NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

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

August 9, 2022

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

RE: Tower Share Application
49 Cook Drive, Montville, CT 06382
Latitude: 41.475061
Longitude: -72.104170
Site #: BOBOS00073B_ 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 49 Cook Drive, Montville, Connecticut.

Dish Wireless LLC proposes to install six (6) 600/1900 MHz 5G antennas and twelve (12) RRUs, at the 162-foot level of the existing 171-foot self-support tower, two (2) Fiber cables 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 Infinigy, dated July 14, 2022, Exhibit C. Also included is a structural analysis prepared by Infinigy, dated March 25, 2022, confirming that the existing tower is structurally capable of supporting the proposed equipment. Attached as Exhibit D. The facility was originally approved by the Town of Montville sometime prior to 1980, and efforts to retrieve a copy of the original permit were unsuccessful. 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 Mayor Ronald McDaniel and Liz Burdick, Town Planner for the Town of Montville, as well as the tower owner (Wireless Solutions) and property owner (KT Enterprises LLC).

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 171-feet and the Dish Wireless LLC antennas will be located at a center line height of 162-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 3.33% as evidenced by Exhibit F.

Connecticut General Statutes 16-50aa indicates that the Council must approve the shared use of a telecommunications facility provided it finds the shared use is technically, legally, environmentally, and economically feasible and meets public safety concerns. As demonstrated in this letter, Dish Wireless LLC respectfully 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 tower in Montville. 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 162-foot level of the existing 171-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 Montville.

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: Mayor Ronald McDaniel
Town of Montville
310 Norwich-New London Turnpike
Uncasville, CT 06382

Liz Burdick - Town Planner
Town of Montville
310 Norwich-New London Turnpike
Uncasville, CT 06382

KT Enterprises LLC – Property Owner
PO Box 374
Uncasville, CT 06382

Wireless Solutions – Tower Owner

Exhibit A

Original Facility Approval

Victoria Masse <victoria@northeastsitesolutions.com>

Fwd: 49 Cook Drive, Uncasville, CT

1 message

Chuck Regulbuto <chuck@northeastsitesolutions.com> Fri, Jul 8, 2022 at 11:29 AM
To: Victoria Masse <victoria@northeastsitesolutions.com>
Cc: Jason Berry <jberry@northeastsitesolutions.com>, Mark Roberts <mark.roberts@qcdevelopment.net>

for Dish CTBOBOS00073B

---------- Forwarded message ---------
From: **Meredith Badalucca** <mbadalucca@montville-ct.org>
Date: Fri, Jul 8, 2022, 11:07 AM
Subject: 49 Cook Drive, Uncasville, CT
To: chuck@northeastsitesolutions.com <chuck@northeastsitesolutions.com>

Good Morning,

It was a pleasure speaking with you this morning regarding the tower at 49 Cook Drive. Unfortunately, we do not have a copy of the original permit in our files. The only permits we have copies of are from 1980 for an addition and 2011 for a replacement.

Should you have any further questions, please feel free to contact me.

Respectfully,

Meredith Badalucca

Zoning & Wetlands Officer

Town of Montville

310 Norwich New London Tpke

Uncasville, CT 06382

860-848-6779

Exhibit B

Property Card

Property Card: **49 COOK DR**

Town of Montville, CT

Parcel Information

Location:	49 COOK DR	Property Use:	Public Utility	Primary Use:	Utility Building
Unique ID:	S0556700	Map Block Lot:	099-010-000	Acres:	2.04
		Zone:	R20	Volume / Page:	0558/0320
		Sale Date:	02/11/2011	Sale Price:	$250,000

Value Information

	Appraised Value	Assessed Value
Land	89700	62790
Buildings	53900	37730
Detached Outbuildings	271700	190190
Total	415300	290710

Owner's Information

Owner's Data
KT TOWER ENTERPRISES LLC PO BOX 374 UNCASVILLE, CT 063820374

Building 1

Category:	Commercial	Siding:	Pre-Cast Concrete	Total Rooms:	0
Stories:	1.00	Fuel:	Oil	Beds/Units:	0
GLA:	784	Heating:	Hot Air No Duct	Baths:	0
Year Built:	1970	Fireplace:	0		
Class:	Masonry	Cooling Percent:	None	Half Baths:	0
Use:	Utility Building	Floors:	Concrete	Basement Garage:	0
Construction Style:	Utility Building	Roof Material:	Asphalt	Finished Basement:	0

49 COOK DRIVE

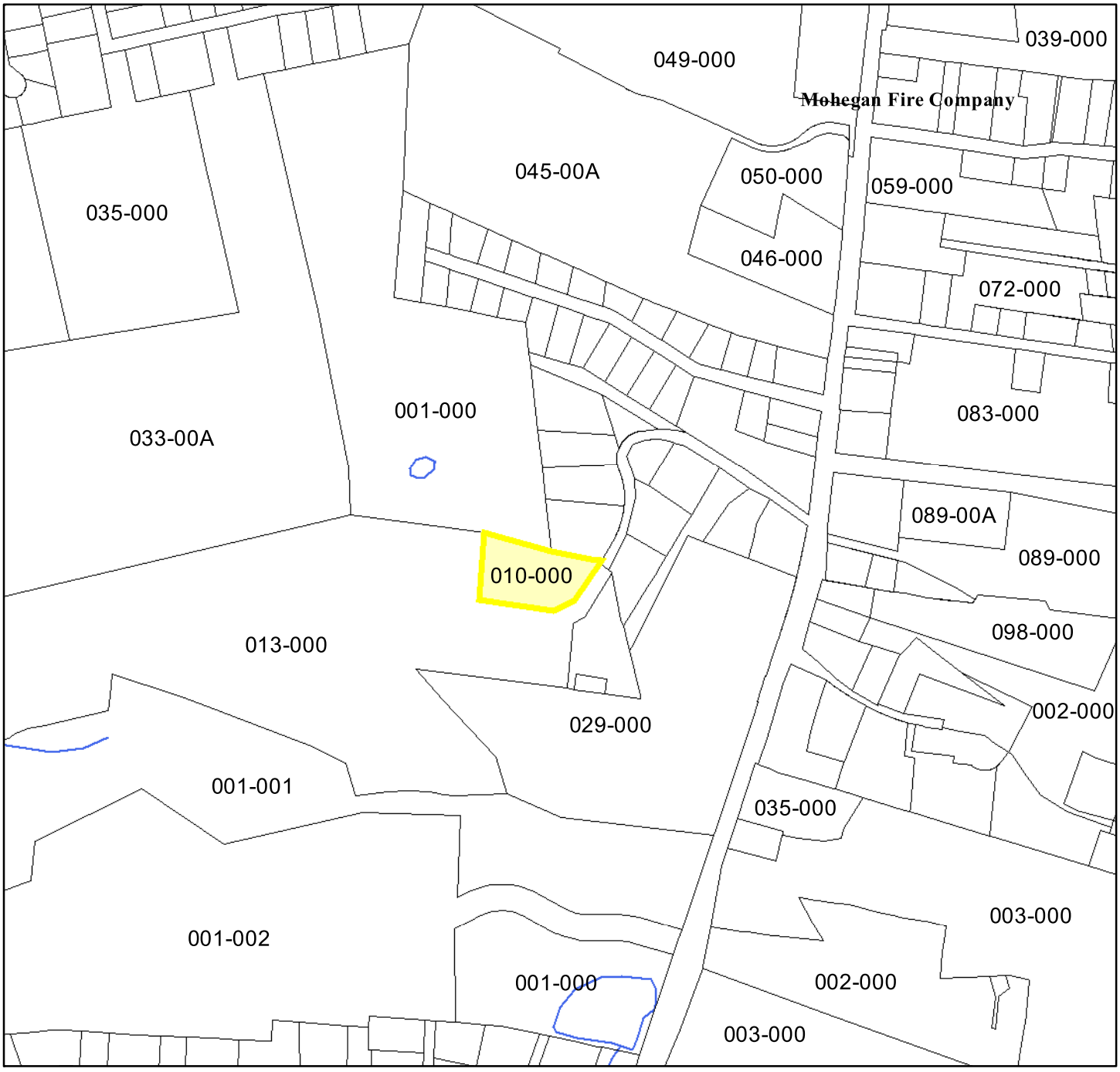
Montville, CT

July 29, 2022

1 inch = 564 Feet

0 564 1128 1692

www.cai-tech.com



Community Facilities

Parcel Lines - No Ortho

Streams

Exhibit C

Construction Drawings

DISH WIRELESS, LLC. SITE ID:

BOBOS00073B

DISH WIRELESS, LLC. SITE ADDRESS:

49 COOK DRIVE
MONTVILLE, CT 06382

CONNECTICUT CODE 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 (6) PROPOSED PANEL ANTENNAS (2 PER SECTOR)
- INSTALL (1) PROPOSED ANTENNA SECTOR FRAMES (1 PER SECTOR)
- INSTALL PROPOSED JUMPERS
- INSTALL (12) PROPOSED RRUs (2 PER SECTOR)
- INSTALL (1) PROPOSED OVER VOLTAGE PROTECTION DEVICE (OVP)
- INSTALL (1) PROPOSED HYBRID CABLE

GROUND SCOPE OF WORK:
- INSTALL (1) PROPOSED METAL PLATFORM
- INSTALL (1) PROPOSED ICE BRIDGE
- INSTALL (1) PROPOSED PPC CABINET
- INSTALL (1) PROPOSED EQUIPMENT CABINET
- INSTALL (1) PROPOSED POWER CONDUIT
- INSTALL (1) PROPOSED TELCO CONDUIT
- INSTALL (1) PROPOSED TELCO-FIBER BOX
- INSTALL (1) PROPOSED GPS UNIT
- INSTALL (1) PROPOSED SAFETY SWITCH (IF REQUIRED)
- INSTALL (1) PROPOSED CIENA BOX (IF REQUIRED)
- INSTALL (1) PROPOSED METER SOCKET

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

811

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:	KT TOWER ENTERPRISES LLC
ADDRESS:	PO BOX 374 UNCASVILLE, CT 06382-0374
TOWER TYPE:	SELF SUPPORT TOWER
TOWER CO SITE ID:	N/A
TOWER APP NUMBER:	N/A
COUNTY:	NEW LONDON
LATITUDE (NAD 83):	41° 28' 30.21" N
LONGITUDE (NAD 83):	72° 06' 14.95" W
ZONING JURISDICTION:	TBD
ZONING DISTRICT:	R20
PARCEL NUMBER:	099-010-000
OCCUPANCY GROUP:	U
CONSTRUCTION TYPE:	V-B
POWER COMPANY:	EVERSOURCE
TELEPHONE COMPANY:	FRONTIER

PROJECT DIRECTORY

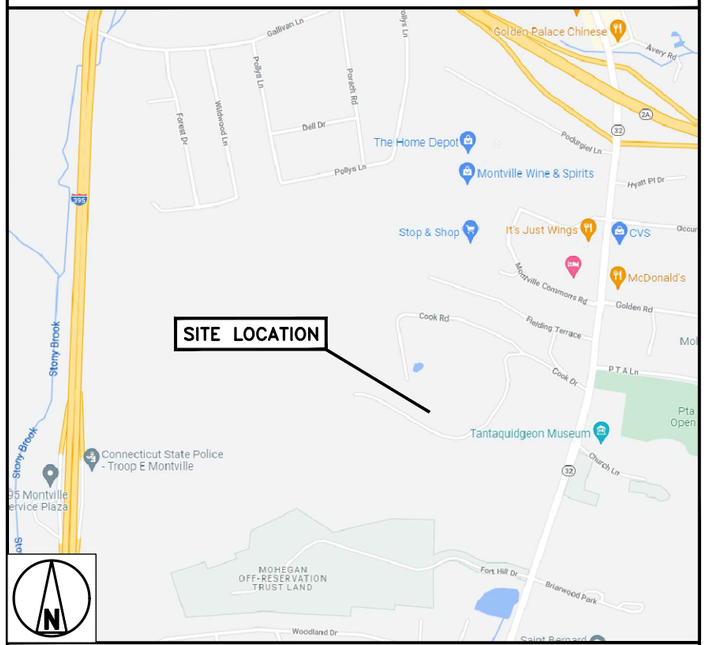
APPLICANT:	DISH WIRELESS, LLC. 5701 SOUTH SANTA FE DRIVE LITTLETON, CO 80120
TOWER OWNER:	KT TOWER ENTERPRISES LLC PO BOX 374 UNCASVILLE, CT 06382-0374
SITE DESIGNER:	INFINIGY 2500 W. HIGGINS RD. STE. 500 HOFFMAN ESTATES, IL 60169 (847) 648-4068
SITE ACQUISITION:	DAVID GOODFELLOW DAVID.GOODFELLOW@DISH.COM
CONSTRUCTION MANAGER:	JAVIER SOTO (303) 706-4617
RF ENGINEER:	DIPESH PARIKH DIPESH.PARIKH@DISH.COM

DIRECTIONS

DIRECTIONS FROM TWEED NEW HAVEN AIRPORT:

HEAD NORTHWEST ON CHESTER AIRPORT TOWARD CT-145 / WINTHROP RD, TURN RIGHT ONTO CT-145 / WINTHROP RD, TURN RIGHT ONTO CT-148 / W MAIN ST, TAKE THE RAMP ON THE RIGHT FOR CT-9 SOUTH AND HEAD TOWARD OLD SAYBROOK, TAKE THE RAMP ON THE LEFT FOR I-95 NORTH / US-1 NORTH AND HEAD TOWARD NEW LONDON / PROVIDENCE, KEEP LEFT TO GET ONTO I-395 N / GOVERNOR JOHN DAVIS LODGE TPKE N, AT EXIT 9, HEAD RIGHT ON THE RAMP FOR CT-2A EAST TOWARD LEDYARD / PRESTON, AT EXIT 5, HEAD RIGHT ON THE RAMP FOR CT-32 TOWARD NEW LONDON / UNCASVILLE, TURN RIGHT ONTO CT-32 / NORWICH NEW LONDON TPKE TOWARD NEW LONDON / UNCASVILLE, TURN RIGHT ONTO COOK DR, KEEP LEFT TO STAY ON COOK DR, ROAD NAME CHANGES TO COOK RD, UNPAVED ROAD, PRIVATE ROAD, ARRIVE AT 57 COOK DRIVE, MONTVILLE, CT 06382

VICINITY MAP



NO SCALE

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STATE OF CONNECTICUT
SHUHEI SAKANOUE
34916
LICENSED PROFESSIONAL ENGINEER
07/14/22

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

RFDS REV #: N/A

PRELIMINARY DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	05/03/2021	ISSUED FOR REVIEW
B	03/25/2022	ISSUED FOR REVIEW / SST
C	06/10/2022	ISSUED FOR REVIEW
D	07/07/2022	ISSUED FOR REVIEW
0	07/12/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
2039-Z5555C

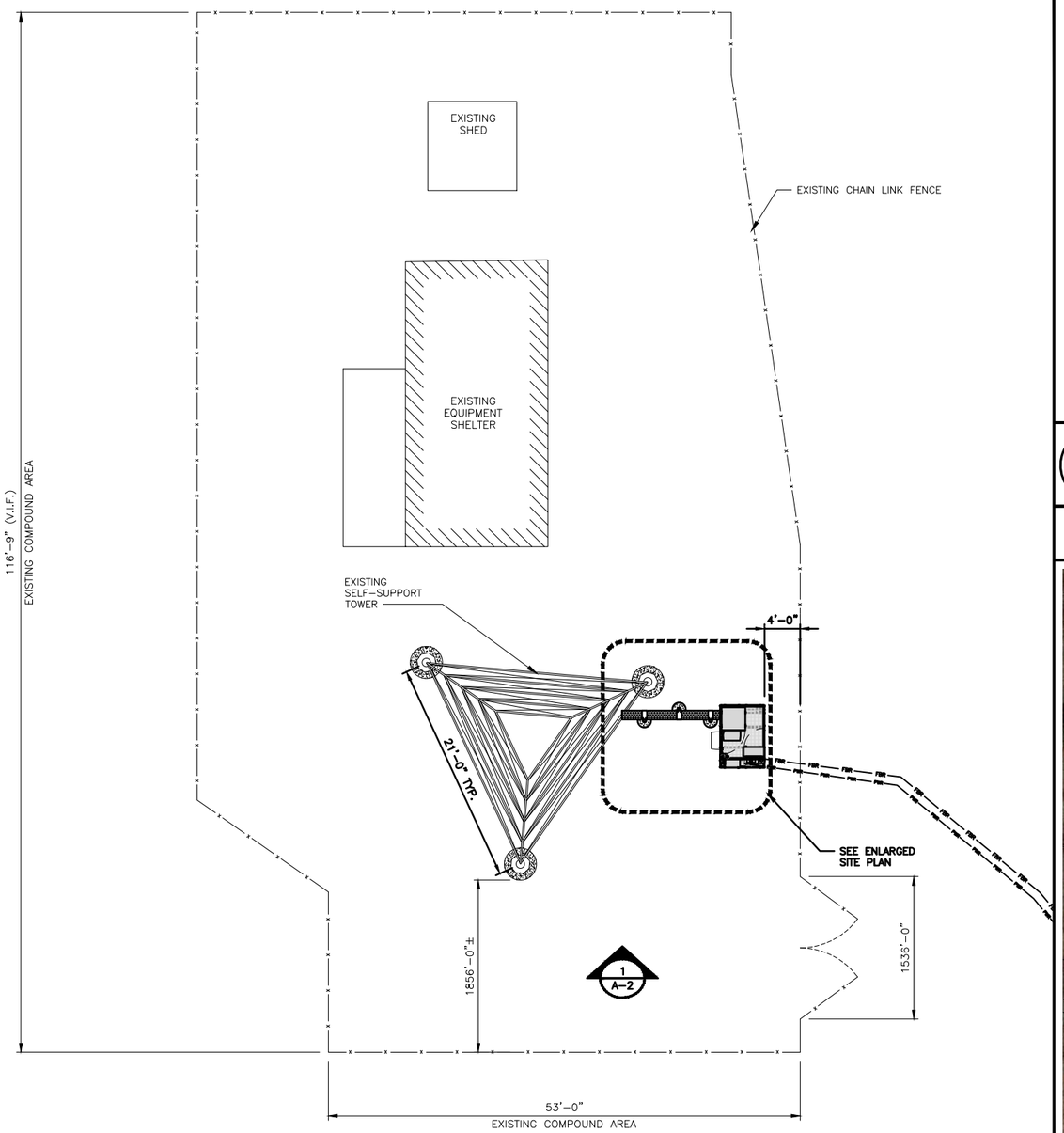
DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBOS00073B
49 COOK DRIVE
MONTVILLE, CT 06382

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1

NOTES

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



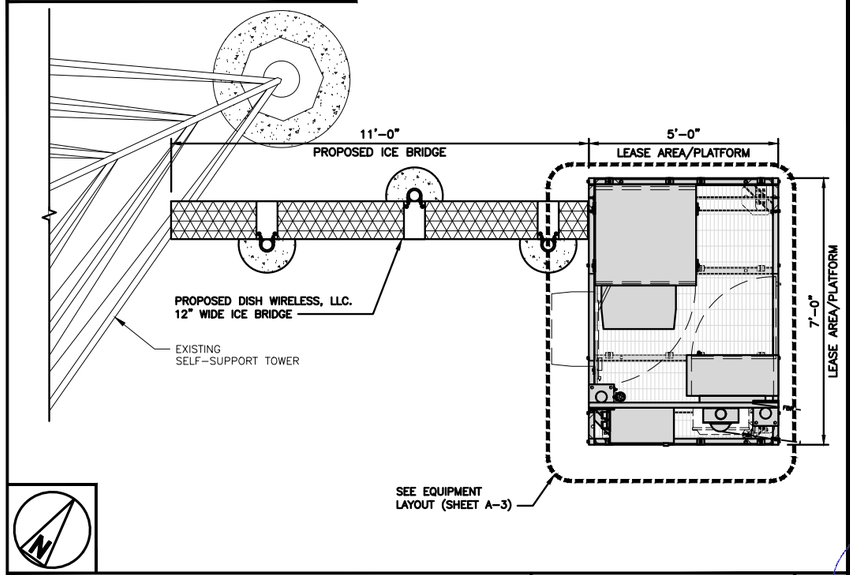
COMPOUND PLAN

8' 4' 0 8' 16'
1/8"=1'-0"

1

NOTES

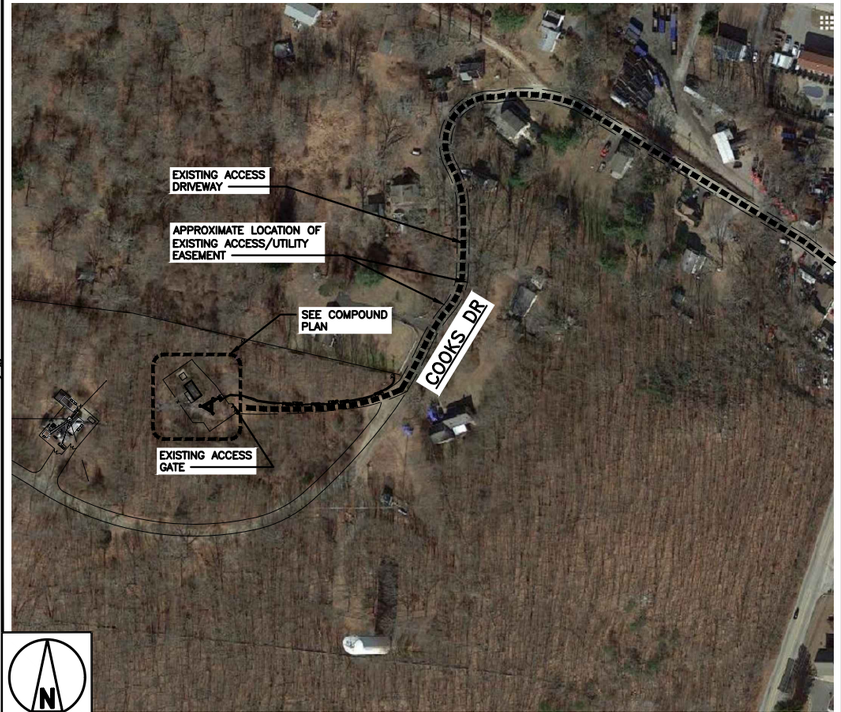
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. CONTRACTOR SHALL MAINTAIN A 10'-0" MINIMUM SEPARATION BETWEEN THE PROPOSED GPS UNIT, TRANSMITTING ANTENNAS AND EXISTING GPS UNITS.
3. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.



ENLARGED SITE PLAN

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

2



AERIAL VIEW

128' 64' 0 128' 256'
1/128"=1'-0"

3

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WWW.INFINIGY.COM

STATE OF CONNECTICUT
SHUHEI SAKANOUE
34916
LICENSED PROFESSIONAL ENGINEER

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

RFDS REV #: N/A

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0	07/12/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
2039-Z5555C

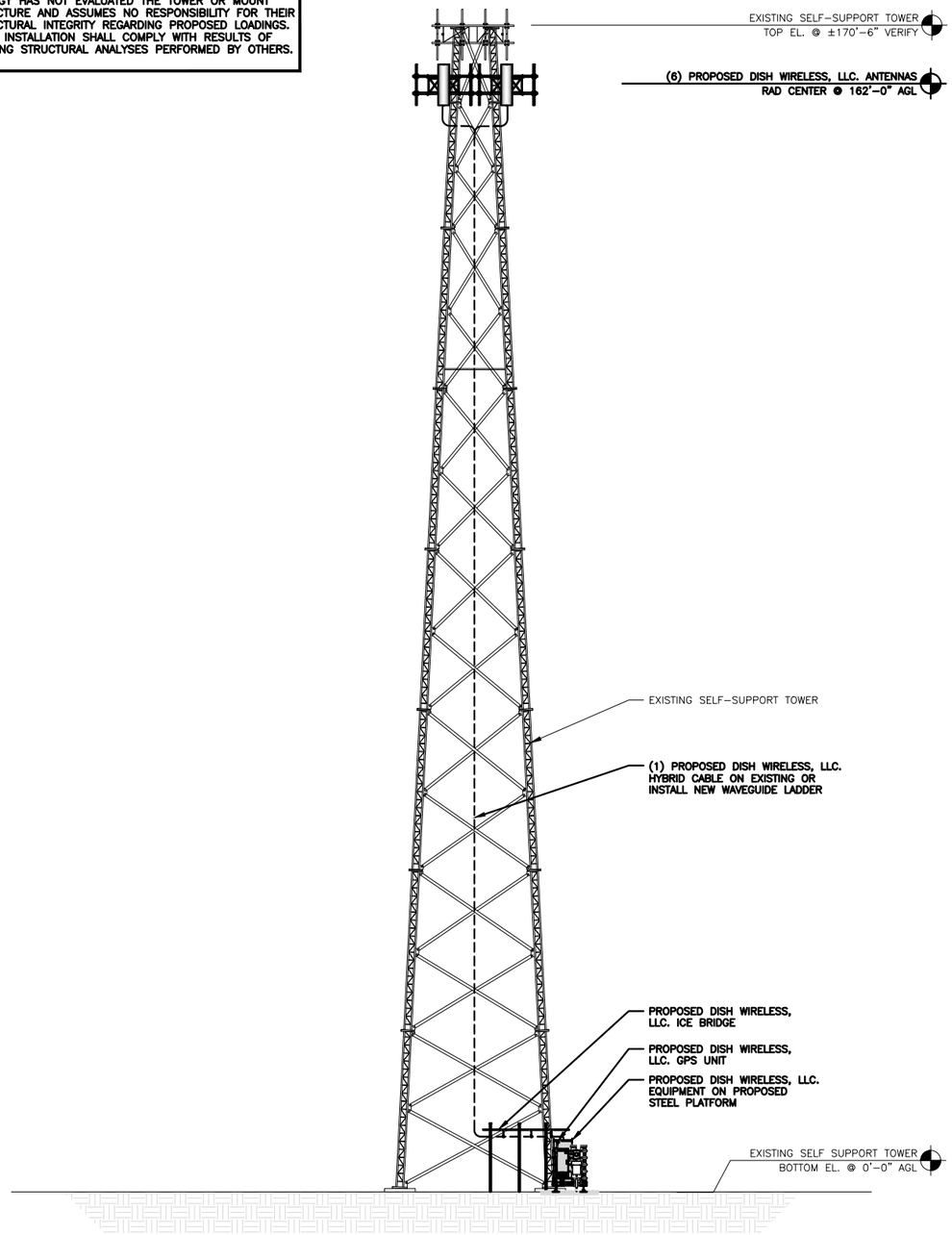
DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBOS00073B
49 COOK DRIVE
MONTVILLE, CT 06382

SHEET TITLE
OVERALL AND ENLARGED SITE PLAN

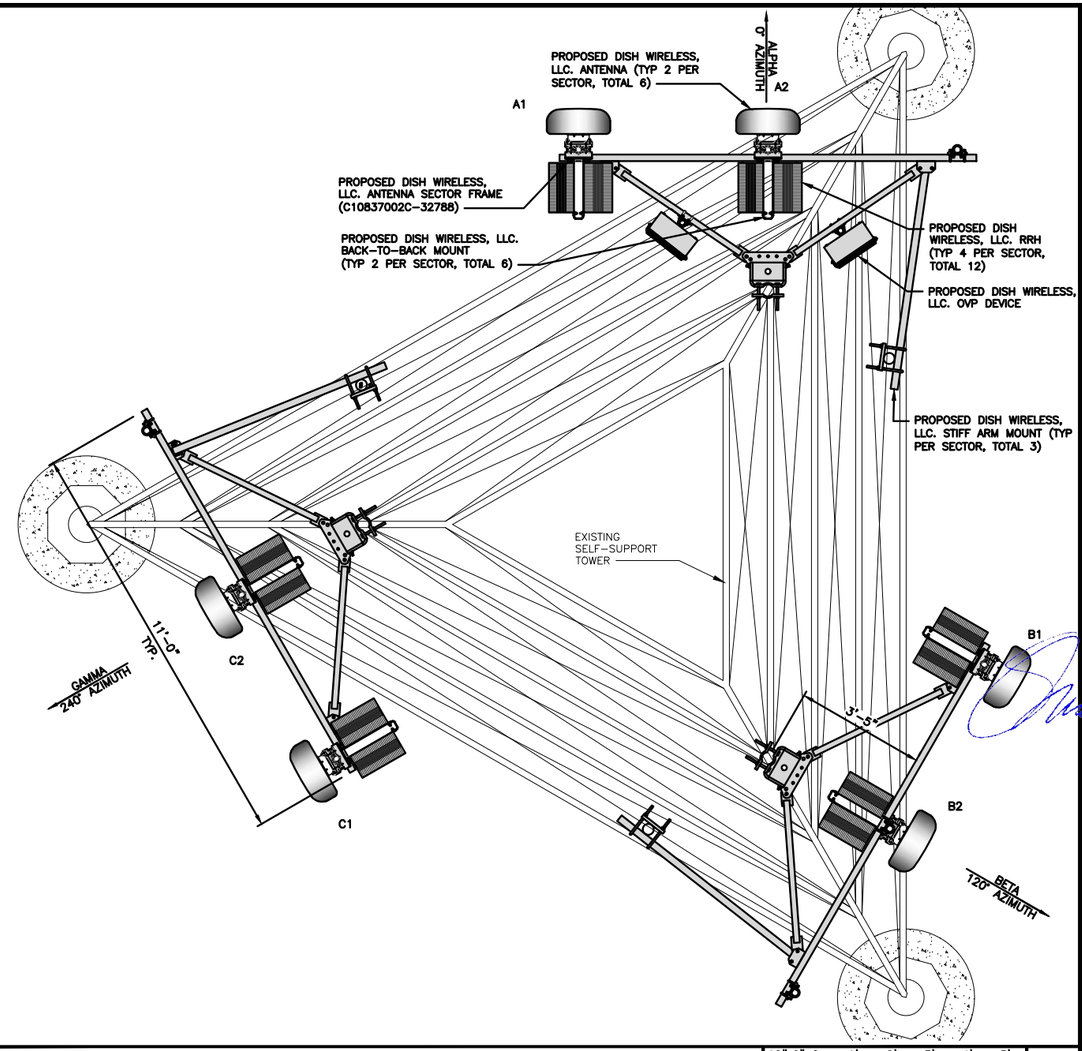
SHEET NUMBER
A-1

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.
4. INFINIGY HAS NOT EVALUATED THE TOWER OR MOUNT STRUCTURE AND ASSUMES NO RESPONSIBILITY FOR THEIR STRUCTURAL INTEGRITY REGARDING PROPOSED LOADINGS. FINAL INSTALLATION SHALL COMPLY WITH RESULTS OF PASSING STRUCTURAL ANALYSES PERFORMED BY OTHERS.



PROPOSED SOUTHEAST ELEVATION | 12' 8' 4' 0 10' 20' — 3/32"=1'-0" | 1



ANTENNA LAYOUT | 12" 6" 0 1' 2' 3' 4' 5' — 1/2"=1'-0" | 2

NOT USED | NO SCALE | 3

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SHUHEI SAKANOUE
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LICENSED PROFESSIONAL ENGINEER
07/12/22

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A&E PROJECT NUMBER
2039-Z5555C

DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBOS00073B
49 COOK DRIVE
MONTVILLE, CT 06382

SHEET TITLE
ELEVATION AND ANTENNA LAYOUTS

SHEET NUMBER
A-2

SECTOR	POSITION	ANTENNA						TRANSMISSION CABLE
		EXISTING OR PROPOSED	MANUFACTURER – MODEL NUMBER	TECHNOLOGY	SIZE (HxW)	AZMUITH	RAD CENTER	FEED LINE TYPE AND LENGTH
ALPHA	A1	PROPOSED	JMA MX08FRO665–21	5G	72.0" x 20.0"	0°	162'–0"	(1) HIGH–CAPACITY HYBRID CABLE (200' LONG)
	A2	PROPOSED	JMA MX08FRO665–21	5G	72.0" X 20.0"	0°	162'–0"	
BETA	B1	PROPOSED	JMA MX08FRO665–21	5G	72.0" X 20.0"	120°	162'–0"	
	B2	PROPOSED	JMA MX08FRO665–21	5G	72.0" X 20.0"	120°	162'–0"	
GAMMA	C1	PROPOSED	JMA MX08FRO665–21	5G	72.0" X 20.0"	240°	162'–0"	
	C2	PROPOSED	JMA MX08FRO665–21	5G	72.0" X 20.0"	240°	162'–0"	

NOTES

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

SECTOR	POSITION	RRH	
		MANUFACTURER – MODEL NUMBER	TECHNOLOGY
ALPHA	A1	(2) FUJITSU – TA08025–B604	5G
	A1	(2) FUJITSU – TA08025–B605	5G
BETA	B1	(2) FUJITSU – TA08025–B604	5G
	B1	(2) FUJITSU – TA08025–B605	5G
GAMMA	C1	(2) FUJITSU – TA08025–B604	5G
	C1	(2) 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 AND RADIO SCHEDULE

NO SCALE

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LITTLETON, CO 80120

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STATE OF CONNECTICUT
SHUHEI SAKANOUE
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LICENSED PROFESSIONAL ENGINEER
07/12/22

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

RFDS REV #: N/A

PRELIMINARY DOCUMENTS

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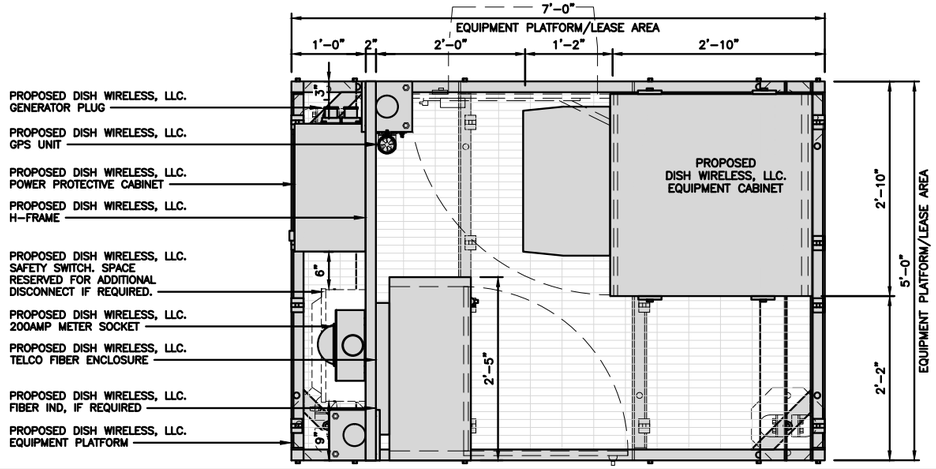
A&E PROJECT NUMBER
2039–Z5555C

DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBOS00073B
49 COOK DRIVE
MONTVILLE, CT 06382

SHEET TITLE
ANTENNA AND RADIO SCHEDULE

SHEET NUMBER
A-2.1

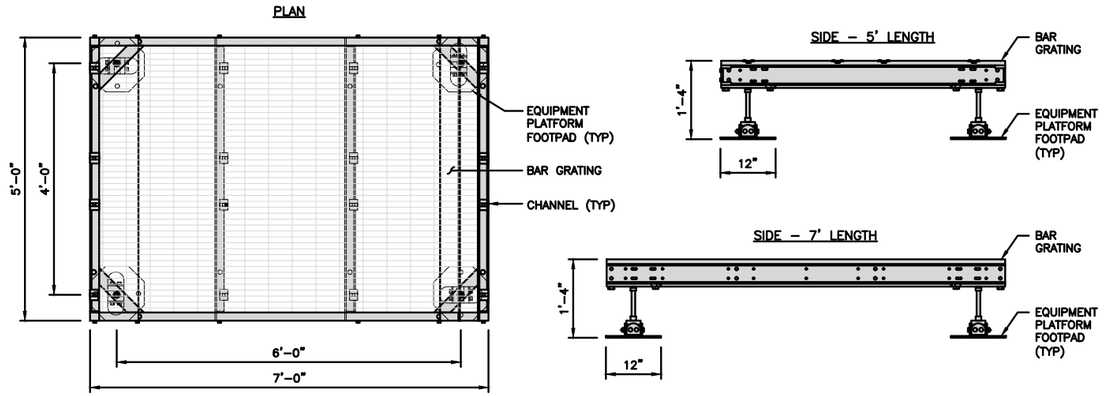


PLATFORM EQUIPMENT PLAN

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

1

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

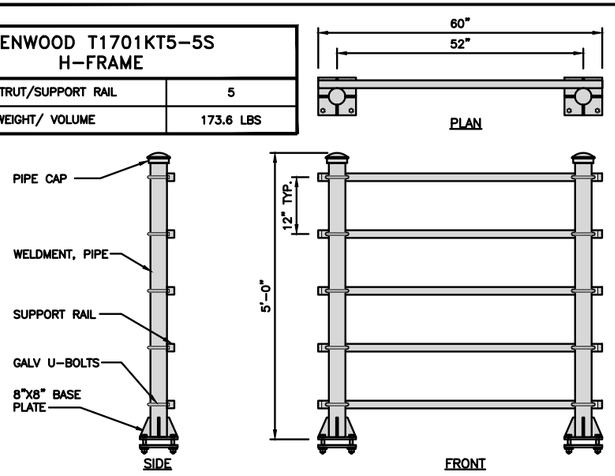


PLATFORM DETAIL

NO SCALE

2

KENWOOD T1701KT5-5S H-FRAME	
UNISTRUT/SUPPORT RAIL	5
WEIGHT/ VOLUME	173.6 LBS



H-FRAME DETAIL

NO SCALE

3

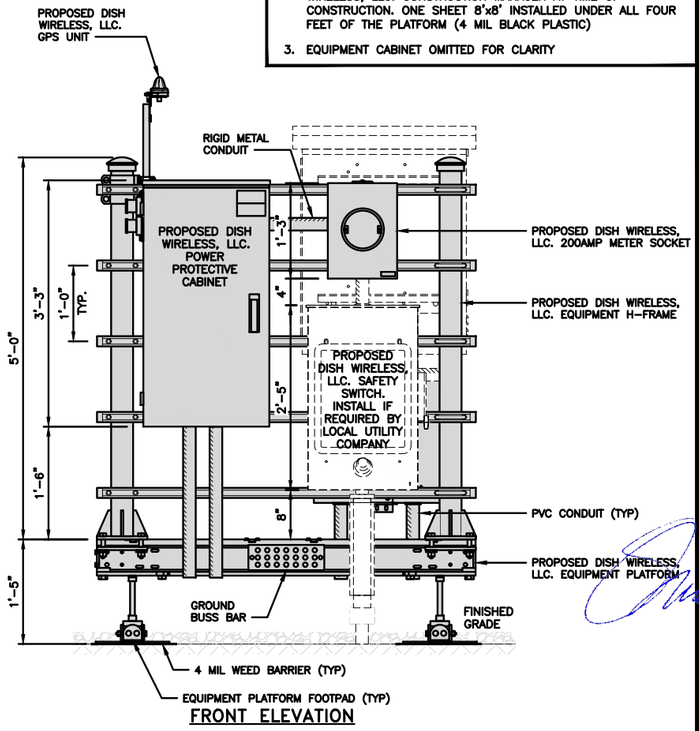
NOT USED

NO SCALE

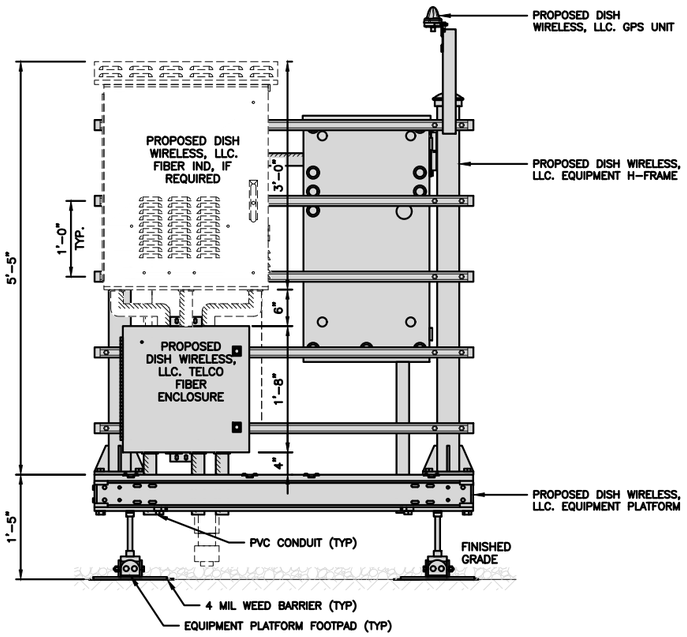
4

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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07/12/22

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

RFDS REV #: N/A

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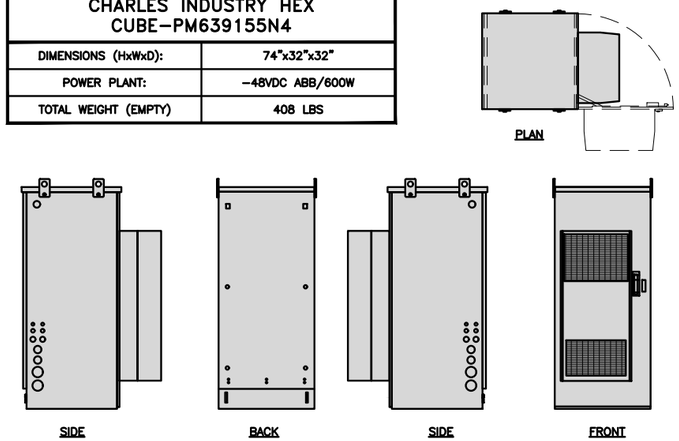
A&E PROJECT NUMBER
2039-Z5555C

DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBOS00073B
49 COOK DRIVE
MONTVILLE, CT 06382

SHEET TITLE
EQUIPMENT PLATFORM AND H-FRAME DETAILS

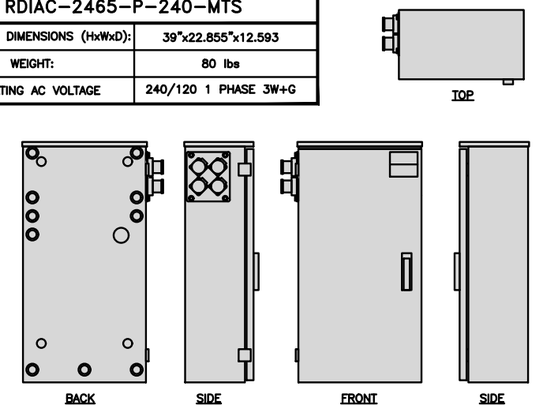
SHEET NUMBER
A-3

CHARLES INDUSTRY HEX CUBE–PM639155N4	
DIMENSIONS (HxWxD):	74"x32"x32"
POWER PLANT:	–48VDC ABB/600W
TOTAL WEIGHT (EMPTY)	408 LBS



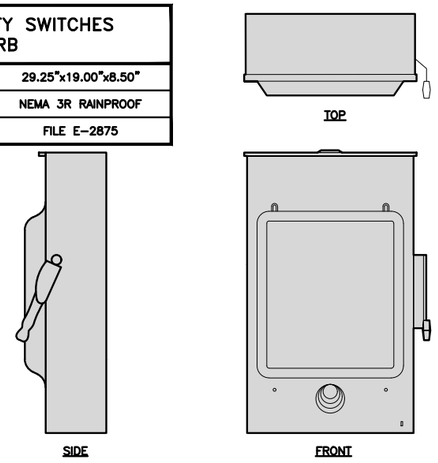
CABINET DETAIL | NO SCALE | 1

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



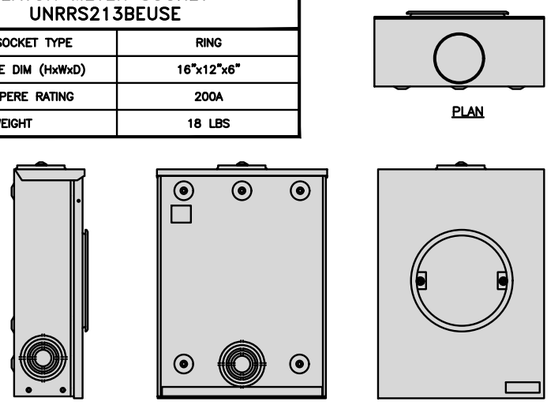
POWER PROTECTION CABINET (PPC) DETAIL | NO SCALE | 2

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



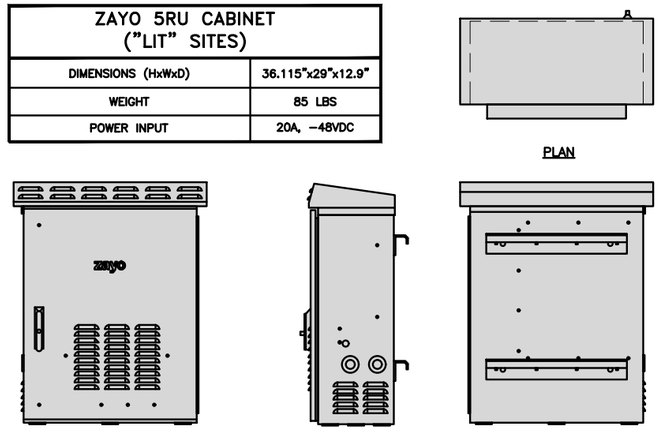
SAFETY SWITCH DETAIL | NO SCALE | 3

EATON METER SOCKET UNRRS213BEUSE	
METER SOCKET TYPE	RING
ENCLOSURE DIM (HxWxD)	16"x12"x6"
MAIN AMPERE RATING	200A
WEIGHT	18 LBS



