			1" Ice	4.890	4.060	0.202
						2" Ice	5.710	4.870	0.384
LNX-8513DS-A1M w/ Mount Pipe	C	From Centroid-Le g	4.000	0.000	150.000	No Ice	4.090	3.300	0.065
			0.000			1/2" Ice	4.490	3.680	0.128
			2.000			1" Ice	4.890	4.060	0.202
						2" Ice	5.710	4.870	0.384
(2) SBNHH-1D65B w/ Mount Pipe	A	From Centroid-Le g	4.000	0.000	150.000	No Ice	4.090	3.300	0.066
			0.000			1/2" Ice	4.490	3.680	0.130
			2.000			1" Ice	4.890	4.070	0.204
						2" Ice	5.720	4.870	0.386
(2) SBNHH-1D65B w/ Mount Pipe	B	From Centroid-Le g	4.000	0.000	150.000	No Ice	4.090	3.300	0.066
			0.000			1/2" Ice	4.490	3.680	0.130
			2.000			1" Ice	4.890	4.070	0.204
						2" Ice	5.720	4.870	0.386
(2) SBNHH-1D65B w/ Mount Pipe	C	From Centroid-Le g	4.000	0.000	150.000	No Ice	4.090	3.300	0.066
			0.000			1/2" Ice	4.490	3.680	0.130
			2.000			1" Ice	4.890	4.070	0.204
						2" Ice	5.720	4.870	0.386
MT6407-77A w/ Mount Pipe	A	From Centroid-Le g	4.000	0.000	150.000	No Ice	4.907	2.682	0.096
			0.000			1/2" Ice	5.256	3.145	0.136
			2.000			1" Ice	5.615	3.624	0.180
						2" Ice	6.362	4.631	0.288
MT6407-77A w/ Mount Pipe	B	From Centroid-Le g	4.000	0.000	150.000	No Ice	4.907	2.682	0.096
			0.000			1/2" Ice	5.256	3.145	0.136
			2.000			1" Ice	5.615	3.624	0.180
						2" Ice	6.362	4.631	0.288
MT6407-77A w/ Mount Pipe	C	From Centroid-Le g	4.000	0.000	150.000	No Ice	4.907	2.682	0.096
			0.000			1/2" Ice	5.256	3.145	0.136
			2.000			1" Ice	5.615	3.624	0.180
						2" Ice	6.362	4.631	0.288
RC2DC-3315-PF-48	A	From Centroid-Le g	4.000	0.000	150.000	No Ice	3.792	2.512	0.032
			0.000			1/2" Ice	4.044	2.725	0.063
			0.000			1" Ice	4.303	2.945	0.099
						2" Ice	4.844	3.414	0.181
RC2DC-3315-PF-48	B	From Centroid-Le g	4.000	0.000	150.000	No Ice	3.792	2.512	0.032
			0.000			1/2" Ice	4.044	2.725	0.063
			0.000			1" Ice	4.303	2.945	0.099
						2" Ice	4.844	3.414	0.181
RFV01U-D1A	A	From Centroid-Le g	4.000	0.000	150.000	No Ice	1.875	1.250	0.084
			0.000			1/2" Ice	2.045	1.393	0.103
			2.000			1" Ice	2.223	1.543	0.124
						2" Ice	2.601	1.865	0.175
(2) RFV01U-D1A	C	From Centroid-Le g	4.000	0.000	150.000	No Ice	1.875	1.250	0.084
			0.000			1/2" Ice	2.045	1.393	0.103
			2.000			1" Ice	2.223	1.543	0.124
						2" Ice	2.601	1.865	0.175
RFV01U-D2A	A	From Centroid-Le g	4.000	0.000	150.000	No Ice	1.875	1.013	0.070
			0.000			1/2" Ice	2.045	1.145	0.087
			2.000			1" Ice	2.223	1.284	0.106
						2" Ice	2.601	1.585	0.153

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Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C _A A _A Front ft ²	C _A A _A Side ft ²	Weight K
(2) RFV01U-D2A	B	From Centroid-Le g	4.000 0.000 0.000	0.000	150.000	No Ice 1.875 1/2" Ice 2.045 1" Ice 2.223 2" Ice 2.601	1.013 1.145 1.284 1.585	0.070 0.087 0.106 0.153
Platform Mount [LP 601-1]	C	None		0.000	150.000	No Ice 28.500 1/2" Ice 31.690 1" Ice 34.870 2" Ice 41.230	28.500 31.690 34.870 41.230	1.122 1.676 2.282 3.653

Load Combinations

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

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<i>Comb. No.</i>	<i>Description</i>
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 Tower Deflections - Service Wind

<i>Section No.</i>	<i>Elevation</i>	<i>Horz. Deflection</i>	<i>Gov. Load Comb.</i>	<i>Tilt</i>	<i>Twist</i>
	<i>ft</i>	<i>in</i>		<i>°</i>	<i>°</i>
L1	173 - 127	12.872	50	0.615	0.001
L2	131.5 - 86.5	7.705	50	0.547	0.001
L3	92 - 42.5	3.773	50	0.387	0.000
L4	49 - 0	1.078	50	0.199	0.000

Critical Deflections and Radius of Curvature - Service Wind

<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>
174.000	Lightning Rod 1"x10'	50	12.872	0.615	0.001	140273
171.000	(4) 6' x 2" Mount Pipe	50	12.613	0.613	0.001	140273
150.000	LNx-8513DS-A1M w/ Mount Pipe	50	9.930	0.587	0.001	30494

Maximum Tower Deflections - Design Wind

<i>Section No.</i>	<i>Elevation</i>	<i>Horz. Deflection</i>	<i>Gov. Load Comb.</i>	<i>Tilt</i>	<i>Twist</i>
	<i>ft</i>	<i>in</i>		<i>°</i>	<i>°</i>
L1	173 - 127	59.613	24	2.850	0.004
L2	131.5 - 86.5	35.683	24	2.533	0.003
L3	92 - 42.5	17.471	24	1.791	0.002
L4	49 - 0	4.990	24	0.921	0.001

Critical Deflections and Radius of Curvature - Design Wind

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	Rocky Hill 2 (BU 801366)	Page	8 of 9
	Project	TEP No. 217983.537661	Date	16:09:32 05/07/21
	Client	Crown Castle	Designed by	JSC

Elevation	Appurtenance	Gov. Load Comb.	Deflection	Tilt	Twist	Radius of Curvature
ft			in	°	°	ft
174.000	Lightning Rod 1"x10'	24	59.613	2.850	0.004	30409
171.000	(4) 6' x 2" Mount Pipe	24	58.415	2.840	0.004	30409
150.000	LNx-8513DS-A1M w/ Mount Pipe	24	45.989	2.721	0.004	6609

Compression Checks

Pole Design Data

Section No.	Elevation	Size	L	L _u	Kl/r	A	P _u	φP _n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in ²	K	K	
L1	173 - 127 (1)	TP35.568x26x0.25	46.000	0.000	0.0	27.282	-9.737	1473.230	0.007
L2	127 - 86.5 (2)	TP43.493x34.132x0.313	45.000	0.000	0.0	41.695	-16.695	2439.150	0.007
L3	86.5 - 42.5 (3)	TP52.02x41.724x0.375	49.500	0.000	0.0	59.861	-27.802	3501.880	0.008
L4	42.5 - 0 (4)	TP60.11x49.918x0.438	49.000	0.000	0.0	82.863	-45.393	4847.470	0.009

Pole Bending Design Data

Section No.	Elevation	Size	M _{ux}	φM _{nx}	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M _{uy}	φM _{ny}	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
	ft		kip-ft	kip-ft		kip-ft	kip-ft	
L1	173 - 127 (1)	TP35.568x26x0.25	251.103	1200.025	0.209	0.000	1200.025	0.000
L2	127 - 86.5 (2)	TP43.493x34.132x0.313	750.915	2413.783	0.311	0.000	2413.783	0.000
L3	86.5 - 42.5 (3)	TP52.02x41.724x0.375	1496.733	4150.683	0.361	0.000	4150.683	0.000
L4	42.5 - 0 (4)	TP60.11x49.918x0.438	2596.433	6774.750	0.383	0.000	6774.750	0.000

Pole Shear Design Data

Section No.	Elevation	Size	Actual V _u	φV _n	Ratio $\frac{V_u}{\phi V_n}$	Actual T _u	φT _n	Ratio $\frac{T_u}{\phi T_n}$
	ft		K	K		kip-ft	kip-ft	
L1	173 - 127 (1)	TP35.568x26x0.25	10.500	441.970	0.024	0.411	1330.775	0.000
L2	127 - 86.5 (2)	TP43.493x34.132x0.313	14.850	731.744	0.020	0.527	2693.792	0.000
L3	86.5 - 42.5 (3)	TP52.02x41.724x0.375	19.810	1050.560	0.019	0.666	4627.117	0.000
L4	42.5 - 0 (4)	TP60.11x49.918x0.438	24.848	1454.240	0.017	0.817	7599.600	0.000

Pole Interaction Design Data

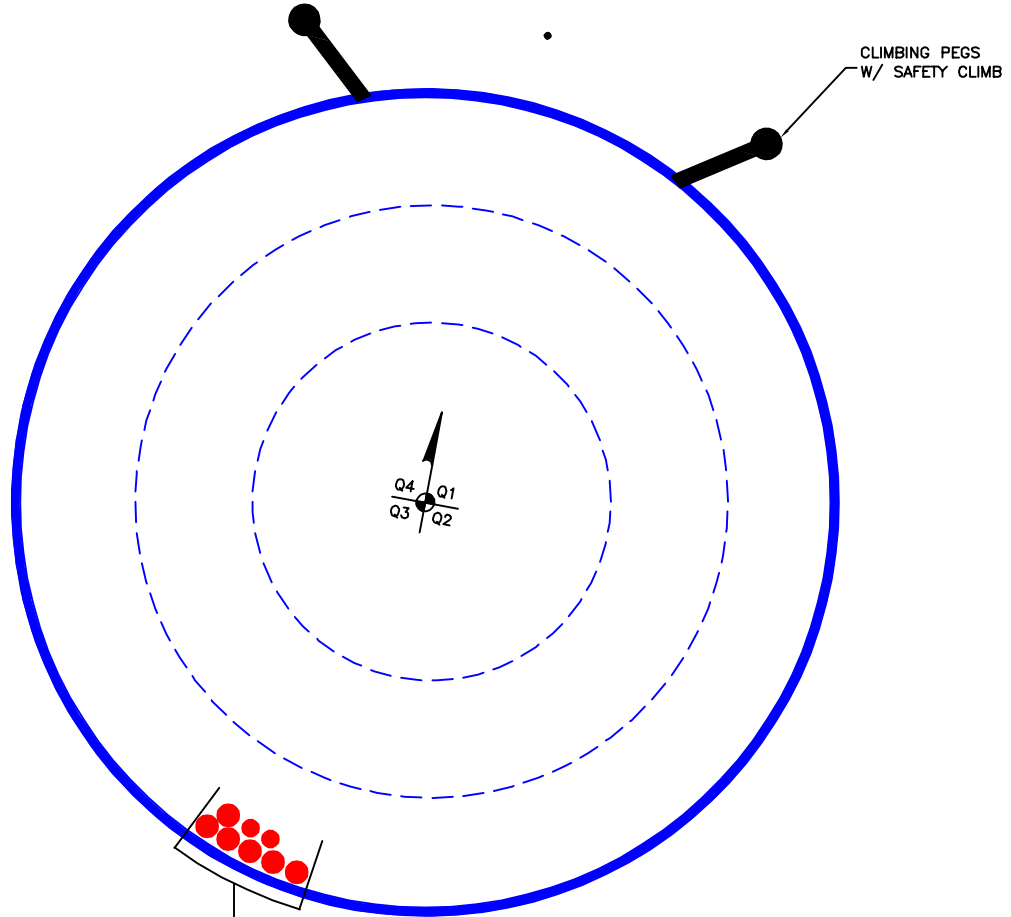
tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	Rocky Hill 2 (BU 801366)	Page	9 of 9
	Project	TEP No. 217983.537661	Date	16:09:32 05/07/21
	Client	Crown Castle	Designed by	JSC

Section No.	Elevation ft	Ratio P_u	Ratio M_{ux}	Ratio M_{uy}	Ratio V_u	Ratio T_u	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	173 - 127 (1)	0.007	0.209	0.000	0.024	0.000	0.216	1.050	4.8.2
L2	127 - 86.5 (2)	0.007	0.311	0.000	0.020	0.000	0.318	1.050	4.8.2
L3	86.5 - 42.5 (3)	0.008	0.361	0.000	0.019	0.000	0.369	1.050	4.8.2
L4	42.5 - 0 (4)	0.009	0.383	0.000	0.017	0.000	0.393	1.050	4.8.2

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	173 - 127	Pole	TP35.568x26x0.25	1	-9.737	1546.891	20.6	Pass
L2	127 - 86.5	Pole	TP43.493x34.132x0.313	2	-16.695	2561.107	30.3	Pass
L3	86.5 - 42.5	Pole	TP52.02x41.724x0.375	3	-27.802	3676.974	35.1	Pass
L4	42.5 - 0	Pole	TP60.11x49.918x0.438	4	-45.393	5089.843	37.4	Pass
							Summary	
							Pole (L4)	37.4
							RATING =	37.4
								Pass

APPENDIX B
BASE LEVEL DRAWING



(PROPOSED EQUIPMENT CONFIGURATION)
(2) 1-1/4" TO 150 FT LEVEL
(6) 1-5/8" TO 150 FT LEVEL

APPENDIX C

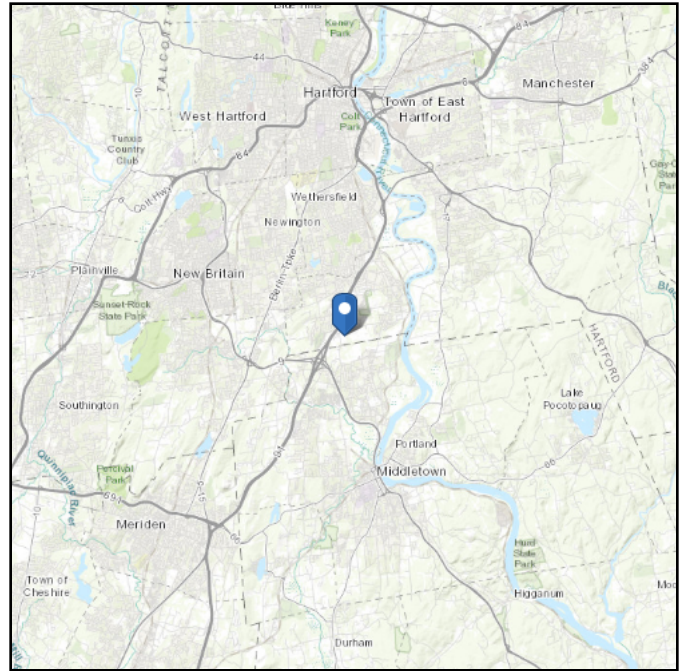
ADDITIONAL CALCULATIONS

ASCE 7 Hazards Report

Address:
No Address at This
Location

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

Elevation: 147.94 ft (NAVD 88)
Latitude: 41.637917
Longitude: -72.673389



Wind

Results:

Wind Speed:	124 Vmph	*125 mph per State requirements
10-year MRI	77 Vmph	
25-year MRI	87 Vmph	
50-year MRI	93 Vmph	
100-year MRI	101 Vmph	

Data Sources: ASCE/SEI 7-10, Fig. 26.5-1A and Figs. CC-1–CC-4, and Section 26.5.2, incorporating errata of March 12, 2014

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 7-10 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).

