



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

October 12, 2021

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

RE: Tower Share Application
800 Ogg Meadow Road, Orange CT 06477
Latitude: 41.307889
Longitude: 73.032278
Site# 806939_Crown_Dish

Dear Ms. Bachman:

This letter and attachments are submitted on behalf of Dish Wireless LLC. Dish Wireless LLC plans to install antennas and related equipment to the tower site located at 800 Ogg Meadow Road in Orange, Connecticut.

Dish Wireless LLC proposes to install three (3) 600/1900 5G MHz antenna and six (6) RRUs, at the 117-foot level of the existing 160-foot monopole tower, one (1) Fiber cables will also be installed. Dish Wireless LLC equipment cabinets will be placed within 7x5 lease area. Included are plans by Infinigy, dated August 11, 2021 Exhibit C. Also included is a structural analysis prepared by Crown Castle, dated June 8, 2021, confirming that the existing tower is structurally capable of supporting the proposed equipment. Attached as Exhibit D. The facility was approved by the CT Siting Council, Docket No. 177A on August 8, 1997. Please see attached Exhibit A.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies 16-50aa, of Dish Wireless LLC intent to share a telecommunications facility pursuant to R.C.S.A. 16-50j-88. In accordance with R.C.S.A., a copy of this letter is being sent to First Selectman James M. Zeoli and Jack Demirjian, Planning, Zoning & Wetlands Enforcement Officer for the Town of Orange, as well as the tower owner (Crown Castle) and property owner (South Central Connecticut Regional Water Authority).

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

1. The proposed modification will not result in an increase in the height of the existing structure. The top of the tower is 160-feet; Dish Wireless LLC proposed antennas will be located at a center line height of 117-feet.
2. The proposed modifications will not result in the increase of the site boundary as depicted on the attached site plan.
3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed local and state criteria. The incremental effect of the proposed changes will be negligent.



4. The operation of the proposed antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard. As indicated in the attached power density calculations, the combined site operations will result in a total power density of 14.33% as evidenced by Exhibit F.

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

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

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

C. Environmental Feasibility. The proposed shared use of this facility would have a minimal environmental impact. The installation of Dish Wireless LLC equipment at the 117-foot level of the existing 160-foot tower would have an insignificant visual impact on the area around the tower. Dish Wireless LLC ground equipment would be installed within the existing facility compound. Dish Wireless LLC shared use would therefore not cause any significant alteration in the physical or environmental characteristics of the existing site. Additionally, as evidenced by Exhibit F, the proposed antennas would not increase radio frequency emissions to a level at or above the Federal Communications Commission safety standard.

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

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

Sincerely,

Denise Sabo

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



Attachments cc:

First Selectman James M. Zeoli
Town of Orange
617 Orange Center Road Orange, CT 06477

Jack Demirjian, Planning, Zoning & Wetlands Enforcement Officer
Town of Orange
617 Orange Center Road Orange, CT 06477

South Central Connecticut Regional Water Authority
Attn: Dianne L. Tompkins, Senior Land Use Manager
30 Sargent Drive New Haven, CT 06511

Crown Castle, Tower Owner

Exhibit A

Original Facility Approval



CONNECTICUT SITING COUNCIL

Home About Us Pending Matters Decisions Forms Contact Us

Filing Guides

Meetings & Minutes

Public Participation

Audio Link to New Britain Hearing Rooms

Programs & Services

Telecommunications Database

Maps

Publications

Other Resources

Statutes & Regulations

Frequently Asked Questions



Melanie Bachman,
Executive Director

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DOCKET NO. 177A - An amended application of Cellco Partnership d/b/a Bell Atlantic NYNEX Mobile for a Certificate of Environmental Compatibility and Public Need for a two cell-site configuration in the Town of Orange. The proposed Prime A site would be located approximately 875 feet east of Orange Center Road at the rear of the High Plains Community Center, 525 Orange Center Road, with the Prime B site located approximately 400 feet northwest from the end of Ogg Meadow Road. These sites would replace the previously proposed Camp Cedarcrest site. A proposed alternate site is located within a 5.5 acre parcel of property approximately 250 feet south and west of Robert Treat Drive Extension, Orange, Connecticut.

ConnecticutSitingCouncil

August 6, 1997

Decision and Order

Pursuant to the foregoing Findings of Fact and Opinion, the Connecticut Siting Council (Council) finds that the effects associated with the construction, operation, and maintenance of a two-cell site configuration consisting of a prime A site at the High Plains Community Center property on Orange Center Road and a prime B site on South Central Regional Water Authority (SCRWA) property located off the end of Ogg Meadow Road in Orange, Connecticut, including effects on the natural environment; ecological integrity and balance; public health and safety; scenic, historic, and recreational values; forests and parks; air and water purity; and fish and wildlife are not disproportionate either alone or cumulatively with other effects when compared to need, 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 General Statutes § 16-50k, be issued to Cellco Partnership d/b/a Bell Atlantic NYNEX Mobile (BANM) for the construction, operation, and maintenance of two cellular telecommunications towers and associated equipment. We deny the alternate site on Robert Treat Drive Extension.

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

1. The towers shall be constructed as proposed, no taller than necessary to provide the proposed communications service, sufficient to accommodate the antennas of BANM, Springwiche Cellular Limited Partnership (Springwich), Smart SMR of New York, Inc. d/b/a Nextel Communications (Nextel), and Sprint Spectrum L.P. d/b/a Sprint PCS (Sprint). Neither tower, excluding antennas, shall exceed 160 feet above ground level.
2. The Certificate Holder shall prepare Development and Management (D&M) Plans for the prime A and prime B sites in compliance with Sections 16-50j-75 through 16-50j-77 of the Regulations of Connecticut State Agencies. The D&M Plans shall be submitted to and approved by the Council prior to the commencement of facility construction. The prime A D&M plan shall include a tower and foundation plan, signed by a professionally licensed engineer, designed to be safe and adequate to protect the electric supply system, and provisions for landscaping, architectural treatment, and traffic management consistent with terms established with the Town. The prime B D&M plan shall include relocation of the prime B tower within the leased parcel to prevent the fall zone of the tower from crossing paved sections of the Route 15 right-of-way; a tower and foundation plan, signed by a professionally licensed engineer; plans for dewatering the site if necessary; installation of a propane tank to fuel the emergency generator; placement of a counter-sunk and sealed concrete floor for the equipment building; traffic management with schedule to construct during daytime hours; and best management practices for on-site use of construction equipment. In addition, we will require landscaping and the establishment of vegetation to stabilize the site consistent with watershed management plans. Both site plans shall provide specifications for the placement of all antennas to be attached to the towers, and plans for the equipment buildings, foundation pads for Sprint's equipment, security fencing and gate, access roads, utility lines, site clearing, tree trimming, and erosion and sedimentation control consistent with the Connecticut Guidelines for Soil Erosion and Sediment Control, as amended.
3. Consistent with Section 16-50j-77 of the Regulations of Connecticut State Agencies, the Certificate Holder shall provide the Council notification of:
 - a. commencement of construction;
 - b. completion of construction;
 - c. completion of site rehabilitation;
 - d. commencement of operation;
 - e. transfer of ownership of the prime A tower to the Town of Orange; and
 - f. final construction cost.
4. Upon the establishment of any new State or federal radio frequency power density standards applicable to frequencies of this facility, the facility granted herein shall be brought into compliance with such standards.

5. The Certificate Holder shall provide the Council a recalculated report of electromagnetic radio frequency power density if and when circumstances in operation cause a change in power density above the levels originally calculated and provided in the application.
6. The Certificate Holder shall permit public or private entities to share space on the proposed tower for fair consideration, or shall provide any requesting entity with specific legal, technical, environmental, or economic reasons precluding such tower sharing.
7. If the facility does not initially provide, or permanently ceases to provide telecommunications services following completion of construction, this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapplication for any continued or new use shall be made to the Council before any such use is made.
8. 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 effective date of this Decision and Order or within three years after all appeals to this Decision and Order have been resolved.

Pursuant to General Statutes § 16-50p, we hereby direct that a copy of the Findings of Fact, Opinion, and Decision and Order be served on each person listed below, and notice of issuance shall be published in the New Haven Register.

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 Connecticut State Agencies.

The parties and intervenors to this proceeding are:

APPLICANT

Cellco Partnership d/b/a

ITS REPRESENTATIVE

Kenneth C. Baldwin, Esq.
Brian C. S. Freeman, Esq.
Bell Atlantic NYNEX Mobile
Robinson & Cole
One Commercial Plaza
Hartford, CT 06103-3597

-
Mr. David S. Malko, P.E.
Jennifer Young Gaudet, Mgr. - Regulatory
Bell Atlantic NYNEX Mobile
20 Alexander Drive
Wallingford, CT 06492

PARTY

Residents of Robert Treat Extension,
Elvera Spinaci
Ross Court, and Mapledale Road
829 Robert Treat Extension
Orange, CT 06477

-

INTERVENOR

Eugene Burshuliak
864 Mapledale Road
Orange, CT 06477

-

INTERVENOR

Springwich Cellular Limited Partnership

ITS REPRESENTATIVE

Peter J. Tyrrell, Esq.
Springwich Cellular Limited Partnership
500 Enterprise Drive
Rocky Hill, CT 06067-3900

ITS REPRESENTATIVE

Francis A. Teodosio, Esq.
Orange Town Hall
617 Orange Center Road
Orange, CT 06477

PARTY

Town of Orange

INTERVENOR

Smart SMR of New York, Inc.

ITS REPRESENTATIVE

Christopher B. Fisher, Esq.
d/b/a Nextel Communications Cuddy, Feder & Worby
90 Maple Avenue
White Plains, NY 10601-5196

PARTY

John Rechi
805 Grassy Hill Road
Orange, CT 06477

-

PARTY

Erwin H. Levine
875 Robert Treat Extension

-

Orange, CT 06477

PARTY

Jeffery Friedrichs

248 Ross Court

Orange, CT 06477

PARTY

Orange Land Trust, Inc.

INTERVENOR

Sprint Spectrum L.P.

PARTY

Jay Nastri

820 Ogg Meadow Road

Orange, CT 06477

-

ITS REPRESENTATIVE

Edmund B. Tucker, President

Orange Land Trust, Inc.

433 Pudden Lane

Orange, CT 06477

ITS REPRESENTATIVE

Elias A. Alexiades, Esq.

d/b/a Sprint PCS Andrew C. Kruger, Esq.

Harris, Beach & Wilcox, LLP

147 North Broad Street

Milford, CT 06460

-

-

Content Last Modified on 8/9/2002 12:03:42 PM

Ten Franklin Square New Britain, CT 06051 / 860- 827-2935

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Exhibit B

Property Card

800 OGG MEADOW RD

Location	800 OGG MEADOW RD	Mblu	97/ 4/ 2-1/ /
Acct#	85805	Owner	SOUTH CENTRAL REGIONAL WATER AUTHORITY
Assessment	\$71,900	Appraisal	\$102,500
PID	5565	Building Count	1

Current Value

Appraisal			
Valuation Year	Improvements	Land	Total
2017	\$24,800	\$77,700	\$102,500
Assessment			
Valuation Year	Improvements	Land	Total
2017	\$17,500	\$54,400	\$71,900

Owner of Record

Owner	SOUTH CENTRAL REGIONAL WATER AUTHORITY	Sale Price	\$0
Co-Owner	CROWN ATLANTIC COMPANY LLC	Certificate	
Address	4017 WASHINGTON RD PMB 353 MCMURRAY, PA 15317	Book & Page	
		Sale Date	

Ownership History

Ownership History				
Owner	Sale Price	Certificate	Book & Page	Sale Date
SOUTH CENTRAL REGIONAL WATER AUTHORITY	\$0			

Building Information

Building 1 : Section 1

Year Built:
Living Area: 0
Replacement Cost
Less Depreciation: \$0

Building Attributes	
Field	Description

Style	Vacant Land
Model	
Stories	
Exterior Wall 1	
Exterior Wall 2	
Roof Structure	
Roof Cover	
Interior Wall 1	
Interior Wall 2	
Interior Floor 1	
Interior Floor 2	
Heat Fuel	
Heat Type	
AC Type	
Bedrooms	
Full Baths	
Half Baths	
Extra Fixtures	
Total Rooms	
Stacks	
Fireplace(s)	
Gas Fireplace(s)	
Attic	
Frame	
Traffic	
Bsmt Gar(s)	
SF FBM	
SF Rec Rm	
Basement	
Bsmt Floor	

Building Photo



(http://images.vgsi.com/photos/OrangeCTPhotos/\00\00\50\27.JPG)

Building Layout

(http://images.vgsi.com/photos/OrangeCTPhotos//Sketches/5565_5565.jpg)

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

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use		Land Line Valuation	
Use Code	520	Size (Acres)	0.23

Description

Zone

Neighborhood

Alt Land Appr

Category

Comm Vacant

RES

010

No

Frontage

Depth

Assessed Value

Appraised Value

\$54,400

\$77,700

Outbuildings

Outbuildings						Legend
Code	Description	Sub Code	Sub Description	Size	Value	Bldg #
SHD1	Shed - Wood			400 UNITS	\$5,500	1
SHD1	Shed - Wood			400 UNITS	\$5,500	1
SHD9	Shed - Block			400 UNITS	\$6,300	1
SHD7	Cell Shed			200 UNITS	\$7,500	1

Valuation History

Appraisal			
Valuation Year	Improvements	Land	Total
2019	\$24,800	\$77,700	\$102,500
2018	\$24,800	\$77,700	\$102,500
2017	\$24,800	\$77,700	\$102,500

Assessment			
Valuation Year	Improvements	Land	Total
2019	\$17,500	\$54,400	\$71,900
2018	\$17,500	\$54,400	\$71,900
2017	\$17,500	\$54,400	\$71,900

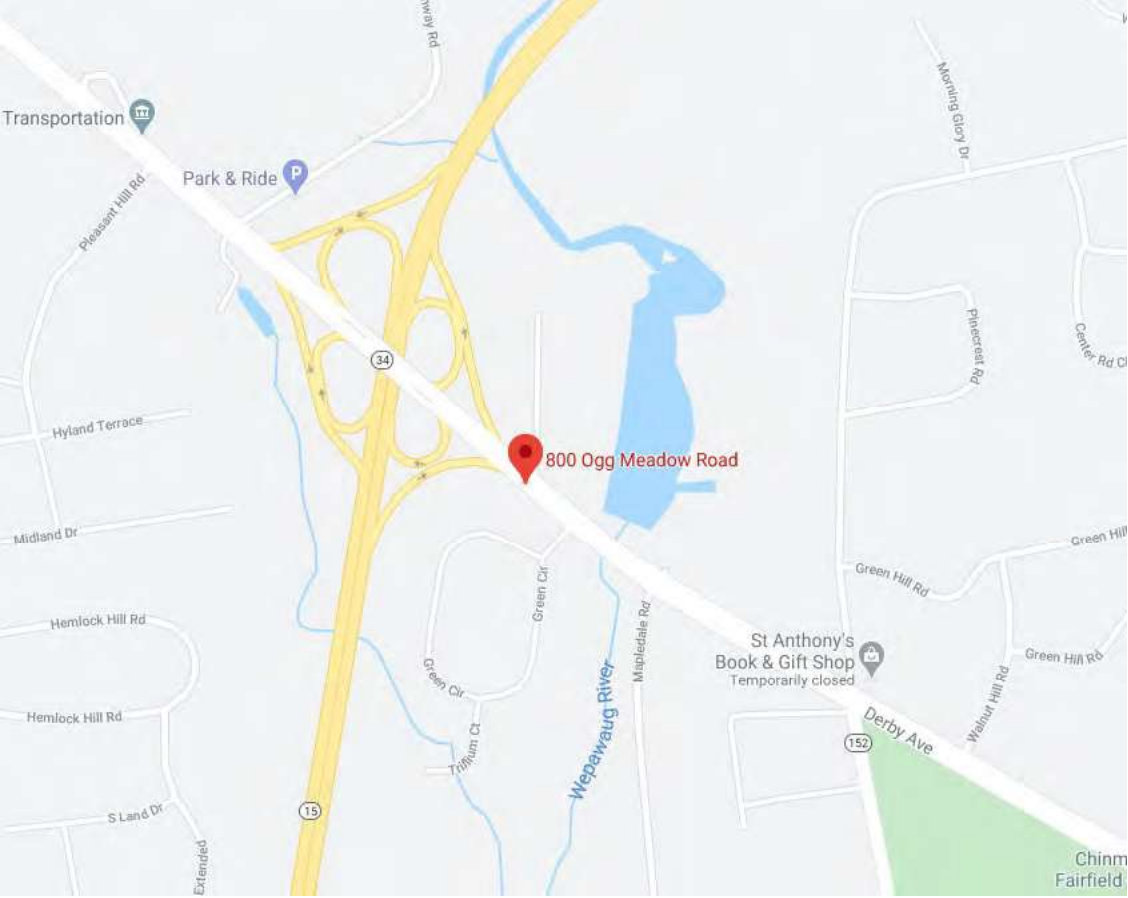
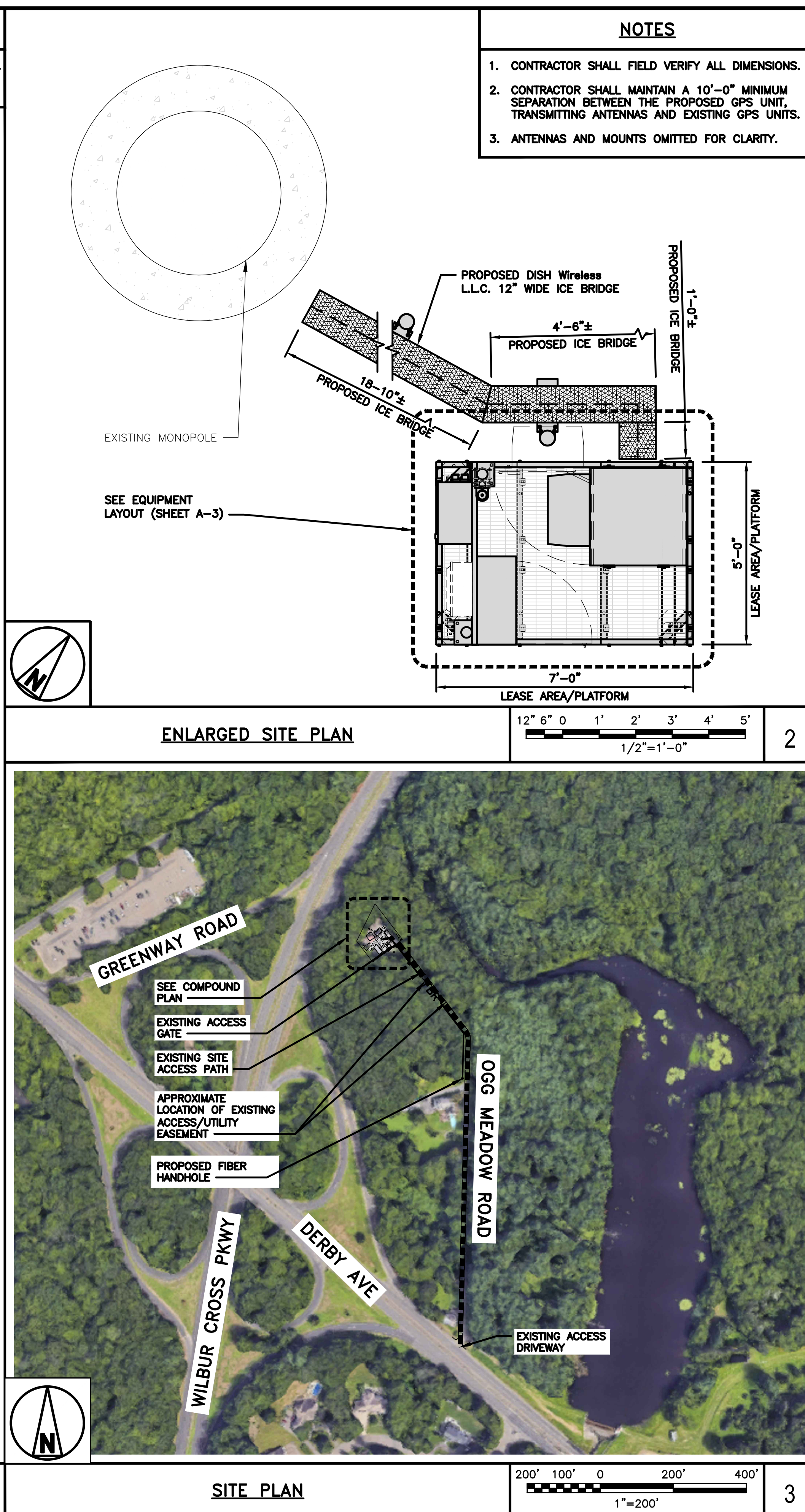
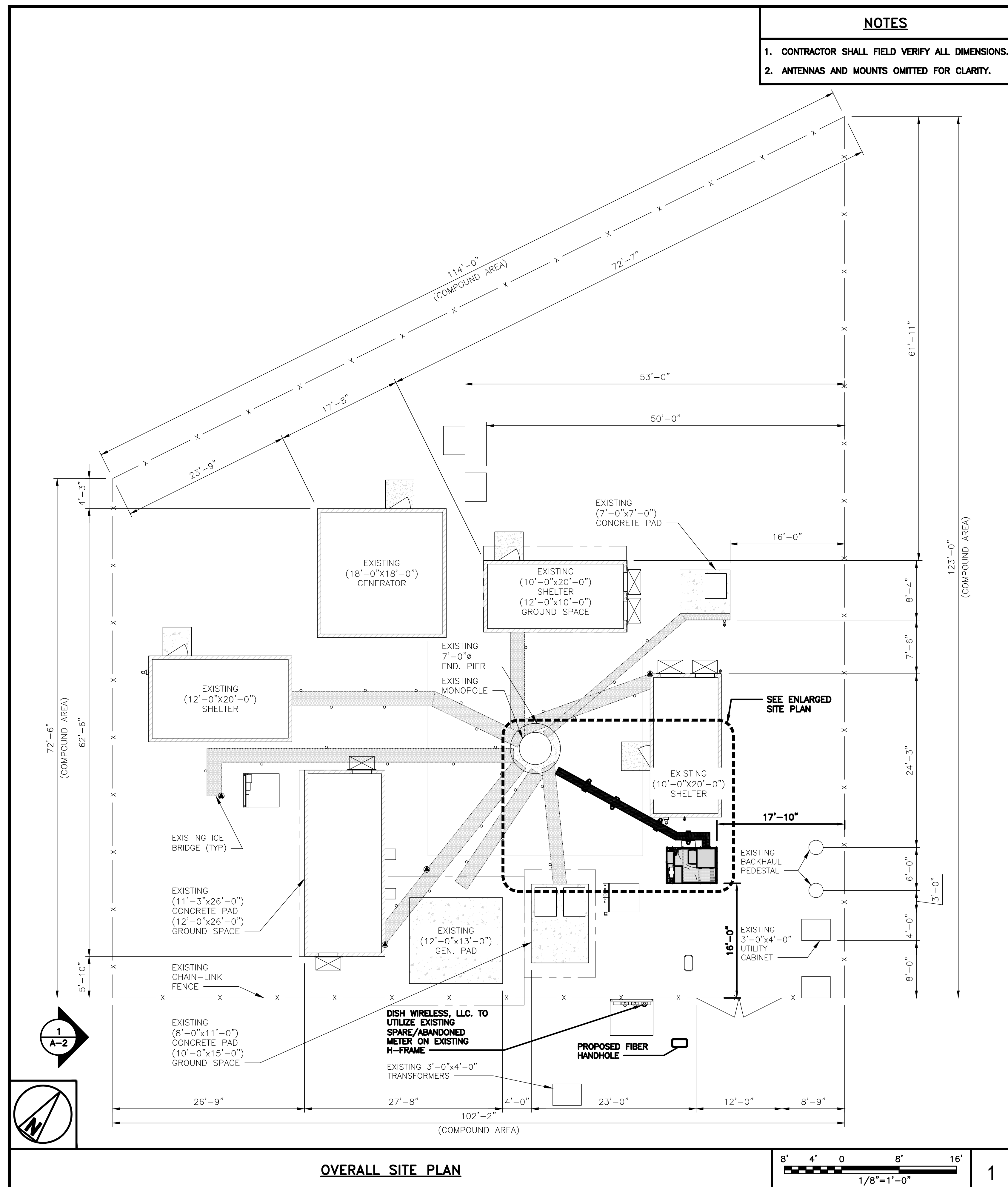


Exhibit C

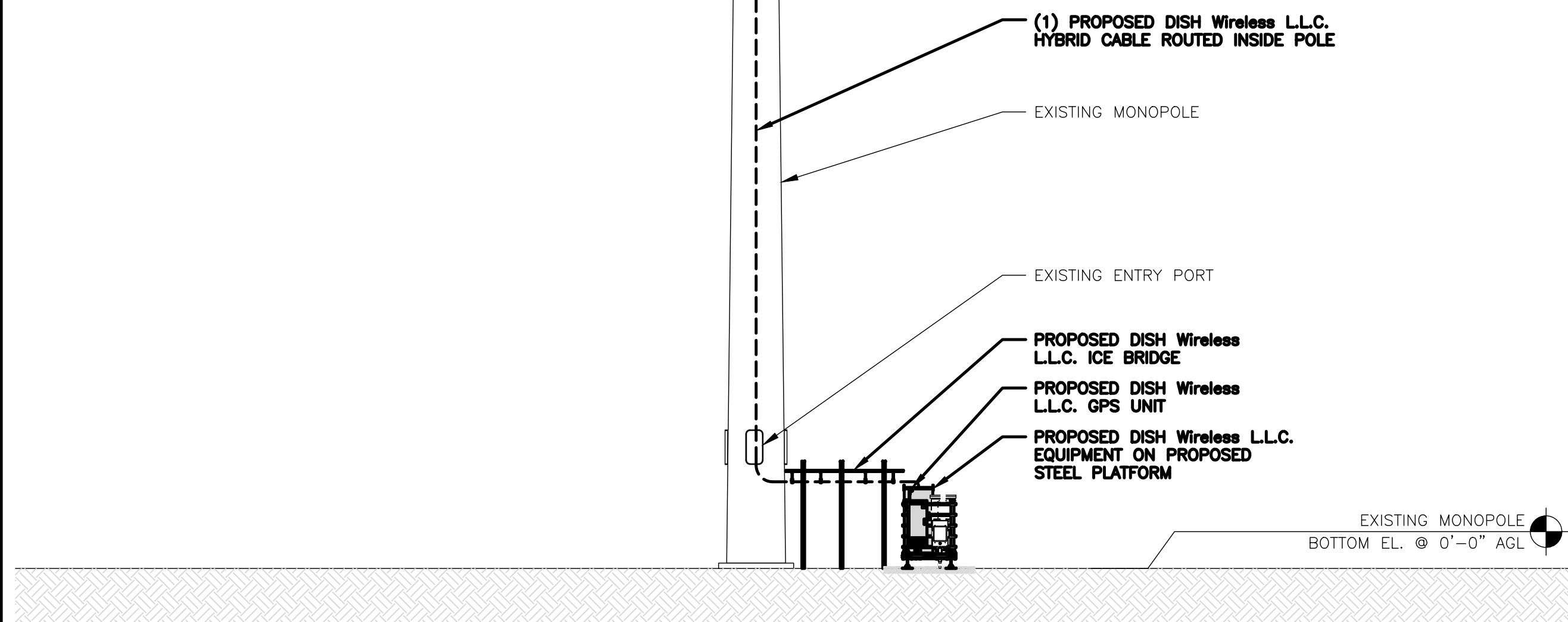
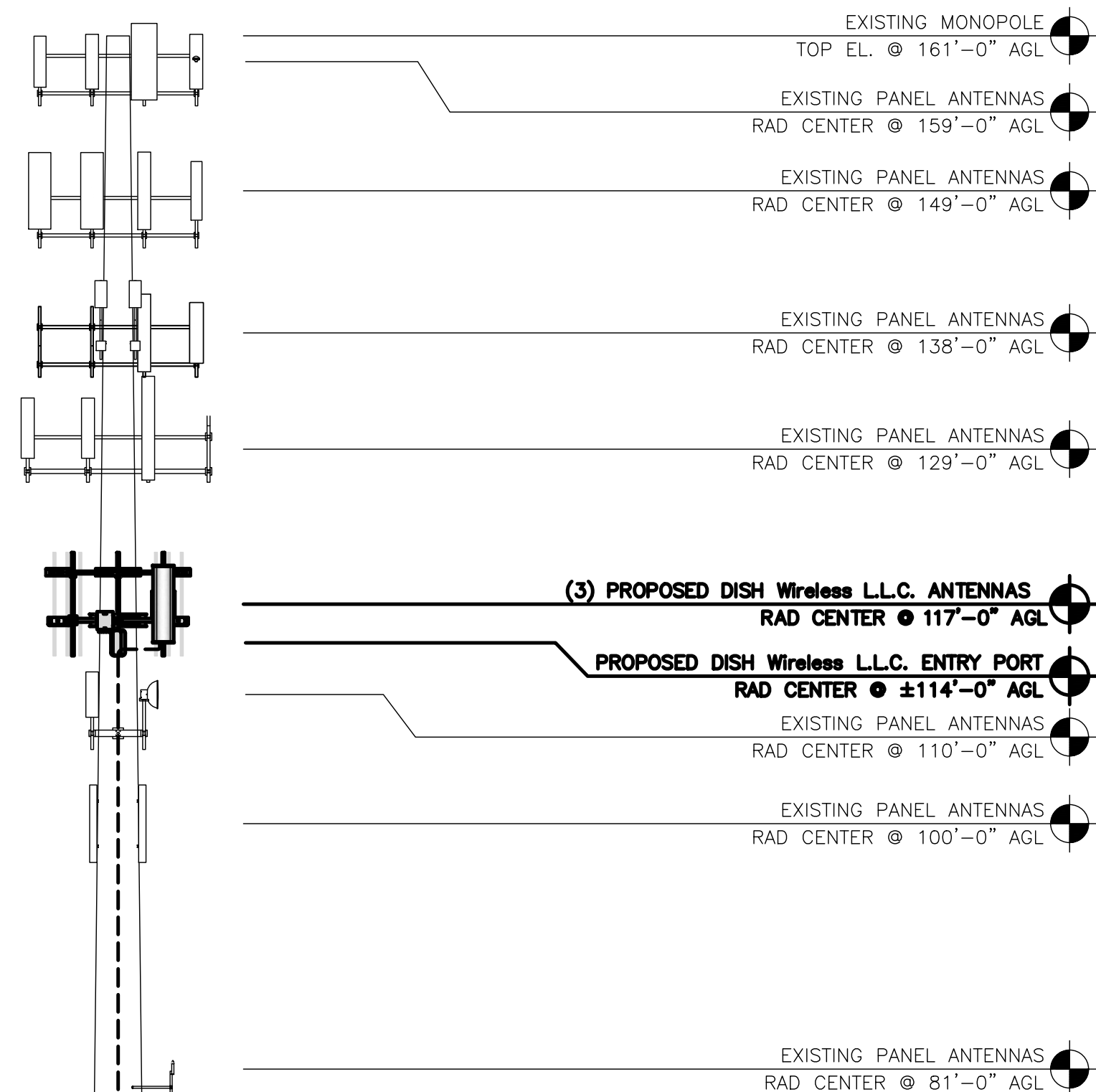
Construction Drawings



dish wireless. 5701 SOUTH SANTA FE DRIVE LITTLETON, CO 80120		
CROWN CASTLE 2000 CORPORATE DRIVE CANONSBURG, PA 15317		
INFINIGY FROM ZERO TO INFINIGY the solutions are endless 2500 W. HIGGINS RD. SUITE 500 HOFFMAN ESTATES, IL 60169 PHONE: 847-648-4068 FAX: 518-690-0793 WWW.INFINIGY.COM		
8/11/2021		
IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.		
DRAWN BY:	CHECKED BY:	APPROVED BY:
RCD	SS	CJW
RFDS REV #: N/A		
CONSTRUCTION DOCUMENTS		
SUBMITTALS		
REV	DATE	DESCRIPTION
A	06/21/2020	ISSUED FOR REVIEW
0	06/09/2021	ISSUED FOR CONSTRUCTION
A&E PROJECT NUMBER 6039-Z0001-C		
DISH Wireless L.L.C. PROJECT INFORMATION BOHVN00012A NHV 2071 143137 800 OGG MEADOW ROAD ORANGE, CT 06477		
SHEET TITLE OVERALL AND ENLARGED SITE PLAN		
SHEET NUMBER A-1		

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

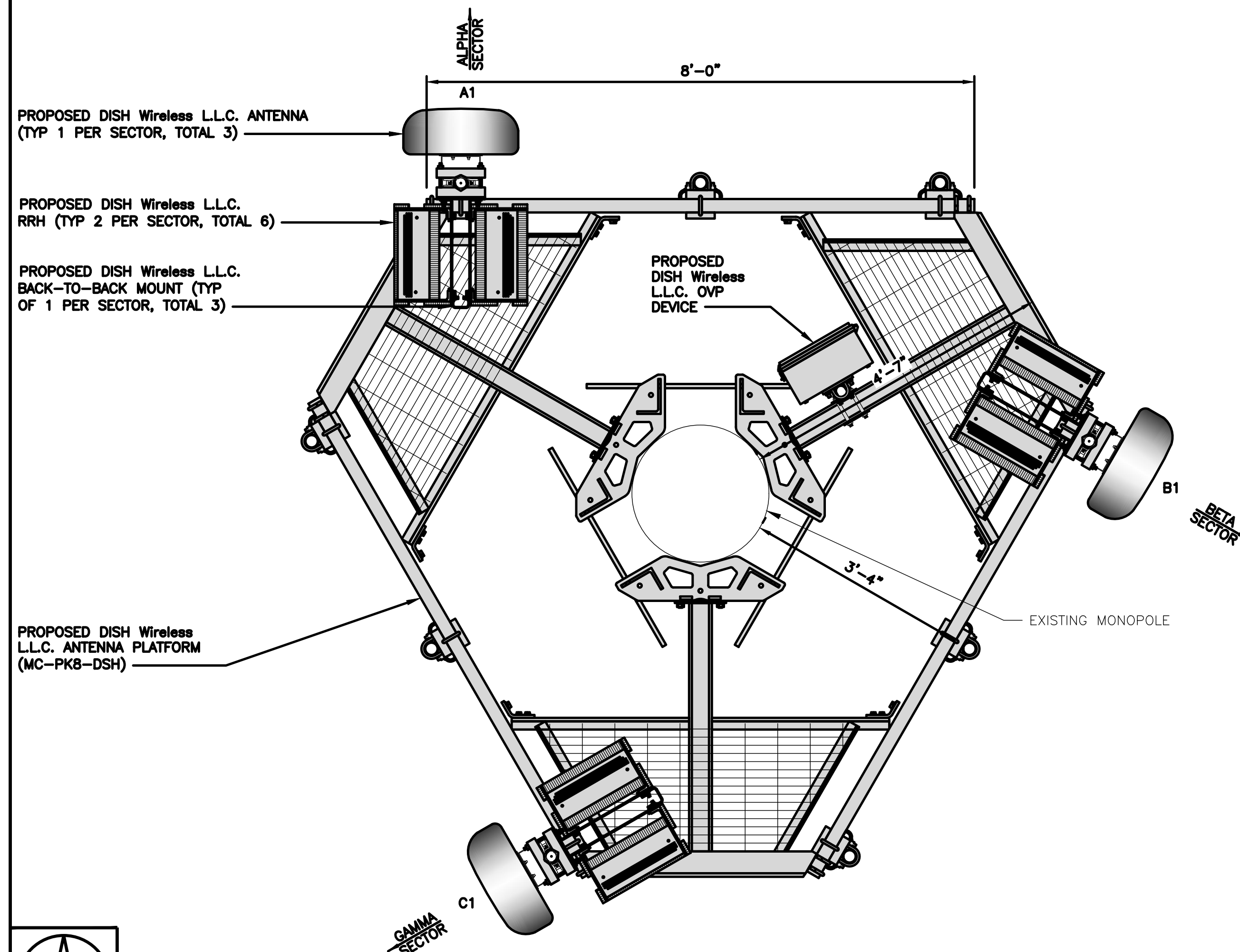
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNA AND MW DISH SPECIFICATIONS REFER TO ANTENNA SCHEDULE AND TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS
3. EXISTING EQUIPMENT AND FENCE OMITTED FOR CLARITY.



12' 8' 4' 0 10' 20'

$3/32" = 1' - 0"$

1



12" 6" 0 1' 2' 3'

$\frac{3}{4}" = 1' - 0"$

2

SECTOR	POSITION	ANTENNA						TRANSMISSION CABLE
		EXISTING OR PROPOSED	MANUFACTURER -- MODEL NUMBER	TECHNOLOGY	SIZE (HxW)	AZMUTH	RAD CENTER	FEED LINE TYPE AND LENGTH
ALPHA	A1	PROPOSED	JMA WIRELESS -- MX08FR0685-21	5G	72.0" x 20.0"	0°	117"-0"	(1) HIGH-CAPACITY HYBRID CABLE (140' LONG)
BETA	B1	PROPOSED	JMA WIRELESS -- MX08FR0685-21	5G	72.0" x 20.0"	120°	117"-0"	
GAMMA	C1	PROPOSED	JMA WIRELESS -- MX08FR0685-21	5G	72.0" x 20.0"	240°	117"-0"	

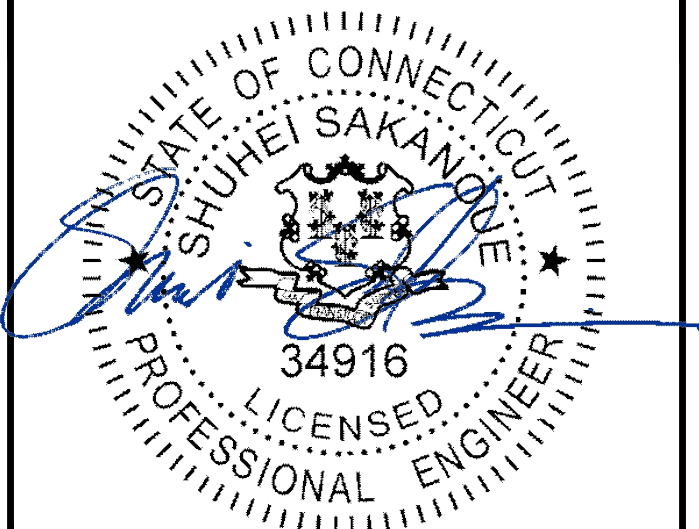
NOTES

1. CONTRACTOR TO REFER TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS.
2. ANTENNA OR RRH MODELS MAY CHANGE DUE TO EQUIPMENT AVAILABILITY. ALL EQUIPMENT CHANGES MUST BE APPROVED AND REMAIN IN COMPLIANCE WITH THE PROPOSED DESIGN AND STRUCTURAL ANALYSES.

SECTOR	POSITION	RRH		NOTES
		MANUFACTURER -- MODEL NUMBER	TECHNOLOGY	
ALPHA	A1	FUJITSU -- TA08025-B604	5G	1. CONTRACTOR TO REFER TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS. 2. ANTENNA AND RRH MODELS MAY CHANGE DUE TO EQUIPMENT AVAILABILITY. ALL EQUIPMENT CHANGES MUST BE APPROVED AND REMAIN IN COMPLIANCE WITH THE PROPOSED DESIGN AND STRUCTURAL ANALYSES.
	A1	FUJITSU -- TA08025-B605	5G	
BETA	B1	FUJITSU -- TA08025-B604	5G	
	B1	FUJITSU -- TA08025-B605	5G	
GAMMA	C1	FUJITSU -- TA08025-B604	5G	
	C1	FUJITSU -- TA08025-B605	5G	

NO SCALE

3



8/11/2021

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DRAWN BY:	CHECKED BY:	APPROVED BY:
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RCD	SS	CJW
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RFDS REV #: N/A

CONSTRUCTION
DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	06/21/2020	ISSUED FOR REVIEW
0	08/09/2021	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

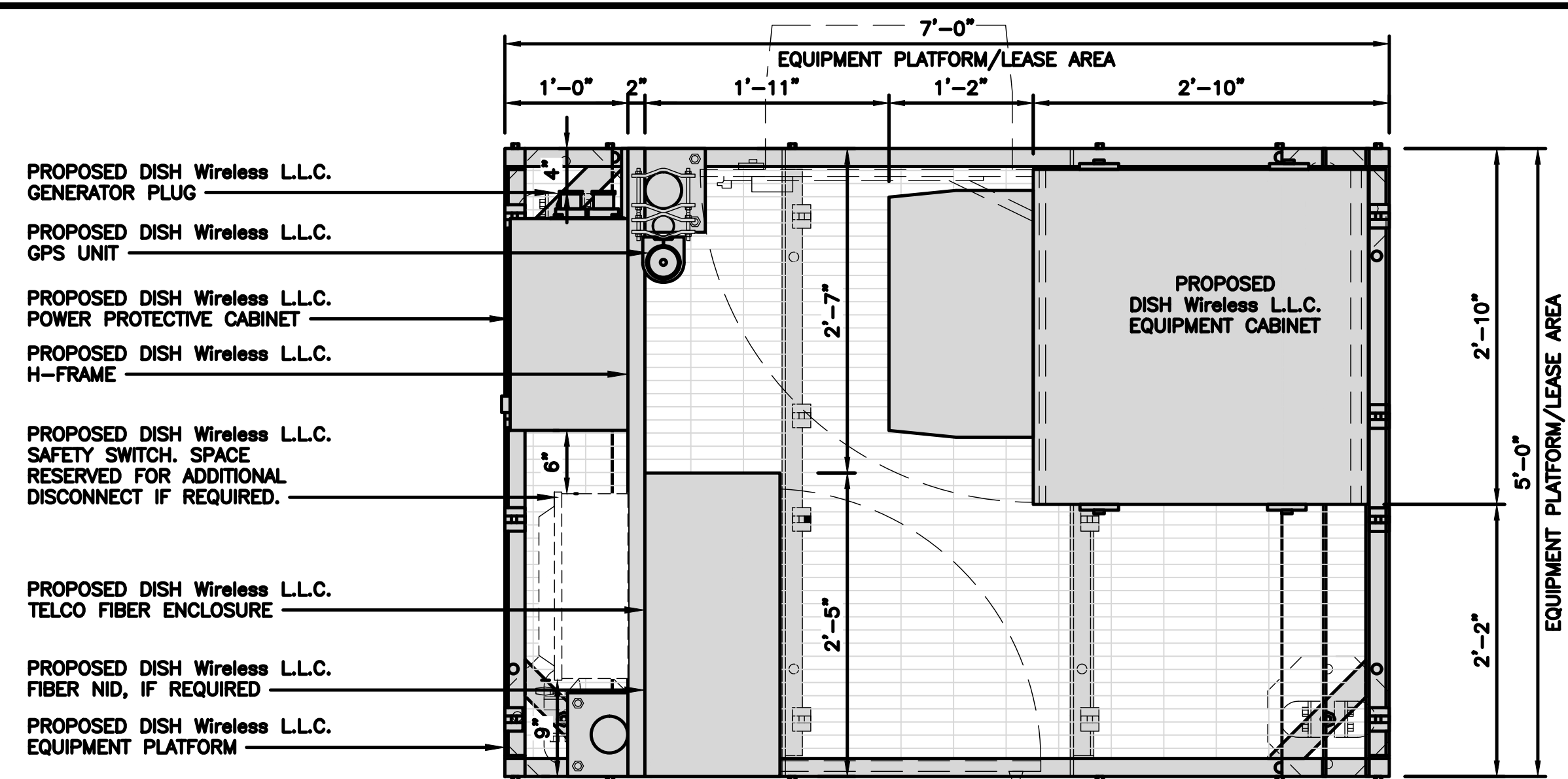
6039-Z0001-C

DISH Wireless L.L.C.
PROJECT INFORMATION
BOHVN00012A
NHV 2071 143137
00 OGG MEADOW ROAD
ORANGE, CT 06477

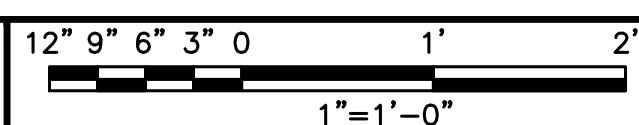
SHEET TITLE
ELEVATION, ANTENNA
LAYOUT AND SCHEDULE

SHEET NUMBER

A-2

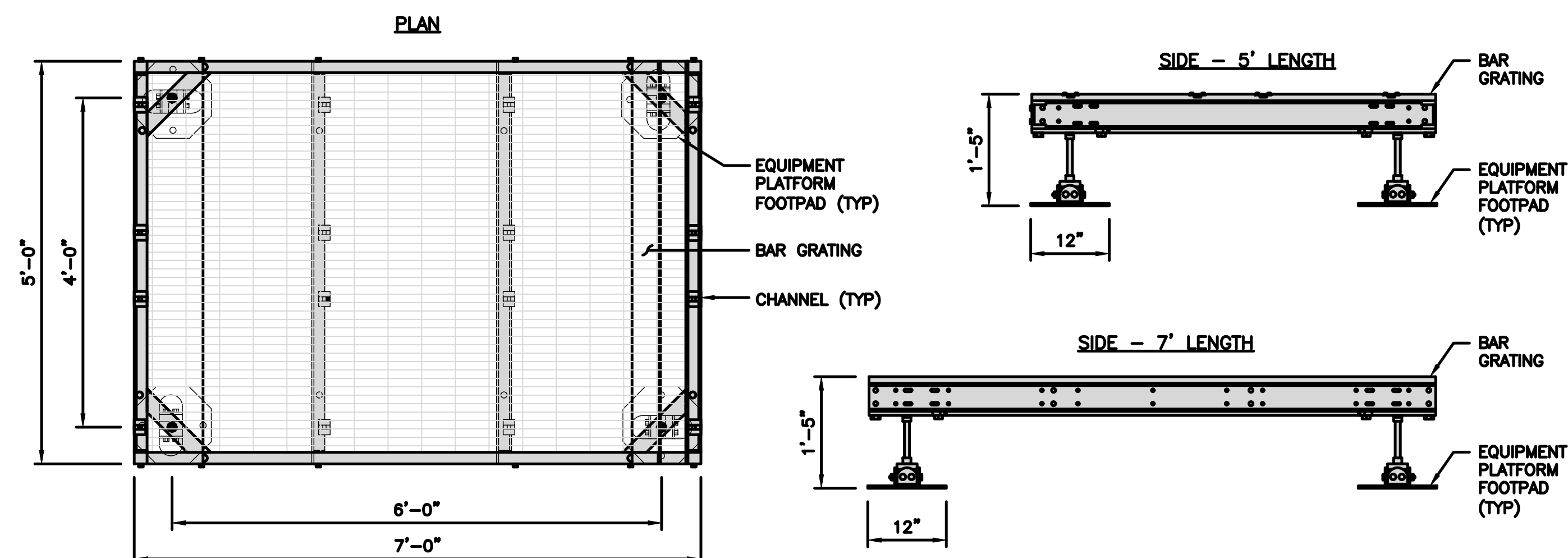


PLATFORM EQUIPMENT PLAN



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

NOTE:
GC TO PROVIDE EXTENDED
THREAD FOR PLATFORM IF
REQUIRED HEIGHT EXCEEDS 17'

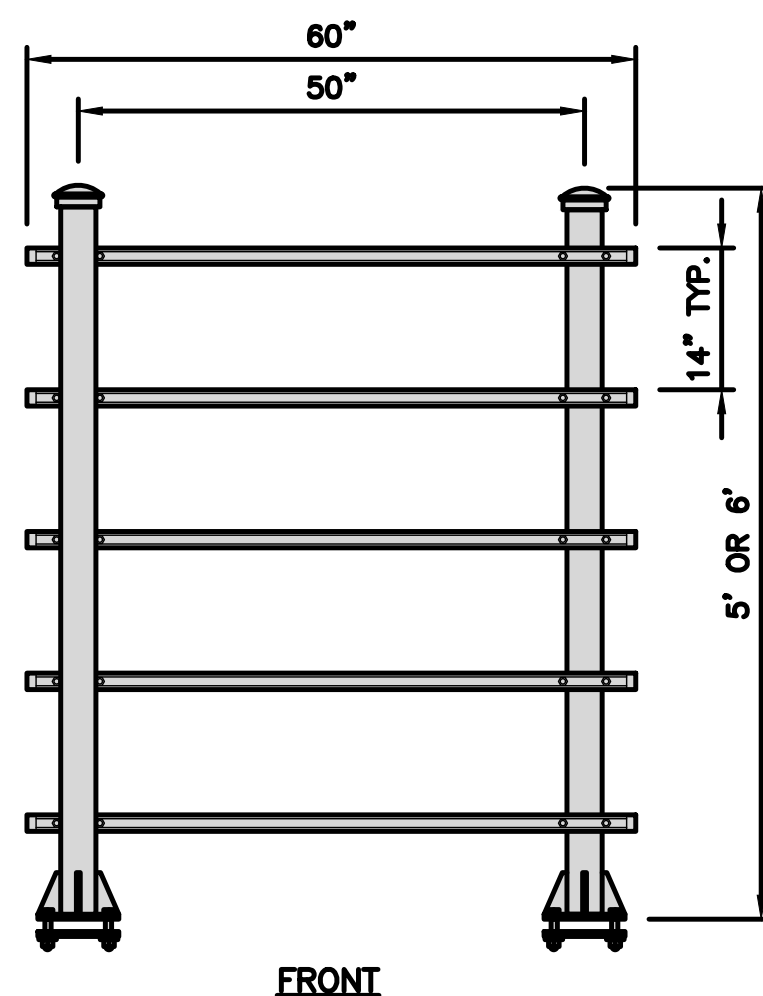
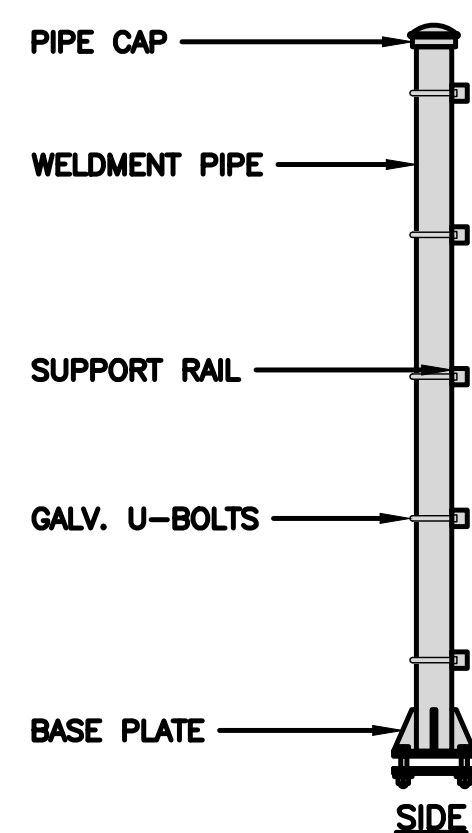


PLATFORM DETAIL

NO SCALE	2
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COMMSCOPE MTC4045HFLD H-FRAME	
UNISTRUT/SUPPORT RAILS QTY	5
WEIGHT	59.74 lbs

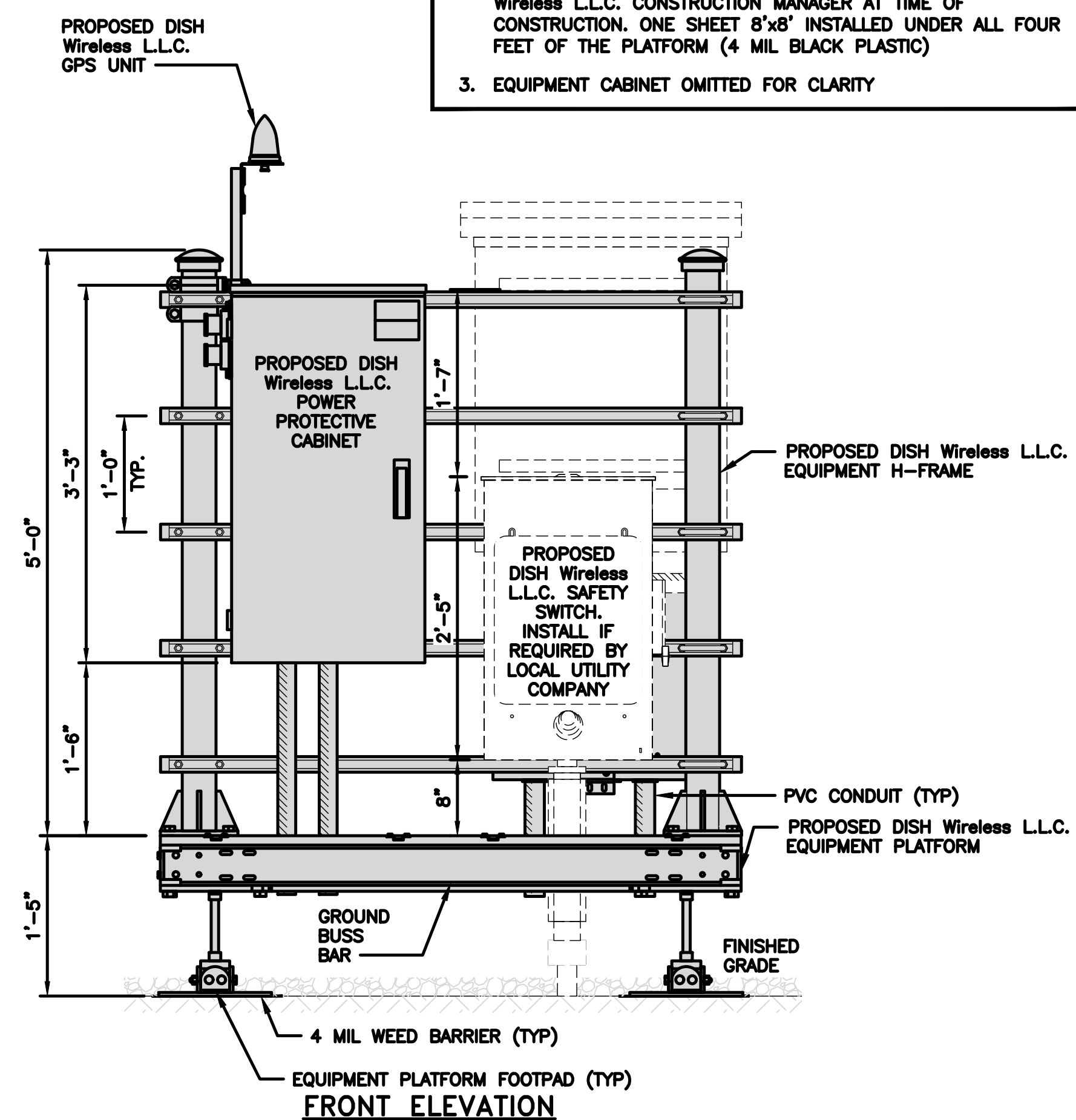
NOTE:
OR DISH Wireless L.L.C.
APPROVED EQUIVALENT



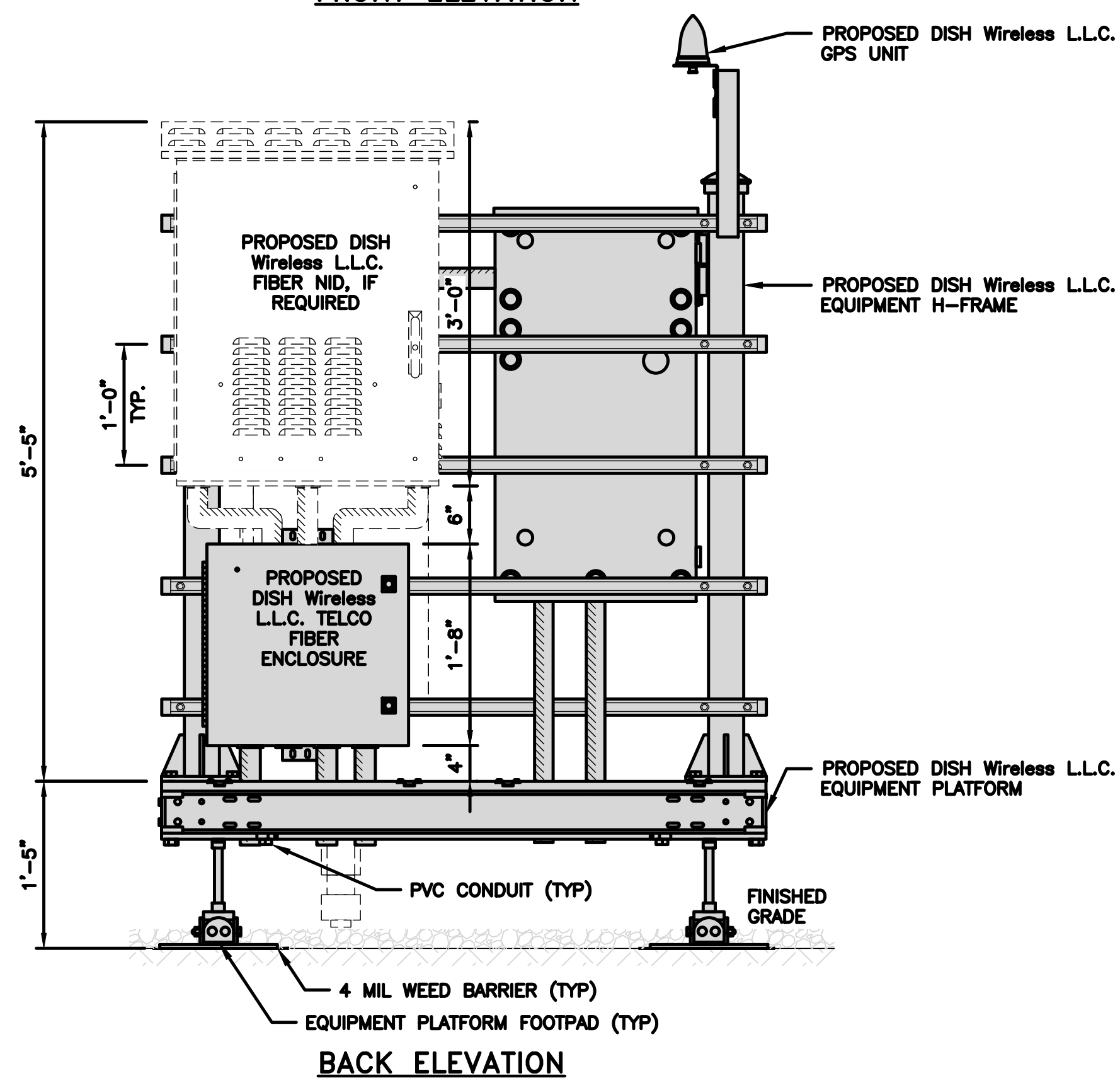
H-FRAME DETAIL

NO SCALE	3
----------	---

NOT USED

NO SCALE | 4

FRONT ELEVATION



BACK ELEVATION

12" 9" 6" 3" 0 1' 2'

1"=1'-0"

NOTES

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

The Dish Wireless logo, featuring the word "dish" in a bold, lowercase sans-serif font, with the "i" stylized as a satellite dish. Below "dish" is the word "wireless" in a smaller, lowercase sans-serif font.

