



June 21, 2021

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

**RE: Request of DISH Wireless LLC for an Order to Approve the Shared Use of an Existing Tower  
7 Sherwood Forest Lane, Killingworth, CT 06419  
Latitude: 41° 20' 17.24" / Longitude: -72° 33' 23.44"**

Dear Ms. Bachman:

Pursuant to Connecticut General Statutes ("C.G.S.") §16-50aa, as amended, DISH Wireless LLC ("DISH") hereby requests an order from the Connecticut Siting Council ("Council") to approve the shared use by DISH of an existing telecommunication tower at 7 Sherwood Forest Lane in Killingworth (the "Property"). The existing 150-foot monopole tower is owned by Crown Castle International Corp. ("Crown Castle"). The underlying property is owned by the Anderson Family Trust. DISH requests that the Council find that the proposed shared use of the Crown Castle tower satisfies the criteria of C.G.S. §16-50aa and issue an order approving the proposed shared use. This modification/proposal includes hardware that is both 4G(LTE) and 5G capable through remote software configuration and either or both services may be turned on or off at various times. A copy of this filing is being sent to Catherine Iino, First Selectwoman for the Town of Killingworth, Cathie Jefferson, Zoning Enforcement Officer, and the Anderson Family Trust as the property owner.

### **Background**

The existing Crown Castle facility consists of a 150-foot monopole tower within a 10,000 square foot leased area. Sprint/T-Mobile currently maintains antennas at the 150-foot level, AT&T currently maintains antennas at the 143-foot level, and Verizon currently maintains antennas at the 128-foot level. Sprint/T-Mobile's equipment is located southwest of the tower, AT&T's equipment is also located southwest of the tower, and Verizon's equipment is located southeast of the tower.

DISH is licensed by the Federal Communications Commission ("FCC") to provide wireless services throughout the State of Connecticut. DISH and Crown Castle have agreed to the proposed shared use of the 7 Sherwood Forest Lane tower pursuant to mutually acceptable terms and conditions. Likewise, DISH and Crown Castle have agreed to the proposed installation of equipment cabinets on the ground on the south side of the tower within the existing compound. Crown Castle has authorized DISH to apply for all necessary permits and approvals that may be required to share the existing tower.

DISH proposes to install three (3) antennas, six (6) RRUs, three (3) antenna t-arm mounts, and one (1) hybrid cable. In addition, DISH will install a ground equipment cabinet on a 5'x7' equipment platform. Included in the Construction Drawings are DISH's project specifications for locations of all proposed site improvements. The Construction Drawings also contain specifications for DISH's proposed antennas and ground work.

C.G.S. § 16-50aa(c)(1) provides that, upon written request for approval of a proposed shared use, "if the Council finds that the proposed shared use of the facility is technically, legally, environmentally and economically feasible and meets public safety concerns, the council shall issue an order approving such a shared use." DISH respectfully submits that the shared use of the tower satisfies these criteria.

**A. Technical Feasibility.** The existing Crown Castle tower is structurally capable of supporting DISH's proposed improvements. The proposed shared use of this tower is, therefore, technically feasible. A Feasibility Structural Analysis Report ("Structural Report") prepared for this project confirms that this tower can support DISH's proposed loading. A copy of the Structural Report has been included in this application.

**B. Legal Feasibility.** Under C.G.S. § 16-50aa, the Council has been authorized to issue order approving the shared use of an existing tower such as the Crown Castle tower. This authority complements the Council's prior-existing authority under C.G.S. § 16-50p to issue orders approving the construction of new towers that are subject to the Council's jurisdiction. In addition, § 16-50x(a) directs the Council to "give such consideration to the other state laws and municipal regulations as it shall deem appropriate" in ruling on requests for the shared use of existing tower facilities. Under the statutory authority vested in the Council, an order by the Council approving the requested shared use would permit the Applicant to obtain a building permit for the proposed installations.

**C. Environmental Feasibility.** The proposed shared use of the Crown Castle tower would have a minimal environmental effect for the following reasons:

1. The proposed installation will have no visual impact on the area of the tower. DISH's equipment cabinet would be installed within the existing facility compound. DISH's shared use of this tower therefore will not cause any significant change or alteration in the physical or environmental characteristics of the existing site.
2. Operation of DISH's antennas at this site would not exceed the RF emissions standard adopted by the Federal Communications Commission ("FCC"). Included in the EME report of this filing are the approximation tables that demonstrate that DISH's proposed facility will operate well within the FCC RF emissions safety standards.
3. Under ordinary operating conditions, the proposed installation would not require the use of any water or sanitary facilities and would not generate air emissions or discharges to water bodies or sanitary facilities. After construction is complete the

proposed installations would not generate any increased traffic to the Crown Castle facility other than periodic maintenance. The proposed shared use of the Crown Castle tower, would, therefore, have a minimal environmental effect, and is environmentally feasible.

**D. Economic Feasibility.** As previously mentioned, DISH has entered into an agreement with Crown Castle for the shared use of the existing facility subject to mutually agreeable terms. The proposed tower sharing is, therefore, economically feasible.

**E. Public Safety Concerns.** As discussed above, the tower is structurally capable of supporting DISH's full array of three (3) antennas, six (6) RRUs, three (3) antenna t-arm mounts, one (1) hybrid cable and all related equipment. DISH is not aware of any public safety concerns relative to the proposed sharing of the existing Crown Castle tower

### **Conclusion**

For the reasons discussed above, the proposed shared use of the existing Crown Castle tower at 7 Sherwood Forest Lane satisfies the criteria stated in C.G.S. §16-50aa and advances the General Assembly's and the Council's goal of preventing the unnecessary proliferation of towers in Connecticut. The Applicant, therefore, respectfully requests that the Council issue an order approving the proposed shared use.

Sincerely,



Richard Zajac  
Site Acquisition Specialist  
4545 East River Road, Suite 320  
West Henrietta, NY 14586  
(585) 445-5896  
[richard.zajac@crowncastle.com](mailto:richard.zajac@crowncastle.com)

Melanie A. Bachman

June 21, 2021

Page 4

CC:

The Honorable Catherine Iino, First Selectwoman (*via email only to ciino@townofkillingworth.com*)

Town of Killingworth

323 Route 81

Killingworth, CT 06419

Cathie S. Jefferson, Zoning Enforcement Officer (*via email only to cjefferson@townofkillingworth.com*)

Town of Killingworth

323 Route 81

Killingworth, CT 06419

Anderson Family Trust

380 May Apple Lane

Martinsburg, WV 25403



## **Zajac, Richard**

---

**From:** Zajac, Richard  
**Sent:** Monday, June 21, 2021 3:37 PM  
**To:** ciino@townofkillingworth.com  
**Subject:** Connecticut Siting Council Shared Use application notification  
**Attachments:** CSC Shared Use Application - 7 Sherwood Forest Lane.pdf

Good afternoon,

Please see the attached application to the Connecticut Siting Council regarding antenna work on the existing cell tower located at 7 Sherwood Forest Lane in Killingworth.

Should you have any questions/comments/concerns regarding this application, please do not hesitate to contact me.

Thank you,

**RICH ZAJAC**

Site Acquisition Specialist

T: (585) 445-5896 M: (607) 346-7212

F: (724) 416-4461

**CROWN CASTLE**

4545 East River Road, Suite 320

West Henrietta, NY 14586

## **Zajac, Richard**

---

**From:** Zajac, Richard  
**Sent:** Monday, June 21, 2021 3:38 PM  
**To:** cjefferson@townofkillingworth.com  
**Subject:** Connecticut Siting Council Shared Use application notification  
**Attachments:** CSC Shared Use Application - 7 Sherwood Forest Lane.pdf

Good afternoon,

Please see the attached application to the Connecticut Siting Council regarding antenna work on the existing cell tower located at 7 Sherwood Forest Lane in Killingworth.

Should you have any questions/comments/concerns regarding this application, please do not hesitate to contact me.

Thank you,

**RICH ZAJAC**

Site Acquisition Specialist

T: (585) 445-5896 M: (607) 346-7212

F: (724) 416-4461

**CROWN CASTLE**

4545 East River Road, Suite 320

West Henrietta, NY 14586

ORIGIN ID: ONHA (585) 445-5896  
RICHARD ZAJAC  
CROWN CASTLE  
629 KAYLEIGH DR

WEBSTER, NY 14580  
UNITED STATES US

TO ANDERSON FAMILY TRUST

SHIP DATE: 21 JUN 21  
ACTWGT: 1.00 LB  
CAD: 112911364INET4340  
BILL SENDER

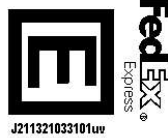
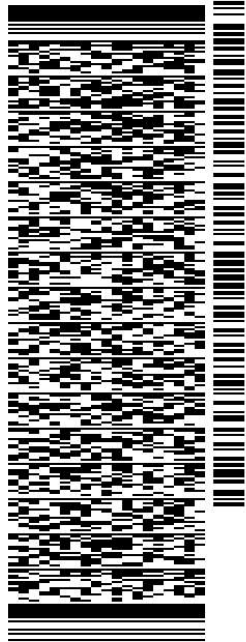
380 MAY APPLE LANE

MARTINSBURG WV 25403

(585) 445-5896

REF: 799001 / 7660

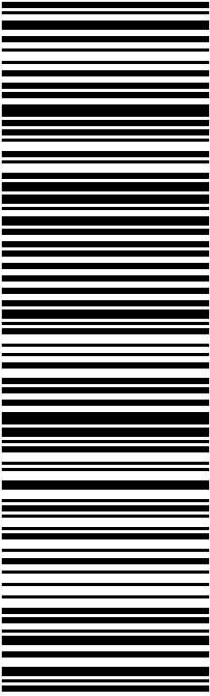
INV: PO: DEPT:



56DJ3/B387/FE4A

TRK# 7740 5634 0635 TUE - 22 JUN 4:30P  
0201 STANDARD OVERNIGHT

XC WDBA 25403  
WV-US IAD



**After printing this label:**

1. Use the 'Print' button on this page to print your label to your laser or inkjet printer.
2. Fold the printed page along the horizontal line.
3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

**Warning:** Use only the printed original label for shipping. Using a photocopy of this label for shipping purposes is fraudulent and could result in additional billing charges, along with the cancellation of your FedEx account number.

Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on [fedex.com](http://fedex.com). FedEx will not be responsible for any claim in excess of \$100 per package, whether the result of loss, damage, delay, non-delivery, misdelivery, or misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim. Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental, consequential, or special is limited to the greater of \$100 or the authorized declared value. Recovery cannot exceed actual documented loss. Maximum for items of extraordinary value is \$1,000, e.g. jewelry, precious metals, negotiable instruments and other items listed in our Service Guide. Written claims must be filed within strict time limits, see current FedEx Service Guide.



3 Corporate Dr, Suite 101  
Clifton Park, NY 12065

Phone: (201) 236-9224  
Fax: (724) 416-6112  
www.crowncastle.com

## **Crown Castle Letter of Authorization**

### **CT - CONNECTICUT SITING COUNCIL**

**Re: Tower Share Application**

**Crown Castle telecommunications site at: 7 Sherwood Forest Lane, KILLINGWORTH, CT 06419**

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

**Crown Site ID/Name: 876383/CLINTON / ANDERSON'S PROPERTY**

**Customer Site ID: BOBDL00096A/CT-CCI-T-876383**

**Site Address: 7 Sherwood Forest Lane, KILLINGWORTH, CT 06419**

Crown Castle USA Inc.

By:  Date: 5/13/21  
Anne Marie Zsamba  
Project Manager – Site Acquisition

# Exhibit A

## **Original Facility Approval**

*Town of Killingworth  
Inland Wetlands and Watercourses Commission  
Killingworth, Connecticut 06419*

Certified # Z 455 232 287

**Memorandum of Decision**

At its Regular Meeting of February 22, 2000, the Commission approved the application of Sherwood R. Anderson (applicant, Sprint Spectrum, L.P.) for construction of a telecommunication facility, a 150 foot monopole, and upgrading of an existing woods road on Route 81, Map 37, Parcel 3.

This permit is granted subject to the following conditions:

1. The work is to be done exactly as shown on the revised plan "Sprint PCS, Anderson Property, Clinton Road (Connecticut Route 81), Killingworth, CT CT33XC543" prepared by Goodkind & O'Dea, Inc. Consulting Engineers and Planners, dated 11/19/99, with two revisions (12/15/99 and 2/22/00), consisting of 10 sheets.
2. All construction is to be carried out in a workman-like manner.
3. During construction, appropriate and effective measures must be taken to prevent silting and water discoloration downstream.
4. If during construction, it becomes apparent that rain and surface drainage runoff will cause silting or water discoloration of the adjacent wetlands and/or watercourse, then appropriate and effective protection against these conditions must be taken.
5. No excavation may commence until all erosion and sedimentation controls, as defined on the approved plans, are in place and have been inspected and approved by the Killingworth IWWC or its agent.
6. The Commission is to be notified when this project begins and when it is completed.
7. The Commission, or its representative, shall be free to make interim inspections of the site as it deems necessary.
8. In no way is it to be construed that this permit allows the applicant to perform any other activity than that which is stated above. Any additional activity requires an additional permit or an amendment to this permit.


page 2 - Memorandum of Decision # Z 455 232 287

9. This permit shall be valid for five (5) years from the date of the legal notice publication. However, the regulated activity or use authorized by the permit must be completed within two (2) years from the time such activity is commenced, unless otherwise specified.

10. Any application to renew this permit should be submitted at least sixty-five (65) days prior to the expiration date.

This permit is granted in the belief that there will be minimal adverse impact on the environment.

For the Commission,

  
Wayne Addy  
Chairman

IN RE APPLICATION  
SPECIAL EXCEPTION  
SPRINT SPECTRUM L.P.

KILLINGWORTH PLANNING  
AND ZONING COMMISSION  
MARCH 21, 2000

MEMORANDUM OF DECISION

An application #149 of SPRINT SPECTRUM L.P. for a Special Exception under Section 120 of the Zoning Regulations for Communication Tower was submitted to the Planning & Zoning Commission at its meeting of February 1, 2000. The property is located at Route 81 and is shown on Tax Map 37, Parcel 3. The owner as recorded in the Killingworth Land Records (Volume 87, Page 642) is Sherwood R. Anderson. The application was considered under the standards prescribed in Section 120G of the Zoning Regulations.

The Commission, at its meeting of March 21, 2000, voted to approve the application for Special Exception with the following conditions:

1. Leased area must encompass the fall zone of the tower.
2. Lighting be limited to time of service repairs.

*Charles E. Martens*  
Charles E. Martens, Chairman

Dated at Killingworth, Connecticut this 3<sup>rd</sup> day of April, 2000.

Certified a true and correct copy of that  
which is on file with the Killingworth  
Planning & Zoning Commission

Date: 4/5/00 Time: 12:50 PM

Clerk of KP&ZC: Smileth R. Brown  
U

Rec'd 4/5/00 at 12:50 PM  
James G. Gandy TOWN CLERK



IN RE APPLICATION  
SPECIAL EXCEPTION  
SPRINT SPECTRUM L.P.

KILLINGWORTH PLANNING  
AND ZONING COMMISSION  
MARCH 21, 2000

MEMORANDUM OF DECISION

An application #149 of SPRINT SPECTRUM L.P. for a Special Exception under Section 120 of the Zoning Regulations for Communication Tower was submitted to the Planning & Zoning Commission at its meeting of February 1, 2000. The property is located at Route 81 and is shown on Tax Map 37, Parcel 3. The owner as recorded in the Killingworth Land Records (Volume 87, Page 642) is Sherwood R. Anderson. The application was considered under the standards prescribed in Section 120G of the Zoning Regulations.

The Commission, at its meeting of March 21, 2000, voted to approve the application for Special Exception with the following conditions:

1. Leased area must encompass the fall zone of the tower.
2. Lighting be limited to time of service repairs.

*Charles E. Martens*  
Charles E. Martens, Chairman

Dated at Killingworth, Connecticut this 3<sup>rd</sup> day of April, 2000.

Certified a true and correct copy of that  
which is on file with the Killingworth  
Planning & Zoning Commission

Date: 4/5/00 Time: 12:50 PM

Clerk of KP&ZC: Judith R. Brown

Received for record April 6, 2000  
at 10 h. 00 m. A M and recorded by  
James J. Dwyer Town Clerk

08  
KILLINGWORTH PLANNING & ZONING COMMISSION

TOWN OFFICE BUILDING  
323 ROUTE 81  
KILLINGWORTH, CONNECTICUT 06419-1298

April 5, 2000

Sprint Spectrum LP  
1 International Boulevard  
Mahwah, NJ 07495

RE: Memorandum of Decision  
March 21, 2000

Gentlemen:

Please be advised that your application for Special Exception for Telecommunications Tower dated 1/18/00 was approved with conditions by the Planning & Zoning Commission at its March 21, 2000 meeting. A copy of the Memorandum of Decision is enclosed. The Notice of Decision was published in The Hartford Courant on Friday, March 31, 2000.

Sincerely,

*Charles E. Martens, Jr.*

Charles E. Martens, Jr. (jr)  
Chairman

CEM/jrb

CERTIFIED MAIL, RRR  
Z 285 870 490

# Exhibit B

## **Property Card**

The Assessor's office is responsible for the maintenance of records on the ownership of properties. Assessments are computed at 70% of the estimated market value of real property at the time of the last revaluation which was 2016.



Information on the Property Records for the Municipality of Killingworth was last updated on 3/20/2021.

### Parcel Information

Location:	7 SHERWOOD FOREST LANE	Property Use:	Residential	Primary Use:	Residential
Unique ID:	00247300	Map Block Lot:	37-03	Acres:	2.14
490 Acres:	0.00	Zone:	R-2	Volume / Page:	0218/0491
Developers Map / Lot:	SM1902/SPRINT E	Census:	6401		

### Value Information

	Appraised Value	Assessed Value
Land	247,499	173,250
Buildings	0	0
Detached Outbuildings	0	0
Total	247,499	173,250

## Owner's Information

### Owner's Data

ANDERSON SHERWOOD & DIAN TRUSTEES  
GLOBAL SIGNAL ACQ II LLC  
PMB 331, 4017 WASHINGTON RD  
MCMURRAY PA 15317

## Owner History - Sales

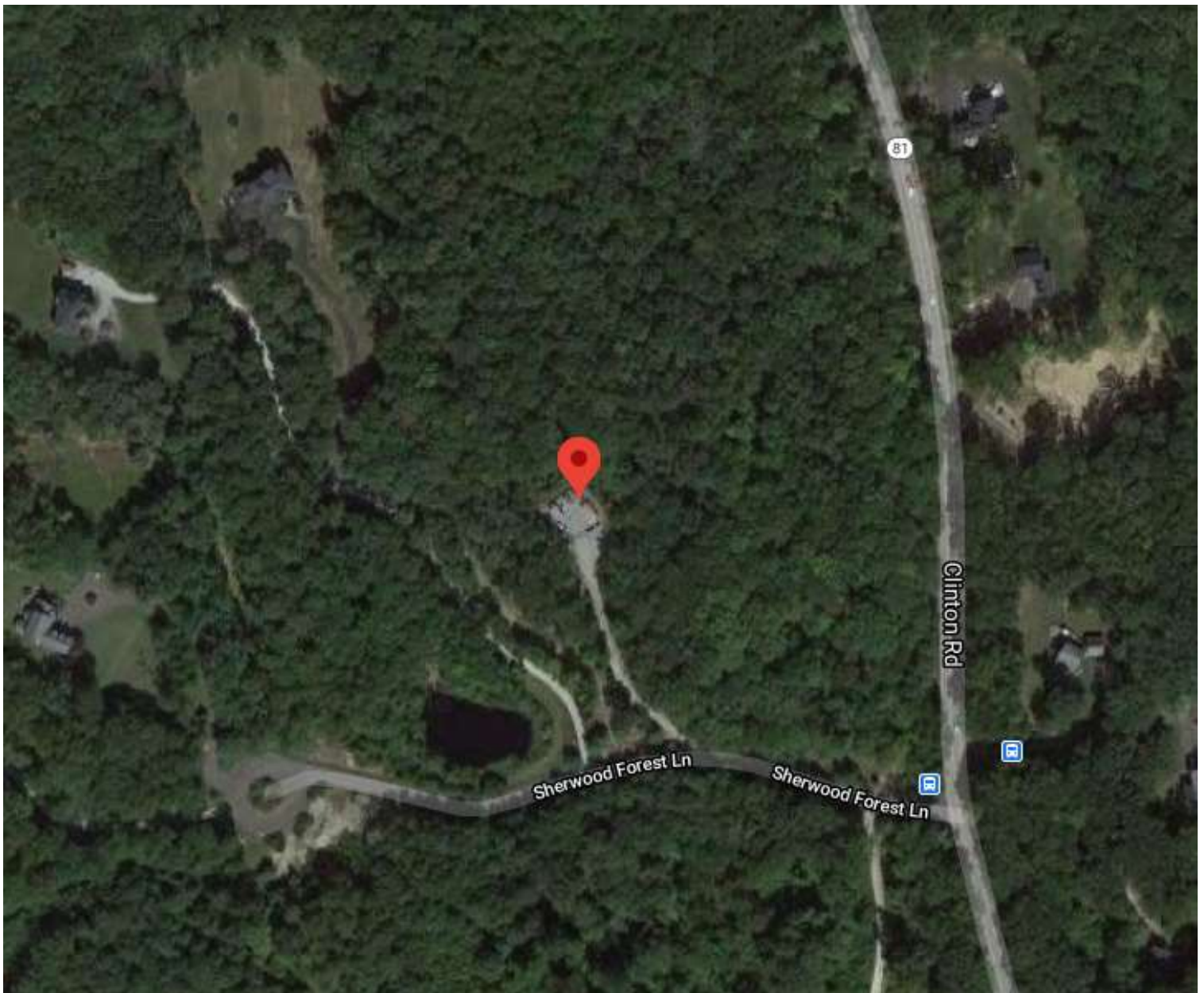
Owner Name	Volume	Page	Sale Date	Deed Type	Valid Sale	Sale Price
ANDERSON SHERWOOD & DIAN TRUSTEES	0218	0491	06/07/2006	Warranty Deed	Yes	\$0
ANDERSON SHERWOOD R	0218	0225	05/26/2005		No	\$0
ANDERSON SHERWOOD R	0087	0642	11/06/1985		No	\$0

## Building Permits

Permit Number	Permit Type	Date Opened	Date Closed	Permit Status	Reason
F20-055	Comm Renovations	08/14/2020		Closed	AT&T TO MODIFY EXISTING ANTENNA ARRAY ON EXISTING CELL TOWER BY REMOVING & REPLACING 6 ANTENNAS WIT
F18-138	Comm Renovations	09/10/2018		Closed	SPRINT TO REPLACE (3) ANTENNAS, ADD (3) ANTENNAS, ADD (12) RRH. AS PER APPLICATION
F17-344	Commercial	04/24/2018		Closed	MODIFY EXSTG AT&T ANTENNA: REMOVE/REPLACE (3) ANTENNAS; ADD (3) REMOTE RADIO UNITS (RRU); INSTALL H
14-062	Electrical	04/22/2014		Closed	REPLACE 6 ANTENNAS
12-397	Commercial	12/11/2012		Closed	CELL TOWER MAINTENANCE
12-377	Building	12/05/2012		Closed	
12-071	Building	03/03/2012		Closed	ADD 6 LINES TO EXISTING INSTALLATION
09-E032	Electrical	07/25/2009		Closed	ELECTRICAL INSTALL;

Permit Number	Permit Type	Date Opened	Date Closed	Permit Status	Reason
09-C002	Commercial Addition	07/05/2009		Closed	ADDITION TO CELL TOWER;

Information Published With Permission From The Assessor



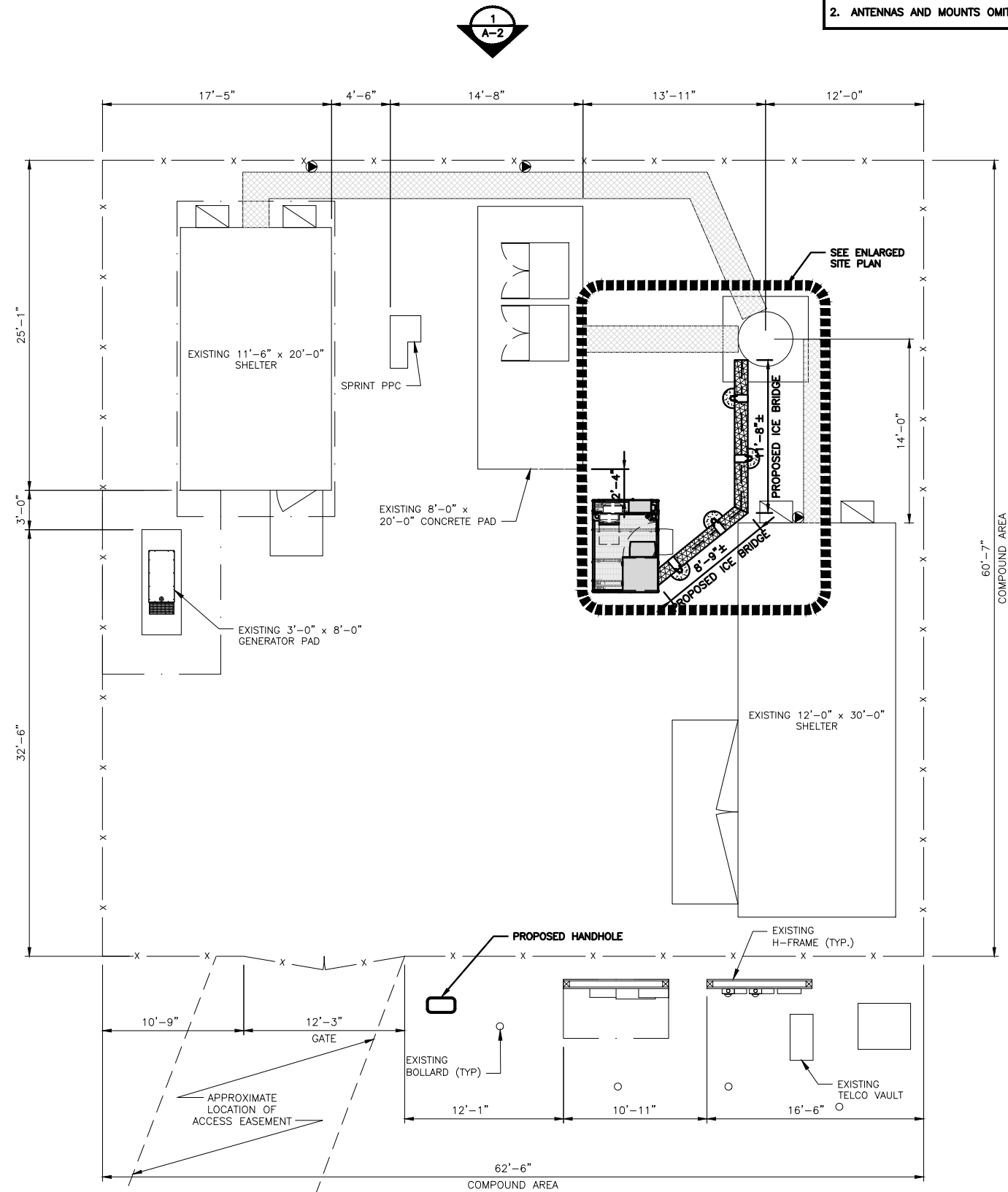
# Exhibit C

## **Construction Drawings**



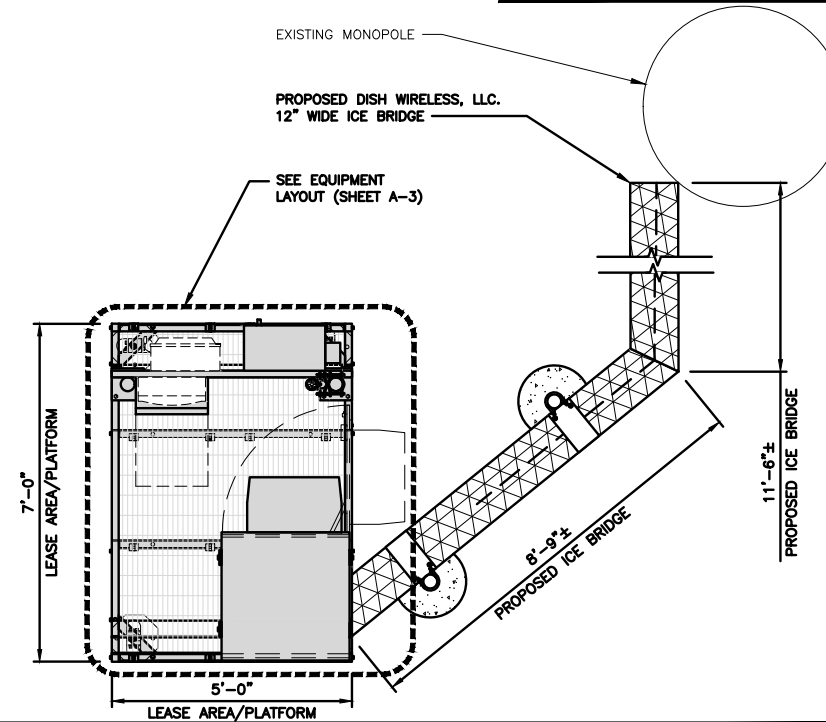
**T-1**





## NOTES

1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.



## NOTES

1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. CONTRACTOR SHALL MAINTAIN A 10'-0" MINIMUM SEPARATION BETWEEN THE PROPOSED GPS UNIT, TRANSMITTING ANTENNAS AND EXISTING GPS UNITS.
3. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.



