NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

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

March 24, 2022

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

RE: Tower Share Application
700 Grassy Hill Road, Orange, CT 06477
Latitude: 41.2854638
Longitude: -73.042558
Site #: 881541_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 700 Grassy Hill Road, Orange, Connecticut.

Dish Wireless LLC proposes to install three (3) 600/1900 MHz 5G antennas and six (6) RRUs, at the 100-foot level of the existing 140-foot monopole, one (1) Fiber cable will also be installed. Dish Wireless LLC equipment cabinets will be placed within a 7' x 5' lease area within the existing fenced compound. Included are plans by NB+C, dated March 1, 2022, Exhibit C. Also included is a structural analysis prepared by Morrison Hershfield, dated September 2, 2021, confirming that the existing tower is structurally capable of supporting the proposed equipment. Attached as Exhibit D. The facility was approved by the Connecticut Siting Council, Docket No. 262 on January 12, 2004. 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 James M. Zeoli, First Selectman and Jack Demirjian, Zoning Administrator & Enforcement Officer for the Town of Orange, as well as the tower owner (Crown Castle) and property owner (Town of Orange).

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

1. The proposed modification will not result in an increase in the height of the existing structure. The top of the existing tower is 140-feet and the Dish Wireless LLC antennas will be located at a centerline height of 100-feet.

2. The proposed modifications will not result in an increase of the site boundary as depicted on the attached site plan.

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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. The combined site operations will result in a total power density of 17.14% as evidenced by Exhibit F.

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

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

B. Legal Feasibility. As referenced above, C.G.S. 16-50aa has been authorized to issue orders approving the shared use of an existing tower such as this monopole in 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 100-foot level of the existing 140-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

NORTHEAST SITE SOLUTIONS

Turnkey Wireless Development

Attachments

Cc: James M. Zeoli, First Selectman & Property Owner
Orange Town Hall
617 Orange Center Road
Orange, CT 06477

Jack Demirjian, Zoning Administrator & Enforcement Officer
Orange Town Hall
617 Orange Center Road
Orange, CT 06477

Crown Castle, Tower Owner

Exhibit A

Original Facility Approval

Connecticut Siting Council
Decisions

DOCKET NO. 262 - Sprint Spectrum, L.P. d/b/a Sprint PCS application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance and operation of a wireless telecommunications facility at 707 Cranberry Lane or off of Grassy Hill Road, Orange, Connecticut.	}	Connecticut
	}	Siting
	}	Council
	}	January 12, 2004

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 wireless telecommunications facility 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 Sprint Spectrum, L.P. d/b/a Sprint PCS (Sprint) for the construction, maintenance and operation of a wireless telecommunications facility at Site C off of Grassy Hill Road, Orange, Connecticut. The Council denies certification of Site A located at 707 Cranberry Lane and Site B located off of Grassy Hill Road, Orange, Connecticut.

The facility 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 tower shall be constructed as a monopole, no taller than necessary to provide the proposed telecommunications services, sufficient to accommodate the antennas of Sprint and other entities, both public and private, but such tower shall not exceed a height of 140 feet above ground level, with a total overall height of 143 feet above ground level including appurtenances. Antennas to be installed on the tower shall be on a T-bar antenna platform or flush mounted.

2. The Certificate Holder shall prepare a D&M Plan for this site in compliance with Sections 16-50j-75 through 16-50j-77 of the Regulations of Connecticut State Agencies. The D&M Plan shall be submitted to and approved by the Council prior to the commencement of facility construction and shall include:
   a) a final site plan(s) of site development to include specifications for the tower, tower location, tower foundation, antennas, equipment building, access road, provisions for underground utilities, utility line, and landscaping; and
   b) construction plans for site clearing, water drainage, and erosion and sedimentation control consistent with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control, as amended.

3. The Certificate Holder shall, prior to the commencement of operation, provide the Council worst-case modeling of electromagnetic radio frequency power densities of all proposed entities'

antennas at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin No. 65, August 1997. The Certificate Holder shall provide a recalculated report of electromagnetic radio frequency power density if and when circumstances in operation cause a change in power density above the levels calculated and provided pursuant to this Decision and Order.

4. Upon the establishment of any new State or federal radio frequency standards applicable to frequencies of this facility, the facility granted herein shall be brought into compliance with such standards.

5. 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. The Certificate Holder shall provide reasonable space on the tower for no compensation for any municipal antennas, provided such antennas are compatible with the structural integrity of the tower.

6. If the facility does not initially provide wireless services within one year of completion of construction or ceases to provide wireless services for a period of one year, this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made.

7. Any antenna that becomes obsolete and ceases to function shall be removed within 60 days after such antenna becomes obsolete and ceases to function.

8. Unless otherwise approved by the Council, this Decision and Order shall be void if the facility authorized herein is not operational within one year of the effective date of this Decision and Order or within one year 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, the Amity Observer and The Bulletin (Orange).

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	**Its Representative**
Sprint Spectrum, L.P. d/b/a Sprint PCS	Thomas J. Regan, Esquire Brown Rudnick Berlack Israels LLP CityPlace I, 38th Floor 185 Asylum Street Hartford, CT 06103-3402
Intervenor	**Its Representative**
AT&T Wireless PCS, LLC d/b/a AT&T Wireless	Christopher B. Fisher, Esq. Cuddy & Feder LLP 90 Maple Avenue White Plains, NY 10601

Intervenor	**Its Representative**
Cellco Partnership d/b/a Verison Wireless	Kenneth C. Baldwin, Esq. Robinson & Cole LLP 280 Trumbull Street Hartford, CT 06103-3597

Content Last Modified on 1/15/2004 8:25:11 AM

Exhibit B

Property Card

700 GRASSY HILL RD

Location	700 GRASSY HILL RD	**Mblu**	60/ 6/ 1A/ /
Acct#	00182505	**Owner**	TOWN OF ORANGE
Assessment	$119,300	**Appraisal**	$170,400
PID	5703	**Building Count**	1

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2017	$13,500	$156,900	$170,400
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2017	$9,500	$109,800	$119,300

Owner of Record

Owner	TOWN OF ORANGE	**Sale Price**	$25,000
Co-Owner		**Certificate**	
Address	617 ORANGE CENTER ROAD ORANGE, CT 06477	**Book & Page**	520/ 156
		Sale Date	05/28/2004
		Instrument	00

Ownership History

Ownership History					
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Instrument**	**Sale Date**
TOWN OF ORANGE	$25,000		520/ 156	00	05/28/2004
SCHEN JULIA ROGERS & SAYLOR ELLEN &	$0				

Building Information

Building 1 : Section 1

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

Building Attributes

Building Photo


Building Photo
(http://images.vgsi.com/photos/OrangeCTPhotos/\00\01\70/98.JPG)

Building Layout

Field	Description
Style	Outbuildings
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 Layout
(http://images.vgsi.com/photos/OrangeCTPhotos//Sketches/5703_5703.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	510E	**Size (Acres)**	0.62
Description	Exempt Vac	**Frontage**	
Zone	RES	**Depth**	
Neighborhood	010	**Assessed Value**	$109,800
Alt Land Appr	No	**Appraised Value**	$156,900
Category			

Outbuildings

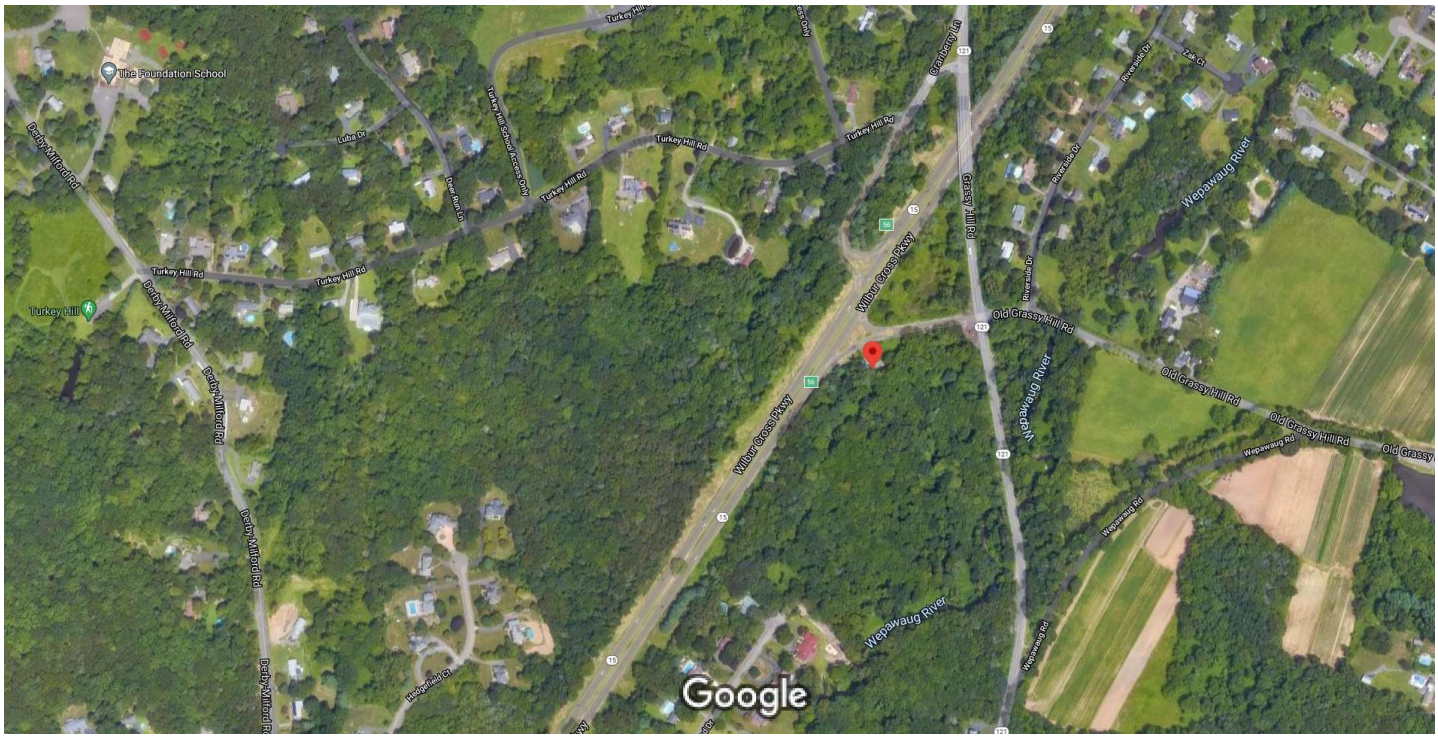
Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
SHD7	Cell Shed			240 UNITS	$13,500	1

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2019	$13,500	$156,900	$170,400
2018	$13,500	$156,900	$170,400
2017	$13,500	$156,900	$170,400

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2019	$9,500	$109,800	$119,300
2018	$9,500	$109,800	$119,300
2017	$9,500	$109,800	$119,300

Google Maps 700 Grassy Hill Rd



Imagery ©2020 Maxar Technologies, New York GIS, USDA Farm Service Agency, Map data ©2020 200 ft

700 Grassy Hill Rd

Orange, CT 06477
Building

Directions Save Nearby Send to your phone Share

Photos

Exhibit C

Construction Drawings

DISH Wireless L.L.C. SITE ID:

BOHVN00173A

DISH Wireless L.L.C. SITE ADDRESS:

700 GRASSY HILL ROAD
ORANGE, CT 06477

CONNECTICUT CODE OF COMPLIANCE

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

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

SHEET INDEX

SCOPE OF WORK

THIS IS NOT AN ALL INCLUSIVE LIST. CONTRACTOR SHALL UTILIZE SPECIFIED EQUIPMENT PART OR ENGINEER APPROVED EQUIVALENT. CONTRACTOR SHALL VERIFY ALL NEEDED EQUIPMENT TO PROVIDE A FUNCTIONAL SITE. THE PROJECT GENERALLY CONSISTS OF THE FOLLOWING:

- TOWER SCOPE OF WORK:
- INSTALL (3) PROPOSED PANEL ANTENNAS (1 PER SECTOR)
- INSTALL (1) PROPOSED ANTENNA PLATFORM MOUNT
- INSTALL PROPOSED JUMPERS
- INSTALL (6) PROPOSED RRUs (2 PER SECTOR)
- INSTALL (1) PROPOSED OVER VOLTAGE PROTECTION DEVICE (OVP)
- INSTALL (1) PROPOSED HYBRID CABLE
- INSTALL (3) DOUBLE Z-BRACKETS (1 PER SECTOR)

GROUND SCOPE OF WORK:
- INSTALL (1) PROPOSED METAL PLATFORM
- INSTALL (1) PROPOSED ICE BRIDGE
- INSTALL (1) PROPOSED PPC CABINET
- INSTALL (1) PROPOSED EQUIPMENT CABINET
- INSTALL (1) PROPOSED POWER CONDUIT
- INSTALL (1) PROPOSED TELCO CONDUIT
- INSTALL (1) PROPOSED TELCO-FIBER BOX
- INSTALL (1) PROPOSED GPS UNIT
- INSTALL (1) PROPOSED FIBER NID (IF REQUIRED)
- INSTALL (1) 20' WIDE GATE EXPANSION
- REMOVE EXISTING UTILITY FRAME AND EQUIPMENT
- REMOVE EXISTING ICE BRIDGE
- REMOVE EXISTING GATE
- REMOVE EXISTING PORTION OF FENCE

SITE PHOTO

UNDERGROUND SERVICE ALERT CBYD 811
UTILITY NOTIFICATION CENTER OF CONNECTICUT
(800) 922-4455
WWW.CBYD.COM

CALL 2 WORKING DAYS UTILITY NOTIFICATION PRIOR TO CONSTRUCTION

GENERAL NOTES

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

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

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

SITE INFORMATION

PROPERTY OWNER:	TOWNSHIP OF ORANGE
ADDRESS:	ORGANGE TOWN HALL 617 ORANGE CENTER ROAD ORANGE, CT 06477
TOWER TYPE:	MONOPOLE
TOWER CO SITE ID:	881541
TOWER APP NUMBER:	553390
COUNTY:	NEW HAVEN
LATITUDE (NAD 83):	41° 17' 7.75" N 41.285486 N
LONGITUDE (NAD 83):	-73° 2' 33.27" W -73.042575 W
ZONING JURISDICTION:	CONNECTICUT SITTING COUNCEL
ZONING DISTRICT:	RES-RESIDENTIAL
PARCEL NUMBER:	ORAN-000060-000006-000001
OCCUPANCY GROUP:	U
CONSTRUCTION TYPE:	II-B
POWER COMPANY:	UNITED ILLUMINATING CO.
TELEPHONE COMPANY:	TBD

PROJECT DIRECTORY

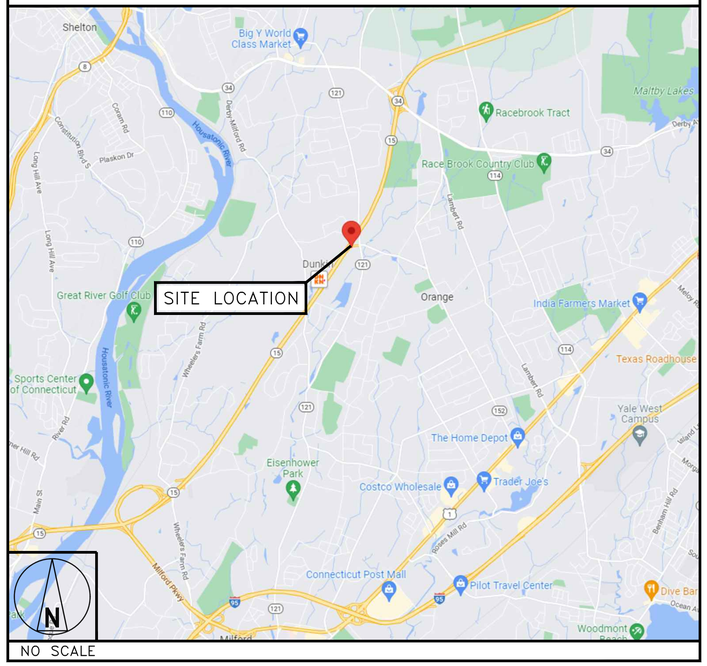
APPLICANT:	DISH Wireless L.L.C. 5701 SOUTH SANTA FE DRIVE LITTLETON, CO 80120
TOWER OWNER:	CROWN CASTLE USA INC. 2000 CORPORATE DR. CANONSBURG, PA 15317 (877) 486-9377
SITE DESIGNER:	NB+C ENGINEERING SERVICES 8601 SIX FORKS RD, SUITE 540 RALEIGH, NC 27615 (919) 657-9131
SITE ACQUISITION:	CORWIN DIXON CORWIN.DIXON@CROWNCASTLE.COM
CONSTRUCTION MANAGER:	JAVIER SOTO JAVIER.SOTO@DISH.COM
RF ENGINEER:	SYED ZAIDI SYED.ZAIDI@DISH.COM

DIRECTIONS

DIRECTIONS FROM BRADLEY INTERNATIONAL AIRPORT:

START AT BRADLEY INTERNATIONAL AIRPORT. START OUT GOING WEST ON SCHOEPHOESTER RD TOWARD BRADLEY INTERNATIONAL AIRPORT. START OUT GOING WEST ON SCHOEPHOESTER RD TOWARD BRADLEY INTERNATIONAL AIRPORT. TURN LEFT TO STAY ON BRADLEY INTERNATIONAL AIRPORT CONNECTOR. TAKE BRADLEY FIELD CONNECTOR TOWARD CT-20 E/I-91. BRADLEY FIELD CONNECTOR BECOMES CT-20 E. MERGE ONTO I-91 S TOWARD HARTFORD. MERGE ONTO CT-15 S VIA EXIT 17 TOWARD E MAIN ST. TAKE THE CT-121 EXIT, EXIT 56, TOWARD ORANGE. STAY STRAIGHT TO GO ONTO TURKEY HILL RD. TURN RIGHT ONTO GRASSY HILL RD/CT-121. TURN RIGHT ONTO OLD GRASSY HILL ROAD AND THE DESTINATION IS ON THE LEFT BEFORE CT-15.

VICINITY MAP



NO SCALE

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

NB+C TOTALLY COMMITTED.
NB+C ENGINEERING SERVICES, LLC.
8601 SIX FORKS ROAD, SUITE 540
RALEIGH, NC 27615
(919) 657-9131

STATE OF CONNECTICUT
KRUPAKARAN KOLANDAIVELU
PEN.0028997
LICENSED
PROFESSIONAL ENGINEER

03/01/2022

KRUPAKARAN KOLANDAIVELU, P.E.
STATE OF CONNECTICUT
PROFESSIONAL ENGINEER
LICENSE #PEN.0028997

DRAWN BY:	CHECKED BY:	APPROVED BY:
JQG	BRN	TA

RFDS REV #: 0

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	10/07/21	ISSUED FOR REVIEW
0	03/01/22	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

881541

DISH WIRELESS, LLC.
PROJECT INFORMATION

BOHVN00173A
700 GRASSY HILL ROAD
ORANGE, CT 06477

SHEET TITLE

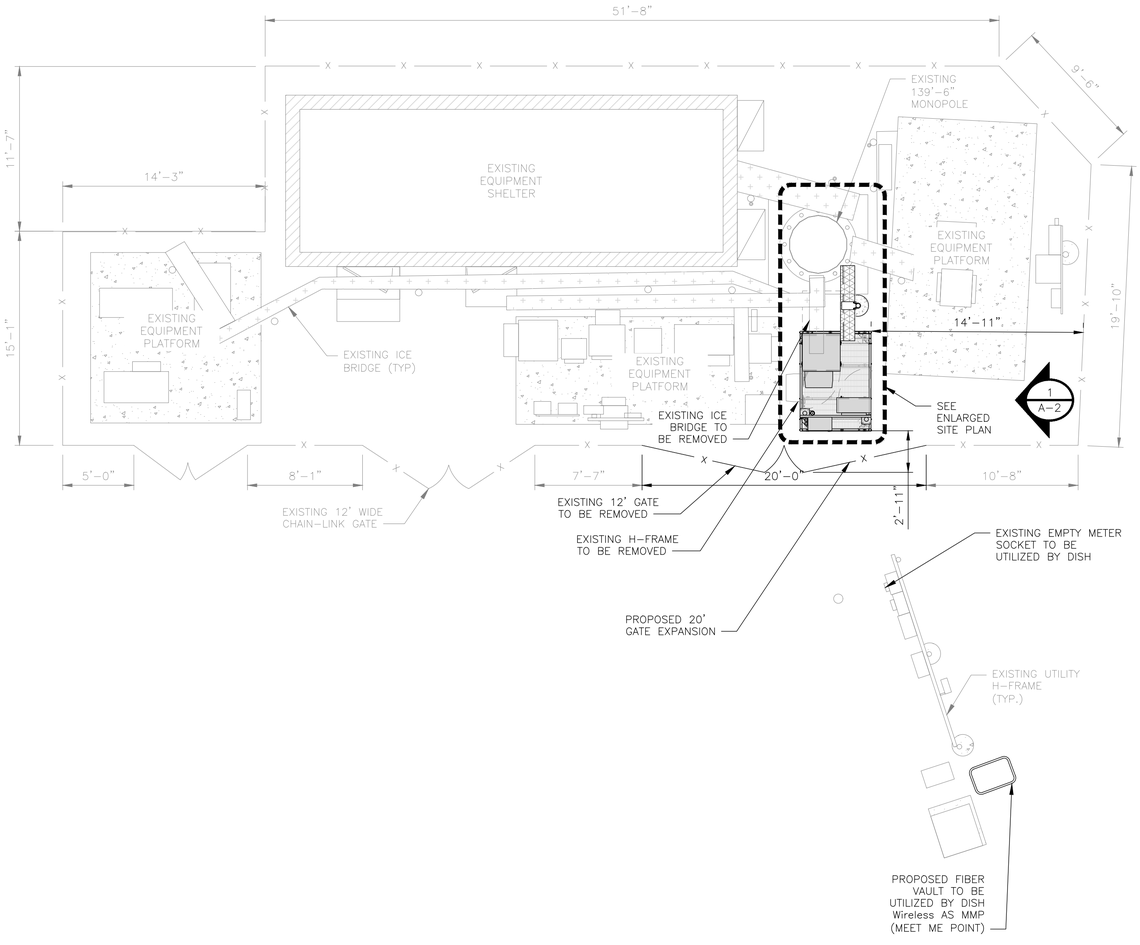
TITLE SHEET

SHEET NUMBER

T-1

NOTES

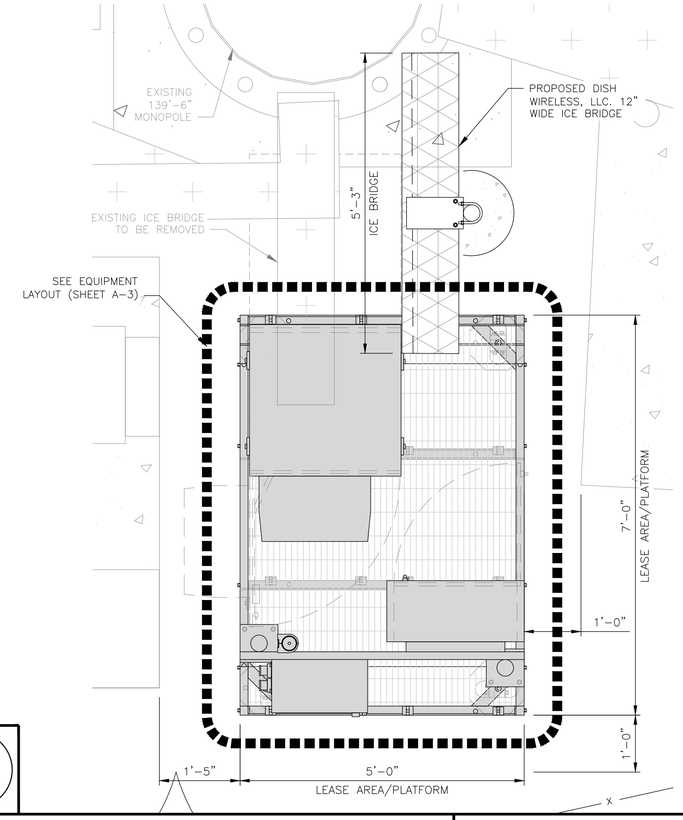
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. CONTRACTOR SHALL MAINTAIN A 10'-0" MINIMUM SEPARATION BETWEEN THE PROPOSED GPS UNIT, TRANSMITTING ANTENNAS AND EXISTING GPS UNITS.
3. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.



OVERALL SITE PLAN

6' 4' 2' 0 5' 10'
3/16"=1'-0"

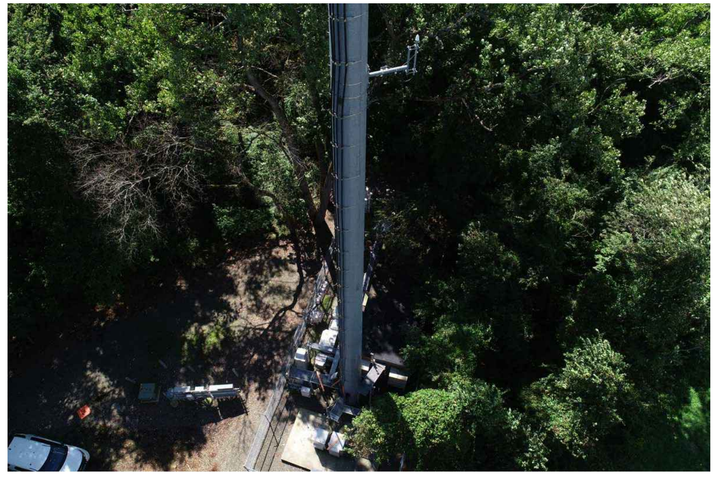
1



ENLARGED SITE PLAN

12" 6" 0 1' 2' 3'
3/4"=1'-0"

2



AERIAL VIEW

3

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

NB+C TOTALLY COMMITTED.
NB+C ENGINEERING SERVICES, LLC.
8601 SIX FORKS ROAD, SUITE 540
RALEIGH, NC 27615
(919) 657-9131

STATE OF CONNECTICUT
KRUPAKARAN KOLANDAIVELU
PEN.0028997
LICENSED
PROFESSIONAL ENGINEER

03/01/2022

KRUPAKARAN KOLANDAIVELU, P.E.
STATE OF CONNECTICUT
PROFESSIONAL ENGINEER
LICENSE #PEN.0028997

DRAWN BY:	CHECKED BY:	APPROVED BY:
JQG	BRN	TA

RFDS REV #: 0

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	10/07/21	ISSUED FOR REVIEW
0	03/01/22	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

881541

DISH WIRELESS, LLC.
PROJECT INFORMATION

BOHVN00173A
700 GRASSY HILL ROAD
ORANGE, CT 06477

SHEET TITLE

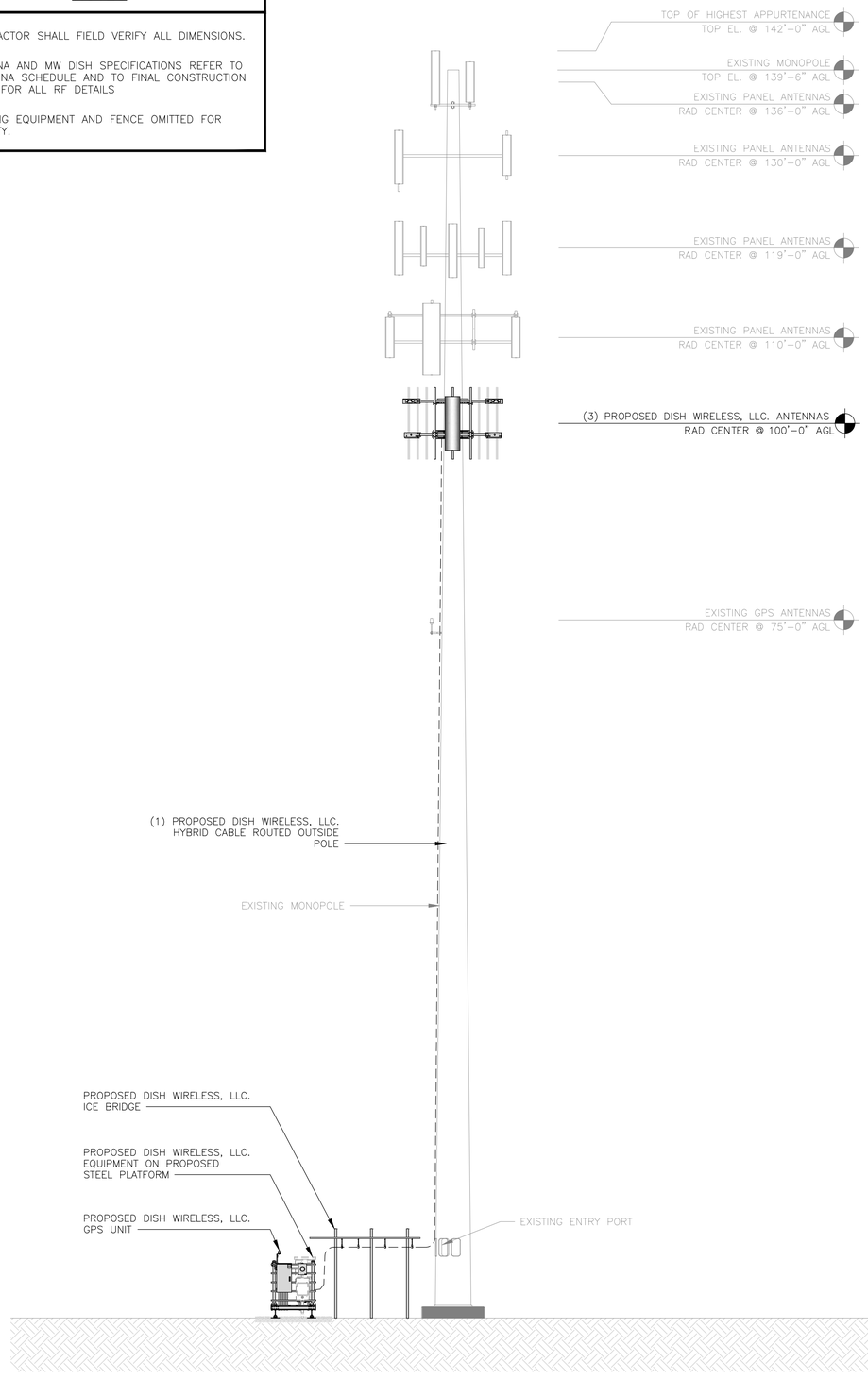
OVERALL AND ENLARGED SITE PLAN

SHEET NUMBER

A-1

NOTES

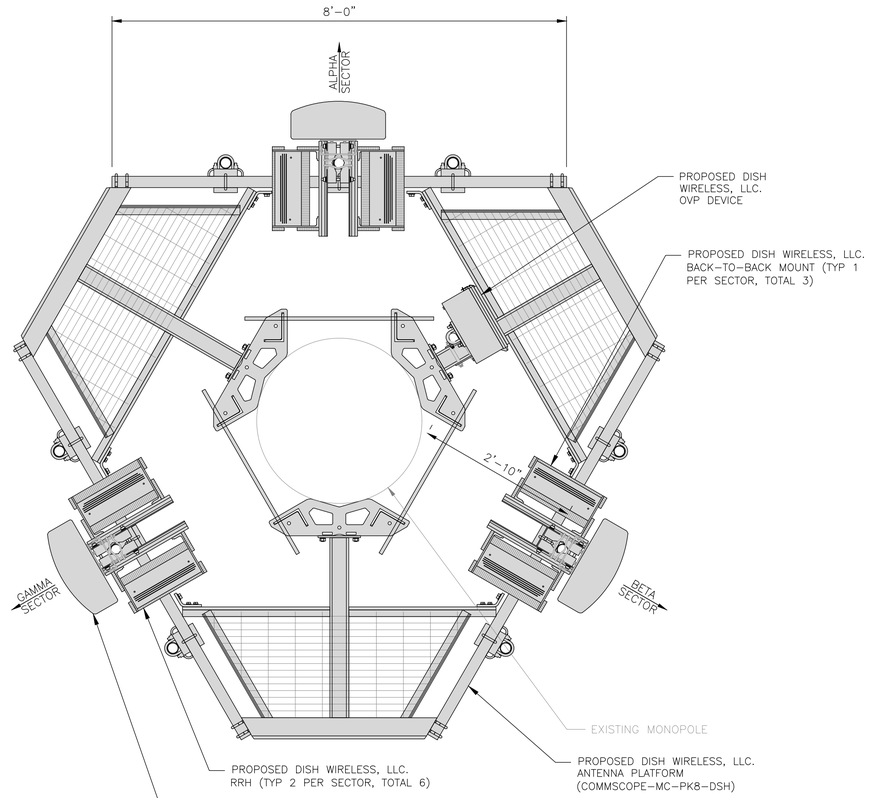
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNA AND MW DISH SPECIFICATIONS REFER TO ANTENNA SCHEDULE AND TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS
3. EXISTING EQUIPMENT AND FENCE OMITTED FOR CLARITY.



PROPOSED NORTH ELEVATION

6' 4' 2' 0 5' 10'
3/16"=1'-0"

1



ANTENNA LAYOUT

12" 6" 0 1' 2' 3'
3/4"=1'-0"

2

SECTOR POS.	ANTENNA					TRANSMISSION CABLE	RRH			OVP
	EXISTING OR PROPOSED	MANUFACTURER – MODEL NUMBER	TECH	AZIMUTH	RAD CENTER	FEED LINE TYPE AND LENGTH	MANUFACTURER – MODEL NUMBER	TECH	POS.	MANUFACTURER MODEL
A1	--	--	--	--	--	(1) HIGH-CAPACITY 1.6" DIA. HYBRID CABLE (134' LONG)	FUJITSU – TA08025-B604	5G	A2	RAYCAP – RDIDC-9181 -PF-48
A2	PROPOSED	JMA – MX08FR0665-21	5G	0°	100'-0"		FUJITSU – TA08025-B605	5G	A2	
A3	--	--	--	--	--		--	--	--	
B1	--	--	--	--	--	SHARED W/ALPHA	FUJITSU – TA08025-B604	5G	B2	SHARED W/ALPHA
B2	PROPOSED	JMA – MX08FR0665-21	5G	120°	100'-0"		FUJITSU – TA08025-B605	5G	B2	
B3	--	--	--	--	--		--	--	--	
C1	--	--	--	--	--	SHARED W/ALPHA	FUJITSU – TA08025-B604	5G	C2	SHARED W/ALPHA
C2	PROPOSED	JMA – MX08FR0665-21	5G	240°	100'-0"		FUJITSU – TA08025-B605	5G	C2	
C3	--	--	--	--	--		--	--	--	

NOTES

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

ANTENNA SCHEDULE

NO SCALE

3

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

NB+C TOTALLY COMMITTED.
NB+C ENGINEERING SERVICES, LLC.
8601 SIX FORKS ROAD, SUITE 540
RALEIGH, NC 27615
(919) 657-9131

STATE OF CONNECTICUT
KRUPAKARAN KOLANDAIVELU
PEN.0028997
LICENSED
PROFESSIONAL ENGINEER

03/01/2022

KRUPAKARAN KOLANDAIVELU, P.E.
STATE OF CONNECTICUT
PROFESSIONAL ENGINEER
LICENSE #PEN.0028997

DRAWN BY:	CHECKED BY:	APPROVED BY:
JQG	BRN	TA

RFDS REV #: 0

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	10/07/21	ISSUED FOR REVIEW
0	03/01/22	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

881541

DISH WIRELESS, LLC.
PROJECT INFORMATION

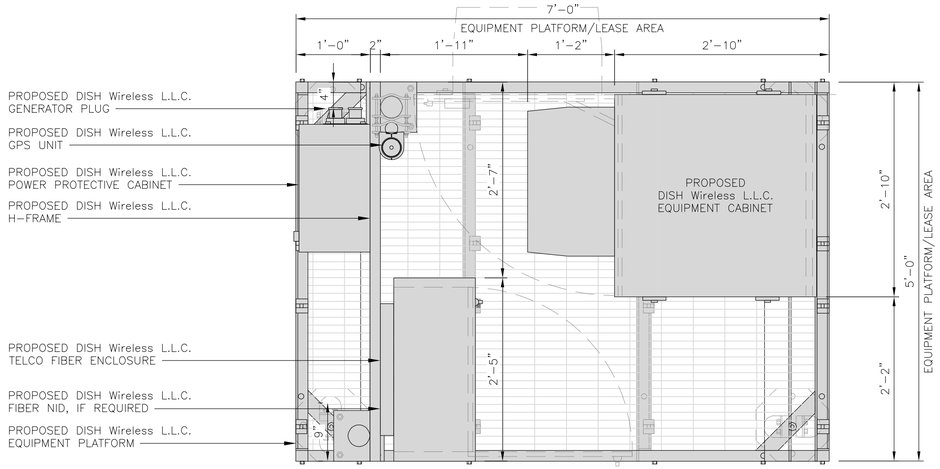
BOHVN00173A
700 GRASSY HILL ROAD
ORANGE, CT 06477

SHEET TITLE

ELEVATION, ANTENNA LAYOUT AND SCHEDULE

SHEET NUMBER

A-2



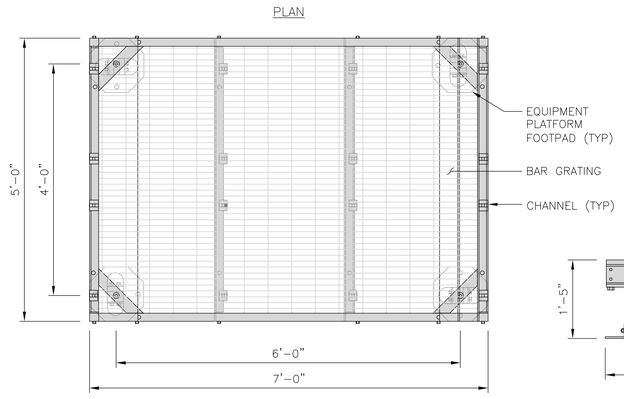
PLATFORM EQUIPMENT PLAN

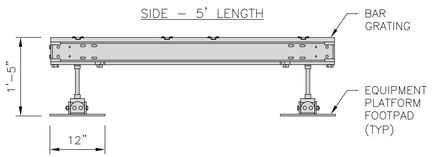
12" 9" 6" 3" 0 1' 2'
1"=1'-0"

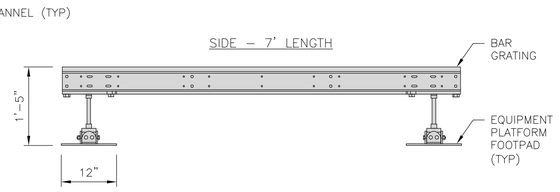
1

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"