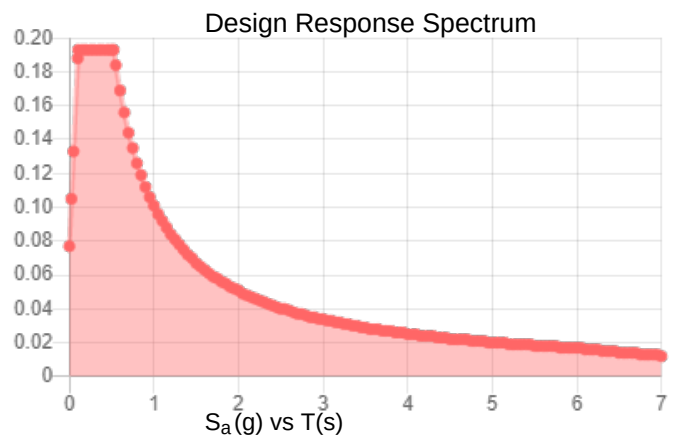
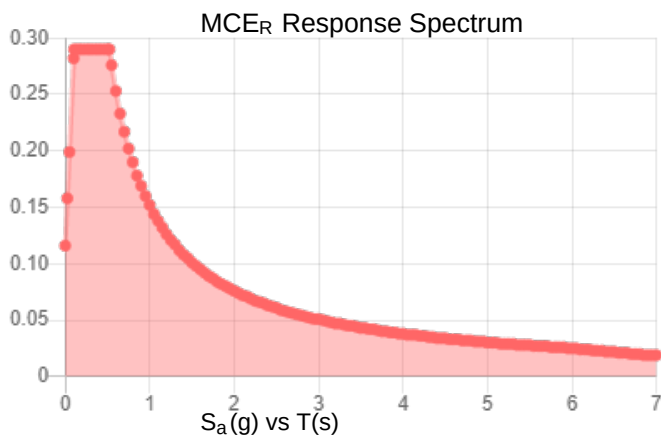
Site is in a hurricane-prone region as defined in ASCE/SEI 7-10 Section 26.2. Glazed openings need not be protected against wind-borne debris.

Site Soil Class: D - Stiff Soil

Results:

S_S :	0.181	S_{DS} :	0.193
S_1 :	0.063	S_{D1} :	0.101
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.092
S_{MS} :	0.29	PGA_M :	0.147
S_{M1} :	0.152	F_{PGA} :	1.6
		I_e :	1

Seismic Design Category B



Data Accessed:

Wed May 05 2021

Date Source:

USGS Seismic Design Maps based on ASCE/SEI 7-10, incorporating Supplement 1 and errata of March 31, 2013, and ASCE/SEI 7-10 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-10 Ch. 21 are available from USGS.

Ice

Results:

Ice Thickness: 1.00 in.

Concurrent Temperature: 5 F

Gust Speed: 50 mph

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

Date Accessed: Wed May 05 2021

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

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

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

ASCE does not intend, nor should anyone interpret, the results provided by this Tool to replace the sound judgment of a competent professional, having knowledge and experience in the appropriate field(s) of practice, nor to substitute for the standard of care required of such professionals in interpreting and applying the contents of this Tool or the ASCE 7 standard.

In using this Tool, you expressly assume all risks associated with your use. Under no circumstances shall ASCE or its officers, directors, employees, members, affiliates, or agents be liable to you or any other person for any direct, indirect, special, incidental, or consequential damages arising from or related to your use of, or reliance on, the Tool or any information obtained therein. To the fullest extent permitted by law, you agree to release and hold harmless ASCE from any and all liability of any nature arising out of or resulting from any use of data provided by the ASCE 7 Hazard Tool.

Monopole Base Plate Connection

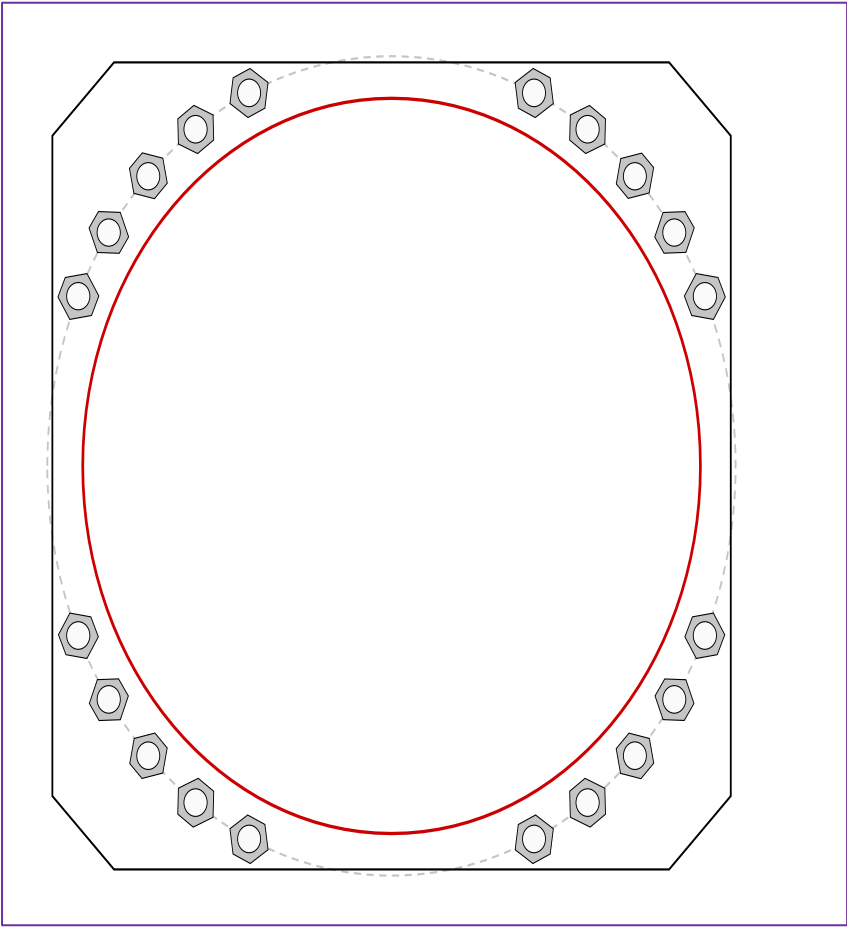


Site Info	
BU #	801366
Site Name	Rocky Hill 2
Order #	552687 Rev. 0

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	No
l_{ar} (in)	1

Applied Loads	
Moment (kip-ft)	2596.00
Axial Force (kips)	45.00
Shear Force (kips)	25.00

*TIA-222-H Section 15.5 Applied



Connection Properties		Analysis Results	
Anchor Rod Data		Anchor Rod Summary <i>(units of kips, kip-in)</i>	
(20) 2-1/4" $\varnothing$ bolts (A615-75 N; $F_y=75$ ksi, $F_u=100$ ksi) on 67" BC <i>Anchor Spacing: 6 in</i>		$Pu_c = 95.2$	$\phi Pn_c = 268.39$ Stress Rating
		$Vu = 1.25$	$\phi Vn = 120.77$ 33.8%
		$Mu = n/a$	$\phi Mn = n/a$ Pass
Base Plate Data		Base Plate Summary	
66" W x 3" Plate (A572-55; $F_y=55$ ksi, $F_u=70$ ksi); Clip: 6 in		Max Stress (ksi):	14.81 (Flexural)
Stiffener Data		Allowable Stress (ksi):	49.5
N/A		Stress Rating:	28.5% Pass
Pole Data			
60.11" x 0.4375" 18-sided pole (A607-65; $F_y=65$ ksi, $F_u=80$ ksi)			

Pier and Pad Foundation



BU #: 801366
 Site Name: Rocky Hill 2
 App. Number: 552687 Rev. 0

TIA-222 Revision: H
 Tower Type: Monopole

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

Superstructure Analysis Reactions		
Compression, P_{comp} :	45	kips
Base Shear, V_{u_comp} :	25	kips
Moment, M_u :	2596	ft-kips
Tower Height, H :	173	ft
BP Dist. Above Fdn, bp_{dist} :	3.25	in

Pier Properties		
Pier Shape:	Circular	
Pier Diameter, $dpier$:	8	ft
Ext. Above Grade, E :	0.5	ft
Pier Rebar Size, Sc :	11	
Pier Rebar Quantity, mc :	40	
Pier Tie/Spiral Size, St :	5	
Pier Tie/Spiral Quantity, mt :	10	
Pier Reinforcement Type:	Tie	
Pier Clear Cover, cc_{pier} :	3	in

Pad Properties		
Depth, D :	8	ft
Pad Width, W_1 :	26	ft
Pad Thickness, T :	3.5	ft
Pad Rebar Size (Bottom dir. 2), Sp_2 :	11	
Pad Rebar Quantity (Bottom dir. 2), mp_2 :	31	
Pad Clear Cover, cc_{pad} :	3	in

Material Properties		
Rebar Grade, F_y :	60	ksi
Concrete Compressive Strength, F'_c :	3	ksi
Dry Concrete Density, δc :	150	pcf

Soil Properties		
Total Soil Unit Weight, γ :	120	pcf
Ultimate Gross Bearing, Q_{ult} :	9.000	ksf
Cohesion, C_u :	0.000	ksf
Friction Angle, ϕ :	33	degrees
SPT Blow Count, N_{blows} :	24	
Base Friction, μ :		
Neglected Depth, N :	4.00	ft
Foundation Bearing on Rock?	No	
Groundwater Depth, gw :	10	ft

Foundation Analysis Checks				
	Capacity	Demand	Rating*	Check
Lateral (Sliding) (kips)	388.27	25.00	6.1%	Pass
Bearing Pressure (ksf)	6.75	2.03	28.7%	Pass
Overturning (kip*ft)	8309.81	2815.27	33.9%	Pass
Pier Flexure (Comp.) (kip*ft)	10913.10	2721.00	23.7%	Pass
Pier Compression (kip)	23994.73	90.24	0.4%	Pass
Pad Flexure (kip*ft)	7630.08	868.29	10.8%	Pass
Pad Shear - 1-way (kips)	945.49	127.47	12.8%	Pass
Pad Shear - 2-way (Comp) (ksi)	0.164	0.020	11.6%	Pass
Flexural 2-way (Comp) (kip*ft)	10768.44	1632.60	14.4%	Pass

*Rating per TIA-222-H Section 15.5

Soil Rating*:	33.9%
Structural Rating*:	23.7%

<--Toggle between Gross and Net

Drilled Pier Foundation

BU #:	801366
Site Name:	Rocky Hill 2
Order Number:	552687 Rev. 0

TIA-222 Revision:	H
Tower Type:	Monopole

Applied Loads		
	Comp.	Uplift
Moment (kip-ft)	2596	
Axial Force (kips)	45	
Shear Force (kips)	25	

Material Properties		
Concrete Strength, f _c :	3	ksi
Rebar Strength, F _y :	60	ksi
Tie Yield Strength, F _{yt} :	40	ksi

Pier Design Data		
Depth	27	ft
Ext. Above Grade	0.5	ft
Pier Section 1		
From 0.5' above grade to 27' below grade		
Pier Diameter	8	ft
Rebar Quantity	24	
Rebar Size	11	
Clear Cover to Ties	4	in
Tie Size	5	
Tie Spacing	18	in

[Rebar & Pier Options](#)

[Embedded Pole Inputs](#)

[Belled Pier Inputs](#)

Analysis Results		
Soil Lateral Check	Compression	Uplift
D _{v=0} (ft from TOC)	6.44	-
Soil Safety Factor	3.77	-
Max Moment (kip-ft)	2754.45	-
Rating*	33.6%	-
Soil Vertical Check	Compression	Uplift
Skin Friction (kips)	431.71	-
End Bearing (kips)	226.19	-
Weight of Concrete (kips)	184.80	-
Total Capacity (kips)	657.91	-
Axial (kips)	229.80	-
Rating*	33.3%	-
Reinforced Concrete Flexure	Compression	Uplift
Critical Depth (ft from TOC)	6.41	-
Critical Moment (kip-ft)	2754.44	-
Critical Moment Capacity	6920.13	-
Rating*	37.9%	-
Reinforced Concrete Shear	Compression	Uplift
Critical Depth (ft from TOC)	17.67	-
Critical Shear (kip)	297.97	-
Critical Shear Capacity	685.55	-
Rating*	41.4%	-
Soil Interaction Rating*	33.6%	
Structural Foundation Rating*	41.4%	

*Rating per TIA-222-H Section 15.5



Check Limitation	
Apply TIA-222-H Section 15.5:	☒
N/A	☐
Shear Design Options	
Check Shear along Depth of Pier:	☒
Utilize Shear-Friction Methodology:	☐
Override Critical Depth:	☐

[Go to Soil Calculations](#)

Soil Profile				
Groundwater Depth	10	# of Layers	5	

Layer	Top (ft)	Bottom (ft)	Thickness (ft)	γ _{soil} (pcf)	γ _{concrete} (pcf)	Cohesion (ksf)	Angle of Friction (degrees)	Calculated Ultimate Skin Friction Comp (ksf)	Calculated Ultimate Skin Friction Uplift (ksf)	Ultimate Skin Friction Comp Override (ksf)	Ultimate Skin Friction Uplift Override (ksf)	Ult. Gross Bearing Capacity (ksf)	SPT Blow Count	Soil Type
1	0	4	4	120	150	0	0	0.000	0.000	0.00	0.00			Cohesionless
2	4	10	6	120	150	0	33	0.960	0.960				24	Cohesionless
3	10	13.5	3.5	60	87.6	0	33	1.354	1.354				15	Cohesionless
4	13.5	23.5	10	60	87.6	0	32	1.048	1.048				10	Cohesionless
5	23.5	27	3.5	55	87.6	1	0	0.550	0.550			6		Cohesive

Exhibit E

Mount Analysis



Maser Consulting Connecticut
2000 Midlantic Drive, Suite 100
Mt. Laurel, NJ 08054
(856) 797-0412
peter.albano@colliersengineering.com

Post-Mod Antenna Mount Analysis Report and PMI Requirements

Mount Fix

SMART Tool Project #: 10061729
Maser Consulting Connecticut Project #: 21777029A

April 30, 2021

Site Information

Site ID: 467462-VZW / Rocky Hill CT
Site Name: Rocky Hill CT
Carrier Name: Verizon Wireless
Address: France St. Lot 1
Rocky Hill, Connecticut 06067
Hartford County
Latitude: 41.639778°
Longitude: -72.701889°

Structure Information

Tower Type: 142-Ft Monopole
Mount Type: 14.25-Ft Platform

FUZE ID # 16232011

Analysis Results

Platform: 91.8% Pass

***Contractor PMI Requirements:

Included at the end of this MA report

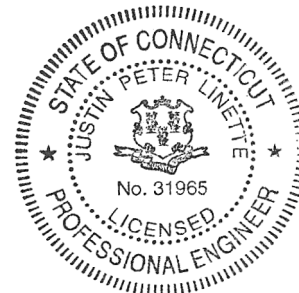
Available & Submitted via portal at <https://pmi.vzwsmart.com>

Contractor - Please Review Specific Site PMI Requirements Upon Award

Requirements also Noted on Mount Modification Drawings

Requirements may also be Noted on A & E drawings

Report Prepared By: Selene Chen



Executive Summary:

The objective of this report is to summarize the analysis results of the antenna support mount including the proposed modifications at the subject facility for the final wireless telecommunications configuration, per the applicable codes and standards.

This analysis is inclusive of the mount structure only and does not address the structural capacity of the supporting structure. This mounting frame was not analyzed as an anchor attachment point for fall protection. All climbing activities are required to have a fall protection plan completed by a competent person.

Sources of Information:

Document Type	Remarks
Radio Frequency Data Sheet (RFDS)	Verizon RFDS, Site ID: 324787, dated September 2, 2020
Mount Mapping Report	Level-Up Towers, Site ID: 467462, dated February 18, 2021
Mount Analysis Report	Maser Consulting Connecticut, Project #: 21777029A, dated April 2, 2021
Mount Modification Drawings	Maser Consulting Connecticut, Project #: 21777029A, dated April 30, 2021

Analysis Criteria:

Codes and Standards:	ANSI/TIA-222-H
Wind Parameters:	Basic Wind Speed (Ultimate 3-sec. Gust), V_{ULT} : 118 mph Ice Wind Speed (3-sec. Gust): 50 mph Design Ice Thickness: 1.50 in Risk Category: II Exposure Category: C Topographic Category: 1 Topographic Feature Considered: N/A Topographic Method: N/A Ground Elevation Factor, K_e : 0.993
Seismic Parameters:	S_S : 0.201 S_1 : 0.055
Maintenance Parameters:	Wind Speed (3-sec. Gust): 30 mph Maintenance Live Load, L_v : 250 lbs. Maintenance Live Load, L_m : 500 lbs.
Analysis Software:	RISA-3D (V17)

Final Loading Configuration:

The following equipment has been considered for the analysis of the mount:

Mount Elevation (ft)	Equipment Elevation (ft)	Quantity	Manufacturer	Model	Status
135.50	137.10	3	Andrew	LNx-6513DS-A1M	Added
		6	Commscope	NHH-65B-R2B	
	135.00	3	Samsung	XXDWMM-12.5-65-8T-CBRS	
	138.50	3	Samsung	MT6407-77A	
		3	Samsung	B2/B66A RRH-BR049	
		3	Samsung	B5/B13 RRH-BR04C	
		2	Raycap	RRFDC-3315-PF-48*	Retained

* Equipment to be flush mounted directly to the Monopole. They are not mounted on platform mount and are not included in this mount analysis.