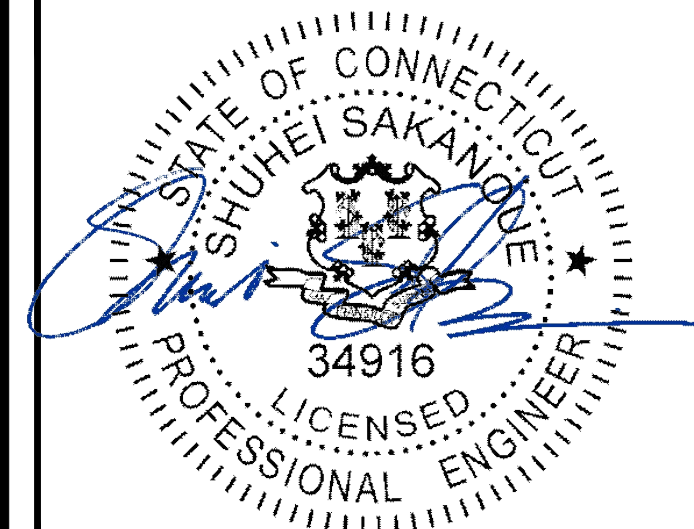
5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120



**CROWN
CASTLE**

2000 CORPORATE DRIVE
CANONSBURG, PA 15317

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



8/11/2021

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OF A LICENSED PROFESSIONAL ENGINEER,
TO ALTER THIS DOCUMENT.

DRAWN BY:	CHECKED BY:	APPROVED BY:
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RCD	SS	CJW
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RFDS REV #: N/A

CONSTRUCTION
DOCUMENTS

SUBMITTALS

[illegible]

A&E PROJECT NUMBER

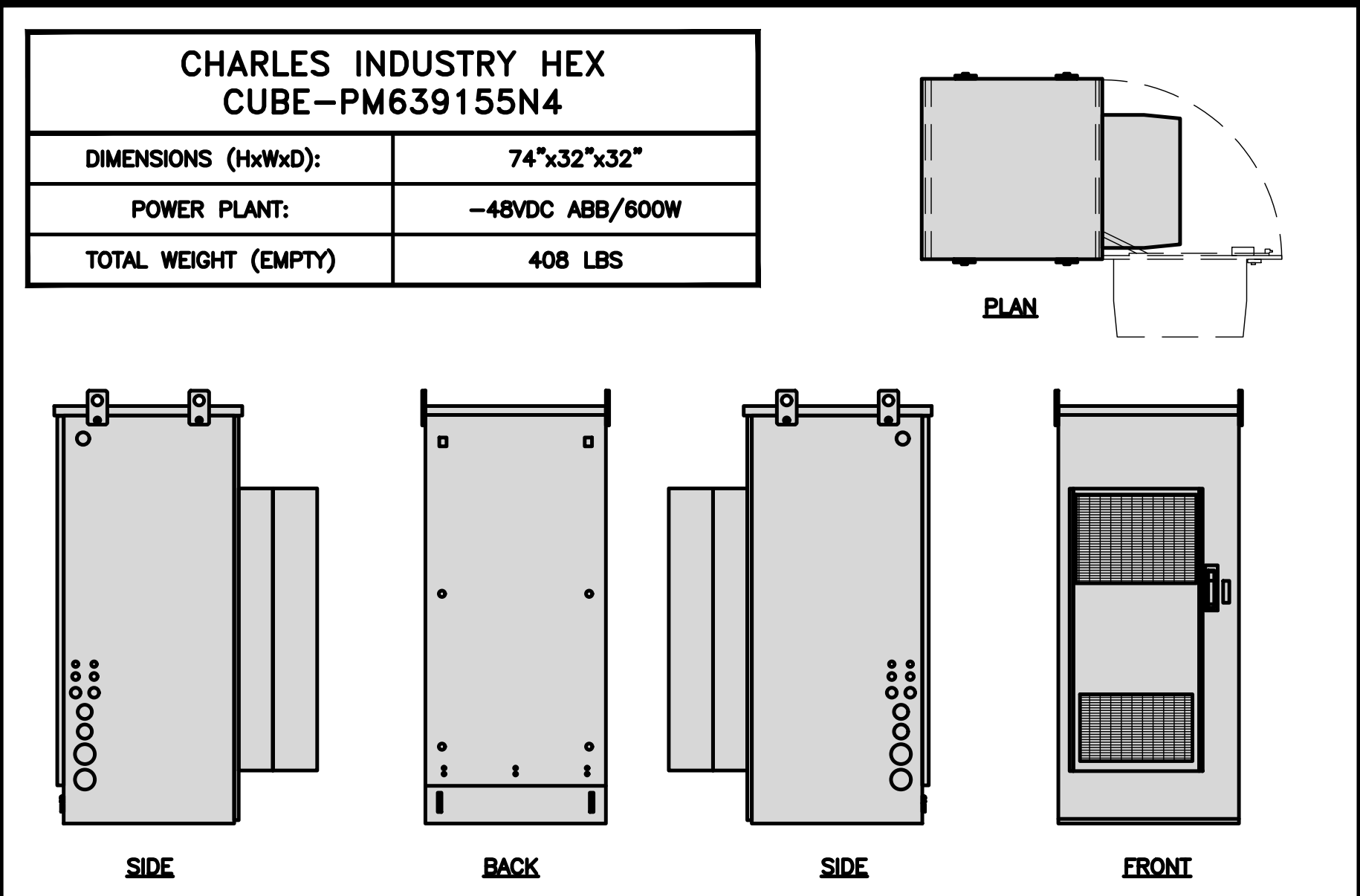
6039-Z0001-C

DISH Wireless L.L.C.
PROJECT INFORMATION
BOHVN00012A
NHV 2071 143137
800 OGG MEADOW ROAD
ORANGE, CT 06477

SHEET TITLE	
EQUIPMENT PLATFORM AND H-FRAME DETAILS	

SHEET NUMBER

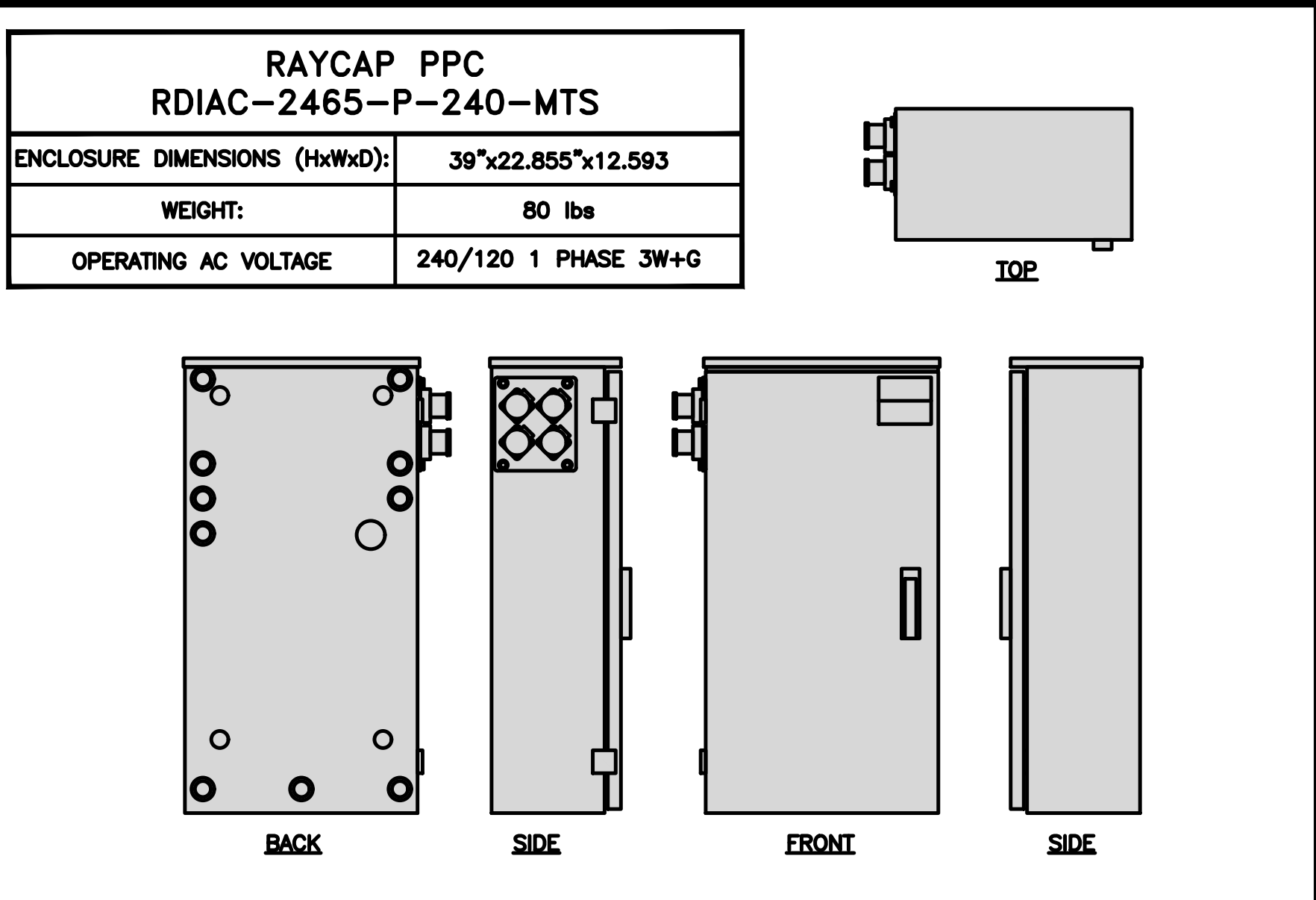
A-3



CABINET DETAIL

NO SCALE

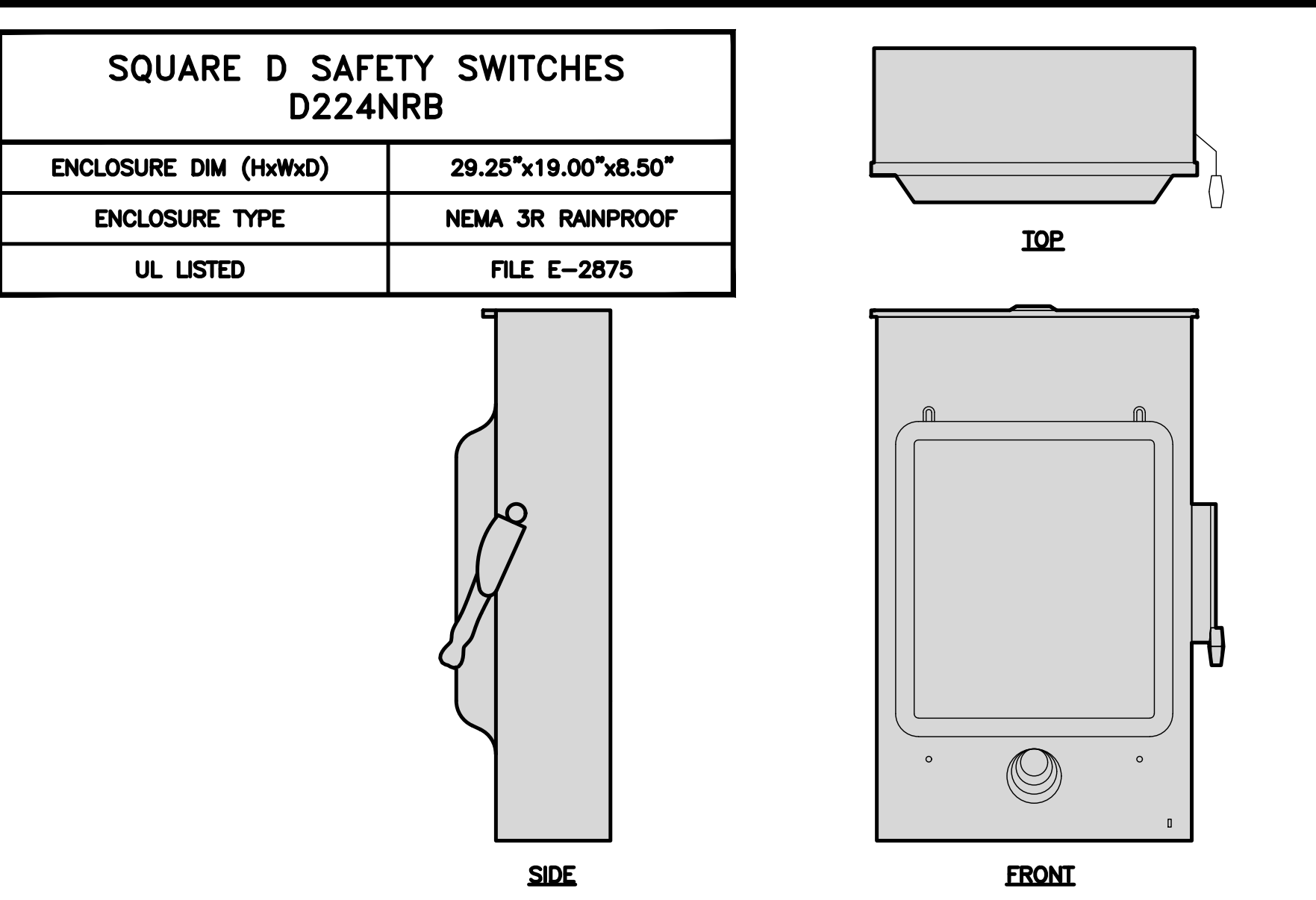
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POWER PROTECTION CABINET (PPC) DETAIL

NO SCALE

2



SAFETY SWITCH DETAIL

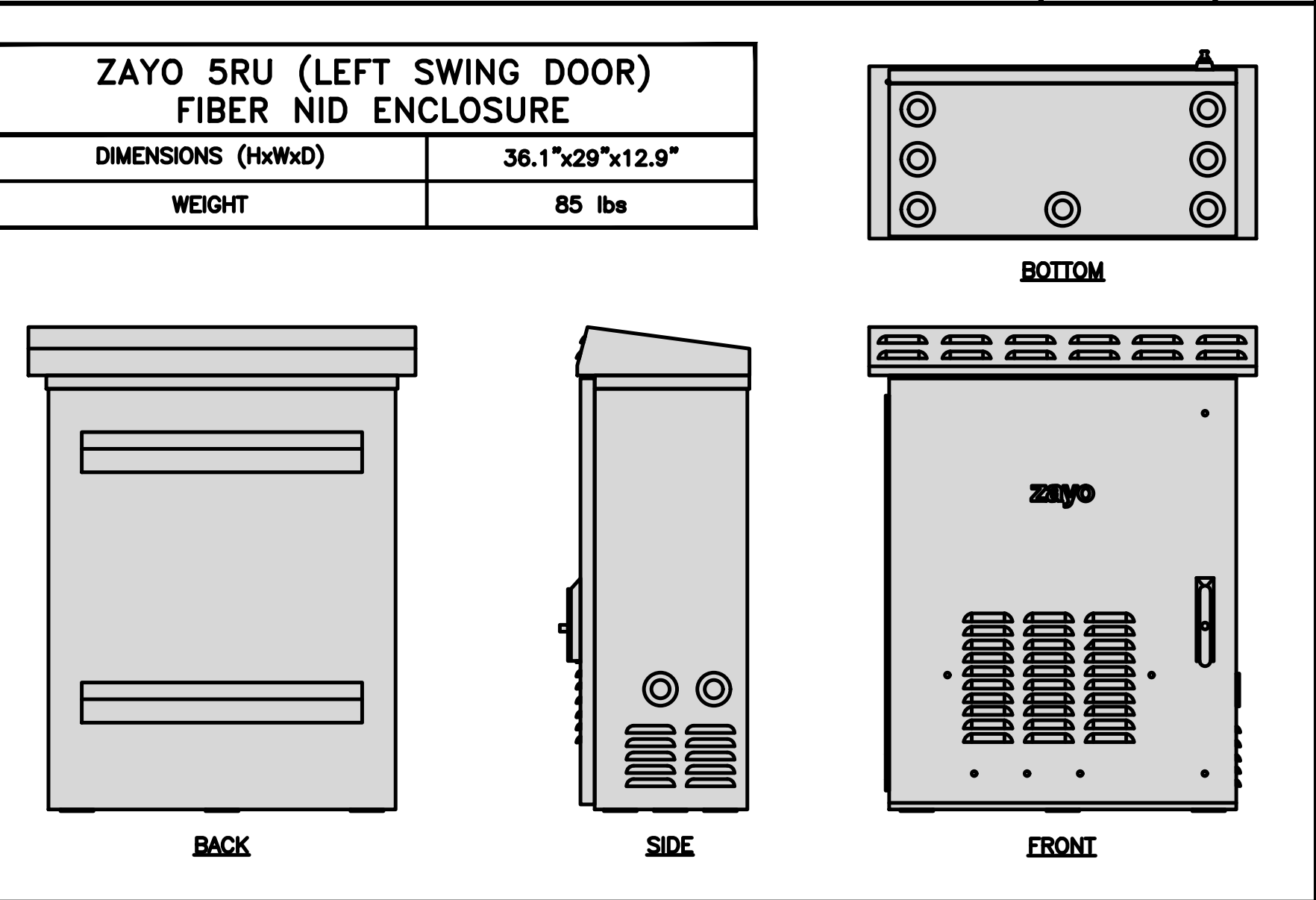
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NO SCALE

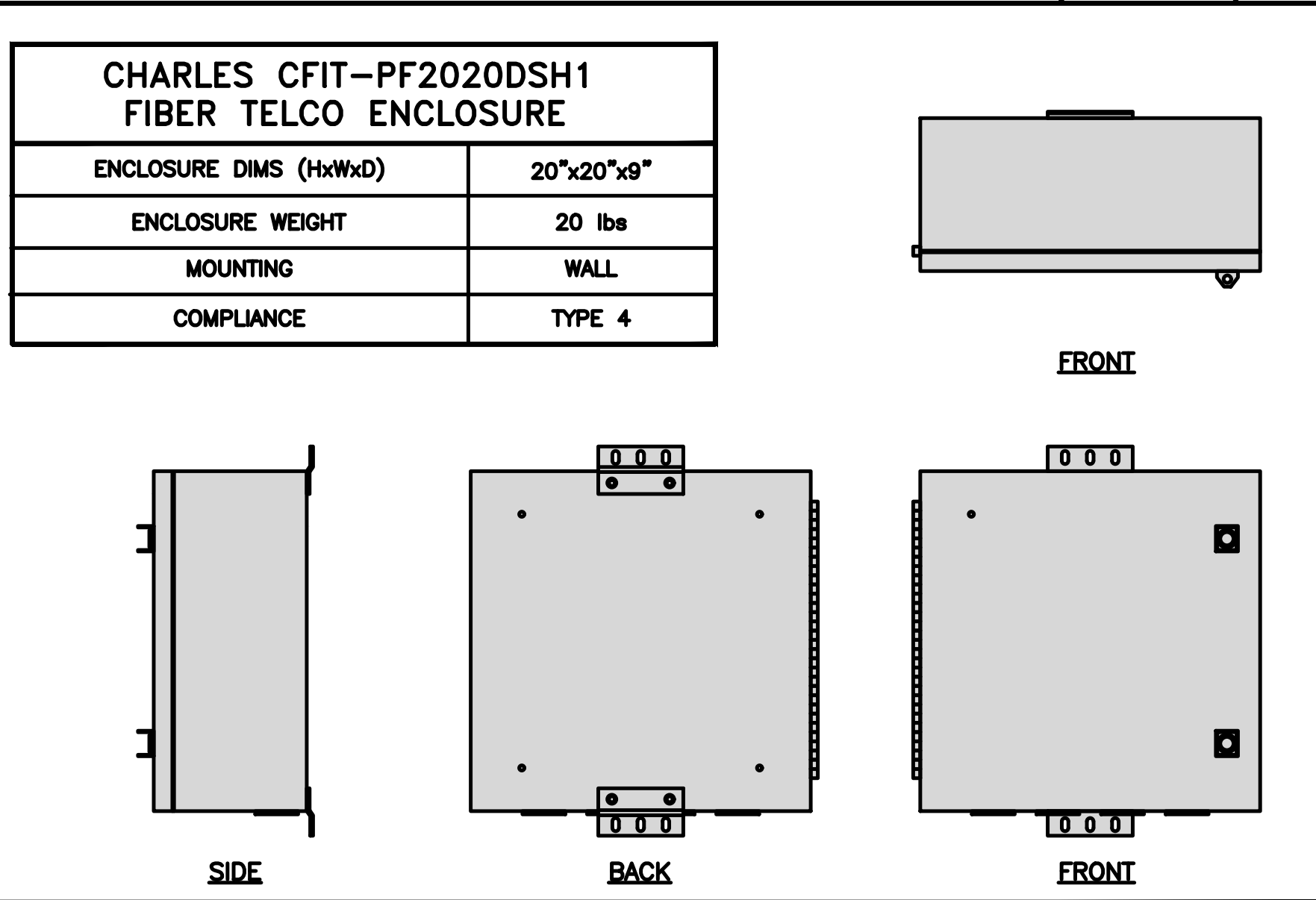
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FIBER NID ENCLOSURE DETAIL

NO SCALE

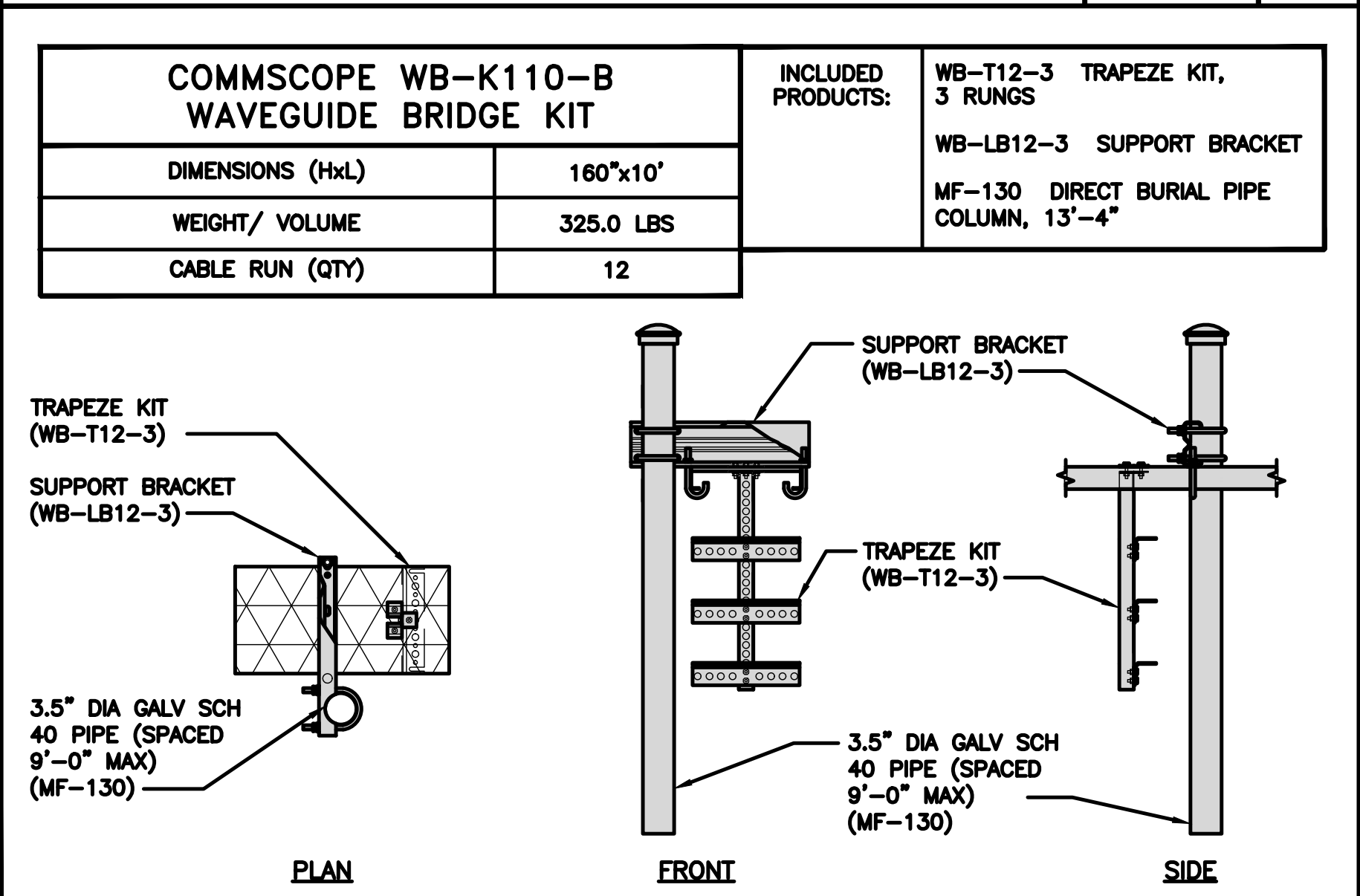
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FIBER TELCO ENCLOSURE DETAIL

NO SCALE

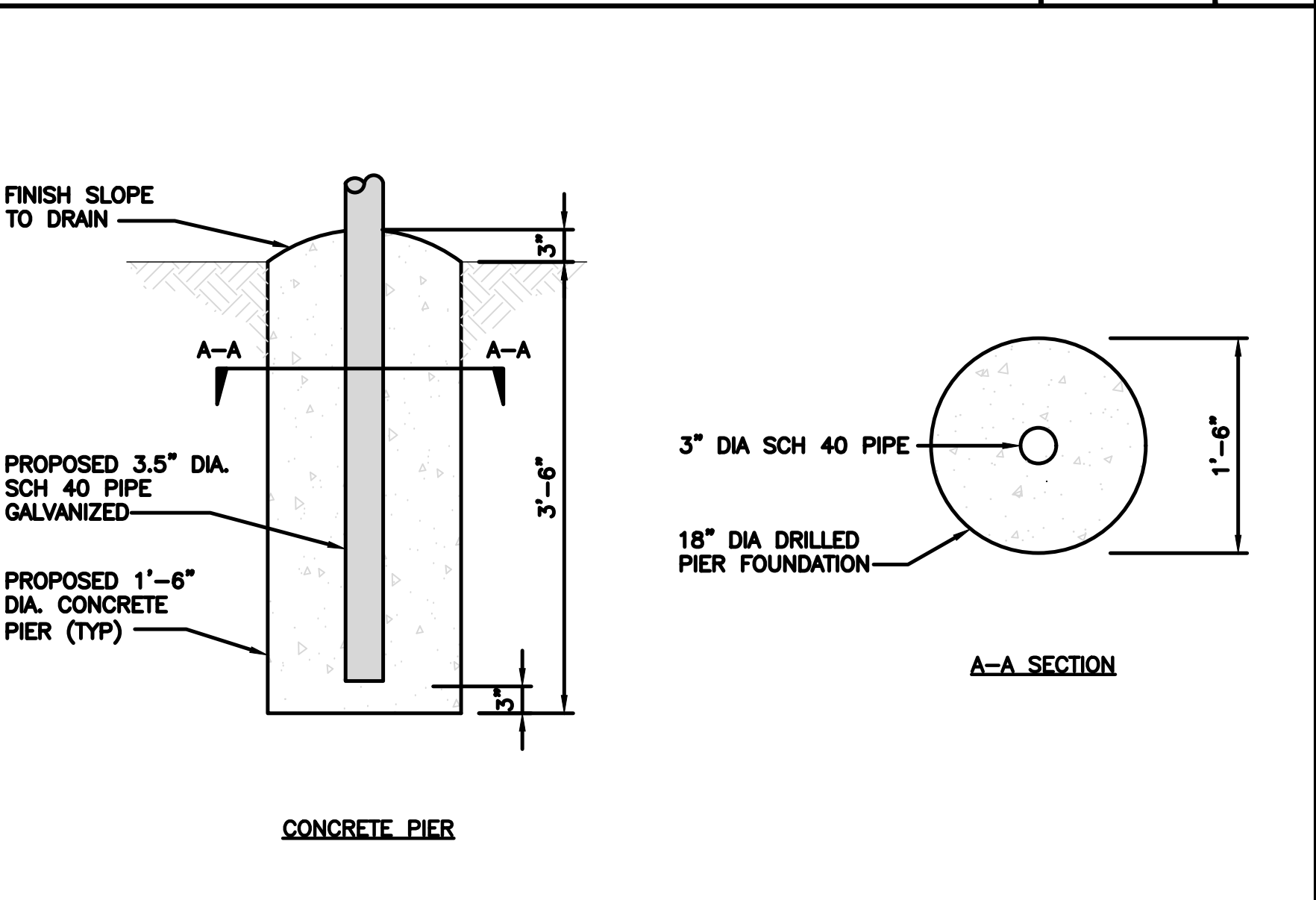
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ICE BRIDGE DETAIL

NO SCALE

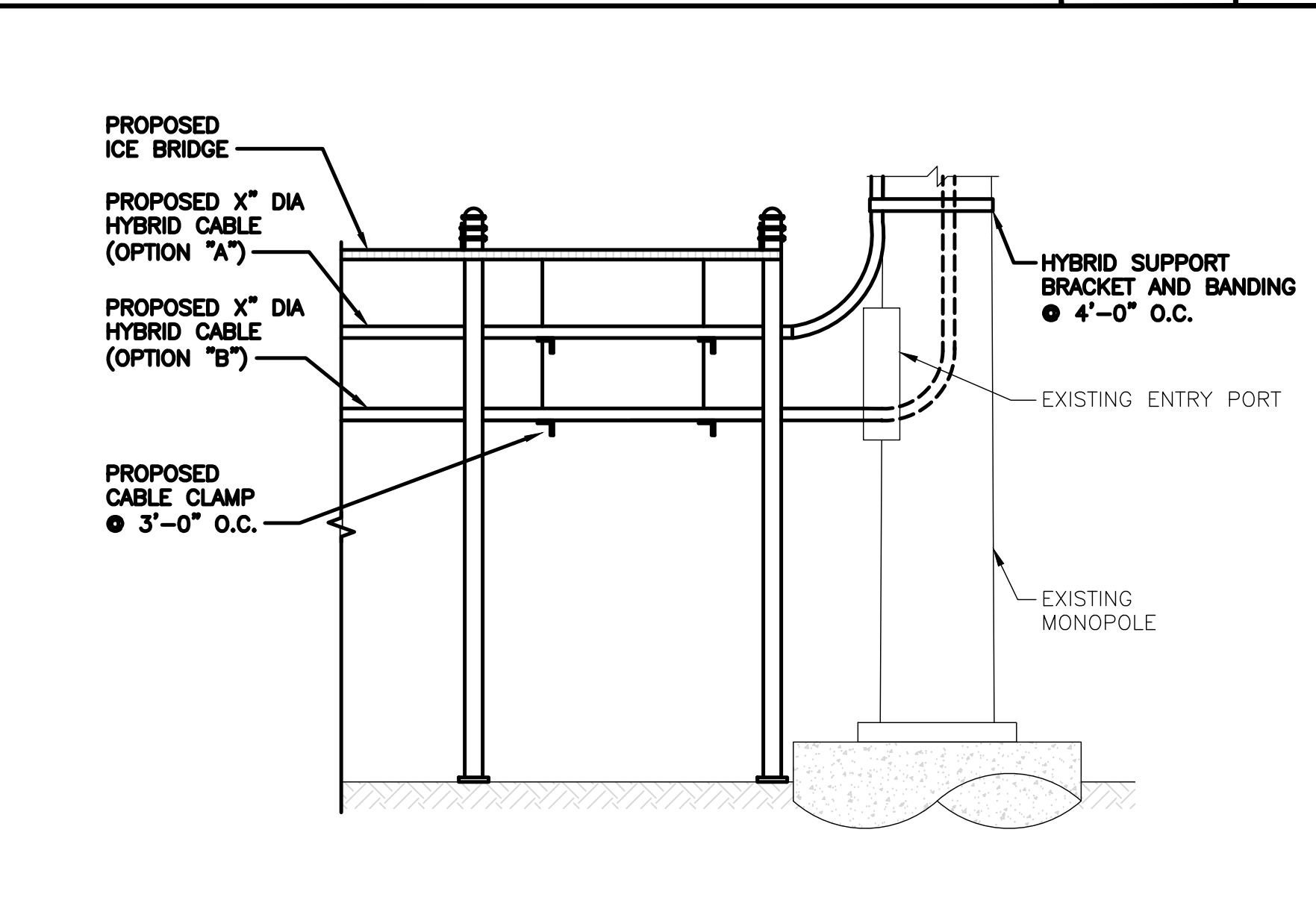
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TYPICAL ICE BRIDGE CONCRETE PIER DETAIL

NO SCALE

8



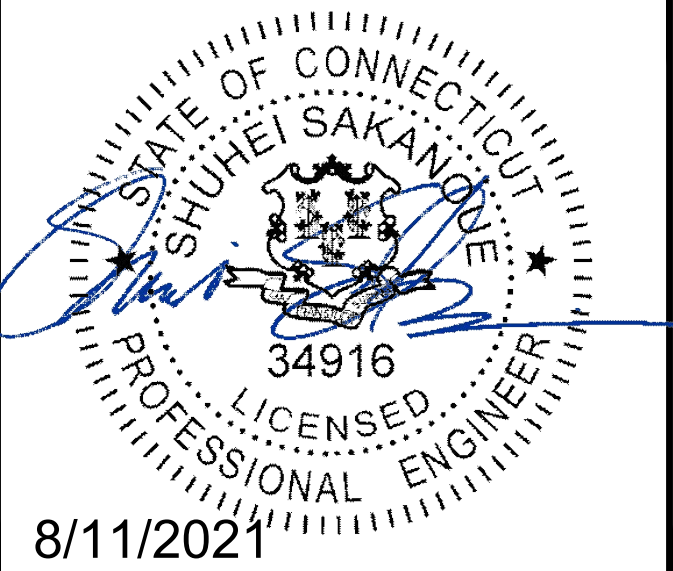
HYBRID CABLE RUN

NO SCALE

9



5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120



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DRAWN BY: CHECKED BY: APPROVED BY:

RCD SS CJW

RFDS REV #: N/A

CONSTRUCTION DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
A	06/21/2020	ISSUED FOR REVIEW
0	06/09/2021	ISSUED FOR CONSTRUCTION

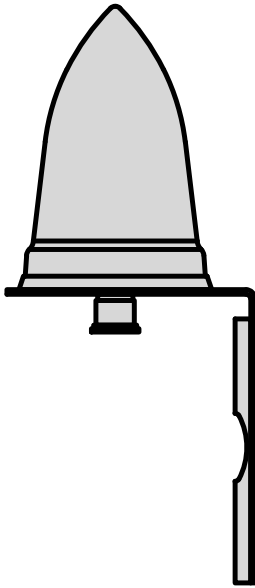
A&E PROJECT NUMBER
6039-Z0001-C

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PROJECT INFORMATION
BOHVN00012A
NHV 2071 143137
800 OGG MEADOW ROAD
ORANGE, CT 06477

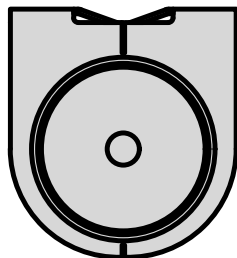
SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-4

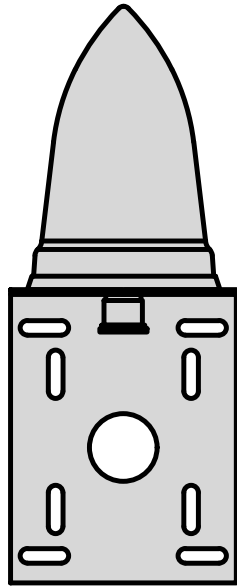
PCTEL GPSGL-TMG-SPI-40NCB	
DIMENSIONS (DIAxH) MM/INCH	81x184mm 3.2"x7.25"
WEIGHT W/ACCESSORIES	075 lbs
CONNECTOR	N-FEMALE
FREQUENCY RANGE	1590 ± 30MHz



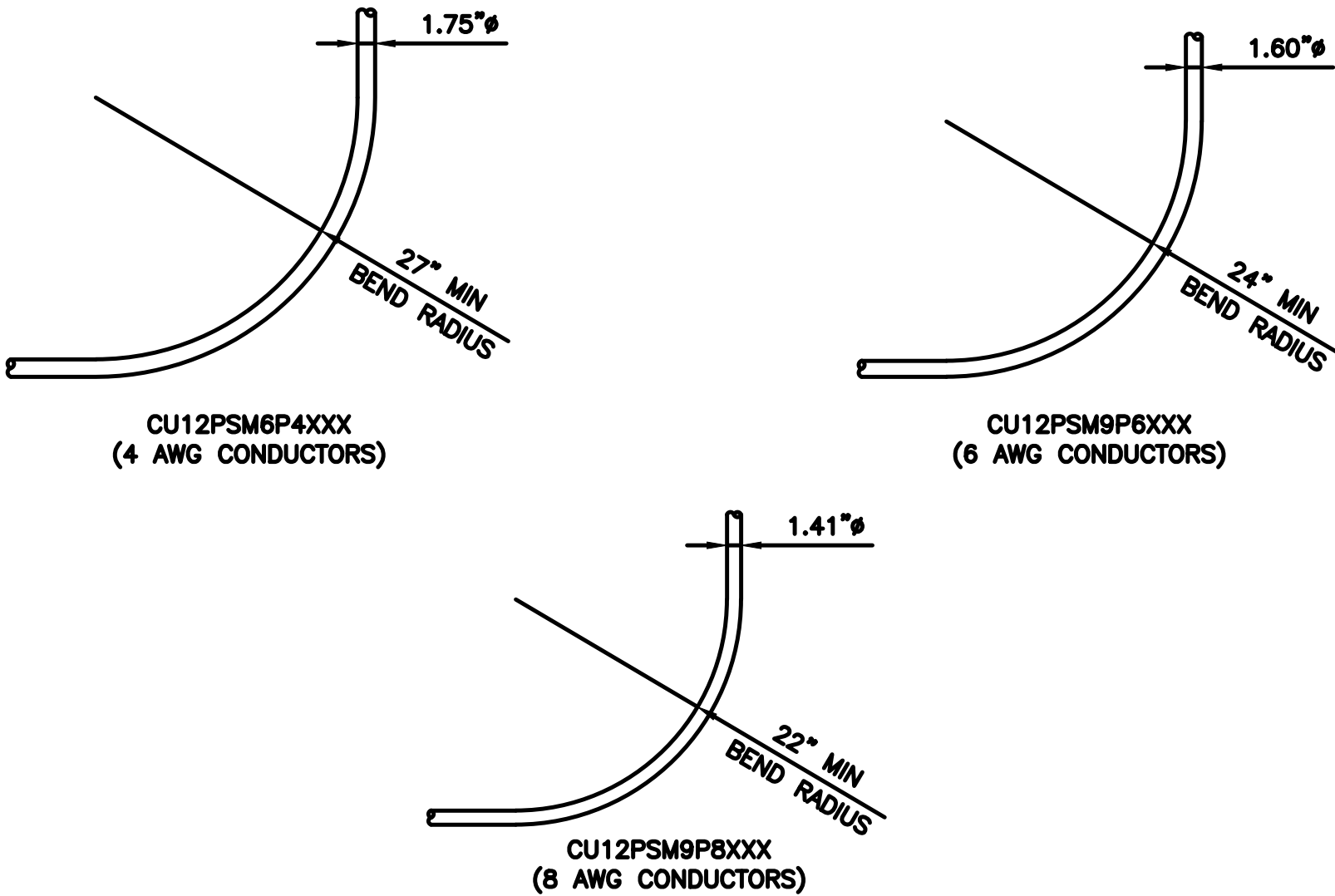
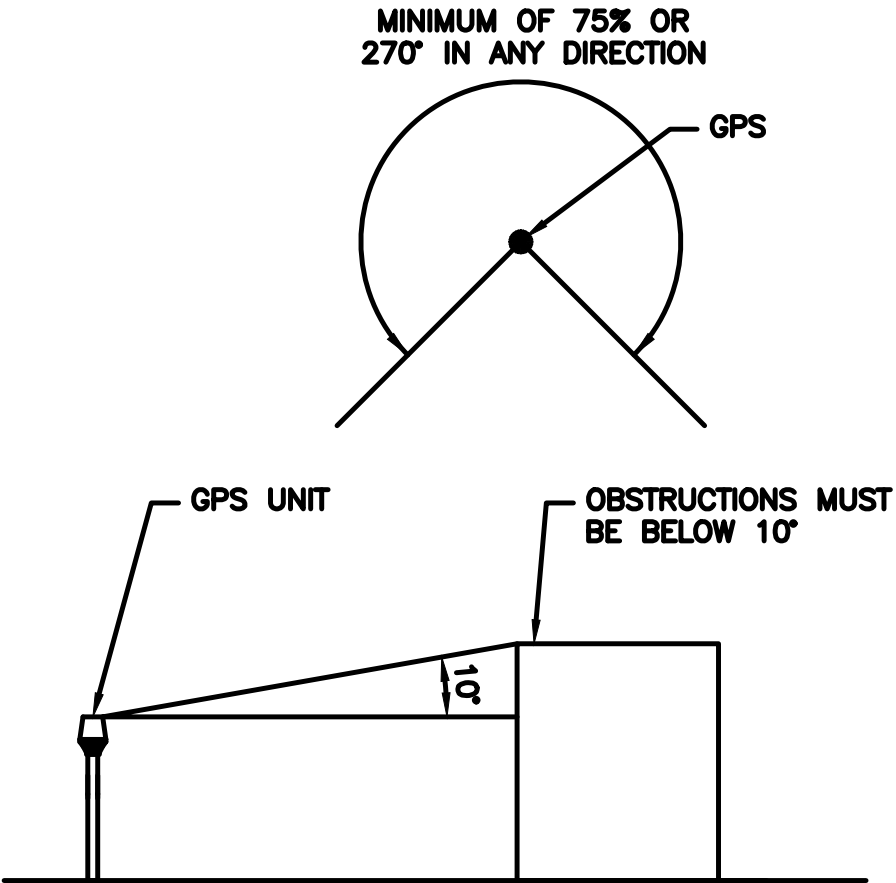
BACK



TOP



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

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

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

RFDS REV #: N/A

CONSTRUCTION DOCUMENTS

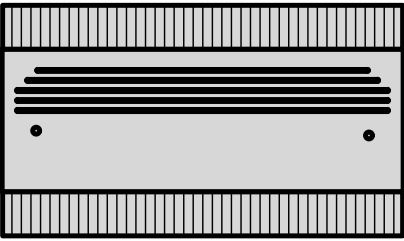
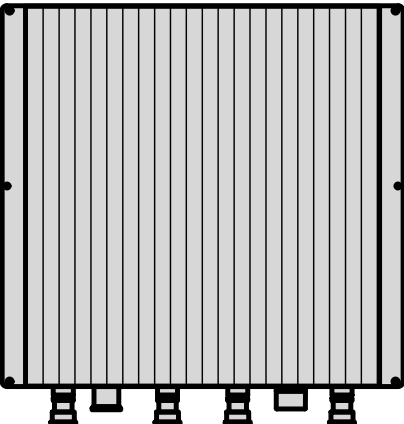
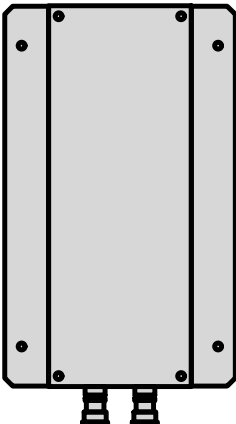
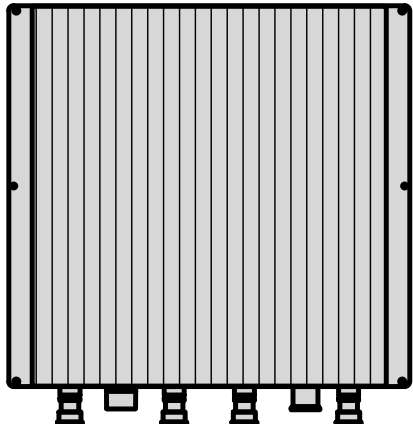
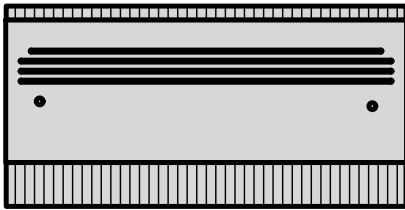
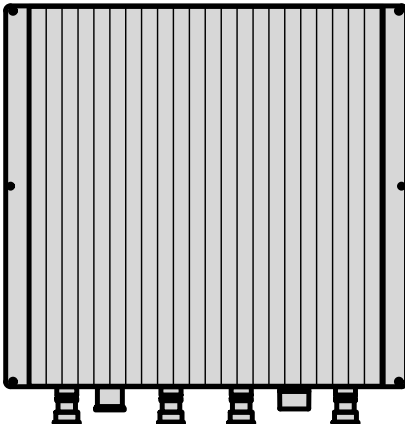
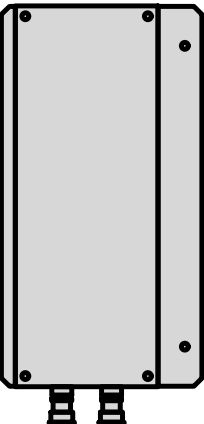
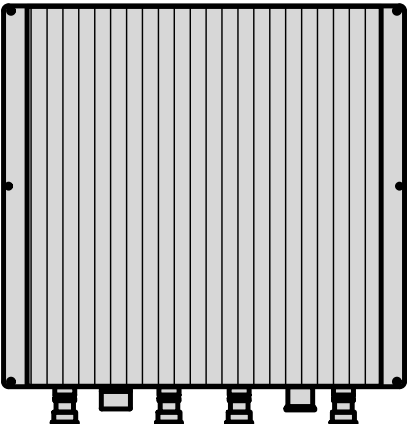
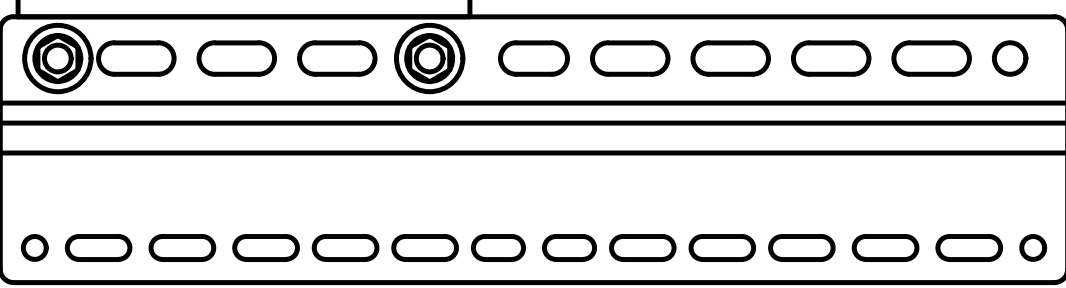
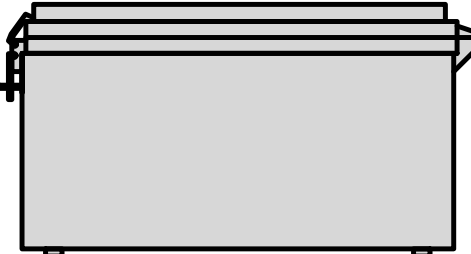
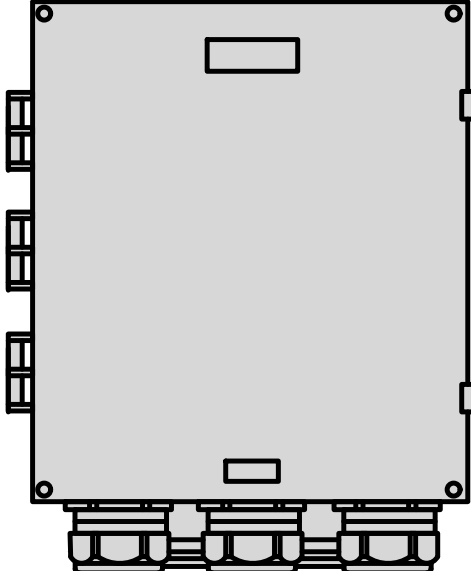
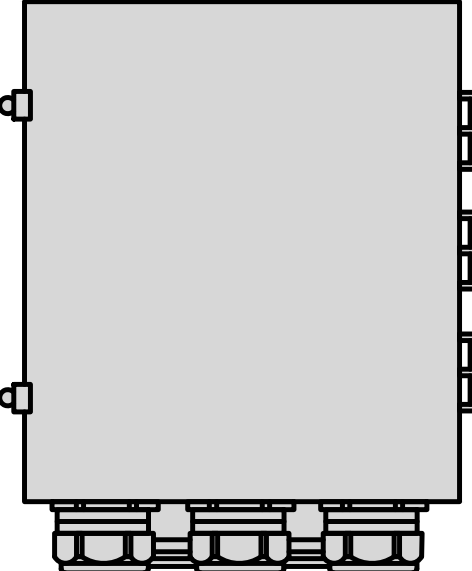
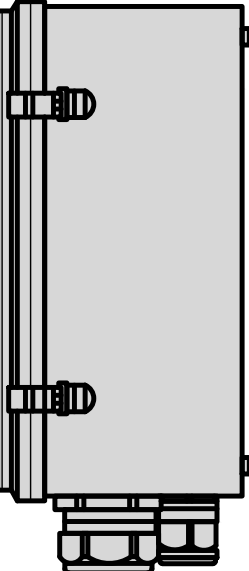
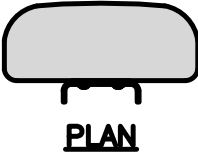
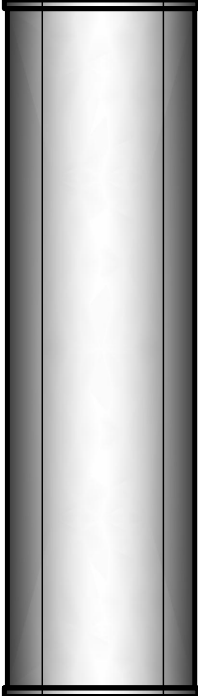
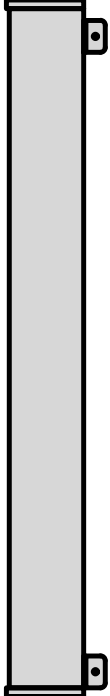
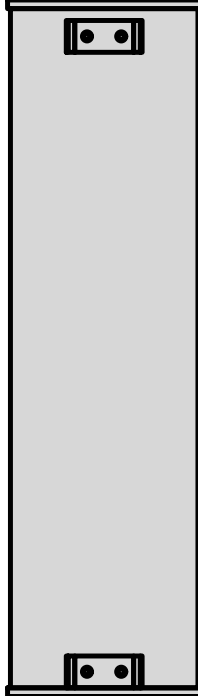
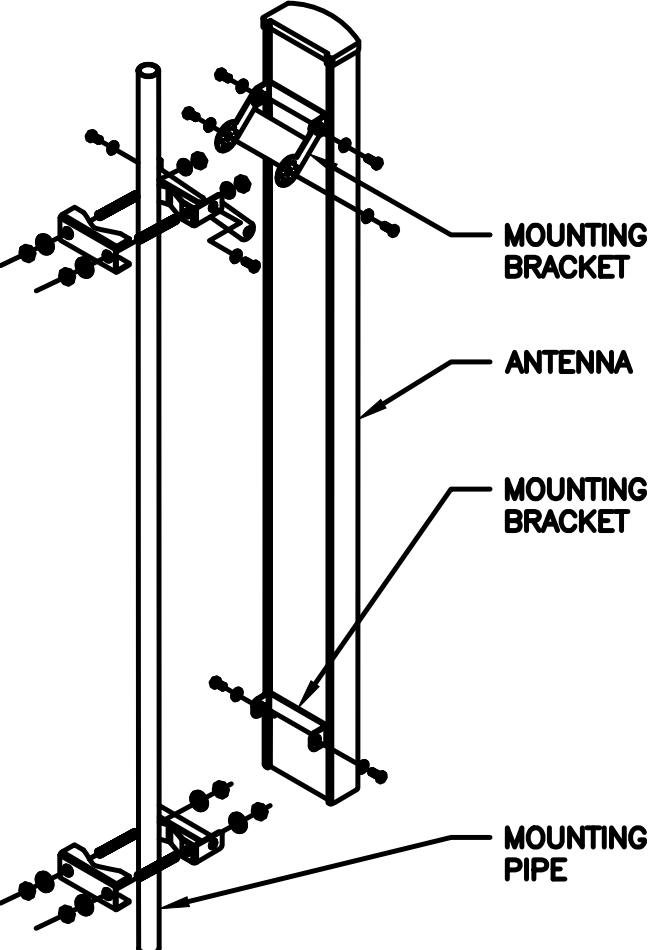
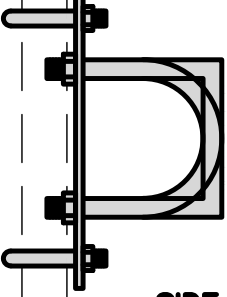
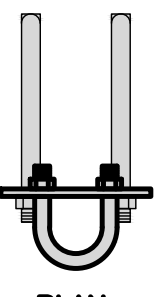
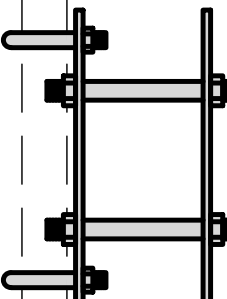
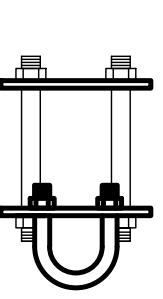
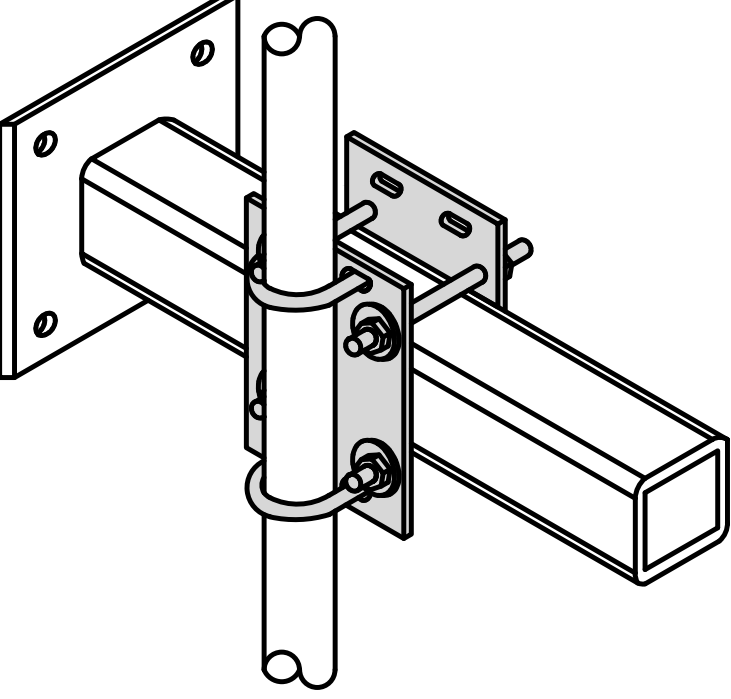
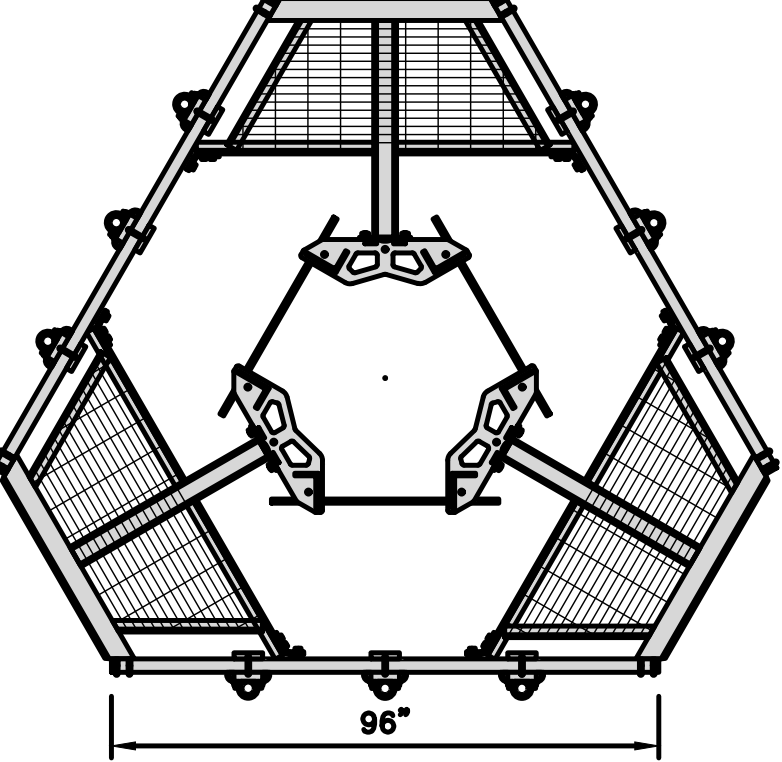
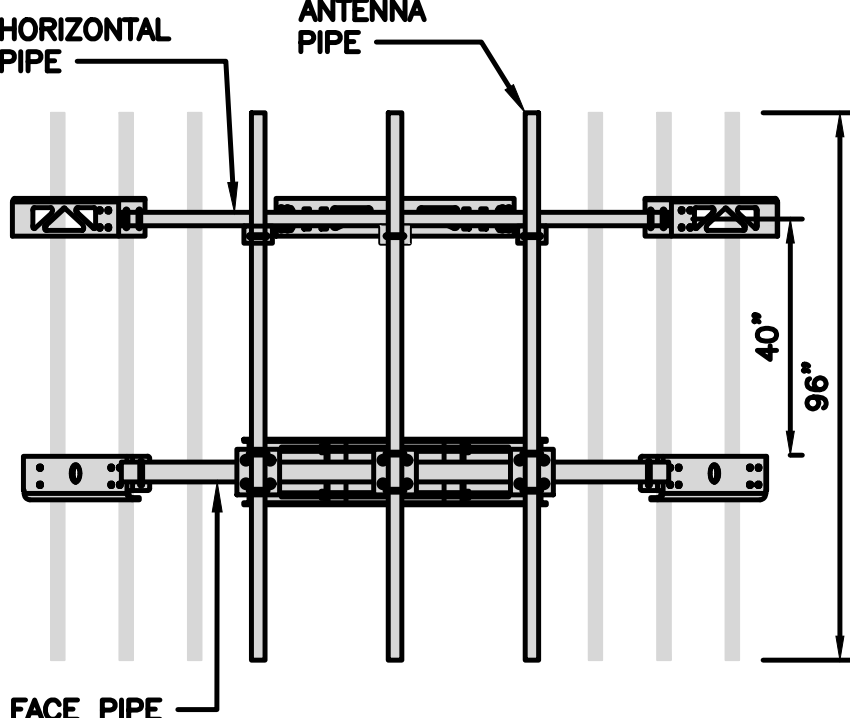
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0	06/09/2021	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
6039-Z0001-C

