

STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL

IN RE: :
: :
A PETITION FOR A DECLARATORY : PETITION NO. _____
RULING ON THE NEED TO OBTAIN A :
SITING COUNCIL CERTIFICATE FOR THE :
PROPOSED MODIFICATION OF AN :
EXISTING WIRELESS :
TELECOMMUNICATIONS FACILITY AT :
128 MATHER STREET, WILTON, : JUNE 29, 2022
CONNECTICUT :

PETITION FOR A DECLARATORY RULING:
INSTALLATION HAVING NO
SUBSTANTIAL ADVERSE ENVIRONMENTAL EFFECT

I. Introduction

Pursuant to Sections 16-50j-38 and 16-50j-39 of the Regulations of Connecticut State Agencies (“R.C.S.A.”), DISH Wireless, LLC (“DISH”) hereby petitions the Connecticut Siting Council (the “Council”) for a declaratory ruling (“Petition”) that no Certificate of Environmental Compatibility and Public Need (“Certificate”) is required under Section 16-50k(a) of the Connecticut General Statutes (“C.G.S.”) for the modification of an existing wireless telecommunications facility at 128 Mather Street in Wilton, Connecticut (the “Existing Facility”).

II. Existing Facility

The Existing Facility is located on an approximately 75-acre wooded parcel that is owned by the Town of Wilton and a portion of which is developed as the Town’s waste transfer station. The Facility consists of a 180-foot self-support tower and associated compound, which is owned by Crown Castle, and currently includes the telecommunications equipment of several wireless carriers. **Attachment 1** contains the owner’s authorization permitting DISH to file this Petition. The Facility was originally approved by the Connecticut Siting Council, Docket No. 94 on May 3, 1988, as documented in **Attachment 2**.

III. DISH Facility

DISH’s proposed facility is illustrated on the plans submitted as **Attachment 3**. DISH proposes the shared use of the Existing Facility to provide FCC licensed services. DISH will install three (3) 600/1900 MHz 5G antennas and six (6) remote radiohead units (RRH) on new mounts installed at the centerline height of approximately 170’ AGL.

DISH has confirmed that the Existing Facility is capable of supporting the addition of DISH's antennas and tower mounted equipment, as documented in the tower Structural Analysis Report annexed hereto as **Attachment 4**, and once new mounts are installed as documented in the Mount Analysis Report annexed hereto as **Attachment 5**.

DISH's 5' x 7' lease area is located to the West of the tower and adjacent to an existing equipment building. In order to fully enclose its ground equipment, DISH will install a 9'-0" x 1'-11" fence extension. The new section of fence will match the existing compound fence. Within its lease area, DISH will install a 5' x 7' steel platform for its ground equipment, supported by four (4) 12" x 12" footpads at grade.

Installation of DISH's facility will cost approximately \$48,000 and will take approximately two (2) weeks to complete. Construction will occur during normal business hours, or as allowed by the tower and/or property owner.

IV. The Proposed Modification Will Not Have A Substantial Adverse Environmental Effect

1. Physical Environmental Effects

The attachment of DISH's antennas to the existing tower, and the installation of radio and electrical equipment within the expanded compound will not involve a significant alteration to the physical and environmental characteristics of the Property. No native trees will need to be removed and no on-site or off-site wetlands or watercourses will be impacted by the proposed facility expansion.

2. Visual Effects

Given the height of the existing tower, 180' AGL, which has existing antennas at multiple levels, DISH's proposed antenna installation at a centerline height of approximately 170' AGL would have a minimal visual impact. The proposed compound expansion will impact only a portion of the existing fenced perimeter and will also have a minimal visual impact.

3. FCC Compliance

Radio frequency ("RF") emissions resulting from DISH's shared use of the Existing Facility will be well below the standards adopted by the Federal Communications Commission ("FCC"). Included in **Attachment 6** is a Radio Frequency Emissions Analysis Report prepared by EBI Consulting. This report confirms that the modified facility will operate well within the RF emission standards established by the FCC.

V. Notice to the City, Property Owner and Abutting Landowners

On June 29, 2022, a copy of this Petition was sent to Lynne Vanderslice, First Selectwoman and Michael Wrinn, Director of Planning & Land Use for the Town of Wilton. A notice of DISH's intent to file this Petition was also sent to the owners of land that may be considered to abut the Property. Included in **Attachment 7** is a sample abutter's letter and the list of those abutting landowners who were sent notice.

VI. Conclusion

Based on the information provided above, the Petitioners respectfully requests that the Council issue a determination in the form of a declaratory ruling that the installation of a temporary tower at the Property will not have a substantial adverse environmental effect and does not require the issuance of a Certificate of Environmental Compatibility and Public Need pursuant to § 16-50k of the General Statutes.

Respectfully submitted,

Denise Sabo
Northeast Site Solutions
Agent for DISH Wireless
(860) 209-4690
denise@northeastsitesolutions.com

Attachments

Cc: Lynne Vanderslice, First Selectwoman & Property Owner
Wilton Town Hall
238 Danbury Road
Wilton, CT 06897

Michael Wrinn, Director of Planning & Land Use
Wilton Town Annex
238 Danbury Road
Wilton, CT 06897

Crown Atlantic Company – Tower Owner

ATTACHMENT 1



6325 Ardrey Kell Rd, Suite 600
Charlotte, NC 28277

Phone:
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:
128 MATHER STREET, WILTON, CT 06897

CROWN ATLANTIC COMPANY 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: 806353/BRG 124 943066
Customer Site ID: NJJER01086A/CT-CCI-T-806353
Site Address: 128 MATHER STREET, WILTON, CT 06897

Crown Castle

By:  Date: 04/07/2022
Robin Cannizzaro
Real Estate Specialist



Town of Wilton, CT

Property Listing Report

Map Block Lot

23-23

Account

006497

Property Information

Property Location	MATHER ST
Owner	WILTON TOWN OF
Co-Owner	
Mailing Address	238 DANBURY RD WILTON CT 06897
Land Use	21V Ex Com MDL-00
Land Class	E
Zoning Code	R-2
Census Tract	
Sub Lot	
Neighborhood	4000
Acreage	74.12
Utilities	
Lot Setting/Desc	Rolling
Survey Map	
Foundation	3

Photo



Sketch



Primary Construction Details

Year Built	0
Stories	
Building Style	
Building Use	
Building Condition	
Floors	Dirt/None
Total Rooms	

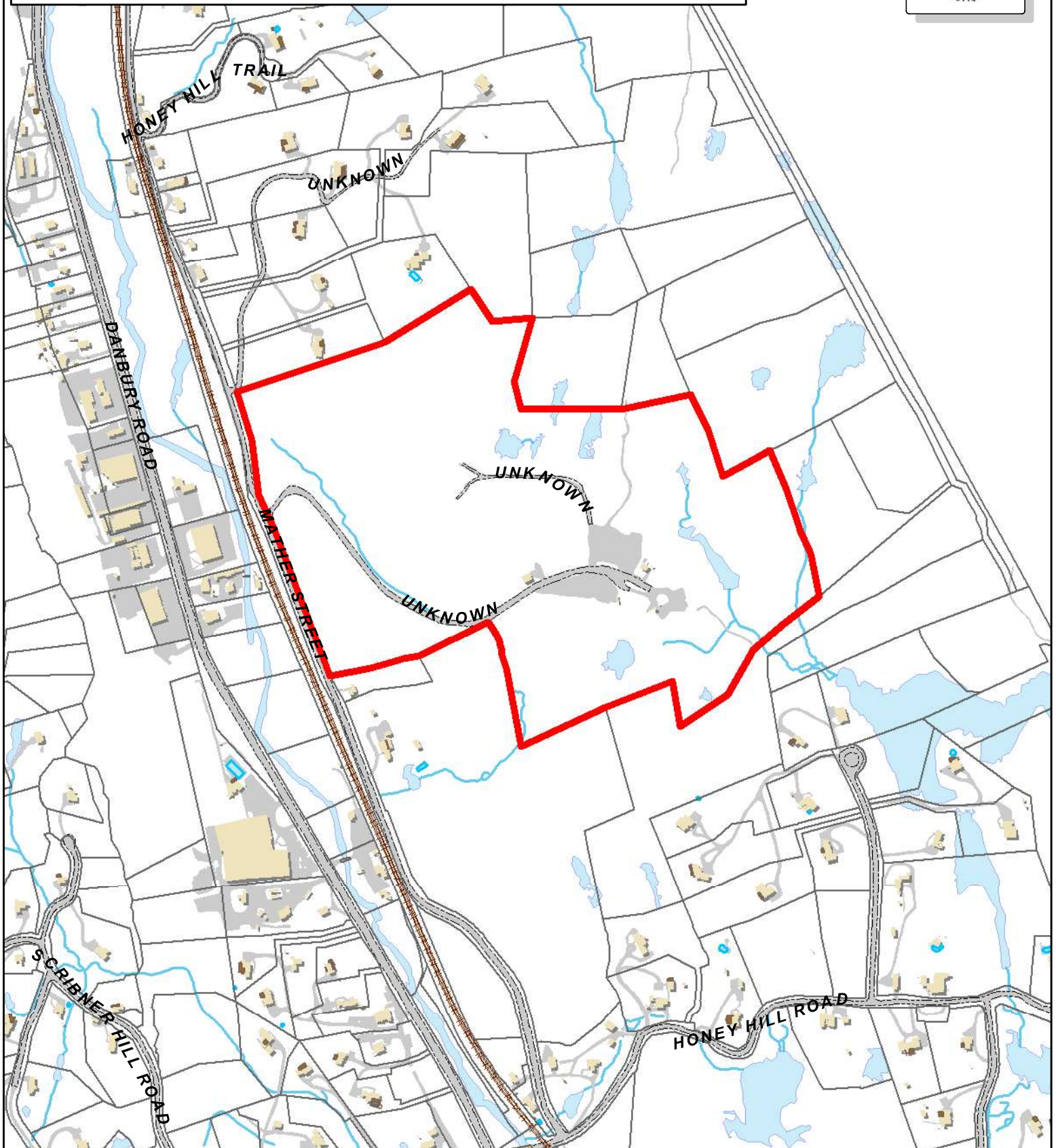
Bedrooms	
Full Bathrooms	
Half Bathrooms	
Bath Style	
Kitchen Style	
Roof Style	Gable/Hip
Roof Cover	Enam Mtl Shing

Exterior Walls	Pre-finsh Metl
Interior Walls	Drywall
Heating Type	None
Heating Fuel	None
AC Type	None
Gross Bldg Area	1200
Total Living Area	1200

Town of Wilton, Connecticut - Assessment Parcel Map

MBL: 23-23

Address: MATHER ST



Approximate Scale:

1 inch = 600 feet

Disclaimer:
This map is for informational purposes only.
All information is subject to verification by any user.
The Town of Wilton and its mapping contractors
assume no legal responsibility for the information contained herein.

Map Grand List Date: Oct 2017

0 350 700 1,050 Feet

ATTACHMENT 2

DOCKET NO. 94 - AN APPLICATION OF METRO : Connecticut
MOBILE CTS OF FAIRFIELD COUNTY, INC., FOR :
A CERTIFICATE OF ENVIRONMENTAL COMPATI- : Siting
BILITY AND PUBLIC NEED FOR CELLULAR : Council
TELEPHONE ANTENNAS AND ASSOCIATED EQUIP- :
MENT IN THE TOWN OF WILTON, CONNECTICUT. May 3, 1988

DECISION AND ORDER

Pursuant to the foregoing opinion, the Connecticut Siting Council finds that the effects associated with the construction and operation of a cellular monopole structure at the alternative Mather Street site, including effects on the natural environment, ecological balance, public health and safety, scenic, historic and recreational values, forests and parks, air and water purity and fish and wildlife, are not significant either alone or cumulatively with other effects, are not in conflict with the policies of the state concerning such effects, and are not sufficient reason to deny the application, and therefore, directs that a Certificate of Environmental Compatibility and Public Need, as provided by Section 16-50k of the General Statutes of Connecticut (CGS) be issued to Metro Mobile CTS of Fairfield County, Inc. (Metro Mobile) for the construction, operation, and maintenance of a cellular telephone tower site and associated equipment at the "Wilton-D/AA" site on Mather Street in Wilton, Connecticut.

The proposed "D-Wilton" site on Richdale Drive and alternative "D/A Wilton" site on Quail Ridge Road are hereby denied.

The facility shall be constructed, operated, and maintained as specified in the Council's record in this matter, and subject to the following conditions:

1. The tower shall be constructed as a monopole or lattice tower, as determined by the Council in approving the development and management plan, and be no taller than necessary to provide the proposed service, and in no event shall exceed a total height of 193 feet, including antennas and associated equipment.
2. The facility shall be constructed in accordance with all applicable federal, state, and municipal laws and regulations.

3. Unless necessary to comply with condition number two, above, no lights shall be installed on this tower.
4. The Certificate Holder shall prepare a development and management (d&m) plan for this site in compliance with Sections 16-50j-75 through 16-50j-77 of the Regulations of State Agencies. The d&m plan shall provide monopole and lattice tower foundation design specifications and plans for permanent evergreen screening around the outside perimeter of the eight-foot chain link fence which will surround the site.
5. The Certificate Holder shall provide the Council with the results of additional subsurface reconnaissance at the proposed site prior to the commencement of any construction at this site.
6. The Certificate Holder or its successor shall notify the Council if and when directional antennas or any equipment other than that listed in this application are added to this facility.
7. The Certificate Holder or its successor shall permit public or private entities to share space on the tower for fair consideration, or shall provide any requesting entity with specific legal, technical, environmental, or economic reasons precluding such tower sharing.
8. If this facility does not provide, or permanently ceases to provide, cellular service following the completion of construction, this Decision and Order shall be void, and the tower and all associated equipment in this application shall be dismantled and removed or reapplication for any new use shall be made to the Council before any such new use is made.
9. The Certificate Holder shall comply with any future radio frequency (RF) standards promulgated by state or federal regulatory agencies. Upon the establishment of any new governmental RF standards, the facility granted in this Decision and Order shall be brought into compliance with such standards.

10. Unless otherwise approved by the Council, this Decision and Order shall be void if all construction authorized herein is not completed within three years of the issuance of this Decision and Order, or within three years of the completion of any appeal taken in this Decision and Order.

Pursuant to Section 16-50p, we hereby direct that a copy of the Decision and Order be served on each person listed below. A notice of issuance shall be published in the Norwalk Hour and the Wilton Bulletin.

By this Decision and Order, the Council disposes of the legal rights, duties, and privileges of each party named or admitted to the proceeding in accordance with Section 16-50j-17 of the Regulations of State Agencies.

The parties or intervenors to this proceeding are:

Metro Mobile CTS of Fairfield County, Inc. (Party)
50 Rockland Road
South Norwalk, CT 06854
Attn: Michael Riley

Howard L. Slater, Esq. (Its Attorney)
Jennifer Young Gaudet, Esq.
Byrne, Slater, Sandler,
Shulman & Rouse, P.C.
330 Main Street
Hartford, CT 06103

Fleischman and Walsh, P.C. (Representative)
1725 N. Street, N.W.
Washington, D.C. 20036
Attn: Richard Rubin, Esq.

PEACE, Inc. (Party)

Ann Caggiano (Representative)
President
PEACE, Inc.
33 Honey Hill Trail
Wilton, CT 06897

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Decision and Order
Page Four

Town of Wilton	(Party)
Edward C. Desmond First Selectman Town of Wilton Town Hall 238 Danbury Road Wilton, CT 06897	(Representative)
Joseph C. Lee, Esq. Alice A. Bruno, Esq. Tyler Cooper & Alcorn 205 Church Street P.O. Box 1936 New Haven, CT 06509	(Its Attorney)
Margaret Doheny 21 Richdale Drive Wilton, CT 06897	(Party)
SNET Cellular, Inc.	(Intervenor)
Donald R. Chapman, Vice President Operations SNET Cellular, Inc. 555 Long Wharf Drive New Haven, CT 06511	(Representative)
Peter J. Tyrrell Senior Attorney SNET Cellular, Inc. 227 Church Street Room 1021 New Haven, CT 06506	(Its Attorney)
Ogden Bigelow 25 Hidden Lake Road Wilton, CT 06897	(Intervenor)

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Page Five

John Jordon
32 Mayapple Road
Wilton, CT 06897

(Party)

Veronica Tella
41 Honey Hill Trail
Wilton, CT 06897

(Party)

Betsy Mitchell
125 Catalpa Road
Wilton, CT 06897
(SERVICE WAIVED)


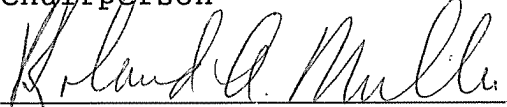
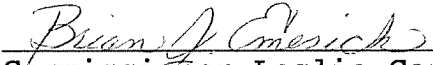
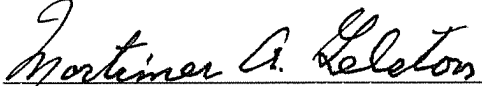
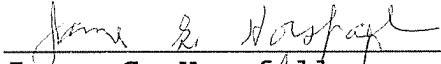
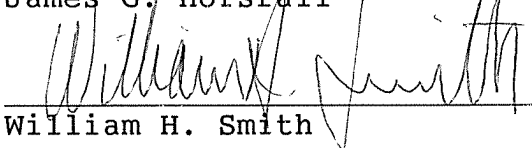
(Party)

1390E

CERTIFICATION

The undersigned members of the Connecticut Siting Council hereby certify that they have heard this case in Docket 94 or read the record thereof, and that we voted as follows:

Dated at New Britain, Connecticut the 3rd day of May, 1988.

<u>Council Members</u>	<u>Vote Cast</u>
 Gloria Dibble Pond Chairperson	Yes
 Commissioner Peter Boucher Designee: Roland Miller	Yes
 Commissioner Leslie Carothers Designee: Brian Emerick	Yes
 Mortimer A. Gelston	Yes
 James G. Horsfall	Yes
 William H. Smith	Yes
 Colin C. Tait	Absent

ATTACHMENT 3



DISH Wireless L.L.C. SITE ID:

NJJER01086A

DISH Wireless L.L.C. SITE ADDRESS:

**128 MATHER STREET
WILTON, CT 06897**

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:	
TOWER SCOPE OF WORK:	
<ul style="list-style-type: none"> REMOVE EXISTING ANTENNAS AND MOUNTS @ 171'-0" AGL INSTALL (3) PROPOSED PANEL ANTENNAS (1 PER SECTOR) INSTALL (3) PROPOSED SECTOR FRAMES INSTALL PROPOSED JUMPERS INSTALL (6) PROPOSED RRUs (2 PER SECTOR) INSTALL (1) PROPOSED OVER VOLTAGE PROTECTION DEVICE (OVP) INSTALL (1) PROPOSED HYBRID CABLE 	
GROUND SCOPE OF WORK:	
<ul style="list-style-type: none"> INSTALL (1) PROPOSED METAL PLATFORM INSTALL (1) PROPOSED ICE BRIDGE INSTALL (1) PROPOSED PPC CABINET INSTALL (1) PROPOSED EQUIPMENT CABINET INSTALL (1) PROPOSED POWER CONDUIT INSTALL (1) PROPOSED TELCO CONDUIT INSTALL (1) PROPOSED TELCO-FIBER BOX INSTALL (1) PROPOSED GPS UNIT INSTALL (1) PROPOSED SAFETY SWITCH (IF REQUIRED) INSTALL (1) PROPOSED FIBER NID (IF REQUIRED) DISH Wireless, L.L.C. TO USE EXISTING 'METROPCS' METER SOCKET INSTALL 14 LF OF PROPOSED FENCE EXPANSION 	

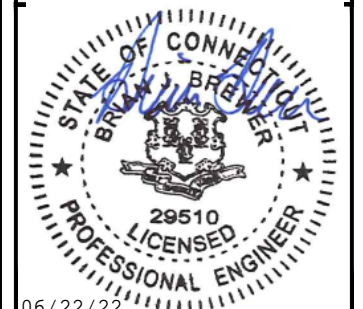
SITE INFORMATION	PROJECT DIRECTORY
PROPERTY OWNER: TOWN OF WILTON ADDRESS: 238 DANBURY RD WILTON, CT 06897	APPLICANT: DISH WIRELESS, LLC. 5701 SOUTH SANTA FE DRIVE LITTLETON, CO 80120
TOWER TYPE: SELF SUPPORT	TOWER OWNER: CROWN CASTLE 2000 CORPORATE DRIVE CANONSBURG, PA 15317 (877) 486-9377
CROWN CASTLE SITE ID: 806353	SITE DESIGNER: KIMLEY-HORN & ASSOCIATES 3875 EMBASSY PKWY, SUITE 280 AKRON, OH 44333 (216) 505-7771 COA #: PEC.0000738
CROWN CASTLE APP NUMBER: 548867	SITE ACQUISITION: VICTOR NUNEZ (917) 563-3682
COUNTY: FAIRFIELD	CONSTRUCTION MANAGER: MICHAEL NARUCCI MICHAEL.NARUCCI@DISH.COM
LATITUDE (NAD 83): 41° 14' 18.70" N 41.238528° N	RF ENGINEER: MURUGABIRAN JAYAPAL MURUGABIRAN.JAYAPAL@DISH.COM
LONGITUDE (NAD 83): 73° 25' 26.90" W 73.424139° W	
ZONING JURISDICTION: CONNECTICUT SITING COUNCIL	
ZONING DISTRICT: R-2	
PARCEL NUMBER: 23-23	
OCCUPANCY GROUP: U	
CONSTRUCTION TYPE: II-B	
POWER COMPANY: CONNECTICUT POWER & LIGHT	
TELEPHONE COMPANY: LIGHTOWER	



5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120



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



06/22/22

Exp. 01/31/23

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: ---
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RFDS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
A	10/01/2021	ISSUED FOR REVIEW
0	11/03/2021	ISSUED FOR CONSTRUCTION
1	05/04/2022	REVISED PER CLIENT
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A&E PROJECT NUMBER
KHCLC-16448

DISH Wireless L.L.C.
PROJECT INFORMATION

NJJER01086A
128 MATHER STREET
WILTON, CT 06897

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1



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.

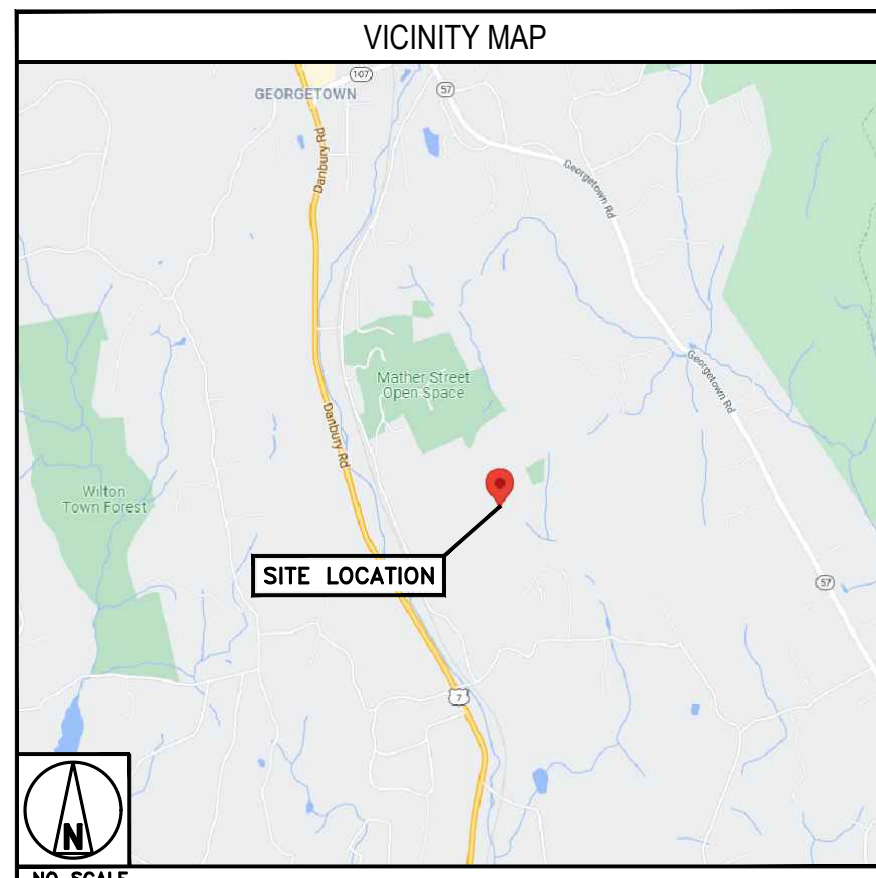
11"x17" PLOT WILL BE HALF SCALE UNLESS OTHERWISE NOTED

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 07068:

- GET ON I-280 E FROM LIVINGSTON AVE
- CONTINUE ON I-280 E. TAKE GARDEN STATE PKWY, I-287 E AND CT-15 N TO US-7 N IN NORWALK. TAKE EXIT 39B FROM CT-15 N
- FOLLOW US-7 N TO QUAL RIDGE RD IN WILTON



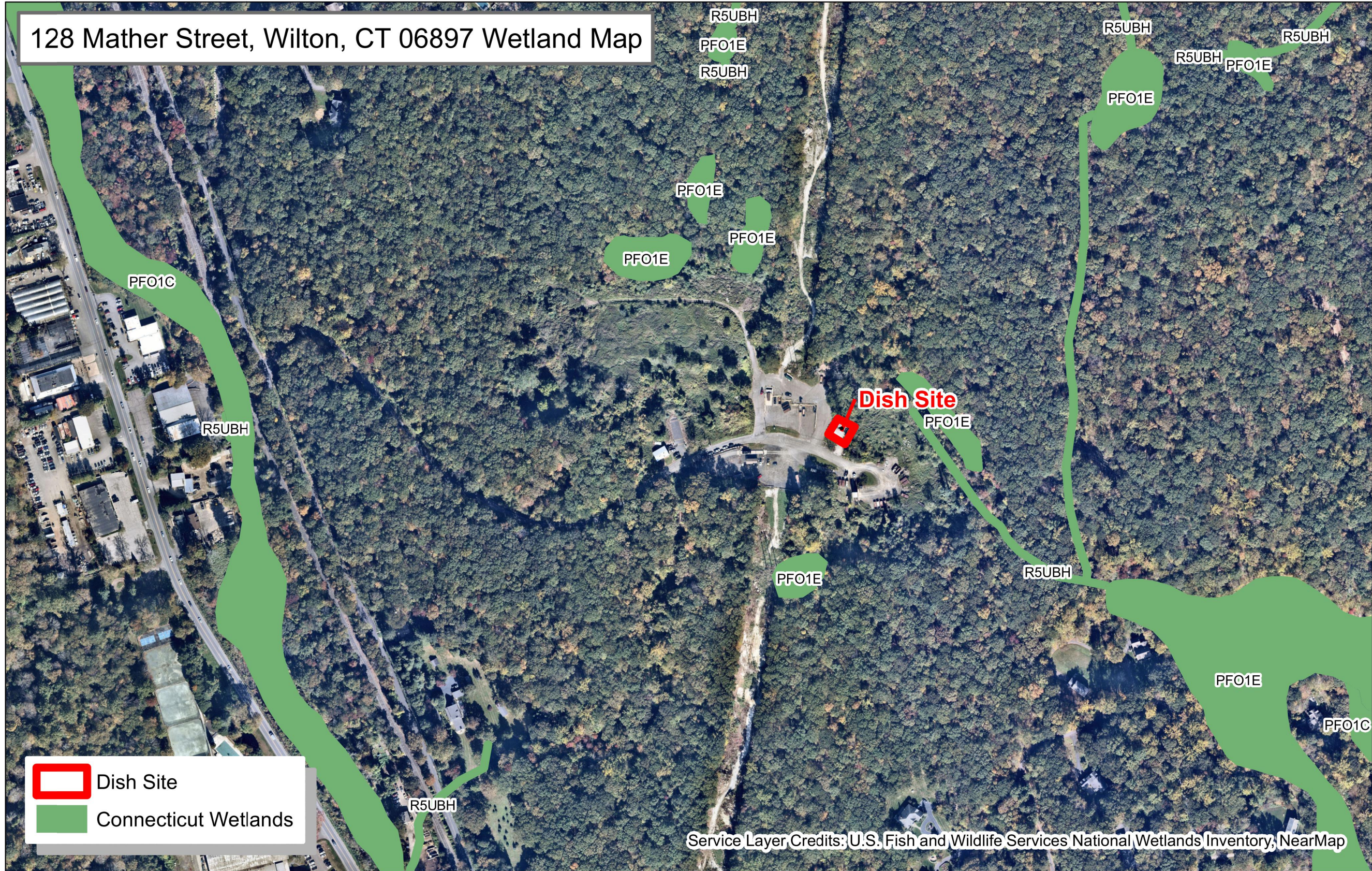
CONNECTICUT CODE OF COMPLIANCE



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-1.1	WETLAND MAP
A-1.2	ABUTTER MAP
A-1.3	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

128 Mather Street, Wilton, CT 06897 Wetland Map



 Dish Site
 Connecticut Wetlands

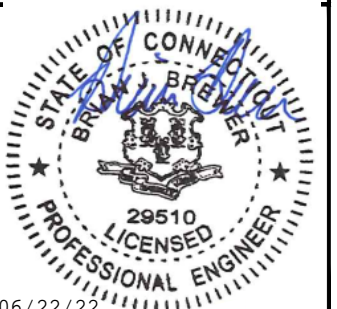
Service Layer Credits: U.S. Fish and Wildlife Services National Wetlands Inventory, NearMap



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DRAWN BY: CHECKED BY: APPROVED BY:

SEW MCK ---

RFDS REV #: ---

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SHEET TITLE
WETLAND MAP

SHEET NUMBER
A-1.1

NOTES

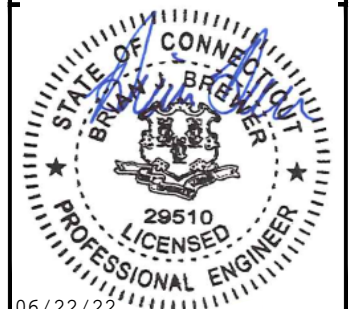
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2. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.



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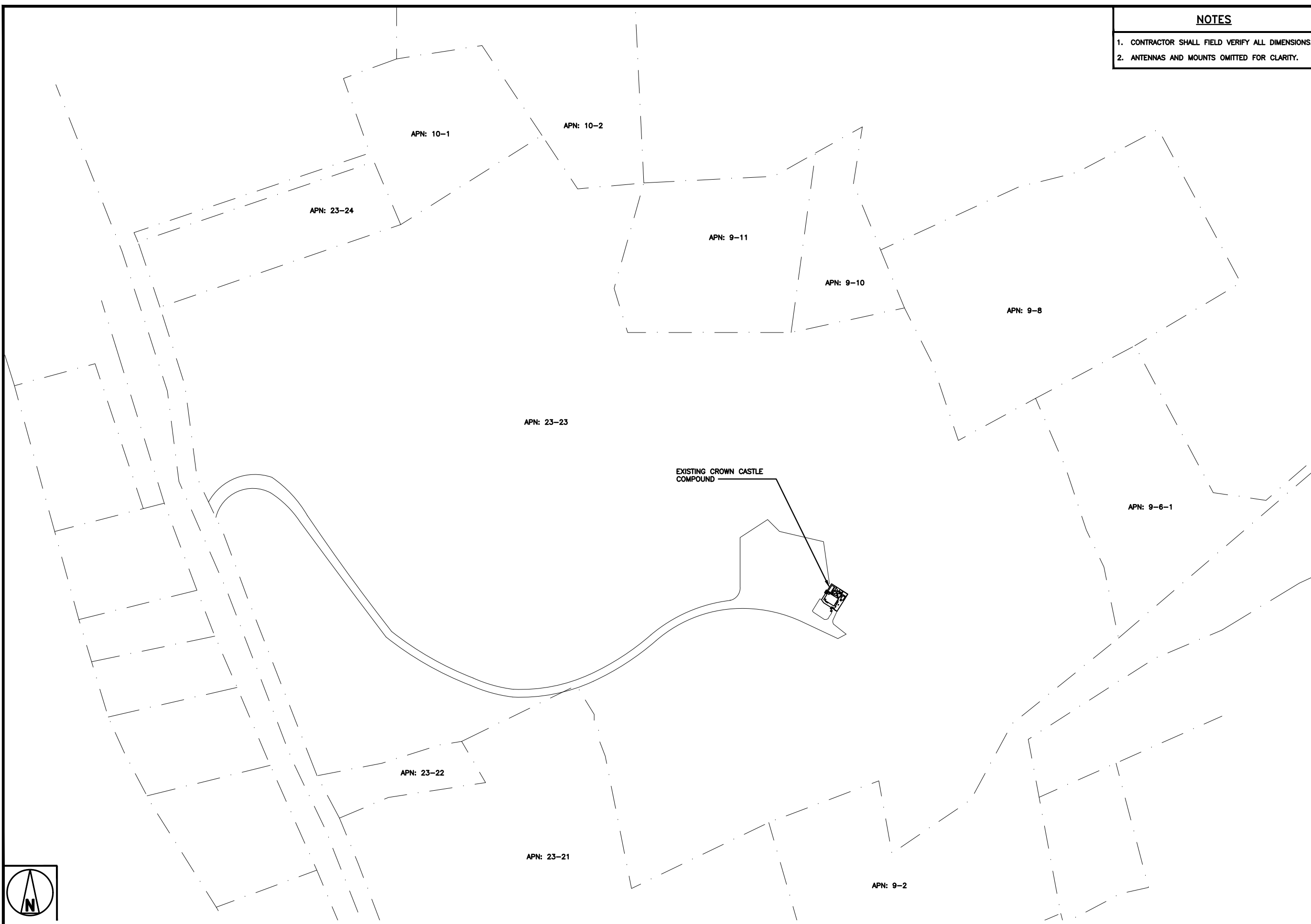
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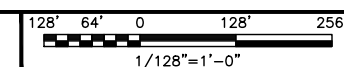
SHEET TITLE
ABUTTER MAP

SHEET NUMBER

A-1.2



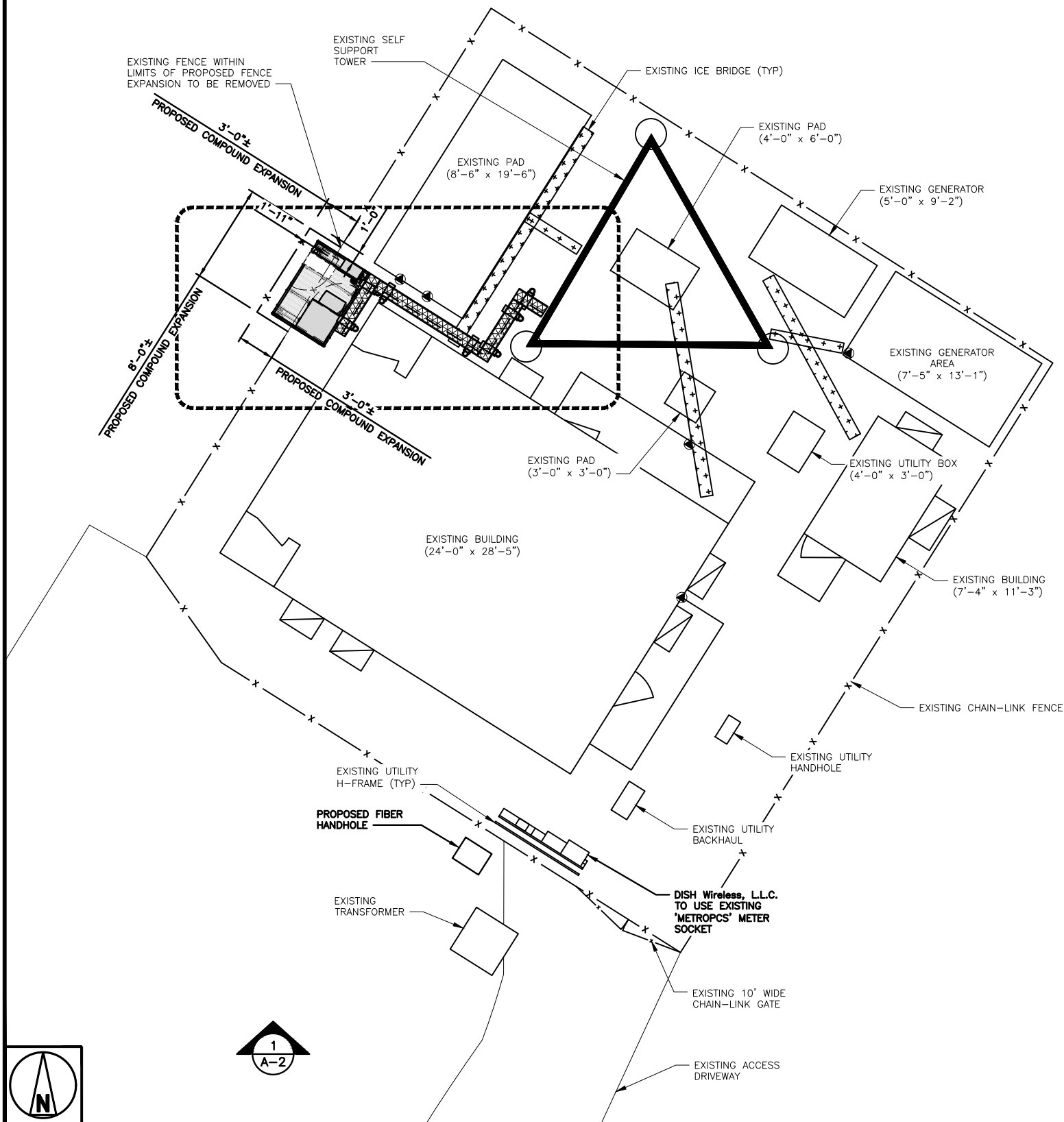
ABUTTER MAP



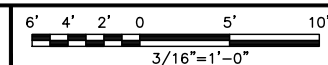
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NOTES

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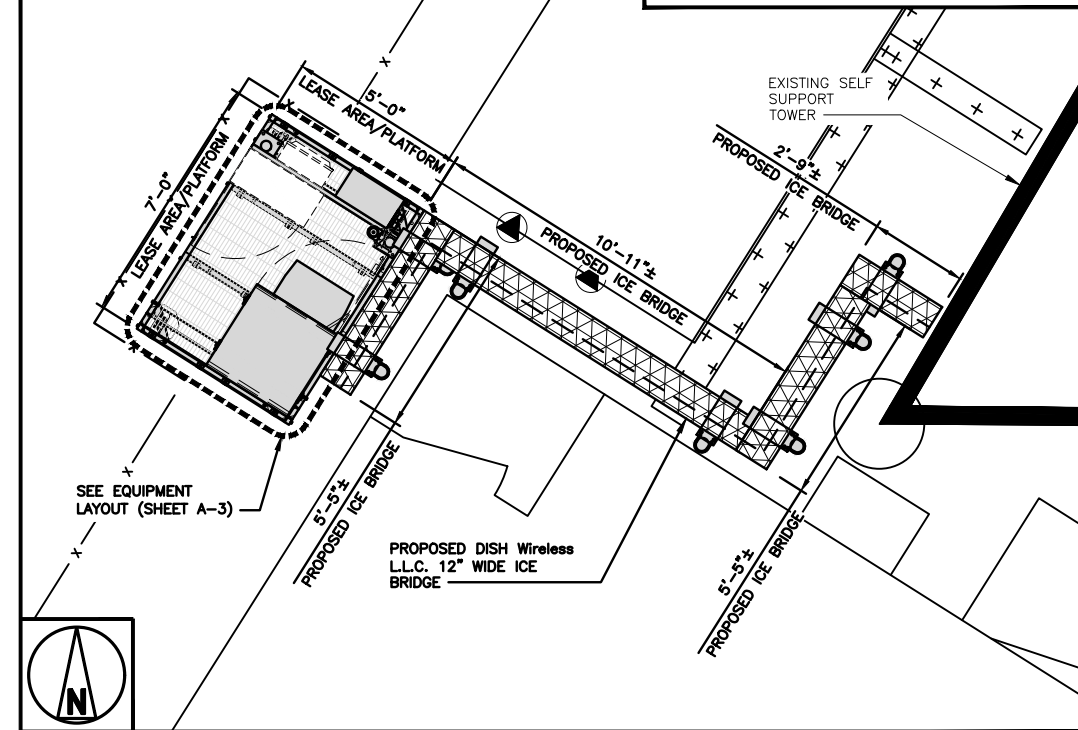
OVERALL SITE PLAN



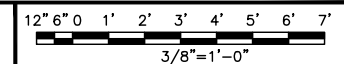
1

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.



ENLARGED SITE PLAN



2



OVERALL UTILITY ROUTE PLAN

NO SCALE

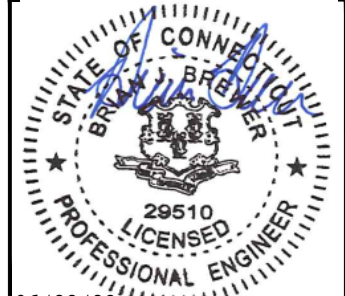
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5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120



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



06/22/22

Exp. 01/31/23

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SEW	MCK	---

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A&E PROJECT NUMBER
KHCLC-16448

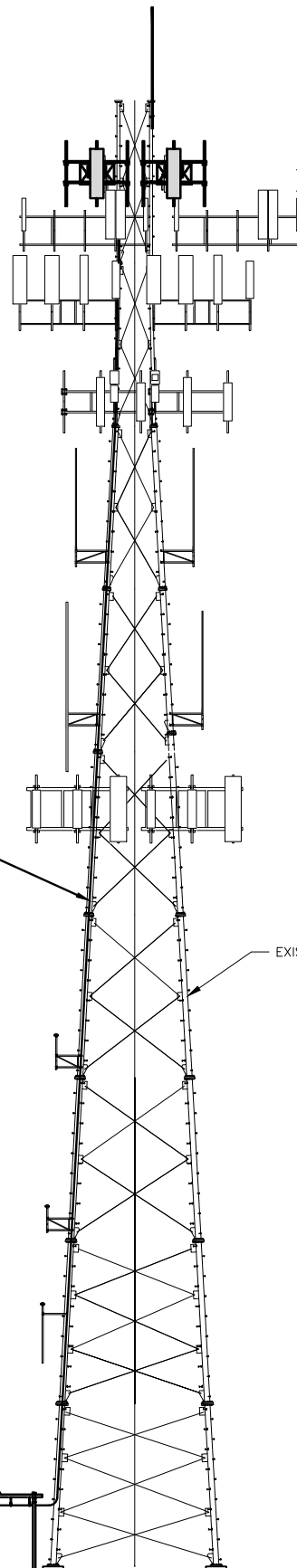
DISH Wireless L.L.C.
PROJECT INFORMATION
NJJER01086A
128 MATHER STREET
WILTON, CT 06897

SHEET TITLE
OVERALL AND ENLARGED
SITE PLAN

SHEET NUMBER
A-1.3

NOTES

1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNA AND MW DISH SPECIFICATIONS REFER TO ANTENNA SCHEDULE AND TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS
3. EXISTING EQUIPMENT AND FENCE OMITTED FOR CLARITY.
4. REMOVE EXISTING ANTENNAS AND MOUNTS @ 171'-0" AGL



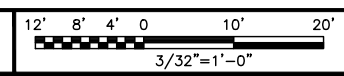
- EXISTING LIGHTNING ROD
TOP EL. @ 191'-6" AGL
- EXISTING TOWER
TOP EL. @ 180'-0" AGL
- EXISTING EQUIPMENT
TOP EL. @ 178'-0" AGL
- EXISTING ANTENNAS AND MOUNTS TO BE REMOVED
RAD CENTER @ 171'-0" AGL
- (3) PROPOSED DISH Wireless L.L.C. ANTENNAS
RAD CENTER @ 170'-0" AGL
- TIP OF EXISTING ANTENNAS
RAD CENTER @ 169'-0" AGL
- EXISTING PANEL ANTENNAS
TOP EL. @ 166'-0" AGL
- EXISTING PANEL ANTENNAS
RAD CENTER @ 158'-0" AGL
- EXISTING PANEL ANTENNAS
RAD CENTER @ 145'-0" AGL
- EXISTING PANEL ANTENNAS
RAD CENTER @ 143'-0" AGL
- EXISTING EQUIPMENT
RAD CENTER @ 124'-0" AGL
- EXISTING EQUIPMENT
RAD CENTER @ 104'-0" AGL
- EXISTING PANEL ANTENNAS
RAD CENTER @ 93'-0" AGL
- EXISTING EQUIPMENT
RAD CENTER @ 62'-0" AGL
- EXISTING EQUIPMENT
RAD CENTER @ 42'-0" AGL
- EXISTING EQUIPMENT
RAD CENTER @ 31'-0" AGL

(1) PROPOSED DISH Wireless L.L.C. HYBRID CABLE ON EXISTING WAVEGUIDE LADDER

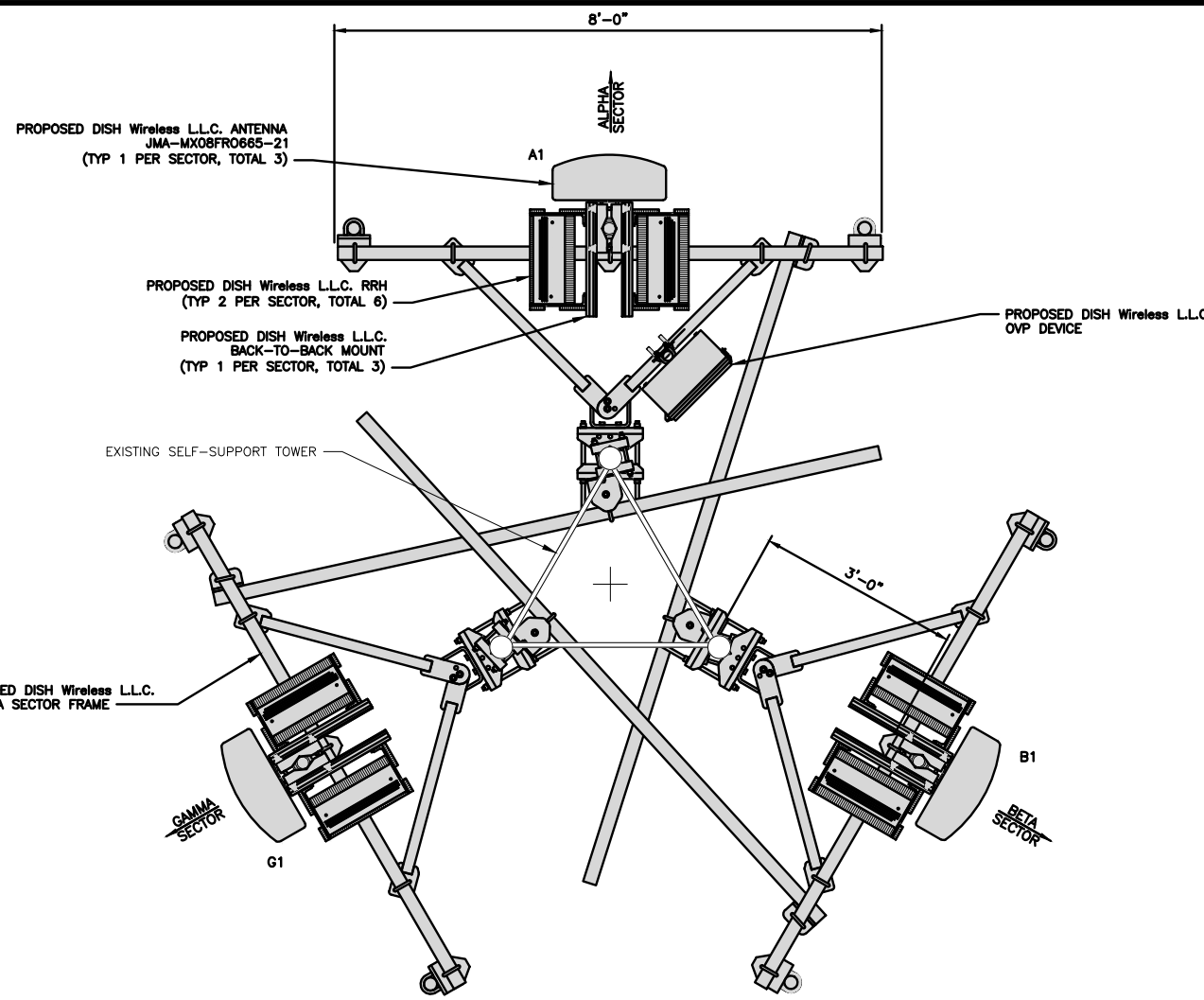
EXISTING SELF-SUPPORT TOWER

- PROPOSED DISH Wireless L.L.C. ICE BRIDGE
- PROPOSED DISH Wireless L.L.C. GPS UNIT (BEHIND CABINET)
- PROPOSED DISH Wireless L.L.C. EQUIPMENT ON PROPOSED STEEL PLATFORM

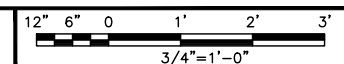
PROPOSED SOUTH ELEVATION



1



ANTENNA LAYOUT



2

SECTOR	POSITION	ANTENNA					RAD CENTER	TRANSMISSION CABLE
		EXISTING OR PROPOSED	MANUFACTURER - MODEL NUMBER	TECHNOLOGY	SIZE (HxW)	AZIMUTH		
ALPHA	A1	PROPOSED	JMA - MX08FRO665-21	5G	72.0" x 20.0"	0°	170'-0"	(1) HIGH-CAPACITY HYBRID CABLE (220'-0" LONG)
BETA	B1	PROPOSED	JMA - MX08FRO665-21	5G	72.0" x 20.0"	120°	170'-0"	
GAMMA	G1	PROPOSED	JMA - MX08FRO665-21	5G	72.0" x 20.0"	240°	170'-0"	

SECTOR	POSITION	OVP		
		EXISTING OR PROPOSED	MANUFACTURER - MODEL NUMBER	SIZE (HxW)
ALPHA	A1	PROPOSED	RAYCAP - RDIDC-9181-PF-48	5G 18.98" x 14.39" x 8.15"

SECTOR	POSITION	RRH	
		MANUFACTURER - MODEL NUMBER	TECHNOLOGY
ALPHA	A1	FUJITSU - TA08025-B604	5G
	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

- NOTES**
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.

