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 9, 2022

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

RE: Tower Share Application
93 Roxbury Road, East Lyme, CT 06437
Latitude: 41.335555
Longitude: -72.222222
Site #: 806384_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 93 Roxbury Road, East Lyme, Connecticut.

Dish Wireless LLC proposes to install three (3) 600/1900 MHz 5G antennas and six (6) RRUs, at the 135-foot level of the existing 150-foot tower, 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 fenced compound. Included are plans by NB+C, dated January 4, 2022, Exhibit C. Also included is a structural analysis prepared by Crown Castle, dated July 10, 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. 116, on January 3, 1990. 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 Kevin A. Seery, First Selectman and Gary A. Goeschel II, Director of Planning for the Town of East Lyme as well as the tower owner (Crown Castle) and property owner (Town of East Lyme).

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 150-feet and the Dish Wireless LLC antennas will be located at a center line height of 135-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 27.26% 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 tower 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 self-support tower in East Lyme. 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 135-foot level of the existing 150-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 East Lyme.

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: Kevin A. Seery, First Selectman & Property Owner
Town of East Lyme
108 Pennsylvania Avenue
Niantic, CT 06357

Gary A. Goeschel II, Director of Planning
Town of East Lyme
108 Pennsylvania Avenue
Niantic, CT 06357

Crown Castle, Tower Owner

Exhibit A

Original Facility Approval

ORIGINAL

An application of Metro Mobile CTS of New London Inc., for a Certificate of Environmental Compatibility and Public Need for the construction, operation, and maintenance of cellular telephone tower and associated equipment in the Town of East Lyme, Connecticut.	:	Docket No. 116 Connecticut Siting Council January 3, 1990

DECISION AND ORDER

Pursuant to the foregoing Findings of Fact and Opinion, the Connecticut Siting Council finds that the effects associated with the construction, operation, and maintenance of a cellular telephone facility at the proposed East Lyme site, 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 significant either alone or cumulatively with other effects, are not in conflict with the policies of the State concerning such effects, and are not sufficient reason to deny the application, and therefore directs that a Certificate of Environmental Compatibility and Public Need, as provided by Section 16-50k of the General Statutes of Connecticut (CGS), be issued to Metro Mobile CTS of New London, Inc., for the construction, operation, and maintenance of a cellular telecommunications tower, associated equipment, and building at the proposed East Lyme site in East Lyme, 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 self-supporting, lattice tower including antennas and associated equipment shall not exceed a height of 343 feet AMSL.
2. The facility shall be constructed in accordance with the State of Connecticut Basic Building Code.
3. The Certificate Holder shall prepare a Development and Management (D&M) Plan for this site in compliance with Sections 16-50j-75 through 16-50j-77 of the Regulations of State Agencies. The D&M plan shall include detailed plans of the site preparation with compacted fill and adjustment for tower height in relation to the new site elevation.
4. The Certificate Holder shall comply with any future radio frequency (RF) standard, promulgated by State or federal regulatory agencies. Upon the establishment of any new governmental RF standards, the facility granted in this Decision and Order shall be brought into compliance with such standards.

5. The Certificate Holder or its successor shall provide the Council a recalculated report of power density if and when additional channels over the proposed 60 channels, higher wattage over the proposed 100 watts per channel, or if other circumstances in operation cause a change in power density above the levels originally calculated in the application.

6. The Certificate Holder or its successor shall permit public or private entities to share space on the East Lyme tower for fair consideration, or shall provide any requesting entity with specific legal, technical, environmental, or economic reasons precluding such tower sharing.

7. If this facility does not initially provide, or permanently ceases to provide cellular service following completion of construction, this Decision and Order shall be void, and the tower and all associated equipment in this application shall be dismantled and removed or reapplication for any new use shall be made to the Council before any such new use is made.

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

Pursuant to Section 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. A notice of issuance shall be published in the New London Day.

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

The parties or intervenors to this proceeding are:

Metro Mobile CTS of New London, Inc. (Applicant)
100 Corporate Drive
Windsor, CT 06095

ATTN: Gary Schulman
General Manager

Robinson and Cole (Its Representative)
One Commercial Plaza
Hartford, CT 06103-3597
Attn: Earl W. Phillips, Jr., Esq.

SNET Cellular, Inc. (Intervenor)
227 Church Street
New Haven, CT 06506

Peter J. Tyrrell (Its Representative)
SNET Cellular, Inc.
Room 1021
227 Church Street
New Haven, CT 06506

3782E-9-11

CERTIFICATION

The undersigned members of the Connecticut Siting Council hereby certify that they have heard this case in Docket No. 116 or read the record thereof, and that we voted as follows:

Dated at New Britain, Connecticut the 3rd day of January, 1990.

Council Members	Vote Cast
Gloria Dibble Pond Chairperson	Yes
Commissioner Peter Boucher Designee: Robert A. Pulito	Yes
Commissioner Leslie Carothers Designee: Brian Emerick	Absent
Harry E. Covey	Yes
Mortimer A. Gelston	Yes
Daniel P. Lynch, Jr.	Yes
Paulann H. Sheets	Yes
William H. Smith	Yes
Colin C. Tait	Yes

Exhibit B

Property Card

93 ROXBURY RD

Location	93 ROXBURY RD	**Mblu**	15.0/ 3/ / /
Acct#	008267	**Owner**	METRO MOBILE CTS OF N L INC
Assessment	$810,530	**Appraisal**	$1,157,900
PID	4698	**Building Count**	1

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2016	$32,900	$1,125,000	$1,157,900
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2016	$23,030	$787,500	$810,530

Owner of Record

Owner	METRO MOBILE CTS OF N L INC
Co-Owner	C/O CROWN ATLANTIC CO
Address	PMB 353 4017 WASHINGTON RD MCMURRAY, PA 15317

Sale Price	$0
Certificate	
Book & Page	0297/0552
Sale Date	03/05/1990

Ownership History

Ownership History
No Data for Ownership History

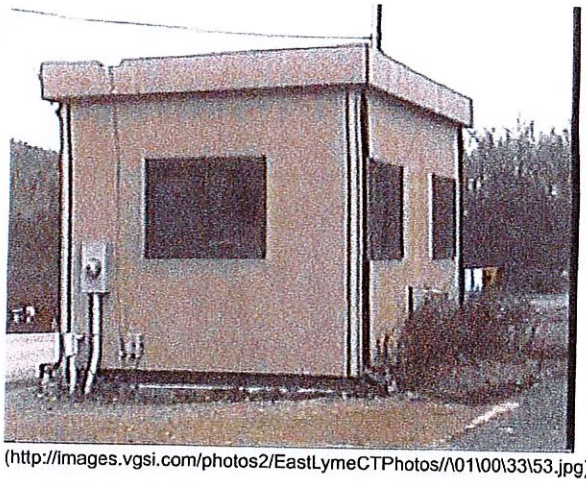
Building Information

Building 1 : Section 1

Year Built:	1990
Living Area:	450
Replacement Cost:	$36,171
Building Percent Good:	82
Replacement Cost Less Depreciation:	$29,700

Building Attributes	
Field	**Description**
STYLE	Commercial
MODEL	Commercial
Grade	Average
Stories:	1
Occupancy	1.00
Exterior Wall 1	Concr/Cinder
Exterior Wall 2	
Roof Structure	Gable/Hip
Roof Cover	Tar & Gravel
Interior Wall 1	Minim/Masonry
Interior Wall 2	
Interior Floor 1	Concr-Finished
Interior Floor 2	
Heating Fuel	NA
Heating Type	None
AC Type	None
Struct Class	
Bldg Use	TEL X STA M94
Total Rooms	
Total Bedrms	00
Total Baths	0
Usrfld 218	
Usrfld 219	
1st Floor Use:	430C
Heat/AC	NONE
Frame Type	MASONRY
Baths/Plumbing	NONE
Ceiling/Wall	NONE
Rooms/Prtns	LIGHT
Wall Height	10.00
% Comn Wall	0.00

Building Photo



(http://images.vgsi.com/photos2/EastLymeCTPhotos/\01\00\33\53.jpg)

Building Layout


Building Layout (ParcelSketch.ashx?pid=4698&bid=4764)

Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
BAS	First Floor	450	450
		450	450

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Land Line Valuation

Land Use

Use Code	430C
Description	TEL X STA M94
Zone	R40
Neighborhood	
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	0.09
Frontage	0
Depth	0
Assessed Value	$787,500
Appraised Value	$1,125,000

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
FN4	FENCE-8' CHAIN			250.00 L.F.	$3,200	1

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2020	$33,900	$1,125,000	$1,158,900
2019	$33,900	$1,125,000	$1,158,900
2018	$33,900	$1,125,000	$1,158,900

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2020	$23,730	$787,500	$811,230
2019	$23,730	$787,500	$811,230
2018	$23,730	$787,500	$811,230

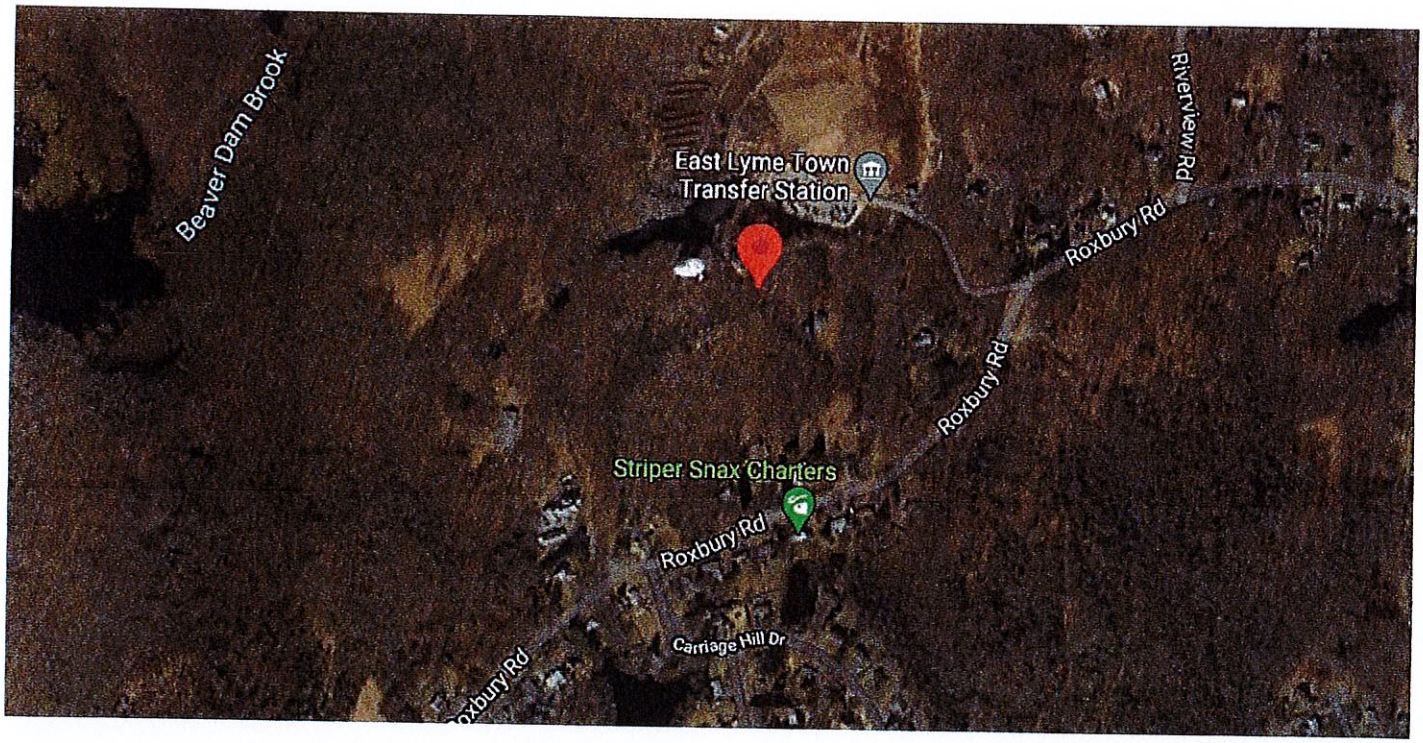

Beaver Dam Brook
East Lyme Town
Transfer Station
Riverview Rd
Roxbury Rd
Roxbury Rd
Striper Snax Charters
Roxbury Rd
Carriage Hill Dr
oxbury Rd

Exhibit C

Construction Drawings

DISH Wireless L.L.C. SITE ID:

BOBOS00033A

DISH Wireless L.L.C. SITE ADDRESS:

93 ROXBURY ROAD
EAST LYME, CT 06357

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 (3) PROPOSED SECTOR FRAMES
- INSTALL PROPOSED JUMPERS
- INSTALL (6) PROPOSED RRUs (2 PER SECTOR)
- INSTALL (1) PROPOSED OVER VOLTAGE PROTECTION DEVICE (OVP)
- INSTALL (1) PROPOSED HYBRID CABLE
- INSTALL (3) DOUBLE Z-BRACKETS (1 PER SECTOR)
- REMOVE EXISTING ABANDONED ANTENNA MOUNT

GROUND SCOPE OF WORK:
- INSTALL (1) PROPOSED METAL PLATFORM
- 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)

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:	TOWN OF EAST LYME
ADDRESS:	PO BOX 519 NIANTIC, CT 06357
TOWER TYPE:	SELF SUPPORT
TOWER CO SITE ID:	806384
TOWER APP NUMBER:	553405
COUNTY:	NEW LONDON
LATITUDE (NAD 83):	41° 20' 8.35" N 41.335653 N
LONGITUDE (NAD 83):	-72° 13' 18.28" W -72.221744 N
ZONING JURISDICTION:	NEW LONDON COUNTY
ZONING DISTRICT:	R40
PARCEL NUMBER:	45-15.0 2
OCCUPANCY GROUP:	U
CONSTRUCTION TYPE:	II-B
POWER COMPANY:	NORTHEAST UTILITIES
TELEPHONE COMPANY:	AT&T

PROJECT DIRECTORY

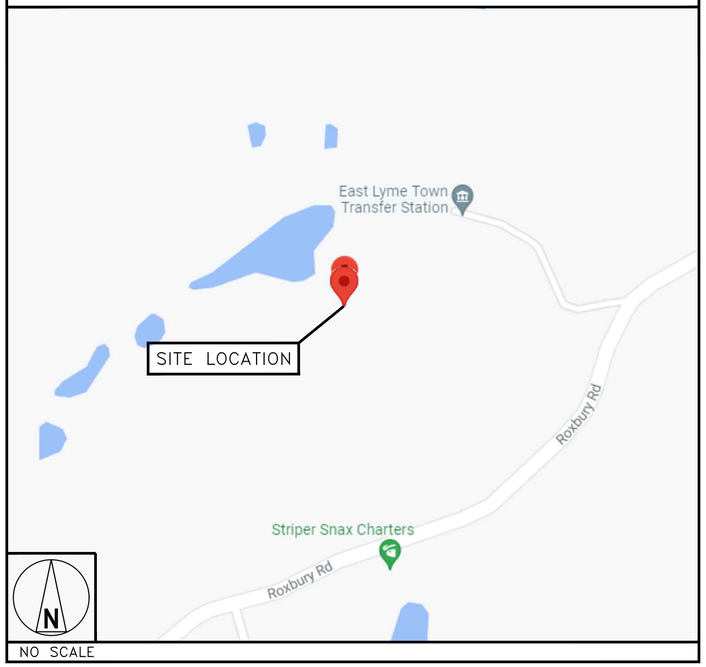
APPLICANT:	DISH WIRELESS, LLC. 5701 SOUTH SANTA FE DRIVE LITTLETON, CO 80120
TOWER OWNER:	CROWN CASTLE USA INC. 2000 CORPORATE DR. CANONSBURG, PA 15317 (877) 486-9377
SITE DESIGNER:	NB+C ENGINEERING SERVICES 8601 SIX FORKS RD, SUITE 540 RALEIGH, NC 27615 (919) 657-9131
SITE ACQUISITION:	CORWIN DIXON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

DIRECTIONS

DIRECTIONS FROM BRADLEY INTERNATIONAL AIRPORT:

START OUT FROM BRADLEY INTERNATIONAL AIRPORT.START OUT GOING NORTHWEST ON SCHOEPHOESTER RD TOWARD BRADLEY INTERNATIONAL AIRPORT CONNECTOR. SCHOEPHOESTER RD BECOMES BRADLEY INTERNATIONAL AIRPORT CONNECTOR. 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-9 S VIA EXIT 22S ON THE LEFT TOWARD MIDDLETOWN/OLD SAYBROOK. MERGE ONTO I-95 N VIA THE EXIT ON THE LEFT TOWARD NEW LONDON/PROVIDENCE. TAKE EXIT 72 TOWARD ROCKY NECK STATE PARK. MERGE ONTO ROCKY NECK CONNECTOR. TURN LEFT ONTO W MAIN ST/CT-156. TURN LEFT ONTO ROXBURY RD.TURN LEFT ONTO DUMP RD. 41.335653,-72.221744, 99 DUMP RD IS ON THE RIGHT.

VICINITY MAP



NO SCALE

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

01/04/2022

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
0	01/04/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

806384

DISH WIRELESS, LLC.
PROJECT INFORMATION

BOBOS00033A
93 ROXBURY ROAD
EAST LYME, CT 06357

SHEET TITLE

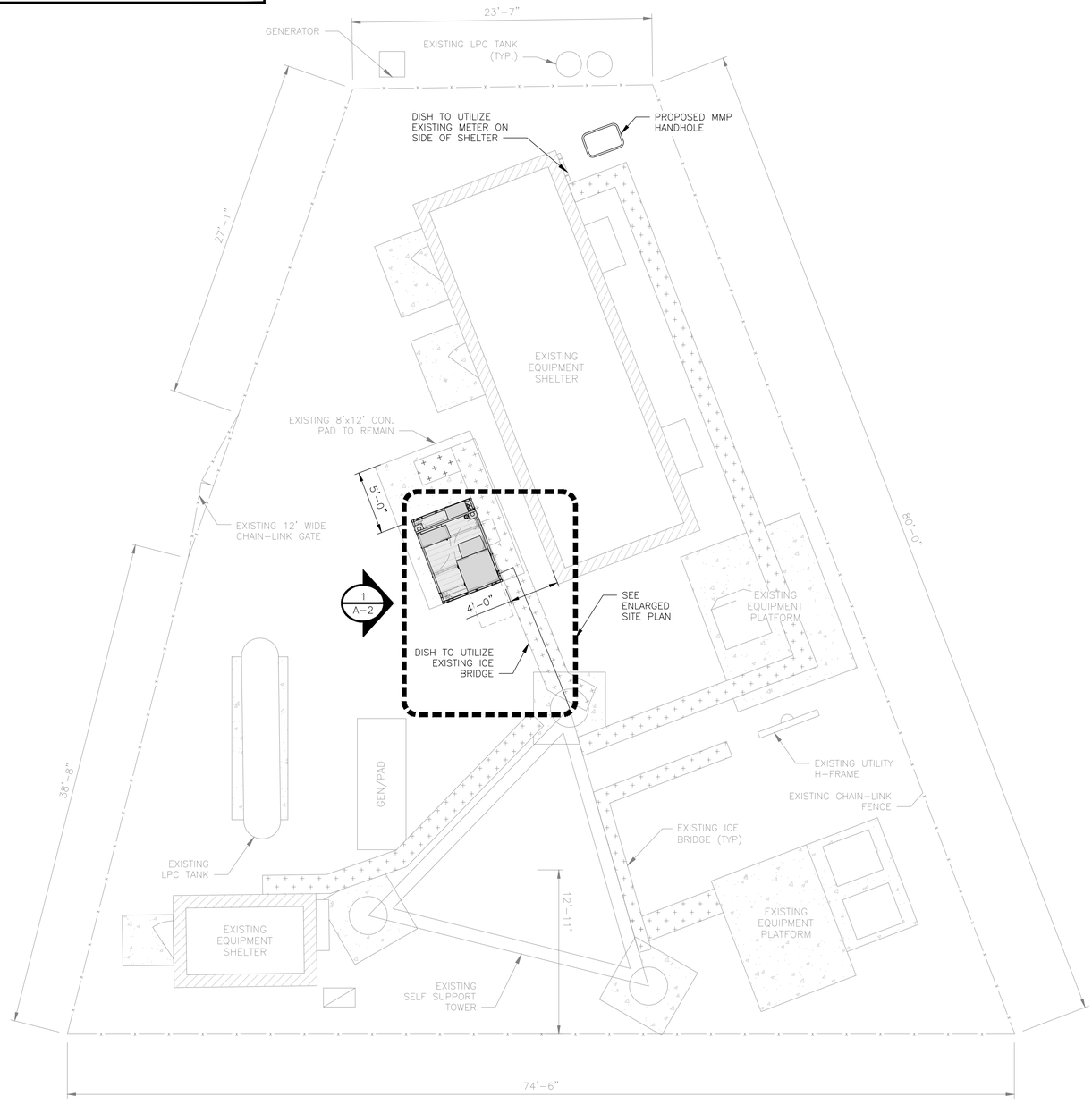
TITLE SHEET

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.



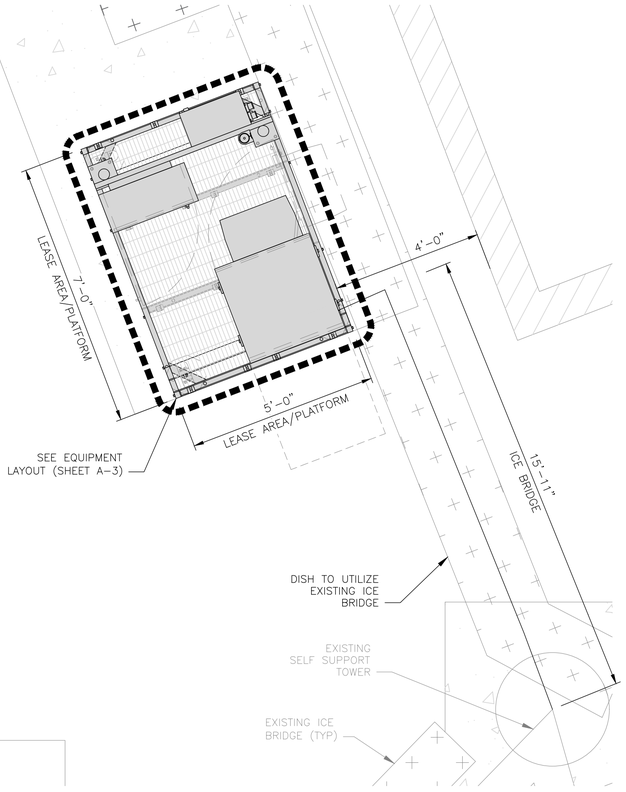
OVERALL SITE PLAN

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

1

NOTES

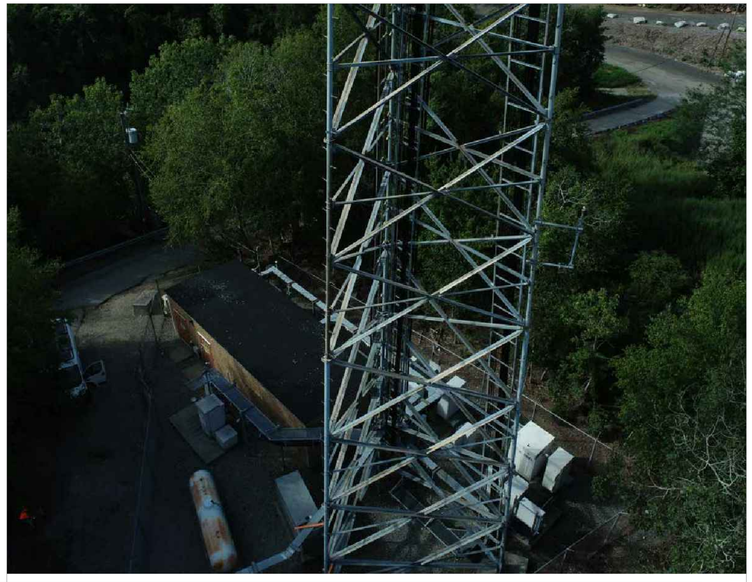
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.



ENLARGED SITE PLAN

12" 6" 0 1' 2' 3' 4' 5'
1/2"=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

01/04/2022

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
0	01/04/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

806384

DISH WIRELESS, LLC.
PROJECT INFORMATION

BOBOS00033A
93 ROXBURY ROAD
EAST LYME, CT 06357

SHEET TITLE

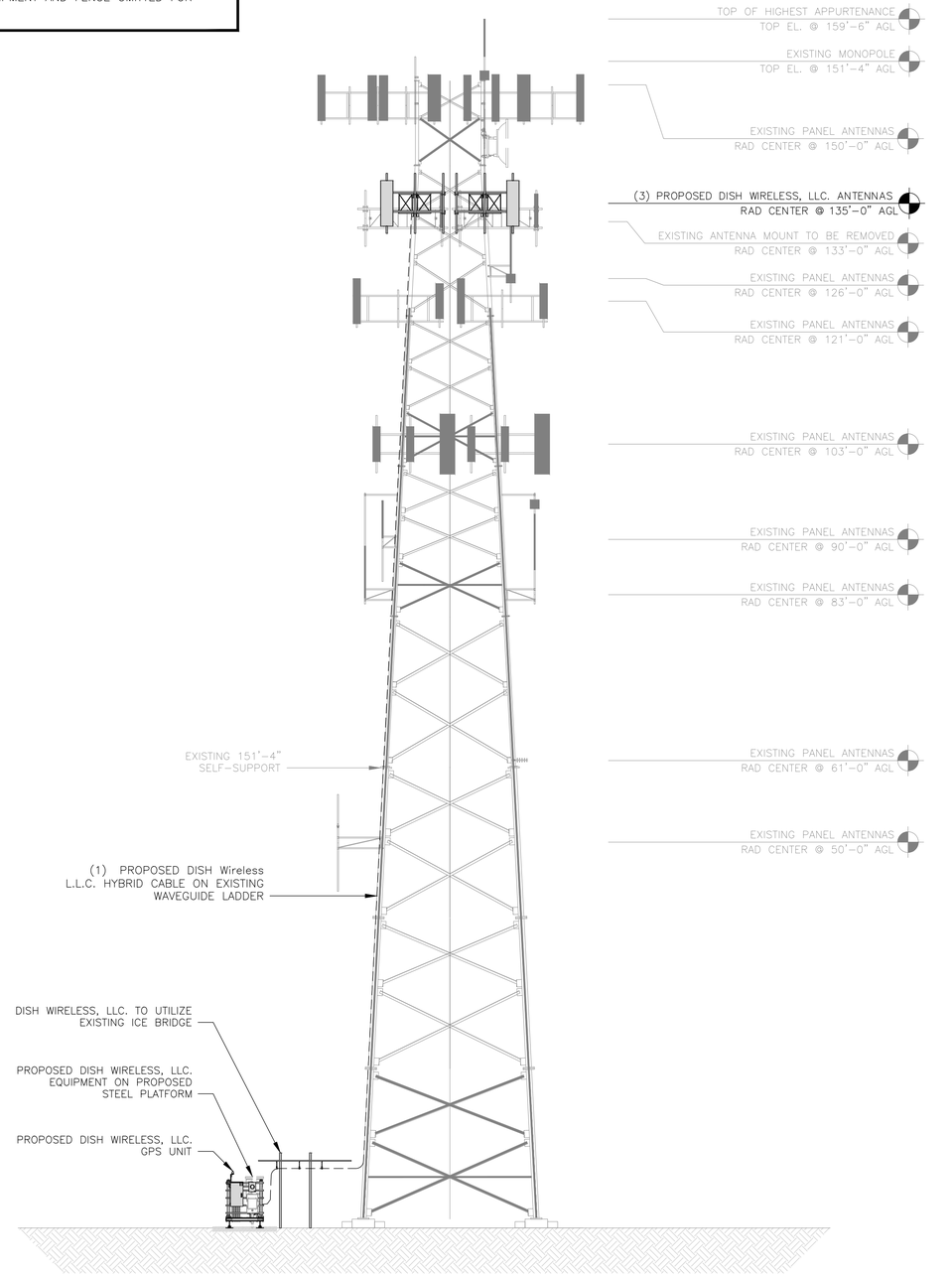
OVERALL AND ENLARGED SITE PLAN

SHEET NUMBER

A-1

NOTES

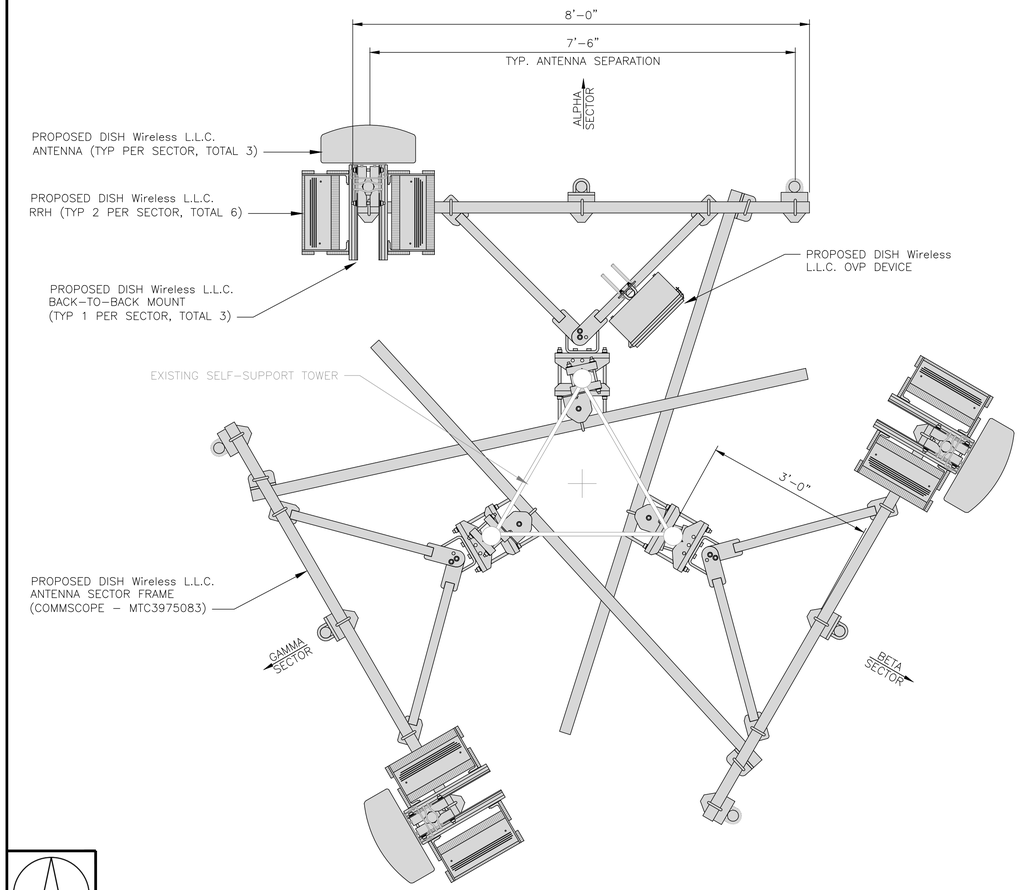
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNA AND MW DISH SPECIFICATIONS REFER TO ANTENNA SCHEDULE AND TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS
3. EXISTING EQUIPMENT AND FENCE OMITTED FOR CLARITY.



PROPOSED NORTH ELEVATION

10' 0 10' 20'
1"=10'

1



N

ANTENNA LAYOUT

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

2

SECTOR	POSITION	ANTENNA						TRANSMISSION CABLE
		EXISTING OR PROPOSED	MANUFACTURER - MODEL NUMBER	TECHNOLOGY	SIZE (HxW)	AZIMUTH	RAD CENTER	FEED LINE TYPE AND LENGTH
ALPHA	A1	PROPOSED	JMA - MX08FR0665-21	5G	72.0" x 20.0"	0°	135'-0"	(1) HIGH-CAPACITY HYBRID CABLE (180' LONG)
BETA	B1	PROPOSED	JMA - MX08FR0665-21	5G	72.0" x 20.0"	120°	135'-0"	
GAMMA	C1	PROPOSED	JMA - MX08FR0665-21	5G	72.0" x 20.0"	240°	135'-0"	

SECTOR	POSITION	RRH	
		MANUFACTURER - MODEL NUMBER	TECHNOLOGY
ALPHA	A1	FUJITSU - TA08025-B604	5G
	A1	FUJITSU - TA08025-B605	5G
BETA	B1	FUJITSU - TA08025-B604	5G
	B1	FUJITSU - TA08025-B605	5G
GAMMA	C1	FUJITSU - TA08025-B604	5G
	C1	FUJITSU - TA08025-B605	5G

NOTES

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

ANTENNA SCHEDULE

NO SCALE

3

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
REG. NO. PEN.0028997
LICENSED PROFESSIONAL ENGINEER

01/04/2022

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
0	01/04/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

806384

DISH WIRELESS, LLC.
PROJECT INFORMATION

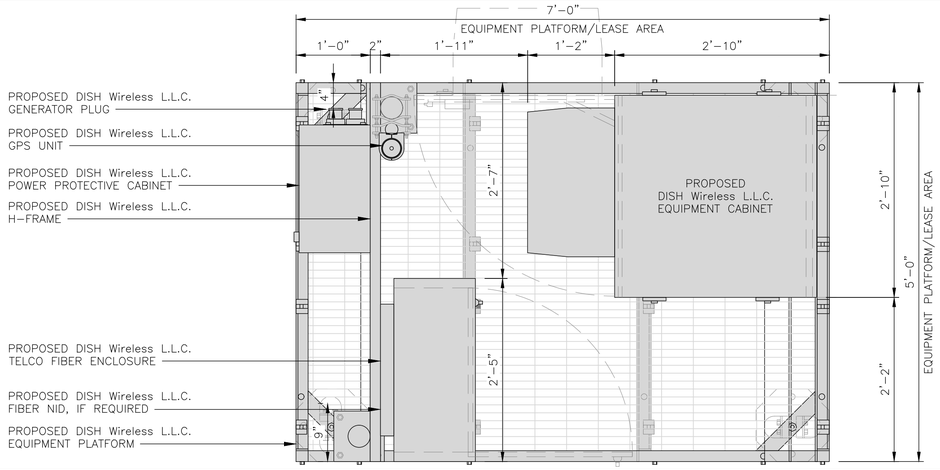
BOBOS00033A
93 ROXBURY ROAD
EAST LYME, CT 06357

SHEET TITLE

ELEVATION, ANTENNA LAYOUT AND SCHEDULE

SHEET NUMBER

A-2



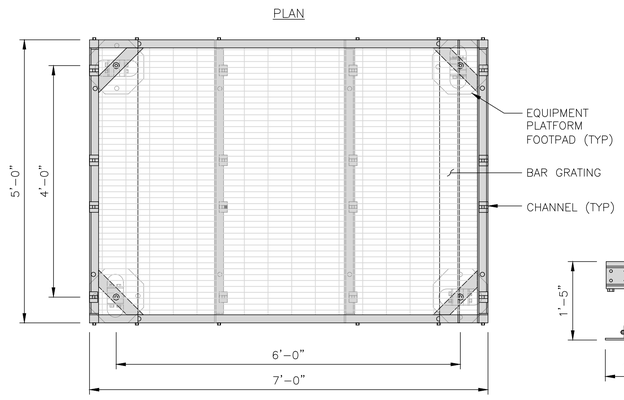
PLATFORM EQUIPMENT PLAN

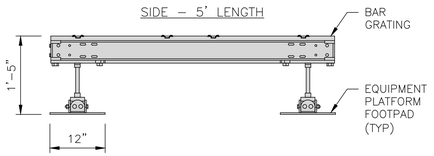
12" 9" 6" 3" 0 1' 2'
1"=1'-0"

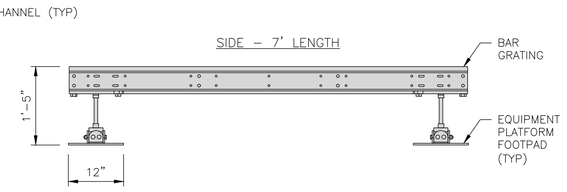
1

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"

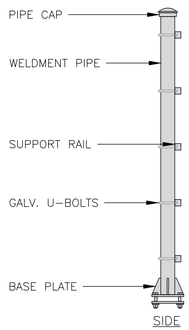






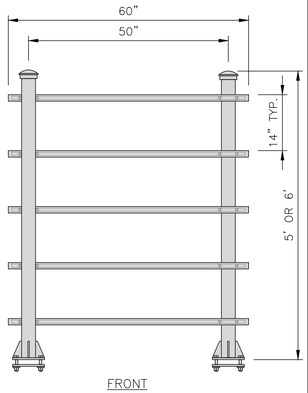
PLATFORM DETAIL | NO SCALE | 2

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



SIDE

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



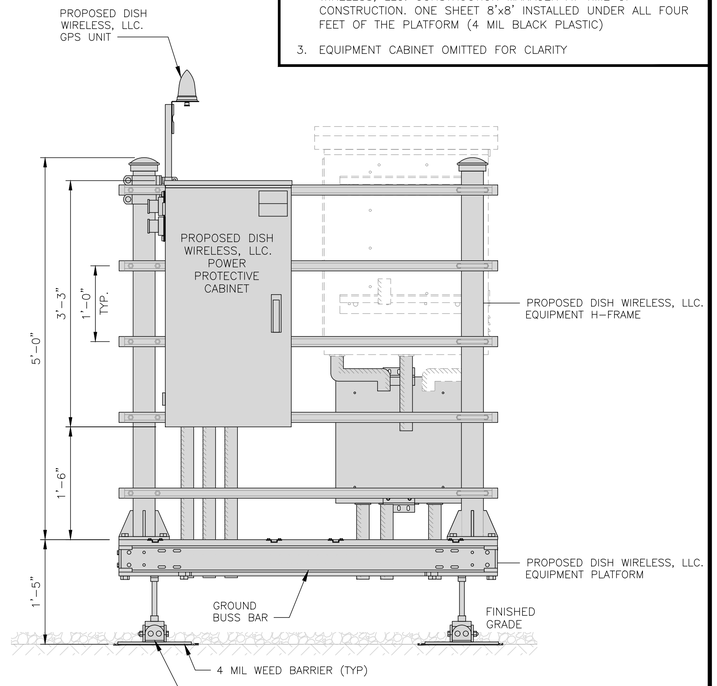
FRONT

H-FRAME DETAIL | NO SCALE | 3

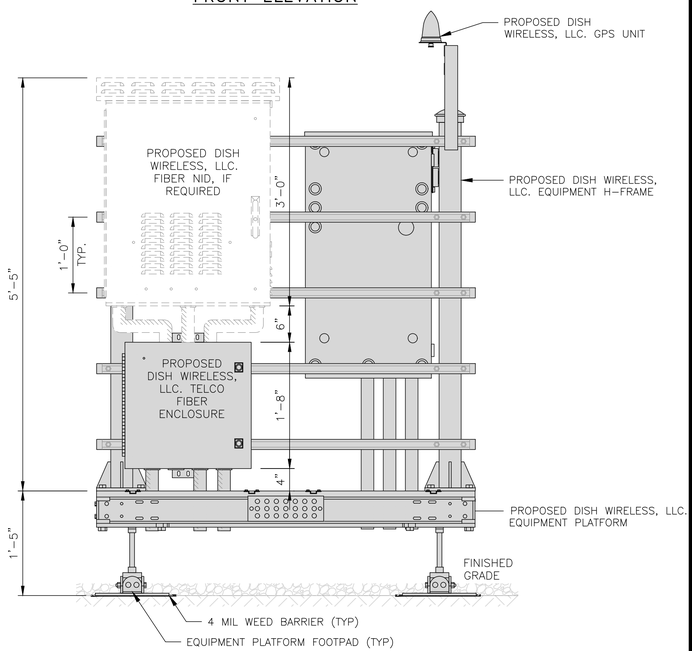
NOT USED | NO SCALE | 4

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
LITTLETON, CO 80120

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

01/04/2022

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

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93 ROXBURY ROAD
EAST LYME, CT 06357

SHEET TITLE

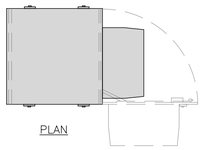
EQUIPMENT PLATFORM AND H-FRAME DETAILS

SHEET NUMBER

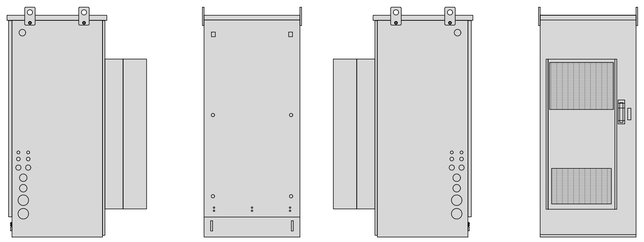
A-3

CHARLES INDUSTRY HEX CUBE–PM639155N4

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



PLAN



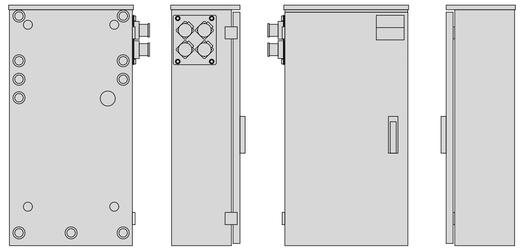
SIDE BACK SIDE FRONT

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



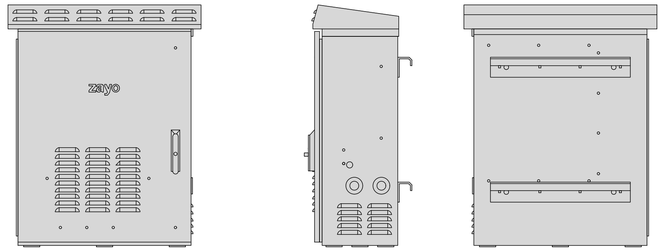
BACK SIDE FRONT SIDE

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

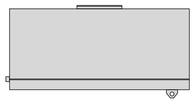


FRONT SIDE BACK

NETWORK INTERFACE UNIT DETAIL | NO SCALE | 3

CHARLES CFIT–PF2020DSH1 FIBER TELCO ENCLOSURE

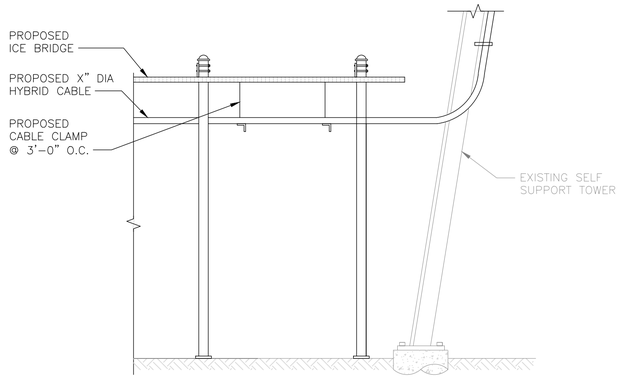
ENCLOSURE DIMS (HxWxD)	20"x20"x9"
ENCLOSURE WEIGHT	20 lbs
MOUNTING	WALL
COMPLIANCE	TYPE 4



FRONT

SIDE BACK FRONT

FIBER TELCO ENCLOSURE DETAIL | NO SCALE | 4



HYBRID CABLE RUN | NO SCALE | 5

NOT USED | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

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93 ROXBURY ROAD
EAST LYME, CT 06357

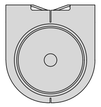
SHEET TITLE

EQUIPMENT DETAILS

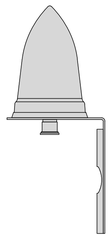
SHEET NUMBER

A-4

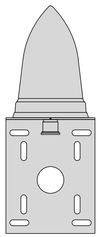
PCTEL GPSGL-TMG-SPI-40NCB	
DIMENSIONS (DIAxH) MM/INCH	81x184mm 3.2"x7.25"
WEIGHT W/ACCESSORIES	075 lbs
CONNECTOR	N-FEMALE
FREQUENCY RANGE	1590 ± 30MHz



TOP

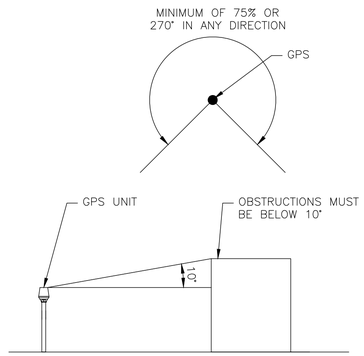


BACK

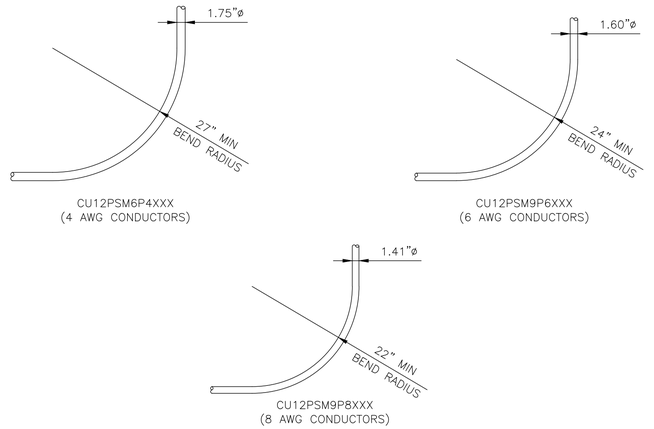


SIDE

GPS DETAIL | NO SCALE | 1



GPS MINIMUM SKY VIEW REQUIREMENTS | NO SCALE | 2



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

DESC	QTY
SITE ID #:	d
TWR TYPE:	d
HYBRID BEND RADIUS	30"
RAD CENTER (ft)	135.0
ICE BRIDGE HEIGHT (ft)	10.0
ICE BRIDGE LENGTH (ft)	16.0
LENGTH ACROSS PLATFORM (ft)	6.0
LENGTH FROM TOWER TOP TO OVP (ft)	6.0
VERTICAL LENGTH OF HYBRID INTO TOWER TOP OVP (ft)	1.0
	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)	180

The preparer must determine the lengths below.
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.
This is the height of the bridge coverings.
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.
This is the length from the cabinet to the first bend up the ice bridge or inside a radio room.
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.
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.

