



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

April 28, 2022

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

RE: Tower Share Application  
88 Main Street, Monroe, CT 06468  
Latitude: 41.299722  
Longitude: -73.249444  
Site #: 826053\_Crown\_Dish

Dear Ms. Bachman:

This letter and attachments are submitted on behalf of Dish Wireless LLC. Dish Wireless LLC plans to install antennas and related equipment to the tower site located at 88 Main Street, Monroe, Connecticut.

Dish Wireless LLC proposes to install three (3) 600/1900 MHz 5G antennas and six (6) RRUs, at the 147-foot level of the existing 195-foot monopole, one (1) Fiber cable will also be installed. Dish Wireless LLC equipment cabinets will be placed within a 7' x 5' lease area within the existing fenced compound. Included are plans by Kimley Horn, dated November 19, 2021, Exhibit C. Also included is a structural analysis prepared by Crown Castle, dated September 25, 2021, confirming that the existing tower is structurally capable of supporting the proposed equipment. Attached as Exhibit D. The facility was approved by the Town of Monroe Planning & Zoning Commission on January 11, 2001. Please see attached.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies 16-50aa, of Dish Wireless LLC intent to share a telecommunications facility pursuant to R.C.S.A. 16-50j-88. In accordance with R.C.S.A., a copy of this letter is being sent to Ken Kellogg, First Selectman and Rick Shultz, Town Planner for the Town of Monroe, as well as the tower owner (Crown Castle) and property owner (Stepney Volunteer Fire Co.).

The planned modifications of the facility fall squarely within those activities explicitly provided for in R.C.S.A. 16-50j-89.

1. The proposed modification will not result in an increase in the height of the existing structure. The top of the existing tower is 195-feet and the Dish Wireless LLC antennas will be located at a centerline height of 147-feet.
2. The proposed modifications will not result in an increase of the site boundary as depicted on the attached site plan.
3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed local and state criteria. The incremental effect of the proposed changes will be negligible.



4. The operation of the proposed antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard. The combined site operations will result in a total power density of 10.16% as evidenced by Exhibit F.

Connecticut General Statutes 16-50aa indicates that the Council must approve the shared use of a telecommunications facility provided it finds the shared use is technically, legally, environmentally, and economically feasible and meets public safety concerns. As demonstrated in this letter, Dish Wireless LLC respectfully submits that the shared use of this facility satisfies these criteria.

A. Technical Feasibility. The existing monopole has been deemed structurally capable of supporting Dish Wireless LLC proposed loading. The structural analysis is included as Exhibit D.

B. Legal Feasibility. As referenced above, C.G.S. 16-50aa has been authorized to issue orders approving the shared use of an existing tower such as this monopole in Monroe. Under the authority granted to the Council, an order of the Council approving the requested shared use would permit Dish Wireless LLC to obtain a building permit for the proposed installation. Further, a Letter of Authorization is included as Exhibit G, authorizing Dish Wireless LLC to file this application for shared use.

C. Environmental Feasibility. The proposed shared use of this facility would have a minimal environmental impact. The installation of Dish Wireless LLC equipment at the 147-foot level of the existing 195-foot tower would have an insignificant visual impact on the area around the tower. Dish Wireless LLC ground equipment would be installed within the existing facility compound. Dish Wireless LLC shared use would therefore not cause any significant alteration in the physical or environmental characteristics of the existing site. Additionally, as evidenced by Exhibit F, the proposed antennas would not increase radio frequency emissions to a level at or above the Federal Communications Commission safety standard.

D. Economic Feasibility. Dish Wireless LLC will be entering into an agreement with the owner of this facility to mutually agreeable terms. As previously mentioned, the Letter of Authorization has been provided by the owner to assist Dish Wireless LLC with this tower sharing application.

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

Sincerely,

*Denise Sabo*

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



**NSS** **NORTHEAST**  
SITE SOLUTIONS  
*Turnkey Wireless Development*

Attachments

Cc: Ken Kellogg, First Selectman  
Town Hall  
7 Fan Hill Road  
Monroe, Connecticut 06468

Rick Shultz, Town Planner  
Town Hall  
7 Fan Hill Road  
Monroe, Connecticut 06468

Stepney Volunteer Fire Co. – Property Owner  
88 Main Street  
Monroe, CT 06468

Crown Castle – Tower Owner

# Exhibit A

## **Original Facility Approval**

**KNOW ALL MEN BY THESE PRESENTS, THAT THE TOWN PLANNING AND ZONING COMMISSION OF MONROE, CONNECTICUT, by its own vote on January 11, 2001, granted a Special Exception Permit to --**

**VoiceStream Wireless, Inc.,** for property at -

**88 Main Street** (DI-1 zone) - for construction of new wireless communication facility and associated site improvements as provided in Article XXV of the Zoning Regulations.

**FURTHER,** the approval is given subject to the following specific conditions:

1. The following plans presented at the hearing concluded November 16, 2000, including revisions and additions herein specified by the Commission, shall be the approved plans of record and basis of approval:  
  
"Site Plan (site address) Stepney Vol. Fire Dept., 88 Main Street, Monroe, CT, SITE #CT 11-215A," by ARCNET Architects, Inc. and Diversified Technology Consultants, Last Revised 10-24-00; Sheet Nos. S-1 (Record Exhibit A), and Z-1 (dated 6-19-00).
2. The final installation tower height be erected at the height proposed in the formal application/presentation (195') above finished grade to accommodate co-location and applicant needs.
3. Adequate area and location shall be reserved on the tower to accommodate the needs of municipal emergency services.
4. The exterior of the westerly and southerly facing sides of the fence enclosure shall be screened with dense evergreen ornamentals approximating the height of the enclosure of a type and nature to be approved by the Commission.
5. Provide copies of relevant final approvals or authorizations of state or federal authorities to the Planning and Zoning Department as a matter of information.
6. Before initiation of the work, final revised plans, based upon the plans of record, shall be filed in the Planning and Zoning Department.
7. The plans shall be revised to incorporate and address all comments in the reviewing reports submitted as part of the application and not previously incorporated into the plans.
8. Final plans shall bear an endorsement block stating:

Re: Special Exception Permit  
VoiceStream Wireless, Inc.  
88 Main Street - Monroe, CT

Page 2

These plans are the final construction plans and have been reviewed by the Director of Public Works and Town Planner.

\_\_\_\_\_  
Town Planner

\_\_\_\_\_  
Director of Public Works

Said block must appear in the lower right corner of each plan page near the title block.

9. No signs of any nature, other than normal temporary construction signs, are approved by this application. The installation of signs shall be approved only through the normal permit procedure of the Commission.
10. Submittal of all bonds and insurances as required by local and state laws and by the Commission at such times as may be required during the term of construction of the overall project until such time as the improvements or work covered by the applicable bond or insurances is deemed to be acceptably complete by the Commission.
11. A pre-construction conference is to be held with the developer and/or general contractor, engineer and architect, and Town staff, including Town Planner, Director of Public Works, Sanitarian, Building Inspector, Fire Marshal, and police representative prior to any work on the premises.
12. As-built construction plans shall be provided promptly in accordance with Chapter 44 of the Code of the Town of Monroe.
13. Provision of copies of plans, details and/or specifications, as may be required by Town and State agencies from time to time.
14. Should this action be the subject of appeal to the courts, no time limit specified herein shall begin to run until such litigation is fully concluded (date of final court action).
15. The effective date of the special exception permit shall be the date of recording in the Monroe Land Records. It shall be the responsibility of the applicant to record the special exception permit document (prepared by the Planning and Zoning Department) in the Monroe Land Records. Failure to record said document within ninety (90) days of the date of approval shall render the approval null and void.

Re: Special Exception Permit  
VoiceStream Wireless, Inc.  
88 Main Street - Monroe, CT

Page 3

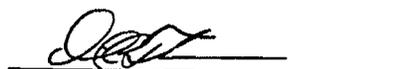
16. Failure to meet any specified condition of this approval or maintain compliance with applicable local, state or federal ordinance, regulation or laws may result in the ordered suspension of construction authorizations until such time as such failure or noncompliance has been satisfactorily resolved.
17. Should any changes in site plan be contemplated, they shall be submitted to the Commission for review. Should any changes be considered as major or substantial changes, they shall be applied for under a special exception permit application to modify the approved site plan. Minor changes are considered by the Commission as those which do not change the substance, impact or general locations involved in the proposal and may be authorized by the Commission after appropriate review.
18. It is the responsibility of the owner/developer to notify the Planning and Zoning Department of any change in the status of ownership and/or contractor(s) and/or professional design or inspection consultant involved in the proposal. Additionally, it is the responsibility of the owner/developer to notify any new owner and/or contractor(s) and/or consultants of all construction requirements including all job meeting notes and inspection notes produced up to the date of any such change in project related personnel.
19. This permit and all conditions specified herein shall be binding in perpetuity upon the applicant and property owner and his (their) heirs, assigns and successors unless otherwise amended by a subsequent act of the Commission.
20. This permit and all conditions specified herein shall be binding in perpetuity upon this parcel and premises unless otherwise amended or invalidated under the terms of this approval or a subsequent act of the Commission.

Dated at Monroe, Connecticut, this 16<sup>th</sup> day of January, 2001.

TOWN PLANNING & ZONING COMMISSION

Witness:

  
Mary E. Mennilli

  
Daniel A. Tuba  
Clerk of Commission

REC'D. FOR RECORD *Oct 4 20 01*  
AT *1:28 P.M.* ATTEST *Thomas A. Di Giovanni*  
*Ass.* MONROE TOWN CLERK

# Exhibit B

## Property Card

# 88 MAIN ST

**Location** 88 MAIN ST

**Map/Lot** 012/ 019/ 0Z/ /

**Acct#** 0120190Z

**Owner** STEPNEY VOLUNTEER FIRE  
CO

**Assessment** \$915,200

**Appraisal** \$1,307,400

**PID** 16246

**Building Count** 1

**Survey**

**Affordable**

## Current Value

Appraisal			
Valuation Year	Improvements	Land	Total
2019	\$1,088,900	\$218,500	\$1,307,400

Assessment			
Valuation Year	Improvements	Land	Total
2019	\$762,200	\$153,000	\$915,200

## Owner of Record

**Owner** STEPNEY VOLUNTEER FIRE CO  
**Co-Owner** DEBORAH HEIM, TREASURER  
**Address** 88 MAIN ST  
MONROE, CT 06468-1637

**Sale Price** \$0  
**Certificate** 1  
**Book & Page**  
**Sale Date**

## Ownership History

Ownership History				
Owner	Sale Price	Certificate	Book & Page	Sale Date
STEPNEY VOLUNTEER FIRE CO	\$0	1		

## Building Information

### Building 1 : Section 1

**Year Built:**

**Living Area:** 0

**Building Attributes**

Field	Description
Style	Vacant Land
Model	
Grade:	
Stories:	
Occupancy	
Exterior Wall 1	
Exterior Wall 2	
Roof Structure:	
Roof Cover	
Interior Wall 1	
Interior Wall 2	
Interior Flr 1	
Interior Flr 2	
Heat Fuel	
Heat Type:	
AC Type:	
Total Bedrooms:	
Total Bthrms:	
Total Half Baths:	
Total Xtra Fixtrs:	
Total Rooms:	
Bath Style:	
Kitchen Style:	
Fireplaces	
Wdstv Flues	
Basement Gar.	
Attic	
Basement	
In Law Apt	

### Building Photo



(<http://images.vgsi.com/photos/MonroeCTPhotos/\00\01\35\63.jpg>)

### Building Layout

([http://images.vgsi.com/photos/MonroeCTPhotos//Sketches/16246\\_16246](http://images.vgsi.com/photos/MonroeCTPhotos//Sketches/16246_16246))

Building Sub-Areas (sq ft)	Legend
No Data for Building Sub-Areas	

### Extra Features

Extra Features	Legend
No Data for Extra Features	

### Parcel Information

**Use Code** 431  
**Description** TEL REL TW  
**Deeded Acres** 0.23

**Land****Land Use**

**Use Code** 431  
**Description** TEL REL TW  
**Zone** I1  
**Neighborhood**  
**Alt Land Approved** No  
**Category**

**Land Line Valuation**

**Size (Acres)** 0.23  
**Appraised Value** \$218,500

**Outbuildings**

Outbuildings						Legend
Code	Description	Sub Code	Sub Description	Size	Value	Bldg #
RS1	Frame Utility Shed			360 S.F.	\$3,600	1
FN1	FENCE CHAIN			2520 L.F.	\$35,300	1
CCTM	CELL TOWER			3 UNITS	\$1,050,000	1

**Valuation History**

Appraisal			
Valuation Year	Improvements	Land	Total
2020	\$1,088,900	\$218,500	\$1,307,400
2019	\$1,088,900	\$218,500	\$1,307,400
2019	\$1,088,900	\$218,500	\$1,307,400

Assessment			
Valuation Year	Improvements	Land	Total
2020	\$762,200	\$153,000	\$915,200
2019	\$762,200	\$153,000	\$915,200
2019	\$762,200	\$153,000	\$915,200



114

012 016 0B  
114 MAIN ST  
1.69 Ac

012 017 00  
104 MAIN ST  
1.02 Ac

012 018 00  
96 MAIN ST  
0.41 Ac

012 019 00  
88 MAIN ST  
0.23 Ac

012 019 00  
88 MAIN ST  
3.91 Ac

012 020 0A  
525 PURDY HILL RD  
4.5 Ac

Stepney  
Volunteer Fire  
Company  
Station 1

012 050 00  
89 MAIN ST #91  
0.78 Ac

012 057 00  
81 MAIN ST

012 058 00  
66 MAIN ST  
1.83 Ac

# Exhibit C

## **Construction Drawings**



DISH Wireless L.L.C. SITE ID:

**NJJER01091A**

DISH Wireless L.L.C. SITE ADDRESS:

**88 MAIN STREET  
MONROE, CT 06468**

SCOPE OF WORK	
THIS IS NOT AN ALL INCLUSIVE LIST. CONTRACTOR SHALL UTILIZE SPECIFIED EQUIPMENT PART OR ENGINEER APPROVED EQUIVALENT. CONTRACTOR SHALL VERIFY ALL NEEDED EQUIPMENT TO PROVIDE A FUNCTIONAL SITE. THE PROJECT GENERALLY CONSISTS OF THE FOLLOWING:	
<b>TOWER SCOPE OF WORK:</b>	
<ul style="list-style-type: none"> <li>• INSTALL (3) PROPOSED PANEL ANTENNAS (1 PER SECTOR)</li> <li>• INSTALL (1) PROPOSED ANTENNA PLATFORM MOUNT</li> <li>• INSTALL PROPOSED JUMPERS</li> <li>• INSTALL (6) PROPOSED RRU's (2 PER SECTOR)</li> <li>• INSTALL (1) PROPOSED OVER VOLTAGE PROTECTION DEVICE (OVP)</li> <li>• INSTALL (1) PROPOSED HYBRID CABLE</li> </ul>	
<b>GROUND SCOPE OF WORK:</b>	
<ul style="list-style-type: none"> <li>• INSTALL (1) PROPOSED METAL PLATFORM</li> <li>• INSTALL (1) PROPOSED ICE BRIDGE</li> <li>• INSTALL (1) PROPOSED PPC CABINET</li> <li>• INSTALL (1) PROPOSED EQUIPMENT CABINET</li> <li>• INSTALL (1) PROPOSED POWER CONDUIT</li> <li>• INSTALL (1) PROPOSED TELCO CONDUIT</li> <li>• INSTALL (1) PROPOSED TELCO-FIBER BOX</li> <li>• INSTALL (1) PROPOSED GPS UNIT</li> <li>• INSTALL (1) PROPOSED SAFETY SWITCH (IF REQUIRED)</li> <li>• INSTALL (1) PROPOSED FIBER NID (IF REQUIRED)</li> <li>• DISH Wireless, L.L.C. TO USE EXISTING EMPTY METER SOCKET</li> </ul>	

SITE INFORMATION	PROJECT DIRECTORY
PROPERTY OWNER: STEPNEY VOLUNTEER FIRE CO ADDRESS: 88 MAIN ST MONROE, CT 06468	APPLICANT: DISH WIRELESS, LLC. 5701 SOUTH SANTA FE DRIVE LITTLETON, CO 80120
TOWER TYPE: MONOPOLE	TOWER OWNER: CROWN CASTLE 2000 CORPORATE DRIVE CANONSBURG, PA 15317 (877) 486-9377
CROWN CASTLE SITE ID: 826053	SITE DESIGNER: KIMLEY-HORN & ASSOCIATES 3875 EMBASSY PKWY, SUITE 280 AKRON, OH 44333 (216) 505-7771 COA #: PEC.0000738
CROWN CASTLE APP NUMBER: 548688	SITE ACQUISITION: VICTOR NUNEZ (917) 563-3682
COUNTY: FAIRFIELD	CONSTRUCTION MANAGER: JOSEPH DIPIAZZA JOSPEH.DIPIAZZA@DISH.COM
LATITUDE (NAD 83): 41° 18' 6.06" N 41.301683° N	RF ENGINEER: MURUGABIRAN JAYAPAL MURUGABIRAN.JAYAPAL@DISH.COM
LONGITUDE (NAD 83): 73° 15' 2.92" W 73.250811° W	11/19/21 Exp. 01/31/22
ZONING JURISDICTION: CONNECTICUT SITING COUNCIL	
ZONING DISTRICT: 11	
PARCEL NUMBER: 012 019 00	
OCCUPANCY GROUP: U	
CONSTRUCTION TYPE: II-B	
POWER COMPANY: NORTHEAST UTILITIES	
TELEPHONE COMPANY: LIGHTOWER	



5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



COA #: PEC.0000738  
421 FAYETTEVILLE ST, SUITE 600  
RALEIGH, NC 27601



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: SEW	CHECKED BY: MCK	APPROVED BY: ---
---------------	-----------------	------------------

RFDS REV #: ---

**CONSTRUCTION DOCUMENTS**

SUBMITTALS		
REV	DATE	DESCRIPTION
A	09/28/2021	ISSUED FOR REVIEW
0	11/18/2021	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER  
KHCLC-16283

DISH Wireless L.L.C.  
PROJECT INFORMATION  
**NJJER01091A**  
88 MAIN STREET  
MONROE, CT 06468

SHEET TITLE  
TITLE SHEET

SHEET NUMBER  
**T-1**

**CONNECTICUT CODE OF COMPLIANCE**

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

CODE TYPE	CODE
BUILDING	2018 CT STATE BUILDING CODE/2015 IBC W/ CT AMENDMENTS
MECHANICAL	2018 CT STATE BUILDING CODE/2015 IMC W/ CT AMENDMENTS
ELECTRICAL	2018 CT STATE BUILDING CODE/2017 NEC W/ CT AMENDMENTS

**SHEET INDEX**

SHEET NO.	SHEET TITLE
T-1	TITLE SHEET
A-1	OVERALL AND ENLARGED SITE PLAN
A-2	ELEVATION, ANTENNA LAYOUT AND SCHEDULE
A-3	EQUIPMENT PLATFORM AND H-FRAME DETAILS
A-4	EQUIPMENT DETAILS
A-5	EQUIPMENT DETAILS
A-6	EQUIPMENT DETAILS
E-1	ELECTRICAL/FIBER ROUTE PLAN AND NOTES
E-2	ELECTRICAL DETAILS
E-3	ELECTRICAL ONE-LINE, FAULT CALCS & PANEL SCHEDULE
G-1	GROUNDING PLANS AND NOTES
G-2	GROUNDING DETAILS
G-3	GROUNDING DETAILS
RF-1	RF CABLE COLOR CODE
GN-1	LEGEND AND ABBREVIATIONS
GN-2	GENERAL NOTES
GN-3	GENERAL NOTES
GN-4	GENERAL NOTES

**SITE PHOTO**



UNDERGROUND SERVICE ALERT CBYD 811  
UTILITY NOTIFICATION CENTER OF CONNECTICUT  
(800) 922-4455  
WWW.CBYD.COM  
CALL 2 WORKING DAYS UTILITY NOTIFICATION PRIOR TO CONSTRUCTION



**GENERAL NOTES**

THE FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION. A TECHNICIAN WILL VISIT THE SITE AS REQUIRED FOR ROUTINE MAINTENANCE. THE PROJECT WILL NOT RESULT IN ANY SIGNIFICANT DISTURBANCE OR EFFECT ON DRAINAGE, NO SANITARY SEWER SERVICE, POTABLE WATER, OR TRASH DISPOSAL IS REQUIRED AND NO COMMERCIAL SIGNAGE IS PROPOSED.

11"x17" PLOT WILL BE HALF SCALE UNLESS OTHERWISE NOTED

CONTRACTOR SHALL VERIFY ALL PLANS, EXISTING DIMENSIONS, AND CONDITIONS ON THE JOB SITE, AND SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK.

**DIRECTIONS**

DIRECTIONS FROM 3 ADP BLVD, ROSELAND, NJ:  
x GET ON I-280 E FROM LIVINGSTON AVE  
x CONTINUE ON I-280 E. TAKE GARDEN STATE PKWY, I-287 E AND CT-15 N TO CT-25 N IN MONROE

**VICINITY MAP**



NO SCALE

**NOTES**

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

**NOTES**

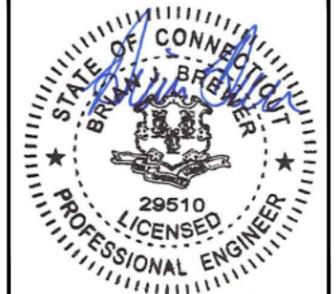
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. CONTRACTOR SHALL MAINTAIN A 10'-0" MINIMUM SEPARATION BETWEEN THE PROPOSED GPS UNIT, TRANSMITTING ANTENNAS AND EXISTING GPS UNITS.
3. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.

**dish**  
wireless.

5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120

**Kimley»Horn**

COA #: PEC.0000738  
421 FAYETTEVILLE ST, SUITE 600  
RALEIGH, NC 27601



11/19/21  
Exp. 01/31/22

**ENLARGED SITE PLAN**



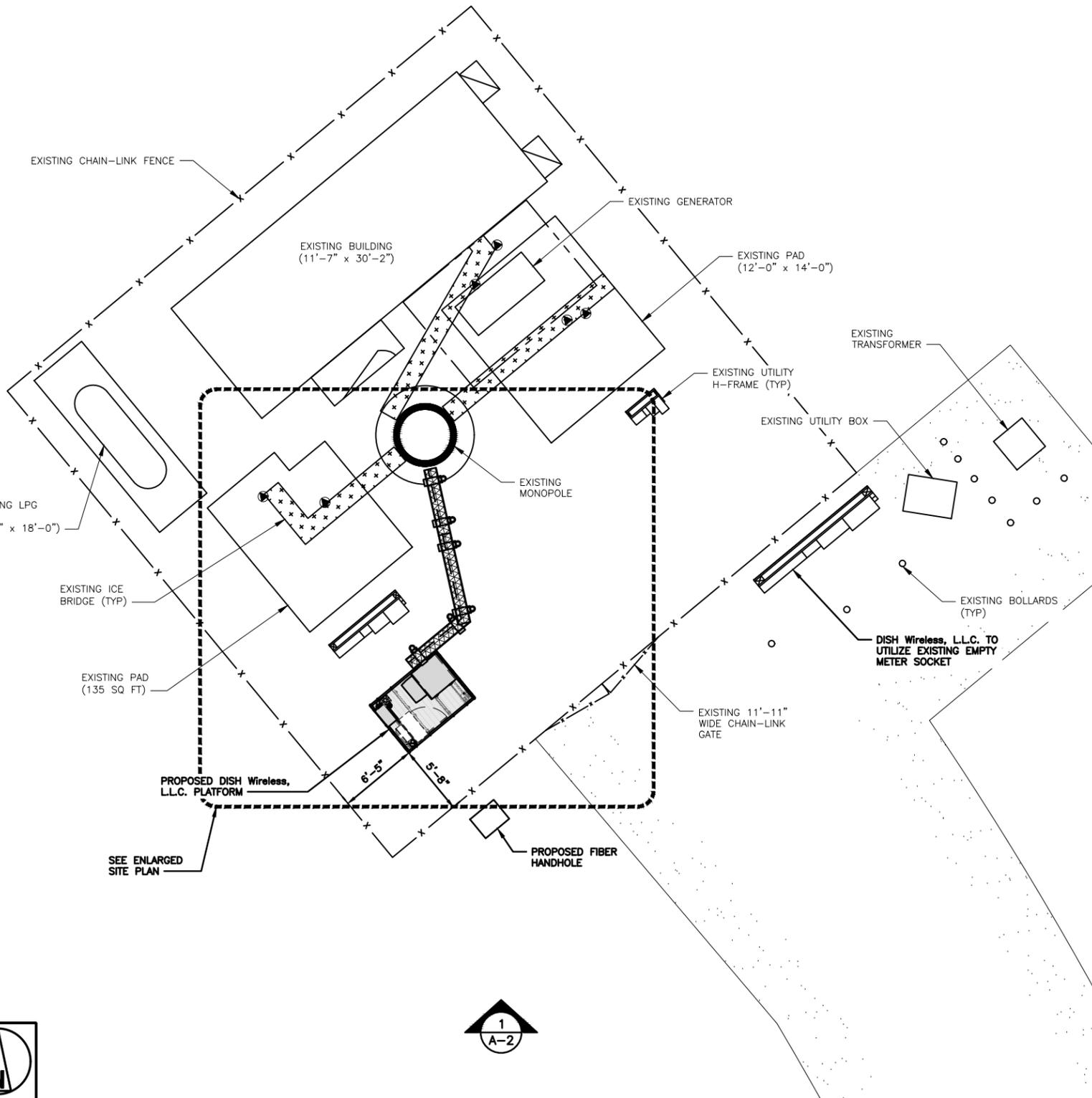
2



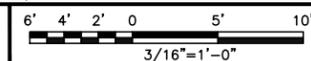
**OVERALL UTILITY ROUTE PLAN**

NO SCALE

3



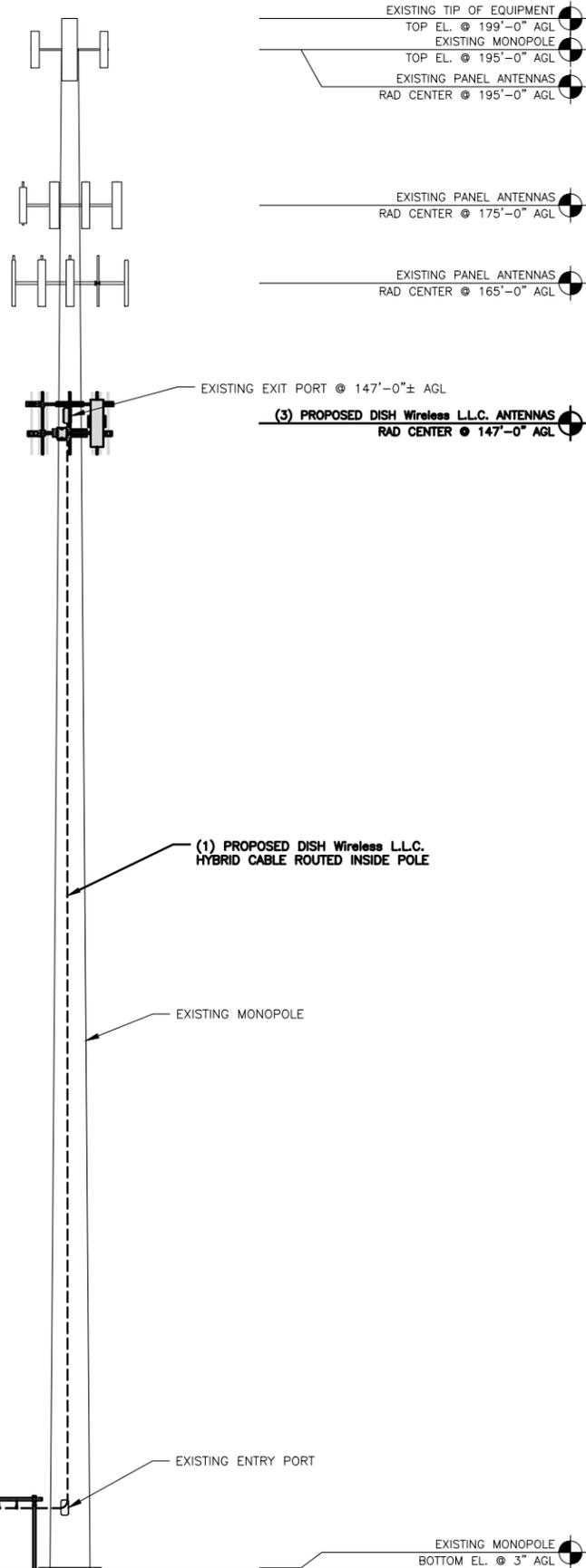
**OVERALL SITE PLAN**



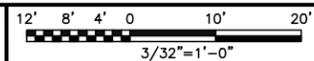
1

**NOTES**

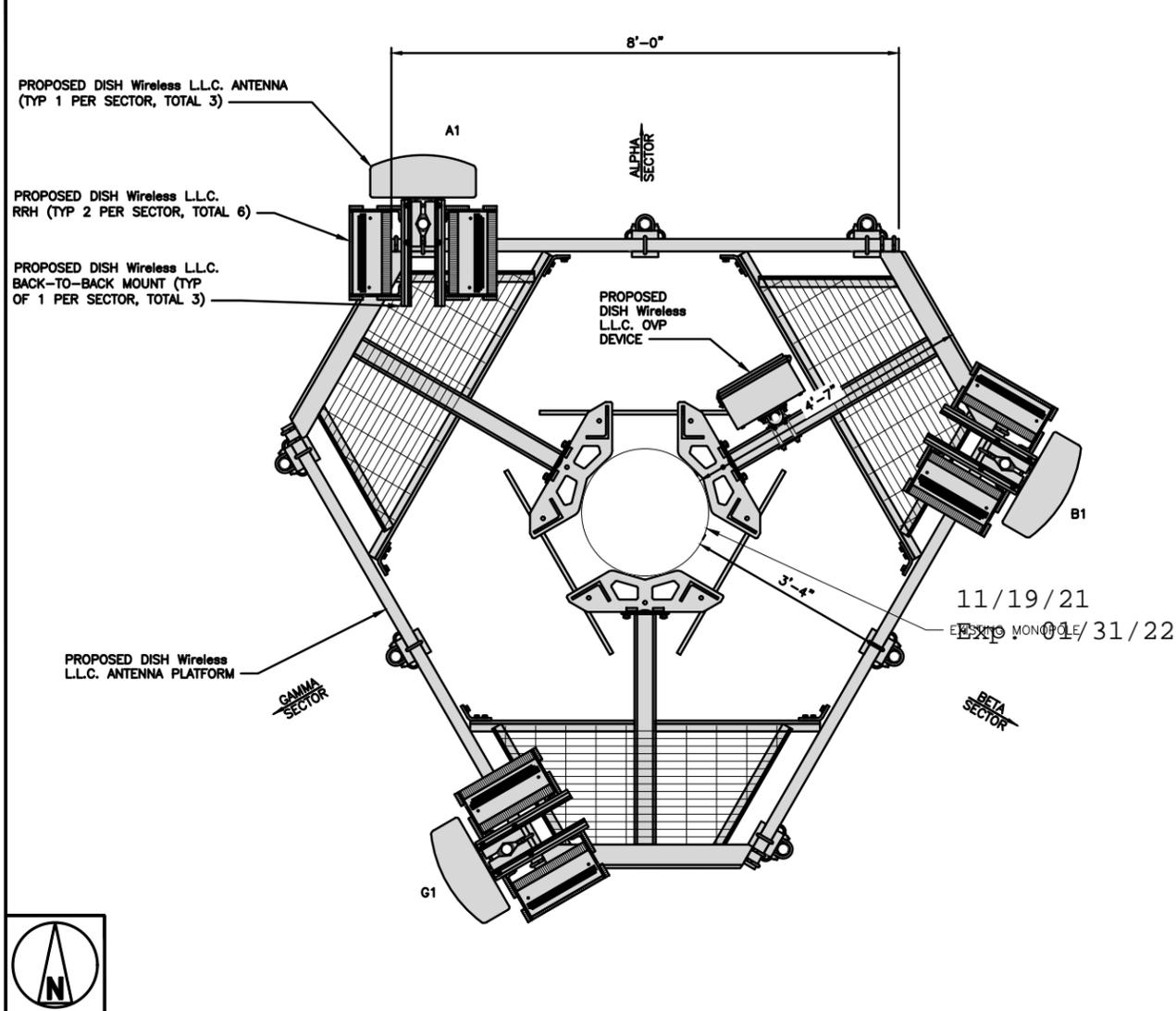
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNA AND MW DISH SPECIFICATIONS REFER TO ANTENNA SCHEDULE AND TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS
3. EXISTING EQUIPMENT AND FENCE OMITTED FOR CLARITY.