ANTENNA SCHEDULE

NO SCALE

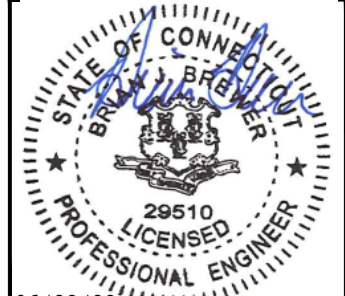
3



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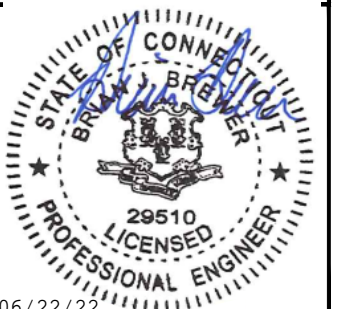
A&E PROJECT NUMBER
KHCLC-16448

DISH Wireless L.L.C.
PROJECT INFORMATION
NJJER01086A
128 MATHER STREET
WILTON, CT 06897

SHEET TITLE
ELEVATION, ANTENNA
LAYOUT AND SCHEDULE

SHEET NUMBER

A-2



06/22/22

Exp. 01/31/23

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128 MATHER STREET
WILTON, CT 06897

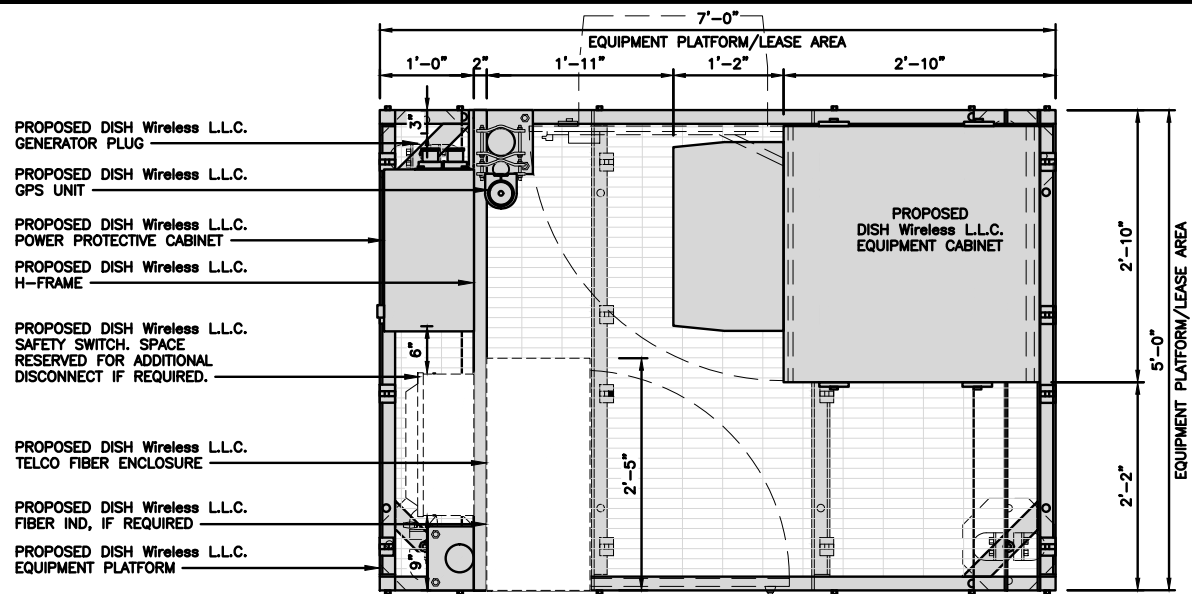
SHEET TITLE
EQUIPMENT PLATFORM AND
H-FRAME DETAILS

SHEET NUMBER

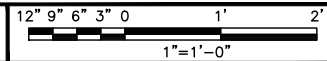
A-3

NOTES

- CONTRACTOR TO BURY PLATFORM FEET WITH A MINIMUM OF 2" OF FILL PER EXISTING SITE SURFACE
- 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)
- EQUIPMENT CABINET OMITTED FOR CLARITY



PLATFORM EQUIPMENT PLAN

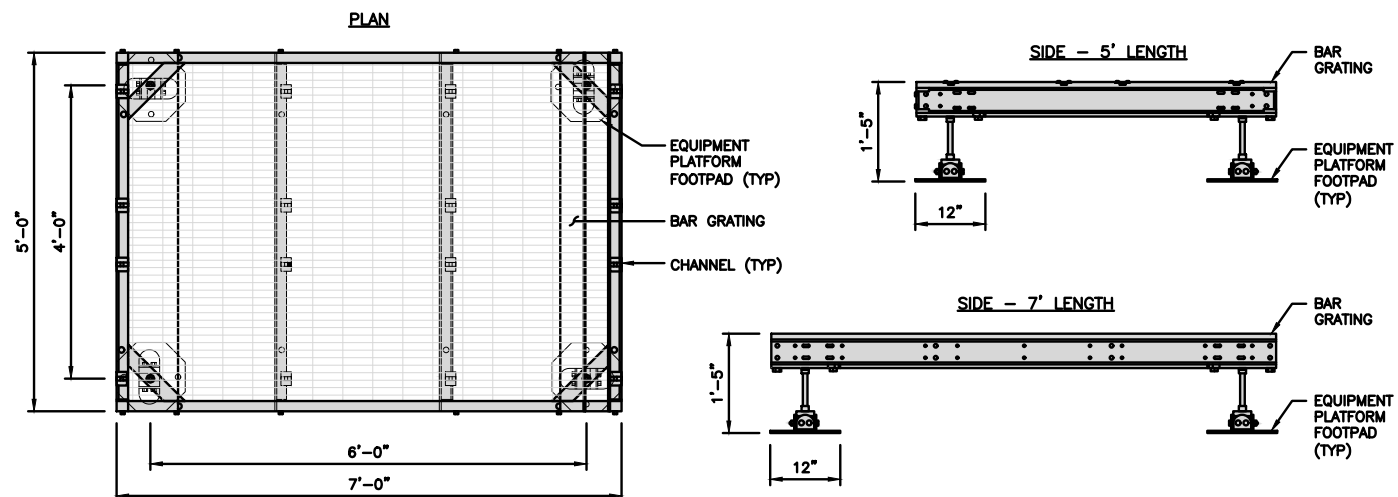


1

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"



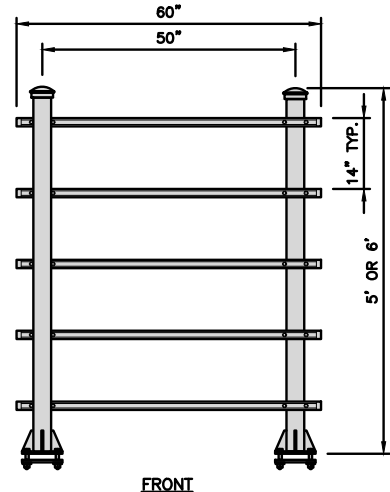
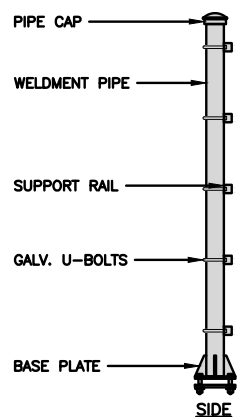
PLATFORM DETAIL

NO SCALE 2

COMMSCOPE MTC4045HFLD H-FRAME

UNISTRUT/SUPPORT RAILS QTY	5
WEIGHT	59.74 lbs

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

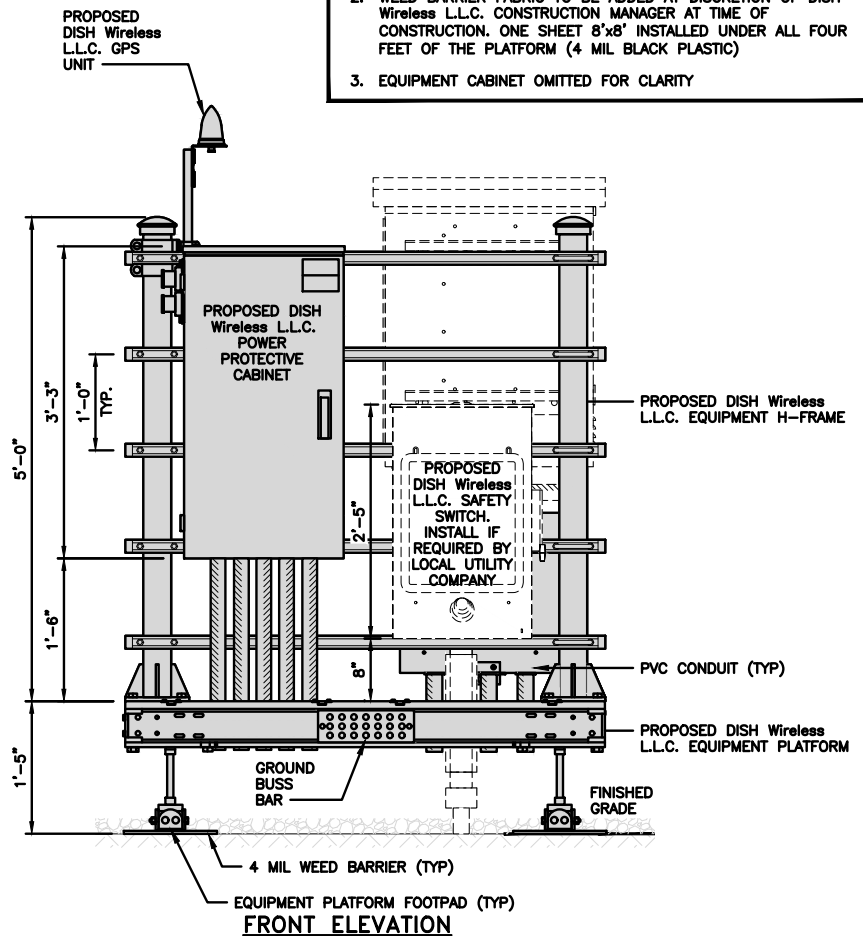


H-FRAME DETAIL

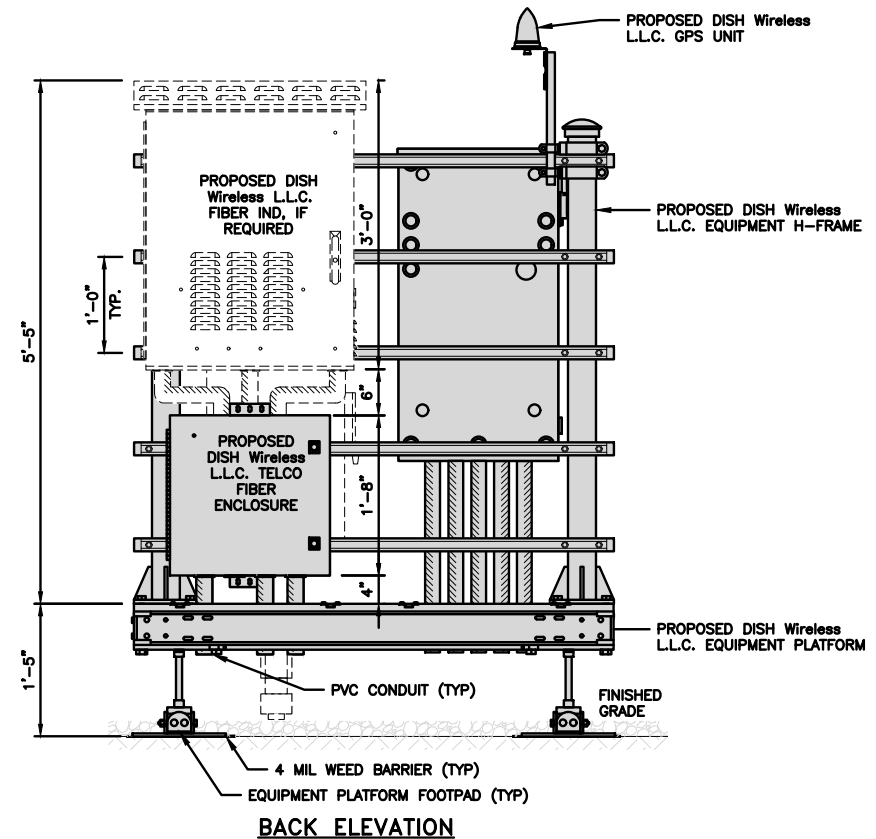
NO SCALE 3

NOT USED

NO SCALE 4

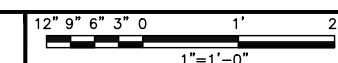


FRONT ELEVATION



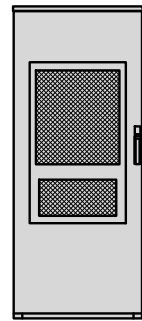
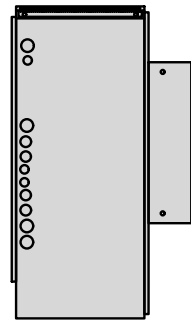
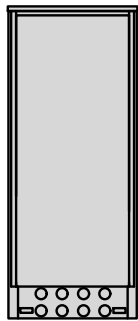
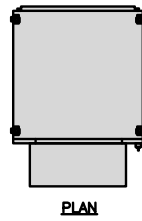
BACK ELEVATION

H-FRAME EQUIPMENT ELEVATION



5

ENERSYS HEX 20000059996	
DIMENSIONS (HxWxD)	73"x30"x32"
POWER SYSTEM	-48V ALPHA/600A
HEATER	800W
TOTAL WEIGHT (EMPTY)	376 lbs

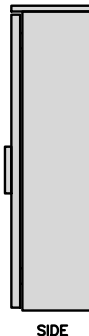
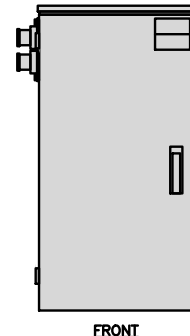
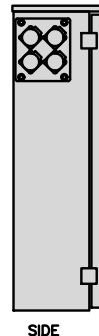
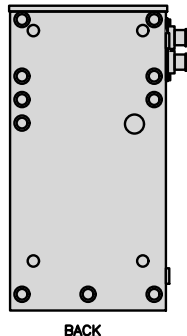
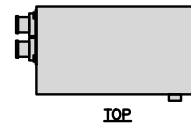


CABINET DETAIL

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

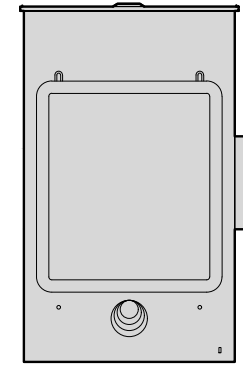
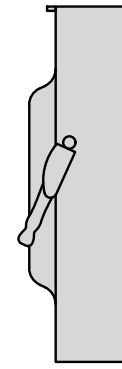
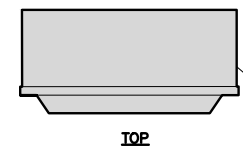


POWER PROTECTION CABINET (PPC) DETAIL

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

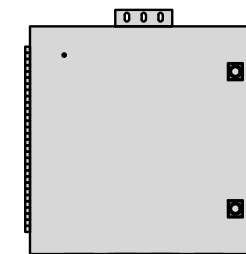
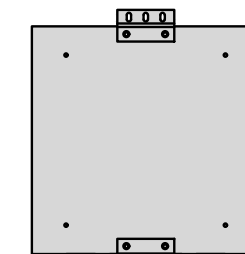
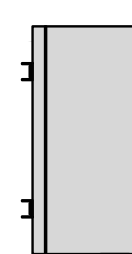
4

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



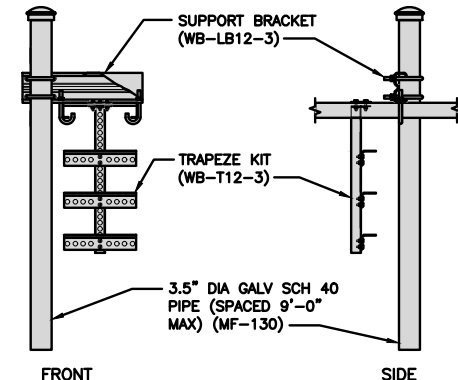
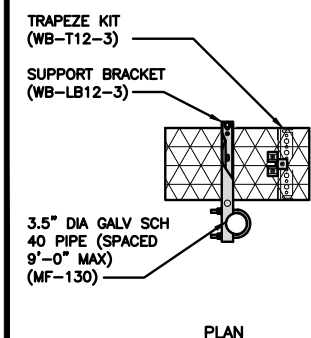
FIBER TELCO ENCLOSURE DETAIL

NO SCALE

6

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

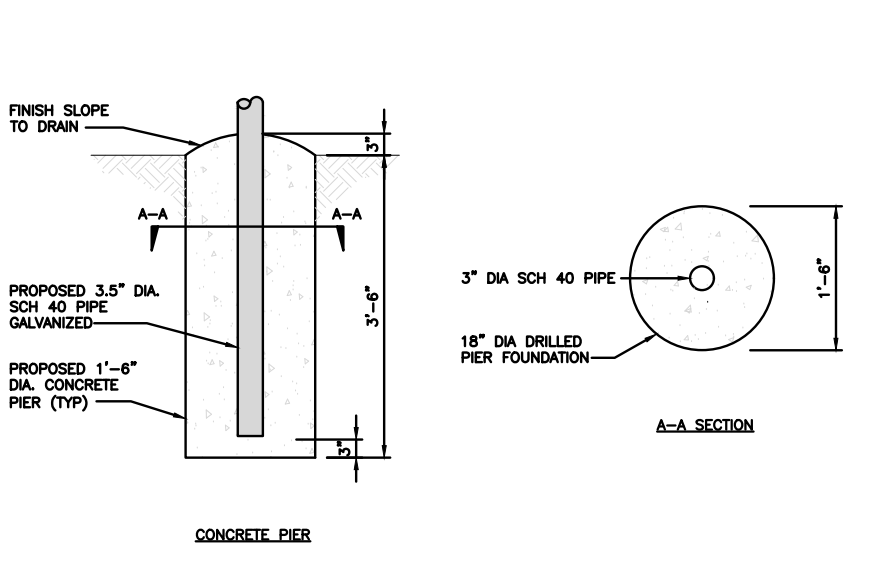
INCLUDED PRODUCTS:
WB-T12-3 TRAPEZE KIT, 3 RUNGS
WB-LB12-3 SUPPORT BRACKET
MF-130 DIRECT BURIAL PIPE COLUMN, 13'-4"



ICE BRIDGE DETAIL

NO SCALE

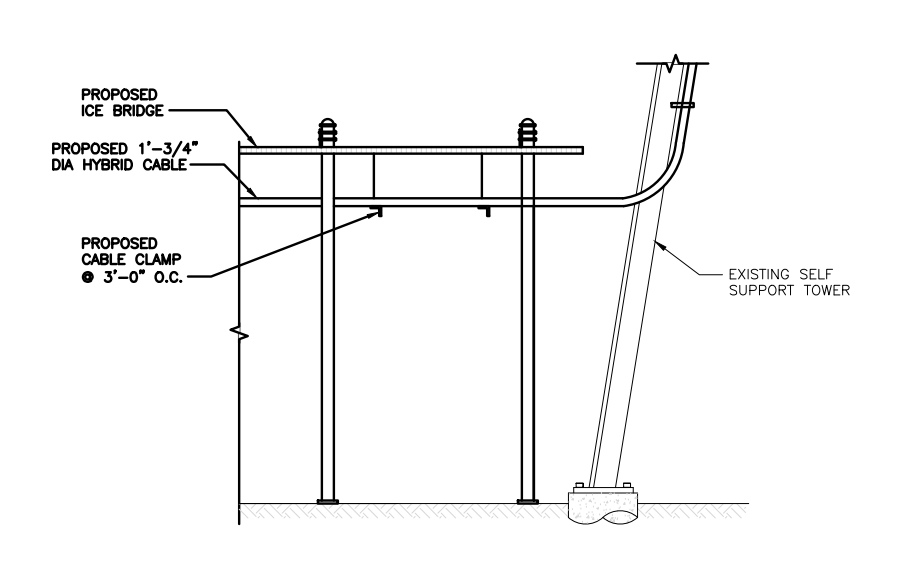
7



TYPICAL ICE BRIDGE CONCRETE PIER DETAIL

NO SCALE

8



HYBRID CABLE RUN

NO SCALE

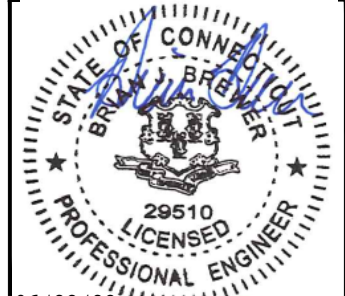
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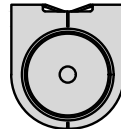
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KHCLC-16448

DISH Wireless L.L.C.
PROJECT INFORMATION
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128 MATHER STREET
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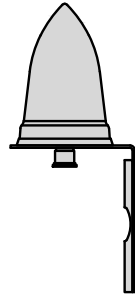
SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-4

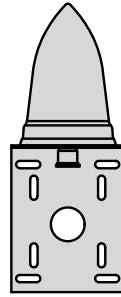
PCTEL GPSGL-TMG-SPI-40NCB	
DIMENSIONS (DIAxH) MM/INCH	81x184mm 3.2"x7.25"
WEIGHT W/ACCESSORIES	075 lbs
CONNECTOR	N-FEMALE
FREQUENCY RANGE	1590 ± 30MHz



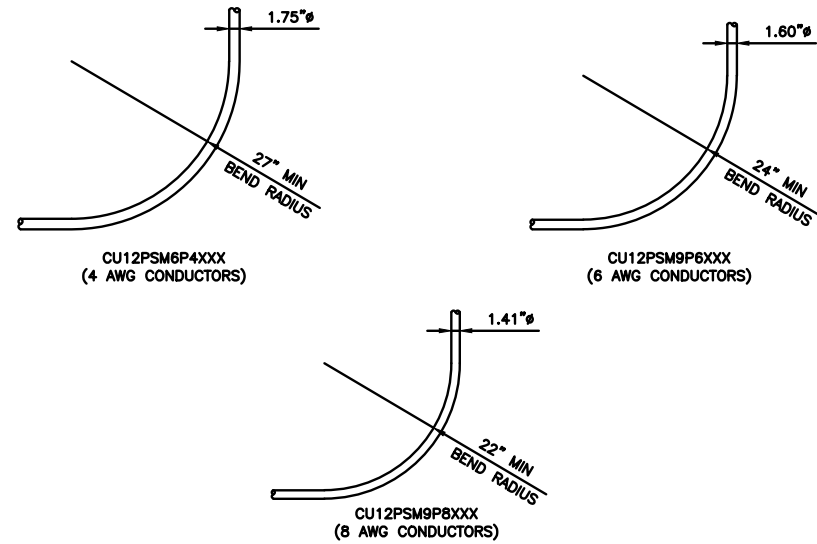
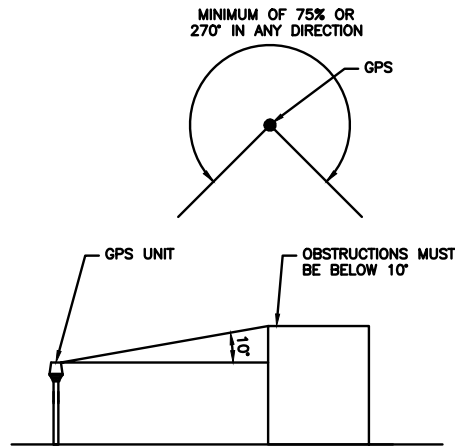
TOP



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

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

dish
wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

Kimley»Horn

COA #: PEC.0000738
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DISH Wireless L.L.C.
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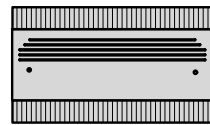
NJERO1086A
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SHEET TITLE
EQUIPMENT DETAILS

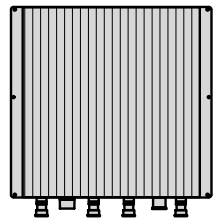
SHEET NUMBER

A-5

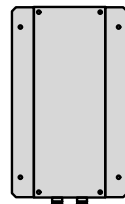
FUJITSU TRIPLE BAND TA08025-B605	
DIMENSIONS (HxWxD)	14.9"x15.7"x9"
WEIGHT	74.95 lbs
CONNECTOR TYPE	4.3-10 RF CONNECTOR
POWER SUPPLY	DC -58~-36V



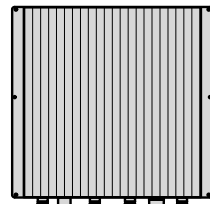
PLAN



BACK



SIDE



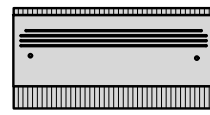
FRONT

RRH DETAIL

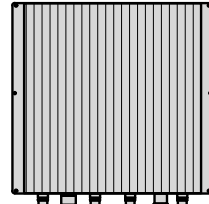
NO SCALE

1

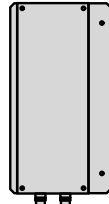
FUJITSU DUAL BAND TA08025-B604	
DIMENSIONS (HxWxD)	14.9"x15.7"x7.8"
WEIGHT	63.9 lbs
CONNECTOR TYPE	4.3-10 RF CONNECTOR
POWER SUPPLY	DC -58~-36V



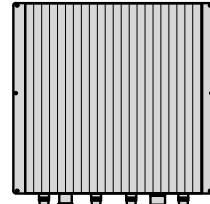
PLAN



BACK



SIDE



FRONT

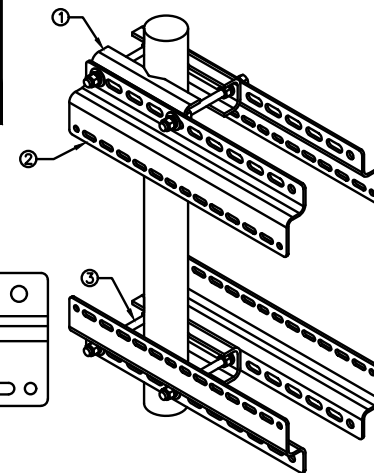
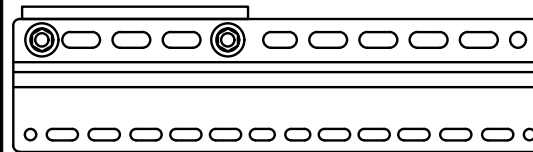
RRH DETAIL

NO SCALE

2

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 MOUNT DETAIL

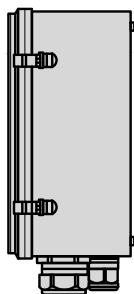
NO SCALE

3

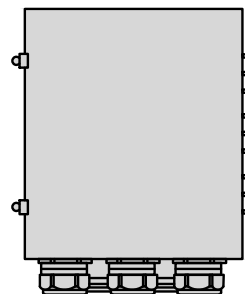
RAYCAP RDIC-9181-PF-48 DC SURGE PROTECTION (OVP)	
DIMENSIONS (HxWxD)	18.98"x14.39"x8.15"
WEIGHT	21.82 LBS



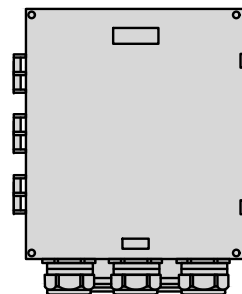
PLAN



SIDE



BACK



FRONT

SURGE SUPPRESSION DETAIL (OVP)

NO SCALE

4

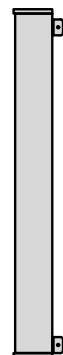
JMA WIRELESS MX08FRO665-21 ANTENNA	
DIMENSIONS (HxWxD)	72.0"x20.0"x8.0"
TOTAL WEIGHT	82.5 LB
RF PORTS, CONNECTOR TYPE	8 x 4.3-10 FEMALE



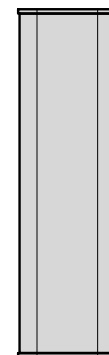
PLAN



BACK



SIDE



FRONT

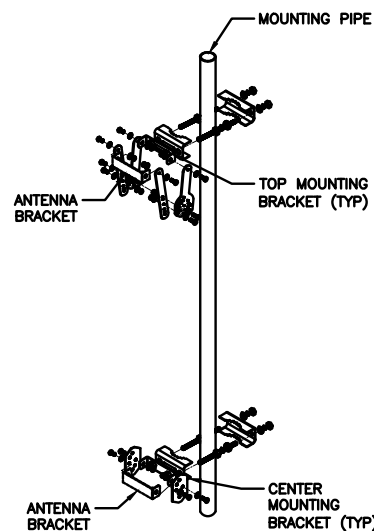
ANTENNA DETAIL

NO SCALE

5

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



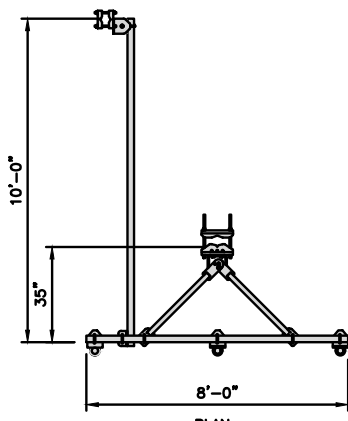
ANTENNA BRACKET DETAIL

NO SCALE

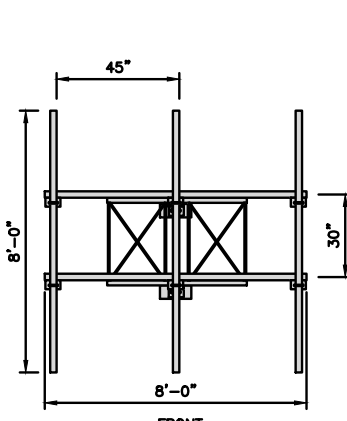
7

COMMSCOPE V-FRAME MTC3975083	
FACE SIZE	8'-0"
WEIGHT	352.136 lbs

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



PLAN



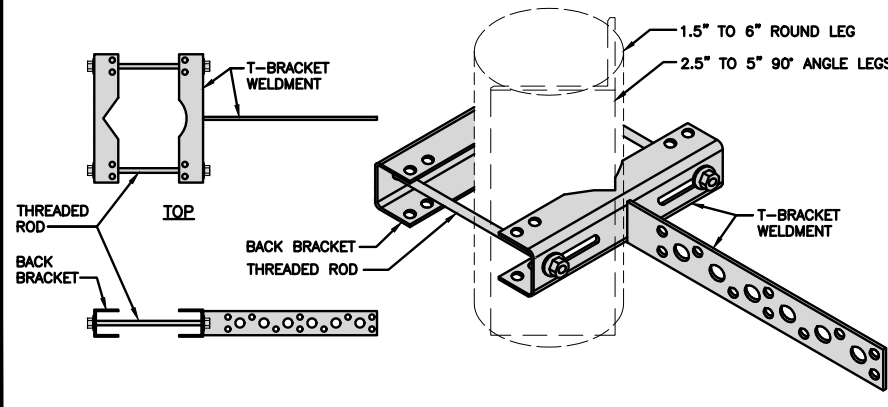
FRONT

ANTENNA FRAME DETAIL

NO SCALE

8

SITEPRO1 T600 UNIVERSAL T-BRACKET	
DIMENSIONS (HxWxL)	2.25"x10.0"x15.25"
WEIGHT/ VOLUME	5.60 LBS



SIDE

ISOMETRIC

VERTICAL CABLE SUPPORT DETAIL

NO SCALE

9

dish
wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

Kimley»Horn

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



06/22/22

Exp. 01/31/23

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DRAWN BY: CHECKED BY: APPROVED BY:

SEW MCK ---

RFDS REV #: ---

**CONSTRUCTION
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A&E PROJECT NUMBER

KHCLC-16448

DISH Wireless L.L.C.
PROJECT INFORMATION

NJER01086A
128 MATHER STREET
WILTON, CT 06897

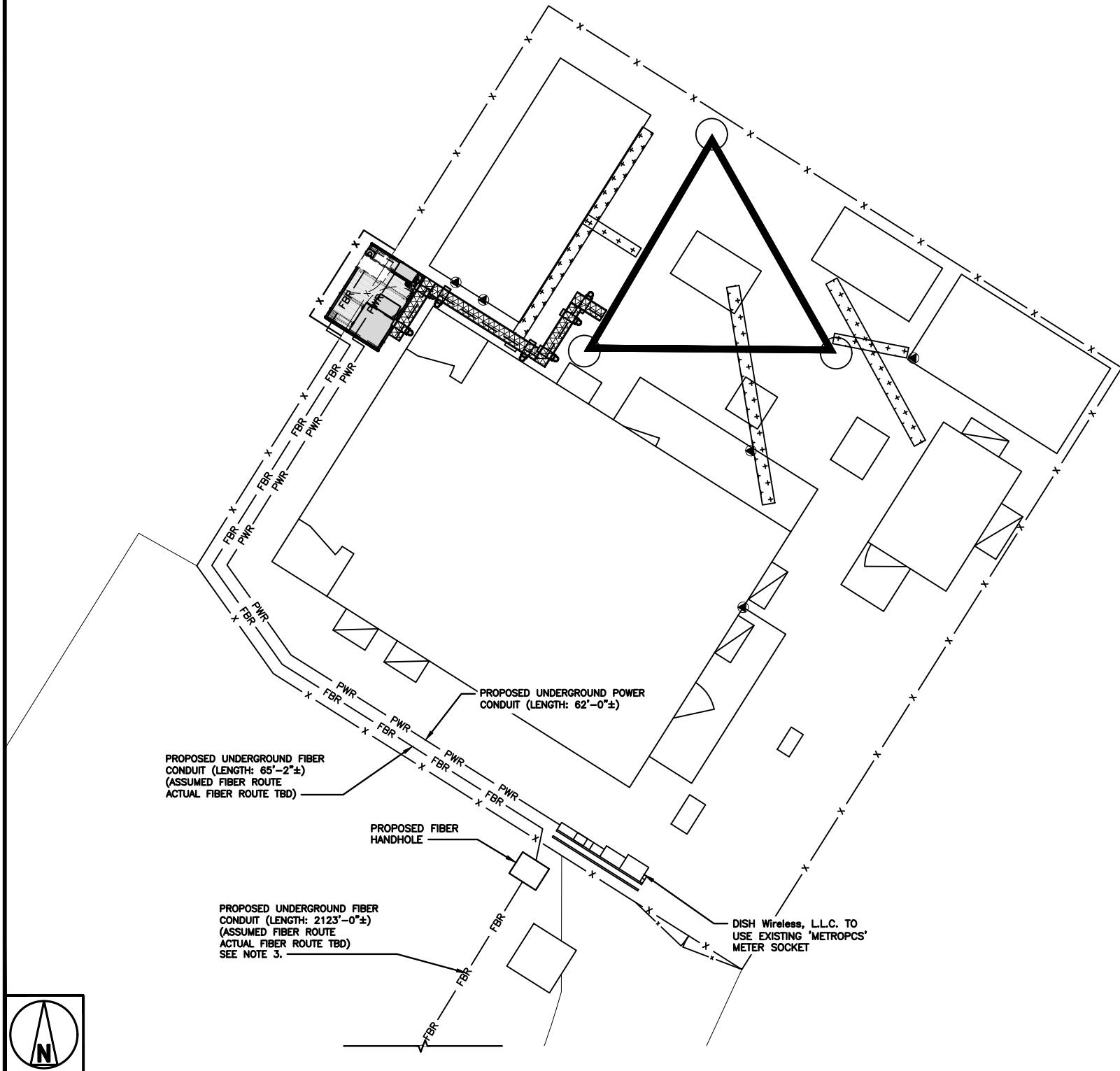
SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER

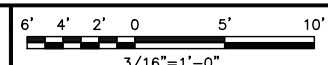
A-6

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



1

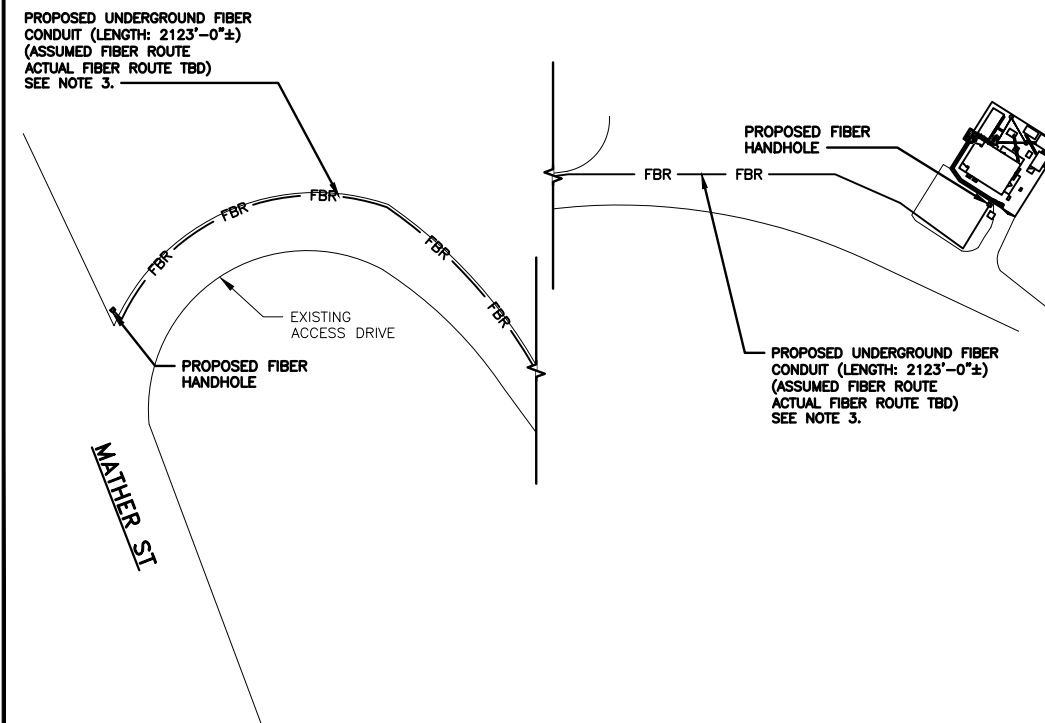
DC POWER WIRING SHALL BE COLOR CODED AT EACH END FOR IDENTIFYING +24V AND -48V CONDUCTORS. RED MARKINGS SHALL IDENTIFY +24V AND BLUE MARKINGS SHALL IDENTIFY -48V.

