PROJECT NARRATIVE

June 17, 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
53 Dayton Road Waterford, CT 06385
Latitude: 41'22'40.1916" / Longitude: -72'8.21.6852"

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 53 Dayton Road in Waterford (the "Property"). The existing 180-foot self-support tower is owned by American Tower Corporation ("ATC"). The underlying property is owned by Cohanzie Fire Company No. 5 Inc. 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 Robert J. Brule, First Selectman of the Town of Waterford, Steve Cardelle, Town of Waterford Building Official and Cohanzie Fire Company No. 5 Inc. as the property owner.

Background

This facility was approved by the Town of Waterford's Building Department on November 20, 1998. A copy of the permit is included in this filing. The existing ATC facility consists of a 180-foot self-support tower located within an existing leased area. The Town of Waterford currently maintains antennas between the 170 and 189-foot levels. T-Mobile currently maintains antennas at the 166-foot level. AT&T Mobility currently maintains antennas at the 157-foot level. The Town of Waterford Police currently maintains antennas at the 156-foot level. Verizon Wireless currently maintains antennas at the 132-foot level. 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 53 Dayton 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 144-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 53 Dayton 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
LICENSEE: DISH WIRELESS L.L.C.

I, Margaret Robinson, Senior Counsel for American Tower*, owner/operator of the tower facility located at the address identified above (the "Tower Facility"), do hereby authorize DISH WIRELESS L.L.C., its successors and assigns, and/or its agent, (collectively, the "Licensee") to act as American Tower's non-exclusive agent for the sole purpose of filing and consummating any land-use or building permit application(s) as may be required by the applicable permitting authorities for Licensee's telecommunications' installation.

We understand that this application may be denied, modified or approved with conditions. The above authorization is limited to the acceptance by Licensee only of conditions related to Licensee's installation and any such conditions of approval or modifications will be Licensee's sole responsibility.

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

Project #	ATC Site #	ATC Site Name	ATC Site Address
13688133	208450	Enfield	1A Ecology Drive, Enfield CT
13700322	209115	Ridgefield 2	320 Old Stagecoach Road, Ridgefield, CT
13688136	209185	Burlington 2	87 Monce Road, Burlington CT
13700320	209271	Brookfield 2	100 Pocono Road, Brookfield CT
13693702	243036	WEST HAVEN & RT 162 CT	668 Jones Hill Road, West Haven CT
13693677	280501	ROXBURY CT	377 Southbury Road, Roxbury CT
13685406	281416	WILLINGTON CT	196 Tolland Turnpike, Willington CT
13709418	281862	BRIDGEWATER CT	111 SECOND HILL RD, Bridgewater CT
13693659	283418	NORTH HAVEN CT	50 Devine Street, North Haven CT
13694329	283419	PINE ORCHARD BRANFORD CT	123 Pine Orchard Road, Branford CT
13694332	283422	SHORT BEACH BRANFORD CT	171 Short Beach Road, Branford CT
13698427	283423	NAUGATUCK CT	880 Andrew Mountain Road, Naugatuck CT
13685464	283563	MANSFIELD CT	343 Daleville Road, Willington CT
13692735	284983	OLD LYME CT	61-1 Buttonball Road, Old Lyme CT
13693120	284984	PAWCATUCK CT	166 Pawcatuck Ave, Pawcatuck CT
13693144	284988	GUILFORD CT	Moose Hill Road, Guilford CT
13694582	302465	Colchester CT 6	355 Route 85, Colchester CT
13683501	302468	Petro Lock	99 Meadow St, Hartford CT
13685427	302469	Bridgeport CT 2	1069 Connecticut Avenue, Bridgeport CT
13683503	302472	Andover-bunker Hill Road	104 Bunker Hill Road, Andover CT
13683507	302473	E H F R - Prestige Park	310 Prestige Park Road, East Hartford CT

AMERICAN TOWER®
CORPORATION

Project #	ATC Site #	ATC Site Name	ATC Site Address
13683510	302474	South Windsor	391 Niederwerfer Road, South Windsor CT
13683513	302483	Brln - Berlin	286 Beckley Road, Berlin CT
13692185	302488	Cntn - Canton	4 Hoffmann Road, Canton CT
13692173	302495	Tolland CT	56 Ruops Road, Tolland CT
13694579	302496	Clch - Colchester	Chestnut Hill Road, Colchester CT
13701212	302501	Plymouth CT 3	297 North Street, Plymouth CT
13685414	302515	SMFR - North	5 High Ridge Park Road, Stamford CT
13702496	302516	Mlfd - Milford	438 Bridgeport Ave, Milford CT
13688395	302518	Newtown CT 3	25 Meridian Ridge Drive, Newton CT
13692174	302529	Vernon CT 6	777 Talcotville Road, Vernon Rockville CT
13693124	311014	NORWICH CT	202 N Wawecus Hill Rd, Norwich CT
13702522	311305	GLFD-GUILFORD REBUILD CT	10 Tanner Marsh Road, Guilford CT
13693127	370623	MONTVILLE CT	139 Sharp Hill Road, Uncasville CT
13681964	370625	Old Saybrook	77 Springbrook Road, Old Saybrook CT
13702535	383660	North Madison Volunteer FD	864 Opening Hill Road, Madison CT
13702538	411180	Good Hill CT	481 GOOD HILL ROAD, Woodbury CT
13693709	411182	Nepaug CT	20 Antolini Road, New Hartford CT
13693131	411183	WATERFORD CT	53 Dayton Rd., Waterford CT
13693135	411184	SALEM CT SQA	399 West Road, Salem CT
13692177	411186	West Granby, CT CT	207 West Granby Road, Granby CT
13692178	411187	Hartford North 2 CT	811 Blue Hills Avenue, Bloomfield CT
13693705	411188	Southbury CT	111 Upper Fishrock Road, Southbury CT
13692179	411256	CANTON CT	14 CANTON SPRINGS ROAD, Canton CT
13681988	411257	Middle Haddam Road-CROWN CT	191 Middle Haddam Rd, Portland CT
13692180	411258	Farmington North 2 CT	199 Town Farm Road, Farmington CT
13692182	411259	CT Collinsville CAC 802816 CT	650 Albany Turnpike, Collinsville CT
13692184	416862	SUFFIELD SW CT CT	106 South Grand St., West Suffield CT
13694578	6260	NORTH STONINGTON CT	118C Wintechog Hill Rd., off of Rt. 2, North Stonington CT
13681397	88013	Killingworth	131 Little City Road, Killingworth CT

Signature:

Print Name: Margaret Robinson
Senior Counsel
American Tower*

AMERICAN TOWER®
CORPORATION

LETTER OF AUTHORIZATION
LICENSEE: DISH WIRELESS L.L.C.

NOTARY BLOCK

Commonwealth of MASSACHUSETTS
County of Middlesex

This instrument was acknowledged before me by Margaret Robinson, Senior Counsel for American Tower*, 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 executed the same.

WITNESS my hand and official seal, this 10th day of September 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

ORIGINAL FACILITY APPROVAL

3 of 2

BUILDING DEPARTMENT
TOWN OF WATERFORD, CONNECTICUT

BUILDING PERMIT

Permit #15308
Date Issued: 11/20/98
Zoning Permit #98-325

Est. Cost	$389,336.00
Permit Fee	$0.00
C of O Fee	$0.00

PERMISION IS HEREBY GRANTED FOR THE FOLLOWING:

Description:
tower foundation and building

Property Address: 53 Dayton Road

Owner: Cohanzie Fire Department
Address: 53 Dayton Road
Waterford, CT 06385
Telephone: 860-444-1910

Leassee:

Contractor: Standard Builders
Address: 52 Holmes Road
Newington, CT 06111-1708
License #: 00900085
Telephone: 860-947-43

NOTE: The recipient of this permit accepts this permit on the condition that he, as owner, or as representing the owner, agrees to comply with all building and zoning ordinances of the Town of Waterford and the State Statues of the State of Connecticut regarding the use, occupancy, and type of building to be constructed and agrees that this building is to be located the proper distances from all other zones and is located in a zone in which the building and its use is allowed.

Building Official

Tower

BUILDING DEPARTMENT
TOWN OF WATERFORD, CONNECTICUT

BUILDING PERMIT

Permit #15309
Date Issued: 11/20/98
Zoning Permit # - 0

Est. Cost	$0.00
Permit Fee	$0.00
C of O Fee	$0.00

PERMISION IS HEREBY GRANTED FOR THE FOLLOWING:

Description:
Radio tower

Property Address: 53 Dayton Road

Owner: Cohanzie Fire Department
Address: 53 Dayton Road
Waterford, CT 06385

Telephone: 860-444-1910

Leassee:

Contractor: Standard Builders
Address: 52 Holmes Road
Newington, CT 06111

License #: 00900085
Telephone: 860-594-7143

NOTE: The recipient of this permit accepts this permit on the condition that he, as owner, or as representing the owner, agrees to comply with all building and zoning ordinances of the Town of Waterford and the State Statues of the State of Connecticut regarding the use, occupancy, and type of building to be constructed and agrees that this building is to be located the proper distances from all other zones and is located in a zone in which the building and its use is allowed.

Building Official

ENGINEERING DRAWINGS

DISH Wireless L.L.C. SITE ID:

BOBOS00025A

DISH Wireless L.L.C. SITE ADDRESS:

53 DAYTON ROAD
WATERFORD, CT 06385

CONNECTICUT CODE COMPLIANCE

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

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

SHEET INDEX

SCOPE OF WORK

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

TOWER SCOPE OF WORK:
- INSTALL (3) PROPOSED PANEL ANTENNAS (1 PER SECTOR)
- INSTALL (3) PROPOSED SECTOR FRAMES (1 PER SECTOR)
- INSTALL PROPOSED JUMPERS
- INSTALL (6) PROPOSED RRHs (2 PER SECTOR)
- INSTALL (1) PROPOSED OVER VOLTAGE PROTECTION DEVICE (OVP)
- INSTALL (1) PROPOSED HYBRID CABLE
- INSTALL (3) BACK TO BACK RRH MOUNTS (1 PER SECTOR)

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

SITE PHOTO

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

CALL 2 WORKING DAYS UTILITY NOTIFICATION PRIOR TO CONSTRUCTION

GENERAL NOTES

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

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

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

SITE INFORMATION

PROPERTY OWNER:	COHANZIE VOLUNTEER FIRE SERVICE BENEFIT
ADDRESS:	53 DAYTON RD WATERFORD, CT 06385
TOWER TYPE:	SELF SUPPORT TOWER
TOWER CO SITE ID:	411183
TOWER APP NUMBER:	13693131
COUNTY:	NEW LONDON
LATITUDE (NAD 83):	41° 22' 40.1916" N 41.377831 N
LONGITUDE (NAD 83):	72° 8' 21.6852" W 72.139357 W
ZONING JURISDICTION:	CONNECTICUT SITING COUNCIL
ZONING DISTRICT:	R-40
PARCEL NUMBER:	152-0158300
OCCUPANCY GROUP:	U
CONSTRUCTION TYPE:	V-B
POWER COMPANY:	NORTHEAST
TELEPHONE COMPANY:	TBD

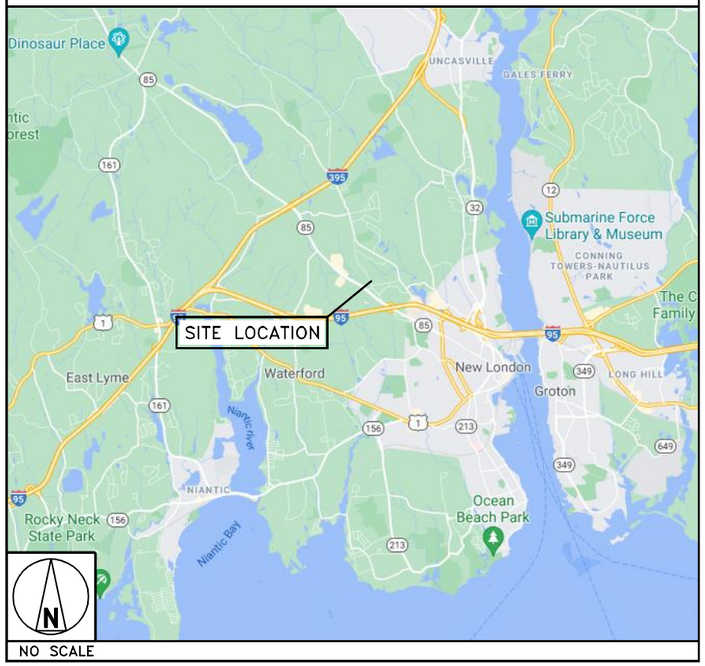
PROJECT DIRECTORY

APPLICANT:	DISH WIRELESS, LLC. 5701 SOUTH SANTA FE DRIVE LITTLETON, CO 80120 (303) 706-4357
TOWER OWNER:	AMERICAN TOWER CORPORATION 10 PRESIDENTIAL WAY WOBURN, MA 01801
ENGINEER:	NB+C ENGINEERING SERVICES, LLC. 8601 SIX FORKS RD, SUITE 540 RALEIGH, NC 27615
SITE ACQUISITION:	JEAN COTTRELL JEAN.COTTRELL@DISH.COM
CONSTRUCTION MANAGER:	JAVIER SOTO JAVIER.SOTO@DISH.COM
RF ENGINEER:	ARVIN SEBASTIAN ARVIN.SEBASTIAN@DISH.COM

DIRECTIONS

TAKE I-91 S TOWARDS NEW HAVEN. STAY IN LEFT LANE, GET ON I-95 N TO EXIT 76 (LEFT HAND EXIT I-395 N). I-395 N TO EXIT 77 (RTE 85). TAKE RIGHT AT END OF THE RAMP (RTE 85 S). TAKE LEFT AT TRAFFIC LIGHT (DAYTON). FOLLOW TO FIRE HOUSE (COHANZIE FIRE CO. #5). GO IN PARKING LOT OF FIREHOUSE AND IN THE BACK LEFT THERE IS A CHAIN COMBO 4667. GO IN GATE TO TOWER COMBO 4667 AND UP STAIRS. WE ARE IN THE FIRST DOOR WITH THE CODE PAD 4667. THEN THE ROOM ON LEFT (CT KEY) GENERATOR COMPOUND COMBO IS 9687

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:
KER	BIW	BIW

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	08/16/2021	ISSUED FOR REVIEW
0	10/20/2021	ISSUED FOR CONSTRUCTION

STATE OF CONNECTICUT · PEN.0028997 · LICENSED PROFESSIONAL ENGINEER

10/20/21

A&E PROJECT NUMBER
411183-13693131

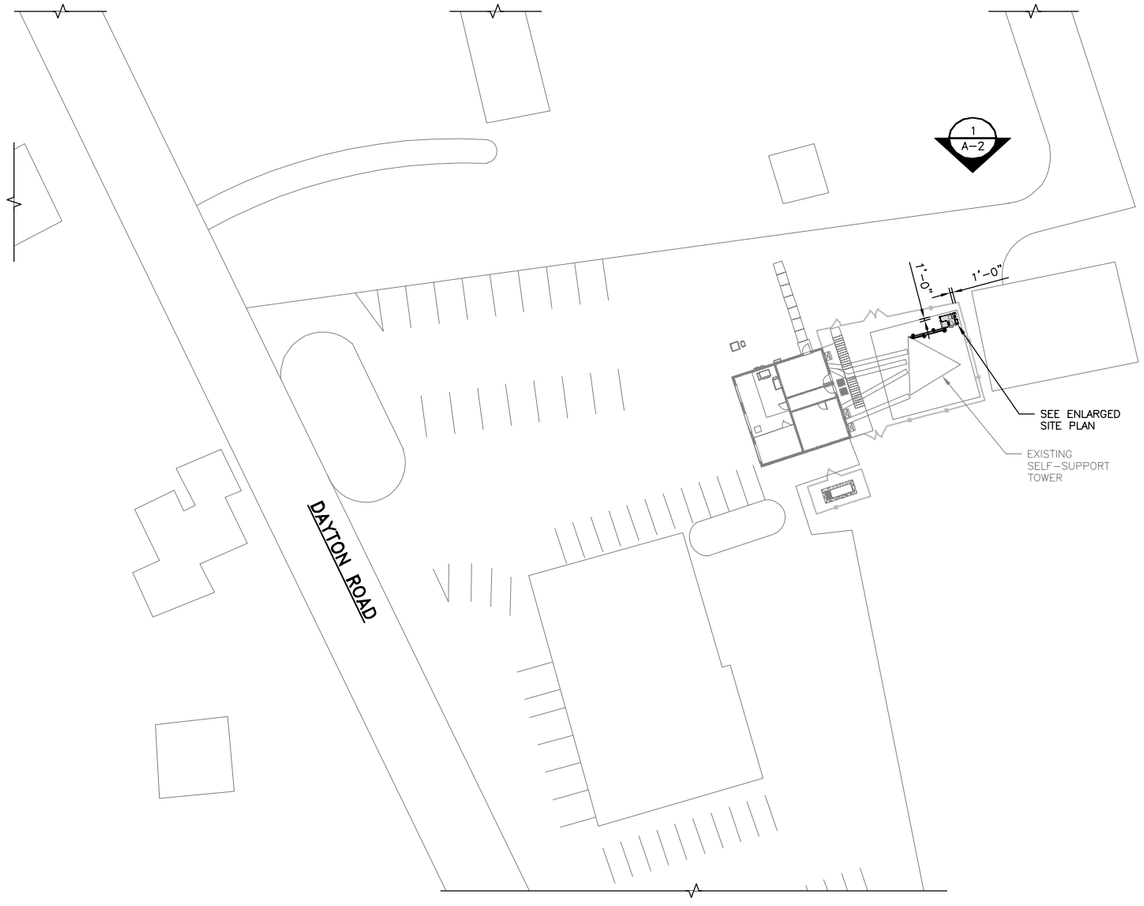
DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBOS00025A
53 DAYTON ROAD
WATERFORD, CT 06385

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1

NOTES

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



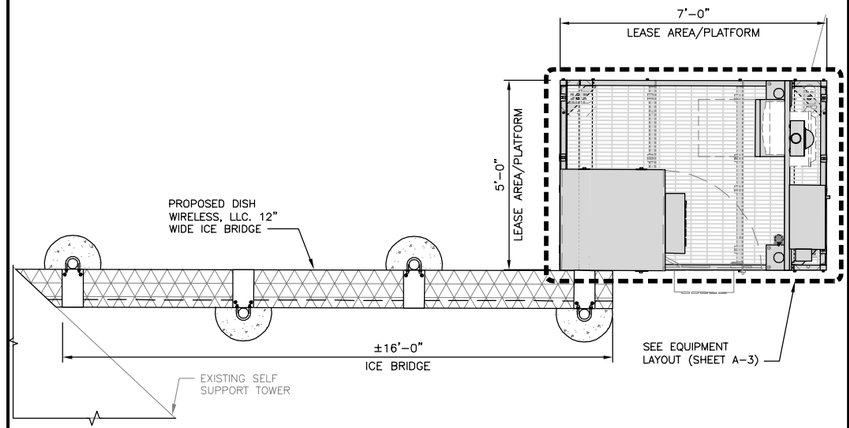
OVERALL SITE PLAN

32' 24'16' 8' 0 32' 64'
1/32"=1'-0"

1

NOTES

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



ENLARGED SITE PLAN

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

2

NOTES

1. AN EXISTING SURVEY WAS NOT AVAILABLE AT THE TIME OF DRAWING CREATION.

AERIAL VIEW

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:
KER	BIW	BIW

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

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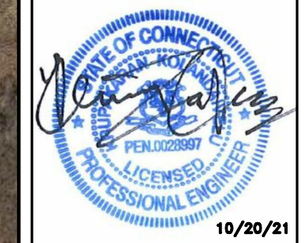