Standard Conditions:

1. All engineering services are performed on the basis that the information provided to Maser Consulting Connecticut and used in this analysis is current and correct. The existing equipment loading has been applied at locations determined from the supplied documentation. Any deviation from the loading locations specified in this report shall be communicated to Maser Consulting Connecticut to verify deviation will not adversely impact the analysis.
2. Mounts are assumed to have been properly fabricated, installed and maintained in good condition, twist free and plumb in accordance with its original design and manufacturer's specifications.

Obvious safety and structural issues/deficiencies noticed at the time of the mount mapping and reported in the Mount Mapping Report are assumed to be corrected and documented as part of the PMI process and are not considered in the mount analysis.

The mount analysis and the mount mapping are not a condition assessment of the mount. Proper maintenance and condition assessments are still required post analysis.

3. For mount analyses completed from other data sources (including new replacement mounts) and not specifically mapped by Maser Consulting Connecticut, the mounts are assumed to have been properly fabricated, installed and maintained in good condition, twist free and plumb in accordance with its original design and manufacturer's specifications.
4. 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.
5. The mount was checked up to, and including, the bolts that fasten it to the mount collar/attachment and threaded rod connections in collar members if applicable. Local deformation and interaction between the mount collar/attachment and the supporting tower structure are outside the scope of this analysis.
6. All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. Maser Consulting Connecticut is not responsible for the conclusion, opinions, and recommendations made by others based on the information supplied.

7. Structural Steel Grades have been assumed as follows, if applicable, unless otherwise noted in this analysis:
- Channel, Solid Round, Angle, Plate ASTM A36 (Gr. 36)
 - HSS (Rectangular) ASTM 500 (Gr. B-46)
 - Pipe ASTM A53 (Gr. B-35)
 - Threaded Rod F1554 (Gr. 36)
 - Bolts ASTM A325
8. Any mount modifications listed under Sources of Information are assumed to have been installed per the design specifications.

Discrepancies between in-field conditions and the assumptions listed above may render this analysis invalid unless explicitly approved by Maser Consulting Connecticut.

Analysis Results:

Component	Utilization %	Pass/Fail
Connection	74.2%	Pass
Back Standoff HSS	60.2%	Pass
Front Standoff HSS	26.2%	Pass
Platform Crossmember	51.9%	Pass
Corner Grating Angle	12.7%	Pass
Face Horizontal	91.8%	Pass
Support Rail	45.5%	Pass
Mount Pipe	32.1%	Pass
Mod Bracing	13.1%	Pass
Support Rail Corner Pipe	7.8%	Pass

Structure Rating – (Controlling Utilization of all Components)	91.8%
---	--------------

Recommendation:

The existing mount will be **SUFFICIENT** for the final loading after the proposed modifications are successfully completed.

ANSI/ASSP rigging plan review services compliant with the requirements of ANSI/TIA 322 are available for a Construction Class IV site or other, if required. Separate review fees will apply.

Attachments:

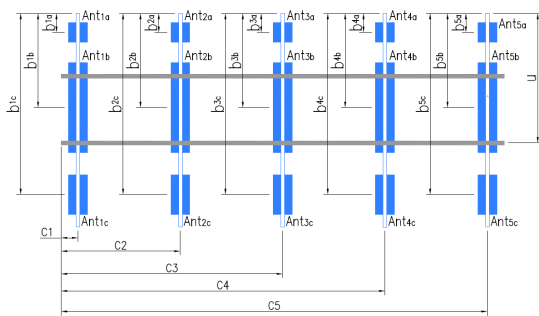
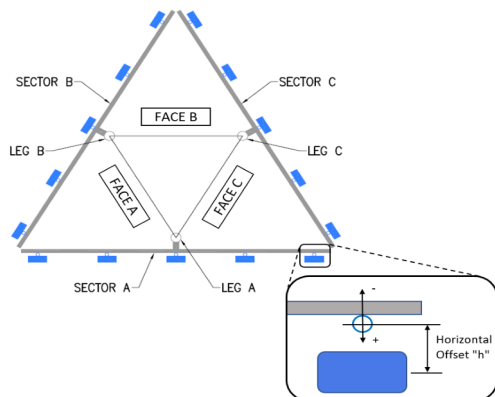
1. Mount Photos
2. Mount Mapping Report (for reference only)
3. Analysis Calculations
4. **Contractor Required PMI Report Deliverables**
5. Antenna Placement Diagrams
6. TIA Adoption and Wind Speed Usage Letter



FCC

Tower Owner:	Crown Castle	Mapping Date:	2/18/2021
Site Name:	Rocky Hill	Tower Type:	Monopole
Site Number or ID:	467462	Tower Height (Ft.):	142
Mapping Contractor:	Level-Up Towers	Mount Elevation (Ft.):	135.5

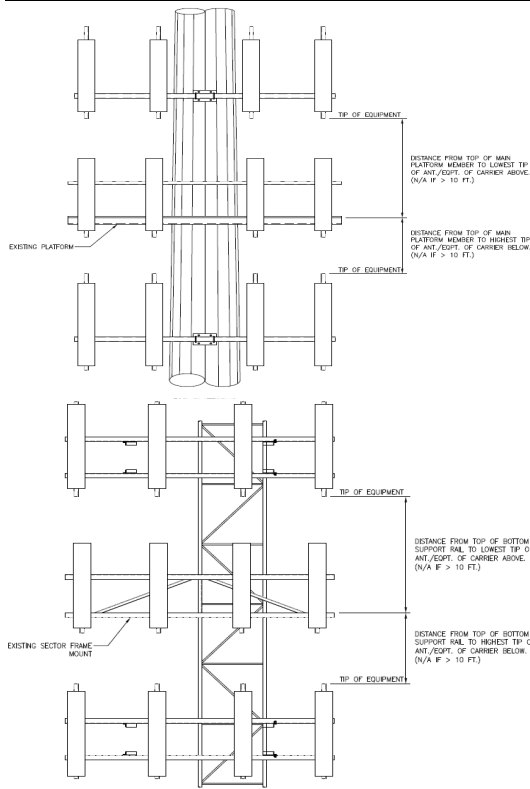
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Antenna Layout (Looking Out From Tower)

Mount Pipe Configuration and Geometries [Unit = Inches]							
Sector / Position	Mount Pipe Size & Length	Vertical Offset Dimension "y"	Horizontal Offset "C1, C2, C3, etc."	Sector / Position	Mount Pipe Size & Length	Vertical Offset Dimension "y"	Horizontal Offset "C1, C2, C3, etc."
A1	P2.38X0.15", 72" Long	59.00	16.00	C1	P2.38X0.15", 72" Long	59.00	16.00
A2	P2.38X0.15", 72" Long	59.00	79.50	C2	P2.38X0.15", 72" Long	59.00	79.50
A3	P2.38X0.15", 72" Long	59.00	128.00	C3	P2.38X0.15", 72" Long	59.00	128.00
A4	P2.38X0.15", 72" Long	59.00	154.00	C4	P2.38X0.15", 72" Long	59.00	154.00
A5				C5			
A6				C6			
B1	P2.38X0.15", 72" Long	59.00	16.00	D1			
B2	P2.38X0.15", 72" Long	59.00	79.50	D2			
B3	P2.38X0.15", 72" Long	59.00	128.00	D3			
B4	P2.38X0.15", 72" Long	59.00	154.00	D4			
B5				D5			
B6				D6			
Distance between bottom rail and mount CL elevation (dim d). Unit is inches. See 'Mount Elev Ref' tab for details. :							
Distance from top of bottom support rail to lowest tip of ant./eqpt. of Carrier above. (N/A if > 10 ft.) :							
Distance from top of bottom support rail to highest tip of ant./eqpt. of Carrier below. (N/A if > 10 ft.) :							
Please enter additional information or comments below.							
Tower Face Width at Mount Elev. (ft.):			Tower Leg Size or Pole Shaft Diameter at Mount Elev. (in.):				18

[illegible]

Mount Azimuth (Degree) for Each Sector				Tower Leg Azimuth (Degree) for Each Sector				Sector B																		
Sector A:	30.00	Deg	Leg A:		Deg			Ant _{1a}	Amphenol LPA-80063	15.00	13.00	48.00	1 - 1-5/8	138	29.00	11.00	150.00	50								
Sector B:	15.00	Deg	Leg B:		Deg			Ant _{1b}																		
Sector C:	270.00	Deg	Leg C:		Deg			Ant _{2a}	Commscope SBNHH-1	12.00	7.00	72.00		137.083	40.00	10.00	150.00	53								
Sector D:		Deg	Leg D:		Deg			Ant _{2b}	Commscope SBNHH-1	12.00	7.00	72.00		137.083	40.00	10.00	150.00	53								
Climbing Facility Information								Ant _{2c}	ALU B13 RRH4x30	12.00	9.00	21.50		137.417	36.00	-7.00	150.00	58								
Location:	30.00	Deg	Sector A					Ant _{3a}																		
Climbing Facility	Corrosion Type:		Good condition.					Ant _{3b}																		
	Access:		Climbing path was unobstructed.					Ant _{3c}																		
	Condition:		Good condition.					Ant _{4a}	Amphenol LPA-80063	15.00	13.00	48.00	1 - 1-5/8	138	29.00	11.00	150.00	62								
								Ant _{4b}																		
								Ant _{4c}																		
								Ant _{5a}																		
								Ant _{5b}																		
								Ant _{5c}																		
								Ant on Standoff																		
								Ant on Standoff																		
								Ant on Tower																		
								Ant on Tower																		
								Sector C																		
								Ant _{1a}	Swedcom SC-E 6014	8.50	8.00	43.00	1 - 1-5/8	138.417	24.00	12.00	270.00	64								
								Ant _{1b}																		
								Ant _{1c}																		
								Ant _{2a}	Commscope SBNHH-1	12.00	7.00	72.00		137.083	40.00	10.00	270.00	67								
								Ant _{2b}	Commscope SBNHH-1	12.00	7.00	72.00		137.083	40.00	10.00	270.00	67								
								Ant _{2c}	ALU B13 RRH4x30	12.00	9.00	21.50		137.417	36.00	-7.00	270.00	72								
								Ant _{3a}																		
								Ant _{3b}																		
								Ant _{3c}																		
								Ant _{4a}	Swedcom SC-E 6014	8.50	8.00	43.00	1 - 1-5/8	138.417	24.00	10.00	270.00	76								
								Ant _{4b}																		
								Ant _{4c}																		
								Ant _{5a}																		
								Ant _{5b}																		
								Ant _{5c}																		
								Ant on Standoff																		
								Ant on Standoff																		
								Ant on Tower																		
								Ant on Tower																		
								Sector D																		
								Ant _{1a}																		
								Ant _{1b}																		
								Ant _{1c}																		
								Ant _{2a}																		
								Ant _{2b}																		
								Ant _{2c}																		
								Ant _{3a}																		
								Ant _{3b}																		
								Ant _{3c}																		
								Ant _{4a}																		
								Ant _{4b}																		
								Ant _{4c}																		
								Ant _{5a}																		
								Ant _{5b}																		
								Ant _{5c}																		
								Ant on Standoff																		
								Ant on Standoff																		
								Ant on Tower																		
								Ant on Tower																		

Observed Safety and Structural Issues During the Mount Mapping		
Issue #	Description of Issue	Photo #

1		
2		
3		
4		
5		
6		
7		
8		

Mapping Notes
1. Please report any visible structural or safety issues observed on the antenna mounts (Damaged members, loose connections, tilting mounts, safety climb issues, etc.) 2. If the thickness of the existing pipes or tubing can't be obtained from a general tool (such as Caliper), please use an ultrasonic measurement tool (thickness gauge) to measure the thickness. 3. Please create all required detail sketches of the mounts and insert them into the "Sketches" tab. 4. Please measure and enter the bolt sizes and types under the Members Box in the spreadsheet of the mount type. 5. Take and label the photos of the tower, mounts, connections, antennas and all measurements. Minimum 50 photos are required. 6. Please measure and report the size and length of all existing antenna mounting pipes. 7. Please measure and report the antenna information for all sectors. 8. Don't delete or rearrange any sheet or contents of any sheet from this mapping form.
Standard Conditions
1. Obvious safety and structural issues/deficiencies noticed at the time of the mount mapping are to be reported in this mapping. However, this mount mapping is not a condition assessment of the mount.



Antenna Mount Mapping Form (PATENT PENDING)

FCC #

Tower Owner:	Crown Castle	Mapping Date:	2/18/2021
Site Name:	Rocky Hill	Tower Type:	Monopole
Site Number or ID:	467462	Tower Height (Ft.):	142
Mapping Contractor:	Level-Up Towers	Mount Elevation (Ft.):	135.5