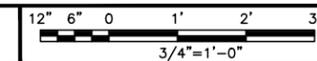
**PROPOSED SOUTH ELEVATION**



1



**ANTENNA LAYOUT**



2

SECTOR	POSITION	ANTENNA					TRANSMISSION CABLE	
		EXISTING OR PROPOSED	MANUFACTURER - MODEL NUMBER	TECHNOLOGY	SIZE (HxW)	AZIMUTH	RAD CENTER	FEED LINE TYPE AND LENGTH
ALPHA	A1	PROPOSED	JMA - MX08FRO665-21	5G	72.0" x 20.0"	0°	147'-0"	(1) HIGH-CAPACITY HYBRID CABLE (190'-0" LONG)
BETA	B1	PROPOSED	JMA - MX08FRO665-21	5G	72.0" x 20.0"	120°	147'-0"	
GAMMA	G1	PROPOSED	JMA - MX08FRO665-21	5G	72.0" x 20.0"	240°	147'-0"	

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	G1	FUJITSU - TA08025-B604	5G	
	G1	FUJITSU - TA08025-B605	5G	

**ANTENNA SCHEDULE**

NO SCALE

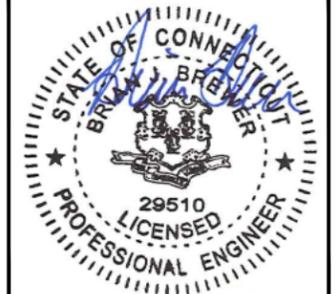
3



5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



COA #: PEC.0000738  
421 FAYETTEVILLE ST, SUITE 600  
RALEIGH, NC 27601



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:

SEW MCK ---

RFDS REV #: ---

**CONSTRUCTION DOCUMENTS**

SUBMITTALS		
REV	DATE	DESCRIPTION
A	09/28/2021	ISSUED FOR REVIEW
0	11/18/2021	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER  
KHCLC-16283

DISH Wireless L.L.C.  
PROJECT INFORMATION

NJER01091A  
88 MAIN STREET  
MONROE, CT 06468

SHEET TITLE  
ELEVATION, ANTENNA  
LAYOUT AND SCHEDULE

SHEET NUMBER

**A-2**



5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



COA #: PEC.0000738  
421 FAYETTEVILLE ST, SUITE 600  
RALEIGH, NC 27601



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: SEW CHECKED BY: MCK APPROVED BY: ---

RFDS REV #: ---

**CONSTRUCTION DOCUMENTS**

SUBMITTALS		
REV	DATE	DESCRIPTION
A	09/28/2021	ISSUED FOR REVIEW
0	11/18/2021	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER  
KHCLC-16283

DISH Wireless L.L.C.  
PROJECT INFORMATION

NJER01091A  
88 MAIN STREET  
MONROE, CT 06468

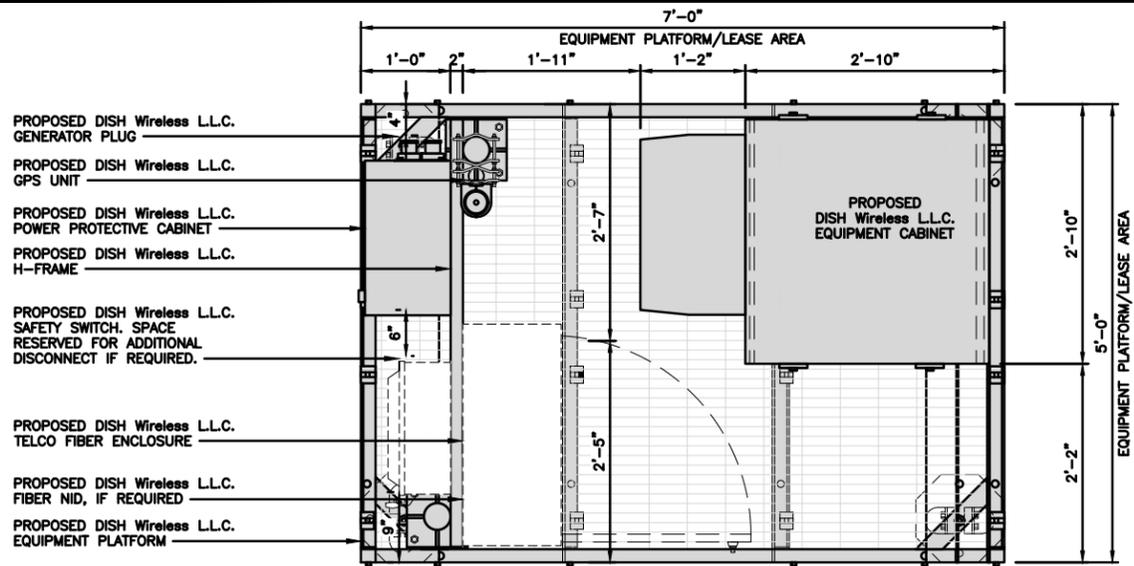
SHEET TITLE  
EQUIPMENT PLATFORM AND  
H-FRAME DETAILS

SHEET NUMBER

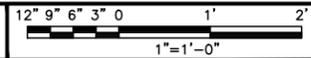
**A-3**

**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 L.L.C. 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



PLATFORM EQUIPMENT PLAN

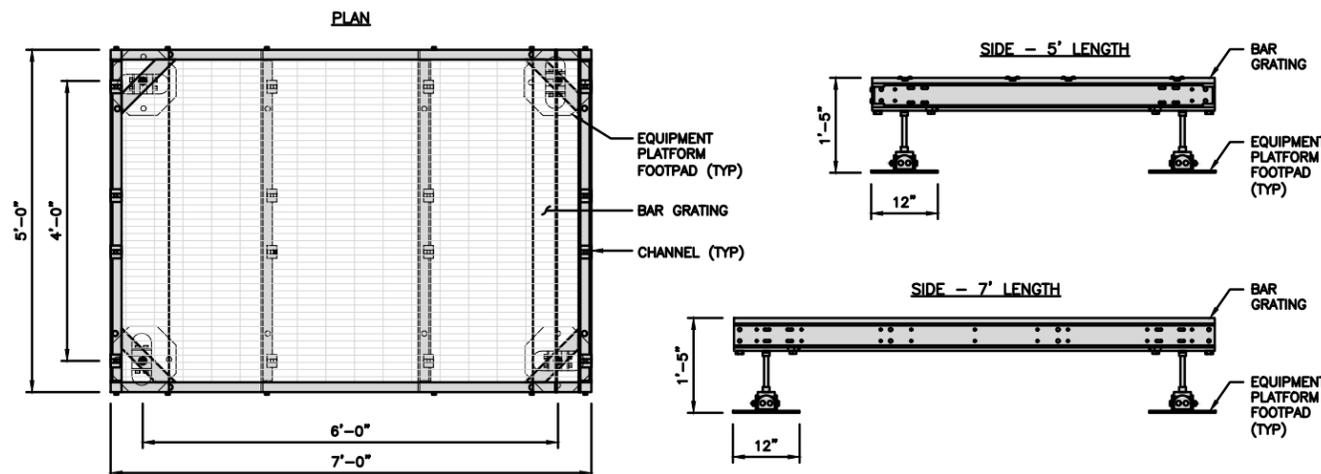


1

**COMMSCOPE MTC4045LP  
5X7 PLATFORM**

DIMENSIONS (HxWxD)	16"x84"x60"
TOTAL WEIGHT	423 LBS

- NOTE:**
1. GC TO PROVIDE EXTENDED THREAD FOR PLATFORM IF REQUIRED HEIGHT EXCEEDS 17"
  2. PLATFORM TO BE LEVEL WITHIN 1"

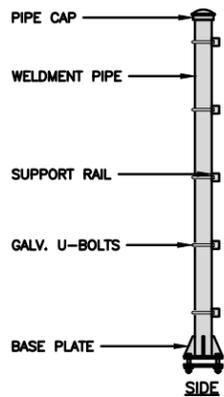


PLATFORM DETAIL

NO SCALE 2

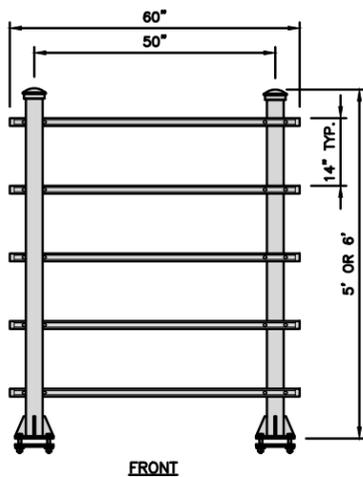
**COMMSCOPE MTC4045HFLD  
H-FRAME**

UNISTRUT/SUPPORT RAILS QTY	5
WEIGHT	59.74 lbs



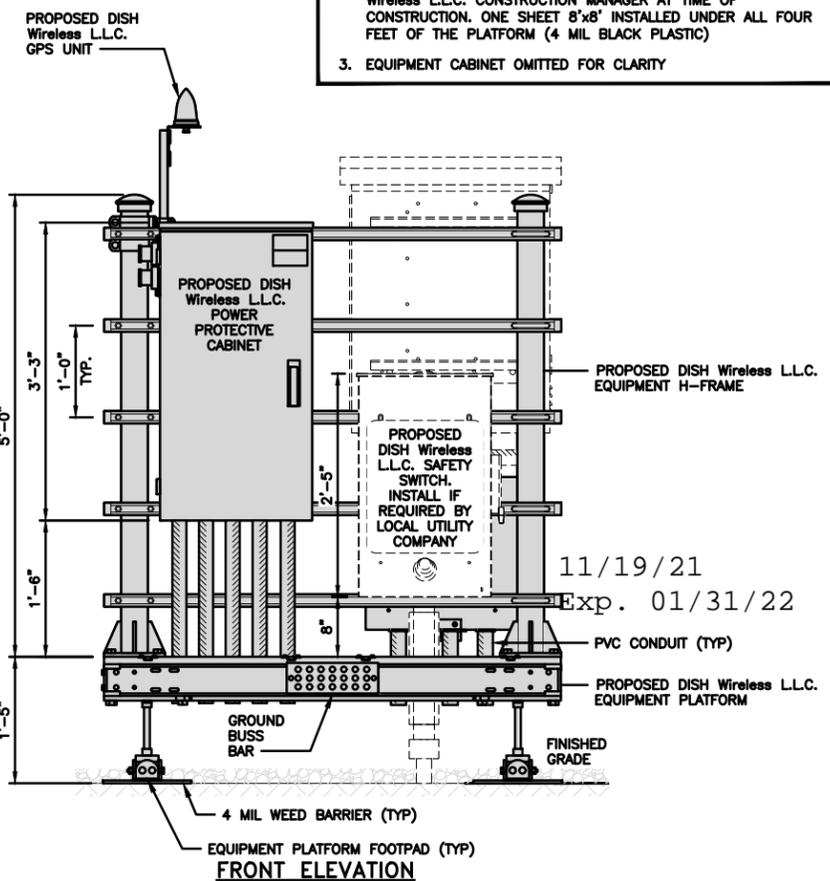
H-FRAME DETAIL

- NOTE:**  
OR DISH Wireless L.L.C.  
APPROVED EQUIVALENT

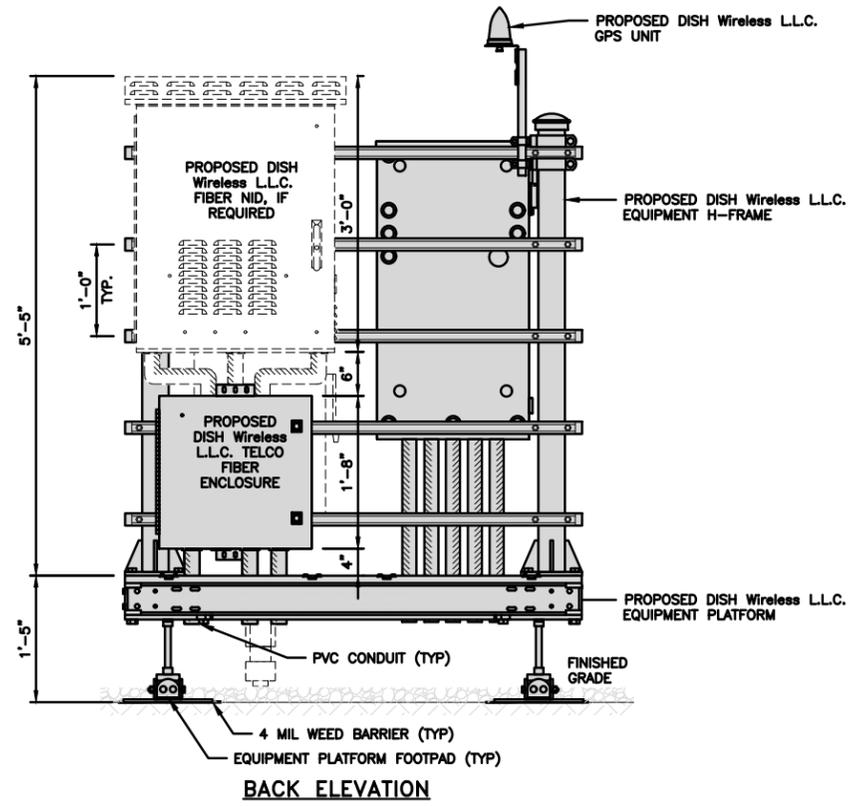


NO SCALE 3

NOT USED

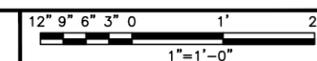


FRONT ELEVATION



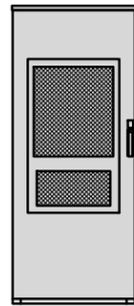
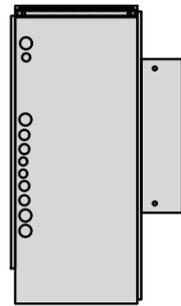
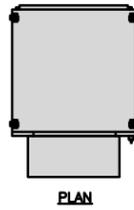
BACK ELEVATION

H-FRAME EQUIPMENT ELEVATION



5

ENERSYS HEX 2000059996	
DIMENSIONS (HxWxD)	73"x30"x32"
POWER SYSTEM	-48V ALPHA/600A
HEATER	800W
TOTAL WEIGHT (EMPTY)	376 lbs

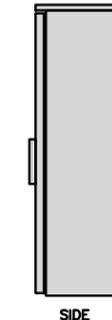
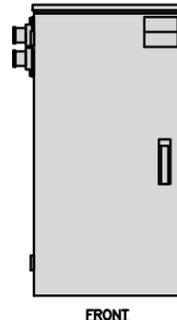
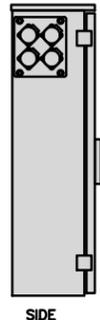
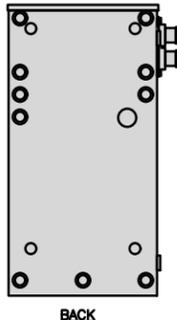
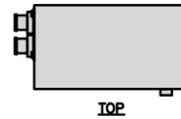


CABINET DETAIL

NO SCALE

1

RAYCAP PPC RDIAC-2465-P-240-MTS	
ENCLOSURE DIMENSIONS (HxWxD):	39"x22.855"x12.593
WEIGHT:	80 lbs
OPERATING AC VOLTAGE	240/120 1 PHASE 3W+G

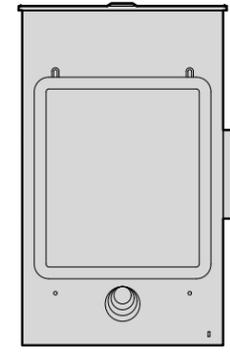
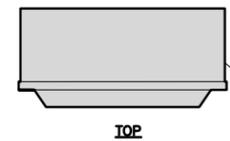


POWER PROTECTION CABINET (PPC) DETAIL

NO SCALE

2

SQUARE D SAFETY SWITCHES D224NRB	
ENCLOSURE DIM (HxWxD)	29.25"x19.00"x8.50"
ENCLOSURE TYPE	NEMA 3R RAINPROOF
UL LISTED	FILE E-2875



SAFETY SWITCH DETAIL

NO SCALE

3

NOT USED

NO SCALE

4

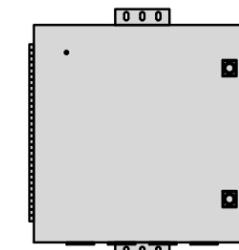
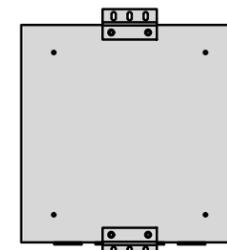
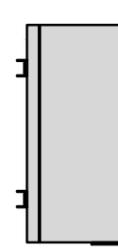
NOT USED

NO SCALE

5

CHARLES CFIT-PF2020DSH1 FIBER TELCO ENCLOSURE	
ENCLOSURE DIMS (HxWxD)	20"x20"x9"
ENCLOSURE WEIGHT	20 lbs
MOUNTING	WALL
COMPLIANCE	TYPE 4

11/19/21  
Exp. 01/31/22



SIDE

BACK

FRONT

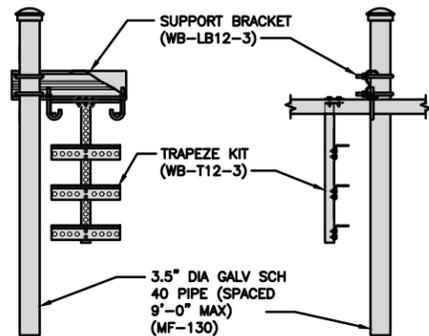
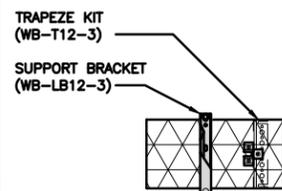
FIBER TELCO ENCLOSURE DETAIL

NO SCALE

6

COMMSCOPE WB-K110-B WAVEGUIDE BRIDGE KIT	
DIMENSIONS (HxL)	160"x10'
WEIGHT/ VOLUME	325.0 LBS
CABLE RUN (QTY)	12

INCLUDED PRODUCTS:	WB-T12-3 TRAPEZE KIT, 3 RUNGS
	WB-LB12-3 SUPPORT BRACKET
	MF-130 DIRECT BURIAL PIPE COLUMN, 13'-4"



PLAN

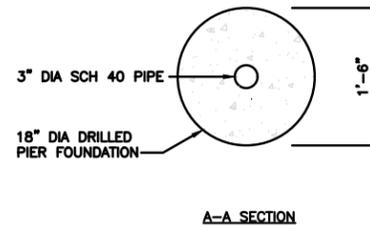
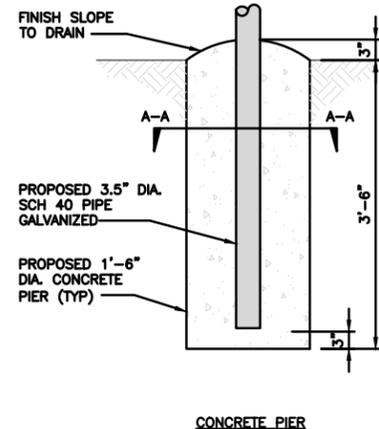
FRONT

SIDE

ICE BRIDGE DETAIL

NO SCALE

7



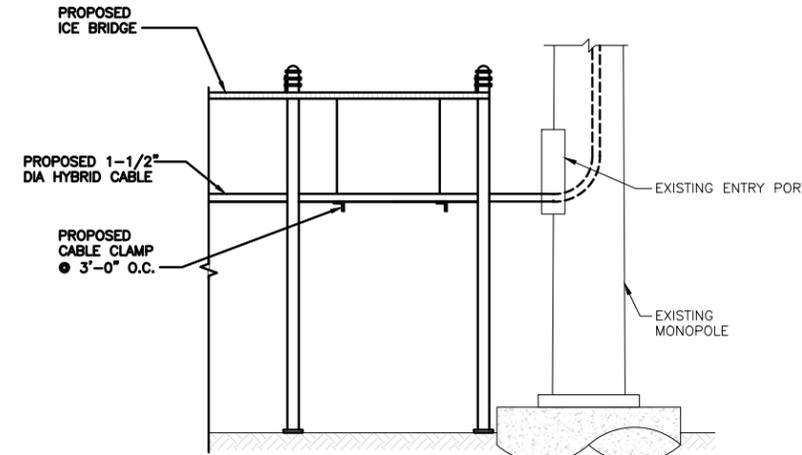
CONCRETE PIER

A-A SECTION

TYPICAL ICE BRIDGE CONCRETE PIER DETAIL

NO SCALE

8



HYBRID CABLE RUN

NO SCALE

9



5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



COA #: PEC.0000738  
421 FAYETTEVILLE ST, SUITE 600  
RALEIGH, NC 27601



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:
SEW	MCK	---

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
A	09/28/2021	ISSUED FOR REVIEW
0	11/18/2021	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER  
KHCLC-16283

DISH Wireless L.L.C.  
PROJECT INFORMATION

NJER01091A  
88 MAIN STREET  
MONROE, CT 06468

SHEET TITLE  
EQUIPMENT DETAILS

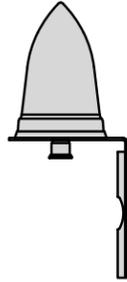
SHEET NUMBER

A-4

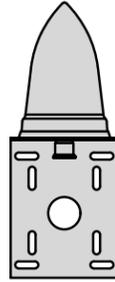
<b>PCTEL</b> <b>GPSGL-TMG-SPI-40NCB</b>	
DIMENSIONS (DIAxH) MM/INCH	81x184mm 3.2"x7.25"
WEIGHT W/ACCESSORIES	075 lbs
CONNECTOR	N-FEMALE
FREQUENCY RANGE	1590 ± 30MHz



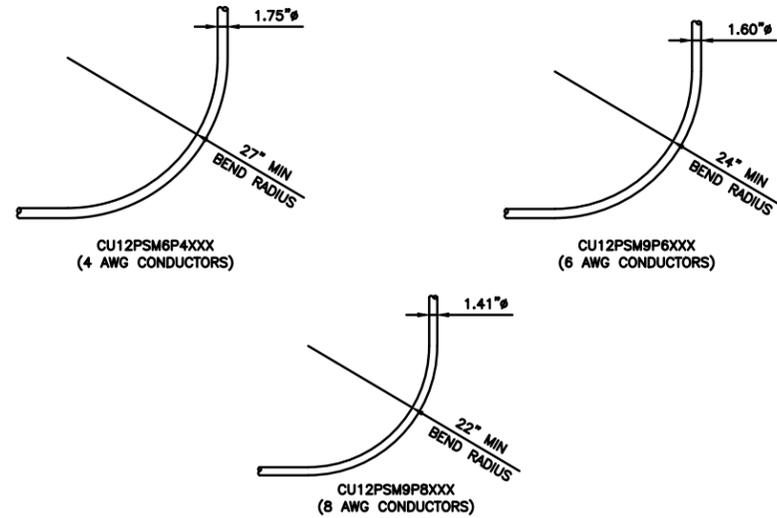
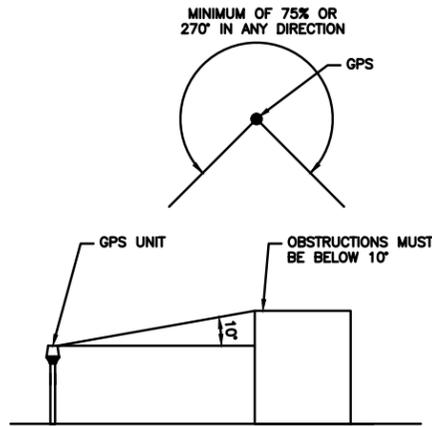
TOP



BACK



SIDE



GPS DETAIL

NO SCALE

1

GPS MINIMUM SKY VIEW REQUIREMENTS

NO SCALE

2

CABLES UNLIMITED HYBRID CABLE  
MINIMUM BEND RADIUSES

NO SCALE

3

11/19/21  
Exp. 01/31/22



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

DRAWN BY: CHECKED BY: APPROVED BY:

SEW MCK ---

RFDS REV #: ---

**CONSTRUCTION DOCUMENTS**

SUBMITTALS		
REV	DATE	DESCRIPTION
A	09/28/2021	ISSUED FOR REVIEW
0	11/18/2021	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER  
KHCLC-16283

DISH Wireless L.L.C.  
PROJECT INFORMATION

NJJER01091A  
88 MAIN STREET  
MONROE, CT 06468

SHEET TITLE  
EQUIPMENT DETAILS

SHEET NUMBER

**A-5**

NOT USED

NO SCALE

4

NOT USED

NO SCALE

5

NOT USED

NO SCALE

6

NOT USED

NO SCALE

7

NOT USED

NO SCALE

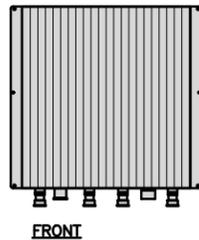
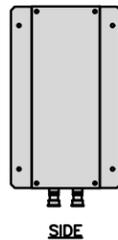
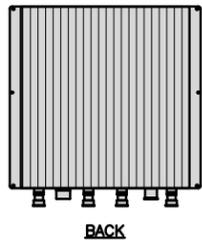
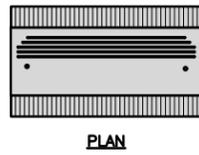
8

NOT USED

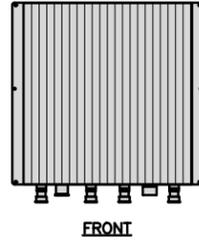
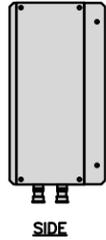
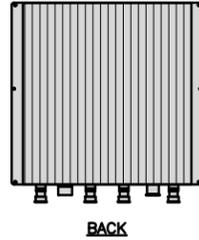
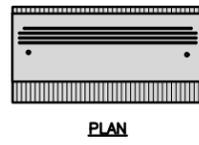
NO SCALE

9

FUJITSU TRIPLE BAND TA08025-B605	
DIMENSIONS (HxWxD)	14.9"x15.7"x9"
WEIGHT	74.95 lbs
CONNECTOR TYPE	4.3-10 RF CONNECTOR
POWER SUPPLY	DC -58~-36V

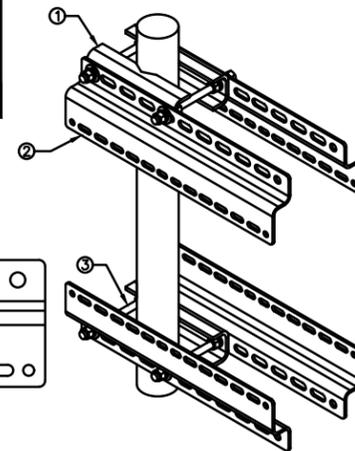
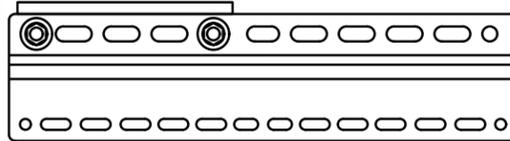


FUJITSU DUAL BAND TA08025-B604	
DIMENSIONS (HxWxD)	14.9"x15.7"x7.8"
WEIGHT	63.9 lbs
CONNECTOR TYPE	4.3-10 RF CONNECTOR
POWER SUPPLY	DC -58~-36V



SABRE DOUBLE Z-BRACKET C10123155	
DIMENSIONS (HxWxD) (1 BRACKET)	5"x20"x1-13/16"
WEIGHT (FULL ASSEMBLY)	35.79 lbs
PACKAGE QUANTITY	4

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



NOTE:  
OR DISH Wireless L.L.C.  
APPROVED EQUIVALENT

RRH DETAIL

NO SCALE

1

RRH DETAIL

NO SCALE

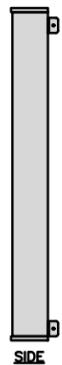
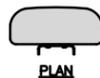
2

RRH MOUNT DETAIL

NO SCALE

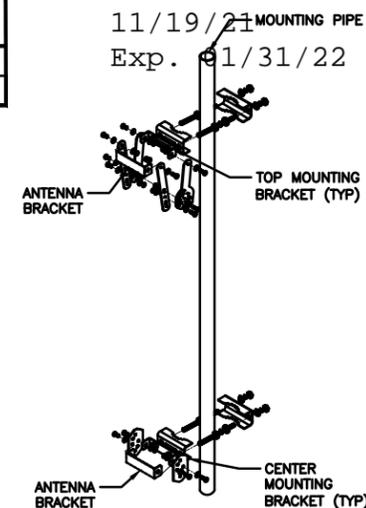
3

JMA WIRELESS MX08FRO665-21 ANTENNA	
DIMENSIONS (HxWxD)	72.0"x20.0"x8.0"
TOTAL WEIGHT	82.5 LB
RF PORTS, CONNECTOR TYPE	8 x 4.3-10 FEMALE



JMA ANTENNA MOUNTING BRACKET #91900318	
TOTAL WEIGHT (WITH BRACKETS)	18 lbs (8.18 Kg)
POLE DIAMETER RANGE	2.5 TO 4.5 INCHES

NOTE:  
KIT #91900318: TOP AND BOTTOM BRACKETS  
FOR 4-, 6-, AND 8-FOOT ANTENNAS  
ANTENNA BRACKET NOT PART OF KIT



11/19/21 MOUNTING PIPE  
Exp. 01/31/22

ANTENNA DETAIL

NO SCALE

4

NOT USED

NO SCALE

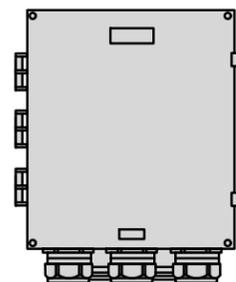
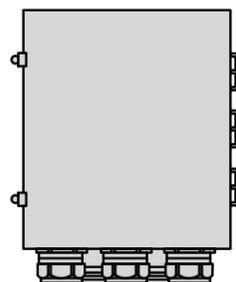
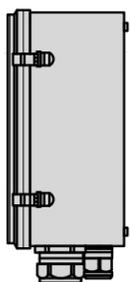
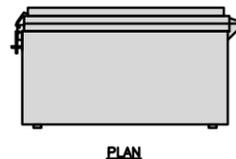
5

ANTENNA BRACKET DETAIL

NO SCALE

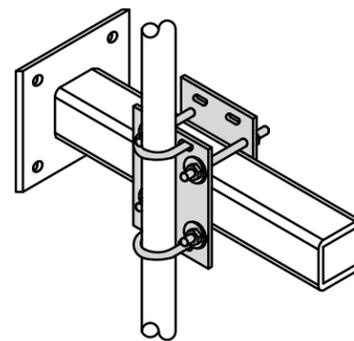
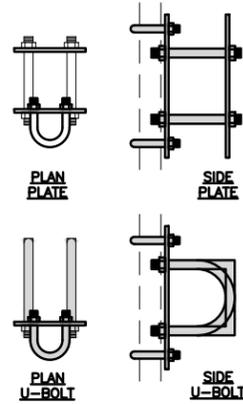
6

RAYCAP RDIC-9181-PF-48 DC SURGE PROTECTION (OVP)	
DIMENSIONS (HxWxD)	18.98"x14.39"x8.15"
WEIGHT	21.82 LBS



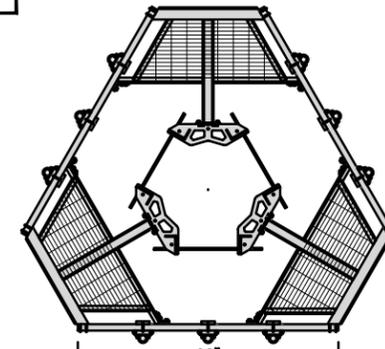
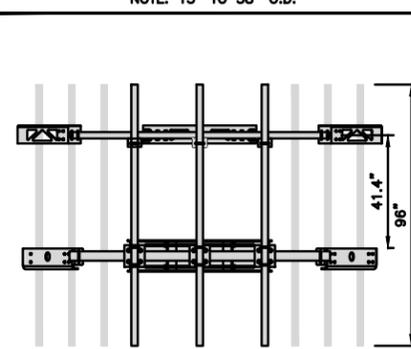
COMMSCOPE XP-2040 CROSSOVER PLATE	
DIMENSIONS (HxW)	10"x12"
WEIGHT	11 lbs

NOTE:  
OR DISH Wireless L.L.C.  
APPROVED EQUIVALENT



COMMSCOPE MC-PK8-DSH	
FACE WIDTH	96"
WEIGHT	1373.08 lbs
NOTE: 15" TO 38" O.D.	

