PROJECT NARRATIVE

April 22, 2022

Melanie A. Bachman
Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

Re: Request of DISH Wireless LLC for an Order to Approve the Shared Use of an Existing Tower
9 Meyers Road, Bethany, CT 06524
Latitude: 41'24'17.13" / Longitude: -72'59'59.940"

Dear Ms. Bachman:

Pursuant to Connecticut General Statutes ("C.G.S.") §16-50aa, as amended, DISH Wireless LLC ("DISH") hereby requests an order from the Connecticut Siting Council ("Council") to approve the shared use by DISH of an existing telecommunication tower at 9 Meyers Road in Bethany (the "Property"). The existing 340-foot self-support tower is owned by American Tower Corporation ("ATC"). The underlying property is owned by American Towers. DISH requests that the Council find that the proposed shared use of the ATC tower satisfies the criteria of C.G.S. §16-50aa and issue an order approving the proposed shared use. A copy of this filing is being sent to Paula Cofrancesco, First Selectwoman for the Town of Bethany, Robert Walsh, Town of Bethany Building Official and American Towers as the property owner.

Background

This facility was originally permitted by the Town of Bethany but no records are available from the Town per an email from the Bethany Zoning Enforcement Office. A copy is included in this filing. There are several existing carriers on the tower and no known condition exists that would restrict an additional shared use. The existing ATC facility consists of a 340-foot self-support tower located within an existing leased area. U.S. Dept. of Homeland Security currently maintains antennas at the 344-foot level, 315-foot level, 285 foot level and 213 foot level. Ligado Networks LLC currently maintains antennas at the 326-foot level. Sprint/Nextel currently maintains antennas at the 240-foot level and 48-foot level. T-Mobile currently maintains antennas at the 222-foot level. Verizon Wireless currently maintains antennas at the 180-foot level. AT&T Mobility currently maintains antennas at the 158-foot level. Sigfox currently maintains antennas at the 147-foot level. Metro PCS currently maintains antennas at the 100-foot level and the Equipment associated with these antennas are located at various positions within the tower and compound.

DISH is licensed by the Federal Communications Commission ("FCC") to provide wireless services throughout the State of Connecticut. DISH and ATC have agreed to the proposed shared use of the 9 Meyers Road tower pursuant to mutually acceptable terms and conditions. Likewise, DISH and ATC have agreed to the proposed installation of equipment cabinets on the ground within the existing compound. ATC has authorized DISH to apply for all necessary permits and approvals that may be required to share the existing tower.
(See attached Letter of Authorization)

DISH proposes to install three (3) antennas, (1) Tower platform mount, (6) Remote radio units at the 140-foot level along with, (1) over voltage protection device (OVP) and (1) Hybrid cable. DISH will install an equipment cabinet on a 5'x7' equipment platform. DISH's Construction Drawings provide project specifications for all proposed site improvement locations.
The construction drawings also include specifications for DISH's proposed antenna and groundwork.

C.G.S. § 16-50aa(c)(1) provides that, upon written request for approval of a proposed shared use, "if the Council finds that the proposed shared use of the facility is technically, legally, environmentally and economically feasible and meets public safety concerns, the council shall issue an order approving such a shared use." DISH respectfully submits that the shared use of the tower satisfies these criteria.

A. Technical Feasibility. The existing ATC tower is structurally capable of supporting DISH's proposed improvements. The proposed shared use of this tower is, therefore, technically feasible. A Feasibility Structural Analysis Report ("Structural Report") prepared for this project confirms that this tower can support DISH's proposed loading. A copy of the Structural Report has been included in this application.

B. Legal Feasibility. Under C.G.S. § 16-50aa, the Council has been authorized to issue order approving the shared use of an existing tower such as the ATC tower. This authority complements the Council's prior-existing authority under C.G.S. § 16-50p to issue orders approving the construction of new towers that are subject to the Council's jurisdiction. In addition, § 16-50x(a) directs the Council to "give such consideration to the other state laws and municipal regulations as it shall deem appropriate" in ruling on requests for the shared use of existing tower facilities. Under the statutory authority vested in the Council, an order by the Council approving the requested shared use would permit the Applicant to obtain a building permit for the proposed installations.

C. Environmental Feasibility. The proposed shared use of the ATC tower would have a minimal environmental effect for the following reasons:

1. The proposed installation will have no visual impact on the area of the tower. DISH's equipment cabinet would be installed within the existing facility compound. DISH's shared use of this tower therefore will not cause any significant change or alteration in the physical or environmental characteristics of the existing site.

2. Operation of DISH's antennas at this site would not exceed the RF emissions standard adopted by the Federal Communications Commission ("FCC"). Included in the EME report of this filing are the approximation tables that demonstrate that DISH's proposed facility will operate well within the FCC RF emissions safety standards.

3. Under ordinary operating conditions, the proposed installation would not require the use of any water or sanitary facilities and would not generate air emissions or discharges to water bodies or sanitary facilities. After construction is complete the proposed installations would not generate any increased traffic to the ATC facility

other than periodic maintenance. The proposed shared use of the ATC tower, would, therefore, have a minimal environmental effect, and is environmentally feasible.

D. **Economic Feasibility**. As previously mentioned, DISH has entered into an agreement with ATC for the shared use of the existing facility subject to mutually agreeable terms. The proposed tower sharing is, therefore, economically feasible.

E. **Public Safety Concerns**. As discussed above, the tower is structurally capable of supporting DISH's full array of three (3) antennas, (1) Tower platform mount, (6) Remote radio units, (1) over voltage protection device (OVP) and (1) Hybrid cable and all related equipment. DISH is not aware of any public safety concerns relative to the proposed sharing of the existing ATC tower.

Conclusion

For the reasons discussed above, the proposed shared use of the existing ATC tower at 9 Meyers Road satisfies the criteria stated in C.G.S. §16-50aa and advances the Council's goal of preventing the unnecessary proliferation of towers in Connecticut. The Applicant, therefore, respectfully requests that the Council issue an order approving the prosed shared use.

Sincerely,

David Hoogasian

David Hoogasian
Project Manager

LETTER OF AUTHORIZATION

AMERICAN TOWER®
CORPORATION

LETTER OF AUTHORIZATION

NETWORK BUILDING AND CONSULTING LLC/ DISH WIRELESS L.L.C.

I, Margaret Robinson, Senior Counsel, US Tower Division on behalf of American Tower*, owner/operator of the tower facility located at the address identified below (the "Tower Facilities"), do hereby authorize NETWORK BUILDING AND CONSULTING LLC, its successors and assigns, to act as American Tower's non-exclusive agent for the purpose of filing and securing any zoning, land-use, building permit and/or electrical permit application(s) and approvals of the applicable jurisdiction for and to conduct the construction of the installation of antennas and related telecommunications equipment on the Tower Facility located at the above address. This installation shall not affect adjoining lands and will occur only within the area leased by American Tower.

American Tower understands that the application may be denied, modified or approved with conditions. The above authorization is limited to the acceptance by American Tower of conditions related to American Tower's installation. Any such conditions of approval or modifications will not be effective unless approved in writing by American Tower.

The above authorization does not permit NETWORK BUILDING AND CONSULTING LLC to modify or alter any existing permit(s) and/or zoning or land-use conditions or impose any additional conditions unrelated to American Tower's installation of telecommunications equipment without the prior written approval of American Tower.

ATC Asset #	Site Name	Customer Site Number	Project Number	Site Address
302484	Branford CT 6	BOHVN00142A	13701211	405 Brushy Plain Rd, Branford
302516	Mlfd - Milford	BOHVN00144A	13702496	438 Bridgeport Ave, Milford
88008	BETHANY CT	BOHVN00151A	13709244	93 Old Amity Road, Bethany (9 Meyers Road)
302467	Bilkays Express	BOHVN00140A	13701206	90 North Plains Industrial Rd., Wallingford

Signature: _____

Margaret Robinson, Senior Counsel
US Tower Division

See attached Notary Block

LETTER OF AUTHORIZATION
NETWORK BUILDING AND CONSULTING LLC/ DISH WIRELESS L.L.C

NOTARY BLOCK

COMMONWEALTH OF MASSACHUSETTS
County of Middlesex

This instrument was acknowledged before me by Margaret Robinson, Senior Counsel of American Tower (Tower Facility owner), personally known to me (or proved to me on the basis of satisfactory evidence) to be the person whose name is subscribed to the within instrument and acknowledged to me that he/she executed the same.

WITNESS my hand and official seal, this 1st day of December, 2021.

NOTARY SEAL

MELISSA ANN METZLER
Notary Public
Commonwealth of Massachusetts
My Commission Expires March 14, 2025

Notary Public
My Commission Expires: March 14, 2025

*American Tower includes all affiliates and subsidiaries of American Tower Corporation.

ORIGINAL FACILITY APPROVAL

EJamieson@TranscendWireless.com

From: Isabel Kearns <ikearns@bethany-ct.com>
Sent: Monday, March 23, 2020 9:53 AM
To: ejamieson@transcendwireless.com
Subject: 93 Old Amity Road

Elizabeth: I am sorry to say, we have nothing in the file about the construction of the tower. I am sorry.

Isabel Kearns
Inland Wetlands & Zoning
Enforcement Officer
Town of Bethany
40 Peck Road
Bethany, CT 06524
(203) 393-2100 X1135 (Office)
(203) 410-5909 (Cell)
(203) 393-0828 (Fax)

ENGINEERING DRAWINGS

DISH WIRELESS, L.L.C. SITE ID:

BOHVN00151A

DISH WIRELESS, L.L.C. SITE ADDRESS:

9 MEYERS ROAD
BETHANY, CT 06524

SCOPE OF WORK

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

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

GROUND SCOPE OF WORK:
- 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 INFORMATION

PROPERTY OWNER:	AMERICAN TOWERS
ADDRESS:	PO BOX 723597 ATLANTA, GA 31139
TOWER TYPE:	SELF SUPPORT TOWER
TOWER CO SITE ID:	88008
TOWER APP NUMBER:	13709244
COUNTY:	NEW HAVEN
LATITUDE (NAD 83):	41° 24' 17.130" N 41.40475833
LONGITUDE (NAD 83):	72° 59' 59.940" W -72.99998333
ZONING JURISDICTION:	CONNECTICUT SITING COUNCIL
ZONING DISTRICT:	R-65
PARCEL NUMBER:	118/51C
OCCUPANCY GROUP:	U
CONSTRUCTION TYPE:	II-B
POWER COMPANY:	UNITED ILLUMINATING
TELEPHONE COMPANY:	FRONTIER COMMUNICATIONS

PROJECT DIRECTORY

APPLICANT:	DISH WIRELESS, L.L.C. 5701 SOUTH SANTA FE DRIVE LITTLETON, CO 80120 (303) 706-5008
TOWER OWNER:	AMERICAN TOWER 10 PRESIDENTIAL WAY WOBURN, MA 01801
ENGINEER:	NB+C ENGINEERING SERVICES, LLC. 8601 SIX FORKS ROAD, SUITE 540 RALEIGH, NC 27615
SITE ACQUISITION:	APRIL PARROTT APRIL.PARROTT@DISH.COM
CONSTRUCTION MANAGER:	JAVIER SOTO JAVIER.SOTO@DISH.COM
RF ENGINEER:	SYED ZAIDI SYED.ZAIDI@DISH.COM

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

SITE PHOTO

DIRECTIONS

FROM NEW HAVEN, CT TAKE RT 34 WEST TO RT 63 NORTH. FOLLOW RT 63 NORTH TO OLD AMITY ROAD. FORK RIGHT ONTO OLD AMITY ROAD AND FOLLOW UP THE HILL TO THE FORK. FORK RIGHT AGAIN TO DEAD END STREET. ACCESS ROAD ENTRANCE WILL BE ON THE LEFT.

FROM NEW HAVEN, CT TAKE RT 34 WEST TO RT 63 NORTH. FOLLOW RT 63 NORTH TO OLD AMITY ROAD. FORK RIGHT ONTO OLD AMITY ROAD AND FOLLOW UP THE HILL TO THE FORK. FORK RIGHT AGAIN TO DEAD END STREET. ACCESS ROAD ENTRANCE WILL BE ON THE LEFT.

SHEET INDEX

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

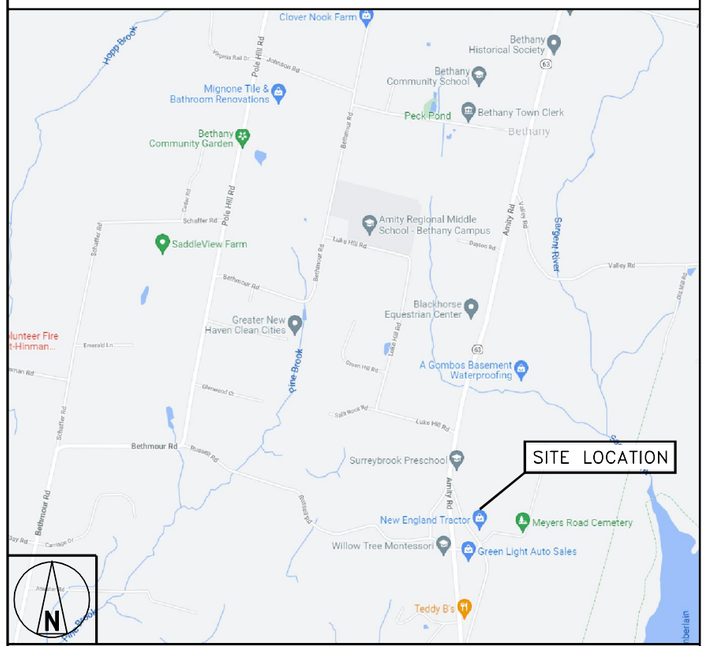
THE FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION. A TECHNICIAN WILL VISIT THE SITE AS REQUIRED FOR ROUTINE MAINTENANCE. THE PROJECT WILL NOT RESULT IN ANY SIGNIFICANT DISTURBANCE OR EFFECT ON DRAINAGE. NO SANITARY SEWER SERVICE, POTABLE WATER, OR TRASH DISPOSAL IS REQUIRED AND NO COMMERCIAL SIGNAGE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

THE PROJECT DEPICTED IN THESE PLANS QUALIFIES AS AN ELIGIBLE FACILITIES REQUEST ENTITLED TO EXPEDITED REVIEW UNDER 47 U.S.C. § 1455(A) AS A MODIFICATION OF AN EXISTING WIRELESS TOWER THAT INVOLVES THE COLLOCATION, REMOVAL, AND/OR REPLACEMENT OF TRANSMISSION EQUIPMENT THAT IS NOT A SUBSTANTIAL CHANGE UNDER CFR § 1.61000 (B)(7).

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.

VICINITY MAP



NO SCALE

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
AMT	BIW	BIW

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	09/15/2021	ISSUED FOR CONSTRUCTION

COMMONWEALTH OF MASSACHUSETTS
KRUPAKARAN KOUNTHEAH
STRUCTURAL
NO. 50019
REGISTERED PROFESSIONAL ENGINEER

09/15/21

A&E PROJECT NUMBER

88008-13709244

DISH WIRELESS, L.L.C.
PROJECT INFORMATION

BOHVN00151A
9 MEYERS ROAD
BETHANY, CT 06524

SHEET TITLE

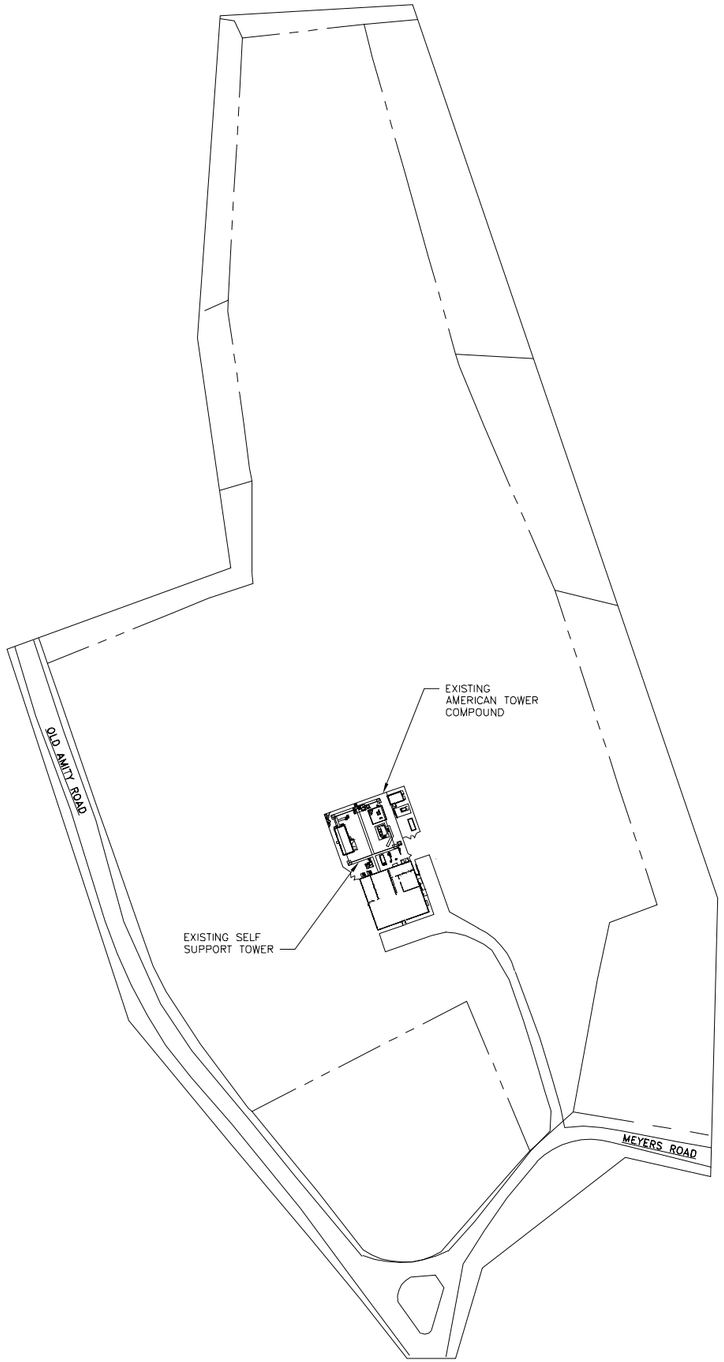
TITLE SHEET

SHEET NUMBER

T-1

NOTES

1. PARCEL LINES TAKEN FROM TOWN OF BETHANY ONLINE GIS.



N

PARCEL PLAN

80' 40' 0 80' 160'
1"=80'

1

dish wireless.

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LITTLETON, CO 80120

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NB+C ENGINEERING SERVICES, LLC.
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RALEIGH, NC 27615
(919) 657-9131

DRAWN BY:	CHECKED BY:	APPROVED BY:
AMT	BIW	BIW

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	09/15/2021	ISSUED FOR CONSTRUCTION

COMMONWEALTH OF MASSACHUSETTS
KUPAKARA
ROCKEFELLER
STRUCTURAL
NO. 50019
REGISTERED
PROFESSIONAL ENGINEER

09/15/21

A&E PROJECT NUMBER

88008-13709244

DISH WIRELESS, L.L.C.
PROJECT INFORMATION

BOHVN00151A
9 MEYERS ROAD
BETHANY, CT 06524

SHEET TITLE

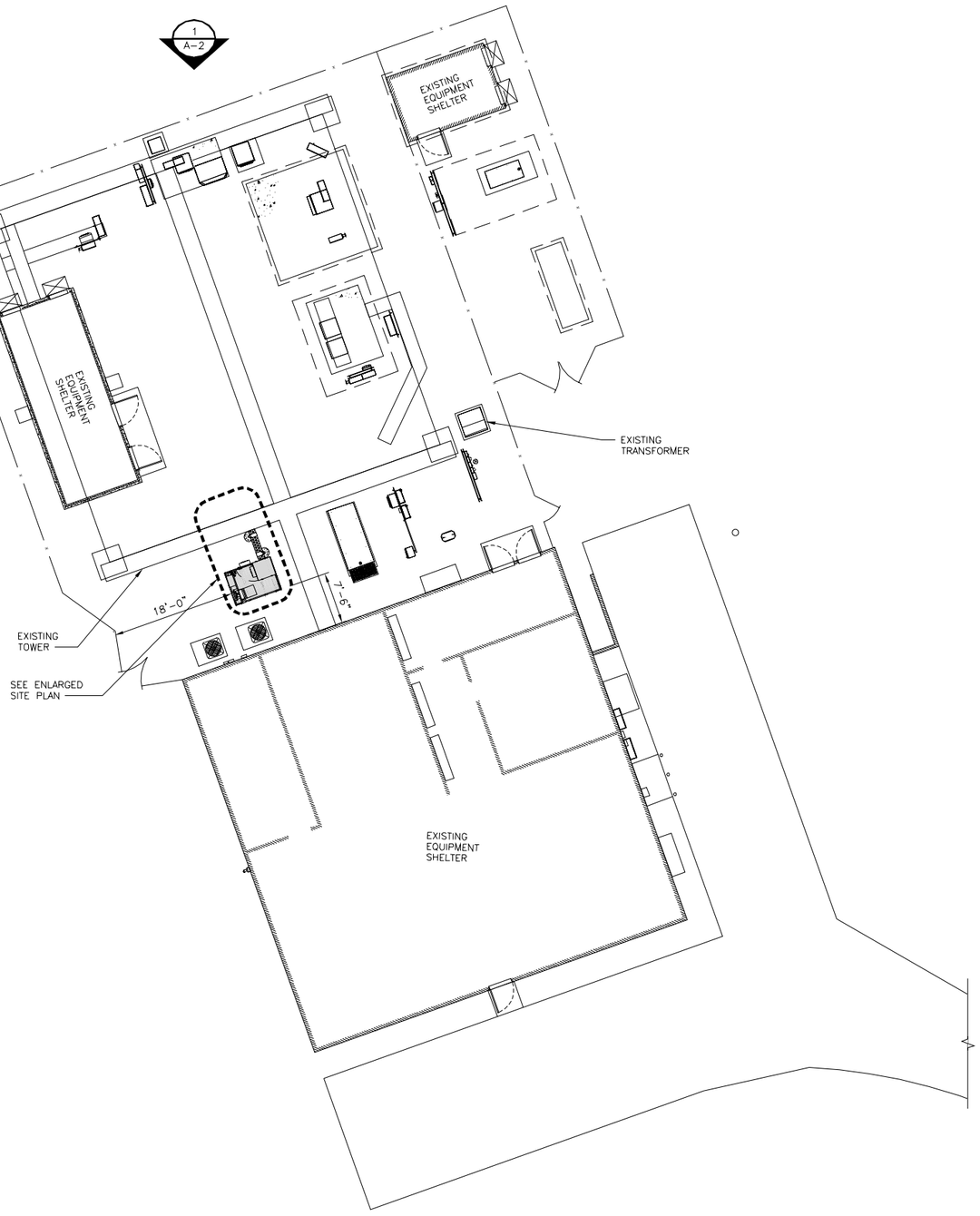
PARCEL PLAN

SHEET NUMBER

A-0

NOTES

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



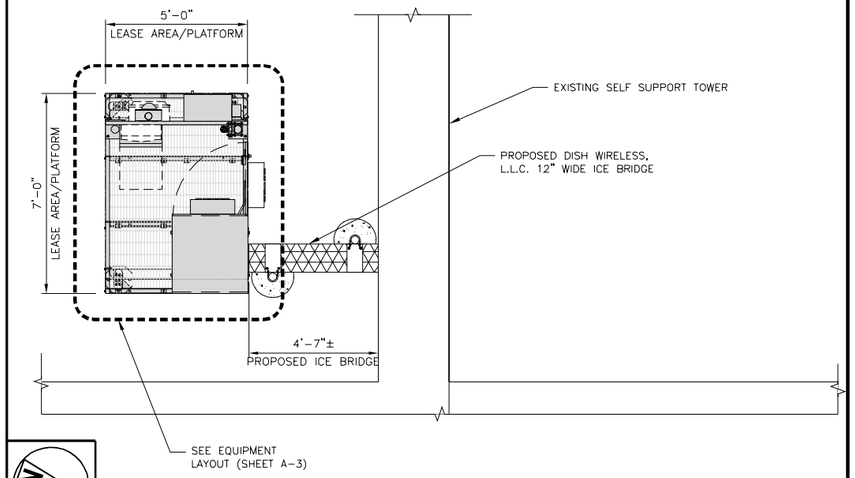
OVERALL SITE PLAN

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

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.



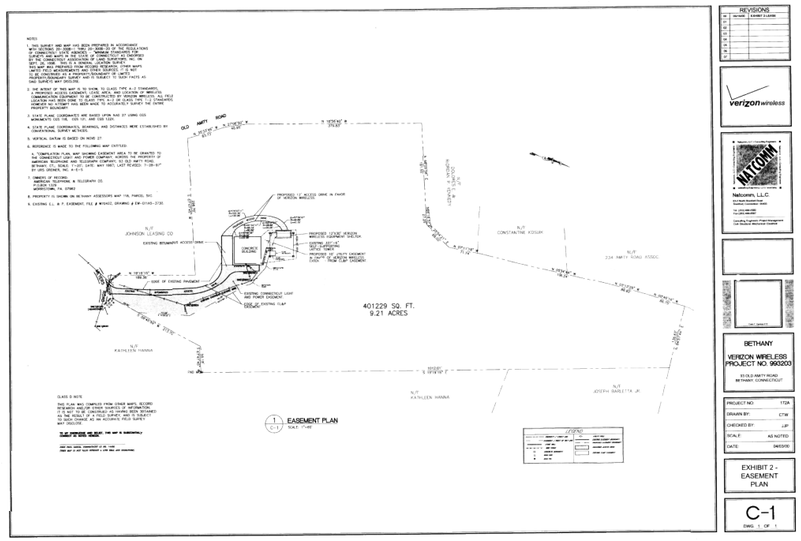
ENLARGED SITE PLAN

12" 6" 0 1' 2' 3' 4' 5' 6' 7'
3/8"=1'-0"

2

NOTES

1. THE SURVEY PROVIDED ON THIS SHEET IS PROVIDED FOR REFERENCE ONLY. THE UTILITY ROUTE AND EXISTING EASEMENTS MUST BE VERIFIED PRIOR TO CONSTRUCTION.



EXISTING SURVEY (BY OTHERS)

NO SCALE

3

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
AMT	BIW	BIW

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	09/15/2021	ISSUED FOR CONSTRUCTION

09/15/21

A&E PROJECT NUMBER
88008-13709244

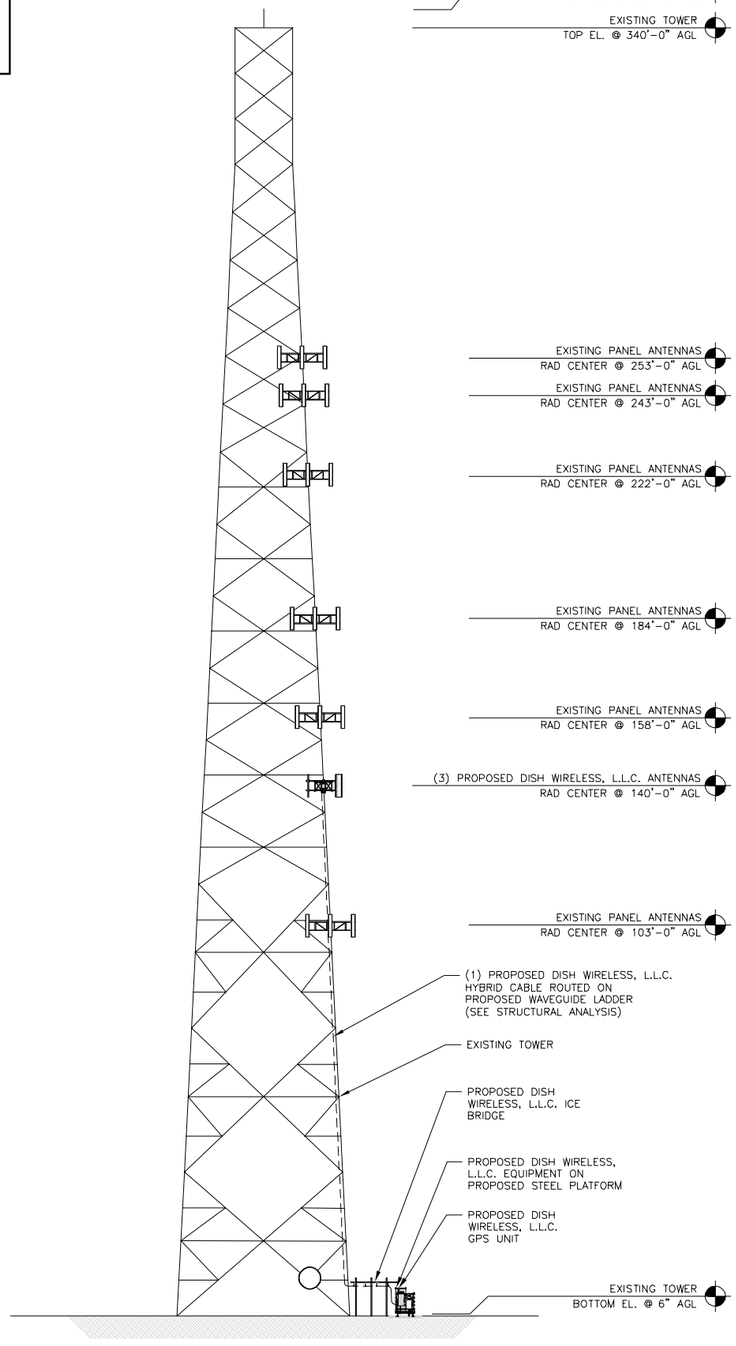
DISH WIRELESS, L.L.C.
PROJECT INFORMATION
BOHVN00151A
9 MEYERS ROAD
BETHANY, CT 06524

SHEET TITLE
OVERALL AND ENLARGED SITE PLAN

SHEET NUMBER
A-1

NOTES

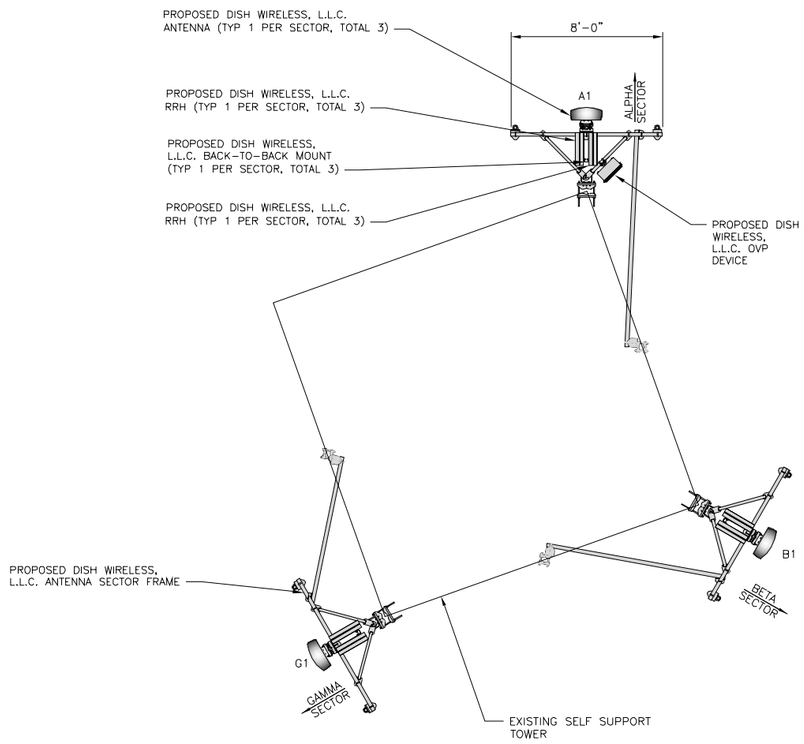
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNA AND MW DISH SPECIFICATIONS REFER TO ANTENNA SCHEDULE AND TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS
3. EXISTING EQUIPMENT AND FENCE OMITTED FOR CLARITY.



PROPOSED NORTH ELEVATION

20' 10' 0 20' 40'
1"=20'

1



ANTENNA LAYOUT

4' 2' 0 4' 8'
1/4"=1'-0"

2

SECTOR	POSITION	ANTENNA						TRANSMISSION CABLE
		EXISTING OR PROPOSED	MANUFACTURER – MODEL NUMBER	TECHNOLOGY	SIZE (HxW)	AZIMUTH	RAD CENTER	FEED LINE TYPE AND LENGTH
ALPHA	A1	PROPOSED	JMA – MX08FRO665-21	5G	72.0" x 20.0"	0°	140'-0"	(1) HIGH-CAPACITY HYBRID CABLE (167' LONG)
BETA	B1	PROPOSED	JMA – MX08FRO665-21	5G	72.0" x 20.0"	120°	140'-0"	
GAMMA	G1	PROPOSED	JMA – MX08FRO665-21	5G	72.0" x 20.0"	240°	140'-0"	

SECTOR	POSITION	RRH	
		MANUFACTURER – MODEL NUMBER	TECHNOLOGY
ALPHA	A1	FUJITSU – TA08025-B604	N29,N71
	A2	FUJITSU – TA08025-B605	N66,N70
BETA	B1	FUJITSU – TA08025-B604	N29,N71
	B2	FUJITSU – TA08025-B605	N66,N70
GAMMA	G1	FUJITSU – TA08025-B604	N29,N71
	G2	FUJITSU – TA08025-B605	N66,N70

SECTOR	POSITION	OVP	
		MANUFACTURER – MODEL NUMBER	TECHNOLOGY
ALPHA	–	RAYCAP – RDIDC-9181-PF-48	--

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.
3. INSTALL (1) RAYCAP RDIDC-9181-PF-48 OVP

ANTENNA SCHEDULE

NO SCALE

3

dish wireless.

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LITTLETON, CO 80120

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NB+C ENGINEERING SERVICES, LLC.
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AMT	BIW	BIW

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
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COMMONWEALTH OF MASSACHUSETTS
KRUPAKARAN KOLANJIVELU
STRUCTURAL
NO. 50019
REGISTERED PROFESSIONAL ENGINEER

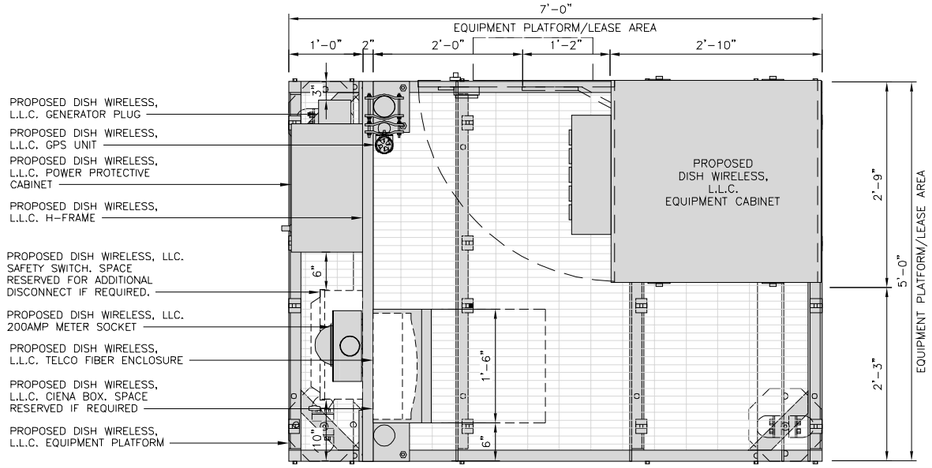
09/15/21

A&E PROJECT NUMBER
88008-13709244

DISH WIRELESS, L.L.C.
PROJECT INFORMATION
BOHVN00151A
9 MEYERS ROAD
BETHANY, CT 06524

SHEET TITLE
ELEVATION, ANTENNA LAYOUT AND SCHEDULE

SHEET NUMBER
A-2



PLATFORM EQUIPMENT PLAN

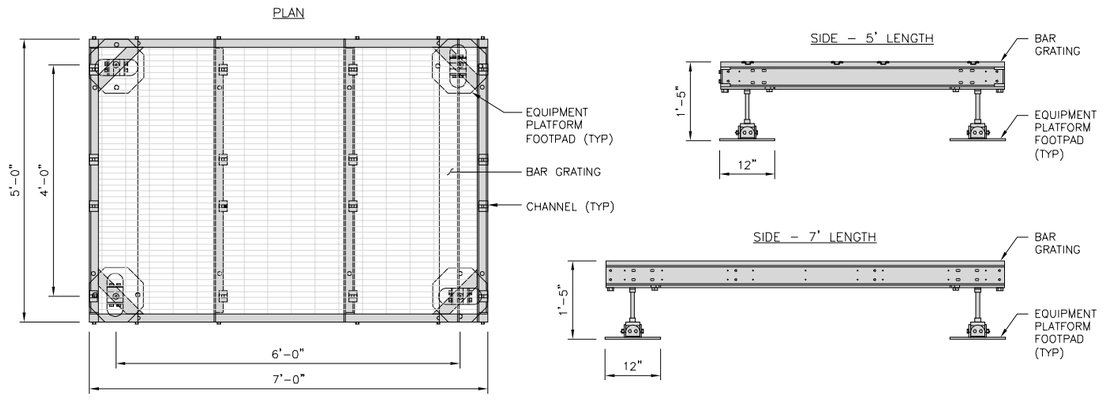
12" 9" 6" 3" 0 1' 2"
1"=1'-0"

1

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

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

PLATFORM TO BE WITHIN 1° OF LEVEL

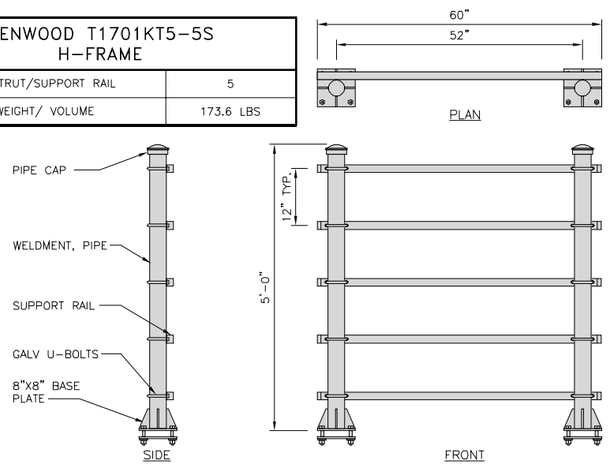


PLATFORM DETAIL

NO SCALE

2

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



H-FRAME DETAIL

NO SCALE

3

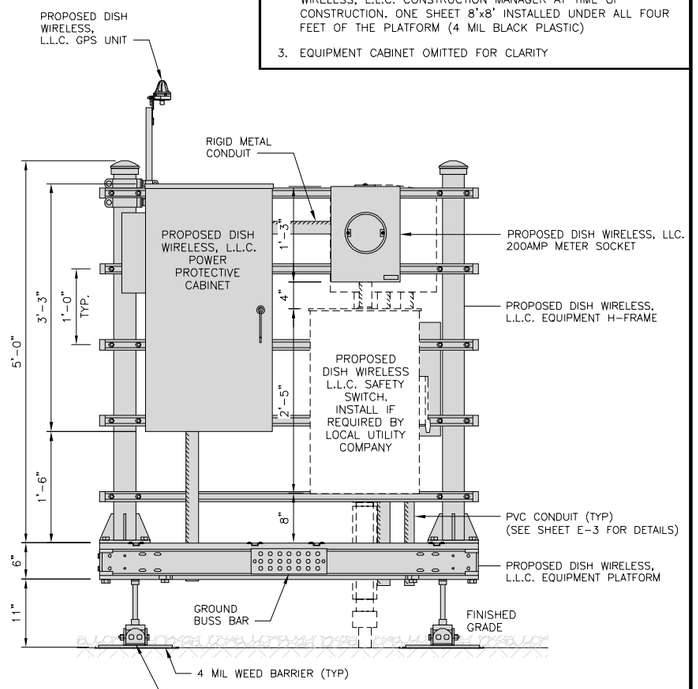
NOT USED

NO SCALE

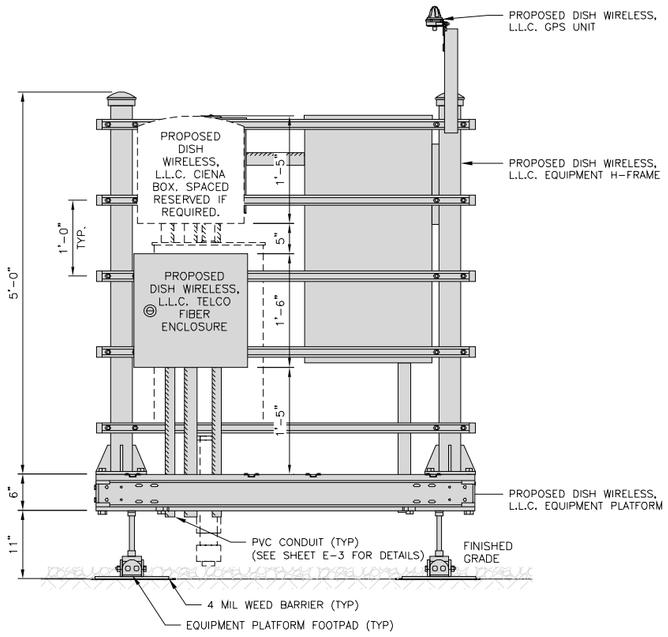
4

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, L.L.C. CONSTRUCTION MANAGER AT TIME OF CONSTRUCTION. ONE SHEET 8'x8' INSTALLED UNDER ALL FOUR FEET OF THE PLATFORM (4 MIL BLACK PLASTIC)
3. EQUIPMENT CABINET OMITTED FOR CLARITY



FRONT ELEVATION



BACK ELEVATION

H-FRAME EQUIPMENT ELEVATION

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

5

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5701 SOUTH SANTA FE DRIVE
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8601 SIX FORKS ROAD, SUITE 540
RALEIGH, NC 27615
(919) 657-9131

DRAWN BY:	CHECKED BY:	APPROVED BY:
AMT	BIW	BIW

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	09/15/2021	ISSUED FOR CONSTRUCTION

COMMONWEALTH OF MASSACHUSETTS
KRUPAKARAN KODANDAPANI
STRUCTURAL
NO. 50019
REGISTERED PROFESSIONAL ENGINEER
09/15/21

A&E PROJECT NUMBER
88008-13709244

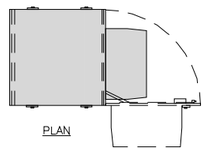
DISH WIRELESS, L.L.C.
PROJECT INFORMATION
BOHVN00151A
9 MEYERS ROAD
BETHANY, CT 06524

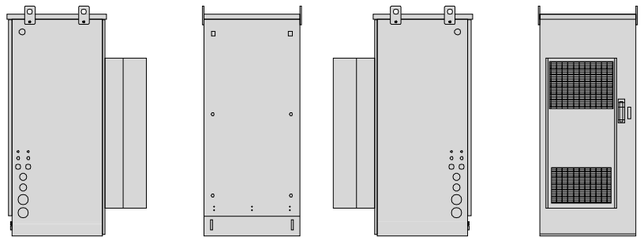
SHEET TITLE
EQUIPMENT PLATFORM AND H-FRAME DETAILS

SHEET NUMBER
A-3

CHARLES INDUSTRY HEX CUBE–PM639155N4

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

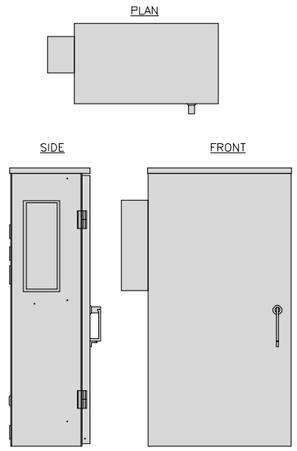

PLAN


SIDE BACK SIDE FRONT

CABINET DETAIL | NO SCALE | 1

RAYCAP RDIAC–6512–P–240–MTS POWER & TELCO PROTECTION CABINET

DIMENSIONS (HxWxD)	40"x20"x10"
WEIGHT/ VOLUME	124 LBS
MANUAL TRANSFER SWITCH	200A
LOAD CENTER	30 POSITION
MAIN BREAKER	200A, 65kA AIC
GENERATOR RECEPTACLE	CAMLOCK
NEMA RATING	3R POWDER COATED ALUMINUM
SURGE PROTECTION DEVICE	UL 1449 4TH EDITION LISTED

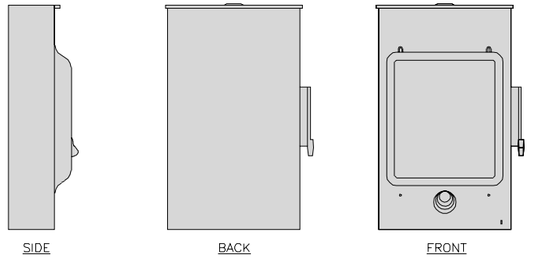

PLAN SIDE FRONT

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

SQUARE D SAFETY SWITCH D324NRB

ENCLOSURE DIM (HxWxD)	29.25"x17.25"x8.25"
TOTAL WEIGHT (EMPTY)	45.33 LBS
MAX VOLTAGE/AMPS/WATT	240V/200A/48000W
ENCLOSURE RATING	OUTDOOR NEMA 3R

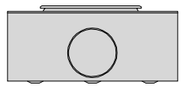

PLAN

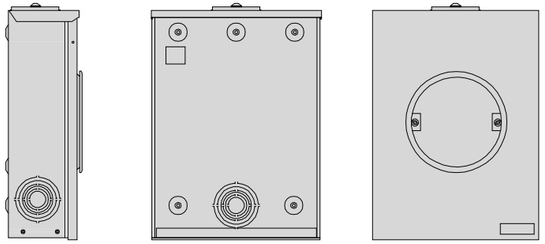

SIDE BACK FRONT

SAFETY SWITCH | NO SCALE | 3

EATON METER SOCKET UNRRS213BEUSE

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


PLAN

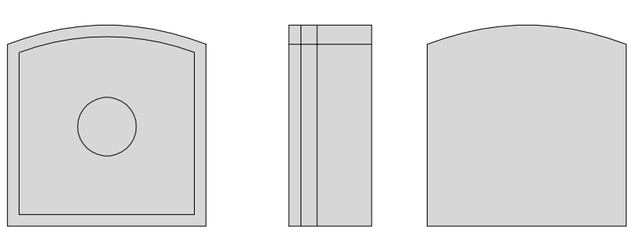

SIDE BACK FRONT

METER SOCKET DETAIL | NO SCALE | 4

CIENA 3931 SERVICE DELIVERY SWITCH

DIMENSIONS (HxWxD)	17.0"x16.8"x7.0" 431x427x178mm
WEIGHT	28.6 LBS/13.0 KG
POWER INPUT	60W MAX


PLAN


FRONT SIDE BACK

CIENA DETAIL | NO SCALE | 5

CHARLES FIBER TELCO ENCLOSURE CUBE–MP1818WB–A

ENCLOSURE DIM (HxWxD)	18.0"x18.0"x9.25"
NEMA RATING	4X
THERMAL	SEALED
MOUNTING BACKBOARD	WOOD


PLAN

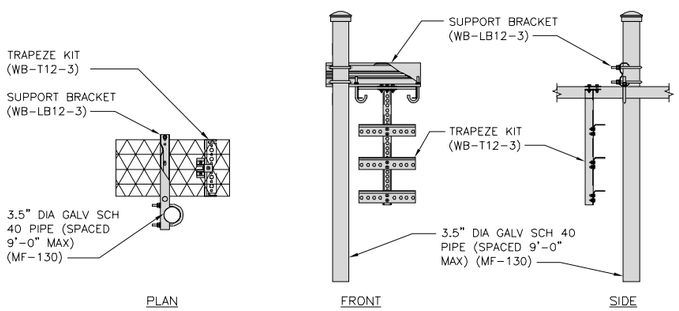

SIDE BACK FRONT

FIBER TELCO ENCLOSURE DETAIL | NO SCALE | 6

COMMSCOPE WB–K110–B WAVEGUIDE BRIDGE KIT

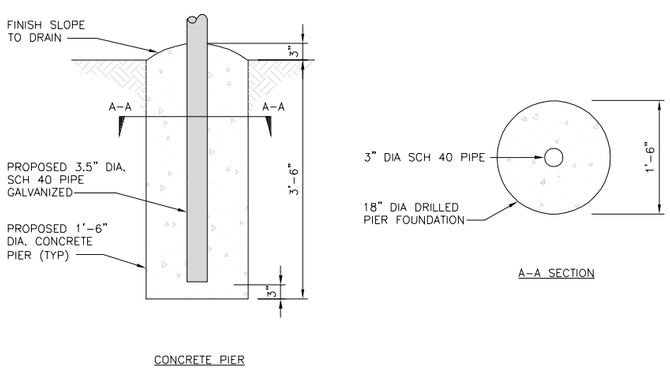
DIMENSIONS (HxL)	160"x10'
WEIGHT/ VOLUME	325.0 LBS
CABLE RUN (QTY)	12