10/20/21

A&E PROJECT NUMBER

411183-13693131

DISH WIRELESS, LLC.
PROJECT INFORMATION

BOBOS00025A
53 DAYTON ROAD
WATERFORD, CT 06385

SHEET TITLE

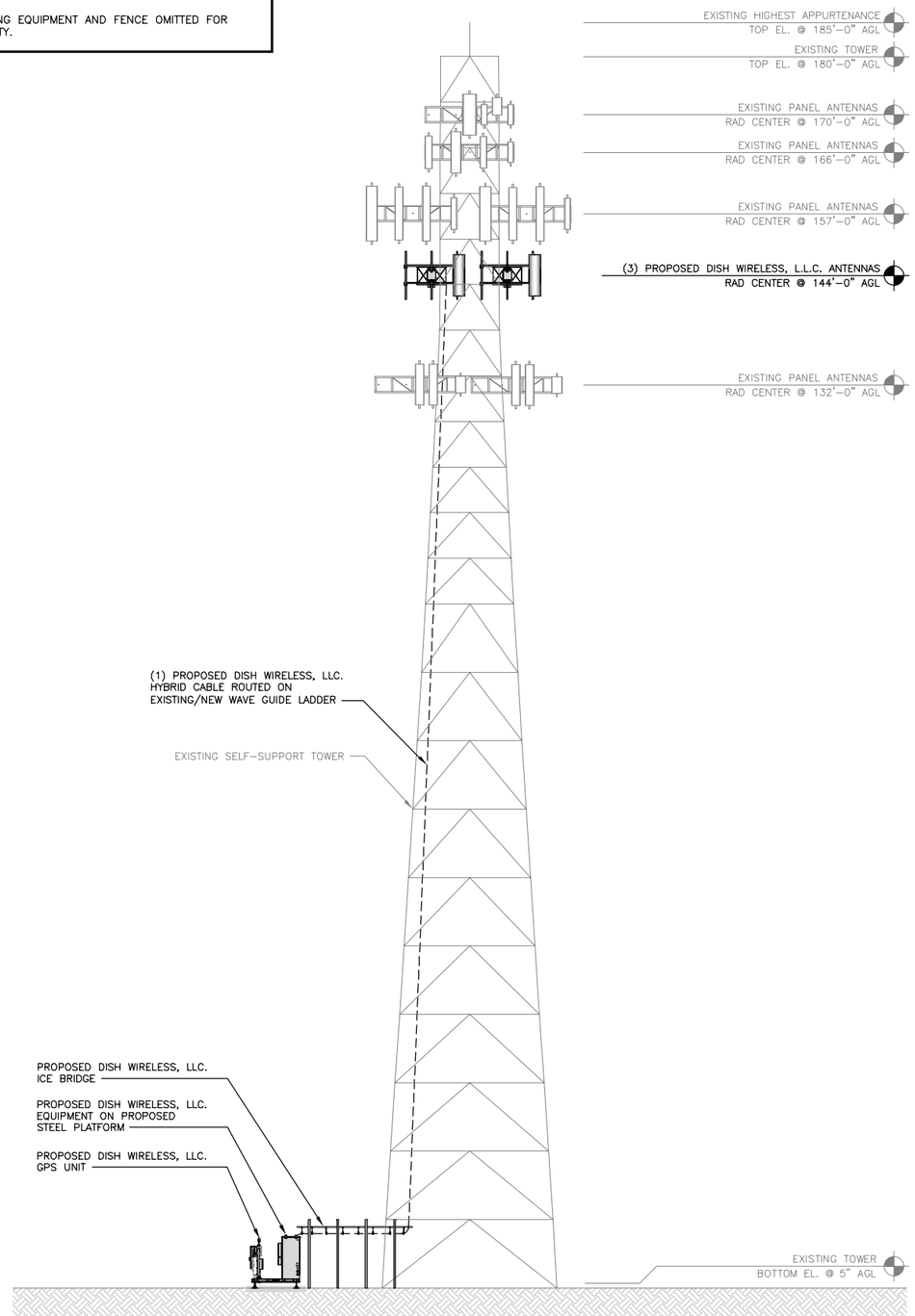
OVERALL AND ENLARGED SITE PLAN

SHEET NUMBER

A-1

NOTES

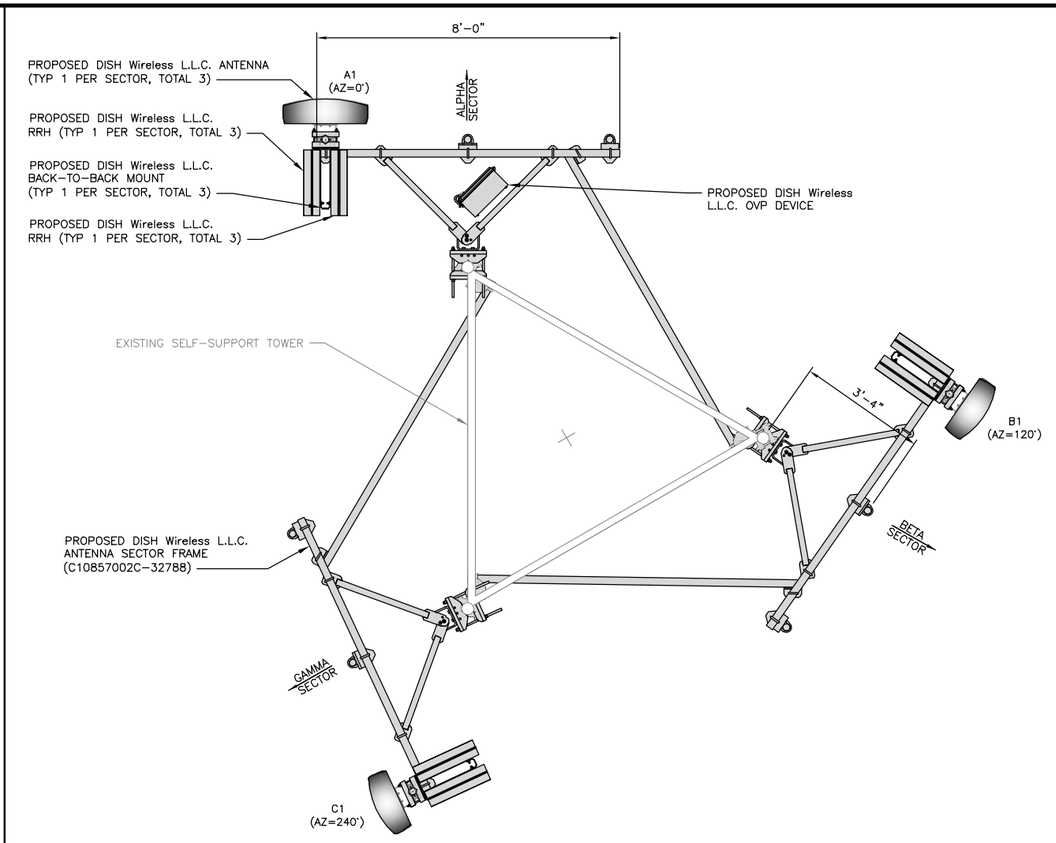
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNA AND MW DISH SPECIFICATIONS REFER TO ANTENNA SCHEDULE AND TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS
3. EXISTING EQUIPMENT AND FENCE OMITTED FOR CLARITY.



PROPOSED NORTH ELEVATION

16' 12' 8' 4' 0 16' 32'
1/16"=1'-0"

1



ANTENNA LAYOUT

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

2

SECTOR	POSITION	ANTENNA						TRANSMISSION CABLE
		EXISTING OR PROPOSED	MANUFACTURER – MODEL NUMBER	TECHNOLOGY	SIZE (WxD)	AZIMUTH	RAD CENTER	FEED LINE TYPE AND LENGTH
ALPHA	A1	PROPOSED	JMA – MX08FR0665-21	5G	72.0" x 20.0"	0°	144'-0"	(1) HIGH-CAPACITY HYBRID CABLE (184' LONG)
BETA	B1	PROPOSED	JMA – MX08FR0665-21	5G	72.0" X 20.0"	120°	144'-0"	
GAMMA	C1	PROPOSED	JMA – MX08FR0665-21	5G	72.0" X 20.0"	240°	144'-0"	

SECTOR	POSITION	RRH	
		MANUFACTURER – MODEL NUMBER	TECHNOLOGY
ALPHA	A1	FUJITSU – TA08025-B604	N29,N71
	A1	FUJITSU – TA08025-B605	N66,N70
BETA	B1	FUJITSU – TA08025-B604	N29,N71
	B1	FUJITSU – TA08025-B605	N66,N70
GAMMA	C1	FUJITSU – TA08025-B604	N29,N71
	C1	FUJITSU – TA08025-B605	N66,N70

NOTES

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

ANTENNA SCHEDULE

NO SCALE

3

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
KER	BIW	BIW

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
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STATE OF CONNECTICUT · KEVIN KOTNIK · PEN.0028997 · LICENSED PROFESSIONAL ENGINEER

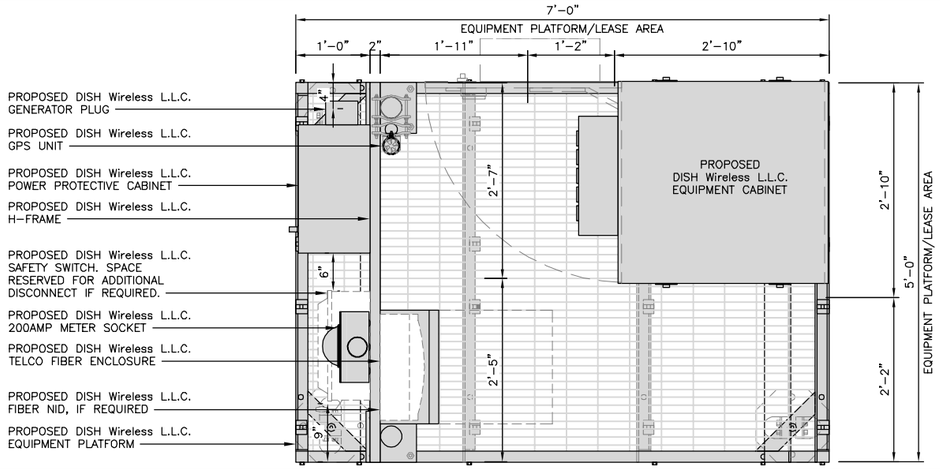
10/20/21

A&E PROJECT NUMBER
411183-13693131

DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBOS00025A
53 DAYTON ROAD
WATERFORD, CT 06385

SHEET TITLE
ELEVATION, ANTENNA LAYOUT AND SCHEDULE

SHEET NUMBER
A-2



PLATFORM EQUIPMENT PLAN

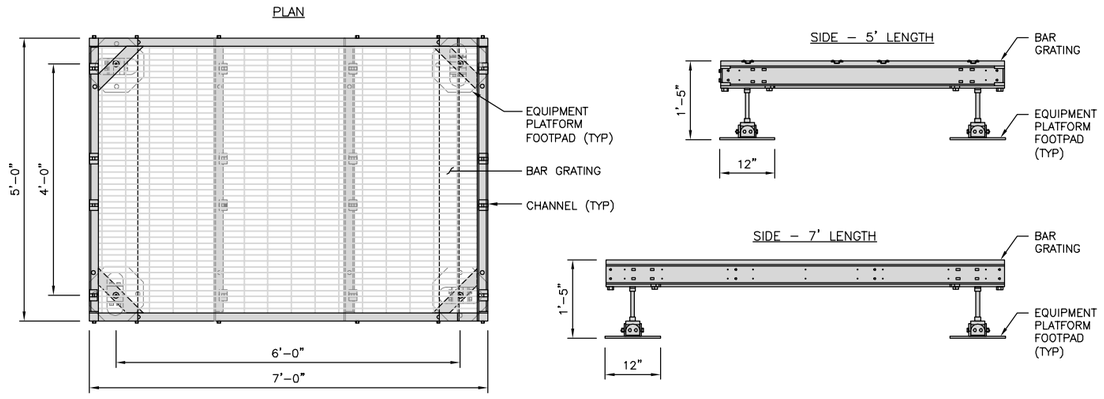
12" 9" 6" 3" 0 1' 2"
1"=1'-0"

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"

NOTE:
PLATFORM MUST BE LEVEL WITHIN 1 DEGREE



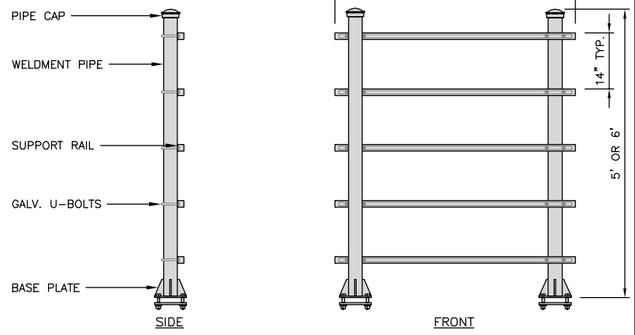
PLATFORM DETAIL

NO SCALE

2

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

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



H-FRAME DETAIL

NO SCALE

3

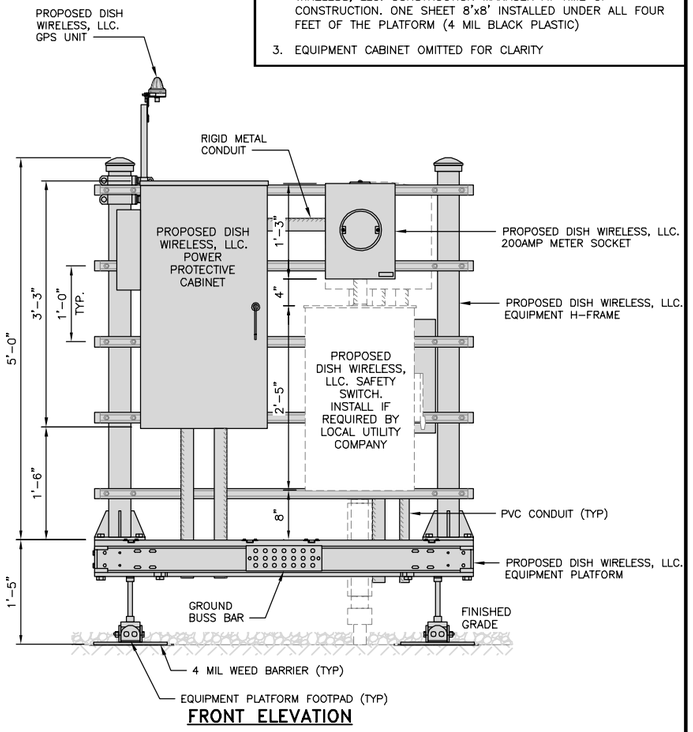
NOT USED

NO SCALE

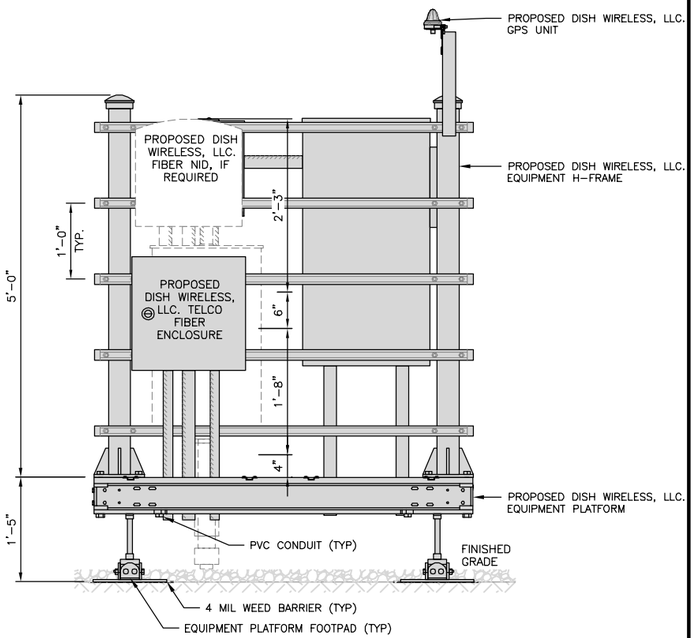
4

NOTES

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



FRONT ELEVATION



BACK ELEVATION

H-FRAME EQUIPMENT ELEVATION

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

5

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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:
KER	BIW	BIW

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
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0	10/20/2021	ISSUED FOR CONSTRUCTION

STATE OF CONNECTICUT
BRIAN KOTNIK
PEN.0028997
LICENSED PROFESSIONAL ENGINEER
10/20/21

A&E PROJECT NUMBER
411183-13693131

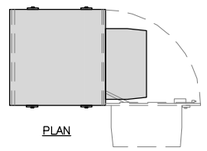
DISH WIRELESS, LLC. PROJECT INFORMATION
BOBOS00025A
53 DAYTON ROAD
WATERFORD, CT 06385

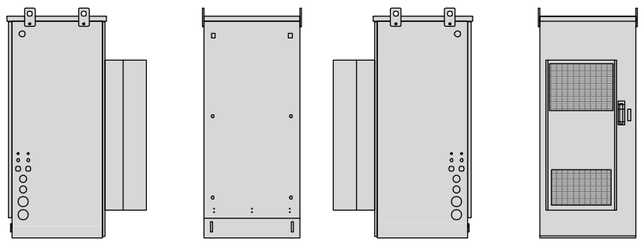
SHEET TITLE
EQUIPMENT PLATFORM AND H-FRAME DETAILS

SHEET NUMBER
A-3

CHARLES INDUSTRY HEX CUBE–PM639155N4

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

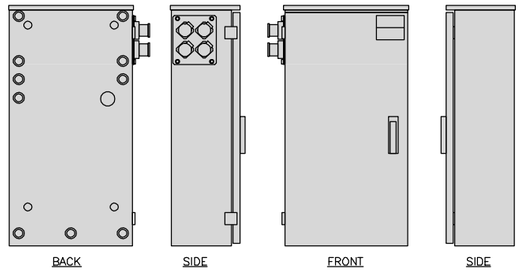




CABINET DETAIL | NO SCALE | 1

RAYCAP PPC RDIAC–2465–P–240–MTS

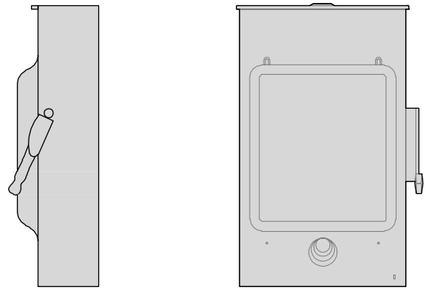
ENCLOSURE DIMENSIONS (HxWxD):	39"x22.855"x12.593
WEIGHT:	80 lbs
OPERATING AC VOLTAGE	240/120 1 PHASE 3W+G



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

SQUARE D SAFETY SWITCHES D224NRB

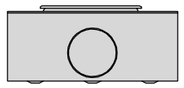
ENCLOSURE DIM (HxWxD)	29.25"x19.00"x8.50"
ENCLOSURE TYPE	NEMA 3R RAINPROOF
UL LISTED	FILE E–2875

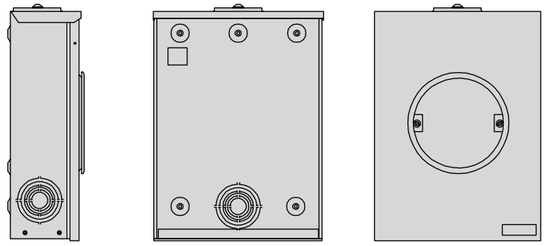


SAFETY SWITCH DETAIL | NO SCALE | 3

EATON METER SOCKET UNRRS213BEUSE

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

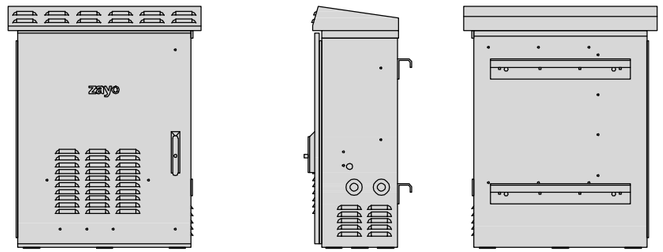




METER SOCKET DETAIL | NO SCALE | 4

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

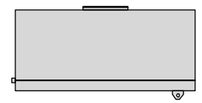
DIMENSIONS (HxWxD)	36.115"x29"x12.9"
WEIGHT	85 LBS
POWER INPUT	20A, –48VDC

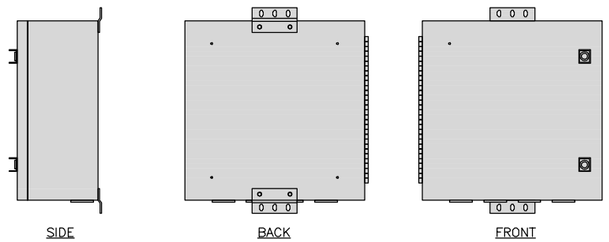


NETWORK INTERFACE UNIT DETAIL | NO SCALE | 5

CHARLES CFIT–PF2020DSH1 FIBER TELCO ENCLOSURE

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



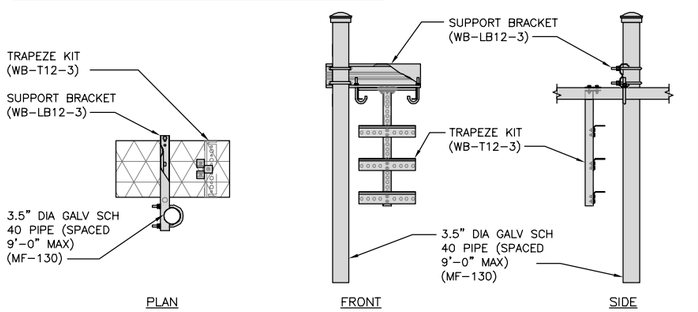


FIBER TELCO ENCLOSURE DETAIL | NO SCALE | 6

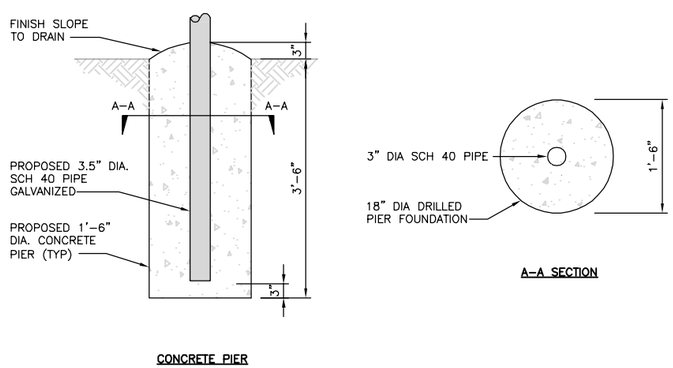
COMMSCOPE WB–K110–B WAVEGUIDE BRIDGE KIT