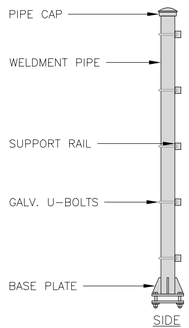




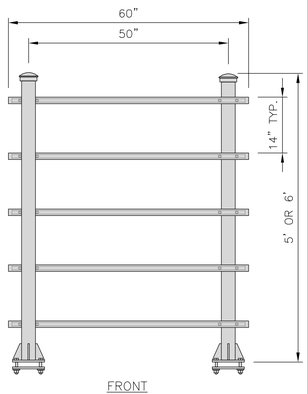


PLATFORM DETAIL | NO SCALE | 2

COMMSCOPE MTC4045HFLD H-FRAME	
UNISTRUT/SUPPORT RAILS QTY	5
WEIGHT	59.74 lbs



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

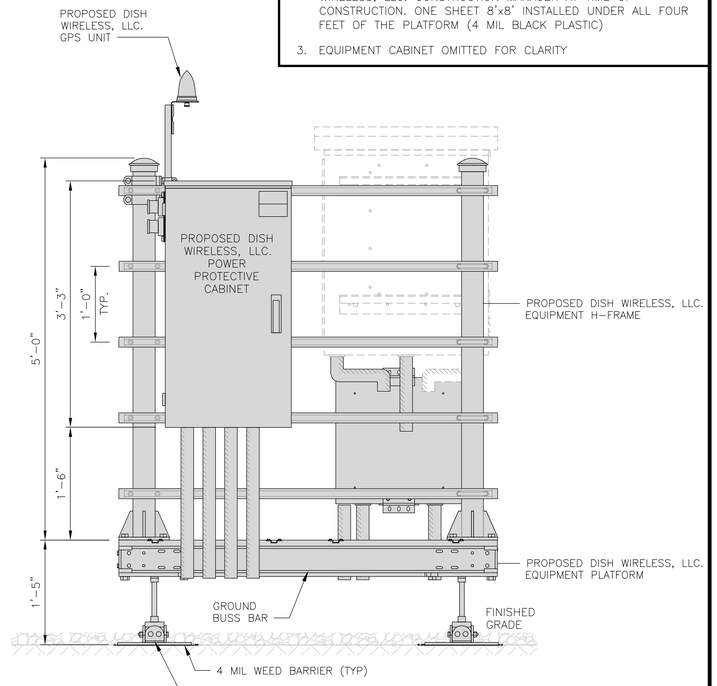


H-FRAME DETAIL | NO SCALE | 3

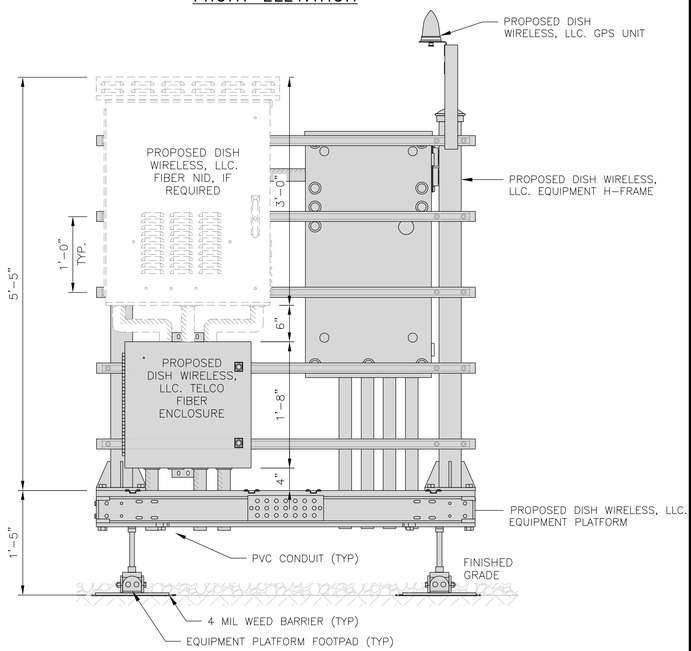
NOT USED | NO SCALE | 4

NOTES

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



FRONT ELEVATION



BACK ELEVATION

H-FRAME EQUIPMENT ELEVATION

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

5

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5701 SOUTH SANTA FE DRIVE
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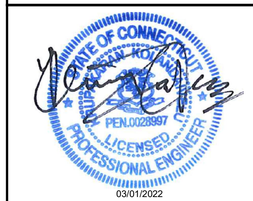

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SHEET TITLE

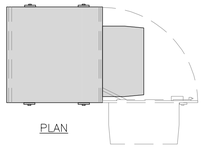
EQUIPMENT PLATFORM AND H-FRAME DETAILS

SHEET NUMBER

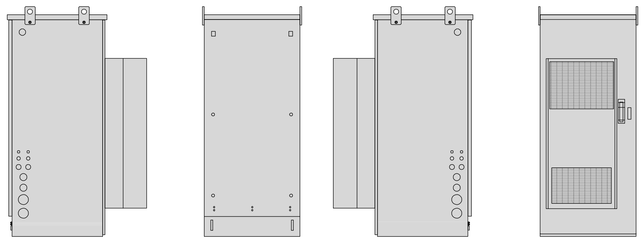
A-3

CHARLES INDUSTRY HEX CUBE–PM639155N4

DIMENSIONS (HxWxD):	74"x32"x32"
POWER PLANT:	–48VDC ABB/600W
TOTAL WEIGHT (EMPTY)	408 LBS



PLAN



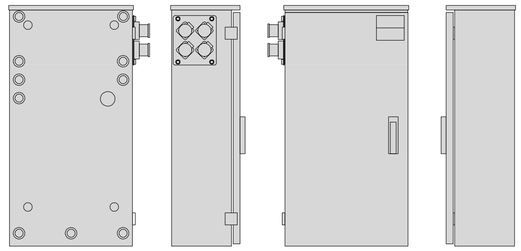
SIDE BACK SIDE FRONT

CABINET DETAIL — NO SCALE — 1

RAYCAP PPC RDIAC–2465–P–240–MTS

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

TOP



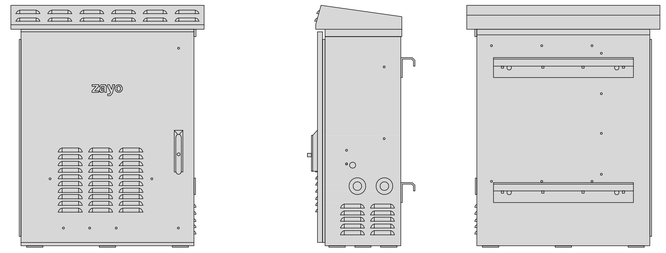
BACK SIDE FRONT SIDE

POWER PROTECTION CABINET (PPC) DETAIL — NO SCALE — 2

ZAYO 5RU CABINET LEFT SWING DOOR ("LIT" SITES)

DIMENSIONS (HxWxD)	36.115"x29"x12.9"
WEIGHT	85 LBS
POWER INPUT	20A, –48VDC

PLAN

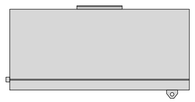


FRONT SIDE BACK

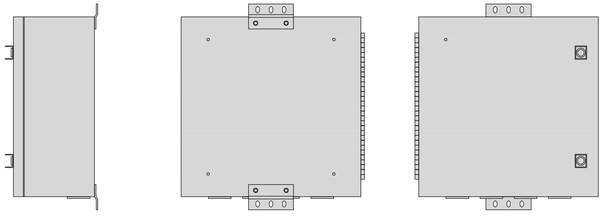
NETWORK INTERFACE UNIT DETAIL — NO SCALE — 3

CHARLES CFIT–PF2020DSH1 FIBER TELCO ENCLOSURE

ENCLOSURE DIMS (HxWxD)	20"x20"x9"
ENCLOSURE WEIGHT	20 lbs
MOUNTING	WALL
COMPLIANCE	TYPE 4

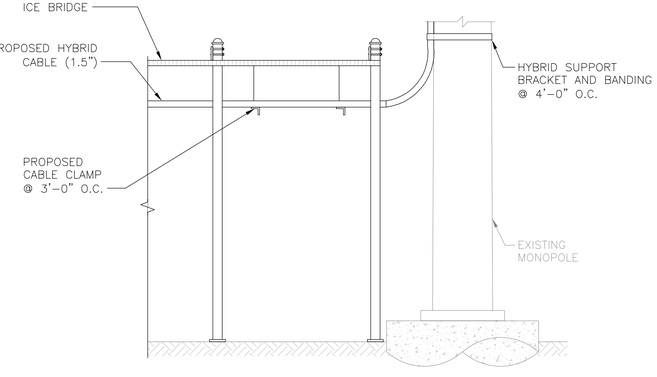


FRONT



SIDE BACK FRONT

FIBER TELCO ENCLOSURE DETAIL — NO SCALE — 4

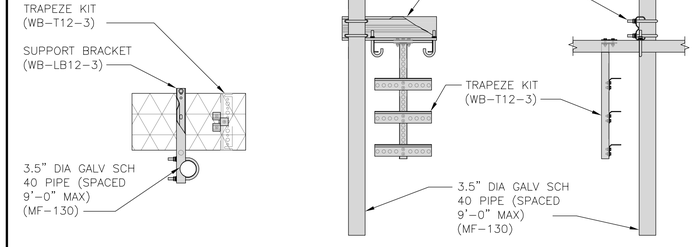


HYBRID CABLE RUN — NO SCALE — 5

COMMSCOPE WB–K110–B WAVEGUIDE BRIDGE KIT

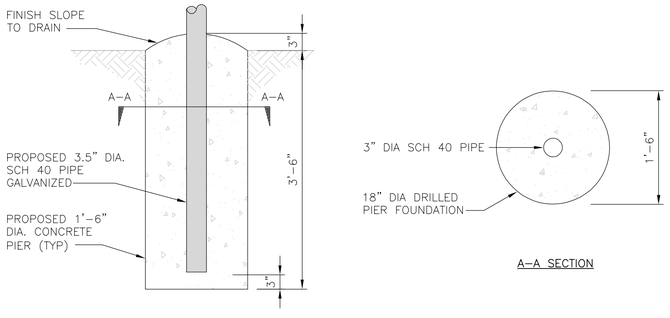
DIMENSIONS (HxL)	160"x10'
WEIGHT/ VOLUME	325.0 LBS
CABLE RUN (QTY)	12

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



PLAN FRONT SIDE

ICE BRIDGE DETAIL — NO SCALE — 6



CONCRETE PIER

A–A SECTION

TYPICAL ICE BRIDGE CONCRETE PIER DETAIL — NO SCALE — 7

NOT USED — NO SCALE — 8

NOT USED — NO SCALE — 9

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BOHVN00173A
700 GRASSY HILL ROAD
ORANGE, CT 06477

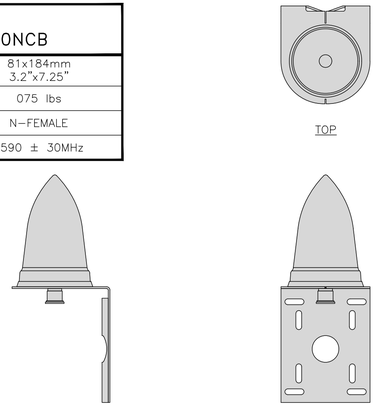
SHEET TITLE

EQUIPMENT DETAILS

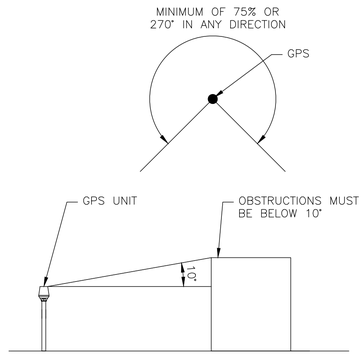
SHEET NUMBER

A-4

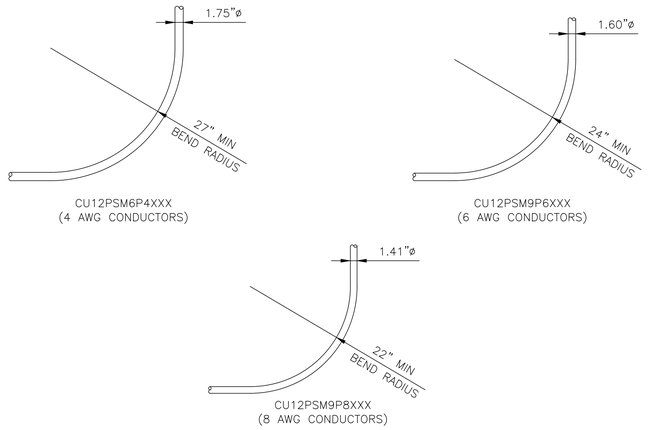
PCTEL GPSGL-TMG-SPI-40NCB	
DIMENSIONS (DIAxH) MM/INCH	81x184mm 3.2"x7.25"
WEIGHT W/ACCESSORIES	075 lbs
CONNECTOR	N-FEMALE
FREQUENCY RANGE	1590 ± 30MHz



GPS DETAIL | NO SCALE | 1



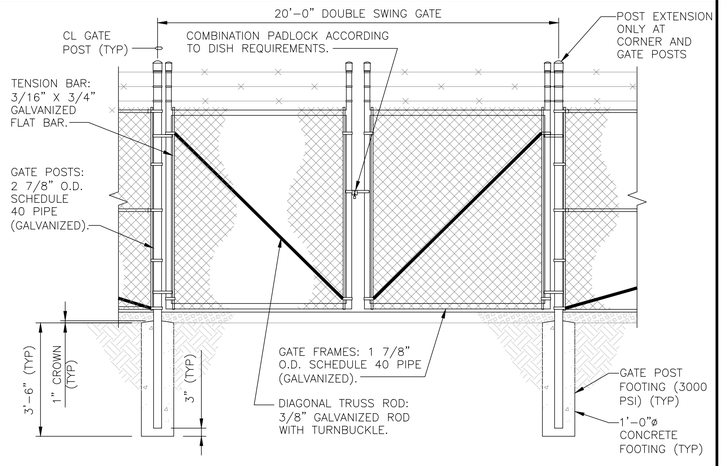
GPS MINIMUM SKY VIEW REQUIREMENTS | NO SCALE | 2



CABLES UNLIMITED HYBRID CABLE
MINIMUM BEND RADIUSES | NO SCALE | 3

DESC	QTY	
SITE ID #:	BOHVN00173A	
TWR TYPE:	MONOPOLE	
HYBRID BEND RADIUS	30"	The preparer must determine the lengths below.
RAD CENTER (ft)	100.0	This is the RAD center for the antennas on towers. For a rooftop, this is the total length of all vertical sections of the hybrid.
ICE BRIDGE HEIGHT (ft)	10.0	This is the height of the bridge coverings.
ICE BRIDGE LENGTH (ft)	5.3	This is the length of the total ice bridge coverings, if more than one ice bridge is used or total horizontal lengths of hybrid if this is inside a building.
LENGTH ACROSS PLATFORM (ft)	6.0	This is the length from the cabinet to the first bend up the ice bridge or inside a radio room.
LENGTH FROM TOWER TOP TO OVP (ft)	6.0	This is the horizontal length from the tower to the OVP at the antenna level or the total horizontal lengths of hybrid on a building or large self supporting tower.
VERTICAL LENGTH OF HYBRID INTO TOWER TOP OVP (ft)	1.0	This is the vertical length of hybrid that comes out to the tower top OVP to the beginning of the first bend that is going into the monopole port.
	LENGTH (ft)	
Additional Excess Hybrid to be added (To be determined by preparer)	0	
Total Hybrid Length to Order (Rounded up to nearest whole number)	134	

NOT USED | NO SCALE | 4



TYPICAL GATE ELEVATION DETAIL | 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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SHEET TITLE

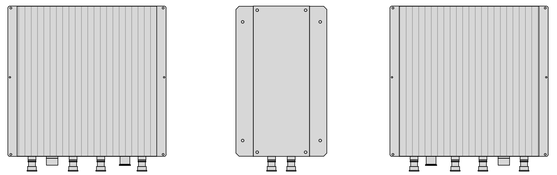
EQUIPMENT DETAILS

SHEET NUMBER

A-5

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

PLAN

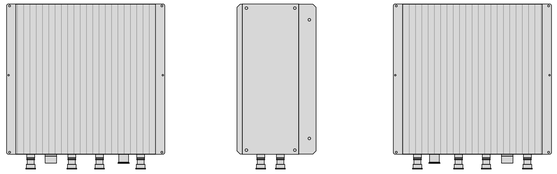


BACK SIDE FRONT

RRH DETAIL | NO SCALE | 1

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

PLAN

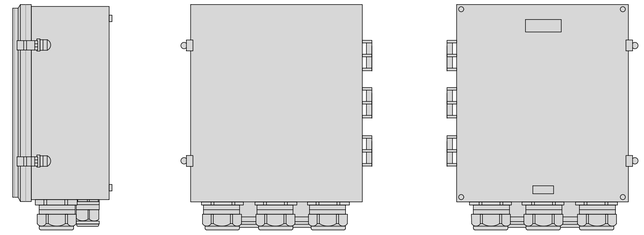


BACK SIDE FRONT

RRH DETAIL | NO SCALE | 2

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

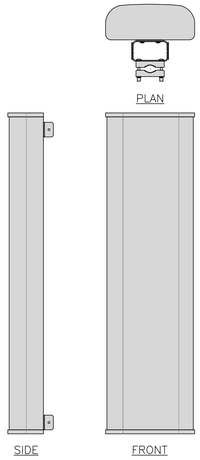
PLAN



SIDE BACK FRONT

SURGE SUPPRESSION DETAIL (OVP) | NO SCALE | 3

JMA MX08FRO665-21	
DIMENSIONS (HxWxD)	72"x20.0"x8.0"
RF PORTS, CONNECTOR TYPE	8 x 4.3-10 FEMALE
WEIGHT	64.5 lbs
WEIGHT WITH BRACKETS	82.5 lbs



PLAN

SIDE FRONT

ANTENNA DETAIL | NO SCALE | 4

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

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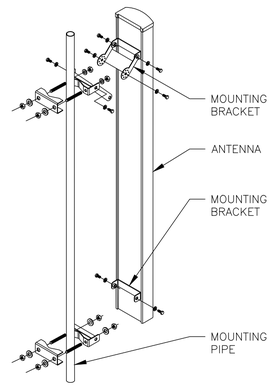
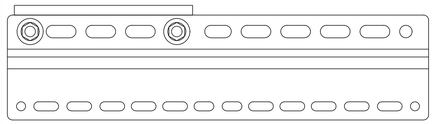
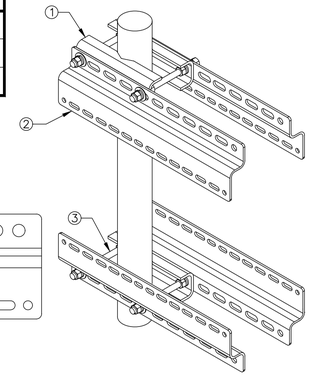


ANTENNA MOUNTING DETAIL | NO SCALE | 5

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

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





NOTE:
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APPROVED EQUIVALENT

RRH MOUNT DETAIL | NO SCALE | 6

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

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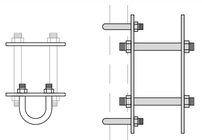
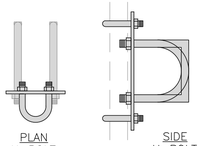
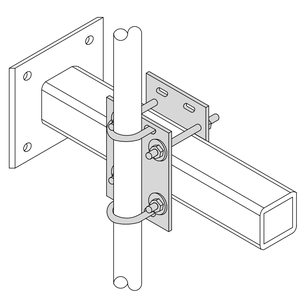


PLAN PLATE SIDE PLATE



PLAN U-BOLT SIDE U-BOLT



RRH/OVP MOUNT DETAIL | NO SCALE | 7

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

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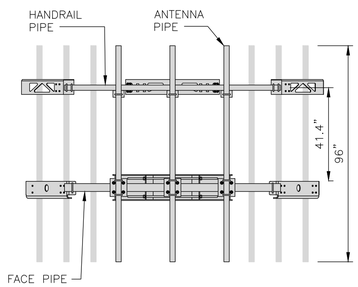

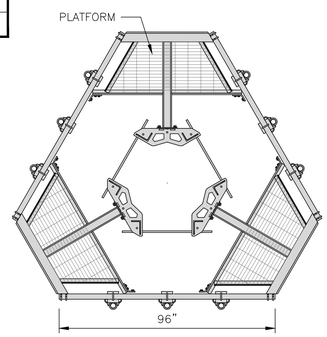

ANTENNA PLATFORM DETAIL | NO SCALE | 8

NOT USED | NO SCALE | 9

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STATE OF CONNECTICUT
KRUPAKARAN KOLANDAIVELU
PEN.0028997
LICENSED
PROFESSIONAL ENGINEER

03/01/2022

KRUPAKARAN KOLANDAIVELU, P.E.
STATE OF CONNECTICUT
PROFESSIONAL ENGINEER
LICENSE #PEN.0028997

DRAWN BY:	CHECKED BY:	APPROVED BY:
JQG	BRN	TA

RFDS REV #: 0

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	10/07/21	ISSUED FOR REVIEW
0	03/01/22	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

881541

DISH WIRELESS, LLC.
PROJECT INFORMATION

BOHVN00173A
700 GRASSY HILL ROAD
ORANGE, CT 06477

SHEET TITLE

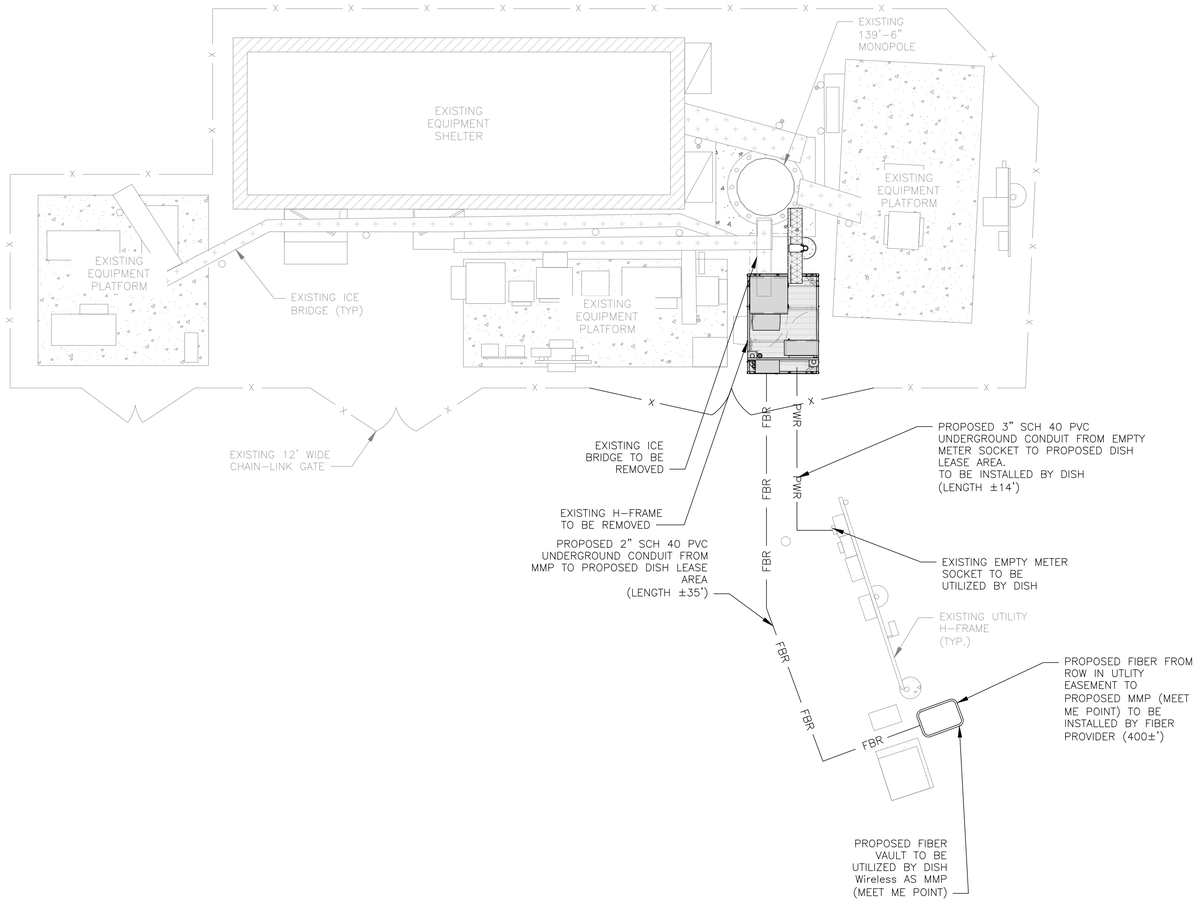
EQUIPMENT DETAILS

SHEET NUMBER

A-6

EASEMENT RIGHTS

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



UTILITY ROUTE PLAN

6' 4' 2' 0 5' 10'
3/16"=1'–0"

1

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

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

ELECTRICAL NOTES

NO SCALE

2

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DISH WIRELESS, LLC.
PROJECT INFORMATION

BOHVN00173A
700 GRASSY HILL ROAD
ORANGE, CT 06477

SHEET TITLE

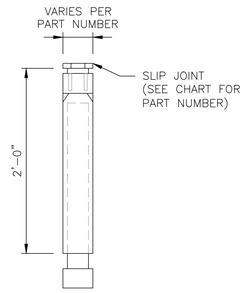
ELECTRICAL/FIBER ROUTE PLAN AND NOTES

SHEET NUMBER

E-1

CARLON EXPANSION FITTINGS

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

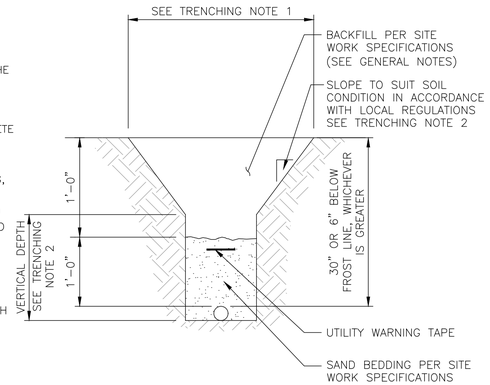


NOTE:
CONTRACTOR TO INSTALL EXPANSION FITTING SLIP JOINT AT METER CENTER CONDUIT TERMINATION, AS PER LOCAL UTILITY POLICY, ORDINANCE AND/OR SPECIFIED REQUIREMENT.

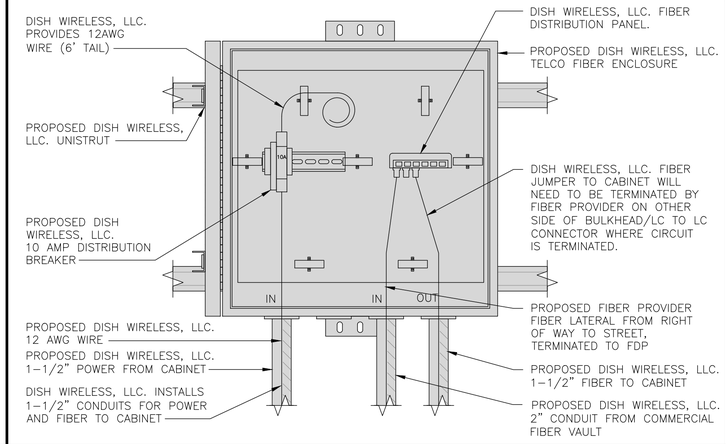
EXPANSION JOINT DETAIL | NO SCALE | 1

TRENCHING NOTES

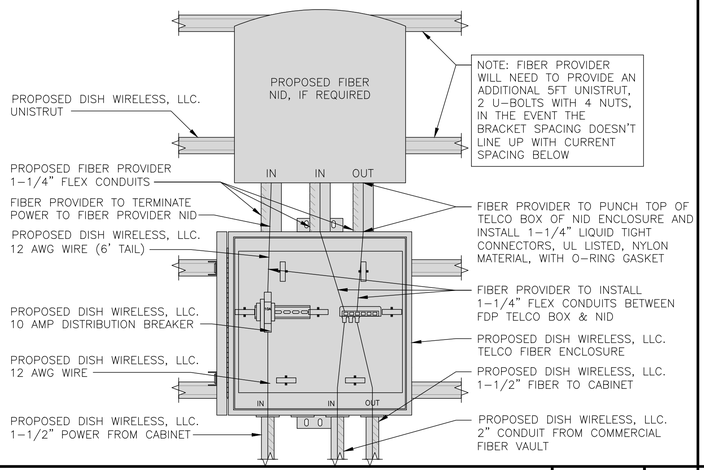
1. CONTRACTOR SHALL RESTORE THE TRENCH TO ITS ORIGINAL CONDITIONS BY EITHER SEEDING OR SODDING GRASS AREAS, OR REPLACING ASPHALT OR CONCRETE AREAS TO ITS ORIGINAL CROSS SECTION.
2. TRENCHING SAFETY; INCLUDING, BUT NOT LIMITED TO SOIL CLASSIFICATION, SLOPING, AND SHORING, SHALL BE GOVERNED BY THE CURRENT 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.



TYPICAL UNDERGROUND TRENCH DETAIL | NO SCALE | 2



DARK TELCO BOX – INTERIOR WIRING LAYOUT | NO SCALE | 3



LIT TELCO BOX – INTERIOR WIRING LAYOUT (OPTIONAL) | NO SCALE | 4

NOT USED | NO SCALE | 5

NOT USED | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

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DISH WIRELESS, LLC.
PROJECT INFORMATION

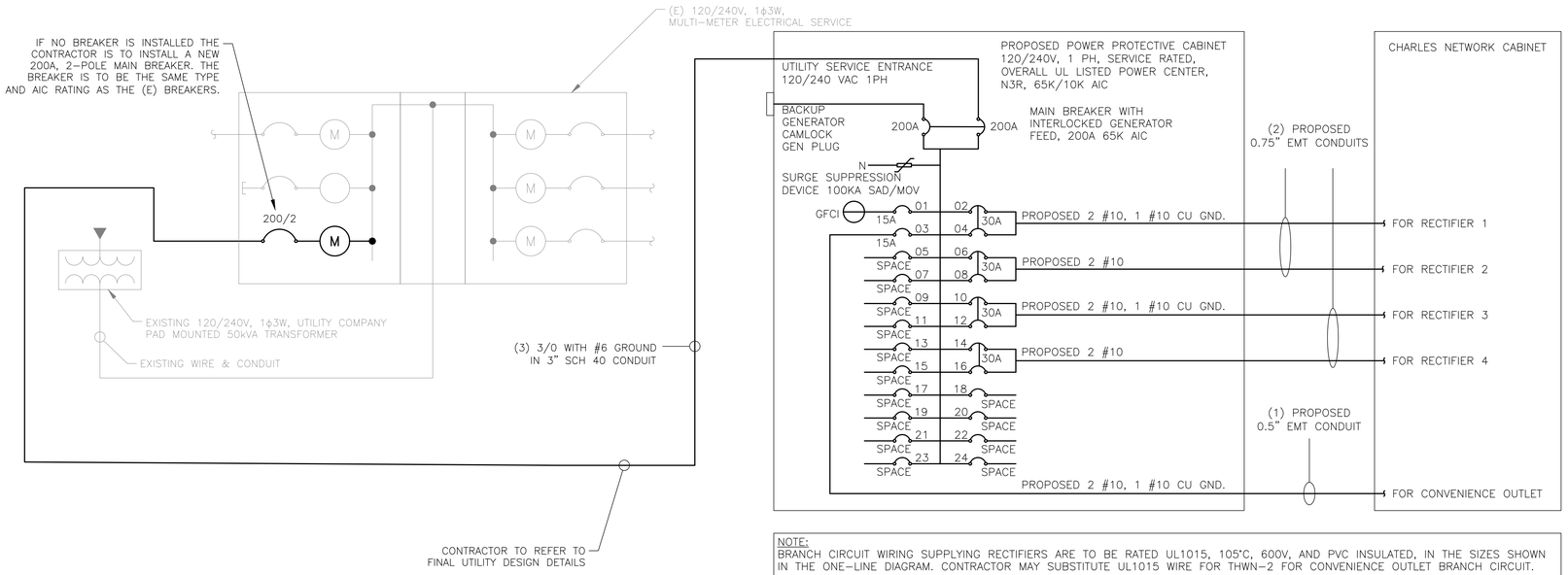
BOHVN00173A
700 GRASSY HILL ROAD
ORANGE, CT 06477

SHEET TITLE

ELECTRICAL DETAILS

SHEET NUMBER

E-2



NOTE:
BRANCH CIRCUIT WIRING SUPPLYING RECTIFIERS ARE TO BE RATED UL1015, 105°C, 600V, AND PVC INSULATED, IN THE SIZES SHOWN IN THE ONE-LINE DIAGRAM. CONTRACTOR MAY SUBSTITUTE UL1015 WIRE FOR THWN-2 FOR CONVENIENCE OUTLET BRANCH CIRCUIT.

BREAKERS REQUIRED:
(4) 30A, 2P BREAKER - SQUARE D P/N:QO230
(1) 15A, 1P BREAKER - SQUARE D P/N:QO115

NOTES

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

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

THE (2) CONDUITS WITH (4) CURRENT CARRYING CONDUCTORS EACH, SHALL APPLY THE ADJUSTMENT FACTOR OF 80% PER 2014/17 NEC TABLE 310.15(B)(3)(a) OR 2020 NEC TABLE 310.15(C)(1) FOR UL1015 WIRE.

#12 FOR 15A-20A/1P BREAKER: 0.8 x 30A = 24.0A
#10 FOR 25A-30A/2P BREAKER: 0.8 x 40A = 32.0A
#8 FOR 35A-40A/2P BREAKER: 0.8 x 55A = 44.0A
#6 FOR 45A-60A/2P BREAKER: 0.8 x 75A = 60.0A

CONDUIT SIZING: AT 40% FILL PER NEC CHAPTER 9, TABLE 4, ARTICLE 358.
0.5" CONDUIT - 0.122 SQ. IN AREA
0.75" CONDUIT - 0.213 SQ. IN AREA
2.0" CONDUIT - 1.316 SQ. IN AREA
3.0" CONDUIT - 2.907 SQ. IN AREA

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

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

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

RECTIFIER CONDUCTORS (2 CONDUITS): USING UL1015, CU.

#10 - 0.0266 SQ. IN X 4 = 0.1064 SQ. IN
#10 - 0.0082 SQ. IN X 1 = 0.0082 SQ. IN <BARE GROUND
TOTAL = 0.1146 SQ. IN

0.75" EMT CONDUIT IS ADEQUATE TO HANDLE THE TOTAL OF (5) WIRES, INCLUDING GROUND WIRE, AS INDICATED ABOVE.

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

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

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

PPC ONE-LINE DIAGRAM — NO SCALE — 1

PROPOSED CHARLES PANEL SCHEDULE

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

PANEL SCHEDULE — NO SCALE — 2

NOT USED — NO SCALE — 3

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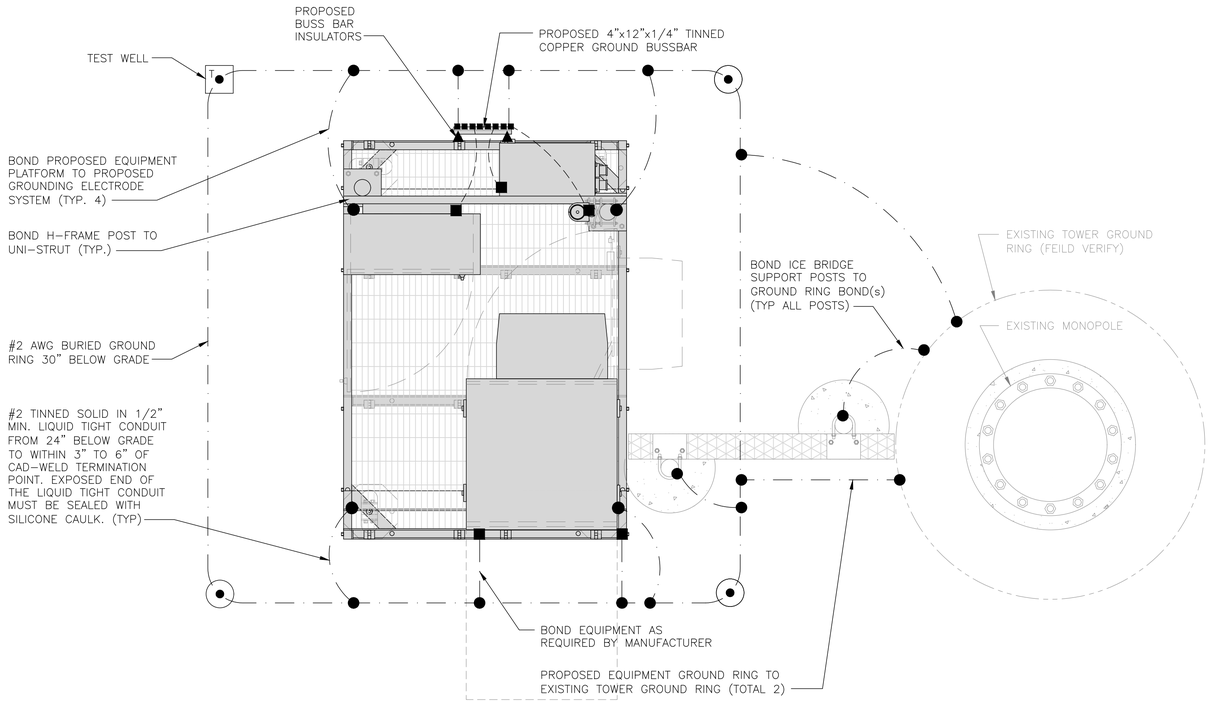
DISH WIRELESS, LLC.
PROJECT INFORMATION
BOHVN00173A
700 GRASSY HILL ROAD
ORANGE, CT 06477

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

SHEET NUMBER
E-3

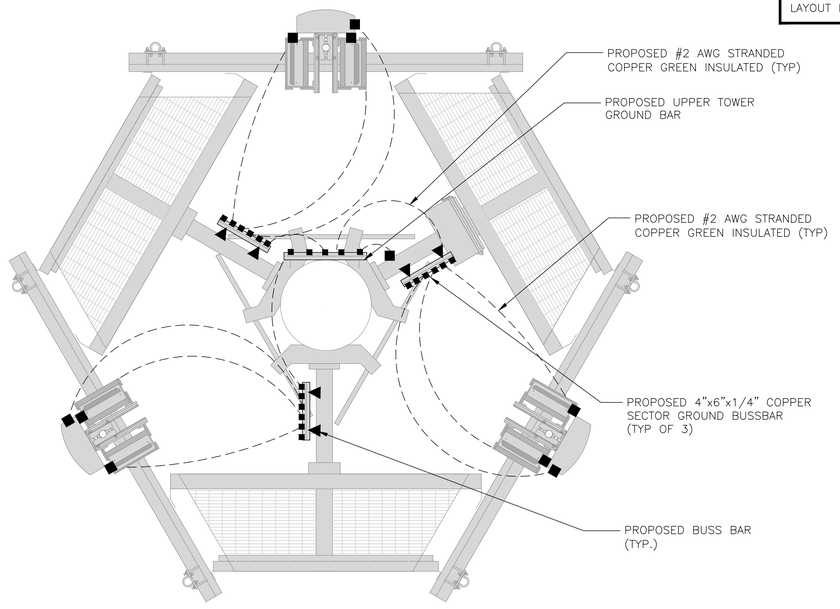


TYPICAL EQUIPMENT GROUNDING PLAN

NO SCALE | 1

NOTES

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



TYPICAL ANTENNA GROUNDING PLAN

NO SCALE | 2

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

GROUNDING LEGEND

1. GROUNDING IS SHOWN DIAGRAMMATICALLY ONLY.
2. CONTRACTOR SHALL GROUND ALL EQUIPMENT AS A COMPLETE SYSTEM. GROUNDING SHALL BE IN COMPLIANCE WITH NEC SECTION 250 AND DISH WIRELESS, LLC. GROUNDING AND BONDING REQUIREMENTS AND MANUFACTURER'S SPECIFICATIONS.
3. ALL GROUND CONDUCTORS SHALL BE COPPER; NO ALUMINUM CONDUCTORS SHALL BE USED.

GROUNDING KEY NOTES

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

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

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

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

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

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

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

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

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

(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, LLC. GROUNDING NOTES.