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



PLAN FRONT SIDE

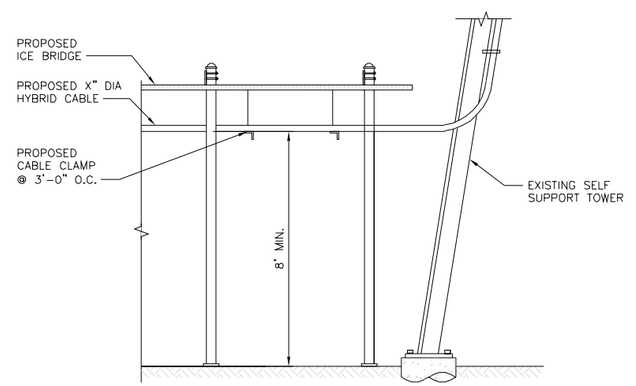
ICE BRIDGE DETAIL | NO SCALE | 7



CONCRETE PIER

A–A SECTION

TYPICAL ICE BRIDGE CONCRETE PIER DETAIL | NO SCALE | 8



HYBRID CABLE RUN | NO SCALE | 9

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NO. 50019
REGISTERED PROFESSIONAL ENGINEER
09/15/21

A&E PROJECT NUMBER
88008–13709244

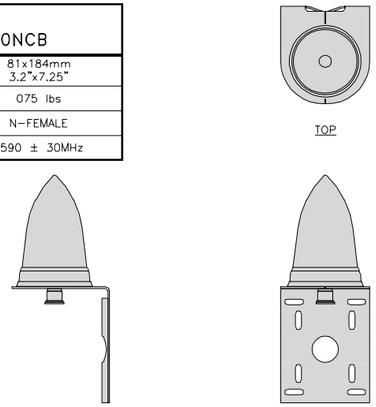
DISH WIRELESS, L.L.C.
PROJECT INFORMATION
BOHVN00151A
9 MEYERS ROAD
BETHANY, CT 06524

SHEET TITLE
EQUIPMENT DETAILS

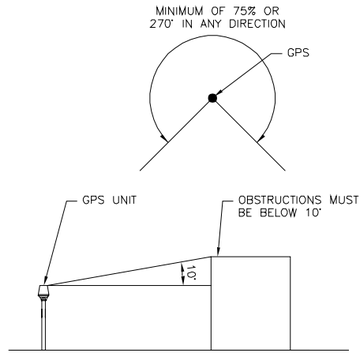
SHEET NUMBER
A-4

PCTEL GPSGL-TMG-SPI-40NCB

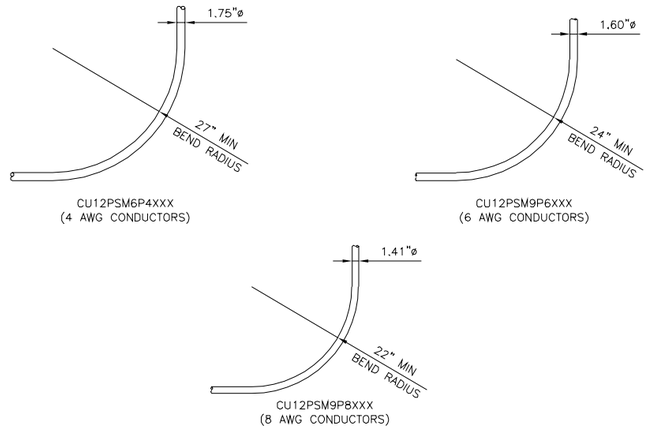
DIMENSIONS (DIAxH) MM/INCH	81x184mm 3.2"x7.25"
WEIGHT W/ACCESSORIES	075 lbs
CONNECTOR	N-FEMALE
FREQUENCY RANGE	1590 ± 30MHz



GPS DETAIL | NO SCALE | 1



GPS MINIMUM SKY VIEW REQUIREMENTS | NO SCALE | 2



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

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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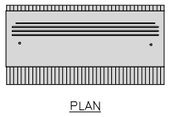
DISH WIRELESS, L.L.C.
PROJECT INFORMATION
BOHVN00151A
9 MEYERS ROAD
BETHANY, CT 06524

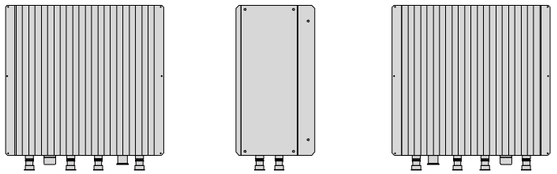
SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-5

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



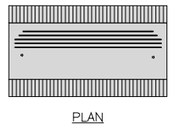
PLAN



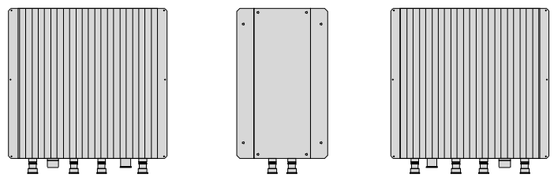
BACK SIDE FRONT

RRH DETAIL | NO SCALE | 1

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



PLAN

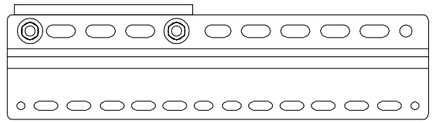


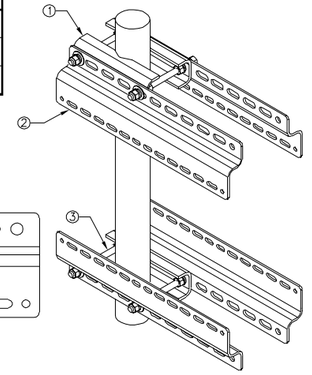
BACK SIDE FRONT

RRH DETAIL | NO SCALE | 2

SABRE DOUBLE Z-BRACKET G10123155	
DIMENSIONS (HxWxD) (1 BRACKET)	5"x20"x1-13/16"
WEIGHT (FULL ASSEMBLY)	35.79 lbs
PACKAGE QUANTITY	4

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



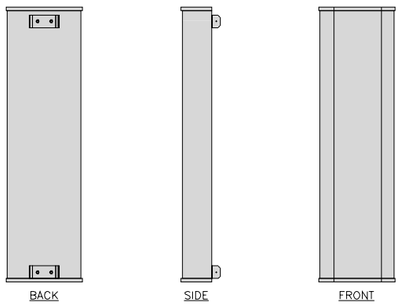


NOTE:
OR DISH Wireless L.L.C.
APPROVED EQUIVALENT

RRH MOUNT DETAIL | NO SCALE | 3

JMA WIRELESS MX08FRO665-21 ANTENNA	
DIMENSIONS (HxWxD)	72.0"x20.0"x8.0"
TOTAL WEIGHT	64.5 LB
RF PORTS, CONNECTOR TYPE	8 x 4.3-10 FEMALE

PLAN



BACK SIDE FRONT

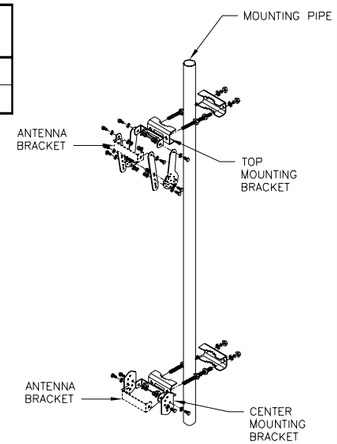
ANTENNA DETAIL | NO SCALE | 4

NOT USED | NO SCALE | 5

JMA ANTENNA MOUNT BRACKET #91900318	
TOTAL WEIGHT (WITH BRACKETS)	18 lbs (8.18 Kg)
POLE DIAMETER RANGE	2.5" TO 4.5"

NOTE:
KIT #91900318: TOP AND BOTTOM BRACKETS FOR 4-,6-, AND 8-FOOT ANTENNAS

ANTENNA BRACKET NOT PART OF KIT

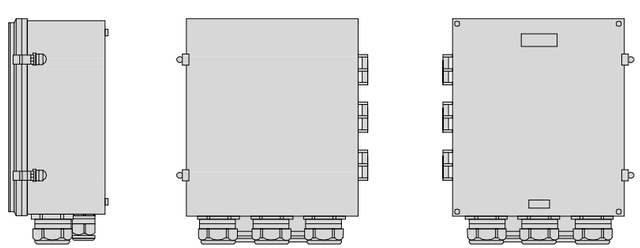


NOTE:
OR DISH Wireless L.L.C.
APPROVED EQUIVALENT

ANTENNA BRACKET DETAIL | NO SCALE | 6

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

PLAN

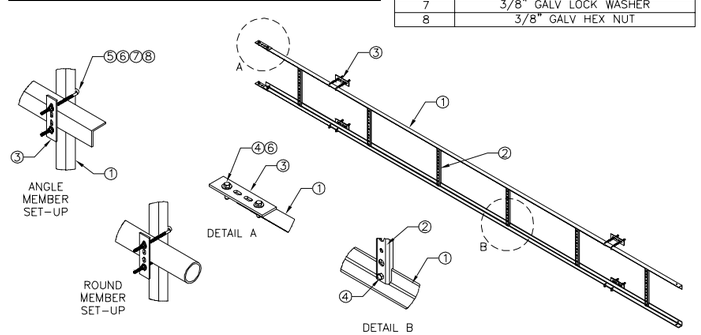


SIDE BACK FRONT

SURGE SUPPRESSION DETAIL (OVP) | NO SCALE | 7

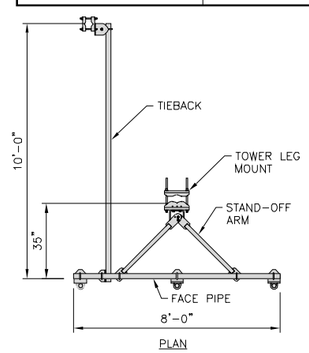
COMMSCOPE 20' CABLE LADDER 6 HOLE RUNGS	
DIMENSIONS (WxL)	20.5"x240"
WEIGHT	84.94 lbs

ITEM#	DESCRIPTION
1	20' ANGLE SIDE RAIL
2	20" LADDER RUNG
3	BACKING PLATE
4	3/8"x1-1/2" GALV BOLT KIT
5	8" GALV J-BOLT KIT
6	3/8" GALV FLAT WASHER
7	3/8" GALV LOCK WASHER
8	3/8" GALV HEX NUT

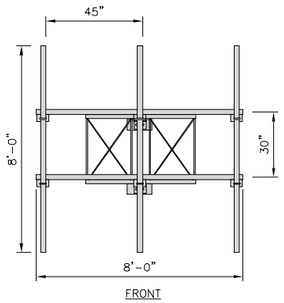


CABLE LADDER DETAIL | NO SCALE | 8

COMMSCOPE V-FRAME MTG3975083	
FACE SIZE	8'-0"
WEIGHT	352.136 lbs



PLAN



FRONT

ANTENNA FRAME DETAIL | NO SCALE | 9

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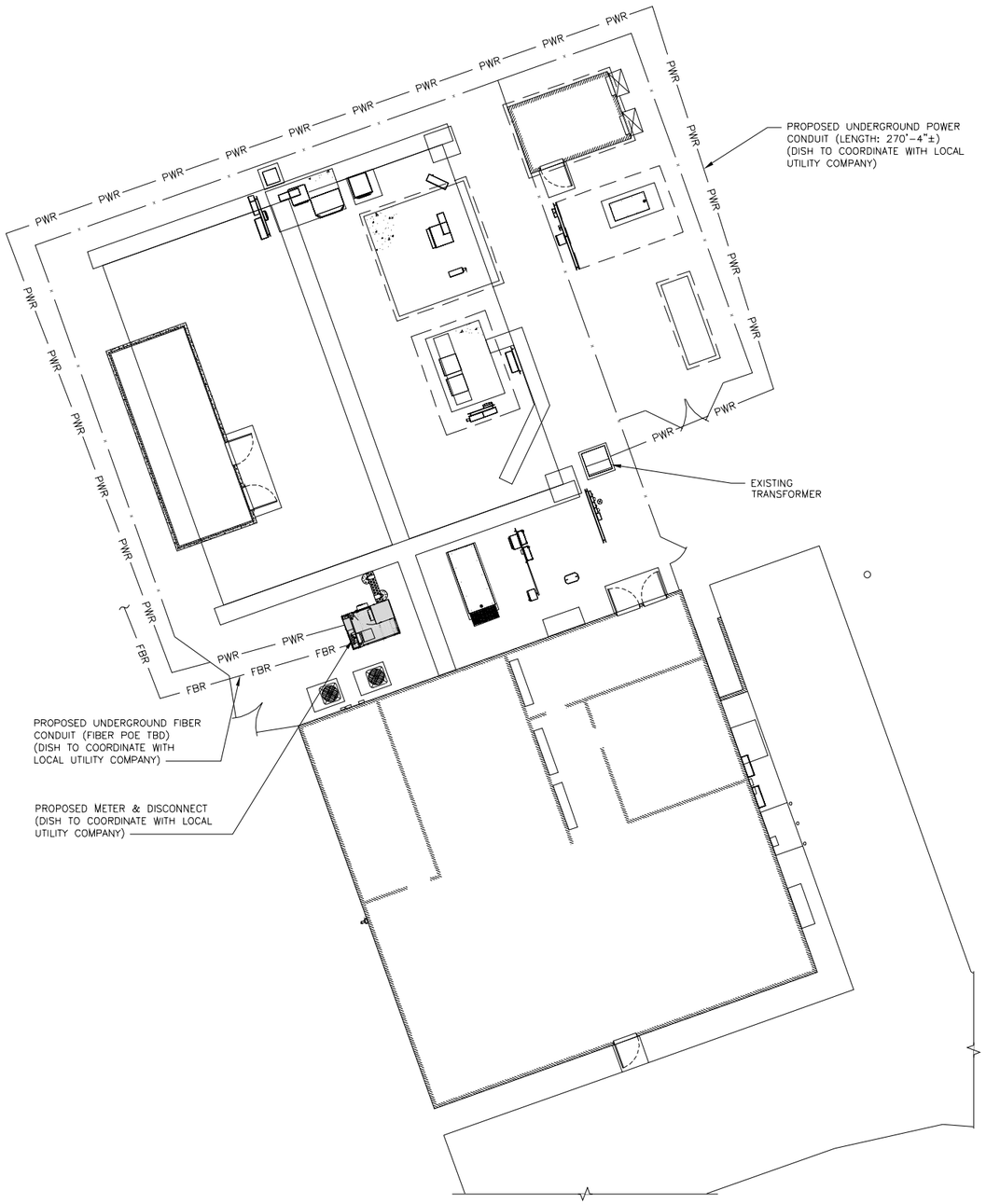
PROJECT INFORMATION
BOHVN00151A
9 MEYERS ROAD
BETHANY, CT 06524

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.



N

UTILITY ROUTE PLAN

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

1

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

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

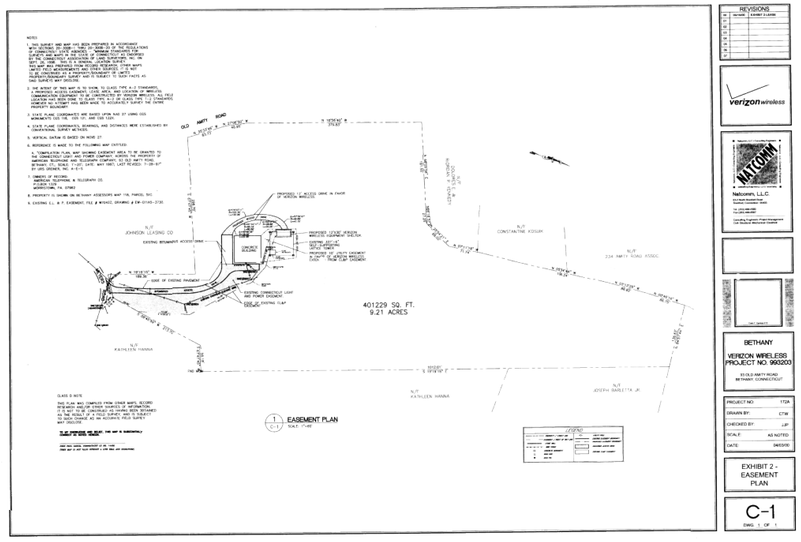
ELECTRICAL NOTES

NO SCALE

2

NOTES

1. THE SURVEY PROVIDED ON THIS SHEET IS PROVIDED FOR REFERENCE ONLY. THE UTILITY ROUTE AND EXISTING EASEMENTS MUST BE VERIFIED PRIOR TO CONSTRUCTION.



EXISTING SURVEY (BY OTHERS)

NO SCALE

3

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LITTLETON, CO 80120

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
AMT	BIW	BIW

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	09/15/2021	ISSUED FOR CONSTRUCTION

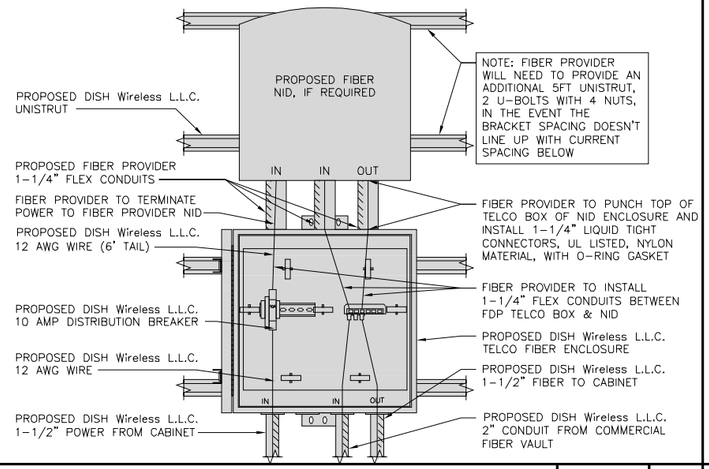
COMMONWEALTH OF MASSACHUSETTS
KRUPAKARAN KOONTHALIL
STRUCTURAL
NO. 50019
REGISTERED PROFESSIONAL ENGINEER
09/15/21

A&E PROJECT NUMBER
88008-13709244

DISH WIRELESS, L.L.C.
PROJECT INFORMATION
BOHVN00151A
9 MEYERS ROAD
BETHANY, CT 06524

SHEET TITLE
ELECTRICAL/FIBER ROUTE PLAN AND NOTES

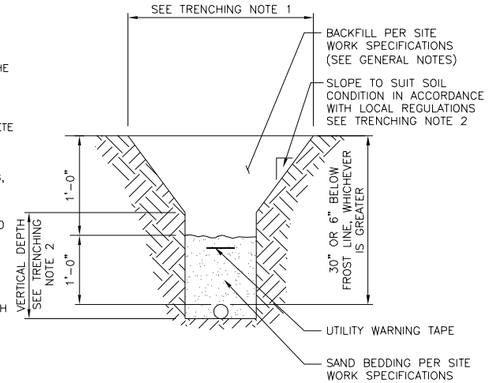
SHEET NUMBER
E-1



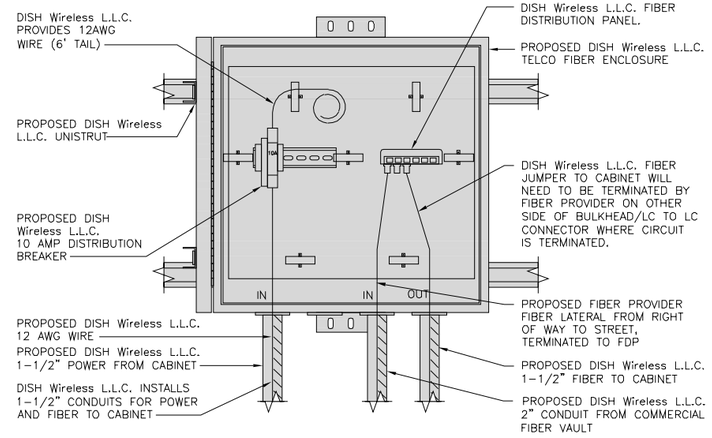
LIT TELCO BOX – INTERIOR WIRING LAYOUT (OPTIONAL) | NO SCALE | 1

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

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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PROJECT INFORMATION
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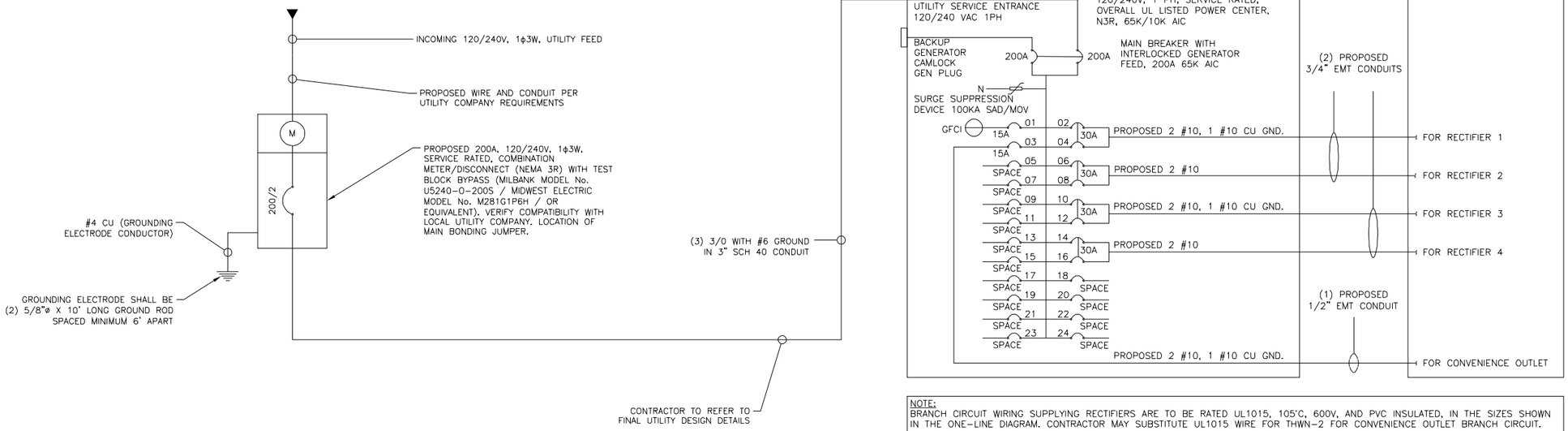
9 MEYERS ROAD
BETHANY, CT 06524

SHEET TITLE
ELECTRICAL DETAILS

SHEET NUMBER
E-2



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

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

PPC ONE-LINE DIAGRAM | NO SCALE | 1

PROPOSED CHARLES PANEL SCHEDULE

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

PANEL SCHEDULE | NO SCALE | 2

NOT USED | NO SCALE | 3

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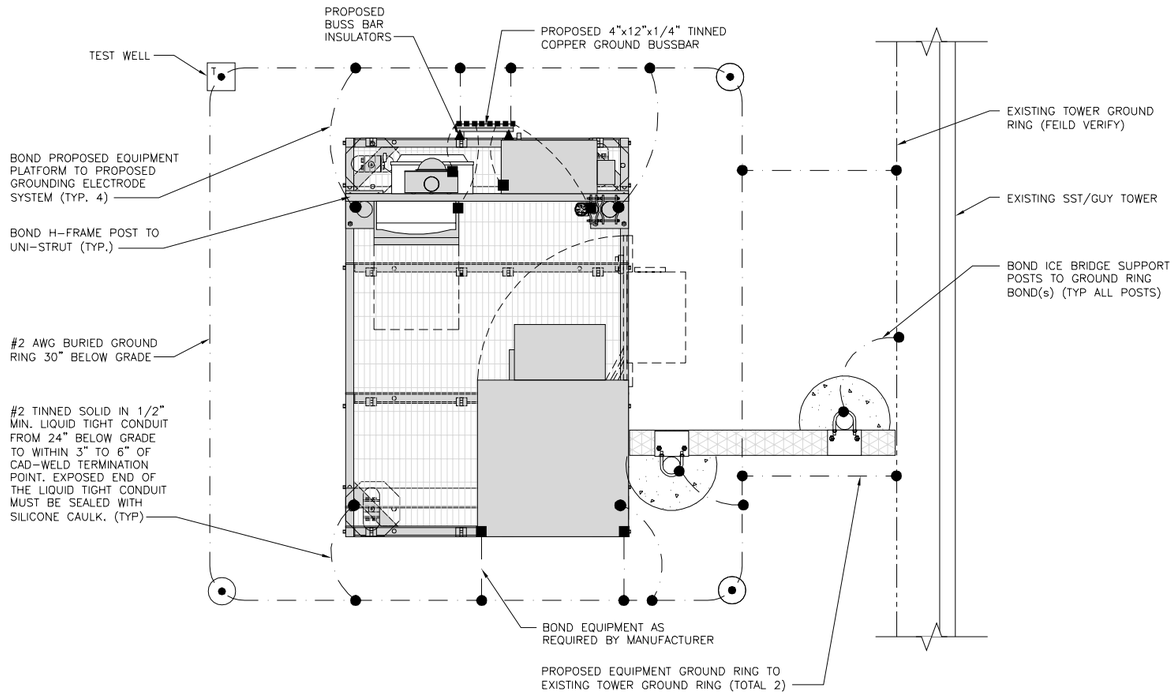
PROJECT INFORMATION
BOHVN00151A
9 MEYERS ROAD
BETHANY, CT 06524

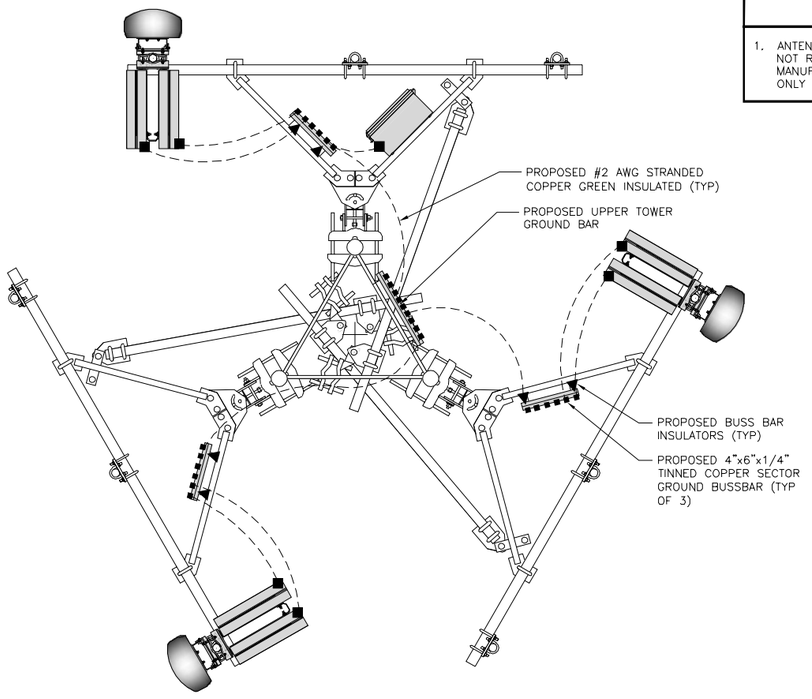
SHEET TITLE
ELECTRICAL ONE-LINE, FAULT CALCS & PANEL SCHEDULE

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
- BUSS BAR INSULATOR

GROUNDING LEGEND

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

GROUNDING KEY NOTES

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

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

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

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

(E) GROUND ROD: UL LISTED COPPER CLAD STEEL. MINIMUM 5/8" 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, L.L.C. GROUNDING NOTES.

GROUNDING KEY NOTES

NO SCALE | 3

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KRUPAKARAN KODANDAPANI
STRUCTURAL
NO. 50019
REGISTERED PROFESSIONAL ENGINEER
09/15/21

A&E PROJECT NUMBER
88008-13709244

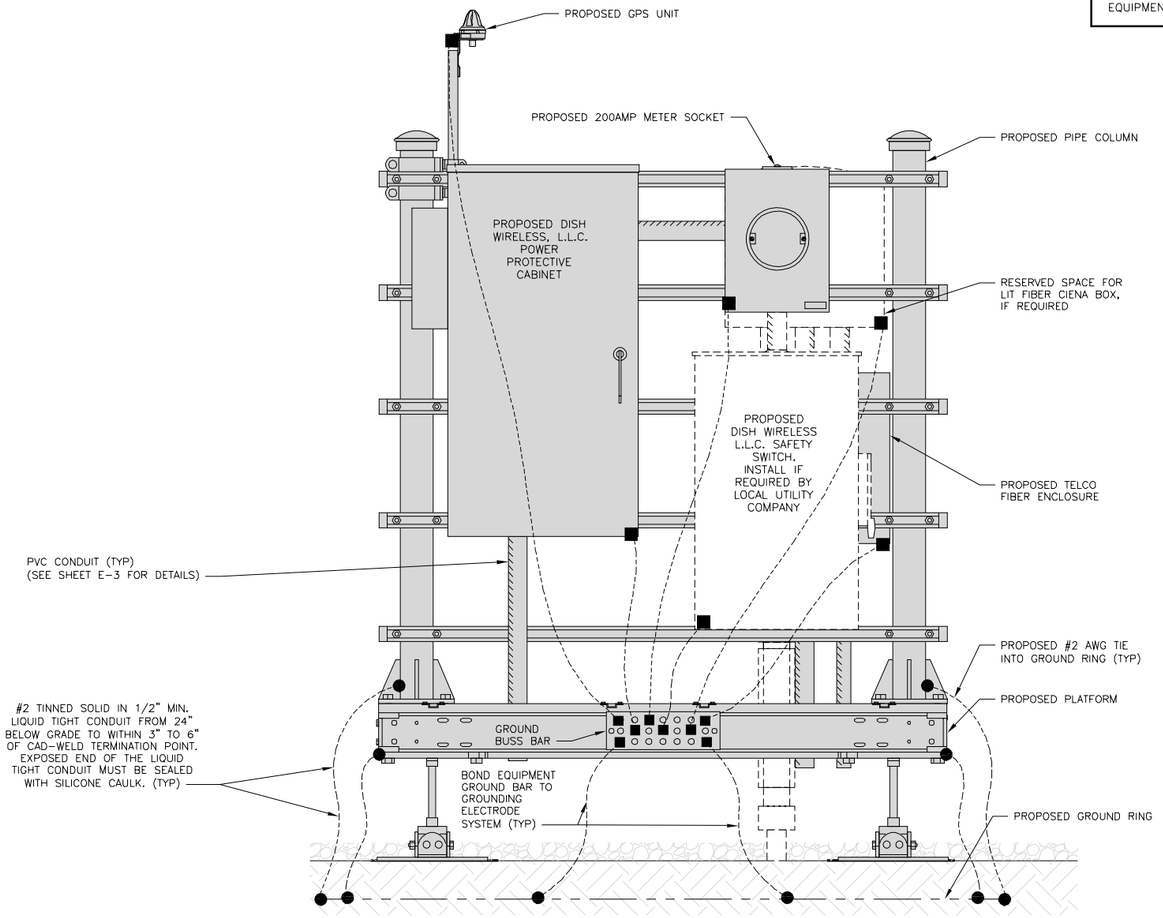
DISH WIRELESS, L.L.C.
PROJECT INFORMATION
BOHVN00151A
9 MEYERS ROAD
BETHANY, CT 06524

SHEET TITLE
GROUNDING PLANS AND NOTES

SHEET NUMBER
G-1

NOTES

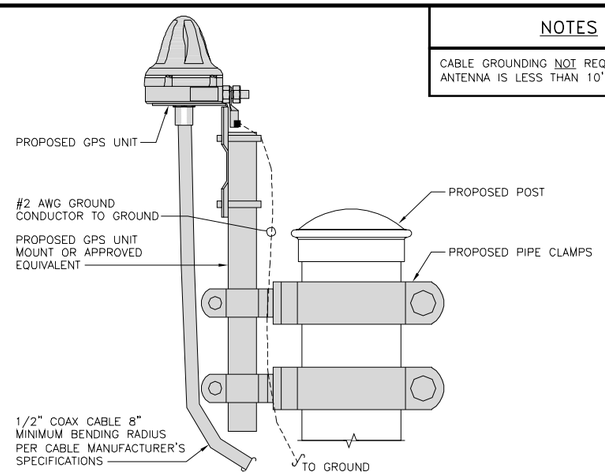
EQUIPMENT CABINET OMITTED FOR CLARITY



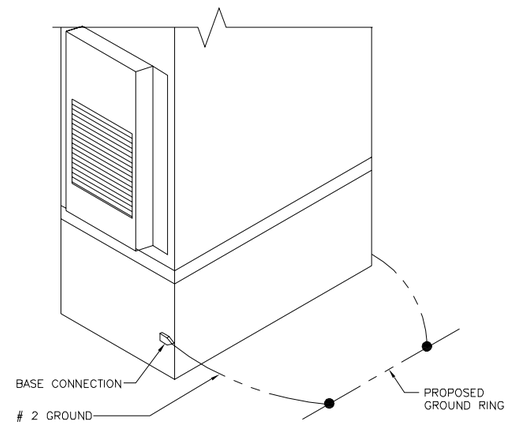
H-FRAME GROUNDING DETAIL | NO SCALE | 1

NOTES

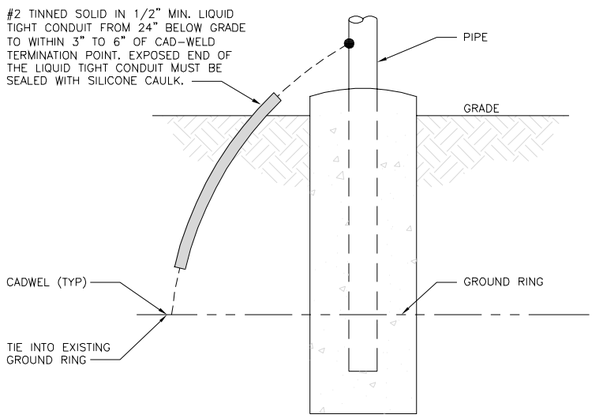
CABLE GROUNDING NOT REQUIRED WHEN ANTENNA IS LESS THAN 10' FROM CABINET



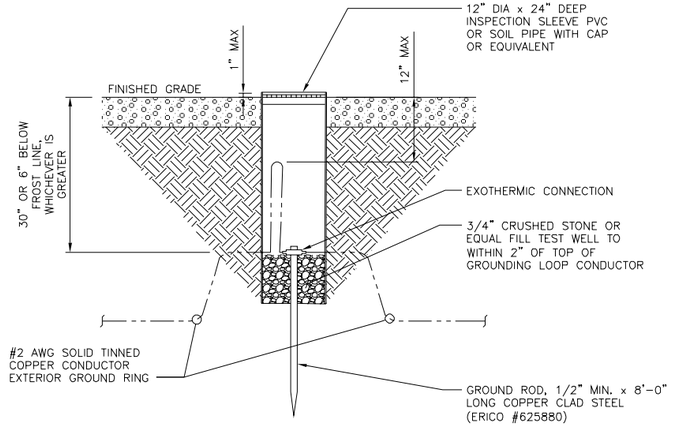
TYPICAL GPS UNIT GROUNDING | NO SCALE | 2



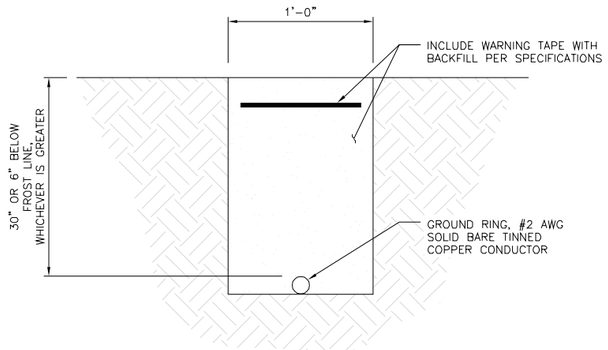
OUTDOOR CABINET GROUNDING | NO SCALE | 3



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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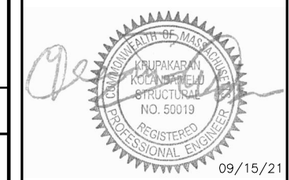


09/15/21

A&E PROJECT NUMBER

88008-13709244

DISH WIRELESS, L.L.C.
PROJECT INFORMATION

BOHVN00151A
9 MEYERS ROAD
BETHANY, CT 06524

SHEET TITLE

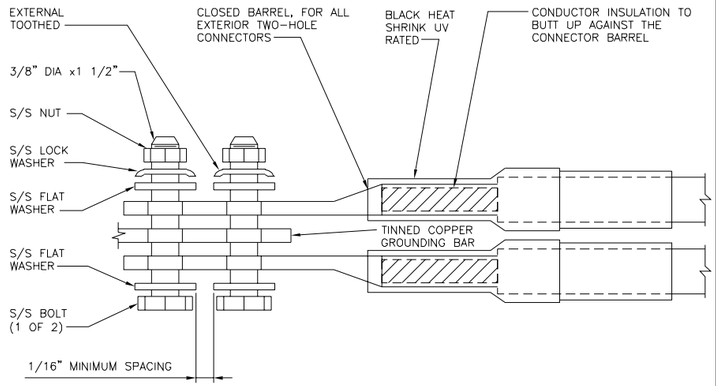
GROUNDING DETAILS

SHEET NUMBER

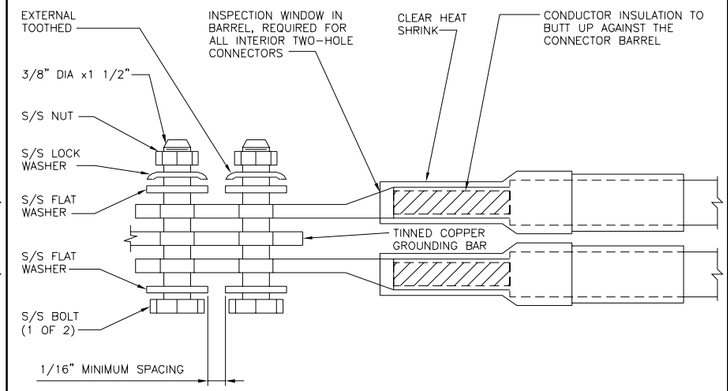
G-2

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).

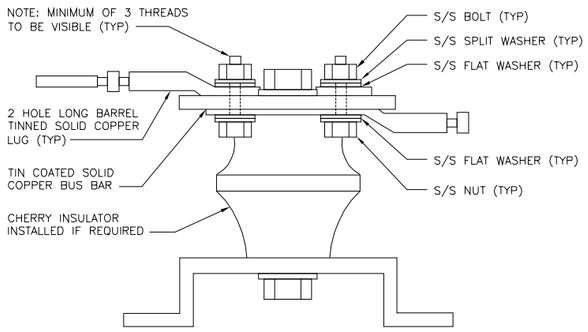
TYPICAL GROUNDING NOTES | NO SCALE | 1



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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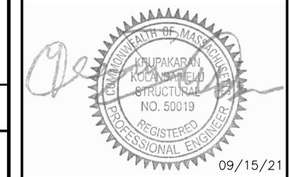

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SHEET TITLE
GROUNDING DETAILS

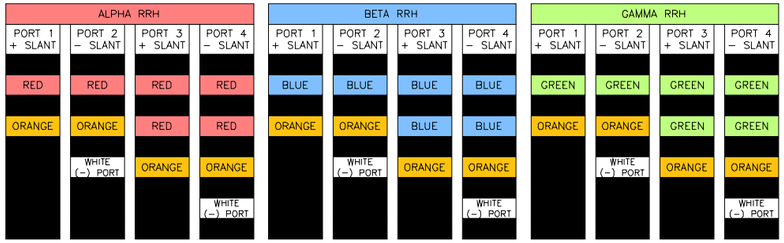
SHEET NUMBER
G-3

RF JUMPER COLOR CODING

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

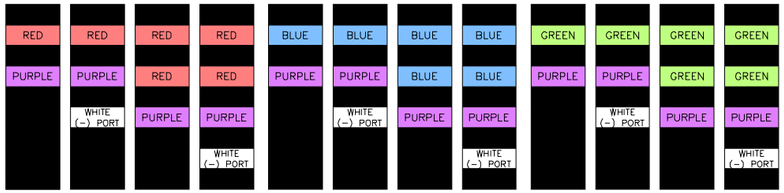
LOW-BAND RRH –
(600MHz N71 BASEBAND) +
(850MHz N26 BAND) +
(700MHz N29 BAND) – OPTIONAL PER MARKET

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



MID-BAND RRH –
(AWS BANDS N66+N70)

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

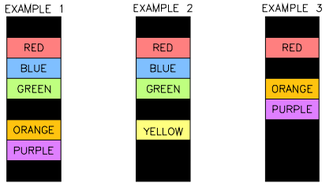


HYBRID/DISCREET CABLES

INCLUDE SECTOR BANDS BEING SUPPORTED
ALONG WITH FREQUENCY BANDS

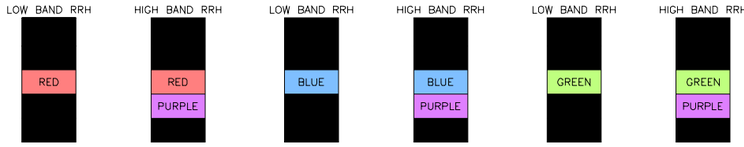
EXAMPLE 1 – HYBRID, OR DISCREET, SUPPORTS
ALL SECTORS, BOTH LOW-BANDS AND MID-BANDS

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



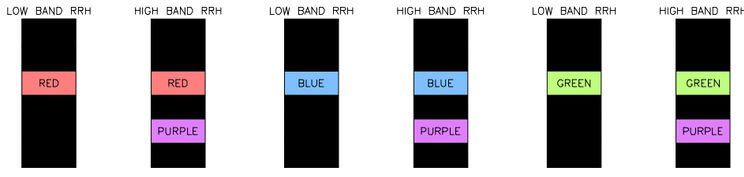
FIBER JUMPERS TO RRHs

LOW-BAND RRH FIBER CABLES HAVE SECTOR
STRIPE ONLY

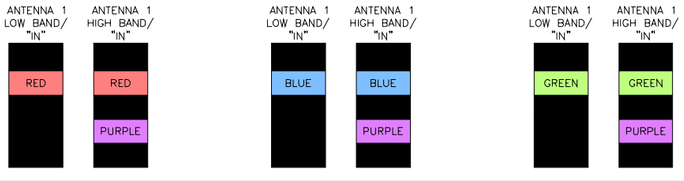


POWER CABLES TO RRHs

LOW-BAND RRH POWER CABLES HAVE SECTOR
STRIPE ONLY



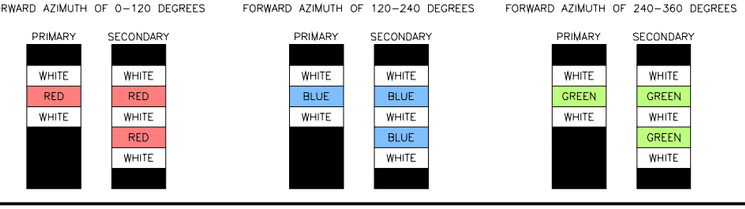
RET MOTORS AT ANTENNAS



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 CABLES 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+N26)
OPTIONAL – (N29)
ORANGE

AWS
(N66+N70+H-BLOCK)
PURPLE

CBRS TECH
(3 GHz)
YELLOW

NEGATIVE SLANT PORT
ON ANT/RRH
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

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
AMT	BIW	BIW

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	09/15/2021	ISSUED FOR CONSTRUCTION

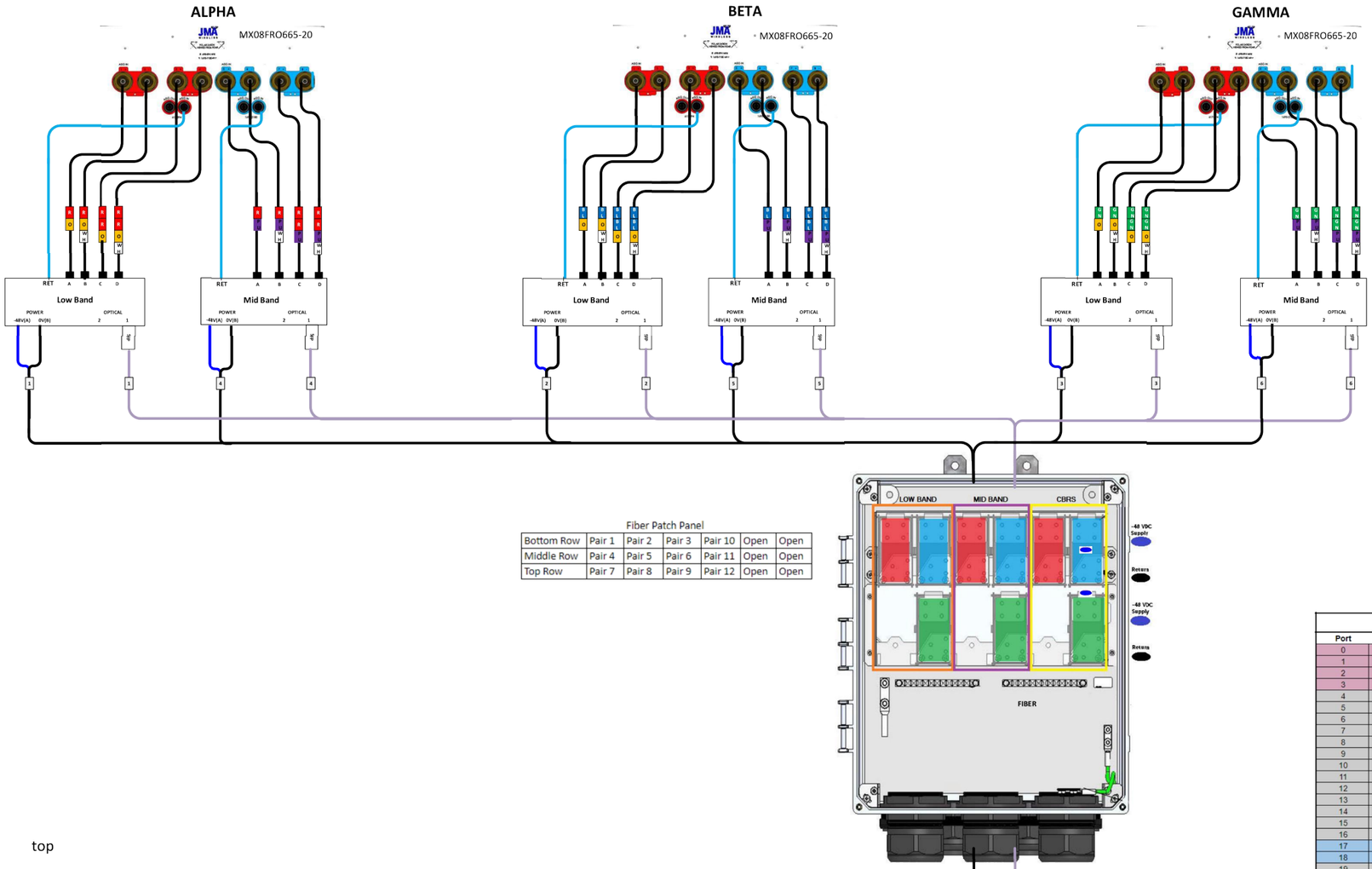
COMMONWEALTH OF MASSACHUSETTS
KRUPAKARAN KOLANTHAIVELU
STRUCTURAL
NO. 50019
REGISTERED PROFESSIONAL ENGINEER
09/15/21

A&E PROJECT NUMBER
88008-13709244

DISH WIRELESS, L.L.C.
PROJECT INFORMATION
BOHVN00151A
9 MEYERS ROAD
BETHANY, CT 06524

SHEET TITLE
RF
CABLE COLOR CODES

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

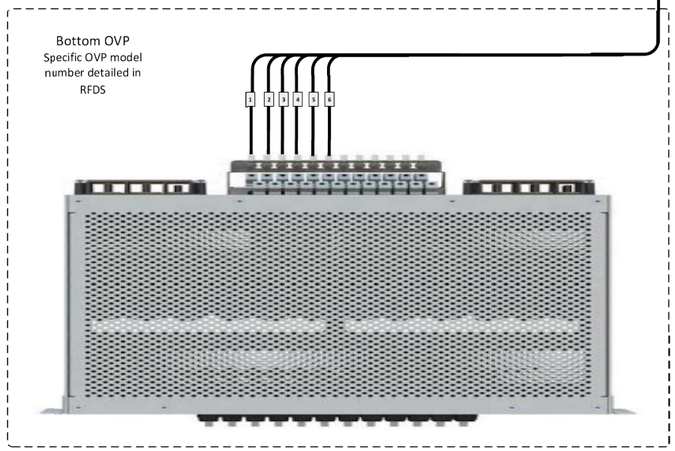
Port	Interface	Description
0	Gi0/0/0/0	SiteBoss
1	Gi0/0/0/1	CBRS - Alpha
2	Gi0/0/0/2	CBRS - Beta
3	Gi0/0/0/3	CBRS - Gamma
4	Te0/0/0/4	Fujitsu Low-Band RU - Alpha
5	Te0/0/0/5	Fujitsu Mid-Band RU - Alpha
6	Te0/0/0/6	Fujitsu Low-Band RU - Beta
7	Te0/0/0/7	Fujitsu Mid-Band RU - Beta
8	Te0/0/0/8	Fujitsu Low-Band RU - Gamma
9	Te0/0/0/9	Fujitsu Mid-Band RU - Gamma
10	Te0/0/0/10	Fixed Wifi
11	Te0/0/0/11	Fixed Wifi
12	Te0/0/0/12	Fixed Wifi
13	Te0/0/0/13	Fixed Wifi
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



Quan Liu	5G plumbing diagram JMA MX08FRO665-20 2-2-2(LB+MB)
5- Jan- 2021	SIZE: — FSCM NO: — DWG NO: — REV: 3
	SCALE: None — SHEET: —

PLUMBING DIAGRAM — NO SCALE — 1

dish wireless.
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LITTLETON, CO 80120

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CONSTRUCTION DOCUMENTS

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REV	DATE	DESCRIPTION
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09/15/21

A&E PROJECT NUMBER
88008-13709244

DISH WIRELESS, L.L.C.
PROJECT INFORMATION
BOHVN00151A
9 MEYERS ROAD
BETHANY, CT 06524

SHEET TITLE
RF
PLUMBING DIAGRAM

SHEET NUMBER
RF-2

LEGEND

EXOTHERMIC CONNECTION

MECHANICAL CONNECTION

BUSS BAR INSULATOR

CHEMICAL ELECTROLYTIC GROUNDING SYSTEM

TEST CHEMICAL ELECTROLYTIC GROUNDING SYSTEM — T

EXOTHERMIC WITH INSPECTION SLEEVE

GROUNDING BAR

GROUND ROD

TEST GROUND ROD WITH INSPECTION SLEEVE — T

SINGLE POLE SWITCH

DUPLEX RECEPTACLE

DUPLEX GFCI RECEPTACLE — GFCI

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

SMOKE DETECTION (DC) — SD

EMERGENCY LIGHTING (DC)

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

CHAIN LINK FENCE — x x x x

WOOD/WROUGHT IRON FENCE

WALL STRUCTURE

LEASE AREA

PROPERTY LINE (PL)

SETBACKS

ICE BRIDGE

CABLE TRAY

WATER LINE — W W W W W

UNDERGROUND POWER — UGP UGP UGP UGP UGP

UNDERGROUND TELCO — UGT UGT UGT UGT UGT

OVERHEAD POWER — OHP OHP OHP OHP

OVERHEAD TELCO — OHT OHT OHT OHT

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

ABOVE GROUND POWER — AGP AGP AGP AGP AGP

ABOVE GROUND TELCO — AGT AGT AGT AGT AGT

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

WORKPOINT — W.P.