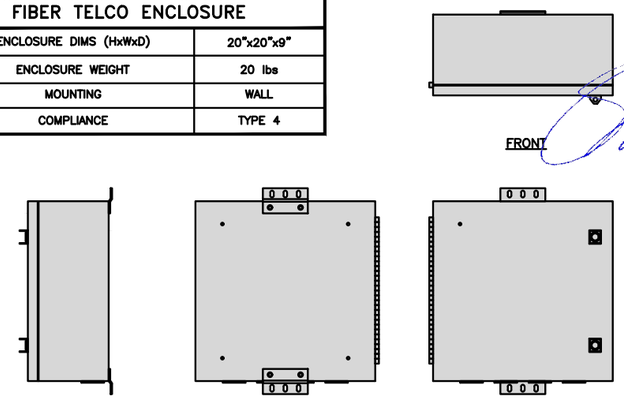
METER SOCKET DETAIL | NO SCALE | 4

ZAYO 5RU CABINET ("LIT" SITES)	
DIMENSIONS (HxWxD)	36.115"x29"x12.9"
WEIGHT	85 LBS
POWER INPUT	20A, –48VDC



NETWORK INTERFACE UNIT DETAIL | NO SCALE | 5

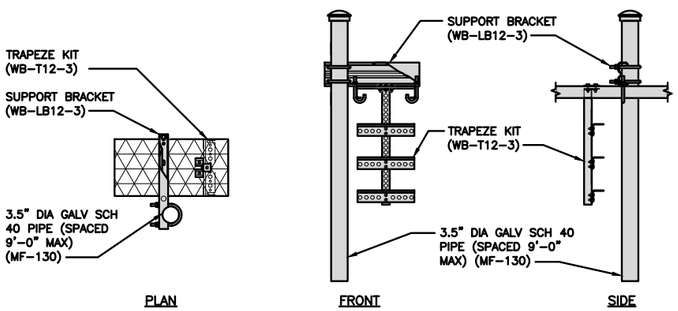
CHARLES CFIT–PF2020DSH1 FIBER TELCO ENCLOSURE	
ENCLOSURE DIMS (HxWxD)	20"x20"x9"
ENCLOSURE WEIGHT	20 lbs
MOUNTING	WALL
COMPLIANCE	TYPE 4



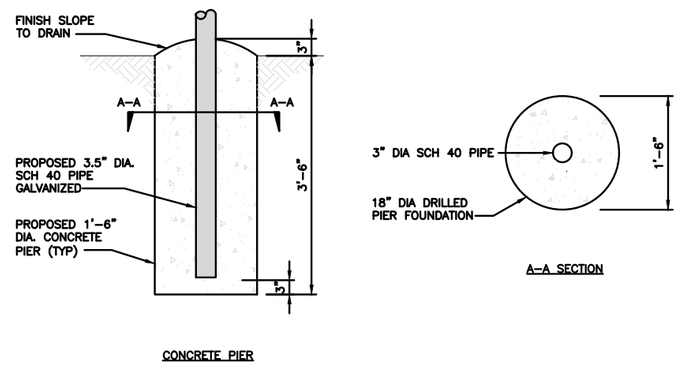
FIBER TELCO ENCLOSURE DETAIL | NO SCALE | 6

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

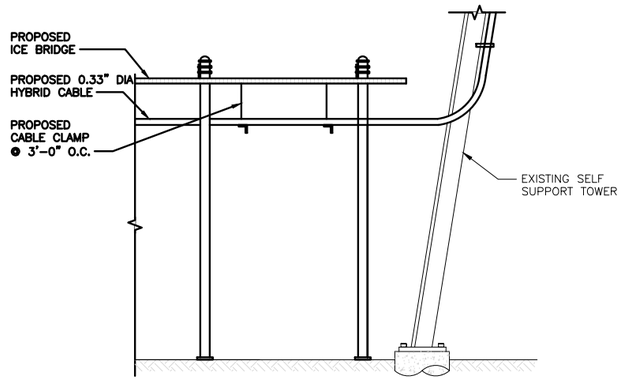
INCLUDED PRODUCTS:	WB–T12–3 TRAPEZE KIT, 3 RUNGS
	WB–LB12–3 SUPPORT BRACKET
	MF–130 DIRECT BURIAL PIPE COLUMN, 13'–4"



ICE BRIDGE DETAIL | NO SCALE | 7



TYPICAL ICE BRIDGE CONCRETE PIER DETAIL | NO SCALE | 8



HYBRID CABLE RUN | NO SCALE | 9

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A&E PROJECT NUMBER
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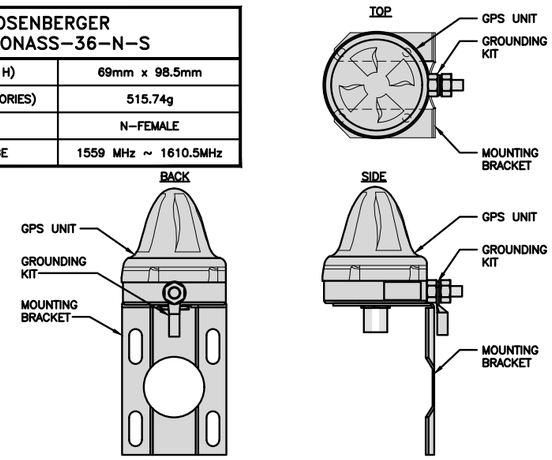
DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBOS00073B
49 COOK DRIVE
MONTVILLE, CT 06382

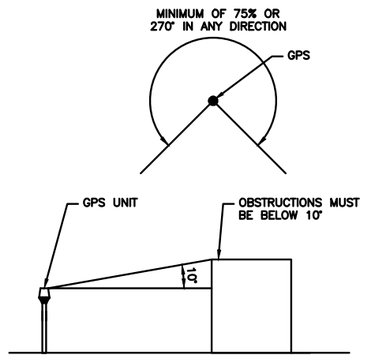
SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-4

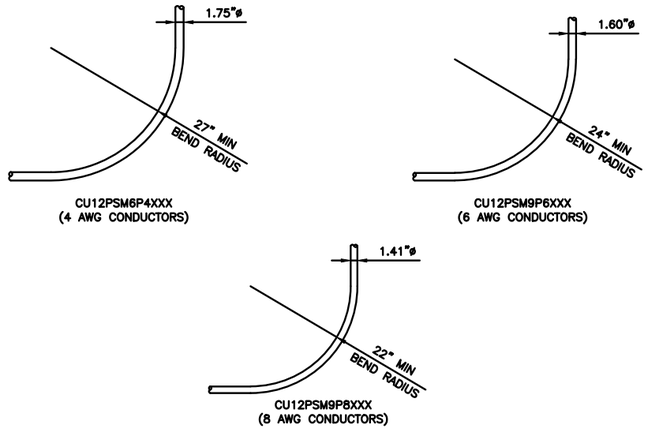
ROSENBERGER GPSGLONASS-36-N-S	
DIMENSION (DIA x H)	69mm x 98.5mm
WEIGHT (WITH ACCESSORIES)	515.74g
CONNECTOR	N-FEMALE
FREQUENCY RANGE	1559 MHz ~ 1610.5MHz



GPS ANTENNA DETAIL — NO SCALE — 1



GPS MINIMUM SKY VIEW REQUIREMENTS — NO SCALE — 2



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

NOT USED — NO SCALE — 4

NOT USED — NO SCALE — 5

NOT USED — NO SCALE — 6

NOT USED — NO SCALE — 7

NOT USED — NO SCALE — 8

NOT USED — NO SCALE — 9

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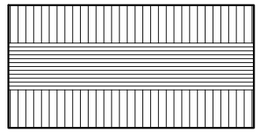
DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBOS00073B
49 COOK DRIVE
MONTVILLE, CT 06382

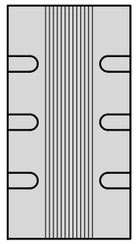
SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-5

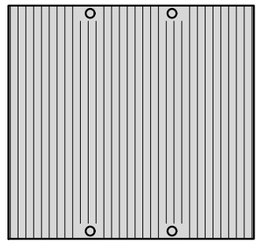
FUJITSU TA08025-B604 RRH	
DIMENSIONS (HxWxD) (KG/IN)	380x400x200/14.9"x15.7"x7.8"
WEIGHT(KG,LB)/ VOLUME	29kg,63.9lb/ 30L
POWER SUPPLY	DC-58~-36V



PLAN



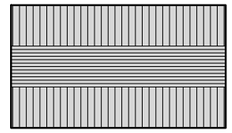
SIDE



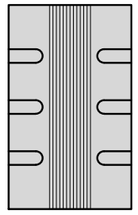
FRONT

REMOTE RADIO HEAD DETAIL | NO SCALE | 1

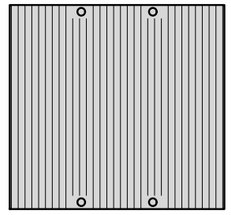
FUJITSU TA08025-B605 RRH	
DIMENSIONS (HxWxD) (KG/IN)	380x400x230/14.9"x15.7"x9.0"
WEIGHT(KG,LB)/ VOLUME	34kg,74.9lb/ 35L
POWER SUPPLY	DC-58~-36V



PLAN



SIDE

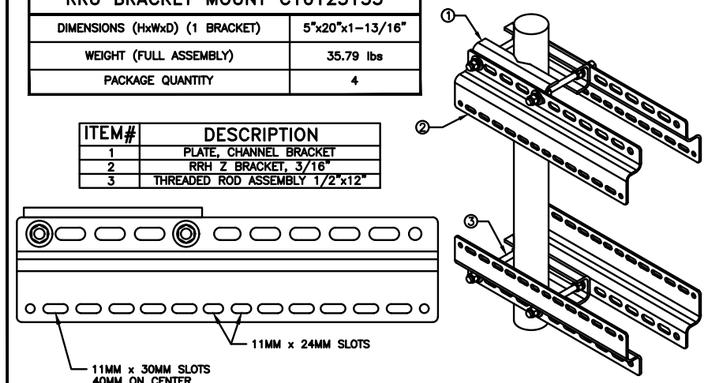


FRONT

REMOTE RADIO HEAD DETAIL | NO SCALE | 2

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

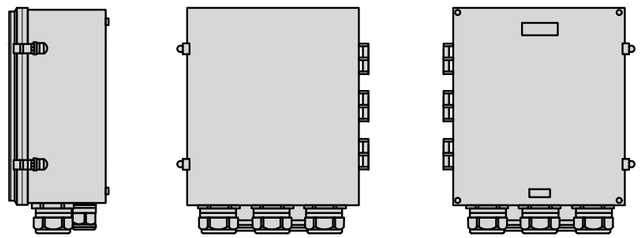
ITEM#	DESCRIPTION
1	PLATE, CHANNEL BRACKET
2	RRH Z BRACKET, 3/16"
3	THREADED ROD ASSEMBLY 1/2"x12"



REMOTE RADIO MOUNT DETAIL | NO SCALE | 3

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

PLAN

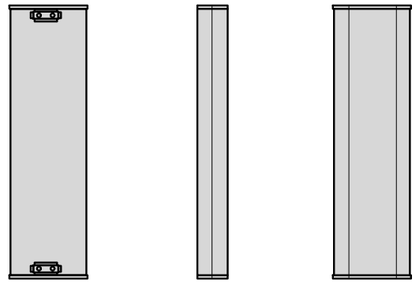


SIDE BACK FRONT

SURGE SUPPRESSION DETAIL | NO SCALE | 4

JMA WIRELESS MX08FRO665-21 ANTENNA	
DIMENSIONS (HxWxD)	72.0"x20.0"x8.0"
TOTAL WEIGHT	54 LB
RF PORTS, CONNECTOR TYPE	8 x 4.3-10 FEMALE

PLAN



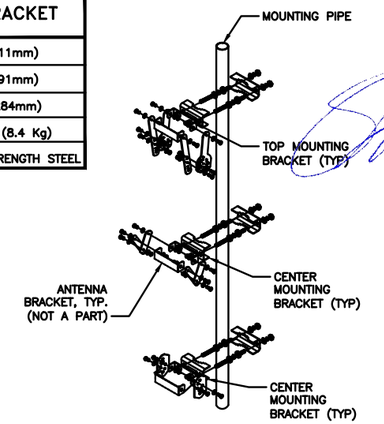
BACK SIDE FRONT

NOTES

FINAL ANTENNA SPECIFICATIONS TO BE CONFIRMED BY GC

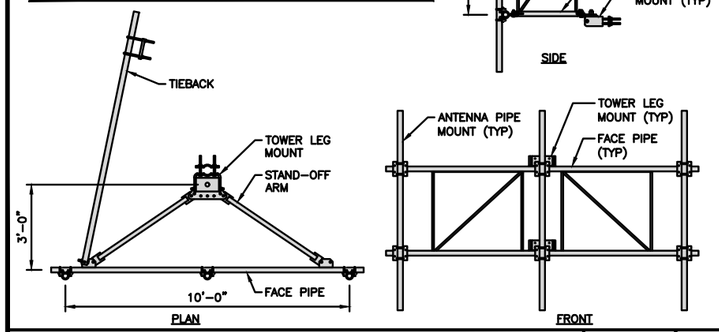
ANTENNA DETAIL | NO SCALE | 5

JMA 91900318 MOUNTING BRACKET	
WIDTH	8.3" (211mm)
DEPTH	7.5" (191mm)
HEIGHT	11.2" (284mm)
TOTAL WEIGHT (WITH BRACKETS)	18.5 LBS (8.4 Kg)
HOUSING MATERIAL	GALV. HIGH STRENGTH STEEL



ANTENNA MOUNTING DETAIL | NO SCALE | 6

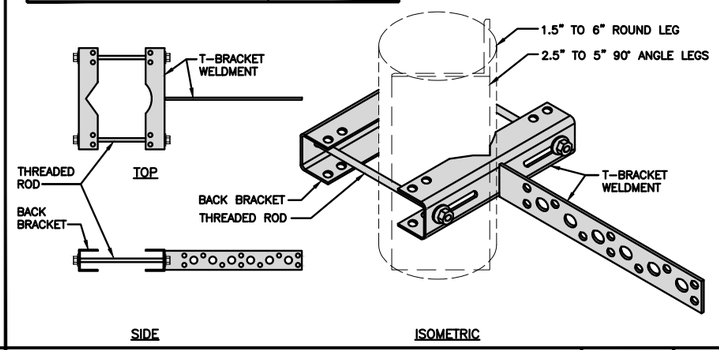
SABRE INDUSTRIES C10837002C-32788 HD V-BOOM ASSEMBLY WITH TIEBACK	
FACE SIZE	10'-0"
WEIGHT	676 LB
TOWER LEG SIZE	1-1/2" TO 5-9/16" DIA ROUND LEG



ANTENNA FRAME DETAIL | NO SCALE | 7

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

VERIFY WITH LANDLORD TO USE EXISTING VERTICAL CABLE SUPPORT (DELETE THIS NOTE & DETAIL IF NOT NEEDED)



VERTICAL CABLE SUPPORT DETAIL | NO SCALE | 8

NOT USED | NO SCALE | 9

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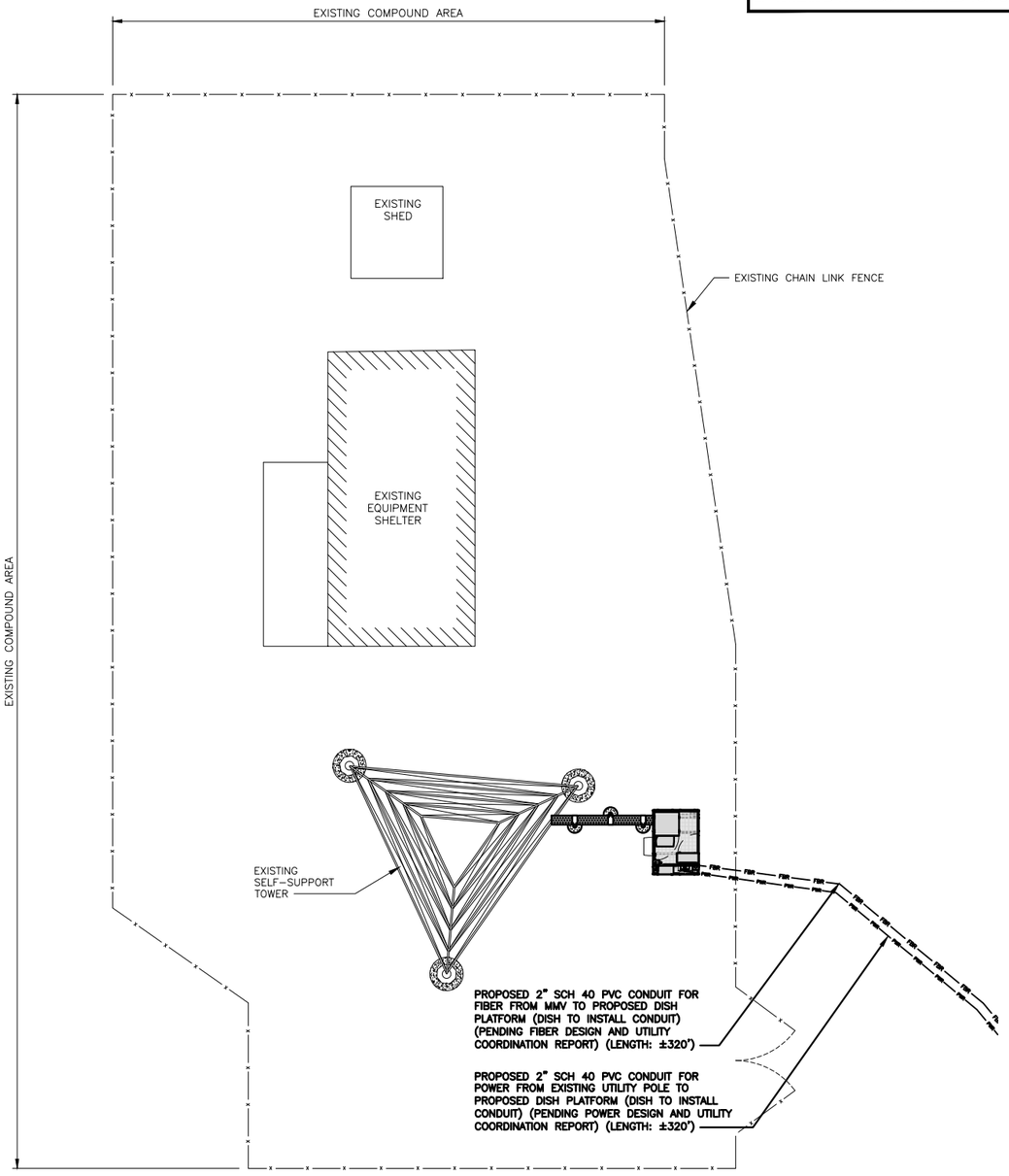
DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBOS00073B
49 COOK DRIVE
MONTVILLE, CT 06382

SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-6

NOTES

1. CONTRACTOR SHALL FIELD VERIFY ALL PROPOSED UNDERGROUND UTILITY CONDUIT ROUTE.
2. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.



UTILITY ROUTE PLAN

8' 4' 0 8' 16'
1/8"=1'-0"

1

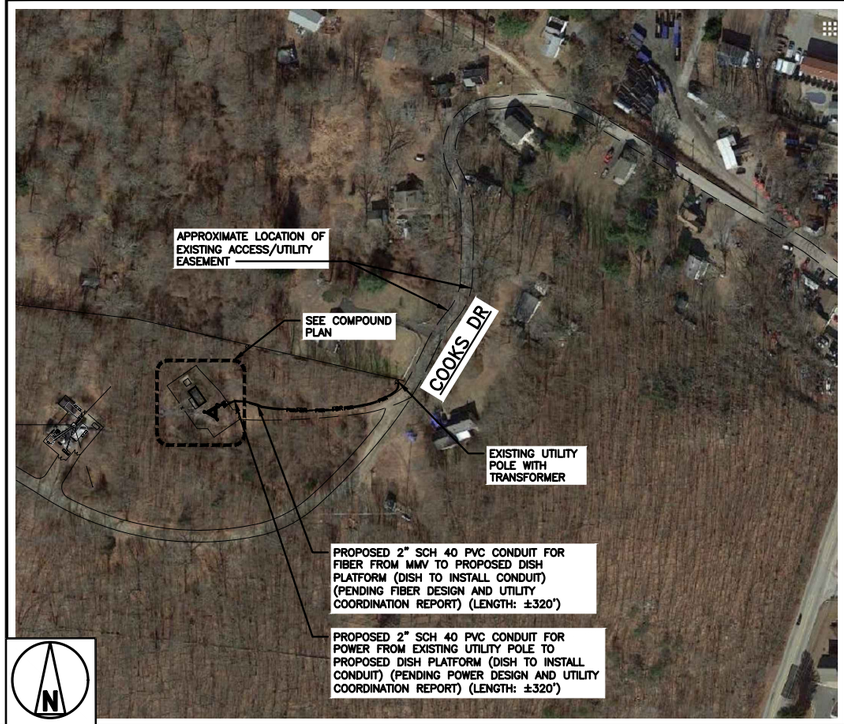
DC POWER WIRING SHALL BE COLOR CODED AT EACH END FOR IDENTIFYING +24V AND −48V CONDUCTORS. RED MARKINGS SHALL IDENTIFY +24V AND BLUE MARKINGS SHALL IDENTIFY −48V.

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. FIBER ROUTE IS PRELIMINARY, FINAL FIBER ROUTE TO BE DETERMINED ONCE UCR (UTILITY COORDINATION REPORT) HAS BEEN FINALIZED.

ELECTRICAL NOTES

NO SCALE

2



OVERALL UTILITY ROUTE PLAN

128' 64' 0 128' 256'
1/128"=1'-0"

3

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34916
LICENSED PROFESSIONAL ENGINEER
07/12/22

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

RFDS REV #: N/A

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A&E PROJECT NUMBER
2039-Z5555C

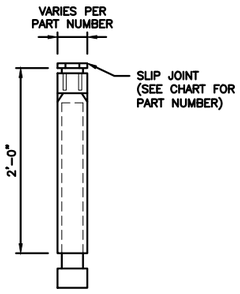
DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBOS00073B
49 COOK DRIVE
MONTVILLE, CT 06382

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"

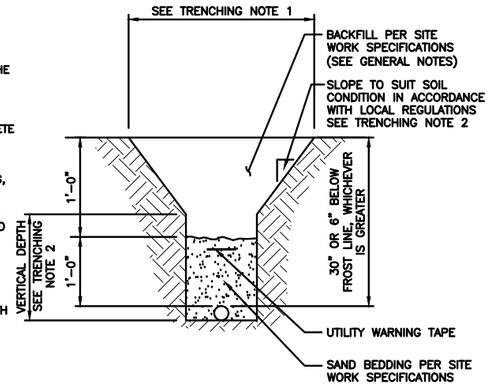


NOTE:
CONTRACTOR TO INSTALL EXPANSION FITTING SLIP JOINT AT METER CENTER CONDUIT TERMINATION, AS PER LOCAL UTILITY POLICY, ORDINANCE AND/OR SPECIFIED REQUIREMENT.

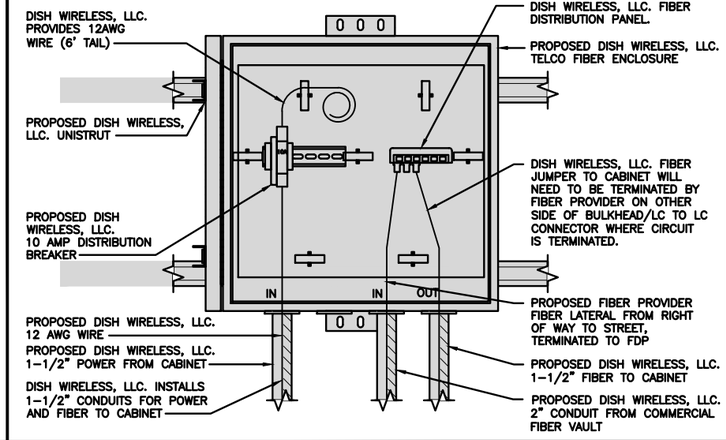
EXPANSION JOINT DETAIL | NO SCALE | 1

TRENCHING NOTES

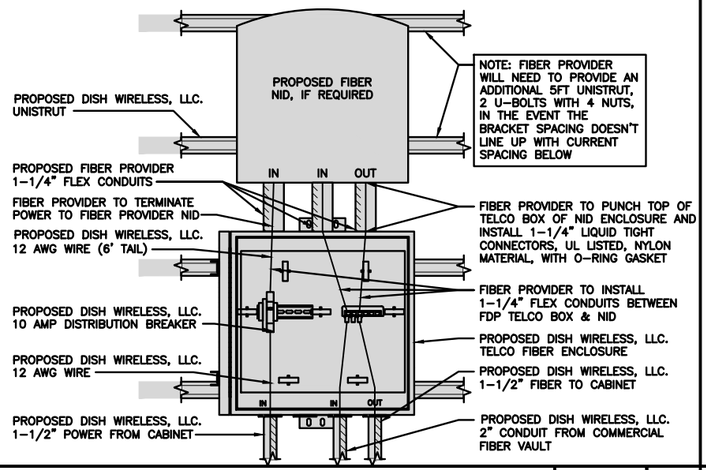
1. CONTRACTOR SHALL RESTORE THE TRENCH TO ITS ORIGINAL CONDITIONS BY EITHER SEEDING OR SODDING GRASS AREAS, OR REPLACING ASPHALT OR CONCRETE AREAS TO ITS ORIGINAL CROSS SECTION.
2. TRENCHING SAFETY; INCLUDING, BUT NOT LIMITED TO SOIL CLASSIFICATION, SLOPING, AND SHORING, SHALL BE GOVERNED BY THE CURRENT 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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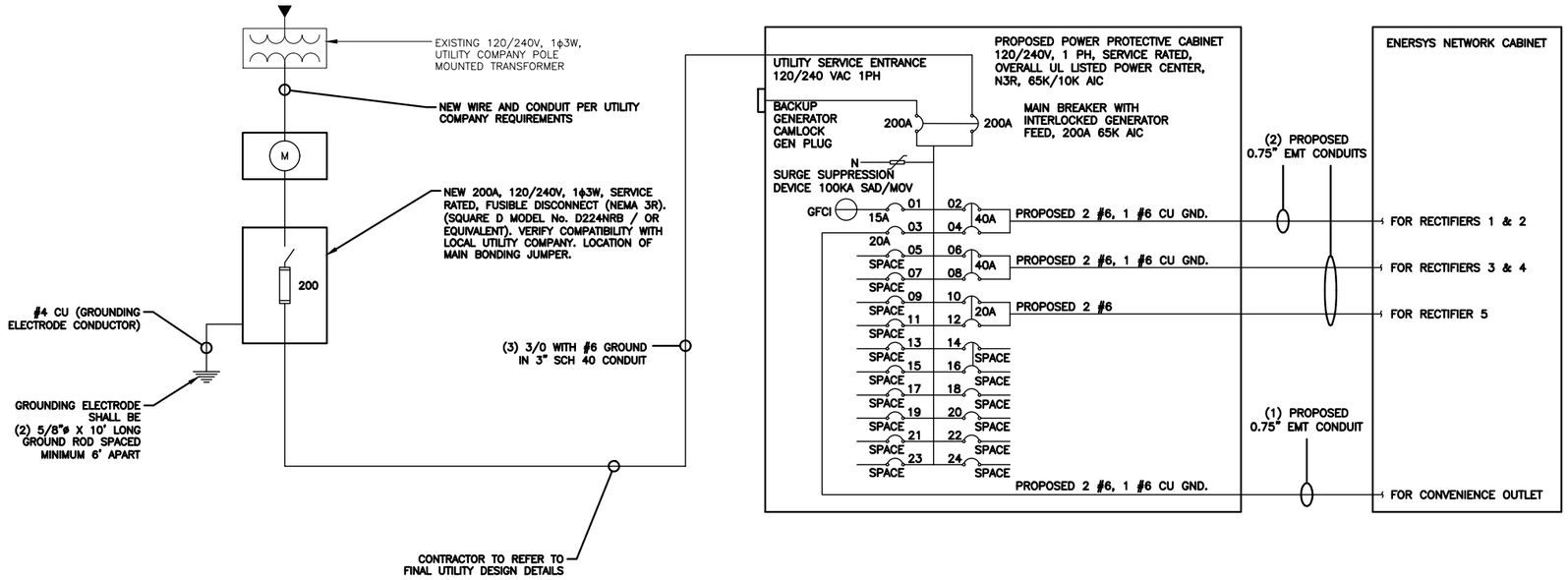
A&E PROJECT NUMBER
2039-Z5555C

DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBOS00073B
49 COOK DRIVE
MONTVILLE, CT 06382

SHEET TITLE
ELECTRICAL DETAILS

SHEET NUMBER
E-2



PPC ONE-LINE DIAGRAM

NO SCALE | 1

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).

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

[RECTIFIER 1 & 2 CONDUCTORS (1 CONDUIT)], AND
[CABINET CONVENIENCE OUTLET CONDUCTORS (1 CONDUIT)]: USING THWN-2, CU.

#6 - 0.0507 SQ. IN X 2 = 0.1014 SQ. IN
#6 - 0.0507 SQ. IN X 1 = 0.0507 SQ. IN <GROUND
TOTAL = 0.1521 SQ. IN

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

RECTIFIER 3, 4, & 5 CONDUCTORS (1 CONDUIT): USING THWN-2, CU.

#6 - 0.0507 SQ. IN X 4 = 0.2028 SQ. IN
#6 - 0.0507 SQ. IN X 1 = 0.0507 SQ. IN <GROUND
TOTAL = 0.2535 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.

PROPOSED ENERSYS 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	40A	3840		ABB/GE INFINITY RECTIFIERS 1 & 2
ENERSYS GFCI OUTLET		180	20A	3	B	4			3840	
-SPACE-				5	A	6	40A	3840		ABB/GE INFINITY RECTIFIER 3 & 4
-SPACE-				7	B	8			3840	
-SPACE-				9	A	10	20A	1920		ABB/GE INFINITY RECTIFIER 5
-SPACE-				11	B	12			1920	
-SPACE-				13	A	14				-SPACE-
-SPACE-				15	B	16				-SPACE-
-SPACE-				17	A	18				-SPACE-
-SPACE-				19	B	20				-SPACE-
-SPACE-				21	A	22				-SPACE-
-SPACE-				23	B	24				-SPACE-
VOLTAGE AMPS	180	180						9500	9500	
200A MCB, 1ϕ, 24 SPACE, 120/240V			L1		L2					
MB RATING: 65,000 AIC			9680		9680		VOLTAGE AMPS			
			81		81		AMPS			
			81				MAX AMPS			
			102				MAX 125%			

PANEL SCHEDULE

NO SCALE | 2

NOT USED

NO SCALE | 3

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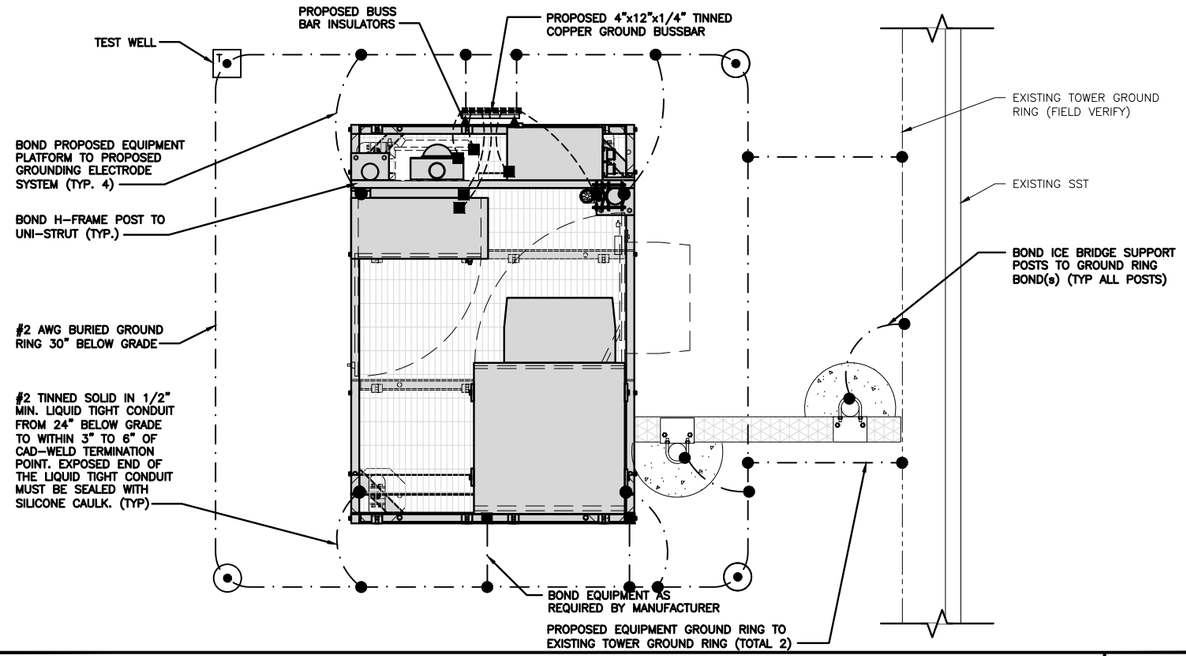
A&E PROJECT NUMBER
2039-Z5555C

DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBOS00073B
49 COOK DRIVE
MONTVILLE, CT 06382

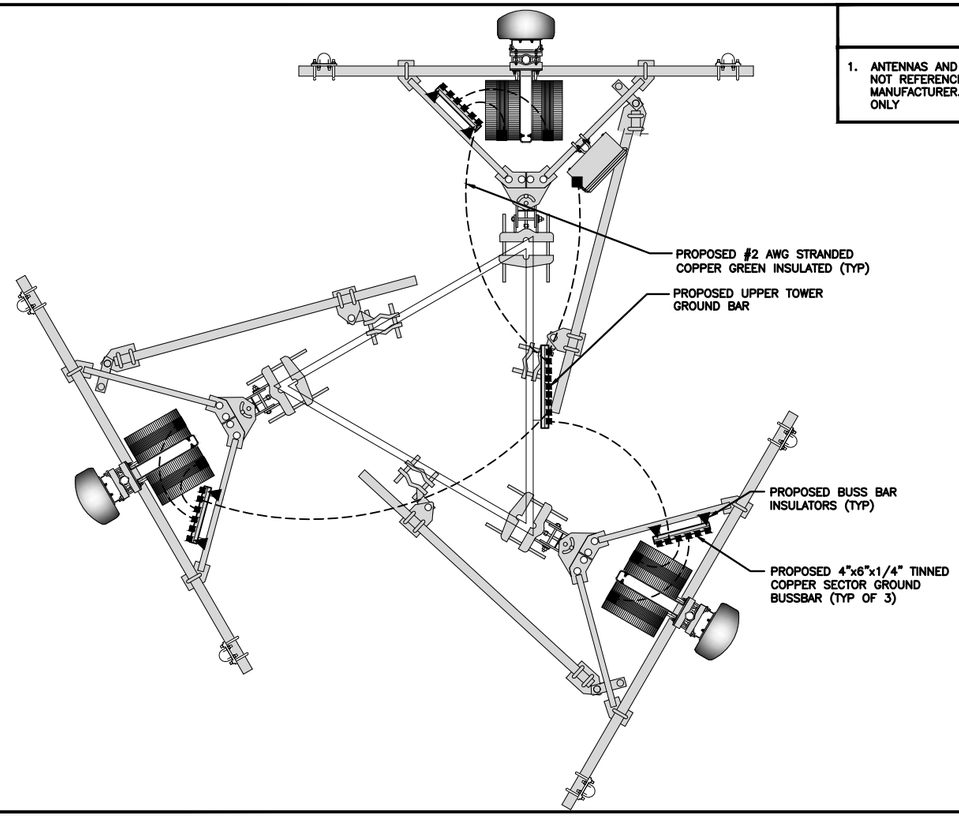
SHEET TITLE
ELECTRICAL ONE-LINE, FAULT CALCS & PANEL SCHEDULE

SHEET NUMBER
E-3



TYPICAL EQUIPMENT GROUNDING PLAN

NO SCALE | 1



TYPICAL ANTENNA GROUNDING PLAN

NO SCALE | 2

NOTES

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

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

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) (E) 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.

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.

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

(K) FRAME BONDING: THE BONDING POINT FOR TELECOM EQUIPMENT FRAMES SHALL BE THE GROUND BUS THAT IS NOT ISOLATED FROM THE EQUIPMENTS METAL FRAMEWORK.

(L) 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.

(M) 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.

(N) 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

(P) 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.

(Q) 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

(R) 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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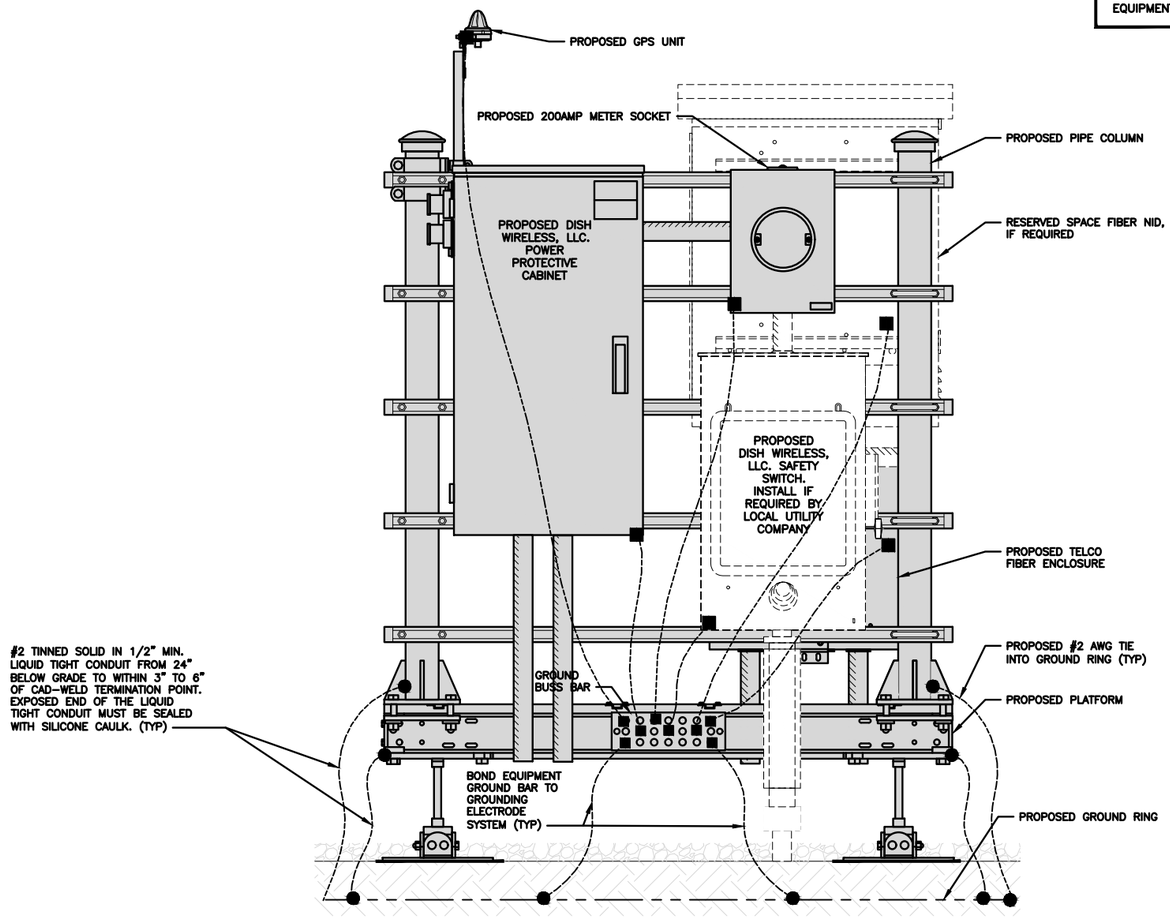
49 COOK DRIVE
MONTVILLE, CT 06382

SHEET TITLE
GROUNDING PLANS AND NOTES

SHEET NUMBER
G-1

NOTES

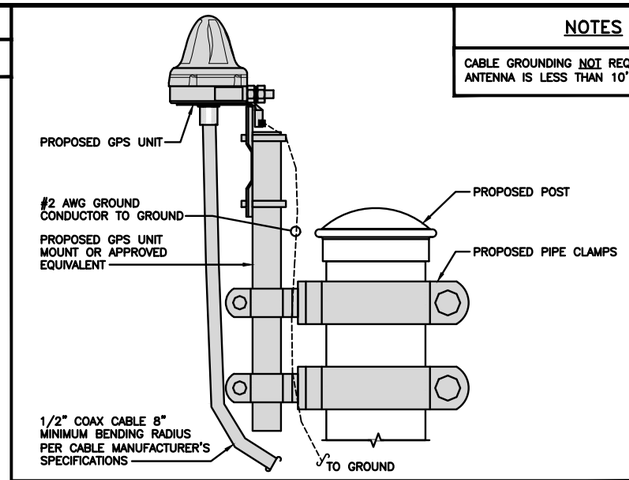
EQUIPMENT CABINET OMITTED FOR CLARITY



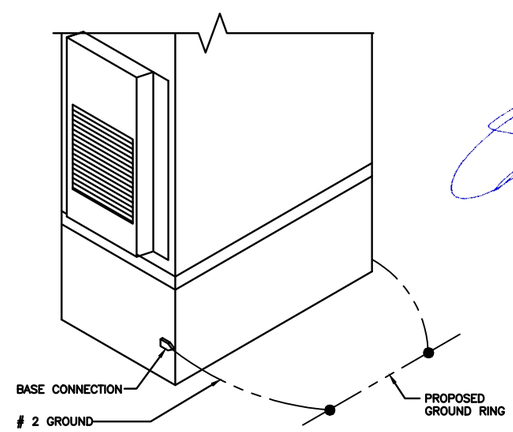
H-FRAME GROUNDING DETAIL | NO SCALE | 1

NOTES

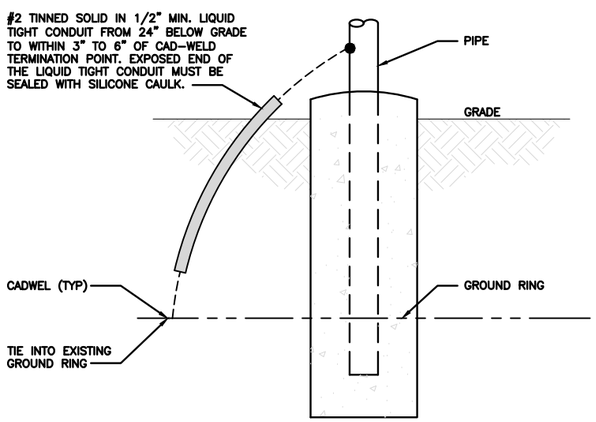
CABLE GROUNDING NOT REQUIRED WHEN ANTENNA IS LESS THAN 10' FROM CABINET



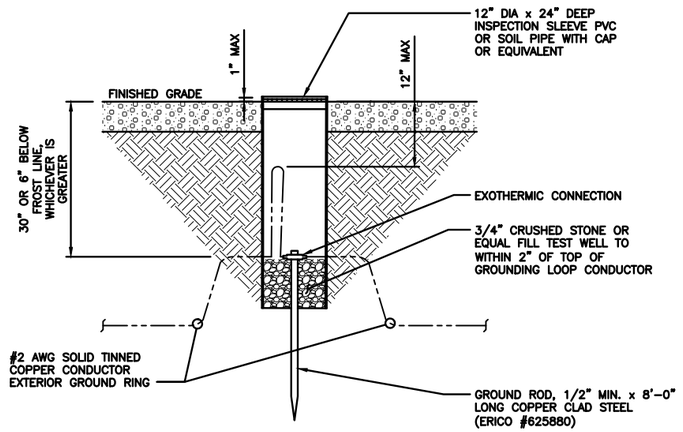
TYPICAL GPS UNIT GROUNDING | NO SCALE | 2



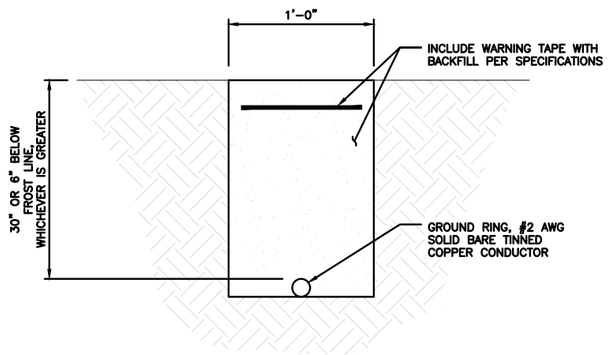
OUTDOOR CABINET GROUNDING | NO SCALE | 3



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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49 COOK DRIVE
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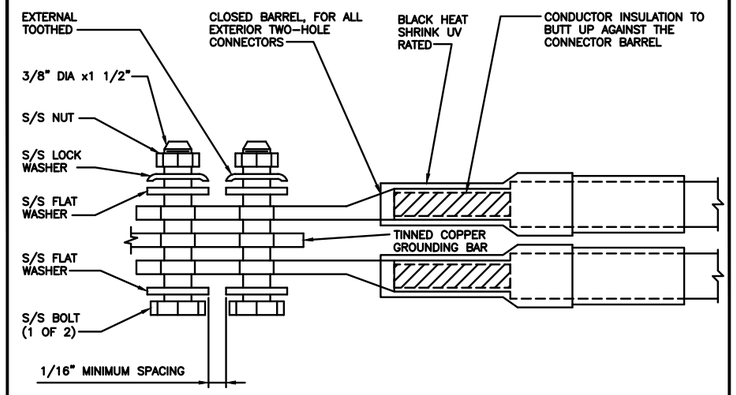
SHEET TITLE
GROUNDING DETAILS

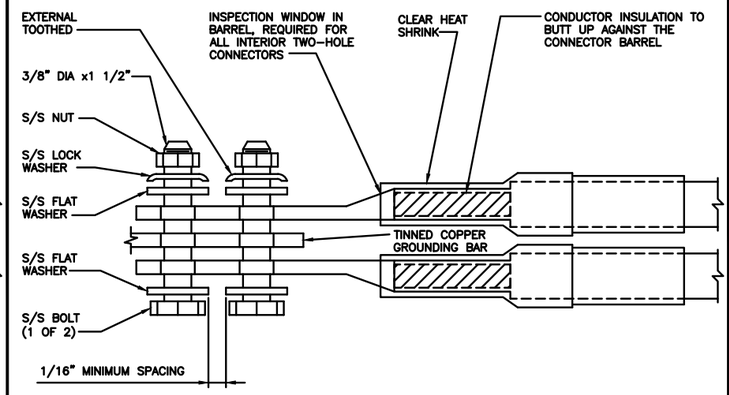
SHEET NUMBER
G-2

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

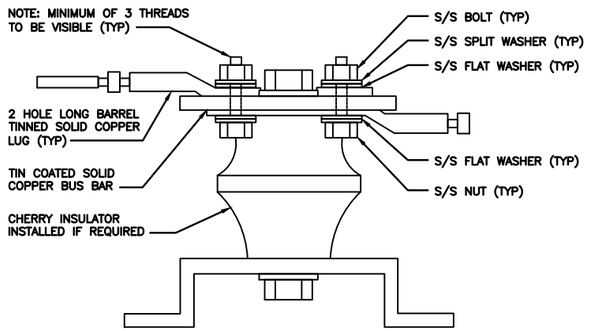
TYPICAL GROUNDING NOTES | NO SCALE | 1



TYPICAL EXTERIOR TWO HOLE LUG | NO SCALE | 2



TYPICAL INTERIOR TWO HOLE LUG | NO SCALE | 3



LUG DETAIL | NO SCALE | 4

NOT USED | NO SCALE | 5

NOT USED | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

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STATE OF CONNECTICUT
SHUHEI SAKANOUE
34916
LICENSED PROFESSIONAL ENGINEER
07/12/22