NOTE:  
OR DISH Wireless L.L.C.  
APPROVED EQUIVALENT



SURGE SUPPRESSION DETAIL (OVP)

NO SCALE

7

RRH/OVP MOUNT DETAIL

NO SCALE

8

ANTENNA PLATFORM DETAIL

NO SCALE

9



5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



COA #: PEC.0000738  
421 FAYETTEVILLE ST, SUITE 600  
RALEIGH, NC 27601



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:

SEW MCK ---

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
A	09/28/2021	ISSUED FOR REVIEW
0	11/18/2021	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER  
KHCLC-16283

DISH Wireless L.L.C.  
PROJECT INFORMATION

NJER01091A  
88 MAIN STREET  
MONROE, CT 06468

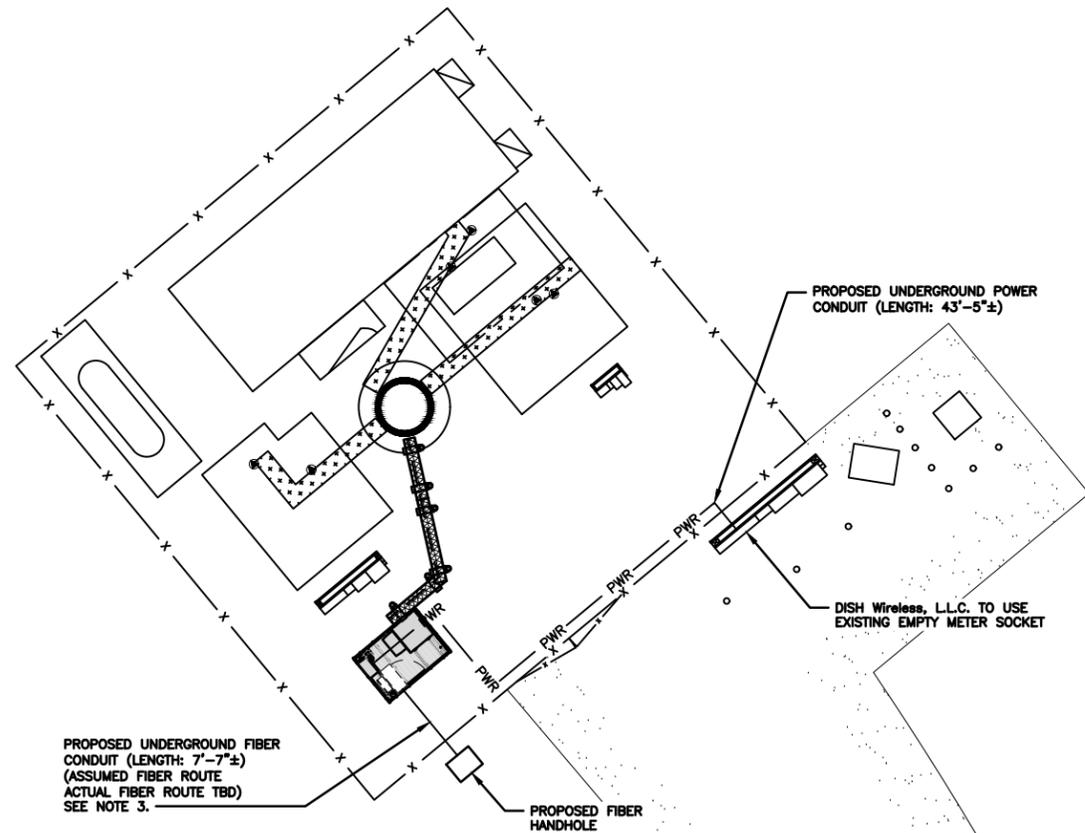
SHEET TITLE  
EQUIPMENT DETAILS

SHEET NUMBER

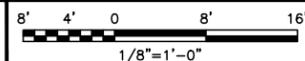
A-6

**NOTES**

1. CONTRACTOR SHALL FIELD VERIFY ALL PROPOSED UNDERGROUND UTILITY CONDUIT ROUTE.
2. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.
3. DUE TO UTILITY EASEMENT RIGHTS SPECIFIED IN THE GROUND LEASE, CUSTOMER MAY INSTALL EQUIPMENT WITHIN SPECIFIED UTILITY EASEMENT AREA. "PWR" AND "FBR" PATH DEPICTED ON A-1 AND E-1 REPRESENT PLANNED ROUTING BASED ON BEST AVAILABLE INFORMATION INCLUDING BUT NOT LIMITED TO A SURVEY, EXHIBITS, METES AND BOUNDS OF THE UTILITY EASEMENT, FIELD VERIFICATION, PRIOR PROJECT DOCUMENTATION AND OTHER REAL PROPERTY RIGHTS DOCUMENTS. WHEN INSTALLING THE UTILITIES PLEASE LOCATE AND FOLLOW EXISTING PATH. IF EXISTING PATH IS MATERIALLY INCONSISTENT WITH "PWR" AND "FBR" PATH DEPICTED ON A-1 AND E-1 AND SAID VARIANCE IS NOT NOTED ON CDs, PLEASE NOTIFY TOWER OWNER AS FURTHER COORDINATION MAY BE NEEDED.



**UTILITY ROUTE PLAN**



DC POWER WIRING SHALL BE COLOR CODED AT EACH END FOR IDENTIFYING +24V AND -48V CONDUCTORS. RED MARKINGS SHALL IDENTIFY +24V AND BLUE MARKINGS SHALL IDENTIFY -48V.

1. CONTRACTOR SHALL INSPECT THE EXISTING CONDITIONS PRIOR TO SUBMITTING A BID. ANY QUESTIONS ARISING DURING THE BID PERIOD IN REGARDS TO THE CONTRACTOR'S FUNCTIONS, THE SCOPE OF WORK, OR ANY OTHER ISSUE RELATED TO THIS PROJECT SHALL BE BROUGHT UP DURING THE BID PERIOD WITH THE PROJECT MANAGER FOR CLARIFICATION, NOT AFTER THE CONTRACT HAS BEEN AWARDED.
2. ALL ELECTRICAL WORK SHALL BE DONE IN ACCORDANCE WITH CURRENT NATIONAL ELECTRICAL CODES AND ALL STATE AND LOCAL CODES, LAWS, AND ORDINANCES. PROVIDE ALL COMPONENTS AND WIRING SIZES AS REQUIRED TO MEET NEC STANDARDS.
3. LOCATION OF EQUIPMENT, CONDUIT AND DEVICES SHOWN ON THE DRAWINGS ARE APPROXIMATE AND SHALL BE COORDINATED WITH FIELD CONDITIONS PRIOR TO CONSTRUCTION.
4. CONDUIT ROUGH-IN SHALL BE COORDINATED WITH THE MECHANICAL EQUIPMENT TO AVOID LOCATION CONFLICTS. VERIFY WITH THE MECHANICAL EQUIPMENT CONTRACTOR AND COMPLY AS REQUIRED.
5. CONTRACTOR SHALL PROVIDE ALL BREAKERS, CONDUITS AND CIRCUITS AS REQUIRED FOR A COMPLETE SYSTEM.
6. CONTRACTOR SHALL PROVIDE PULL BOXES AND JUNCTION BOXES AS REQUIRED BY THE NEC ARTICLE 314.
7. CONTRACTOR SHALL PROVIDE ALL STRAIN RELIEF AND CABLE SUPPORTS FOR ALL CABLE ASSEMBLIES. INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS.
8. ALL DISCONNECTS AND CONTROLLING DEVICES SHALL BE PROVIDED WITH ENGRAVED PHENOLIC NAMEPLATES INDICATING EQUIPMENT CONTROLLED, BRANCH CIRCUITS INSTALLED ON, AND PANEL FIELD LOCATIONS FED FROM.
9. INSTALL AN EQUIPMENT GROUNDING CONDUCTOR IN ALL CONDUITS PER THE SPECIFICATIONS AND NEC 250. THE EQUIPMENT GROUNDING CONDUCTORS SHALL BE BONDED AT ALL JUNCTION BOXES, PULL BOXES, AND ALL DISCONNECT SWITCHES, AND EQUIPMENT CABINETS.
10. ALL NEW MATERIAL SHALL HAVE A U.L. LABEL.
11. PANEL SCHEDULE LOADING AND CIRCUIT ARRANGEMENTS REFLECT POST-CONSTRUCTION EQUIPMENT / 21
12. CONTRACTOR SHALL BE RESPONSIBLE FOR AS-BUILT PANEL SCHEDULE AND SITE DRAWINGS. Exp. 01/31/22
13. ALL TRENCHES IN COMPOUND TO BE HAND DUG

**ELECTRICAL NOTES**

NO SCALE

2

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:

SEW MCK ---

RFDS REV #: ---

**CONSTRUCTION DOCUMENTS**

SUBMITTALS		
REV	DATE	DESCRIPTION
A	09/28/2021	ISSUED FOR REVIEW
0	11/18/2021	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER  
KHCLC-16283

DISH Wireless L.L.C.  
PROJECT INFORMATION

NJJER01091A  
88 MAIN STREET  
MONROE, CT 06468

SHEET TITLE  
ELECTRICAL/FIBER ROUTE  
PLAN AND NOTES

SHEET NUMBER

**E-1**

**NOT USED**

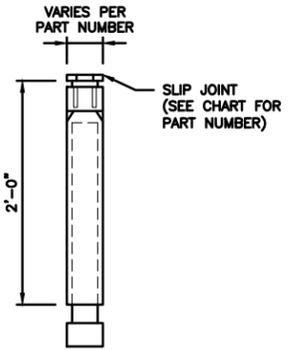
NO SCALE

3



**CARLON EXPANSION FITTINGS**

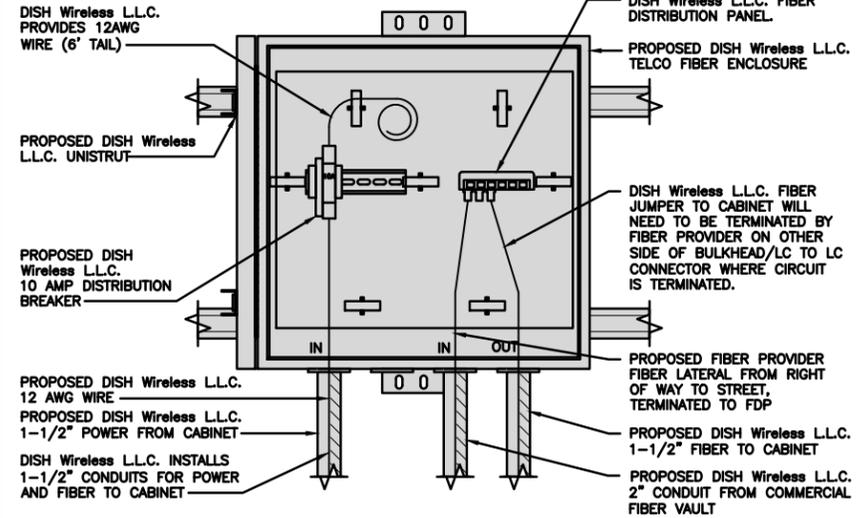
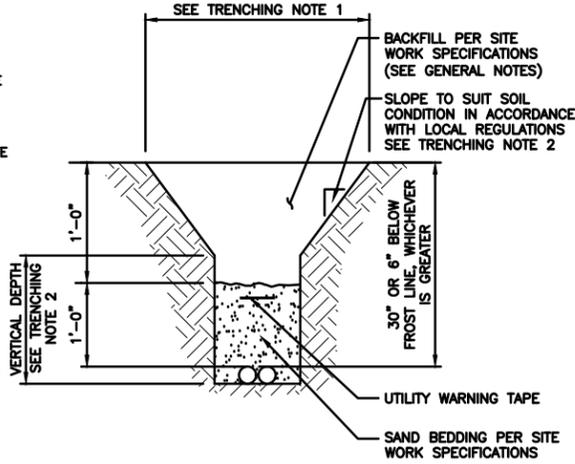
COUPLING END PART#	MALE TERMINAL ADAPTER END PART#	SIZE	STD CTN QTY.	TRAVEL LENGTH
E945D	E945DX	1/2"	20	4"
E945E	E945EX	3/4"	15	4"
E945F	E945FX	1"	10	4"
E945G	E945GX	1 1/4"	5	4"
E945H	E945HX	1 1/2"	5	4"
E945J	E945JX	2"	15	8"
E945K	E945KX	2 1/2"	10	8"
E945L	E945LX	3"	10	8"
E945M	E945MX	3 1/2"	5	8"
E945N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



NOTE: CONTRACTOR TO INSTALL EXPANSION FITTING SLIP JOINT AT METER CENTER CONDUIT TERMINATION, AS PER LOCAL UTILITY POLICY, ORDINANCE AND/OR SPECIFIED REQUIREMENT.

**TRENCHING NOTES**

- 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.
- TRENCHING SAFETY; INCLUDING, BUT NOT LIMITED TO SOIL CLASSIFICATION, SLOPING, AND SHORING, SHALL BE GOVERNED BY THE CURRENT OSHA TRENCHING AND EXCAVATION SAFETY STANDARDS.
- 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

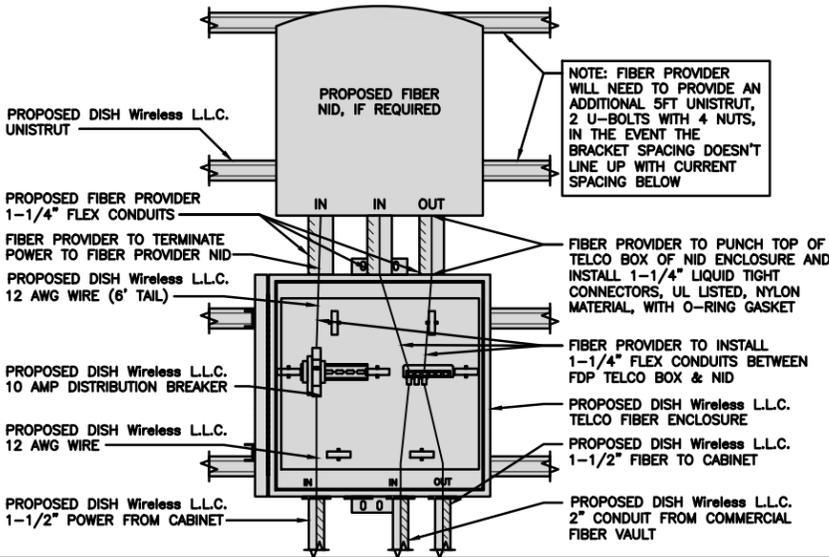
NO SCALE 1

TYPICAL UNDERGROUND TRENCH DETAIL

NO SCALE 2

DARK TELCO BOX – INTERIOR WIRING LAYOUT

NO SCALE 3



LIT TELCO BOX – INTERIOR WIRING LAYOUT (OPTIONAL)

NO SCALE 4

NOT USED

NO SCALE 5

NOT USED

NO SCALE 6

NOT USED

NO SCALE 8

NOT USED

NO SCALE 9

11/19/21  
Exp. 01/31/22



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

DRAWN BY:	CHECKED BY:	APPROVED BY:
SEW	MCK	---
RFDS REV #:	---	

**CONSTRUCTION DOCUMENTS**

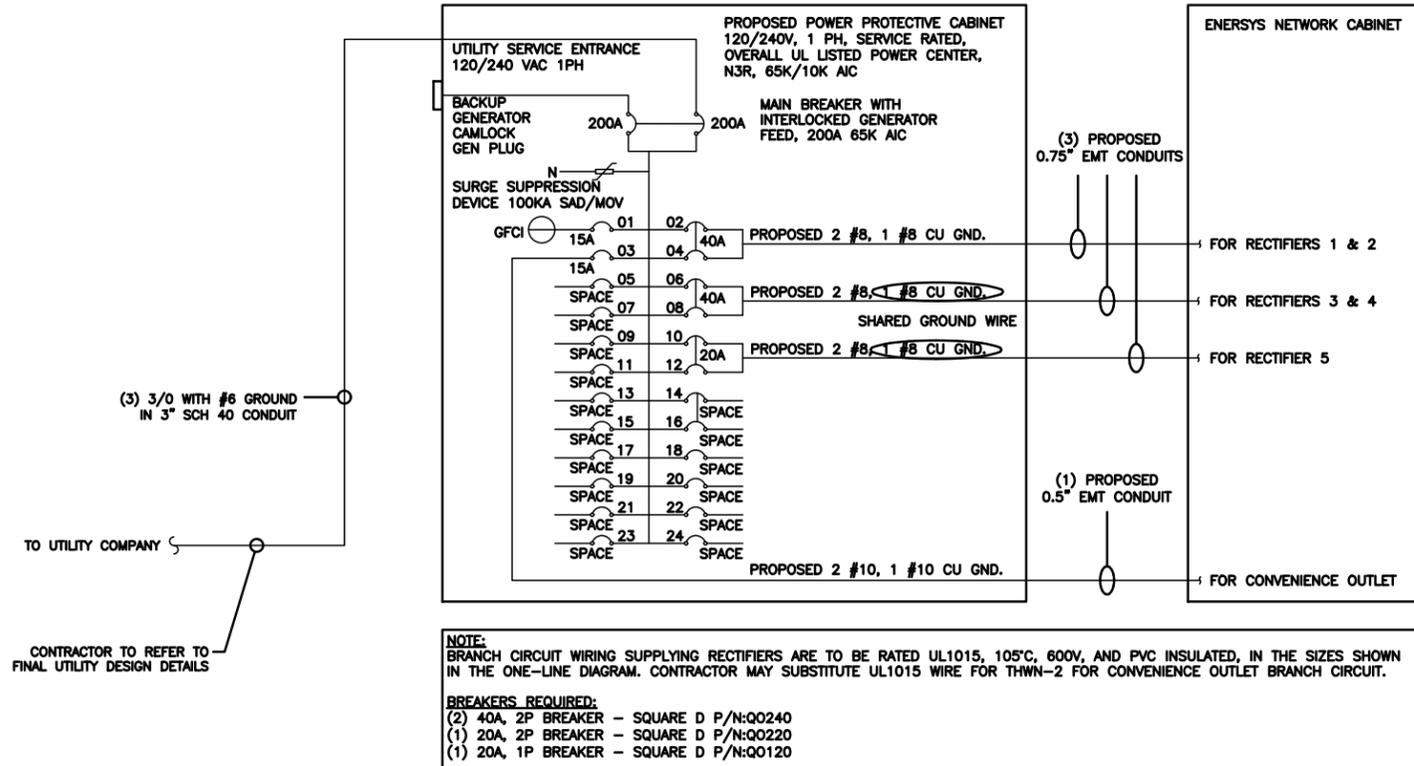
SUBMITTALS		
REV	DATE	DESCRIPTION
A	09/28/2021	ISSUED FOR REVIEW
0	11/18/2021	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER  
KHCLC-16283

DISH Wireless L.L.C.  
PROJECT INFORMATION  
NJJER01091A  
88 MAIN STREET  
MONROE, CT 06468

SHEET TITLE  
ELECTRICAL  
DETAILS

SHEET NUMBER  
**E-2**



**NOTES**

THE ENGINEER OF RECORD HAS PERFORMED ALL REQUIRED SHORT CIRCUIT CALCULATIONS AND THE AIC RATINGS FOR EACH DEVICE IS ADEQUATE TO PROTECT THE EQUIPMENT AND THE ELECTRICAL SYSTEM.

THE ENGINEER OF RECORD HAS PERFORMED ALL REQUIRED VOLTAGE DROP CALCULATIONS AND ALL BRANCH CIRCUIT AND FEEDERS COMPLY WITH THE NEC (LISTED ON T-1) ARTICLE 210.19(A)(1) FPN NO. 4.

CONDUIT SIZING: AT 40% FILL PER NEC CHAPTER 9, TABLE 4, ARTICLE 358.

0.5" CONDUIT - 0.122 SQ. IN AREA  
0.75" CONDUIT - 0.213 SQ. IN AREA  
2.0" CONDUIT - 1.316 SQ. IN AREA  
3.0" CONDUIT - 2.907 SQ. IN AREA

CABINET CONVENIENCE OUTLET CONDUCTORS (1 CONDUIT): USING THWN-2, CU.

#10 - 0.0211 SQ. IN X 2 = 0.0422 SQ. IN  
#10 - 0.0211 SQ. IN X 1 = 0.0211 SQ. IN <GROUND  
TOTAL = 0.0633 SQ. IN

0.5" EMT CONDUIT IS ADEQUATE TO HANDLE THE TOTAL OF (3) WIRES, INCLUDING GROUND WIRE, AS INDICATED ABOVE.

RECTIFIER CONDUCTORS (3 CONDUITS): USING UL1015, CU.

#8 - 0.0552 SQ. IN X 2 = 0.1103 SQ. IN  
#8 - 0.0131 SQ. IN X 1 = 0.0131 SQ. IN <BARE GROUND  
TOTAL = 0.1234 SQ. IN

0.75" EMT CONDUIT IS ADEQUATE TO HANDLE THE TOTAL OF (3) WIRES, INCLUDING GROUND WIRE, AS INDICATED ABOVE.

PPC FEED CONDUCTORS (1 CONDUIT): USING THWN, CU.

3/0 - 0.2679 SQ. IN X 3 = 0.8037 SQ. IN  
#6 - 0.0507 SQ. IN X 1 = 0.0507 SQ. IN <GROUND  
TOTAL = 0.8544 SQ. IN

3.0" SCH 40 PVC CONDUIT IS ADEQUATE TO HANDLE THE TOTAL OF (4) WIRES, INCLUDING GROUND WIRE, AS INDICATED ABOVE. EXP. 01/31/22

**dish wireless.**

5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120

**Kimley Horn**

COA #: PEC.0000738  
421 FAYETTEVILLE ST, SUITE 600  
RALEIGH, NC 27601

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: SEW    CHECKED BY: MCK    APPROVED BY: ---

RFDS REV #: ---

**CONSTRUCTION DOCUMENTS**

SUBMITTALS

REV	DATE	DESCRIPTION
A	09/28/2021	ISSUED FOR REVIEW
0	11/18/2021	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER  
KHCLC-16283

DISH Wireless L.L.C.  
PROJECT INFORMATION

NJER01091A  
88 MAIN STREET  
MONROE, CT 06468

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

SHEET NUMBER  
**E-3**

**PPC ONE-LINE DIAGRAM**

NO SCALE 1

**PROPOSED ENERSYS PANEL SCHEDULE**

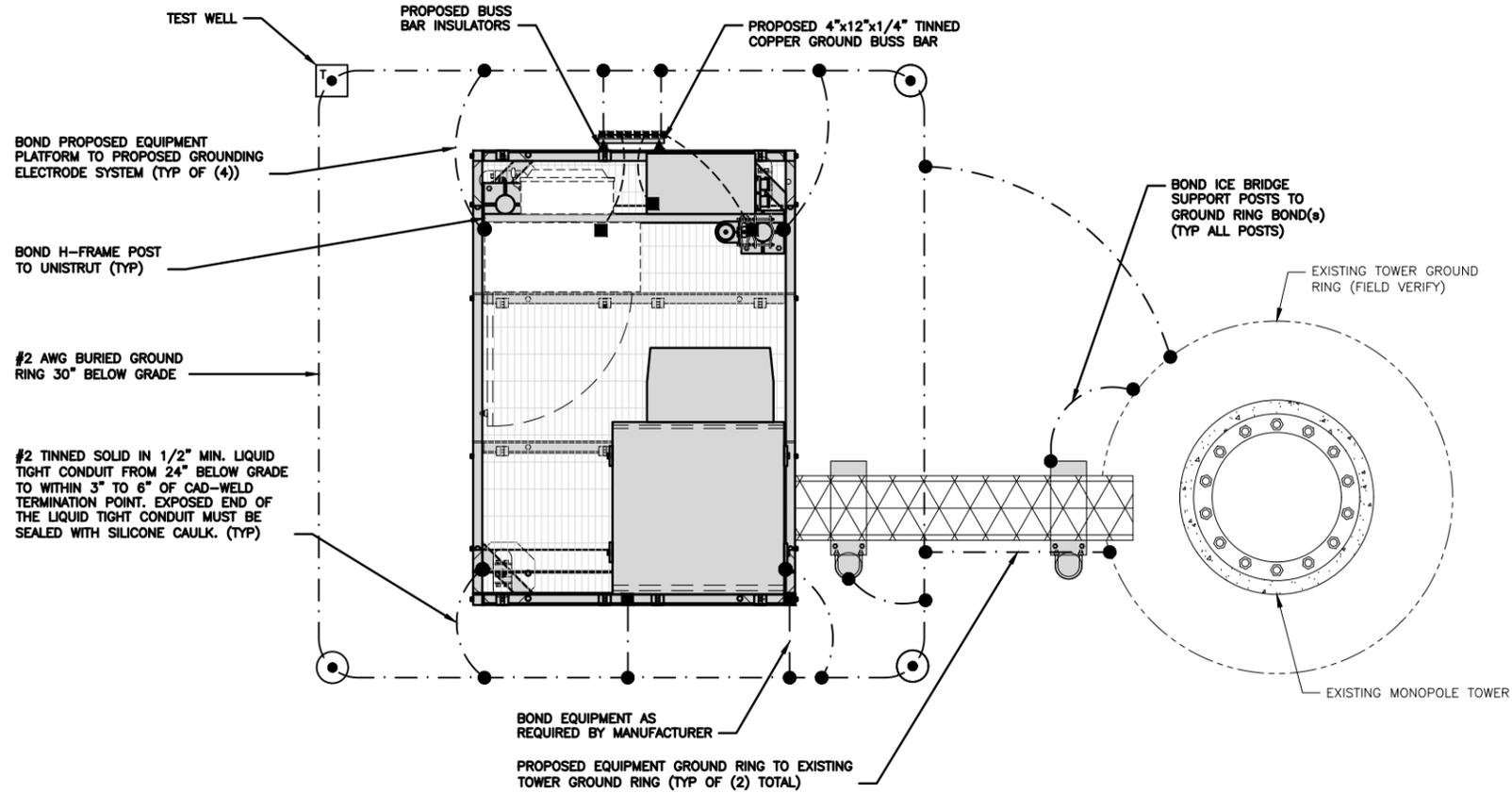
LOAD SERVED	VOLT AMPS (WATTS)		TRIP	CKT #	PHASE	CKT #	TRIP	VOLT AMPS (WATTS)		LOAD SERVED
	L1	L2						L1	L2	
PPC GFCI OUTLET	180	180	15A	1	A	2	40A	3840	3840	ENERSYS ALPHA CORDEX RECTIFIERS 1 & 2
ENERSYS GFCI OUTLET			15A	3	B	4	40A	3840	3840	ENERSYS ALPHA CORDEX RECTIFIER 3 & 4
-SPACE-				5	A	6	40A	3840	3840	ENERSYS ALPHA CORDEX RECTIFIER 3 & 4
-SPACE-				7	B	8	20A	1920	1920	ENERSYS ALPHA CORDEX RECTIFIER 5
-SPACE-				9	A	10				
-SPACE-				11	B	12				
-SPACE-				13	A	14				
-SPACE-				15	B	16				
-SPACE-				17	A	18				
-SPACE-				19	B	20				
-SPACE-				21	A	22				
-SPACE-				23	B	24				
VOLTAGE AMPS		180	180					9500	9500	
200A MCB, 1φ, 24 SPACE, 120/240V				L1	L2					
MB RATING: 65,000 AIC				9680	9680					
				81	81					
				81						
				102						

**PANEL SCHEDULE**

NO SCALE 2

NOT USED

NO SCALE 3

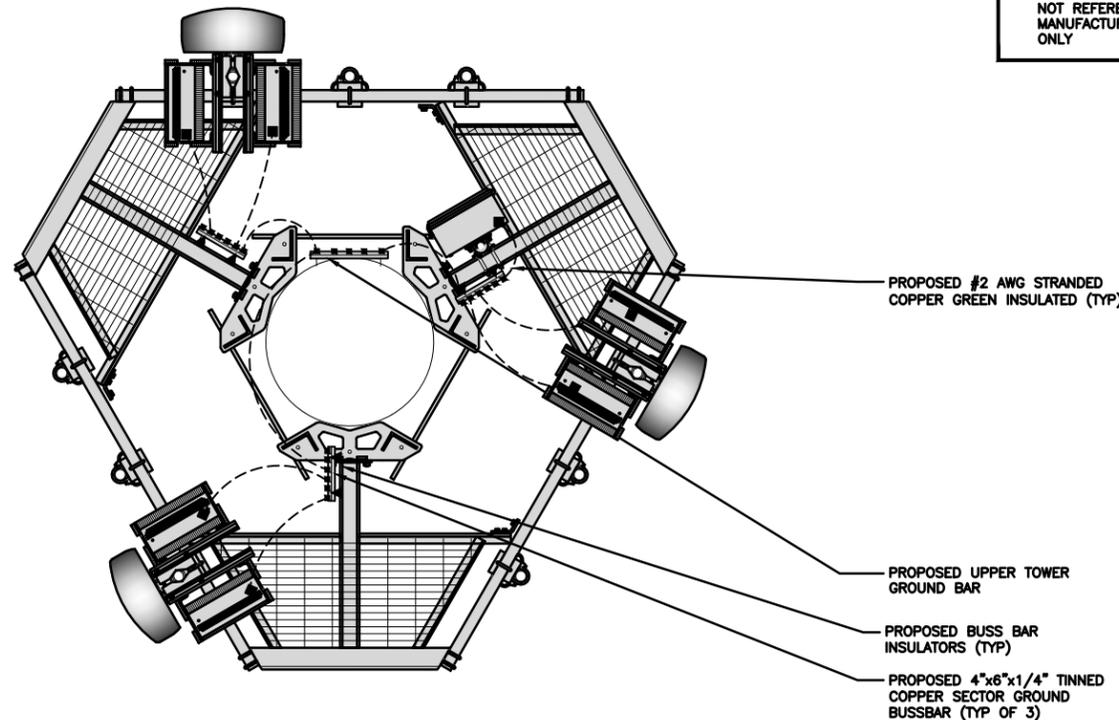


TYPICAL EQUIPMENT GROUNDING PLAN

NO SCALE 1

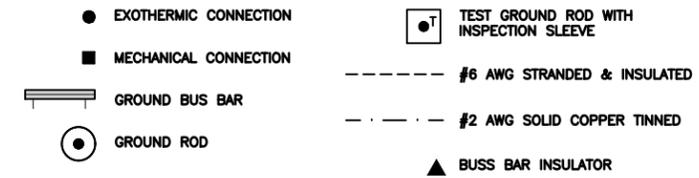
NOTES

1. ANTENNAS AND OVP SHOWN ARE GENERIC AND NOT REFERENCING TO A SPECIFIC MANUFACTURER. THIS LAYOUT IS FOR REFERENCE ONLY



TYPICAL ANTENNA GROUNDING PLAN

NO SCALE 2



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 L.L.C. 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.
- (J) FRAME BONDING: THE BONDING POINT FOR TELECOM EQUIPMENT FRAMES SHALL BE THE GROUND BUS THAT IS NOT ISOLATED FROM THE EQUIPMENTS METAL FRAMEWORK.
- (K) 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.
- (L) 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.
- (M) 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
- (N) 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.
- (O) 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
- (P) TOWER TOP COLLECTOR BUSS BAR IS TO BE MECHANICALLY BONDED TO PROPOSED ANTENNA MOUNT COLLAR. REFER TO DISH Wireless L.L.C. GROUNDING NOTES.