SECTION REFERENCE — XX / X-X

DETAIL REFERENCE — XX / X-X

ABBREVIATIONS

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

dish wireless.

5701 SOUTH SANTA FE DRIVE
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DRAWN BY:	CHECKED BY:	APPROVED BY:
AMT	BIW	BIW

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	09/15/2021	ISSUED FOR CONSTRUCTION

COMMONWEALTH OF MASSACHUSETTS
KRUPAKARAN KODANDAPANI
STRUCTURAL
NO. 50019
REGISTERED PROFESSIONAL ENGINEER
09/15/21

A&E PROJECT NUMBER

88008-13709244

DISH WIRELESS, L.L.C.
PROJECT INFORMATION

BOHVN00151A
9 MEYERS ROAD
BETHANY, CT 06524

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, L.L.C. AND TOWER OWNER NOC & THE DISH WIRELESS, L.L.C. AND TOWER OWNER CONSTRUCTION MANAGER.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

GENERAL NOTES:

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

CONTRACTOR:GENERAL CONTRACTOR RESPONSIBLE FOR CONSTRUCTION

CARRIER:DISH WIRELESS, L.L.C.

TOWER OWNER:TOWER OWNER

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

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

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

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

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

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

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

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

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

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

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

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

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

dish wireless.

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AMT	BIW	BIW

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	09/15/2021	ISSUED FOR CONSTRUCTION

COMMONWEALTH OF MASSACHUSETTS
KRUPAKARAN KOONTHALIL
STRUCTURAL
NO. 50019
REGISTERED PROFESSIONAL ENGINEER

09/15/21

A&E PROJECT NUMBER

88008-13709244

DISH WIRELESS, L.L.C.
PROJECT INFORMATION

BOHVN00151A
9 MEYERS ROAD
BETHANY, CT 06524

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-2

CONCRETE, FOUNDATIONS, AND REINFORCING STEEL:

1. ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE ACI 301, ACI 318, ACI 336, ASTM A184, ASTM A185 AND THE DESIGN AND CONSTRUCTION SPECIFICATION FOR CAST-IN-PLACE CONCRETE.

2. UNLESS NOTED OTHERWISE, SOIL BEARING PRESSURE USED FOR DESIGN OF SLABS AND FOUNDATIONS IS ASSUMED TO BE 1000 psf.

3. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH (f'c) OF 3000 psi AT 28 DAYS, UNLESS NOTED OTHERWISE. NO MORE THAN 90 MINUTES SHALL ELAPSE FROM BATCH TIME TO TIME OF PLACEMENT UNLESS APPROVED BY THE ENGINEER OF RECORD. TEMPERATURE OF CONCRETE SHALL NOT EXCEED 90'f AT TIME OF PLACEMENT.

4. CONCRETE EXPOSED TO FREEZE-THAW CYCLES SHALL CONTAIN AIR ENTRAINING ADMIXTURES. AMOUNT OF AIR ENTRAINMENT TO BE BASED ON SIZE OF AGGREGATE AND F3 CLASS EXPOSURE (VERY SEVERE). CEMENT USED TO BE TYPE II PORTLAND CEMENT WITH A MAXIMUM WATER-TO-CEMENT RATIO (W/C) OF 0.45.

5. ALL STEEL REINFORCING SHALL CONFORM TO ASTM A615. ALL WELDED WIRE FABRIC (WWF) SHALL CONFORM TO ASTM A185. ALL SPLICES SHALL BE CLASS "B" TENSION SPLICES, UNLESS NOTED OTHERWISE. ALL HOOKS SHALL BE STANDARD 90 DEGREE HOOKS, UNLESS NOTED OTHERWISE. YIELD STRENGTH (Fy) OF STANDARD DEFORMED BARS ARE AS FOLLOWS:

#4 BARS AND SMALLER 40 ksi

#5 BARS AND LARGER 60 ksi

6. THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCING STEEL UNLESS SHOWN OTHERWISE ON DRAWINGS:

- CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH 3"
- CONCRETE EXPOSED TO EARTH OR WEATHER:
- #6 BARS AND LARGER 2"
- #5 BARS AND SMALLER 1-1/2"
- CONCRETE NOT EXPOSED TO EARTH OR WEATHER:
- SLAB AND WALLS 3/4"
- BEAMS AND COLUMNS 1-1/2"

7. A TOOLED EDGE OR A 3/4" CHAMFER SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE, UNLESS NOTED OTHERWISE, IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.

ELECTRICAL INSTALLATION NOTES:

1. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC AND ALL APPLICABLE FEDERAL, STATE, AND LOCAL CODES/ORDINANCES.

2. CONDUIT ROUTINGS ARE SCHEMATIC. CONTRACTOR SHALL INSTALL CONDUITS SO THAT ACCESS TO EQUIPMENT IS NOT BLOCKED AND TRIP HAZARDS ARE ELIMINATED.

3. WIRING, RACEWAY AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC.

4. ALL CIRCUITS SHALL BE SEGREGATED AND MAINTAIN MINIMUM CABLE SEPARATION AS REQUIRED BY THE NEC.

4.1. ALL EQUIPMENT SHALL BEAR THE UNDERWRITERS LABORATORIES LABEL OF APPROVAL, AND SHALL CONFORM TO REQUIREMENT OF THE NATIONAL ELECTRICAL CODE.

4.2. ALL OVERCURRENT DEVICES SHALL HAVE AN INTERRUPTING CURRENT RATING THAT SHALL BE GREATER THAN THE SHORT CIRCUIT CURRENT TO WHICH THEY ARE SUBJECTED, 22,000 AIC MINIMUM. VERIFY AVAILABLE SHORT CIRCUIT CURRENT DOES NOT EXCEED THE RATING OF ELECTRICAL EQUIPMENT IN ACCORDANCE WITH ARTICLE 110.24 NEC OR THE MOST CURRENT ADOPTED CODE PRE THE GOVERNING JURISDICTION.

5. EACH END OF EVERY POWER PHASE CONDUCTOR, GROUNDING CONDUCTOR, AND TELCO CONDUCTOR OR CABLE SHALL BE LABELED WITH COLOR-CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, 1/2" PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL). THE IDENTIFICATION METHOD SHALL CONFORM WITH NEC AND OSHA.

6. ALL ELECTRICAL COMPONENTS SHALL BE CLEARLY LABELED WITH LAMICOID TAGS SHOWING THEIR RATED VOLTAGE, PHASE CONFIGURATION, WIRE CONFIGURATION, POWER OR AMPACITY RATING AND BRANCH CIRCUIT ID NUMBERS (i.e. PANEL BOARD AND CIRCUIT ID'S).

7. PANEL BOARDS (ID NUMBERS) SHALL BE CLEARLY LABELED WITH PLASTIC LABELS.

8. TIE WRAPS ARE NOT ALLOWED.

9. ALL POWER AND EQUIPMENT GROUND WIRING IN TUBING OR CONDUIT SHALL BE SINGLE COPPER CONDUCTOR (#14 OR LARGER) WITH TYPE THHW, THWN, THWN-2, XHHW, XHHW-2, THW, THW-2, RHW, OR RHW-2 INSULATION UNLESS OTHERWISE SPECIFIED.

10. SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED INDOORS SHALL BE SINGLE COPPER CONDUCTOR (#6 OR LARGER) WITH TYPE THHW, THWN, THWN-2, XHHW, XHHW-2, THW, THW-2, RHW, OR RHW-2 INSULATION UNLESS OTHERWISE SPECIFIED.

11. POWER AND CONTROL WIRING IN FLEXIBLE CORD SHALL BE MULTI-CONDUCTOR, TYPE SOOW CORD (#14 OR LARGER) UNLESS OTHERWISE SPECIFIED.

12. POWER AND CONTROL WIRING FOR USE IN CABLE TRAY SHALL BE MULTI-CONDUCTOR, TYPE TC CABLE (#14 OR LARGER), WITH TYPE THHW, THWN, THWN-2, XHHW, XHHW-2, THW, THW-2, RHW, OR RHW-2 INSULATION UNLESS OTHERWISE SPECIFIED.

13. ALL POWER AND GROUNDING CONNECTIONS SHALL BE CRIMP-STYLE, COMPRESSION WIRE LUGS AND WIRE NUTS BY THOMAS AND BETTS (OR EQUAL). LUGS AND WIRE NUTS SHALL BE RATED FOR OPERATION NOT LESS THAN 75° C (90° C IF AVAILABLE).

14. RACEWAY AND CABLE TRAY SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND NEC.

15. ELECTRICAL METALLIC TUBING (EMT), INTERMEDIATE METAL CONDUIT (IMC), OR RIGID METAL CONDUIT (RMC) SHALL BE USED FOR EXPOSED INDOOR LOCATIONS.

16. ELECTRICAL METALLIC TUBING (EMT) OR METAL-CLAD CABLE (MC) SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.

17. SCHEDULE 40 PVC UNDERGROUND ON STRAIGHTS AND SCHEDULE 80 PVC FOR ALL ELBOWS/90s AND ALL APPROVED ABOVE GRADE PVC CONDUIT.

18. LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID-TITE FLEX) SHALL BE USED INDOORS AND OUTDOORS, WHERE VIBRATION OCCURS OR FLEXIBILITY IS NEEDED.

19. CONDUIT AND TUBING FITTINGS SHALL BE THREADED OR COMPRESSION-TYPE AND APPROVED FOR THE LOCATION USED. SET SCREW FITTINGS ARE NOT ACCEPTABLE.

20. CABINETS, BOXES AND WIRE WAYS SHALL BE LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND THE NEC.

21. WIREWAYS SHALL BE METAL WITH AN ENAMEL FINISH AND INCLUDE A HINGED COVER, DESIGNED TO SWING OPEN DOWNWARDS (WIREMOLD SPECMATE WIREWAY).

22. SLOTTED WIRING DUCT SHALL BE PVC AND INCLUDE COVER (PANDUIT TYPE E OR EQUAL).

23. CONDUITS SHALL BE FASTENED SECURELY IN PLACE WITH APPROVED NON-PERFORATED STRAPS AND HANGERS. EXPLOSIVE DEVICES (i.e. POWDER-ACTUATED) FOR ATTACHING HANGERS TO STRUCTURE WILL NOT BE PERMITTED. CLOSELY FOLLOW THE LINES OF THE STRUCTURE, MAINTAIN CLOSE PROXIMITY TO THE STRUCTURE AND KEEP CONDUITS IN TIGHT ENVELOPES. CHANGES IN DIRECTION TO ROUTE AROUND OBSTACLES SHALL BE MADE WITH CONDUIT OUTLET BODIES. CONDUIT SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER. PARALLEL AND PERPENDICULAR TO STRUCTURE WALL AND CEILING LINES. ALL CONDUIT SHALL BE FISHED TO CLEAR OBSTRUCTIONS. ENDS OF CONDUITS SHALL BE TEMPORARILY CAPPED FLUSH TO FINISH GRADE TO PREVENT CONCRETE, PLASTER OR DIRT FROM ENTERING. CONDUITS SHALL BE RIGIDLY CLAMPED TO BOXES BY GALVANIZED MALLEABLE IRON BUSHING ON INSIDE AND GALVANIZED MALLEABLE IRON LOCKNUT ON OUTSIDE AND INSIDE.

24. EQUIPMENT CABINETS, TERMINAL BOXES, JUNCTION BOXES AND PULL BOXES SHALL BE GALVANIZED OR EPOXY-COATED SHEET STEEL. SHALL MEET OR EXCEED UL 50 AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND NEMA 3 (OR BETTER) FOR EXTERIOR LOCATIONS.

25. METAL RECEPTACLE, SWITCH AND DEVICE BOXES SHALL BE GALVANIZED, EPOXY-COATED OR NON-CORRODING; SHALL MEET OR EXCEED UL 514A AND NEMA OS 1 AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND WEATHER PROTECTED (WP OR BETTER) FOR EXTERIOR LOCATIONS.

26. NONMETALLIC RECEPTACLE, SWITCH AND DEVICE BOXES SHALL MEET OR EXCEED NEMA OS 2 (NEWEST REVISION) AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND WEATHER PROTECTED (WP OR BETTER) FOR EXTERIOR LOCATIONS.

27. THE CONTRACTOR SHALL NOTIFY AND OBTAIN NECESSARY AUTHORIZATION FROM THE CARRIER AND/OR DISH WIRELESS, L.L.C. AND TOWER OWNER BEFORE COMMENCING WORK ON THE AC POWER DISTRIBUTION PANELS.

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

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

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

dish wireless.

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AMT	BIW	BIW

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	09/15/2021	ISSUED FOR CONSTRUCTION

COMMONWEALTH OF MASSACHUSETTS
KRUPAKARAN KODANDAPANI
STRUCTURAL
NO. 50019
REGISTERED PROFESSIONAL ENGINEER

09/15/21

A&E PROJECT NUMBER

88008-13709244

DISH WIRELESS, L.L.C.
PROJECT INFORMATION

BOHVN00151A
9 MEYERS ROAD
BETHANY, CT 06524

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.

STRUCTURAL STEEL NOTES:

1. STRUCTURAL STEEL SHALL CONFORM TO THE LATEST EDITION OF THE AISC "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS."

2. STRUCTURAL STEEL ROLLED SHAPES, PLATES AND BARS SHALL CONFORM TO THE FOLLOWING ASTM DESIGNATIONS:

A. ASTM A-572, GRADE 50 – ALL W SHAPES, UNLESS NOTED OR A992 OTHERWISE

B. ASTM A-36 – ALL OTHER ROLLED SHAPES, PLATES AND BARS UNLESS NOTED OTHERWISE.

C. ASTM A-500, GRADE B – HSS SECTION (SQUARE, RECTANGULAR, AND ROUND)

D. ASTM A-325, TYPE SC OR N – ALL BOLTS FOR CONNECTING STRUCTURAL MEMBERS

E. ASTM F-1554 07 – ALL ANCHOR BOLTS, UNLESS NOTED OTHERWISE

3. ALL EXPOSED STRUCTURAL STEEL MEMBERS SHALL BE HOT-DIPPED GALVANIZED AFTER FABRICATION PER ASTM A123. EXPOSED STEEL HARDWARE AND ANCHOR BOLTS SHALL BE GALVANIZED PER ASTM A153 OR B695.

4. ALL FIELD CUT SURFACES, FIELD DRILLED HOLES AND GROUND SURFACES WHERE EXISTING PAINT OR GALVANIZATION REMOVAL WAS REQUIRED SHALL BE REPAIRED WITH (2) BRUSHED COATS OF ZRC GALVILITE COLD GALVANIZING COMPOUND PER ASTM A780 AND MANUFACTURER'S RECOMMENDATIONS.

5. DO NOT DRILL HOLES THROUGH STRUCTURAL STEEL MEMBERS EXCEPT AS SHOWN AND DETAILED ON STRUCTURAL DRAWINGS.

6. CONNECTIONS:

A. ALL WELDING TO BE PERFORMED BY AWS CERTIFIED WELDERS AND CONDUCTED IN ACCORDANCE WITH THE LATEST EDITION OF THE AWS WELDING CODE D1.1.

B. ALL WELDS SHALL BE INSPECTED VISUALLY. 25% OF WELDS SHALL BE INSPECTED WITH DYE PENETRANT OR MAGNETIC PARTICLE TO MEET THE ACCEPTANCE CRITERIA OF AWS D1.1. REPAIR ALL WELDS AS NECESSARY.

C. INSPECTION SHALL BE PERFORMED BY AN AWS CERTIFIED WELD INSPECTOR.

D. IT IS THE CONTRACTORS RESPONSIBILITY TO PROVIDE BURNING/WELDING PERMITS AS REQUIRED BY LOCAL GOVERNING AUTHORITY AND IF REQUIRED SHALL HAVE FIRE DEPARTMENT DETAIL FOR ANY WELDING ACTIVITY.

E. ALL ELECTRODES TO BE LOW HYDROGEN, MATCHING FILLER METAL, PER AWS D1.1, UNLESS NOTED OTHERWISE.

F. MINIMUM WELD SIZE TO BE 0.1875 INCH FILLET WELDS, UNLESS NOTED OTHERWISE.

G. PRIOR TO FIELD WELDING GALVANIZING MATERIAL, CONTRACTOR SHALL GRIND OFF GALVANIZING ½" BEYOND ALL FIELD WELD SURFACES. AFTER WELD AND WELD INSPECTION IS COMPLETE, REPAIR ALL GROUND AND WELDED SURFACES WITH ZRC GALVILITE COLD GALVANIZING COMPOUND PER ASTM A780 AND MANUFACTURERS RECOMMENDATIONS.

H. THE CONTRACTOR SHALL PROVIDE ADEQUATE SHORING AND/OR BRACING WHERE REQUIRED DURING CONSTRUCTION UNTIL ALL CONNECTIONS ARE COMPLETE.

I. ANY FIELD CHANGES OR SUBSTITUTIONS SHALL HAVE PRIOR APPROVAL FROM THE ENGINEER, AND DISH WIRELESS L.L.C. PROJECT MANAGER IN WRITING

dish wireless.

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RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	09/15/2021	ISSUED FOR CONSTRUCTION

COMMONWEALTH OF MASSACHUSETTS
KRUPAKARAN KOLANTHAIVELU
STRUCTURAL
NO. 50019
REGISTERED PROFESSIONAL ENGINEER
09/15/21

A&E PROJECT NUMBER
88008-13709244

DISH WIRELESS, L.L.C.
PROJECT INFORMATION
BOHVN00151A
9 MEYERS ROAD
BETHANY, CT 06524

SHEET TITLE
GENERAL NOTES

SHEET NUMBER
GN-4

ENGINEERING:

STRUCTURAL ANALYSIS

MOUNT ANALYSIS

AMERICAN TOWER®
CORPORATION

AIROSMITH
ENGINEERING

Structural Analysis Report

Structure	:	**337.5 ft Self Supported AT&T TAG Tower**
ATC Site Name	:	**BETHANY CT, CT**
ATC Site Number	:	**88008**
Engineering Number	:	**13709244_C3_03**
Proposed Carrier	:	**DISH WIRELESS L.L.C.**
Carrier Site Name	:	**BOHVN00151A**
Carrier Site Number	:	**BOHVN00151A**
Site Location	:	**9 Meyers Road** **Bethany, CT 06524-3400** **41.4048, -73**
County	:	**New Haven**
Date	:	**October 8, 2021**
Max Usage	:	**75%**
Result	:	**Pass**

Prepared By:

Andrew Vargo
Airosmith Engineering

Reviewed By:

STATE OF CONNECTICUT
JOSEPH R. JOHNSTON
29460
LICENSED
PROFESSIONAL ENGINEER

10/8/2021

COA : PEC.0001553

Table of Contents

Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 337.5 ft Self Supported AT&T TAG tower to reflect the change in loading by DISH WIRELESS L.L.C..

Supporting Documents

Tower Drawings	CSEI Analysis ATC Engineering #73115244, dated November 18, 2002
Foundation Drawing	Mapping by ETS Project #120302.01, dated June 18, 2012
Geotechnical Report	Geotel Report #E12-221, dated June 5, 2012
Modifications	ATC Job #OAA712592_C6_13, dated August 13, 2018

Analysis

The tower was analyzed using Power Line System's tower analysis software. This program considers an elastic three-dimensional model and second-order effects per ANSI/TIA-222.

Basic Wind Speed:	119 mph (3-second gust)
Basic Wind Speed w/ Ice:	50 mph (3-second gust) w/ 1.00" radial ice concurrent
Code:	ANSI/TIA-222-H / 2015 IBC / 2018 Connecticut State Building Code
Exposure Category:	B
Risk Category:	II
Topographic Factor Procedure:	Method 1
Topographic Category:	1
Crest Height (H):	0 ft
Crest Length (L):	0 ft

Conclusion

Based on the analysis results, the structure meets the requirements per the applicable codes listed above. The tower and foundation can support the equipment as described in this report.

If you have any questions or require additional information, please contact American Tower via email at Engineering@americantower.com. Please include the American Tower site name, site number, and engineering number in the subject line for any questions.

Existing and Reserved Equipment

Elev.[1] (ft)	Qty	Equipment	Mount Type	Lines	Carrier
344.0	1	Rohde & Schwarz ADD090	Leg	(2) 7/8" Coax	US DEPT OF HOMELAND SECURITY
326.0	1	Kathrein Scala 750 10074	Side Arm	(1) 1 5/8" Coax	LIGADO NETWORKS LLC
320.0	1	Sinclair SC281-L	Sector Frame	(1) 7/8" Coax	US DEPT OF HOMELAND SECURITY
315.0	1	Sinclair SC381-HL (160")		(1) 7/8" Coax	
300.0	-	-		(1) 1/2" Coax	
291.0	2	Generic 8' Omni	Side Arm	-	UNKNOWN
285.0	1	Sinclair SC281-L	Leg/Flush	(1) 7/8" Coax	US DEPT OF HOMELAND SECURITY
266.0	1	Generic 8' Omni	Side Arm	-	UNKNOWN
253.0	12	Decibel DB844H90E-XY	Leg	(12) 1 5/8" Coax	SPRINT NEXTEL
240.0	6	Alcatel-Lucent 800 MHz 2X50W RRH w/ Filter	Sector Frame	(4) 1 1/4" Hybriflex Cable	
	3	Commscope NNVV-65B-R4			
	3	RFS APXVTM14-ALU-I20			
	3	Alcatel-Lucent TD-RRH8x20-25 w/ Solar Shield			
	3	Alcatel-Lucent 1900 MHz 4X45 RRH			
222.0	3	RFS APXVAARR24_43-U-NA20	Sector Frame	(3) 1 1/4" (1.25"-31.8mm) Fiber (6) 1 5/8" Coax	T-MOBILE
	3	RFS APX16DWV-16DWVS-E-A20			
	3	Ericsson Radio 4449 B12,B71			
	3	Andrew ETT19V2A12UB			
213.0	1	Andrew DB616E-BC	Side Arm	(1) 1 1/4" Coax	US DEPT OF HOMELAND SECURITY
180.0	3	Samsung Outdoor CBRS 20W RRH –Clip-on Antenna	Sector Frame	(12) 1 5/8" Coax (2) 1 5/8" Hybriflex	VERIZON WIRELESS
	6	JMA Wireless MX06FRO660-03			
	3	Samsung MT6407-77A			
	1	Raycap RCMDC-6627-PF-48			
	6	Andrew DB844H90E-XY			
	3	Samsung B5/B13 RRH-BR04C			
	3	Samsung B2/B66A RRH-BR049			
	3	Samsung RT4401-48A			
158.0	2	Andrew SBNH-1D6565C (60.8 lbs)	Sector Frame	(1) 0.39" (10mm) Fiber Trunk (2) 0.78" (19.7mm) 8 AWG 6 (6) 1 5/8" Coax (1) 3" conduit	AT&T MOBILITY
	3	Raycap DC2-48-60-0-9E			
	6	Powerwave Allgon LGP21401			
	1	Raycap FC12-PC6-10E			
	3	Ericsson RRUS 11 (Band 12)			
	3	Powerwave Allgon 7770.00			
	1	KMW AM-X-CD-16-65-00T-RET			
	3	Powerwave Allgon LGP21901			
147.0	1	Procom CXL 900-3LW	Side Arm	(1) 1/2" Coax	SIGFOX S.A.
	1	Generic 5" x 3" x 2" Cavity Filter			
	1	Generic Low Noise Amplifier			
100.0	3	RFS APXV18-206517S-C	Flush	(6) 1 5/8" Coax	METRO PCS INC
48.0	1	PCTEL GPS-TMG-HR-26N	Stand-Off	(1) 1/2" Coax	SPRINT NEXTEL

Equipment to be Removed

Elev.[1] (ft)	Qty	Equipment	Mount Type	Lines	Carrier
No loading was considered as removed as part of this analysis.					

Proposed Equipment

Elev.[1] (ft)	Qty	Equipment	Mount Type	Lines	Carrier
140.0	1	Commscope RDIDC-9181-PF-48	Sector Frame	(1) 1.60" (40.6mm) Hybrid	DISH WIRELESS L.L.C.
	3	Fujitsu TA08025-B604			
	3	Fujitsu TA08025-B605			
	3	JMA Wireless MX08FRO665-21			

[1] Contracted elevations are shown for appurtenances within contracted installation tolerances. Appurtenances outside of contract limits are shown at installed elevations.

Install proposed lines on the tower face with the least amount of existing lines.

Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Legs	57%	Pass
Diagonals	75%	Pass
Truss Diagonals	72%	Pass
Horizontals	70%	Pass
Truss Horizontals	58%	Pass
Anchor Bolts	42%	Pass

Foundations

Reaction Component	Analysis Reactions	% of Usage
Uplift (Kips)	290.9	52%
Download (kips)	419.1	3%

The structure base reactions resulting from this analysis were found to be acceptable through analysis based on geotechnical and foundation information, therefore no modification or reinforcement of the foundation will be required.

Standard Conditions

All engineering services performed by A.T. Engineering Service, PLLC are prepared on the basis that the information used is current and correct. This information may consist of, but is not limited to the following:

- Information supplied by the client regarding antenna, mounts and feed line loading
- Information from drawings, design and analysis documents, and field notes in the possession of A.T. Engineering Service, PLLC

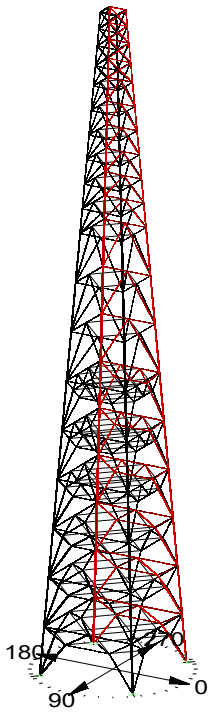
It is the responsibility of the client to ensure that the information provided to A.T. Engineering Service, PLLC and used in the performance of our engineering services is correct and complete.

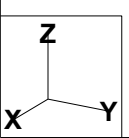
All assets of American Tower Corporation, its affiliates, and subsidiaries (collectively "American Tower") are inspected at regular intervals. Based upon these inspections and in the absence of information to the contrary, American Tower assumes that all structures were constructed in accordance with the drawings and specifications.

Unless explicitly agreed by both the client and A.T. Engineering Service, PLLC, all services will be performed in accordance with the current revision of ANSI/TIA-222.

All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. A.T. Engineering Service, PLLC is not responsible for the conclusions, opinions and recommendations made by others based on the information supplied herein.

American Tower Corp., Project: "88008- 13709244_C3_03"
Tower Version 16.73, 10:18:18 AM Friday, October 8, 2021
Undeformed geometry displayed





100 (ft)

Project Name : 88008 - Bethany CT
Project Notes: Dish Wireless - 13709244_C3_03
Project File : N:\L2 - ATC\88008\2021.10.08 - Dish Wireless - 13709244_C3_03\88008- 13709244_C3_03.TOW
Date run : 10:13:11 AM Friday, October 8, 2021
by : Tower Version 16.73
Licensed to : American Tower Corp.

Successfully performed nonlinear analysis

Member check option: ANSI/TIA 222-G-1
Connection rupture check: Not Checked
Crossing diagonal check: Fixed
Included angle check: None
Climbing load check: None
Redundant members checked with: Actual Force
Loads from file: N:\L2 - ATC\88008\2021.10.08 - Dish Wireless - 13709244_C3_03\88008- 13709244_C3_03.eia

*** Analysis Results:

Maximum element usage is 75.26% for Angle "D 12X" in load case "W -90"

Foundation Design Forces For All Load Cases:

Note: loads are factored.

Load Case	Foundation Description	Axial Force (kips)	Shear Force (kips)	Bending Moment (ft-k)	Foundation Usage %
W 0	0P	300.92	47.81	4.77	0.00
W 0	0X	294.99	46.83	4.52	0.00
W 0	0XY	-173.64	33.89	5.13	0.00
W 0	0Y	-172.34	34.58	5.35	0.00
W 180	0P	-168.77	34.43	5.41	0.00
W 180	0X	-169.76	33.84	5.22	0.00
W 180	0XY	291.11	46.77	4.60	0.00
W 180	0Y	297.36	47.66	4.84	0.00
W 45	0P	419.08	62.92	4.18	0.00
W 45	0X	60.93	22.98	5.33	0.00
W 45	0XY	-290.90	50.53	5.63	0.00
W 45	0Y	60.82	22.93	5.32	0.00
W -45	0P	66.15	24.18	5.59	0.00
W -45	0X	413.88	62.49	4.22	0.00
W -45	0XY	58.80	22.24	5.15	0.00
W -45	0Y	-288.89	50.63	5.71	0.00
W 90	0P	301.02	47.83	4.78	0.00
W 90	0X	-172.33	34.60	5.36	0.00
W 90	0XY	-173.54	33.87	5.13	0.00
W 90	0Y	294.78	46.80	4.51	0.00
W -90	0P	-168.87	34.46	5.42	0.00
W -90	0X	297.56	47.69	4.84	0.00
W -90	0XY	291.01	46.75	4.59	0.00
W -90	0Y	-169.77	33.81	5.21	0.00
W 0 Ice	0P	151.59	19.81	1.76	0.00
W 0 Ice	0X	146.68	19.34	1.66	0.00
W 0 Ice	0XY	31.66	3.17	3.15	0.00
W 0 Ice	0Y	35.82	3.24	3.23	0.00
W 180 Ice	0P	40.24	3.58	3.29	0.00
W 180 Ice	0X	36.51	3.46	3.24	0.00
W 180 Ice	0XY	141.83	19.18	1.61	0.00
W 180 Ice	0Y	147.16	19.54	1.75	0.00
W 45 Ice	0P	181.14	24.32	1.13	0.00
W 45 Ice	0X	91.18	10.96	2.58	0.00
W 45 Ice	0XY	2.36	4.22	3.46	0.00
W 45 Ice	0Y	91.07	10.95	2.58	0.00
W -45 Ice	0P	95.91	11.49	2.67	0.00
W -45 Ice	0X	176.42	23.95	1.10	0.00
W -45 Ice	0XY	86.74	10.84	2.51	0.00
W -45 Ice	0Y	6.69	4.08	3.54	0.00
W 90 Ice	0P	151.61	19.82	1.76	0.00
W 90 Ice	0X	35.91	3.25	3.23	0.00
W 90 Ice	0XY	31.68	3.16	3.15	0.00
W 90 Ice	0Y	146.55	19.33	1.66	0.00
W -90 Ice	0P	40.22	3.58	3.29	0.00
W -90 Ice	0X	147.29	19.55	1.75	0.00
W -90 Ice	0XY	141.81	19.18	1.61	0.00
W -90 Ice	0Y	36.42	3.45	3.24	0.00

Summary of Joint Support Reactions For All Load Cases:

Load Case	Joint Label	Long. Force (kips)	Tran. Force (kips)	Vert. Force (kips)	Shear Force (kips)	Tran. Moment (ft-k)	Long. Moment (ft-k)	Bending Moment (ft-k)	Vert. Moment (ft-k)	Found. Usage %
W 0	0P	-43.28	-20.31	-300.92	47.81	-0.95	-4.68	4.77	-2.81	0.00
W 0	0X	-41.88	20.96	-294.99	46.83	0.68	-4.46	4.52	2.80	0.00
W 0	0XY	-31.59	-12.29	173.64	33.89	0.48	-5.11	5.13	2.52	0.00
W 0	0Y	-32.56	11.64	172.34	34.58	-0.37	-5.34	5.35	-2.49	0.00
W 180	0P	32.52	11.32	168.77	34.43	-0.36	5.40	5.41	2.51	0.00
W 180	0X	31.62	-12.03	169.76	33.84	0.49	5.20	5.22	-2.53	0.00
W 180	0XY	41.91	20.76	-291.11	46.77	0.67	4.55	4.60	-2.82	0.00
W 180	0Y	43.24	-20.04	-297.36	47.66	-0.96	4.74	4.84	2.83	0.00
W 45	0P	-44.47	-44.51	-419.08	62.92	2.96	-2.95	4.18	0.00	0.00
W 45	0X	-20.18	-11.00	-60.93	22.98	4.25	-3.22	5.33	3.86	0.00
W 45	0XY	-35.75	-35.71	290.90	50.53	3.98	-3.99	5.63	-0.00	0.00
W 45	0Y	-10.96	-20.13	-60.82	22.93	3.21	-4.24	5.32	-3.86	0.00
W -45	0P	-21.29	11.45	-66.15	24.18	-4.46	-3.37	5.59	-3.86	0.00
W -45	0X	-43.40	44.95	-413.88	62.49	-3.16	-2.79	4.22	-0.01	0.00
W -45	0XY	-10.34	19.69	-58.80	22.24	-3.15	-4.08	5.15	3.87	0.00
W -45	0Y	-36.32	35.26	288.89	50.63	-3.93	-4.14	5.71	0.02	0.00
W 90	0P	-20.29	-43.32	-301.02	47.83	4.68	0.96	4.78	2.81	0.00
W 90	0X	11.62	-32.59	172.33	34.60	5.34	0.37	5.36	2.49	0.00
W 90	0XY	-12.30	-31.56	173.54	33.87	5.11	-0.49	5.13	-2.52	0.00
W 90	0Y	20.97	-41.84	-294.78	46.80	4.46	-0.68	4.51	-2.80	0.00
W -90	0P	11.31	32.55	168.87	34.46	-5.41	0.35	5.42	-2.50	0.00
W -90	0X	-20.03	43.28	-297.56	47.69	-4.75	0.96	4.84	-2.83	0.00
W -90	0XY	20.78	41.88	-291.01	46.75	-4.54	-0.66	4.59	2.82	0.00
W -90	0Y	-12.06	31.59	169.77	33.81	-5.19	-0.49	5.21	2.53	0.00
W 0 Ice	0P	-16.20	-11.40	-151.59	19.81	-1.68	0.50	1.76	-0.60	0.00
W 0 Ice	0X	-15.53	11.52	-146.68	19.34	1.56	0.56	1.66	0.58	0.00
W 0 Ice	0XY	-1.78	2.62	-31.66	3.17	1.62	-2.70	3.15	0.58	0.00
W 0 Ice	0Y	-1.74	-2.74	-35.82	3.24	-1.68	-2.76	3.23	-0.57	0.00
W 180 Ice	0P	1.70	-3.15	-40.24	3.58	-1.66	2.84	3.29	0.58	0.00
W 180 Ice	0X	1.82	2.94	-36.51	3.46	1.63	2.80	3.24	-0.60	0.00
W 180 Ice	0XY	15.57	11.20	-141.83	19.18	1.55	-0.46	1.61	-0.60	0.00
W 180 Ice	0Y	16.16	-10.99	-147.16	19.54	-1.70	-0.42	1.75	0.61	0.00
W 45 Ice	0P	-17.19	-17.20	-181.14	24.32	-0.80	0.80	1.13	0.00	0.00
W 45 Ice	0X	-10.30	3.74	-91.18	10.96	2.44	0.84	2.58	0.86	0.00
W 45 Ice	0XY	-2.98	-2.98	-2.36	4.22	2.45	-2.45	3.46	-0.00	0.00
W 45 Ice	0Y	3.74	-10.29	-91.07	10.95	-0.84	-2.44	2.58	-0.86	0.00
W -45 Ice	0P	-10.89	-3.66	-95.91	11.49	-2.55	0.79	2.67	-0.88	0.00
W -45 Ice	0X	-16.59	17.27	-176.42	23.95	0.69	0.86	1.10	-0.01	0.00
W -45 Ice	0XY	3.62	10.22	-86.74	10.84	0.77	-2.39	2.51	0.88	0.00
W -45 Ice	0Y	-2.86	2.91	-6.69	4.08	-2.52	-2.49	3.54	0.02	0.00
W 90 Ice	0P	-11.40	-16.21	-151.61	19.82	-0.49	1.69	1.76	0.60	0.00
W 90 Ice	0X	-2.75	-1.74	-35.91	3.25	2.76	1.68	3.23	0.57	0.00
W 90 Ice	0XY	2.62	-1.77	-31.68	3.16	2.70	-1.62	3.15	-0.58	0.00
W 90 Ice	0Y	11.52	-15.52	-146.55	19.33	-0.56	-1.56	1.66	-0.58	0.00
W -90 Ice	0P	-3.15	1.70	-40.22	3.58	-2.84	1.66	3.29	-0.58	0.00
W -90 Ice	0X	-10.99	16.17	-147.29	19.55	0.42	1.70	1.75	-0.61	0.00
W -90 Ice	0XY	11.21	15.56	-141.81	19.18	0.46	-1.55	1.61	0.60	0.00
W -90 Ice	0Y	2.93	1.82	-36.42	3.45	-2.80	-1.63	3.24	0.60	0.00

Summary of Joint Support Reactions For All Load Cases in Direction of Leg:

Load Case	Support Joint	Origin Joint	Leg Member	Force In Leg Dir. (kips)	Residual Shear Perpendicular To Leg (kips)	Residual Shear Horizontal To Leg - Res. (kips)	Residual Shear Horizontal To Leg - Long. (kips)	Residual Shear Horizontal To Leg - Tran. (kips)	Total Long. Force (kips)	Total Tran. Force (kips)	Total Vert. Force (kips)
W 0	0P	1P	L 1P	303.741	24.136	24.189	24.160	1.196	-43.28	-20.31	-300.92
W 0	0X	1X	L 1X	297.781	23.191	23.246	23.140	-2.217	-41.88	20.96	-294.99
W 0	0XY	1XY	L 1XY	-175.715	20.551	20.597	20.559	1.256	-31.59	-12.29	173.64
W 0	0Y	1Y	L 1Y	-174.445	21.575	21.621	21.609	-0.694	-32.56	11.64	172.34
W 180	0P	1P	L 1P	-170.869	21.762	21.808	-21.800	-0.597	32.52	11.32	168.77
W 180	0X	1X	L 1X	-171.839	20.832	20.878	-20.841	1.251	31.62	-12.03	169.76
W 180	0XY	1XY	L 1XY	293.905	23.474	23.530	-23.421	-2.262	41.91	20.76	-291.11
W 180	0Y	1Y	L 1Y	300.170	24.326	24.379	-24.352	1.149	43.24	-20.04	-297.36
W 45	0P	1P	L 1P	423.033	25.169	25.270	17.848	17.889	-44.47	-44.51	-419.08
W 45	0X	1X	L 1X	61.270	22.068	22.068	16.305	14.870	-20.18	-11.00	-60.93
W 45	0XY	1XY	L 1XY	-294.259	24.296	24.394	17.266	17.232	-35.75	-35.71	290.90
W 45	0Y	1Y	L 1Y	61.160	22.014	22.014	14.829	16.270	-10.96	-20.13	-60.82
W -45	0P	1P	L 1P	66.505	23.173	23.173	17.091	-15.650	-21.29	11.45	-66.15
W -45	0X	1X	L 1X	417.807	25.217	25.318	17.110	-18.662	-43.40	44.95	-413.88
W -45	0XY	1XY	L 1XY	59.158	21.277	21.277	14.074	-15.957	-10.34	19.69	-58.80
W -45	0Y	1Y	L 1Y	-292.260	24.579	24.678	17.972	-16.912	-36.32	35.26	288.89
W 90	0P	1P	L 1P	303.837	24.168	24.221	1.170	24.193	-20.29	-43.32	-301.02
W 90	0X	1X	L 1X	-174.431	21.608	21.654	-0.674	21.644	11.62	-32.59	172.33
W 90	0XY	1XY	L 1XY	-175.619	20.525	20.571	1.275	20.531	-12.30	-31.56	173.54
W 90	0Y	1Y	L 1Y	297.575	23.167	23.223	-2.244	23.114	20.97	-41.84	-294.78
W -90	0P	1P	L 1P	-170.965	21.788	21.834	-0.578	-21.827	11.31	32.55	168.87
W -90	0X	1X	L 1X	300.376	24.351	24.404	1.123	-24.378	-20.03	43.28	-297.56
W -90	0XY	1XY	L 1XY	293.809	23.444	23.500	-2.289	-23.388	20.78	41.88	-291.01

W -90	0Y	1Y	L 1Y	-171.853	20.799	20.846	1.271	-20.807	-12.06	31.59	169.77
W 0 Ice	0P	1P	L 1P	152.724	6.788	6.808	6.573	1.774	-16.20	-11.40	-151.59
W 0 Ice	0X	1X	L 1X	147.807	6.569	6.591	6.211	-2.204	-15.53	11.52	-146.68
W 0 Ice	0XY	1XY	L 1XY	31.589	3.832	3.838	3.789	-0.608	-1.78	2.62	-31.66
W 0 Ice	0Y	1Y	L 1Y	35.736	4.035	4.041	4.015	0.462	-1.74	-2.74	-35.82
W 180 Ice	0P	1P	L 1P	40.170	4.286	4.292	-4.251	0.591	1.70	-3.15	-40.24
W 180 Ice	0X	1X	L 1X	36.439	4.183	4.189	-4.142	-0.621	1.82	2.94	-36.51
W 180 Ice	0XY	1XY	L 1XY	142.957	6.897	6.919	-6.563	-2.191	15.57	11.20	-141.83
W 180 Ice	0Y	1Y	L 1Y	148.291	6.985	7.006	-6.810	1.645	16.16	-10.99	-147.16
W 45 Ice	0P	1P	L 1P	182.594	8.011	8.043	5.681	5.693	-17.19	-17.20	-181.14
W 45 Ice	0X	1X	L 1X	91.699	4.952	4.954	4.507	2.057	-10.30	3.74	-91.18
W 45 Ice	0XY	1XY	L 1XY	1.974	4.410	4.428	3.133	3.129	-2.98	-2.98	-2.36
W 45 Ice	0Y	1Y	L 1Y	91.589	4.943	4.945	2.047	4.502	3.74	-10.29	-91.07
W -45 Ice	0P	1P	L 1P	96.443	5.378	5.380	4.801	-2.428	-10.89	-3.66	-95.91
W -45 Ice	0X	1X	L 1X	177.850	8.079	8.112	5.388	-6.064	-16.59	17.27	-176.42
W -45 Ice	0XY	1XY	L 1XY	87.269	5.068	5.071	1.890	-4.706	3.62	10.22	-86.74
W -45 Ice	0Y	1Y	L 1Y	6.294	4.664	4.683	3.289	-3.334	-2.86	2.91	-6.69
W 90 Ice	0P	1P	L 1P	152.744	6.796	6.816	1.765	6.583	-11.40	-16.21	-151.61
W 90 Ice	0X	1X	L 1X	35.826	4.044	4.050	0.465	4.024	-2.75	-1.74	-35.91
W 90 Ice	0XY	1XY	L 1XY	31.609	3.830	3.836	-0.607	3.787	2.62	-1.77	-31.68
W 90 Ice	0Y	1Y	L 1Y	147.678	6.569	6.590	-2.212	6.208	11.52	-15.52	-146.55
W -90 Ice	0P	1P	L 1P	40.150	4.288	4.294	0.592	-4.253	-3.15	1.70	-40.22
W -90 Ice	0X	1X	L 1X	148.420	6.987	7.007	1.638	-6.813	-10.99	16.17	-147.29
W -90 Ice	0XY	1XY	L 1XY	142.937	6.890	6.912	-2.200	-6.553	11.21	15.56	-141.81
W -90 Ice	0Y	1Y	L 1Y	36.348	4.174	4.179	-0.619	-4.133	2.93	1.82	-36.42

Overturning Moment Summary For All Load Cases:

Load Case	Transverse Moment (ft-k)	Longitudinal Moment (ft-k)	Torsional Moment (ft-k)	Resultant Moment (ft-k)	Transverse Force (kips)	Longitudinal Force (kips)	Vertical Force (kips)
W 0	187.604	-24432.589	94.759	24433.309	-0.000	149.302	249.938
W 180	187.735	24046.293	-94.826	24047.026	-0.000	-149.302	249.938
W 45	18414.263	-18419.952	-3.927	26045.724	111.358	111.358	249.938
W -45	-18039.230	-18420.287	138.040	25782.179	-111.358	111.358	249.938
W 90	24426.913	-193.300	-100.317	24427.678	149.302	-0.000	249.938
W -90	-24051.988	-193.433	100.384	24052.766	-149.302	-0.000	249.938
W 0 Ice	234.879	-5986.716	22.606	5991.322	-0.000	35.250	365.748
W 180 Ice	234.907	5505.529	-22.609	5510.538	-0.000	-35.250	365.748
W 45 Ice	4634.792	-4640.492	-0.808	6558.618	26.732	26.732	365.748
W -45 Ice	-4165.020	-4640.535	32.797	6235.540	-26.732	26.732	365.748
W 90 Ice	5981.017	-240.581	-23.748	5985.854	35.250	-0.000	365.748
W -90 Ice	-5511.233	-240.609	23.751	5516.483	-35.250	-0.000	365.748

EIA Sections Information:

Section Label	Top Z (ft)	Bottom Z (ft)	Joint Count	Member Count	Top Width (ft)	Bottom Width (ft)	Gross Area (ft^2)	Face Af Adjust Factor	Face Ar Adjust Factor	Dead Load Factor
328.9-337.5	337.500	328.917	8	20	9.00	10.09	81.93	1.1220	1.1220	1.146
320.3-328.9	328.917	320.334	8	16	10.09	11.18	91.29	1.1610	1.1610	1.193
310.2-320.3	320.334	310.167	8	16	11.18	12.47	120.24	1.1970	1.1970	1.236
300.0-310.2	310.167	300.000	12	24	12.47	13.76	133.38	1.1540	1.1540	1.185
287.5-300.0	300.000	287.500	16	24	13.76	15.35	181.98	1.2010	1.2010	1.242
275.0-287.5	287.500	275.000	16	24	15.35	16.94	201.83	1.2080	1.2080	1.249
262.5-275.0	275.000	262.500	16	24	16.94	18.53	221.69	1.2140	1.2140	1.257
250.0-262.5	262.500	250.000	16	24	18.53	20.12	241.54	1.2200	1.2200	1.264
237.5-250.0	250.000	237.500	16	24	20.12	21.71	261.39	1.2260	1.2260	1.271
225.0-237.5	237.500	225.000	16	24	21.71	23.29	281.24	1.2320	1.2320	1.278
200.0-225.0	225.000	200.000	16	24	23.29	26.47	622.04	1.2640	1.2640	1.316
175.0-200.0	200.000	175.000	16	24	26.47	29.65	701.44	1.2730	1.2730	1.328
150.0-175.0	175.000	150.000	20	32	29.65	32.82	780.85	1.2750	1.2750	1.330
125.0-150.0	150.000	125.000	36	76	32.82	36.00	860.26	1.2300	1.2300	1.276
100.0-125.0	125.000	100.000	36	76	36.00	39.17	939.67	1.2250	1.2250	1.270
75.00-100.0	100.000	75.000	32	68	39.17	42.35	1019.07	1.2270	1.2270	1.272
50.00-75.00	75.000	50.000	24	52	42.35	45.53	1098.48	1.3380	1.3380	1.406
25.00-50.00	50.000	25.000	24	52	45.53	48.70	1177.89	1.3250	1.3250	1.390
0.000-25.00	25.000	0.000	20	40	48.70	51.88	1257.30	1.3210	1.3210	1.385

Printed capacities do not include the strength factor entered for each load case.
The Group Summary reports on the member and load case that resulted in maximum usage which may not necessarily be the same as that which produces maximum force.