5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120

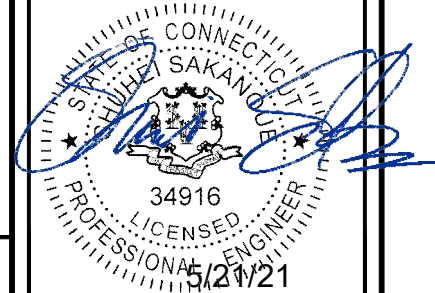


2000 CORPORATE DRIVE  
CANONSBURG, PA 15317



FROM ZERO TO INFINIGY

**the solutions are endless**  
2500 W. HIGGINS RD. SUITE 500 |  
HOFFMAN ESTATES, IL 60169  
PHONE: 847-648-4068 | FAX: 518-690-0793  
[WWW.INFINIGY.COM](http://WWW.INFINIGY.COM)



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.

DRAWN BY:	CHECKED BY:	APPROVED BY:
-----------	-------------	--------------

RCD	SS	CJW
-----	----	-----

RFDS REV #: N/A

CONSTRUCTION  
DOCUMENTS

## SUBMITTALS

[illegible]

A&E PROJECT NUMBER  
2039-Z5555C

DISH WIRELESS, LLC.  
PROJECT INFORMATION  
BOBDL00096A  
7 SHERWOOD FOREST LANE  
KILLINGWORTH, CT 06419

SHEET TITLE  
OVERALL AND ENLARGED  
SITE PLAN

SHEET NUMBER

**A-1**



## SITE PLAN

100' 50' 0 100' 200'

1"=100'

3



**COMPOUND PLAN**

6' 4' 2' 0 5' 10'

$\frac{3}{16}" = 1'-0"$

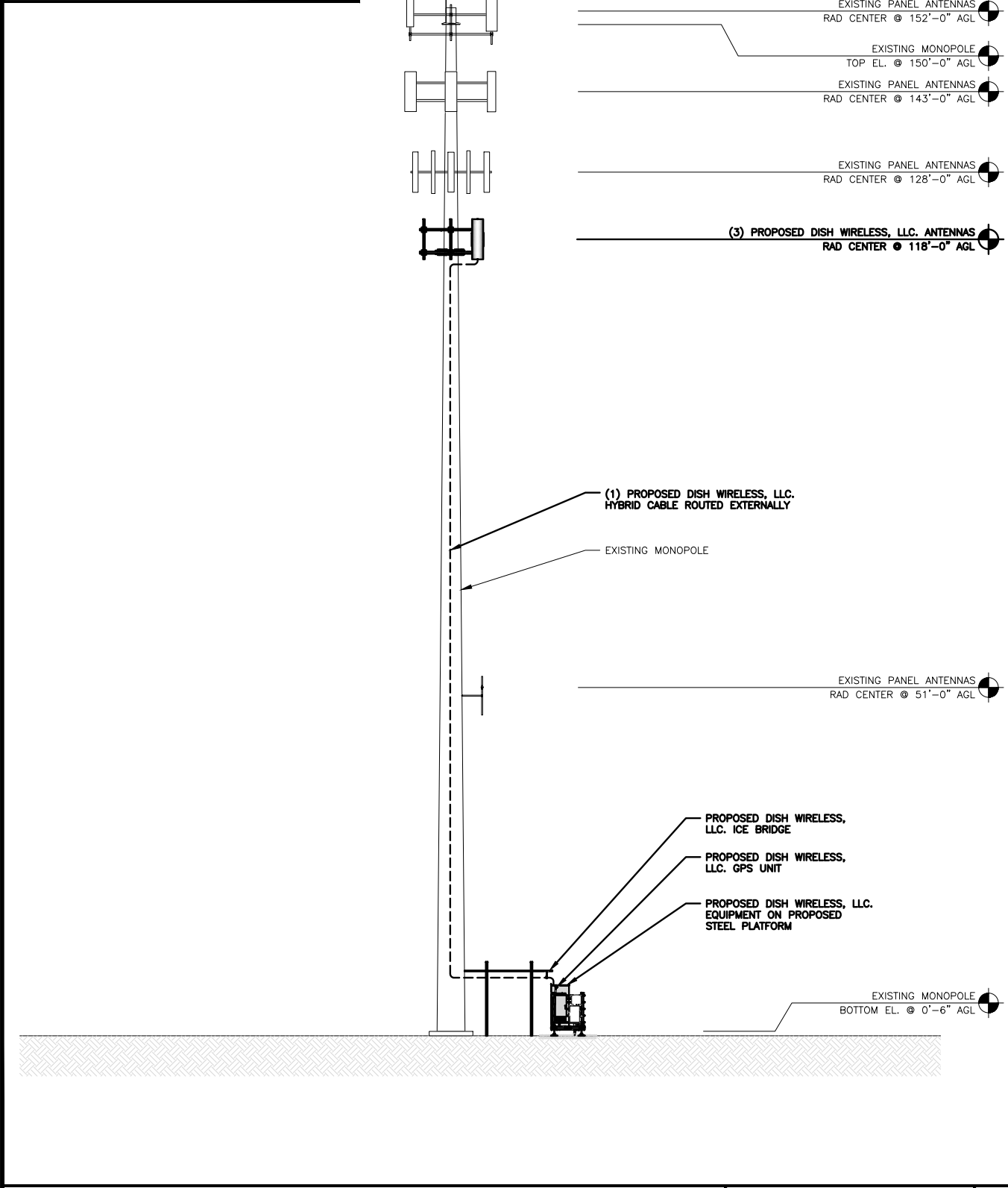
1

- NOTES
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.

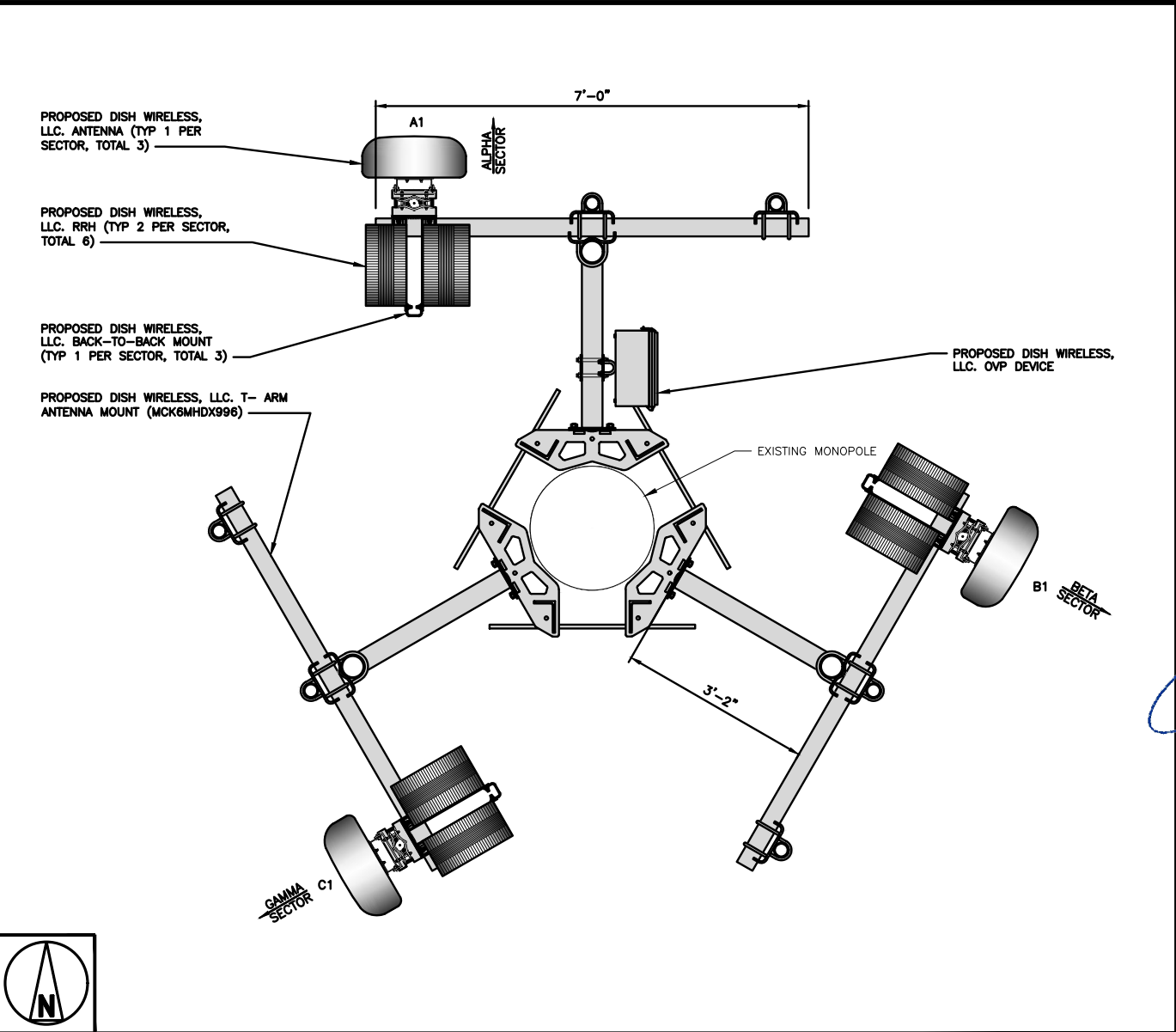
2. ANTENNA AND MW DISH SPECIFICATIONS REFER TO ANTENNA SCHEDULE AND TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS

3. EXISTING EQUIPMENT AND FENCE OMITTED FOR CLARITY.

4. INFINIGY HAS NOT EVALUATED THE TOWER OR MOUNT STRUCTURE AND ASSUMES NO RESPONSIBILITY FOR THEIR STRUCTURAL INTEGRITY REGARDING PROPOSED LOADINGS. FINAL INSTALLATION SHALL COMPLY WITH RESULTS OF PASSING STRUCTURAL ANALYSES PERFORMED BY OTHERS.



PROPOSED SOUTH ELEVATION



ANTENNA LAYOUT

SECTOR	POSITION	ANTENNA						TRANSMISSION CABLE
		EXISTING OR PROPOSED	MANUFACTURER – MODEL NUMBER	TECHNOLOGY	SIZE (HxW)	AZMUTH	RAD CENTER	FEED LINE TYPE AND LENGTH
ALPHA	A1	PROPOSED	JMA WIRELESS – MX08FRO665–20	5G	72.0" x 20.0"	0°	118'–0"	(1) HIGH–CAPACITY HYBRID CABLE (168' LONG)
BETA	B1	PROPOSED	JMA WIRELESS – MX08FRO665–20	5G	72.0" x 20.0"	120°	118'–0"	
GAMMA	C1	PROPOSED	JMA WIRELESS – MX08FRO665–20	5G	72.0" x 20.0"	240°	118'–0"	
NOTES								
1. CONTRACTOR TO REFER TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS.								
2. ANTENNA OR RRH MODELS MAY CHANGE DUE TO EQUIPMENT AVAILABILITY. ALL EQUIPMENT CHANGES MUST BE APPROVED AND REMAIN IN COMPLIANCE WITH THE PROPOSED DESIGN AND STRUCTURAL ANALYSES.								
SECTOR	POSITION	RRH		NOTES				
		MANUFACTURER – MODEL NUMBER	TECHNOLOGY					
ALPHA	A1	FUJITSU – TA08025–B604	5G	1. CONTRACTOR TO REFER TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS.  2. ANTENNA AND RRH MODELS MAY CHANGE DUE TO EQUIPMENT AVAILABILITY. ALL EQUIPMENT CHANGES MUST BE APPROVED AND REMAIN IN COMPLIANCE WITH THE PROPOSED DESIGN AND STRUCTURAL ANALYSES.				
	A1	FUJITSU – TA08025–B605	5G					
BETA	B1	FUJITSU – TA08025–B604	5G					
	B1	FUJITSU – TA08025–B605	5G					
GAMMA	C1	FUJITSU – TA08025–B604	5G					
	C1	FUJITSU – TA08025–B605	5G					

ANTENNA SCHEDULE

dish  
wireless.

5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120

CROWN  
CASTLE

2000 CORPORATE DRIVE  
CANONSBURG, PA 15317

INFINIGY

FROM ZERO TO INFINIGY

the solutions are endless

2500 W. HIGGINS RD. SUITE 500 |  
HOFFMAN ESTATES, IL 60169  
PHONE: 847-648-4068 | FAX: 518-690-0793  
WWW.INFINIGY.COM

STATE OF CONNECTICUT  
LUKEI SAKA  
34916  
LICENSED PROFESSIONAL ENGINEER  
5/21/21

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.

DRAWN BY: CHECKED BY: APPROVED BY:  
RCD SS CJW

RFDS REV #: N/A

CONSTRUCTION  
DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	05/20/2021	PRELIM CDS

A&E PROJECT NUMBER

2039-Z5555C

DISH WIRELESS, LLC.  
PROJECT INFORMATION

BOBDL00096A

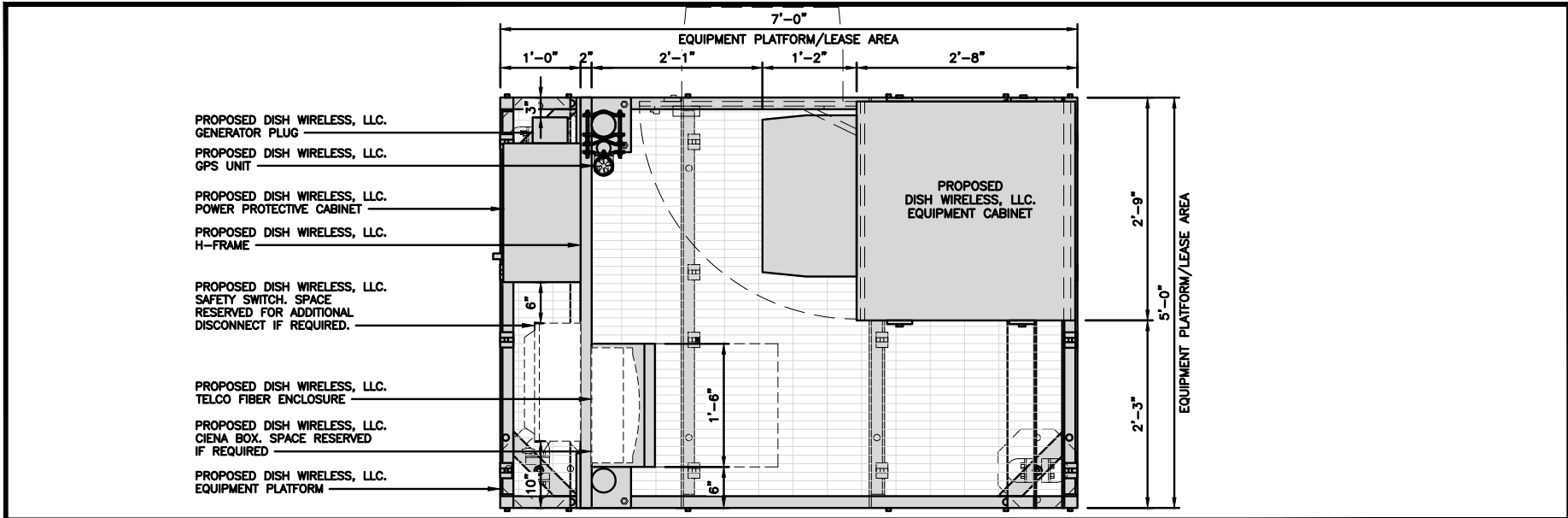
7 SHERWOOD FOREST LANE  
KILLINGWORTH, CT 06419

SHEET TITLE

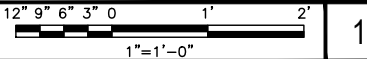
ELEVATION, ANTENNA  
LAYOUT AND SCHEDULE

SHEET NUMBER

A-2

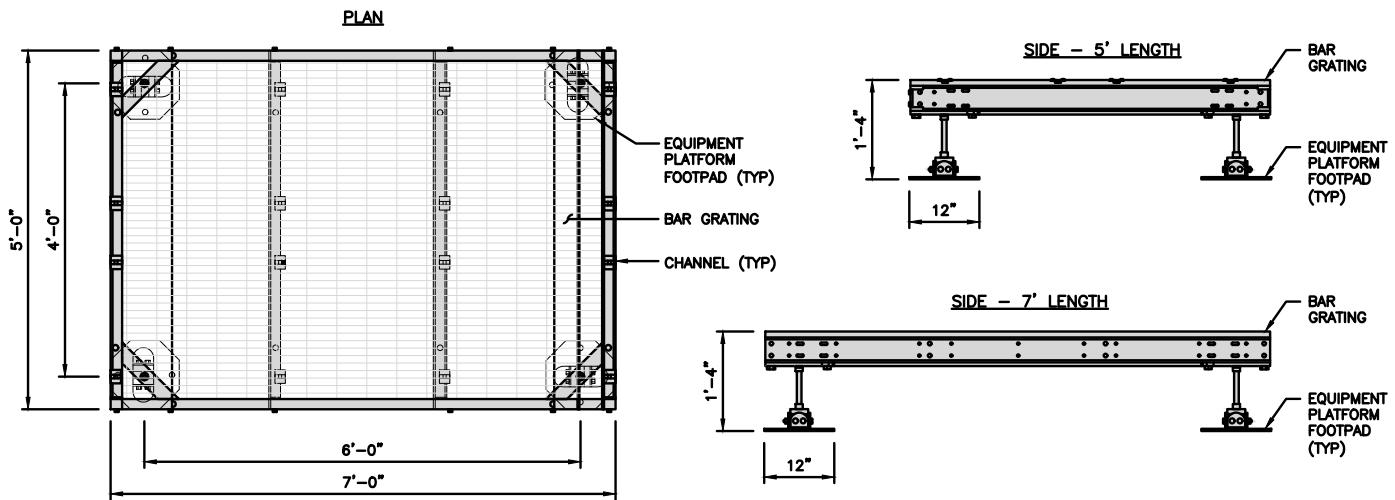


PLATFORM EQUIPMENT PLAN



1

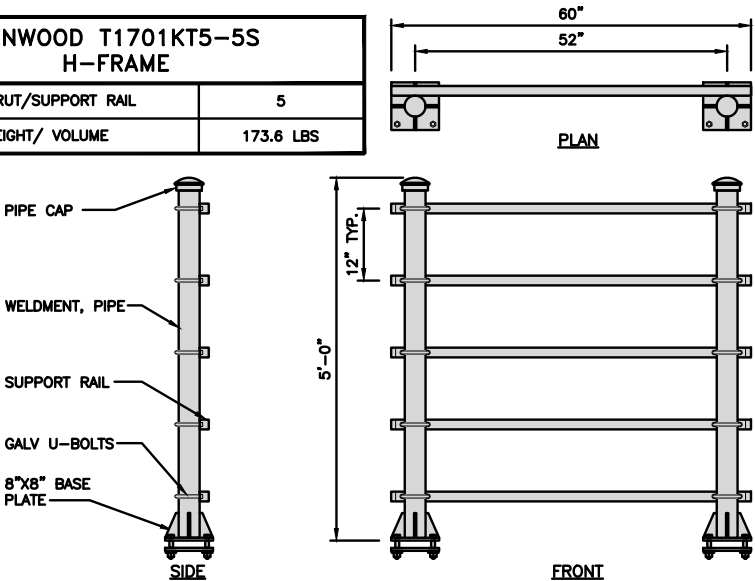
COMMSCOPE MTC4045LP 5X7 PLATFORM	
DIMENSIONS (HxWxD)	16"x84"x60"
TOTAL WEIGHT	423 LBS



PLATFORM DETAIL

NO SCALE 2

KENWOOD T1701KT5-5S H-FRAME	
UNISTRUT/SUPPORT RAIL	5
WEIGHT/ VOLUME	173.6 LBS

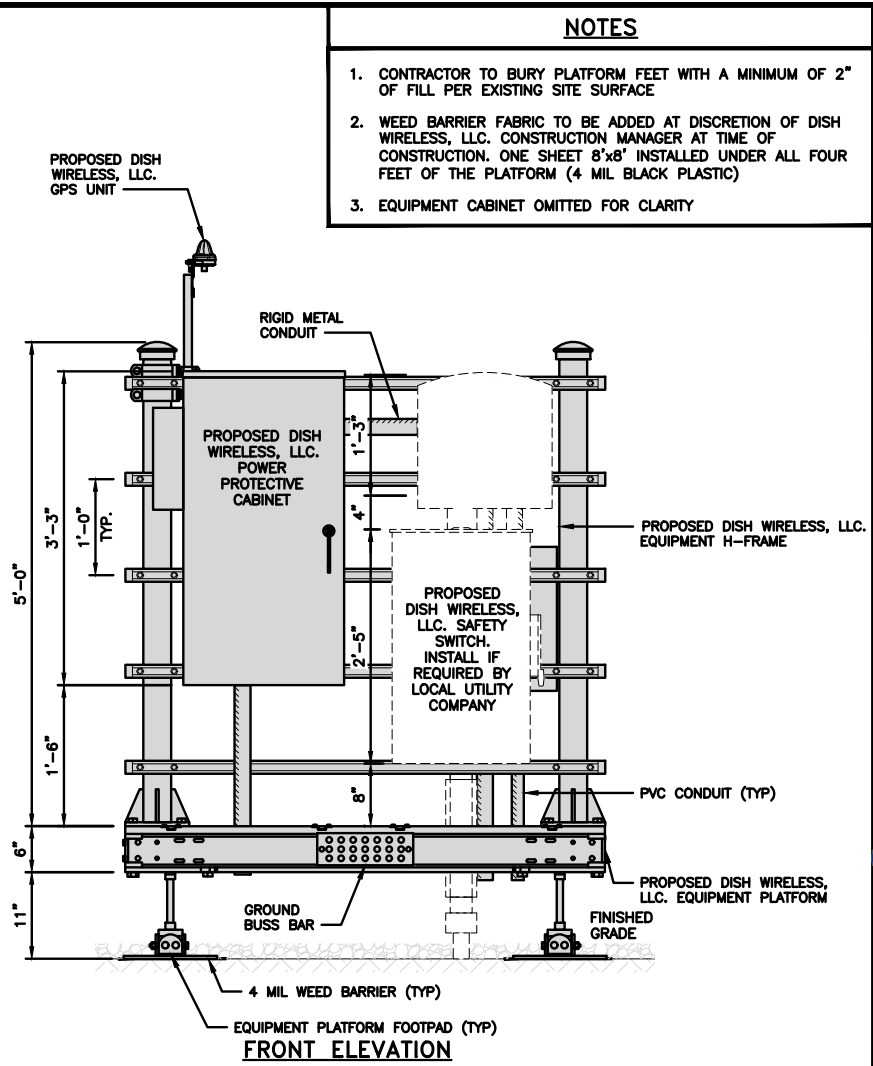


H-FRAME DETAIL

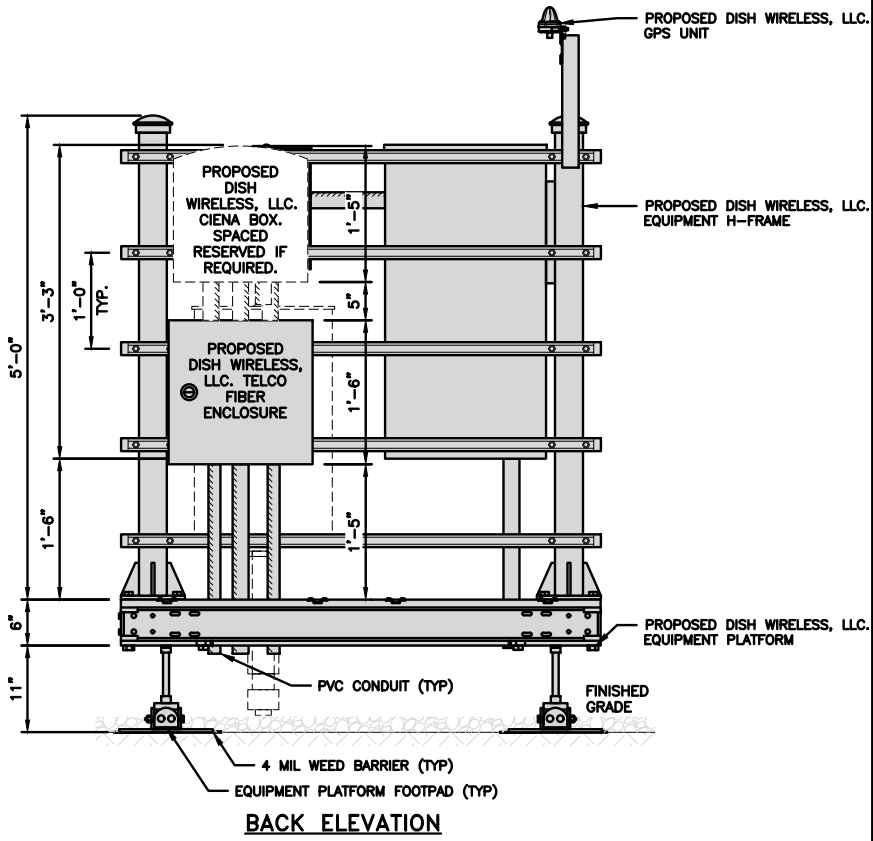
NO SCALE 3

NOT USED

NO SCALE 4

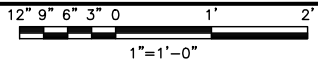


FRONT ELEVATION



BACK ELEVATION

H-FRAME EQUIPMENT ELEVATION



5

NOTES

1. CONTRACTOR TO BURY PLATFORM FEET WITH A MINIMUM OF 2" OF FILL PER EXISTING SITE SURFACE
2. WEED BARRIER FABRIC TO BE ADDED AT DISCRETION OF DISH WIRELESS, LLC. CONSTRUCTION MANAGER AT TIME OF CONSTRUCTION. ONE SHEET 8'x8' INSTALLED UNDER ALL FOUR FEET OF THE PLATFORM (4 MIL BLACK PLASTIC)
3. EQUIPMENT CABINET OMITTED FOR CLARITY

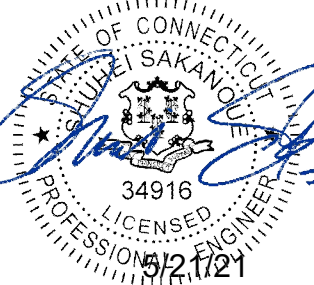
**dish**  
wireless.

5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120

**CROWN**  
**CASTLE**

2000 CORPORATE DRIVE  
CANONSBURG, PA 15317

**INFINIGY**  
FROM ZERO TO INFINIGY  
the solutions are endless  
2500 W. HIGGINS RD., SUITE 500 |  
HOFFMAN ESTATES, IL 60169  
PHONE: 847-648-4068 | FAX: 518-690-0793  
WWW.INFINIGY.COM



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.

DRAWN BY: CHECKED BY: APPROVED BY:  
RCD SS CJW

RFDS REV #: N/A

CONSTRUCTION  
DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
A	05/20/2021	PRELIM CDS

A&E PROJECT NUMBER  
2039-Z5555C

DISH WIRELESS, LLC.  
PROJECT INFORMATION  
BOBDL00096A  
7 SHERWOOD FOREST LANE  
KILLINGWORTH, CT 06419

SHEET TITLE  
EQUIPMENT PLATFORM AND  
H-FRAME DETAILS

SHEET NUMBER

**A-3**



CHARLES INDUSTRY HEX  
CUBE-PM369155N4

DIMENSIONS (HxWxD):	74"x32"x32"
POWER PLANT:	-48VDC ABB
TOTAL WEIGHT (EMPTY)	394 LBS

PLAN

SIDE

BACK

SIDE

FRONT

CABINET DETAIL

NO SCALE

1

RAYCAP RDIAC-6512-P-240-MTS  
POWER & TELCO PROTECTION CABINET

DIMENSIONS (HxWxD)	40"x20"x10"
WEIGHT/ VOLUME	124 LBS
MANUAL TRANSFER SWITCH	200A
LOAD CENTER	30 POSITION
MAIN BREAKER	200A, 65kA AIC
GENERATOR RECEPTACLE	CAMLOCK
NEMA RATING	3R POWDER COATED ALUMINUM
SURGE PROTECTION DEVICE	UL 1449 4TH EDITION LISTED

PLAN

SIDE

FRONT

POWER PROTECTION CABINET (PPC) DETAIL

NO SCALE

2

SQUARE D SAFETY SWITCH  
D324NRB

ENCLOSURE DIM (HxWxD)	29.25"x17.25"x8.25"
TOTAL WEIGHT (EMPTY)	45.33 LBS
MAX VOLTAGE/AMPS/WATT	240V/200A/48000W
ENCLOSURE RATING	OUTDOOR NEMA 3R

PLAN

SIDE

BACK

FRONT

SAFETY SWITCH

NO SCALE

3

CABINET DETAIL

NO SCALE

1

CIENA 3931  
SERVICE DELIVERY SWITCH

DIMENSIONS (HxWxD)	17.0"x16.8"x7.0" 431x427x178mm
WEIGHT	28.6 LBS/13.0 KG
POWER INPUT	60W MAX

PLAN

FRONT

SIDE

BACK

CIENA DETAIL

NO SCALE

5

CHARLES  
FIBER TELCO ENCLOSURE  
CUBE-MP1818WB-A

ENCLOSURE DIM (HxWxD)	18.0"x18.0"x9.25"
NEMA RATING	4X
THERMAL	SEALED
MOUNTING BACKBOARD	WOOD

PLAN

SIDE

BACK

FRONT

FIBER TELCO ENCLOSURE DETAIL

NO SCALE

6

NOT USED

NO SCALE

4

COMMSCOPE WB-K110-B  
WAVEGUIDE BRIDGE KIT

DIMENSIONS (HxL)	160"x10'
WEIGHT/ VOLUME	325.0 LBS
CABLE RUN (QTY)	12

PLAN

FRONT

SIDE

INCLUDED PRODUCTS:

WB-T12-3 TRAPEZE KIT,  
3 RUNGS

WB-LB12-3 SUPPORT BRACKET

MF-130 DIRECT BURIAL PIPE  
COLUMN, 13'-4"

ICE BRIDGE DETAIL

NO SCALE

7

TYPICAL ICE BRIDGE CONCRETE PIER DETAIL

NO SCALE

8

HYBRID CABLE RUN

NO SCALE

9

5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120

2000 CORPORATE DRIVE  
CANONSBURG, PA 15317

FROM ZERO TO INFINIGY  
the solutions are endless  
2500 W. HIGGINS RD. SUITE 500 |  
HOFFMAN ESTATES, IL 60169  
PHONE: 847-648-4068 | FAX: 518-690-0793  
WWW.INFINIGY.COM

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.