GROUNDING KEY NOTES

NO SCALE | 3

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700 GRASSY HILL ROAD
ORANGE, CT 06477

SHEET TITLE

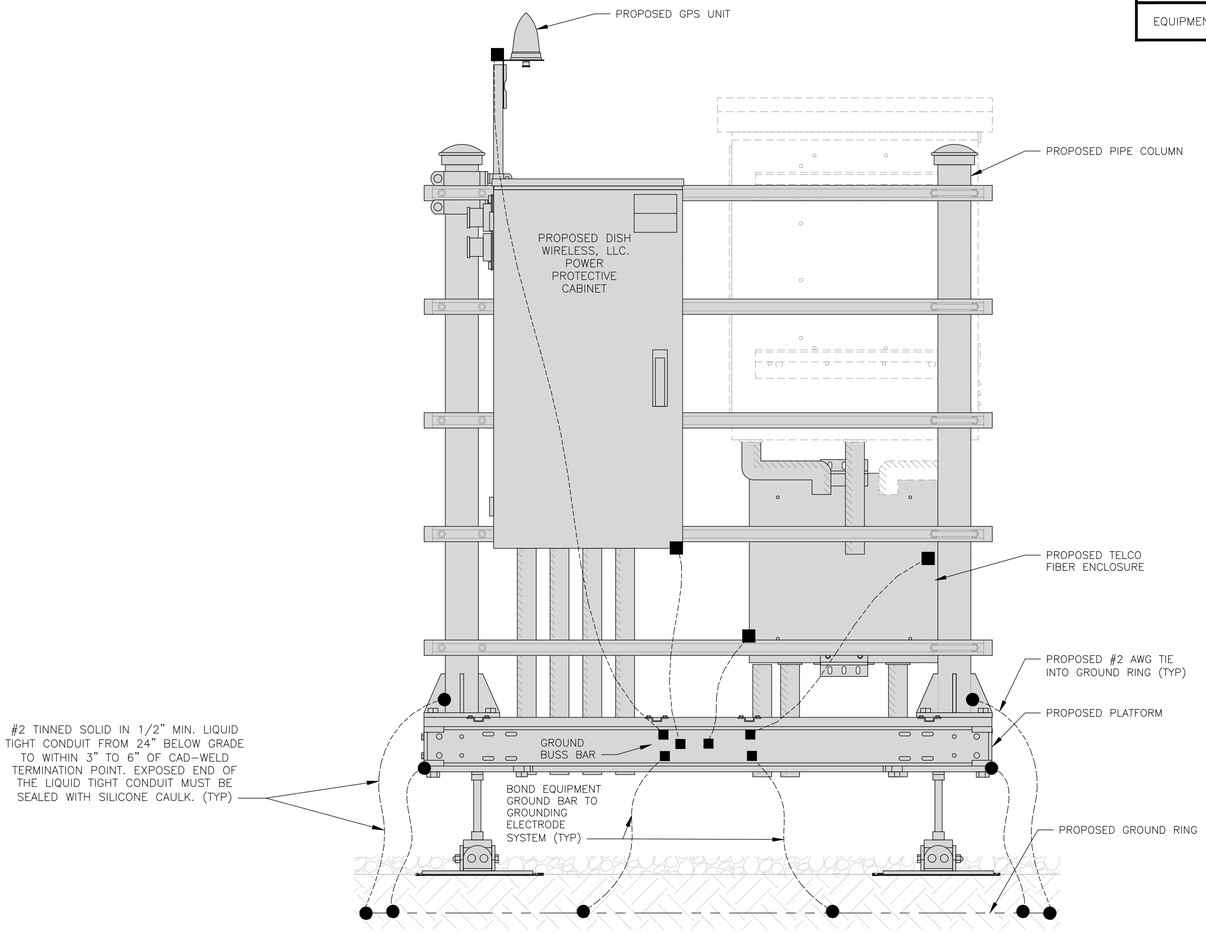
GROUNDING PLANS AND NOTES

SHEET NUMBER

G-1

NOTES

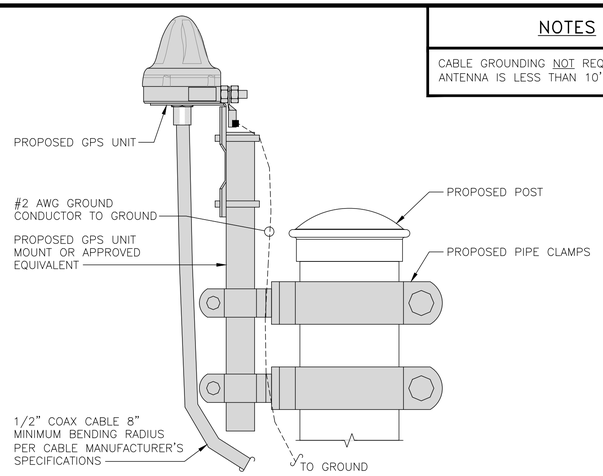
EQUIPMENT CABINET OMITTED FOR CLARITY



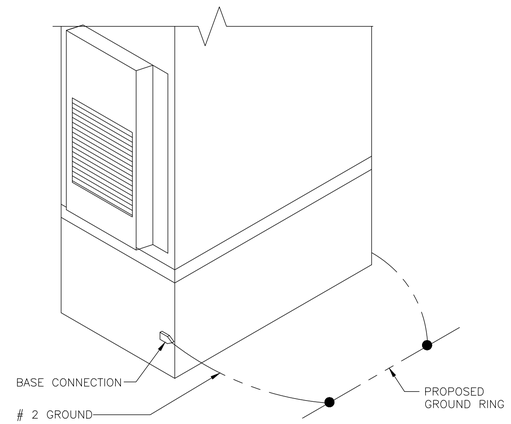
H-FRAME GROUNDING DETAIL | NO SCALE | 1

NOTES

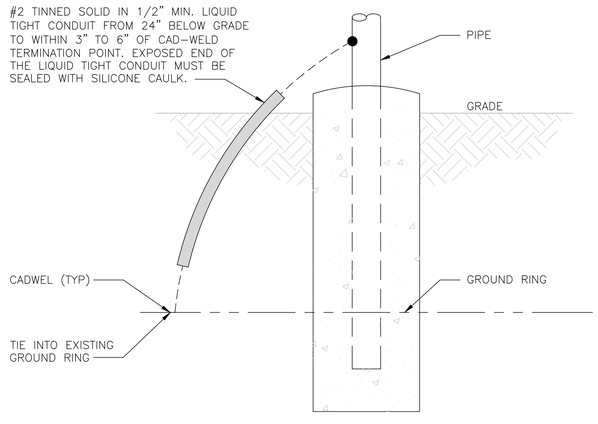
CABLE GROUNDING NOT REQUIRED WHEN ANTENNA IS LESS THAN 10' FROM CABINET



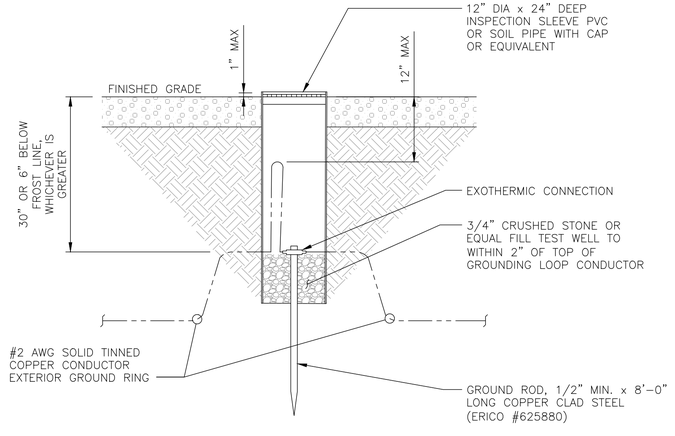
TYPICAL GPS UNIT GROUNDING | NO SCALE | 2



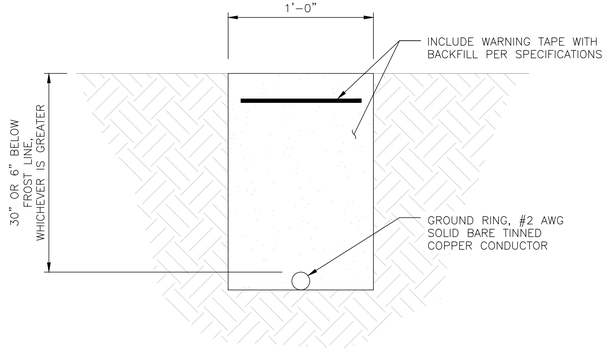
OUTDOOR CABINET GROUNDING | NO SCALE | 3



TRANSITIONING GROUND DETAIL | NO SCALE | 4



TYPICAL TEST GROUND ROD WITH INSPECTION SLEEVE | NO SCALE | 5



TYPICAL GROUND RING TRENCH | NO SCALE | 6

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(919) 657-9131

STATE OF CONNECTICUT · KRUPAKARAN KOLANDAIVELU · PEN.0028997 · LICENSED PROFESSIONAL ENGINEER

03/01/2022

KRUPAKARAN KOLANDAIVELU, P.E.
STATE OF CONNECTICUT
PROFESSIONAL ENGINEER
LICENSE #PEN.0028997

DRAWN BY:	CHECKED BY:	APPROVED BY:
JQG	BRN	TA

RFDS REV #: 0

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	10/07/21	ISSUED FOR REVIEW
0	03/01/22	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

881541

DISH WIRELESS, LLC.
PROJECT INFORMATION

BOHVN00173A
700 GRASSY HILL ROAD
ORANGE, CT 06477

SHEET TITLE

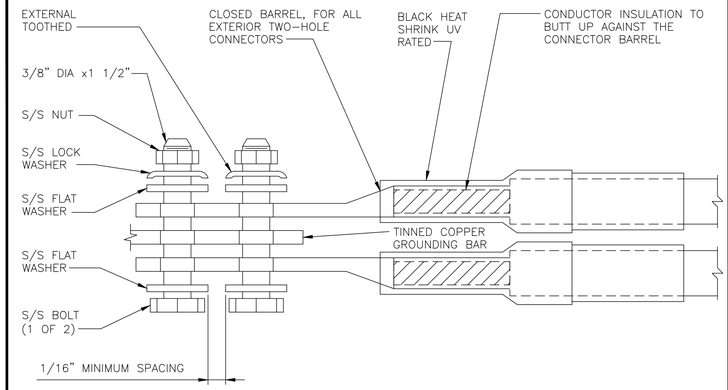
GROUNDING DETAILS

SHEET NUMBER

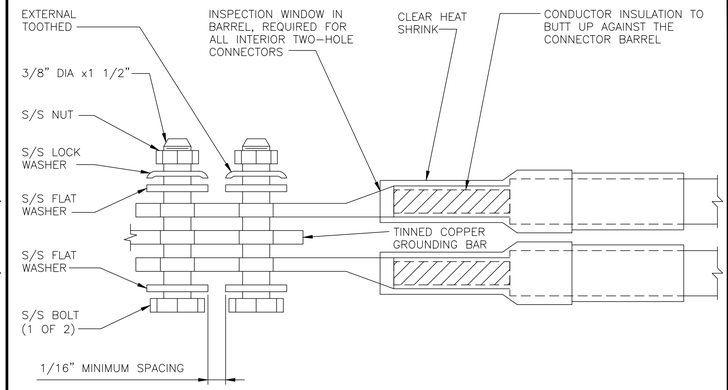
G-2

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).

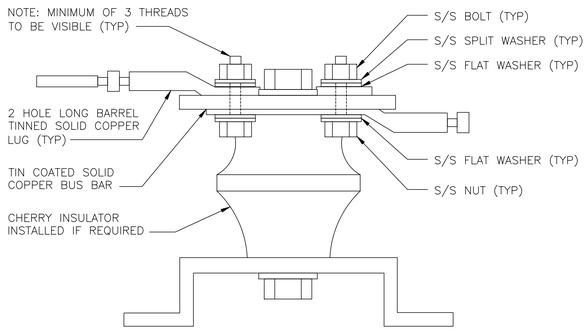
TYPICAL GROUNDING NOTES | NO SCALE | 1



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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700 GRASSY HILL ROAD
ORANGE, CT 06477

SHEET TITLE

GROUNDING DETAILS

SHEET NUMBER

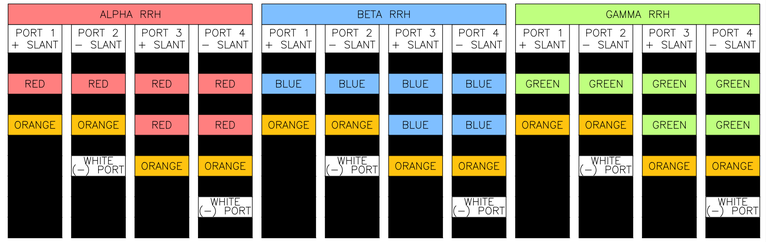
G-3

HYBRID/DISCREET CABLES

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

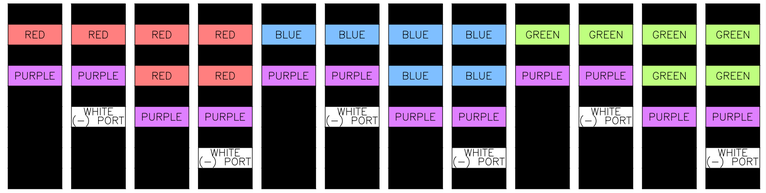
LOW–BAND RRH
(600 MHz N71 BASEBAND) +
(850 MHz N26 BAND) +
(700 MHz N29 BAND) – OPTIONAL PER MARKET

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



MID–BAND RRH
(AWS BANDS N66+N70)

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



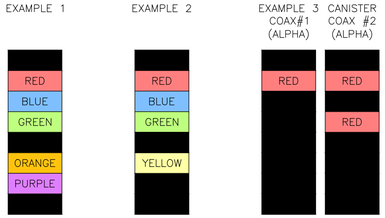
HYBRID/DISCREET CABLES

INCLUDE SECTOR BANDS BEING SUPPORTED ALONG WITH FREQUENCY BANDS.

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

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

EXAMPLE 3 – MAIN COAX WITH GROUND MOUNTED RRHs.

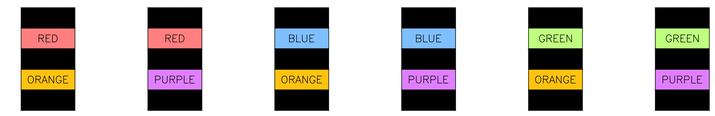


FIBER JUMPERS TO RRHs

LOW–BAND HHR FIBER CABLES HAVE SECTOR STRIPE ONLY.

POWER CABLES TO RRHs

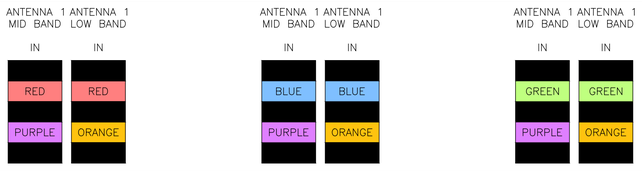
LOW–BAND RRH POWER CABLES HAVE SECTOR STRIPE ONLY



RET MOTORS AT ANTENNAS

RET CONTROL IS HANDLED BY THE MID–BAND RRH WHEN ONE SET OF RET PORTS EXIST ON ANTENNA.

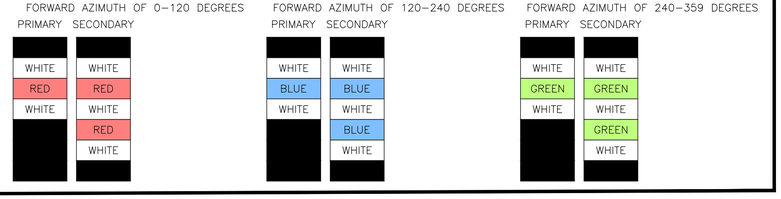
SEPARATE RET CABLES ARE USED WHEN ANTENNA PORTS PROVIDE INPUTS FOR BOTH LOW AND MID BANDS.

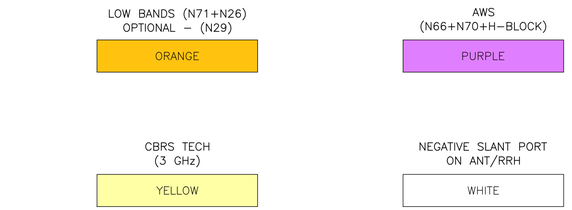


MICROWAVE RADIO LINKS

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

MICROWAVE CABLES WILL REQUIRE P–TOUCH LABELS INSIDE THE CABINET TO IDENTIFY THE LOCAL AND REMOTE SITE ID's.





COLOR IDENTIFIER | 2

NOT USED | 3

RF CABLE COLOR CODES | 1

NOT USED | 4

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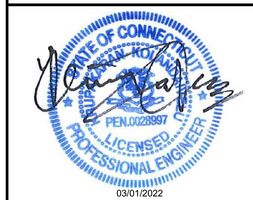

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A&E PROJECT NUMBER

881541

DISH WIRELESS, LLC.
PROJECT INFORMATION

BOHVN00173A
700 GRASSY HILL ROAD
ORANGE, CT 06477

SHEET TITLE

RF
CABLE COLOR CODES

SHEET NUMBER

RF-1

EXOTHERMIC CONNECTION

MECHANICAL CONNECTION

BUSS BAR INSULATOR

CHEMICAL ELECTROLYTIC GROUNDING SYSTEM

TEST CHEMICAL ELECTROLYTIC GROUNDING SYSTEM — T

EXOTHERMIC WITH INSPECTION SLEEVE

GROUNDING BAR

GROUND ROD

TEST GROUND ROD WITH INSPECTION SLEEVE — T

SINGLE POLE SWITCH — S

DUPLEX RECEPTACLE

DUPLEX GFCI RECEPTACLE — GFCI

FLUORESCENT LIGHTING FIXTURE
(2) TWO LAMPS 48–T8 — F

SMOKE DETECTION (DC) — SD

EMERGENCY LIGHTING (DC)

SECURITY LIGHT W/PHOTOCELL LITHONIA ALXW
LED–1–25A400/51K–SR4–120–PE–DDBTXD

CHAIN LINK FENCE — X — X — X — X

WOOD/WROUGHT IRON FENCE

WALL STRUCTURE

LEASE AREA

PROPERTY LINE (PL)

SETBACKS

ICE BRIDGE

CABLE TRAY

WATER LINE — W — W — W — W — W

UNDERGROUND POWER — UGP — UGP — UGP — UGP — UGP

UNDERGROUND TELCO — UGT — UGT — UGT — UGT — UGT

OVERHEAD POWER — OHP — OHP — OHP — OHP

OVERHEAD TELCO — OHT — OHT — OHT — OHT

UNDERGROUND TELCO/POWER — UGT/P — UGT/P — UGT/P — UGT/P

ABOVE GROUND POWER — AGP — AGP — AGP — AGP — AGP

ABOVE GROUND TELCO — AGT — AGT — AGT — AGT — AGT

ABOVE GROUND TELCO/POWER — AGT/P — AGT/P — AGT/P — AGT/P

WORKPOINT — W.P.

SECTION REFERENCE — XX / X–X

DETAIL REFERENCE — XX / X–X

LEGEND

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

ABBREVIATIONS

dish wireless.

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SHEET TITLE

LEGEND AND ABBREVIATIONS

SHEET NUMBER

GN-1

SITE ACTIVITY REQUIREMENTS:

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

2. "LOOK UP" – DISH WIRELESS, LLC. AND TOWER OWNER SAFETY CLIMB REQUIREMENT:

THE INTEGRITY OF THE SAFETY CLIMB AND ALL COMPONENTS OF THE CLIMBING FACILITY SHALL BE CONSIDERED DURING ALL STAGES OF DESIGN, INSTALLATION, AND INSPECTION. TOWER MODIFICATION, MOUNT REINFORCEMENTS, AND/OR EQUIPMENT INSTALLATIONS SHALL NOT COMPROMISE THE INTEGRITY OR FUNCTIONAL USE OF THE SAFETY CLIMB OR ANY COMPONENTS OF THE CLIMBING FACILITY ON THE STRUCTURE. THIS SHALL INCLUDE, BUT NOT BE LIMITED TO: PINCHING OF THE WIRE ROPE, BENDING OF THE WIRE ROPE FROM ITS SUPPORTS, DIRECT CONTACT OR CLOSE PROXIMITY TO THE WIRE ROPE WHICH MAY CAUSE FRICTIONAL WEAR, IMPACT TO THE ANCHORAGE POINTS IN ANY WAY, OR TO IMPEDE/BLOCK ITS INTENDED USE. ANY COMPROMISED SAFETY CLIMB, INCLUDING EXISTING CONDITIONS MUST BE TAGGED OUT AND REPORTED TO YOUR DISH WIRELESS, LLC. AND DISH WIRELESS, LLC. AND TOWER OWNER POC OR CALL THE NOC TO GENERATE A SAFETY CLIMB MAINTENANCE AND CONTRACTOR NOTICE TICKET.

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

4. ALL CONSTRUCTION MEANS AND METHODS; INCLUDING BUT NOT LIMITED TO, ERECTION PLANS, RIGGING PLANS, CLIMBING PLANS, AND RESCUE PLANS SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR RESPONSIBLE FOR THE EXECUTION OF THE WORK CONTAINED HEREIN, AND SHALL MEET ANSI/ASSE A10.48 (LATEST EDITION); FEDERAL, STATE, AND LOCAL REGULATIONS; AND ANY APPLICABLE INDUSTRY CONSENSUS STANDARDS RELATED TO THE CONSTRUCTION ACTIVITIES BEING PERFORMED. ALL RIGGING PLANS SHALL ADHERE TO ANSI/ASSE A10.48 (LATEST EDITION) AND DISH WIRELESS, LLC. AND TOWER OWNER STANDARDS, INCLUDING THE REQUIRED INVOLVEMENT OF A QUALIFIED ENGINEER FOR CLASS IV CONSTRUCTION, TO CERTIFY THE SUPPORTING STRUCTURE(S) IN ACCORDANCE WITH ANSI/TIA–322 (LATEST EDITION).

5. ALL SITE WORK TO COMPLY WITH DISH WIRELESS, LLC. AND TOWER OWNER INSTALLATION STANDARDS FOR CONSTRUCTION ACTIVITIES ON DISH WIRELESS, LLC. AND TOWER OWNER TOWER SITE AND LATEST VERSION OF ANSI/TIA–1019–A–2012 "STANDARD FOR INSTALLATION, ALTERATION, AND MAINTENANCE OF ANTENNA SUPPORTING STRUCTURES AND ANTENNAS."

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

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

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

9. THE CONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES INCLUDING PRIVATE LOCATES SERVICES PRIOR TO THE START OF CONSTRUCTION.

10. ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY CONTRACTOR. EXTREME CAUTION SHOULD BE USED BY THE CONTRACTOR WHEN EXCAVATING OR DRILLING PIERS AROUND OR NEAR UTILITIES. CONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS WILL INCLUDE BUT NOT BE LIMITED TO A) FALL PROTECTION B) CONFINED SPACE C) ELECTRICAL SAFETY D) TRENCHING AND EXCAVATION E) CONSTRUCTION SAFETY PROCEDURES.

11. ALL SITE WORK SHALL BE AS INDICATED ON THE STAMPED CONSTRUCTION DRAWINGS AND DISH PROJECT SPECIFICATIONS, LATEST APPROVED REVISION.

12. CONTRACTOR SHALL KEEP THE SITE FREE FROM ACCUMULATING WASTE MATERIAL, DEBRIS, AND TRASH AT THE COMPLETION OF THE WORK. IF NECESSARY, RUBBISH, STUMPS, DEBRIS, STICKS, STONES AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.

13. ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, SUBJECT TO THE APPROVAL OF DISH WIRELESS, LLC. AND TOWER OWNER, AND/OR LOCAL UTILITIES.

14. THE CONTRACTOR SHALL PROVIDE SITE SIGNAGE IN ACCORDANCE WITH THE TECHNICAL SPECIFICATION FOR SITE SIGNAGE REQUIRED BY LOCAL JURISDICTION AND SIGNAGE REQUIRED ON INDIVIDUAL PIECES OF EQUIPMENT, ROOMS, AND SHELTERS.

15. THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE CARRIER'S EQUIPMENT AND TOWER AREAS.

16. THE SUB GRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION.

17. THE AREAS OF THE OWNERS PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE TOWER, EQUIPMENT OR DRIVEWAY, SHALL BE GRADED TO A UNIFORM SLOPE, AND STABILIZED TO PREVENT EROSION AS SPECIFIED ON THE CONSTRUCTION DRAWINGS AND/OR PROJECT SPECIFICATIONS.

18. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.

19. THE CONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.

20. CONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS AND RADIOS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.

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

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

GENERAL NOTES:

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

CONTRACTOR:GENERAL CONTRACTOR RESPONSIBLE FOR CONSTRUCTION

CARRIER:DISH WIRELESS, LLC.

TOWER OWNER:TOWER OWNER

2. THESE DRAWINGS HAVE BEEN PREPARED USING STANDARDS OF PROFESSIONAL CARE AND COMPLETENESS NORMALLY EXERCISED UNDER SIMILAR CIRCUMSTANCES BY REPUTABLE ENGINEERS IN THIS OR SIMILAR LOCALITIES. IT IS ASSUMED THAT THE WORK DEPICTED WILL BE PERFORMED BY AN EXPERIENCED CONTRACTOR AND/OR WORKPEOPLE WHO HAVE A WORKING KNOWLEDGE OF THE APPLICABLE CODE STANDARDS AND REQUIREMENTS AND OF INDUSTRY ACCEPTED STANDARD GOOD PRACTICE. AS NOT EVERY CONDITION OR ELEMENT IS (OR CAN BE) EXPLICITLY SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL USE INDUSTRY ACCEPTED STANDARD GOOD PRACTICE FOR MISCELLANEOUS WORK NOT EXPLICITLY SHOWN.

3. THESE DRAWINGS REPRESENT THE FINISHED STRUCTURE. THEY DO NOT INDICATE THE MEANS OR METHODS OF CONSTRUCTION. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES. THE CONTRACTOR SHALL PROVIDE ALL MEASURES NECESSARY FOR PROTECTION OF LIFE AND PROPERTY DURING CONSTRUCTION. SUCH MEASURES SHALL INCLUDE, BUT NOT BE LIMITED TO, BRACING, FORMWORK, SHORING, ETC. SITE VISITS BY THE ENGINEER OR HIS REPRESENTATIVE WILL NOT INCLUDE INSPECTION OF THESE ITEMS AND IS FOR STRUCTURAL OBSERVATION OF THE FINISHED STRUCTURE ONLY.

4. NOTES AND DETAILS IN THE CONSTRUCTION DRAWINGS SHALL TAKE PRECEDENCE OVER GENERAL NOTES AND TYPICAL DETAILS. WHERE NO DETAILS ARE SHOWN, CONSTRUCTION SHALL CONFORM TO SIMILAR WORK ON THE PROJECT, AND/OR AS PROVIDED FOR IN THE CONTRACT DOCUMENTS. WHERE DISCREPANCIES OCCUR BETWEEN PLANS, DETAILS, GENERAL NOTES, AND SPECIFICATIONS, THE GREATER, MORE STRICT REQUIREMENTS, SHALL GOVERN. IF FURTHER CLARIFICATION IS REQUIRED CONTACT THE ENGINEER OF RECORD.

5. SUBSTANTIAL EFFORT HAS BEEN MADE TO PROVIDE ACCURATE DIMENSIONS AND MEASUREMENTS ON THE DRAWINGS TO ASSIST IN THE FABRICATION AND/OR PLACEMENT OF CONSTRUCTION ELEMENTS BUT IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY THE DIMENSIONS, MEASUREMENTS, AND/OR CLEARANCES SHOWN IN THE CONSTRUCTION DRAWINGS PRIOR TO FABRICATION OR CUTTING OF ANY NEW OR EXISTING CONSTRUCTION ELEMENTS. IF IT IS DETERMINED THAT THERE ARE DISCREPANCIES AND/OR CONFLICTS WITH THE CONSTRUCTION DRAWINGS THE ENGINEER OF RECORD IS TO BE NOTIFIED AS SOON AS POSSIBLE.

6. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING CONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CARRIER POC AND TOWER OWNER.

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

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

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

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

11. CONTRACTOR IS TO PERFORM A SITE INVESTIGATION, BEFORE SUBMITTING BIDS, TO DETERMINE THE BEST ROUTING OF ALL CONDUITS FOR POWER, AND TELCO AND FOR GROUNDING CABLES AS SHOWN IN THE POWER, TELCO, AND GROUNDING PLAN DRAWINGS.

12. THE CONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE TO THE SATISFACTION OF DISH WIRELESS, LLC. AND TOWER OWNER

13. CONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.

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

dish wireless.

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03/01/2022

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DRAWN BY:	CHECKED BY:	APPROVED BY:
JQG	BRN	TA

RFDS REV #: 0

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	10/07/21	ISSUED FOR REVIEW
0	03/01/22	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

881541

DISH WIRELESS, LLC.
PROJECT INFORMATION

BOHVN00173A
700 GRASSY HILL 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, LLC. AND TOWER OWNER BEFORE COMMENCING WORK ON THE AC POWER DISTRIBUTION PANELS.

28. THE CONTRACTOR SHALL PROVIDE NECESSARY TAGGING ON THE BREAKERS, CABLES AND DISTRIBUTION PANELS IN ACCORDANCE WITH THE APPLICABLE CODES AND STANDARDS TO SAFEGUARD LIFE AND PROPERTY.

29. INSTALL LAMICOID LABEL ON THE METER CENTER TO SHOW "DISH WIRELESS, LLC.".

30. ALL EMPTY/SPARE CONDUITS THAT ARE INSTALLED ARE TO HAVE A METERED MULE TAPE PULL CORD INSTALLED.

dish wireless.

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03/01/2022

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LICENSE #PEN.0028997

DRAWN BY:	CHECKED BY:	APPROVED BY:
JQG	BRN	TA

RFDS REV #: 0

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	10/07/21	ISSUED FOR REVIEW
0	03/01/22	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

881541

DISH WIRELESS, LLC.
PROJECT INFORMATION

BOHVN00173A
700 GRASSY HILL 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.

dish wireless.

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A&E PROJECT NUMBER

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DISH WIRELESS, LLC.
PROJECT INFORMATION

BOHVN00173A
700 GRASSY HILL ROAD
ORANGE, CT 06477

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-4

Exhibit D

Structural Analysis Report

Date: **September 02, 2021**

MORRISON HERSHFIELD

Morrison Hershfield
1455 Lincoln Parkway, Suite 500
Atlanta, GA 30346
(770) 379-8500

Subject:	**Structural Analysis Report**	
Carrier Designation:	***DISH Network* Co-Locate**	
	Site Number:	BOHVN00173A
	Site Name:	CT-CCI-T-881541
Crown Castle Designation:	**BU Number:**	881541
	Site Name:	Rogers Property
	JDE Job Number:	645210
	Work Order Number:	1966148
	Order Number:	553390 Rev. 0
Engineering Firm Designation:	**Morrison Hershfield Project Number:** CN9-494 / 2101398	
Site Data:	**700 Grassy Hill Road, Orange, New Haven County, CT 06477** **Latitude *41° 17' 7.75"*, Longitude *-73° 2' 33.27"*** **139.5 Foot – EEI Monopole Tower**	

Morrison Hershfield 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**

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.

Respectfully submitted by:

G. Lance Cooke, P.E. (CT License No. PEN.0028133)
Senior Engineer

Digitally signed by G. Lance Cooke
Date: 2021.09.02 12:26:13-07'00'

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1) INTRODUCTION

This tower is a 139.5 ft Monopole tower designed by Engineered Endeavors, Inc.

The tower was modified per reinforcement drawing prepared by B+T Group, in October of 2013. Reinforcement consists of addition of base plate stiffeners. Per the post modification report completed by SGS, Inc., in February of 2014, these modifications were properly installed on the tower and has been considered in this analysis.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	125 mph
Exposure Category:	C
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)
100.0	100.0	1	-	Commscope MC-PK8-DSH	1	1-1/2
		3	fujitsu	TA08025-B604		
		3	fujitsu	TA08025-B605		
		3	jma wireless	MX08FRO665-21 w/ Mount Pipe		
		1	raycap	RDIDC-9181-PF-48		

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)
136.0	140.0	3	ericsson	RRUS 11 B12	6 1 2	1-5/8 5/8 3/8
		3	ericsson	RRUS12/RRUS A2		
		6	powerwave technologies	LGP21401		
		1	raycap	DC6-48-60-18-8F		
	139.0	3	cci antennas	HPA-65R-BUU-H6 w/ Mount Pipe		
		3	kathrein	800 10121 w/ Mount Pipe		
	136.0	1	-	T-Arm Mount [TA 702-3]		
132.0	132.0	1	-	Side Arm Mount [SO 102-3]		
		3	alcatel lucent	1900MHZ RRH (65MHZ)		
		3	alcatel lucent	800MHZ RRH		
130.0	134.0	1	andrew	VHLP2-11	3 3 4	5/16 7983A 1-1/4
	132.0	3	argus technologies	LLPX310R w/ Mount Pipe		
		1	dragonwave	A-ANT-23G-2-C		
	130.0	1	-	Sector Mount [SM 901-3]		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
		3	alcatel lucent	800 EXTERNAL NOTCH FILTER		
		3	alcatel lucent	TD-RRH8X20-25		
		9	rfs celwave	ACU-A20-N		
		3	rfs celwave	APXVSPP18-C-A20 w/ Mount Pipe		
		3	rfs celwave	APXVTM14-ALU-I20 w/ Mount Pipe		
		3	samsung telecommunications	FDD_R6_RRH		
119.0	119.0	1	-	T-Arm Mount [TA 602-3]	12 1	1-5/8 1-1/4
		3	antel	BXA-171063-8BF-EDIN-0 w/ Mount Pipe		
		3	antel	BXA-70063-6CF-EDIN-0 w/ Mount Pipe		
		6	decibel	DB846F65ZAXY w/ Mount Pipe		
		3	rymsa wireless	MG D3-800TX w/ Mount Pipe		
	118.0	3	alcatel lucent	RRH2X40-AWS		
110.0	110.0	1	-	T-Arm Mount [TA 601-3]	10	1-5/8
		3	ericsson	ERICSSON AIR 21 B2A B4P w/ Mount Pipe		
		3	ericsson	ERICSSON AIR 21 B4A B2P w/ Mount Pipe		
		3	ericsson	KRY 112 144/1		
		3	ericsson	RADIO 4449 B71/B85A		
		1	perfect vision	Kicker Kit [PV-PKPB-M]		
		3	rfs celwave	APXVAALL24_43-U-NA20 w/ Mount Pipe		
		1	site pro 1	Stabilizer Kit [PRK-SFS]		
75.0	77.0	1	lucent	KS24019-L112A		-
	75.0	1	-	Side Arm Mount [SO 701-1]		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Reference	Source
4-GEOTECHNICAL REPORTS	2245154	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	2208511	CCISITES
4-TOWER MANUFACTURER DRAWINGS	2207700	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	4024239	CCISITES
4-POST-MODIFICATION INSPECTION	4432995	CCISITES

3.1) Analysis Method

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

3.2) Assumptions

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

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

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	139.5 - 93.04	Pole	TP26.99x15.5x0.25	1	-15.75	1256.07	59.6	Pass
L2	93.04 - 46.38	Pole	TP37.91x25.5205x0.375	2	-26.94	2650.21	64.8	Pass
L3	46.38 - 0	Pole	TP48.5x35.874x0.375	3	-42.87	3518.48	76.9	Pass
							Summary	
						Pole (L3)	76.9	Pass
						Rating =	76.9	Pass

Table 5 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	62.0	Pass
1	Base Plate		49.9	Pass
1	Base Foundation (Structure)	0	78.5	Pass
1	Base Foundation (Soil Interaction)		88.8	Pass

Structure Rating (max from all components) =	88.8%

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

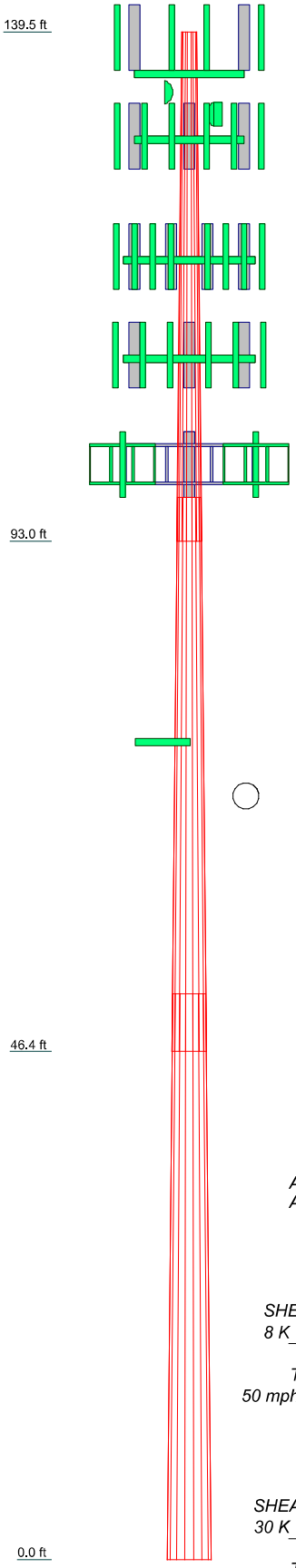
4.1) Recommendations

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

APPENDIX A

TNXTOWER OUTPUT

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	46.46	18	0.2500	3.92	15.5000	26.9900		2.6
2	50.58	18	0.3750	5.25	25.5205	37.9100	A572-65	6.4
3	51.63	18	0.3750		35.8740	48.5000		8.7
								17.8



MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower designed for Exposure C to the TIA-222-H Standard.
2. Tower designed for a 125 mph basic wind in accordance with the TIA-222-H Standard.
3. Tower is also designed for a 50 mph basic wind with 1.50 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 60 mph wind.
5. Tower Risk Category II.
6. Topographic Category 1 with Crest Height of 0.00 ft
7. TOWER RATING: 76.9%

ALL REACTIONS ARE FACTORED

AXIAL 73 K

SHEAR 8 K *MOMENT 846 kip-ft*

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

AXIAL 43 K

SHEAR 30 K *MOMENT 3066 kip-ft*

TORQUE 0 kip-ft
REACTIONS - 125 mph WIND

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Job: ***CN9-494 / 2101398***			
Project: ***881541 / Rogers Property***			
Client: Crown Castle USA	Drawn by: LKampara	App'd:	
Code: TIA-222-H	Date: 09/02/21	Scale: NTS	
Path: C:\Users\LKampara\Desktop\Redlines CN9-494\CN9-494 SA\Analysis\CN9-494 BU_881541 WO_1966148.dri		Dwg No. E-1	

Tower Input Data

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

- Tower base elevation above sea level: 91.00 ft.
- Basic wind speed of 125 mph.
- Risk Category II.
- Exposure Category C.
- Simplified Topographic Factor Procedure for wind speed-up calculations is used.
- Topographic Category: 1.
- Crest Height: 0.00 ft.
- Nominal ice thickness of 1.5000 in.
- Ice thickness is considered to increase with height.
- Ice density of 56 pcf.
- A wind speed of 50 mph is used in combination with ice.
- Temperature drop of 50 °F.
- Deflections calculated using a wind speed of 60 mph.
- A non-linear (P-delta) analysis was used.
- Pressures are calculated at each section.
- Stress ratio used in pole design is 1.
- Tower analysis based on target reliabilities in accordance with Annex S.
- Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.
- Maximum demand-capacity ratio is: 1.05.
- Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

	Consider Moments - Legs		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		Retension 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	139.50-93.04	46.46	3.92	18	15.5000	26.9900	0.2500	0.3750	A572-65 (65 ksi)
L2	93.04-46.38	50.58	5.25	18	25.5205	37.9100	0.3750	0.5625	A572-65 (65 ksi)
L3	46.38-0.00	51.63		18	35.8740	48.5000	0.3750	0.5625	A572-65 (65 ksi)

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	15.7198	12.1009	355.5445	5.4138	7.8740	45.1542	711.5567	6.0516	2.5080	10.032
	27.3871	21.2182	1916.7638	9.4927	13.7109	139.7983	3836.0497	10.6111	4.5302	18.121
L2	26.8603	29.9295	2390.8861	8.9267	12.9644	184.4188	4784.9182	14.9676	4.1616	11.098
	38.4659	44.6760	7952.1562	13.3249	19.2583	412.9214	15914.7760	22.3423	6.3422	16.912
L3	37.7022	42.2527	6727.0539	12.6022	18.2240	369.1315	13462.9594	21.1304	5.9838	15.957
	49.2193	57.2808	16760.5346	17.0844	24.6380	680.2717	33543.1232	28.6458	8.2060	21.883