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.
12. CONTRACTOR SHALL BE RESPONSIBLE FOR AS-BUILT PANEL SCHEDULE AND SITE DRAWINGS.
13. ALL TRENCHES IN COMPOUND TO BE HAND DUG

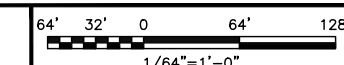
ELECTRICAL NOTES

NO SCALE

2



OVERALL UTILITY ROUTE PLAN



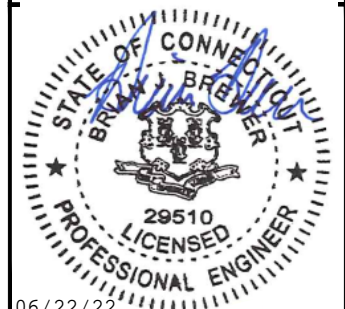
3



5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120



COA #: PEC.000738
421 FAYETTEVILLE ST, SUITE 600
RALEIGH, NC 27601



06/22/22

Exp. 01/31/23

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SEW MCK ---

RFDS REV #: ---

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A&E PROJECT NUMBER

KHCLC-16448

DISH Wireless L.L.C.
PROJECT INFORMATION

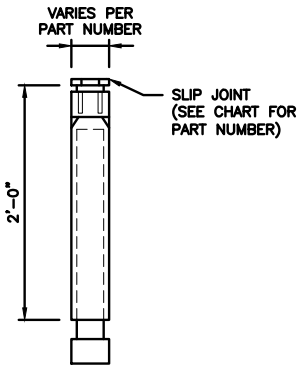
NJER01086A
128 MATHER STREET
WILTON, CT 06897

SHEET TITLE
**ELECTRICAL/FIBER ROUTE
PLAN AND NOTES**

SHEET NUMBER

E-1

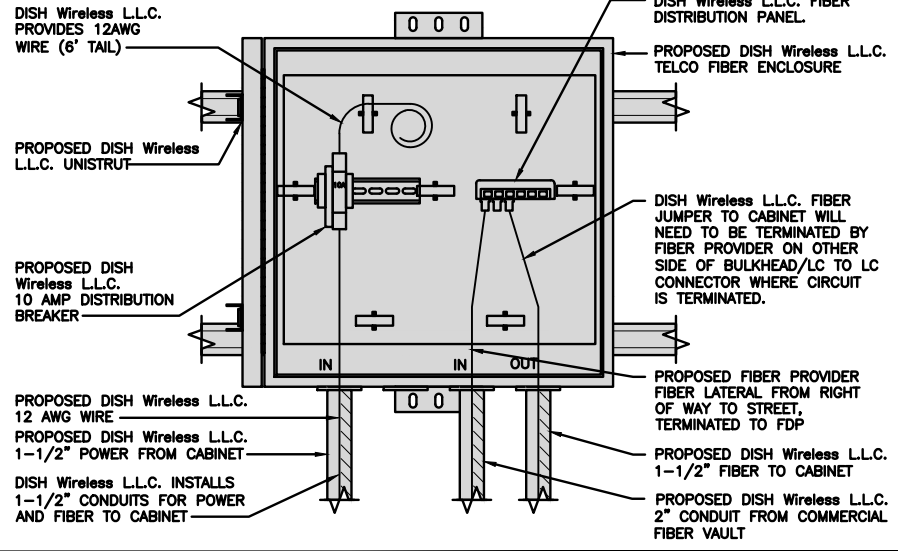
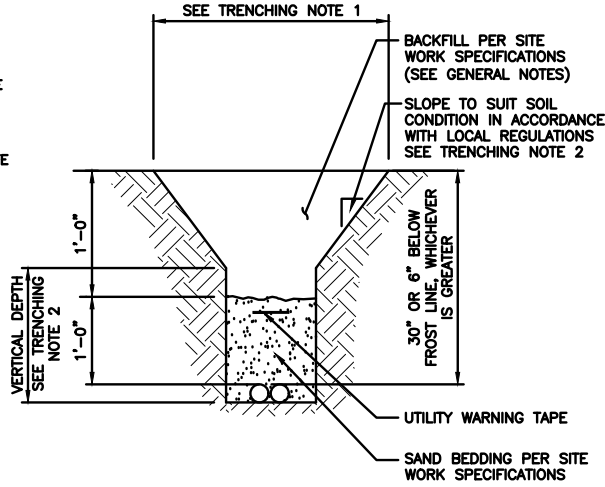
CARLON EXPANSION FITTINGS				
COUPLING END PART#	MALE TERMINAL ADAPTER END PART#	SIZE	STD CTN QTY.	TRAVEL LENGTH
E945D	E945DX	1/2"	20	4"
E945E	E945EX	3/4"	15	4"
E945F	E945FX	1"	10	4"
E945G	E945GX	1 1/4"	5	4"
E945H	E945HX	1 1/2"	5	4"
E945J	E945JX	2"	15	8"
E945K	E945KX	2 1/2"	10	8"
E945L	E945LX	3"	10	8"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



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

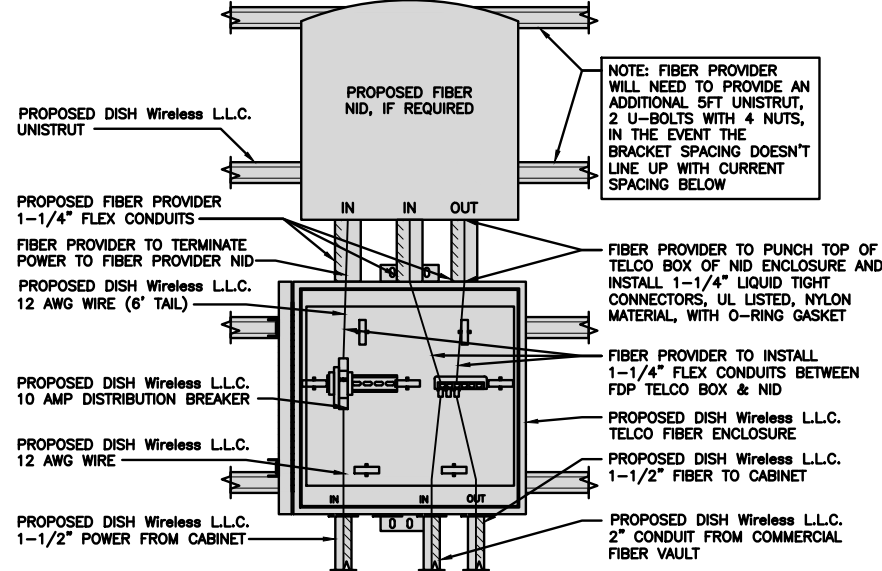
NO SCALE 1

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 7

NOT USED

NO SCALE 8

NOT USED

NO SCALE 9



5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120



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



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Exp. 01/31/23

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

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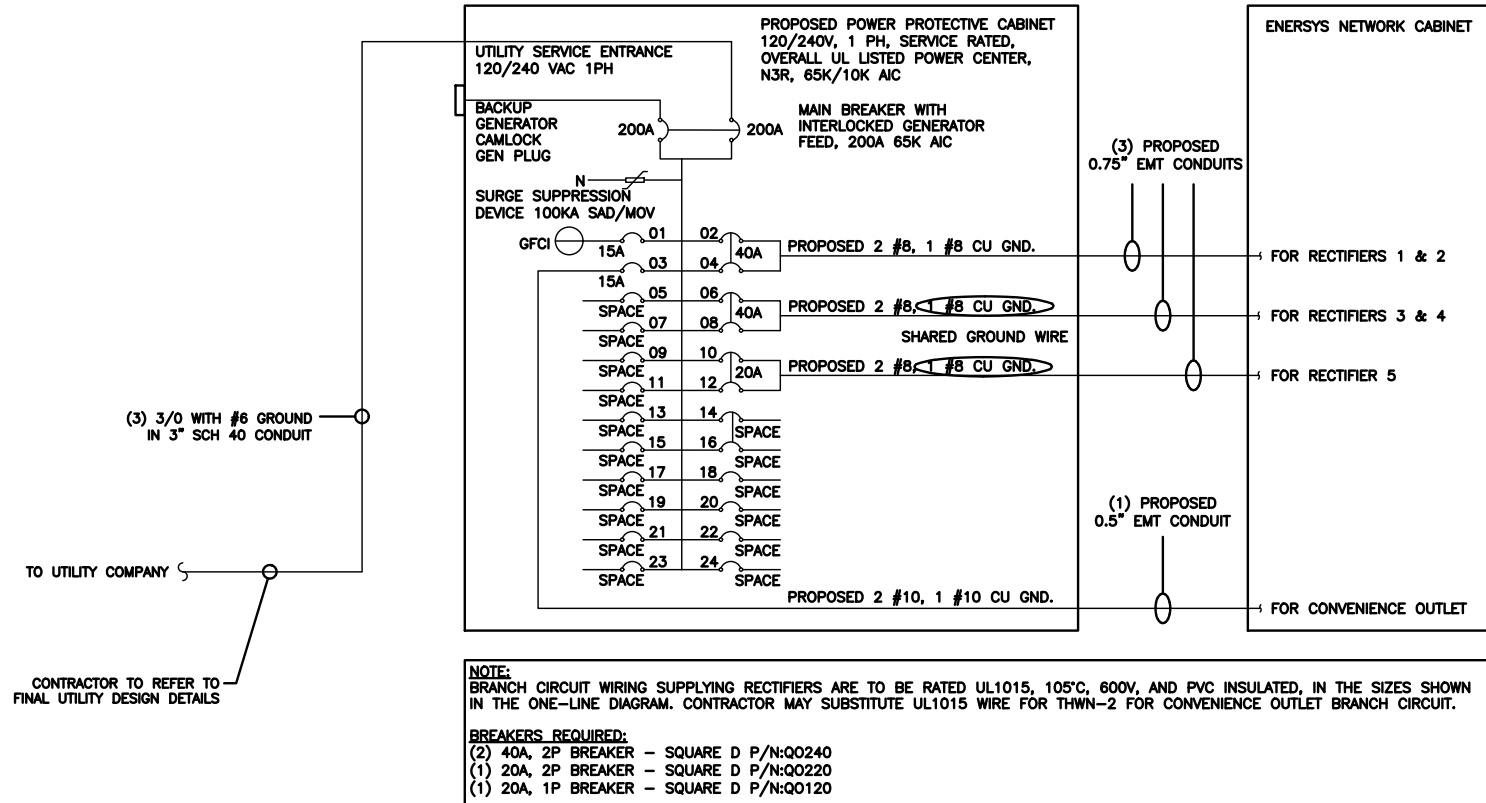
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A&E PROJECT NUMBER
KHCLC-16448

DISH Wireless L.L.C.
PROJECT INFORMATION
NJJER01086A
128 MATHER STREET
WILTON, CT 06897

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

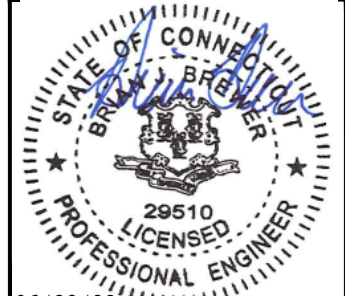
3.0" SCH 40 PVC CONDUIT IS ADEQUATE TO HANDLE THE TOTAL OF (4) WIRES, INCLUDING GROUND WIRE, AS INDICATED ABOVE.



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DISH Wireless L.L.C.
PROJECT INFORMATION
NJJER01086A
128 MATHER STREET
WILTON, CT 06897

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

SHEET NUMBER
E-3

PPC ONE-LINE DIAGRAM

NO SCALE 1

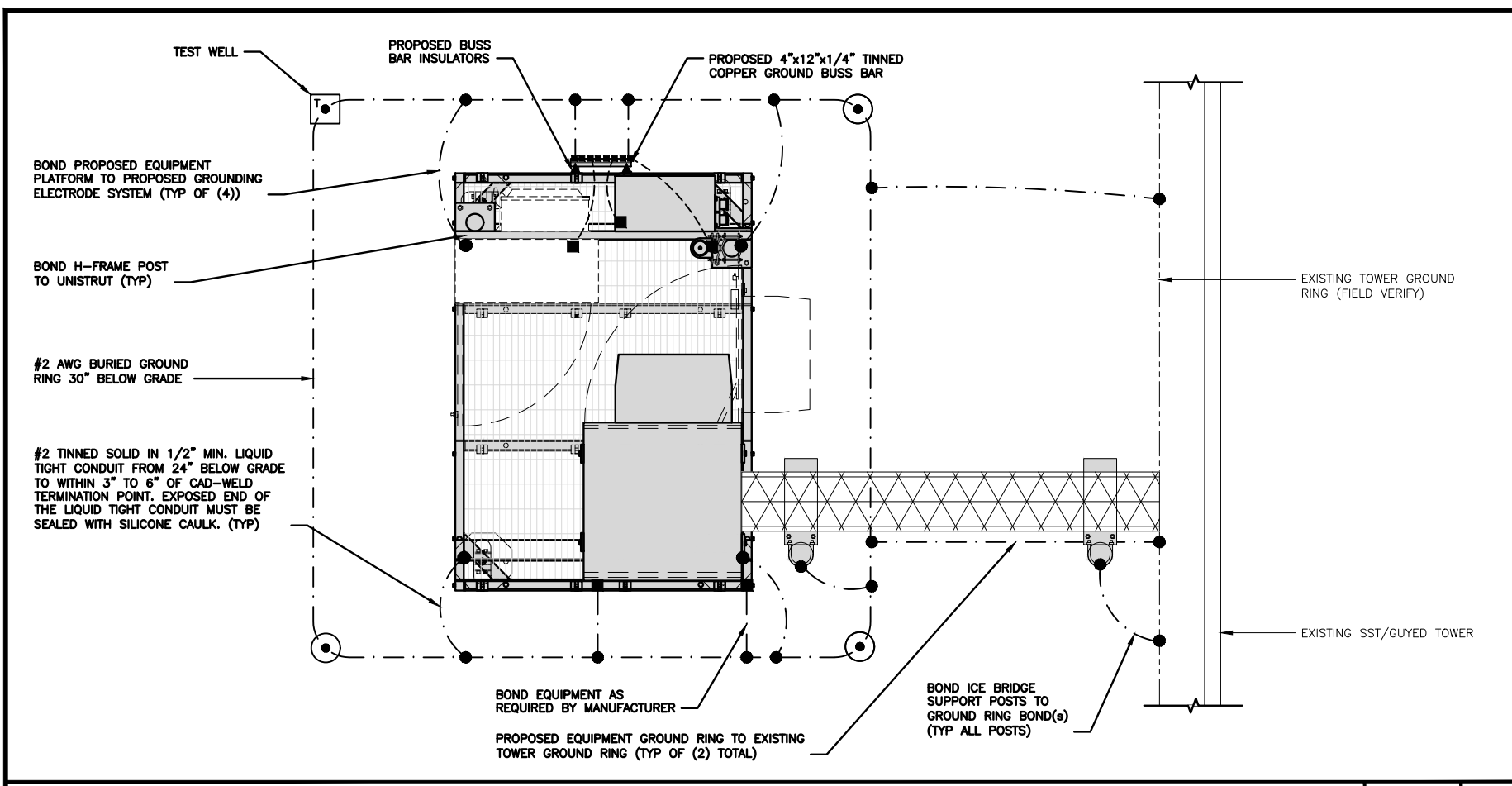
PROPOSED ENERSYS PANEL SCHEDULE											
LOAD SERVED	VOLT AMPS (WATTS)		TRIP	CKT #	PHASE	CKT #	TRIP	VOLT AMPS (WATTS)		LOAD SERVED	
	L1	L2						L1	L2		
PPC GFCI OUTLET	180	180	15A	1	A	2	40A	3840	3840	ENERSYS ALPHA CORDEX RECTIFIERS 1 & 2	
ENERSYS GFCI OUTLET			15A	3	B	4	40A	3840	3840	ENERSYS ALPHA 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-	
-SPACE-				11	B	12				-SPACE-	
-SPACE-				13	A	14				-SPACE-	
-SPACE-				15	B	16				-SPACE-	
-SPACE-				17	A	18				-SPACE-	
-SPACE-				19	B	20				-SPACE-	
-SPACE-				21	A	22				-SPACE-	
-SPACE-				23	B	24				-SPACE-	
VOLTAGE AMPS		180	180					9500	9500		
200A MCB, 1φ, 24 SPACE, 120/240V				L1	L2						
MB RATING: 65,000 AIC				9680	9680						
				81	81						
										VOLTAGE AMPS	
										AMPS	
										MAX AMPS	
										MAX 125%	

PANEL SCHEDULE

NO SCALE 2

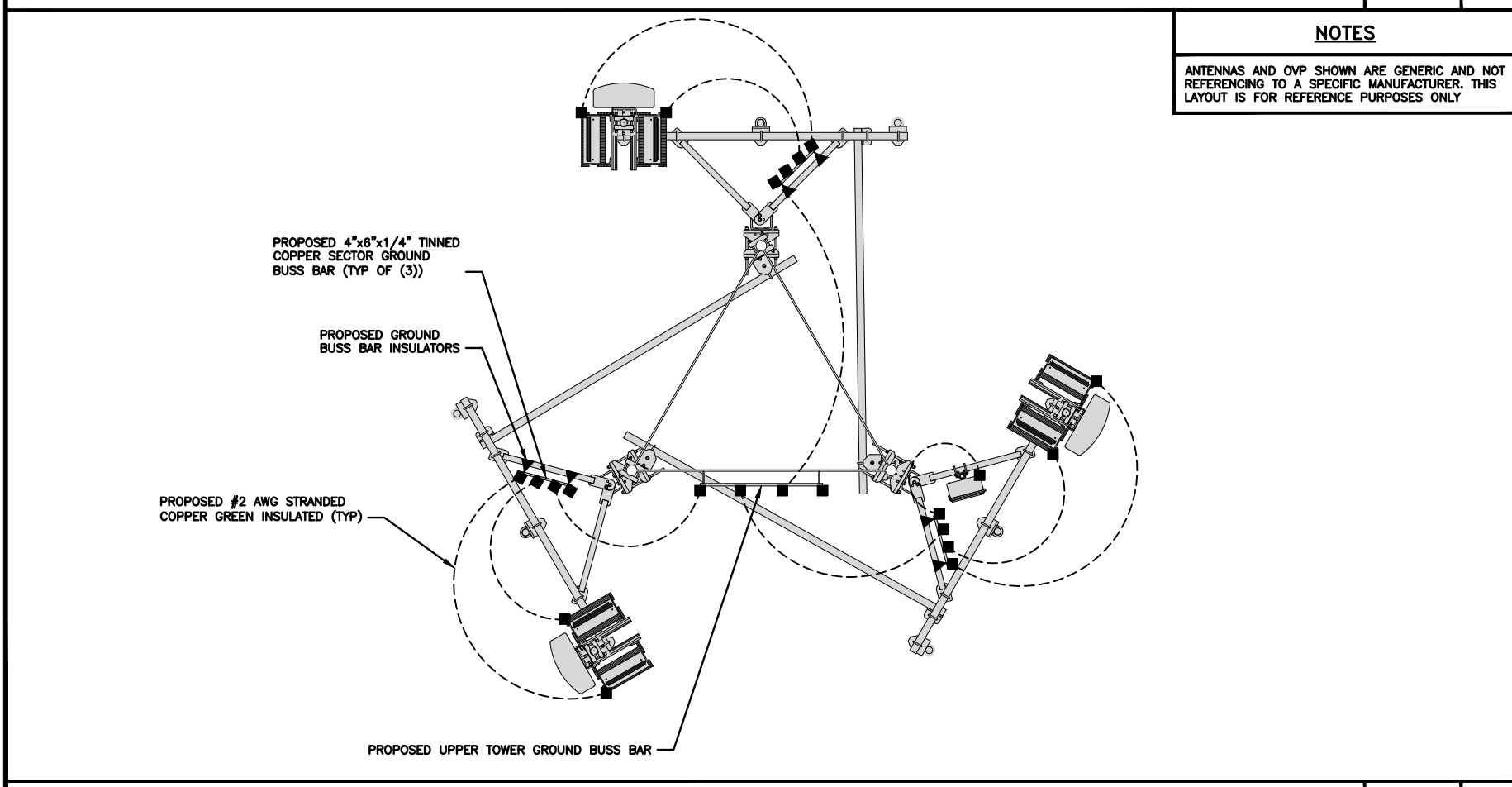
NOT USED

NO SCALE 3



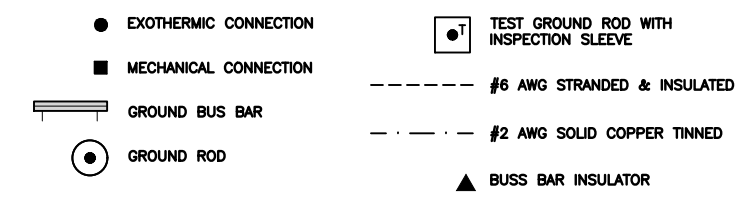
TYPICAL EQUIPMENT GROUNDING PLAN

NO SCALE 1



TYPICAL ANTENNA GROUNDING PLAN

NO SCALE 2



GROUNDING LEGEND

- GROUNDING IS SHOWN DIAGRAMMATICALLY ONLY.
- 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.
- 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 TOWER STEEL.**
- REFER TO DISH Wireless L.L.C. GROUNDING NOTES.

GROUNDING KEY NOTES

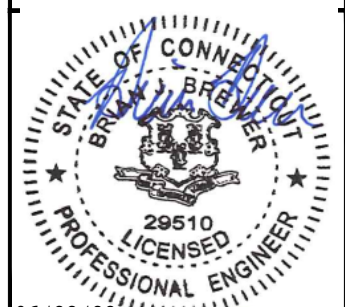
NO SCALE 3



5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120



COA #: PEC.0000738
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Exp. 01/31/23

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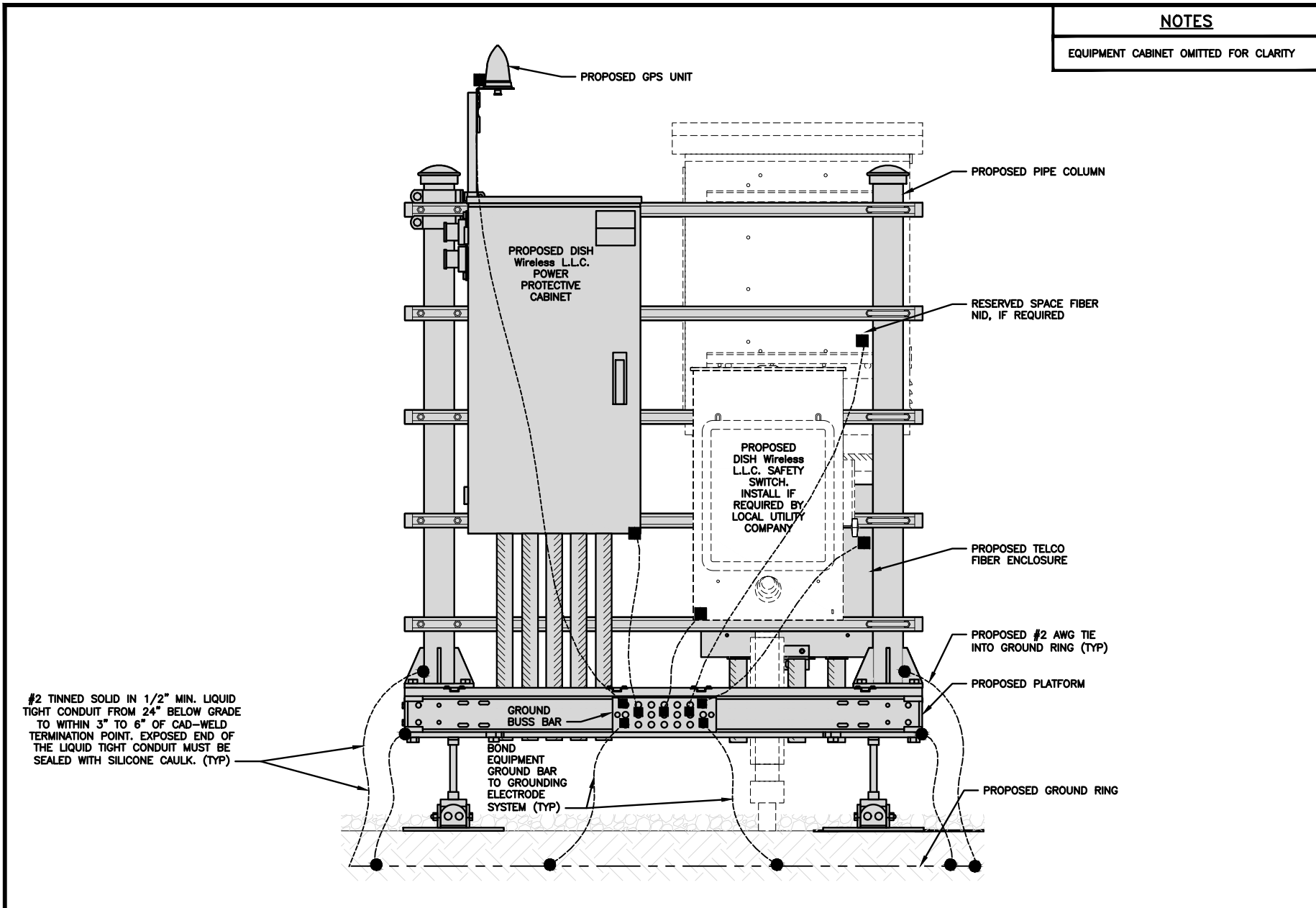
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A&E PROJECT NUMBER
KHCLC-16448

DISH Wireless L.L.C.
PROJECT INFORMATION
NJJER01086A
128 MATHER STREET
WILTON, CT 06897

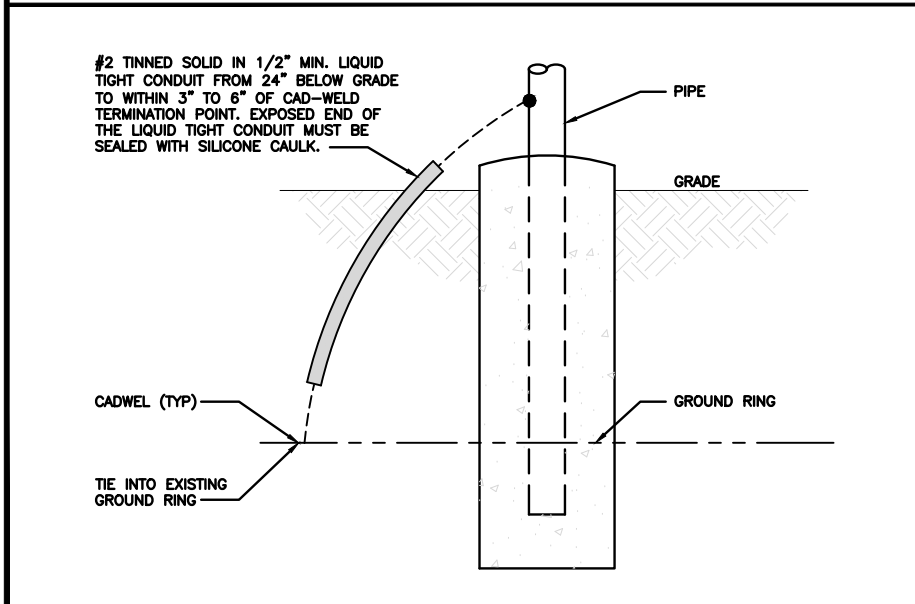
SHEET TITLE
GROUNDING PLANS AND NOTES

SHEET NUMBER
G-1

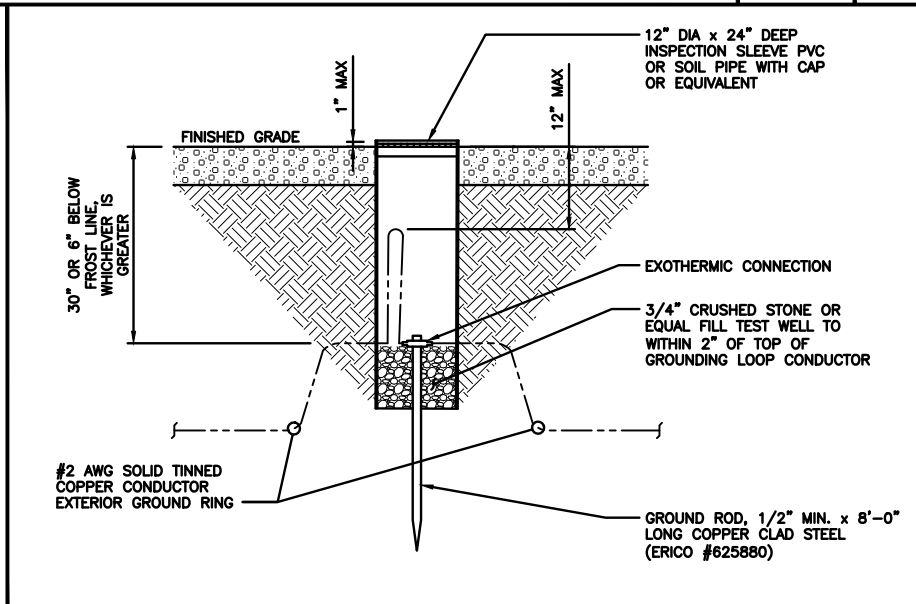


NOTES
EQUIPMENT CABINET OMITTED FOR CLARITY

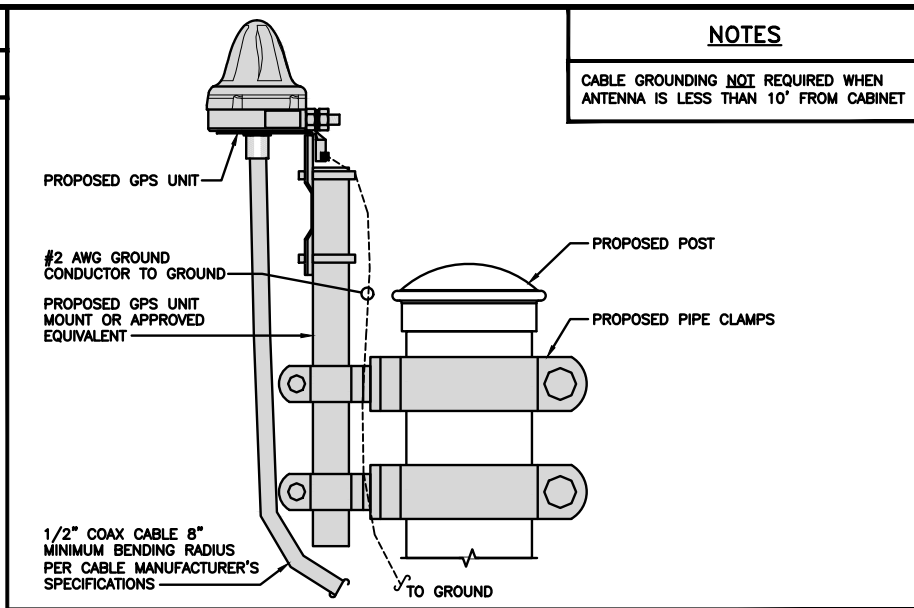
H-FRAME GROUNDING DETAIL NO SCALE 1



TRANSITIONING GROUND DETAIL NO SCALE 4

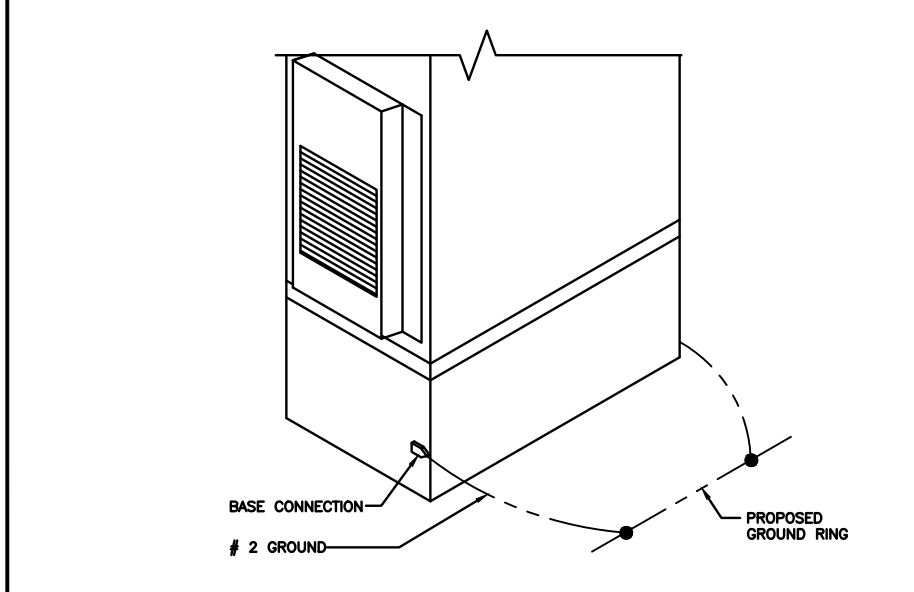


TYPICAL TEST GROUND ROD WITH INSPECTION SLEEVE NO SCALE 5

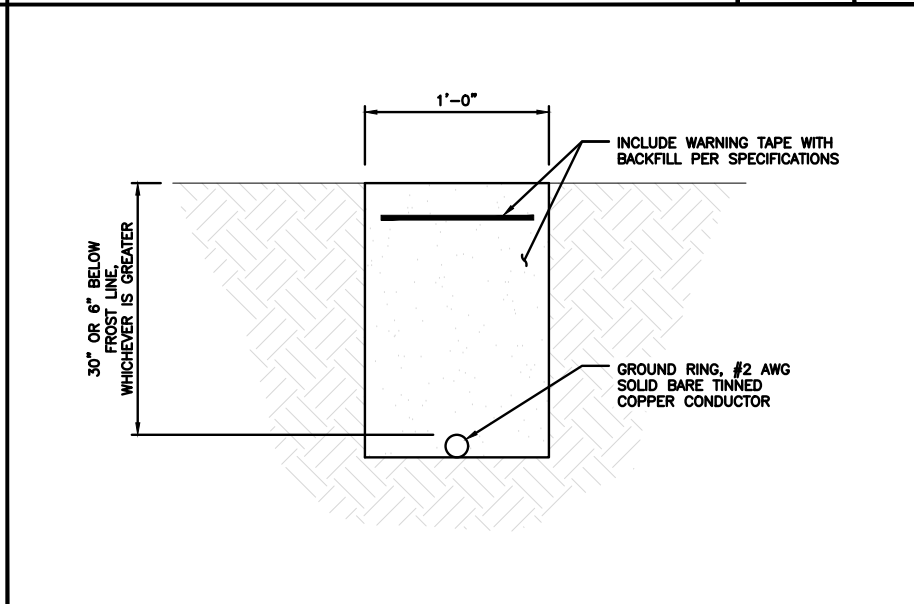


NOTES
CABLE GROUNDING NOT REQUIRED WHEN ANTENNA IS LESS THAN 10' FROM CABINET

TYPICAL GPS UNIT GROUNDING NO SCALE 2



OUTDOOR CABINET GROUNDING NO SCALE 3



TYPICAL GROUND RING TRENCH NO SCALE 6

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Kimley Horn
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STATE OF CONNECTICUT
BRUCE BREWER
29510
LICENSED PROFESSIONAL ENGINEER
06/22/22
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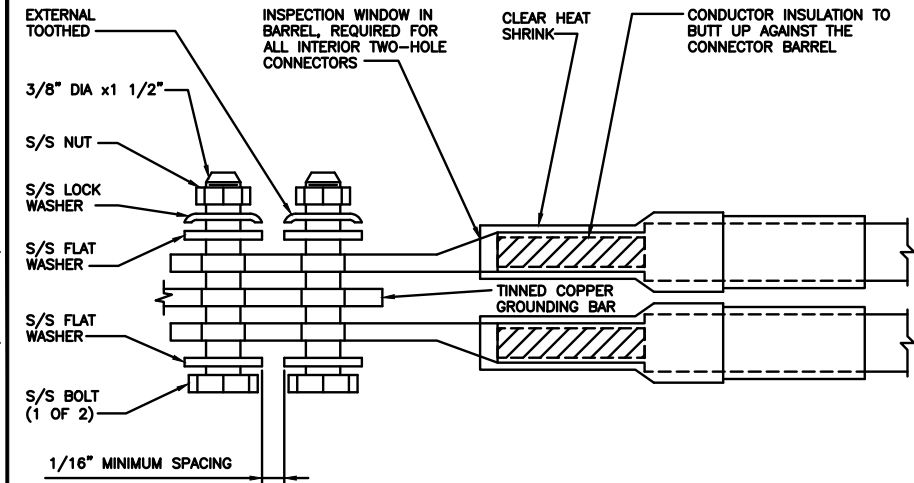
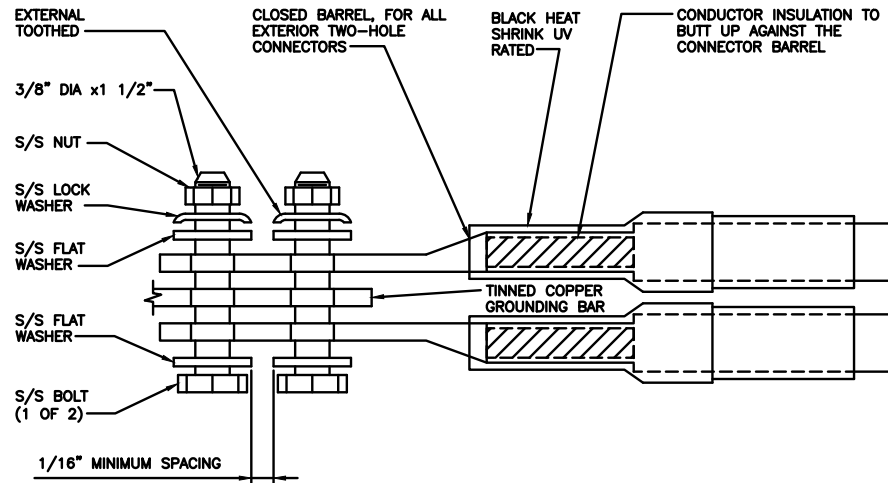
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128 MATHER STREET
WILTON, CT 06897

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

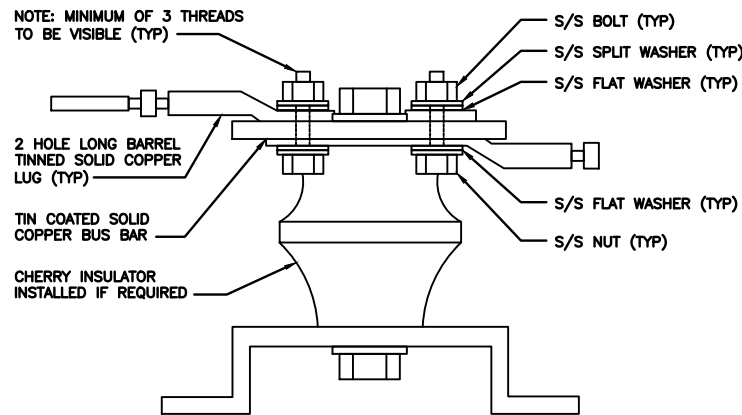
NO SCALE 1

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

NOT USED

NO SCALE 7

NOT USED

NO SCALE 8

NOT USED

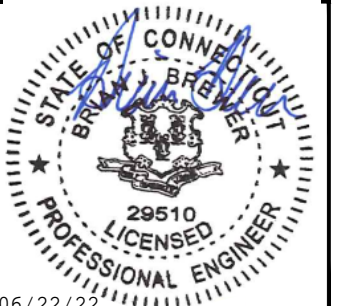
NO SCALE 9

dish
wireless.

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Kimley»Horn

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DISH Wireless L.L.C.
PROJECT INFORMATION

NJJER01086A
128 MATHER STREET
WILTON, CT 06897

SHEET TITLE
GROUNDING DETAILS

SHEET NUMBER

G-3

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

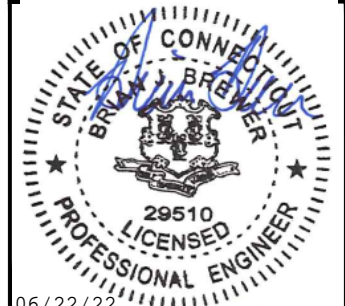
4



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A&E PROJECT NUMBER

KHCLC-16448

DISH Wireless L.L.C.
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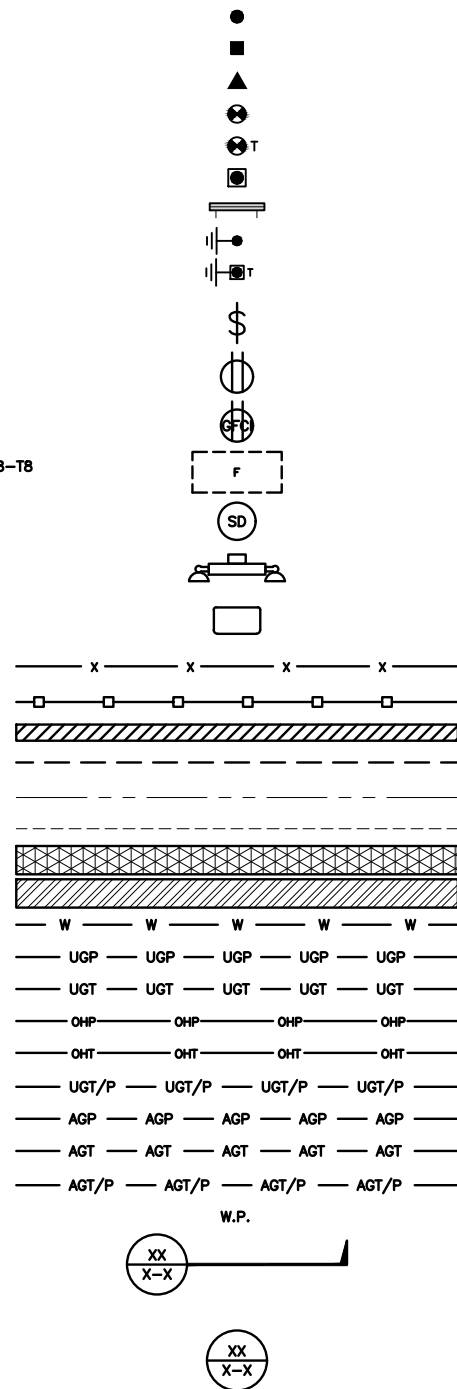
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128 MATHER STREET
WILTON, CT 06897

SHEET TITLE
RF
CABLE COLOR CODE

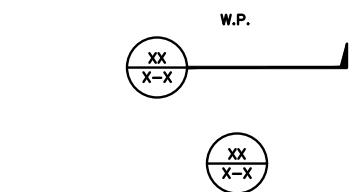
SHEET NUMBER

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

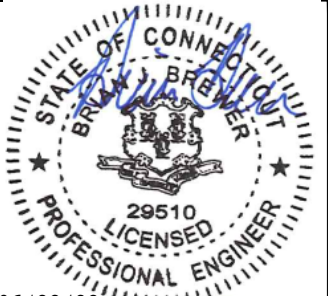
ABBREVIATIONS



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2	06/20/2022	REVISED PER CLIENT

A&E PROJECT NUMBER
 KHCLC-16448

DISH Wireless L.L.C.
 PROJECT INFORMATION
 NJJER01086A
 128 MATHER STREET
 WILTON, CT 06897

SHEET TITLE
 LEGEND AND ABBREVIATIONS

SHEET NUMBER
GN-1

SITE ACTIVITY REQUIREMENTS:

- 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.
- "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.
- PRIOR TO THE START OF CONSTRUCTION, ALL REQUIRED JURISDICTIONAL PERMITS SHALL BE OBTAINED. THIS INCLUDES, BUT IS NOT LIMITED TO, BUILDING, ELECTRICAL, MECHANICAL, FIRE, FLOOD ZONE, ENVIRONMENTAL, AND ZONING. AFTER ONSITE ACTIVITIES AND CONSTRUCTION ARE COMPLETED, ALL REQUIRED PERMITS SHALL BE SATISFIED AND CLOSED OUT ACCORDING TO LOCAL JURISDICTIONAL REQUIREMENTS.
- ALL CONSTRUCTION MEANS AND METHODS; INCLUDING BUT NOT LIMITED TO, ERECTION PLANS, RIGGING PLANS, CLIMBING PLANS, AND RESCUE PLANS SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR RESPONSIBLE FOR THE EXECUTION OF THE WORK CONTAINED HEREIN, AND SHALL MEET ANSI/ASSE A10.48 (LATEST EDITION); FEDERAL, STATE, AND LOCAL REGULATIONS; AND ANY APPLICABLE INDUSTRY CONSENSUS STANDARDS RELATED TO THE CONSTRUCTION ACTIVITIES BEING PERFORMED. ALL RIGGING PLANS SHALL ADHERE TO ANSI/ASSE A10.48 (LATEST EDITION) AND 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).
- 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."
- 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.
- ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES. CONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
- THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
- THE CONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES INCLUDING PRIVATE LOCATES SERVICES PRIOR TO THE START OF CONSTRUCTION.
- ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY CONTRACTOR. EXTREME CAUTION SHOULD BE USED BY THE CONTRACTOR WHEN EXCAVATING OR DRILLING PIERS AROUND OR NEAR UTILITIES. CONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS WILL INCLUDE BUT NOT BE LIMITED TO A) FALL PROTECTION B) CONFINED SPACE C) ELECTRICAL SAFETY D) TRENCHING AND EXCAVATION E) CONSTRUCTION SAFETY PROCEDURES.
- ALL SITE WORK SHALL BE AS INDICATED ON THE STAMPED CONSTRUCTION DRAWINGS AND DISH PROJECT SPECIFICATIONS, LATEST APPROVED REVISION.
- CONTRACTOR SHALL KEEP THE SITE FREE FROM ACCUMULATING WASTE MATERIAL, DEBRIS, AND TRASH AT THE COMPLETION OF THE WORK. IF NECESSARY, RUBBISH, STUMPS, DEBRIS, STICKS, STONES AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.
- ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, SUBJECT TO THE APPROVAL OF DISH Wireless L.L.C. AND TOWER OWNER, AND/OR LOCAL UTILITIES.
- THE CONTRACTOR SHALL PROVIDE SITE SIGNAGE IN ACCORDANCE WITH THE TECHNICAL SPECIFICATION FOR SITE SIGNAGE REQUIRED BY LOCAL JURISDICTION AND SIGNAGE REQUIRED ON INDIVIDUAL PIECES OF EQUIPMENT, ROOMS, AND SHELTERS.
- THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE CARRIER'S EQUIPMENT AND TOWER AREAS.
- THE SUB GRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION.
- THE AREAS OF THE OWNERS PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE TOWER, EQUIPMENT OR DRIVEWAY, SHALL BE GRADED TO A UNIFORM SLOPE, AND STABILIZED TO PREVENT EROSION AS SPECIFIED ON THE CONSTRUCTION DRAWINGS AND/OR PROJECT SPECIFICATIONS.
- CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.
- THE CONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.
- CONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS AND RADIOS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
- CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION. TRASH AND DEBRIS SHOULD BE REMOVED FROM SITE ON A DAILY BASIS.
- NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUND. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.

GENERAL NOTES:

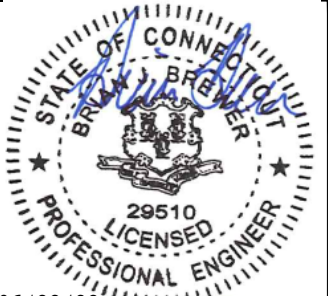
- FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:
CONTRACTOR:GENERAL CONTRACTOR RESPONSIBLE FOR CONSTRUCTION
CARRIER:DISH Wireless L.L.C.
TOWER OWNER:TOWER OWNER
- THESE DRAWINGS HAVE BEEN PREPARED USING STANDARDS OF PROFESSIONAL CARE AND COMPLETENESS NORMALLY EXERCISED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



5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120



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



06/22/22

Exp. 01/31/23

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	10/01/2021	ISSUED FOR REVIEW
0	11/03/2021	ISSUED FOR CONSTRUCTION
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A&E PROJECT NUMBER
KHCL-16448

DISH Wireless L.L.C.
PROJECT INFORMATION
NJJER01086A
128 MATHER STREET
WILTON, CT 06897

SHEET TITLE
GENERAL NOTES

SHEET NUMBER
GN-2

CONCRETE, FOUNDATIONS, AND REINFORCING STEEL:

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

ELECTRICAL INSTALLATION NOTES:

- ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC AND ALL APPLICABLE FEDERAL, STATE, AND LOCAL CODES/ORDINANCES.
- CONDUIT ROUTINGS ARE SCHEMATIC. CONTRACTOR SHALL INSTALL CONDUITS SO THAT ACCESS TO EQUIPMENT IS NOT BLOCKED AND TRIP HAZARDS ARE ELIMINATED.
- WIRING, RACEWAY AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC.
- ALL CIRCUITS SHALL BE SEGREGATED AND MAINTAIN MINIMUM CABLE SEPARATION AS REQUIRED BY THE NEC.
 - ALL EQUIPMENT SHALL BEAR THE UNDERWRITERS LABORATORIES LABEL OF APPROVAL, AND SHALL CONFORM TO REQUIREMENT OF THE NATIONAL ELECTRICAL CODE.
 - ALL OVERCURRENT DEVICES SHALL HAVE AN INTERRUPTING CURRENT RATING THAT SHALL BE GREATER THAN THE SHORT CIRCUIT CURRENT TO WHICH THEY ARE SUBJECTED, 22,000 AIC MINIMUM. VERIFY AVAILABLE SHORT CIRCUIT CURRENT DOES NOT EXCEED THE RATING OF ELECTRICAL EQUIPMENT IN ACCORDANCE WITH ARTICLE 110.24 NEC OR THE MOST CURRENT ADOPTED CODE PRE THE GOVERNING JURISDICTION.
- EACH END OF EVERY POWER PHASE CONDUCTOR, GROUNDING CONDUCTOR, AND TELCO CONDUCTOR OR CABLE SHALL BE LABELED WITH COLOR-CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, 1/2" PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL). THE IDENTIFICATION METHOD SHALL CONFORM WITH NEC AND OSHA.
- ALL ELECTRICAL COMPONENTS SHALL BE CLEARLY LABELED WITH LAMICOID TAGS SHOWING THEIR RATED VOLTAGE, PHASE CONFIGURATION, WIRE CONFIGURATION, POWER OR AMPACITY RATING AND BRANCH CIRCUIT ID NUMBERS (i.e. PANEL BOARD AND CIRCUIT ID'S).
- PANEL BOARDS (ID NUMBERS) SHALL BE CLEARLY LABELED WITH PLASTIC LABELS.
- TIE WRAPS ARE NOT ALLOWED.
- 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.
- 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.
- POWER AND CONTROL WIRING IN FLEXIBLE CORD SHALL BE MULTI-CONDUCTOR, TYPE SOOW CORD (#14 OR LARGER) UNLESS OTHERWISE SPECIFIED.
- POWER AND CONTROL WIRING FOR USE IN CABLE TRAY SHALL BE MULTI-CONDUCTOR, TYPE TC CABLE (#14 OR LARGER), WITH TYPE THHW, THWN, THWN-2, XHHW, XHHW-2, THW, THW-2, RHW, OR RHW-2 INSULATION UNLESS OTHERWISE SPECIFIED.
- ALL POWER AND GROUNDING CONNECTIONS SHALL BE CRIMP-STYLE, COMPRESSION WIRE LUGS AND WIRE NUTS BY THOMAS AND BETTS (OR EQUAL). LUGS AND WIRE NUTS SHALL BE RATED FOR OPERATION NOT LESS THAN 75° C (90° C IF AVAILABLE).
- RACEWAY AND CABLE TRAY SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND NEC.
- ELECTRICAL METALLIC TUBING (EMT), INTERMEDIATE METAL CONDUIT (IMC), OR RIGID METAL CONDUIT (RMC) SHALL BE USED FOR EXPOSED INDOOR LOCATIONS.