Group Summary (Compression Portion):

Group Label	Group Desc.	Angle Type	Angle Size	Steel Strength (ksi)	Max Usage %	Usage Cont-rol	Max Use In Comp. %	Comp. Control Member	Comp. Force (kips)	Comp. Control Load Case	L/r Capacity (kips)	Comp. Connect. Shear Capacity (kips)	Comp. Connect. Bearing Capacity (kips)	RLX	RLY	RLZ	L/r	KL/r	Length Comp. Member (ft)	Curve No.	No. Of Bolts Comp.
Leg S1	L 8" x 8" x 1.125"	SAE	8X8X1.13	36.0	56.95	Comp	56.95	L 1P	-368.668	W 45	647.310	0.000	0.000	0.281	0.281	0.281	54.29	54.29	25.101	1	0
Leg S2	L 8" x 8" x 1.125"	SAE	8X8X1.13	36.0	55.38	Comp	55.38	L 2P	-329.464	W 45	594.930	0.000	0.000	0.281	0.281	0.281	54.29	54.29	25.101	1	0
Leg S3	L 8" x 8" x 1.125"	SAE	8X8X1.13	36.0	53.49	Comp	53.49	L 3P	-291.456	W 45	544.890	0.000	0.000	0.281	0.281	0.281	54.29	54.29	25.101	1	0
Leg S4	L 8" x 8" x 1.125"	SAE	8X8X1.13	36.0	43.99	Comp	43.99	L 4P	-240.577	W 45	546.883	0.000	0.000	0.281	0.281	0.281	54.29	54.29	25.101	1	0
Leg S5	L 8" x 8" x 1"	SAE	8X8X1	36.0	41.65	Comp	41.65	L 5P	-204.289	W 45	490.433	0.000	0.000	0.281	0.281	0.281	54.29	54.29	25.101	1	0
Leg S6	L 8" x 8" x 1"	SAE	8X8X1	36.0	33.84	Comp	33.84	L 6P	-165.949	W 45	490.433	0.000	0.000	0.281	0.281	0.281	54.29	54.29	25.101	1	0
Leg S7	L 8" x 8" x 0.875"	SAE	8X8X0.88	36.0	37.65	Comp	37.65	L 7P	-156.388	W 45	415.358	0.000	0.000	0.333	0.333	0.333	63.94	63.94	25.101	1	0
Leg S8	L 8" x 8" x 0.75"	SAE	8X8X0.75	36.0	34.84	Comp	34.84	L 8P	-125.211	W 45	359.355	0.000	0.000	0.333	0.333	0.333	63.54	63.54	25.101	1	0
Leg S9	L 8" x 8" x 0.75"	SAE	8X8X0.75	36.0	27.25	Comp	27.25	L 9P	-97.919	W 45	359.355	0.000	0.000	0.333	0.333	0.333	63.54	63.54	25.101	1	0
Leg S10	L 6" x 6" x 0.875"	SAE	6X6X0.88	36.0	27.64	Comp	27.64	L 10P	-84.288	W 45	304.972	0.000	0.000	0.500	0.500	0.500	64.36	64.36	12.550	1	0
Leg S11	L 6" x 6" x 0.75"	SAE	6X6X0.75	36.0	26.65	Comp	26.65	L 11P	-70.501	W 45	264.572	0.000	0.000	0.500	0.500	0.500	64.36	64.36	12.550	1	0
Leg S12	L 6" x 6" x 0.75"	SAE	6X6X0.75	36.0	22.43	Comp	22.43	L 12P	-59.351	W 45	264.572	0.000	0.000	0.500	0.500	0.500	64.36	64.36	12.550	1	0
Leg S13	L 6" x 6" x 0.5625"	SAE	6X6X0.56	36.0	23.84	Comp	23.84	L 13P	-48.197	W 45	202.137	0.000	0.000	0.500	0.500	0.500	63.82	63.82	12.550	1	0
Leg S14	L 6" x 6" x 0.5625"	SAE	6X6X0.56	36.0	18.50	Comp	18.50	L 14P	-37.386	W 45	202.137	0.000	0.000	0.500	0.500	0.500	63.82	63.82	12.550	1	0
Leg S15	L 6" x 6" x 0.4375"	SAE	6X6X0.44	36.0	16.81	Comp	16.81	L 15P	-26.759	W 45	159.214	0.000	0.000	0.500	0.500	0.500	63.28	63.28	12.550	1	0
Leg S16	L 5" x 5" x 0.4375"	SAE	5X5X0.44	36.0	19.89	Comp	19.89	L 16P	-26.342	W 45	132.414	0.000	0.000	0.500	0.500	0.500	62.12	62.12	10.208	1	0
Leg S17	L 5" x 5" x 0.4375"	SAE	5X5X0.44	36.0	13.56	Comp	13.56	L 17P	-17.957	W 45	132.414	0.000	0.000	0.500	0.500	0.500	62.12	62.12	10.208	1	0
Leg S18	L 5" x 5" x 0.3125"	SAE	5X5X0.31	36.0	9.97	Comp	9.97	L 18P	-9.639	W 45	96.703	0.000	0.000	0.500	0.500	0.500	52.02	52.02	8.618	1	0
Leg S19	L 5" x 5" x 0.3125"	SAE	5X5X0.31	36.0	5.43	Comp	5.43	L 19P	-5.251	W 45	96.703	0.000	0.000	0.500	0.500	0.500	52.02	52.02	8.618	1	0
Diag S1	B/B L3"x4"x0.375"	DAS	4X3X0.38	36.0	46.39	Comp	46.39	D 2X	-43.140	W -90	92.986	0.000	0.000	0.333	0.848	0.333	118.88	118.88	22.664	1	0
Diag S2	B/B L3"x4"x0.25"	DAS	4X3X0.25	36.0	65.42	Comp	65.42	D 4X	-41.954	W -90	64.134	0.000	0.000	0.333	0.848	0.333	117.61	117.61	22.191	1	0
Diag S3	B/B L3"x4"x0.25"	DAS	4X3X0.25	36.0	61.28	Comp	61.28	D 6X	-40.626	W -90	66.301	0.000	0.000	0.333	0.848	0.333	115.20	115.20	21.737	1	0
Diag S4	B/B L3"x3.5"x0.25"	DAS	3.5X3X0.25	36.0	52.89	Comp	52.89	D 8X	-43.945	W -90	83.084	0.000	0.000	0.333	0.333	0.333	91.27	91.27	20.858	1	0
Diag S5	B/B L3"x3.5"x0.25"	DAS	3.5X3X0.25	36.0	50.34	Comp	50.34	D 10X	-42.355	W -90	84.132	0.000	0.000	0.333	0.333	0.333	89.64	89.64	20.484	1	0
Diag S6	B/B L2.5"x3.5"x0.25"	DAS	3.5X2.5X0.25	36.0	75.26	Comp	75.26	D 12X	-39.908	W -90	53.030	0.000	0.000	0.300	0.848	0.300	119.11	119.11	20.133	1	0
Diag S7	B/B L3"x3"x0.375"	DAE	3X3X0.38	36.0	50.68	Comp	50.68	D 13X	-24.736	W -90	48.805	0.000	0.000	0.300	0.600	0.300	152.92	140.25	29.947	6	0
Diag S8	B/B L2.5"x3"x0.25"	DAS	3X2.5X0.25	36.0	67.28	Comp	67.28	D 16Y	-21.428	W 180	31.851	0.000	0.000	0.300	0.600	0.300	144.53	135.09	29.107	6	0
Diag S9	B/B L2.5"x3"x0.25"	DAS	3X2.5X0.25	36.0	58.23	Comp	58.23	D 18Y	-19.402	W 180	33.317	0.000	0.000	0.300	0.600	0.300	140.68	132.72	28.332	6	0
Diag S10	B/B L2.5"x2.5"x0.25"	DAE	2.5X2.5X0.25	36.0	45.71	Comp	45.71	D 20Y	-10.954	W 180	23.965	0.000	0.000	0.500	1.000	0.500	172.47	152.27	17.103	6	0
Diag S11	B/B L2.5"x2.5"x0.25"	DAE	2.5X2.5X0.25	36.0	37.85	Comp	37.85	D 22Y	-9.563	W 180	25.265	0.000	0.000	0.500	1.000	0.500	167.12	148.98	16.573	6	0
Diag S12	B/B L2.5"x2.5"x0.25"	DAE	2.5X2.5X0.25	36.0	34.97	Comp	34.97	D 24Y	-9.307	W 180	26.613	0.000	0.000	0.500	1.000	0.500	161.99	145.82	16.064	6	0
Diag S13	B/B L2.5"x2"x0.25"	DAL	2.5X2X0.25	36.0	53.27	Comp	53.27	D 26Y	-9.080	W 180	17.045	0.000	0.000	0.500	1.000	0.500	199.95	169.17	15.579	6	0
Diag S14	B/B L2.5"x2"x0.25"	DAL	2.5X2X0.25	36.0	45.63	Comp	45.63	D 28Y	-8.187	W 180	17.940	0.000	0.000	0.500	1.000	0.500	194.06	165.55	15.120	6	0
Diag S15	B/B L2.5"x2"x0.25"	DAL	2.5X2X0.25	36.0	40.12	Comp	40.12	D 29X	-7.560	W -90	18.844	0.000	0.000	0.500	1.000	0.500	188.54	162.15	14.690	6	0
Diag S16	L 3.5" x 3.5" x 0.25"	SAE	3.5X3.5X0.25	36.0	14.90	Tens	0.00	D 32Y	0.000		0.001	0.000	0.000	100.000	100.000	100.000	28719.94	17708.96	16.610	6	0
Diag S17	L 3.5" x 3.5" x 0.25"	SAE	3.5X3.5X0.25	36.0	11.49	Tens	0.00	D 34Y	0.000		0.001	0.000	0.000	100.000	100.000	100.000	26990.64	20595.47	15.610	5	0
Diag S18	L 3" x 3" x 0.25"	SAE	3X3X0.25	36.0	8.92	Tens	0.00	D 36Y	0.000		0.001	0.000	0.000	100.000	100.000	100.000	27725.40	21155.35	13.678	5	0
Diag S19	L 3" x 3" x 0.25"	SAE	3X3X0.25	36.0	6.84	Tens	0.00	D 38Y	0.000		0.001	0.000	0.000	100.000	100.000	100.000	26043.70	19873.90	12.848	5	0
Horiz 1	B/B L4"x3"x0.25"	DAL	4X3X0.25	36.0	55.36	Comp	55.36	H 1P	-36.996	W -90	66.826	0.000	0.000	0.500	0.500	0.500	114.15	114.15	24.352	1	0
Horiz 2	B/B L3.5"x2.5"x0.25"	DAL	3.5X2.5X0.25	36.0	69.58	Comp	69.58	H 3P	-34.761	W -90	49.961	0.000	0.000	0.490	0.490	0.490	122.80	121.72	22.764	6	0
Horiz 3	B/B L3"x2.5"x0.25"	DAL	3X2.5X0.25	36.0	62.04	Comp	62.04	H 5P	-32.071	W -90	51.690	0.000	0.000	0.460	0.460	0.460	123.69	122.27	21.176	6	0
Horiz 4	B/B L3.5"x2.5"x0.25"	DAL	3.5X2.5X0.25	36.0	62.79	Comp	62.79	H 7P	-31.520	W -90	50.198	0.000	0.000	0.900	0.900	0.900	129.38	125.77	13.058	6	0
Horiz 5	B/B L3.5"x2.5"x0.25"	DAL	3.5X2.5X0.25	36.0	58.17	Comp	58.17	H 9P	-28.604	W -90	49.171	0.000	0.000	1.000	1.000	1.000	132.10	127.44	12.000	6	0
Horiz 6	B/B L3"x2.5"x0.25"	DAL	3X2.5X0.25	36.0	56.36	Comp	56.36	H 11P	-25.096	W -90	44.528	0.000	0.000	0.980	0.980	0.980	136.15	129.93	10.941	6	0
Horiz 7	B/B L3"x2.5"x0.25"	DAL	3X2.5X0.25	36.0	42.29	Comp	42.29	H 14P	-12.122	W 180	28.661	0.000	0.000	1.000	1.000	1.000	188.23	161.96	14.823	6	0
Horiz 8	B/B L3"x2.5"x0.25"	DAL	3X2.5X0.25	36.0	28.90	Comp	28.90	H 16P	-9.714	W 180	33.611	0.000	0.000	1.000	1.000	1.000	168.06	149.56	13.235	6	0
Horiz 9	B/B L2.5"x2.5"x0.25"	DAE	2.5X2.5X0.25	36.0	29.18	Comp	29.18	H 18P	-7.956	W 180	27.264	0.000	0.000	1.000	1.000	1.000	181.74	157.97	11.647	6	0
Horiz 10	B/B L2.5"x2.5"x0.25"	DAE	2.5X2.5X0.25	36.0	22.41	Comp	22.41	H 20P	-6.744	W 180	30.098	0.000	0.000	1.000	1.000	1.000	169.35	150.35	10.853	6	0
Horiz 11	B/B L2.5"x2.5"x0.25"	DAE	2.5X2.5X0.25	36.0	16.47	Comp	16.47	H 22P	-5.499	W 180	33.397	0.000	0.000	1.000	1.000	1.000	156.96	142.73	10.059	6	0
Horiz 12	B/B L2.5"x2.5"x0.25"	DAE	2.5X2.5X0.25	36.0	13.97	Comp	13.97	H 24P	-5.208	W 180	37.270	0.000	0.000	1.000	1.000	1.000	144.57	135.11	9.264	6	0
Horiz 13	B/B L2.5"x2.5"x0.25"	DAE	2.5X2.5X0.25	36.0	12.58	Comp	12.58	H 26P	-5.265	W 180	41.857	0.000	0.000	1.000	1.000	1.000	132.18	127.49	8.470	6	0
Horiz 14	B/B L2.5"x2.5"x0.25"	DAE	2.5X2.5X0.25	36.0	9.37	Comp	9.37	H 28P	-4.403	W 180	46.973	0.000	0.000	1.000	1.200	1.000	119.79	119.79	7.676	1	0
Horiz 15	B/B L2.5"x2.5"x0.25"	DAE	2.5X2.5X0.25	36.0	12.23	Comp	12.23	H 29P	-6.670	W -90	54.531	0.000	0.000	1.000	1.070	1.000	107.39	107.39	6.882	1	0
Horiz 16	L 3" x 2.5" x 0.25"	SAU	3X2.5X0.25	36.0	29.43	Comp	29.43	H 31P	-6.211	W -90	21.106	0.000	0.000	0.500	0.520	0.500	141.74	133.37	12.473	6	0
Horiz 17	B/B L3"x2.5"x0.25"	DAL	3X2.5X0.25	36.0	8.67	Comp	8.67	H 33P	-4.324	W -90	49.899	0.000	0.000	0.500	1.000	0.500	118.74	118.74	11.181	1	0
Horiz 18	L 3" x 2.5" x 0.25"	SAU	3X2.5X0.25	36.0	15.91	Comp	15.91	H 35P	-2.836	W -90	17.832	0.000	0.000	0.500	1.000	0.500	160.80	145.09	10.090	6	0
Horiz 19	C8x11.5	CHN	C8x11.5	36.0	5.37	Comp	5.37	H 37P	-1.765	W -90	32.845	0.000	0.000	1.000	1.000	1.000	172.80	152.47	9.000	6	0
LD 1	B/B L3"x2.5"x0.3125"	DAL	3X2.5X0.31	36.0	42.45	Comp	42.45	LD 1X	-18.395	W -90	43.337	0.000	0.000	0.904	0.904	0.904	162.86	146.36	14.067	6	0
LD 2	B/B L4"x3"x0.3125"	DAL	4X3X0.31	36.0	59.45	Comp	59.45	LD 3X	-47.599	W -90	80.071	0.000	0.000	0.904	0.904	0.904	120.15	120.09	14.067	6	0
LD 4	B/B L3"x2"x0.25"	DAL	3X2X0.25	36.0	60.68	Comp	60.68	LD 7X	-17.510	W -90	28.855	0.000	0.000	0.904	0.904	0.904	162.97	146.42	13.385	6	0
LD 5	B/B L4"x3"x0.25"	DAL	4X3X0.25	36.0	65.86	Comp	65.86	LD 9X	-45.215	W -90	68.657	0.000	0.000	0.904	0.904	0.904	113.44	113.44	13.385	1	0
LD 7	B/B L2.5"x2.5"x0.375"	DAE	2.5X2.5X0.38	36.0	41.59	Comp	41.59	LD 13X	-16.381	W -90	39.383	0.000	0.000	0.904	0.904	0.904	183.21	158.87	12.717	6	0
LD 8	B/B L3.5"x3"x0.25"	DAL	3.5X3X0.25	36.0	72.07	Comp	72.07	LD 15X	-42.619	W -90	59.138	0.000	0.000	0.904	0.904	0.904	124.28	122.63	12.717	6	0
LD 10	B/B L3"x3"x0.25"	DAE	3X3X0.25	36.0	37.88	Comp	37.88	LD 19X	-21.135	W -45	55.790	0.000	0.000	0.830	0.830	0.830	121.89	121.16	11.382	6	0
LD 11	B/B L2.5"x2"x0.25"	DAL	2.5X2X0.25	36.0	57.46	Comp	57.46	LD 21X	-28.435	W -90	49.489	0.000	0.000	0.850	0.850	0.850	106.16	106.16	8.160	1	0
LD 12	B/B L3"x2"x0.25"	DAL	3X2X0.25	36.0	62.52	Comp	62.52	LD 23P	-30.848	W -90	49.345	0.000	0.000	0.860	0.860	0.860	111.25	111.25	9.605	1	0
LD 13	B/B L2.5"x2"x0.25"	DAL	2.5X2X0.25	36.0	54.46	Comp	54.46	LD 25X	-19.471	W -90	35.750	0.000	0.000	0.830	0.830	0.830	137.13	130.53	10.794	6	0
LD 14	B/B L2.5"x2"x0.25"	DAL	2.5X2X0.25	36.0	54.15	Comp	54.15	LD 27X	-27.320	W -90	50.451	0.000	0.000	0.850	0.850	0.850	104.26	104.26	8.014	1	0
LD 15	B/B L3"x3"x0.25"	DAE	3X3X0.25	36.0	42.44	Comp	42.44	LD 29P	-29.409	W -90	69.294	0.000	0.000	0.860	0.860	0.860	102.68	102.68	9.253	1	0
LD 16	B/B L2.5"x2"x0.25"	DAL	2.5X2X0.25	36.0	46.93	Comp	46.93	LD 31X	-17.972	W -45	38.298	0.000	0.000	0.830	0.830	0.830	129.96	126.12	10.229	6	0
LD 17	B/B L2.5"x2"x0.25"	DAL	2.5X2X0.25	36.0	50.32	Comp	50.32	LD 33X	-25.835	W -90	51.340	0.000	0.000	0.850	0.850	0.850	102.47	102.47	7.876	1	0
LD 18	B/B L2.5"x2"x0.25"	DAL	2.5X2X0.25	36.0	61.86	Comp	61.86	LD 35P	-26.878	W -90	43.450	0.000	0.000	0.860	0.860	0.860	117.40	117.40	8.919	1	0
LH 1	B/B L2.5"x3"x0.25"	DAS	3X2.5X0.25	36.0	10.08	Tens	0.00	LH 2X	0.000		0.001	0.000	0.000	100.000	100.000	100.000	38807.73	23912.96	24.352	6	0
LH 2	B/B L2.5"x3"x0.25"	DAS	3X2.5X0.25	36.0	6.28	Tens	0.00	LH 4X	0.000		0.002	0.000	0.000	100.000	100.000	100.000	36276.82	22356.44	22.764	6	0
LH 3	B/B L2.5"x3"x0.25"	DAS	3X2.5X0.25	36.0	6.49	Tens	0.00	LH 6X	0.000		0.002	0.000	0.000	100.000	100.000	100.000	33745.91	20799.93	21.176	6	0
LH 4	B/B L3"x3"x0.375"	DAE	3X3X0.38	36.0	46.76	Comp	46.76	LH 7X	-24.004	W -45	51.338	0.000	0.000	0.940	1.880	0.940	170.36	150.97	10.648	6	0
LH 5	B/B L2.5"x3"x0.25"	DAS	3X2.5X0.25	36.0	57.83	Comp	57.83	LH 9X	-21.255	W -45	36.752	0.000	0.000	0.940	1.880	0.940	152.80	140.17	9.821	6	0
LH 6	B/B L2.5"x3"x0.25"	DAS	3X2.5X0.25	36.0	45.50	Comp	45.50	LH 11X	-18.826	W -45	41.375	0.000	0.000	0.940	1.880	0.940	139.93	132.25	8.993	6	0

DUM 1	Dummy Bracing Member	DUM	0.1X0.1X1	36.0	0.00		0.00	BR 13XY	-0.887	W 45	0.324	0.000	0.000	1.000	1.000	1.000	2.52	2.52	20.963	1	0					

Group Summary (Tension Portion):

Group Label	Group Desc.	Angle Type	Angle Size	Steel Strength (ksi)	Max Usage %	Usage Control	Max Use In Tens. %	Tension Control Member	Tension Force (kips)	Tension Control Load Case	Net Section Capacity (kips)	Tension Connect. Shear Capacity (kips)	Tension Connect. Bearing Capacity (kips)	Tension Connect. Rupture Capacity (kips)	Length Tens. Member (ft)	No. Of Bolts Tens.	No. Of Holes	Hole Diameter (in)
Leg S1	L 8" x 8" x 1.125"	SAE	8X8X1.13	36.0	56.95	Comp	45.59	L 1XY	247.105	W 45	542.051	0.000	0.000	0.000	25.101	0	0.000	0
Leg S2	L 8" x 8" x 1.125"	SAE	8X8X1.13	36.0	55.38	Comp	41.09	L 2XY	222.748	W 45	542.051	0.000	0.000	0.000	25.101	0	0.000	0
Leg S3	L 8" x 8" x 1.125"	SAE	8X8X1.13	36.0	53.49	Comp	36.12	L 3XY	195.804	W 45	542.051	0.000	0.000	0.000	25.101	0	0.000	0
Leg S4	L 8" x 8" x 1.125"	SAE	8X8X1.13	36.0	43.99	Comp	30.29	L 4XY	164.192	W 45	542.051	0.000	0.000	0.000	25.101	0	0.000	0
Leg S5	L 8" x 8" x 1"	SAE	8X8X1	36.0	41.65	Comp	28.51	L 5XY	138.561	W 45	485.999	0.000	0.000	0.000	25.101	0	0.000	0
Leg S6	L 8" x 8" x 1"	SAE	8X8X1	36.0	33.84	Comp	23.52	L 6XY	114.297	W 45	485.999	0.000	0.000	0.000	25.101	0	0.000	0
Leg S7	L 8" x 8" x 0.875"	SAE	8X8X0.88	36.0	37.65	Comp	25.85	L 7XY	110.826	W 45	428.651	0.000	0.000	0.000	25.101	0	0.000	0
Leg S8	L 8" x 8" x 0.75"	SAE	8X8X0.75	36.0	34.84	Comp	23.91	L 8XY	88.624	W 45	370.655	0.000	0.000	0.000	25.101	0	0.000	0
Leg S9	L 8" x 8" x 0.75"	SAE	8X8X0.75	36.0	27.25	Comp	18.13	L 9XY	67.197	W 45	370.655	0.000	0.000	0.000	25.101	0	0.000	0
Leg S10	L 6" x 6" x 0.875"	SAE	6X6X0.88	36.0	27.64	Comp	18.29	L 10XY	57.644	W 45	315.252	0.000	0.000	0.000	12.550	0	0.000	0
Leg S11	L 6" x 6" x 0.75"	SAE	6X6X0.75	36.0	26.65	Comp	17.95	L 11Y	49.079	W -45	273.456	0.000	0.000	0.000	12.550	0	0.000	0
Leg S12	L 6" x 6" x 0.75"	SAE	6X6X0.75	36.0	22.43	Comp	14.63	L 12Y	40.002	W -45	273.456	0.000	0.000	0.000	12.550	0	0.000	0
Leg S13	L 6" x 6" x 0.5625"	SAE	6X6X0.56	36.0	23.84	Comp	14.84	L 13Y	30.907	W -45	208.332	0.000	0.000	0.000	12.550	0	0.000	0
Leg S14	L 6" x 6" x 0.5625"	SAE	6X6X0.56	36.0	18.50	Comp	10.68	L 14Y	22.251	W -45	208.332	0.000	0.000	0.000	12.550	0	0.000	0
Leg S15	L 6" x 6" x 0.4375"	SAE	6X6X0.44	36.0	16.81	Comp	8.53	L 15Y	13.988	W -45	163.944	0.000	0.000	0.000	12.550	0	0.000	0
Leg S16	L 5" x 5" x 0.4375"	SAE	5X5X0.44	36.0	19.89	Comp	5.61	L 16Y	7.598	W -45	135.432	0.000	0.000	0.000	10.208	0	0.000	0
Leg S17	L 5" x 5" x 0.4375"	SAE	5X5X0.44	36.0	13.56	Comp	1.52	L 17Y	2.058	W -45	135.432	0.000	0.000	0.000	10.208	0	0.000	0
Leg S18	L 5" x 5" x 0.3125"	SAE	5X5X0.31	36.0	9.97	Comp	0.31	L 18Y	0.302	W -45	98.172	0.000	0.000	0.000	8.618	0	0.000	0
Leg S19	L 5" x 5" x 0.3125"	SAE	5X5X0.31	36.0	5.43	Comp	0.00	L 19Y	0.000		98.172	0.000	0.000	0.000	8.618	0	0.000	0
Diag S1	B/B L3"x4"x0.375"	DAS	4X3X0.38	36.0	46.39	Comp	23.02	D 2P	37.061	W -90	161.028	0.000	0.000	0.000	22.664	0	0.000	0
Diag S2	B/B L3"x4"x0.25"	DAS	4X3X0.25	36.0	65.42	Comp	33.57	D 4P	36.768	W -90	109.512	0.000	0.000	0.000	22.191	0	0.000	0
Diag S3	B/B L3"x4"x0.25"	DAS	4X3X0.25	36.0	61.28	Comp	33.13	D 6P	36.280	W -90	109.512	0.000	0.000	0.000	21.737	0	0.000	0
Diag S4	B/B L3"x3.5"x0.25"	DAS	3.5X3X0.25	36.0	52.89	Comp	36.94	D 8P	37.461	W -90	101.412	0.000	0.000	0.000	20.858	0	0.000	0
Diag S5	B/B L3"x3.5"x0.25"	DAS	3.5X3X0.25	36.0	50.34	Comp	35.96	D 10P	36.472	W -90	101.412	0.000	0.000	0.000	20.484	0	0.000	0
Diag S6	B/B L2.5"x3.5"x0.25"	DAS	3.5X2.5X0.25	36.0	75.26	Comp	36.25	D 12P	33.825	W -90	93.312	0.000	0.000	0.000	20.133	0	0.000	0
Diag S7	B/B L3"x3"x0.375"	DAE	3X3X0.38	36.0	50.68	Comp	16.72	D 13P	22.866	W -90	136.728	0.000	0.000	0.000	29.947	0	0.000	0
Diag S8	B/B L2.5"x3"x0.25"	DAS	3X2.5X0.25	36.0	67.28	Comp	23.14	D 16P	19.715	W 180	85.212	0.000	0.000	0.000	29.107	0	0.000	0
Diag S9	B/B L2.5"x3"x0.25"	DAS	3X2.5X0.25	36.0	58.23	Comp	21.35	D 18P	18.194	W 180	85.212	0.000	0.000	0.000	28.332	0	0.000	0
Diag S10	B/B L2.5"x2.5"x0.25"	DAE	2.5X2.5X0.25	36.0	45.71	Comp	13.02	D 20P	10.039	W 180	77.112	0.000	0.000	0.000	17.103	0	0.000	0
Diag S11	B/B L2.5"x2.5"x0.25"	DAE	2.5X2.5X0.25	36.0	37.85	Comp	11.33	D 22P	8.734	W 180	77.112	0.000	0.000	0.000	16.573	0	0.000	0
Diag S12	B/B L2.5"x2.5"x0.25"	DAE	2.5X2.5X0.25	36.0	34.97	Comp	11.13	D 24P	8.585	W 180	77.112	0.000	0.000	0.000	16.064	0	0.000	0
Diag S13	B/B L2.5"x2"x0.25"	DAL	2.5X2X0.25	36.0	53.27	Comp	12.25	D 26P	8.455	W 180	69.012	0.000	0.000	0.000	15.579	0	0.000	0
Diag S14	B/B L2.5"x2"x0.25"	DAL	2.5X2X0.25	36.0	45.63	Comp	11.05	D 28P	7.627	W 180	69.012	0.000	0.000	0.000	15.120	0	0.000	0
Diag S15	B/B L2.5"x2"x0.25"	DAL	2.5X2X0.25	36.0	40.12	Comp	10.19	D 29P	7.034	W -90	69.012	0.000	0.000	0.000	14.690	0	0.000	0
Diag S16	L 3.5" x 3.5" x 0.25"	SAE	3.5X3.5X0.25	36.0	14.90	Tens	14.90	D 32P	8.159	W -90	54.756	0.000	0.000	0.000	16.610	0	0.000	0
Diag S17	L 3.5" x 3.5" x 0.25"	SAE	3.5X3.5X0.25	36.0	11.49	Tens	11.49	D 34P	6.293	W -90	54.756	0.000	0.000	0.000	15.610	0	0.000	0
Diag S18	L 3" x 3" x 0.25"	SAE	3X3X0.25	36.0	8.92	Tens	8.92	D 36P	4.161	W -90	46.656	0.000	0.000	0.000	13.678	0	0.000	0
Diag S19	L 3" x 3" x 0.25"	SAE	3X3X0.25	36.0	6.84	Tens	6.84	D 38P	3.192	W -90	46.656	0.000	0.000	0.000	12.848	0	0.000	0
Horiz 1	B/B L4"x3"x0.25"	DAL	4X3X0.25	36.0	55.36	Comp	36.16	H 1X	39.594	W -90	109.512	0.000	0.000	0.000	24.352	0	0.000	0
Horiz 2	B/B L3.5"x2.5"x0.25"	DAL	3.5X2.5X0.25	36.0	69.58	Comp	39.67	H 3X	37.015	W -90	93.312	0.000	0.000	0.000	22.764	0	0.000	0
Horiz 3	B/B L3"x2.5"x0.25"	DAL	3X2.5X0.25	36.0	62.04	Comp	40.88	H 5X	34.832	W -90	85.212	0.000	0.000	0.000	21.176	0	0.000	0
Horiz 4	B/B L3.5"x2.5"x0.25"	DAL	3.5X2.5X0.25	36.0	62.79	Comp	38.11	H 7X	35.563	W -90	93.312	0.000	0.000	0.000	13.058	0	0.000	0
Horiz 5	B/B L3.5"x2.5"x0.25"	DAL	3.5X2.5X0.25	36.0	58.17	Comp	34.69	H 9X	32.367	W -90	93.312	0.000	0.000	0.000	12.000	0	0.000	0
Horiz 6	B/B L3"x2.5"x0.25"	DAL	3X2.5X0.25	36.0	56.36	Comp	31.72	H 11P	27.026	W 90	85.212	0.000	0.000	0.000	10.941	0	0.000	0
Horiz 7	B/B L3"x2.5"x0.25"	DAL	3X2.5X0.25	36.0	42.29	Comp	14.32	H 14P	12.199	W 0	85.212	0.000	0.000	0.000	14.823	0	0.000	0
Horiz 8	B/B L3"x2.5"x0.25"	DAL	3X2.5X0.25	36.0	28.90	Comp	11.55	H 16P	9.841	W 0	85.212	0.000	0.000	0.000	13.235	0	0.000	0
Horiz 9	B/B L2.5"x2.5"x0.25"	DAE	2.5X2.5X0.25	36.0	29.18	Comp	10.73	H 18Y	8.271	W 180	77.112	0.000	0.000	0.000	11.647	0	0.000	0
Horiz 10	B/B L2.5"x2.5"x0.25"	DAE	2.5X2.5X0.25	36.0	22.41	Comp	8.84	H 20Y	6.817	W 180	77.112	0.000	0.000	0.000	10.853	0	0.000	0
Horiz 11	B/B L2.5"x2.5"x0.25"	DAE	2.5X2.5X0.25	36.0	16.47	Comp	7.54	H 22Y	5.813	W 180	77.112	0.000	0.000	0.000	10.059	0	0.000	0
Horiz 12	B/B L2.5"x2.5"x0.25"	DAE	2.5X2.5X0.25	36.0	13.97	Comp	7.02	H 24P	5.411	W 0	77.112	0.000	0.000	0.000	9.264	0	0.000	0
Horiz 13	B/B L2.5"x2.5"x0.25"	DAE	2.5X2.5X0.25	36.0	12.58	Comp	6.98	H 26P	5.384	W 0	77.112	0.000	0.000	0.000	8.470	0	0.000	0
Horiz 14	B/B L2.5"x2.5"x0.25"	DAE	2.5X2.5X0.25	36.0	9.37	Comp	5.81	H 28P	4.484	W 0	77.112	0.000	0.000	0.000	7.676	0	0.000	0
Horiz 15	B/B L2.5"x2.5"x0.25"	DAE	2.5X2.5X0.25	36.0	12.23	Comp	0.76	H 29XY	0.583	W -90	77.112	0.000	0.000	0.000	6.882	0	0.000	0
Horiz 16	L 3" x 2.5" x 0.25"	SAU	3X2.5X0.25	36.0	29.43	Comp	0.00	H 32X	0.000		42.444	0.000	0.000	0.000	12.473	0	0.000	0
Horiz 17	B/B L3"x2.5"x0.25"	DAL	3X2.5X0.25	36.0	8.67	Comp	0.00	H 34X	0.000		85.212	0.000	0.000	0.000	11.181	0	0.000	0
Horiz 18	L 3" x 2.5" x 0.25"	SAU	3X2.5X0.25	36.0	15.91	Comp	0.00	H 36X	0.000		42.444	0.000	0.000	0.000	10.090	0	0.000	0
Horiz 19	C8x11.5	CHN	C8x11.5	36.0	5.37	Comp	0.00	H 38X	0.000		109.512	0.000	0.000	0.000	9.000	0	0.000	0
LD 1	B/B L3"x2.5"x0.3125"	DAL	3X2.5X0.31	36.0	42.45	Comp	17.64	LD 2Y	18.518	W -45	104.976	0.000	0.000	0.000	14.067	0	0.000	0
LD 2	B/B L4"x3"x0.3125"	DAL	4X3X0.31	36.0	59.45	Comp	31.71	LD 3P	42.950	W -90	135.432	0.000	0.000	0.000	14.067	0	0.000	0
LD 4	B/B L3"x2"x0.25"	DAL	3X2X0.25	36.0	60.68	Comp	22.06	LD 7P	17.011	W -90	77.112	0.000	0.000	0.000	13.385	0	0.000	0
LD 5	B/B L4"x3"x0.25"	DAL	4X3X0.25	36.0	65.86	Comp	37.68	LD 9P	41.263	W -90	109.512	0.000	0.000	0.000	13.385	0	0.000	0
LD 7	B/B L2.5"x2.5"x0.375"	DAE	2.5X2.5X0.38	36.0	41.59	Comp	14.36	LD 13P	16.147	W -90	112.428	0.000	0.000	0.000	12.717	0	0.000	0
LD 8	B/B L3.5"x3"x0.25"	DAL	3.5X3X0.25	36.0	72.07	Comp	39.02	LD 15P	39.576	W -90	101.412	0.000	0.000	0.000	12.717	0	0.000	0
LD 10	B/B L3"x3"x0.25"	DAE	3X3X0.25	36.0	37.88	Comp	19.62	LD 19P	18.304	W -90	93.312	0.000	0.000	0.000	11.382	0	0.000	0
LD 11	B/B L2.5"x2"x0.25"	DAL	2.5X2X0.25	36.0	57.46	Comp	36.07	LD 21P	24.894	W -90	69.012	0.000	0.000	0.000	8.160	0	0.000	0
LD 12	B/B L3"x2"x0.25"	DAL	3X2X0.25	36.0	62.52	Comp	41.18	LD 23X	31.752	W -90	77.112	0.000	0.000	0.000	9.605	0	0.000	0
LD 13	B/B L2.5"x2"x0.25"	DAL	2.5X2X0.25	36.0	54.46	Comp	24.51	LD 25P	16.914	W -90	69.012	0.000	0.000	0.000	10.794	0	0.000	0
LD 14	B/B L2.5"x2"x0.25"	DAL	2.5X2X0.25	36.0	54.15	Comp	35.30	LD 27P	24.364	W -90	69.012	0.000	0.000	0.000	8.014	0	0.000	0
LD 15	B/B L3"x3"x0.25"	DAE	3X3X0.25	36.0	42.44	Comp	32.26	LD 29X	30.104	W -90	93.312	0.000	0.000	0.000	9.253	0	0.000	0
LD 16	B/B L2.5"x2"x0.25"	DAL	2.5X2X0.25	36.0	46.93	Comp	22.76	LD 32Y	15.709	W -45	69.012	0.000	0.000	0.000	10.229	0	0.000	0
LD 17	B/B L2.5"x2"x0.25"	DAL	2.5X2X0.25	36.0	50.32	Comp	32.36	LD 33P	22.332	W -90	69.012	0.000	0.000	0.000	7.876	0	0.000	0
LD 18	B/B L2.5"x2"x0.25"	DAL	2.5X2X0.25	36.0	61.86	Comp	39.87	LD 35X	27.514	W -90	69.012	0.000	0.000	0.000	8.919	0	0.000	0
LH 1	B/B L2.5"x3"x0.25"	DAS	3X2.5X0.25	36.0	10.08	Tens	10.08	LH 1Y	8.590	W 0	85.212	0.000	0.000	0.000	24.352	0	0.000	0
LH 2	B/B L2.5"x3"x0.25"	DAS	3X2.5X0.25	36.0	6.28	Tens	6.28	LH 3Y	5.349	W 0	85.212	0.000	0.000	0.000	22.764	0	0.000	0
LH 3	B/B L2.5"x3"x0.25"	DAS	3X2.5X0.25	36.0	6.49	Tens	6.49	LH 5Y	5.531	W 0	85.212	0.000	0.000	0.000	21.176	0	0.000	0
LH 4	B/B L3"x3"x0.375"	DAE	3X3X0.38	36.0	46.76	Comp	14.66	LH 7P	20.039	W -90	136.728	0.000	0.000	0.000	10.648	0	0.000	0
LH 5	B/B L2.5"x3"x0.25"	DAS	3X2.5X0.25	36.0	57.83	Comp	21.09	LH 9P	17.975	W -90	85.212	0.000	0.000	0.000	9.821	0	0.000	0
LH 6	B/B L2.5"x3"x0.25"	DAS	3X2.5X0.25	36.0	45.50	Comp	18.76	LH 12Y	15.988	W -45	85.212	0.000	0.000	0.000	8.993	0	0.000	0
DUM 1	Dummy Bracing Member	DUM	0.1X0.1X1	36.0	0.00		0.00	BR 13X	0.714	W -45	0.324	0.000	0.000	0.000	20.963	0	0.000	0

*** Maximum Stress Summary for Each Load Case

Summary of Maximum Usages by Load Case:

Load Case	Maximum Usage %	Element Label	Element Type
W 0	73.91	D 11P	Angle
W 180	75.01	D 11Y	Angle
W 45	61.42	D 12P	Angle
W -45	65.60	D 12X	Angle
W 90	74.21	D 12P	Angle
W -90	75.26	D 12X	Angle
W 0 Ice	24.40	D 11P	Angle
W 180 Ice	25.56	D 11Y	Angle
W 45 Ice	25.30	L 1P	Angle
W -45 Ice	24.55	L 1X	Angle
W 90 Ice	24.49	D 12P	Angle
W -90 Ice	25.60	D 12X	Angle

*** Weight of structure (lbs):
Weight of Angles*Section DLF: 155444.9
Total: 155444.9

*** End of Report

Site #:	88008
Name:	Bethany CT, CT

Engineer:	ADV
Date:	10/08/21

Windspeed:	No Ice:	119 mph	Ice:	50 mph
Carrier	Dish Wireless			

Taper:	-0.127052	
FW @ Base:	51.88	ft

Taper Change:	337.5	ft
FW @ Top:	9	ft

Spreadsheet Version Last Updated: 11/12/2014

Joint Label	Symmetry Code	X Coord. (ft)	Y Coord. (ft)	Z Coord. (ft)	X Disp. Rest.	Y Disp. Rest.	Z Disp. Rest.	X Rot. Rest.	Y Rot. Rest.	Z Rot. Rest.	Drop Sub-Brace (Y or Blank)	# Vert	Drop (ft)	Height (ft)	Type	Count	Z-Elev. (ft)	FW (ft)	# Sub-Brace
0	XY-Symmetry	25.94	25.94	0	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed		3	7.030	25	1	1	0	51.88	3
1	XY-Symmetry	24.35185185	24.35185185	25	Free	Free	Free	Free	Free	Free		3	7.030	25	1	2	25	48.7037037	3
2	XY-Symmetry	22.7637037	22.7637037	50	Free	Free	Free	Free	Free	Free		3	7.030	25	1	3	50	45.52740741	3
3	XY-Symmetry	21.17555556	21.17555556	75	Free	Free	Free	Free	Free	Free			7.030	25	2	4	75	42.35111111	3
4	XY-Symmetry	19.58740741	19.58740741	100	Free	Free	Free	Free	Free	Free			7.030	25	2	5	100	39.17481481	3
5	XY-Symmetry	17.99925926	17.99925926	125	Free	Free	Free	Free	Free	Free			7.03	25	2	6	125	35.99851852	3
6	XY-Symmetry	16.41111111	16.41111111	150	Free	Free	Free	Free	Free	Free				25	A	7	150	32.82222222	2
7	XY-Symmetry	14.82296296	14.82296296	175	Free	Free	Free	Free	Free	Free				25	A	8	175	29.64592593	2
8	XY-Symmetry	13.23481481	13.23481481	200	Free	Free	Free	Free	Free	Free				25	A	9	200	26.46962963	2
9	XY-Symmetry	11.64666667	11.64666667	225	Free	Free	Free	Free	Free	Free				12.5	A	10	225	23.29333333	1
10	XY-Symmetry	10.85259259	10.85259259	237.5	Free	Free	Free	Free	Free	Free				12.5	A	11	237.5	21.70518519	1
11	XY-Symmetry	10.05851852	10.05851852	250	Free	Free	Free	Free	Free	Free				12.5	A	12	250	20.11703704	1
12	XY-Symmetry	9.264444444	9.264444444	262.5	Free	Free	Free	Free	Free	Free				12.5	A	13	262.5	18.52888889	1
13	XY-Symmetry	8.47037037	8.47037037	275	Free	Free	Free	Free	Free	Free				12.5	A	14	275	16.94074074	1
14	XY-Symmetry	7.676296296	7.676296296	287.5	Free	Free	Free	Free	Free	Free				12.5	A	15	287.5	15.35259259	1
15	XY-Symmetry	6.882222222	6.882222222	300	Free	Free	Free	Free	Free	Free				10.167	X	16	300	13.76444444	1
16	XY-Symmetry	6.236354133	6.236354133	310.167	Free	Free	Free	Free	Free	Free		1		10.167	X	17	310.167	12.47270827	1
17	XY-Symmetry	5.590486044	5.590486044	320.334	Free	Free	Free	Free	Free	Free				8.583	X	18	320.334	11.18097209	1
18	XY-Symmetry	5.045243022	5.045243022	328.917	Free	Free	Free	Free	Free	Free				8.583	X	19	328.917	10.09048604	1
19	XY-Symmetry	4.5	4.5	337.5	Free	Free	Free	Free	Free	Free						20	337.5	9	
A1	Y-Symmetry	24.35185185	0	25	Free	Free	Free	Free	Free	Free									
A2	X-Symmetry	0	24.35185185	25	Free	Free	Free	Free	Free	Free									
A3	Y-Symmetry	22.7637037	0	50	Free	Free	Free	Free	Free	Free									
A4	X-Symmetry	0	22.7637037	50	Free	Free	Free	Free	Free	Free									
A5	Y-Symmetry	21.17555556	0	75	Free	Free	Free	Free	Free	Free									
A6	X-Symmetry	0	21.17555556	75	Free	Free	Free	Free	Free	Free									
A7	XY-Symmetry	19.58740741	6.529135802	100	Free	Free	Free	Free	Free	Free									
A8	XY-Symmetry	6.529135802	19.58740741	100	Free	Free	Free	Free	Free	Free									
A9	XY-Symmetry	17.99925926	5.999753086	125	Free	Free	Free	Free	Free	Free									
A10	XY-Symmetry	5.999753086	17.99925926	125	Free	Free	Free	Free	Free	Free									
A11	XY-Symmetry	16.41111111	5.47037037	150	Free	Free	Free	Free	Free	Free									
A12	XY-Symmetry	5.47037037	16.41111111	150	Free	Free	Free	Free	Free	Free									
A13	Y-Symmetry	14.82296296	0	175	Free	Free	Free	Free	Free	Free									
A14	X-Symmetry	0	14.82296296	175	Free	Free	Free	Free	Free	Free									
A15	Y-Symmetry	13.23481481	0	200	Free	Free	Free	Free	Free	Free									
A16	X-Symmetry	0	13.23481481	200	Free	Free	Free	Free	Free	Free									
A17	Y-Symmetry	11.64666667	0	225	Free	Free	Free	Free	Free	Free									
A18	X-Symmetry	0	11.64666667	225	Free	Free	Free	Free	Free	Free									
A19	Y-Symmetry	10.85259259	0	237.5	Free	Free	Free	Free	Free	Free									
A20	X-Symmetry	0	10.85259259	237.5	Free	Free	Free	Free	Free	Free									
A21	Y-Symmetry	10.05851852	0	250	Free	Free	Free	Free	Free	Free									
A22	X-Symmetry	0	10.05851852	250	Free	Free	Free	Free	Free	Free									
A23	Y-Symmetry	9.264444444	0	262.5	Free	Free	Free	Free	Free	Free									
A24	X-Symmetry	0	9.264444444	262.5	Free	Free	Free	Free	Free	Free									
A25	Y-Symmetry	8.47037037	0	275	Free	Free	Free	Free	Free	Free									
A26	X-Symmetry	0	8.47037037	275	Free	Free	Free	Free	Free	Free									
A27	Y-Symmetry	7.676296296	0	287.5	Free	Free	Free	Free	Free	Free									
A28	X-Symmetry	0	7.676296296	287.5	Free	Free	Free	Free	Free	Free									
A29	Y-Symmetry	6.882222222	0	300	Free	Free	Free	Free	Free	Free									
A30	X-Symmetry	0	6.882222222	300	Free	Free	Free	Free	Free	Free									
H1	XY-Symmetry	24.79843911	12.17592593	17.97	Free	Free	Free	Free	Free	Free									
H2	XY-Symmetry	12.17592593	24.79843911	17.97	Free	Free	Free	Free	Free	Free									
H5	XY-Symmetry	23.21029096	11.38185185	42.97	Free	Free	Free	Free	Free	Free									
H6	XY-Symmetry	11.38185185	23.21029096	42.97	Free	Free	Free	Free	Free	Free									
H9	XY-Symmetry	21.62214281	10.58777778	67.97	Free	Free	Free	Free	Free	Free									
H10	XY-Symmetry	10.58777778	21.62214281	67.97	Free	Free	Free	Free	Free	Free									
H13	XY-Symmetry	20.03399467	10.64770904	92.97	Free	Free	Free	Free	Free	Free									
H14	XY-Symmetry	10.64770904	20.03399467	92.97	Free	Free	Free	Free	Free	Free									
H15	Y-Symmetry	20.03399467	0	92.97	Free	Free	Free	Free	Free	Free									
H16	X-Symmetry	0	20.03399467	92.97	Free	Free	Free	Free	Free	Free									
H17	XY-Symmetry	18.44584652	9.820601481	117.97	Free	Free	Free	Free	Free	Free									
H18	XY-Symmetry	9.820601481	18.44584652	117.97	Free	Free	Free	Free	Free	Free									
H19	Y-Symmetry	18.44584652	0	117.97	Free	Free	Free	Free	Free	Free									
H20	X-Symmetry	0	18.44584652	117.97	Free	Free	Free	Free	Free	Free									
H21	XY-Symmetry	16.85769837	8.993493926	142.97	Free	Free	Free	Free	Free	Free									
H22	XY-Symmetry	8.993493926	16.85769837	142.97	Free	Free	Free	Free	Free	Free									
H23	Y-Symmetry	16.85769837	0	142.97	Free	Free	Free	Free	Free	Free									
H24	X-Symmetry	0	16.85769837	142.97	Free	Free	Free	Free	Free	Free									

NOTES	
Types:	
1:	Built up Horizs. w/ A
2:	Built up Horizs. w/ M
A:	Typical A brace
X:	Typical X brace
Drop:	Use only for types 1 & 2
# Sections:	19

Legs

Site No.:	88008
Engineer:	ADV
Date:	10/08/2021
Carrier:	Dish Wireless

When inputting thickness values, include all decimal places.