GROUNDING KEY NOTES

NO SCALE 3



5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



COA #: PEC.0000738  
421 FAYETTEVILLE ST, SUITE 600  
RALEIGH, NC 27601



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:
SEW	MCK	---

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
A	09/28/2021	ISSUED FOR REVIEW
0	11/18/2021	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER  
KHCLC-16283

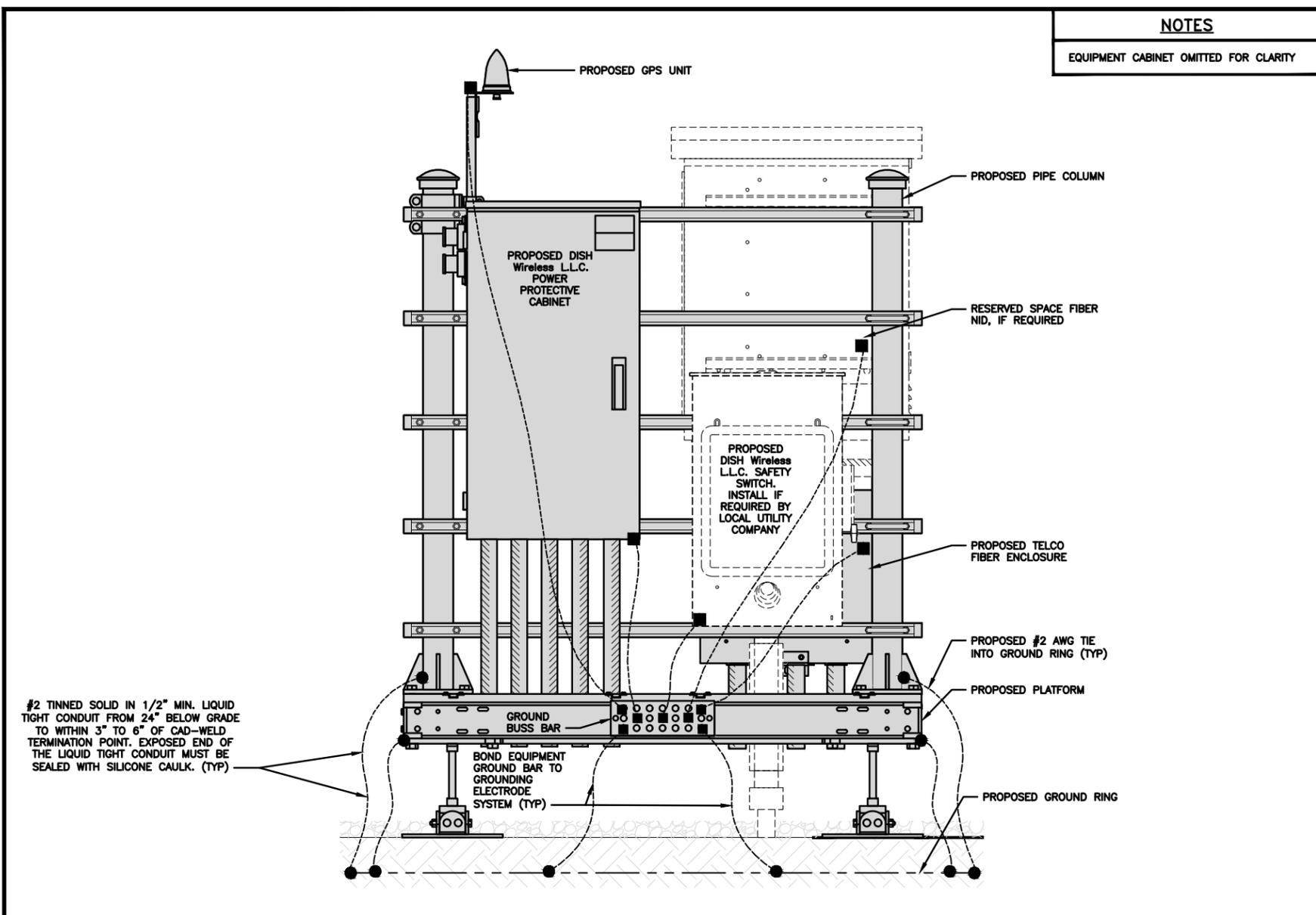
DISH Wireless L.L.C.  
PROJECT INFORMATION

NJER01091A  
88 MAIN STREET  
MONROE, CT 06468

SHEET TITLE  
GROUNDING PLANS  
AND NOTES

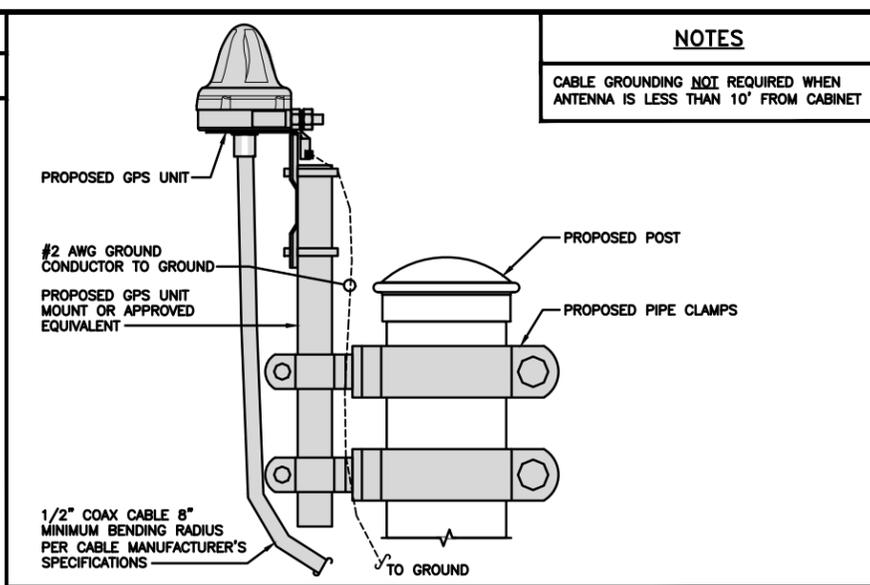
SHEET NUMBER

G-1



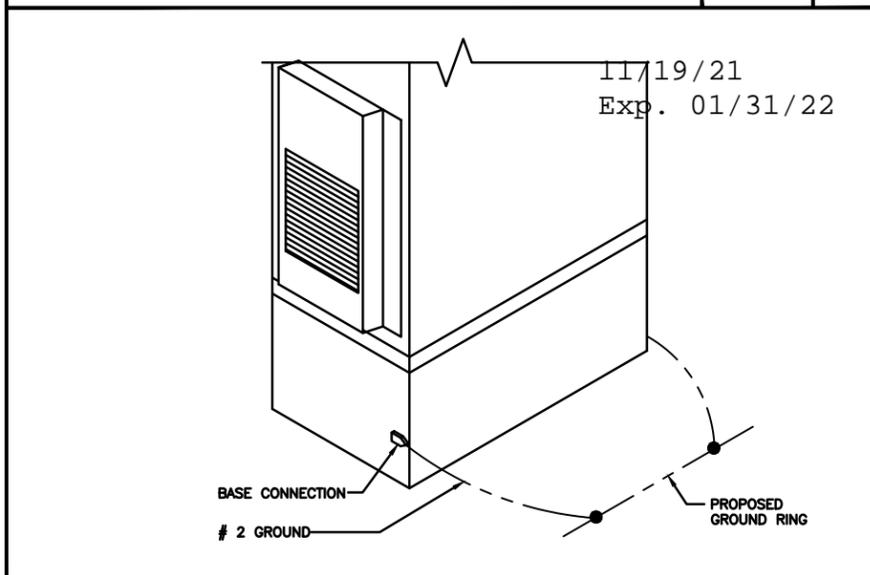
**H-FRAME GROUNDING DETAIL**

NO SCALE 1



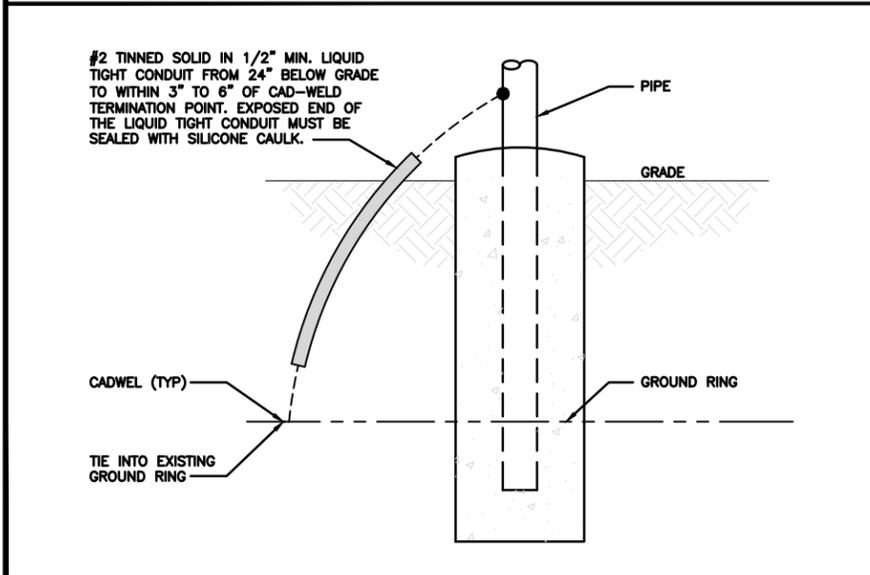
**TYPICAL GPS UNIT GROUNDING**

NO SCALE 2



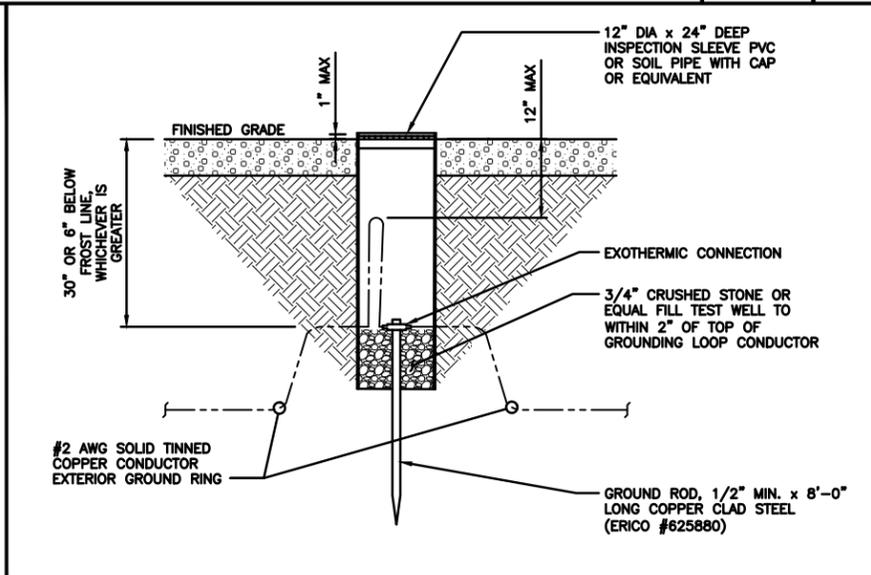
**OUTDOOR CABINET GROUNDING**

NO SCALE 3



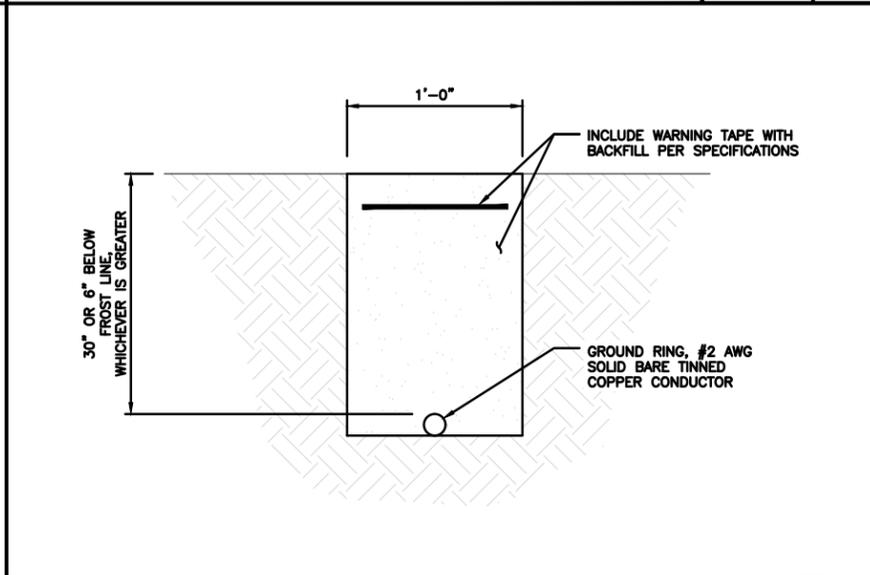
**TRANSITIONING GROUND DETAIL**

NO SCALE 4



**TYPICAL TEST GROUND ROD WITH INSPECTION SLEEVE**

NO SCALE 5



**TYPICAL GROUND RING TRENCH**

NO SCALE 6

**dish wireless.**

5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120

**Kimley Horn**

COA #: PEC.0000738  
421 FAYETTEVILLE ST, SUITE 600  
RALEIGH, NC 27601

STATE OF CONNECTICUT  
BRIAN BREWER  
29510 LICENSED PROFESSIONAL ENGINEER

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:
SEW	MCK	---
RFDS REV #:	---	

**CONSTRUCTION DOCUMENTS**

SUBMITTALS		
REV	DATE	DESCRIPTION
A	09/28/2021	ISSUED FOR REVIEW
0	11/18/2021	ISSUED FOR CONSTRUCTION

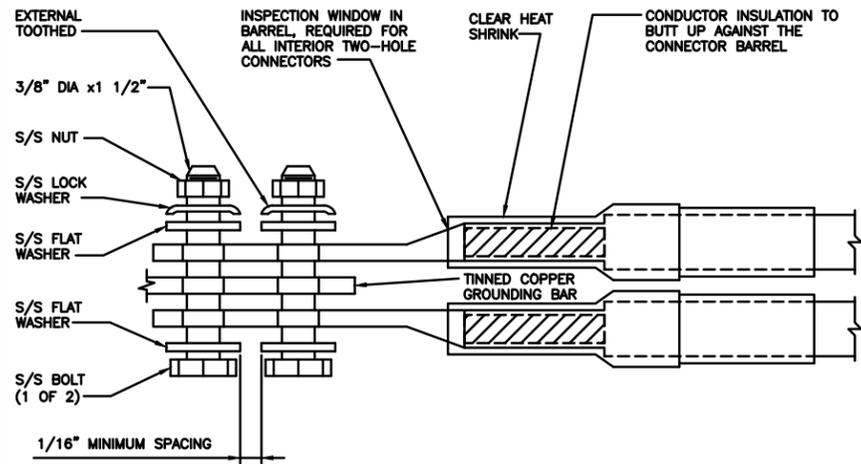
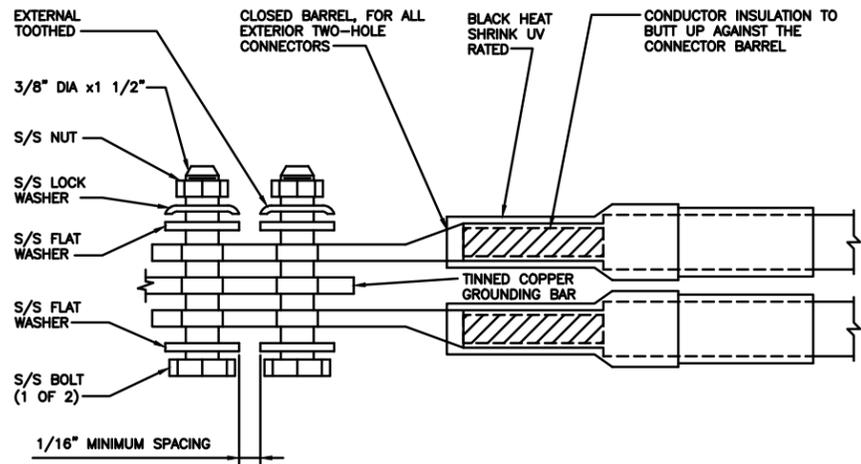
A&E PROJECT NUMBER  
KHCLC-16283

DISH Wireless L.L.C.  
PROJECT INFORMATION  
NJJER01091A  
88 MAIN STREET  
MONROE, CT 06468

SHEET TITLE  
GROUNDING DETAILS

SHEET NUMBER  
**G-2**

1. EXOTHERMIC WELD (2) TWO, #2 AWG BARE TINNED SOLID COPPER CONDUCTORS TO GROUND BAR. ROUTE CONDUCTORS TO BURIED GROUND RING AND PROVIDE PARALLEL EXOTHERMIC WELD.
2. ALL EXTERIOR GROUNDING HARDWARE SHALL BE STAINLESS STEEL 3/8" DIAMETER OR LARGER. ALL HARDWARE 18-8 STAINLESS STEEL INCLUDING LOCK WASHERS, COAT ALL SURFACES WITH AN ANTI-OXIDANT COMPOUND BEFORE MATING.
3. FOR GROUND BOND TO STEEL ONLY: COAT ALL SURFACES WITH AN ANTI-OXIDANT COMPOUND BEFORE MATING.
4. DO NOT INSTALL CABLE GROUNDING KIT AT A BEND AND ALWAYS DIRECT GROUND CONDUCTOR DOWN TO GROUNDING BUS.
5. NUT & WASHER SHALL BE PLACED ON THE FRONT SIDE OF THE GROUND BAR AND BOLTED ON THE BACK SIDE.
6. ALL GROUNDING PARTS AND EQUIPMENT TO BE SUPPLIED AND INSTALLED BY CONTRACTOR.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING ADDITIONAL GROUND BAR AS REQUIRED.
8. ENSURE THE WIRE INSULATION TERMINATION IS WITHIN 1/8" OF THE BARREL (NO SHINERS).



TYPICAL GROUNDING NOTES

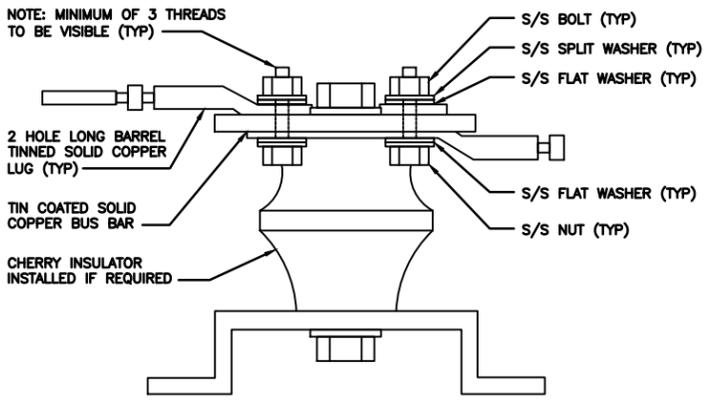
NO SCALE 1

TYPICAL EXTERIOR TWO HOLE LUG

NO SCALE 2

TYPICAL INTERIOR TWO HOLE LUG

NO SCALE 3



LUG DETAIL

NO SCALE 4

NOT USED

NO SCALE 5

NOT USED

NO SCALE 6

11/19/21  
Exp. 01/31/22



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

DRAWN BY:	CHECKED BY:	APPROVED BY:
SEW	MCK	---

RFDS REV #: ---

**CONSTRUCTION DOCUMENTS**

SUBMITTALS		
REV	DATE	DESCRIPTION
A	09/28/2021	ISSUED FOR REVIEW
0	11/18/2021	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER  
KHCLE-16283

DISH Wireless L.L.C.  
PROJECT INFORMATION  
  
NJJER01091A  
88 MAIN STREET  
MONROE, CT 06468

SHEET TITLE  
GROUNDING DETAILS

SHEET NUMBER  
**G-3**

NOT USED

NO SCALE 7

NOT USED

NO SCALE 8

NOT USED

NO SCALE 9

**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 (-) PORT	ORANGE	ORANGE		WHITE (-) PORT	ORANGE	ORANGE		WHITE (-) PORT	ORANGE	ORANGE
			WHITE (-) PORT				WHITE (-) PORT				WHITE (-) 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 (-) PORT	PURPLE	PURPLE		WHITE (-) PORT	PURPLE	PURPLE		WHITE (-) PORT	PURPLE	PURPLE
			WHITE (-) PORT				WHITE (-) PORT				WHITE (-) PORT

**HYBRID/DISCREET CABLES**

INCLUDE SECTOR BANDS BEING SUPPORTED  
ALONG 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	EXAMPLE 3
RED	RED	RED
BLUE	BLUE	
GREEN	GREEN	ORANGE
ORANGE	YELLOW	PURPLE
PURPLE		

**FIBER JUMPERS TO RRHs**

LOW-BAND RRH FIBER CABLES HAVE SECTOR  
STRIPE ONLY

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

**RET MOTORS AT ANTENNAS**

ANTENNA 1 LOW BAND/ "IN"	ANTENNA 1 HIGH BAND/ "IN"	ANTENNA 1 LOW BAND/ "IN"	ANTENNA 1 HIGH BAND/ "IN"	ANTENNA 1 LOW BAND/ "IN"	ANTENNA 1 HIGH BAND/ "IN"
RED	RED	BLUE	BLUE	GREEN	GREEN
	PURPLE		PURPLE		PURPLE

**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 CABLES WILL REQUIRE P-TOUCH  
LABELS INSIDE THE CABINET TO IDENTIFY THE  
LOCAL AND REMOTE SITE ID'S

FORWARD AZIMUTH OF 0-120 DEGREES		FORWARD AZIMUTH OF 120-240 DEGREES		FORWARD AZIMUTH OF 240-360 DEGREES	
PRIMARY	SECONDARY	PRIMARY	SECONDARY	PRIMARY	SECONDARY
WHITE	WHITE	WHITE	WHITE	WHITE	WHITE
RED	RED	BLUE	BLUE	GREEN	GREEN
WHITE	WHITE	WHITE	WHITE	WHITE	WHITE
	RED		BLUE		GREEN
	WHITE		WHITE		WHITE

**RF CABLE COLOR CODES**

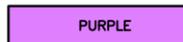
NO SCALE

1

LOW BANDS (N71+N26)  
OPTIONAL - (N29)



AWS  
(N66+N70+H-BLOCK)



CBRS TECH  
(3 GHz)



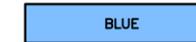
NEGATIVE SLANT PORT  
ON ANT/RRH



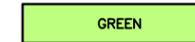
ALPHA SECTOR



BETA SECTOR



GAMMA SECTOR



COLOR IDENTIFIER

NO SCALE

2

NOT USED

NO SCALE

3

NOT USED

NO SCALE

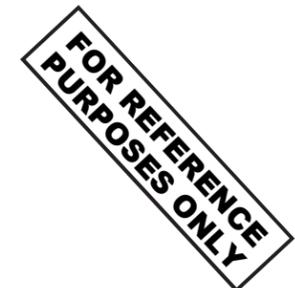
4



5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



COA #: PEC.0000738  
421 FAYETTEVILLE ST, SUITE 600  
RALEIGH, NC 27601



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:

SEW MCK ---

RFDS REV #: ---

**CONSTRUCTION DOCUMENTS**

SUBMITTALS		
REV	DATE	DESCRIPTION
A	09/28/2021	ISSUED FOR REVIEW
0	11/18/2021	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER  
KHCLC-16283

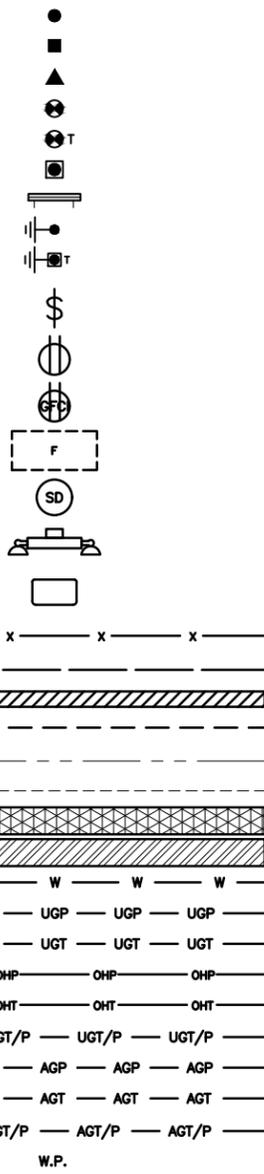
DISH Wireless L.L.C.  
PROJECT INFORMATION

NJER01091A  
88 MAIN STREET  
MONROE, CT 06468

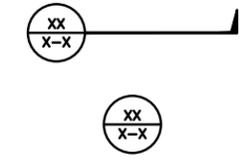
SHEET TITLE  
RF  
CABLE COLOR CODES

SHEET NUMBER  
**RF-1**

EXOTHERMIC CONNECTION  
 MECHANICAL CONNECTION  
 BUSS BAR INSULATOR  
 CHEMICAL ELECTROLYTIC GROUNDING SYSTEM  
 TEST CHEMICAL ELECTROLYTIC GROUNDING SYSTEM  
 EXOTHERMIC WITH INSPECTION SLEEVE  
 GROUNDING BAR  
 GROUND ROD  
 TEST GROUND ROD WITH INSPECTION SLEEVE  
 SINGLE POLE SWITCH  
 DUPLEX RECEPTACLE  
 DUPLEX GFCI RECEPTACLE  
 FLUORESCENT LIGHTING FIXTURE (2) TWO LAMPS 48-T8  
 SMOKE DETECTION (DC)  
 EMERGENCY LIGHTING (DC)  
 SECURITY LIGHT W/PHOTOCELL LITHONIA ALXW  
 LED-1-25A400/51K-SR4-120-PE-DOBTD  
 CHAIN LINK FENCE  
 WOOD/WROUGHT IRON FENCE  
 WALL STRUCTURE  
 LEASE AREA  
 PROPERTY LINE (PL)  
 SETBACKS  
 ICE BRIDGE  
 CABLE TRAY  
 WATER LINE  
 UNDERGROUND POWER  
 UNDERGROUND TELCO  
 OVERHEAD POWER  
 OVERHEAD TELCO  
 UNDERGROUND TELCO/POWER  
 ABOVE GROUND POWER  
 ABOVE GROUND TELCO  
 ABOVE GROUND TELCO/POWER  
 WORKPOINT



SECTION REFERENCE  
 DETAIL REFERENCE



**LEGEND**

AB	ANCHOR BOLT	IN	INCH
ABV	ABOVE	INT	INTERIOR
AC	ALTERNATING CURRENT	LB(S)	POUND(S)
ADDL	ADDITIONAL	LF	LINEAR FEET
AFF	ABOVE FINISHED FLOOR	LTE	LONG TERM EVOLUTION
AFG	ABOVE FINISHED GRADE	MAS	MASONRY
AGL	ABOVE GROUND LEVEL	MAX	MAXIMUM
AIC	AMPERAGE INTERRUPTION CAPACITY	MB	MACHINE BOLT
ALUM	ALUMINUM	MECH	MECHANICAL
ALT	ALTERNATE	MFR	MANUFACTURER
ANT	ANTENNA	MGB	MASTER GROUND BAR
APPROX	APPROXIMATE	MIN	MINIMUM
ARCH	ARCHITECTURAL	MISC	MISCELLANEOUS
ATS	AUTOMATIC TRANSFER SWITCH	MTL	METAL
AWG	AMERICAN WIRE GAUGE	MTS	MANUAL TRANSFER SWITCH
BATT	BATTERY	MW	MICROWAVE
BLDG	BUILDING	NEC	NATIONAL ELECTRIC CODE
BLK	BLOCK	NM	NEWTON METERS
BLKG	BLOCKING	NO.	NUMBER
BM	BEAM	#	NUMBER
BTC	BARE TINNED COPPER CONDUCTOR	NTS	NOT TO SCALE
BOF	BOTTOM OF FOOTING	OC	ON-CENTER
CAB	CABINET	OSHA	OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
CANT	CANTILEVERED	OPNG	OPENING
CHG	CHARGING	P/C	PRECAST CONCRETE
CLG	CEILING	PCS	PERSONAL COMMUNICATION SERVICES
CLR	CLEAR	PCU	PRIMARY CONTROL UNIT
COL	COLUMN	PRC	PRIMARY RADIO CABINET
COMM	COMMON	PP	POLARIZING PRESERVING
CONC	CONCRETE	PSF	POUNDS PER SQUARE FOOT
CONSTR	CONSTRUCTION	PSI	POUNDS PER SQUARE INCH
DBL	DOUBLE	PT	PRESSURE TREATED
DC	DIRECT CURRENT	PWR	POWER CABINET
DEPT	DEPARTMENT	QTY	QUANTITY
DF	DOUGLAS FIR	RAD	RADIUS
DIA	DIAMETER	RECT	RECTIFIER
DIAG	DIAGONAL	REF	REFERENCE
DIM	DIMENSION	REINF	REINFORCEMENT
DWG	DRAWING	REQ'D	REQUIRED
DWL	DOWEL	RET	REMOTE ELECTRIC TILT
EA	EACH	RF	RADIO FREQUENCY
EC	ELECTRICAL CONDUCTOR	RMC	RIGID METALLIC CONDUIT
EL	ELEVATION	RRH	REMOTE RADIO HEAD
ELEC	ELECTRICAL	RRU	REMOTE RADIO UNIT
EMT	ELECTRICAL METALLIC TUBING	RWY	RACEWAY
ENG	ENGINEER	SCH	SCHEDULE
EQ	EQUAL	SHT	SHEET
EXP	EXPANSION	SIAD	SMART INTEGRATED ACCESS DEVICE
EXT	EXTERIOR	SIM	SIMILAR
EW	EACH WAY	SPEC	SPECIFICATION
FAB	FABRICATION	SQ	SQUARE
FF	FINISH FLOOR	SS	STAINLESS STEEL
FG	FINISH GRADE	STD	STANDARD
FIF	FACILITY INTERFACE FRAME	STL	STEEL
FIN	FINISH(ED)	TEMP	TEMPORARY
FLR	FLOOR	THK	THICKNESS
FDN	FOUNDATION	TMA	TOWER MOUNTED AMPLIFIER
FOC	FACE OF CONCRETE	TN	TOE NAIL
FOM	FACE OF MASONRY	TOA	TOP OF ANTENNA
FOS	FACE OF STUD	TOC	TOP OF CURB
FOW	FACE OF WALL	TOF	TOP OF FOUNDATION
FS	FINISH SURFACE	TOP	TOP OF PLATE (PARAPET)
FT	FOOT	TOS	TOP OF STEEL
FTG	FOOTING	TOW	TOP OF WALL
GA	GAUGE	TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSION
GEN	GENERATOR	TYP	TYPICAL
GFCI	GROUND FAULT CIRCUIT INTERRUPTER	UG	UNDERGROUND
GLB	GLUE LAMINATED BEAM	UL	UNDERWRITERS LABORATORY
GLV	GALVANIZED	UNO	UNLESS NOTED OTHERWISE
GPS	GLOBAL POSITIONING SYSTEM	UMTS	UNIVERSAL MOBILE TELECOMMUNICATIONS SYSTEM
GND	GROUND	UPS	UNINTERRUPTIBLE POWER SYSTEM (DC POWER PLANT)
GSM	GLOBAL SYSTEM FOR MOBILE	VIF	VERIFIED IN FIELD
HDG	HOT DIPPED GALVANIZED	W	WIDE
HDR	HEADER	W/	WITH
HGR	HANGER	WD	WOOD
HVAC	HEAT/VENTILATION/AIR CONDITIONING	WP	WEATHERPROOF
HT	HEIGHT	WT	WEIGHT
IGR	INTERIOR GROUND RING		

**ABBREVIATIONS**

11/19/21  
 Exp. 01/31/22



5701 SOUTH SANTA FE DRIVE  
 LITTLETON, CO 80120



COA #: PEC.0000738  
 421 FAYETTEVILLE ST, SUITE 600  
 RALEIGH, NC 27601



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:
SEW	MCK	---
RFDS REV #:	---	

**CONSTRUCTION DOCUMENTS**

SUBMITTALS		
REV	DATE	DESCRIPTION
A	09/28/2021	ISSUED FOR REVIEW
0	11/18/2021	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER  
 KHCLE-16283

DISH Wireless L.L.C.  
 PROJECT INFORMATION  
 NJJER01091A  
 88 MAIN STREET  
 MONROE, CT 06468

SHEET TITLE  
 LEGEND AND ABBREVIATIONS

SHEET NUMBER  
**GN-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 L.L.C. AND TOWER OWNER NOC & THE DISH Wireless L.L.C. AND TOWER OWNER CONSTRUCTION MANAGER.
2. "LOOK UP" – DISH Wireless L.L.C. 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 L.L.C. AND DISH Wireless L.L.C. 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 L.L.C. 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 L.L.C. AND TOWER OWNER INSTALLATION STANDARDS FOR CONSTRUCTION ACTIVITIES ON DISH Wireless L.L.C. 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 L.L.C. 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 L.L.C. 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 L.L.C.  
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. Exp. 01/31/22
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 L.L.C. 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



COA #: PEC.0000738  
421 FAYETTEVILLE ST, SUITE 600  
RALEIGH, NC 27601



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:
SEW	MCK	---
RFDS REV #:		
---		

**CONSTRUCTION DOCUMENTS**

SUBMITTALS		
REV	DATE	DESCRIPTION
A	09/28/2021	ISSUED FOR REVIEW
0	11/18/2021	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER  
KHCL-16283

DISH Wireless L.L.C.  
PROJECT INFORMATION  
  
NJJER01091A  
88 MAIN STREET  
MONROE, CT 06468

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.

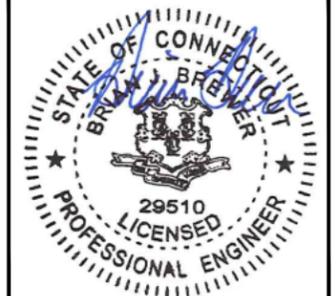
16. ELECTRICAL METALLIC TUBING (EMT) OR METAL-CLAD CABLE (MC) SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.
17. SCHEDULE 40 PVC UNDERGROUND ON STRAIGHTS AND SCHEDULE 80 PVC FOR ALL ELBOWS/90s AND ALL APPROVED ABOVE GRADE PVC CONDUIT.
18. LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID-TITE FLEX) SHALL 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 EDITION) 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 L.L.C. 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 L.L.C.".
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



COA #: PEC.0000738  
421 FAYETTEVILLE ST, SUITE 600  
RALEIGH, NC 27601



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:
SEW	MCK	---
RFDS REV #:		---

**CONSTRUCTION DOCUMENTS**

SUBMITTALS		
REV	DATE	DESCRIPTION
A	09/28/2021	ISSUED FOR REVIEW
0	11/18/2021	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER  
KHCLC-16283

DISH Wireless L.L.C.  
PROJECT INFORMATION  
  
NJJER01091A  
88 MAIN STREET  
MONROE, CT 06468

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.

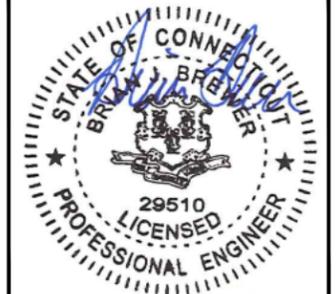
11/19/21  
Exp. 01/31/22



5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



COA #: PEC.0000738  
421 FAYETTEVILLE ST, SUITE 600  
RALEIGH, NC 27601



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:

SEW MCK ---

RFDS REV #: ---

**CONSTRUCTION DOCUMENTS**

SUBMITTALS		
REV	DATE	DESCRIPTION
A	09/28/2021	ISSUED FOR REVIEW
0	11/18/2021	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER  
KHCLC-16283

DISH Wireless L.L.C.  
PROJECT INFORMATION

NJJER01091A  
88 MAIN STREET  
MONROE, CT 06468

SHEET TITLE  
GENERAL NOTES

SHEET NUMBER  
**GN-4**

# Exhibit D

## **Structural Analysis Report**

Date: **September 25, 2021**



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

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

**Carrier Designation:** **DISH Network Co-Locate**  
**Site Number:** NJJER01091A  
**Site Name:** CT-CCI-T-826053

**Crown Castle Designation:** **BU Number:** 826053  
**Site Name:** Monroe-1/Rt 25  
**JDE Job Number:** 640181  
**Work Order Number:** 1965050  
**Order Number:** 548688 Rev. 1

**Engineering Firm Designation:** **Crown Castle Project Number:** 1965050

**Site Data:** **88 Main Street, Monroe, Fairfield County, CT**  
**Latitude 41° 18' 6.06", Longitude -73° 15' 2.92"**  
**195 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 – 63.1%**

This analysis utilizes an ultimate 3-second gust wind speed of 121 mph as required by the 2018 Connecticut State Building Code. Applicable Standard references and design criteria are listed in Section 2 - "Analysis Criteria".

Structural analysis prepared by: Daniel Chen

Respectfully submitted by:

*Maribel Dentinger*  
Maribel Dentinger, P.E.  
Senior Project Engineer

Maribel  
Dentinger

Digitally signed by  
Maribel Dentinger  
Date: 2021.09.25  
13:30:13 -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 195 ft Monopole tower designed by Summit.