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	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
L1 139.50-93.04				1	1	1			
L2 93.04-46.38				1	1	1			
L3 46.38-0.00				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
******										
Safety Line 3/8	C	No	Surface Ar (CaAa)	139.50 - 11.00	1	1	-0.450 -0.450	0.3750		0.22
Climbing Pegs	C	No	Surface Ar (CaAa)	139.50 - 12.00	1	1	-0.500 -0.400	0.7050		1.80
7983A(ELLIPTICAL)	A	No	Surface Ar (CaAa)	130.00 - 7.00	2	2	0.250 0.300	0.5730		0.08
7983A(ELLIPTICAL)	A	No	Surface Ar (CaAa)	130.00 - 7.00	1	1	0.200 0.250	0.0000		0.08
9207(5/16)	A	No	Surface Ar (CaAa)	130.00 - 7.00	3	3	0.200 0.250	0.0000		0.06
3" Conduit	A	No	Surface Ar (CaAa)	130.00 - 7.00	2	2	0.200 0.250	3.0000		6.25
***										
HB114-21U3M12-XXXF(1-1/4)	B	No	Surface Ar (CaAa)	130.00 - 7.00	1	1	-0.480 -0.048	1.5400		1.22
HCS 6X12 4AWG(1-5/8)	B	No	Surface Ar (CaAa)	110.00 - 7.00	3	3	0.250 0.370	1.6600		2.40
MLE HYBRID 9POWER/18FIBER RL	B	No	Surface Ar (CaAa)	110.00 - 7.00	1	1	0.320 0.320	1.6250		1.07

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
2(1-5/8)										
*****										
CU12PSM9P6XXX(1-1/2)	A	No	Surface Ar (CaAa)	100.00 - 7.00	1	1	0.100 0.100	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		C_AA_A ft^2/ft	Weight plf
*****									
LDF7-50A(1-5/8)	B	No	No	Inside Pole	136.00 - 3.00	6	No Ice	0.00	0.82
							1/2" Ice	0.00	0.82
							1" Ice	0.00	0.82
							2" Ice	0.00	0.82
FB-L98B-002-75000(3/8)	B	No	No	Inside Pole	136.00 - 3.00	2	No Ice	0.00	0.06
							1/2" Ice	0.00	0.06
							1" Ice	0.00	0.06
							2" Ice	0.00	0.06
WR-VG82ST-BRDA(5/8)	B	No	No	Inside Pole	136.00 - 3.00	1	No Ice	0.00	0.31
							1/2" Ice	0.00	0.31
							1" Ice	0.00	0.31
							2" Ice	0.00	0.31
2" Conduit	B	No	No	Inside Pole	136.00 - 3.00	1	No Ice	0.00	2.80
							1/2" Ice	0.00	2.80
							1" Ice	0.00	2.80
							2" Ice	0.00	2.80
*****									
HB114-1-0813U4-M5J(1-1/4)	B	No	No	Inside Pole	130.00 - 7.00	3	No Ice	0.00	1.20
							1/2" Ice	0.00	1.20
							1" Ice	0.00	1.20
							2" Ice	0.00	1.20
*****									
561(1-5/8)	A	No	No	Inside Pole	119.00 - 10.00	12	No Ice	0.00	1.35
							1/2" Ice	0.00	1.35
							1" Ice	0.00	1.35
							2" Ice	0.00	1.35
LDF6-50A(1-1/4)	A	No	No	Inside Pole	119.00 - 10.00	1	No Ice	0.00	0.60
							1/2" Ice	0.00	0.60
							1" Ice	0.00	0.60
							2" Ice	0.00	0.60
*****									
LDF7-50A(1-5/8)	B	No	No	Inside Pole	110.00 - 7.00	6	No Ice	0.00	0.82
							1/2" Ice	0.00	0.82
							1" Ice	0.00	0.82
							2" Ice	0.00	0.82

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	139.50-93.04	A	0.000	0.000	27.525	0.000	0.93
		B	0.000	0.000	16.894	0.000	0.75
		C	0.000	0.000	5.018	0.000	0.09
L2	93.04-46.38	A	0.000	0.000	40.809	0.000	1.50
		B	0.000	0.000	38.005	0.000	1.22
		C	0.000	0.000	5.039	0.000	0.09
L3	46.38-0.00	A	0.000	0.000	34.442	0.000	1.21
		B	0.000	0.000	32.075	0.000	1.06
		C	0.000	0.000	3.751	0.000	0.07

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	139.50-93.04	A	1.444	0.000	0.000	86.833	0.000	1.75
		B		0.000	0.000	40.697	0.000	1.20
		C		0.000	0.000	31.849	0.000	0.42
L2	93.04-46.38	A	1.372	0.000	0.000	126.617	0.000	2.74
		B		0.000	0.000	87.603	0.000	2.17
		C		0.000	0.000	31.986	0.000	0.42
L3	46.38-0.00	A	1.231	0.000	0.000	103.615	0.000	2.19
		B		0.000	0.000	72.099	0.000	1.81
		C		0.000	0.000	22.894	0.000	0.29

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	139.50-93.04	0.3351	-2.7053	0.3939	-2.3866
L2	93.04-46.38	1.3568	-3.2043	1.0039	-3.1496
L3	46.38-0.00	1.3158	-3.2083	0.9968	-3.5289

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
L1	2	Safety Line 3/8	93.04 - 139.50	1.0000	1.0000
L1	3	Climbing Pegs	93.04 - 139.50	1.0000	1.0000
L1	11	7983A(ELLIPTICAL)	93.04 - 130.00	1.0000	1.0000
L1	12	7983A(ELLIPTICAL)	93.04 - 130.00	1.0000	1.0000
L1	13	9207(5/16)	93.04 - 130.00	1.0000	1.0000
L1	14	3" Conduit	93.04 - 130.00	1.0000	1.0000
L1	16	HB114-21U3M12-XXXF(1-1/4)	93.04 - 130.00	1.0000	1.0000
L1	22	HCS 6X12 4AWG(1-5/8)	93.04 - 110.00	1.0000	1.0000
L1	23	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	93.04 - 110.00	1.0000	1.0000
L1	25	CU12PSM9P6XXX(1-1/2)	93.04 - 100.00	1.0000	1.0000
L2	2	Safety Line 3/8	46.38 - 93.04	1.0000	1.0000
L2	3	Climbing Pegs	46.38 - 93.04	1.0000	1.0000
L2	11	7983A(ELLIPTICAL)	46.38 - 93.04	1.0000	1.0000
L2	12	7983A(ELLIPTICAL)	46.38 - 93.04	1.0000	1.0000
L2	13	9207(5/16)	46.38 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
			93.04		
L2	14	3" Conduit	46.38 - 93.04	1.0000	1.0000
L2	16	HB114-21U3M12-XXXF(1-1/4)	46.38 - 93.04	1.0000	1.0000
L2	22	HCS 6X12 4AWG(1-5/8)	46.38 - 93.04	1.0000	1.0000
L2	23	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	46.38 - 93.04	1.0000	1.0000
L2	25	CU12PSM9P6XXX(1-1/2)	46.38 - 93.04	1.0000	1.0000
L3	2	Safety Line 3/8	11.00 - 46.38	1.0000	1.0000
L3	3	Climbing Pegs	12.00 - 46.38	1.0000	1.0000
L3	11	7983A(ELLIPTICAL)	7.00 - 46.38	1.0000	1.0000
L3	12	7983A(ELLIPTICAL)	7.00 - 46.38	1.0000	1.0000
L3	13	9207(5/16)	7.00 - 46.38	1.0000	1.0000
L3	14	3" Conduit	7.00 - 46.38	1.0000	1.0000
L3	16	HB114-21U3M12-XXXF(1-1/4)	7.00 - 46.38	1.0000	1.0000
L3	22	HCS 6X12 4AWG(1-5/8)	7.00 - 46.38	1.0000	1.0000
L3	23	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	7.00 - 46.38	1.0000	1.0000
L3	25	CU12PSM9P6XXX(1-1/2)	7.00 - 46.38	1.0000	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
*****									
HPA-65R-BUU-H6 w/ Mount Pipe	A	From Leg	4.00 0.00 3.00	0.0000	136.00	No Ice 1/2" Ice 1" Ice 2" Ice	9.22 9.98 10.76 12.36	6.25 6.96 7.70 9.22	0.07 0.14 0.22 0.42
HPA-65R-BUU-H6 w/ Mount Pipe	B	From Leg	4.00 0.00 3.00	0.0000	136.00	No Ice 1/2" Ice 1" Ice 2" Ice	9.22 9.98 10.76 12.36	6.25 6.96 7.70 9.22	0.07 0.14 0.22 0.42
HPA-65R-BUU-H6 w/ Mount Pipe	C	From Leg	4.00 0.00 3.00	0.0000	136.00	No Ice 1/2" Ice 1" Ice 2" Ice	9.22 9.98 10.76 12.36	6.25 6.96 7.70 9.22	0.07 0.14 0.22 0.42
800 10121 w/ Mount Pipe	A	From Leg	4.00 0.00 3.00	0.0000	136.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.60 4.00 4.42 5.29	2.95 3.34 3.74 4.59	0.07 0.11 0.17 0.30
800 10121 w/ Mount Pipe	B	From Leg	4.00 0.00 3.00	0.0000	136.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.60 4.00 4.42 5.29	2.95 3.34 3.74 4.59	0.07 0.11 0.17 0.30
800 10121 w/ Mount Pipe	C	From Leg	4.00 0.00 3.00	0.0000	136.00	No Ice 1/2" Ice Ice	3.60 4.00 4.42	2.95 3.34 3.74	0.07 0.11 0.17

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						1" Ice	5.29	4.59	0.30
						2" Ice			
(2) LGP21401	A	From Leg	4.00	0.0000	136.00	No Ice	1.10	0.21	0.01
			0.00			1/2"	1.24	0.27	0.02
			4.00			Ice	1.38	0.35	0.03
						1" Ice	1.69	0.52	0.05
						2" Ice			
(2) LGP21401	B	From Leg	4.00	0.0000	136.00	No Ice	1.10	0.21	0.01
			0.00			1/2"	1.24	0.27	0.02
			4.00			Ice	1.38	0.35	0.03
						1" Ice	1.69	0.52	0.05
						2" Ice			
(2) LGP21401	C	From Leg	4.00	0.0000	136.00	No Ice	1.10	0.21	0.01
			0.00			1/2"	1.24	0.27	0.02
			4.00			Ice	1.38	0.35	0.03
						1" Ice	1.69	0.52	0.05
						2" Ice			
DC6-48-60-18-8F	A	From Leg	4.00	0.0000	136.00	No Ice	0.92	0.92	0.02
			0.00			1/2"	1.46	1.46	0.04
			4.00			Ice	1.64	1.64	0.06
						1" Ice	2.04	2.04	0.11
						2" Ice			
RRUS 11 B12	A	From Leg	4.00	0.0000	136.00	No Ice	2.83	1.18	0.05
			0.00			1/2"	3.04	1.33	0.07
			4.00			Ice	3.26	1.48	0.10
						1" Ice	3.71	1.83	0.15
						2" Ice			
RRUS 11 B12	B	From Leg	4.00	0.0000	136.00	No Ice	2.83	1.18	0.05
			0.00			1/2"	3.04	1.33	0.07
			4.00			Ice	3.26	1.48	0.10
						1" Ice	3.71	1.83	0.15
						2" Ice			
RRUS 11 B12	C	From Leg	4.00	0.0000	136.00	No Ice	2.83	1.18	0.05
			0.00			1/2"	3.04	1.33	0.07
			4.00			Ice	3.26	1.48	0.10
						1" Ice	3.71	1.83	0.15
						2" Ice			
RRUS12/RRUS A2	A	From Leg	4.00	0.0000	136.00	No Ice	3.14	1.84	0.07
			0.00			1/2"	3.36	2.01	0.10
			4.00			Ice	3.59	2.20	0.13
						1" Ice	4.07	2.59	0.20
						2" Ice			
RRUS12/RRUS A2	B	From Leg	4.00	0.0000	136.00	No Ice	3.14	1.84	0.07
			0.00			1/2"	3.36	2.01	0.10
			4.00			Ice	3.59	2.20	0.13
						1" Ice	4.07	2.59	0.20
						2" Ice			
RRUS12/RRUS A2	C	From Leg	4.00	0.0000	136.00	No Ice	3.14	1.84	0.07
			0.00			1/2"	3.36	2.01	0.10
			4.00			Ice	3.59	2.20	0.13
						1" Ice	4.07	2.59	0.20
						2" Ice			
T-Arm Mount [TA 702-3]	C	None		0.0000	136.00	No Ice	4.75	4.75	0.34
						1/2"	5.82	5.82	0.43
						Ice	6.98	6.98	0.55
						1" Ice	9.72	9.72	0.87
						2" Ice			
*****									
1900MHZ RRH (65MHZ)	A	From Leg	4.00	0.0000	132.00	No Ice	2.32	2.24	0.06
			0.00			1/2"	2.53	2.44	0.08
			0.00			Ice	2.74	2.65	0.11
						1" Ice	3.19	3.09	0.17
						2" Ice			
1900MHZ RRH (65MHZ)	B	From Leg	4.00	0.0000	132.00	No Ice	2.32	2.24	0.06
			0.00			1/2"	2.53	2.44	0.08

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00			Ice	2.74	2.65	0.11
						1" Ice	3.19	3.09	0.17
						2" Ice			
1900MHZ RRH (65MHZ)	C	From Leg	4.00	0.0000	132.00	No Ice	2.32	2.24	0.06
			0.00			1/2"	2.53	2.44	0.08
			0.00			Ice	2.74	2.65	0.11
						1" Ice	3.19	3.09	0.17
						2" Ice			
800MHZ RRH	A	From Leg	4.00	0.0000	132.00	No Ice	2.13	1.77	0.05
			0.00			1/2"	2.32	1.95	0.07
			0.00			Ice	2.51	2.13	0.10
						1" Ice	2.92	2.51	0.16
						2" Ice			
800MHZ RRH	B	From Leg	4.00	0.0000	132.00	No Ice	2.13	1.77	0.05
			0.00			1/2"	2.32	1.95	0.07
			0.00			Ice	2.51	2.13	0.10
						1" Ice	2.92	2.51	0.16
						2" Ice			
800MHZ RRH	C	From Leg	4.00	0.0000	132.00	No Ice	2.13	1.77	0.05
			0.00			1/2"	2.32	1.95	0.07
			0.00			Ice	2.51	2.13	0.10
						1" Ice	2.92	2.51	0.16
						2" Ice			
Side Arm Mount [SO 102-3]	C	None		0.0000	132.00	No Ice	3.60	3.60	0.07
						1/2"	4.18	4.18	0.11
						Ice	4.75	4.75	0.14
						1" Ice	5.90	5.90	0.20
						2" Ice			
*****									
APXVSPP18-C-A20 w/ Mount Pipe	A	From Leg	4.00	0.0000	130.00	No Ice	4.60	4.01	0.10
			0.00			1/2"	5.05	4.45	0.16
			0.00			Ice	5.50	4.89	0.23
						1" Ice	6.44	5.82	0.42
						2" Ice			
APXVSPP18-C-A20 w/ Mount Pipe	B	From Leg	4.00	0.0000	130.00	No Ice	4.60	4.01	0.10
			0.00			1/2"	5.05	4.45	0.16
			0.00			Ice	5.50	4.89	0.23
						1" Ice	6.44	5.82	0.42
						2" Ice			
APXVSPP18-C-A20 w/ Mount Pipe	C	From Leg	4.00	0.0000	130.00	No Ice	4.60	4.01	0.10
			0.00			1/2"	5.05	4.45	0.16
			0.00			Ice	5.50	4.89	0.23
						1" Ice	6.44	5.82	0.42
						2" Ice			
LLPX310R w/ Mount Pipe	A	From Leg	4.00	0.0000	130.00	No Ice	3.88	2.36	0.06
			0.00			1/2"	4.29	2.73	0.09
			2.00			Ice	4.72	3.12	0.13
						1" Ice	5.61	3.94	0.24
						2" Ice			
LLPX310R w/ Mount Pipe	B	From Leg	4.00	0.0000	130.00	No Ice	3.88	2.36	0.06
			0.00			1/2"	4.29	2.73	0.09
			2.00			Ice	4.72	3.12	0.13
						1" Ice	5.61	3.94	0.24
						2" Ice			
LLPX310R w/ Mount Pipe	C	From Leg	4.00	0.0000	130.00	No Ice	3.88	2.36	0.06
			0.00			1/2"	4.29	2.73	0.09
			2.00			Ice	4.72	3.12	0.13
						1" Ice	5.61	3.94	0.24
						2" Ice			
(3) ACU-A20-N	A	From Leg	4.00	0.0000	130.00	No Ice	0.07	0.12	0.00
			0.00			1/2"	0.10	0.16	0.00
			0.00			Ice	0.15	0.21	0.00
						1" Ice	0.26	0.34	0.01
						2" Ice			
(3) ACU-A20-N	B	From Leg	4.00	0.0000	130.00	No Ice	0.07	0.12	0.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00			1/2" Ice	0.10	0.16	0.00
			0.00			1" Ice	0.15	0.21	0.00
						2" Ice	0.26	0.34	0.01
(3) ACU-A20-N	C	From Leg	4.00	0.0000	130.00	No Ice	0.07	0.12	0.00
			0.00			1/2" Ice	0.10	0.16	0.00
			0.00			1" Ice	0.15	0.21	0.00
						2" Ice	0.26	0.34	0.01
800 EXTERNAL NOTCH FILTER	A	From Leg	4.00	0.0000	130.00	No Ice	0.66	0.32	0.01
			0.00			1/2" Ice	0.76	0.40	0.02
			0.00			1" Ice	0.87	0.48	0.02
						2" Ice	1.11	0.67	0.04
800 EXTERNAL NOTCH FILTER	B	From Leg	4.00	0.0000	130.00	No Ice	0.66	0.32	0.01
			0.00			1/2" Ice	0.76	0.40	0.02
			0.00			1" Ice	0.87	0.48	0.02
						2" Ice	1.11	0.67	0.04
800 EXTERNAL NOTCH FILTER	C	From Leg	4.00	0.0000	130.00	No Ice	0.66	0.32	0.01
			0.00			1/2" Ice	0.76	0.40	0.02
			0.00			1" Ice	0.87	0.48	0.02
						2" Ice	1.11	0.67	0.04
FDD_R6_RRH	A	From Leg	4.00	0.0000	130.00	No Ice	1.53	0.68	0.03
			0.00			1/2" Ice	1.69	0.80	0.04
			0.00			1" Ice	1.85	0.92	0.06
						2" Ice	2.20	1.19	0.09
FDD_R6_RRH	B	From Leg	4.00	0.0000	130.00	No Ice	1.53	0.68	0.03
			0.00			1/2" Ice	1.69	0.80	0.04
			0.00			1" Ice	1.85	0.92	0.06
						2" Ice	2.20	1.19	0.09
FDD_R6_RRH	C	From Leg	4.00	0.0000	130.00	No Ice	1.53	0.68	0.03
			0.00			1/2" Ice	1.69	0.80	0.04
			0.00			1" Ice	1.85	0.92	0.06
						2" Ice	2.20	1.19	0.09
Sector Mount [SM 901-3]	C	None		0.0000	130.00	No Ice	12.78	12.78	1.26
						1/2" Ice	15.53	15.53	1.45
						1" Ice	18.18	18.18	1.69
						2" Ice	22.76	22.76	2.30
***									
APXVTM14-ALU-I20 w/ Mount Pipe	A	From Leg	4.00	0.0000	130.00	No Ice	4.09	2.86	0.08
			0.00			1/2" Ice	4.48	3.23	0.13
			0.00			1" Ice	4.88	3.61	0.19
						2" Ice	5.71	4.40	0.33
APXVTM14-ALU-I20 w/ Mount Pipe	B	From Leg	4.00	0.0000	130.00	No Ice	4.09	2.86	0.08
			0.00			1/2" Ice	4.48	3.23	0.13
			0.00			1" Ice	4.88	3.61	0.19
						2" Ice	5.71	4.40	0.33
APXVTM14-ALU-I20 w/ Mount Pipe	C	From Leg	4.00	0.0000	130.00	No Ice	4.09	2.86	0.08
			0.00			1/2" Ice	4.48	3.23	0.13
			0.00			1" Ice	4.88	3.61	0.19
						2" Ice	5.71	4.40	0.33
TD-RRH8X20-25	A	From Leg	4.00	0.0000	130.00	No Ice	4.05	1.53	0.07
			0.00			1/2" Ice	4.30	1.71	0.10
			0.00			1" Ice	4.56	1.90	0.13
						2" Ice	5.10	2.30	0.20

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
TD-RRH8X20-25	B	From Leg	4.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.05 4.30 4.56 5.10	1.53 1.71 1.90 2.30	0.07 0.10 0.13 0.20
TD-RRH8X20-25	C	From Leg	4.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.05 4.30 4.56 5.10	1.53 1.71 1.90 2.30	0.07 0.10 0.13 0.20
*****									
(2) DB846F65ZAXY w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice	6.10 6.80 7.51 8.98	6.81 7.52 8.24 9.73	0.06 0.12 0.19 0.37
(2) DB846F65ZAXY w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice	6.10 6.80 7.51 8.98	6.81 7.52 8.24 9.73	0.06 0.12 0.19 0.37
(2) DB846F65ZAXY w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice	6.10 6.80 7.51 8.98	6.81 7.52 8.24 9.73	0.06 0.12 0.19 0.37
BXA-171063-8BF-EDIN-0 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.18 3.56 3.93 4.69	3.35 3.97 4.60 5.89	0.03 0.06 0.10 0.19
BXA-171063-8BF-EDIN-0 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.18 3.56 3.93 4.69	3.35 3.97 4.60 5.89	0.03 0.06 0.10 0.19
BXA-171063-8BF-EDIN-0 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.18 3.56 3.93 4.69	3.35 3.97 4.60 5.89	0.03 0.06 0.10 0.19
BXA-70063-6CF-EDIN-0 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice	7.40 8.14 8.90 10.46	5.39 6.10 6.83 8.34	0.04 0.10 0.16 0.33
BXA-70063-6CF-EDIN-0 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice	7.40 8.14 8.90 10.46	5.39 6.10 6.83 8.34	0.04 0.10 0.16 0.33
BXA-70063-6CF-EDIN-0 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice	7.40 8.14 8.90 10.46	5.39 6.10 6.83 8.34	0.04 0.10 0.16 0.33
MG D3-800TX w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.40 2.81 3.22 4.09	2.29 2.68 3.10 3.96	0.05 0.07 0.11 0.21
MG D3-800TX w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	119.00	No Ice 1/2" Ice 1" Ice	2.40 2.81 3.22 4.09	2.29 2.68 3.10 3.96	0.05 0.07 0.11 0.21

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						2" Ice			
MG D3-800TX w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.40 2.81 3.22 4.09	2.29 2.68 3.10 3.96	0.05 0.07 0.11 0.21
RRH2X40-AWS	A	From Leg	4.00 0.00 -1.00	0.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.16 2.36 2.57 3.00	1.42 1.59 1.77 2.14	0.04 0.06 0.08 0.13
RRH2X40-AWS	B	From Leg	4.00 0.00 -1.00	0.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.16 2.36 2.57 3.00	1.42 1.59 1.77 2.14	0.04 0.06 0.08 0.13
RRH2X40-AWS	C	From Leg	4.00 0.00 -1.00	0.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.16 2.36 2.57 3.00	1.42 1.59 1.77 2.14	0.04 0.06 0.08 0.13
T-Arm Mount [TA 602-3]	C	None		0.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice	13.40 16.44 19.70 25.86	13.40 16.44 19.70 25.86	0.77 1.00 1.29 2.05
*****									
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.14 3.45 3.77 4.43	2.59 2.88 3.19 3.84	0.11 0.16 0.23 0.38
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.14 3.45 3.77 4.43	2.59 2.88 3.19 3.84	0.11 0.16 0.23 0.38
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.14 3.45 3.77 4.43	2.59 2.88 3.19 3.84	0.11 0.16 0.23 0.38
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.14 3.45 3.77 4.43	2.59 2.88 3.19 3.84	0.11 0.16 0.22 0.37
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.14 3.45 3.77 4.43	2.59 2.88 3.19 3.84	0.11 0.16 0.22 0.37
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.14 3.45 3.77 4.43	2.59 2.88 3.19 3.84	0.11 0.16 0.22 0.37
APXVAALL24_43-U-NA20 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	14.69 15.46 16.23 17.82	6.87 7.55 8.25 9.67	0.18 0.31 0.45 0.78
APXVAALL24_43-U-NA20 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice	14.69 15.46 16.23	6.87 7.55 8.25	0.18 0.31 0.45

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						1" Ice	17.82	9.67	0.78
						2" Ice			
APXVAALL24_43-U-NA20 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	14.69 15.46 16.23 17.82	6.87 7.55 8.25 9.67	0.18 0.31 0.45 0.78
KRY 112 144/1	A	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice Ice 1" Ice 2" Ice	0.35 0.43 0.51 0.70	0.17 0.23 0.30 0.46	0.01 0.01 0.02 0.03
KRY 112 144/1	B	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice Ice 1" Ice 2" Ice	0.35 0.43 0.51 0.70	0.17 0.23 0.30 0.46	0.01 0.01 0.02 0.03
KRY 112 144/1	C	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice Ice 1" Ice 2" Ice	0.35 0.43 0.51 0.70	0.17 0.23 0.30 0.46	0.01 0.01 0.02 0.03
RADIO 4449 B71/B85A	A	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice Ice 1" Ice 2" Ice	1.64 1.80 1.97 2.33	1.31 1.46 1.61 1.94	0.07 0.09 0.11 0.16
RADIO 4449 B71/B85A	B	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice Ice 1" Ice 2" Ice	1.64 1.80 1.97 2.33	1.31 1.46 1.61 1.94	0.07 0.09 0.11 0.16
RADIO 4449 B71/B85A	C	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice Ice 1" Ice 2" Ice	1.64 1.80 1.97 2.33	1.31 1.46 1.61 1.94	0.07 0.09 0.11 0.16
Stabilizer Kit [PRK-SFS]	C	None		0.0000	110.00	No Ice 1/2" Ice Ice 1" Ice 2" Ice	4.56 6.39 8.18 11.66	4.56 6.39 8.18 11.66	0.25 0.31 0.40 0.66
Kicker Kit [PV-PKPB-M]	C	None		0.0000	110.00	No Ice 1/2" Ice Ice 1" Ice 2" Ice	11.84 16.96 22.08 32.32	11.84 16.96 22.08 32.32	0.28 0.30 0.32 0.36
T-Arm Mount [TA 601-3]	C	None		0.0000	110.00	No Ice 1/2" Ice Ice 1" Ice 2" Ice	12.56 15.36 18.04 23.69	12.56 15.36 18.04 23.69	0.73 0.94 1.21 1.92
****									
MX08FRO665-21 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice Ice 1" Ice 2" Ice	8.01 8.52 9.04 10.11	4.23 4.69 5.16 6.12	0.11 0.19 0.29 0.52
MX08FRO665-21 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice Ice 1" Ice 2" Ice	8.01 8.52 9.04 10.11	4.23 4.69 5.16 6.12	0.11 0.19 0.29 0.52
MX08FRO665-21 w/ Mount Pipe	C	From Leg	4.00 0.00	0.0000	100.00	No Ice 1/2"	8.01 8.52	4.23 4.69	0.11 0.19

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00			Ice	9.04	5.16	0.29
						1" Ice	10.11	6.12	0.52
						2" Ice			
TA08025-B604	A	From Leg	4.00	0.0000	100.00	No Ice	1.96	0.98	0.06
			0.00			1/2"	2.14	1.11	0.08
			0.00			Ice	2.32	1.25	0.10
						1" Ice	2.71	1.55	0.15
						2" Ice			
TA08025-B604	B	From Leg	4.00	0.0000	100.00	No Ice	1.96	0.98	0.06
			0.00			1/2"	2.14	1.11	0.08
			0.00			Ice	2.32	1.25	0.10
						1" Ice	2.71	1.55	0.15
						2" Ice			
TA08025-B604	C	From Leg	4.00	0.0000	100.00	No Ice	1.96	0.98	0.06
			0.00			1/2"	2.14	1.11	0.08
			0.00			Ice	2.32	1.25	0.10
						1" Ice	2.71	1.55	0.15
						2" Ice			
TA08025-B605	A	From Leg	4.00	0.0000	100.00	No Ice	1.96	1.13	0.08
			0.00			1/2"	2.14	1.27	0.09
			0.00			Ice	2.32	1.41	0.11
						1" Ice	2.71	1.72	0.16
						2" Ice			
TA08025-B605	B	From Leg	4.00	0.0000	100.00	No Ice	1.96	1.13	0.08
			0.00			1/2"	2.14	1.27	0.09
			0.00			Ice	2.32	1.41	0.11
						1" Ice	2.71	1.72	0.16
						2" Ice			
TA08025-B605	C	From Leg	4.00	0.0000	100.00	No Ice	1.96	1.13	0.08
			0.00			1/2"	2.14	1.27	0.09
			0.00			Ice	2.32	1.41	0.11
						1" Ice	2.71	1.72	0.16
						2" Ice			
RDIDC-9181-PF-48	A	From Leg	4.00	0.0000	100.00	No Ice	2.01	1.17	0.02
			0.00			1/2"	2.19	1.31	0.04
			0.00			Ice	2.37	1.46	0.06
						1" Ice	2.76	1.78	0.11
						2" Ice			
(2) 8' x 2" Mount Pipe	A	From Leg	4.00	0.0000	100.00	No Ice	1.90	1.90	0.03
			0.00			1/2"	2.73	2.73	0.04
			0.00			Ice	3.40	3.40	0.06
						1" Ice	4.40	4.40	0.12
						2" Ice			
(2) 8' x 2" Mount Pipe	B	From Leg	4.00	0.0000	100.00	No Ice	1.90	1.90	0.03
			0.00			1/2"	2.73	2.73	0.04
			0.00			Ice	3.40	3.40	0.06
						1" Ice	4.40	4.40	0.12
						2" Ice			
(2) 8' x 2" Mount Pipe	C	From Leg	4.00	0.0000	100.00	No Ice	1.90	1.90	0.03
			0.00			1/2"	2.73	2.73	0.04
			0.00			Ice	3.40	3.40	0.06
						1" Ice	4.40	4.40	0.12
						2" Ice			
Commscope MC-PK8-DSH	C	None		0.0000	100.00	No Ice	34.24	34.24	1.75
						1/2"	62.95	62.95	2.10
						Ice	91.66	91.66	2.45
						1" Ice	149.08	149.08	3.15
						2" Ice			
*****									
KS24019-L112A	C	From Leg	3.00	0.0000	75.00	No Ice	0.14	0.14	0.01
			0.00			1/2"	0.20	0.20	0.01
			2.00			Ice	0.26	0.26	0.01
						1" Ice	0.41	0.41	0.02
						2" Ice			
Side Arm Mount [SO 701-	C	From Leg	1.50	0.0000	75.00	No Ice	0.85	1.67	0.07

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
1]			0.00 0.00			1/2" Ice 1" Ice 2" Ice	1.14 1.43 2.01	2.34 3.01 4.35	0.08 0.09 0.12
******									

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		Aperture Area ft^2	Weight K
VHLP2-11	C	Paraboloid w/o Radome	From Leg	1.00 0.00 4.00	-30.0000		130.00	2.17	No Ice 1/2" Ice 1" Ice 2" Ice	3.72 4.01 4.30 4.88	0.03 0.05 0.07 0.11
A-ANT-23G-2-C	B	Paraboloid w/Shroud (HP)	From Leg	1.00 0.00 2.00	10.0000		130.00	2.17	No Ice 1/2" Ice 1" Ice 2" Ice	3.72 4.01 4.30 4.88	0.03 0.05 0.07 0.11

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

Comb. No.	Description
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	139.5 - 93.04	Pole	Max Tension	2	0.00	-0.00	-0.00
			Max. Compression	26	-36.76	0.70	1.50
			Max. Mx	8	-15.83	-471.71	7.54
			Max. My	2	-15.81	-1.25	475.46
			Max. Vy	8	21.94	-471.71	7.54
			Max. Vx	2	-22.05	-1.25	475.46
			Max. Torque	9			0.61
L2	93.04 - 46.38	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-52.27	1.97	3.41
			Max. Mx	8	-27.01	-1552.34	16.52
			Max. My	2	-27.00	-1.86	1563.06
			Max. Vy	8	25.78	-1552.34	16.52
			Max. Vx	2	-25.92	-1.86	1563.06
			Max. Torque	9			0.61
L3	46.38 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-72.88	2.90	5.78
			Max. Mx	8	-42.88	-2983.52	26.13
			Max. My	2	-42.87	-2.27	3002.51
			Max. Vy	8	29.46	-2983.52	26.13
			Max. Vx	2	-29.58	-2.27	3002.51
			Max. Torque	9			0.48

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	27	72.88	-0.00	8.00
	Max. H_x	20	42.91	29.37	0.09
	Max. H_z	2	42.91	-0.02	29.54
	Max. M_x	2	3002.51	-0.02	29.54
	Max. M_z	8	2983.52	-29.41	0.16
	Max. Torsion	9	0.48	-29.41	0.16
	Min. Vert	11	32.18	-25.38	-14.71
	Min. H_x	9	32.18	-29.41	0.16
	Min. H_z	14	42.91	-0.10	-29.42
	Min. M_x	14	-2981.05	-0.10	-29.42
	Min. M_z	20	-2980.61	29.37	0.09

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
	Min. Torsion	14	-0.31	-0.10	-29.42

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	35.76	0.00	0.00	-1.81	1.20	-0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	42.91	0.02	-29.54	-3002.51	-2.27	-0.29
0.9 Dead+1.0 Wind 0 deg - No Ice	32.18	0.02	-29.54	-2960.15	-2.59	-0.29
1.2 Dead+1.0 Wind 30 deg - No Ice	42.91	15.09	-26.27	-2659.81	-1524.15	-0.35
0.9 Dead+1.0 Wind 30 deg - No Ice	32.18	15.09	-26.27	-2622.35	-1503.38	-0.35
1.2 Dead+1.0 Wind 60 deg - No Ice	42.91	26.05	-15.17	-1543.44	-2637.36	-0.45
0.9 Dead+1.0 Wind 60 deg - No Ice	32.18	26.05	-15.17	-1521.41	-2601.11	-0.45
1.2 Dead+1.0 Wind 90 deg - No Ice	42.91	29.41	-0.16	-26.13	-2983.52	-0.48
0.9 Dead+1.0 Wind 90 deg - No Ice	32.18	29.41	-0.16	-25.13	-2942.33	-0.48
1.2 Dead+1.0 Wind 120 deg - No Ice	42.91	25.38	14.71	1488.19	-2569.45	0.00
0.9 Dead+1.0 Wind 120 deg - No Ice	32.18	25.38	14.71	1468.05	-2534.07	0.00
1.2 Dead+1.0 Wind 150 deg - No Ice	42.91	14.69	25.47	2580.01	-1488.31	0.19
0.9 Dead+1.0 Wind 150 deg - No Ice	32.18	14.69	25.47	2544.66	-1467.98	0.19
1.2 Dead+1.0 Wind 180 deg - No Ice	42.91	0.10	29.42	2981.05	-11.09	0.31
0.9 Dead+1.0 Wind 180 deg - No Ice	32.18	0.10	29.42	2940.15	-11.30	0.31
1.2 Dead+1.0 Wind 210 deg - No Ice	42.91	-15.04	26.20	2644.87	1519.08	0.23
0.9 Dead+1.0 Wind 210 deg - No Ice	32.18	-15.04	26.20	2608.76	1497.65	0.24
1.2 Dead+1.0 Wind 240 deg - No Ice	42.91	-26.06	14.97	1510.34	2641.61	0.20
0.9 Dead+1.0 Wind 240 deg - No Ice	32.18	-26.06	14.97	1489.96	2604.53	0.20
1.2 Dead+1.0 Wind 270 deg - No Ice	42.91	-29.37	-0.09	-13.48	2980.61	0.16
0.9 Dead+1.0 Wind 270 deg - No Ice	32.18	-29.37	-0.09	-12.72	2938.76	0.17
1.2 Dead+1.0 Wind 300 deg - No Ice	42.91	-25.42	-14.74	-1496.87	2578.41	0.04
0.9 Dead+1.0 Wind 300 deg - No Ice	32.18	-25.42	-14.74	-1475.48	2542.15	0.04
1.2 Dead+1.0 Wind 330 deg - No Ice	42.91	-14.58	-25.69	-2616.08	1474.61	-0.23
0.9 Dead+1.0 Wind 330 deg - No Ice	32.18	-14.58	-25.69	-2579.04	1453.76	-0.23
1.2 Dead+1.0 Ice+1.0 Temp	72.88	-0.00	-0.00	-5.78	2.90	-0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	72.88	0.00	-8.00	-844.97	2.38	-0.09
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	72.88	3.98	-6.92	-732.36	-414.42	-0.10
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	72.88	6.89	-4.00	-426.79	-719.67	-0.11
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	72.88	7.97	-0.03	-10.72	-832.70	-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
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	72.88	6.88	3.99	411.76	-717.85	0.01
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	72.88	3.98	6.90	717.46	-414.49	0.06
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	72.88	0.02	7.97	829.58	0.08	0.09
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	72.88	-3.97	6.91	718.35	418.63	0.08
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	72.88	-6.89	3.96	408.95	725.83	0.06
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	72.88	-7.96	-0.02	-8.48	837.37	0.04
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	72.88	-6.89	-3.99	-424.44	725.03	-0.01
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	72.88	-3.96	-6.95	-735.93	416.89	-0.07
Dead+Wind 0 deg - Service	35.76	0.00	-6.41	-648.38	0.45	-0.06
Dead+Wind 30 deg - Service	35.76	3.28	-5.70	-574.58	-327.52	-0.08
Dead+Wind 60 deg - Service	35.76	5.65	-3.29	-334.00	-567.41	-0.10
Dead+Wind 90 deg - Service	35.76	6.38	-0.03	-7.02	-641.94	-0.11
Dead+Wind 120 deg - Service	35.76	5.51	3.19	319.26	-552.70	-0.00
Dead+Wind 150 deg - Service	35.76	3.19	5.53	554.52	-319.76	0.04
Dead+Wind 180 deg - Service	35.76	0.02	6.38	640.95	-1.46	0.07
Dead+Wind 210 deg - Service	35.76	-3.26	5.69	568.56	328.29	0.05
Dead+Wind 240 deg - Service	35.76	-5.66	3.25	324.07	570.17	0.05
Dead+Wind 270 deg - Service	35.76	-6.37	-0.02	-4.30	643.18	0.04
Dead+Wind 300 deg - Service	35.76	-5.52	-3.20	-323.93	556.51	0.01
Dead+Wind 330 deg - Service	35.76	-3.16	-5.58	-565.10	318.69	-0.05