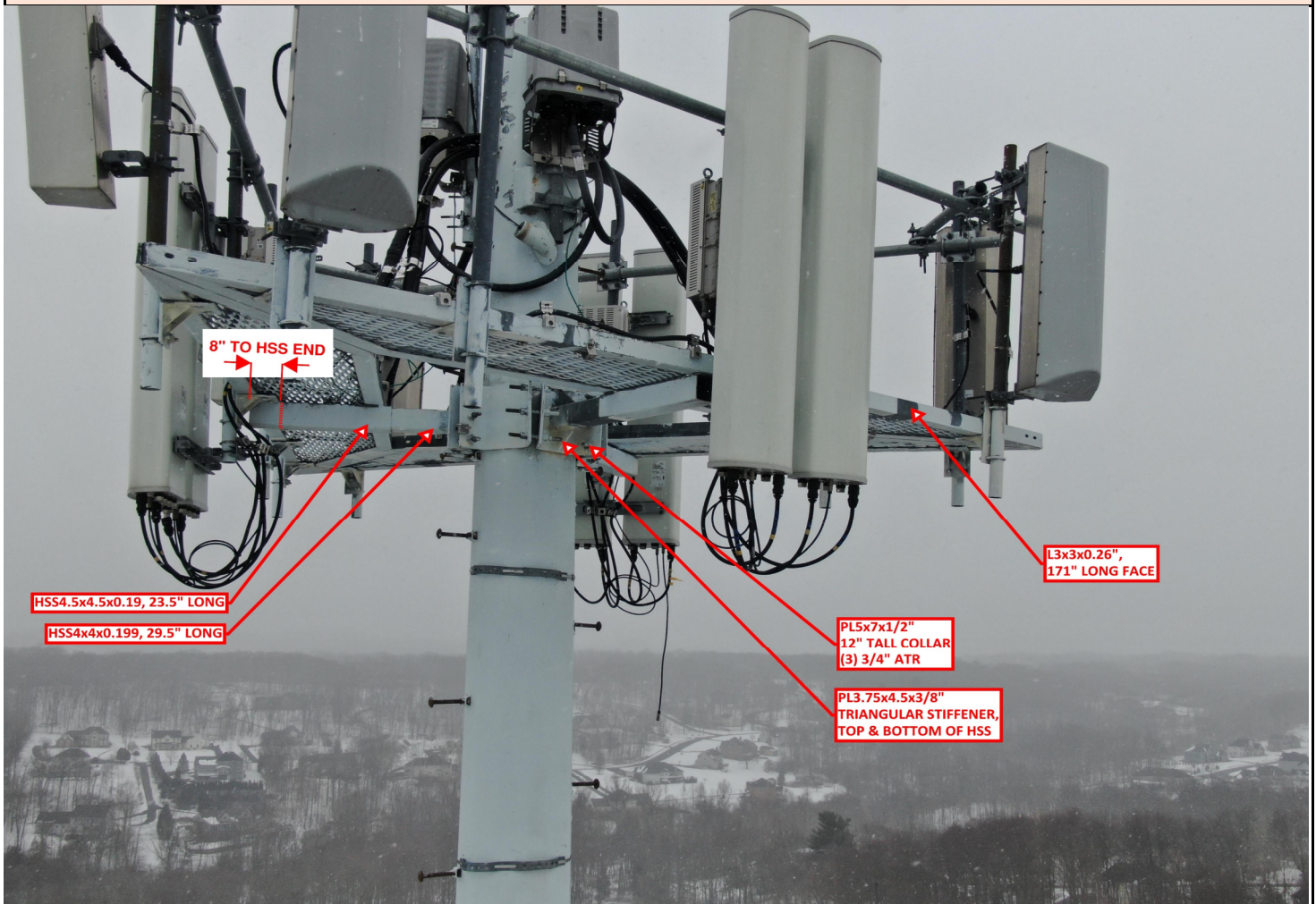
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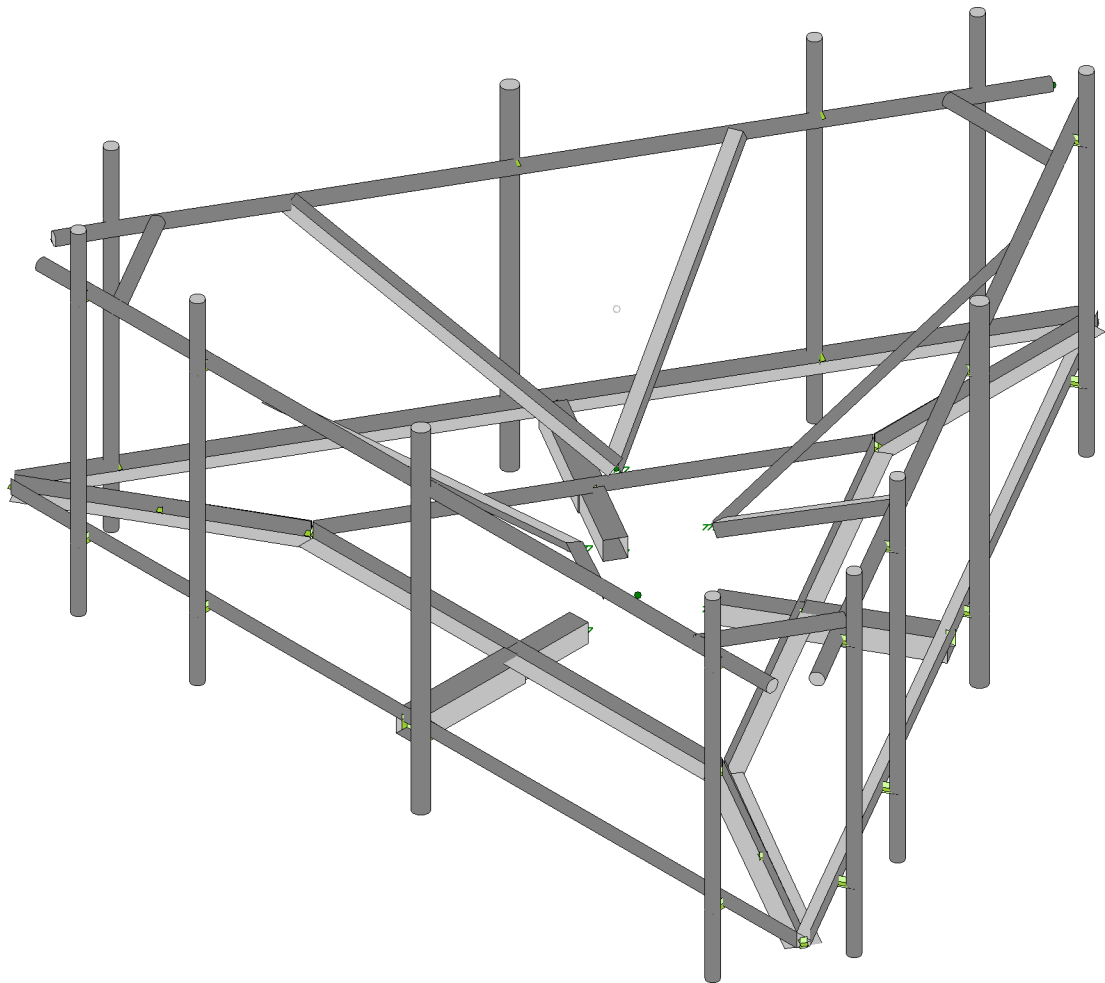
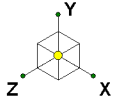
Please Insert Sketches of the Antenna Mount



Please Insert Sketches of the Antenna Mount, cont'd







Envelope Only Solution

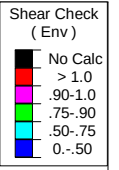
Maser Consulting

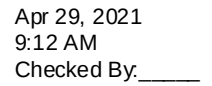
467462-VZW_MT_LO_H

SK - 1

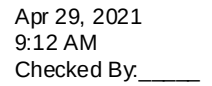
Apr 29, 2021 at 9:11 AM

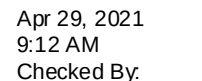
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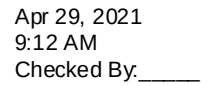


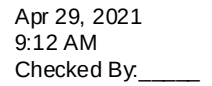


BLC Description		Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed Area(Me... Surface(P...	
1	Antenna D	None					99		
2	Antenna Di	None					99		
3	Antenna W o (0 Deg)	None					99		
4	Antenna W o (30 Deg)	None					99		
5	Antenna W o (60 Deg)	None					99		
6	Antenna W o (90 Deg)	None					99		
7	Antenna W o (120 Deg)	None					99		
8	Antenna W o (150 Deg)	None					99		
9	Antenna W o (180 Deg)	None					99		
10	Antenna W o (210 Deg)	None					99		
11	Antenna W o (240 Deg)	None					99		
12	Antenna W o (270 Deg)	None					99		
13	Antenna W o (300 Deg)	None					99		
14	Antenna W o (330 Deg)	None					99		
15	Antenna W i (0 Deg)	None					99		
16	Antenna W i (30 Deg)	None					99		
17	Antenna W i (60 Deg)	None					99		
18	Antenna W i (90 Deg)	None					99		
19	Antenna W i (120 Deg)	None					99		
20	Antenna W i (150 Deg)	None					99		
21	Antenna W i (180 Deg)	None					99		
22	Antenna W i (210 Deg)	None					99		
23	Antenna W i (240 Deg)	None					99		
24	Antenna W i (270 Deg)	None					99		
25	Antenna W i (300 Deg)	None					99		
26	Antenna W i (330 Deg)	None					99		
27	Antenna W m (0 Deg)	None					99		
28	Antenna W m (30 Deg)	None					99		
29	Antenna W m (60 Deg)	None					99		
30	Antenna W m (90 Deg)	None					99		
31	Antenna W m (120 De...	None					99		
32	Antenna W m (150 De...	None					99		
33	Antenna W m (180 De...	None					99		
34	Antenna W m (210 De...	None					99		
35	Antenna W m (240 De...	None					99		
36	Antenna W m (270 De...	None					99		
37	Antenna W m (300 De...	None					99		
38	Antenna W m (330 De...	None					99		
39	Structure D	None		-1				3	
40	Structure Di	None						42	3
41	Structure Wo (0 Deg)	None						84	
42	Structure Wo (30 Deg)	None						84	
43	Structure Wo (60 Deg)	None						84	
44	Structure Wo (90 Deg)	None						84	
45	Structure Wo (120 D...	None						84	
46	Structure Wo (150 D...	None						84	
47	Structure Wo (180 D...	None						84	
48	Structure Wo (210 D...	None						84	
49	Structure Wo (240 D...	None						84	
50	Structure Wo (270 D...	None						84	
51	Structure Wo (300 D...	None						84	

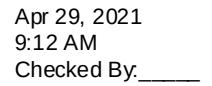
Page 2







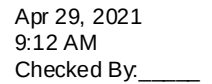
	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diap...
52	N52	0.5	4.916667	0.291667	0	
53	N53	0.5	-1.083333	0.291667	0	
54	N54	-3.541667	0	0.041667	0	
55	N55	-3.541667	3.791667	0.041667	0	
56	N56	-3.541667	0	0.291667	0	
57	N57	-3.541667	3.791667	0.291667	0	
58	N58	-3.541667	4.916667	0.291667	0	
59	N59	-3.541667	-1.083333	0.291667	0	
60	N60	-5.708333	0	0.041667	0	
61	N61	-5.708333	3.791667	0.041667	0	
62	N62	-5.708333	0	0.291667	0	
63	N63	-5.708333	3.791667	0.291667	0	
64	N64	-5.708333	4.916667	0.291667	0	
65	N65	-5.708333	-1.083333	0.291667	0	
66	N67	0.712606	0	-11.224064	0	
67	N68	0.712606	3.791667	-11.224064	0	
68	N69	0.929112	0	-11.349064	0	
69	N70	0.929112	3.791667	-11.349064	0	
70	N71	0.929112	4.916667	-11.349064	0	
71	N72	0.929112	-1.083333	-11.349064	0	
72	N73	3.358439	0	-6.641346	0	
73	N74	3.358439	3.791667	-6.641346	0	
74	N75	3.574946	0	-6.766346	0	
75	N76	3.574946	3.791667	-6.766346	0	
76	N77	3.574946	4.916667	-6.766346	0	
77	N78	3.574946	-1.083333	-6.766346	0	
78	N79	5.379273	0	-3.14116	0	
79	N80	5.379273	3.791667	-3.14116	0	
80	N81	5.595779	0	-3.26616	0	
81	N82	5.595779	3.791667	-3.26616	0	
82	N83	5.595779	4.916667	-3.26616	0	
83	N84	5.595779	-1.083333	-3.26616	0	
84	N85	6.462606	0	-1.264772	0	
85	N86	6.462606	3.791667	-1.264772	0	
86	N87	6.679112	0	-1.389772	0	
87	N88	6.679112	3.791667	-1.389772	0	
88	N89	6.679112	4.916667	-1.389772	0	
89	N90	6.679112	-1.083333	-1.389772	0	
90	N92	-6.504273	0	-1.192603	0	
91	N93	-6.504273	3.791667	-1.192603	0	
92	N94	-6.720779	0	-1.317603	0	
93	N95	-6.720779	3.791667	-1.317603	0	
94	N96	-6.720779	4.916667	-1.317603	0	
95	N97	-6.720779	-1.083333	-1.317603	0	
96	N98	-3.858439	0	-5.775321	0	
97	N99	-3.858439	3.791667	-5.775321	0	
98	N100	-4.074946	0	-5.900321	0	
99	N101	-4.074946	3.791667	-5.900321	0	
100	N102	-4.074946	4.916667	-5.900321	0	
101	N103	-4.074946	-1.083333	-5.900321	0	
102	N104	-1.837606	0	-9.275507	0	
103	N105	-1.837606	3.791667	-9.275507	0	

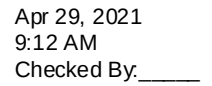


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105	N107	-2.054112	3.791667	-9.400507	0	
106	N108	-2.054112	4.916667	-9.400507	0	
107	N109	-2.054112	-1.083333	-9.400507	0	
108	N110	-0.754273	0	-11.151895	0	
109	N111	-0.754273	3.791667	-11.151895	0	
110	N112	-0.970779	0	-11.276895	0	
111	N113	-0.970779	3.791667	-11.276895	0	
112	N114	-0.970779	4.916667	-11.276895	0	
113	N115	-0.970779	-1.083333	-11.276895	0	
114	N114A	5.416667	0	-0.9375	0	
115	N115A	-5.416667	0	-0.9375	0	
116	N116	0.052123	0	-10.409721	0	
117	N117	5.468789	0	-1.027779	0	
118	N118	-5.468789	0	-1.027779	0	
119	N119	-0.052123	0	-10.409721	0	
120	N134	-.25	0	0.041667	0	
121	N135	.25	0	0.041667	0	
122	N136	-5.75	0	0.041667	0	
123	N137	-4.375	0	0.041667	0	
124	N138	-3	0	0.041667	0	
125	N139	-1.625	0	0.041667	0	
126	N191	-6.483439	0	-1.228687	0	
127	N127	0.	1.123333	-3.083333	0	
128	N128	0.90211	3.623333	-4.645833	0	
129	N129	-0.90211	3.623333	-4.645833	0	
130	N130	-2.5	3.791667	0.041667	0	
131	N131	3.5	3.791667	0.041667	0	
132	N133	0.90211	1.123333	-4.645833	0	
133	N134A	4.858439	3.791667	-4.04327	0	
134	N135A	1.858439	3.791667	-9.239422	0	
135	N137A	-0.90211	1.123333	-4.645833	0	
136	N138A	-2.358439	3.791667	-8.373397	0	
137	N139A	-5.358439	3.791667	-3.177244	0	

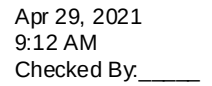
	Label	Shape	Type	Design List	Material	Design Rul...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Standoff HSS Back	HSS4X4X3	Beam	Tube	A500 Gr. B...	Typical	2.58	6.21	6.21	10
2	Platform Angle	L3X3X4	Beam	Single Angle	A36 Gr.36	Typical	1.44	1.23	1.23	.031
3	Mounp Pipe	PIPE 2.0	Column	Pipe	A53 Gr. B	Typical	1.02	.627	.627	1.25
4	Standoff HSS Front	HSS4.5X4...	Beam	Tube	A500 Gr. B...	Typical	2.93	9.02	9.02	14.4
5	kickers	L2.5x2.5x3	Column	Single Angle	A36 Gr.36	Typical	.901	.535	.535	.011
6	Pipe 2.5	PIPE 2.5	Column	Pipe	A53 Gr. B	Typical	1.61	1.45	1.45	2.89

	Label	E [ksi]	G [ksi]	Nu	Therm (/1E...Density[k/ft...	Yield[ksi]	Ry	Fu[ksi]	Rt	
1	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
2	A53 Gr. B	29000	11154	.3	.65	.49	35	1.5	60	1.2
3	A572 Gr.50	29000	11154	.3	.65	.49	50	1.1	65	1.1

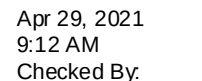
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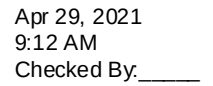


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	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Defl Rat...	Analysis ...	Inactive	Seismic ...
11	M11						Yes				None
12	M12						Yes				None
13	M13						Yes	** NA **			None
14	M14						Yes	** NA **			None
15	M15						Yes				None
16	M16						Yes				None
17	M17						Yes				None
18	M18						Yes				None
19	M19						Yes				None
20	M20						Yes	** NA **			None
21	M21						Yes	** NA **			None
22	M22A						Yes	** NA **			None
23	M23A						Yes	** NA **			None
24	M24						Yes	** NA **			None
25	M25						Yes	** NA **			None
26	M26						Yes	** NA **			None
27	M27						Yes	** NA **			None
28	M28						Yes				None
29	M29						Yes				None
30	M30						Yes				None
31	M31						Yes	** NA **			None
32	M32						Yes	** NA **			None
33	M33						Yes	** NA **			None
34	M34	BenPIN	BenPIN				Yes	** NA **			None
35	M35	BenPIN	BenPIN				Yes	** NA **			None
36	M36	BenPIN	BenPIN				Yes	** NA **			None
37	M37						Yes	** NA **			None
38	M38						Yes	** NA **			None
39	MP1A						Yes	** NA **			None
40	M40						Yes	** NA **			None
41	M41						Yes	** NA **			None
42	MP2A						Yes	** NA **			None
43	M43						Yes	** NA **			None
44	M44						Yes	** NA **			None
45	MP3A						Yes	** NA **			None
46	M46						Yes	** NA **			None
47	M47						Yes	** NA **			None
48	MP4A						Yes	** NA **			None
49	M49						Yes	** NA **			None
50	M50						Yes	** NA **			None
51	MP1C						Yes	** NA **			None
52	M52						Yes	** NA **			None
53	M53						Yes	** NA **			None
54	MP2C						Yes	** NA **			None
55	M55						Yes	** NA **			None
56	M56						Yes	** NA **			None
57	MP3C						Yes	** NA **			None
58	M58						Yes	** NA **			None
59	M59						Yes	** NA **			None
60	MP4C						Yes	** NA **			None
61	M61						Yes	** NA **			None
62	M62						Yes	** NA **			None