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

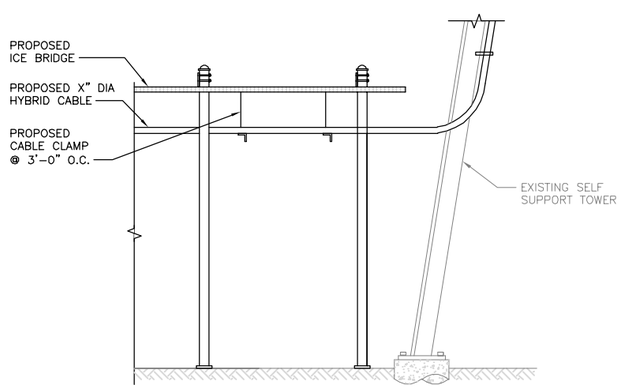
INCLUDED PRODUCTS:
- WB–T12–3 TRAPEZE KIT, 3 RUNGS
- WB–LB12–3 SUPPORT BRACKET
- MF–130 DIRECT BURIAL PIPE COLUMN, 13'–4"



ICE BRIDGE DETAIL | NO SCALE | 7



TYPICAL ICE BRIDGE CONCRETE PIER DETAIL | NO SCALE | 8



HYBRID CABLE RUN | NO SCALE | 9

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LITTLETON, CO 80120

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(919) 657-9131

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KER	BIW	BIW

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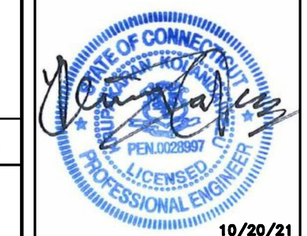


10/20/21

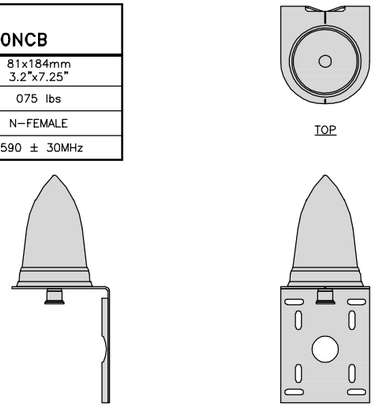
A&E PROJECT NUMBER
411183–13693131

DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBOS00025A
53 DAYTON ROAD
WATERFORD, CT 06385

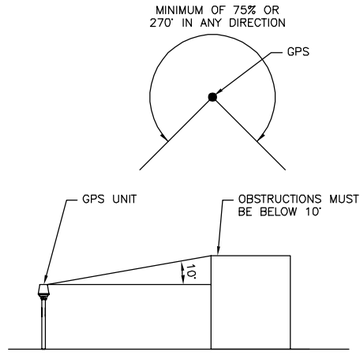
SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-4

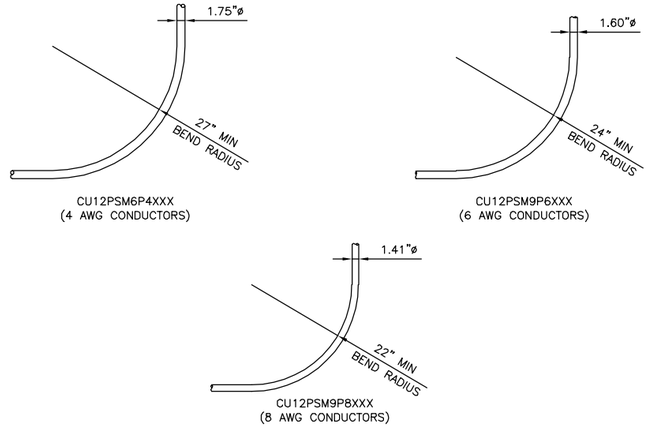
PCTEL GPSGL-TMG-SPI-40NCB	
DIMENSIONS (DIAxH) MM/INCH	81x184mm 3.2"x7.25"
WEIGHT W/ACCESSORIES	075 lbs
CONNECTOR	N-FEMALE
FREQUENCY RANGE	1590 ± 30MHz



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

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:
KER	BIW	BIW

RFDS REV #: 1

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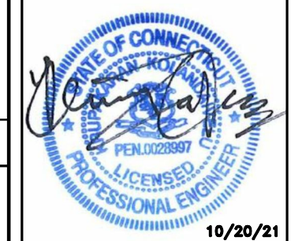


10/20/21

A&E PROJECT NUMBER
411183-13693131

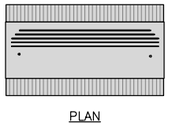
DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBOS00025A
53 DAYTON ROAD
WATERFORD, CT 06385

SHEET TITLE
EQUIPMENT DETAILS

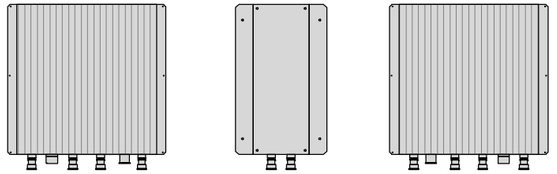
SHEET NUMBER
A-5

FUJITSU TRIPLE BAND TA08025-B605

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



PLAN

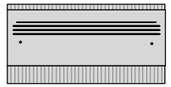


BACK SIDE FRONT

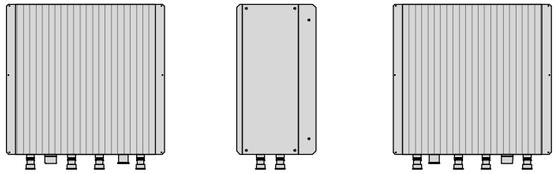
RRH DETAIL | NO SCALE | 1

FUJITSU DUAL BAND TA08025-B604

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



PLAN

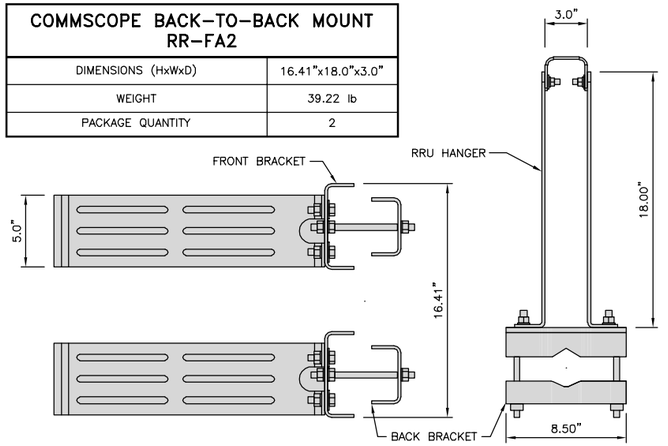


BACK SIDE FRONT

RRH DETAIL | NO SCALE | 2

COMMSCOPE BACK-TO-BACK MOUNT RR-FA2

DIMENSIONS (HxWxD)	16.41"x18.0"x3.0"
WEIGHT	39.22 lb
PACKAGE QUANTITY	2

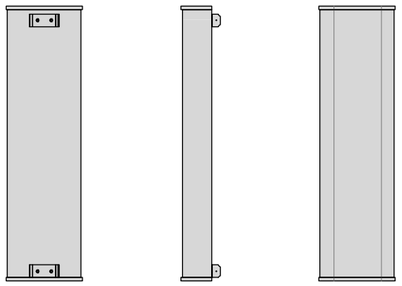


REMOTE RADIO MOUNT DETAIL | NO SCALE | 3

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



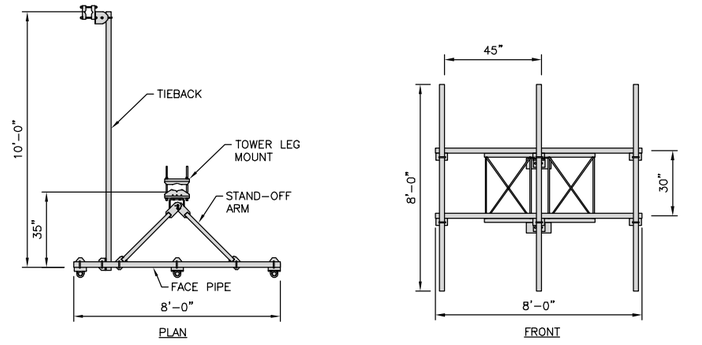
BACK SIDE FRONT

ANTENNA DETAIL | NO SCALE | 4

COMMSCOPE V-FRAME MTC3975083

FACE SIZE	8'-0"
WEIGHT	352.136 lbs

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

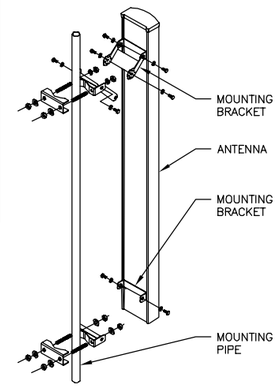


ANTENNA FRAME DETAIL | NO SCALE | 5

M04 MOUNTING BRACKET HPA-33R-BUU-H4-K

WIDTH	5"
DEPTH	2"
HEIGHT	8"
TOTAL WEIGHT	1.5 lbs
HOUSING MATERIAL	ASA/ABS/ALUMINUM
RADOME COLOR	LIGHT GRAY
CONNECTOR	1x8-PIN DAISY CHAIN

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

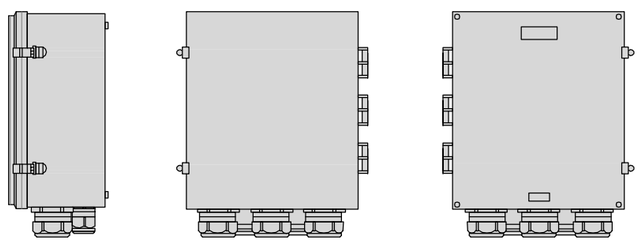


ANTENNA MOUNTING DETAIL | NO SCALE | 6

RAYCAP RDIDC-9181-PF-48 DC SURGE PROTECTION (OVP)

DIMENSIONS (HxWxD)	18.98"x14.39"x8.15"
WEIGHT	21.82 LBS

PLAN

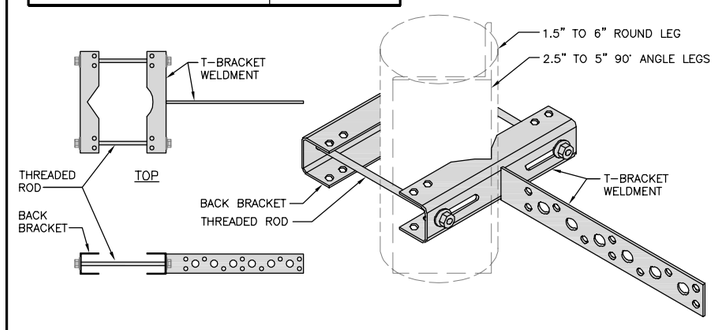


SIDE BACK FRONT

SURGE SUPPRESSION DETAIL (OVP) | NO SCALE | 7

SITEPRO1 T600 UNIVERSAL T-BRACKET

DIMENSIONS (HxWxL)	2.25"x10.0"x15.25"
WEIGHT/ VOLUME	5.60 LBS



SIDE ISOMETRIC

VERTICAL CABLE SUPPORT DETAIL | NO SCALE | 8

NOT USED | NO SCALE | 9

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5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

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STATE OF CONNECTICUT · JASON KOTTENSTETTE · PEN.0028997 · LICENSED PROFESSIONAL ENGINEER

10/20/21

A&E PROJECT NUMBER
411183-13693131

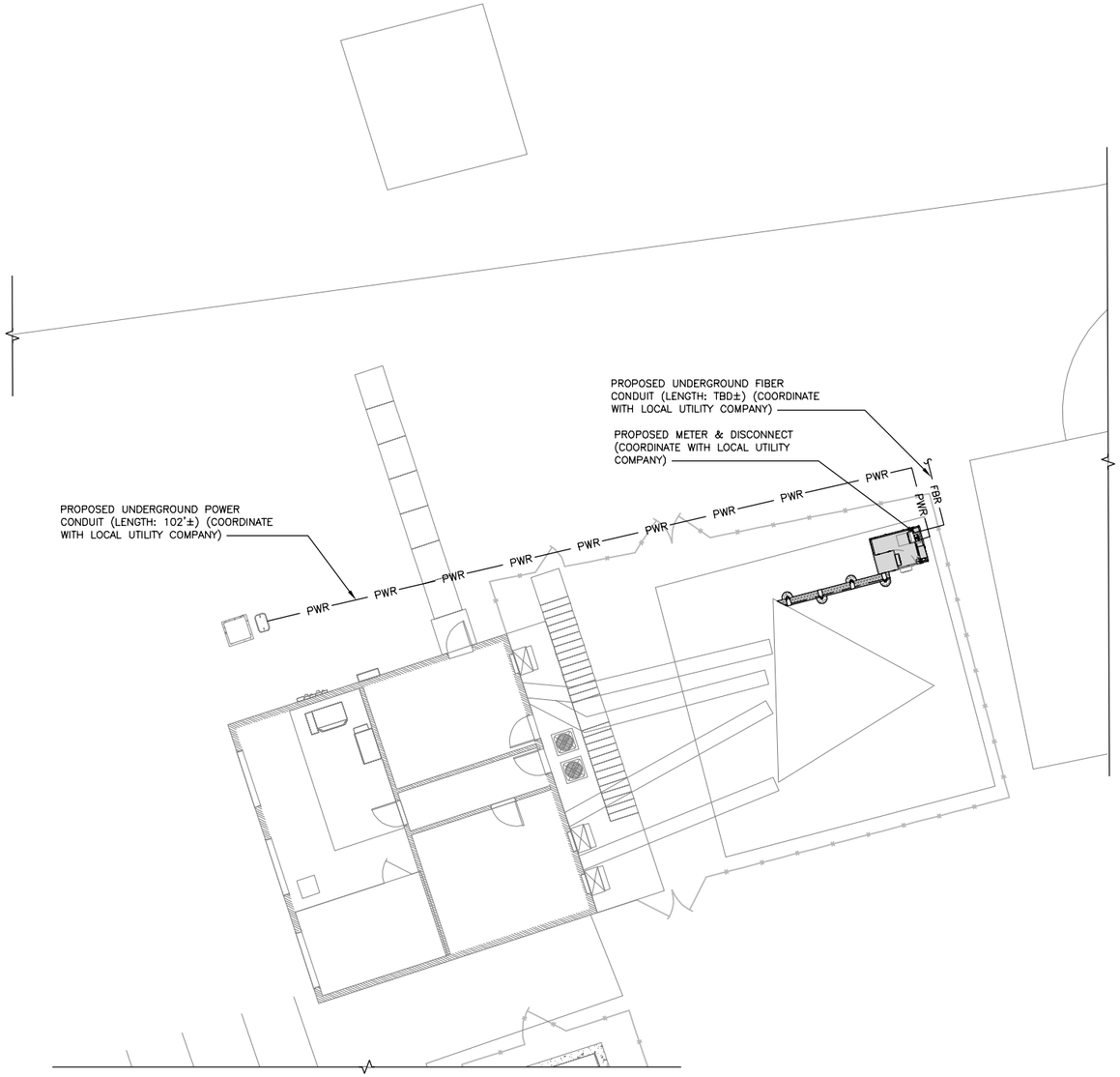
DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBOS00025A
53 DAYTON ROAD
WATERFORD, CT 06385

SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-6

NOTES

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



UTILITY ROUTE PLAN

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

AERIAL VIEW

NO SCALE

3

NOTES

1. AN EXISTING SURVEY WAS NOT AVAILABLE AT THE TIME OF DRAWING CREATION.

dish wireless.

5701 SOUTH SANTA FE DRIVE
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NB+C ENGINEERING SERVICES, LLC.
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DRAWN BY:	CHECKED BY:	APPROVED BY:
KER	BIW	BIW

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

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STATE OF CONNECTICUT
JORDAN KOTTMANN
PEN.0028997
LICENSED
PROFESSIONAL ENGINEER

10/20/21

A&E PROJECT NUMBER

411183−13693131

DISH WIRELESS, LLC.
PROJECT INFORMATION

BOBOS00025A
53 DAYTON ROAD
WATERFORD, CT 06385

SHEET TITLE

ELECTRICAL/FIBER ROUTE PLAN AND NOTES

SHEET NUMBER

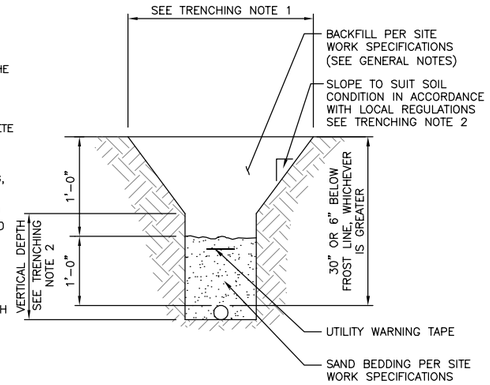
E-1

NOT USED

NO SCALE | 1

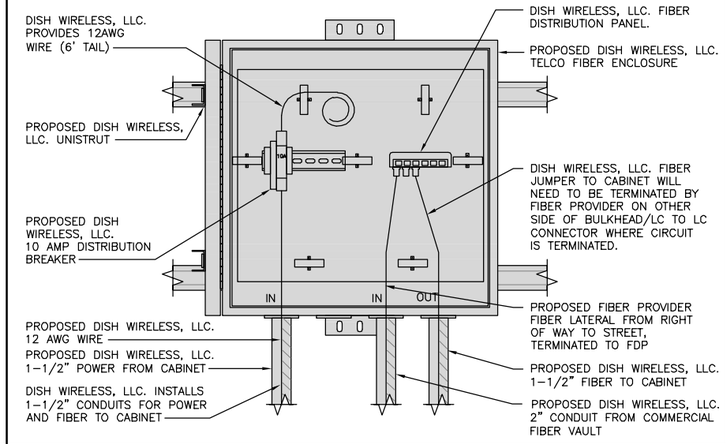
TRENCHING NOTES

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



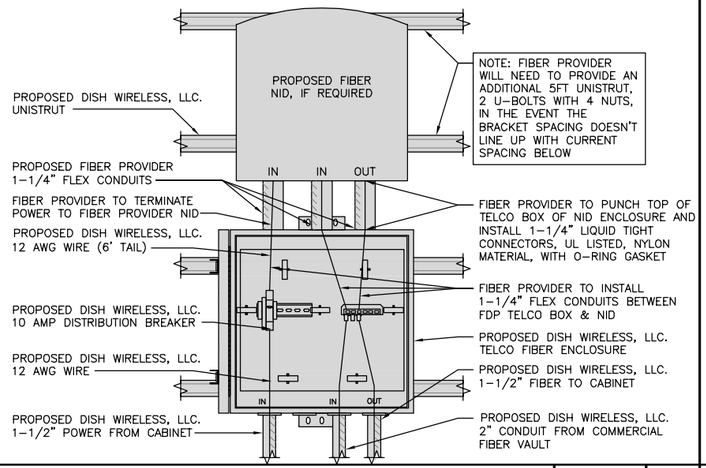
TYPICAL UNDERGROUND TRENCH DETAIL

NO SCALE | 2



DARK TELCO BOX – INTERIOR WIRING LAYOUT

NO SCALE | 3



LIT TELCO BOX – INTERIOR WIRING LAYOUT (OPTIONAL)

NO SCALE | 4

NOT USED

NO SCALE | 5

NOT USED

NO SCALE | 6

NOT USED

NO SCALE | 7

NOT USED

NO SCALE | 8

NOT USED

NO SCALE | 9

dish wireless.