NOT USED | NO SCALE | 4

NOT USED | NO SCALE | 5

NOT USED | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

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KRUPAKARAN KOLANDAIVELU
PEN.0028997
LICENSED PROFESSIONAL ENGINEER

01/04/2022

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A&E PROJECT NUMBER

806384

DISH WIRELESS, LLC.
PROJECT INFORMATION

BOBOS00033A
93 ROXBURY ROAD
EAST LYME, CT 06357

SHEET TITLE

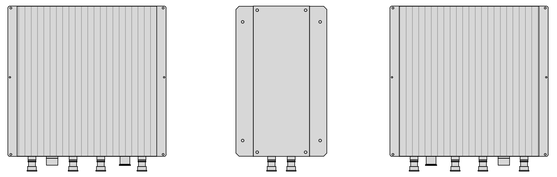
EQUIPMENT DETAILS

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

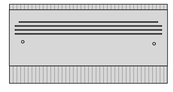
PLAN



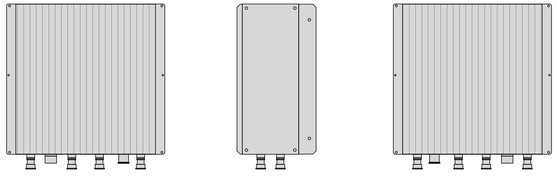
BACK SIDE FRONT

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

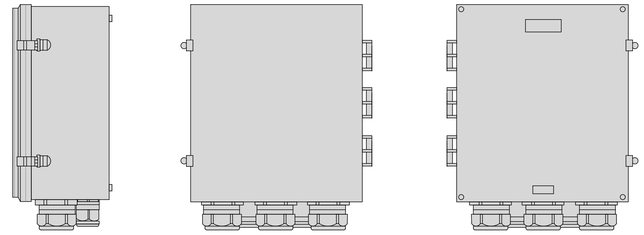


BACK SIDE FRONT

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

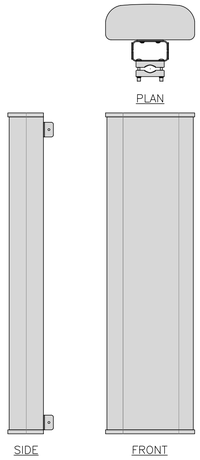
PLAN



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



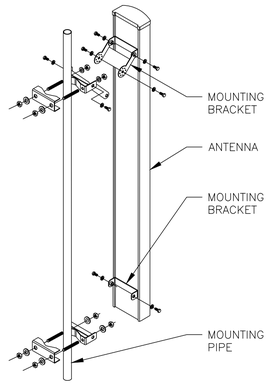
PLAN

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

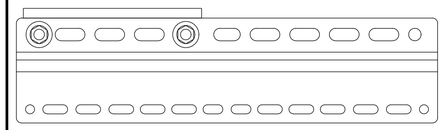
NOTE:
OR DISH Wireless L.L.C.
APPROVED EQUIVALENT

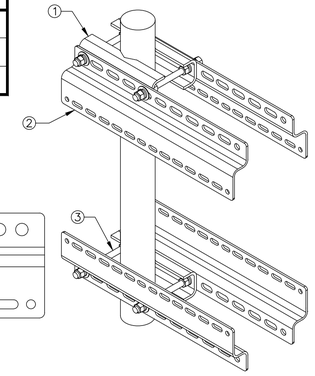


ANTENNA MOUNTING DETAIL | NO SCALE | 5

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"



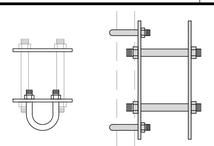


NOTE:
OR DISH Wireless L.L.C.
APPROVED EQUIVALENT

RRH MOUNT DETAIL | NO SCALE | 6

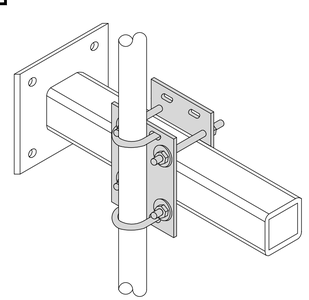
COMMSCOPE XP-2040 CROSSOVER PLATE	
DIMENSIONS (HxW)	10"x12"
WEIGHT	11 lbs

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



PLAN PLATE SIDE PLATE

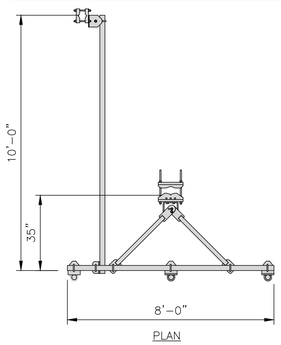
PLAN U-BOLT SIDE U-BOLT



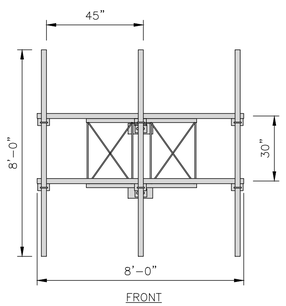
RRH/OVP MOUNT DETAIL | NO SCALE | 7

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

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



PLAN



FRONT

ANTENNA FRAME DETAIL | NO SCALE | 8

NOT USED | NO SCALE | 9

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EAST LYME, CT 06357

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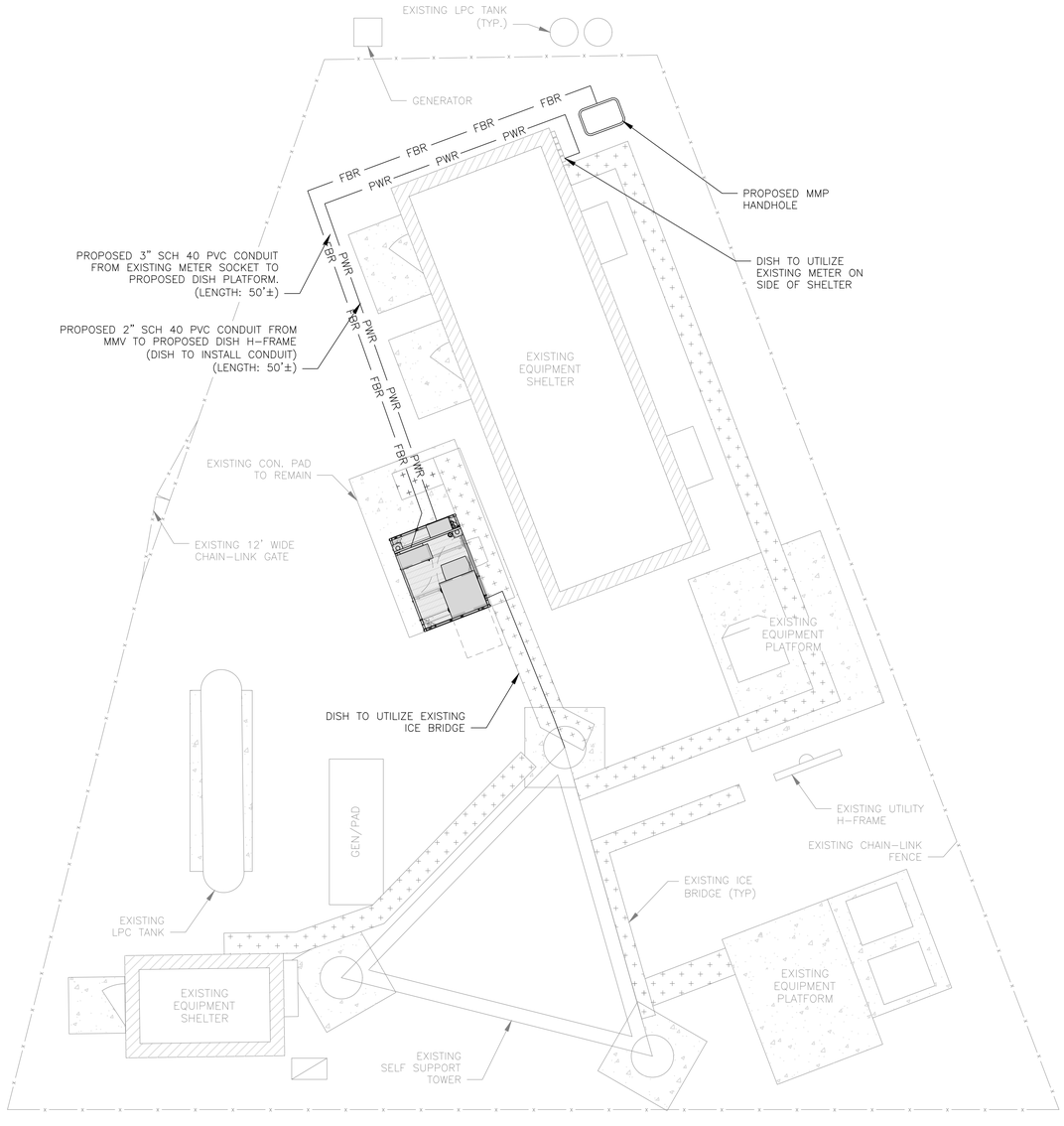
EQUIPMENT DETAILS

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. THE GROUND LEASE PROVIDES BROAD/BLANKET UTILITY RIGHTS. "PWR" AND "FBR" PATH DEPICTED ON A-1 AND E-1 ARE BASED ON BEST AVAILABLE INFORMATION INCLUDING BUT NOT LIMITED TO 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 NOT AN OPTION, PLEASE NOTIFY CROWN CASTLE REAL ESTATE AS FURTHER COORDINATION MAY BE NEEDED.



N

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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STATE OF CONNECTICUT
KRUPAKARAN KOLANDAIVELU
PEN.0028997
LICENSED PROFESSIONAL ENGINEER

01/04/2022

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
0	01/04/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

806384

DISH WIRELESS, LLC.
PROJECT INFORMATION

BOBOS00033A
93 ROXBURY ROAD
EAST LYME, CT 06357

SHEET TITLE

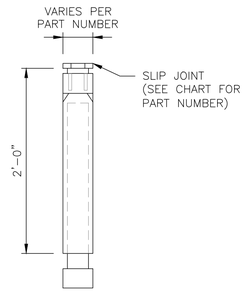
ELECTRICAL/FIBER ROUTE PLAN AND NOTES

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"

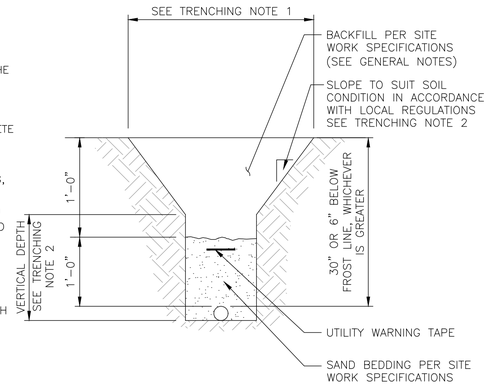


NOTE:
CONTRACTOR TO INSTALL EXPANSION FITTING SLIP JOINT AT METER CENTER CONDUIT TERMINATION, AS PER LOCAL UTILITY POLICY, ORDINANCE AND/OR SPECIFIED REQUIREMENT.

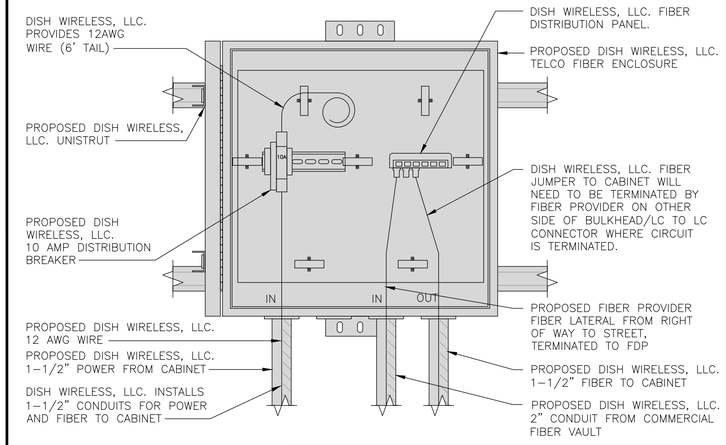
EXPANSION JOINT DETAIL | NO SCALE | 1

TRENCHING NOTES

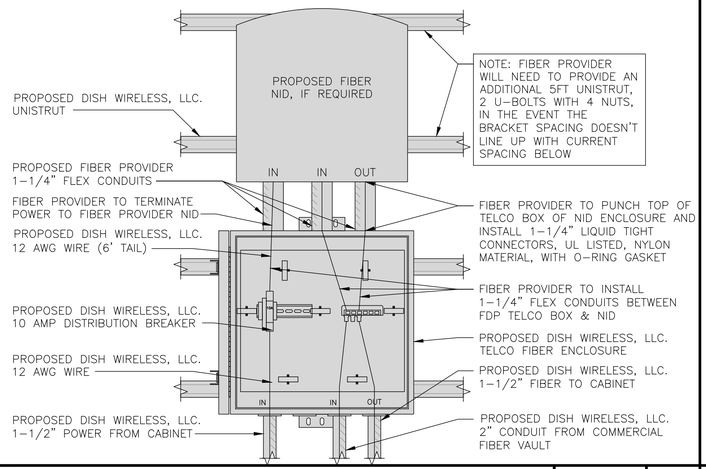
1. CONTRACTOR SHALL RESTORE THE TRENCH TO ITS ORIGINAL CONDITIONS BY EITHER SEEDING OR SODDING GRASS AREAS, OR REPLACING ASPHALT OR CONCRETE AREAS TO ITS ORIGINAL CROSS SECTION.
2. TRENCHING SAFETY; INCLUDING, BUT NOT LIMITED TO SOIL CLASSIFICATION, SLOPING, AND SHORING, SHALL BE GOVERNED BY THE CURRENT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

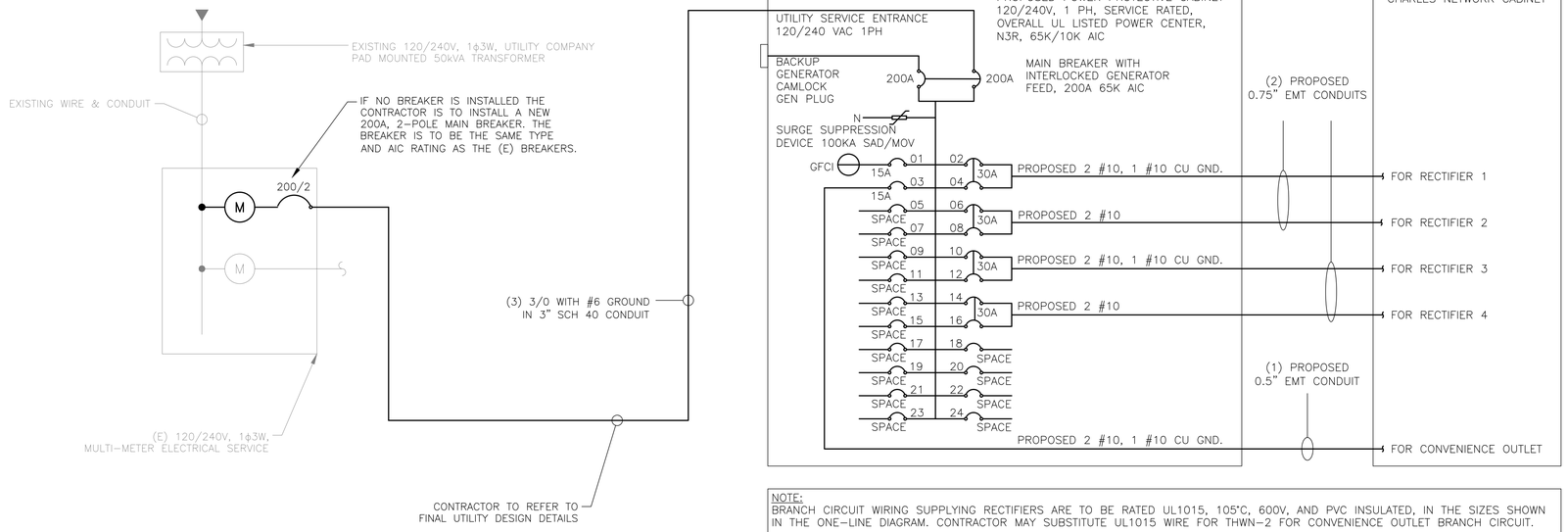
BOBOS00033A
93 ROXBURY ROAD
EAST LYME, CT 06357

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

01/04/2022

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
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RFDS REV #: 0

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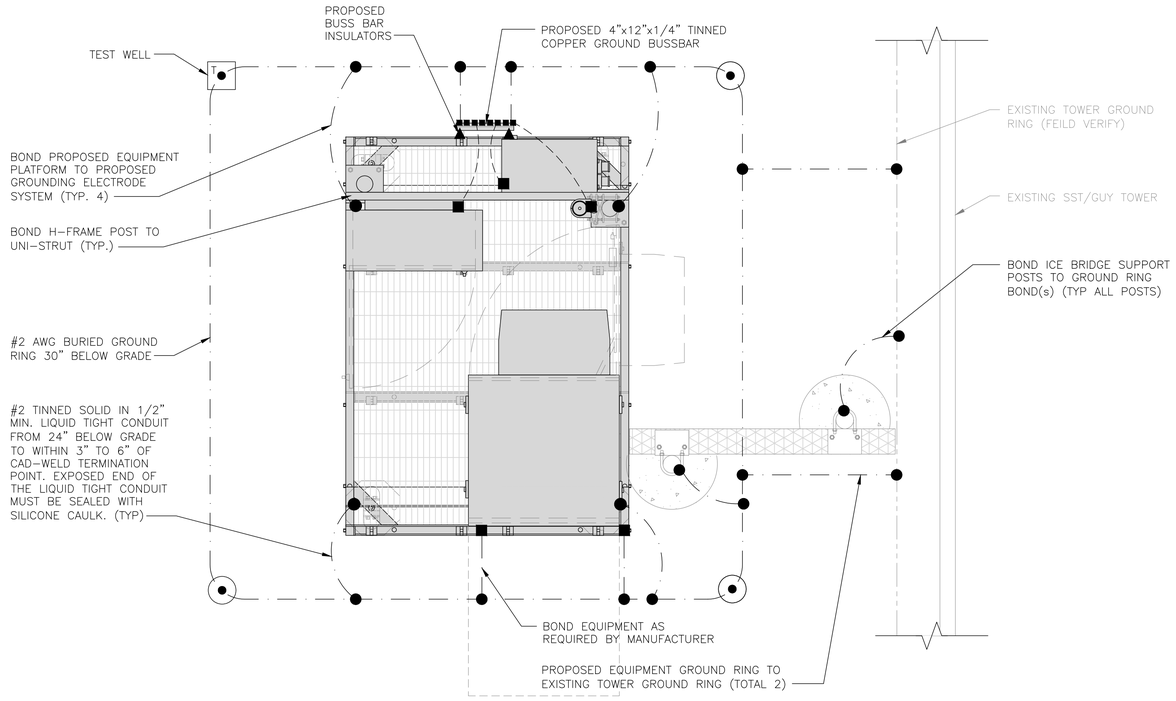
A&E PROJECT NUMBER
806384

DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBOS00033A
93 ROXBURY ROAD
EAST LYME, CT 06357

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

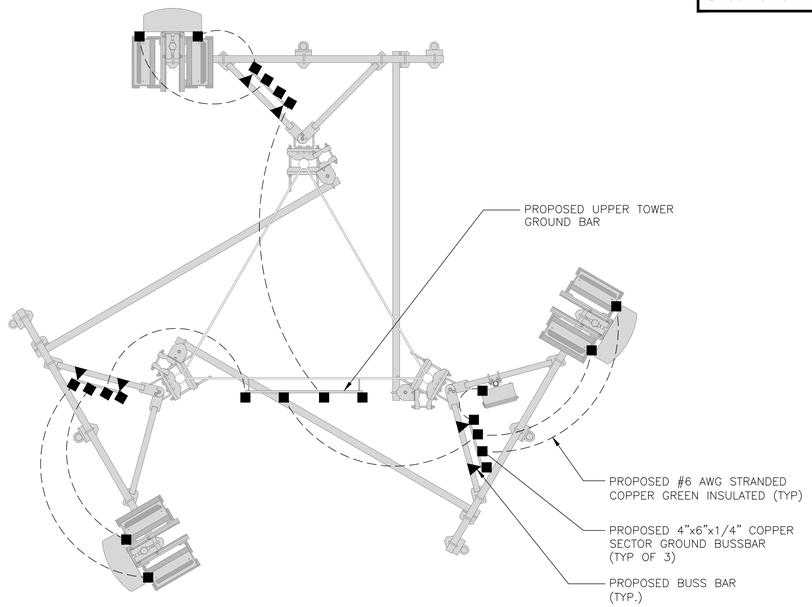
SHEET NUMBER
E-3



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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806384

DISH WIRELESS, LLC.
PROJECT INFORMATION

BOBOS00033A
93 ROXBURY ROAD
EAST LYME, CT 06357

SHEET TITLE

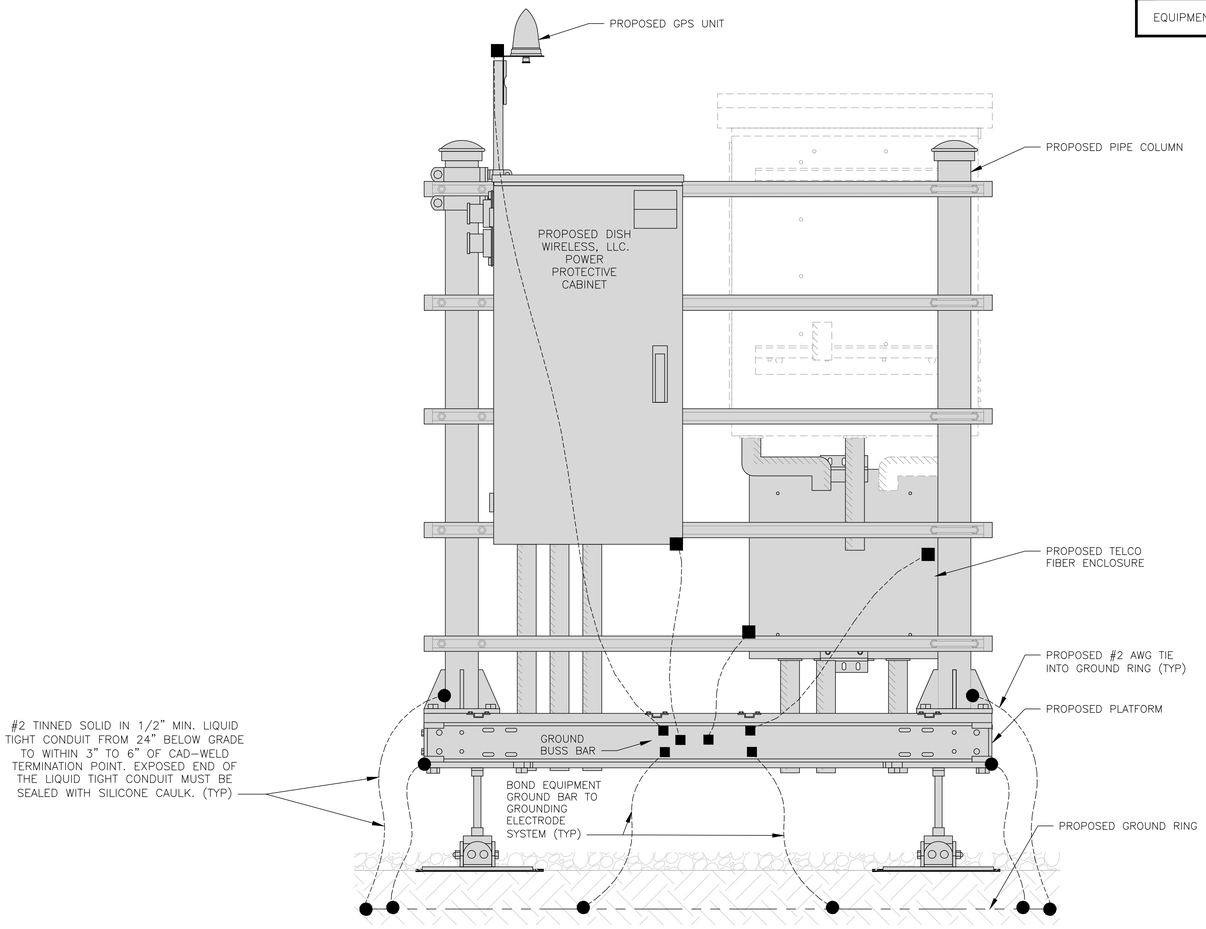
GROUNDING PLANS AND NOTES

SHEET NUMBER

G-1

NOTES

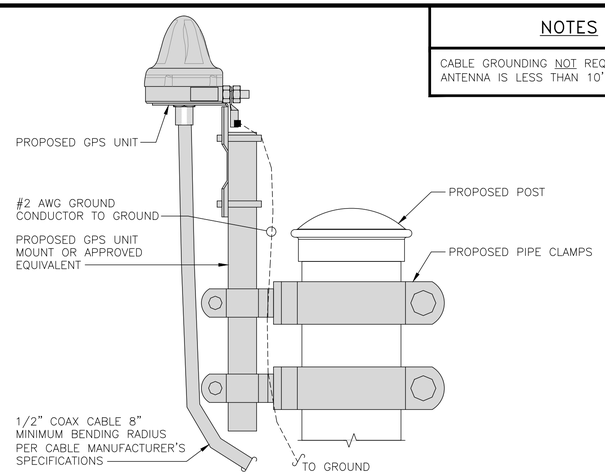
EQUIPMENT CABINET OMITTED FOR CLARITY



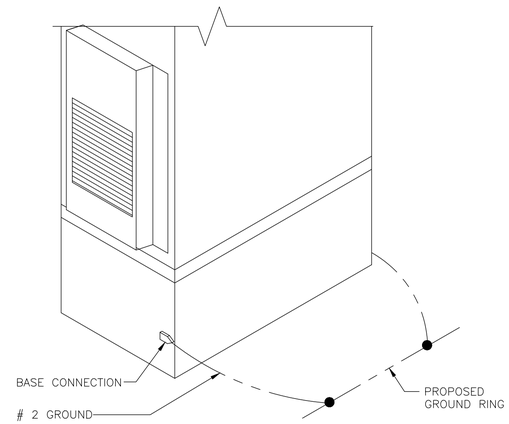
H-FRAME GROUNDING DETAIL | NO SCALE | 1

NOTES

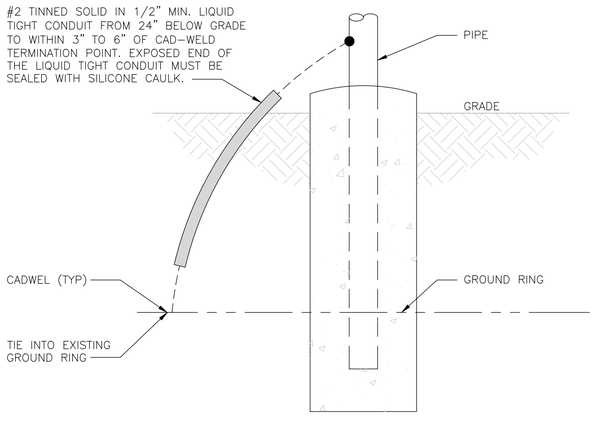
CABLE GROUNDING NOT REQUIRED WHEN ANTENNA IS LESS THAN 10' FROM CABINET



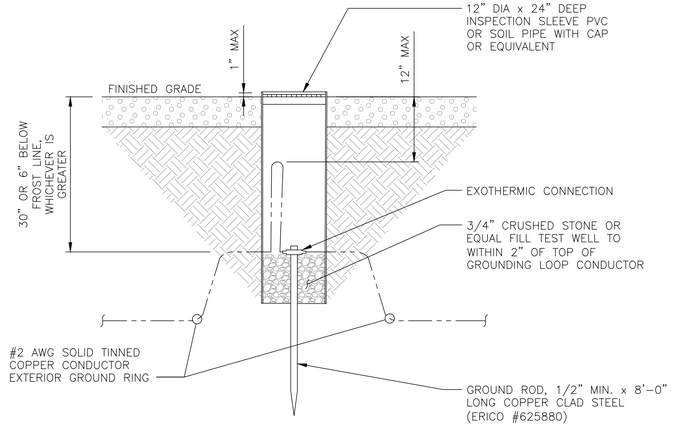
TYPICAL GPS UNIT GROUNDING | NO SCALE | 2



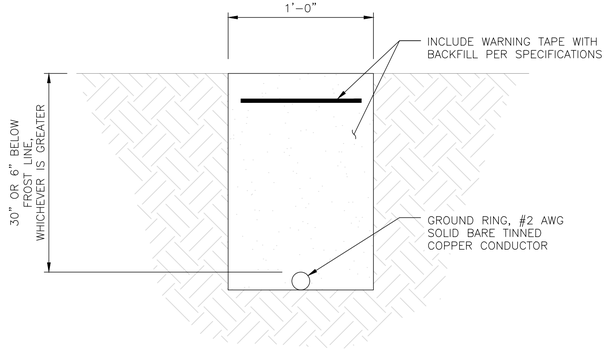
OUTDOOR CABINET GROUNDING | NO SCALE | 3



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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8601 SIX FORKS ROAD, SUITE 540
RALEIGH, NC 27615
(919) 657-9131

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

01/04/2022

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
0	01/04/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

806384

DISH WIRELESS, LLC.
PROJECT INFORMATION

BOBOS00033A
93 ROXBURY ROAD
EAST LYME, CT 06357

SHEET TITLE

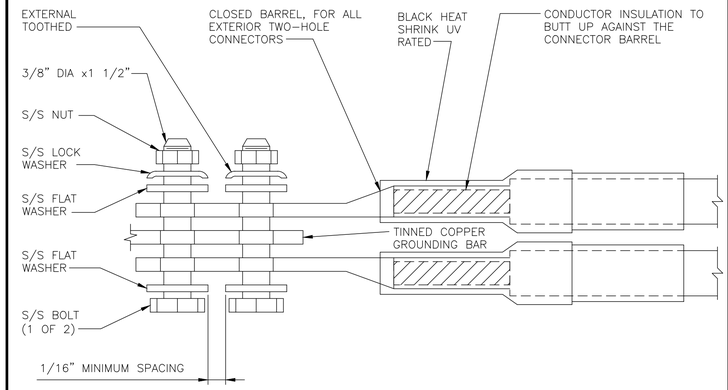
GROUNDING DETAILS

SHEET NUMBER

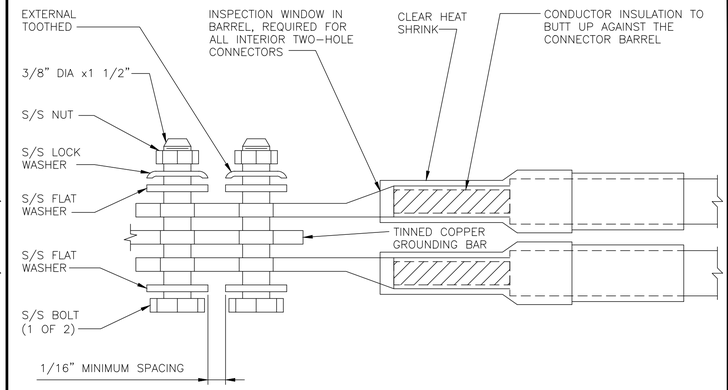
G-2

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

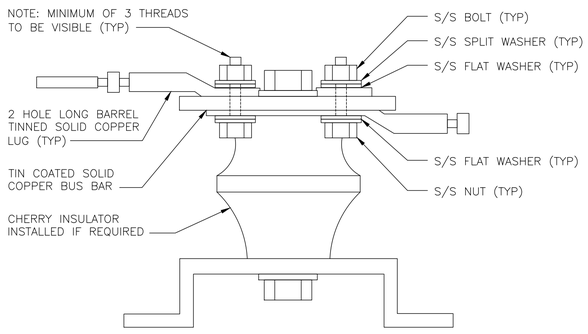
TYPICAL GROUNDING NOTES | NO SCALE | 1



TYPICAL EXTERIOR TWO HOLE LUG | NO SCALE | 2



TYPICAL INTERIOR TWO HOLE LUG | NO SCALE | 3



LUG DETAIL | NO SCALE | 4

NOT USED | NO SCALE | 5

NOT USED | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

dish wireless.

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LITTLETON, CO 80120

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SHEET TITLE

GROUNDING DETAILS

SHEET NUMBER

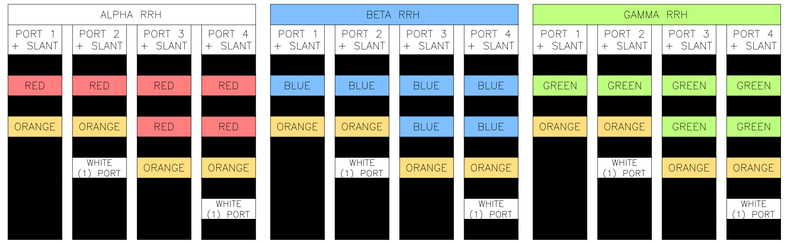
G-3

RF JUMPER COLOR CODING

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

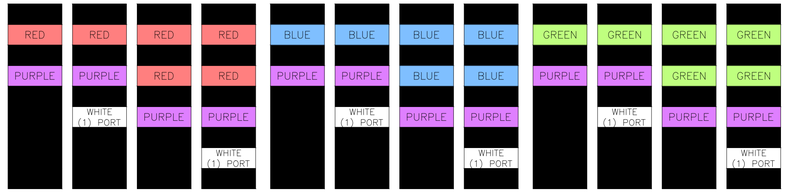
LOW-BAND RRH –
(600MHz N71 BASEBAND) +
(850MHz N26 BAND) +
(700MHz N29 BAND) – OPTIONAL PER MARKET

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



MID-BAND RRH –
(AWS BANDS N66+N70)

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

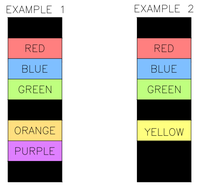


HYBRID/DISCREET CABLES

INCLUDE SECTOR BANDS BEING SUPPORTED AM LONG WITH FREQUENCY BANDS

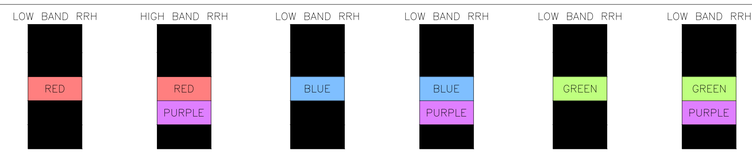
EXAMPLE 1 – HYBRID, OR DISCREET, SUPPORTS ALL SECTORS, BOTH LOW-BANDS AND MID-BANDS

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



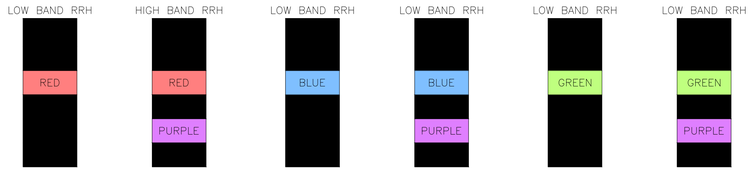
HYBRID/DISCREET CABLES

LOW-BAND RRH FIBER CABLES HAVE SECTOR STRIPE ONLY

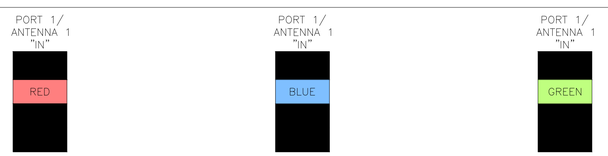


POWER CABLES TO RRHs

LOW-BAND RRH POWER CABLES HAVE SECTOR STRIPE ONLY



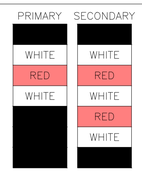
RET MOTORS AT ANTENNAS



MICROWAVE RADIO LINKS

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

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



RF CABLE COLOR CODES | NO SCALE | 1

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

AWS
(N65+N70+H-BLOCK)
PURPLE

CBRS TECH
(3 GHz)
YELLOW

NEGATIVE SLANT PORT
ON ANTRRH
WHITE

ALPHA SECTOR
RED

BETA SECTOR
BLUE

GAMMA SECTOR
GREEN

COLOR IDENTIFIER | NO SCALE | 2

NOT USED | NO SCALE | 3

NOT USED | NO SCALE | 4

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DISH WIRELESS, LLC.
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93 ROXBURY ROAD
EAST LYME, CT 06357

SHEET TITLE
RF
CABLE COLOR CODES

SHEET NUMBER
RF-1

LEGEND

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

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

ABBREVIATIONS

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

dish wireless.

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PROJECT INFORMATION

BOBOS00033A
93 ROXBURY ROAD
EAST LYME, CT 06357

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

RFDS REV #: 0

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
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A&E PROJECT NUMBER

806384

DISH WIRELESS, LLC.
PROJECT INFORMATION

BOBOS00033A
93 ROXBURY ROAD
EAST LYME, CT 06357

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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RFDS REV #: 0

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
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A&E PROJECT NUMBER

806384

DISH WIRELESS, LLC.
PROJECT INFORMATION

BOBOS00033A
93 ROXBURY ROAD
EAST LYME, CT 06357

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.

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PROJECT INFORMATION

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93 ROXBURY ROAD
EAST LYME, CT 06357

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-4

Exhibit D

Structural Analysis Report

Date: **July 10, 2021**

Tower Engineering Professionals
326 Tryon Road
Raleigh, NC 27603
(919) 661-6351

Subject: Structural Analysis Report

Carrier Designation:	***DISH Network* Co-Locate**	
	Site Number:	BOBOS00033A
	Site Name:	CT-CCI-T-806384
Crown Castle Designation:	**BU Number:**	806384
	Site Name:	NLN 136 943455
	JDE Job Number:	645649
	Work Order Number:	1965332
	Order Number:	553405 Rev. 0
Engineering Firm Designation:	**TEP Project Number:**	45439.570072
Site Data:	**93 Roxbury Road, East Lyme, New London County, CT 06357** **Latitude *41° 20' 8.35"*, Longitude *-72° 13' 18.28"*** **150 Foot - Self-Supporting Tower**	

Tower Engineering Professionals 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 - 81.2%**

This analysis has been performed in accordance with the 2018 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 145 mph. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Structural analysis prepared by: Gautam Sopal, E.I. / CLT

Respectfully submitted by:

Aaron T. Rucker, P.E.