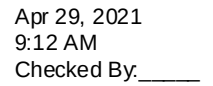
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Member Point Loads (BLC 1 : Antenna D) (Continued)

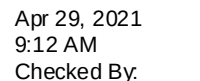
	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
81	MP1C	Mz	0	2.5
82	MP2A	Y	-84.4	3
83	MP2A	My	.042	3
84	MP2A	Mz	0	3
85	MP2B	Y	-84.4	3
86	MP2B	My	-.021	3
87	MP2B	Mz	.037	3
88	MP2C	Y	-84.4	3
89	MP2C	My	-.021	3
90	MP2C	Mz	-.037	3
91	MP3A	Y	-70.3	3
92	MP3A	My	.035	3
93	MP3A	Mz	0	3
94	MP3B	Y	-70.3	3
95	MP3B	My	-.018	3
96	MP3B	Mz	.03	3
97	MP3C	Y	-70.3	3
98	MP3C	My	-.018	3
99	MP3C	Mz	-.03	3

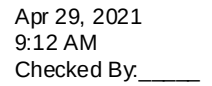
Member Point Loads (BLC 2 : Antenna Di)

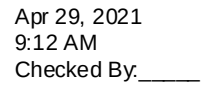
	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP4A	Y	-74.463	1.25
2	MP4A	My	-.037	1.25
3	MP4A	Mz	0	1.25
4	MP4A	Y	-74.463	4.75
5	MP4A	My	-.037	4.75
6	MP4A	Mz	0	4.75
7	MP4B	Y	-74.463	1.25
8	MP4B	My	.019	1.25
9	MP4B	Mz	-.032	1.25
10	MP4B	Y	-74.463	4.75
11	MP4B	My	.019	4.75
12	MP4B	Mz	-.032	4.75
13	MP4C	Y	-74.463	1.25
14	MP4C	My	.019	1.25
15	MP4C	Mz	.032	1.25
16	MP4C	Y	-74.463	4.75
17	MP4C	My	.019	4.75
18	MP4C	Mz	.032	4.75
19	MP2A	Y	-95.494	1
20	MP2A	My	-.048	1
21	MP2A	Mz	.056	1
22	MP2A	Y	-95.494	5
23	MP2A	My	-.048	5
24	MP2A	Mz	.056	5
25	MP2B	Y	-95.494	1
26	MP2B	My	-.024	1
27	MP2B	Mz	-.069	1
28	MP2B	Y	-95.494	5
29	MP2B	My	-.024	5

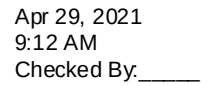


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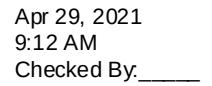


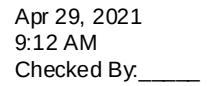
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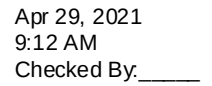


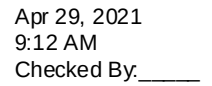


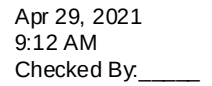
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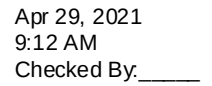
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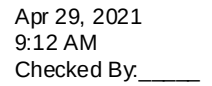
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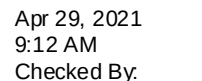
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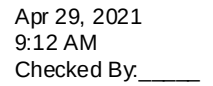
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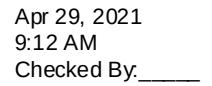


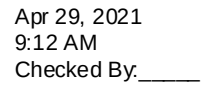
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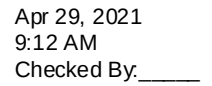
Page 30

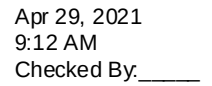


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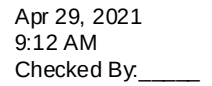


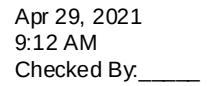
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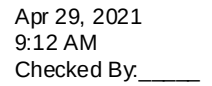
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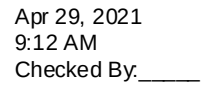
Member Point Loads (BLC 15 : Antenna Wi (0 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
43	MP2B	X	0	1
44	MP2B	Z	-26.674	1
45	MP2B	Mx	.004	1
46	MP2B	X	0	5
47	MP2B	Z	-26.674	5
48	MP2B	Mx	.004	5
49	MP2C	X	0	1
50	MP2C	Z	-26.674	1
51	MP2C	Mx	-.019	1
52	MP2C	X	0	5
53	MP2C	Z	-26.674	5
54	MP2C	Mx	-.019	5
55	MP1A	X	0	5.5
56	MP1A	Z	-9.553	5.5
57	MP1A	Mx	0	5.5
58	MP1B	X	0	5.5
59	MP1B	Z	-4.822	5.5
60	MP1B	Mx	.002	5.5
61	MP1C	X	0	5.5
62	MP1C	Z	-4.822	5.5
63	MP1C	Mx	-.002	5.5
64	MP1A	X	0	.5
65	MP1A	Z	-20.637	.5
66	MP1A	Mx	0	.5
67	MP1A	X	0	2.5
68	MP1A	Z	-20.637	2.5
69	MP1A	Mx	0	2.5
70	MP1B	X	0	.5
71	MP1B	Z	-17.768	.5
72	MP1B	Mx	-.004	.5
73	MP1B	X	0	2.5
74	MP1B	Z	-17.768	2.5
75	MP1B	Mx	-.004	2.5
76	MP1C	X	0	.5
77	MP1C	Z	-20.637	.5
78	MP1C	Mx	0	.5
79	MP1C	X	0	2.5
80	MP1C	Z	-20.637	2.5
81	MP1C	Mx	0	2.5
82	MP2A	X	0	3
83	MP2A	Z	-17.874	3
84	MP2A	Mx	0	3
85	MP2B	X	0	3
86	MP2B	Z	-13.974	3
87	MP2B	Mx	-.006	3
88	MP2C	X	0	3
89	MP2C	Z	-13.974	3
90	MP2C	Mx	.006	3
91	MP3A	X	0	3
92	MP3A	Z	-17.874	3
93	MP3A	Mx	0	3
94	MP3B	X	0	3

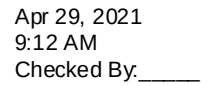
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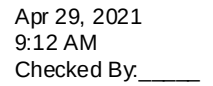
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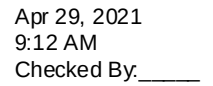
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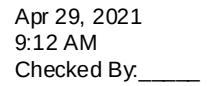


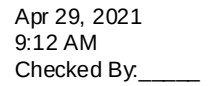
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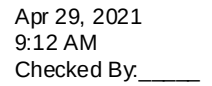
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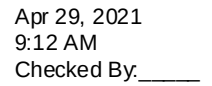


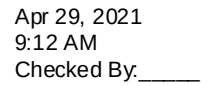
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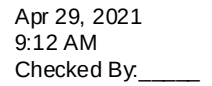


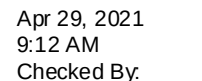
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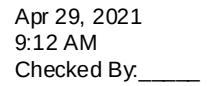












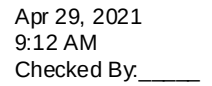
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Member Point Loads (BLC 24 : Antenna Wi (270 Deg)) (Continued)

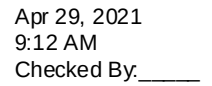
	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
56	MP1A	Z	0	5.5
57	MP1A	Mx	.002	5.5
58	MP1B	X	-7.976	5.5
59	MP1B	Z	0	5.5
60	MP1B	Mx	-.002	5.5
61	MP1C	X	-7.976	5.5
62	MP1C	Z	0	5.5
63	MP1C	Mx	-.002	5.5
64	MP1A	X	-9.163	.5
65	MP1A	Z	0	.5
66	MP1A	Mx	.005	.5
67	MP1A	X	-9.163	2.5
68	MP1A	Z	0	2.5
69	MP1A	Mx	.005	2.5
70	MP1B	X	-12.032	.5
71	MP1B	Z	0	.5
72	MP1B	Mx	.005	.5
73	MP1B	X	-12.032	2.5
74	MP1B	Z	0	2.5
75	MP1B	Mx	.005	2.5
76	MP1C	X	-9.163	.5
77	MP1C	Z	0	.5
78	MP1C	Mx	.005	.5
79	MP1C	X	-9.163	2.5
80	MP1C	Z	0	2.5
81	MP1C	Mx	.005	2.5
82	MP2A	X	-12.674	3
83	MP2A	Z	0	3
84	MP2A	Mx	-.006	3
85	MP2B	X	-16.574	3
86	MP2B	Z	0	3
87	MP2B	Mx	.004	3
88	MP2C	X	-16.574	3
89	MP2C	Z	0	3
90	MP2C	Mx	.004	3
91	MP3A	X	-10.698	3
92	MP3A	Z	0	3
93	MP3A	Mx	-.005	3
94	MP3B	X	-16.08	3
95	MP3B	Z	0	3
96	MP3B	Mx	.004	3
97	MP3C	X	-16.08	3
98	MP3C	Z	0	3
99	MP3C	Mx	.004	3

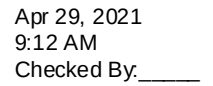
Member Point Loads (BLC 25 : Antenna Wi (300 Deg))

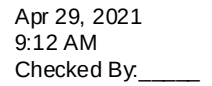
	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP4A	X	-16.913	1.25
2	MP4A	Z	-9.765	1.25
3	MP4A	Mx	.008	1.25
4	MP4A	X	-16.913	4.75



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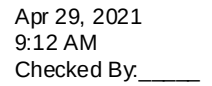


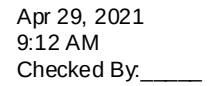
Member Point Loads (BLC 27 : Antenna Wm (0 Deg)) (Continued)

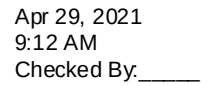
	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
59	MP1B	Z	-.933	5.5
60	MP1B	Mx	.000404	5.5
61	MP1C	X	0	5.5
62	MP1C	Z	-.933	5.5
63	MP1C	Mx	-.000404	5.5
64	MP1A	X	0	.5
65	MP1A	Z	-6.205	.5
66	MP1A	Mx	0	.5
67	MP1A	X	0	2.5
68	MP1A	Z	-6.205	2.5
69	MP1A	Mx	0	2.5
70	MP1B	X	0	.5
71	MP1B	Z	-5.261	.5
72	MP1B	Mx	-.001	.5
73	MP1B	X	0	2.5
74	MP1B	Z	-5.261	2.5
75	MP1B	Mx	-.001	2.5
76	MP1C	X	0	.5
77	MP1C	Z	-6.205	.5
78	MP1C	Mx	0	.5
79	MP1C	X	0	2.5
80	MP1C	Z	-6.205	2.5
81	MP1C	Mx	0	2.5
82	MP2A	X	0	3
83	MP2A	Z	-4.938	3
84	MP2A	Mx	0	3
85	MP2B	X	0	3
86	MP2B	Z	-3.71	3
87	MP2B	Mx	-.002	3
88	MP2C	X	0	3
89	MP2C	Z	-3.71	3
90	MP2C	Mx	.002	3
91	MP3A	X	0	3
92	MP3A	Z	-4.938	3
93	MP3A	Mx	0	3
94	MP3B	X	0	3
95	MP3B	Z	-3.24	3
96	MP3B	Mx	-.001	3
97	MP3C	X	0	3
98	MP3C	Z	-3.24	3
99	MP3C	Mx	.001	3

Member Point Loads (BLC 28 : Antenna Wm (30 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP4A	X	3.52	1.25
2	MP4A	Z	-6.097	1.25
3	MP4A	Mx	-.002	1.25
4	MP4A	X	3.52	4.75
5	MP4A	Z	-6.097	4.75
6	MP4A	Mx	-.002	4.75
7	MP4B	X	2.534	1.25

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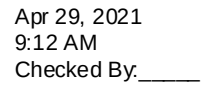
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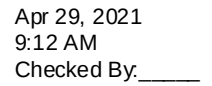
Member Point Loads (BLC 30 : Antenna Wm (90 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
62	MP1C	Z	0	5.5
63	MP1C	Mx	.00047	5.5
64	MP1A	X	2.429	.5
65	MP1A	Z	0	.5
66	MP1A	Mx	-.001	.5
67	MP1A	X	2.429	2.5
68	MP1A	Z	0	2.5
69	MP1A	Mx	-.001	2.5
70	MP1B	X	3.373	.5
71	MP1B	Z	0	.5
72	MP1B	Mx	-.001	.5
73	MP1B	X	3.373	2.5
74	MP1B	Z	0	2.5
75	MP1B	Mx	-.001	2.5
76	MP1C	X	2.429	.5
77	MP1C	Z	0	.5
78	MP1C	Mx	-.001	.5
79	MP1C	X	2.429	2.5
80	MP1C	Z	0	2.5
81	MP1C	Mx	-.001	2.5
82	MP2A	X	3.301	3
83	MP2A	Z	0	3
84	MP2A	Mx	.002	3
85	MP2B	X	4.528	3
86	MP2B	Z	0	3
87	MP2B	Mx	-.001	3
88	MP2C	X	4.528	3
89	MP2C	Z	0	3
90	MP2C	Mx	-.001	3
91	MP3A	X	2.673	3
92	MP3A	Z	0	3
93	MP3A	Mx	.001	3
94	MP3B	X	4.372	3
95	MP3B	Z	0	3
96	MP3B	Mx	-.001	3
97	MP3C	X	4.372	3
98	MP3C	Z	0	3
99	MP3C	Mx	-.001	3

Member Point Loads (BLC 31 : Antenna Wm (120 Deg))

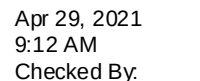
	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP4A	X	4.959	1.25
2	MP4A	Z	2.863	1.25
3	MP4A	Mx	-.002	1.25
4	MP4A	X	4.959	4.75
5	MP4A	Z	2.863	4.75
6	MP4A	Mx	-.002	4.75
7	MP4B	X	6.666	1.25
8	MP4B	Z	3.848	1.25
9	MP4B	Mx	0	1.25
10	MP4B	X	6.666	4.75

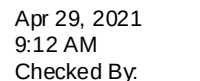


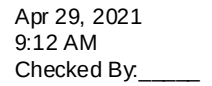
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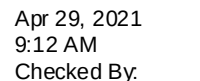
Member Point Loads (BLC 32 : Antenna Wm (150 Deg)) (Continued)

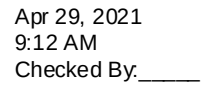
	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
12	MP4B	Mx	-.002	4.75
13	MP4C	X	2.534	1.25
14	MP4C	Z	4.389	1.25
15	MP4C	Mx	.003	1.25
16	MP4C	X	2.534	4.75
17	MP4C	Z	4.389	4.75
18	MP4C	Mx	.003	4.75
19	MP2A	X	4.882	1
20	MP2A	Z	8.456	1
21	MP2A	Mx	.002	1
22	MP2A	X	4.882	5
23	MP2A	Z	8.456	5
24	MP2A	Mx	.002	5
25	MP2B	X	4.882	1
26	MP2B	Z	8.456	1
27	MP2B	Mx	-.007	1
28	MP2B	X	4.882	5
29	MP2B	Z	8.456	5
30	MP2B	Mx	-.007	5
31	MP2C	X	3.526	1
32	MP2C	Z	6.107	1
33	MP2C	Mx	.004	1
34	MP2C	X	3.526	5
35	MP2C	Z	6.107	5
36	MP2C	Mx	.004	5
37	MP2A	X	4.882	1
38	MP2A	Z	8.456	1
39	MP2A	Mx	-.007	1
40	MP2A	X	4.882	5
41	MP2A	Z	8.456	5
42	MP2A	Mx	-.007	5
43	MP2B	X	4.882	1
44	MP2B	Z	8.456	1
45	MP2B	Mx	.002	1
46	MP2B	X	4.882	5
47	MP2B	Z	8.456	5
48	MP2B	Mx	.002	5
49	MP2C	X	3.526	1
50	MP2C	Z	6.107	1
51	MP2C	Mx	.004	1
52	MP2C	X	3.526	5
53	MP2C	Z	6.107	5
54	MP2C	Mx	.004	5
55	MP1A	X	.939	5.5
56	MP1A	Z	1.626	5.5
57	MP1A	Mx	-.00047	5.5
58	MP1B	X	.939	5.5
59	MP1B	Z	1.626	5.5
60	MP1B	Mx	-.000469	5.5
61	MP1C	X	.23	5.5
62	MP1C	Z	.399	5.5
63	MP1C	Mx	.00023	5.5