DISH Wireless L.L.C.
PROJECT INFORMATION
BOHVN00012A
NHV 2071 143137
800 OGG MEADOW ROAD
ORANGE, CT 06477

SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-5

<table><tr><td colspan="2">FUJITSU TRIPLE BAND TA08025-B605</td></tr><tr><td>DIMENSIONS (HxWxD)</td><td>14.9"x15.7"x9"</td></tr><tr><td>WEIGHT</td><td>74.95 lbs</td></tr><tr><td>CONNECTOR TYPE</td><td>4.3-10 RF CONNECTOR</td></tr><tr><td>POWER SUPPLY</td><td>DC -58~-36V</td></tr></table>  PLAN  BACK SIDE FRONT			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	<table><tr><td colspan="2">FUJITSU DUAL BAND TA08025-B604</td></tr><tr><td>DIMENSIONS (HxWxD)</td><td>14.9"x15.7"x7.8"</td></tr><tr><td>WEIGHT</td><td>63.9 lbs</td></tr><tr><td>CONNECTOR TYPE</td><td>4.3-10 RF CONNECTOR</td></tr><tr><td>POWER SUPPLY</td><td>DC -58~-36V</td></tr></table>  PLAN  BACK SIDE FRONT			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	<table><tr><td colspan="2">SABRE DOUBLE Z-BRACKET C10123155</td></tr><tr><td>DIMENSIONS (HxWxD) (1 BRACKET)</td><td>5"x20"x1-13/16"</td></tr><tr><td>WEIGHT (FULL ASSEMBLY)</td><td>35.79 lbs</td></tr><tr><td>PACKAGE QUANTITY</td><td>4</td></tr></table> <table><tr><th>#</th><th>DESCRIPTION</th></tr><tr><td>1</td><td>PLATE, CHANNEL BRACKET</td></tr><tr><td>2</td><td>RRH Z BRACKET, 3/16"</td></tr><tr><td>3</td><td>THREADED ROD ASSEMBLY 1/2"x12"</td></tr></table>  NOTE: OR DISH Wireless L.L.C. APPROVED EQUIVALENT			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"	<table><tr><td colspan="2">RRH DETAIL</td><td>NO SCALE</td><td>1</td></tr></table>			RRH DETAIL		NO SCALE	1	<table><tr><td colspan="2">RRH DETAIL</td><td>NO SCALE</td><td>2</td></tr></table>			RRH DETAIL		NO SCALE	2	<table><tr><td colspan="2">RRH MOUNT DETAIL</td><td>NO SCALE</td><td>3</td></tr></table>			RRH MOUNT DETAIL		NO SCALE	3
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<table><tr><td colspan="2">RAYCAP RDIDC-9181-PF-48 DC SURGE PROTECTION (OVP)</td></tr><tr><td>DIMENSIONS (HxWxD)</td><td>18.98"x14.39"x8.15"</td></tr><tr><td>WEIGHT</td><td>21.82 LBS</td></tr></table>  PLAN  SIDE BACK FRONT			RAYCAP RDIDC-9181-PF-48 DC SURGE PROTECTION (OVP)		DIMENSIONS (HxWxD)	18.98"x14.39"x8.15"	WEIGHT	21.82 LBS	<table><tr><td colspan="2">JMA WIRELESS MX08FR0665-21 ANTENNA</td></tr><tr><td>DIMENSIONS (HxWxD)</td><td>72.0"x20.0"x8.0"</td></tr><tr><td>TOTAL WEIGHT</td><td>64.5 LB</td></tr><tr><td>RF PORTS, CONNECTOR TYPE</td><td>8 x 4.3-10 FEMALE</td></tr></table>  PLAN  BACK SIDE FRONT NOTES FINAL ANTENNA SPECIFICATIONS TO BE CONFIRMED BY GC			JMA WIRELESS MX08FR0665-21 ANTENNA		DIMENSIONS (HxWxD)	72.0"x20.0"x8.0"	TOTAL WEIGHT	64.5 LB	RF PORTS, CONNECTOR TYPE	8 x 4.3-10 FEMALE	<table><tr><td colspan="2">M04 MOUNTING BRACKET HPA-33R-BUU-H4-K</td></tr><tr><td>WIDTH</td><td>5"</td></tr><tr><td>DEPTH</td><td>2"</td></tr><tr><td>HEIGHT</td><td>8"</td></tr><tr><td>TOTAL WEIGHT</td><td>1.5 lbs</td></tr><tr><td>HOUSING MATERIAL</td><td>ASA/ABS/ALUMINUM</td></tr><tr><td>RADOME COLOR</td><td>LIGHT GRAY</td></tr><tr><td>CONNECTOR</td><td>1x8-PIN DAISY CHAIN</td></tr></table>  NOTE: OR DISH Wireless L.L.C. APPROVED EQUIVALENT			M04 MOUNTING BRACKET HPA-33R-BUU-H4-K		WIDTH	5"	DEPTH	2"	HEIGHT	8"	TOTAL WEIGHT	1.5 lbs	HOUSING MATERIAL	ASA/ABS/ALUMINUM	RADOME COLOR	LIGHT GRAY	CONNECTOR	1x8-PIN DAISY CHAIN	<table><tr><td colspan="2">SURGE SUPPRESSION DETAIL (OVP)</td><td>NO SCALE</td><td>4</td></tr></table>			SURGE SUPPRESSION DETAIL (OVP)		NO SCALE	4	<table><tr><td colspan="2">ANTENNA DETAIL</td><td>NO SCALE</td><td>5</td></tr></table>			ANTENNA DETAIL		NO SCALE	5	<table><tr><td colspan="2">ANTENNA MOUNTING DETAIL</td><td>NO SCALE</td><td>6</td></tr></table>			ANTENNA MOUNTING DETAIL		NO SCALE	6						
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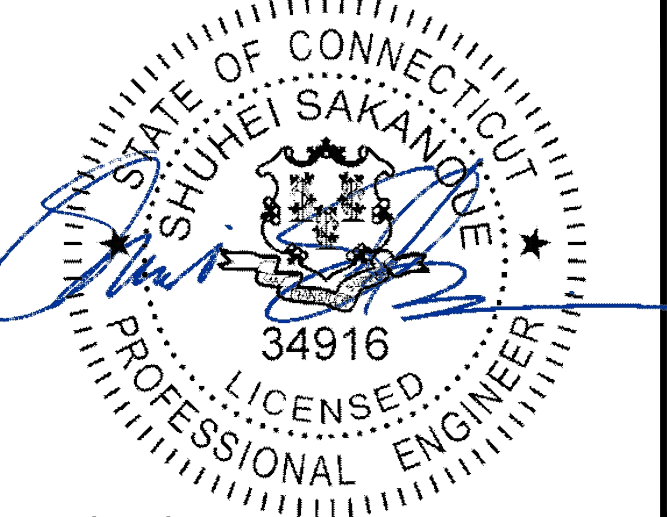
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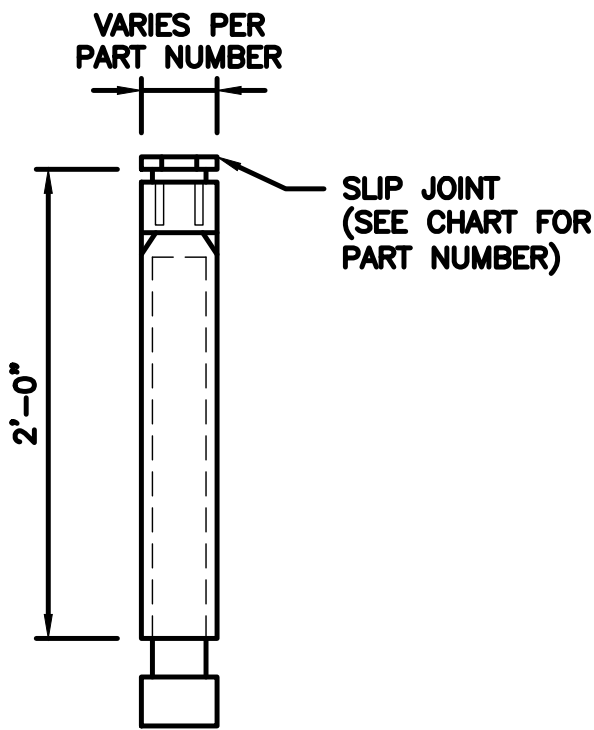
A&E PROJECT NUMBER
6039-Z0001-C

DISH Wireless L.L.C.
PROJECT INFORMATION
BOHVN00012A
NHV 2071 143137
800 OGG MEADOW ROAD
ORANGE, CT 06477

SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-6

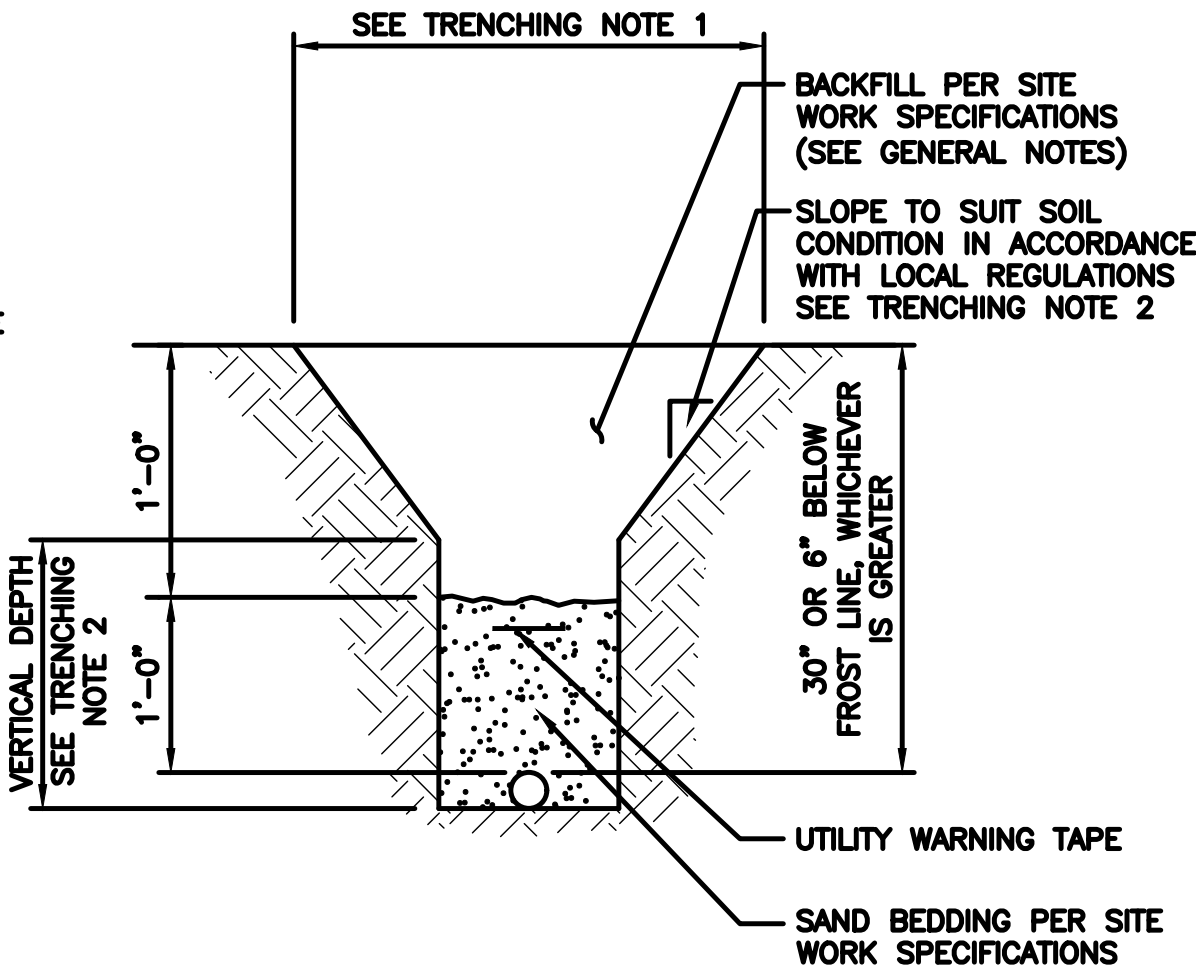
CARLON EXPANSION FITTINGS				
COUPLING END PART#	MALE TERMINAL ADAPTER END PART#	SIZE	STD CTN QTY.	TRAVEL LENGTH
E945D	E945DX	1/2"	20	4"
E945E	E945EX	3/4"	15	4"
E945F	E945FX	1"	10	4"
E945G	E945GX	1 1/4"	5	4"
E945H	E945HX	1 1/2"	5	4"
E945J	E945JX	2"	15	8"
E945K	E945KX	2 1/2"	10	8"
E945L	E945LX	3"	10	8"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

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



EXPANSION JOINT DETAIL

NO SCALE

1

TYPICAL UNDERGROUND TRENCH DETAIL

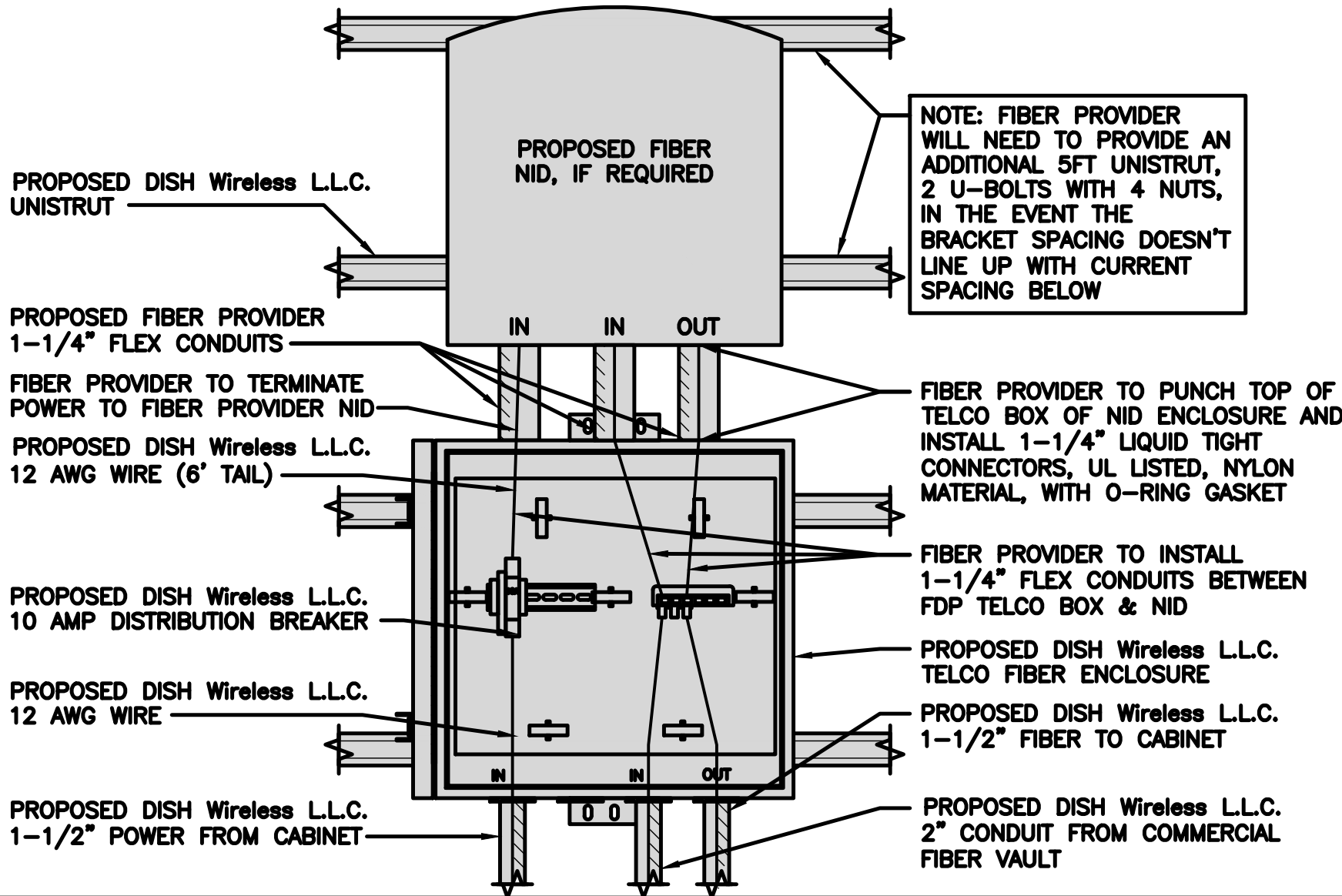
NO SCALE

2

NOT USED

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

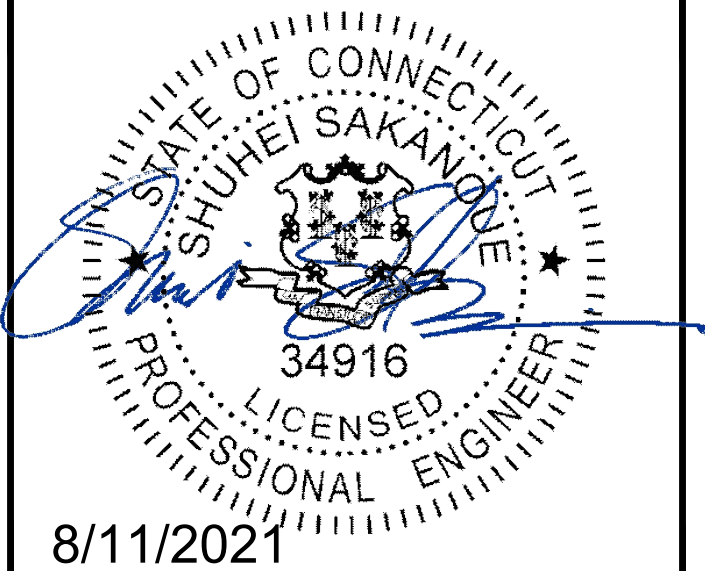
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RCD SS CJW

RFDS REV #: N/A

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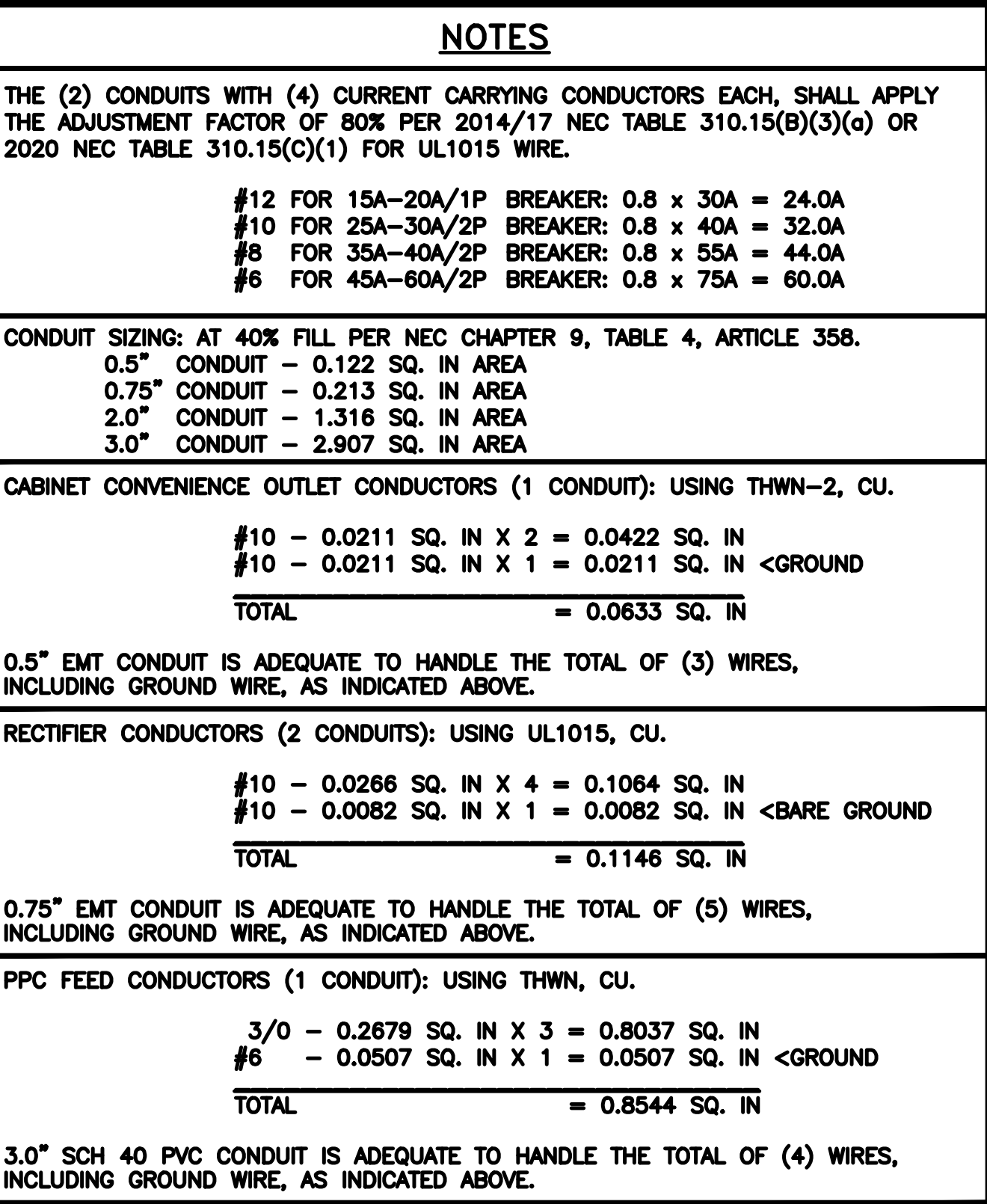
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DISH Wireless L.L.C.
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NHV 2071 143137
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SHEET TITLE
ELECTRICAL
DETAILS

SHEET NUMBER

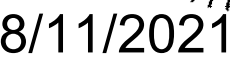
E-2



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RFDS REV #: N/A

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HV 2071 143137
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SHEET TITLE	
ELECTRICAL ONE-LINE, FAULT CALCS & PANEL SCHEDULE	

SHEET NUMBER

E-3

NO SCALE

1

PANEL SCHEDULE

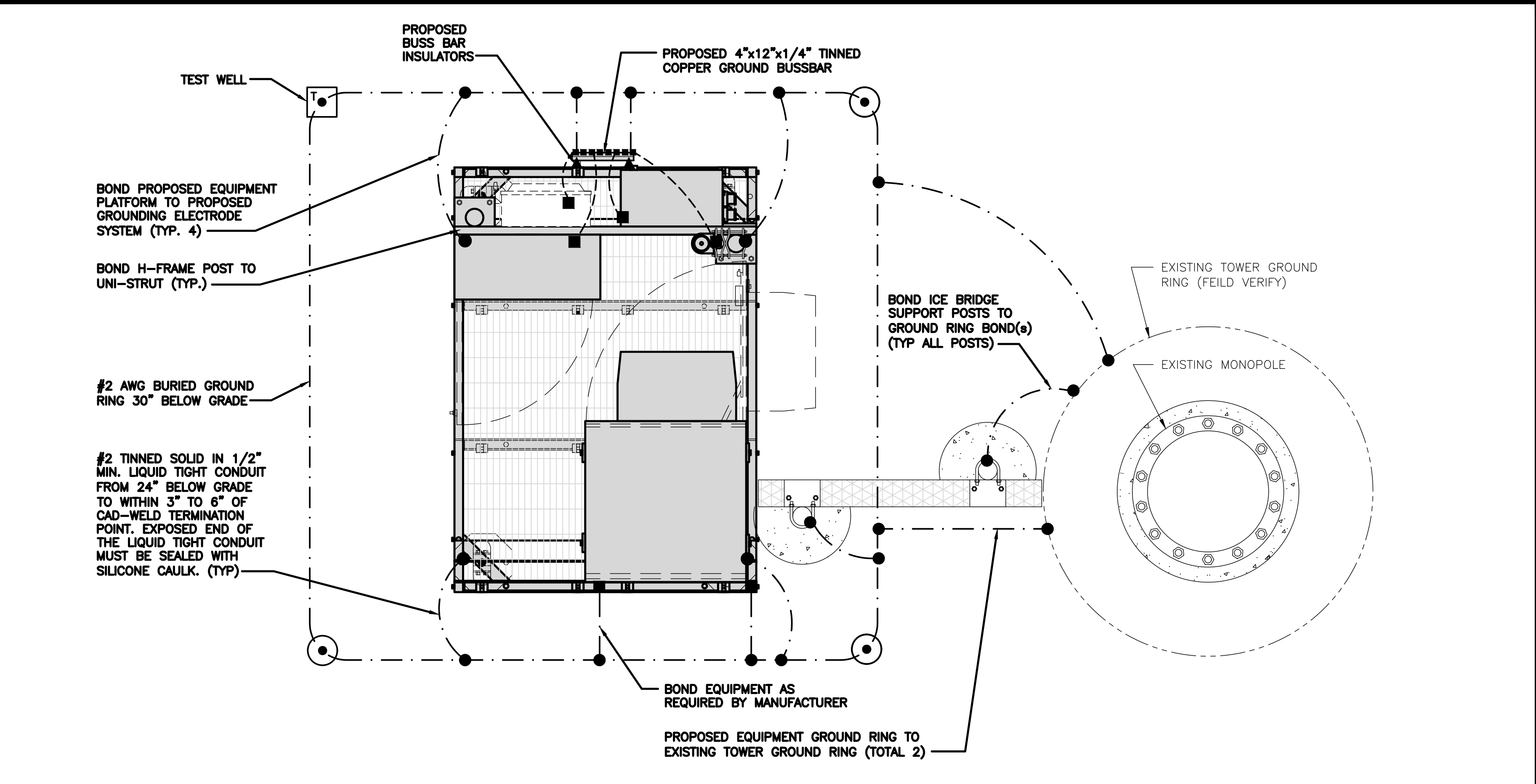
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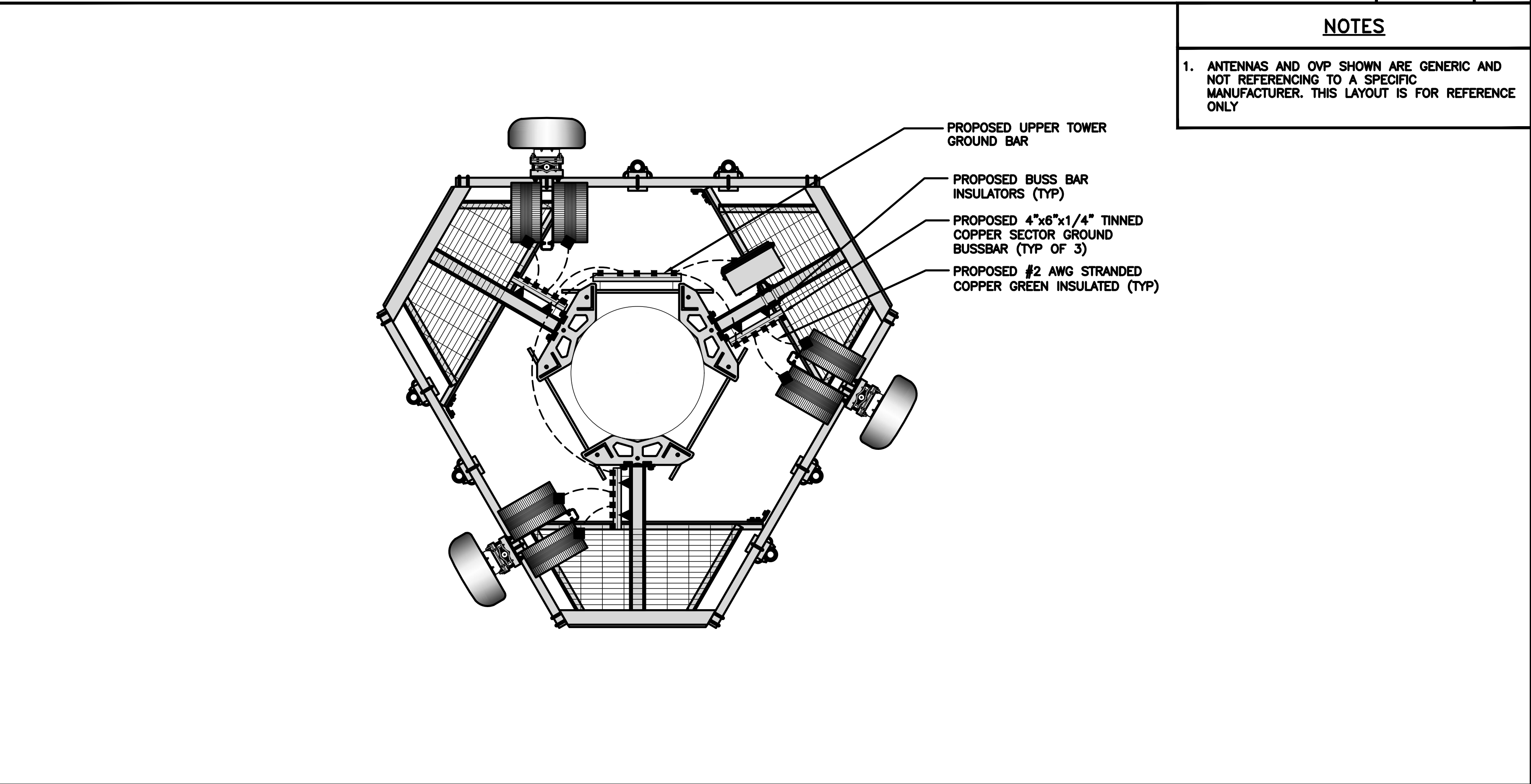
NO SCALE

3



TYPICAL EQUIPMENT GROUNDING PLAN

NO SCALE 1



TYPICAL ANTENNA GROUNDING PLAN

NO SCALE 2

- EXOTHERMIC CONNECTION
- MECHANICAL CONNECTION
- #6 AWG STRANDED & INSULATED
- #2 AWG SOLID COPPER TINNED
- ▲ BUSS BAR INSULATOR
- TEST GROUND ROD WITH INSPECTION SLEEVE
- GROUND BUS BAR
- GROUND ROD

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 PROPOSED ANTENNA MOUNT COLLAR. REFER TO DISH Wireless L.L.C. GROUNDING NOTES.

GROUNDING KEY NOTES

NO SCALE 3



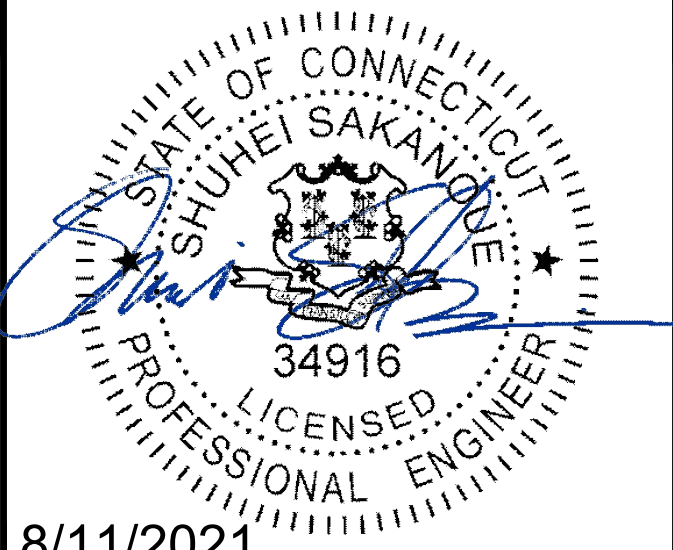
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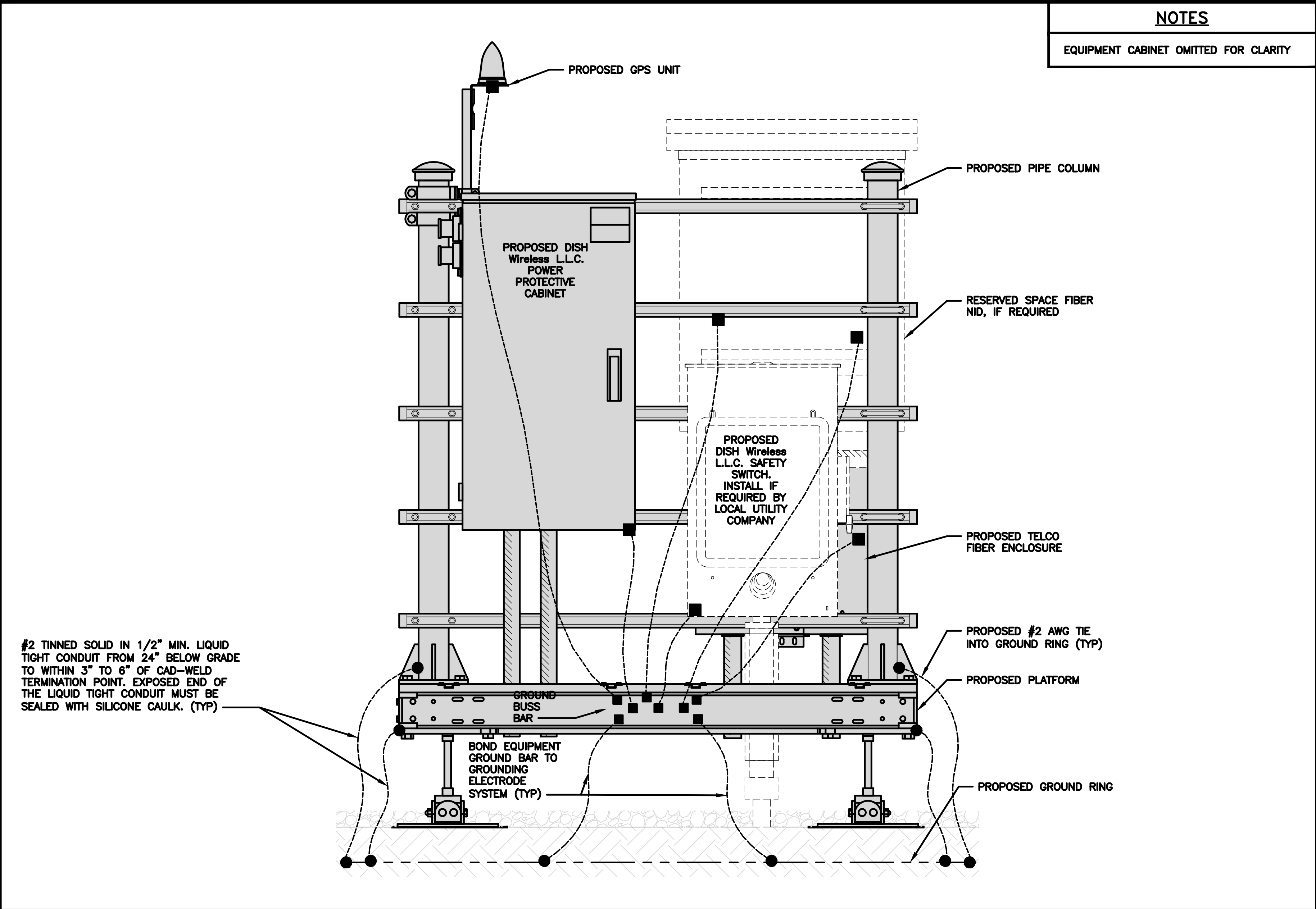
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DISH Wireless L.L.C.
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NHV 2071 143137
800 OGG MEADOW ROAD
ORANGE, CT 06477

SHEET TITLE
GROUNDING PLANS
AND NOTES

SHEET NUMBER

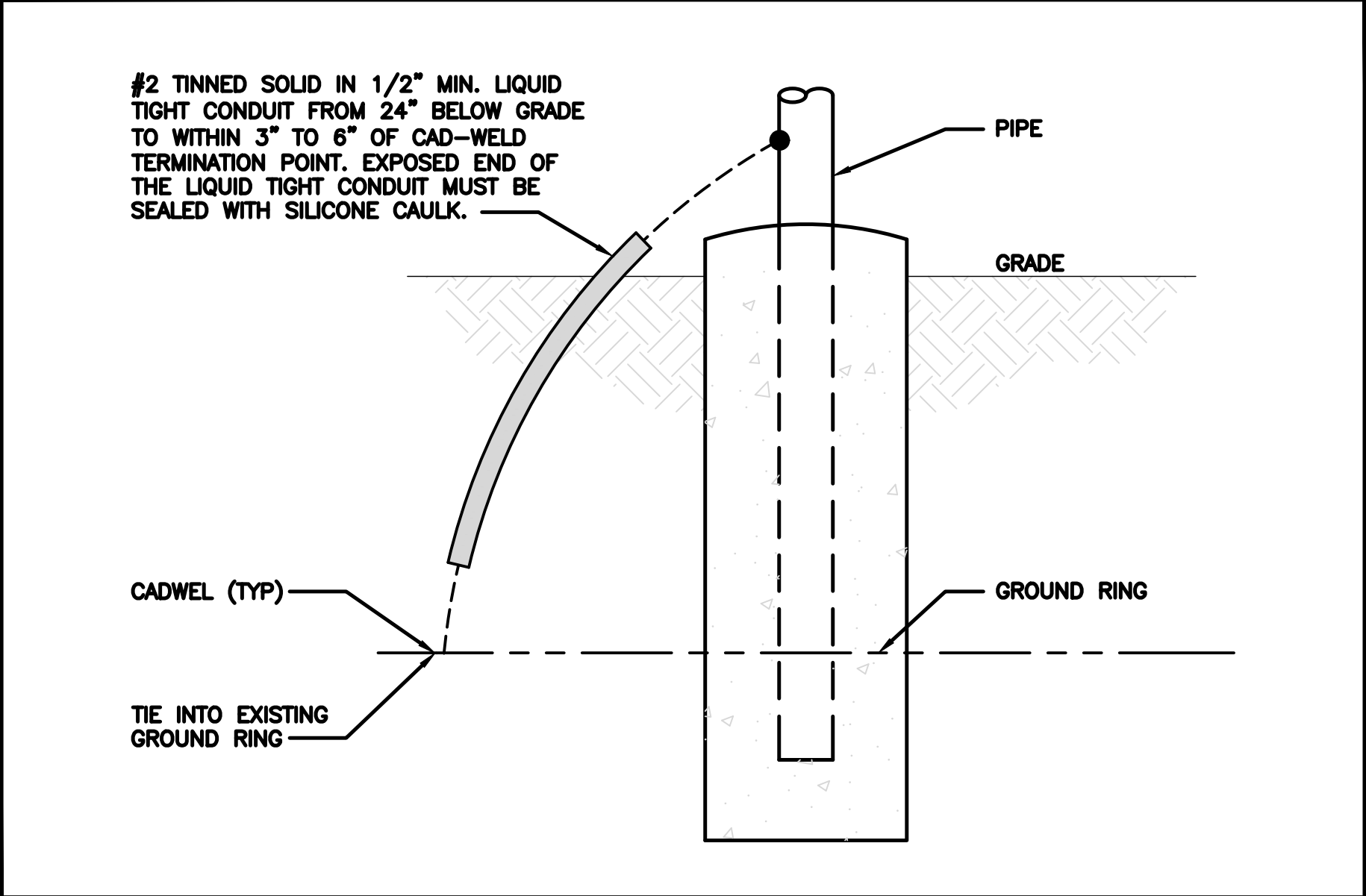
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H-FRAME GROUNDING DETAIL

NO SCALE

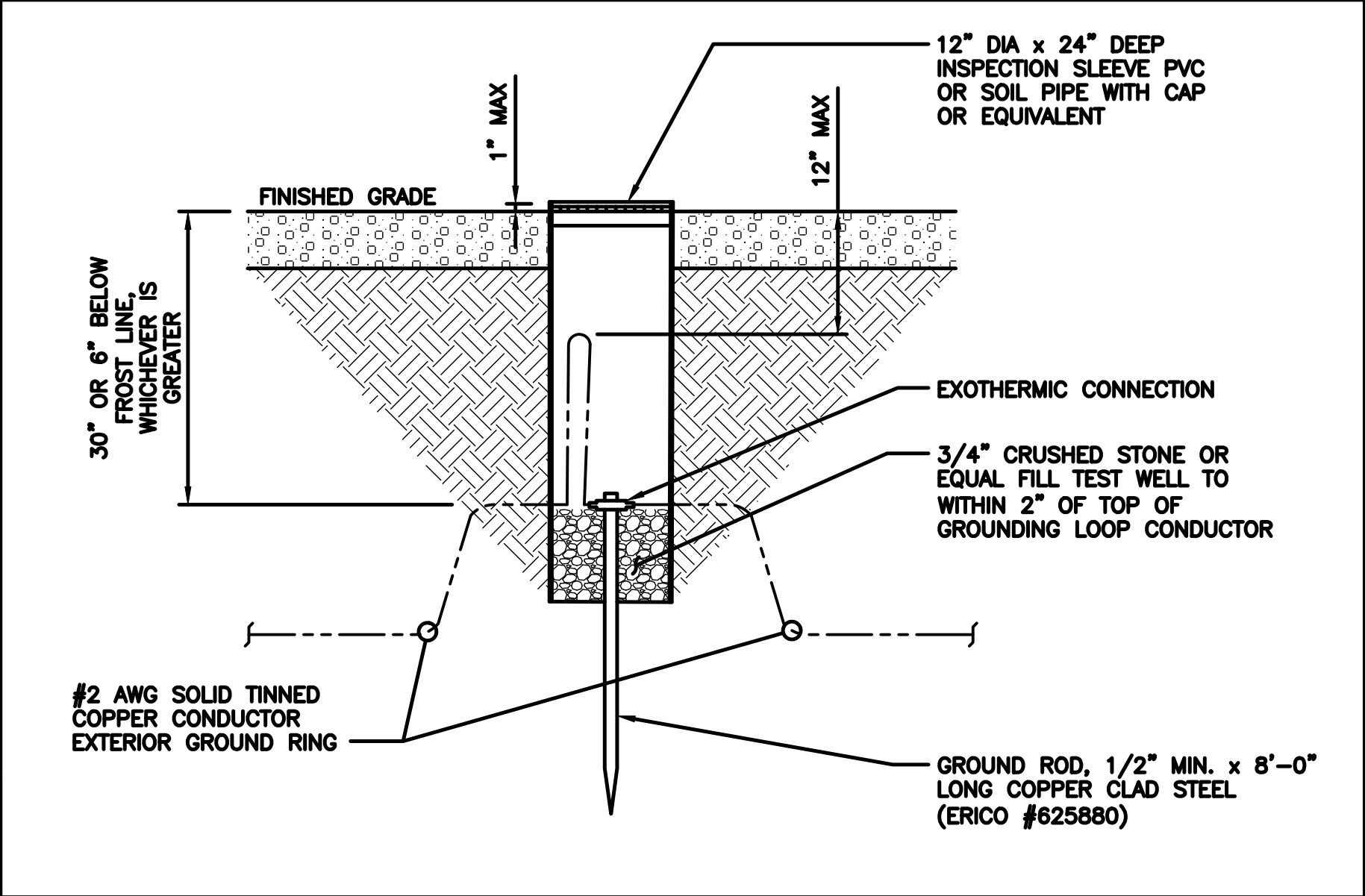
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TRANSITIONING GROUND DETAIL

NO SCALE

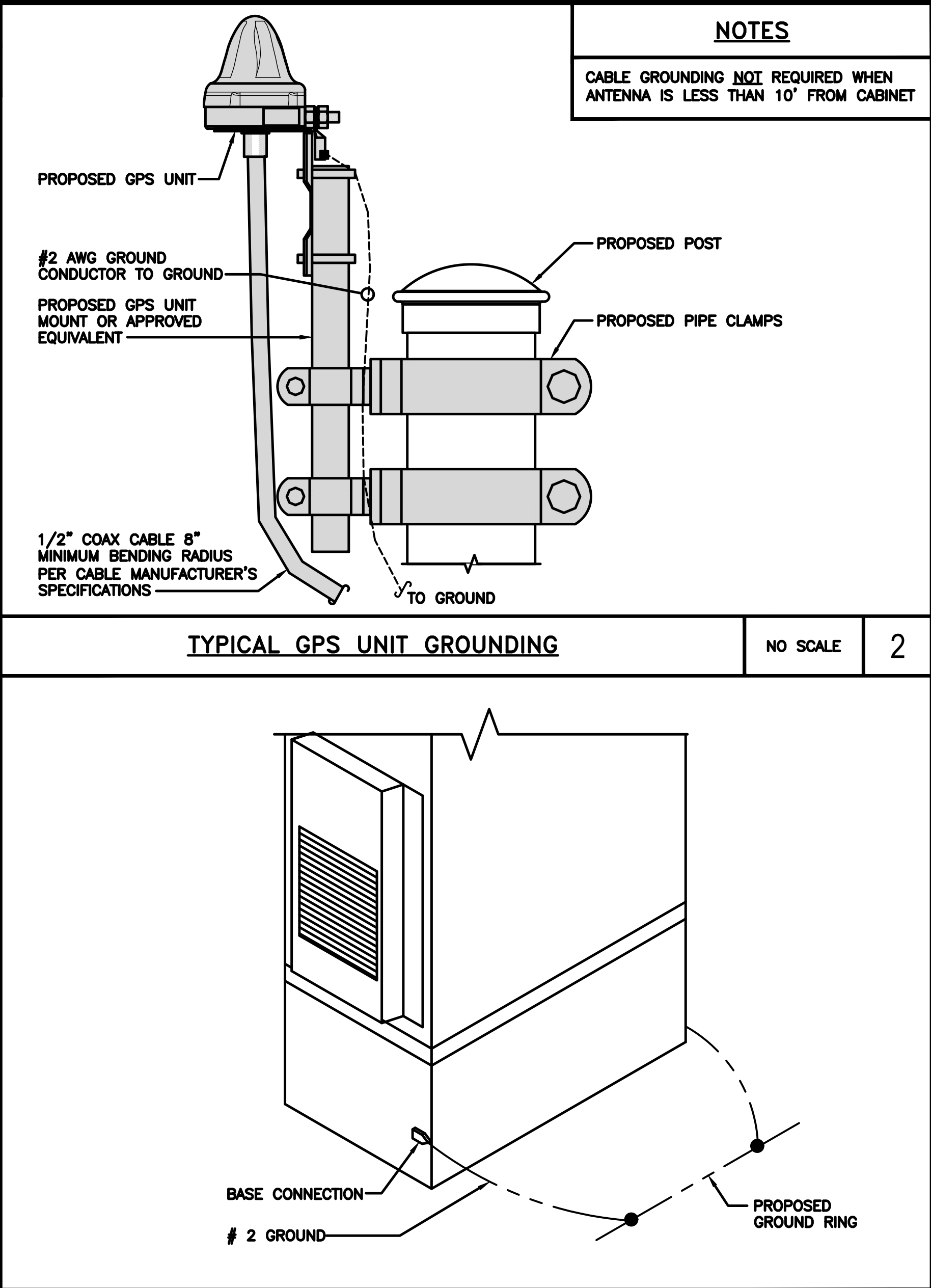
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TYPICAL TEST GROUND ROD WITH INSPECTION SLEEVE

NO SCALE

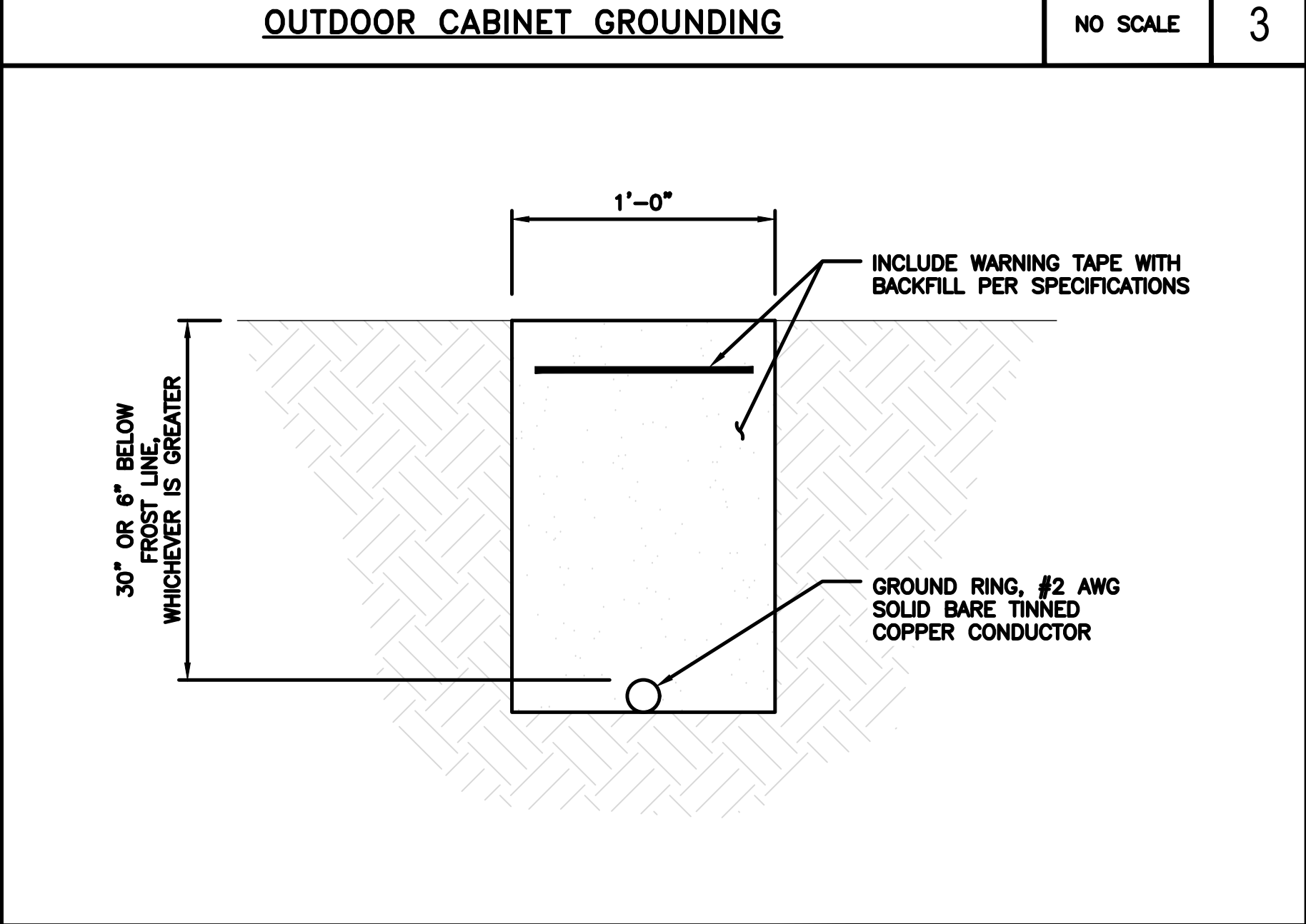
5



TYPICAL GPS UNIT GROUNDING

NO SCALE

2



TYPICAL GROUND RING TRENCH

NO SCALE

6

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STATE OF CONNECTICUT
SHUHEI SAKAMOTO
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LICENSED PROFESSIONAL ENGINEER

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800 OGG MEADOW ROAD
ORANGE, CT 06477

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			



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SHUHEI SAKANO

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SHEET TITLE
GROUNDING DETAILS

SHEET NUMBER
G-3

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-DDBTXD 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	ABANCHOR BOLT ABVABOVE ACALTERNATING CURRENT ADDLADDITIONAL AFFABOVE FINISHED FLOOR AFGABOVE FINISHED GRADE AGLABOVE GROUND LEVEL AICAMPERAGE INTERRUPTION CAPACITY ALUMALUMINUM ALTALTERNATE ANTANTENNA APPROXAPPROXIMATE ARCHARCHITECTURAL ATSAutomatic Transfer Switch AWGAMERICAN WIRE GAUGE BATTBATTERY BLDGBUILDING BLKBLOCK BLKGBLOCKING BMBeam BTCBare Tinned Copper Conductor BOFBOTTOM OF FOOTING CABCABINET CANTCANTILEVERED CHGCHARGING CLGCEILING CLRCLEAR COLCOLUMN COMMCOMMON CONCCONCRETE CONSTRCONSTRUCTION DBLDOUBLE DCDIRECT CURRENT DEPTDEPARTMENT DFDOUGLAS FIR DIA DIAMETER DIAGDIAGONAL DIMDIMENSION DWGDRAWING DWLDOWEL EA EACH ECELECTRICAL CONDUCTOR ELELEVATION ELECELECTRICAL EMTELECTRICAL METALLIC TUBING ENGENGINEER EQEQUAL EXPEXPANSION EXTEXTERIOR EW EACH WAY FABFABRICATION FFFINISH FLOOR FGFINISH GRADE FIFACILITY INTERFACE FRAME FINFINISH(ED) FLRFLOOR FDNFOUNDATION FOCFACE OF CONCRETE FOMFACE OF MASONRY FOSFACE OF STUD FOWFACE OF WALL FSFINISH SURFACE FTFOOT FTGFOOTING GAGAUGE GENGENERATOR GFCIGROUND FAULT CIRCUIT INTERRUPTER GLBGLUE LAMINATED BEAM GLVGALVANIZED GPSGLOBAL POSITIONING SYSTEM GNDGROUND GSMGLOBAL SYSTEM FOR MOBILE HDBGHOT DIPPED GALVANIZED HDRHEADER HGRHANGER HVACHHEAT/VENTILATION/AIR CONDITIONING HTHEIGHT IGRINTERIOR GROUND RING ININCH INTINTERIOR LB(S)POUND(S) LF LINEAR FEET LTE LONG TERM EVOLUTION MASMASONRY MAXMAXIMUM MBMACHINE BOLT MECHMECHANICAL MFRMANUFACTURER MGBMASTER GROUND BAR MINMINIMUM MISC MISCELLANEOUS MTLMETAL MTSMANUAL TRANSFER SWITCH MWMICROWAVE NECNATIONAL ELECTRIC CODE NMNEWTON METERS NO. NUMBER #NUMBER NTSNOT TO SCALE OC ON-CENTER OSHA OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION OPNGOPENING P/C PRECAST CONCRETE PCSPERSONAL COMMUNICATION SERVICES PCUPRIMARY CONTROL UNIT PRCPRIMARY RADIO CABINET PPPOLARIZING PRESERVING PSFPOUNDS PER SQUARE FOOT PSIPOUNDS PER SQUARE INCH PTPRESSURE TREATED PWRPOWER CABINET QTYQUANTITY RADRADIUS RECTRECTIFIER REFREFERENCE REINFREINFORCEMENT REQ'DREQUIRED RETEREMOTE ELECTRIC TILT RF RADIO FREQUENCY RMC RIGID METALLIC CONDUIT RRH REMOTE RADIO HEAD RRUREMOTE RADIO UNIT RWY RACEWAY SCHSCHEDULE SHTSHEET SIADSMART INTEGRATED ACCESS DEVICE SIMSIMILAR SPECSPECIFICATION SQSQUARE SSSTAINLESS STEEL STDSTANDARD STLSTEEL TEMPTEMPORARY THKTHICKNESS TMATOWER MOUNTED AMPLIFIER TNTOE NAIL TOATOP OF ANTENNA TOCTOP OF CURB TOFTOP OF FOUNDATION TOPTOP OF PLATE (PARAPET) TOSTOP OF STEEL TOWTOP OF WALL TVSSTRANSIENT VOLTAGE SURGE SUPPRESSION TYP TYPICAL UGUNDERGROUND ULUNDERWRITERS LABORATORY UNO UNLESS NOTED OTHERWISE UMTS UNIVERSAL MOBILE TELECOMMUNICATIONS SYSTEM UPS UNINTERRUPTIBLE POWER SYSTEM (DC POWER PLANT) VIF VERIFIED IN FIELD WWIDE W/ WITH WDWOOD WPWEATHERPROOF WTWEIGHT ABBREVIATIONS
--	--

SITE ACTIVITY REQUIREMENTS:

1. NOTICE TO PROCEED – NO WORK SHALL COMMENCE PRIOR TO CONTRACTOR RECEIVING A WRITTEN NOTICE TO PROCEED (NTP) AND THE ISSUANCE OF A PURCHASE ORDER. PRIOR TO ACCESSING/ENTERING THE SITE YOU MUST CONTACT THE DISH Wireless L.L.C. AND TOWER OWNER NOC & THE DISH Wireless L.L.C. AND TOWER OWNER CONSTRUCTION MANAGER.
2. "LOOK UP" – DISH Wireless L.L.C. AND TOWER OWNER SAFETY CLIMB REQUIREMENT:

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

GENERAL NOTES:

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

CONTRACTOR:GENERAL CONTRACTOR RESPONSIBLE FOR CONSTRUCTION

CARRIER:DISH Wireless L.L.C.

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



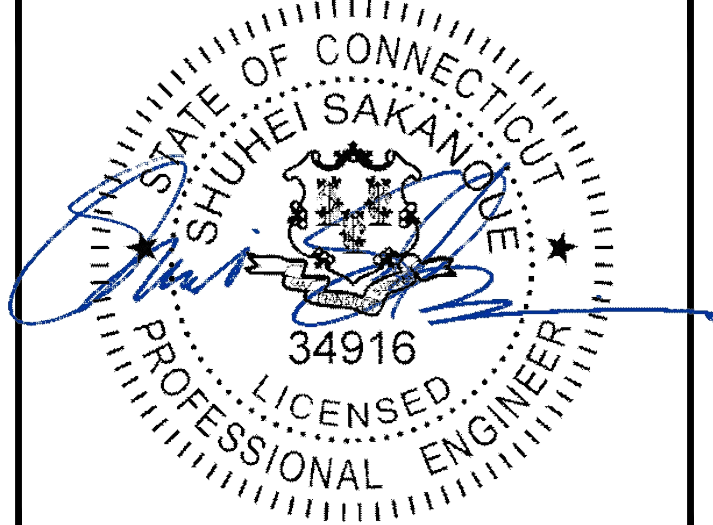
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DRAWN BY:	CHECKED BY:	APPROVED BY:
RCD	SS	CJW

RFDS REV #: N/A

CONSTRUCTION DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
A	06/21/2020	ISSUED FOR REVIEW
0	06/09/2021	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
6039–Z0001–C

DISH Wireless L.L.C.
PROJECT INFORMATION
BOHVN00012A
NHV 2071 143137
800 OGG MEADOW ROAD
ORANGE, CT 06477

SHEET TITLE
GENERAL NOTES

SHEET NUMBER
GN-2

CONCRETE, FOUNDATIONS, AND REINFORCING STEEL:

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

CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH 3"

CONCRETE EXPOSED TO EARTH OR WEATHER:
#6 BARS AND LARGER 2"
#5 BARS AND SMALLER 1-1/2"

CONCRETE NOT EXPOSED TO EARTH OR WEATHER:
SLAB AND WALLS 3/4"
BEAMS AND COLUMNS 1-1/2"
7. A TOOLED EDGE OR A 3/4" CHAMFER SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE, UNLESS NOTED OTHERWISE, IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.