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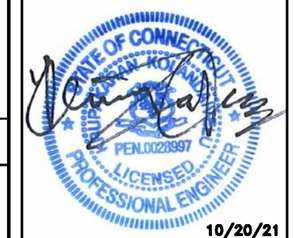


10/20/21

A&E PROJECT NUMBER

411183-13693131

DISH WIRELESS, LLC.
PROJECT INFORMATION

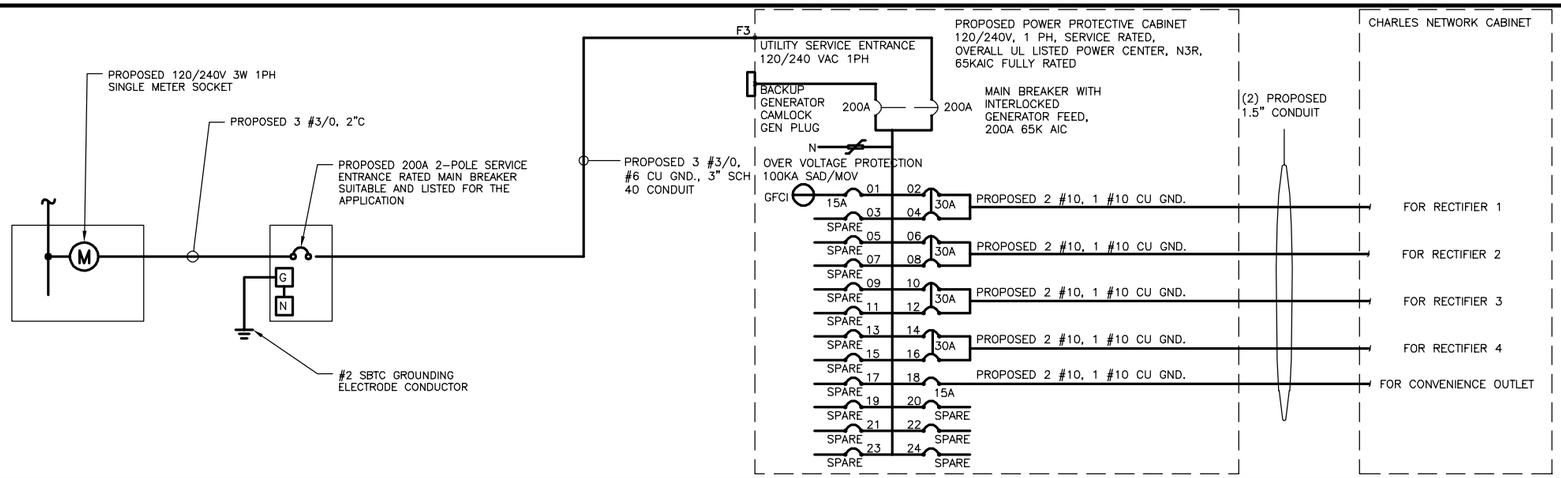
BOBOS00025A
53 DAYTON ROAD
WATERFORD, CT 06385

SHEET TITLE

ELECTRICAL DETAILS

SHEET NUMBER

E-2



(CHARLES ABB GE INFINITY) WITH STAND ALONE METER 120V240V 1PH SOURCE — NO SCALE

PROPOSED 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
GFCI IN PPC CAB.	1440A		15A	1	A	2	30A	2880		ABB/GE INFINITY RECTIFIER 1
-SPARE-				3	B	4			2880	
-SPARE-				5	A	6	30A	2880		ABB/GE INFINITY RECTIFIER 2
-SPARE-				7	B	8			2880	
-SPARE-				9	A	10	30A	2880		ABB/GE INFINITY RECTIFIER 3
-SPARE-				11	B	12			2880	
-SPARE-				13	A	14	30A	2880		ABB/GE INFINITY RECTIFIER 4
-SPARE-				15	B	16			2880	
-SPARE-				17	A	18	15A	1920		CHARLES GFCI OUTLET
-SPARE-				19	B	20				-SPARE-
-SPARE-				21	A	22				-SPARE-
-SPARE-				23	B	24				-SPARE-
VOLT AMPS	1440							12960A	11520	

	L1	L2	
200A MCB, 1ϕ, 3W, 120/240V			
MB RATING: 65,000 AIC	14400	11520	VOLT AMPS
	120	96	AMPS
	120		MAX AMPS
	150		MAX 125%

PANEL SCHEDULE
(CHARLES ABB GE INFINITY) WITH STAND ALONE METER 120V240V 1PH SOURCE — NO SCALE — 2

NOT USED — NO SCALE — 3

NOT USED — NO SCALE — 4

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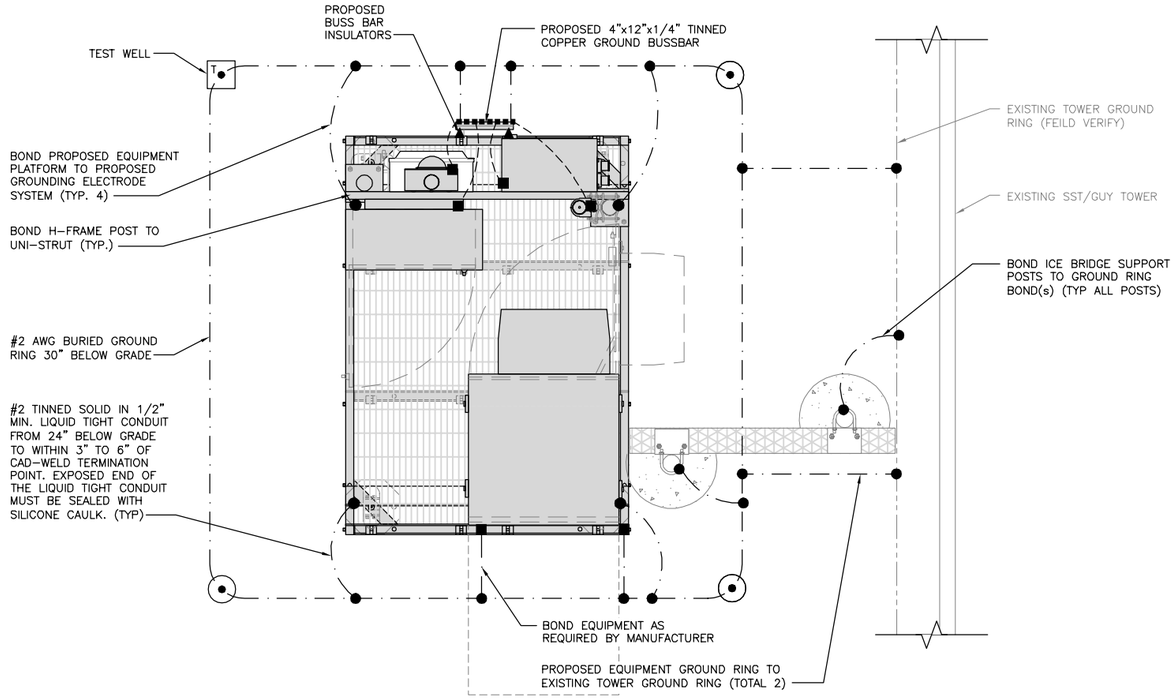
A&E PROJECT NUMBER
411183-13693131

DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBOS00025A
53 DAYTON ROAD
WATERFORD, CT 06385

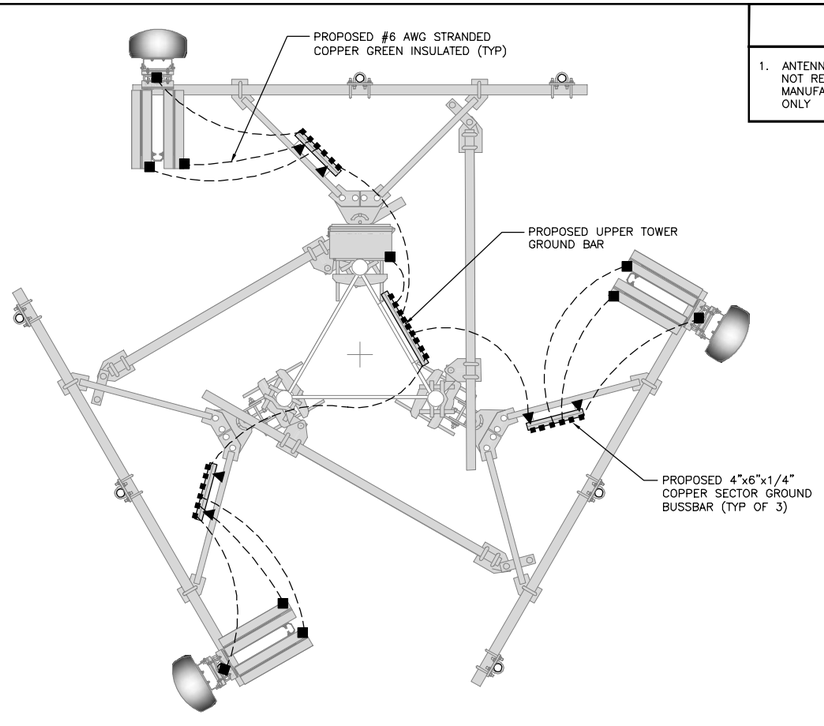
SHEET TITLE
ELECTRICAL ONE-LINE, FAULT CALCS & PANEL SCHEDULE

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
- #6 AWG STRANDED & INSULATED
- #2 AWG SOLID COPPER TINNED
- BUSS BAR INSULATOR

GROUNDING LEGEND

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

GROUNDING KEY NOTES

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

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

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

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

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

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

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

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

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

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

(K) INTERIOR UNIT BONDS: METAL FRAMES, CABINETS AND INDIVIDUAL METALLIC UNITS LOCATED WITH THE AREA OF THE INTERIOR GROUND RING REQUIRE A #6 AWG STRANDED GREEN INSULATED COPPER BOND TO THE INTERIOR GROUND RING.

(L) FENCE AND GATE GROUNDING: METAL FENCES WITHIN 7 FEET OF THE EXTERIOR GROUND RING OR OBJECTS BONDED TO THE EXTERIOR GROUND RING SHALL BE BONDED TO THE GROUND RING WITH A #2 AWG SOLID TINNED COPPER CONDUCTOR AT AN INTERVAL NOT EXCEEDING 25 FEET. BONDS SHALL BE MADE AT EACH GATE POST AND ACROSS GATE OPENINGS.

(M) EXTERIOR UNIT BONDS: METALLIC OBJECTS, EXTERNAL TO OR MOUNTED TO THE BUILDING, SHALL BE BONDED TO THE EXTERIOR GROUND RING. USING #2 TINNED SOLID COPPER WIRE

(N) ICE BRIDGE SUPPORTS: EACH ICE BRIDGE LEG SHALL BE BONDED TO THE GROUND RING WITH #2 AWG BARE TINNED COPPER CONDUCTOR. PROVIDE EXOTHERMIC WELDS AT BOTH THE ICE BRIDGE LEG AND BURIED GROUND RING.

(O) DURING ALL DC POWER SYSTEM CHANGES INCLUDING DC SYSTEM CHANGE OUTS, RECTIFIER REPLACEMENTS OR ADDITIONS, BREAKER DISTRIBUTION CHANGES, BATTERY ADDITIONS, BATTERY REPLACEMENTS AND INSTALLATIONS OR CHANGES TO DC CONVERTER SYSTEMS IT SHALL BE REQUIRED THAT SERVICE CONTRACTORS VERIFY ALL DC POWER SYSTEMS ARE EQUIPPED WITH A MASTER DC SYSTEM RETURN GROUND CONDUCTOR FROM THE DC POWER SYSTEM COMMON RETURN BUS DIRECTLY CONNECTED TO THE CELL SITE REFERENCE GROUND BAR

(P) TOWER TOP COLLECTOR BUSS BAR IS TO BE MECHANICALLY BONDED TO PROPOSED ANTENNA MOUNT COLLAR.

REFER TO DISH WIRELESS, LLC. GROUNDING NOTES.

GROUNDING KEY NOTES

NO SCALE | 3

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(919) 657-9131

DRAWN BY:	CHECKED BY:	APPROVED BY:
KER	BIW	BIW

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
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STATE OF CONNECTICUT · KURT BRIAN KOTAN · PEN.0028997 · LICENSED PROFESSIONAL ENGINEER

10/20/21

A&E PROJECT NUMBER
411183-13693131

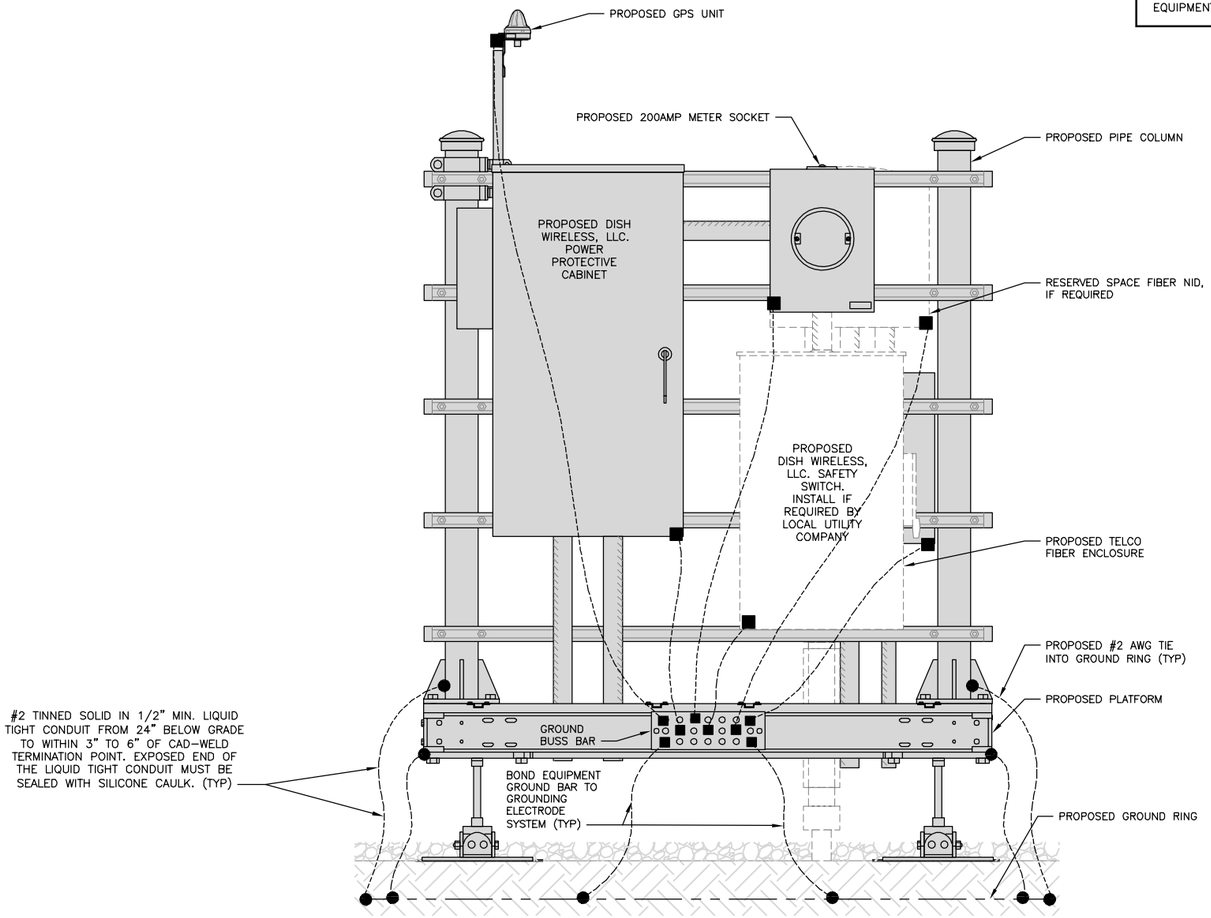
DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBOS00025A
53 DAYTON ROAD
WATERFORD, CT 06385

SHEET TITLE
GROUNDING PLANS AND NOTES

SHEET NUMBER
G-1

NOTES

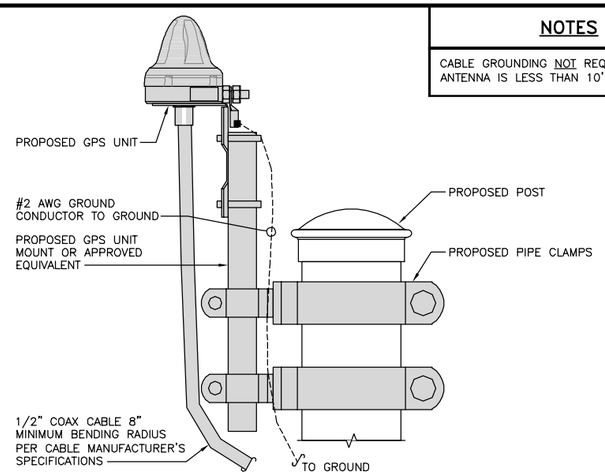
EQUIPMENT CABINET OMITTED FOR CLARITY



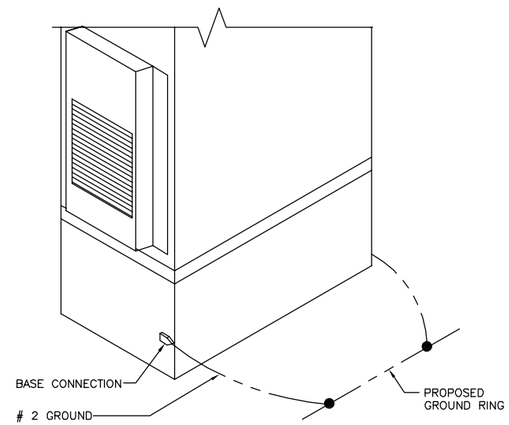
H-FRAME GROUNDING DETAIL | NO SCALE | 1

NOTES

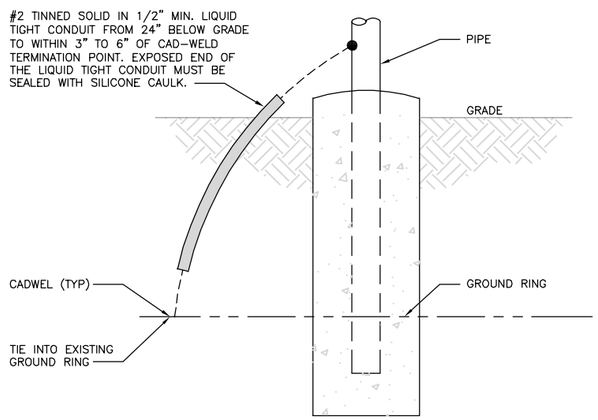
CABLE GROUNDING NOT REQUIRED WHEN ANTENNA IS LESS THAN 10' FROM CABINET



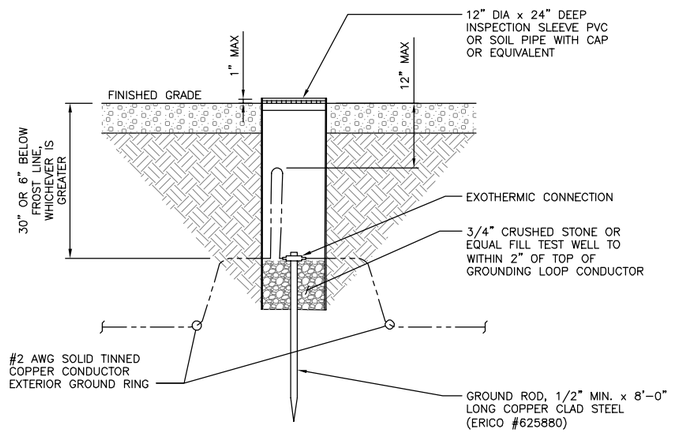
TYPICAL GPS UNIT GROUNDING | NO SCALE | 2



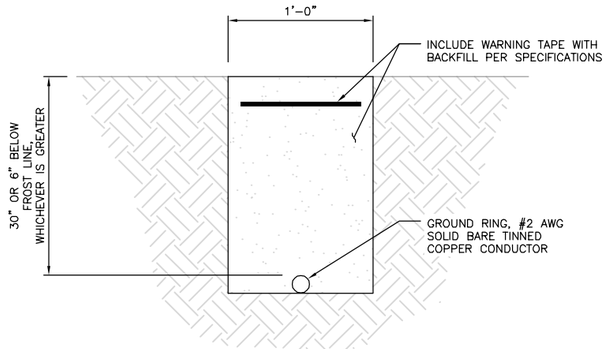
OUTDOOR CABINET GROUNDING | NO SCALE | 3



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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STATE OF CONNECTICUT · BRIAN KOTANCHIK · PEN.0028997 · LICENSED PROFESSIONAL ENGINEER

10/20/21

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411183-13693131

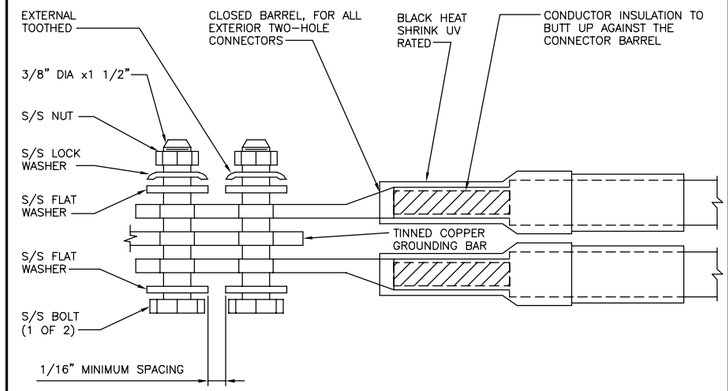
DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBOS00025A
53 DAYTON ROAD
WATERFORD, CT 06385

SHEET TITLE
GROUNDING DETAILS

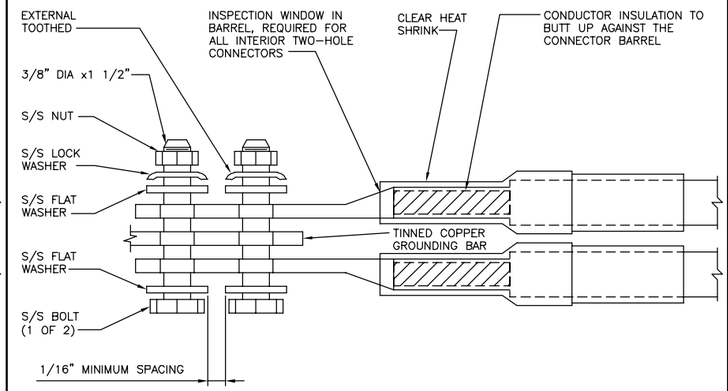
SHEET NUMBER
G-2

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).