DRAWN BY: CHECKED BY: APPROVED BY:  
RCD SS CJW

RFDS REV #: N/A

CONSTRUCTION DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
A	05/20/2021	PRELIM CDS

A&E PROJECT NUMBER  
2039-Z5555C

DISH WIRELESS, LLC.  
PROJECT INFORMATION  
BOBDL00096A  
7 SHERWOOD FOREST LANE  
KILLINGWORTH, CT 06419

SHEET TITLE  
EQUIPMENT DETAILS

SHEET NUMBER  
A-4

<div>ROSENBERGER GPSGLONASS-36-N-S</div> <table><tr><td>DIMENSION (DIA x H)</td><td>69mm x 98.5mm</td></tr><tr><td>WEIGHT (WITH ACCESSORIES)</td><td>515.74g</td></tr><tr><td>CONNECTOR</td><td>N-FEMALE</td></tr><tr><td>FREQUENCY RANGE</td><td>1559 MHz ~ 1610.5MHz</td></tr></table> <div><div>GPS UNIT GROUNDING KIT MOUNTING BRACKET</div><div>GPS UNIT GROUNDING KIT MOUNTING BRACKET</div></div> <div><div>GPS UNIT GROUNDING KIT MOUNTING BRACKET</div><div>GPS UNIT GROUNDING KIT MOUNTING BRACKET</div></div>			DIMENSION (DIA x H)	69mm x 98.5mm	WEIGHT (WITH ACCESSORIES)	515.74g	CONNECTOR	N-FEMALE	FREQUENCY RANGE	1559 MHz ~ 1610.5MHz	<div>MINIMUM OF 75% OR 270° IN ANY DIRECTION</div> <div>GPS UNIT OBSTRUCTIONS MUST BE BELOW 10'</div>															
DIMENSION (DIA x H)	69mm x 98.5mm																									
WEIGHT (WITH ACCESSORIES)	515.74g																									
CONNECTOR	N-FEMALE																									
FREQUENCY RANGE	1559 MHz ~ 1610.5MHz																									
GPS ANTENNA DETAIL			NO SCALE			1			GPS MINIMUM SKY VIEW REQUIREMENTS			NO SCALE			2			NOT USED			NO SCALE			3		
NOT USED			NO SCALE			4			NOT USED			NO SCALE			5			NOT USED			NO SCALE			6		
NOT USED			NO SCALE			7			NOT USED			NO SCALE			8			NOT USED			NO SCALE			9		



5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



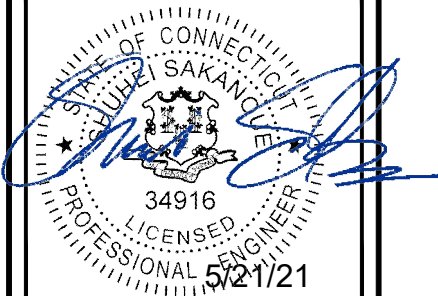
2000 CORPORATE DRIVE  
CANONSBURG, PA 15317

INFINIGY

FROM ZERO TO INFINIGY

the solutions are endless

2500 W. HIGGINS RD., SUITE 500 |  
HOFFMAN ESTATES, IL 60169  
PHONE: 847-648-4068 | FAX: 518-690-0793  
WWW.INFINIGY.COM



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.

DRAWN BY: CHECKED BY: APPROVED BY:

RCD SS CJW

RFDS REV #: N/A

CONSTRUCTION  
DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
A	05/20/2021	PRELIM CDS

A&E PROJECT NUMBER  
2039-Z5555C

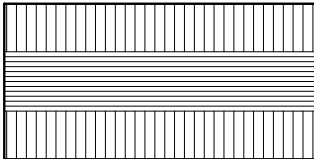
DISH WIRELESS, LLC.  
PROJECT INFORMATION  
BOBDL00096A  
7 SHERWOOD FOREST LANE  
KILLINGWORTH, CT 06419

SHEET TITLE  
EQUIPMENT DETAILS

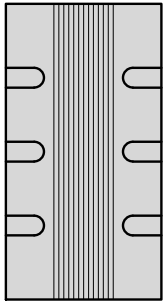
SHEET NUMBER  
A-5

FUJITSU  
TA08025-B604 RRH

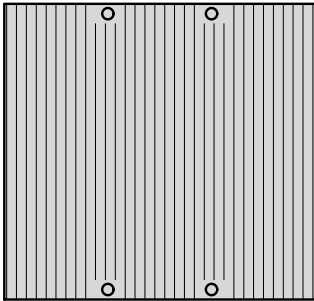
DIMENSIONS (HxWxD) (KG/IN)	380x400x200/14.9"x15.7"x7.8"
WEIGHT(KG,LB)/ VOLUME	29kg,63.9lb/ 30L
POWER SUPPLY	DC-58~-36V



PLAN



SIDE



FRONT

NOTES

FINAL RRH SPECIFICATIONS TO BE CONFIRMED BY GC

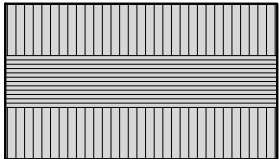
REMOTE RADIO HEAD DETAIL

NO SCALE

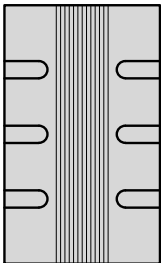
1

FUJITSU  
TA08025-B605 RRH

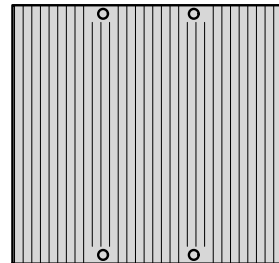
DIMENSIONS (HxWxD) (KG/IN)	380x400x230/14.9"x15.7"x9.0"
WEIGHT(KG,LB)/ VOLUME	34kg,74.9lb/ 35L
POWER SUPPLY	DC-58~-36V



PLAN



SIDE



FRONT

NOTES

FINAL RRH SPECIFICATIONS TO BE CONFIRMED BY GC

REMOTE RADIO HEAD DETAIL

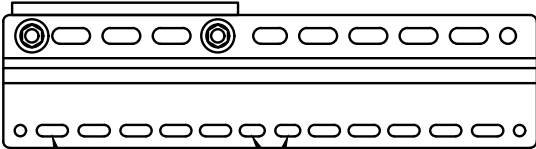
NO SCALE

2

SABRE INDUSTRIES  
RRU BRACKET MOUNT C10123155

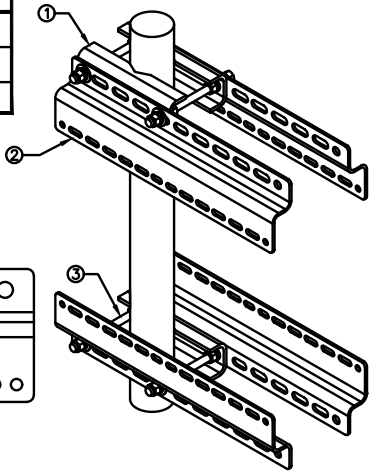
DIMENSIONS (HxWxD) (1 BRACKET)	5"x20"x1-13/16"
WEIGHT (FULL ASSEMBLY)	35.79 lbs
PACKAGE QUANTITY	4

ITEM#	DESCRIPTION
1	PLATE, CHANNEL BRACKET
2	RRH Z BRACKET, 3/16"
3	THREADED ROD ASSEMBLY 1/2"x12"



11MM x 30MM SLOTS  
40MM ON CENTER

11MM x 24MM SLOTS




REMOTE RADIO MOUNT DETAIL

NO SCALE

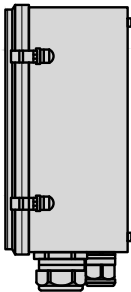
3

RAYCAP RDIDC-9181-PF-48  
DC SURGE PROTECTION

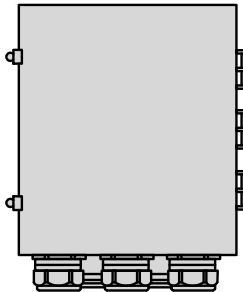
DIMENSIONS (HxWxD)	18.98"x14.39"x8.15"
WEIGHT	21.82 LBS



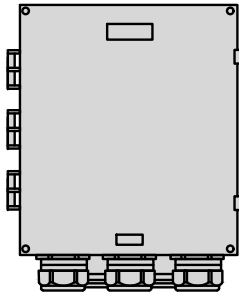
PLAN



SIDE



BACK



FRONT

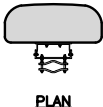
SURGE SUPPRESSION DETAIL

NO SCALE


4

JMA WIRELESS  
MX08FR0665-20 ANTENNA

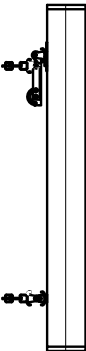
DIMENSIONS (HxWxD)	72.0"x20.0"x8.0"
TOTAL WEIGHT	54 LB
RF PORTS, CONNECTOR TYPE	8 x 4.3-10 FEMALE



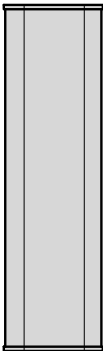
PLAN



SIDE



FRONT



BACK

NOTES

FINAL ANTENNA SPECIFICATIONS TO BE CONFIRMED BY GC

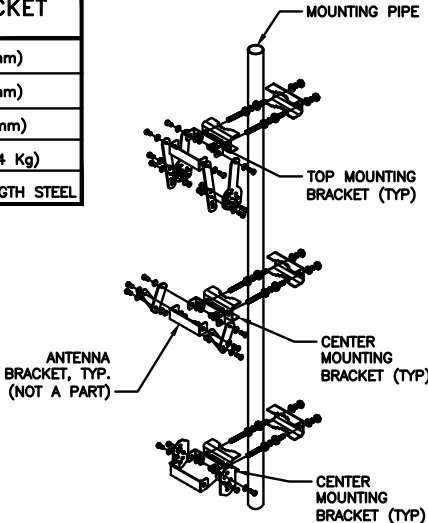
ANTENNA DETAIL

NO SCALE

5

JMA 91900318 MOUNTING BRACKET

WIDTH	8.3" (211mm)
DEPTH	7.5" (191mm)
HEIGHT	11.2" (284mm)
TOTAL WEIGHT (WITH BRACKETS)	18.5 LBS (8.4 Kg)
HOUSING MATERIAL	GALV. HIGH STRENGTH STEEL



MOUNTING PIPE

TOP MOUNTING BRACKET (TYP)

CENTER MOUNTING BRACKET (TYP)

ANTENNA BRACKET, TYP. (NOT A PART)

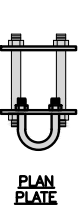
ANTENNA MOUNTING DETAIL

NO SCALE

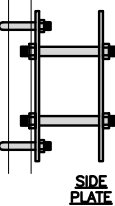
6

COMMSCOPE XP-2040  
CROSSOVER PLATE

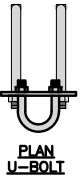
DIMENSIONS (HxW)	10"x12"
WEIGHT	11.023 LBS



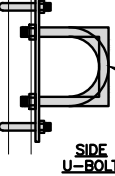
PLAN PLATE



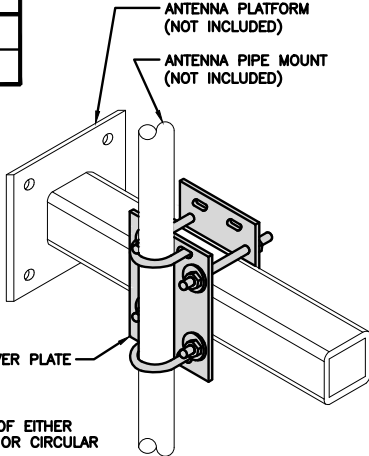
SIDE PLATE



PLAN U-BOLT



SIDE U-BOLT



ANTENNA PLATFORM (NOT INCLUDED)

ANTENNA PIPE MOUNT (NOT INCLUDED)

CROSSOVER PLATE

OPTION OF EITHER SQUARE OR CIRCULAR U-BOLT

RRH/OVP MOUNT DETAIL

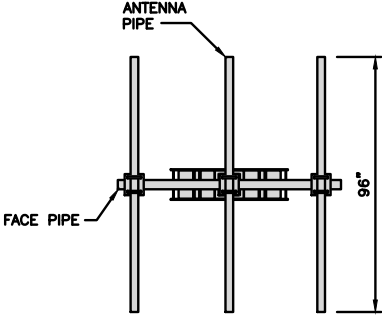
NO SCALE

7

COMMSCOPE  
MC-K6MHDX-9-96

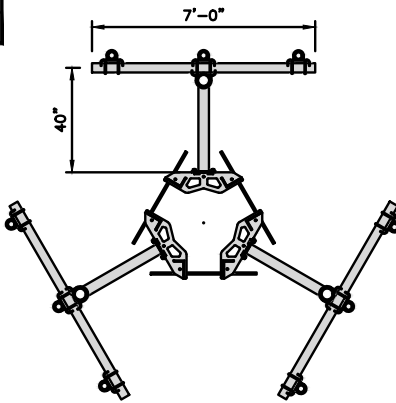
FACE WIDTH	7'-0"
WEIGHT	1203.31 lbs

NOTE: 15" TO 50" O.D.



ANTENNA PIPE

FACE PIPE



7'-0"

40"

96"

T-ARM MOUNT DETAIL


NO SCALE

8


NOT USED

NO SCALE


9



5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



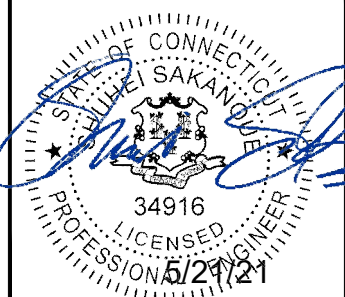
2000 CORPORATE DRIVE  
CANONSBURG, PA 15317



FROM ZERO TO INFINIGY

the solutions are endless

2500 W. HIGGINS RD. SUITE 500 |  
HOFFMAN ESTATES, IL 60169  
PHONE: 847-648-4068 | FAX: 518-690-0793  
WWW.INFINIGY.COM



STATE OF CONNECTICUT  
SHIHAI SAKANAKA  
34916  
LICENSED PROFESSIONAL ENGINEER  
5/24/21

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.

DRAWN BY: CHECKED BY: APPROVED BY:

RCD SS CJW

RFDS REV #: N/A

CONSTRUCTION DOCUMENTS

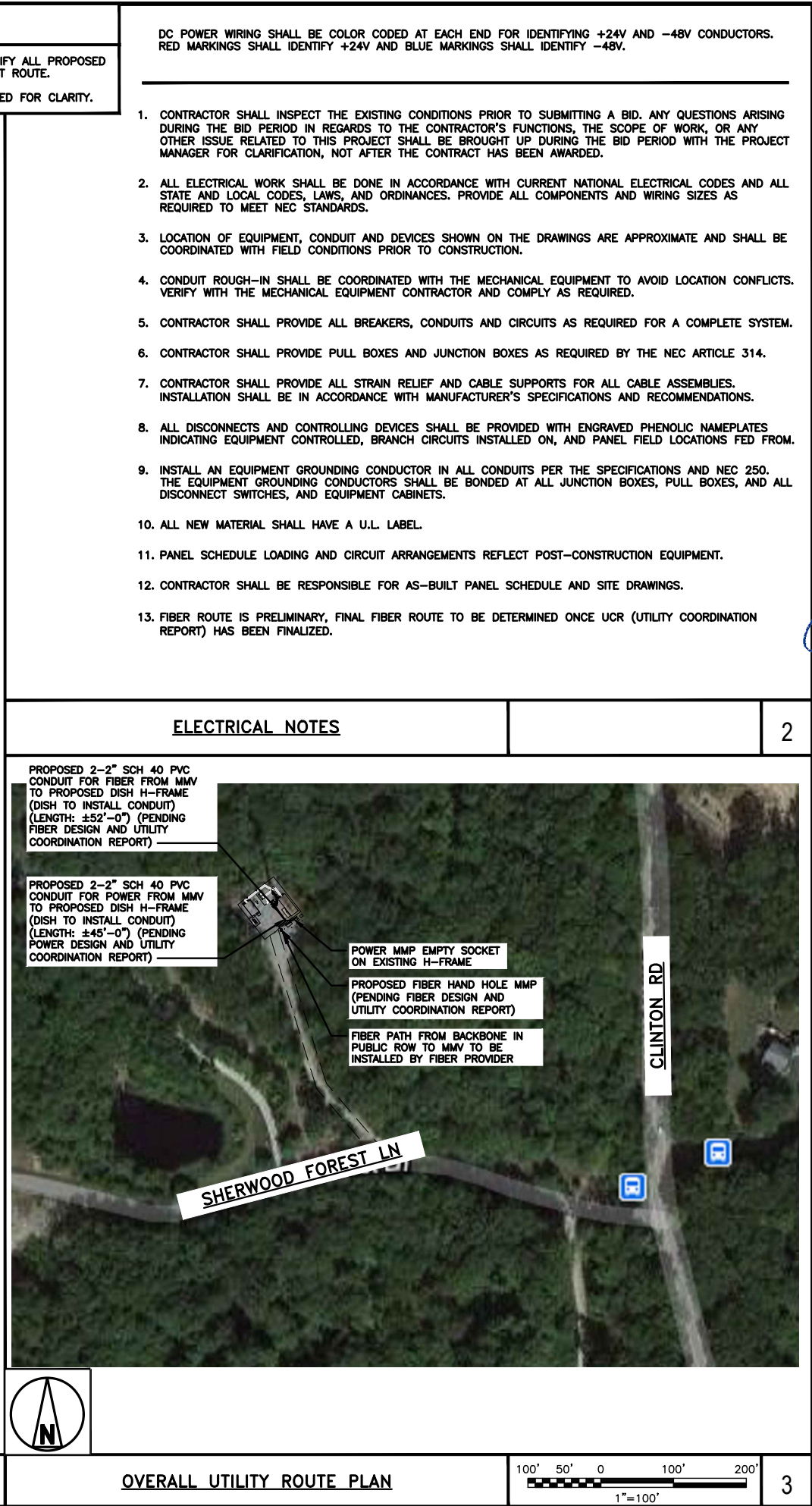
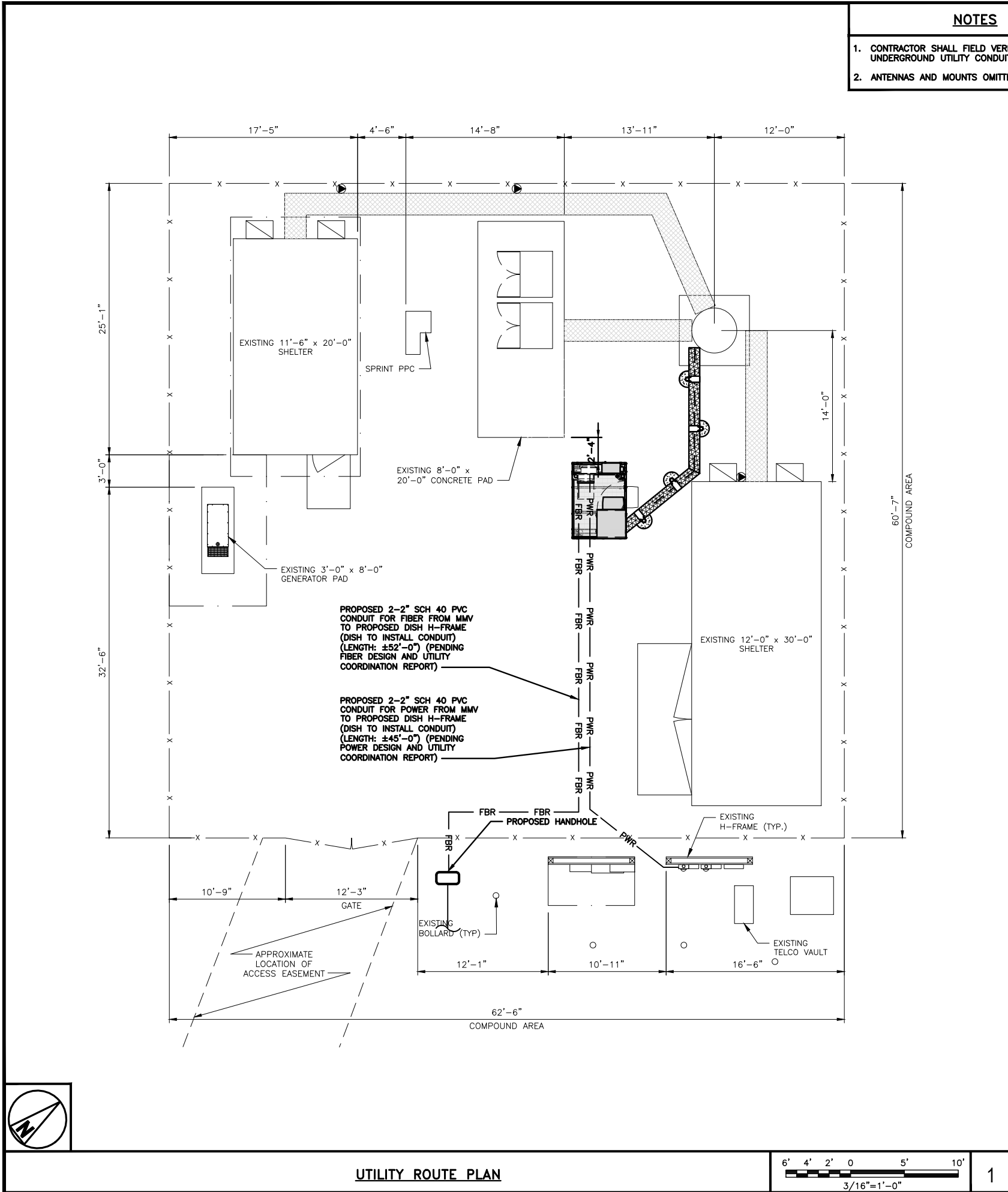
SUBMITTALS		
REV	DATE	DESCRIPTION
A	05/20/2021	PRELIM CDS

A&E PROJECT NUMBER  
2039-Z5555C

DISH WIRELESS, LLC.  
PROJECT INFORMATION  
BOBDL00096A  
7 SHERWOOD FOREST LANE  
KILLINGWORTH, CT 06419

SHEET TITLE  
EQUIPMENT DETAILS

SHEET NUMBER  
A-6



dish  
wireless.

5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120

CROWN  
CASTLE

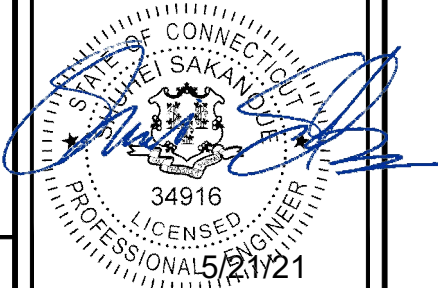
2000 CORPORATE DRIVE  
CANONSBURG, PA 15317

INFINIGY

FROM ZERO TO INFINIGY

the solutions are endless

2500 W. HIGGINS RD., SUITE 500 |  
HOFFMAN ESTATES, IL 60169  
PHONE: 847-648-4068 | FAX: 518-690-0793  
WWW.INFINIGY.COM



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.

DRAWN BY: CHECKED BY: APPROVED BY:

RCD SS CJW

RFDS REV #: N/A

### CONSTRUCTION DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
A	05/20/2021	PRELIM CDS

A&E PROJECT NUMBER

2039-Z5555C

DISH WIRELESS, LLC.

PROJECT INFORMATION

BOBDL00096A

7 SHERWOOD FOREST LANE  
KILLINGWORTH, CT 06419

SHEET TITLE

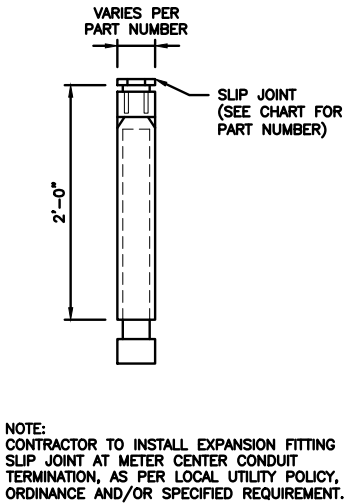
ELECTRICAL/FIBER ROUTE  
PLAN AND NOTES

SHEET NUMBER

E-1

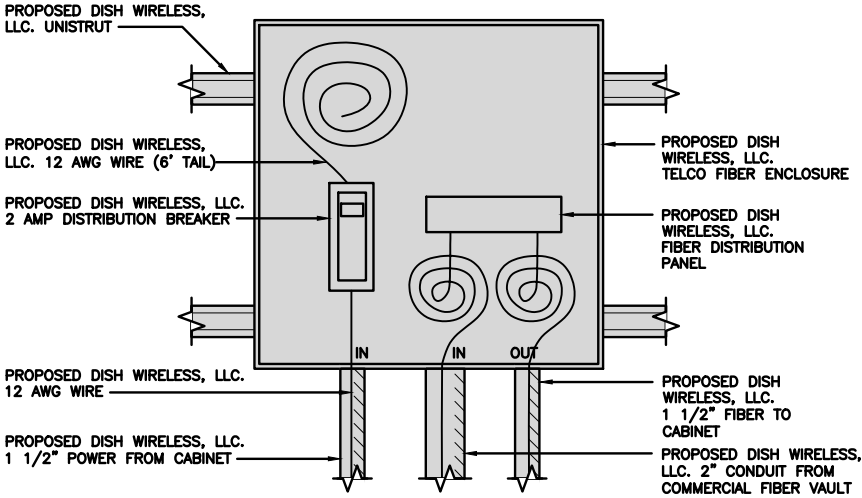
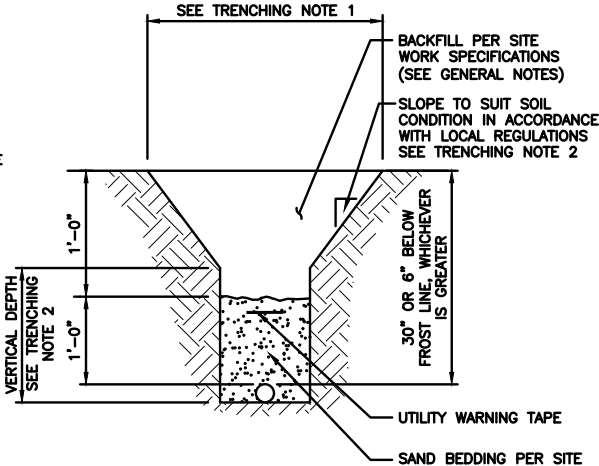


CARLON EXPANSION FITTINGS				
COUPLING END PART#	MALE TERMINAL ADAPTER END PART#	SIZE	STD CTN QTY.	TRAVEL LENGTH
E945D	E945DX	1/2"	20	4"
E945E	E945EX	3/4"	15	4"
E945F	E945FX	1"	10	4"
E945G	E945GX	1 1/4"	5	4"
E945H	E945HX	1 1/2"	5	4"
E945J	E945JX	2"	15	8"
E945K	E945KX	2 1/2"	10	8"
E945L	E945LX	3"	10	8"
E945M	E945MX	3 1/2"	5	8"
E945N	E945NX	4"	5	8"
E945P	E945PX	5"	1	8"
E945R	E945RX	6"	1	8"



TRENCHING NOTES

1. CONTRACTOR SHALL RESTORE THE TRENCH TO ITS ORIGINAL CONDITIONS BY EITHER SEEDING OR SODDING GRASS AREAS, OR REPLACING ASPHALT OR CONCRETE AREAS TO ITS ORIGINAL CROSS SECTION.
2. TRENCHING SAFETY; INCLUDING, BUT NOT LIMITED TO SOIL CLASSIFICATION, SLOPING, AND SHORING, SHALL BE GOVERNED BY THE CURRENT OSHA TRENCHING AND EXCAVATION SAFETY STANDARDS.
3. ALL CONDUITS SHALL BE INSTALLED IN COMPLIANCE WITH THE CURRENT NATIONAL ELECTRIC CODE (NEC) OR AS REQUIRED BY THE LOCAL JURISDICTION, WHICHEVER IS THE MOST STRINGENT.



EXPANSION JOINT DETAIL

NO SCALE

1

TYPICAL UNDERGROUND TRENCH DETAIL

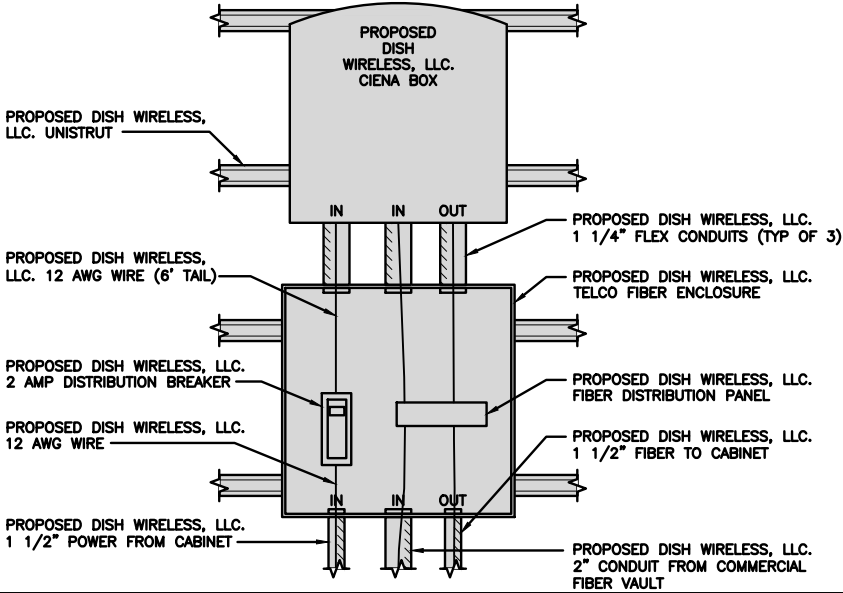
NO SCALE

2

DARK TELCO BOX – INTERIOR WIRING LAYOUT

NO SCALE

3



LIT TELCO BOX – INTERIOR WIRING LAYOUT

NO SCALE

4

NOT USED

NO SCALE

5

NOT USED

NO SCALE

6

NOT USED

NO SCALE

7

NOT USED

NO SCALE

8

NOT USED

NO SCALE

9

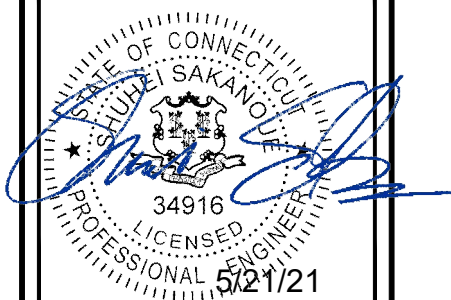
dish  
wireless.