ELECTRICAL INSTALLATION NOTES:

1. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC AND ALL APPLICABLE FEDERAL, STATE, AND LOCAL CODES/ORDINANCES.
2. CONDUIT ROUTINGS ARE SCHEMATIC. CONTRACTOR SHALL INSTALL CONDUITS SO THAT ACCESS TO EQUIPMENT IS NOT BLOCKED AND TRIP HAZARDS ARE ELIMINATED.
3. WIRING, RACEWAY AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC.
4. ALL CIRCUITS SHALL BE SEGREGATED AND MAINTAIN MINIMUM CABLE SEPARATION AS REQUIRED BY THE NEC.
- 4.1. ALL EQUIPMENT SHALL BEAR THE UNDERWRITERS LABORATORIES LABEL OF APPROVAL, AND SHALL CONFORM TO REQUIREMENT OF THE NATIONAL ELECTRICAL CODE.
- 4.2. ALL OVERCURRENT DEVICES SHALL HAVE AN INTERRUPTING CURRENT RATING THAT SHALL BE GREATER THAN THE SHORT CIRCUIT CURRENT TO WHICH THEY ARE SUBJECTED, 22,000 AIC MINIMUM. VERIFY AVAILABLE SHORT CIRCUIT CURRENT DOES NOT EXCEED THE RATING OF ELECTRICAL EQUIPMENT IN ACCORDANCE WITH ARTICLE 110.24 NEC OR THE MOST CURRENT ADOPTED CODE PRE THE GOVERNING JURISDICTION.
5. EACH END OF EVERY POWER PHASE CONDUCTOR, GROUNDING CONDUCTOR, AND TELCO CONDUCTOR OR CABLE SHALL BE LABELED WITH COLOR-CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, 1/2" PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL). THE IDENTIFICATION METHOD SHALL CONFORM WITH NEC AND OSHA.
6. ALL ELECTRICAL COMPONENTS SHALL BE CLEARLY LABELED WITH LAMICOID TAGS SHOWING THEIR RATED VOLTAGE, PHASE CONFIGURATION, WIRE CONFIGURATION, POWER OR AMPACITY RATING AND BRANCH CIRCUIT ID NUMBERS (i.e. PANEL BOARD AND CIRCUIT ID'S).
7. PANEL BOARDS (ID NUMBERS) SHALL BE CLEARLY LABELED WITH PLASTIC LABELS.
8. TIE WRAPS ARE NOT ALLOWED.
9. ALL POWER AND EQUIPMENT GROUND WIRING IN TUBING OR CONDUIT SHALL BE SINGLE COPPER CONDUCTOR (#14 OR LARGER) WITH TYPE THHW, THWN, THWN-2, XHHW, XHHW-2, THW, THW-2, RHW, OR RHW-2 INSULATION UNLESS OTHERWISE SPECIFIED.
10. SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED INDOORS SHALL BE SINGLE COPPER CONDUCTOR (#6 OR LARGER) WITH TYPE THHW, THWN, THWN-2, XHHW, XHHW-2, THW, THW-2, RHW, OR RHW-2 INSULATION UNLESS OTHERWISE SPECIFIED.
11. POWER AND CONTROL WIRING IN FLEXIBLE CORD SHALL BE MULTI-CONDUCTOR, TYPE SOOW CORD (#14 OR LARGER) UNLESS OTHERWISE SPECIFIED.
12. POWER AND CONTROL WIRING FOR USE IN CABLE TRAY SHALL BE MULTI-CONDUCTOR, TYPE TC CABLE (#14 OR LARGER), WITH TYPE THHW, THWN, THWN-2, XHHW, XHHW-2, THW, THW-2, RHW, OR RHW-2 INSULATION UNLESS OTHERWISE SPECIFIED.
13. ALL POWER AND GROUNDING CONNECTIONS SHALL BE CRIMP-STYLE, COMPRESSION WIRE LUGS AND WIRE NUTS BY THOMAS AND BETTS (OR EQUAL). LUGS AND WIRE NUTS SHALL BE RATED FOR OPERATION NOT LESS THAN 75° C (90° C IF AVAILABLE).
14. RACEWAY AND CABLE TRAY SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND NEC.
15. ELECTRICAL METALLIC TUBING (EMT), INTERMEDIATE METAL CONDUIT (IMC), OR RIGID METAL CONDUIT (RMC) SHALL BE USED FOR EXPOSED INDOOR LOCATIONS.

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



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

RFDS REV #: N/A

CONSTRUCTION DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
A	06/21/2020	ISSUED FOR REVIEW
0	06/09/2021	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
6039-Z0001-C

DISH Wireless L.L.C.
PROJECT INFORMATION
BOHVN00012A
NHV 2071 143137
800 OGG MEADOW ROAD
ORANGE, CT 06477

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

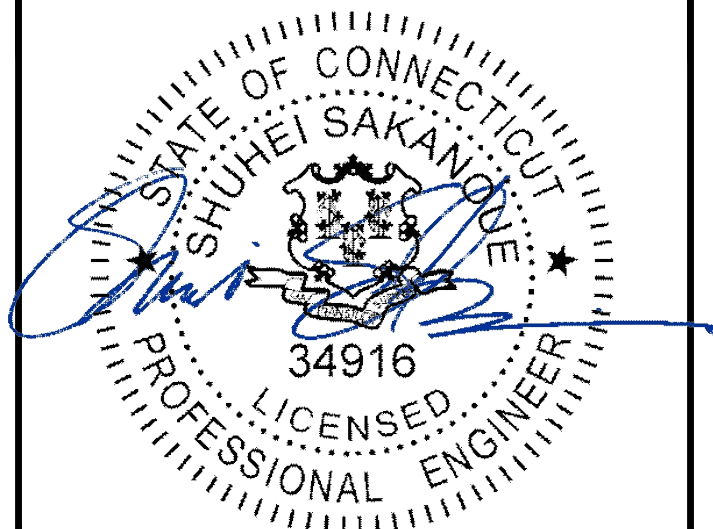


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DRAWN BY: CHECKED BY: APPROVED BY:

RCD SS CJW

RFDS REV #: N/A

CONSTRUCTION
DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
A	06/21/2020	ISSUED FOR REVIEW
0	06/09/2021	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

6039–Z0001–C

DISH Wireless L.L.C.
PROJECT INFORMATION
BOHVN00012A
NHV 2071 143137
800 OGG MEADOW ROAD
ORANGE, CT 06477

SHEET TITLE
GENERAL NOTES

SHEET NUMBER

GN-4

Exhibit D

Structural Analysis Report

Date: **June 08, 2021**



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

Subject: **Structural Analysis Report**

Carrier Designation: **DISH Network Co-Locate**
Site Number: BOHVN00012A
Site Name: CT-CCI-T-806939

Crown Castle Designation: **BU Number:** 806939
Site Name: NHV 2071 143137
JDE Job Number: 645118
Work Order Number: 1964050
Order Number: 553356 Rev. 1

Engineering Firm Designation: **Crown Castle Project Number:** 1964050

Site Data: **800 OGG MEADOW ROAD, ORANGE, NEW HAVEN County, CT**
Latitude 41° 18' 28.36", Longitude -73° 1' 56.22"
160 Foot - Monopole Tower

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

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

LC7: Proposed Equipment Configuration

Sufficient Capacity – 67.2%

This analysis utilizes an ultimate 3-second gust wind speed of 125 mph as required by the 2018 Connecticut State Building Code. Applicable Standard references and design criteria are listed in Section 2 - "Analysis Criteria".

Structural analysis prepared by: Melanie Atilas

Respectfully submitted by:

Maham Barimani, P.E.
Senior Project Engineer

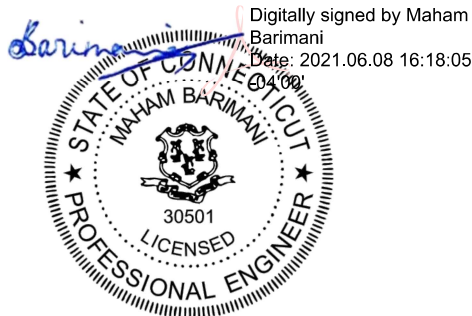


TABLE OF CONTENTS

1) INTRODUCTION

2) ANALYSIS CRITERIA

Table 1 - Proposed Equipment Configuration

Table 2 - Other Considered Equipment

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

3.1) Analysis Method

3.2) Assumptions

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Table 5 - Tower Component Stresses vs. Capacity - LC7

4.1) Recommendations

5) APPENDIX A

tnxTower Output

6) APPENDIX B

Base Level Drawing

7) APPENDIX C

Additional Calculations

1) INTRODUCTION

This tower is a 160 ft Monopole tower designed by VALMONT. 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:	125 mph
Exposure Category:	B
Topographic Factor:	1
Ice Thickness:	1.5 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)
117.0	117.0	3	fujitsu	TA08025-B604	1	1-1/2
		3	fujitsu	TA08025-B605		
		3	jma wireless	MX08FRO665-21 w/ Mount Pipe		
		1	raycap	RDIDC-9181-PF-48		
		1	tower mounts	Commscope MC-PK8-DSH		

Table 2 - Other Considered Equipment

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
158.0	159.0	3	alcatel lucent	B4 RRH2X60-4R	13 1	1-5/8 1/2
		2	amphenol	BXA-80063-6BF-EDIN-X w/ Mount Pipe		
		3	antel	BXA-70040/6CF w/ Mount Pipe		
		1	antel	BXA-80063/4CF w/ Mount Pipe		
		2	commscope	HBXX-6516DS-A2M w/ Mount Pipe		
		4	commscope	HBXX-6517DS-A2M w/ Mount Pipe		
		1	gps	GPS_A		
		1	rfs celwave	DB-T1-6Z-8AB-0Z		
	158.0	1	tower mounts	Platform Mount [LP 602-1]		
147.0	149.0	3	cci antennas	DMP65R-BU6D w/ Mount Pipe	12 2 2 2 2	1-1/4 7/8 3/4 5/8 3/8
		3	cci antennas	OPA65R-BU6D w/ Mount Pipe		
		6	cci antennas	TPX-070821		
		2	commscope	WCS-IMFQ-AMT		
		3	ericsson	RRUS 32 B30		
		3	ericsson	RRUS 32 B66A		
		3	ericsson	RRUS 4449 B5/B12		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
		3	ericsson	RRUS 4478 B14_CCIV2		
		3	ericsson	RRUS12/RRUS A2		
		3	kathrein	782 10253		
		3	kathrein	800 10121 w/ Mount Pipe		
		3	powerwave technologies	TT19-08BP111-001		
		3	quintel technology	QS66512-2 w/ Mount Pipe		
		1	raycap	DC6-48-60-18-8C-EV		
		2	raycap	DC6-48-60-18-8F		
	147.0	3	mounts	HSS4x4x1/4 x 3.5' (Standoff)		
		1	tower mounts	Platform Mount [LP 602-1]		
137.0	140.0	1		VHLP2-11	4	1-1/4
		3	alcatel lucent	1900MHz RRH (65MHz)		
		3	alcatel lucent	800 EXTERNAL NOTCH FILTER		
		3	alcatel lucent	800MHZ RRH		
		3	alcatel lucent	TD-RRH8x20-25		
		1	dragonwave	HORIZON DUO		
		9	rfs celwave	ACU-A20-N		
		3	rfs celwave	APXVSPP18-C-A20 w/ Mount Pipe		
		3	rfs celwave	APXVTM14-C-120 w/ Mount Pipe		
	137.0	1	tower mounts	Platform Mount [LP 602-1]		
127.0	129.0	3	ericsson	ERICSSON AIR 21 B2A B4P	14	1-5/8
		3	ericsson	ERICSSON AIR 21 B4A B2P		
		3	ericsson	KRY 112 144/1		
		3	ericsson	RADIO 4449 B12/B71		
		3	rfs celwave	APXVAARR24_43-U-NA20		
	127.0	1	tower mounts	Platform Mount [LP 1201-1]		
107.0	110.0	1		PX2F-52	3 3	5/8 1/2
		1	andrew	VHLP2-11		
		3	argus technologies	LLPX310R w/ Mount Pipe		
		2	dragonwave	HORIZON COMPACT		
		3	samsung telecommunications	WIMAX DAP HEAD		
	107.0	1	tower mounts	Side Arm Mount [SO 101-3]		
100.0	100.0	3	rfs celwave	APXV18-206517S-C w/ Mount Pipe	6	7/8
		1	tower mounts	Pipe Mount [PM 601-3]		
80.0	81.0	1	kathrein	OG-860/1920/GPS-A	1	7/8
	80.0	1	tower mounts	Side Arm Mount [SO 701-1]		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Reference	Source
4-GEOTECHNICAL REPORTS	1257473	CCISITES
4-POST-MODIFICATION INSPECTION	4489413	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	1060127	CCISITES
4-TOWER MANUFACTURER DRAWINGS	822032	CCISITES
4-POST-MODIFICATION INSPECTION	2927319	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	2380239	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	4025748	CCISITES

3.1) Analysis Method

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

tnxTower was used to determine the loads on the modified structure. Additional calculations were performed to determine the stresses in the pole and in the reinforcing elements. These calculations are included in Appendix C.

3.2) Assumptions

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

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

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
L1	160 - 155	Pole	TP22.7x21.65x0.25	Pole	3.8%	Pass
L2	155 - 150	Pole	TP23.75x22.7x0.25	Pole	8.1%	Pass
L3	150 - 145	Pole	TP24.8x23.75x0.25	Pole	15.6%	Pass
L4	145 - 140	Pole	TP25.85x24.8x0.25	Pole	23.7%	Pass
L5	140 - 135	Pole	TP26.9x25.85x0.25	Pole	32.8%	Pass
L6	135 - 130	Pole	TP27.95x26.9x0.25	Pole	41.5%	Pass
L7	130 - 126	Pole	TP29.77x27.95x0.25	Pole	48.7%	Pass
L8	126 - 121	Pole	TP29.34x28.29x0.375	Pole	35.4%	Pass
L9	121 - 116	Pole	TP30.39x29.34x0.375	Pole	40.3%	Pass
L10	116 - 111	Pole	TP31.44x30.39x0.375	Pole	45.2%	Pass
L11	111 - 106	Pole	TP32.49x31.44x0.375	Pole	50.2%	Pass
L12	106 - 102.75	Pole	TP33.172x32.49x0.375	Pole	53.3%	Pass
L13	102.75 - 102.5	Pole	TP33.225x33.172x0.375	Pole	53.5%	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
L14	102.5 - 97.5	Pole	TP34.275x33.225x0.375	Pole	57.9%	Pass
L15	97.5 - 92.5	Pole	TP35.325x34.275x0.375	Pole	62.0%	Pass
L16	92.5 - 87.5	Pole	TP36.375x35.325x0.375	Pole	65.7%	Pass
L17	87.5 - 87	Pole	TP37.67x36.375x0.375	Pole	66.1%	Pass
L18	87 - 80.33	Pole	TP37.13x35.73x0.5	Pole	52.2%	Pass
L19	80.33 - 75.33	Pole	TP38.179x37.13x0.5	Pole	53.9%	Pass
L20	75.33 - 70.33	Pole	TP39.229x38.179x0.5	Pole	55.4%	Pass
L21	70.33 - 67.75	Pole	TP39.771x39.229x0.5	Pole	56.2%	Pass
L22	67.75 - 67.5	Pole + Reinf.	TP39.824x39.771x0.725	Reinf. 5 Tension Rupture	59.9%	Pass
L23	67.5 - 62.5	Pole + Reinf.	TP40.874x39.824x0.7125	Reinf. 5 Tension Rupture	61.7%	Pass
L24	62.5 - 57.5	Pole + Reinf.	TP41.923x40.874x0.7	Reinf. 5 Tension Rupture	63.4%	Pass
L25	57.5 - 52.5	Pole + Reinf.	TP42.973x41.923x0.7	Reinf. 5 Tension Rupture	65.0%	Pass
L26	52.5 - 48	Pole + Reinf.	TP45.3x42.973x0.7	Reinf. 5 Tension Rupture	66.3%	Pass
L27	48 - 40.42	Pole + Reinf.	TP44.511x42.918x0.7625	Reinf. 5 Tension Rupture	65.2%	Pass
L28	40.42 - 35.42	Pole + Reinf.	TP45.561x44.511x0.75	Reinf. 5 Tension Rupture	66.3%	Pass
L29	35.42 - 30.5	Pole + Reinf.	TP46.594x45.561x0.75	Reinf. 5 Tension Rupture	67.2%	Pass
L30	30.5 - 30.25	Pole + Reinf.	TP46.646x46.594x0.7375	Reinf. 3 Compression	60.0%	Pass
L31	30.25 - 26.75	Pole + Reinf.	TP47.381x46.646x0.7375	Reinf. 3 Compression	60.6%	Pass
L32	26.75 - 26.5	Pole + Reinf.	TP47.434x47.381x0.6	Pole	58.1%	Pass
L33	26.5 - 26.25	Pole + Reinf.	TP47.486x47.434x0.6	Pole	58.2%	Pass
L34	26.25 - 26	Pole	TP47.539x47.486x0.5625	Pole	59.4%	Pass
L35	26 - 21	Pole	TP48.589x47.539x0.5625	Pole	60.2%	Pass
L36	21 - 16	Pole	TP49.639x48.589x0.5625	Pole	60.9%	Pass
L37	16 - 11	Pole	TP50.69x49.639x0.5625	Pole	61.6%	Pass
L38	11 - 6	Pole	TP51.74x50.69x0.5625	Pole	62.2%	Pass
L39	6 - 1	Pole	TP52.79x51.74x0.5625	Pole	62.8%	Pass
L40	1 - 0.5	Pole	TP52.895x52.79x0.5625	Pole	62.9%	Pass
L41	0.5 - 0.25	Pole + Reinf.	TP52.947x52.895x0.8125	Reinf. 1 Tension Yield	55.7%	Pass
L42	0.25 - 0	Pole	TP53x52.947x0.5625	Pole	62.9%	Pass
					Summary	
				Pole	66.1%	Pass
				Reinforcement	67.2%	Pass
				Overall	67.2%	Pass

Table 5 - Tower Component Stresses vs. Capacity - LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	58.0	Pass
1	Base Plate	0	43.8	Pass
1	Base Foundation (Structure)	0	53.7	Pass
1	Base Foundation (Soil Interaction)	0	36.4	Pass
Structure Rating (max from all components) =				67.2%

Notes:

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

4.1) Recommendations

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

APPENDIX A

TNXTOWER OUTPUT

Tower Input Data

The tower is a monopole.

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

The following design criteria apply:

- Tower is located in New Haven County, Connecticut.
- Tower base elevation above sea level: 191.00 ft.
- Basic wind speed of 125 mph.
- Risk Category II.
- Exposure Category B.
- Simplified Topographic Factor Procedure for wind speed-up calculations is used.
- Topographic Category: 1.
- Crest Height: 0.00 ft.
- Nominal ice thickness of 1.5000 in.
- Ice thickness is considered to increase with height.
- Ice density of 56 pcf.
- A wind speed of 50 mph is used in combination with ice.
- Temperature drop of 50 °F.
- Deflections calculated using a wind speed of 60 mph.
- TOWER RATING:.
- A non-linear (P-delta) analysis was used.
- Pressures are calculated at each section.
- Stress ratio used in pole design is 1.
- Tower analysis based on target reliabilities in accordance with Annex S.
- Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.
- Maximum demand-capacity ratio is: 1.05.
- Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	160.00-155.00	5.00	0.00	12	21.6500	22.7000	0.2500	1.0000	A572-65 (65 ksi)
L2	155.00-150.00	5.00	0.00	12	22.7000	23.7500	0.2500	1.0000	A572-65 (65 ksi)
L3	150.00-145.00	5.00	0.00	12	23.7500	24.8000	0.2500	1.0000	A572-65 (65 ksi)
L4	145.00-140.00	5.00	0.00	12	24.8000	25.8500	0.2500	1.0000	A572-65 (65 ksi)
L5	140.00-135.00	5.00	0.00	12	25.8500	26.9000	0.2500	1.0000	A572-65 (65 ksi)
L6	135.00-130.00	5.00	0.00	12	26.9000	27.9499	0.2500	1.0000	A572-65 (65 ksi)
L7	130.00-121.33	8.67	4.67	12	27.9499	29.7700	0.2500	1.0000	A572-65 (65 ksi)
L8	121.33-121.00	5.00	0.00	12	28.2899	29.3399	0.3750	1.5000	A572-65 (65 ksi)
L9	121.00-116.00	5.00	0.00	12	29.3399	30.3899	0.3750	1.5000	A572-65 (65 ksi)
L10	116.00-111.00	5.00	0.00	12	30.3899	31.4399	0.3750	1.5000	A572-65 (65 ksi)
L11	111.00-106.00	5.00	0.00	12	31.4399	32.4899	0.3750	1.5000	A572-65 (65 ksi)
L12	106.00-102.75	3.25	0.00	12	32.4899	33.1724	0.3750	1.5000	A572-65 (65 ksi)
L13	102.75-102.50	0.25	0.00	12	33.1724	33.2249	0.3750	1.5000	A572-65 (65 ksi)
L14	102.50-97.50	5.00	0.00	12	33.2249	34.2749	0.3750	1.5000	A572-65 (65 ksi)
L15	97.50-92.50	5.00	0.00	12	34.2749	35.3249	0.3750	1.5000	A572-65 (65 ksi)
L16	92.50-87.50	5.00	0.00	12	35.3249	36.3749	0.3750	1.5000	A572-65 (65 ksi)
L17	87.50-81.33	6.17	5.67	12	36.3749	37.6700	0.3750	1.5000	A572-65 (65 ksi)
L18	81.33-80.33	6.67	0.00	12	35.7299	37.1297	0.5000	2.0000	A572-65 (65 ksi)
L19	80.33-75.33	5.00	0.00	12	37.1297	38.1794	0.5000	2.0000	A572-65 (65 ksi)
L20	75.33-70.33	5.00	0.00	12	38.1794	39.2291	0.5000	2.0000	A572-65 (65 ksi)
L21	70.33-67.75	2.58	0.00	12	39.2291	39.7714	0.5000	2.0000	A572-65 (65 ksi)
L22	67.75-67.50	0.25	0.00	12	39.7714	39.8239	0.7250	2.9000	A572-65 (65 ksi)
L23	67.50-62.50	5.00	0.00	12	39.8239	40.8737	0.7125	2.8500	A572-65 (65 ksi)
L24	62.50-57.50	5.00	0.00	12	40.8737	41.9234	0.7000	2.8000	A572-65 (65 ksi)
L25	57.50-52.50	5.00	0.00	12	41.9234	42.9731	0.7000	2.8000	A572-65 (65 ksi)
L26	52.50-41.42	11.08	6.58	12	42.9731	45.3000	0.7000	2.8000	A572-65 (65 ksi)
L27	41.42-40.42	7.58	0.00	12	42.9179	44.5107	0.7625	3.0500	A572-65 (65 ksi)
L28	40.42-35.42	5.00	0.00	12	44.5107	45.5609	0.7500	3.0000	A572-65 (65 ksi)
L29	35.42-30.50	4.92	0.00	12	45.5609	46.5937	0.7500	3.0000	A572-65 (65 ksi)
L30	30.50-30.25	0.25	0.00	12	46.5937	46.6462	0.7375	2.9500	A572-65 (65 ksi)
L31	30.25-26.75	3.50	0.00	12	46.6462	47.3813	0.7375	2.9500	A572-65 (65 ksi)
L32	26.75-26.50	0.25	0.00	12	47.3813	47.4338	0.6000	2.4000	A572-65 (65 ksi)
L33	26.50-26.25	0.25	0.00	12	47.4338	47.4864	0.6000	2.4000	A572-65 (65 ksi)
L34	26.25-26.00	0.25	0.00	12	47.4864	47.5389	0.5625	2.2500	A572-65 (65 ksi)
L35	26.00-21.00	5.00	0.00	12	47.5389	48.5891	0.5625	2.2500	A572-65

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L36	21.00-16.00	5.00	0.00	12	48.5891	49.6393	0.5625	2.2500	(65 ksi) A572-65
L37	16.00-11.00	5.00	0.00	12	49.6393	50.6895	0.5625	2.2500	(65 ksi) A572-65
L38	11.00-6.00	5.00	0.00	12	50.6895	51.7397	0.5625	2.2500	(65 ksi) A572-65
L39	6.00-1.00	5.00	0.00	12	51.7397	52.7900	0.5625	2.2500	(65 ksi) A572-65
L40	1.00-0.50	0.50	0.00	12	52.7900	52.8950	0.5625	2.2500	(65 ksi) A572-65
L41	0.50-0.25	0.25	0.00	12	52.8950	52.9475	0.8125	3.2500	(65 ksi) A572-65
L42	0.25-0.00	0.25		12	52.9475	53.0000	0.5625	2.2500	(65 ksi) A572-65

Tapered Pole Properties

Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	It/Q in ²	w in	w/t
L1	22.3255	17.2270	1006.9853	7.6612	11.2147	89.7916	2040.4253	8.4786	5.1322	20.529
	23.4126	18.0722	1162.6001	8.0371	11.7586	98.8724	2355.7429	8.8946	5.4136	21.654
L2	23.4126	18.0722	1162.6001	8.0371	11.7586	98.8724	2355.7429	8.8946	5.4136	21.654
	24.4996	18.9175	1333.4736	8.4130	12.3025	108.3905	2701.9790	9.3106	5.6950	22.78
L3	24.4996	18.9175	1333.4736	8.4130	12.3025	108.3905	2701.9790	9.3106	5.6950	22.78
	25.5866	19.7627	1520.3195	8.7889	12.8464	118.3461	3080.5796	9.7266	5.9764	23.906
L4	25.5866	19.7627	1520.3195	8.7889	12.8464	118.3461	3080.5796	9.7266	5.9764	23.906
	26.6737	20.6080	1723.8516	9.1648	13.3903	128.7390	3492.9908	10.1426	6.2578	25.031
L5	26.6737	20.6080	1723.8516	9.1648	13.3903	128.7390	3492.9908	10.1426	6.2578	25.031
	27.7607	21.4532	1944.7835	9.5407	13.9342	139.5693	3940.6586	10.5586	6.5392	26.157
L6	27.7607	21.4532	1944.7835	9.5407	13.9342	139.5693	3940.6586	10.5586	6.5392	26.157
	28.8477	22.2985	2183.8288	9.9166	14.4781	150.8370	4425.0292	10.9746	6.8206	27.282
L7	28.8477	22.2985	2183.8288	9.9166	14.4781	150.8370	4425.0292	10.9746	6.8206	27.282
	30.7320	23.7636	2643.2053	10.5682	15.4209	171.4045	5355.8505	11.6957	7.3084	29.233
L8	30.1703	33.7073	3352.6106	9.9935	14.6542	228.7817	6793.2980	16.5897	6.5767	17.538
	30.2427	34.9752	3745.3368	10.3694	15.1981	246.4347	7589.0678	17.2137	6.8581	18.288
L9	30.2427	34.9752	3745.3368	10.3694	15.1981	246.4347	7589.0678	17.2137	6.8581	18.288
	31.3297	36.2430	4167.5938	10.7453	15.7420	264.7438	8444.6748	17.8377	7.1395	19.039
L10	31.3297	36.2430	4167.5938	10.7453	15.7420	264.7438	8444.6748	17.8377	7.1395	19.039
	32.4167	37.5109	4620.4520	11.1212	16.2859	283.7090	9362.2884	18.4617	7.4209	19.789
L11	32.4167	37.5109	4620.4520	11.1212	16.2859	283.7090	9362.2884	18.4617	7.4209	19.789
	33.5038	38.7788	5104.9820	11.4971	16.8298	303.3302	10344.077	19.0857	7.7023	20.539
L12	33.5038	38.7788	5104.9820	11.4971	16.8298	303.3302	10344.077	19.0857	7.7023	20.539
	34.2103	39.6029	5437.4176	11.7415	17.1833	316.4358	11017.682	19.4913	7.8852	21.027
L13	34.2103	39.6029	5437.4176	11.7415	17.1833	316.4358	11017.682	19.4913	7.8852	21.027
	34.2647	39.6663	5463.5710	11.7603	17.2105	317.4554	11070.676	19.5225	7.8993	21.065
L14	34.2647	39.6663	5463.5710	11.7603	17.2105	317.4554	11070.676	19.5225	7.8993	21.065
	35.3517	40.9342	6004.3999	12.1362	17.7544	338.1919	12166.542	20.1466	8.1807	21.815
L15	35.3517	40.9342	6004.3999	12.1362	17.7544	338.1919	12166.542	20.1466	8.1807	21.815
	36.4388	42.2020	6579.7910	12.5121	18.2983	359.5845	13332.440	20.7706	8.4621	22.566
L16	36.4388	42.2020	6579.7910	12.5121	18.2983	359.5845	13332.440	20.7706	8.4621	22.566
	37.5258	43.4699	7190.8148	12.8880	18.8422	381.6332	14570.540	21.3946	8.7435	23.316
L17	37.5258	43.4699	7190.8148	12.8880	18.8422	381.6332	14570.540	21.3946	8.7435	23.316

Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	It/Q in ²	w in	w/t
	38.8666	45.0337	7995.1189	13.3516	19.5131	409.7317	16200.278 4	22.1642	9.0906	24.241
L18	38.0457	56.7202	8985.6026	12.6123	18.5081	485.4956	18207.267 0	27.9160	8.2356	16.471
	38.2631	58.9737	10099.743 3	13.1134	19.2332	525.1213	20464.818 2	29.0251	8.6107	17.221
L19	38.2631	58.9737	10099.743 3	13.1134	19.2332	525.1213	20464.818 2	29.0251	8.6107	17.221
	39.3498	60.6638	10993.187 9	13.4892	19.7769	555.8592	22275.179 0	29.8569	8.8921	17.784
L20	39.3498	60.6638	10993.187 9	13.4892	19.7769	555.8592	22275.179 0	29.8569	8.8921	17.784
	40.4366	62.3539	11937.827 8	13.8650	20.3207	587.4715	24189.275 7	30.6887	9.1734	18.347
L21	40.4366	62.3539	11937.827 8	13.8650	20.3207	587.4715	24189.275 7	30.6887	9.1734	18.347
	40.9980	63.2270	12446.352 7	14.0592	20.6016	604.1449	25219.685 0	31.1184	9.3187	18.637
L22	40.9187	91.1539	17738.788 6	13.9786	20.6016	861.0393	35943.595 0	44.8632	8.7157	12.022
	40.9730	91.2764	17810.419 4	13.9974	20.6288	863.3768	36088.738 4	44.9235	8.7298	12.041
L23	40.9774	89.7314	17520.136 1	14.0019	20.6288	849.3050	35500.545 8	44.1631	8.7633	12.299
	42.0642	92.1397	18969.046 5	14.3777	21.1726	895.9261	38436.431 0	45.3484	9.0446	12.694
L24	42.0686	90.5514	18653.663 0	14.3822	21.1726	881.0302	37797.378 6	44.5667	9.0781	12.969
	43.1554	92.9176	20154.470 1	14.7580	21.7163	928.0793	40838.420 5	45.7312	9.3595	13.371
L25	43.1554	92.9176	20154.470 1	14.7580	21.7163	928.0793	40838.420 5	45.7312	9.3595	13.371
	44.2421	95.2837	21733.692 1	15.1338	22.2601	976.3525	44038.352 6	46.8957	9.6408	13.773
L26	44.2421	95.2837	21733.692 1	15.1338	22.2601	976.3525	44038.352 6	46.8957	9.6408	13.773
	46.6511	100.5284	25523.747 4	15.9668	23.4654	1087.7184	51718.032 1	49.4770	10.2644	14.663
L27	45.5944	103.5021	23476.948 8	15.0916	22.2315	1056.0229	47570.663 2	50.9406	9.4585	12.405
	45.8119	107.4127	26239.851 5	15.6618	23.0565	1138.0661	53169.053 1	52.8653	9.8854	12.964
L28	45.8163	105.6820	25831.819 8	15.6663	23.0565	1120.3690	52342.270 4	52.0135	9.9189	13.225
	46.9035	108.2183	27736.633 9	16.0423	23.6005	1175.2542	56201.940 0	53.2618	10.2003	13.6
L29	46.9035	108.2183	27736.633 9	16.0423	23.6005	1175.2542	56201.940 0	53.2618	10.2003	13.6
	47.9727	110.7125	29698.963 5	16.4120	24.1355	1230.5084	60178.151 8	54.4893	10.4771	13.969
L30	47.9772	108.8969	29227.876 0	16.4165	24.1355	1210.9900	59223.600 9	53.5958	10.5106	14.252
	48.0315	109.0216	29328.399 5	16.4353	24.1627	1213.7870	59427.288 6	53.6571	10.5247	14.271
L31	48.0315	109.0216	29328.399 5	16.4353	24.1627	1213.7870	59427.288 6	53.6571	10.5247	14.271
	48.7926	110.7674	30760.020 5	16.6985	24.5435	1253.2842	62328.140 9	54.5164	10.7217	14.538
L32	48.8411	90.3815	25247.066 7	16.7477	24.5435	1028.6648	51157.402 0	44.4830	11.0902	18.484
	48.8955	90.4830	25332.179 8	16.7665	24.5707	1030.9900	51329.864 2	44.5330	11.1043	18.507
L33	48.8955	90.4830	25332.179 8	16.7665	24.5707	1030.9900	51329.864 2	44.5330	11.1043	18.507
	48.9498	90.5844	25417.484 0	16.7853	24.5979	1033.3179	51502.713 5	44.5829	11.1183	18.531
L34	48.9631	84.9908	23886.112 4	16.7987	24.5979	971.0618	48399.739 6	41.8299	11.2188	19.945
	49.0174	85.0859	23966.392 6	16.8175	24.6251	973.2492	48562.409 0	41.8767	11.2329	19.97

Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	It/Q in ²	w in	w/t
L35	49.0174	85.0859	23966.392 6	16.8175	24.6251	973.2492	48562.409 0	41.8767	11.2329	19.97
	50.1047	86.9882	25609.995 2	17.1935	25.1691	1017.5154	51892.793 5	42.8129	11.5144	20.47
L36	50.1047	86.9882	25609.995 2	17.1935	25.1691	1017.5154	51892.793 5	42.8129	11.5144	20.47
	51.1920	88.8904	27327.075 6	17.5695	25.7132	1062.7662	55372.063 8	43.7491	11.7958	20.97
L37	51.1920	88.8904	27327.075 6	17.5695	25.7132	1062.7662	55372.063 8	43.7491	11.7958	20.97
	52.2792	90.7926	29119.240 5	17.9455	26.2572	1109.0014	59003.475 8	44.6853	12.0773	21.471
L38	52.2792	90.7926	29119.240 5	17.9455	26.2572	1109.0014	59003.475 8	44.6853	12.0773	21.471
	53.3665	92.6948	30988.096 6	18.3215	26.8012	1156.2212	62790.285 1	45.6215	12.3588	21.971
L39	53.3665	92.6948	30988.096 6	18.3215	26.8012	1156.2212	62790.285 1	45.6215	12.3588	21.971
	54.4538	94.5970	32935.250 9	18.6974	27.3452	1204.4254	66735.747 5	46.5578	12.6402	22.471
L40	54.4538	94.5970	32935.250 9	18.6974	27.3452	1204.4254	66735.747 5	46.5578	12.6402	22.471
	54.5625	94.7872	33134.334 6	18.7350	27.3996	1209.3000	67139.145 0	46.6514	12.6684	22.522
L41	54.4743	136.2608	47178.064 0	18.6455	27.3996	1721.8524	95595.548 2	67.0634	11.9984	14.767
	54.5287	136.3982	47320.906 2	18.6643	27.4268	1725.3528	95884.985 4	67.1310	12.0124	14.785
L42	54.6168	94.8823	33234.176 6	18.7538	27.4268	1211.7410	67341.451 9	46.6982	12.6824	22.547
	54.6712	94.9774	33334.218 9	18.7726	27.4540	1214.1844	67544.164 9	46.7450	12.6965	22.572

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A _r	Adjust. Factor A _r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontal in	Double Angle Stitch Bolt Spacing Redundants in
ft	ft ²	in							
L1 160.00- 155.00				1	1	1			
L2 155.00- 150.00				1	1	1			
L3 150.00- 145.00				1	1	1			
L4 145.00- 140.00				1	1	1			
L5 140.00- 135.00				1	1	1			
L6 135.00- 130.00				1	1	1			
L7 130.00- 121.33				1	1	1			
L8 121.33- 121.00				1	1	1			
L9 121.00- 116.00				1	1	1			
L10 116.00- 111.00				1	1	1			
L11 111.00- 106.00				1	1	1			
L12 106.00- 102.75				1	1	1			
L13 102.75- 102.50				1	1	1			
L14 102.50- 97.50				1	1	1			
L15 97.50- 92.50				1	1	1			
L16 92.50-				1	1	1			

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A_r	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
ft	ft ²	in							
87.50									
L17 87.50-81.33				1	1	1			
L18 81.33-80.33				1	1	1			
L19 80.33-75.33				1	1	1			
L20 75.33-70.33				1	1	1			
L21 70.33-67.75				1	1	1			
L22 67.75-67.50				1	1	0.961053			
L23 67.50-62.50				1	1	0.970391			
L24 62.50-57.50				1	1	0.980457			
L25 57.50-52.50				1	1	0.973847			
L26 52.50-41.42				1	1	0.968173			
L27 41.42-40.42				1	1	0.968331			
L28 40.42-35.42				1	1	0.9787			
L29 35.42-30.50				1	1	0.973548			
L30 30.50-30.25				1	1	0.960814			
L31 30.25-26.75				1	1	0.957692			
L32 26.75-26.50				1	1	1.14577			
L33 26.50-26.25				1	1	1.14554			
L34 26.25-26.00				1	1	1			
L35 26.00-21.00				1	1	1			
L36 21.00-16.00				1	1	1			
L37 16.00-11.00				1	1	1			
L38 11.00-6.00				1	1	1			
L39 6.00-1.00				1	1	1			
L40 1.00-0.50				1	1	1			
L41 0.50-0.25				1	1	1.01225			
L42 0.25-0.00				1	1	1			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
EC4-50(1/2)	A	No	Surface Ar (CaAa)	107.00 - 0.00	3	3	0.500 0.500	0.6300		0.16
2" Flexible Conduit	B	No	Surface Ar (CaAa)	107.00 - 0.00	2	2	-0.250 -0.250	2.0000		0.34
*** (Area) CCI-65FP- 085125 (H)	A	No	Surface Af (CaAa)	30.50 - 0.00	1	1	0.000 0.000	8.5000	19.5000	0.00

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
(Area) CCI-65FP-085125 (H)	B	No	Surface Af (CaAa)	30.50 - 0.00	1	1	0.250 0.250	8.5000	19.5000	0.00
(Area) CCI-65FP-085125 (H)	C	No	Surface Af (CaAa)	30.50 - 0.00	1	1	0.250 0.250	8.5000	19.5000	0.00
(Area) CCI-65FP-065125 (H)	A	No	Surface Af (CaAa)	50.50 - 23.50	1	1	0.250 0.250	6.5000	15.5000	0.00
(Area) CCI-65FP-065125 (H)	B	No	Surface Af (CaAa)	50.50 - 30.50	1	1	0.250 0.250	6.5000	15.5000	0.00
(Area) CCI-65FP-065125 (H)	C	No	Surface Af (CaAa)	50.50 - 30.50	1	1	0.250 0.250	6.5000	15.5000	0.00
(Area) CCI-65FP-065125 (H)	A	No	Surface Af (CaAa)	75.50 - 50.50	1	1	0.250 0.250	6.5000	15.5000	0.00
(Area) CCI-65FP-065125 (H)	B	No	Surface Af (CaAa)	75.50 - 50.50	1	1	0.250 0.250	6.5000	15.5000	0.00
(Area) CCI-65FP-065125 (H)	C	No	Surface Af (CaAa)	75.50 - 50.50	1	1	0.250 0.250	6.5000	15.5000	0.00
(Area) CCI-65FP-060100 (H)	A	No	Surface Af (CaAa)	104.75 - 84.75	1	1	0.500 0.500	6.0000	14.0000	0.00

CU12PSM9P6XXX(1-1/2)	B	No	Surface Ar (CaAa)	117.00 - 0.00	1	1	0.350 0.370	1.6000		2.35

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		CAAA ft ² /ft	Weight plf

HJ7-50A(1-5/8)	A	No	No	Inside Pole	158.00 - 0.00	12	No Ice 1/2" Ice 1" Ice 2" Ice	0.00 0.00 0.00 0.00	1.04 1.04 1.04 1.04
LDF4-50A(1/2)	A	No	No	Inside Pole	158.00 - 0.00	1	No Ice 1/2" Ice 1" Ice 2" Ice	0.00 0.00 0.00 0.00	0.15 0.15 0.15 0.15
HB158-1-08U8-S8J18(1-5/8)	A	No	No	Inside Pole	158.00 - 0.00	1	No Ice 1/2" Ice 1" Ice 2" Ice	0.00 0.00 0.00 0.00	1.30 1.30 1.30 1.30
**									
LDF6-50A(1-1/4)	C	No	No	Inside Pole	147.00 - 0.00	12	No Ice 1/2" Ice 1" Ice 2" Ice	0.00 0.00 0.00 0.00	0.60 0.60 0.60 0.60
FB-L98B-002-75000(3/8)	C	No	No	Inside Pole	147.00 - 0.00	2	No Ice 1/2" Ice 1" Ice 2" Ice	0.00 0.00 0.00 0.00	0.06 0.06 0.06 0.06
WR-VG82ST-BRDA(5/8)	C	No	No	Inside Pole	147.00 - 0.00	2	No Ice 1/2" Ice 1" Ice 2" Ice	0.00 0.00 0.00 0.00	0.31 0.31 0.31 0.31
WR-VG86ST-BRD(3/4)	C	No	No	Inside Pole	147.00 - 0.00	2	No Ice 1/2" Ice 1" Ice 2" Ice	0.00 0.00 0.00 0.00	0.58 0.58 0.58 0.58
WR-VG66ST-BRD_CCIV2(7/8)	C	No	No	Inside Pole	147.00 - 0.00	2	No Ice 1/2" Ice 1" Ice 2" Ice	0.00 0.00 0.00 0.00	0.88 0.88 0.88 0.88
2" Flexible Conduit	C	No	No	Inside Pole	147.00 - 0.00	1	No Ice 1/2" Ice	0.00 0.00	0.34 0.34

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C _A A _A ft ² /ft	Weight plf
**	LDF4.5-50(5/8)	B	No	Inside Pole	137.00 - 0.00	1	1" Ice	0.00	0.34
							2" Ice	0.00	0.34
HB114-1-0813U4- M5J(1-1/4)	B	No	No	Inside Pole	137.00 - 0.00	3	No Ice	0.00	0.15
							1/2" Ice	0.00	0.15
							1" Ice	0.00	0.15
							2" Ice	0.00	0.15
							No Ice	0.00	1.20
							1/2" Ice	0.00	1.20
**	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	C	No	Inside Pole	127.00 - 0.00	12	1" Ice	0.00	1.07
							2" Ice	0.00	1.07
							No Ice	0.00	0.92
							1/2" Ice	0.00	0.92
							1" Ice	0.00	0.92
							2" Ice	0.00	0.92
HCS 6X12 4AWG(1-5/8)	C	No	No	Inside Pole	127.00 - 0.00	1	No Ice	0.00	2.40
							1/2" Ice	0.00	2.40
							1" Ice	0.00	2.40
							2" Ice	0.00	2.40
							No Ice	0.00	0.40
							1/2" Ice	0.00	0.40
**	HJ4.5-50(5/8)	C	No	Inside Pole	107.00 - 0.00	3	1" Ice	0.00	0.40
							2" Ice	0.00	0.40
							No Ice	0.00	0.33
							1/2" Ice	0.00	0.33
							1" Ice	0.00	0.33
							2" Ice	0.00	0.33
**	LDF5-50A(7/8)	C	No	Inside Pole	100.00 - 0.00	6	No Ice	0.00	0.33
							1/2" Ice	0.00	0.33
							1" Ice	0.00	0.33
							2" Ice	0.00	0.33
							No Ice	0.00	0.33
							1/2" Ice	0.00	0.33
***	LDF5-50A(7/8)	B	No	Inside Pole	80.00 - 0.00	1	1" Ice	0.00	0.33
							2" Ice	0.00	0.33
							No Ice	0.00	0.33
							1/2" Ice	0.00	0.33
							1" Ice	0.00	0.33
							2" Ice	0.00	0.33

Feed Line/Linear Appurtenances Section Areas

Tower Section n	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
L1	160.00-155.00	A	0.000	0.000	0.000	0.000	0.04
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L2	155.00-150.00	A	0.000	0.000	0.000	0.000	0.07
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L3	150.00-145.00	A	0.000	0.000	0.000	0.000	0.07
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.02
L4	145.00-140.00	A	0.000	0.000	0.000	0.000	0.07
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.06
L5	140.00-135.00	A	0.000	0.000	0.000	0.000	0.07
		B	0.000	0.000	0.000	0.000	0.01
		C	0.000	0.000	0.000	0.000	0.06
L6	135.00-130.00	A	0.000	0.000	0.000	0.000	0.07

Tower Sectio n	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
		B	0.000	0.000	0.000	0.000	0.02
		C	0.000	0.000	0.000	0.000	0.06
L7	130.00-121.33	A	0.000	0.000	0.000	0.000	0.12
		B	0.000	0.000	0.000	0.000	0.03
		C	0.000	0.000	0.000	0.000	0.18
L8	121.33-121.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.01
L9	121.00-116.00	A	0.000	0.000	0.000	0.000	0.07
		B	0.000	0.000	0.160	0.000	0.02
		C	0.000	0.000	0.000	0.000	0.13
L10	116.00-111.00	A	0.000	0.000	0.000	0.000	0.07
		B	0.000	0.000	0.800	0.000	0.03
		C	0.000	0.000	0.000	0.000	0.13
L11	111.00-106.00	A	0.000	0.000	0.189	0.000	0.07
		B	0.000	0.000	1.200	0.000	0.03
		C	0.000	0.000	0.000	0.000	0.13
L12	106.00-102.75	A	0.000	0.000	2.614	0.000	0.05
		B	0.000	0.000	1.820	0.000	0.02
		C	0.000	0.000	0.000	0.000	0.09
L13	102.75-102.50	A	0.000	0.000	0.297	0.000	0.00
		B	0.000	0.000	0.140	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.01
L14	102.50-97.50	A	0.000	0.000	5.945	0.000	0.07
		B	0.000	0.000	2.800	0.000	0.03
		C	0.000	0.000	0.000	0.000	0.14
L15	97.50-92.50	A	0.000	0.000	5.945	0.000	0.07
		B	0.000	0.000	2.800	0.000	0.03
		C	0.000	0.000	0.000	0.000	0.14
L16	92.50-87.50	A	0.000	0.000	5.945	0.000	0.07
		B	0.000	0.000	2.800	0.000	0.03
		C	0.000	0.000	0.000	0.000	0.14
L17	87.50-81.33	A	0.000	0.000	3.916	0.000	0.09
		B	0.000	0.000	3.454	0.000	0.04
		C	0.000	0.000	0.000	0.000	0.18
L18	81.33-80.33	A	0.000	0.000	0.189	0.000	0.01
		B	0.000	0.000	0.560	0.000	0.01
		C	0.000	0.000	0.000	0.000	0.03
L19	80.33-75.33	A	0.000	0.000	1.126	0.000	0.07
		B	0.000	0.000	2.981	0.000	0.04
		C	0.000	0.000	0.181	0.000	0.14
L20	75.33-70.33	A	0.000	0.000	6.362	0.000	0.07
		B	0.000	0.000	8.217	0.000	0.04
		C	0.000	0.000	5.417	0.000	0.14
L21	70.33-67.75	A	0.000	0.000	3.286	0.000	0.04
		B	0.000	0.000	4.245	0.000	0.02
		C	0.000	0.000	2.798	0.000	0.07
L22	67.75-67.50	A	0.000	0.000	0.318	0.000	0.00
		B	0.000	0.000	0.411	0.000	0.00
		C	0.000	0.000	0.271	0.000	0.01
L23	67.50-62.50	A	0.000	0.000	6.362	0.000	0.07
		B	0.000	0.000	8.217	0.000	0.04
		C	0.000	0.000	5.417	0.000	0.14
L24	62.50-57.50	A	0.000	0.000	6.362	0.000	0.07
		B	0.000	0.000	8.217	0.000	0.04
		C	0.000	0.000	5.417	0.000	0.14
L25	57.50-52.50	A	0.000	0.000	6.362	0.000	0.07
		B	0.000	0.000	8.217	0.000	0.04
		C	0.000	0.000	5.417	0.000	0.14
L26	52.50-41.42	A	0.000	0.000	14.101	0.000	0.16
		B	0.000	0.000	18.213	0.000	0.08
		C	0.000	0.000	12.007	0.000	0.32
L27	41.42-40.42	A	0.000	0.000	1.272	0.000	0.01
		B	0.000	0.000	1.643	0.000	0.01
		C	0.000	0.000	1.083	0.000	0.03
L28	40.42-35.42	A	0.000	0.000	6.362	0.000	0.07
		B	0.000	0.000	8.217	0.000	0.04
		C	0.000	0.000	5.417	0.000	0.14
L29	35.42-30.50	A	0.000	0.000	6.256	0.000	0.07

Tower Sectio n	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
L30	30.50-30.25	B	0.000	0.000	8.080	0.000	0.03
		C	0.000	0.000	5.327	0.000	0.14
		A	0.000	0.000	0.672	0.000	0.00
L31	30.25-26.75	B	0.000	0.000	0.494	0.000	0.00
		C	0.000	0.000	0.354	0.000	0.01
		A	0.000	0.000	9.412	0.000	0.05
L32	26.75-26.50	B	0.000	0.000	6.918	0.000	0.02
		C	0.000	0.000	4.958	0.000	0.10
		A	0.000	0.000	0.672	0.000	0.00
L33	26.50-26.25	B	0.000	0.000	0.494	0.000	0.00
		C	0.000	0.000	0.354	0.000	0.01
		A	0.000	0.000	0.672	0.000	0.00
L34	26.25-26.00	B	0.000	0.000	0.494	0.000	0.00
		C	0.000	0.000	0.354	0.000	0.01
		A	0.000	0.000	0.672	0.000	0.00
L35	26.00-21.00	B	0.000	0.000	9.883	0.000	0.04
		C	0.000	0.000	7.083	0.000	0.14
		A	0.000	0.000	10.737	0.000	0.07
L36	21.00-16.00	B	0.000	0.000	9.883	0.000	0.04
		C	0.000	0.000	7.083	0.000	0.14
		A	0.000	0.000	8.028	0.000	0.07
L37	16.00-11.00	B	0.000	0.000	9.883	0.000	0.04
		C	0.000	0.000	7.083	0.000	0.14
		A	0.000	0.000	8.028	0.000	0.07
L38	11.00-6.00	B	0.000	0.000	9.883	0.000	0.04
		C	0.000	0.000	7.083	0.000	0.14
		A	0.000	0.000	8.028	0.000	0.07
L39	6.00-1.00	B	0.000	0.000	9.883	0.000	0.04
		C	0.000	0.000	7.083	0.000	0.14
		A	0.000	0.000	8.028	0.000	0.07
L40	1.00-0.50	B	0.000	0.000	0.988	0.000	0.00
		C	0.000	0.000	0.708	0.000	0.01
		A	0.000	0.000	0.803	0.000	0.01
L41	0.50-0.25	B	0.000	0.000	0.494	0.000	0.00
		C	0.000	0.000	0.354	0.000	0.01
		A	0.000	0.000	0.401	0.000	0.00
L42	0.25-0.00	B	0.000	0.000	0.494	0.000	0.00
		C	0.000	0.000	0.354	0.000	0.01
		A	0.000	0.000	0.401	0.000	0.00

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Sectio n	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
L1	160.00-155.00	A	1.491	0.000	0.000	0.000	0.000	0.04
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
L2	155.00-150.00	A	1.486	0.000	0.000	0.000	0.000	0.07
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
L3	150.00-145.00	A	1.481	0.000	0.000	0.000	0.000	0.07
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.02
L4	145.00-140.00	A	1.476	0.000	0.000	0.000	0.000	0.07
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.06
L5	140.00-135.00	A	1.471	0.000	0.000	0.000	0.000	0.07
		B		0.000	0.000	0.000	0.000	0.01
		C		0.000	0.000	0.000	0.000	0.06
L6	135.00-130.00	A	1.465	0.000	0.000	0.000	0.000	0.07
		B		0.000	0.000	0.000	0.000	0.02
		C		0.000	0.000	0.000	0.000	0.06
L7	130.00-121.33	A	1.457	0.000	0.000	0.000	0.000	0.12

Tower Sectio n	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
		B		0.000	0.000	0.000	0.000	0.03
		C		0.000	0.000	0.000	0.000	0.18
L8	121.33-121.00	A	1.452	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.01
L9	121.00-116.00	A	1.449	0.000	0.000	0.000	0.000	0.07
		B		0.000	0.000	0.450	0.000	0.03
		C		0.000	0.000	0.000	0.000	0.13
L10	116.00-111.00	A	1.443	0.000	0.000	0.000	0.000	0.07
		B		0.000	0.000	2.243	0.000	0.06
		C		0.000	0.000	0.000	0.000	0.13
L11	111.00-106.00	A	1.436	0.000	0.000	0.595	0.000	0.08
		B		0.000	0.000	3.095	0.000	0.07
		C		0.000	0.000	0.000	0.000	0.13
L12	106.00-102.75	A	1.431	0.000	0.000	4.502	0.000	0.08
		B		0.000	0.000	4.237	0.000	0.07
		C		0.000	0.000	0.000	0.000	0.09
L13	102.75-102.50	A	1.428	0.000	0.000	0.470	0.000	0.01
		B		0.000	0.000	0.326	0.000	0.01
		C		0.000	0.000	0.000	0.000	0.01
L14	102.50-97.50	A	1.424	0.000	0.000	9.386	0.000	0.15
		B		0.000	0.000	6.505	0.000	0.10
		C		0.000	0.000	0.000	0.000	0.14
L15	97.50-92.50	A	1.417	0.000	0.000	9.370	0.000	0.15
		B		0.000	0.000	6.489	0.000	0.10
		C		0.000	0.000	0.000	0.000	0.14
L16	92.50-87.50	A	1.410	0.000	0.000	9.353	0.000	0.15
		B		0.000	0.000	6.471	0.000	0.10
		C		0.000	0.000	0.000	0.000	0.14
L17	87.50-81.33	A	1.401	0.000	0.000	7.137	0.000	0.15
		B		0.000	0.000	7.957	0.000	0.12
		C		0.000	0.000	0.000	0.000	0.18
L18	81.33-80.33	A	1.394	0.000	0.000	0.586	0.000	0.02
		B		0.000	0.000	1.290	0.000	0.02
		C		0.000	0.000	0.000	0.000	0.03
L19	80.33-75.33	A	1.389	0.000	0.000	3.145	0.000	0.10
		B		0.000	0.000	6.653	0.000	0.10
		C		0.000	0.000	0.227	0.000	0.15
L20	75.33-70.33	A	1.380	0.000	0.000	9.703	0.000	0.15
		B		0.000	0.000	13.202	0.000	0.16
		C		0.000	0.000	6.797	0.000	0.20
L21	70.33-67.75	A	1.373	0.000	0.000	5.004	0.000	0.08
		B		0.000	0.000	6.808	0.000	0.08
		C		0.000	0.000	3.507	0.000	0.10
L22	67.75-67.50	A	1.370	0.000	0.000	0.484	0.000	0.01
		B		0.000	0.000	0.658	0.000	0.01
		C		0.000	0.000	0.339	0.000	0.01
L23	67.50-62.50	A	1.364	0.000	0.000	9.668	0.000	0.15
		B		0.000	0.000	13.151	0.000	0.16
		C		0.000	0.000	6.781	0.000	0.20
L24	62.50-57.50	A	1.354	0.000	0.000	9.643	0.000	0.15
		B		0.000	0.000	13.116	0.000	0.15
		C		0.000	0.000	6.770	0.000	0.20
L25	57.50-52.50	A	1.342	0.000	0.000	9.617	0.000	0.15
		B		0.000	0.000	13.078	0.000	0.15
		C		0.000	0.000	6.758	0.000	0.20
L26	52.50-41.42	A	1.321	0.000	0.000	21.211	0.000	0.33
		B		0.000	0.000	28.835	0.000	0.33
		C		0.000	0.000	14.934	0.000	0.44
L27	41.42-40.42	A	1.303	0.000	0.000	1.914	0.000	0.03
		B		0.000	0.000	2.602	0.000	0.03
		C		0.000	0.000	1.347	0.000	0.04
L28	40.42-35.42	A	1.293	0.000	0.000	9.507	0.000	0.15
		B		0.000	0.000	12.918	0.000	0.15
		C		0.000	0.000	6.709	0.000	0.20
L29	35.42-30.50	A	1.275	0.000	0.000	9.309	0.000	0.14
		B		0.000	0.000	12.646	0.000	0.14
		C		0.000	0.000	6.580	0.000	0.19
L30	30.50-30.25	A	1.264	0.000	0.000	0.890	0.000	0.01

Tower Section n	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
		B		0.000	0.000	0.725	0.000	0.01
		C		0.000	0.000	0.417	0.000	0.01
L31	30.25-26.75	A	1.256	0.000	0.000	12.435	0.000	0.14
		B		0.000	0.000	10.127	0.000	0.11
		C		0.000	0.000	5.838	0.000	0.14
L32	26.75-26.50	A	1.248	0.000	0.000	0.887	0.000	0.01
		B		0.000	0.000	0.722	0.000	0.01
		C		0.000	0.000	0.417	0.000	0.01
L33	26.50-26.25	A	1.247	0.000	0.000	0.887	0.000	0.01
		B		0.000	0.000	0.722	0.000	0.01
		C		0.000	0.000	0.417	0.000	0.01
L34	26.25-26.00	A	1.246	0.000	0.000	0.886	0.000	0.01
		B		0.000	0.000	0.722	0.000	0.01
		C		0.000	0.000	0.416	0.000	0.01
L35	26.00-21.00	A	1.232	0.000	0.000	14.362	0.000	0.17
		B		0.000	0.000	14.389	0.000	0.15
		C		0.000	0.000	8.316	0.000	0.20
L36	21.00-16.00	A	1.203	0.000	0.000	10.972	0.000	0.15
		B		0.000	0.000	14.294	0.000	0.15
		C		0.000	0.000	8.287	0.000	0.20
L37	16.00-11.00	A	1.166	0.000	0.000	10.888	0.000	0.15
		B		0.000	0.000	14.173	0.000	0.14
		C		0.000	0.000	8.249	0.000	0.20
L38	11.00-6.00	A	1.113	0.000	0.000	10.769	0.000	0.14
		B		0.000	0.000	14.001	0.000	0.14
		C		0.000	0.000	8.196	0.000	0.20
L39	6.00-1.00	A	1.019	0.000	0.000	10.556	0.000	0.13
		B		0.000	0.000	13.693	0.000	0.13
		C		0.000	0.000	8.102	0.000	0.19
L40	1.00-0.50	A	0.873	0.000	0.000	1.023	0.000	0.01
		B		0.000	0.000	1.322	0.000	0.01
		C		0.000	0.000	0.796	0.000	0.02
L41	0.50-0.25	A	0.815	0.000	0.000	0.505	0.000	0.01
		B		0.000	0.000	0.652	0.000	0.01
		C		0.000	0.000	0.395	0.000	0.01
L42	0.25-0.00	A	0.730	0.000	0.000	0.495	0.000	0.01
		B		0.000	0.000	0.638	0.000	0.00
		C		0.000	0.000	0.391	0.000	0.01