07/11/2021

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 150-ft self supporting tower designed by Rohn. The tower has been modified multiple times in the past to accommodate additional loading.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	III
Wind Speed:	145 mph
Exposure Category:	B
Topographic Factor:	1.0
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)
135.0	135.0	3	JMA Wireless	MX08FRO665-21 w/ Mount Pipe	1	1-1/2
		3	Fujitsu	TA08025-B604		
		3	Fujitsu	TA08025-B605		
		1	Raycap	RDIDC-9181-PF-48		
		1	Tower Mounts	Commscope MTC3975083 (3)		

Table 2 - Other Considered Equipment

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
150.0	157.0	1	Telewave	ANT150F2	1	7/8
	152.0	1	Motorola	PTP 400		
148.0	149.0	4	Commscope	HBXX-6517DS-A2M w/ Mount Pipe	6 8	7/8 1-5/8
		3	Amphenol	QUAD656C0000X w/ Mount Pipe		
		3	Commscope	LNX-6514DS-AIM w/ Mount Pipe		
		2	Commscope	JAHH-65B-R3B w/ Mount Pipe		
		3	Nokia	B25 RRH4X30 (UHFA)		
		3	Samsung Telecom.	RFV01U-D1A		
		3	Nokia	B66A RRH4X45 (UHIE)		
		2	RFS Celwave	DB-B1-6C-12AB-0Z		
		1	Commscope	CBC1923T-DS-43		
	148.0	1	Tower Mounts	Sector Mount [SM 510-3]		
146.0	145.0	1	Panasonic	WV-CW864	2	3/8

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
126.0	130.0	1	Amphenol	BCD-87010-EDIN-X	1 1	17/64 7/8
		1	Motorola	SC614		
	126.0	1	Tower Mounts	Side Arm Mount [SO 305-1]		
	125.0	1	Motorola	PTP 400		
121.0	122.0	3	Ericsson	AIR6449 B41_T-MOBILE w/ Mount Pipe	3	1-5/8
		3	RFS Celwave	APXVAALL24_43-U-NA20_TMO w/ Mount Pipe		
		3	RFS Celwave	APX16DWV-16DWV-S-E-A20 w/ Mount Pipe		
		3	Ericsson	RADIO 4415 B66A_CCIV3		
		3	Ericsson	RADIO 4424 B25_TMOV1		
		3	Ericsson	RADIO 4449 B71 B85A_T-MOBILE		
	121.0	1	Tower Mounts	Sector Mount [SM 505-3]		
103.0	103.0	3	RFS Celwave	APXVAARR24_43-U-NA20 w/ Mount Pipe	6	1-5/8
		3	Ericsson	AIR6449 B41_T-MOBILE w/ Mount Pipe		
		3	Ericsson	AIR 32 B2A B66AA_T-MOBILE w/ Mount Pipe		
		3	Ericsson	RADIO 4449 B71 B85A_T-MOBILE		
		3	Ericsson	RRUS 4415 B25		
		1	Tower Mounts	Sector Mount [SM 701-3]		
		1	Tower Mounts	Pipe Mount [PM 601-3]		
90.0	93.0	1	Telewave	ANT150F2	1	1/2
	90.0	1	Tower Mounts	Side Arm Mount [SO 302-1]		
83.0	95.0	1	Motorola	PTP 400	1 1 1	17/64 1/2 7/8
	90.0	1	Telewave	ANT150D3		
	86.0	1	Telewave	ANT940F10		
	83.0	2	Tower Mounts	Side Arm Mount [SO 305-1]		
61.0	61.0	1	Maxrad	BMOY8905	1	1/4
50.0	52.0	1	Lucent	KS24019-L112A	1	1/2
	50.0	1	Tower Mounts	Side Arm Mount [SO 305-1]		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Reference	Source
Geotechnical Report	258373	CCISites
Tower Foundation Drawings	958525	CCISites
Tower Manufacturer Drawings	258359	CCISites
Tower Reinforcement Drawings	801526	CCISites
Tower Reinforcement Drawings	2215933	CCISites
Tower Reinforcement Drawings	2457486	CCISites
Post-Modification Inspection	2457484	CCISites
Tower Reinforcement Drawings	2883931	CCISites
Post-Modification Inspection	3046703	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) The tower and structures were maintained in accordance with the TIA-222 Standard.
2) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2, and the referenced drawings.

This analysis may be affected if any assumptions are not valid or have been made in error. Tower Engineering Professionals 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)	ϕP_{allow} (k)	% Capacity	Pass / Fail
T1	150 - 145	Leg	ROHN 2.5 STD	3	-6.08	60.05	10.1	Pass
T2	145 - 140	Leg	ROHN 2.5 STD	15	-7.72	60.05	12.9	Pass
T3	140 - 120	Leg	ROHN 2.5 EH	24	-33.09	61.44	53.9	Pass
T4	120 - 113.333	Leg	ROHN 2.5 EH (GR)	48	-43.17	67.62	63.8	Pass
T5	113.333 - 106.667	Leg	ROHN 2.5 EH (GR)	57	-54.73	67.61	80.9	Pass
T6	106.667 - 100	Leg	ROHN 2.5 EH (GR)	66	-66.08	105.07	62.9	Pass
T7	100 - 93.3333	Leg	ROHN 3 EH (GR)	78	-78.88	113.64	69.4	Pass
T8	93.3333 - 86.6667	Leg	ROHN 3 EH (GR)	87	-90.57	152.69	59.3	Pass
T9	86.6667 - 80	Leg	ROHN 3 EH (GR)	99	-103.12	152.73	67.5	Pass
T10	80 - 70	Leg	ROHN 4 EH (GR)	111	-118.75	149.91	79.2	Pass
T11	70 - 60	Leg	ROHN 4 EH (GR)	120	-136.65	223.18	61.2	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (k)	ΦP_{allow} (k)	% Capacity	Pass / Fail
T12	60 - 50	Leg	ROHN 4 EH (GR)	132	-154.84	223.22	69.4	Pass
T13	50 - 40	Leg	ROHN 4 EH (GR)	144	-172.51	223.32	77.2	Pass
T14	40 - 30	Leg	ROHN 5 EH (GR)	156	-190.99	259.31	73.7	Pass
T15	30 - 20	Leg	ROHN 5 EH (GR)	165	-207.88	336.60	61.8	Pass
T16	20 - 10	Leg	ROHN 5 EH (GR)	177	-226.27	336.68	67.2	Pass
T17	10 - 0	Leg	ROHN 5 EH (GR)	189	-243.30	336.75	72.3	Pass
T1	150 - 145	Diagonal	L1 1/2x1 1/2x3/16	12	-1.42	4.26	33.4	Pass
T2	145 - 140	Diagonal	L2x2x3/16	20	-3.06	10.47	29.2	Pass
T3	140 - 120	Diagonal	L2 1/2x2 1/2x3/16	33	-4.90	12.57	39.0	Pass
T4-T5	120 – 106.667	Diagonal	L2 1/2x2 1/2x3/16	Note 1	Note 1	Note 1	60.4	Pass
T6	106.667 - 100	Diagonal	L2 1/2x2 1/2x3/16x3/16	72	-7.73	38.58	20.0	Pass
T7-T8	100 – 86.6667	Diagonal	L3x3x3/16	Note 1	Note 1	Note 1	74.8	Pass
T9	86.6667 - 80	Diagonal	2L3x3x3/16x1/4	105	-8.40	47.56	17.7	Pass
T10	80 - 70	Diagonal	2L3x3x3/16x1/4	114	-9.55	39.20	24.4	Pass
T11	70 - 60	Diagonal	2L3x3x3/16x1/4	123	-10.41	35.93	29.0	Pass
T12	60 - 50	Diagonal	2L3x3x1/4x1/4	135	-10.58	46.14	22.9	Pass
T13	50 - 40	Diagonal	2L3x3x1/4x1/4	147	-11.08	42.40	26.1	Pass
T14	40 - 30	Diagonal	2L3 1/2x3 1/2x1/4x1/4	159	-10.81	60.05	18.0	Pass
T15	30 - 20	Diagonal	2L3 1/2x3 1/2x1/4x1/4	168	-12.28	55.93	22.0	Pass
T16	20 - 10	Diagonal	2L4x4x1/4x1/4	180	-11.98	73.00	16.4	Pass
T17	10 - 0	Diagonal	2L4x4x1/4x1/4	192	-13.68	68.42	20.0	Pass
T6	106.667 - 100	Secondary Horizontal	L2x2x3/16	74	-1.02	6.68	15.2	Pass
T8	93.3333 - 86.6667	Secondary Horizontal	L2x2x3/16	94	-0.27	5.39	5.0	Pass
T9	86.6667 - 80	Secondary Horizontal	L2x2x3/16	108	-0.24	4.86	5.0	Pass
T11	70 - 60	Secondary Horizontal	L2 1/2x2 1/2x3/16	129	-0.39	7.61	5.2	Pass
T12	60 - 50	Secondary Horizontal	L3x3x1/4	141	-0.60	15.05	4.0	Pass
T13	50 - 40	Secondary Horizontal	L3x3x1/4	153	-0.48	13.32	3.6	Pass
T15	30 - 20	Secondary Horizontal	L3x3x3/16	174	-0.55	8.45	6.5	Pass
T16	20 - 10	Secondary Horizontal	L3x3x3/16	186	-0.90	7.64	11.7	Pass
T17	10 - 0	Secondary Horizontal	L3 1/2x3 1/2x1/4	198	-0.74	14.61	5.1	Pass
T1	150 - 145	Top Girt	L2 1/2x2 1/2x3/16	4	-0.36	7.00	5.1	Pass
T3	140 - 120	Top Girt	L2 1/2x2 1/2x3/16	25	-0.69	7.00	9.9	Pass
							Summary	
						Leg (T5)	80.9	Pass
						Diagonal (T7-T8)	74.8	Pass
						Secondary Horizontal (T6)	15.2	Pass
						Top Girt (T3)	9.9	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (k)	ΦP_{allow} (k)	% Capacity	Pass / Fail
						Bolt Checks	73.6	Pass
						Rating =	**80.9**	**Pass**

Table 5 - Tower Component Stresses vs. Capacity - LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1,2	Anchor Rods	-	58.4	Pass
1,2	Base Foundation Structural	-	54.1	Pass
1,2	Base Foundation Soil Interaction	-	81.2	Pass

Structure Rating (max from all components) =	**81.2%**

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

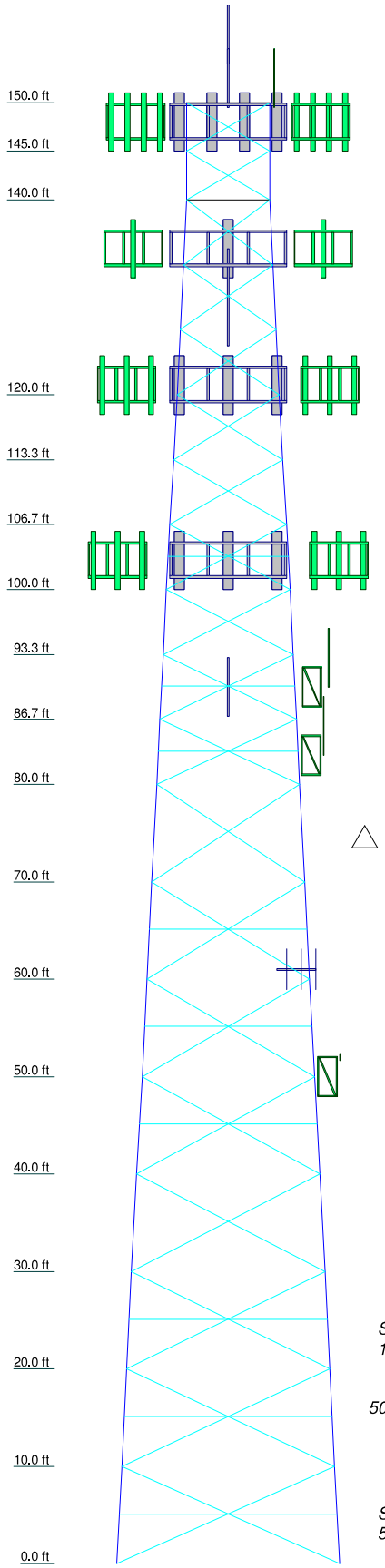
4.1) Recommendations

1) 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	T17	T16	T15	T14	T13	T12	T11	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1
Legs		ROHN 5 EH (GR)				ROHN 4 EH (GR)			ROHN 3 EH (GR)			ROHN 2.5 EH (GR)			ROHN 2.5 EH		ROHN 2.5 STD
Leg Grade								A572-50									
Diagonals	2L4x4x1/4x1/4		2L3 1/2x3 1/2x1/4x1/4			2L3x3x1/4x1/4		2L3x3x3/16x1/4			L3x3x3/16			L2 1/2x2 1/2x3/16			A
Diagonal Grade								A36									
Top Girts							N.A.								L2 1/2x2 1/2x3/16		D
Sec. Horizontals	E		L3x3x3/16		N.A.		L3x3x1/4	D	N.A.		L2x2x3/16		N.A.				N.A.
Face Width (ft)	21.7813		20.7813		19.776		18.7708	17.7344	16.6979	15.6979	14	13.3021	12.6042	11.9245	11.2422	10.5625	8.5625
# Panels @ (ft)							8 @ 10							9 @ 6.66667			2 @ 5
Weight (K)	27.9	3.7	3.5	3.1	2.8	2.4	2.3	1.9	1.7	1.2	0.8	0.7	0.9	0.5	0.5	1.2	0.2	0.3



SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	L1 1/2x1 1/2x3/16	D	L2 1/2x2 1/2x3/16
B	L2x2x3/16	E	L3 1/2x3 1/2x1/4
C	L2 1/2x2 1/2x3/16x3/16		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A36	36 ksi	58 ksi

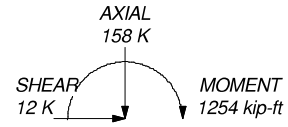
TOWER DESIGN NOTES

1. Tower is located in New London County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-H Standard.
3. Tower designed for a 145 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.50 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category III.
7. Topographic Category 1 with Crest Height of 0'
8. Grouted pipe f'c is 7 ksi
9. TOWER RATING: 80.9%

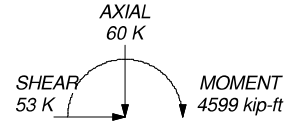
ALL REACTIONS ARE FACTORED

MAX. CORNER REACTIONS AT BASE:
DOWN: 253 K
SHEAR: 32 K

UPLIFT: -209 K
SHEAR: 28 K



TORQUE 26 kip-ft
50 mph WIND - 1.5000 in ICE



TORQUE 84 kip-ft
REACTIONS - 145 mph WIND

Tower Engineering Professionals

Tower Engineering Professionals
326 Tryon Road
Raleigh, NC 27603
Phone: (919) 661-6351
FAX: (919) 661-6350

Job:	***NLN 136 943455 (BU 806384)***		
Project:	***TEP No. 45439.570072***		
Client: Crown Castle	Drawn by: zschartraw		App'd:
Code: TIA-222-H	Date: 07/10/21		Scale: NTS
Path:			Dwg No. E-1

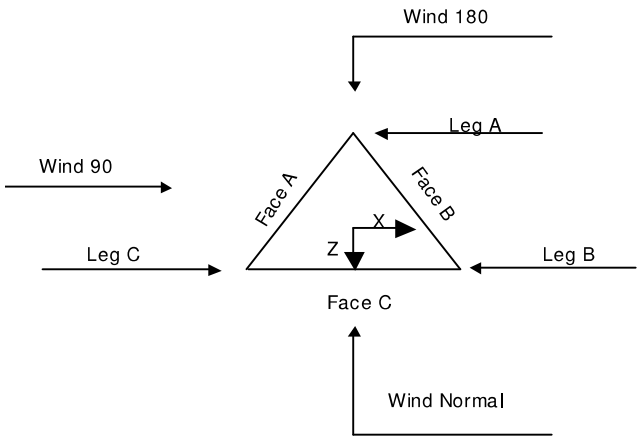
Tower Input Data

The main tower is a 3x free standing tower with an overall height of 150' above the ground line.
The base of the tower is set at an elevation of 0' above the ground line.
The face width of the tower is 8'6-3/4" at the top and 22'9-3/8" at the base.
This tower is designed using the TIA-222-H standard.
The following design criteria apply:

Tower is located in New London County, Connecticut.
Tower base elevation above sea level: 173'.
Basic wind speed of 145 mph.
Risk Category III.
Exposure Category B.
Simplified Topographic Factor Procedure for wind speed-up calculations is used.
Topographic Category: 1.
Crest Height: 0'.
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.
Grouted pipe f'_c is 7 ksi.
Pressures are calculated at each section.
Stress ratio used in tower member design is 1.
Tower analysis based on target reliabilities in accordance with Annex S.
Load Modification Factors used: $K_{es}(F_w) = 1.0$, $K_{es}(t_i) = 1.0$.
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



Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	ft			ft		ft
T1	150'-145'			8'6-3/4"	1	5'
T2	145'-140'			8'6-3/4"	1	5'
T3	140'-120'			8'6-3/4"	1	20'
T4	120'-113'3-31/32"			10'6-3/4"	1	6'8-1/32"
T5	113'3-31/32"-106' 8-1/32"			11'2-29/32"	1	6'8-1/32"
T6	106'8-1/32"-100'			11'11-3/32"	1	6'8-1/32"
T7	100'-93'3-31/32"			12'7-1/4"	1	6'8-1/32"
T8	93'3-31/32"-86'8-1/32"			13'3-5/8"	1	6'8-1/32"
T9	86'8-1/32"-80'			14'	1	6'8-1/32"
T10	80'-70'			14'8-3/8"	1	10'
T11	70'-60'			15'8-3/8"	1	10'
T12	60'-50'			16'8-3/8"	1	10'
T13	50'-40'			17'8-13/16"	1	10'
T14	40'-30'			18'9-1/4"	1	10'
T15	30'-20'			19'9-5/16"	1	10'
T16	20'-10'			20'9-3/8"	1	10'
T17	10'-0'			21'9-3/8"	1	10'

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T1	150'-145'	5'	X Brace	No	No	0.0000	0.0000
T2	145'-140'	5'	X Brace	No	No	0.0000	0.0000
T3	140'-120'	6'8"	X Brace	No	No	0.0000	0.0000
T4	120'-113'3-31/32"	6'8"	X Brace	No	No	0.0000	0.0000
T5	113'3-31/32"-106' 8-1/32"	6'8"	X Brace	No	No	0.0000	0.0000
T6	106'8-1/32"-100'	6'8"	X Brace	No	Yes	0.0000	0.0000
T7	100'-93'3-31/32"	6'8"	X Brace	No	No	0.0000	0.0000
T8	93'3-31/32"-86'8-1/32"	6'8"	X Brace	No	Yes	0.0000	0.0000
T9	86'8-1/32"-80'	6'8"	X Brace	No	Yes	0.0000	0.0000
T10	80'-70'	10'	X Brace	No	No	0.0000	0.0000
T11	70'-60'	10'	X Brace	No	Yes	0.0000	0.0000
T12	60'-50'	10'	X Brace	No	Yes	0.0000	0.0000
T13	50'-40'	10'	X Brace	No	Yes	0.0000	0.0000
T14	40'-30'	10'	X Brace	No	No	0.0000	0.0000
T15	30'-20'	10'	X Brace	No	Yes	0.0000	0.0000
T16	20'-10'	10'	X Brace	No	Yes	0.0000	0.0000
T17	10'-0'	10'	X Brace	No	Yes	0.0000	0.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 150'-145'	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T2 145'-140'	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)	Equal Angle	L2x2x3/16	A36 (36 ksi)
T3 140'-120'	Pipe	ROHN 2.5 EH	A572-50 (50 ksi)	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T4 120'-113'3-31/32"	Grouted Pipe	ROHN 2.5 EH	A572-50 (50 ksi)	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T5 113'3-31/32"-106' 8-1/32"	Grouted Pipe	ROHN 2.5 EH	A572-50 (50 ksi)	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T6 106'8-1/32"-100'	Grouted Pipe	ROHN 2.5 EH	A572-50 (50 ksi)	Double Equal Angle	L2 1/2x2 1/2x3/16x3/16	A36 (36 ksi)
T7 100'-93'3-31/32"	Grouted Pipe	ROHN 3 EH	A572-50 (50 ksi)	Equal Angle	L3x3x3/16	A36 (36 ksi)
T8 93'3-31/32"-86'8-1/32"	Grouted Pipe	ROHN 3 EH	A572-50 (50 ksi)	Equal Angle	L3x3x3/16	A36 (36 ksi)
T9 86'8-1/32"-80'	Grouted Pipe	ROHN 3 EH	A572-50 (50 ksi)	Double Equal Angle	2L3x3x3/16x1/4	A36 (36 ksi)
T10 80'-70'	Grouted Pipe	ROHN 4 EH	A572-50 (50 ksi)	Double Equal Angle	2L3x3x3/16x1/4	A36 (36 ksi)
T11 70'-60'	Grouted Pipe	ROHN 4 EH	A572-50 (50 ksi)	Double Equal Angle	2L3x3x3/16x1/4	A36 (36 ksi)
T12 60'-50'	Grouted Pipe	ROHN 4 EH	A572-50 (50 ksi)	Double Equal Angle	2L3x3x1/4x1/4	A36 (36 ksi)
T13 50'-40'	Grouted Pipe	ROHN 4 EH	A572-50 (50 ksi)	Double Equal Angle	2L3x3x1/4x1/4	A36 (36 ksi)
T14 40'-30'	Grouted Pipe	ROHN 5 EH	A572-50	Double Equal	2L3 1/2x3 1/2x1/4x1/4	A36

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T15 30'-20'	Grouted Pipe	ROHN 5 EH	(50 ksi) A572-50 (50 ksi)	Angle Double Equal Angle	2L3 1/2x3 1/2x1/4x1/4	(36 ksi) A36 (36 ksi)
T16 20'-10'	Grouted Pipe	ROHN 5 EH	A572-50 (50 ksi)	Double Equal Angle	2L4x4x1/4x1/4	A36 (36 ksi)
T17 10'-0'	Grouted Pipe	ROHN 5 EH	A572-50 (50 ksi)	Double Equal Angle	2L4x4x1/4x1/4	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 150'-145'	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T3 140'-120'	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T6 106'8-1/32"-100'	Equal Angle	L2x2x3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T8 93'3-31/32"-86'8-1/32"	Equal Angle	L2x2x3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T9 86'8-1/32"-80'	Equal Angle	L2x2x3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T11 70'-60'	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T12 60'-50'	Equal Angle	L3x3x1/4	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T13 50'-40'	Equal Angle	L3x3x1/4	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T15 30'-20'	Equal Angle	L3x3x3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T16 20'-10'	Equal Angle	L3x3x3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T17 10'-0'	Equal Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)	Single Angle		A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Gusset Area (per face) ft²	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
T1 150'-145'	0.00	0.1875	A36 (36 ksi)	1.03	1	1.05	Mid-Pt	30.0000	36.0000
T2 145'-140'	0.00	0.1875	A36 (36 ksi)	1.03	1	1.05	Mid-Pt	30.0000	36.0000
T3 140'-120'	0.00	0.1875	A36 (36 ksi)	1.03	1	1.05	Mid-Pt	30.0000	36.0000
T4 120'-113'3-31/32"	0.00	0.4293	A36 (36 ksi)	1.03	1	1.05	Mid-Pt	30.0000	36.0000
T5 113'3-31/32"-106'8-1/32"	0.00	0.4293	A36 (36 ksi)	1.03	1	1.05	Mid-Pt	30.0000	36.0000
T6 106'8-1/32"-100'	0.00	0.4293	A36 (36 ksi)	1.03	1	1.05	Mid-Pt	30.0000	36.0000
T7 100'-93'3-31/32"	0.00	0.4293	A36 (36 ksi)	1.03	1	1.05	Mid-Pt	30.0000	36.0000
T8 93'3-31/32"-86'8-1/32"	0.00	0.4293	A36 (36 ksi)	1.03	1	1.05	Mid-Pt	30.0000	36.0000
T9 86'8-1/32"-80'	0.00	0.4293	A36 (36 ksi)	1.03	1	1.05	Mid-Pt	30.0000	36.0000
T10 80'-70'	0.00	0.2500	A36 (36 ksi)	1.03	1	1.05	Mid-Pt	30.0000	36.0000
T11 70'-60'	0.00	0.2500	A36 (36 ksi)	1.03	1	1.05	Mid-Pt	30.0000	36.0000
T12 60'-50'	0.00	0.2500	A36 (36 ksi)	1.03	1	1.05	Mid-Pt	30.0000	36.0000
T13 50'-40'	0.00	0.5000	A36 (36 ksi)	1.03	1	1.05	Mid-Pt	30.0000	36.0000
T14 40'-30'	0.00	0.5000	A36 (36 ksi)	1.03	1	1.05	Mid-Pt	30.0000	36.0000
T15 30'-20'	0.00	0.5000	A36 (36 ksi)	1.03	1	1.05	Mid-Pt	30.0000	36.0000
T16 20'-10'	0.00	0.5000	A36 (36 ksi)	1.03	1	1.05	Mid-Pt	30.0000	36.0000
T17 10'-0'	0.00	0.5000	A36 (36 ksi)	1.03	1	1.05	Mid-Pt	30.0000	36.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T1 150'-145'	Yes	Yes	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T2 145'-140'	Yes	Yes	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T3 140'-120'	Yes	Yes	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T4	Yes	Yes	1	1	1	1	1	1	1	1

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X	X Brace Diags Y	K Brace Diags X	K Brace Diags Y	Single Diags X	Single Diags Y	Girts X	Girts Y	Horiz. X	Horiz. Y	Sec. Horiz. X	Sec. Horiz. Y	Inner Brace X	Inner Brace Y
120'-113'3-31/32"				1		1		1		1		1		1		1	
T5	Yes	Yes	1	1		1		1		1		1		1		1	
113'3-31/32"-106'8-1/32"				1		1		1		1		1		1		1	
T6	Yes	Yes	1	1		1		1		1		1		1		1	
106'8-1/32"-100'				1		1		1		1		1		0.5		1	
T7	Yes	Yes	1	1		1		1		1		1		1		1	
100'-93'3-31/32"				1		1		1		1		1		1		1	
T8	Yes	Yes	1	1		1		1		1		1		1		1	
93'3-31/32"-86'8-1/32"				1		1		1		1		1		0.5		1	
T9	Yes	Yes	1	1		1		1		1		1		1		1	
86'8-1/32"-80'				1		1		1		1		1		0.5		1	
T10 80'-70'	Yes	Yes	1	1		1		1		1		1		1		1	
				1		1		1		1		1		1		1	
T11 70'-60'	Yes	Yes	1	1		1		1		1		1		1		1	
				1		1		1		1		1		0.5		1	
T12 60'-50'	Yes	Yes	1	1		1		1		1		1		1		1	
				1		1		1		1		1		0.5		1	
T13 50'-40'	Yes	Yes	1	1		1		1		1		1		1		1	
				1		1		1		1		1		0.5		1	
T14 40'-30'	Yes	Yes	1	1		1		1		1		1		1		1	
				1		1		1		1		1		1		1	
T15 30'-20'	Yes	Yes	1	1		1		1		1		1		1		1	
				1		1		1		1		1		0.5		1	
T16 20'-10'	Yes	Yes	1	1		1		1		1		1		1		1	
				1		1		1		1		1		0.5		1	
T17 10'-0'	Yes	Yes	1	1		1		1		1		1		1		1	
				1		1		1		1		1		0.5		1	

[1]*Note: K factors are applied to member segment lengths. K-braces without inner supporting members will have the K factor in the out-of-plane direction applied to the overall length.*

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Net Width Deduct in	Leg U	Diagonal Net Width Deduct in	Diagonal U	Top Girt Net Width Deduct in	Top Girt U	Bottom Girt Net Width Deduct in	Bottom Girt U	Mid Girt Net Width Deduct in	Mid Girt U	Long Horizontal Net Width Deduct in	Long Horizontal U	Short Horizontal Net Width Deduct in	Short Horizontal U
T1 150'-145'	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T2 145'-140'	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T3 140'-120'	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T4 120'-113'3-31/32"	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T5 113'3-31/32"-106'8-1/32"	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T6 106'8-1/32"-100'	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T7 100'-93'3-31/32"	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T8 93'3-31/32"-86'8-1/32"	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T9 86'8-1/32"-80'	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T10 80'-70'	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T11 70'-60'	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T12 60'-50'	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T13 50'-40'	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T14 40'-30'	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T15 30'-20'	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T16 20'-10'	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T17 10'-0'	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Elevation ft	Redundant Horizontal		Redundant Diagonal		Redundant Sub-Diagonal		Redundant Sub-Horizontal		Redundant Vertical		Redundant Hip		Redundant Hip Diagonal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1 150'-145'	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T2 145'-140'	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T3 140'-120'	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T4 120'-113'3-31/32"	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T5 113'3-31/32"-106'8-1/32"	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T6 106'8-1/32"-100'	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T7 100'-93'3-31/32"	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T8 93'3-31/32"-86'8-1/32"	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T9 86'8-1/32"-80'	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T10 80'-70'	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T11 70'-60'	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T12 60'-50'	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T13 50'-40'	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T14 40'-30'	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T15 30'-20'	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T16 20'-10'	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Elevation ft	Redundant Horizontal		Redundant Diagonal		Redundant Sub-Diagonal		Redundant Sub-Horizontal		Redundant Vertical		Redundant Hip		Redundant Hip Diagonal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T17 10'-0'	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1 150'-145'	Flange	0.6250 A325X	0	0.5000 A325X	1	0.5000 A325X	1	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T2 145'-140'	Flange	0.6250 A325X	4	0.5000 A325X	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T3 140'-120'	Flange	0.6250 A325X	4	0.5000 A325X	1	0.5000 A325X	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T4 120'-113'3-31/32"	Flange	0.7500 A325X	0	0.5000 A325X	2 *	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T5 113'3-31/32"-106'8-1/32"	Flange	0.7500 A325X	0	0.5000 A325X	2 *	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T6 106'8-1/32"-100'	Flange	0.7500 A325X	4	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	1
T7 100'-93'3-31/32"	Flange	0.8750 A325X	0	0.5000 A325N	2 *	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T8 93'3-31/32"-86'8-1/32"	Flange	0.8750 A325X	0	0.5000 A325N	2 *	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	1
T9 86'8-1/32"-80'	Flange	0.8750 A325X	4	0.5000 A325N	1	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	1
T10 80'-70'	Flange	0.8750 A325X	0	0.6250 A325N	1	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T11 70'-60'	Flange	0.8750 A325X	4	0.6250 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	1
T12 60'-50'	Flange	1.0000 A325X	0	0.6250 A325N	1	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.5000 A325N	1
T13 50'-40'	Flange	1.0000 A325X	4	0.6250 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.5000 A325N	1
T14 40'-30'	Flange	1.0000 A325X	0	0.6250 A325N	1	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T15 30'-20'	Flange	1.0625 A325X	4	0.6250 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	1
T16 20'-10'	Flange	1.0000 A325X	0	0.6250 A325N	1	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	1
T17 10'-0'	Flange	0.0000 A354-BC	0	0.6250 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	1

* Out-of-plane partial restraint assumed

Grouted Pipe Properties

Size	F_y ksi	A_s in^2	A_c in^2	Wt plf	E_c ksi	E_m ksi	F_{ym} ksi
ROHN 2.5 EH (GR)	50	2.2535	4.2383	16.498	4769	36175	61
ROHN 3 EH (GR)	50	3.0159	6.6052	24.023	4769	37356	63
ROHN 4 EH (GR)	50	4.4074	11.4969	38.949	4769	38952	66
ROHN 5 EH (GR)	50	6.1120	18.1937	58.701	4769	40357	68

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
Safety Line 3/8	A	No	No	Ar (CaAa)	150' - 0'	0.0000	0.5	1	1	0.3750	0.3750		0.22
Step Pegs (5/8" SR) 7-in. w/30" step	A	No	No	Ar (CaAa)	150' - 0'	0.0000	0.5	1	1	0.3500	0.3500		0.49
Step Pegs (5/8" SR) 7-in. w/30" step	B	No	No	Ar (CaAa)	80' - 0'	0.0000	0.5	1	1	0.3500	0.3500		0.49
Step Pegs (5/8" SR) 7-in. w/30" step	C	No	No	Ar (CaAa)	80' - 0'	0.0000	0.5	1	1	0.3500	0.3500		0.49
** A-Face **													
Feedline Ladder (Af)	A	No	No	Af (CaAa)	150' - 0'	0.0000	0.4	1	1	3.0000	3.0000		8.40
LDF5-50A(7/8)	A	No	No	Ar (CaAa)	126' - 0'	0.0000	0.43	2	2	0.5000	1.0900		0.33
LDF5-50A(7/8)	A	No	No	Ar (CaAa)	150' - 126'	0.0000	0.43	1	1	0.5000	1.0900		0.33
LDF4-50A(1/2)	A	No	No	Ar (CaAa)	83' - 0'	0.0000	0.4	2	2	0.5000	0.6250		0.15
LDF4-50A(1/2)	A	No	No	Ar (CaAa)	90' - 83'	0.0000	0.4	1	1	0.5000	0.6250		0.15
7919A(17/64)	A	No	No	Ar (CaAa)	83' - 0'	0.0000	0.42	2	2	0.2650	0.2650		0.03
7919A(17/64)	A	No	No	Ar (CaAa)	126' - 83'	0.0000	0.42	1	1	0.2650	0.2650		0.03
LDF1-50A(1/4)	A	No	No	Ar (CaAa)	61' - 0'	0.0000	0.41	1	1	0.3450	0.3450		0.06
CU12PSM9P6XXX(1-1/2)	A	No	No	Ar (CaAa)	135' - 0'	0.0000	0.35	1	1	0.5000	1.6000		2.35
** B-Face **													
Feedline Ladder (Af)	B	No	No	Af (CaAa)	148' - 0'	0.0000	-0.4	1	1	3.0000	3.0000		8.40
Feedline Ladder (Af)	B	No	No	Af (CaAa)	121' - 0'	-1.0000	-0.4	1	1	3.0000	3.0000		8.40
HJ7-50A(1-5/8)	B	No	No	Ar (CaAa)	148' - 0'	0.0000	-0.43	4	2	0.5000	1.9800		1.04
HJ7-50A(1-5/8)	B	No	No	Ar (CaAa)	148' - 0'	0.0000	-0.35	4	2	0.5000	1.9800		1.04
LDF5-50A(7/8)	B	No	No	Ar (CaAa)	148' - 0'	0.0000	-0.4	6	6	0.5000	1.0900		0.33
LDF5-50A(7/8)	B	No	No	Ar (CaAa)	83' - 0'	0.0000	-0.45	1	1	0.5000	1.0300		0.33

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
LDF2-50(3/8)	B	No	No	Ar (CaAa)	146' - 0'	-2.0000	-0.48	2	2	0.4400	0.4400		0.08
HB158-21U6S24-xxM_TMO (1-5/8)	B	No	No	Ar (CaAa)	121' - 0'	-3.0000	-0.4	3	3	0.5000	1.9960		2.50
LDF4-50A(1/2)	B	No	No	Ar (CaAa)	50' - 0'	-2.0000	0.49	1	1	0.5000	0.6250		0.15
Feedline Ladder (Af)	B	No	No	Af (CaAa)	103' - 0'	0.0000	0.4	1	1	3.0000	3.0000		8.40
HCS 6X12 4AWG(1-5/8)	B	No	No	Ar (CaAa)	103' - 0'	0.0000	0.4	6	3	0.5000	1.6600		2.40
***													

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
***								

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
T1	150'-145'	A	0.000	0.000	3.408	0.000	0.05
		B	0.000	0.000	8.302	0.000	0.06
		C	0.000	0.000	0.000	0.000	0.00
T2	145'-140'	A	0.000	0.000	3.408	0.000	0.05
		B	0.000	0.000	14.130	0.000	0.09
		C	0.000	0.000	0.000	0.000	0.00
T3	140'-120'	A	0.000	0.000	16.843	0.000	0.23
		B	0.000	0.000	57.619	0.000	0.39
		C	0.000	0.000	0.000	0.000	0.00
T4	120'-113'3-31/32"	A	0.000	0.000	6.513	0.000	0.08
		B	0.000	0.000	26.165	0.000	0.23
		C	0.000	0.000	0.000	0.000	0.00
T5	113'3-31/32"-106' 8-1/32"	A	0.000	0.000	6.513	0.000	0.08
		B	0.000	0.000	26.165	0.000	0.23
		C	0.000	0.000	0.000	0.000	0.00
T6	106'8-1/32"-100'	A	0.000	0.000	6.513	0.000	0.08
		B	0.000	0.000	30.653	0.000	0.30
		C	0.000	0.000	0.000	0.000	0.00
T7	100'-93'3-31/32"	A	0.000	0.000	6.513	0.000	0.08
		B	0.000	0.000	36.139	0.000	0.38
		C	0.000	0.000	0.000	0.000	0.00
T8	93'3-31/32"-86'8-1/32"	A	0.000	0.000	6.722	0.000	0.08
		B	0.000	0.000	36.139	0.000	0.38
		C	0.000	0.000	0.000	0.000	0.00
T9	86'8-1/32"-80'	A	0.000	0.000	7.197	0.000	0.08

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
		B	0.000	0.000	36.448	0.000	0.38
		C	0.000	0.000	0.000	0.000	0.00
T10	80'-70'	A	0.000	0.000	11.285	0.000	0.12
		B	0.000	0.000	55.588	0.000	0.58
		C	0.000	0.000	0.350	0.000	0.00
T11	70'-60'	A	0.000	0.000	11.320	0.000	0.12
		B	0.000	0.000	55.588	0.000	0.58
		C	0.000	0.000	0.350	0.000	0.00
T12	60'-50'	A	0.000	0.000	11.630	0.000	0.13
		B	0.000	0.000	55.588	0.000	0.58
		C	0.000	0.000	0.350	0.000	0.00
T13	50'-40'	A	0.000	0.000	11.630	0.000	0.13
		B	0.000	0.000	56.213	0.000	0.59
		C	0.000	0.000	0.350	0.000	0.00
T14	40'-30'	A	0.000	0.000	11.630	0.000	0.13
		B	0.000	0.000	56.213	0.000	0.59
		C	0.000	0.000	0.350	0.000	0.00
T15	30'-20'	A	0.000	0.000	11.630	0.000	0.13
		B	0.000	0.000	56.213	0.000	0.59
		C	0.000	0.000	0.350	0.000	0.00
T16	20'-10'	A	0.000	0.000	11.630	0.000	0.13
		B	0.000	0.000	56.213	0.000	0.59
		C	0.000	0.000	0.350	0.000	0.00
T17	10'-0'	A	0.000	0.000	11.630	0.000	0.13
		B	0.000	0.000	56.213	0.000	0.59
		C	0.000	0.000	0.350	0.000	0.00

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
T1	150'-145'	A	2.004	0.000	0.000	11.422	0.000	0.22
		B		0.000	0.000	17.803	0.000	0.29
		C		0.000	0.000	0.000	0.000	0.00
T2	145'-140'	A	1.997	0.000	0.000	11.394	0.000	0.22
		B		0.000	0.000	32.509	0.000	0.51
		C		0.000	0.000	0.000	0.000	0.00
T3	140'-120'	A	1.978	0.000	0.000	59.380	0.000	1.08
		B		0.000	0.000	131.912	0.000	2.09
		C		0.000	0.000	0.000	0.000	0.00
T4	120'-113'3-31/32"	A	1.957	0.000	0.000	25.006	0.000	0.41
		B		0.000	0.000	59.206	0.000	1.00
		C		0.000	0.000	0.000	0.000	0.00
T5	113'3-31/32"-106' 8-1/32"	A	1.946	0.000	0.000	24.903	0.000	0.41
		B		0.000	0.000	59.043	0.000	0.99
		C		0.000	0.000	0.000	0.000	0.00
T6	106'8-1/32"-100'	A	1.934	0.000	0.000	24.794	0.000	0.41
		B		0.000	0.000	66.217	0.000	1.17
		C		0.000	0.000	0.000	0.000	0.00
T7	100'-93'3-31/32"	A	1.921	0.000	0.000	24.678	0.000	0.40
		B		0.000	0.000	74.965	0.000	1.38
		C		0.000	0.000	0.000	0.000	0.00
T8	93'3-31/32"-86'8-1 /32"	A	1.907	0.000	0.000	25.892	0.000	0.42
		B		0.000	0.000	74.721	0.000	1.37
		C		0.000	0.000	0.000	0.000	0.00
T9	86'8-1/32"-80'	A	1.892	0.000	0.000	29.619	0.000	0.44
		B		0.000	0.000	75.905	0.000	1.38

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
		C		0.000	0.000	0.000	0.000	0.00
T10	80'-70'	A	1.873	0.000	0.000	48.706	0.000	0.67
		B		0.000	0.000	120.032	0.000	2.14
		C		0.000	0.000	4.095	0.000	0.06
T11	70'-60'	A	1.846	0.000	0.000	48.616	0.000	0.66
		B		0.000	0.000	119.215	0.000	2.12
		C		0.000	0.000	4.042	0.000	0.05
T12	60'-50'	A	1.815	0.000	0.000	51.621	0.000	0.69
		B		0.000	0.000	118.276	0.000	2.09
		C		0.000	0.000	3.981	0.000	0.05
T13	50'-40'	A	1.779	0.000	0.000	50.880	0.000	0.68
		B		0.000	0.000	121.353	0.000	2.10
		C		0.000	0.000	3.909	0.000	0.05
T14	40'-30'	A	1.735	0.000	0.000	49.974	0.000	0.66
		B		0.000	0.000	119.910	0.000	2.06
		C		0.000	0.000	3.820	0.000	0.05
T15	30'-20'	A	1.678	0.000	0.000	48.795	0.000	0.63
		B		0.000	0.000	118.034	0.000	2.00
		C		0.000	0.000	3.706	0.000	0.05
T16	20'-10'	A	1.594	0.000	0.000	47.079	0.000	0.59
		B		0.000	0.000	115.306	0.000	1.91
		C		0.000	0.000	3.538	0.000	0.04
T17	10'-0'	A	1.428	0.000	0.000	43.676	0.000	0.52
		B		0.000	0.000	109.897	0.000	1.75
		C		0.000	0.000	3.207	0.000	0.04