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
1	0.00	-35.76	0.00	0.00	35.76	0.00	0.000%
2	0.02	-42.91	-29.54	-0.02	42.91	29.54	0.000%
3	0.02	-32.18	-29.54	-0.02	32.18	29.54	0.000%
4	15.09	-42.91	-26.27	-15.09	42.91	26.27	0.000%
5	15.09	-32.18	-26.27	-15.09	32.18	26.27	0.000%
6	26.05	-42.91	-15.17	-26.05	42.91	15.17	0.000%
7	26.05	-32.18	-15.17	-26.05	32.18	15.17	0.000%
8	29.41	-42.91	-0.16	-29.41	42.91	0.16	0.000%
9	29.41	-32.18	-0.16	-29.41	32.18	0.16	0.000%
10	25.38	-42.91	14.71	-25.38	42.91	-14.71	0.000%
11	25.38	-32.18	14.71	-25.38	32.18	-14.71	0.000%
12	14.69	-42.91	25.47	-14.69	42.91	-25.47	0.000%
13	14.69	-32.18	25.47	-14.69	32.18	-25.47	0.000%
14	0.10	-42.91	29.42	-0.10	42.91	-29.42	0.000%
15	0.10	-32.18	29.42	-0.10	32.18	-29.42	0.000%
16	-15.04	-42.91	26.20	15.04	42.91	-26.20	0.000%
17	-15.04	-32.18	26.20	15.04	32.18	-26.20	0.000%
18	-26.06	-42.91	14.97	26.06	42.91	-14.97	0.000%
19	-26.06	-32.18	14.97	26.06	32.18	-14.97	0.000%
20	-29.37	-42.91	-0.09	29.37	42.91	0.09	0.000%
21	-29.37	-32.18	-0.09	29.37	32.18	0.09	0.000%
22	-25.42	-42.91	-14.74	25.42	42.91	14.74	0.000%
23	-25.42	-32.18	-14.74	25.42	32.18	14.74	0.000%
24	-14.58	-42.91	-25.69	14.58	42.91	25.69	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
25	-14.58	-32.18	-25.69	14.58	32.18	25.69	0.000%
26	0.00	-72.88	0.00	0.00	72.88	0.00	0.000%
27	0.00	-72.88	-8.00	-0.00	72.88	8.00	0.000%
28	3.98	-72.88	-6.92	-3.98	72.88	6.92	0.000%
29	6.89	-72.88	-4.00	-6.89	72.88	4.00	0.000%
30	7.97	-72.88	-0.03	-7.97	72.88	0.03	0.000%
31	6.88	-72.88	3.99	-6.88	72.88	-3.99	0.000%
32	3.98	-72.88	6.90	-3.98	72.88	-6.90	0.000%
33	0.02	-72.88	7.97	-0.02	72.88	-7.97	0.000%
34	-3.97	-72.88	6.91	3.97	72.88	-6.91	0.000%
35	-6.89	-72.88	3.96	6.89	72.88	-3.96	0.000%
36	-7.96	-72.88	-0.02	7.96	72.88	0.02	0.000%
37	-6.89	-72.88	-3.99	6.89	72.88	3.99	0.000%
38	-3.96	-72.88	-6.95	3.96	72.88	6.95	0.000%
39	0.00	-35.76	-6.41	-0.00	35.76	6.41	0.000%
40	3.28	-35.76	-5.70	-3.28	35.76	5.70	0.000%
41	5.65	-35.76	-3.29	-5.65	35.76	3.29	0.000%
42	6.38	-35.76	-0.03	-6.38	35.76	0.03	0.000%
43	5.51	-35.76	3.19	-5.51	35.76	-3.19	0.000%
44	3.19	-35.76	5.53	-3.19	35.76	-5.53	0.000%
45	0.02	-35.76	6.38	-0.02	35.76	-6.38	0.000%
46	-3.26	-35.76	5.69	3.26	35.76	-5.69	0.000%
47	-5.66	-35.76	3.25	5.66	35.76	-3.25	0.000%
48	-6.37	-35.76	-0.02	6.37	35.76	0.02	0.000%
49	-5.52	-35.76	-3.20	5.52	35.76	3.20	0.000%
50	-3.16	-35.76	-5.58	3.16	35.76	5.58	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	4	0.00000001	0.00126907
3	Yes	4	0.00000001	0.00039370
4	Yes	6	0.00000001	0.00010926
5	Yes	5	0.00000001	0.00076967
6	Yes	6	0.00000001	0.00011120
7	Yes	5	0.00000001	0.00078402
8	Yes	5	0.00000001	0.00007200
9	Yes	4	0.00000001	0.00079372
10	Yes	6	0.00000001	0.00010537
11	Yes	5	0.00000001	0.00074471
12	Yes	6	0.00000001	0.00010569
13	Yes	5	0.00000001	0.00074679
14	Yes	4	0.00000001	0.00125838
15	Yes	4	0.00000001	0.00039329
16	Yes	6	0.00000001	0.00010919
17	Yes	5	0.00000001	0.00076946
18	Yes	6	0.00000001	0.00010843
19	Yes	5	0.00000001	0.00076436
20	Yes	4	0.00000001	0.00134445
21	Yes	4	0.00000001	0.00048589
22	Yes	6	0.00000001	0.00010660
23	Yes	5	0.00000001	0.00075269
24	Yes	6	0.00000001	0.00010710
25	Yes	5	0.00000001	0.00075571
26	Yes	4	0.00000001	0.00003345
27	Yes	5	0.00000001	0.00042862
28	Yes	5	0.00000001	0.00063872
29	Yes	5	0.00000001	0.00064448
30	Yes	5	0.00000001	0.00042218
31	Yes	5	0.00000001	0.00062091
32	Yes	5	0.00000001	0.00062341
33	Yes	5	0.00000001	0.00041954
34	Yes	5	0.00000001	0.00063222

35	Yes	5	0.00000001	0.00062611
36	Yes	5	0.00000001	0.00042468
37	Yes	5	0.00000001	0.00064493
38	Yes	5	0.00000001	0.00064738
39	Yes	4	0.00000001	0.00006221
40	Yes	4	0.00000001	0.00039872
41	Yes	4	0.00000001	0.00041929
42	Yes	4	0.00000001	0.00006961
43	Yes	4	0.00000001	0.00037031
44	Yes	4	0.00000001	0.00037286
45	Yes	4	0.00000001	0.00006054
46	Yes	4	0.00000001	0.00040233
47	Yes	4	0.00000001	0.00039240
48	Yes	4	0.00000001	0.00006230
49	Yes	4	0.00000001	0.00038702
50	Yes	4	0.00000001	0.00039130

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	139.5 - 93.04	25.527	40	1.6050	0.0007
L2	96.96 - 46.38	12.328	40	1.2288	0.0003
L3	51.63 - 0	3.413	40	0.6243	0.0001

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
136.00	HPA-65R-BUU-H6 w/ Mount Pipe	40	24.367	1.5783	0.0019	33872
134.00	VHLP2-11	40	23.705	1.5630	0.0018	30793
132.00	A-ANT-23G-2-C	40	23.045	1.5476	0.0017	22581
130.00	APXVSPP18-C-A20 w/ Mount Pipe	40	22.387	1.5321	0.0016	17827
119.00	(2) DB846F65ZAXY w/ Mount Pipe	40	18.830	1.4431	0.0013	8261
110.00	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	40	16.047	1.3630	0.0010	5740
100.00	MX08FRO665-21 w/ Mount Pipe	40	13.155	1.2624	0.0007	4291
75.00	KS24019-L112A	40	7.195	0.9484	0.0003	3785

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	139.5 - 93.04	118.169	4	7.4473	0.0035
L2	96.96 - 46.38	57.149	4	5.7055	0.0013
L3	51.63 - 0	15.828	4	2.8975	0.0005

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
136.00	HPA-65R-BUU-H6 w/ Mount Pipe	4	112.807	7.3241	0.0066	7541
134.00	VHLP2-11	4	109.748	7.2533	0.0064	6856
132.00	A-ANT-23G-2-C	4	106.697	7.1821	0.0061	5027
130.00	APXVSPP18-C-A20 w/ Mount Pipe	4	103.655	7.1104	0.0059	3968
119.00	(2) DB846F65ZAXY w/ Mount Pipe	4	87.217	6.6986	0.0046	1836
110.00	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	4	74.349	6.3276	0.0036	1273
100.00	MX08FRO665-21 w/ Mount Pipe	4	60.975	5.8613	0.0027	949
75.00	KS24019-L112A	4	33.369	4.4035	0.0013	827

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	139.5 - 93.04 (1)	TP26.99x15.5x0.25	46.46	0.00	0.0	20.4489	-15.75	1196.26	0.013
L2	93.04 - 46.38 (2)	TP37.91x25.5205x0.375	50.58	0.00	0.0	43.1454	-26.94	2524.01	0.011
L3	46.38 - 0 (3)	TP48.5x35.874x0.375	51.63	0.00	0.0	57.2808	-42.87	3350.93	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	139.5 - 93.04 (1)	TP26.99x15.5x0.25	479.66	787.46	0.609	0.00	787.46	0.000
L2	93.04 - 46.38 (2)	TP37.91x25.5205x0.375	1586.43	2373.92	0.668	0.00	2373.92	0.000
L3	46.38 - 0 (3)	TP48.5x35.874x0.375	3065.55	3860.34	0.794	0.00	3860.34	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	139.5 - 93.04 (1)	TP26.99x15.5x0.25	22.31	358.88	0.062	0.45	809.94	0.001
L2	93.04 - 46.38 (2)	TP37.91x25.5205x0.375	26.63	757.20	0.035	0.35	2403.74	0.000
L3	46.38 - 0 (3)	TP48.5x35.874x0.375	30.35	1005.28	0.030	0.35	4236.79	0.000

Pole Interaction Design Data

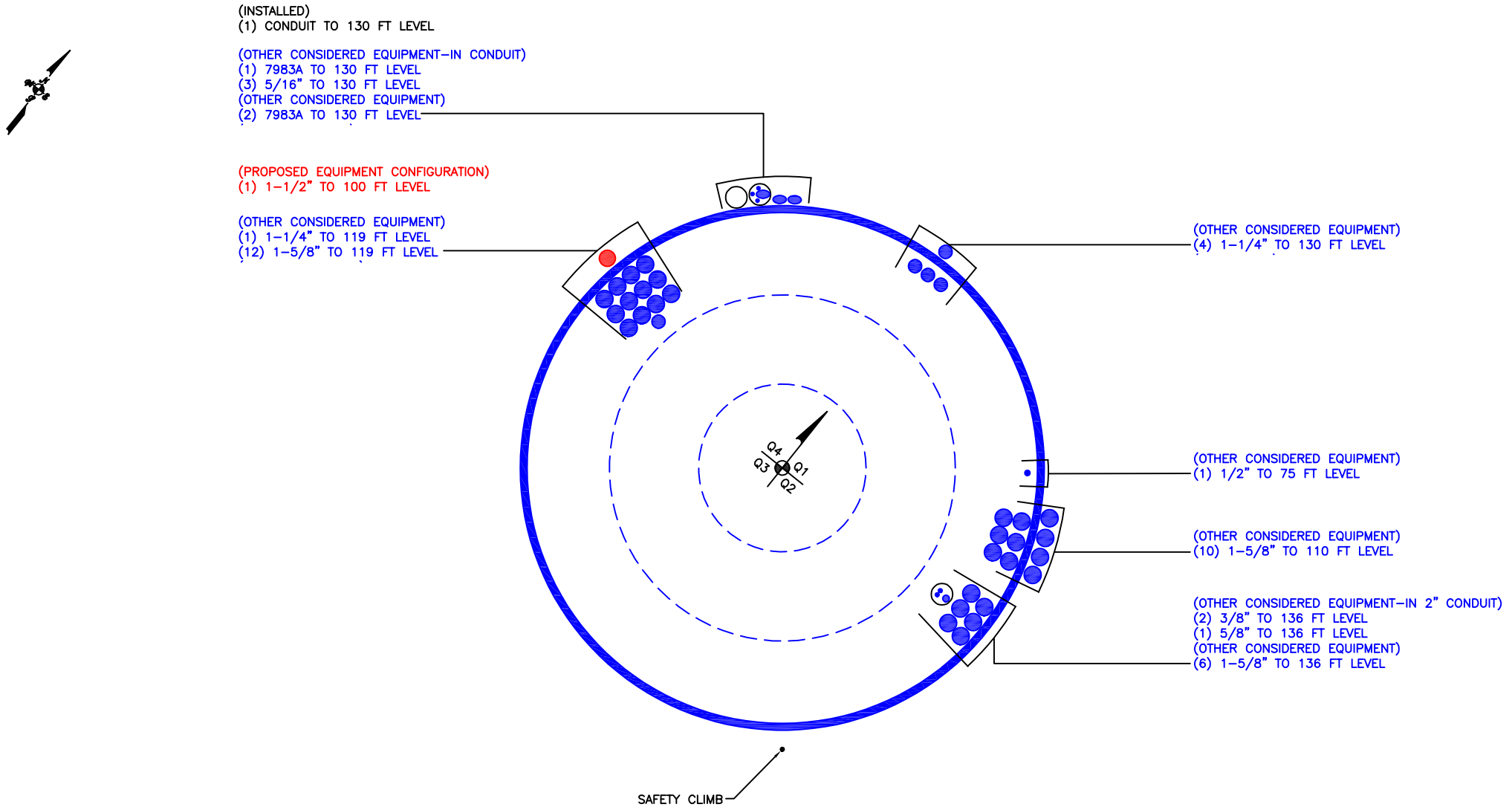
Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	139.5 - 93.04 (1)	0.013	0.609	0.000	0.062	0.001	0.626	1.050	4.8.2
L2	93.04 - 46.38 (2)	0.011	0.668	0.000	0.035	0.000	0.680	1.050	4.8.2
L3	46.38 - 0 (3)	0.013	0.794	0.000	0.030	0.000	0.808	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	139.5 - 93.04	Pole	TP26.99x15.5x0.25	1	-15.75	1256.07	59.6	Pass
L2	93.04 - 46.38	Pole	TP37.91x25.5205x0.375	2	-26.94	2650.21	64.8	Pass
L3	46.38 - 0	Pole	TP48.5x35.874x0.375	3	-42.87	3518.48	76.9	Pass
							Summary	
						Pole (L3)	76.9	Pass
						RATING =	**76.9**	**Pass**

APPENDIX B

BASE LEVEL DRAWING


(INSTALLED)
(1) CONDUIT TO 130 FT LEVEL
(OTHER CONSIDERED EQUIPMENT–IN CONDUIT)
(1) 7983A TO 130 FT LEVEL
(3) 5/16" TO 130 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(2) 7983A TO 130 FT LEVEL
(PROPOSED EQUIPMENT CONFIGURATION)
(1) 1–1/2" TO 100 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 1–1/4" TO 119 FT LEVEL
(12) 1–5/8" TO 119 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(4) 1–1/4" TO 130 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 1/2" TO 75 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(10) 1–5/8" TO 110 FT LEVEL
(OTHER CONSIDERED EQUIPMENT–IN 2" CONDUIT)
(2) 3/8" TO 136 FT LEVEL
(1) 5/8" TO 136 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(6) 1–5/8" TO 136 FT LEVEL
SAFETY CLIMB
Q1
Q2
Q3
Q4

APPENDIX C

ADDITIONAL CALCULATIONS

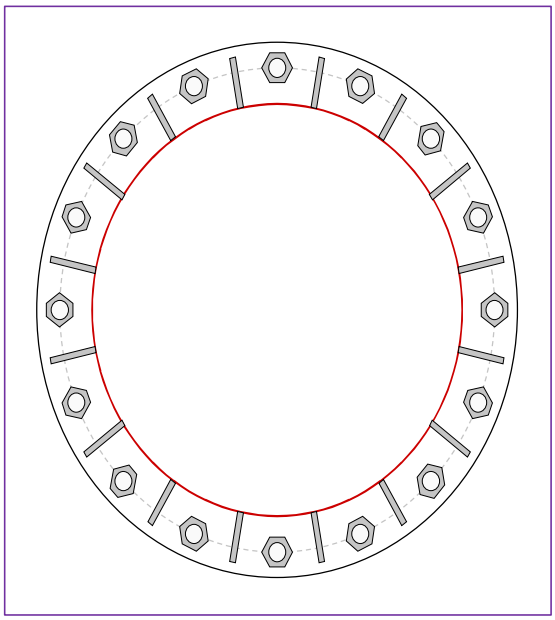
Monopole Base Plate Connection

Site Info	
BU #	881541
Site Name	Rogers Property
Order #	553390 Rev.0

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	No
l_{ar} (in)	2.625

Applied Loads	
Moment (kip-ft)	3065.55
Axial Force (kips)	42.87
Shear Force (kips)	30.35

**TIA-222-H Section 15.5 Applied*



Connection Properties

Anchor Rod Data

(16) 2-1/4" ø bolts (A615-75 N; Fy=75 ksi, Fu=100 ksi) on 57" BC

Base Plate Data

63" OD x 2" Plate (A572-60; Fy=60 ksi, Fu=75 ksi)

Stiffener Data

(16) 15"H x 6"W x 0.75"T, Notch: 0.75"
plate: Fy= 50 ksi ; weld: Fy= 70 ksi
horiz. weld: 0.375" groove, 45° dbl bevel, 0.3125" fillet
vert. weld: 0.3125" fillet

Pole Data

48.5" x 0.375" 18-sided pole (A572-65; Fy=65 ksi, Fu=80 ksi)

Analysis Results

Anchor Rod Summary		*(units of kips, kip-in)*
Pu_t = 158.56	ϕPn_t = 243.75	**Stress Rating**
Vu = 1.9	ϕVn = 149.1	**62.0%**
Mu = 3.24	ϕMn = 128.14	**Pass**

Base Plate Summary		
Max Stress (ksi):	28.27	(Roark's Flexural)
Allowable Stress (ksi):	54	
Stress Rating:	**49.9%**	**Pass**

Stiffener Summary		
Horizontal Weld:	**60.3%**	**Pass**
Vertical Weld:	**56.6%**	**Pass**
Plate Flexure+Shear:	**21.8%**	**Pass**
Plate Tension+Shear:	**61.0%**	**Pass**
Plate Compression:	**67.0%**	**Pass**
Pole Summary		
Punching Shear:	**14.6%**	**Pass**

Drilled Pier Foundation

BU # :	881541
Site Name:	Rogers Property
Order Number:	553390
TIA-222 Revison:	H
Tower Type:	Monopole

Check Limitation	
Apply TIA-222-H Section 15.5:	☑
N/A	☐
Additional Longitudinal Rebar	
Input Effective Depths (else Actual):	☐
Shear Design Options	
Check Shear along Depth of Pier:	☑
Utilize Shear-Friction Methodology:	☐
Override Critical Depth:	☐

Go to Soil Calculations

Applied Loads	Comp.	Uplift
Moment (kip-ft)	3065.55	
Axial Force (kips)	42.91	
Shear Force (kips)	30.3	

Material Properties		
Concrete Strength, f'c:	4	ksi
Rebar Strength, Fy:	60	ksi
Tie Yield Strength, Fyt:	40	ksi

Pier Design Data		
Depth	20	ft
Ext. Above Grade	1	ft
Pier Section 1		
From 1' above grade to 20' below grade		
Pier Diameter	6.5	ft
Rebar Quantity	22	
Rebar Size	11	
Clear Cover to Ties	4	in
Tie Size	5	
Tie Spacing		in

Rebar & Pier Options

Embedded Pole Inputs

Belled Pier Inputs

Analysis Results		
Soil Lateral Check	*Compression*	*Uplift*
$D_{v=0}$ (ft from TOC)	5.71	-
Soil Safety Factor	1.43	-
Max Moment (kip-ft)	3251.66	-
Rating*	*88.8%*	-
Soil Vertical Check	*Compression*	*Uplift*
Skin Friction (kips)	301.24	-
End Bearing (kips)	995.49	-
Weight of Concrete (kips)	93.11	-
Total Capacity (kips)	1296.73	-
Axial (kips)	136.02	-
Rating*	*10.0%*	-
Reinforced Concrete Flexure	*Compression*	*Uplift*
Critical Depth (ft from TOC)	5.57	-
Critical Moment (kip-ft)	3251.34	-
Critical Moment Capacity	5063.15	-
Rating*	*61.2%*	-
Reinforced Concrete Shear	*Compression*	*Uplift*
Critical Depth (ft from TOC)	14.91	-
Critical Shear (kip)	448.18	-
Critical Shear Capacity	543.59	-
Rating*	*78.5%*	-

Structural Foundation Rating*	**78.5%**
Soil Interaction Rating*	**88.8%**

*Rating per TIA-222-H Section 15.5

Soil Profile

Groundwater Depth	7	# of Layers	3

Layer	Top (ft)	Bottom (ft)	Thickness (ft)	γ_{soil} (pcf)	$\gamma_{concrete}$ (pcf)	Cohesion (ksf)	Angle of Friction (degrees)	Calculated Ultimate Skin Friction Comp (ksf)	Calculated Ultimate Skin Friction Uplift (ksf)	Ultimate Skin Friction Comp Override (ksf)	Ultimate Skin Friction Uplift Override (ksf)	Ult. Gross Bearing Capacity (ksf)	SPT Blow Count	Soil Type
1	0	3.5	3.5	125	150	0	0	0.000	0.000	0.00	0.00			Cohesionless
2	3.5	7	3.5	125	150	0	34	0.781	0.781				28	Cohesionless
3	7	20	13	65	87.6	0	34	1.303	1.303			40	50	Cohesionless

Pier and Pad Foundation

BU # :	881541
Site Name:	Rogers Property
App. Number:	

TIA-222 Revision:	H
Tower Type:	Monopole

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

Superstructure Analysis Reactions		
Compression, P_{comp}:	42.91	kips
Base Shear, Vu_comp:	30.3	kips
Moment, M_u:	3065.55	ft-kips
Tower Height, **H**:	139.5	ft
BP Dist. Above Fdn, bp_{dist}:	3.25	in

Pier Properties		
Pier Shape:	Square	
Pier Diameter, **dpier**:	6.5	ft
Ext. Above Grade, **E**:	1	ft
Pier Rebar Size, **Sc**:	11	
Pier Rebar Quantity, **mc**:	22	
Pier Tie/Spiral Size, **St**:	5	
Pier Tie/Spiral Quantity, **mt**:	7	
Pier Reinforcement Type:	Tie	
Pier Clear Cover, cc_{pier}:	4	in

Pad Properties		
Depth, **D**:	7	ft
Pad Width, W_1:	23	ft
Pad Thickness, **T**:	3	ft
Pad Rebar Size (Bottom dir. 2), Sp_2:	8	
Pad Rebar Quantity (Bottom dir. 2), mp_2:	46	
Pad Clear Cover, cc_{pad}:	3	in

Material Properties		
Rebar Grade, **Fy**:	60	ksi
Concrete Compressive Strength, **F'c**:	4	ksi
Dry Concrete Density, δc:	150	pcf

Soil Properties		
Total Soil Unit Weight, γ:	125	pcf
Ultimate Gross Bearing, Qult:	8.000	ksf
Cohesion, **Cu**:	0.000	ksf
Friction Angle, φ:	34	degrees
SPT Blow Count, N_{blows}:		
Base Friction, μ:	0.6	
Neglected Depth, **N**:	3.25	ft
Foundation Bearing on Rock?	No	
Groundwater Depth, **gw**:	7	ft

<--Toggle between Gross and Net

Foundation Analysis Checks				
	Capacity	**Demand**	**Rating***	**Check**
Lateral (Sliding) (kips)	354.00	30.30	**8.2%**	**Pass**
Bearing Pressure (ksf)	6.00	2.47	**41.2%**	**Pass**
*Overturning (kip*ft)*	5280.54	3316.16	**62.8%**	**Pass**
*Pier Flexure (Comp.) (kip*ft)*	5014.28	3217.05	**61.1%**	**Pass**
Pier Compression (kip)	26891.28	80.94	**0.3%**	**Pass**
*Pad Flexure (kip*ft)*	4961.21	1223.67	**23.5%**	**Pass**
Pad Shear - 1-way (kips)	824.79	200.58	**23.2%**	**Pass**
Pad Shear - 2-way (Comp) (ksi)	0.190	0.035	**17.6%**	**Pass**
*Flexural 2-way (Comp) (kip*ft)*	6710.75	1930.23	**27.4%**	**Pass**

**Rating per TIA-222-H Section 15.5*

Structural Rating*:	**61.1%**
Soil Rating*:	**62.8%**

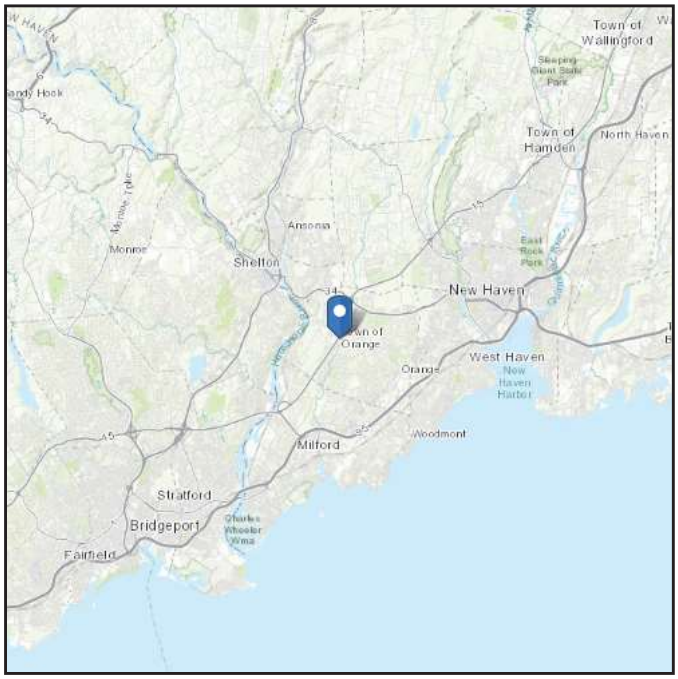
Version 4.1.1

ASCE 7 Hazards Report

Address:
No Address at This Location

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

Elevation: 91.22 ft (NAVD 88)
Latitude: 41.285486
Longitude: -73.042575



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

Ultimate wind speed of 125 Vmph per city exception

Data Accessed: Wed Sep 01 2021

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.

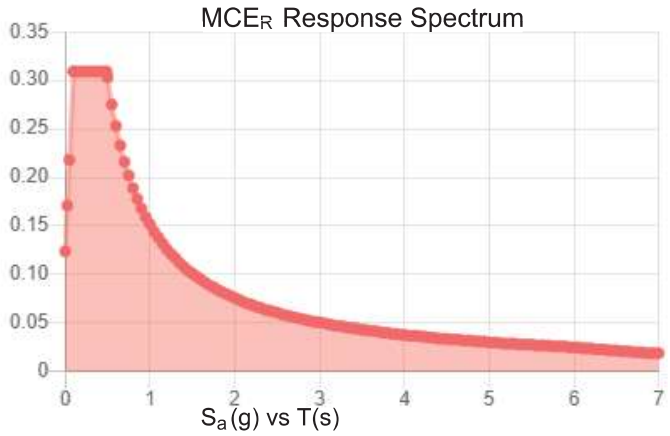
Seismic

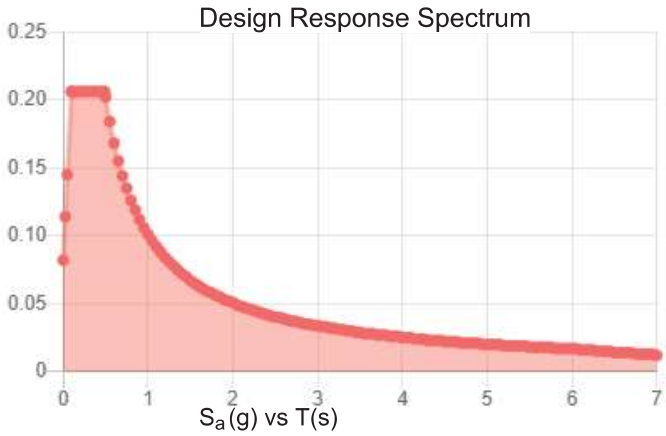
Site Soil Class: D - Stiff Soil

Results:

S_S :	0.193	S_{DS} :	0.206
S_1 :	0.063	S_{D1} :	0.101
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.102
S_{MS} :	0.309	PGA_M :	0.163
S_{M1} :	0.152	F_{PGA} :	1.596
		I_e :	1

Seismic Design Category B





Data Accessed: Wed Sep 01 2021

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

Ice

Results:

Ice Thickness:	0.75 in.	Ice Thickness = 0.75*2 = 1.5 in
Concurrent Temperature:	15 F	
Gust Speed:	50 mph	

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

Date Accessed: Wed Sep 01 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.

Exhibit E

Mount Analysis

Date: **November 3, 2021**

Michael McWilliams
Crown Castle
8000 Avalon Blvd, Suite 700,
Alpharetta, GA 30009
770-375-4936

Infinigy Engineering, PLLC
1033 Watervliet Shaker Road
Albany, NY 12205
518-690-0790
structural@infinigy.com

Subject:	**Mount Analysis Report**	
Carrier Designation:	**Dish Network 5G**	
	Carrier Site Number:	BOHVN00173A
	Carrier Site Name:	CT-CCI-T-881541
Crown Castle Designation:	**Crown Castle BU Number:**	881541
	Crown Castle Site Name:	ROGERS PROPERTY
	Crown Castle JDE Job Number:	645210
	Crown Castle Order Number:	553390 Rev. 2
Engineering Firm Designation:	**Infinigy Engineering, PLLC Report Designation:** 1039-Z0001-B	
Site Data:	**700 Grassy Hill Road, Orange, New Haven County, CT, 06477**	
	Latitude 41°17'7.75" Longitude -73°2'33.27"	
Structure Information:	**Tower Height & Type:**	**139.5 ft Monopole**
	Mount Elevation:	**100.0 ft**
	Mount Type:	**8.0 ft Platform**

Dear Michael McWilliams,

Infinigy Engineering, PLLC is pleased to submit this **"Mount 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.

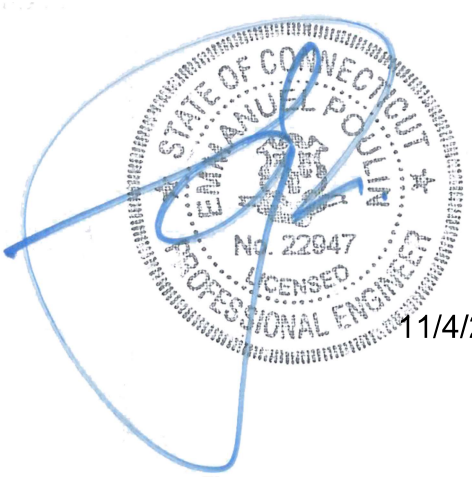
The purpose of the analysis is to determine acceptability of the mount stress level. Based on our analysis we have determined the mount stress level to be:

Platform **Sufficient**

This analysis has been performed in accordance with the 2015 International Building Code based upon an ultimate 3-second gust wind speed of 119 mph. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Mount analysis prepared by: Farhad Ahmadyar

Respectfully Submitted by:
Emmanuel Poulin, P.E.
518-690-0790
structural@infinigy.com
CT PE License No. 22947



11/4/21

TABLE OF CONTENTS

1) INTRODUCTION

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

2) ANALYSIS CRITERIA

Building Code:	2015 IBC
TIA-222 Revision:	TIA-222-H
Risk Category:	II
Ultimate Wind Speed:	119 mph
Exposure Category:	C
Topographic Factor at Base:	1.0
Topographic Factor at Mount:	1.0
Ice Thickness:	1.5 in
Wind Speed with Ice:	50 mph
Seismic S_s:	0.193
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
100.0	100.0	3	JMA WIRELESS	MX08FRO665-21	8.0 ft Platform (Commscope MC-PK8-DSH)
		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	553390 Rev. 2	CCI Sites
Mount Manufacturer Drawings	Commscope, Inc	Part No. MC-PK8-DSH	Infinigy

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.

Infinigy Mount Analysis Tool V2.1.7, a tool internally developed by Infinigy, was used to calculate wind loading on all appurtenances, dishes and mount members for various loading cases. Selected output from the analysis is included in Appendix B "Software Input Calculations".

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. Infinigy Engineering, PLLC 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)	MP4	100.0	15.6	Pass
	Horizontal(s)	HOR1		12.5	Pass
	Standoff(s)	S3		31.0	Pass
	Bracing(s)	M1		35.6	Pass
	Mount Connection(s)	--		24.7	Pass

Structure Rating (max from all components) =	35.6%

Notes:

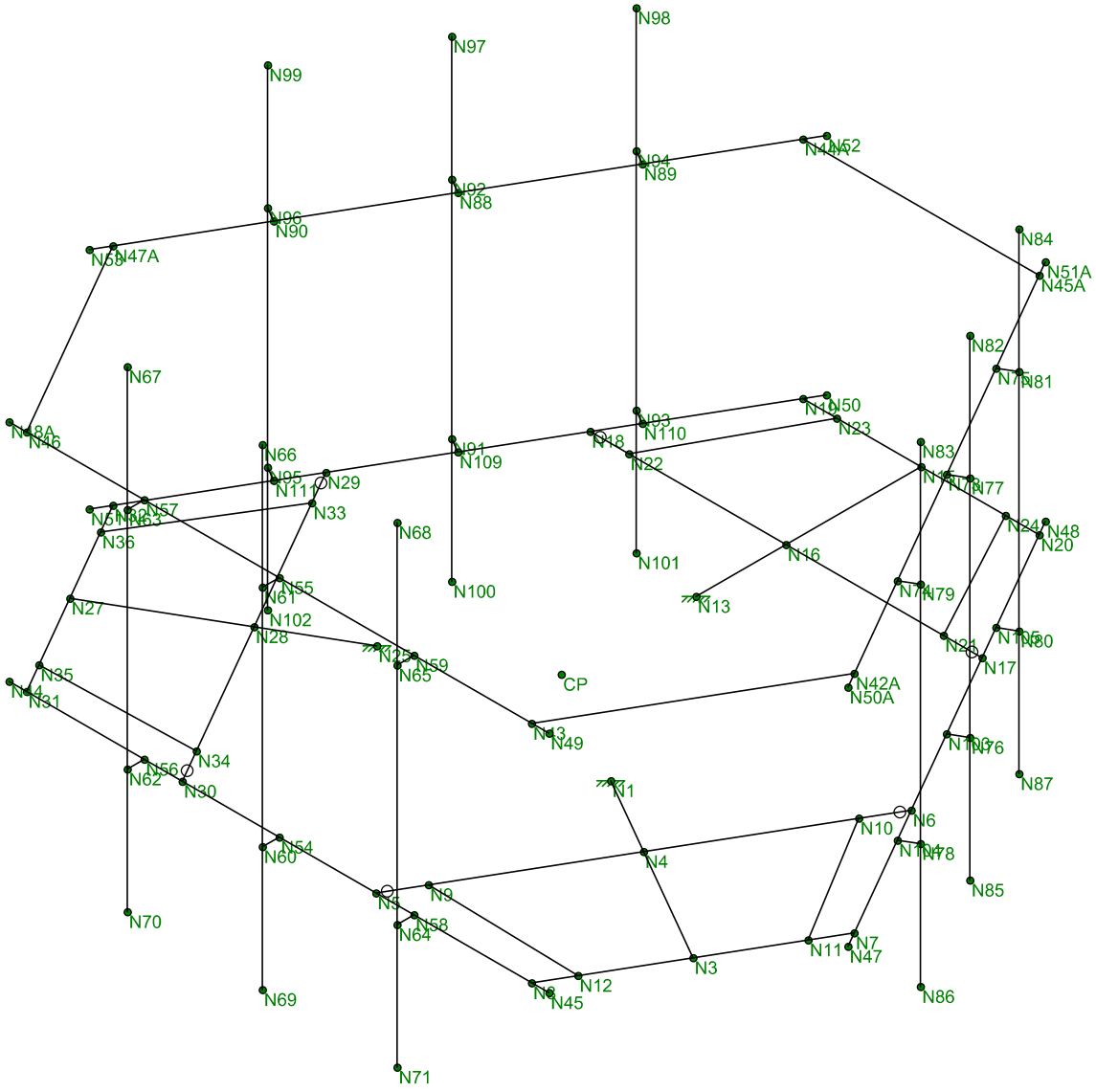
1) See additional documentation in "Appendix C - Software Analysis Output" for calculations supporting the % capacity consumed.
2) See additional documentation in “Appendix D – Additional Calculations” for detailed mount connection calculations.

4.1) Recommendations

The mount has sufficient capacity to carry the proposed loading configuration. No modifications are required at this time.