Feed Line Center of Pressure

Section	Elevation ft	CP _x in	CP _z in	CP _x Ice in	CP _z Ice in
L1	160.00-155.00	0.0000	0.0000	0.0000	0.0000
L2	155.00-150.00	0.0000	0.0000	0.0000	0.0000
L3	150.00-145.00	0.0000	0.0000	0.0000	0.0000
L4	145.00-140.00	0.0000	0.0000	0.0000	0.0000
L5	140.00-135.00	0.0000	0.0000	0.0000	0.0000
L6	135.00-130.00	0.0000	0.0000	0.0000	0.0000
L7	130.00-121.33	0.0000	0.0000	0.0000	0.0000
L8	121.33-121.00	0.0000	0.0000	0.0000	0.0000
L9	121.00-116.00	0.2011	0.0472	0.4037	0.0947
L10	116.00-111.00	0.9438	0.2214	1.8090	0.4243
L11	111.00-106.00	1.1437	-0.4163	1.9388	-0.6201
L12	106.00-102.75	4.0317	-4.7014	3.7798	-4.6668
L13	102.75-102.50	5.1193	-5.7758	4.5919	-5.4590
L14	102.50-97.50	5.1510	-5.8096	4.6324	-5.5060
L15	97.50-92.50	5.2094	-5.8721	4.7078	-5.5933
L16	92.50-87.50	5.2658	-5.9323	4.7808	-5.6779
L17	87.50-81.33	3.5757	-4.2688	3.5681	-4.5159
L18	81.33-80.33	1.8333	-2.5499	2.3670	-3.3521
L19	80.33-75.33	1.7871	-2.4860	2.3329	-3.3056
L20	75.33-70.33	1.0073	-1.4015	1.5282	-2.1666
L21	70.33-67.75	1.0178	-1.4164	1.5446	-2.1908

Section	Elevation	CP _x	CP _z	CP _x Ice	CP _z Ice
	ft	in	in	in	in
L22	67.75-67.50	1.0226	-1.4231	1.5517	-2.2012
L23	67.50-62.50	1.0297	-1.4330	1.5626	-2.2174
L24	62.50-57.50	1.0429	-1.4518	1.5827	-2.2473
L25	57.50-52.50	1.0559	-1.4701	1.6020	-2.2760
L26	52.50-41.42	1.0762	-1.4988	1.6309	-2.3195
L27	41.42-40.42	1.0796	-1.5036	1.6374	-2.3288
L28	40.42-35.42	1.0869	-1.5139	1.6400	-2.3350
L29	35.42-30.50	1.0989	-1.5307	1.6545	-2.3576
L30	30.50-30.25	-2.0362	-2.0346	-1.0163	-2.7642
L31	30.25-26.75	-2.0464	-2.0446	-1.0252	-2.7751
L32	26.75-26.50	-2.0558	-2.0537	-1.0340	-2.7848
L33	26.50-26.25	-2.0571	-2.0550	-1.0352	-2.7862
L34	26.25-26.00	-2.0582	-2.0561	-1.0363	-2.7873
L35	26.00-21.00	-2.0804	-0.6139	-1.0064	-1.5899
L36	21.00-16.00	-2.1158	1.0132	-0.9868	-0.2558
L37	16.00-11.00	-2.1406	1.0252	-1.0180	-0.2378
L38	11.00-6.00	-2.1649	1.0370	-1.0572	-0.2103
L39	6.00-1.00	-2.1888	1.0485	-1.1184	-0.1567
L40	1.00-0.50	-2.2017	1.0548	-1.2027	-0.0684
L41	0.50-0.25	-2.2052	1.0564	-1.2367	-0.0314
L42	0.25-0.00	-2.2047	1.0562	-1.2840	0.0235

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

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L9	41	CU12PSM9P6XXX(1-1/2)	116.00 - 117.00	1.0000	1.0000
L10	41	CU12PSM9P6XXX(1-1/2)	111.00 - 116.00	1.0000	1.0000
L11	23	EC4-50(1/2)	106.00 - 107.00	1.0000	1.0000
L11	24	2" Flexible Conduit	106.00 - 107.00	1.0000	1.0000
L11	41	CU12PSM9P6XXX(1-1/2)	106.00 - 111.00	1.0000	1.0000
L12	23	EC4-50(1/2)	102.75 - 106.00	1.0000	1.0000
L12	24	2" Flexible Conduit	102.75 - 106.00	1.0000	1.0000
L12	39	(Area) CCI-65FP-060100 (H)	102.75 - 104.75	1.0000	1.0000
L12	41	CU12PSM9P6XXX(1-1/2)	102.75 - 106.00	1.0000	1.0000
L13	23	EC4-50(1/2)	102.50 - 102.75	1.0000	1.0000
L13	24	2" Flexible Conduit	102.50 - 102.75	1.0000	1.0000
L13	39	(Area) CCI-65FP-060100 (H)	102.50 - 102.75	1.0000	1.0000
L13	41	CU12PSM9P6XXX(1-1/2)	102.50 - 102.75	1.0000	1.0000
L14	23	EC4-50(1/2)	97.50 - 102.50	1.0000	1.0000
L14	24	2" Flexible Conduit	97.50 - 102.50	1.0000	1.0000
L14	39	(Area) CCI-65FP-060100 (H)	97.50 - 102.50	1.0000	1.0000
L14	41	CU12PSM9P6XXX(1-1/2)	97.50 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L15	23	EC4-50(1/2)	102.50 92.50 - 97.50	1.0000	1.0000
L15	24	2" Flexible Conduit	92.50 - 97.50	1.0000	1.0000
L15	39	(Area) CCI-65FP-060100 (H)	92.50 - 97.50	1.0000	1.0000
L15	41	CU12PSM9P6XXX(1-1/2)	92.50 - 97.50	1.0000	1.0000
L16	23	EC4-50(1/2)	87.50 - 92.50	1.0000	1.0000
L16	24	2" Flexible Conduit	87.50 - 92.50	1.0000	1.0000
L16	39	(Area) CCI-65FP-060100 (H)	87.50 - 92.50	1.0000	1.0000
L16	41	CU12PSM9P6XXX(1-1/2)	87.50 - 92.50	1.0000	1.0000
L17	23	EC4-50(1/2)	81.33 - 87.50	1.0000	1.0000
L17	24	2" Flexible Conduit	81.33 - 87.50	1.0000	1.0000
L17	39	(Area) CCI-65FP-060100 (H)	84.75 - 87.50	1.0000	1.0000
L17	41	CU12PSM9P6XXX(1-1/2)	81.33 - 87.50	1.0000	1.0000
L18	23	EC4-50(1/2)	80.33 - 81.33	1.0000	1.0000
L18	24	2" Flexible Conduit	80.33 - 81.33	1.0000	1.0000
L18	41	CU12PSM9P6XXX(1-1/2)	80.33 - 81.33	1.0000	1.0000
L19	23	EC4-50(1/2)	75.33 - 80.33	1.0000	1.0000
L19	24	2" Flexible Conduit	75.33 - 80.33	1.0000	1.0000
L19	36	(Area) CCI-65FP-065125 (H)	75.33 - 75.50	1.0000	1.0000
L19	37	(Area) CCI-65FP-065125 (H)	75.33 - 75.50	1.0000	1.0000
L19	38	(Area) CCI-65FP-065125 (H)	75.33 - 75.50	1.0000	1.0000
L19	41	CU12PSM9P6XXX(1-1/2)	75.33 - 80.33	1.0000	1.0000
L20	23	EC4-50(1/2)	70.33 - 75.33	1.0000	1.0000
L20	24	2" Flexible Conduit	70.33 - 75.33	1.0000	1.0000
L20	36	(Area) CCI-65FP-065125 (H)	70.33 - 75.33	1.0000	1.0000
L20	37	(Area) CCI-65FP-065125 (H)	70.33 - 75.33	1.0000	1.0000
L20	38	(Area) CCI-65FP-065125 (H)	70.33 - 75.33	1.0000	1.0000
L20	41	CU12PSM9P6XXX(1-1/2)	70.33 - 75.33	1.0000	1.0000
L21	23	EC4-50(1/2)	67.75 - 70.33	1.0000	1.0000
L21	24	2" Flexible Conduit	67.75 - 70.33	1.0000	1.0000
L21	36	(Area) CCI-65FP-065125 (H)	67.75 - 70.33	1.0000	1.0000
L21	37	(Area) CCI-65FP-065125 (H)	67.75 - 70.33	1.0000	1.0000
L21	38	(Area) CCI-65FP-065125 (H)	67.75 - 70.33	1.0000	1.0000
L21	41	CU12PSM9P6XXX(1-1/2)	67.75 - 70.33	1.0000	1.0000
L22	23	EC4-50(1/2)	67.50 - 67.75	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L22	24	2" Flexible Conduit	67.50 - 67.75	1.0000	1.0000
L22	36	(Area) CCI-65FP-065125 (H)	67.50 - 67.75	1.0000	1.0000
L22	37	(Area) CCI-65FP-065125 (H)	67.50 - 67.75	1.0000	1.0000
L22	38	(Area) CCI-65FP-065125 (H)	67.50 - 67.75	1.0000	1.0000
L22	41	CU12PSM9P6XXX(1-1/2)	67.50 - 67.75	1.0000	1.0000
L23	23	EC4-50(1/2)	62.50 - 67.50	1.0000	1.0000
L23	24	2" Flexible Conduit	62.50 - 67.50	1.0000	1.0000
L23	36	(Area) CCI-65FP-065125 (H)	62.50 - 67.50	1.0000	1.0000
L23	37	(Area) CCI-65FP-065125 (H)	62.50 - 67.50	1.0000	1.0000
L23	38	(Area) CCI-65FP-065125 (H)	62.50 - 67.50	1.0000	1.0000
L23	41	CU12PSM9P6XXX(1-1/2)	62.50 - 67.50	1.0000	1.0000
L24	23	EC4-50(1/2)	57.50 - 62.50	1.0000	1.0000
L24	24	2" Flexible Conduit	57.50 - 62.50	1.0000	1.0000
L24	36	(Area) CCI-65FP-065125 (H)	57.50 - 62.50	1.0000	1.0000
L24	37	(Area) CCI-65FP-065125 (H)	57.50 - 62.50	1.0000	1.0000
L24	38	(Area) CCI-65FP-065125 (H)	57.50 - 62.50	1.0000	1.0000
L24	41	CU12PSM9P6XXX(1-1/2)	57.50 - 62.50	1.0000	1.0000
L25	23	EC4-50(1/2)	52.50 - 57.50	1.0000	1.0000
L25	24	2" Flexible Conduit	52.50 - 57.50	1.0000	1.0000
L25	36	(Area) CCI-65FP-065125 (H)	52.50 - 57.50	1.0000	1.0000
L25	37	(Area) CCI-65FP-065125 (H)	52.50 - 57.50	1.0000	1.0000
L25	38	(Area) CCI-65FP-065125 (H)	52.50 - 57.50	1.0000	1.0000
L25	41	CU12PSM9P6XXX(1-1/2)	52.50 - 57.50	1.0000	1.0000
L26	23	EC4-50(1/2)	41.42 - 52.50	1.0000	1.0000
L26	24	2" Flexible Conduit	41.42 - 52.50	1.0000	1.0000
L26	33	(Area) CCI-65FP-065125 (H)	41.42 - 50.50	1.0000	1.0000
L26	34	(Area) CCI-65FP-065125 (H)	41.42 - 50.50	1.0000	1.0000
L26	35	(Area) CCI-65FP-065125 (H)	41.42 - 50.50	1.0000	1.0000
L26	36	(Area) CCI-65FP-065125 (H)	50.50 - 52.50	1.0000	1.0000
L26	37	(Area) CCI-65FP-065125 (H)	50.50 - 52.50	1.0000	1.0000
L26	38	(Area) CCI-65FP-065125 (H)	50.50 - 52.50	1.0000	1.0000
L26	41	CU12PSM9P6XXX(1-1/2)	41.42 - 52.50	1.0000	1.0000
L27	23	EC4-50(1/2)	40.42 - 41.42	1.0000	1.0000
L27	24	2" Flexible Conduit	40.42 - 41.42	1.0000	1.0000
L27	33	(Area) CCI-65FP-065125	40.42 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L27	34	(H) (Area) CCI-65FP-065125	41.42 40.42 -	1.0000	1.0000
L27	35	(H) (Area) CCI-65FP-065125	41.42 40.42 -	1.0000	1.0000
L27	41	(H) CU12PSM9P6XXX(1-1/2)	41.42 40.42 -	1.0000	1.0000
L28	23	EC4-50(1/2)	41.42 35.42 -	1.0000	1.0000
L28	24	2" Flexible Conduit	40.42 35.42 -	1.0000	1.0000
L28	33	(Area) CCI-65FP-065125	40.42 35.42 -	1.0000	1.0000
L28	34	(H) (Area) CCI-65FP-065125	40.42 35.42 -	1.0000	1.0000
L28	35	(H) (Area) CCI-65FP-065125	40.42 35.42 -	1.0000	1.0000
L28	41	(H) CU12PSM9P6XXX(1-1/2)	40.42 35.42 -	1.0000	1.0000
L29	23	EC4-50(1/2)	40.42 30.50 -	1.0000	1.0000
L29	24	2" Flexible Conduit	35.42 30.50 -	1.0000	1.0000
L29	33	(Area) CCI-65FP-065125	35.42 30.50 -	1.0000	1.0000
L29	34	(H) (Area) CCI-65FP-065125	35.42 30.50 -	1.0000	1.0000
L29	35	(H) (Area) CCI-65FP-065125	35.42 30.50 -	1.0000	1.0000
L29	41	(H) CU12PSM9P6XXX(1-1/2)	35.42 30.50 -	1.0000	1.0000
L30	23	EC4-50(1/2)	35.42 30.25 -	1.0000	1.0000
L30	24	2" Flexible Conduit	30.50 30.25 -	1.0000	1.0000
L30	30	(Area) CCI-65FP-085125	30.50 30.25 -	1.0000	1.0000
L30	31	(H) (Area) CCI-65FP-085125	30.50 30.25 -	1.0000	1.0000
L30	32	(H) (Area) CCI-65FP-085125	30.50 30.25 -	1.0000	1.0000
L30	33	(H) (Area) CCI-65FP-065125	30.50 30.25 -	1.0000	1.0000
L30	41	(H) CU12PSM9P6XXX(1-1/2)	30.50 30.25 -	1.0000	1.0000
L31	23	EC4-50(1/2)	30.50 26.75 -	1.0000	1.0000
L31	24	2" Flexible Conduit	30.25 26.75 -	1.0000	1.0000
L31	30	(Area) CCI-65FP-085125	30.25 26.75 -	1.0000	1.0000
L31	31	(H) (Area) CCI-65FP-085125	30.25 26.75 -	1.0000	1.0000
L31	32	(H) (Area) CCI-65FP-085125	30.25 26.75 -	1.0000	1.0000
L31	33	(H) (Area) CCI-65FP-065125	30.25 26.75 -	1.0000	1.0000
L31	41	(H) CU12PSM9P6XXX(1-1/2)	30.25 26.75 -	1.0000	1.0000
L32	23	EC4-50(1/2)	30.25 26.50 -	1.0000	1.0000
L32	24	2" Flexible Conduit	26.75 26.50 -	1.0000	1.0000
L32	30	(Area) CCI-65FP-085125	26.75 26.50 -	1.0000	1.0000
L32	31	(H) (Area) CCI-65FP-085125	26.75 26.50 -	1.0000	1.0000
L32	32	(H) (Area) CCI-65FP-085125	26.75 26.50 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L32	33	(Area) CCI-65FP-065125 (H)	26.50 - 26.75	1.0000	1.0000
L32	41	CU12PSM9P6XXX(1-1/2)	26.50 - 26.75	1.0000	1.0000
L33	23	EC4-50(1/2)	26.25 - 26.50	1.0000	1.0000
L33	24	2" Flexible Conduit	26.25 - 26.50	1.0000	1.0000
L33	30	(Area) CCI-65FP-085125 (H)	26.25 - 26.50	1.0000	1.0000
L33	31	(Area) CCI-65FP-085125 (H)	26.25 - 26.50	1.0000	1.0000
L33	32	(Area) CCI-65FP-085125 (H)	26.25 - 26.50	1.0000	1.0000
L33	33	(Area) CCI-65FP-065125 (H)	26.25 - 26.50	1.0000	1.0000
L33	41	CU12PSM9P6XXX(1-1/2)	26.25 - 26.50	1.0000	1.0000
L34	23	EC4-50(1/2)	26.00 - 26.25	1.0000	1.0000
L34	24	2" Flexible Conduit	26.00 - 26.25	1.0000	1.0000
L34	30	(Area) CCI-65FP-085125 (H)	26.00 - 26.25	1.0000	1.0000
L34	31	(Area) CCI-65FP-085125 (H)	26.00 - 26.25	1.0000	1.0000
L34	32	(Area) CCI-65FP-085125 (H)	26.00 - 26.25	1.0000	1.0000
L34	33	(Area) CCI-65FP-065125 (H)	26.00 - 26.25	1.0000	1.0000
L34	41	CU12PSM9P6XXX(1-1/2)	26.00 - 26.25	1.0000	1.0000
L35	23	EC4-50(1/2)	21.00 - 26.00	1.0000	1.0000
L35	24	2" Flexible Conduit	21.00 - 26.00	1.0000	1.0000
L35	30	(Area) CCI-65FP-085125 (H)	21.00 - 26.00	1.0000	1.0000
L35	31	(Area) CCI-65FP-085125 (H)	21.00 - 26.00	1.0000	1.0000
L35	32	(Area) CCI-65FP-085125 (H)	21.00 - 26.00	1.0000	1.0000
L35	33	(Area) CCI-65FP-065125 (H)	23.50 - 26.00	1.0000	1.0000
L35	41	CU12PSM9P6XXX(1-1/2)	21.00 - 26.00	1.0000	1.0000
L36	23	EC4-50(1/2)	16.00 - 21.00	1.0000	1.0000
L36	24	2" Flexible Conduit	16.00 - 21.00	1.0000	1.0000
L36	30	(Area) CCI-65FP-085125 (H)	16.00 - 21.00	1.0000	1.0000
L36	31	(Area) CCI-65FP-085125 (H)	16.00 - 21.00	1.0000	1.0000
L36	32	(Area) CCI-65FP-085125 (H)	16.00 - 21.00	1.0000	1.0000
L36	41	CU12PSM9P6XXX(1-1/2)	16.00 - 21.00	1.0000	1.0000
L37	23	EC4-50(1/2)	11.00 - 16.00	1.0000	1.0000
L37	24	2" Flexible Conduit	11.00 - 16.00	1.0000	1.0000
L37	30	(Area) CCI-65FP-085125 (H)	11.00 - 16.00	1.0000	1.0000
L37	31	(Area) CCI-65FP-085125 (H)	11.00 - 16.00	1.0000	1.0000
L37	32	(Area) CCI-65FP-085125 (H)	11.00 - 16.00	1.0000	1.0000
L37	41	CU12PSM9P6XXX(1-1/2)	11.00 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
			16.00		
L38	23	EC4-50(1/2)	6.00 - 11.00	1.0000	1.0000
L38	24	2" Flexible Conduit	6.00 - 11.00	1.0000	1.0000
L38	30	(Area) CCI-65FP-085125	6.00 - 11.00	1.0000	1.0000
		(H)			
L38	31	(Area) CCI-65FP-085125	6.00 - 11.00	1.0000	1.0000
		(H)			
L38	32	(Area) CCI-65FP-085125	6.00 - 11.00	1.0000	1.0000
		(H)			
L38	41	CU12PSM9P6XXX(1-1/2)	6.00 - 11.00	1.0000	1.0000
L39	23	EC4-50(1/2)	1.00 - 6.00	1.0000	1.0000
L39	24	2" Flexible Conduit	1.00 - 6.00	1.0000	1.0000
L39	30	(Area) CCI-65FP-085125	1.00 - 6.00	1.0000	1.0000
		(H)			
L39	31	(Area) CCI-65FP-085125	1.00 - 6.00	1.0000	1.0000
		(H)			
L39	32	(Area) CCI-65FP-085125	1.00 - 6.00	1.0000	1.0000
		(H)			
L39	41	CU12PSM9P6XXX(1-1/2)	1.00 - 6.00	1.0000	1.0000
L40	23	EC4-50(1/2)	0.50 - 1.00	1.0000	1.0000
L40	24	2" Flexible Conduit	0.50 - 1.00	1.0000	1.0000
L40	30	(Area) CCI-65FP-085125	0.50 - 1.00	1.0000	1.0000
		(H)			
L40	31	(Area) CCI-65FP-085125	0.50 - 1.00	1.0000	1.0000
		(H)			
L40	32	(Area) CCI-65FP-085125	0.50 - 1.00	1.0000	1.0000
		(H)			
L40	41	CU12PSM9P6XXX(1-1/2)	0.50 - 1.00	1.0000	1.0000
L41	23	EC4-50(1/2)	0.25 - 0.50	1.0000	1.0000
L41	24	2" Flexible Conduit	0.25 - 0.50	1.0000	1.0000
L41	30	(Area) CCI-65FP-085125	0.25 - 0.50	1.0000	1.0000
		(H)			
L41	31	(Area) CCI-65FP-085125	0.25 - 0.50	1.0000	1.0000
		(H)			
L41	32	(Area) CCI-65FP-085125	0.25 - 0.50	1.0000	1.0000
		(H)			
L41	41	CU12PSM9P6XXX(1-1/2)	0.25 - 0.50	1.0000	1.0000
L42	23	EC4-50(1/2)	0.00 - 0.25	1.0000	1.0000
L42	24	2" Flexible Conduit	0.00 - 0.25	1.0000	1.0000
L42	30	(Area) CCI-65FP-085125	0.00 - 0.25	1.0000	1.0000
		(H)			
L42	31	(Area) CCI-65FP-085125	0.00 - 0.25	1.0000	1.0000
		(H)			
L42	32	(Area) CCI-65FP-085125	0.00 - 0.25	1.0000	1.0000
		(H)			
L42	41	CU12PSM9P6XXX(1-1/2)	0.00 - 0.25	1.0000	1.0000

Effective Width of Flat Linear Attachments / Feed Lines

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L12	39	(Area) CCI-65FP-060100	102.75 - 104.75	Auto	0.0000
		(H)			
L13	39	(Area) CCI-65FP-060100	102.50 - 102.75	Auto	0.0000
		(H)			
L14	39	(Area) CCI-65FP-060100	97.50 - 102.50	Auto	0.0000
		(H)			
L15	39	(Area) CCI-65FP-060100	92.50 - 97.50	Auto	0.0000
		(H)			

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L16	39	(Area) CCI-65FP-060100 (H)	87.50 - 92.50	Auto	0.0000
L17	39	(Area) CCI-65FP-060100 (H)	84.75 - 87.50	Auto	0.0000
L19	36	(Area) CCI-65FP-065125 (H)	75.33 - 75.50	Auto	0.0000
L19	37	(Area) CCI-65FP-065125 (H)	75.33 - 75.50	Auto	0.0000
L19	38	(Area) CCI-65FP-065125 (H)	75.33 - 75.50	Auto	0.0000
L20	36	(Area) CCI-65FP-065125 (H)	70.33 - 75.33	Auto	0.0000
L20	37	(Area) CCI-65FP-065125 (H)	70.33 - 75.33	Auto	0.0000
L20	38	(Area) CCI-65FP-065125 (H)	70.33 - 75.33	Auto	0.0000
L21	36	(Area) CCI-65FP-065125 (H)	67.75 - 70.33	Auto	0.0000
L21	37	(Area) CCI-65FP-065125 (H)	67.75 - 70.33	Auto	0.0000
L21	38	(Area) CCI-65FP-065125 (H)	67.75 - 70.33	Auto	0.0000
L22	36	(Area) CCI-65FP-065125 (H)	67.50 - 67.75	Auto	0.0000
L22	37	(Area) CCI-65FP-065125 (H)	67.50 - 67.75	Auto	0.0000
L22	38	(Area) CCI-65FP-065125 (H)	67.50 - 67.75	Auto	0.0000
L23	36	(Area) CCI-65FP-065125 (H)	62.50 - 67.50	Auto	0.0000
L23	37	(Area) CCI-65FP-065125 (H)	62.50 - 67.50	Auto	0.0000
L23	38	(Area) CCI-65FP-065125 (H)	62.50 - 67.50	Auto	0.0000
L24	36	(Area) CCI-65FP-065125 (H)	57.50 - 62.50	Auto	0.0000
L24	37	(Area) CCI-65FP-065125 (H)	57.50 - 62.50	Auto	0.0000
L24	38	(Area) CCI-65FP-065125 (H)	57.50 - 62.50	Auto	0.0000
L25	36	(Area) CCI-65FP-065125 (H)	52.50 - 57.50	Auto	0.0000
L25	37	(Area) CCI-65FP-065125 (H)	52.50 - 57.50	Auto	0.0000
L25	38	(Area) CCI-65FP-065125 (H)	52.50 - 57.50	Auto	0.0000
L26	33	(Area) CCI-65FP-065125 (H)	41.42 - 50.50	Auto	0.0000
L26	34	(Area) CCI-65FP-065125 (H)	41.42 - 50.50	Auto	0.0000
L26	35	(Area) CCI-65FP-065125 (H)	41.42 - 50.50	Auto	0.0000
L26	36	(Area) CCI-65FP-065125 (H)	50.50 - 52.50	Auto	0.0000
L26	37	(Area) CCI-65FP-065125 (H)	50.50 - 52.50	Auto	0.0000
L26	38	(Area) CCI-65FP-065125 (H)	50.50 - 52.50	Auto	0.0000
L27	33	(Area) CCI-65FP-065125 (H)	40.42 - 41.42	Auto	0.0000
L27	34	(Area) CCI-65FP-065125 (H)	40.42 - 41.42	Auto	0.0000
L27	35	(Area) CCI-65FP-065125 (H)	40.42 - 41.42	Auto	0.0000
L28	33	(Area) CCI-65FP-065125 (H)	35.42 - 40.42	Auto	0.0000
L28	34	(Area) CCI-65FP-065125 (H)	35.42 - 40.42	Auto	0.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L28	35	(Area) CCI-65FP-065125 (H)	35.42 - 40.42	Auto	0.0000
L29	33	(Area) CCI-65FP-065125 (H)	30.50 - 35.42	Auto	0.0000
L29	34	(Area) CCI-65FP-065125 (H)	30.50 - 35.42	Auto	0.0000
L29	35	(Area) CCI-65FP-065125 (H)	30.50 - 35.42	Auto	0.0000
L30	30	(Area) CCI-65FP-085125 (H)	30.25 - 30.50	Auto	0.0000
L30	31	(Area) CCI-65FP-085125 (H)	30.25 - 30.50	Auto	0.0000
L30	32	(Area) CCI-65FP-085125 (H)	30.25 - 30.50	Auto	0.0000
L30	33	(Area) CCI-65FP-065125 (H)	30.25 - 30.50	Auto	0.0000
L31	30	(Area) CCI-65FP-085125 (H)	26.75 - 30.25	Auto	0.0000
L31	31	(Area) CCI-65FP-085125 (H)	26.75 - 30.25	Auto	0.0000
L31	32	(Area) CCI-65FP-085125 (H)	26.75 - 30.25	Auto	0.0000
L31	33	(Area) CCI-65FP-065125 (H)	26.75 - 30.25	Auto	0.0000
L32	30	(Area) CCI-65FP-085125 (H)	26.50 - 26.75	Auto	0.0000
L32	31	(Area) CCI-65FP-085125 (H)	26.50 - 26.75	Auto	0.0000
L32	32	(Area) CCI-65FP-085125 (H)	26.50 - 26.75	Auto	0.0000
L32	33	(Area) CCI-65FP-065125 (H)	26.50 - 26.75	Auto	0.0000
L33	30	(Area) CCI-65FP-085125 (H)	26.25 - 26.50	Auto	0.0000
L33	31	(Area) CCI-65FP-085125 (H)	26.25 - 26.50	Auto	0.0000
L33	32	(Area) CCI-65FP-085125 (H)	26.25 - 26.50	Auto	0.0000
L33	33	(Area) CCI-65FP-065125 (H)	26.25 - 26.50	Auto	0.0000
L34	30	(Area) CCI-65FP-085125 (H)	26.00 - 26.25	Auto	0.0000
L34	31	(Area) CCI-65FP-085125 (H)	26.00 - 26.25	Auto	0.0000
L34	32	(Area) CCI-65FP-085125 (H)	26.00 - 26.25	Auto	0.0000
L34	33	(Area) CCI-65FP-065125 (H)	26.00 - 26.25	Auto	0.0000
L35	30	(Area) CCI-65FP-085125 (H)	21.00 - 26.00	Auto	0.0000
L35	31	(Area) CCI-65FP-085125 (H)	21.00 - 26.00	Auto	0.0000
L35	32	(Area) CCI-65FP-085125 (H)	21.00 - 26.00	Auto	0.0000
L35	33	(Area) CCI-65FP-065125 (H)	23.50 - 26.00	Auto	0.0000
L36	30	(Area) CCI-65FP-085125 (H)	16.00 - 21.00	Auto	0.0000
L36	31	(Area) CCI-65FP-085125 (H)	16.00 - 21.00	Auto	0.0000
L36	32	(Area) CCI-65FP-085125 (H)	16.00 - 21.00	Auto	0.0000
L37	30	(Area) CCI-65FP-085125 (H)	11.00 - 16.00	Auto	0.0000
L37	31	(Area) CCI-65FP-085125 (H)	11.00 - 16.00	Auto	0.0000
L37	32	(Area) CCI-65FP-085125 (H)	11.00 - 16.00	Auto	0.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L38	30	(Area) CCI-65FP-085125 (H)	6.00 - 11.00	Auto	0.0000
L38	31	(Area) CCI-65FP-085125 (H)	6.00 - 11.00	Auto	0.0000
L38	32	(Area) CCI-65FP-085125 (H)	6.00 - 11.00	Auto	0.0000
L39	30	(Area) CCI-65FP-085125 (H)	1.00 - 6.00	Auto	0.0000
L39	31	(Area) CCI-65FP-085125 (H)	1.00 - 6.00	Auto	0.0000
L39	32	(Area) CCI-65FP-085125 (H)	1.00 - 6.00	Auto	0.0000
L40	30	(Area) CCI-65FP-085125 (H)	0.50 - 1.00	Auto	0.0000
L40	31	(Area) CCI-65FP-085125 (H)	0.50 - 1.00	Auto	0.0000
L40	32	(Area) CCI-65FP-085125 (H)	0.50 - 1.00	Auto	0.0000
L41	30	(Area) CCI-65FP-085125 (H)	0.25 - 0.50	Auto	0.0000
L41	31	(Area) CCI-65FP-085125 (H)	0.25 - 0.50	Auto	0.0000
L41	32	(Area) CCI-65FP-085125 (H)	0.25 - 0.50	Auto	0.0000
L42	30	(Area) CCI-65FP-085125 (H)	0.00 - 0.25	Auto	0.0000
L42	31	(Area) CCI-65FP-085125 (H)	0.00 - 0.25	Auto	0.0000
L42	32	(Area) CCI-65FP-085125 (H)	0.00 - 0.25	Auto	0.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft
BXA-70040/6CF w/ Mount Pipe	A	From Centroid-Leg	4.00 0.00 1.00	0.0000	158.00
BXA-70040/6CF w/ Mount Pipe	B	From Centroid-Leg	4.00 0.00 1.00	0.0000	158.00
BXA-70040/6CF w/ Mount Pipe	C	From Centroid-Leg	4.00 0.00 1.00	0.0000	158.00
(2) HBXX-6516DS-A2M w/ Mount Pipe	A	From Centroid-Leg	4.00 0.00 1.00	0.0000	158.00
(2) HBXX-6517DS-A2M w/ Mount Pipe	B	From Centroid-Leg	4.00 0.00 1.00	0.0000	158.00
(2) HBXX-6517DS-A2M w/ Mount Pipe	C	From Centroid-Leg	4.00 0.00 1.00	0.0000	158.00
BXA-80063/4CF w/ Mount Pipe	A	From Centroid-Leg	4.00 0.00 1.00	0.0000	158.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft
BXA-80063-6BF-EDIN-X w/ Mount Pipe	B	From Centroid-Leg	4.00 0.00 1.00	0.0000	158.00
BXA-80063-6BF-EDIN-X w/ Mount Pipe	C	From Centroid-Leg	4.00 0.00 1.00	0.0000	158.00
GPS_A	B	From Centroid-Leg	4.00 0.00 1.00	0.0000	158.00
B4 RRH2X60-4R	A	From Centroid-Leg	4.00 0.00 1.00	0.0000	158.00
B4 RRH2X60-4R	B	From Centroid-Leg	4.00 0.00 1.00	0.0000	158.00
B4 RRH2X60-4R	C	From Centroid-Leg	4.00 0.00 1.00	0.0000	158.00
DB-T1-6Z-8AB-0Z	B	From Centroid-Leg	4.00 0.00 1.00	0.0000	158.00
Platform Mount [LP 602-1] **	C	None		0.0000	158.00
800 10121 w/ Mount Pipe	A	From Centroid-Leg	4.00 0.00 2.00	0.0000	147.00
800 10121 w/ Mount Pipe	B	From Centroid-Leg	4.00 0.00 2.00	0.0000	147.00
800 10121 w/ Mount Pipe	C	From Centroid-Leg	4.00 0.00 2.00	0.0000	147.00
QS66512-2 w/ Mount Pipe	A	From Centroid-Leg	4.00 0.00 2.00	0.0000	147.00
QS66512-2 w/ Mount Pipe	B	From Centroid-Leg	4.00 0.00 2.00	0.0000	147.00
QS66512-2 w/ Mount Pipe	C	From Centroid-Leg	4.00 0.00 2.00	0.0000	147.00
OPA65R-BU6D w/ Mount Pipe	A	From Centroid-Leg	4.00 0.00 2.00	0.0000	147.00
OPA65R-BU6D w/ Mount Pipe	B	From Centroid-Leg	4.00 0.00 2.00	0.0000	147.00
OPA65R-BU6D w/ Mount Pipe	C	From Centroid-Leg	4.00 0.00 2.00	0.0000	147.00
DMP65R-BU6D w/ Mount Pipe	A	From Centroid-Leg	4.00 0.00 2.00	0.0000	147.00
DMP65R-BU6D w/ Mount Pipe	B	From Centroid-Leg	4.00 0.00 2.00	0.0000	147.00
DMP65R-BU6D w/ Mount Pipe	C	From Centroid-Leg	4.00 0.00 2.00	0.0000	147.00
TPX-070821	A	From Centroid-Leg	4.00 0.00 2.00	0.0000	147.00
TPX-070821	B	From Centroid-Leg	4.00 0.00 2.00	0.0000	147.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft
TPX-070821	C	From Centroid-Leg	4.00 0.00 2.00	0.0000	147.00
TPX-070821	A	From Centroid-Leg	4.00 0.00 2.00	0.0000	147.00
TPX-070821	B	From Centroid-Leg	4.00 0.00 2.00	0.0000	147.00
TPX-070821	C	From Centroid-Leg	4.00 0.00 2.00	0.0000	147.00
TT19-08BP111-001	A	From Centroid-Leg	4.00 0.00 2.00	0.0000	147.00
TT19-08BP111-001	B	From Centroid-Leg	4.00 0.00 2.00	0.0000	147.00
TT19-08BP111-001	C	From Centroid-Leg	4.00 0.00 2.00	0.0000	147.00
RRUS 32 B30	A	From Centroid-Leg	4.00 0.00 2.00	0.0000	147.00
RRUS 32 B30	B	From Centroid-Leg	4.00 0.00 2.00	0.0000	147.00
RRUS 32 B30	C	From Centroid-Leg	4.00 0.00 2.00	0.0000	147.00
782 10253	A	From Centroid-Leg	4.00 0.00 2.00	0.0000	147.00
782 10253	B	From Centroid-Leg	4.00 0.00 2.00	0.0000	147.00
782 10253	C	From Centroid-Leg	4.00 0.00 2.00	0.0000	147.00
RRUS12/RRUS A2	A	From Centroid-Leg	4.00 0.00 2.00	0.0000	147.00
RRUS12/RRUS A2	B	From Centroid-Leg	4.00 0.00 2.00	0.0000	147.00
RRUS12/RRUS A2	C	From Centroid-Leg	4.00 0.00 2.00	0.0000	147.00
(2) WCS-IMFQ-AMT	A	From Centroid-Leg	4.00 0.00 2.00	0.0000	147.00
DC6-48-60-18-8F	B	From Centroid-Leg	4.00 0.00 2.00	0.0000	147.00
DC6-48-60-18-8F	B	From Centroid-Leg	4.00 0.00 2.00	0.0000	147.00
RRUS 4478 B14_CCIV2	A	From Centroid-Leg	4.00 0.00 2.00	0.0000	147.00
RRUS 4478 B14_CCIV2	B	From Centroid-Leg	4.00 0.00 2.00	0.0000	147.00
RRUS 4478 B14_CCIV2	C	From Centroid-Leg	4.00 0.00	0.0000	147.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft
RRUS 32 B66A	A	From Centroid-Leg	2.00 4.00 0.00	0.0000	147.00
RRUS 32 B66A	B	From Centroid-Leg	2.00 4.00 0.00	0.0000	147.00
RRUS 32 B66A	C	From Centroid-Leg	2.00 4.00 0.00	0.0000	147.00
RRUS 4449 B5/B12	A	From Centroid-Leg	2.00 4.00 0.00	0.0000	147.00
RRUS 4449 B5/B12	B	From Centroid-Leg	2.00 4.00 0.00	0.0000	147.00
RRUS 4449 B5/B12	C	From Centroid-Leg	2.00 4.00 0.00	0.0000	147.00
DC6-48-60-18-8C-EV	A	From Centroid-Leg	2.00 4.00 0.00	0.0000	147.00
(2) 2.4" Dia. x 6-ft	A	From Centroid-Leg	2.00 4.00 0.00	0.0000	147.00
(2) 2.4" Dia. x 6-ft	B	From Centroid-Leg	0.00 4.00 0.00	0.0000	147.00
(2) 2.4" Dia. x 6-ft	C	From Centroid-Leg	0.00 4.00 0.00	0.0000	147.00
2.4" x 8' Pipe	A	From Centroid-Leg	0.00 4.00 0.00	0.0000	147.00
2.4" x 8' Pipe	B	From Centroid-Leg	0.00 4.00 0.00	0.0000	147.00
2.4" x 8' Pipe	C	From Centroid-Leg	0.00 4.00 0.00	0.0000	147.00
2.4" x 8' Pipe	A	From Leg	0.00 0.50 0.00	0.0000	147.00
2.4" x 8' Pipe	B	From Leg	0.00 0.50 0.00	0.0000	147.00
2.4" x 8' Pipe	C	From Leg	0.00 0.50 0.00	0.0000	147.00
HSS4x4x1/4 x 3.5' (Standoff)	A	From Centroid-Face	0.00 2.00 0.00	0.0000	147.00
HSS4x4x1/4 x 3.5' (Standoff)	B	From Centroid-Face	0.00 2.00 0.00	0.0000	147.00
HSS4x4x1/4 x 3.5' (Standoff)	C	From Centroid-Face	0.00 2.00 0.00	0.0000	147.00
2.9"x5' Pipe	A	From Centroid-Face	0.00 2.00 0.00	0.0000	147.00
2.9"x5' Pipe	B	From Centroid-Face	0.00 2.00 0.00	0.0000	147.00
2.9"x5' Pipe	C	From Centroid-Face	0.00 2.00	0.0000	147.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft
			0.00		
Platform Mount [LP 602-1] **	C	None	0.00	0.0000	147.00
APXVSPP18-C-A20 w/ Mount Pipe	A	From Centroid-Face	4.00	0.0000	137.00
			0.00		
APXVSPP18-C-A20 w/ Mount Pipe	B	From Centroid-Face	3.00 4.00	0.0000	137.00
			0.00		
APXVSPP18-C-A20 w/ Mount Pipe	C	From Centroid-Face	3.00 4.00	0.0000	137.00
			0.00		
APXVTM14-C-120 w/ Mount Pipe	A	From Centroid-Face	3.00 4.00	0.0000	137.00
			0.00		
APXVTM14-C-120 w/ Mount Pipe	B	From Centroid-Face	3.00 4.00	0.0000	137.00
			0.00		
APXVTM14-C-120 w/ Mount Pipe	C	From Centroid-Face	3.00 4.00	0.0000	137.00
			0.00		
TD-RRH8x20-25	A	From Centroid-Face	3.00 4.00	0.0000	137.00
			0.00		
TD-RRH8x20-25	B	From Centroid-Face	3.00 4.00	0.0000	137.00
			0.00		
TD-RRH8x20-25	C	From Centroid-Face	3.00 4.00	0.0000	137.00
			0.00		
(3) ACU-A20-N	A	From Centroid-Face	3.00 4.00	0.0000	137.00
			0.00		
(3) ACU-A20-N	B	From Centroid-Face	3.00 4.00	0.0000	137.00
			0.00		
(3) ACU-A20-N	C	From Centroid-Face	3.00 4.00	0.0000	137.00
			0.00		
800MHZ RRH	A	From Centroid-Face	3.00 4.00	0.0000	137.00
			0.00		
800MHZ RRH	B	From Centroid-Face	3.00 4.00	0.0000	137.00
			0.00		
800MHZ RRH	C	From Centroid-Face	3.00 4.00	0.0000	137.00
			0.00		
800 EXTERNAL NOTCH FILTER	A	From Centroid-Face	3.00 4.00	0.0000	137.00
			0.00		
800 EXTERNAL NOTCH FILTER	B	From Centroid-Face	3.00 4.00	0.0000	137.00
			0.00		
800 EXTERNAL NOTCH FILTER	C	From Centroid-Face	3.00 4.00	0.0000	137.00
			0.00		
1900MHz RRH (65MHz)	A	From Centroid-Face	3.00 4.00	0.0000	137.00
			0.00		
1900MHz RRH (65MHz)	B	From Centroid-Face	3.00 4.00	0.0000	137.00
			0.00		
1900MHz RRH (65MHz)	C	From Centroid-Face	3.00 4.00	0.0000	137.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft
			0.00		
(2) 2.4" Dia. x 6-ft	A	From Centroid-Face	3.00 4.00	0.0000	137.00
			0.00		
(2) 2.4" Dia. x 6-ft	B	From Centroid-Face	0.00 4.00	0.0000	137.00
			0.00		
(2) 2.4" Dia. x 6-ft	C	From Centroid-Face	0.00 4.00	0.0000	137.00
			0.00		
Platform Mount [LP 602-1] **	C	None		0.0000	137.00
APXVAARR24_43-U-NA20	A	From Centroid-Face	4.00	0.0000	127.00
			0.00		
APXVAARR24_43-U-NA20	B	From Centroid-Face	2.00 4.00	0.0000	127.00
			0.00		
APXVAARR24_43-U-NA20	C	From Centroid-Face	2.00 4.00	0.0000	127.00
			0.00		
ERICSSON AIR 21 B4A B2P	A	From Centroid-Face	2.00 4.00	0.0000	127.00
			0.00		
ERICSSON AIR 21 B4A B2P	B	From Centroid-Face	2.00 4.00	0.0000	127.00
			0.00		
ERICSSON AIR 21 B4A B2P	C	From Centroid-Face	2.00 4.00	0.0000	127.00
			0.00		
ERICSSON AIR 21 B2A B4P	A	From Centroid-Face	2.00 4.00	0.0000	127.00
			0.00		
ERICSSON AIR 21 B2A B4P	B	From Centroid-Face	2.00 4.00	0.0000	127.00
			0.00		
ERICSSON AIR 21 B2A B4P	C	From Centroid-Face	2.00 4.00	0.0000	127.00
			0.00		
KRY 112 144/1	A	From Centroid-Face	2.00 4.00	0.0000	127.00
			0.00		
KRY 112 144/1	B	From Centroid-Face	2.00 4.00	0.0000	127.00
			0.00		
KRY 112 144/1	C	From Centroid-Face	2.00 4.00	0.0000	127.00
			0.00		
RADIO 4449 B12/B71	B	From Centroid-Face	2.00 4.00	0.0000	127.00
			0.00		
(2) RADIO 4449 B12/B71	C	From Centroid-Face	2.00 4.00	0.0000	127.00
			0.00		
2.4" Dia. x 14-ft	A	From Centroid-Face	2.00 4.00	0.0000	127.00
			0.00		
2.4" Dia. x 14-ft	B	From Centroid-Face	0.00 4.00	0.0000	127.00
			0.00		
2.4" Dia. x 14-ft	C	From Centroid-Face	0.00 4.00	0.0000	127.00
			0.00		
(2) L2.5x2.5x1/4 x 14-ft	A	From Centroid-Face	0.00 4.00	0.0000	127.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft
			0.00		
(2) L2.5x2.5x1/4 x 14-ft	B	From Centroid-Face	-7.00	0.0000	127.00
			4.00		
			0.00		
(2) L2.5x2.5x1/4 x 14-ft	C	From Centroid-Face	-7.00	0.0000	127.00
			4.00		
			0.00		
Platform Mount [LP 1201-1] **	C	None	-7.00	0.0000	127.00
LLPX310R w/ Mount Pipe	A	From Leg	2.00	0.0000	107.00
			0.00		
			3.00		
LLPX310R w/ Mount Pipe	B	From Leg	2.00	0.0000	107.00
			0.00		
			3.00		
LLPX310R w/ Mount Pipe	C	From Leg	2.00	0.0000	107.00
			0.00		
			3.00		
WIMAX DAP HEAD	A	From Leg	2.00	0.0000	107.00
			0.00		
			3.00		
WIMAX DAP HEAD	B	From Leg	2.00	0.0000	107.00
			0.00		
			3.00		
WIMAX DAP HEAD	C	From Leg	2.00	0.0000	107.00
			0.00		
			3.00		
HORIZON COMPACT	A	From Leg	2.00	0.0000	107.00
			0.00		
			3.00		
HORIZON COMPACT	C	From Leg	2.00	0.0000	107.00
			0.00		
			3.00		
2.4" Dia. x 6-ft	A	From Leg	2.00	0.0000	107.00
			0.00		
			3.00		
2.4" Dia. x 6-ft	B	From Leg	2.00	0.0000	107.00
			0.00		
			3.00		
2.4" Dia. x 6-ft	C	From Leg	2.00	0.0000	107.00
			0.00		
			3.00		
1.9" x 6' Stabilizer	A	From Face	2.00	0.0000	107.00
			0.00		
			0.00		
1.9" x 6' Stabilizer	B	From Face	2.00	0.0000	107.00
			0.00		
			0.00		
1.9" x 6' Stabilizer	C	From Face	2.00	0.0000	107.00
			0.00		
			0.00		
Side Arm Mount [SO 101-3] **	C	None		0.0000	107.00
APXV18-206517S-C w/ Mount Pipe	A	From Leg	1.00	0.0000	100.00
			0.00		
			0.00		
APXV18-206517S-C w/ Mount Pipe	B	From Leg	1.00	0.0000	100.00
			0.00		
			0.00		
APXV18-206517S-C w/ Mount Pipe	C	From Leg	1.00	0.0000	100.00
			0.00		
			0.00		
Pipe Mount [PM 601-3] **	C	None		0.0000	100.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft
OG-860/1920/GPS-A	C	From Leg	3.00 0.00 1.00	0.0000	80.00
2.4" Dia. x 2-ft	C	From Leg	3.00 0.00 0.00	0.0000	80.00
2.4" Dia. x 2-ft	B	From Face	3.00 0.00 0.00	0.0000	80.00
Side Arm Mount [SO 701-1]	C	From Leg	1.50 0.00 0.00	0.0000	80.00

MX08FRO665-21 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	117.00
MX08FRO665-21 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	117.00
MX08FRO665-21 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	117.00
TA08025-B604	A	From Leg	4.00 0.00 0.00	0.0000	117.00
TA08025-B604	B	From Leg	4.00 0.00 0.00	0.0000	117.00
TA08025-B604	C	From Leg	4.00 0.00 0.00	0.0000	117.00
TA08025-B605	A	From Leg	4.00 0.00 0.00	0.0000	117.00
TA08025-B605	B	From Leg	4.00 0.00 0.00	0.0000	117.00
TA08025-B605	C	From Leg	4.00 0.00 0.00	0.0000	117.00
RDIDC-9181-PF-48	A	From Leg	4.00 0.00 0.00	0.0000	117.00
(2) 8' x 2" Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	117.00
(2) 8' x 2" Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	117.00
(2) 8' x 2" Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	117.00
Commscope MC-PK8-DSH ***	C	None		0.0000	117.00

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft
VHLP2-11	C	Paraboloid w/Shroud (HP)	From	4.00	-17.0000		137.00	2.00

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft
			Centroid-Face	0.00 3.00				
** VHLP2-11	A	Paraboloid w/o Radome	From Leg	2.00 0.00 3.00	-17.0000		107.00	2.17
PX2F-52	C	Paraboloid w/Shroud (HP)	From Leg	2.00 0.00 3.00	0.0000		107.00	2.09

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice
3	0.9 Dead+1.0 Wind 0 deg - No Ice
4	1.2 Dead+1.0 Wind 30 deg - No Ice
5	0.9 Dead+1.0 Wind 30 deg - No Ice
6	1.2 Dead+1.0 Wind 60 deg - No Ice
7	0.9 Dead+1.0 Wind 60 deg - No Ice
8	1.2 Dead+1.0 Wind 90 deg - No Ice
9	0.9 Dead+1.0 Wind 90 deg - No Ice
10	1.2 Dead+1.0 Wind 120 deg - No Ice
11	0.9 Dead+1.0 Wind 120 deg - No Ice
12	1.2 Dead+1.0 Wind 150 deg - No Ice
13	0.9 Dead+1.0 Wind 150 deg - No Ice
14	1.2 Dead+1.0 Wind 180 deg - No Ice
15	0.9 Dead+1.0 Wind 180 deg - No Ice
16	1.2 Dead+1.0 Wind 210 deg - No Ice
17	0.9 Dead+1.0 Wind 210 deg - No Ice
18	1.2 Dead+1.0 Wind 240 deg - No Ice
19	0.9 Dead+1.0 Wind 240 deg - No Ice
20	1.2 Dead+1.0 Wind 270 deg - No Ice
21	0.9 Dead+1.0 Wind 270 deg - No Ice
22	1.2 Dead+1.0 Wind 300 deg - No Ice
23	0.9 Dead+1.0 Wind 300 deg - No Ice
24	1.2 Dead+1.0 Wind 330 deg - No Ice
25	0.9 Dead+1.0 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	160 - 155	Pole	Max Tension	42	0.00	-0.00	0.00
			Max. Compression	26	-8.68	-0.67	-1.52
			Max. Mx	8	-2.60	-21.47	-0.49
			Max. My	14	-2.61	-0.32	-21.17
			Max. Vy	8	5.90	-21.47	-0.49
			Max. Vx	14	5.76	-0.32	-21.17
			Max. Torque	8			-1.17
L2	155 - 150	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-9.38	-0.68	-1.53
			Max. Mx	8	-3.02	-52.12	-0.72
			Max. My	14	-3.03	-0.54	-51.12
			Max. Vy	8	6.36	-52.12	-0.72
			Max. Vx	14	6.22	-0.54	-51.12
			Max. Torque	8			-1.17
L3	150 - 145	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-22.91	-1.38	-0.96
			Max. Mx	8	-7.97	-106.92	-0.65
			Max. My	14	-7.98	-0.91	-104.82
			Max. Vy	8	13.62	-106.92	-0.65
			Max. Vx	14	13.50	-0.91	-104.82
			Max. Torque	8			-1.17
L4	145 - 140	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-23.72	-1.40	-0.97
			Max. Mx	8	-8.51	-176.23	-0.90
			Max. My	14	-8.52	-1.15	-173.54
			Max. Vy	8	14.10	-176.23	-0.90
			Max. Vx	14	13.99	-1.15	-173.54
			Max. Torque	6			-1.14
L5	140 - 135	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-32.21	-1.42	-1.36
			Max. Mx	8	-11.86	-260.36	-1.49
			Max. My	14	-11.87	-1.52	-257.48
			Max. Vy	8	18.21	-260.36	-1.49
			Max. Vx	2	-18.19	0.93	257.21
			Max. Torque	18			1.45
L6	135 - 130	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-33.10	-1.44	-1.38
			Max. Mx	8	-12.50	-352.62	-1.98
			Max. My	14	-12.51	-1.89	-349.39
			Max. Vy	8	18.70	-352.62	-1.98
			Max. Vx	2	-18.67	1.33	349.34
			Max. Torque	18			1.45
L7	130 - 121.333	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-43.32	-1.96	-2.25
			Max. Mx	8	-17.38	-431.46	-2.84
			Max. My	14	-17.39	-2.44	-428.25
			Max. Vy	8	22.87	-431.46	-2.84
			Max. Vx	2	-22.87	1.35	427.36
			Max. Torque	18			1.71
L8	121.333 - 121	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-45.23	-1.99	-2.27
			Max. Mx	8	-18.77	-547.24	-3.32
			Max. My	14	-18.78	-2.78	-543.81
			Max. Vy	8	23.45	-547.24	-3.32
			Max. Vx	2	-23.44	1.71	543.13
			Max. Torque	18			1.71
L9	121 - 116	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-52.39	-2.02	-1.79
			Max. Mx	8	-22.79	-668.69	-3.68
			Max. My	14	-22.79	-3.13	-664.94
			Max. Vy	8	26.92	-668.69	-3.68
			Max. Vx	2	-26.96	2.08	664.73
			Max. Torque	18			1.71

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L10	116 - 111	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-53.74	-2.08	-1.77
			Max. Mx	8	-23.88	-804.52	-4.15
			Max. My	2	-23.88	2.43	800.71
			Max. Vy	8	27.42	-804.52	-4.15
			Max. Vx	2	-27.45	2.43	800.71
L11	111 - 106	Pole	Max. Torque	18			1.51
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-57.23	-1.80	-1.48
			Max. Mx	8	-25.77	-946.48	-4.90
			Max. My	2	-25.78	2.51	942.94
			Max. Vy	8	29.12	-946.48	-4.90
L12	106 - 102.75	Pole	Max. Vx	14	29.16	-3.81	-942.78
			Max. Torque	18			1.51
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-58.22	-1.84	-1.39
			Max. Mx	8	-26.54	-1041.61	-5.50
			Max. My	2	-26.54	2.44	1038.10
L13	102.75 - 102.5	Pole	Max. Vy	8	29.44	-1041.61	-5.50
			Max. Vx	14	29.48	-4.09	-1038.03
			Max. Torque	18			1.39
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-58.29	-1.84	-1.38
			Max. Mx	8	-26.61	-1048.98	-5.54
L14	102.5 - 97.5	Pole	Max. My	2	-26.62	2.44	1045.47
			Max. Vy	8	29.46	-1048.98	-5.54
			Max. Vx	14	29.50	-4.11	-1045.40
			Max. Torque	18			1.39
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-60.88	-1.89	-1.19
L15	97.5 - 92.5	Pole	Max. Mx	8	-28.22	-1198.64	-6.45
			Max. My	14	-28.22	-4.55	-1195.22
			Max. Vy	8	30.42	-1198.64	-6.45
			Max. Vx	14	30.46	-4.55	-1195.22
			Max. Torque	18			1.39
			Max Tension	1	0.00	0.00	0.00
L16	92.5 - 87.5	Pole	Max. Compression	26	-62.50	-1.94	-1.00
			Max. Mx	8	-29.48	-1351.87	-7.36
			Max. My	14	-29.48	-4.98	-1348.63
			Max. Vy	8	30.89	-1351.87	-7.36
			Max. Vx	14	30.94	-4.98	-1348.63
			Max. Torque	18			1.39
L17	87.5 - 81.333	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-64.31	-1.99	-0.79
			Max. Mx	8	-30.92	-1523.14	-8.36
			Max. My	14	-30.92	-5.46	-1520.09
			Max. Vy	8	31.40	-1523.14	-8.36
			Max. Vx	14	31.44	-5.46	-1520.09
L18	81.333 - 80.333	Pole	Max. Torque	18			1.39
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-68.29	-2.09	-0.61
			Max. Mx	8	-33.99	-1735.19	-9.56
			Max. My	14	-33.98	-6.03	-1732.36
			Max. Vy	8	32.20	-1735.19	-9.56
L19	80.333 - 75.333	Pole	Max. Vx	14	32.25	-6.03	-1732.36
			Max. Torque	18			1.39
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-70.44	-1.79	-0.74