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
T1	150'-145'	0.7162	-14.7996	0.5572	-18.5004
T2	145'-140'	1.4526	-21.2147	1.2525	-25.8276
T3	140'-120'	1.2525	-22.6181	0.9702	-29.0249
T4	120'-113'3-31/32"	1.4766	-30.0855	1.0915	-36.8036
T5	113'3-31/32"-106'8-1/32"	1.5342	-31.3197	1.1474	-38.4255
T6	106'8-1/32"-100'	3.9584	-26.4123	3.7560	-33.8374
T7	100'-93'3-31/32"	7.2079	-25.0215	7.2900	-33.6896
T8	93'3-31/32"-86'8-1/32"	6.5937	-23.5930	6.7665	-32.5298
T9	86'8-1/32"-80'	6.6667	-24.8126	6.7394	-34.8050
T10	80'-70'	8.4695	-31.1250	7.7689	-39.5628
T11	70'-60'	7.8098	-29.3382	7.4681	-38.5957
T12	60'-50'	7.8410	-29.9799	7.4632	-40.6985
T13	50'-40'	8.5041	-30.5281	9.2673	-40.6065
T14	40'-30'	9.4866	-33.7129	10.2151	-44.4975
T15	30'-20'	8.4134	-30.5428	9.5299	-41.9412
T16	20'-10'	8.1953	-30.0041	9.5338	-42.1021
T17	10'-0'	8.1808	-30.1059	9.5618	-42.1953

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	1	Safety Line 3/8	145.00 - 150.00	0.6000	0.5793
T1	2	Step Pegs (5/8" SR) 7-in. w/30" step	145.00 - 150.00	0.6000	0.5793
T1	6	Feedline Ladder (Af)	145.00 - 150.00	0.6000	0.5793
T1	9	LDF5-50A(7/8)	145.00 - 150.00	0.6000	0.5793
T1	17	Feedline Ladder (Af)	145.00 - 148.00	0.6000	0.5793
T1	19	HJ7-50A(1-5/8)	145.00 - 148.00	0.6000	0.5793
T1	20	HJ7-50A(1-5/8)	145.00 - 148.00	0.6000	0.5793
T1	21	LDF5-50A(7/8)	145.00 - 148.00	0.6000	0.5793
T1	23	LDF2-50(3/8)	145.00 - 146.00	0.6000	0.5793
T2	1	Safety Line 3/8	140.00 - 145.00	0.6000	0.6000
T2	2	Step Pegs (5/8" SR) 7-in. w/30" step	140.00 - 145.00	0.6000	0.6000
T2	6	Feedline Ladder (Af)	140.00 - 145.00	0.6000	0.6000
T2	9	LDF5-50A(7/8)	140.00 - 145.00	0.6000	0.6000
T2	17	Feedline Ladder (Af)	140.00 - 145.00	0.6000	0.6000
T2	19	HJ7-50A(1-5/8)	140.00 - 145.00	0.6000	0.6000
T2	20	HJ7-50A(1-5/8)	140.00 - 145.00	0.6000	0.6000
T2	21	LDF5-50A(7/8)	140.00 - 145.00	0.6000	0.6000
T2	23	LDF2-50(3/8)	140.00 - 145.00	0.6000	0.6000
T3	1	Safety Line 3/8	120.00 - 140.00	0.6000	0.6000
T3	2	Step Pegs (5/8" SR) 7-in. w/30" step	120.00 - 140.00	0.6000	0.6000
T3	6	Feedline Ladder (Af)	120.00 - 140.00	0.6000	0.6000
T3	8	LDF5-50A(7/8)	120.00 - 126.00	0.6000	0.6000
T3	9	LDF5-50A(7/8)	126.00 - 140.00	0.6000	0.6000
T3	13	7919A(17/64)	120.00 - 126.00	0.6000	0.6000
T3	15	CU12PSM9P6XXX(1-1/2)	120.00 - 135.00	0.6000	0.6000
T3	17	Feedline Ladder (Af)	120.00 - 140.00	0.6000	0.6000
T3	18	Feedline Ladder (Af)	120.00 - 121.00	0.6000	0.6000
T3	19	HJ7-50A(1-5/8)	120.00 - 140.00	0.6000	0.6000
T3	20	HJ7-50A(1-5/8)	120.00 - 140.00	0.6000	0.6000
T3	21	LDF5-50A(7/8)	120.00 -	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T3	23	LDF2-50(3/8)	140.00 120.00 - 140.00	0.6000	0.6000
T3	24	HB158-21U6S24-xxM_TMO (1-5/8)	120.00 - 121.00	0.6000	0.6000
T4	1	Safety Line 3/8	113.33 - 120.00	0.6000	0.6000
T4	2	Step Pegs (5/8" SR) 7-in. w/30" step	113.33 - 120.00	0.6000	0.6000
T4	6	Feedline Ladder (Af)	113.33 - 120.00	0.6000	0.6000
T4	8	LDF5-50A(7/8)	113.33 - 120.00	0.6000	0.6000
T4	13	7919A(17/64)	113.33 - 120.00	0.6000	0.6000
T4	15	CU12PSM9P6XXX(1-1/2)	113.33 - 120.00	0.6000	0.6000
T4	17	Feedline Ladder (Af)	113.33 - 120.00	0.6000	0.6000
T4	18	Feedline Ladder (Af)	113.33 - 120.00	0.6000	0.6000
T4	19	HJ7-50A(1-5/8)	113.33 - 120.00	0.6000	0.6000
T4	20	HJ7-50A(1-5/8)	113.33 - 120.00	0.6000	0.6000
T4	21	LDF5-50A(7/8)	113.33 - 120.00	0.6000	0.6000
T4	23	LDF2-50(3/8)	113.33 - 120.00	0.6000	0.6000
T4	24	HB158-21U6S24-xxM_TMO (1-5/8)	113.33 - 120.00	0.6000	0.6000
T5	1	Safety Line 3/8	106.67 - 113.33	0.6000	0.6000
T5	2	Step Pegs (5/8" SR) 7-in. w/30" step	106.67 - 113.33	0.6000	0.6000
T5	6	Feedline Ladder (Af)	106.67 - 113.33	0.6000	0.6000
T5	8	LDF5-50A(7/8)	106.67 - 113.33	0.6000	0.6000
T5	13	7919A(17/64)	106.67 - 113.33	0.6000	0.6000
T5	15	CU12PSM9P6XXX(1-1/2)	106.67 - 113.33	0.6000	0.6000
T5	17	Feedline Ladder (Af)	106.67 - 113.33	0.6000	0.6000
T5	18	Feedline Ladder (Af)	106.67 - 113.33	0.6000	0.6000
T5	19	HJ7-50A(1-5/8)	106.67 - 113.33	0.6000	0.6000
T5	20	HJ7-50A(1-5/8)	106.67 - 113.33	0.6000	0.6000
T5	21	LDF5-50A(7/8)	106.67 - 113.33	0.6000	0.6000
T5	23	LDF2-50(3/8)	106.67 - 113.33	0.6000	0.6000
T5	24	HB158-21U6S24-xxM_TMO (1-5/8)	106.67 - 113.33	0.6000	0.6000
T6	1	Safety Line 3/8	100.00 - 106.67	0.6000	0.6000
T6	2	Step Pegs (5/8" SR) 7-in. w/30" step	100.00 - 106.67	0.6000	0.6000
T6	6	Feedline Ladder (Af)	100.00 -	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T6	8	LDF5-50A(7/8)	106.67 100.00 - 106.67	0.6000	0.6000
T6	13	7919A(17/64)	100.00 - 106.67	0.6000	0.6000
T6	15	CU12PSM9P6XXX(1-1/2)	100.00 - 106.67	0.6000	0.6000
T6	17	Feedline Ladder (Af)	100.00 - 106.67	0.6000	0.6000
T6	18	Feedline Ladder (Af)	100.00 - 106.67	0.6000	0.6000
T6	19	HJ7-50A(1-5/8)	100.00 - 106.67	0.6000	0.6000
T6	20	HJ7-50A(1-5/8)	100.00 - 106.67	0.6000	0.6000
T6	21	LDF5-50A(7/8)	100.00 - 106.67	0.6000	0.6000
T6	23	LDF2-50(3/8)	100.00 - 106.67	0.6000	0.6000
T6	24	HB158-21U6S24-xxM_TMO (1-5/8)	100.00 - 106.67	0.6000	0.6000
T6	26	Feedline Ladder (Af)	100.00 - 103.00	0.6000	0.6000
T6	27	HCS 6X12 4AWG(1-5/8)	100.00 - 103.00	0.6000	0.6000
T7	1	Safety Line 3/8	93.33 - 100.00	0.6000	0.6000
T7	2	Step Pegs (5/8" SR) 7-in. w/30" step	93.33 - 100.00	0.6000	0.6000
T7	6	Feedline Ladder (Af)	93.33 - 100.00	0.6000	0.6000
T7	8	LDF5-50A(7/8)	93.33 - 100.00	0.6000	0.6000
T7	13	7919A(17/64)	93.33 - 100.00	0.6000	0.6000
T7	15	CU12PSM9P6XXX(1-1/2)	93.33 - 100.00	0.6000	0.6000
T7	17	Feedline Ladder (Af)	93.33 - 100.00	0.6000	0.6000
T7	18	Feedline Ladder (Af)	93.33 - 100.00	0.6000	0.6000
T7	19	HJ7-50A(1-5/8)	93.33 - 100.00	0.6000	0.6000
T7	20	HJ7-50A(1-5/8)	93.33 - 100.00	0.6000	0.6000
T7	21	LDF5-50A(7/8)	93.33 - 100.00	0.6000	0.6000
T7	23	LDF2-50(3/8)	93.33 - 100.00	0.6000	0.6000
T7	24	HB158-21U6S24-xxM_TMO (1-5/8)	93.33 - 100.00	0.6000	0.6000
T7	26	Feedline Ladder (Af)	93.33 - 100.00	0.6000	0.6000
T7	27	HCS 6X12 4AWG(1-5/8)	93.33 - 100.00	0.6000	0.6000
T8	1	Safety Line 3/8	86.67 - 93.33	0.6000	0.6000
T8	2	Step Pegs (5/8" SR) 7-in. w/30" step	86.67 - 93.33	0.6000	0.6000
T8	6	Feedline Ladder (Af)	86.67 - 93.33	0.6000	0.6000
T8	8	LDF5-50A(7/8)	86.67 - 93.33	0.6000	0.6000
T8	11	LDF4-50A(1/2)	86.67 - 90.00	0.6000	0.6000
T8	13	7919A(17/64)	86.67 - 93.33	0.6000	0.6000
T8	15	CU12PSM9P6XXX(1-1/2)	86.67 - 93.33	0.6000	0.6000
T8	17	Feedline Ladder (Af)	86.67 - 93.33	0.6000	0.6000
T8	18	Feedline Ladder (Af)	86.67 - 93.33	0.6000	0.6000
T8	19	HJ7-50A(1-5/8)	86.67 - 93.33	0.6000	0.6000
T8	20	HJ7-50A(1-5/8)	86.67 - 93.33	0.6000	0.6000
T8	21	LDF5-50A(7/8)	86.67 - 93.33	0.6000	0.6000
T8	23	LDF2-50(3/8)	86.67 - 93.33	0.6000	0.6000
T8	24	HB158-21U6S24-xxM_TMO (1-5/8)	86.67 - 93.33	0.6000	0.6000
T8	26	Feedline Ladder (Af)	86.67 - 93.33	0.6000	0.6000
T8	27	HCS 6X12 4AWG(1-5/8)	86.67 - 93.33	0.6000	0.6000
T9	1	Safety Line 3/8	80.00 - 86.67	0.6000	0.6000
T9	2	Step Pegs (5/8" SR) 7-in.	80.00 - 86.67	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
		w/30" step			
T9	6	Feedline Ladder (Af)	80.00 - 86.67	0.6000	0.6000
T9	8	LDF5-50A(7/8)	80.00 - 86.67	0.6000	0.6000
T9	10	LDF4-50A(1/2)	80.00 - 83.00	0.6000	0.6000
T9	11	LDF4-50A(1/2)	83.00 - 86.67	0.6000	0.6000
T9	12	7919A(17/64)	80.00 - 83.00	0.6000	0.6000
T9	13	7919A(17/64)	83.00 - 86.67	0.6000	0.6000
T9	15	CU12PSM9P6XXX(1-1/2)	80.00 - 86.67	0.6000	0.6000
T9	17	Feedline Ladder (Af)	80.00 - 86.67	0.6000	0.6000
T9	18	Feedline Ladder (Af)	80.00 - 86.67	0.6000	0.6000
T9	19	HJ7-50A(1-5/8)	80.00 - 86.67	0.6000	0.6000
T9	20	HJ7-50A(1-5/8)	80.00 - 86.67	0.6000	0.6000
T9	21	LDF5-50A(7/8)	80.00 - 86.67	0.6000	0.6000
T9	22	LDF5-50A(7/8)	80.00 - 83.00	0.6000	0.6000
T9	23	LDF2-50(3/8)	80.00 - 86.67	0.6000	0.6000
T9	24	HB158-21U6S24-xxM_TMO (1-5/8)	80.00 - 86.67	0.6000	0.6000
T9	26	Feedline Ladder (Af)	80.00 - 86.67	0.6000	0.6000
T9	27	HCS 6X12 4AWG(1-5/8)	80.00 - 86.67	0.6000	0.6000
T10	1	Safety Line 3/8	70.00 - 80.00	0.6000	0.6000
T10	2	Step Pegs (5/8" SR) 7-in. w/30" step	70.00 - 80.00	0.6000	0.6000
T10	3	Step Pegs (5/8" SR) 7-in. w/30" step	70.00 - 80.00	0.6000	0.6000
T10	4	Step Pegs (5/8" SR) 7-in. w/30" step	70.00 - 80.00	0.6000	0.6000
T10	6	Feedline Ladder (Af)	70.00 - 80.00	0.6000	0.6000
T10	8	LDF5-50A(7/8)	70.00 - 80.00	0.6000	0.6000
T10	10	LDF4-50A(1/2)	70.00 - 80.00	0.6000	0.6000
T10	12	7919A(17/64)	70.00 - 80.00	0.6000	0.6000
T10	15	CU12PSM9P6XXX(1-1/2)	70.00 - 80.00	0.6000	0.6000
T10	17	Feedline Ladder (Af)	70.00 - 80.00	0.6000	0.6000
T10	18	Feedline Ladder (Af)	70.00 - 80.00	0.6000	0.6000
T10	19	HJ7-50A(1-5/8)	70.00 - 80.00	0.6000	0.6000
T10	20	HJ7-50A(1-5/8)	70.00 - 80.00	0.6000	0.6000
T10	21	LDF5-50A(7/8)	70.00 - 80.00	0.6000	0.6000
T10	22	LDF5-50A(7/8)	70.00 - 80.00	0.6000	0.6000
T10	23	LDF2-50(3/8)	70.00 - 80.00	0.6000	0.6000
T10	24	HB158-21U6S24-xxM_TMO (1-5/8)	70.00 - 80.00	0.6000	0.6000
T10	26	Feedline Ladder (Af)	70.00 - 80.00	0.6000	0.6000
T10	27	HCS 6X12 4AWG(1-5/8)	70.00 - 80.00	0.6000	0.6000
T11	1	Safety Line 3/8	60.00 - 70.00	0.6000	0.6000
T11	2	Step Pegs (5/8" SR) 7-in. w/30" step	60.00 - 70.00	0.6000	0.6000
T11	3	Step Pegs (5/8" SR) 7-in. w/30" step	60.00 - 70.00	0.6000	0.6000
T11	4	Step Pegs (5/8" SR) 7-in. w/30" step	60.00 - 70.00	0.6000	0.6000
T11	6	Feedline Ladder (Af)	60.00 - 70.00	0.6000	0.6000
T11	8	LDF5-50A(7/8)	60.00 - 70.00	0.6000	0.6000
T11	10	LDF4-50A(1/2)	60.00 - 70.00	0.6000	0.6000
T11	12	7919A(17/64)	60.00 - 70.00	0.6000	0.6000
T11	14	LDF1-50A(1/4)	60.00 - 61.00	0.6000	0.6000
T11	15	CU12PSM9P6XXX(1-1/2)	60.00 - 70.00	0.6000	0.6000
T11	17	Feedline Ladder (Af)	60.00 - 70.00	0.6000	0.6000
T11	18	Feedline Ladder (Af)	60.00 - 70.00	0.6000	0.6000
T11	19	HJ7-50A(1-5/8)	60.00 - 70.00	0.6000	0.6000
T11	20	HJ7-50A(1-5/8)	60.00 - 70.00	0.6000	0.6000
T11	21	LDF5-50A(7/8)	60.00 - 70.00	0.6000	0.6000
T11	22	LDF5-50A(7/8)	60.00 - 70.00	0.6000	0.6000
T11	23	LDF2-50(3/8)	60.00 - 70.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T11	24	HB158-21U6S24-xxM_TMO (1-5/8)	60.00 - 70.00	0.6000	0.6000
T11	26	Feedline Ladder (Af)	60.00 - 70.00	0.6000	0.6000
T11	27	HCS 6X12 4AWG(1-5/8)	60.00 - 70.00	0.6000	0.6000
T12	1	Safety Line 3/8	50.00 - 60.00	0.6000	0.6000
T12	2	Step Pegs (5/8" SR) 7-in. w/30" step	50.00 - 60.00	0.6000	0.6000
T12	3	Step Pegs (5/8" SR) 7-in. w/30" step	50.00 - 60.00	0.6000	0.6000
T12	4	Step Pegs (5/8" SR) 7-in. w/30" step	50.00 - 60.00	0.6000	0.6000
T12	6	Feedline Ladder (Af)	50.00 - 60.00	0.6000	0.6000
T12	8	LDF5-50A(7/8)	50.00 - 60.00	0.6000	0.6000
T12	10	LDF4-50A(1/2)	50.00 - 60.00	0.6000	0.6000
T12	12	7919A(17/64)	50.00 - 60.00	0.6000	0.6000
T12	14	LDF1-50A(1/4)	50.00 - 60.00	0.6000	0.6000
T12	15	CU12PSM9P6XXX(1-1/2)	50.00 - 60.00	0.6000	0.6000
T12	17	Feedline Ladder (Af)	50.00 - 60.00	0.6000	0.6000
T12	18	Feedline Ladder (Af)	50.00 - 60.00	0.6000	0.6000
T12	19	HJ7-50A(1-5/8)	50.00 - 60.00	0.6000	0.6000
T12	20	HJ7-50A(1-5/8)	50.00 - 60.00	0.6000	0.6000
T12	21	LDF5-50A(7/8)	50.00 - 60.00	0.6000	0.6000
T12	22	LDF5-50A(7/8)	50.00 - 60.00	0.6000	0.6000
T12	23	LDF2-50(3/8)	50.00 - 60.00	0.6000	0.6000
T12	24	HB158-21U6S24-xxM_TMO (1-5/8)	50.00 - 60.00	0.6000	0.6000
T12	26	Feedline Ladder (Af)	50.00 - 60.00	0.6000	0.6000
T12	27	HCS 6X12 4AWG(1-5/8)	50.00 - 60.00	0.6000	0.6000
T13	1	Safety Line 3/8	40.00 - 50.00	0.6000	0.6000
T13	2	Step Pegs (5/8" SR) 7-in. w/30" step	40.00 - 50.00	0.6000	0.6000
T13	3	Step Pegs (5/8" SR) 7-in. w/30" step	40.00 - 50.00	0.6000	0.6000
T13	4	Step Pegs (5/8" SR) 7-in. w/30" step	40.00 - 50.00	0.6000	0.6000
T13	6	Feedline Ladder (Af)	40.00 - 50.00	0.6000	0.6000
T13	8	LDF5-50A(7/8)	40.00 - 50.00	0.6000	0.6000
T13	10	LDF4-50A(1/2)	40.00 - 50.00	0.6000	0.6000
T13	12	7919A(17/64)	40.00 - 50.00	0.6000	0.6000
T13	14	LDF1-50A(1/4)	40.00 - 50.00	0.6000	0.6000
T13	15	CU12PSM9P6XXX(1-1/2)	40.00 - 50.00	0.6000	0.6000
T13	17	Feedline Ladder (Af)	40.00 - 50.00	0.6000	0.6000
T13	18	Feedline Ladder (Af)	40.00 - 50.00	0.6000	0.6000
T13	19	HJ7-50A(1-5/8)	40.00 - 50.00	0.6000	0.6000
T13	20	HJ7-50A(1-5/8)	40.00 - 50.00	0.6000	0.6000
T13	21	LDF5-50A(7/8)	40.00 - 50.00	0.6000	0.6000
T13	22	LDF5-50A(7/8)	40.00 - 50.00	0.6000	0.6000
T13	23	LDF2-50(3/8)	40.00 - 50.00	0.6000	0.6000
T13	24	HB158-21U6S24-xxM_TMO (1-5/8)	40.00 - 50.00	0.6000	0.6000
T13	25	LDF4-50A(1/2)	40.00 - 50.00	0.6000	0.6000
T13	26	Feedline Ladder (Af)	40.00 - 50.00	0.6000	0.6000
T13	27	HCS 6X12 4AWG(1-5/8)	40.00 - 50.00	0.6000	0.6000
T14	1	Safety Line 3/8	30.00 - 40.00	0.6000	0.6000
T14	2	Step Pegs (5/8" SR) 7-in. w/30" step	30.00 - 40.00	0.6000	0.6000
T14	3	Step Pegs (5/8" SR) 7-in. w/30" step	30.00 - 40.00	0.6000	0.6000
T14	4	Step Pegs (5/8" SR) 7-in. w/30" step	30.00 - 40.00	0.6000	0.6000
T14	6	Feedline Ladder (Af)	30.00 - 40.00	0.6000	0.6000
T14	8	LDF5-50A(7/8)	30.00 - 40.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T14	10	LDF4-50A(1/2)	30.00 - 40.00	0.6000	0.6000
T14	12	7919A(17/64)	30.00 - 40.00	0.6000	0.6000
T14	14	LDF1-50A(1/4)	30.00 - 40.00	0.6000	0.6000
T14	15	CU12PSM9P6XXX(1-1/2)	30.00 - 40.00	0.6000	0.6000
T14	17	Feedline Ladder (Af)	30.00 - 40.00	0.6000	0.6000
T14	18	Feedline Ladder (Af)	30.00 - 40.00	0.6000	0.6000
T14	19	HJ7-50A(1-5/8)	30.00 - 40.00	0.6000	0.6000
T14	20	HJ7-50A(1-5/8)	30.00 - 40.00	0.6000	0.6000
T14	21	LDF5-50A(7/8)	30.00 - 40.00	0.6000	0.6000
T14	22	LDF5-50A(7/8)	30.00 - 40.00	0.6000	0.6000
T14	23	LDF2-50(3/8)	30.00 - 40.00	0.6000	0.6000
T14	24	HB158-21U6S24-xxM_TMO (1-5/8)	30.00 - 40.00	0.6000	0.6000
T14	25	LDF4-50A(1/2)	30.00 - 40.00	0.6000	0.6000
T14	26	Feedline Ladder (Af)	30.00 - 40.00	0.6000	0.6000
T14	27	HCS 6X12 4AWG(1-5/8)	30.00 - 40.00	0.6000	0.6000
T15	1	Safety Line 3/8	20.00 - 30.00	0.6000	0.6000
T15	2	Step Pegs (5/8" SR) 7-in. w/30" step	20.00 - 30.00	0.6000	0.6000
T15	3	Step Pegs (5/8" SR) 7-in. w/30" step	20.00 - 30.00	0.6000	0.6000
T15	4	Step Pegs (5/8" SR) 7-in. w/30" step	20.00 - 30.00	0.6000	0.6000
T15	6	Feedline Ladder (Af)	20.00 - 30.00	0.6000	0.6000
T15	8	LDF5-50A(7/8)	20.00 - 30.00	0.6000	0.6000
T15	10	LDF4-50A(1/2)	20.00 - 30.00	0.6000	0.6000
T15	12	7919A(17/64)	20.00 - 30.00	0.6000	0.6000
T15	14	LDF1-50A(1/4)	20.00 - 30.00	0.6000	0.6000
T15	15	CU12PSM9P6XXX(1-1/2)	20.00 - 30.00	0.6000	0.6000
T15	17	Feedline Ladder (Af)	20.00 - 30.00	0.6000	0.6000
T15	18	Feedline Ladder (Af)	20.00 - 30.00	0.6000	0.6000
T15	19	HJ7-50A(1-5/8)	20.00 - 30.00	0.6000	0.6000
T15	20	HJ7-50A(1-5/8)	20.00 - 30.00	0.6000	0.6000
T15	21	LDF5-50A(7/8)	20.00 - 30.00	0.6000	0.6000
T15	22	LDF5-50A(7/8)	20.00 - 30.00	0.6000	0.6000
T15	23	LDF2-50(3/8)	20.00 - 30.00	0.6000	0.6000
T15	24	HB158-21U6S24-xxM_TMO (1-5/8)	20.00 - 30.00	0.6000	0.6000
T15	25	LDF4-50A(1/2)	20.00 - 30.00	0.6000	0.6000
T15	26	Feedline Ladder (Af)	20.00 - 30.00	0.6000	0.6000
T15	27	HCS 6X12 4AWG(1-5/8)	20.00 - 30.00	0.6000	0.6000
T16	1	Safety Line 3/8	10.00 - 20.00	0.6000	0.6000
T16	2	Step Pegs (5/8" SR) 7-in. w/30" step	10.00 - 20.00	0.6000	0.6000
T16	3	Step Pegs (5/8" SR) 7-in. w/30" step	10.00 - 20.00	0.6000	0.6000
T16	4	Step Pegs (5/8" SR) 7-in. w/30" step	10.00 - 20.00	0.6000	0.6000
T16	6	Feedline Ladder (Af)	10.00 - 20.00	0.6000	0.6000
T16	8	LDF5-50A(7/8)	10.00 - 20.00	0.6000	0.6000
T16	10	LDF4-50A(1/2)	10.00 - 20.00	0.6000	0.6000
T16	12	7919A(17/64)	10.00 - 20.00	0.6000	0.6000
T16	14	LDF1-50A(1/4)	10.00 - 20.00	0.6000	0.6000
T16	15	CU12PSM9P6XXX(1-1/2)	10.00 - 20.00	0.6000	0.6000
T16	17	Feedline Ladder (Af)	10.00 - 20.00	0.6000	0.6000
T16	18	Feedline Ladder (Af)	10.00 - 20.00	0.6000	0.6000
T16	19	HJ7-50A(1-5/8)	10.00 - 20.00	0.6000	0.6000
T16	20	HJ7-50A(1-5/8)	10.00 - 20.00	0.6000	0.6000
T16	21	LDF5-50A(7/8)	10.00 - 20.00	0.6000	0.6000
T16	22	LDF5-50A(7/8)	10.00 - 20.00	0.6000	0.6000
T16	23	LDF2-50(3/8)	10.00 - 20.00	0.6000	0.6000
T16	24	HB158-21U6S24-xxM_TMO	10.00 - 20.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
		(1-5/8)			
T16	25	LDF4-50A(1/2)	10.00 - 20.00	0.6000	0.6000
T16	26	Feedline Ladder (Af)	10.00 - 20.00	0.6000	0.6000
T16	27	HCS 6X12 4AWG(1-5/8)	10.00 - 20.00	0.6000	0.6000
T17	1	Safety Line 3/8	0.00 - 10.00	0.6000	0.6000
T17	2	Step Pegs (5/8" SR) 7-in. w/30" step	0.00 - 10.00	0.6000	0.6000
T17	3	Step Pegs (5/8" SR) 7-in. w/30" step	0.00 - 10.00	0.6000	0.6000
T17	4	Step Pegs (5/8" SR) 7-in. w/30" step	0.00 - 10.00	0.6000	0.6000
T17	6	Feedline Ladder (Af)	0.00 - 10.00	0.6000	0.6000
T17	8	LDF5-50A(7/8)	0.00 - 10.00	0.6000	0.6000
T17	10	LDF4-50A(1/2)	0.00 - 10.00	0.6000	0.6000
T17	12	7919A(17/64)	0.00 - 10.00	0.6000	0.6000
T17	14	LDF1-50A(1/4)	0.00 - 10.00	0.6000	0.6000
T17	15	CU12PSM9P6XXX(1-1/2)	0.00 - 10.00	0.6000	0.6000
T17	17	Feedline Ladder (Af)	0.00 - 10.00	0.6000	0.6000
T17	18	Feedline Ladder (Af)	0.00 - 10.00	0.6000	0.6000
T17	19	HJ7-50A(1-5/8)	0.00 - 10.00	0.6000	0.6000
T17	20	HJ7-50A(1-5/8)	0.00 - 10.00	0.6000	0.6000
T17	21	LDF5-50A(7/8)	0.00 - 10.00	0.6000	0.6000
T17	22	LDF5-50A(7/8)	0.00 - 10.00	0.6000	0.6000
T17	23	LDF2-50(3/8)	0.00 - 10.00	0.6000	0.6000
T17	24	HB158-21U6S24-xxM_TMO (1-5/8)	0.00 - 10.00	0.6000	0.6000
T17	25	LDF4-50A(1/2)	0.00 - 10.00	0.6000	0.6000
T17	26	Feedline Ladder (Af)	0.00 - 10.00	0.6000	0.6000
T17	27	HCS 6X12 4AWG(1-5/8)	0.00 - 10.00	0.6000	0.6000

Discrete Tower Loads

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
150									
ANT150F2	A	From Leg	1.00 0' 7'	0.0000	150'	No Ice 1/2" Ice 1" Ice 2" Ice	1.23 1.53 1.84 2.49	1.23 1.53 1.84 2.49	0.01 0.02 0.04 0.07
PTP 400	A	From Leg	1.00 0' 2'	0.0000	150'	No Ice 1/2" Ice 1" Ice 2" Ice	1.75 1.92 2.09 2.46	0.48 0.58 0.69 0.92	0.01 0.02 0.04 0.07
2.5 STD 5' Pipe	A	From Leg	0.50 0' 2'6"	0.0000	150'	No Ice 1/2" Ice 1" Ice 2" Ice	1.19 1.50 1.83 2.54	1.19 1.50 1.83 2.54	0.00 0.00 0.00 0.00
2.5 STD 5' Pipe	B	From Leg	0.50 0' 2'6"	0.0000	150'	No Ice 1/2" Ice 1" Ice	1.19 1.50 1.83	1.19 1.50 1.83	0.00 0.00 0.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						2" Ice	2.54	2.54	0.00
148									
(2) HBXX-6517DS-A2M w/ Mount Pipe	A	From Face	4.00 0' 1'	0.0000	148'	No Ice 1/2" Ice 1" Ice 2" Ice	7.97 8.73 9.50 11.11	5.99 6.72 7.47 9.02	0.08 0.14 0.22 0.40
(2) HBXX-6517DS-A2M w/ Mount Pipe	C	From Face	4.00 0' 1'	0.0000	148'	No Ice 1/2" Ice 1" Ice 2" Ice	7.97 8.73 9.50 11.11	5.99 6.72 7.47 9.02	0.08 0.14 0.22 0.40
QUAD656C0000X w/ Mount Pipe	A	From Face	4.00 0' 1'	0.0000	148'	No Ice 1/2" Ice 1" Ice 2" Ice	13.90 14.77 15.64 17.46	6.62 7.39 8.17 9.78	0.10 0.18 0.28 0.52
QUAD656C0000X w/ Mount Pipe	B	From Face	4.00 0' 1'	0.0000	148'	No Ice 1/2" Ice 1" Ice 2" Ice	13.90 14.77 15.64 17.46	6.62 7.39 8.17 9.78	0.10 0.18 0.28 0.52
QUAD656C0000X w/ Mount Pipe	C	From Face	4.00 0' 1'	0.0000	148'	No Ice 1/2" Ice 1" Ice 2" Ice	13.90 14.77 15.64 17.46	6.62 7.39 8.17 9.78	0.10 0.18 0.28 0.52
LNX-6514DS-AIM w/ Mount Pipe	A	From Face	4.00 0' 1'	0.0000	148'	No Ice 1/2" Ice 1" Ice 2" Ice	4.09 4.49 4.89 5.71	3.30 3.68 4.06 4.87	0.06 0.13 0.20 0.38
LNX-6514DS-AIM w/ Mount Pipe	B	From Face	4.00 0' 1'	0.0000	148'	No Ice 1/2" Ice 1" Ice 2" Ice	4.09 4.49 4.89 5.71	3.30 3.68 4.06 4.87	0.06 0.13 0.20 0.38
LNX-6514DS-AIM w/ Mount Pipe	C	From Face	4.00 0' 1'	0.0000	148'	No Ice 1/2" Ice 1" Ice 2" Ice	4.09 4.49 4.89 5.71	3.30 3.68 4.06 4.87	0.06 0.13 0.20 0.38
(2) JAHH-65B-R3B w/ Mount Pipe	B	From Face	4.00 0' 1'	0.0000	148'	No Ice 1/2" Ice 1" Ice 2" Ice	5.50 5.97 6.45 7.44	4.38 4.84 5.30 6.26	0.10 0.17 0.25 0.46
B25 RRH4X30 (UHFA)	A	From Face	4.00 0' 1'	0.0000	148'	No Ice 1/2" Ice 1" Ice 2" Ice	2.11 2.30 2.50 2.91	1.29 1.45 1.61 1.96	0.05 0.07 0.09 0.14
B25 RRH4X30 (UHFA)	B	From Face	4.00 0' 1'	0.0000	148'	No Ice 1/2" Ice 1" Ice 2" Ice	2.11 2.30 2.50 2.91	1.29 1.45 1.61 1.96	0.05 0.07 0.09 0.14
B25 RRH4X30 (UHFA)	C	From Face	4.00 0' 1'	0.0000	148'	No Ice 1/2" Ice 1" Ice 2" Ice	2.11 2.30 2.50 2.91	1.29 1.45 1.61 1.96	0.05 0.07 0.09 0.14
RFV01U-D1A	A	From Face	4.00 0' 1'	0.0000	148'	No Ice 1/2" Ice 1" Ice 2" Ice	1.88 2.05 2.22 2.60	1.25 1.39 1.54 1.86	0.08 0.10 0.12 0.18
RFV01U-D1A	B	From Face	4.00 0' 1'	0.0000	148'	No Ice 1/2" Ice 1" Ice	1.88 2.05 2.22	1.25 1.39 1.54	0.08 0.10 0.12

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	2.60	1.86	0.18
RFV01U-D1A	C	From Face	4.00 0' 1'	0.0000	148'	No Ice 1/2" Ice 1" Ice 2" Ice	1.88 2.05 2.22 2.60	1.25 1.39 1.54 1.86	0.08 0.10 0.12 0.18
B66A RRH4X45 (UHIE)	A	From Face	4.00 0' 1'	0.0000	148'	No Ice 1/2" Ice 1" Ice 2" Ice	2.54 2.75 2.97 3.43	1.61 1.79 1.98 2.37	0.06 0.08 0.10 0.16
B66A RRH4X45 (UHIE)	B	From Face	4.00 0' 1'	0.0000	148'	No Ice 1/2" Ice 1" Ice 2" Ice	2.54 2.75 2.97 3.43	1.61 1.79 1.98 2.37	0.06 0.08 0.10 0.16
B66A RRH4X45 (UHIE)	C	From Face	4.00 0' 1'	0.0000	148'	No Ice 1/2" Ice 1" Ice 2" Ice	2.54 2.75 2.97 3.43	1.61 1.79 1.98 2.37	0.06 0.08 0.10 0.16
DB-B1-6C-12AB-0Z	A	From Face	4.00 0' 1'	0.0000	148'	No Ice 1/2" Ice 1" Ice 2" Ice	3.79 4.04 4.30 4.84	2.51 2.73 2.95 3.42	0.03 0.06 0.10 0.18
DB-B1-6C-12AB-0Z	C	From Face	4.00 0' 1'	0.0000	148'	No Ice 1/2" Ice 1" Ice 2" Ice	3.79 4.04 4.30 4.84	2.51 2.73 2.95 3.42	0.03 0.06 0.10 0.18
CBC1923T-DS-43	B	From Face	4.00 0' 1'	0.0000	148'	No Ice 1/2" Ice 1" Ice 2" Ice	0.32 0.39 0.47 0.66	0.23 0.30 0.37 0.54	0.01 0.01 0.02 0.03
Sector Mount [SM 510-3]	C	None		0.0000	148'	No Ice 1/2" Ice 1" Ice 2" Ice	39.97 56.45 72.59 104.06	39.97 56.45 72.59 104.06	2.40 3.08 3.96 6.30
146 WV-CW864	A	From Leg	1.00 0' -1'	0.0000	146'	No Ice 1/2" Ice 1" Ice 2" Ice	0.80 1.44 2.08 3.36	0.80 1.44 2.08 3.36	0.01 0.01 0.02 0.02
135 MX08FRO665-21 w/ Mount Pipe	A	From Leg	4.00 0' 0'	0.0000	135'	No Ice 1/2" 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' 0'	0.0000	135'	No Ice 1/2" 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' 0'	0.0000	135'	No Ice 1/2" 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
TA08025-B604	A	From Leg	4.00 0' 0'	0.0000	135'	No Ice 1/2" Ice 1" Ice 2" Ice	1.96 2.14 2.32 2.71	0.98 1.11 1.25 1.55	0.06 0.08 0.10 0.15
TA08025-B604	B	From Leg	4.00 0'	0.0000	135'	No Ice 1/2" Ice	1.96 2.14	0.98 1.11	0.06 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'			1" Ice	2.32	1.25	0.10
						2" Ice	2.71	1.55	0.15
TA08025-B604	C	From Leg	4.00	0.0000	135'	No Ice	1.96	0.98	0.06
			0'			1/2" Ice	2.14	1.11	0.08
			0'			1" Ice	2.32	1.25	0.10
						2" Ice	2.71	1.55	0.15
TA08025-B605	A	From Leg	4.00	0.0000	135'	No Ice	1.96	1.13	0.08
			0'			1/2" Ice	2.14	1.27	0.09
			0'			1" Ice	2.32	1.41	0.11
						2" Ice	2.71	1.72	0.16
TA08025-B605	B	From Leg	4.00	0.0000	135'	No Ice	1.96	1.13	0.08
			0'			1/2" Ice	2.14	1.27	0.09
			0'			1" Ice	2.32	1.41	0.11
						2" Ice	2.71	1.72	0.16
TA08025-B605	C	From Leg	4.00	0.0000	135'	No Ice	1.96	1.13	0.08
			0'			1/2" Ice	2.14	1.27	0.09
			0'			1" Ice	2.32	1.41	0.11
						2" Ice	2.71	1.72	0.16
RDIDC-9181-PF-48	A	From Leg	4.00	0.0000	135'	No Ice	2.01	1.17	0.02
			0'			1/2" Ice	2.19	1.31	0.04
			0'			1" Ice	2.37	1.46	0.06
						2" Ice	2.76	1.78	0.11
(2) 2.4" Dia x 8-ft Mount Pipe	A	From Leg	4.00	0.0000	135'	No Ice	1.90	1.90	0.03
			0'			1/2" Ice	2.73	2.73	0.04
			0'			1" Ice	3.40	3.40	0.06
						2" Ice	4.40	4.40	0.12
(2) 2.4" Dia x 8-ft Mount Pipe	B	From Leg	4.00	0.0000	135'	No Ice	1.90	1.90	0.03
			0'			1/2" Ice	2.73	2.73	0.04
			0'			1" Ice	3.40	3.40	0.06
						2" Ice	4.40	4.40	0.12
(2) 2.4" Dia x 8-ft Mount Pipe	C	From Leg	4.00	0.0000	135'	No Ice	1.90	1.90	0.03
			0'			1/2" Ice	2.73	2.73	0.04
			0'			1" Ice	3.40	3.40	0.06
						2" Ice	4.40	4.40	0.12
Commscope MTC3975083 (3)	C	None		0.0000	135'	No Ice	23.85	23.85	1.26
						1/2" Ice	34.12	34.12	1.80
						1" Ice	44.39	44.39	2.35
						2" Ice	64.93	64.93	3.43
126									
BCD-87010-EDIN-X	A	From Leg	3.00	0.0000	126'	No Ice	2.90	2.90	0.03
			0'			1/2" Ice	4.05	4.05	0.05
			4'			1" Ice	5.21	5.21	0.08
						2" Ice	7.01	7.01	0.16
PTP 400	A	From Leg	3.00	0.0000	126'	No Ice	1.75	0.48	0.01
			0'			1/2" Ice	1.92	0.58	0.02
			-1'			1" Ice	2.09	0.69	0.04
						2" Ice	2.46	0.92	0.07
SC614	A	From Leg	3.00	0.0000	126'	No Ice	0.00	0.00	0.00
			0'			1/2" Ice	0.00	0.00	0.00
			4'			1" Ice	0.00	0.00	0.00
						2" Ice	0.00	0.00	0.00
Side Arm Mount [SO 305-1]	A	From Leg	1.50	0.0000	126'	No Ice	0.53	1.52	0.03
			0'			1/2" Ice	0.78	2.07	0.04
			0'			1" Ice	1.06	2.66	0.06
						2" Ice	1.73	3.91	0.13
121									
AIR6449 B41_T-MOBILE	A	From Leg	4.00	0.0000	121'	No Ice	5.19	2.71	0.13