APPENDIX A

WIRE FRAME AND RENDERED MODELS



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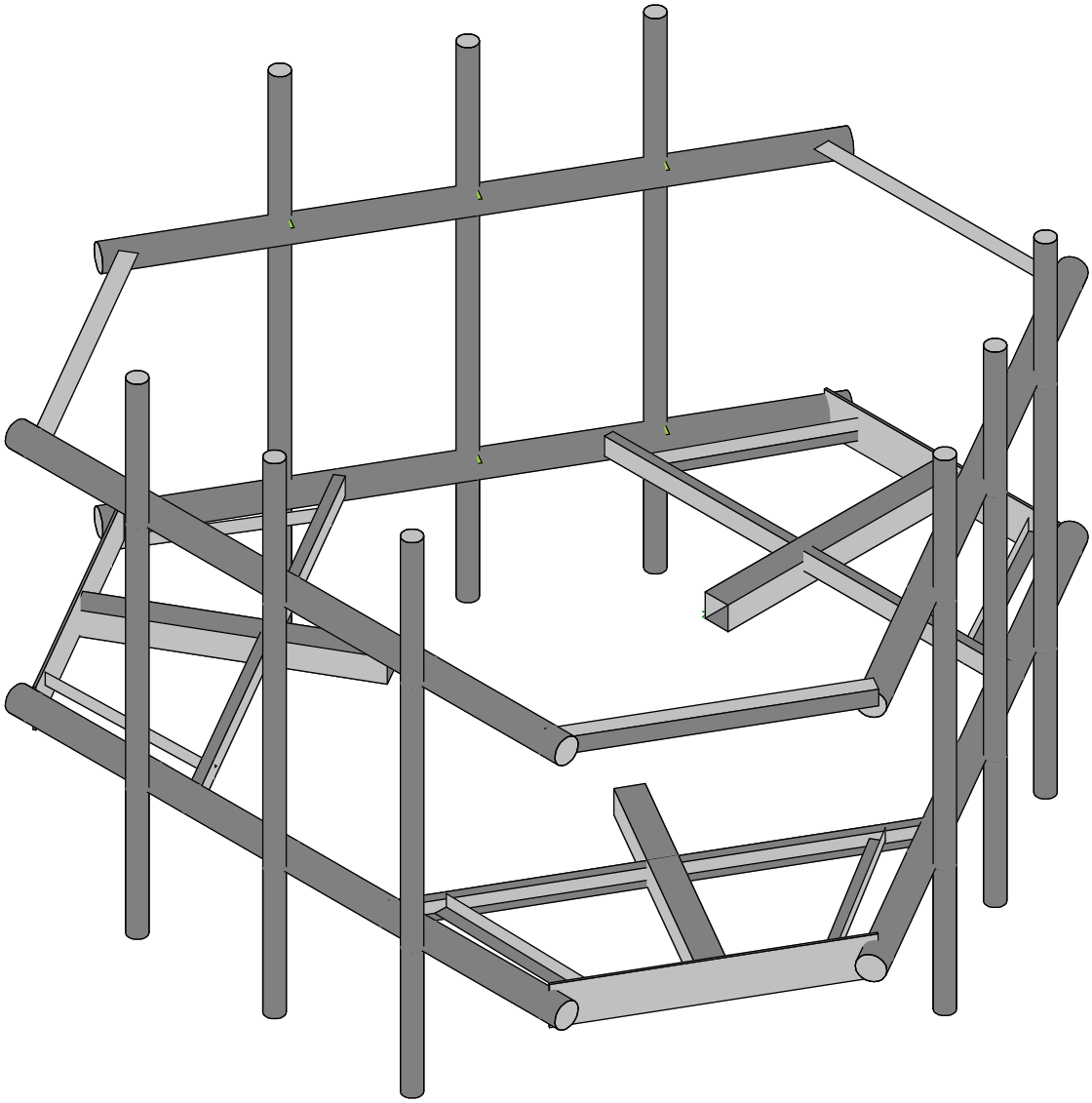
1039-Z0001-B		MC-PK8-B_loaded.r3d



Infinigy Engineering	881541	RENDERED
FA		Nov 3, 2021 at 12:33 PM
1039-Z0001-B		MC-PK8-B_loaded.r3d

APPENDIX B

SOFTWARE INPUT CALCULATIONS

Program Inputs

PROJECT INFORMATION	
Client:	Crown Castle
Carrier:	Dish Network
Engineer:	Farhad Ahmadyar

SITE INFORMATION		
Risk Category:	II	
Exposure Category:	C	
Topo Factor Procedure:	Method 1, Category 1	
Site Class:	D - Stiff Soil (Assumed)	
Ground Elevation:	91.22	ft *Rev H

MOUNT INFORMATION		
Mount Type:	Platform	
Num Sectors:	3	
Centerline AGL:	100.00	ft
Tower Height AGL:	120.00	ft

TOPOGRAPHIC DATA		
Topo Feature:	N/A	
Slope Distance:	N/A	ft
Crest Distance:	N/A	ft
Crest Height:	N/A	ft

FACTORS		
Directionality Fact. (K_d):	0.950	
Ground Ele. Factor (K_e):	0.992	*Rev H Only
Rooftop Speed-Up (K_s):	1.000	*Rev H Only
Topographic Factor (K_{zt}):	1.000	
Gust Effect Factor (G_h):	1.000	

CODE STANDARDS		
Building Code:	2015 IBC	
TIA Standard:	TIA-222-H	
ASCE Standard:	ASCE 7-10	

WIND AND ICE DATA		
Ultimate Wind (V_{ult}):	119	mph
Design Wind (V):	N/A	mph
Ice Wind (V_{ice}):	50	mph
Base Ice Thickness (t_i):	1.5	in
Flat Pressure:	83.802	psf
Round Pressure:	50.281	psf
Ice Wind Pressure:	8.877	psf

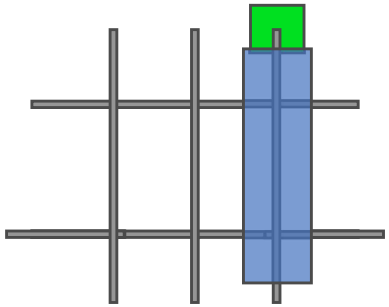
SEISMIC DATA		
Short-Period Accel. (S_s):	0.193	g
1-Second Accel. (S_1):	0.063	g
Short-Period Design (S_{DS}):	0.209	
1-Second Design (S_{D1}):	0.101	
Short-Period Coeff. (F_a):	1.600	
1-Second Coeff. (F_v):	2.400	
Amplification Factor (A_s):	3.000	
Response Mod. Coeff. (R):	2.000	

INFINIGY
FROM ZERO TO INFINIGY
the solutions are endless

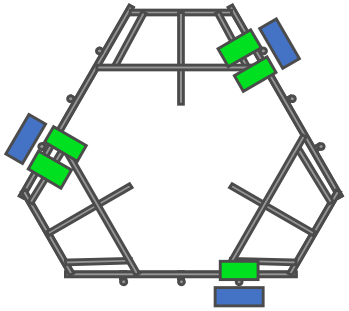
Infinigy Load Calculator V2.1.7

Program Inputs

ELEVATION VIEW



PLAN VIEW



INFINIGY
FROM ZERO TO INFINIGY
the solutions are endless

Infinigy Load Calculator V2.1.7

APPURTENANCE INFORMATION

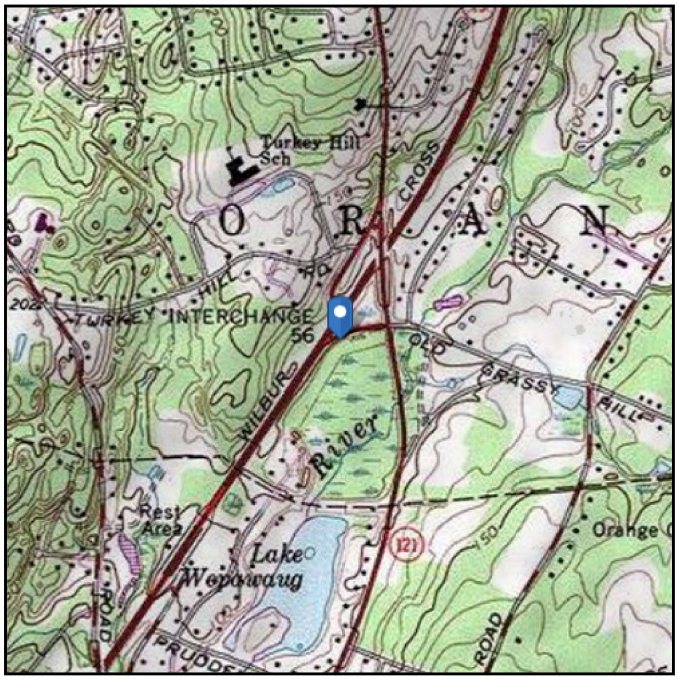
Appurtenance Name	Elevation	Qty.	K_a	q_z (psf)	EPA_N (ft^2)	EPA_T (ft^2)	Wind F_z (lbs)	Wind F_x (lbs)	Weight (lbs)	Seismic F (lbs)	Member (α sector)
JMA WIRELESS MX08FRO665-21	100.0	3	0.90	41.90	8.01	3.21	302.06	121.05	82.50	25.87	MP1
FUJITSU TA08025-B604	100.0	3	0.90	41.90	1.96	0.98	74.05	37.00	63.90	20.04	MP1
FUJITSU TA08025-B605	100.0	3	0.90	41.90	1.96	1.13	74.05	42.59	75.00	23.52	MP1
RAYCAP RDIDC-9181-PF-48	100.0	1	0.90	41.90	2.01	1.17	75.87	44.05	21.85	6.85	MP1

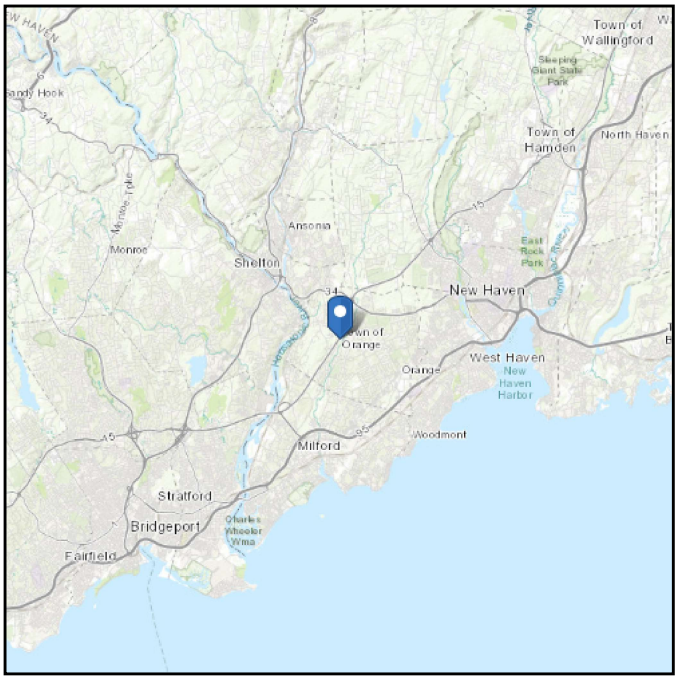
ASCE 7 Hazards Report

Address:
No Address at This Location

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

Elevation: 91.22 ft (NAVD 88)
Latitude: 41.285486
Longitude: -73.042575





Wind

Results:

Wind Speed: 119 Vmph per the State of Connecticut allowing ASCE 7-16 wind speed values.

10-year MRI	77 Vmph
25-year MRI	87 Vmph
50-year MRI	93 Vmph
100-year MRI	100 Vmph

Data Accessed: Tue Nov 02 2021

Date 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.

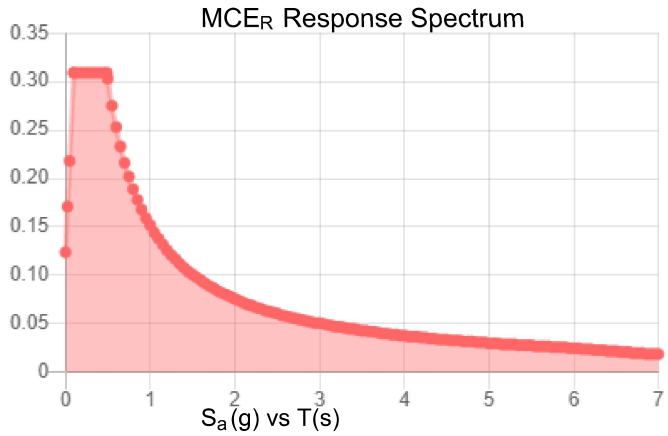
Seismic

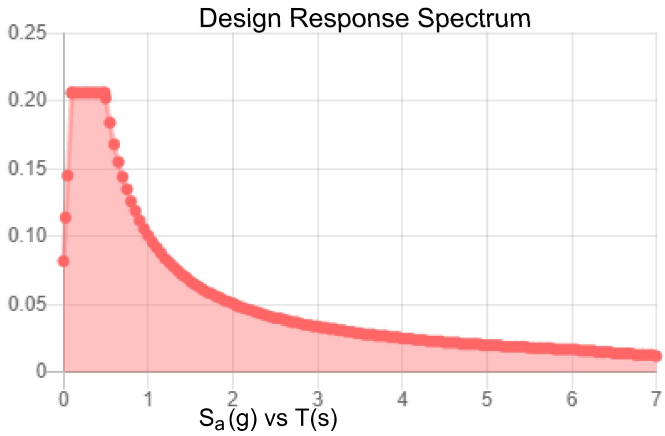
Site Soil Class: D - Stiff Soil

Results:

S_S :	0.193	S_{DS} :	0.206
S_1 :	0.063	S_{D1} :	0.101
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.102
S_{MS} :	0.309	PGA_M :	0.163
S_{M1} :	0.152	F_{PGA} :	1.596
		I_e :	1

Seismic Design Category B





Data Accessed: Tue Nov 02 2021

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

Ice

Results:

Ice Thickness:	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 Nov 02 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.

APPENDIX C

SOFTWARE ANALYSIS OUTPUT

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
1	M1	N5	N6			Channel 3" x 1...	Beam	Channel	A36 Gr.36	Typical
2	S3	N3	N1			Standoff	Beam	Tube	A500 Gr.B...	Typical
3	M3	N9	N12			L 2"x2"x3/16"	Beam	Single Angle	A36 Gr.36	Typical
4	M4	N10	N11			L 2"x2"x3/16"	Beam	Single Angle	A36 Gr.36	Typical
5	M5	N8	N7			6.5"x0.37" Plate	Beam	RECT	A36 Gr.36	Typical
6	M6	N17	N18			Channel 3" x 1...	Beam	Channel	A36 Gr.36	Typical
7	S2	N15	N13			Standoff	Beam	Tube	A500 Gr.B...	Typical
8	M8	N21	N24			L 2"x2"x3/16"	Beam	Single Angle	A36 Gr.36	Typical
9	M9	N22	N23			L 2"x2"x3/16"	Beam	Single Angle	A36 Gr.36	Typical
10	M10	N20	N19			6.5"x0.37" Plate	Beam	RECT	A36 Gr.36	Typical
11	M11	N29	N30			Channel 3" x 1...	Beam	Channel	A36 Gr.36	Typical
12	S1	N27	N25			Standoff	Beam	Tube	A500 Gr.B...	Typical
13	M13	N33	N36			L 2"x2"x3/16"	Beam	Single Angle	A36 Gr.36	Typical
14	M14	N34	N35			L 2"x2"x3/16"	Beam	Single Angle	A36 Gr.36	Typical
15	M15	N32	N31			6.5"x0.37" Plate	Beam	RECT	A36 Gr.36	Typical
16	HOR1	N44	N45			Horizontal	Beam	Pipe	A53 Gr.B	Typical
17	HOR3	N47	N48			Horizontal	Beam	Pipe	A53 Gr.B	Typical
18	HOR2	N50	N51			Horizontal	Beam	Pipe	A53 Gr.B	Typical
19	HR1	N48A	N49			Horizontal	Beam	Pipe	A53 Gr.B	Typical
20	HR3	N50A	N51A			Horizontal	Beam	Pipe	A53 Gr.B	Typical
21	HR2	N52	N53			Horizontal	Beam	Pipe	A53 Gr.B	Typical
22	M22	N57	N63			RIGID	None	None	RIGID	Typical
23	M23	N55	N61			RIGID	None	None	RIGID	Typical
24	M24	N56	N62			RIGID	None	None	RIGID	Typical
25	M25	N59	N65			RIGID	None	None	RIGID	Typical
26	M26	N54	N60			RIGID	None	None	RIGID	Typical
27	M27	N58	N64			RIGID	None	None	RIGID	Typical
28	MP3	N67	N70			Mount Pipes	Column	Pipe	A53 Gr.B	Typical
29	MP2	N66	N69			Mount Pipes	Column	Pipe	A53 Gr.B	Typical
30	MP1	N68	N71			Mount Pipes	Column	Pipe	A53 Gr.B	Typical
31	M31	N74	N79			RIGID	None	None	RIGID	Typical
32	M32	N73	N77			RIGID	None	None	RIGID	Typical
33	M33	N75	N81			RIGID	None	None	RIGID	Typical
34	MP9	N83	N86			Mount Pipes	Column	Pipe	A53 Gr.B	Typical
35	MP8	N82	N85			Mount Pipes	Column	Pipe	A53 Gr.B	Typical
36	MP7	N84	N87			Mount Pipes	Column	Pipe	A53 Gr.B	Typical
37	M37	N89	N94			RIGID	None	None	RIGID	Typical
38	M38	N88	N92			RIGID	None	None	RIGID	Typical
39	M39	N90	N96			RIGID	None	None	RIGID	Typical
40	MP6	N98	N101			Mount Pipes	Column	Pipe	A53 Gr.B	Typical
41	MP5	N97	N100			Mount Pipes	Column	Pipe	A53 Gr.B	Typical
42	MP4	N99	N102			Mount Pipes	Column	Pipe	A53 Gr.B	Typical
43	M43	N104	N78			RIGID	None	None	RIGID	Typical
44	M44	N103	N76			RIGID	None	None	RIGID	Typical
45	M45	N105	N80			RIGID	None	None	RIGID	Typical
46	M46	N110	N93			RIGID	None	None	RIGID	Typical
47	M47	N109	N91			RIGID	None	None	RIGID	Typical
48	M48	N111	N95			RIGID	None	None	RIGID	Typical
49	M49	N46	N47A		90	Handrail Plate	Beam	Single Angle	A36 Gr.36	Typical
50	M50	N44A	N45A		90	Handrail Plate	Beam	Single Angle	A36 Gr.36	Typical
51	M51	N42A	N43		90	Handrail Plate	Beam	Single Angle	A36 Gr.36	Typical

Hot Rolled Steel Properties

	Label	E [psi]	G [psi]	Nu	Therm (/1...	Density[k/f...	Yield[ksi]	Ry	Fu[ksi]	Rt
1	A992	2.9e+7	1.115e+7	.3	.65	.49	50	1.1	65	1.1
2	A36 Gr.36	2.9e+7	1.115e+7	.3	.65	.49	36	1.5	58	1.2
3	A572 Gr.50	2.9e+7	1.115e+7	.3	.65	.49	50	1.1	65	1.1
4	A500 Gr.B RND	2.9e+7	1.115e+7	.3	.65	.527	42	1.4	58	1.3
5	A500 Gr.B Rect	2.9e+7	1.115e+7	.3	.65	.527	46	1.4	58	1.3
6	A53 Gr.B	2.9e+7	1.115e+7	.3	.65	.49	35	1.6	60	1.2
7	A1085	2.9e+7	1.115e+7	.3	.65	.49	50	1.4	65	1.3

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design R...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	6.5"x0.37" Pl...	6.5"x0.37...	Beam	RECT	A36 Gr.36	Typical	2.405	.027	8.468	.106
2	L 2"x2"x3/16"	L2x2x3	Beam	Single Angle	A36 Gr.36	Typical	.722	.271	.271	.009
3	Handrail Plate	L2.5x2.5x3	Beam	Single Angle	A36 Gr.36	Typical	.901	.535	.535	.011
4	Horizontal	PIPE_3.5	Beam	Pipe	A53 Gr.B	Typical	2.5	4.52	4.52	9.04
5	Handrail	PIPE_2.0	Beam	Pipe	A53 Gr.B	Typical	1.02	.627	.627	1.25
6	Mount Pipes	PIPE_2.5	Column	Pipe	A53 Gr.B	Typical	1.61	1.45	1.45	2.89
7	Standoff	HSS4X4X4	Beam	Tube	A500 Gr.B Rect	Typical	3.37	7.8	7.8	12.8
8	Channel 3" x ...	C3X5	Beam	Channel	A36 Gr.36	Typical	1.47	.241	1.85	.043

Joint Coordinates and Temperatures

	Label	X [in]	Y [in]	Z [in]	Temp [F]	Detach From Diap...
1	N1	20.78461	0	-12	0	
2	CP	0	0	-24	0	
3	N3	55.425626	0	8	0	
4	N4	34.641016	0	-4	0	
5	N5	17.212813	0	26.186533	0	
6	N6	52.069219	0	-34.186533	0	
7	N7	65.925626	0	-10.186533	0	
8	N8	44.925626	0	26.186533	0	
9	N9	20.641016	0	20.248711	0	
10	N10	48.641016	0	-28.248711	0	
11	N11	62.925626	0	-4.990381	0	
12	N12	47.925626	0	20.990381	0	
13	N13	-0.	0	-48	0	
14	N15	-0.	0	-88	0	
15	N16	-0.	0	-64	0	
16	N17	34.856406	0	-64	0	
17	N18	-34.856406	0	-64	0	
18	N19	-21	0	-88	0	
19	N20	21	0	-88	0	
20	N21	28	0	-64	0	
21	N22	-28	0	-64	0	
22	N23	-15	0	-88	0	
23	N24	15	0	-88	0	
24	N25	-20.78461	0	-12	0	
25	N27	-55.425626	0	8	0	
26	N28	-34.641016	0	-4	0	
27	N29	-52.069219	0	-34.186533	0	
28	N30	-17.212813	0	26.186533	0	
29	N31	-44.925626	0	26.186533	0	
30	N32	-65.925626	0	-10.186533	0	
31	N33	-48.641016	0	-28.248711	0	
32	N34	-20.641016	0	20.248711	0	

Joint Coordinates and Temperatures (Continued)

	Label	X [in]	Y [in]	Z [in]	Temp [F]	Detach From Diap...
33	N35	-47.925626	0	20.990381	0	
34	N36	-62.925626	0	-4.990381	0	
35	N44	-48.000126	0	26.186533	0	
36	N45	48.000126	0	26.186533	0	
37	N47	67.462876	0	-7.523938	0	
38	N48	19.46275	0	-90.662595	0	
39	N50	-19.46275	0	-90.662595	0	
40	N51	-67.462876	0	-7.523938	0	
41	N42A	65.925626	40	-10.186533	0	
42	N43	44.925626	40	26.186533	0	
43	N44A	-21	40	-88	0	
44	N45A	21	40	-88	0	
45	N46	-44.925626	40	26.186533	0	
46	N47A	-65.925626	40	-10.186533	0	
47	N48A	-48.000126	40	26.186533	0	
48	N49	48.000126	40	26.186533	0	
49	N50A	67.462876	40	-7.523938	0	
50	N51A	19.46275	40	-90.662595	0	
51	N52	-19.46275	40	-90.662595	0	
52	N53	-67.462876	40	-7.523938	0	
53	N54	-0.000126	0	26.186533	0	
54	N55	-0.000126	40	26.186533	0	
55	N56	-24.000126	0	26.186533	0	
56	N57	-24.000126	40	26.186533	0	
57	N58	23.999874	0	26.186533	0	
58	N59	23.999874	40	26.186533	0	
59	N60	-0.000126	0	29.186533	0	
60	N61	-0.000126	40	29.186533	0	
61	N62	-24.000126	0	29.186533	0	
62	N63	-24.000126	40	29.186533	0	
63	N64	23.999874	0	29.186533	0	
64	N65	23.999874	40	29.186533	0	
65	N66	-0.000126	62	29.186533	0	
66	N67	-24.000126	62	29.186533	0	
67	N68	23.999874	62	29.186533	0	
68	N69	-0.000126	-22	29.186533	0	
69	N70	-24.000126	-22	29.186533	0	
70	N71	23.999874	-22	29.186533	0	
71	N73	43.462876	40	-49.093158	0	
72	N74	55.462876	40	-28.308548	0	
73	N75	31.462876	40	-69.877767	0	
74	N76	46.060952	0	-50.593158	0	
75	N77	46.060952	40	-50.593158	0	
76	N78	58.060952	0	-29.808548	0	
77	N79	58.060952	40	-29.808548	0	
78	N80	34.060952	0	-71.377767	0	
79	N81	34.060952	40	-71.377767	0	
80	N82	46.060952	62	-50.593158	0	
81	N83	58.060952	62	-29.808548	0	
82	N84	34.060952	62	-71.377767	0	
83	N85	46.060952	-22	-50.593158	0	
84	N86	58.060952	-22	-29.808548	0	
85	N87	34.060952	-22	-71.377767	0	
86	N88	-43.46275	40	-49.093376	0	
87	N89	-31.46275	40	-69.877985	0	
88	N90	-55.46275	40	-28.308766	0	
89	N91	-46.060826	0	-50.593376	0	

Joint Coordinates and Temperatures (Continued)

	Label	X [in]	Y [in]	Z [in]	Temp [F]	Detach From Diap...
90	N92	-46.060826	40	-50.593376	0	
91	N93	-34.060826	0	-71.377985	0	
92	N94	-34.060826	40	-71.377985	0	
93	N95	-58.060826	0	-29.808766	0	
94	N96	-58.060826	40	-29.808766	0	
95	N97	-46.060826	62	-50.593376	0	
96	N98	-34.060826	62	-71.377985	0	
97	N99	-58.060826	62	-29.808766	0	
98	N100	-46.060826	-22	-50.593376	0	
99	N101	-34.060826	-22	-71.377985	0	
100	N102	-58.060826	-22	-29.808766	0	
101	N103	43.462876	0	-49.093158	0	
102	N104	55.462876	0	-28.308548	0	
103	N105	31.462876	0	-69.877767	0	
104	N109	-43.46275	0	-49.093376	0	
105	N110	-31.46275	0	-69.877985	0	
106	N111	-55.46275	0	-28.308766	0	

Hot Rolled Steel Design Parameters

	Label	Shape	Length[in]	Lbyy[in]	Lbzz[in]	Lcomp top[in]	Lcomp bot[in]	L-torqu...	Kyy	Kzz	Cb	Function
1	M1	Channel 3" ...	69.713	28	28	28	28	28				Lateral
2	S3	Standoff	40	24	24	24	24	24				Lateral
3	M3	L 2"x2"x3/16"	27.295			Lbyy						Lateral
4	M4	L 2"x2"x3/16"	27.295			Lbyy						Lateral
5	M5	6.5"x0.37" P...	42			Lbyy						Lateral
6	M6	Channel 3" ...	69.713	28	28	28	28	28				Lateral
7	S2	Standoff	40	24	24	24	24	24				Lateral
8	M8	L 2"x2"x3/16"	27.295			Lbyy						Lateral
9	M9	L 2"x2"x3/16"	27.295			Lbyy						Lateral
10	M10	6.5"x0.37" P...	42			Lbyy						Lateral
11	M11	Channel 3" ...	69.713	28	28	28	28	28				Lateral
12	S1	Standoff	40	24	24	24	24	24				Lateral
13	M13	L 2"x2"x3/16"	27.295			Lbyy						Lateral
14	M14	L 2"x2"x3/16"	27.295			Lbyy						Lateral
15	M15	6.5"x0.37" P...	42			Lbyy						Lateral
16	HOR1	Horizontal	96	34.5	34.5	34.5	34.5	34.5				Lateral
17	HOR3	Horizontal	96	34.5	34.5	34.5	34.5	34.5				Lateral
18	HOR2	Horizontal	96	34.5	34.5	34.5	34.5	34.5				Lateral
19	HR1	Horizontal	96	34.5	34.5	34.5	34.5	34.5				Lateral
20	HR3	Horizontal	96	34.5	34.5	34.5	34.5	34.5				Lateral
21	HR2	Horizontal	96	34.5	34.5	34.5	34.5	34.5				Lateral
22	MP3	Mount Pipes	84									Lateral
23	MP2	Mount Pipes	84									Lateral
24	MP1	Mount Pipes	84									Lateral
25	MP9	Mount Pipes	84									Lateral
26	MP8	Mount Pipes	84									Lateral
27	MP7	Mount Pipes	84									Lateral
28	MP6	Mount Pipes	84									Lateral
29	MP5	Mount Pipes	84									Lateral
30	MP4	Mount Pipes	84									Lateral
31	M49	Handrail Pla...	42			Lbyy						Lateral
32	M50	Handrail Pla...	42			Lbyy						Lateral
33	M51	Handrail Pla...	42			Lbyy						Lateral

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(P...
1	Self Weight	DL		-1			13		3	
2	Wind Load AZI 0	WLZ					26			
3	Wind Load AZI 30	None					26			
4	Wind Load AZI 60	None					26			
5	Wind Load AZI 90	WLX					26			
6	Wind Load AZI 120	None					26			
7	Wind Load AZI 150	None					26			
8	Wind Load AZI 180	None					26			
9	Wind Load AZI 210	None					26			
10	Wind Load AZI 240	None					26			
11	Wind Load AZI 270	None					26			
12	Wind Load AZI 300	None					26			
13	Wind Load AZI 330	None					26			
14	Distr. Wind Load Z	WLZ						51		
15	Distr. Wind Load X	WLX						51		
16	Ice Weight	OL1					13	51	3	
17	Ice Wind Load AZI 0	OL2					26			
18	Ice Wind Load AZI 30	None					26			
19	Ice Wind Load AZI 60	None					26			
20	Ice Wind Load AZI 90	OL3					26			
21	Ice Wind Load AZI 120	None					26			
22	Ice Wind Load AZI 150	None					26			
23	Ice Wind Load AZI 180	None					26			
24	Ice Wind Load AZI 210	None					26			
25	Ice Wind Load AZI 240	None					26			
26	Ice Wind Load AZI 270	None					26			
27	Ice Wind Load AZI 300	None					26			
28	Ice Wind Load AZI 330	None					26			
29	Distr. Ice Wind Load Z	OL2						51		
30	Distr. Ice Wind Load X	OL3						51		
31	Seismic Load Z	ELZ			-.314		13			
32	Seismic Load X	ELX	-.314				13			
33	Service Live Loads	LL				1				
34	Maintenance Load 1	LL				1				
35	Maintenance Load 2	LL				1				
36	Maintenance Load 3	LL				1				
37	Maintenance Load 4	LL				1				
38	Maintenance Load 5	LL				1				
39	Maintenance Load 6	LL				1				
40	Maintenance Load 7	LL				1				
41	Maintenance Load 8	LL				1				
42	Maintenance Load 9	LL				1				
43	BLC 1 Transient Area...	None						9		
44	BLC 16 Transient Are...	None						9		

Joint Loads and Enforced Displacements (BLC 33 : Service Live Loads)

	Joint Label	L,D,M	Direction	Magnitude[(lb,lb-ft), (in,rad), (lb*s^2...
1	N45	L	Y	-250

Joint Loads and Enforced Displacements (BLC 34 : Maintenance Load 1)

	Joint Label	L,D,M	Direction	Magnitude[(lb,lb-ft), (in,rad), (lb*s^2...
1	N56	L	Y	-500

Joint Loads and Enforced Displacements (BLC 35 : Maintenance Load 2)

	Joint Label	L,D,M	Direction	Magnitude[(lb,lb-ft), (in,rad), (lb*s^2...
1	N54	L	Y	-500

Joint Loads and Enforced Displacements (BLC 36 : Maintenance Load 3)

	Joint Label	L,D,M	Direction	Magnitude[(lb,lb-ft), (in,rad), (lb*s^2...
1	N58	L	Y	-500

Joint Loads and Enforced Displacements (BLC 37 : Maintenance Load 4)

	Joint Label	L,D,M	Direction	Magnitude[(lb,lb-ft), (in,rad), (lb*s^2...
1	N104	L	Y	-500

Joint Loads and Enforced Displacements (BLC 38 : Maintenance Load 5)

	Joint Label	L,D,M	Direction	Magnitude[(lb,lb-ft), (in,rad), (lb*s^2...
1	N103	L	Y	-500

Joint Loads and Enforced Displacements (BLC 39 : Maintenance Load 6)

	Joint Label	L,D,M	Direction	Magnitude[(lb,lb-ft), (in,rad), (lb*s^2...
1	N105	L	Y	-500

Joint Loads and Enforced Displacements (BLC 40 : Maintenance Load 7)

	Joint Label	L,D,M	Direction	Magnitude[(lb,lb-ft), (in,rad), (lb*s^2...
1	N110	L	Y	-500

Joint Loads and Enforced Displacements (BLC 41 : Maintenance Load 8)

	Joint Label	L,D,M	Direction	Magnitude[(lb,lb-ft), (in,rad), (lb*s^2...
1	N109	L	Y	-500

Joint Loads and Enforced Displacements (BLC 42 : Maintenance Load 9)

	Joint Label	L,D,M	Direction	Magnitude[(lb,lb-ft), (in,rad), (lb*s^2...
1	N111	L	Y	-500

Member Point Loads (BLC 1 : Self Weight)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	Y	-41.25	6
2	MP1	Y	-41.25	66
3	MP1	Y	-63.9	20
4	MP1	Y	-75	40
5	MP1	Y	-21.85	60
6	MP4	Y	-41.25	6
7	MP4	Y	-41.25	66
8	MP4	Y	-63.9	20
9	MP4	Y	-75	40
10	MP7	Y	-41.25	6
11	MP7	Y	-41.25	66
12	MP7	Y	-63.9	20
13	MP7	Y	-75	40

Member Point Loads (BLC 2 : Wind Load AZI 0)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	0	6
2	MP1	Z	-151.03	6
3	MP1	X	0	66

Member Point Loads (BLC 2 : Wind Load AZI 0) (Continued)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
4	MP1	Z	-151.03	66
5	MP1	X	0	20
6	MP1	Z	-74.05	20
7	MP1	X	0	40
8	MP1	Z	-74.05	40
9	MP1	X	0	60
10	MP1	Z	-75.87	60
11	MP4	X	0	6
12	MP4	Z	-83.15	6
13	MP4	X	0	66
14	MP4	Z	-83.15	66
15	MP4	X	0	20
16	MP4	Z	-46.26	20
17	MP4	X	0	40
18	MP4	Z	-50.46	40
19	MP7	X	0	6
20	MP7	Z	-83.15	6
21	MP7	X	0	66
22	MP7	Z	-83.15	66
23	MP7	X	0	20
24	MP7	Z	-46.26	20
25	MP7	X	0	40
26	MP7	Z	-50.46	40

Member Point Loads (BLC 3 : Wind Load AZI 30)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	-64.2	6
2	MP1	Z	-111.2	6
3	MP1	X	-64.2	66
4	MP1	Z	-111.2	66
5	MP1	X	-32.39	20
6	MP1	Z	-56.1	20
7	MP1	X	-33.09	40
8	MP1	Z	-57.32	40
9	MP1	X	-33.96	60
10	MP1	Z	-58.82	60
11	MP4	X	-64.2	6
12	MP4	Z	-111.2	6
13	MP4	X	-64.2	66
14	MP4	Z	-111.2	66
15	MP4	X	-32.39	20
16	MP4	Z	-56.1	20
17	MP4	X	-33.09	40
18	MP4	Z	-57.32	40
19	MP7	X	-30.26	6
20	MP7	Z	-52.42	6
21	MP7	X	-30.26	66
22	MP7	Z	-52.42	66
23	MP7	X	-18.5	20
24	MP7	Z	-32.04	20
25	MP7	X	-21.3	40
26	MP7	Z	-36.89	40

Member Point Loads (BLC 4 : Wind Load AZI 60)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	-72.01	6

Member Point Loads (BLC 4 : Wind Load AZI 60) (Continued)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
2	MP1	Z	-41.58	6
3	MP1	X	-72.01	66
4	MP1	Z	-41.58	66
5	MP1	X	-40.06	20
6	MP1	Z	-23.13	20
7	MP1	X	-43.7	40
8	MP1	Z	-25.23	40
9	MP1	X	-45.04	60
10	MP1	Z	-26	60
11	MP4	X	-130.8	6
12	MP4	Z	-75.52	6
13	MP4	X	-130.8	66
14	MP4	Z	-75.52	66
15	MP4	X	-64.12	20
16	MP4	Z	-37.02	20
17	MP4	X	-64.12	40
18	MP4	Z	-37.02	40
19	MP7	X	-72.01	6
20	MP7	Z	-41.58	6
21	MP7	X	-72.01	66
22	MP7	Z	-41.58	66
23	MP7	X	-40.06	20
24	MP7	Z	-23.13	20
25	MP7	X	-43.7	40
26	MP7	Z	-25.23	40

Member Point Loads (BLC 5 : Wind Load AZI 90)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	-60.53	6
2	MP1	Z	0	6
3	MP1	X	-60.53	66
4	MP1	Z	0	66
5	MP1	X	-37	20
6	MP1	Z	0	20
7	MP1	X	-42.59	40
8	MP1	Z	0	40
9	MP1	X	-44.05	60
10	MP1	Z	0	60
11	MP4	X	-128.41	6
12	MP4	Z	0	6
13	MP4	X	-128.41	66
14	MP4	Z	0	66
15	MP4	X	-64.78	20
16	MP4	Z	0	20
17	MP4	X	-66.18	40
18	MP4	Z	0	40
19	MP7	X	-128.41	6
20	MP7	Z	0	6
21	MP7	X	-128.41	66
22	MP7	Z	0	66
23	MP7	X	-64.78	20
24	MP7	Z	0	20
25	MP7	X	-66.18	40
26	MP7	Z	0	40

Member Point Loads (BLC 6 : Wind Load AZI 120)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	-72.01	6
2	MP1	Z	41.58	6
3	MP1	X	-72.01	66
4	MP1	Z	41.58	66
5	MP1	X	-40.06	20
6	MP1	Z	23.13	20
7	MP1	X	-43.7	40
8	MP1	Z	25.23	40
9	MP1	X	-45.04	60
10	MP1	Z	26	60
11	MP4	X	-72.01	6
12	MP4	Z	41.58	6
13	MP4	X	-72.01	66
14	MP4	Z	41.58	66
15	MP4	X	-40.06	20
16	MP4	Z	23.13	20
17	MP4	X	-43.7	40
18	MP4	Z	25.23	40
19	MP7	X	-130.8	6
20	MP7	Z	75.52	6
21	MP7	X	-130.8	66
22	MP7	Z	75.52	66
23	MP7	X	-64.12	20
24	MP7	Z	37.02	20
25	MP7	X	-64.12	40
26	MP7	Z	37.02	40

Member Point Loads (BLC 7 : Wind Load AZI 150)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	-64.2	6
2	MP1	Z	111.2	6
3	MP1	X	-64.2	66
4	MP1	Z	111.2	66
5	MP1	X	-32.39	20
6	MP1	Z	56.1	20
7	MP1	X	-33.09	40
8	MP1	Z	57.32	40
9	MP1	X	-33.96	60
10	MP1	Z	58.82	60
11	MP4	X	-30.26	6
12	MP4	Z	52.42	6
13	MP4	X	-30.26	66
14	MP4	Z	52.42	66
15	MP4	X	-18.5	20
16	MP4	Z	32.04	20
17	MP4	X	-21.3	40
18	MP4	Z	36.89	40
19	MP7	X	-64.2	6
20	MP7	Z	111.2	6
21	MP7	X	-64.2	66
22	MP7	Z	111.2	66
23	MP7	X	-32.39	20
24	MP7	Z	56.1	20
25	MP7	X	-33.09	40
26	MP7	Z	57.32	40

Member Point Loads (BLC 8 : Wind Load AZI 180)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	0	6
2	MP1	Z	151.03	6
3	MP1	X	0	66
4	MP1	Z	151.03	66
5	MP1	X	0	20
6	MP1	Z	74.05	20
7	MP1	X	0	40
8	MP1	Z	74.05	40
9	MP1	X	0	60
10	MP1	Z	75.87	60
11	MP4	X	0	6
12	MP4	Z	83.15	6
13	MP4	X	0	66
14	MP4	Z	83.15	66
15	MP4	X	0	20
16	MP4	Z	46.26	20
17	MP4	X	0	40
18	MP4	Z	50.46	40
19	MP7	X	0	6
20	MP7	Z	83.15	6
21	MP7	X	0	66
22	MP7	Z	83.15	66
23	MP7	X	0	20
24	MP7	Z	46.26	20
25	MP7	X	0	40
26	MP7	Z	50.46	40

Member Point Loads (BLC 9 : Wind Load AZI 210)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	64.2	6
2	MP1	Z	111.2	6
3	MP1	X	64.2	66
4	MP1	Z	111.2	66
5	MP1	X	32.39	20
6	MP1	Z	56.1	20
7	MP1	X	33.09	40
8	MP1	Z	57.32	40
9	MP1	X	33.96	60
10	MP1	Z	58.82	60
11	MP4	X	64.2	6
12	MP4	Z	111.2	6
13	MP4	X	64.2	66
14	MP4	Z	111.2	66
15	MP4	X	32.39	20
16	MP4	Z	56.1	20
17	MP4	X	33.09	40
18	MP4	Z	57.32	40
19	MP7	X	30.26	6
20	MP7	Z	52.42	6
21	MP7	X	30.26	66
22	MP7	Z	52.42	66
23	MP7	X	18.5	20
24	MP7	Z	32.04	20
25	MP7	X	21.3	40
26	MP7	Z	36.89	40

Member Point Loads (BLC 10 : Wind Load AZI 240)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	72.01	6
2	MP1	Z	41.58	6
3	MP1	X	72.01	66
4	MP1	Z	41.58	66
5	MP1	X	40.06	20
6	MP1	Z	23.13	20
7	MP1	X	43.7	40
8	MP1	Z	25.23	40
9	MP1	X	45.04	60
10	MP1	Z	26	60
11	MP4	X	130.8	6
12	MP4	Z	75.52	6
13	MP4	X	130.8	66
14	MP4	Z	75.52	66
15	MP4	X	64.12	20
16	MP4	Z	37.02	20
17	MP4	X	64.12	40
18	MP4	Z	37.02	40
19	MP7	X	72.01	6
20	MP7	Z	41.58	6
21	MP7	X	72.01	66
22	MP7	Z	41.58	66
23	MP7	X	40.06	20
24	MP7	Z	23.13	20
25	MP7	X	43.7	40
26	MP7	Z	25.23	40

Member Point Loads (BLC 11 : Wind Load AZI 270)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	60.53	6
2	MP1	Z	0	6
3	MP1	X	60.53	66
4	MP1	Z	0	66
5	MP1	X	37	20
6	MP1	Z	0	20
7	MP1	X	42.59	40
8	MP1	Z	0	40
9	MP1	X	44.05	60
10	MP1	Z	0	60
11	MP4	X	128.41	6
12	MP4	Z	0	6
13	MP4	X	128.41	66
14	MP4	Z	0	66
15	MP4	X	64.78	20
16	MP4	Z	0	20
17	MP4	X	66.18	40
18	MP4	Z	0	40
19	MP7	X	128.41	6
20	MP7	Z	0	6
21	MP7	X	128.41	66
22	MP7	Z	0	66
23	MP7	X	64.78	20
24	MP7	Z	0	20
25	MP7	X	66.18	40
26	MP7	Z	0	40

Member Point Loads (BLC 12 : Wind Load AZI 300)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	72.01	6
2	MP1	Z	-41.58	6
3	MP1	X	72.01	66
4	MP1	Z	-41.58	66
5	MP1	X	40.06	20
6	MP1	Z	-23.13	20
7	MP1	X	43.7	40
8	MP1	Z	-25.23	40
9	MP1	X	45.04	60
10	MP1	Z	-26	60
11	MP4	X	72.01	6
12	MP4	Z	-41.58	6
13	MP4	X	72.01	66
14	MP4	Z	-41.58	66
15	MP4	X	40.06	20
16	MP4	Z	-23.13	20
17	MP4	X	43.7	40
18	MP4	Z	-25.23	40
19	MP7	X	130.8	6
20	MP7	Z	-75.52	6
21	MP7	X	130.8	66
22	MP7	Z	-75.52	66
23	MP7	X	64.12	20
24	MP7	Z	-37.02	20
25	MP7	X	64.12	40
26	MP7	Z	-37.02	40