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

RFDS REV #: N/A

PRELIMINARY DOCUMENTS

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A&E PROJECT NUMBER
2039-Z5555C

DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBOS00073B
49 COOK DRIVE
MONTVILLE, CT 06382

SHEET TITLE
GROUNDING DETAILS

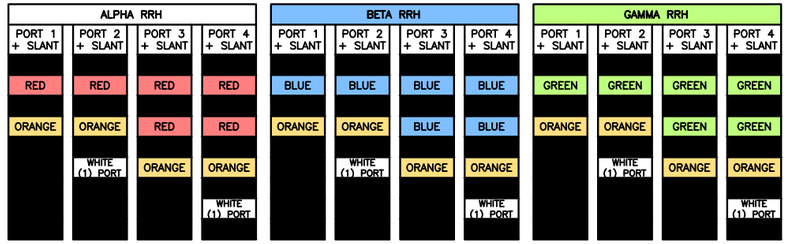
SHEET NUMBER
G-3

RF JUMPER COLOR CODING

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

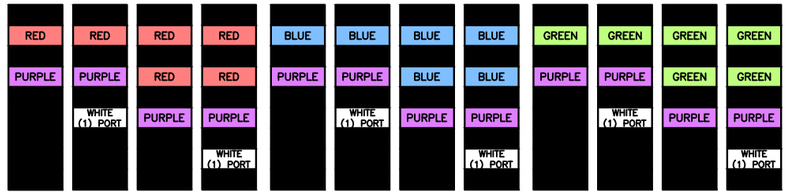
LOW-BAND RRH –
(600MHz N71 BASEBAND) +
(850MHz N26 BAND) +
(700MHz N29 BAND) – OPTIONAL PER MARKET

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)

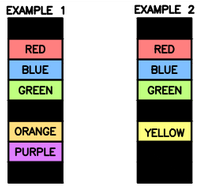


HYBRID/DISCREET CABLES

INCLUDE SECTOR BANDS BEING SUPPORTED AM LONG WITH FREQUENCY BANDS

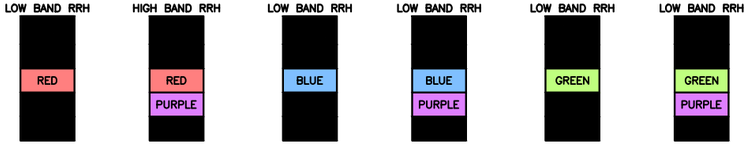
EXAMPLE 1 – HYBRID, OR DISCREET, SUPPORTS ALL SECTORS, BOTH LOW-BANDS AND MID-BANDS

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



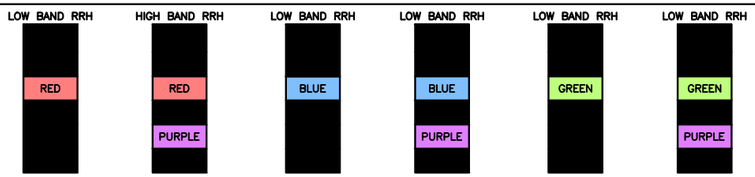
HYBRID/DISCREET CABLES

LOW-BAND RRH FIBER CABLES HAVE SECTOR STRIPE ONLY

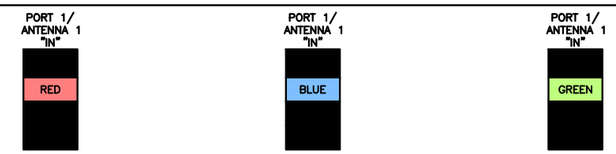


POWER CABLES TO RRHs

LOW-BAND RRH POWER CABLES HAVE SECTOR STRIPE ONLY



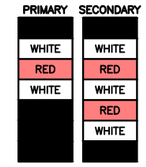
RET MOTORS AT ANTENNAS



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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07/11/22

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RFDS REV #: N/A

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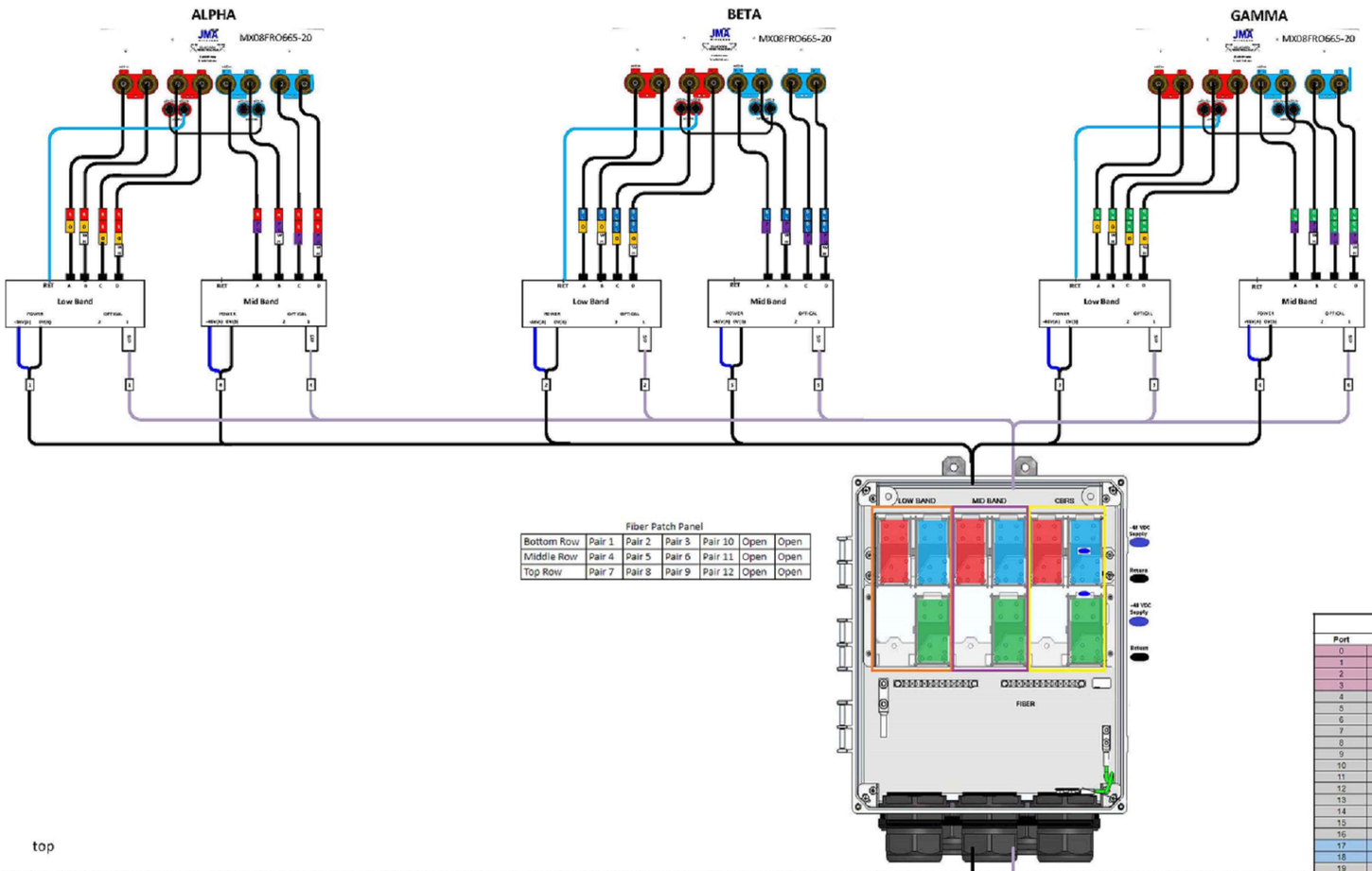
2039-Z5555C

DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBOS00073B
49 COOK DRIVE
MONTVILLE, CT 06382

SHEET TITLE
RF
CABLE COLOR CODE

SHEET NUMBER
RF-1



Fiber Patch Panel

Bottom Row	Pair 1	Pair 2	Pair 3	Pair 10	Open	Open
Middle Row	Pair 4	Pair 5	Pair 6	Pair 11	Open	Open
Top Row	Pair 7	Pair 8	Pair 9	Pair 12	Open	Open

CSR NCS540

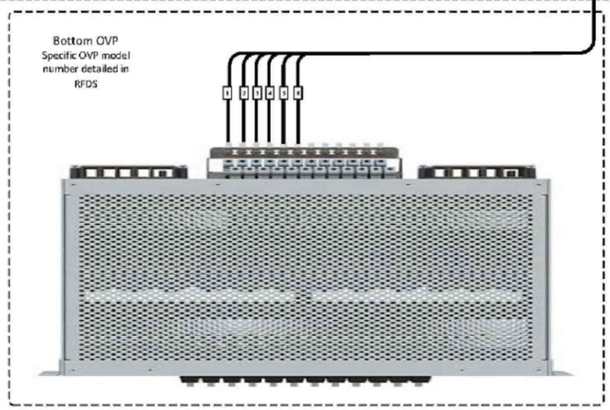
Port	Interface	Description
0	Gi0/0/0/0	SiteBoss
1	Gi0/0/0/1	CBRS - Alpha
2	Gi0/0/0/2	CBRS - Beta
3	Gi0/0/0/3	CBRS - Gamma
4	Te0/0/0/4	Fujitsu Low-Band RU - Alpha
5	Te0/0/0/5	Fujitsu Mid-Band RU - Alpha
6	Te0/0/0/6	Fujitsu Low-Band RU - Beta
7	Te0/0/0/7	Fujitsu Mid-Band RU - Beta
8	Te0/0/0/8	Fujitsu Low-Band RU - Gamma
9	Te0/0/0/9	Fujitsu Mid-Band RU - Gamma
10	Te0/0/0/10	Fixed WI6
11	Te0/0/0/11	Fixed WI6
12	Te0/0/0/12	Fixed WI6
13	Te0/0/0/13	Fixed WI6
14	Te0/0/0/14	CBRS1
15	Te0/0/0/15	CBRS2
16	Te0/0/0/16	CBRS3
17	Gi0/0/0/17	SM1 - BMC
18	Gi0/0/0/18	SM2 - BMC
19	Te0/0/019	SM1 - Data 1
20	Te0/0/020	SM1 - Data 2
21	Te0/0/021	SM2 - Data 1
22	Te0/0/022	SM2 - Data 2
23	Te0/0/023	Reserved Uplink (EDC, LDC)
24	Te0/0/024	Blank/Future
25	Te0/0/025	Blank/Future
26	Te0/0/026	Fiber NIU
27	Te0/0/027	Fiber NIU
28	Te0/0/028	Blank/Future
29	Te0/0/029	Blank/Future

top

bottom

Bottom OVP Layout

Circuit 1	Alpha Low Band
Circuit 2	Beta Low Band
Circuit 3	Gamma Low Band
Circuit 4	Alpha Mid Band
Circuit 5	Beta Mid Band
Circuit 6	Gamma Mid Band
Circuit 7	Alpha CBRS
Circuit 8	Beta CBRS
Circuit 9	Gamma CBRS
Circuit 10	Open
Circuit 11	Open
Circuit 12	Open



	5G plumbing diagram JMA MX08FRO665-20 2-2-2(LB+MB)
Quantity	
5-Jan-2021	None

PLUMBING DIAGRAM | NO SCALE | 1

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DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBOS00073B
49 COOK DRIVE
MONTVILLE, CT 06382

SHEET TITLE
RF
PLUMBING DIAGRAM

SHEET NUMBER
RF-2

EXOTHERMIC CONNECTION

MECHANICAL CONNECTION

BUSS BAR INSULATOR

CHEMICAL ELECTROLYTIC GROUNDING SYSTEM

TEST CHEMICAL ELECTROLYTIC GROUNDING SYSTEM

EXOTHERMIC WITH INSPECTION SLEEVE

GROUNDING BAR

GROUND ROD

TEST GROUND ROD WITH INSPECTION SLEEVE

SINGLE POLE SWITCH

DUPLEX RECEPTACLE

DUPLEX GFCI RECEPTACLE

FLUORESCENT LIGHTING FIXTURE
(2) TWO LAMPS 48–T8

SMOKE DETECTION (DC)

EMERGENCY LIGHTING (DC)

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

CHAIN LINK FENCE

WOOD/WROUGHT IRON FENCE

WALL STRUCTURE

LEASE AREA

PROPERTY LINE (PL)

SETBACKS

ICE BRIDGE

CABLE TRAY

WATER LINE

UNDERGROUND POWER

UNDERGROUND TELCO

OVERHEAD POWER

OVERHEAD TELCO

UNDERGROUND TELCO/POWER

ABOVE GROUND POWER

ABOVE GROUND TELCO

ABOVE GROUND TELCO/POWER

WORKPOINT

SECTION REFERENCE

DETAIL REFERENCE

LEGEND

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

ABBREVIATIONS

dish wireless.

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A&E PROJECT NUMBER

2039–Z5555C

DISH WIRELESS, LLC.
PROJECT INFORMATION

BOBOS00073B
49 COOK DRIVE
MONTVILLE, CT 06382

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.

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LICENSED PROFESSIONAL ENGINEER
07/12/22

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

RFDS REV #: N/A

PRELIMINARY DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	05/03/2021	ISSUED FOR REVIEW
B	03/25/2022	ISSUED FOR REVIEW / SST
C	06/10/2022	ISSUED FOR REVIEW
D	07/07/2022	ISSUED FOR REVIEW
0	07/12/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

2039–Z5555C

DISH WIRELESS, LLC.
PROJECT INFORMATION

BOBOS00073B
49 COOK DRIVE
MONTVILLE, CT 06382

SHEET TITLE

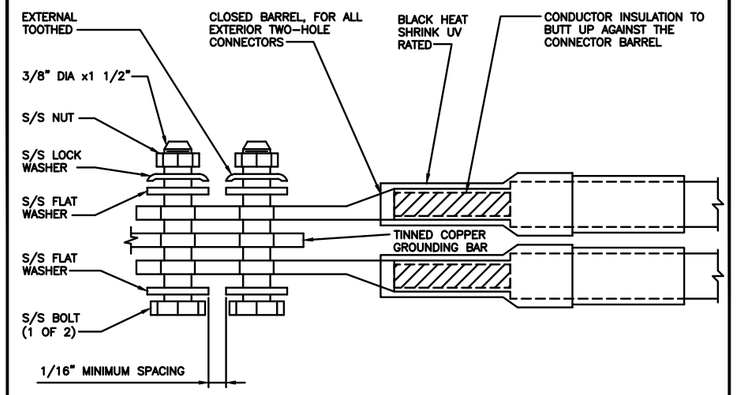
GENERAL NOTES

SHEET NUMBER

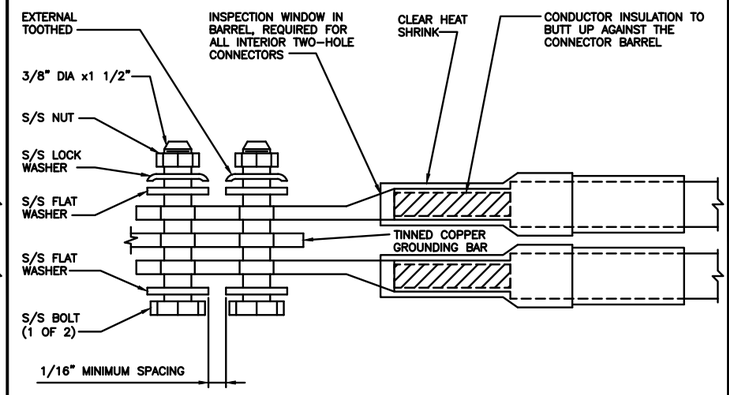
GN-2

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

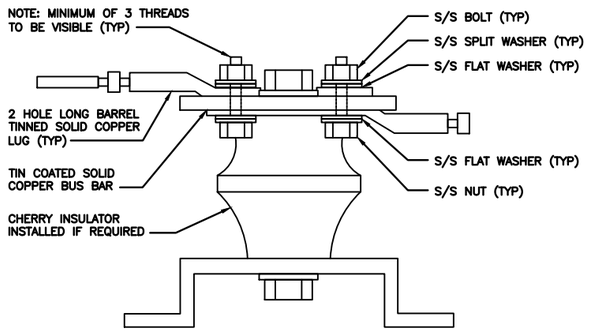
TYPICAL GROUNDING NOTES | NO SCALE | 1



TYPICAL EXTERIOR TWO HOLE LUG | NO SCALE | 2



TYPICAL INTERIOR TWO HOLE LUG | NO SCALE | 3



LUG DETAIL | NO SCALE | 4

NOT USED | NO SCALE | 5

NOT USED | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

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07/12/22

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

RFDS REV #: N/A

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A&E PROJECT NUMBER
2039-Z5555C

DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBOS00073B
49 COOK DRIVE
MONTVILLE, CT 06382

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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07/12/22

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

RFDS REV #: N/A

PRELIMINARY DOCUMENTS

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A&E PROJECT NUMBER

2039-Z5555C

DISH WIRELESS, LLC.
PROJECT INFORMATION

BOBOS00073B
49 COOK DRIVE
MONTVILLE, CT 06382

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-4

Exhibit D

Structural Analysis Report

TOWER STRUCTURAL ANALYSIS REPORT

March 25, 2022

DISH Wireless Site Name	Montville, CT
DISH Wireless Site Number	BOBOS00073B
NSS Site Name	Montville, CT
Infinigy Job Number	1197-F0001-B
Client	NSS
Carrier	DISH Wireless
Site Location	49 Cook Drive Montville, CT 06353 New London County 41°28'30.21" N NAD83 72°06'14.95" W NAD83
Structure Type	Valmont Self-Support Tower
Structure Height	170.5 FT
Structural Usage Ratio	**58.0%**
Overall Result	**Pass**

The enclosed structural analysis has been performed in accordance with the 2015 IBC / 2018 Connecticut Building Code based on an ultimate 3-second gust wind speed of 125 mph. The evaluation criteria and applicable standards are presented in the next section of this report.

Emmanuel Poulin, P.E.
structural@infinigy.com
CT P.E. License Number: 22947

CONTENTS

1. INTRODUCTION

Infinigy performed a structural analysis on the Existing Valmont Self-Support Tower. All referenced supporting documents have been obtained from the client and are assumed to be accurate and applicable to this site. The structure was analyzed using tnxTower version 8.1.1.0 analysis software.

2. DESIGN/ANALYSIS PARAMETERS

Wind Speed	125 mph (3-Second Gust, V_{ult})
Wind Speed w/ ice	50 mph (3-Second Gust) w/ 1" Ice Loading Considered
Adopted Code	2015 IBC / 2018 Connecticut Building Code
Standard(s)	TIA-222-H
Risk Category	II
Exposure Category	C
Topographic Factor	1
Seismic Site Class	D – Stiff Soil (Assumed)
Seismic Spectral Response	S_s = 0.195 g / S_1 = 0.054 g
Service Load Wind Speed	60 mph
Ground Elevation (HMSL)	363.0 ft

3. PROPOSED LOADING CONFIGURATION

Mount Center (ft)	RAD Center (ft)	Qty.	Appurtenance	Mount Type	Coax & Lines	Carrier
162.0	162.0	6	JMA Wireless MX08FRO665-21	(3) Sector Frames	(2) Hybrid Cable	DISH Wireless
		6	Fujitsu TA08025-B605			
		6	Fujitsu TA08025-B604			
		2	Raycap RDIDC-3045-PF-48 DC Surge Protectors			

EXISTING LOADING CONFIGURATION

Mount Center (ft)	RAD Center (ft)	Qty.	Appurtenance	Mount Type	Coax & Lines	Carrier
145.0	145.0	1	6' Omni	(1) Stand Off	(1) Coax	Unknown*
82.0	82.0	1	4' Dish	(1) Pipe	(1) EW	
80.0	80.0	1	6' Grid Dish	(1) Pipe	(1) EW	

*** Antenna configuration assumed based on Infinigy site visit on February 08, 2022.**

4. SUPPORTING DOCUMENTATION

Construction Drawings	Infinigy, BOBOS00073B, dated March, 2022
Site Visit	Infinigy, February 08, 2022
DISH Wireless Proposed Loading	DISH Wireless RFDS, Site ID: BOBOS0073B Rev. 1, dated March 17, 2022
Tower & Foundation Design Drawings & Calculations	Valmont Structures, Eng. File # A-146154, Drawing # 236900, dated April 13, 2011

5. RESULTS

Leg (T1)	58.0	Pass
Diagonal (T3)	36.9	Pass
Top Girt (T4)	8.4	Pass
Bolt Checks	36.9	Pass
RATING =	**58.0**	**Pass**

Reaction Data	Analysis Reactions	Design Reactions	Ratio	Result*
Axial per leg (kip)	182.5	647.0	28.2%	Pass
Shear per leg (kip)	20.9	106.0	19.7%	Pass
Uplift per leg (kip)	141.1	582.0	24.2%	Pass
Moment (kip-ft)	3131.1	11869.0	26.4%	Pass

*** Tower base reactions of analysis are acceptable when compared to original design reactions.**

Structural Components	Capacity	Pass/Fail
Legs	58.0%	Pass
Diagonals	36.9%	Pass
Horizontals	8.4%	Pass
Tower Bolts	36.9%	Pass
Anchor Bolts	19.8%	Pass
Foundation Reaction Comparison	28.2%	Pass
STRUCTURE RATING =	**58.0%**	**Pass**

5.1 DEFLECTION, TWIST, AND SWAY

Antenna Elevation (ft)	Deflection (in)	Sway (°)	Twist (°)
162.0	1.034	0.057	0.001
82.0	0.256	0.027	0.001

***Per ANSI/TIA-222-H Section 2.8.2 maximum serviceability structural deflection limit is 3% of structure height.**
***Per ANSI/TIA-222-H Section 2.8.2 maximum serviceability structural twist and sway limit is 4 degrees.**
***Per ANSI/TIA-222-H Section 2.8.3 deflection, Twist, and sway values were calculated using a basic 3-second gust wind speed of 60 mph.**
***It is the responsibility of the client to ensure their proposed and/or existing equipment will meet ANSI/TIA-222-H Annex D or other appropriate microwave signal degradation limits based on the provided values above.**

6. RECOMMENDATIONS

Infinigy recommends installing DISH Wireless's proposed equipment loading configuration on the mounts located on this structure. The installation shall be performed in accordance with the construction documents issued for this site.

If you have any questions, require additional information, or believe the actual conditions differ from those detailed in this report, please contact us immediately.

James M. Connor III, PE
Engineering Manager | **INFINIGY**

7. ASSUMPTIONS

The structure, its foundation system and related structures were built and maintained in accordance with the manufacturer's specifications and instructions.
The structure condition is essentially as erected and does not have corrosion, damages or defects that would affect its structural integrity. The structure is plumb and all members and their connections are sound and can fully develop their structural capacities.
The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in the loading configuration tables.
Some of the antennas and mounts used in the structure model are similar in size and weight to the actual appurtenances mounted on the structure.
Steel grades have been assumed as follows, unless noted otherwise: Channel, Solid Round, Angle, Plate — ASTM A36 HSS (Rectangular) — ASTM A500-B GR 46 HSS (Circular) — ASTM A500-B GR 42 Pipe — ASTM A53-B GR 35 Connection Bolts — ASTM A325 U-Bolts — ASTM A307
All bolted connections are pretensioned in accordance with Table 8.2 of the RCSC 2014 Standard.

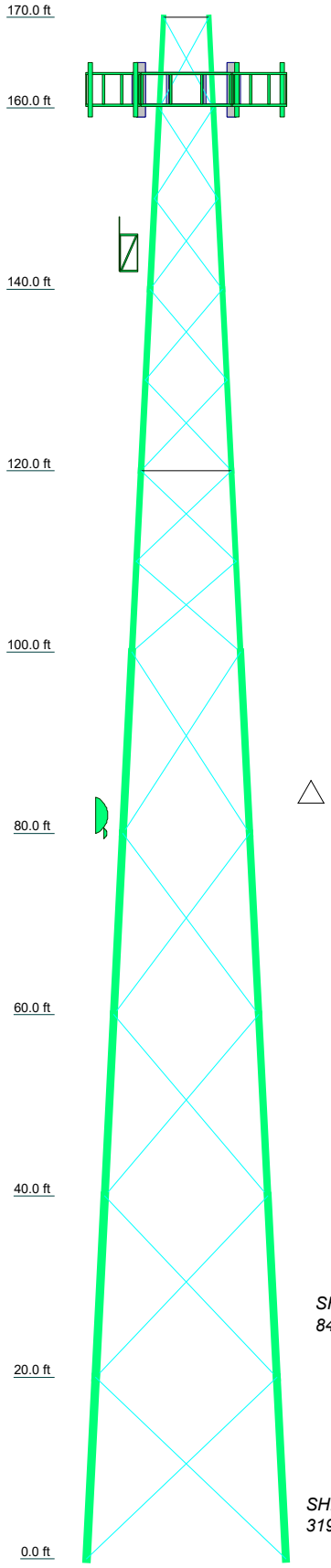
8. LIABILITY WAIVER AND LIMITATIONS

Our structural calculations are completed assuming all information provided to Infinigy is accurate and applicable to this site. For the purposes of calculations, we assume an overall structure condition as erected and all members and connections to be free of corrosion and/or structural defects. The structure owner and/or contractor shall verify the structure's condition prior to installation of any proposed equipment. If actual conditions differ from those described in this report, Infinigy Engineering should be notified immediately to assess the impact on the results of this report.

Our evaluation is completed using industry standard methods and procedures. The structural results, conclusions and recommendations contained in this report are proprietary and should not be used by others as their own. Infinigy is not responsible for decisions made by others that are or are not based on the stated assumptions and conclusions in this report.

This report is an evaluation of the tower structure only and does not reflect adequacy of any existing antenna mounts, mount connections, or cable mounting attachments. The analysis of these elements is outside the scope of this analysis and are assumed to be adequate for the purposes of this report and are assumed to have been installed per their manufacturer requirements. This document is not for construction purposes.

Section		T1	T2	T3	T4	T5	T6	T7	T8	T9		
Legs		Pirod 208951	Valmont 207629	Pirod 195557		Valmont 214589 (12x2.25)	Valmont 208335		Pirod 208337			
Leg Grade		A572-50										
Diagonals	A	L2-1/2x2-1/2x1/4		L3x3x3/16	L3x3x5/16			2L3 1/2x3 1/2x1/4				
Diagonal Grade	A36											
Top Girts	L3x3x5/16	N.A.			L3x3x5/16			N.A.				
Face Width (ft)	5	6	8	10	12	14	16	18	20	22		
# Panels @ (ft)	7 @ 10							5 @ 20				
Weight (lb)	1094.1	2244.0	2639.0	3302.5	5574.6	5785.1	5881.3	6738.7	6836.2	40105.5		



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Sector Mount [SM 601-3]	162	TA08025-B604 (DISH Wireless)	162
MX08FRO665-21 w/ MP (DISH Wireless)	162	TA08025-B605 (DISH Wireless)	162
		TA08025-B605 (DISH Wireless)	162
MX08FRO665-21 w/ MP (DISH Wireless)	162	TA08025-B605 (DISH Wireless)	162
		TA08025-B605 (DISH Wireless)	162
MX08FRO665-21 w/ MP (DISH Wireless)	162	TA08025-B605 (DISH Wireless)	162
MX08FRO665-21 w/ MP (DISH Wireless)	162	TA08025-B605 (DISH Wireless)	162
		RDIDC-9181-PF-48 (DISH Wireless)	162
MX08FRO665-21 w/ MP (DISH Wireless)	162	RDIDC-9181-PF-48 (DISH Wireless)	162
MX08FRO665-21 w/ MP (DISH Wireless)	162	Sector Mount [SM 601-3] (DISH Wireless)	162
		6' x 2" Omni	145
TA08025-B604 (DISH Wireless)	162	Side Arm Mount [SO 301-1]	145
TA08025-B604 (DISH Wireless)	162	Pipe Mount [PM 601-1]	82 - 80
TA08025-B604 (DISH Wireless)	162	P4-105	82
TA08025-B604 (DISH Wireless)	162	Pipe Mount [PM 601-1]	80
TA08025-B604 (DISH Wireless)	162	DB496-A	80

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	L2-1/2x2-1/2x3/16		

MATERIAL STRENGTH

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

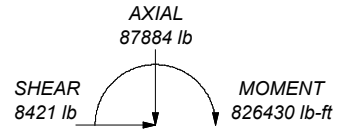
TOWER DESIGN NOTES

1. Tower is located in New London County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-H Standard.
3. Tower designed for a 125 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 58%

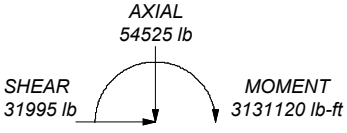
ALL REACTIONS ARE FACTORED

MAX. CORNER REACTIONS AT BASE:
DOWN: 182501 lb
SHEAR: 20924 lb

UPLIFT: -141064 lb
SHEAR: 16931 lb



TORQUE 762 lb-ft
50 mph WIND - 1.0000 in ICE



TORQUE 3679 lb-ft
REACTIONS - 125 mph WIND

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The Solutions Are Endless

Infinigy Engineering
1517 Old Apex Road
Cary, NC 27513
Phone: 518-690-0790
FAX:

Job: **BOBOS00073B**			
Project: **1197-F0001-B**			
Client: NSS	Drawn by: JMC	App'd:	
Code: TIA-222-H	Date: 03/25/22	Scale: NTS	
Path: L:\Telecom\DISH\NSS\CT - Private sites\BOBOS00073B\Structural\2022.03.25 - SAVAnalysis\tnx\BOBOS00073B_SST.eri		Dwg No. E-1	

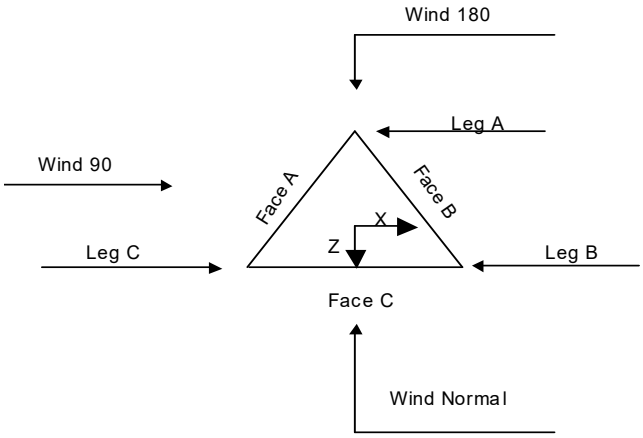
Tower Input Data

The main tower is a 3x free standing tower with an overall height of 170.00 ft above the ground line.
The base of the tower is set at an elevation of 0.00 ft above the ground line.
The face width of the tower is 5.00 ft at the top and 22.00 ft 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: 363.00 ft.
Basic wind speed of 125 mph.
Risk Category II.
Exposure Category C.
Simplified Topographic Factor Procedure for wind speed-up calculations is used.
Topographic Category: 1.
Crest Height: 0.00 ft.
Nominal ice thickness of 1.0000 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in tower member design is 1.
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 ft	Assembly Database	Description	Section Width ft	Number of Sections	Section Length ft
T1	170.00-160.00			5.00	1	10.00
T2	160.00-140.00			6.00	1	20.00
T3	140.00-120.00			8.00	1	20.00
T4	120.00-100.00			10.00	1	20.00
T5	100.00-80.00			12.00	1	20.00
T6	80.00-60.00			14.00	1	20.00
T7	60.00-40.00			16.00	1	20.00
T8	40.00-20.00			18.00	1	20.00
T9	20.00-0.00			20.00	1	20.00

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	170.00-160.00	10.00	X Brace	No	No	0.0000	0.0000
T2	160.00-140.00	10.00	X Brace	No	No	0.0000	0.0000
T3	140.00-120.00	10.00	X Brace	No	No	0.0000	0.0000
T4	120.00-100.00	10.00	X Brace	No	No	0.0000	0.0000
T5	100.00-80.00	20.00	X Brace	No	No	0.0000	0.0000
T6	80.00-60.00	20.00	X Brace	No	No	0.0000	0.0000

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
T7	60.00-40.00	20.00	X Brace	No	No	0.0000	0.0000
T8	40.00-20.00	20.00	X Brace	No	No	0.0000	0.0000
T9	20.00-0.00	20.00	X Brace	No	No	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 170.00-160.00	Truss Leg	Pirod 208951	A572-50 (50 ksi)	Equal Angle	L2-1/2x2-1/2x3/16	A36 (36 ksi)
T2 160.00-140.00	Truss Leg	Valmont 207629	A572-50 (50 ksi)	Equal Angle	L2-1/2x2-1/2x1/4	A36 (36 ksi)
T3 140.00-120.00	Truss Leg	Pirod 195557	A572-50 (50 ksi)	Equal Angle	L3x3x3/16	A36 (36 ksi)
T4 120.00-100.00	Truss Leg	Pirod 195557	A572-50 (50 ksi)	Equal Angle	L3x3x5/16	A36 (36 ksi)
T5 100.00-80.00	Truss Leg	Valmont 214589 (12x2.25)	A572-50 (50 ksi)	Double Equal Angle	2L3 1/2x3 1/2x1/4	A36 (36 ksi)
T6 80.00-60.00	Truss Leg	Valmont 208335	A572-50 (50 ksi)	Double Equal Angle	2L3 1/2x3 1/2x1/4	A36 (36 ksi)
T7 60.00-40.00	Truss Leg	Valmont 208335	A572-50 (50 ksi)	Double Equal Angle	2L3 1/2x3 1/2x1/4	A36 (36 ksi)
T8 40.00-20.00	Truss Leg	Pirod 208337	A572-50 (50 ksi)	Double Equal Angle	2L3 1/2x3 1/2x1/4	A36 (36 ksi)
T9 20.00-0.00	Truss Leg	Pirod 208337	A572-50 (50 ksi)	Double Equal Angle	2L3 1/2x3 1/2x1/4	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 170.00-160.00	Equal Angle	L3x3x5/16	A36 (36 ksi)	Equal Angle		A36 (36 ksi)
T4 120.00-100.00	Equal Angle	L3x3x5/16	A36 (36 ksi)	Equal Angle		A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
T1 170.00-160.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000

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
T2 160.00-140.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T3 140.00-120.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T4 120.00-100.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T5 100.00-80.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T6 80.00-60.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T7 60.00-40.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T8 40.00-20.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T9 20.00-0.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	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	Yes	Yes	1	1	1	1	1	1	1	1
170.00-160.00				1	1	1	1	1	1	1
T2	Yes	Yes	1	1	1	1	1	1	1	1
160.00-140.00				1	1	1	1	1	1	1
T3	Yes	Yes	1	1	1	1	1	1	1	1
140.00-120.00				1	1	1	1	1	1	1
T4	Yes	Yes	1	1	1	1	1	1	1	1
120.00-100.00				1	1	1	1	1	1	1
T5	Yes	Yes	1	1	1	1	1	1	1	1
100.00-80.00				1	1	1	1	1	1	1
T6	Yes	Yes	1	1	1	1	1	1	1	1
80.00-60.00				1	1	1	1	1	1	1
T7	Yes	Yes	1	1	1	1	1	1	1	1
60.00-40.00				1	1	1	1	1	1	1
T8	Yes	Yes	1	1	1	1	1	1	1	1
40.00-20.00				1	1	1	1	1	1	1
T9 20.00-0.00	Yes	Yes	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	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)*

Truss-Leg K Factors	
Truss-Legs Used As Leg Members	*Truss-Legs Used As Inner Members*

Tower Elevation ft	Leg Panels	X Brace Diagonals	Z Brace Diagonals	Leg Panels	X Brace Diagonals	Z Brace Diagonals
T1 170.00-160.00	1	0.5	0.85	1	0.5	0.85
T2 160.00-140.00	1	0.5	0.85	1	0.5	0.85
T3 140.00-120.00	1	0.5	0.85	1	0.5	0.85
T4 120.00-100.00	1	0.5	0.85	1	0.5	0.85
T5 100.00-80.00	1	0.5	0.85	1	0.5	0.85
T6 80.00-60.00	1	0.5	0.85	1	0.5	0.85
T7 60.00-40.00	1	0.5	0.85	1	0.5	0.85
T8 40.00-20.00	1	0.5	0.85	1	0.5	0.85
T9 20.00-0.00	1	0.5	0.85	1	0.5	0.85

Tower Section Geometry *(cont'd)*

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
T1 170.00-160.00	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 160.00-140.00	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 140.00-120.00	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 120.00-100.00	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 100.00-80.00	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
T6 80.00-60.00	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 60.00-40.00	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 40.00-20.00	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 20.00-0.00	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 170.00-160.00	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 160.00-140.00	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 140.00-120.00	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
T4 120.00-100.00	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 100.00-80.00	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 80.00-60.00	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 60.00-40.00	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 40.00-20.00	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 20.00-0.00	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 170.00-160.00	Flange	1.0000 A325N	6	1.0000 A325N	1	1.0000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T2 160.00-140.00	Flange	1.0000 A325N	6	1.0000 A325N	1	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T3 140.00-120.00	Flange	1.0000 A325N	6	1.0000 A325N	1	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T4 120.00-100.00	Flange	1.0000 A325N	6	1.0000 A325N	1	1.0000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T5 100.00-80.00	Flange	1.0000 A325N	12	0.8750 A325N	1	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T6 80.00-60.00	Flange	1.0000 A325N	12	0.8750 A325N	1	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T7 60.00-40.00	Flange	1.0000 A325N	12	0.8750 A325N	1	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T8 40.00-20.00	Flange	1.0000 A325N	12	0.8750 A325N	1	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T9 20.00-0.00	Flange	1.0000 A325N	0	0.8750 A325N	1	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
CUI11283248MM(1 -7/8) (DISH Wireless) ****	C	No	Yes	Ar (CaAa)	162.00 - 0.00	2	2	1.8200	1.8200		2.12
LDF5-50A (7/8 FOAM)	C	No	Yes	Ar (CaAa)	145.00 - 0.00	1	1	1.0900	1.0900		0.33
LDF5-50A (7/8	C	No	Yes	Ar (CaAa)	82.00 - 0.00	1	1	1.0900	1.0900		0.33

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
FOAM) LDF5-50A (7/8 FOAM)	C	No	Yes	Ar (CaAa)	80.00 - 0.00	1	1	1.0900	1.0900		0.33

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 lb
T1	170.00-160.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.728	0.000	8.48
T2	160.00-140.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	7.825	0.000	86.45
T3	140.00-120.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	9.460	0.000	91.40
T4	120.00-100.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	9.460	0.000	91.40
T5	100.00-80.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	9.678	0.000	92.06
T6	80.00-60.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	13.820	0.000	104.60
T7	60.00-40.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	13.820	0.000	104.60
T8	40.00-20.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	13.820	0.000	104.60
T9	20.00-0.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	13.820	0.000	104.60

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 lb
T1	170.00-160.00	A	1.175	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	2.213	0.000	26.86
T2	160.00-140.00	A	1.163	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	23.764	0.000	284.45
T3	140.00-120.00	A	1.147	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	28.712	0.000	333.47
T4	120.00-100.00	A	1.128	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	28.507	0.000	328.94

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 lb
T5	100.00-80.00	A	1.106	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	28.927	0.000	330.22
T6	80.00-60.00	A	1.078	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	40.956	0.000	444.62
T7	60.00-40.00	A	1.042	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	40.288	0.000	430.77
T8	40.00-20.00	A	0.991	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	39.315	0.000	411.06
T9	20.00-0.00	A	0.887	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	31.569	0.000	350.66

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	1	CUI11283248MM(1-7/8)	160.00 - 162.00	0.6000	0.6000
T2	1	CUI11283248MM(1-7/8)	140.00 - 160.00	0.6000	0.6000
T2	3	LDF5-50A (7/8 FOAM)	140.00 - 145.00	0.6000	0.6000
T3	1	CUI11283248MM(1-7/8)	120.00 - 140.00	0.6000	0.6000
T3	3	LDF5-50A (7/8 FOAM)	120.00 - 140.00	0.6000	0.6000
T4	1	CUI11283248MM(1-7/8)	100.00 - 120.00	0.6000	0.6000
T4	3	LDF5-50A (7/8 FOAM)	100.00 - 120.00	0.6000	0.6000
T5	1	CUI11283248MM(1-7/8)	80.00 - 100.00	0.6000	0.6000
T5	3	LDF5-50A (7/8 FOAM)	80.00 - 100.00	0.6000	0.6000
T5	4	LDF5-50A (7/8 FOAM)	80.00 - 82.00	0.6000	0.6000
T6	1	CUI11283248MM(1-7/8)	60.00 - 80.00	0.6000	0.6000
T6	3	LDF5-50A (7/8 FOAM)	60.00 - 80.00	0.6000	0.6000
T6	4	LDF5-50A (7/8 FOAM)	60.00 - 80.00	0.6000	0.6000
T6	5	LDF5-50A (7/8 FOAM)	60.00 - 80.00	0.6000	0.6000
T7	1	CUI11283248MM(1-7/8)	40.00 - 60.00	0.6000	0.6000
T7	3	LDF5-50A (7/8 FOAM)	40.00 - 60.00	0.6000	0.6000
T7	4	LDF5-50A (7/8 FOAM)	40.00 - 60.00	0.6000	0.6000
T7	5	LDF5-50A (7/8 FOAM)	40.00 - 60.00	0.6000	0.6000
T8	1	CUI11283248MM(1-7/8)	20.00 - 40.00	0.6000	0.6000
T8	3	LDF5-50A (7/8 FOAM)	20.00 - 40.00	0.6000	0.6000
T8	4	LDF5-50A (7/8 FOAM)	20.00 - 40.00	0.6000	0.6000
T8	5	LDF5-50A (7/8 FOAM)	20.00 - 40.00	0.6000	0.6000
T9	1	CUI11283248MM(1-7/8)	0.00 - 20.00	0.6000	0.6000
T9	3	LDF5-50A (7/8 FOAM)	0.00 - 20.00	0.6000	0.6000
T9	4	LDF5-50A (7/8 FOAM)	0.00 - 20.00	0.6000	0.6000
T9	5	LDF5-50A (7/8 FOAM)	0.00 - 20.00	0.6000	0.6000

Discrete Tower Loads

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 lb
Sector Mount [SM 601-3]	C	None		0.000	162.00	No Ice	29.25	29.25	1422.90
						1/2" Ice	36.23	36.23	1954.53
						1" Ice	43.21	43.21	2486.16
****									
MX08FRO665-21 w/ MP (DISH Wireless)	A	From Leg	4.00 5.00 0.00	0.000	162.00	No Ice 1/2" Ice 1" Ice	12.87 13.47 14.03	7.61 8.80 9.70	90.05 183.09 284.73
MX08FRO665-21 w/ MP (DISH Wireless)	B	From Leg	4.00 5.00 0.00	0.000	162.00	No Ice 1/2" Ice 1" Ice	12.87 13.47 14.03	7.61 8.80 9.70	90.05 183.09 284.73
MX08FRO665-21 w/ MP (DISH Wireless)	C	From Leg	4.00 5.00 0.00	0.000	162.00	No Ice 1/2" Ice 1" Ice	12.87 13.47 14.03	7.61 8.80 9.70	90.05 183.09 284.73
MX08FRO665-21 w/ MP (DISH Wireless)	A	From Leg	4.00 -5.00 0.00	0.000	162.00	No Ice 1/2" Ice 1" Ice	12.87 13.47 14.03	7.61 8.80 9.70	90.05 183.09 284.73
MX08FRO665-21 w/ MP (DISH Wireless)	B	From Leg	4.00 -5.00 0.00	0.000	162.00	No Ice 1/2" Ice 1" Ice	12.87 13.47 14.03	7.61 8.80 9.70	90.05 183.09 284.73
MX08FRO665-21 w/ MP (DISH Wireless)	C	From Leg	4.00 -5.00 0.00	0.000	162.00	No Ice 1/2" Ice 1" Ice	12.87 13.47 14.03	7.61 8.80 9.70	90.05 183.09 284.73
TA08025-B604 (DISH Wireless)	A	From Leg	3.00 5.00 0.00	0.000	162.00	No Ice 1/2" Ice 1" Ice	1.96 2.14 2.32	1.03 1.17 1.31	63.93 80.68 100.13
TA08025-B604 (DISH Wireless)	B	From Leg	3.00 5.00 0.00	0.000	162.00	No Ice 1/2" Ice 1" Ice	1.96 2.14 2.32	1.03 1.17 1.31	63.93 80.68 100.13
TA08025-B604 (DISH Wireless)	C	From Leg	3.00 5.00 0.00	0.000	162.00	No Ice 1/2" Ice 1" Ice	1.96 2.14 2.32	1.03 1.17 1.31	63.93 80.68 100.13
TA08025-B604 (DISH Wireless)	A	From Leg	3.00 -5.00 0.00	0.000	162.00	No Ice 1/2" Ice 1" Ice	1.96 2.14 2.32	1.03 1.17 1.31	63.93 80.68 100.13
TA08025-B604 (DISH Wireless)	B	From Leg	3.00 -5.00 0.00	0.000	162.00	No Ice 1/2" Ice 1" Ice	1.96 2.14 2.32	1.03 1.17 1.31	63.93 80.68 100.13
TA08025-B604 (DISH Wireless)	C	From Leg	3.00 -5.00 0.00	0.000	162.00	No Ice 1/2" Ice 1" Ice	1.96 2.14 2.32	1.03 1.17 1.31	63.93 80.68 100.13
TA08025-B605 (DISH Wireless)	A	From Leg	3.00 5.00 0.00	0.000	162.00	No Ice 1/2" Ice 1" Ice	1.96 2.14 2.32	1.19 1.33 1.48	74.95 92.92 113.67
TA08025-B605 (DISH Wireless)	B	From Leg	3.00 5.00 0.00	0.000	162.00	No Ice 1/2" Ice 1" Ice	1.96 2.14 2.32	1.19 1.33 1.48	74.95 92.92 113.67
TA08025-B605 (DISH Wireless)	C	From Leg	3.00 5.00 0.00	0.000	162.00	No Ice 1/2" Ice 1" Ice	1.96 2.14 2.32	1.19 1.33 1.48	74.95 92.92 113.67
TA08025-B605	A	From Leg	3.00	0.000	162.00	No Ice	1.96	1.19	74.95