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
w/ Mount Pipe			0'			1/2" Ice	5.59	3.04	0.17
			1'			1" Ice	6.02	3.38	0.23
						2" Ice	6.90	4.12	0.35
AIR6449 B41_T-MOBILE	B	From Leg	4.00	0.0000	121'	No Ice	5.19	2.71	0.13
w/ Mount Pipe			0'			1/2" Ice	5.59	3.04	0.17
			1'			1" Ice	6.02	3.38	0.23
						2" Ice	6.90	4.12	0.35
AIR6449 B41_T-MOBILE	C	From Leg	4.00	0.0000	121'	No Ice	5.19	2.71	0.13
w/ Mount Pipe			0'			1/2" Ice	5.59	3.04	0.17
			1'			1" Ice	6.02	3.38	0.23
						2" Ice	6.90	4.12	0.35
APXVAALL24_43-U-NA20	A	From Leg	4.00	0.0000	121'	No Ice	14.69	6.87	0.18
_TMO w/ Mount Pipe			0'			1/2" Ice	15.46	7.55	0.31
			1'			1" Ice	16.23	8.25	0.45
						2" Ice	17.82	9.67	0.78
APXVAALL24_43-U-NA20	B	From Leg	4.00	0.0000	121'	No Ice	14.69	6.87	0.18
_TMO w/ Mount Pipe			0'			1/2" Ice	15.46	7.55	0.31
			1'			1" Ice	16.23	8.25	0.45
						2" Ice	17.82	9.67	0.78
APXVAALL24_43-U-NA20	C	From Leg	4.00	0.0000	121'	No Ice	14.69	6.87	0.18
_TMO w/ Mount Pipe			0'			1/2" Ice	15.46	7.55	0.31
			1'			1" Ice	16.23	8.25	0.45
						2" Ice	17.82	9.67	0.78
APX16DWV-16DWV-S-E-A	A	From Leg	4.00	0.0000	121'	No Ice	6.29	2.76	0.06
20 w/ Mount Pipe			0'			1/2" Ice	6.86	3.27	0.11
			1'			1" Ice	7.45	3.79	0.16
						2" Ice	8.68	4.90	0.29
APX16DWV-16DWV-S-E-A	B	From Leg	4.00	0.0000	121'	No Ice	6.29	2.76	0.06
20 w/ Mount Pipe			0'			1/2" Ice	6.86	3.27	0.11
			1'			1" Ice	7.45	3.79	0.16
						2" Ice	8.68	4.90	0.29
APX16DWV-16DWV-S-E-A	C	From Leg	4.00	0.0000	121'	No Ice	6.29	2.76	0.06
20 w/ Mount Pipe			0'			1/2" Ice	6.86	3.27	0.11
			1'			1" Ice	7.45	3.79	0.16
						2" Ice	8.68	4.90	0.29
RADIO 4415 B66A_CCIV3	A	From Leg	4.00	0.0000	121'	No Ice	1.64	0.68	0.05
			0'			1/2" Ice	1.80	0.79	0.06
			1'			1" Ice	1.97	0.91	0.07
						2" Ice	2.32	1.18	0.11
RADIO 4415 B66A_CCIV3	B	From Leg	4.00	0.0000	121'	No Ice	1.64	0.68	0.05
			0'			1/2" Ice	1.80	0.79	0.06
			1'			1" Ice	1.97	0.91	0.07
						2" Ice	2.32	1.18	0.11
RADIO 4415 B66A_CCIV3	C	From Leg	4.00	0.0000	121'	No Ice	1.64	0.68	0.05
			0'			1/2" Ice	1.80	0.79	0.06
			1'			1" Ice	1.97	0.91	0.07
						2" Ice	2.32	1.18	0.11
RADIO 4424 B25_TMOV1	A	From Leg	4.00	0.0000	121'	No Ice	2.05	1.61	0.10
			0'			1/2" Ice	2.23	1.77	0.12
			1'			1" Ice	2.42	1.94	0.14
						2" Ice	2.81	2.30	0.20
RADIO 4424 B25_TMOV1	B	From Leg	4.00	0.0000	121'	No Ice	2.05	1.61	0.10
			0'			1/2" Ice	2.23	1.77	0.12
			1'			1" Ice	2.42	1.94	0.14
						2" Ice	2.81	2.30	0.20
RADIO 4424 B25_TMOV1	C	From Leg	4.00	0.0000	121'	No Ice	2.05	1.61	0.10
			0'			1/2" Ice	2.23	1.77	0.12

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'			1" Ice	2.42	1.94	0.14
						2" Ice	2.81	2.30	0.20
RADIO 4449 B71	A	From Leg	4.00	0.0000	121'	No Ice	1.97	1.59	0.07
B85A_T-MOBILE			0'			1/2" Ice	2.15	1.75	0.09
			1'			1" Ice	2.33	1.92	0.12
						2" Ice	2.72	2.28	0.17
RADIO 4449 B71	B	From Leg	4.00	0.0000	121'	No Ice	1.97	1.59	0.07
B85A_T-MOBILE			0'			1/2" Ice	2.15	1.75	0.09
			1'			1" Ice	2.33	1.92	0.12
						2" Ice	2.72	2.28	0.17
RADIO 4449 B71	C	From Leg	4.00	0.0000	121'	No Ice	1.97	1.59	0.07
B85A_T-MOBILE			0'			1/2" Ice	2.15	1.75	0.09
			1'			1" Ice	2.33	1.92	0.12
						2" Ice	2.72	2.28	0.17
Sector Mount [SM 505-3]	C	None		0.0000	121'	No Ice	31.66	31.66	1.73
						1/2" Ice	44.64	44.64	2.36
						1" Ice	57.44	57.44	3.19
						2" Ice	82.68	82.68	5.45
103									
APXVAARR24_43-U-NA20	A	From Leg	4.00	0.0000	103'	No Ice	14.69	6.87	0.19
w/ Mount Pipe			0'			1/2" Ice	15.46	7.55	0.31
			0'			1" Ice	16.23	8.25	0.46
						2" Ice	17.82	9.67	0.79
APXVAARR24_43-U-NA20	B	From Leg	4.00	0.0000	103'	No Ice	14.69	6.87	0.19
w/ Mount Pipe			0'			1/2" Ice	15.46	7.55	0.31
			0'			1" Ice	16.23	8.25	0.46
						2" Ice	17.82	9.67	0.79
APXVAARR24_43-U-NA20	C	From Leg	4.00	0.0000	103'	No Ice	14.69	6.87	0.19
w/ Mount Pipe			0'			1/2" Ice	15.46	7.55	0.31
			0'			1" Ice	16.23	8.25	0.46
						2" Ice	17.82	9.67	0.79
AIR6449 B41_T-MOBILE	A	From Leg	4.00	0.0000	103'	No Ice	5.19	2.71	0.13
w/ Mount Pipe			0'			1/2" Ice	5.59	3.04	0.17
			0'			1" Ice	6.02	3.38	0.23
						2" Ice	6.90	4.12	0.35
AIR6449 B41_T-MOBILE	B	From Leg	4.00	0.0000	103'	No Ice	5.19	2.71	0.13
w/ Mount Pipe			0'			1/2" Ice	5.59	3.04	0.17
			0'			1" Ice	6.02	3.38	0.23
						2" Ice	6.90	4.12	0.35
AIR6449 B41_T-MOBILE	C	From Leg	4.00	0.0000	103'	No Ice	5.19	2.71	0.13
w/ Mount Pipe			0'			1/2" Ice	5.59	3.04	0.17
			0'			1" Ice	6.02	3.38	0.23
						2" Ice	6.90	4.12	0.35
AIR 32 B2A	A	From Leg	4.00	0.0000	103'	No Ice	3.76	3.15	0.19
B66AA_T-MOBILE w/			0'			1/2" Ice	4.12	3.49	0.25
Mount Pipe			0'			1" Ice	4.48	3.84	0.32
						2" Ice	5.24	4.58	0.48
AIR 32 B2A	B	From Leg	4.00	0.0000	103'	No Ice	3.76	3.15	0.19
B66AA_T-MOBILE w/			0'			1/2" Ice	4.12	3.49	0.25
Mount Pipe			0'			1" Ice	4.48	3.84	0.32
						2" Ice	5.24	4.58	0.48
AIR 32 B2A	C	From Leg	4.00	0.0000	103'	No Ice	3.76	3.15	0.19
B66AA_T-MOBILE w/			0'			1/2" Ice	4.12	3.49	0.25
Mount Pipe			0'			1" Ice	4.48	3.84	0.32
						2" Ice	5.24	4.58	0.48
RADIO 4449 B71	A	From Leg	4.00	0.0000	103'	No Ice	1.97	1.59	0.07
B85A_T-MOBILE			0'			1/2" Ice	2.15	1.75	0.09

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0'			1" Ice	2.33	1.92	0.12
						2" Ice	2.72	2.28	0.17
RADIO 4449 B71	B	From Leg	4.00	0.0000	103'	No Ice	1.97	1.59	0.07
B85A_T-MOBILE			0'			1/2" Ice	2.15	1.75	0.09
			0'			1" Ice	2.33	1.92	0.12
						2" Ice	2.72	2.28	0.17
RADIO 4449 B71	C	From Leg	4.00	0.0000	103'	No Ice	1.97	1.59	0.07
B85A_T-MOBILE			0'			1/2" Ice	2.15	1.75	0.09
			0'			1" Ice	2.33	1.92	0.12
						2" Ice	2.72	2.28	0.17
RRUS 4415 B25	A	From Leg	4.00	0.0000	103'	No Ice	1.64	0.68	0.04
			0'			1/2" Ice	1.80	0.79	0.06
			0'			1" Ice	1.97	0.91	0.07
						2" Ice	2.33	1.18	0.11
RRUS 4415 B25	B	From Leg	4.00	0.0000	103'	No Ice	1.64	0.68	0.04
			0'			1/2" Ice	1.80	0.79	0.06
			0'			1" Ice	1.97	0.91	0.07
						2" Ice	2.33	1.18	0.11
RRUS 4415 B25	C	From Leg	4.00	0.0000	103'	No Ice	1.64	0.68	0.04
			0'			1/2" Ice	1.80	0.79	0.06
			0'			1" Ice	1.97	0.91	0.07
						2" Ice	2.33	1.18	0.11
Sector Mount [SM 701-3]	C	None		0.0000	103'	No Ice	19.16	19.16	0.82
						1/2" Ice	25.62	25.62	1.17
						1" Ice	32.19	32.19	1.61
						2" Ice	45.91	45.91	2.79
Pipe Mount [PM 601-3]	C	None		0.0000	103'	No Ice	3.17	3.17	0.20
						1/2" Ice	3.79	3.79	0.23
						1" Ice	4.42	4.42	0.28
						2" Ice	5.76	5.76	0.40
90									
ANT150F2	B	From Leg	4.00	0.0000	90'	No Ice	1.23	1.23	0.01
			0'			1/2" Ice	1.53	1.53	0.02
			3'			1" Ice	1.84	1.84	0.04
						2" Ice	2.49	2.49	0.07
2.4" x 6' Stabilizer	B	From Leg	4.00	0.0000	90'	No Ice	1.44	1.44	0.02
			0'			1/2" Ice	1.93	1.93	0.03
			0'			1" Ice	2.30	2.30	0.05
						2" Ice	3.07	3.07	0.09
Side Arm Mount [SO 302-1]	B	From Leg	2.00	0.0000	90'	No Ice	0.81	3.31	0.06
			0'			1/2" Ice	1.30	5.00	0.08
			0'			1" Ice	1.81	6.80	0.12
						2" Ice	2.91	10.99	0.23
83									
ANT150D3	A	From Leg	3.00	0.0000	83'	No Ice	1.60	1.60	0.01
			0'			1/2" Ice	3.20	3.20	0.02
			7'			1" Ice	4.80	4.80	0.03
						2" Ice	8.00	8.00	0.05
PTP 400	A	From Leg	3.00	0.0000	83'	No Ice	1.75	0.48	0.01
			0'			1/2" Ice	1.92	0.58	0.02
			12'			1" Ice	2.09	0.69	0.04
						2" Ice	2.46	0.92	0.07
ANT940F10	B	From Leg	3.00	0.0000	83'	No Ice	1.64	1.64	0.02
			0'			1/2" Ice	2.36	2.36	0.03
			3'			1" Ice	2.78	2.78	0.05
						2" Ice	3.65	3.65	0.10
Side Arm Mount [SO 305-1]	A	From Leg	1.50	0.0000	83'	No Ice	0.53	1.52	0.03

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'			1/2" Ice	0.78	2.07	0.04
			0'			1" Ice	1.06	2.66	0.06
						2" Ice	1.73	3.91	0.13
Side Arm Mount [SO 305-1]	B	From Leg	1.50	0.0000	83'	No Ice	0.53	1.52	0.03
			0'			1/2" Ice	0.78	2.07	0.04
			0'			1" Ice	1.06	2.66	0.06
						2" Ice	1.73	3.91	0.13
61									
BMOY8905	B	From Face	1.00	0.0000	61'	No Ice	0.16	0.16	0.00
			0'			1/2" Ice	0.21	0.21	0.00
			0'			1" Ice	0.26	0.26	0.00
						2" Ice	0.36	0.36	0.00
50									
KS24019-L112A	B	From Leg	3.00	0.0000	50'	No Ice	0.08	0.08	0.01
			0'			1/2" Ice	0.13	0.13	0.01
			2'			1" Ice	0.19	0.19	0.01
						2" Ice	0.35	0.35	0.02
Side Arm Mount [SO 305-1]	B	From Leg	1.50	0.0000	50'	No Ice	0.53	1.52	0.03
			0'			1/2" Ice	0.78	2.07	0.04
			0'			1" Ice	1.06	2.66	0.06
						2" Ice	1.73	3.91	0.13
***									

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

Comb. No.	Description
25	0.9 Dead+1.0 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T1	150 - 145	Leg	Max Tension	15	0.90	0.00	0.00
			Max. Compression	27	-6.08	-0.00	0.16
			Max. Mx	20	-3.03	-1.94	-0.02
			Max. My	3	-0.48	0.01	-2.03
			Max. Vy	20	1.09	0.00	0.00
			Max. Vx	3	1.09	0.00	0.00
		Diagonal	Max Tension	6	1.45	0.00	0.00
			Max. Compression	19	-1.42	0.00	0.00
			Max. Mx	28	0.20	0.03	0.00
			Max. My	20	1.29	0.01	-0.00
			Max. Vy	28	-0.03	0.03	0.00
			Max. Vx	20	-0.00	0.01	-0.00
		Top Girt	Max Tension	3	0.30	0.00	0.00
			Max. Compression	14	-0.36	0.00	0.00
			Max. Mx	26	-0.14	-0.16	0.00
			Max. Vy	26	-0.07	0.00	0.00
T2	145 - 140	Leg	Max Tension	23	3.89	0.03	0.10
			Max. Compression	27	-7.72	0.00	-0.01
			Max. Mx	8	-1.88	-0.79	-0.01
			Max. My	2	0.89	0.01	0.82
			Max. Vy	8	-0.21	-0.79	-0.01
			Max. Vx	2	0.19	-0.02	0.82
		Diagonal	Max Tension	17	3.00	0.00	0.00
			Max. Compression	4	-3.06	0.00	0.00
			Max. Mx	29	0.61	0.04	0.00
			Max. My	16	-3.04	0.01	-0.00
			Max. Vy	29	-0.04	0.04	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vx	16	-0.00	0.01	-0.00
T3	140 - 120	Leg	Max Tension	7	23.96	-0.13	0.08
			Max. Compression	2	-33.09	0.58	-0.00
			Max. Mx	14	7.55	0.70	0.00
			Max. My	20	-3.33	-0.03	0.73
			Max. Vy	14	1.21	-0.65	0.00
			Max. Vx	8	-1.19	-0.04	0.60
		Diagonal	Max Tension	17	4.79	0.00	0.00
			Max. Compression	16	-4.90	0.00	0.00
			Max. Mx	28	0.26	0.07	0.01
			Max. My	36	0.86	0.07	-0.01
			Max. Vy	30	0.06	0.07	0.01
			Max. Vx	36	0.00	0.00	0.00
		Top Girt	Max Tension	14	0.73	0.00	0.00
			Max. Compression	3	-0.69	0.00	0.00
			Max. Mx	26	-0.02	-0.16	0.00
			Max. My	26	-0.02	0.00	0.00
			Max. Vy	26	0.07	0.00	0.00
			Max. Vx	26	-0.00	0.00	0.00
T4	120 - 113.333	Leg	Max Tension	7	32.39	0.07	0.08
			Max. Compression	2	-43.17	-0.06	-0.01
			Max. Mx	14	30.33	-0.65	0.00
			Max. My	8	-5.56	-0.04	0.60
			Max. Vy	14	-0.16	-0.65	0.00
			Max. Vx	8	0.21	-0.04	0.60
		Diagonal	Max Tension	16	6.34	0.00	0.00
			Max. Compression	16	-6.39	0.00	0.00
			Max. Mx	28	1.33	0.08	-0.01
			Max. My	35	-1.86	0.07	-0.01
			Max. Vy	30	0.06	0.08	-0.01
			Max. Vx	35	0.00	0.00	0.00
T5	113.333 - 106.667	Leg	Max Tension	7	42.92	-0.11	0.08
			Max. Compression	2	-54.73	0.09	-0.01
			Max. Mx	33	-10.82	-0.12	0.00
			Max. My	8	-6.37	-0.02	0.24
			Max. Vy	14	0.08	-0.12	0.01
			Max. Vx	8	-0.16	-0.02	0.24
		Diagonal	Max Tension	16	6.39	0.00	0.00
			Max. Compression	16	-6.38	0.00	0.00
			Max. Mx	27	1.32	0.09	-0.01
			Max. My	36	1.30	0.08	-0.01
			Max. Vy	29	0.06	0.08	0.01
			Max. Vx	36	0.00	0.00	0.00
T6	106.667 - 100	Leg	Max Tension	7	52.15	-0.28	-0.00
			Max. Compression	2	-66.08	0.03	-0.01
			Max. Mx	2	-64.72	0.32	0.00
			Max. My	8	-7.98	-0.04	-0.30
			Max. Vy	14	-0.96	-0.27	-0.00
			Max. Vx	20	-0.81	0.02	-0.04
		Diagonal	Max Tension	17	7.44	-0.06	0.01
			Max. Compression	18	-7.73	0.00	0.00
			Max. Mx	27	0.92	-0.16	-0.02
			Max. My	35	-2.52	-0.13	0.03
			Max. Vy	29	-0.10	-0.14	0.02
			Max. Vx	35	0.01	0.00	0.00
		Secondary Horizontal	Max Tension	23	0.97	0.00	0.00
			Max. Compression	10	-1.02	0.02	0.00
			Max. Mx	33	-0.19	0.07	0.00
			Max. My	4	-0.92	0.02	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vy	33	-0.06	0.07	0.00
			Max. Vx	28	-0.00	0.00	0.00
T7	100 - 93.3333	Leg	Max Tension	7	62.64	-0.05	0.05
			Max. Compression	2	-78.88	0.05	-0.03
			Max. Mx	33	-13.12	-0.17	0.01
			Max. My	8	-8.40	-0.04	0.29
			Max. Vy	14	-0.06	-0.09	0.01
			Max. Vx	20	-0.15	-0.04	-0.29
		Diagonal	Max Tension	16	7.88	0.00	0.00
			Max. Compression	16	-7.76	0.00	0.00
			Max. Mx	27	1.74	0.12	-0.02
			Max. My	36	1.77	0.11	-0.02
			Max. Vy	29	0.08	0.11	0.02
			Max. Vx	36	0.00	0.00	0.00
T8	93.3333 - 86.6667	Leg	Max Tension	7	73.42	0.07	0.05
			Max. Compression	2	-90.57	-0.17	-0.03
			Max. Mx	2	-90.40	0.40	0.02
			Max. My	8	-9.14	-0.06	0.48
			Max. Vy	2	0.26	0.40	0.02
			Max. Vx	8	-0.23	-0.06	0.48
		Diagonal	Max Tension	16	7.86	0.00	0.00
			Max. Compression	18	-8.17	0.00	0.00
			Max. Mx	27	0.94	0.15	-0.02
			Max. My	30	-2.25	0.13	0.02
			Max. Vy	29	0.08	0.14	-0.02
			Max. Vx	30	-0.01	0.00	0.00
		Secondary Horizontal	Max Tension	4	0.31	0.00	0.00
			Max. Compression	5	-0.27	0.00	0.00
			Max. Mx	34	0.04	0.09	0.01
			Max. My	28	-0.04	0.09	0.01
			Max. Vy	34	0.06	0.09	0.01
			Max. Vx	28	0.00	0.00	0.00
T9	86.6667 - 80	Leg	Max Tension	7	84.35	-0.17	0.09
			Max. Compression	2	-103.12	0.15	-0.04
			Max. Mx	2	-102.78	0.45	0.01
			Max. My	8	-9.59	-0.06	0.48
			Max. Vy	2	-0.21	0.45	0.01
			Max. Vx	8	0.25	-0.06	0.48
		Diagonal	Max Tension	16	8.26	0.00	0.00
			Max. Compression	16	-8.40	0.00	0.00
			Max. Mx	27	1.86	-0.19	0.03
			Max. My	30	-1.17	-0.15	-0.04
			Max. Vy	29	-0.12	-0.17	-0.03
			Max. Vx	30	0.01	0.00	0.00
		Secondary Horizontal	Max Tension	20	0.29	0.00	0.00
			Max. Compression	9	-0.24	0.02	0.00
			Max. Mx	34	0.07	0.08	0.00
			Max. My	29	0.05	0.08	0.00
			Max. Vy	34	0.06	0.08	0.00
			Max. Vx	27	0.00	0.08	-0.00
T10	80 - 70	Leg	Max Tension	7	97.85	-0.17	0.09
			Max. Compression	2	-118.75	-0.02	-0.04
			Max. Mx	33	-10.18	-0.40	0.01
			Max. My	8	-11.14	-0.07	0.76
			Max. Vy	18	0.11	0.16	-0.09
			Max. Vx	8	-0.24	-0.07	0.76
		Diagonal	Max Tension	12	9.60	0.00	0.00
			Max. Compression	12	-9.55	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	29	0.85	-0.28	-0.03
			Max. My	37	-2.16	-0.25	0.04
			Max. Vy	29	-0.14	-0.28	-0.03
			Max. Vx	37	-0.01	0.00	0.00
T11	70 - 60	Leg	Max Tension	7	113.74	-0.07	0.12
			Max. Compression	2	-136.65	-0.59	-0.02
			Max. Mx	2	-136.33	1.02	0.00
			Max. My	8	-11.56	-0.07	0.76
			Max. Vy	18	0.36	1.00	0.01
			Max. Vx	8	0.29	-0.07	0.76
		Diagonal	Max Tension	13	9.72	-0.12	0.01
			Max. Compression	10	-10.41	0.00	0.00
			Max. Mx	27	2.08	-0.26	-0.04
			Max. My	30	1.96	-0.25	-0.05
			Max. Vy	29	-0.14	-0.26	0.04
			Max. Vx	30	0.01	0.00	0.00
		Secondary Horizontal	Max Tension	8	0.45	0.03	-0.00
			Max. Compression	9	-0.39	0.02	0.01
			Max. Mx	30	0.16	0.12	0.00
			Max. My	6	-0.31	0.03	0.01
			Max. Vy	30	-0.08	0.12	0.00
			Max. Vx	29	0.00	0.00	0.00
T12	60 - 50	Leg	Max Tension	7	129.26	0.42	0.07
			Max. Compression	2	-154.84	-0.95	-0.01
			Max. Mx	2	-154.52	1.32	-0.00
			Max. My	8	-13.56	-0.18	1.07
			Max. Vy	18	0.48	1.31	-0.01
			Max. Vx	8	-0.36	-0.18	1.07
		Diagonal	Max Tension	13	9.89	-0.16	-0.02
			Max. Compression	10	-10.58	0.00	0.00
			Max. Mx	29	0.44	-0.38	-0.05
			Max. My	37	-3.18	-0.34	0.06
			Max. Vy	29	-0.17	-0.38	-0.05
			Max. Vx	37	0.01	0.00	0.00
		Secondary Horizontal	Max Tension	8	0.69	0.04	-0.01
			Max. Compression	9	-0.60	0.05	0.02
			Max. Mx	28	0.00	0.20	0.01
			Max. My	6	-0.45	0.06	0.02
			Max. Vy	28	0.11	0.20	0.01
			Max. Vx	29	-0.00	0.00	0.00
T13	50 - 40	Leg	Max Tension	7	144.21	0.64	0.06
			Max. Compression	2	-172.51	0.07	-0.03
			Max. Mx	2	-172.20	1.19	-0.00
			Max. My	8	-14.30	-0.18	1.07
			Max. Vy	18	-0.48	1.18	-0.00
			Max. Vx	8	0.35	-0.18	1.07
		Diagonal	Max Tension	12	10.21	0.00	0.00
			Max. Compression	10	-11.08	0.00	0.00
			Max. Mx	27	2.47	-0.34	-0.06
			Max. My	30	2.32	-0.33	-0.06
			Max. Vy	29	-0.17	-0.34	0.05
			Max. Vx	30	0.01	0.00	0.00
		Secondary Horizontal	Max Tension	8	0.56	0.07	-0.01
			Max. Compression	9	-0.48	0.04	0.02
			Max. Mx	30	0.26	0.18	0.01
			Max. My	6	-0.36	0.06	0.02
			Max. Vy	30	-0.11	0.18	0.01
			Max. Vx	29	0.00	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T14	40 - 30	Leg	Max Tension	7	159.49	-0.10	0.09
			Max. Compression	2	-190.99	-0.07	-0.03
			Max. Mx	33	-9.17	-1.04	0.01
			Max. My	8	-16.61	-0.13	1.15
			Max. Vy	33	-0.26	-1.04	0.01
			Max. Vx	8	-0.25	-0.13	1.15
		Diagonal	Max Tension	10	11.06	0.00	0.00
			Max. Compression	12	-10.81	0.00	0.00
			Max. Mx	29	0.31	-0.54	-0.06
			Max. My	37	-2.65	-0.49	0.07
			Max. Vy	29	-0.21	-0.54	-0.06
			Max. Vx	37	-0.01	0.00	0.00
T15	30 - 20	Leg	Max Tension	7	173.54	-0.13	0.10
			Max. Compression	2	-207.88	-0.91	-0.02
			Max. Mx	27	-97.92	-2.30	0.00
			Max. My	8	-17.30	-0.13	1.15
			Max. Vy	27	0.68	-2.30	0.00
			Max. Vx	8	0.35	-0.13	1.15
		Diagonal	Max Tension	12	10.92	0.00	0.00
			Max. Compression	10	-12.28	0.00	0.00
			Max. Mx	27	2.91	-0.41	-0.08
			Max. My	30	2.78	-0.39	-0.08
			Max. Vy	29	-0.21	-0.41	0.07
			Max. Vx	30	0.01	0.00	0.00
		Secondary Horizontal	Max Tension	8	0.64	0.06	-0.00
			Max. Compression	9	-0.55	0.04	0.01
			Max. Mx	30	0.32	0.19	0.00
			Max. My	28	0.10	0.19	0.01
			Max. Vy	30	-0.10	0.19	0.00
			Max. Vx	28	0.00	0.00	0.00
T16	20 - 10	Leg	Max Tension	7	188.23	0.69	0.07
			Max. Compression	2	-226.27	-1.75	-0.01
			Max. Mx	27	-102.28	-2.30	0.00
			Max. My	8	-20.00	-0.34	2.00
			Max. Vy	18	0.82	2.21	0.01
			Max. Vx	8	-0.56	-0.34	2.00
		Diagonal	Max Tension	10	11.51	0.00	0.00
			Max. Compression	10	-11.98	0.00	0.00
			Max. Mx	28	1.52	-0.75	0.07
			Max. My	37	-4.63	-0.68	0.10
			Max. Vy	29	-0.26	-0.74	-0.08
			Max. Vx	37	-0.01	0.00	0.00
		Secondary Horizontal	Max Tension	8	1.06	0.06	-0.00
			Max. Compression	9	-0.90	0.06	0.01
			Max. Mx	27	-0.08	0.25	0.00
			Max. My	28	-0.09	0.25	0.01
			Max. Vy	27	0.11	0.25	0.00
			Max. Vx	28	0.00	0.00	0.00
T17	10 - 0	Leg	Max Tension	7	201.84	1.14	0.06
			Max. Compression	2	-243.30	0.00	0.00
			Max. Mx	18	-242.61	2.02	-0.00
			Max. My	8	-20.90	-0.34	2.00
			Max. Vy	18	-0.81	2.02	-0.00
			Max. Vx	8	0.52	-0.34	2.00
		Diagonal	Max Tension	22	11.82	0.00	0.00
			Max. Compression	10	-13.68	0.00	0.00
			Max. Mx	2	9.35	-0.46	-0.07
			Max. My	8	8.65	-0.41	-0.11
			Max. Vy	28	-0.22	-0.42	0.09

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
		Secondary Horizontal	Max. Vx	30	0.01	0.00	0.00
			Max Tension	8	0.87	0.13	-0.01
			Max. Compression	9	-0.74	0.07	0.02
			Max. Mx	29	0.03	0.23	0.01
			Max. My	8	-0.73	0.10	0.02
			Max. Vy	29	-0.12	0.23	0.01
			Max. Vx	28	0.00	0.00	0.00

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Leg C	Max. Vert	18	252.41	27.82	-17.81
	Max. H_x	18	252.41	27.82	-17.81
	Max. H_z	7	-209.17	-23.08	15.01
	Min. Vert	7	-209.17	-23.08	15.01
	Min. H_x	7	-209.17	-23.08	15.01
	Min. H_z	18	252.41	27.82	-17.81
Leg B	Max. Vert	10	249.18	-26.83	-17.77
	Max. H_x	23	-201.74	22.04	14.89
	Max. H_z	23	-201.74	22.04	14.89
	Min. Vert	23	-201.74	22.04	14.89
	Min. H_x	10	249.18	-26.83	-17.77
	Min. H_z	10	249.18	-26.83	-17.77
Leg A	Max. Vert	2	252.59	0.57	32.24
	Max. H_x	20	22.56	6.23	2.04
	Max. H_z	2	252.59	0.57	32.24
	Min. Vert	15	-200.47	-0.53	-26.56
	Min. H_x	9	16.80	-6.18	1.55
	Min. H_z	15	-200.47	-0.53	-26.56

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	49.77	0.00	-0.00	-42.46	-22.77	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	59.73	0.02	-51.60	-4590.65	-25.99	21.70
0.9 Dead+1.0 Wind 0 deg - No Ice	44.79	0.02	-51.60	-4577.92	-19.16	21.70
1.2 Dead+1.0 Wind 30 deg - No Ice	59.73	24.99	-43.48	-3905.28	-2237.08	-19.02
0.9 Dead+1.0 Wind 30 deg - No Ice	44.79	24.99	-43.48	-3892.54	-2230.25	-19.02
1.2 Dead+1.0 Wind 60 deg - No Ice	59.73	42.76	-24.82	-2253.66	-3818.27	-58.42
0.9 Dead+1.0 Wind 60 deg - No Ice	44.79	42.76	-24.82	-2240.92	-3811.44	-58.42
1.2 Dead+1.0 Wind 90 deg - No Ice	59.73	50.26	-0.02	-49.62	-4467.67	-83.61

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
0.9 Dead+1.0 Wind 90 deg - No Ice	44.79	50.26	-0.02	-36.88	-4460.84	-83.61
1.2 Dead+1.0 Wind 120 deg - No Ice	59.73	44.56	25.83	2223.31	-3939.55	-75.65
0.9 Dead+1.0 Wind 120 deg - No Ice	44.79	44.56	25.83	2236.05	-3932.72	-75.65
1.2 Dead+1.0 Wind 150 deg - No Ice	59.73	23.65	41.20	3637.12	-2142.64	-50.29
0.9 Dead+1.0 Wind 150 deg - No Ice	44.79	23.65	41.20	3649.86	-2135.81	-50.29
1.2 Dead+1.0 Wind 180 deg - No Ice	59.73	-0.02	47.90	4236.92	-28.66	-21.70
0.9 Dead+1.0 Wind 180 deg - No Ice	44.79	-0.02	47.90	4249.66	-21.83	-21.70
1.2 Dead+1.0 Wind 210 deg - No Ice	59.73	-24.99	43.48	3803.37	2182.43	19.02
0.9 Dead+1.0 Wind 210 deg - No Ice	44.79	-24.99	43.48	3816.11	2189.26	19.02
1.2 Dead+1.0 Wind 240 deg - No Ice	59.73	-45.96	26.67	2277.65	3981.70	58.42
0.9 Dead+1.0 Wind 240 deg - No Ice	44.79	-45.96	26.67	2290.39	3988.53	58.42
1.2 Dead+1.0 Wind 270 deg - No Ice	59.73	-50.26	0.02	-52.29	4413.02	83.61
0.9 Dead+1.0 Wind 270 deg - No Ice	44.79	-50.26	0.02	-39.55	4419.85	83.61
1.2 Dead+1.0 Wind 300 deg - No Ice	59.73	-41.36	-23.98	-2199.31	3666.83	75.65
0.9 Dead+1.0 Wind 300 deg - No Ice	44.79	-41.36	-23.98	-2186.58	3673.66	75.65
1.2 Dead+1.0 Wind 330 deg - No Ice	59.73	-23.65	-41.20	-3739.04	2087.99	50.29
0.9 Dead+1.0 Wind 330 deg - No Ice	44.79	-23.65	-41.20	-3726.30	2094.82	50.29
1.2 Dead+1.0 Ice+1.0 Temp	157.53	0.00	-0.00	-210.24	-67.70	-0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	157.53	0.02	-11.61	-1243.93	-68.65	5.32
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	157.53	5.81	-10.08	-1109.32	-585.16	-7.91
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	157.53	10.13	-5.87	-733.45	-969.21	-20.43
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	157.53	11.66	-0.02	-211.19	-1105.25	-26.43
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	157.53	10.07	5.83	307.92	-962.37	-23.93
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	157.53	5.58	9.71	660.89	-567.92	-16.07
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	157.53	-0.02	11.24	799.07	-66.75	-5.32
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	157.53	-5.81	10.08	688.84	449.76	7.91
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	157.53	-10.44	6.06	325.16	854.93	20.43
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	157.53	-11.66	0.02	-209.29	969.86	26.43
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	157.53	-9.76	-5.64	-716.21	805.86	23.93
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	157.53	-5.58	-9.71	-1081.36	432.53	16.07
Dead+Wind 0 deg - Service	49.77	0.00	-8.89	-822.06	-22.54	3.72
Dead+Wind 30 deg - Service	49.77	4.31	-7.50	-704.40	-402.28	-3.26

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
Dead+Wind 60 deg - Service	49.77	7.37	-4.28	-420.77	-673.86	-10.00
Dead+Wind 90 deg - Service	49.77	8.66	-0.00	-42.24	-785.36	-14.32
Dead+Wind 120 deg - Service	49.77	7.68	4.45	348.09	-694.62	-12.95
Dead+Wind 150 deg - Service	49.77	4.08	7.10	591.01	-386.11	-8.61
Dead+Wind 180 deg - Service	49.77	-0.00	8.26	694.02	-23.00	-3.72
Dead+Wind 210 deg - Service	49.77	-4.31	7.50	619.48	356.74	3.26
Dead+Wind 240 deg - Service	49.77	-7.92	4.60	357.40	665.66	10.00
Dead+Wind 270 deg - Service	49.77	-8.66	0.00	-42.69	739.82	14.32
Dead+Wind 300 deg - Service	49.77	-7.13	-4.14	-411.46	611.74	12.95
Dead+Wind 330 deg - Service	49.77	-4.08	-7.10	-675.94	340.57	8.61

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	K	K	K	K	K	K	
1	0.00	-49.77	0.00	-0.00	49.77	0.00	0.000%
2	0.02	-59.73	-51.60	-0.02	59.73	51.60	0.000%
3	0.02	-44.79	-51.60	-0.02	44.79	51.60	0.000%
4	24.99	-59.73	-43.48	-24.99	59.73	43.48	0.000%
5	24.99	-44.79	-43.48	-24.99	44.79	43.48	0.000%
6	42.76	-59.73	-24.82	-42.76	59.73	24.82	0.000%
7	42.76	-44.79	-24.82	-42.76	44.79	24.82	0.000%
8	50.26	-59.73	-0.02	-50.26	59.73	0.02	0.000%
9	50.26	-44.79	-0.02	-50.26	44.79	0.02	0.000%
10	44.56	-59.73	25.83	-44.56	59.73	-25.83	0.000%
11	44.56	-44.79	25.83	-44.56	44.79	-25.83	0.000%
12	23.65	-59.73	41.20	-23.65	59.73	-41.20	0.000%
13	23.65	-44.79	41.20	-23.65	44.79	-41.20	0.000%
14	-0.02	-59.73	47.90	0.02	59.73	-47.90	0.000%
15	-0.02	-44.79	47.90	0.02	44.79	-47.90	0.000%
16	-24.99	-59.73	43.48	24.99	59.73	-43.48	0.000%
17	-24.99	-44.79	43.48	24.99	44.79	-43.48	0.000%
18	-45.96	-59.73	26.67	45.96	59.73	-26.67	0.000%
19	-45.96	-44.79	26.67	45.96	44.79	-26.67	0.000%
20	-50.26	-59.73	0.02	50.26	59.73	-0.02	0.000%
21	-50.26	-44.79	0.02	50.26	44.79	-0.02	0.000%
22	-41.36	-59.73	-23.98	41.36	59.73	23.98	0.000%
23	-41.36	-44.79	-23.98	41.36	44.79	23.98	0.000%
24	-23.65	-59.73	-41.20	23.65	59.73	41.20	0.000%
25	-23.65	-44.79	-41.20	23.65	44.79	41.20	0.000%
26	0.00	-157.53	0.00	-0.00	157.53	0.00	0.000%
27	0.02	-157.53	-11.61	-0.02	157.53	11.61	0.000%
28	5.81	-157.53	-10.08	-5.81	157.53	10.08	0.000%
29	10.13	-157.53	-5.87	-10.13	157.53	5.87	0.000%
30	11.66	-157.53	-0.02	-11.66	157.53	0.02	0.000%
31	10.07	-157.53	5.83	-10.07	157.53	-5.83	0.000%
32	5.58	-157.53	9.71	-5.58	157.53	-9.71	0.000%
33	-0.02	-157.53	11.24	0.02	157.53	-11.24	0.000%
34	-5.81	-157.53	10.08	5.81	157.53	-10.08	0.000%
35	-10.44	-157.53	6.06	10.44	157.53	-6.06	0.000%
36	-11.66	-157.53	0.02	11.66	157.53	-0.02	0.000%
37	-9.76	-157.53	-5.64	9.76	157.53	5.64	0.000%
38	-5.58	-157.53	-9.71	5.58	157.53	9.71	0.000%
39	0.00	-49.77	-8.89	-0.00	49.77	8.89	0.000%
40	4.31	-49.77	-7.50	-4.31	49.77	7.50	0.000%
41	7.37	-49.77	-4.28	-7.37	49.77	4.28	0.000%
42	8.66	-49.77	-0.00	-8.66	49.77	0.00	0.000%

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
43	7.68	-49.77	4.45	-7.68	49.77	-4.45	0.000%
44	4.08	-49.77	7.10	-4.08	49.77	-7.10	0.000%
45	-0.00	-49.77	8.26	0.00	49.77	-8.26	0.000%
46	-4.31	-49.77	7.50	4.31	49.77	-7.50	0.000%
47	-7.92	-49.77	4.60	7.92	49.77	-4.60	0.000%
48	-8.66	-49.77	0.00	8.66	49.77	-0.00	0.000%
49	-7.13	-49.77	-4.14	7.13	49.77	4.14	0.000%
50	-4.08	-49.77	-7.10	4.08	49.77	7.10	0.000%

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	150 - 145	2.173	39	0.1228	0.0197
T2	145 - 140	2.043	39	0.1225	0.0196
T3	140 - 120	1.911	39	0.1213	0.0193
T4	120 - 113.333	1.410	39	0.1106	0.0165
T5	113.333 - 106.667	1.251	39	0.1050	0.0150
T6	106.667 - 100	1.103	39	0.0983	0.0133
T7	100 - 93.3333	0.966	39	0.0905	0.0123
T8	93.3333 - 86.6667	0.837	39	0.0842	0.0107
T9	86.6667 - 80	0.716	39	0.0772	0.0090
T10	80 - 70	0.610	39	0.0695	0.0081
T11	70 - 60	0.466	39	0.0610	0.0069
T12	60 - 50	0.342	39	0.0520	0.0055
T13	50 - 40	0.237	39	0.0421	0.0045
T14	40 - 30	0.156	39	0.0319	0.0035
T15	30 - 20	0.091	39	0.0243	0.0026
T16	20 - 10	0.044	39	0.0165	0.0016
T17	10 - 0	0.012	47	0.0083	0.0008

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
150'	ANT150F2	39	2.173	0.1228	0.0197	244790
148'	(2) HBXX-6517DS-A2M w/ Mount Pipe	39	2.121	0.1228	0.0197	244790
146'	WV-CW864	39	2.069	0.1226	0.0196	244790
135'	MX08FRO665-21 w/ Mount Pipe	39	1.782	0.1194	0.0188	109954
126'	BCD-87010-EDIN-X	39	1.556	0.1147	0.0175	142661
121'	AIR6449 B41_T-MOBILE w/ Mount Pipe	39	1.434	0.1113	0.0166	144463
103'	APXVAARR24_43-U-NA20 w/ Mount Pipe	39	1.026	0.0940	0.0128	57112
90'	ANT150F2	39	0.775	0.0809	0.0098	43994
83'	ANT150D3	39	0.656	0.0729	0.0084	45828
61'	BMOY8905	39	0.354	0.0529	0.0057	70203
50'	KS24019-L112A	39	0.237	0.0421	0.0045	46490

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	150 - 145	12.083	2	0.6765	0.1151
T2	145 - 140	11.364	2	0.6748	0.1142
T3	140 - 120	10.639	2	0.6683	0.1125
T4	120 - 113.333	7.865	2	0.6111	0.0961
T5	113.333 - 106.667	6.983	2	0.5810	0.0874
T6	106.667 - 100	6.159	2	0.5447	0.0775
T7	100 - 93.3333	5.403	2	0.5021	0.0721
T8	93.3333 - 86.6667	4.683	2	0.4675	0.0625
T9	86.6667 - 80	4.009	2	0.4291	0.0526
T10	80 - 70	3.414	19	0.3864	0.0474
T11	70 - 60	2.614	19	0.3397	0.0400
T12	60 - 50	1.924	19	0.2894	0.0323
T13	50 - 40	1.338	19	0.2347	0.0263
T14	40 - 30	0.881	19	0.1778	0.0203
T15	30 - 20	0.517	19	0.1354	0.0150
T16	20 - 10	0.254	19	0.0919	0.0096
T17	10 - 0	0.068	19	0.0463	0.0048