Member Point Loads (BLC 13 : Wind Load AZI 330)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	64.2	6
2	MP1	Z	-111.2	6
3	MP1	X	64.2	66
4	MP1	Z	-111.2	66
5	MP1	X	32.39	20
6	MP1	Z	-56.1	20
7	MP1	X	33.09	40
8	MP1	Z	-57.32	40
9	MP1	X	33.96	60
10	MP1	Z	-58.82	60
11	MP4	X	30.26	6
12	MP4	Z	-52.42	6
13	MP4	X	30.26	66
14	MP4	Z	-52.42	66
15	MP4	X	18.5	20
16	MP4	Z	-32.04	20
17	MP4	X	21.3	40
18	MP4	Z	-36.89	40
19	MP7	X	64.2	6
20	MP7	Z	-111.2	6
21	MP7	X	64.2	66
22	MP7	Z	-111.2	66
23	MP7	X	32.39	20
24	MP7	Z	-56.1	20
25	MP7	X	33.09	40
26	MP7	Z	-57.32	40

Member Point Loads (BLC 16 : Ice Weight)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	Y	-134.656	6
2	MP1	Y	-134.656	66
3	MP1	Y	-65.864	20
4	MP1	Y	-70.195	40
5	MP1	Y	-69.174	60
6	MP4	Y	-134.656	6
7	MP4	Y	-134.656	66
8	MP4	Y	-65.864	20
9	MP4	Y	-70.195	40
10	MP7	Y	-134.656	6
11	MP7	Y	-134.656	66
12	MP7	Y	-65.864	20
13	MP7	Y	-70.195	40

Member Point Loads (BLC 17 : Ice Wind Load AZI 0)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	0	6
2	MP1	Z	-20.94	6
3	MP1	X	0	66
4	MP1	Z	-20.94	66
5	MP1	X	0	20
6	MP1	Z	-8.04	20
7	MP1	X	0	40
8	MP1	Z	-8.04	40
9	MP1	X	0	60
10	MP1	Z	-8.21	60
11	MP4	X	0	6
12	MP4	Z	-15.61	6
13	MP4	X	0	66
14	MP4	Z	-15.61	66
15	MP4	X	0	20
16	MP4	Z	-6.35	20
17	MP4	X	0	40
18	MP4	Z	-6.58	40
19	MP7	X	0	6
20	MP7	Z	-15.61	6
21	MP7	X	0	66
22	MP7	Z	-15.61	66
23	MP7	X	0	20
24	MP7	Z	-6.35	20
25	MP7	X	0	40
26	MP7	Z	-6.58	40

Member Point Loads (BLC 18 : Ice Wind Load AZI 30)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	-9.58	6
2	MP1	Z	-16.59	6
3	MP1	X	-9.58	66
4	MP1	Z	-16.59	66
5	MP1	X	-3.74	20
6	MP1	Z	-6.48	20
7	MP1	X	-3.78	40
8	MP1	Z	-6.54	40
9	MP1	X	-3.89	60
10	MP1	Z	-6.73	60
11	MP4	X	-9.58	6

Member Point Loads (BLC 18 : Ice Wind Load AZI 30) (Continued)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
12	MP4	Z	-16.59	6
13	MP4	X	-9.58	66
14	MP4	Z	-16.59	66
15	MP4	X	-3.74	20
16	MP4	Z	-6.48	20
17	MP4	X	-3.78	40
18	MP4	Z	-6.54	40
19	MP7	X	-6.91	6
20	MP7	Z	-11.98	6
21	MP7	X	-6.91	66
22	MP7	Z	-11.98	66
23	MP7	X	-2.89	20
24	MP7	Z	-5.01	20
25	MP7	X	-3.05	40
26	MP7	Z	-5.27	40

Member Point Loads (BLC 19 : Ice Wind Load AZI 60)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	-13.52	6
2	MP1	Z	-7.8	6
3	MP1	X	-13.52	66
4	MP1	Z	-7.8	66
5	MP1	X	-5.5	20
6	MP1	Z	-3.17	20
7	MP1	X	-5.7	40
8	MP1	Z	-3.29	40
9	MP1	X	-5.97	60
10	MP1	Z	-3.45	60
11	MP4	X	-18.13	6
12	MP4	Z	-10.47	6
13	MP4	X	-18.13	66
14	MP4	Z	-10.47	66
15	MP4	X	-6.96	20
16	MP4	Z	-4.02	20
17	MP4	X	-6.96	40
18	MP4	Z	-4.02	40
19	MP7	X	-13.52	6
20	MP7	Z	-7.8	6
21	MP7	X	-13.52	66
22	MP7	Z	-7.8	66
23	MP7	X	-5.5	20
24	MP7	Z	-3.17	20
25	MP7	X	-5.7	40
26	MP7	Z	-3.29	40

Member Point Loads (BLC 20 : Ice Wind Load AZI 90)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	-13.83	6
2	MP1	Z	0	6
3	MP1	X	-13.83	66
4	MP1	Z	0	66
5	MP1	X	-5.78	20
6	MP1	Z	0	20
7	MP1	X	-6.09	40
8	MP1	Z	0	40
9	MP1	X	-6.46	60

Member Point Loads (BLC 20 : Ice Wind Load AZI 90) (Continued)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
10	MP1	Z	0	60
11	MP4	X	-19.16	6
12	MP4	Z	0	6
13	MP4	X	-19.16	66
14	MP4	Z	0	66
15	MP4	X	-7.48	20
16	MP4	Z	0	20
17	MP4	X	-7.55	40
18	MP4	Z	0	40
19	MP7	X	-19.16	6
20	MP7	Z	0	6
21	MP7	X	-19.16	66
22	MP7	Z	0	66
23	MP7	X	-7.48	20
24	MP7	Z	0	20
25	MP7	X	-7.55	40
26	MP7	Z	0	40

Member Point Loads (BLC 21 : Ice Wind Load AZI 120)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	-13.52	6
2	MP1	Z	7.8	6
3	MP1	X	-13.52	66
4	MP1	Z	7.8	66
5	MP1	X	-5.5	20
6	MP1	Z	3.17	20
7	MP1	X	-5.7	40
8	MP1	Z	3.29	40
9	MP1	X	-5.97	60
10	MP1	Z	3.45	60
11	MP4	X	-13.52	6
12	MP4	Z	7.8	6
13	MP4	X	-13.52	66
14	MP4	Z	7.8	66
15	MP4	X	-5.5	20
16	MP4	Z	3.17	20
17	MP4	X	-5.7	40
18	MP4	Z	3.29	40
19	MP7	X	-18.13	6
20	MP7	Z	10.47	6
21	MP7	X	-18.13	66
22	MP7	Z	10.47	66
23	MP7	X	-6.96	20
24	MP7	Z	4.02	20
25	MP7	X	-6.96	40
26	MP7	Z	4.02	40

Member Point Loads (BLC 22 : Ice Wind Load AZI 150)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	-9.58	6
2	MP1	Z	16.59	6
3	MP1	X	-9.58	66
4	MP1	Z	16.59	66
5	MP1	X	-3.74	20
6	MP1	Z	6.48	20
7	MP1	X	-3.78	40

Member Point Loads (BLC 22 : Ice Wind Load AZI 150) (Continued)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
8	MP1	Z	6.54	40
9	MP1	X	-3.89	60
10	MP1	Z	6.73	60
11	MP4	X	-6.91	6
12	MP4	Z	11.98	6
13	MP4	X	-6.91	66
14	MP4	Z	11.98	66
15	MP4	X	-2.89	20
16	MP4	Z	5.01	20
17	MP4	X	-3.05	40
18	MP4	Z	5.27	40
19	MP7	X	-9.58	6
20	MP7	Z	16.59	6
21	MP7	X	-9.58	66
22	MP7	Z	16.59	66
23	MP7	X	-3.74	20
24	MP7	Z	6.48	20
25	MP7	X	-3.78	40
26	MP7	Z	6.54	40

Member Point Loads (BLC 23 : Ice Wind Load AZI 180)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	0	6
2	MP1	Z	20.94	6
3	MP1	X	0	66
4	MP1	Z	20.94	66
5	MP1	X	0	20
6	MP1	Z	8.04	20
7	MP1	X	0	40
8	MP1	Z	8.04	40
9	MP1	X	0	60
10	MP1	Z	8.21	60
11	MP4	X	0	6
12	MP4	Z	15.61	6
13	MP4	X	0	66
14	MP4	Z	15.61	66
15	MP4	X	0	20
16	MP4	Z	6.35	20
17	MP4	X	0	40
18	MP4	Z	6.58	40
19	MP7	X	0	6
20	MP7	Z	15.61	6
21	MP7	X	0	66
22	MP7	Z	15.61	66
23	MP7	X	0	20
24	MP7	Z	6.35	20
25	MP7	X	0	40
26	MP7	Z	6.58	40

Member Point Loads (BLC 24 : Ice Wind Load AZI 210)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	9.58	6
2	MP1	Z	16.59	6
3	MP1	X	9.58	66
4	MP1	Z	16.59	66
5	MP1	X	3.74	20

Member Point Loads (BLC 24 : Ice Wind Load AZI 210) (Continued)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
6	MP1	Z	6.48	20
7	MP1	X	3.78	40
8	MP1	Z	6.54	40
9	MP1	X	3.89	60
10	MP1	Z	6.73	60
11	MP4	X	9.58	6
12	MP4	Z	16.59	6
13	MP4	X	9.58	66
14	MP4	Z	16.59	66
15	MP4	X	3.74	20
16	MP4	Z	6.48	20
17	MP4	X	3.78	40
18	MP4	Z	6.54	40
19	MP7	X	6.91	6
20	MP7	Z	11.98	6
21	MP7	X	6.91	66
22	MP7	Z	11.98	66
23	MP7	X	2.89	20
24	MP7	Z	5.01	20
25	MP7	X	3.05	40
26	MP7	Z	5.27	40

Member Point Loads (BLC 25 : Ice Wind Load AZI 240)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	13.52	6
2	MP1	Z	7.8	6
3	MP1	X	13.52	66
4	MP1	Z	7.8	66
5	MP1	X	5.5	20
6	MP1	Z	3.17	20
7	MP1	X	5.7	40
8	MP1	Z	3.29	40
9	MP1	X	5.97	60
10	MP1	Z	3.45	60
11	MP4	X	18.13	6
12	MP4	Z	10.47	6
13	MP4	X	18.13	66
14	MP4	Z	10.47	66
15	MP4	X	6.96	20
16	MP4	Z	4.02	20
17	MP4	X	6.96	40
18	MP4	Z	4.02	40
19	MP7	X	13.52	6
20	MP7	Z	7.8	6
21	MP7	X	13.52	66
22	MP7	Z	7.8	66
23	MP7	X	5.5	20
24	MP7	Z	3.17	20
25	MP7	X	5.7	40
26	MP7	Z	3.29	40

Member Point Loads (BLC 26 : Ice Wind Load AZI 270)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	13.83	6
2	MP1	Z	0	6
3	MP1	X	13.83	66

Member Point Loads (BLC 26 : Ice Wind Load AZI 270) (Continued)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
4	MP1	Z	0	66
5	MP1	X	5.78	20
6	MP1	Z	0	20
7	MP1	X	6.09	40
8	MP1	Z	0	40
9	MP1	X	6.46	60
10	MP1	Z	0	60
11	MP4	X	19.16	6
12	MP4	Z	0	6
13	MP4	X	19.16	66
14	MP4	Z	0	66
15	MP4	X	7.48	20
16	MP4	Z	0	20
17	MP4	X	7.55	40
18	MP4	Z	0	40
19	MP7	X	19.16	6
20	MP7	Z	0	6
21	MP7	X	19.16	66
22	MP7	Z	0	66
23	MP7	X	7.48	20
24	MP7	Z	0	20
25	MP7	X	7.55	40
26	MP7	Z	0	40

Member Point Loads (BLC 27 : Ice Wind Load AZI 300)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	13.52	6
2	MP1	Z	-7.8	6
3	MP1	X	13.52	66
4	MP1	Z	-7.8	66
5	MP1	X	5.5	20
6	MP1	Z	-3.17	20
7	MP1	X	5.7	40
8	MP1	Z	-3.29	40
9	MP1	X	5.97	60
10	MP1	Z	-3.45	60
11	MP4	X	13.52	6
12	MP4	Z	-7.8	6
13	MP4	X	13.52	66
14	MP4	Z	-7.8	66
15	MP4	X	5.5	20
16	MP4	Z	-3.17	20
17	MP4	X	5.7	40
18	MP4	Z	-3.29	40
19	MP7	X	18.13	6
20	MP7	Z	-10.47	6
21	MP7	X	18.13	66
22	MP7	Z	-10.47	66
23	MP7	X	6.96	20
24	MP7	Z	-4.02	20
25	MP7	X	6.96	40
26	MP7	Z	-4.02	40

Member Point Loads (BLC 28 : Ice Wind Load AZI 330)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	9.58	6

Member Point Loads (BLC 28 : Ice Wind Load AZI 330) (Continued)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
2	MP1	Z	-16.59	6
3	MP1	X	9.58	66
4	MP1	Z	-16.59	66
5	MP1	X	3.74	20
6	MP1	Z	-6.48	20
7	MP1	X	3.78	40
8	MP1	Z	-6.54	40
9	MP1	X	3.89	60
10	MP1	Z	-6.73	60
11	MP4	X	6.91	6
12	MP4	Z	-11.98	6
13	MP4	X	6.91	66
14	MP4	Z	-11.98	66
15	MP4	X	2.89	20
16	MP4	Z	-5.01	20
17	MP4	X	3.05	40
18	MP4	Z	-5.27	40
19	MP7	X	9.58	6
20	MP7	Z	-16.59	6
21	MP7	X	9.58	66
22	MP7	Z	-16.59	66
23	MP7	X	3.74	20
24	MP7	Z	-6.48	20
25	MP7	X	3.78	40
26	MP7	Z	-6.54	40

Member Point Loads (BLC 31 : Seismic Load Z)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	Z	-12.936	6
2	MP1	Z	-12.936	66
3	MP1	Z	-20.039	20
4	MP1	Z	-23.52	40
5	MP1	Z	-6.852	60
6	MP4	Z	-12.936	6
7	MP4	Z	-12.936	66
8	MP4	Z	-20.039	20
9	MP4	Z	-23.52	40
10	MP7	Z	-12.936	6
11	MP7	Z	-12.936	66
12	MP7	Z	-20.039	20
13	MP7	Z	-23.52	40

Member Point Loads (BLC 32 : Seismic Load X)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	-12.936	6
2	MP1	X	-12.936	66
3	MP1	X	-20.039	20
4	MP1	X	-23.52	40
5	MP1	X	-6.852	60
6	MP4	X	-12.936	6
7	MP4	X	-12.936	66
8	MP4	X	-20.039	20
9	MP4	X	-23.52	40
10	MP7	X	-12.936	6
11	MP7	X	-12.936	66
12	MP7	X	-20.039	20

Member Point Loads (BLC 32 : Seismic Load X) (Continued)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
13	MP7	X	-23.52	40

Member Distributed Loads (BLC 14 : Distr. Wind Load Z)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[in,%]	End Location[in,%]
1	M1	SZ	-83.802	-83.802	0	%100
2	S3	SZ	-83.802	-83.802	0	%100
3	M3	SZ	-83.802	-83.802	0	%100
4	M4	SZ	-83.802	-83.802	0	%100
5	M5	SZ	-83.802	-83.802	0	%100
6	M6	SZ	-83.802	-83.802	0	%100
7	S2	SZ	-83.802	-83.802	0	%100
8	M8	SZ	-83.802	-83.802	0	%100
9	M9	SZ	-83.802	-83.802	0	%100
10	M10	SZ	-83.802	-83.802	0	%100
11	M11	SZ	-83.802	-83.802	0	%100
12	S1	SZ	-83.802	-83.802	0	%100
13	M13	SZ	-83.802	-83.802	0	%100
14	M14	SZ	-83.802	-83.802	0	%100
15	M15	SZ	-83.802	-83.802	0	%100
16	HOR1	SZ	-50.281	-50.281	0	%100
17	HOR3	SZ	-50.281	-50.281	0	%100
18	HOR2	SZ	-50.281	-50.281	0	%100
19	HR1	SZ	-50.281	-50.281	0	%100
20	HR3	SZ	-50.281	-50.281	0	%100
21	HR2	SZ	-50.281	-50.281	0	%100
22	M22	SZ	0	0	0	%100
23	M23	SZ	0	0	0	%100
24	M24	SZ	0	0	0	%100
25	M25	SZ	0	0	0	%100
26	M26	SZ	0	0	0	%100
27	M27	SZ	0	0	0	%100
28	MP3	SZ	-50.281	-50.281	0	%100
29	MP2	SZ	-50.281	-50.281	0	%100
30	MP1	SZ	-50.281	-50.281	0	%100
31	M31	SZ	0	0	0	%100
32	M32	SZ	0	0	0	%100
33	M33	SZ	0	0	0	%100
34	MP9	SZ	-50.281	-50.281	0	%100
35	MP8	SZ	-50.281	-50.281	0	%100
36	MP7	SZ	-50.281	-50.281	0	%100
37	M37	SZ	0	0	0	%100
38	M38	SZ	0	0	0	%100
39	M39	SZ	0	0	0	%100
40	MP6	SZ	-50.281	-50.281	0	%100
41	MP5	SZ	-50.281	-50.281	0	%100
42	MP4	SZ	-50.281	-50.281	0	%100
43	M43	SZ	0	0	0	%100
44	M44	SZ	0	0	0	%100
45	M45	SZ	0	0	0	%100
46	M46	SZ	0	0	0	%100
47	M47	SZ	0	0	0	%100
48	M48	SZ	0	0	0	%100
49	M49	SZ	-83.802	-83.802	0	%100
50	M50	SZ	-83.802	-83.802	0	%100
51	M51	SZ	-83.802	-83.802	0	%100

Member Distributed Loads (BLC 15 : Distr. Wind Load X)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[in,%]	End Location[in,%]
1	M1	SX	-83.802	-83.802	0	%100
2	S3	SX	-83.802	-83.802	0	%100
3	M3	SX	-83.802	-83.802	0	%100
4	M4	SX	-83.802	-83.802	0	%100
5	M5	SX	-83.802	-83.802	0	%100
6	M6	SX	-83.802	-83.802	0	%100
7	S2	SX	-83.802	-83.802	0	%100
8	M8	SX	-83.802	-83.802	0	%100
9	M9	SX	-83.802	-83.802	0	%100
10	M10	SX	-83.802	-83.802	0	%100
11	M11	SX	-83.802	-83.802	0	%100
12	S1	SX	-83.802	-83.802	0	%100
13	M13	SX	-83.802	-83.802	0	%100
14	M14	SX	-83.802	-83.802	0	%100
15	M15	SX	-83.802	-83.802	0	%100
16	HOR1	SX	-50.281	-50.281	0	%100
17	HOR3	SX	-50.281	-50.281	0	%100
18	HOR2	SX	-50.281	-50.281	0	%100
19	HR1	SX	-50.281	-50.281	0	%100
20	HR3	SX	-50.281	-50.281	0	%100
21	HR2	SX	-50.281	-50.281	0	%100
22	M22	SX	0	0	0	%100
23	M23	SX	0	0	0	%100
24	M24	SX	0	0	0	%100
25	M25	SX	0	0	0	%100
26	M26	SX	0	0	0	%100
27	M27	SX	0	0	0	%100
28	MP3	SX	-50.281	-50.281	0	%100
29	MP2	SX	-50.281	-50.281	0	%100
30	MP1	SX	-50.281	-50.281	0	%100
31	M31	SX	0	0	0	%100
32	M32	SX	0	0	0	%100
33	M33	SX	0	0	0	%100
34	MP9	SX	-50.281	-50.281	0	%100
35	MP8	SX	-50.281	-50.281	0	%100
36	MP7	SX	-50.281	-50.281	0	%100
37	M37	SX	0	0	0	%100
38	M38	SX	0	0	0	%100
39	M39	SX	0	0	0	%100
40	MP6	SX	-50.281	-50.281	0	%100
41	MP5	SX	-50.281	-50.281	0	%100
42	MP4	SX	-50.281	-50.281	0	%100
43	M43	SX	0	0	0	%100
44	M44	SX	0	0	0	%100
45	M45	SX	0	0	0	%100
46	M46	SX	0	0	0	%100
47	M47	SX	0	0	0	%100
48	M48	SX	0	0	0	%100
49	M49	SX	-83.802	-83.802	0	%100
50	M50	SX	-83.802	-83.802	0	%100
51	M51	SX	-83.802	-83.802	0	%100

Member Distributed Loads (BLC 16 : Ice Weight)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[in,%]	End Location[in,%]
1	M1	Y	-10.094	-10.094	0	%100
2	S3	Y	-14.738	-14.738	0	%100

Member Distributed Loads (BLC 16 : Ice Weight) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[in,%]	End Location[in,%]
3	M3	Y	-9.034	-9.034	0	%100
4	M4	Y	-9.034	-9.034	0	%100
5	M5	Y	-16.46	-16.46	0	%100
6	M6	Y	-10.094	-10.094	0	%100
7	S2	Y	-14.738	-14.738	0	%100
8	M8	Y	-9.034	-9.034	0	%100
9	M9	Y	-9.034	-9.034	0	%100
10	M10	Y	-16.46	-16.46	0	%100
11	M11	Y	-10.094	-10.094	0	%100
12	S1	Y	-14.738	-14.738	0	%100
13	M13	Y	-9.034	-9.034	0	%100
14	M14	Y	-9.034	-9.034	0	%100
15	M15	Y	-16.46	-16.46	0	%100
16	HOR1	Y	-11.397	-11.397	0	%100
17	HOR3	Y	-11.397	-11.397	0	%100
18	HOR2	Y	-11.397	-11.397	0	%100
19	HR1	Y	-11.397	-11.397	0	%100
20	HR3	Y	-11.397	-11.397	0	%100
21	HR2	Y	-11.397	-11.397	0	%100
22	M22	Y	-3.329	-3.329	0	%100
23	M23	Y	-3.329	-3.329	0	%100
24	M24	Y	-3.329	-3.329	0	%100
25	M25	Y	-3.329	-3.329	0	%100
26	M26	Y	-3.329	-3.329	0	%100
27	M27	Y	-3.329	-3.329	0	%100
28	MP3	Y	-9.128	-9.128	0	%100
29	MP2	Y	-9.128	-9.128	0	%100
30	MP1	Y	-9.128	-9.128	0	%100
31	M31	Y	-3.329	-3.329	0	%100
32	M32	Y	-3.329	-3.329	0	%100
33	M33	Y	-3.329	-3.329	0	%100
34	MP9	Y	-9.128	-9.128	0	%100
35	MP8	Y	-9.128	-9.128	0	%100
36	MP7	Y	-9.128	-9.128	0	%100
37	M37	Y	-3.329	-3.329	0	%100
38	M38	Y	-3.329	-3.329	0	%100
39	M39	Y	-3.329	-3.329	0	%100
40	MP6	Y	-9.128	-9.128	0	%100
41	MP5	Y	-9.128	-9.128	0	%100
42	MP4	Y	-9.128	-9.128	0	%100
43	M43	Y	-3.329	-3.329	0	%100
44	M44	Y	-3.329	-3.329	0	%100
45	M45	Y	-3.329	-3.329	0	%100
46	M46	Y	-3.329	-3.329	0	%100
47	M47	Y	-3.329	-3.329	0	%100
48	M48	Y	-3.329	-3.329	0	%100
49	M49	Y	-10.46	-10.46	0	%100
50	M50	Y	-10.46	-10.46	0	%100
51	M51	Y	-10.46	-10.46	0	%100

Member Distributed Loads (BLC 29 : Distr. Ice Wind Load Z)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[in,%]	End Location[in,%]
1	M1	SZ	-17.614	-17.614	0	%100
2	S3	SZ	-14.057	-14.057	0	%100
3	M3	SZ	-19.238	-19.238	0	%100
4	M4	SZ	-19.238	-19.238	0	%100

Member Distributed Loads (BLC 29 : Distr. Ice Wind Load Z) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[in,%]	End Location[in,%]
5	M5	SZ	-13.378	-13.378	0	%100
6	M6	SZ	-17.614	-17.614	0	%100
7	S2	SZ	-14.057	-14.057	0	%100
8	M8	SZ	-19.238	-19.238	0	%100
9	M9	SZ	-19.238	-19.238	0	%100
10	M10	SZ	-13.378	-13.378	0	%100
11	M11	SZ	-17.614	-17.614	0	%100
12	S1	SZ	-14.057	-14.057	0	%100
13	M13	SZ	-19.238	-19.238	0	%100
14	M14	SZ	-19.238	-19.238	0	%100
15	M15	SZ	-13.378	-13.378	0	%100
16	HOR1	SZ	-16.203	-16.203	0	%100
17	HOR3	SZ	-16.203	-16.203	0	%100
18	HOR2	SZ	-16.203	-16.203	0	%100
19	HR1	SZ	-16.203	-16.203	0	%100
20	HR3	SZ	-16.203	-16.203	0	%100
21	HR2	SZ	-16.203	-16.203	0	%100
22	M22	SZ	0	0	0	%100
23	M23	SZ	0	0	0	%100
24	M24	SZ	0	0	0	%100
25	M25	SZ	0	0	0	%100
26	M26	SZ	0	0	0	%100
27	M27	SZ	0	0	0	%100
28	MP3	SZ	-19.07	-19.07	0	%100
29	MP2	SZ	-19.07	-19.07	0	%100
30	MP1	SZ	-19.07	-19.07	0	%100
31	M31	SZ	0	0	0	%100
32	M32	SZ	0	0	0	%100
33	M33	SZ	0	0	0	%100
34	MP9	SZ	-19.07	-19.07	0	%100
35	MP8	SZ	-19.07	-19.07	0	%100
36	MP7	SZ	-19.07	-19.07	0	%100
37	M37	SZ	0	0	0	%100
38	M38	SZ	0	0	0	%100
39	M39	SZ	0	0	0	%100
40	MP6	SZ	-19.07	-19.07	0	%100
41	MP5	SZ	-19.07	-19.07	0	%100
42	MP4	SZ	-19.07	-19.07	0	%100
43	M43	SZ	0	0	0	%100
44	M44	SZ	0	0	0	%100
45	M45	SZ	0	0	0	%100
46	M46	SZ	0	0	0	%100
47	M47	SZ	0	0	0	%100
48	M48	SZ	0	0	0	%100
49	M49	SZ	-17.166	-17.166	0	%100
50	M50	SZ	-17.166	-17.166	0	%100
51	M51	SZ	-17.166	-17.166	0	%100

Member Distributed Loads (BLC 30 : Distr. Ice Wind Load X)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[in,%]	End Location[in,%]
1	M1	SX	-17.614	-17.614	0	%100
2	S3	SX	-14.057	-14.057	0	%100
3	M3	SX	-19.238	-19.238	0	%100
4	M4	SX	-19.238	-19.238	0	%100
5	M5	SX	-13.378	-13.378	0	%100
6	M6	SX	-17.614	-17.614	0	%100

Member Distributed Loads (BLC 30 : Distr. Ice Wind Load X) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[in,%]	End Location[in,%]
7	S2	SX	-14.057	-14.057	0	%100
8	M8	SX	-19.238	-19.238	0	%100
9	M9	SX	-19.238	-19.238	0	%100
10	M10	SX	-13.378	-13.378	0	%100
11	M11	SX	-17.614	-17.614	0	%100
12	S1	SX	-14.057	-14.057	0	%100
13	M13	SX	-19.238	-19.238	0	%100
14	M14	SX	-19.238	-19.238	0	%100
15	M15	SX	-13.378	-13.378	0	%100
16	HOR1	SX	-16.203	-16.203	0	%100
17	HOR3	SX	-16.203	-16.203	0	%100
18	HOR2	SX	-16.203	-16.203	0	%100
19	HR1	SX	-16.203	-16.203	0	%100
20	HR3	SX	-16.203	-16.203	0	%100
21	HR2	SX	-16.203	-16.203	0	%100
22	M22	SX	0	0	0	%100
23	M23	SX	0	0	0	%100
24	M24	SX	0	0	0	%100
25	M25	SX	0	0	0	%100
26	M26	SX	0	0	0	%100
27	M27	SX	0	0	0	%100
28	MP3	SX	-19.07	-19.07	0	%100
29	MP2	SX	-19.07	-19.07	0	%100
30	MP1	SX	-19.07	-19.07	0	%100
31	M31	SX	0	0	0	%100
32	M32	SX	0	0	0	%100
33	M33	SX	0	0	0	%100
34	MP9	SX	-19.07	-19.07	0	%100
35	MP8	SX	-19.07	-19.07	0	%100
36	MP7	SX	-19.07	-19.07	0	%100
37	M37	SX	0	0	0	%100
38	M38	SX	0	0	0	%100
39	M39	SX	0	0	0	%100
40	MP6	SX	-19.07	-19.07	0	%100
41	MP5	SX	-19.07	-19.07	0	%100
42	MP4	SX	-19.07	-19.07	0	%100
43	M43	SX	0	0	0	%100
44	M44	SX	0	0	0	%100
45	M45	SX	0	0	0	%100
46	M46	SX	0	0	0	%100
47	M47	SX	0	0	0	%100
48	M48	SX	0	0	0	%100
49	M49	SX	-17.166	-17.166	0	%100
50	M50	SX	-17.166	-17.166	0	%100
51	M51	SX	-17.166	-17.166	0	%100

Member Distributed Loads (BLC 43 : BLC 1 Transient Area Loads)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[in,%]	End Location[in,%]
1	S3	Y	-3.185	-3.185	0	23.596
2	M3	Y	-1.406	-1.406	.498	27.295
3	M4	Y	-1.406	-1.406	.498	27.295
4	S2	Y	-3.185	-3.185	0	23.596
5	M8	Y	-1.406	-1.406	.498	27.295
6	M9	Y	-1.406	-1.406	.498	27.295
7	S1	Y	-3.185	-3.185	0	23.596
8	M13	Y	-1.406	-1.406	.498	27.295

Member Distributed Loads (BLC 43 : BLC 1 Transient Area Loads) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[in,%]	End Location[in,%]
9	M14	Y	-1.406	-1.406	.498	27.295

Member Distributed Loads (BLC 44 : BLC 16 Transient Area Loads)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[in,%]	End Location[in,%]
1	S3	Y	-28.031	-28.031	0	23.596
2	M3	Y	-12.371	-12.371	.498	27.295
3	M4	Y	-12.371	-12.371	.498	27.295
4	S2	Y	-28.031	-28.031	0	23.596
5	M8	Y	-12.371	-12.371	.498	27.295
6	M9	Y	-12.371	-12.371	.498	27.295
7	S1	Y	-28.031	-28.031	0	23.596
8	M13	Y	-12.371	-12.371	.498	27.295
9	M14	Y	-12.371	-12.371	.498	27.295

Load Combinations

	Description	S...	P...	SRSS	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
1	1.4DL	Yes	Y		1	1.4																		
2	1.2DL + 1WL AZI 0	Yes	Y		1	1.2	2	1	14	1	15													
3	1.2DL + 1WL AZI 30	Yes	Y		1	1.2	3	1	14	.866	15	.5												
4	1.2DL + 1WL AZI 60	Yes	Y		1	1.2	4	1	14	.5	15	.866												
5	1.2DL + 1WL AZI 90	Yes	Y		1	1.2	5	1	14		15	1												
6	1.2DL + 1WL AZI 120	Yes	Y		1	1.2	6	1	14	-.5	15	.866												
7	1.2DL + 1WL AZI 150	Yes	Y		1	1.2	7	1	14	-.8...	15	.5												
8	1.2DL + 1WL AZI 180	Yes	Y		1	1.2	8	1	14	-1	15													
9	1.2DL + 1WL AZI 210	Yes	Y		1	1.2	9	1	14	-.8...	15	-.5												
10	1.2DL + 1WL AZI 240	Yes	Y		1	1.2	10	1	14	-.5	15	-.8...												
11	1.2DL + 1WL AZI 270	Yes	Y		1	1.2	11	1	14		15	-1												
12	1.2DL + 1WL AZI 300	Yes	Y		1	1.2	12	1	14	.5	15	-.8...												
13	1.2DL + 1WL AZI 330	Yes	Y		1	1.2	13	1	14	.866	15	-.5												
14	0.9DL + 1WL AZI 0	Yes	Y		1	.9	2	1	14	1	15													
15	0.9DL + 1WL AZI 30	Yes	Y		1	.9	3	1	14	.866	15	.5												
16	0.9DL + 1WL AZI 60	Yes	Y		1	.9	4	1	14	.5	15	.866												
17	0.9DL + 1WL AZI 90	Yes	Y		1	.9	5	1	14		15	1												
18	0.9DL + 1WL AZI 120	Yes	Y		1	.9	6	1	14	-.5	15	.866												
19	0.9DL + 1WL AZI 150	Yes	Y		1	.9	7	1	14	-.8...	15	.5												
20	0.9DL + 1WL AZI 180	Yes	Y		1	.9	8	1	14	-1	15													
21	0.9DL + 1WL AZI 210	Yes	Y		1	.9	9	1	14	-.8...	15	-.5												
22	0.9DL + 1WL AZI 240	Yes	Y		1	.9	10	1	14	-.5	15	-.8...												
23	0.9DL + 1WL AZI 270	Yes	Y		1	.9	11	1	14		15	-1												
24	0.9DL + 1WL AZI 300	Yes	Y		1	.9	12	1	14	.5	15	-.8...												
25	0.9DL + 1WL AZI 330	Yes	Y		1	.9	13	1	14	.866	15	-.5												
26	1.2D + 1.0Di	Yes	Y		1	1.2	16	1																
27	1.2D + 1.0Di +1.0Wi AZI 0	Yes	Y		1	1.2	16	1	17	1	29	1	30											
28	1.2D + 1.0Di +1.0Wi AZI ..	Yes	Y		1	1.2	16	1	18	1	29	.866	30	.5										
29	1.2D + 1.0Di +1.0Wi AZI ..	Yes	Y		1	1.2	16	1	19	1	29	.5	30	.866										
30	1.2D + 1.0Di +1.0Wi AZI ..	Yes	Y		1	1.2	16	1	20	1	29		30	1										
31	1.2D + 1.0Di +1.0Wi AZI ..	Yes	Y		1	1.2	16	1	21	1	29	-.5	30	.866										
32	1.2D + 1.0Di +1.0Wi AZI ..	Yes	Y		1	1.2	16	1	22	1	29	-.8...	30	.5										
33	1.2D + 1.0Di +1.0Wi AZI ..	Yes	Y		1	1.2	16	1	23	1	29	-1	30											
34	1.2D + 1.0Di +1.0Wi AZI ..	Yes	Y		1	1.2	16	1	24	1	29	-.8...	30	-.5										
35	1.2D + 1.0Di +1.0Wi AZI ..	Yes	Y		1	1.2	16	1	25	1	29	-.5	30	-.8...										
36	1.2D + 1.0Di +1.0Wi AZI ..	Yes	Y		1	1.2	16	1	26	1	29		30	-1										
37	1.2D + 1.0Di +1.0Wi AZI ..	Yes	Y		1	1.2	16	1	27	1	29	.5	30	-.8...										
38	1.2D + 1.0Di +1.0Wi AZI ..	Yes	Y		1	1.2	16	1	28	1	29	.866	30	-.5										
39	(1.2 + 0.2Sds)DL + 1.0E ..	Yes	Y		1	1.2...	31	1	32															

Load Combinations (Continued)

	Description	S...	P...	SRSS	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
40	(1.2 + 0.2Sds)DL + 1.0E ...	Yes	Y		1	1.2...	31	.866	32	.5														
41	(1.2 + 0.2Sds)DL + 1.0E ...	Yes	Y		1	1.2...	31	.5	32	.866														
42	(1.2 + 0.2Sds)DL + 1.0E ...	Yes	Y		1	1.2...	31		32	1														
43	(1.2 + 0.2Sds)DL + 1.0E ...	Yes	Y		1	1.2...	31	-.5	32	.866														
44	(1.2 + 0.2Sds)DL + 1.0E ...	Yes	Y		1	1.2...	31	-.8...	32	.5														
45	(1.2 + 0.2Sds)DL + 1.0E ...	Yes	Y		1	1.2...	31	-1	32															
46	(1.2 + 0.2Sds)DL + 1.0E ...	Yes	Y		1	1.2...	31	-.8...	32	-.5														
47	(1.2 + 0.2Sds)DL + 1.0E ...	Yes	Y		1	1.2...	31	-.5	32	-.8...														
48	(1.2 + 0.2Sds)DL + 1.0E ...	Yes	Y		1	1.2...	31		32	-1														
49	(1.2 + 0.2Sds)DL + 1.0E ...	Yes	Y		1	1.2...	31	.5	32	-.8...														
50	(1.2 + 0.2Sds)DL + 1.0E ...	Yes	Y		1	1.2...	31	.866	32	-.5														
51	(0.9 - 0.2Sds)DL + 1.0E ...	Yes	Y		1	.858	31	1	32															
52	(0.9 - 0.2Sds)DL + 1.0E ...	Yes	Y		1	.858	31	.866	32	.5														
53	(0.9 - 0.2Sds)DL + 1.0E ...	Yes	Y		1	.858	31	.5	32	.866														
54	(0.9 - 0.2Sds)DL + 1.0E ...	Yes	Y		1	.858	31		32	1														
55	(0.9 - 0.2Sds)DL + 1.0E ...	Yes	Y		1	.858	31	-.5	32	.866														
56	(0.9 - 0.2Sds)DL + 1.0E ...	Yes	Y		1	.858	31	-.8...	32	.5														
57	(0.9 - 0.2Sds)DL + 1.0E ...	Yes	Y		1	.858	31	-1	32															
58	(0.9 - 0.2Sds)DL + 1.0E ...	Yes	Y		1	.858	31	-.8...	32	-.5														
59	(0.9 - 0.2Sds)DL + 1.0E ...	Yes	Y		1	.858	31	-.5	32	-.8...														
60	(0.9 - 0.2Sds)DL + 1.0E ...	Yes	Y		1	.858	31		32	-1														
61	(0.9 - 0.2Sds)DL + 1.0E ...	Yes	Y		1	.858	31	.5	32	-.8...														
62	(0.9 - 0.2Sds)DL + 1.0E ...	Yes	Y		1	.858	31	.866	32	-.5														
63	1.0DL + 1.5LL + 1.0SWL...	Yes	Y		1	1	2	.254	14	.254	15		33	1.5										
64	1.0DL + 1.5LL + 1.0SWL...	Yes	Y		1	1	3	.254	14	.22	15	.127	33	1.5										
65	1.0DL + 1.5LL + 1.0SWL...	Yes	Y		1	1	4	.254	14	.127	15	.22	33	1.5										
66	1.0DL + 1.5LL + 1.0SWL...	Yes	Y		1	1	5	.254	14		15	.254	33	1.5										
67	1.0DL + 1.5LL + 1.0SWL...	Yes	Y		1	1	6	.254	14	-.1...	15	.22	33	1.5										
68	1.0DL + 1.5LL + 1.0SWL...	Yes	Y		1	1	7	.254	14	-.22	15	.127	33	1.5										
69	1.0DL + 1.5LL + 1.0SWL...	Yes	Y		1	1	8	.254	14	-.2...	15		33	1.5										
70	1.0DL + 1.5LL + 1.0SWL...	Yes	Y		1	1	9	.254	14	-.22	15	-.1...	33	1.5										
71	1.0DL + 1.5LL + 1.0SWL...	Yes	Y		1	1	10	.254	14	-.1...	15	-.22	33	1.5										
72	1.0DL + 1.5LL + 1.0SWL...	Yes	Y		1	1	11	.254	14		15	-.2...	33	1.5										
73	1.0DL + 1.5LL + 1.0SWL...	Yes	Y		1	1	12	.254	14	.127	15	-.22	33	1.5										
74	1.0DL + 1.5LL + 1.0SWL...	Yes	Y		1	1	13	.254	14	.22	15	-.1...	33	1.5										
75	1.2DL + 1.5LL	Yes	Y		1	1.2	33	1.5																
76	1.2DL + 1.5LM-MP1 + 1...	Yes	Y		1	1.2	34	1.5	2	.064	14	.064	15											
77	1.2DL + 1.5LM-MP1 + 1...	Yes	Y		1	1.2	34	1.5	3	.064	14	.055	15	.032										
78	1.2DL + 1.5LM-MP1 + 1...	Yes	Y		1	1.2	34	1.5	4	.064	14	.032	15	.055										
79	1.2DL + 1.5LM-MP1 + 1...	Yes	Y		1	1.2	34	1.5	5	.064	14		15	.064										
80	1.2DL + 1.5LM-MP1 + 1...	Yes	Y		1	1.2	34	1.5	6	.064	14	-.0...	15	.055										
81	1.2DL + 1.5LM-MP1 + 1...	Yes	Y		1	1.2	34	1.5	7	.064	14	-.0...	15	.032										
82	1.2DL + 1.5LM-MP1 + 1...	Yes	Y		1	1.2	34	1.5	8	.064	14	-.0...	15											
83	1.2DL + 1.5LM-MP1 + 1...	Yes	Y		1	1.2	34	1.5	9	.064	14	-.0...	15	-.0...										
84	1.2DL + 1.5LM-MP1 + 1...	Yes	Y		1	1.2	34	1.5	10	.064	14	-.0...	15	-.0...										
85	1.2DL + 1.5LM-MP1 + 1...	Yes	Y		1	1.2	34	1.5	11	.064	14		15	-.0...										
86	1.2DL + 1.5LM-MP1 + 1...	Yes	Y		1	1.2	34	1.5	12	.064	14	.032	15	-.0...										
87	1.2DL + 1.5LM-MP1 + 1...	Yes	Y		1	1.2	34	1.5	13	.064	14	.055	15	-.0...										
88	1.2DL + 1.5LM-MP2 + 1...	Yes	Y		1	1.2	35	1.5	2	.064	14	.064	15											
89	1.2DL + 1.5LM-MP2 + 1...	Yes	Y		1	1.2	35	1.5	3	.064	14	.055	15	.032										
90	1.2DL + 1.5LM-MP2 + 1...	Yes	Y		1	1.2	35	1.5	4	.064	14	.032	15	.055										
91	1.2DL + 1.5LM-MP2 + 1...	Yes	Y		1	1.2	35	1.5	5	.064	14		15	.064										
92	1.2DL + 1.5LM-MP2 + 1...	Yes	Y		1	1.2	35	1.5	6	.064	14	-.0...	15	.055										
93	1.2DL + 1.5LM-MP2 + 1...	Yes	Y		1	1.2	35	1.5	7	.064	14	-.0...	15	.032										
94	1.2DL + 1.5LM-MP2 + 1...	Yes	Y		1	1.2	35	1.5	8	.064	14	-.0...	15											
95	1.2DL + 1.5LM-MP2 + 1...	Yes	Y		1	1.2	35	1.5	9	.064	14	-.0...	15	-.0...										
96	1.2DL + 1.5LM-MP2 + 1...	Yes	Y		1	1.2	35	1.5	10	.064	14	-.0...	15	-.0...										