5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120

CROWN  
CASTLE

2000 CORPORATE DRIVE  
CANONSBURG, PA 15317

INFINIGY  
FROM ZERO TO INFINITY  
the solutions are endless  
2500 W. HIGGINS RD. SUITE 500 |  
HOFFMAN ESTATES, IL 60169  
PHONE: 847-648-4068 | FAX: 518-690-0793  
WWW.INFINIGY.COM



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.

DRAWN BY: CHECKED BY: APPROVED BY:

RCD SS CJW

RFDS REV #: N/A

CONSTRUCTION  
DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
A	05/20/2021	PRELIM CDS

A&E PROJECT NUMBER

2039-Z5555C

DISH WIRELESS, LLC.  
PROJECT INFORMATION  
BOBDL00096A  
7 SHERWOOD FOREST LANE  
KILLINGWORTH, CT 06419

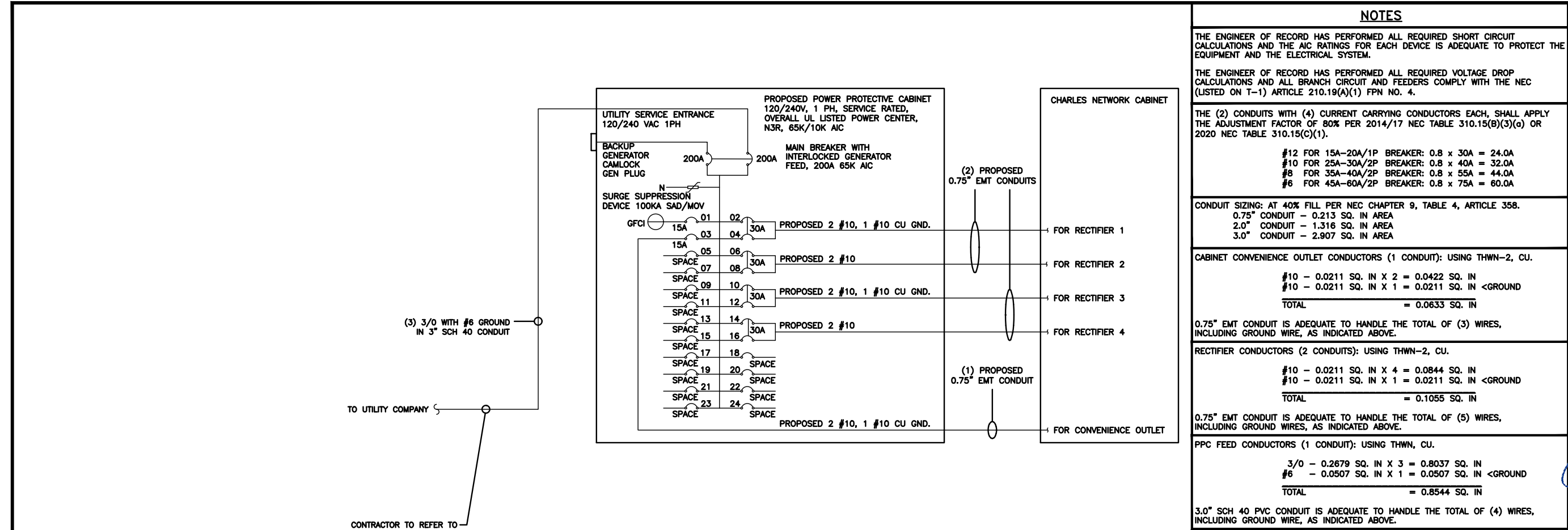
SHEET TITLE

ELECTRICAL  
DETAILS

SHEET NUMBER

E-2





PPC ONE-LINE DIAGRAM

NO SCALE

1

PROPOSED CHARLES PANEL SCHEDULE											
LOAD SERVED	VOLT AMPS (WATTS)		TRIP	CKT #	PHASE	CKT #	TRIP	VOLT AMPS (WATTS)		LOAD SERVED	
	L1	L2						L1	L2		
PPC GFCI OUTLET	180		15A	1	A	2	30A	2880		ABB/GE INFINITY RECTIFIER 1	
CHARLES GFCI OUTLET		180	15A	3	B	4			2880		
-SPACE-				5	A	6	30A	2880		ABB/GE INFINITY RECTIFIER 2	
-SPACE-				7	B	8			2880		
-SPACE-				9	A	10	30A	2880		ABB/GE INFINITY RECTIFIER 3	
-SPACE-				11	B	12			2880		
-SPACE-				13	A	14	30A	2880		ABB/GE INFINITY RECTIFIER 4	
-SPACE-				15	B	16			2880		
-SPACE-				17	A	18				-SPACE-	
-SPACE-				19	B	20				-SPACE-	
-SPACE-				21	A	22				-SPACE-	
-SPACE-				23	B	24				-SPACE-	
VOLTAGE AMPS	180	180							11520	11520	
200A MCB, 10, 24 SPACE, 120/240V			L1	L2							
MB RATING: 65,000 AIC			11700	11700		VOLTAGE AMPS					
			98	98		AMPS					
				98		MAX AMPS					
				123		MAX 125%					

PANEL SCHEDULE

NO SCALE

2

NOT USED

NO SCALE

3



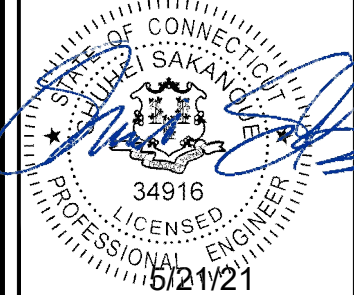
5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



2000 CORPORATE DRIVE  
CANONSBURG, PA 15317



FROM ZERO TO INFINIGY  
the solutions are endless  
2500 W. HIGGINS RD. SUITE 500 |  
HOFFMAN ESTATES, IL 60169  
PHONE: 847-648-4068 | FAX: 518-690-0793  
WWW.INFINIGY.COM



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.

DRAWN BY: CHECKED BY: APPROVED BY:

RCD SS CJW

RFDS REV #: N/A

### CONSTRUCTION DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
A	05/20/2021	PRELIM CDS

A&E PROJECT NUMBER

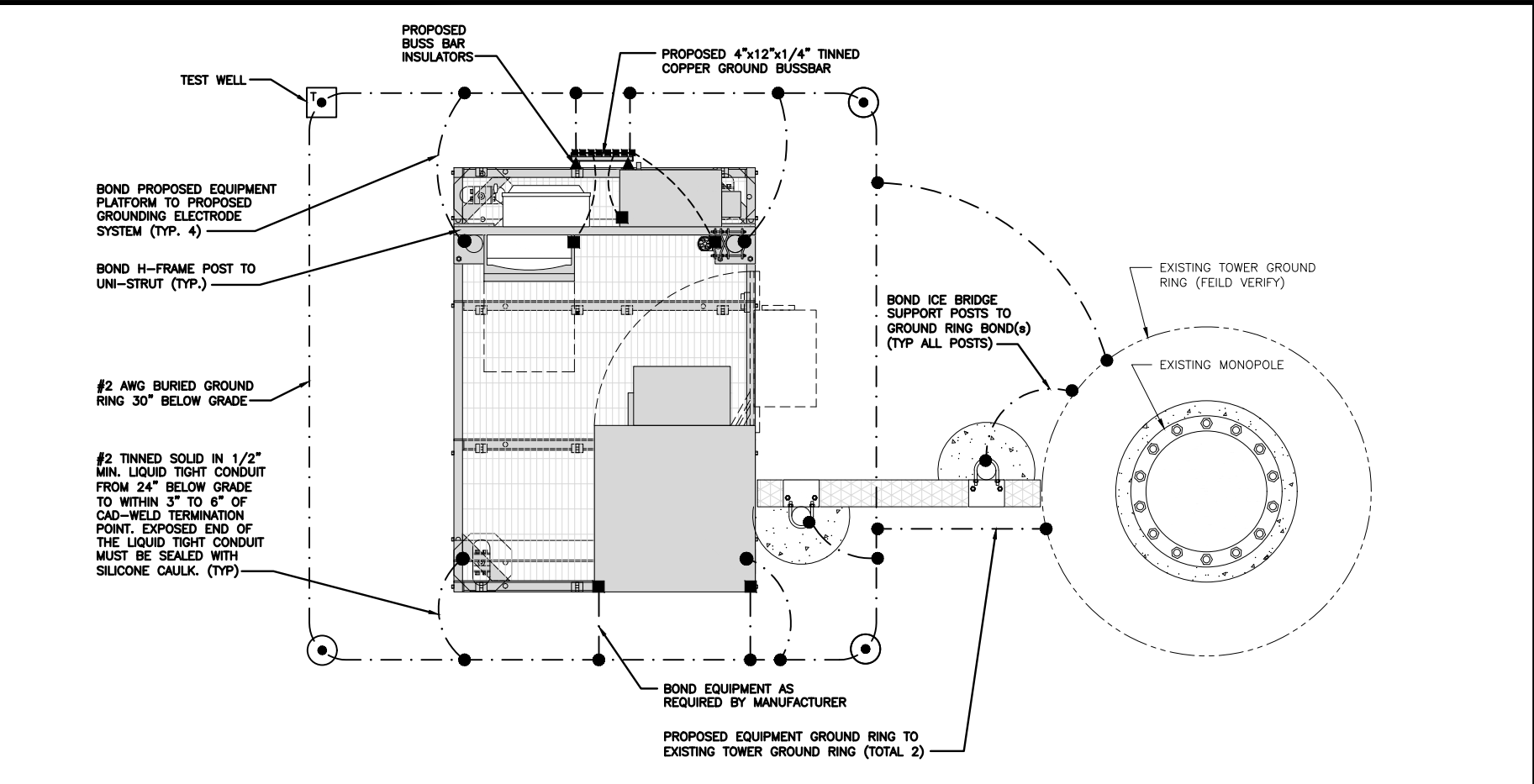
2039-Z5555C

DISH WIRELESS, LLC.  
PROJECT INFORMATION  
BOBDL00096A  
7 SHERWOOD FOREST LANE  
KILLINGWORTH, CT 06419

SHEET TITLE  
ELECTRICAL ONE-LINE, FAULT  
CALCS & PANEL SCHEDULE

SHEET NUMBER

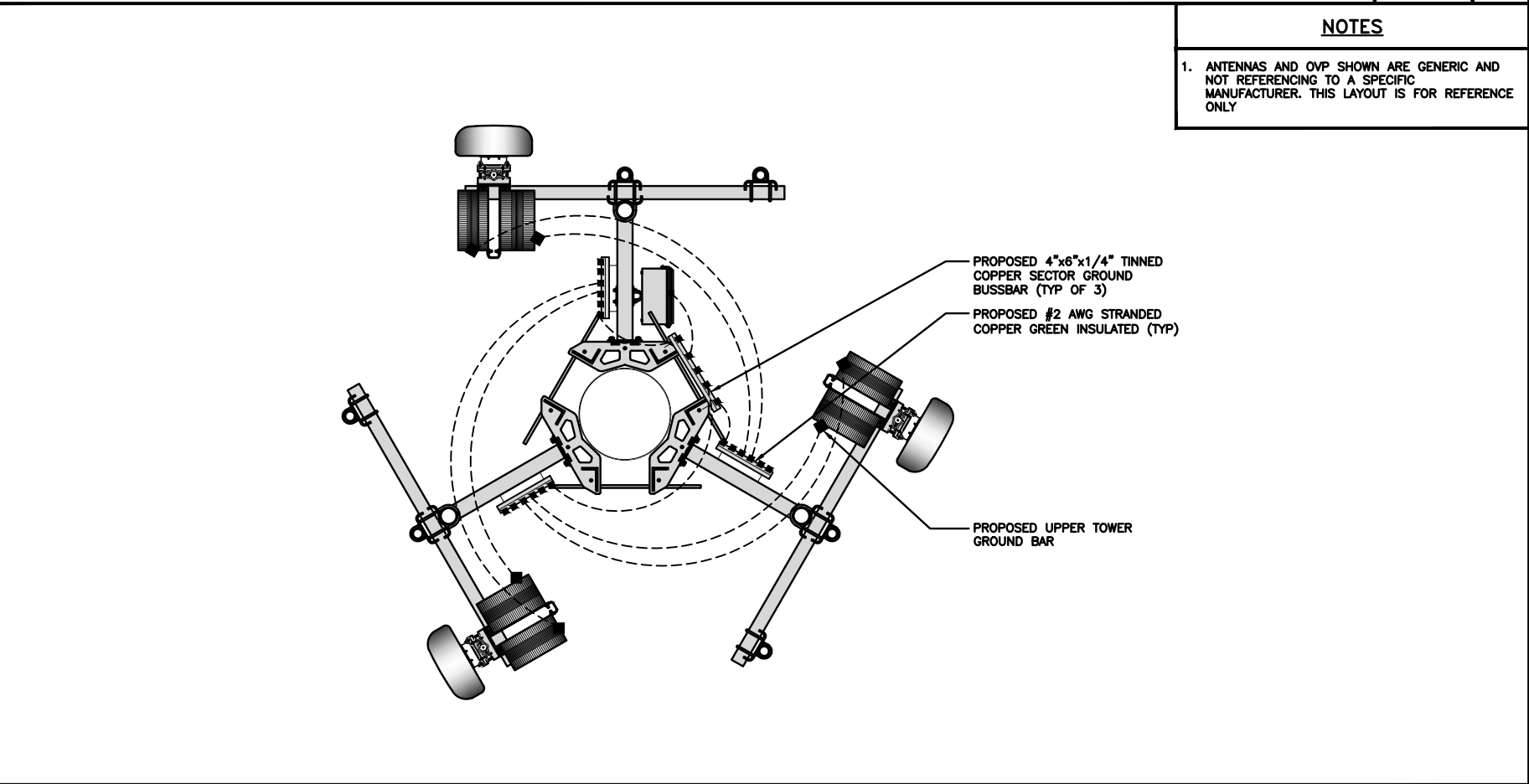
E-3



TYPICAL EQUIPMENT GROUNDING PLAN

NO SCALE

1



TYPICAL ANTENNA GROUNDING PLAN

NO SCALE

2

● EXOTHERMIC CONNECTION

■ MECHANICAL CONNECTION

▬ GROUND BUS BAR

○ GROUND ROD

TEST GROUND ROD WITH INSPECTION SLEEVE

----- #2 AWG STRANDED & INSULATED

- - - - #2 AWG SOLID COPPER TINNED

GROUNDING LEGEND

1. GROUNDING IS SHOWN DIAGRAMMATICALLY ONLY.

2. CONTRACTOR SHALL GROUND ALL EQUIPMENT AS A COMPLETE SYSTEM. GROUNDING SHALL BE IN COMPLIANCE WITH NEC SECTION 250 AND DISH WIRELESS, LLC. GROUNDING AND BONDING REQUIREMENTS AND MANUFACTURER'S SPECIFICATIONS.

3. ALL GROUND CONDUCTORS SHALL BE COPPER; NO ALUMINUM CONDUCTORS SHALL BE USED.

GROUNDING KEY NOTES

A EXTERIOR GROUND RING: #2 AWG SOLID COPPER, BURIED AT A DEPTH OF AT LEAST 30 INCHES BELOW GRADE, OR 6 INCHES BELOW THE FROST LINE AND APPROXIMATELY 24 INCHES FROM THE EXTERIOR WALL OR FOOTING.

B TOWER GROUND RING: THE GROUND RING SYSTEM SHALL BE INSTALLED AROUND AN ANTENNA TOWER'S LEGS, AND/OR GUY ANCHORS. WHERE SEPARATE SYSTEMS HAVE BEEN PROVIDED FOR THE TOWER AND THE BUILDING, AT LEAST TWO BONDS SHALL BE MADE BETWEEN THE TOWER RING GROUND SYSTEM AND THE BUILDING RING GROUND SYSTEM USING MINIMUM #2 AWG SOLID COPPER CONDUCTORS.

C INTERIOR GROUND RING: #2 AWG STRANDED GREEN INSULATED COPPER CONDUCTOR EXTENDED AROUND THE PERIMETER OF THE EQUIPMENT AREA. ALL NON-TELECOMMUNICATIONS RELATED METALLIC OBJECTS FOUND WITHIN A SITE SHALL BE GROUNDED TO THE INTERIOR GROUND RING WITH #6 AWG STRANDED GREEN INSULATED CONDUCTOR.

D BOND TO INTERIOR GROUND RING: #2 AWG SOLID TINNED COPPER WIRE PRIMARY BONDS SHALL BE PROVIDED AT LEAST AT FOUR POINTS ON THE INTERIOR GROUND RING, LOCATED AT THE CORNERS OF THE BUILDING.

E GROUND ROD: UL LISTED COPPER CLAD STEEL. MINIMUM 1/2" DIAMETER BY EIGHT FEET LONG. GROUND RODS SHALL BE INSTALLED WITH INSPECTION SLEEVES. GROUND RODS SHALL BE DRIVEN TO THE DEPTH OF GROUND RING CONDUCTOR.

F CELL REFERENCE GROUND BAR: POINT OF GROUND REFERENCE FOR ALL COMMUNICATIONS EQUIPMENT FRAMES. ALL BONDS ARE MADE WITH #2 AWG UNLESS NOTED OTHERWISE STRANDED GREEN INSULATED COPPER CONDUCTORS. BOND TO GROUND RING WITH (2) #2 SOLID TINNED COPPER CONDUCTORS.

G HATCH PLATE GROUND BAR: BOND TO THE INTERIOR GROUND RING WITH TWO #2 AWG STRANDED GREEN INSULATED COPPER CONDUCTORS. WHEN A HATCH-PLATE AND A CELL REFERENCE GROUND BAR ARE BOTH PRESENT, THE CRGB MUST BE CONNECTED TO THE HATCH-PLATE AND TO THE INTERIOR GROUND RING USING (2) TWO #2 AWG STRANDED GREEN INSULATED COPPER CONDUCTORS EACH.

H EXTERIOR CABLE ENTRY PORT GROUND BARS: LOCATED AT THE ENTRANCE TO THE CELL SITE BUILDING. BOND TO GROUND RING WITH A #2 AWG SOLID TINNED COPPER CONDUCTORS WITH AN EXOTHERMIC WELD AND INSPECTION SLEEVE.

I TELCO GROUND BAR: BOND TO BOTH CELL REFERENCE GROUND BAR OR EXTERIOR GROUND RING.

K FRAME BONDING: THE BONDING POINT FOR TELECOM EQUIPMENT FRAMES SHALL BE THE GROUND BUS THAT IS NOT ISOLATED FROM THE EQUIPMENTS METAL FRAMEWORK.

L INTERIOR UNIT BONDS: METAL FRAMES, CABINETS AND INDIVIDUAL METALLIC UNITS LOCATED WITH THE AREA OF THE INTERIOR GROUND RING REQUIRE A #6 AWG STRANDED GREEN INSULATED COPPER BOND TO THE INTERIOR GROUND RING.

M FENCE AND GATE GROUNDING: METAL FENCES WITHIN 7 FEET OF THE EXTERIOR GROUND RING OR OBJECTS BONDED TO THE EXTERIOR GROUND RING SHALL BE BONDED TO THE GROUND RING WITH A #2 AWG SOLID TINNED COPPER CONDUCTOR AT AN INTERVAL NOT EXCEEDING 25 FEET. BONDS SHALL BE MADE AT EACH GATE POST AND ACROSS GATE OPENINGS.

N EXTERIOR UNIT BONDS: METALLIC OBJECTS, EXTERNAL TO OR MOUNTED TO THE BUILDING, SHALL BE BONDED TO THE EXTERIOR GROUND RING. USING #2 TINNED SOLID COPPER WIRE

P ICE BRIDGE SUPPORTS: EACH ICE BRIDGE LEG SHALL BE BONDED TO THE GROUND RING WITH #2 AWG BARE TINNED COPPER CONDUCTOR. PROVIDE EXOTHERMIC WELDS AT BOTH THE ICE BRIDGE LEG AND BURIED GROUND RING.

Q DURING ALL DC POWER SYSTEM CHANGES INCLUDING DC SYSTEM CHANGE OUTS, RECTIFIER REPLACEMENTS OR ADDITIONS, BREAKER DISTRIBUTION CHANGES, BATTERY ADDITIONS, BATTERY REPLACEMENTS AND INSTALLATIONS OR CHANGES TO DC CONVERTER SYSTEMS IT SHALL BE REQUIRED THAT SERVICE CONTRACTORS VERIFY ALL DC POWER SYSTEMS ARE EQUIPPED WITH A MASTER DC SYSTEM RETURN GROUND CONDUCTOR FROM THE DC POWER SYSTEM COMMON RETURN BUS DIRECTLY CONNECTED TO THE CELL SITE REFERENCE GROUND BAR

R TOWER TOP COLLECTOR BUSS BAR IS TO BE MECHANICALLY BONDED TO PROPOSED ANTENNA MOUNT COLLAR. REFER TO DISH WIRELESS, LLC. GROUNDING NOTES.

GROUNDING KEY NOTES

NO SCALE

3

dish

wireless.

5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120

CROWN

CASTLE

2000 CORPORATE DRIVE  
CANONSBURG, PA 15317

INFINIGY

FROM ZERO TO INFINIGY

the solutions are endless

2500 W. HIGGINS RD., SUITE 500 |  
HOFFMAN ESTATES, IL 60169  
PHONE: 847-648-4068 | FAX: 518-690-0793  
WWW.INFINIGY.COM

STATE OF CONNECTICUT  
SHUHEI SAKANO  
34916  
LICENSED PROFESSIONAL ENGINEER  
5/21/21

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.

DRAWN BY: RCD

CHECKED BY: SS

APPROVED BY: CJW

RFDS REV #: N/A

CONSTRUCTION DOCUMENTS

SUBMITTALS

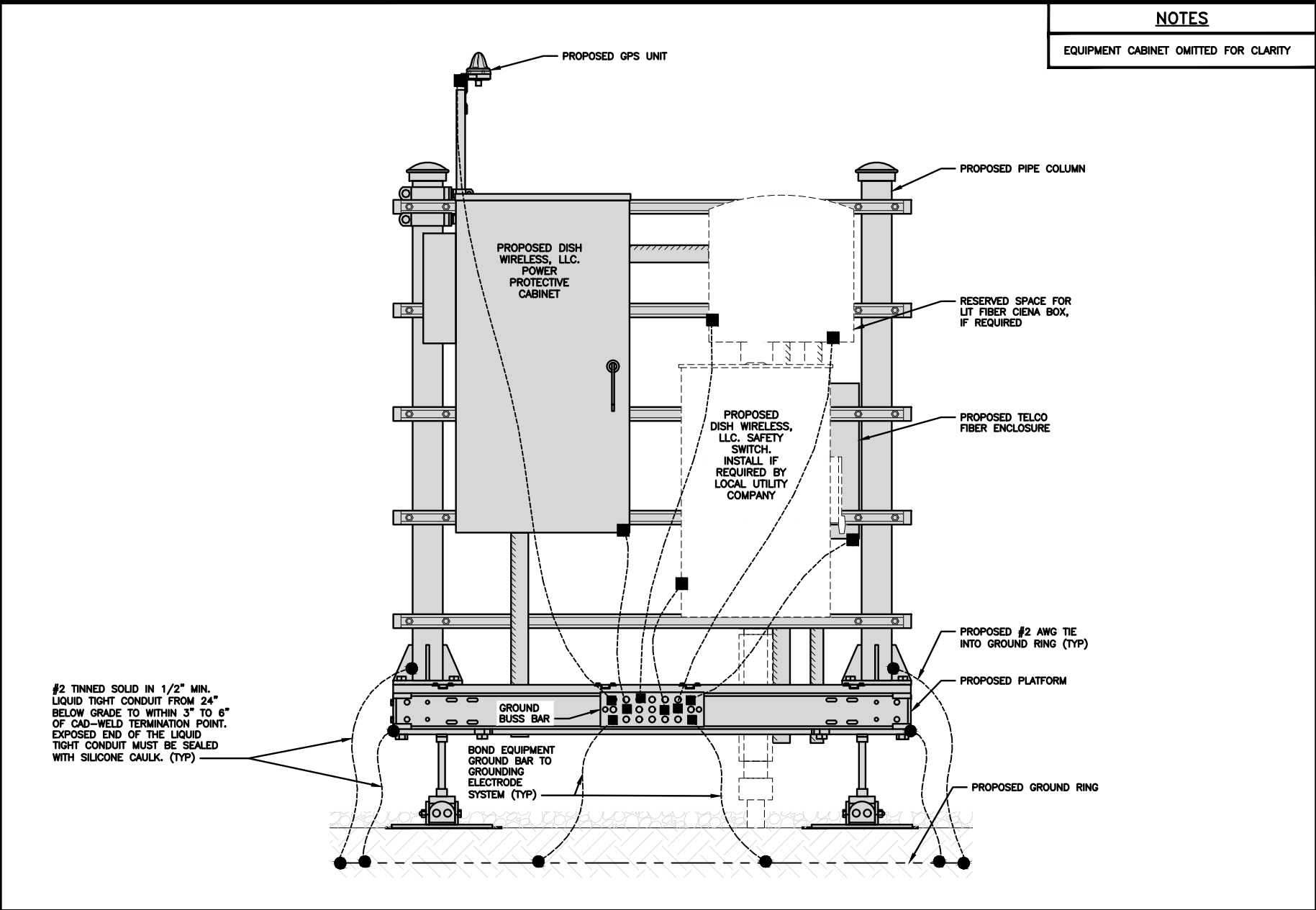
REV	DATE	DESCRIPTION
A	05/20/2021	PRELIM CDS