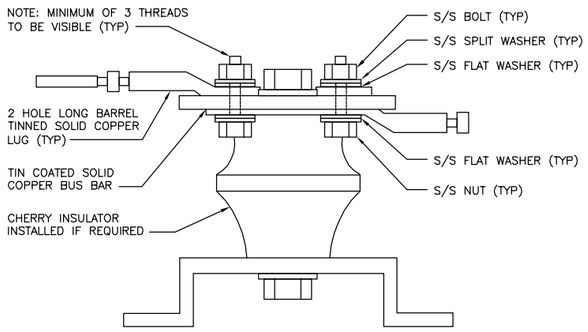
TYPICAL GROUNDING NOTES | NO SCALE | 1



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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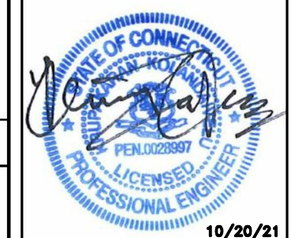

10/20/21

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411183-13693131

DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBOS00025A
53 DAYTON ROAD
WATERFORD, CT 06385

SHEET TITLE
GROUNDING DETAILS

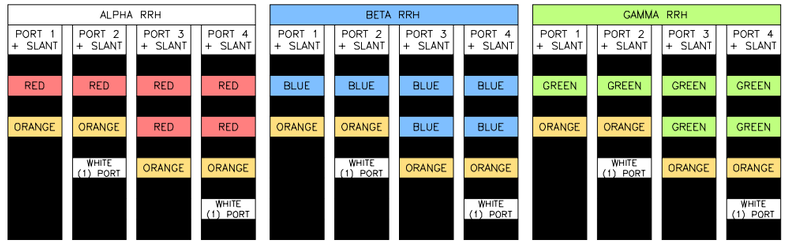
SHEET NUMBER
G-3

RF JUMPER COLOR CODING

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

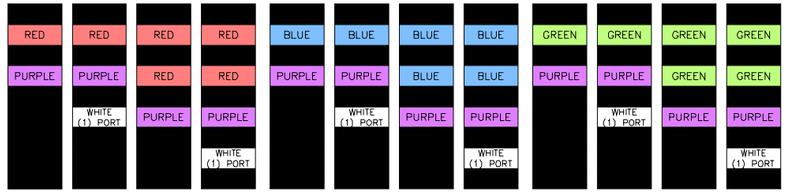
LOW-BAND RRH –
(600MHz N71 BASEBAND) +
(850MHz N26 BAND) +
(700MHz N29 BAND) – OPTIONAL PER MARKET

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



MID-BAND RRH –
(AWS BANDS N66+N70)

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

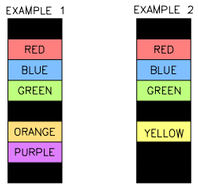


HYBRID/DISCREET CABLES

INCLUDE SECTOR BANDS BEING SUPPORTED AM
LONG WITH FREQUENCY BANDS

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

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

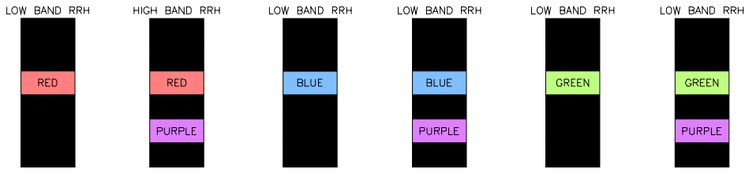


HYBRID/DISCREET CABLES

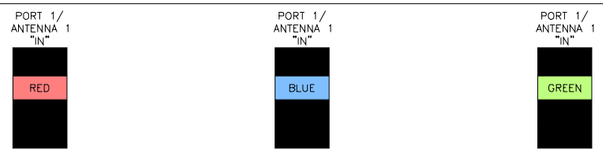
LOW-BAND RRH FIBER CABLES HAVE SECTOR
STRIPE ONLY

POWER CABLES TO RRHs

LOW-BAND RRH POWER CABLES HAVE SECTOR
STRIPE ONLY



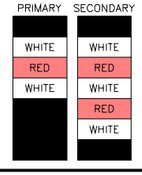
RET MOTORS AT ANTENNAS



MICROWAVE RADIO LINKS

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

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



RF CABLE COLOR CODES | NO SCALE | 1

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

AWS
(N65+N70+H-BLOCK)
PURPLE

CBRS TECH
(3 GHz)
YELLOW

NEGATIVE SLANT PORT
ON ANTRRH
WHITE

ALPHA SECTOR
RED

BETA SECTOR
BLUE

GAMMA SECTOR
GREEN

COLOR IDENTIFIER | NO SCALE | 2

NOT USED | NO SCALE | 3

NOT USED | NO SCALE | 4

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:
KER	BIW	BIW

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	08/16/2021	ISSUED FOR REVIEW
0	10/20/2021	ISSUED FOR CONSTRUCTION

STATE OF CONNECTICUT
JOSEPH KOTARA
PEN.0028997
LICENSED
PROFESSIONAL ENGINEER

10/20/21

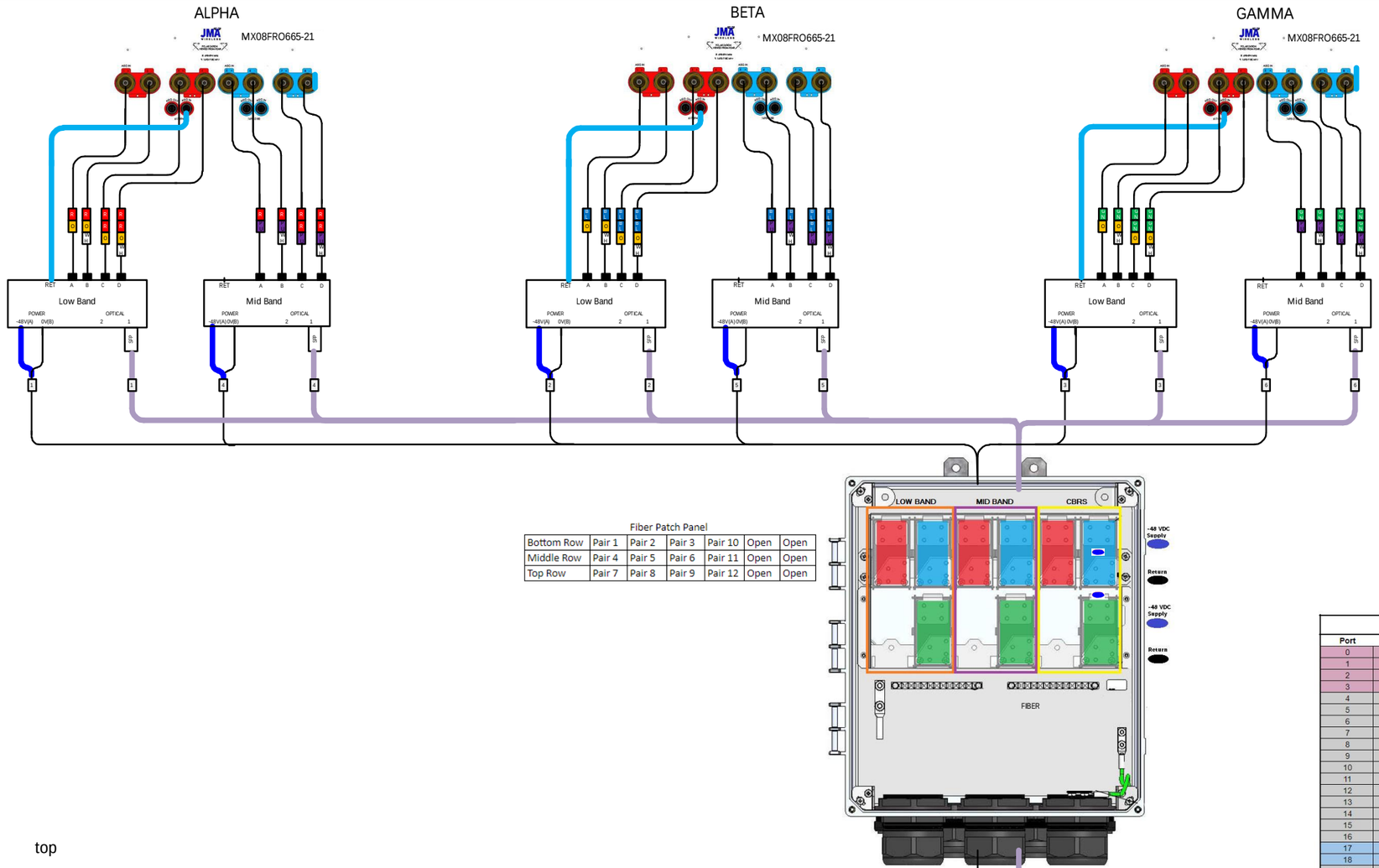
A&E PROJECT NUMBER
411183-13693131

DISH WIRELESS, LLC.
PROJECT INFORMATION

BOBOS00025A
53 DAYTON ROAD
WATERFORD, CT 06385

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

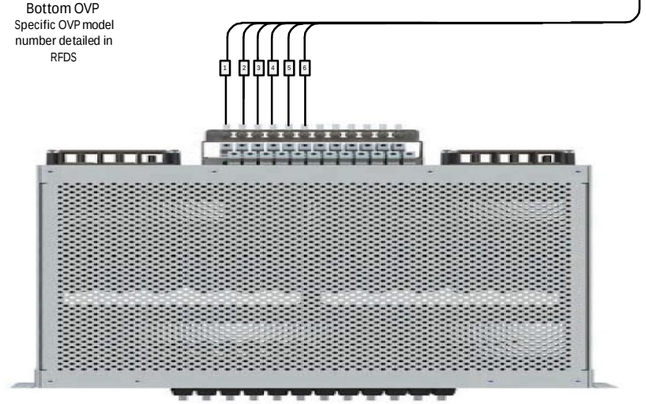
top

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

Bottom OVP
Specific OVP model number detailed in RFDS



5G plumbing diagram JMA MX08FRO665-21
2-2-2(LB+MB)

Quan Liu	SIZE	FSCM NO	DWG NO	REV 3
5- Jan- 2021	SCALE None		SHEET	

PLUMBING DIAGRAM | NO SCALE | 1

dish wireless.
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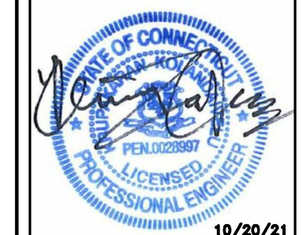

10/20/21

A&E PROJECT NUMBER
411183-13693131

DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBOS00025A
53 DAYTON ROAD
WATERFORD, CT 06385

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
KER	BIW	BIW

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	08/16/2021	ISSUED FOR REVIEW
0	10/20/2021	ISSUED FOR CONSTRUCTION

STATE OF CONNECTICUT — BRIAN KOTANCHIK — PEN.0028997 — LICENSED PROFESSIONAL ENGINEER

10/20/21

A&E PROJECT NUMBER

411183–13693131

DISH WIRELESS, LLC.
PROJECT INFORMATION

BOBOS00025A
53 DAYTON ROAD
WATERFORD, CT 06385

SHEET TITLE

LEGEND AND ABBREVIATIONS

SHEET NUMBER

GN-1

SITE ACTIVITY REQUIREMENTS:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

GENERAL NOTES:

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

CONTRACTOR:GENERAL CONTRACTOR RESPONSIBLE FOR CONSTRUCTION

CARRIER:DISH WIRELESS, LLC.

TOWER OWNER:TOWER OWNER

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

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

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

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

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

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

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

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

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

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

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

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

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

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DRAWN BY:	CHECKED BY:	APPROVED BY:
KER	BIW	BIW

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	08/16/2021	ISSUED FOR REVIEW
0	10/20/2021	ISSUED FOR CONSTRUCTION

STATE OF CONNECTICUT
PEN.0028997
LICENSED PROFESSIONAL ENGINEER
10/20/21

A&E PROJECT NUMBER
411183–13693131

DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBOS00025A
53 DAYTON ROAD
WATERFORD, CT 06385

SHEET TITLE
GENERAL NOTES

SHEET NUMBER
GN-2

CONCRETE, FOUNDATIONS, AND REINFORCING STEEL:

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

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

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

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

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

#4 BARS AND SMALLER 40 ksi

#5 BARS AND LARGER 60 ksi

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

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

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

ELECTRICAL INSTALLATION NOTES:

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

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

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

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

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

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

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

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

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

8. TIE WRAPS ARE NOT ALLOWED.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

dish wireless.

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DRAWN BY:	CHECKED BY:	APPROVED BY:
KER	BIW	BIW

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	08/16/2021	ISSUED FOR REVIEW
0	10/20/2021	ISSUED FOR CONSTRUCTION

STATE OF CONNECTICUT · KURT KOTAN · PEN.0028997 · LICENSED PROFESSIONAL ENGINEER

10/20/21

A&E PROJECT NUMBER

411183-13693131

DISH WIRELESS, LLC.
PROJECT INFORMATION

BOBOS00025A
53 DAYTON ROAD
WATERFORD, CT 06385

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-3

GROUNDING NOTES:

1. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION AND AC POWER GES'S) SHALL BE BONDED TOGETHER AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.

2. THE CONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR GROUND ELECTRODE SYSTEMS, THE CONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.

3. THE CONTRACTOR IS RESPONSIBLE FOR PROPERLY SEQUENCING GROUNDING AND UNDERGROUND CONDUIT INSTALLATION AS TO PREVENT ANY LOSS OF CONTINUITY IN THE GROUNDING SYSTEM OR DAMAGE TO THE CONDUIT AND PROVIDE TESTING RESULTS.

4. METAL CONDUIT AND TRAY SHALL BE GROUNDED AND MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH #6 COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.

5. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.

6. EACH CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, #6 STRANDED COPPER OR LARGER FOR INDOOR BTS; #2 BARE SOLID TINNED COPPER FOR OUTDOOR BTS.

7. CONNECTIONS TO THE GROUND BUS SHALL NOT BE DOUBLED UP OR STACKED BACK TO BACK CONNECTIONS ON OPPOSITE SIDE OF THE GROUND BUS ARE PERMITTED.

8. ALL EXTERIOR GROUND CONDUCTORS BETWEEN EQUIPMENT/GROUND BARS AND THE GROUND RING SHALL BE #2 SOLID TINNED COPPER UNLESS OTHERWISE INDICATED.

9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.

10. USE OF 90° BENDS IN THE PROTECTION GROUNDING CONDUCTORS SHALL BE AVOIDED WHEN 45° BENDS CAN BE ADEQUATELY SUPPORTED.

11. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.

12. ALL GROUND CONNECTIONS ABOVE GRADE (INTERIOR AND EXTERIOR) SHALL BE FORMED USING HIGH PRESS CRIMPS.

13. COMPRESSION GROUND CONNECTIONS MAY BE REPLACED BY EXOTHERMIC WELD CONNECTIONS.

14. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO THE BRIDGE AND THE TOWER GROUND BAR.

15. APPROVED ANTIOXIDANT COATINGS (i.e. CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.

16. ALL EXTERIOR GROUND CONNECTIONS SHALL BE COATED WITH A CORROSION RESISTANT MATERIAL.

17. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.

18. BOND ALL METALLIC OBJECTS WITHIN 6 ft OF MAIN GROUND RING WITH (1) #2 BARE SOLID TINNED COPPER GROUND CONDUCTOR.

19. GROUND CONDUCTORS USED FOR THE FACILITY GROUNDING AND LIGHTNING PROTECTION SYSTEMS SHALL NOT BE ROUTED THROUGH METALLIC OBJECTS THAT FORM A RING AROUND THE CONDUCTOR, SUCH AS METALLIC CONDUITS, METAL SUPPORT CLIPS OR SLEEVES THROUGH WALLS OR FLOORS. WHEN IT IS REQUIRED TO BE HOUSED IN CONDUIT TO MEET CODE REQUIREMENTS OR LOCAL CONDITIONS, NON-METALLIC MATERIAL SUCH AS PVC CONDUIT SHALL BE USED. WHERE USE OF METAL CONDUIT IS UNAVOIDABLE (i.e., NONMETALLIC CONDUIT PROHIBITED BY LOCAL CODE) THE GROUND CONDUCTOR SHALL BE BONDED TO EACH END OF THE METAL CONDUIT.

20. ALL GROUNDS THAT TRANSITION FROM BELOW GRADE TO ABOVE GRADE MUST BE #2 BARE SOLID TINNED COPPER IN 3/4" NON-METALLIC, FLEXIBLE CONDUIT FROM 24" BELOW GRADE TO WITHIN 3" TO 6" OF CAD-WELD TERMINATION POINT. THE EXPOSED END OF THE CONDUIT MUST BE SEALED WITH SILICONE CAULK. (ADD TRANSITIONING GROUND STANDARD DETAIL AS WELL).

21. BUILDINGS WHERE THE MAIN GROUNDING CONDUCTORS ARE REQUIRED TO BE ROUTED TO GRADE, THE CONTRACTOR SHALL ROUTE TWO GROUNDING CONDUCTORS FROM THE ROOFTOP, TOWERS, AND WATER TOWERS GROUNDING RING, TO THE EXISTING GROUNDING SYSTEM, THE GROUNDING CONDUCTORS SHALL NOT BE SMALLER THAN 2/0 COPPER. ROOFTOP GROUNDING RING SHALL BE BONDED TO THE EXISTING GROUNDING SYSTEM, THE BUILDING STEEL COLUMNS, LIGHTNING PROTECTION SYSTEM, AND BUILDING MAIN WATER LINE (FERROUS OR NONFERROUS METAL PIPING ONLY). DO NOT ATTACH GROUNDING TO FIRE SPRINKLER SYSTEM PIPES.

dish wireless.

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STATE OF CONNECTICUT
KARAN KOTHARI
PEN.0028997
LICENSED
PROFESSIONAL ENGINEER

10/20/21

A&E PROJECT NUMBER

411183-13693131

DISH WIRELESS, LLC.
PROJECT INFORMATION

BOBOS00025A
53 DAYTON ROAD
WATERFORD, CT 06385

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-4

ENGINEERING:

STRUCTURAL ANALYSIS

MOUNT ANALYSIS

AMERICAN TOWER®
CORPORATION

Structural Analysis Report

Structure	:	**180 ft Self Supported Tower**
ATC Site Name	:	**WATERFORD CT, CT**
ATC Asset Number	:	**411183**
Engineering Number	:	**13693131_C3_02**
Proposed Carrier	:	**DISH WIRELESS L.L.C.**
Carrier Site Name	:	**BOBOS00025A**
Carrier Site Number	:	**BOBOS00025A**
Site Location	:	**53 Dayton Rd.** **Waterford, CT 06385-4274** **41.377800,-72.141400**
County	:	**New London**
Date	:	**June 23, 2021**
Max Usage	:	**46%**
Result	:	**Pass**

Prepared By:
Lucas Tait
Structural Engineer I

L Tait

Reviewed By:

COA: PEC.0001553

AMERICAN TOWER®
CORPORATION

Table of Contents

Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 180 ft self supported tower to reflect the change in loading by DISH WIRELESS L.L.C..

Supporting Documents

Tower Drawings	Rohn Drawing #A982166, dated August 20, 1998
Foundation Drawing	Rohn Drawing #A982167-1, dated August 20, 1998
Geotechnical Report	Clarence Welti Site Name Cohenzie Fire Station; Waterford, CT, dated March 24, 1997

Analysis

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

Basic Wind Speed:	126 mph (3-Second Gust)
Basic Wind Speed w/ Ice:	50 mph (3-Second Gust) w/ 1" 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
Spectral Response:	Ss = 0.19, S_1 = 0.05
Site Class:	D - Stiff Soil

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
189.0	1	Generic 15' Omni	Sector Frame and Side Arm	(4) 7/8" Coax (2) 7/8" Coax	TOWN OF WATERFORD POLICE DEPARTMENT
188.0	1	Generic 15' Omni			
187.0	2	Generic 15' Omni			
182.0	2	Generic 8' Omni			
181.0	1	dbSpectra ATS4TMA4-4			
	1	Generic 5' Omni			
170.0	1	Generic 13' Omni	Leg	(1) 7/8" Coax	
166.0	3	Ericsson AIR32 B66Aa/B2a	Sector Frame	(5) 1 1/4" Hybriflex Cable (18) 1 5/8" Coax (1) 1 5/8" Hybriflex (3) 7/8" Coax	T-MOBILE
	3	Generic 12" x 9" x 6" TMA			
	3	Ericsson Radio 4449 B71 B85A			
	3	Ericsson RRUS 4415 B25			
	3	Ericsson Air6449 B41			
	3	Ericsson AIR 21, 1.3M, B2A B4P (91.5 lbs)			
	3	RFS APXVAARR24_43-U-NA20			
157.0	3	Ericsson RRUS 4478 B5 (56.1 lbs)	Sector Frame	(3) 0.39" (10mm) Fiber Trunk (6) 0.78" (19.7mm) 8 AWG 6 (12) 1 5/8" Coax (1) 2" conduit	AT&T MOBILITY
	3	Kathrein Scala 80010966			
	3	CCI TPA-65R-LCUUUU-H8			
	3	CCI HPA-65R-BUU-H8			
	3	Powerwave Allgon 7770.00			
	3	Ericsson RRUS-32 (77 lbs)			
	3	Ericsson RRUS 32 B2			
	3	Ericsson RRUS-11 (50 lbs.)			
	6	Kaelus DBCT108F1V92-1			
	6	Powerwave Allgon LGP21401			
	3	Raycap DC6-48-60-18-8F (23.5" Height)			
	3	Ericsson RRUS 4426 B66			
	3	Ericsson RRUS 4478 B14			
156.0	1	Generic 15' Omni	Side Arm	(1) 1 5/8" Coax	TOWN OF WATERFORD POLICE DEPARTMENT
132.0	3	Samsung CBRS 64T64R MMU	Sector Frame	(2) 1 1/4" Hybriflex Cable (12) 1 5/8" Coax (2) 1 5/8" Hybriflex (1) 1/2" Coax	VERIZON WIRELESS
	3	Samsung B2/B66A RRH-BR049			
	3	Samsung B5/B13 RRH-BR04C			
	2	Raycap RRFDC-1064-PF-48			
	6	JMA Wireless MX06FRO660-02			
	3	Samsung Outdoor CBRS 20W RRH			
	1	VZW Unused Reserve (19857.21 sqin)			

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
144.0	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 coax anywhere on tower.