Load Combinations (Continued)

	Description	S...	P...	SRSS	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
97	1.2DL + 1.5LM-MP2 + 1...	Yes	Y		1	1.2	35	1.5	11	.064	14		15	-.0...										
98	1.2DL + 1.5LM-MP2 + 1...	Yes	Y		1	1.2	35	1.5	12	.064	14	.032	15	-.0...										
99	1.2DL + 1.5LM-MP2 + 1...	Yes	Y		1	1.2	35	1.5	13	.064	14	.055	15	-.0...										
100	1.2DL + 1.5LM-MP3 + 1...	Yes	Y		1	1.2	36	1.5	2	.064	14	.064	15											
101	1.2DL + 1.5LM-MP3 + 1...	Yes	Y		1	1.2	36	1.5	3	.064	14	.055	15	.032										
102	1.2DL + 1.5LM-MP3 + 1...	Yes	Y		1	1.2	36	1.5	4	.064	14	.032	15	.055										
103	1.2DL + 1.5LM-MP3 + 1...	Yes	Y		1	1.2	36	1.5	5	.064	14		15	.064										
104	1.2DL + 1.5LM-MP3 + 1...	Yes	Y		1	1.2	36	1.5	6	.064	14	-.0...	15	.055										
105	1.2DL + 1.5LM-MP3 + 1...	Yes	Y		1	1.2	36	1.5	7	.064	14	-.0...	15	.032										
106	1.2DL + 1.5LM-MP3 + 1...	Yes	Y		1	1.2	36	1.5	8	.064	14	-.0...	15											
107	1.2DL + 1.5LM-MP3 + 1...	Yes	Y		1	1.2	36	1.5	9	.064	14	-.0...	15	-.0...										
108	1.2DL + 1.5LM-MP3 + 1...	Yes	Y		1	1.2	36	1.5	10	.064	14	-.0...	15	-.0...										
109	1.2DL + 1.5LM-MP3 + 1...	Yes	Y		1	1.2	36	1.5	11	.064	14		15	-.0...										
110	1.2DL + 1.5LM-MP3 + 1...	Yes	Y		1	1.2	36	1.5	12	.064	14	.032	15	-.0...										
111	1.2DL + 1.5LM-MP3 + 1...	Yes	Y		1	1.2	36	1.5	13	.064	14	.055	15	-.0...										
112	1.2DL + 1.5LM-MP4 + 1...	Yes	Y		1	1.2	37	1.5	2	.064	14	.064	15											
113	1.2DL + 1.5LM-MP4 + 1...	Yes	Y		1	1.2	37	1.5	3	.064	14	.055	15	.032										
114	1.2DL + 1.5LM-MP4 + 1...	Yes	Y		1	1.2	37	1.5	4	.064	14	.032	15	.055										
115	1.2DL + 1.5LM-MP4 + 1...	Yes	Y		1	1.2	37	1.5	5	.064	14		15	.064										
116	1.2DL + 1.5LM-MP4 + 1...	Yes	Y		1	1.2	37	1.5	6	.064	14	-.0...	15	.055										
117	1.2DL + 1.5LM-MP4 + 1...	Yes	Y		1	1.2	37	1.5	7	.064	14	-.0...	15	.032										
118	1.2DL + 1.5LM-MP4 + 1...	Yes	Y		1	1.2	37	1.5	8	.064	14	-.0...	15											
119	1.2DL + 1.5LM-MP4 + 1...	Yes	Y		1	1.2	37	1.5	9	.064	14	-.0...	15	-.0...										
120	1.2DL + 1.5LM-MP4 + 1...	Yes	Y		1	1.2	37	1.5	10	.064	14	-.0...	15	-.0...										
121	1.2DL + 1.5LM-MP4 + 1...	Yes	Y		1	1.2	37	1.5	11	.064	14		15	-.0...										
122	1.2DL + 1.5LM-MP4 + 1...	Yes	Y		1	1.2	37	1.5	12	.064	14	.032	15	-.0...										
123	1.2DL + 1.5LM-MP4 + 1...	Yes	Y		1	1.2	37	1.5	13	.064	14	.055	15	-.0...										
124	1.2DL + 1.5LM-MP5 + 1...	Yes	Y		1	1.2	38	1.5	2	.064	14	.064	15											
125	1.2DL + 1.5LM-MP5 + 1...	Yes	Y		1	1.2	38	1.5	3	.064	14	.055	15	.032										
126	1.2DL + 1.5LM-MP5 + 1...	Yes	Y		1	1.2	38	1.5	4	.064	14	.032	15	.055										
127	1.2DL + 1.5LM-MP5 + 1...	Yes	Y		1	1.2	38	1.5	5	.064	14		15	.064										
128	1.2DL + 1.5LM-MP5 + 1...	Yes	Y		1	1.2	38	1.5	6	.064	14	-.0...	15	.055										
129	1.2DL + 1.5LM-MP5 + 1...	Yes	Y		1	1.2	38	1.5	7	.064	14	-.0...	15	.032										
130	1.2DL + 1.5LM-MP5 + 1...	Yes	Y		1	1.2	38	1.5	8	.064	14	-.0...	15											
131	1.2DL + 1.5LM-MP5 + 1...	Yes	Y		1	1.2	38	1.5	9	.064	14	-.0...	15	-.0...										
132	1.2DL + 1.5LM-MP5 + 1...	Yes	Y		1	1.2	38	1.5	10	.064	14	-.0...	15	-.0...										
133	1.2DL + 1.5LM-MP5 + 1...	Yes	Y		1	1.2	38	1.5	11	.064	14		15	-.0...										
134	1.2DL + 1.5LM-MP5 + 1...	Yes	Y		1	1.2	38	1.5	12	.064	14	.032	15	-.0...										
135	1.2DL + 1.5LM-MP5 + 1...	Yes	Y		1	1.2	38	1.5	13	.064	14	.055	15	-.0...										
136	1.2DL + 1.5LM-MP6 + 1...	Yes	Y		1	1.2	39	1.5	2	.064	14	.064	15											
137	1.2DL + 1.5LM-MP6 + 1...	Yes	Y		1	1.2	39	1.5	3	.064	14	.055	15	.032										
138	1.2DL + 1.5LM-MP6 + 1...	Yes	Y		1	1.2	39	1.5	4	.064	14	.032	15	.055										
139	1.2DL + 1.5LM-MP6 + 1...	Yes	Y		1	1.2	39	1.5	5	.064	14		15	.064										
140	1.2DL + 1.5LM-MP6 + 1...	Yes	Y		1	1.2	39	1.5	6	.064	14	-.0...	15	.055										
141	1.2DL + 1.5LM-MP6 + 1...	Yes	Y		1	1.2	39	1.5	7	.064	14	-.0...	15	.032										
142	1.2DL + 1.5LM-MP6 + 1...	Yes	Y		1	1.2	39	1.5	8	.064	14	-.0...	15											
143	1.2DL + 1.5LM-MP6 + 1...	Yes	Y		1	1.2	39	1.5	9	.064	14	-.0...	15	-.0...										
144	1.2DL + 1.5LM-MP6 + 1...	Yes	Y		1	1.2	39	1.5	10	.064	14	-.0...	15	-.0...										
145	1.2DL + 1.5LM-MP6 + 1...	Yes	Y		1	1.2	39	1.5	11	.064	14		15	-.0...										
146	1.2DL + 1.5LM-MP6 + 1...	Yes	Y		1	1.2	39	1.5	12	.064	14	.032	15	-.0...										
147	1.2DL + 1.5LM-MP6 + 1...	Yes	Y		1	1.2	39	1.5	13	.064	14	.055	15	-.0...										
148	1.2DL + 1.5LM-MP7 + 1...	Yes	Y		1	1.2	40	1.5	2	.064	14	.064	15											
149	1.2DL + 1.5LM-MP7 + 1...	Yes	Y		1	1.2	40	1.5	3	.064	14	.055	15	.032										
150	1.2DL + 1.5LM-MP7 + 1...	Yes	Y		1	1.2	40	1.5	4	.064	14	.032	15	.055										
151	1.2DL + 1.5LM-MP7 + 1...	Yes	Y		1	1.2	40	1.5	5	.064	14		15	.064										
152	1.2DL + 1.5LM-MP7 + 1...	Yes	Y		1	1.2	40	1.5	6	.064	14	-.0...	15	.055										
153	1.2DL + 1.5LM-MP7 + 1...	Yes	Y		1	1.2	40	1.5	7	.064	14	-.0...	15	.032										

Load Combinations (Continued)

	Description	S...	P...	SRSS	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
154	1.2DL + 1.5LM-MP7 + 1...	Yes	Y		1	1.2	40	1.5	8	.064	14	-.0...	15											
155	1.2DL + 1.5LM-MP7 + 1...	Yes	Y		1	1.2	40	1.5	9	.064	14	-.0...	15	-.0...										
156	1.2DL + 1.5LM-MP7 + 1...	Yes	Y		1	1.2	40	1.5	10	.064	14	-.0...	15	-.0...										
157	1.2DL + 1.5LM-MP7 + 1...	Yes	Y		1	1.2	40	1.5	11	.064	14		15	-.0...										
158	1.2DL + 1.5LM-MP7 + 1...	Yes	Y		1	1.2	40	1.5	12	.064	14	.032	15	-.0...										
159	1.2DL + 1.5LM-MP7 + 1...	Yes	Y		1	1.2	40	1.5	13	.064	14	.055	15	-.0...										
160	1.2DL + 1.5LM-MP8 + 1...	Yes	Y		1	1.2	41	1.5	2	.064	14	.064	15											
161	1.2DL + 1.5LM-MP8 + 1...	Yes	Y		1	1.2	41	1.5	3	.064	14	.055	15	.032										
162	1.2DL + 1.5LM-MP8 + 1...	Yes	Y		1	1.2	41	1.5	4	.064	14	.032	15	.055										
163	1.2DL + 1.5LM-MP8 + 1...	Yes	Y		1	1.2	41	1.5	5	.064	14		15	.064										
164	1.2DL + 1.5LM-MP8 + 1...	Yes	Y		1	1.2	41	1.5	6	.064	14	-.0...	15	.055										
165	1.2DL + 1.5LM-MP8 + 1...	Yes	Y		1	1.2	41	1.5	7	.064	14	-.0...	15	.032										
166	1.2DL + 1.5LM-MP8 + 1...	Yes	Y		1	1.2	41	1.5	8	.064	14	-.0...	15											
167	1.2DL + 1.5LM-MP8 + 1...	Yes	Y		1	1.2	41	1.5	9	.064	14	-.0...	15	-.0...										
168	1.2DL + 1.5LM-MP8 + 1...	Yes	Y		1	1.2	41	1.5	10	.064	14	-.0...	15	-.0...										
169	1.2DL + 1.5LM-MP8 + 1...	Yes	Y		1	1.2	41	1.5	11	.064	14		15	-.0...										
170	1.2DL + 1.5LM-MP8 + 1...	Yes	Y		1	1.2	41	1.5	12	.064	14	.032	15	-.0...										
171	1.2DL + 1.5LM-MP8 + 1...	Yes	Y		1	1.2	41	1.5	13	.064	14	.055	15	-.0...										
172	1.2DL + 1.5LM-MP9 + 1...	Yes	Y		1	1.2	42	1.5	2	.064	14	.064	15											
173	1.2DL + 1.5LM-MP9 + 1...	Yes	Y		1	1.2	42	1.5	3	.064	14	.055	15	.032										
174	1.2DL + 1.5LM-MP9 + 1...	Yes	Y		1	1.2	42	1.5	4	.064	14	.032	15	.055										
175	1.2DL + 1.5LM-MP9 + 1...	Yes	Y		1	1.2	42	1.5	5	.064	14		15	.064										
176	1.2DL + 1.5LM-MP9 + 1...	Yes	Y		1	1.2	42	1.5	6	.064	14	-.0...	15	.055										
177	1.2DL + 1.5LM-MP9 + 1...	Yes	Y		1	1.2	42	1.5	7	.064	14	-.0...	15	.032										
178	1.2DL + 1.5LM-MP9 + 1...	Yes	Y		1	1.2	42	1.5	8	.064	14	-.0...	15											
179	1.2DL + 1.5LM-MP9 + 1...	Yes	Y		1	1.2	42	1.5	9	.064	14	-.0...	15	-.0...										
180	1.2DL + 1.5LM-MP9 + 1...	Yes	Y		1	1.2	42	1.5	10	.064	14	-.0...	15	-.0...										
181	1.2DL + 1.5LM-MP9 + 1...	Yes	Y		1	1.2	42	1.5	11	.064	14		15	-.0...										
182	1.2DL + 1.5LM-MP9 + 1...	Yes	Y		1	1.2	42	1.5	12	.064	14	.032	15	-.0...										

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	993.48	4	2030.608	31	1583.512	3	274.246	25	1982.441	15	229.042	24
2		min	-989.687	22	3.061	24	-1576.809	21	-2285.18	32	-1994.556	9	-4097.822	31
3	N1	max	908.733	7	2077.117	35	1641.925	25	255.466	15	2024.341	19	4051.632	35
4		min	-905.056	25	12.758	16	-1647.077	7	-2629.197	34	-2039.573	13	-206.531	16
5	N13	max	1733.424	17	1988.235	27	410.768	14	4575.512	27	1810.057	23	591.02	11
6		min	-1741.242	11	-23.695	20	-413.617	8	-331.043	20	-1822.037	5	-487.67	17
7	Totals:	max	3133.458	17	5689.822	36	3319.05	2						
8		min	-3133.459	11	1578.461	54	-3319.05	8						

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

	Member	Shape	Code Check	Loc[in]	LC	Shear Check	Loc...	...	LC	phi*Pn...	phi*Pn...	phi*M...	phi*M...	...	Eqn
1	M1	C3X5	.356	34.856	35	.106	63....	y	32	37027....	47628	981.263	4020.2...	1	H1-1b
2	M11	C3X5	.344	34.856	31	.106	63....	y	28	37027....	47628	981.263	4020.2...	1	H1-1b
3	M6	C3X5	.340	34.856	27	.102	63....	y	36	37027....	47628	981.263	4020.2...	1	H1-1b
4	S3	HSS4X4X4	.310	40	33	.094	40	z	7	13720...	139518	16180.5	16180.5	1	H1-1b
5	S1	HSS4X4X4	.303	40	33	.091	40	z	3	13720...	139518	16180.5	16180.5	1	H1-1b
6	S2	HSS4X4X4	.295	40	29	.089	40	z	11	13720...	139518	16180.5	16180.5	1	H1-1b
7	M51	L2.5x2.5x3	.284	42	2	.022	0	z	13	19573...	29192.4	872.574	1878.4...	1...	H2-1
8	M49	L2.5x2.5x3	.277	0	9	.022	0	z	9	19573...	29192.4	872.574	1971.83	2...	H2-1
9	M50	L2.5x2.5x3	.270	42	6	.022	0	z	5	19573...	29192.4	872.574	1916.2...	1...	H2-1
10	M15	6.5"x0.37...	.234	21	6	.081	21	y	30	3513.8...	77922	600.647	6649.5...	1...	H1-1b
11	M5	6.5"x0.37...	.233	21	10	.084	21	y	34	3513.8...	77922	600.647	6684.3...	1...	H1-1b

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

	Member	Shape	Code Check	Loc[in]	LC	Shear Check	Loc...	...	LC	phi*Pn...	phi*Pn...	phi*M...	phi*M...	...	Eqn
12	M10	6.5"x0.37...	.232	21	2	.080	21	y	38	3513.8...	77922	600.647	6677.17	1...	H1-1b
13	MP4	PIPE_2.5	.156	61.25	8	.043	61.25		7	33961....	50715	3596.25	3596.25	2...	H1-1b
14	MP7	PIPE_2.5	.154	61.25	4	.041	61.25		3	33961....	50715	3596.25	3596.25	3...	H1-1b
15	MP1	PIPE_2.5	.153	61.25	12	.043	61.25		11	33961....	50715	3596.25	3596.25	3...	H1-1b
16	MP9	PIPE_2.5	.153	61.25	8	.037	61.25		10	33961....	50715	3596.25	3596.25	1...	H1-1b
17	MP6	PIPE_2.5	.152	61.25	12	.035	61.25		2	33961....	50715	3596.25	3596.25	3...	H1-1b
18	MP3	PIPE_2.5	.149	61.25	4	.036	61.25		6	33961....	50715	3596.25	3596.25	4...	H1-1b
19	M3	L2x2x3	.148	0	3	.023	0	y	36	18051...	23392.8	557.717	1239.29	2...	H2-1
20	M13	L2x2x3	.147	0	11	.023	0	y	32	18051...	23392.8	557.717	1239.29	2...	H2-1
21	M8	L2x2x3	.130	0	8	.023	0	y	28	18051...	23392.8	557.717	1239.29	2...	H2-1
22	HOR1	PIPE_3.5	.125	72	110	.081	24		9	76140....	78750	7953.75	7953.75	1	H1-1b
23	HOR2	PIPE_3.5	.123	72	178	.079	24		5	76140....	78750	7953.75	7953.75	1	H1-1b
24	HOR3	PIPE_3.5	.122	72	138	.080	24		13	76140....	78750	7953.75	7953.75	1	H1-1b
25	M4	L2x2x3	.121	0	10	.024	0	y	33	18051...	23392.8	557.717	1239.29	2...	H2-1
26	M9	L2x2x3	.108	0	2	.024	0	y	37	18051...	23392.8	557.717	1239.29	2...	H2-1
27	MP8	PIPE_2.5	.103	61.25	8	.056	61.25		9	33961....	50715	3596.25	3596.25	3...	H1-1b
28	M14	L2x2x3	.102	0	6	.024	0	y	29	18051...	23392.8	557.717	1239.29	2...	H2-1
29	MP5	PIPE_2.5	.102	61.25	12	.056	61.25		13	33961....	50715	3596.25	3596.25	3...	H1-1b
30	MP2	PIPE_2.5	.099	61.25	4	.054	61.25		5	33961....	50715	3596.25	3596.25	4...	H1-1b
31	HR1	PIPE_3.5	.056	72	8	.049	24		6	76140....	78750	7953.75	7953.75	1	H1-1b
32	HR2	PIPE_3.5	.055	71	5	.049	24		2	76140....	78750	7953.75	7953.75	1	H1-1b
33	HR3	PIPE_3.5	.054	47	130	.049	24		10	76140....	78750	7953.75	7953.75	1	H1-1b

Material Takeoff

	Material	Size	Pieces	Length[in]	Weight[K]
1	General				
2	RIGID		18	54	0
3	Total General		18	54	0
4					
5	Hot Rolled Steel				
6	A36 Gr.36	6.5"x0.37" Plate	3	126	.086
7	A36 Gr.36	C3X5	3	209.1	.087
8	A36 Gr.36	L2x2x3	6	163.8	.034
9	A36 Gr.36	L2.5x2.5x3	3	126	.032
10	A500 Gr.B Rect	HSS4X4X4	3	120	.123
11	A53 Gr.B	PIPE_2.5	9	756	.345
12	A53 Gr.B	PIPE_3.5	6	576	.408
13	Total HR Steel		33	2076.9	1.116

APPENDIX D

ADDITIONAL CALCUATIONS

INFINIGY
FROM ZERO TO INFINIGY
the solutions are endless

Bolt Calculation Tool, V1.5.1

PROJECT DATA	
Site Name:	ROGERS PROPERTY
Site Number:	881541
Connection Description:	Mount to Tower

MAXIMUM BOLT LOADS		
Bolt Tension:	5031.23	lbs
Bolt Shear:	922.46	lbs

WORST CASE BOLT LOADS[1]		
Bolt Tension:	5031.23	lbs
Bolt Shear:	672.22	lbs

BOLT PROPERTIES		
Bolt Type:	Bolt	-
Bolt Diameter:	0.625	in
Bolt Grade:	A325	-
# of Bolts:	4	-
Threads Excluded?	No	-

[1] *Worst case bolt loads correspond to Load combination #33 on member S3 in RISA-3D, which causes the maximum demand on the bolts.*

Member Information
J nodes of S3, S2, S1

BOLT CHECK		
Tensile Strength	20340.15	
Shear Strength	13805.83	
Max Tensile Usage	24.7%	
Max Shear Usage	6.7%	
Interaction Check (Worst Case)	0.06	***≤1.05***
Result	Pass	

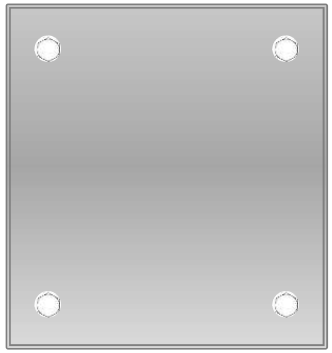


Exhibit F

Power Density/RF Emissions Report

EBI Consulting

environmental | engineering | due diligence

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

Dish Wireless Existing Facility

Site ID: BOHVN00173A

881541
700 Grassy Hill Road
Orange, Connecticut 06477

November 19, 2021

EBI Project Number: 6221007206

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**17.14%**

November 19, 2021

Dish Wireless

Emissions Analysis for Site: BOHVN00173A - 881541

EBI Consulting was directed to analyze the proposed Dish Wireless facility located at **700 Grassy Hill 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 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter ($\mu W/cm^2$). The number of $\mu W/cm^2$ 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 ($\mu W/cm^2$). The general population exposure limits for the 600 MHz and 700 MHz frequency bands are approximately 400 $\mu W/cm^2$ and 467 $\mu W/cm^2$, respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 11 GHz frequency bands is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

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

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed Dish Wireless Wireless antenna facility located at 700 Grassy Hill 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) 4 n66 channels (AWS Band - 2190 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.

4) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.

5) For the following calculations, the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 20 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used in this direction. This value is a very conservative

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

6) The antennas used in this modeling are the JMA MX08FRO665-20 for the 600 MHz / 1900 MHz / 2190 MHz channel(s) in Sector A, the JMA MX08FRO665-20 for the 600 MHz / 1900 MHz / 2190 MHz channel(s) in Sector B, the JMA MX08FRO665-20 for the 600 MHz / 1900 MHz / 2190 MHz channel(s) in Sector C. This is based on feedback from the carrier with regard to anticipated antenna selection. All Antenna gain values and associated transmit power levels are shown in the Site Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 20 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

7) The antenna mounting height centerline of the proposed antennas is 100 feet above ground level (AGL).

8) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

9) All calculations were done with respect to uncontrolled / general population threshold limits.

Dish Wireless Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	JMA MX08FRO665-20	Make / Model:	JMA MX08FRO665-20	Make / Model:	JMA MX08FRO665-20
Frequency Bands:	600 MHz / 1900 MHz / 2190 MHz	Frequency Bands:	600 MHz / 1900 MHz / 2190 MHz	Frequency Bands:	600 MHz / 1900 MHz / 2190 MHz
Gain:	17.45 dBd / 22.65 dBd / 22.65 dBd	Gain:	17.45 dBd / 22.65 dBd / 22.65 dBd	Gain:	17.45 dBd / 22.65 dBd / 22.65 dBd
Height (AGL):	100 feet	Height (AGL):	100 feet	Height (AGL):	100 feet
Channel Count:	12	Channel Count:	12	Channel Count:	12
Total TX Power (W):	440 Watts	Total TX Power (W):	440 Watts	Total TX Power (W):	440 Watts
ERP (W):	5,236.31	ERP (W):	5,236.31	ERP (W):	5,236.31
Antenna A1 MPE %:	**2.68%**	Antenna B1 MPE %:	**2.68%**	Antenna C1 MPE %:	**2.68%**

Site Composite MPE %	
Carrier	**MPE %**
Dish Wireless (Max at Sector A):	2.68%
Sprint	3.85%
Verizon	2.75%
Metro PCS	0.77%
Clearwire	0.12%
AT&T	2.44%
T-Mobile	4.53%
Site Total MPE % :	17.14%

Dish Wireless MPE % Per Sector	
Dish Wireless Sector A Total:	2.68%
Dish Wireless Sector B Total:	2.68%
Dish Wireless Sector C Total:	2.68%
Site Total MPE % :	17.14%

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 (μW/cm²)	Frequency (MHz)	Allowable MPE (μW/cm²)	Calculated % MPE
Dish Wireless 600 MHz n71	4	223.68	100.0	3.64	600 MHz n71	400	0.91%
Dish Wireless 1900 MHz n70	4	542.70	100.0	8.83	1900 MHz n70	1000	0.88%
Dish Wireless 2190 MHz n66	4	542.70	100.0	8.83	2190 MHz n66	1000	0.88%
						Total:	**2.68%**

• 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:	2.68%
Sector B:	2.68%
Sector C:	2.68%
Dish Wireless Maximum MPE % (Sector A):	2.68%
Site Total:	17.14%
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **17.14%** 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:
700 GRASSY HILL ROAD, ORANGE, CT 06477

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

Crown Site ID/Name:	**881541/ROGERS PROPERTY**
Customer Site ID:	**BOHVN00173A/CT-CCI-T-881541**
Site Address:	**700 Grassy Hill Road, Orange, CT 06477**

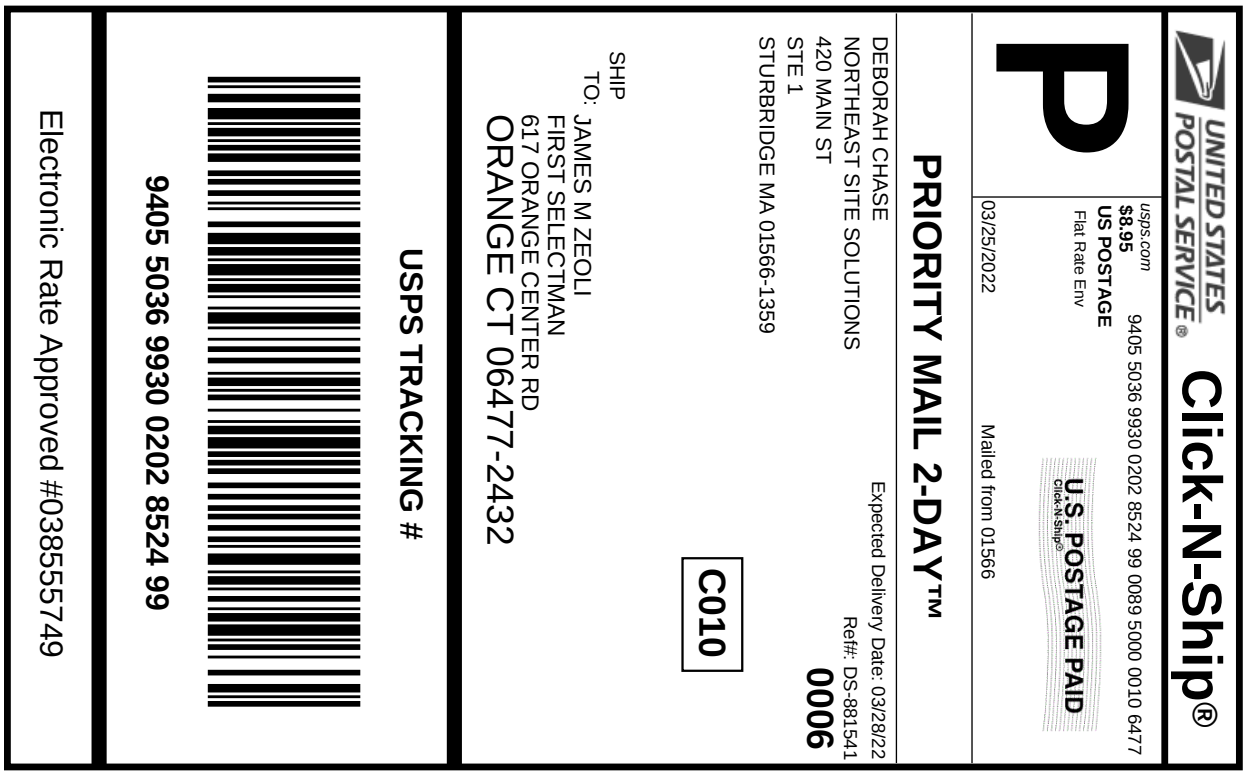
Crown Castle

By: _____ Date: 3/21/2022

Richard Zajac
Site Acquisition Specialist

Exhibit H

Recipient Mailings



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Instructions

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

Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0202 8524 99

Trans. #:	559657329
Print Date:	03/25/2022
Ship Date:	03/25/2022
Expected Delivery Date:	03/28/2022

Priority Mail® Postage:	**$8.95**
Total:	**$8.95**

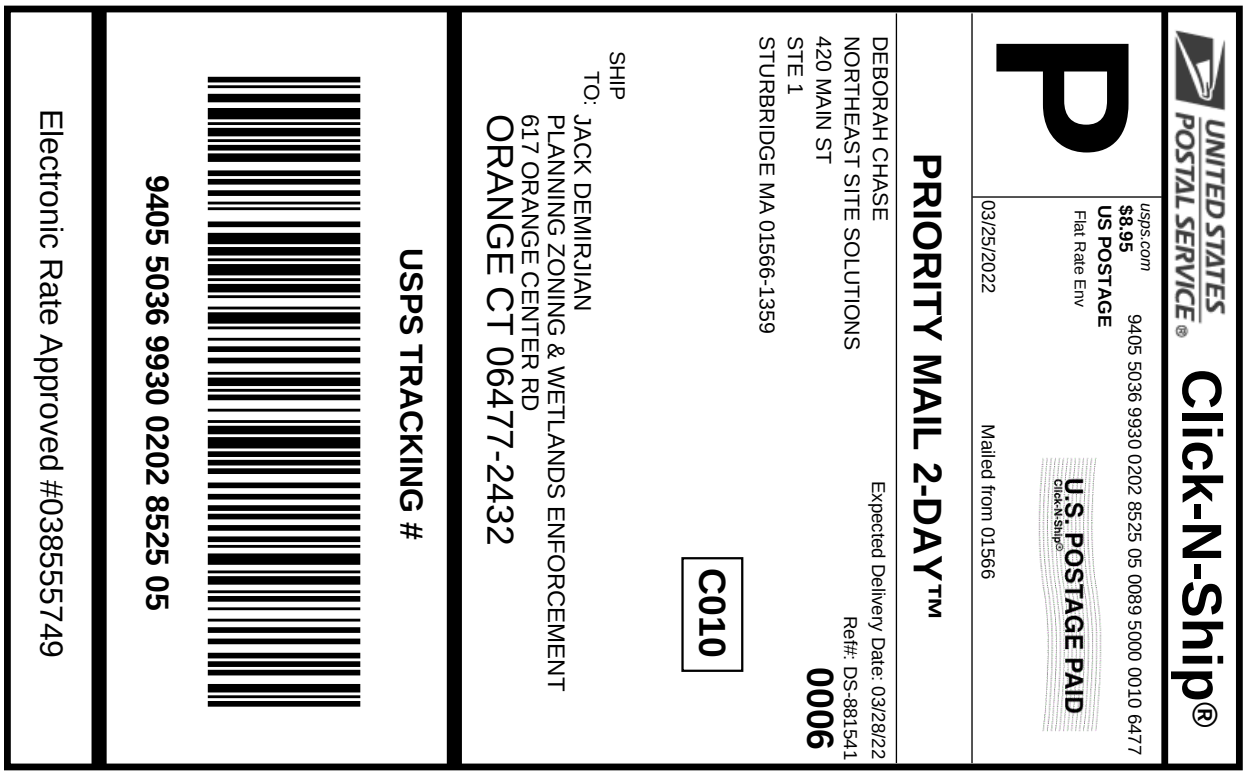
From: DEBORAH CHASE
NORTHEAST SITE SOLUTIONS
420 MAIN ST
STE 1
STURBRIDGE MA 01566-1359

Ref#: DS-881541

To: JAMES M ZEOLI
FIRST SELECTMAN
617 ORANGE CENTER RD
ORANGE CT 06477-2432

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

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



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Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0202 8525 05

Trans. #:	559657329
Print Date:	03/25/2022
Ship Date:	03/25/2022
Expected Delivery Date:	03/28/2022

Priority Mail® Postage:	**$8.95**
Total:	**$8.95**

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

Ref#: DS-881541

To: JACK DEMIRJIAN
PLANNING ZONING & WETLANDS ENFORCEMENT OFFICER
617 ORANGE CENTER RD
ORANGE CT 06477-2432

* 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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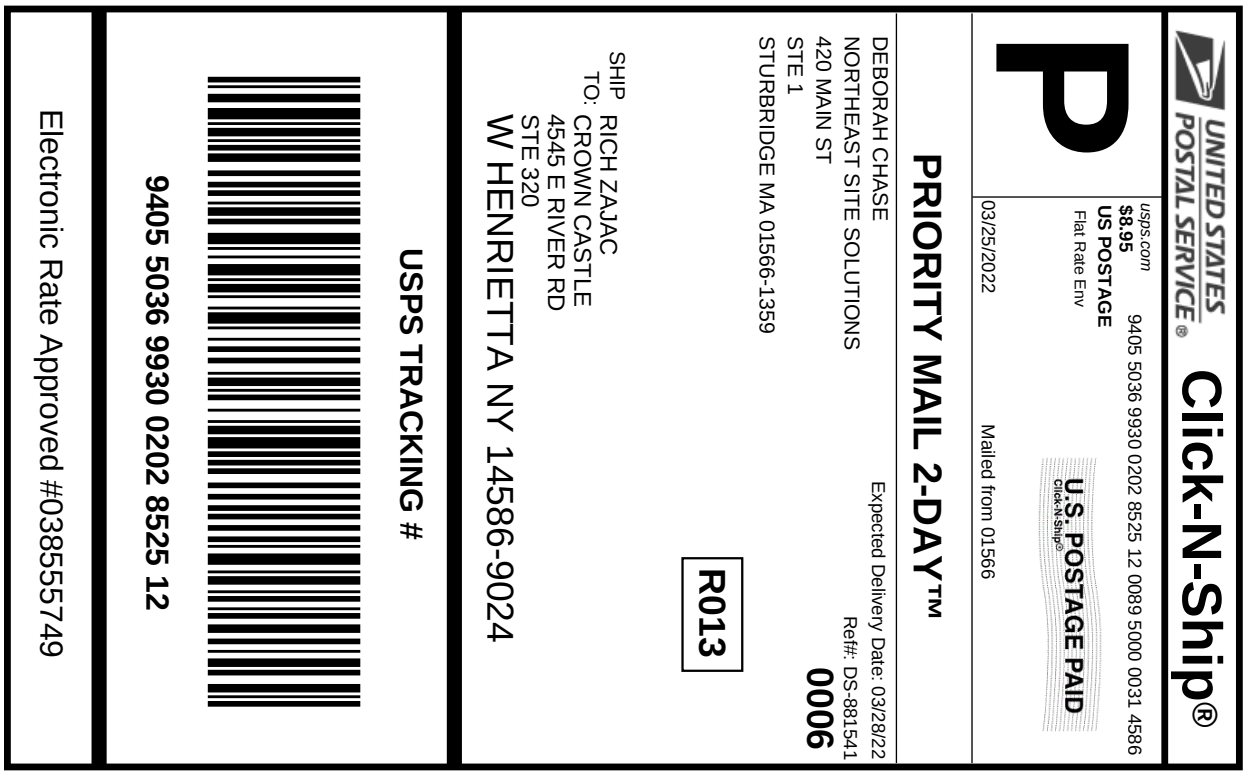
Check the status of your shipment on the USPS Tracking® page at usps.com



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Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0202 8525 12

Trans. #:	559657329
Print Date:	03/25/2022
Ship Date:	03/25/2022
Expected Delivery Date:	03/28/2022

Priority Mail® Postage:	**$8.95**
Total:	**$8.95**

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

Ref#: DS-881541

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

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

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881541 Crown
DLSH

UNITED STATES POSTAL SERVICE.

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

03/25/2022 01:56 PM

Product	Qty	Unit Price	Price
Prepaid Mail West Henrietta, NY 14586 Weight: 0 lb 2.00 oz Acceptance Date: Fri 03/25/2022 Tracking #: 9405 5036 9930 0202 8525 12	1		$0.00
Prepaid Mail Orange, CT 06477 Weight: 0 lb 7.50 oz Acceptance Date: Fri 03/25/2022 Tracking #: 9405 5036 9930 0202 8524 99	1		$0.00
Prepaid Mail Orange, CT 06477 Weight: 0 lb 7.50 oz Acceptance Date: Fri 03/25/2022 Tracking #: 9405 5036 9930 0202 8525 05	1		$0.00
Grand Total:			$0.00