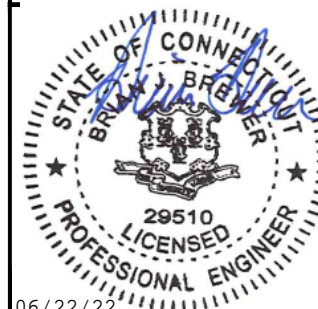
- ELECTRICAL METALLIC TUBING (EMT) OR METAL-CLAD CABLE (MC) SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.
- SCHEDULE 40 PVC UNDERGROUND ON STRAIGHTS AND SCHEDULE 80 PVC FOR ALL ELBOWS/90s AND ALL APPROVED ABOVE GRADE PVC CONDUIT.
- LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID-TITE FLEX) SHALL BE USED INDOORS AND OUTDOORS, WHERE VIBRATION OCCURS OR FLEXIBILITY IS NEEDED.
- CONDUIT AND TUBING FITTINGS SHALL BE THREADED OR COMPRESSION-TYPE AND APPROVED FOR THE LOCATION USED. SET SCREW FITTINGS ARE NOT ACCEPTABLE.
- CABINETS, BOXES AND WIRE WAYS SHALL BE LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND THE NEC.
- WIREWAYS SHALL BE METAL WITH AN ENAMEL FINISH AND INCLUDE A HINGED COVER, DESIGNED TO SWING OPEN DOWNWARDS (WIREMOLD SPECMATE WIREWAY).
- SLOTTED WIRING DUCT SHALL BE PVC AND INCLUDE COVER (PANDUIT TYPE E OR EQUAL).
- CONDUITS SHALL BE FASTENED SECURELY IN PLACE WITH APPROVED NON-PERFORATED STRAPS AND HANGERS. EXPLOSIVE DEVICES (i.e. POWDER-ACTUATED) FOR ATTACHING HANGERS TO STRUCTURE WILL NOT BE PERMITTED. CLOSELY FOLLOW THE LINES OF THE STRUCTURE, MAINTAIN CLOSE PROXIMITY TO THE STRUCTURE AND KEEP CONDUITS IN TIGHT ENVELOPES. CHANGES IN DIRECTION TO ROUTE AROUND OBSTACLES SHALL BE MADE WITH CONDUIT OUTLET BODIES. CONDUIT SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER. PARALLEL AND PERPENDICULAR TO STRUCTURE WALL AND CEILING LINES. ALL CONDUIT SHALL BE FISHED TO CLEAR OBSTRUCTIONS. ENDS OF CONDUITS SHALL BE TEMPORARILY CAPPED FLUSH TO FINISH GRADE TO PREVENT CONCRETE, PLASTER OR DIRT FROM ENTERING. CONDUITS SHALL BE RIGIDLY CLAMPED TO BOXES BY GALVANIZED MALLEABLE IRON BUSHING ON INSIDE AND GALVANIZED MALLEABLE IRON LOCKNUT ON OUTSIDE AND INSIDE.
- EQUIPMENT CABINETS, TERMINAL BOXES, JUNCTION BOXES AND PULL BOXES SHALL BE GALVANIZED OR EPOXY-COATED SHEET STEEL. SHALL MEET OR EXCEED UL 50 AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND NEMA 3 (OR BETTER) FOR EXTERIOR LOCATIONS.
- METAL RECEPTACLE, SWITCH AND DEVICE BOXES SHALL BE GALVANIZED, EPOXY-COATED OR NON-CORRODING; SHALL MEET OR EXCEED UL 514A AND NEMA OS 1 AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND WEATHER PROTECTED (WP OR BETTER) FOR EXTERIOR LOCATIONS.
- NONMETALLIC RECEPTACLE, SWITCH AND DEVICE BOXES SHALL MEET OR EXCEED NEMA OS 2 (NEWEST REVISION) AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND WEATHER PROTECTED (WP OR BETTER) FOR EXTERIOR LOCATIONS.
- THE CONTRACTOR SHALL NOTIFY AND OBTAIN NECESSARY AUTHORIZATION FROM THE CARRIER AND/OR DISH Wireless L.L.C. AND TOWER OWNER BEFORE COMMENCING WORK ON THE AC POWER DISTRIBUTION PANELS.
- THE CONTRACTOR SHALL PROVIDE NECESSARY TAGGING ON THE BREAKERS, CABLES AND DISTRIBUTION PANELS IN ACCORDANCE WITH THE APPLICABLE CODES AND STANDARDS TO SAFEGUARD LIFE AND PROPERTY.
- INSTALL LAMICOID LABEL ON THE METER CENTER TO SHOW "DISH Wireless L.L.C.".
- 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
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DRAWN BY: CHECKED BY: APPROVED BY:

SEW MCK ---

RFDS REV #: ---

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DISH Wireless L.L.C.
PROJECT INFORMATION

NJJER01086A
128 MATHER STREET
WILTON, CT 06897

SHEET TITLE
GENERAL NOTES

SHEET NUMBER

GN-3

GROUNDING NOTES:

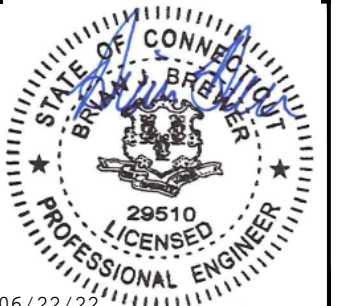
1. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION AND AC POWER GES'S) SHALL BE BONDED TOGETHER AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.
2. THE CONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING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



5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120



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



06/22/22

Exp. 01/31/23

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	10/01/2021	ISSUED FOR REVIEW
0	11/03/2021	ISSUED FOR CONSTRUCTION
1	05/04/2022	REVISED PER CLIENT
2	06/20/2022	REVISED PER CLIENT

A&E PROJECT NUMBER
KHCLC-16448

DISH Wireless L.L.C.
PROJECT INFORMATION

NJJER01086A
128 MATHER STREET
WILTON, CT 06897

SHEET TITLE
GENERAL NOTES

SHEET NUMBER
GN-4

ATTACHMENT 4

Date: **September 23, 2021**



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

Subject: **Structural Analysis Report**

Carrier Designation: **DISH Network Co-Locate**
Site Number: NJJER01086A
Site Name: CT-CCI-T-806353

Crown Castle Designation: **BU Number:** 806353
Site Name: BRG 124 943066
JDE Job Number: 640163
Work Order Number: 1963355
Order Number: 548867 Rev. 2

Engineering Firm Designation: **B+T Group Project Number:** 102920.009.01

Site Data: **128 Mather Street, Wilton, Fairfield County, CT**
Latitude 41° 14' 18.7", Longitude -73° 25' 26.9"
180 Foot - Self Support Tower

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

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

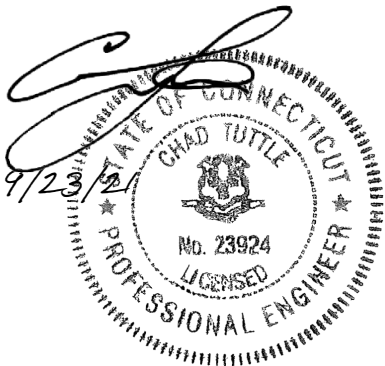
LC7: Proposed Equipment Configuration

Sufficient Capacity – 87.8%

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

Structural analysis prepared by: Erik Perez

Respectfully submitted by: B+T Engineering, Inc.
COA: PEC.0001564; Expires: 02/10/2022



Chad E. Tuttle, P.E.

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tnxTower Output

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1) INTRODUCTION

This tower is a 180 ft. Self-Support tower designed by FWT INC in May of 1988.

The tower has been modified multiple times to accommodate additional loading.

2) ANALYSIS CRITERIA

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

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
170.0	170.0	3	Fujitsu	TA08025-B604	1	1-3/4
		3	Fujitsu	TA08025-B605		
		3	Jma Wireless	MX08FRO665-21		
		1	Raycap	RDIDC-9181-PF-48		
		1	--	Commscope MTC3975083 (3)		

Table 2 - Other Considered Equipment

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
178.0	184.0	1	Rfs Celwave	PD10017	2	7/8
164.0	164.0	1	--	Sector Mount [SM 702-3] (16')	7	1-5/8
	162.0	6	Commscope	JAHH-65B-R3B		
		6	Rfs Celwave	APL868013-42T0		
		1	Rfs Celwave	DB-T1-6Z-8AB-0Z		
		3	Samsung Telecom.	CBRS		
		3	Samsung Telecom.	RFV01U-D1A		
		6	Samsung Telecom.	RFV01U-D2A		
		3	Vzw	Sub6 Antenna - VZS01		
154.0	158.0	3	CCI Antennas	DMP65R-BU6D	12	1-5/8
		3	CCI Antennas	OPA65R-BU6D		
		3	Ericsson	RRUS 32 B2		
		3	Ericsson	RRUS 32 B30		
		3	Ericsson	RRUS 4449 B5/B12		
		3	Ericsson	RRUS 4478 B14		
		3	Kaelus	DBC0061F1V51-2		
		3	Powerwave Tech.	7770.00		
		6	Powerwave Tech.	LGP21401		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
	154.0	3	Quintel Tech.	QS66512-2		
		3	Raycap	DC6-48-60-18-8F		
		1	--	Sector Mount [SM 1303-3]		
145.0	146.0	3	Alcatel Lucent	800 External Notch Filter	--	--
		3	Alcatel Lucent	800MHZ 2X50W RRH		
		3	Alcatel Lucent	PCS 1900MHZ 4X45W-65MHZ		
143.0	143.0	3	Alcatel Lucent	TD-RRH8x20-25	3	1-1/4
		9	Rfs Celwave	ACU-A20-N		
		3	Rfs Celwave	APXVSP18-C-A20		
		3	Rfs Celwave	APXVTM14-C-120		
124.0	131.0	2	Rfs Celwave	1142-2C	2	1/2
	124.0	2	--	Side Arm Mount [SO 303-1]		
104.0	111.0	1	Rfs Celwave	1142-2C	1	7/8
	108.0	1	Rfs Celwave	220-3BN	1	1/2
	104.0	2	--	Side Arm Mount [SO 303-1]		
93.0	93.0	3	Ericsson	AIR 32 B2a/B66Aa	4 6	1-5/8 1-1/4
		3	Ericsson	ERICSSON AIR 21 B2A B4P		
		3	Ericsson	KRY 112 144/1		
		3	Ericsson	RADIO 4449 B12/B71		
		3	Rfs Celwave	APXVAARR24_43-U-NA20		
		1	--	Sector Mount [SM 404-3]		
62.0	65.0	1	Gps	GPS_A	1	1/2
	62.0	1	--	Side Arm Mount [SO 305-1]		
42.0	44.0	1	Gps	GPS_A	1	1/2
	42.0	1	--	Side Arm Mount [SO 305-1]		
31.0	32.0	1	Gps	GPS_A	1	1/2
	31.0	1	--	Side Arm Mount [SO 701-1]		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Reference	Source
Tower Manufacturer Drawing	217757	CCI Sites
Tower Modification Drawing	3290324	CCI Sites
Tower Modification Drawing	801524	CCI Sites
Tower Modification Drawing	2434484	CCI Sites
Post Modification Inspection	2575710	CCI Sites
Tower Modification Drawing	6061656	CCI Sites
Post Modification Inspection	6515894	CCI Sites

Document	Reference	Source
Foundation Drawing	262285	CCI Sites
Geotech Report	262283	CCI Sites
Crown CAD Package	Date: 05/13/2021	CCI Sites

3.1) Analysis Method

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

3.2) Assumptions

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

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

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
T1	180 - 168	Leg	P2x0.154	2	-3.044	29.380	10.4	Pass
T2	168 - 160	Leg	P2x0.154 (GR)	26	-11.417	40.351	28.3	Pass
T3	160 - 140	Leg	P3x0.216 (GR)	41	-51.508	91.364	56.4	Pass
T4	140 - 120	Leg	P3.5x.318 (GR)	68	-85.311	128.240	66.5	Pass
T5	120 - 100	Leg	P4x.337 (GR)	89	-114.934	165.049	69.6 79.8 (b)	Pass
T6	100 - 80	Leg	P5x0.375 (GR)	109	120.220	202.153	59.5	Pass
T7	80 - 60	Leg	P6x0.432	131	-170.913	238.435	71.7 85.8 (b)	Pass
T8	60 - 40	Leg	P6x0.432	146	-198.302	238.435	83.2	Pass
T9	40 - 20	Leg	P6x0.432	160	-224.272	266.933	84.0 85.8 (b)	Pass
T10	20 - 0	Leg	P8x.5	181	-251.272	386.074	65.1	Pass
T1	180 - 168	Diagonal	L2x1 1/2x3/16	10	-0.799	15.935	5.0 8.9 (b)	Pass
T2	168 - 160	Diagonal	L2x1 1/2x3/16	30	-2.875	15.935	18.0 34.7 (b)	Pass
T3	160 - 140	Diagonal	L2x1 1/2x3/16	43	-4.061	10.157	40.0 50.9 (b)	Pass
T4	140 - 120	Diagonal	L2x2x3/16	70	-4.533	9.511	47.7 59.7 (b)	Pass
T5	120 - 100	Diagonal	L2 1/2x2x3/16	91	-4.759	9.472	50.2	Pass
T6	100 - 80	Diagonal	L2 1/2x2 1/2x3/16	112	-5.573	10.923	51.0 56.6 (b)	Pass
T7	80 - 60	Diagonal	L3x3x3/16	133	-6.635	11.950	55.5 60.3 (b)	Pass
T8	60 - 40	Diagonal	L3 1/2x3x1/4	148	-7.061	15.837	44.6	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
							51.1 (b)	
T9	40 - 20	Diagonal	L3 1/2x3x1/4	163	-8.111	12.837	63.2	Pass
T10	20 - 0	Diagonal	L3 1/2x3 1/2x1/4	184	-8.352	14.867	56.2 60.5 (b)	Pass
T9	40 - 20	Secondary Horizontal	L3 1/2x3 1/2x1/4	171	-3.889	23.697	16.4 44.0 (b)	Pass
T1	180 - 168	Top Girt	L2x1 1/2x3/16	6	-0.138	10.904	1.3 2.3 (b)	Pass
							Summary	
						Leg (T9)	85.8	Pass
						Diagonal (T9)	63.2	Pass
						Secondary Horizontal (T9)	44.0	Pass
						Top Girt (T1)	2.3	Pass
						Bolt Checks	81.8	Pass
						Rating =	85.8	Pass

Table 5 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1,2	Anchor Rods	Base	55.4	Pass
1,2	Base Foundation (Structure)	Base	87.8	Pass
1,2	Base Foundation (Soil Interaction)	Base	86.1	Pass

Structure Rating (max from all components) =	87.8%
---	--------------

Notes:

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

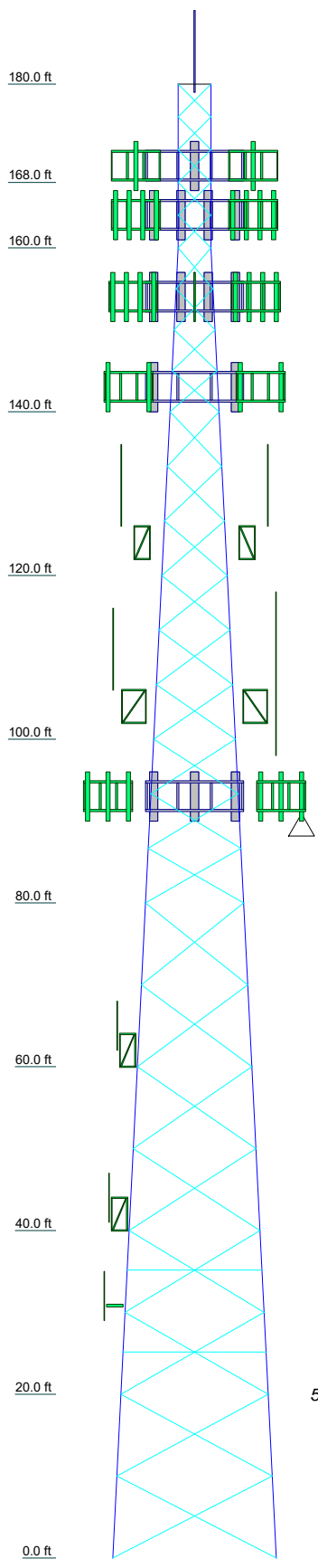
4.1) Recommendations

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

APPENDIX A

TNXTOWER OUTPUT

Section	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1
Legs	P8x.5	P6x0.432	P5x0.375 (GR)	P4x.337 (GR)	P3.5x.318 (GR)	P3x0.216 (GR)	P2x0.154			
Leg Grade			A53-B-35							
Diagonals	L3 1/2x3 1/2x1/4	L3 1/2x3x1/4	L2 1/2x2 1/2x3/16	L3x3x3/16	L2 1/2x2 1/2x3/16	L2x2x3/16	L2x1 1/2x3/16			
Diagonal Grade			A36							
Top Girts										L2x1 1/2x3/16
Sec. Horizontals	N.A.	L3 1/2x3 1/2x1/4	N.A.							
Face Width (ft)	20	18	16	14	12	10	8	6	4	4
# Panels @ (ft)	24.1	4.5	8 @ 10	3.2	2.7	3.4	2.4	1.9	1.4	5 @ 4
Weight (K)									0.3	0.4



SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	P2x0.154 (GR)		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A53-B-35	35 ksi	63 ksi	A36	36 ksi	58 ksi

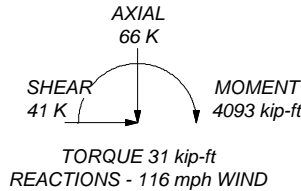
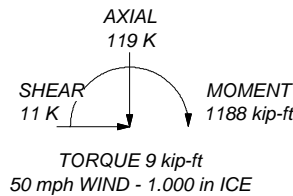
TOWER DESIGN NOTES

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 116 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.000 ft
8. Grouted pipe Fc is 7.000 ksi
9. TIA-222-H Annex S
10. TOWER RATING: 85.8%

ALL REACTIONS
ARE FACTORED

MAX. CORNER REACTIONS AT BASE:
DOWN: 258 K
SHEAR: 26 K

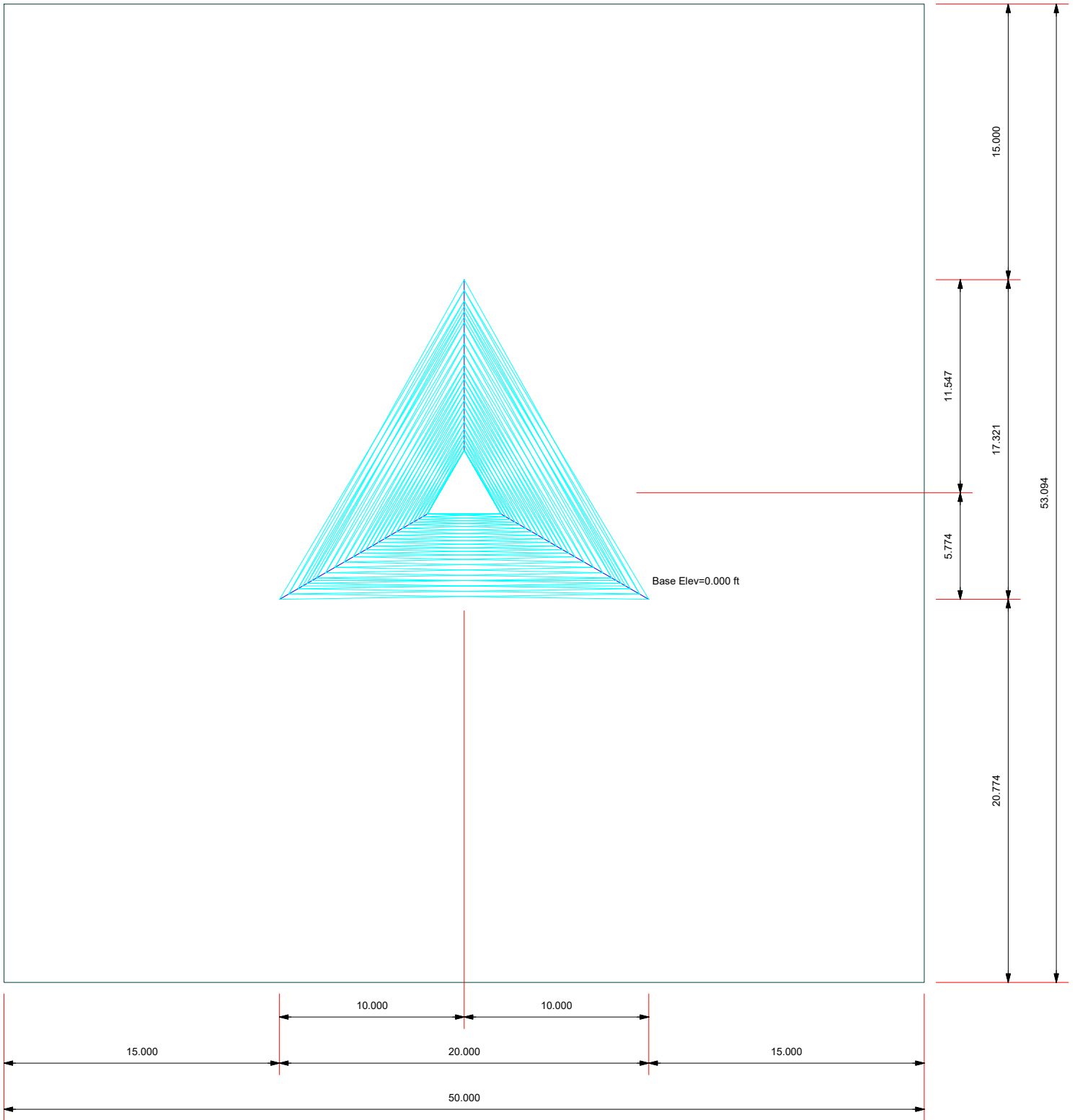
UPLIFT: -214 K
SHEAR: 22 K



B+T Group
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Phone: (918) 587-4630
FAX: (918) 295-0265

Job:	102920.009.01 - BRG 124 943066, CT (BU# 80635)		
Project:			
Client:	Crown Castle	Drawn by:	Jayaraj B
Code:	TIA-222-H	Date:	09/23/21
Path:			Scale: NTS
			Dwg No: E-1

Plot Plan
Total Area - 0.06 Acres



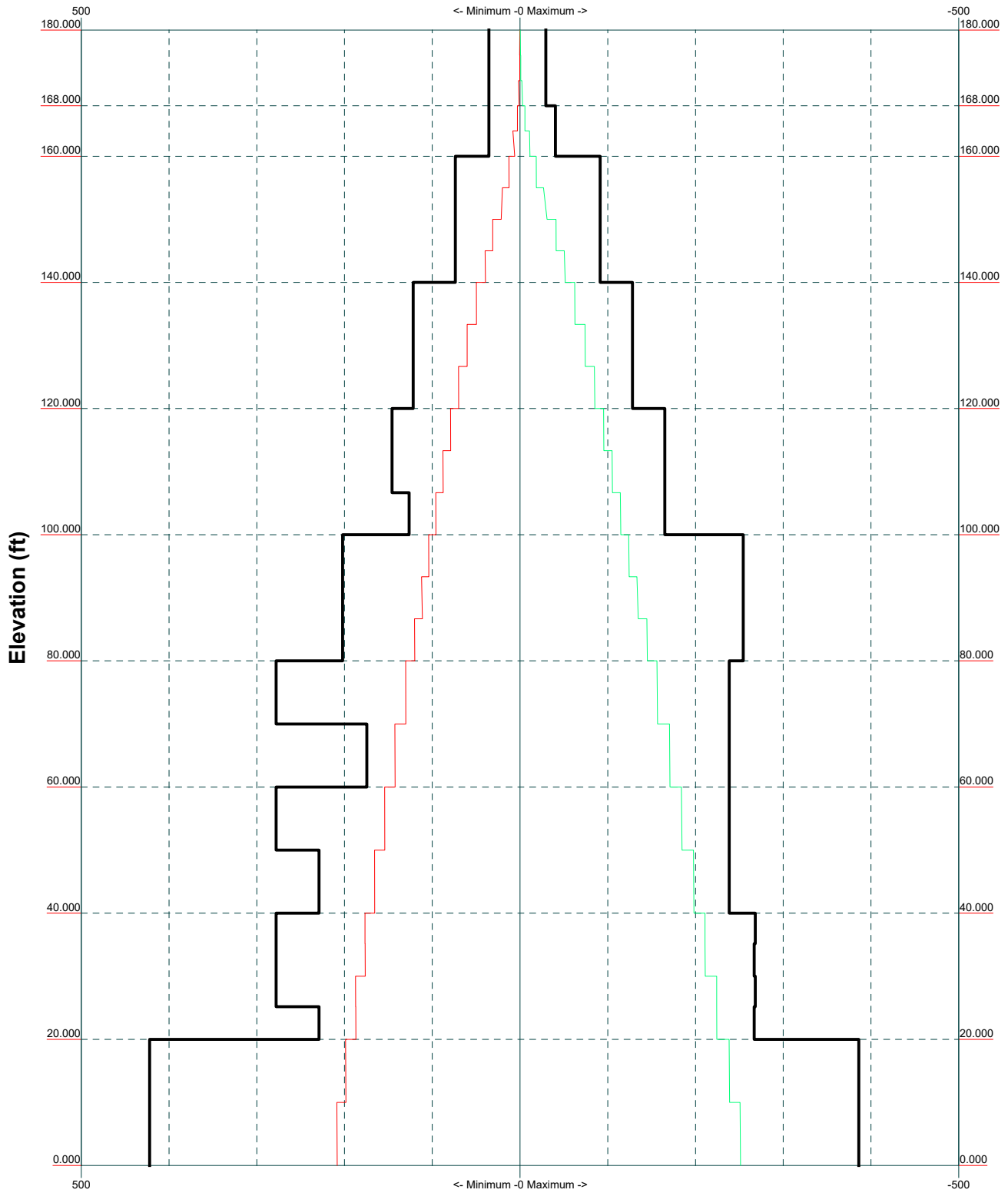
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Job: 102920.009.01 - BRG 124 943066, CT (BU# 80635)		
Project:		
Client: Crown Castle	Drawn by: Jayaraj B	App'd:
Code: TIA-222-H	Date: 09/23/21	Scale: NTS
Path:		Dwg No: E-2

TIA-222-H - 116 mph/50 mph 1.000 in Ice Exposure B

Leg Capacity ———

Leg Compression (K)



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Project:		
Client: Crown Castle	Drawn by: Jayaraj B	App'd:
Code: TIA-222-H	Date: 09/23/21	Scale: NTS
Path:		Dwg No: E-3

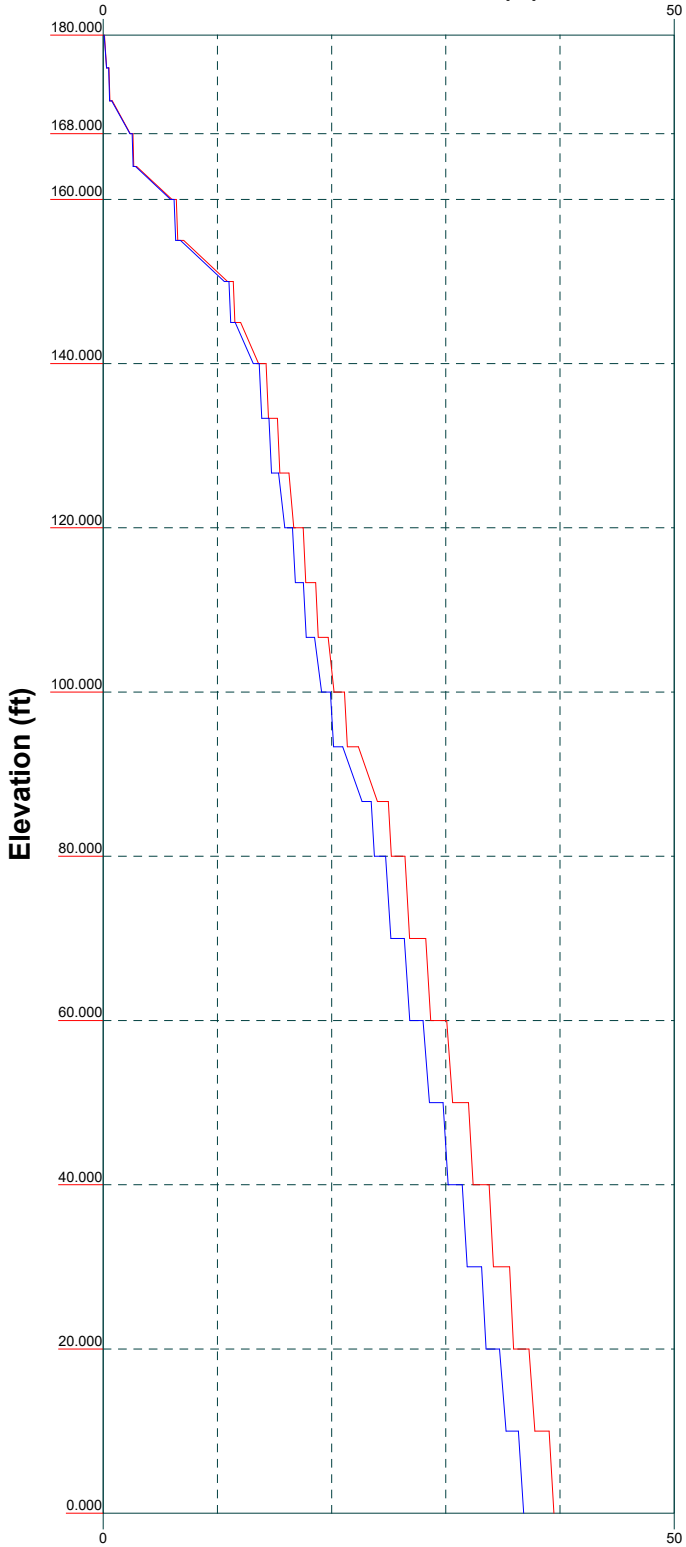
Vx

Vz

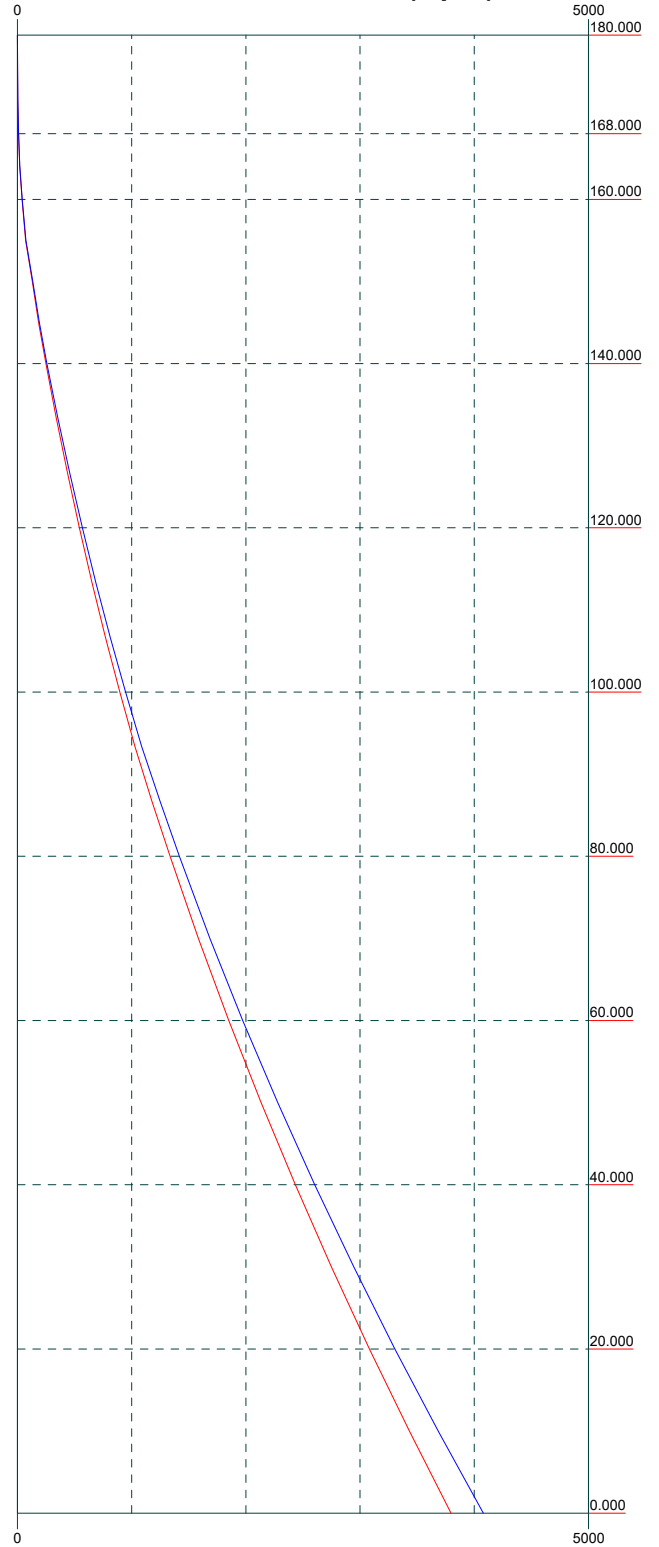
Mx

Mz

Global Mast Shear (K)

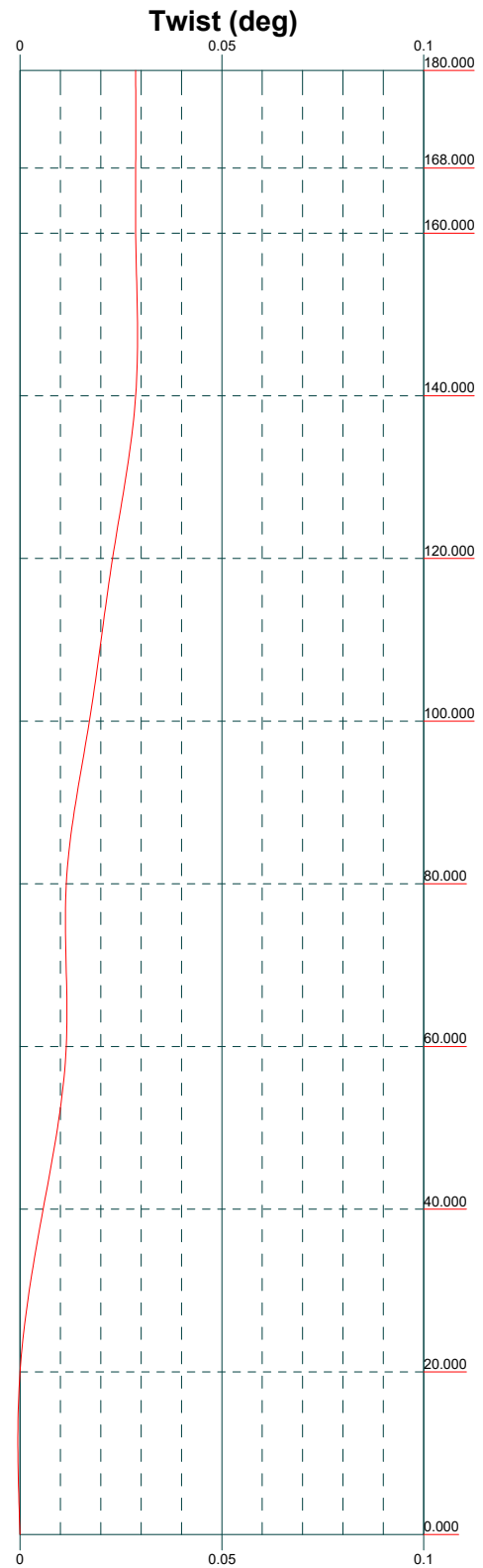
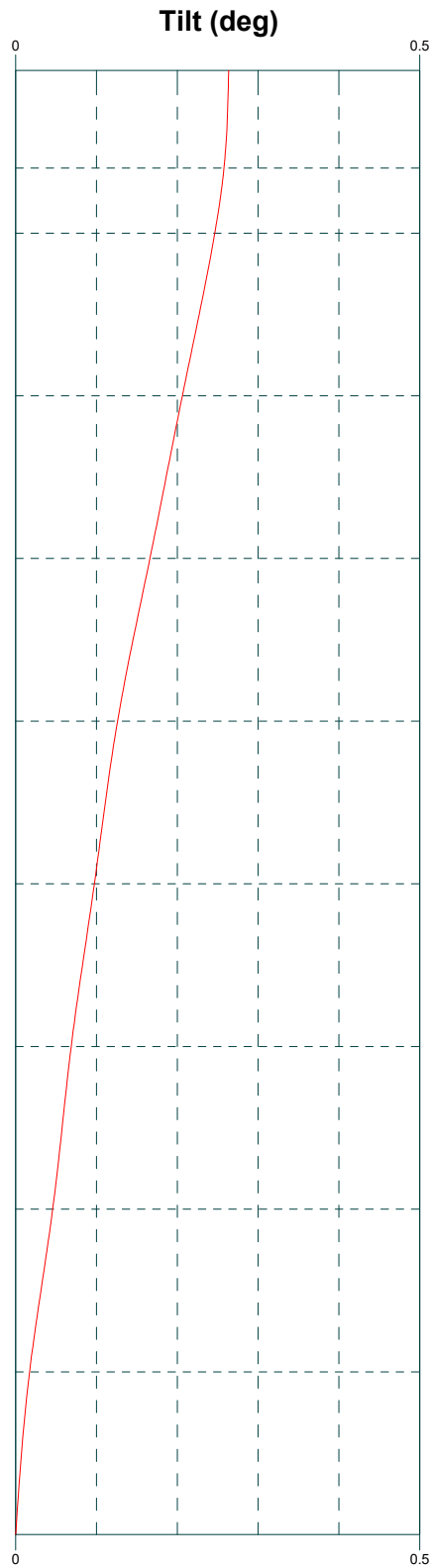
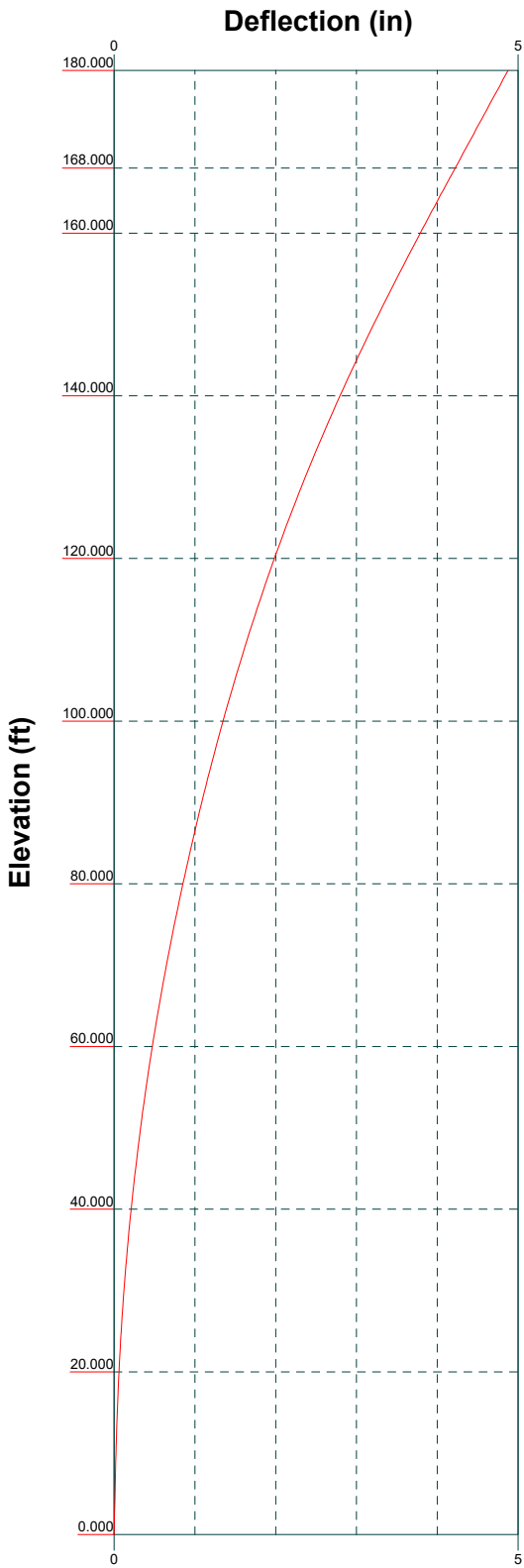


Global Mast Moment (kip-ft)



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Job: 102920.009.01 - BRG 124 943066, CT (BU# 80635)		
Project:		
Client: Crown Castle	Drawn by: Jayaraj B	App'd:
Code: TIA-222-H	Date: 09/23/21	Scale: NTS
Path:	Dwg No: E-4	



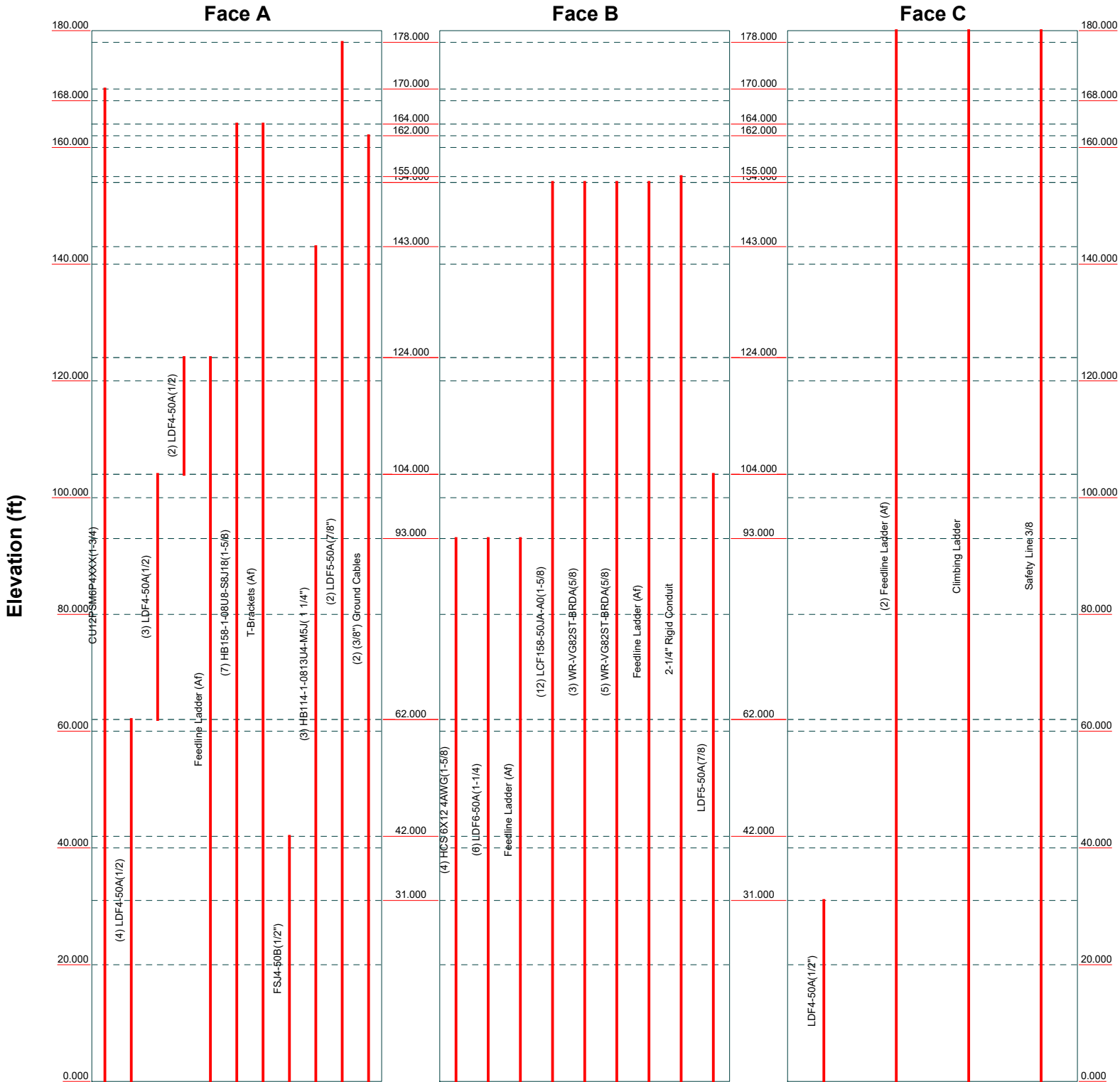
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Job: 102920.009.01 - BRG 124 943066, CT (BU# 80635)		
Project:		
Client: Crown Castle	Drawn by: Jayaraj B	App'd:
Code: TIA-222-H	Date: 09/23/21	Scale: NTS
Path:	Dwg No: E-5	

Feed Line Distribution Chart

0' - 180'

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



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Job: 102920.009.01 - BRG 124 943066, CT (BU# 80635)		
Project:		
Client: Crown Castle	Drawn by: Jayaraj B	App'd:
Code: TIA-222-H	Date: 09/23/21	Scale: NTS
Path:	Dwg No: E-7	

<p>tnxTower</p> <p>B+T Group 1717 S. Boulder, Suite 300 Tulsa, OK 74119 Phone: (918) 587-4630 FAX: (918) 295-0265</p>	<p>Job 102920.009.01 - BRG 124 943066, CT (BU# 806353)</p>	<p>Page 1 of 35</p>
	<p>Project</p>	<p>Date 16:35:40 09/23/21</p>
	<p>Client Crown Castle</p>	<p>Designed by Jayaraj B</p>

Tower Input Data

The main tower is a 3x free standing tower with an overall height of 180.000 ft above the ground line.