## 2) ANALYSIS CRITERIA

<b>TIA-222 Revision:</b>	TIA-222-H
<b>Risk Category:</b>	II
<b>Wind Speed:</b>	121 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)
147.0	147.0	3	fujitsu	TA08025-B604	1	1-1/2
		3	fujitsu	TA08025-B605		
		3	jma wireless	MX08FRO665-21 w/ Mount Pipe		
		1	raycap	RDIDC-9181-PF-48		
		1	tower mounts	Commscope MC-PK8-DSH		

**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)
195.0	195.0	3	commscope	SDX1926Q-43	13	1-5/8
		3	ericsson	AIR 32 B2A/B66AA w/ Mount Pipe		
		3	ericsson	AIR6449 B41_T-MOBILE w/ Mount Pipe		
		3	ericsson	KRY 112 144/1		
		3	ericsson	RADIO 4449 B12/B71		
		3	ericsson	RRUS 4415 B25_CCIV2		
		3	rfs celwave	APXVAARR24_43-U-NA20 w/ Mount Pipe		
		1	tower mounts	Sector Mount [SM 901-3]		
175.0	175.0	3	cci antennas	OPA-65R-LCUU-H6 w/ Mount Pipe	6 6 3	7/8 1-5/8 3/8
		3	ericsson	RRUS 32 B2		
		3	ericsson	RRUS 32 B30		
		3	ericsson	RRUS 4426 B66		
		3	ericsson	RRUS 4478 B5		
		3	ericsson	RRUS-11		
		6	powerwave technologies	7020.00		

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		
		3	quintel technology	QS66512-2 w/ Mount Pipe		
		2	raycap	DC6-48-60-18-8C		
		1	raycap	DC6-48-60-18-8F		
		1	tower mounts	Platform Mount [LP 303-1_HR-1]		
165.0	165.0	3	alcatel lucent	B13 RRH 4X30	13 2	1-5/8 1-1/4
		3	alcatel lucent	B25 RRH4X30		
		3	alcatel lucent	RRH4X45-AWS4 B66		
		6	andrew	SBNHH-1D65B w/ Mount Pipe		
		6	antel	LPA-80080/6CF w/ Mount Pipe		
		2	raycap	RRFDC-3315-PF-48		
		1	tower mounts	Miscellaneous [NA 510-1]		
		1	tower mounts	Platform Mount [LP 403-1]		

### 3) ANALYSIS PROCEDURE

**Table 3 - Documents Provided**

Document	Reference	Source
4-GEOTECHNICAL REPORTS	3488965	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	3950063	CCISITES
4-TOWER MANUFACTURER DRAWINGS	3488966	CCISITES

#### 3.1) Analysis Method

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

#### 3.2) Assumptions

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

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

#### 4) ANALYSIS RESULTS

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

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	195 - 157.5	Pole	TP33.351x26x0.25	1	-14.44	1572.76	20.2	Pass
L2	157.5 - 116.75	Pole	TP40.839x32.0179x0.3125	2	-25.41	2406.41	44.2	Pass
L3	116.75 - 77	Pole	TP48.006x39.1849x0.375	3	-36.47	3396.36	51.1	Pass
L4	77 - 38	Pole	TP54.901x46.0798x0.375	4	-49.24	3886.13	63.1	Pass
L5	38 - 0	Pole	TP61.6x52.7788x0.4375	5	-68.33	5216.94	59.6	Pass
							Summary	
						Pole (L4)	63.1	Pass
						Rating =	63.1	Pass

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

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	57.2	Pass
1	Base Plate	0	49.4	Pass
1	Base Foundation (Structure)	0	54.4	Pass
1	Base Foundation (Soil Interaction)	0	37.7	Pass

<b>Structure Rating (max from all components) =</b>	<b>63.1%</b>
---	--------------

Notes:

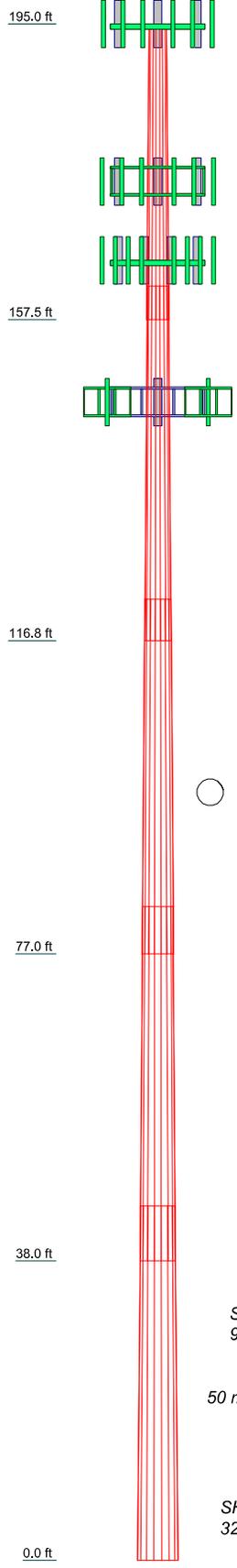
- 1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.

#### 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	5
Length (ft)	37.50	45.00	45.00	45.00	45.00
Number of Sides	18	18	18	18	18
Thickness (in)	0.2500	0.3125	0.3750	0.3750	0.4375
Socket Length (ft)	4.25	5.25	6.00	7.00	7.00
Top Dia (in)	26.0000	32.0179	39.1849	46.0798	52.7788
Bot Dia (in)	33.3510	40.8390	48.0060	54.9010	61.6000
Grade			A607-65		
Weight (K)	3.0	5.5	7.9	9.1	12.1



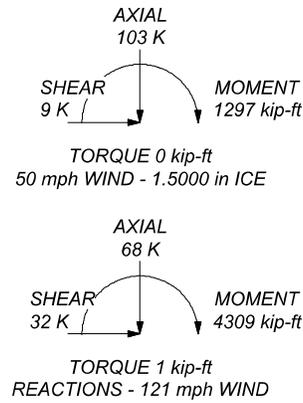
**MATERIAL STRENGTH**

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

**TOWER DESIGN NOTES**

1. Tower is located in Fairfield County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-H Standard.
3. Tower designed for a 121 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.50 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 63.1%

ALL REACTIONS  
ARE FACTORED



**Crown Castle**  
 2000 Corporate Drive  
 Canonsburg, PA 15317  
 The Pathway to Possible Phone: (724) 416-2000  
 FAX:

Job:	<b>BU# 826053</b>		
Project:			
Client:	Crown Castle	Drawn by:	Daniel Chen
Code:	TIA-222-H	Date:	09/25/21
Path:		App'd:	
		Scale:	NTS
		Dwg No.	E-1

C:\Users\dchen\Documents\Work Area - DChen\826053\WO 1965050 - SA\Prod\826053.dwg

## Tower Input Data

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

- Tower is located in Fairfield County, Connecticut.
- Tower base elevation above sea level: 324.00 ft.
- Basic wind speed of 121 mph.
- Risk Category II.
- Exposure Category B.
- Simplified Topographic Factor Procedure for wind speed-up calculations is used.
- Topographic Category: 1.
- Crest Height: 0.00 ft.
- Nominal ice thickness of 1.5000 in.
- Ice thickness is considered to increase with height.
- Ice density of 56 pcf.
- A wind speed of 50 mph is used in combination with ice.
- Temperature drop of 50 °F.
- Deflections calculated using a wind speed of 60 mph.
- A non-linear (P-delta) analysis was used.
- Pressures are calculated at each section.
- Stress ratio used in pole design is 1.
- Tower analysis based on target reliabilities in accordance with Annex S.
- Load Modification Factors used:  $K_{es}(F_w) = 0.95$ ,  $K_{es}(t_i) = 0.85$ .
- Maximum demand-capacity ratio is: 1.05.
- Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

## Options

Consider Moments - Legs Consider Moments - Horizontals Consider Moments - Diagonals Use Moment Magnification ✓ Use Code Stress Ratios ✓ Use Code Safety Factors - Guys Escalate Ice Always Use Max Kz Use Special Wind Profile  Include Bolts In Member Capacity  Leg Bolts Are At Top Of Section Secondary Horizontal Braces Leg Use Diamond Inner Bracing (4 Sided) SR Members Have Cut Ends SR Members Are Concentric	Distribute Leg Loads As Uniform Assume Legs Pinned ✓ Assume Rigid Index Plate ✓ Use Clear Spans For Wind Area Use Clear Spans For KL/r Retension Guys To Initial Tension ✓ Bypass Mast Stability Checks ✓ Use Azimuth Dish Coefficients ✓ Project Wind Area of Appurt.  Autocalc Torque Arm Areas  Add IBC .6D+W Combination ✓ Sort Capacity Reports By Component Triangulate Diamond Inner Bracing Treat Feed Line Bundles As Cylinder Ignore KL/ry For 60 Deg. Angle Legs	Use ASCE 10 X-Brace Ly Rules Calculate Redundant Bracing Forces Ignore Redundant Members in FEA SR Leg Bolts Resist Compression All Leg Panels Have Same Allowable Offset Girt At Foundation ✓ Consider Feed Line Torque Include Angle Block Shear Check Use TIA-222-H Bracing Resist. Exemption Use TIA-222-H Tension Splice Exemption  <div style="text-align: center; background-color: #e0e0e0; padding: 2px;"><b>Poles</b></div> ✓ Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets Pole Without Linear Attachments Pole With Shroud Or No Appurtenances Outside and Inside Corner Radii Are Known
--	---	---

## Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	195.00-157.50	37.50	4.25	18	26.0000	33.3510	0.2500	1.0000	A607-65 (65 ksi)
L2	157.50-116.75	45.00	5.25	18	32.0179	40.8390	0.3125	1.2500	A607-65 (65 ksi)
L3	116.75-77.00	45.00	6.00	18	39.1849	48.0060	0.3750	1.5000	A607-65 (65 ksi)
L4	77.00-38.00	45.00	7.00	18	46.0798	54.9010	0.3750	1.5000	A607-65 (65 ksi)
L5	38.00-0.00	45.00		18	52.7788	61.6000	0.4375	1.7500	A607-65 (65 ksi)

### Tapered Pole Properties

Section	Tip Dia. in	Area in <sup>2</sup>	I in <sup>4</sup>	r in	C in	I/C in <sup>3</sup>	J in <sup>4</sup>	It/Q in <sup>2</sup>	w in	w/t
L1	26.3625	20.4326	1711.6544	9.1412	13.2080	129.5922	3425.5610	10.2183	4.1360	16.544
	33.8269	26.2656	3635.8648	11.7509	16.9423	214.6027	7276.5137	13.1353	5.4298	21.719
L2	33.3096	31.4478	3993.8666	11.2554	16.2651	245.5484	7992.9885	15.7269	5.0851	16.272
	41.4208	40.1972	8340.8765	14.3869	20.7462	402.0433	16692.728	20.1024	6.6377	21.241
L3	40.7765	46.1934	8790.2699	13.7775	19.9059	441.5909	17592.106	23.1011	6.2365	16.631
	48.6887	56.6928	16249.677	16.9090	24.3870	666.3241	32520.736	28.3518	7.7891	20.771
L4	47.9272	54.4002	14356.959	16.2252	23.4086	613.3208	28732.810	27.2053	7.4501	19.867
	55.6901	64.8996	24377.353	19.3567	27.8897	874.0627	48786.783	32.4560	9.0026	24.007
L5	54.9189	72.6825	25156.862	18.5812	26.8116	938.2813	50346.826	36.3481	8.5191	19.472
	62.4828	84.9318	40140.069	21.7127	31.2928	1282.7254	80332.955	42.4740	10.0716	23.021

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 Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 195.00- 157.50				1	1	1			
L2 157.50- 116.75				1	1	1			
L3 116.75- 77.00				1	1	1			
L4 77.00- 38.00				1	1	1			
L5 38.00-0.00				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
RFF-24SM-1206-618- APE(1-1/4) *****	A	No	Surface Ar (CaAa)	165.00 - 0.00	2	2	0.460 0.470	1.3100		1.48

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

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Componen t Type	Placement  ft	Total Number		CAAA  ft <sup>2</sup> /ft	Weight  plf
*** 195 ***									
LDF7-50A(1-5/8)	B	No	No	Inside Pole	195.00 - 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
MLE HYBRID 9POWER/18FIBE R RL 2(1-5/8)	B	No	No	Inside Pole	195.00 - 0.00	1	No Ice	0.00	1.07
							1/2" Ice	0.00	1.07
							1" Ice	0.00	1.07
							2" Ice	0.00	1.07
*** 175 ***									
LDF7-50A(1-5/8)	C	No	No	Inside Pole	175.00 - 0.00	6	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-034- XXX(3/8)	C	No	No	Inside Pole	175.00 - 0.00	1	No Ice	0.00	0.06
							1/2" Ice	0.00	0.06
							1" Ice	0.00	0.06
							2" Ice	0.00	0.06
WR-VG66ST- BRD(7/8)	C	No	No	Inside Pole	175.00 - 0.00	4	No Ice	0.00	0.91
							1/2" Ice	0.00	0.91
							1" Ice	0.00	0.91
							2" Ice	0.00	0.91
FB-L98B-034- XXX(3/8)	C	No	No	Inside Pole	175.00 - 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-VG66ST- BRD(7/8)	C	No	No	Inside Pole	175.00 - 0.00	4	No Ice	0.00	0.91
							1/2" Ice	0.00	0.91
							1" Ice	0.00	0.91
							2" Ice	0.00	0.91
*** 165 ***									
LDF7-50A(1-5/8)	A	No	No	Inside Pole	165.00 - 0.00	13	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
**									
CU12PSM9P6XXX (1-1/2)	A	No	No	Inside Pole	147.00 - 0.00	1	No Ice	0.00	2.35
							1/2" Ice	0.00	2.35
							1" Ice	0.00	2.35
							2" Ice	0.00	2.35
****									

### 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	195.00-157.50	A	0.000	0.000	1.965	0.000	0.10
		B	0.000	0.000	0.000	0.000	0.41
		C	0.000	0.000	0.000	0.000	0.22
L2	157.50-116.75	A	0.000	0.000	10.677	0.000	0.63
		B	0.000	0.000	0.000	0.000	0.44
		C	0.000	0.000	0.000	0.000	0.50
L3	116.75-77.00	A	0.000	0.000	10.415	0.000	0.63
		B	0.000	0.000	0.000	0.000	0.43
		C	0.000	0.000	0.000	0.000	0.49
L4	77.00-38.00	A	0.000	0.000	10.218	0.000	0.62
		B	0.000	0.000	0.000	0.000	0.43
		C	0.000	0.000	0.000	0.000	0.48

Tower Section	Tower Elevation	Face	$A_R$	$A_F$	$C_{AA}$ In Face	$C_{AA}$ Out Face	Weight
<i>n</i>	ft		ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>	K
L5	38.00-0.00	A	0.000	0.000	9.956	0.000	0.61
		B	0.000	0.000	0.000	0.000	0.41
		C	0.000	0.000	0.000	0.000	0.47

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

Tower Section	Tower Elevation	Face or Leg	Ice Thickness	$A_R$	$A_F$	$C_{AA}$ In Face	$C_{AA}$ Out Face	Weight
<i>n</i>	ft		in	ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>	K
L1	195.00-157.50	A	1.507	0.000	0.000	5.282	0.000	0.15
		B		0.000	0.000	0.000	0.000	0.41
		C		0.000	0.000	0.000	0.000	0.22
L2	157.50-116.75	A	1.470	0.000	0.000	28.698	0.000	0.91
		B		0.000	0.000	0.000	0.000	0.44
		C		0.000	0.000	0.000	0.000	0.50
L3	116.75-77.00	A	1.420	0.000	0.000	27.622	0.000	0.90
		B		0.000	0.000	0.000	0.000	0.43
		C		0.000	0.000	0.000	0.000	0.49
L4	77.00-38.00	A	1.348	0.000	0.000	26.613	0.000	0.87
		B		0.000	0.000	0.000	0.000	0.43
		C		0.000	0.000	0.000	0.000	0.48
L5	38.00-0.00	A	1.204	0.000	0.000	25.249	0.000	0.83
		B		0.000	0.000	0.000	0.000	0.41
		C		0.000	0.000	0.000	0.000	0.47

### Feed Line Center of Pressure

Section	Elevation	$CP_x$	$CP_z$	$CP_x$ Ice	$CP_z$ Ice
	ft	in	in	in	in
L1	195.00-157.50	-0.0346	-0.4707	-0.0492	-0.6694
L2	157.50-116.75	-0.1444	-1.9664	-0.1865	-2.5401
L3	116.75-77.00	-0.1461	-1.9891	-0.1932	-2.6305
L4	77.00-38.00	-0.1472	-2.0050	-0.1968	-2.6801
L5	38.00-0.00	-0.1481	-2.0174	-0.1979	-2.6952

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	12	RFF-24SM-1206-618-APE(1-1/4)	157.50 - 165.00	1.0000	1.0000
L2	12	RFF-24SM-1206-618-APE(1-1/4)	116.75 - 157.50	1.0000	1.0000
L3	12	RFF-24SM-1206-618-APE(1-1/4)	77.00 - 116.75	1.0000	1.0000
L4	12	RFF-24SM-1206-618-APE(1-1/4)	38.00 - 77.00	1.0000	1.0000
L5	12	RFF-24SM-1206-618-APE(1-1/4)	0.00 - 38.00	1.0000	1.0000

### Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment  °	Placement  ft
Top Hat - 1.5ft. OD x 2ft Tall **	C	None		0.0000	195.00
APXVAARR24_43-U-NA20 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	195.00
APXVAARR24_43-U-NA20 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	195.00
APXVAARR24_43-U-NA20 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	195.00
AIR 32 B2A/B66AA w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	195.00
AIR 32 B2A/B66AA w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	195.00
AIR 32 B2A/B66AA w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	195.00
AIR6449 B41_T-MOBILE w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	195.00
AIR6449 B41_T-MOBILE w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	195.00
AIR6449 B41_T-MOBILE w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	195.00
KRY 112 144/1	A	From Leg	4.00 0.00 0.00	0.0000	195.00
KRY 112 144/1	A	From Leg	4.00 0.00 0.00	0.0000	195.00
KRY 112 144/1	A	From Leg	4.00 0.00 0.00	0.0000	195.00
RADIO 4449 B12/B71	A	From Leg	4.00 0.00 0.00	0.0000	195.00
RADIO 4449 B12/B71	B	From Leg	4.00 0.00 0.00	0.0000	195.00
RADIO 4449 B12/B71	C	From Leg	4.00 0.00 0.00	0.0000	195.00
SDX1926Q-43	A	From Leg	4.00 0.00 0.00	0.0000	195.00
SDX1926Q-43	B	From Leg	4.00 0.00 0.00	0.0000	195.00
SDX1926Q-43	B	From Leg	4.00 0.00 0.00	0.0000	195.00
RRUS 4415 B25_CCIV2	A	From Leg	4.00	0.0000	195.00

Description	Face or Leg	Offset Type	Offsets:			Azimuth Adjustment	Placement
			Horz Lateral ft	Vert ft	ft		
			0.00				
RRUS 4415 B25_CCIV2	B	From Leg	0.00			0.0000	195.00
			4.00				
			0.00				
RRUS 4415 B25_CCIV2	C	From Leg	0.00			0.0000	195.00
			4.00				
			0.00				
Sector Mount [SM 901-3] **	C	None	0.00			0.0000	195.00
OPA-65R-LCUU-H6 w/ Mount Pipe	A	From Leg	4.00			0.0000	175.00
			0.00				
			0.00				
OPA-65R-LCUU-H6 w/ Mount Pipe	B	From Leg	4.00			0.0000	175.00
			0.00				
			0.00				
OPA-65R-LCUU-H6 w/ Mount Pipe	C	From Leg	4.00			0.0000	175.00
			0.00				
			0.00				
QS66512-2 w/ Mount Pipe	A	From Leg	4.00			0.0000	175.00
			0.00				
			0.00				
QS66512-2 w/ Mount Pipe	B	From Leg	4.00			0.0000	175.00
			0.00				
			0.00				
QS66512-2 w/ Mount Pipe	C	From Leg	4.00			0.0000	175.00
			0.00				
			0.00				
7770.00 w/ Mount Pipe	A	From Leg	4.00			0.0000	175.00
			0.00				
			0.00				
7770.00 w/ Mount Pipe	B	From Leg	4.00			0.0000	175.00
			0.00				
			0.00				
7770.00 w/ Mount Pipe	C	From Leg	4.00			0.0000	175.00
			0.00				
			0.00				
DC6-48-60-18-8C	A	From Leg	4.00			0.0000	175.00
			0.00				
			0.00				
DC6-48-60-18-8C	C	From Leg	4.00			0.0000	175.00
			0.00				
			0.00				
RRUS 4478 B5	A	From Leg	4.00			0.0000	175.00
			0.00				
			0.00				
RRUS 4478 B5	B	From Leg	4.00			0.0000	175.00
			0.00				
			0.00				
RRUS 4478 B5	C	From Leg	4.00			0.0000	175.00
			0.00				
			0.00				
(2) LGP21401	A	From Leg	4.00			0.0000	175.00
			0.00				
			0.00				
(2) LGP21401	B	From Leg	4.00			0.0000	175.00
			0.00				
			0.00				
(2) LGP21401	C	From Leg	4.00			0.0000	175.00
			0.00				
			0.00				
(2) 7020.00	A	From Leg	4.00			0.0000	175.00
			0.00				
			0.00				
(2) 7020.00	B	From Leg	4.00			0.0000	175.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft
			0.00		
(2) 7020.00	C	From Leg	0.00 4.00	0.0000	175.00
			0.00		
(2) RRUS 4426 B66	A	From Leg	0.00 4.00	0.0000	175.00
			0.00		
RRUS 4426 B66	B	From Leg	0.00 4.00	0.0000	175.00
			0.00		
DC6-48-60-18-8F	A	From Leg	0.00 4.00	0.0000	175.00
			0.00		
RRUS-11	A	From Leg	0.00 4.00	0.0000	175.00
			0.00		
RRUS-11	B	From Leg	0.00 4.00	0.0000	175.00
			0.00		
RRUS-11	C	From Leg	0.00 4.00	0.0000	175.00
			0.00		
(3) RRUS 32 B2	B	From Leg	0.00 4.00	0.0000	175.00
			0.00		
(3) RRUS 32 B30	C	From Leg	0.00 4.00	0.0000	175.00
			0.00		
Platform Mount [LP 303-1_HR-1] **	C	None	0.00	0.0000	175.00
(2) LPA-80080/6CF w/ Mount Pipe	A	From Leg	4.00 0.00	0.0000	165.00
			0.00		
(2) LPA-80080/6CF w/ Mount Pipe	B	From Leg	4.00 0.00	0.0000	165.00
			0.00		
(2) LPA-80080/6CF w/ Mount Pipe	C	From Leg	4.00 0.00	0.0000	165.00
			0.00		
(2) SBNHH-1D65B w/ Mount Pipe	A	From Leg	4.00 0.00	0.0000	165.00
			0.00		
(2) SBNHH-1D65B w/ Mount Pipe	B	From Leg	4.00 0.00	0.0000	165.00
			0.00		
(2) SBNHH-1D65B w/ Mount Pipe	C	From Leg	4.00 0.00	0.0000	165.00
			0.00		
RRH4X45-AWS4 B66	A	From Leg	4.00 0.00	0.0000	165.00
			0.00		
(2) RRH4X45-AWS4 B66	B	From Leg	4.00 0.00	0.0000	165.00
			0.00		
B13 RRH 4X30	A	From Leg	4.00 0.00	0.0000	165.00
			0.00		
B13 RRH 4X30	B	From Leg	4.00 0.00	0.0000	165.00
			0.00		
B13 RRH 4X30	C	From Leg	4.00 0.00	0.0000	165.00
			0.00		
B25 RRH4X30	A	From Leg	4.00	0.0000	165.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft
			0.00		
B25 RRH4X30	B	From Leg	0.00 4.00	0.0000	165.00
			0.00		
B25 RRH4X30	C	From Leg	0.00 4.00	0.0000	165.00
			0.00		
RRFDC-3315-PF-48	B	From Leg	0.00 4.00	0.0000	165.00
			0.00		
RRFDC-3315-PF-48	C	From Leg	0.00 4.00	0.0000	165.00
			0.00		
(2) 6' x 2" Mount Pipe	A	From Leg	0.00 4.00	0.0000	165.00
			0.00		
(2) 6' x 2" Mount Pipe	B	From Leg	0.00 4.00	0.0000	165.00
			0.00		
(2) 6' x 2" Mount Pipe	C	From Leg	0.00 4.00	0.0000	165.00
			0.00		
Miscellaneous [NA 510-1]	C	None		0.0000	165.00
Platform Mount [LP 403-1]	C	None		0.0000	165.00
**					
MX08FRO665-21 w/ Mount Pipe	A	From Leg	4.00 0.00	0.0000	147.00
			0.00		
MX08FRO665-21 w/ Mount Pipe	B	From Leg	4.00 0.00	0.0000	147.00
			0.00		
MX08FRO665-21 w/ Mount Pipe	C	From Leg	4.00 0.00	0.0000	147.00
			0.00		
(3) TA08025-B604	A	From Leg	0.00 4.00	0.0000	147.00
			0.00		
(3) TA08025-B605	A	From Leg	0.00 4.00	0.0000	147.00
			0.00		
RDIDC-9181-PF-48	A	From Leg	4.00 0.00	0.0000	147.00
			0.00		
(2) 8' x 2" Mount Pipe	A	From Leg	0.00 4.00	0.0000	147.00
			0.00		
(2) 8' x 2" Mount Pipe	B	From Leg	0.00 4.00	0.0000	147.00
			0.00		
(2) 8' x 2" Mount Pipe	C	From Leg	0.00 4.00	0.0000	147.00
			0.00		
Commscope MC-PK8-DSH	C	None	0.00	0.0000	147.00
****					

**Load Combinations**

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice
3	0.9 Dead+1.0 Wind 0 deg - No Ice
4	1.2 Dead+1.0 Wind 30 deg - No Ice
5	0.9 Dead+1.0 Wind 30 deg - No Ice
6	1.2 Dead+1.0 Wind 60 deg - No Ice
7	0.9 Dead+1.0 Wind 60 deg - No Ice
8	1.2 Dead+1.0 Wind 90 deg - No Ice
9	0.9 Dead+1.0 Wind 90 deg - No Ice
10	1.2 Dead+1.0 Wind 120 deg - No Ice
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

Sectio n No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	195 - 157.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-31.92	-1.39	-0.71
			Max. Mx	8	-14.44	-232.22	-0.70
			Max. My	14	-14.45	-1.08	-231.64
			Max. Vy	8	15.08	-232.22	-0.70
			Max. Vx	2	-15.00	-0.16	231.04
			Max. Torque	19			0.80
L2	157.5 - 116.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-49.05	-0.90	5.23
			Max. Mx	8	-25.43	-978.24	0.28

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L3	116.75 - 77	Pole	Max. My	2	-25.41	2.01	982.44
			Max. Vy	8	21.70	-978.24	0.28
			Max. Vx	2	-21.84	2.01	982.44
			Max. Torque	11			0.84
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-63.56	-0.26	5.91
			Max. Mx	8	-36.48	-1898.30	-1.48
			Max. My	2	-36.47	4.21	1908.14
			Max. Vy	8	25.41	-1898.30	-1.48
			Max. Vx	2	-25.55	4.21	1908.14
			Max. Torque	11			0.84
L4	77 - 38	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-79.88	0.44	6.31
			Max. Mx	8	-49.25	-2927.12	-3.19
			Max. My	2	-49.24	6.37	2942.47
			Max. Vy	20	-28.58	2927.08	9.58
			Max. Vx	2	-28.71	6.37	2942.47
			Max. Torque	11			0.84
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-103.14	1.33	6.83
			Max. Mx	20	-68.33	4285.05	11.98
			Max. My	2	-68.33	8.89	4306.15
Max. Vy	20	-31.62	4285.05	11.98			
Max. Vx	2	-31.75	8.89	4306.15			
Max. Torque	11			0.84			
L5	38 - 0	Pole	Max. My	2	-68.33	8.89	4306.15
			Max. Vy	20	-31.62	4285.05	11.98
			Max. Vx	2	-31.75	8.89	4306.15
			Max. Torque	11			0.84

### Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	27	103.14	0.01	9.19
	Max. H <sub>x</sub>	21	51.26	31.58	0.05
	Max. H <sub>z</sub>	3	51.26	0.05	31.71
	Max. M <sub>x</sub>	2	4306.15	0.05	31.71
	Max. M <sub>z</sub>	8	4284.42	-31.58	-0.05
	Max. Torsion	11	0.84	-27.38	-15.90
	Min. Vert	7	51.26	-27.33	15.81
	Min. H <sub>x</sub>	9	51.26	-31.58	-0.05
	Min. H <sub>z</sub>	15	51.26	-0.05	-31.71
	Min. M <sub>x</sub>	14	-4299.34	-0.05	-31.71
	Min. M <sub>z</sub>	20	-4285.05	31.58	0.05
	Min. Torsion	23	-0.84	27.38	15.90

### 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	56.95	0.00	-0.00	-2.66	0.27	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	68.34	-0.05	-31.71	-4306.15	8.89	0.52
0.9 Dead+1.0 Wind 0 deg - No Ice	51.26	-0.05	-31.71	-4238.33	8.66	0.52
1.2 Dead+1.0 Wind 30 deg - No Ice	68.34	15.75	-27.44	-3725.45	-2134.62	0.13
0.9 Dead+1.0 Wind 30 deg - No Ice	51.26	15.75	-27.44	-3666.68	-2101.51	0.12
1.2 Dead+1.0 Wind 60 deg - No Ice	68.34	27.33	-15.81	-2147.40	-3706.10	-0.31
0.9 Dead+1.0 Wind 60 deg - No Ice	51.26	27.33	-15.81	-2113.17	-3648.54	-0.32

Load Combination	Vertical K	Shear <sub>x</sub> K	Shear <sub>z</sub> K	Overturning Moment, M <sub>x</sub> kip-ft	Overturning Moment, M <sub>z</sub> kip-ft	Torque kip-ft
No Ice						
1.2 Dead+1.0 Wind 90 deg - No Ice	68.34	31.58	0.05	5.15	-4284.42	-0.66
0.9 Dead+1.0 Wind 90 deg - No Ice	51.26	31.58	0.05	5.92	-4217.83	-0.67
1.2 Dead+1.0 Wind 120 deg - No Ice	68.34	27.38	15.90	2155.39	-3714.63	-0.83
0.9 Dead+1.0 Wind 120 deg - No Ice	51.26	27.38	15.90	2122.73	-3656.93	-0.84
1.2 Dead+1.0 Wind 150 deg - No Ice	68.34	15.83	27.49	3727.16	-2149.44	-0.78
0.9 Dead+1.0 Wind 150 deg - No Ice	51.26	15.83	27.49	3670.08	-2116.08	-0.78
1.2 Dead+1.0 Wind 180 deg - No Ice	68.34	0.05	31.71	4299.34	-8.24	-0.52
0.9 Dead+1.0 Wind 180 deg - No Ice	51.26	0.05	31.71	4233.35	-8.17	-0.52
1.2 Dead+1.0 Wind 210 deg - No Ice	68.34	-15.75	27.44	3718.63	2135.27	-0.13
0.9 Dead+1.0 Wind 210 deg - No Ice	51.26	-15.75	27.44	3661.69	2102.01	-0.11
1.2 Dead+1.0 Wind 240 deg - No Ice	68.34	-27.33	15.81	2140.57	3706.74	0.31
0.9 Dead+1.0 Wind 240 deg - No Ice	51.26	-27.33	15.81	2108.17	3649.03	0.32
1.2 Dead+1.0 Wind 270 deg - No Ice	68.34	-31.58	-0.05	-11.98	4285.05	0.66
0.9 Dead+1.0 Wind 270 deg - No Ice	51.26	-31.58	-0.05	-10.92	4218.32	0.67
1.2 Dead+1.0 Wind 300 deg - No Ice	68.34	-27.38	-15.90	-2162.21	3715.26	0.83
0.9 Dead+1.0 Wind 300 deg - No Ice	51.26	-27.38	-15.90	-2127.72	3657.41	0.84
1.2 Dead+1.0 Wind 330 deg - No Ice	68.34	-15.83	-27.49	-3733.97	2150.08	0.78
0.9 Dead+1.0 Wind 330 deg - No Ice	51.26	-15.83	-27.49	-3675.06	2116.56	0.78
1.2 Dead+1.0 Ice+1.0 Temp	103.14	0.00	-0.00	-6.83	1.33	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	103.14	-0.01	-9.19	-1296.82	3.16	0.12
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	103.14	4.58	-7.96	-1123.14	-639.95	0.01
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	103.14	7.94	-4.59	-650.43	-1111.22	-0.11
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	103.14	9.17	0.01	-5.34	-1284.38	-0.20
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	103.14	7.95	4.61	639.27	-1113.02	-0.24
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	103.14	4.59	7.97	1110.67	-643.06	-0.21
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	103.14	0.01	9.19	1282.56	-0.43	-0.12
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	103.14	-4.58	7.96	1108.88	642.69	-0.01
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	103.14	-7.94	4.59	636.16	1113.96	0.11
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	103.14	-9.17	-0.01	-8.93	1287.11	0.20
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	103.14	-7.95	-4.61	-653.53	1115.75	0.24
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	103.14	-4.59	-7.97	-1124.94	645.79	0.21
Dead+Wind 0 deg - Service	56.95	-0.01	-7.35	-990.93	2.23	0.11
Dead+Wind 30 deg - Service	56.95	3.65	-6.36	-857.56	-490.02	0.02
Dead+Wind 60 deg - Service	56.95	6.33	-3.66	-495.17	-850.89	-0.09
Dead+Wind 90 deg - Service	56.95	7.32	0.01	-0.85	-983.70	-0.17
Dead+Wind 120 deg - Service	56.95	6.34	3.68	492.94	-852.86	-0.20
Dead+Wind 150 deg - Service	56.95	3.67	6.37	853.90	-493.42	-0.18

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
Service						
Dead+Wind 180 deg - Service	56.95	0.01	7.35	985.30	-1.70	-0.11
Dead+Wind 210 deg - Service	56.95	-3.65	6.36	851.93	490.55	-0.02
Dead+Wind 240 deg - Service	56.95	-6.33	3.66	489.54	851.42	0.09
Dead+Wind 270 deg - Service	56.95	-7.32	-0.01	-4.78	984.23	0.17
Dead+Wind 300 deg - Service	56.95	-6.34	-3.68	-498.57	853.39	0.20
Dead+Wind 330 deg - Service	56.95	-3.67	-6.37	-859.53	493.95	0.18