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 lb
(DISH Wireless)			-5.00			1/2" Ice	2.14	1.33	92.92
			0.00			1" Ice	2.32	1.48	113.67
TA08025-B605	B	From Leg	3.00	0.000	162.00	No Ice	1.96	1.19	74.95
(DISH Wireless)			-5.00			1/2" Ice	2.14	1.33	92.92
			0.00			1" Ice	2.32	1.48	113.67
TA08025-B605	C	From Leg	3.00	0.000	162.00	No Ice	1.96	1.19	74.95
(DISH Wireless)			-5.00			1/2" Ice	2.14	1.33	92.92
			0.00			1" Ice	2.32	1.48	113.67
RDIDC-9181-PF-48	A	From Leg	3.00	0.000	162.00	No Ice	2.56	1.52	21.85
(DISH Wireless)			5.00			1/2" Ice	2.76	1.69	44.28
			2.00			1" Ice	2.97	1.86	69.81
RDIDC-9181-PF-48	A	From Leg	3.00	0.000	162.00	No Ice	2.56	1.52	21.85
(DISH Wireless)			-5.00			1/2" Ice	2.76	1.69	44.28
			-2.00			1" Ice	2.97	1.86	69.81
Sector Mount [SM 601-3]	C	None		0.000	162.00	No Ice	29.25	29.25	1422.90
(DISH Wireless)						1/2" Ice	36.23	36.23	1954.53
						1" Ice	43.21	43.21	2486.16
****									
6' x 2" Omni	C	From Leg	3.00	0.000	145.00	No Ice	1.20	1.20	15.00
			0.00			1/2" Ice	1.80	1.80	24.39
			0.00			1" Ice	2.17	2.17	37.81
Side Arm Mount [SO 301-1]	C	From Leg	3.00	0.000	145.00	No Ice	0.46	0.91	23.00
			0.00			1/2" Ice	0.65	1.30	32.54
			0.00			1" Ice	0.84	1.69	42.08
****									
Pipe Mount [PM 601-1]	C	From Leg	2.00	0.000	80.00 - 82.00	No Ice	1.32	1.32	65.00
			0.00			1/2" Ice	1.58	1.58	77.47
			0.00			1" Ice	1.84	1.84	89.94
****									
Pipe Mount [PM 601-1]	C	From Leg	2.00	0.000	80.00	No Ice	1.32	1.32	65.00
			0.00			1/2" Ice	1.58	1.58	77.47
			0.00			1" Ice	1.84	1.84	89.94

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight lb
P4-105	C	Paraboloid w/o Radome	From Leg	2.00	0.000		82.00	4.00	No Ice	12.57	104.00
				0.00					1/2" Ice	13.09	171.19
				0.00					1" Ice	13.61	238.38
****											
DB496-A	C	Grid	From Leg	2.00	0.000		80.00	1.13	No Ice	1.30	9.00
				0.00					1/2" Ice	1.15	14.88
				0.00					1" Ice	0.00	20.77

Truss-Leg Properties

Section Designation	Area	Area Ice	Self Weight	Ice Weight	Equiv. Diameter	Equiv. Diameter Ice	Leg Area
	in^2	in^2	lb	lb	in	in	in^2
Pirod 208951	1034.5809	2909.6152	527.74	329.72	7.1846	20.2057	3.6816
Valmont 207629	2291.7722	5808.8649	549.19	524.78	7.9575	20.1697	5.3014
Pirod 195557	2422.4677	5869.1059	678.81	633.68	8.4113	20.3788	7.2158
Pirod 195557	2422.4677	5855.5898	678.81	618.04	8.4113	20.3319	7.2158
Valmont 214589 (12x2.25)	2823.4402	5983.6496	1307.17	706.31	9.8036	20.7766	11.9282
Valmont 208335	2824.1561	6036.1324	1354.24	566.78	9.8061	20.9588	14.7262
Valmont 208335	2824.1561	6010.7581	1354.24	539.53	9.8061	20.8707	14.7262
Pirod 208337	3051.4496	6045.8309	1608.85	519.36	10.5953	20.9925	17.8187
Pirod 208337	3051.4496	5972.5247	1608.85	445.82	10.5953	20.7379	17.8187

Tower Pressures - No Ice

$G_H = 0.850$

Section Elevation	z	K_Z	q_z	A_G	Face	A_F	A_R	A_{leg}	Leg %	C_AA_A In Face	C_AA_A Out Face
ft	ft		psf	ft^2		ft^2	ft^2	ft^2		ft^2	ft^2
T1	165.00	1.406	47	66.055	A	4.893	11.994	11.994	71.02	0.000	0.000
170.00-160.00					B	4.893	11.994		71.02	0.000	0.000
					C	4.893	11.994		71.02	0.728	0.000
T2	150.00	1.378	46	162.528	A	8.723	26.569	26.569	75.28	0.000	0.000
160.00-140.00					B	8.723	26.569		75.28	0.000	0.000
					C	8.723	26.569		75.28	7.825	0.000
T3	130.00	1.337	45	202.945	A	11.964	28.085	28.085	70.13	0.000	0.000
140.00-120.00					B	11.964	28.085		70.13	0.000	0.000
					C	11.964	28.085		70.13	9.460	0.000
T4	110.00	1.291	43	242.945	A	15.770	28.085	28.085	64.04	0.000	0.000
120.00-100.00					B	15.770	28.085		64.04	0.000	0.000
					C	15.770	28.085		64.04	9.460	0.000
T5	90.00	1.238	42	283.780	A	12.849	32.733	32.733	71.81	0.000	0.000
100.00-80.00					B	12.849	32.733		71.81	0.000	0.000
					C	12.849	32.733		71.81	9.678	0.000
T6 80.00-60.00	70.00	1.174	39	324.197	A	13.615	32.741	32.741	70.63	0.000	0.000
					B	13.615	32.741		70.63	0.000	0.000
					C	13.615	32.741		70.63	13.820	0.000
T7 60.00-40.00	50.00	1.094	37	364.197	A	14.415	32.741	32.741	69.43	0.000	0.000
					B	14.415	32.741		69.43	0.000	0.000
					C	14.415	32.741		69.43	13.820	0.000
T8 40.00-20.00	30.00	0.982	33	404.614	A	15.249	35.377	35.377	69.88	0.000	0.000
					B	15.249	35.377		69.88	0.000	0.000
					C	15.249	35.377		69.88	13.820	0.000
T9 20.00-0.00	10.00	0.85	29	444.614	A	16.115	35.377	35.377	68.70	0.000	0.000
					B	16.115	35.377		68.70	0.000	0.000
					C	16.115	35.377		68.70	13.820	0.000

Tower Pressure - With Ice

$G_H = 0.850$

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
T1	165.00	1.406	8	1.1746	68.016	A	4.893	38.174	33.732	78.33	0.000	0.000
170.00-160.00						B	4.893	38.174		78.33	0.000	0.000
						C	4.893	38.174		78.33	2.213	0.000
T2	150.00	1.378	7	1.1635	166.411	A	8.723	75.463	67.344	79.99	0.000	0.000
160.00-140.00						B	8.723	75.463		79.99	0.000	0.000
						C	8.723	75.463		79.99	23.764	0.000
T3	130.00	1.337	7	1.1469	206.773	A	11.964	77.191	68.043	76.32	0.000	0.000
140.00-120.00						B	11.964	77.191		76.32	0.000	0.000
						C	11.964	77.191		76.32	28.712	0.000
T4	110.00	1.291	7	1.1279	246.710	A	15.770	79.744	67.886	71.07	0.000	0.000
120.00-100.00						B	15.770	79.744		71.07	0.000	0.000
						C	15.770	79.744		71.07	28.507	0.000
T5 100.00-80.00	90.00	1.238	7	1.1055	287.469	A	12.849	77.488	69.371	76.79	0.000	0.000
						B	12.849	77.488		76.79	0.000	0.000
						C	12.849	77.488		76.79	28.927	0.000
T6 80.00-60.00	70.00	1.174	6	1.0781	327.795	A	13.615	78.367	69.979	76.08	0.000	0.000
						B	13.615	78.367		76.08	0.000	0.000
						C	13.615	78.367		76.08	40.956	0.000
T7 60.00-40.00	50.00	1.094	6	1.0424	367.676	A	14.415	78.271	69.685	75.18	0.000	0.000
						B	14.415	78.271		75.18	0.000	0.000
						C	14.415	78.271		75.18	40.288	0.000
T8 40.00-20.00	30.00	0.982	5	0.9905	407.920	A	15.249	78.722	70.091	74.59	0.000	0.000
						B	15.249	78.722		74.59	0.000	0.000
						C	15.249	78.722		74.59	39.315	0.000
T9 20.00-0.00	10.00	0.85	5	0.8875	447.576	A	16.115	77.414	69.242	74.03	0.000	0.000
						B	16.115	77.414		74.03	0.000	0.000
						C	16.115	77.414		74.03	31.569	0.000

Tower Pressure - Service

$G_H = 0.850$

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
T1	165.00	1.406	11	66.055	A	4.893	11.994	11.994	71.02	0.000	0.000
170.00-160.00					B	4.893	11.994		71.02	0.000	0.000
					C	4.893	11.994		71.02	0.728	0.000
T2	150.00	1.378	11	162.528	A	8.723	26.569	26.569	75.28	0.000	0.000
160.00-140.00					B	8.723	26.569		75.28	0.000	0.000
					C	8.723	26.569		75.28	7.825	0.000
T3	130.00	1.337	10	202.945	A	11.964	28.085	28.085	70.13	0.000	0.000
140.00-120.00					B	11.964	28.085		70.13	0.000	0.000
					C	11.964	28.085		70.13	9.460	0.000
T4	110.00	1.291	10	242.945	A	15.770	28.085	28.085	64.04	0.000	0.000
120.00-100.00					B	15.770	28.085		64.04	0.000	0.000
					C	15.770	28.085		64.04	9.460	0.000
T5	90.00	1.238	10	283.780	A	12.849	32.733	32.733	71.81	0.000	0.000
100.00-80.00					B	12.849	32.733		71.81	0.000	0.000
					C	12.849	32.733		71.81	9.678	0.000
T6 80.00-60.00	70.00	1.174	9	324.197	A	13.615	32.741	32.741	70.63	0.000	0.000
					B	13.615	32.741		70.63	0.000	0.000
					C	13.615	32.741		70.63	13.820	0.000

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
T7 60.00-40.00	50.00	1.094	8	364.197	A	14.415	32.741	32.741	69.43	0.000	0.000
					B	14.415	32.741		69.43	0.000	0.000
					C	14.415	32.741		69.43	13.820	0.000
T8 40.00-20.00	30.00	0.982	8	404.614	A	15.249	35.377	35.377	69.88	0.000	0.000
					B	15.249	35.377		69.88	0.000	0.000
					C	15.249	35.377		69.88	13.820	0.000
T9 20.00-0.00	10.00	0.85	7	444.614	A	16.115	35.377	35.377	68.70	0.000	0.000
					B	16.115	35.377		68.70	0.000	0.000
					C	16.115	35.377		68.70	13.820	0.000

Tower Forces - No Ice - Wind Normal To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	8.48	1094.10	A	0.256	2.421	47	1	1	11.927	1175.58	117.56	C
170.00-160.00			B	0.256	2.421		1	1	11.927			
			C	0.256	2.421		1	1	11.927			
T2	86.45	2243.95	A	0.217	2.54	46	1	1	24.071	2588.16	129.41	C
160.00-140.00			B	0.217	2.54		1	1	24.071			
			C	0.217	2.54		1	1	24.071			
T3	91.40	2639.00	A	0.197	2.605	45	1	1	28.085	3007.50	150.38	C
140.00-120.00			B	0.197	2.605		1	1	28.085			
			C	0.197	2.605		1	1	28.085			
T4	91.40	3302.54	A	0.181	2.662	43	1	1	31.816	3328.79	166.44	C
120.00-100.00			B	0.181	2.662		1	1	31.816			
			C	0.181	2.662		1	1	31.816			
T5	92.06	5574.62	A	0.161	2.733	42	1	1	31.465	3240.93	162.05	C
100.00-80.00			B	0.161	2.733		1	1	31.465			
			C	0.161	2.733		1	1	31.465			
T6	104.60	5795.14	A	0.143	2.797	39	1	1	32.175	3291.87	164.59	C
80.00-60.00			B	0.143	2.797		1	1	32.175			
			C	0.143	2.797		1	1	32.175			
T7	104.60	5881.30	A	0.129	2.848	37	1	1	32.939	3185.80	159.29	C
60.00-40.00			B	0.129	2.848		1	1	32.939			
			C	0.129	2.848		1	1	32.939			
T8	104.60	6738.67	A	0.125	2.865	33	1	1	35.253	3062.17	153.11	C
40.00-20.00			B	0.125	2.865		1	1	35.253			
			C	0.125	2.865		1	1	35.253			
T9 20.00-0.00	104.60	6836.21	A	0.116	2.901	29	1	1	36.101	2740.34	137.02	C
			B	0.116	2.901		1	1	36.101			
			C	0.116	2.901		1	1	36.101			
Sum Weight:	788.19	40105.54						OTM	2140010.6 2 lb-ft	25621.14		

Tower Forces - No Ice - Wind 60 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	8.48	1094.10	A	0.256	2.421	47	0.8	1	10.948	1080.55	108.06	C
170.00-160.00			B	0.256	2.421		0.8	1	10.948			
			C	0.256	2.421		0.8	1	10.948			
T2	86.45	2243.95	A	0.217	2.54	46	0.8	1	22.327	2413.97	120.70	C
160.00-140.00			B	0.217	2.54		0.8	1	22.327			
			C	0.217	2.54		0.8	1	22.327			
T3	91.40	2639.00	A	0.197	2.605	45	0.8	1	25.692	2769.71	138.49	C
140.00-120.00			B	0.197	2.605		0.8	1	25.692			
			C	0.197	2.605		0.8	1	25.692			
T4	91.40	3302.54	A	0.181	2.662	43	0.8	1	28.662	3019.53	150.98	C
120.00-100.00			B	0.181	2.662		0.8	1	28.662			
			C	0.181	2.662		0.8	1	28.662			
T5	92.06	5574.62	A	0.161	2.733	42	0.8	1	28.895	2992.98	149.65	C
100.00-80.00			B	0.161	2.733		0.8	1	28.895			
			C	0.161	2.733		0.8	1	28.895			
T6	104.60	5795.14	A	0.143	2.797	39	0.8	1	29.452	3036.77	151.84	C
80.00-60.00			B	0.143	2.797		0.8	1	29.452			
			C	0.143	2.797		0.8	1	29.452			
T7	104.60	5881.30	A	0.129	2.848	37	0.8	1	30.056	2929.61	146.48	C
60.00-40.00			B	0.129	2.848		0.8	1	30.056			
			C	0.129	2.848		0.8	1	30.056			
T8	104.60	6738.67	A	0.125	2.865	33	0.8	1	32.204	2817.36	140.87	C
40.00-20.00			B	0.125	2.865		0.8	1	32.204			
			C	0.125	2.865		0.8	1	32.204			
T9 20.00-0.00	104.60	6836.21	A	0.116	2.901	29	0.8	1	32.878	2513.64	125.68	C
			B	0.116	2.901		0.8	1	32.878			
			C	0.116	2.901		0.8	1	32.878			
Sum Weight:	788.19	40105.54						OTM	1970676.89 lb-ft	23574.11		

Tower Forces - No Ice - Wind 90 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	8.48	1094.10	A	0.256	2.421	47	0.85	1	11.193	1104.31	110.43	C
170.00-160.00			B	0.256	2.421		0.85	1	11.193			
			C	0.256	2.421		0.85	1	11.193			
T2	86.45	2243.95	A	0.217	2.54	46	0.85	1	22.763	2457.52	122.88	C
160.00-140.00			B	0.217	2.54		0.85	1	22.763			
			C	0.217	2.54		0.85	1	22.763			
T3	91.40	2639.00	A	0.197	2.605	45	0.85	1	26.291	2829.16	141.46	C
140.00-120.00			B	0.197	2.605		0.85	1	26.291			
			C	0.197	2.605		0.85	1	26.291			
T4	91.40	3302.54	A	0.181	2.662	43	0.85	1	29.450	3096.84	154.84	C
120.00-100.00			B	0.181	2.662		0.85	1	29.450			
			C	0.181	2.662		0.85	1	29.450			
T5	92.06	5574.62	A	0.161	2.733	42	0.85	1	29.537	3054.96	152.75	C
100.00-80.00			B	0.161	2.733		0.85	1	29.537			
			C	0.161	2.733		0.85	1	29.537			
T6	104.60	5795.14	A	0.143	2.797	39	0.85	1	30.133	3100.55	155.03	C
80.00-60.00			B	0.143	2.797		0.85	1	30.133			
			C	0.143	2.797		0.85	1	30.133			

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T7	104.60	5881.30	A	0.129	2.848	37	0.85	1	30.777	2993.66	149.68	C
60.00-40.00			B	0.129	2.848		0.85	1	30.777			
			C	0.129	2.848		0.85	1	30.777			
T8	104.60	6738.67	A	0.125	2.865	33	0.85	1	32.966	2878.56	143.93	C
40.00-20.00			B	0.125	2.865		0.85	1	32.966			
			C	0.125	2.865		0.85	1	32.966			
T9 20.00-0.00	104.60	6836.21	A	0.116	2.901	29	0.85	1	33.683	2570.31	128.52	C
			B	0.116	2.901		0.85	1	33.683			
			C	0.116	2.901		0.85	1	33.683			
Sum Weight:	788.19	40105.54						OTM	2013010.32 lb-ft	24085.87		

Tower Forces - With Ice - Wind Normal To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	26.86	2169.13	A	0.633	1.787	8	1	1	34.105	399.70	39.97	C
170.00-160.00			B	0.633	1.787		1	1	34.105			
			C	0.633	1.787		1	1	34.105			
T2	284.45	4800.13	A	0.506	1.892	7	1	1	60.656	811.78	40.59	C
160.00-140.00			B	0.506	1.892		1	1	60.656			
			C	0.506	1.892		1	1	60.656			
T3	333.47	5763.20	A	0.431	2.006	7	1	1	62.160	866.10	43.30	C
140.00-120.00			B	0.431	2.006		1	1	62.160			
			C	0.431	2.006		1	1	62.160			
T4	328.94	6702.63	A	0.387	2.09	7	1	1	66.070	914.53	45.73	C
120.00-100.00			B	0.387	2.09		1	1	66.070			
			C	0.387	2.09		1	1	66.070			
T5	330.22	9264.41	A	0.314	2.259	7	1	1	59.612	858.70	42.94	C
100.00-80.00			B	0.314	2.259		1	1	59.612			
			C	0.314	2.259		1	1	59.612			
T6	444.62	9094.76	A	0.281	2.349	6	1	1	60.097	888.00	44.40	C
80.00-60.00			B	0.281	2.349		1	1	60.097			
			C	0.281	2.349		1	1	60.097			
T7	430.77	9116.09	A	0.252	2.431	6	1	1	60.244	851.77	42.59	C
60.00-40.00			B	0.252	2.431		1	1	60.244			
			C	0.252	2.431		1	1	60.244			
T8	411.06	9900.19	A	0.23	2.498	5	1	1	60.943	788.09	39.40	C
40.00-20.00			B	0.23	2.498		1	1	60.943			
			C	0.23	2.498		1	1	60.943			
T9 20.00-0.00	350.66	9664.21	A	0.209	2.566	5	1	1	60.713	677.88	33.89	C
			B	0.209	2.566		1	1	60.713			
			C	0.209	2.566		1	1	60.713			
Sum Weight:	2941.06	66474.76						OTM	613361.12 lb-ft	7056.54		

Tower Forces - With Ice - Wind 60 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	26.86	2169.13	A	0.633	1.787	8	0.8	1	33.126	388.48	38.85	C
170.00-160.00			B	0.633	1.787		0.8	1	33.126			
			C	0.633	1.787		0.8	1	33.126			
T2	284.45	4800.13	A	0.506	1.892	7	0.8	1	58.911	791.01	39.55	C
160.00-140.00			B	0.506	1.892		0.8	1	58.911			
			C	0.506	1.892		0.8	1	58.911			
T3	333.47	5763.20	A	0.431	2.006	7	0.8	1	59.767	836.80	41.84	C
140.00-120.00			B	0.431	2.006		0.8	1	59.767			
			C	0.431	2.006		0.8	1	59.767			
T4	328.94	6702.63	A	0.387	2.09	7	0.8	1	62.916	875.68	43.78	C
120.00-100.00			B	0.387	2.09		0.8	1	62.916			
			C	0.387	2.09		0.8	1	62.916			
T5	330.22	9264.41	A	0.314	2.259	7	0.8	1	57.042	825.91	41.30	C
100.00-80.00			B	0.314	2.259		0.8	1	57.042			
			C	0.314	2.259		0.8	1	57.042			
T6	444.62	9094.76	A	0.281	2.349	6	0.8	1	57.374	853.73	42.69	C
80.00-60.00			B	0.281	2.349		0.8	1	57.374			
			C	0.281	2.349		0.8	1	57.374			
T7	430.77	9116.09	A	0.252	2.431	6	0.8	1	57.361	816.78	40.84	C
60.00-40.00			B	0.252	2.431		0.8	1	57.361			
			C	0.252	2.431		0.8	1	57.361			
T8	411.06	9900.19	A	0.23	2.498	5	0.8	1	57.894	753.94	37.70	C
40.00-20.00			B	0.23	2.498		0.8	1	57.894			
			C	0.23	2.498		0.8	1	57.894			
T9 20.00-0.00	350.66	9664.21	A	0.209	2.566	5	0.8	1	57.490	645.79	32.29	C
			B	0.209	2.566		0.8	1	57.490			
			C	0.209	2.566		0.8	1	57.490			
Sum Weight:	2941.06	66474.76						OTM	591868.11 lb-ft	6788.13		

Tower Forces - With Ice - Wind 90 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	26.86	2169.13	A	0.633	1.787	8	0.85	1	33.371	391.28	39.13	C
170.00-160.00			B	0.633	1.787		0.85	1	33.371			
			C	0.633	1.787		0.85	1	33.371			
T2	284.45	4800.13	A	0.506	1.892	7	0.85	1	59.348	796.20	39.81	C
160.00-140.00			B	0.506	1.892		0.85	1	59.348			
			C	0.506	1.892		0.85	1	59.348			
T3	333.47	5763.20	A	0.431	2.006	7	0.85	1	60.365	844.13	42.21	C
140.00-120.00			B	0.431	2.006		0.85	1	60.365			
			C	0.431	2.006		0.85	1	60.365			
T4	328.94	6702.63	A	0.387	2.09	7	0.85	1	63.705	885.39	44.27	C
120.00-100.00			B	0.387	2.09		0.85	1	63.705			
			C	0.387	2.09		0.85	1	63.705			
T5	330.22	9264.41	A	0.314	2.259	7	0.85	1	57.684	834.11	41.71	C
100.00-80.00			B	0.314	2.259		0.85	1	57.684			
			C	0.314	2.259		0.85	1	57.684			
T6	444.62	9094.76	A	0.281	2.349	6	0.85	1	58.055	862.30	43.11	C
80.00-60.00			B	0.281	2.349		0.85	1	58.055			

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
			C	0.281	2.349		0.85	1	58.055			
T7	430.77	9116.09	A	0.252	2.431	6	0.85	1	58.082	825.53	41.28	C
60.00-40.00			B	0.252	2.431		0.85	1	58.082			
			C	0.252	2.431		0.85	1	58.082			
T8	411.06	9900.19	A	0.23	2.498	5	0.85	1	58.656	762.48	38.12	C
40.00-20.00			B	0.23	2.498		0.85	1	58.656			
			C	0.23	2.498		0.85	1	58.656			
T9 20.00-0.00	350.66	9664.21	A	0.209	2.566	5	0.85	1	58.296	653.81	32.69	C
			B	0.209	2.566		0.85	1	58.296			
			C	0.209	2.566		0.85	1	58.296			
Sum Weight:	2941.06	66474.76						OTM	597241.36 lb-ft	6855.23		

Tower Forces - Service - Wind Normal To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	8.48	1094.10	A	0.256	2.421	11	1	1	11.927	270.85	27.09	C
170.00-160.00			B	0.256	2.421		1	1	11.927			
			C	0.256	2.421		1	1	11.927			
T2	86.45	2243.95	A	0.217	2.54	11	1	1	24.071	596.31	29.82	C
160.00-140.00			B	0.217	2.54		1	1	24.071			
			C	0.217	2.54		1	1	24.071			
T3	91.40	2639.00	A	0.197	2.605	10	1	1	28.085	692.93	34.65	C
140.00-120.00			B	0.197	2.605		1	1	28.085			
			C	0.197	2.605		1	1	28.085			
T4	91.40	3302.54	A	0.181	2.662	10	1	1	31.816	766.95	38.35	C
120.00-100.00			B	0.181	2.662		1	1	31.816			
			C	0.181	2.662		1	1	31.816			
T5	92.06	5574.62	A	0.161	2.733	10	1	1	31.465	746.71	37.34	C
100.00-80.00			B	0.161	2.733		1	1	31.465			
			C	0.161	2.733		1	1	31.465			
T6	104.60	5795.14	A	0.143	2.797	9	1	1	32.175	758.45	37.92	C
80.00-60.00			B	0.143	2.797		1	1	32.175			
			C	0.143	2.797		1	1	32.175			
T7	104.60	5881.30	A	0.129	2.848	8	1	1	32.939	734.01	36.70	C
60.00-40.00			B	0.129	2.848		1	1	32.939			
			C	0.129	2.848		1	1	32.939			
T8	104.60	6738.67	A	0.125	2.865	8	1	1	35.253	705.52	35.28	C
40.00-20.00			B	0.125	2.865		1	1	35.253			
			C	0.125	2.865		1	1	35.253			
T9 20.00-0.00	104.60	6836.21	A	0.116	2.901	7	1	1	36.101	631.37	31.57	C
			B	0.116	2.901		1	1	36.101			
			C	0.116	2.901		1	1	36.101			
Sum Weight:	788.19	40105.54						OTM	493058.45 lb-ft	5903.11		

Tower Forces - Service - Wind 60 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	8.48	1094.10	A	0.256	2.421	11	0.8	1	10.948	248.96	24.90	C
170.00-160.00			B	0.256	2.421		0.8	1	10.948			
			C	0.256	2.421		0.8	1	10.948			
T2	86.45	2243.95	A	0.217	2.54	11	0.8	1	22.327	556.18	27.81	C
160.00-140.00			B	0.217	2.54		0.8	1	22.327			
			C	0.217	2.54		0.8	1	22.327			
T3	91.40	2639.00	A	0.197	2.605	10	0.8	1	25.692	638.14	31.91	C
140.00-120.00			B	0.197	2.605		0.8	1	25.692			
			C	0.197	2.605		0.8	1	25.692			
T4	91.40	3302.54	A	0.181	2.662	10	0.8	1	28.662	695.70	34.78	C
120.00-100.00			B	0.181	2.662		0.8	1	28.662			
			C	0.181	2.662		0.8	1	28.662			
T5	92.06	5574.62	A	0.161	2.733	10	0.8	1	28.895	689.58	34.48	C
100.00-80.00			B	0.161	2.733		0.8	1	28.895			
			C	0.161	2.733		0.8	1	28.895			
T6	104.60	5795.14	A	0.143	2.797	9	0.8	1	29.452	699.67	34.98	C
80.00-60.00			B	0.143	2.797		0.8	1	29.452			
			C	0.143	2.797		0.8	1	29.452			
T7	104.60	5881.30	A	0.129	2.848	8	0.8	1	30.056	674.98	33.75	C
60.00-40.00			B	0.129	2.848		0.8	1	30.056			
			C	0.129	2.848		0.8	1	30.056			
T8	104.60	6738.67	A	0.125	2.865	8	0.8	1	32.204	649.12	32.46	C
40.00-20.00			B	0.125	2.865		0.8	1	32.204			
			C	0.125	2.865		0.8	1	32.204			
T9 20.00-0.00	104.60	6836.21	A	0.116	2.901	7	0.8	1	32.878	579.14	28.96	C
			B	0.116	2.901		0.8	1	32.878			
			C	0.116	2.901		0.8	1	32.878			
Sum Weight:	788.19	40105.54						OTM	454043.96 lb-ft	5431.48		

Tower Forces - Service - Wind 90 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	8.48	1094.10	A	0.256	2.421	11	0.85	1	11.193	254.43	25.44	C
170.00-160.00			B	0.256	2.421		0.85	1	11.193			
			C	0.256	2.421		0.85	1	11.193			
T2	86.45	2243.95	A	0.217	2.54	11	0.85	1	22.763	566.21	28.31	C
160.00-140.00			B	0.217	2.54		0.85	1	22.763			
			C	0.217	2.54		0.85	1	22.763			
T3	91.40	2639.00	A	0.197	2.605	10	0.85	1	26.291	651.84	32.59	C
140.00-120.00			B	0.197	2.605		0.85	1	26.291			
			C	0.197	2.605		0.85	1	26.291			
T4	91.40	3302.54	A	0.181	2.662	10	0.85	1	29.450	713.51	35.68	C
120.00-100.00			B	0.181	2.662		0.85	1	29.450			
			C	0.181	2.662		0.85	1	29.450			
T5	92.06	5574.62	A	0.161	2.733	10	0.85	1	29.537	703.86	35.19	C
100.00-80.00			B	0.161	2.733		0.85	1	29.537			
			C	0.161	2.733		0.85	1	29.537			

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T6	104.60	5795.14	A	0.143	2.797	9	0.85	1	30.133	714.37	35.72	C
80.00-60.00			B	0.143	2.797		0.85	1	30.133			
			C	0.143	2.797		0.85	1	30.133			
T7	104.60	5881.30	A	0.129	2.848	8	0.85	1	30.777	689.74	34.49	C
60.00-40.00			B	0.129	2.848		0.85	1	30.777			
			C	0.129	2.848		0.85	1	30.777			
T8	104.60	6738.67	A	0.125	2.865	8	0.85	1	32.966	663.22	33.16	C
40.00-20.00			B	0.125	2.865		0.85	1	32.966			
			C	0.125	2.865		0.85	1	32.966			
T9 20.00-0.00	104.60	6836.21	A	0.116	2.901	7	0.85	1	33.683	592.20	29.61	C
			B	0.116	2.901		0.85	1	33.683			
			C	0.116	2.901		0.85	1	33.683			
Sum Weight:	788.19	40105.54						OTM	463797.58 lb-ft	5549.38		

Force Totals

Load Case	Vertical Forces lb	Sum of Forces X lb	Sum of Forces Z lb	Sum of Overturning Moments, M_x lb-ft	Sum of Overturning Moments, M_z lb-ft	Sum of Torques lb-ft
Leg Weight	28259.04					
Bracing Weight	11846.50					
Total Member Self-Weight	40105.54			1079.03	2349.47	
Total Weight	45437.81			1079.03	2349.47	
Wind 0 deg - No Ice		563.77	-31990.02	-3124622.75	-43394.59	-2341.50
Wind 90 deg - No Ice		30499.14	-343.85	-26634.76	-2992795.05	-116.61
Wind 180 deg - No Ice		-69.29	29765.26	2942872.39	7543.55	3672.12
Member Ice	26369.22					
Total Weight Ice	78796.17			1596.45	4531.41	
Wind 0 deg - Ice		103.90	-8420.22	-823824.97	-3818.56	-513.41
Wind 90 deg - Ice		8225.87	-63.02	-3406.91	-804009.66	4.52
Wind 180 deg - Ice		-11.15	8118.46	802794.41	5288.08	759.21
Total Weight	45437.81			1079.03	2349.47	
Wind 0 deg - Service		129.89	-7370.50	-719082.66	-8189.97	-539.48
Wind 90 deg - Service		7027.00	-79.22	-5306.23	-687731.83	-26.87
Wind 180 deg - Service		-15.96	6857.92	678868.22	3546.18	846.06

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 90 deg - No Ice
5	0.9 Dead+1.0 Wind 90 deg - No Ice
6	1.2 Dead+1.0 Wind 180 deg - No Ice
7	0.9 Dead+1.0 Wind 180 deg - No Ice
8	1.2 Dead+1.0 Ice+1.0 Temp

Comb. No.	Description
9	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
10	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
11	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
12	Dead+Wind 0 deg - Service
13	Dead+Wind 90 deg - Service
14	Dead+Wind 180 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
T1	170 - 160	Leg	Max Tension	6	717.56	0.00	0.00
			Max. Compression	9	-4173.87	345.61	-0.43
			Max. Mx	6	-1233.00	1948.59	2.42
			Max. My	4	-2059.80	-50.28	-3112.09
			Max. Vy	6	1936.56	-1876.72	2.42
			Max. Vx	4	-1734.67	-50.28	311.22
		Diagonal	Max Tension	7	1076.75	0.00	0.00
			Max. Compression	2	-1206.11	0.00	0.00
			Max. Mx	11	-269.57	24.81	-4.83
			Max. My	10	123.09	23.64	5.62
			Max. Vy	11	19.64	24.81	-4.83
			Max. Vx	10	-1.86	0.00	0.00
		Top Girt	Max Tension	6	13.21	0.00	0.00
			Max. Compression	11	-4.44	0.00	0.00
			Max. Mx	8	1.17	-46.99	0.00
			Max. My	11	3.41	0.00	1.36
			Max. Vy	8	37.59	0.00	0.00
			Max. Vx	11	-1.09	0.00	0.00
T2	160 - 140	Leg	Max Tension	7	17919.01	-284.44	-15.80
			Max. Compression	2	-23452.52	1446.18	15.86
			Max. Mx	6	5614.48	-1876.72	2.42
			Max. My	4	-2725.03	-117.45	1685.33
			Max. Vy	3	311.30	1809.58	-1.92
			Max. Vx	4	-280.53	-117.45	1685.33
		Diagonal	Max Tension	7	4054.90	0.00	0.00
			Max. Compression	2	-4256.39	0.00	0.00
			Max. Mx	11	860.56	38.94	-6.67
			Max. My	2	-4230.16	5.31	-9.93
			Max. Vy	11	28.94	38.94	-6.67
			Max. Vx	11	-2.27	0.00	0.00
T3	140 - 120	Leg	Max Tension	7	36866.08	-1038.99	1.55
			Max. Compression	2	-44737.08	2569.86	19.98
			Max. Mx	2	-44737.08	2569.86	19.98
			Max. My	4	-3585.25	-160.78	1806.76
			Max. Vy	2	-329.16	2569.86	19.98
			Max. Vx	4	-272.12	-160.78	1806.76
		Diagonal	Max Tension	4	3747.27	0.00	0.00
			Max. Compression	2	-3946.01	0.00	0.00
			Max. Mx	10	831.94	56.82	8.82
			Max. My	11	773.09	56.80	-8.91
			Max. Vy	10	37.85	56.82	8.82
			Max. Vx	11	2.50	0.00	0.00
T4	120 - 100	Leg	Max Tension	7	55447.21	-1325.62	13.83
			Max. Compression	2	-67080.48	2445.00	153.62
			Max. Mx	2	-54458.78	2569.86	19.98
			Max. My	4	-5574.15	-69.96	2588.43
			Max. Vy	2	284.44	2569.86	19.98

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. Vx	4	-262.69	-69.96	2588.43
		Diagonal	Max Tension	2	4151.99	0.00	0.00
			Max. Compression	2	-4574.70	0.00	0.00
			Max. Mx	11	828.55	91.99	-11.82
			Max. My	11	-977.54	72.68	-13.42
			Max. Vy	11	55.58	91.99	-11.82
			Max. Vx	11	3.39	0.00	0.00
		Top Girt	Max Tension	6	1426.70	0.00	0.00
			Max. Compression	3	-1119.59	0.00	0.00
			Max. Mx	8	349.26	-183.29	0.00
			Max. My	11	189.76	0.00	5.29
			Max. Vy	8	73.32	0.00	0.00
			Max. Vx	11	-2.12	0.00	0.00
T5	100 - 80	Leg	Max Tension	7	67128.21	-2462.89	-57.32
			Max. Compression	2	-81106.65	2894.44	37.40
			Max. Mx	6	64324.65	-2954.91	-49.07
			Max. My	4	-6931.76	-29.31	3018.92
			Max. Vy	4	596.52	-2748.38	-1484.60
			Max. Vx	4	-551.42	-29.31	3018.92
		Diagonal	Max Tension	5	6306.27	0.00	0.00
			Max. Compression	2	-7196.50	0.00	0.00
			Max. Mx	11	1705.24	-276.59	-48.90
			Max. My	11	-1391.30	-251.50	52.85
			Max. Vy	11	-108.19	-276.59	-48.90
			Max. Vx	11	8.75	0.00	0.00
T6	80 - 60	Leg	Max Tension	7	85116.44	-2917.35	-48.89
			Max. Compression	2	-105607.92	2545.31	93.34
			Max. Mx	6	81533.32	-3008.87	-14.96
			Max. My	4	-10162.23	-351.98	3388.00
			Max. Vy	6	-390.11	-2954.91	-49.07
			Max. Vx	4	-352.17	-351.98	3388.00
		Diagonal	Max Tension	4	7261.65	0.00	0.00
			Max. Compression	4	-7125.77	0.00	0.00
			Max. Mx	11	964.32	-345.18	57.59
			Max. My	11	964.32	-345.18	57.72
			Max. Vy	11	-123.65	-345.18	57.59
			Max. Vx	9	-9.08	0.00	0.00
T7	60 - 40	Leg	Max Tension	7	101149.31	-2930.12	-12.62
			Max. Compression	2	-126533.65	3491.86	-51.47
			Max. Mx	11	7866.07	-4670.50	4.19
			Max. My	4	-10952.49	-351.98	3388.00
			Max. Vy	11	453.71	-4670.50	4.19
			Max. Vx	4	411.73	-351.98	3388.00
		Diagonal	Max Tension	5	7177.63	0.00	0.00
			Max. Compression	2	-7949.20	0.00	0.00
			Max. Mx	11	2394.32	-359.13	-58.78
			Max. My	9	2041.90	-354.14	-59.68
			Max. Vy	11	-134.04	-359.13	-58.78
			Max. Vx	11	9.14	0.00	0.00
T8	40 - 20	Leg	Max Tension	7	118451.68	-3048.15	3.93
			Max. Compression	2	-150783.98	2569.32	93.37
			Max. Mx	9	-58789.54	4804.06	6.97
			Max. My	4	-16128.54	-598.81	5570.46
			Max. Vy	11	-542.35	-4670.50	4.19
			Max. Vx	4	-512.23	-598.81	5570.46
		Diagonal	Max Tension	4	7533.60	0.00	0.00
			Max. Compression	4	-7430.66	0.00	0.00
			Max. Mx	11	176.21	-463.60	67.50
			Max. My	11	-2931.10	-371.81	72.12
			Max. Vy	11	-149.23	-463.60	67.50
			Max. Vx	11	9.92	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
T9	20 - 0	Leg	Max Tension	7	133103.45	-3403.75	-16.82
			Max. Compression	2	-170816.21	0.00	0.04
			Max. Mx	9	-68595.37	4804.06	6.97
			Max. My	4	-16739.48	-598.81	5570.46
			Max. Vy	6	-497.94	-3555.40	-18.37
			Max. Vx	4	549.56	-598.81	5570.46
		Diagonal	Max Tension	5	7775.31	0.00	0.00
			Max. Compression	2	-8776.68	0.00	0.00
			Max. Mx	10	3320.75	-424.36	-67.57
			Max. My	9	2797.42	-422.79	-68.15
			Max. Vy	10	-150.86	-424.36	-67.57
			Max. Vx	9	-9.41	0.00	0.00

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Leg C	Max. Vert	6	95936.32	8382.06	-6711.51
	Max. H_x	6	95936.32	8382.06	-6711.51
	Max. H_z	5	-123328.01	-13407.94	6717.20
	Min. Vert	5	-123328.01	-13407.94	6717.20
	Min. H_x	5	-123328.01	-13407.94	6717.20
	Min. H_z	6	95936.32	8382.06	-6711.51
Leg B	Max. Vert	4	153775.79	-15591.07	-7913.40
	Max. H_x	3	-66512.77	6337.43	5557.04
	Max. H_z	3	-66512.77	6337.43	5557.04
	Min. Vert	3	-66512.77	6337.43	5557.04
	Min. H_x	4	153775.79	-15591.07	-7913.40
	Min. H_z	4	153775.79	-15591.07	-7913.40
Leg A	Max. Vert	2	182500.68	-114.28	20924.13
	Max. H_x	7	-141063.52	101.66	-16930.49
	Max. H_z	2	182500.68	-114.28	20924.13
	Min. Vert	7	-141063.52	101.66	-16930.49
	Min. H_x	5	15036.50	-1837.96	1345.10
	Min. H_z	7	-141063.52	101.66	-16930.49

Tower Mast Reaction Summary

Load Combination	Vertical lb	$Shear_x$ lb	$Shear_z$ lb	Overturning Moment, M_x lb-ft	Overturning Moment, M_z lb-ft	Torque lb-ft
Dead Only	45437.81	-0.00	0.00	1078.80	2349.04	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	54525.00	563.33	-31989.88	-3130824.68	-42976.05	-2344.52
0.9 Dead+1.0 Wind 0 deg - No Ice	40894.03	563.77	-31990.02	-3129540.47	-43670.55	-2344.67
1.2 Dead+1.0 Wind 90 deg - No Ice	54525.37	30499.14	-343.85	-26458.04	-2998490.17	-118.32
0.9 Dead+1.0 Wind 90 deg - No Ice	40894.03	30499.14	-343.85	-26771.91	-2997649.09	-115.32
1.2 Dead+1.0 Wind 180 deg - No Ice	54525.37	-69.29	29765.26	2949188.80	8031.31	3679.20

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	lb	lb	lb	lb-ft	lb-ft	lb-ft
0.9 Dead+1.0 Wind 180 deg - No Ice	40894.03	-69.29	29765.26	2947333.03	7321.65	3677.53
1.2 Dead+1.0 Ice+1.0 Temp	87883.73	0.00	-0.00	1813.01	5004.48	0.04
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	87883.73	103.90	-8420.22	-826423.53	-3343.95	-516.21
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	87883.73	8225.87	-63.02	-3197.31	-806282.76	4.69
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	87883.73	-11.15	8118.46	805766.39	5784.76	762.15
Dead+Wind 0 deg - Service	45437.81	129.89	-7370.50	-720322.42	-8197.32	-540.59
Dead+Wind 90 deg - Service	45437.81	7027.00	-79.22	-5309.90	-688921.27	-29.81
Dead+Wind 180 deg - Service	45437.81	-15.96	6857.92	679987.18	3553.15	847.37

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	% Error
1	0.00	-45437.81	-0.00	0.00	45437.81	-0.00	0.000%
2	563.77	-54525.37	-31990.02	-563.33	54525.00	31989.88	0.001%
3	563.77	-40894.03	-31990.02	-563.77	40894.03	31990.02	0.000%
4	30499.14	-54525.37	-343.85	-30499.14	54525.37	343.85	0.000%
5	30499.14	-40894.03	-343.85	-30499.14	40894.03	343.85	0.000%
6	-69.29	-54525.37	29765.26	69.29	54525.37	-29765.26	0.000%
7	-69.29	-40894.03	29765.26	69.29	40894.03	-29765.26	0.000%
8	0.00	-87883.73	-0.00	-0.00	87883.73	0.00	0.000%
9	103.90	-87883.73	-8420.22	-103.90	87883.73	8420.22	0.000%
10	8225.87	-87883.73	-63.02	-8225.87	87883.73	63.02	0.000%
11	-11.15	-87883.73	8118.46	11.15	87883.73	-8118.46	0.000%
12	129.89	-45437.81	-7370.50	-129.89	45437.81	7370.50	0.000%
13	7027.00	-45437.81	-79.22	-7027.00	45437.81	79.22	0.000%
14	-15.96	-45437.81	6857.92	15.96	45437.81	-6857.92	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	4	0.00000001	0.00000001
3	Yes	4	0.00000001	0.00000001
4	Yes	4	0.00000001	0.00000001
5	Yes	4	0.00000001	0.00000001
6	Yes	4	0.00000001	0.00000001
7	Yes	4	0.00000001	0.00000001
8	Yes	4	0.00000001	0.00000001
9	Yes	4	0.00000001	0.00000001
10	Yes	4	0.00000001	0.00000001
11	Yes	4	0.00000001	0.00000001
12	Yes	4	0.00000001	0.00000001
13	Yes	4	0.00000001	0.00000001
14	Yes	4	0.00000001	0.00000001

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	170 - 160	1.131	12	0.057	0.002
T2	160 - 140	1.010	12	0.057	0.001
T3	140 - 120	0.763	12	0.052	0.001
T4	120 - 100	0.549	12	0.044	0.001
T5	100 - 80	0.376	12	0.033	0.001
T6	80 - 60	0.244	12	0.026	0.001
T7	60 - 40	0.141	12	0.019	0.001
T8	40 - 20	0.067	12	0.012	0.000
T9	20 - 0	0.019	12	0.006	0.000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
162.00	Sector Mount [SM 601-3]	12	1.034	0.057	0.001	266866
145.00	6' x 2" Omni	12	0.824	0.054	0.001	185029
82.00	P4-105	12	0.256	0.027	0.001	176479
81.00	Pipe Mount [PM 601-1]	12	0.250	0.026	0.001	180572
80.00	DB496-A	12	0.244	0.026	0.001	183389

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	170 - 160	4.912	2	0.248	0.007
T2	160 - 140	4.387	2	0.248	0.006
T3	140 - 120	3.318	2	0.226	0.006
T4	120 - 100	2.384	2	0.191	0.004
T5	100 - 80	1.634	2	0.144	0.004
T6	80 - 60	1.059	2	0.113	0.004
T7	60 - 40	0.613	2	0.084	0.002
T8	40 - 20	0.292	2	0.054	0.001
T9	20 - 0	0.081	2	0.027	0.001

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
162.00	Sector Mount [SM 601-3]	2	4.493	0.249	0.006	62315
145.00	6' x 2" Omni	2	3.579	0.233	0.006	42870
82.00	P4-105	2	1.111	0.115	0.004	40589

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
81.00	Pipe Mount [PM 601-1]	2	1.085	0.114	0.004	41523
80.00	DB496-A	2	1.059	0.113	0.004	42164