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
150'	ANT150F2	2	12.083	0.6765	0.1151	44990
148'	(2) HBXX-6517DS-A2M w/ Mount Pipe	2	11.796	0.6762	0.1148	44990
146'	WV-CW864	2	11.508	0.6755	0.1144	44990
135'	MX08FRO665-21 w/ Mount Pipe	2	9.925	0.6585	0.1097	20257
126'	BCD-87010-EDIN-X	2	8.677	0.6334	0.1024	28569
121'	AIR6449 B41_T-MOBILE w/ Mount Pipe	2	7.999	0.6152	0.0972	29848
103'	APXVAARR24_43-U-NA20 w/ Mount Pipe	2	5.737	0.5209	0.0745	10583
90'	ANT150F2	2	4.337	0.4494	0.0571	7876
83'	ANT150D3	2	3.673	0.4050	0.0493	8165
61'	BMOY8905	19	1.988	0.2946	0.0330	12569
50'	KS24019-L112A	19	1.338	0.2347	0.0263	8373

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load per Bolt K	Ratio Load / Allowable	Allowable Ratio	Criteria
T1	150	Diagonal	A325X	0.5000	1	1.45	5.20	0.279	1.05	Member Block Shear
		Top Girt	A325X	0.5000	1	0.30	6.20	0.049	1.05	Member Bearing

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load per Bolt K	Ratio Load / Allowable	Allowable Ratio	Criteria
T2	145	Leg	A325X	0.6250	4	0.97	20.34	0.048	1.05	Bolt Tension
		Diagonal	A325X	0.5000	1	3.00	7.25	0.414	1.05	Member Block Shear
T3	140	Leg	A325X	0.6250	4	5.99	20.34	0.295	1.05	Bolt Tension
		Diagonal	A325X	0.5000	1	4.79	6.20	0.773	1.05	Member Bearing
		Top Girt	A325X	0.5000	1	0.73	6.20	0.117	1.05	Member Bearing
T4	120	Diagonal	A325X	0.5000	2	3.17	8.30	0.382	1.05	Member Block Shear
T5	113.333	Diagonal	A325X	0.5000	2	3.19	8.30	0.385	1.05	Member Block Shear
T6	106.667	Leg	A325X	0.7500	4	13.02	30.10	0.433	1.05	Bolt Tension
		Diagonal	A325N	0.5000	1	7.44	12.40	0.600	1.05	Member Bearing
		Secondary Horizontal	A325N	0.6250	1	0.97	6.83	0.142	1.05	Member Block Shear
T7	100	Diagonal	A325N	0.5000	2	3.94	8.32	0.474	1.05	Member Bearing
T8	93.3333	Diagonal	A325N	0.5000	2	3.93	8.32	0.472	1.05	Member Bearing
		Secondary Horizontal	A325N	0.6250	1	0.31	6.83	0.045	1.05	Member Block Shear
T9	86.6667	Leg	A325X	0.8750	4	21.09	41.56	0.507	1.05	Bolt Tension
		Diagonal	A325N	0.5000	1	8.26	12.40	0.666	1.05	Member Bearing
		Secondary Horizontal	A325N	0.6250	1	0.29	6.83	0.043	1.05	Member Block Shear
T10	80	Diagonal	A325N	0.6250	1	9.60	13.92	0.690	1.05	Gusset Bearing
T11	70	Leg	A325X	0.8750	4	28.42	41.56	0.684	1.05	Bolt Tension
		Diagonal	A325N	0.6250	1	9.72	13.92	0.698	1.05	Gusset Bearing
		Secondary Horizontal	A325N	0.6250	1	0.45	7.83	0.058	1.05	Member Bearing
T12	60	Diagonal	A325N	0.6250	1	9.89	13.92	0.710	1.05	Gusset Bearing
		Secondary Horizontal	A325N	0.5000	1	0.69	8.84	0.079	1.05	Bolt Shear
T13	50	Leg	A325X	1.0000	4	36.03	54.52	0.661	1.05	Bolt Tension
		Diagonal	A325N	0.6250	1	10.21	20.88	0.489	1.05	Member Bearing
		Secondary Horizontal	A325N	0.5000	1	0.56	8.84	0.063	1.05	Bolt Shear
T14	40	Diagonal	A325N	0.6250	1	11.06	20.88	0.530	1.05	Member Bearing
T15	30	Leg	A325X	1.0625	4	43.35	60.26	0.719	1.05	Bolt Tension
		Diagonal	A325N	0.6250	1	10.92	20.88	0.523	1.05	Member Bearing
		Secondary Horizontal	A325N	0.6250	1	0.64	7.83	0.082	1.05	Member Bearing
T16	20	Diagonal	A325N	0.6250	1	11.51	20.88	0.551	1.05	Member Bearing
		Secondary Horizontal	A325N	0.6250	1	1.06	7.83	0.135	1.05	Member Bearing
T17	10	Diagonal	A325N	0.6250	1	11.82	20.88	0.566	1.05	Member Bearing
		Secondary Horizontal	A325N	0.6250	1	0.87	10.44	0.083	1.05	Member Bearing

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	150 - 145	ROHN 2.5 STD	5'	5'	63.3 K=1.00	1.7040	-6.08	57.19	0.106 [1]
T2	145 - 140	ROHN 2.5 STD	5'	5'	63.3 K=1.00	1.7040	-7.72	57.19	0.135 [1]
T3	140 - 120	ROHN 2.5 EH	20'3/8"	6'8-5/32"	86.7 K=1.00	2.2535	-33.09	58.52	0.566 [1]
T4	120 - 113.333	ROHN 2.5 EH (GR)	6'8-5/32"	6'8-5/32"	86.7 K=1.00	2.2535	-43.17	64.40	0.670 [1]
T5	113.333 - 106.667	ROHN 2.5 EH (GR)	6'8-5/32"	6'8-5/32"	86.7 K=1.00	2.2535	-54.73	64.40	0.850 [1]
T6	106.667 - 100	ROHN 2.5 EH (GR)	6'8-5/32"	3'5-5/32"	44.6 K=1.00	2.2535	-66.08	100.07	0.660 [1]
T7	100 - 93.3333	ROHN 3 EH (GR)	6'8-5/32"	6'8-5/32"	70.5 K=1.00	3.0159	-78.88	108.23	0.729 [1]
T8	93.3333 - 86.6667	ROHN 3 EH (GR)	6'8-5/32"	3'5-1/32"	36.2 K=1.00	3.0159	-90.57	145.42	0.623 [1]
T9	86.6667 - 80	ROHN 3 EH (GR)	6'8-5/32"	3'5-1/32"	36.1 K=1.00	3.0159	-103.12	145.46	0.709 [1]
T10	80 - 70	ROHN 4 EH (GR)	10'1/4"	10'1/4"	81.4 K=1.00	4.4074	-118.75	142.77	0.832 [1]
T11	70 - 60	ROHN 4 EH (GR)	10'1/4"	5'1-29/32"	42.0 K=1.00	4.4074	-136.65	212.55	0.643 [1]
T12	60 - 50	ROHN 4 EH (GR)	10'1/4"	5'1-29/32"	41.9 K=1.00	4.4074	-154.84	212.59	0.728 [1]
T13	50 - 40	ROHN 4 EH (GR)	10'1/4"	5'1-13/16"	41.9 K=1.00	4.4074	-172.51	212.69	0.811 [1]
T14	40 - 30	ROHN 5 EH (GR)	10'1/4"	10'1/4"	65.4 K=1.00	6.1120	-190.99	246.96	0.773 [1]
T15	30 - 20	ROHN 5 EH (GR)	10'1/4"	5'1-9/16"	33.5 K=1.00	6.1120	-207.88	320.57	0.648 [1]
T16	20 - 10	ROHN 5 EH (GR)	10'1/4"	5'1-9/16"	33.4 K=1.00	6.1120	-226.27	320.65	0.706 [1]
T17	10 - 0	ROHN 5 EH (GR)	10'1/4"	5'1-7/16"	33.4 K=1.00	6.1120	-243.30	320.71	0.759 [1]

[1] $P_u / \phi P_n$ controls

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	150 - 145	L1 1/2x1 1/2x3/16	9'11-1/32"	4'8-17/32"	192.9 K=1.00	0.5273	-1.42	4.06	0.351 [1]
T2	145 - 140	L2x2x3/16	9'11-1/32"	4'8-13/32"	143.3 K=1.00	0.7150	-3.06	9.97	0.307 [1]
T3	140 - 120	L2 1/2x2 1/2x3/16	12'2-17/32"	6'23/32"	146.9 K=1.00	0.9023	-4.90	11.97	0.409 [1]
T4	120 - 113.333	L2 1/2x2 1/2x3/16	12'9-3/8"	6'3-3/8"	144.7 K=0.95	0.9023	-6.39	12.34	0.518 [1]
T5	113.333 - 106.667	L2 1/2x2 1/2x3/16	13'4-7/16"	6'6-31/32"	150.1 K=0.94	0.9023	-6.38	11.47	0.556 [1]
T6	106.667 - 100	L2 1/2x2 1/2x3/16x3/16	13'11-17/32"	6'11-5/32"	112.7 K=1.00	1.8047	-7.73	36.74	0.210 [1]
T7	100 - 93.3333	2L 'a' > 39.6784 in - 72 L3x3x3/16	14'6-27/	7'1-13/1	138.3	1.0900	-7.76	16.31	0.476 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T8	93.3333 - 86.6667	L3x3x3/16	32" 15'2-9/32"	6" 7'5-17/32"	K=0.96 143.1 K=0.95	1.0900	-8.17	15.24	0.536 [1]
T9	86.6667 - 80	2L3x3x3/16x1/4	15'9-27/32"	7'10-3/32"	105.9 K=1.00	2.1797	-8.40	45.29	0.186 [1]
T10	80 - 70	2L 'a' > 44.7872 in - 105 2L3x3x3/16x1/4	18'2-13/32"	9'19/32"	122.3 K=1.00	2.1797	-9.55	37.33	0.256 [1]
T11	70 - 60	2L 'a' > 51.7204 in - 114 2L3x3x3/16x1/4	19'15/32"	9'5-5/8"	127.9 K=1.00	2.1797	-10.41	34.22	0.304 [1]
T12	60 - 50	2L 'a' > 54.1213 in - 123 2L3x3x1/4x1/4	19'10-29/32"	9'11-1/32"	134.0 K=1.00	2.8750	-10.58	43.95	0.241 [1]
T13	50 - 40	2L 'a' > 56.8408 in - 135 2L3x3x1/4x1/4	20'9-23/32"	10'4-7/16"	140.1 K=1.00	2.8750	-11.08	40.38	0.274 [1]
T14	40 - 30	2L 'a' > 59.4205 in - 147 2L3 1/2x3 1/2x1/4x1/4	21'8-5/8"	10'9-1/8"	125.1 K=1.00	3.3750	-10.81	57.19	0.189 [1]
T15	30 - 20	2L 'a' > 61.5464 in - 159 2L3 1/2x3 1/2x1/4x1/4	22'7-5/16"	11'2-17/32"	130.3 K=1.00	3.3750	-12.28	53.27	0.230 [1]
T16	20 - 10	2L 'a' > 64.1103 in - 168 2L4x4x1/4x1/4	23'6-1/4"	11'7-29/32"	119.0 K=1.00	3.8750	-11.98	69.52	0.172 [1]
T17	10 - 0	2L 'a' > 66.6062 in - 180 2L4x4x1/4x1/4 2L 'a' > 69.2011 in - 192	24'5-1/32"	12'1-5/16"	123.6 K=1.00	3.8750	-13.68	65.16	0.210 [1]

[1] P_u / ϕP_n controls

Secondary Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T6	106.667 - 100	L2x2x3/16	12'3"	5'10-11/16"	179.3 K=1.00	0.7150	-1.02	6.36	0.160 [1]
T8	93.3333 - 86.6667	L2x2x3/16	13'7-11/16"	6'6-23/32"	199.7 K=1.00	0.7150	-0.27	5.13	0.053 [1]
T9	86.6667 - 80	L2x2x3/16	14'4-3/32"	6'10-13/16"	210.3 K=1.00	0.7150	-0.24	4.63	0.052 [1]
T11	70 - 60	L2 1/2x2 1/2x3/16	16'2-5/32"	7'9-3/8"	188.7 K=1.00	0.9023	-0.39	7.25	0.054 [1]
T12	60 - 50	L3x3x1/4	17'2-13/32"	8'3-1/4"	169.6 K=1.00	1.4400	-0.60	14.33	0.042 [1]
T13	50 - 40	L3x3x1/4	18'2-7/8"	8'9-15/32"	180.2 K=1.00	1.4400	-0.48	12.69	0.038 [1]
T15	30 - 20	L3x3x3/16	20'3-1/4"	9'9-3/8"	196.9 K=1.00	1.0900	-0.55	8.04	0.068 [1]
T16	20 - 10	L3x3x3/16	21'3-1/4"	10'3-3/8"	207.0 K=1.00	1.0900	-0.90	7.28	0.123 [1]
T17	10 - 0	L3 1/2x3 1/2x1/4	22'3-1/4"	10'9-3/8"	186.5 K=1.00	1.6900	-0.74	13.91	0.053 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$

[1] P_u / ϕP_n controls

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	150 - 145	L2 1/2x2 1/2x3/16	8'6-23/32"	8'1-5/16"	196.8 K=1.00	0.9023	-0.36	6.67	0.053 [1]
T3	140 - 120	L2 1/2x2 1/2x3/16	8'6-23/32"	8'1-5/16"	196.8 K=1.00	0.9023	-0.69	6.67	0.104 [1]

[1] P_u / ϕP_n controls

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	150 - 145	ROHN 2.5 STD	5'	5'	63.3	1.7040	0.90	76.68	0.012 [1]
T2	145 - 140	ROHN 2.5 STD	5'	5'	63.3	1.7040	3.89	76.68	0.051 [1]
T3	140 - 120	ROHN 2.5 EH	20'3/8"	6'8-5/32"	86.7	2.2535	23.96	101.41	0.236 [1]
T4	120 - 113.333	ROHN 2.5 EH (GR)	6'8-5/32"	6'8-5/32"	86.7	2.2535	32.39	101.41	0.319 [1]
T5	113.333 - 106.667	ROHN 2.5 EH (GR)	6'8-5/32"	6'8-5/32"	86.7	2.2535	42.92	101.41	0.423 [1]
T6	106.667 - 100	ROHN 2.5 EH (GR)	6'8-5/32"	3'3"	42.2	2.2535	52.15	101.41	0.514 [1]
T7	100 - 93.3333	ROHN 3 EH (GR)	6'8-5/32"	6'8-5/32"	70.5	3.0159	62.64	135.72	0.462 [1]
T8	93.3333 - 86.6667	ROHN 3 EH (GR)	6'8-5/32"	3'5-1/32"	36.2	3.0159	73.42	135.72	0.541 [1]
T9	86.6667 - 80	ROHN 3 EH (GR)	6'8-5/32"	3'5-1/32"	36.1	3.0159	84.35	135.72	0.622 [1]
T10	80 - 70	ROHN 4 EH (GR)	10'1/4"	10'1/4"	81.4	4.4074	97.85	198.34	0.493 [1]
T11	70 - 60	ROHN 4 EH (GR)	10'1/4"	4'10-3/16"	39.4	4.4074	113.74	198.34	0.573 [1]
T12	60 - 50	ROHN 4 EH (GR)	10'1/4"	4'10-5/16"	39.5	4.4074	129.26	198.34	0.652 [1]
T13	50 - 40	ROHN 4 EH (GR)	10'1/4"	4'10-7/16"	39.5	4.4074	144.22	198.34	0.727 [1]
T14	40 - 30	ROHN 5 EH (GR)	10'1/4"	10'1/4"	65.4	6.1120	159.49	275.04	0.580 [1]
T15	30 - 20	ROHN 5 EH (GR)	10'1/4"	4'10-9/16"	31.9	6.1120	173.54	275.04	0.631 [1]
T16	20 - 10	ROHN 5 EH (GR)	10'1/4"	4'10-11/	31.9	6.1120	188.23	275.04	0.684 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T17	10 - 0	ROHN 5 EH (GR)	10'1/4"	16" 4'10-13/16"	31.9	6.1120	201.84	275.04	0.734 [1]

[1] $P_u / \phi P_n$ controls

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	150 - 145	L1 1/2x1 1/2x3/16	9'11-1/32"	4'8-17/32"	126.6	0.3076	1.45	13.38	0.109 [1]
T2	145 - 140	L2x2x3/16	9'11-1/32"	4'8-13/32"	93.7	0.4484	3.00	19.50	0.154 [1]
T3	140 - 120	L2 1/2x2 1/2x3/16	12'2-17/32"	6'23/32"	95.0	0.5889	4.79	25.62	0.187 [1]
T4	120 - 113.333	L2 1/2x2 1/2x3/16	12'9-3/8"	6'3-3/8"	99.4	0.5889	6.34	25.62	0.247 [1]
T5	113.333 - 106.667	L2 1/2x2 1/2x3/16	13'4-7/16"	6'6-31/32"	104.0	0.5889	6.39	25.62	0.249 [1]
T6	106.667 - 100	L2 1/2x2 1/2x3/16x3/16	13'11-17/32"	6'11-5/32"	108.5	1.1777	7.44	51.23	0.145 [1]
T7	100 - 93.3333	2L 'a' > 39.6784 in - 71 L3x3x3/16	14'6-27/32"	7'1-13/16"	93.5	0.7296	7.88	31.74	0.248 [1]
T8	93.3333 - 86.6667	L3x3x3/16	15'2-9/32"	7'5-17/32"	97.5	0.7296	7.86	31.74	0.248 [1]
T9	86.6667 - 80	2L3x3x3/16x1/4	15'9-27/32"	7'10-3/32"	101.5	1.4590	8.26	63.47	0.130 [1]
T10	80 - 70	2L 'a' > 44.7872 in - 104 2L3x3x3/16x1/4	18'2-13/32"	9'19/32"	117.2	1.4238	9.60	61.94	0.155 [1]
T11	70 - 60	2L 'a' > 51.7204 in - 115 2L3x3x3/16x1/4	19'15/32"	9'5-5/8"	122.5	1.4238	9.72	61.94	0.157 [1]
T12	60 - 50	2L 'a' > 54.1213 in - 124 2L3x3x1/4x1/4	19'10-29/32"	9'11-1/32"	129.5	1.8750	9.89	81.56	0.121 [1]
T13	50 - 40	2L 'a' > 56.8408 in - 136 2L3x3x1/4x1/4	20'9-23/32"	10'4-7/16"	135.3	1.8750	10.21	81.56	0.125 [1]
T14	40 - 30	2L 'a' > 59.4205 in - 148 2L3 1/2x3 1/2x1/4x1/4	21'8-5/8"	10'9-1/8"	119.6	2.2500	11.06	97.88	0.113 [1]
T15	30 - 20	2L 'a' > 61.5464 in - 160 2L3 1/2x3 1/2x1/4x1/4	22'7-5/16"	11'2-17/32"	124.6	2.2500	10.92	97.88	0.112 [1]
T16	20 - 10	2L 'a' > 64.1103 in - 169 2L4x4x1/4x1/4	23'6-1/4"	11'7-29/32"	112.8	2.6250	11.51	114.19	0.101 [1]
T17	10 - 0	2L 'a' > 66.6062 in - 181 2L4x4x1/4x1/4	24'5-1/32"	12'1-5/16"	117.2	2.6250	11.82	114.19	0.103 [1]
		2L 'a' > 69.2011 in - 192							

[1] P_u / ϕP_n controls

Secondary Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T6	106.667 - 100	L2x2x3/16	12'3"	5'10-11/16"	233.7	0.4308	0.97	18.74	0.052 [1]
T8	93.3333 - 86.6667	L2x2x3/16	13'7-11/16"	6'6-23/32"	259.7	0.4308	0.31	18.74	0.016 [1]
T9	86.6667 - 80	L2x2x3/16	14'4-3/32"	6'10-13/16"	273.2	0.4308	0.29	18.74	0.016 [1]
T11	70 - 60	L2 1/2x2 1/2x3/16	16'2-5/32"	7'9-3/8"	243.7	0.5713	0.45	24.85	0.018 [1]
T12	60 - 50	L3x3x1/4	17'2-13/32"	8'3-1/4"	218.0	0.9628	0.69	41.88	0.017 [1]
T13	50 - 40	L3x3x1/4	18'2-7/8"	8'9-15/32"	231.5	0.9628	0.56	41.88	0.013 [1]
T15	30 - 20	L3x3x3/16	20'3-1/4"	9'9-3/8"	253.1	0.7120	0.64	30.97	0.021 [1]
T16	20 - 10	L3x3x3/16	21'3-1/4"	10'3-3/8"	265.9	0.7120	1.06	30.97	0.034 [1]
T17	10 - 0	L3 1/2x3 1/2x1/4	22'3-1/4"	10'9-3/8"	240.1	1.1269	0.87	49.02	0.018 [1]

[1] P_u / ϕP_n controls

Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	150 - 145	L2 1/2x2 1/2x3/16	8'6-23/32"	8'1-5/16"	128.3	0.5889	0.30	25.62	0.012 [1]
T3	140 - 120	L2 1/2x2 1/2x3/16	8'6-23/32"	8'1-5/16"	128.3	0.5889	0.73	25.62	0.028 [1]

[1] P_u / ϕP_n controls

Section Capacity Table

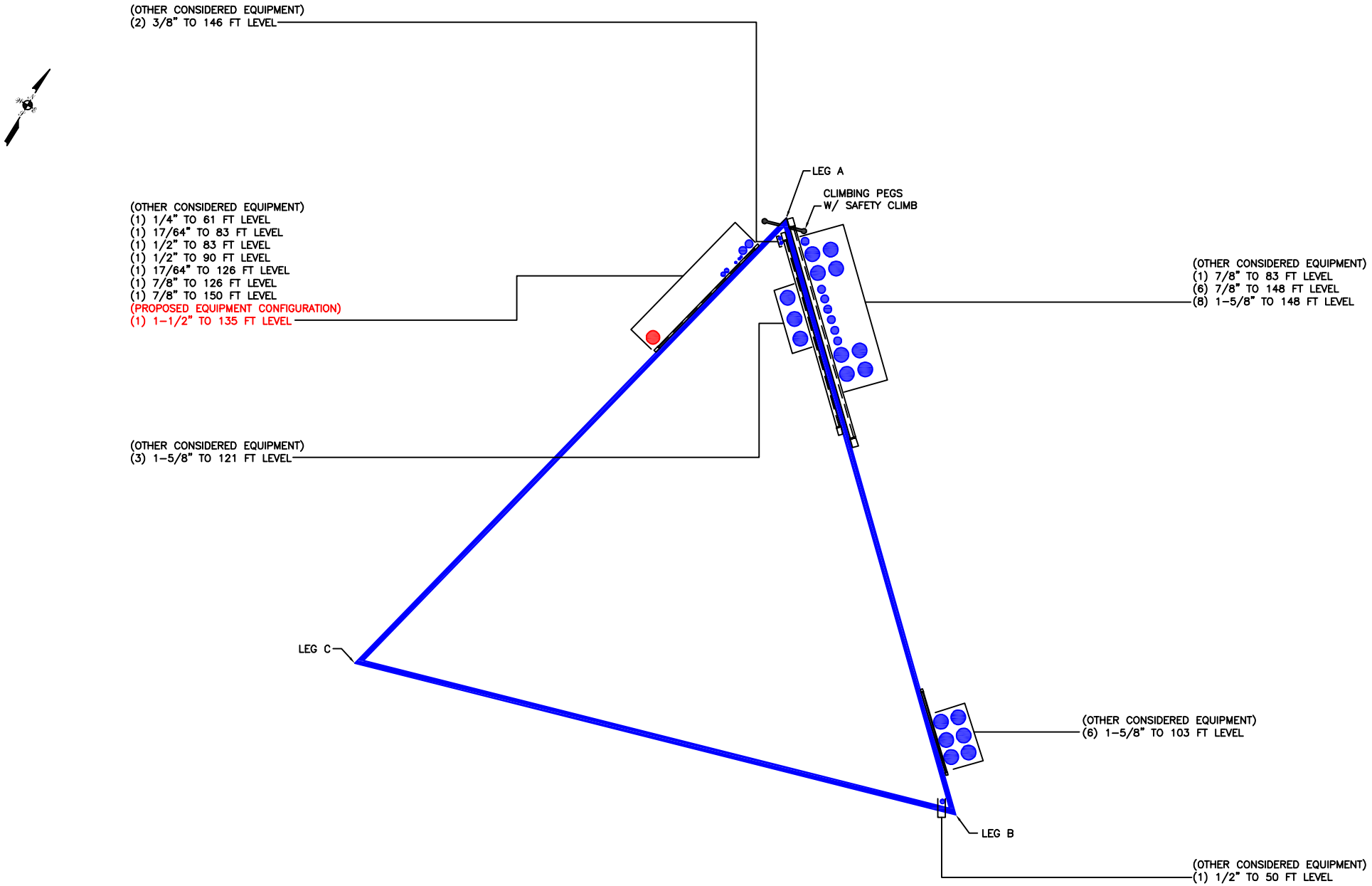
Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T1	150 - 145	Leg	ROHN 2.5 STD	3	-6.08	60.05	10.1	Pass
T2	145 - 140	Leg	ROHN 2.5 STD	15	-7.72	60.05	12.9	Pass
T3	140 - 120	Leg	ROHN 2.5 EH	24	-33.09	61.44	53.9	Pass
T4	120 - 113.333	Leg	ROHN 2.5 EH (GR)	48	-43.17	67.62	63.8	Pass
T5	113.333 - 106.667	Leg	ROHN 2.5 EH (GR)	57	-54.73	67.61	80.9	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T6	106.667 - 100	Leg	ROHN 2.5 EH (GR)	66	-66.08	105.07	62.9	Pass
T7	100 - 93.3333	Leg	ROHN 3 EH (GR)	78	-78.88	113.64	69.4	Pass
T8	93.3333 - 86.6667	Leg	ROHN 3 EH (GR)	87	-90.57	152.69	59.3	Pass
T9	86.6667 - 80	Leg	ROHN 3 EH (GR)	99	-103.12	152.73	67.5	Pass
T10	80 - 70	Leg	ROHN 4 EH (GR)	111	-118.75	149.91	79.2	Pass
T11	70 - 60	Leg	ROHN 4 EH (GR)	120	-136.65	223.18	61.2	Pass
T12	60 - 50	Leg	ROHN 4 EH (GR)	132	-154.84	223.22	69.4	Pass
T13	50 - 40	Leg	ROHN 4 EH (GR)	144	-172.51	223.32	77.2	Pass
T14	40 - 30	Leg	ROHN 5 EH (GR)	156	-190.99	259.31	73.7	Pass
T15	30 - 20	Leg	ROHN 5 EH (GR)	165	-207.88	336.60	61.8	Pass
T16	20 - 10	Leg	ROHN 5 EH (GR)	177	-226.27	336.68	67.2	Pass
T17	10 - 0	Leg	ROHN 5 EH (GR)	189	-243.30	336.75	72.3	Pass
T1	150 - 145	Diagonal	L1 1/2x1 1/2x3/16	12	-1.42	4.26	33.4	Pass
T2	145 - 140	Diagonal	L2x2x3/16	20	-3.06	10.47	29.2	Pass
T3	140 - 120	Diagonal	L2 1/2x2 1/2x3/16	33	-4.90	12.57	39.0	Pass
T4-T5	120 – 106.667	Diagonal	L2 1/2x2 1/2x3/16	Note 1	Note 1	Note 1	60.4	Pass
T6	106.667 - 100	Diagonal	L2 1/2x2 1/2x3/16x3/16	72	-7.73	38.58	20.0	Pass
T7-T8	100 – 86.6667	Diagonal	L3x3x3/16	Note 1	Note 1	Note 1	74.8	Pass
T9	86.6667 - 80	Diagonal	2L3x3x3/16x1/4	105	-8.40	47.56	17.7	Pass
T10	80 - 70	Diagonal	2L3x3x3/16x1/4	114	-9.55	39.20	24.4	Pass
T11	70 - 60	Diagonal	2L3x3x3/16x1/4	123	-10.41	35.93	29.0	Pass
T12	60 - 50	Diagonal	2L3x3x1/4x1/4	135	-10.58	46.14	22.9	Pass
T13	50 - 40	Diagonal	2L3x3x1/4x1/4	147	-11.08	42.40	26.1	Pass
T14	40 - 30	Diagonal	2L3 1/2x3 1/2x1/4x1/4	159	-10.81	60.05	18.0	Pass
T15	30 - 20	Diagonal	2L3 1/2x3 1/2x1/4x1/4	168	-12.28	55.93	22.0	Pass
T16	20 - 10	Diagonal	2L4x4x1/4x1/4	180	-11.98	73.00	16.4	Pass
T17	10 - 0	Diagonal	2L4x4x1/4x1/4	192	-13.68	68.42	20.0	Pass
T6	106.667 - 100	Secondary Horizontal	L2x2x3/16	74	-1.02	6.68	15.2	Pass
T8	93.3333 - 86.6667	Secondary Horizontal	L2x2x3/16	94	-0.27	5.39	5.0	Pass
T9	86.6667 - 80	Secondary Horizontal	L2x2x3/16	108	-0.24	4.86	5.0	Pass
T11	70 - 60	Secondary Horizontal	L2 1/2x2 1/2x3/16	129	-0.39	7.61	5.2	Pass
T12	60 - 50	Secondary Horizontal	L3x3x1/4	141	-0.60	15.05	4.0	Pass
T13	50 - 40	Secondary Horizontal	L3x3x1/4	153	-0.48	13.32	3.6	Pass
T15	30 - 20	Secondary Horizontal	L3x3x3/16	174	-0.55	8.45	6.5	Pass
T16	20 - 10	Secondary Horizontal	L3x3x3/16	186	-0.90	7.64	11.7	Pass
T17	10 - 0	Secondary Horizontal	L3 1/2x3 1/2x1/4	198	-0.74	14.61	5.1	Pass
T1	150 - 145	Top Girt	L2 1/2x2 1/2x3/16	4	-0.36	7.00	5.1	Pass
T3	140 - 120	Top Girt	L2 1/2x2 1/2x3/16	25	-0.69	7.00	9.9	Pass
							Summary	
						Leg (T5)	80.9	Pass
						Diagonal (T7-T8)	74.8	Pass
						Secondary Horizontal (T6)	15.2	Pass
						Top Girt (T3)	9.9	Pass
						Bolt Checks	73.6	Pass
						RATING =	**80.9**	**Pass**

Notes:
1) See additional documentation in "Appendix C - Additional Calculations" for calculations supporting the % capacity listed.

APPENDIX B

BASE LEVEL DRAWING


(OTHER CONSIDERED EQUIPMENT)
(2) 3/8" TO 146 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 1/4" TO 61 FT LEVEL
(1) 17/64" TO 83 FT LEVEL
(1) 1/2" TO 83 FT LEVEL
(1) 1/2" TO 90 FT LEVEL
(1) 17/64" TO 126 FT LEVEL
(1) 7/8" TO 126 FT LEVEL
(1) 7/8" TO 150 FT LEVEL
(PROPOSED EQUIPMENT CONFIGURATION)
(1) 1-1/2" TO 135 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(3) 1-5/8" TO 121 FT LEVEL
LEG A
CLIMBING PEGS
W/ SAFETY CLIMB
(OTHER CONSIDERED EQUIPMENT)
(1) 7/8" TO 83 FT LEVEL
(6) 7/8" TO 148 FT LEVEL
(8) 1-5/8" TO 148 FT LEVEL
LEG C
(OTHER CONSIDERED EQUIPMENT)
(6) 1-5/8" TO 103 FT LEVEL
LEG B
(OTHER CONSIDERED EQUIPMENT)
(1) 1/2" TO 50 FT LEVEL

APPENDIX C

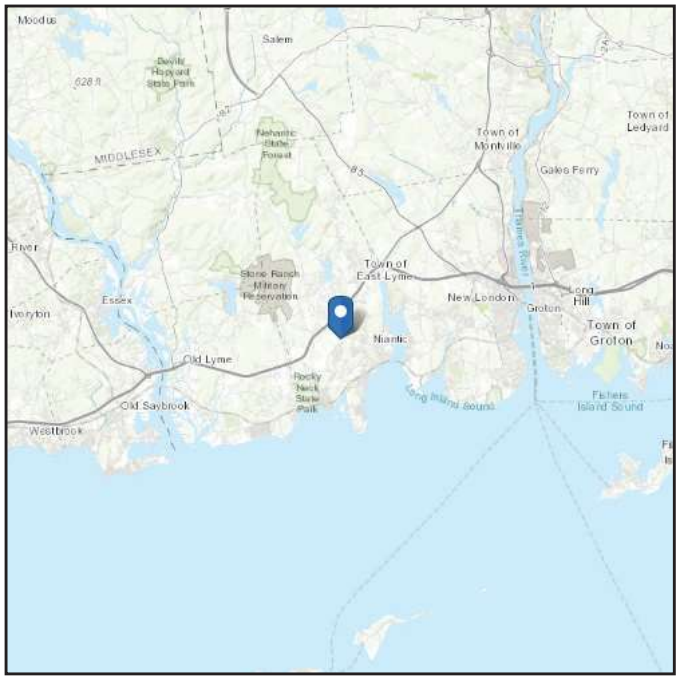
ADDITIONAL CALCULATIONS

ASCE 7 Hazards Report

Address:
No Address at This Location

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

Elevation: 173.19 ft (NAVD 88)
Latitude: 41.335653
Longitude: -72.221744



Wind

Results:

Wind Speed:	144 Vmph	*145 mph per Jurisdiction requirements
10-year MRI	79 Vmph	
25-year MRI	89 Vmph	
50-year MRI	98 Vmph	
100-year MRI	108 Vmph	

Data Accessed: Tue Jul 06 2021

Date Source: ASCE/SEI 7-10, Fig. 26.5-1B 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 3% probability of exceedance in 50 years (annual exceedance probability = 0.000588, MRI = 1,700 years).

Site is in a hurricane-prone region as defined in ASCE/SEI 7-10 Section 26.2. Glazed openings in health-care facilities shall be protected against wind-borne debris as specified in Section 26.10.3.

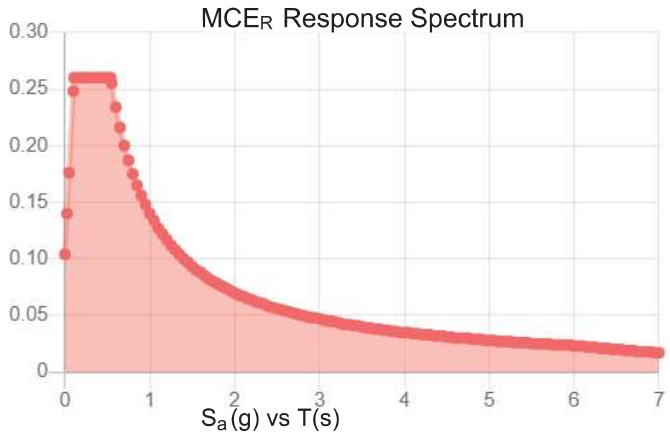
Seismic

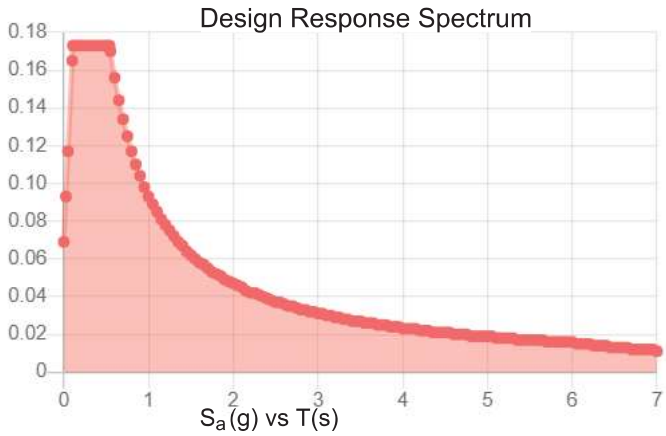
Site Soil Class: D - Stiff Soil

Results:

S_S :	0.162	S_{DS} :	0.173
S_1 :	0.058	S_{D1} :	0.093
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.081
S_{MS} :	0.26	PGA_M :	0.13
S_{M1} :	0.14	F_{PGA} :	1.6
		I_e :	1.25

Seismic Design Category B





Data Accessed: Tue Jul 06 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 Jul 06 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.

Project Name:	NLN 136 943455	**Engineer:**	GJS
Project Number:	TEP No. 45439.570072	**Check:**	CLT
Client Site Number:	BU 806384	**Date:**	7/10/2021

Double Angle Member Connection Check

Input - Properties

Elevation:	106.67-120	ft - elevation of angle brace
F_y:	36.00	ksi - yield stress of angle brace
F_u:	58.00	ksi - tensile stress of angle brace
Member Size:	L2-1/2X2-1/2X3/16	- member considered (connecting leg first)
Type:	Double	- member type (single or double angle)
d_{bolt}:	0.500	in - bolt diameter
Type:	A325-N	- bolt type (X - threads excluded, N - threads included)
n:	1	- number of bolts in a single line
d_{hole}:	0.5625	in - drill hole diameter
Min. Edge:	0.750	in - minimum edge distance (center of hole to edge of member)
Bolt Spacing:		in - minimum bolt spacing (center to center)
Gage:	0.940	in - gage distance (heel of angle to center of hole)
Gusset thickness:	0.250	in
Gusset Min. Edge	0.875	in

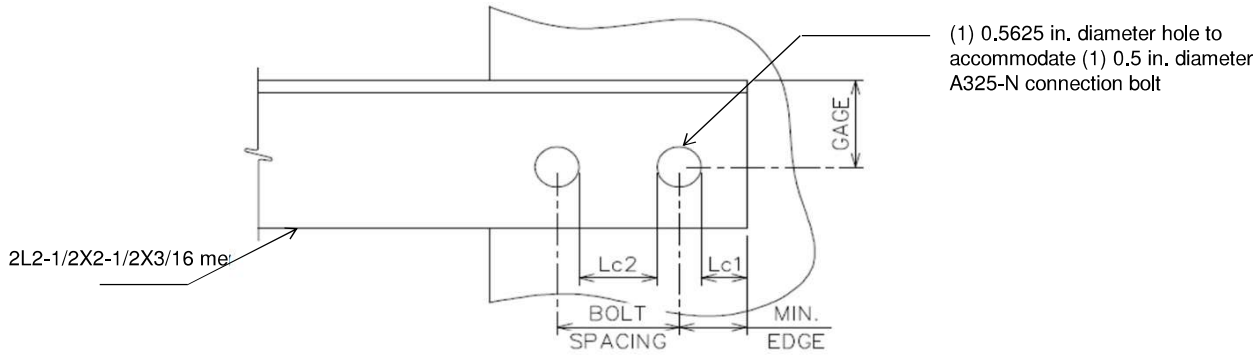
Input - Loads

Code:	TIA-H	- select version of the TIA
T_u:	6.34	kips - maximum leg tension load
P_u:	6.39	kips - maximum leg compression load
ASIF:	1.33	< = = DISREGARD
z	0.75	- shear lag coefficient
U_{bs}:	1.00	- shear lag coefficient for block shear
ϕ_t:	0.90	- tension yielding
ϕ_t:	0.75	- tension rupture
ϕ_{bs}:	0.75	- block shear
ϕ_{br}:	0.80	- bearing/tear out
ϕ_b:	0.75	- bolt shear
AISC Minimums?:	No	- Use AISC Minimums for Min. Edge, Bolt Spacing, and Gage?

Member Properties:

A_g:	0.900	in^2 - gross area of a single angle brace
A_e:	0.587	in^2 - net area of a single angle brace
A_{gv}:	0.141	in^2 - gross area subjected to shear of a single angle brace
A_{nv}:	0.082	in^2 - net area subjected to shear of a single angle brace
A_{nt}:	0.234	in^2 - net area subjected to tension of a single angle brace
L_{c1}:	0.469	in - clear edge distance of a single angle brace
L_{c2}:	0.000	in - clear edge distance between bolts of a single angle brace

D:	2.50	in - width of angle brace
t:	0.1875	in - thickness of angle brace
Min. Edge:	0.750	in - minimum edge distance (center of hole to edge of member)
Bolt Spacing:	0.000	in - minimum edge distance (center of hole to edge of member)
Gage:	0.940	in - gage distance (heel of angle to center of hole)
$L_{c1gusset}$:	0.594	in



Project Name:	NLN 136 943455	**Engineer:**	GJS
Project Number:	TEP No. 45439.570072	**Check:**	CLT
Client Site Number:	BU 806384	**Date:**	7/10/2021

Double Angle Member Connection Check

Gusset Capacity:

Tension Bearing/Tear Out = (2)ASIF(MIN((Le)(Fu)/(2)(t) , (1.2)(dbolt)(t)(Fu)) =

Bearing/Tear Out = (2)1.333(MIN((0.875 in)(58 ksi)/(2)(0.25 in),(1.2)(0.5 in)(0.25 in)(58 ksi) + (n-1)MIN((0 in)(58 ksi)/(2)(0.25 in),(1.2)(0.5 in)(0.25 in)(58 ksi) = **10.01** kips

Compression Bearing/Tear Out = (2)ASIF(MIN((Le)(Fu)/(2)(t) , (1.2)(dbolt)(t)(Fu)) =

Bearing/Tear Out = (2)1.333((1.2)(0.5 in)(0.1875 in)(58 ksi) + (n-1)MIN((0 in)(58 ksi)/(2)(0.1875 in),(1.2)(0.5 in)(0.1875 in)(58 ksi) = **13.92** kips

Summary:

		Stress Ratio
Gusset Tension:	**6.34 < 10.01 (Pass)**	**60.4%**
Gusset Compression:	**6.39 < 13.92 (Pass)**	43.7%

Project Name:	NLN 136 943455	**Engineer:**	GJS
Project Number:	TEP No. 45439.570072	**Check:**	CLT
Client Site Number:	BU 806384	**Date:**	7/10/2021

Single Angle Member Connection Check

Input - Properties

Elevation:	86.67-100	ft - elevation of angle brace
F_y:	36.00	ksi - yield stress of angle brace
F_u:	58.00	ksi - tensile stress of angle brace
Member Size:	L3X3X3/16	- member considered (connecting leg first)
Type:	Single	- member type (single or double angle)
d_{bolt}:	0.500	in - bolt diameter
Type:	A325-N	- bolt type (X - threads excluded, N - threads included)
n:	1	- number of bolts in a single line
d_{hole}:	0.5625	in - drill hole diameter
Min. Edge:	0.750	in - minimum edge distance (center of hole to edge of member)
Bolt Spacing:		in - minimum bolt spacing (center to center)
Gage:	1.000	in - gage distance (heel of angle to center of hole)
Gusset thickness:	0.250	in
Gusset Min. Edge	0.875	in

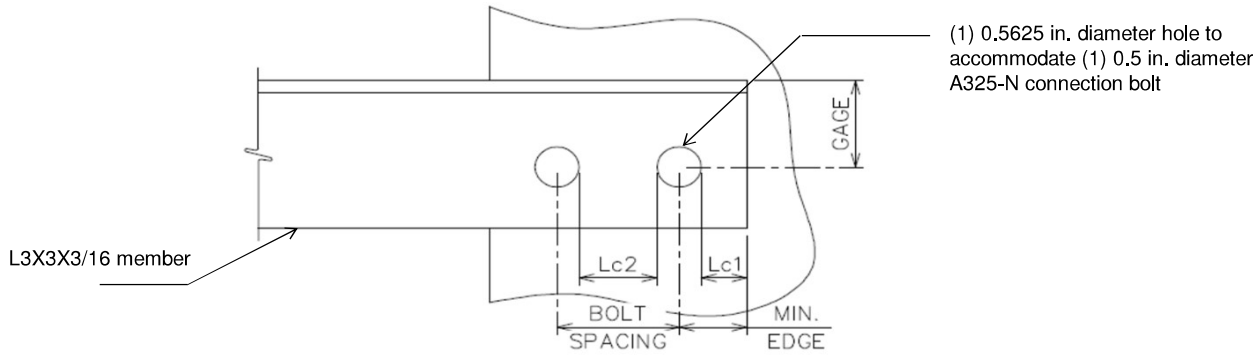
Input - Loads

Code:	TIA-H	- select version of the TIA
T_u:	7.86	kips - maximum leg tension load
P_u:	8.17	kips - maximum leg compression load
ASIF:	1.33	< = = DISREGARD
z	0.75	- shear lag coefficient
U_{bs}:	1.00	- shear lag coefficient for block shear
ϕ_t:	0.90	- tension yielding
ϕ_t:	0.75	- tension rupture
ϕ_{bs}:	0.75	- block shear
ϕ_{br}:	0.80	- bearing/tear out
ϕ_b:	0.75	- bolt shear
AISC Minimums?:	No	- Use AISC Minimums for Min. Edge, Bolt Spacing, and Gage?