## 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	-56.95	0.00	0.00	56.95	0.00	0.000%
2	-0.05	-68.34	-31.71	0.05	68.34	31.71	0.000%
3	-0.05	-51.26	-31.71	0.05	51.26	31.71	0.000%
4	15.75	-68.34	-27.44	-15.75	68.34	27.44	0.000%
5	15.75	-51.26	-27.44	-15.75	51.26	27.44	0.000%
6	27.33	-68.34	-15.81	-27.33	68.34	15.81	0.000%
7	27.33	-51.26	-15.81	-27.33	51.26	15.81	0.000%
8	31.58	-68.34	0.05	-31.58	68.34	-0.05	0.000%
9	31.58	-51.26	0.05	-31.58	51.26	-0.05	0.000%
10	27.38	-68.34	15.90	-27.38	68.34	-15.90	0.000%
11	27.38	-51.26	15.90	-27.38	51.26	-15.90	0.000%
12	15.83	-68.34	27.49	-15.83	68.34	-27.49	0.000%
13	15.83	-51.26	27.49	-15.83	51.26	-27.49	0.000%
14	0.05	-68.34	31.71	-0.05	68.34	-31.71	0.000%
15	0.05	-51.26	31.71	-0.05	51.26	-31.71	0.000%
16	-15.75	-68.34	27.44	15.75	68.34	-27.44	0.000%
17	-15.75	-51.26	27.44	15.75	51.26	-27.44	0.000%
18	-27.33	-68.34	15.81	27.33	68.34	-15.81	0.000%
19	-27.33	-51.26	15.81	27.33	51.26	-15.81	0.000%
20	-31.58	-68.34	-0.05	31.58	68.34	0.05	0.000%
21	-31.58	-51.26	-0.05	31.58	51.26	0.05	0.000%
22	-27.38	-68.34	-15.90	27.38	68.34	15.90	0.000%
23	-27.38	-51.26	-15.90	27.38	51.26	15.90	0.000%
24	-15.83	-68.34	-27.49	15.83	68.34	27.49	0.000%
25	-15.83	-51.26	-27.49	15.83	51.26	27.49	0.000%
26	0.00	-103.14	0.00	-0.00	103.14	0.00	0.000%
27	-0.01	-103.14	-9.19	0.01	103.14	9.19	0.000%
28	4.58	-103.14	-7.96	-4.58	103.14	7.96	0.000%
29	7.94	-103.14	-4.59	-7.94	103.14	4.59	0.000%
30	9.17	-103.14	0.01	-9.17	103.14	-0.01	0.000%
31	7.95	-103.14	4.61	-7.95	103.14	-4.61	0.000%
32	4.59	-103.14	7.97	-4.59	103.14	-7.97	0.000%
33	0.01	-103.14	9.19	-0.01	103.14	-9.19	0.000%
34	-4.58	-103.14	7.96	4.58	103.14	-7.96	0.000%
35	-7.94	-103.14	4.59	7.94	103.14	-4.59	0.000%
36	-9.17	-103.14	-0.01	9.17	103.14	0.01	0.000%
37	-7.95	-103.14	-4.61	7.95	103.14	4.61	0.000%
38	-4.59	-103.14	-7.97	4.59	103.14	7.97	0.000%
39	-0.01	-56.95	-7.35	0.01	56.95	7.35	0.000%
40	3.65	-56.95	-6.36	-3.65	56.95	6.36	0.000%
41	6.33	-56.95	-3.66	-6.33	56.95	3.66	0.000%
42	7.32	-56.95	0.01	-7.32	56.95	-0.01	0.000%
43	6.34	-56.95	3.68	-6.34	56.95	-3.68	0.000%
44	3.67	-56.95	6.37	-3.67	56.95	-6.37	0.000%
45	0.01	-56.95	7.35	-0.01	56.95	-7.35	0.000%
46	-3.65	-56.95	6.36	3.65	56.95	-6.36	0.000%
47	-6.33	-56.95	3.66	6.33	56.95	-3.66	0.000%

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
48	-7.32	-56.95	-0.01	7.32	56.95	0.01	0.000%
49	-6.34	-56.95	-3.68	6.34	56.95	3.68	0.000%
50	-3.67	-56.95	-6.37	3.67	56.95	6.37	0.000%

### Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.0000001	0.0000001
2	Yes	5	0.0000001	0.00005920
3	Yes	4	0.0000001	0.00067972
4	Yes	6	0.0000001	0.00030743
5	Yes	6	0.0000001	0.00010745
6	Yes	6	0.0000001	0.00030735
7	Yes	6	0.0000001	0.00010748
8	Yes	5	0.0000001	0.00006657
9	Yes	4	0.0000001	0.00072719
10	Yes	6	0.0000001	0.00030545
11	Yes	6	0.0000001	0.00010671
12	Yes	6	0.0000001	0.00031142
13	Yes	6	0.0000001	0.00010898
14	Yes	5	0.0000001	0.00009144
15	Yes	4	0.0000001	0.00092467
16	Yes	6	0.0000001	0.00030418
17	Yes	6	0.0000001	0.00010647
18	Yes	6	0.0000001	0.00030400
19	Yes	6	0.0000001	0.00010642
20	Yes	5	0.0000001	0.00010128
21	Yes	4	0.0000001	0.00099466
22	Yes	6	0.0000001	0.00031265
23	Yes	6	0.0000001	0.00010930
24	Yes	6	0.0000001	0.00030694
25	Yes	6	0.0000001	0.00010705
26	Yes	4	0.0000001	0.00006650
27	Yes	6	0.0000001	0.00016607
28	Yes	6	0.0000001	0.00022232
29	Yes	6	0.0000001	0.00022259
30	Yes	6	0.0000001	0.00016426
31	Yes	6	0.0000001	0.00021787
32	Yes	6	0.0000001	0.00021945
33	Yes	6	0.0000001	0.00016303
34	Yes	6	0.0000001	0.00021748
35	Yes	6	0.0000001	0.00021685
36	Yes	6	0.0000001	0.00016413
37	Yes	6	0.0000001	0.00022382
38	Yes	6	0.0000001	0.00022256
39	Yes	4	0.0000001	0.00014897
40	Yes	4	0.0000001	0.00082719
41	Yes	4	0.0000001	0.00083176
42	Yes	4	0.0000001	0.00015153
43	Yes	4	0.0000001	0.00079096
44	Yes	4	0.0000001	0.00084169
45	Yes	4	0.0000001	0.00014913
46	Yes	4	0.0000001	0.00079977
47	Yes	4	0.0000001	0.00079354
48	Yes	4	0.0000001	0.00015390
49	Yes	4	0.0000001	0.00085785
50	Yes	4	0.0000001	0.00080841

### Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	195 - 157.5	28.440	50	1.2123	0.0008
L2	161.75 - 116.75	20.152	50	1.1456	0.0007
L3	122 - 77	11.484	50	0.8993	0.0005
L4	83 - 38	5.240	50	0.6078	0.0002
L5	45 - 0	1.519	50	0.3057	0.0001

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

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
195.00	Top Hat - 1.5ft. OD x 2ft Tall	50	28.440	1.2123	0.0008	94300
175.00	OPA-65R-LCUU-H6 w/ Mount Pipe	50	23.395	1.1844	0.0007	23574
165.00	(2) LPA-80080/6CF w/ Mount Pipe	50	20.936	1.1574	0.0007	15721
147.00	MX08FRO665-21 w/ Mount Pipe	50	16.715	1.0712	0.0006	10627

### Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	195 - 157.5	123.607	24	5.2774	0.0034
L2	161.75 - 116.75	87.606	24	4.9859	0.0032
L3	122 - 77	49.947	24	3.9145	0.0019
L4	83 - 38	22.793	24	2.6457	0.0010
L5	45 - 0	6.607	24	1.3300	0.0004

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

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
195.00	Top Hat - 1.5ft. OD x 2ft Tall	24	123.607	5.2774	0.0034	21988
175.00	OPA-65R-LCUU-H6 w/ Mount Pipe	24	101.693	5.1551	0.0034	5494
165.00	(2) LPA-80080/6CF w/ Mount Pipe	24	91.012	5.0376	0.0033	3662
147.00	MX08FRO665-21 w/ Mount Pipe	24	72.676	4.6626	0.0028	2472

### Compression Checks

### Pole Design Data

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	KI/r	A in <sup>2</sup>	P <sub>u</sub> K	φP <sub>n</sub> K	Ratio $\frac{P_u}{\phi P_n}$
L1	195 - 157.5 (1)	TP33.351x26x0.25	37.50	0.00	0.0	25.604 6	-14.44	1497.87	0.010

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	KI/r	A in <sup>2</sup>	P <sub>u</sub> K	φP <sub>n</sub> K	Ratio P <sub>u</sub> / φP <sub>n</sub>
L2	157.5 - 116.75 (2)	TP40.839x32.0179x0.312 5	45.00	0.00	0.0	39.176 5	-25.41	2291.82	0.011
L3	116.75 - 77 (3)	TP48.006x39.1849x0.375	45.00	0.00	0.0	55.292 9	-36.47	3234.63	0.011
L4	77 - 38 (4)	TP54.901x46.0798x0.375	45.00	0.00	0.0	63.266 3	-49.24	3701.08	0.013
L5	38 - 0 (5)	TP61.6x52.7788x0.4375	45.00	0.00	0.0	84.931 8	-68.33	4968.51	0.014

### Pole Bending Design Data

Section No.	Elevation ft	Size	M <sub>ux</sub> kip-ft	φM <sub>nx</sub> kip-ft	Ratio M <sub>ux</sub> / φM <sub>nx</sub>	M <sub>uy</sub> kip-ft	φM <sub>ny</sub> kip-ft	Ratio M <sub>uy</sub> / φM <sub>ny</sub>
L1	195 - 157.5 (1)	TP33.351x26x0.25	232.63	1154.72	0.201	0.00	1154.72	0.000
L2	157.5 - 116.75 (2)	TP40.839x32.0179x0.312 5	983.48	2178.16	0.452	0.00	2178.16	0.000
L3	116.75 - 77 (3)	TP48.006x39.1849x0.375	1909.69	3639.87	0.525	0.00	3639.87	0.000
L4	77 - 38 (4)	TP54.901x46.0798x0.375	2944.50	4539.82	0.649	0.00	4539.82	0.000
L5	38 - 0 (5)	TP61.6x52.7788x0.4375	4308.76	7050.74	0.611	0.00	7050.74	0.000

### Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V <sub>u</sub> K	φV <sub>n</sub> K	Ratio V <sub>u</sub> / φV <sub>n</sub>	Actual T <sub>u</sub> kip-ft	φT <sub>n</sub> kip-ft	Ratio T <sub>u</sub> / φT <sub>n</sub>
L1	195 - 157.5 (1)	TP33.351x26x0.25	15.11	449.36	0.034	0.27	1269.83	0.000
L2	157.5 - 116.75 (2)	TP40.839x32.0179x0.312 5	21.85	687.55	0.032	0.78	2378.21	0.000
L3	116.75 - 77 (3)	TP48.006x39.1849x0.375	25.56	970.39	0.026	0.78	3947.82	0.000
L4	77 - 38 (4)	TP54.901x46.0798x0.375	28.72	1110.32	0.026	0.78	5168.50	0.000
L5	38 - 0 (5)	TP61.6x52.7788x0.4375	31.76	1490.55	0.021	0.78	7983.85	0.000

### Pole Interaction Design Data

Section No.	Elevation ft	Ratio P <sub>u</sub> φP <sub>n</sub>	Ratio M <sub>ux</sub> φM <sub>nx</sub>	Ratio M <sub>uy</sub> φM <sub>ny</sub>	Ratio V <sub>u</sub> φV <sub>n</sub>	Ratio T <sub>u</sub> φT <sub>n</sub>	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	195 - 157.5 (1)	0.010	0.201	0.000	0.034	0.000	0.212	1.050	4.8.2
L2	157.5 - 116.75 (2)	0.011	0.452	0.000	0.032	0.000	0.464	1.050	4.8.2
L3	116.75 - 77 (3)	0.011	0.525	0.000	0.026	0.000	0.537	1.050	4.8.2
L4	77 - 38 (4)	0.013	0.649	0.000	0.026	0.000	0.663	1.050	4.8.2
L5	38 - 0 (5)	0.014	0.611	0.000	0.021	0.000	0.625	1.050	4.8.2

### Section Capacity Table

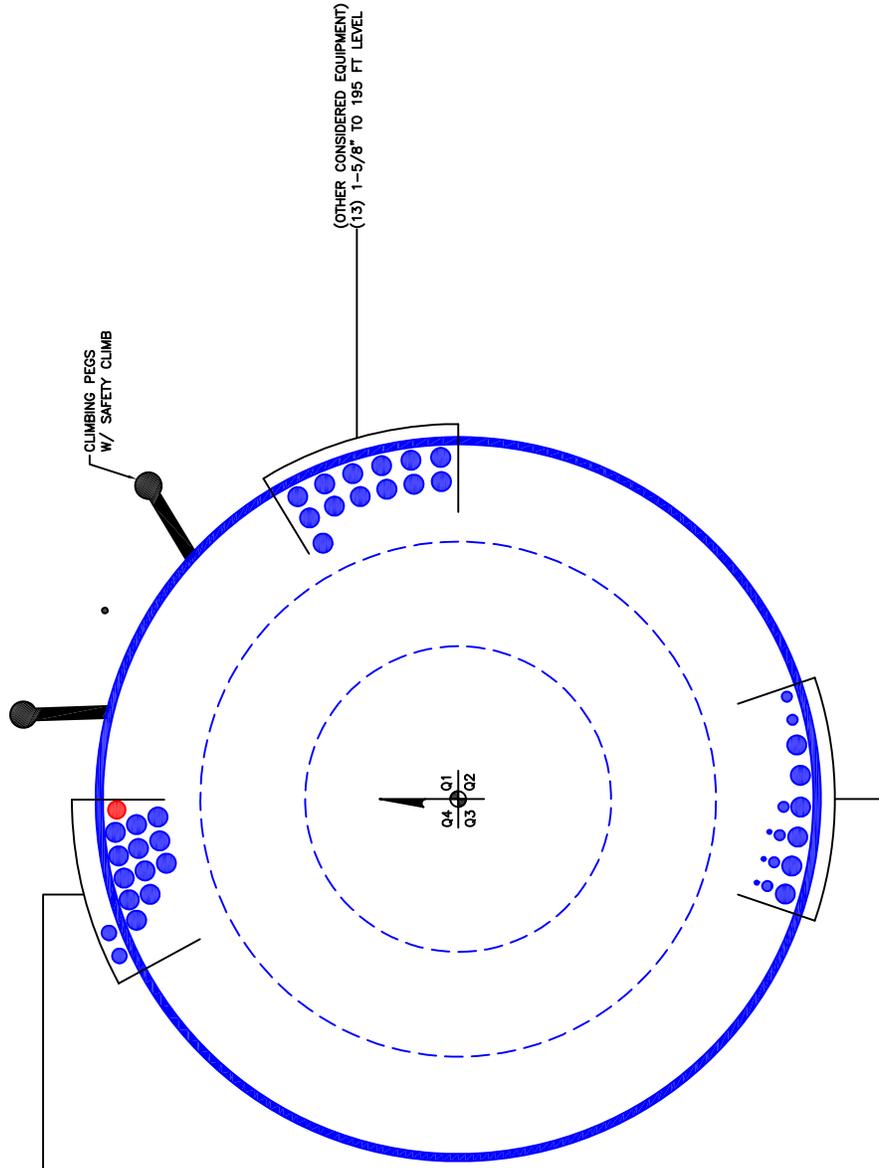
Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$\phi P_{allow}$ K	% Capacity	Pass Fail	
L1	195 - 157.5	Pole	TP33.351x26x0.25	1	-14.44	1572.76	20.2	Pass	
L2	157.5 - 116.75	Pole	TP40.839x32.0179x0.3125	2	-25.41	2406.41	44.2	Pass	
L3	116.75 - 77	Pole	TP48.006x39.1849x0.375	3	-36.47	3396.36	51.1	Pass	
L4	77 - 38	Pole	TP54.901x46.0798x0.375	4	-49.24	3886.13	63.1	Pass	
L5	38 - 0	Pole	TP61.6x52.7788x0.4375	5	-68.33	5216.94	59.6	Pass	
							Summary		
							Pole (L4)	63.1	Pass
							<b>RATING =</b>	<b>63.1</b>	<b>Pass</b>

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



(PROPOSED EQUIPMENT CONFIGURATION)  
(1) 1-1/2" TO 147 FT LEVEL

(OTHER CONSIDERED EQUIPMENT)  
(2) 1-1/4" TO 165 FT LEVEL  
(13) 1-5/8" TO 195 FT LEVEL



(OTHER CONSIDERED EQUIPMENT)  
(3) 3/8" TO 175 FT LEVEL  
(8) 7/8" TO 175 FT LEVEL  
(6) 1-5/8" TO 175 FT LEVEL

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

# Monopole Base Plate Connection

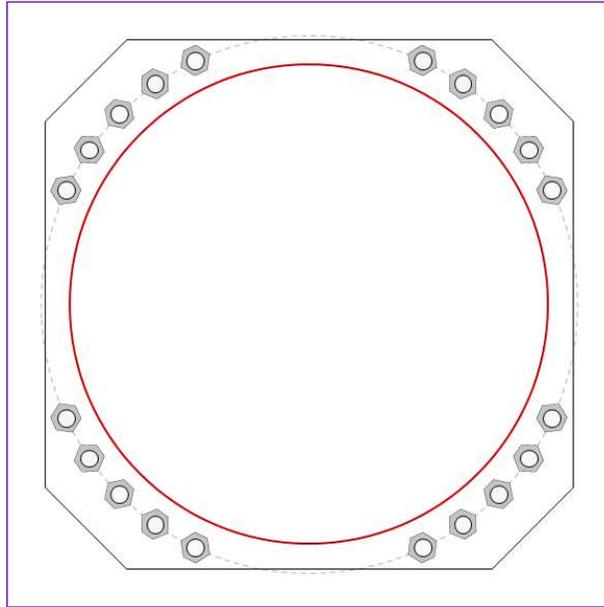


Site Info	
BU #	826053
Site Name	Monroe-1/Rt 25
Order #	548688 Rev 1

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	No
$l_{gr}$ (in)	2.75

Applied Loads	
Moment (kip-ft)	4308.76
Axial Force (kips)	68.33
Shear Force (kips)	31.76

\*TIA-222-H Section 15.5 Applied



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

Anchor Rod Data
(20) 2-1/4" $\phi$ bolts (A615-75 N; $F_y=75$ ksi, $F_u=100$ ksi) on 69" BC <i>Anchor Spacing: 6 in</i>
Base Plate Data
68" W x 3" Plate (A572-55; $F_y=55$ ksi, $F_u=70$ ksi); Clip: 10.5 in
Stiffener Data
N/A
Pole Data
61.6" x 0.4375" 18-sided pole (A607-65; $F_y=65$ ksi, $F_u=80$ ksi)

Anchor Rod Summary		<i>(units of kips, kip-in)</i>
$P_{u,t} = 146.39$	$\phi P_{n,t} = 243.75$	<b>Stress Rating</b>
$V_u = 1.59$	$\phi V_n = 149.1$	<b>57.2%</b>
$M_u = 2.84$	$\phi M_n = 128.14$	<b>Pass</b>
Base Plate Summary		
Max Stress (ksi):	25.67	(Flexural)
Allowable Stress (ksi):	49.5	
Stress Rating:	<b>49.4%</b>	<b>Pass</b>

# Drilled Pier Foundation

BU # : 826053
Site Name: Monroe-1/Rt 25
Order Number: 548688 Rev 1
TIA-222 Revision: H
Tower Type: Monopole



Check Limitation	
Apply TIA-222-H Section 15.5:	<input checked="" type="checkbox"/>
	N/A
Additional Longitudinal Rebar	
Input Effective Depths (else Actual):	<input type="checkbox"/>
Shear Design Options	
Check Shear along Depth of Pier:	<input checked="" type="checkbox"/>
Utilize Shear-Friction Methodology:	<input type="checkbox"/>
Override Critical Depth:	<input type="checkbox"/>

## Analysis Results

Soil Lateral Check	Compression	Uplift
D <sub>req</sub> (ft from TOC)	14.93	-
Soil Safety Factor	3.36	-
Max Moment (kip-ft)	4772.93	-
Rating*	37.7%	-

Soil Vertical Check	Compression	Uplift
Skin Friction (kips)	678.58	-
End Bearing (kips)	1130.97	-
Weight of Concrete (kips)	211.27	-
Total Capacity (kips)	1809.56	-
Axial (kips)	279.27	-
Rating*	14.7%	-

Reinforced Concrete Flexure	Compression	Uplift
Critical Depth (ft from TOC)	14.94	-
Critical Moment (kip-ft)	4772.92	-
Critical Moment Capacity	8362.41	-
Rating*	54.4%	-

Reinforced Concrete Shear	Compression	Uplift
Critical Depth (ft from TOC)	28.31	-
Critical Shear (kip)	430.36	-
Critical Shear Capacity	805.49	-
Rating*	50.9%	-

Structural Foundation Rating*	Compression	Uplift
Soil Interaction Rating*	54.4%	37.7%

\*Rating per TIA-222-H Section 15.5

Material Properties	Rebar, Fy Override (ksi)
Concrete Strength, f <sub>c</sub> :	4.5 ksi
Rebar Strength, F <sub>y</sub> :	60 ksi
Tie Yield Strength, F <sub>y</sub> :	40 ksi

## Rebar & Pier Options

### Embedded Pole Inputs

### Belled Pier Inputs

Pier Design Data	Depth	Uplift
Depth	37 ft	-
Ext. Above Grade	0.5 ft	-
Pier Section 1		
<i>From 0.5' above grade to 37' below grade</i>		
Pier Diameter	8 ft	-
Rebar Quantity	28	-
Rebar Size	11	-
Clear Cover to Ties	4 in	-
Tie Size	5	-
Tie Spacing	18 in	-

## Soil Profile

Groundwater Depth	3
# of Layers	3

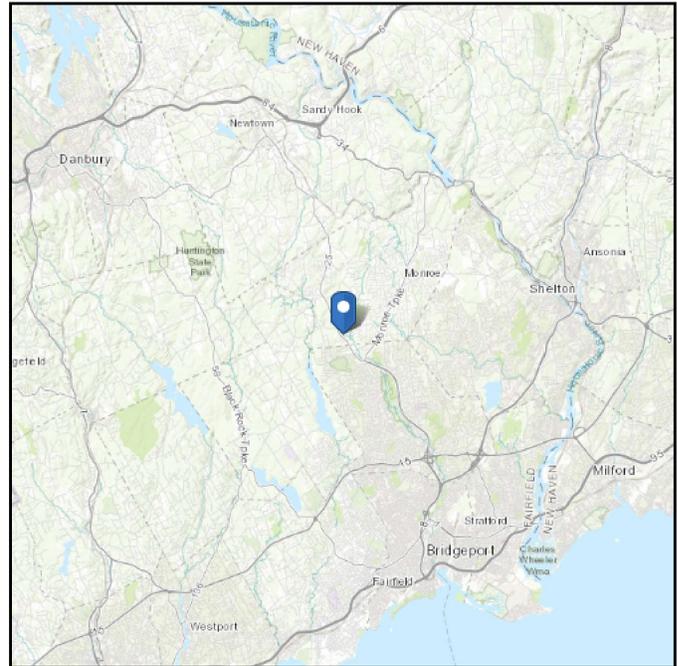
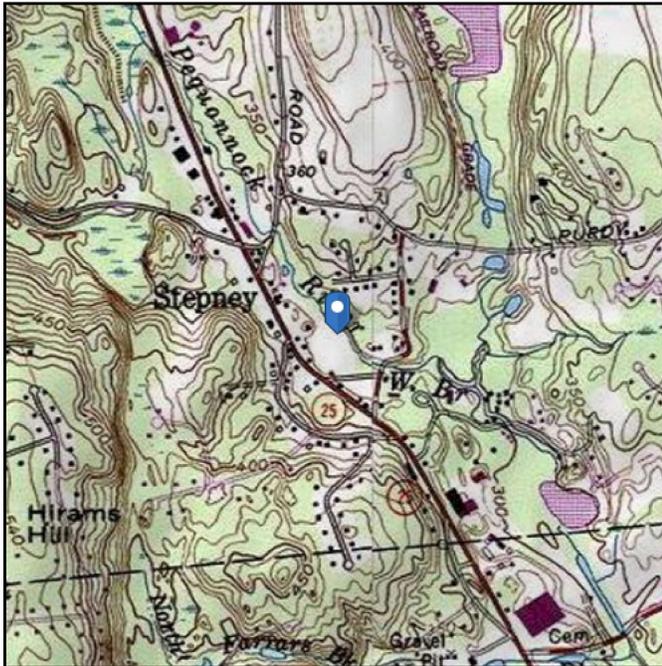
Layer	Top (ft)	Bottom (ft)	Thickness (ft)	γ <sub>soil</sub> (pcf)	γ <sub>concrete</sub> (pcf)	Cohesion (ksf)	Angle of Friction (degrees)	Calculated Ultimate Skin Friction Comp (ksf)	Calculated Ultimate Skin Friction Uplift (ksf)	Ultimate Skin Friction Comp Override (ksf)	Ultimate Skin Friction Uplift Override (ksf)	Ult. Gross Bearing Capacity (ksf)	SPT Blow Count	Soil Type
1	0	3	3	115	150	0	0	0.000	0.000	0.00	0.00			Cohesionless
2	3	13	10	52.6	87.6	0	0	0.000	0.000	0.00	0.00			Cohesionless
3	13	37	24	52.6	87.6	0	34	0.000	0.000	1.50	1.50	30		Cohesionless

# ASCE 7 Hazards Report

**Address:**  
No Address at This  
Location

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

**Elevation:** 323.94 ft (NAVD 88)  
**Latitude:** 41.301683  
**Longitude:** -73.250811



## Wind

### Results:

Wind Speed:	121 Vmph
10-year MRI	76 Vmph
25-year MRI	86 Vmph
50-year MRI	92 Vmph
100-year MRI	98 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:** Thu Oct 15 2020

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.

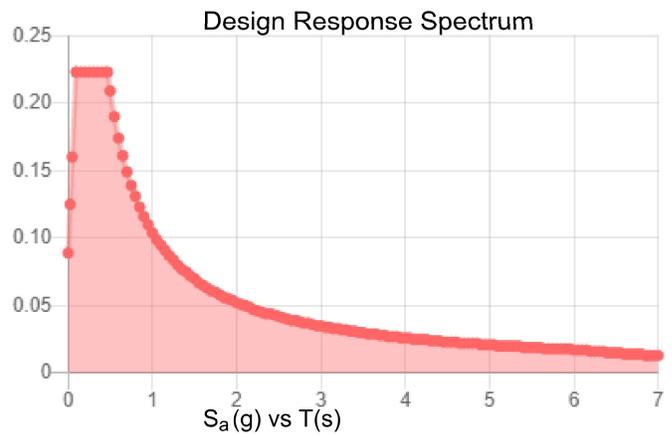
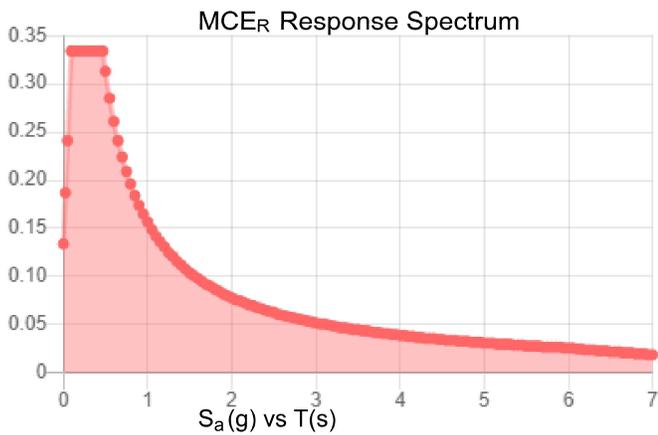
Mountainous terrain, gorges, ocean promontories, and special wind regions should be examined for unusual wind conditions.

**Site Soil Class:** D - Stiff Soil

**Results:**

$S_s$ :	0.209	$S_{DS}$ :	0.223
$S_1$ :	0.065	$S_{D1}$ :	0.104
$F_a$ :	1.6	$T_L$ :	6
$F_v$ :	2.4	PGA :	0.113
$S_{MS}$ :	0.334	PGA <sub>M</sub> :	0.178
$S_{M1}$ :	0.157	$F_{PGA}$ :	1.574
		$I_e$ :	1

**Seismic Design Category** B



**Data Accessed:**

Thu Oct 15 2020

**Date Source:**

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

## Ice

---

**Results:**

Ice Thickness: 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:** Thu Oct 15 2020

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.

# Exhibit E

## **Mount Analysis**

Date: **March 7, 2022**



Kimley-Horn and Associates, Inc.  
421 Fayetteville Street, Suite 600  
Raleigh, NC 27601  
(919) 677-2000  
CrownMounts@kimley-horn.com

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

**Carrier Designation:** **DISH Network Equipment Change-Out**  
**Carrier Site Number:** NJJER01091A  
**Carrier Site Name:** CT-CCI-T-826053

**Crown Castle Designation:** **BU Number:** 826053  
**Site Name:** Monroe-1/Rt 25  
**JDE Job Number:** 640181  
**Order Number:** 548688, Rev. 1

**Engineering Firm Designation:** **Kimley-Horn Project Number:** 019558058

**Site Data:** **88 Main Street, Monroe, Fairfield County, CT 06468**  
**Latitude 41° 18' 6.06" Longitude -73° 15' 2.92"**

**Structure Information:** **Tower Height & Type:** 195 ft Monopole  
**Mount Elevation:** 147 ft  
**Mount Type:** 8 ft Platform w/ Support Rails

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

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

**Platform w/ Support Rails**

**Sufficient**

\* See Section 4.1 for loading and structural modifications required for the mount to support the loading listed in Table 1.

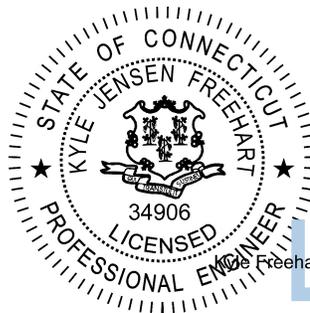
This analysis has been performed in accordance with the 2018 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 117 mph. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Mount analysis prepared by: Jeff Sparks

Respectfully Submitted by:

Kyle Freehart, P.E.

Lic. #PEN.0034906, Exp. 1/31/2022  
Kimley-Horn and Associates, Inc. COA #PEC.0000738



Digitally signed by Kyle Freehart  
DN: cn=US,  
email=freehart@kimleyhorn.com,  
ou=Kimley Horn, CN=Kyle  
Freehart  
Date: 2022.03.09 13:56:11-0500'

## TABLE OF CONTENTS

### 1) INTRODUCTION

### 2) ANALYSIS CRITERIA

Table 1 - Proposed Equipment Configuration

### 3) ANALYSIS PROCEDURE

Table 2 - Documents Provided

3.1) Analysis Method

3.2) Assumptions

### 4) ANALYSIS RESULTS

Table 3 - Mount Component Stresses vs. Capacity

4.1) Recommendations

### 5) APPENDIX A

Wire Frame and Rendered Models

### 6) APPENDIX B

Software Input Calculations

### 7) APPENDIX C

Software Analysis Output

### 8) APPENDIX D

Additional Calculations

### 9) APPENDIX E

Supplemental Drawings

**1) INTRODUCTION**

The mounting configuration consists of a proposed 8 ft Platform w/ Support Rails designed by CommScope.

**2) ANALYSIS CRITERIA**

<b>Building Code:</b>	2018 Connecticut State Building Code
<b>TIA-222 Revision:</b>	TIA-222-H
<b>Risk Category:</b>	II
<b>Ultimate Wind Speed:</b>	117 mph
<b>Exposure Category:</b>	B
<b>Topographic Factor at Base:</b>	1.0
<b>Topographic Factor at Mount:</b>	1.0
<b>Ice Thickness:</b>	1 in
<b>Wind Speed with Ice:</b>	50 mph
<b>Live Loading Wind Speed:</b>	30 mph
<b>Man Live Load at Mid/End-Points:</b>	250 lb
<b>Man Live Load at Mount Pipes:</b>	500 lb

**Table 1 – Proposed Equipment Configuration**

Elevation (ft)		Antennas			Mount / Modification Details
Mount	Centerline	#	Manufacturer	Model	
147	147	3	Fujitsu	TA08025-B605	Proposed 8 ft Platform w/ Support Rails designed by CommScope
		1	Raycap	RDIDC-9181-PF-48	
		3	Fujitsu	TA08025-B604	
		3	JMA	MX08FRO665-21	

### 3) ANALYSIS PROCEDURE

**Table 2 – Documents Provided**

Document	Remarks	Reference	Source
Construction Drawings	Kimley-Horn	A&E Project #KHCL-16283	On File
Mount Design Drawings	Commscope	MC-PK8-DSH	On File
Structural Analysis	Crown Castle	9990607	CCISites
Site Photos	-	-	CCISites

#### 3.1) Analysis Method

RISA-3D (v. 17.02.00), a commercially-available analysis software package, was used to create a three-dimensional model of the antenna mounting system and calculate member stresses for various loading cases.

A proprietary tool internally developed by Kimley-Horn was used to calculate wind loading on all appurtenances, dishes and mount members for various load cases. Selected output from the analysis is included in Appendix B.

This analysis was performed in accordance with Crown Castle's ENG-SOW-10208 *Mount Analysis* (Rev. E).