A&E PROJECT NUMBER  
2039-Z5555C

DISH WIRELESS, LLC.  
PROJECT INFORMATION  
BOBDL00096A  
7 SHERWOOD FOREST LANE  
KILLINGWORTH, CT 06419

SHEET TITLE  
GROUNDING PLANS  
AND NOTES

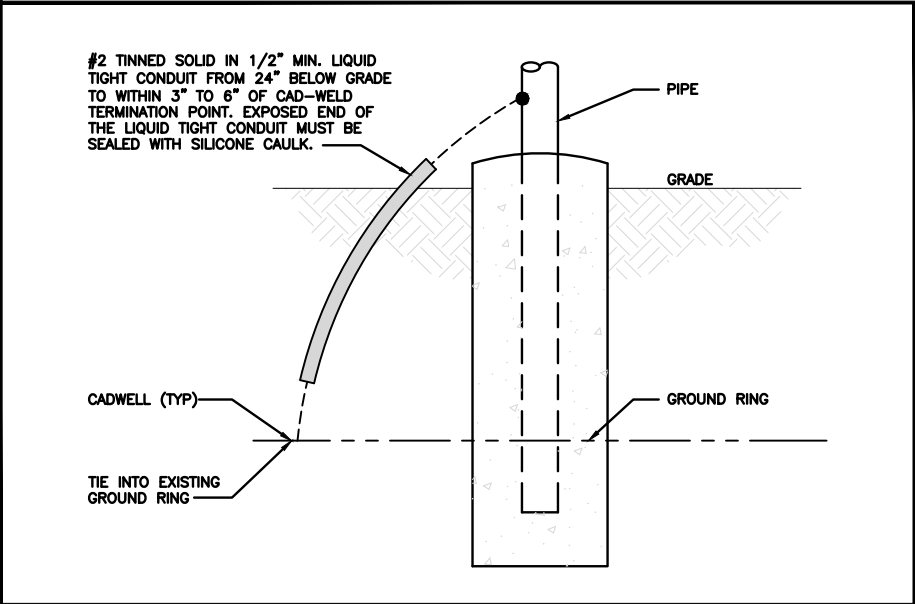
SHEET NUMBER  
G-1



H-FRAME GROUNDING DETAIL

NO SCALE

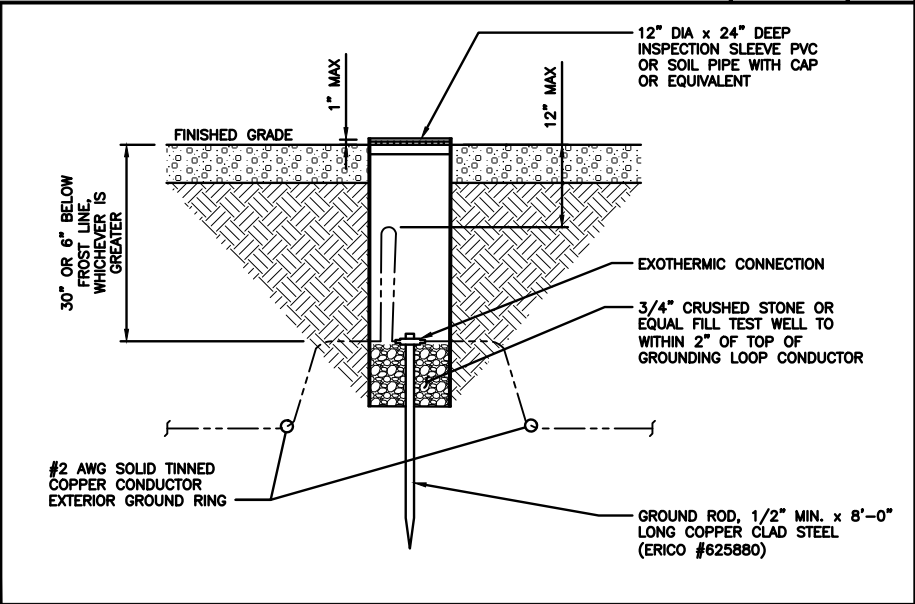
1



TRANSITIONING GROUND DETAIL

NO SCALE

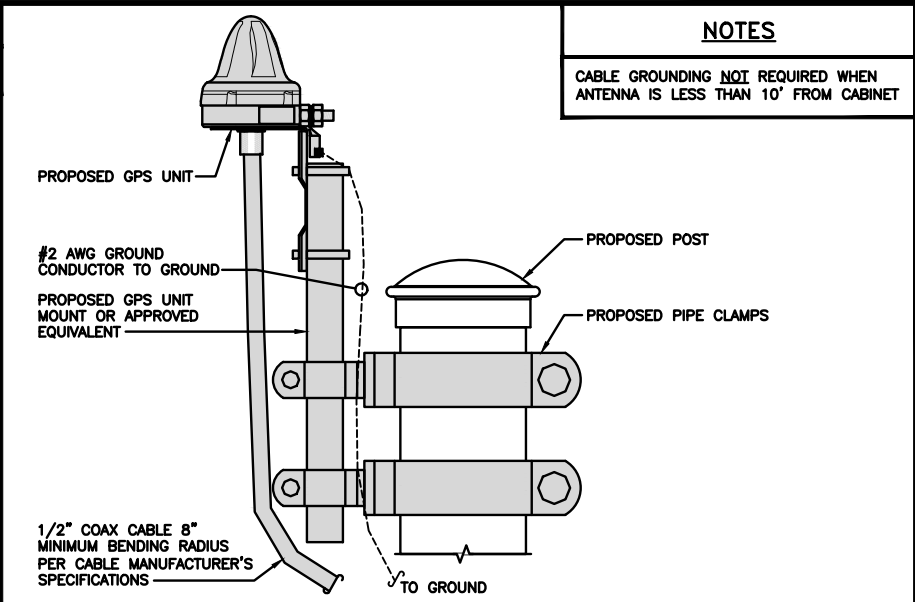
4



TYPICAL TEST GROUND ROD WITH INSPECTION SLEEVE

NO SCALE

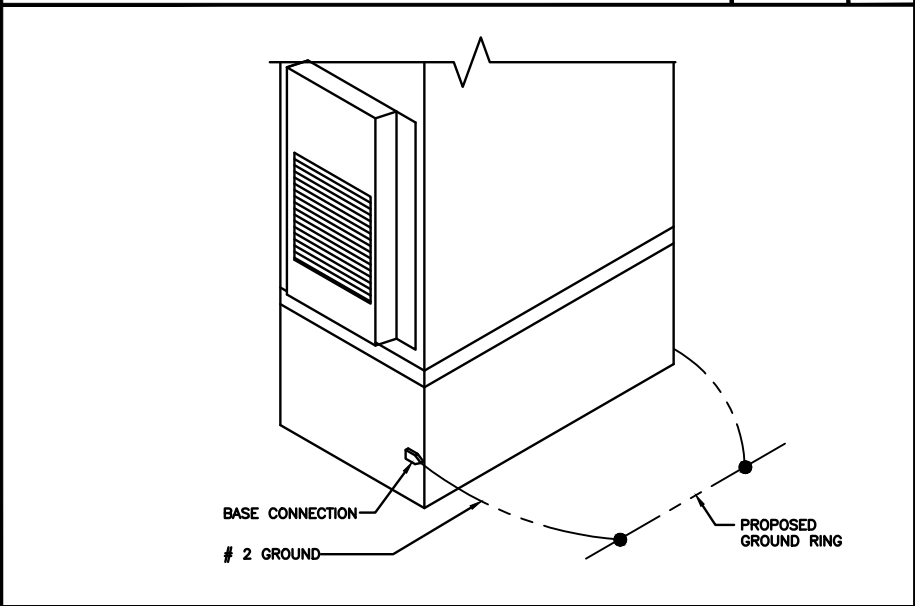
5



TYPICAL GPS UNIT GROUNDING

NO SCALE

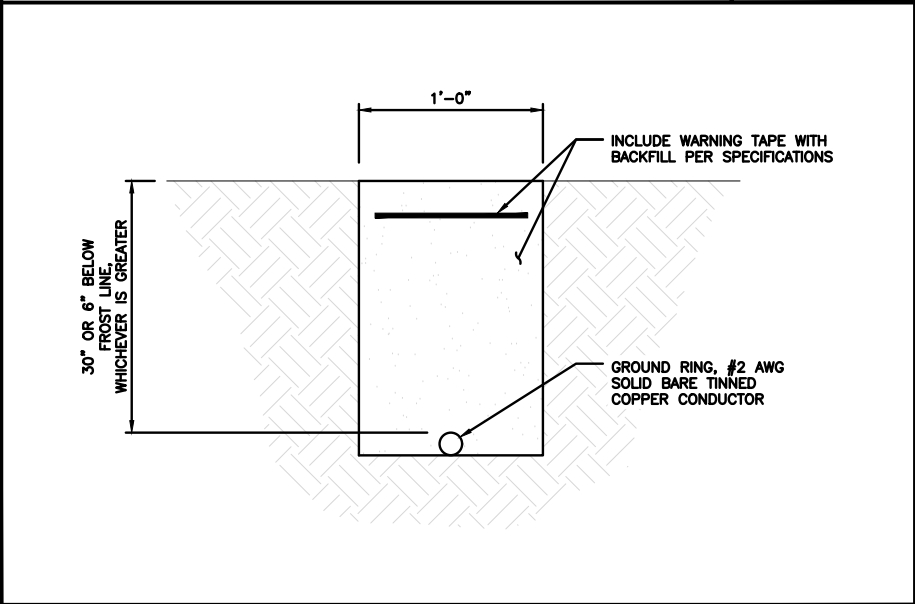
2



OUTDOOR CABINET GROUNDING

NO SCALE

3



TYPICAL GROUND RING TRENCH

NO SCALE

6

dish  
wireless.

5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120

CROWN  
CASTLE

2000 CORPORATE DRIVE  
CANONSBURG, PA 15317

INFINIGY

FROM ZERO TO INFINIGY

the solutions are endless  
2500 W. HIGGINS RD. SUITE 500 |  
HOFFMAN ESTATES, IL 60169  
PHONE: 847-648-4068 | FAX: 518-690-0793  
WWW.INFINIGY.COM

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.

DRAWN BY: CHECKED BY: APPROVED BY:

RCD SS CJW

RFDS REV #: N/A

CONSTRUCTION  
DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
A	05/20/2021	PRELIM CDS

A&E PROJECT NUMBER

2039-Z5555C

DISH WIRELESS, LLC.  
PROJECT INFORMATION  
BOBDL00096A  
7 SHERWOOD FOREST LANE  
KILLINGWORTH, CT 06419

SHEET TITLE  
GROUNDING DETAILS

SHEET NUMBER

G-2





RF JUMPER COLOR CODING

3/4" TAPE WIDTHS WITH 3/4" SPACING

LOW-BAND RRH –  
(600MHz N71 BASEBAND) +  
(850MHz N26 BAND) +  
(700MHz N29 BAND) – OPTIONAL PER MARKET

ADD FREQUENCY COLOR TO SECTOR BAND  
(CBRS WILL USE YELLOW BANDS)

ALPHA RRH				BETA RRH				GAMMA RRH			
PORT 1 + SLANT	PORT 2 + SLANT	PORT 3 + SLANT	PORT 4 + SLANT	PORT 1 + SLANT	PORT 2 + SLANT	PORT 3 + SLANT	PORT 4 + SLANT	PORT 1 + SLANT	PORT 2 + SLANT	PORT 3 + SLANT	PORT 4 + SLANT
RED	RED	RED	RED	BLUE	BLUE	BLUE	BLUE	GREEN	GREEN	GREEN	GREEN
ORANGE	ORANGE	RED	RED	ORANGE	ORANGE	BLUE	BLUE	ORANGE	ORANGE	GREEN	GREEN
	WHITE (1) PORT	ORANGE	ORANGE		WHITE (1) PORT	ORANGE	ORANGE		WHITE (1) PORT	ORANGE	ORANGE
			WHITE (1) PORT				WHITE (1) PORT				WHITE (1) PORT

MID-BAND RRH –  
(AWS BANDS N66+N70)

ADD FREQUENCY COLOR TO SECTOR BAND  
(CBRS WILL USE YELLOW BANDS)

RED	RED	RED	RED	BLUE	BLUE	BLUE	BLUE	GREEN	GREEN	GREEN	GREEN
PURPLE	PURPLE	RED	RED	PURPLE	PURPLE	BLUE	BLUE	PURPLE	PURPLE	GREEN	GREEN
	WHITE (1) PORT	PURPLE	PURPLE		WHITE (1) PORT	PURPLE	PURPLE		WHITE (1) PORT	PURPLE	PURPLE
			WHITE (1) PORT				WHITE (1) PORT				WHITE (1) PORT

HYBRID/DISCREET CABLES

INCLUDE SECTOR BANDS BEING SUPPORTED AM  
LONG WITH FREQUENCY BANDS

EXAMPLE 1 – HYBRID, OR DISCREET, SUPPORTS  
ALL SECTORS, BOTH LOW-BANDS AND MID-BANDS

EXAMPLE 2 – HYBRID, OR DISCREET, SUPPORTS  
CBRS ONLY, ALL SECTORS

EXAMPLE 1	EXAMPLE 2
RED	RED
BLUE	BLUE
GREEN	GREEN
ORANGE	YELLOW
PURPLE	

HYBRID/DISCREET CABLES

LOW-BAND RRH FIBER CABLES HAVE SECTOR  
STRIPE ONLY

LOW BAND RRH	HIGH BAND RRH	LOW BAND RRH	LOW BAND RRH	LOW BAND RRH	LOW BAND RRH
RED	RED	BLUE	BLUE	GREEN	GREEN
	PURPLE		PURPLE		PURPLE

POWER CABLES TO RRHs

LOW-BAND RRH POWER CABLES HAVE SECTOR  
STRIPE ONLY

LOW BAND RRH	HIGH BAND RRH	LOW BAND RRH	LOW BAND RRH	LOW BAND RRH	LOW BAND RRH
RED	RED	BLUE	BLUE	GREEN	GREEN
	PURPLE		PURPLE		PURPLE

RET MOTORS AT ANTENNAS

PORT 1/ ANTENNA 1 "IN"	PORT 1/ ANTENNA 1 "IN"	PORT 1/ ANTENNA 1 "IN"
RED	BLUE	GREEN

MICROWAVE RADIO LINKS

LINKS WILL HAVE A 1.5–2 INCH WHITE WRAP WITH  
THE AZIMUTH COLOR OVERLAPPING IN THE MIDDLE.  
ADD ADDITIONAL SECTOR COLOR BANDS FOR EACH  
ADDITIONAL MW RADIO.

MICROWAVE CABINETS WILL REQUIRE P-TOUCH  
LABELS INSIDE THE CABINET TO IDENTIFY THE  
LOCAL AND REMOTE SITE ID'S.

PRIMARY	SECONDARY
WHITE	WHITE
RED	RED
WHITE	WHITE
	RED
	WHITE

RF CABLE COLOR CODES

NO SCALE

1

LOW BANDS (N71–N28)  
OPTIONAL – (N29)

ORANGE

AWS  
(N65+N70+H–BLOCK)

PURPLE

CBRS TECH  
(3 GHz)

YELLOW

NEGATIVE SLANT PORT  
ON ANTRRH

WHITE

ALPHA SECTOR

RED

BETA SECTOR

BLUE

GAMMA SECTOR

GREEN

COLOR IDENTIFIER

NO SCALE

2

NOT USED

NO SCALE

3

NOT USED

NO SCALE

4

dish  
wireless.

5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120

CROWN  
CASTLE

2000 CORPORATE DRIVE  
CANONSBURG, PA 15317

INFINIGY

FROM ZERO TO INFINIGY

the solutions are endless

2500 W. HIGGINS RD., SUITE 500 |  
HOFFMAN ESTATES, IL 60169  
PHONE: 847-648-4068 | FAX: 518-690-0793  
WWW.INFINIGY.COM

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.

DRAWN BY: CHECKED BY: APPROVED BY:

RCD

SS

CJW

RFDS REV #: N/A

CONSTRUCTION  
DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	05/20/2021	PRELIM CDS

A&E PROJECT NUMBER

2039–Z5555C

DISH WIRELESS, LLC.  
PROJECT INFORMATION  
BOBDL00096A  
7 SHERWOOD FOREST LANE  
KILLINGWORTH, CT 06419

SHEET TITLE

RF  
CABLE COLOR CODES

SHEET NUMBER

RF-1







SITE ACTIVITY REQUIREMENTS:

1. NOTICE TO PROCEED – NO WORK SHALL COMMENCE PRIOR TO CONTRACTOR RECEIVING A WRITTEN NOTICE TO PROCEED (NTP) AND THE ISSUANCE OF A PURCHASE ORDER. PRIOR TO ACCESSING/ENTERING THE SITE YOU MUST CONTACT THE DISH WIRELESS, LLC. AND TOWER OWNER NOC & THE DISH WIRELESS, LLC. AND TOWER OWNER CONSTRUCTION MANAGER.

2. "LOOK UP" – DISH WIRELESS, LLC. AND TOWER OWNER 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 DISH WIRELESS, LLC. AND DISH WIRELESS, LLC. AND TOWER OWNER POC OR CALL THE NOC TO GENERATE A SAFETY CLIMB MAINTENANCE AND CONTRACTOR NOTICE TICKET.

3. PRIOR TO THE START OF CONSTRUCTION, ALL REQUIRED JURISDICTIONAL PERMITS SHALL BE OBTAINED. THIS INCLUDES, BUT IS NOT LIMITED TO, BUILDING, ELECTRICAL, MECHANICAL, FIRE, FLOOD ZONE, ENVIRONMENTAL, AND ZONING. AFTER ONSITE ACTIVITIES AND CONSTRUCTION ARE COMPLETED, ALL REQUIRED PERMITS SHALL BE SATISFIED AND CLOSED OUT ACCORDING TO LOCAL JURISDICTIONAL REQUIREMENTS.

4. ALL CONSTRUCTION MEANS AND METHODS; INCLUDING BUT NOT LIMITED TO, ERECTION PLANS, RIGGING PLANS, CLIMBING PLANS, AND RESCUE PLANS SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR RESPONSIBLE FOR THE EXECUTION OF THE WORK CONTAINED HEREIN, AND SHALL MEET ANSI/ASSE A10.48 (LATEST EDITION); FEDERAL, STATE, AND LOCAL REGULATIONS; AND ANY APPLICABLE INDUSTRY CONSENSUS STANDARDS RELATED TO THE CONSTRUCTION ACTIVITIES BEING PERFORMED. ALL RIGGING PLANS SHALL ADHERE TO ANSI/ASSE A10.48 (LATEST EDITION) AND DISH WIRELESS, LLC. AND TOWER OWNER STANDARDS, 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 DISH WIRELESS, LLC. AND TOWER OWNER INSTALLATION STANDARDS FOR CONSTRUCTION ACTIVITIES ON DISH WIRELESS, LLC. AND TOWER OWNER TOWER SITE AND LATEST VERSION OF ANSI/TIA–1019–A–2012 "STANDARD FOR INSTALLATION, ALTERATION, AND MAINTENANCE OF ANTENNA SUPPORTING STRUCTURES AND ANTENNAS."

6. IF THE SPECIFIED EQUIPMENT CAN NOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY DISH WIRELESS, LLC. AND TOWER OWNER 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 INCLUDING PRIVATE LOCATES 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 DISH 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 DISH WIRELESS, LLC. AND TOWER OWNER, 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 AND RADIOS REMOVED SHALL BE RETURNED TO THE OWNER’S DESIGNATED LOCATION.

21. CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION. TRASH AND DEBRIS SHOULD BE REMOVED FROM SITE ON A DAILY BASIS.

22. NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUND. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.

GENERAL NOTES:

1.FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:

CONTRACTOR:GENERAL CONTRACTOR RESPONSIBLE FOR CONSTRUCTION

CARRIER:DISH WIRELESS, LLC.

TOWER OWNER:TOWER OWNER

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 CARRIER POC AND TOWER OWNER.

7. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES. CONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.

8. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.

9. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER’S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.

10. IF THE SPECIFIED EQUIPMENT CAN NOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY THE CARRIER AND TOWER OWNER PRIOR TO PROCEEDING WITH ANY SUCH CHANGE OF INSTALLATION.

11. CONTRACTOR IS TO PERFORM A SITE INVESTIGATION, BEFORE SUBMITTING BIDS, 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 DISH WIRELESS, LLC. AND TOWER OWNER

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.



5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



2000 CORPORATE DRIVE  
CANONSBURG, PA 15317



FROM ZERO TO INFINIGY  
the solutions are endless  
2500 W. HIGGINS RD., SUITE 500 |  
HOFFMAN ESTATES, IL 60169  
PHONE: 847-648-4068 | FAX: 518-690-0793  
WWW.INFINIGY.COM

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.

DRAWN BY: CHECKED BY: APPROVED BY:

RCD SS CJW

RFDS REV #: N/A

CONSTRUCTION DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
A	05/20/2021	PRELIM CDS

A&E PROJECT NUMBER

2039–Z5555C

DISH WIRELESS, LLC.  
PROJECT INFORMATION  
BOBDL00096A  
7 SHERWOOD FOREST LANE  
KILLINGWORTH, CT 06419

SHEET TITLE  
GENERAL NOTES

SHEET NUMBER

GN-2



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. TIE WRAPS ARE NOT ALLOWED.
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 3 (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 DISH WIRELESS, LLC. AND TOWER OWNER 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 "DISH WIRELESS, LLC.".
30. ALL EMPTY/SPARE CONDUITS THAT ARE INSTALLED ARE TO HAVE A METERED MULE TAPE PULL CORD INSTALLED.



5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



2000 CORPORATE DRIVE  
CANONSBURG, PA 15317

INFINIGY

FROM ZERO TO INFINIGY

the solutions are endless

2500 W. HIGGINS RD., SUITE 500 |  
HOFFMAN ESTATES, IL 60169  
PHONE: 847-648-4068 | FAX: 518-690-0793  
WWW.INFINIGY.COM



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.

DRAWN BY:	CHECKED BY:	APPROVED BY:
RCD	SS	CJW

RFDS REV #: N/A

CONSTRUCTION DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
A	05/20/2021	PRELIM CDS

A&E PROJECT NUMBER  
2039-Z5555C

DISH WIRELESS, LLC.  
PROJECT INFORMATION  
BOBDL00096A  
7 SHERWOOD FOREST LANE  
KILLINGWORTH, CT 06419

SHEET TITLE  
GENERAL NOTES

SHEET NUMBER  
GN-3

GROUNDING NOTES:

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



5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



2000 CORPORATE DRIVE  
CANONSBURG, PA 15317



FROM ZERO TO INFINIGY  
the solutions are endless  
2500 W. HIGGINS RD., SUITE 500 |  
HOFFMAN ESTATES, IL 60169  
PHONE: 847-648-4068 | FAX: 518-690-0793  
WWW.INFINIGY.COM

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.

DRAWN BY: CHECKED BY: APPROVED BY:

RCD SS CJW

RFDS REV #: N/A

CONSTRUCTION  
DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
A	05/20/2021	PRELIM CDS

A&E PROJECT NUMBER  
2039–Z5555C

DISH WIRELESS, LLC.  
PROJECT INFORMATION  
BOBDL00096A  
7 SHERWOOD FOREST LANE  
KILLINGWORTH, CT 06419

SHEET TITLE  
GENERAL NOTES

SHEET NUMBER

GN-4

# Exhibit D

## **Structural Analysis Report**

Date: **April 19, 2021**



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

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

**Carrier Designation:** **DISH Network Co-Locate**  
**Site Number:** BOBDL00096A  
**Site Name:** CT-CCI-T-876383

**Crown Castle Designation:** **BU Number:** 876383  
**Site Name:** CLINTON / ANDERSON'S PROPERTY  
**JDE Job Number:** 645195  
**Work Order Number:** 1945902  
**Order Number:** 553295 Rev. 0

**Engineering Firm Designation:** **Crown Castle Project Number:** 1945902

**Site Data:** **7 Sherwood Forest Lane, KILLINGWORTH, MIDDLESEX County, CT**  
**Latitude 41° 20' 17.24", Longitude -72° 33' 23.44"**  
**150 Foot - Monopole Tower**

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

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

LC7: Proposed Equipment Configuration

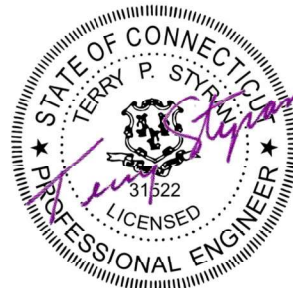
**Sufficient Capacity – 97.3%**

This analysis utilizes an ultimate 3-second gust wind speed of 130 mph as required by the 2018 Connecticut State Building Code and Appendix N. Applicable Standard references and design criteria are listed in Section 2 - "Analysis Criteria".

Structural analysis prepared by: Kenneth Sukitch, E.I.T.

Respectfully submitted by:

Terry P. Styran, P.E.  
Senior Project Engineer



Terry P Styran  
2021.04.20  
20:50:16 -04'00'

## TABLE OF CONTENTS

### 1) INTRODUCTION

### 2) ANALYSIS CRITERIA

Table 1 - Proposed Equipment Configuration

Table 2 - Other Considered Equipment

### 3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

3.1) Analysis Method

3.2) Assumptions

### 4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Table 5 - Tower Component Stresses vs. Capacity – LC7

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 150 ft Monopole tower designed by Engineered Endeavors, Inc. The tower has been modified per reinforcement drawings prepared by Paul J. Ford in July of 2019.

## 2) ANALYSIS CRITERIA

<b>TIA-222 Revision:</b>	TIA-222-H
<b>Risk Category:</b>	II
<b>Wind Speed:</b>	130 mph
<b>Exposure Category:</b>	B
<b>Topographic Factor:</b>	1
<b>Ice Thickness:</b>	1.5 in
<b>Wind Speed with Ice:</b>	50 mph
<b>Service Wind Speed:</b>	60 mph

**Table 1 - Proposed Equipment Configuration**

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
118.0	118.0	3	fujitsu	TA08025-B604	1	1-1/2
		3	fujitsu	TA08025-B605		
		3	jma wireless	MX08FRO665-20 w/ Mount Pipe		
		1	raycap	RDIDC-9181-PF-48		
		1	tower mounts	Commscope MC-K6MHDX-9-96 (3)		

**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)
150.0	152.0	3	ericsson	AIR6449 B41_T-MOBILE w/ Mount Pipe	4	1-5/8
		3	ericsson	RADIO 4415 B66A		
		3	ericsson	RADIO 4424 B25_TMO		
		3	ericsson	RADIO 4449 B71 B85A_T-MOBILE		
		3	rfs/celwave	APX16DWV-16DWV-S-E-A20 w/ Mount Pipe		
		3	rfs/celwave	APXVAALL24_43-U-NA20_TMO w/ Mount Pipe		
	150.0	1	tower mounts	Platform Mount [LP 602-1]		
140.0	143.0	1	cci antennas	DMP65R-BU6D w/ Mount Pipe	12 2 2 2 2	1-5/8 7/16 3/8 7/8
		2	cci antennas	DMP65R-BU8D w/ Mount Pipe		
		1	cci antennas	HPA-65R-BUU-H6 w/ Mount Pipe		
		2	cci antennas	HPA-65R-BUU-H8 w/ Mount Pipe		
		1	cci antennas	OPA65R-BU6D w/ Mount Pipe		
		2	cci antennas	OPA65R-BU8D w/ Mount Pipe		
		3	ericsson	RRUS 32 B2		
		3	ericsson	RRUS 4449 B5/B12		
		3	ericsson	RRUS 4478 B14_CCIV2		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
		3	powerwave technologies	7770.00 w/ Mount Pipe		
		6	powerwave technologies	LGP21401		
		6	powerwave technologies	LGP21901		
		1	raycap	DC6-48-60-18-8C-EV		
		1	raycap	DC6-48-60-18-8F		
	140.0	1	tower mounts	Platform Mount [LP 303-1_HR-1]		
128.0	130.0	6	andrew	DB846F65ZAXY w/ Mount Pipe	19	1-5/8
		3	commscope	CBC78T-DS-43-2X		
		6	commscope	JAAH-65B-R3B w/ Mount Pipe		
		1	raycap	RVZDC-6627-PF-48		
		3	samsung telecom.	RFV01U-D1A		
		3	samsung telecom.	RFV01U-D2A		
		3	vzw	Sub6 Antenna - VZS01 w/ Mount Pipe		
	128.0	1	tower mounts	T-Arm Mount [TA 602-3]		
50.0	51.0	1	lucent	KS24019-L112A	1	1/2
	50.0	1	tower mounts	Side Arm Mount [SO 701-1]		

### 3) ANALYSIS PROCEDURE

**Table 3 - Documents Provided**

Document	Reference	Source
4-GEOTECHNICAL REPORTS	2122536	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	1440547	CCISITES
4-TOWER MANUFACTURER DRAWINGS	1613582	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	2418226	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	1595940	CCISITES
4-POST-MODIFICATION INSPECTION	2471721	CCISITES
4-POST-MODIFICATION INSPECTION	2471721	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) Tower and structures were maintained in accordance with the TIA-222 Standard.
- 2) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.

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

## 4) ANALYSIS RESULTS

**Table 4 - Section Capacity (Summary)**

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	150 - 112.08	Pole	TP26.59x18x0.1875	1	-13.00	933.44	94.3	Pass
L2	112.08 - 76.58	Pole	TP34.14x25.3474x0.3125	2	-19.62	1995.19	81.2	Pass
L3	76.58 - 43.16	Pole	TP40.97x32.4352x0.3125	3	-27.51	2400.02	97.3	Pass
L4	43.16 - 0	Pole	TP50x39.0798x0.375	4	-42.50	3628.14	85.4	Pass
							Summary	
						Pole (L3)	97.3	Pass
						Rating =	97.3	Pass

**Table 5 - Tower Component Stresses vs. Capacity – LC7**

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	93.5	Pass
1	Base Plate		90.4	Pass
1	Base Foundation (Structure)		75.3	Pass
1	Base Foundation (Soil Interaction)		83.3	Pass

<b>Structure Rating (max from all components) =</b>	<b>97.3%</b>
---	--------------

Notes:

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

### 4.1) Recommendations

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



## **APPENDIX A**

### **TNXTOWER OUTPUT**

Section	1	2	3	4	
Length (ft)	37.92	39.33	38.25	48.83	
Number of Sides	18	18	18	18	
Thickness (in)	0.1875	0.3125	0.3125	0.3750	
Socket Length (ft)	3.83	4.83	5.67		
Top Dia (in)	18.0000	25.3474	32.4352	39.0798	
Bot Dia (in)	26.5900	34.1400	40.9700	50.0000	
Grade	A572-65				
Weight (K)	1.7	3.9	4.7	8.7	19.0

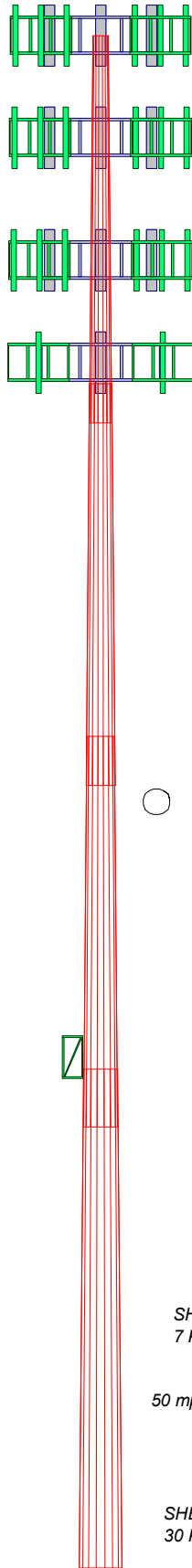
150.0 ft

112.1 ft

76.6 ft

43.2 ft

0.0 ft



### MATERIAL STRENGTH

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

### TOWER DESIGN NOTES

1. Tower designed for Exposure B to the TIA-222-H Standard.
2. Tower designed for a 130 mph basic wind in accordance with the TIA-222-H Standard.
3. Tower is also designed for a 50 mph basic wind with 1.50 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 60 mph wind.
5. Tower Risk Category II.
6. Topographic Category 1 with Crest Height of 0.00 ft
7. TOWER RATING: 97.3%

ALL REACTIONS  
ARE FACTORED

AXIAL  
75 K

SHEAR  
7 K

MOMENT  
852 kip-ft

TORQUE 0 kip-ft  
50 mph WIND - 1.5000 in ICE

AXIAL  
43 K

SHEAR  
30 K

MOMENT  
3586 kip-ft

TORQUE 0 kip-ft  
REACTIONS - 130 mph WIND

## Tower Input Data

The tower is a monopole.

This tower is designed using the TIA-222-H standard.