The base of the tower is set at an elevation of 0.000 ft above the ground line.

The face width of the tower is 4.000 ft at the top and 20.000 ft at the base.

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: 427.000 ft.

Basic wind speed of 116 mph.

Risk Category II.

Exposure Category B.

Simplified Topographic Factor Procedure for wind speed-up calculations is used.

Topographic Category: 1.

Crest Height: 0.000 ft.

Nominal ice thickness of 1.000 in.

Ice thickness is considered to increase with height.

Ice density of 56.000 pcf.

A wind speed of 50 mph is used in combination with ice.

Temperature drop of 50.000 °F.

Deflections calculated using a wind speed of 60 mph.

TIA-222-H Annex S.

Grouted pipe f'_c is 7.000 ksi.

Pressures are calculated at each section.

Stress ratio used in tower member design is 1.

Tower analysis based on target reliabilities in accordance with Annex S.

Load Modification Factors used: $K_{cs}(F_w) = 0.95$, $K_{cs}(t_i) = 0.85$.

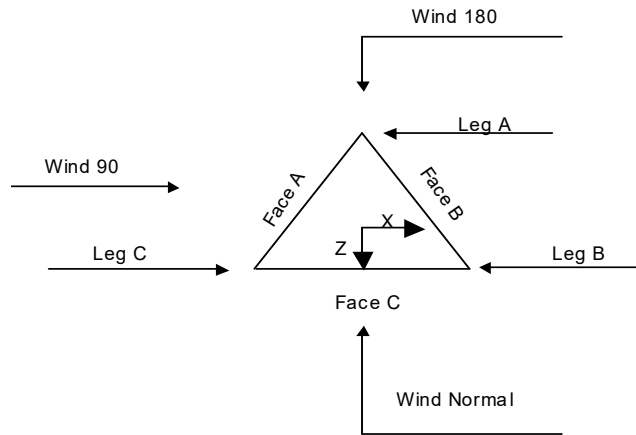
Maximum demand-capacity ratio is: 1.05.

Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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 <li style="text-align: center;">Poles Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets Pole Without Linear Attachments Pole With Shroud Or No Appurtenances Outside and Inside Corner Radii Are Known
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Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	ft			ft		ft
T1	180.000-168.000			4.000	1	12.000
T2	168.000-160.000			4.000	1	8.000
T3	160.000-140.000			4.000	1	20.000
T4	140.000-120.000			6.000	1	20.000
T5	120.000-100.000			8.000	1	20.000
T6	100.000-80.000			10.000	1	20.000
T7	80.000-60.000			12.000	1	20.000
T8	60.000-40.000			14.000	1	20.000
T9	40.000-20.000			16.000	1	20.000
T10	20.000-0.000			18.000	1	20.000

Tower Section Geometry (cont'd)

Tower Section	Tower Elevation	Diagonal Spacing	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset	Bottom Girt Offset
	ft	ft				in	in
T1	180.000-168.000	4.000	X Brace	No	No	0.000	0.000
T2	168.000-160.000	4.000	X Brace	No	No	0.000	0.000

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Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T3	160.000-140.000	5.000	X Brace	No	No	0.000	0.000
T4	140.000-120.000	6.667	X Brace	No	No	0.000	0.000
T5	120.000-100.000	6.667	X Brace	No	No	0.000	0.000
T6	100.000-80.000	6.667	X Brace	No	No	0.000	0.000
T7	80.000-60.000	10.000	X Brace	No	No	0.000	0.000
T8	60.000-40.000	10.000	X Brace	No	No	0.000	0.000
T9	40.000-20.000	10.000	X Brace	No	Yes	0.000	0.000
T10	20.000-0.000	10.000	X Brace	No	No	0.000	0.000

Tower Section Geometry (cont'd)

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 180.000-168.000	Pipe	P2x0.154	A53-B-35 (35 ksi)	Single Angle	L2x1 1/2x3/16	A36 (36 ksi)
T2 168.000-160.000	Grouted Pipe	P2x0.154	A53-B-35 (35 ksi)	Single Angle	L2x1 1/2x3/16	A36 (36 ksi)
T3 160.000-140.000	Grouted Pipe	P3x0.216	A53-B-35 (35 ksi)	Single Angle	L2x1 1/2x3/16	A36 (36 ksi)
T4 140.000-120.000	Grouted Pipe	P3.5x.318	A53-B-35 (35 ksi)	Single Angle	L2x2x3/16	A36 (36 ksi)
T5 120.000-100.000	Grouted Pipe	P4x.337	A53-B-35 (35 ksi)	Single Angle	L2 1/2x2x3/16	A36 (36 ksi)
T6 100.000-80.000	Grouted Pipe	P5x0.375	A53-B-35 (35 ksi)	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T7 80.000-60.000	Pipe	P6x0.432	A53-B-35 (35 ksi)	Single Angle	L3x3x3/16	A36 (36 ksi)
T8 60.000-40.000	Pipe	P6x0.432	A53-B-35 (35 ksi)	Single Angle	L3 1/2x3x1/4	A36 (36 ksi)
T9 40.000-20.000	Pipe	P6x0.432	A53-B-35 (35 ksi)	Single Angle	L3 1/2x3x1/4	A36 (36 ksi)
T10 20.000-0.000	Pipe	P8x.5	A53-B-35 (35 ksi)	Single Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)

Tower Section Geometry (cont'd)

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 180.000-168.000	Single Angle	L2x1 1/2x3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)

Tower Section Geometry (cont'd)

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Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T9 40.000-20.000	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T10 20.000-0.000	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75

Tower Elevation ft	Redundant Horizontal		Redundant Diagonal		Redundant Sub-Diagonal		Redundant Sub-Horizontal		Redundant Vertical		Redundant Hip		Redundant Hip Diagonal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1 180.000-168.000	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T2 168.000-160.000	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T3 160.000-140.000	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T4 140.000-120.000	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T5 120.000-100.000	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T6 100.000-80.000	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T7 80.000-60.000	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T8 60.000-40.000	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T9 40.000-20.000	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T10 20.000-0.000	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75

Tower Section Geometry (cont'd)

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1 180.000-168.000	Flange	0.000 A325N	0	0.625 A325N	1	0.625 A325N	1	0.000 A325N	0	0.625 A325N	0	0.000 A325N	0	0.000 A325N	0

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Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T2 168.000-160.000	Flange	0.625 A325N	4	0.625 A325N	1	0.000 A325N	0	0.000 A325N	0	0.625 A325N	0	0.000 A325N	0	0.000 A325N	0
T3 160.000-140.000	Flange	0.625 A325N	4	0.625 A325N	1	0.000 A325N	0	0.000 A325N	0	0.625 A325N	0	0.000 A325N	0	0.000 A325N	0
T4 140.000-120.000	Flange	0.750 A325N	4	0.625 A325N	1	0.000 A325N	0	0.000 A325N	0	0.625 A325N	0	0.000 A325N	0	0.000 A325N	0
T5 120.000-100.000	Flange	0.750 A325N	4	0.625 A325N	1	0.000 A325N	0	0.000 A325N	0	0.625 A325N	0	0.000 A325N	0	0.000 A325N	0
T6 100.000-80.000	Flange	0.875 A490N	4	0.625 A325N	1	0.000 A325N	0	0.000 A325N	0	0.625 A325N	0	0.000 A325N	0	0.000 A325N	0
T7 80.000-60.000	Flange	0.875 A325N	4	0.625 A325N	1	0.000 A325N	0	0.000 A325N	0	0.625 A325N	0	0.000 A325N	0	0.000 A325N	0
T8 60.000-40.000	Flange	1.000 A325N	4	0.625 A325N	1	0.000 A325N	0	0.000 A325N	0	0.625 A325N	0	0.000 A325N	0	0.000 A325N	0
T9 40.000-20.000	Flange	1.000 A325N	4	0.625 A325N	1	0.000 A325N	0	0.000 A325N	0	0.625 A325N	0	0.000 A325N	0	0.500 A325N	1
T10 20.000-0.000	Flange	1.500 A36	0	0.625 A325N	1	0.000 A325N	0	0.000 A325N	0	0.625 A325N	0	0.000 A325N	0	0.000 A325N	0

Grouted Pipe Properties

Size	F _y ksi	A _s in ²	A _c in ²	W _t plf	E _c ksi	E _m ksi	F _{ym} ksi
P2x0.154 (GR)	35.000	1.075	3.356	10.647	4768.962	40914.218	53.581
P3x0.216 (GR)	35.000	2.228	7.393	22.984	4768.962	41656.327	54.738
P3.5x.318 (GR)	35.000	3.678	8.888	31.033	4768.962	38218.387	49.377
P4x.337 (GR)	35.000	4.407	11.497	38.949	4768.962	38951.934	50.521
P5x0.375 (GR)	35.000	6.112	18.194	58.701	4768.962	40356.758	52.712

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight klf
* LDF4-50A(1/2") Feedline Ladder (Af)	C	No	No	Ar (CaAa)	31.000 - 0.000	-1.000	-0.32	1	1	0.850 0.750	0.630		0.000
* Climbing Ladder Safety Line 3/8	C	No	No	Af (CaAa)	180.000 - 0.000	-1.000	-0.33	2	1	3.000	3.000		0.008
	C	No	No	Af (CaAa)	180.000 - 0.000	0.000	0.025	1	1	3.000	3.000		0.008
	C	No	No	Ar (CaAa)	180.000 - 0.000	0.000	0.025	1	1	0.375	0.375		0.000

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight klf
*													
HCS 6X12 4AWG(1-5/8)	B	No	No	Ar (CaAa)	93.000 - 0.000	0.000	0.05	4	2	0.850 0.750	1.660		0.002
LDF6-50A(1-1/4)	B	No	No	Ar (CaAa)	93.000 - 0.000	0.000	0.15	6	6	0.850 0.750	1.550		0.001
Feedline Ladder (Af)	B	No	No	Af (CaAa)	93.000 - 0.000	0.000	0.1	1	1	3.000	3.000		0.008
*													
LCF158-50JA -A0(1-5/8)	B	No	No	Ar (CaAa)	154.000 - 0.000	0.000	0.3	12	6	0.850 0.750	1.980		0.001
WR-VG82ST-BRDA(5/8)	B	No	No	Ar (CaAa)	154.000 - 0.000	0.000	0.365	3	2	0.500	0.645		0.000
WR-VG82ST-BRDA(5/8)	B	No	No	Ar (CaAa)	154.000 - 0.000	5.500	0.3	5	5	1.500 1.000	0.645		0.000
Feedline Ladder (Af)	B	No	No	Af (CaAa)	154.000 - 0.000	0.000	0.32	1	1	3.000	3.000		0.008
2-1/4" Rigid Conduit	B	No	No	Ar (CaAa)	155.000 - 0.000	0.000	0.385	1	1	0.850 0.750	2.250		0.003
*													
LDF5-50A(7/8)	B	No	No	Ar (CaAa)	104.000 - 0.000	0.000	0.345	1	1	0.850 0.750	1.090		0.000
*													
CU12PSM6P4 XXX(1-3/4)	A	No	No	Ar (CaAa)	170.000 - 0.000	0.000	-0.09	1	1	0.850 0.750	1.750		0.003
LDF4-50A(1/2)	A	No	No	Ar (CaAa)	62.000 - 0.000	0.000	-0.1	4	2	0.500	0.630		0.000
LDF4-50A(1/2)	A	No	No	Ar (CaAa)	104.000 - 62.000	0.000	-0.1	3	2	0.500	0.630		0.000
LDF4-50A(1/2)	A	No	No	Ar (CaAa)	124.000 - 104.000	0.000	-0.1	2	2	0.500	0.630		0.000
Feedline Ladder (Af)	A	No	No	Af (CaAa)	124.000 - 0.000	0.000	0	1	1	3.000	3.000		0.008
*													
HB158-1-08U 8-S8J18(1-5/8)	A	No	No	Ar (CaAa)	164.000 - 0.000	0.000	0.1	7	4	0.850 0.750	1.980		0.001
T-Brackets (Af)	A	No	No	Af (CaAa)	164.000 - 0.000	0.000	0.1	1	1	1.000	1.000		0.008
*													
FSJ4-50B(1/2")	A	No	No	Ar (CaAa)	42.000 - 0.000	0.000	0.03	1	1	0.850 0.750	0.520		0.000
*													
HB114-1-081 3U4-M5J(1 1/4")	A	No	No	Ar (CaAa)	143.000 - 0.000	0.000	0.05	3	3	0.850 0.750	1.540		0.001
*													
LDF5-50A(7/8")	A	No	No	Ar (CaAa)	178.000 - 0.000	5.500	0.1	2	2	0.850 0.750	1.090		0.000
*													
(3/8") Ground Cables	A	No	No	Ar (CaAa)	162.000 - 0.000	0.000	-0.15	2	2	0.500	0.440		0.000
*													

Feed Line/Linear Appurtenances - Entered As Area

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Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	C _{AA} ft ² /ft	Weight klf
*								

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	Weight K
T1	180.000-168.000	A	0.000	0.000	2.530	0.000	0.012
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	18.450	0.000	0.305
T2	168.000-160.000	A	0.000	0.000	9.531	0.000	0.097
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	12.300	0.000	0.203
T3	160.000-140.000	A	0.000	0.000	42.059	0.000	0.432
		B	0.000	0.000	50.863	0.000	0.331
		C	0.000	0.000	30.750	0.000	0.508
T4	140.000-120.000	A	0.000	0.000	52.417	0.000	0.528
		B	0.000	0.000	72.340	0.000	0.469
		C	0.000	0.000	30.750	0.000	0.508
T5	120.000-100.000	A	0.000	0.000	62.685	0.000	0.667
		B	0.000	0.000	72.776	0.000	0.470
		C	0.000	0.000	30.750	0.000	0.508
T6	100.000-80.000	A	0.000	0.000	63.693	0.000	0.670
		B	0.000	0.000	101.742	0.000	0.757
		C	0.000	0.000	30.750	0.000	0.508
T7	80.000-60.000	A	0.000	0.000	63.819	0.000	0.670
		B	0.000	0.000	116.400	0.000	0.908
		C	0.000	0.000	30.750	0.000	0.508
T8	60.000-40.000	A	0.000	0.000	65.057	0.000	0.673
		B	0.000	0.000	116.400	0.000	0.908
		C	0.000	0.000	30.750	0.000	0.508
T9	40.000-20.000	A	0.000	0.000	65.993	0.000	0.676
		B	0.000	0.000	116.400	0.000	0.908
		C	0.000	0.000	31.443	0.000	0.510
T10	20.000-0.000	A	0.000	0.000	65.993	0.000	0.676
		B	0.000	0.000	116.400	0.000	0.908
		C	0.000	0.000	32.010	0.000	0.511

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	Weight K
T1	180.000-168.000	A	1.004	0.000	0.000	8.143	0.000	0.064
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	28.086	0.000	0.547
T2	168.000-160.000	A	0.998	0.000	0.000	18.477	0.000	0.255
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	18.686	0.000	0.364
T3	160.000-140.000	A	0.989	0.000	0.000	78.479	0.000	1.105
		B		0.000	0.000	79.352	0.000	1.113

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	Client	Crown Castle	Designed by	Jayaraj B

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	Weight K
T4	140.000-120.000	C	0.975	0.000	0.000	46.573	0.000	0.905
		A		0.000	0.000	102.176	0.000	1.364
		B		0.000	0.000	112.370	0.000	1.567
T5	120.000-100.000	C	0.959	0.000	0.000	46.348	0.000	0.897
		A		0.000	0.000	121.951	0.000	1.633
		B		0.000	0.000	113.129	0.000	1.563
T6	100.000-80.000	C	0.940	0.000	0.000	46.090	0.000	0.889
		A		0.000	0.000	122.525	0.000	1.630
		B		0.000	0.000	165.757	0.000	2.265
T7	80.000-60.000	C	0.916	0.000	0.000	45.785	0.000	0.880
		A		0.000	0.000	121.448	0.000	1.608
		B		0.000	0.000	190.696	0.000	2.594
T8	60.000-40.000	C	0.886	0.000	0.000	45.412	0.000	0.868
		A		0.000	0.000	120.506	0.000	1.592
		B		0.000	0.000	189.227	0.000	2.547
T9	40.000-20.000	C	0.842	0.000	0.000	44.927	0.000	0.853
		A		0.000	0.000	122.419	0.000	1.576
		B		0.000	0.000	187.090	0.000	2.480
T10	20.000-0.000	C	0.754	0.000	0.000	46.766	0.000	0.850
		A		0.000	0.000	118.031	0.000	1.488
		B		0.000	0.000	182.855	0.000	2.350
		C		0.000	0.000	47.097	0.000	0.819

Feed Line Center of Pressure

Section	Elevation ft	CP _x in	CP _z in	CP _x Ice in	CP _z Ice in
T1	180.000-168.000	0.618	4.016	0.373	3.670
T2	168.000-160.000	-1.194	1.804	-1.696	1.557
T3	160.000-140.000	3.692	1.779	3.196	1.767
T4	140.000-120.000	5.582	2.109	4.929	1.977
T5	120.000-100.000	4.963	2.041	4.108	1.887
T6	100.000-80.000	8.592	1.669	7.998	1.643
T7	80.000-60.000	11.174	1.569	10.567	1.565
T8	60.000-40.000	11.629	1.718	11.374	1.761
T9	40.000-20.000	11.014	1.760	11.031	1.853
T10	20.000-0.000	13.390	2.228	13.058	2.387

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
T1	5	Feedline Ladder (Af)	168.00 - 180.00	0.6000	0.5970
T1	7	Climbing Ladder	168.00 - 180.00	0.6000	0.5970
T1	8	Safety Line 3/8	168.00 - 180.00	0.6000	0.5970
T1	24	CU12PSM6P4XXX(1-3/4)	168.00 - 170.00	0.6000	0.5970

tnxTower

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Client

Crown Castle

Designed by

Jayaraj B

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	38	LDF5-50A(7/8")	168.00 - 178.00	0.6000	0.5970
T2	5	Feedline Ladder (Af)	160.00 - 168.00	0.6000	0.6000
T2	7	Climbing Ladder	160.00 - 168.00	0.6000	0.6000
T2	8	Safety Line 3/8	160.00 - 168.00	0.6000	0.6000
T2	24	CU12PSM6P4XXX(1-3/4)	160.00 - 168.00	0.6000	0.6000
T2	31	HB158-1-08U8-S8J18(1-5/8)	160.00 - 164.00	0.6000	0.6000
T2	32	T-Brackets (Af)	160.00 - 164.00	0.6000	0.6000
T2	38	LDF5-50A(7/8")	160.00 - 168.00	0.6000	0.6000
T2	40	(3/8") Ground Cables	160.00 - 162.00	0.6000	0.6000
T3	5	Feedline Ladder (Af)	140.00 - 160.00	0.6000	0.6000
T3	7	Climbing Ladder	140.00 - 160.00	0.6000	0.6000
T3	8	Safety Line 3/8	140.00 - 160.00	0.6000	0.6000
T3	14	LCF158-50JA-A0(1-5/8)	140.00 - 154.00	0.6000	0.6000
T3	15	WR-VG82ST-BRDA(5/8)	140.00 - 154.00	0.6000	0.6000
T3	17	WR-VG82ST-BRDA(5/8)	140.00 - 154.00	0.6000	0.6000
T3	19	Feedline Ladder (Af)	140.00 - 154.00	0.6000	0.6000
T3	20	2-1/4" Rigid Conduit	140.00 - 155.00	0.6000	0.6000
T3	24	CU12PSM6P4XXX(1-3/4)	140.00 - 160.00	0.6000	0.6000
T3	31	HB158-1-08U8-S8J18(1-5/8)	140.00 - 160.00	0.6000	0.6000
T3	32	T-Brackets (Af)	140.00 - 160.00	0.6000	0.6000
T3	36	HB114-1-0813U4-M5J(1-1/4")	140.00 - 143.00	0.6000	0.6000
T3	38	LDF5-50A(7/8")	140.00 - 160.00	0.6000	0.6000
T3	40	(3/8") Ground Cables	140.00 - 160.00	0.6000	0.6000
T4	5	Feedline Ladder (Af)	120.00 - 140.00	0.6000	0.6000
T4	7	Climbing Ladder	120.00 - 140.00	0.6000	0.6000
T4	8	Safety Line 3/8	120.00 - 140.00	0.6000	0.6000
T4	14	LCF158-50JA-A0(1-5/8)	120.00 - 140.00	0.6000	0.6000
T4	15	WR-VG82ST-BRDA(5/8)	120.00 - 140.00	0.6000	0.6000
T4	17	WR-VG82ST-BRDA(5/8)	120.00 - 140.00	0.6000	0.6000
T4	19	Feedline Ladder (Af)	120.00 - 140.00	0.6000	0.6000
T4	20	2-1/4" Rigid Conduit	120.00 - 140.00	0.6000	0.6000

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Client

Crown Castle

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Jayaraj B

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T4	24	CU12PSM6P4XXX(1-3/4)	120.00 - 140.00	0.6000	0.6000
T4	27	LDF4-50A(1/2)	120.00 - 124.00	0.6000	0.6000
T4	28	Feedline Ladder (Af)	120.00 - 124.00	0.6000	0.6000
T4	31	HB158-1-08U8-S8J18(1-5/8)	120.00 - 140.00	0.6000	0.6000
T4	32	T-Brackets (Af)	120.00 - 140.00	0.6000	0.6000
T4	36	HB114-1-0813U4-M5J(1/4")	120.00 - 140.00	0.6000	0.6000
T4	38	LDF5-50A(7/8")	120.00 - 140.00	0.6000	0.6000
T4	40	(3/8") Ground Cables	120.00 - 140.00	0.6000	0.6000
T5	5	Feedline Ladder (Af)	100.00 - 120.00	0.6000	0.6000
T5	7	Climbing Ladder	100.00 - 120.00	0.6000	0.6000
T5	8	Safety Line 3/8	100.00 - 120.00	0.6000	0.6000
T5	14	LCF158-50JA-A0(1-5/8)	100.00 - 120.00	0.6000	0.6000
T5	15	WR-VG82ST-BRDA(5/8)	100.00 - 120.00	0.6000	0.6000
T5	17	WR-VG82ST-BRDA(5/8)	100.00 - 120.00	0.6000	0.6000
T5	19	Feedline Ladder (Af)	100.00 - 120.00	0.6000	0.6000
T5	20	2-1/4" Rigid Conduit	100.00 - 120.00	0.6000	0.6000
T5	22	LDF5-50A(7/8)	100.00 - 104.00	0.6000	0.6000
T5	24	CU12PSM6P4XXX(1-3/4)	100.00 - 120.00	0.6000	0.6000
T5	26	LDF4-50A(1/2)	100.00 - 104.00	0.6000	0.6000
T5	27	LDF4-50A(1/2)	104.00 - 120.00	0.6000	0.6000
T5	28	Feedline Ladder (Af)	100.00 - 120.00	0.6000	0.6000
T5	31	HB158-1-08U8-S8J18(1-5/8)	100.00 - 120.00	0.6000	0.6000
T5	32	T-Brackets (Af)	100.00 - 120.00	0.6000	0.6000
T5	36	HB114-1-0813U4-M5J(1/4")	100.00 - 120.00	0.6000	0.6000
T5	38	LDF5-50A(7/8")	100.00 - 120.00	0.6000	0.6000
T5	40	(3/8") Ground Cables	100.00 - 120.00	0.6000	0.6000
T6	5	Feedline Ladder (Af)	80.00 - 100.00	0.6000	0.6000
T6	7	Climbing Ladder	80.00 - 100.00	0.6000	0.6000
T6	8	Safety Line 3/8	80.00 - 100.00	0.6000	0.6000
T6	10	HCS 6X12 4AWG(1-5/8)	80.00 - 93.00	0.6000	0.6000
T6	11	LDF6-50A(1-1/4)	80.00 - 93.00	0.6000	0.6000
T6	12	Feedline Ladder (Af)	80.00 - 93.00	0.6000	0.6000
T6	14	LCF158-50JA-A0(1-5/8)	80.00 - 100.00	0.6000	0.6000
T6	15	WR-VG82ST-BRDA(5/8)	80.00 - 100.00	0.6000	0.6000
T6	17	WR-VG82ST-BRDA(5/8)	80.00 - 100.00	0.6000	0.6000
T6	19	Feedline Ladder (Af)	80.00 - 100.00	0.6000	0.6000

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Project**Date**

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Client

Crown Castle

Designed by

Jayaraj B

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T6	20	2-1/4" Rigid Conduit	80.00 - 100.00	0.6000	0.6000
T6	22	LDF5-50A(7/8)	80.00 - 100.00	0.6000	0.6000
T6	24	CU12PSM6P4XXX(1-3/4)	80.00 - 100.00	0.6000	0.6000
T6	26	LDF4-50A(1/2)	80.00 - 100.00	0.6000	0.6000
T6	28	Feedline Ladder (Af)	80.00 - 100.00	0.6000	0.6000
T6	31	HB158-1-08U8-S8J18(1-5/8)	80.00 - 100.00	0.6000	0.6000
T6	32	T-Brackets (Af)	80.00 - 100.00	0.6000	0.6000
T6	36	HB114-1-0813U4-M5J(1/4")	80.00 - 100.00	0.6000	0.6000
T6	38	LDF5-50A(7/8")	80.00 - 100.00	0.6000	0.6000
T6	40	(3/8") Ground Cables	80.00 - 100.00	0.6000	0.6000
T7	5	Feedline Ladder (Af)	60.00 - 80.00	0.6000	0.6000
T7	7	Climbing Ladder	60.00 - 80.00	0.6000	0.6000
T7	8	Safety Line 3/8	60.00 - 80.00	0.6000	0.6000
T7	10	HCS 6X12 4AWG(1-5/8)	60.00 - 80.00	0.6000	0.6000
T7	11	LDF6-50A(1-1/4)	60.00 - 80.00	0.6000	0.6000
T7	12	Feedline Ladder (Af)	60.00 - 80.00	0.6000	0.6000
T7	14	LCF158-50JA-A0(1-5/8)	60.00 - 80.00	0.6000	0.6000
T7	15	WR-VG82ST-BRDA(5/8)	60.00 - 80.00	0.6000	0.6000
T7	17	WR-VG82ST-BRDA(5/8)	60.00 - 80.00	0.6000	0.6000
T7	19	Feedline Ladder (Af)	60.00 - 80.00	0.6000	0.6000
T7	20	2-1/4" Rigid Conduit	60.00 - 80.00	0.6000	0.6000
T7	22	LDF5-50A(7/8)	60.00 - 80.00	0.6000	0.6000
T7	24	CU12PSM6P4XXX(1-3/4)	60.00 - 80.00	0.6000	0.6000
T7	25	LDF4-50A(1/2)	60.00 - 62.00	0.6000	0.6000
T7	26	LDF4-50A(1/2)	62.00 - 80.00	0.6000	0.6000
T7	28	Feedline Ladder (Af)	60.00 - 80.00	0.6000	0.6000
T7	31	HB158-1-08U8-S8J18(1-5/8)	60.00 - 80.00	0.6000	0.6000
T7	32	T-Brackets (Af)	60.00 - 80.00	0.6000	0.6000
T7	36	HB114-1-0813U4-M5J(1/4")	60.00 - 80.00	0.6000	0.6000
T7	38	LDF5-50A(7/8")	60.00 - 80.00	0.6000	0.6000
T7	40	(3/8") Ground Cables	60.00 - 80.00	0.6000	0.6000
T8	5	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.6000
T8	7	Climbing Ladder	40.00 - 60.00	0.6000	0.6000
T8	8	Safety Line 3/8	40.00 - 60.00	0.6000	0.6000
T8	10	HCS 6X12 4AWG(1-5/8)	40.00 - 60.00	0.6000	0.6000
T8	11	LDF6-50A(1-1/4)	40.00 - 60.00	0.6000	0.6000
T8	12	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.6000
T8	14	LCF158-50JA-A0(1-5/8)	40.00 - 60.00	0.6000	0.6000
T8	15	WR-VG82ST-BRDA(5/8)	40.00 - 60.00	0.6000	0.6000
T8	17	WR-VG82ST-BRDA(5/8)	40.00 - 60.00	0.6000	0.6000
T8	19	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.6000
T8	20	2-1/4" Rigid Conduit	40.00 - 60.00	0.6000	0.6000
T8	22	LDF5-50A(7/8)	40.00 - 60.00	0.6000	0.6000
T8	24	CU12PSM6P4XXX(1-3/4)	40.00 - 60.00	0.6000	0.6000
T8	25	LDF4-50A(1/2)	40.00 - 60.00	0.6000	0.6000
T8	28	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.6000
T8	31	HB158-1-08U8-S8J18(1-5/8)	40.00 - 60.00	0.6000	0.6000
T8	32	T-Brackets (Af)	40.00 - 60.00	0.6000	0.6000
T8	34	FSJ4-50B(1/2")	40.00 - 42.00	0.6000	0.6000
T8	36	HB114-1-0813U4-M5J(1/4")	40.00 - 60.00	0.6000	0.6000
T8	38	LDF5-50A(7/8")	40.00 - 60.00	0.6000	0.6000
T8	40	(3/8") Ground Cables	40.00 - 60.00	0.6000	0.6000
T9	4	LDF4-50A(1/2")	20.00 - 31.00	0.6000	0.6000
T9	5	Feedline Ladder (Af)	20.00 - 40.00	0.6000	0.6000
T9	7	Climbing Ladder	20.00 - 40.00	0.6000	0.6000
T9	8	Safety Line 3/8	20.00 - 40.00	0.6000	0.6000
T9	10	HCS 6X12 4AWG(1-5/8)	20.00 - 40.00	0.6000	0.6000
T9	11	LDF6-50A(1-1/4)	20.00 - 40.00	0.6000	0.6000
T9	12	Feedline Ladder (Af)	20.00 - 40.00	0.6000	0.6000

tnxTower B+T Group 1717 S. Boulder, Suite 300 Tulsa, OK 74119 Phone: (918) 587-4630 FAX: (918) 295-0265	Job 102920.009.01 - BRG 124 943066, CT (BU# 806353)	Page 14 of 35
	Project	Date 16:35:40 09/23/21
	Client Crown Castle	Designed by Jayaraj B

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T9	14	LCF158-50JA-A0(1-5/8)	20.00 - 40.00	0.6000	0.6000
T9	15	WR-VG82ST-BRDA(5/8)	20.00 - 40.00	0.6000	0.6000
T9	17	WR-VG82ST-BRDA(5/8)	20.00 - 40.00	0.6000	0.6000
T9	19	Feedline Ladder (Af)	20.00 - 40.00	0.6000	0.6000
T9	20	2-1/4" Rigid Conduit	20.00 - 40.00	0.6000	0.6000
T9	22	LDF5-50A(7/8)	20.00 - 40.00	0.6000	0.6000
T9	24	CU12PSM6P4XXX(1-3/4)	20.00 - 40.00	0.6000	0.6000
T9	25	LDF4-50A(1/2)	20.00 - 40.00	0.6000	0.6000
T9	28	Feedline Ladder (Af)	20.00 - 40.00	0.6000	0.6000
T9	31	HB158-1-08U8-S8J18(1-5/8)	20.00 - 40.00	0.6000	0.6000
T9	32	T-Brackets (Af)	20.00 - 40.00	0.6000	0.6000
T9	34	FSJ4-50B(1/2")	20.00 - 40.00	0.6000	0.6000
T9	36	HB114-1-0813U4-M5J(1/4")	20.00 - 40.00	0.6000	0.6000
T9	38	LDF5-50A(7/8")	20.00 - 40.00	0.6000	0.6000
T9	40	(3/8") Ground Cables	20.00 - 40.00	0.6000	0.6000
T10	4	LDF4-50A(1/2")	0.00 - 20.00	0.6000	0.6000
T10	5	Feedline Ladder (Af)	0.00 - 20.00	0.6000	0.6000
T10	7	Climbing Ladder	0.00 - 20.00	0.6000	0.6000
T10	8	Safety Line 3/8	0.00 - 20.00	0.6000	0.6000
T10	10	HCS 6X12 4AWG(1-5/8)	0.00 - 20.00	0.6000	0.6000
T10	11	LDF6-50A(1-1/4)	0.00 - 20.00	0.6000	0.6000
T10	12	Feedline Ladder (Af)	0.00 - 20.00	0.6000	0.6000
T10	14	LCF158-50JA-A0(1-5/8)	0.00 - 20.00	0.6000	0.6000
T10	15	WR-VG82ST-BRDA(5/8)	0.00 - 20.00	0.6000	0.6000
T10	17	WR-VG82ST-BRDA(5/8)	0.00 - 20.00	0.6000	0.6000
T10	19	Feedline Ladder (Af)	0.00 - 20.00	0.6000	0.6000
T10	20	2-1/4" Rigid Conduit	0.00 - 20.00	0.6000	0.6000
T10	22	LDF5-50A(7/8)	0.00 - 20.00	0.6000	0.6000
T10	24	CU12PSM6P4XXX(1-3/4)	0.00 - 20.00	0.6000	0.6000
T10	25	LDF4-50A(1/2)	0.00 - 20.00	0.6000	0.6000
T10	28	Feedline Ladder (Af)	0.00 - 20.00	0.6000	0.6000
T10	31	HB158-1-08U8-S8J18(1-5/8)	0.00 - 20.00	0.6000	0.6000
T10	32	T-Brackets (Af)	0.00 - 20.00	0.6000	0.6000
T10	34	FSJ4-50B(1/2")	0.00 - 20.00	0.6000	0.6000
T10	36	HB114-1-0813U4-M5J(1/4")	0.00 - 20.00	0.6000	0.6000
T10	38	LDF5-50A(7/8")	0.00 - 20.00	0.6000	0.6000
T10	40	(3/8") Ground Cables	0.00 - 20.00	0.6000	0.6000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C_{AA} Front	C_{AA} Side	Weight	
			Horz Lateral	Vert						
			ft	ft	°	ft	ft ²	ft ²	K	
PD10017	A	From Leg	0.500	0.000	0.000	178.000	No Ice	4.114	4.114	0.025
			0.000				1/2" Ice	5.641	5.641	0.055
			6.000				1" Ice	7.185	7.185	0.095
* MX08FRO665-21 w/ Mount Pipe	A	From Leg	4.000	0.000	0.000	170.000	No Ice	8.010	4.230	0.108
			0.000				1/2" Ice	8.520	4.690	0.194

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	CAAA Front	CAAA Side	Weight K
(2) JAHH-65B-R3B w/ Mount Pipe	C	From Leg	4.000 0.000 -2.000	0.000	164.000	No Ice 5.500 1/2" Ice 5.970 1" Ice 6.450	4.380 4.840 5.300	0.096 0.169 0.254
RFV01U-D1A	A	From Leg	4.000 0.000 -2.000	0.000	164.000	No Ice 1.875 1/2" Ice 2.045 1" Ice 2.223	1.250 1.393 1.543	0.084 0.103 0.124
RFV01U-D1A	B	From Leg	4.000 0.000 -2.000	0.000	164.000	No Ice 1.875 1/2" Ice 2.045 1" Ice 2.223	1.250 1.393 1.543	0.084 0.103 0.124
RFV01U-D1A	C	From Leg	4.000 0.000 -2.000	0.000	164.000	No Ice 1.875 1/2" Ice 2.045 1" Ice 2.223	1.250 1.393 1.543	0.084 0.103 0.124
RFV01U-D2A	A	From Leg	4.000 0.000 -2.000	0.000	164.000	No Ice 1.875 1/2" Ice 2.045 1" Ice 2.223	1.013 1.145 1.284	0.070 0.087 0.106
(2) RFV01U-D2A	B	From Leg	4.000 0.000 -2.000	0.000	164.000	No Ice 1.875 1/2" Ice 2.045 1" Ice 2.223	1.013 1.145 1.284	0.070 0.087 0.106
DB-T1-6Z-8AB-0Z	B	From Leg	4.000 0.000 -2.000	0.000	164.000	No Ice 4.800 1/2" Ice 5.070 1" Ice 5.348	2.000 2.193 2.393	0.044 0.080 0.120
CBRS w/ Mount Pipe	A	From Leg	4.000 0.000 -2.000	0.000	164.000	No Ice 1.450 1/2" Ice 1.670 1" Ice 1.900	0.990 1.180 1.390	0.032 0.048 0.068
CBRS w/ Mount Pipe	B	From Leg	4.000 0.000 -2.000	0.000	164.000	No Ice 1.450 1/2" Ice 1.670 1" Ice 1.900	0.990 1.180 1.390	0.032 0.048 0.068
CBRS w/ Mount Pipe	C	From Leg	4.000 0.000 -2.000	0.000	164.000	No Ice 1.450 1/2" Ice 1.670 1" Ice 1.900	0.990 1.180 1.390	0.032 0.048 0.068
Sub6 Antenna - VZS01 w/ Mount Pipe	A	From Leg	4.000 0.000 -2.000	0.000	164.000	No Ice 4.915 1/2" Ice 5.264 1" Ice 5.623	2.687 3.151 3.631	0.101 0.141 0.186
Sub6 Antenna - VZS01 w/ Mount Pipe	B	From Leg	4.000 0.000 -2.000	0.000	164.000	No Ice 4.915 1/2" Ice 5.264 1" Ice 5.623	2.687 3.151 3.631	0.101 0.141 0.186
Sub6 Antenna - VZS01 w/ Mount Pipe	C	From Leg	4.000 0.000 -2.000	0.000	164.000	No Ice 4.915 1/2" Ice 5.264 1" Ice 5.623	2.687 3.151 3.631	0.101 0.141 0.186
RFV01U-D2A	A	From Leg	4.000 0.000 -2.000	0.000	164.000	No Ice 1.875 1/2" Ice 2.045 1" Ice 2.223	1.013 1.145 1.284	0.070 0.087 0.106
(2) RFV01U-D2A	C	From Leg	4.000 0.000 -2.000	0.000	164.000	No Ice 1.875 1/2" Ice 2.045 1" Ice 2.223	1.013 1.145 1.284	0.070 0.087 0.106
Sector Mount [SM 702-3]	C	None		0.000	164.000	No Ice 47.865 1/2" Ice 62.031 1" Ice 76.025	47.865 62.031 76.025	1.909 2.805 3.959
* 7770.00 w/ Mount Pipe	A	From Leg	4.000 0.000 4.000	0.000	154.000	No Ice 5.746 1/2" Ice 6.179 1" Ice 6.607	4.254 5.014 5.711	0.055 0.103 0.157
7770.00 w/ Mount Pipe	B	From Leg	4.000 0.000 4.000	0.000	154.000	No Ice 5.746 1/2" Ice 6.179 1" Ice 6.607	4.254 5.014 5.711	0.055 0.103 0.157
7770.00 w/ Mount Pipe	C	From Leg	4.000 0.000	0.000	154.000	No Ice 5.746 1/2" Ice 6.179	4.254 5.014	0.055 0.103

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Client	Designed by	
	Crown Castle	Jayaraj B

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight	
			Horz	Vert						
			ft	ft	°	ft	ft ²	ft ²	K	
QS66512-2 w/ Mount Pipe	A	From Leg	4.000		0.000	154.000	1" Ice	6.607	5.711	0.157
			4.000				No Ice	4.040	4.180	0.137
			0.000				1/2" Ice	4.420	4.570	0.206
QS66512-2 w/ Mount Pipe	B	From Leg	4.000		0.000	154.000	1" Ice	4.820	4.970	0.287
			4.000				No Ice	4.040	4.180	0.137
			0.000				1/2" Ice	4.420	4.570	0.206
QS66512-2 w/ Mount Pipe	C	From Leg	4.000		0.000	154.000	1" Ice	4.820	4.970	0.287
			4.000				No Ice	4.040	4.180	0.137
			0.000				1/2" Ice	4.420	4.570	0.206
OPA65R-BU6D w/ Mount Pipe	A	From Leg	4.000		0.000	154.000	1" Ice	4.820	4.970	0.287
			4.000				No Ice	12.250	6.050	0.089
			0.000				1/2" Ice	13.000	6.710	0.176
OPA65R-BU6D w/ Mount Pipe	B	From Leg	4.000		0.000	154.000	1" Ice	13.760	7.390	0.275
			4.000				No Ice	12.250	6.050	0.089
			0.000				1/2" Ice	13.000	6.710	0.176
OPA65R-BU6D w/ Mount Pipe	C	From Leg	4.000		0.000	154.000	1" Ice	13.760	7.390	0.275
			4.000				No Ice	12.250	6.050	0.089
			0.000				1/2" Ice	13.000	6.710	0.176
DMP65R-BU6D w/ Mount Pipe	A	From Leg	4.000		0.000	154.000	1" Ice	13.760	7.390	0.275
			4.000				No Ice	11.960	5.970	0.115
			0.000				1/2" Ice	12.700	6.630	0.201
DMP65R-BU6D w/ Mount Pipe	B	From Leg	4.000		0.000	154.000	1" Ice	13.460	7.300	0.298
			4.000				No Ice	11.960	5.970	0.115
			0.000				1/2" Ice	12.700	6.630	0.201
DMP65R-BU6D w/ Mount Pipe	C	From Leg	4.000		0.000	154.000	1" Ice	13.460	7.300	0.298
			4.000				No Ice	11.960	5.970	0.115
			0.000				1/2" Ice	12.700	6.630	0.201
(2) LGP21401	A	From Leg	4.000		0.000	154.000	1" Ice	13.460	7.300	0.298
			4.000				No Ice	1.104	0.207	0.014
			0.000				1/2" Ice	1.239	0.274	0.021
(2) LGP21401	B	From Leg	4.000		0.000	154.000	1" Ice	1.381	0.348	0.030
			4.000				No Ice	1.104	0.207	0.014
			0.000				1/2" Ice	1.239	0.274	0.021
(2) LGP21401	C	From Leg	4.000		0.000	154.000	1" Ice	1.381	0.348	0.030
			4.000				No Ice	1.104	0.207	0.014
			0.000				1/2" Ice	1.239	0.274	0.021
RRUS 32 B30	A	From Leg	4.000		0.000	154.000	1" Ice	1.381	0.348	0.030
			4.000				No Ice	2.692	1.573	0.060
			0.000				1/2" Ice	2.912	1.756	0.080
RRUS 32 B30	B	From Leg	4.000		0.000	154.000	1" Ice	3.138	1.945	0.104
			4.000				No Ice	2.692	1.573	0.060
			0.000				1/2" Ice	2.912	1.756	0.080
RRUS 32 B30	C	From Leg	4.000		0.000	154.000	1" Ice	3.138	1.945	0.104
			4.000				No Ice	2.692	1.573	0.060
			0.000				1/2" Ice	2.912	1.756	0.080
RRUS 32 B2	A	From Leg	4.000		0.000	154.000	1" Ice	3.138	1.945	0.104
			4.000				No Ice	2.731	1.668	0.053
			0.000				1/2" Ice	2.953	1.855	0.074
RRUS 32 B2	B	From Leg	4.000		0.000	154.000	1" Ice	3.182	2.049	0.098
			4.000				No Ice	2.731	1.668	0.053
			0.000				1/2" Ice	2.953	1.855	0.074
RRUS 32 B2	C	From Leg	4.000		0.000	154.000	1" Ice	3.182	2.049	0.098
			4.000				No Ice	2.731	1.668	0.053
			0.000				1/2" Ice	2.953	1.855	0.074
DBC0061F1V51-2	A	From Leg	4.000		0.000	154.000	1" Ice	3.182	2.049	0.098
			4.000				No Ice	0.433	0.413	0.025
			0.000				1/2" Ice	0.518	0.496	0.031