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L20	75.333 - 70.333	Pole	Max. Mx	8	-35.71	-1897.53	-10.65
			Max. My	14	-35.71	-6.32	-1895.30
			Max. Vy	8	32.77	-1897.53	-10.65
			Max. Vx	14	32.83	-6.32	-1895.30
			Max. Torque	18			1.39
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-72.60	-1.88	-0.64
			Max. Mx	8	-37.38	-2062.52	-11.62
			Max. My	14	-37.38	-6.82	-2060.53
			Max. Vy	8	33.25	-2062.52	-11.62
L21	70.333 - 67.75	Pole	Max. Vx	14	33.31	-6.82	-2060.53
			Max. Torque	18			1.38
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-73.73	-1.92	-0.59
			Max. Mx	8	-38.26	-2148.68	-12.12
			Max. My	14	-38.26	-7.08	-2146.82
			Max. Vy	8	33.49	-2148.68	-12.12
			Max. Vx	14	33.55	-7.08	-2146.82
			Max. Torque	18			1.38
			Max Tension	1	0.00	0.00	0.00
L22	67.75 - 67.5	Pole	Max. Compression	26	-73.86	-1.93	-0.59
			Max. Mx	8	-38.38	-2157.05	-12.17
			Max. My	14	-38.38	-7.11	-2155.21
			Max. Vy	8	33.51	-2157.05	-12.17
			Max. Vx	14	33.57	-7.11	-2155.21
			Max. Torque	18			1.38
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-76.58	-2.01	-0.49
			Max. Mx	8	-40.56	-2325.90	-13.13
			Max. My	14	-40.56	-7.61	-2324.31
L23	67.5 - 62.5	Pole	Max. Vy	8	34.04	-2325.90	-13.13
			Max. Vx	14	34.10	-7.61	-2324.31
			Max. Torque	18			1.38
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-79.33	-2.10	-0.40
			Max. Mx	8	-42.78	-2497.37	-14.09
			Max. My	14	-42.78	-8.11	-2496.03
			Max. Vy	8	34.56	-2497.37	-14.09
			Max. Vx	14	34.62	-8.11	-2496.03
			Max. Torque	18			1.38
L24	62.5 - 57.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-82.12	-2.19	-0.30
			Max. Mx	8	-45.04	-2671.41	-15.05
			Max. My	14	-45.04	-8.61	-2670.32
			Max. Vy	8	35.07	-2671.41	-15.05
			Max. Vx	14	35.13	-8.61	-2670.32
			Max. Torque	18			1.38
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-84.66	-2.28	-0.21
			Max. Mx	8	-47.10	-2830.16	-15.91
L25	57.5 - 52.5	Pole	Max. My	14	-47.10	-9.05	-2829.30
			Max. Vy	8	35.51	-2830.16	-15.91
			Max. Vx	14	35.57	-9.05	-2829.30
			Max. Torque	18			1.38
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-92.29	-2.42	-0.05
			Max. Mx	8	-53.37	-3102.90	-17.37
			Max. My	14	-53.37	-9.81	-3102.41
			Max. Vy	8	36.42	-3102.90	-17.37
			Max. Vx	14	36.48	-9.81	-3102.41
L26	52.5 - 41.417	Pole	Max. Torque	18			1.38
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-95.34	-2.51	0.05
			Max. Mx	8	-55.90	-3286.05	-18.32
			Max. My	14	-55.90	-9.81	-3102.41
			Max. Vy	8	36.42	-3102.90	-17.37
			Max. Vx	14	36.48	-9.81	-3102.41
			Max. Torque	18			1.38
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-95.34	-2.51	0.05
L27	41.417 - 40.417	Pole	Max. Mx	8	-55.90	-3286.05	-18.32
			Max. My	14	-55.90	-9.81	-3102.41
			Max. Vy	8	36.42	-3102.90	-17.37
			Max. Vx	14	36.48	-9.81	-3102.41
			Max. Torque	18			1.38
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-95.34	-2.51	0.05
			Max. Mx	8	-55.90	-3286.05	-18.32
			Max. My	14	-55.90	-9.81	-3102.41
			Max. Vy	8	36.42	-3102.90	-17.37
L28	40.417 - 35.417	Pole	Max. Vx	14	36.48	-9.81	-3102.41
			Max. Torque	18			1.38
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-95.34	-2.51	0.05
			Max. Mx	8	-55.90	-3286.05	-18.32
			Max. My	14	-55.90	-9.81	-3102.41
			Max. Vy	8	36.42	-3102.90	-17.37
			Max. Vx	14	36.48	-9.81	-3102.41
			Max. Torque	18			1.38
			Max Tension	1	0.00	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L29	35.417 - 30.5	Pole	Max. My	14	-55.90	-10.31	-3285.80
			Max. Vy	8	36.86	-3286.05	-18.32
			Max. Vx	14	36.92	-10.31	-3285.80
			Max. Torque	18			1.38
			Max Tension	1	0.00	0.00	0.00
L30	30.5 - 30.25	Pole	Max. Compression	26	-98.37	-2.60	0.15
			Max. Mx	8	-58.43	-3468.26	-19.26
			Max. My	14	-58.43	-10.80	-3468.26
			Max. Vy	8	37.28	-3468.26	-19.26
			Max. Vx	14	37.34	-10.80	-3468.26
L31	30.25 - 26.75	Pole	Max. Torque	18			1.38
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-98.53	-2.60	0.15
			Max. Mx	8	-58.57	-3477.58	-19.31
			Max. My	14	-58.56	-10.82	-3477.59
L32	26.75 - 26.5	Pole	Max. Vy	8	37.29	-3477.58	-19.31
			Max. Vx	14	37.35	-10.82	-3477.59
			Max. Torque	18			1.38
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-100.73	-2.60	0.25
L33	26.5 - 26.25	Pole	Max. Mx	8	-60.34	-3608.57	-19.97
			Max. My	14	-60.34	-11.17	-3608.76
			Max. Vy	8	37.58	-3608.57	-19.97
			Max. Vx	14	37.64	-11.17	-3608.76
			Max. Torque	18			1.38
L34	26.25 - 26	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-100.88	-2.60	0.26
			Max. Mx	8	-60.48	-3617.97	-20.02
			Max. My	14	-60.48	-11.20	-3618.16
			Max. Vy	8	37.59	-3617.97	-20.02
L35	26 - 21	Pole	Max. Vx	14	37.65	-11.20	-3618.16
			Max. Torque	18			1.38
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-101.04	-2.60	0.27
			Max. Mx	8	-60.60	-3627.37	-20.06
L36	21 - 16	Pole	Max. My	14	-60.60	-11.22	-3627.57
			Max. Vy	8	37.61	-3627.37	-20.06
			Max. Vx	14	37.67	-11.22	-3627.57
			Max. Torque	18			1.38
			Max Tension	1	0.00	0.00	0.00
L37	16 - 11	Pole	Max. Compression	26	-101.17	-2.60	0.27
			Max. Mx	8	-60.71	-3636.77	-20.11
			Max. My	14	-60.71	-11.25	-3636.99
			Max. Vy	8	37.63	-3636.77	-20.11
			Max. Vx	14	37.69	-11.25	-3636.99
L38		Pole	Max. Torque	18			1.38
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-103.89	-2.64	0.37
			Max. Mx	8	-62.89	-3825.75	-21.05
			Max. My	14	-62.89	-11.74	-3826.21
L39		Pole	Max. Vy	8	37.99	-3825.75	-21.05
			Max. Vx	14	38.05	-11.74	-3826.21
			Max. Torque	18			1.38
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-106.61	-2.70	0.42
L40		Pole	Max. Mx	8	-65.12	-4016.46	-21.99
			Max. My	14	-65.12	-12.23	-4017.16
			Max. Vy	8	38.33	-4016.46	-21.99
			Max. Vx	14	38.39	-12.23	-4017.16
			Max. Torque	18			1.38
L41		Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-109.35	-2.77	0.47
			Max. Mx	8	-67.39	-4208.89	-22.92
			Max. My	14	-67.39	-12.72	-4209.84
			Max. Vy	8	38.68	-4208.89	-22.92
L42		Pole	Max. Vx	14	38.74	-12.72	-4209.84
			Max. Torque	18			1.38

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L38	11 - 6	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-112.12	-2.83	0.52
			Max. Mx	8	-69.70	-4403.06	-23.84
			Max. My	14	-69.70	-13.21	-4404.24
			Max. Vy	8	39.02	-4403.06	-23.84
			Max. Vx	14	39.08	-13.21	-4404.24
L39	6 - 1	Pole	Max. Torque	18			1.38
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-114.87	-2.89	0.57
			Max. Mx	8	-72.05	-4598.95	-24.76
			Max. My	14	-72.05	-13.69	-4600.38
			Max. Vy	8	39.37	-4598.95	-24.76
L40	1 - 0.5	Pole	Max. Vx	14	39.43	-13.69	-4600.38
			Max. Torque	18			1.38
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-115.14	-2.90	0.58
			Max. Mx	8	-72.30	-4618.64	-24.85
			Max. My	14	-72.30	-13.74	-4620.09
L41	0.5 - 0.25	Pole	Max. Vy	8	39.39	-4618.64	-24.85
			Max. Vx	14	39.45	-13.74	-4620.09
			Max. Torque	18			1.38
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-115.32	-2.90	0.58
			Max. Mx	8	-72.46	-4628.49	-24.90
L42	0.25 - 0	Pole	Max. My	14	-72.46	-13.76	-4629.95
			Max. Vy	8	39.41	-4628.49	-24.90
			Max. Vx	14	39.47	-13.76	-4629.95
			Max. Torque	18			1.38
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-115.45	-2.91	0.58
			Max. Mx	8	-72.58	-4638.34	-24.94
			Max. My	14	-72.58	-13.79	-4639.82
			Max. Vy	8	39.42	-4638.34	-24.94
			Max. Vx	14	39.48	-13.79	-4639.82
			Max. Torque	18			1.38

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	26	115.45	-0.00	-0.00
	Max. H _x	20	72.58	39.35	0.11
	Max. H _z	2	72.58	-0.00	39.45
	Max. M _x	2	4637.32	-0.00	39.45
	Max. M _z	8	4638.34	-39.42	-0.19
	Max. Torsion	18	1.38	33.99	-19.77
	Min. Vert	15	54.44	-0.09	-39.48
	Min. H _x	8	72.58	-39.42	-0.19
	Min. H _z	14	72.58	-0.09	-39.48
	Min. M _x	14	-4639.82	-0.09	-39.48
	Min. M _z	20	-4627.92	39.35	0.11
	Min. Torsion	6	-1.27	-34.04	19.71

Tower Mast Reaction Summary

Load Combination	Vertical K	Shear _x K	Shear _z K	Overturning Moment, M _x kip-ft	Overturning Moment, M _z kip-ft	Torque kip-ft
Dead Only	60.49	0.00	4.15	0.69	-0.72	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	72.58	0.00	-39.45	-4637.32	1.52	0.15
0.9 Dead+1.0 Wind 0 deg - No Ice	54.44	0.00	-39.45	-4580.95	1.70	0.14

Load Combination	Vertical K	Shear _x K	Shear _z K	Overturning Moment, M _x kip-ft	Overturning Moment, M _z kip-ft	Torque kip-ft
1.2 Dead+1.0 Wind 30 deg - No Ice	72.58	19.65	-34.14	-4012.97	-2308.96	0.63
0.9 Dead+1.0 Wind 30 deg - No Ice	54.44	19.65	-34.14	-3964.20	-2280.64	0.62
1.2 Dead+1.0 Wind 60 deg - No Ice	72.58	34.04	-19.71	-2315.25	-4004.06	1.27
0.9 Dead+1.0 Wind 60 deg - No Ice	54.44	34.04	-19.71	-2287.15	-3955.08	1.26
1.2 Dead+1.0 Wind 90 deg - No Ice	72.58	39.42	0.19	24.94	-4638.34	1.22
0.9 Dead+1.0 Wind 90 deg - No Ice	54.44	39.42	0.19	24.58	-4581.63	1.22
1.2 Dead+1.0 Wind 120 deg - No Ice	72.58	34.13	19.88	2338.69	-4016.07	0.95
0.9 Dead+1.0 Wind 120 deg - No Ice	54.44	34.13	19.88	2310.18	-3966.93	0.96
1.2 Dead+1.0 Wind 150 deg - No Ice	72.58	19.71	34.25	4026.38	-2321.71	0.49
0.9 Dead+1.0 Wind 150 deg - No Ice	54.44	19.71	34.25	3977.34	-2293.19	0.50
1.2 Dead+1.0 Wind 180 deg - No Ice	72.58	0.09	39.48	4639.82	-13.79	-0.41
0.9 Dead+1.0 Wind 180 deg - No Ice	54.44	0.09	39.48	4583.31	-13.38	-0.41
1.2 Dead+1.0 Wind 210 deg - No Ice	72.58	-19.52	34.23	4022.18	2293.29	-1.10
0.9 Dead+1.0 Wind 210 deg - No Ice	54.44	-19.52	34.23	3973.20	2265.59	-1.09
1.2 Dead+1.0 Wind 240 deg - No Ice	72.58	-33.99	19.77	2322.78	3997.05	-1.38
0.9 Dead+1.0 Wind 240 deg - No Ice	54.44	-33.99	19.77	2294.48	3948.59	-1.38
1.2 Dead+1.0 Wind 270 deg - No Ice	72.58	-39.35	-0.11	-15.64	4627.92	-1.28
0.9 Dead+1.0 Wind 270 deg - No Ice	54.44	-39.35	-0.11	-15.49	4571.78	-1.28
1.2 Dead+1.0 Wind 300 deg - No Ice	72.58	-34.13	-19.76	-2326.25	4015.37	-0.94
0.9 Dead+1.0 Wind 300 deg - No Ice	54.44	-34.13	-19.76	-2297.98	3966.70	-0.95
1.2 Dead+1.0 Wind 330 deg - No Ice	72.58	-19.76	-34.18	-4018.88	2325.67	-0.48
0.9 Dead+1.0 Wind 330 deg - No Ice	54.44	-19.76	-34.18	-3970.02	2297.56	-0.49
1.2 Dead+1.0 Ice+1.0 Temp	115.45	0.00	0.00	-0.58	-2.91	-0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	115.45	-0.00	-9.28	-1156.64	-2.62	0.06
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	115.45	4.62	-8.03	-1001.11	-577.81	0.18
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	115.45	8.00	-4.64	-577.87	-999.68	0.32
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	115.45	9.26	0.04	4.57	-1156.96	0.30
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	115.45	8.02	4.67	581.57	-1002.21	0.22
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	115.45	4.63	8.05	1002.68	-580.55	0.10
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	115.45	0.02	9.29	1155.92	-5.88	-0.12
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	115.45	-4.59	8.05	1001.76	568.62	-0.28
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	115.45	-7.99	4.65	578.20	992.26	-0.34
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	115.45	-9.25	-0.02	-3.88	1148.83	-0.31
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	115.45	-8.02	-4.65	-580.25	996.09	-0.22
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	115.45	-4.64	-8.04	-1002.37	575.38	-0.10

Load Combination	Vertical K	Shear _x K	Shear _z K	Overturning Moment, M _x kip-ft	Overturning Moment, M _z kip-ft	Torque kip-ft
Dead+Wind 0 deg - Service	60.49	0.00	-8.56	-999.98	-0.24	0.04
Dead+Wind 30 deg - Service	60.49	4.27	-7.41	-865.33	-498.54	0.14
Dead+Wind 60 deg - Service	60.49	7.39	-4.28	-499.18	-864.12	0.28
Dead+Wind 90 deg - Service	60.49	8.56	0.04	5.53	-1000.91	0.27
Dead+Wind 120 deg - Service	60.49	7.41	4.32	504.54	-866.72	0.20
Dead+Wind 150 deg - Service	60.49	4.28	7.44	868.53	-501.29	0.10
Dead+Wind 180 deg - Service	60.49	0.02	8.57	1000.82	-3.53	-0.10
Dead+Wind 210 deg - Service	60.49	-4.24	7.43	867.61	494.03	-0.25
Dead+Wind 240 deg - Service	60.49	-7.38	4.29	501.11	861.48	-0.31
Dead+Wind 270 deg - Service	60.49	-8.54	-0.02	-3.22	997.54	-0.28
Dead+Wind 300 deg - Service	60.49	-7.41	-4.29	-501.55	865.44	-0.20
Dead+Wind 330 deg - Service	60.49	-4.29	-7.42	-866.61	501.02	-0.10

Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.00	-60.49	0.00	0.00	60.49	-4.15	6.855%
2	0.00	-72.58	-39.45	-0.00	72.58	39.45	0.000%
3	0.00	-54.44	-39.45	-0.00	54.44	39.45	0.000%
4	19.65	-72.58	-34.14	-19.65	72.58	34.14	0.000%
5	19.65	-54.44	-34.14	-19.65	54.44	34.14	0.000%
6	34.04	-72.58	-19.71	-34.04	72.58	19.71	0.000%
7	34.04	-54.44	-19.71	-34.04	54.44	19.71	0.000%
8	39.42	-72.58	0.19	-39.42	72.58	-0.19	0.000%
9	39.42	-54.44	0.19	-39.42	54.44	-0.19	0.000%
10	34.13	-72.58	19.88	-34.13	72.58	-19.88	0.000%
11	34.13	-54.44	19.88	-34.13	54.44	-19.88	0.000%
12	19.71	-72.58	34.25	-19.71	72.58	-34.25	0.000%
13	19.71	-54.44	34.25	-19.71	54.44	-34.25	0.000%
14	0.09	-72.58	39.48	-0.09	72.58	-39.48	0.000%
15	0.09	-54.44	39.48	-0.09	54.44	-39.48	0.000%
16	-19.52	-72.58	34.23	19.52	72.58	-34.23	0.000%
17	-19.52	-54.44	34.23	19.52	54.44	-34.23	0.000%
18	-33.99	-72.58	19.77	33.99	72.58	-19.77	0.000%
19	-33.99	-54.44	19.77	33.99	54.44	-19.77	0.000%
20	-39.35	-72.58	-0.11	39.35	72.58	0.11	0.000%
21	-39.35	-54.44	-0.11	39.35	54.44	0.11	0.000%
22	-34.13	-72.58	-19.76	34.13	72.58	19.76	0.000%
23	-34.13	-54.44	-19.76	34.13	54.44	19.76	0.000%
24	-19.76	-72.58	-34.18	19.76	72.58	34.18	0.000%
25	-19.76	-54.44	-34.18	19.76	54.44	34.18	0.000%
26	0.00	-115.45	0.00	-0.00	115.45	-0.00	0.000%
27	-0.00	-115.45	-9.28	0.00	115.45	9.28	0.000%
28	4.62	-115.45	-8.03	-4.62	115.45	8.03	0.000%
29	8.00	-115.45	-4.64	-8.00	115.45	4.64	0.000%
30	9.26	-115.45	0.04	-9.26	115.45	-0.04	0.000%
31	8.02	-115.45	4.67	-8.02	115.45	-4.67	0.000%
32	4.63	-115.45	8.05	-4.63	115.45	-8.05	0.000%
33	0.02	-115.45	9.29	-0.02	115.45	-9.29	0.000%
34	-4.59	-115.45	8.05	4.59	115.45	-8.05	0.000%
35	-7.99	-115.45	4.65	7.99	115.45	-4.65	0.000%
36	-9.25	-115.45	-0.02	9.25	115.45	0.02	0.000%
37	-8.02	-115.45	-4.65	8.02	115.45	4.65	0.000%
38	-4.64	-115.45	-8.04	4.64	115.45	8.04	0.000%
39	0.00	-60.49	-8.56	-0.00	60.49	8.56	0.000%
40	4.27	-60.49	-7.41	-4.27	60.49	7.41	0.000%
41	7.39	-60.49	-4.28	-7.39	60.49	4.28	0.000%

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
42	8.56	-60.49	0.04	-8.56	60.49	-0.04	0.000%
43	7.41	-60.49	4.32	-7.41	60.49	-4.32	0.000%
44	4.28	-60.49	7.44	-4.28	60.49	-7.44	0.000%
45	0.02	-60.49	8.57	-0.02	60.49	-8.57	0.000%
46	-4.24	-60.49	7.43	4.24	60.49	-7.43	0.000%
47	-7.38	-60.49	4.29	7.38	60.49	-4.29	0.000%
48	-8.54	-60.49	-0.02	8.54	60.49	0.02	0.000%
49	-7.41	-60.49	-4.29	7.41	60.49	4.29	0.000%
50	-4.29	-60.49	-7.42	4.29	60.49	7.42	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	14	0.00000001	0.00000000
2	Yes	5	0.00000001	0.00024865
3	Yes	5	0.00000001	0.00009115
4	Yes	6	0.00000001	0.00066963
5	Yes	6	0.00000001	0.00022099
6	Yes	6	0.00000001	0.00065385
7	Yes	6	0.00000001	0.00021515
8	Yes	5	0.00000001	0.00055107
9	Yes	5	0.00000001	0.00025186
10	Yes	6	0.00000001	0.00068037
11	Yes	6	0.00000001	0.00022406
12	Yes	6	0.00000001	0.00066669
13	Yes	6	0.00000001	0.00021917
14	Yes	5	0.00000001	0.00033640
15	Yes	5	0.00000001	0.00014015
16	Yes	6	0.00000001	0.00065172
17	Yes	6	0.00000001	0.00021456
18	Yes	6	0.00000001	0.00067689
19	Yes	6	0.00000001	0.00022366
20	Yes	5	0.00000001	0.00033898
21	Yes	5	0.00000001	0.00014509
22	Yes	6	0.00000001	0.00066267
23	Yes	6	0.00000001	0.00021782
24	Yes	6	0.00000001	0.00067268
25	Yes	6	0.00000001	0.00022157
26	Yes	4	0.00000001	0.00010329
27	Yes	6	0.00000001	0.00087318
28	Yes	6	0.00000001	0.00098698
29	Yes	6	0.00000001	0.00098451
30	Yes	6	0.00000001	0.00087801
31	Yes	6	0.00000001	0.00099540
32	Yes	6	0.00000001	0.00099350
33	Yes	6	0.00000001	0.00087671
34	Yes	6	0.00000001	0.00097999
35	Yes	6	0.00000001	0.00098190
36	Yes	6	0.00000001	0.00086848
37	Yes	6	0.00000001	0.00098097
38	Yes	6	0.00000001	0.00098324
39	Yes	4	0.00000001	0.00087923
40	Yes	5	0.00000001	0.00016256
41	Yes	5	0.00000001	0.00015258
42	Yes	4	0.00000001	0.00094291
43	Yes	5	0.00000001	0.00016645
44	Yes	5	0.00000001	0.00015922
45	Yes	4	0.00000001	0.00089214
46	Yes	5	0.00000001	0.00015207
47	Yes	5	0.00000001	0.00016673
48	Yes	4	0.00000001	0.00092455
49	Yes	5	0.00000001	0.00015589
50	Yes	5	0.00000001	0.00016159

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	160 - 155	22.715	43	1.2885	0.0032
L2	155 - 150	21.366	43	1.2862	0.0030
L3	150 - 145	20.024	43	1.2769	0.0026
L4	145 - 140	18.694	43	1.2607	0.0023
L5	140 - 135	17.388	43	1.2338	0.0020
L6	135 - 130	16.114	43	1.1976	0.0017
L7	130 - 121.333	14.883	43	1.1518	0.0014
L8	126 - 121	13.936	43	1.1096	0.0012
L9	121 - 116	12.786	43	1.0835	0.0011
L10	116 - 111	11.676	43	1.0362	0.0010
L11	111 - 106	10.618	43	0.9846	0.0008
L12	106 - 102.75	9.616	43	0.9293	0.0007
L13	102.75 - 102.5	8.996	43	0.8916	0.0007
L14	102.5 - 97.5	8.949	43	0.8886	0.0007
L15	97.5 - 92.5	8.050	43	0.8284	0.0006
L16	92.5 - 87.5	7.215	43	0.7661	0.0005
L17	87.5 - 81.333	6.446	43	0.7023	0.0004
L18	87 - 80.333	6.373	43	0.6959	0.0004
L19	80.333 - 75.333	5.428	43	0.6524	0.0004
L20	75.333 - 70.333	4.773	43	0.5995	0.0003
L21	70.333 - 67.75	4.173	43	0.5465	0.0003
L22	67.75 - 67.5	3.885	43	0.5191	0.0003
L23	67.5 - 62.5	3.857	43	0.5172	0.0003
L24	62.5 - 57.5	3.336	43	0.4795	0.0002
L25	57.5 - 52.5	2.853	43	0.4413	0.0002
L26	52.5 - 41.417	2.411	43	0.4034	0.0002
L27	48 - 40.417	2.047	43	0.3696	0.0002
L28	40.417 - 35.417	1.482	43	0.3380	0.0001
L29	35.417 - 30.5	1.148	43	0.3013	0.0001
L30	30.5 - 30.25	0.856	43	0.2658	0.0001
L31	30.25 - 26.75	0.842	43	0.2640	0.0001
L32	26.75 - 26.5	0.658	43	0.2386	0.0001
L33	26.5 - 26.25	0.645	43	0.2364	0.0001
L34	26.25 - 26	0.633	43	0.2342	0.0001
L35	26 - 21	0.621	43	0.2319	0.0001
L36	21 - 16	0.402	43	0.1856	0.0001
L37	16 - 11	0.232	43	0.1401	0.0001
L38	11 - 6	0.108	43	0.0953	0.0000
L39	6 - 1	0.032	43	0.0512	0.0000
L40	1 - 0.5	0.001	43	0.0079	0.0000
L41	0.5 - 0.25	0.000	43	0.0000	0.0000
L42	0.25 - 0	0.000	1	0.0000	0.0000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
158.00	BXA-70040/6CF w/ Mount Pipe	43	22.175	1.2881	0.0033	48898
147.00	800 10121 w/ Mount Pipe	43	19.224	1.2683	0.0026	16258
140.00	VHLP2-11	43	17.388	1.2338	0.0022	9086
137.00	APXVSP18-C-A20 w/ Mount Pipe	43	16.619	1.2130	0.0020	7753
127.00	APXVAARR24_43-U-NA20	43	14.170	1.1186	0.0014	6964
117.00	MX08FRO665-21 w/ Mount Pipe	43	11.895	1.0469	0.0011	6060
110.00	VHLP2-11	43	10.413	0.9739	0.0009	5300
107.00	LLPX310R w/ Mount Pipe	43	9.811	0.9407	0.0008	5098
100.00	APXV18-206517S-C w/ Mount Pipe	43	8.492	0.8589	0.0007	4759
80.00	OG-860/1920/GPS-A	43	5.383	0.6499	0.0004	6266

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	160 - 155	105.130	10	5.9667	0.0141
L2	155 - 150	98.903	10	5.9569	0.0130
L3	150 - 145	92.704	10	5.9152	0.0114
L4	145 - 140	86.563	10	5.8413	0.0100
L5	140 - 135	80.525	10	5.7176	0.0090
L6	135 - 130	74.638	10	5.5505	0.0075
L7	130 - 121.333	68.948	10	5.3394	0.0063
L8	126 - 121	64.565	10	5.1446	0.0054
L9	121 - 116	59.248	10	5.0241	0.0049
L10	116 - 111	54.111	10	4.8056	0.0042
L11	111 - 106	49.211	10	4.5668	0.0036
L12	106 - 102.75	44.570	10	4.3106	0.0032
L13	102.75 - 102.5	41.699	10	4.1359	0.0029
L14	102.5 - 97.5	41.484	10	4.1222	0.0029
L15	97.5 - 92.5	37.318	10	3.8430	0.0025
L16	92.5 - 87.5	33.449	10	3.5541	0.0022
L17	87.5 - 81.333	29.885	10	3.2582	0.0019
L18	87 - 80.333	29.546	10	3.2283	0.0019
L19	80.333 - 75.333	25.168	10	3.0268	0.0017
L20	75.333 - 70.333	22.129	10	2.7813	0.0015
L21	70.333 - 67.75	19.347	10	2.5351	0.0013
L22	67.75 - 67.5	18.011	10	2.4079	0.0012
L23	67.5 - 62.5	17.885	10	2.3993	0.0012
L24	62.5 - 57.5	15.465	10	2.2242	0.0010
L25	57.5 - 52.5	13.230	10	2.0470	0.0009
L26	52.5 - 41.417	11.179	12	1.8710	0.0008
L27	48 - 40.417	9.490	12	1.7140	0.0007
L28	40.417 - 35.417	6.873	12	1.5675	0.0007
L29	35.417 - 30.5	5.321	12	1.3974	0.0006
L30	30.5 - 30.25	3.967	12	1.2326	0.0005
L31	30.25 - 26.75	3.903	12	1.2241	0.0005
L32	26.75 - 26.5	3.049	12	1.1064	0.0004
L33	26.5 - 26.25	2.991	12	1.0963	0.0004
L34	26.25 - 26	2.934	12	1.0861	0.0004
L35	26 - 21	2.877	12	1.0753	0.0004
L36	21 - 16	1.864	12	0.8607	0.0003
L37	16 - 11	1.074	12	0.6495	0.0002
L38	11 - 6	0.502	12	0.4418	0.0002
L39	6 - 1	0.147	12	0.2375	0.0001
L40	1 - 0.5	0.004	12	0.0367	0.0000
L41	0.5 - 0.25	0.001	12	0.0169	0.0000
L42	0.25 - 0	0.000	12	0.0099	0.0000

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
158.00	BXA-70040/6CF w/ Mount Pipe	10	102.638	5.9651	0.0157	11340
147.00	800 10121 w/ Mount Pipe	10	89.010	5.8759	0.0124	3631
140.00	VHLP2-11	10	80.525	5.7176	0.0105	2013
137.00	APXVSPP18-C-A20 w/ Mount Pipe	10	76.972	5.6216	0.0095	1715
127.00	APXVAARR24_43-U-NA20	10	65.648	5.1858	0.0067	1535
117.00	MX08FRO665-21 w/ Mount Pipe	10	55.121	4.8550	0.0053	1331
110.00	VHLP2-11	10	48.262	4.5174	0.0043	1160
107.00	LLPX310R w/ Mount Pipe	10	45.477	4.3634	0.0039	1114
100.00	APXV18-206517S-C w/ Mount Pipe	10	39.364	3.9841	0.0032	1038
80.00	OG-860/1920/GPS-A	10	24.958	3.0148	0.0019	1359

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L _u ft	KI/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
L1	160 - 155 (1)	TP22.7x21.65x0.25	5.00	0.00	0.0	18.072 2	-2.59	1057.23	0.002
L2	155 - 150 (2)	TP23.75x22.7x0.25	5.00	0.00	0.0	18.917 5	-3.01	1106.67	0.003
L3	150 - 145 (3)	TP24.8x23.75x0.25	5.00	0.00	0.0	19.762 7	-7.96	1156.12	0.007
L4	145 - 140 (4)	TP25.85x24.8x0.25	5.00	0.00	0.0	20.608 0	-8.51	1205.57	0.007
L5	140 - 135 (5)	TP26.9x25.85x0.25	5.00	0.00	0.0	21.453 2	-11.85	1255.01	0.009
L6	135 - 130 (6)	TP27.9499x26.9x0.25	5.00	0.00	0.0	22.298 5	-12.49	1304.46	0.010
L7	130 - 121.333 (7)	TP29.77x27.9499x0.25	8.67	0.00	0.0	22.974 7	-17.37	1344.02	0.013
L8	121.333 - 121 (8)	TP29.3399x28.2899x0.37 5	5.00	0.00	0.0	34.975 2	-18.76	2046.05	0.009
L9	121 - 116 (9)	TP30.3899x29.3399x0.37 5	5.00	0.00	0.0	36.243 0	-22.78	2120.22	0.011
L10	116 - 111 (10)	TP31.4399x30.3899x0.37 5	5.00	0.00	0.0	37.510 9	-23.88	2194.39	0.011
L11	111 - 106 (11)	TP32.4899x31.4399x0.37 5	5.00	0.00	0.0	38.778 8	-25.77	2268.56	0.011
L12	106 - 102.75 (12)	TP33.1724x32.4899x0.37 5	3.25	0.00	0.0	39.602 9	-26.53	2316.77	0.011
L13	102.75 - 102.5 (13)	TP33.2249x33.1724x0.37 5	0.25	0.00	0.0	39.666 3	-26.61	2320.48	0.011
L14	102.5 - 97.5 (14)	TP34.2749x33.2249x0.37 5	5.00	0.00	0.0	40.934 2	-28.21	2394.65	0.012
L15	97.5 - 92.5 (15)	TP35.3249x34.2749x0.37 5	5.00	0.00	0.0	42.202 0	-29.48	2468.82	0.012
L16	92.5 - 87.5 (16)	TP36.3749x35.3249x0.37 5	5.00	0.00	0.0	43.469 9	-30.78	2542.99	0.012
L17	87.5 - 81.333 (17)	TP37.67x36.3749x0.375	6.17	0.00	0.0	43.596 7	-30.92	2550.41	0.012
L18	81.333 - 80.333 (18)	TP37.1297x35.7299x0.5	6.67	0.00	0.0	58.973 7	-33.98	3449.96	0.010
L19	80.333 - 75.333 (19)	TP38.1794x37.1297x0.5	5.00	0.00	0.0	60.663 8	-35.71	3548.83	0.010
L20	75.333 - 70.333 (20)	TP39.2291x38.1794x0.5	5.00	0.00	0.0	62.353 9	-37.38	3647.70	0.010
L21	70.333 - 67.75 (21)	TP39.7714x39.2291x0.5	2.58	0.00	0.0	63.227 0	-38.25	3698.78	0.010
L22	67.75 - 67.5 (22)	TP39.8239x39.7714x0.72 5	0.25	0.00	0.0	91.276 4	-38.38	5339.67	0.007
L23	67.5 - 62.5 (23)	TP40.8737x39.8239x0.71 25	5.00	0.00	0.0	92.139 7	-40.55	5390.18	0.008
L24	62.5 - 57.5 (24)	TP41.9234x40.8737x0.7	5.00	0.00	0.0	92.917 5	-42.78	5435.68	0.008
L25	57.5 - 52.5 (25)	TP42.9731x41.9234x0.7	5.00	0.00	0.0	95.283 7	-45.03	5574.09	0.008
L26	52.5 - 41.417 (26)	TP45.3x42.9731x0.7	11.08	0.00	0.0	97.413 2	-47.10	5698.67	0.008
L27	41.417 - 40.417 (27)	TP44.5107x42.9179x0.76 25	7.58	0.00	0.0	107.41 30	-53.36	6283.64	0.008
L28	40.417 - 35.417 (28)	TP45.5609x44.5107x0.75	5.00	0.00	0.0	108.21 80	-55.90	6330.77	0.009
L29	35.417 - 30.5 (29)	TP46.5937x45.5609x0.75	4.92	0.00	0.0	110.71 20	-58.43	6476.68	0.009
L30	30.5 - 30.25 (30)	TP46.6462x46.5937x0.73 75	0.25	0.00	0.0	109.02 20	-58.56	6377.77	0.009
L31	30.25 - 26.75 (31)	TP47.3813x46.6462x0.73 75	3.50	0.00	0.0	110.76 70	-60.34	6479.90	0.009
L32	26.75 - 26.5 (32)	TP47.4338x47.3813x0.6	0.25	0.00	0.0	90.483 0	-60.47	5293.26	0.011
L33	26.5 - 26.25 (33)	TP47.4864x47.4338x0.6	0.25	0.00	0.0	90.584 4	-60.60	5299.19	0.011

Section No.	Elevation ft	Size	L ft	L _u ft	KI/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
L34	26.25 - 26 (34)	TP47.5389x47.4864x0.56 25	0.25	0.00	0.0	85.085 9	-60.71	4977.53	0.012
L35	26 - 21 (35)	TP48.5891x47.5389x0.56 25	5.00	0.00	0.0	86.988 2	-62.89	5088.81	0.012
L36	21 - 16 (36)	TP49.6393x48.5891x0.56 25	5.00	0.00	0.0	88.890 4	-65.12	5200.09	0.013
L37	16 - 11 (37)	TP50.6895x49.6393x0.56 25	5.00	0.00	0.0	90.792 6	-67.39	5311.37	0.013
L38	11 - 6 (38)	TP51.7397x50.6895x0.56 25	5.00	0.00	0.0	92.694 8	-69.70	5422.64	0.013
L39	6 - 1 (39)	TP52.79x51.7397x0.5625	5.00	0.00	0.0	94.597 0	-72.05	5533.92	0.013
L40	1 - 0.5 (40)	TP52.895x52.79x0.5625	0.50	0.00	0.0	94.787 2	-72.30	5545.05	0.013
L41	0.5 - 0.25 (41)	TP52.9475x52.895x0.812 5	0.25	0.00	0.0	136.39 80	-72.46	7979.29	0.009
L42	0.25 - 0 (42)	TP53x52.9475x0.5625	0.25	0.00	0.0	94.977 4	-72.58	5556.18	0.013

Pole Bending Design Data

Section No.	Elevation ft	Size	M _{ux} kip-ft	φM _{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M _{uy} kip-ft	φM _{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	160 - 155 (1)	TP22.7x21.65x0.25	21.67	590.53	0.037	0.00	590.53	0.000
L2	155 - 150 (2)	TP23.75x22.7x0.25	52.34	637.40	0.082	0.00	637.40	0.000
L3	150 - 145 (3)	TP24.8x23.75x0.25	106.99	685.05	0.156	0.00	685.05	0.000
L4	145 - 140 (4)	TP25.85x24.8x0.25	176.35	733.36	0.240	0.00	733.36	0.000
L5	140 - 135 (5)	TP26.9x25.85x0.25	260.74	782.20	0.333	0.00	782.20	0.000
L6	135 - 130 (6)	TP27.9499x26.9x0.25	353.19	831.46	0.425	0.00	831.46	0.000
L7	130 - 121.333 (7)	TP29.77x27.9499x0.25	432.40	871.09	0.496	0.00	871.09	0.000
L8	121.333 - 121 (8)	TP29.3399x28.2899x0.37 5	548.37	1513.72	0.362	0.00	1513.72	0.000
L9	121 - 116 (9)	TP30.3899x29.3399x0.37 5	669.96	1626.19	0.412	0.00	1626.19	0.000
L10	116 - 111 (10)	TP31.4399x30.3899x0.37 5	806.02	1737.80	0.464	0.00	1737.80	0.000
L11	111 - 106 (11)	TP32.4899x31.4399x0.37 5	948.23	1839.37	0.516	0.00	1839.37	0.000
L12	106 - 102.75 (12)	TP33.1724x32.4899x0.37 5	1043.55	1906.21	0.547	0.00	1906.21	0.000
L13	102.75 - 102.5 (13)	TP33.2249x33.1724x0.37 5	1050.93	1911.38	0.550	0.00	1911.38	0.000
L14	102.5 - 97.5 (14)	TP34.2749x33.2249x0.37 5	1200.87	2015.47	0.596	0.00	2015.47	0.000
L15	97.5 - 92.5 (15)	TP35.3249x34.2749x0.37 5	1354.39	2120.89	0.639	0.00	2120.89	0.000
L16	92.5 - 87.5 (16)	TP36.3749x35.3249x0.37 5	1510.26	2227.51	0.678	0.00	2227.51	0.000
L17	87.5 - 81.333 (17)	TP37.67x36.3749x0.375	1525.97	2238.23	0.682	0.00	2238.23	0.000
L18	81.333 - 80.333 (18)	TP37.1297x35.7299x0.5	1738.41	3225.56	0.539	0.00	3225.56	0.000
L19	80.333 - 75.333 (19)	TP38.1794x37.1297x0.5	1901.21	3414.37	0.557	0.00	3414.37	0.000
L20	75.333 - 70.333 (20)	TP39.2291x38.1794x0.5	2066.55	3608.54	0.573	0.00	3608.54	0.000
L21	70.333 - 67.75 (21)	TP39.7714x39.2291x0.5	2152.90	3710.96	0.580	0.00	3710.96	0.000
L22	67.75 - 67.5 (22)	TP39.8239x39.7714x0.72 5	2161.29	5303.29	0.408	0.00	5303.29	0.000
L23	67.5 - 62.5 (23)	TP40.8737x39.8239x0.71 25	2330.50	5503.23	0.423	0.00	5503.23	0.000
L24	62.5 - 57.5 (24)	TP41.9234x40.8737x0.7	2502.34	5700.72	0.439	0.00	5700.72	0.000

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L25	57.5 - 52.5 (25)	TP42.9731x41.9234x0.7	2676.73	5997.24	0.446	0.00	5997.24	0.000
L26	52.5 - 41.417 (26)	TP45.3x42.9731x0.7	2835.82	6270.54	0.452	0.00	6270.54	0.000
L27	41.417 - 40.417 (27)	TP44.5107x42.9179x0.75	3109.11	6990.57	0.445	0.00	6990.57	0.000
L28	40.417 - 35.417 (28)	TP45.5609x44.5107x0.75	3292.61	7219.00	0.456	0.00	7219.00	0.000
L29	35.417 - 30.5 (29)	TP46.5937x45.5609x0.75	3475.18	7558.40	0.460	0.00	7558.40	0.000
L30	30.5 - 30.25 (30)	TP46.6462x46.5937x0.73	3484.52	7455.68	0.467	0.00	7455.68	0.000
L31	30.25 - 26.75 (31)	TP47.3813x46.6462x0.73	3615.76	7698.30	0.470	0.00	7698.30	0.000
L32	26.75 - 26.5 (32)	TP47.4338x47.3813x0.6	3625.18	6332.86	0.572	0.00	6332.86	0.000
L33	26.5 - 26.25 (33)	TP47.4864x47.4338x0.6	3634.59	6347.16	0.573	0.00	6347.16	0.000
L34	26.25 - 26 (34)	TP47.5389x47.4864x0.56	3644.01	5947.05	0.613	0.00	5947.05	0.000
L35	26 - 21 (35)	TP48.5891x47.5389x0.56	3833.34	6175.89	0.621	0.00	6175.89	0.000
L36	21 - 16 (36)	TP49.6393x48.5891x0.56	4024.46	6407.04	0.628	0.00	6407.04	0.000
L37	16 - 11 (37)	TP50.6895x49.6393x0.56	4217.35	6640.39	0.635	0.00	6640.39	0.000
L38	11 - 6 (38)	TP51.7397x50.6895x0.56	4411.98	6875.80	0.642	0.00	6875.80	0.000
L39	6 - 1 (39)	TP52.79x51.7397x0.5625	4608.32	7113.17	0.648	0.00	7113.17	0.000
L40	1 - 0.5 (40)	TP52.895x52.79x0.5625	4628.06	7137.01	0.648	0.00	7137.01	0.000
L41	0.5 - 0.25 (41)	TP52.9475x52.895x0.812	4637.93	10598.00	0.438	0.00	10598.00	0.000
L42	0.25 - 0 (42)	TP53x52.9475x0.5625	4647.81	7160.86	0.649	0.00	7160.86	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	160 - 155 (1)	TP22.7x21.65x0.25	5.91	317.17	0.019	0.86	626.33	0.001
L2	155 - 150 (2)	TP23.75x22.7x0.25	6.37	332.00	0.019	0.86	686.29	0.001
L3	150 - 145 (3)	TP24.8x23.75x0.25	13.63	346.84	0.039	0.52	748.99	0.001
L4	145 - 140 (4)	TP25.85x24.8x0.25	14.12	361.67	0.039	0.52	814.43	0.001
L5	140 - 135 (5)	TP26.9x25.85x0.25	18.25	376.50	0.048	0.89	882.60	0.001
L6	135 - 130 (6)	TP27.9499x26.9x0.25	18.74	391.34	0.048	0.89	953.52	0.001
L7	130 - 121.333 (7)	TP29.77x27.9499x0.25	22.91	403.20	0.057	1.02	1012.23	0.001
L8	121.333 - 121 (8)	TP29.3399x28.2899x0.37	23.49	613.81	0.038	1.02	1563.90	0.001
L9	121 - 116 (9)	TP30.3899x29.3399x0.37	26.97	636.07	0.042	0.81	1679.34	0.000
L10	116 - 111 (10)	TP31.4399x30.3899x0.37	27.47	658.32	0.042	0.81	1798.89	0.000
L11	111 - 106 (11)	TP32.4899x31.4399x0.37	29.18	680.57	0.043	0.75	1922.55	0.000
L12	106 - 102.75 (12)	TP33.1724x32.4899x0.37	29.50	695.03	0.042	0.75	2005.13	0.000
L13	102.75 - 102.5 (13)	TP33.2249x33.1724x0.37	29.53	696.14	0.042	0.75	2011.56	0.000
L14	102.5 - 97.5 (14)	TP34.2749x33.2249x0.37	30.48	718.39	0.042	0.75	2142.21	0.000
L15	97.5 - 92.5 (15)	TP35.3249x34.2749x0.37	30.95	740.65	0.042	0.75	2276.97	0.000
L16	92.5 - 87.5 (16)	TP36.3749x35.3249x0.37	31.42	762.90	0.041	0.74	2415.83	0.000
L17	87.5 - 81.333	TP37.67x36.3749x0.375	31.46	765.12	0.041	0.74	2429.95	0.000

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio V_u ϕV_n	Actual T_u kip-ft	ϕT_n kip-ft	Ratio T_u ϕT_n
L18	(17) 81.333 - 80.333 (18)	TP37.1297x35.7299x0.5	32.26	1034.99	0.031	0.74	3334.79	0.000
L19	80.333 - 75.333 (19)	TP38.1794x37.1297x0.5	32.84	1064.65	0.031	0.95	3528.67	0.000
L20	75.333 - 70.333 (20)	TP39.2291x38.1794x0.5	33.32	1094.31	0.030	0.95	3728.03	0.000
L21	70.333 - 67.75 (21)	TP39.7714x39.2291x0.5	33.57	1109.63	0.030	0.95	3833.16	0.000
L22	67.75 - 67.5 (22)	TP39.8239x39.7714x0.725	33.59	1601.90	0.021	0.95	5509.35	0.000
L23	67.5 - 62.5 (23)	TP40.8737x39.8239x0.7125	34.12	1617.05	0.021	0.95	5712.55	0.000
L24	62.5 - 57.5 (24)	TP41.9234x40.8737x0.7	34.64	1630.70	0.021	0.95	5913.14	0.000
L25	57.5 - 52.5 (25)	TP42.9731x41.9234x0.7	35.15	1672.23	0.021	0.95	6218.13	0.000
L26	52.5 - 41.417 (26)	TP45.3x42.9731x0.7	35.58	1709.60	0.021	0.95	6499.17	0.000
L27	41.417 - 40.417 (27)	TP44.5107x42.9179x0.7625	36.49	1885.09	0.019	0.95	7254.25	0.000
L28	40.417 - 35.417 (28)	TP45.5609x44.5107x0.75	36.94	1899.23	0.019	0.95	7486.20	0.000
L29	35.417 - 30.5 (29)	TP46.5937x45.5609x0.75	37.36	1943.00	0.019	0.95	7835.25	0.000
L30	30.5 - 30.25 (30)	TP46.6462x46.5937x0.7375	37.36	1913.33	0.020	0.95	7726.53	0.000
L31	30.25 - 26.75 (31)	TP47.3813x46.6462x0.7375	37.66	1943.97	0.019	0.95	7975.97	0.000
L32	26.75 - 26.5 (32)	TP47.4338x47.3813x0.6	37.66	1587.98	0.024	0.95	6541.90	0.000
L33	26.5 - 26.25 (33)	TP47.4864x47.4338x0.6	37.68	1589.76	0.024	0.95	6556.57	0.000
L34	26.25 - 26 (34)	TP47.5389x47.4864x0.5625	37.70	1493.26	0.025	0.95	6170.42	0.000
L35	26 - 21 (35)	TP48.5891x47.5389x0.5625	38.06	1526.64	0.025	0.95	6449.39	0.000
L36	21 - 16 (36)	TP49.6393x48.5891x0.5625	38.43	1560.03	0.025	0.49	6734.54	0.000
L37	16 - 11 (37)	TP50.6895x49.6393x0.5625	38.78	1593.41	0.024	0.49	7025.86	0.000
L38	11 - 6 (38)	TP51.7397x50.6895x0.5625	39.12	1626.79	0.024	0.49	7323.34	0.000
L39	6 - 1 (39)	TP52.79x51.7397x0.5625	39.47	1660.18	0.024	0.49	7626.99	0.000
L40	1 - 0.5 (40)	TP52.895x52.79x0.5625	39.49	1663.52	0.024	0.49	7657.69	0.000
L41	0.5 - 0.25 (41)	TP52.9475x52.895x0.8125	39.50	2393.79	0.017	0.49	10977.75	0.000
L42	0.25 - 0 (42)	TP53x52.9475x0.5625	39.52	1666.85	0.024	0.49	7688.46	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio P_u ϕP_n	Ratio M_{ux} ϕM_{nx}	Ratio M_{uy} ϕM_{ny}	Ratio V_u ϕV_n	Ratio T_u ϕT_n	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	160 - 155 (1)	0.002	0.037	0.000	0.019	0.001	0.040	1.050	4.8.2
L2	155 - 150 (2)	0.003	0.082	0.000	0.019	0.001	0.085	1.050	4.8.2
L3	150 - 145 (3)	0.007	0.156	0.000	0.039	0.001	0.165	1.050	4.8.2
L4	145 - 140 (4)	0.007	0.240	0.000	0.039	0.001	0.249	1.050	4.8.2
L5	140 - 135 (5)	0.009	0.333	0.000	0.048	0.001	0.345	1.050	4.8.2
L6	135 - 130 (6)	0.010	0.425	0.000	0.048	0.001	0.437	1.050	4.8.2
L7	130 - 121.333 (7)	0.013	0.496	0.000	0.057	0.001	0.513	1.050	4.8.2
L8	121.333 - 121 (8)	0.009	0.362	0.000	0.038	0.001	0.373	1.050	4.8.2
L9	121 - 116 (9)	0.011	0.412	0.000	0.042	0.000	0.425	1.050	4.8.2
L10	116 - 111 (10)	0.011	0.464	0.000	0.042	0.000	0.476	1.050	4.8.2

Section No.	Elevation ft	Ratio P_u ϕP_n	Ratio M_{ux} ϕM_{nx}	Ratio M_{uy} ϕM_{ny}	Ratio V_u ϕV_n	Ratio T_u ϕT_n	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L11	111 - 106 (11)	0.011	0.516	0.000	0.043	0.000	0.529	1.050	4.8.2
L12	106 - 102.75 (12)	0.011	0.547	0.000	0.042	0.000	0.561	1.050	4.8.2
L13	102.75 - 102.5 (13)	0.011	0.550	0.000	0.042	0.000	0.563	1.050	4.8.2
L14	102.5 - 97.5 (14)	0.012	0.596	0.000	0.042	0.000	0.609	1.050	4.8.2
L15	97.5 - 92.5 (15)	0.012	0.639	0.000	0.042	0.000	0.652	1.050	4.8.2
L16	92.5 - 87.5 (16)	0.012	0.678	0.000	0.041	0.000	0.692	1.050	4.8.2
L17	87.5 - 81.333 (17)	0.012	0.682	0.000	0.041	0.000	0.696	1.050	4.8.2
L18	81.333 - 80.333 (18)	0.010	0.539	0.000	0.031	0.000	0.550	1.050	4.8.2
L19	80.333 - 75.333 (19)	0.010	0.557	0.000	0.031	0.000	0.568	1.050	4.8.2
L20	75.333 - 70.333 (20)	0.010	0.573	0.000	0.030	0.000	0.584	1.050	4.8.2
L21	70.333 - 67.75 (21)	0.010	0.580	0.000	0.030	0.000	0.591	1.050	4.8.2
L22	67.75 - 67.5 (22)	0.007	0.408	0.000	0.021	0.000	0.415	1.050	4.8.2
L23	67.5 - 62.5 (23)	0.008	0.423	0.000	0.021	0.000	0.431	1.050	4.8.2
L24	62.5 - 57.5 (24)	0.008	0.439	0.000	0.021	0.000	0.447	1.050	4.8.2
L25	57.5 - 52.5 (25)	0.008	0.446	0.000	0.021	0.000	0.455	1.050	4.8.2
L26	52.5 - 41.417 (26)	0.008	0.452	0.000	0.021	0.000	0.461	1.050	4.8.2
L27	41.417 - 40.417 (27)	0.008	0.445	0.000	0.019	0.000	0.454	1.050	4.8.2
L28	40.417 - 35.417 (28)	0.009	0.456	0.000	0.019	0.000	0.465	1.050	4.8.2
L29	35.417 - 30.5 (29)	0.009	0.460	0.000	0.019	0.000	0.469	1.050	4.8.2
L30	30.5 - 30.25 (30)	0.009	0.467	0.000	0.020	0.000	0.477	1.050	4.8.2
L31	30.25 - 26.75 (31)	0.009	0.470	0.000	0.019	0.000	0.479	1.050	4.8.2
L32	26.75 - 26.5 (32)	0.011	0.572	0.000	0.024	0.000	0.584	1.050	4.8.2
L33	26.5 - 26.25 (33)	0.011	0.573	0.000	0.024	0.000	0.585	1.050	4.8.2
L34	26.25 - 26 (34)	0.012	0.613	0.000	0.025	0.000	0.626	1.050	4.8.2
L35	26 - 21 (35)	0.012	0.621	0.000	0.025	0.000	0.634	1.050	4.8.2
L36	21 - 16 (36)	0.013	0.628	0.000	0.025	0.000	0.641	1.050	4.8.2
L37	16 - 11 (37)	0.013	0.635	0.000	0.024	0.000	0.648	1.050	4.8.2
L38	11 - 6 (38)	0.013	0.642	0.000	0.024	0.000	0.655	1.050	4.8.2
L39	6 - 1 (39)	0.013	0.648	0.000	0.024	0.000	0.661	1.050	4.8.2
L40	1 - 0.5 (40)	0.013	0.648	0.000	0.024	0.000	0.662	1.050	4.8.2
L41	0.5 - 0.25 (41)	0.009	0.438	0.000	0.017	0.000	0.447	1.050	4.8.2
L42	0.25 - 0 (42)	0.013	0.649	0.000	0.024	0.000	0.663	1.050	4.8.2

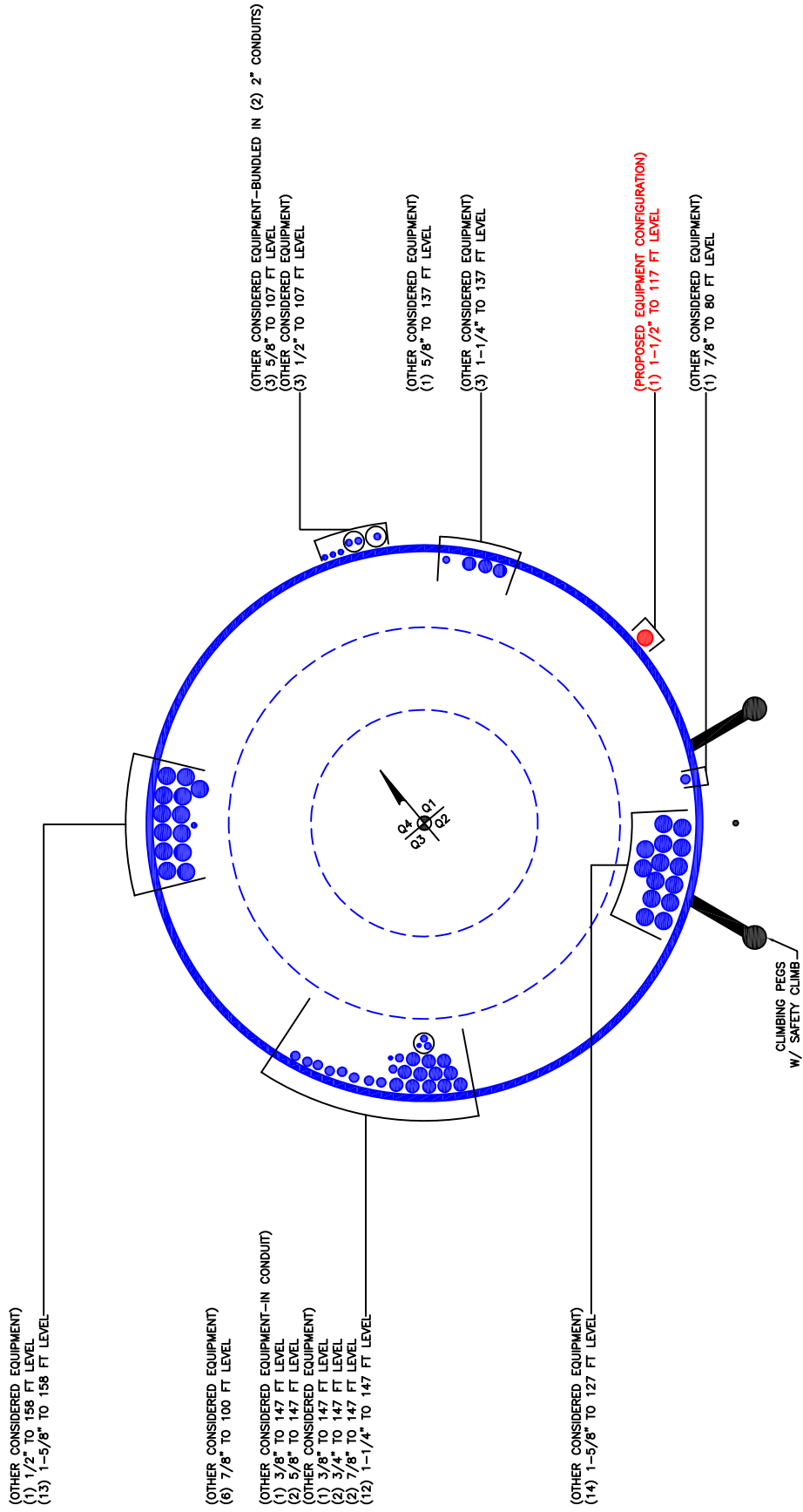
Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	160 - 155	Pole	TP22.7x21.65x0.25	1	-2.59	1110.09	3.8	Pass
L2	155 - 150	Pole	TP23.75x22.7x0.25	2	-3.01	1162.00	8.1	Pass
L3	150 - 145	Pole	TP24.8x23.75x0.25	3	-7.96	1213.93	15.7	Pass
L4	145 - 140	Pole	TP25.85x24.8x0.25	4	-8.51	1265.85	23.7	Pass
L5	140 - 135	Pole	TP26.9x25.85x0.25	5	-11.85	1317.76	32.9	Pass
L6	135 - 130	Pole	TP27.9499x26.9x0.25	6	-12.49	1369.68	41.6	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L7	130 - 121.333	Pole	TP29.77x27.9499x0.25	7	-17.37	1411.22	48.8	Pass
L8	121.333 - 121	Pole	TP29.3399x28.2899x0.375	8	-18.76	2148.35	35.5	Pass
L9	121 - 116	Pole	TP30.3899x29.3399x0.375	9	-22.78	2226.23	40.4	Pass
L10	116 - 111	Pole	TP31.4399x30.3899x0.375	10	-23.88	2304.11	45.4	Pass
L11	111 - 106	Pole	TP32.4899x31.4399x0.375	11	-25.77	2381.99	50.4	Pass
L12	106 - 102.75	Pole	TP33.1724x32.4899x0.375	12	-26.53	2432.61	53.4	Pass
L13	102.75 - 102.5	Pole	TP33.2249x33.1724x0.375	13	-26.61	2436.50	53.6	Pass
L14	102.5 - 97.5	Pole	TP34.2749x33.2249x0.375	14	-28.21	2514.38	58.0	Pass
L15	97.5 - 92.5	Pole	TP35.3249x34.2749x0.375	15	-29.48	2592.26	62.1	Pass
L16	92.5 - 87.5	Pole	TP36.3749x35.3249x0.375	16	-30.78	2670.14	65.9	Pass
L17	87.5 - 81.333	Pole	TP37.67x36.3749x0.375	17	-30.92	2677.93	66.2	Pass
L18	81.333 - 80.333	Pole	TP37.1297x35.7299x0.5	18	-33.98	3622.46	52.4	Pass
L19	80.333 - 75.333	Pole	TP38.1794x37.1297x0.5	19	-35.71	3726.27	54.1	Pass
L20	75.333 - 70.333	Pole	TP39.2291x38.1794x0.5	20	-37.38	3830.08	55.6	Pass
L21	70.333 - 67.75	Pole	TP39.7714x39.2291x0.5	21	-38.25	3883.72	56.3	Pass
L22	67.75 - 67.5	Pole	TP39.8239x39.7714x0.725	22	-38.38	5606.65	39.5	Pass
L23	67.5 - 62.5	Pole	TP40.8737x39.8239x0.7125	23	-40.55	5659.69	41.1	Pass
L24	62.5 - 57.5	Pole	TP41.9234x40.8737x0.7	24	-42.78	5707.46	42.6	Pass
L25	57.5 - 52.5	Pole	TP42.9731x41.9234x0.7	25	-45.03	5852.79	43.3	Pass
L26	52.5 - 41.417	Pole	TP45.3x42.9731x0.7	26	-47.10	5983.60	43.9	Pass
L27	41.417 - 40.417	Pole	TP44.5107x42.9179x0.7625	27	-53.36	6597.82	43.2	Pass
L28	40.417 - 35.417	Pole	TP45.5609x44.5107x0.75	28	-55.90	6647.31	44.3	Pass
L29	35.417 - 30.5	Pole	TP46.5937x45.5609x0.75	29	-58.43	6800.51	44.7	Pass
L30	30.5 - 30.25	Pole	TP46.6462x46.5937x0.7375	30	-58.56	6696.66	45.4	Pass
L31	30.25 - 26.75	Pole	TP47.3813x46.6462x0.7375	31	-60.34	6803.89	45.7	Pass
L32	26.75 - 26.5	Pole	TP47.4338x47.3813x0.6	32	-60.47	5557.92	55.7	Pass
L33	26.5 - 26.25	Pole	TP47.4864x47.4338x0.6	33	-60.60	5564.15	55.7	Pass
L34	26.25 - 26	Pole	TP47.5389x47.4864x0.5625	34	-60.71	5226.41	59.6	Pass
L35	26 - 21	Pole	TP48.5891x47.5389x0.5625	35	-62.89	5343.25	60.4	Pass
L36	21 - 16	Pole	TP49.6393x48.5891x0.5625	36	-65.12	5460.09	61.1	Pass
L37	16 - 11	Pole	TP50.6895x49.6393x0.5625	37	-67.39	5576.94	61.8	Pass
L38	11 - 6	Pole	TP51.7397x50.6895x0.5625	38	-69.70	5693.77	62.4	Pass
L39	6 - 1	Pole	TP52.79x51.7397x0.5625	39	-72.05	5810.62	63.0	Pass
L40	1 - 0.5	Pole	TP52.895x52.79x0.5625	40	-72.30	5822.30	63.1	Pass
L41	0.5 - 0.25	Pole	TP52.9475x52.895x0.8125	41	-72.46	8378.25	42.6	Pass
L42	0.25 - 0	Pole	TP53x52.9475x0.5625	42	-72.58	5833.99	63.1	Pass
							Summary	
							Pole (L17)	Pass
							RATING =	Pass