The following design criteria apply:

- Tower base elevation above sea level: 288.00 ft.
- Basic wind speed of 130 mph.
- Risk Category II.
- Exposure Category B.
- Simplified Topographic Factor Procedure for wind speed-up calculations is used.
- Topographic Category: 1.
- Crest Height: 0.00 ft.
- Nominal ice thickness of 1.5000 in.
- Ice thickness is considered to increase with height.
- Ice density of 56 pcf.
- A wind speed of 50 mph is used in combination with ice.
- Temperature drop of 50 °F.
- Deflections calculated using a wind speed of 60 mph.
- A non-linear (P-delta) analysis was used.
- Pressures are calculated at each section.
- Stress ratio used in pole design is 1.05.
- 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.
- Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

## Options

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

## Tapered Pole Section Geometry

Section	Elevation	Section Length	Splice Length	Number of Sides	Top Diameter	Bottom Diameter	Wall Thickness	Bend Radius	Pole Grade
	ft	ft	ft		in	in	in	in	
L1	150.00-112.08	37.92	3.83	18	18.0000	26.5900	0.1875	0.7500	A572-65

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L2	112.08-76.58	39.33	4.83	18	25.3474	34.1400	0.3125	1.2500	(65 ksi) A572-65
L3	76.58-43.16	38.25	5.67	18	32.4352	40.9700	0.3125	1.2500	(65 ksi) A572-65
L4	43.16-0.00	48.83		18	39.0798	50.0000	0.3750	1.5000	(65 ksi) A572-65

### Tapered Pole Properties

Section	Tip Dia. in	Area in <sup>2</sup>	I in <sup>4</sup>	r in	C in	I/C in <sup>3</sup>	J in <sup>4</sup>	It/Q in <sup>2</sup>	w in	w/t
L1	18.2488	10.6007	424.9328	6.3234	9.1440	46.4712	850.4248	5.3013	2.8380	15.136
	26.9713	15.7128	1383.8238	9.3729	13.5077	102.4469	2769.4685	7.8579	4.3498	23.199
L2	26.5597	24.8315	1966.2175	8.8874	12.8765	152.6984	3935.0222	12.4181	3.9111	12.516
	34.6185	33.5527	4850.6965	12.0088	17.3431	279.6900	9707.7757	16.7795	5.4586	17.468
L3	33.9817	31.8617	4153.6583	11.4036	16.4771	252.0870	8312.7820	15.9339	5.1586	16.508
	41.5538	40.3272	8422.0227	14.4334	20.8128	404.6567	16855.127	20.1674	6.6607	21.314
L4	40.9124	46.0684	8719.0976	13.7402	19.8526	439.1926	17449.667	23.0386	6.2181	16.581
	50.7135	59.0662	18377.109	17.6169	25.4000	723.5082	36778.399	29.5387	8.1400	21.707

Tower Elevation ft	Gusset Area (per face) ft <sup>2</sup>	Gusset Thickness in	Gusset Grade	Adjust. Factor A <sub>r</sub>	Adjust. Factor A <sub>r</sub>	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontal in	Double Angle Stitch Bolt Spacing Redundants in
L1 150.00- 112.08				1	1	1			
L2 112.08- 76.58				1	1	1			
L3 76.58- 43.16				1	1	1			
L4 43.16-0.00				1	1	1			

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

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter r in	Perimeter r in	Weight plf
AVA7-50(1-5/8)	C	No	Surface Ar (CaAa)	128.00 - 0.00	7	6	-0.500 -0.250	2.0100		0.70
** 118 ** CU12PSM9P6XXX(1- 1/2) **	C	No	Surface Ar (CaAa)	118.00 - 0.00	1	1	0.000 0.000	1.6000		2.35

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

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	CaAa ft <sup>2</sup> /ft	Weight plf
-------------	-------------------	-----------------	--	-------------------	-----------------	-----------------	-----------------------------	---------------

\*\* 150 \*\*

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C <sub>A</sub> A <sub>A</sub> ft <sup>2</sup> /ft	Weight plf
HB158-21U6S24- xxM_TMO(1-5/8)	C	No	No	Inside Pole	150.00 - 0.00	4	No Ice	0.00	2.50
							1/2" Ice	0.00	2.50
							1" Ice	0.00	2.50
							2" Ice	0.00	2.50
** 128 **									
AVA7-50(1-5/8)	B	No	No	Inside Pole	128.00 - 0.00	12	No Ice	0.00	0.70
							1/2" Ice	0.00	0.70
							1" Ice	0.00	0.70
							2" Ice	0.00	0.70
** 140 **									
LDF7-50A(1-5/8)	A	No	No	Inside Pole	140.00 - 0.00	12	No Ice	0.00	0.82
							1/2" Ice	0.00	0.82
							1" Ice	0.00	0.82
							2" Ice	0.00	0.82
FB-L98B-002- 75000(3/8)	A	No	No	Inside Pole	140.00 - 0.00	2	No Ice	0.00	0.06
							1/2" Ice	0.00	0.06
							1" Ice	0.00	0.06
							2" Ice	0.00	0.06
WR-VG122ST- BRDA(7/16)	A	No	No	Inside Pole	140.00 - 0.00	2	No Ice	0.00	0.14
							1/2" Ice	0.00	0.14
							1" Ice	0.00	0.14
							2" Ice	0.00	0.14
WR-VG66ST- BRD_CCIV2(7/8)	A	No	No	Inside Pole	140.00 - 0.00	2	No Ice	0.00	0.88
							1/2" Ice	0.00	0.88
							1" Ice	0.00	0.88
							2" Ice	0.00	0.88
2" Flexible Conduit	A	No	No	Inside Pole	140.00 - 0.00	2	No Ice	0.00	0.34
							1/2" Ice	0.00	0.34
							1" Ice	0.00	0.34
							2" Ice	0.00	0.34
** 50 **									
LDF4-50A(1/2")	C	No	No	Inside Pole	50.00 - 0.00	1	No Ice	0.00	0.15
							1/2" Ice	0.00	0.15
							1" Ice	0.00	0.15
							2" Ice	0.00	0.15
**									

### Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A <sub>R</sub> ft <sup>2</sup>	A <sub>F</sub> ft <sup>2</sup>	C <sub>A</sub> A <sub>A</sub> In Face ft <sup>2</sup>	C <sub>A</sub> A <sub>A</sub> Out Face ft <sup>2</sup>	Weight K
L1	150.00-112.08	A	0.000	0.000	0.000	0.000	0.35
		B	0.000	0.000	0.000	0.000	0.13
		C	0.000	0.000	20.147	0.000	0.47
L2	112.08-76.58	A	0.000	0.000	0.000	0.000	0.45
		B	0.000	0.000	0.000	0.000	0.30
		C	0.000	0.000	48.493	0.000	0.61
L3	76.58-43.16	A	0.000	0.000	0.000	0.000	0.42
		B	0.000	0.000	0.000	0.000	0.28
		C	0.000	0.000	45.652	0.000	0.58
L4	43.16-0.00	A	0.000	0.000	0.000	0.000	0.55
		B	0.000	0.000	0.000	0.000	0.36
		C	0.000	0.000	58.957	0.000	0.75

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

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	$A_R$ ft <sup>2</sup>	$A_F$ ft <sup>2</sup>	$C_A A_A$ In Face ft <sup>2</sup>	$C_A A_A$ Out Face ft <sup>2</sup>	Weight K
L1	150.00-112.08	A	1.462	0.000	0.000	0.000	0.000	0.35
		B		0.000	0.000	0.000	0.000	0.13
		C		0.000	0.000	32.498	0.000	0.84
L2	112.08-76.58	A	1.415	0.000	0.000	0.000	0.000	0.45
		B		0.000	0.000	0.000	0.000	0.30
		C		0.000	0.000	82.558	0.000	1.57
L3	76.58-43.16	A	1.353	0.000	0.000	0.000	0.000	0.42
		B		0.000	0.000	0.000	0.000	0.28
		C		0.000	0.000	77.014	0.000	1.44
L4	43.16-0.00	A	1.218	0.000	0.000	0.000	0.000	0.55
		B		0.000	0.000	0.000	0.000	0.36
		C		0.000	0.000	98.242	0.000	1.82

### Feed Line Center of Pressure

Section	Elevation ft	$CP_x$ in	$CP_z$ in	$CP_x$ Ice in	$CP_z$ Ice in
L1	150.00-112.08	2.7045	2.8847	2.1826	2.4475
L2	112.08-76.58	4.5180	5.3057	3.6031	4.7469
L3	76.58-43.16	4.8023	5.6504	3.9031	5.1400
L4	43.16-0.00	5.0508	5.9518	4.1741	5.4834

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

### Shielding Factor $K_a$

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	$K_a$ No Ice	$K_a$ Ice
L1	5	AVA7-50(1-5/8)	112.08 - 128.00	1.0000	1.0000
L1	15	CU12PSM9P6XXX(1-1/2)	112.08 - 118.00	1.0000	1.0000
L2	5	AVA7-50(1-5/8)	76.58 - 112.08	1.0000	1.0000
L2	15	CU12PSM9P6XXX(1-1/2)	76.58 - 112.08	1.0000	1.0000
L3	5	AVA7-50(1-5/8)	43.16 - 76.58	1.0000	1.0000
L3	15	CU12PSM9P6XXX(1-1/2)	43.16 - 76.58	1.0000	1.0000
L4	5	AVA7-50(1-5/8)	0.00 - 43.16	1.0000	1.0000
L4	15	CU12PSM9P6XXX(1-1/2)	0.00 - 43.16	1.0000	1.0000

### Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft		C <sub>AA</sub> Front ft <sup>2</sup>	C <sub>AA</sub> Side ft <sup>2</sup>	Weight K
** 150 **									
APXVAALL24_43-U- NA20_TMO w/ Mount Pipe	A	From Leg	4.00	0.0000	150.00	No Ice	22.61	10.87	0.15
			0.00			1/2"	23.50	12.39	0.32
			2.00			Ice	24.39	13.94	0.46
						1" Ice	26.12	16.29	0.79
APXVAALL24_43-U- NA20_TMO w/ Mount Pipe	B	From Leg	4.00	0.0000	150.00	No Ice	22.61	10.87	0.15
			0.00			1/2"	23.50	12.39	0.32
			2.00			Ice	24.39	13.94	0.46
						1" Ice	26.12	16.29	0.79
APXVAALL24_43-U- NA20_TMO w/ Mount Pipe	C	From Leg	4.00	0.0000	150.00	No Ice	22.61	10.87	0.15
			0.00			1/2"	23.50	12.39	0.32
			2.00			Ice	24.39	13.94	0.46
						1" Ice	26.12	16.29	0.79
APX16DWV-16DWV-S-E- A20 w/ Mount Pipe	A	From Leg	4.00	0.0000	150.00	No Ice	7.47	3.49	0.04
			0.00			1/2"	7.99	4.26	0.11
			2.00			Ice	8.52	4.96	0.16
						1" Ice	9.59	6.40	0.30
APX16DWV-16DWV-S-E- A20 w/ Mount Pipe	B	From Leg	4.00	0.0000	150.00	No Ice	7.47	3.49	0.04
			0.00			1/2"	7.99	4.26	0.11
			2.00			Ice	8.52	4.96	0.16
						1" Ice	9.59	6.40	0.30
APX16DWV-16DWV-S-E- A20 w/ Mount Pipe	C	From Leg	4.00	0.0000	150.00	No Ice	7.47	3.49	0.04
			0.00			1/2"	7.99	4.26	0.11
			2.00			Ice	8.52	4.96	0.16
						1" Ice	9.59	6.40	0.30
AIR6449 B41_T-MOBILE w/ Mount Pipe	A	From Leg	4.00	0.0000	150.00	No Ice	5.19	2.71	0.13
			0.00			1/2"	5.59	3.04	0.17
			2.00			Ice	6.02	3.38	0.23
						1" Ice	6.90	4.12	0.35
AIR6449 B41_T-MOBILE w/ Mount Pipe	B	From Leg	4.00	0.0000	150.00	No Ice	5.19	2.71	0.13
			0.00			1/2"	5.59	3.04	0.17
			2.00			Ice	6.02	3.38	0.23
						1" Ice	6.90	4.12	0.35
AIR6449 B41_T-MOBILE w/ Mount Pipe	C	From Leg	4.00	0.0000	150.00	No Ice	5.19	2.71	0.13
			0.00			1/2"	5.59	3.04	0.17
			2.00			Ice	6.02	3.38	0.23
						1" Ice	6.90	4.12	0.35
RADIO 4415 B66A	A	From Leg	4.00	0.0000	150.00	No Ice	1.86	0.87	0.05
			0.00			1/2"	2.03	1.00	0.06
			2.00			Ice	2.20	1.13	0.08
						1" Ice	2.58	1.43	0.12
RADIO 4415 B66A	B	From Leg	4.00	0.0000	150.00	No Ice	1.86	0.87	0.05
			0.00			1/2"	2.03	1.00	0.06
			2.00			Ice	2.20	1.13	0.08
						1" Ice	2.58	1.43	0.12
RADIO 4415 B66A	C	From Leg	4.00	0.0000	150.00	No Ice	1.86	0.87	0.05
			0.00			1/2"	2.03	1.00	0.06
			2.00			Ice	2.20	1.13	0.08
						1" Ice	2.58	1.43	0.12
RADIO 4449 B71 B85A_T- MOBILE	A	From Leg	4.00	0.0000	150.00	No Ice	1.97	1.59	0.07
			0.00			1/2"	2.15	1.75	0.09
			2.00			Ice	2.33	1.92	0.12
						1" Ice	2.72	2.28	0.17

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft		C <sub>AA</sub> Front ft <sup>2</sup>	C <sub>AA</sub> Side ft <sup>2</sup>	Weight K
RADIO 4449 B71 B85A_T- MOBILE	B	From Leg	4.00 0.00 2.00	0.0000	150.00	2" Ice No Ice 1/2" Ice 1" Ice	1.97 2.15 2.33 2.72	1.59 1.75 1.92 2.28	0.07 0.09 0.12 0.17
RADIO 4449 B71 B85A_T- MOBILE	C	From Leg	4.00 0.00 2.00	0.0000	150.00	2" Ice No Ice 1/2" Ice 1" Ice	1.97 2.15 2.33 2.72	1.59 1.75 1.92 2.28	0.07 0.09 0.12 0.17
RADIO 4424 B25_TMO	A	From Leg	4.00 0.00 2.00	0.0000	150.00	2" Ice No Ice 1/2" Ice 1" Ice	2.05 2.23 2.42 2.81	1.61 1.77 1.94 2.30	0.09 0.11 0.13 0.19
RADIO 4424 B25_TMO	B	From Leg	4.00 0.00 2.00	0.0000	150.00	2" Ice No Ice 1/2" Ice 1" Ice	2.05 2.23 2.42 2.81	1.61 1.77 1.94 2.30	0.09 0.11 0.13 0.19
RADIO 4424 B25_TMO	C	From Leg	4.00 0.00 2.00	0.0000	150.00	2" Ice No Ice 1/2" Ice 1" Ice	2.05 2.23 2.42 2.81	1.61 1.77 1.94 2.30	0.09 0.11 0.13 0.19
Platform Mount [LP 602-1]	C	None		0.0000	150.00	2" Ice No Ice 1/2" Ice 1" Ice	31.07 34.82 38.48 45.60	31.07 34.82 38.48 45.60	1.34 1.97 2.67 4.31
Transition Ladder	A	From Centroid- Leg	2.00 0.00 0.00	0.0000	150.00	2" Ice No Ice 1/2" Ice 1" Ice	6.00 8.00 10.00 14.00	6.00 8.00 10.00 14.00	0.16 0.24 0.32 0.48
** 140 **									
7770.00 w/ Mount Pipe	A	From Leg	4.00 0.00 3.00	0.0000	140.00	2" Ice No Ice 1/2" Ice 1" Ice	5.75 6.18 6.61 7.49	4.25 5.01 5.71 7.16	0.06 0.10 0.16 0.29
7770.00 w/ Mount Pipe	B	From Leg	4.00 0.00 3.00	0.0000	140.00	2" Ice No Ice 1/2" Ice 1" Ice	5.75 6.18 6.61 7.49	4.25 5.01 5.71 7.16	0.06 0.10 0.16 0.29
7770.00 w/ Mount Pipe	C	From Leg	4.00 0.00 3.00	0.0000	140.00	2" Ice No Ice 1/2" Ice 1" Ice	5.75 6.18 6.61 7.49	4.25 5.01 5.71 7.16	0.06 0.10 0.16 0.29
HPA-65R-BUU-H6 w/ Mount Pipe	A	From Leg	4.00 0.00 3.00	0.0000	140.00	2" Ice No Ice 1/2" Ice 1" Ice	9.22 9.98 10.76 12.36	6.25 6.96 7.70 9.22	0.07 0.14 0.22 0.42
HPA-65R-BUU-H8 w/ Mount Pipe	B	From Leg	4.00 0.00 3.00	0.0000	140.00	2" Ice No Ice 1/2" Ice 1" Ice	12.25 13.19 14.16 16.14	8.33 9.23 10.15 12.05	0.10 0.19 0.30 0.54
HPA-65R-BUU-H8 w/ Mount Pipe	C	From Leg	4.00 0.00 3.00	0.0000	140.00	2" Ice No Ice 1/2" Ice	12.25 13.19 14.16	8.33 9.23 10.15	0.10 0.19 0.30



Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft		C <sub>AA</sub> Front ft <sup>2</sup>	C <sub>AA</sub> Side ft <sup>2</sup>	Weight K
						1" Ice	16.14	12.05	0.54
						2" Ice			
OPA65R-BU6D w/ Mount	A	From Leg	4.00	0.0000	140.00	No Ice	12.25	6.05	0.09
Pipe			0.00			1/2"	13.00	6.71	0.18
			3.00			Ice	13.76	7.39	0.27
						1" Ice	15.34	8.79	0.51
						2" Ice			
DMP65R-BU6D w/ Mount	A	From Leg	4.00	0.0000	140.00	No Ice	11.96	5.97	0.11
Pipe			0.00			1/2"	12.70	6.63	0.20
			3.00			Ice	13.46	7.30	0.30
						1" Ice	15.02	8.69	0.53
						2" Ice			
OPA65R-BU8D w/ Mount	B	From Leg	4.00	0.0000	140.00	No Ice	17.46	8.58	0.11
Pipe			0.00			1/2"	18.46	9.49	0.22
			3.00			Ice	19.48	10.42	0.35
						1" Ice	21.58	12.33	0.66
						2" Ice			
OPA65R-BU8D w/ Mount	C	From Leg	4.00	0.0000	140.00	No Ice	17.46	8.58	0.11
Pipe			0.00			1/2"	18.46	9.49	0.22
			3.00			Ice	19.48	10.42	0.35
						1" Ice	21.58	12.33	0.66
						2" Ice			
DMP65R-BU8D w/ Mount	B	From Leg	4.00	0.0000	140.00	No Ice	15.89	7.89	0.14
Pipe			0.00			1/2"	16.81	8.74	0.25
			3.00			Ice	17.76	9.60	0.38
						1" Ice	19.70	11.37	0.68
						2" Ice			
DMP65R-BU8D w/ Mount	C	From Leg	4.00	0.0000	140.00	No Ice	15.89	7.89	0.14
Pipe			0.00			1/2"	16.81	8.74	0.25
			3.00			Ice	17.76	9.60	0.38
						1" Ice	19.70	11.37	0.68
						2" Ice			
(2) LGP21401	A	From Leg	4.00	0.0000	140.00	No Ice	1.10	0.21	0.01
			0.00			1/2"	1.24	0.27	0.02
			3.00			Ice	1.38	0.35	0.03
						1" Ice	1.69	0.52	0.05
						2" Ice			
(2) LGP21401	B	From Leg	4.00	0.0000	140.00	No Ice	1.10	0.21	0.01
			0.00			1/2"	1.24	0.27	0.02
			3.00			Ice	1.38	0.35	0.03
						1" Ice	1.69	0.52	0.05
						2" Ice			
(2) LGP21401	C	From Leg	4.00	0.0000	140.00	No Ice	1.10	0.21	0.01
			0.00			1/2"	1.24	0.27	0.02
			3.00			Ice	1.38	0.35	0.03
						1" Ice	1.69	0.52	0.05
						2" Ice			
(2) LGP21901	A	From Leg	4.00	0.0000	140.00	No Ice	0.23	0.16	0.01
			0.00			1/2"	0.29	0.21	0.01
			3.00			Ice	0.36	0.28	0.01
						1" Ice	0.53	0.42	0.02
						2" Ice			
(2) LGP21901	B	From Leg	4.00	0.0000	140.00	No Ice	0.23	0.16	0.01
			0.00			1/2"	0.29	0.21	0.01
			3.00			Ice	0.36	0.28	0.01
						1" Ice	0.53	0.42	0.02
						2" Ice			
(2) LGP21901	C	From Leg	4.00	0.0000	140.00	No Ice	0.23	0.16	0.01
			0.00			1/2"	0.29	0.21	0.01
			3.00			Ice	0.36	0.28	0.01
						1" Ice	0.53	0.42	0.02
						2" Ice			
DC6-48-60-18-8F	A	From Leg	4.00	0.0000	140.00	No Ice	1.21	1.21	0.02
			0.00			1/2"	1.89	1.89	0.04
			3.00			Ice	2.11	2.11	0.07

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft		C <sub>AA</sub> Front ft <sup>2</sup>	C <sub>AA</sub> Side ft <sup>2</sup>	Weight K
						1" Ice	2.57	2.57	0.13
						2" Ice			
RRUS 32 B2	A	From Leg	4.00	0.0000	140.00	No Ice	2.73	1.67	0.05
			0.00			1/2"	2.95	1.86	0.07
			3.00			Ice	3.18	2.05	0.10
						1" Ice	3.66	2.46	0.16
						2" Ice			
RRUS 32 B2	B	From Leg	4.00	0.0000	140.00	No Ice	2.73	1.67	0.05
			0.00			1/2"	2.95	1.86	0.07
			3.00			Ice	3.18	2.05	0.10
						1" Ice	3.66	2.46	0.16
						2" Ice			
RRUS 32 B2	C	From Leg	4.00	0.0000	140.00	No Ice	2.73	1.67	0.05
			0.00			1/2"	2.95	1.86	0.07
			3.00			Ice	3.18	2.05	0.10
						1" Ice	3.66	2.46	0.16
						2" Ice			
RRUS 4478 B14_CCIV2	A	From Leg	4.00	0.0000	140.00	No Ice	2.02	1.25	0.06
			0.00			1/2"	2.20	1.40	0.08
			3.00			Ice	2.39	1.55	0.10
						1" Ice	2.78	1.89	0.15
						2" Ice			
RRUS 4478 B14_CCIV2	B	From Leg	4.00	0.0000	140.00	No Ice	2.02	1.25	0.06
			0.00			1/2"	2.20	1.40	0.08
			3.00			Ice	2.39	1.55	0.10
						1" Ice	2.78	1.89	0.15
						2" Ice			
RRUS 4478 B14_CCIV2	C	From Leg	4.00	0.0000	140.00	No Ice	2.02	1.25	0.06
			0.00			1/2"	2.20	1.40	0.08
			3.00			Ice	2.39	1.55	0.10
						1" Ice	2.78	1.89	0.15
						2" Ice			
RRUS 4449 B5/B12	A	From Leg	4.00	0.0000	140.00	No Ice	1.97	1.41	0.07
			0.00			1/2"	2.14	1.56	0.09
			3.00			Ice	2.33	1.73	0.11
						1" Ice	2.72	2.07	0.16
						2" Ice			
RRUS 4449 B5/B12	B	From Leg	4.00	0.0000	140.00	No Ice	1.97	1.41	0.07
			0.00			1/2"	2.14	1.56	0.09
			3.00			Ice	2.33	1.73	0.11
						1" Ice	2.72	2.07	0.16
						2" Ice			
RRUS 4449 B5/B12	C	From Leg	4.00	0.0000	140.00	No Ice	1.97	1.41	0.07
			0.00			1/2"	2.14	1.56	0.09
			3.00			Ice	2.33	1.73	0.11
						1" Ice	2.72	2.07	0.16
						2" Ice			
DC6-48-60-18-8C-EV	B	From Leg	4.00	0.0000	140.00	No Ice	1.14	1.14	0.03
			0.00			1/2"	1.79	1.79	0.05
			3.00			Ice	2.00	2.00	0.07
						1" Ice	2.45	2.45	0.13
						2" Ice			
Platform Mount [LP 303-1_HR-1]	C	None		0.0000	140.00	No Ice	17.09	17.09	1.50
						1/2"	21.47	21.47	1.88
						Ice	25.72	25.72	2.35
						1" Ice	33.96	33.96	3.52
						2" Ice			
** 128 **									
(2) DB846F65ZAXY w/ Mount Pipe	A	From Leg	4.00	0.0000	128.00	No Ice	6.10	6.81	0.06
			0.00			1/2"	6.80	7.52	0.12
			2.00			Ice	7.51	8.24	0.19
						1" Ice	8.98	9.73	0.37
						2" Ice			
(2) DB846F65ZAXY w/ Mount Pipe	B	From Leg	4.00	0.0000	128.00	No Ice	6.10	6.81	0.06
			0.00				6.80	7.52	0.12

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft		C <sub>AA</sub> Front ft <sup>2</sup>	C <sub>AA</sub> Side ft <sup>2</sup>	Weight K
			2.00			1/2" Ice	7.51 8.98	8.24 9.73	0.19 0.37
(2) DB846F65ZAXY w/ Mount Pipe	C	From Leg	4.00 0.00 2.00	0.0000	128.00	1" Ice 2" Ice No Ice	6.10 6.80 7.51	6.81 7.52 8.24	0.06 0.12 0.19
						1" Ice 2" Ice	8.98 9.73	9.73	0.37
(2) JAHH-65B-R3B w/ Mount Pipe	A	From Leg	4.00 0.00 2.00	0.0000	128.00	No Ice 1/2" Ice	5.50 5.97 6.45	4.38 4.84 5.30	0.10 0.17 0.25
						1" Ice 2" Ice	7.44 8.98	6.26 9.73	0.46
(2) JAHH-65B-R3B w/ Mount Pipe	B	From Leg	4.00 0.00 2.00	0.0000	128.00	No Ice 1/2" Ice	5.50 5.97 6.45	4.38 4.84 5.30	0.10 0.17 0.25
						1" Ice 2" Ice	7.44 8.98	6.26 9.73	0.46
(2) JAHH-65B-R3B w/ Mount Pipe	C	From Leg	4.00 0.00 2.00	0.0000	128.00	No Ice 1/2" Ice	5.50 5.97 6.45	4.38 4.84 5.30	0.10 0.17 0.25
						1" Ice 2" Ice	7.44 8.98	6.26 9.73	0.46
Sub6 Antenna - VZS01 w/ Mount Pipe	A	From Leg	4.00 0.00 2.00	0.0000	128.00	No Ice 1/2" Ice	4.92 5.26 5.62	2.69 3.15 3.63	0.10 0.14 0.19
						1" Ice 2" Ice	6.37 8.98	4.64 9.73	0.29
Sub6 Antenna - VZS01 w/ Mount Pipe	B	From Leg	4.00 0.00 2.00	0.0000	128.00	No Ice 1/2" Ice	4.92 5.26 5.62	2.69 3.15 3.63	0.10 0.14 0.19
						1" Ice 2" Ice	6.37 8.98	4.64 9.73	0.29
Sub6 Antenna - VZS01 w/ Mount Pipe	C	From Leg	4.00 0.00 2.00	0.0000	128.00	No Ice 1/2" Ice	4.92 5.26 5.62	2.69 3.15 3.63	0.10 0.14 0.19
						1" Ice 2" Ice	6.37 8.98	4.64 9.73	0.29
CBC78T-DS-43-2X	A	From Leg	4.00 0.00 2.00	0.0000	128.00	No Ice 1/2" Ice	0.37 0.45 0.53	0.51 0.60 0.70	0.02 0.03 0.04
						1" Ice 2" Ice	0.72 0.98	0.93 1.24	0.06
CBC78T-DS-43-2X	B	From Leg	4.00 0.00 2.00	0.0000	128.00	No Ice 1/2" Ice	0.37 0.45 0.53	0.51 0.60 0.70	0.02 0.03 0.04
						1" Ice 2" Ice	0.72 0.98	0.93 1.24	0.06
CBC78T-DS-43-2X	C	From Leg	4.00 0.00 2.00	0.0000	128.00	No Ice 1/2" Ice	0.37 0.45 0.53	0.51 0.60 0.70	0.02 0.03 0.04
						1" Ice 2" Ice	0.72 0.98	0.93 1.24	0.06
RFV01U-D2A	A	From Leg	4.00 0.00 2.00	0.0000	128.00	No Ice 1/2" Ice	1.88 2.05 2.22	1.01 1.14 1.28	0.07 0.09 0.11
						1" Ice 2" Ice	2.60 3.16	1.59 2.14	0.15
RFV01U-D2A	B	From Leg	4.00 0.00 2.00	0.0000	128.00	No Ice 1/2" Ice	1.88 2.05 2.22	1.01 1.14 1.28	0.07 0.09 0.11
						1" Ice 2" Ice	2.60 3.16	1.59 2.14	0.15
RFV01U-D2A	C	From Leg	4.00	0.0000	128.00	No Ice	1.88	1.01	0.07