Tower Section #	Section Elevations *(ft)*	Type of Shape [1]	Diameter or Length *(in)*	Thickness [2] *(in)*	F_Y *(ksi)*
1	0.000-25.00	L	8	1.125	36
2	25.00-50.00	L	8	1.125	36
3	50.00-75.00	L	8	1.125	36
4	75.00-100.0	L	8	1.125	36
5	100.0-125.0	L	8	1	36
6	125.0-150.0	L	8	1	36
7	150.0-175.0	L	8	0.875	36
8	175.0-200.0	L	8	0.75	36
9	200.0-225.0	L	8	0.75	36
10	225.0-237.5	L	6	0.875	36
11	237.5-250.0	L	6	0.75	36
12	250.0-262.5	L	6	0.75	36
13	262.5-275.0	L	6	0.5625	36
14	275.0-287.5	L	6	0.5625	36
15	287.5-300.0	L	6	0.4375	36
16	300.0-310.2	L	5	0.4375	36
17	310.2-320.3	L	5	0.4375	36
18	320.3-328.9	L	5	0.3125	36
19	328.9-337.5	L	5	0.3125	36

Notes:

[1] Type of Leg Shape: **R** = Round or **P** = Bent Plate or **S** = Schifflerized Angle. **L** = Even Le

[2] For Solid Round Leg Shapes Thickness Equals Zero.

[3] Adjust for Bent Plate Leg Shapes.

Diagonals

Site No.:	88008
Engineer:	ADV
Date:	10/08/2021
Carrier:	Dish Wireless

When inputting thickness values, include all decimal places.

Tower Section #	Section Elevations *(ft)*	Type of Shape [1]	Diameter [2] *(in)*	Web Length [3] *(in)*	Flange Length [3] *(in)*	Thickness *(in)*	F_y *(ksi)*	Is Diag. Tension Only? *(Y/N)*
1	0.000-25.00	2L		3	4	0.375	36	
2	25.00-50.00	2L		3	4	0.25	36	
3	50.00-75.00	2L		3	4	0.25	36	
4	75.00-100.0	2L		3	3.5	0.25	36	
5	100.0-125.0	2L		3	3.5	0.25	36	
6	125.0-150.0	2L		2.5	3.5	0.25	36	
7	150.0-175.0	2L		3	3	0.375	36	
8	175.0-200.0	2L		2.5	3	0.25	36	
9	200.0-225.0	2L		2.5	3	0.25	36	
10	225.0-237.5	2L		2.5	2.5	0.25	36	
11	237.5-250.0	2L		2.5	2.5	0.25	36	
12	250.0-262.5	2L		2.5	2.5	0.25	36	
13	262.5-275.0	2L		2.5	2	0.25	36	
14	275.0-287.5	2L		2.5	2	0.25	36	
15	287.5-300.0	2L		2.5	2	0.25	36	
16	300.0-310.2	L		3.5	3.5	0.25	36	Y
17	310.2-320.3	L		3.5	3.5	0.25	36	Y
18	320.3-328.9	L		3	3	0.25	36	Y
19	328.9-337.5	L		3	3	0.25	36	Y

Notes:

[1] Type of Diagonal Shape: **R** = Round, **L** = Single-Angle or **2L** = Double-Angle.

[2] Applies to Pipes and Solid Round Shapes only. For Solid Round Shapes Thickness Equals Zero.

[3] Applies to Single-Angle and Double-Angle Shapes only.

[4] Applies to Double-Angle Shapes only.

[5] Applies to Single-Angle Shapes only.

Horizontals

Site No.:	88008
Engineer:	ADV
Date:	10/08/2021
Carrier:	Dish Wireless

When inputting thickness values, include all decimal places.

Tower Section #	Section Elevations *(ft)*	Type of Shape [1]	Diameter [2] *(in)*	Web Length [3] *(in)*	Flange Length [3] *(in)*	Thickness *(in)*	F_y *(ksi)*	B/B Spacing (in.)
1	0.000-25.00	2L		4	3	0.25	36	
2	25.00-50.00	2L		3.5	2.5	0.25	36	
3	50.00-75.00	2L		3	2.5	0.25	36	
4	75.00-100.0	2L		3.5	2.5	0.25	36	
5	100.0-125.0	2L		3.5	2.5	0.25	36	
6	125.0-150.0	2L		3	2.5	0.25	36	
7	150.0-175.0	2L		3	2.5	0.25	36	
8	175.0-200.0	2L		3	2.5	0.25	36	
9	200.0-225.0	2L		2.5	2.5	0.25	36	
10	225.0-237.5	2L		2.5	2.5	0.25	36	
11	237.5-250.0	2L		2.5	2.5	0.25	36	
12	250.0-262.5	2L		2.5	2.5	0.25	36	
13	262.5-275.0	2L		2.5	2.5	0.25	36	
14	275.0-287.5	2L		2.5	2.5	0.25	36	
15	287.5-300.0	2L		2.5	2.5	0.25	36	
16	300.0-310.2	L		3	2.5	0.25	36	
17	310.2-320.3	2L		3	2.5	0.25	36	
18	320.3-328.9	L		3	2.5	0.25	36	
19	328.9-337.5	C		8	11.5		36	

Notes:

[1] Type of Horizontal Shape: **R** = Round, **L** = Single-Angle, **2L** = Double-Angle, **C** = Channel, **W** = W Shape

[2] Applies to Pipes and Solid Round Shapes only. For Solid Round Shapes Thickness Equals Zero.

[3] Applies to Single-Angle and Double-Angle Shapes only.

[4] Applies to Double-Angle Shapes only.

[5] Applies to Single-Angle Shapes only.

Built-up Diagonals

Site No.:	88008
Engineer:	ADV
Date:	10/08/2021
Carrier:	Dish Wireless

When inputting thickness values, include all decimal places.
Input diags. from left to center & from base section upward.

Tower Built-up Diag. #	Section Elevations (ft)	Type of Shape [1]	Diameter [2] (in)	Web Length [3] (in)	Flange Length [3] (in)	Thickness (in)	F_y (ksi)
1	0.000-25.00	2L		3	2.5	0.3125	36
2	0.000-25.00	2L		4	3	0.3125	36
3	25.00-50.00	2L		3	2	0.25	36
4	25.00-50.00	2L		4	3	0.25	36
5	50.00-75.00	2L		2.5	2.5	0.375	36
6	50.00-75.00	2L		3.5	3	0.25	36
7	75.00-100.0	2L		3	3	0.25	36
8	75.00-100.0	2L		2.5	2	0.25	36
9	75.00-100.0	2L		3	2	0.25	36
10	100.0-125.0	2L		2.5	2	0.25	36
11	100.0-125.0	2L		2.5	2	0.25	36
12	100.0-125.0	2L		3	3	0.25	36
13	125.0-150.0	2L		2.5	2	0.25	36
14	125.0-150.0	2L		2.5	2	0.25	36
15	125.0-150.0	2L		2.5	2	0.25	36

Notes:

[1] Type of Diagonal Shape: **R** = Round, **L** = Single-Angle or **2L** = Double-Angle.

[2] Applies to Pipes and Solid Round Shapes only. For Solid Round Shapes Thickness Equals Zero.

[3] Applies to Single-Angle and Double-Angle Shapes only.

[4] Applies to Double-Angle Shapes only.

[5] Applies to Single-Angle Shapes only.

Built-up Horizontals

Site No.:	88008
Engineer:	ADV
Date:	10/08/2021
Carrier:	Dish Wireless

When inputting thickness values, include all decimal places.

Tower Section #	Section Elevations *(ft)*	Type of Shape [1]	Diameter [2] *(in)*	Web Length [3] *(in)*	Flange Length [3] *(in)*	Thickness *(in)*	F_y *(ksi)*	Is Horiz. Tension Only? *(Y/N)*
1	0.000-25.00	2L		2.5	3	0.25	36	Y
2	25.00-50.00	2L		2.5	3	0.25	36	Y
3	50.00-75.00	2L		2.5	3	0.25	36	Y
4	75.00-100.0	2L		3	3	0.375	36	
5	100.0-125.0	2L		2.5	3	0.25	36	
6	125.0-150.0	2L		2.5	3	0.25	36	

Notes:

[1] Type of Horizontal Shape: **R** = Round, **L** = Single-Angle or **2L** = Double-Angle.

[2] Applies to Pipes and Solid Round Shapes only. For Solid Round Shapes Thickness Equals Zero.

[3] Applies to Single-Angle and Double-Angle Shapes only.

[4] Applies to Double-Angle Shapes only.

[5] Applies to Single-Angle Shapes only.

Coax (p. 1 of 2)

Orig by MED, Improved by ABL. Last update 6/25/13 MED

Site No.:	88008
Engineer:	ADV
Date:	10/08/21
Carrier:	Dish Wireless

Description	From (ft)	To (ft)	Quantity	Shape	Width or Diameter** (in)	Perimeter (in)	Unit Weight (lb/ft)	In Face Zone? (Yes/No)	Include in Wind Load (Yes/No)
1 Climbing Ladder	0	337.5	1	Flat	2.000	8.0	6	No	Yes
2 US Dept	0	337.5	2	Round	1.090	3.4	0.33	Yes	Yes
3 US Dept	0	337.5	1	Round	0.630	2.0	0.15	Yes	Yes
4 Ligado	0	319	1	Round	1.980	6.2	0.82	Yes	Yes
5 US Dept	0	310	2	Round	1.090	3.4	0.33	Yes	Yes
6 US Dept	0	275	1	Round	1.090	3.4	0.33	Yes	Yes
7 Sprint	0	240	3	Round	1.540	4.8	1	No	Yes
8 TMO	0	220	1	Flat	4.838	25.8	4.92	Yes	Yes
9 TMO	0	220	3	Round	1.250	3.9	1.05	Yes	Yes
10 US Dept	0	194	1	Round	1.550	4.9	0.63	Yes	No
11 Verizon	0	180	1	Flat	8.190	43.7	9.84	Yes	Yes
12 ATT	0	165	6	Round	1.980	6.2	0.82	Yes	Yes
13 ATT	0	165	1	Round	0.390	1.2	0.17	Yes	No
14 ATT	0	165	2	Round	0.780	2.5	0.59	Yes	No
15 ATT	0	165	1	Round	3.500	11.0	7.58	Yes	No
16 Metro	0	100	6	Round	1.980	6.2	0.82	Yes	Yes
17 Sprint	0	48	1	Round	0.630	2.0	0.15	No	No
18 Coax Cage	12.5	32.5	2	Flat	12.000	48.0	25	Yes	Yes
19 Coax Cage	12.5	32.5	2	Flat	12.000	48.0	25	Yes	Yes
20 Waive Guide	0	180	1	Flat	1.500	6.0	2	Yes	Yes
21 Waive Guide	0	165	1	Flat	1.500	6.0	2	Yes	Yes
22 Waive Guide	0	100	1	Flat	1.500	6.0	2	Yes	Yes
23 Siglox	0	147	1	Flat	0.630	2.5	0.15	No	Yes
24 Sprint	0	204.8	3	Flat	1.980	25.8	4.92	No	Yes
25 Verizon	0	180	1	Round	1.980	10.2	1.64	Yes	No
26 Dish	0	140	1	Round	2.000	5.0	2.34	No	Yes

Coax (p. 2 of 2)

			Ke	0.977806	
		Exposure	B	α	7 $K_{z\,max}$ 2.01
	Tia Code:	TIA-222-H	Topo Cat:	1	z_g 1200 $K_{z\,min}$ 0.7
			f		K_c 0.9 K_s

Site No.:	88008
Engineer:	ADV
Date:	10/08/21
Carrier:	Dish Wireless

Description	From (ft)	To (ft)	Quantity	Face # (1-4, A-D)	Coax Width (in)	Coax Shape (Block / Flat / Ind)	% Exposed	Spacing (in)	Shape (Round/Flat)	Block Width (# coax)	Block Depth (# coax)	Perimeter (in)	Unit Weight (lb/ft)	In Face Zone (Yes/No)	Include in Wind Load (Yes/No)
Climbing Ladder	0	337.5	1	B	2.00	Flat	100		Flat	1	1	8.0	6	No	Yes
US Dept	0	337.5	2	2	1.09	Ind	100		Round	2	1	3.4	0.33	Yes	Yes
US Dept	0	337.5	1	2	0.63	Ind	100		Round	1	1	2.0	0.15	Yes	Yes
Ligado	0	319	1	A	1.98	Ind	100		Round	1	1	6.2	0.82	Yes	Yes
US Dept	0	310	2	2	1.09	Ind	100		Round	2	1	3.4	0.33	Yes	Yes
US Dept	0	275	1	2	1.09	Ind	100		Round	1	1	3.4	0.33	Yes	Yes
Sprint	0	240	3	B	1.54	Ind	100		Round	3	1	4.8	1	No	Yes
TMO	0	220	1	B	4.84	Block	50	1	Flat	1	1	25.8	4.92	Yes	Yes
TMO	0	220	3	B	1.25	Ind	100		Round	3	1	3.9	1.05	Yes	Yes
US Dept	0	194	1	A	1.55	Ind	100		Round	1	1	4.9	0.63	Yes	No
Verizon	0	180	12	A	1.98	Block	50	1	Flat	6	2	43.7	9.84	Yes	Yes
ATT	0	165	6	2	1.98	Ind	100		Round	6	1	6.2	0.82	Yes	Yes
ATT	0	165	1	2	0.39	Ind	100		Round	1	1	1.2	0.17	Yes	No
ATT	0	165	2	2	0.78	Ind	100		Round	2	1	2.5	0.59	Yes	No
ATT	0	165	1	2	3.50	Ind	100		Round	1	1	11.0	7.58	Yes	No
Metro	0	100	6	2	1.98	Ind	100		Round	6	1	6.2	0.82	Yes	Yes
Sprint	0	48	1	B	0.63	Ind	100		Round	1	1	2.0	0.15	No	Yes
Coax Cage	12.5	32.5	2	1	12.00	Flat	100		Flat	2	1	48.0	25	Yes	Yes
Coax Cage	12.5	32.5	2	3	12.00	Flat	100		Flat	2	1	48.0	25	Yes	Yes
Waive Guide	0	180	1	4	1.50	Flat	100		Flat	1	1	6.0	2	Yes	Yes
Waive Guide	0	165	1	2	1.50	Flat	100		Flat	1	1	6.0	2	Yes	Yes
Waive Guide	0	100	1	2	1.50	Flat	100		Flat	1	1	6.0	2	Yes	Yes
Siglox	0	147	1	2	0.63	Flat	100		Flat	1	1	2.5	0.15	No	Yes
Sprint	0	204.8	3	2	1.54	Block	50	1	Flat	1	2	25.8	4.92	No	Yes
Verizon	0	180	1	A	1.98	Ind	0		Round	1	2	10.2	1.64	Yes	No
Dish	0	140	1	B	1.60	Ind	100		Round	1	1	5.0	2.34	No	No

Fac

Notes: Actual block width multiplied by 0.75 (1 x block area factor actual divided by 2.0 flat

Task:	Determine Point Loads
Tower Height:	337.5 ft
Kzt:	0.85
Wind Speed:	110 mph,Vult
Ice Wind Speed:	50
Ice Density:	56
Tower Type:	S

Ice Thick:	1 in
Topographic Category (1-4):	1
Exposure Category (B-D):	B
Risk Category (1-4):	2
Height of Crest (H) if Topo Cat. >1:	0 ft
Load Factor, Wind:	1
Load Factor, Dead:	1.2

Rooftop Speed Up Factor (Ks)	1
Ground Elevation (AMSL)	620 ft
Topographic Factor Procedure	Method 1

Site No.:	
Engineer:	
Date:	
Carrier:	

No.	Carrier	Elevation (ft)	Quantity	# of Azimuths	Proposed?	Manufacturer	Model	Height (in)	Width (in)	Depth (in)	Weight (lbs/ea)	Flat/Round (F/R)	Reduction	C_AA_r (ft^2)	Weight (lb)	Ka
1	US Dept	338	1	1		-	-	0.001	0.001	0.001	0.001	F	0.001			1
	US Dept	338	1	1		Rohde & Schwarz	ADD090						1.000	20.76	0.09	1
2	-	338	1	1		-	Platform	0.001	0.001	0.001	0.001	F	0.001			1
	-	338	1	4		-							1.000	70.00	6.00	1
3	Ligado	319	1	1		-	Side Arm	0.001	0.001	0.001	0.001	F	0.001			1
	Ligado	319	1	1		Kathrein Scala	750 10074						1.000	1.73	0.02	1
4	Ligado	319	1	1		-	Side Arm	0.001	0.001	0.001	0.001	F	0.001			1
	Ligado	319	1	1		-							1.000	5.20	0.15	1
5	US Dept	310	1	1		-	Sector Frame	0.001	0.001	0.001	0.001	F	0.001			1
	US Dept	310	1	1		Sinclair	SC381-HL (160°)						1.000	6.00	0.05	1
6	US Dept	310	1	1		-		0.001	0.001	0.001	0.001	F	0.001			1
	US Dept	310	1	1		Sinclair	SC281-L						1.000	10.46	0.08	1
7	-	310	1	1		-	Sector Frame	0.001	0.001	0.001	0.001	F	0.001			1
	-	310	1	1		-							1.000	14.90	0.30	1
8	Unknown	287	1	1		-	Side Arm	0.001	0.001	0.001	0.001	F	0.001			1
	Unknown	287	1	1		Generic	8' Omni						1.000	2.40	0.03	1
9	US Dept	275	1	1		-		0.001	0.001	0.001	0.001	F	0.001			1
	US Dept	275	1	1		Sinclair	SC281-L						1.000	10.46	0.08	1
10	US Dept	275	1	1		-	Sector Frame	0.001	0.001	0.001	0.001	F	0.001			1
	US Dept	275	1	1		-							1.000	14.90	0.30	1
11	Unknown	262	1	1		-	Side Arm	0.001	0.001	0.001	0.001	F	0.001			1
	Unknown	262	1	1		Generic	8' Omni						1.000	2.40	0.03	1
12	US Dept	194	1	1		-	-	0.001	0.001	0.001	0.001	F	0.001			1
	US Dept	194	1	1		Andrew	DB616E-BC						1.000	6.73	0.05	1
13	US Dept	194	1	1		-	Side Arm	0.001	0.001	0.001	0.001	F	0.001			1
	US Dept	194	1	1		-							1.000	5.20	0.15	1
14	T-MOBILE	222	3	3		Andrew	ETT19V2A12UB	9.4	7.3	3.5	11	F	0.500			0.8
	T-MOBILE	222	1	1		-							0.001	0.00	0.00	1
15	T-MOBILE	222	3	3		Ericsson	Radio 4449 B12_B71	14.9	13.2	9.3	74	F	0.500			0.8
	T-MOBILE	222	1	1		-							0.001	0.00	0.00	1
16	T-MOBILE	222	3	3		RFS	APX16DWV-16DWVS-E-A20	55.9	13.3	3.1	40.7	F	0.600			0.8
	T-MOBILE	222	1	1		-							0.001	0.00	0.00	1
17	T-MOBILE	222	3	3		RFS	APXVAARR24_43-U-NA20	95.9	24	8.7	127.9	F	0.630			0.8
	T-MOBILE	222	3	3		-	PV-SFA-B Sector Frames						0.670	10.00	0.30	0.75
18	ATT	165	3	3		Powerwave Allgon	LGP21901	4	6	3	5.5	F	0.500			0.8
	ATT	165	1	1		-	-						0.001	0.00	0.00	1
19	ATT	165	3	3		Raycap	DC2-48-60-0-9E	10.3	10.3	6.2	16	F	0.500			0.8
	ATT	165	1	1		-	-						0.001	0.00	0.00	1
20	ATT	165	6	3		Powerwave Allgon	LGP21401	14.4	9.2	2.6	14.1	F	0.500			0.8
	ATT	165	1	1		-	-						0.001	0.00	0.00	1
21	ATT	165	3	3		Raycap	FC12-PC6-10E	15.5	16.3	6.6	25	F	0.500			0.8
	ATT	165	1	1		-	-						0.001	0.00	0.00	1
22	ATT	165	3	3		Ericsson	RRUS 11 (Band 12)	17.8	17.3	7.2	50	F	0.500			0.8
	ATT	165	1	1		-	-						0.001	0.00	0.00	1
23	ATT	165	3	3		Powerwave Allgon	7770	55	11	5	35	F	0.650			0.8
	ATT	165	1	1		-	-						0.001	0.00	0.00	1
24	ATT	165	1	1		KMW	AM-X-CD-16-65-00T-RET	72	11.8	5.9	48.5	F	0.670			0.8
	ATT	165	1	1		-	-						0.001	0.00	0.00	1
25	ATT	165	2	2		Andrew	SBNH-1D6565C (60.8 lbs)	96.4	11.9	7.1	60.8	F	0.700			0.8
	ATT	165	3	3		-	Sector Frame						0.670	10.00	0.30	0.75
26	Metro	100	3	3		RFS	APXV18-206517S-C	72	6.8	3.2	26.4	F	0.680			1
	Metro	100	1	1		-	-						0.001	0.00	0.00	1
27	Sprint	48	1	1		PCTEL	GPS-TMG-HR-26N	5	3.2	3.2	0.6	F	1.000			1
	Sprint	48	1	1		-	-						0.001	0.00	0.00	1
28	-	320	1	1		-	-	0.001	0.001	0.001	0.001	F	0.001			1
	-	320	1	4		-	Access Platform						1.000	30.00	5.00	1
29	-	287.5	1	1		-	Rest Platform	0.001	0.001	0.001	0.001	F	0.001			1
	-	287.5	1	1		-							1.000	15.00	0.50	1
30	-	237	1	1		-	Catwalk	0.001	0.001	0.001	0.001	F	0.001			1
	-	237	1	3		-							1.000	30.00	5.00	1
31	-	200	1	1		-	Rest Platform	0.001	0.001	0.001	0.001	F	0.001			1
	-	200	1	1		-							1.000	10.00	0.50	1
32	-	150	1	1		-	-	0.001	0.001	0.001	0.001	F	0.001			1
	-	150	1	1		-	Rest Platform						1.000	10.00	0.50	1
33	-	125	1	1		-	-	0.001	0.001	0.001	0.001	F	0.001			1
	-	125	1	3		-	Catwalk						1.000	70.00	8.00	1
34	SIGFOX S.A.	147	1	1		Procom	CXL 900-3LW	27.6	0.6	0.6	1.5	R	1.000			1
	SIGFOX S.A.	147	1	1									0.001	0.00	0.00	1
35	SIGFOX S.A.	147	1	1		Generic	5" x 3" x 2" Cavity Filter	5.3	3.2	1.9	1.5	F	1.000			1
	SIGFOX S.A.	147	1	1									0.001	0.00	0.00	1
36	SIGFOX S.A.	147	1	1		Generic	Low Noise Amplifier	5	4	2	2	F	1.000			1
	SIGFOX S.A.	147	1	1		-	Side Arm						1.000	6.30	0.15	1
37	Sprint	240	3	3			APXV19PY18-C-A20	72	11.8	7	57	F	0.680			0.8
	Sprint	240	1	1									0.001	0.00	0.00	1
38	Sprint	240	3	3			1900 MHz 4x45 RRH	25.1	11.1	10.7	60	F	0.500			0.8
	Sprint	240	1	1									0.001	0.00	0.00	1
39	Sprint	240	3	3			800 MHz 2x50W RHH w/ Filter	19	13	12.2	64	F	0.500			0.8
40	Sprint	240	3	3			Pipes						0.670	8.00	0.20	1
	Sprint	204.8	6	4			DB980H90E-M	60	6.3	3	8.5	F	0.670			1
	Sprint	204.8	1	1									0.001	0.00	0.00	1
41	Sprint	48	1	1			GPS	5	3.2	3.2	0.6		1.000			1
	Sprint	48	1	1									0.001	0.00	0.00	1
42	VERIZON WIRELESS	180	3	3		Samsung	Outdoor C8RS 2DW RRH –Clip-on Antenna	12.3	8.7	1.4	4.4	F	0.500			0.8
	VERIZON WIRELESS	180	3	3			Flat Sector Frames						0.670	17.60	0.40	0.75
43	VERIZON WIRELESS	180	3	3		Samsung	RT4401-48A	13.9	8.6	4.2	18.6	F	0.500			0.8
	VERIZON WIRELESS	180	6	3		JMA Wireless	MX08FRO660-03						0.710	9.87	0.06	0.8
44	VERIZON WIRELESS	180	3	3		Samsung	B5/B13 RRH-BRIDAC	15	15	8.1	70.3	F	0.600			0.8
	VERIZON WIRELESS	180	3	3		Samsung	MT6407-77A						0.610	4.71	0.08	0.8
45	VERIZON WIRELESS	180	3	3		Samsung	B2/B66A RRH-BRD4I	15	15	10	84.4	F	0.630			0.8
	VERIZON WIRELESS	180	1	1									0.670	10.00	0.30	0.75
46	VERIZON WIRELESS	180	6	3		Andrew	DB844H90E-XY	48	6.5	8	14	F	0.670			0.8
	VERIZON WIRELESS	180	1	1									0.001	0.00	0.00	0.8
47	VERIZON WIRELESS	180	1	1		Raycap	RCMDC-6627-PF-48	29.5	16.5	12.6	32	F	0.670			0.8
	VERIZON WIRELESS	180	1	1									0.001	0.00	0.00	0.8
48	DISH WIRELESS	140	1	1		Commscope	RDIDC-9181-PF-48	16	14	8	21.9	F	1.000			0.8
	DISH WIRELESS	140	3	3		Fujitsu	TA08025-B604						0.500	1.96	0.06	0.8
49	DISH WIRELESS	140	3	3		Fujitsu	TA08025-B605	15.7	15	9.1	75	F	0.500			0.8
	DISH WIRELESS	140	3	3		JMA Wireless	MX08FRO665-21						0.640	12.49	0.06	0.8
50	DISH WIRELESS	140	1	1		-	-	0.001	0.001	0.001	0.001	F	0.001			1
	DISH WIRELESS	140	3	3			Flat Sector Frames						0.670	17.60	0.40	0.75

No.	Elevation (ft)	C_AA_r (ft^2)	C_AA_r (Ice) (ft^2)	Force (lb)	Force (Ice) (lb)	Weight (lb)	Weight (Ice) (lb)	60 Azi Mult.	Force mean	F (Ice) mean
1	338	0.00	0.00	0.000	0.000	0	0	1.00	0.00	0.00
	338	20.76	28.03	744.097	177.341	108	140	1.00	409.25	97.54
2	338	0.00	0.00	0.000	0.000	0	0	1.00	0.00	0.00
	338	70.00	94.50	2508.997	597.971	7200	9360	1.00	1379.95	328.88
3	319	0.00	0.00	0.000	0.000	0	0	1.00	0.00	0.00
	319	1.73	2.34	60.991	14.536	24	31	1.00	33.55	7.99
4	319	0.00	0.00	0.000	0.000	0	0	1.00	0.00	0.00
	319	5.20	7.02	183.327	43.692	180	234	1.00	100.83	24.03
5	310	0.00	0.00	0.000	0.000	0	0	1.00	0.00	0.00
	310	6.00	8.10	209.809	50.004	60	78	1.00	115.39	27.50
6	310	0.00	0.00	0.000	0.000	0	0	1.00	0.00	0.00
	310	10.46	14.12	365.766	87.173	96	125	1.00	201.17	47.95
7	310	0.00	0.00	0.000	0.000	0	0	1.00	0.00	0.00
	310	14.90	20.12	521.025	124.176	360	468	1.00	286.56	68.30
8	287	0.00	0.00	0.000	0.000	0	0	1.00	0.00	0.00
	287	2.40	3.24	82.095	19.566	36	47	1.00	45.15	10.76
9	275	0.00	0.00	0.000	0.000	0	0	1.00	0.00	0.00
	275	10.46	14.12	353.458	84.240	96	125	1.00	194.40	46.33
10	275	0.00	0.00	0.000	0.000	0	0	1.00	0.00	0.00
	275	14.90	20.12	503.492	119.998	360	468	1.00	276.92	66.00
11	262	0.00	0.00	0.000	0.000	0	0	1.00	0.00	0.00
	262	2.40	3.24	79.985	19.063	36	47	1.00	43.99	10.48
12	194	0.00	0.00	0.000	0.000	0	0	1.00	0.00	0.00
	194	6.73	9.09	205.839	49.058	60	78	1.00	113.21	26.98
13	194	0.00	0.00	0.000	0.000	0	0	1.00	0.00	0.00
	194	5.20	7.02	159.043	37.905	180	234	1.00	87.47	20.85
14	222	0.69	1.24	21.812	6.941	40	60	1.00	12.00	3.82
	222	0.00	0.00	0.000	0.000	1	2	1.00	0.00	0.00
15	222	1.97	3.00	62.517	16.818	266	358	1.00	34.38	9.25
	222	0.00	0.00	0.000	0.000	1	2	1.00	0.00	0.00
16	222	9.48	12.40	301.474	69.596	147	299	1.00	165.81	38.28
	222	0.00	0.00	0.000	0.000	1	2	1.00	0.00	0.00
17	222	30.61	37.42	972.879	209.972	460	932	1.00	535.08	115.48
	222	15.08	20.35	359.385	85.652	1080	1404	1.00	197.66	47.11
18	165	0.24	0.56	7.069	2.887	20	28	1.00	3.85	1.59
	165	0.00	0.00	0.000	0.000	1	2	1.00	0.00	0.00
19	165	1.06	1.77	30.981	9.100	58	89	1.00	17.04	5.00
	165	0.00	0.00	0.000	0.000	1	2	1.00	0.00	0.00
20	165	2.65	4.29	77.375	22.096	102	144	1.00	42.56	12.15
	165	0.00	0.00	0.000	0.000	1	2	1.00	0.00	0.00
21	165	0.84	1.25	24.593	6.421	30	78	1.00	13.53	3.53
	165	0.00	0.00	0.000	0.000	1	2	1.00	0.00	0.00
22	165	3.08	4.46	89.926	22.985	180	267	1.00	49.46	12.64
	165	0.00	0.00	0.000	0.000	1	2	1.00	0.00	0.00
23	165	8.59	11.24	250.945	57.940	126	256	1.00	138.02	31.87
	165	0.00	0.00	0.000	0.000	1	2	1.00	0.00	0.00
24	165	4.30	5.32	125.803	27.435	58	218	1.00	69.08	15.09
	165	0.00	0.00	0.000	0.000	1	2	1.00	0.00	0.00
25	165	12.82	14.92	374.339	76.927	146	383	1.00	205.89	42.31
	165	15.08	20.35	330.172	78.690	1080	1404	1.00	181.59	43.28
26	100	10.54	13.35	266.762	59.645	95	199	1.00	146.72	32.80
	100	0.00	0.00	0.000	0.000	1	2	1.00	0.00	0.00
27	48	0.16	0.35	3.192	1.282	1	4	1.00	1.76	0.71
	48	0.00	0.00	0.000	0.000	1	2	1.00	0.00	0.00
28	320	0.00	0.00	0.000	0.000	0	0	1.00	0.00	0.00
	320	30.00	40.50	1058.602	252.297	6000	7800	1.00	582.23	138.76
29	287.5	0.00	0.00	0.000	0.000	0	0	1.00	0.00	0.00
	287.5	15.00	20.25	513.350	122.347	600	780	1.00	282.34	67.29
30	237	0.00	0.00	0.000	0.000	0	0	1.00	0.00	0.00
	237	30.00	40.50	971.572	231.555	6000	7800	1.00	534.36	127.36
31	200	0.00	0.00	0.000	0.000	0	0	1.00	0.00	0.00
	200	10.00	13.50	308.526	73.531	600	780	1.00	169.69	40.44
32	150	0.00	0.00	0.000	0.000	0	0	1.00	0.00	0.00
	150	10.00	13.50	284.181	67.729	600	780	1.00	156.30	37.25
33	125	0.00	0.00	0.000	0.000	0	0	1.00	0.00	0.00
	125	70.00	94.50	1888.294	450.038	9600	12480	1.00	1038.56	247.52
34	147	0.14	0.48	3.899	2.392	2	10	1.00	2.14	1.32
	147	0.00	0.00	0.000	0.000	1	2	1.00	0.00	0.00
35	147	0.14	0.37	3.993	1.841	2	6	1.00	2.20	1.01
	147	0.00	0.00	0.000	0.000	1	2	1.00	0.00	0.00
36	147	0.17	0.41	4.709	2.037	2	7	1.00	2.59	1.12
	147	6.30	8.51	178.003	42.424	180	234	1.00	97.90	23.33
37	240	13.10	16.20	425.647	92.973	205	406	1.00	234.11	51.14
	240	0.00	0.00	0.000	0.000	1	2	1.00	0.00	0.00
38	240	3.13	4.14	101.840	23.766	216	321	1.00	56.01	13.07
	240	0.00	0.00	0.000	0.000	1	2	1.00	0.00	0.00
39	240	2.70	3.68	87.897	21.087	230	330	1.00	48.34	11.60
	240	16.08	21.71	522.638	124.561	720	936	1.00	287.45	68.51
40	204.8	15.66	20.34	486.475	111.525	61	145	1.00	267.56	61.34
	204.8	0.00	0.00	0.000	0.000	1	2	1.00	0.00	0.00
41	48	0.16	0.35	3.192	1.282	1	4	1.00	1.76	0.71
	48	0.00	0.00	0.000	0.000	1	2	1.00	0.00	0.00
42	180	1.07	1.79	32.036	9.435	16	37	1.00	17.62	5.19
	180	26.53	35.82	595.730	141.981	1440	1872	1.00	327.65	78.09
43	180	1.20	1.97	35.787	10.392	67	102	1.00	19.68	5.72
	180	33.64	45.42	805.773	192.040	432	562	1.00	443.18	105.62
44	180	2.70	4.05	80.832	21.384	253	343	1.00	44.46	11.76
	180	6.89	9.31	165.112	39.351	294	382	1.00	90.81	21.64
45	180	2.84	4.25	84.873	22.453	304	406	1.00	46.68	12.35
	180	5.03	6.78	112.828	26.890	360	468	1.00	62.06	14.79
46	180	12.01	15.63	359.444	82.626	101	201	1.00	197.69	45.44
	180	0.00	0.00	0.000	0.000	1	2	1.00	0.00	0.00
47	180	2.17	3.04	65.089	16.050	38	140	1.00	35.80	8.83
	180	0.00	0.00	0.000	0.000	1	2	1.00	0.00	0.00
48	140	1.49	2.24	41.609	11.019	26	71	1.00	22.89	6.06
	140	2.35	3.18	52.481	12.508	230	299	1.00	28.86	6.88
49	140	2.36	3.51	65.618	17.268	270	365	1.00	36.09	9.50
	140	19.18	25.90	427.605	101.911	232	302	1.00	235.18	56.05
50	140	0.00	0.00	0.000	0.000	0	0	1.00	0.00	0.00
	140	26.53	35.82	554.453	132.143	1440	1872	1.00	304.95	72.68

Height	Sum of Forces (No Ice)	
Flag	60 Azi.	180 Azi.
0.0000010	744.0967354	
0.0000020	0.00	
1.5029586	3253.093435	
1.5029596		
1.5029596	60.99149672	
1.5029606	0.00	
1.5031348	244.3185389	
1.5031358	0.00	
1.5031358	209.8086061	
1.5031368	0.00	
1.5031368	575.5749428	
1.5031378	0.00	
1.5032258	1096.599648	
1.5032268	0.00	
1.5034843	82.0951751	
1.5034853		
1.5034853	353.4583974	
1.5034863	0.00	
1.5036364	856.9507609	
1.5036374	0.00	
1.5038168	79.98506261	
1.5038178	205.8387437	
1.5038188	0.00	
1.5051546	364.8820524	
1.5051556	0.00	
1.5045045	21.81184144	
1.5045055	0.00	
1.5045055	84.3293131	
1.5045055		
1.5045045	1718.066989	
1.5045055	385.8029684	
1.5045055		
1.5045045	37.98969824	
1.5045055	7.008649051	
1.5060816		
1.5060806	37.98969824	
1.5060616		
1.5060806	115.3648906	
1.5060616		
1.5060806	139.9583615	
1.5060616		
1.5060806	229.8848239	
1.5060816		
1.5060806	480.8296765	
1.5060616		
1.5060806	606.432999	
1.5060616		
1.5060806	1310.943868	
1.5060616		
1.5100000	266.7618034	
1.5100010		
1.5208333	3.19225355	
1.5208343	0.00	
1.5031250	1058.60225	
1.5031260		
1.5034783	513.3500838	
1.5034793		
1.5042194	971.5724769	
1.5042204	0.00	
1.5050000	308.5258539	
1.5050010	0.00	
1.5066667	284.1808317	
1.5066677	0.00	
1.5080000	1888.293977	
1.5080010		
1.5068027	3.89915212	
1.5068037		
1.5068027	7.892485977	
1.5068037		
1.5068027	190.6050536	
1.5068037		
1.5041667	425.6473543	
1.5041677		
1.5041667	527.4875449	
1.5041677		
1.5041667	1138.02254	
1.5041677		
1.5048828	486.4753707	
1.5048838		
1.5208333	3.19225355	
1.5208343		
1.5055556	627.7659921	
1.5055566		
1.5055556	1469.326488	
1.5055566		
1.5055556	1715.269859	
1.5055566		
1.5055556	1912.970746	
1.5055566		
1.5055556	2272.414404	
1.5055566		
1.5055556	2337.503408	
1.5055566		
1.5071429	94.0905611	
1.5071439		
1.5071429	587.3137847	
1.5071439		
1.5071429	1141.767263	

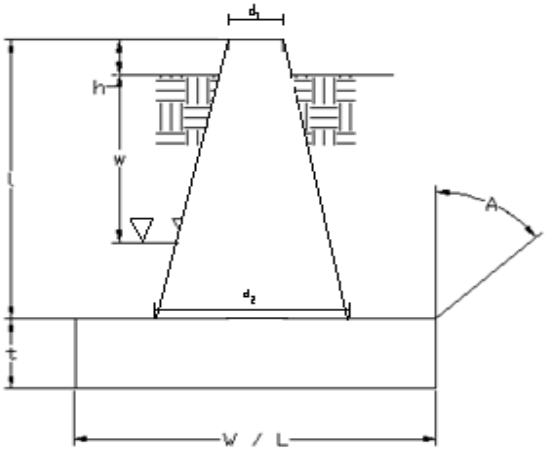
Foundation

Site No.:	88008
Engineer:	ADV
Date:	10/08/21
Carrier:	Dish Wireless

Design Loads (Factored)

Compression/Leg:	419.08	k
Uplift/Leg:	290.90	k
Shear/Leg	62.92	k

Face Width @ Top of Pier (d_1):	4.00	ft
Face Width @ Bottom of Pier (d_2):	7.50	ft
Total Length of Pier (l):	7.25	ft
Height of Pedestal Above Ground (h):	0.50	ft
Width of Pad (W):	21.50	ft
Length of Pad (L):	21.50	ft
Thickness of Pad (t):	2.50	ft
Water Table Depth (w):	99.00	ft
Unit Weight of Concrete:	150.0	pcf
Unit Weight of Soil (Above Water Table):	131.0	pcf
Unit Weight of Soil (Below Water Table):	68.6	pcf
Friction Angle of Uplift (A):	30	°
Ultimate Compressive Bearing Pressure:	48200	psf
Ultimate Skin Friction:	0	psf



Volume Pier (Total):	247.10	ft³
Volume Pad (Total):	1155.63	ft³
Volume Soil (Total):	4120.07	ft³
Volume Pier (Buoyant):	0.00	ft³
Volume Pad (Buoyant):	0.00	ft³
Volume Soil (Buoyant):	0.00	ft³
Weight Pier:	37.07	k
Weight Pad:	173.34	k
Weight Soil:	539.73	k
Uplift Skin Friction:	0.00	k

Uplift Check

ϕs Uplift Resistance (k)	Ratio	Result
562.60	0.52	**OK**

Axial Check

ϕs Axial Resistance (k)	Ratio	Result
16710.34	0.03	**OK**

Anchor Bolt Check

Bolt Diameter (in)	2.25
# of Bolts	6
Steel Grade	A36
Steel Fy	36
Steel Fu	58
Detail Type	B

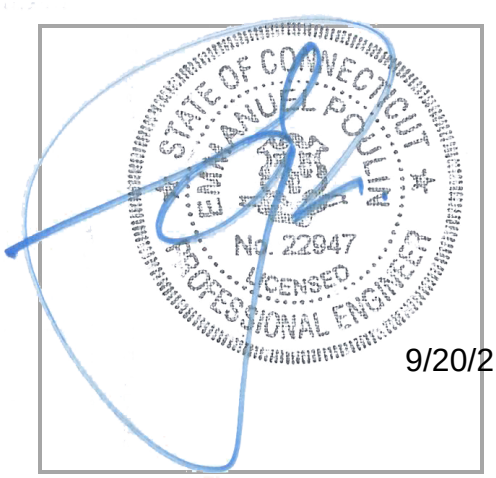
Usage Ratio	Result
0.42	**OK**

MOUNT ANALYSIS REPORT

September 20, 2021

Dish Wireless Site Name	BOHVN00151A
Dish Wireless Site Number	BOHVN00151A
Infinigy Job Number	1197-F0001-B
Client	NSS/DISH
Carrier	Dish Wireless
Site Location	93 Old Amity Road Bethany, CT 06524 New Haven County 41.40475800 N NAD83 72.99998333 W NAD83
Mount Type	8.0 ft Sector Frames
Mount Elevation	140.0 ft AGL
Structural Usage Ratio	**40.0**
Overall Result	**Pass**
Notes:	**Tower information was not provided so Option 1 Mount was considered for the mount analysis and the DISH rad height was assumed to be the tower height.**

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 119 mph. The evaluation criteria and applicable codes are presented in the next section of this report.