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load per Bolt lb	Ratio Load / Allowable	Allowable Ratio	Criteria
T1	170	Leg	A325N	1.0000	6	231.88	54517.00	0.004 ✔	1	Bolt Tension
		Diagonal	A325N	1.0000	1	1076.75	9144.14	0.118 ✔	1	Member Block Shear
		Top Girt	A325N	1.0000	1	13.21	16939.50	0.001 ✔	1	Member Block Shear
T2	160	Leg	A325N	1.0000	6	2986.50	54517.00	0.055 ✔	1	Bolt Tension
		Diagonal	A325N	1.0000	1	4054.90	12192.20	0.333 ✔	1	Member Block Shear
T3	140	Leg	A325N	1.0000	6	6144.35	54517.00	0.113 ✔	1	Bolt Tension
		Diagonal	A325N	1.0000	1	3747.27	10163.70	0.369 ✔	1	Member Block Shear
T4	120	Leg	A325N	1.0000	6	9241.20	54517.00	0.170 ✔	1	Bolt Tension
		Diagonal	A325N	1.0000	1	4151.99	16939.50	0.245 ✔	1	Member Block Shear
		Top Girt	A325N	1.0000	1	1426.70	16939.50	0.084 ✔	1	Member Block Shear
T5	100	Leg	A325N	1.0000	12	5594.02	54517.00	0.103 ✔	1	Bolt Tension
		Diagonal	A325N	0.8750	1	6306.27	29580.00	0.213 ✔	1	Member Bearing
T6	80	Leg	A325N	1.0000	12	7093.04	54517.00	0.130 ✔	1	Bolt Tension
		Diagonal	A325N	0.8750	1	7261.65	29580.00	0.245 ✔	1	Member Bearing
T7	60	Leg	A325N	1.0000	12	8429.11	54517.00	0.155 ✔	1	Bolt Tension
		Diagonal	A325N	0.8750	1	7177.63	29580.00	0.243 ✔	1	Member Bearing
T8	40	Leg	A325N	1.0000	12	9870.97	54517.00	0.181 ✔	1	Bolt Tension
		Diagonal	A325N	0.8750	1	7533.60	29580.00	0.255 ✔	1	Member Bearing
T9	20	Diagonal	A325N	0.8750	1	7775.31	29580.00	0.263 ✔	1	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 lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	170 - 160	Pirod 208951	10.02	10.02	45.0 K=1.00	3.6816	-4173.87	142870.00	0.029 [1] ✔
T2	160 - 140	Valmont 207629	20.03	10.02	37.5 K=1.00	5.3014	-23452.50	215254.00	0.109 [1] ✔
T3	140 - 120	Pirod 195557	20.03	10.02	32.1 K=1.00	7.2158	-44737.10	301087.00	0.149 [1] ✔
T4	120 - 100	Pirod 195557	20.03	10.02	32.1 K=1.00	7.2158	-67080.50	301087.00	0.223 [1] ✔
T5	100 - 80	Valmont 214589 (12x2.25)	20.03	20.03	48.8 K=1.00	11.9282	-81106.60	451148.00	0.180 [1] ✔
T6	80 - 60	Valmont 208335	20.03	20.03	48.7 K=1.00	14.7262	-105608.00	557267.00	0.190 [1] ✔
T7	60 - 40	Valmont 208335	20.03	20.03	48.7 K=1.00	14.7262	-126534.00	557267.00	0.227 [1] ✔
T8	40 - 20	Pirod 208337	20.03	20.03	48.6 K=1.00	17.8187	-150784.00	674685.00	0.223 [1] ✔
T9	20 - 0	Pirod 208337	20.03	20.03	48.6 K=1.00	17.8187	-170816.00	674685.00	0.253 [1] ✔

[1] P_u / ϕP_n controls

Truss-Leg Diagonal Data

Section No.	Elevation ft	Diagonal Size	L_d ft	Kl/r	ϕP_n lb	A in^2	V_u lb	ϕV_n lb	Stress Ratio
T1	170 - 160	0.5	1.48	120.4	165670.00	0.1963	1936.56	3338.01	0.580 ✔
T2	160 - 140	0.5	1.46	119.3	238565.00	0.1963	311.31	3381.46	0.092 ✔
T3	140 - 120	0.5	1.45	118.3	324713.00	0.1963	329.17	3563.86	0.092 ✔
T4	120 - 100	0.5	1.45	118.3	324713.00	0.1963	290.07	3563.86	0.081 ✔
T5	100 - 80	0.5	1.38	112.2	536771.00	0.1963	649.89	3804.69	0.171 ✔
T6	80 - 60	0.5	1.36	111.2	662680.00	0.1963	416.49	3849.52	0.108 ✔
T7	60 - 40	0.5	1.36	111.2	662680.00	0.1963	453.71	3849.52	0.118 ✔
T8	40 - 20	0.625	1.35	88.2	801842.00	0.3068	542.35	7659.42	0.071 ✔
T9	20 - 0	0.625	1.35	88.2	801842.00	0.3068	592.63	7659.42	0.077 ✔

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	170 - 160	L2-1/2x2-1/2x3/16	11.42	5.02	121.8 K=1.00	0.9023	-1206.11	17325.30	0.070 [1] ✔
T2	160 - 140	L2-1/2x2-1/2x1/4	11.93	5.42	132.6 K=1.00	1.1900	-4256.39	19379.20	0.220 [1] ✔
T3	140 - 120	L3x3x3/16	13.80	6.37	128.2 K=1.00	1.0900	-3946.01	18973.80	0.208 [1] ✔
T4	120 - 100	L3x3x5/16	14.50	6.77	137.9 K=1.00	1.7800	-4574.70	26799.10	0.171 [1] ✔
T5	100 - 80	2L3 1/2x3 1/2x1/4	23.86	11.78	129.7 K=1.00	3.3800	-7196.50	57517.30	0.125 [1] ✔
T6	80 - 60	2L3 1/2x3 1/2x1/4	25.01	12.35	136.0 K=1.00	3.3800	-7125.77	52307.80	0.136 [1] ✔
T7	60 - 40	2L3 1/2x3 1/2x1/4	26.26	12.98	142.9 K=1.00	3.3800	-7949.20	47397.70	0.168 [1] ✔
T8	40 - 20	2L3 1/2x3 1/2x1/4	27.59	13.65	150.2 K=1.00	3.3800	-7430.66	42867.70	0.173 [1] ✔
T9	20 - 0	2L3 1/2x3 1/2x1/4	29.01	14.35	158.0 K=1.00	3.3800	-8776.68	38750.20	0.226 [1] ✔

[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 lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	170 - 160	L3x3x5/16	5.00	3.67	97.4 K=1.30	1.7800	-4.44	44983.60	0.000 [1] ✔
T4	120 - 100	L3x3x5/16	10.00	8.67	176.6 K=1.00	1.7800	-1163.32	16341.10	0.071 [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 lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	170 - 160	Pirod 208951	10.02	10.02	45.0	3.6816	717.57	165670.00	0.004 [1] ✔
T2	160 - 140	Valmont 207629	20.03	10.02	37.5	5.3014	17919.00	238565.00	0.075 [1] ✔
T3	140 - 120	Pirod 195557	20.03	10.02	32.1	7.2158	36866.10	324713.00	0.114 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T4	120 - 100	Pirod 195557	20.03	10.02	32.1	7.2158	55447.20	324713.00	0.171 [1]
T5	100 - 80	Valmont 214589 (12x2.25)	20.03	20.03	48.8	11.9282	67128.20	536771.00	0.125 [1]
T6	80 - 60	Valmont 208335	20.03	20.03	48.7	14.7262	85116.40	662680.00	0.128 [1]
T7	60 - 40	Valmont 208335	20.03	20.03	48.7	14.7262	101149.00	662680.00	0.153 [1]
T8	40 - 20	Pirod 208337	20.03	20.03	48.6	17.8187	118452.00	801842.00	0.148 [1]
T9	20 - 0	Pirod 208337	20.03	20.03	48.6	17.8187	133103.00	801842.00	0.166 [1]

[1] P_u / ϕP_n controls

Truss-Leg Diagonal Data

Section No.	Elevation ft	Diagonal Size	L_d ft	Kl/r	ϕP_n lb	A in^2	V_u lb	ϕV_n lb	Stress Ratio
T1	170 - 160	0.5	1.48	120.4	165670.00	0.1963	1936.56	3338.01	0.580
T2	160 - 140	0.5	1.46	119.3	238565.00	0.1963	311.31	3381.46	0.092
T3	140 - 120	0.5	1.45	118.3	324713.00	0.1963	329.17	3563.86	0.092
T4	120 - 100	0.5	1.45	118.3	324713.00	0.1963	290.07	3563.86	0.081
T5	100 - 80	0.5	1.38	112.2	536771.00	0.1963	649.89	3804.69	0.171
T6	80 - 60	0.5	1.36	111.2	662680.00	0.1963	416.49	3849.52	0.108
T7	60 - 40	0.5	1.36	111.2	662680.00	0.1963	453.71	3849.52	0.118
T8	40 - 20	0.625	1.35	88.2	801842.00	0.3068	542.35	7659.42	0.071
T9	20 - 0	0.625	1.35	88.2	801842.00	0.3068	592.63	7659.42	0.077

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	170 - 160	L2-1/2x2-1/2x3/16	11.42	5.02	80.0	0.5186	1076.75	22557.10	0.048 [1]
T2	160 - 140	L2-1/2x2-1/2x1/4	11.93	5.42	87.2	0.6816	4054.90	29648.00	0.137 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T3	140 - 120	L3x3x3/16	13.13	6.06	79.5	0.6593	3747.27	28679.40	0.131 [1]
T4	120 - 100	L3x3x5/16	15.24	7.12	94.9	1.0713	4151.99	46602.80	0.089 [1]
T5	100 - 80	2L3 1/2x3 1/2x1/4	23.86	11.78	131.4	2.1600	6306.27	93960.00	0.067 [1]
T6	80 - 60	2L3 1/2x3 1/2x1/4	25.01	12.35	137.7	2.1600	7261.65	93960.00	0.077 [1]
T7	60 - 40	2L3 1/2x3 1/2x1/4	26.26	12.98	144.5	2.1600	7177.63	93960.00	0.076 [1]
T8	40 - 20	2L3 1/2x3 1/2x1/4	27.59	13.65	151.9	2.1600	7533.60	93960.00	0.080 [1]
T9	20 - 0	2L3 1/2x3 1/2x1/4	29.01	14.35	159.7	2.1600	7775.31	93960.00	0.083 [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 lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	170 - 160	L3x3x5/16	5.00	3.67	52.1	1.0713	13.21	46602.80	0.000 [1]
T4	120 - 100	L3x3x5/16	10.00	8.67	117.1	1.0713	1426.70	46602.80	0.031 [1]

[1] P_u / ϕP_n controls

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
T1	170 - 160	Leg	Pirod 208951	3	-4173.87	142870.00	58.0	Pass
T2	160 - 140	Leg	Valmont 207629	15	-23452.50	215254.00	10.9	Pass
T3	140 - 120	Leg	Pirod 195557	30	-44737.10	301087.00	14.9	Pass
T4	120 - 100	Leg	Pirod 195557	45	-67080.50	301087.00	22.3	Pass
T5	100 - 80	Leg	Valmont 214589 (12x2.25)	63	-81106.60	451148.00	18.0	Pass
T6	80 - 60	Leg	Valmont 208335	72	-105608.00	557267.00	19.0	Pass
T7	60 - 40	Leg	Valmont 208335	81	-126534.00	557267.00	22.7	Pass
T8	40 - 20	Leg	Pirod 208337	90	-150784.00	674685.00	22.3	Pass
T9	20 - 0	Leg	Pirod 208337	99	-170816.00	674685.00	25.3	Pass
T1	170 - 160	Diagonal	L2-1/2x2-1/2x3/16	11	-1206.11	17325.30	7.0 11.8 (b)	Pass
T2	160 - 140	Diagonal	L2-1/2x2-1/2x1/4	25	-4256.39	19379.20	22.0 33.3 (b)	Pass
T3	140 - 120	Diagonal	L3x3x3/16	35	-3946.01	18973.80	20.8	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
							36.9 (b)	
T4	120 - 100	Diagonal	L3x3x5/16	59	-4574.70	26799.10	17.1	Pass
							24.5 (b)	
T5	100 - 80	Diagonal	2L3 1/2x3 1/2x1/4	67	-7196.50	57517.30	12.5	Pass
							21.3 (b)	
T6	80 - 60	Diagonal	2L3 1/2x3 1/2x1/4	74	-7125.77	52307.80	13.6	Pass
							24.5 (b)	
T7	60 - 40	Diagonal	2L3 1/2x3 1/2x1/4	86	-7949.20	47397.70	16.8	Pass
							24.3 (b)	
T8	40 - 20	Diagonal	2L3 1/2x3 1/2x1/4	92	-7430.66	42867.70	17.3	Pass
							25.5 (b)	
T9	20 - 0	Diagonal	2L3 1/2x3 1/2x1/4	104	-8776.68	38750.20	22.6	Pass
							26.3 (b)	
T1	170 - 160	Top Girt	L3x3x5/16	4	13.21	46602.80	0.2	Pass
T4	120 - 100	Top Girt	L3x3x5/16	47	-1163.32	16341.10	7.1	Pass
							8.4 (b)	
							Summary	
						Leg (T1)	58.0	Pass
						Diagonal (T3)	36.9	Pass
						Top Girt (T4)	8.4	Pass
						Bolt Checks	36.9	Pass
						RATING =	**58.0**	**Pass**

Self Support Anchor Rod Capacity

Site Info	
BU #	BOBOS00073B
Site Name	Montville, CT
Order #	1197-F0001-B

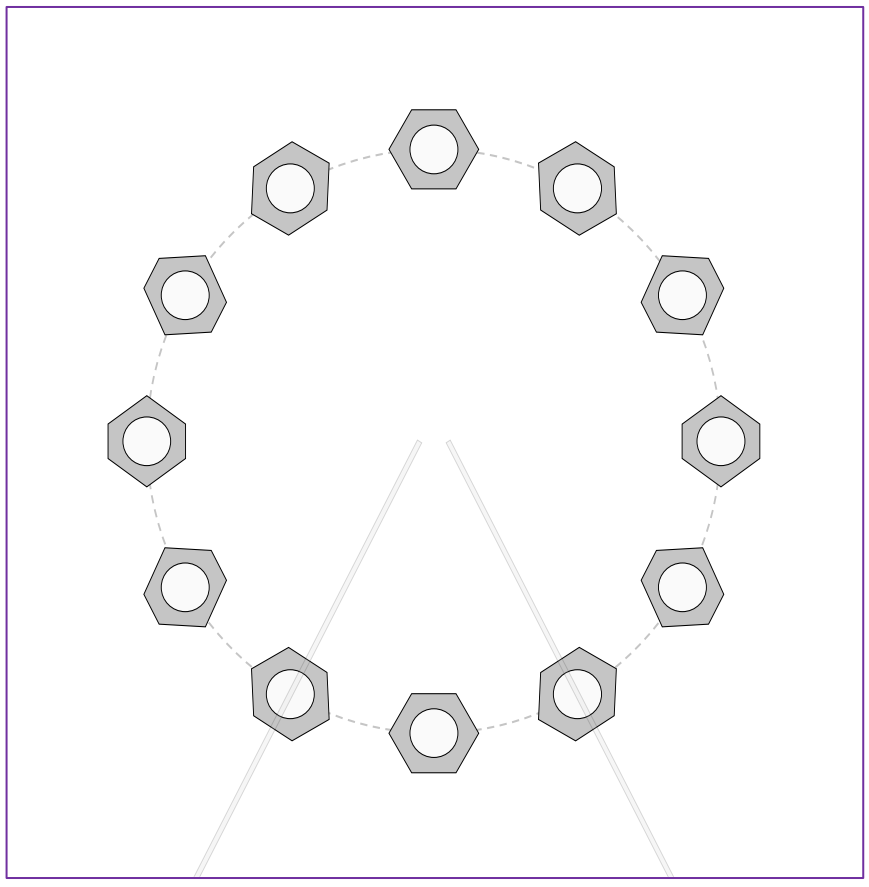
Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	No
l_{ar} (in)	1

Applied Loads		
	Comp.	Uplift
Axial Force (kips)	182.50	141.06
Shear Force (kips)	20.92	16.93

**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

(12) 1" ø bolts (F1554-105 N; Fy=105 ksi, Fu=125 ksi)

l_{ar} (in): 1

Analysis Results

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

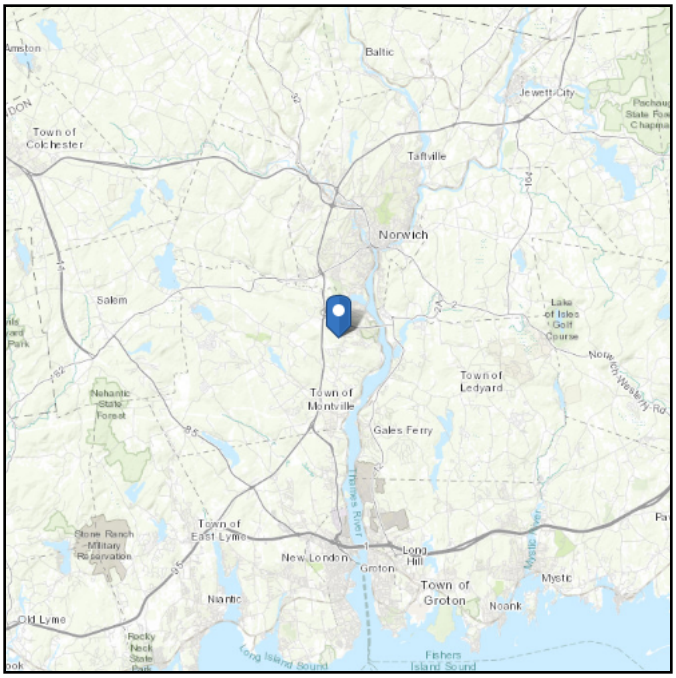
Pu_c = 15.21	ϕPn_c = 74.22	**Stress Rating**
Vu = 1.74	ϕVn = 33.4	**19.8%**
Mu = n/a	ϕMn = n/a	**Pass**

ASCE 7 Hazards Report

Address:
No Address at This Location

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

Elevation: 363 ft (NAVD 88)
Latitude: 41.474986
Longitude: -72.10505



Wind

Results:

Wind Speed	125 Vmph
10-year MRI	75 Vmph
25-year MRI	85 Vmph
50-year MRI	97 Vmph
100-year MRI	102 Vmph

Data Source: ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2
Date Accessed: Thu Mar 17 2022

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

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

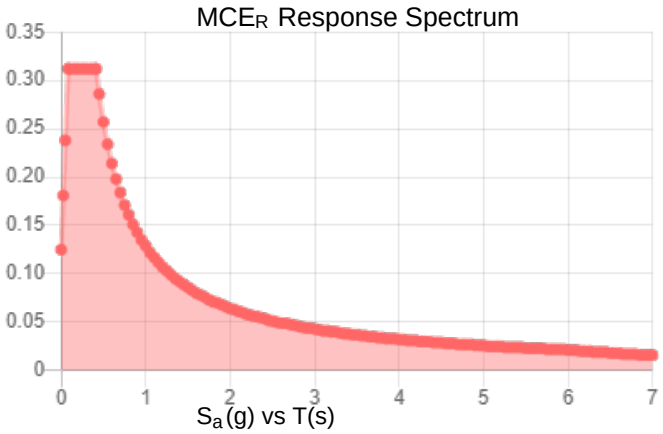
Seismic

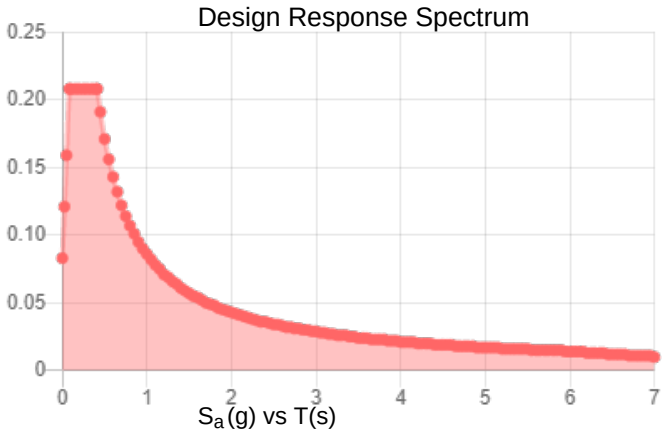
Site Soil Class: D - Default (see Section 11.4.3)

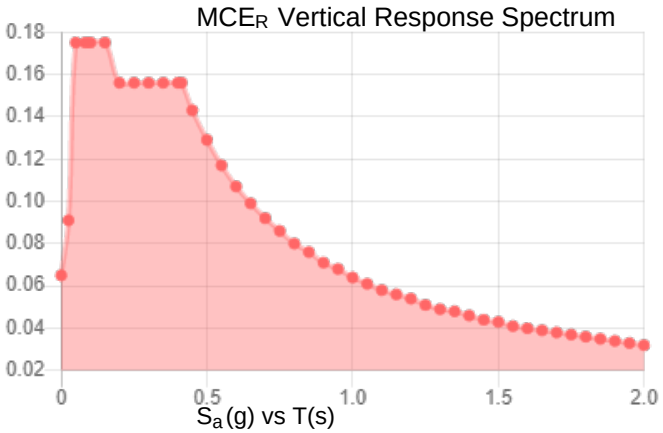
Results:

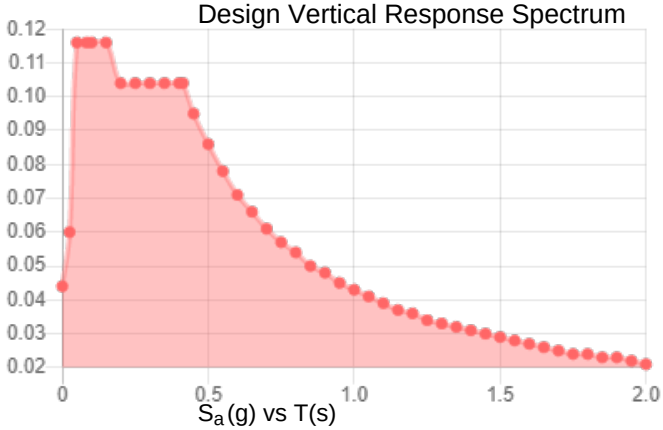
S_S :	0.195	S_{D1} :	0.086
S_1 :	0.054	T_L :	6
F_a :	1.6	PGA :	0.107
F_v :	2.4	PGA_M :	0.17
S_{MS} :	0.312	F_{PGA} :	1.585
S_{M1} :	0.129	I_e :	1
S_{DS} :	0.208	C_v :	0.7

Seismic Design Category B









Data Accessed: **Thu Mar 17 2022**

Date Source:

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

Ice

Results:

Ice Thickness:	1.00 in.
Concurrent Temperature:	15 F
Gust Speed	50 mph
Data Source:	Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8
Date Accessed:	Thu Mar 17 2022

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

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

Exhibit E

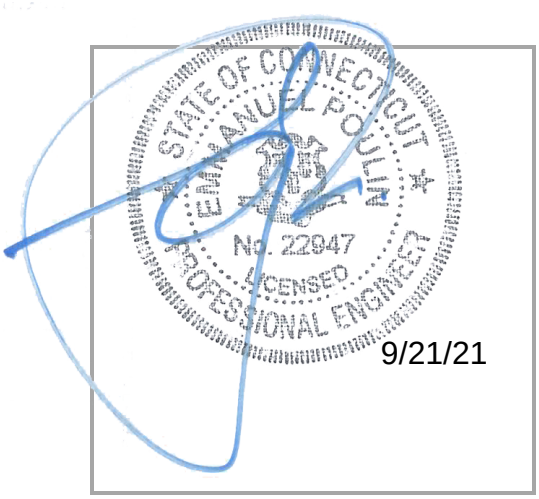
Mount Analysis

MOUNT ANALYSIS REPORT

September 21, 2021

Dish Wireless Site Name	BOBOS00073B
Dish Wireless Site Number	BOBOS00073B
Infinigy Job Number	1197-F0001-B
Client	NSS/DISH
Carrier	Dish Wireless
Site Location	57 Cook Drive Montville, CT 06353 New London County 41.475003 N NAD83 72.105052 W NAD83
Mount Type	8.0 ft Sector Frames
Mount Elevation	162.0 ft AGL
Structural Usage Ratio	**45.2%**
Overall Result	**Pass**

The enclosed mount structural analysis has been performed in accordance with the 2018 Connecticut State Building Code (2015 IBC) based on an ultimate 3-second gust wind speed of 125 mph. The evaluation criteria and applicable codes are presented in the next section of this report.



CONTENTS

1. INTRODUCTION

Infinigy performed a structural analysis on the Dish Wireless proposed telecommunication equipment supporting Sector Frames mounted to the existing structure located at the aforementioned address. All referenced supporting documents have been obtained from the client and are assumed to be accurate and applicable to this site. The mount was analyzed using Risa-3D version 17.0.4 analysis software.

2. DESIGN/ANALYSIS PARAMETERS

Wind Speed	125 mph (3-Second Gust)
Wind Speed w/ ice	50 mph (3-Second Gust) w/ 1.0" ice
Code / Standard	TIA-222-H
Adopted Code	2018 Connecticut State Building Code (2015 IBC)
Risk Category	II
Exposure Category	C
Topographic Category	1
Seismic Spectral Response	S_s = 0.195 g / S_1 = 0.054 g
Live Load Wind Speed	60 mph
Man Live Load at Mid/End Points	250 lbs
Man Live Load at Mount Pipes	500 lbs

3. PROPOSED LOADING CONFIGURATION - 162.0 ft. AGL Sector Frames

Antenna Centerline (ft)	Qty.	Appurtenance Manufacturers	Appurtenance Models
162.0	6	JMA WIRELESS	MX08FRO665-21
	6	FUJITSU	TA08025-B605
	6	FUJITSU	TA08025-B604
	2	RAYCAP	RDIDC-9181-PF-48

4. SUPPORTING DOCUMENTATION

Proposed Loading	Dish Wireless Site #BOBOS00073B, Rev 1, dated March 17, 2022
Mount Manufacturer Drawings	CommScope Document # MTC3975083, dated March 17, 2021
Preliminary Construction Drawing	Infinigy, A&E Project # 2039-Z5555C Rev B, dated March, 2022

5. RESULTS

Components	Capacity	Pass/Fail
Mount Pipes	34.2%	Pass
Horizontals	20.7%	Pass
Standoffs	45.2%	Pass
Connections	7.7%	Pass
MOUNT RATING =	**45.2%**	**Pass**

Notes:
1. See additional documentation in Appendix for calculations supporting the capacity consumed and detailed mount connection calculations.

6. RECOMMENDATIONS

Infinigy recommends installing Dish Wireless 's proposed equipment loading configuration on the mount at 162.0 ft. The installation shall be performed in accordance with the construction documents issued for this site.

Binita Yadav
Project Engineer I | **INFINIGY**

7. ASSUMPTIONS

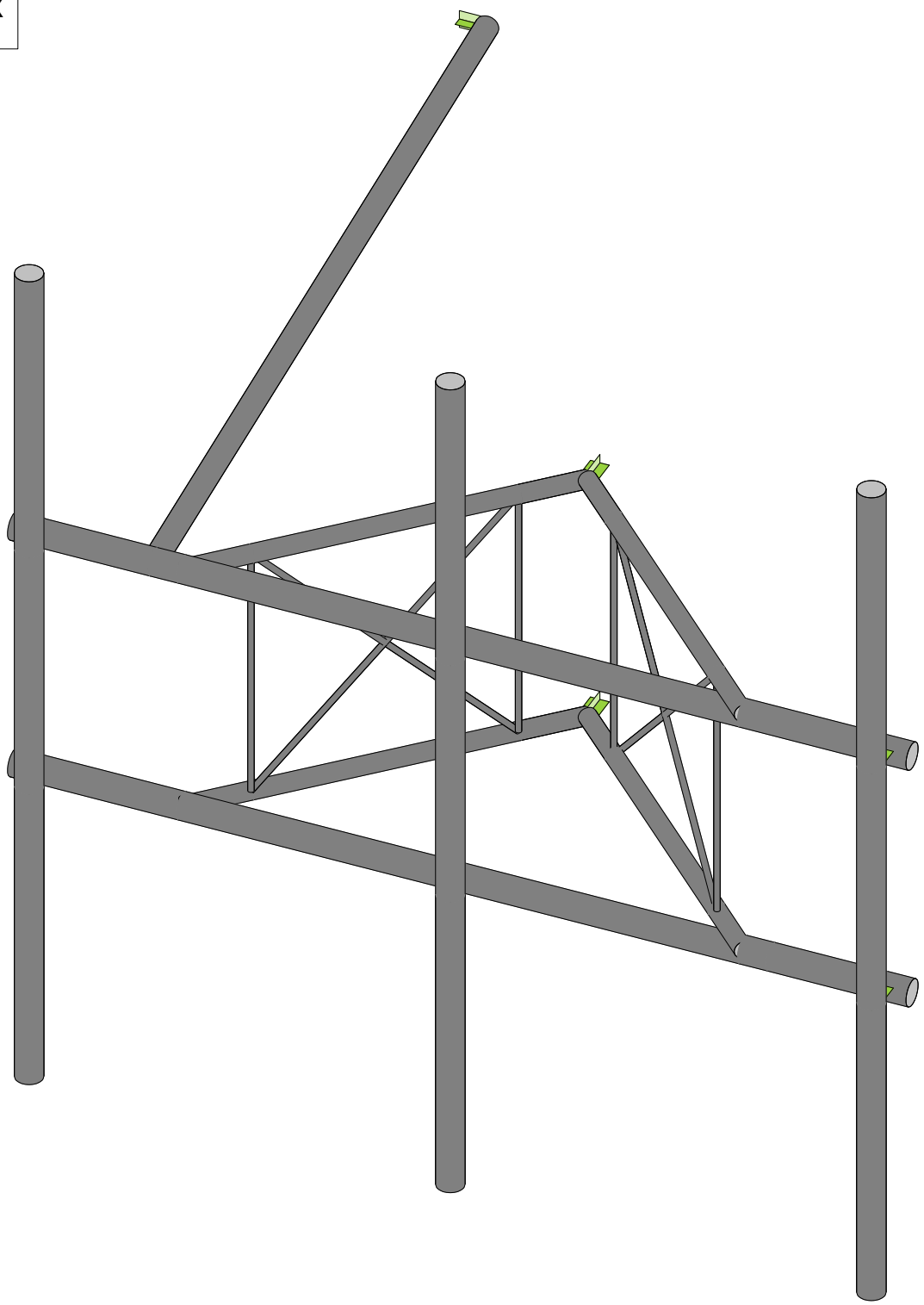
The antenna mounting system was properly fabricated, installed and maintained in accordance with its original design and manufacturer's specifications.
The configuration of antennas, mounts, and other appurtenances are as specified in the proposed loading configuration table.
All member connections are assumed to have been designed to meet or exceed the load carrying capacity of the connected member unless otherwise specified in this report.
The analysis will require revisions 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.
Steel grades have been assumed as follows, unless noted otherwise: Channel, Plate, Built-up Angle — ASTM A1011 36 KSI Solid Round — ASTM A529 Gr 50 Structural Angle — ASTM A529 Gr. 50 HSS (Rectangular) — ASTM A500-B GR 46 HSS (Circular) — ASTM A500-B GR 42 Pipe — ASTM A500 Gr 46 Connection Bolts — ASTM A449 U-Bolts — ASTM A307
All bolted connections are pretensioned in accordance with Table 8.2 of the RCSC 2014 Standard

8. LIABILITY WAIVER AND LIMITATIONS

Our structural calculations are completed assuming all information provided to Infinigy is accurate and applicable to this site. For the purposes of calculations, we assume an overall structure condition as erected and all members and connections to be free of corrosion and/or structural defects. The structure owner and/or contractor shall verify the structure's condition prior to installation of any proposed equipment. If actual conditions differ from those described in this report, Infinigy should be notified immediately to assess the impact on the results of this report.

Our evaluation is completed using industry standard methods and procedures. The structural results, conclusions and recommendations contained in this report are proprietary and should not be used by others as their own. Infinigy is not responsible for decisions made by others that are or are not based on the stated assumptions and conclusions in this report.

This report is an evaluation of the mount structure only and does not determine the adequacy of the supporting structure, other carrier mounts or cable mounting attachments. The analysis of these elements is outside the scope of this analysis, are assumed to be adequate for the purpose of this report and to have been installed per their manufacturer requirements. This document is not for construction purposes.



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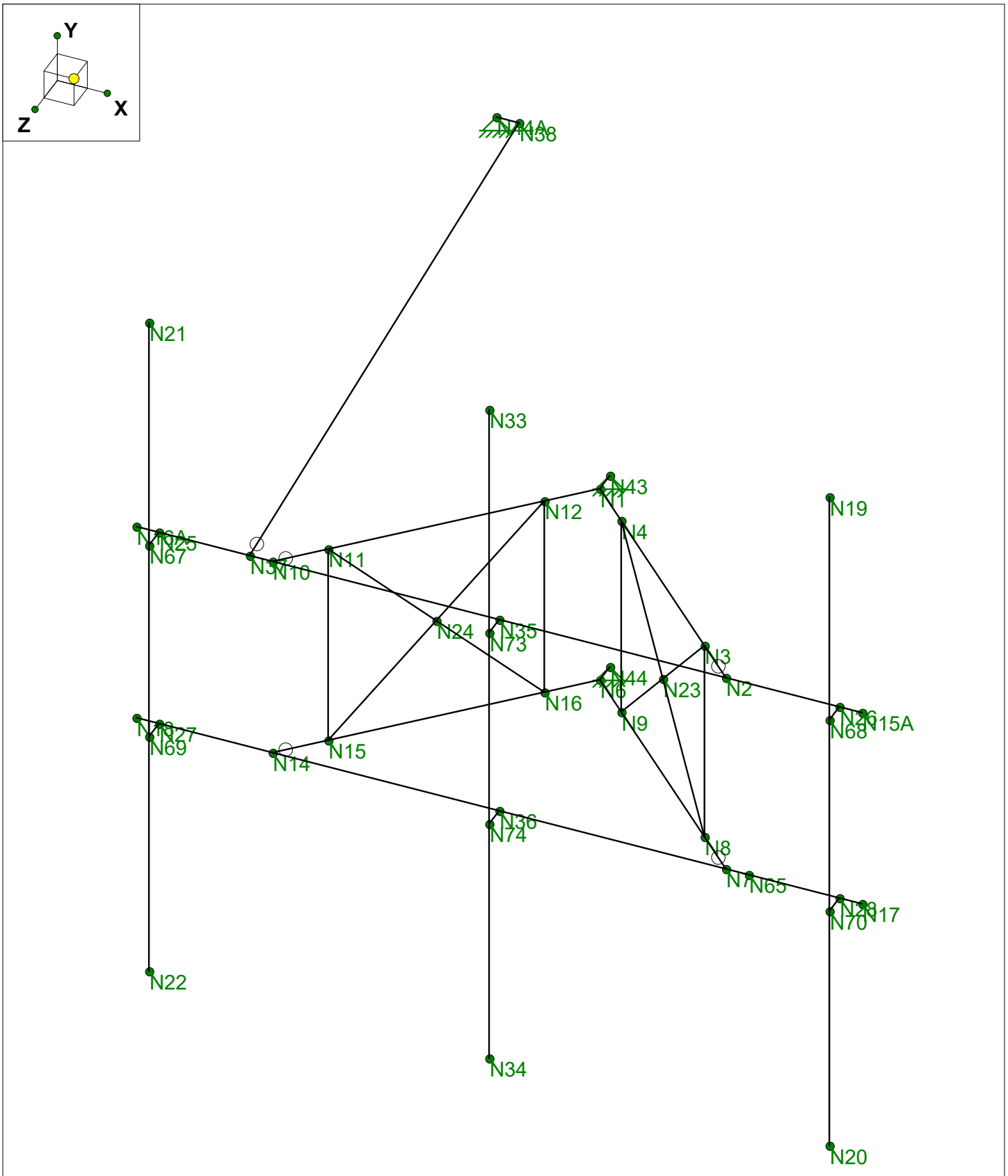

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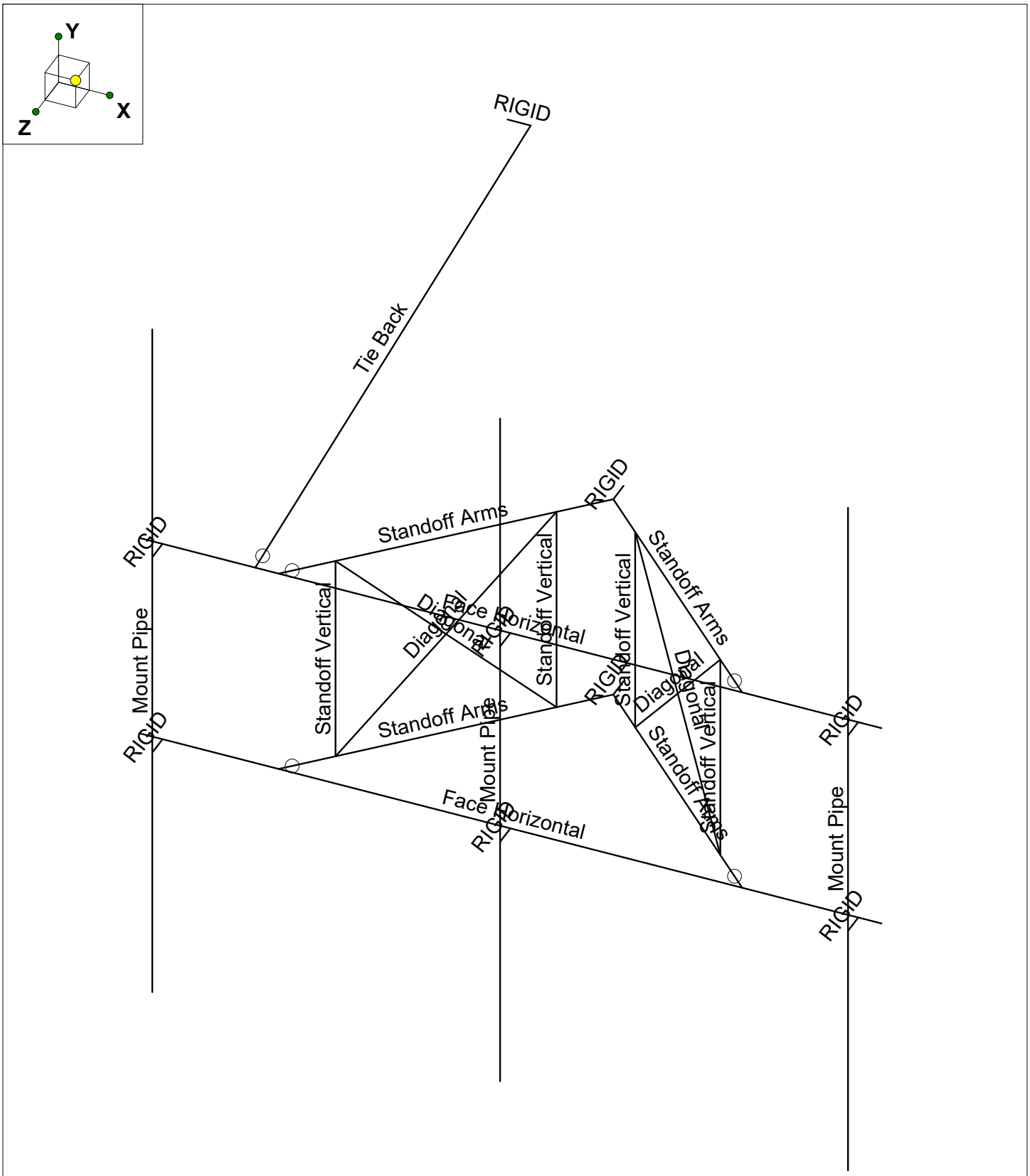

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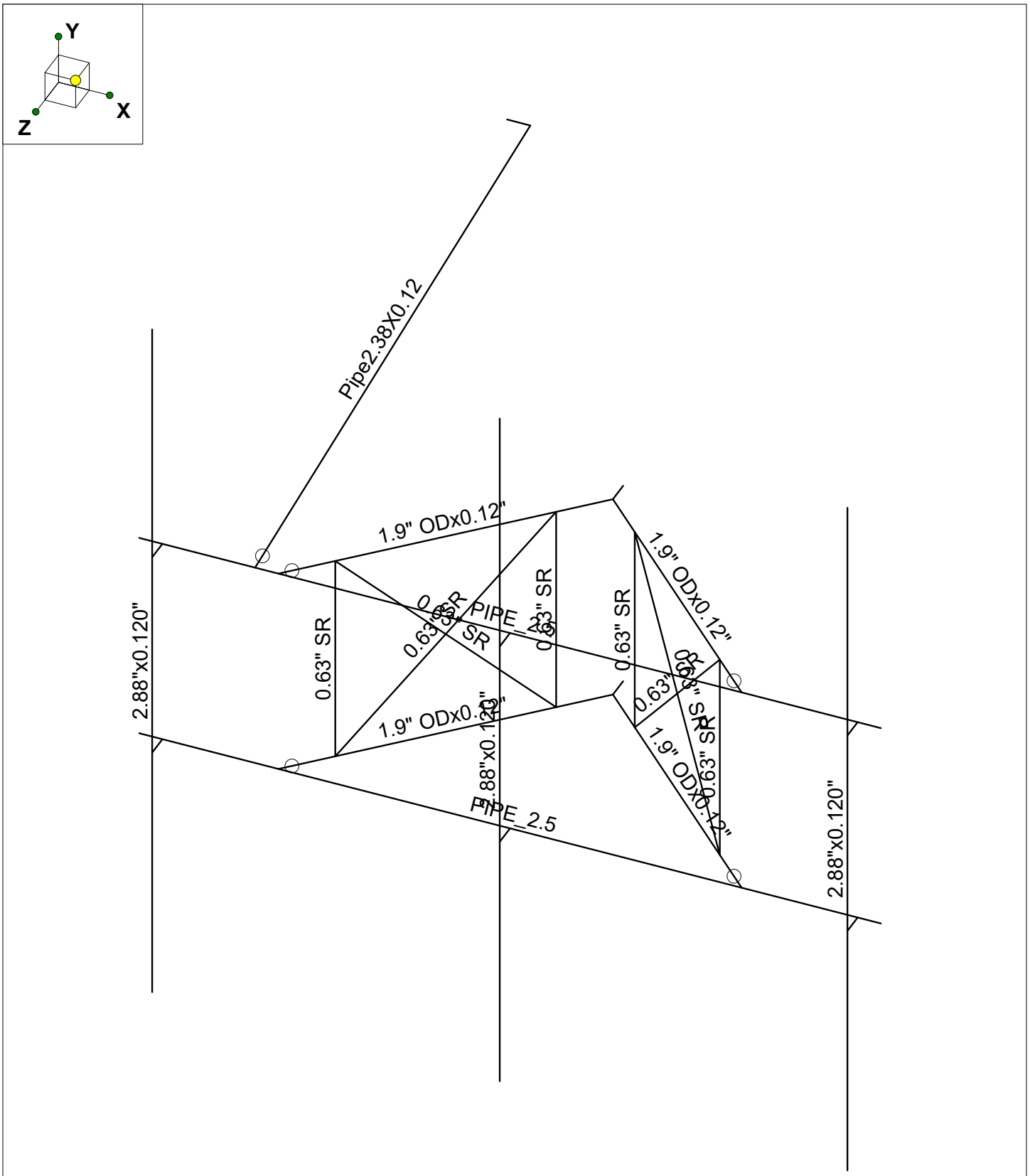

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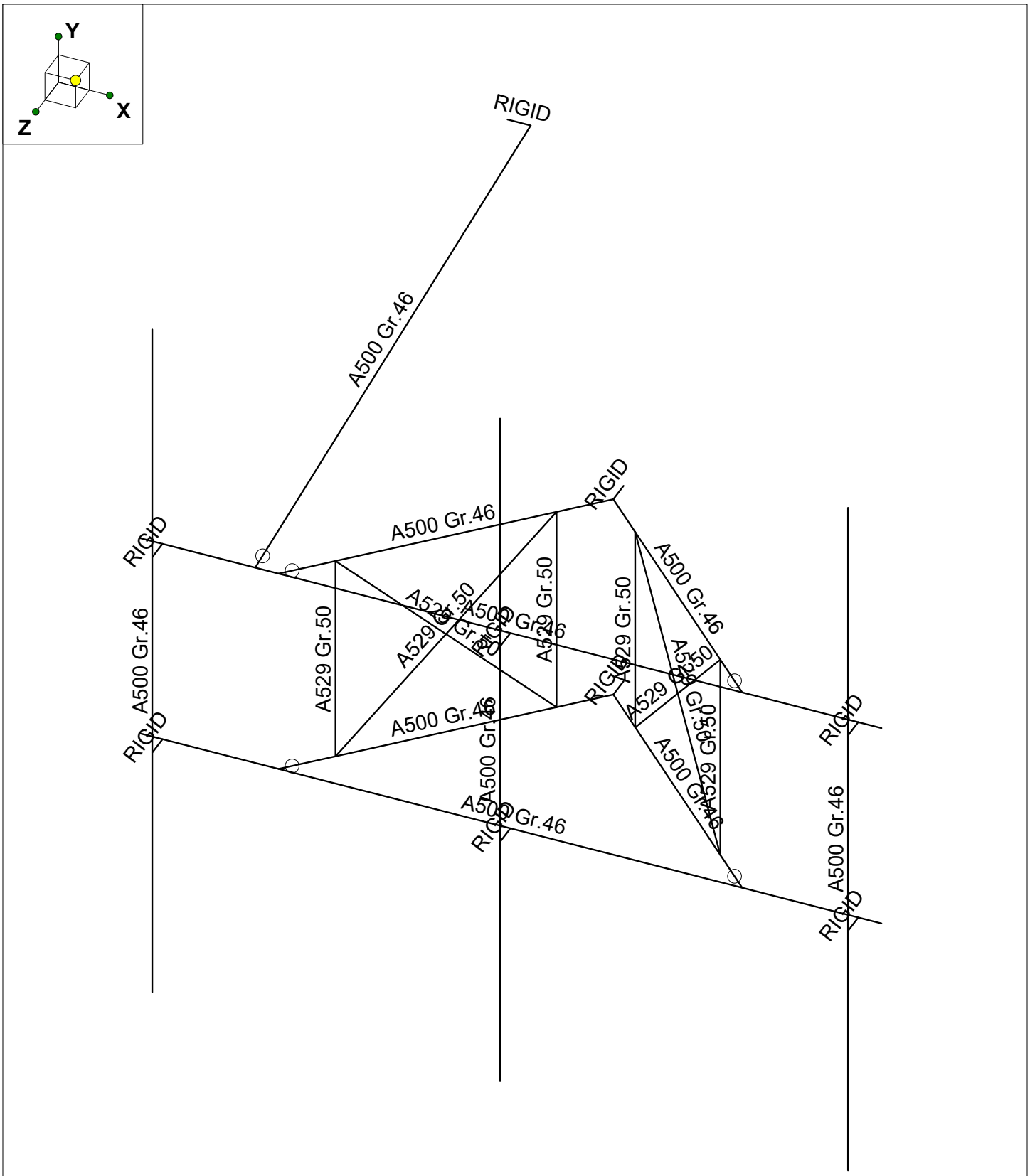