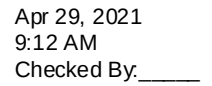




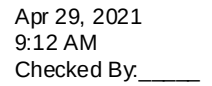




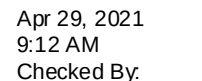
	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
15	MP4C	Mx	0	1.25
16	MP4C	X	-6.666	4.75
17	MP4C	Z	3.848	4.75
18	MP4C	Mx	0	4.75
19	MP2A	X	-6.89	1
20	MP2A	Z	3.978	1
21	MP2A	Mx	.006	1
22	MP2A	X	-6.89	5
23	MP2A	Z	3.978	5
24	MP2A	Mx	.006	5
25	MP2B	X	-6.89	1
26	MP2B	Z	3.978	1
27	MP2B	Mx	-.001	1
28	MP2B	X	-6.89	5
29	MP2B	Z	3.978	5
30	MP2B	Mx	-.001	5
31	MP2C	X	-9.238	1
32	MP2C	Z	5.334	1
33	MP2C	Mx	-.006	1
34	MP2C	X	-9.238	5
35	MP2C	Z	5.334	5
36	MP2C	Mx	-.006	5
37	MP2A	X	-6.89	1
38	MP2A	Z	3.978	1
39	MP2A	Mx	.001	1
40	MP2A	X	-6.89	5
41	MP2A	Z	3.978	5
42	MP2A	Mx	.001	5
43	MP2B	X	-6.89	1
44	MP2B	Z	3.978	1
45	MP2B	Mx	-.006	1
46	MP2B	X	-6.89	5
47	MP2B	Z	3.978	5
48	MP2B	Mx	-.006	5
49	MP2C	X	-9.238	1
50	MP2C	Z	5.334	1
51	MP2C	Mx	.006	1
52	MP2C	X	-9.238	5
53	MP2C	Z	5.334	5
54	MP2C	Mx	.006	5
55	MP1A	X	-.808	5.5
56	MP1A	Z	.467	5.5
57	MP1A	Mx	.000404	5.5
58	MP1B	X	-.808	5.5
59	MP1B	Z	.467	5.5
60	MP1B	Mx	-.000404	5.5
61	MP1C	X	-2.035	5.5
62	MP1C	Z	1.175	5.5
63	MP1C	Mx	0	5.5
64	MP1A	X	-2.921	.5
65	MP1A	Z	1.687	.5
66	MP1A	Mx	.001	.5

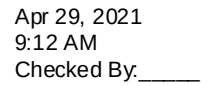


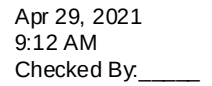
	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft, %]
1	MP4A	X	-5.069	1.25
2	MP4A	Z	0	1.25
3	MP4A	Mx	.003	1.25
4	MP4A	X	-5.069	4.75
5	MP4A	Z	0	4.75
6	MP4A	Mx	.003	4.75
7	MP4B	X	-7.04	1.25
8	MP4B	Z	0	1.25
9	MP4B	Mx	-.002	1.25
10	MP4B	X	-7.04	4.75
11	MP4B	Z	0	4.75
12	MP4B	Mx	-.002	4.75
13	MP4C	X	-7.04	1.25
14	MP4C	Z	0	1.25
15	MP4C	Mx	-.002	1.25

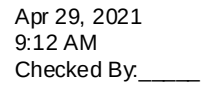


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Member Point Loads (BLC 38 : Antenna Wm (330 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb.k-ft]	Location[ft,%]
70	MP1B	X	-3.103	.5
71	MP1B	Z	-5.374	.5
72	MP1B	Mx	0	.5
73	MP1B	X	-3.103	2.5
74	MP1B	Z	-5.374	2.5
75	MP1B	Mx	0	2.5
76	MP1C	X	-2.631	.5
77	MP1C	Z	-4.556	.5
78	MP1C	Mx	.001	.5
79	MP1C	X	-2.631	2.5
80	MP1C	Z	-4.556	2.5
81	MP1C	Mx	.001	2.5
82	MP2A	X	-2.264	3
83	MP2A	Z	-3.922	3
84	MP2A	Mx	-.001	3
85	MP2B	X	-2.264	3
86	MP2B	Z	-3.922	3
87	MP2B	Mx	-.001	3
88	MP2C	X	-1.65	3
89	MP2C	Z	-2.858	3
90	MP2C	Mx	.002	3
91	MP3A	X	-2.186	3
92	MP3A	Z	-3.786	3
93	MP3A	Mx	-.001	3
94	MP3B	X	-2.186	3
95	MP3B	Z	-3.786	3
96	MP3B	Mx	-.001	3
97	MP3C	X	-1.337	3
98	MP3C	Z	-2.315	3
99	MP3C	Mx	.001	3

Member Point Loads (BLC 77 : Lm1)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	M1	Y	-500	%91

Member Point Loads (BLC 78 : Lm2)

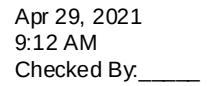
	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	M1	Y	-500	%54

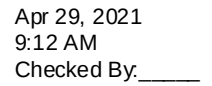
Member Point Loads (BLC 79 : Lv1)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	M1	Y	-250	0

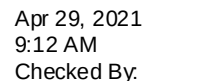
Member Point Loads (BLC 80 : Lv2)

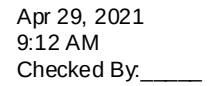
	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	M1	Y	-250	%50

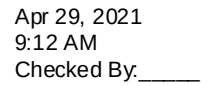




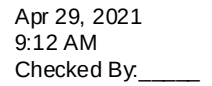
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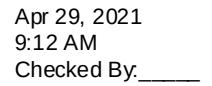




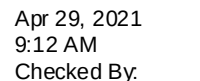


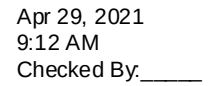
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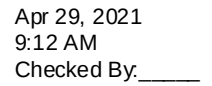


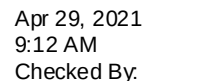


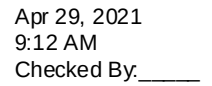
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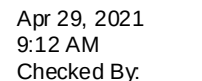


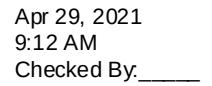


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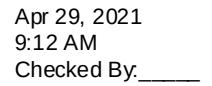


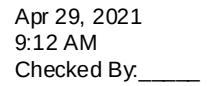




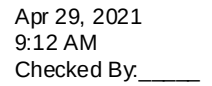


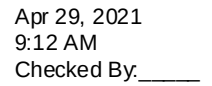
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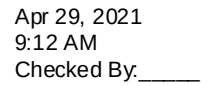


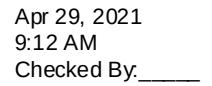
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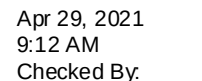


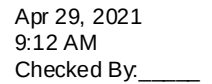


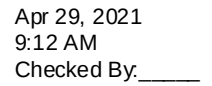
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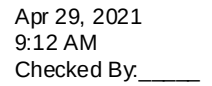


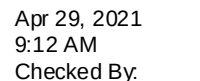


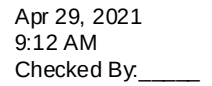




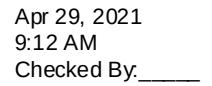


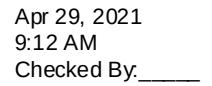


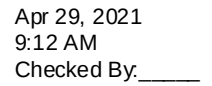




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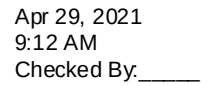


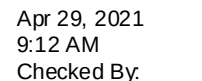
Member Distributed Loads (BLC 60 : Structure Wi (210 Deg)) (Continued)

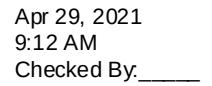
	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
69	MP3B	X	-2.04	-2.04	0	%100
70	MP3B	Z	3.534	3.534	0	%100
71	MP4B	X	-2.04	-2.04	0	%100
72	MP4B	Z	3.534	3.534	0	%100
73	M76	X	-.611	-.611	0	%100
74	M76	Z	1.058	1.058	0	%100
75	M77	X	-2.535	-2.535	0	%100
76	M77	Z	4.391	4.391	0	%100
77	M78	X	-2.243	-2.243	0	%100
78	M78	Z	3.886	3.886	0	%100
79	M79	X	-.674	-.674	0	%100
80	M79	Z	1.167	1.167	0	%100
81	M80	X	-1.745	-1.745	0	%100
82	M80	Z	3.023	3.023	0	%100
83	M81	X	-1.421	-1.421	0	%100
84	M81	Z	2.462	2.462	0	%100

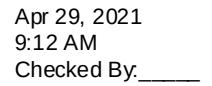
Member Distributed Loads (BLC 61 : Structure Wi (240 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	-1.343	-1.343	0	%100
2	M1	Z	.775	.775	0	%100
3	M2	X	-3.304	-3.304	0	%100
4	M2	Z	1.907	1.907	0	%100
5	M3	X	-1.343	-1.343	0	%100
6	M3	Z	.775	.775	0	%100
7	M4	X	-4.4e-5	-4.4e-5	0	%100
8	M4	Z	2.5e-5	2.5e-5	0	%100
9	M5	X	-2.47	-2.47	0	%100
10	M5	Z	1.426	1.426	0	%100
11	M8	X	-5.371	-5.371	0	%100
12	M8	Z	3.101	3.101	0	%100
13	M9	X	-3.328	-3.328	0	%100
14	M9	Z	1.921	1.921	0	%100
15	M10	X	-5.371	-5.371	0	%100
16	M10	Z	3.101	3.101	0	%100
17	M11	X	-3.328	-3.328	0	%100
18	M11	Z	1.921	1.921	0	%100
19	M12	X	0	0	0	%100
20	M12	Z	0	0	0	%100
21	M15	X	-1.343	-1.343	0	%100
22	M15	Z	.775	.775	0	%100
23	M16	X	-4.4e-5	-4.4e-5	0	%100
24	M16	Z	2.5e-5	2.5e-5	0	%100
25	M17	X	-1.343	-1.343	0	%100
26	M17	Z	.775	.775	0	%100
27	M18	X	-3.304	-3.304	0	%100
28	M18	Z	1.907	1.907	0	%100
29	M19	X	-2.47	-2.47	0	%100
30	M19	Z	1.426	1.426	0	%100
31	M28	X	-2.861	-2.861	0	%100
32	M28	Z	1.652	1.652	0	%100

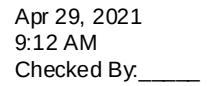


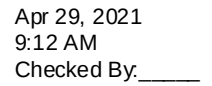


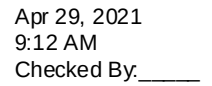


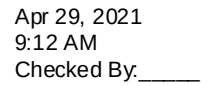


RISA-3D Version 17.0.4 [\\.\...\Rev 0\Risa\467462-VZW MT LO H.r3d] Page 125

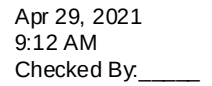


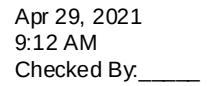


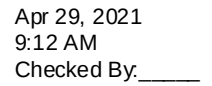




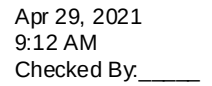
RISA-3D Version 17.0.4 [\\.\...\Rev 0\Risa\467462-VZW MT LO H.r3d] Page 130

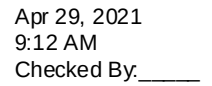




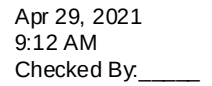


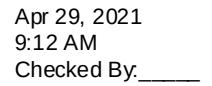
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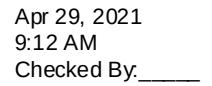


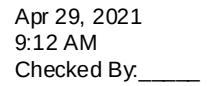


RISA-3D Version 17.0.4 [\\.\...\Rev 0\Risa\467462-VZW MT LO H.r3d] Page 137

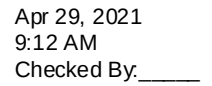


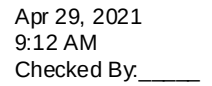


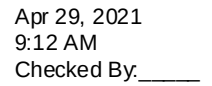




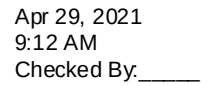
RISA-3D Version 17.0.4 [\\.\...\Rev 0\Risa\467462-VZW MT LO H.r3d] Page 142

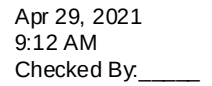






RISA-3D Version 17.0.4 [\\.\...\Rev 0\Risa\467462-VZW MT LO H.r3d] Page 145



Page 147

Member Distributed Loads (BLC 82 : BLC 40 Transient Area Loads) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
13	M1	Y	-.256	-7.564	0	2.036
14	M1	Y	-7.564	-12.318	2.036	4.071
15	M1	Y	-12.318	-11.582	4.071	6.107
16	M1	Y	-11.582	-11.582	6.107	8.143
17	M1	Y	-11.582	-12.318	8.143	10.179
18	M1	Y	-12.318	-7.564	10.179	12.214
19	M1	Y	-7.564	-.256	12.214	14.25
20	M2	Y	-1.26	-6.084	0	1.969
21	M2	Y	-6.084	-10.908	1.969	3.938
22	M3	Y	-12.646	-12.646	.012	7.405
23	M4	Y	-10.908	-6.084	0	1.969
24	M4	Y	-6.084	-1.26	1.969	3.938
25	M8	Y	-.256	-7.564	0	2.036
26	M8	Y	-7.564	-12.318	2.036	4.071
27	M8	Y	-12.318	-11.582	4.071	6.107
28	M8	Y	-11.582	-11.582	6.107	8.143
29	M8	Y	-11.582	-12.318	8.143	10.179
30	M8	Y	-12.318	-7.564	10.179	12.214
31	M8	Y	-7.564	-.256	12.214	14.25
32	M9	Y	-1.26	-6.084	0	1.969
33	M9	Y	-6.084	-10.908	1.969	3.938
34	M10	Y	-12.646	-12.646	.012	7.405
35	M11	Y	-10.908	-6.084	0	1.969
36	M11	Y	-6.084	-1.26	1.969	3.938

Member Area Loads (BLC 39 : Structure D)

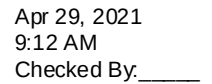
	Joint A	Joint B	Joint C	Joint D	Direction	Distribution	Magnitude[ksf]
1	N23	N26A	N25	N22	Y	Two Way	-.005
2	N3	N6	N5	N2	Y	Two Way	-.005
3	N13	N16	N15	N12	Y	Two Way	-.005

Member Area Loads (BLC 40 : Structure Di)

	Joint A	Joint B	Joint C	Joint D	Direction	Distribution	Magnitude[ksf]
1	N23	N26A	N25	N22	Y	Two Way	-.013
2	N3	N6	N5	N2	Y	Two Way	-.013
3	N13	N16	N15	N12	Y	Two Way	-.013

Envelope Joint Reactions

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N7	max	1261.216	11	2703.303	19	547.617	1	1.184	1	1.261	12	1.381	4
2		min	-1267.265	5	-300.321	1	-621.637	7	-7.308	19	-1.315	6	-1.385	10
3	N17	max	903.923	10	2636.466	15	1338.463	2	3.621	14	1.247	8	6.211	15
4		min	-963.799	4	-239.408	9	-1251.213	8	-.981	8	-1.34	2	-.923	9
5	N27	max	1012.471	10	2634.994	23	1281.27	12	3.721	24	1.217	12	.856	5
6		min	-930.594	4	-258.138	5	-1235.061	6	-1.188	6	-1.27	6	-6.148	23
7	N127	max	472.393	10	1142.988	1	1356.179	1	0	6	0	4	0	4
8		min	-404.358	4	-751.843	7	-972.13	7	0	24	0	10	0	10
9	N128	max	0	51	0	51	0	51	0	51	0	51	0	51