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:

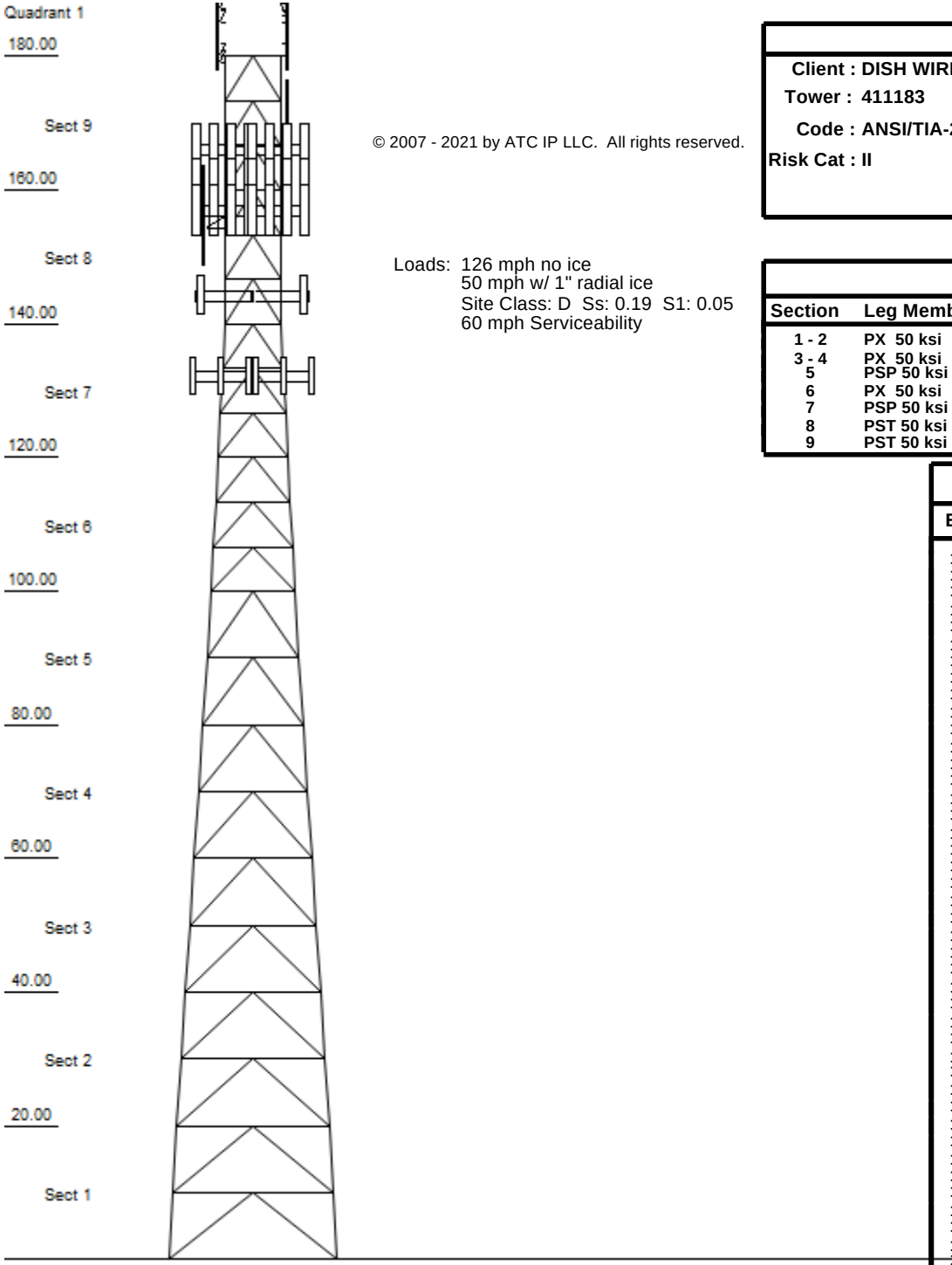
- Information supplied by the client regarding antenna, mounts and feed line loading
- Information from drawings, design and analysis documents, and field notes in the possession of A.T. Engineering Service, PLLC

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.



Loads: 126 mph no ice
50 mph w/ 1" radial ice
Site Class: D Ss: 0.19 S1: 0.05
60 mph Serviceability

Job Information

Client :	DISH WIRELESS L.L.C.				
Tower :	411183	Location :	WATERFORD CT,	Base Width :	25.55 ft
Code :	ANSI/TIA-222-H	Topo Method:	Method 1	Top Width :	8.50 ft
Risk Cat :	II	Topo:	1	Tower Ht :	180.00 ft
		Exposure :	B	Shape :	Triangle

Sections Properties

Section	Leg Members		Diagonal Members	Horizontal Members
1 - 2	PX 50 ksi	12" DIA PIPE	PST 50 ksi 3-1/2" DIA PIPE	PST 50 ksi 3" DIA PIPE
3 - 4	PX 50 ksi	10" DIA PIPE	PX 50 ksi 3" DIA PIPE	PST 50 ksi 2-1/2" DIA PIPE
5	PSP 50 ksi	8.75" OD x 0.5"	PX 50 ksi 3" DIA PIPE	PX 50 ksi 2" DIA PIPE
6	PX 50 ksi	6" DIA PIPE	PST 50 ksi 2-1/2" DIA PIPE	PST 50 ksi 2" DIA PIPE
7	PSP 50 ksi	ROHN 5 EH	PST 50 ksi 2-1/2" DIA PIPE	PST 50 ksi 1-1/2" DIA PIPE
8	PST 50 ksi	4" DIA PIPE	PST 50 ksi 2-1/2" DIA PIPE	PST 50 ksi 2" DIA PIPE
9	PST 50 ksi	3" DIA PIPE	PST 50 ksi 2" DIA PIPE	PST 50 ksi 1-1/2" DIA PIPE

Discrete Appurtenance

Elev (ft)	Type	Qty	Description
189.00	Whip	1	Generic 15' Omni
188.00	Whip	1	Generic 15' Omni
187.00	Whip	2	Generic 15' Omni
182.00	Whip	2	Generic 8' Omni
181.00		1	dbSpectra ATS4TMA4-4
181.00	Whip	1	Generic 5' Omni
180.00	Straight Arm	2	Round Side Arm
180.00	Mounting Frame	1	Round Sector Frame
170.00	Whip	1	Generic 13' Omni
166.00	Mounting Frame	3	Round Sector Frame
166.00	Panel	3	RFS APXVAARR24_43-U-NA20
166.00	Panel	3	Ericsson AIR32 B66Aa/B2a
166.00	Panel	3	Ericsson AIR 21, 1.3M, B2A B4P
166.00	Panel	3	Ericsson Air6449 B41
166.00		3	Ericsson RRUS 4415 B25
166.00		3	Ericsson Radio 4449 B71 B85A
166.00		3	Generic 12" x 9" x 6" TMA
157.00	Mounting Frame	3	Generic Flat Light Sector Fram
157.00	Panel	3	Kathrein Scala 80010966
157.00	Panel	3	CCI TPA-65R-LCUUUU-H8
157.00	Panel	3	CCI HPA-65R-BUU-H8
157.00	Panel	3	Powerwave Allgon 7770.00
157.00		3	Ericsson RRUS-32 (77 lbs)
157.00		3	Ericsson RRUS 32 B2
157.00		3	Ericsson RRUS-11 (50 lbs.)
157.00		3	Ericsson RRUS 4478 B14
157.00		3	Ericsson RRUS 4426 B66
157.00		3	Raycap DC6-48-60-18-8F (23.5"
157.00		3	Ericsson RRUS 4478 B5 (56.1 lb
157.00		6	Powerwave Allgon LGP21401
157.00		6	Kaelus DBCT108F1V92-1
156.00	Straight Arm	1	Round Side Arm
156.00	Whip	1	Generic 15' Omni
144.00	Mounting Frame	3	Generic Flat Light Sector Fram
144.00	Panel	3	JMA Wireless MX08FRO665-21
144.00		3	Fujitsu TA08025-B605
144.00		3	Fujitsu TA08025-B604
144.00		1	Commscope RDIDC-9181-PF-48
132.00	Mounting Frame	3	Round Sector Frame
132.00	Panel	6	JMA Wireless MX06FRO660-02
132.00	Panel	3	Samsung CBRS 64T64R MMU
132.00		3	Samsung B2/B66A RRH-BR049
132.00		3	Samsung B5/B13 RRH-BR04C
132.00		2	Raycap RRFDC-1064-PF-48
132.00		3	Samsung Outdoor CBRS 20W
132.00	Other	1	VZW Unused Reserve (19857.21 s

Job Information

Client :	DISH WIRELESS L.L.C.				
Tower :	411183	Location :	WATERFORD CT,	Base Width :	25.55 ft
Code :	ANSI/TIA-222-H	Topo Method:	Method 1	Top Width :	8.50 ft
Risk Cat :	II	Topo:	1	Tower Ht :	180.00 ft
		Exposure :	B	Shape :	Triangle

Linear Appurtenance

Elev (ft) From	To	Qty	Description
0.00	189.00	1	7/8" Coax
0.00	188.00	1	7/8" Coax
30.00	187.00	2	7/8" Coax
0.00	182.00	1	7/8" Coax
0.00	181.00	1	7/8" Coax
30.00	180.00	1	Waveguide
0.00	180.00	1	Waveguide
0.00	170.00	1	7/8" Coax
30.00	166.00	1	1 5/8" Hybriflex
30.00	166.00	5	1 1/4" Hybriflex Cab
0.00	166.00	1	Waveguide
0.00	166.00	3	7/8" Coax
0.00	166.00	6	1 5/8" Coax
0.00	166.00	12	1 5/8" Coax
30.00	157.00	1	Waveguide
30.00	157.00	1	2" conduit
30.00	157.00	12	1 5/8" Coax
30.00	157.00	6	0.78" (19.7mm) 8 AWG
30.00	157.00	3	0.39" (10mm) Fiber T
30.00	156.00	1	1 5/8" Coax
0.00	144.00	1	1.60" (40.6mm) Hybri
0.00	132.00	1	1/2" Coax
0.00	132.00	2	1 5/8" Hybriflex
0.00	132.00	12	1 5/8" Coax
0.00	132.00	2	1 1/4" Hybriflex Cab

Global Base Foundation Design Loads

Load Case	Moment (k-ft)	Vertical (kip)	Horizontal (kip)
DL + WL	6,815.53	77.11	62.99
DL + WL + IL	2,138.33	151.95	20.52

Individual Base Foundation Design Loads

Vertical (kip)	Uplift (kip)	Horizontal (kip)
333.72	288.23	38.59

Site Number:	411183	Code:	ANSI/TIA-222-H	
Site Name:	WATERFORD CT, CT	Engineering Number:	13693131_C3_02	6/23/2021 10:32:20 AM
Customer:	DISH WIRELESS L.L.C.			

Analysis Parameters

Location:	New London County, CT	Height (ft):	180
Code:	ANSI/TIA-222-H	Base Elevation (ft):	0.00
Shape:	Triangle	Bottom Face Width (ft):	25.55
Tower Manufacturer:	Rohn	Top Face Width (ft):	8.50
Tower Type:	Self Support	Anchor Bolt Detail Type	c
Kd:	0.85		
Ke:	0.99		

Ice & Wind Parameters

Exposure Category:	B	Design Windspeed Without Ice:	126 mph
Risk Category:	II	Design Windspeed With Ice:	50 mph
Topographic Factor Procedure:	Method 1	Operational Windspeed:	60 mph
Topographic Category:	1	Design Ice Thickness:	1.00 in
Crest Height:	0 ft	HMSL:	188.00 ft

Seismic Parameters

Analysis Method:	Equivalent Lateral Force Method				
Site Class:	D - Stiff Soil				
Period Based on Rayleigh Method (sec):	0.65				
T_L (sec):	6	p:	1.3	C_S:	0.043
S_S :	0.194	S_1 :	0.053	C_S, Max:	0.043
F_a :	1.600	F_V :	2.400	C_S, Min:	0.030
S_{ds} :	0.207	S_{d1} :	0.085		

Load Cases

1.2D + 1.0W Normal	126 mph Normal with No Ice
1.2D + 1.0W 60 deg	126 mph 60 degree with No Ice
1.2D + 1.0W 90 deg	126 mph 90 degree with No Ice
0.9D + 1.0W Normal	126 mph Normal with No Ice (Reduced DL)
0.9D + 1.0W 60 deg	126 mph 60 deg with No Ice (Reduced DL)
0.9D + 1.0W 90 deg	126 mph 90 deg with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi Normal	50 mph Normal with 1.00 in Radial Ice
1.2D + 1.0Di + 1.0Wi 60 deg	50 mph 60 deg with 1.00 in Radial Ice
1.2D + 1.0Di + 1.0Wi 90 deg	50 mph 90 deg with 1.00 in Radial Ice
1.2D + 1.0Ev + 1.0Eh Normal	Seismic Normal
1.2D + 1.0Ev + 1.0Eh 60 deg	Seismic 60 deg
1.2D + 1.0Ev + 1.0Eh 90 deg	Seismic 90 deg
0.9D - 1.0Ev + 1.0Eh Normal	Seismic (Reduced DL) Normal
0.9D - 1.0Ev + 1.0Eh 60 deg	Seismic (Reduced DL) 60 deg
0.9D - 1.0Ev + 1.0Eh 90 deg	Seismic (Reduced DL) 90 deg
1.0D + 1.0W Service Normal	Serviceability - 60 mph Wind Normal
1.0D + 1.0W Service 60 deg	Serviceability - 60 mph Wind 60 deg
1.0D + 1.0W Service 90 deg	Serviceability - 60 mph Wind 90 deg

Tower Loading

Discrete Appurtenance Properties 1.2D + 1.0W

Elevation (ft)	Description	Qty	Wt. (lb)	EPA (sf)	Length (ft)	Width (in)	Depth (in)	K_a	Orient. Factor	Vert. Ecc.(ft)	M_u (lb-ft)	Q_z (psf)	F_a (WL) (lb)	P_a (DL) (lb)
189.0	Generic 15' Omni	1	40	4.5	15.0	3.0	3.0	1.00	1.00	0.0	0.0	40.67	156	48
188.0	Generic 15' Omni	1	40	4.5	15.0	3.0	3.0	1.00	1.00	0.0	0.0	40.61	155	48
187.0	Generic 15' Omni	2	40	4.5	15.0	3.0	3.0	1.00	1.00	0.0	0.0	40.55	310	96
182.0	Generic 8' Omni	2	25	2.4	8.0	3.0	3.0	1.00	1.00	0.0	0.0	40.24	164	60
181.0	Generic 5' Omni	1	10	1.0	5.0	2.0	2.0	1.00	1.00	0.0	0.0	40.17	34	12
181.0	dbSpectra	1	50	2.3	2.6	13.3	11.5	0.90	1.00	0.0	0.0	40.17	71	60
180.0	Round Side Arm	2	150	5.2	0.0	0.0	0.0	0.90	0.90	0.0	0.0	40.11	287	360
180.0	Round Sector Frame	1	300	14.4	0.0	0.0	0.0	1.00	1.00	0.0	0.0	40.11	491	360
170.0	Generic 13' Omni	1	40	3.9	13.0	3.0	3.0	1.00	1.00	0.0	0.0	39.46	131	48
166.0	Generic 12" x 9" x	3	20	0.9	1.0	9.0	6.0	0.80	0.50	0.0	0.0	39.19	36	72
166.0	Ericsson Radio 4449	3	75	1.6	1.3	13.2	10.5	0.80	0.50	0.0	0.0	39.19	66	270
166.0	Ericsson RRUS 4415	3	46	1.8	1.4	13.4	5.9	0.80	0.50	0.0	0.0	39.19	74	166
166.0	Ericsson Air6449	3	104	5.7	2.8	20.6	8.6	0.80	0.63	0.0	0.0	39.19	286	374
166.0	Ericsson AIR 21,	3	92	6.0	4.7	12.0	7.8	0.80	0.70	0.0	0.0	39.19	338	329
166.0	Ericsson AIR32	3	132	6.5	4.7	12.9	8.7	0.80	0.71	0.0	0.0	39.19	370	476
166.0	Round Sector Frame	3	300	14.4	0.0	0.0	0.0	0.75	0.75	0.0	0.0	39.19	809	1080
166.0	RFS	3	128	20.2	8.0	24.0	8.7	0.80	0.63	0.0	0.0	39.19	1020	460
157.0	Kaelus	6	14	0.6	0.9	7.1	6.8	0.80	0.50	0.0	0.0	38.57	50	100
157.0	Powerwave Allgon	6	14	1.1	1.2	9.2	2.6	0.80	0.50	2.0	174.4	38.71	87	102
157.0	Raycap DC6-48-60-	3	20	1.3	2.0	9.7	9.7	0.80	1.00	0.0	0.0	38.57	99	72
157.0	Ericsson RRUS 4426	3	48	1.6	1.3	13.2	5.8	0.80	0.50	0.0	0.0	38.57	65	174
157.0	Ericsson RRUS 4478	3	59	2.0	1.5	13.4	8.3	0.80	0.67	0.0	0.0	38.57	107	214
157.0	Ericsson RRUS 4478	3	56	2.0	1.5	13.5	7.8	0.80	0.67	0.0	0.0	38.57	107	202
157.0	Ericsson RRUS-11	3	50	2.6	1.5	17.3	7.2	0.80	0.67	2.0	271.5	38.71	136	180
157.0	Ericsson RRUS 32 B2	3	53	2.7	2.3	12.1	7.0	0.80	0.67	2.0	290.3	38.71	145	191
157.0	Ericsson RRUS-32	3	77	3.3	2.5	13.3	9.5	0.80	0.71	2.0	371.6	38.71	186	277
157.0	Powerwave Allgon	3	35	5.5	4.6	11.0	5.0	0.80	0.65	2.0	565.5	38.71	283	126
157.0	CCI HPA-65R-BUU-H8	3	68	13.0	7.7	14.8	7.4	0.80	0.67	2.0	1373.2	38.71	687	245
157.0	CCI TPA-65R-	3	82	13.3	8.0	14.4	8.6	0.80	0.69	2.0	1449.2	38.71	725	294
157.0	Kathrein Scala	3	115	17.4	8.0	20.0	6.9	0.80	0.63	0.0	0.0	38.57	861	413
157.0	Generic Flat Light	3	400	17.9	0.0	0.0	0.0	0.75	0.75	0.0	0.0	38.57	990	1440
156.0	Generic 15' Omni	1	40	4.5	15.0	3.0	3.0	1.00	1.00	0.0	0.0	38.50	147	48
156.0	Round Side Arm	1	150	5.2	0.0	0.0	0.0	1.00	1.00	0.0	0.0	38.50	170	180
144.0	Commscope RDIDC-	1	22	1.9	1.3	14.0	8.0	0.80	1.00	0.0	0.0	37.63	48	26
144.0	Fujitsu TA08025-	3	64	2.0	1.3	15.0	7.9	0.80	0.50	0.0	0.0	37.63	75	230
144.0	Fujitsu TA08025-	3	75	2.0	1.3	15.0	9.1	0.80	0.50	0.0	0.0	37.63	75	270
144.0	JMA Wireless	3	65	12.5	6.0	20.0	8.0	0.80	0.64	0.0	0.0	37.63	614	232
144.0	Generic Flat Light	3	400	17.9	0.0	0.0	0.0	0.75	0.75	0.0	0.0	37.63	966	1440
132.0	Samsung Outdoor	3	19	0.9	1.0	8.5	4.1	0.80	0.50	0.0	0.0	36.71	32	67
132.0	Raycap RRFDC-1064-	2	14	1.2	1.1	10.2	8.2	0.80	0.50	0.0	0.0	36.71	29	34
132.0	Samsung B5/B13	3	70	1.9	1.3	15.0	8.1	0.80	0.50	0.0	0.0	36.71	70	253
132.0	Samsung B2/B66A	3	84	1.9	1.3	15.0	10.0	0.80	0.50	0.0	0.0	36.71	70	304
132.0	Samsung CBRS	3	75	4.5	2.4	18.8	4.8	0.80	0.58	0.0	0.0	36.71	195	270
132.0	JMA Wireless	6	46	9.9	5.9	15.4	10.7	0.80	0.71	0.0	0.0	36.71	1050	331
132.0	Round Sector Frame	3	300	14.4	0.0	0.0	0.0	0.75	0.67	0.0	0.0	36.71	677	1080
132.0	VZW Unused	1	1451	137.9	0.0	0.0	0.0	0.80	0.90	0.0	0.0	36.71	3098	1741
	Totals	123	12379	869.4									16641	14855