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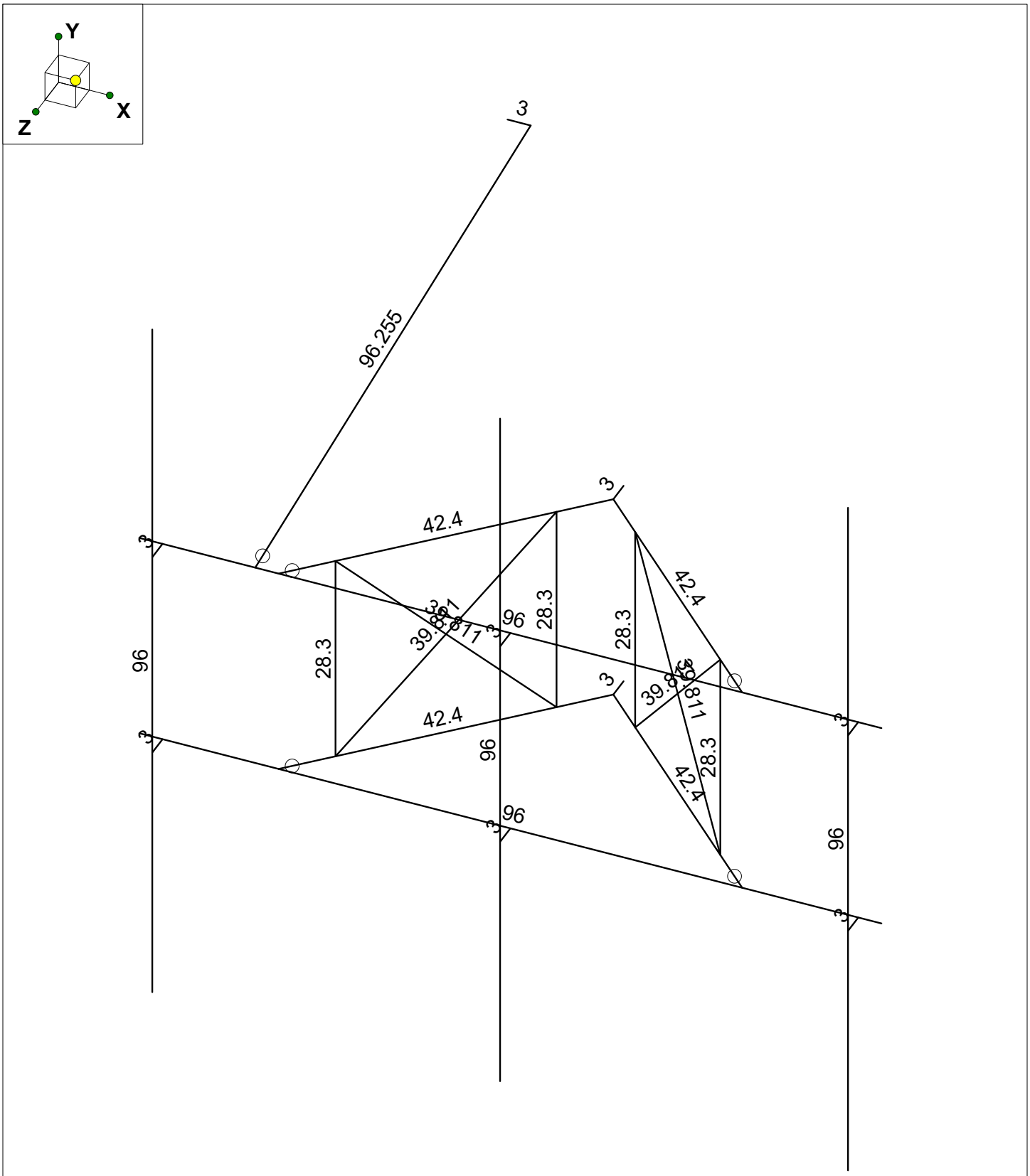

Member Length (in) Displayed

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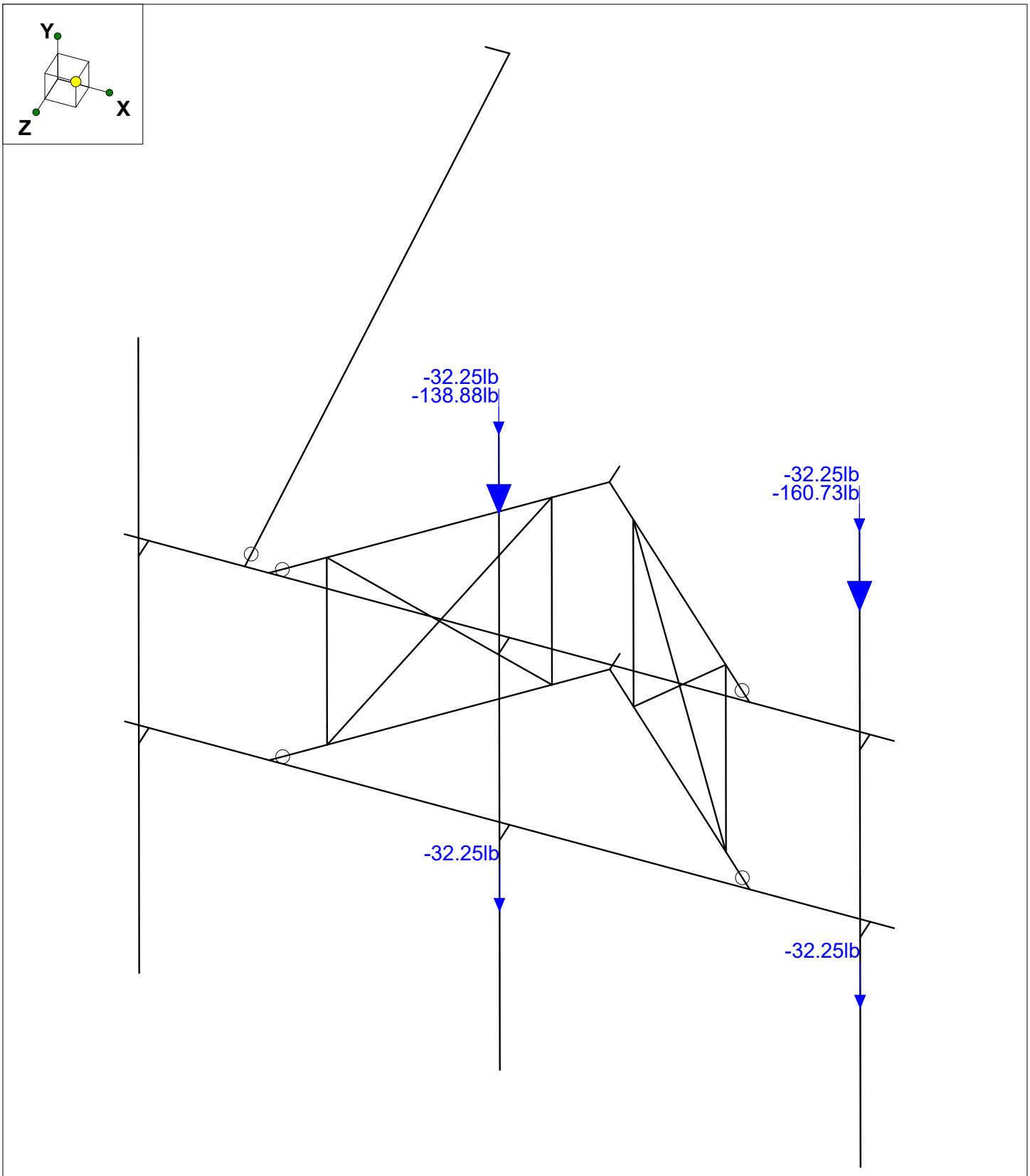

Loads: BLC 1, Self Weight

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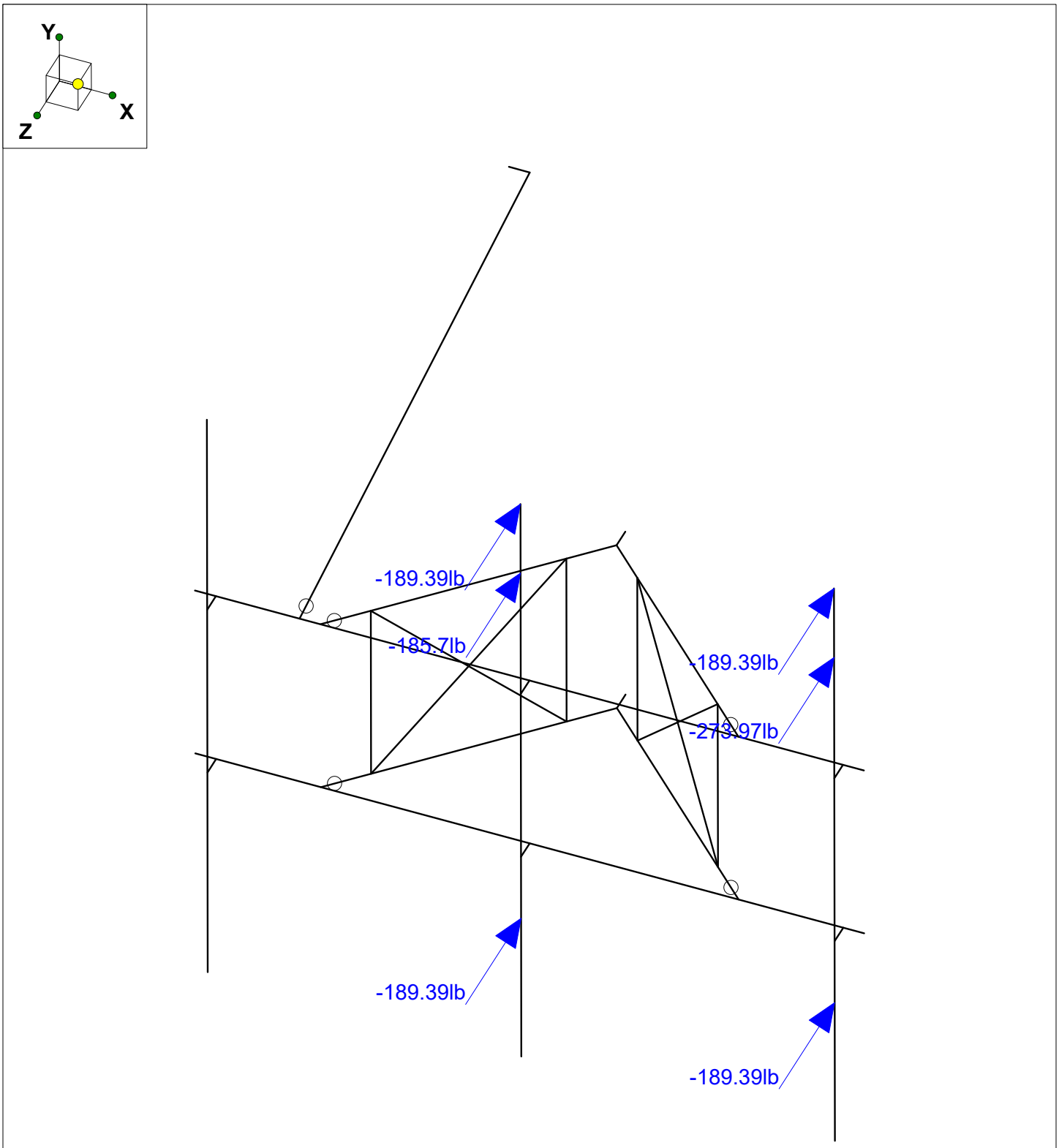

Loads: BLC 2, Wind Load AZI 0

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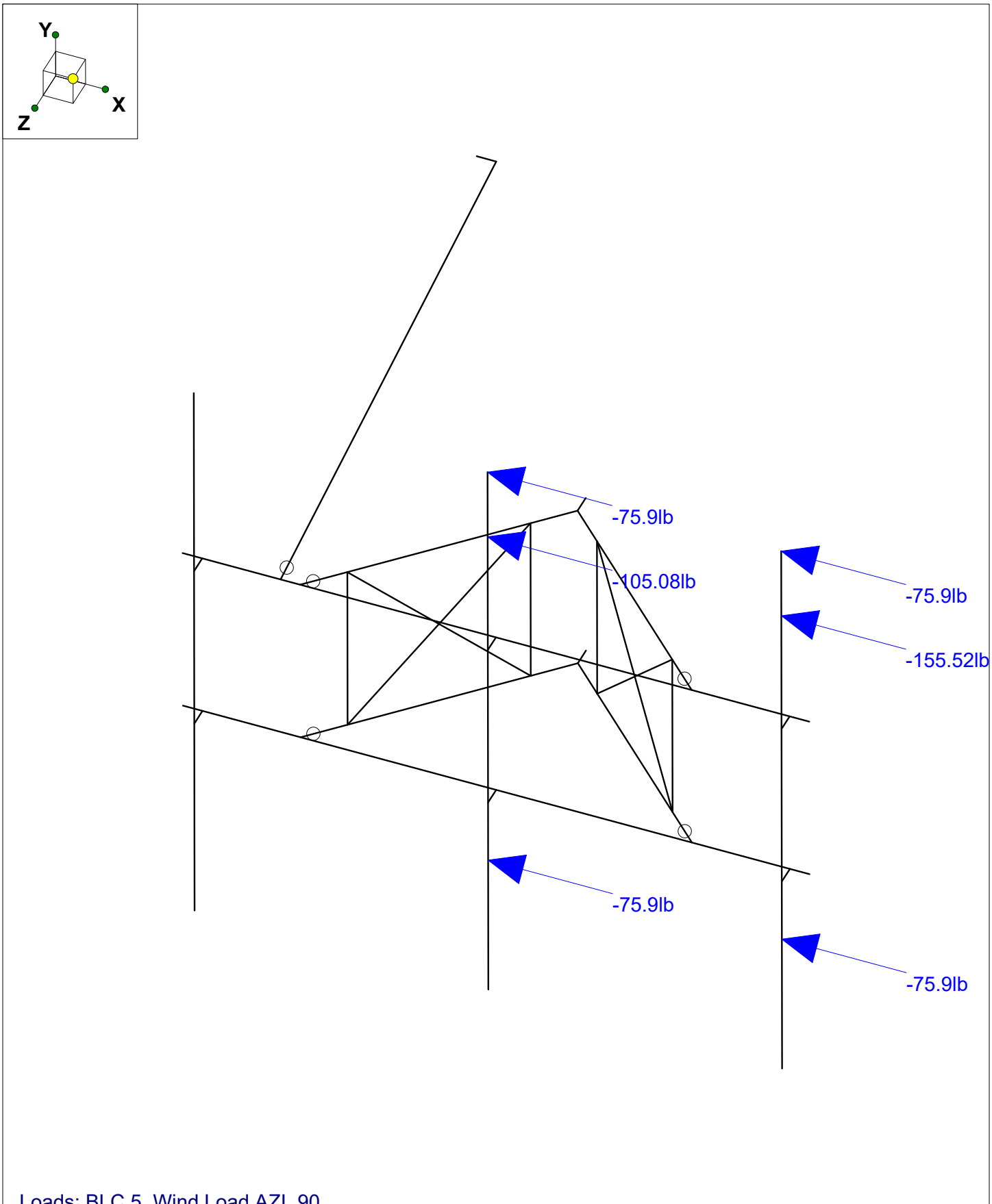

Loads: BLC 5, Wind Load AZI 90

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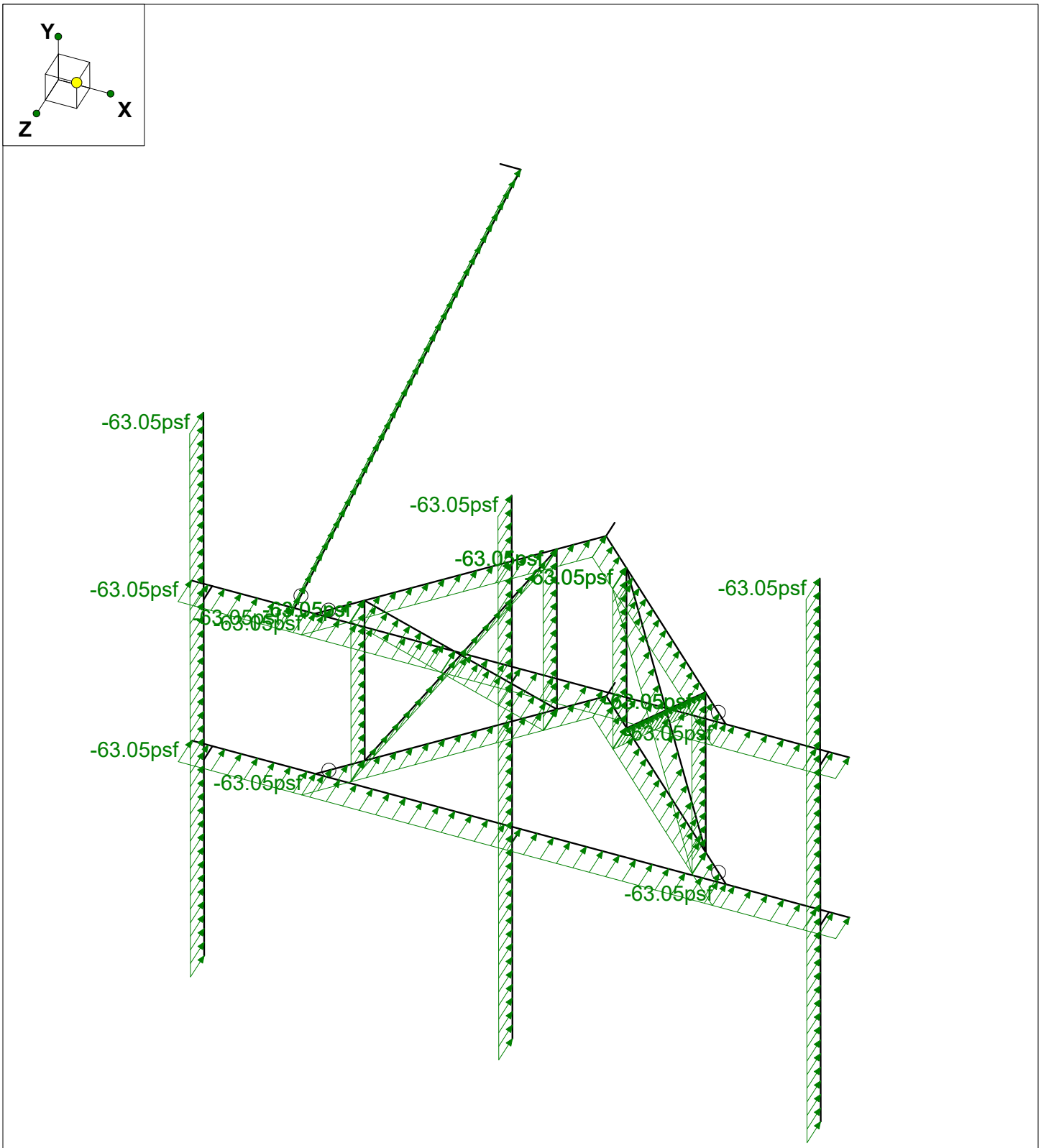

Loads: BLC 14, Distr. Wind Load Z

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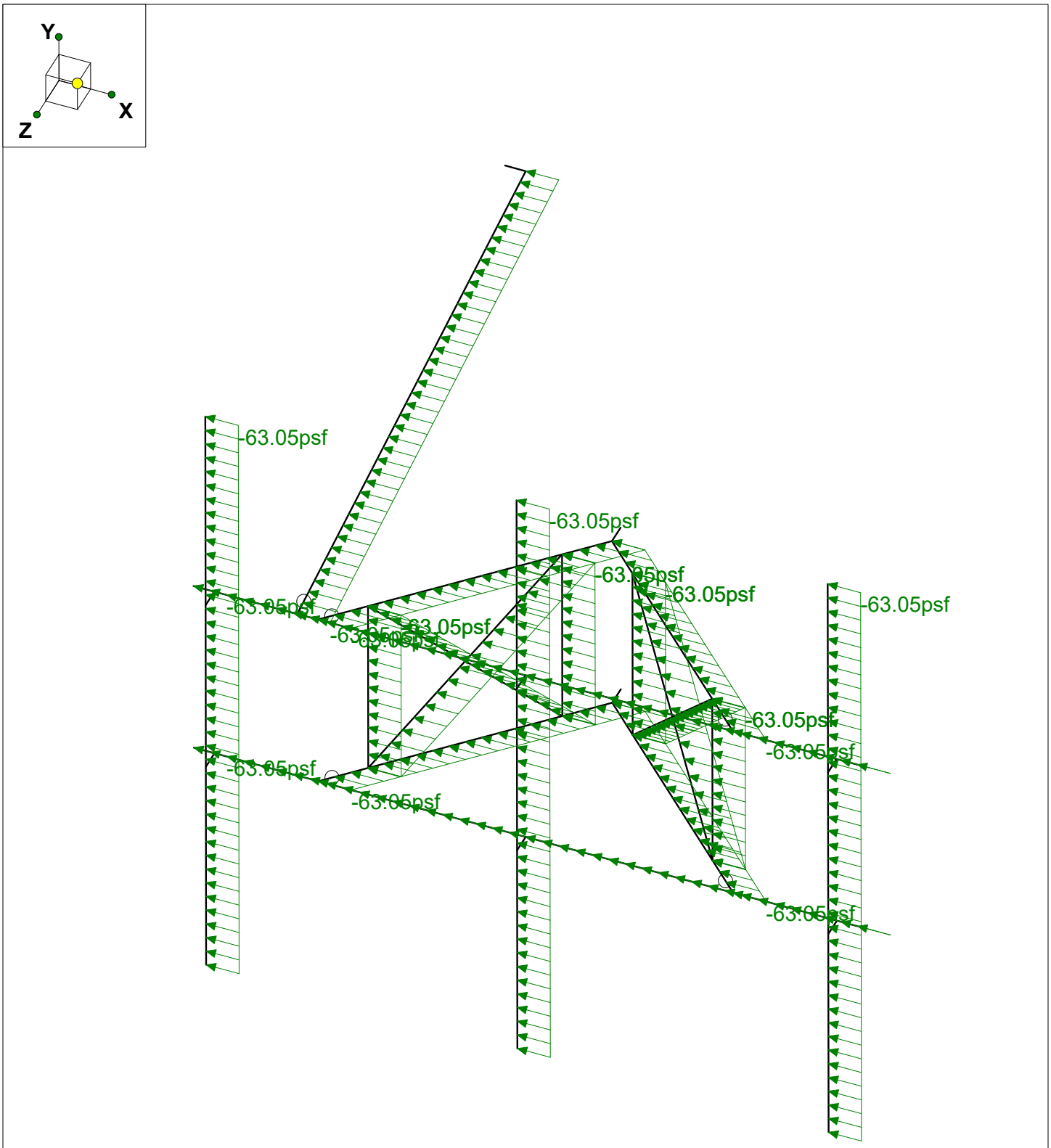

Loads: BLC 15, Distr. Wind Load X

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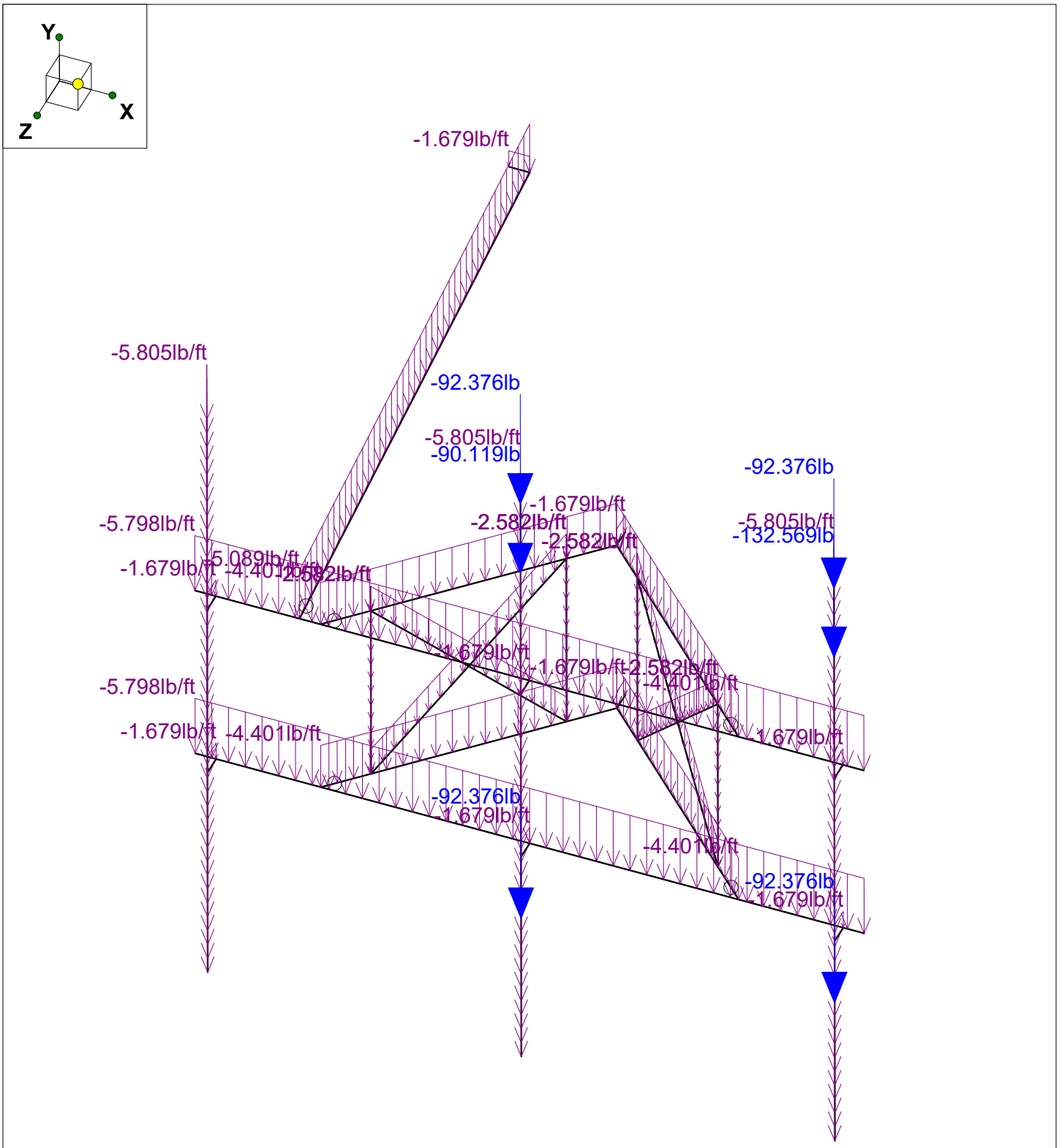

Loads: BLC 16, Ice Weight

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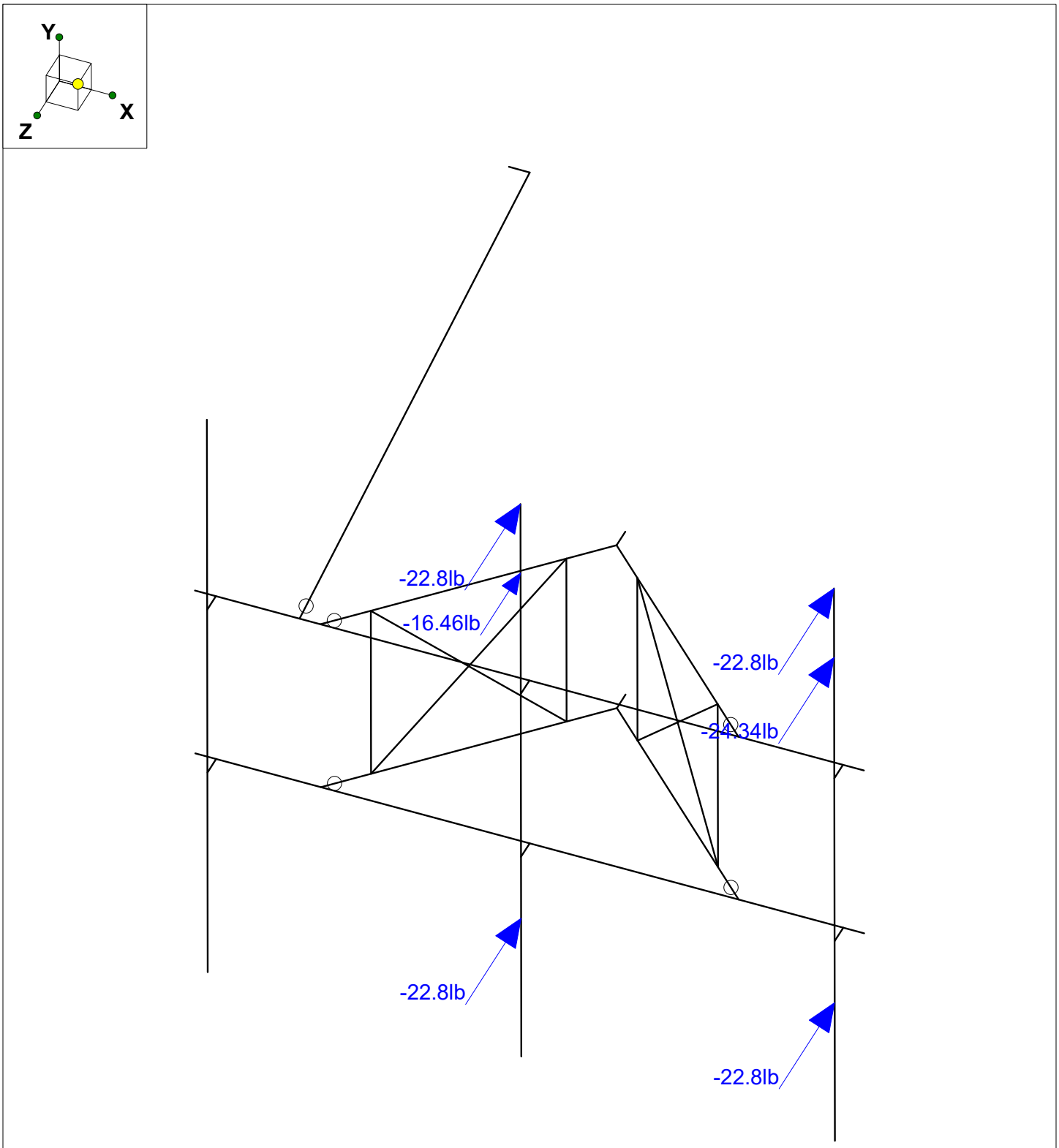

Loads: BLC 17, Ice Wind Load AZI 0

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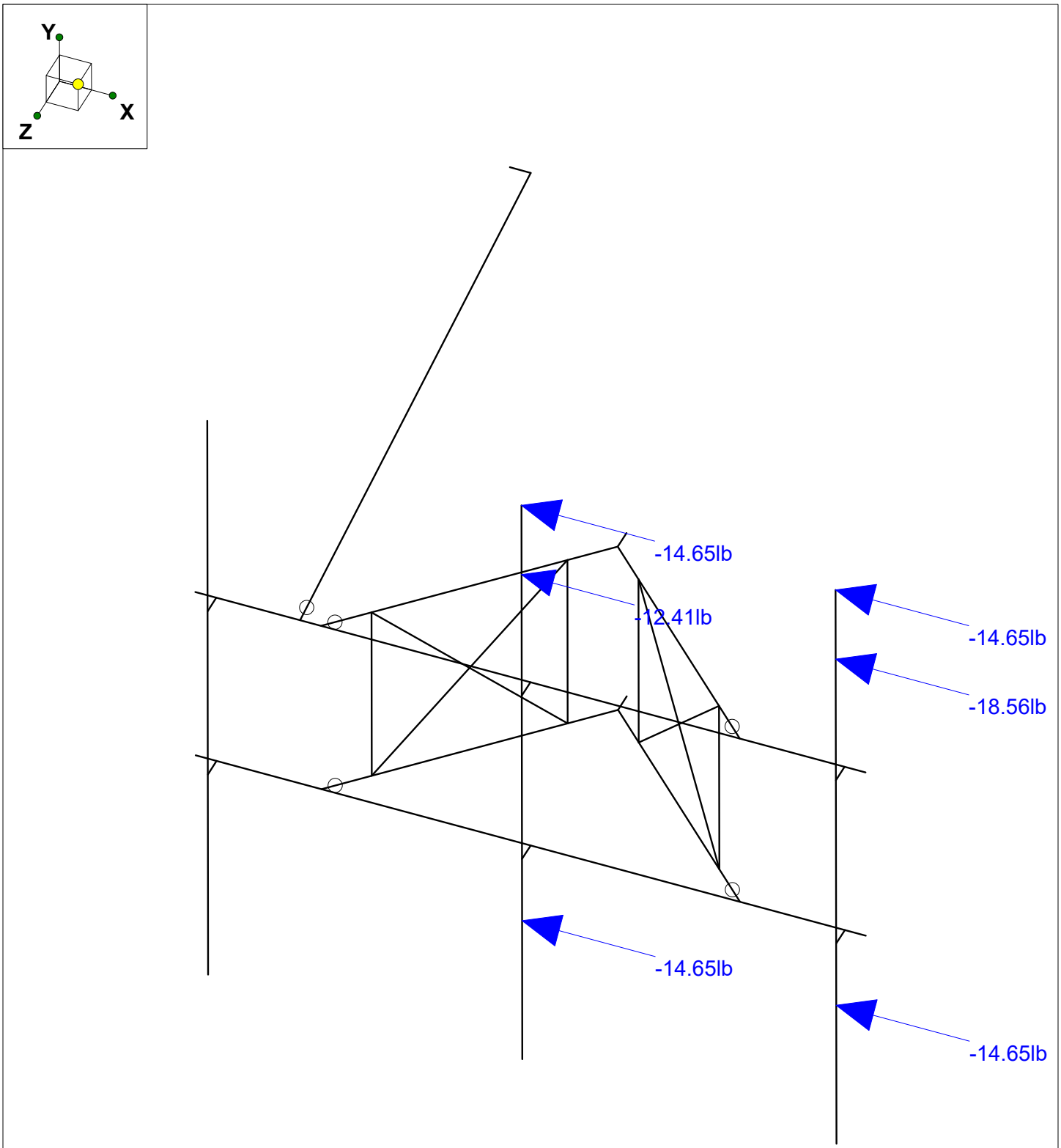

Loads: BLC 20, Ice Wind Load AZI 90

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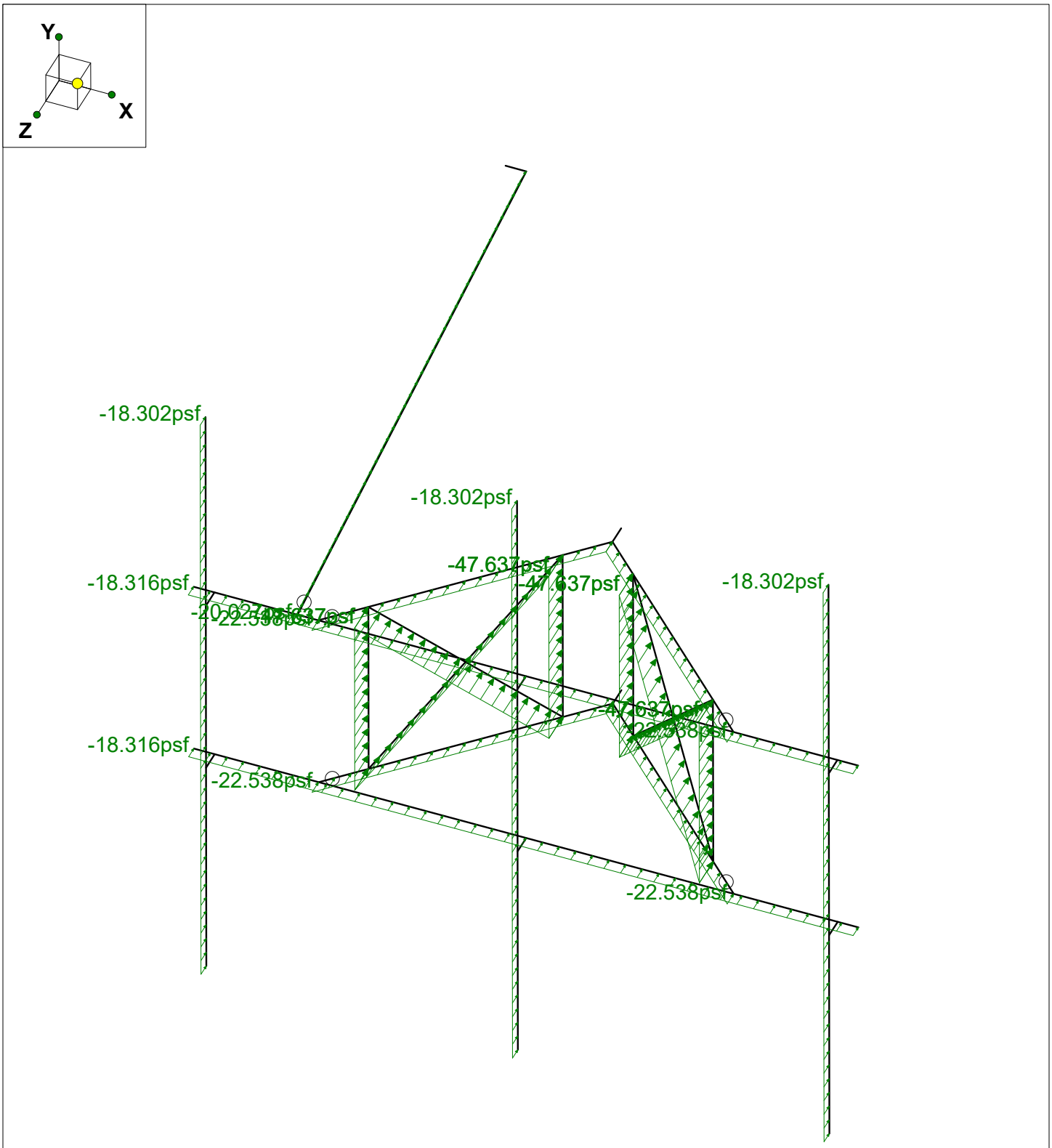

Loads: BLC 29, Distr. Ice Wind Load Z

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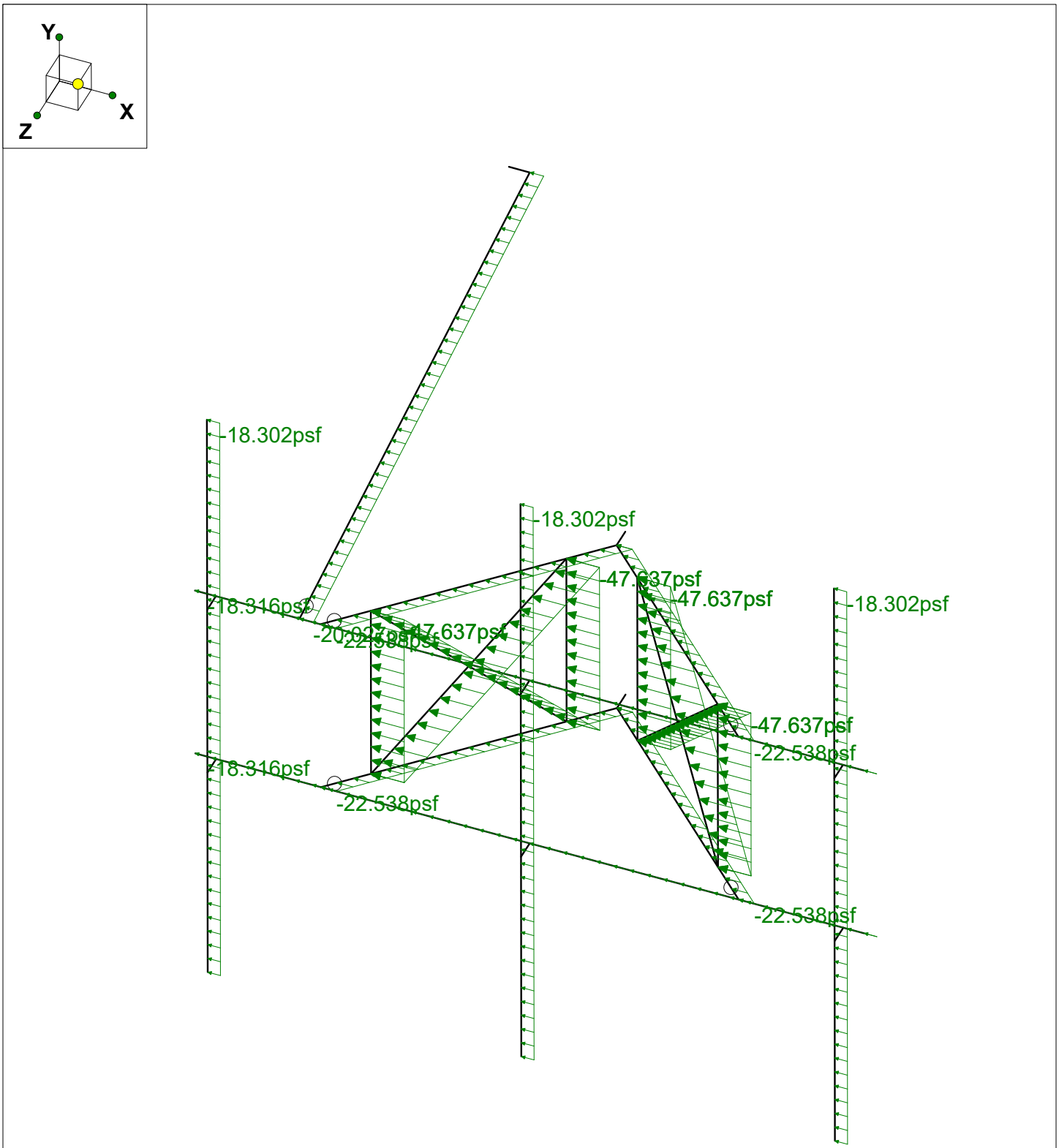

Loads: BLC 30, Distr. Ice Wind Load X

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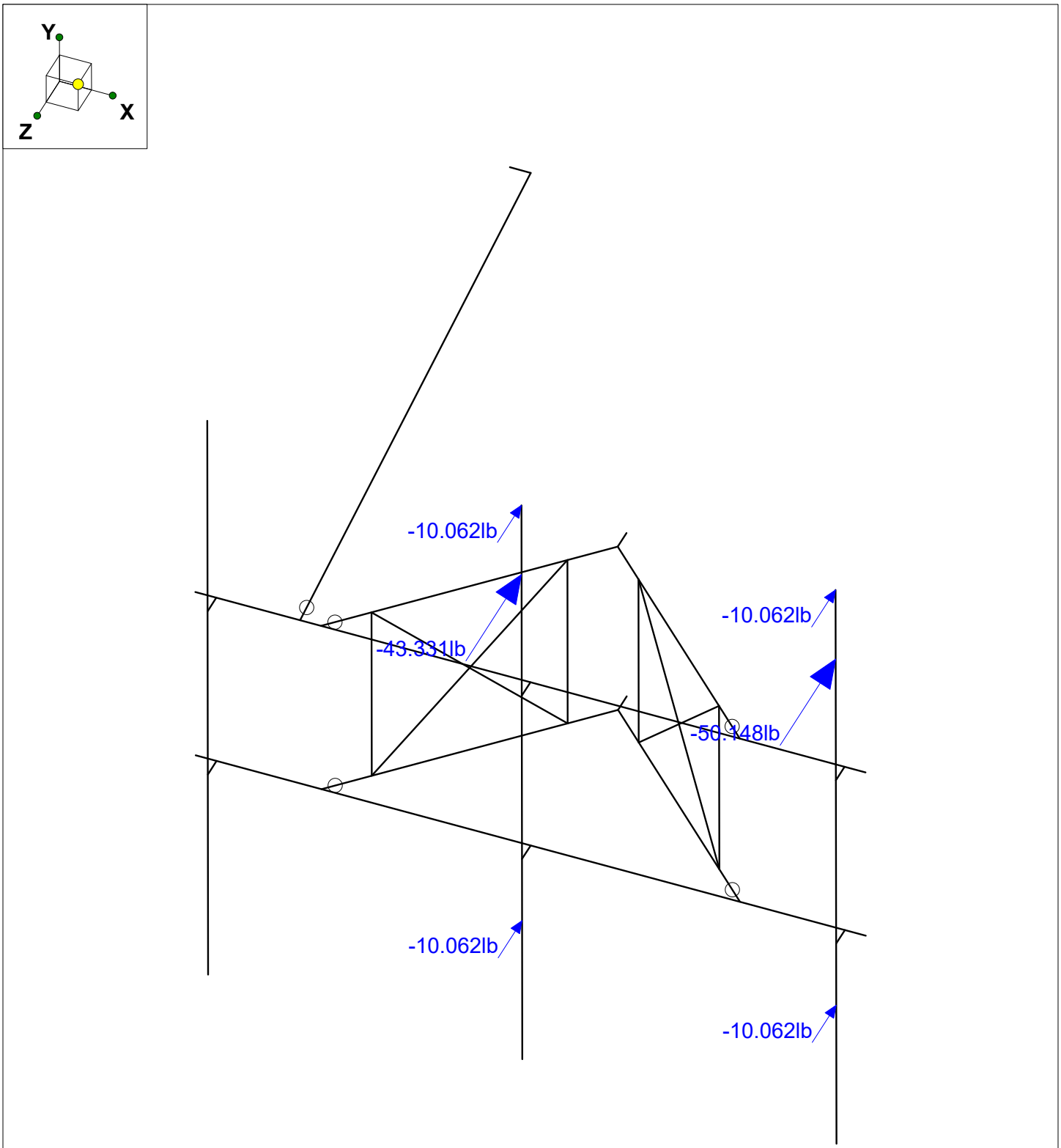