9/20/21

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	119 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	B
Topographic Category	1
Calculated Crest Height	0 ft.
Seismic Spectral Response	S_s = 0.200 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 - 140.0 ft. AGL Sector Frames

Antenna Centerline (ft)	Qty.	Appurtenance Manufacturers	Appurtenance Models
140.0	3	JMA WIRELESS	MX08FRO665-21
	3	FUJITSU	TA08025-B605
	3	FUJITSU	TA08025-B604
	1	RAYCAP	RDIDC-9181-PF-48

4. SUPPORTING DOCUMENTATION

Proposed Loading	Dish Wireless, Asset ID CT-ATC-T-88008, dated July 09, 2021
Mount Manufacturer Drawings	Commscope Document # MTC3975083, dated March 17, 2021

5. RESULTS

Components	Capacity	Pass/Fail
Mount Pipes	20.8%	Pass
Horizontals	11.1%	Pass
Standoffs	40.0%	Pass
Connections	6.2%	Pass
MOUNT RATING =	**40.0%**	**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 140.0 ft. The installation shall be performed in accordance with the construction documents issued for this site.

Pradin Suinyal Magar
Project Engineer II | **INFINIGY**

7. ASSUMPTIONS

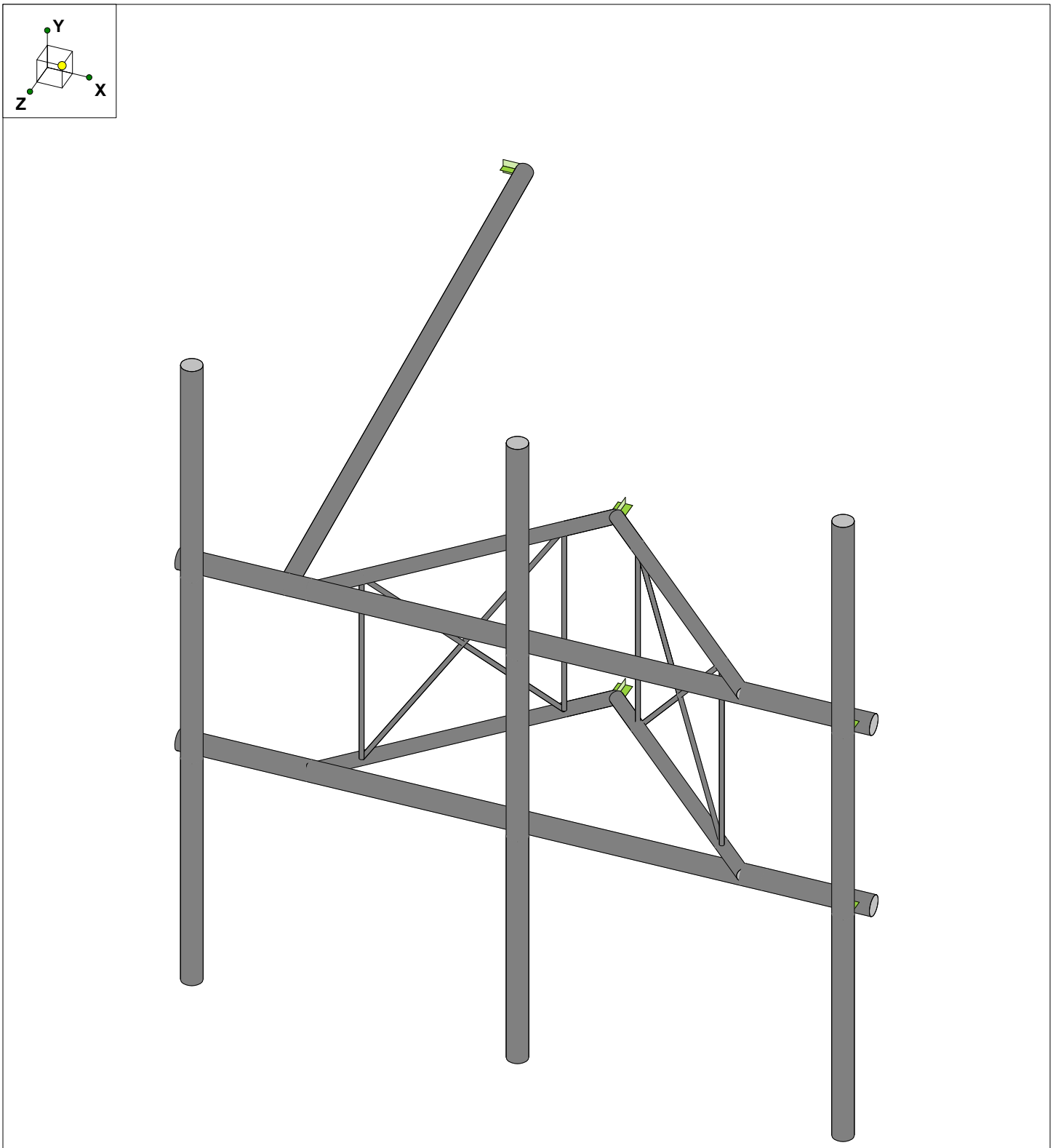
The antenna mounting system was properly fabricated, installed and maintained in accordance with its original design and manufacturer's specifications.
The configuration of antennas, mounts, and other appurtenances are as specified in the proposed loading configuration table.
All member connections are 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.



Envelope Only Solution

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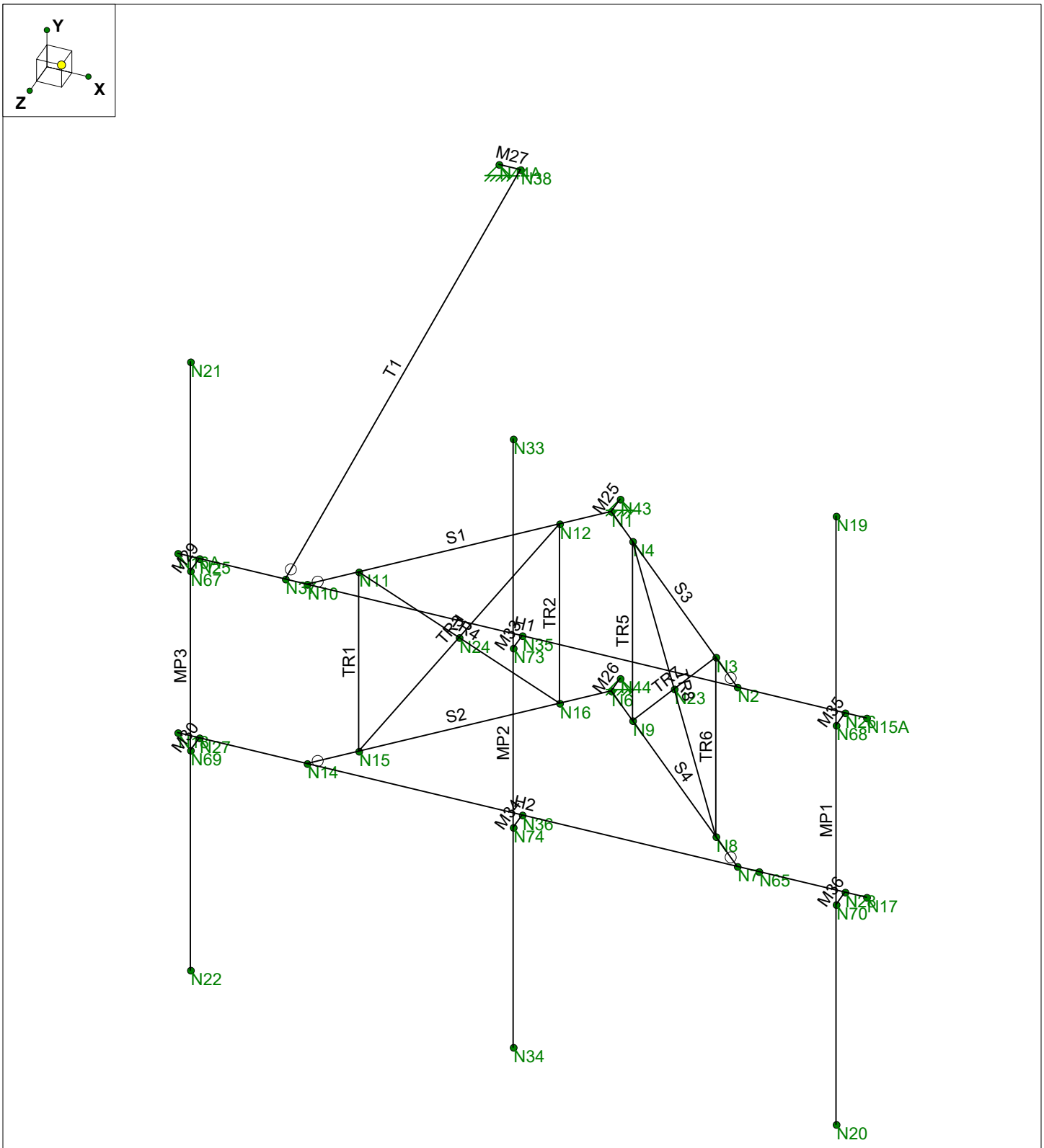

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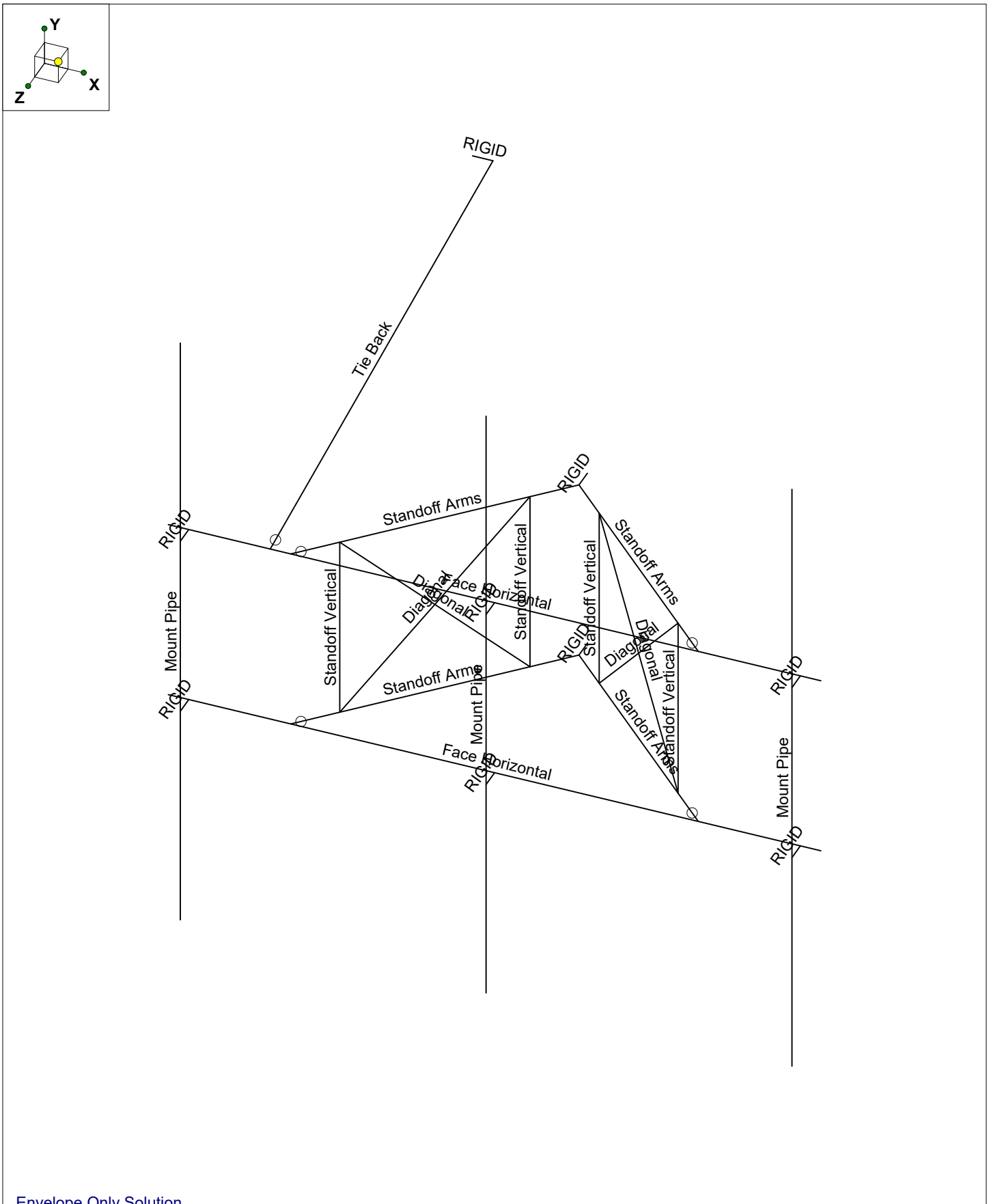

Envelope Only Solution

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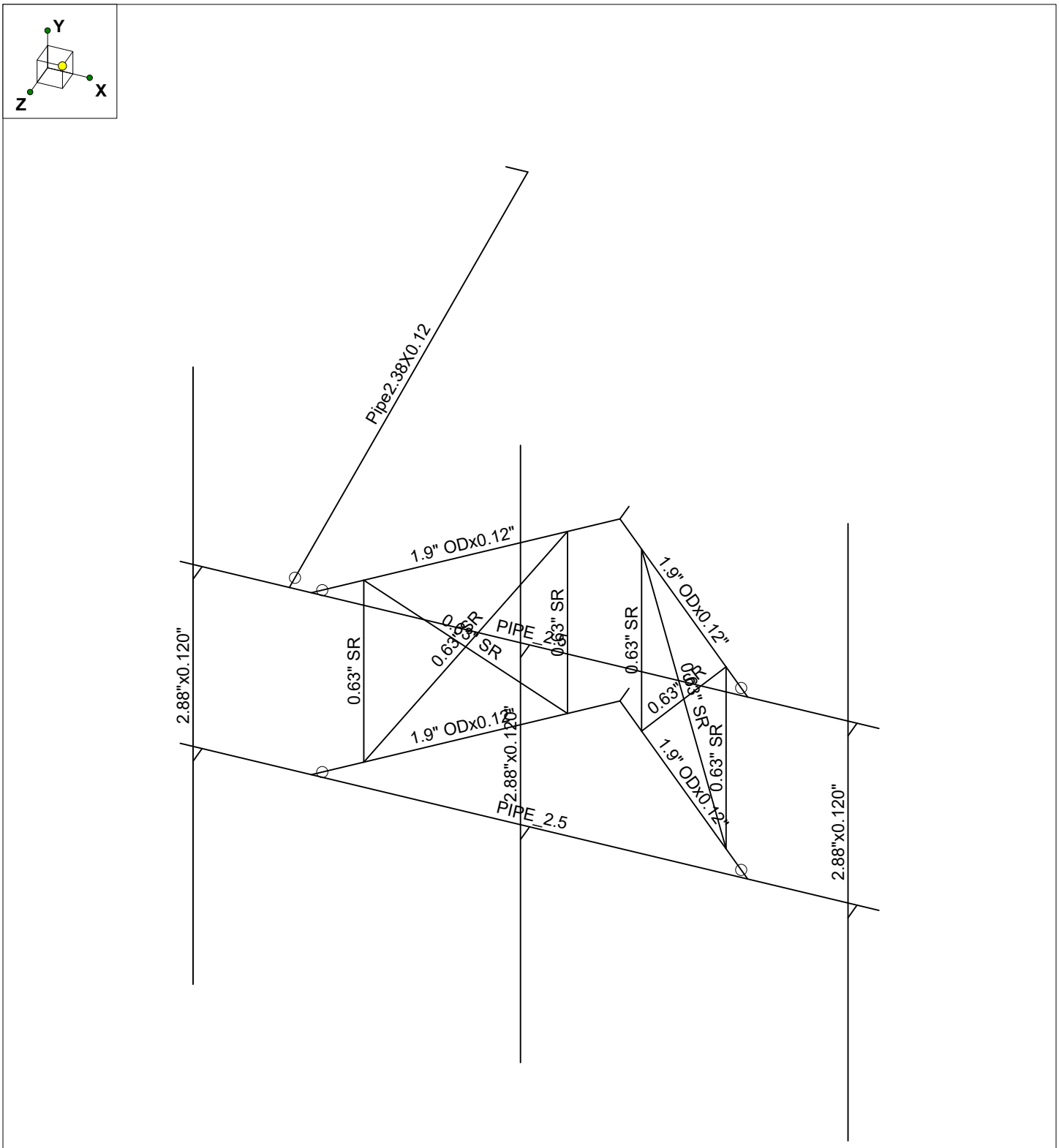

Envelope Only Solution

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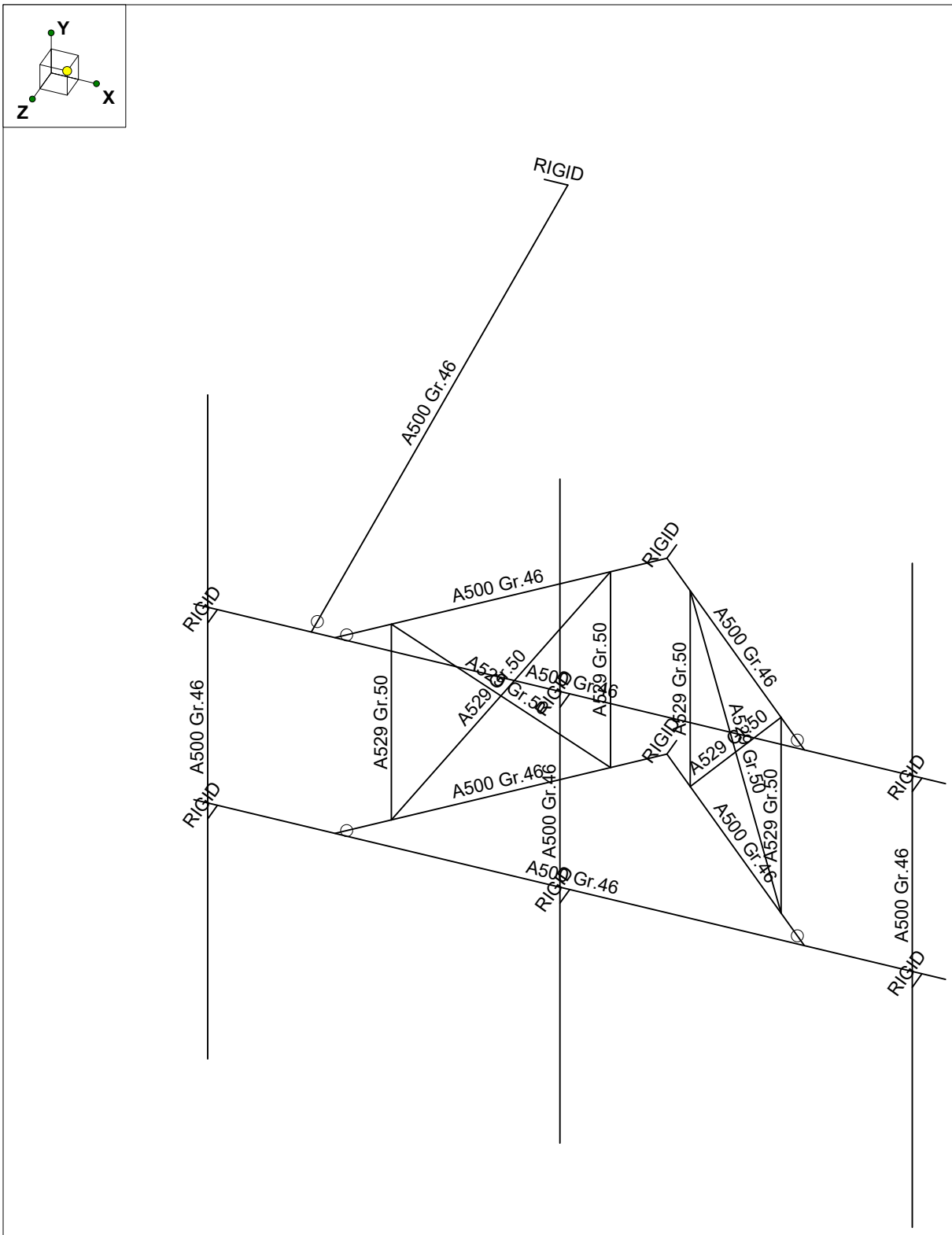

Envelope Only Solution

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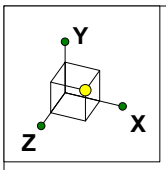

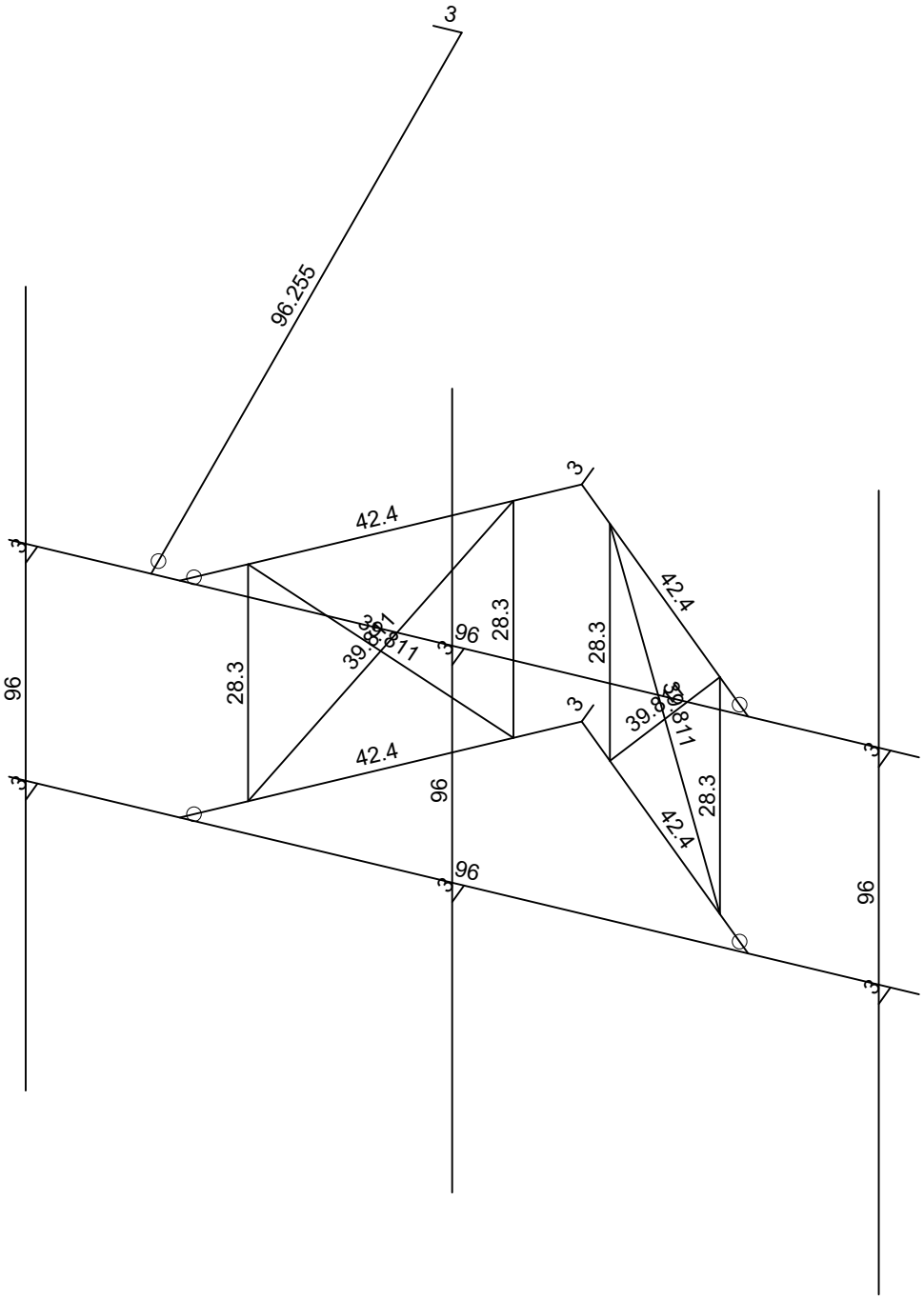

Member Length (in) Displayed
Envelope Only Solution

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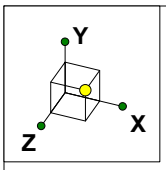

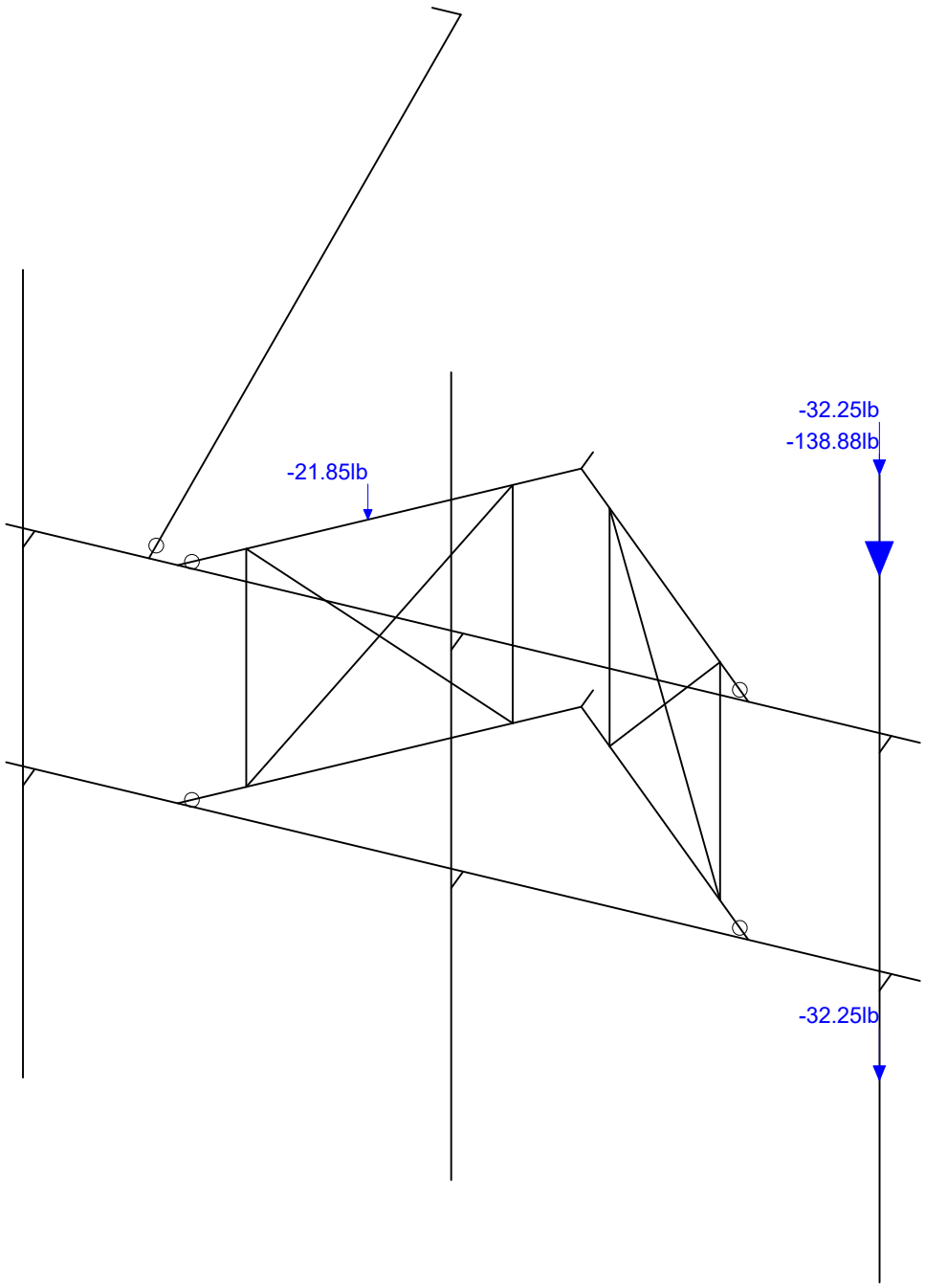

Loads: BLC 1, Self Weight
Envelope Only Solution

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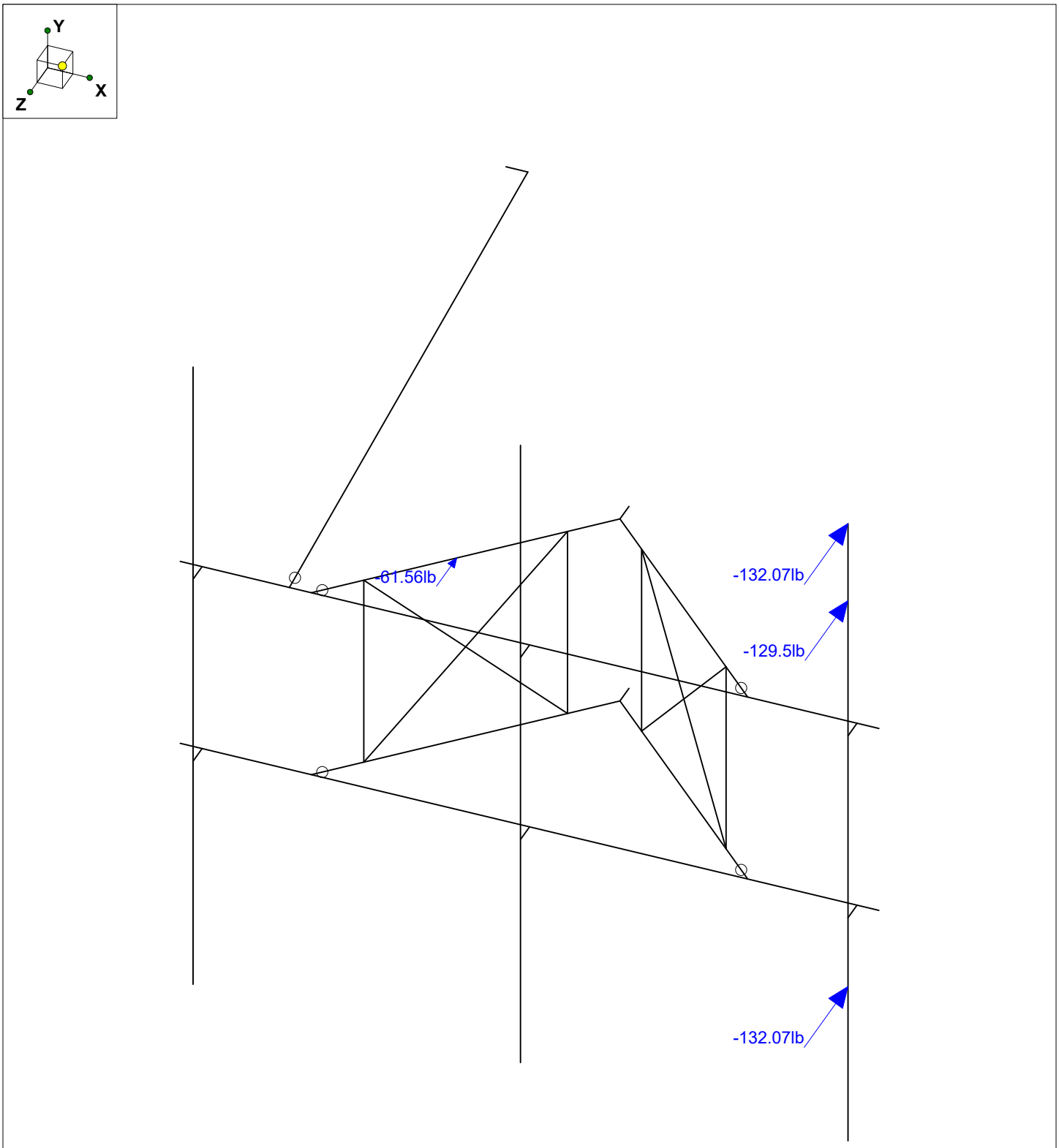

Loads: BLC 2, Wind Load AZI 0
Envelope Only Solution

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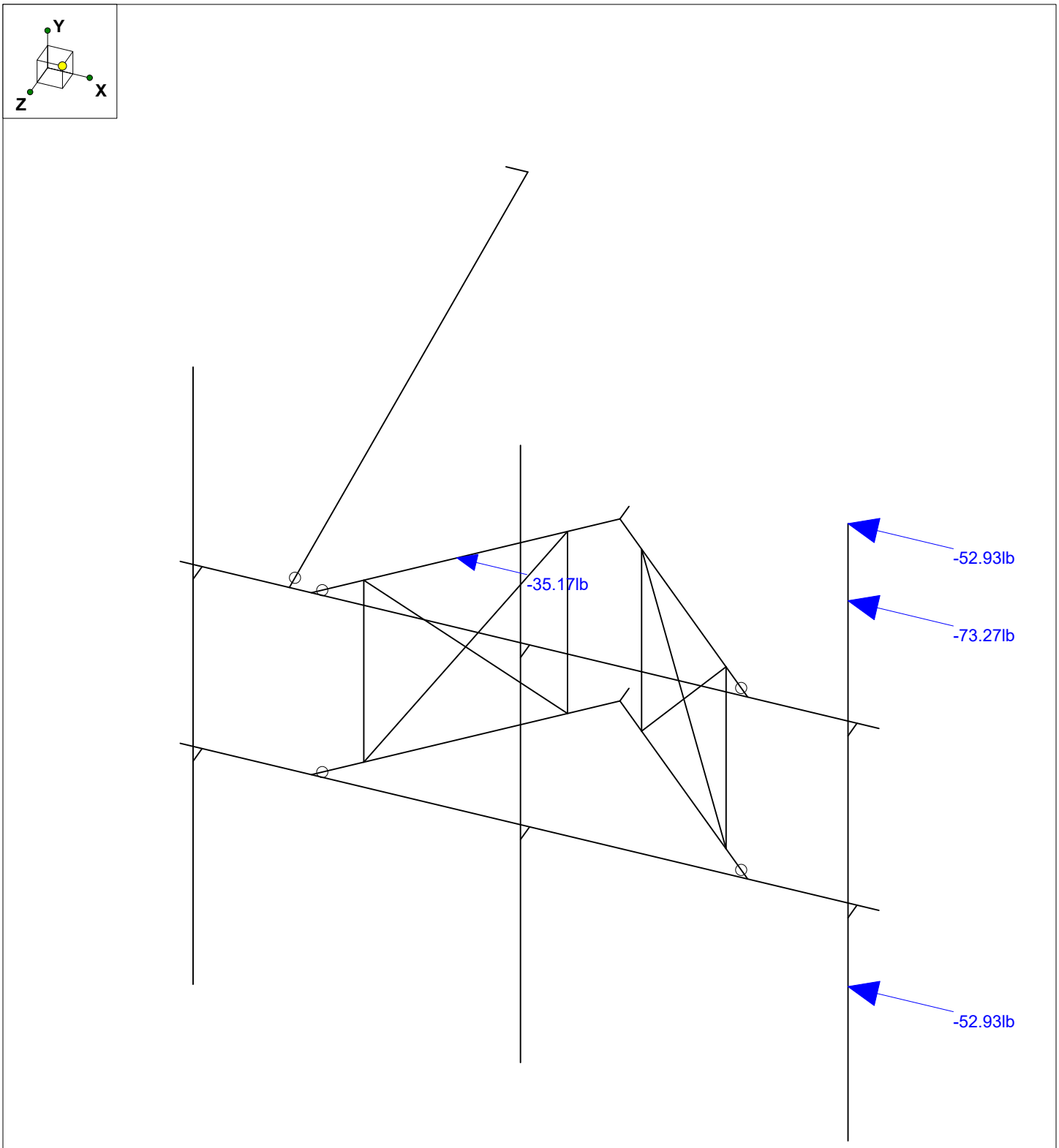

Loads: BLC 5, Wind Load AZI 90
Envelope Only Solution

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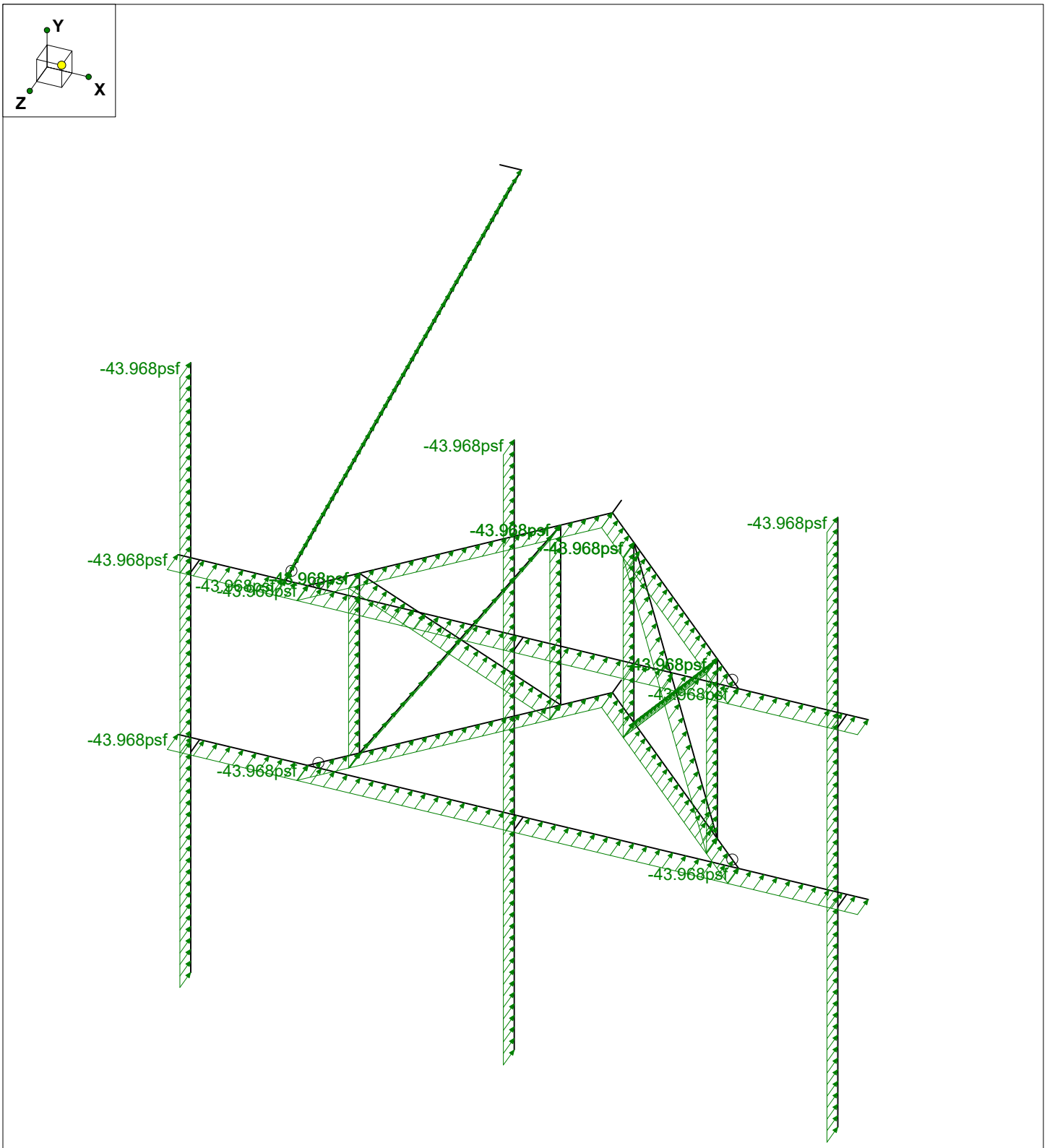

Loads: BLC 14, Distr. Wind Load Z
Envelope Only Solution

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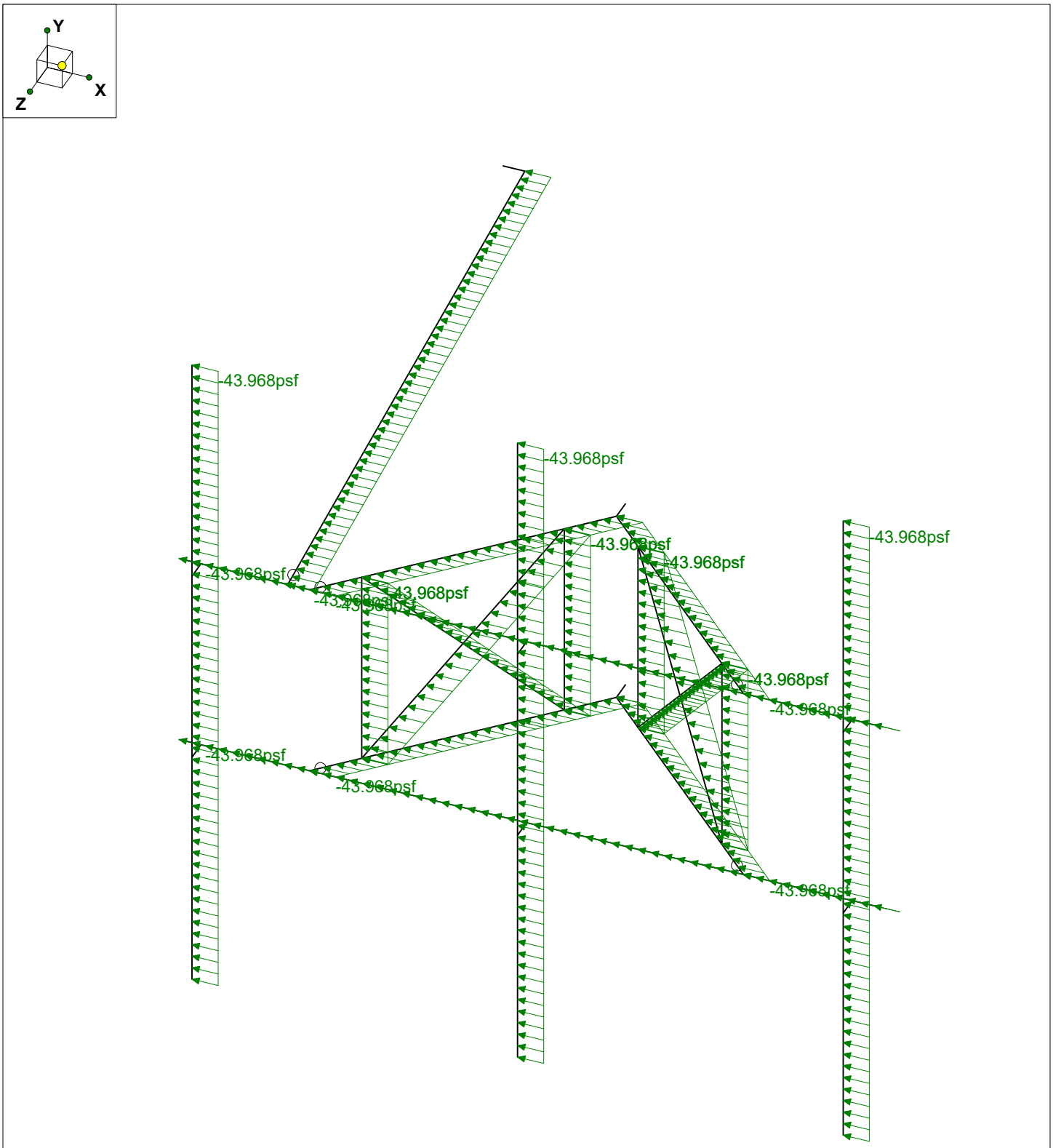

Loads: BLC 15, Distr. Wind Load X
Envelope Only Solution

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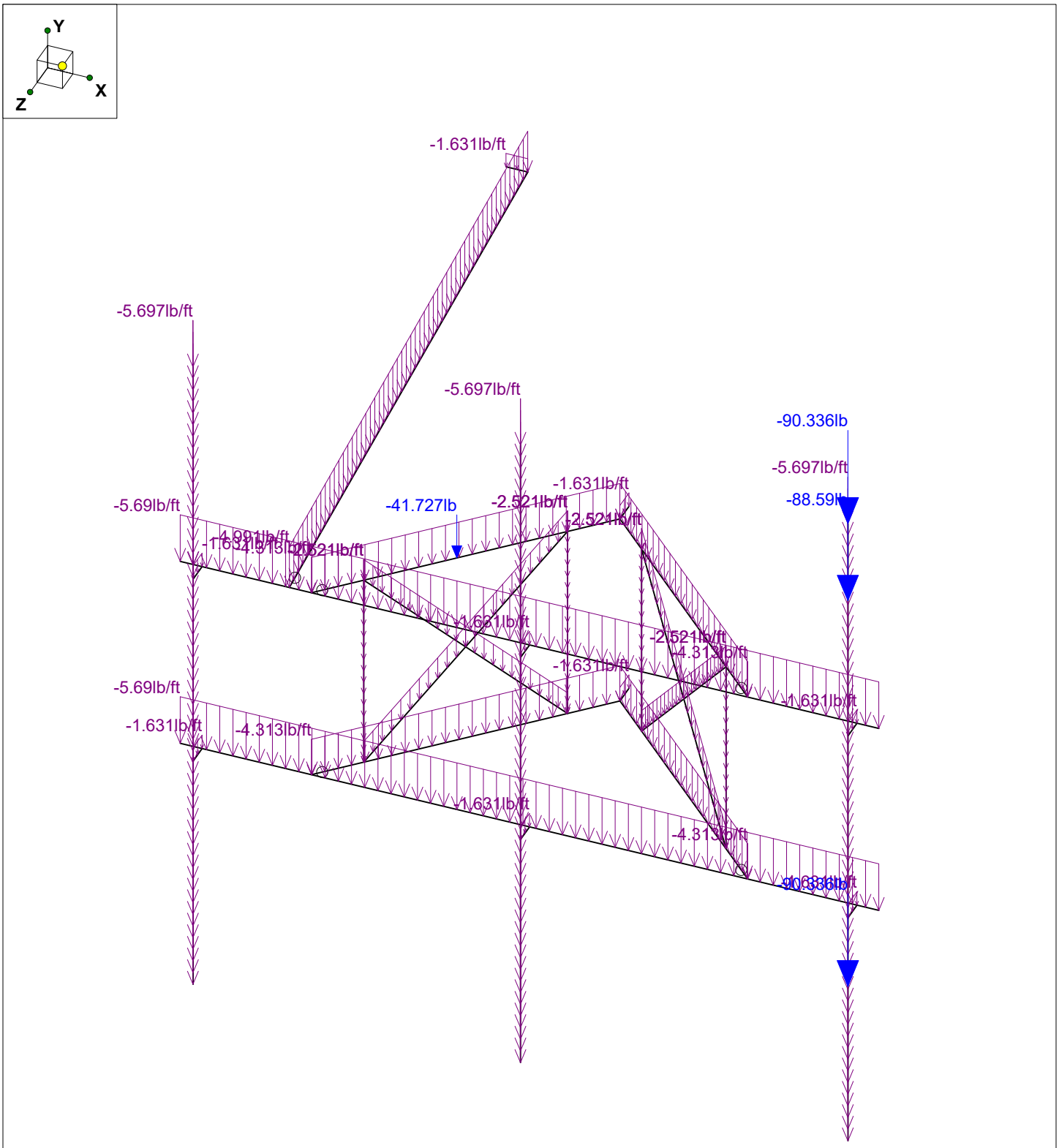

Loads: BLC 16, Ice Weight
Envelope Only Solution

Infinigy Engineering, PLLC	BOHVN00151A	Ice Weight
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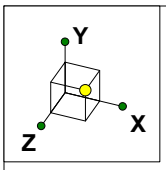