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight	
			Horz Lateral	Vert						°
DBC0061F1V51-2	B	From Leg	4.000		0.000	154.000	1" Ice	0.609	0.586	0.038
			4.000				No Ice	0.433	0.413	0.025
			0.000				1/2" Ice	0.518	0.496	0.031
DBC0061F1V51-2	C	From Leg	4.000		0.000	154.000	1" Ice	0.609	0.586	0.038
			4.000				No Ice	0.433	0.413	0.025
			0.000				1/2" Ice	0.518	0.496	0.031
RRUS 4478 B14	A	From Leg	4.000		0.000	154.000	1" Ice	0.609	0.586	0.038
			4.000				No Ice	1.843	1.059	0.060
			0.000				1/2" Ice	2.012	1.197	0.076
RRUS 4478 B14	B	From Leg	4.000		0.000	154.000	1" Ice	2.190	1.342	0.094
			4.000				No Ice	1.843	1.059	0.060
			0.000				1/2" Ice	2.012	1.197	0.076
RRUS 4478 B14	C	From Leg	4.000		0.000	154.000	1" Ice	2.190	1.342	0.094
			4.000				No Ice	1.843	1.059	0.060
			0.000				1/2" Ice	2.012	1.197	0.076
RRUS 4449 B5/B12	A	From Leg	4.000		0.000	154.000	1" Ice	2.190	1.342	0.094
			4.000				No Ice	1.968	1.408	0.071
			0.000				1/2" Ice	2.144	1.564	0.090
RRUS 4449 B5/B12	B	From Leg	4.000		0.000	154.000	1" Ice	2.328	1.727	0.111
			4.000				No Ice	1.968	1.408	0.071
			0.000				1/2" Ice	2.144	1.564	0.090
RRUS 4449 B5/B12	C	From Leg	4.000		0.000	154.000	1" Ice	2.328	1.727	0.111
			4.000				No Ice	1.968	1.408	0.071
			0.000				1/2" Ice	2.144	1.564	0.090
(3) DC6-48-60-18-8F	A	From Leg	4.000		0.000	154.000	1" Ice	2.328	1.727	0.111
			4.000				No Ice	1.212	1.212	0.033
			0.000				1/2" Ice	1.892	1.892	0.055
(2) 5' x 2" Pipe Mount	A	From Leg	4.000		0.000	154.000	1" Ice	2.105	2.105	0.080
			4.000				No Ice	1.188	1.188	0.018
			0.000				1/2" Ice	1.496	1.496	0.027
(2) 5' x 2" Pipe Mount	B	From Leg	4.000		0.000	154.000	1" Ice	1.807	1.807	0.040
			4.000				No Ice	1.188	1.188	0.018
			0.000				1/2" Ice	1.496	1.496	0.027
(2) 5' x 2" Pipe Mount	C	From Leg	4.000		0.000	154.000	1" Ice	1.807	1.807	0.040
			4.000				No Ice	1.188	1.188	0.018
			0.000				1/2" Ice	1.496	1.496	0.027
12.5' x 2.375" Horizontal Mount Pipe	A	From Leg	4.000		0.000	154.000	1" Ice	1.807	1.807	0.040
			4.000				No Ice	2.980	0.010	0.046
			0.000				1/2" Ice	4.250	0.050	0.068
12.5' x 2.375" Horizontal Mount Pipe	B	From Leg	4.000		0.000	154.000	1" Ice	5.550	0.100	0.981
			4.000				No Ice	2.980	0.010	0.046
			0.000				1/2" Ice	4.250	0.050	0.068
12.5' x 2.375" Horizontal Mount Pipe	C	From Leg	4.000		0.000	154.000	1" Ice	5.550	0.100	0.981
			4.000				No Ice	2.980	0.010	0.046
			0.000				1/2" Ice	4.250	0.050	0.068
Sector Mount [SM 1303-3]	C	None			0.000	154.000	1" Ice	5.550	0.100	0.981
							No Ice	38.780	38.780	1.104
							1/2" Ice	46.780	46.780	1.763
Pipe Mount [PM 601-3]	C	None			0.000	154.000	1" Ice	54.730	54.730	2.567
							No Ice	3.170	3.170	0.195
							1/2" Ice	3.790	3.790	0.232
* 800 EXTERNAL NOTCH FILTER	A	From Leg	1.000		0.000	145.000	1" Ice	4.420	4.420	0.279
			1.000				No Ice	0.660	0.321	0.011
			0.000				1/2" Ice	0.763	0.398	0.017
800 EXTERNAL NOTCH	B	From Leg	1.000		0.000	145.000	1" Ice	0.873	0.483	0.024
			1.000				No Ice	0.660	0.321	0.011
			0.000				1/2" Ice	0.763	0.398	0.017

tnxTower

B+T Group
1717 S. Boulder, Suite 300
Tulsa, OK 74119
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Client
Crown Castle
Designed by
Jayaraj B

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz	Lateral					
			ft	ft	°	ft	ft ²	ft ²	K
FILTER			0.000			1/2" Ice	0.763	0.398	0.017
			1.000			1" Ice	0.873	0.483	0.024
800 EXTERNAL NOTCH FILTER	C	From Leg	1.000	0.000	145.000	No Ice	0.660	0.321	0.011
			0.000			1/2" Ice	0.763	0.398	0.017
			1.000			1" Ice	0.873	0.483	0.024
PCS 1900MHZ 4X45W-65MHZ	A	From Leg	1.000	0.000	145.000	No Ice	2.322	2.238	0.060
			0.000			1/2" Ice	2.527	2.441	0.083
			1.000			1" Ice	2.739	2.651	0.110
PCS 1900MHZ 4X45W-65MHZ	B	From Leg	1.000	0.000	145.000	No Ice	2.322	2.238	0.060
			0.000			1/2" Ice	2.527	2.441	0.083
			1.000			1" Ice	2.739	2.651	0.110
PCS 1900MHZ 4X45W-65MHZ	C	From Leg	1.000	0.000	145.000	No Ice	2.322	2.238	0.060
			0.000			1/2" Ice	2.527	2.441	0.083
			1.000			1" Ice	2.739	2.651	0.110
800MHZ 2X50W RRH	A	From Leg	1.000	0.000	145.000	No Ice	2.134	1.773	0.053
			0.000			1/2" Ice	2.320	1.946	0.074
			1.000			1" Ice	2.512	2.127	0.098
800MHZ 2X50W RRH	B	From Leg	1.000	0.000	145.000	No Ice	2.134	1.773	0.053
			0.000			1/2" Ice	2.320	1.946	0.074
			1.000			1" Ice	2.512	2.127	0.098
800MHZ 2X50W RRH	C	From Leg	1.000	0.000	145.000	No Ice	2.134	1.773	0.053
			0.000			1/2" Ice	2.320	1.946	0.074
			1.000			1" Ice	2.512	2.127	0.098
*									
APXVTM14-C-120	A	From Leg	4.000	0.000	143.000	No Ice	4.120	2.060	0.056
			0.000			1/2" Ice	4.520	2.420	0.096
			0.000			1" Ice	4.930	2.800	0.140
APXVTM14-C-120	B	From Leg	4.000	0.000	143.000	No Ice	4.120	2.060	0.056
			0.000			1/2" Ice	4.520	2.420	0.096
			0.000			1" Ice	4.930	2.800	0.140
APXVTM14-C-120	C	From Leg	4.000	0.000	143.000	No Ice	4.120	2.060	0.056
			0.000			1/2" Ice	4.520	2.420	0.096
			0.000			1" Ice	4.930	2.800	0.140
APXVSP18-C-A20	A	From Leg	4.000	0.000	143.000	No Ice	4.660	3.110	0.070
			0.000			1/2" Ice	5.120	3.550	0.121
			0.000			1" Ice	5.600	4.000	0.180
APXVSP18-C-A20	B	From Leg	4.000	0.000	143.000	No Ice	4.660	3.110	0.070
			0.000			1/2" Ice	5.120	3.550	0.121
			0.000			1" Ice	5.600	4.000	0.180
APXVSP18-C-A20	C	From Leg	4.000	0.000	143.000	No Ice	4.660	3.110	0.070
			0.000			1/2" Ice	5.120	3.550	0.121
			0.000			1" Ice	5.600	4.000	0.180
TD-RRH8x20-25	A	From Leg	4.000	0.000	143.000	No Ice	4.045	1.535	0.070
			0.000			1/2" Ice	4.298	1.714	0.097
			4.000			1" Ice	4.557	1.901	0.128
TD-RRH8x20-25	B	From Leg	4.000	0.000	143.000	No Ice	4.045	1.535	0.070
			0.000			1/2" Ice	4.298	1.714	0.097
			4.000			1" Ice	4.557	1.901	0.128
TD-RRH8x20-25	C	From Leg	4.000	0.000	143.000	No Ice	4.045	1.535	0.070
			0.000			1/2" Ice	4.298	1.714	0.097
			4.000			1" Ice	4.557	1.901	0.128
(3) ACU-A20-N	A	From Leg	4.000	0.000	143.000	No Ice	0.067	0.117	0.001
			0.000			1/2" Ice	0.104	0.162	0.002
			0.000			1" Ice	0.148	0.215	0.004
(3) ACU-A20-N	B	From Leg	4.000	0.000	143.000	No Ice	0.067	0.117	0.001
			0.000			1/2" Ice	0.104	0.162	0.002
			0.000			1" Ice	0.148	0.215	0.004

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Client	Crown Castle		Designed by	Jayaraj B

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz	Vert					
			ft	ft	°	ft	ft ²	ft ²	K
(3) ACU-A20-N	C	From Leg	4.000	0.000	0.000	143.000	No Ice 0.067	0.117	0.001
			0.000				1/2" Ice 0.104	0.162	0.002
			0.000				1" Ice 0.148	0.215	0.004
5' x 2" Pipe Mount	A	From Leg	4.000	0.000	0.000	143.000	No Ice 1.188	1.188	0.018
			0.000				1/2" Ice 1.496	1.496	0.027
			0.000				1" Ice 1.807	1.807	0.040
5' x 2" Pipe Mount	B	From Leg	4.000	0.000	0.000	143.000	No Ice 1.188	1.188	0.018
			0.000				1/2" Ice 1.496	1.496	0.027
			0.000				1" Ice 1.807	1.807	0.040
5' x 2" Pipe Mount	C	From Leg	4.000	0.000	0.000	143.000	No Ice 1.188	1.188	0.018
			0.000				1/2" Ice 1.496	1.496	0.027
			0.000				1" Ice 1.807	1.807	0.040
Sector Mount [SM 401-3]	C	None		0.000	0.000	143.000	No Ice 17.820	17.820	0.804
							1/2" Ice 25.010	25.010	1.143
							1" Ice 32.110	32.110	1.600
*									
1142-2C	B	From Leg	6.000	0.000	0.000	124.000	No Ice 2.092	2.092	0.024
			0.000				1/2" Ice 3.374	3.374	0.041
			7.000				1" Ice 4.673	4.673	0.066
1142-2C	C	From Leg	6.000	0.000	0.000	124.000	No Ice 2.092	2.092	0.024
			0.000				1/2" Ice 3.374	3.374	0.041
			7.000				1" Ice 4.673	4.673	0.066
Side Arm Mount [SO 303-1]	B	From Leg	3.000	0.000	0.000	124.000	No Ice 1.080	5.310	0.115
			0.000				1/2" Ice 1.630	7.570	0.158
			0.000				1" Ice 2.210	9.930	0.217
Side Arm Mount [SO 303-1]	C	From Leg	3.000	0.000	0.000	124.000	No Ice 1.080	5.310	0.115
			0.000				1/2" Ice 1.630	7.570	0.158
			0.000				1" Ice 2.210	9.930	0.217
*									
220-3BN	B	From Leg	6.000	0.000	0.000	104.000	No Ice 5.720	5.720	0.024
			0.000				1/2" Ice 7.831	7.831	0.066
			4.000				1" Ice 9.959	9.959	0.120
1142-2C	C	From Leg	6.000	0.000	0.000	104.000	No Ice 2.092	2.092	0.024
			0.000				1/2" Ice 3.374	3.374	0.041
			7.000				1" Ice 4.673	4.673	0.066
Side Arm Mount [SO 303-1]	B	From Leg	3.000	0.000	0.000	104.000	No Ice 1.080	5.310	0.115
			0.000				1/2" Ice 1.630	7.570	0.158
			0.000				1" Ice 2.210	9.930	0.217
Side Arm Mount [SO 303-1]	C	From Leg	3.000	0.000	0.000	104.000	No Ice 1.080	5.310	0.115
			0.000				1/2" Ice 1.630	7.570	0.158
			0.000				1" Ice 2.210	9.930	0.217
*									
APXVAARR24_43-U-NA20	A	From Leg	4.000	0.000	0.000	93.000	No Ice 14.670	5.320	0.153
			0.000				1/2" Ice 15.430	5.990	0.266
			0.000				1" Ice 16.210	6.680	0.387
APXVAARR24_43-U-NA20	B	From Leg	4.000	0.000	0.000	93.000	No Ice 14.670	5.320	0.153
			0.000				1/2" Ice 15.430	5.990	0.266
			0.000				1" Ice 16.210	6.680	0.387
APXVAARR24_43-U-NA20	C	From Leg	4.000	0.000	0.000	93.000	No Ice 14.670	5.320	0.153
			0.000				1/2" Ice 15.430	5.990	0.266
			0.000				1" Ice 16.210	6.680	0.387
AIR 32 B2a/B66Aa	A	From Leg	4.000	0.000	0.000	93.000	No Ice 3.860	2.510	0.172
			0.000				1/2" Ice 4.230	2.860	0.220
			0.000				1" Ice 4.610	3.220	0.273
AIR 32 B2a/B66Aa	B	From Leg	4.000	0.000	0.000	93.000	No Ice 3.860	2.510	0.172
			0.000				1/2" Ice 4.230	2.860	0.220
			0.000				1" Ice 4.610	3.220	0.273

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz	Lateral					
AIR 32 B2a/B66Aa	C	From Leg	4.000	0.000	0.000	93.000	No Ice 3.860	2.510	0.172
			0.000				1/2" Ice 4.230	2.860	0.220
			0.000				1" Ice 4.610	3.220	0.273
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	A	From Leg	4.000	0.000	0.000	93.000	No Ice 3.140	2.590	0.112
			0.000				1/2" Ice 3.450	2.880	0.164
			0.000				1" Ice 3.770	3.190	0.225
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	B	From Leg	4.000	0.000	0.000	93.000	No Ice 3.140	2.590	0.112
			0.000				1/2" Ice 3.450	2.880	0.164
			0.000				1" Ice 3.770	3.190	0.225
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	C	From Leg	4.000	0.000	0.000	93.000	No Ice 3.140	2.590	0.112
			0.000				1/2" Ice 3.450	2.880	0.164
			0.000				1" Ice 3.770	3.190	0.225
KRY 112 144/1	A	From Leg	4.000	0.000	0.000	93.000	No Ice 0.350	0.175	0.011
			0.000				1/2" Ice 0.426	0.234	0.014
			0.000				1" Ice 0.509	0.301	0.019
KRY 112 144/1	B	From Leg	4.000	0.000	0.000	93.000	No Ice 0.350	0.175	0.011
			0.000				1/2" Ice 0.426	0.234	0.014
			0.000				1" Ice 0.509	0.301	0.019
KRY 112 144/1	C	From Leg	4.000	0.000	0.000	93.000	No Ice 0.350	0.175	0.011
			0.000				1/2" Ice 0.426	0.234	0.014
			0.000				1" Ice 0.509	0.301	0.019
RADIO 4449 B12/B71	A	From Leg	4.000	0.000	0.000	93.000	No Ice 1.650	1.163	0.074
			0.000				1/2" Ice 1.810	1.301	0.090
			0.000				1" Ice 1.978	1.447	0.109
RADIO 4449 B12/B71	B	From Leg	4.000	0.000	0.000	93.000	No Ice 1.650	1.163	0.074
			0.000				1/2" Ice 1.810	1.301	0.090
			0.000				1" Ice 1.978	1.447	0.109
RADIO 4449 B12/B71	C	From Leg	4.000	0.000	0.000	93.000	No Ice 1.650	1.163	0.074
			0.000				1/2" Ice 1.810	1.301	0.090
			0.000				1" Ice 1.978	1.447	0.109
Sector Mount [SM 404-3]	C	None		0.000	0.000	93.000	No Ice 20.430	20.430	0.920
							1/2" Ice 28.680	28.680	1.311
							1" Ice 36.800	36.800	1.839
* GPS_A	C	From Leg	3.000	0.000	0.000	62.000	No Ice 0.255	0.255	0.001
			0.000				1/2" Ice 0.320	0.320	0.005
			3.000				1" Ice 0.393	0.393	0.010
Side Arm Mount [SO 305-1]	C	From Leg	1.500	0.000	0.000	62.000	No Ice 0.530	1.520	0.030
			0.000				1/2" Ice 0.780	2.070	0.044
			0.000				1" Ice 1.060	2.660	0.064
* GPS_A	C	From Leg	3.000	0.000	0.000	42.000	No Ice 0.255	0.255	0.001
			0.000				1/2" Ice 0.320	0.320	0.005
			2.000				1" Ice 0.393	0.393	0.010
Side Arm Mount [SO 305-1]	C	From Leg	1.500	0.000	0.000	42.000	No Ice 0.530	1.520	0.030
			0.000				1/2" Ice 0.780	2.070	0.044
			0.000				1" Ice 1.060	2.660	0.064
* GPS_A	C	From Leg	3.000	0.000	0.000	31.000	No Ice 0.255	0.255	0.001
			0.000				1/2" Ice 0.320	0.320	0.005
			1.000				1" Ice 0.393	0.393	0.010
Side Arm Mount [SO 701-1]	C	From Leg	1.500	0.000	0.000	31.000	No Ice 0.850	1.670	0.065
			0.000				1/2" Ice 1.140	2.340	0.079
			0.000				1" Ice 1.430	3.010	0.093
* (2) 3'x8" Knife Plate	A	From Leg	0.000	0.000	0.000	20.000	No Ice 2.333	0.250	0.048
			0.000				1/2" Ice 2.625	0.500	0.054

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight	
			Horz Lateral	Vert						
			ft	ft	°	ft	ft ²	ft ²	K	
(2) 3'x8" Knife Plate	B	From Leg	0.000	0.000	0.000	20.000	1" Ice	2.917	0.750	0.060
			0.000	0.000			No Ice	2.333	0.250	0.048
			0.000	0.000			1/2" Ice	2.625	0.500	0.054
			0.000	0.000			1" Ice	2.917	0.750	0.060
(2) 3'x8" Knife Plate	C	From Leg	0.000	0.000	0.000	20.000	No Ice	2.333	0.250	0.048
			0.000	0.000			1/2" Ice	2.625	0.500	0.054
			0.000	0.000			1" Ice	2.917	0.750	0.060
			0.000	0.000			No Ice	2.333	0.250	0.048
(2) 3'x8" Knife Plate	A	From Leg	0.000	0.000	0.000	60.000	1/2" Ice	2.625	0.500	0.054
			0.000	0.000			1" Ice	2.917	0.750	0.060
			0.000	0.000			No Ice	2.333	0.250	0.048
			0.000	0.000			1/2" Ice	2.625	0.500	0.054
(2) 3'x8" Knife Plate	B	From Leg	0.000	0.000	0.000	60.000	1" Ice	2.917	0.750	0.060
			0.000	0.000			No Ice	2.333	0.250	0.048
			0.000	0.000			1/2" Ice	2.625	0.500	0.054
			0.000	0.000			1" Ice	2.917	0.750	0.060
(2) 3'x8" Knife Plate	C	From Leg	0.000	0.000	0.000	60.000	No Ice	2.333	0.250	0.048
			0.000	0.000			1/2" Ice	2.625	0.500	0.054
			0.000	0.000			1" Ice	2.917	0.750	0.060
			0.000	0.000			No Ice	2.333	0.250	0.048
*										

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

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Comb. No.	Description
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T1	180 - 168	Leg	Max Tension	7	1.672	-0.151	0.085
			Max. Compression	10	-3.044	-0.151	-0.095
			Max. Mx	20	-1.008	-0.345	0.008
			Max. My	14	1.547	-0.001	0.349
			Max. Vy	20	-0.299	0.247	0.008
			Max. Vx	14	0.290	0.025	-0.229
		Diagonal	Max Tension	13	0.699	0.000	0.000
			Max. Compression	24	-0.799	0.000	0.000
			Max. Mx	8	0.327	0.011	0.001
			Max. My	24	0.675	0.006	-0.003
			Max. Vy	28	-0.011	0.010	-0.000
			Max. Vx	24	-0.001	0.005	-0.003
		Top Girt	Max Tension	2	0.182	0.000	0.000
			Max. Compression	23	-0.138	0.000	0.000
Max. Mx	26		0.045	-0.014	0.000		
Max. Vy	26		0.014	0.000	0.000		
T2	168 - 160	Leg	Max Tension	7	8.115	-0.003	0.002
			Max. Compression	10	-11.417	0.005	0.003
			Max. Mx	20	-1.248	0.247	0.008
			Max. My	14	-3.256	0.025	-0.229
			Max. Vy	20	1.019	-0.021	0.050
		Diagonal	Max. Vx	14	-1.015	0.005	-0.006
			Max Tension	25	2.732	0.000	0.000
			Max. Compression	12	-2.875	0.000	0.000
			Max. Mx	8	-1.719	-0.020	0.002
			Max. My	24	2.708	0.009	-0.004
T3	160 - 140	Leg	Max. Vy	29	-0.013	0.018	-0.001
			Max. Vx	24	-0.002	0.009	-0.004
			Max Tension	7	39.796	-0.262	-0.014
			Max. Compression	10	-51.508	0.289	0.001
			Max. Mx	14	18.458	-0.522	0.008
			Max. My	20	-4.893	-0.022	0.747

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft	
T4	140 - 120	Diagonal	Max. Vy	14	-1.037	-0.522	0.008	
			Max. Vx	8	1.013	-0.034	0.267	
			Max Tension	20	4.008	0.000	0.000	
			Max. Compression	20	-4.061	0.000	0.000	
			Max. Mx	10	3.556	0.026	-0.001	
			Max. My	24	-3.861	-0.011	-0.004	
		Leg	Max. Vy	31	-0.015	0.018	0.001	
			Max. Vx	4	0.001	0.000	0.000	
			Max Tension	7	70.006	-0.269	-0.067	
			Max. Compression	10	-85.311	0.303	-0.038	
			Max. Mx	22	47.893	-0.337	-0.003	
			Max. My	4	-6.589	-0.028	-0.418	
			Max. Vy	3	0.088	0.271	-0.015	
			Max. Vx	19	0.156	-0.139	0.327	
Diagonal	Max Tension	20	4.698	0.000	0.000			
	Max. Compression	20	-4.733	0.000	0.000			
	Max. Mx	10	3.679	0.027	-0.001			
	Max. My	28	0.976	0.021	-0.003			
	Max. Vy	29	0.020	0.022	-0.003			
	Max. Vx	28	0.001	0.000	0.000			
T5	120 - 100	Leg	Max Tension	7	96.026	-0.339	-0.081	
			Max. Compression	10	-114.934	0.426	-0.031	
			Max. Mx	3	-106.202	0.432	-0.045	
			Max. My	16	-10.232	-0.001	0.544	
			Max. Vy	3	-0.103	0.432	-0.045	
			Max. Vx	4	-0.188	-0.034	-0.459	
		Diagonal	Max Tension	20	4.703	0.000	0.000	
			Max. Compression	20	-4.759	0.000	0.000	
			Max. Mx	31	0.944	0.041	-0.004	
			Max. My	29	0.850	0.035	-0.005	
			Max. Vy	29	0.027	0.035	-0.005	
			Max. Vx	29	0.002	0.000	0.000	
			Leg	Max Tension	7	120.220	-0.444	-0.016
				Max. Compression	10	-145.069	0.779	0.019
Max. Mx	18	-144.297		0.790	0.060			
Max. My	16	-13.716		0.014	0.656			
Max. Vy	22	-0.571		-0.536	-0.018			
Max. Vx	16	0.516		-0.013	0.388			
Diagonal	Max Tension	20		5.607	0.000	0.000		
	Max. Compression	20		-5.590	0.000	0.000		
	Max. Mx	31	1.338	0.049	-0.006			
	Max. My	29	-1.227	0.040	-0.007			
	Max. Vy	29	0.034	0.048	-0.006			
	Max. Vx	29	0.002	0.000	0.000			
T7	80 - 60	Leg	Max Tension	7	142.594	-0.663	-0.048	
			Max. Compression	10	-170.913	1.029	0.023	
			Max. Mx	18	-170.284	1.043	0.091	
			Max. My	16	-15.247	-0.085	1.016	
			Max. Vy	18	-0.120	1.043	0.091	
			Max. Vx	4	0.156	-0.089	-1.016	
		Diagonal	Max Tension	20	6.589	0.000	0.000	
			Max. Compression	20	-6.635	0.000	0.000	
			Max. Mx	31	1.550	0.085	0.011	
			Max. My	34	1.493	0.082	0.012	
			Max. Vy	29	0.047	0.083	-0.012	
			Max. Vx	34	-0.003	0.000	0.000	
			Leg	Max Tension	7	165.830	-0.886	-0.046
				Max. Compression	10	-198.302	-0.127	0.012
Max. Mx	18	-183.830		1.043	0.091			
Max. My	4	-16.089		-0.073	-0.922			
Max. Vy	22	-0.171		-0.903	-0.025			

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	Crown Castle	Jayaraj B	

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T9	40 - 20	Diagonal	Max. Vx	16	-0.132	-0.068	0.922
			Max Tension	20	6.997	0.000	0.000
			Max. Compression	20	-7.061	0.000	0.000
			Max. Mx	31	1.188	0.130	0.014
			Max. My	34	1.896	0.122	0.017
			Max. Vy	29	0.064	0.119	0.015
		Leg	Max. Vx	34	-0.004	0.000	0.000
			Max Tension	7	187.386	1.430	-0.031
			Max. Compression	18	-224.272	-0.390	0.039
			Max. Mx	10	-210.833	3.162	-0.004
			Max. My	8	-16.614	-0.411	1.858
			Max. Vy	18	-1.118	3.101	-0.016
		Diagonal	Max. Vx	4	0.454	-0.430	-1.779
			Max Tension	21	7.324	0.101	-0.002
			Max. Compression	18	-8.111	0.000	0.000
			Max. Mx	31	0.927	0.159	-0.011
			Max. My	18	-7.651	0.016	0.015
			Max. Vy	29	0.069	0.129	-0.011
Secondary Horizontal	Max. Vx	28	-0.003	0.000	0.000		
	Max Tension	8	1.198	0.058	0.004		
	Max. Compression	9	-0.995	0.051	0.020		
	Max. Mx	36	0.012	0.135	0.027		
	Max. My	30	0.263	0.102	0.029		
	Max. Vy	36	-0.072	0.135	0.027		
T10	20 - 0	Leg	Max. Vx	30	-0.005	0.000	0.000
			Max Tension	7	208.653	-1.636	-0.044
			Max. Compression	18	-251.272	0.000	-0.000
			Max. Mx	35	-100.613	4.085	-0.019
			Max. My	8	-19.409	-0.147	2.328
			Max. Vy	31	-0.727	-3.070	0.001
		Diagonal	Max. Vx	4	-0.333	-0.147	-2.238
			Max Tension	20	7.828	0.000	0.000
			Max. Compression	18	-8.352	0.000	0.000
			Max. Mx	29	-0.117	0.206	-0.021
			Max. My	28	3.587	0.123	-0.025
			Max. Vy	29	0.080	0.206	-0.021
			Max. Vx	28	0.004	0.000	0.000

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Leg C	Max. Vert	18	257.946	23.093	-12.423
	Max. H _x	18	257.946	23.093	-12.423
	Max. H _z	7	-213.850	-19.796	10.567
	Min. Vert	7	-213.850	-19.796	10.567
	Min. H _x	7	-213.850	-19.796	10.567
	Min. H _z	18	257.946	23.093	-12.423
Leg B	Max. Vert	10	257.205	-22.183	-13.005
	Max. H _x	23	-208.198	18.836	11.062
	Max. H _z	23	-208.198	18.836	11.062
	Min. Vert	23	-208.198	18.836	11.062
	Min. H _x	10	257.205	-22.183	-13.005
	Min. H _z	10	257.205	-22.183	-13.005
Leg A	Max. Vert	2	240.966	0.557	24.130

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Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
	Max. H _x	20	21.606	2.387	1.630
	Max. H _z	2	240.966	0.557	24.130
	Min. Vert	15	-195.971	-0.506	-20.331
	Min. H _x	11	-101.441	-2.354	-10.898
	Min. H _z	15	-195.971	-0.506	-20.331

Tower Mast Reaction Summary

Load Combination	Vertical	Shear _x	Shear _z	Overturning Moment, M _x	Overturning Moment, M _z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
Dead Only	54.748	0.000	0.000	8.556	-23.384	0.000
1.2 Dead+1.0 Wind 0 deg - No Ice	65.698	-0.048	-37.354	-3794.350	-22.873	18.191
0.9 Dead+1.0 Wind 0 deg - No Ice	49.273	-0.048	-37.354	-3796.917	-15.858	18.191
1.2 Dead+1.0 Wind 30 deg - No Ice	65.698	18.556	-32.375	-3285.885	-1916.826	31.015
0.9 Dead+1.0 Wind 30 deg - No Ice	49.273	18.556	-32.375	-3288.452	-1909.811	31.015
1.2 Dead+1.0 Wind 60 deg - No Ice	65.698	33.913	-19.660	-1982.990	-3466.145	26.626
0.9 Dead+1.0 Wind 60 deg - No Ice	49.273	33.913	-19.660	-1985.557	-3459.130	26.626
1.2 Dead+1.0 Wind 90 deg - No Ice	65.698	40.097	0.048	15.455	-4080.357	7.791
0.9 Dead+1.0 Wind 90 deg - No Ice	49.273	40.097	0.048	12.888	-4073.341	7.791
1.2 Dead+1.0 Wind 120 deg - No Ice	65.698	34.543	20.079	2044.057	-3525.974	-5.504
0.9 Dead+1.0 Wind 120 deg - No Ice	49.273	34.543	20.079	2041.490	-3518.958	-5.504
1.2 Dead+1.0 Wind 150 deg - No Ice	65.698	17.919	31.176	3234.766	-1881.447	-7.324
0.9 Dead+1.0 Wind 150 deg - No Ice	49.273	17.919	31.176	3232.199	-1874.432	-7.324
1.2 Dead+1.0 Wind 180 deg - No Ice	65.698	0.048	35.627	3681.360	-33.248	-18.191
0.9 Dead+1.0 Wind 180 deg - No Ice	49.273	0.048	35.627	3678.793	-26.233	-18.191
1.2 Dead+1.0 Wind 210 deg - No Ice	65.698	-18.556	32.375	3306.420	1860.705	-31.015
0.9 Dead+1.0 Wind 210 deg - No Ice	49.273	-18.556	32.375	3303.853	1867.720	-31.015
1.2 Dead+1.0 Wind 240 deg - No Ice	65.698	-35.409	20.524	2070.288	3525.660	-26.626
0.9 Dead+1.0 Wind 240 deg - No Ice	49.273	-35.409	20.524	2067.721	3532.675	-26.626
1.2 Dead+1.0 Wind 270 deg - No Ice	65.698	-40.097	-0.048	5.080	4024.236	-7.791
0.9 Dead+1.0 Wind 270 deg - No Ice	49.273	-40.097	-0.048	2.513	4031.251	-7.791
1.2 Dead+1.0 Wind 300 deg - No Ice	65.698	-33.047	-19.215	-1956.760	3354.217	5.504
0.9 Dead+1.0 Wind 300 deg - No Ice	49.273	-33.047	-19.215	-1959.327	3361.232	5.504
1.2 Dead+1.0 Wind 330 deg - No Ice	65.698	-17.919	-31.176	-3214.231	1825.326	7.324

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Load Combination	Vertical	Shear _x	Shear _z	Overturning Moment, M _x	Overturning Moment, M _z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
No Ice						
0.9 Dead+1.0 Wind 330 deg - No Ice	49.273	-17.919	-31.176	-3216.798	1832.341	7.324
1.2 Dead+1.0 Ice+1.0 Temp	119.374	0.000	0.000	16.179	-68.492	0.000
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	119.374	-0.012	-10.136	-1022.362	-67.372	4.616
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	119.374	5.172	-9.033	-902.579	-594.431	8.529
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	119.374	9.443	-5.481	-537.174	-1021.364	7.656
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	119.374	11.083	0.012	17.299	-1188.041	2.416
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	119.374	9.344	5.438	569.287	-1018.699	-0.966
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	119.374	4.983	8.681	913.263	-583.211	-1.779
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	119.374	0.012	9.845	1032.770	-69.612	-4.616
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	119.374	-5.172	9.033	934.937	457.447	-8.529
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	119.374	-9.695	5.627	580.507	903.388	-7.656
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	119.374	-11.083	-0.012	15.059	1051.057	-2.416
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	119.374	-9.091	-5.292	-525.954	862.705	0.966
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	119.374	-4.983	-8.681	-880.905	446.227	1.779
Dead+Wind 0 deg - Service	54.748	-0.013	-10.657	-1069.627	-21.923	5.123
Dead+Wind 30 deg - Service	54.748	5.294	-9.236	-925.531	-558.661	8.723
Dead+Wind 60 deg - Service	54.748	9.670	-5.605	-556.148	-997.442	7.479
Dead+Wind 90 deg - Service	54.748	11.429	0.013	10.017	-1171.318	2.172
Dead+Wind 120 deg - Service	54.748	9.847	5.723	584.675	-1014.291	-1.569
Dead+Wind 150 deg - Service	54.748	5.115	8.899	922.465	-548.698	-2.074
Dead+Wind 180 deg - Service	54.748	0.013	10.171	1049.136	-24.845	-5.123
Dead+Wind 210 deg - Service	54.748	-5.294	9.236	942.644	511.894	-8.723
Dead+Wind 240 deg - Service	54.748	-10.091	5.849	592.062	983.240	-7.479
Dead+Wind 270 deg - Service	54.748	-11.429	-0.013	7.095	1124.550	-2.172
Dead+Wind 300 deg - Service	54.748	-9.426	-5.480	-548.761	934.958	1.569
Dead+Wind 330 deg - Service	54.748	-5.115	-8.899	-905.352	501.930	2.074

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	0.000	-54.748	0.000	-0.000	54.748	0.000	0.000%
2	-0.048	-65.698	-37.354	0.048	65.698	37.354	0.000%
3	-0.048	-49.273	-37.354	0.048	49.273	37.354	0.000%
4	18.556	-65.698	-32.375	-18.556	65.698	32.375	0.000%
5	18.556	-49.273	-32.375	-18.556	49.273	32.375	0.000%
6	33.913	-65.698	-19.660	-33.913	65.698	19.660	0.000%
7	33.913	-49.273	-19.660	-33.913	49.273	19.660	0.000%
8	40.097	-65.698	0.048	-40.097	65.698	-0.048	0.000%
9	40.097	-49.273	0.048	-40.097	49.273	-0.048	0.000%
10	34.543	-65.698	20.079	-34.543	65.698	-20.079	0.000%
11	34.543	-49.273	20.079	-34.543	49.273	-20.079	0.000%
12	17.919	-65.698	31.176	-17.919	65.698	-31.176	0.000%

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Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
13	17.919	-49.273	31.176	-17.919	49.273	-31.176	0.000%
14	0.048	-65.698	35.627	-0.048	65.698	-35.627	0.000%
15	0.048	-49.273	35.627	-0.048	49.273	-35.627	0.000%
16	-18.556	-65.698	32.375	18.556	65.698	-32.375	0.000%
17	-18.556	-49.273	32.375	18.556	49.273	-32.375	0.000%
18	-35.409	-65.698	20.524	35.409	65.698	-20.524	0.000%
19	-35.409	-49.273	20.524	35.409	49.273	-20.524	0.000%
20	-40.097	-65.698	-0.048	40.097	65.698	0.048	0.000%
21	-40.097	-49.273	-0.048	40.097	49.273	0.048	0.000%
22	-33.047	-65.698	-19.215	33.047	65.698	19.215	0.000%
23	-33.047	-49.273	-19.215	33.047	49.273	19.215	0.000%
24	-17.919	-65.698	-31.176	17.919	65.698	31.176	0.000%
25	-17.919	-49.273	-31.176	17.919	49.273	31.176	0.000%
26	0.000	-119.374	0.000	-0.000	119.374	-0.000	0.000%
27	-0.012	-119.374	-10.136	0.012	119.374	10.136	0.000%
28	5.172	-119.374	-9.033	-5.172	119.374	9.033	0.000%
29	9.443	-119.374	-5.481	-9.443	119.374	5.481	0.000%
30	11.083	-119.374	0.012	-11.083	119.374	-0.012	0.000%
31	9.344	-119.374	5.438	-9.344	119.374	-5.438	0.000%
32	4.983	-119.374	8.681	-4.983	119.374	-8.681	0.000%
33	0.012	-119.374	9.845	-0.012	119.374	-9.845	0.000%
34	-5.172	-119.374	9.033	5.172	119.374	-9.033	0.000%
35	-9.695	-119.374	5.627	9.695	119.374	-5.627	0.000%
36	-11.083	-119.374	-0.012	11.083	119.374	0.012	0.000%
37	-9.091	-119.374	-5.292	9.091	119.374	5.292	0.000%
38	-4.983	-119.374	-8.681	4.983	119.374	8.681	0.000%
39	-0.013	-54.748	-10.657	0.013	54.748	10.657	0.000%
40	5.294	-54.748	-9.236	-5.294	54.748	9.236	0.000%
41	9.670	-54.748	-5.605	-9.670	54.748	5.605	0.000%
42	11.429	-54.748	0.013	-11.429	54.748	-0.013	0.000%
43	9.847	-54.748	5.723	-9.847	54.748	-5.723	0.000%
44	5.115	-54.748	8.899	-5.115	54.748	-8.899	0.000%
45	0.013	-54.748	10.171	-0.013	54.748	-10.171	0.000%
46	-5.294	-54.748	9.236	5.294	54.748	-9.236	0.000%
47	-10.091	-54.748	5.849	10.091	54.748	-5.849	0.000%
48	-11.429	-54.748	-0.013	11.429	54.748	0.013	0.000%
49	-9.426	-54.748	-5.480	9.426	54.748	5.480	0.000%
50	-5.115	-54.748	-8.899	5.115	54.748	8.899	0.000%

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	180 - 168	4.876	43	0.261	0.031
T2	168 - 160	4.221	43	0.258	0.031
T3	160 - 140	3.789	43	0.248	0.031
T4	140 - 120	2.796	43	0.207	0.028
T5	120 - 100	1.984	43	0.165	0.024
T6	100 - 80	1.348	43	0.126	0.019
T7	80 - 60	0.852	43	0.097	0.014
T8	60 - 40	0.473	42	0.071	0.009
T9	40 - 20	0.211	42	0.044	0.006
T10	20 - 0	0.060	47	0.018	0.003

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Critical Deflections and Radius of Curvature - Service Wind

<i>Elevation</i>	<i>Appurtenance</i>	<i>Gov. Load Comb.</i>	<i>Deflection in</i>	<i>Tilt °</i>	<i>Twist °</i>	<i>Radius of Curvature ft</i>
178.000	PD10017	43	4.766	0.261	0.031	796821
170.000	MX08FRO665-21 w/ Mount Pipe	43	4.330	0.259	0.031	341389
164.000	(2) APL868013-42T0 w/ Mount Pipe	43	4.003	0.254	0.031	74980
154.000	7770.00 w/ Mount Pipe	43	3.475	0.237	0.030	34542
145.000	800 EXTERNAL NOTCH FILTER	43	3.029	0.218	0.029	27104
143.000	APXVTM14-C-120	43	2.934	0.214	0.029	25905
124.000	1142-2C	43	2.132	0.174	0.025	26179
104.000	220-3BN	43	1.463	0.133	0.020	32999
93.000	APXVAARR24_43-U-NA20	43	1.160	0.115	0.017	37510
62.000	GPS_A	42	0.506	0.074	0.009	40162
60.000	(2) 3'x8" Knife Plate	42	0.473	0.071	0.009	40097
42.000	GPS_A	42	0.232	0.047	0.006	44078
31.000	GPS_A	47	0.129	0.032	0.005	43764
20.000	(2) 3'x8" Knife Plate	47	0.060	0.018	0.003	44623

Maximum Tower Deflections - Design Wind

<i>Section No.</i>	<i>Elevation ft</i>	<i>Horz. Deflection in</i>	<i>Gov. Load Comb.</i>	<i>Tilt °</i>	<i>Twist °</i>
T1	180 - 168	17.036	10	0.909	0.111
T2	168 - 160	14.751	10	0.899	0.111
T3	160 - 140	13.243	10	0.865	0.110
T4	140 - 120	9.772	10	0.724	0.101
T5	120 - 100	6.944	19	0.577	0.086
T6	100 - 80	4.726	19	0.440	0.068
T7	80 - 60	2.991	19	0.339	0.048
T8	60 - 40	1.664	19	0.248	0.032
T9	40 - 20	0.745	19	0.155	0.021
T10	20 - 0	0.210	19	0.061	0.010

Critical Deflections and Radius of Curvature - Design Wind

<i>Elevation</i>	<i>Appurtenance</i>	<i>Gov. Load Comb.</i>	<i>Deflection in</i>	<i>Tilt °</i>	<i>Twist °</i>	<i>Radius of Curvature ft</i>
178.000	PD10017	10	16.655	0.909	0.111	303471
170.000	MX08FRO665-21 w/ Mount Pipe	10	15.131	0.904	0.111	123509
164.000	(2) APL868013-42T0 w/ Mount Pipe	10	13.993	0.885	0.111	22711
154.000	7770.00 w/ Mount Pipe	10	12.147	0.828	0.109	10039
145.000	800 EXTERNAL NOTCH FILTER	10	10.587	0.762	0.104	7760
143.000	APXVTM14-C-120	10	10.256	0.747	0.103	7399
124.000	1142-2C	19	7.457	0.606	0.089	7479
104.000	220-3BN	19	5.127	0.465	0.072	9437
93.000	APXVAARR24_43-U-NA20	19	4.069	0.401	0.061	10724
62.000	GPS_A	19	1.778	0.257	0.034	11474

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Elevation	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
60.000	(2) 3'x8" Knife Plate	19	1.664	0.248	0.032	11457
42.000	GPS_A	19	0.819	0.165	0.022	12644
31.000	GPS_A	19	0.457	0.111	0.016	12554
20.000	(2) 3'x8" Knife Plate	19	0.210	0.061	0.010	12785

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load per Bolt K	Ratio Load Allowable	Allowable Ratio	Criteria
T1	180	Diagonal	A325N	0.625	1	0.699	7.875	0.089 ✓	1.05	Member Block Shear
		Top Girt	A325N	0.625	1	0.182	7.875	0.023 ✓	1.05	Member Block Shear
T2	168	Leg	A325N	0.625	4	1.507	20.340	0.074 ✓	1.05	Bolt Tension
		Diagonal	A325N	0.625	1	2.732	7.875	0.347 ✓	1.05	Member Block Shear
T3	160	Leg	A325N	0.625	4	9.938	20.340	0.489 ✓	1.05	Bolt Tension
		Diagonal	A325N	0.625	1	4.008	7.875	0.509 ✓	1.05	Member Block Shear
T4	140	Leg	A325N	0.750	4	17.502	30.101	0.581 ✓	1.05	Bolt Tension
		Diagonal	A325N	0.625	1	4.698	7.875	0.597 ✓	1.05	Member Block Shear
T5	120	Leg	A325N	0.750	4	24.006	30.101	0.798 ✓	1.05	Bolt Tension
		Diagonal	A325N	0.625	1	4.703	9.914	0.474 ✓	1.05	Member Block Shear
T6	100	Leg	A490N	0.875	4	30.055	51.945	0.579 ✓	1.05	Bolt Tension
		Diagonal	A325N	0.625	1	5.607	9.914	0.566 ✓	1.05	Member Block Shear
T7	80	Leg	A325N	0.875	4	35.648	41.556	0.858 ✓	1.05	Bolt Tension
		Diagonal	A325N	0.625	1	6.589	10.934	0.603 ✓	1.05	Member Block Shear
T8	60	Leg	A325N	1.000	4	41.457	54.517	0.760 ✓	1.05	Bolt Tension
		Diagonal	A325N	0.625	1	7.061	13.806	0.511 ✓	1.05	Bolt Shear
T9	40	Leg	A325N	1.000	4	46.797	54.517	0.858 ✓	1.05	Bolt Tension
		Diagonal	A325N	0.625	1	8.111	13.806	0.587 ✓	1.05	Bolt Shear
		Secondary Horizontal	A325N	0.500	1	3.889	8.836	0.440 ✓	1.05	Bolt Shear
T10	20	Diagonal	A325N	0.625	1	8.352	13.806	0.605 ✓	1.05	Bolt Shear

Compression Checks

Leg Design Data (Compression)

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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 168	P2x0.154	12.000	4.000	61.0 K=1.00	1.075	-3.044	27.981	0.109 ¹
T2	168 - 160	P2x0.154 (GR)	8.000	4.000	61.0 K=1.00	1.075	-11.417	38.430	0.297 ¹
T3	160 - 140	P3x0.216 (GR)	20.033	5.008	51.7 K=1.00	2.228	-51.508	87.013	0.592 ¹
T4	140 - 120	P3.5x.318 (GR)	20.033	6.678	61.3 K=1.00	3.678	-85.311	122.133	0.699 ¹
T5	120 - 100	P4x.337 (GR)	20.033	6.678	54.3 K=1.00	4.407	-114.934	157.190	0.731 ¹
T6	100 - 80	P5x0.375 (GR)	20.033	6.678	43.6 K=1.00	6.112	-145.069	242.300	0.599 ¹
T7	80 - 60	P6x0.432	20.033	10.017	54.8 K=1.00	8.405	-170.913	227.081	0.753 ¹
T8	60 - 40	P6x0.432	20.033	10.017	54.8 K=1.00	8.405	-198.302	227.081	0.873 ¹
T9	40 - 20	P6x0.432	20.033	5.151	28.2 K=1.00	8.405	-224.272	254.222	0.882 ¹
T10	20 - 0	P8x.5	20.033	10.017	41.8 K=1.00	12.763	-251.272	367.690	0.683 ¹

¹ P_u / φP_n controls

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 168	L2x1 1/2x3/16	5.657	2.543	101.1 K=1.07	0.621	-0.799	15.177	0.053 ¹
T2	168 - 160	L2x1 1/2x3/16	5.657	2.543	101.1 K=1.07	0.621	-2.875	15.177	0.189 ¹
T3	160 - 140	L2x1 1/2x3/16	7.621	3.637	135.6 K=1.00	0.621	-4.061	9.673	0.420 ¹
T4	140 - 120	L2x2x3/16	10.162	4.935	150.3 K=1.00	0.715	-4.533	9.058	0.500 ¹
T5	120 - 100	L2 1/2x2x3/16	11.744	5.701	160.2 K=1.00	0.809	-4.759	9.021	0.528 ¹
T6	100 - 80	L2 1/2x2 1/2x3/16	13.438	6.498	157.5 K=1.00	0.902	-5.573	10.403	0.536 ¹
T7	80 - 60	L3x3x3/16	16.803	8.223	165.6 K=1.00	1.090	-6.635	11.381	0.583 ¹
T8	60 - 40	L3 1/2x3x1/4	18.448	9.047	172.1 K=1.00	1.560	-7.061	15.083	0.468 ¹
T9	40 - 20	L3 1/2x3x1/4	20.158	10.049	191.1 K=1.00	1.560	-8.111	12.226	0.663 ¹
T10	20 - 0	L3 1/2x3 1/2x1/4	21.916	10.690	184.8 K=1.00	1.690	-8.352	14.159	0.590 ¹

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	Client Crown Castle	Designed by Jayaraj B

¹ $P_u / \phi P_n$ controls

Secondary Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T9	40 - 20	L3 1/2x3 1/2x1/4	17.486	8.467	146.4 K=1.00	1.690	-3.889	22.568	0.172 ¹