Loads: BLC 31, Seismic Load Z

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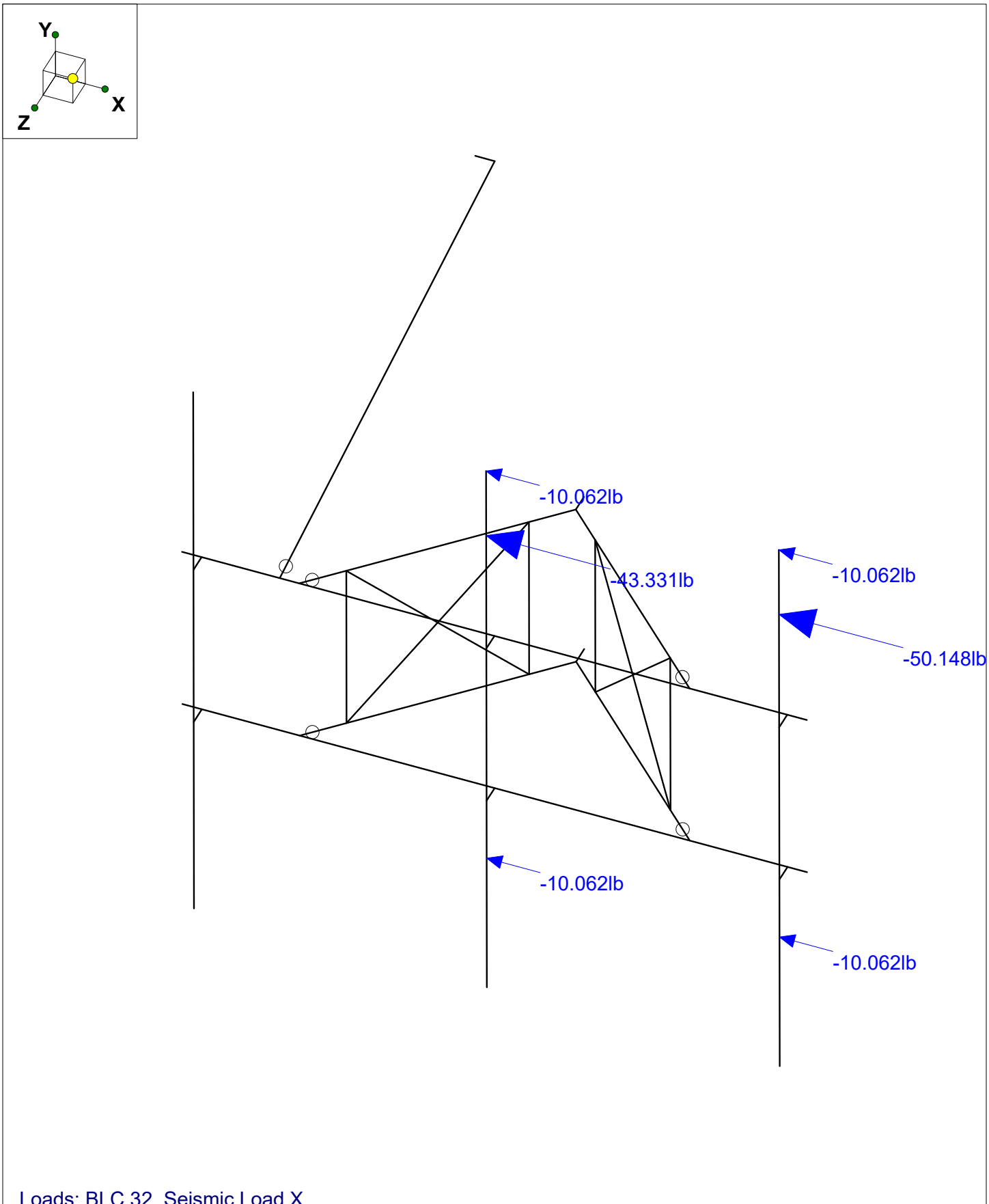

Loads: BLC 32, Seismic Load X

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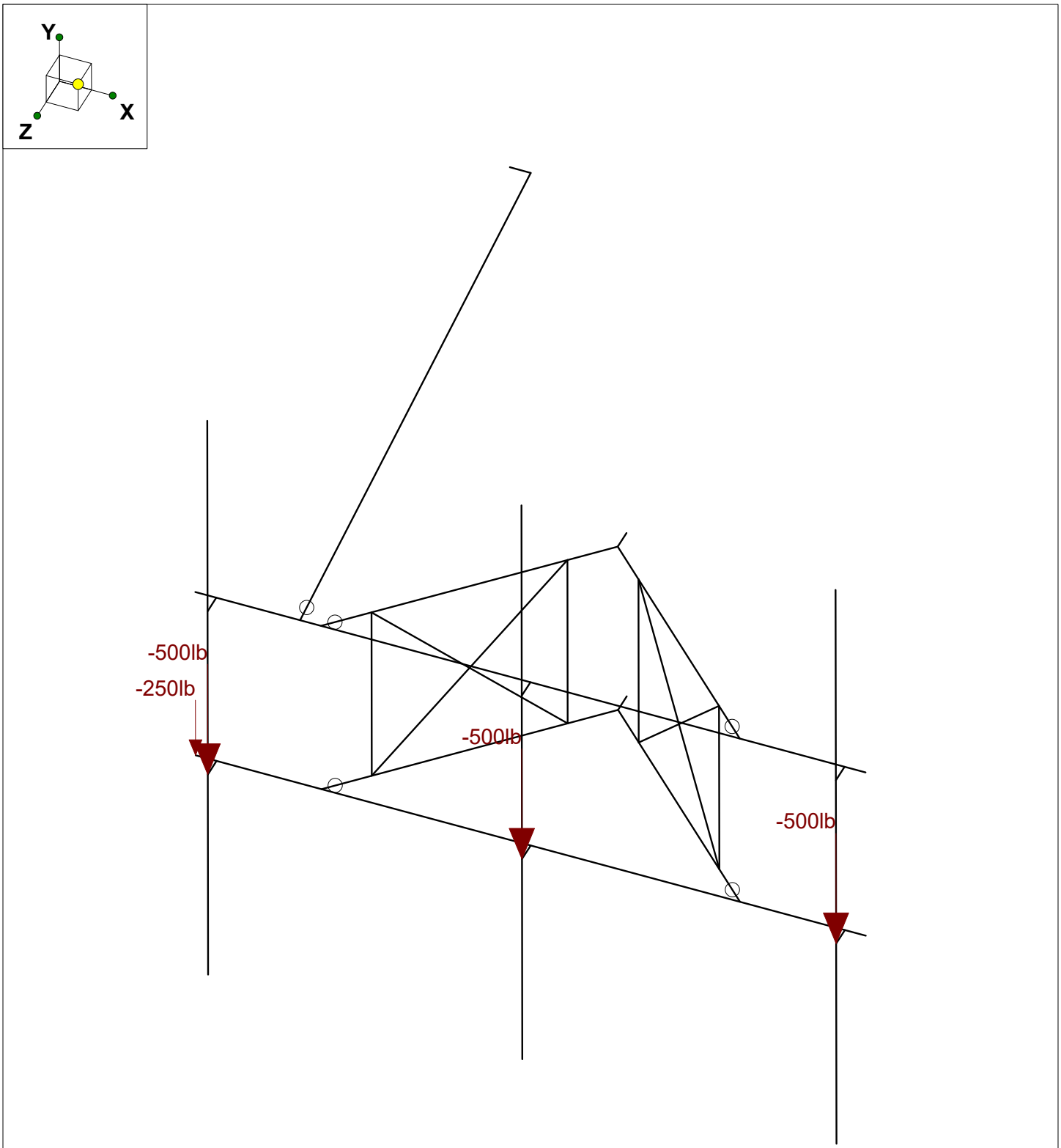

Loads: LL - Live Load

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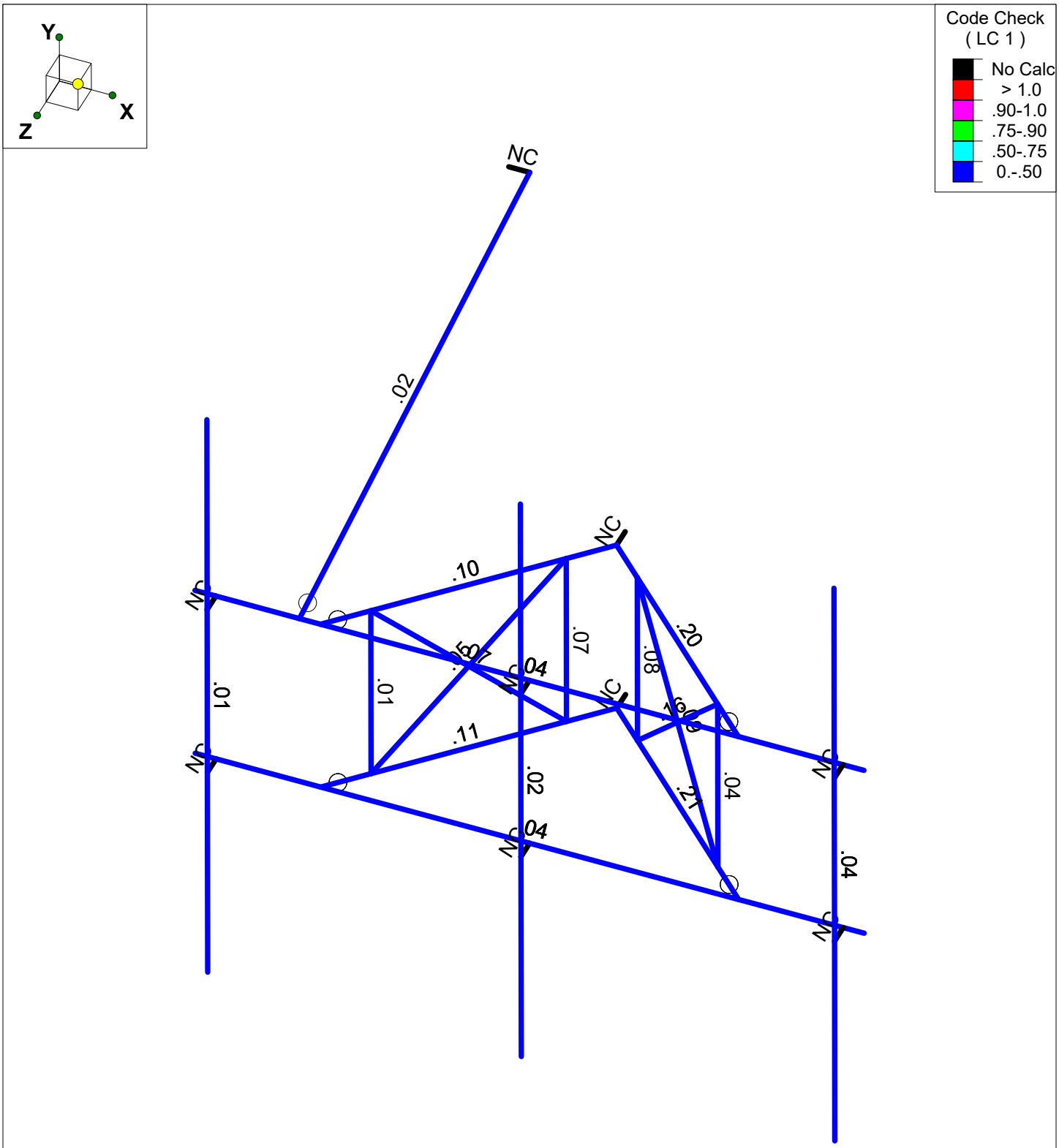

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Results for LC 1, 1.4DL

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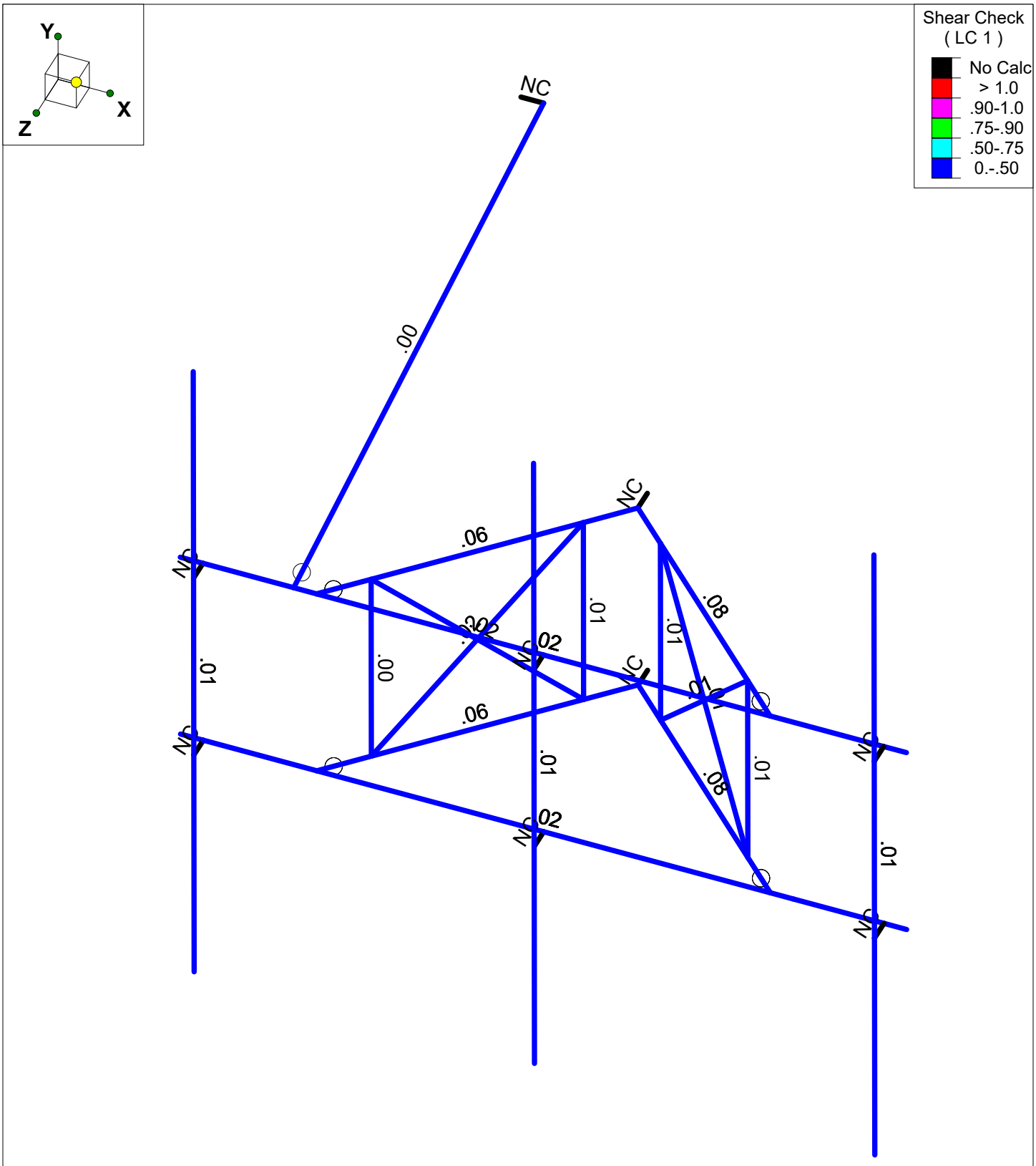

Infinigy Engineering, PLLC	BOBOS00073B	Shear Check
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Program Inputs

PROJECT INFORMATION	
Client:	ATC
Carrier:	Dish Wireless
Engineer:	Binita Yadav

SITE INFORMATION		
Risk Category:	II	
Exposure Category:	C	
Topo Factor Procedure:	Method 1, Category 1	
Site Class:	D - Stiff Soil (Assumed)	
Ground Elevation:	362.00	ft *Rev H

MOUNT INFORMATION		
Mount Type:	Sector Frame	
Num Sectors:	3	
Centerline AGL:	162.00	ft
Tower Height AGL:	160.00	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):	0.987	*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 7-16	

WIND AND ICE DATA		
Ultimate Wind (V_{ult}):	125	mph
Design Wind (V):	N/A	mph
Ice Wind (V_{ice}):	50	mph
Base Ice Thickness (t_i):	1	in
Flat Pressure:	105.083	psf
Round Pressure:	63.050	psf
Ice Wind Pressure:	10.088	psf

SEISMIC DATA		
Short-Period Accel. (S_s):	0.195	g
1-Second Accel. (S_1):	0.054	g
Short-Period Design (S_{DS}):	0.208	
1-Second Design (S_{D1}):	0.086	
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

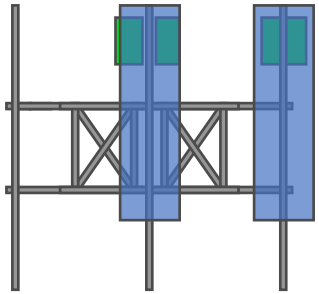
FROM ZERO TO INFINIGY

the solutions are endless

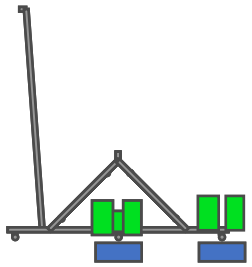
Infinigy Load Calculator V2.1.7

Program Inputs

ELEVATION VIEW



PLAN VIEW



INFINIGY
FROM ZERO TO INFINIGY
the solutions are endless

Infinigy Load Calculator V2.1.7

APPURTENANCE INFORMATION

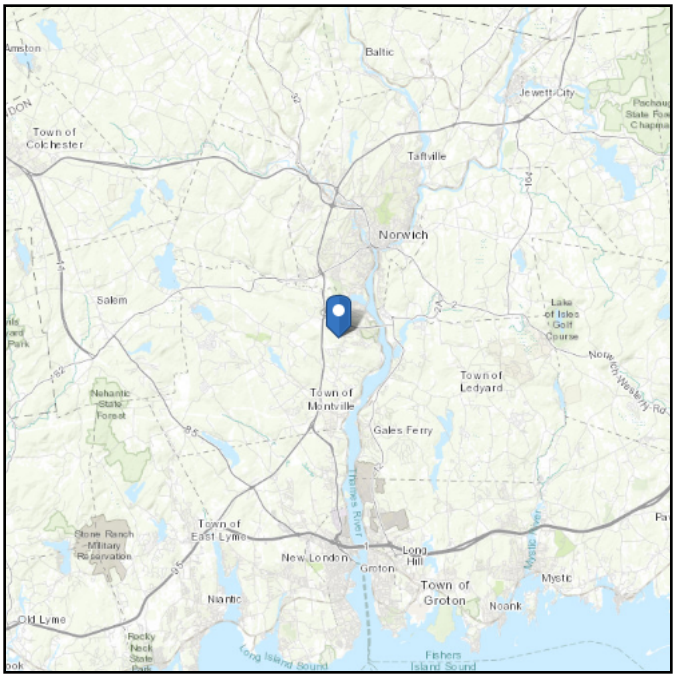
Appurtenance Name	Elevation	Qty.	K_a	q_z (psf)	EPA_N (ft^2)	EPA_T (ft^2)	Wind F_z (lbs)	Wind F_x (lbs)	Weight (lbs)	Seismic F (lbs)	Member (α sector)
JMA WIRELESS MX08FRO665-20	162.0	3	0.90	52.54	8.01	3.21	378.77	151.79	64.50	20.12	MP1
FUJITSU TA08025-B605	162.0	3	0.90	52.54	1.96	1.19	92.85	56.23	74.95	23.38	MP1
FUJITSU TA08025-B604	162.0	3	0.90	52.54	1.96	1.03	92.85	48.85	63.93	19.95	MP1
RAYCAP RDIDC-9181-PF-48	162.0	3	0.90	52.54	1.87	1.07	88.27	50.44	21.85	6.82	MP1
JMA WIRELESS MX08FRO665-20	162.0	3	0.90	52.54	8.01	3.21	378.77	151.79	64.50	20.12	MP2
FUJITSU TA08025-B605	162.0	3	0.90	52.54	1.96	1.19	92.85	56.23	74.95	23.38	MP2
FUJITSU TA08025-B604	162.0	3	0.90	52.54	1.96	1.03	92.85	48.85	63.93	19.95	MP2

ASCE 7 Hazards Report

Address:
No Address at This Location

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

Elevation: 362.17 ft (NAVD 88)
Latitude: 41.475003
Longitude: -72.105052



Wind

Results:

Wind Speed:	125 Vmph
10-year MRI	75 Vmph
25-year MRI	85 Vmph
50-year MRI	97 Vmph
100-year MRI	102 Vmph

Data Source: ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2
Date Accessed: Tue Sep 21 2021

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

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

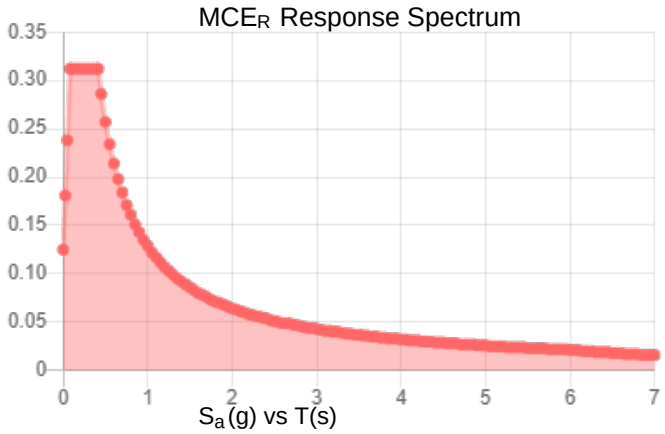
Seismic

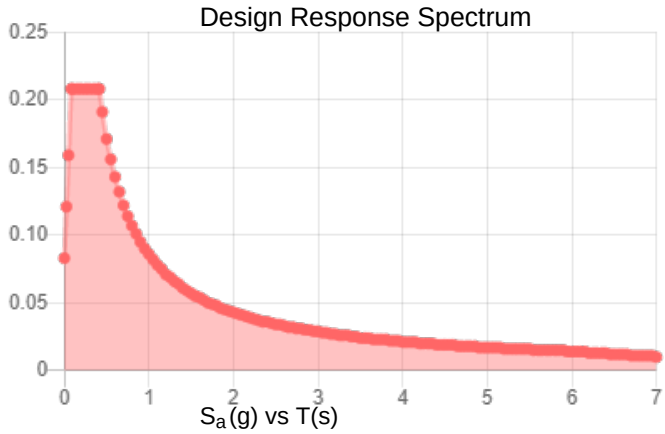
Site Soil Class: D - Default (see Section 11.4.3)

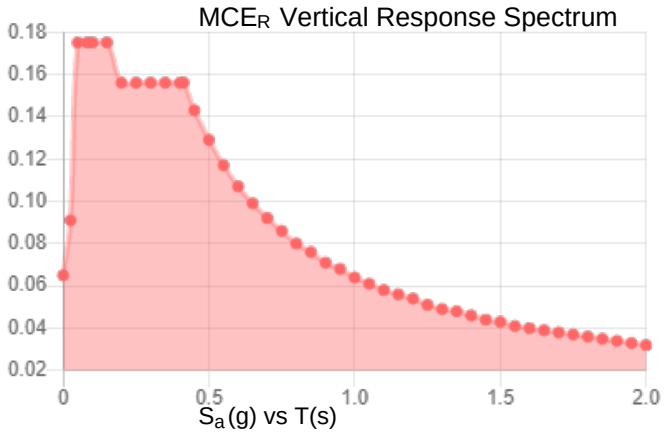
Results:

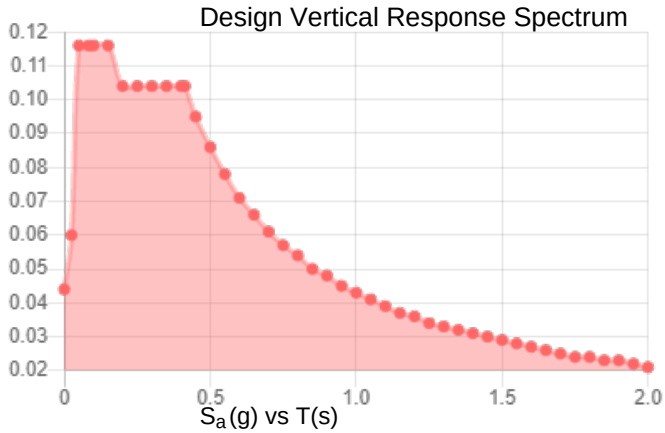
S_S :	0.195	S_{D1} :	0.086
S_1 :	0.054	T_L :	6
F_a :	1.6	PGA :	0.107
F_v :	2.4	PGA_M :	0.17
S_{MS} :	0.312	F_{PGA} :	1.585
S_{M1} :	0.129	I_e :	1
S_{DS} :	0.208	C_v :	0.7

Seismic Design Category B









Data Accessed: Tue Sep 21 2021

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

Ice

Results:

Ice Thickness:	1.00 in.
Concurrent Temperature:	15 F
Gust Speed:	50 mph
Data Source:	Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8
Date Accessed:	Tue Sep 21 2021

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

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

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
1	S3	N2	N1			Standoff Arms	Beam	Pipe	A500 Gr.46	Typical
2	S4	N7	N6			Standoff Arms	Beam	Pipe	A500 Gr.46	Typical
3	TR6	N3	N8			Standoff Vertical	None	None	A529 Gr.50	Typical
4	TR5	N4	N9			Standoff Vertical	None	None	A529 Gr.50	Typical
5	TR8	N4	N8			Diagonal	None	None	A529 Gr.50	Typical
6	TR7	N3	N9			Diagonal	None	None	A529 Gr.50	Typical
7	S1	N10	N1			Standoff Arms	Beam	Pipe	A500 Gr.46	Typical
8	S2	N14	N6			Standoff Arms	Beam	Pipe	A500 Gr.46	Typical
9	TR1	N11	N15			Standoff Vertical	None	None	A529 Gr.50	Typical
10	TR2	N12	N16			Standoff Vertical	None	None	A529 Gr.50	Typical
11	TR3	N12	N15			Diagonal	None	None	A529 Gr.50	Typical
12	TR4	N11	N16			Diagonal	None	None	A529 Gr.50	Typical
13	H1	N16A	N15A			Face Horizontal	Beam	Pipe	A500 Gr.46	Typical
14	H2	N18	N17			Face Horizontal	Beam	Pipe	A500 Gr.46	Typical
15	MP3	N21	N22			Mount Pipe	Column	Pipe	A500 Gr.46	Typical
16	MP1	N19	N20			Mount Pipe	Column	Pipe	A500 Gr.46	Typical
17	MP2	N33	N34			Mount Pipe	Column	Pipe	A500 Gr.46	Typical
18	T1	N37	N38			Tie Back	None	None	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	N43	N1			RIGID	None	None	RIGID	Typical
26	M26	N44	N6			RIGID	None	None	RIGID	Typical
27	M27	N44A	N38			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	S3	Standoff Ar...	42.4			Lbyy						Lateral
2	S4	Standoff Ar...	42.4			Lbyy						Lateral
3	TR6	Standoff Ve...	28.3			Lbyy			.65	.65		Lateral
4	TR5	Standoff Ve...	28.3			Lbyy			.65	.65		Lateral
5	TR8	Diagonal	39.811			Lbyy			.7	.7		Lateral
6	TR7	Diagonal	39.811			Lbyy			.5	.5		Lateral
7	S1	Standoff Ar...	42.4			Lbyy						Lateral
8	S2	Standoff Ar...	42.4			Lbyy						Lateral
9	TR1	Standoff Ve...	28.3			Lbyy			.65	.65		Lateral
10	TR2	Standoff Ve...	28.3			Lbyy			.65	.65		Lateral
11	TR3	Diagonal	39.811			Lbyy			.7	.7		Lateral
12	TR4	Diagonal	39.811			Lbyy			.5	.5		Lateral
13	H1	Face Horizo...	96			Lbyy						Lateral
14	H2	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	T1	Tie Back	96.255			Lbyy						Lateral

Member Advanced Data

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Defl Rat...	Analysis ...	Inactive	Seismic...
1	S3	BenPIN					Yes	Default			None
2	S4	BenPIN					Yes	Default			None
3	TR6						Yes	** NA **			None
4	TR5						Yes	** NA **			None
5	TR8						Yes	** NA **			None
6	TR7						Yes	** NA **			None
7	S1	BenPIN					Yes	Default			None
8	S2	BenPIN					Yes	Default			None
9	TR1						Yes	** NA **			None
10	TR2						Yes	** NA **			None
11	TR3						Yes	** NA **			None
12	TR4						Yes	** NA **			None
13	H1						Yes				None
14	H2						Yes				None
15	MP3						Yes	** NA **			None
16	MP1						Yes	** NA **			None
17	MP2						Yes	** NA **			None
18	T1	BenPIN					Yes	** NA **			None
19	M29						Yes	** NA **			None
20	M30						Yes	** NA **			None
21	M33						Yes	** NA **			None
22	M34						Yes	** NA **			None
23	M35						Yes	** NA **			None
24	M36						Yes	** NA **			None
25	M25						Yes	** NA **			None
26	M26						Yes	** NA **			None
27	M27						Yes	** NA **			None

Material Takeoff

	Material	Size	Pieces	Length[in]	Weight[LB]
1	General				
2	RIGID		9	27	0
3	Total General		9	27	0
4					
5	Hot Rolled Steel				
6	A500 Gr.46	1.9" ODx0.12"	4	169.6	32.27
7	A500 Gr.46	PIPE_2.5	2	192	87.656
8	A500 Gr.46	2.88"x0.120"	3	288	84.933
9	A500 Gr.46	Pipe2.38X0.12	1	96.3	23.255
10	A529 Gr.50	0.63" SR	8	272.4	24.082
11	Total HR Steel		18	1018.3	252.196

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rules	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Face Horizo...	PIPE_2.5	Beam	Pipe	A500 Gr.46	Typical	1.61	1.45	1.45	2.89
2	Standoff Arms	1.9" ODx0.12"	Beam	Pipe	A500 Gr.46	Typical	.671	.267	.267	.534
3	Diagonal	0.63" SR	None	None	A529 Gr.50	Typical	.312	.008	.008	.015
4	Mount Pipe	2.88"x0.120"	Column	Pipe	A500 Gr.46	Typical	1.04	.993	.993	1.985

Hot Rolled Steel Section Sets (Continued)

	Label	Shape	Type	Design List	Material	Design Rules	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
5	Tie Back	Pipe2.38X0....	None	None	A500 Gr.46	Typical	.852	.545	.545	1.091
6	End Support...	3.5"x0.120	None	None	A500 Gr.46	Typical	1.274	1.822	1.822	3.644
7	Standoff Ver...	0.63" SR	None	None	A529 Gr.50	Typical	.312	.008	.008	.015

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(...
1	Self Weight	DL		-1			9			
2	Wind Load AZI 0	WLZ					18			
3	Wind Load AZI 30	None					18			
4	Wind Load AZI 60	None					18			
5	Wind Load AZI 90	WLX					18			
6	Wind Load AZI 120	None					18			
7	Wind Load AZI 150	None					18			
8	Wind Load AZI 180	None					18			
9	Wind Load AZI 210	None					18			
10	Wind Load AZI 240	None					18			
11	Wind Load AZI 270	None					18			
12	Wind Load AZI 300	None					18			
13	Wind Load AZI 330	None					18			
14	Distr. Wind Load Z	WLZ						27		
15	Distr. Wind Load X	WLX						27		
16	Ice Weight	OL1					9	27		
17	Ice Wind Load AZI 0	OL2					18			
18	Ice Wind Load AZI 30	None					18			
19	Ice Wind Load AZI 60	None					18			
20	Ice Wind Load AZI 90	OL3					18			
21	Ice Wind Load AZI 120	None					18			
22	Ice Wind Load AZI 150	None					18			
23	Ice Wind Load AZI 180	None					18			
24	Ice Wind Load AZI 210	None					18			
25	Ice Wind Load AZI 240	None					18			
26	Ice Wind Load AZI 270	None					18			
27	Ice Wind Load AZI 300	None					18			
28	Ice Wind Load AZI 330	None					18			
29	Distr. Ice Wind Load Z	OL2						27		
30	Distr. Ice Wind Load X	OL3						27		
31	Seismic Load Z	ELZ			-.312		9			
32	Seismic Load X	ELX	-.312				9			
33	Service Live Loads	LL				1				
34	Maintenance Load 1	LL				1				
35	Maintenance Load 2	LL				1				
36	Maintenance Load 3	LL				1				

Load Combinations

	Description	S...	P...	S...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...
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												

Load Combinations (Continued)

	Description	S...	P...	S...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...
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 120	Yes	Y		1	1.2	16	1	21	1	29	-.5	30	.866												
32	1.2D + 1.0Di +1.0Wi AZI 150	Yes	Y		1	1.2	16	1	22	1	29	-.866	30	.5												
33	1.2D + 1.0Di +1.0Wi AZI 180	Yes	Y		1	1.2	16	1	23	1	29	-1	30													
34	1.2D + 1.0Di +1.0Wi AZI 210	Yes	Y		1	1.2	16	1	24	1	29	-.866	30	-.5												
35	1.2D + 1.0Di +1.0Wi AZI 240	Yes	Y		1	1.2	16	1	25	1	29	-.5	30	-.866												
36	1.2D + 1.0Di +1.0Wi AZI 270	Yes	Y		1	1.2	16	1	26	1	29		30	-1												
37	1.2D + 1.0Di +1.0Wi AZI 300	Yes	Y		1	1.2	16	1	27	1	29	.5	30	-.866												
38	1.2D + 1.0Di +1.0Wi AZI 330	Yes	Y		1	1.2	16	1	28	1	29	.866	30	-.5												
39	(1.2 + 0.2Sds)DL + 1.0E A...	Yes	Y		1	1.2...	31	1	32																	
40	(1.2 + 0.2Sds)DL + 1.0E A...	Yes	Y		1	1.2...	31	.866	32	.5																
41	(1.2 + 0.2Sds)DL + 1.0E A...	Yes	Y		1	1.2...	31	.5	32	.866																
42	(1.2 + 0.2Sds)DL + 1.0E A...	Yes	Y		1	1.2...	31		32	1																
43	(1.2 + 0.2Sds)DL + 1.0E A...	Yes	Y		1	1.2...	31	-.5	32	.866																
44	(1.2 + 0.2Sds)DL + 1.0E A...	Yes	Y		1	1.2...	31	-.866	32	.5																
45	(1.2 + 0.2Sds)DL + 1.0E A...	Yes	Y		1	1.2...	31	-1	32																	
46	(1.2 + 0.2Sds)DL + 1.0E A...	Yes	Y		1	1.2...	31	-.866	32	-.5																
47	(1.2 + 0.2Sds)DL + 1.0E A...	Yes	Y		1	1.2...	31	-.5	32	-.866																
48	(1.2 + 0.2Sds)DL + 1.0E A...	Yes	Y		1	1.2...	31		32	-1																
49	(1.2 + 0.2Sds)DL + 1.0E A...	Yes	Y		1	1.2...	31	.5	32	-.866																
50	(1.2 + 0.2Sds)DL + 1.0E A...	Yes	Y		1	1.2...	31	.866	32	-.5																
51	(0.9 - 0.2Sds)DL + 1.0E AZ...	Yes	Y		1	.858	31	1	32																	
52	(0.9 - 0.2Sds)DL + 1.0E AZ...	Yes	Y		1	.858	31	.866	32	.5																
53	(0.9 - 0.2Sds)DL + 1.0E AZ...	Yes	Y		1	.858	31	.5	32	.866																
54	(0.9 - 0.2Sds)DL + 1.0E AZ...	Yes	Y		1	.858	31		32	1																
55	(0.9 - 0.2Sds)DL + 1.0E AZ...	Yes	Y		1	.858	31	-.5	32	.866																
56	(0.9 - 0.2Sds)DL + 1.0E AZ...	Yes	Y		1	.858	31	-.866	32	.5																

Load Combinations (Continued)

	Description	S...	P...	S...	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac...
57	(0.9 - 0.2Sds)DL + 1.0E AZ...	Yes	Y		1	.858	31	-1	32																	
58	(0.9 - 0.2Sds)DL + 1.0E AZ...	Yes	Y		1	.858	31	-.866	32	-.5																
59	(0.9 - 0.2Sds)DL + 1.0E AZ...	Yes	Y		1	.858	31	-.5	32	-.866																
60	(0.9 - 0.2Sds)DL + 1.0E AZ...	Yes	Y		1	.858	31		32	-1																
61	(0.9 - 0.2Sds)DL + 1.0E AZ...	Yes	Y		1	.858	31	.5	32	-.866																
62	(0.9 - 0.2Sds)DL + 1.0E AZ...	Yes	Y		1	.858	31	.866	32	-.5																
63	1.0DL + 1.5LL + 1.0SWL (6...	Yes	Y		1	1	2	.23	14	.23	15		33	1.5												
64	1.0DL + 1.5LL + 1.0SWL (6...	Yes	Y		1	1	3	.23	14	.2	15	.115	33	1.5												
65	1.0DL + 1.5LL + 1.0SWL (6...	Yes	Y		1	1	4	.23	14	.115	15	.2	33	1.5												
66	1.0DL + 1.5LL + 1.0SWL (6...	Yes	Y		1	1	5	.23	14		15	.23	33	1.5												
67	1.0DL + 1.5LL + 1.0SWL (6...	Yes	Y		1	1	6	.23	14	-.115	15	.2	33	1.5												
68	1.0DL + 1.5LL + 1.0SWL (6...	Yes	Y		1	1	7	.23	14	-.2	15	.115	33	1.5												
69	1.0DL + 1.5LL + 1.0SWL (6...	Yes	Y		1	1	8	.23	14	-.23	15		33	1.5												
70	1.0DL + 1.5LL + 1.0SWL (6...	Yes	Y		1	1	9	.23	14	-.2	15	-.115	33	1.5												
71	1.0DL + 1.5LL + 1.0SWL (6...	Yes	Y		1	1	10	.23	14	-.115	15	-.2	33	1.5												
72	1.0DL + 1.5LL + 1.0SWL (6...	Yes	Y		1	1	11	.23	14		15	-.23	33	1.5												
73	1.0DL + 1.5LL + 1.0SWL (6...	Yes	Y		1	1	12	.23	14	.115	15	-.2	33	1.5												
74	1.0DL + 1.5LL + 1.0SWL (6...	Yes	Y		1	1	13	.23	14	.2	15	-.115	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	.058	14	.058	15													
77	1.2DL + 1.5LM-MP1 + 1S...	Yes	Y		1	1.2	34	1.5	3	.058	14	.05	15	.029												
78	1.2DL + 1.5LM-MP1 + 1S...	Yes	Y		1	1.2	34	1.5	4	.058	14	.029	15	.05												
79	1.2DL + 1.5LM-MP1 + 1S...	Yes	Y		1	1.2	34	1.5	5	.058	14		15	.058												
80	1.2DL + 1.5LM-MP1 + 1S...	Yes	Y		1	1.2	34	1.5	6	.058	14	-.029	15	.05												
81	1.2DL + 1.5LM-MP1 + 1S...	Yes	Y		1	1.2	34	1.5	7	.058	14	-.05	15	.029												
82	1.2DL + 1.5LM-MP1 + 1S...	Yes	Y		1	1.2	34	1.5	8	.058	14	-.058	15													
83	1.2DL + 1.5LM-MP1 + 1S...	Yes	Y		1	1.2	34	1.5	9	.058	14	-.05	15	-.029												
84	1.2DL + 1.5LM-MP1 + 1S...	Yes	Y		1	1.2	34	1.5	10	.058	14	-.029	15	-.05												
85	1.2DL + 1.5LM-MP1 + 1S...	Yes	Y		1	1.2	34	1.5	11	.058	14		15	-.058												
86	1.2DL + 1.5LM-MP1 + 1S...	Yes	Y		1	1.2	34	1.5	12	.058	14	.029	15	-.05												
87	1.2DL + 1.5LM-MP1 + 1S...	Yes	Y		1	1.2	34	1.5	13	.058	14	.05	15	-.029												
88	1.2DL + 1.5LM-MP2 + 1S...	Yes	Y		1	1.2	35	1.5	2	.058	14	.058	15													
89	1.2DL + 1.5LM-MP2 + 1S...	Yes	Y		1	1.2	35	1.5	3	.058	14	.05	15	.029												
90	1.2DL + 1.5LM-MP2 + 1S...	Yes	Y		1	1.2	35	1.5	4	.058	14	.029	15	.05												
91	1.2DL + 1.5LM-MP2 + 1S...	Yes	Y		1	1.2	35	1.5	5	.058	14		15	.058												
92	1.2DL + 1.5LM-MP2 + 1S...	Yes	Y		1	1.2	35	1.5	6	.058	14	-.029	15	.05												
93	1.2DL + 1.5LM-MP2 + 1S...	Yes	Y		1	1.2	35	1.5	7	.058	14	-.05	15	.029												
94	1.2DL + 1.5LM-MP2 + 1S...	Yes	Y		1	1.2	35	1.5	8	.058	14	-.058	15													
95	1.2DL + 1.5LM-MP2 + 1S...	Yes	Y		1	1.2	35	1.5	9	.058	14	-.05	15	-.029												
96	1.2DL + 1.5LM-MP2 + 1S...	Yes	Y		1	1.2	35	1.5	10	.058	14	-.029	15	-.05												
97	1.2DL + 1.5LM-MP2 + 1S...	Yes	Y		1	1.2	35	1.5	11	.058	14		15	-.058												
98	1.2DL + 1.5LM-MP2 + 1S...	Yes	Y		1	1.2	35	1.5	12	.058	14	.029	15	-.05												
99	1.2DL + 1.5LM-MP2 + 1S...	Yes	Y		1	1.2	35	1.5	13	.058	14	.05	15	-.029												
100	1.2DL + 1.5LM-MP3 + 1S...	Yes	Y		1	1.2	36	1.5	2	.058	14	.058	15													
101	1.2DL + 1.5LM-MP3 + 1S...	Yes	Y		1	1.2	36	1.5	3	.058	14	.05	15	.029												
102	1.2DL + 1.5LM-MP3 + 1S...	Yes	Y		1	1.2	36	1.5	4	.058	14	.029	15	.05												
103	1.2DL + 1.5LM-MP3 + 1S...	Yes	Y		1	1.2	36	1.5	5	.058	14		15	.058												
104	1.2DL + 1.5LM-MP3 + 1S...	Yes	Y		1	1.2	36	1.5	6	.058	14	-.029	15	.05												
105	1.2DL + 1.5LM-MP3 + 1S...	Yes	Y		1	1.2	36	1.5	7	.058	14	-.05	15	.029												
106	1.2DL + 1.5LM-MP3 + 1S...	Yes	Y		1	1.2	36	1.5	8	.058	14	-.058	15													
107	1.2DL + 1.5LM-MP3 + 1S...	Yes	Y		1	1.2	36	1.5	9	.058	14	-.05	15	-.029												
108	1.2DL + 1.5LM-MP3 + 1S...	Yes	Y		1	1.2	36	1.5	10	.058	14	-.029	15	-.05												

Load Combinations (Continued)

	Description	S...	P...	S...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...
109	1.2DL + 1.5LM-MP3 + 1S...	Yes	Y		1	1.2	36	1.5	11	.058	14		15	-.058											
110	1.2DL + 1.5LM-MP3 + 1S...	Yes	Y		1	1.2	36	1.5	12	.058	14	.029	15	-.05											

Joint Boundary Conditions

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
1	N1						
2	N6						
3	N38						
4	N43	Reaction	Reaction	Reaction			
5	N44	Reaction	Reaction	Reaction			
6	N44A	Reaction	Reaction	Reaction			

Envelope Joint Reactions

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
1	N43	max	832.572	78	911.508	28	2079.644	25	0	110	0	110	0	110
2		min	-1661.539	96	233.814	20	-3762.266	7	0	1	0	1	0	1
3	N44	max	1612.16	91	870.45	34	2219.681	27	0	110	0	110	0	110
4		min	-782.687	85	227.15	14	585.574	19	0	1	0	1	0	1
5	N44A	max	174.872	6	34.794	37	1352.223	7	0	110	0	110	0	110
6		min	-176.213	12	9.922	55	-1357.094	25	0	1	0	1	0	1
7	Totals:	max	1158.235	17	1806.664	30	1991.438	14						
8		min	-1158.235	11	584.406	53	-1991.437	20						

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

	Joint Label	L,D,M	Direction	Magnitude[(lb,lb-ft), (in,rad), (lb*s^...
1	N18	L	Y	-250

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

	Joint Label	L,D,M	Direction	Magnitude[(lb,lb-ft), (in,rad), (lb*s^...
1	N69	L	Y	-500

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

	Joint Label	L,D,M	Direction	Magnitude[(lb,lb-ft), (in,rad), (lb*s^...
1	N70	L	Y	-500

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

	Joint Label	L,D,M	Direction	Magnitude[(lb,lb-ft), (in,rad), (lb*s^...
1	N74	L	Y	-500

Member Point Loads (BLC 1 : Self Weight)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	Y	-32.25	0
2	MP1	Y	-32.25	72
3	MP1	Y	-74.95	12

Member Point Loads (BLC 1 : Self Weight) (Continued)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
4	MP1	Y	-63.93	12
5	MP1	Y	-21.85	12
6	MP2	Y	-32.25	0
7	MP2	Y	-32.25	72
8	MP2	Y	-74.95	12
9	MP2	Y	-63.93	12

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	0	0
2	MP1	Z	-189.39	0
3	MP1	X	0	72
4	MP1	Z	-189.39	72
5	MP1	X	0	12
6	MP1	Z	-92.85	12
7	MP1	X	0	12
8	MP1	Z	-92.85	12
9	MP1	X	0	12
10	MP1	Z	-88.27	12
11	MP2	X	0	0
12	MP2	Z	-189.39	0
13	MP2	X	0	72
14	MP2	Z	-189.39	72
15	MP2	X	0	12
16	MP2	Z	-92.85	12
17	MP2	X	0	12
18	MP2	Z	-92.85	12

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	-80.51	0
2	MP1	Z	-139.44	0
3	MP1	X	-80.51	72
4	MP1	Z	-139.44	72
5	MP1	X	-41.85	12
6	MP1	Z	-72.48	12
7	MP1	X	-40.92	12
8	MP1	Z	-70.88	12
9	MP1	X	-39.41	12
10	MP1	Z	-68.25	12
11	MP2	X	-80.51	0
12	MP2	Z	-139.44	0
13	MP2	X	-80.51	72
14	MP2	Z	-139.44	72
15	MP2	X	-41.85	12
16	MP2	Z	-72.48	12
17	MP2	X	-40.92	12
18	MP2	Z	-70.88	12

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

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

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	-90.3	0
2	MP1	Z	-52.13	0
3	MP1	X	-90.3	72
4	MP1	Z	-52.13	72
5	MP1	X	-56.63	12
6	MP1	Z	-32.69	12
7	MP1	X	-51.83	12
8	MP1	Z	-29.92	12
9	MP1	X	-51.87	12
10	MP1	Z	-29.95	12
11	MP2	X	-90.3	0
12	MP2	Z	-52.13	0
13	MP2	X	-90.3	72
14	MP2	Z	-52.13	72
15	MP2	X	-56.63	12
16	MP2	Z	-32.69	12
17	MP2	X	-51.83	12
18	MP2	Z	-29.92	12