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft		C <sub>AA</sub> Front ft <sup>2</sup>	C <sub>AA</sub> Side ft <sup>2</sup>	Weight K
			0.00			1/2"	2.05	1.14	0.09
			2.00			Ice	2.22	1.28	0.11
						1" Ice	2.60	1.59	0.15
						2" Ice			
RFV01U-D1A	A	From Leg	4.00	0.0000	128.00	No Ice	1.88	1.25	0.08
			0.00			1/2"	2.05	1.39	0.10
			2.00			Ice	2.22	1.54	0.12
						1" Ice	2.60	1.86	0.18
						2" Ice			
RFV01U-D1A	B	From Leg	4.00	0.0000	128.00	No Ice	1.88	1.25	0.08
			0.00			1/2"	2.05	1.39	0.10
			2.00			Ice	2.22	1.54	0.12
						1" Ice	2.60	1.86	0.18
						2" Ice			
RFV01U-D1A	C	From Leg	4.00	0.0000	128.00	No Ice	1.88	1.25	0.08
			0.00			1/2"	2.05	1.39	0.10
			2.00			Ice	2.22	1.54	0.12
						1" Ice	2.60	1.86	0.18
						2" Ice			
RVZDC-6627-PF-48	A	From Leg	4.00	0.0000	128.00	No Ice	3.79	2.51	0.03
			0.00			1/2"	4.04	2.73	0.06
			2.00			Ice	4.30	2.95	0.10
						1" Ice	4.84	3.42	0.18
						2" Ice			
T-Arm Mount [TA 602-3]	C	None		0.0000	128.00	No Ice	13.40	13.40	0.77
						1/2"	16.44	16.44	1.00
						Ice	19.70	19.70	1.29
						1" Ice	25.86	25.86	2.05
						2" Ice			
** 118 **									
MX08FRO665-20 w/ Mount Pipe	A	From Leg	4.00	0.0000	118.00	No Ice	8.01	4.23	0.10
			0.00			1/2"	8.52	4.69	0.18
			0.00			Ice	9.04	5.16	0.28
						1" Ice	10.11	6.12	0.51
						2" Ice			
MX08FRO665-20 w/ Mount Pipe	B	From Leg	4.00	0.0000	118.00	No Ice	8.01	4.23	0.10
			0.00			1/2"	8.52	4.69	0.18
			0.00			Ice	9.04	5.16	0.28
						1" Ice	10.11	6.12	0.51
						2" Ice			
MX08FRO665-20 w/ Mount Pipe	C	From Leg	4.00	0.0000	118.00	No Ice	8.01	4.23	0.10
			0.00			1/2"	8.52	4.69	0.18
			0.00			Ice	9.04	5.16	0.28
						1" Ice	10.11	6.12	0.51
						2" Ice			
TA08025-B604	A	From Leg	4.00	0.0000	118.00	No Ice	1.96	0.98	0.06
			0.00			1/2"	2.14	1.11	0.08
			0.00			Ice	2.32	1.25	0.10
						1" Ice	2.71	1.55	0.15
						2" Ice			
TA08025-B604	B	From Leg	4.00	0.0000	118.00	No Ice	1.96	0.98	0.06
			0.00			1/2"	2.14	1.11	0.08
			0.00			Ice	2.32	1.25	0.10
						1" Ice	2.71	1.55	0.15
						2" Ice			
TA08025-B604	C	From Leg	4.00	0.0000	118.00	No Ice	1.96	0.98	0.06
			0.00			1/2"	2.14	1.11	0.08
			0.00			Ice	2.32	1.25	0.10
						1" Ice	2.71	1.55	0.15
						2" Ice			
TA08025-B605	A	From Leg	4.00	0.0000	118.00	No Ice	1.96	1.13	0.08
			0.00			1/2"	2.14	1.27	0.09
			0.00			Ice	2.32	1.41	0.11
						1" Ice	2.71	1.72	0.16
						2" Ice			

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft		C <sub>AA</sub> Front ft <sup>2</sup>	C <sub>AA</sub> Side ft <sup>2</sup>	Weight K
TA08025-B605	B	From Leg	4.00 0.00 0.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.96 2.14 2.32 2.71	1.13 1.27 1.41 1.72	0.08 0.09 0.11 0.16
TA08025-B605	C	From Leg	4.00 0.00 0.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.96 2.14 2.32 2.71	1.13 1.27 1.41 1.72	0.08 0.09 0.11 0.16
RDIDC-9181-PF-48	B	From Leg	4.00 0.00 0.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.31 2.50 2.70 3.12	1.29 1.45 1.61 1.96	0.02 0.04 0.06 0.12
Commscope MC- K6MHDX-9-96 (3)	C	None		0.0000	118.00	No Ice 1/2" Ice 1" Ice 2" Ice	15.30 20.48 25.66 36.02	15.30 20.48 25.66 36.02	1.19 1.71 2.22 3.25
(2) 8' x 2" Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.90 2.73 3.40 4.40	1.90 2.73 3.40 4.40	0.03 0.04 0.06 0.12
(2) 8' x 2" Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.90 2.73 3.40 4.40	1.90 2.73 3.40 4.40	0.03 0.04 0.06 0.12
(2) 8' x 2" Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.90 2.73 3.40 4.40	1.90 2.73 3.40 4.40	0.03 0.04 0.06 0.12
** 50 ** KS24019-L112A	C	From Leg	3.00 0.00 1.00	0.0000	50.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.10 0.18 0.26 0.42	0.10 0.18 0.26 0.42	0.01 0.01 0.01 0.01
Side Arm Mount [SO 701- 1]	C	From Leg	1.50 0.00 0.00	0.0000	50.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.85 1.14 1.43 2.01	1.67 2.34 3.01 4.35	0.07 0.08 0.09 0.12
****									

## 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

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

## Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	150 - 112.08	Pole	Max Tension	42	0.00	0.00	-0.00
			Max. Compression	26	-36.97	-0.92	-0.84
			Max. Mx	8	-13.00	-515.26	-0.08
			Max. My	14	-13.06	-0.28	-509.69
			Max. Vy	8	22.39	-515.26	-0.08
			Max. Vx	14	22.19	-0.28	-509.69
			Max. Torque	8			0.63
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-45.70	-1.01	-2.82
			Max. Mx	8	-19.62	-1330.84	-1.08
L2	112.08 - 76.58	Pole	Max. My	14	-19.65	-0.88	-1318.88
			Max. Vy	8	24.87	-1330.84	-1.08
			Max. Vx	14	24.67	-0.88	-1318.88
			Max. Torque	17			0.38
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-55.91	-0.70	-5.18
L3	76.58 - 43.16	Pole					

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L4	43.16 - 0	Pole	Max. Mx	8	-27.53	-2177.28	-2.26
			Max. My	14	-27.55	-1.22	-2159.84
			Max. Vy	8	27.03	-2177.28	-2.26
			Max. Vx	14	26.85	-1.22	-2159.84
			Max. Torque	17			0.37
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-74.55	-0.70	-8.49
			Max. Mx	8	-42.50	-3565.62	-4.51
			Max. My	14	-42.50	-2.60	-3540.55
			Max. Vy	8	29.73	-3565.62	-4.51
			Max. Vx	14	29.56	-2.60	-3540.55
			Max. Torque	17			0.27

### Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	33	74.55	-0.01	-6.69
	Max. H <sub>x</sub>	20	42.54	29.68	0.03
	Max. H <sub>z</sub>	2	42.54	0.03	29.51
	Max. M <sub>x</sub>	2	3536.68	0.03	29.51
	Max. M <sub>z</sub>	8	3565.62	-29.68	-0.03
	Max. Torsion	17	0.27	14.97	-25.81
	Min. Vert	11	31.90	-25.72	-14.78
	Min. H <sub>x</sub>	8	42.54	-29.68	-0.03
	Min. H <sub>z</sub>	14	42.54	-0.03	-29.51
	Min. M <sub>x</sub>	14	-3540.55	-0.03	-29.51
	Min. M <sub>z</sub>	20	-3565.55	29.68	0.03
	Min. Torsion	5	-0.24	-14.97	25.81

### Tower Mast Reaction Summary

Load Combination	Vertical K	Shear <sub>x</sub> K	Shear <sub>z</sub> K	Overturning Moment, M <sub>x</sub> kip-ft	Overturning Moment, M <sub>z</sub> kip-ft	Torque kip-ft
Dead Only	35.45	0.00	0.00	1.55	-0.02	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	42.54	-0.03	-29.51	-3536.68	2.54	0.19
0.9 Dead+1.0 Wind 0 deg - No Ice	31.90	-0.03	-29.51	-3476.40	2.52	0.19
1.2 Dead+1.0 Wind 30 deg - No Ice	42.54	14.97	-25.81	-3085.82	-1794.90	0.22
0.9 Dead+1.0 Wind 30 deg - No Ice	31.90	14.97	-25.81	-3033.40	-1764.09	0.24
1.2 Dead+1.0 Wind 60 deg - No Ice	42.54	25.96	-14.89	-1779.22	-3111.27	0.21
0.9 Dead+1.0 Wind 60 deg - No Ice	31.90	25.96	-14.89	-1749.20	-3057.89	0.23
1.2 Dead+1.0 Wind 90 deg - No Ice	42.54	29.68	0.03	4.51	-3565.62	0.15
0.9 Dead+1.0 Wind 90 deg - No Ice	31.90	29.68	0.03	3.97	-3504.31	0.18
1.2 Dead+1.0 Wind 120 deg - No Ice	42.54	25.72	14.78	1773.36	-3089.26	0.06
0.9 Dead+1.0 Wind 120 deg - No Ice	31.90	25.72	14.78	1742.44	-3036.14	0.08
1.2 Dead+1.0 Wind 150 deg - No Ice	42.54	14.86	25.57	3067.68	-1785.15	-0.07
0.9 Dead+1.0 Wind 150 deg - No Ice	31.90	14.86	25.57	3014.51	-1754.45	-0.06

Load Combination	Vertical K	Shear <sub>x</sub> K	Shear <sub>z</sub> K	Overturning Moment, M <sub>x</sub> kip-ft	Overturning Moment, M <sub>z</sub> kip-ft	Torque kip-ft
1.2 Dead+1.0 Wind 180 deg	42.54	0.03	29.51	3540.55	-2.60	-0.19
- No Ice						
0.9 Dead+1.0 Wind 180 deg	31.90	0.03	29.51	3479.25	-2.55	-0.19
- No Ice						
1.2 Dead+1.0 Wind 210 deg	42.54	-14.97	25.81	3089.68	1794.83	-0.26
- No Ice						
0.9 Dead+1.0 Wind 210 deg	31.90	-14.97	25.81	3036.26	1764.05	-0.27
- No Ice						
1.2 Dead+1.0 Wind 240 deg	42.54	-25.96	14.89	1783.09	3111.20	-0.25
- No Ice						
0.9 Dead+1.0 Wind 240 deg	31.90	-25.96	14.89	1752.06	3057.85	-0.27
- No Ice						
1.2 Dead+1.0 Wind 270 deg	42.54	-29.68	-0.03	-0.63	3565.55	-0.15
- No Ice						
0.9 Dead+1.0 Wind 270 deg	31.90	-29.68	-0.03	-1.10	3504.27	-0.18
- No Ice						
1.2 Dead+1.0 Wind 300 deg	42.54	-25.72	-14.78	-1769.48	3089.20	-0.02
- No Ice						
0.9 Dead+1.0 Wind 300 deg	31.90	-25.72	-14.78	-1739.57	3036.10	-0.04
- No Ice						
1.2 Dead+1.0 Wind 330 deg	42.54	-14.86	-25.57	-3063.81	1785.10	0.10
- No Ice						
0.9 Dead+1.0 Wind 330 deg	31.90	-14.86	-25.57	-3011.65	1754.42	0.09
- No Ice						
1.2 Dead+1.0 Ice+1.0 Temp	74.55	0.00	0.00	8.49	-0.70	-0.00
1.2 Dead+1.0 Wind 0	74.55	-0.01	-6.69	-833.59	-0.16	0.03
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 30	74.55	3.35	-5.79	-720.47	-423.48	-0.01
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 60	74.55	5.81	-3.34	-412.00	-733.52	-0.04
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 90	74.55	6.72	0.01	9.18	-847.21	-0.07
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 120	74.55	5.82	3.35	430.21	-734.07	-0.07
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 150	74.55	3.36	5.80	738.27	-424.44	-0.06
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 180	74.55	0.01	6.69	850.83	-1.27	-0.03
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 210	74.55	-3.35	5.79	737.71	422.05	0.01
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 240	74.55	-5.81	3.34	429.24	732.09	0.04
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 270	74.55	-6.72	-0.01	8.07	845.77	0.07
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 300	74.55	-5.82	-3.35	-412.96	732.65	0.07
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 330	74.55	-3.36	-5.80	-721.03	423.02	0.06
deg+1.0 Ice+1.0 Temp						
Dead+Wind 0 deg - Service	35.45	-0.01	-5.92	-703.63	0.48	0.05
Dead+Wind 30 deg - Service	35.45	3.01	-5.18	-613.82	-357.77	0.06
Dead+Wind 60 deg - Service	35.45	5.21	-2.99	-353.41	-620.17	0.05
Dead+Wind 90 deg - Service	35.45	5.96	0.01	2.13	-710.70	0.03
Dead+Wind 120 deg - Service	35.45	5.16	2.97	354.69	-615.76	0.01
Dead+Wind 150 deg - Service	35.45	2.98	5.13	612.64	-355.82	-0.02
Dead+Wind 180 deg - Service	35.45	0.01	5.92	706.86	-0.54	-0.05
Dead+Wind 210 deg - Service	35.45	-3.01	5.18	617.05	357.71	-0.06
Dead+Wind 240 deg - Service	35.45	-5.21	2.99	356.64	620.10	-0.05
Dead+Wind 270 deg - Service	35.45	-5.96	-0.01	1.10	710.64	-0.03
Dead+Wind 300 deg - Service	35.45	-5.16	-2.97	-351.45	615.69	-0.00
Dead+Wind 330 deg - Service	35.45	-2.98	-5.13	-609.41	355.75	0.03



## Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.00	-35.45	0.00	0.00	35.45	0.00	0.000%
2	-0.03	-42.54	-29.51	0.03	42.54	29.51	0.000%
3	-0.03	-31.90	-29.51	0.03	31.90	29.51	0.000%
4	14.97	-42.54	-25.81	-14.97	42.54	25.81	0.000%
5	14.97	-31.90	-25.81	-14.97	31.90	25.81	0.000%
6	25.96	-42.54	-14.89	-25.96	42.54	14.89	0.000%
7	25.96	-31.90	-14.89	-25.96	31.90	14.89	0.000%
8	29.68	-42.54	0.03	-29.68	42.54	-0.03	0.000%
9	29.68	-31.90	0.03	-29.68	31.90	-0.03	0.000%
10	25.72	-42.54	14.78	-25.72	42.54	-14.78	0.000%
11	25.72	-31.90	14.78	-25.72	31.90	-14.78	0.000%
12	14.86	-42.54	25.57	-14.86	42.54	-25.57	0.000%
13	14.86	-31.90	25.57	-14.86	31.90	-25.57	0.000%
14	0.03	-42.54	29.51	-0.03	42.54	-29.51	0.000%
15	0.03	-31.90	29.51	-0.03	31.90	-29.51	0.000%
16	-14.97	-42.54	25.81	14.97	42.54	-25.81	0.000%
17	-14.97	-31.90	25.81	14.97	31.90	-25.81	0.000%
18	-25.96	-42.54	14.89	25.96	42.54	-14.89	0.000%
19	-25.96	-31.90	14.89	25.96	31.90	-14.89	0.000%
20	-29.68	-42.54	-0.03	29.68	42.54	0.03	0.000%
21	-29.68	-31.90	-0.03	29.68	31.90	0.03	0.000%
22	-25.72	-42.54	-14.78	25.72	42.54	14.78	0.000%
23	-25.72	-31.90	-14.78	25.72	31.90	14.78	0.000%
24	-14.86	-42.54	-25.57	14.86	42.54	25.57	0.000%
25	-14.86	-31.90	-25.57	14.86	31.90	25.57	0.000%
26	0.00	-74.55	0.00	-0.00	74.55	-0.00	0.000%
27	-0.01	-74.55	-6.69	0.01	74.55	6.69	0.000%
28	3.35	-74.55	-5.79	-3.35	74.55	5.79	0.000%
29	5.81	-74.55	-3.34	-5.81	74.55	3.34	0.000%
30	6.72	-74.55	0.01	-6.72	74.55	-0.01	0.000%
31	5.82	-74.55	3.35	-5.82	74.55	-3.35	0.000%
32	3.36	-74.55	5.80	-3.36	74.55	-5.80	0.000%
33	0.01	-74.55	6.69	-0.01	74.55	-6.69	0.000%
34	-3.35	-74.55	5.79	3.35	74.55	-5.79	0.000%
35	-5.81	-74.55	3.34	5.81	74.55	-3.34	0.000%
36	-6.72	-74.55	-0.01	6.72	74.55	0.01	0.000%
37	-5.82	-74.55	-3.35	5.82	74.55	3.35	0.000%
38	-3.36	-74.55	-5.80	3.36	74.55	5.80	0.000%
39	-0.01	-35.45	-5.92	0.01	35.45	5.92	0.000%
40	3.01	-35.45	-5.18	-3.01	35.45	5.18	0.000%
41	5.21	-35.45	-2.99	-5.21	35.45	2.99	0.000%
42	5.96	-35.45	0.01	-5.96	35.45	-0.01	0.000%
43	5.16	-35.45	2.97	-5.16	35.45	-2.97	0.000%
44	2.98	-35.45	5.13	-2.98	35.45	-5.13	0.000%
45	0.01	-35.45	5.92	-0.01	35.45	-5.92	0.000%
46	-3.01	-35.45	5.18	3.01	35.45	-5.18	0.000%
47	-5.21	-35.45	2.99	5.21	35.45	-2.99	0.000%
48	-5.96	-35.45	-0.01	5.96	35.45	0.01	0.000%
49	-5.16	-35.45	-2.97	5.16	35.45	2.97	0.000%
50	-2.98	-35.45	-5.13	2.98	35.45	5.13	0.000%

## Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	5	0.00000001	0.00006550
3	Yes	5	0.00000001	0.00002585
4	Yes	6	0.00000001	0.00077812
5	Yes	6	0.00000001	0.00021178
6	Yes	6	0.00000001	0.00077344
7	Yes	6	0.00000001	0.00020991
8	Yes	5	0.00000001	0.00007107
9	Yes	5	0.00000001	0.00002839
10	Yes	6	0.00000001	0.00077258
11	Yes	6	0.00000001	0.00021033
12	Yes	6	0.00000001	0.00077430
13	Yes	6	0.00000001	0.00021101
14	Yes	5	0.00000001	0.00009411
15	Yes	5	0.00000001	0.00003864
16	Yes	6	0.00000001	0.00077234
17	Yes	6	0.00000001	0.00020962
18	Yes	6	0.00000001	0.00077840
19	Yes	6	0.00000001	0.00021165
20	Yes	5	0.00000001	0.00005133
21	Yes	5	0.00000001	0.00001885
22	Yes	6	0.00000001	0.00077353
23	Yes	6	0.00000001	0.00021069
24	Yes	6	0.00000001	0.00077040
25	Yes	6	0.00000001	0.00020983
26	Yes	4	0.00000001	0.00010664
27	Yes	6	0.00000001	0.00038725
28	Yes	6	0.00000001	0.00063850
29	Yes	6	0.00000001	0.00063802
30	Yes	6	0.00000001	0.00039408
31	Yes	6	0.00000001	0.00065482
32	Yes	6	0.00000001	0.00065595
33	Yes	6	0.00000001	0.00039428
34	Yes	6	0.00000001	0.00064811
35	Yes	6	0.00000001	0.00065106
36	Yes	6	0.00000001	0.00039220
37	Yes	6	0.00000001	0.00063669
38	Yes	6	0.00000001	0.00063324
39	Yes	4	0.00000001	0.00024281
40	Yes	5	0.00000001	0.00015386
41	Yes	5	0.00000001	0.00015120
42	Yes	4	0.00000001	0.00024286
43	Yes	5	0.00000001	0.00015175
44	Yes	5	0.00000001	0.00015268
45	Yes	4	0.00000001	0.00024520
46	Yes	5	0.00000001	0.00015089
47	Yes	5	0.00000001	0.00015487
48	Yes	4	0.00000001	0.00024191
49	Yes	5	0.00000001	0.00015105
50	Yes	5	0.00000001	0.00014883

### Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	150 - 112.08	32.688	47	2.1094	0.0010
L2	115.91 - 76.58	18.814	47	1.6490	0.0005
L3	81.41 - 43.16	8.788	47	1.0945	0.0002
L4	48.83 - 0	2.991	47	0.5774	0.0001

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

Elevation	Appurtenance	Gov. Load Comb.	Deflection	Tilt	Twist	Radius of Curvature
ft			in	°	°	ft
150.00	APXVAALL24_43-U-NA20_TMO w/ Mount Pipe	47	32.688	2.1094	0.0010	18804
140.00	7770.00 w/ Mount Pipe	47	28.393	1.9800	0.0008	9402
128.00	(2) DB846F65ZAXY w/ Mount Pipe	47	23.418	1.8200	0.0007	4273
118.00	MX08FRO665-20 w/ Mount Pipe	47	19.571	1.6796	0.0006	2956
50.00	KS24019-L112A	47	3.135	0.5942	0.0001	3303

### Maximum Tower Deflections - Design Wind

Section No.	Elevation	Horz. Deflection	Gov. Load Comb.	Tilt	Twist
	ft	in		°	°
L1	150 - 112.08	163.195	18	10.5719	0.0047
L2	115.91 - 76.58	94.156	18	8.2760	0.0023
L3	81.41 - 43.16	44.047	18	5.4944	0.0009
L4	48.83 - 0	14.999	18	2.8974	0.0003

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

Elevation	Appurtenance	Gov. Load Comb.	Deflection	Tilt	Twist	Radius of Curvature
ft			in	°	°	ft
150.00	APXVAALL24_43-U-NA20_TMO w/ Mount Pipe	18	163.195	10.5719	0.0047	3987
140.00	7770.00 w/ Mount Pipe	18	141.840	9.9284	0.0038	1992
128.00	(2) DB846F65ZAXY w/ Mount Pipe	18	117.091	9.1321	0.0033	901
118.00	MX08FRO665-20 w/ Mount Pipe	18	97.930	8.4292	0.0029	619
50.00	KS24019-L112A	18	15.723	2.9816	0.0004	662

### Compression Checks

### Pole Design Data

Section No.	Elevation	Size	L	L <sub>u</sub>	KI/r	A	P <sub>u</sub>	φP <sub>n</sub>	Ratio P <sub>u</sub> /φP <sub>n</sub>
	ft		ft	ft		in <sup>2</sup>	K	K	
L1	150 - 112.08 (1)	TP26.59x18x0.1875	37.92	0.00	0.0	15.1965	-13.00	888.99	0.015
L2	112.08 - 76.58 (2)	TP34.14x25.3474x0.3125	39.33	0.00	0.0	32.4816	-19.62	1900.18	0.010
L3	76.58 - 43.16 (3)	TP40.97x32.4352x0.3125	38.25	0.00	0.0	39.0723	-27.51	2285.73	0.012
L4	43.16 - 0 (4)	TP50x39.0798x0.375	48.83	0.00	0.0	59.0662	-42.50	3455.37	0.012

### Pole Bending Design Data

Section No.	Elevation ft	Size	$M_{ux}$ kip-ft	$\phi M_{nx}$ kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	$M_{uy}$ kip-ft	$\phi M_{ny}$ kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	150 - 112.08 (1)	TP26.59x18x0.1875	515.26	531.97	0.969	0.00	531.97	0.000
L2	112.08 - 76.58 (2)	TP34.14x25.3474x0.3125	1330.84	1582.77	0.841	0.00	1582.77	0.000
L3	76.58 - 43.16 (3)	TP40.97x32.4352x0.3125	2185.08	2168.53	1.008	0.00	2168.53	0.000
L4	43.16 - 0 (4)	TP50x39.0798x0.375	3585.94	4060.77	0.883	0.00	4060.77	0.000

### Pole Shear Design Data

Section No.	Elevation ft	Size	Actual $V_u$ K	$\phi V_n$ K	Ratio $\frac{V_u}{\phi V_n}$	Actual $T_u$ kip-ft	$\phi T_n$ kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	150 - 112.08 (1)	TP26.59x18x0.1875	22.39	266.70	0.084	0.06	596.39	0.000
L2	112.08 - 76.58 (2)	TP34.14x25.3474x0.3125	24.87	570.05	0.044	0.06	1634.84	0.000
L3	76.58 - 43.16 (3)	TP40.97x32.4352x0.3125	27.27	685.72	0.040	0.25	2365.58	0.000
L4	43.16 - 0 (4)	TP50x39.0798x0.375	29.97	1036.61	0.029	0.25	4505.02	0.000

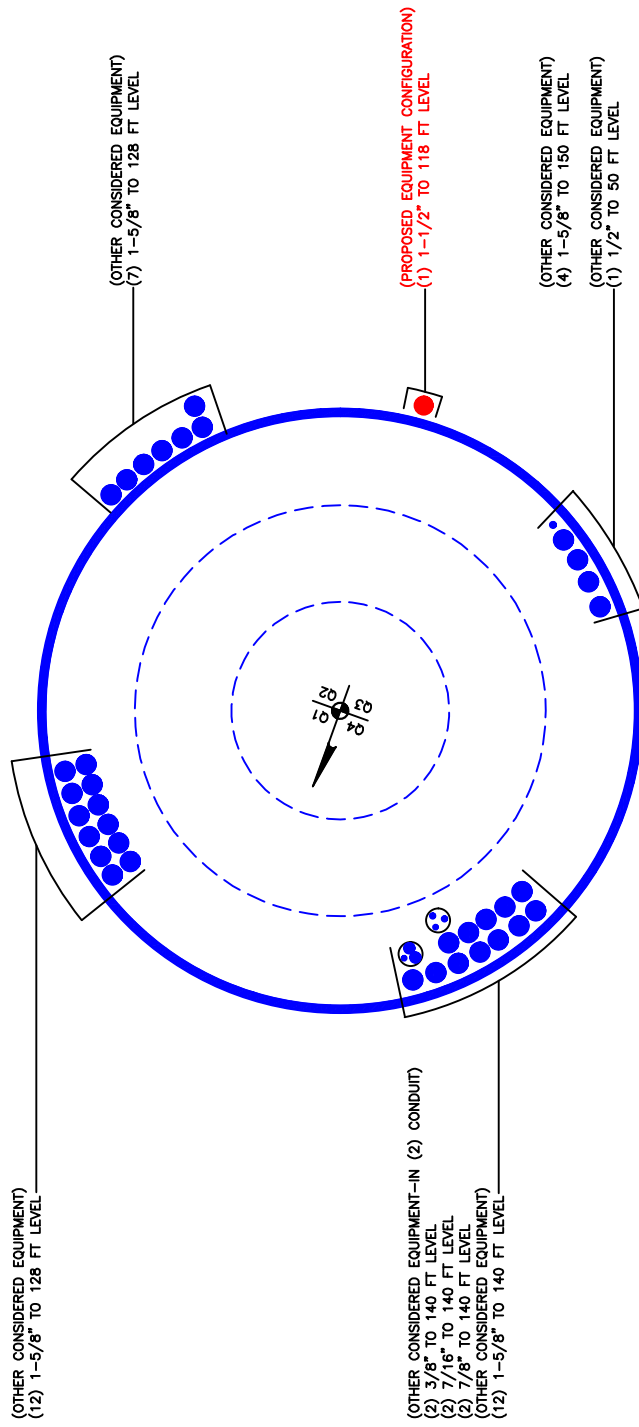
### Pole Interaction Design Data

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	150 - 112.08 (1)	0.015	0.969	0.000	0.084	0.000	0.990	1.050	4.8.2
L2	112.08 - 76.58 (2)	0.010	0.841	0.000	0.044	0.000	0.853	1.050	4.8.2
L3	76.58 - 43.16 (3)	0.012	1.008	0.000	0.040	0.000	1.021	1.050	4.8.2
L4	43.16 - 0 (4)	0.012	0.883	0.000	0.029	0.000	0.896	1.050	4.8.2

### Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$\phi P_{allow}$ K	% Capacity	Pass Fail
L1	150 - 112.08	Pole	TP26.59x18x0.1875	1	-13.00	933.44	94.3	Pass
L2	112.08 - 76.58	Pole	TP34.14x25.3474x0.3125	2	-19.62	1995.19	81.2	Pass
L3	76.58 - 43.16	Pole	TP40.97x32.4352x0.3125	3	-27.51	2400.02	97.3	Pass
L4	43.16 - 0	Pole	TP50x39.0798x0.375	4	-42.50	3628.14	85.4	Pass
							Summary	
							Pole (L3)	Pass
							<b>RATING = 97.3</b>	<b>Pass</b>

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



## **APPENDIX C**

### **ADDITIONAL CALCULATIONS**

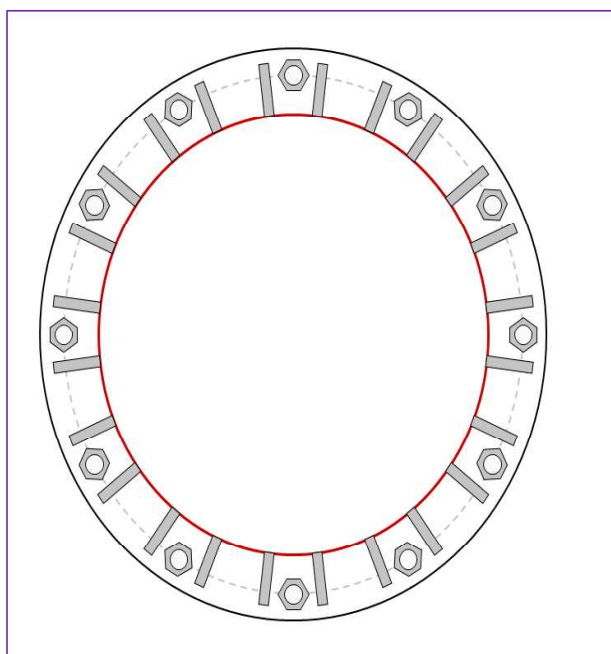
# Monopole Base Plate Connection

Site Info	
BU #	876383
Site Name	ton / Anderson's Prop
Order #	553295 - Rev. 0

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	Yes
$l_{ar}$ (in)	2.25

Applied Loads	
Moment (kip-ft)	3585.94
Axial Force (kips)	42.50
Shear Force (kips)	29.97

\*TIA-222-H Section 15.5 Applied



## Connection Properties

### Anchor Rod Data

(12) 2-1/4"  $\phi$  bolts (A615-75 N;  $F_y=75$  ksi,  $F_u=100$  ksi) on 59" BC

### Base Plate Data

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

### Stiffener Data

(24) 18"H x 6"W x 1.25"T, Notch: 0.75"

plate:  $F_y=50$  ksi ; weld:  $F_y=70$  ksi

horiz. weld: 0.5" groove, 45° dbl bevel, 0.5" fillet

vert. weld: 0.375" fillet

### Pole Data

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

## Analysis Results

### Anchor Rod Summary

(units of kips, kip-in)

$Pu_t = 239.43$	$\phi Pn_t = 243.75$	<b>Stress Rating</b>
$Vu = 2.5$	$\phi Vn = 149.1$	<b>93.5%</b>
$Mu = n/a$	$\phi Mn = n/a$	<b>Pass</b>