Page 149

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

	Member	Shape	Code C...	Loc[ft]	LC	Shear ...	Loc[ft]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-...	phi*Mn z-...	Cb	Eqn
39	M78	L2.5x2.5x3	.107	2.455	8	.011	0	z	23	13721.806	29192.4	.873	1.635	1...	H2-1
40	M79	L2.5x2.5x3	.129	2.755	20	.010	0	y	19	11271.244	29192.4	.873	1.582	1...	H2-1
41	M80	L2.5x2.5x3	.102	2.455	4	.012	4.81	z	19	13721.806	29192.4	.873	1.635	1...	H2-1
42	M81	L2.5x2.5x3	.131	2.699	6	.010	0	z	1	11271.244	29192.4	.873	1.582	1...	H2-1



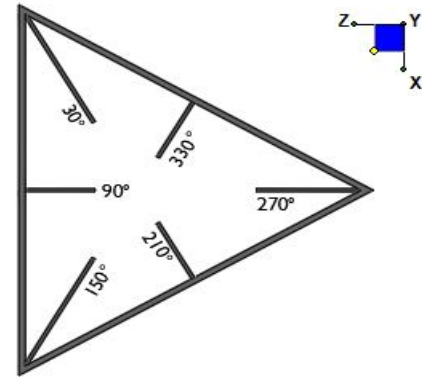
Client:	Verizon	Date:	4/29/2021
Site Name:	Rocky Hill CT		
Project No.	21777029A		
Title:	Mount Analysis	Page:	1

Version 3.1

I. Mount-to-Tower Connection Check

RISA Model Data

Nodes (labeled per RISA)	Orientation (per graphic of typical platform)
N7	90
N17	210
N27	330



TYPICAL PLATFORM

Tower Connection Plate and Weld Check

Connecting Standoff Member Shape:

W1 (in):

W2 (in):

Fy (ksi, plate):

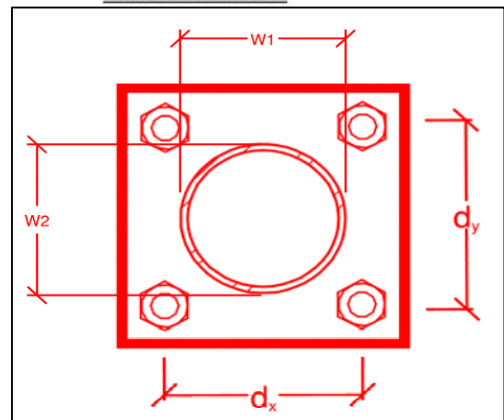
Weld Size (1/16 in):

Phi*Rn (kip/in):

Required Weld Strength (kip/in):

Weld Capacity:

Rect
4
4
36
4
5.57
4.13
74.2%



Mount Desktop – Post Modification Inspection (PMI) Report Requirements

Documents & Photos Required from Contractor – Mount Modification

Purpose – to provide Maser Consulting Connecticut the proper documentation in order to complete the required Mount Desktop review of the Post Modification Inspection Report.

- Contractor is responsible for making certain the photos provided as noted below provide confirmation that the modification was completed in accordance with the modification drawings.
- Contractor shall relay any data that can impact the performance of the mount or the mount modification, this includes safety issues.

Base Requirements:

- Any special photos outside of the standard requirements will be indicated on the drawings
- Provide “as built drawings” showing contractor’s name, preparer’s signature, and date. Any deviations from the drawings (proposed modification) must be shown.
- Notation that all hardware was properly installed, and the existing hardware was inspected for any issues.
- Verification that loading is as communicated in the modification drawings. NOTE If loading is different than what is conveyed in the modification drawing contact Maser Consulting Connecticut immediately.
- Each photo should be time and date stamped
- Photos should be high resolution and submitted in a Zip File and should be organized in the file structure as depicted in Schedule A attached.
- Contractor shall ensure that the safety climb wire rope is supported and not adversely impacted by the install of the modification components. This may involve the install of wire rope guides, or other items to protect the wire rope.
- The photos in the file structure should be uploaded to <https://pmi.vzwsmart.com> as depicted on the drawings

Photo Requirements:

- Base and “During Installation Photos”
 - Base pictures include
 - Photo of Gate Signs showing the tower owner, site name, and number
 - Photo of carrier shelter showing the carrier site name and number if available
 - Photos of the galvanizing compound and/or paint used (if applicable), clearly showing the label and name
 - “During Installation Photos if provided - must be placed only in this folder
- Photos taken at ground level
 - Overall tower structure before and after installation of the modifications
 - Photos of the appropriate mount before and after installation of the modifications; if the mounts are at different rad elevations, pictures must be provided for all elevations that the modifications were installed

- *Photos taken at Mount Elevation*
 - Photos showing each individual sector before and also after installation of modifications. Each entire sector must be in one photo to show in the inter-connection of members.
 - These photos should also certify that the placement and geometry of the equipment on the mount is as depicted on the sketch and table in the mount analysis
 - Close-up photos of each installed modification per the modification drawings; pictures should also include connection hardware (U-bolts, bolts, nuts, all-threaded rods, etc.)
 - Photos showing the measurements of the installed modification member sizes (i.e. lengths, widths, depths, diameters, thicknesses)
 - Photos showing the elevation or distances of the installed modifications from the appropriate reference locations shown in the modification drawings
 - Photos showing the installed modifications onto the tower with tape drop measurements (if applicable) (i.e. ring/collar mounts, tie-backs, V-bracing kits, etc.); if the existing mount elevation needs to be changed according to the modification drawings, a tape drop measurement shall be provided before the elevation change
 - Photos showing the safety climb wire rope above and below the mount prior to modification.
 - Photos showing the climbing facility and safety climb if present.

Material Certification:

- Materials utilized must be as per specification on the drawings or the equivalent as validated by Maser Consulting Connecticut.
 - If the drawings are as specified on the drawings
 - The contractor should provide the packing list or the materials utilized to perform the mount modification
 - If an equivalent is utilized
 - It is required that the Maser Consulting Connecticut certification of such is included in the contractor submission package. There may be an additional charge for this certification if the equivalent submission doesn't meet specifications as prescribed in the drawings.
- The contractor must certify that the materials meet these specifications by one of these methods.

☐ The Material utilized was as specified on the Maser Consulting Connecticut Mount Modification Drawings and included in the Material certification folder is a packing list or invoice for these materials

☐ The material utilized was an "equivalent" and included as part of the contractor submission is the Maser Consulting Connecticut certification, invoices, or specifications validating accepted status

Certifying Individual: Company _____

Name _____

Signature _____

Antenna & equipment placement and Geometry Confirmation:

- The contractor must certify that the antenna & equipment placement and geometry is in accordance with the antenna placement diagrams as included in this mount analysis.
- ☐ The contractor certifies that the photos support and the equipment on the mount is as depicted on the antenna placement diagrams as included in this mount analysis.
- ☐ The contractor notes that the equipment on the mount is not in accordance with the antenna placement diagrams and has accordingly marked up the diagrams or provided a diagram outlining the differences.

Certifying Individual: _____ Company _____

Name _____

Signature _____

Special Instructions / Validation as required from the MA or Mod Drawings:

Issue:

OVP to be moved up on the tower as needed for installation of the new collar

Response:

--

Schedule A – Photo & Document File Structure



VzW Site Number / Name



Base & “During Installation” Photos



Pre-Installation Photos



Alpha



Beta



Gamma



Ground Level



Tape Drop



Post-Installation Photos



Alpha



Beta



Gamma



Ground Level



Tape Drop



Photos of climbing facility and safety climb – If Present

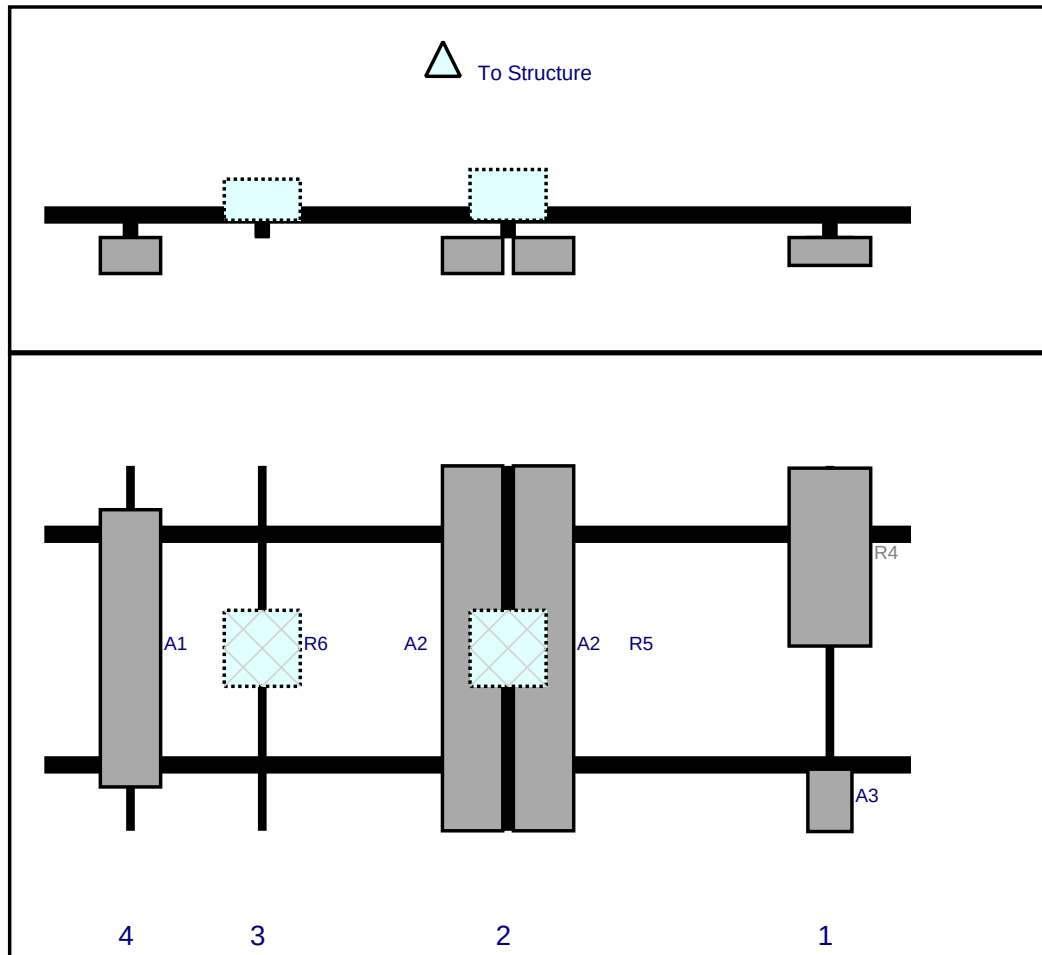


Certifications – Submission of this document including certifications



Specific Required Additional Photos

Plan View



Ref#	Model	Height (in)	Width (in)	H Dist Frm L.	Pipe #	Pipe Pos V	Ant Pos	C. Ant Frm T.	Ant H Off	Status	Validation
A3	XXDWMM-12.5-65-8T-CBRS	12.3	8.7	155	1	a	Front	66	0	Added	
R4	MT6407-77A	35.1	16.1	155	1	a	Front	18	0	Added	
A2	NHH-65B-R2B	72	11.9	91.5	2	a	Front	36	7	Added	
A2	NHH-65B-R2B	72	11.9	91.5	2	b	Front	36	-7	Added	
R5	B2/B66A RRH-BR049 (RFV01U-D1A)	15	15	91.5	2	a	Behind	36	0	Added	
R6	B5/B13 RRH-BR04C (RFV01U-D2A)	15	15	43	3	a	Behind	36	0	Added	
A1	LNK-6513DS-A1M	54.7	11.9	17	4	a	Front	36	0	Added	