***NOTE: Above stress ratios for reinforced sections are approximate. More exact calculations are presented in Appendix C.**

APPENDIX B
BASE LEVEL DRAWING



APPENDIX C

ADDITIONAL CALCULATIONS

Site BU: 806939
Work Order: 1964050

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Pole Geometry

	Pole Height Above Base (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Bend Radius (in)	Pole Material
1	160	38.667	4.667	12	21.65	29.77	0.25	Auto	A572-65
2	126	44.667	5.667	12	28.29	37.67	0.375	Auto	A572-65
3	87	45.583	6.583	12	35.73	45.3	0.5	Auto	A572-65
4	48	48	0	12	42.92	53	0.5625	Auto	A572-65

Reinforcement Configuration

	Bottom Effective Elevation (ft)	Top Effective Elevation (ft)	Type	Model	Number	1	2	3	4	5	6	7	8	9	10	11	12
1	0	0.5	plate	TS 1.25x6.5	6		-5		5			-5		5	-5		5
2	0.5	26.75	plate	CCI-CFP-085125	1								x				
3	0.5	30.5	plate	CCI-CFP-085125	2			x								x	
4	26.25	67.75	plate	CCI-SFP-065125	1							x					
5	30.5	67.75	plate	CCI-SFP-065125	2			x								x	
6	86.75	102.75	plate	CCI-SFP-060100	3		x				x				x		
7																	
8																	
9																	
10																	

Reinforcement Details

	B (in)	H (in)	Gross Area (in ²)	Pole Face to Centroid (in)	Bottom Termination Type	Bottom Termination Length (in)	Top Termination Type	Top Termination Length (in)	Lu (in)	Net Area (in ²)	Bolt Hole Size (in)	Reinforcement Material
1	1.25	5.75	7.1875	2.875	Welded	n/a	Welded	n/a	0.000	7.188	0.0000	A572-65
2	8.5	1.25	10.625	0.625	PC 8.8 - M20 (100)	54	PC 8.8 - M20 (100)	54.000	17.000	9.063	1.1875	A572-65
3	8.5	1.25	10.625	0.625	PC 8.8 - M20 (100)	54	PC 8.8 - M20 (100)	54.000	17.000	9.063	1.1875	A572-65
4	6.5	1.25	8.125	0.625	PC 8.8 - M20 (100)	33	PC 8.8 - M20 (100)	33.000	19.000	6.563	1.1875	A572-65
5	6.5	1.25	8.125	0.625	PC 8.8 - M20 (100)	33	PC 8.8 - M20 (100)	33.000	19.000	6.563	1.1875	A572-65
6	6	1	6	0.5	PC 8.8 - M20 (100)	24	PC 8.8 - M20 (100)	24.000	16.000	4.750	1.1875	A572-65

Connection Details for Custom Reinforcements

Reinforcement	End	# Bolts	N or X	Bolt Spacing (in)	Edge Dist (in)	Weld Grade (ksi)	Transverse (Horiz.) Weld Type	Horiz. Weld Length (in)	Horiz. Groove Depth (in)	Horiz. Groove Angle (deg)	Horiz. Fillet Size (in)	Vertical Weld Length (in)	Vertical Fillet Size (in)	Rev H Connection Capacity (kip)
CCI-CFP-085125	Top	18	N	3	3	-	-	-	-	-	-	-	-	-
	Bottom	18	N	3	3	-	-	-	-	-	-	-	-	-
TS 1.25x6.5	Top	-	-	-	-	80	None	-	-	-	-	51	0.375	-
	Bottom	-	-	-	-	80	PJP Groove	11.5	0.5	45	0.625	-	-	-

TNX Geometry Input

Increment (ft): 5 [Export to TNX](#)

	Section Height (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Tapered Pole Grade	Weight Multiplier
1	160 - 155	5		12	21.650	22.700	0.25	A572-65	1.000
2	155 - 150	5		12	22.700	23.750	0.25	A572-65	1.000
3	150 - 145	5		12	23.750	24.800	0.25	A572-65	1.000
4	145 - 140	5		12	24.800	25.850	0.25	A572-65	1.000
5	140 - 135	5		12	25.850	26.900	0.25	A572-65	1.000
6	135 - 130	5		12	26.900	27.950	0.25	A572-65	1.000
7	130 - 126	8.667	4.667	12	27.950	29.770	0.25	A572-65	1.000
8	126 - 121	5		12	28.290	29.340	0.375	A572-65	1.000
9	121 - 116	5		12	29.340	30.390	0.375	A572-65	1.000
10	116 - 111	5		12	30.390	31.440	0.375	A572-65	1.000
11	111 - 106	5		12	31.440	32.490	0.375	A572-65	1.000
12	106 - 102.75	3.25		12	32.490	33.172	0.375	A572-65	1.000
13	102.75 - 102.5	0.25		12	33.172	33.225	0.375	A572-65	1.000
14	102.5 - 97.5	5		12	33.225	34.275	0.375	A572-65	1.000
15	97.5 - 92.5	5		12	34.275	35.325	0.375	A572-65	1.000
16	92.5 - 87.5	5		12	35.325	36.375	0.375	A572-65	1.000
17	87.5 - 87	6.167	5.667	12	36.375	37.670	0.375	A572-65	1.000
18	87 - 80.333	6.667		12	35.730	37.130	0.5	A572-65	1.000
19	80.333 - 75.333	5		12	37.130	38.179	0.5	A572-65	1.000
20	75.333 - 70.333	5		12	38.179	39.229	0.5	A572-65	1.000
21	70.333 - 67.75	2.583		12	39.229	39.771	0.5	A572-65	1.000
22	67.75 - 67.5	0.25		12	39.771	39.824	0.725	A572-65	0.961
23	67.5 - 62.5	5		12	39.824	40.874	0.7125	A572-65	0.970
24	62.5 - 57.5	5		12	40.874	41.923	0.7	A572-65	0.980
25	57.5 - 52.5	5		12	41.923	42.973	0.7	A572-65	0.974
26	52.5 - 48	11.083	6.583	12	42.973	45.300	0.7	A572-65	0.968
27	48 - 40.417	7.583		12	42.918	44.511	0.7625	A572-65	0.968
28	40.417 - 35.417	5		12	44.511	45.561	0.75	A572-65	0.979
29	35.417 - 30.5	4.917		12	45.561	46.594	0.75	A572-65	0.974
30	30.5 - 30.25	0.25		12	46.594	46.646	0.7375	A572-65	0.961
31	30.25 - 26.75	3.5		12	46.646	47.381	0.7375	A572-65	0.958
32	26.75 - 26.5	0.25		12	47.381	47.434	0.6	A572-65	1.146
33	26.5 - 26.25	0.25		12	47.434	47.486	0.6	A572-65	1.146
34	26.25 - 26	0.25		12	47.486	47.539	0.5625	A572-65	1.000
35	26 - 21	5		12	47.539	48.589	0.5625	A572-65	1.000
36	21 - 16	5		12	48.589	49.639	0.5625	A572-65	1.000
37	16 - 11	5		12	49.639	50.690	0.5625	A572-65	1.000
38	11 - 6	5		12	50.690	51.740	0.5625	A572-65	1.000
39	6 - 1	5		12	51.740	52.790	0.5625	A572-65	1.000
40	1 - 0.5	0.5		12	52.790	52.895	0.5625	A572-65	1.000
41	0.5 - 0.25	0.25		12	52.895	52.947	0.8125	A572-65	1.012
42	0.25 - 0	0.25		12	52.947	53.000	0.5625	A572-65	1.000

TNX Section Forces

Increment (ft): 5		TNX Output		
	Section Height (ft)	P _u (K)	M _{ux} (kip-ft)	V _u (K)
1	160 - 155	2.59	21.67	5.91
2	155 - 150	3.01	52.34	6.37
3	150 - 145	7.96	106.99	13.63
4	145 - 140	8.51	176.35	14.12
5	140 - 135	11.85	260.74	18.25
6	135 - 130	12.49	353.19	18.74
7	130 - 126	17.37	432.40	22.91
8	126 - 121	18.76	548.37	23.49
9	121 - 116	22.78	669.96	26.97
10	116 - 111	23.88	806.02	27.47
11	111 - 106	25.77	948.23	29.18
12	106 - 102.75	26.53	1043.55	29.50
13	102.75 - 102.5	26.61	1050.92	29.53
14	102.5 - 97.5	28.21	1200.87	30.48
15	97.5 - 92.5	29.48	1354.39	30.95
16	92.5 - 87.5	30.78	1510.26	31.42
17	87.5 - 87	30.92	1525.98	31.46
18	87 - 80.333	33.98	1738.41	32.26
19	80.333 - 75.333	35.71	1901.21	32.84
20	75.333 - 70.333	37.38	2066.55	33.32
21	70.333 - 67.75	38.25	2152.90	33.57
22	67.75 - 67.5	38.38	2161.29	33.59
23	67.5 - 62.5	40.55	2330.50	34.12
24	62.5 - 57.5	42.78	2502.34	34.64
25	57.5 - 52.5	45.03	2676.74	35.15
26	52.5 - 48	47.10	2835.82	35.58
27	48 - 40.417	53.36	3109.11	36.49
28	40.417 - 35.417	55.90	3292.61	36.94
29	35.417 - 30.5	58.43	3475.18	37.36
30	30.5 - 30.25	58.56	3484.51	37.36
31	30.25 - 26.75	60.34	3615.76	37.66
32	26.75 - 26.5	60.47	3625.17	37.66
33	26.5 - 26.25	60.60	3634.59	37.68
34	26.25 - 26	60.71	3644.01	37.70
35	26 - 21	62.89	3833.35	38.06
36	21 - 16	65.12	4024.46	38.43
37	16 - 11	67.39	4217.35	38.78
38	11 - 6	69.70	4411.98	39.12
39	6 - 1	72.05	4608.33	39.47
40	1 - 0.5	72.30	4628.06	39.49
41	0.5 - 0.25	72.46	4637.93	39.50
42	0.25 - 0	72.58	4647.81	39.52

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
160 - 155	Pole	TP22.7x21.65x0.25	Pole	3.8%	Pass
155 - 150	Pole	TP23.75x22.7x0.25	Pole	8.1%	Pass
150 - 145	Pole	TP24.8x23.75x0.25	Pole	15.6%	Pass
145 - 140	Pole	TP25.85x24.8x0.25	Pole	23.7%	Pass
140 - 135	Pole	TP26.9x25.85x0.25	Pole	32.8%	Pass
135 - 130	Pole	TP27.95x26.9x0.25	Pole	41.5%	Pass
130 - 126	Pole	TP29.77x27.95x0.25	Pole	48.7%	Pass
126 - 121	Pole	TP29.34x28.29x0.375	Pole	35.4%	Pass
121 - 116	Pole	TP30.39x29.34x0.375	Pole	40.3%	Pass
116 - 111	Pole	TP31.44x30.39x0.375	Pole	45.2%	Pass
111 - 106	Pole	TP32.49x31.44x0.375	Pole	50.2%	Pass
106 - 102.75	Pole	TP33.172x32.49x0.375	Pole	53.3%	Pass
102.75 - 102.5	Pole	TP33.225x33.172x0.375	Pole	53.5%	Pass
102.5 - 97.5	Pole	TP34.275x33.225x0.375	Pole	57.9%	Pass
97.5 - 92.5	Pole	TP35.325x34.275x0.375	Pole	62.0%	Pass
92.5 - 87.5	Pole	TP36.375x35.325x0.375	Pole	65.7%	Pass
87.5 - 87	Pole	TP37.67x36.375x0.375	Pole	66.1%	Pass
87 - 80.33	Pole	TP37.13x35.73x0.5	Pole	52.2%	Pass
80.33 - 75.33	Pole	TP38.179x37.13x0.5	Pole	53.9%	Pass
75.33 - 70.33	Pole	TP39.229x38.179x0.5	Pole	55.4%	Pass
70.33 - 67.75	Pole	TP39.771x39.229x0.5	Pole	56.2%	Pass
67.75 - 67.5	Pole + Reinf.	TP39.824x39.771x0.725	Reinf. 5 Tension Rupture	59.9%	Pass
67.5 - 62.5	Pole + Reinf.	TP40.874x39.824x0.7125	Reinf. 5 Tension Rupture	61.7%	Pass
62.5 - 57.5	Pole + Reinf.	TP41.923x40.874x0.7	Reinf. 5 Tension Rupture	63.4%	Pass
57.5 - 52.5	Pole + Reinf.	TP42.973x41.923x0.7	Reinf. 5 Tension Rupture	65.0%	Pass
52.5 - 48	Pole + Reinf.	TP45.3x42.973x0.7	Reinf. 5 Tension Rupture	66.3%	Pass
48 - 40.42	Pole + Reinf.	TP44.511x42.918x0.7625	Reinf. 5 Tension Rupture	65.2%	Pass
40.42 - 35.42	Pole + Reinf.	TP45.561x44.511x0.75	Reinf. 5 Tension Rupture	66.3%	Pass
35.42 - 30.5	Pole + Reinf.	TP46.594x45.561x0.75	Reinf. 5 Tension Rupture	67.2%	Pass
30.5 - 30.25	Pole + Reinf.	TP46.646x46.594x0.7375	Reinf. 3 Compression	60.0%	Pass
30.25 - 26.75	Pole + Reinf.	TP47.381x46.646x0.7375	Reinf. 3 Compression	60.6%	Pass
26.75 - 26.5	Pole + Reinf.	TP47.434x47.381x0.6	Pole	58.1%	Pass
26.5 - 26.25	Pole + Reinf.	TP47.486x47.434x0.6	Pole	58.2%	Pass
26.25 - 26	Pole	TP47.539x47.486x0.5625	Pole	59.4%	Pass
26 - 21	Pole	TP48.589x47.539x0.5625	Pole	60.2%	Pass
21 - 16	Pole	TP49.639x48.589x0.5625	Pole	60.9%	Pass
16 - 11	Pole	TP50.69x49.639x0.5625	Pole	61.6%	Pass
11 - 6	Pole	TP51.74x50.69x0.5625	Pole	62.2%	Pass
6 - 1	Pole	TP52.79x51.74x0.5625	Pole	62.8%	Pass
1 - 0.5	Pole	TP52.895x52.79x0.5625	Pole	62.9%	Pass
0.5 - 0.25	Pole + Reinf.	TP52.947x52.895x0.8125	Reinf. 1 Tension Yield	55.7%	Pass
0.25 - 0	Pole	TP53x52.947x0.5625	Pole	62.9%	Pass
				Summary	
			Pole	66.1%	Pass
			Reinforcement	67.2%	Pass
			Overall	67.2%	Pass

Additional Calculations

Section Elevation (ft)	Moment of Inertia (in ⁴)			Area (in ²)			% Capacity*							
	Pole	Reinf.	Total	Pole	Reinf.	Total	Pole	R1	R2	R3	R4	R5	R6	
160 - 155	1164	n/a	1164	18.05	n/a	18.05	3.8%							
155 - 150	1335	n/a	1335	18.89	n/a	18.89	8.1%							
150 - 145	1522	n/a	1522	19.73	n/a	19.73	15.6%							
145 - 140	1726	n/a	1726	20.58	n/a	20.58	23.7%							
140 - 135	1947	n/a	1947	21.42	n/a	21.42	32.8%							
135 - 130	2187	n/a	2187	22.27	n/a	22.27	41.5%							
130 - 126	2392	n/a	2392	22.94	n/a	22.94	48.7%							
126 - 121	3750	n/a	3750	34.93	n/a	34.93	35.4%							
121 - 116	4173	n/a	4173	36.19	n/a	36.19	40.3%							
116 - 111	4627	n/a	4627	37.46	n/a	37.46	45.2%							
111 - 106	5112	n/a	5112	38.72	n/a	38.72	50.2%							
106 - 102.75	5445	n/a	5445	39.55	n/a	39.55	53.3%							
102.75 - 102.5	5471	n/a	5471	39.61	n/a	39.61	53.5%							
102.5 - 97.5	6013	n/a	6013	40.88	n/a	40.88	57.9%							
97.5 - 92.5	6589	n/a	6589	42.14	n/a	42.14	62.0%							
92.5 - 87.5	7201	n/a	7201	43.41	n/a	43.41	65.7%							
87.5 - 87	7264	n/a	7264	43.53	n/a	43.53	66.1%							
87 - 80.33	10114	n/a	10114	58.89	n/a	58.89	52.2%							
80.33 - 75.33	11008	n/a	11008	60.58	n/a	60.58	53.9%							
75.33 - 70.33	11954	n/a	11954	62.26	n/a	62.26	55.4%							
70.33 - 67.75	12463	n/a	12463	63.14	n/a	63.14	56.2%							
67.75 - 67.5	12513	5185	17698	63.22	24.38	87.60	38.5%				59.9%	59.9%		
67.5 - 62.5	13543	5451	18993	64.91	24.38	89.28	39.7%				61.7%	61.7%		
62.5 - 57.5	14627	5724	20350	66.60	24.38	90.97	40.9%				63.4%	63.4%		
57.5 - 52.5	15767	6003	21770	68.28	24.38	92.66	42.2%				65.0%	65.0%		
52.5 - 48	16843	6261	23103	69.80	24.38	94.18	43.4%				66.3%	66.3%		
48 - 40.42	19651	6425	26076	79.49	24.38	103.86	42.0%				65.2%	65.2%		
40.42 - 35.42	21094	6721	27815	81.39	24.38	105.76	42.7%				66.3%	66.3%		
35.42 - 30.5	22580	7019	29598	83.25	24.38	107.63	43.4%				67.2%	67.2%		
30.5 - 30.25	22819	6824	29644	83.35	21.25	104.60	46.8%			60.0%				
30.25 - 26.75	23924	7038	30962	84.68	21.25	105.93	47.4%			60.6%				
26.75 - 26.5	24073	1738	25811	84.77	18.75	103.52	58.1%		53.2%		57.4%			
26.5 - 26.25	24153	1742	25896	84.87	18.75	103.62	58.2%		53.2%		57.5%			
26.25 - 26	23999	n/a	23999	84.96	n/a	84.96	59.4%							
26 - 21	25645	n/a	25645	86.86	n/a	86.86	60.2%							
21 - 16	27364	n/a	27364	88.76	n/a	88.76	60.9%							
16 - 11	29159	n/a	29159	90.66	n/a	90.66	61.6%							
11 - 6	31030	n/a	31030	92.56	n/a	92.56	62.2%							
6 - 1	32980	n/a	32980	94.46	n/a	94.46	62.8%							
1 - 0.5	33179	n/a	33179	94.65	n/a	94.65	62.9%							
0.5 - 0.25	33406	14096	47501	94.75	43.13	137.87	45.6%	55.7%						
0.25 - 0	33379	n/a	33379	94.84	n/a	94.84	62.9%							

Note: Section capacity checked using 5 degree increments.
Rating per TIA-222-H Section 15.5.

Monopole Base Plate Connection

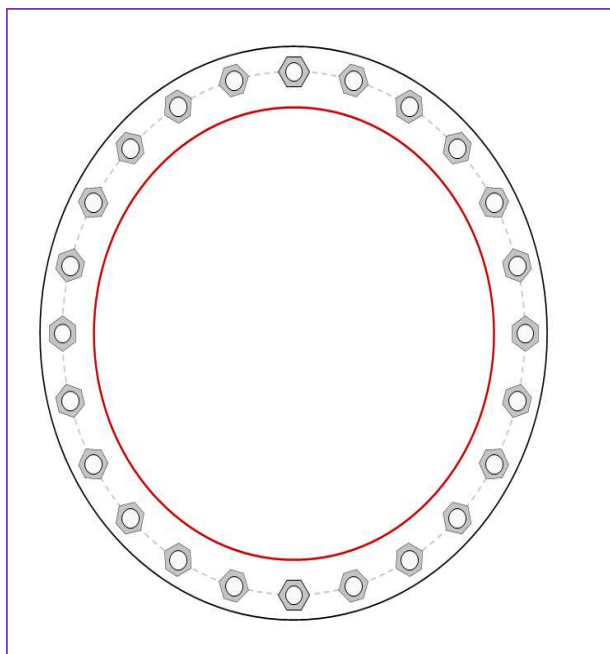


Site Info	
BU #	806939
Site Name	NHV 2071 143137
Order #	553356, Rev. 1

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	No
l_{ar} (in)	1.25

Applied Loads	
Moment (kip-ft)	4647.81
Axial Force (kips)	72.58
Shear Force (kips)	39.52

*TIA-222-H Section 15.5 Applied



Connection Properties

Anchor Rod Data

(24) 2-1/4" ϕ bolts (A615-75 N; $F_y=75$ ksi, $F_u=100$ ksi) on 61.37" BC

Base Plate Data

67.37" OD x 3" Plate (S-128; $F_y=60$ ksi, $F_u=80$ ksi)

Stiffener Data

N/A

Pole Data

53" x 0.5625" 12-sided pole (A572-65; $F_y=65$ ksi, $F_u=80$ ksi)

Analysis Results

Anchor Rod Summary

(units of kips, kip-in)

$P_{u,t} = 148.36$	$\phi P_{n,t} = 243.75$	Stress Rating
$V_u = 1.65$	$\phi V_n = 149.1$	58.0%
$M_u = n/a$	$\phi M_n = n/a$	Pass

Base Plate Summary

Max Stress (ksi):	24.85	(Flexural)
Allowable Stress (ksi):	54	
Stress Rating:	43.8%	Pass

Pier and Pad Foundation



BU #: 806939
 Site Name: NHV 2071 143137
 App. Number: 553356, Rev. 1

TIA-222 Revision: H
 Tower Type: Monopole

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

Superstructure Analysis Reactions		
Compression, P_{comp} :	72.58	kips
Base Shear, V_{u_comp} :	39.52	kips
Moment, M_u :	4647.8	ft-kips
Tower Height, H :	160	ft
BP Dist. Above Fdn, b_{pdist} :	3.5	in

Pier Properties		
Pier Shape:	Circular	
Pier Diameter, d_{pier} :	7	ft
Ext. Above Grade, E :	0.5	ft
Pier Rebar Size, S_c :	11	
Pier Rebar Quantity, m_c :	36	
Pier Tie/Spiral Size, S_t :	5	
Pier Tie/Spiral Quantity, m_t :	6	
Pier Reinforcement Type:	Tie	
Pier Clear Cover, cc_{pier} :	3	in

Pad Properties		
Depth, D :	9.5	ft
Pad Width, W_1 :	30	ft
Pad Thickness, T :	3.5	ft
Pad Rebar Size (Bottom dir. 2), Sp_2 :	11	
Pad Rebar Quantity (Bottom dir. 2), mp_2 :	28	
Pad Clear Cover, cc_{pad} :	3	in

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

Soil Properties		
Total Soil Unit Weight, γ :	115	pcf
Ultimate Net Bearing, Q_{net} :	25.000	ksf
Cohesion, C_u :	0.000	ksf
Friction Angle, ϕ :	31	degrees
SPT Blow Count, N_{blows} :	16	
Base Friction, μ :	0.4	
Neglected Depth, N :	3.30	ft
Foundation Bearing on Rock?	No	
Groundwater Depth, gw :	8	ft

Foundation Analysis Checks				
	Capacity	Demand	Rating*	Check
Lateral (Sliding) (kips)	529.80	39.52	7.1%	Pass
Bearing Pressure (ksf)	19.50	2.22	10.8%	Pass
Overturing (kip*ft)	13902.55	5054.53	36.4%	Pass
Pier Flexure (Comp.) (kip*ft)	8702.22	4904.68	53.7%	Pass
Pier Compression (kip)	24494.62	117.61	0.5%	Pass
Pad Flexure (kip*ft)	7039.68	1847.76	25.0%	Pass
Pad Shear - 1-way (kips)	1259.72	228.27	17.3%	Pass
Pad Shear - 2-way (Comp) (ksi)	0.190	0.039	19.7%	Pass
Flexural 2-way (Comp) (kip*ft)	8089.81	2942.81	34.6%	Pass

*Rating per TIA-222-H Section 15.5

Structural Rating*:	53.7%
Soil Rating*:	36.4%

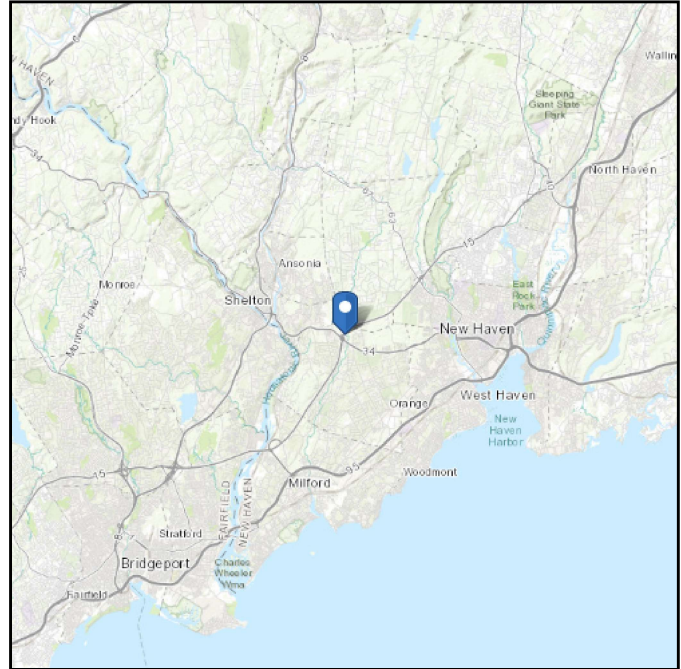
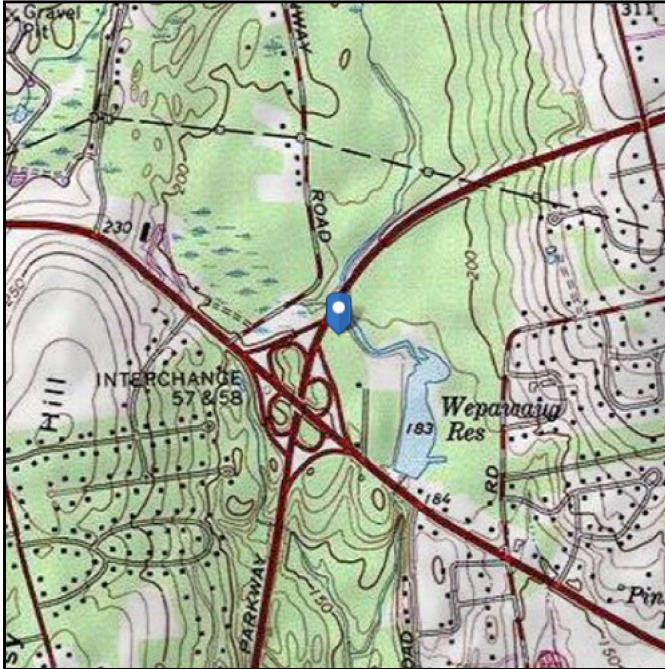
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ASCE 7 Hazards Report

Address:
No Address at This
Location

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

Elevation: 191.26 ft (NAVD 88)
Latitude: 41.307878
Longitude: -73.032283



Wind

Results:

Wind Speed:	124 Vmph
10-year MRI	77 Vmph
25-year MRI	87 Vmph
50-year MRI	93 Vmph
100-year MRI	100 Vmph

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

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-10 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).

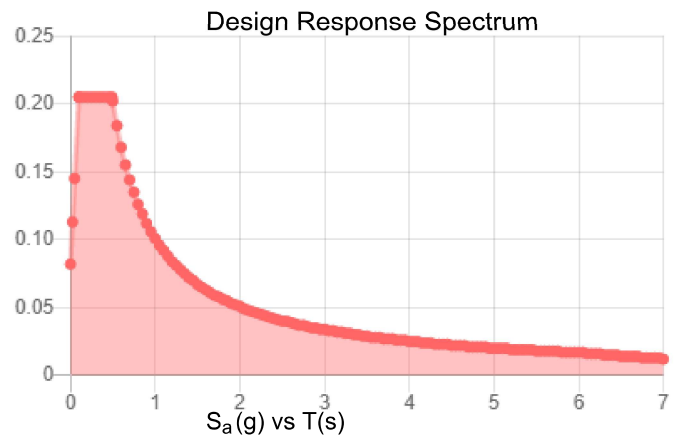
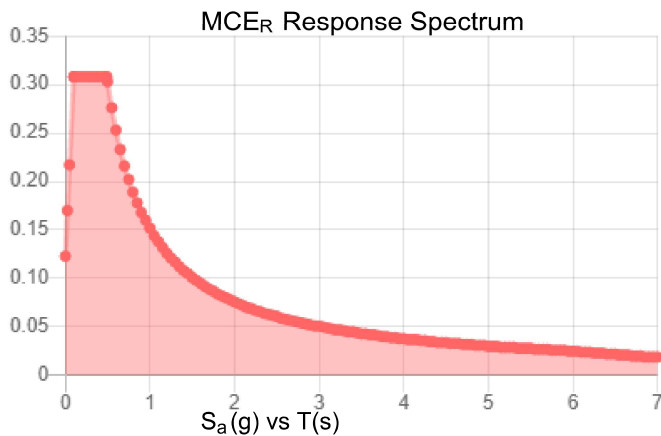
Site is in a hurricane-prone region as defined in ASCE/SEI 7-10 Section 26.2. Glazed openings need not be protected against wind-borne debris.

Site Soil Class: D - Stiff Soil

Results:

S_s :	0.192	S_{DS} :	0.205
S_1 :	0.063	S_{D1} :	0.101
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.102
S_{MS} :	0.308	PGA _M :	0.162
S_{M1} :	0.152	F_{PGA} :	1.597
		I_e :	1

Seismic Design Category B



Data Accessed:

Tue May 25 2021

Date Source:

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

Results:

Ice Thickness: 0.75 in.
Concurrent Temperature: 15 F
Gust Speed: 50 mph

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

Date Accessed: Tue May 25 2021

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

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

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Exhibit E

Mount Analysis

Date: **July 29, 2021**

Darcy Tarr
Crown Castle
3530 Toringdon Way, Suite 300
Charlotte, NC 28277
(704) 405-6589



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

Subject: **Mount Replacement Analysis Report**

Carrier Designation: **Dish Network Dish 5G**
Carrier Site Number: BOHVN00012A
Carrier Site Name: CT-CCI-T-806939

Crown Castle Designation: **Crown Castle BU Number:** 806939
Crown Castle Site Name: NHV 2071 143137
Crown Castle JDE Job Number: 645118
Crown Castle Order Number: 553356 Rev. 1

Engineering Firm Designation: **Trylon Report Designation:** 189030

Site Data: **800 Ogg Meadow Road, Orange, New Haven County, CT, 06477**
Latitude 41°18'28.36" Longitude -73°1'56.22"

Structure Information: **Tower Height & Type:** **160.0 ft Monopole**
Mount Elevation: **117.0 ft**
Mount Type: **8.0 ft Platform**

Dear Darcy Tarr,

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

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

Platform

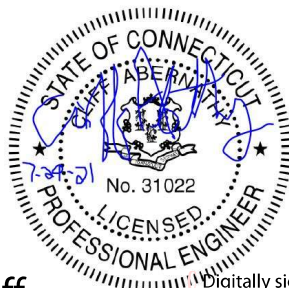
Sufficient*

***Sufficient upon completion of the changes listed in the 'Recommendations' section of this report.**

This analysis utilizes an ultimate 3-second gust wind speed of 125 mph as required by the 2018 Connecticut State Building Code. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Mount analysis prepared by: Ionela Neamtu

Respectfully Submitted by:
Cliff Abernathy, P.E.



Cliff
Abernathy

Digitally signed by Cliff
Abernathy
Date: 2021.07.29 14:49:58
-04'00'

TABLE OF CONTENTS

1) INTRODUCTION

2) ANALYSIS CRITERIA

Table 1 - Proposed Equipment Configuration

3) ANALYSIS PROCEDURE

Table 2 - Documents Provided

3.1) Analysis Method

3.2) Assumptions

4) ANALYSIS RESULTS

Table 3 - Mount Component Stresses vs. Capacity

4.1) Recommendations

5) APPENDIX A

Wire Frame and Rendered Models

6) APPENDIX B

Software Input Calculations

7) APPENDIX C

Software Analysis Output

8) APPENDIX D

Additional Calculations

9) APPENDIX E

Supplemental Drawings

1) INTRODUCTION

This is a proposed 3 sector 8.0 ft Platform, designed by Commscope.

2) ANALYSIS CRITERIA

Building Code:	2015 IBC
TIA-222 Revision:	TIA-222-H
Risk Category:	II
Ultimate Wind Speed:	125 mph
Exposure Category:	B
Topographic Factor at Base:	1.00
Topographic Factor at Mount:	1.00
Ice Thickness:	1.50 in
Wind Speed with Ice:	50 mph
Seismic S_s:	0.192
Seismic S_1:	0.063
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

Mount Centerline (ft)	Antenna Centerline (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Mount / Modification Details
117.0	117.0	3	JMA Wireless	MX08FRO665-21	8.0 ft Platform [Commscope, MC-PK8-C]
		3	Fujitsu	TA08025-B604	
		3	Fujitsu	TA08025-B605	
		1	Raycap	RDIDC-9181-PF-48	

3) ANALYSIS PROCEDURE

Table 2 - Documents Provided

Document	Remarks	Reference	Source
Crown Application	Dish Network Application	553356 Rev. 1	CCI Sites
Mount Manufacturer Drawings	Commscope	MC-PK8-C	Trylon

3.1) Analysis Method

RISA-3D (Version 17.0.4), a commercially available analysis software package, was used to create a three-dimensional model of the antenna mounting system and calculate member stresses for various loading cases.

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

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

3.2) Assumptions

- 1) The antenna mounting system was properly fabricated, installed and maintained in good condition in accordance with its original design and manufacturer's specifications.
- 2) The configuration of antennas, mounts, and other appurtenances are as specified in Table 1 and the referenced drawings.
- 3) All member connections are assumed to have been designed to meet or exceed the load carrying capacity of the connected member unless otherwise specified in this report.
- 4) The analysis will be required to be revised if the existing conditions in the field differ from those shown in the above-referenced documents or assumed in this analysis. No allowance was made for any damaged, missing, or rusted members.
- 5) Prior structural modifications to the tower mounting system are assumed to be installed as shown per available data.
- 6) Steel grades have been assumed as follows, unless noted otherwise:

Channel, Solid Round, Angle, Plate	ASTM A36 (GR 36)
HSS (Rectangular)	ASTM A500 (GR B-46)
Pipe	ASTM A53 (GR 35)
Connection Bolts	ASTM A325

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

4) ANALYSIS RESULTS

Table 3 - Mount Component Stresses vs. Capacity (Platform, All Sectors)

Notes	Component	Critical Member	Centerline (ft)	% Capacity	Pass / Fail
1,2	Mount Pipe(s)	MP1	117.0	34.8	Pass
	Horizontal(s)	H1		12.3	Pass
	Standoff(s)	M2		52.5	Pass
	Bracing(s)	M1		45.1	Pass
	Handrail(s)	M20		11.5	Pass
	Plate(s)	M5		23.8	Pass
	Mount Connection(s)	-		21.3	Pass

Structure Rating (max from all components) =	52.5%
---	--------------

Notes:

- 1) See additional documentation in "Appendix C - Software Analysis Output" for calculations supporting the % capacity consumed.
- 2) Rating per TIA-222-H, Section 15.5

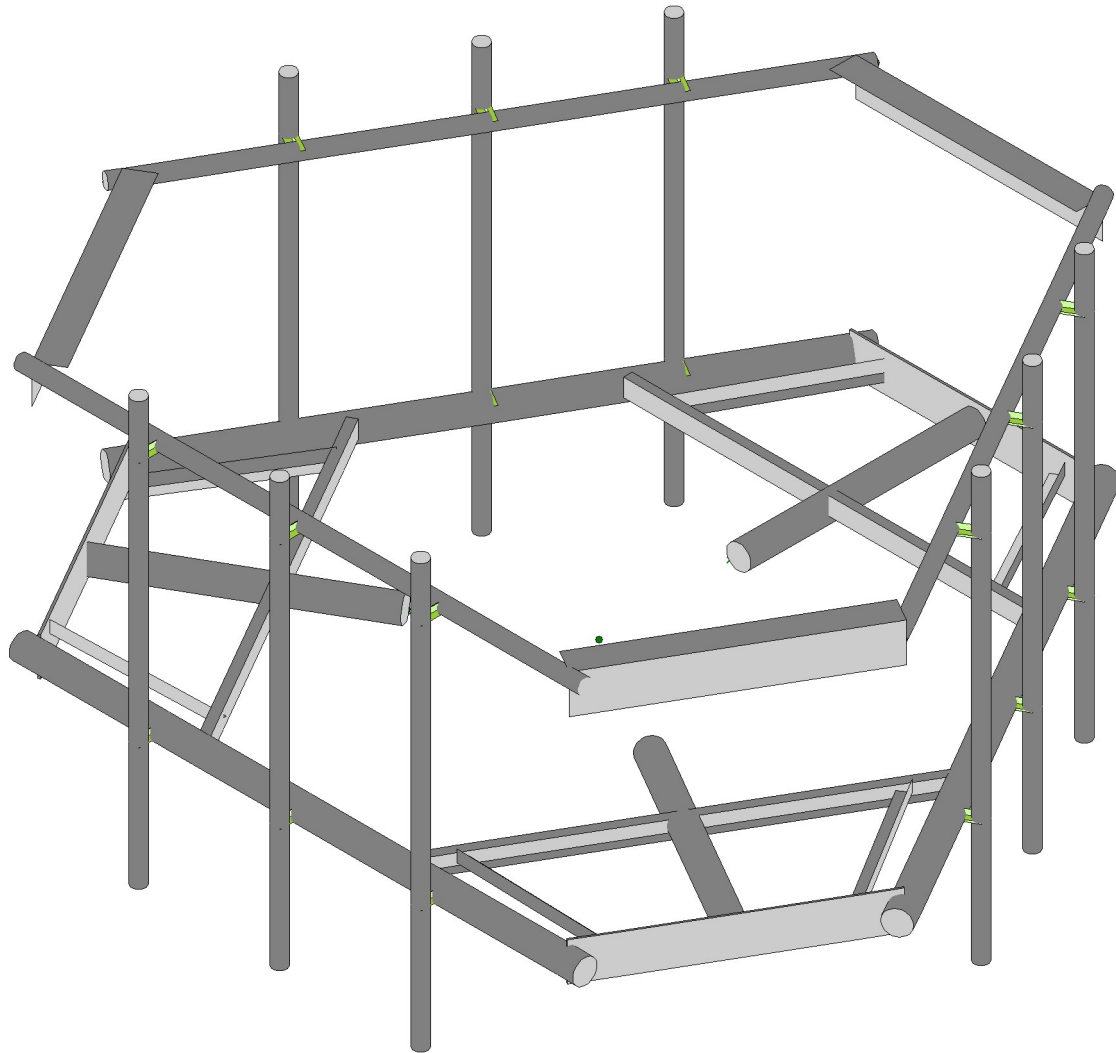
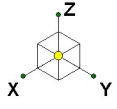
4.1) Recommendations

The mount has sufficient capacity to carry the proposed loading configuration. In order for the results of the analysis to be considered valid, the proposed mount listed below must be installed.

1. Commscope, MC-PK8-C.

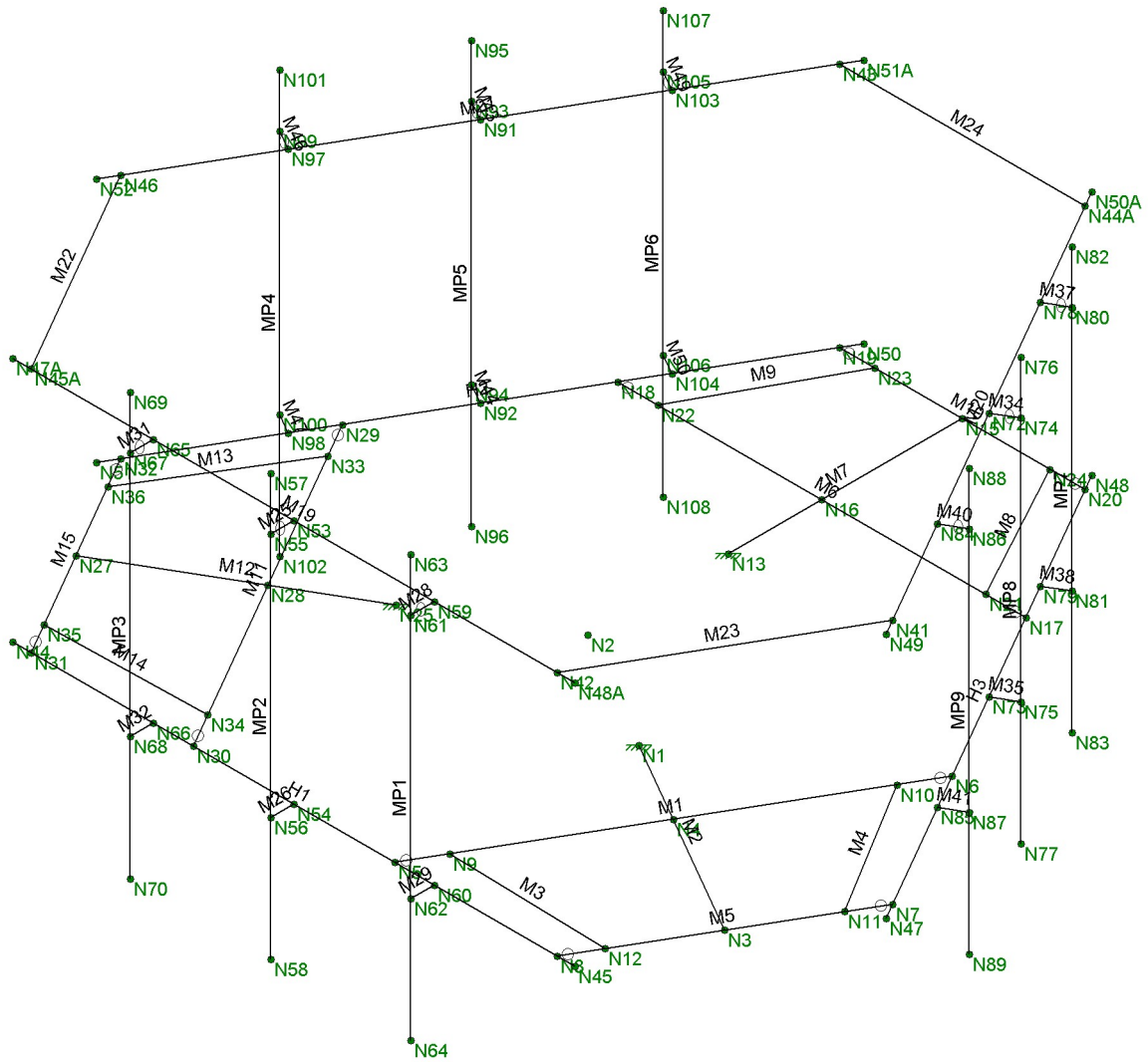
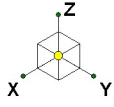
No structural modifications are required at this time, provided that the above-listed changes are implemented.

APPENDIX A
WIRE FRAME AND RENDERED MODELS



Envelope Only Solution

Trylon	806939_NHV 2071 143137	SK - 1
IN		July 28, 2021 at 8:29 AM
189030		806939_NHV 2071 143137.r3d



Envelope Only Solution

Trylon	806939_NHV 2071 143137	SK - 2
IN		July 28, 2021 at 8:29 AM
189030		806939_NHV 2071 143137.r3d

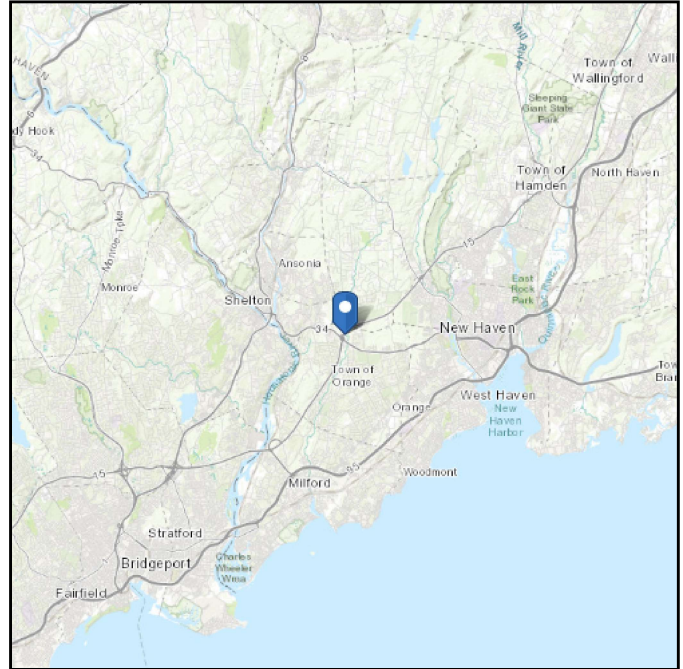
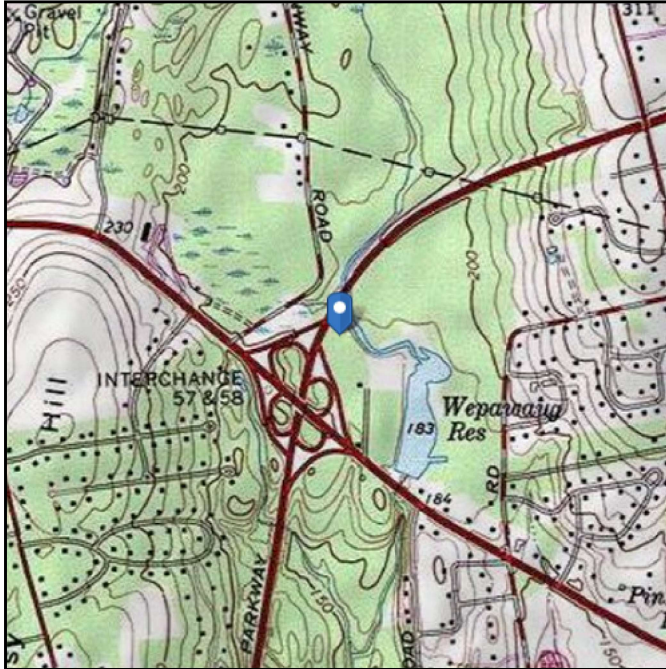
APPENDIX B
SOFTWARE INPUT CALCULATIONS

ASCE 7 Hazards Report

Address:
No Address at This
Location

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

Elevation: 191.26 ft (NAVD 88)
Latitude: 41.307878
Longitude: -73.032283

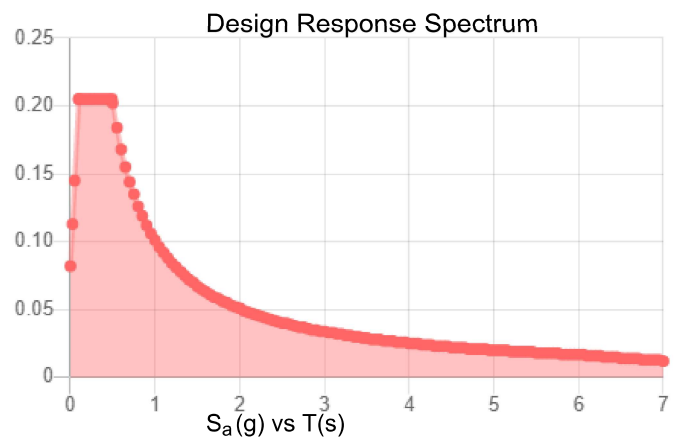
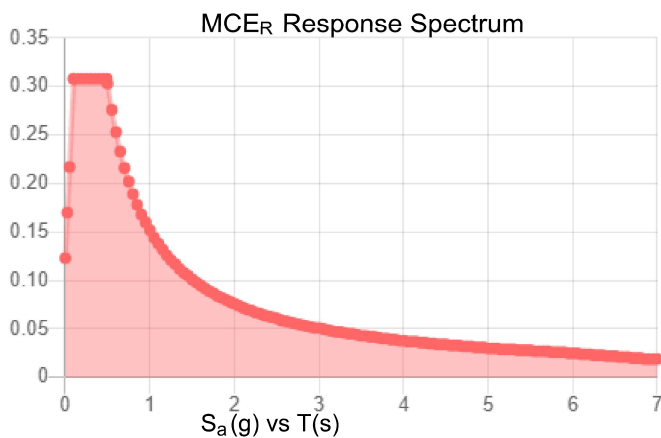


Site Soil Class: D - Stiff Soil

Results:

S_s :	0.192	S_{DS} :	0.205
S_1 :	0.063	S_{D1} :	0.101
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.102
S_{MS} :	0.308	PGA _M :	0.162
S_{M1} :	0.152	F_{PGA} :	1.597
		I_e :	1

Seismic Design Category B



Data Accessed:

Tue Jul 27 2021

Date Source:

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

Results:

Ice Thickness: 0.75 in.
Concurrent Temperature: 15 F
Gust Speed: 50 mph

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

Date Accessed: Tue Jul 27 2021

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

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

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TIA LOAD CALCULATOR 2.0

PROJECT DATA		
Job Code:	189030	
Carrier Site ID:	BOHVN00012A	
Carrier Site Name:	CT-CCI-T-806939	

CODES AND STANDARDS		
Building Code:	2015 IBC	
Local Building Code:	Connecticut State Building	
Design Standard:	TIA-222-H	

STRUCTURE DETAILS		
Mount Type:	Platform	--
Mount Elevation:	117.0	ft.
Number of Sectors:	3	--
Structure Type:	Monopole	--
Structure Height:	160.0	ft.

ANALYSIS CRITERIA		
Structure Risk Category:	II	--
Exposure Category:	B	--
Site Class:	D - Stiff Soil	--
Ground Elevation:	191.26	ft.

TOPOGRAPHIC DATA		
Topographic Category:	1.00	--
Topographic Feature:	N/A	--
Crest Point Elevation:	0.00	ft.
Base Point Elevation:	0.00	ft.
Crest to Mid-Height (L/2):	0.00	ft.
Distance from Crest (x):	0.00	ft.
Base Topo Factor (K_{zt}):	1.00	--
Mount Topo Factor (K_{zt}):	1.00	--

WIND PARAMETERS		
Design Wind Speed:	125	mph
Wind Escalation Factor (K_s):	1.00	--
Velocity Coefficient (K_z):	1.03	--
Directionality Factor (K_d):	0.95	--
Gust Effect Factor (G_h):	1.00	--
Shielding Factor (K_a):	0.90	--
Velocity Pressure (q_z):	39.00	psf

ICE PARAMETERS		
Design Ice Wind Speed:	50	mph
Design Ice Thickness (t_i):	1.50	in
Importance Factor (I_i):	1.00	--
Ice Velocity Pressure (q_{zi}):	39.00	psf
Mount Ice Thickness (t_{iz}):	1.70	in

WIND STRUCTURE CALCULATIONS		
Flat Member Pressure:	70.21	psf
Round Member Pressure:	42.13	psf
Ice Wind Pressure:	7.40	psf

SEISMIC PARAMETERS		
Importance Factor (I_e):	1.00	--
Short Period Accel. (S_s):	0.192	g
1 Second Accel (S_1):	0.063	g
Short Period Des. (S_{DS}):	0.20	g
1 Second Des. (S_{D1}):	0.10	g
Short Period Coeff. (F_a):	1.60	--
1 Second Coeff. (F_v):	2.40	--
Response Coefficient (C_s):	0.10	--
Amplification Factor (A_S):	1.20	--

LOAD COMBINATIONS [LRFD]

#	Description
1	1.4DL
2	1.2DL + 1WL 0 AZI
3	1.2DL + 1WL 30 AZI
4	1.2DL + 1WL 45 AZI
5	1.2DL + 1WL 60 AZI
6	1.2DL + 1WL 90 AZI
7	1.2DL + 1WL 120 AZI
8	1.2DL + 1WL 135 AZI
9	1.2DL + 1WL 150 AZI
10	1.2DL + 1WL 180 AZI
11	1.2DL + 1WL 210 AZI
12	1.2DL + 1WL 225 AZI
13	1.2DL + 1WL 240 AZI
14	1.2DL + 1WL 270 AZI
15	1.2DL + 1WL 300 AZI
16	1.2DL + 1WL 315 AZI
17	1.2DL + 1WL 330 AZI
18	0.9DL + 1WL 0 AZI
19	0.9DL + 1WL 30 AZI
20	0.9DL + 1WL 45 AZI
21	0.9DL + 1WL 60 AZI
22	0.9DL + 1WL 90 AZI
23	0.9DL + 1WL 120 AZI
24	0.9DL + 1WL 135 AZI
25	0.9DL + 1WL 150 AZI
26	0.9DL + 1WL 180 AZI
27	0.9DL + 1WL 210 AZI
28	0.9DL + 1WL 225 AZI
29	0.9DL + 1WL 240 AZI
30	0.9DL + 1WL 270 AZI
31	0.9DL + 1WL 300 AZI
32	0.9DL + 1WL 315 AZI
33	0.9DL + 1WL 330 AZI
34	1.2DL + 1DLi + 1WLi 0 AZI
35	1.2DL + 1DLi + 1WLi 30 AZI
36	1.2DL + 1DLi + 1WLi 45 AZI
37	1.2DL + 1DLi + 1WLi 60 AZI
38	1.2DL + 1DLi + 1WLi 90 AZI
39	1.2DL + 1DLi + 1WLi 120 AZI
40	1.2DL + 1DLi + 1WLi 135 AZI
41	1.2DL + 1DLi + 1WLi 150 AZI

#	Description
42	1.2DL + 1DLi + 1WLi 180 AZI
43	1.2DL + 1DLi + 1WLi 210 AZI
44	1.2DL + 1DLi + 1WLi 225 AZI
45	1.2DL + 1DLi + 1WLi 240 AZI
46	1.2DL + 1DLi + 1WLi 270 AZI
47	1.2DL + 1DLi + 1WLi 300 AZI
48	1.2DL + 1DLi + 1WLi 315 AZI
49	1.2DL + 1DLi + 1WLi 330 AZI
50	(1.2+0.2Sds) + 1.0E 0 AZI
51	(1.2+0.2Sds) + 1.0E 30 AZI
52	(1.2+0.2Sds) + 1.0E 45 AZI
53	(1.2+0.2Sds) + 1.0E 60 AZI
54	(1.2+0.2Sds) + 1.0E 90 AZI
55	(1.2+0.2Sds) + 1.0E 120 AZI
56	(1.2+0.2Sds) + 1.0E 135 AZI
57	(1.2+0.2Sds) + 1.0E 150 AZI
58	(1.2+0.2Sds) + 1.0E 180 AZI
59	(1.2+0.2Sds) + 1.0E 210 AZI
60	(1.2+0.2Sds) + 1.0E 225 AZI
61	(1.2+0.2Sds) + 1.0E 240 AZI
62	(1.2+0.2Sds) + 1.0E 270 AZI
63	(1.2+0.2Sds) + 1.0E 300 AZI
64	(1.2+0.2Sds) + 1.0E 315 AZI
65	(1.2+0.2Sds) + 1.0E 330 AZI
66	(0.9-0.2Sds) + 1.0E 0 AZI
67	(0.9-0.2Sds) + 1.0E 30 AZI
68	(0.9-0.2Sds) + 1.0E 45 AZI
69	(0.9-0.2Sds) + 1.0E 60 AZI
70	(0.9-0.2Sds) + 1.0E 90 AZI
71	(0.9-0.2Sds) + 1.0E 120 AZI
72	(0.9-0.2Sds) + 1.0E 135 AZI
73	(0.9-0.2Sds) + 1.0E 150 AZI
74	(0.9-0.2Sds) + 1.0E 180 AZI
75	(0.9-0.2Sds) + 1.0E 210 AZI
76	(0.9-0.2Sds) + 1.0E 225 AZI
77	(0.9-0.2Sds) + 1.0E 240 AZI
78	(0.9-0.2Sds) + 1.0E 270 AZI
79	(0.9-0.2Sds) + 1.0E 300 AZI
80	(0.9-0.2Sds) + 1.0E 315 AZI
81	(0.9-0.2Sds) + 1.0E 330 AZI
82-88	1.2D + 1.5 Lv1

#	Description
89	1.2D + 1.5Lm + 1.0Wm 0 AZI - MP1
90	1.2D + 1.5Lm + 1.0Wm 30 AZI - MP1
91	1.2D + 1.5Lm + 1.0Wm 45 AZI - MP1
92	1.2D + 1.5Lm + 1.0Wm 60 AZI - MP1
93	1.2D + 1.5Lm + 1.0Wm 90 AZI - MP1
94	1.2D + 1.5Lm + 1.0Wm 120 AZI - MP1
95	1.2D + 1.5Lm + 1.0Wm 135 AZI - MP1
96	1.2D + 1.5Lm + 1.0Wm 150 AZI - MP1
97	1.2D + 1.5Lm + 1.0Wm 180 AZI - MP1
98	1.2D + 1.5Lm + 1.0Wm 210 AZI - MP1
99	1.2D + 1.5Lm + 1.0Wm 225 AZI - MP1
100	1.2D + 1.5Lm + 1.0Wm 240 AZI - MP1
101	1.2D + 1.5Lm + 1.0Wm 270 AZI - MP1
102	1.2D + 1.5Lm + 1.0Wm 300 AZI - MP1
103	1.2D + 1.5Lm + 1.0Wm 315 AZI - MP1
104	1.2D + 1.5Lm + 1.0Wm 330 AZI - MP1
105	1.2D + 1.5Lm + 1.0Wm 0 AZI - MP2
106	1.2D + 1.5Lm + 1.0Wm 30 AZI - MP2
107	1.2D + 1.5Lm + 1.0Wm 45 AZI - MP2
108	1.2D + 1.5Lm + 1.0Wm 60 AZI - MP2
109	1.2D + 1.5Lm + 1.0Wm 90 AZI - MP2
110	1.2D + 1.5Lm + 1.0Wm 120 AZI - MP2
111	1.2D + 1.5Lm + 1.0Wm 135 AZI - MP2
112	1.2D + 1.5Lm + 1.0Wm 150 AZI - MP2
113	1.2D + 1.5Lm + 1.0Wm 180 AZI - MP2
114	1.2D + 1.5Lm + 1.0Wm 210 AZI - MP2
115	1.2D + 1.5Lm + 1.0Wm 225 AZI - MP2
116	1.2D + 1.5Lm + 1.0Wm 240 AZI - MP2
117	1.2D + 1.5Lm + 1.0Wm 270 AZI - MP2
118	1.2D + 1.5Lm + 1.0Wm 300 AZI - MP2
119	1.2D + 1.5Lm + 1.0Wm 315 AZI - MP2
120	1.2D + 1.5Lm + 1.0Wm 330 AZI - MP2

#	Description
121	1.2D + 1.5Lm + 1.0Wm 0 AZI - MP3
122	1.2D + 1.5Lm + 1.0Wm 30 AZI - MP3
123	1.2D + 1.5Lm + 1.0Wm 45 AZI - MP3
124	1.2D + 1.5Lm + 1.0Wm 60 AZI - MP3
125	1.2D + 1.5Lm + 1.0Wm 90 AZI - MP3
126	1.2D + 1.5Lm + 1.0Wm 120 AZI - MP3
127	1.2D + 1.5Lm + 1.0Wm 135 AZI - MP3
128	1.2D + 1.5Lm + 1.0Wm 150 AZI - MP3
129	1.2D + 1.5Lm + 1.0Wm 180 AZI - MP3
130	1.2D + 1.5Lm + 1.0Wm 210 AZI - MP3
131	1.2D + 1.5Lm + 1.0Wm 225 AZI - MP3
132	1.2D + 1.5Lm + 1.0Wm 240 AZI - MP3
133	1.2D + 1.5Lm + 1.0Wm 270 AZI - MP3
134	1.2D + 1.5Lm + 1.0Wm 300 AZI - MP3
135	1.2D + 1.5Lm + 1.0Wm 315 AZI - MP3
136	1.2D + 1.5Lm + 1.0Wm 330 AZI - MP3
137	1.2D + 1.5Lm + 1.0Wm 0 AZI - MP4
138	1.2D + 1.5Lm + 1.0Wm 30 AZI - MP4
139	1.2D + 1.5Lm + 1.0Wm 45 AZI - MP4
140	1.2D + 1.5Lm + 1.0Wm 60 AZI - MP4
141	1.2D + 1.5Lm + 1.0Wm 90 AZI - MP4
142	1.2D + 1.5Lm + 1.0Wm 120 AZI - MP4
143	1.2D + 1.5Lm + 1.0Wm 135 AZI - MP4
144	1.2D + 1.5Lm + 1.0Wm 150 AZI - MP4
145	1.2D + 1.5Lm + 1.0Wm 180 AZI - MP4
146	1.2D + 1.5Lm + 1.0Wm 210 AZI - MP4
147	1.2D + 1.5Lm + 1.0Wm 225 AZI - MP4
148	1.2D + 1.5Lm + 1.0Wm 240 AZI - MP4
149	1.2D + 1.5Lm + 1.0Wm 270 AZI - MP4
150	1.2D + 1.5Lm + 1.0Wm 300 AZI - MP4
151	1.2D + 1.5Lm + 1.0Wm 315 AZI - MP4
152	1.2D + 1.5Lm + 1.0Wm 330 AZI - MP4

*This page shows an example of maintenance loads for (4) pipes, the number of mount pipe LCs may vary per site

EQUIPMENT LOADING

[illegible]

EQUIPMENT LOADING [CONT.]