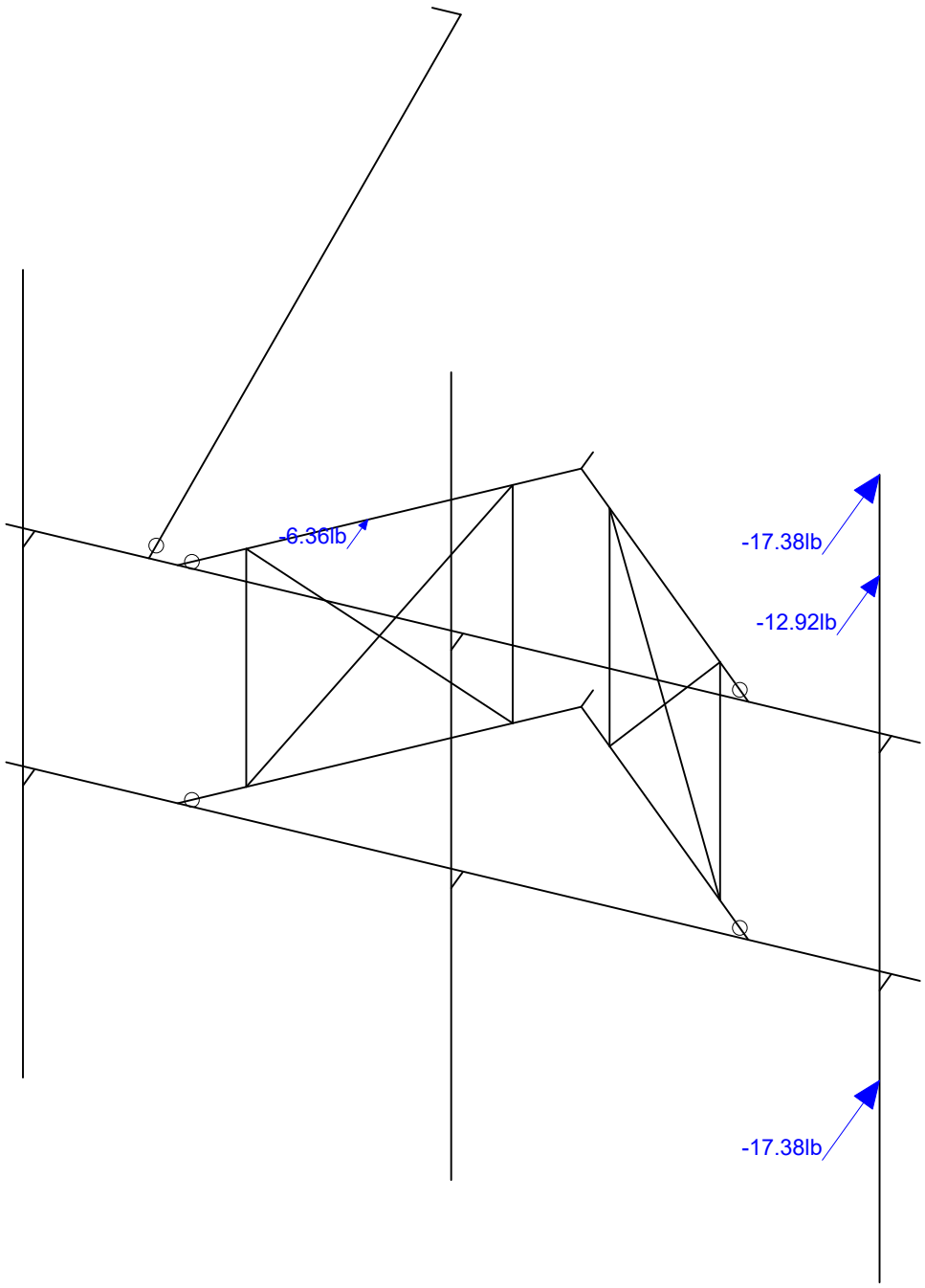

Loads: BLC 17, Ice Wind Load AZI 0
Envelope Only Solution

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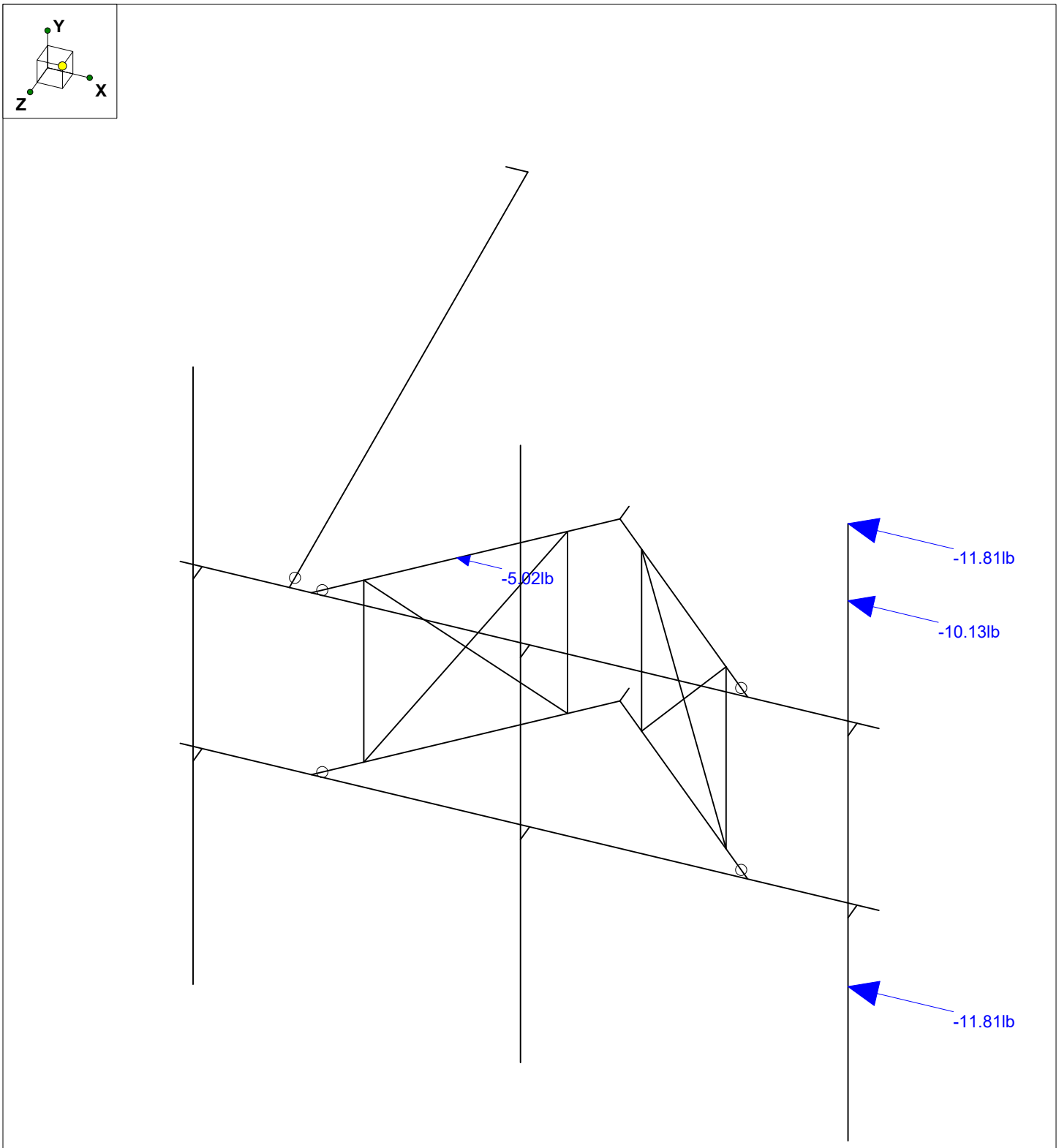

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Envelope Only Solution

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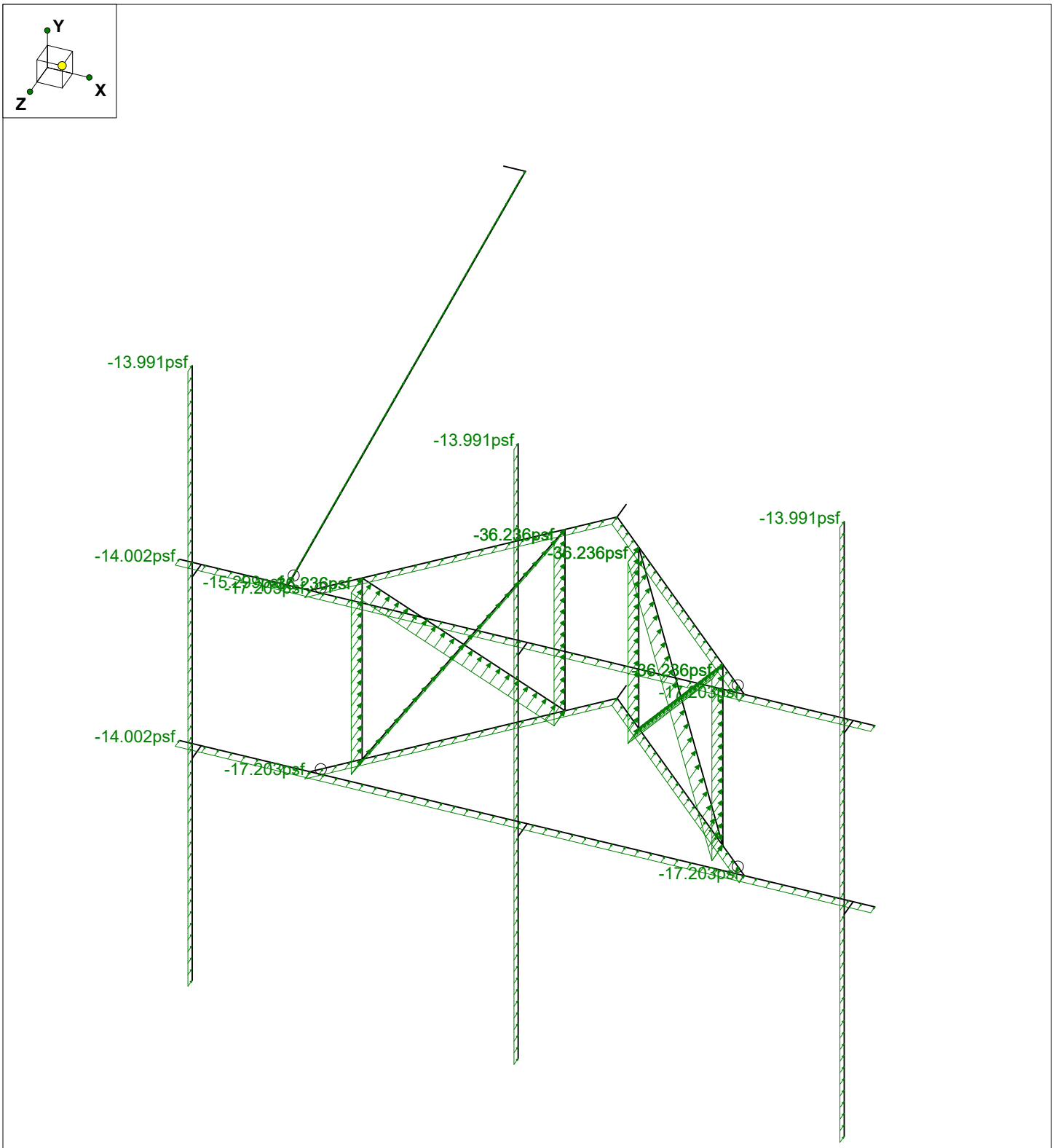

Loads: BLC 29, Distr. Ice Wind Load Z
Envelope Only Solution

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PSM		Sept 20, 2021 at 10:22 AM
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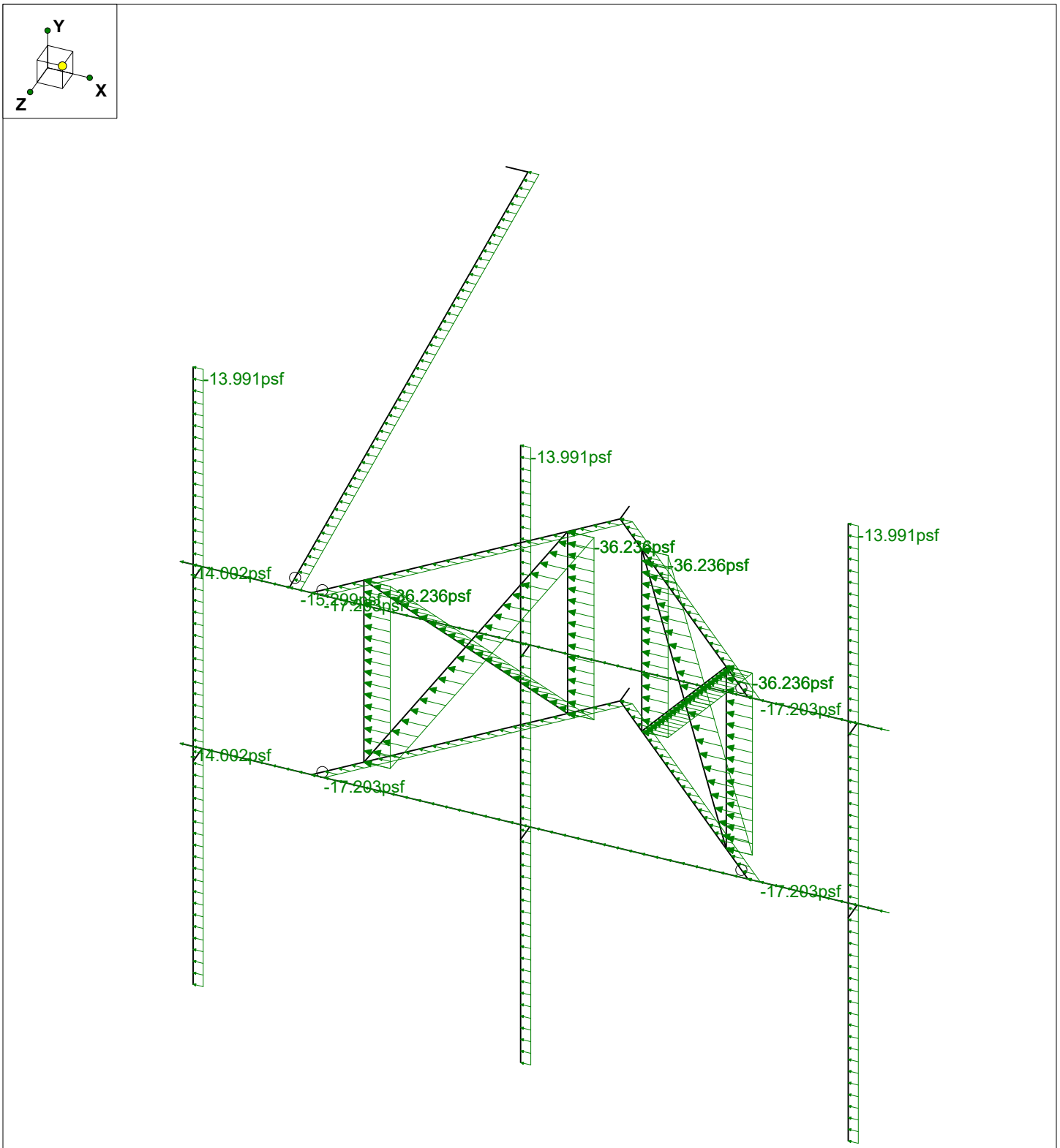
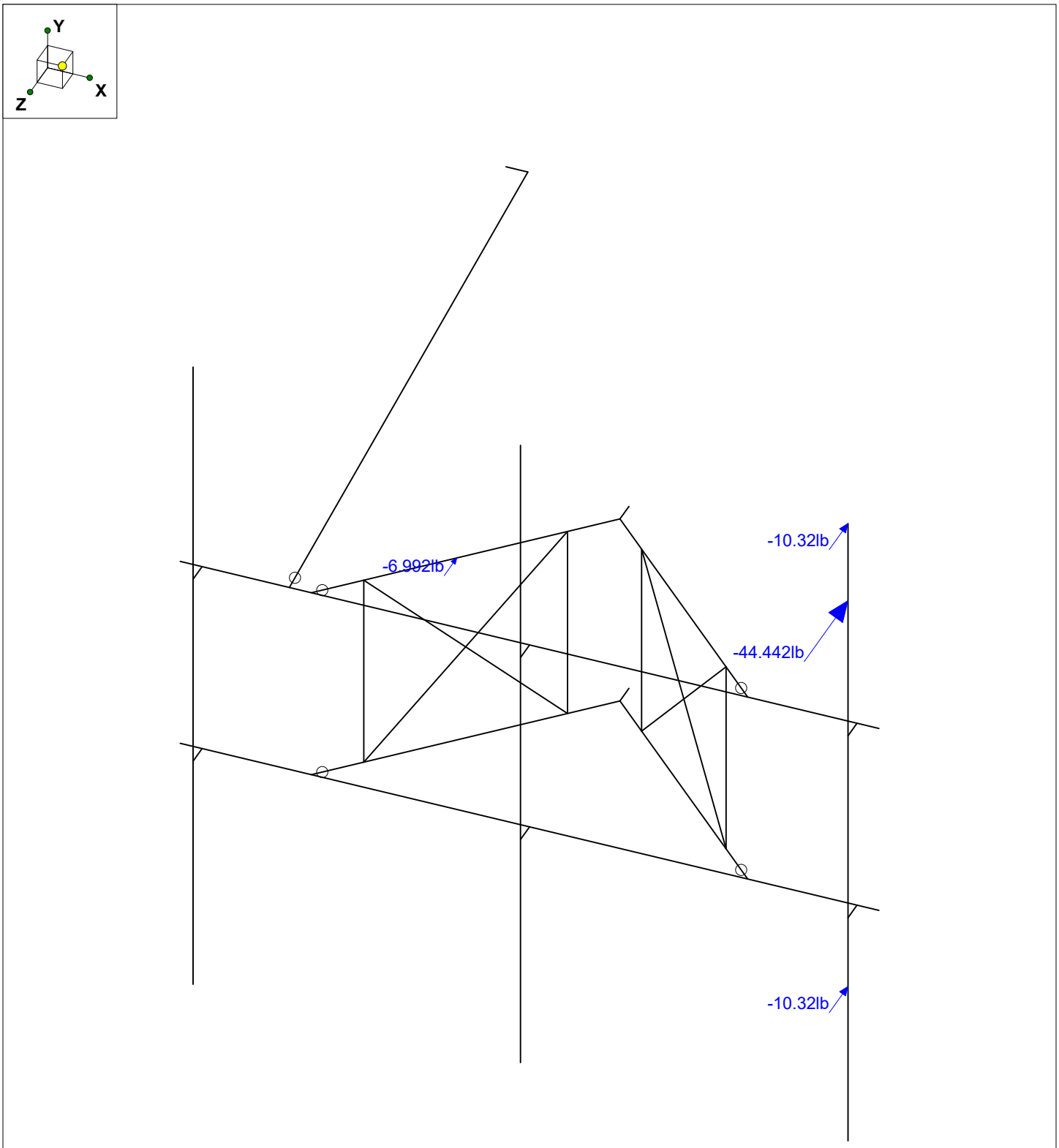


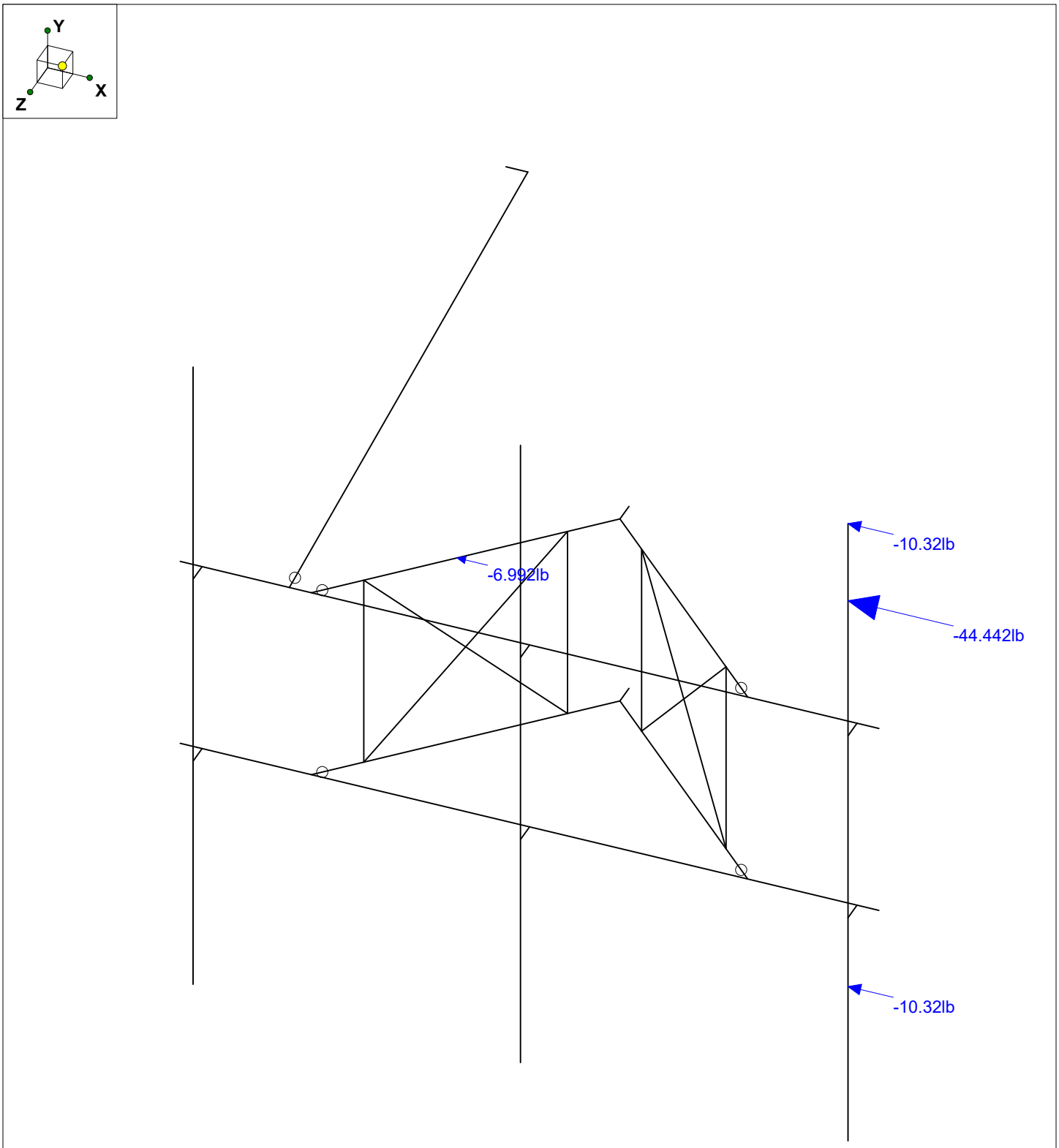
Loads: BLC 30, Distr. Ice Wind Load X
Envelope Only Solution

Infinigy Engineering, PLLC	BOHVN00151A	Distr Ice + Wind Load AZI 090
PSM		Sept 20, 2021 at 10:22 AM
1197-F0001-B		BOHVN00151A_loaded.r3d



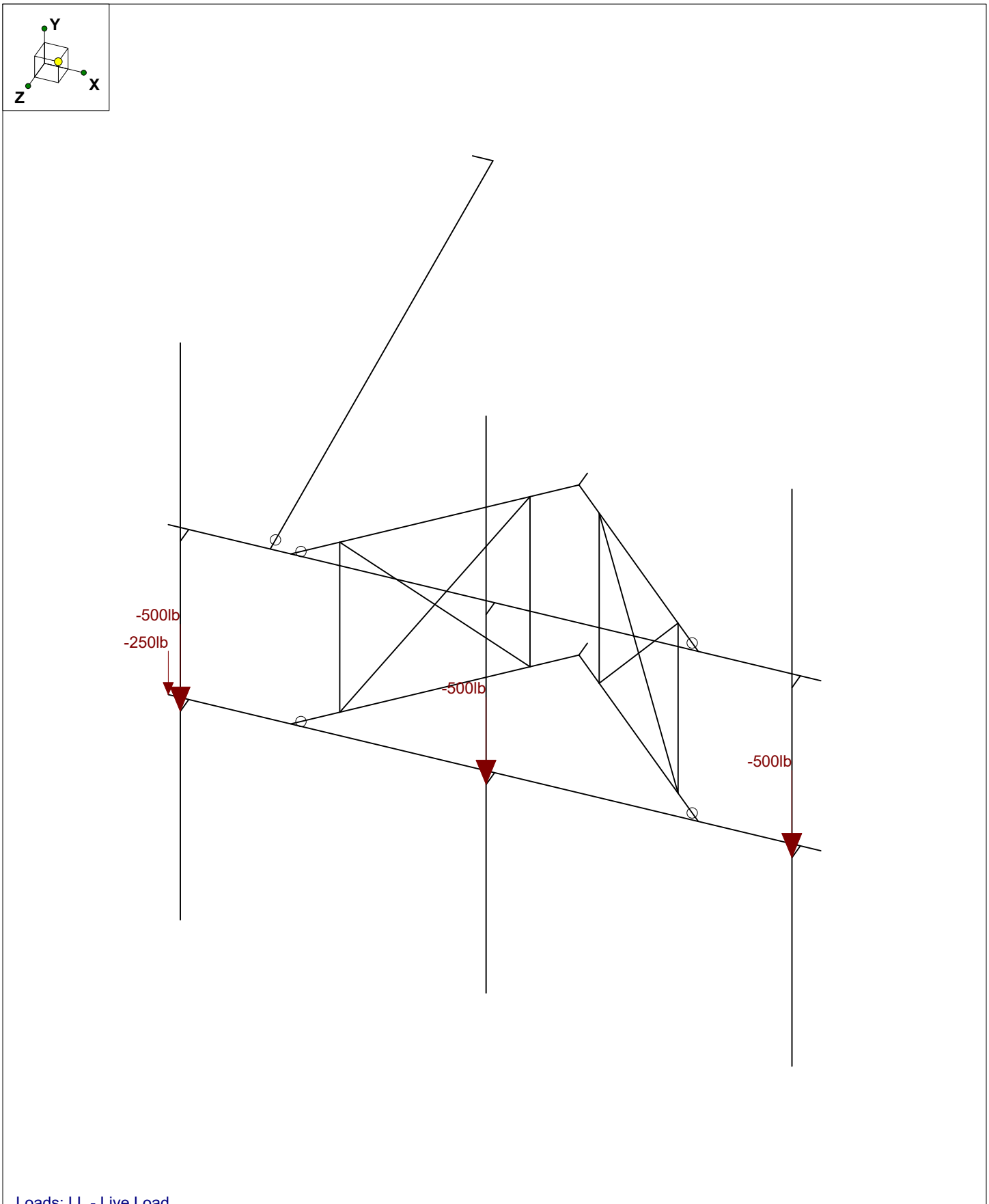
Loads: BLC 31, Seismic Load Z
Envelope Only Solution

Infinigy Engineering, PLLC	BOHVN00151A	Seismic Load AZI 000
PSM		Sept 20, 2021 at 10:22 AM
1197-F0001-B		BOHVN00151A_loaded.r3d



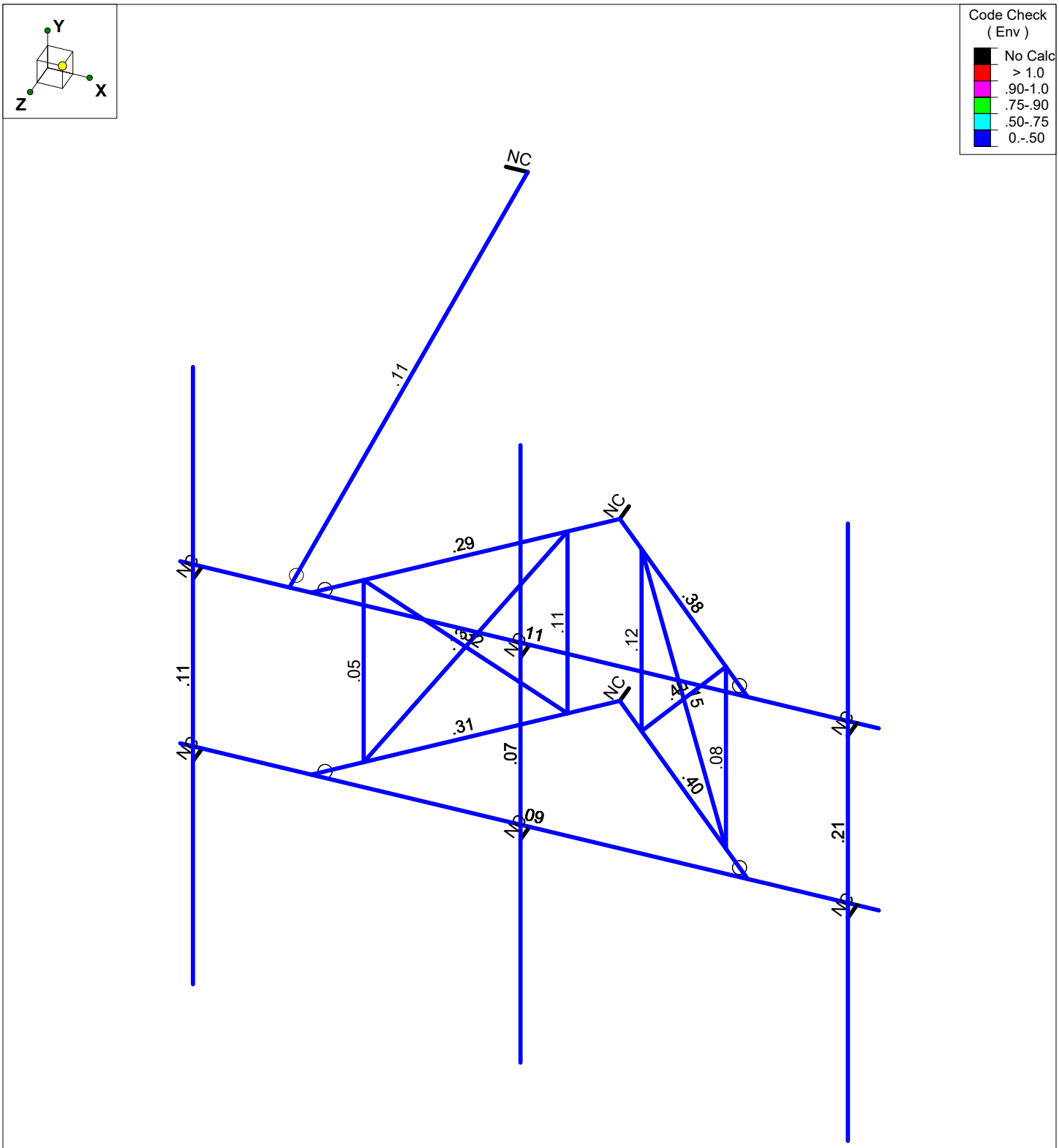
Loads: BLC 32, Seismic Load X
Envelope Only Solution

Infinigy Engineering, PLLC	BOHVN00151A	Seismic Load AZI 090
PSM		Sept 20, 2021 at 10:22 AM
1197-F0001-B		BOHVN00151A_loaded.r3d



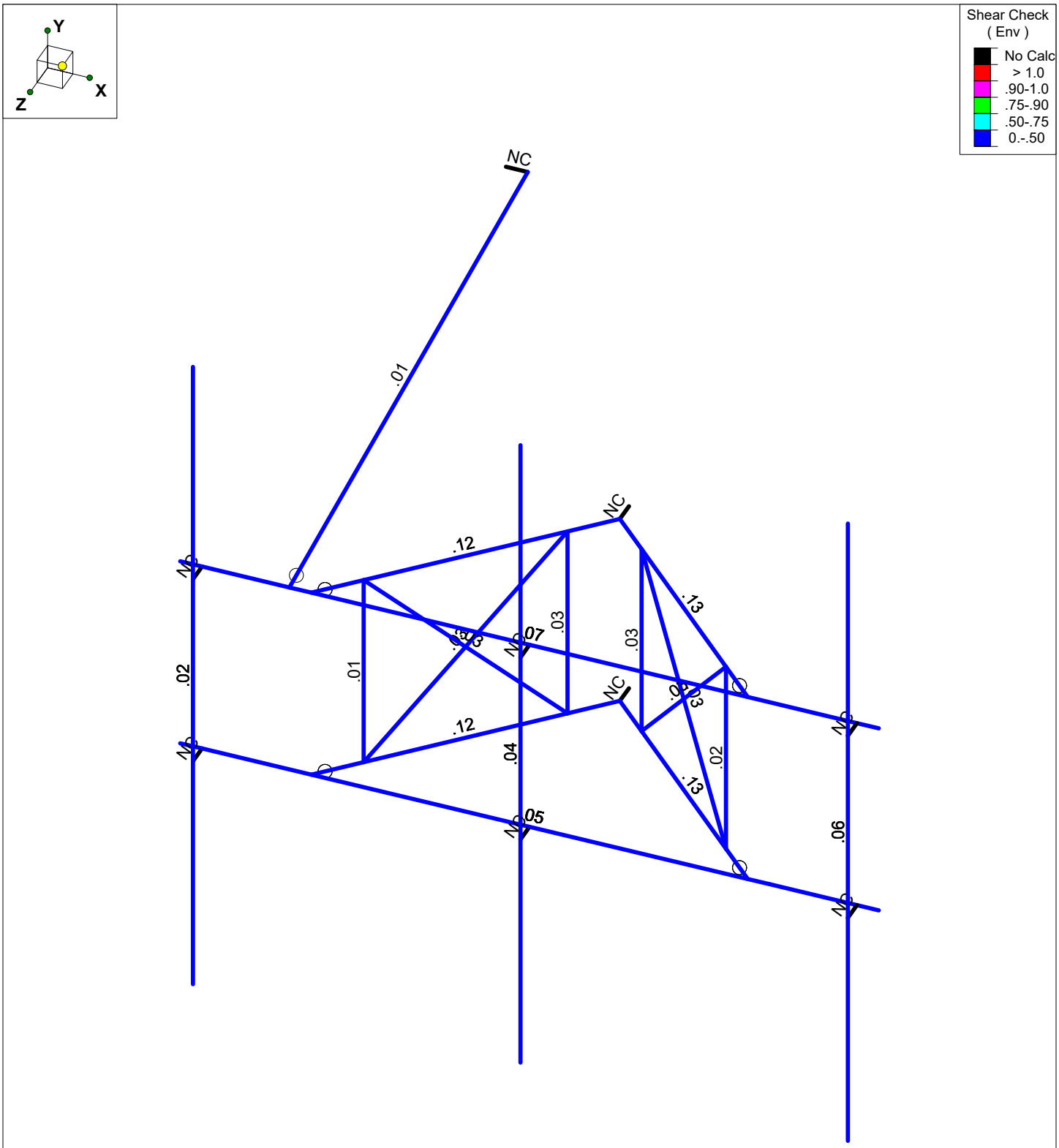
Loads: LL - Live Load

Infinigy Engineering, PLLC	BOHVN00151A	Non-concurrent Live Loads
PSM		Sept 20, 2021 at 10:24 AM
1197-F0001-B		BOHVN00151A_loaded.r3d



Member Code Checks Displayed (Enveloped)
Results for LC 1, 1.4DL

Infinigy Engineering, PLLC	BOHVN00151A	Bending Check
PSM		Sept 20, 2021 at 10:25 AM
1197-F0001-B		BOHVN00151A_loaded.r3d



Member Shear Checks Displayed (Enveloped)
Results for LC 1, 1.4DL

Infinigy Engineering, PLLC	BOHVN00151A	Shear Check
PSM		Sept 20, 2021 at 10:25 AM
1197-F0001-B		BOHVN00151A_loaded.r3d

Program Inputs

PROJECT INFORMATION	
Client:	ATC
Carrier:	Dish Wireless
Engineer:	Pradin Suinyal Magar, M.S

SITE INFORMATION		
Risk Category:	II	
Exposure Category:	B	
Topo Factor Procedure:	Method 1, Category 1	
Site Class:	D - Stiff Soil (Assumed)	
Ground Elevation:	617.44	ft *Rev H

MOUNT INFORMATION		
Mount Type:	Sector Frame	
Num Sectors:	3	
Centerline AGL:	140.00	ft
Tower Height AGL:	140.00	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):	0.978	*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}):	119	mph
Design Wind (V):	N/A	mph
Ice Wind (V_{ice}):	50	mph
Base Ice Thickness (t_i):	1	in
Flat Pressure:	73.281	psf
Round Pressure:	43.968	psf
Ice Wind Pressure:	7.762	psf

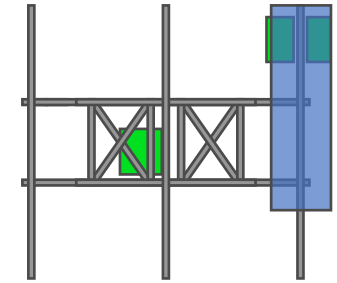
SEISMIC DATA		
Short-Period Accel. (S_s):	0.200	g
1-Second Accel. (S_1):	0.054	g
Short-Period Design (S_{DS}):	0.213	
1-Second Design (S_{D1}):	0.086	
Short-Period Coeff. (F_a):	1.600	
1-Second Coeff. (F_v):	2.400	
Amplification Factor (A_s):	3.000	
Response Mod. Coeff. (R):	2.000	

INFINIGY
FROM ZERO TO INFINIGY
the solutions are endless

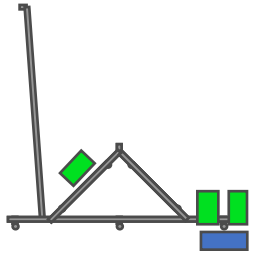
Infinigy Load Calculator V2.1.7

Program Inputs

ELEVATION VIEW



PLAN VIEW



INFINIGY
FROM ZERO TO INFINIGY
the solutions are endless

Infinigy Load Calculator V2.1.7

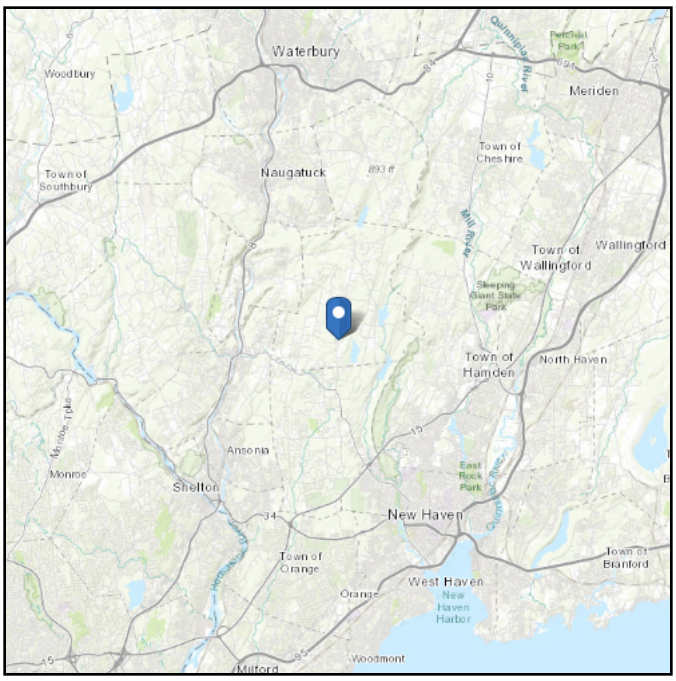
APPURTENANCE INFORMATION

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 MX08FRO665-21	140.0	3	0.90	36.64	8.01	3.21	264.14	105.85	64.50	20.64	MP1
FUJITSU TA08025-B605	140.0	3	0.90	36.64	1.96	1.19	64.75	39.21	74.95	23.98	MP1
FUJITSU TA08025-B604	140.0	3	0.90	36.64	1.96	1.03	64.75	34.06	63.93	20.46	MP1
RAYCAP RDIDC-9181-PF-48	140.0	1	0.90	36.64	1.87	1.07	61.56	35.17	21.85	6.99	S1

ASCE 7 Hazards Report

Address:
No Address at This Location

Standard:	ASCE/SEI 7-16	**Elevation:**	617.44 ft (NAVD 88)
Risk Category:	II	**Latitude:**	41.404758
Soil Class:	D - Default (see Section 11.4.3)	**Longitude:**	-72.999983



Wind

Results:

Wind Speed:	119 Vmph
10-year MRI	75 Vmph
25-year MRI	85 Vmph
50-year MRI	90 Vmph
100-year MRI	98 Vmph

Data Source:	ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2
Date Accessed:	Mon Sep 20 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.

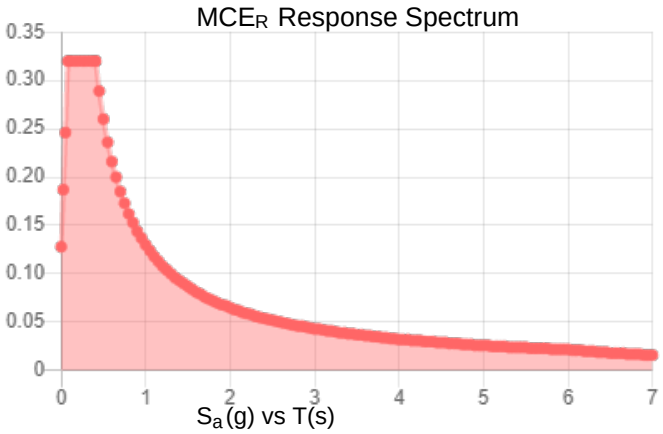
Seismic

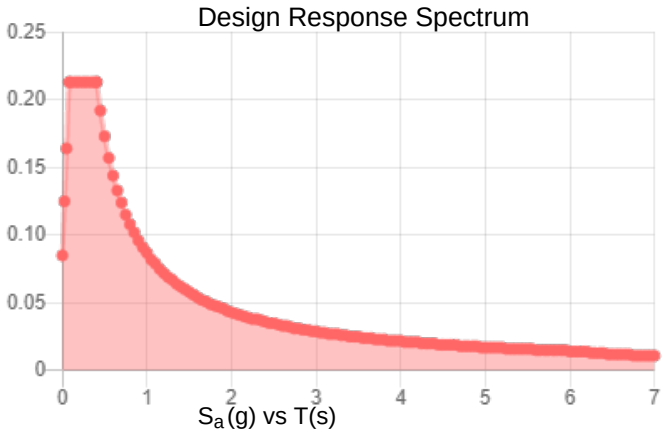
Site Soil Class: D - Default (see Section 11.4.3)

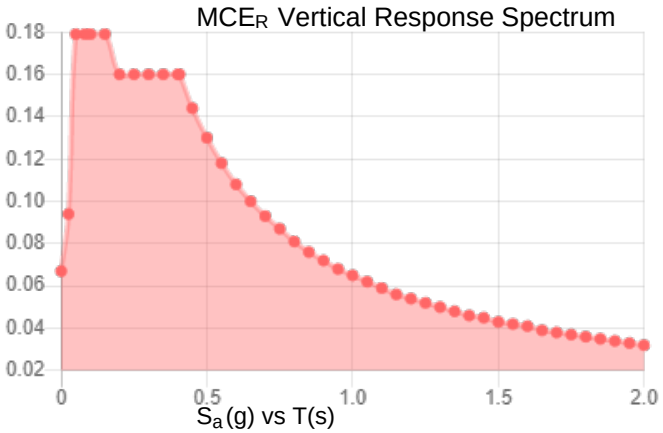
Results:

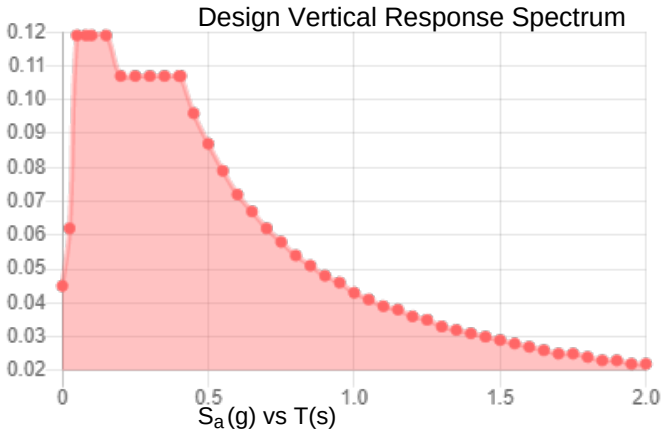
S_S :	0.2	S_{D1} :	0.087
S_1 :	0.054	T_L :	6
F_a :	1.6	PGA :	0.112
F_v :	2.4	PGA_M :	0.176
S_{MS} :	0.32	F_{PGA} :	1.577
S_{M1} :	0.13	I_e :	1
S_{DS} :	0.213	C_v :	0.7

Seismic Design Category B









Data Accessed: Mon Sep 20 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:	Mon Sep 20 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(...	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	Colu...	Pipe	A500 Gr.46	Typical
16	MP1	N19	N20			Mount Pipe	Colu...	Pipe	A500 Gr.46	Typical
17	MP2	N33	N34			Mount Pipe	Colu...	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	Lengt...	Lbyy[in]	Lbzz[in]	Lcomp t...	Lcomp b...	L-tor...	Kyy	Kzz	Cb	Func...
1	S3	Standoff Arms	42.4			Lbyy						Late...
2	S4	Standoff Arms	42.4			Lbyy						Late...
3	TR6	Standoff Vertical	28.3			Lbyy			.65	.65		Late...
4	TR5	Standoff Vertical	28.3			Lbyy			.65	.65		Late...
5	TR8	Diagonal	39.811			Lbyy			.7	.7		Late...
6	TR7	Diagonal	39.811			Lbyy			.5	.5		Late...
7	S1	Standoff Arms	42.4			Lbyy						Late...
8	S2	Standoff Arms	42.4			Lbyy						Late...
9	TR1	Standoff Vertical	28.3			Lbyy			.65	.65		Late...
10	TR2	Standoff Vertical	28.3			Lbyy			.65	.65		Late...

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Lengt...	Lbyy[in]	Lbzz[in]	Lcomp t...	Lcomp b...	L-tor...	Kyy	Kzz	Cb	Func...
11	TR3	Diagonal	39.811			Lbyy			.7	.7		Late...
12	TR4	Diagonal	39.811			Lbyy			.5	.5		Late...
13	H1	Face Horizontal	96			Lbyy						Late...
14	H2	Face Horizontal	96			Lbyy						Late...
15	MP3	Mount Pipe	96			Lbyy						Late...
16	MP1	Mount Pipe	96			Lbyy						Late...
17	MP2	Mount Pipe	96			Lbyy						Late...
18	T1	Tie Back	96.255			Lbyy						Late...