¹ $P_u / \phi P_n$ controls

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 168	L2x1 1/2x3/16	4.000	3.510	130.8 K=1.00	0.621	-0.138	10.385	0.013 ¹

¹ $P_u / \phi P_n$ controls

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 168	P2x0.154	12.000	4.000	61.0	1.075	1.672	33.848	0.049 ¹
T2	168 - 160	P2x0.154 (GR)	8.000	4.000	61.0	1.075	6.029	33.848	0.178 ¹
T3	160 - 140	P3x0.216 (GR)	20.033	5.008	51.7	2.228	39.751	70.197	0.566 ¹
T4	140 - 120	P3.5x.318 (GR)	20.033	6.678	61.3	3.678	70.006	115.870	0.604 ¹
T5	120 - 100	P4x.337 (GR)	20.033	6.678	54.3	4.407	96.026	138.834	0.692 ¹
T6	100 - 80	P5x0.375 (GR)	20.033	6.678	43.6	6.112	120.220	192.527	0.624 ¹
T7	80 - 60	P6x0.432	20.033	10.017	54.8	8.405	142.594	264.756	0.539 ¹
T8	60 - 40	P6x0.432	20.033	10.017	54.8	8.405	165.830	264.756	0.626 ¹

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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T9	40 - 20	P6x0.432	20.033	4.865	26.6	8.405	187.386	264.756	0.708 ¹
T10	20 - 0	P8x.5	20.033	10.017	41.8	12.763	208.653	402.026	0.519 ¹

¹ P_u / φP_n controls

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 168	L2x1 1/2x3/16	5.657	2.543	73.4	0.360	0.699	15.675	0.045 ¹
T2	168 - 160	L2x1 1/2x3/16	5.657	2.543	73.4	0.360	2.732	15.675	0.174 ¹
T3	160 - 140	L2x1 1/2x3/16	7.621	3.637	103.3	0.360	4.008	15.675	0.256 ¹
T4	140 - 120	L2x2x3/16	9.197	4.474	89.9	0.431	4.698	18.739	0.251 ¹
T5	120 - 100	L2 1/2x2x3/16	11.744	5.701	117.0	0.501	4.703	21.806	0.216 ¹
T6	100 - 80	L2 1/2x2 1/2x3/16	13.438	6.498	102.5	0.571	5.607	24.840	0.226 ¹
T7	80 - 60	L3x3x3/16	16.803	8.223	107.0	0.712	6.589	30.973	0.213 ¹
T8	60 - 40	L3 1/2x3x1/4	18.448	9.047	120.8	1.029	6.997	44.778	0.156 ¹
T9	40 - 20	L3 1/2x3x1/4	20.158	10.049	132.1	1.029	7.324	44.778	0.164 ¹
T10	20 - 0	L3 1/2x3 1/2x1/4	21.916	10.690	119.3	1.127	7.828	49.019	0.160 ¹

¹ P_u / φP_n controls

Secondary Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T9	40 - 20	L3 1/2x3 1/2x1/4	16.485	7.966	175.4	1.150	3.889	50.039	0.078 ¹

¹ P_u / φP_n controls

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	Client Crown Castle	Designed by Jayaraj B

Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$ ¹
T1	180 - 168	L2x1 1/2x3/16	4.000	3.510	103.8	0.360	0.182	15.675	0.012 ¹

¹ P_u / φP_n controls

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	φP _{allow} K	% Capacity	Pass Fail
T1	180 - 168	Leg	P2x0.154	2	-3.044	29.380	10.4	Pass
T2	168 - 160	Leg	P2x0.154 (GR)	26	-11.417	40.351	28.3	Pass
T3	160 - 140	Leg	P3x0.216 (GR)	41	-51.508	91.364	56.4	Pass
T4	140 - 120	Leg	P3.5x.318 (GR)	68	-85.311	128.240	66.5	Pass
T5	120 - 100	Leg	P4x.337 (GR)	89	-114.934	165.049	69.6	Pass
							79.8 (b)	
T6	100 - 80	Leg	P5x0.375 (GR)	109	120.220	202.153	59.5	Pass
T7	80 - 60	Leg	P6x0.432	131	-170.913	238.435	71.7	Pass
							85.8 (b)	
T8	60 - 40	Leg	P6x0.432	146	-198.302	238.435	83.2	Pass
T9	40 - 20	Leg	P6x0.432	160	-224.272	266.933	84.0	Pass
							85.8 (b)	
T10	20 - 0	Leg	P8x.5	181	-251.272	386.074	65.1	Pass
T1	180 - 168	Diagonal	L2x1 1/2x3/16	10	-0.799	15.935	5.0	Pass
							8.9 (b)	
T2	168 - 160	Diagonal	L2x1 1/2x3/16	30	-2.875	15.935	18.0	Pass
							34.7 (b)	
T3	160 - 140	Diagonal	L2x1 1/2x3/16	43	-4.061	10.157	40.0	Pass
							50.9 (b)	
T4	140 - 120	Diagonal	L2x2x3/16	70	-4.533	9.511	47.7	Pass
							59.7 (b)	
T5	120 - 100	Diagonal	L2 1/2x2x3/16	91	-4.759	9.472	50.2	Pass
T6	100 - 80	Diagonal	L2 1/2x2 1/2x3/16	112	-5.573	10.923	51.0	Pass
							56.6 (b)	
T7	80 - 60	Diagonal	L3x3x3/16	133	-6.635	11.950	55.5	Pass
							60.3 (b)	
T8	60 - 40	Diagonal	L3 1/2x3x1/4	148	-7.061	15.837	44.6	Pass
							51.1 (b)	
T9	40 - 20	Diagonal	L3 1/2x3x1/4	163	-8.111	12.837	63.2	Pass
T10	20 - 0	Diagonal	L3 1/2x3 1/2x1/4	184	-8.352	14.867	56.2	Pass
							60.5 (b)	
T9	40 - 20	Secondary Horizontal	L3 1/2x3 1/2x1/4	171	-3.889	23.697	16.4	Pass
							44.0 (b)	
T1	180 - 168	Top Girt	L2x1 1/2x3/16	6	-0.138	10.904	1.3	Pass
							2.3 (b)	
							Summary	
						Leg (T9)	85.8	Pass
						Diagonal (T9)	63.2	Pass
						Secondary Horizontal (T9)	44.0	Pass

tnxTower

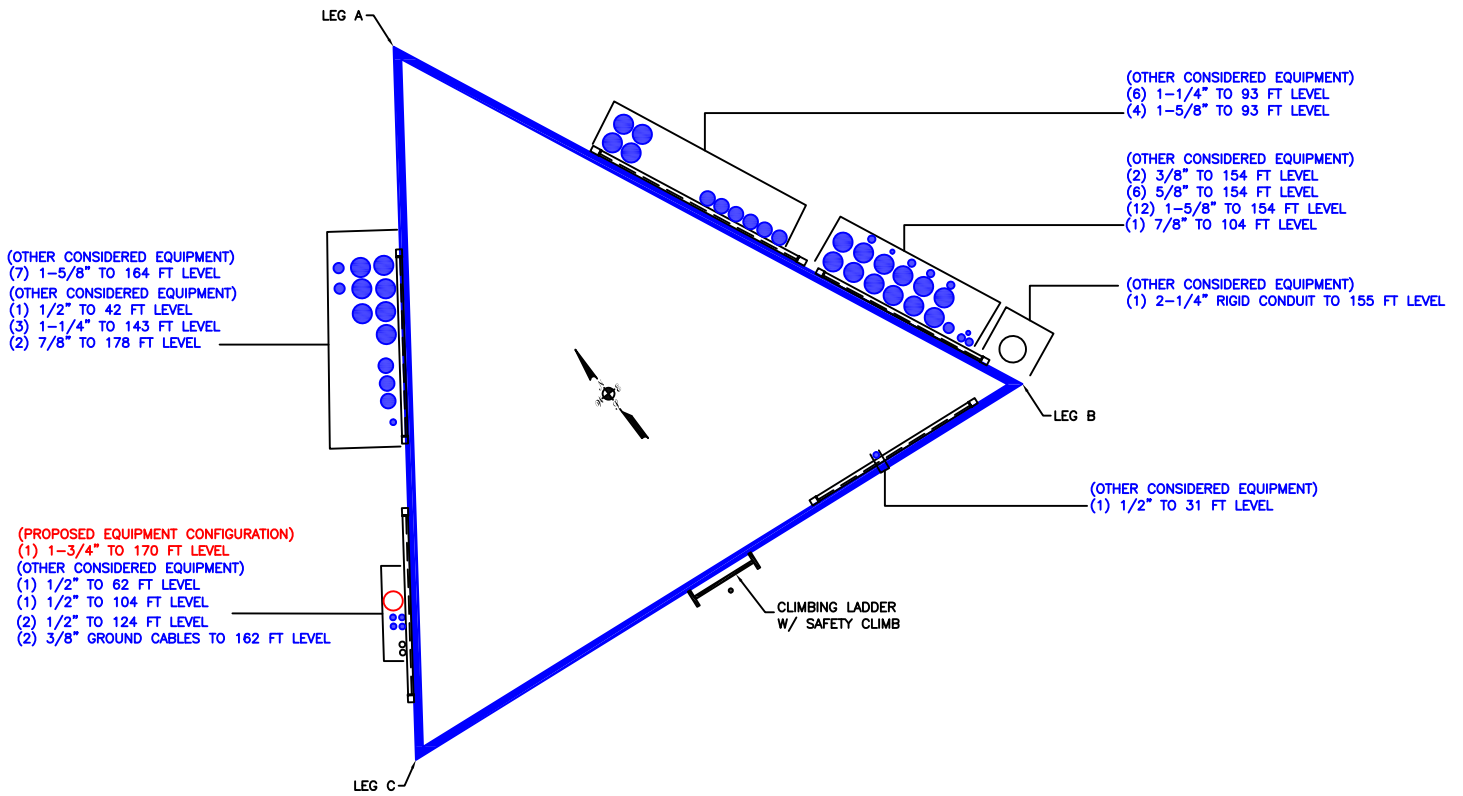
B+T Group
1717 S. Boulder, Suite 300
Tulsa, OK 74119
Phone: (918) 587-4630
FAX: (918) 295-0265

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Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
						Top Girt (T1)	2.3	Pass
						Bolt Checks	81.8	Pass
						RATING =	85.8	Pass

Program Version 8.1.1.0

APPENDIX B
BASE LEVEL DRAWING



BUSINESS UNIT: 806353

APPENDIX C
ADDITIONAL CALCULATIONS

Self Support Anchor Rod Capacity



Site Info	
BU #	806353
Site Name	BRG 124 943066, CT
Order #	548867, Rev# 2

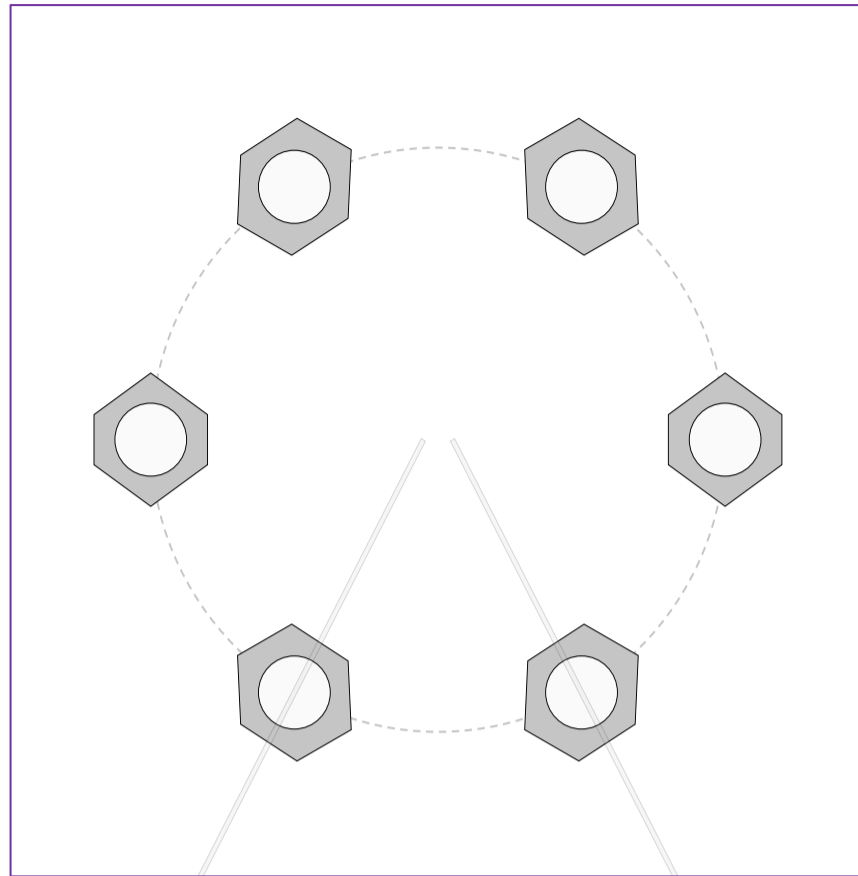
Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	Yes
l_{ar} (in)	0

Applied Loads		
	Comp.	Uplift
Axial Force (kips)	258.00	214.00
Shear Force (kips)	26.00	22.00

*TIA-222-H Section 15.5 Applied

Considered Eccentricity	
Leg Mod Eccentricity (in)	0.000
Anchor Rod N.A Shift (in)	0.000
Total Eccentricity (in)	0.000

*Anchor Rod Eccentricity Applied



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

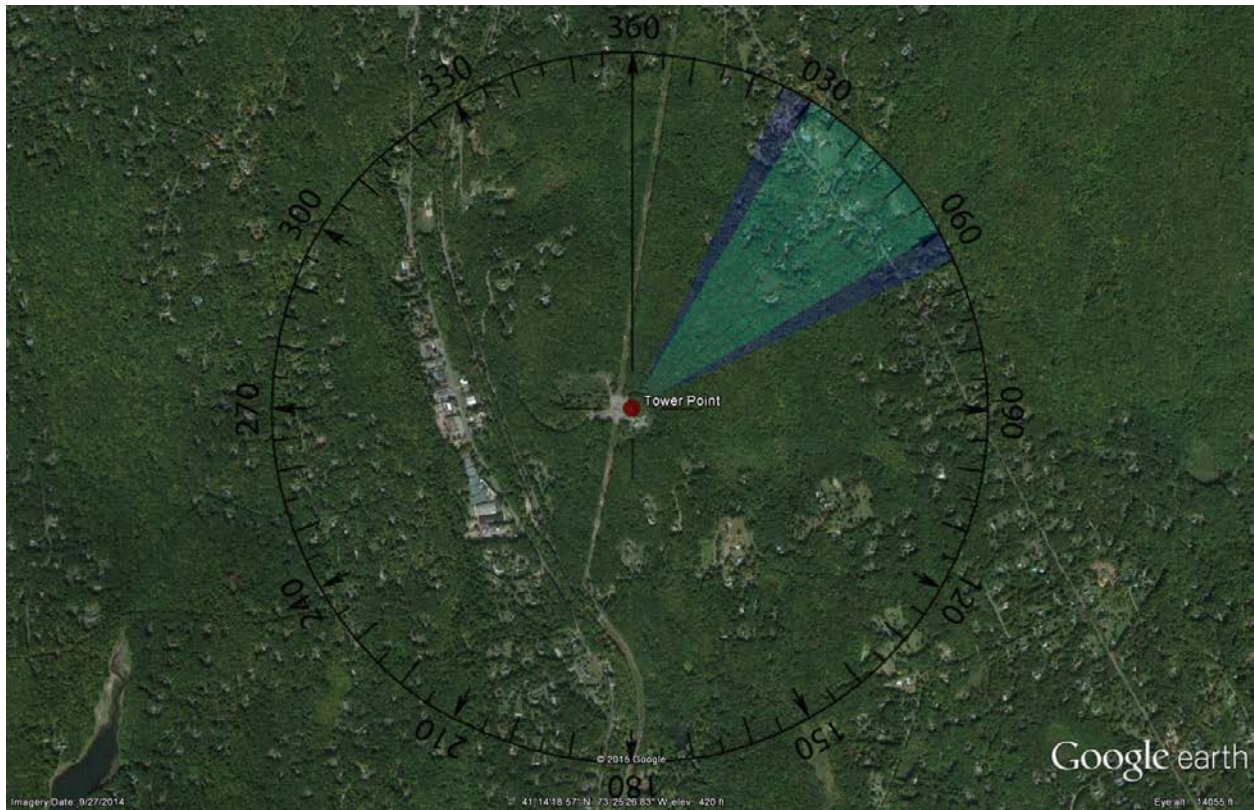
Anchor Rod Data	
(6) 1-1/2" ϕ bolts (A36 N; $F_y=36$ ksi, $F_u=58$ ksi)	
l_{ar} (in):	0

Anchor Rod Summary			<i>(units of kips, kip-in)</i>
P_{u_t} = 35.67	ϕP_{n_t} = 61.34	Stress Rating	
V_u = 3.67	ϕV_n = 38.44	55.4%	
M_u = n/a	ϕM_n = n/a	Pass	

Exposure Category Determination
BU#806353



- Latitude/Longitude = 41° 14' 18.34", -73° 25' 26.44"
- Tower Height = 180 ft
- Upwind Fetch Radius = Greater of 25 x Tower Height or 3250 ft = 4500 ft
- Minimum Open Patch = 164 ft x 164 ft
- Maximum continuous surface roughness category C arc angle = 0 degrees
- Kmz file saved in folder ... R:\SA Models - Letters\Work Area\Exposure_Topo_KMZ



Exposure Category for this site is **B**.

The determination is based on Crown Castle standard ENG-PRC-10202, Determination of Exposure Category, revision C.

Completed by: Erin Doyle

Approved by: Jason Hedrich

Date: 11/05/2015

Date: 11/06/2015



Unmitigated Percentage (B/C)

Inputs

Tower Height (ft):	180'
Starting Azimuth:	30°
Upwind Fetch Radius (ft):	4500'
20% Unmitigated Limit (ft):	900'
Overlay Size Selected:	30°

Subsector (Degrees)	Total Unmitigated Length (ft)	Percentage of Subsector Unmitigated
15°		0.0%
20°		0.0%
25°	'	0.0%
30°	'	0.0%
35°	295'	6.6%
40°	'	0.0%
45°	'	0.0%
50°	'	0.0%
55°	'	0.0%
60°	'	0.0%
65°		0.0%
70°		0.0%
75°		0.0%
80°		0.0%

THIS SITE IS EXPOSURE:	B
-------------------------------	----------

Length measurements should be taken to the nearest 5' increment.

The determination is based on Crown Castle standard ENG-PRC-10202, Determination of Exposure Category, revision C.

This chart is intended only for use with Exposures B and C and is Not applicable for Exposure D.

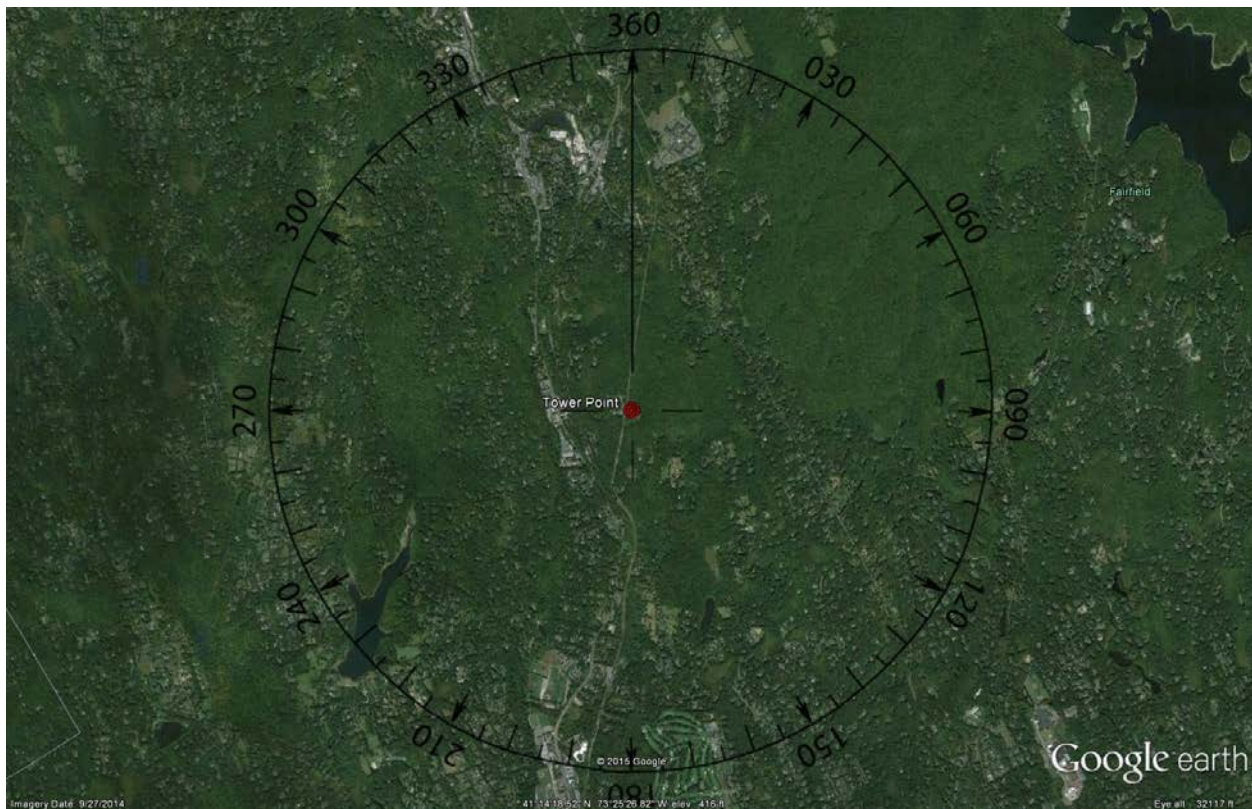
LEGEND	
	Considered Subsector
	Bookending Subsector

Topographic Factor Determination

BU#806353



- Latitude/Longitude = 41° 14' 18.34", -73° 25' 26.44"
- Tower Height = 180 ft
- Topo Radius = 10,560 ft
- Maximum continuous effective topo arc angle = 0 degrees
- Critical wind azimuth used in topo tool = 0
- Kmz file saved in folder ... R:\SA Models - Letters\Work Area\Exposure_Topo_KMZ



Exposure Category for this site is **B**.
No topo feature.
Topographic Factor (K_{zt}) at base is 1.0.

The determination is based on Crown Castle standard ENG-PRC-10040, Determination of Topographic Factor, initial release.

Completed by: Erin Doyle

Approved by: Jason Hedrich

Date: 11/05/2015

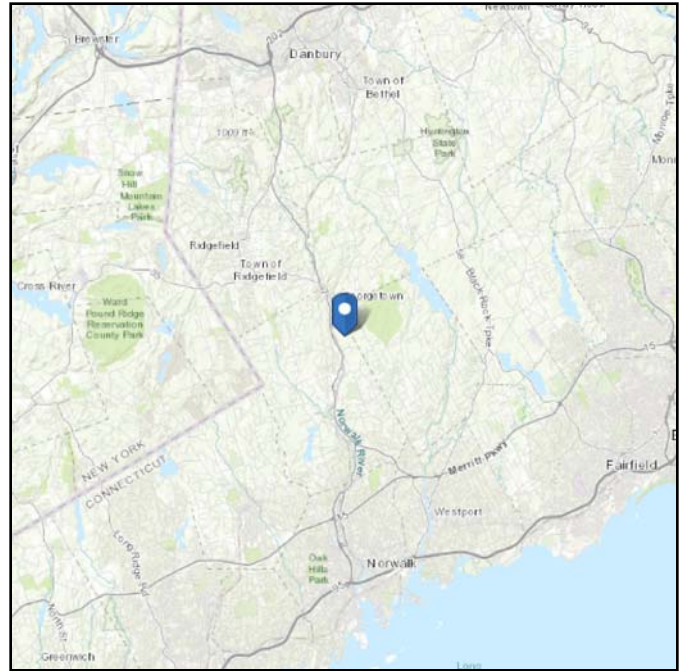
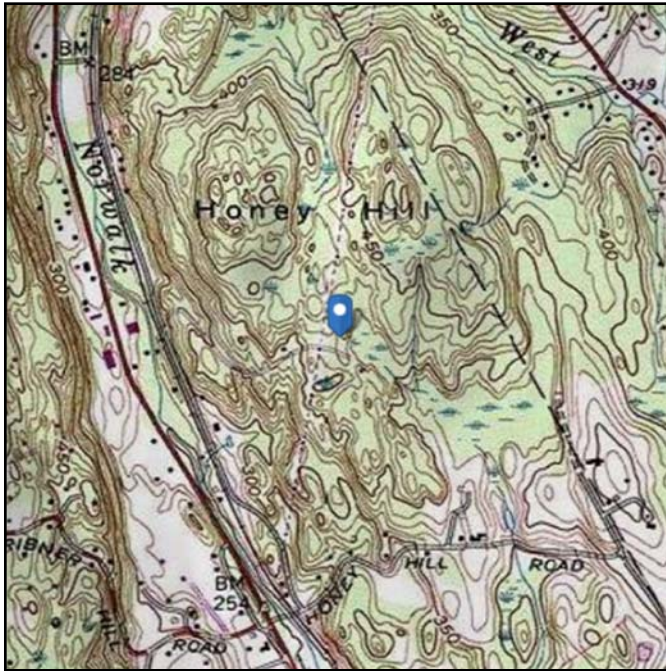
Date: 11/06/2015

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: 427.44 ft (NAVD 88)
Latitude: 41.238528
Longitude: -73.424139



Wind

Results:

Wind Speed:	116 Vmph
10-year MRI	75 Vmph
25-year MRI	84 Vmph
50-year MRI	90 Vmph
100-year MRI	97 Vmph

Data Source: ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2
Date Accessed: Sat Sep 18 2021

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

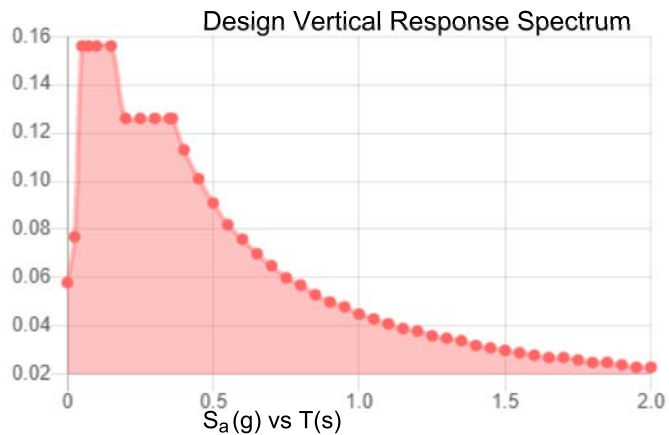
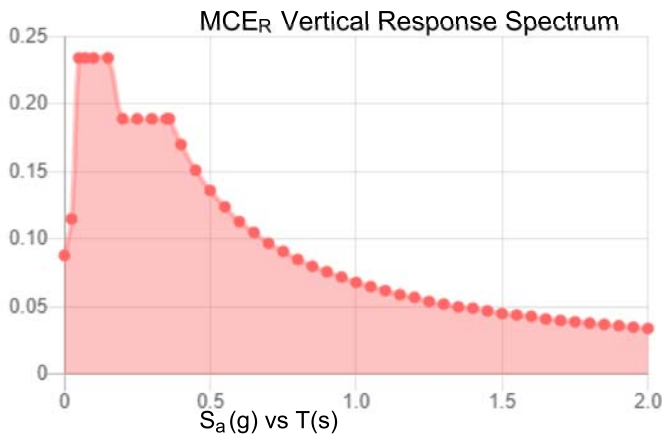
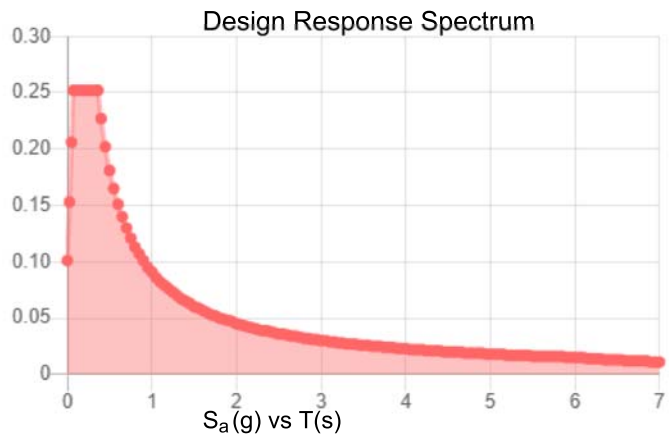
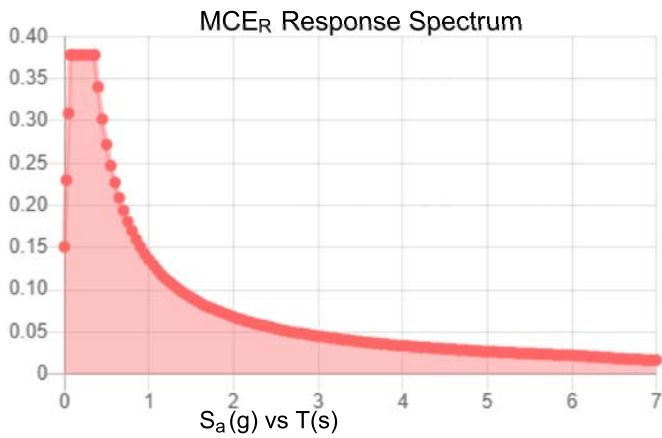
Site is in a hurricane-prone region as defined in ASCE/SEI 7-16 Section 26.2. Glazed openings need not be protected against wind-borne debris.

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

Results:

S_s :	0.236	S_{D1} :	0.091
S_1 :	0.057	T_L :	6
F_a :	1.6	PGA :	0.139
F_v :	2.4	PGA _M :	0.211
S_{MS} :	0.378	F_{PGA} :	1.523
S_{M1} :	0.136	I_e :	1
S_{DS} :	0.252	C_v :	0.773

Seismic Design Category B



Data Accessed:

Sat Sep 18 2021

Date Source:

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

Ice

Results:

Ice Thickness: 1.00 in.

Concurrent Temperature: 15 F

Gust Speed: 50 mph

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

Date Accessed: Sat Sep 18 2021

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

Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 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.

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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.

ATTACHMENT 5

Date: **March 9, 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 Wireless L.L.C. Equipment Change-Out
Carrier Site Number: NJJER01086A
Carrier Site Name: CT-CCI-T-806353

Crown Castle Designation: **BU Number:** 806353
Site Name: BRG 124 943066
JDE Job Number: 640163
Order Number: 548867, Rev. 2

Engineering Firm Designation: Kimley-Horn Project Number: 019558058

Site Data: 128 Mather Street, Wilton, Fairfield County, CT 06897
Latitude 41° 14' 18.70" Longitude -73° 25' 26.90"

Structure Information: **Tower Height & Type:** 180 ft Self-Supporting Tower
Mount Elevation: 170 ft
Mount Type: 8 ft Sector Frames

Kimley-Horn is pleased to submit this “**Mount Analysis - Conditional Passing Report**” to determine the structural integrity of DISH Wireless L.L.C.’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:

Sector Frames (Typical)

Sufficient

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

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

Mount analysis prepared by: Saja Alkhafaji, E.I.

Respectfully Submitted by:

Kyle Freehart, P.E.

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

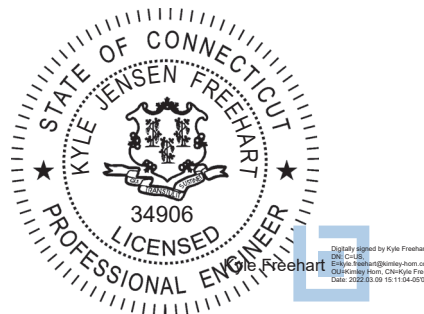


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Software Analysis Output

8) APPENDIX D

Additional Calculations

9) APPENDIX E

Supplemental Drawings

1) INTRODUCTION

The mounting configuration consists of (3) proposed 8 ft Sector Frames designed by CommScope.

2) ANALYSIS CRITERIA

Building Code:	2018 Connecticut State Building Code
TIA-222 Revision:	TIA-222-H
Risk Category:	II
Ultimate Wind Speed:	116 mph
Exposure Category:	B
Topographic Factor at Base:	1.0
Topographic Factor at Mount:	1.0
Ice Thickness:	1 in
Wind Speed with Ice:	50 mph
Live Loading Wind Speed:	30 mph
Man Live Load at Mid/End-Points:	250 lb
Man Live Load at Mount Pipes:	500 lb

Table 1 – Proposed Equipment Configuration

Elevation (ft)		Antennas			Mount / Modification Details
Mount	Centerline	#	Manufacturer	Model	
170	170	3	Fujitsu	TA08025-B604	(3) Proposed 8 ft Sector Frames designed by CommScope
		3	Fujitsu	TA08025-B605	
		3	JMA	MX08FRO665-21	
		1	Raycap	RDIDC-9181-PF-48	

3) ANALYSIS PROCEDURE

Table 2 – Documents Provided

Document	Remarks	Reference	Source
Mount Design Drawings	CommScope	MTC3975083	On File

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	-	170	32%	Pass
1, 2	Stand Off Horizontals	M15		25%	Pass
1, 2	Mount Pipes	M45		10%	Pass
1, 2	Face Horizontals	M26		10%	Pass
1, 2	Stiff Arms	M48		9%	Pass

Structure Rating (max from all components) =	32%
---	------------

Notes:

- 1) See additional documentation in Appendix C and Appendix D for calculations supporting the % capacity consumed.
- 2) Rating per TIA-222-H, Section 15.5.
- 3) All sectors are typical.

Table 4 – Tieback Connection Data Table

Tower Connection Node No.	Existing / Proposed	Resultant End Reaction (lb)	Connected Member Type	Connected Member Size	Member Compressive Capacity (lb) ³	Notes
N84	Proposed	1356	Leg	P2x0.154	1469	1

Notes:

- 1) Tieback connection point is within 25% of either end of the connected tower member.
- 2) Tieback connection point is NOT within 25% of either end of the connected tower member.
- 3) Reduced member compressive capacity according to CED-STD-10294 *Standard for Installation of Mounts and Appurtenances*.

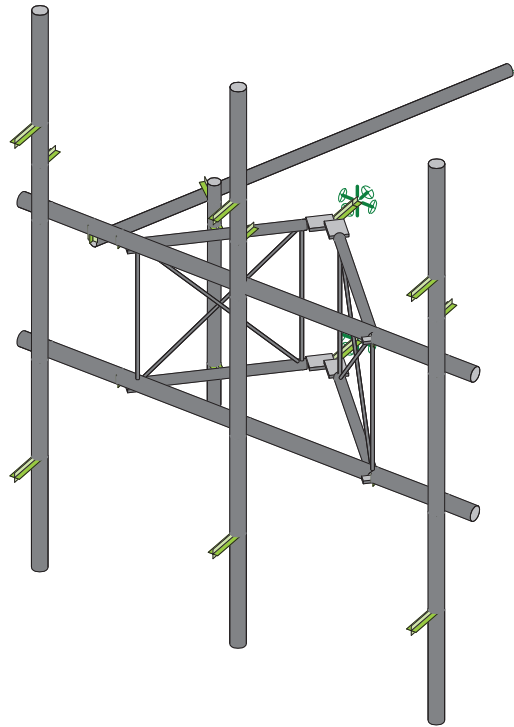
4.1) Recommendations

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

- **Install (3) CommScope MTC3975083 sector frame kits. Vertically center antennas and mount pipes on mount face. Attach included tie-back to right side of upper face horizontal pipe (looking at back of mount) and to adjacent tower leg within 12" of a tower bracing point.**

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.

SSA

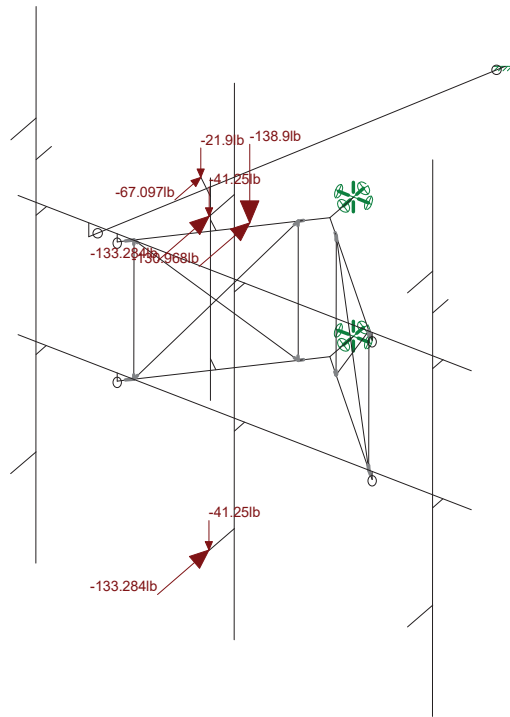
019558058

806353

SK - 2

Mar 9, 2022 at 1:38 PM

806353.r3d



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

Kimley-Horn and Associates, Inc.	806353	SK - 1
SSA		Mar 9, 2022 at 1:38 PM
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APPENDIX B
SOFTWARE INPUT CALCULATIONS

Date **March 09, 2022**
 Client **Crown Castle**
 Site # **806353**
 Site Name **BRG 124 943066**
 Project # **19558058**

General Criteria	
TIA Standard	H
IBC Edition	2015
Structure Class	-
Risk Category	II

Wind Summary	
Basic Wind Speed w/o Ice, V (mph)	116.00
Velocity Pressure Coeff., K_z	1.15
Velocity Pressure, q_z (w/o Ice) (psf)	37.06

Site-Specific Criteria	
Exposure Category	B
Topographic Factor, K_{zt}	1.00
Structure Base Elev. (AMSL), z_s (ft)	427.44
Ground Effect Factor, K_e	0.98

Ice Load Summary	
Basic Wind Speed w/ Ice, V_i (mph)	50.00
Design Ice Thick. (ASCE 7-10) , t_i (in)	0.5
Velocity Pressure, q_z (w/ Ice) (psf)	6.88
Escalated Ice Thick. @ Mount, t_{iz} (in)	1.18

Mount & Structure Criteria	
Mount Elevation (AGL) (ft)	170.00
Structure Height (ft)	180.00
Structure Type	Self-Supporting Tower

Seismic Load Summary	
Spectral Response (Short Periods), S_s	-
Spectral Response (1-Sec. Period), S_1	-
Site Class	-
Seismic Design Category	-
Seismic Risk Category	-

Constants	
Wind Direction Probability Factor, K_d	0.95
Gust Effect Factor, G_h	1
Shielding Factor, K_a (antenna)	0.9
Shielding Factor, K_a (mount)	0.9

Snow Load Summary	
Ground Snow Load, p_g (psf)	-
Snow Load on Flat Roofs, p_f (psf)	-

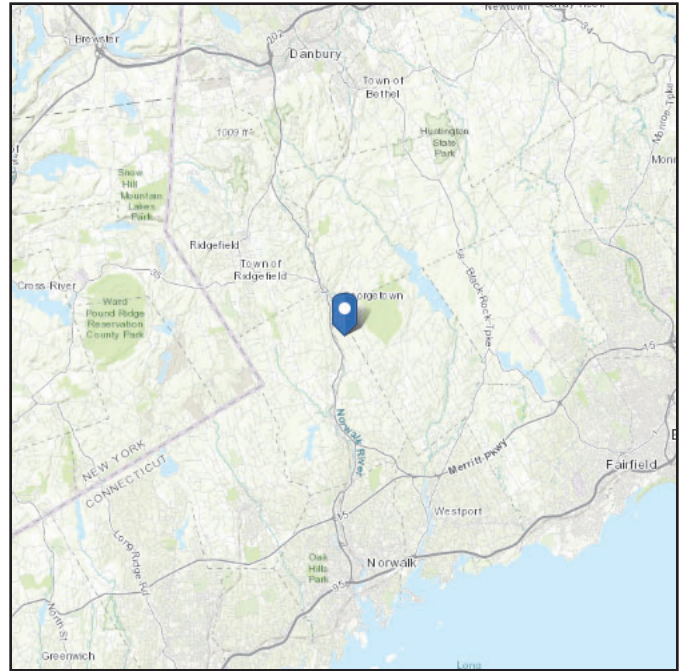
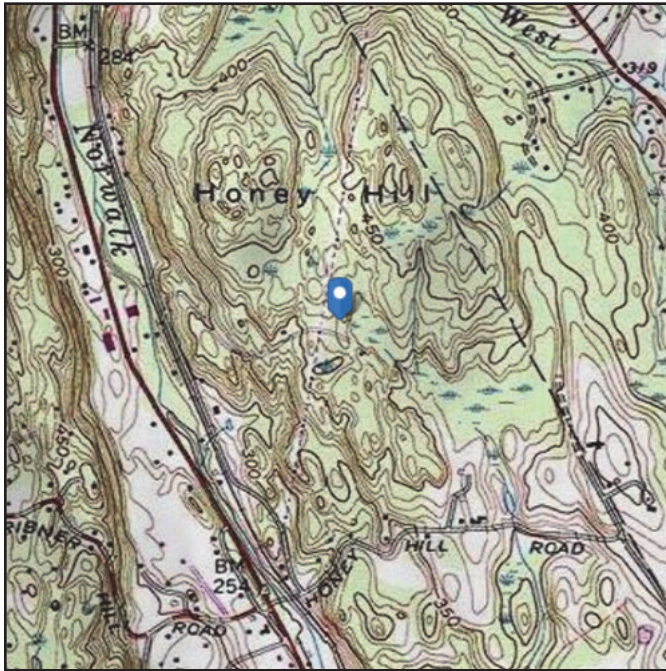
Antenna Name	Qty	Shape	Dimensions (in)			Weight (lb)	Joint Labels				EPA (ft ²)		Wind Force, F_A (lb)					
			H	W	D		Alpha	Beta	Gamma	Delta	Front	Side	No Ice		With Ice			
													Front	Side	Front	Side		
MX08FRO665-21	3	Flat	72	20	8	82.5	A2B	A2T					7.99	3.23	266.57	107.61	56.61	25.62
TA08025-B604	3	Flat	15	15.8	7.9	63.9	A2R						1.96	0.98	65.48	32.72	16.19	9.14
TA08025-B605	3	Flat	15	15.8	9.1	75	A2R						1.96	1.13	65.48	37.67	16.19	10.21
RDIDC-9181-PF-48	1	Flat	16.6	14.6	8.5	21.9	RC						2.01	1.17	67.1	38.96	16.54	10.57

ASCE 7 Hazards Report

Address:
No Address at This Location

Standard: ASCE/SEI 7-16
Risk Category: II
Soil Class: D - Stiff Soil

Elevation: 427.44 ft (NAVD 88)
Latitude: 41.238528
Longitude: -73.424139



Wind

Results:

Wind Speed	116 Vmph
10-year MRI	75 Vmph
25-year MRI	84 Vmph
50-year MRI	90 Vmph
100-year MRI	97 Vmph

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

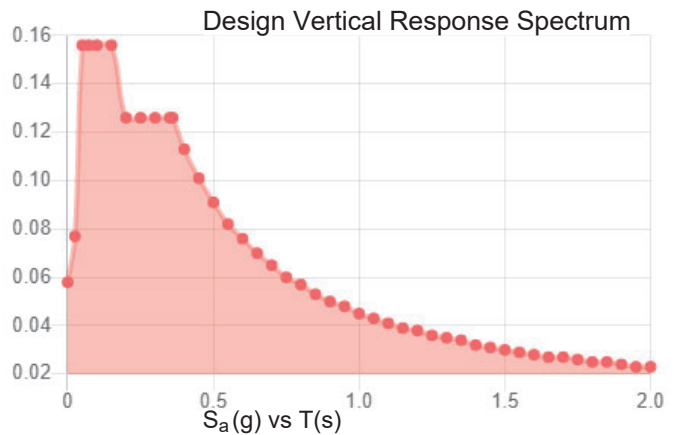
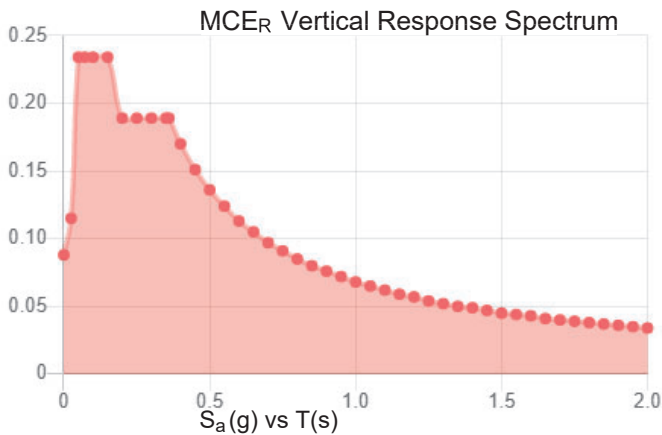
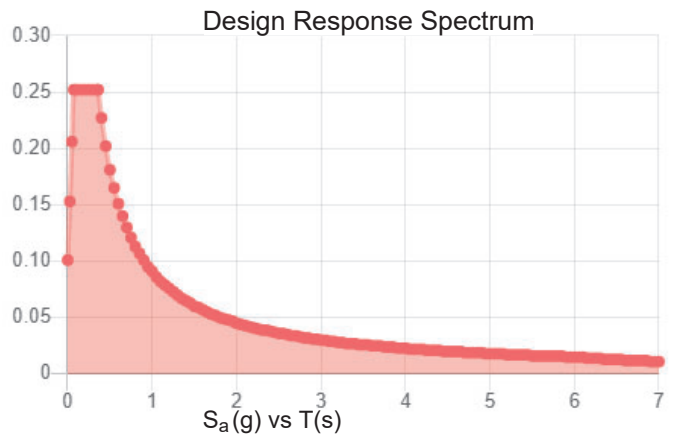
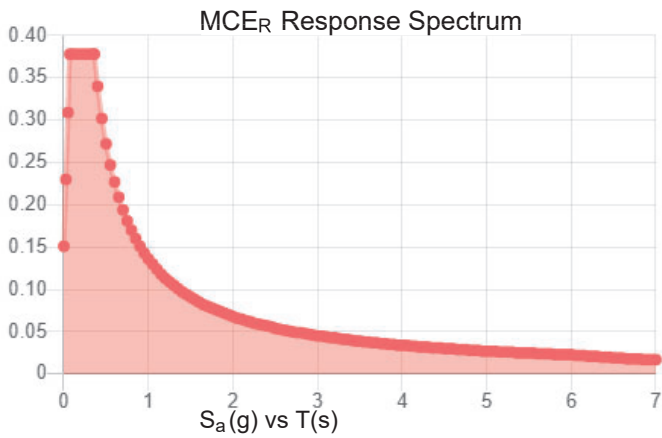
Site is in a hurricane-prone region as defined in ASCE/SEI 7-16 Section 26.2. Glazed openings need not be protected against wind-borne debris.