Sector: **B**

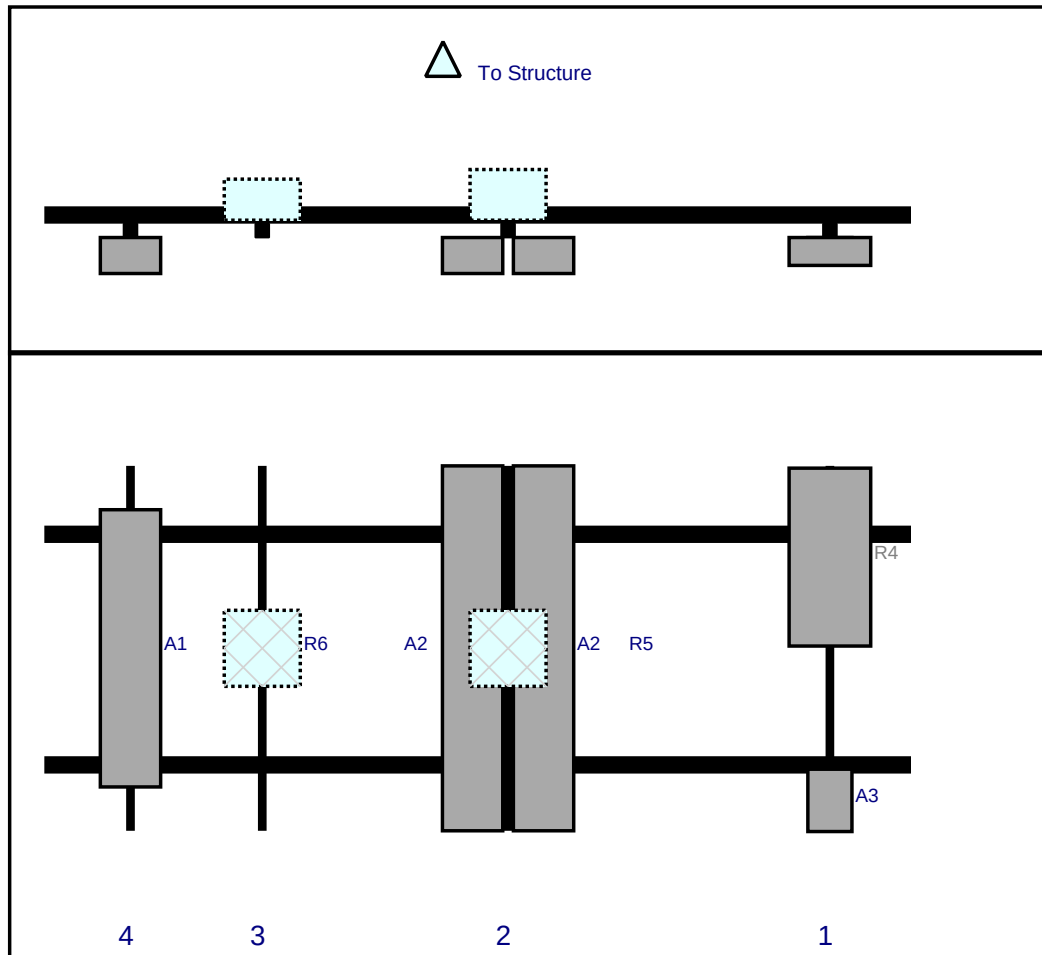
4/29/2021

Structure Type: Monopole

Mount Elev: 135.50

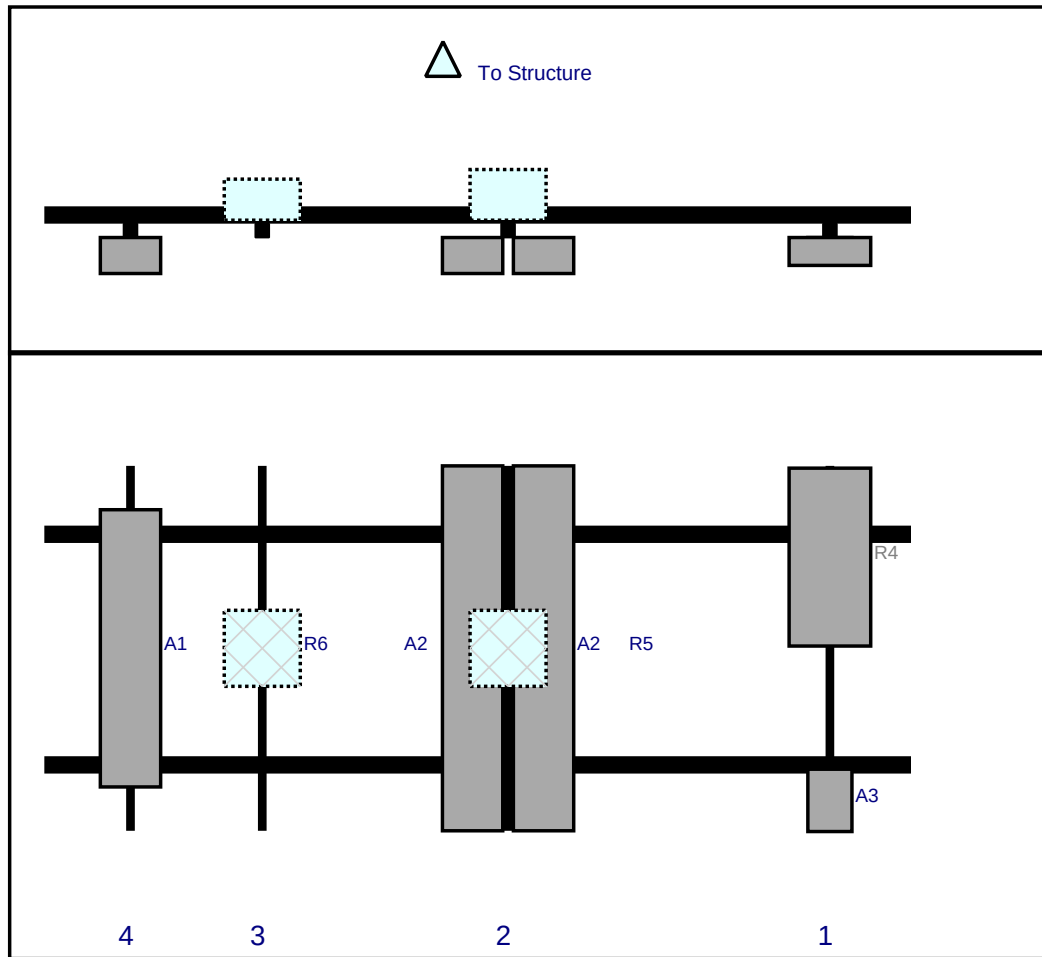
Page: 2

Plan View

Front View
Looking at Structure

Ref#	Model	Height (in)	Width (in)	H Dist Frm L.	Pipe #	Pipe Pos V	Ant Pos	C. Ant Frm T.	Ant H Off	Status	Validation
A3	XXDWMM-12.5-65-8T-CBRS	12.3	8.7	155	1	a	Front	66	0	Added	
R4	MT6407-77A	35.1	16.1	155	1	a	Front	18	0	Added	
A2	NHH-65B-R2B	72	11.9	91.5	2	a	Front	36	7	Added	
A2	NHH-65B-R2B	72	11.9	91.5	2	b	Front	36	-7	Added	
R5	B2/B66A RRH-BR049 (RFV01U-D1A)	15	15	91.5	2	a	Behind	36	0	Added	
R6	B5/B13 RRH-BR04C (RFV01U-D2A)	15	15	43	3	a	Behind	36	0	Added	
A1	LNK-6513DS-A1M	54.7	11.9	17	4	a	Front	36	0	Added	

Plan View



Ref#	Model	Height (in)	Width (in)	H Dist Frm L.	Pipe #	Pipe Pos V	Ant Pos	C. Ant Frm T.	Ant H Off	Status	Validation
A3	XXDWMM-12.5-65-8T-CBRS	12.3	8.7	155	1	a	Front	66	0	Added	
R4	MT6407-77A	35.1	16.1	155	1	a	Front	18	0	Added	
A2	NHH-65B-R2B	72	11.9	91.5	2	a	Front	36	7	Added	
A2	NHH-65B-R2B	72	11.9	91.5	2	b	Front	36	-7	Added	
R5	B2/B66A RRH-BR049 (RFV01U-D1A)	15	15	91.5	2	a	Behind	36	0	Added	
R6	B5/B13 RRH-BR04C (RFV01U-D2A)	15	15	43	3	a	Behind	36	0	Added	
A1	LNx-6513DS-A1M	54.7	11.9	17	4	a	Front	36	0	Added	

Maser Consulting Connecticut

Subject

TIA-222-H Usage

Site Information

Site ID: 467462-VZW / Rocky Hill
CT

Site Name: Rocky Hill CT

Carrier Name: Verizon Wireless

Address:

France St. Lot 1

Rocky Hill, Connecticut 06067

Hartford County

Latitude: 41.639778°

Longitude: -72.701889°

Structure Information

Tower Type: 142-Ft Monopole

Mount Type: 14.25-Ft Platform

To Whom It May Concern,

We respectfully submit the above referenced Antenna Mount Structural Analysis report in conformance with ANSI/TIA-222-H, Structural Standard for Antenna Supporting Structures and Antennas and Small Wind Turbine Support Structures.

The 2018 International Building Code states that, in Section 3108, telecommunication towers shall be designed and constructed in accordance with the provisions of TIA-222. TIA-222-H is the latest revision of the TIA-222 Standard, effective as of January 01, 2018.

As with all ANSI standards and engineering best practice is to apply the most current revision of the standard. This ensures the engineer is applying all updates. As an example, the TIA-222-H Standard includes updates to bring it in line with the latest AISC and ACI standards and it also incorporates the latest wind speed maps by ASCE 7 based on updated studies of the wind data.

The TIA-222-H standard clarifies these specific requirements for the antenna mount analysis such as modeling methods, seismic analysis, 30-degree increment wind directions and maintenance loading. Therefore, it is our opinion that TIA-222-H is the most appropriate standard for antenna mount structural analysis and is acceptable for use at this site to ensure the engineer is taking into account the most current engineering standard available.

Sincerely,

Justin Linette, PE
Sr. Technical Manager

Exhibit F

Power Density/RF Emissions Report

Site Name: **ROCKY HILL 2 CT**
Cumulative Power Density

Operator	Operating Frequency	Number of Trans.	ERP Per Trans.	Total ERP	Distance to Target	Calculated Power Density
	(MHz)		(watts)	(watts)	(feet)	(mW/cm ²)
VZW 700	751	4	541	2164	146	0.0037
VZW Cellular	874	4	541	2164	146	0.0037
VZW PCS	1975	4	1167	4669	146	0.0079
VZW AWS	2120	4	1541	6163	146	0.0104
VZW CBAND	3730.08	4	6531	26125	146	0.0441

Total Percentage of Maximum Permissible Exposure

*Guidelines adopted by the FCC on August 1, 1996, 47 CFR Part 1 based on NCRP Report 86, 1986 and generally on ANSI

**Calculation includes a -10 dB Off Beam Antenna Pattern Adjustment pursuant to Attachments B and C of the Siting Council

MHz = Megahertz

mW/cm² = milliwatts per square centimeter

ERP = Effective Radiated Power

Absolute worst case maximum values used.

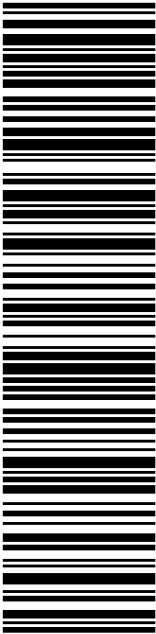
Maximum Permissible Exposure*	Fraction of MPE
(mW/cm ²)	(%)
0.5007	0.73%
0.5827	0.63%
1.0000	0.79%
1.0000	1.04%
1.0000	4.41%
	7.59%

/IEEE C95.1-1992

il's November 10, 2015 Memorandum for Exempt Modification filing:

Exhibit G

Recipient Mailings

 Click-N-Ship®	
P	usps.com US POSTAGE Flat Rate Env 12/03/2021 Mailed from 01566
PRIORITY MAIL 2-DAY™	
DEBORAH CHASE NORTHEAST SITE SOLUTIONS 420 MAIN ST STE 1 STURBRIDGE MA 01566-1359	Expected Delivery Date: 12/07/21 Ref#: CR-801366 0006
SHIP TO: LISA A MAROTTA 761 OLD MAIN ST ROCKY HILL CT 06067-1519	
USPS TRACKING #  9405 5036 9930 0082 4206 58	
Electronic Rate Approved #038555749	



Cut on dotted line.

Instructions

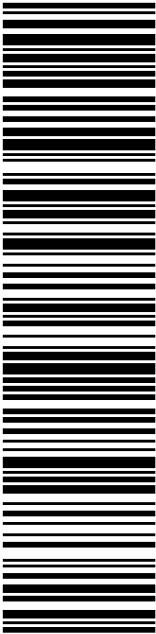
- Each Click-N-Ship® label is unique. Labels are to be used as printed and used only once. DO NOT PHOTO COPY OR ALTER LABEL.
- Place your label so it does not wrap around the edge of the package.
- Adhere your label to the package. A self-adhesive label is recommended. If tape or glue is used, DO NOT TAPE OVER BARCODE. Be sure all edges are secure.
- To mail your package with PC Postage®, you may schedule a Package Pickup online, hand to your letter carrier, take to a Post Office™, or drop in a USPS collection box.
- Mail your package on the "Ship Date" you selected when creating this label.

Click-N-Ship® Label Record

USPS TRACKING # : 9405 5036 9930 0082 4206 58	
Trans. #: 549942168 Print Date: 12/03/2021 Ship Date: 12/03/2021 Expected Delivery Date: 12/07/2021	Priority Mail® Postage: \$8.70 Total: \$8.70
From: DEBORAH CHASE NORTHEAST SITE SOLUTIONS 420 MAIN ST STE 1 STURBRIDGE MA 01566-1359	
To: LISA A MAROTTA 761 OLD MAIN ST ROCKY HILL CT 06067-1519	
Ref#: CR-801366	
* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.	



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 Click-N-Ship®	
P	usps.com US POSTAGE Flat Rate Env 12/03/2021 Mailed from 01566
PRIORITY MAIL 2-DAY™	
DEBORAH CHASE NORTHEAST SITE SOLUTIONS 420 MAIN ST STE 1 STURBRIDGE MA 01566-1359	Expected Delivery Date: 12/07/21 Re#: CR-801366 0006
SHIP TO: KIM RICCI TOWN PLANNER 761 OLD MAIN ST ROCKY HILL CT 06067-1519	
USPS TRACKING #  9405 5036 9930 0082 4206 72	
Electronic Rate Approved #038555749	



Cut on dotted line.

Instructions

- Each Click-N-Ship® label is unique. Labels are to be used as printed and used only once. DO NOT PHOTO COPY OR ALTER LABEL.
- Place your label so it does not wrap around the edge of the package.
- Adhere your label to the package. A self-adhesive label is recommended. If tape or glue is used, DO NOT TAPE OVER BARCODE. Be sure all edges are secure.
- To mail your package with PC Postage®, you may schedule a Package Pickup online, hand to your letter carrier, take to a Post Office™, or drop in a USPS collection box.
- Mail your package on the "Ship Date" you selected when creating this label.

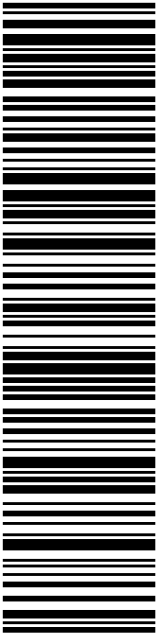
Click-N-Ship® Label Record

USPS TRACKING # : 9405 5036 9930 0082 4206 72	
Trans. #: 549942168 Print Date: 12/03/2021 Ship Date: 12/03/2021 Expected Delivery Date: 12/07/2021	Priority Mail® Postage: \$8.70 Total: \$8.70
From: DEBORAH CHASE NORTHEAST SITE SOLUTIONS 420 MAIN ST STE 1 STURBRIDGE MA 01566-1359	
To: KIM RICCI TOWN PLANNER 761 OLD MAIN ST ROCKY HILL CT 06067-1519	
Re#: CR-801366	
* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.	



**UNITED STATES
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 Click-N-Ship®	
P	usps.com US POSTAGE Flat Rate Env 12/03/2021 Mailed from 01566
PRIORITY MAIL 1-DAY™	
DEBORAH CHASE NORTHEAST SITE SOLUTIONS 420 MAIN ST STE 1 STURBRIDGE MA 01566-1359	Expected Delivery Date: 12/06/21 Ref#: CR-801366 0006
SHIP TO: SARAH SNELL CROWN CASTLE 1800 W PARK DR WESTBOROUGH MA 01581-3926	
USPS TRACKING #  9405 5036 9930 0082 4206 96	
Electronic Rate Approved #038555749	

✂ ————— Cut on dotted line.

Instructions

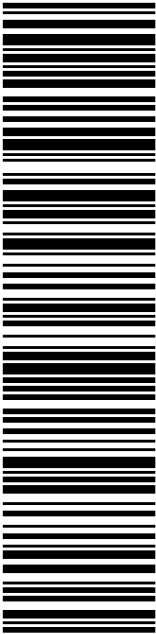
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Click-N-Ship® Label Record

USPS TRACKING # : 9405 5036 9930 0082 4206 96	
Trans. #: 549942168 Print Date: 12/03/2021 Ship Date: 12/03/2021 Expected Delivery Date: 12/06/2021	Priority Mail® Postage: \$8.70 Total: \$8.70
From: DEBORAH CHASE NORTHEAST SITE SOLUTIONS 420 MAIN ST STE 1 STURBRIDGE MA 01566-1359	
To: SARAH SNELL CROWN CASTLE 1800 W PARK DR WESTBOROUGH MA 01581-3926	
Ref#: CR-801366	
* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.	



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 Click-N-Ship®	
P	usps.com US POSTAGE Flat Rate Env 12/03/2021 Mailed from 01566
PRIORITY MAIL 2-DAY™	
DEBORAH CHASE NORTHEAST SITE SOLUTIONS 420 MAIN ST STE 1 STURBRIDGE MA 01566-1359	Expected Delivery Date: 12/07/21 Ref#: CR-801366 0006
SHIP TO: TABSHEY DEVELOPMENT LLC 1218 CROMWELL AVE ROCKY HILL CT 06067-3411	
USPS TRACKING #  9405 5036 9930 0082 4207 19	
Electronic Rate Approved #038555749	

— ✂ ————— Cut on dotted line. —————

Instructions

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Click-N-Ship® Label Record

USPS TRACKING # : 9405 5036 9930 0082 4207 19	
Trans. #: 549942168 Print Date: 12/03/2021 Ship Date: 12/03/2021 Expected Delivery Date: 12/07/2021	Priority Mail® Postage: \$8.70 Total: \$8.70
From: DEBORAH CHASE NORTHEAST SITE SOLUTIONS 420 MAIN ST STE 1 STURBRIDGE MA 01566-1359	
To: TABSHEY DEVELOPMENT LLC 1218 CROMWELL AVE ROCKY HILL CT 06067-3411	
Ref#: CR-801366	
* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.	



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801366



UNIONVILLE
24 MILL ST
UNIONVILLE, CT 06085-9998
(800)275-8777

12/06/2021

03:06 PM

Product	Qty	Unit Price	Price
Prepaid Mail	1		\$0.00
Westborough, MA 01581			
Weight: 0 lb 2.00 oz			
Acceptance Date: Mon 12/06/2021			
Tracking #: 9405 5036 9930 0082 4206 96			
Prepaid Mail	1		\$0.00
Rocky Hill, CT 06067			
Weight: 0 lb 7.30 oz			
Acceptance Date: Mon 12/06/2021			
Tracking #: 9405 5036 9930 0082 4206 58			
Prepaid Mail	1		\$0.00
Rocky Hill, CT 06067			
Weight: 0 lb 7.30 oz			
Acceptance Date: Mon 12/06/2021			
Tracking #: 9405 5036 9930 0082 4206 72			
Prepaid Mail	1		\$0.00
Rocky Hill, CT 06067			
Weight: 0 lb 7.30 oz			
Acceptance Date: Mon 12/06/2021			
Tracking #: 9405 5036 9930 0082 4207 19			
Grand Total:			\$0.00