Member Advanced Data

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Defl Ra...	Analysis ...	Inactive	Seismi...
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...	A [in2]	Iyy [in...	Izz [in...	J [in4]
1	Face Horizontal	PIPE 2.5	Beam	Pipe	A500 G...	Typical	1.61	1.45	1.45	2.89
2	Standoff Arms	1.9" ODx0.12"	Beam	Pipe	A500 G...	Typical	.671	.267	.267	.534
3	Diagonal	0.63" SR	None	None	A529 G...	Typical	.312	.008	.008	.015
4	Mount Pipe	2.88"x0.120"	Colu...	Pipe	A500 G...	Typical	1.04	.993	.993	1.985
5	Tie Back	Pipe2.38X0.12	None	None	A500 G...	Typical	.852	.545	.545	1.091
6	End Support Pipe	3.5"x0.120	None	None	A500 G...	Typical	1.274	1.822	1.822	3.644
7	Standoff Vertical	0.63" SR	None	None	A529 G...	Typical	.312	.008	.008	.015

Basic Load Cases

	BLC Description	Category	X Gr...	Y Gr...	Z Gr...	Joint	Point	Distributed	Area(Memb...	Surface(Plate/Wall)
1	Self Weight	DL		-1			5			
2	Wind Load AZI 0	WLZ					10			
3	Wind Load AZI 30	None					10			
4	Wind Load AZI 60	None					10			
5	Wind Load AZI 90	WLX					10			
6	Wind Load AZI 1...	None					10			
7	Wind Load AZI 1...	None					10			
8	Wind Load AZI 1...	None					10			
9	Wind Load AZI 2...	None					10			
10	Wind Load AZI 2...	None					10			
11	Wind Load AZI 2...	None					10			
12	Wind Load AZI 3...	None					10			
13	Wind Load AZI 3...	None					10			
14	Distr. Wind Load Z	WLZ						27		

Basic Load Cases (Continued)

	BLC Description	Category	X Gr...	Y Gr...	Z Gr...	Joint	Point	Distributed	Area(Memb...	Surface(Plate/Wall)
15	Distr. Wind Load X	WLX						27		
16	Ice Weight	OL1					5	27		
17	Ice Wind Load A...	OL2					10			
18	Ice Wind Load A...	None					10			
19	Ice Wind Load A...	None					10			
20	Ice Wind Load A...	OL3					10			
21	Ice Wind Load A...	None					10			
22	Ice Wind Load A...	None					10			
23	Ice Wind Load A...	None					10			
24	Ice Wind Load A...	None					10			
25	Ice Wind Load A...	None					10			
26	Ice Wind Load A...	None					10			
27	Ice Wind Load A...	None					10			
28	Ice Wind Load A...	None					10			
29	Distr. Ice Wind L...	OL2						27		
30	Distr. Ice Wind L...	OL3						27		
31	Seismic Load Z	ELZ			-.32		5			
32	Seismic Load X	ELX	-.32				5			
33	Service Live Loa...	LL				1				
34	Maintenance Loa...	LL				1				
35	Maintenance Loa...	LL				1				
36	Maintenance Loa...	LL				1				

Load Combinations

	Description	S...	P...	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
1	1.4DL	Y...	Y		1	1.4																				
2	1.2DL + 1WL AZI 0	Y...	Y		1	1.2	2	1	14	1	15															
3	1.2DL + 1WL AZI 30	Y...	Y		1	1.2	3	1	14	.866	15	.5														
4	1.2DL + 1WL AZI 60	Y...	Y		1	1.2	4	1	14	.5	15	.866														
5	1.2DL + 1WL AZI 90	Y...	Y		1	1.2	5	1	14		15	1														
6	1.2DL + 1WL AZI 120	Y...	Y		1	1.2	6	1	14	-.5	15	.866														
7	1.2DL + 1WL AZI 150	Y...	Y		1	1.2	7	1	14	-.8...	15	.5														
8	1.2DL + 1WL AZI 180	Y...	Y		1	1.2	8	1	14	-1	15															
9	1.2DL + 1WL AZI 210	Y...	Y		1	1.2	9	1	14	-.8...	15	-.5														
10	1.2DL + 1WL AZI 240	Y...	Y		1	1.2	10	1	14	-.5	15	-.8...														
11	1.2DL + 1WL AZI 270	Y...	Y		1	1.2	11	1	14		15	-1														
12	1.2DL + 1WL AZI 300	Y...	Y		1	1.2	12	1	14	.5	15	-.8...														
13	1.2DL + 1WL AZI 330	Y...	Y		1	1.2	13	1	14	.866	15	-.5														
14	0.9DL + 1WL AZI 0	Y...	Y		1	.9	2	1	14	1	15															
15	0.9DL + 1WL AZI 30	Y...	Y		1	.9	3	1	14	.866	15	.5														
16	0.9DL + 1WL AZI 60	Y...	Y		1	.9	4	1	14	.5	15	.866														

Load Combinations (Continued)

	Description	S...	P...	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
17	0.9DL + 1WL AZI 90	Y...	Y		1	.9	5	1	14		15	1														
18	0.9DL + 1WL AZI 120	Y...	Y		1	.9	6	1	14	-.5	15	.866														
19	0.9DL + 1WL AZI 150	Y...	Y		1	.9	7	1	14	-.8...	15	.5														
20	0.9DL + 1WL AZI 180	Y...	Y		1	.9	8	1	14	-1	15															
21	0.9DL + 1WL AZI 210	Y...	Y		1	.9	9	1	14	-.8...	15	-.5														
22	0.9DL + 1WL AZI 240	Y...	Y		1	.9	10	1	14	-.5	15	-.8...														
23	0.9DL + 1WL AZI 270	Y...	Y		1	.9	11	1	14		15	-1														
24	0.9DL + 1WL AZI 300	Y...	Y		1	.9	12	1	14	.5	15	-.8...														
25	0.9DL + 1WL AZI 330	Y...	Y		1	.9	13	1	14	.866	15	-.5														
26	1.2D + 1.0Di	Y...	Y		1	1.2	16	1																		
27	1.2D + 1.0Di +1.0Wi AZI 0	Y...	Y		1	1.2	16	1	17	1	29	1	30													
28	1.2D + 1.0Di +1.0Wi AZI 30	Y...	Y		1	1.2	16	1	18	1	29	.866	30	.5												
29	1.2D + 1.0Di +1.0Wi AZI 60	Y...	Y		1	1.2	16	1	19	1	29	.5	30	.866												
30	1.2D + 1.0Di +1.0Wi AZI 90	Y...	Y		1	1.2	16	1	20	1	29		30	1												
31	1.2D + 1.0Di +1.0Wi AZI 120	Y...	Y		1	1.2	16	1	21	1	29	-.5	30	.866												
32	1.2D + 1.0Di +1.0Wi AZI 150	Y...	Y		1	1.2	16	1	22	1	29	-.8...	30	.5												
33	1.2D + 1.0Di +1.0Wi AZI 180	Y...	Y		1	1.2	16	1	23	1	29	-1	30													
34	1.2D + 1.0Di +1.0Wi AZI 210	Y...	Y		1	1.2	16	1	24	1	29	-.8...	30	-.5												
35	1.2D + 1.0Di +1.0Wi AZI 240	Y...	Y		1	1.2	16	1	25	1	29	-.5	30	-.8...												
36	1.2D + 1.0Di +1.0Wi AZI 270	Y...	Y		1	1.2	16	1	26	1	29		30	-1												
37	1.2D + 1.0Di +1.0Wi AZI 300	Y...	Y		1	1.2	16	1	27	1	29	.5	30	-.8...												
38	1.2D + 1.0Di +1.0Wi AZI 330	Y...	Y		1	1.2	16	1	28	1	29	.866	30	-.5												
39	(1.2 + 0.2Sds)DL + 1.0E AZI 0	Y...	Y		1	1.2...	31	1	32																	
40	(1.2 + 0.2Sds)DL + 1.0E AZI 30	Y...	Y		1	1.2...	31	.866	32	.5																
41	(1.2 + 0.2Sds)DL + 1.0E AZI 60	Y...	Y		1	1.2...	31	.5	32	.866																
42	(1.2 + 0.2Sds)DL + 1.0E AZI 90	Y...	Y		1	1.2...	31		32	1																
43	(1.2 + 0.2Sds)DL + 1.0E AZI 1...	Y...	Y		1	1.2...	31	-.5	32	.866																
44	(1.2 + 0.2Sds)DL + 1.0E AZI 1...	Y...	Y		1	1.2...	31	-.8...	32	.5																
45	(1.2 + 0.2Sds)DL + 1.0E AZI 1...	Y...	Y		1	1.2...	31	-1	32																	
46	(1.2 + 0.2Sds)DL + 1.0E AZI 2...	Y...	Y		1	1.2...	31	-.8...	32	-.5																
47	(1.2 + 0.2Sds)DL + 1.0E AZI 2...	Y...	Y		1	1.2...	31	-.5	32	-.8...																
48	(1.2 + 0.2Sds)DL + 1.0E AZI 2...	Y...	Y		1	1.2...	31		32	-1																
49	(1.2 + 0.2Sds)DL + 1.0E AZI 3...	Y...	Y		1	1.2...	31	.5	32	-.8...																
50	(1.2 + 0.2Sds)DL + 1.0E AZI 3...	Y...	Y		1	1.2...	31	.866	32	-.5																
51	(0.9 - 0.2Sds)DL + 1.0E AZI 0	Y...	Y		1	.857	31	1	32																	
52	(0.9 - 0.2Sds)DL + 1.0E AZI 30	Y...	Y		1	.857	31	.866	32	.5																
53	(0.9 - 0.2Sds)DL + 1.0E AZI 60	Y...	Y		1	.857	31	.5	32	.866																
54	(0.9 - 0.2Sds)DL + 1.0E AZI 90	Y...	Y		1	.857	31		32	1																
55	(0.9 - 0.2Sds)DL + 1.0E AZI 1...	Y...	Y		1	.857	31	-.5	32	.866																
56	(0.9 - 0.2Sds)DL + 1.0E AZI 1...	Y...	Y		1	.857	31	-.8...	32	.5																
57	(0.9 - 0.2Sds)DL + 1.0E AZI 1...	Y...	Y		1	.857	31	-1	32																	
58	(0.9 - 0.2Sds)DL + 1.0E AZI 2...	Y...	Y		1	.857	31	-.8...	32	-.5																

Load Combinations (Continued)

	Description	S...	P...	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
59	(0.9 - 0.2Sds)DL + 1.0E AZI 2...	Y...	Y		1	.857	31	-.5	32	-.8...															
60	(0.9 - 0.2Sds)DL + 1.0E AZI 2...	Y...	Y		1	.857	31		32	-1															
61	(0.9 - 0.2Sds)DL + 1.0E AZI 3...	Y...	Y		1	.857	31	.5	32	-.8...															
62	(0.9 - 0.2Sds)DL + 1.0E AZI 3...	Y...	Y		1	.857	31	.866	32	-.5															
63	1.0DL + 1.5LL + 1.0SWL (60 ...	Y...	Y		1	1	2	.254	14	.254	15		33	1.5											
64	1.0DL + 1.5LL + 1.0SWL (60 ...	Y...	Y		1	1	3	.254	14	.22	15	.127	33	1.5											
65	1.0DL + 1.5LL + 1.0SWL (60 ...	Y...	Y		1	1	4	.254	14	.127	15	.22	33	1.5											
66	1.0DL + 1.5LL + 1.0SWL (60 ...	Y...	Y		1	1	5	.254	14		15	.254	33	1.5											
67	1.0DL + 1.5LL + 1.0SWL (60 ...	Y...	Y		1	1	6	.254	14	-.1...	15	.22	33	1.5											
68	1.0DL + 1.5LL + 1.0SWL (60 ...	Y...	Y		1	1	7	.254	14	-.22	15	.127	33	1.5											
69	1.0DL + 1.5LL + 1.0SWL (60 ...	Y...	Y		1	1	8	.254	14	-.2...	15		33	1.5											
70	1.0DL + 1.5LL + 1.0SWL (60 ...	Y...	Y		1	1	9	.254	14	-.22	15	-.1...	33	1.5											
71	1.0DL + 1.5LL + 1.0SWL (60 ...	Y...	Y		1	1	10	.254	14	-.1...	15	-.22	33	1.5											
72	1.0DL + 1.5LL + 1.0SWL (60 ...	Y...	Y		1	1	11	.254	14		15	-.2...	33	1.5											
73	1.0DL + 1.5LL + 1.0SWL (60 ...	Y...	Y		1	1	12	.254	14	.127	15	-.22	33	1.5											
74	1.0DL + 1.5LL + 1.0SWL (60 ...	Y...	Y		1	1	13	.254	14	.22	15	-.1...	33	1.5											
75	1.2DL + 1.5LL	Y...	Y		1	1.2	33	1.5																	
76	1.2DL + 1.5LM-MP1 + 1SWL (...	Y...	Y		1	1.2	34	1.5	2	.064	14	.064	15												
77	1.2DL + 1.5LM-MP1 + 1SWL (...	Y...	Y		1	1.2	34	1.5	3	.064	14	.055	15	.032											
78	1.2DL + 1.5LM-MP1 + 1SWL (...	Y...	Y		1	1.2	34	1.5	4	.064	14	.032	15	.055											
79	1.2DL + 1.5LM-MP1 + 1SWL (...	Y...	Y		1	1.2	34	1.5	5	.064	14		15	.064											
80	1.2DL + 1.5LM-MP1 + 1SWL (...	Y...	Y		1	1.2	34	1.5	6	.064	14	-.0...	15	.055											
81	1.2DL + 1.5LM-MP1 + 1SWL (...	Y...	Y		1	1.2	34	1.5	7	.064	14	-.0...	15	.032											
82	1.2DL + 1.5LM-MP1 + 1SWL (...	Y...	Y		1	1.2	34	1.5	8	.064	14	-.0...	15												
83	1.2DL + 1.5LM-MP1 + 1SWL (...	Y...	Y		1	1.2	34	1.5	9	.064	14	-.0...	15	-.0...											
84	1.2DL + 1.5LM-MP1 + 1SWL (...	Y...	Y		1	1.2	34	1.5	10	.064	14	-.0...	15	-.0...											
85	1.2DL + 1.5LM-MP1 + 1SWL (...	Y...	Y		1	1.2	34	1.5	11	.064	14		15	-.0...											
86	1.2DL + 1.5LM-MP1 + 1SWL (...	Y...	Y		1	1.2	34	1.5	12	.064	14	.032	15	-.0...											
87	1.2DL + 1.5LM-MP1 + 1SWL (...	Y...	Y		1	1.2	34	1.5	13	.064	14	.055	15	-.0...											
88	1.2DL + 1.5LM-MP2 + 1SWL (...	Y...	Y		1	1.2	35	1.5	2	.064	14	.064	15												
89	1.2DL + 1.5LM-MP2 + 1SWL (...	Y...	Y		1	1.2	35	1.5	3	.064	14	.055	15	.032											
90	1.2DL + 1.5LM-MP2 + 1SWL (...	Y...	Y		1	1.2	35	1.5	4	.064	14	.032	15	.055											
91	1.2DL + 1.5LM-MP2 + 1SWL (...	Y...	Y		1	1.2	35	1.5	5	.064	14		15	.064											
92	1.2DL + 1.5LM-MP2 + 1SWL (...	Y...	Y		1	1.2	35	1.5	6	.064	14	-.0...	15	.055											
93	1.2DL + 1.5LM-MP2 + 1SWL (...	Y...	Y		1	1.2	35	1.5	7	.064	14	-.0...	15	.032											
94	1.2DL + 1.5LM-MP2 + 1SWL (...	Y...	Y		1	1.2	35	1.5	8	.064	14	-.0...	15												
95	1.2DL + 1.5LM-MP2 + 1SWL (...	Y...	Y		1	1.2	35	1.5	9	.064	14	-.0...	15	-.0...											
96	1.2DL + 1.5LM-MP2 + 1SWL (...	Y...	Y		1	1.2	35	1.5	10	.064	14	-.0...	15	-.0...											
97	1.2DL + 1.5LM-MP2 + 1SWL (...	Y...	Y		1	1.2	35	1.5	11	.064	14		15	-.0...											
98	1.2DL + 1.5LM-MP2 + 1SWL (...	Y...	Y		1	1.2	35	1.5	12	.064	14	.032	15	-.0...											
99	1.2DL + 1.5LM-MP2 + 1SWL (...	Y...	Y		1	1.2	35	1.5	13	.064	14	.055	15	-.0...											
100	1.2DL + 1.5LM-MP3 + 1SWL (...	Y...	Y		1	1.2	36	1.5	2	.064	14	.064	15												

Load Combinations (Continued)

	Description	S...	P...	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
101	1.2DL + 1.5LM-MP3 + 1SWL (...	Y...	Y		1	1.2	36	1.5	3	.064	14	.055	15	.032										
102	1.2DL + 1.5LM-MP3 + 1SWL (...	Y...	Y		1	1.2	36	1.5	4	.064	14	.032	15	.055										
103	1.2DL + 1.5LM-MP3 + 1SWL (...	Y...	Y		1	1.2	36	1.5	5	.064	14		15	.064										
104	1.2DL + 1.5LM-MP3 + 1SWL (...	Y...	Y		1	1.2	36	1.5	6	.064	14	-.0...	15	.055										
105	1.2DL + 1.5LM-MP3 + 1SWL (...	Y...	Y		1	1.2	36	1.5	7	.064	14	-.0...	15	.032										
106	1.2DL + 1.5LM-MP3 + 1SWL (...	Y...	Y		1	1.2	36	1.5	8	.064	14	-.0...	15											
107	1.2DL + 1.5LM-MP3 + 1SWL (...	Y...	Y		1	1.2	36	1.5	9	.064	14	-.0...	15	-.0...										
108	1.2DL + 1.5LM-MP3 + 1SWL (...	Y...	Y		1	1.2	36	1.5	10	.064	14	-.0...	15	-.0...										
109	1.2DL + 1.5LM-MP3 + 1SWL (...	Y...	Y		1	1.2	36	1.5	11	.064	14		15	-.0...										
110	1.2DL + 1.5LM-MP3 + 1SWL (...	Y...	Y		1	1.2	36	1.5	12	.064	14	.032	15	-.0...										

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	...	859.821	78	667.498	89	830.537	25	0	110	0	110	0	110
2		...	-1576.143	96	184.093	20	-1947.6...	7	0	1	0	1	0	1
3	N44	...	1558.542	91	648.528	107	1607.3...	88	0	110	0	110	0	110
4		...	-841.941	85	185.724	14	272.184	20	0	1	0	1	0	1
5	N44A	...	96.113	6	34.328	37	683.824	7	0	110	0	110	0	110
6		...	-96.41	12	9.936	55	-684.812	25	0	1	0	1	0	1
7	Totals:	...	628.555	17	1322.9...	90	995.102	2						
8		...	-628.555	11	409.314	55	-995.101	8						

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
4	MP1	Y	-63.93	12
5	S1	Y	-21.85	20

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	-132.07	0
3	MP1	X	0	72
4	MP1	Z	-132.07	72
5	MP1	X	0	12
6	MP1	Z	-64.75	12
7	MP1	X	0	12
8	MP1	Z	-64.75	12
9	S1	X	0	20
10	S1	Z	-61.56	20

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	-56.14	0
2	MP1	Z	-97.24	0
3	MP1	X	-56.14	72
4	MP1	Z	-97.24	72
5	MP1	X	-29.18	12
6	MP1	Z	-50.55	12
7	MP1	X	-28.54	12
8	MP1	Z	-49.43	12
9	S1	X	-27.48	20
10	S1	Z	-47.6	20

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	-62.97	0
2	MP1	Z	-36.36	0
3	MP1	X	-62.97	72
4	MP1	Z	-36.36	72
5	MP1	X	-39.49	12
6	MP1	Z	-22.8	12
7	MP1	X	-36.14	12
8	MP1	Z	-20.87	12
9	S1	X	-36.17	20
10	S1	Z	-20.89	20

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	-52.93	0
2	MP1	Z	0	0

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
3	MP1	X	-52.93	72
4	MP1	Z	0	72
5	MP1	X	-39.21	12
6	MP1	Z	0	12
7	MP1	X	-34.06	12
8	MP1	Z	0	12
9	S1	X	-35.17	20
10	S1	Z	0	20

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	-62.97	0
2	MP1	Z	36.36	0
3	MP1	X	-62.97	72
4	MP1	Z	36.36	72
5	MP1	X	-39.49	12
6	MP1	Z	22.8	12
7	MP1	X	-36.14	12
8	MP1	Z	20.87	12
9	S1	X	-36.17	20
10	S1	Z	20.89	20

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	-56.14	0
2	MP1	Z	97.24	0
3	MP1	X	-56.14	72
4	MP1	Z	97.24	72
5	MP1	X	-29.18	12
6	MP1	Z	50.55	12
7	MP1	X	-28.54	12
8	MP1	Z	49.43	12
9	S1	X	-27.48	20
10	S1	Z	47.6	20

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	132.07	0
3	MP1	X	0	72
4	MP1	Z	132.07	72

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
5	MP1	X	0	12
6	MP1	Z	64.75	12
7	MP1	X	0	12
8	MP1	Z	64.75	12
9	S1	X	0	20
10	S1	Z	61.56	20

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	56.14	0
2	MP1	Z	97.24	0
3	MP1	X	56.14	72
4	MP1	Z	97.24	72
5	MP1	X	29.18	12
6	MP1	Z	50.55	12
7	MP1	X	28.54	12
8	MP1	Z	49.43	12
9	S1	X	27.48	20
10	S1	Z	47.6	20

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	62.97	0
2	MP1	Z	36.36	0
3	MP1	X	62.97	72
4	MP1	Z	36.36	72
5	MP1	X	39.49	12
6	MP1	Z	22.8	12
7	MP1	X	36.14	12
8	MP1	Z	20.87	12
9	S1	X	36.17	20
10	S1	Z	20.89	20

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	52.93	0
2	MP1	Z	0	0
3	MP1	X	52.93	72
4	MP1	Z	0	72
5	MP1	X	39.21	12
6	MP1	Z	0	12

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
7	MP1	X	34.06	12
8	MP1	Z	0	12
9	S1	X	35.17	20
10	S1	Z	0	20

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	62.97	0
2	MP1	Z	-36.36	0
3	MP1	X	62.97	72
4	MP1	Z	-36.36	72
5	MP1	X	39.49	12
6	MP1	Z	-22.8	12
7	MP1	X	36.14	12
8	MP1	Z	-20.87	12
9	S1	X	36.17	20
10	S1	Z	-20.89	20

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	56.14	0
2	MP1	Z	-97.24	0
3	MP1	X	56.14	72
4	MP1	Z	-97.24	72
5	MP1	X	29.18	12
6	MP1	Z	-50.55	12
7	MP1	X	28.54	12
8	MP1	Z	-49.43	12
9	S1	X	27.48	20
10	S1	Z	-47.6	20

Member Point Loads (BLC 16 : Ice Weight)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	Y	-90.336	0
2	MP1	Y	-90.336	72
3	MP1	Y	-45.767	12
4	MP1	Y	-42.824	12
5	S1	Y	-41.727	20

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

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

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	0	0
2	MP1	Z	-17.38	0
3	MP1	X	0	72
4	MP1	Z	-17.38	72
5	MP1	X	0	12
6	MP1	Z	-6.46	12
7	MP1	X	0	12
8	MP1	Z	-6.46	12
9	S1	X	0	20
10	S1	Z	-6.36	20

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	-7.99	0
2	MP1	Z	-13.84	0
3	MP1	X	-7.99	72
4	MP1	Z	-13.84	72
5	MP1	X	-3.08	12
6	MP1	Z	-5.33	12
7	MP1	X	-3.04	12
8	MP1	Z	-5.26	12
9	S1	X	-3.01	20
10	S1	Z	-5.22	20

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	-11.43	0
2	MP1	Z	-6.6	0
3	MP1	X	-11.43	72
4	MP1	Z	-6.6	72
5	MP1	X	-4.79	12
6	MP1	Z	-2.76	12
7	MP1	X	-4.6	12
8	MP1	Z	-2.65	12
9	S1	X	-4.64	20
10	S1	Z	-2.68	20

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	-11.81	0
2	MP1	Z	0	0

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
3	MP1	X	-11.81	72
4	MP1	Z	0	72
5	MP1	X	-5.21	12
6	MP1	Z	0	12
7	MP1	X	-4.92	12
8	MP1	Z	0	12
9	S1	X	-5.02	20
10	S1	Z	0	20

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	-11.43	0
2	MP1	Z	6.6	0
3	MP1	X	-11.43	72
4	MP1	Z	6.6	72
5	MP1	X	-4.79	12
6	MP1	Z	2.76	12
7	MP1	X	-4.6	12
8	MP1	Z	2.65	12
9	S1	X	-4.64	20
10	S1	Z	2.68	20

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	-7.99	0
2	MP1	Z	13.84	0
3	MP1	X	-7.99	72
4	MP1	Z	13.84	72
5	MP1	X	-3.08	12
6	MP1	Z	5.33	12
7	MP1	X	-3.04	12
8	MP1	Z	5.26	12
9	S1	X	-3.01	20
10	S1	Z	5.22	20

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	17.38	0
3	MP1	X	0	72
4	MP1	Z	17.38	72

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
5	MP1	X	0	12
6	MP1	Z	6.46	12
7	MP1	X	0	12
8	MP1	Z	6.46	12
9	S1	X	0	20
10	S1	Z	6.36	20

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	7.99	0
2	MP1	Z	13.84	0
3	MP1	X	7.99	72
4	MP1	Z	13.84	72
5	MP1	X	3.08	12
6	MP1	Z	5.33	12
7	MP1	X	3.04	12
8	MP1	Z	5.26	12
9	S1	X	3.01	20
10	S1	Z	5.22	20

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	11.43	0
2	MP1	Z	6.6	0
3	MP1	X	11.43	72
4	MP1	Z	6.6	72
5	MP1	X	4.79	12
6	MP1	Z	2.76	12
7	MP1	X	4.6	12
8	MP1	Z	2.65	12
9	S1	X	4.64	20
10	S1	Z	2.68	20

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	11.81	0
2	MP1	Z	0	0
3	MP1	X	11.81	72
4	MP1	Z	0	72
5	MP1	X	5.21	12
6	MP1	Z	0	12

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
7	MP1	X	4.92	12
8	MP1	Z	0	12
9	S1	X	5.02	20
10	S1	Z	0	20

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	11.43	0
2	MP1	Z	-6.6	0
3	MP1	X	11.43	72
4	MP1	Z	-6.6	72
5	MP1	X	4.79	12
6	MP1	Z	-2.76	12
7	MP1	X	4.6	12
8	MP1	Z	-2.65	12
9	S1	X	4.64	20
10	S1	Z	-2.68	20

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	7.99	0
2	MP1	Z	-13.84	0
3	MP1	X	7.99	72
4	MP1	Z	-13.84	72
5	MP1	X	3.08	12
6	MP1	Z	-5.33	12
7	MP1	X	3.04	12
8	MP1	Z	-5.26	12
9	S1	X	3.01	20
10	S1	Z	-5.22	20

Member Point Loads (BLC 31 : Seismic Load Z)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	Z	-10.32	0
2	MP1	Z	-10.32	72
3	MP1	Z	-23.984	12
4	MP1	Z	-20.458	12
5	S1	Z	-6.992	20

Member Point Loads (BLC 32 : Seismic Load X)

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

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	-10.32	0
2	MP1	X	-10.32	72
3	MP1	X	-23.984	12
4	MP1	X	-20.458	12
5	S1	X	-6.992	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^2/in, lb*s^2*in)]
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^2/in, lb*s^2*in)]
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^2/in, lb*s^2*in)]
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^2/in, lb*s^2*in)]
1	N74	L	Y	-500

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

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magn...	Start Location...	End Location[in,%]
1	S3	SZ	-43.968	-43.968	0	%100
2	S4	SZ	-43.968	-43.968	0	%100
3	TR6	SZ	-43.968	-43.968	0	%100
4	TR5	SZ	-43.968	-43.968	0	%100
5	TR8	SZ	-43.968	-43.968	0	%100
6	TR7	SZ	-43.968	-43.968	0	%100
7	S1	SZ	-43.968	-43.968	0	%100
8	S2	SZ	-43.968	-43.968	0	%100
9	TR1	SZ	-43.968	-43.968	0	%100
10	TR2	SZ	-43.968	-43.968	0	%100
11	TR3	SZ	-43.968	-43.968	0	%100
12	TR4	SZ	-43.968	-43.968	0	%100
13	H1	SZ	-43.968	-43.968	0	%100
14	H2	SZ	-43.968	-43.968	0	%100

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

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magn...	Start Location...	End Location[in,%]
15	MP3	SZ	-43.968	-43.968	0	%100
16	MP1	SZ	-43.968	-43.968	0	%100
17	MP2	SZ	-43.968	-43.968	0	%100
18	T1	SZ	-43.968	-43.968	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 15 : Distr. Wind Load X)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magn...	Start Location...	End Location[in,%]
1	S3	SX	-43.968	-43.968	0	%100
2	S4	SX	-43.968	-43.968	0	%100
3	TR6	SX	-43.968	-43.968	0	%100
4	TR5	SX	-43.968	-43.968	0	%100
5	TR8	SX	-43.968	-43.968	0	%100
6	TR7	SX	-43.968	-43.968	0	%100
7	S1	SX	-43.968	-43.968	0	%100
8	S2	SX	-43.968	-43.968	0	%100
9	TR1	SX	-43.968	-43.968	0	%100
10	TR2	SX	-43.968	-43.968	0	%100
11	TR3	SX	-43.968	-43.968	0	%100
12	TR4	SX	-43.968	-43.968	0	%100
13	H1	SX	-43.968	-43.968	0	%100
14	H2	SX	-43.968	-43.968	0	%100
15	MP3	SX	-43.968	-43.968	0	%100
16	MP1	SX	-43.968	-43.968	0	%100
17	MP2	SX	-43.968	-43.968	0	%100
18	T1	SX	-43.968	-43.968	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

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

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

Member Distributed Loads (BLC 16 : Ice Weight)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magn...	Start Location...	End Location[in,%]
1	S3	Y	-4.313	-4.313	0	%100
2	S4	Y	-4.313	-4.313	0	%100
3	TR6	Y	-2.521	-2.521	0	%100
4	TR5	Y	-2.521	-2.521	0	%100
5	TR8	Y	-2.521	-2.521	0	%100
6	TR7	Y	-2.521	-2.521	0	%100
7	S1	Y	-4.313	-4.313	0	%100
8	S2	Y	-4.313	-4.313	0	%100
9	TR1	Y	-2.521	-2.521	0	%100
10	TR2	Y	-2.521	-2.521	0	%100
11	TR3	Y	-2.521	-2.521	0	%100
12	TR4	Y	-2.521	-2.521	0	%100
13	H1	Y	-5.69	-5.69	0	%100
14	H2	Y	-5.69	-5.69	0	%100
15	MP3	Y	-5.697	-5.697	0	%100
16	MP1	Y	-5.697	-5.697	0	%100
17	MP2	Y	-5.697	-5.697	0	%100
18	T1	Y	-4.991	-4.991	0	%100
19	M29	Y	-1.631	-1.631	0	%100
20	M30	Y	-1.631	-1.631	0	%100
21	M33	Y	-1.631	-1.631	0	%100
22	M34	Y	-1.631	-1.631	0	%100
23	M35	Y	-1.631	-1.631	0	%100
24	M36	Y	-1.631	-1.631	0	%100
25	M25	Y	-1.631	-1.631	0	%100
26	M26	Y	-1.631	-1.631	0	%100
27	M27	Y	-1.631	-1.631	0	%100

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

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magn...	Start Location...	End Location[in,%]
1	S3	SZ	-17.203	-17.203	0	%100
2	S4	SZ	-17.203	-17.203	0	%100
3	TR6	SZ	-36.236	-36.236	0	%100
4	TR5	SZ	-36.236	-36.236	0	%100
5	TR8	SZ	-36.236	-36.236	0	%100
6	TR7	SZ	-36.236	-36.236	0	%100
7	S1	SZ	-17.203	-17.203	0	%100

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

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magn...	Start Location...	End Location[in,%]
8	S2	SZ	-17.203	-17.203	0	%100
9	TR1	SZ	-36.236	-36.236	0	%100
10	TR2	SZ	-36.236	-36.236	0	%100
11	TR3	SZ	-36.236	-36.236	0	%100
12	TR4	SZ	-36.236	-36.236	0	%100
13	H1	SZ	-14.002	-14.002	0	%100
14	H2	SZ	-14.002	-14.002	0	%100
15	MP3	SZ	-13.991	-13.991	0	%100
16	MP1	SZ	-13.991	-13.991	0	%100
17	MP2	SZ	-13.991	-13.991	0	%100
18	T1	SZ	-15.299	-15.299	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,...	End Magn...	Start Location...	End Location[in,%]
1	S3	SX	-17.203	-17.203	0	%100
2	S4	SX	-17.203	-17.203	0	%100
3	TR6	SX	-36.236	-36.236	0	%100
4	TR5	SX	-36.236	-36.236	0	%100
5	TR8	SX	-36.236	-36.236	0	%100
6	TR7	SX	-36.236	-36.236	0	%100
7	S1	SX	-17.203	-17.203	0	%100
8	S2	SX	-17.203	-17.203	0	%100
9	TR1	SX	-36.236	-36.236	0	%100
10	TR2	SX	-36.236	-36.236	0	%100
11	TR3	SX	-36.236	-36.236	0	%100
12	TR4	SX	-36.236	-36.236	0	%100
13	H1	SX	-14.002	-14.002	0	%100
14	H2	SX	-14.002	-14.002	0	%100
15	MP3	SX	-13.991	-13.991	0	%100
16	MP1	SX	-13.991	-13.991	0	%100
17	MP2	SX	-13.991	-13.991	0	%100
18	T1	SX	-15.299	-15.299	0	%100
19	M29	SX	0	0	0	%100

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

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magn...	Start Location...	End Location[in,%]
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	She...	Loc[in]	Dir	LC	phi*P...	phi*P...	phi*M...	phi*Mn z-z [lb...	Cb	Eqn
1	TR7	0.63" SR	.400	39.811	88	.026	19.905		85	4409....	1402...	147.2...	147.295	2....	H1-1a
2	S4	1.9" ODx0.1...	.396	35.333	91	.134	42.4		94	2049...	2777...	1314....	1314.45	1....	H1-1b
3	S3	1.9" ODx0.1...	.378	35.333	94	.135	42.4		88	2049...	2777...	1314....	1314.45	1....	H1-1b
4	TR4	0.63" SR	.318	39.811	87	.030	19.905		90	4409....	1402...	147.2...	147.295	2....	H1-1a
5	S2	1.9" ODx0.1...	.308	35.333	85	.119	42.4		84	2049...	2777...	1314....	1314.45	1....	H1-1b
6	S1	1.9" ODx0.1...	.292	35.333	81	.118	42.4		87	2049...	2777...	1314....	1314.45	1.79	H1-1b
7	MP1	2.88"x0.120"	.208	33	2	.057	33		8	2249...	43056	3156....	3156.75	4....	H1-1b
8	TR8	0.63" SR	.153	0	94	.026	19.905		81	2249....	1402...	147.2...	147.295	2....	H1-1b
9	TR3	0.63" SR	.125	0	81	.030	19.905		96	2249....	1402...	147.2...	147.295	2....	H1-1b
10	TR5	0.63" SR	.119	0	94	.033	0		95	5162....	1402...	147.2...	147.295	2....	H1-1b
11	H1	PIPE 2.5	.111	77	8	.069	78		2	3348...	66654	4726.5	4726.5	2....	H1-1b
12	TR2	0.63" SR	.110	0	81	.034	0		95	5162....	1402...	147.2...	147.295	2....	H1-1b
13	MP3	2.88"x0.120"	.109	33	81	.022	61		87	2249...	43056	3156....	3156.75	4....	H1-1b
14	T1	Pipe2.38X0....	.107	96.255	7	.008	96.255		30	1328...	3527...	2114....	2114.85	1....	H1-1b
15	H2	PIPE 2.5	.088	93	96	.047	78		94	3348...	66654	4726.5	4726.5	2....	H1-1b
16	TR6	0.63" SR	.076	0	93	.016	0		96	5162....	1402...	147.2...	147.295	2....	H1-1b
17	MP2	2.88"x0.120"	.066	33	8	.038	33		93	2249...	43056	3156....	3156.75	4....	H1-1b
18	TR1	0.63" SR	.053	28.3	77	.015	28.3		96	5162....	1402...	147.2...	147.295	2....	H1-1b

INFINIGY

FROM ZERO TO INFINIGY

the solutions are endless

Bolt Calculation Tool, V1.5.1

PROJECT DATA	
Site Name:	BOHVN00151A
Site Number:	BOHVN00151A
Connection Description:	Sector Frame to Tower Leg

MAXIMUM BOLT LOADS		
Bolt Tension:	973.82	lbs
Bolt Shear:	849.96	lbs

WORST CASE BOLT LOADS[1]		
Bolt Tension:	0.00	lbs
Bolt Shear:	849.96	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 #91 on member M26 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	4.8%	
Max Shear Usage	6.2%	
Interaction Check (Worst Case)	0.00	***≤1.05***
Result	Pass	

INFINIGY

FROM ZERO TO INFINIGY

the solutions are endless

Bolt Calculation Tool, V1.5.1

PROJECT DATA	
Site Name:	BOHVN00151A
Site Number:	BOHVN00151A
Connection Description:	Tieback to Tower Leg

MAXIMUM BOLT LOADS		
Bolt Tension:	48.21	lbs
Bolt Shear:	342.29	lbs

WORST CASE BOLT LOADS[1]		
Bolt Tension:	44.56	lbs
Bolt Shear:	342.29	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	0.4%	
Max Shear Usage	3.9%	
Interaction Check (Worst Case)	0.00	***≤1.05***
Result	Pass	

POWER DENSITY STUDY

EBI Consulting

environmental | engineering | due diligence

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

Dish Wireless Existing Facility

Site ID: BOHVN00151A

BOHVN00151A
9 Meyers Road
Bethany, Connecticut 06524

November 10, 2021

EBI Project Number: 6221004017

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**6.98%**

November 10, 2021

Dish Wireless

Emissions Analysis for Site: BOHVN00151A - BOHVN00151A

EBI Consulting was directed to analyze the proposed Dish Wireless facility located at **9 Meyers Road** in **Bethany, Connecticut** for the purpose of determining whether the emissions from the Proposed Dish Wireless Antenna Installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter ($\mu W/cm^2$). The number of $\mu W/cm^2$ calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits; therefore, it is necessary to report results and limits in terms of percent MPE rather than power density.

All results were compared to the FCC (Federal Communications Commission) radio frequency exposure rules, 47 CFR 1.1307(b)(1) – (b)(3), to determine compliance with the Maximum Permissible Exposure (MPE) limits for General Population/Uncontrolled environments as defined below.

General population/uncontrolled exposure limits apply to situations in which the general population may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Therefore, members of the general population would always be considered under this category when exposure is not employment related, for example, in the case of a telecommunications tower that exposes persons in a nearby residential area.

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limits for the 600 MHz and 700 MHz frequency bands are approximately 400 $\mu W/cm^2$ and 467 $\mu W/cm^2$, respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 11 GHz frequency bands is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

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

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed Dish Wireless Wireless antenna facility located at 9 Meyers Road in Bethany, Connecticut using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since Dish Wireless is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 20 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was focused at the base of the tower. For this report, the sample point is the top of a 6-foot person standing at the base of the tower.

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

- 4 n71 channels (600 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 4 n70 channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.
- 4 n66 channels (AWS Band - 2190 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.
- All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.
- For the following calculations, the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 20 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used in this direction. This value is a very conservative

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

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

- The antenna mounting height centerline of the proposed antennas is 140 feet above ground level (AGL).

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

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

Dish Wireless Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	JMA MX08FRO665-21	Make / Model:	JMA MX08FRO665-21	Make / Model:	JMA MX08FRO665-21
Frequency Bands:	600 MHz / 1900 MHz / 2190 MHz	Frequency Bands:	600 MHz / 1900 MHz / 2190 MHz	Frequency Bands:	600 MHz / 1900 MHz / 2190 MHz
Gain:	17.45 dBd / 22.65 dBd / 22.65 dBd	Gain:	17.45 dBd / 22.65 dBd / 22.65 dBd	Gain:	17.45 dBd / 22.65 dBd / 22.65 dBd
Height (AGL):	140 feet	Height (AGL):	140 feet	Height (AGL):	140 feet
Channel Count:	12	Channel Count:	12	Channel Count:	12
Total TX Power (W):	440 Watts	Total TX Power (W):	440 Watts	Total TX Power (W):	440 Watts
ERP (W):	5,236.31	ERP (W):	5,236.31	ERP (W):	5,236.31
Antenna A1 MPE %:	**1.32%**	Antenna B1 MPE %:	**1.32%**	Antenna C1 MPE %:	**1.32%**

Site Composite MPE %	
Carrier	**MPE %**
Dish Wireless (Max at Sector A):	1.32%
AT&T	1.29%
Metro PCS	0.77%
Verizon	0.67%
Sprint	1.01%
Ind Comms	0.16%
Nextel	0.16%
T-Mobile	1.16%
Rescue 21	0.22%
DHS	0.2%
Lightsquared	0.02%
Site Total MPE % :	6.98%

Dish Wireless MPE % Per Sector	
Dish Wireless Sector A Total:	1.32%
Dish Wireless Sector B Total:	1.32%
Dish Wireless Sector C Total:	1.32%
Site Total MPE % :	6.98%

Dish Wireless Maximum MPE Power Values (Sector A)

Dish Wireless Frequency Band / Technology (Sector A)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density (μW/cm²)	Frequency (MHz)	Allowable MPE (μW/cm²)	Calculated % MPE
Dish Wireless 600 MHz n71	4	223.68	140.0	1.79	600 MHz n71	400	0.45%
Dish Wireless 1900 MHz n70	4	542.70	140.0	4.35	1900 MHz n70	1000	0.43%
Dish Wireless 2190 MHz n66	4	542.70	140.0	4.35	2190 MHz n66	1000	0.43%
						Total:	**1.32%**

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

Summary

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

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

Dish Wireless Sector	Power Density Value (%)
Sector A:	1.32%
Sector B:	1.32%
Sector C:	1.32%
Dish Wireless Maximum MPE % (Sector A):	1.32%
Site Total:	6.98%
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **6.98%** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

UNDERLYING PROPERTY INFORMATION

The Assessor's office is responsible for the maintenance of records on the ownership of properties. Assessments are computed at 70% of the estimated market value of real property at the time of the last revaluation which was 2018.

Information on the Property Records for the Municipality of Bethany was last updated on 4/19/2022.

Parcel Information

Location:	9 MEYERS RD	Property Use:	Industrial	Primary Use:	Light Industrial
Unique ID:	00002800	Map Block Lot:	118/51C	Acres:	9.20
490 Acres:	0.00	Zone:	B&I	Volume / Page:	0000/0000
Developers Map / Lot:		Census:			

Value Information

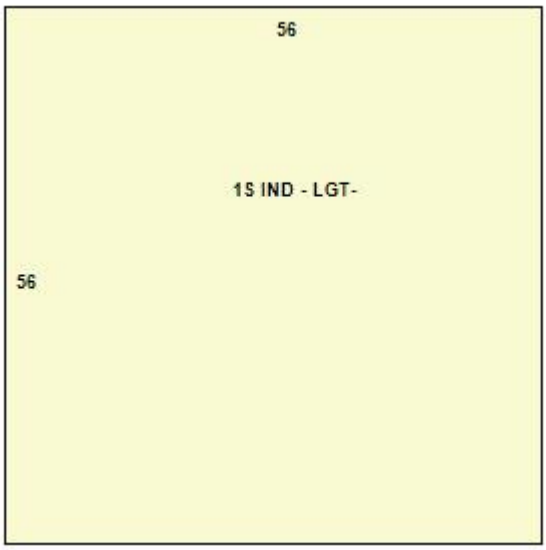
	Appraised Value	Assessed Value
Land	479,000	335,300
Buildings	112,419	78,690
Detached Outbuildings	14,237	9,970

	Appraised Value	Assessed Value
Total	605,656	423,960

Owner's Information

Owner's Data
AMERICAN TOWERS RE: SITE # 88008 STE 205 P O BOX 723597 ATLANTA GA 31139

Building 1



Category:	Industrial	Use:	Light Industrial	Stories:	1.00
Above Grade:	3,136	Below Grade:	0	Below Grade Finish:	0
Construction:	Average	Year Built:	1967	Heating:	FHA
Fuel:	Oil	Cooling Percent:	0%	Siding:	Pre-Cast Concrete
Roof Material:		Beds/Units:	0		

Special Features

Attached Components

Detached Outbuildings

Type:	Year Built:	Length:	Width:	Area:
Fencing	1967			216
Paving	1967			1,100
Building Utility	1967			360

Owner History - Sales

Owner Name	Volume	Page	Sale Date	Deed Type	Sale Price
AMERICAN TOWERS INC	0124	0716	02/16/2000		$6,222,480
AMERICAN TEL & TEL CO	0043	0554	08/10/1966		$0

NOTIFICATIONS

May 11, 2022

Dear Customer,

The following is the proof-of-delivery for tracking number: 776705505982

Delivery Information:

Status:	Delivered	**Delivered To:**	Shipping/Receiving
Signed for by:	W.BRINTON	**Delivery Location:**	Bethany Town Hall
Service type:	FedEx 2Day		40 Peck Road
Special Handling:	Deliver Weekday		BETHANY, CT, 06524
		Delivery date:	Apr 29, 2022 12:47

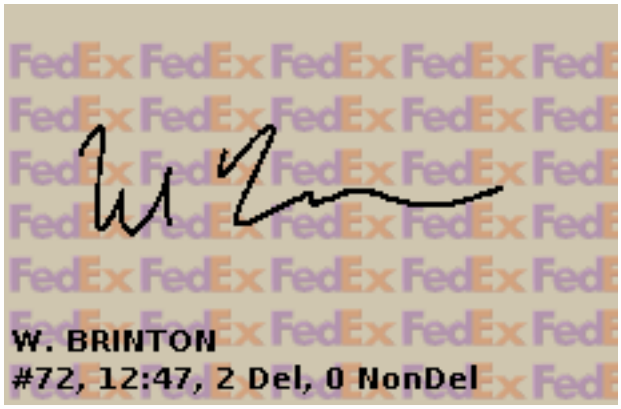
Shipping Information:

Tracking number:	776705505982	**Ship Date:**	Apr 27, 2022
		Weight:	1.0 LB/0.45 KG

Recipient:
Paula Cofrancesco,
Bethany Town Hall
40 Peck Road
BETHANY, CT, US, 06524

Shipper:
Corey Milan, NB+C
100 Apollo Dr.
Suite 303
CHELMSFORD, MA, US, 01824

Reference 100814



Thank you for choosing FedEx

May 11, 2022

Dear Customer,

The following is the proof-of-delivery for tracking number: 776705479514

Delivery Information:

Status:	Delivered	**Delivered To:**	Shipping/Receiving
Signed for by:	W.BRINTON	**Delivery Location:**	Bethany Town Hall
Service type:	FedEx 2Day		40 Peck Road
Special Handling:	Deliver Weekday		BETHANY, CT, 06524
		Delivery date:	Apr 29, 2022 12:47

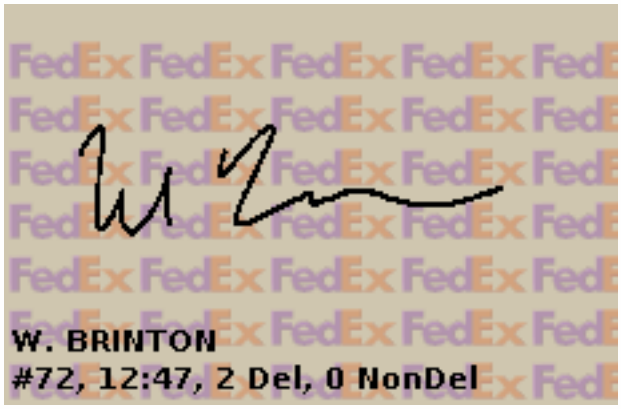
Shipping Information:

Tracking number:	776705479514	**Ship Date:**	Apr 27, 2022
		Weight:	1.0 LB/0.45 KG

Recipient:
Robert Walsh,
Bethany Town Hall
40 Peck Road
BETHANY, CT, US, 06524

Shipper:
Corey Milan, NB+C
100 Apollo Dr.
Suite 303
CHELMSFORD, MA, US, 01824

Reference 100814



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Delivered, PO Box

April 29, 2022 at 6:31 pm
ATLANTA, GA 31139

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Tracking History ⌄

USPS Tracking Plus® ⌄

Product Information ⌄

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