Site Soil Class: D - Stiff Soil

Results:

S_s :	0.236	S_{D1} :	0.091
S_1 :	0.057	T_L :	6
F_a :	1.6	PGA :	0.139
F_v :	2.4	PGA _M :	0.211
S_{MS} :	0.378	F_{PGA} :	1.523
S_{M1} :	0.136	I_e :	1
S_{DS} :	0.252	C_v :	0.773

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.

Ice

Results:

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

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

Date Accessed: 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

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

	Member	Shape	Code Check	Loc[in]	LC	Shear Check	Loc...Dir	LC	phi*Pn...	phi*Pnt...	phi*Mn...	phi*Mn...Cb	Eqn
23	M43A	PL4-1/4x5/8	.051	0	3	.017	1.5 z	35	118928...	119531...	1556.3...	10583...	1... H1-1b
24	M19	SR5/8	.040	0	17	.021	28.1	80	5072.1...	13805...	143.811	143.811	3... H1-1b*
25	M46A	SR5/8	.031	28.1	43	.022	0	80	5072.1...	13805...	143.811	143.811	2... H1-1b
26	M18	SR1/2	.000	0	114	.013	40.1...	8	3765.3...	8835.75	73.632	73.632	2 H1-1a
27	M45A	SR1/2	.000	0	114	.011	40.1...	14	3765.3...	8835.75	73.632	73.632	1... H1-1a

APPENDIX D
ADDITIONAL CALCULATIONS

CONNECTION SLIP RESISTANCE



DESIGN LOADS	
Factored Axial, P_u (lb)	1356
Factored Moment, M_u (lb-ft)	

Normalize usages per TIA-222-H Sec. 15.5

BOLT PROPERTIES	
Bolt Type	Thru Bolts
# of Bolts	2
Hole Type	Standard
Bolt Grade	A36
Bolt Diameter, d (in)	0.5
Leg Width, W_{leg} (in)	
Bolt Torque Override, T (lb-ft)	
Bolt Pretension Stress Override (ksi)	
Bolt Ultimate Strength, F_u (ksi)	58
Specified Torque, T (lb-ft)	49.82
Clamping Force per Bolt, P_u (lb)	5978.84
Bolt Pretension Stress (ksi)	30.45
Tensile Strength per Bolt, ϕP_n (lb)	6405.90
Axial Slip Resistance per Bolt, ϕP_n (lb)	2026.83
Total Axial Slip Resistance, ϕP_n (lb)	4053.66
Rotational Slip Resistance per Bolt, ϕM_n (lb-ft)	0.00
Total Rotational Slip Resistance, ϕM_n (lb-ft)	0.00
Axial Slip Usage, $P_u / \phi P_n$	31.9%

FACTORS	
Nut Factor, K	0.20
$\Phi_{(BOLT\ TENSION)}$	0.75
$\Phi_{(SLIP-CRITICAL)}$	1.00
Mean Slip Coefficient, μ	0.30
Installed Pretension Ratio, D_u	1.13
Turn-of-Nut Pretension Factor	0.70

Rule-of-thumb estimate
 AISC 15th, J3.6
 AISC 15th, J3.8
 AISC 15th, J3.8
 AISC 15th, J3.8
 AISC 15th, Table J3.1[a]

Using Turn-of-Nut!

Normalized

APPENDIX E
SUPPLEMENTAL DRAWINGS

4

3

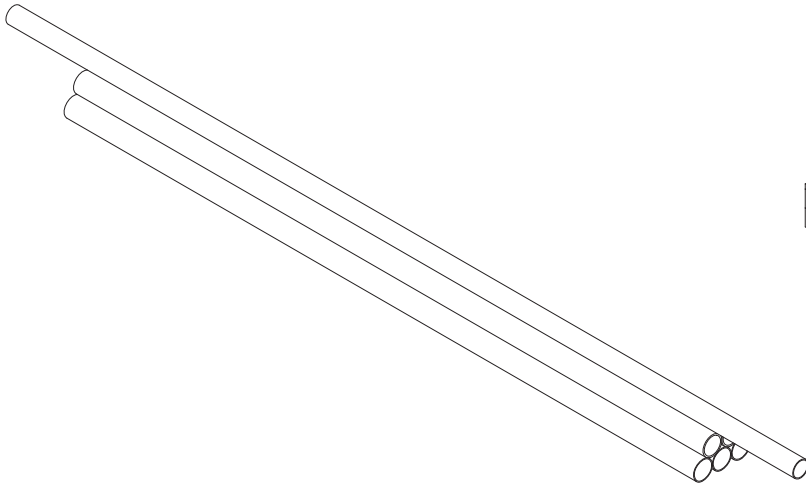
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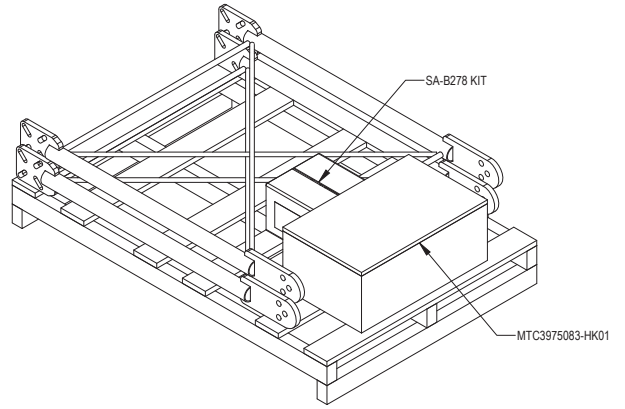
NOTES:

- 1.0 GENERAL
 - 1.1 ALL METRIC DIMENSIONS ARE IN BRACKETS
 - 1.2 FOR PATENT INFO :<https://www.cs-pat.com>
- 2.0 DESIGN NOTES
 - 2.1 DESIGN SURVIVAL WIND SPEED: 180 MPH, 3 SEC GUST WITH EQUIPMENT MOUNTED AS SHOWN
- 3.0 MANUFACTURING/SPECIAL REQUIREMENTS
 - 3.1 TORQUE HARDWARE ACCORDING TO SIZE AS NOTED BELOW:
 - ALL HARDWARE 1/4" DIAMETER: TORQUE 7 FT-LBS
 - ALL HARDWARE 3/8" DIAMETER: TORQUE 12 FT-LBS
 - ALL HARDWARE 1/2" DIAMETER OR LARGER SHALL BE TIGHTENED SNUG TIGHT, DEFINED AS THE CONDITION OBTAINED WITH A FEW IMPACTS ON AN IMPACT WRENCH OR THE FULL EFFORT OF AN IRONWORKER USING AN ORDINARY SPUD WRENCH TO BRING THE CONNECTED PLIES INTO FIRM CONTACT.
- 4.0 TEST
- 5.0 PACKAGING
 - 5.1 PACKAGING SHALL MEET COMMSCOPE REQUIREMENTS PER DOCUMENT IS-PL-3005
 - 5.2 PRINTED DOCUMENT TO BE PLACED INSIDE POLYBAG AND THEN IN SHIPPING CONTAINER
 - 5.3 EXTRA HARDWARE MAY BE SUPPLIED, BAGGED AND SHIPPED.

REVISIONS				
REV.	IPS	DESCRIPTION	BY	DATE
A	10191PC	NEW RELEASED.	RAC	3/17/2021



PB01TEA0308B0208K



MTC3975083-PK01

ITEM	PART NO.	DESCRIPTION	QTY
1	MTC3975083-PK01	PACK KIT, MTC3975083, 1 SCTR, 3 ANT PIPE	1
2	PB01TEA0308B0208K	PIPE BUNDLE	1

DENSITY	352.136	lbs/in ³
MASS	352.136	lbs
VOLUME	2431.173	in ³
SURFACE AREA	19715.555	in ²
HEIGHT		
LENGTH		
WIDTH		

COMMSCOPE, INC. OF NORTH CAROLINA											
TOLERANCES					SAP MATERIAL MASTER						
0 PLACE X ± .25		2 PLACE XX ± 0.06			MTC3975083						
1 PLACE X ± 0.12		ANGLES ± 2°									
FINISH GALV A123					MATERIAL SEE BOM						
CE XZ1054	03/02/2021	SECTOR FRAME, TW, SFG21, 8FT, 3 ANT PIPE									
RW SCAMPBELL.COM	03/17/2021										
AD	03/17/2021										
RE bcROSS	03/17/2021										
EON 10191PC											
SCALE	DOCUMENT NO. MTC3975083										
1:8											
SIZE	Auth Group	INSL	MODEL	DRAWING	VERSION	STATUS	REVISION	VERSION	STATUS	REVISION	SHEET
C					00	RE	A	00	RE	A	1 OF 7

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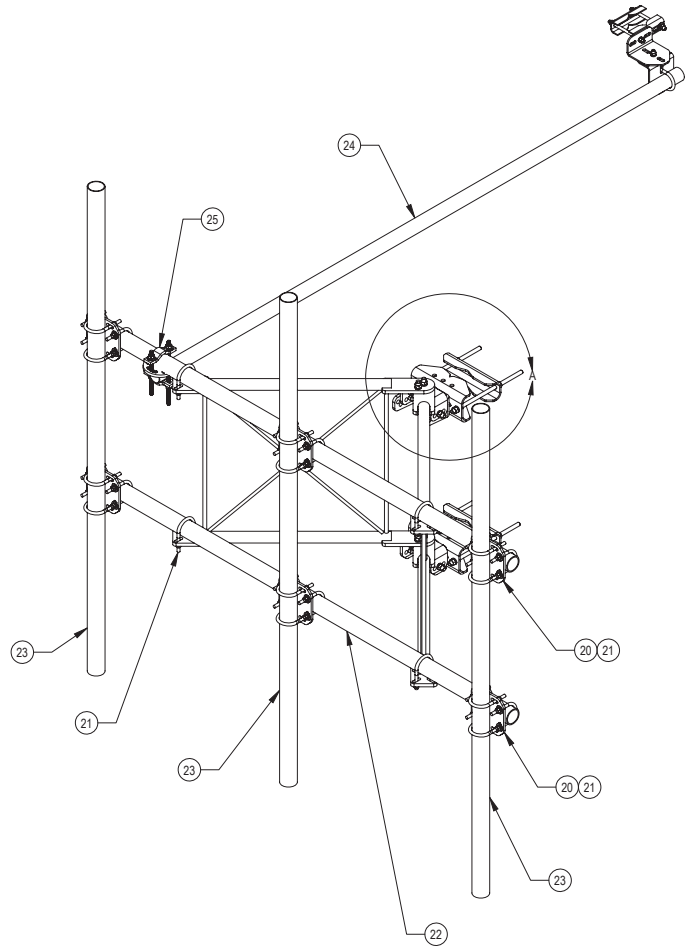
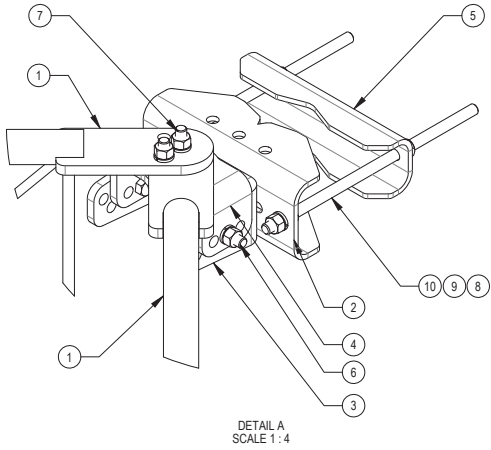
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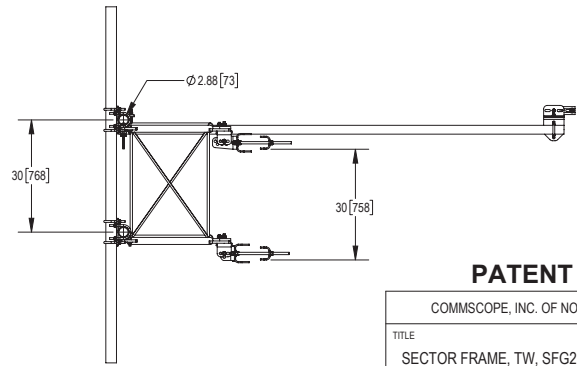
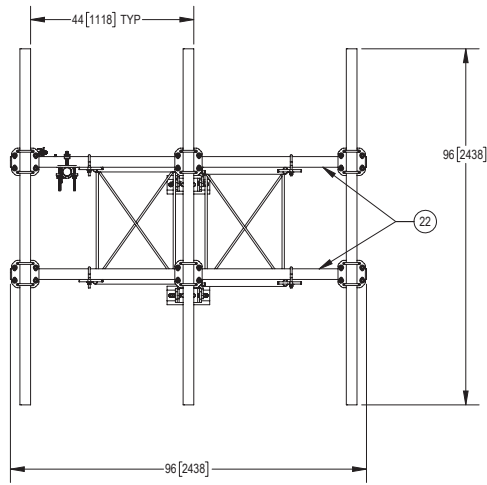
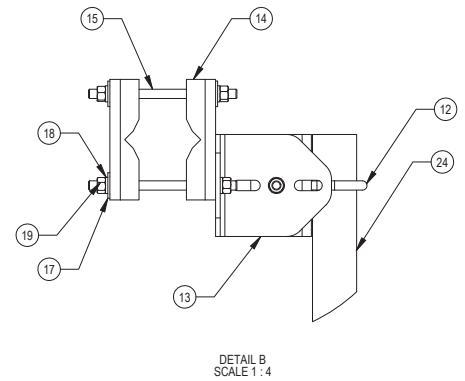
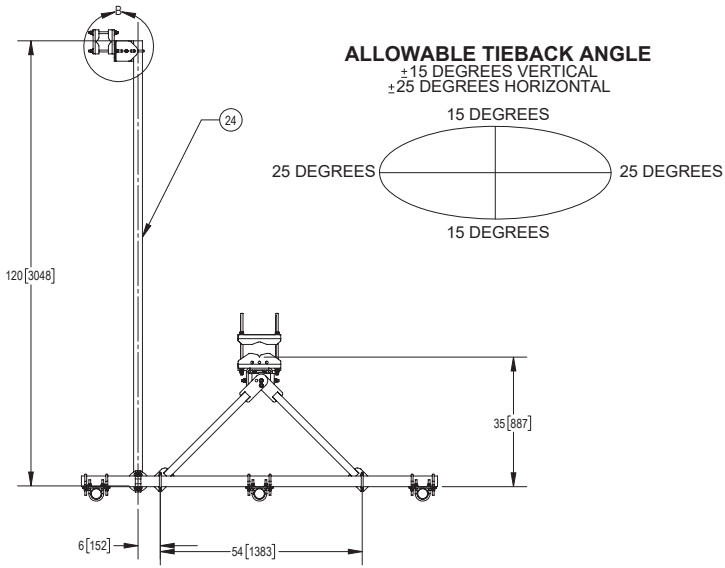


ITEM NO.	PART NUMBER	DESCRIPTION	QTY.	NOTE NO.
1	SFV01	WELDMENT, SF-V STANDOFF ARM	2	
2	MTC397522	CLAMP, FRONT MOUNTING	2	
3	SFV03	SFV TAPER BRACKET	1	
4	SFV02	SFV AZIMUTH BRACKET	3	
5	MTC397521	CLAMP, BACK	2	
6	GB-05225	5/8" X 2-1/4" GALV BOLT KIT	8	
7	GB-05305	5/8" X 3" GALV BOLT KIT	4	
8	GWL-05	5/8" GALV LOCK WASHER	8	
9	GN-05	5/8" GALV HEX NUT	12	
10	MT-382-16	5/8" X 16" GALV THREADED ROD	4	
11	GWFL-05	5/8" GALV FLAT WASHER, 1.7OD	6	
12	GUB-4240	1/2" X 2-1/2" X 4" GALV U-BOLT	1	
13	XAU01	ANGLE, CROSSOVER, 1.9-3.5" X 1.9-3.5" OD	2	
14	SAB01	FORMED CLAMP	2	
15	MT-379-8	1/2" X 8" GALV THREADED ROD	2	
16	GB-04145	1/2" X 1-1/2" GALV BOLT KIT	1	
17	GWFL-04	1/2" GALV FLAT WASHER	52	
18	GWL-04	1/2" GALV LOCK WASHER	41	
19	GN-04	1/2" GALV HEX NUT	41	
20	XPU01	PLATE, CROSSOVER, 1.9-3.5" X 1.9-3.5" OD	6	
21	GUB-4352	1/2" X 3" X 5-1/4" GALV U-BOLT	28	
22	MTS4696	Ø2.875" O.D. X 96 PIPE	2	
23	MTS4696120	Ø2.88" X 96" GALV PIPE	3	
24	MT-451-120	2.375" OD X 120" PIPE	1	
25	XP-R	CROSSOVER PLATE, ROUND, UP TO 3.5" OD	1	

COMMSCOPE, INC. OF NORTH CAROLINA				
TITLE SECTOR FRAME, TW, SFG21, 8FT, 3 ANT PIPE				
SIZE C	SCALE 1:12	DOCUMENT NO. MTC3975083		
DRAWING		VERSION	STATUS	REVISION
		00	RE	A
				SHEET 2 OF 7

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NOTES:



PATENT PENDING

COMMSCOPE, INC. OF NORTH CAROLINA

TITLE
 SECTOR FRAME, TW, SFG21, 8FT, 3 ANT PIPE

SIZE C	SCALE 1:20	DOCUMENT NO. MTC3975083
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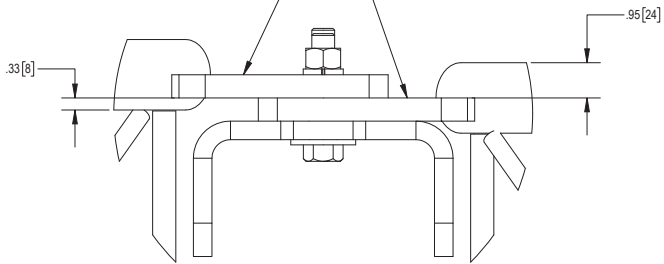
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VERSION	STATUS	REVISION	
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NOTES:

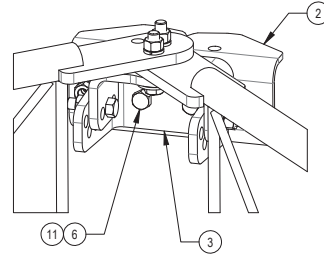
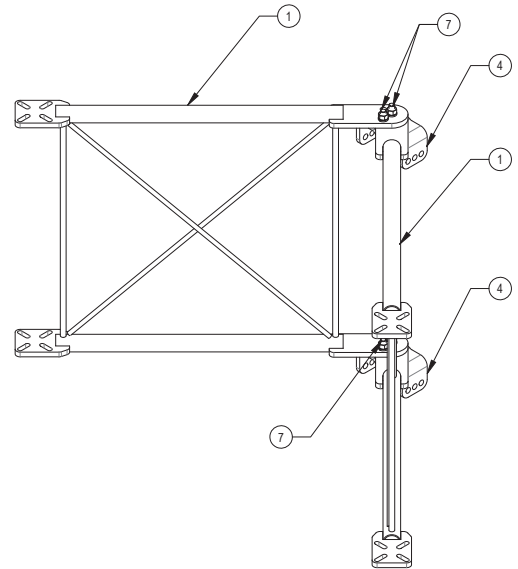
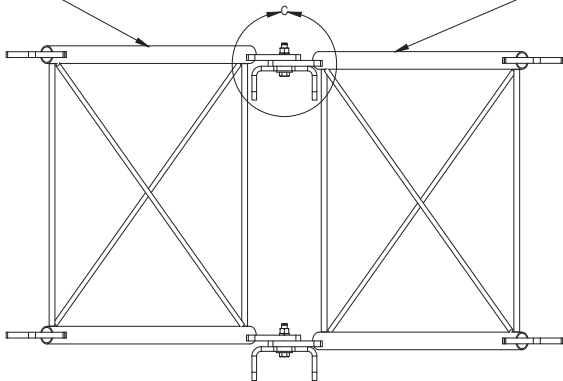
STEP1: ATTACH STANDOFF ARMS (SFV01) TO AZIMUTH BRACKETS (SFV02) USING BOLT KITS (GB-05305)

LOWER ARM "UPSIDE DOWN" UPPER ARM "RIGHT SIDE UP"



DETAIL C
SCALE 1:2

**STANDOFF ARM ORIENTATION IS CRITICAL!
WHEN ASSEMBLED, ARMS SHOULD BE LEVEL
WITH EACH OTHER. ALSO SEE DETAIL C ABOVE**



ISO ROTATED VIEW

PATENT PENDING

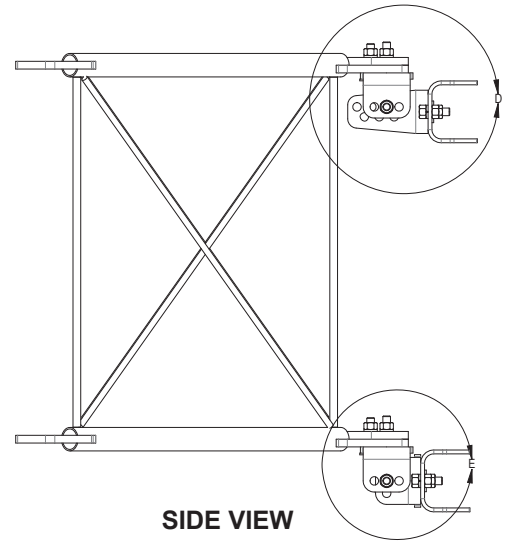
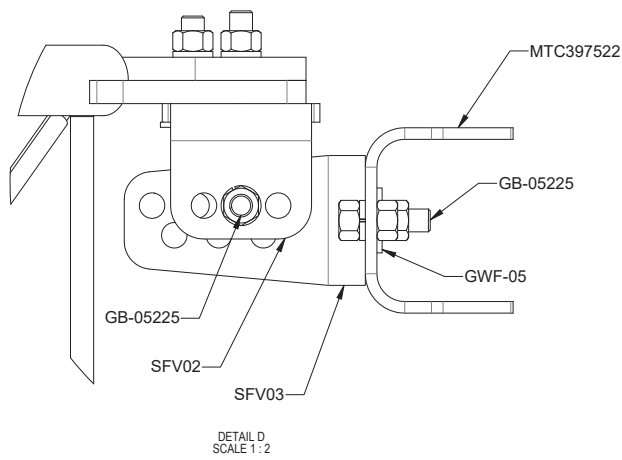
COMMScope, INC. OF NORTH CAROLINA			
TITLE			
SECTOR FRAME, TW, SFG21, 8FT, 3 ANT PIPE			
SIZE	SCALE	DOCUMENT NO.	
C	1:8	MTC3975083	
DRAWING			
VERSION	STATUS	REVISION	SHEET
00	RE	A	4 OF 7

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NOTES:

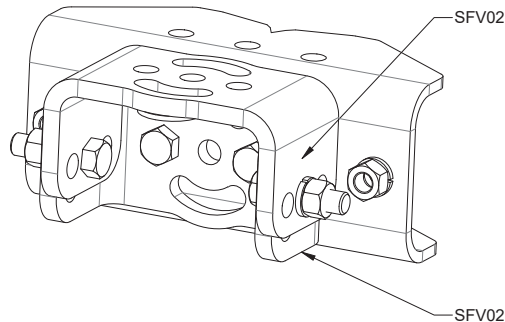
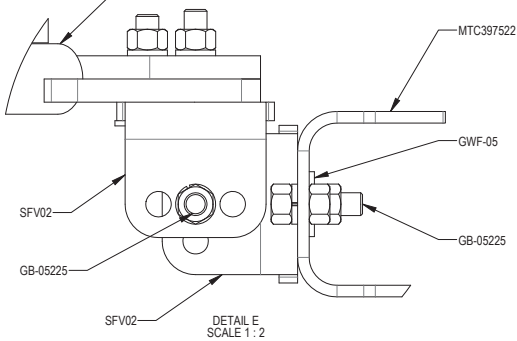
STEP 2A: ON TOP, ATTACH TAPER BRACKET (SFV03) TO AZIMUTH BRACKET (SFV02) USING BOLT KITS (GB-05225). SEE ISO ROTATED VIEW. ATTACH TAPER BRACKET (SFV03) TO CLAMP, FRONT MTG (MTC397522) USING BOLT KITS (GB-05225).

STEP 2B: ON BOTTOM, ATTACH AZIMUTH BRACKET (SFV02) TO AZIMUTH BRACKET (SFV02) USING BOLT KITS (GB-05225). ATTACH AZIMUTH BRACKET (SFV02) TO CLAMP, FRONT MTG (MTC397522) USING BOLT KITS(GB-05225).



SIDE VIEW

STANDOFF ARM ORIENTATION IS CRITICAL! WHEN ASSEMBLED, PIPES SHOULD BE LEVEL



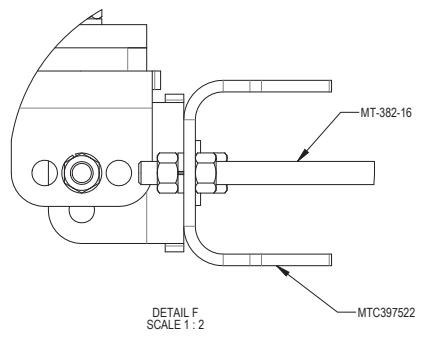
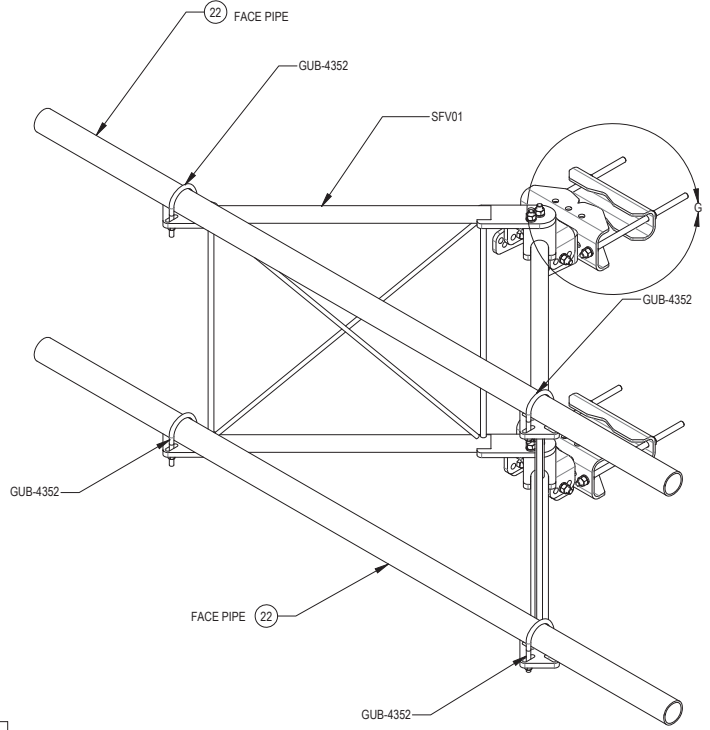
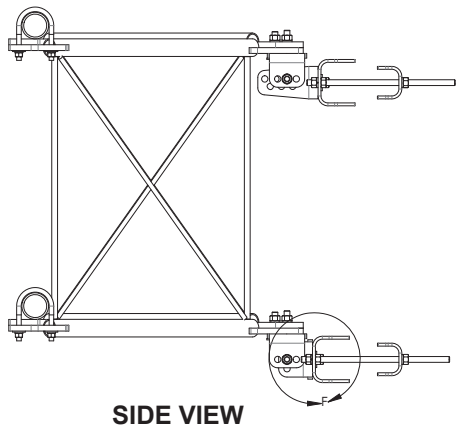
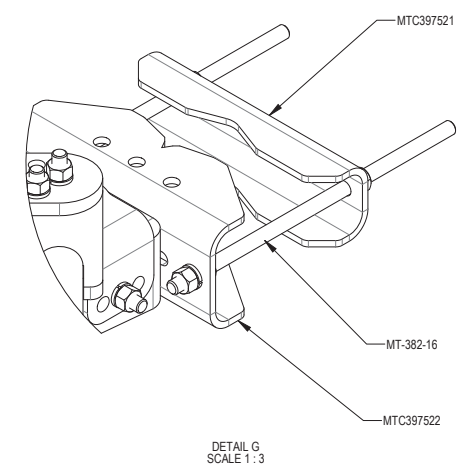
ISO ROTATED VIEW

PATENT PENDING

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DRAWING			SHEET
VERSION 00	STATUS RE	REVISION A	5 OF 7

NOTES:

STEP 3: ATTACH FACE PIPES TO STANDOFF ARMS (SFV01) USING U-BOLTS (GUB-4240).



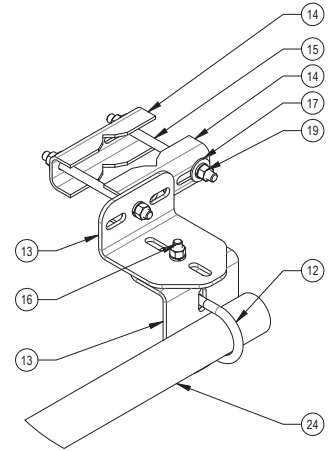
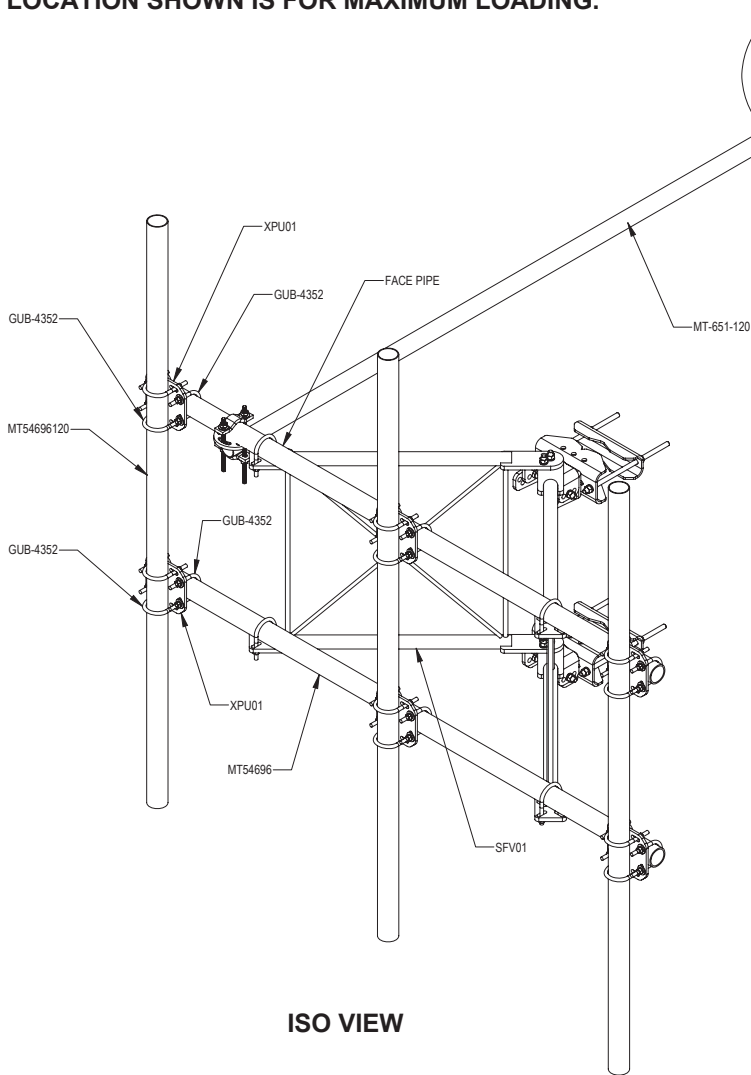
PATENT PENDING

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VERSION	STATUS	REVISION	SHEET
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NOTES:

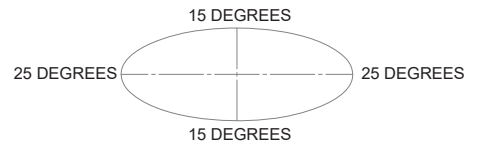
STEP 4: ATTACH ANTENNA PIPES & TIE BACK PIPE (MT-651-120) TO FACE PIPES USING CROSSOVER BRACKETS (XAU01) AND U-BOLTS (GUB-4240). LOCATION SHOWN IS FOR MAXIMUM LOADING.



DETAIL H
SCALE 1:4

ALLOWABLE TIEBACK ANGLE

±15 DEGREES VERTICAL
±25 DEGREES HORIZONTAL



PATENT PENDING

COMMSCOPE, INC. OF NORTH CAROLINA			
TITLE			
SECTOR FRAME, TW, SFG21, 8FT, 3 ANT PIPE			
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ATTACHMENT 6

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

Dish Wireless Existing Facility

Site ID: 806353

NJJER01086A
128 Mather Street
Wilton, Connecticut 06897

May 26, 2022

EBI Project Number: 6222003432

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	32.92%

May 26, 2022

Attn: Dish Wireless

Emissions Analysis for Site: 806353 - NJJER01086A

EBI Consulting was directed to analyze the proposed Dish Wireless facility located at **128 Mather Street** in **Wilton, 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 128 Mather Street in Wilton, 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 170 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:	11.35 dBd / 15.75 dBd / 16.75 dBd	Gain:	11.35 dBd / 15.75 dBd / 16.75 dBd	Gain:	11.35 dBd / 15.75 dBd / 16.75 dBd
Height (AGL):	170 feet	Height (AGL):	170 feet	Height (AGL):	170 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):	2,524.75	ERP (W):	2,524.75	ERP (W):	2,524.75
Antenna AI MPE %:	0.43%	Antenna BI MPE %:	0.43%	Antenna CI MPE %:	0.43%

Site Composite MPE %	
Carrier	MPE %
Dish Wireless (Max at Sector A):	0.43%
Verizon	11.41%
AT&T	4.37%
Metro PCS	0.18%
Sprint	2.83%
T-Mobile	8.89%
Nextel	0.19%
Town	4.62%
Site Total MPE % :	32.92%

Dish Wireless MPE % Per Sector	
Dish Wireless Sector A Total:	0.43%
Dish Wireless Sector B Total:	0.43%
Dish Wireless Sector C Total:	0.43%
Site Total MPE % :	32.92%

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	110.82	170.0	0.59	600 MHz n71	400	0.15%
Dish Wireless 1900 MHz n70	4	245.22	170.0	1.31	1900 MHz n70	1000	0.13%
Dish Wireless 2190 MHz n66	4	275.14	170.0	1.47	2190 MHz n66	1000	0.15%
						Total:	0.43%

• 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:	0.43%
Sector B:	0.43%
Sector C:	0.43%
Dish Wireless Maximum MPE % (Sector A):	0.43%
Site Total:	32.92%
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **32.92%** 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.

ATTACHMENT 7

CERTIFICATION OF SERVICE

I hereby certify that on the 29th day of June 2022, DISH Wireless, LLC provided notice of its intent to file a Petition for a declaratory ruling that a Certificate of Environmental Compatibility and Public Need is not required for the modification of a wireless telecommunications facility at 128 Mather Street in Wilton, Connecticut, to the following:

Abutters

Sardan, Sanjay Kumar (APN: 23-24)
150 Mather Street
Wilton, CT 06897

Astacio, Yahdira & Richard (APN: 10-2)
148 Mather Street
Wilton, CT 06897

Town of Wilton (APN: 10-2, 9-11 & 9-8)
238 Danbury Road
Wilton, CT 06897

The Conn Light & Power Co (APN: 9-10)
PO Box 270
Hartford, CT 06141

Honey Hill Holdings, LLC (APN: 9-6-1)
75 East Meadow Road
Wilton, CT 06897

Aspetuck Land Trust Inc. (APN: 9-2)
18 Cold Spring Road
Easton, CT 06612

Daulaire per Ola Revocable Trust (APN: 23-21)
74 Mather Street
Wilton, CT 06897

Alexander, Corey & Malysa (APN: 23-22)
94 Mather Street
Wilton, CT 06897

Owner

Town of Wilton
238 Danbury Road
Wilton, CT 06897

Respectfully Submitted,

Victoria Masse
Northeast Site Solutions
420 Main Street #2
Sturbridge, MA 01566

June 29, 2022

**VIA USPS CERTIFIED MAIL/
RETURN RECEIPT REQUESTED**

Town of Wilton
238 Danbury Road
Wilton, CT 06897

**RE: Proposed Modification to Existing Wireless Telecommunications Facility at 128
Mather Street in Wilton, Connecticut**

To Whom It May Concern:

I am writing to you on behalf of DISH Wireless, LLC (“DISH”). DISH intends to file with the Connecticut Siting Council (“Council”) a petition for declaratory ruling (“Petition”) that a Certificate of Environmental Compatibility and Public Need is not required.

The Petition will provide details of the Existing Facility modification and explain why it will have no significant adverse environmental effect.

This letter serves as notice to you as an abutting property owner pursuant to § 16-50j-40 of the Regulations of Connecticut State Agencies. DISH will file the Petition on or about June 29, 2022 and will request that the Council place the Petition on some future agenda.

You may review the Petition at the office of the Council, which is located at Ten Franklin Square, New Britain, Connecticut, 06051, or at the Office of the Town Clerk at the Wilton Town Hall. All inquiries should be addressed to Council or to the undersigned.

Sincerely,

Victoria Masse
Northeast Site Solutions
420 Main Street #2
Sturbridge, MA 01566

7021 2720 0001 5746 2532

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City, State, ZIP+4® Wilton, CT 06897

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

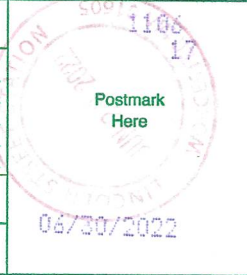
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City, State, ZIP+4® Hartford CT 06141

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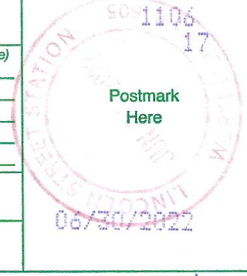
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<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00
Postage	\$0.58
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Street and Apt. No., or PO Box No. **15 East Meadow Rd**
City, State, ZIP+4® **Wilton, CT 06897**
PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

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petition
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Certified Mail®			\$3.75
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Return Receipt			\$3.05
Tracking #: 9590 9402 7040 1225 8324 02			
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Return Receipt			\$3.05
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Return Receipt			\$3.05
Tracking #: 9590 9402 7040 1225 8322 97			
Total			\$7.38

7021 2720 0001 5746 2068

7021 2720 0001 5746 2062

First-Class Mail® 1 \$0.58
 Letter
 Hartford, CT 06141
 Weight: 0 lb 0.40 oz
 Estimated Delivery Date
 Sat 07/02/2022
 Certified Mail® \$3.75
 Tracking #: 70212720000157462075
 Return Receipt \$3.05
 Tracking #: 9590 9402 7040 1225 8324 64
 Total \$7.38

First-Class Mail® 1 \$0.58
 Letter
 Wilton, CT 06897
 Weight: 0 lb 0.40 oz
 Estimated Delivery Date
 Tue 07/05/2022
 Certified Mail® \$3.75
 Tracking #: 70212720000157462068
 Return Receipt \$3.05
 Tracking #: 9590 9402 7040 1225 8324 71
 Total \$7.38


First-Class Mail® 1 \$0.58
 Letter
 Wilton, CT 06897
 Weight: 0 lb 0.40 oz
 Estimated Delivery Date
 Tue 07/05/2022
 Certified Mail® \$3.75
 Tracking #: 70212720000157462532
 Return Receipt \$3.05
 Tracking #: 9590 9402 7040 1225 8324 88
 Total \$7.38

First-Class Mail® 1 \$0.58
 Letter
 Wilton, CT 06897
 Weight: 0 lb 0.40 oz
 Estimated Delivery Date
 Tue 07/05/2022
 Certified Mail® \$3.75
 Tracking #: 70212720000157462525
 Return Receipt \$3.05
 Tracking #: 9590 9402 7040 1225 8324 95
 Total \$7.38

(800) 532-8333
 ACCEPTED BY MAIL SERVICE
 200 INCOME 21 21E 8
 FINCOPI HATT

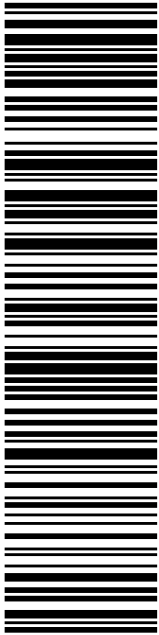


2023-07-02
 2101-48
 2101-48



LYNNE VANDERSLICE
FIRST SELCTWOMAN
238 DANBURY RD
WILTON CT 06897-4008

USPS TRACKING #



9405 5036 9930 0285 3809 40

P

06/29/2022 Mailed from 01566

U.S. POSTAGE PAID
Click-N-Ship®

usps.com 9405 5036 9930 0285 3809 40 0075 5000 0020 6897
US POSTAGE
Flat Rate Env
\$8.95


PRIORITY MAIL 2-DAY™

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

Expected Delivery Date: 07/01/22
Ref#: DS-806353
0006

C005

Electronic Rate Approved #038555749





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Instructions

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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 0285 3809 40

Trans. #: 566635563	Priority Mail® Postage: \$8.95
Print Date: 06/29/2022	Total: \$8.95
Ship Date: 06/29/2022	
Expected Delivery Date: 07/01/2022	

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

Ref#: DS-806353


To: LYNNE VANDERSLICE
FIRST SELCTWOMAN
238 DANBURY RD
WILTON CT 06897-4008

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



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MICHAEL WRINN
DIRECTOR OF PLANNING & LAND USE
238 DANBURY RD
WILTON CT 06897-4008

P

06/29/2022

Expected Delivery Date: 07/01/22
Ref#: DS-806353
0006

C005

PRIORITY MAIL 2-DAY™

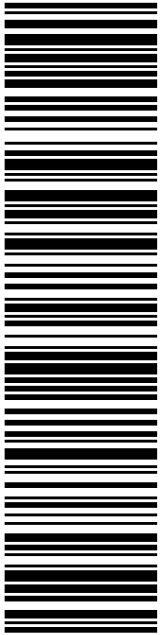
DEBORAH CHASE
NORTHEAST SITE SOLUTIONS
420 MAIN ST
STE 1
STURBRIDGE MA 01566-1359

USPS.com
\$8.95
US POSTAGE
Flat Rate Env
U.S. POSTAGE PAID
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9405 5036 9930 0285 3809 57 0075 5000 0020 6897


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USPS TRACKING #



9405 5036 9930 0285 3809 57

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5. Mail your package on the "Ship Date" you selected when creating this label.

Click-N-Ship® Label Record

USPS TRACKING # :	
9405 5036 9930 0285 3809 57	
Trans. #:	566635563
Print Date:	06/29/2022
Ship Date:	06/29/2022
Expected Delivery Date:	07/01/2022
Priority Mail® Postage:	\$8.95
Total:	\$8.95
From:	DEBORAH CHASE NORTHEAST SITE SOLUTIONS 420 MAIN ST STE 1 STURBRIDGE MA 01566-1359
To:	MICHAEL WRINN DIRECTOR OF PLANNING & LAND USE 238 DANBURY RD WILTON CT 06897-4008
	Ref#: DS-806353
<p>* 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.</p>	

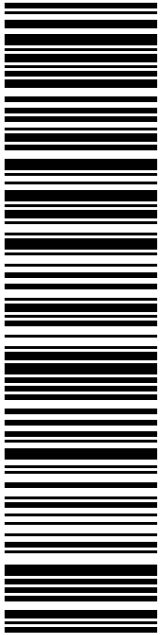


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RICH ZAJAC
CROWN CASTLE
4545 E RIVER RD
STE 320
W HENRIETTA NY 14586-9024

USPS TRACKING #



9405 5036 9930 0285 3809 71

P

06/29/2022

Expected Delivery Date: 07/01/22

Ref#: DS-806353

0006

R013

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

PRIORITY MAIL 2-DAY™

usps.com 9405 5036 9930 0285 3809 71 0075 5000 0031 4586

US POSTAGE


Flat Rate Env

U.S. POSTAGE PAID

Click-N-Ship®

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5. Mail your package on the "Ship Date" you selected when creating this label.

Click-N-Ship® Label Record

USPS TRACKING # :	
9405 5036 9930 0285 3809 71	
Trans. #:	566635563
Print Date:	06/29/2022
Ship Date:	06/29/2022
Expected Delivery Date:	07/01/2022
Priority Mail® Postage:	\$8.95
Total:	\$8.95
From:	DEBORAH CHASE NORTHEAST SITE SOLUTIONS 420 MAIN ST STE 1 STURBRIDGE MA 01566-1359
To:	RICH ZAJAC CROWN CASTLE 4545 E RIVER RD STE 320 W HENRIETTA NY 14586-9024
Ref#:	DS-806353
<p><small>* 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.</small></p>	



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806353 Crown Dish



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

07/01/2022 08:47 AM

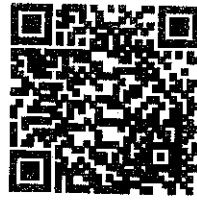
Product	Qty	Unit Price	Price
Prepaid Mail West Henrietta, NY 14586 Weight: 0 lb 2.00 oz Acceptance Date: Fri 07/01/2022 Tracking #: 9405 5036 9930 0285 3809 71	1		\$0.00
Prepaid Mail Wilton, CT 06897 Weight: 0 lb 13.20 oz Acceptance Date: Fri 07/01/2022 Tracking #: 9405 5036 9930 0285 3809 40	1		\$0.00
Prepaid Mail Wilton, CT 06897 Weight: 1 lb 10.30 oz Acceptance Date: Fri 07/01/2022 Tracking #: 9405 5036 9930 0285 3809 57	1		\$0.00
Grand Total:			\$0.00

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 Clerk: 17