Member Properties:

A_g:	1.090	in^2 - gross area of a single angle brace
A_e:	0.730	in^2 - net area of a single angle brace
A_{gv}:	0.141	in^2 - gross area subjected to shear of a single angle brace
A_{nv}:	0.082	in^2 - net area subjected to shear of a single angle brace
A_{nt}:	0.316	in^2 - net area subjected to tension of a single angle brace
L_{c1}:	0.469	in - clear edge distance of a single angle brace
L_{c2}:	0.000	in - clear edge distance between bolts of a single angle brace

D:	3.00	in - width of angle brace
t:	0.1875	in - thickness of angle brace
Min. Edge:	0.750	in - minimum edge distance (center of hole to edge of member)
Bolt Spacing:	0.000	in - minimum edge distance (center of hole to edge of member)
Gage:	1.000	in - gage distance (heel of angle to center of hole)
$L_{c1gusset}$:	0.594	in



Project Name:	NLN 136 943455	**Engineer:**	GJS
Project Number:	TEP No. 45439.570072	**Check:**	CLT
Client Site Number:	BU 806384	**Date:**	7/10/2021

Single Angle Member Connection Check

Summary:

		Stress Ratio
Gusset Tension:	**7.86 < 10.01 (Pass)**	**74.8%**
Gusset Compression:	**8.17 < 13.92 (Pass)**	55.9%

Self Support Anchor Rod Capacity

Site Info	
BU #	806384
Site Name	NLN 136 943455
Order #	553405 Rev.0

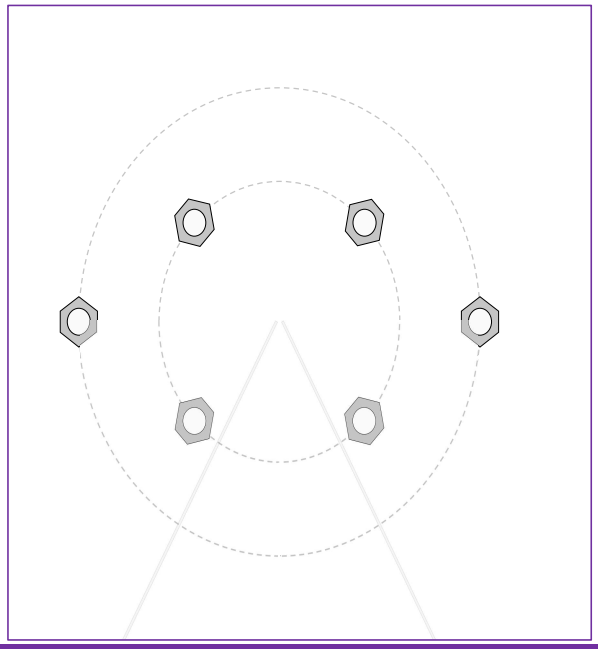
Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	See Custom Sheet
l_{ar} (in)	See Custom Sheet

Applied Loads		
	Comp.	Uplift
Axial Force (kips)	253.00	209.00
Shear Force (kips)	32.00	28.00

**TIA-222-H Section 15.5 Applied*

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

**Anchor Rod Eccentricity Applied*



Connection Properties

Anchor Rod Data

GROUP 1: (4) 1" ø bolts (A193 Gr. B7 N; Fy=105 ksi, Fu=125 ksi) on 10.5" BC

l_{ar} (in): 2.5

GROUP 2: (2) 1" ø bolts (A193 Gr. B7 N; Fy=105 ksi, Fu=125 ksi) on 17.5" BC

pos. (deg): 0, 180

l_{ar} (in): 0

Analysis Results

Anchor Rod Summary *(units of kips, kip-in)*

GROUP 1:

Pu_t = 34.83	ϕPn_t = 56.81	**Stress Rating**
Vu = 7	ϕVn = 36.82	**58.4%**
Mu = n/a	ϕMn = n/a	**Pass**

GROUP 2:

Pu_t = 34.83	ϕPn_t = 56.81	**Stress Rating**
Vu = 0	ϕVn = 36.82	**58.4%**
Mu = n/a	ϕMn = n/a	**Pass**

CCIplate

Elevation (ft)		*(Base)*

note: Bending interaction not considered when Grout Considered = "Yes"

Bolt Group	Resist Axial	Resist Shear		Grout Considered
1	Yes	Yes		Yes
2	Yes	No		No

Leg Mod Eccentricity (in)

Custom Bolt Connection

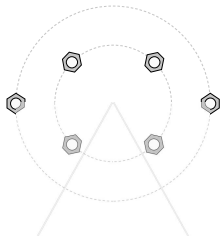
Bolt	Bolt Group ID	Location (deg.)	Diameter (in)	Material	Bolt Circle (in)	Eta Factor, η:	l_{er} (in):	Thread Type	Area Override, in^2	Tension Only
1	1	45	1	A193 Gr. B7	10.5	0.5	2.5	N-Included		No
2	1	135	1	A193 Gr. B7	10.5	0.5	2.5	N-Included		No
3	1	225	1	A193 Gr. B7	10.5	0.5	2.5	N-Included		No
4	1	315	1	A193 Gr. B7	10.5	0.5	2.5	N-Included		No
5	2	0	1	A193 Gr. B7	17.5	0.5	0	N-Included		No
6	2	180	1	A193 Gr. B7	17.5	0.5	0	N-Included		No

note: For Self-Support towers, only one direction is checked (in+out of the tower) so please use the Plot Graphic button to confirm Anchor Rod placement.

Custom Stiffener Connection

Stiffener	Stiffener Group ID	Location (deg.)	Width (in)	Height (in)	Thickness (in)	H. Notch (in)	V. Notch (in)	Grade (ksi)	Weld Type	Groove Depth (in)	Groove Angle (deg.)	H. Fillet Weld Size (in)	V. Fillet Weld Size (in)	Weld Strength (ksi)

Plot Graphic



Pier and Pad Foundation

BU # :	806384
Site Name:	NLN 136 943455
App. Number:	553405 Rev.0

TIA-222 Revision:	H
Tower Type:	Self Support

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

Superstructure Analysis Reactions		
Compression, P_{comp}:	253	kips
Compression Shear, Vu_comp:	32	kips
Uplift, P_{uplift}:	209	kips
Uplift Shear, V_{u_uplift}:	28	kips
Tower Height, **H**:	150	ft
Base Face Width, **BW**:	22.7813	ft
BP Dist. Above Fdn, bp_{dist}:	3.5	in

Pier Properties		
Pier Shape:	Circular	
Pier Diameter, **dpier**:	3	ft
Ext. Above Grade, **E**:	0.5	ft
Pier Rebar Size, **Sc**:	9	
Pier Rebar Quantity, **mc**:	12	
Pier Tie/Spiral Size, **St**:	4	
Pier Tie/Spiral Quantity, **mt**:	14	
Pier Reinforcement Type:	Tie	
Pier Clear Cover, cc_{pier}:	3	in

Pad Properties		
Depth, **D**:	12	ft
Pad Width, W_1:	8.25	ft
Pad Thickness, **T**:	2	ft
Pad Rebar Size (Bottom dir. 2), Sp_2:	7	
Pad Rebar Quantity (Bottom dir. 2), mp_2:	9	
Pad Clear Cover, cc_{pad}:	3	in

Material Properties		
Rebar Grade, **Fy**:	60	ksi
Concrete Compressive Strength, **F'c**:	3	ksi
Dry Concrete Density, δc:	150	pcf

Soil Properties		
Total Soil Unit Weight, γ:	131	pcf
Ultimate Gross Bearing, Qult:	12.000	ksf
Cohesion, **Cu**:		ksf
Friction Angle, φ:	31	degrees
SPT Blow Count, N_{blows}:		
Base Friction, μ:	0.3	
Neglected Depth, **N**:	3.33	ft
Foundation Bearing on Rock?	No	
Groundwater Depth, **gw**:	N/A	ft

<--Toggle between Gross and Net

Foundation Analysis Checks	Capacity	Demand	Rating*	Check
Uplift (kips)	245.01	209.00	**81.2%**	**Pass**
Lateral (Sliding) (kips)	96.64	28.00	**27.6%**	**Pass**
Bearing Pressure (ksf)	9.00	5.68	**60.1%**	**Pass**
*Pier Flexure (Comp.) (kip*ft)*	853.31	336.00	**37.5%**	**Pass**
*Pier Flexure (Tension) (kip*ft)*	517.23	294.00	**54.1%**	**Pass**
Pier Compression (kip)	1708.19	266.36	**14.9%**	**Pass**
*Pad Flexure (kip*ft)*	462.81	106.59	**21.9%**	**Pass**
Pad Shear - 1-way (kips)	160.13	30.46	**18.1%**	**Pass**
Pad Shear - 2-way (Comp) (ksi)	0.164	0.058	**33.5%**	**Pass**
*Flexural 2-way (Comp) (kip*ft)*	925.63	201.60	**20.7%**	**Pass**
Pad Shear - 2-way (Uplift) (ksi)	0.164	0.080	**46.4%**	**Pass**
*Flexural 2-way (Tension) (kip*ft)*	925.63	176.40	**18.1%**	**Pass**

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

Structural Rating*:	**54.1%**
Soil Rating*:	**81.2%**

Exhibit E

Mount Analysis

Date: **November 4, 2021**

INFINIGY
FROM ZERO TO INFINIGY
the solutions are endless

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

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

Subject:	**Mount Analysis Report**	
Carrier Designation:	**Dish Network 5G**	
	Carrier Site Number:	BOBOS00033A
	Carrier Site Name:	CT-CCI-T-806384
Crown Castle Designation:	**Crown Castle BU Number:**	806384
	Crown Castle Site Name:	NLN 136 943455
	Crown Castle JDE Job Number:	645649
	Crown Castle Order Number:	553405 Rev. 2
Engineering Firm Designation:	**Infinigy Engineering, PLLC Report Designation:** 1039-Z0001-B	
Site Data:	**93 Roxbury Road, East Lyme, New London County, CT, 06357** **Latitude 41°20'8.35" Longitude -72°13'18.28"**	
Structure Information:	**Tower Height & Type:**	**150.0 ft Self Support**
	Mount Elevation:	**135.0 ft**
	Mount Type:	**8.0 ft Sector Frame**

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.

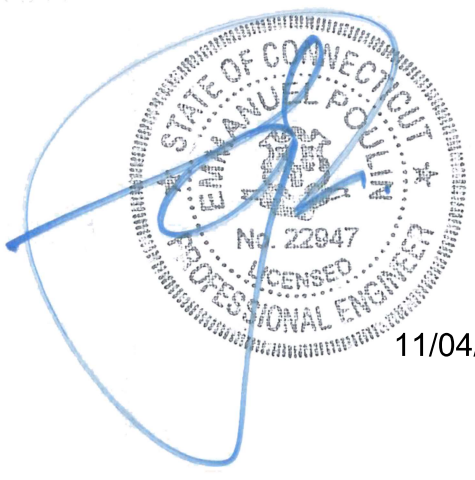
The purpose of the analysis is to determine acceptability of the mount stress level. Based on our analysis we have determined the mount stress level to be:

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

This analysis utilizes an ultimate 3-second gust wind speed of 135 mph as required by the 2018 Connecticut State Building Code. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Mount analysis prepared by: Robert Faber, E.I.T.

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



11/04/21

TABLE OF CONTENTS

1) INTRODUCTION

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

2) ANALYSIS CRITERIA

Building Code:	2015 IBC / 2018 Connecticut State Building Code
TIA-222 Revision:	TIA-222-H
Risk Category:	III
Ultimate Wind Speed:	135 mph
Exposure Category:	B
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:	0.162
Seismic S_1:	0.058
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
135.0	135.0	3	JMA WIRELESS	MX08FRO665-21	8.0 ft Sector Frame (Commscope MTC3975083)
		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	553405 Rev. 2	CCI Sites
Mount Manufacturer Drawings	Commscope	Part No: MTC3975083	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 A529 (GR 50)
HSS (Rectangular)	ASTM A500 (GR 46)
Pipe	ASTM A500 (GR 46)
Threaded Rod	ASTM A307

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 (Sector Frame, Worst Case Sector)

Notes	Component	Critical Member	Centerline (ft)	% Capacity	Pass / Fail
1,2	Mount Pipe(s)	MP2	135.0	10.5	Pass
	Horizontal(s)	HOR1		9.8	Pass
	Standoff(s)	SA1		32.2	Pass
	Bracing	DIAG2		26.3	Pass
	Mount Connection(s)	--		36.9	Pass

Structure Rating (max from all components) =	36.9%

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.

Table 4 - Tieback Connection Data Table

Tower Connection Node No.	Existing / Proposed	Resultant End Reaction (lb)	Connected Member Type	Connected Member Size	Member Compressive Capacity (lb)[2]	Notes
N38	Proposed	855.1	Leg	ROHN 2.5 EH	3,072.0	1,2

Notes:
1) Tieback connection point is within 25% of either end of the connected tower member
2) Reduced member compressive capacity according to CED-STD-10294 *Standard for Installation of Mounts and Appurtenances*

4.1) Recommendations

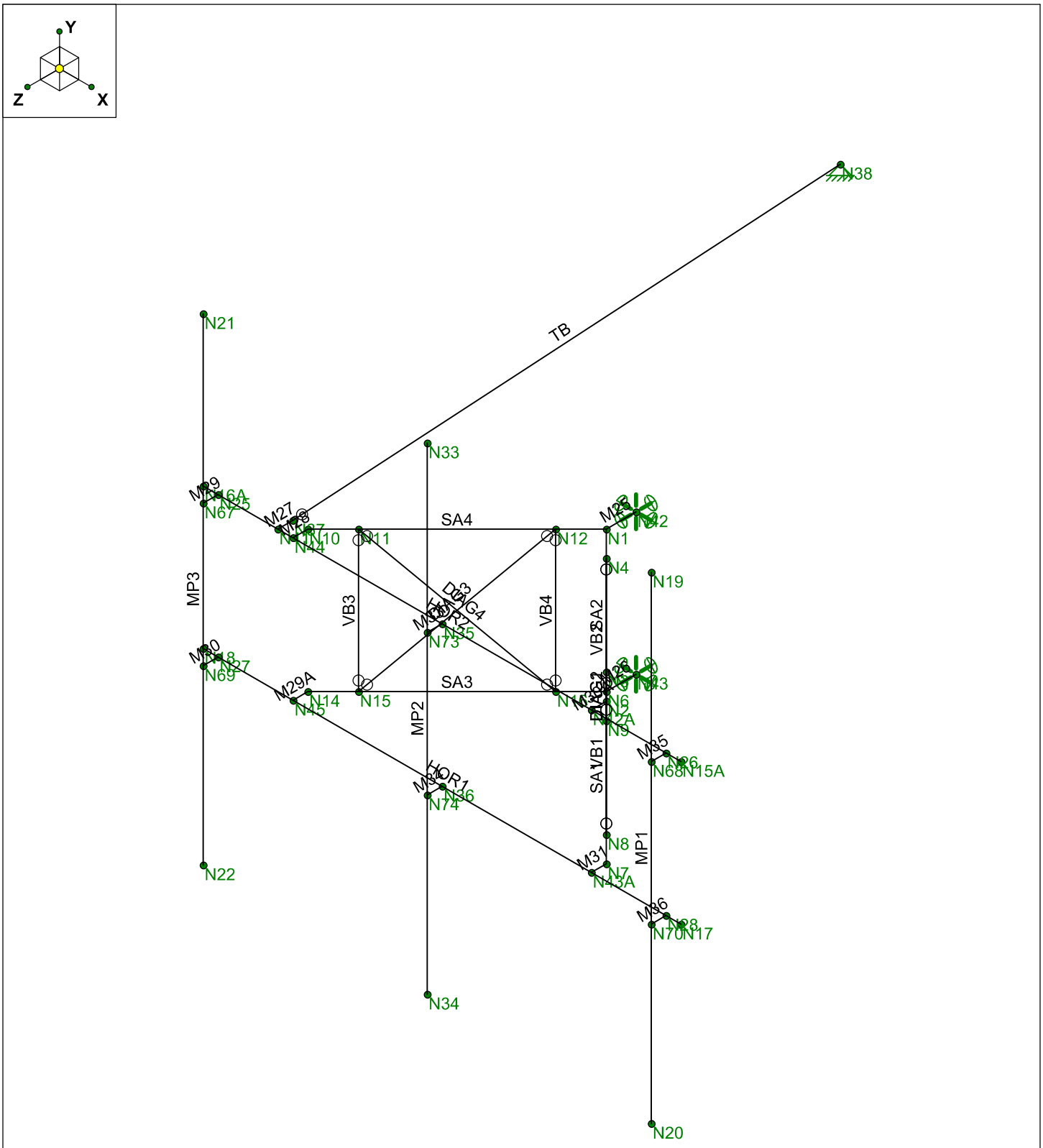
The mount has sufficient capacity to carry the proposed loading configuration. In order for the results of the analysis to be considered valid, the proposed mount listed below must be installed.

1. Commscope MTC3975083 (8' sector).

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

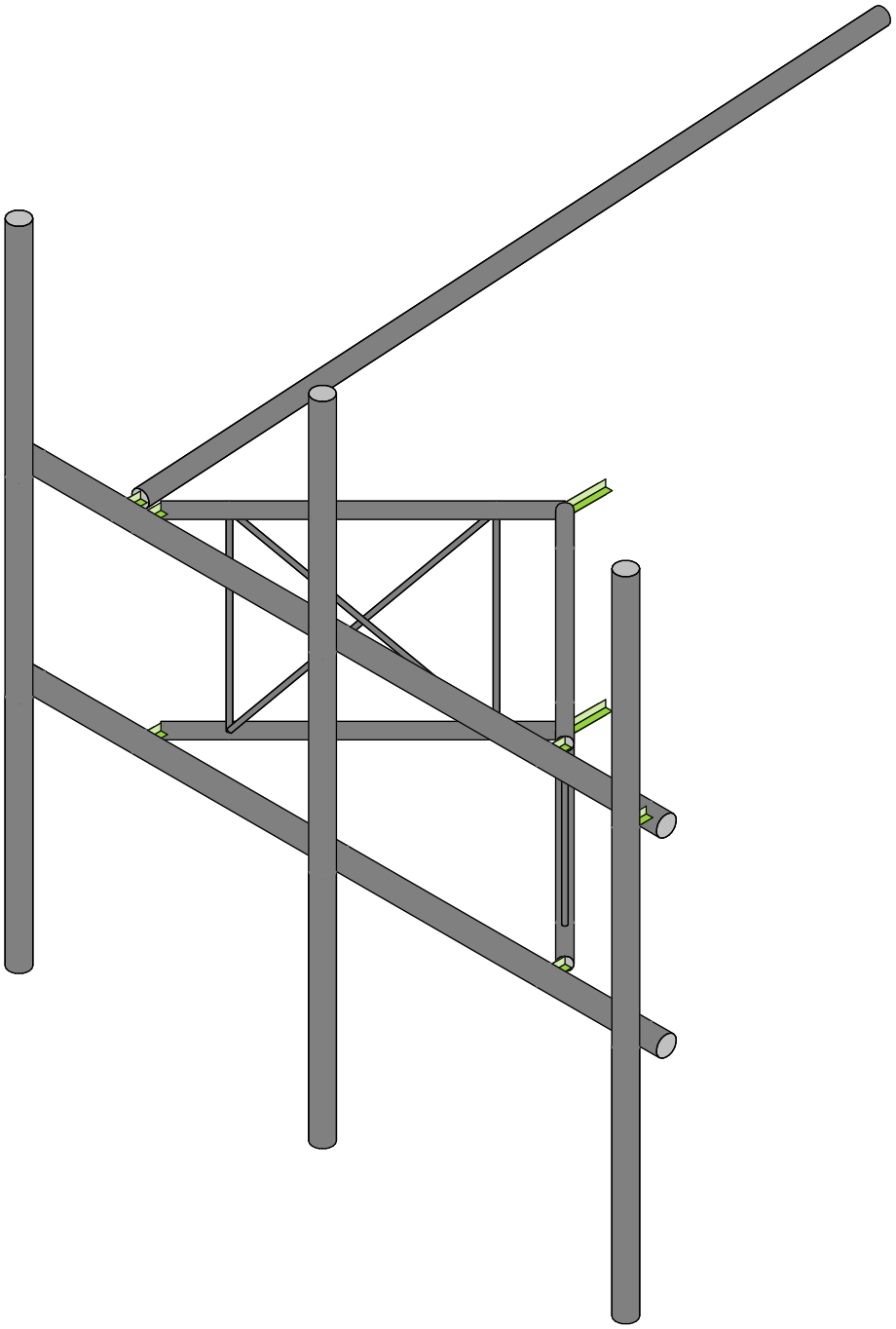
APPENDIX A

WIRE FRAME AND RENDERED MODELS



Envelope Only Solution

Infinigy Engineering, PLLC	806384	Wireframe
Robert Faber		Nov 4, 2021 at 9:00 AM
1039-Z0001-B		MTC3975083_loaded.r3d



Envelope Only Solution

Infinigy Engineering, PLLC	806384	Render
Robert Faber		Nov 4, 2021 at 9:01 AM
1039-Z0001-B		MTC3975083_loaded.r3d

APPENDIX B

SOFTWARE INPUT CALCULATIONS

Program Inputs

PROJECT INFORMATION	
Client:	Crown Castle
Carrier:	Dish Network
Engineer:	Robert Faber

SITE INFORMATION		
Risk Category:	III	
Exposure Category:	B	
Topo Factor Procedure:	Method 1, Category 1	
Site Class:	D - Stiff Soil (Assumed)	
Ground Elevation:	173.19	ft *Rev H

MOUNT INFORMATION		
Mount Type:	Sector Frame	
Num Sectors:	3	
Centerline AGL:	135.00	ft
Tower Height AGL:	150.00	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):	0.994	*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}):	135	mph
Design Wind (V):	N/A	mph
Ice Wind (V_{ice}):	50	mph
Base Ice Thickness (t_i):	1.5	in
Flat Pressure:	94.850	psf
Round Pressure:	56.910	psf
Ice Wind Pressure:	7.807	psf

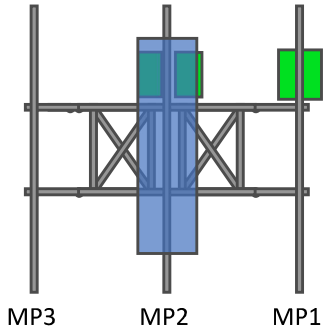
SEISMIC DATA		
Short-Period Accel. (S_s):	0.162	g
1-Second Accel. (S_1):	0.058	g
Short-Period Design (S_{DS}):	0.173	
1-Second Design (S_{D1}):	0.093	
Short-Period Coeff. (F_a):	1.600	
1-Second Coeff. (F_v):	2.400	
Amplification Factor (A_s):	3.000	
Response Mod. Coeff. (R):	2.000	

INFINIGY
FROM ZERO TO INFINIGY
the solutions are endless

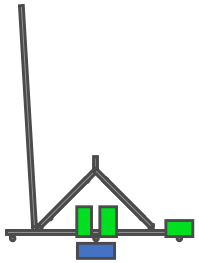
Infinigy Load Calculator V2.1.7

Program Inputs

ELEVATION VIEW



PLAN VIEW



INFINIGY
FROM ZERO TO INFINIGY
the solutions are endless

Infinigy Load Calculator V2.1.7

APPURTENANCE INFORMATION

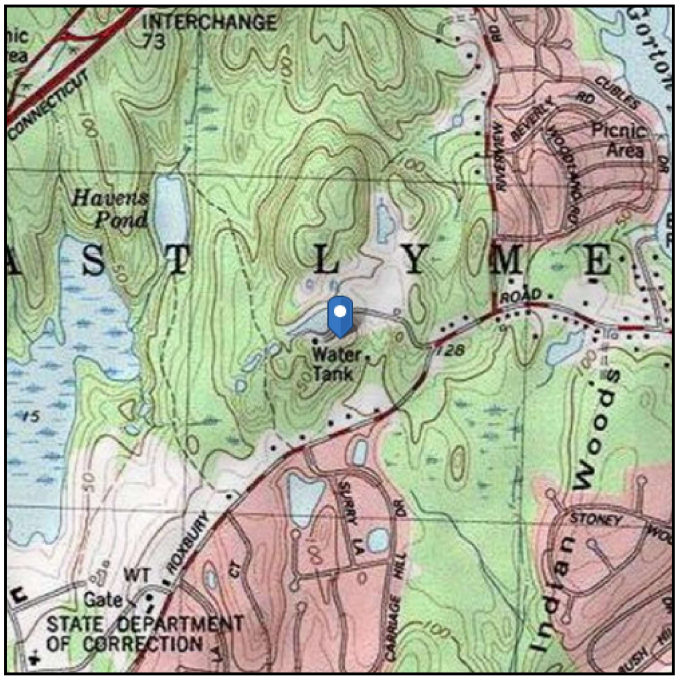
Appurtenance Name	Elevation	Qty.	K_a	q_z (psf)	EPA_N (ft^2)	EPA_T (ft^2)	Wind F_z (lbs)	Wind F_x (lbs)	Weight (lbs)	Seismic F (lbs)	Member (α sector)
JMA WIRELESS MX08FRO665-21	135.0	3	0.90	47.42	8.01	3.21	341.89	137.01	82.50	26.73	MP2
FUJITSU TA08025-B604	135.0	3	0.90	47.42	1.96	0.98	83.81	41.88	63.90	20.70	MP2
FUJITSU TA08025-B605	135.0	3	0.90	47.42	1.96	1.13	83.81	48.21	75.00	24.30	MP2
RAYCAP RDIDC-9181-PF-48	135.0	1	0.90	47.42	2.01	1.17	85.87	49.86	21.85	7.08	MP1

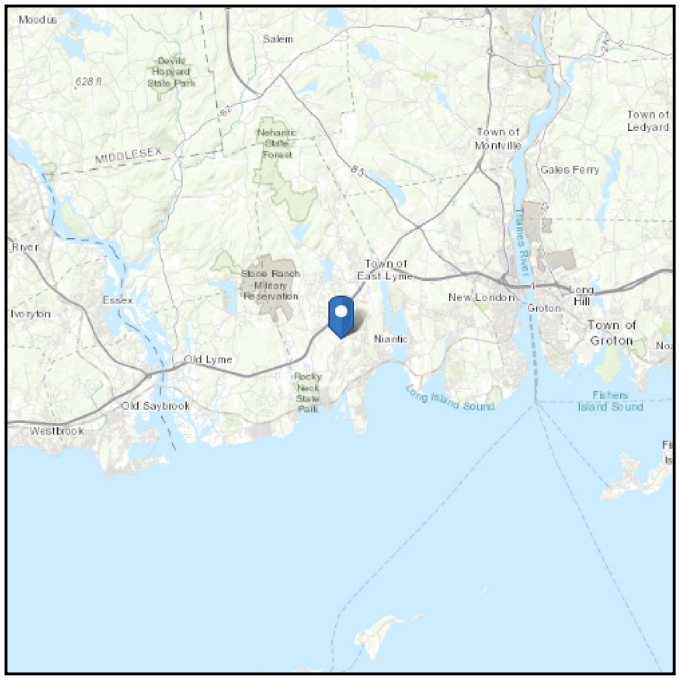
ASCE 7 Hazards Report

Address:
No Address at This Location

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

Elevation: 173.19 ft (NAVD 88)
Latitude: 41.335653
Longitude: -72.221744





Wind

Results:

Wind Speed:	135 Vmph per the 2018 Connecticut State Building Code allowing ASCE 7-16 Wind Speed
10-year MRI	79 Vmph
25-year MRI	89 Vmph
50-year MRI	98 Vmph
100-year MRI	108 Vmph

Data Accessed: Wed Nov 03 2021

Date Source: ASCE/SEI 7-10, Fig. 26.5-1B 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 3% probability of exceedance in 50 years (annual exceedance probability = 0.000588, MRI = 1,700 years).

Site is in a hurricane-prone region as defined in ASCE/SEI 7-10 Section 26.2. Glazed openings in health-care facilities shall be protected against wind-borne debris as specified in Section 26.10.3.

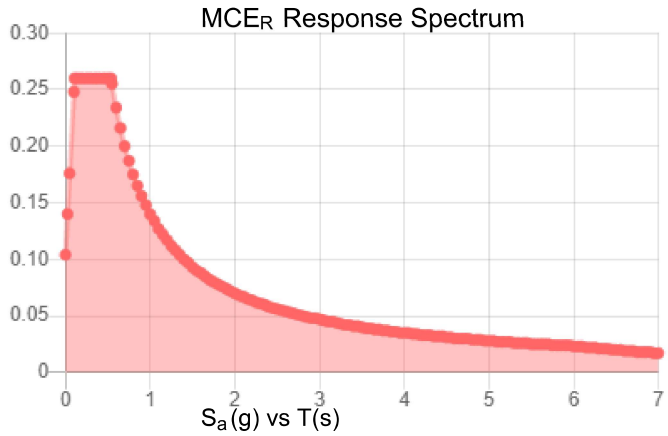
Seismic

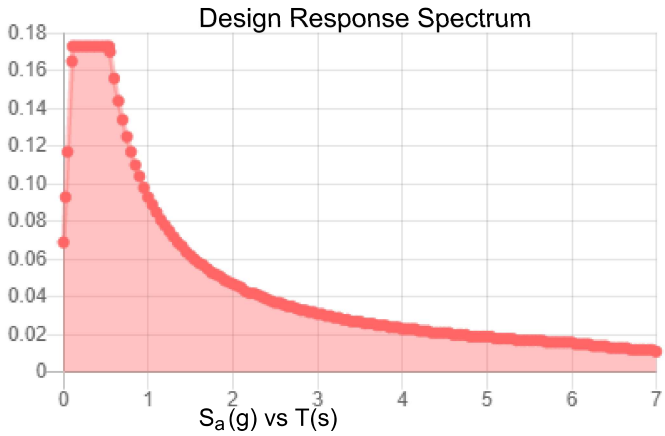
Site Soil Class: D - Stiff Soil

Results:

S_S :	0.162	S_{DS} :	0.173
S_1 :	0.058	S_{D1} :	0.093
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.081
S_{MS} :	0.26	PGA_M :	0.13
S_{M1} :	0.14	F_{PGA} :	1.6
		I_e :	1.25

Seismic Design Category B





Data Accessed: Wed Nov 03 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:	Wed Nov 03 2021

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

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

APPENDIX C

SOFTWARE ANALYSIS OUTPUT

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(de...	Section/Shape	Type	Design List	Material	Design Rules
1	SA2	N2	N1			Standoff Arms	Beam	Pipe	A500 Gr.46	Typical
2	SA1	N7	N6			Standoff Arms	Beam	Pipe	A500 Gr.46	Typical
3	VB1	N3	N8			Standoff Vertical	VBrace	BAR	A529 Gr.50	Typical
4	VB2	N4	N9			Standoff Vertical	VBrace	BAR	A529 Gr.50	Typical
5	DIAG1	N4	N8			Diagonal	VBrace	BAR	A529 Gr.50	Typical
6	DIAG2	N3	N9			Diagonal	VBrace	BAR	A529 Gr.50	Typical
7	SA4	N10	N1			Standoff Arms	Beam	Pipe	A500 Gr.46	Typical
8	SA3	N14	N6			Standoff Arms	Beam	Pipe	A500 Gr.46	Typical
9	VB3	N11	N15			Standoff Vertical	VBrace	BAR	A529 Gr.50	Typical
10	VB4	N12	N16			Standoff Vertical	VBrace	BAR	A529 Gr.50	Typical
11	DIAG3	N12	N15			Diagonal	VBrace	BAR	A529 Gr.50	Typical
12	DIAG4	N11	N16			Diagonal	VBrace	BAR	A529 Gr.50	Typical
13	HOR2	N16A	N15A			Face Horizontal	Beam	Pipe	A500 Gr.46	Typical
14	HOR1	N18	N17			Face Horizontal	Beam	Pipe	A500 Gr.46	Typical
15	MP3	N22	N21			Mount Pipe	Column	Pipe	A500 Gr.46	Typical
16	MP1	N20	N19			Mount Pipe	Column	Pipe	A500 Gr.46	Typical
17	MP2	N34	N33			Mount Pipe	Column	Pipe	A500 Gr.46	Typical
18	TB	N37	N38			Tieback	Beam	Pipe	A500 Gr.46	Typical
19	M29	N25	N67			RIGID	None	None	RIGID	Typical
20	M30	N27	N69			RIGID	None	None	RIGID	Typical
21	M33	N35	N73			RIGID	None	None	RIGID	Typical
22	M34	N36	N74			RIGID	None	None	RIGID	Typical
23	M35	N26	N68			RIGID	None	None	RIGID	Typical
24	M36	N28	N70			RIGID	None	None	RIGID	Typical
25	M25	N1	N42			RIGID	None	None	RIGID	Typical
26	M26	N6	N43			RIGID	None	None	RIGID	Typical
27	M27	N37	N41			RIGID	None	None	RIGID	Typical
28	M28	N10	N44			RIGID	None	None	RIGID	Typical
29	M29A	N14	N45			RIGID	None	None	RIGID	Typical
30	M30A	N2	N42A			RIGID	None	None	RIGID	Typical
31	M31	N7	N43A			RIGID	None	None	RIGID	Typical

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	SA2	Standoff Ar...	42.4			Lbyy						Lateral
2	SA1	Standoff Ar...	42.4			Lbyy						Lateral
3	VB1	Standoff Ve...	28.3			Lbyy			.65	.65		Lateral
4	VB2	Standoff Ve...	28.3			Lbyy			.65	.65		Lateral
5	DIAG1	Diagonal	39.811			Lbyy			.7	.7		Lateral
6	DIAG2	Diagonal	39.811			Lbyy			.5	.5		Lateral
7	SA4	Standoff Ar...	42.4			Lbyy						Lateral
8	SA3	Standoff Ar...	42.4			Lbyy						Lateral
9	VB3	Standoff Ve...	28.3			Lbyy			.65	.65		Lateral
10	VB4	Standoff Ve...	28.3			Lbyy			.65	.65		Lateral
11	DIAG3	Diagonal	39.811			Lbyy			.7	.7		Lateral
12	DIAG4	Diagonal	39.811			Lbyy			.5	.5		Lateral
13	HOR2	Face Horizo...	96	Segment	Segment	Segment	Segment	Segme...				Lateral
14	HOR1	Face Horizo...	96			Lbyy						Lateral
15	MP3	Mount Pipe	96			Lbyy						Lateral
16	MP1	Mount Pipe	96			Lbyy						Lateral
17	MP2	Mount Pipe	96			Lbyy						Lateral
18	TB	Tieback	117.209									Lateral

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design R...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Face Horizontal	PIPE_2.5	Beam	Pipe	A500 Gr.46	Typical	1.61	1.45	1.45	2.89
2	Standoff Arms	PIPE_1.5	Beam	Pipe	A500 Gr.46	Typical	.749	.293	.293	.586
3	Diagonal	0.625" S.R.	VBrace	BAR	A529 Gr.50	Typical	.307	.007	.007	.015
4	Mount Pipe	PIPE_2.5	Column	Pipe	A500 Gr.46	Typical	1.61	1.45	1.45	2.89
5	Tieback	PIPE_2.0	Beam	Pipe	A500 Gr.46	Typical	1.02	.627	.627	1.25
6	Standoff Vertical	0.625" S.R.	VBrace	BAR	A529 Gr.50	Typical	.307	.007	.007	.015

Material Takeoff

	Material	Size	Pieces	Length[in]	Weight[K]
1	General				
2	RIGID		13	45	0
3	Total General		13	45	0
4					
5	Hot Rolled Steel				
6	A500 Gr.46	PIPE_1.5	4	169.6	.036
7	A500 Gr.46	PIPE_2.5	5	480	.219
8	A500 Gr.46	PIPE_2.0	1	117.2	.034
9	A529 Gr.50	0.625" S.R.	8	272.4	.024
10	Total HR Steel		18	1039.3	.313

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(...
1	Self Weight	DL		-1			5			
2	Wind Load AZI 0	WLZ					10			
3	Wind Load AZI 30	None					10			
4	Wind Load AZI 60	None					10			
5	Wind Load AZI 90	WLX					10			
6	Wind Load AZI 120	None					10			
7	Wind Load AZI 150	None					10			
8	Wind Load AZI 180	None					10			
9	Wind Load AZI 210	None					10			
10	Wind Load AZI 240	None					10			
11	Wind Load AZI 270	None					10			
12	Wind Load AZI 300	None					10			
13	Wind Load AZI 330	None					10			
14	Distr. Wind Load Z	WLZ						31		
15	Distr. Wind Load X	WLX						31		
16	Ice Weight	OL1					5	31		
17	Ice Wind Load AZI 0	OL2					10			
18	Ice Wind Load AZI 30	None					10			
19	Ice Wind Load AZI 60	None					10			
20	Ice Wind Load AZI 90	OL3					10			
21	Ice Wind Load AZI 120	None					10			
22	Ice Wind Load AZI 150	None					10			
23	Ice Wind Load AZI 180	None					10			
24	Ice Wind Load AZI 210	None					10			
25	Ice Wind Load AZI 240	None					10			
26	Ice Wind Load AZI 270	None					10			
27	Ice Wind Load AZI 300	None					10			
28	Ice Wind Load AZI 330	None					10			
29	Distr. Ice Wind Load Z	OL2						31		
30	Distr. Ice Wind Load X	OL3						31		
31	Seismic Load Z	ELZ			-.324		5			

Basic Load Cases (Continued)

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(...
32	Seismic Load X	ELX	-.324				5			
33	Service Live Loads	LL				1				
34	Maintenance Load 1	LL				1				
35	Maintenance Load 2	LL				1				
36	Maintenance Load 3	LL				1				

Member Point Loads (BLC 1 : Self Weight)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	Y	-41.25	84
2	MP2	Y	-41.25	12
3	MP2	Y	-63.9	%75
4	MP2	Y	-75	%75
5	MP1	Y	-21.85	84

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	X	0	84
2	MP2	Z	-170.94	84
3	MP2	X	0	12
4	MP2	Z	-170.94	12
5	MP2	X	0	%75
6	MP2	Z	-83.81	%75
7	MP2	X	0	%75
8	MP2	Z	-83.81	%75
9	MP1	X	0	84
10	MP1	Z	-85.87	84

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	X	-72.67	84
2	MP2	Z	-125.86	84
3	MP2	X	-72.67	12
4	MP2	Z	-125.86	12
5	MP2	X	-36.66	%75
6	MP2	Z	-63.5	%75
7	MP2	X	-37.45	%75
8	MP2	Z	-64.87	%75
9	MP1	X	-38.43	84
10	MP1	Z	-66.57	84

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	X	-81.51	84
2	MP2	Z	-47.06	84
3	MP2	X	-81.51	12
4	MP2	Z	-47.06	12
5	MP2	X	-45.34	%75
6	MP2	Z	-26.18	%75
7	MP2	X	-49.46	%75
8	MP2	Z	-28.55	%75
9	MP1	X	-50.98	84
10	MP1	Z	-29.43	84

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	X	-68.51	84
2	MP2	Z	0	84
3	MP2	X	-68.51	12
4	MP2	Z	0	12
5	MP2	X	-41.88	%75
6	MP2	Z	0	%75
7	MP2	X	-48.21	%75
8	MP2	Z	0	%75
9	MP1	X	-49.86	84
10	MP1	Z	0	84

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	X	-81.51	84
2	MP2	Z	47.06	84
3	MP2	X	-81.51	12
4	MP2	Z	47.06	12
5	MP2	X	-45.34	%75
6	MP2	Z	26.18	%75
7	MP2	X	-49.46	%75
8	MP2	Z	28.55	%75
9	MP1	X	-50.98	84
10	MP1	Z	29.43	84

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	X	-72.67	84
2	MP2	Z	125.86	84
3	MP2	X	-72.67	12
4	MP2	Z	125.86	12
5	MP2	X	-36.66	%75
6	MP2	Z	63.5	%75
7	MP2	X	-37.45	%75
8	MP2	Z	64.87	%75
9	MP1	X	-38.43	84
10	MP1	Z	66.57	84