Discrete Appurtenance Properties 0.9D + 1.0W

Elevation (ft)	Description	Qty	Wt. (lb)	EPA (sf)	Length (ft)	Width (in)	Depth (in)	K_a	Orient. Factor	Vert. Ecc.(ft)	M_u (lb-ft)	Q_z (psf)	F_a (WL) (lb)	P_a (DL) (lb)

Tower Loading

189.0	Generic 15' Omni	1	40	4.5	15.0	3.0	3.0	1.00	1.00	0.0	0.0	40.67	156	36
188.0	Generic 15' Omni	1	40	4.5	15.0	3.0	3.0	1.00	1.00	0.0	0.0	40.61	155	36
187.0	Generic 15' Omni	2	40	4.5	15.0	3.0	3.0	1.00	1.00	0.0	0.0	40.55	310	72
182.0	Generic 8' Omni	2	25	2.4	8.0	3.0	3.0	1.00	1.00	0.0	0.0	40.24	164	45
181.0	Generic 5' Omni	1	10	1.0	5.0	2.0	2.0	1.00	1.00	0.0	0.0	40.17	34	9
181.0	dbSpectra	1	50	2.3	2.6	13.3	11.5	0.90	1.00	0.0	0.0	40.17	71	45
180.0	Round Side Arm	2	150	5.2	0.0	0.0	0.0	0.90	0.90	0.0	0.0	40.11	287	270
180.0	Round Sector Frame	1	300	14.4	0.0	0.0	0.0	1.00	1.00	0.0	0.0	40.11	491	270
170.0	Generic 13' Omni	1	40	3.9	13.0	3.0	3.0	1.00	1.00	0.0	0.0	39.46	131	36
166.0	Generic 12" x 9" x	3	20	0.9	1.0	9.0	6.0	0.80	0.50	0.0	0.0	39.19	36	54
166.0	Ericsson Radio 4449	3	75	1.6	1.3	13.2	10.5	0.80	0.50	0.0	0.0	39.19	66	203
166.0	Ericsson RRUS 4415	3	46	1.8	1.4	13.4	5.9	0.80	0.50	0.0	0.0	39.19	74	124
166.0	Ericsson Air6449	3	104	5.7	2.8	20.6	8.6	0.80	0.63	0.0	0.0	39.19	286	281
166.0	Ericsson AIR 21,	3	92	6.0	4.7	12.0	7.8	0.80	0.70	0.0	0.0	39.19	338	247
166.0	Ericsson AIR32	3	132	6.5	4.7	12.9	8.7	0.80	0.71	0.0	0.0	39.19	370	357
166.0	Round Sector Frame	3	300	14.4	0.0	0.0	0.0	0.75	0.75	0.0	0.0	39.19	809	810
166.0	RFS	3	128	20.2	8.0	24.0	8.7	0.80	0.63	0.0	0.0	39.19	1020	345
157.0	Kaelus	6	14	0.6	0.9	7.1	6.8	0.80	0.50	0.0	0.0	38.57	50	75
157.0	Powerwave Allgon	6	14	1.1	1.2	9.2	2.6	0.80	0.50	2.0	174.4	38.71	87	76
157.0	Raycap DC6-48-60-	3	20	1.3	2.0	9.7	9.7	0.80	1.00	0.0	0.0	38.57	99	54
157.0	Ericsson RRUS 4426	3	48	1.6	1.3	13.2	5.8	0.80	0.50	0.0	0.0	38.57	65	131
157.0	Ericsson RRUS 4478	3	59	2.0	1.5	13.4	8.3	0.80	0.67	0.0	0.0	38.57	107	160
157.0	Ericsson RRUS 4478	3	56	2.0	1.5	13.5	7.8	0.80	0.67	0.0	0.0	38.57	107	151
157.0	Ericsson RRUS-11	3	50	2.6	1.5	17.3	7.2	0.80	0.67	2.0	271.5	38.71	136	135
157.0	Ericsson RRUS 32 B2	3	53	2.7	2.3	12.1	7.0	0.80	0.67	2.0	290.3	38.71	145	143
157.0	Ericsson RRUS-32	3	77	3.3	2.5	13.3	9.5	0.80	0.71	2.0	371.6	38.71	186	208
157.0	Powerwave Allgon	3	35	5.5	4.6	11.0	5.0	0.80	0.65	2.0	565.5	38.71	283	95
157.0	CCI HPA-65R-BUU-H8	3	68	13.0	7.7	14.8	7.4	0.80	0.67	2.0	1373.2	38.71	687	184
157.0	CCI TPA-65R-	3	82	13.3	8.0	14.4	8.6	0.80	0.69	2.0	1449.2	38.71	725	220
157.0	Kathrein Scala	3	115	17.4	8.0	20.0	6.9	0.80	0.63	0.0	0.0	38.57	861	309
157.0	Generic Flat Light	3	400	17.9	0.0	0.0	0.0	0.75	0.75	0.0	0.0	38.57	990	1080
156.0	Generic 15' Omni	1	40	4.5	15.0	3.0	3.0	1.00	1.00	0.0	0.0	38.50	147	36
156.0	Round Side Arm	1	150	5.2	0.0	0.0	0.0	1.00	1.00	0.0	0.0	38.50	170	135
144.0	Commscope RDIDC-	1	22	1.9	1.3	14.0	8.0	0.80	1.00	0.0	0.0	37.63	48	20
144.0	Fujitsu TA08025-	3	64	2.0	1.3	15.0	7.9	0.80	0.50	0.0	0.0	37.63	75	173
144.0	Fujitsu TA08025-	3	75	2.0	1.3	15.0	9.1	0.80	0.50	0.0	0.0	37.63	75	203
144.0	JMA Wireless	3	65	12.5	6.0	20.0	8.0	0.80	0.64	0.0	0.0	37.63	614	174
144.0	Generic Flat Light	3	400	17.9	0.0	0.0	0.0	0.75	0.75	0.0	0.0	37.63	966	1080
132.0	Samsung Outdoor	3	19	0.9	1.0	8.5	4.1	0.80	0.50	0.0	0.0	36.71	32	50
132.0	Raycap RRFDC-1064-	2	14	1.2	1.1	10.2	8.2	0.80	0.50	0.0	0.0	36.71	29	25
132.0	Samsung B5/B13	3	70	1.9	1.3	15.0	8.1	0.80	0.50	0.0	0.0	36.71	70	190
132.0	Samsung B2/B66A	3	84	1.9	1.3	15.0	10.0	0.80	0.50	0.0	0.0	36.71	70	228
132.0	Samsung CBRS	3	75	4.5	2.4	18.8	4.8	0.80	0.58	0.0	0.0	36.71	195	203
132.0	JMA Wireless	6	46	9.9	5.9	15.4	10.7	0.80	0.71	0.0	0.0	36.71	1050	248
132.0	Round Sector Frame	3	300	14.4	0.0	0.0	0.0	0.75	0.67	0.0	0.0	36.71	677	810
132.0	VZW Unused	1	1451	137.9	0.0	0.0	0.0	0.80	0.90	0.0	0.0	36.71	3098	1306
	Totals	123	12379	869.4									16641	11141

Discrete Appurtenance Properties 1.2D + 1.0Di + 1.0Wi

Elevation (ft)	Description	Qty	Ice Wt (lb)	Ice EPA (sf)	Length (ft)	Width (in)	Depth (in)	K_a	Orient. Factor	Vert. Ecc.(ft)	M_u (lb-ft)	Q_z (psf)	F_a (WL) (lb)	P_a (DL) (lb)
189.0	Generic 15' Omni	1	117	8.1	15.0	3.0	3.0	1.00	1.00	0.0	0.0	6.40	44	125
188.0	Generic 15' Omni	1	117	8.1	15.0	3.0	3.0	1.00	1.00	0.0	0.0	6.39	44	125
187.0	Generic 15' Omni	2	117	8.1	15.0	3.0	3.0	1.00	1.00	0.0	0.0	6.39	88	249
182.0	Generic 8' Omni	2	66	4.3	8.0	3.0	3.0	1.00	1.00	0.0	0.0	6.34	46	143

Tower Loading

181.0	Generic 5' Omni	1	29	1.9	5.0	2.0	2.0	1.00	1.00	0.0	0.0	6.33	10	31
181.0	dbSpectra	1	109	2.9	2.6	13.3	11.5	0.90	1.00	0.0	0.0	6.33	14	119
180.0	Round Side Arm	2	199	7.0	0.0	0.0	0.0	0.90	0.90	0.0	0.0	6.32	61	459
180.0	Round Sector Frame	1	549	25.6	0.0	0.0	0.0	1.00	1.00	0.0	0.0	6.32	137	609
170.0	Generic 13' Omni	1	106	7.0	13.0	3.0	3.0	1.00	1.00	0.0	0.0	6.21	37	114
166.0	Generic 12" x 9" x	3	40	1.3	1.0	9.0	6.0	0.80	0.50	0.0	0.0	6.17	8	132
166.0	Ericsson Radio 4449	3	116	2.2	1.3	13.2	10.5	0.80	0.50	0.0	0.0	6.17	14	392
166.0	Ericsson RRUS 4415	3	79	2.4	1.4	13.4	5.9	0.80	0.50	0.0	0.0	6.17	15	265
166.0	Ericsson Air6449	3	196	6.8	2.8	20.6	8.6	0.80	0.63	0.0	0.0	6.17	54	651
166.0	Ericsson AIR 21,	3	190	7.5	4.7	12.0	7.8	0.80	0.70	0.0	0.0	6.17	66	625
166.0	Ericsson AIR32	3	240	8.0	4.7	12.9	8.7	0.80	0.71	0.0	0.0	6.17	71	800
166.0	Round Sector Frame	3	549	25.6	0.0	0.0	0.0	0.75	0.75	0.0	0.0	6.17	227	1826
166.0	RFS	3	393	22.8	8.0	24.0	8.7	0.80	0.63	0.0	0.0	6.17	180	1257
157.0	Kaelus	6	31	1.0	0.9	7.1	6.8	0.80	0.50	0.0	0.0	6.07	12	201
157.0	Powerwave Allgon	6	31	1.6	1.2	9.2	2.6	0.80	0.50	2.0	39.3	6.10	20	202
157.0	Raycap DC6-48-60-	3	55	1.7	2.0	9.7	9.7	0.80	1.00	0.0	0.0	6.07	21	178
157.0	Ericsson RRUS 4426	3	78	2.2	1.3	13.2	5.8	0.80	0.50	0.0	0.0	6.07	14	264
157.0	Ericsson RRUS 4478	3	100	2.7	1.5	13.4	8.3	0.80	0.67	0.0	0.0	6.07	22	337
157.0	Ericsson RRUS 4478	3	96	2.7	1.5	13.5	7.8	0.80	0.67	0.0	0.0	6.07	22	322
157.0	Ericsson RRUS-11	3	96	3.3	1.5	17.3	7.2	0.80	0.67	2.0	54.4	6.10	27	317
157.0	Ericsson RRUS 32 B2	3	102	3.5	2.3	12.1	7.0	0.80	0.67	2.0	58.7	6.10	29	338
157.0	Ericsson RRUS-32	3	142	4.2	2.5	13.3	9.5	0.80	0.71	2.0	73.7	6.10	37	472
157.0	Powerwave Allgon	3	118	6.2	4.6	11.0	5.0	0.80	0.65	2.0	100.2	6.10	50	376
157.0	CCI HPA-65R-BUU-H8	3	240	15.4	7.7	14.8	7.4	0.80	0.67	2.0	256.1	6.10	128	760
157.0	CCI TPA-65R-	3	267	15.8	8.0	14.4	8.6	0.80	0.69	2.0	271.0	6.10	136	848
157.0	Kathrein Scala	3	329	19.8	8.0	20.0	6.9	0.80	0.63	0.0	0.0	6.07	155	1056
157.0	Generic Flat Light	3	601	28.0	0.0	0.0	0.0	0.75	0.75	0.0	0.0	6.07	244	2043
156.0	Generic 15' Omni	1	116	8.1	15.0	3.0	3.0	1.00	1.00	0.0	0.0	6.06	42	124
156.0	Round Side Arm	1	199	7.0	0.0	0.0	0.0	1.00	1.00	0.0	0.0	6.06	36	229
144.0	Commscope RDIDC-	1	60	2.5	1.3	14.0	8.0	0.80	1.00	0.0	0.0	5.93	10	64
144.0	Fujitsu TA08025-	3	103	2.6	1.3	15.0	7.9	0.80	0.50	0.0	0.0	5.93	16	347
144.0	Fujitsu TA08025-	3	117	2.6	1.3	15.0	9.1	0.80	0.50	0.0	0.0	5.93	16	396
144.0	JMA Wireless	3	236	14.4	6.0	20.0	8.0	0.80	0.64	0.0	0.0	5.93	111	747
144.0	Generic Flat Light	3	601	28.0	0.0	0.0	0.0	0.75	0.75	0.0	0.0	5.93	238	2043
132.0	Samsung Outdoor	3	34	1.3	1.0	8.5	4.1	0.80	0.50	0.0	0.0	5.78	7	114
132.0	Raycap RRFDC-1064-	2	41	1.6	1.1	10.2	8.2	0.80	0.50	0.0	0.0	5.78	6	88
132.0	Samsung B5/B13	3	108	2.5	1.3	15.0	8.1	0.80	0.50	0.0	0.0	5.78	15	366
132.0	Samsung B2/B66A	3	126	2.5	1.3	15.0	10.0	0.80	0.50	0.0	0.0	5.78	15	430
132.0	Samsung CBRS	3	136	5.4	2.4	18.8	4.8	0.80	0.58	0.0	0.0	5.78	37	454
132.0	JMA Wireless	6	204	11.7	5.9	15.4	10.7	0.80	0.71	0.0	0.0	5.78	196	1279
132.0	Round Sector Frame	3	542	25.3	0.0	0.0	0.0	0.75	0.67	0.0	0.0	5.78	187	1807
132.0	VZW Unused	1	2117	201.2	0.0	0.0	0.0	0.80	0.90	0.0	0.0	5.78	712	2407
	Totals	123	24052	1199.2									3677	26528

Discrete Appurtenance Properties 1.0D + 1.0W Service

Elevation (ft)	Description	Qty	Wt. (lb)	EPA (sf)	Length (ft)	Width (in)	Depth (in)	K_a	Orient. Factor	Vert. Ecc.(ft)	M_u (lb-ft)	Q_z (psf)	F_a (WL) (lb)	P_a (DL) (lb)
189.0	Generic 15' Omni	1	40	4.5	15.0	3.0	3.0	1.00	1.00	0.0	0.0	9.22	35	40
188.0	Generic 15' Omni	1	40	4.5	15.0	3.0	3.0	1.00	1.00	0.0	0.0	9.21	35	40
187.0	Generic 15' Omni	2	40	4.5	15.0	3.0	3.0	1.00	1.00	0.0	0.0	9.19	70	80
182.0	Generic 8' Omni	2	25	2.4	8.0	3.0	3.0	1.00	1.00	0.0	0.0	9.12	37	50
181.0	Generic 5' Omni	1	10	1.0	5.0	2.0	2.0	1.00	1.00	0.0	0.0	9.11	8	10
181.0	dbSpectra	1	50	2.3	2.6	13.3	11.5	0.90	1.00	0.0	0.0	9.11	16	50
180.0	Round Side Arm	2	150	5.2	0.0	0.0	0.0	0.90	0.90	0.0	0.0	9.09	65	300
180.0	Round Sector Frame	1	300	14.4	0.0	0.0	0.0	1.00	1.00	0.0	0.0	9.09	111	300

Site Number: 411183 Code: ANSI/TIA-222-H

Site Name: WATERFORD CT, CT Engineering Number: 13693131_C3_02 6/23/2021 10:32:20 AM

Customer: DISH WIRELESS L.L.C.

Tower Loading

170.0	Generic 13' Omni	1	40	3.9	13.0	3.0	3.0	1.00	1.00	0.0	0.0	8.95	30	40
166.0	Generic 12" x 9" x	3	20	0.9	1.0	9.0	6.0	0.80	0.50	0.0	0.0	8.89	8	60
166.0	Ericsson Radio 4449	3	75	1.6	1.3	13.2	10.5	0.80	0.50	0.0	0.0	8.89	15	225
166.0	Ericsson RRUS 4415	3	46	1.8	1.4	13.4	5.9	0.80	0.50	0.0	0.0	8.89	17	138
166.0	Ericsson Air6449	3	104	5.7	2.8	20.6	8.6	0.80	0.63	0.0	0.0	8.89	65	312
166.0	Ericsson AIR 21,	3	92	6.0	4.7	12.0	7.8	0.80	0.70	0.0	0.0	8.89	77	275
166.0	Ericsson AIR32	3	132	6.5	4.7	12.9	8.7	0.80	0.71	0.0	0.0	8.89	84	397
166.0	Round Sector Frame	3	300	14.4	0.0	0.0	0.0	0.75	0.75	0.0	0.0	8.89	184	900
166.0	RFS	3	128	20.2	8.0	24.0	8.7	0.80	0.63	0.0	0.0	8.89	231	384
157.0	Kaelus	6	14	0.6	0.9	7.1	6.8	0.80	0.50	0.0	0.0	8.75	11	83
157.0	Powerwave Allgon	6	14	1.1	1.2	9.2	2.6	0.80	0.50	2.0	39.5	8.78	20	85
157.0	Raycap DC6-48-60-	3	20	1.3	2.0	9.7	9.7	0.80	1.00	0.0	0.0	8.75	22	60
157.0	Ericsson RRUS 4426	3	48	1.6	1.3	13.2	5.8	0.80	0.50	0.0	0.0	8.75	15	145
157.0	Ericsson RRUS 4478	3	59	2.0	1.5	13.4	8.3	0.80	0.67	0.0	0.0	8.75	24	178
157.0	Ericsson RRUS 4478	3	56	2.0	1.5	13.5	7.8	0.80	0.67	0.0	0.0	8.75	24	168
157.0	Ericsson RRUS-11	3	50	2.6	1.5	17.3	7.2	0.80	0.67	2.0	61.6	8.78	31	150
157.0	Ericsson RRUS 32 B2	3	53	2.7	2.3	12.1	7.0	0.80	0.67	2.0	65.8	8.78	33	159
157.0	Ericsson RRUS-32	3	77	3.3	2.5	13.3	9.5	0.80	0.71	2.0	84.3	8.78	42	231
157.0	Powerwave Allgon	3	35	5.5	4.6	11.0	5.0	0.80	0.65	2.0	128.2	8.78	64	105
157.0	CCI HPA-65R-BUU-H8	3	68	13.0	7.7	14.8	7.4	0.80	0.67	2.0	311.4	8.78	156	204
157.0	CCI TPA-65R-	3	82	13.3	8.0	14.4	8.6	0.80	0.69	2.0	328.6	8.78	164	245
157.0	Kathrein Scala	3	115	17.4	8.0	20.0	6.9	0.80	0.63	0.0	0.0	8.75	195	344
157.0	Generic Flat Light	3	400	17.9	0.0	0.0	0.0	0.75	0.75	0.0	0.0	8.75	225	1200
156.0	Generic 15' Omni	1	40	4.5	15.0	3.0	3.0	1.00	1.00	0.0	0.0	8.73	33	40
156.0	Round Side Arm	1	150	5.2	0.0	0.0	0.0	1.00	1.00	0.0	0.0	8.73	39	150
144.0	Commscope RDIDC-	1	22	1.9	1.3	14.0	8.0	0.80	1.00	0.0	0.0	8.53	11	22
144.0	Fujitsu TA08025-	3	64	2.0	1.3	15.0	7.9	0.80	0.50	0.0	0.0	8.53	17	192
144.0	Fujitsu TA08025-	3	75	2.0	1.3	15.0	9.1	0.80	0.50	0.0	0.0	8.53	17	225
144.0	JMA Wireless	3	65	12.5	6.0	20.0	8.0	0.80	0.64	0.0	0.0	8.53	139	194
144.0	Generic Flat Light	3	400	17.9	0.0	0.0	0.0	0.75	0.75	0.0	0.0	8.53	219	1200
132.0	Samsung Outdoor	3	19	0.9	1.0	8.5	4.1	0.80	0.50	0.0	0.0	8.32	7	56
132.0	Raycap RRFDC-1064-	2	14	1.2	1.1	10.2	8.2	0.80	0.50	0.0	0.0	8.32	7	28
132.0	Samsung B5/B13	3	70	1.9	1.3	15.0	8.1	0.80	0.50	0.0	0.0	8.32	16	211
132.0	Samsung B2/B66A	3	84	1.9	1.3	15.0	10.0	0.80	0.50	0.0	0.0	8.32	16	253
132.0	Samsung CBRS	3	75	4.5	2.4	18.8	4.8	0.80	0.58	0.0	0.0	8.32	44	225
132.0	JMA Wireless	6	46	9.9	5.9	15.4	10.7	0.80	0.71	0.0	0.0	8.32	238	276
132.0	Round Sector Frame	3	300	14.4	0.0	0.0	0.0	0.75	0.67	0.0	0.0	8.32	154	900
132.0	VZW Unused	1	1451	137.9	0.0	0.0	0.0	0.80	0.90	0.0	0.0	8.32	702	1451
	Totals	123	12379	869.4									3774	12379