[illegible]

EQUIPMENT WIND CALCULATIONS

[illegible]

EQUIPMENT LATERAL WIND FORCE CALCULATIONS

[illegible]

EQUIPMENT LATERAL WIND FORCE CALCULATIONS [CONT.]

[illegible]

EQUIPMENT SEISMIC FORCE CALCULATIONS

[illegible]

APPENDIX C
SOFTWARE ANALYSIS OUTPUT

(Global) Model Settings

Display Sections for Member Calcs	5
Max Internal Sections for Member Calcs	97
Include Shear Deformation?	Yes
Increase Nailing Capacity for Wind?	Yes
Include Warping?	Yes
Trans Load Btwn Intersecting Wood Wall?	Yes
Area Load Mesh (in^2)	144
Merge Tolerance (in)	.12
P-Delta Analysis Tolerance	0.50%
Include P-Delta for Walls?	Yes
Automatically Iterate Stiffness for Walls?	Yes
Max Iterations for Wall Stiffness	3
Gravity Acceleration (in/sec^2)	386.4
Wall Mesh Size (in)	24
Eigensolution Convergence Tol. (1.E-)	4
Vertical Axis	Z
Global Member Orientation Plane	XY
Static Solver	Sparse Accelerated
Dynamic Solver	Accelerated Solver

Hot Rolled Steel Code	AISC 15th(360-16): LRFD
Adjust Stiffness?	Yes(Iterative)
RISAC Connection Code	AISC 15th(360-16): LRFD
Cold Formed Steel Code	AISI S100-12: LRFD
Wood Code	None
Wood Temperature	< 100F
Concrete Code	None
Masonry Code	None
Aluminum Code	None - Building
Stainless Steel Code	AISC 14th(360-10): LRFD
Adjust Stiffness?	Yes(Iterative)

Number of Shear Regions	4
Region Spacing Increment (in)	4
Biaxial Column Method	Exact Integration
Parma Beta Factor (PCA)	.65
Concrete Stress Block	Rectangular
Use Cracked Sections?	Yes
Use Cracked Sections Slab?	Yes
Bad Framing Warnings?	No
Unused Force Warnings?	Yes
Min 1 Bar Diam. Spacing?	No
Concrete Rebar Set	REBAR_SET_ASTMA615
Min % Steel for Column	1
Max % Steel for Column	8

(Global) Model Settings, Continued

Seismic Code	ASCE 7-10
Seismic Base Elevation (in)	Not Entered
Add Base Weight?	Yes
Ct X	.02
Ct Z	.02
T X (sec)	Not Entered
T Z (sec)	Not Entered
R X	3
R Z	3
Ct Exp. X	.75
Ct Exp. Z	.75
SD1	1
SDS	1
S1	1
TL (sec)	5
Risk Cat	I or II
Drift Cat	Other
Om Z	1
Om X	1
Cd Z	1
Cd X	1
Rho Z	1
Rho X	1

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (/...)	Density[k/ft^3]	Yield[psi]	Ry	Fu[psi]	Rt
1	A992	29000	11154	.3	.65	.49	50000	1.1	65000	1.1
2	A36 Gr.36	29000	11154	.3	.65	.49	36000	1.5	58000	1.2
3	A572 Gr.50	29000	11154	.3	.65	.49	50000	1.1	65000	1.1
4	A500 Gr.B RND	29000	11154	.3	.65	.527	42000	1.4	58000	1.3
5	A500 Gr.B Rect	29000	11154	.3	.65	.527	46000	1.4	58000	1.3
6	A53 Gr.B	29000	11154	.3	.65	.49	35000	1.6	60000	1.2
7	A1085	29000	11154	.3	.65	.49	50000	1.4	65000	1.3

Cold Formed Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (/1E5 F)	Density[k/ft^3]	Yield[psi]	Fu[psi]
1	A653 SS Gr33	29500	11346	.3	.65	.49	33000	45000
2	A653 SS Gr50/1	29500	11346	.3	.65	.49	50000	65000

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design ...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Plates	6.5"x0.37" Plate	Beam	RECT	A53 Gr.B	Typical	2.405	.027	8.468	.106
2	Grating Bracing	L2x2x3	Beam	Single Angle	A36 Gr.36	Typical	.722	.271	.271	.009
3	Standoffs	PIPE 3.5	Beam	Pipe	A53 Gr.B	Typical	2.5	4.52	4.52	9.04
4	Standoff Bracing	C3X5	Beam	Channel	A36 Gr.36	Typical	1.47	.241	1.85	.043
5	Handrails	PIPE 2.0	Beam	Pipe	A53 Gr.B	Typical	1.02	.627	.627	1.25
6	Handrail Corners	L6.6"x4.46"x0.25"	Beam	Single Angle	A36 Gr.36	Typical	2.703	4.759	12.473	.055
7	Horizontals	PIPE 3.5	Beam	Pipe	A53 Gr.B	Typical	2.5	4.52	4.52	9.04

Hot Rolled Steel Section Sets (Continued)

	Label	Shape	Type	Design List	Material	Design ...	A [in ²]	I _{yy} [in ⁴]	I _{zz} [in ⁴]	J [in ⁴]
8	Mount Pipes	PIPE 2.0	Beam	Pipe	A53 Gr.B	Typical	1.02	.627	.627	1.25

Cold Formed Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rules	A [in ²]	I _{yy} [in ⁴]	I _{zz} [in ⁴]	J [in ⁴]
1	CF1A	8CU1.25X057	Beam	None	A653 SS Gr...	Typical	.581	.057	4.41	.00063

Joint Boundary Conditions

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
1	N25	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
2	N1	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
3	N13	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed Area(Me...	Surface(...
1	Self Weight	DL			-1		13	3	
2	Structure Wind X	WLX					33		
3	Structure Wind Y	WLY					33		
4	Wind Load 0 AZI	WLX					13		
5	Wind Load 30 AZI	None					26		
6	Wind Load 45 AZI	None					26		
7	Wind Load 60 AZI	None					26		
8	Wind Load 90 AZI	WLY					13		
9	Wind Load 120 AZI	None					26		
10	Wind Load 135 AZI	None					26		
11	Wind Load 150 AZI	None					26		
12	Ice Weight	OL1					13	33	3
13	Structure Ice Wind X	OL2					33		
14	Structure Ice Wind Y	OL3					33		
15	Ice Wind Load 0 AZI	OL2					13		
16	Ice Wind Load 30 AZI	None					26		
17	Ice Wind Load 45 AZI	None					26		
18	Ice Wind Load 60 AZI	None					26		
19	Ice Wind Load 90 AZI	OL3					13		
20	Ice Wind Load 120 AZI	None					26		
21	Ice Wind Load 135 AZI	None					26		
22	Ice Wind Load 150 AZI	None					26		
23	Seismic Load X	ELX	-.123				13		
24	Seismic Load Y	ELY		-.123			13		
25	Live Load 1 (Lv)	LL				1			
26	Live Load 2 (Lv)	LL				1			
27	Live Load 3 (Lv)	LL				1			
28	Live Load 4 (Lv)	LL				1			
29	Live Load 5 (Lv)	LL				1			
30	Live Load 6 (Lv)	LL				1			
31	Maintenance Load 1 (Lm)	None				1			
32	Maintenance Load 2 (Lm)	None				1			
33	Maintenance Load 3 (Lm)	None				1			

Basic Load Cases (Continued)

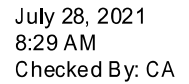
BLC Description		Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed Area(Me... Surface(...
34	Maintenance Load 4 (Lm)	None				1		
35	Maintenance Load 5 (Lm)	None				1		
36	Maintenance Load 6 (Lm)	None				1		
37	Maintenance Load 7 (Lm)	None				1		
38	Maintenance Load 8 (Lm)	None				1		
39	Maintenance Load 9 (Lm)	None				1		
40	BLC 1 Transient Area Loads	None						9
41	BLC 12 Transient Area Loads	None						9

Load Combinations

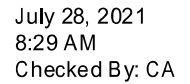
	Des cription	S ... P...	S ... B...	FactorB...	Fac...B...	Fac...BLC	Fac..B...	Fac..B...	Fac..B...	Fac..B...	Fac..B...	Fac..B...	Fac...
1	1.4DL	Yes Y		DL 1.4									
2	1.2DL + 1WL 0 AZI	Yes Y		DL 1.2	2 1 3		4 1						
3	1.2DL + 1WL 30 AZI	Yes Y		DL 1.2	2 .866	3 .5	5 1						
4	1.2DL + 1WL 45 AZI	Yes Y		DL 1.2	2 .707	3 .707	6 1						
5	1.2DL + 1WL 60 AZI	Yes Y		DL 1.2	2 .5	3 .866	7 1						
6	1.2DL + 1WL 90 AZI	Yes Y		DL 1.2	2	3 1	8 1						
7	1.2DL + 1WL 120 AZI	Yes Y		DL 1.2	2 -.5	3 .866	9 1						
8	1.2DL + 1WL 135 AZI	Yes Y		DL 1.2	2 -.707	3 .707	10 1						
9	1.2DL + 1WL 150 AZI	Yes Y		DL 1.2	2 -.866	3 .5	11 1						
10	1.2DL + 1WL 180 AZI	Yes Y		DL 1.2	2 -1	3 4	-1						
11	1.2DL + 1WL 210 AZI	Yes Y		DL 1.2	2 -.866	3 -.5	5 -1						
12	1.2DL + 1WL 225 AZI	Yes Y		DL 1.2	2 -.707	3 -.707	6 -1						
13	1.2DL + 1WL 240 AZI	Yes Y		DL 1.2	2 -.5	3 -.866	7 -1						
14	1.2DL + 1WL 270 AZI	Yes Y		DL 1.2	2	3 -1	8 -1						
15	1.2DL + 1WL 300 AZI	Yes Y		DL 1.2	2 .5	3 -.866	9 -1						
16	1.2DL + 1WL 315 AZI	Yes Y		DL 1.2	2 .707	3 -.707	10 -1						
17	1.2DL + 1WL 330 AZI	Yes Y		DL 1.2	2 .866	3 -.5	11 -1						
18	0.9DL + 1WL 0 AZI	Yes Y		DL .9	2 1 3		4 1						
19	0.9DL + 1WL 30 AZI	Yes Y		DL .9	2 .866	3 .5	5 1						
20	0.9DL + 1WL 45 AZI	Yes Y		DL .9	2 .707	3 .707	6 1						
21	0.9DL + 1WL 60 AZI	Yes Y		DL .9	2 .5	3 .866	7 1						
22	0.9DL + 1WL 90 AZI	Yes Y		DL .9	2	3 1	8 1						
23	0.9DL + 1WL 120 AZI	Yes Y		DL .9	2 -.5	3 .866	9 1						
24	0.9DL + 1WL 135 AZI	Yes Y		DL .9	2 -.707	3 .707	10 1						
25	0.9DL + 1WL 150 AZI	Yes Y		DL .9	2 -.866	3 .5	11 1						
26	0.9DL + 1WL 180 AZI	Yes Y		DL .9	2 -1	3 4	-1						
27	0.9DL + 1WL 210 AZI	Yes Y		DL .9	2 -.866	3 -.5	5 -1						
28	0.9DL + 1WL 225 AZI	Yes Y		DL .9	2 -.707	3 -.707	6 -1						
29	0.9DL + 1WL 240 AZI	Yes Y		DL .9	2 -.5	3 -.866	7 -1						
30	0.9DL + 1WL 270 AZI	Yes Y		DL .9	2	3 -1	8 -1						
31	0.9DL + 1WL 300 AZI	Yes Y		DL .9	2 .5	3 -.866	9 -1						
32	0.9DL + 1WL 315 AZI	Yes Y		DL .9	2 .707	3 -.707	10 -1						
33	0.9DL + 1WL 330 AZI	Yes Y		DL .9	2 .866	3 -.5	11 -1						
34	1.2DL + 1DLi + 1WLi 0 A...	Yes Y		DL 1.2	O... 1 13	1 14	15 1						
35	1.2DL + 1DLi + 1WLi 30 ...	Yes Y		DL 1.2	O... 1 13	.866 14	.5 16 1						
36	1.2DL + 1DLi + 1WLi 45 ...	Yes Y		DL 1.2	O... 1 13	.707 14	.707 17 1						
37	1.2DL + 1DLi + 1WLi 60 ...	Yes Y		DL 1.2	O... 1 13	.5 14	.866 18 1						
38	1.2DL + 1DLi + 1WLi 90 ...	Yes Y		DL 1.2	O... 1 13		14 1 19 1						
39	1.2DL + 1DLi + 1WLi 12...	Yes Y		DL 1.2	O... 1 13	-.5 14	.866 20 1						

Load Combinations (Continued)

	Description	S...	P...	S...	B...	Factor	B...	Fac...	B...	Fac...	BLC	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...
40	1.2DL + 1DLi + 1WLi 13...	Yes	Y		DL	1.2	O...	1	13	-.707	14	.707	21	1						
41	1.2DL + 1DLi + 1WLi 15...	Yes	Y		DL	1.2	O...	1	13	-.866	14	.5	22	1						
42	1.2DL + 1DLi + 1WLi 18...	Yes	Y		DL	1.2	O...	1	13	-.1	14		15	-.1						
43	1.2DL + 1DLi + 1WLi 21...	Yes	Y		DL	1.2	O...	1	13	-.866	14	-.5	16	-.1						
44	1.2DL + 1DLi + 1WLi 22...	Yes	Y		DL	1.2	O...	1	13	-.707	14	-.707	17	-.1						
45	1.2DL + 1DLi + 1WLi 24...	Yes	Y		DL	1.2	O...	1	13	-.5	14	-.866	18	-.1						
46	1.2DL + 1DLi + 1WLi 27...	Yes	Y		DL	1.2	O...	1	13		14	-.1	19	-.1						
47	1.2DL + 1DLi + 1WLi 30...	Yes	Y		DL	1.2	O...	1	13	.5	14	-.866	20	-.1						
48	1.2DL + 1DLi + 1WLi 31...	Yes	Y		DL	1.2	O...	1	13	.707	14	-.707	21	-.1						
49	1.2DL + 1DLi + 1WLi 33...	Yes	Y		DL	1.2	O...	1	13	.866	14	-.5	22	-.1						
50	(1.2+0.2Sds) + 1.0E 0 AZ	Yes	Y		DL	1.239	E...	1	E...											
51	(1.2+0.2Sds) + 1.0E 30 ...	Yes	Y		DL	1.239	E...	.866	E...	.5										
52	(1.2+0.2Sds) + 1.0E 45 ...	Yes	Y		DL	1.239	E...	.707	E...	.707										
53	(1.2+0.2Sds) + 1.0E 60 ...	Yes	Y		DL	1.239	E...	.5	E...	.866										
54	(1.2+0.2Sds) + 1.0E 90 ...	Yes	Y		DL	1.239	E...		E...	1										
55	(1.2+0.2Sds) + 1.0E 120...	Yes	Y		DL	1.239	E...	-.5	E...	.866										
56	(1.2+0.2Sds) + 1.0E 135...	Yes	Y		DL	1.239	E...	-.707	E...	.707										
57	(1.2+0.2Sds) + 1.0E 150...	Yes	Y		DL	1.239	E...	-.866	E...	.5										
58	(1.2+0.2Sds) + 1.0E 180...	Yes	Y		DL	1.239	E...	-.1	E...											
59	(1.2+0.2Sds) + 1.0E 210...	Yes	Y		DL	1.239	E...	-.866	E...	-.5										
60	(1.2+0.2Sds) + 1.0E 225...	Yes	Y		DL	1.239	E...	-.707	E...	-.707										
61	(1.2+0.2Sds) + 1.0E 240...	Yes	Y		DL	1.239	E...	-.5	E...	-.866										
62	(1.2+0.2Sds) + 1.0E 270...	Yes	Y		DL	1.239	E...		E...	-.1										
63	(1.2+0.2Sds) + 1.0E 300...	Yes	Y		DL	1.239	E...	.5	E...	-.866										
64	(1.2+0.2Sds) + 1.0E 315...	Yes	Y		DL	1.239	E...	.707	E...	-.707										
65	(1.2+0.2Sds) + 1.0E 330...	Yes	Y		DL	1.239	E...	.866	E...	-.5										
66	(0.9-0.2Sds) + 1.0E 0 AZ	Yes	Y		DL	.861	E...	1	E...											
67	(0.9-0.2Sds) + 1.0E 30 A...	Yes	Y		DL	.861	E...	.866	E...	.5										
68	(0.9-0.2Sds) + 1.0E 45 A...	Yes	Y		DL	.861	E...	.707	E...	.707										
69	(0.9-0.2Sds) + 1.0E 60 A...	Yes	Y		DL	.861	E...	.5	E...	.866										
70	(0.9-0.2Sds) + 1.0E 90 A...	Yes	Y		DL	.861	E...		E...	1										
71	(0.9-0.2Sds) + 1.0E 120 ...	Yes	Y		DL	.861	E...	-.5	E...	.866										
72	(0.9-0.2Sds) + 1.0E 135 ...	Yes	Y		DL	.861	E...	-.707	E...	.707										
73	(0.9-0.2Sds) + 1.0E 150 ...	Yes	Y		DL	.861	E...	-.866	E...	.5										
74	(0.9-0.2Sds) + 1.0E 180 ...	Yes	Y		DL	.861	E...	-.1	E...											
75	(0.9-0.2Sds) + 1.0E 210 ...	Yes	Y		DL	.861	E...	-.866	E...	-.5										
76	(0.9-0.2Sds) + 1.0E 225 ...	Yes	Y		DL	.861	E...	-.707	E...	-.707										
77	(0.9-0.2Sds) + 1.0E 240 ...	Yes	Y		DL	.861	E...	-.5	E...	-.866										
78	(0.9-0.2Sds) + 1.0E 270 ...	Yes	Y		DL	.861	E...		E...	-.1										
79	(0.9-0.2Sds) + 1.0E 300 ...	Yes	Y		DL	.861	E...	.5	E...	-.866										
80	(0.9-0.2Sds) + 1.0E 315 ...	Yes	Y		DL	.861	E...	.707	E...	-.707										
81	(0.9-0.2Sds) + 1.0E 330 ...	Yes	Y		DL	.861	E...	.866	E...	-.5										
82	1.2D + 1.5 Lv1	Yes	Y		DL	1.2	25	1.5												
83	1.2D + 1.5 Lv2	Yes	Y		DL	1.2	26	1.5												
84	1.2D + 1.5 Lv3	Yes	Y		DL	1.2	27	1.5												
85	1.2D + 1.5 Lv4	Yes	Y		DL	1.2	28	1.5												
86	1.2D + 1.5 Lv5	Yes	Y		DL	1.2	29	1.5												
87	1.2D + 1.5 Lv6	Yes	Y		DL	1.2	30	1.5												
88	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	31	1.5	4	.058	2	.058	3							
89	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	31	1.5	5	.058	2	.05	3	.029						
90	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	31	1.5	6	.058	2	.041	3	.041						
91	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	31	1.5	7	.058	2	.029	3	.05						



Page 8



Page 9

Load Combinations (Continued)

	Description	S...	P...	S...	B...	Factor	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...
196	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	37	1.5	8	.058	2		3	-.058						
197	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	37	1.5	9	.058	2	.029	3	-.05						
198	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	37	1.5	10	.058	2	.041	3	-.041						
199	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	37	1.5	11	.058	2	.05	3	-.029						
200	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	38	1.5	4	.058	2	.058	3							
201	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	38	1.5	5	.058	2	.05	3	.029						
202	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	38	1.5	6	.058	2	.041	3	.041						
203	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	38	1.5	7	.058	2	.029	3	.05						
204	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	38	1.5	8	.058	2		3	.058						
205	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	38	1.5	9	.058	2	-.029	3	.05						
206	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	38	1.5	10	.058	2	-.041	3	.041						
207	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	38	1.5	11	.058	2	-.05	3	.029						
208	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	38	1.5	4	.058	2	-.058	3							
209	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	38	1.5	5	.058	2	-.05	3	-.029						
210	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	38	1.5	6	.058	2	-.041	3	-.041						
211	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	38	1.5	7	.058	2	-.029	3	-.05						
212	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	38	1.5	8	.058	2		3	-.058						
213	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	38	1.5	9	.058	2	.029	3	-.05						
214	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	38	1.5	10	.058	2	.041	3	-.041						
215	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	38	1.5	11	.058	2	.05	3	-.029						
216	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	39	1.5	4	.058	2	.058	3							
217	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	39	1.5	5	.058	2	.05	3	.029						
218	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	39	1.5	6	.058	2	.041	3	.041						
219	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	39	1.5	7	.058	2	.029	3	.05						
220	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	39	1.5	8	.058	2		3	.058						
221	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	39	1.5	9	.058	2	-.029	3	.05						
222	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	39	1.5	10	.058	2	-.041	3	.041						
223	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	39	1.5	11	.058	2	-.05	3	.029						
224	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	39	1.5	4	.058	2	-.058	3							
225	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	39	1.5	5	.058	2	-.05	3	-.029						
226	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	39	1.5	6	.058	2	-.041	3	-.041						
227	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	39	1.5	7	.058	2	-.029	3	-.05						
228	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	39	1.5	8	.058	2		3	-.058						
229	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	39	1.5	9	.058	2	.029	3	-.05						
230	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	39	1.5	10	.058	2	.041	3	-.041						
231	1.2D + 1.5Lm + 1.0Wm ...	Yes	Y		DL	1.2	39	1.5	11	.058	2	.05	3	-.029						

Envelope Joint Reactions

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
1	N25	max	1356.024	3	906.361	5	2076.729	39	111.7	30	-86.364	33	1581.183	4
2		min	-1348.9	27	-906.945	29	147.022	31	-3295.539	38	-2827.472	41	-1569.552	28
3	N1	max	1379.918	17	911.105	23	2127.764	45	3402.864	46	-86.111	19	1590.468	24
4		min	-1372.317	25	-910.054	15	155.887	21	-88.169	22	-2920.974	43	-1602.934	16
5	N13	max	327.187	18	1145.027	22	1321.005	34	655.355	192	2585.805	34	1077.174	14
6		min	-341.43	10	-1145.495	14	-128.697	26	-680.566	172	-538.651	26	-1076.633	22
7	Totals:	max	2619.884	2	2634.159	6	5312.444	41						
8		min	-2619.878	26	-2634.157	30	1366.263	81						

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

	Member	Shape	Code Check	Loc[in]	LC	Shea	Loc		L	phi*P	n	phi*P	n	phi*M	...	phi*M		Eqn
1	M2	PIPE 3.5	.552	40	45	.213	40		42	64491...	78750	7953.75	7953.75	2...	H1-1b			
2	M12	PIPE 3.5	.535	40	39	.211	40		1..	64491...	78750	7953.75	7953.75	2...	H1-1b			
3	M1	C3X5	.474	34.856	46	.149	6.5...	y	34	32858...	47628	981.263	4104	1..	H1-1b			
4	M11	C3X5	.469	34.856	38	.148	63....	y	34	32858...	47628	981.263	4104	1..	H1-1b			
5	MP1	PIPE 2.0	.366	51	15	.048	51		11	20866...	32130	1871....	1871....	2...	H1-1b			
6	MP3	PIPE 2.0	.365	51	6	.051	51		9	20866...	32130	1871....	1871....	1	H1-1b			
7	MP2	PIPE 2.0	.332	51	6	.045	51		6	20866...	32130	1871....	1871....	1	H1-1b			
8	M7	PIPE 3.5	.325	40	34	.138	40		1..	64491...	78750	7953.75	7953.75	2...	H1-1b			
9	MP9	PIPE 2.0	.268	51	10	.029	51		9	20866...	32130	1871....	1871....	1..	H1-1b			
10	M6	C3X5	.260	34.856	34	.102	6.5...	y	39	32858...	47628	981.263	4104	1..	H1-1b			
11	MP4	PIPE 2.0	.257	51	10	.029	51		11	20866...	32130	1871....	1871....	1	H1-1b			
12	M5	6.5"x0.37" Plate	.250	21	13	.105	21	y	43	27548...	75757.5	583.963	6554....	1..	H1-1b			
13	M15	6.5"x0.37" Plate	.247	21	7	.101	21	y	41	27548...	75757.5	583.963	6527....	1..	H1-1b			
14	MP8	PIPE 2.0	.245	51	10	.045	51		9	20866...	32130	1871....	1871....	1..	H1-1b			
15	MP7	PIPE 2.0	.238	51	11	.038	51		8	20866...	32130	1871....	1871....	2...	H1-1b			
16	MP5	PIPE 2.0	.235	51	10	.044	51		11	20866...	32130	1871....	1871....	1	H1-1b			
17	MP6	PIPE 2.0	.232	51	8	.036	51		12	20866...	32130	1871....	1871....	1	H1-1b			
18	M10	6.5"x0.37" Plate	.174	21	2	.061	21	y	37	27548...	75757.5	583.963	6207....	1..	H1-1b			
19	M3	L2x2x3	.144	0	5	.031	0	z	49	18084.2	23392.8	557.717	1182....	1	H2-1			
20	M14	L2x2x3	.140	0	23	.031	0	y	35	18084.2	23392.8	557.717	1182....	1	H2-1			
21	H1	PIPE 3.5	.129	48	106	.091	24		10	60666...	78750	7953.75	7953.75	1	H1-1b			
22	M4	L2x2x3	.126	0	13	.030	0	y	41	18084.2	23392.8	557.717	1182....	1	H2-1			
23	M13	L2x2x3	.125	0	7	.030	0	z	43	18084.2	23392.8	557.717	1239.29	2...	H2-1			
24	M20	PIPE 2.0	.121	24	15	.100	72		8	14916...	32130	1871....	1871....	1..	H1-1b			
25	M21	PIPE 2.0	.119	72	5	.100	24		12	14916...	32130	1871....	1871....	1..	H1-1b			
26	M8	L2x2x3	.107	0	10	.022	0	z	38	18084.2	23392.8	557.717	1182....	1	H2-1			
27	M9	L2x2x3	.106	0	10	.022	0	y	46	18084.2	23392.8	557.717	1239.29	2...	H2-1			
28	M19	PIPE 2.0	.105	72	10	.102	92		2	14916...	32130	1871....	1871....	1..	H1-1b			
29	H3	PIPE 3.5	.097	48	207	.081	24		15	60666...	78750	7953.75	7953.75	1	H1-1b			
30	H2	PIPE 3.5	.096	48	159	.080	72		5	60666...	78750	7953.75	7953.75	1	H1-1b			
31	M23	L6.6"x4.46"x0...	.058	42	32	.033	42	y	17	51170...	87561	2464....	7125....	1	H2-1			
32	M22	L6.6"x4.46"x0...	.053	0	20	.032	0	y	3	51170...	87561	2464....	7125....	1	H2-1			
33	M24	L6.6"x4.46"x0...	.036	20.125	18	.027	42	y	6	51170...	87561	2464....	7125....	1	H2-1			

Envelope AISI 100-12: LRFD Cold Formed Steel Code Checks

Member	Shape	Code Check	Loc[in]	LC	Shea...	Loc[i..Dir	LC	phi*Pn[...	phi*Tn[...	phi*Mn...	phi*Mn...	Cb	Cmyy	Cmzz	Eqn
No Data to Print ...															

APPENDIX D
ADDITIONAL CALCUATIONS

BOLT TOOL 1.5.2

Project Data	
Job Code:	189030
Carrier Site ID:	BOHVN00012A
Carrier Site Name:	CT-CCI-T-806939

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

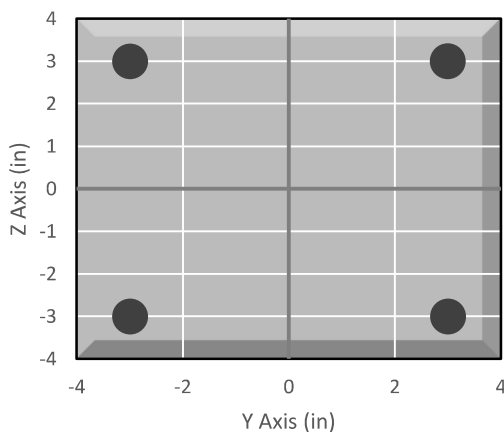
Bolt Properties		
Connection Type:	Bolt	
Diameter:	0.625	in
Grade:	A325	--
Yield Strength (Fy):	92	ksi
Ultimate Strength (Fu):	120	ksi
Number of Bolts:	4	--
Threads Included:	No	--
Double Shear:	No	--
Connection Pipe Size:	-	in

Connection Description
Standoff to Monopole

Bolt Check*		
Tensile Capacity (ϕT_n):	20340.1	lbs
Shear Capacity (ϕV_n):	17257.3	lbs
Tension Force (T_u):	4557.0	lbs
Shear Force (V_u):	338.2	lbs
Tension Usage:	21.3%	--
Shear Usage:	1.9%	--
Interaction:	21.3%	Pass
Controlling Member:	M2	--
Controlling LC:	47	--

*Rating per TIA-222-H Section 15.5

Bolt Layout

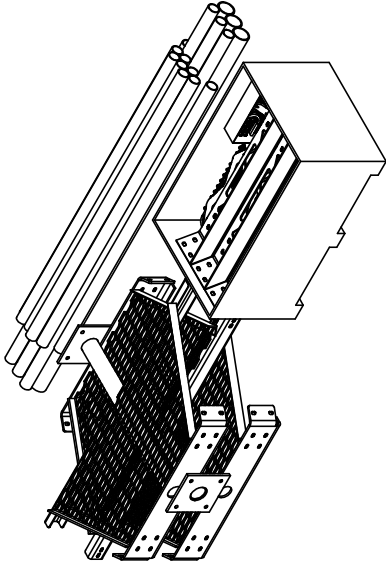


APPENDIX E
SUPPLEMENTAL DRAWINGS

ITEM	PART NO.	DESCRIPTION	QTY.	WEIGHT	NOTE NO.
1	MTC3006SB	STEEL BUNDLE FOR SNUB NOSE PLATFORM	1	402.64 LBS	
2	MCPK8CSB	PIPE STEEL BUNDLE FOR MC-PK8-C	1	464.27 LBS	
3	MCPK8CHWK	HARDWARE KIT FOR MC-PK8-C	1	543.22 LBS	



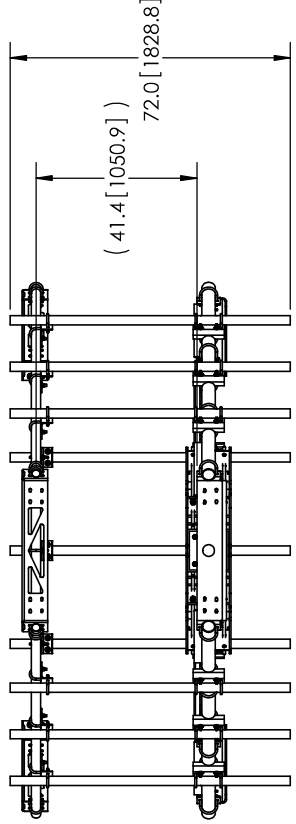
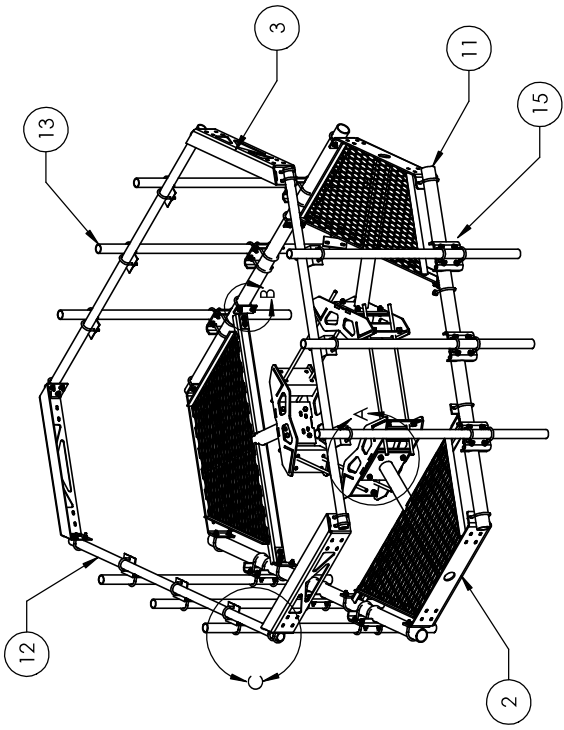
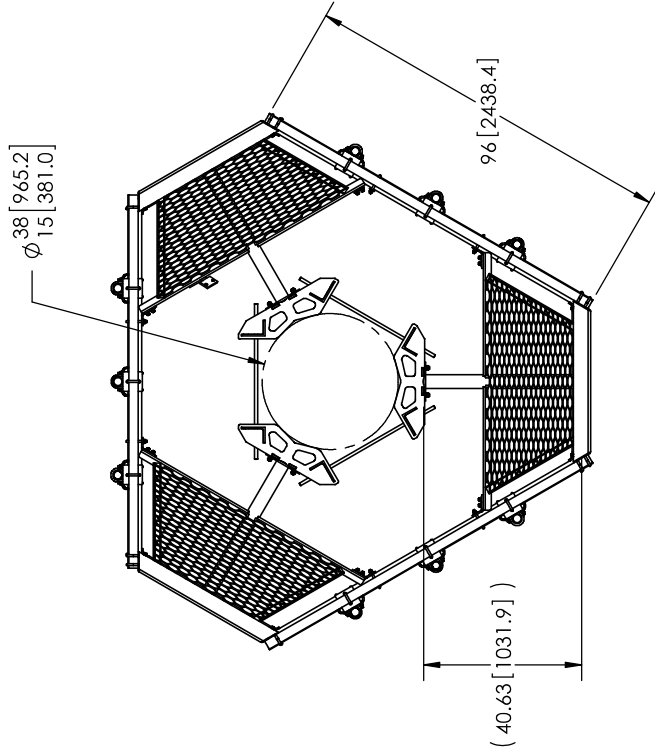
FOR BOM ENTRY ONLY



REV.	ECN	DESCRIPTION	BY	DATE
A		INITIAL RELEASE	DRR	12/27/11
B	8000005979	CHANGE NOSE CORNER BRKT. ADD GUB-4240	MSM	11/25/14
C	8000007579	NEW RINGMOUNT WELDMENT DESIGN	RJC	04/07/15

- NOTES:
1. CUSTOMER ASSEMBLY SHEETS 2-3.

These drawings and specifications are the proprietary property of Andrew Corporation and may be used only for the specific application intended in writing by Andrew Corporation.		FORM NO. MSM	REV. 1 of 3	DATE 12/27/11	MC-PK8-C
ALL DIMENSIONS ARE IN INCHES U.S. TOLERANCES UNLESS OTHERWISE SPECIFIED: X = ± .12 XX = ± .06 XXX = ± .03 REMOVE BURRS AND BREAK EDGES .005		TYPE TP	NTS	FACE A36, A500	LOW PROFILE PLATFORM KIT 8' FACE
DO NOT SCALE THIS PRINT		DATE 10/18/11	REV. A36, A500	FACE A36, A500	ASSEMBLY DRAWING
		REGION C	FACE GALV. A123	FACE 1410.14 LBS	WESTCHESTER, IL. 60154 ANDREW ® U.S.A.



NOTES:
 1. ALL METRIC DIMENSIONS ARE IN BRACKETS.
 2. WILL FIT MONOPOLES 15"-38" OD.

ITEM	PART NO.	DESCRIPTION	QTY.	WEIGHT
1	MC-RM1550-3	12" - 50" OD RINGMOUNT	1	230.42 LBS
2	MTC300601	Low Profile Co-Location Platform Snub Nose	3	134.21 LBS
3	MT195801	Corner Weldment Snub Nose Handrail	3	27.10 LBS
4	XA2020.01	CROSS OVER ANGLE	9	2.65 LBS
5	GUB-4356	1/2" X 3-5/8" X 6" GALV U-BOLT	18	0.82 LBS
6	GUB-4355	1/2" X 3-5/8" X 5" GALV U-BOLT	12	0.71 LBS
7	GUB-4240	1/2" X 2-1/2" X 4" GALV U-BOLT	48	0.56 LBS
8	GB-04145	1/2" X 1-1/2" GALV BOLT KIT	12	0.13 LBS
9	GWF-04	1/2" GALV FLAT WASHER	24	0.03 LBS
10	GB-0520A	5/8" X 2" GALV BOLT KIT (A325)	12	0.27 LBS
11	MT54796	3.50" OD X 96" GALV PIPE	3	60.28 LBS
12	MT-651-96	Ø2.375" OD X 96" PIPE	3	29.07 LBS
13	MT-651	2.375" OD x 72" PIPE	9	21.80 LBS
14	MT19617	MT196 Pipe Mount Plate	6	2.49 LBS
15	MT21701	PIPE MOUNT PLATE	9	7.93 LBS

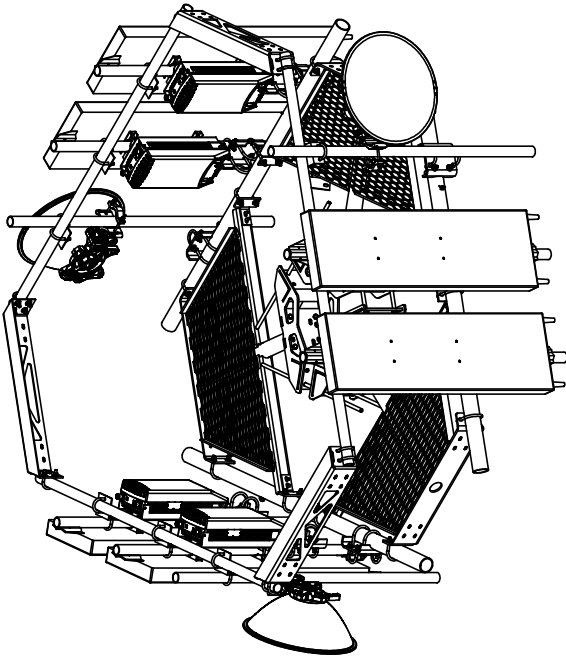
These drawings are the property of Andrew Corporation and may be used only for the specific application intended by Andrew Corporation.

ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED:
 X = ± .12
 ANGLES = ±Z
 XX = ± .06
 FRACTIONS = ±1/32
 XXX = ± .03
 REMOVE BURRS AND BREAK EDGES .05

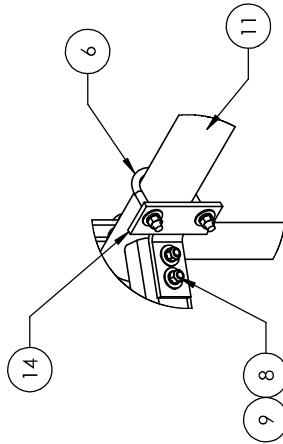
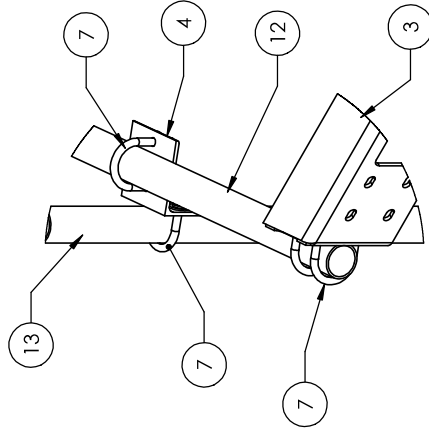
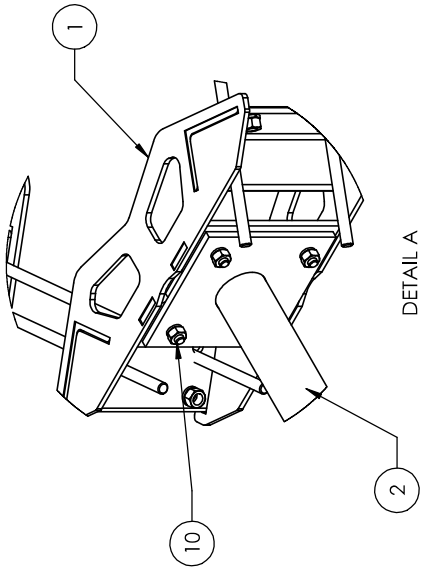
DO NOT SCALE THIS PRINT

SCALE	1" = 1'-0"
QUANTITY	2 of 3
REVISION	NTS
DATE	10/18/11
DESIGNER	A36, A53
CHECKED	GALV A123
APPROVED	C
TOTAL WEIGHT	1361.27 LBS

MC-PK8-C
 25" OD Snub Nose MT-196
 ASSEMBLY DRAWING
 WESTCHESTER, IL 60154
ANDREW® U.S.A.



WITH ANTENNAS



NOTES:
1. ALL METRIC DIMENSIONS ARE IN BRACKETS.

These drawings and specifications are the proprietary property of Andrew Corporation and may be used only for the specific application intended in writing by Andrew Corporation.		NAME: MSN	REV: 3 of 3	DATE: 10/18/11	MC-PK8-C
ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED: X = ± .12 XX = ± .06 XXX = ± .03 REMOVE BURRS AND BREAK EDGES .005		DESCRIPTION: TP	NTS	10/18/11	25" 00 Sub. Nose MT-196
ANGLES FRACTIONS ±1/32		REVISION: C	A36, A53	10/18/11	ASSEMBLY DRAWING
DO NOT SCALE THIS PRINT		WEIGHT: 1361.27 LBS	GALV. A123	WESTCHESTER, IL. 60154	ANDREW® U.S.A.

Exhibit F

Power Density/RF Emissions Report

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

Dish Wireless Existing Facility

Site ID: BOHVN00012A

806939

**800 Ogg Meadow Road
Orange, Connecticut 06477**

October 6, 2021

EBI Project Number: 6221005718

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	14.33%

October 6, 2021

Dish Wireless

Emissions Analysis for Site: BOHVN00012A - 806939

EBI Consulting was directed to analyze the proposed Dish Wireless facility located at **800 Ogg Meadow Road in Orange, 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 antenna facility located at 800 Ogg Meadow Road in Orange, 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) 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.
- 4) 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.



- 5) The antennas used in this modeling are the JMA MX08FRO665-20 for the 600 MHz / 1900 MHz channel(s) in Sector A, the JMA MX08FRO665-20 for the 600 MHz / 1900 MHz channel(s) in Sector B, the JMA MX08FRO665-20 for the 600 MHz / 1900 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.
- 6) The antenna mounting height centerline of the proposed antennas is 117 feet above ground level (AGL).
- 7) 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.
- 8) 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 #:	I	Antenna #:	I	Antenna #:	I
Make / Model:	JMA MX08FRO665-20	Make / Model:	JMA MX08FRO665-20	Make / Model:	JMA MX08FRO665-20
Frequency Bands:	600 MHz / 1900 MHz	Frequency Bands:	600 MHz / 1900 MHz	Frequency Bands:	600 MHz / 1900 MHz
Gain:	17.45 dBd / 22.65 dBd	Gain:	17.45 dBd / 22.65 dBd	Gain:	17.45 dBd / 22.65 dBd
Height (AGL):	117 feet	Height (AGL):	117 feet	Height (AGL):	117 feet
Channel Count:	8	Channel Count:	8	Channel Count:	8
Total TX Power (W):	280 Watts	Total TX Power (W):	280 Watts	Total TX Power (W):	280 Watts
ERP (W):	3,065.51	ERP (W):	3,065.51	ERP (W):	3,065.51
Antenna AI MPE %:	1.29%	Antenna BI MPE %:	1.29%	Antenna CI MPE %:	1.29%



EBI Consulting

environmental | engineering | due diligence

Site Composite MPE %	
Carrier	MPE %
Dish Wireless (Max at Sector A):	1.29%
AT&T	4.24%
Metro PCS	0.77%
Verizon	1.95%
Clearwire	0.17%
Sprint	2.96%
T-Mobile	2.66%
Metricom	0.06%
XM Sat Radio	0.23%
Site Total MPE % :	14.33%

Dish Wireless MPE % Per Sector	
Dish Wireless Sector A Total:	1.29%
Dish Wireless Sector B Total:	1.29%
Dish Wireless Sector C Total:	1.29%
Site Total MPE % :	14.33%

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	223.68	117.0	2.61	600 MHz n71	400	0.65%
Dish Wireless 1900 MHz n70	4	542.70	117.0	6.33	1900 MHz n70	1000	0.63%
						Total:	1.29%

• 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:	1.29%
Sector B:	1.29%
Sector C:	1.29%
Dish Wireless Maximum MPE % (Sector A):	1.29%
Site Total:	14.33%
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **14.33%** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

Exhibit G

Letter of Authorization



4545 E River Rd, Suite 320
West Henrietta, NY 14586

Phone: (585) 445-5896
Fax: (724) 416-4461
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:
800 OGG MEADOW ROAD, ORANGE, CT 06477

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

Crown Site ID/Name: 806939/NHV 2071 143137
Customer Site ID: BOHVN00012A/CT-CCI-T-806939
Site Address: 800 OGG MEADOW ROAD, ORANGE, CT 06477

Crown Castle

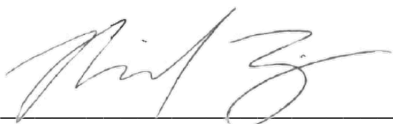
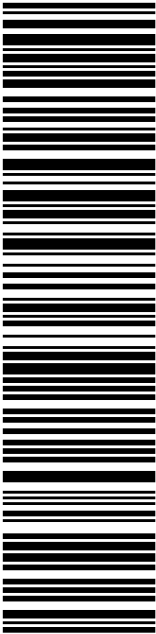
By:  Date: 10/11/2021
Richard Zajac
Site Acquisition Specialist

Exhibit H

Recipient Mailings

 UNITED STATES POSTAL SERVICE®		Click-N-Ship®	
P	usps.com US POSTAGE Flat Rate Env	9405 5036 9930 0030 6271 53 0087 0000 0031 4586	
	10/12/2021		
PRIORITY MAIL 2-DAY™		Expected Delivery Date: 10/15/21 Re#: DS-806939 0006	
DEBORAH CHASE NORTHEAST SITE SOLUTIONS 420 MAIN ST STE 1 STURBRIDGE MA 01566-1359			
SHIP TO: RICH ZAJAC CROWN CASTLE 4545 E RIVER RD STE 320 W HENRIETTA NY 14586-9024			
USPS TRACKING #			
			
9405 5036 9930 0030 6271 53			
Electronic Rate Approved #038555749			

— ✂ — Cut on dotted line.

Instructions

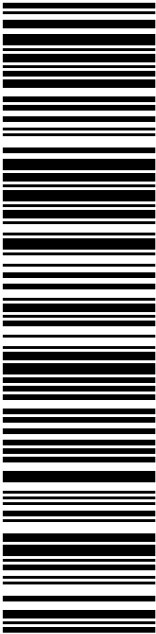
- Each Click-N-Ship® label is unique. Labels are to be used as printed and used only once. DO NOT PHOTO COPY OR ALTER LABEL.
- Place your label so it does not wrap around the edge of the package.
- Adhere your label to the package. A self-adhesive label is recommended. If tape or glue is used, DO NOT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

Click-N-Ship® Label Record

USPS TRACKING # : 9405 5036 9930 0030 6271 53	
Trans. #: 545790153 Print Date: 10/12/2021 Ship Date: 10/12/2021 Expected Delivery Date: 10/15/2021	Priority Mail® Postage: \$8.70 Total: \$8.70
From: DEBORAH CHASE NORTHEAST SITE SOLUTIONS 420 MAIN ST STE 1 STURBRIDGE MA 01566-1359	
To: RICH ZAJAC CROWN CASTLE 4545 E RIVER RD STE 320 W HENRIETTA NY 14586-9024	
Re#: DS-806939	
* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.	



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 Click-N-Ship®	
P	usps.com US POSTAGE Flat Rate Env 10/12/2021 Mailed from 01566
PRIORITY MAIL 2-DAY™	
DEBORAH CHASE NORTHEAST SITE SOLUTIONS 420 MAIN ST STE 1 STURBRIDGE MA 01566-1359	Expected Delivery Date: 10/15/21 Re#: DS-806939 0006
SHIP TO: JAMES M ZEOLI FIRST SELECTMAN 617 ORANGE CENTER RD ORANGE CT 06477-2432	
USPS TRACKING #  9405 5036 9930 0030 6271 60	
Electronic Rate Approved #038555749	

Cut on dotted line.

Instructions

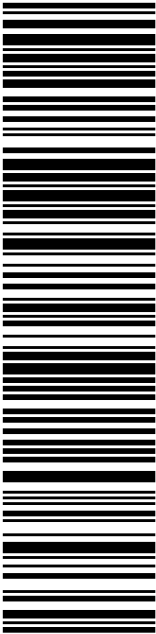
- Each Click-N-Ship® label is unique. Labels are to be used as printed and used only once. DO NOT PHOTO COPY OR ALTER LABEL.
- Place your label so it does not wrap around the edge of the package.
- Adhere your label to the package. A self-adhesive label is recommended. If tape or glue is used, DO NOT TAPE OVER BARCODE. Be sure all edges are secure.
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Click-N-Ship® Label Record

USPS TRACKING # : 9405 5036 9930 0030 6271 60	
Trans. #: 545790153 Print Date: 10/12/2021 Ship Date: 10/12/2021 Expected Delivery Date: 10/15/2021	Priority Mail® Postage: \$8.70 Total: \$8.70
From: DEBORAH CHASE NORTHEAST SITE SOLUTIONS 420 MAIN ST STE 1 STURBRIDGE MA 01566-1359	
To: JAMES M ZEOLI FIRST SELECTMAN 617 ORANGE CENTER RD ORANGE CT 06477-2432	
Re#: DS-806939	
* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.	



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 Click-N-Ship®	
P	usps.com US POSTAGE Flat Rate Env 10/12/2021 Mailed from 01566
PRIORITY MAIL 2-DAY™	
DEBORAH CHASE NORTHEAST SITE SOLUTIONS 420 MAIN ST STE 1 STURBRIDGE MA 01566-1359	Expected Delivery Date: 10/15/21 Re#: DS-806939 0006
SHIP TO: JACK DEMIRJIAN PLANNING ZONING & WETLANDS ENFORCEMENT 617 ORANGE CENTER RD ORANGE CT 06477-2432	
USPS TRACKING #  9405 5036 9930 0030 6271 84	
Electronic Rate Approved #038555749	

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Instructions

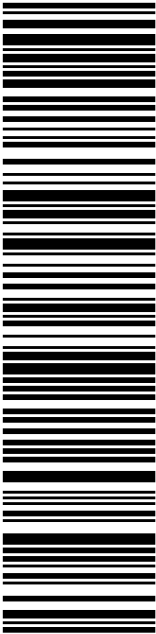
- Each Click-N-Ship® label is unique. Labels are to be used as printed and used only once. DO NOT PHOTO COPY OR ALTER LABEL.
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Click-N-Ship® Label Record

USPS TRACKING # : 9405 5036 9930 0030 6271 84	
Trans. #: 545790153 Print Date: 10/12/2021 Ship Date: 10/12/2021 Expected Delivery Date: 10/15/2021	Priority Mail® Postage: \$8.70 Total: \$8.70
From: DEBORAH CHASE NORTHEAST SITE SOLUTIONS 420 MAIN ST STE 1 STURBRIDGE MA 01566-1359	
To: JACK DEMIRJIAN PLANNING ZONING & WETLANDS ENFORCEMENT OFFICER 617 ORANGE CENTER RD ORANGE CT 06477-2432	
Re#: DS-806939	
* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.	



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 Click-N-Ship®	
P	usps.com US POSTAGE Flat Rate Env 10/12/2021 Mailed from 01566
PRIORITY MAIL 2-DAY™	
DEBORAH CHASE NORTHEAST SITE SOLUTIONS 420 MAIN ST STE 1 STURBRIDGE MA 01566-1359	Expected Delivery Date: 10/15/21 Re#: DS-806939 0006
SHIP TO: DIANNE L TOMPKINS-SENIOR LAND USE MANAGER SOUTH CENTRAL CT REGIONAL WATER AUTHORITY 30 SARGENT DR NEW HAVEN CT 06511	
USPS TRACKING #  9405 5036 9930 0030 6271 91	
Electronic Rate Approved #038555749	



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Click-N-Ship® Label Record

USPS TRACKING # : 9405 5036 9930 0030 6271 91	
Trans. #: 545790153 Print Date: 10/12/2021 Ship Date: 10/12/2021 Expected Delivery Date: 10/15/2021	Priority Mail® Postage: \$8.70 Total: \$8.70
From: DEBORAH CHASE NORTHEAST SITE SOLUTIONS 420 MAIN ST STE 1 STURBRIDGE MA 01566-1359	
To: DIANNE L TOMPKINS-SENIOR LAND USE MANAGER SOUTH CENTRAL CT REGIONAL WATER AUTHORITY 30 SARGENT DR NEW HAVEN CT 06511	
Re#: DS-806939	
* 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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06939



NEW BRITAIN
135 CHESTNUT ST
NEW BRITAIN, CT 06050-9998
(800)275-8777

10/14/2021

12:52 PM

Product	Qty	Unit Price	Price
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Prepaid Mail	1		\$0.00
West Henrietta, NY 14586			
Weight: 0 lb 2.00 oz			
Acceptance Date:			
Thu 10/14/2021			
Tracking #:			
9405 5036 9930 0030 6271 53			

Prepaid Mail	1		\$0.00
New Haven, CT 06511			
Weight: 0 lb 13.90 oz			
Acceptance Date:			
Thu 10/14/2021			
Tracking #:			
9405 5036 9930 0030 6271 91			

Prepaid Mail	1		\$0.00
Orange, CT 06477			
Weight: 0 lb 13.90 oz			
Acceptance Date:			
Thu 10/14/2021			
Tracking #:			
9405 5036 9930 0030 6271 84			

Prepaid Mail	1		\$0.00
Orange, CT 06477			
Weight: 0 lb 13.90 oz			
Acceptance Date:			
Thu 10/14/2021			
Tracking #:			
9405 5036 9930 0030 6271 60			

Prepaid Mail	1		\$0.00
Orange, CT 06477			
Weight: 0 lb 13.90 oz			
Acceptance Date:			
Thu 10/14/2021			