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	X	0	84
2	MP2	Z	170.94	84
3	MP2	X	0	12
4	MP2	Z	170.94	12
5	MP2	X	0	%75
6	MP2	Z	83.81	%75
7	MP2	X	0	%75
8	MP2	Z	83.81	%75
9	MP1	X	0	84
10	MP1	Z	85.87	84

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	X	72.67	84
2	MP2	Z	125.86	84
3	MP2	X	72.67	12

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
4	MP2	Z	125.86	12
5	MP2	X	36.66	%75
6	MP2	Z	63.5	%75
7	MP2	X	37.45	%75
8	MP2	Z	64.87	%75
9	MP1	X	38.43	84
10	MP1	Z	66.57	84

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	X	81.51	84
2	MP2	Z	47.06	84
3	MP2	X	81.51	12
4	MP2	Z	47.06	12
5	MP2	X	45.34	%75
6	MP2	Z	26.18	%75
7	MP2	X	49.46	%75
8	MP2	Z	28.55	%75
9	MP1	X	50.98	84
10	MP1	Z	29.43	84

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	X	68.51	84
2	MP2	Z	0	84
3	MP2	X	68.51	12
4	MP2	Z	0	12
5	MP2	X	41.88	%75
6	MP2	Z	0	%75
7	MP2	X	48.21	%75
8	MP2	Z	0	%75
9	MP1	X	49.86	84
10	MP1	Z	0	84

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	X	81.51	84
2	MP2	Z	-47.06	84
3	MP2	X	81.51	12
4	MP2	Z	-47.06	12
5	MP2	X	45.34	%75
6	MP2	Z	-26.18	%75
7	MP2	X	49.46	%75
8	MP2	Z	-28.55	%75
9	MP1	X	50.98	84
10	MP1	Z	-29.43	84

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	X	72.67	84
2	MP2	Z	-125.86	84
3	MP2	X	72.67	12
4	MP2	Z	-125.86	12
5	MP2	X	36.66	%75
6	MP2	Z	-63.5	%75

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
7	MP2	X	37.45	%75
8	MP2	Z	-64.87	%75
9	MP1	X	38.43	84
10	MP1	Z	-66.57	84

Member Point Loads (BLC 16 : Ice Weight)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	Y	-166.626	84
2	MP2	Y	-166.626	12
3	MP2	Y	-83.194	%75
4	MP2	Y	-88.507	%75
5	MP1	Y	-87.263	84

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	X	0	84
2	MP2	Z	-19.06	84
3	MP2	X	0	12
4	MP2	Z	-19.06	12
5	MP2	X	0	%75
6	MP2	Z	-7.59	%75
7	MP2	X	0	%75
8	MP2	Z	-7.59	%75
9	MP1	X	0	84
10	MP1	Z	-7.74	84

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	X	-8.76	84
2	MP2	Z	-15.17	84
3	MP2	X	-8.76	12
4	MP2	Z	-15.17	12
5	MP2	X	-3.55	%75
6	MP2	Z	-6.14	%75
7	MP2	X	-3.58	%75
8	MP2	Z	-6.2	%75
9	MP1	X	-3.68	84
10	MP1	Z	-6.38	84

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	X	-12.51	84
2	MP2	Z	-7.22	84
3	MP2	X	-12.51	12
4	MP2	Z	-7.22	12
5	MP2	X	-5.28	%75
6	MP2	Z	-3.05	%75
7	MP2	X	-5.47	%75
8	MP2	Z	-3.16	%75
9	MP1	X	-5.73	84
10	MP1	Z	-3.31	84

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	X	-12.9	84
2	MP2	Z	0	84
3	MP2	X	-12.9	12
4	MP2	Z	0	12
5	MP2	X	-5.6	%75
6	MP2	Z	0	%75
7	MP2	X	-5.89	%75
8	MP2	Z	0	%75
9	MP1	X	-6.23	84
10	MP1	Z	0	84

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	X	-12.51	84
2	MP2	Z	7.22	84
3	MP2	X	-12.51	12
4	MP2	Z	7.22	12
5	MP2	X	-5.28	%75
6	MP2	Z	3.05	%75
7	MP2	X	-5.47	%75
8	MP2	Z	3.16	%75
9	MP1	X	-5.73	84
10	MP1	Z	3.31	84

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	X	-8.76	84
2	MP2	Z	15.17	84
3	MP2	X	-8.76	12
4	MP2	Z	15.17	12
5	MP2	X	-3.55	%75
6	MP2	Z	6.14	%75
7	MP2	X	-3.58	%75
8	MP2	Z	6.2	%75
9	MP1	X	-3.68	84
10	MP1	Z	6.38	84

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	X	0	84
2	MP2	Z	19.06	84
3	MP2	X	0	12
4	MP2	Z	19.06	12
5	MP2	X	0	%75
6	MP2	Z	7.59	%75
7	MP2	X	0	%75
8	MP2	Z	7.59	%75
9	MP1	X	0	84
10	MP1	Z	7.74	84

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	X	8.76	84
2	MP2	Z	15.17	84
3	MP2	X	8.76	12

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
4	MP2	Z	15.17	12
5	MP2	X	3.55	%75
6	MP2	Z	6.14	%75
7	MP2	X	3.58	%75
8	MP2	Z	6.2	%75
9	MP1	X	3.68	84
10	MP1	Z	6.38	84

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	X	12.51	84
2	MP2	Z	7.22	84
3	MP2	X	12.51	12
4	MP2	Z	7.22	12
5	MP2	X	5.28	%75
6	MP2	Z	3.05	%75
7	MP2	X	5.47	%75
8	MP2	Z	3.16	%75
9	MP1	X	5.73	84
10	MP1	Z	3.31	84

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	X	12.9	84
2	MP2	Z	0	84
3	MP2	X	12.9	12
4	MP2	Z	0	12
5	MP2	X	5.6	%75
6	MP2	Z	0	%75
7	MP2	X	5.89	%75
8	MP2	Z	0	%75
9	MP1	X	6.23	84
10	MP1	Z	0	84

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	X	12.51	84
2	MP2	Z	-7.22	84
3	MP2	X	12.51	12
4	MP2	Z	-7.22	12
5	MP2	X	5.28	%75
6	MP2	Z	-3.05	%75
7	MP2	X	5.47	%75
8	MP2	Z	-3.16	%75
9	MP1	X	5.73	84
10	MP1	Z	-3.31	84

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	X	8.76	84
2	MP2	Z	-15.17	84
3	MP2	X	8.76	12
4	MP2	Z	-15.17	12
5	MP2	X	3.55	%75
6	MP2	Z	-6.14	%75

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
7	MP2	X	3.58	%75
8	MP2	Z	-6.2	%75
9	MP1	X	3.68	84
10	MP1	Z	-6.38	84

Member Point Loads (BLC 31 : Seismic Load Z)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	Z	-13.365	84
2	MP2	Z	-13.365	12
3	MP2	Z	-20.704	%75
4	MP2	Z	-24.3	%75
5	MP1	Z	-7.079	84

Member Point Loads (BLC 32 : Seismic Load X)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	X	-13.365	84
2	MP2	X	-13.365	12
3	MP2	X	-20.704	%75
4	MP2	X	-24.3	%75
5	MP1	X	-7.079	84

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	SA2	SZ	-56.91	-56.91	0	%100
2	SA1	SZ	-56.91	-56.91	0	%100
3	VB1	SZ	-56.91	-56.91	0	%100
4	VB2	SZ	-56.91	-56.91	0	%100
5	DIAG1	SZ	-56.91	-56.91	0	%100
6	DIAG2	SZ	-56.91	-56.91	0	%100
7	SA4	SZ	-56.91	-56.91	0	%100
8	SA3	SZ	-56.91	-56.91	0	%100
9	VB3	SZ	-56.91	-56.91	0	%100
10	VB4	SZ	-56.91	-56.91	0	%100
11	DIAG3	SZ	-56.91	-56.91	0	%100
12	DIAG4	SZ	-56.91	-56.91	0	%100
13	HOR2	SZ	-56.91	-56.91	0	%100
14	HOR1	SZ	-56.91	-56.91	0	%100
15	MP3	SZ	-56.91	-56.91	0	%100
16	MP1	SZ	-56.91	-56.91	0	%100
17	MP2	SZ	-56.91	-56.91	0	%100
18	TB	SZ	-56.91	-56.91	0	%100
19	M29	SZ	0	0	0	%100
20	M30	SZ	0	0	0	%100
21	M33	SZ	0	0	0	%100
22	M34	SZ	0	0	0	%100
23	M35	SZ	0	0	0	%100
24	M36	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	M28	SZ	0	0	0	%100
29	M29A	SZ	0	0	0	%100
30	M30A	SZ	0	0	0	%100
31	M31	SZ	0	0	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	SA2	SX	-56.91	-56.91	0	%100
2	SA1	SX	-56.91	-56.91	0	%100
3	VB1	SX	-56.91	-56.91	0	%100
4	VB2	SX	-56.91	-56.91	0	%100
5	DIAG1	SX	-56.91	-56.91	0	%100
6	DIAG2	SX	-56.91	-56.91	0	%100
7	SA4	SX	-56.91	-56.91	0	%100
8	SA3	SX	-56.91	-56.91	0	%100
9	VB3	SX	-56.91	-56.91	0	%100
10	VB4	SX	-56.91	-56.91	0	%100
11	DIAG3	SX	-56.91	-56.91	0	%100
12	DIAG4	SX	-56.91	-56.91	0	%100
13	HOR2	SX	-56.91	-56.91	0	%100
14	HOR1	SX	-56.91	-56.91	0	%100
15	MP3	SX	-56.91	-56.91	0	%100
16	MP1	SX	-56.91	-56.91	0	%100
17	MP2	SX	-56.91	-56.91	0	%100
18	TB	SX	-56.91	-56.91	0	%100
19	M29	SX	0	0	0	%100
20	M30	SX	0	0	0	%100
21	M33	SX	0	0	0	%100
22	M34	SX	0	0	0	%100
23	M35	SX	0	0	0	%100
24	M36	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	M28	SX	0	0	0	%100
29	M29A	SX	0	0	0	%100
30	M30A	SX	0	0	0	%100
31	M31	SX	0	0	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	SA2	Y	-9.429	-9.429	0	%100
2	SA1	Y	-9.429	-9.429	0	%100
3	VB1	Y	-6.335	-6.335	0	%100
4	VB2	Y	-6.335	-6.335	0	%100
5	DIAG1	Y	-6.335	-6.335	0	%100
6	DIAG2	Y	-6.335	-6.335	0	%100
7	SA4	Y	-9.429	-9.429	0	%100
8	SA3	Y	-9.429	-9.429	0	%100
9	VB3	Y	-6.335	-6.335	0	%100
10	VB4	Y	-6.335	-6.335	0	%100
11	DIAG3	Y	-6.335	-6.335	0	%100
12	DIAG4	Y	-6.335	-6.335	0	%100
13	HOR2	Y	-11.794	-11.794	0	%100
14	HOR1	Y	-11.794	-11.794	0	%100
15	MP3	Y	-11.794	-11.794	0	%100
16	MP1	Y	-11.794	-11.794	0	%100
17	MP2	Y	-11.794	-11.794	0	%100
18	TB	Y	-10.581	-10.581	0	%100
19	M29	Y	-4.819	-4.819	0	%100
20	M30	Y	-4.819	-4.819	0	%100
21	M33	Y	-4.819	-4.819	0	%100
22	M34	Y	-4.819	-4.819	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,%]
23	M35	Y	-4.819	-4.819	0	%100
24	M36	Y	-4.819	-4.819	0	%100
25	M25	Y	-4.819	-4.819	0	%100
26	M26	Y	-4.819	-4.819	0	%100
27	M27	Y	-4.819	-4.819	0	%100
28	M28	Y	-4.819	-4.819	0	%100
29	M29A	Y	-4.819	-4.819	0	%100
30	M30A	Y	-4.819	-4.819	0	%100
31	M31	Y	-4.819	-4.819	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	SA2	SZ	-24.126	-24.126	0	%100
2	SA1	SZ	-24.126	-24.126	0	%100
3	VB1	SZ	-57.418	-57.418	0	%100
4	VB2	SZ	-57.418	-57.418	0	%100
5	DIAG1	SZ	-57.418	-57.418	0	%100
6	DIAG2	SZ	-57.418	-57.418	0	%100
7	SA4	SZ	-24.126	-24.126	0	%100
8	SA3	SZ	-24.126	-24.126	0	%100
9	VB3	SZ	-57.418	-57.418	0	%100
10	VB4	SZ	-57.418	-57.418	0	%100
11	DIAG3	SZ	-57.418	-57.418	0	%100
12	DIAG4	SZ	-57.418	-57.418	0	%100
13	HOR2	SZ	-18.592	-18.592	0	%100
14	HOR1	SZ	-18.592	-18.592	0	%100
15	MP3	SZ	-18.592	-18.592	0	%100
16	MP1	SZ	-18.592	-18.592	0	%100
17	MP2	SZ	-18.592	-18.592	0	%100
18	TB	SZ	-20.862	-20.862	0	%100
19	M29	SZ	0	0	0	%100
20	M30	SZ	0	0	0	%100
21	M33	SZ	0	0	0	%100
22	M34	SZ	0	0	0	%100
23	M35	SZ	0	0	0	%100
24	M36	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	M28	SZ	0	0	0	%100
29	M29A	SZ	0	0	0	%100
30	M30A	SZ	0	0	0	%100
31	M31	SZ	0	0	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	SA2	SX	-24.126	-24.126	0	%100
2	SA1	SX	-24.126	-24.126	0	%100
3	VB1	SX	-57.418	-57.418	0	%100
4	VB2	SX	-57.418	-57.418	0	%100
5	DIAG1	SX	-57.418	-57.418	0	%100
6	DIAG2	SX	-57.418	-57.418	0	%100
7	SA4	SX	-24.126	-24.126	0	%100
8	SA3	SX	-24.126	-24.126	0	%100
9	VB3	SX	-57.418	-57.418	0	%100
10	VB4	SX	-57.418	-57.418	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,%]
11	DIAG3	SX	-57.418	-57.418	0	%100
12	DIAG4	SX	-57.418	-57.418	0	%100
13	HOR2	SX	-18.592	-18.592	0	%100
14	HOR1	SX	-18.592	-18.592	0	%100
15	MP3	SX	-18.592	-18.592	0	%100
16	MP1	SX	-18.592	-18.592	0	%100
17	MP2	SX	-18.592	-18.592	0	%100
18	TB	SX	-20.862	-20.862	0	%100
19	M29	SX	0	0	0	%100
20	M30	SX	0	0	0	%100
21	M33	SX	0	0	0	%100
22	M34	SX	0	0	0	%100
23	M35	SX	0	0	0	%100
24	M36	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	M28	SX	0	0	0	%100
29	M29A	SX	0	0	0	%100
30	M30A	SX	0	0	0	%100
31	M31	SX	0	0	0	%100

Load Combinations

	Description	So..	P...	S...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	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	-.866	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	-.866	15	-.5												
10	1.2DL + 1WL AZI 240	Yes	Y		1	1.2	10	1	14	-.5	15	-.866												
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	-.866												
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	-.866	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	-.866	15	-.5												
22	0.9DL + 1WL AZI 240	Yes	Y		1	.9	10	1	14	-.5	15	-.866												
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	-.866												
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 30	Yes	Y		1	1.2	16	1	18	1	29	.866	30	.5										
29	1.2D + 1.0Di +1.0Wi AZI 60	Yes	Y		1	1.2	16	1	19	1	29	.5	30	.866										
30	1.2D + 1.0Di +1.0Wi AZI 90	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										

Load Combinations (Continued)

	Description	So..	P...	S...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...
32	1.2D + 1.0Di +1.0Wi AZI ...	Yes	Y		1	1.2	16	1	22	1	29	-.866	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	-.866	30	-.5										
35	1.2D + 1.0Di +1.0Wi AZI ...	Yes	Y		1	1.2	16	1	25	1	29	-.5	30	-.866										
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	-.866										
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															
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	-.866	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	-.866	32	-.5														
47	(1.2 + 0.2Sds)DL + 1.0E ...	Yes	Y		1	1.2...	31	-.5	32	-.866														
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	-.866														
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 A...	Yes	Y		1	.865	31	1	32															
52	(0.9 - 0.2Sds)DL + 1.0E A...	Yes	Y		1	.865	31	.866	32	.5														
53	(0.9 - 0.2Sds)DL + 1.0E A...	Yes	Y		1	.865	31	.5	32	.866														
54	(0.9 - 0.2Sds)DL + 1.0E A...	Yes	Y		1	.865	31		32	1														
55	(0.9 - 0.2Sds)DL + 1.0E A...	Yes	Y		1	.865	31	-.5	32	.866														
56	(0.9 - 0.2Sds)DL + 1.0E A...	Yes	Y		1	.865	31	-.866	32	.5														
57	(0.9 - 0.2Sds)DL + 1.0E A...	Yes	Y		1	.865	31	-1	32															
58	(0.9 - 0.2Sds)DL + 1.0E A...	Yes	Y		1	.865	31	-.866	32	-.5														
59	(0.9 - 0.2Sds)DL + 1.0E A...	Yes	Y		1	.865	31	-.5	32	-.866														
60	(0.9 - 0.2Sds)DL + 1.0E A...	Yes	Y		1	.865	31		32	-1														
61	(0.9 - 0.2Sds)DL + 1.0E A...	Yes	Y		1	.865	31	.5	32	-.866														
62	(0.9 - 0.2Sds)DL + 1.0E A...	Yes	Y		1	.865	31	.866	32	-.5														
63	1.0DL + 1.5LL + 1.0SWL ...	Yes	Y		1	1	2	.198	14	.198	15		33	1.5										
64	1.0DL + 1.5LL + 1.0SWL ...	Yes	Y		1	1	3	.198	14	.171	15	.099	33	1.5										
65	1.0DL + 1.5LL + 1.0SWL ...	Yes	Y		1	1	4	.198	14	.099	15	.171	33	1.5										
66	1.0DL + 1.5LL + 1.0SWL ...	Yes	Y		1	1	5	.198	14		15	.198	33	1.5										
67	1.0DL + 1.5LL + 1.0SWL ...	Yes	Y		1	1	6	.198	14	-.099	15	.171	33	1.5										
68	1.0DL + 1.5LL + 1.0SWL ...	Yes	Y		1	1	7	.198	14	-.171	15	.099	33	1.5										
69	1.0DL + 1.5LL + 1.0SWL ...	Yes	Y		1	1	8	.198	14	-.198	15		33	1.5										
70	1.0DL + 1.5LL + 1.0SWL ...	Yes	Y		1	1	9	.198	14	-.171	15	-.099	33	1.5										
71	1.0DL + 1.5LL + 1.0SWL ...	Yes	Y		1	1	10	.198	14	-.099	15	-.171	33	1.5										
72	1.0DL + 1.5LL + 1.0SWL ...	Yes	Y		1	1	11	.198	14		15	-.198	33	1.5										
73	1.0DL + 1.5LL + 1.0SWL ...	Yes	Y		1	1	12	.198	14	.099	15	-.171	33	1.5										
74	1.0DL + 1.5LL + 1.0SWL ...	Yes	Y		1	1	13	.198	14	.171	15	-.099	33	1.5										
75	1.2DL + 1.5LL	Yes	Y		1	1.2	33	1.5																
76	1.2DL + 1.5LM-MP1 + 1S...	Yes	Y		1	1.2	34	1.5	2	.049	14	.049	15											
77	1.2DL + 1.5LM-MP1 + 1S...	Yes	Y		1	1.2	34	1.5	3	.049	14	.043	15	.025										
78	1.2DL + 1.5LM-MP1 + 1S...	Yes	Y		1	1.2	34	1.5	4	.049	14	.025	15	.043										
79	1.2DL + 1.5LM-MP1 + 1S...	Yes	Y		1	1.2	34	1.5	5	.049	14		15	.049										
80	1.2DL + 1.5LM-MP1 + 1S...	Yes	Y		1	1.2	34	1.5	6	.049	14	-.025	15	.043										
81	1.2DL + 1.5LM-MP1 + 1S...	Yes	Y		1	1.2	34	1.5	7	.049	14	-.043	15	.025										
82	1.2DL + 1.5LM-MP1 + 1S...	Yes	Y		1	1.2	34	1.5	8	.049	14	-.049	15											
83	1.2DL + 1.5LM-MP1 + 1S...	Yes	Y		1	1.2	34	1.5	9	.049	14	-.043	15	-.025										
84	1.2DL + 1.5LM-MP1 + 1S...	Yes	Y		1	1.2	34	1.5	10	.049	14	-.025	15	-.043										
85	1.2DL + 1.5LM-MP1 + 1S...	Yes	Y		1	1.2	34	1.5	11	.049	14		15	-.049										
86	1.2DL + 1.5LM-MP1 + 1S...	Yes	Y		1	1.2	34	1.5	12	.049	14	.025	15	-.043										
87	1.2DL + 1.5LM-MP1 + 1S...	Yes	Y		1	1.2	34	1.5	13	.049	14	.043	15	-.025										
88	1.2DL + 1.5LM-MP2 + 1S...	Yes	Y		1	1.2	35	1.5	2	.049	14	.049	15											

Load Combinations (Continued)

	Description	So..	P...	S...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...
89	1.2DL + 1.5LM-MP2 + 1S...	Yes	Y		1	1.2	35	1.5	3	.049	14	.043	15	.025										
90	1.2DL + 1.5LM-MP2 + 1S...	Yes	Y		1	1.2	35	1.5	4	.049	14	.025	15	.043										
91	1.2DL + 1.5LM-MP2 + 1S...	Yes	Y		1	1.2	35	1.5	5	.049	14		15	.049										
92	1.2DL + 1.5LM-MP2 + 1S...	Yes	Y		1	1.2	35	1.5	6	.049	14	-.025	15	.043										
93	1.2DL + 1.5LM-MP2 + 1S...	Yes	Y		1	1.2	35	1.5	7	.049	14	-.043	15	.025										
94	1.2DL + 1.5LM-MP2 + 1S...	Yes	Y		1	1.2	35	1.5	8	.049	14	-.049	15											
95	1.2DL + 1.5LM-MP2 + 1S...	Yes	Y		1	1.2	35	1.5	9	.049	14	-.043	15	-.025										
96	1.2DL + 1.5LM-MP2 + 1S...	Yes	Y		1	1.2	35	1.5	10	.049	14	-.025	15	-.043										
97	1.2DL + 1.5LM-MP2 + 1S...	Yes	Y		1	1.2	35	1.5	11	.049	14		15	-.049										
98	1.2DL + 1.5LM-MP2 + 1S...	Yes	Y		1	1.2	35	1.5	12	.049	14	.025	15	-.043										
99	1.2DL + 1.5LM-MP2 + 1S...	Yes	Y		1	1.2	35	1.5	13	.049	14	.043	15	-.025										
100	1.2DL + 1.5LM-MP3 + 1S...	Yes	Y		1	1.2	36	1.5	2	.049	14	.049	15											
101	1.2DL + 1.5LM-MP3 + 1S...	Yes	Y		1	1.2	36	1.5	3	.049	14	.043	15	.025										
102	1.2DL + 1.5LM-MP3 + 1S...	Yes	Y		1	1.2	36	1.5	4	.049	14	.025	15	.043										
103	1.2DL + 1.5LM-MP3 + 1S...	Yes	Y		1	1.2	36	1.5	5	.049	14		15	.049										
104	1.2DL + 1.5LM-MP3 + 1S...	Yes	Y		1	1.2	36	1.5	6	.049	14	-.025	15	.043										
105	1.2DL + 1.5LM-MP3 + 1S...	Yes	Y		1	1.2	36	1.5	7	.049	14	-.043	15	.025										
106	1.2DL + 1.5LM-MP3 + 1S...	Yes	Y		1	1.2	36	1.5	8	.049	14	-.049	15											
107	1.2DL + 1.5LM-MP3 + 1S...	Yes	Y		1	1.2	36	1.5	9	.049	14	-.043	15	-.025										
108	1.2DL + 1.5LM-MP3 + 1S...	Yes	Y		1	1.2	36	1.5	10	.049	14	-.025	15	-.043										
109	1.2DL + 1.5LM-MP3 + 1S...	Yes	Y		1	1.2	36	1.5	11	.049	14		15	-.049										
110	1.2DL + 1.5LM-MP3 + 1S...	Yes	Y		1	1.2	36	1.5	12	.049	14	.025	15	-.043										

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

	Member	Shape	Code Check	Loc[in]	LC	Shear Check	Loc[in]	...	LC	phi*...	phi*...	phi*...	phi*...	Cb	Eqn
1	SA1	PIPE_1...	.322	42.4	89	.087	7.067		93	227...	310...	145...	145...	2.6...	H1...
2	SA3	PIPE_1...	.316	42.4	86	.086	7.067		83	227...	310...	145...	145...	2.6...	H1...
3	SA2	PIPE_1...	.312	42.4	95	.083	42.4		89	227...	310...	145...	145...	2.7...	H1...
4	SA4	PIPE_1...	.307	42.4	80	.081	42.4		86	227...	310...	145...	145...	2.6...	H1...
5	DIAG2	0.625" ...	.263	20.32	89	.006	0		7	399...	13815	134.4	134.4	1.1...	H1...
6	DIAG4	0.625" ...	.262	20.32	85	.006	39.811		9	399...	13815	134.4	134.4	1.1...	H1...
7	MP2	PIPE_2...	.105	63	2	.024	63		91	334...	66654	472...	472...	4.64	H1...
8	TB	PIPE_2...	.099	58.605	5	.006	117.209		36	103...	42228	245...	245...	1.1...	H1...
9	DIAG1	0.625" ...	.099	19.905	29	.005	39.811		13	203...	13815	134.4	134.4	1.1...	H1...
10	HOR1	PIPE_2...	.098	48	104	.087	78		92	334...	66654	472...	472...	1.5...	H1...
11	DIAG3	0.625" ...	.096	19.905	37	.005	39.811		3	203...	13815	134.4	134.4	1.1...	H1...
12	MP1	PIPE_2...	.095	63	95	.028	63		94	334...	66654	472...	472...	4.2...	H1...
13	HOR2	PIPE_2...	.095	48	8	.072	18		81	623...	66654	472...	472...	2.0...	H1...
14	MP3	PIPE_2...	.092	63	82	.026	35		77	334...	66654	472...	472...	4.2...	H1...
15	VB3	0.625" ...	.024	14.15	3	.010	0		96	467...	13815	134.4	134.4	1	H1...
16	VB1	0.625" ...	.024	14.15	2	.010	0		96	467...	13815	134.4	134.4	1	H1...
17	VB2	0.625" ...	.022	14.15	20	.021	0		81	467...	13815	134.4	134.4	1	H1...
18	VB4	0.625" ...	.021	14.15	20	.022	0		95	467...	13815	134.4	134.4	1	H1...

APPENDIX D

ADDITIONAL CALCUATIONS

INFINIGY

FROM ZERO TO INFINIGY

the solutions are endless

Bolt Calculation Tool, V1.5.1

PROJECT DATA	
Site Name:	NLN 136 943455
Site Number:	806384
Connection Description:	Sector Frame to Self Support

MAXIMUM BOLT LOADS		
Bolt Tension:	3757.12	lbs
Bolt Shear:	917.54	lbs

WORST CASE BOLT LOADS[1]		
Bolt Tension:	3757.12	lbs
Bolt Shear:	476.48	lbs

BOLT PROPERTIES		
Bolt Type:	Threaded Rod	-
Bolt Diameter:	0.625	in
Bolt Grade:	A307	-
# of Threaded Rods:	2	-
Threads Excluded?	No	-

[1] *Worst case bolt loads correspond to Load combination #31 on member M25 in RISA-3D, which causes the maximum demand on the bolts.*

Member Information
J nodes of M25, M26

BOLT CHECK		
Tensile Strength	10170.07	
Shear Strength	6902.91	
Max Tensile Usage	36.9%	
Max Shear Usage	13.3%	
Interaction Check (Worst Case)	0.14	***≤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: BOBOS00033A

806384
93 Roxbury Road
East Lyme, Connecticut 06357

November 18, 2021

EBI Project Number: 6221007186

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**27.26%**

21 B Street, Burlington, MA 01803 · Tel: (781) 273.2500 · Fax: (781) 273.3311

November 18, 2021

Dish Wireless

Emissions Analysis for Site: BOBOS00033A - 806384

EBI Consulting was directed to analyze the proposed Dish Wireless facility located at **93 Roxbury Road** in **East Lyme, 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 93 Roxbury Road in East Lyme, Connecticut using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since Dish Wireless is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 20 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was focused at the base of the tower. For this report, the sample point is the top of a 6-foot person standing at the base of the tower.

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

1) 4 n71 channels (600 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

2) 4 n70 channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.

3) 4 n66 channels (AWS Band - 2190 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.

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

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

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

6) The antennas used in this modeling are the JMA MX08FRO665-21 for the 600 MHz / 1900 MHz / 2190 MHz channel(s) in Sector A, the JMA MX08FRO665-21 for the 600 MHz / 1900 MHz / 2190 MHz channel(s) in Sector B, the JMA MX08FRO665-21 for the 600 MHz / 1900 MHz / 2190 MHz channel(s) in Sector C. This is based on feedback from the carrier with regard to anticipated antenna selection. All Antenna gain values and associated transmit power levels are shown in the Site Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 20 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

7) The antenna mounting height centerline of the proposed antennas is 135 feet above ground level (AGL).

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

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

Dish Wireless Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	JMA MX08FRO665-21	Make / Model:	JMA MX08FRO665-21	Make / Model:	JMA MX08FRO665-21
Frequency Bands:	600 MHz / 1900 MHz / 2190 MHz	Frequency Bands:	600 MHz / 1900 MHz / 2190 MHz	Frequency Bands:	600 MHz / 1900 MHz / 2190 MHz
Gain:	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):	135 feet	Height (AGL):	135 feet	Height (AGL):	135 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 %:	**1.42%**	Antenna B1 MPE %:	**1.42%**	Antenna C1 MPE %:	**1.42%**

Site Composite MPE %	
Carrier	**MPE %**
Dish Wireless (Max at Sector A):	1.42%
Verizon	4.89%
Metro PCS	0.48%
T-Mobile	20.45%
Town	0.02%
Site Total MPE % :	27.26%

Dish Wireless MPE % Per Sector	
Dish Wireless Sector A Total:	1.42%
Dish Wireless Sector B Total:	1.42%
Dish Wireless Sector C Total:	1.42%
Site Total MPE % :	27.26%

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	135.0	1.93	600 MHz n71	400	0.48%
Dish Wireless 1900 MHz n70	4	542.70	135.0	4.69	1900 MHz n70	1000	0.47%
Dish Wireless 2190 MHz n66	4	542.70	135.0	4.69	2190 MHz n66	1000	0.47%
						Total:	**1.42%**

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

Summary

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

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

Dish Wireless Sector	Power Density Value (%)
Sector A:	1.42%
Sector B:	1.42%
Sector C:	1.42%
Dish Wireless Maximum MPE % (Sector A):	1.42%
Site Total:	27.26%
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **27.26%** 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:
93 ROXBURY ROAD, EAST LYME, CT 06357

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

Crown Site ID/Name:	**806384/NLN 136 943455**
Customer Site ID:	**BOBOS00033A/CT-CCI-T-806384**
Site Address:	**93 ROXBURY ROAD, EAST LYME, CT 06357**

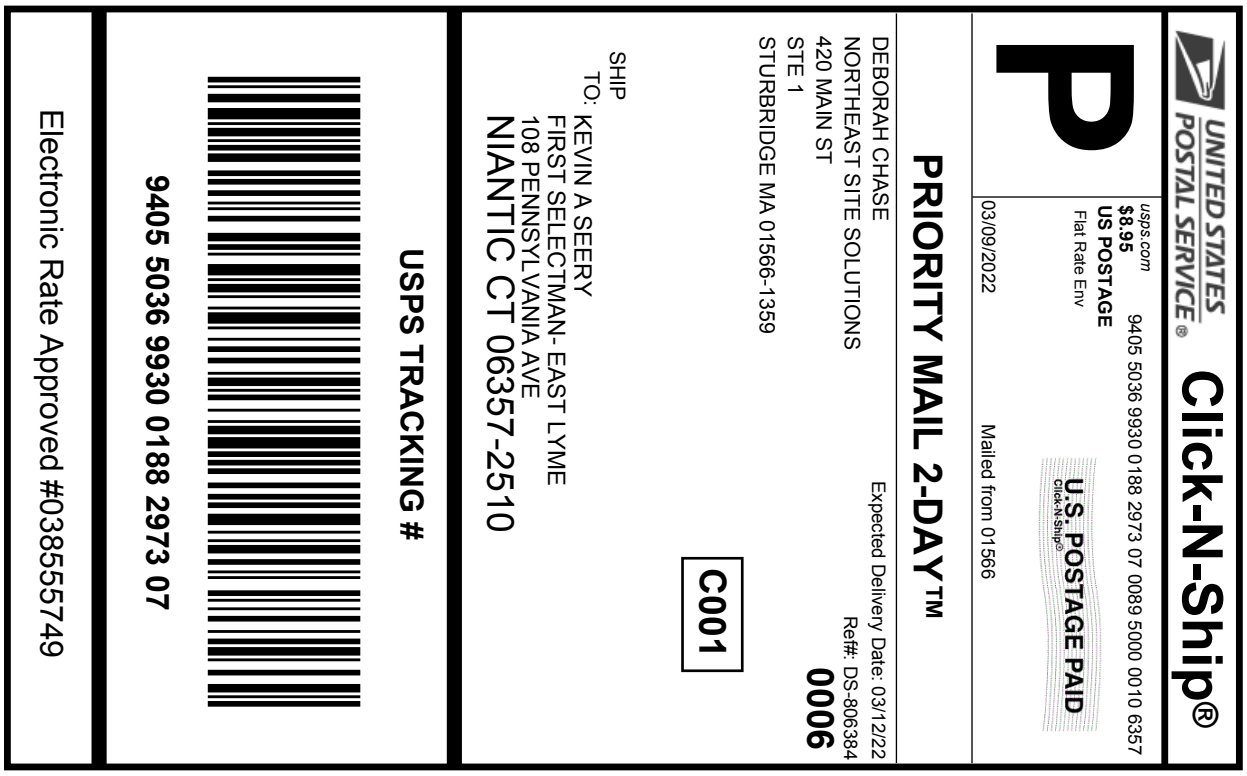
Crown Castle

By: _____ Date: 3/7/22

Richard Zajac
Site Acquisition Specialist

Exhibit H

Recipient Mailings



Cut on dotted line.

Instructions

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

Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0188 2973 07

Trans. #:	558440074
Print Date:	03/09/2022
Ship Date:	03/09/2022
Expected Delivery Date:	03/12/2022

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

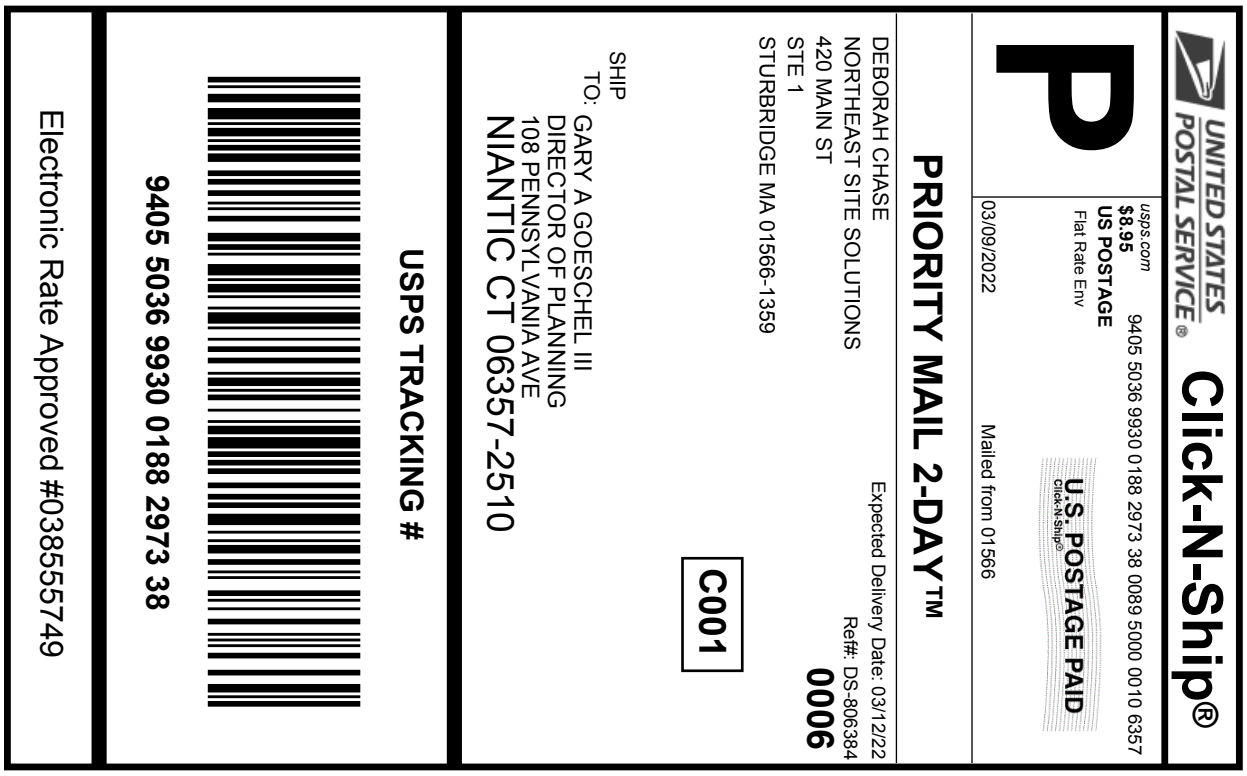
From: DEBORAH CHASE
NORTHEAST SITE SOLUTIONS
420 MAIN ST
STE 1
STURBRIDGE MA 01566-1359

Ref#: DS-806384

To: KEVIN A SEERY
FIRST SELECTMAN- EAST LYME
108 PENNSYLVANIA AVE
NIANTIC CT 06357-2510

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

Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0188 2973 38

Trans. #:	558440074
Print Date:	03/09/2022
Ship Date:	03/09/2022
Expected Delivery Date:	03/12/2022

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-806384

To: GARY A GOESCHEL III
DIRECTOR OF PLANNING
108 PENNSYLVANIA AVE
NIANTIC CT 06357-2510

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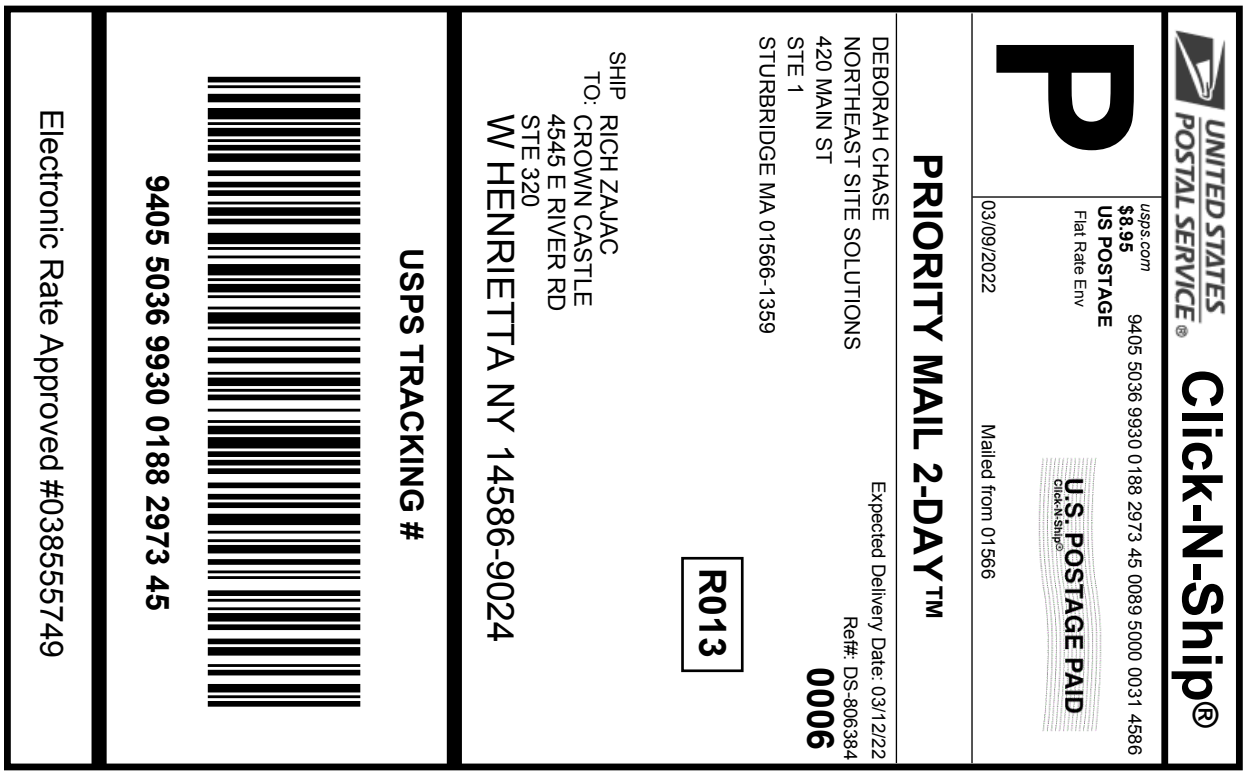

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Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0188 2973 45

Trans. #:	558440074
Print Date:	03/09/2022
Ship Date:	03/09/2022
Expected Delivery Date:	03/12/2022

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-806384

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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806384 Crown Dish

UNITED STATES POSTAL SERVICE.

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

03/11/2022 08:43 AM

Product	Qty	Unit Price	Price
Prepaid Mail West Henrietta, NY 14586 Weight: 0 lb 1.90 oz Acceptance Date: Fri 03/11/2022 Tracking #: 9405 5036 9930 0188 2973 45	1		$0.00
Prepaid Mail Niantic, CT 06357 Weight: 0 lb 8.10 oz Acceptance Date: Fri 03/11/2022 Tracking #: 9405 5036 9930 0188 2973 38	1		$0.00
Prepaid Mail Niantic, CT 06357 Weight: 0 lb 8.20 oz Acceptance Date: Fri 03/11/2022 Tracking #: 9405 5036 9930 0188 2973 07	1		$0.00
Grand Total:			$0.00

****
USPS is experiencing unprecedented volume