#### 3.2) Assumptions

- 1) The antenna mounting system (including any considered modifications) was properly fabricated, installed and maintained in good condition in accordance with its original design and manufacturer specifications.
- 2) The configuration of antennas, mounts, and other appurtenances are as specified in Table 1 and the provided reference information.
- 3) All member connections are assumed to have been designed to meet or exceed the load carrying capacity of the connected members unless otherwise specified in this report.
- 4) The analysis will be required to be revised if the existing conditions in the field differ from those shown in the above-referenced documents or assumed in this analysis. No allowance was made for any damaged, missing, or rusted members that could not be verified at this time.
- 5) Any referenced prior structural modifications to the tower mounting system are assumed to be installed as shown per available data unless noted otherwise.
- 6) Steel grades have been assumed as follows, unless noted otherwise:
 

Channel, Solid Round, Angle, Plate	ASTM A36 (Gr. 36)
HSS (Rectangular)	ASTM A36 (Gr. 36)
Pipe	ASTM A53 (Gr. 35)
Connection Bolts	ASTM A325
U-Bolts	ASTM A36 (Gr. 36)
Threaded Rods	ASTM A36 (Gr. 36)

If any assumptions are not valid or have been made in error, Kimley-Horn should be notified to determine the effect on the structural integrity of the antenna mounting system.

#### 4) ANALYSIS RESULTS

**Table 3 – Mount Component Stresses vs. Capacity**

Notes	Component	Critical Member	Centerline (ft)	% Capacity	Pass / Fail
1, 2	Connections	-	147	25%	Pass
1, 2	Cross Horizontals	M63A		21%	Pass
1, 2	Corner Plates	M10		18%	Pass
1, 2	Stand Off Horizontals	M12		16%	Pass
1, 2	Mount Pipes	MP6		13%	Pass
1, 2	Face Horizontals	M62		9%	Pass
1, 2	Support Rails	M29		8%	Pass

<b>Structure Rating (max from all components) =</b>	<b>25%</b>
---	------------

Notes:

- 1) See additional documentation in Appendix C and Appendix D for calculations supporting the % capacity consumed.
- 2) A structure rating of 105% or less is within engineering tolerances and considered acceptable.

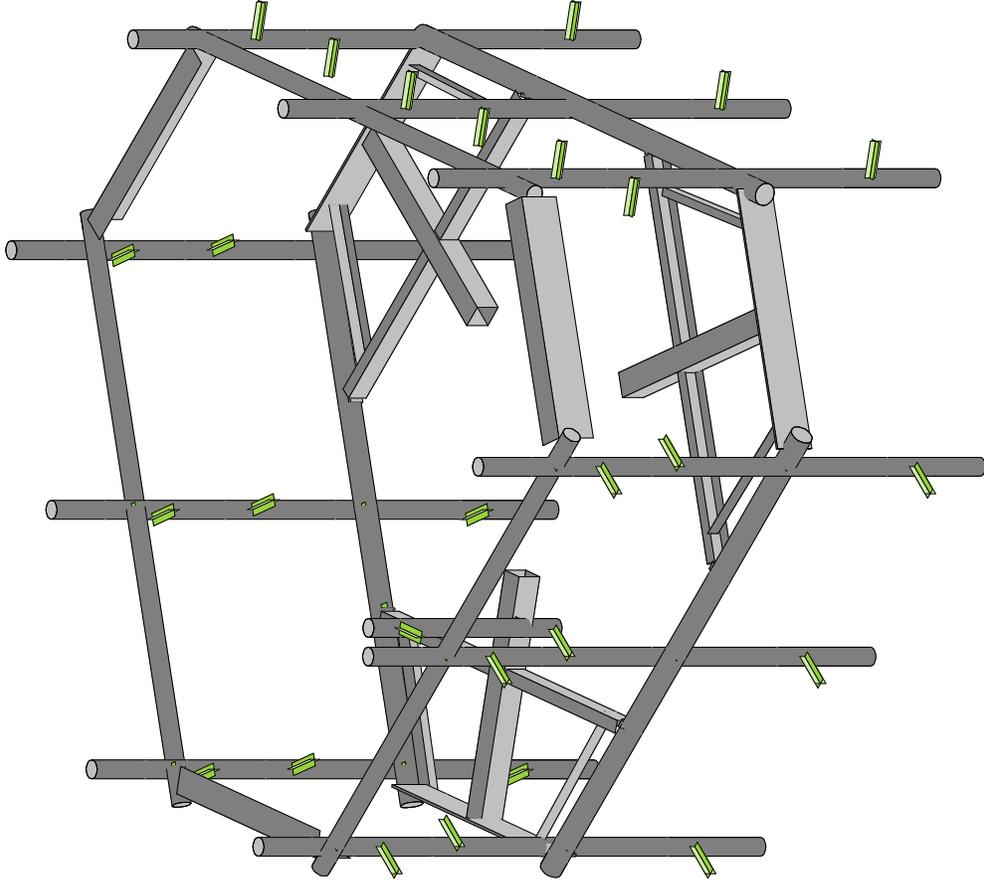
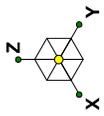
#### 4.1) Recommendations

The mounting configuration will have sufficient capacity to carry the referenced loading once the following modifications are completed:

- **Install new Commscope MC-PK8-DSH platform. Vertically center antennae and mount pipes on mount face horizontals.**

No additional modifications are required at this time provided that the above-listed changes are completed.

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



Envelope Only Solution

Kimley-Horn and Associates, Inc.

JSS

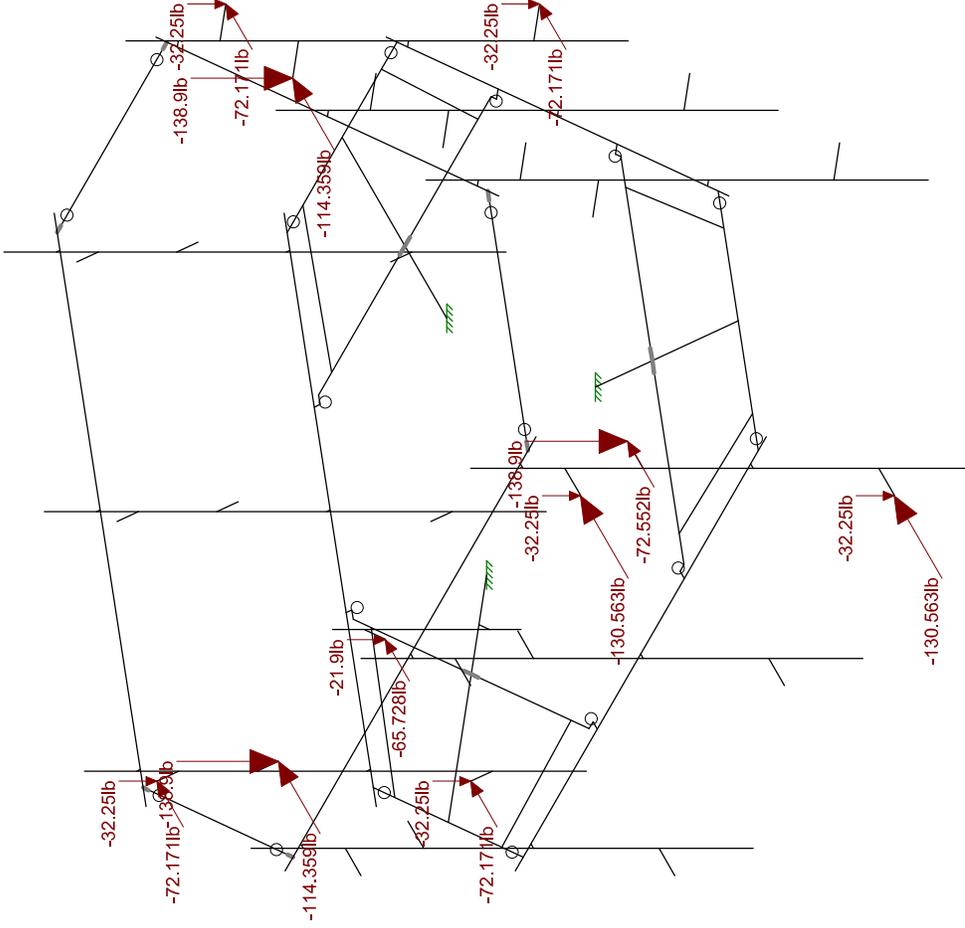
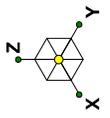
019558058

826053 - Monroe-1/Rt 25

SK - 1

Mar 7, 2022 at 1:03 PM

826053.r3d



Loads: LC 1, Summary: 1.0D + 1.0W  
Envelope Only Solution

Kimley-Horn and Associates, Inc.  
JSS  
019558058

826053 - Monroe-1/Rt 25

SK - 2  
Mar 7, 2022 at 1:03 PM  
826053.r3d

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



Date	March 07, 2022
Client	Crown Castle
Site #	826053
Site Name	Monroe-1/Rt 25
Project #	195580585

General Criteria	
TIA Standard	H
IBC Edition	2018
Structure Class	-
Risk Category	II

Wind Summary	
Basic Wind Speed w/o Ice, V (mph)	117.00
Velocity Pressure Coeff., K <sub>z</sub>	1.10
Velocity Pressure, q <sub>z</sub> (w/o Ice) (psf)	36.30

Site-Specific Criteria	
Exposure Category	B
Topographic Factor, K <sub>zt</sub>	1.00
Structure Base Elev. (AMSL), z <sub>s</sub> (ft)	324.00
Ground Effect Factor, K <sub>e</sub>	0.99

Ice Load Summary	
Basic Wind Speed w/ Ice, V <sub>i</sub> (mph)	50.00
Design Ice Thick. (ASCE 7-16), t <sub>i</sub> (in)	1
Velocity Pressure, q <sub>z</sub> (w/ Ice) (psf)	6.63
Escalated Ice Thick. @ Mount, t <sub>iz</sub> (in)	1.16

Mount & Structure Criteria	
Mount Elevation (AGL) (ft)	147.00
Structure Height (ft)	195.00
Structure Type	Monopole

Seismic Load Summary	
Spectral Response (Short Periods), S <sub>s</sub>	-
Spectral Response (1-Sec. Period), S <sub>1</sub>	-
Site Class	D
Seismic Design Category	-
Seismic Risk Category	-

Constants	
Wind Direction Probability Factor, K <sub>d</sub>	0.95
Gust Effect Factor, G <sub>h</sub>	1
Shielding Factor, K <sub>s</sub> (antenna)	0.9
Shielding Factor, K <sub>s</sub> (mount)	0.9

Snow Load Summary	
Ground Snow Load, p <sub>g</sub> (psf)	-
Snow Load on Flat Roofs, p <sub>f</sub> (psf)	-

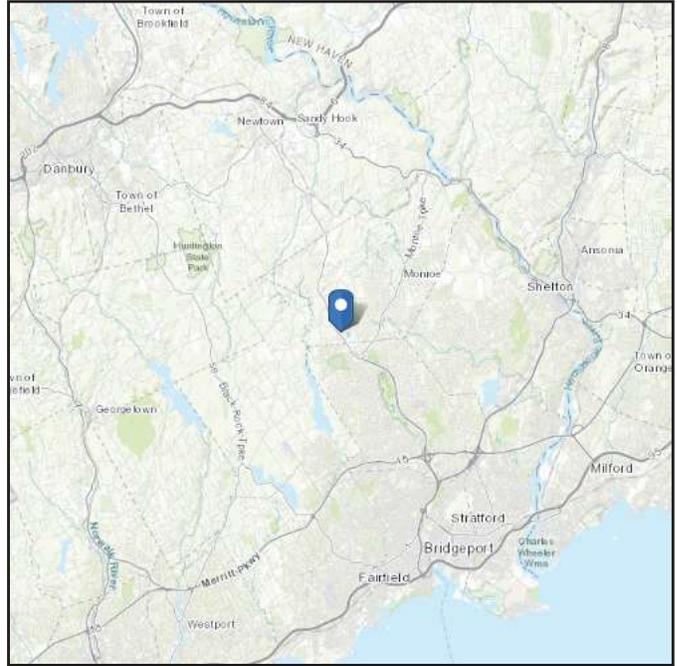
Antenna Name	Qty	Shape	Dimensions (in)			Weight (lb)	Joint Labels								EPA (ft <sup>2</sup> )		Wind Force, F <sub>A</sub> (lb)			
			H	W	D		Alpha		Beta		Gamma		Delta		Front	Side	No Ice		With Ice	
							A1A	A1B	B1A	B1B	G1A	G1B	D1A	D1B			Front	Side	Front	Side
MX08FRO665-21	3	Flat	72	20	8	64.5	A1T	A1B	B1T	B1B	G1T	G1B			7.99	3.23	261.13	105.41	54.41	24.59
TA08025-B604	3	Flat	15.8	15	7.9	63.9	A1R		B1R		G1R				1.03	1.96	33.75	64.15	9.16	15.53
TA08025-B605	3	Flat	15.8	15	9.1	75	A1R		B1R		G1R				1.19	1.96	38.81	64.15	10.22	15.53
RDIDC-9181-PF-48	1	Flat	16.6	14.6	8.5	21.9	RC1								2.01	1.17	65.73	38.16	15.87	10.13

# ASCE 7 Hazards Report

**Address:**  
No Address at This Location

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

**Elevation:** 323.94 ft (NAVD 88)  
**Latitude:** 41.301683  
**Longitude:** -73.250811



## Wind

### Results:

Wind Speed	117 Vmph
10-year MRI	75 Vmph
25-year MRI	85 Vmph
50-year MRI	90 Vmph
100-year MRI	97 Vmph

Data Source: ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2  
Date Accessed: Mon Mar 07 2022

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

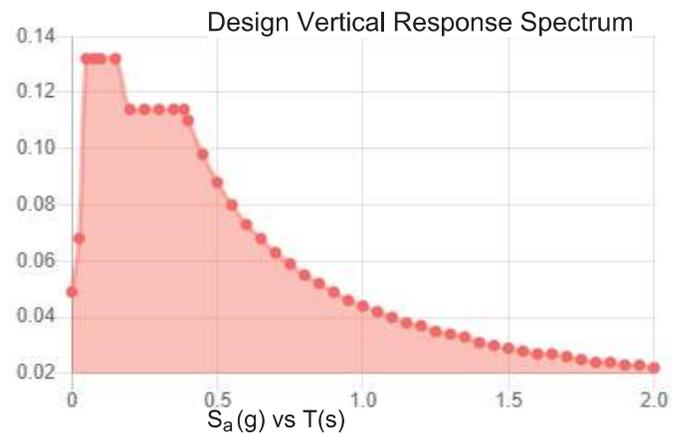
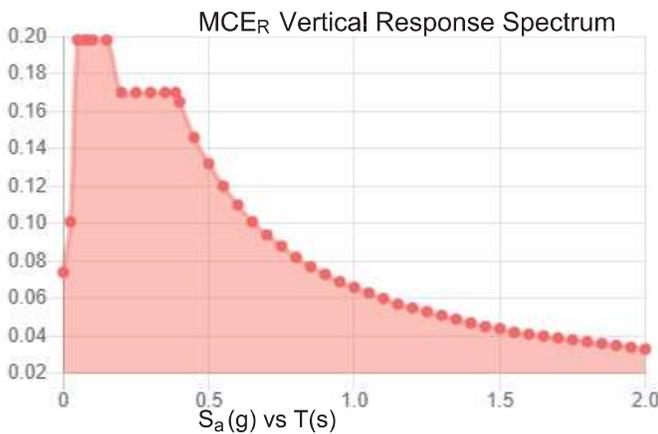
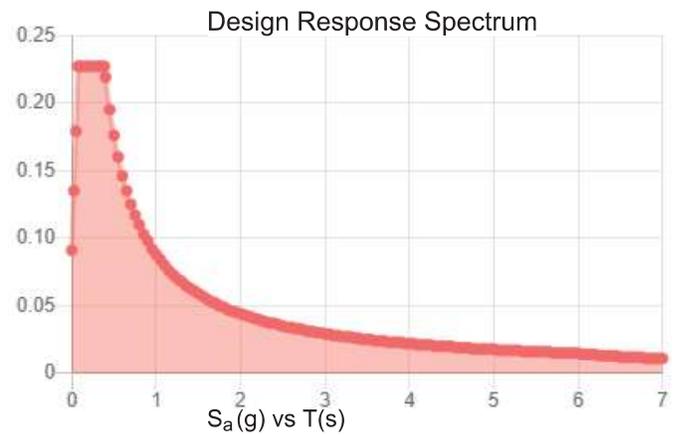
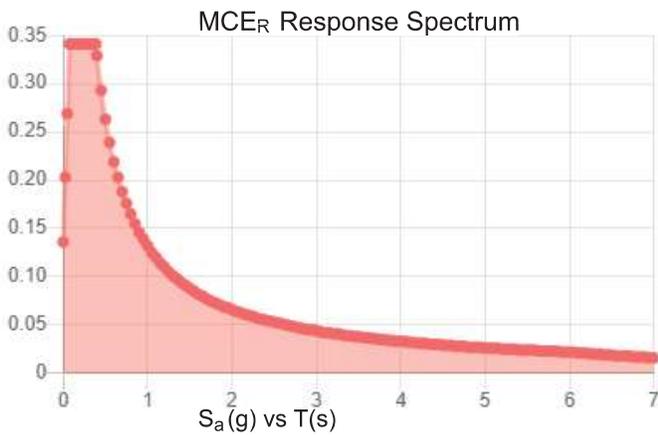
Site is in a hurricane-prone region as defined in ASCE/SEI 7-16 Section 26.2. Glazed openings need not be protected against wind-borne debris.

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

**Results:**

$S_s$ :	0.213	$S_{D1}$ :	0.088
$S_1$ :	0.055	$T_L$ :	6
$F_a$ :	1.6	PGA :	0.121
$F_v$ :	2.4	PGA <sub>M</sub> :	0.189
$S_{MS}$ :	0.341	$F_{PGA}$ :	1.557
$S_{M1}$ :	0.132	$I_e$ :	1
$S_{DS}$ :	0.227	$C_v$ :	0.726

**Seismic Design Category** B



**Data Accessed:** Mon Mar 07 2022

**Date Source:**

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

**Results:**

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

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

**Date Accessed:** Mon Mar 07 2022

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

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

---

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.

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

### Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (1...	Density[k/ft^3]	Yield[ksi]	Ry	Fu[ksi]	Rt
1	A992	29000	11154	.3	.65	.49	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	.3	.65	.49	50	1.1	65	1.1
4	A500 Gr.B Rnd	29000	11154	.3	.65	.527	42	1.4	58	1.3
5	A500 Gr.B Rect	29000	11154	.3	.65	.527	46	1.4	58	1.3
6	A53 Gr.B	29000	11154	.3	.65	.49	35	1.6	60	1.2
7	A1085	29000	11154	.3	.65	.49	50	1.4	65	1.3
8	A913 Gr.65	29000	11154	.3	.65	.49	65	1.1	80	1.1
9	A500 Gr.C Rnd	29000	11154	.3	.65	.49	46	1.6	62	1.2
10	A500 Gr.C Rect	29000	11154	.3	.65	.49	50	1.5	62	1.2
11	A529 Gr. 50	29000	11154	.3	.65	.49	50	1.1	65	1.1
12	A1011-33 ksi	29000	11154	.3	.65	.49	33	1.5	58	1.2
13	A1011 36 ksi	29000	11154	.3	.65	.49	36	1.5	58	1.2
14	A1018 50 ksi	29000	11154	.3	.65	.49	50	1.5	65	1.2
15	Q235	29000	11154	.3	.65	.49	35	1.5	58	1.2

### Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design ...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Corner Plate	PL6-1/2x3/8	Beam	None	A1011 3...	Typical	2.438	.029	8.582	.11
2	Side Plate	PL2-3/8x1/2	Beam	None	A1011 3...	Typical	1.188	.025	.558	.086
3	Grating Horiz	L2x2x4	Beam	None	A529 Gr...	Typical	.944	.346	.346	.021
4	Face Horiz	HSS3.500x0.165	Beam	None	A500 Gr...	Typical	1.729	2.409	2.409	4.819
5	Mount Pipe	HSS2.875x0.120	Column	None	A500 Gr...	Typical	1.039	.987	.987	1.975
6	Cross Horiz	C3.38x2.06x1/4	Beam	None	A1011 3...	Typical	1.75	.715	3.026	.034
7	Stand-Off Horiz	HSS4X4X6	Beam	None	A500 Gr...	Typical	4.78	10.3	10.3	17.5
8	Support Rail	HSS2.875x0.120	Beam	None	A500 Gr...	Typical	1.039	.987	.987	1.975
9	SR Corner Brace	L6.6x4.46x0.25	Beam	None	A1011 3...	Typical	2.703	4.759	12.473	.055

### Hot Rolled Steel Design Parameters

	Label	Shape	Length[in]	Lbyy[in]	Lbzz[in]	Lcomp top[in]	Lcomp bot[in]	L-torqu...	Kyy	Kzz	Cb	Function
1	M3	Grating Horiz	27.295			Lbyy						Lateral
2	M8	Grating Horiz	27.295			Lbyy						Lateral
3	M13	Grating Horiz	27.295			Lbyy						Lateral
4	M28	SR Corner ...	42			Lbyy						Lateral
5	M29	SR Corner ...	42			Lbyy						Lateral
6	M30	SR Corner ...	42			Lbyy						Lateral
7	M63A	Cross Horiz	33			Lbyy						Lateral
8	M61B	Cross Horiz	33			Lbyy						Lateral
9	M63B	Cross Horiz	33			Lbyy						Lateral
10	M25	Support Rail	96			Lbyy						Lateral
11	M51	Support Rail	96			Lbyy						Lateral
12	M65A	Support Rail	96			Lbyy						Lateral
13	M2	Stand-Off H...	40			Lbyy						Lateral
14	M7	Stand-Off H...	40			Lbyy						Lateral
15	M12	Stand-Off H...	40			Lbyy						Lateral
16	MP9	Mount Pipe	96			Lbyy						Lateral
17	MP7	Mount Pipe	96			Lbyy						Lateral
18	MP8	Mount Pipe	96			Lbyy						Lateral
19	MP3	Mount Pipe	96			Lbyy						Lateral
20	MP1	Mount Pipe	96			Lbyy						Lateral
21	MP6	Mount Pipe	96			Lbyy						Lateral
22	MP4	Mount Pipe	96			Lbyy						Lateral
23	MP2	Mount Pipe	96			Lbyy						Lateral

**Hot Rolled Steel Design Parameters (Continued)**

	Label	Shape	Length[in]	Lbyy[in]	Lbzz[in]	Lcomp top[in]	Lcomp bot[in]	L-torqu...	Kyy	Kzz	Cb	Function
24	MP5	Mount Pipe	96			Lbyy						Lateral
25	M4	Grating Horiz	27.295			Lbyy						Lateral
26	M9	Grating Horiz	27.295			Lbyy						Lateral
27	M14	Grating Horiz	27.295			Lbyy						Lateral
28	M18	Face Horiz	96			Lbyy						Lateral
29	M48	Face Horiz	96			Lbyy						Lateral
30	M62	Face Horiz	96			Lbyy						Lateral
31	M61A	Cross Horiz	33			Lbyy						Lateral
32	M60A	Cross Horiz	33			Lbyy						Lateral
33	M62A	Cross Horiz	33			Lbyy						Lateral
34	M5	Corner Plate	42			Lbyy						Lateral
35	M10	Corner Plate	42			Lbyy						Lateral
36	M15	Corner Plate	42			Lbyy						Lateral
37	M88A	Side Plate	1.5			Lbyy						Lateral
38	M89A	Side Plate	1.5			Lbyy						Lateral
39	M90A	Side Plate	1.5			Lbyy						Lateral
40	M91A	Side Plate	1.5			Lbyy						Lateral
41	M92A	Side Plate	1.5			Lbyy						Lateral
42	M93A	Side Plate	1.5			Lbyy						Lateral
43	M101	Mount Pipe	36									Lateral

**Basic Load Cases**

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distribut...	Area(...	Surface...
1	Dead	DL			-1	13				
2	Dead of Ice	RL				13		43		
4	Structure Wind (0)	None						86		
5	Structure Wind (30)	None						86		
6	Structure Wind (45)	None						86		
7	Structure Wind (60)	None						86		
8	Structure Wind (90)	None						86		
9	Structure Wind (120)	None						86		
10	Structure Wind (135)	None						86		
11	Structure Wind (150)	None						86		
12	Structure Wind w/ Ice (0)	None						86		
13	Structure Wind w/ Ice (30)	None						86		
14	Structure Wind w/ Ice (45)	None						86		
15	Structure Wind w/ Ice (60)	None						86		
16	Structure Wind w/ Ice (90)	None						86		
17	Structure Wind w/ Ice (120)	None						86		
18	Structure Wind w/ Ice (135)	None						86		
19	Structure Wind w/ Ice (150)	None						86		
20	Antenna Wind (0)	None				26				
21	Antenna Wind (30)	None				26				
22	Antenna Wind (45)	None				26				
23	Antenna Wind (60)	None				26				
24	Antenna Wind (90)	None				26				
25	Antenna Wind (120)	None				26				
26	Antenna Wind (135)	None				26				
27	Antenna Wind (150)	None				26				
28	Antenna Wind w/ Ice (0)	None				26				
29	Antenna Wind w/ Ice (30)	None				26				
30	Antenna Wind w/ Ice (45)	None				26				
31	Antenna Wind w/ Ice (60)	None				26				
32	Antenna Wind w/ Ice (90)	None				26				
33	Antenna Wind w/ Ice (120)	None				26				

**Basic Load Cases (Continued)**

BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distribut...	Area(...	Surface...
34 Antenna Wind w/ Ice (135)	None				26				
35 Antenna Wind w/ Ice (150)	None				26				
36 Maintenance Live Lm (1)	OL1				1				
37 Maintenance Live Lm (2)	OL2				1				
38 Maintenance Live Lm (3)	OL3				1				
41 Maintenance Live Lv (1)	OL6					1			
42 Maintenance Live Lv (2)	OL7					1			
43 Maintenance Live Lv (3)	OL8					1			

**Load Combinations**

Description	S...	P...	SRSS	B...	Fa...																		
1 Summary: 1.0D + 1.0W	Yes	Y		DL	1	20	1																
2 1.4D	Yes	Y		DL	1.4																		
3 1.2D + 1.0W(0)	Yes	Y		DL	1.2	4	1	20	1														
4 1.2D + 1.0W(30)	Yes	Y		DL	1.2	5	1	21	1														
5 1.2D + 1.0W(45)	Yes	Y		DL	1.2	6	1	22	1														
6 1.2D + 1.0W(60)	Yes	Y		DL	1.2	7	1	23	1														
7 1.2D + 1.0W(90)	Yes	Y		DL	1.2	8	1	24	1														
8 1.2D + 1.0W(120)	Yes	Y		DL	1.2	9	1	25	1														
9 1.2D + 1.0W(135)	Yes	Y		DL	1.2	10	1	26	1														
10 1.2D + 1.0W(150)	Yes	Y		DL	1.2	11	1	27	1														
11 1.2D + 1.0W(180)	Yes	Y		DL	1.2	4	-1	20	-1														
12 1.2D + 1.0W(210)	Yes	Y		DL	1.2	5	-1	21	-1														
13 1.2D + 1.0W(225)	Yes	Y		DL	1.2	6	-1	22	-1														
14 1.2D + 1.0W(240)	Yes	Y		DL	1.2	7	-1	23	-1														
15 1.2D + 1.0W(270)	Yes	Y		DL	1.2	8	-1	24	-1														
16 1.2D + 1.0W(300)	Yes	Y		DL	1.2	9	-1	25	-1														
17 1.2D + 1.0W(315)	Yes	Y		DL	1.2	10	-1	26	-1														
18 1.2D + 1.0W(330)	Yes	Y		DL	1.2	11	-1	27	-1														
19 1.2D + 1.0Di + 1.0Wi(0)	Yes	Y		DL	1.2	RL	1	12	1	28	1												
20 1.2D + 1.0Di + 1.0Wi(30)	Yes	Y		DL	1.2	RL	1	13	1	29	1												
21 1.2D + 1.0Di + 1.0Wi(45)	Yes	Y		DL	1.2	RL	1	14	1	30	1												
22 1.2D + 1.0Di + 1.0Wi(60)	Yes	Y		DL	1.2	RL	1	15	1	31	1												
23 1.2D + 1.0Di + 1.0Wi(90)	Yes	Y		DL	1.2	RL	1	16	1	32	1												
24 1.2D + 1.0Di + 1.0Wi(1...	Yes	Y		DL	1.2	RL	1	17	1	33	1												
25 1.2D + 1.0Di + 1.0Wi(1...	Yes	Y		DL	1.2	RL	1	18	1	34	1												
26 1.2D + 1.0Di + 1.0Wi(1...	Yes	Y		DL	1.2	RL	1	19	1	35	1												
27 1.2D + 1.0Di + 1.0Wi(1...	Yes	Y		DL	1.2	RL	1	12	-1	28	-1												
28 1.2D + 1.0Di + 1.0Wi(2...	Yes	Y		DL	1.2	RL	1	13	-1	39	-1												
29 1.2D + 1.0Di + 1.0Wi(2...	Yes	Y		DL	1.2	RL	1	14	-1	30	-1												
30 1.2D + 1.0Di + 1.0Wi(2...	Yes	Y		DL	1.2	RL	1	15	-1	31	-1												
31 1.2D + 1.0Di + 1.0Wi(2...	Yes	Y		DL	1.2	RL	1	16	-1	32	-1												
32 1.2D + 1.0Di + 1.0Wi(3...	Yes	Y		DL	1.2	RL	1	17	-1	33	-1												
33 1.2D + 1.0Di + 1.0Wi(3...	Yes	Y		DL	1.2	RL	1	18	-1	34	-1												
34 1.2D + 1.0Di + 1.0Wi(3...	Yes	Y		DL	1.2	RL	1	19	-1	35	-1												
35 1.2D + 1.5Lm(1) + 1.0...	Yes	Y		DL	1.2	4	.066	20	.066	O...	1.5												
36 1.2D + 1.5Lm(1) + 1.0...	Yes	Y		DL	1.2	5	.066	21	.066	O...	1.5												
37 1.2D + 1.5Lm(1) + 1.0...	Yes	Y		DL	1.2	6	.066	22	.066	O...	1.5												
38 1.2D + 1.5Lm(1) + 1.0...	Yes	Y		DL	1.2	7	.066	23	.066	O...	1.5												
39 1.2D + 1.5Lm(1) + 1.0...	Yes	Y		DL	1.2	8	.066	24	.066	O...	1.5												
40 1.2D + 1.5Lm(1) + 1.0...	Yes	Y		DL	1.2	9	.066	25	.066	O...	1.5												
41 1.2D + 1.5Lm(1) + 1.0...	Yes	Y		DL	1.2	10	.066	26	.066	O...	1.5												
42 1.2D + 1.5Lm(1) + 1.0...	Yes	Y		DL	1.2	11	.066	27	.066	O...	1.5												
43 1.2D + 1.5Lm(1) + 1.0...	Yes	Y		DL	1.2	4	-.066	20	-.066	O...	1.5												
44 1.2D + 1.5Lm(1) + 1.0...	Yes	Y		DL	1.2	5	-.066	21	-.066	O...	1.5												





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

Member	Shape	Code Check	Loc[in]	LC	She...	Lo...	LC	phi*P...	phi*P...	phi*M...	phi*M...	Eqn	
12	M89A	PL2-3/8x1/2	.153	1.5	16	.190	0	y 60	3825...	38475	.401	1.904	H1-1b
13	M2	HSS4X4X6	.151	40	43	.099	40	y 39	2037...	2151...	23.963	23.963	H1-1b
14	M92A	PL2-3/8x1/2	.150	1.5	18	.112	0	y 20	3825...	38475	.401	1.904	H1-1b
15	M91A	PL2-3/8x1/2	.149	1.5	13	.153	0	y 34	3825...	38475	.401	1.904	H1-1b
16	M88A	PL2-3/8x1/2	.146	1.5	7	.181	0	y 58	3825...	38475	.401	1.904	H1-1b
17	M90A	PL2-3/8x1/2	.144	1.5	12	.120	0	y 30	3825...	38475	.401	1.904	H1-1b
18	M8	L2x2x4	.144	0	4	.009	0	y 12	2952...	42480	.96	2.19	H2-1
19	M7	HSS4X4X6	.142	40	22	.066	24	y 32	2037...	2151...	23.963	23.963	H1-1b
20	M13	L2x2x4	.137	0	15	.009	0	y 7	2952...	42480	.96	2.19	H2-1
21	M3	L2x2x4	.134	0	9	.009	0	y 17	2952...	42480	.96	2.19	H2-1
22	MP6	HSS2.875x0.1...	.133	42.442	9	.040	42...	6	2239...	4301...	3.143	3.143	H1-1b
23	MP3	HSS2.875x0.1...	.128	42.442	7	.048	85...	11	2239...	4301...	3.143	3.143	H1-1b
24	MP9	HSS2.875x0.1...	.126	42.442	4	.057	42...	3	2239...	4301...	3.143	3.143	H1-1b
25	MP8	HSS2.875x0.1...	.119	42.442	4	.037	42...	12	2239...	4301...	3.143	3.143	H1-1b
26	MP2	HSS2.875x0.1...	.113	42.442	15	.038	42...	7	2239...	4301...	3.143	3.143	H1-1b
27	MP5	HSS2.875x0.1...	.109	42.442	10	.041	42...	18	2239...	4301...	3.143	3.143	H1-1b
28	MP4	HSS2.875x0.1...	.104	42.442	18	.037	42...	11	2239...	4301...	3.143	3.143	H1-1b
29	M4	L2x2x4	.099	0	16	.014	27...	y 36	2952...	42480	.96	2.19	H2-1
30	M14	L2x2x4	.098	0	6	.013	27...	y 26	2952...	42480	.96	2.19	H2-1
31	MP1	HSS2.875x0.1...	.096	42.442	7	.039	42...	8	2239...	4301...	3.143	3.143	H1-1b
32	MP7	HSS2.875x0.1...	.092	42.442	12	.041	42...	14	2239...	4301...	3.143	3.143	H1-1b
33	M9	L2x2x4	.091	0	11	.013	27...	y 31	2952...	42480	.96	2.19	H2-1
34	M62	HSS3.500x0.1...	.087	31.326	3	.032	48	4	4587...	7158...	6.338	6.338	H1-1b
35	M48	HSS3.500x0.1...	.085	31.326	8	.042	92...	39	4587...	7158...	6.338	6.338	H1-1b
36	M18	HSS3.500x0.1...	.085	31.326	14	.029	48	7	4587...	7158...	6.338	6.338	H1-1b
37	M29	L6.6x4.46x0.25	.077	39	3	.011	39	z 11	5143...	87561	2.465	7.125	H2-1
38	M25	HSS2.875x0.1...	.072	6.063	12	.029	92...	8	2239...	4301...	3.143	3.143	H1-1b
39	M65A	HSS2.875x0.1...	.072	6.063	18	.031	5.5...	3	2239...	4301...	3.143	3.143	H1-1b
40	M28	L6.6x4.46x0.25	.072	39	13	.011	0	z 7	5143...	87561	2.465	7.125	H2-1
41	M30	L6.6x4.46x0.25	.071	39	8	.011	39	z 17	5143...	87561	2.465	7.125	H2-1
42	M51	HSS2.875x0.1...	.070	6.063	7	.031	92...	11	2239...	4301...	3.143	3.143	H1-1b
43	M101	HSS2.875x0.1...	.055	29.937	11	.015	29...	12	3924...	4301...	3.143	3.143	H1-1b

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

# Square/Rectangular Flange Connection

TIA-222-H

Site Number	826053
Job number	019558058
Code	TIA-222-H

Normalize usages per TIA-222-H, Sec. 15.5

REACTIONS (ABOUT X - HORIZONTAL)	
Moment, Mu (kip-ft)	3.660
Shear, Vu (kips)	-1.472
Axial, Pu (kips) - <i>Negative for tension</i>	-0.040

BOLT CONFIGURATION	
Bolt Quantity, n <sub>b</sub>	4
Bolt Diameter, d <sub>b</sub> (in)	0.625
Bolt Grade	A325
Width between bolts, s (in)	7.00

PLATE CONFIGURATION	
Plate Shape	Square
Plate Grade	A572-50
Thickness of plate, t (in)	0.750
Width of plate, w (in)	9.00

SUPPORT ARM CONFIGURATION	
Member Shape	Square
Member Grade	A500-50
Thickness of Member, t (in)	0.375
Width of member, w (in)	4.000

Stiffeners present?