### Base Plate Summary

Max Stress (ksi):	51.28	(Roark's Flexural)
Allowable Stress (ksi):	54	
Stress Rating:	<b>90.4%</b>	<b>Pass</b>

### Stiffener Summary

Horizontal Weld:	<b>55.9%</b>	<b>Pass</b>
Vertical Weld:	<b>37.2%</b>	<b>Pass</b>
Plate Flexure+Shear:	<b>7.5%</b>	<b>Pass</b>
Plate Tension+Shear:	<b>33.8%</b>	<b>Pass</b>
Plate Compression:	<b>35.4%</b>	<b>Pass</b>

### Pole Summary

Punching Shear:	<b>10.1%</b>	<b>Pass</b>
-----------------	--------------	-------------



## Pier and Pad Foundation



BU #: 876383  
 Site Name: Clinton / Anderson  
 App. Number: 553295 - Rev. 0

TIA-222 Revision: H  
 Tower Type: Monopole

Top & Bot. Pad Rein. Different?:	<input checked="" type="checkbox"/>
Block Foundation?:	<input type="checkbox"/>
Rectangular Pad?:	<input type="checkbox"/>

Superstructure Analysis Reactions		
Compression, $P_{comp}$ :	42.54	kips
Base Shear, $V_{u\_comp}$ :	29.93	kips
Moment, $M_u$ :	3585.94	ft-kips
Tower Height, $H$ :	150	ft
BP Dist. Above Fdn, $bp_{dist}$ :	4	in

Pier Properties		
Pier Shape:	Square	
Pier Diameter, $dpier$ :	6.5	ft
Ext. Above Grade, $E$ :	0.5	ft
Pier Rebar Size, $Sc$ :	8	
Pier Rebar Quantity, $mc$ :	39	
Pier Tie/Spiral Size, $St$ :	4	
Pier Tie/Spiral Quantity, $mt$ :	7	
Pier Reinforcement Type:	Tie	
Pier Clear Cover, $cc_{pier}$ :	3	in

Pad Properties		
Depth, $D$ :	5	ft
Pad Width, $W_1$ :	24.5	ft
Pad Thickness, $T$ :	3	ft
Pad Rebar Size (Top dir.2), $Sp_{top2}$ :	8	
Pad Rebar Quantity (Top dir. 2), $mp_{top2}$ :	28	
Pad Rebar Size (Bottom dir. 2), $Sp_2$ :	8	
Pad Rebar Quantity (Bottom dir. 2), $mp_2$ :	40	
Pad Clear Cover, $cc_{pad}$ :	3	in

Material Properties		
Rebar Grade, $F_y$ :	60	ksi
Concrete Compressive Strength, $F'_c$ :	4	ksi
Dry Concrete Density, $\delta c$ :	150	pcf

Soil Properties		
Total Soil Unit Weight, $\gamma$ :	100	pcf
Ultimate Gross Bearing, $Q_{ult}$ :	20.000	ksf
Cohesion, $C_u$ :		ksf
Friction Angle, $\phi$ :	30	degrees
SPT Blow Count, $N_{blows}$ :	6	
Base Friction, $\mu$ :		
Neglected Depth, $N$ :	3.30	ft
Foundation Bearing on Rock?	Yes	
Groundwater Depth, $gw$ :	n/a	ft

Foundation Analysis Checks				
	Capacity	Demand	Rating*	Check
Lateral (Sliding) (kips)	145.27	29.93	19.6%	Pass
Bearing Pressure (ksf)	15.00	4.70	31.3%	Pass
Overturning (kip*ft)	4516.17	3760.53	83.3%	Pass
Pier Flexure (Comp.) (kip*ft)	4630.41	3660.77	75.3%	Pass
Pier Compression (kip)	26891.28	61.55	0.2%	Pass
Pad Flexure (kip*ft)	4344.44	1913.52	41.9%	Pass
Pad Shear - 1-way (kips)	878.58	285.31	30.9%	Pass
Pad Shear - 2-way (Comp) (ksi)	0.190	0.000	0.0%	Pass
Flexural 2-way (Comp) (kip*ft)	4663.98	2196.46	44.9%	Pass

\*Rating per TIA-222-H Section 15.5

Soil Rating*:	83.3%
Structural Rating*:	75.3%

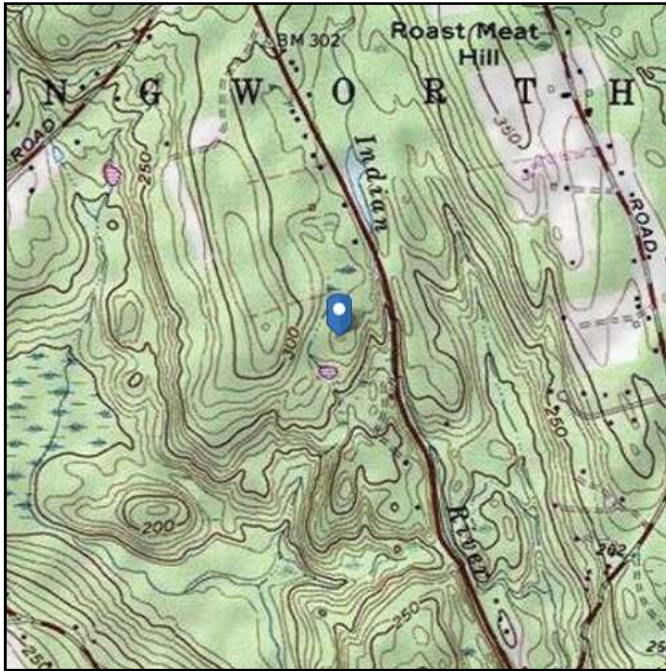
--Toggle between Gross and Net

# ASCE 7 Hazards Report

**Address:**  
No Address at This  
Location

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

**Elevation:** 288.38 ft (NAVD 88)  
**Latitude:** 41.338122  
**Longitude:** -72.556511



## Wind

### Results:

Wind Speed:	129 Vmph
10-year MRI	78 Vmph
25-year MRI	88 Vmph
50-year MRI	96 Vmph
100-year MRI	106 Vmph

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

**Date Accessed:** Wed Feb 03 2021

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.

Mountainous terrain, gorges, ocean promontories, and special wind regions should be examined for unusual wind conditions.

## Ice

---

### Results:

Ice Thickness: 0.75 in.

Concurrent Temperature: 15 F

Gust Speed: 50 mph

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

**Date Accessed:** Wed Feb 03 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.



BU: 876383  
 WO: 1945902  
 Order: 553295

Structure: A  
 Rev: 0

Location				
	Decimal Degrees	Deg	Min	Sec
Lat:	41.338122	+	41	20
Long:	-72.556511	-	72	33
Code and Site Parameters				
Seismic Design Code:		ASCE 7-10		
Site Soil:		D Stiff Soil (Default)		
Risk Category:		II		
<u>USGS Seismic Reference</u>				
	$S_s$ :	0.1730	g	
	$S_1$ :	0.0610	g	
	$T_L$ :	6	s	
Seismic Design Category Determination				
Importance Factor, $I_e$ :		1		
Acceleration-based site coefficient, $F_a$ :		1.6000		
Velocity-based site coefficient, $F_v$ :		2.4000		
Design spectral response acceleration short period, $S_{DS}$ :		0.1845	g	
Design spectral response acceleration 1 s period, $S_{D1}$ :		0.0976	g	
Seismic Design Category Based on $S_{DS}$ :		B		
Seismic Design Category Based on $S_{D1}$ :		B		
Seismic Design Category Based on $S_1$ :		N/A		
Controlling Seismic Design Category:		B		

# Exhibit E

## **Power Density/RF Emissions Report**



## RF EMISSIONS COMPLIANCE REPORT

### Crown Castle on behalf of Dish Wireless

Crown Castle Site Name: CLINTON / ANDERSON'S PROPERTY

Crown Castle Site BU Number: 876383

Dish Wireless Site Name: CT-CCI-T-876383

Dish Wireless Site ID: BOBDL00096A

7 Sherwood Forest Lane

Killingworth, CT

6/8/2021

### Report Status:

**Dish Wireless is Compliant**



Michael Fischer, P.E.  
Registered Professional Engineer (Electrical)  
Connecticut License Number 33928  
Expires January 31, 2022

Signed 08 June 2021

Prepared By:

**Site Safe, LLC**

Engineering Statement in Re:  
Electromagnetic Energy Analysis  
Crown Castle  
Killingworth, CT

My signature on the cover of this document indicates:

That I am registered as a Professional Engineer in the jurisdiction indicated; and

That I have extensive professional experience in the wireless communications engineering industry; and

That I am an employee of Site Safe, LLC in Vienna, Virginia; and

That I am thoroughly familiar with the Rules and Regulations of the Federal Communications Commission ("the FCC" and "the FCC Rules") both in general and specifically as they apply to the FCC's Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields; and

That the technical information serving as the basis for this report was supplied by Crown Castle on behalf of Dish Wireless (see attached Site Summary and Carrier documents) and that Dish Wireless' installation involves communications equipment, antennas and associated technical equipment at a location referred to as "CLINTON / ANDERSON'S PROPERTY" ("the site"); and

That Dish Wireless proposes to operate at the site with transmit antennas listed in the carrier summary and with a maximum effective radiated power as specified by Dish Wireless and shown on the worksheet and that worst-case 100% duty cycle has been assumed; and

That this analysis has been performed with the assumption that the ground immediately surrounding the tower is primarily flat or falling; and

That at this time, the FCC requires that certain licensees address specific levels of radio frequency energy to which workers or members of the public might possibly be exposed (at §1.1307(b) of the FCC Rules); and

That such consideration of possible exposure of humans to radio frequency energy must utilize the standards set by the FCC, which is the federal agency having jurisdiction over communications facilities; and

That the FCC rules define two tiers of permissible exposure guidelines: 1) "uncontrolled environments," which defines situations in which persons may not be aware of (the "general public"), or may not be able to control their exposure to a transmission facility; and 2) "controlled environments," which defines situations in which persons are aware of their potential for exposure (industry personnel); and

That this statement specifically addresses the uncontrolled environment (which is more conservative than the controlled environment) and the limit set forth in the FCC rules for licensees of Dish Wireless' operating frequencies as shown on the attached antenna worksheet; and

That when applying the uncontrolled environment standards, the predicted Maximum Power Density at two meters above ground level from the proposed T-Mobile operation is no more than 2.221% of the maximum permissible exposure limits in any accessible area on the ground; and

That it is understood per FCC Guidelines and OET 65 Appendix A, that regardless of the existent radio frequency environment, only those licensees whose contributions exceed 5% of the exposure limit pertinent to their operation(s) bear any responsibility for bringing any non-compliant area(s) into compliance; and

That when applying the uncontrolled environment standards, the cumulative predicted energy density from the proposed operation is no more than 15.864% of the maximum in any accessible area up to two meters above the ground per OET 65; and

That the calculations provided in this report are based on data provided by the client and antenna pattern data supplied by the antenna manufacturer, in accordance with FCC guidelines listed in OET 65. Horizontal and vertical antenna patterns are combined for modeling purposes to accurately reflect the energy two meters above ground level where on-axis energy refers to maximum energy two meters above the ground along the azimuth of the antenna and where area energy refers to the maximum energy anywhere two meters above the ground regardless of the antenna azimuth, accounting for cumulative energy from multiple antennas for the carrier(s) and frequency range(s) indicated; and

That the Occupational Safety and Health Administration has policies in place which address worker safety in and around communications sites, thus individual companies will be responsible for their employees' training regarding radio frequency safety; and

In summary, it is stated here that the proposed operation at the site will not result in exposure of the public to excessive levels of radio frequency energy as defined in the FCC Rules and Regulations, specifically 47 CFR 1.1307(b), and that Dish Wireless' proposed operation is completely compliant.

Finally, it is stated that access to the tower should be restricted to communication industry professionals and approved contractor personnel trained in radio frequency safety and that this instant analysis addresses exposure levels at two meters above ground level and does not address exposure levels on the tower or in the immediate proximity of the antennas.



**Crown Castle**  
**CLINTON / ANDERSON'S PROPERTY**  
**Site Summary**

<b>Carrier</b>	<b>Area Maximum Percentage MPE</b>
AT&T Mobility, LLC	0.681 %
AT&T Mobility, LLC	0.594 %
AT&T Mobility, LLC	0.346 %
AT&T Mobility, LLC	0.344 %
AT&T Mobility, LLC	0.579 %
AT&T Mobility, LLC	0.322 %
Dish Wireless (Proposed)	0.976 %
Dish Wireless (Proposed)	0.957 %
Dish Wireless (Proposed)	0.288 %
Sprint (T-Mobile)	3.965 %
Sprint (T-Mobile)	0.471 %
Sprint (T-Mobile)	0.604 %
Sprint (T-Mobile)	0.286 %
Sprint (T-Mobile)	0.384 %
Verizon Wireless	2.458 %
Verizon Wireless	0.619 %
Verizon Wireless	0.684 %
Verizon Wireless	0.605 %
Verizon Wireless	0.701 %
<b>Composite Site MPE:</b>	<b>15.864 %</b>

**AT&T Mobility, LLC**  
**CLINTON / ANDERSON'S PROPERTY**  
**Carrier Summary**

Frequency: 2100 MHz  
Maximum Permissible Exposure (MPE): 1000  $\mu\text{W}/\text{cm}^2$   
Maximum power density at ground level: 6.81257  $\mu\text{W}/\text{cm}^2$   
Highest percentage of Maximum Permissible Exposure: 0.68126 %

					On Axis		Area	
Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE	Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE
CCI Antennas	DMP65R-BU6D	140	25	4788	4.357018	0.435702	5.590600	0.559060
CCI Antennas	DMP65R-BU8D	140	155	5250	5.299832	0.529983	6.771962	0.677196
CCI Antennas	DMP65R-BU8D	140	275	5250	5.299832	0.529983	6.771962	0.677196

**AT&T Mobility, LLC**  
**CLINTON / ANDERSON'S PROPERTY**  
**Carrier Summary**

Frequency: 1900 MHz  
Maximum Permissible Exposure (MPE): 1000  $\mu\text{W}/\text{cm}^2$   
Maximum power density at ground level: 5.93908  $\mu\text{W}/\text{cm}^2$   
Highest percentage of Maximum Permissible Exposure: 0.59391 %

					On Axis		Area	
Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE	Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE
CCI Antennas	DMP65R-BU6D	140	25	4075	4.949279	0.494928	5.901897	0.590190
CCI Antennas	DMP65R-BU8D	140	155	4170	4.178038	0.417804	5.464867	0.546487
CCI Antennas	DMP65R-BU8D	140	275	4170	4.178038	0.417804	5.464867	0.546487

**AT&T Mobility, LLC**  
**CLINTON / ANDERSON'S PROPERTY**  
**Carrier Summary**

Frequency: 850 MHz  
Maximum Permissible Exposure (MPE): 566.67  $\mu\text{W}/\text{cm}^2$   
Maximum power density at ground level: 1.96227  $\mu\text{W}/\text{cm}^2$   
Highest percentage of Maximum Permissible Exposure: 0.34628 %

					On Axis		Area	
Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE	Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE
CCI Antennas	DMP65R-BU6D	140	25	2239	0.898198	0.158506	1.633717	0.288303
CCI Antennas	HPA-65R-BUU-H6	140	25	588	0.297130	0.052435	0.455503	0.080383
CCI Antennas	DMP65R-BU8D	140	155	2885	0.817271	0.144224	1.541951	0.272109
CCI Antennas	HPA-65R-BUU-H8	140	155	1114	0.299133	0.052788	0.311051	0.054891
CCI Antennas	DMP65R-BU8D	140	275	2885	0.817271	0.144224	1.541951	0.272109
CCI Antennas	HPA-65R-BUU-H8	140	275	1114	0.299133	0.052788	0.311051	0.054891

**AT&T Mobility, LLC**  
**CLINTON / ANDERSON'S PROPERTY**  
**Carrier Summary**

Frequency: 737 MHz  
Maximum Permissible Exposure (MPE): 491.33  $\mu\text{W}/\text{cm}^2$   
Maximum power density at ground level: 1.69091  $\mu\text{W}/\text{cm}^2$   
Highest percentage of Maximum Permissible Exposure: 0.34415 %

					On Axis		Area	
Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE	Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE
CCI Antennas	DMP65R-BU6D	140	25	2400	0.954035	0.194173	1.241715	0.252724
CCI Antennas	DMP65R-BU8D	140	155	2692	0.799607	0.162742	1.479026	0.301023
CCI Antennas	DMP65R-BU8D	140	275	2692	0.799607	0.162742	1.479026	0.301023

**AT&T Mobility, LLC**  
**CLINTON / ANDERSON'S PROPERTY**  
**Carrier Summary**

Frequency: 2300 MHz  
Maximum Permissible Exposure (MPE): 1000  $\mu\text{W}/\text{cm}^2$   
Maximum power density at ground level: 5.78760  $\mu\text{W}/\text{cm}^2$   
Highest percentage of Maximum Permissible Exposure: 0.57876 %

					On Axis		Area	
Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE	Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE
CCI	OPA65R-BU6D	140	25	2661	5.635561	0.563556	5.761063	0.576106
CCI	OPA65R-BU8D	140	155	2661	5.432076	0.543208	5.612769	0.561277
CCI	OPA65R-BU8D	140	275	2661	5.432076	0.543208	5.612769	0.561277

**AT&T Mobility, LLC**  
**CLINTON / ANDERSON'S PROPERTY**  
**Carrier Summary**

Frequency: 763 MHz  
Maximum Permissible Exposure (MPE): 508.67  $\mu\text{W}/\text{cm}^2$   
Maximum power density at ground level: 1.63655  $\mu\text{W}/\text{cm}^2$   
Highest percentage of Maximum Permissible Exposure: 0.32173 %

					On Axis		Area	
Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE	Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE
CCI	OPA65R-BU6D	140	25	2450	0.988857	0.194402	1.025012	0.201510
CCI	OPA65R-BU8D	140	155	3229	0.958117	0.188358	1.445613	0.284196
CCI	OPA65R-BU8D	140	275	3229	0.958117	0.188358	1.445613	0.284196

**Dish Wireless (Proposed)**  
**CLINTON / ANDERSON'S PROPERTY**  
**Carrier Summary**

Frequency: 2100 MHz  
Maximum Permissible Exposure (MPE): 1000  $\mu\text{W}/\text{cm}^2$   
Maximum power density at ground level: 9.76066  $\mu\text{W}/\text{cm}^2$   
Highest percentage of Maximum Permissible Exposure: 0.97607 %

					On Axis		Area	
Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE	Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE
JMA Wireless	MX08FRO665-20	118	0	11861	5.115400	0.511540	9.694734	0.969473
JMA Wireless	MX08FRO665-20	118	120	11861	5.115400	0.511540	9.694734	0.969473
JMA Wireless	MX08FRO665-20	118	240	11861	5.115400	0.511540	9.694734	0.969473



**Dish Wireless (Proposed)**  
**CLINTON / ANDERSON'S PROPERTY**  
**Carrier Summary**

Frequency: 1900 MHz  
Maximum Permissible Exposure (MPE): 1000  $\mu\text{W}/\text{cm}^2$   
Maximum power density at ground level: 9.57073  $\mu\text{W}/\text{cm}^2$   
Highest percentage of Maximum Permissible Exposure: 0.95707 %

					On Axis		Area	
Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE	Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE
JMA Wireless	MX08FRO665-20	118	0	9866	4.526858	0.452686	9.449297	0.944930
JMA Wireless	MX08FRO665-20	118	120	9866	4.526858	0.452686	9.449297	0.944930
JMA Wireless	MX08FRO665-20	118	240	9866	4.526858	0.452686	9.449297	0.944930

**Dish Wireless (Proposed)**  
**CLINTON / ANDERSON'S PROPERTY**  
**Carrier Summary**

Frequency: 600 MHz  
Maximum Permissible Exposure (MPE): 400  $\mu\text{W}/\text{cm}^2$   
Maximum power density at ground level: 1.15276  $\mu\text{W}/\text{cm}^2$   
Highest percentage of Maximum Permissible Exposure: 0.28819 %

					On Axis		Area	
Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE	Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE
JMA Wireless	MX08FRO665-20	118	0	1304	0.862075	0.215519	1.092515	0.273129
JMA Wireless	MX08FRO665-20	118	120	1304	0.862075	0.215519	1.092515	0.273129
JMA Wireless	MX08FRO665-20	118	240	1304	0.862075	0.215519	1.092515	0.273129

**Sprint (T-Mobile)**  
**CLINTON / ANDERSON'S PROPERTY**  
**Carrier Summary**

Frequency:	2500	MHz
Maximum Permissible Exposure (MPE):	1000	$\mu\text{W}/\text{cm}^2$
Maximum power density at ground level:	39.64606	$\mu\text{W}/\text{cm}^2$
Highest percentage of Maximum Permissible Exposure:	3.96461	%

Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	On Axis		Area	
					Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE	Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE
Ericsson	AIR6449	152	0	27612	7.860965	0.786097	11.254486	1.125449
Ericsson	AIR6449	152	0	27612	7.860965	0.786097	11.254486	1.125449
Ericsson	AIR6449	152	120	27612	7.860965	0.786097	11.254486	1.125449
Ericsson	AIR6449	152	120	27612	7.860965	0.786097	11.254486	1.125449
Ericsson	AIR6449	152	240	27612	7.860965	0.786097	11.254486	1.125449
Ericsson	AIR6449	152	240	27612	7.860965	0.786097	11.254486	1.125449

**Sprint (T-Mobile)**  
**CLINTON / ANDERSON'S PROPERTY**  
**Carrier Summary**

Frequency: 2100 MHz  
Maximum Permissible Exposure (MPE): 1000  $\mu\text{W}/\text{cm}^2$   
Maximum power density at ground level: 4.71416  $\mu\text{W}/\text{cm}^2$   
Highest percentage of Maximum Permissible Exposure: 0.47142 %

					On Axis		Area	
Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE	Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE
RFS	APX16DWV-16DWVS-C-A20	152	0	6763	4.671087	0.467109	4.671087	0.467109
RFS	APX16DWV-16DWVS-C-A20	152	120	6763	4.671087	0.467109	4.671087	0.467109
RFS	APX16DWV-16DWVS-C-A20	152	240	6763	4.671087	0.467109	4.671087	0.467109

**Sprint (T-Mobile)**  
**CLINTON / ANDERSON'S PROPERTY**  
**Carrier Summary**

Frequency: 1900 MHz  
Maximum Permissible Exposure (MPE): 1000  $\mu\text{W}/\text{cm}^2$   
Maximum power density at ground level: 6.04001  $\mu\text{W}/\text{cm}^2$   
Highest percentage of Maximum Permissible Exposure: 0.60400 %

					On Axis		Area	
Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE	Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE
RFS	APXVAALL24_43-U-NA20	152	0	1340	0.417997	0.041800	0.742982	0.074298
RFS	APXVAALL24_43-U-NA20	152	0	1340	0.417997	0.041800	0.742982	0.074298
RFS	APXVAALL24_43-U-NA20	152	0	8039	2.507992	0.250799	4.457909	0.445791
RFS	APXVAALL24_43-U-NA20	152	120	1340	0.417997	0.041800	0.742982	0.074298
RFS	APXVAALL24_43-U-NA20	152	120	1340	0.417997	0.041800	0.742982	0.074298
RFS	APXVAALL24_43-U-NA20	152	120	8039	2.507992	0.250799	4.457909	0.445791
RFS	APXVAALL24_43-U-NA20	152	240	1340	0.417997	0.041800	0.742982	0.074298
RFS	APXVAALL24_43-U-NA20	152	240	1340	0.417997	0.041800	0.742982	0.074298
RFS	APXVAALL24_43-U-NA20	152	240	8039	2.507992	0.250799	4.457909	0.445791

**Sprint (T-Mobile)**  
**CLINTON / ANDERSON'S PROPERTY**  
**Carrier Summary**

Frequency: 700 MHz  
Maximum Permissible Exposure (MPE): 466.67  $\mu\text{W}/\text{cm}^2$   
Maximum power density at ground level: 1.33278  $\mu\text{W}/\text{cm}^2$   
Highest percentage of Maximum Permissible Exposure: 0.28560 %

					On Axis		Area	
Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE	Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE
RFS	APXVAALL24_43-U-NA20	152	0	3794	1.020849	0.218753	1.273492	0.272891
RFS	APXVAALL24_43-U-NA20	152	120	3794	1.020849	0.218753	1.273492	0.272891
RFS	APXVAALL24_43-U-NA20	152	240	3794	1.020849	0.218753	1.273492	0.272891

**Sprint (T-Mobile)**  
**CLINTON / ANDERSON'S PROPERTY**  
**Carrier Summary**

Frequency: 600 MHz  
Maximum Permissible Exposure (MPE): 400  $\mu\text{W}/\text{cm}^2$   
Maximum power density at ground level: 1.53629  $\mu\text{W}/\text{cm}^2$   
Highest percentage of Maximum Permissible Exposure: 0.38407 %

					On Axis		Area	
Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE	Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE
RFS	APXVAALL24_43-U-NA20	152	0	1730	0.477165	0.119291	0.731426	0.182857
RFS	APXVAALL24_43-U-NA20	152	0	1730	0.477165	0.119291	0.731426	0.182857
RFS	APXVAALL24_43-U-NA20	152	120	1730	0.477165	0.119291	0.731426	0.182857
RFS	APXVAALL24_43-U-NA20	152	120	1730	0.477165	0.119291	0.731426	0.182857
RFS	APXVAALL24_43-U-NA20	152	240	1730	0.477165	0.119291	0.731426	0.182857
RFS	APXVAALL24_43-U-NA20	152	240	1730	0.477165	0.119291	0.731426	0.182857

**Verizon Wireless**  
**CLINTON / ANDERSON'S PROPERTY**  
**Carrier Summary**

Frequency: 3700 MHz  
Maximum Permissible Exposure (MPE): 1000  $\mu\text{W}/\text{cm}^2$   
Maximum power density at ground level: 24.58247  $\mu\text{W}/\text{cm}^2$   
Highest percentage of Maximum Permissible Exposure: 2.45825 %

					On Axis		Area	
Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE	Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE
Samsung	MT6407-77A	130	350	43155	8.480894	0.848089	20.265799	2.026580
Samsung	MT6407-77A	130	160	43155	8.480894	0.848089	20.265799	2.026580
Samsung	MT6407-77A	130	260	43155	8.480894	0.848089	20.265799	2.026580



**Verizon Wireless**  
**CLINTON / ANDERSON'S PROPERTY**  
**Carrier Summary**

Frequency: 2100 MHz  
Maximum Permissible Exposure (MPE): 1000  $\mu\text{W}/\text{cm}^2$   
Maximum power density at ground level: 6.19119  $\mu\text{W}/\text{cm}^2$   
Highest percentage of Maximum Permissible Exposure: 0.61912 %

					On Axis		Area	
Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE	Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE
Commscope	JAHH-65B-R3B	130	350	6069	2.700644	0.270064	4.700192	0.470019
Commscope	JAHH-65B-R3B	130	160	6069	2.700644	0.270064	4.700192	0.470019
Commscope	JAHH-65B-R3B	130	260	6069	2.700644	0.270064	4.700192	0.470019

**Verizon Wireless**  
**CLINTON / ANDERSON'S PROPERTY**  
**Carrier Summary**

Frequency: 1900 MHz  
Maximum Permissible Exposure (MPE): 1000  $\mu\text{W}/\text{cm}^2$   
Maximum power density at ground level: 6.84368  $\mu\text{W}/\text{cm}^2$   
Highest percentage of Maximum Permissible Exposure: 0.68437 %

					On Axis		Area	
Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE	Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE
Commscope	JAHH-65B-R3B	130	350	5890	3.048116	0.304812	4.870207	0.487021
Commscope	JAHH-65B-R3B	130	160	5890	3.048116	0.304812	4.870207	0.487021
Commscope	JAHH-65B-R3B	130	260	5890	3.048116	0.304812	4.870207	0.487021

**Verizon Wireless**  
**CLINTON / ANDERSON'S PROPERTY**  
**Carrier Summary**

Frequency: 751 MHz  
Maximum Permissible Exposure (MPE): 500.67  $\mu\text{W}/\text{cm}^2$   
Maximum power density at ground level: 3.03096  $\mu\text{W}/\text{cm}^2$   
Highest percentage of Maximum Permissible Exposure: 0.60539 %

					On Axis		Area	
Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE	Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE
Commscope	JAHH-65B-R3B	130	350	2661	1.114271	0.222558	1.598412	0.319257
Commscope	JAHH-65B-R3B	130	160	2661	1.114271	0.222558	1.598412	0.319257
Commscope	JAHH-65B-R3B	130	260	2661	1.114271	0.222558	1.598412	0.319257

**Verizon Wireless**  
**CLINTON / ANDERSON'S PROPERTY**  
**Carrier Summary**

Frequency: 850 MHz  
Maximum Permissible Exposure (MPE): 566.67  $\mu\text{W}/\text{cm}^2$   
Maximum power density at ground level: 3.97322  $\mu\text{W}/\text{cm}^2$   
Highest percentage of Maximum Permissible Exposure: 0.70116 %

Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	On Axis		Area	
					Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE	Max Power Density ( $\mu\text{W}/\text{cm}^2$ )	Percent of MPE
ANDREW	DB846F65ZAXY	130	350	1127	0.527357	0.093063	0.554509	0.097855
Commscope	JAHH-65B-R3B	130	350	3120	1.110056	0.195892	1.810148	0.319438
ANDREW	DB846F65ZAXY	130	350	1127	0.527357	0.093063	0.554509	0.097855
ANDREW	DB846F65ZAXY	130	160	1127	0.527357	0.093063	0.554509	0.097855
Commscope	JAHH-65B-R3B	130	160	3120	1.110056	0.195892	1.810148	0.319438
ANDREW	DB846F65ZAXY	130	160	1127	0.527357	0.093063	0.554509	0.097855
ANDREW	DB846F65ZAXY	130	260	1127	0.527357	0.093063	0.554509	0.097855
Commscope	JAHH-65B-R3B	130	260	3120	1.110056	0.195892	1.810148	0.319438
ANDREW	DB846F65ZAXY	130	260	1127	0.527357	0.093063	0.554509	0.097855