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	-75.9	0
2	MP1	Z	0	0
3	MP1	X	-75.9	72
4	MP1	Z	0	72
5	MP1	X	-56.23	12
6	MP1	Z	0	12
7	MP1	X	-48.85	12
8	MP1	Z	0	12
9	MP1	X	-50.44	12
10	MP1	Z	0	12
11	MP2	X	-75.9	0
12	MP2	Z	0	0
13	MP2	X	-75.9	72
14	MP2	Z	0	72
15	MP2	X	-56.23	12
16	MP2	Z	0	12
17	MP2	X	-48.85	12
18	MP2	Z	0	12

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	-90.3	0
2	MP1	Z	52.13	0
3	MP1	X	-90.3	72
4	MP1	Z	52.13	72
5	MP1	X	-56.63	12
6	MP1	Z	32.69	12
7	MP1	X	-51.83	12
8	MP1	Z	29.92	12
9	MP1	X	-51.87	12

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
10	MP1	Z	29.95	12
11	MP2	X	-90.3	0
12	MP2	Z	52.13	0
13	MP2	X	-90.3	72
14	MP2	Z	52.13	72
15	MP2	X	-56.63	12
16	MP2	Z	32.69	12
17	MP2	X	-51.83	12
18	MP2	Z	29.92	12

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	-80.51	0
2	MP1	Z	139.44	0
3	MP1	X	-80.51	72
4	MP1	Z	139.44	72
5	MP1	X	-41.85	12
6	MP1	Z	72.48	12
7	MP1	X	-40.92	12
8	MP1	Z	70.88	12
9	MP1	X	-39.41	12
10	MP1	Z	68.25	12
11	MP2	X	-80.51	0
12	MP2	Z	139.44	0
13	MP2	X	-80.51	72
14	MP2	Z	139.44	72
15	MP2	X	-41.85	12
16	MP2	Z	72.48	12
17	MP2	X	-40.92	12
18	MP2	Z	70.88	12

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	0	0
2	MP1	Z	189.39	0
3	MP1	X	0	72
4	MP1	Z	189.39	72
5	MP1	X	0	12
6	MP1	Z	92.85	12
7	MP1	X	0	12
8	MP1	Z	92.85	12
9	MP1	X	0	12
10	MP1	Z	88.27	12
11	MP2	X	0	0
12	MP2	Z	189.39	0
13	MP2	X	0	72
14	MP2	Z	189.39	72
15	MP2	X	0	12
16	MP2	Z	92.85	12
17	MP2	X	0	12
18	MP2	Z	92.85	12

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	80.51	0
2	MP1	Z	139.44	0
3	MP1	X	80.51	72
4	MP1	Z	139.44	72
5	MP1	X	41.85	12
6	MP1	Z	72.48	12
7	MP1	X	40.92	12
8	MP1	Z	70.88	12
9	MP1	X	39.41	12
10	MP1	Z	68.25	12
11	MP2	X	80.51	0
12	MP2	Z	139.44	0
13	MP2	X	80.51	72
14	MP2	Z	139.44	72
15	MP2	X	41.85	12
16	MP2	Z	72.48	12
17	MP2	X	40.92	12
18	MP2	Z	70.88	12

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	90.3	0
2	MP1	Z	52.13	0
3	MP1	X	90.3	72
4	MP1	Z	52.13	72
5	MP1	X	56.63	12
6	MP1	Z	32.69	12
7	MP1	X	51.83	12
8	MP1	Z	29.92	12
9	MP1	X	51.87	12
10	MP1	Z	29.95	12
11	MP2	X	90.3	0
12	MP2	Z	52.13	0
13	MP2	X	90.3	72
14	MP2	Z	52.13	72
15	MP2	X	56.63	12
16	MP2	Z	32.69	12
17	MP2	X	51.83	12
18	MP2	Z	29.92	12

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	75.9	0
2	MP1	Z	0	0
3	MP1	X	75.9	72
4	MP1	Z	0	72
5	MP1	X	56.23	12
6	MP1	Z	0	12
7	MP1	X	48.85	12
8	MP1	Z	0	12
9	MP1	X	50.44	12

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
10	MP1	Z	0	12
11	MP2	X	75.9	0
12	MP2	Z	0	0
13	MP2	X	75.9	72
14	MP2	Z	0	72
15	MP2	X	56.23	12
16	MP2	Z	0	12
17	MP2	X	48.85	12
18	MP2	Z	0	12

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	90.3	0
2	MP1	Z	-52.13	0
3	MP1	X	90.3	72
4	MP1	Z	-52.13	72
5	MP1	X	56.63	12
6	MP1	Z	-32.69	12
7	MP1	X	51.83	12
8	MP1	Z	-29.92	12
9	MP1	X	51.87	12
10	MP1	Z	-29.95	12
11	MP2	X	90.3	0
12	MP2	Z	-52.13	0
13	MP2	X	90.3	72
14	MP2	Z	-52.13	72
15	MP2	X	56.63	12
16	MP2	Z	-32.69	12
17	MP2	X	51.83	12
18	MP2	Z	-29.92	12

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	80.51	0
2	MP1	Z	-139.44	0
3	MP1	X	80.51	72
4	MP1	Z	-139.44	72
5	MP1	X	41.85	12
6	MP1	Z	-72.48	12
7	MP1	X	40.92	12
8	MP1	Z	-70.88	12
9	MP1	X	39.41	12
10	MP1	Z	-68.25	12
11	MP2	X	80.51	0
12	MP2	Z	-139.44	0
13	MP2	X	80.51	72
14	MP2	Z	-139.44	72
15	MP2	X	41.85	12
16	MP2	Z	-72.48	12
17	MP2	X	40.92	12
18	MP2	Z	-70.88	12

Member Point Loads (BLC 16 : Ice Weight)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	Y	-92.376	0
2	MP1	Y	-92.376	72
3	MP1	Y	-46.554	12
4	MP1	Y	-43.565	12
5	MP1	Y	-42.45	12
6	MP2	Y	-92.376	0
7	MP2	Y	-92.376	72
8	MP2	Y	-46.554	12
9	MP2	Y	-43.565	12

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	0	0
2	MP1	Z	-22.8	0
3	MP1	X	0	72
4	MP1	Z	-22.8	72
5	MP1	X	0	12
6	MP1	Z	-8.23	12
7	MP1	X	0	12
8	MP1	Z	-8.23	12
9	MP1	X	0	12
10	MP1	Z	-7.88	12
11	MP2	X	0	0
12	MP2	Z	-22.8	0
13	MP2	X	0	72
14	MP2	Z	-22.8	72
15	MP2	X	0	12
16	MP2	Z	-8.23	12
17	MP2	X	0	12
18	MP2	Z	-8.23	12

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	-10.38	0
2	MP1	Z	-17.98	0
3	MP1	X	-10.38	72
4	MP1	Z	-17.98	72
5	MP1	X	-3.88	12
6	MP1	Z	-6.72	12
7	MP1	X	-3.84	12
8	MP1	Z	-6.65	12
9	MP1	X	-3.72	12
10	MP1	Z	-6.45	12
11	MP2	X	-10.38	0
12	MP2	Z	-17.98	0
13	MP2	X	-10.38	72
14	MP2	Z	-17.98	72
15	MP2	X	-3.88	12
16	MP2	Z	-6.72	12
17	MP2	X	-3.84	12
18	MP2	Z	-6.65	12

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	-14.45	0
2	MP1	Z	-8.34	0
3	MP1	X	-14.45	72
4	MP1	Z	-8.34	72
5	MP1	X	-5.92	12
6	MP1	Z	-3.42	12
7	MP1	X	-5.7	12
8	MP1	Z	-3.29	12
9	MP1	X	-5.7	12
10	MP1	Z	-3.29	12
11	MP2	X	-14.45	0
12	MP2	Z	-8.34	0
13	MP2	X	-14.45	72
14	MP2	Z	-8.34	72
15	MP2	X	-5.92	12
16	MP2	Z	-3.42	12
17	MP2	X	-5.7	12
18	MP2	Z	-3.29	12

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	-14.65	0
2	MP1	Z	0	0
3	MP1	X	-14.65	72
4	MP1	Z	0	72
5	MP1	X	-6.38	12
6	MP1	Z	0	12
7	MP1	X	-6.03	12
8	MP1	Z	0	12
9	MP1	X	-6.15	12
10	MP1	Z	0	12
11	MP2	X	-14.65	0
12	MP2	Z	0	0
13	MP2	X	-14.65	72
14	MP2	Z	0	72
15	MP2	X	-6.38	12
16	MP2	Z	0	12
17	MP2	X	-6.03	12
18	MP2	Z	0	12

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	-14.45	0
2	MP1	Z	8.34	0
3	MP1	X	-14.45	72
4	MP1	Z	8.34	72
5	MP1	X	-5.92	12
6	MP1	Z	3.42	12
7	MP1	X	-5.7	12
8	MP1	Z	3.29	12
9	MP1	X	-5.7	12

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
10	MP1	Z	3.29	12
11	MP2	X	-14.45	0
12	MP2	Z	8.34	0
13	MP2	X	-14.45	72
14	MP2	Z	8.34	72
15	MP2	X	-5.92	12
16	MP2	Z	3.42	12
17	MP2	X	-5.7	12
18	MP2	Z	3.29	12

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	-10.38	0
2	MP1	Z	17.98	0
3	MP1	X	-10.38	72
4	MP1	Z	17.98	72
5	MP1	X	-3.88	12
6	MP1	Z	6.72	12
7	MP1	X	-3.84	12
8	MP1	Z	6.65	12
9	MP1	X	-3.72	12
10	MP1	Z	6.45	12
11	MP2	X	-10.38	0
12	MP2	Z	17.98	0
13	MP2	X	-10.38	72
14	MP2	Z	17.98	72
15	MP2	X	-3.88	12
16	MP2	Z	6.72	12
17	MP2	X	-3.84	12
18	MP2	Z	6.65	12

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	0	0
2	MP1	Z	22.8	0
3	MP1	X	0	72
4	MP1	Z	22.8	72
5	MP1	X	0	12
6	MP1	Z	8.23	12
7	MP1	X	0	12
8	MP1	Z	8.23	12
9	MP1	X	0	12
10	MP1	Z	7.88	12
11	MP2	X	0	0
12	MP2	Z	22.8	0
13	MP2	X	0	72
14	MP2	Z	22.8	72
15	MP2	X	0	12
16	MP2	Z	8.23	12
17	MP2	X	0	12
18	MP2	Z	8.23	12

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	10.38	0
2	MP1	Z	17.98	0
3	MP1	X	10.38	72
4	MP1	Z	17.98	72
5	MP1	X	3.88	12
6	MP1	Z	6.72	12
7	MP1	X	3.84	12
8	MP1	Z	6.65	12
9	MP1	X	3.72	12
10	MP1	Z	6.45	12
11	MP2	X	10.38	0
12	MP2	Z	17.98	0
13	MP2	X	10.38	72
14	MP2	Z	17.98	72
15	MP2	X	3.88	12
16	MP2	Z	6.72	12
17	MP2	X	3.84	12
18	MP2	Z	6.65	12

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	14.45	0
2	MP1	Z	8.34	0
3	MP1	X	14.45	72
4	MP1	Z	8.34	72
5	MP1	X	5.92	12
6	MP1	Z	3.42	12
7	MP1	X	5.7	12
8	MP1	Z	3.29	12
9	MP1	X	5.7	12
10	MP1	Z	3.29	12
11	MP2	X	14.45	0
12	MP2	Z	8.34	0
13	MP2	X	14.45	72
14	MP2	Z	8.34	72
15	MP2	X	5.92	12
16	MP2	Z	3.42	12
17	MP2	X	5.7	12
18	MP2	Z	3.29	12

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	14.65	0
2	MP1	Z	0	0
3	MP1	X	14.65	72
4	MP1	Z	0	72
5	MP1	X	6.38	12
6	MP1	Z	0	12
7	MP1	X	6.03	12
8	MP1	Z	0	12
9	MP1	X	6.15	12

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
10	MP1	Z	0	12
11	MP2	X	14.65	0
12	MP2	Z	0	0
13	MP2	X	14.65	72
14	MP2	Z	0	72
15	MP2	X	6.38	12
16	MP2	Z	0	12
17	MP2	X	6.03	12
18	MP2	Z	0	12

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	14.45	0
2	MP1	Z	-8.34	0
3	MP1	X	14.45	72
4	MP1	Z	-8.34	72
5	MP1	X	5.92	12
6	MP1	Z	-3.42	12
7	MP1	X	5.7	12
8	MP1	Z	-3.29	12
9	MP1	X	5.7	12
10	MP1	Z	-3.29	12
11	MP2	X	14.45	0
12	MP2	Z	-8.34	0
13	MP2	X	14.45	72
14	MP2	Z	-8.34	72
15	MP2	X	5.92	12
16	MP2	Z	-3.42	12
17	MP2	X	5.7	12
18	MP2	Z	-3.29	12

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	10.38	0
2	MP1	Z	-17.98	0
3	MP1	X	10.38	72
4	MP1	Z	-17.98	72
5	MP1	X	3.88	12
6	MP1	Z	-6.72	12
7	MP1	X	3.84	12
8	MP1	Z	-6.65	12
9	MP1	X	3.72	12
10	MP1	Z	-6.45	12
11	MP2	X	10.38	0
12	MP2	Z	-17.98	0
13	MP2	X	10.38	72
14	MP2	Z	-17.98	72
15	MP2	X	3.88	12
16	MP2	Z	-6.72	12
17	MP2	X	3.84	12
18	MP2	Z	-6.65	12

Member Point Loads (BLC 31 : Seismic Load Z)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	Z	-10.062	0
2	MP1	Z	-10.062	72
3	MP1	Z	-23.384	12
4	MP1	Z	-19.946	12
5	MP1	Z	-6.817	12
6	MP2	Z	-10.062	0
7	MP2	Z	-10.062	72
8	MP2	Z	-23.384	12
9	MP2	Z	-19.946	12

Member Point Loads (BLC 32 : Seismic Load X)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	-10.062	0
2	MP1	X	-10.062	72
3	MP1	X	-23.384	12
4	MP1	X	-19.946	12
5	MP1	X	-6.817	12
6	MP2	X	-10.062	0
7	MP2	X	-10.062	72
8	MP2	X	-23.384	12
9	MP2	X	-19.946	12

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

	Member Label	Direction	Start Magnitude[lb/ft,F,psf]	End Magnitude[lb/ft,F,psf]	Start Location[in,...	End Location[in,...
1	S3	SZ	-63.05	-63.05	0	%100
2	S4	SZ	-63.05	-63.05	0	%100
3	TR6	SZ	-63.05	-63.05	0	%100
4	TR5	SZ	-63.05	-63.05	0	%100
5	TR8	SZ	-63.05	-63.05	0	%100
6	TR7	SZ	-63.05	-63.05	0	%100
7	S1	SZ	-63.05	-63.05	0	%100
8	S2	SZ	-63.05	-63.05	0	%100
9	TR1	SZ	-63.05	-63.05	0	%100
10	TR2	SZ	-63.05	-63.05	0	%100
11	TR3	SZ	-63.05	-63.05	0	%100
12	TR4	SZ	-63.05	-63.05	0	%100
13	H1	SZ	-63.05	-63.05	0	%100
14	H2	SZ	-63.05	-63.05	0	%100
15	MP3	SZ	-63.05	-63.05	0	%100
16	MP1	SZ	-63.05	-63.05	0	%100
17	MP2	SZ	-63.05	-63.05	0	%100
18	T1	SZ	-63.05	-63.05	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

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

	Member Label	Direction	Start Magnitude[lb/ft,F,psf]	End Magnitude[lb/ft,F,psf]	Start Location[in,..	End Location[in,...
27	M27	SZ	0	0	0	%100

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

	Member Label	Direction	Start Magnitude[lb/ft,F,psf]	End Magnitude[lb/ft,F,psf]	Start Location[in,..	End Location[in,...
1	S3	SX	-63.05	-63.05	0	%100
2	S4	SX	-63.05	-63.05	0	%100
3	TR6	SX	-63.05	-63.05	0	%100
4	TR5	SX	-63.05	-63.05	0	%100
5	TR8	SX	-63.05	-63.05	0	%100
6	TR7	SX	-63.05	-63.05	0	%100
7	S1	SX	-63.05	-63.05	0	%100
8	S2	SX	-63.05	-63.05	0	%100
9	TR1	SX	-63.05	-63.05	0	%100
10	TR2	SX	-63.05	-63.05	0	%100
11	TR3	SX	-63.05	-63.05	0	%100
12	TR4	SX	-63.05	-63.05	0	%100
13	H1	SX	-63.05	-63.05	0	%100
14	H2	SX	-63.05	-63.05	0	%100
15	MP3	SX	-63.05	-63.05	0	%100
16	MP1	SX	-63.05	-63.05	0	%100
17	MP2	SX	-63.05	-63.05	0	%100
18	T1	SX	-63.05	-63.05	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

Member Distributed Loads (BLC 16 : Ice Weight)

	Member Label	Direction	Start Magnitude[lb/ft,F,psf]	End Magnitude[lb/ft,F,psf]	Start Location[in,..	End Location[in,...
1	S3	Y	-4.401	-4.401	0	%100
2	S4	Y	-4.401	-4.401	0	%100
3	TR6	Y	-2.582	-2.582	0	%100
4	TR5	Y	-2.582	-2.582	0	%100
5	TR8	Y	-2.582	-2.582	0	%100
6	TR7	Y	-2.582	-2.582	0	%100
7	S1	Y	-4.401	-4.401	0	%100
8	S2	Y	-4.401	-4.401	0	%100
9	TR1	Y	-2.582	-2.582	0	%100
10	TR2	Y	-2.582	-2.582	0	%100
11	TR3	Y	-2.582	-2.582	0	%100
12	TR4	Y	-2.582	-2.582	0	%100
13	H1	Y	-5.798	-5.798	0	%100
14	H2	Y	-5.798	-5.798	0	%100
15	MP3	Y	-5.805	-5.805	0	%100
16	MP1	Y	-5.805	-5.805	0	%100
17	MP2	Y	-5.805	-5.805	0	%100

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

	Member Label	Direction	Start Magnitude[lb/ft,F,psf]	End Magnitude[lb/ft,F,psf]	Start Location[in,..	End Location[in,...
18	T1	Y	-5.089	-5.089	0	%100
19	M29	Y	-1.679	-1.679	0	%100
20	M30	Y	-1.679	-1.679	0	%100
21	M33	Y	-1.679	-1.679	0	%100
22	M34	Y	-1.679	-1.679	0	%100
23	M35	Y	-1.679	-1.679	0	%100
24	M36	Y	-1.679	-1.679	0	%100
25	M25	Y	-1.679	-1.679	0	%100
26	M26	Y	-1.679	-1.679	0	%100
27	M27	Y	-1.679	-1.679	0	%100

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

	Member Label	Direction	Start Magnitude[lb/ft,F,psf]	End Magnitude[lb/ft,F,psf]	Start Location[in,..	End Location[in,...
1	S3	SZ	-22.538	-22.538	0	%100
2	S4	SZ	-22.538	-22.538	0	%100
3	TR6	SZ	-47.637	-47.637	0	%100
4	TR5	SZ	-47.637	-47.637	0	%100
5	TR8	SZ	-47.637	-47.637	0	%100
6	TR7	SZ	-47.637	-47.637	0	%100
7	S1	SZ	-22.538	-22.538	0	%100
8	S2	SZ	-22.538	-22.538	0	%100
9	TR1	SZ	-47.637	-47.637	0	%100
10	TR2	SZ	-47.637	-47.637	0	%100
11	TR3	SZ	-47.637	-47.637	0	%100
12	TR4	SZ	-47.637	-47.637	0	%100
13	H1	SZ	-18.316	-18.316	0	%100
14	H2	SZ	-18.316	-18.316	0	%100
15	MP3	SZ	-18.302	-18.302	0	%100
16	MP1	SZ	-18.302	-18.302	0	%100
17	MP2	SZ	-18.302	-18.302	0	%100
18	T1	SZ	-20.027	-20.027	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

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

	Member Label	Direction	Start Magnitude[lb/ft,F,psf]	End Magnitude[lb/ft,F,psf]	Start Location[in,..	End Location[in,...
1	S3	SX	-22.538	-22.538	0	%100
2	S4	SX	-22.538	-22.538	0	%100
3	TR6	SX	-47.637	-47.637	0	%100
4	TR5	SX	-47.637	-47.637	0	%100
5	TR8	SX	-47.637	-47.637	0	%100
6	TR7	SX	-47.637	-47.637	0	%100
7	S1	SX	-22.538	-22.538	0	%100
8	S2	SX	-22.538	-22.538	0	%100

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

	Member Label	Direction	Start Magnitude[lb/ft,F,psf]	End Magnitude[lb/ft,F,psf]	Start Location[in,..	End Location[in,...
9	TR1	SX	-47.637	-47.637	0	%100
10	TR2	SX	-47.637	-47.637	0	%100
11	TR3	SX	-47.637	-47.637	0	%100
12	TR4	SX	-47.637	-47.637	0	%100
13	H1	SX	-18.316	-18.316	0	%100
14	H2	SX	-18.316	-18.316	0	%100
15	MP3	SX	-18.302	-18.302	0	%100
16	MP1	SX	-18.302	-18.302	0	%100
17	MP2	SX	-18.302	-18.302	0	%100
18	T1	SX	-20.027	-20.027	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

Member Area Loads

Joint A	Joint B	Joint C	Joint D	Direction	Distribution	Magnitude[psf]
No Data to Print ...						

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

	Member	Shape	Code Check	Loc[in]	LC	Shear ...	Loc[in]	Dir	LC	phi*Pnc ...	phi*Pnt [lb]	phi*Mn y-y ...	phi*Mn z-z [l...	Cb	Eqn
1	TR7	0.63" SR	.452	39.811	99	.030	19.905		85	4409.088	14027.625	147.295	147.295	2.275	H1-1a
2	S4	1.9" O...	.443	35.333	95	.151	42.4		94	20499.0...	27779.4	1314.45	1314.45	1.826	H1-1b
3	S3	1.9" O...	.425	35.333	95	.154	42.4		27	20499.0...	27779.4	1314.45	1314.45	1.828	H1-1b
4	TR4	0.63" SR	.353	39.811	76	.038	19.905		30	4409.088	14027.625	147.295	147.295	2.289	H1-1a
5	MP1	2.88"x0...	.342	33	8	.099	33		8	22493.3...	43056	3156.75	3156.75	3.456	H1-1b
6	S2	1.9" O...	.338	35.333	82	.134	42.4		82	20499.0...	27779.4	1314.45	1314.45	1.831	H1-1b
7	S1	1.9" O...	.328	35.333	81	.135	42.4		76	20499.0...	27779.4	1314.45	1314.45	1.832	H1-1b
8	MP2	2.88"x0...	.292	33	8	.046	33		8	22493.3...	43056	3156.75	3156.75	3.717	H1-1b
9	T1	Pipe2.3...	.211	96.255	7	.010	96.255		6	13288.9...	35272.8	2114.85	2114.85	1.136	H1-1b
10	H1	PIPE_...	.207	77	8	.099	18		13	33487.3...	66654	4726.5	4726.5	1.627	H1-1b
11	TR8	0.63" SR	.174	0	95	.030	19.905		81	2249.534	14027.625	147.295	147.295	2.274	H1-1b
12	TR5	0.63" SR	.161	0	33	.034	28.3		98	5162.835	14027.625	147.295	147.295	2.248	H1-1b
13	TR2	0.63" SR	.146	0	32	.036	28.3		98	5162.835	14027.625	147.295	147.295	2.272	H1-1b
14	TR3	0.63" SR	.141	0	81	.037	19.905		36	2249.534	14027.625	147.295	147.295	2.293	H1-1b
15	H2	PIPE_...	.104	48	104	.050	78		95	33487.3...	66654	4726.5	4726.5	1.681	H1-1b
16	MP3	2.88"x0...	.099	33	82	.022	33		81	22493.3...	43056	3156.75	3156.75	4.511	H1-1b
17	TR6	0.63" SR	.086	0	94	.017	0		96	5162.835	14027.625	147.295	147.295	2.26	H1-1b
18	TR1	0.63" SR	.064	0	81	.015	0		98	5162.835	14027.625	147.295	147.295	2.267	H1-1b

INFINIGY

FROM ZERO TO INFINIGY

the solutions are endless

Bolt Calculation Tool, V1.5.1

PROJECT DATA	
Site Name:	BOBOS00073B
Site Number:	BOBOS00073B
Connection Description:	Sector Frame to Tower Leg

MAXIMUM BOLT LOADS		
Bolt Tension:	1881.13	lbs
Bolt Shear:	912.82	lbs

WORST CASE BOLT LOADS[1]		
Bolt Tension:	1881.13	lbs
Bolt Shear:	206.52	lbs

BOLT PROPERTIES		
Bolt Type:	Threaded Rod	-
Bolt Diameter:	0.625	in
Bolt Grade:	A449	-
# of Threaded Rods:	2	-
Threads Excluded?	No	-

[1] *Worst case bolt loads correspond to Load combination #7 on member M25 in RISA-3D, which causes the maximum demand on the bolts.*

Member Information
I nodes of M25, M26

BOLT CHECK		
Tensile Strength	20340.15	
Shear Strength	13805.83	
Max Tensile Usage	9.2%	
Max Shear Usage	6.6%	
Interaction Check (Worst Case)	0.01	***≤1.05***
Result	Pass	

INFINIGY
FROM ZERO TO INFINIGY
the solutions are endless

Bolt Calculation Tool, V1.5.1

PROJECT DATA	
Site Name:	BOBOS00073B
Site Number:	BOBOS00073B
Connection Description:	Tieback to Tower Leg

MAXIMUM BOLT LOADS		
Bolt Tension:	88.11	lbs
Bolt Shear:	677.89	lbs

WORST CASE BOLT LOADS[1]		
Bolt Tension:	83.65	lbs
Bolt Shear:	677.89	lbs

BOLT PROPERTIES		
Bolt Type:	Threaded Rod	-
Bolt Diameter:	0.5	in
Bolt Grade:	A449	-
# of Threaded Rods:	2	-
Threads Excluded?	No	-

[1] *Worst case bolt loads correspond to Load combination #13 on member M27 in RISA-3D, which causes the maximum demand on the bolts.*

Member Information
I nodes of M27

BOLT CHECK		
Tensile Strength	12770.86	
Shear Strength	8835.73	
Max Tensile Usage	0.7%	
Max Shear Usage	7.7%	
Interaction Check (Worst Case)	0.01	***≤1.05***
Result	Pass	

Exhibit F

Power Density/RF Emissions Report

Fox Hill Telecom

Radio Frequency Emissions Analysis Report

Site ID: BOBOS00073B

Montville CT
49 Cook Drive
Montville, CT 06382

August 9, 2022

Fox Hill Telecom Project Number: 221536

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**3.33 %**

Fox Hill Telecom

August 9, 2022

Dish Wireless
5701 South Santa Fe Drive
Littleton, CO 80120

Emissions Analysis for Site: **BOBOS00073B – Montville CT**

Fox Hill Telecom, Inc ("Fox Hill") was directed to analyze the proposed radio installation for Dish Wireless, LLC (Dish) facility located at **49 Cook Drive, Montville, CT**, for the purpose of determining whether the emissions from the Proposed Dish radio and 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 (μW/cm2). 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.

Population 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 & 700 MHz 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) and 2100 MHz (AWS / AWS-4) 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 performed for the proposed radio system installation for **Dish** on the subject site located at **49 Cook Drive, Montville, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since **Dish** 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 manufactures supplied specifications, minus 10 dB for directional panel antennas, 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.

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. All power values expressed and analyzed are maximum power levels expected to be used on all radios.

All emissions values for additional carriers were taken from the Connecticut Siting Council (CSC) active MPE database. Values in this database are provided by the individual carriers themselves. There is an additional tower on the property immediately adjacent to the subject tower. Contributions from this tower are included in the composite emissions total for the property.

For each sector the following channel counts, frequency bands and power levels were utilized as shown in *Table 1*:

Technology	Frequency Band	Channel Count	Transmit Power per Channel (W)
5G	n71 (600 MHz)	4	61.5
5G	n70 (AWS-4 / 1995-2020)	4	40
5G	n66 (AWS-4 / 2180-2200)	4	40

Table 1: Channel Data Table

The following antennas listed in *Table 2* were used in the modeling for transmission in the 600 MHz (n71) frequency band, and the 2100 MHz (AWS 4) frequency bands at 1995-2020 MHz (n70) and 2180-2200 MHz (n66). This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB for directional panel antennas, 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.

Sector	Antenna Number	Antenna Make / Model	Antenna Centerline (ft)
A	1	JMA MX08FRO665-21	162
A	2	JMA MX08FRO665-21	162
B	1	JMA MX08FRO665-21	162
B	2	JMA MX08FRO665-21	162
C	1	JMA MX08FRO665-21	162
C	2	JMA MX08FRO665-21	162

Table 2: Antenna Data

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

RESULTS

Per the calculations completed for the proposed **Dish** configurations *Table 3* shows resulting emissions power levels and percentages of the FCC's allowable general population limit.

Antenna ID	Antenna Make / Model	Frequency Bands	Antenna Gain (dBd)	Channel Count	Total TX Power (W)	ERP (W)	MPE %
Antenna A1	JMA MX08FRO665-21	n71 (600 MHz) / n70 (AWS-4 / 1995-2020) / n66 (AWS-4 / 2180-2200)	11.45 / 16.15 / 16.65	12	566	17,426.72	3.33
Antenna A2	JMA MX08FRO665-21	Dormant	N/A	N/A	N/A	N/A	N/A
						Sector A Composite MPE%	**3.33**
Antenna B1	JMA MX08FRO665-21	n71 (600 MHz) / n70 (AWS-4 / 1995-2020) / n66 (AWS-4 / 2180-2200)	11.45 / 16.15 / 16.65	12	566	17,426.72	3.33
Antenna B2	JMA MX08FRO665-21	Dormant	N/A	N/A	N/A	N/A	N/A
						Sector B Composite MPE%	**3.33**
Antenna C1	JMA MX08FRO665-21	n71 (600 MHz) / n70 (AWS-4 / 1995-2020) / n66 (AWS-4 / 2180-2200)	11.45 / 16.15 / 16.65	12	566	17,426.72	3.33
Antenna C2	JMA MX08FRO665-21	Dormant	N/A	N/A	N/A	N/A	N/A
						Sector C Composite MPE%	**3.33**

Table 3: Dish Emissions Levels

The Following table (*Table 4*) shows all additional carriers on site and their MPE% as recorded in the CSC active MPE database for this facility along with the newly calculated maximum **Dish** MPE contributions per this report. FCC OET 65 specifies that for carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. For this site, all three sectors have the same configuration yielding the same results on all three sectors. *Table 5* below shows a summary for each **Dish** Sector as well as the composite MPE value for the site.

Site Composite MPE%	
Carrier	**MPE%**
Dish – Max Per Sector Value	**3.33 %**
No Additional Carriers on This Tower	NA
Site Total MPE %:	**3.33 %**

Table 4: All Carrier MPE Contributions

Dish Sector A Total:	3.33 %
Dish Sector B Total:	3.33 %
Dish Sector C Total:	3.33 %
Site Total:	3.33 %

Table 5: Site MPE Summary

FCC OET 65 specifies that for carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. *Table 6* below details a breakdown by frequency band and technology for the MPE power values for the maximum calculated **Dish** sector(s). For this site, all three sectors have the same configuration yielding the same results on all three sectors.

Dish _ Frequency Band / Technology Max Power Values (Per Sector)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
Dish n71 (600 MHz) 5G	4	858.77	162	5.07	n71 (600 MHz)	400	1.27%
Dish n70 (AWS-4 / 1995-2020) 5G	4	1,648.39	162	9.74	n70 (AWS-4 / 1995-2020)	1000	0.97%
Dish n66 (AWS-4 / 2180-2200) 5G	4	1,849.52	162	10.93	n66 (AWS-4 / 2180-2200)	1000	1.09%
						Total:	**3.33%**

Table 6: Dish Maximum Sector MPE Power Values

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 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 Sector	Power Density Value (%)
Sector A:	3.33 %
Sector B:	3.33 %
Sector C:	3.33 %
Dish Maximum Total (per sector):	3.33 %
Site Total:	3.33 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **3.33 %** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions. There is an additional tower on the property immediately adjacent to the subject tower. Contributions from this tower are included in the composite emissions total for the property

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.

Scott Heffernan
Principal RF Engineer
Fox Hill Telecom, Inc
Holden, MA 01520
(978)660-3998

Exhibit G

Letter of Authorization

Wireless Solutions, LLC

3-15-2022

PO Box 374

Uncasville, CT 06382

LETTER OF AUTHORIZATION

I, Wireless Solutions, LLC, the owner representative for the telecommunications tower located at 72 Boggy Hole Rd., Old Lyme, Connecticut 06371 (the "Property"), hereby authorize DISH Wireless L.L.C., through its designated agent, Northeast Site Solutions, LLC to apply for all necessary municipal, state, federal and other permits necessary to accommodate the installation of Dish antennas and ancillary equipment on the subject tower and base station equipment at the Property.

Sincerely,

Wireless Solutions, LLC

Ken Thomas

Its, Owner

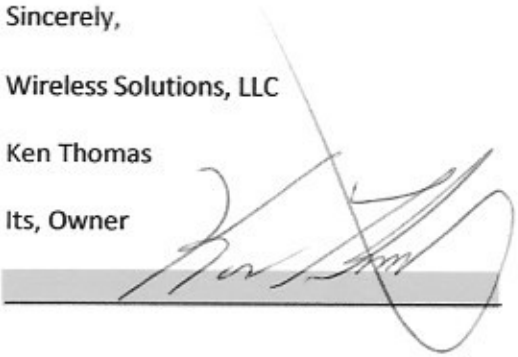
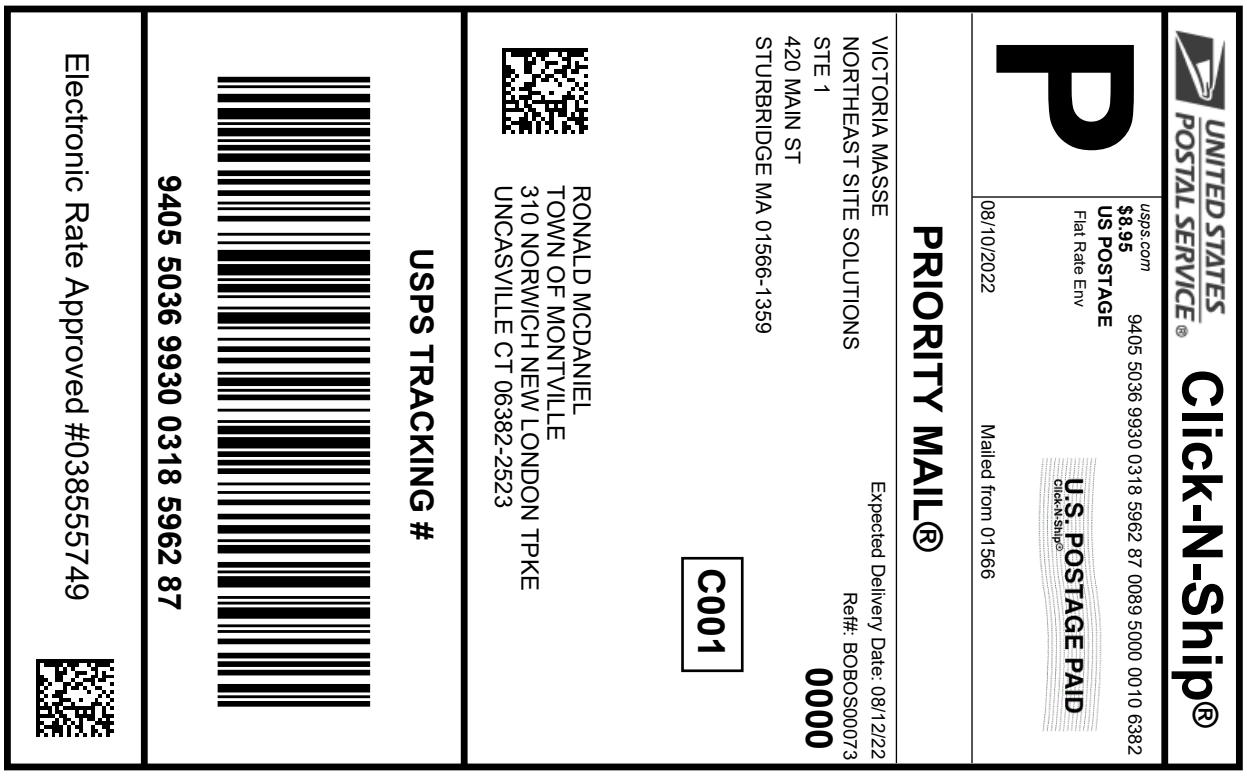


Exhibit H

Recipient Mailings



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TOWN OF MONTVILLE
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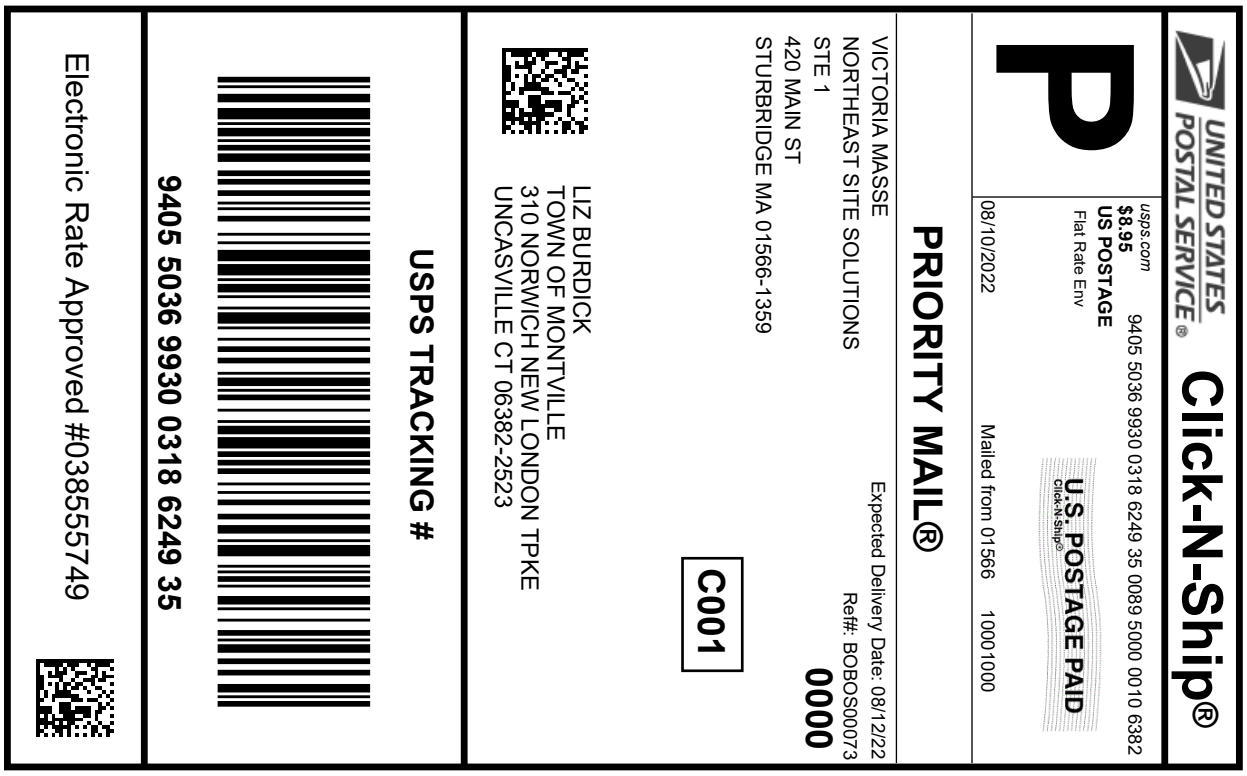

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TOWN OF MONTVILLE
310 NORWICH NEW LONDON TPKE
UNCASVILLE CT 06382-2523

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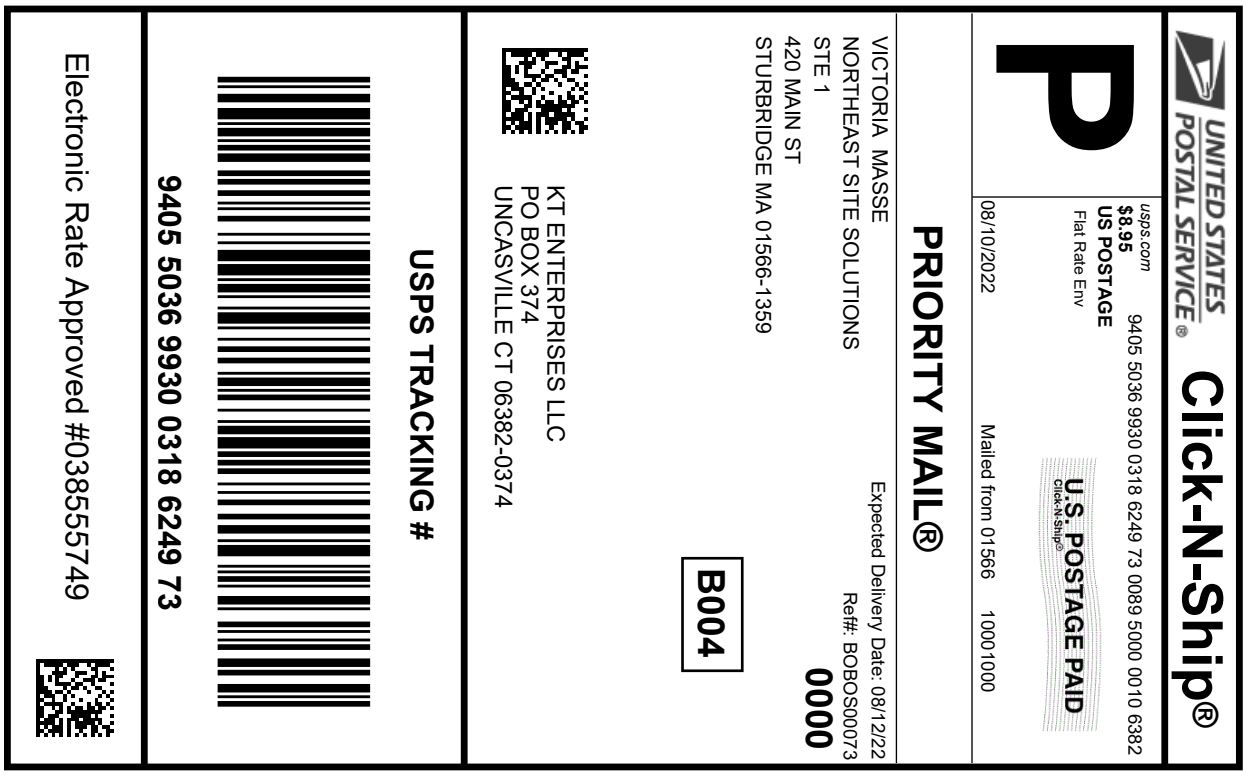

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STURBRIDGE MA 01566-1359

Ref#: BOBOS00073

To: KT ENTERPRISES LLC
PO BOX 374
UNCASVILLE CT 06382-0374

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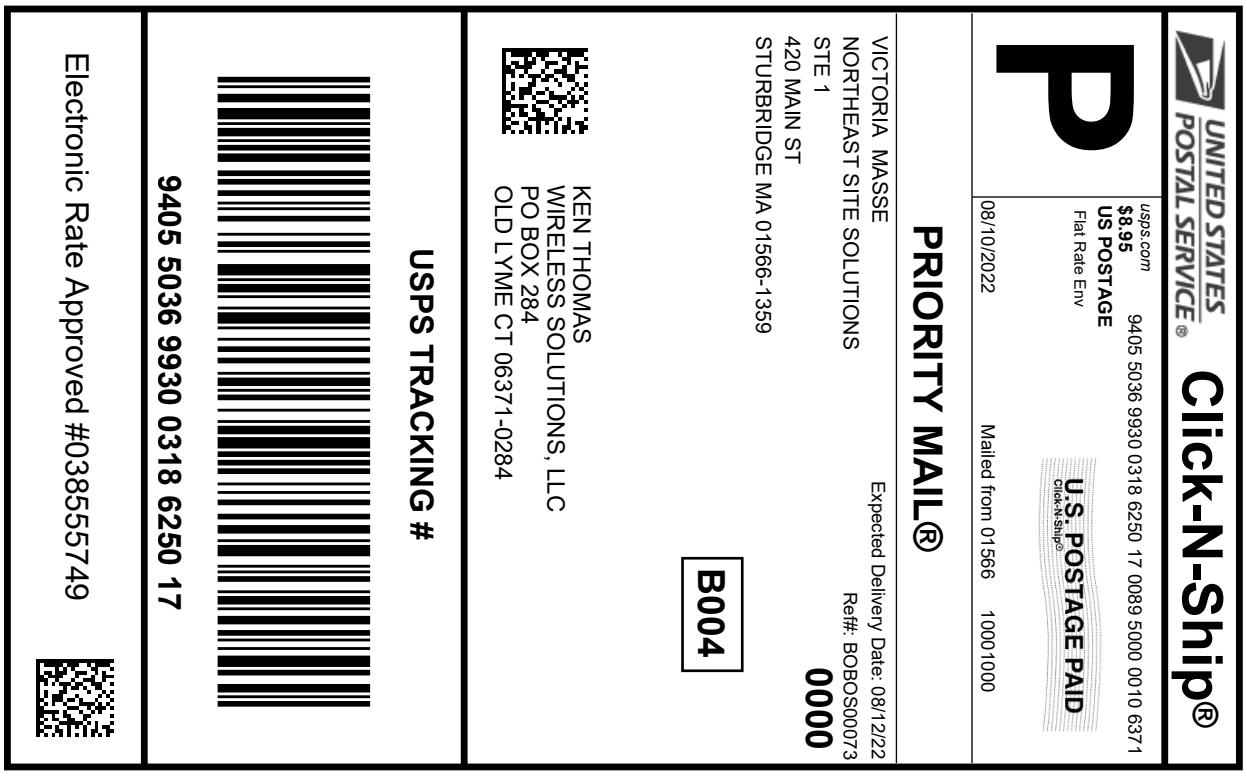

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WIRELESS SOLUTIONS, LLC
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