Member/Node Under Consideration	M12
Controlling Load Combination (X-Direction)	LC78
Controlling Load Combination (Y-Direction)	LC10

X and Y Reactions Simultaneous?  No

REACTIONS (ABOUT Y - VERTICAL)	
Moment, Mu (kip-ft)	1.601
Shear, Vu (kips)	1.242
Axial, Pu (kips) - <i>Negative for tension</i>	0.060

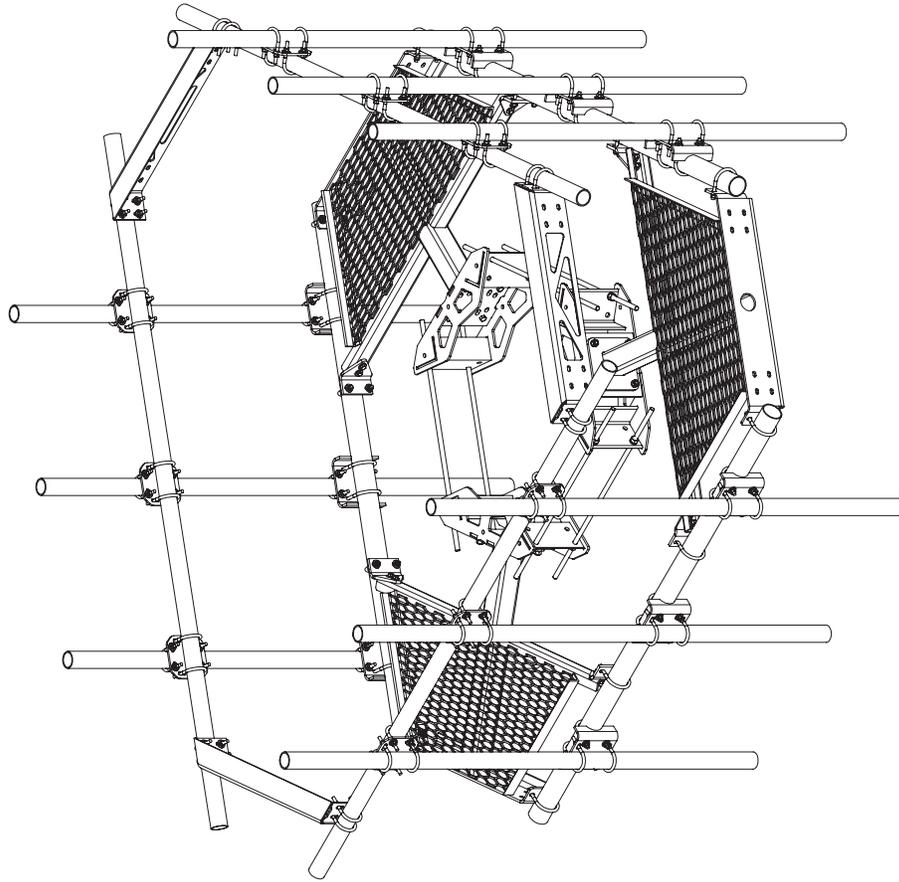
BOLT USAGE	
Maximum Tension in Bolt, Tub (kip)	3.147
Nominal Tensile Strength, φR <sub>t</sub> (kip)	20,340
Tensile Usage (Section 4.9.6.1)	<b>15%</b>

PLATE USAGE	
Effective width of plate, b <sub>eff</sub> (in)	4.493
Ultimate flexural load in plate, Mu (kip-in)	7.069
Factored flexural capacity, φM <sub>n</sub> (kip-in)	28,430
Flexural Usage	<b>25%</b>

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

NOTES:

- 1.0 GENERAL
  - 1.1 ALL METRIC DIMENSIONS ARE IN BRACKETS
  - 1.2 FOR PATENTS, SEE WWW.COMMSCOPE.COM
- 2.0 DESIGN NOTES
  - 2.1 TORQUE L-BOLTS TO 44 FT-LBS
- 3.0 MANUFACTURING/SPECIAL REQUIREMENTS
- 4.0 TEST
- 5.0 PACKAGING



REV.	ECN	REVISIONS	BY	DATE
A	10272PC	INITIAL RELEASE	HDAI	03/09/2021

PATENT PENDING

COMMSCOPE, INC. OF NORTH CAROLINA

TOLERANCES	SAP MATERIAL MASTER
1 PLACE .X ± .25	MC-PK8-DSH
2 PLACE .XX ± 0.12	
3 PLACE .XXX ± 0.06	
ANGLES ± 2°	

FINISH GALV A123 MATERIAL A500, A1011/A1018

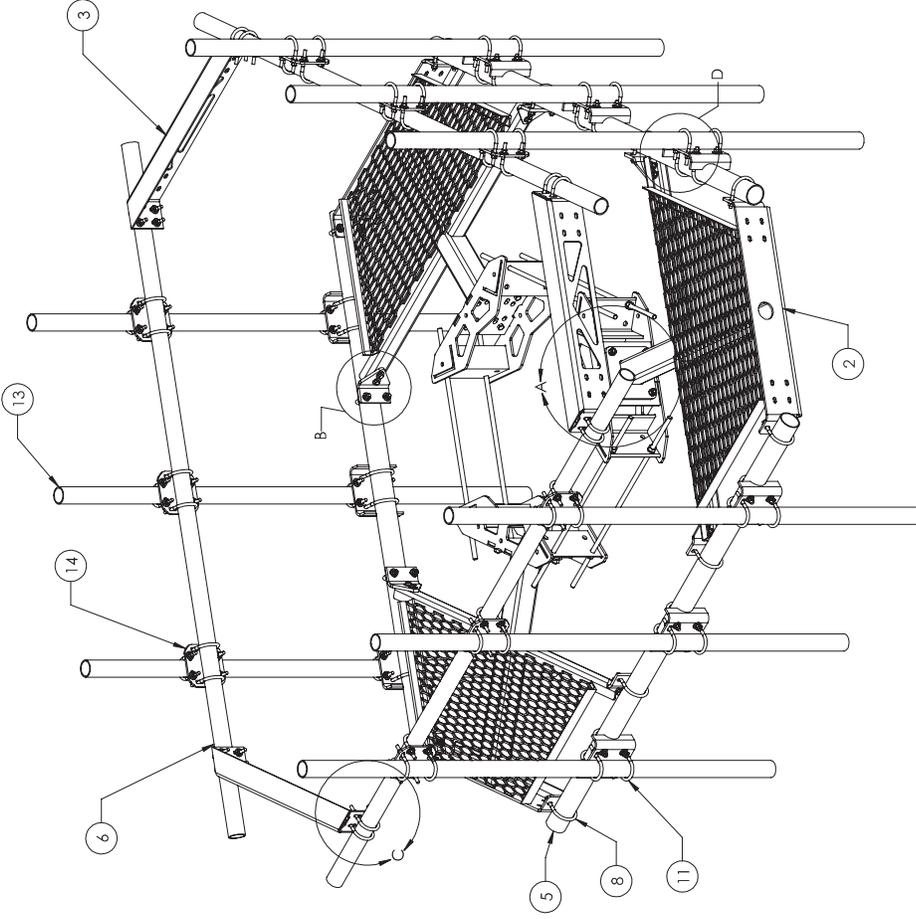
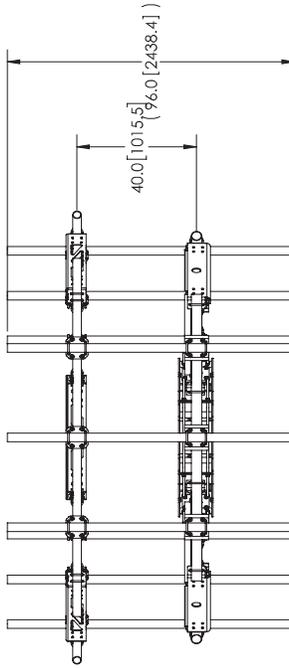
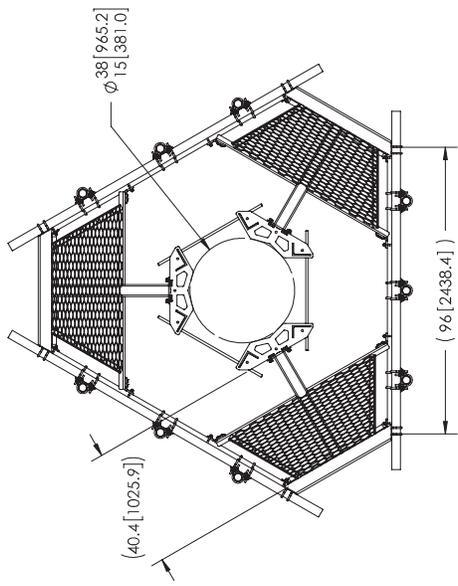
NAME	DATE	TITLE
MRC 02/17/20	03/16/2021	LOW PROFILE PLATFORM FACE
CE ROGHANSON		
RE FAT024		
AD BURCSS		
ECN 10272PC		

SCALE	DOCUMENT NO.
1:32	MC-PK8-DSH

SIZE	INSL	VERSION	STATUS	REVISION	DRAWING	SHEET
C		01	AD	00	AD	A

DENSITY	MASS	VOLUME	SURFACE AREA	HEIGHT	LENGTH	WIDTH
lb/in <sup>3</sup>	lb	in <sup>3</sup>	in <sup>2</sup>	90°	46"	29"

NOTES:



ITEM	PART NO.	DESCRIPTION	QTY.
1	MC-RMT1550-3	12" - 50" OD RINGMOUNT	1
2	MITC300602	SECTOR WELDMENT FOR SNUB NOSE PLATFORM	3
3	MIT195801	Corner Weldment Snub Nose Handrail	1
4	GB-0520A	5/8" X 2" GALV BOLT KIT (A325)	12
5	MIT54796	3.50" OD X 96" GALV PIPE	3
6	MIT546120	2.875" O.D. X 120" PIPE	3
7	GW-04	1/2" GALV FLAT WASHER	12
8	GUB-4355	1/2" X 3-5/8" X 5" GALV U-BOLT	12
9	MITC300618	MOUNTING PLATE FOR MT-196	6
10	GB-04205	1/2" X 2" GALV BOLT KIT	12
11	MT-219MH	3.5" OD X 2-7/8" OD Clamp Bracket Assembly	9
12	GUB-4352	1/2" X 3" X 5-1/4" GALV U-BOLT	12
13	MIT54696	Ø 2.875" O.D. X 96 PIPE	9
14	XP-2525	CROSSOVER PLATE KIT, 2-7/8 OD X 2-7/8 OD	9

COMMSCOPE, INC. OF NORTH CAROLINA

TITLE  
LOW PROFILE PLATFORM FACE

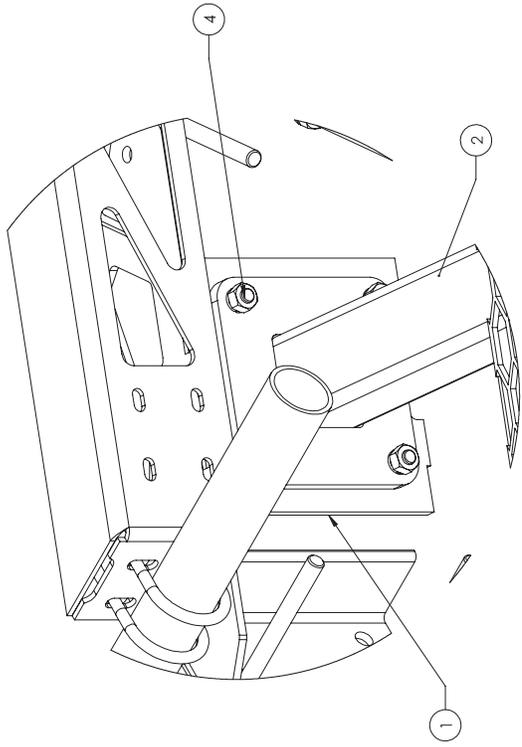
SCALE  
1:32

DOCUMENT NO.  
MC-PK8-DSH

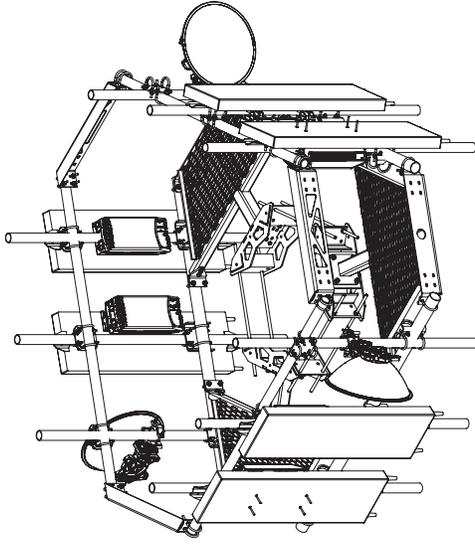
DRAWING	STATUS	AD	A
	VERSION	00	

© 2021 CommScope, Inc.

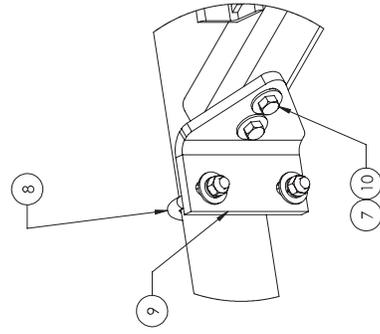
NOTES:



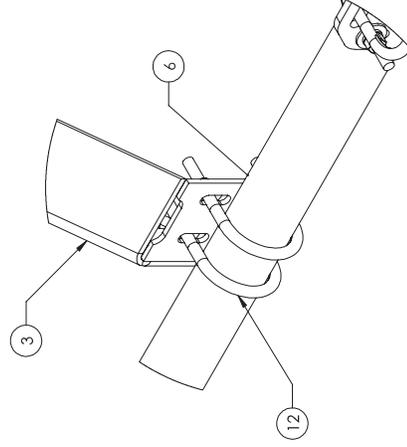
DETAIL A  
SCALE 1 : 4



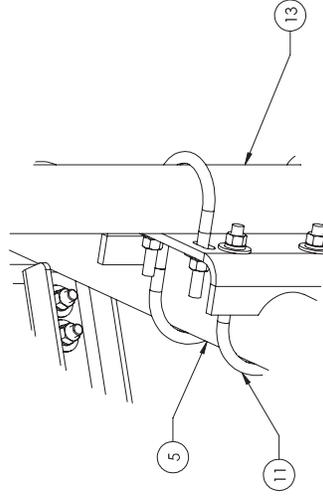
WITH ANTENNAS



DETAIL B  
SCALE 1 : 4



DETAIL C  
SCALE 1 : 4



DETAIL D  
SCALE 1 : 4

COMMSCOPE, INC. OF NORTH CAROLINA

TITLE

LOW PROFILE PLATFORM FACE

SIZE  
C

SCALE  
1:24

DOCUMENT NO.  
MC-PK8-DSH

DRAWING	
VERSION	STATUS
00	AD
REVISION	A

SHEET  
3 OF 3

© 2021 CommScope, Inc.

# Exhibit F

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

RADIO FREQUENCY EMISSIONS ANALYSIS REPORT  
EVALUATION OF HUMAN EXPOSURE POTENTIAL  
TO NON-IONIZING EMISSIONS

Dish Wireless Existing Facility

Site ID: NJJER01091A

826053

88 Main Street

Monroe, Connecticut 06468

**April 27, 2022**

**EBI Project Number: 6222002988**

Site Compliance Summary	
Compliance Status:	<b>COMPLIANT</b>
Site total MPE% of FCC general population allowable limit:	<b>10.16%</b>

April 27, 2022

Attn: Dish Wireless

Emissions Analysis for Site: NJJER01091A - 826053

EBI Consulting was directed to analyze the proposed Dish Wireless facility located at **88 Main Street in Monroe, Connecticut** for the purpose of determining whether the emissions from the Proposed Dish Wireless Antenna Installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01 and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter ( $\mu\text{W}/\text{cm}^2$ ). The number of  $\mu\text{W}/\text{cm}^2$  calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits; therefore, it is necessary to report results and limits in terms of percent MPE rather than power density.

All results were compared to the FCC (Federal Communications Commission) radio frequency exposure rules, 47 CFR 1.1307(b)(1) – (b)(3), to determine compliance with the Maximum Permissible Exposure (MPE) limits for General Population/Uncontrolled environments as defined below.

General population/uncontrolled exposure limits apply to situations in which the general population may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Therefore, members of the general population would always be considered under this category when exposure is not employment related, for example, in the case of a telecommunications tower that exposes persons in a nearby residential area.

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ( $\mu\text{W}/\text{cm}^2$ ). The general population exposure limits for the 600 MHz and 700 MHz frequency bands are approximately  $400 \mu\text{W}/\text{cm}^2$  and  $467 \mu\text{W}/\text{cm}^2$ , respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 11 GHz frequency bands is  $1000 \mu\text{W}/\text{cm}^2$ . Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

Occupational/controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully aware of the potential for exposure and can exercise control over their exposure.

Occupational/controlled exposure limits also apply where exposure is of a transient nature as a result of incidental passage through a location where exposure levels may be above general population/uncontrolled limits (see below), as long as the exposed person has been made fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Additional details can be found in FCC OET 65.

## **CALCULATIONS**

Calculations were done for the proposed Dish Wireless Wireless antenna facility located at 88 Main Street in Monroe, Connecticut using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since Dish Wireless is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 20 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was focused at the base of the tower. For this report, the sample point is the top of a 6-foot person standing at the base of the tower.

For all calculations, all equipment was calculated using the following assumptions:

- 1) 4 n71 channels (600 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 2) 4 n70 channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.
- 3) 4 n66 channels (AWS Band - 2190 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.
- 4) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.
- 5) For the following calculations, the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 20 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used in this direction. This value is a very conservative

estimate as gain reductions for these particular antennas are typically much higher in this direction.

- 6) The antennas used in this modeling are the JMA MX08FRO665-21 for the 600 MHz / 1900 MHz / 2190 MHz channel(s) in Sector A, the JMA MX08FRO665-21 for the 600 MHz / 1900 MHz / 2190 MHz channel(s) in Sector B, the JMA MX08FRO665-21 for the 600 MHz / 1900 MHz / 2190 MHz channel(s) in Sector C. This is based on feedback from the carrier with regard to anticipated antenna selection. All Antenna gain values and associated transmit power levels are shown in the Site Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 20 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 7) The antenna mounting height centerline of the proposed antennas is 147 feet above ground level (AGL).
- 8) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.
- 9) All calculations were done with respect to uncontrolled / general population threshold limits.

## Dish Wireless Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	JMA MX08FRO665-21	Make / Model:	JMA MX08FRO665-21	Make / Model:	JMA MX08FRO665-21
Frequency Bands:	600 MHz / 1900 MHz / 2190 MHz	Frequency Bands:	600 MHz / 1900 MHz / 2190 MHz	Frequency Bands:	600 MHz / 1900 MHz / 2190 MHz
Gain:	11.45 dBd / 15.75 dBd / 16.75 dBd	Gain:	11.45 dBd / 15.75 dBd / 16.75 dBd	Gain:	11.45 dBd / 15.75 dBd / 16.75 dBd
Height (AGL):	147 feet	Height (AGL):	147 feet	Height (AGL):	147 feet
Channel Count:	12	Channel Count:	12	Channel Count:	12
Total TX Power (W):	440.00 Watts	Total TX Power (W):	440.00 Watts	Total TX Power (W):	440.00 Watts
ERP (W):	2,529.88	ERP (W):	2,529.88	ERP (W):	2,529.88
Antenna AI MPE %:	<b>0.58%</b>	Antenna BI MPE %:	<b>0.58%</b>	Antenna CI MPE %:	<b>0.58%</b>

Site Composite MPE %	
Carrier	MPE %
Dish Wireless (Max at Sector A):	0.58%
AT&T	2.47%
Verizon	1.55%
T-Mobile	5.56%
<b>Site Total MPE % :</b>	<b>10.16%</b>

Dish Wireless MPE % Per Sector	
Dish Wireless Sector A Total:	0.58%
Dish Wireless Sector B Total:	0.58%
Dish Wireless Sector C Total:	0.58%
<b>Site Total MPE % :</b>	<b>10.16%</b>

Dish Wireless Maximum MPE Power Values (Sector A)							
Dish Wireless Frequency Band / Technology (Sector A)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ( $\mu\text{W}/\text{cm}^2$ )	Frequency (MHz)	Allowable MPE ( $\mu\text{W}/\text{cm}^2$ )	Calculated % MPE
Dish Wireless 600 MHz n71	4	112.10	147.0	0.81	600 MHz n71	400	0.20%
Dish Wireless 1900 MHz n70	4	245.22	147.0	1.77	1900 MHz n70	1000	0.18%
Dish Wireless 2190 MHz n66	4	275.14	147.0	1.99	2190 MHz n66	1000	0.20%
						<b>Total:</b>	<b>0.58%</b>

• NOTE: Totals may vary by approximately 0.01% due to summation of remainders in calculations.

## Summary

All calculations performed for this analysis yielded results that were **within** the allowable limits for general population exposure to RF Emissions.

The anticipated maximum composite contributions from the Dish Wireless facility as well as the site composite emissions value with regards to compliance with FCC's allowable limits for general population exposure to RF Emissions are shown here:

Dish Wireless Sector	Power Density Value (%)
Sector A:	0.58%
Sector B:	0.58%
Sector C:	0.58%
Dish Wireless Maximum MPE % (Sector A):	0.58%
Site Total:	10.16%
Site Compliance Status:	<b>COMPLIANT</b>

The anticipated composite MPE value for this site assuming all carriers present is **10.16%** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

# Exhibit G

## **Letter of Authorization**



1200 MacArthur Blvd, Suite 200  
Mahwah, NJ 07430

Phone: (862) 226-6914  
www.crowncastle.com

## **Crown Castle Letter of Authorization**

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

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

**Re: Tower Share Application**  
**Crown Castle telecommunications site at:**  
**88 MAIN STREET, MONROE, CT 06468**

T-MOBILE USA TOWER LLC ("Crown Castle") hereby authorizes DISH NETWORK, 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:

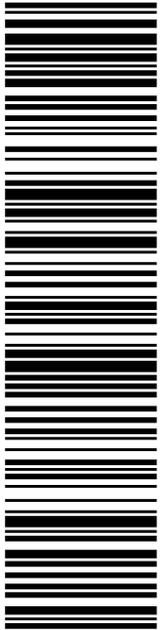
**Crown Site ID/Name: 826053/Monroe-1/Rt 25**  
**Customer Site ID: NJJER01091A/CT-CCI-T-826053**  
**Site Address: 88 Main Street, Monroe, CT 06468**

Crown Castle

By:  \_\_\_\_\_ Date: 04/27/2022  
Robin Cannizzaro  
Real Estate Specialist

# Exhibit H

## Recipient Mailings



**USPS TRACKING #**

**9405 5036 9930 0235 6994 43**

Electronic Rate Approved #038555749

**SHIP**

**TO: KEN KELLOGG**  
**FIRST SELECTMAN**  
**7 FAN HILL RD**  
**MONROE CT 06468-1847**

**P**

**US POSTAGE**  
Flat Rate Env  
**\$8.95**

**U.S. POSTAGE PAID**  
click-n-ship®

Mailed from 01566

**PRIORITY MAIL 2-DAY™**

DEBORAH CHASE  
NORTHEAST SITE SOLUTIONS  
420 MAIN ST  
STE 1  
STURBRIDGE MA 01566-1359

Expected Delivery Date: 05/02/22  
Ref#: DS-826053  
**0006**

**R005**

**UNITED STATES POSTAL SERVICE®**

**Click-N-Ship®**

usps.com  
9405 5036 9930 0235 6994 43 0089 5000 0010 6468

04/28/2022



Cut on dotted line.

## Instructions

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

## Click-N-Ship® Label Record

**USPS TRACKING # :**  
**9405 5036 9930 0235 6994 43**

Trans. #: 562378215	Priority Mail® Postage: <b>\$8.95</b>
Print Date: 04/28/2022	Total: <b>\$8.95</b>
Ship Date: 04/28/2022	
Expected Delivery Date: 05/02/2022	

**From:** DEBORAH CHASE  
NORTHEAST SITE SOLUTIONS  
420 MAIN ST  
STE 1  
STURBRIDGE MA 01566-1359

Ref#: DS-826053

**To:** KEN KELLOGG  
FIRST SELECTMAN  
7 FAN HILL RD  
MONROE CT 06468-1847

\* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.



Thank you for shipping with the United States Postal Service!  
Check the status of your shipment on the USPS Tracking® page at usps.com



**UNITED STATES  
POSTAL SERVICE®**

**Click-N-Ship®**

**P**

usps.com 9405 5036 9930 0235 6994 67 0089 5000 0010 6468  
**US POSTAGE**  
 Flat Rate Env  
 U.S. POSTAGE PAID  
Click-N-Ship®

04/28/2022 Mailed from 01566

**PRIORITY MAIL 2-DAY™**

Expected Delivery Date: 05/02/22  
 Ref#: DS-826053  
**0006**

SHIP TO: RICK SCHULTZ  
 TOWN PLANNER  
 7 FAN HILL RD  
 MONROE CT 06468-1847

**USPS TRACKING #**



**9405 5036 9930 0235 6994 67**

Electronic Rate Approved #038555749



Cut on dotted line.

### Instructions

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

### Click-N-Ship® Label Record

**USPS TRACKING # :**  
**9405 5036 9930 0235 6994 67**

Trans. #: 562378215	Priority Mail® Postage: <b>\$8.95</b>
Print Date: 04/28/2022	Total: <b>\$8.95</b>
Ship Date: 04/28/2022	
Expected Delivery Date: 05/02/2022	

**From:** DEBORAH CHASE  
 NORTHEAST SITE SOLUTIONS  
 420 MAIN ST  
 STE 1  
 STURBRIDGE MA 01566-1359

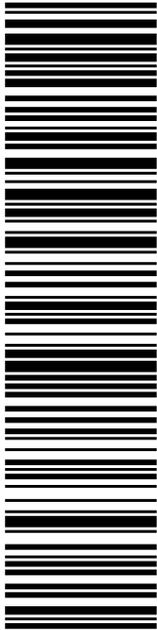
Ref#: DS-826053

**To:** RICK SCHULTZ  
 TOWN PLANNER  
 7 FAN HILL RD  
 MONROE CT 06468-1847

\* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.



Thank you for shipping with the United States Postal Service!  
 Check the status of your shipment on the USPS Tracking® page at usps.com



**USPS TRACKING #**

**9405 5036 9930 0235 6994 74**

Electronic Rate Approved #038555749

**SHIP TO:** RICH ZAJAC  
CROWN CASTLE  
4545 E RIVER RD  
STE 320  
W HENRIETTA NY 14586-9024

**P**

04/28/2022

**PRIORITY MAIL 2-DAY™**

Expected Delivery Date: 05/02/22  
Ref#: DS-826053  
**0006**

**R013**

**UNITED STATES POSTAL SERVICE®**

**Click-N-Ship®**

usps.com  
9405 5036 9930 0235 6994 74 0089 5000 0031 4586

**US POSTAGE**  
Flat Rate Envoy

**U.S. POSTAGE PAID**  
Click-N-Ship®

Mailed from 01566



Cut on dotted line.

### Instructions

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

### Click-N-Ship® Label Record

**USPS TRACKING # :**  
**9405 5036 9930 0235 6994 74**

Trans. #: 562378215	Priority Mail® Postage: <b>\$8.95</b>
Print Date: 04/28/2022	Total: <b>\$8.95</b>
Ship Date: 04/28/2022	
Expected Delivery Date: 05/02/2022	

**From:** DEBORAH CHASE  
NORTHEAST SITE SOLUTIONS  
420 MAIN ST  
STE 1  
STURBRIDGE MA 01566-1359

Ref#: DS-826053

**To:** RICH ZAJAC  
CROWN CASTLE  
4545 E RIVER RD  
STE 320  
W HENRIETTA NY 14586-9024

\* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.



Thank you for shipping with the United States Postal Service!  
Check the status of your shipment on the USPS Tracking® page at usps.com



**UNITED STATES POSTAL SERVICE®**

**Click-N-Ship®**

**P**

USPS.com 9405 5036 9930 0235 6994 81 0089 5000 0010 6468  
**US POSTAGE**  
 Flat Rate Env  
 U.S. POSTAGE PAID  
 Click-N-Ship®

04/28/2022 Mailed from 01566

**PRIORITY MAIL 2-DAY™**

Expected Delivery Date: 05/02/22  
 Ref#: DS-826053  
**0006**

DEBORAH CHASE  
 NORTHEAST SITE SOLUTIONS  
 420 MAIN ST  
 STE 1  
 STURBRIDGE MA 01566-1359

**R013**

SHIP TO:  
 STEPNEY VOLUNTEER FIRE CO  
 88 MAIN ST  
 MONROE CT 06468-1637

**USPS TRACKING #**



**9405 5036 9930 0235 6994 81**

Electronic Rate Approved #038555749



Cut on dotted line.

### Instructions

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

### Click-N-Ship® Label Record

**USPS TRACKING # :**  
**9405 5036 9930 0235 6994 81**

Trans. #: 562378215	Priority Mail® Postage: <b>\$8.95</b>
Print Date: 04/28/2022	Total: <b>\$8.95</b>
Ship Date: 04/28/2022	
Expected Delivery Date: 05/02/2022	

**From:** DEBORAH CHASE  
 NORTHEAST SITE SOLUTIONS  
 420 MAIN ST  
 STE 1  
 STURBRIDGE MA 01566-1359

Ref#: DS-826053

**To:** STEPNEY VOLUNTEER FIRE CO  
 88 MAIN ST  
 MONROE CT 06468-1637

\* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.



Thank you for shipping with the United States Postal Service!  
 Check the status of your shipment on the USPS Tracking® page at usps.com

826053 Crown  
02810



FARMINGTON  
210 MAIN ST  
FARMINGTON, CT 06032-9998  
(800)275-8777

04/28/2022 04:49 PM

Product	Qty	Unit Price	Price
---------	-----	------------	-------

Prepaid Mail	1		\$0.00
West Henrietta, NY 14586			
Weight: 0 lb 1.90 oz			
Acceptance Date:			
Thu 04/28/2022			
Tracking #:			
9405 5036 9930 0235 6994 74			

Prepaid Mail	1		\$0.00
Monroe, CT 06468			
Weight: 0 lb 9.30 oz			
Acceptance Date:			
Thu 04/28/2022			
Tracking #:			
9405 5036 9930 0235 6994 67			

Prepaid Mail	1		\$0.00
Monroe, CT 06468			
Weight: 0 lb 9.20 oz			
Acceptance Date:			
Thu 04/28/2022			
Tracking #:			
9405 5036 9930 0235 6994 43			

Prepaid Mail	1		\$0.00
Monroe, CT 06468			
Weight: 0 lb 9.20 oz			
Acceptance Date:			
Thu 04/28/2022			
Tracking #:			
9405 5036 9930 0235 6994 81			

Grand Total: \$0.00

\*\*\*\*\*  
Every household in the U.S. is now  
eligible to receive a second set  
of 4 free test kits.  
Go to [www.covidtests.gov](http://www.covidtests.gov)  
\*\*\*\*\*

Preview your Mail  
Track your Packages  
Sign up for FREE @  
<https://informedelivery.usps.com>  
All sales final on stamps and postage.  
Refunds for guaranteed services only.  
Thank you for your business  
Tell us about your experience  
Go to: <https://postalexperience.com/Pos>  
or scan this code with