Tower Loading

Linear Appurtenance Properties

Elev From (ft)	Elev To (ft)	Description	Qty	Width (in)	Weight (lb/ft)	Pct In Block	Spread On Faces	Bundling Arrangement	Cluster Dia (in)	Out Of Zone	Spacing (in)	Orientation Factor	Ka Override
0.00	189.0	7/8" Coax	1	1.09	0.33	100	3	Individual	0.00	N	1.00	1.00	0.00
0.00	188.0	7/8" Coax	1	1.09	0.33	100	3	Individual	0.00	N	1.00	1.00	0.00
30.00	187.0	7/8" Coax	2	1.09	0.33	100	3	Cluster	3.22	N	1.00	1.00	0.00
0.00	182.0	7/8" Coax	1	1.09	0.33	100	3	Individual	0.00	N	1.00	1.00	0.00
0.00	181.0	7/8" Coax	1	1.09	0.33	100	3	Individual	0.00	N	1.00	1.00	0.00
0.00	180.0	Waveguide	1	2.00	6.00	100	3	Individual	0.00	N	1.00	1.00	0.00
30.00	180.0	Waveguide	1	2.00	6.00	100	3	Individual	0.00	N	1.00	1.00	0.00
0.00	170.0	7/8" Coax	1	1.09	0.33	100	3	Individual	0.00	N	1.00	1.00	0.00
0.00	166.0	1 5/8" Coax	12	1.98	0.82	100	3	Individual	0.00	N	1.00	1.00	0.00
0.00	166.0	1 5/8" Coax	6	1.98	0.82	100	3	Individual	0.00	N	1.00	1.00	0.00
0.00	166.0	7/8" Coax	3	1.09	0.33	100	None	Individual	0.00	N	1.00	1.00	0.00
0.00	166.0	Waveguide	1	2.00	6.00	100	3	Individual	0.00	N	1.00	1.00	0.00
30.00	166.0	1 1/4" Hybriflex	5	1.54	1.00	100	3	Individual	0.00	N	1.00	1.00	0.00
30.00	166.0	1 5/8" Hybriflex	1	1.98	1.30	100	3	Individual	0.00	N	1.00	1.00	0.00
30.00	157.0	0.39" (10mm) Fiber	3	0.39	0.06	100	1	Individual	0.00	N	1.00	1.00	0.01
30.00	157.0	0.78" (19.7mm) 8	6	0.78	0.59	100	1	Individual	0.00	N	1.00	1.00	0.01
30.00	157.0	1 5/8" Coax	12	1.98	0.82	100	1	Individual	0.00	N	1.00	1.00	0.00
30.00	157.0	2" conduit	1	2.38	3.65	100	1	Individual	0.00	N	1.00	1.00	0.00
30.00	157.0	Waveguide	1	2.00	6.00	100	1	Individual	0.00	N	1.00	1.00	0.00
30.00	156.0	1 5/8" Coax	1	1.98	0.82	100	3	Individual	0.00	N	1.00	1.00	0.01
0.00	144.0	1.60" (40.6mm)	1	1.60	2.34	100	None	Individual	0.00	N	1.00	1.00	0.00
0.00	132.0	1 1/4" Hybriflex	2	1.54	1.00	100	None	Individual	0.00	N	1.00	1.00	0.00
0.00	132.0	1 5/8" Coax	12	1.98	0.82	100	None	Individual	0.00	N	1.00	1.00	0.00
0.00	132.0	1 5/8" Hybriflex	2	1.98	1.30	100	3	Individual	0.00	N	1.00	1.00	0.00
0.00	132.0	1/2" Coax	1	0.63	0.15	100	None	Individual	0.00	N	1.00	1.00	0.00

Equivalent Lateral Force Method

Spectral Response Acceleration for Short Period (S_s):	0.19
Spectral Response Acceleration at 1.0 Second Period (S_1):	0.05
Long-Period Transition Period (T_L - Seconds):	6
Importance Factor (I_e):	1.00
Site Coefficient F_a:	1.60
Site Coefficient F_v:	2.40
Response Modification Coefficient (R):	3.00
Design Spectral Response Acceleration at Short Period (S_{ds}):	0.21
Design Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.08
Seismic Response Coefficient (C_s):	0.04
Upper Limit C_s:	0.04
Lower Limit C_s:	0.03
Period based on Rayleigh Method (sec):	0.65
Redundancy Factor (p):	1.30
Seismic Force Distribution Exponent (k):	1.08
Total Unfactored Dead Load:	64.26 k
Seismic Base Shear (E):	3.62 k

LoadCase 1.2D + 1.0Ev + 1.0Eh Seismic

Section	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
9	170.00	1,741	436,958	0.055	201	2,161
8	150.00	3,166	694,390	0.088	319	3,930
7	130.00	4,014	754,757	0.096	347	4,983
6	110.00	4,890	768,205	0.098	353	6,070
5	90.00	6,454	817,058	0.104	376	8,012
4	70.00	7,416	716,457	0.091	330	9,206
3	50.00	7,654	514,893	0.065	237	9,502
2	30.00	8,316	322,902	0.041	149	10,324
1	10.00	8,229	97,994	0.012	45	10,216
Generic 15' Omni	180.00	40	10,675	0.001	5	50
Generic 15' Omni	180.00	40	10,675	0.001	5	50
Generic 15' Omni	180.00	80	21,350	0.003	10	99
Generic 8' Omni	180.00	50	13,344	0.002	6	62
Generic 5' Omni	180.00	10	2,669	0.000	1	12
dbSpectra ATS4TMA4-4	180.00	50	13,344	0.002	6	62
Round Side Arm	180.00	300	80,062	0.010	37	372
Round Sector Frame	180.00	300	80,062	0.010	37	372
Generic 13' Omni	170.00	40	10,038	0.001	5	50
Generic 12" x 9" x 6" TMA	166.00	60	14,677	0.002	7	74
Ericsson Radio 4449 B71 B85A	166.00	225	55,037	0.007	25	279
Ericsson RRUS 4415 B25	166.00	138	33,756	0.004	16	171
Ericsson Air6449 B41	166.00	312	76,318	0.010	35	387
Ericsson AIR 21, 1.3M, B2A B4P (91.5 lbs	166.00	275	67,145	0.009	31	341
Ericsson AIR32 B66Aa/B2a	166.00	397	97,012	0.012	45	492
Round Sector Frame	166.00	900	220,149	0.028	101	1,117

Equivalent Lateral Force Method

RFS APXVAARR24_43-U-NA20	166.00	384	93,857	0.012	43	476
Kaelus DBCT108F1V92-1	157.00	83	19,213	0.002	9	104
Powerwave Allgon LGP21401	157.00	85	19,489	0.002	9	105
Raycap DC6-48-60-18-8F (23.5" Height)	157.00	60	13,822	0.002	6	74
Ericsson RRUS 4426 B66	157.00	145	33,450	0.004	15	180
Ericsson RRUS 4478 B14	157.00	178	41,052	0.005	19	221
Ericsson RRUS 4478 B5 (56.1 lbs)	157.00	168	38,772	0.005	18	209
Ericsson RRUS-11 (50 lbs.)	157.00	150	34,556	0.004	16	186
Ericsson RRUS 32 B2	157.00	159	36,629	0.005	17	197
Ericsson RRUS-32 (77 lbs)	157.00	231	53,216	0.007	24	287
Powerwave Allgon 7770.00	157.00	105	24,189	0.003	11	130
CCI HPA-65R-BUU-H8	157.00	204	46,996	0.006	22	253
CCI TPA-65R-LCUUUU-H8	157.00	245	56,395	0.007	26	304
Kathrein Scala 80010966	157.00	344	79,202	0.010	36	427
Generic Flat Light Sector Frame	157.00	1,200	276,446	0.035	127	1,490
Generic 15' Omni	156.00	40	9,152	0.001	4	50
Round Side Arm	156.00	150	34,319	0.004	16	186
Commscope RDIDC-9181-PF-48	144.00	22	4,597	0.001	2	27
Fujitsu TA08025-B604	144.00	192	40,241	0.005	19	238
Fujitsu TA08025-B605	144.00	225	47,231	0.006	22	279
JMA Wireless MX08FRO665-21	144.00	193	40,619	0.005	19	240
Generic Flat Light Sector Frame	144.00	1,200	251,899	0.032	116	1,490
Samsung Outdoor CBRS 20W RRH	132.00	56	10,667	0.001	5	69
Raycap RRFDC-1064-PF-48	132.00	28	5,352	0.001	2	35
Samsung B5/B13 RRH-BR04C	132.00	211	40,315	0.005	19	262
Samsung B2/B66A RRH-BR049	132.00	253	48,401	0.006	22	314
Samsung CBRS 64T64R MMU	132.00	225	43,010	0.005	20	279
JMA Wireless MX06FRO660-02	132.00	276	52,759	0.007	24	343
Round Sector Frame	132.00	900	172,042	0.022	79	1,117
VZW Unused Reserve (19857.21 sqin)	132.00	1,451	277,389	0.035	128	1,801
		64,259	7,875,202	1.000	3,623	79,770

LoadCase 0.9D - 1.0Ev + 1.0Eh Seismic (Reduced DL)

Section	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
9	170.00	1,741	436,958	0.055	201	1,495
8	150.00	3,166	694,390	0.088	319	2,718
7	130.00	4,014	754,757	0.096	347	3,446
6	110.00	4,890	768,205	0.098	353	4,198
5	90.00	6,454	817,058	0.104	376	5,541
4	70.00	7,416	716,457	0.091	330	6,367
3	50.00	7,654	514,893	0.065	237	6,572
2	30.00	8,316	322,902	0.041	149	7,140
1	10.00	8,229	97,994	0.012	45	7,066
Generic 15' Omni	180.00	40	10,675	0.001	5	34
Generic 15' Omni	180.00	40	10,675	0.001	5	34
Generic 15' Omni	180.00	80	21,350	0.003	10	69
Generic 8' Omni	180.00	50	13,344	0.002	6	43
Generic 5' Omni	180.00	10	2,669	0.000	1	9
dbSpectra ATS4TMA4-4	180.00	50	13,344	0.002	6	43
Round Side Arm	180.00	300	80,062	0.010	37	258
Round Sector Frame	180.00	300	80,062	0.010	37	258
Generic 13' Omni	170.00	40	10,038	0.001	5	34

Equivalent Lateral Force Method

Generic 12" x 9" x 6" TMA	166.00	60	14,677	0.002	7	52
Ericsson Radio 4449 B71 B85A	166.00	225	55,037	0.007	25	193
Ericsson RRUS 4415 B25	166.00	138	33,756	0.004	16	118
Ericsson Air6449 B41	166.00	312	76,318	0.010	35	268
Ericsson AIR 21, 1.3M, B2A B4P (91.5 lbs	166.00	275	67,145	0.009	31	236
Ericsson AIR32 B66Aa/B2a	166.00	397	97,012	0.012	45	341
Round Sector Frame	166.00	900	220,149	0.028	101	773
RFS APXVAARR24_43-U-NA20	166.00	384	93,857	0.012	43	329
Kaelus DBCT108F1V92-1	157.00	83	19,213	0.002	9	72
Powerwave Allgon LGP21401	157.00	85	19,489	0.002	9	73
Raycap DC6-48-60-18-8F (23.5" Height)	157.00	60	13,822	0.002	6	52
Ericsson RRUS 4426 B66	157.00	145	33,450	0.004	15	125
Ericsson RRUS 4478 B14	157.00	178	41,052	0.005	19	153
Ericsson RRUS 4478 B5 (56.1 lbs)	157.00	168	38,772	0.005	18	145
Ericsson RRUS-11 (50 lbs.)	157.00	150	34,556	0.004	16	129
Ericsson RRUS 32 B2	157.00	159	36,629	0.005	17	137
Ericsson RRUS-32 (77 lbs)	157.00	231	53,216	0.007	24	198
Powerwave Allgon 7770.00	157.00	105	24,189	0.003	11	90
CCI HPA-65R-BUU-H8	157.00	204	46,996	0.006	22	175
CCI TPA-65R-LCUUUU-H8	157.00	245	56,395	0.007	26	210
Kathrein Scala 80010966	157.00	344	79,202	0.010	36	295
Generic Flat Light Sector Frame	157.00	1,200	276,446	0.035	127	1,030
Generic 15' Omni	156.00	40	9,152	0.001	4	34
Round Side Arm	156.00	150	34,319	0.004	16	129
Commscope RDIDC-9181-PF-48	144.00	22	4,597	0.001	2	19
Fujitsu TA08025-B604	144.00	192	40,241	0.005	19	165
Fujitsu TA08025-B605	144.00	225	47,231	0.006	22	193
JMA Wireless MX08FRO665-21	144.00	193	40,619	0.005	19	166
Generic Flat Light Sector Frame	144.00	1,200	251,899	0.032	116	1,030
Samsung Outdoor CBRS 20W RRH	132.00	56	10,667	0.001	5	48
Raycap RRFDC-1064-PF-48	132.00	28	5,352	0.001	2	24
Samsung B5/B13 RRH-BR04C	132.00	211	40,315	0.005	19	181
Samsung B2/B66A RRH-BR049	132.00	253	48,401	0.006	22	217
Samsung CBRS 64T64R MMU	132.00	225	43,010	0.005	20	193
JMA Wireless MX06FRO660-02	132.00	276	52,759	0.007	24	237
Round Sector Frame	132.00	900	172,042	0.022	79	773
VZW Unused Reserve (19857.21 sqin)	132.00	1,451	277,389	0.035	128	1,246
		64,259	7,875,203	1.000	3,623	55,174

Force/Stress Summary

Section: 1 1 Bot Elev (ft): 0.00 Height (ft): 20.000

Max Compression Member	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'y (ksi)	Phic Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG PX - 12" DIA PIPE	-320.12	1.2D + 1.0W Normal	10.02	100	100	100	27.8	50.0	816.60	0	0	0.00	0.00	39	Member X
HORIZ PST - 3" DIA PIPE	-9.22	0.9D + 1.0W 90 deg	12.17	100	100	100	125.9	50.0	31.77	2	0	0.00	40.44	29	Member X
DIAG PST - 3-1/2" DIA PIP	-14.14	1.2D + 1.0W 90 deg	15.75	100	100	100	141.1	50.0	30.41	3	0	0.00	63.46	46	Member X

Max Tension Member	Pu (kip)	Load Case	Fy (ksi)	Fu (ksi)	Phit Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Blk Shear phit Pn (kip)	Use %	Controls
LEG PX - 12" DIA PIPE	276.83	0.9D + 1.0W 60 deg	50	65	864.00	0	0	0.00	0.00		32	Member
HORIZ PST - 3" DIA PIPE	10.72	1.2D + 1.0W 90 deg	50	65	100.35	2	0	0.00	32.43	0.00	33	Bolt Bear
DIAG PST - 3-1/2" DIA PIP	13.23	0.9D + 1.0W 90 deg	50	65	120.60	3	0	0.00	55.09	0.00	24	Bolt Bear

Max Splice Forces	Pu (kip)	Load Case	phiRnt (kip)	Use %	Num Bolts	Bolt Type
Top Tension	261.71	0.9D + 1.0W 60 deg	0.00	0	0	
Top Compression	302.60	1.2D + 1.0W Normal	0.00	0		
Bot Tension	290.41	0.9D + 1.0W 60 deg	1362.92	12	24	1" A354-BC
Bot Compression	334.92	1.2D + 1.0W Normal	1584.63	36		

Section: 2 1 Bot Elev (ft): 20.00 Height (ft): 20.000

Max Compression Member	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'y (ksi)	Phic Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG PX - 12" DIA PIPE	-288.78	1.2D + 1.0W Normal	10.03	100	100	100	27.8	50.0	816.53	0	0	0.00	0.00	35	Member X
HORIZ PST - 3" DIA PIPE	-8.43	1.2D + 1.0W 90 deg	10.88	100	100	100	112.6	50.0	39.73	2	0	0.00	40.44	21	Member X
DIAG PST - 3-1/2" DIA PIP	-12.72	1.2D + 1.0W 90 deg	15.29	100	100	100	137.0	50.0	32.26	3	0	0.00	63.46	39	Member X

Max Tension Member	Pu (kip)	Load Case	Fy (ksi)	Fu (ksi)	Phit Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Blk Shear phit Pn (kip)	Use %	Controls
LEG PX - 12" DIA PIPE	245.17	1.2D + 1.0W 60 deg	50	65	864.00	0	0	0.00	0.00		28	Member
HORIZ PST - 3" DIA PIPE	9.07	1.2D + 1.0W 90 deg	50	65	100.35	2	0	0.00	32.43	0.00	27	Bolt Bear
DIAG PST - 3-1/2" DIA PIP	11.60	0.9D + 1.0W 90 deg	50	65	120.60	3	0	0.00	55.09	0.00	21	Bolt Bear

Max Splice Forces	Pu (kip)	Load Case	phiRnt (kip)	Use %	Num Bolts	Bolt Type
Top Tension	236.61	0.9D + 1.0W 60 deg	0.00	0	0	
Top Compression	272.09	1.2D + 1.0W Normal	0.00	0		
Bot Tension	261.71	0.9D + 1.0W 60 deg	872.27	30	16	1 A325
Bot Compression	0.00		0.00	0		

Force/Stress Summary

Section: 3 1 Bot Elev (ft): 40.00 Height (ft): 20.000

Max Compression Member	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'y (ksi)	Phic Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG PX - 10" DIA PIPE	-255.07	1.2D + 1.0W Normal	10.03	100	100	100	33.1	50.0	668.58	0	0	0.00	0.00	38	Member X
HORIZ PST - 2-1/2" DIA PIP	-8.94	0.9D + 1.0W 90 deg	9.570	100	100	100	121.3	50.0	26.18	2	0	0.00	38.00	34	Member X
DIAG PX - 3" DIA PIPE	-13.94	1.2D + 1.0W 90 deg	14.28	100	100	100	150.4	50.0	30.17	3	0	0.00	84.24	46	Member X

Max Tension Member	Pu (kip)	Load Case	Fy (ksi)	Fu (ksi)	Phit Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Blk Shear phit Pn (kip)	Use %	Controls
LEG PX - 10" DIA PIPE	217.99	1.2D + 1.0W 60 deg	50	65	724.50	0	0	0.00	0.00		30	Member
HORIZ PST - 2-1/2" DIA PIP	9.31	1.2D + 1.0W 90 deg	50	65	76.68	2	0	0.00	30.48	0.00	30	Bolt Bear
DIAG PX - 3" DIA PIPE	12.84	1.2D + 1.0W 90 deg	50	65	135.90	3	0	0.00	73.13	0.00	17	Bolt Bear

Max Splice Forces	Pu (kip)	Load Case	phiRnt (kip)	Use %	Num Bolts	Bolt Type
Top Tension	205.78	0.9D + 1.0W 60 deg	0.00	0	0	
Top Compression	235.77	1.2D + 1.0W Normal	0.00	0		
Bot Tension	236.61	0.9D + 1.0W 60 deg	872.27	27	16	1 A325
Bot Compression	0.00		0.00	0		

Section: 4 1 Bot Elev (ft): 60.00 Height (ft): 20.000

Max Compression Member	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'y (ksi)	Phic Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG PX - 10" DIA PIPE	-218.41	1.2D + 1.0W Normal	10.03	100	100	100	33.2	50.0	668.56	0	0	0.00	0.00	32	Member X
HORIZ PST - 2-1/2" DIA PIP	-8.02	1.2D + 1.0W 90 deg	8.298	100	100	100	105.1	50.0	34.17	2	0	0.00	38.00	23	Member X
DIAG PX - 3" DIA PIPE	-13.57	1.2D + 1.0W 90 deg	13.42	100	100	100	141.3	50.0	34.18	3	0	0.00	84.24	39	Member X

Max Tension Member	Pu (kip)	Load Case	Fy (ksi)	Fu (ksi)	Phit Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Blk Shear phit Pn (kip)	Use %	Controls
LEG PX - 10" DIA PIPE	190.98	0.9D + 1.0W 60 deg	50	65	724.50	0	0	0.00	0.00		26	Member
HORIZ PST - 2-1/2" DIA PIP	8.39	1.2D + 1.0W 90 deg	50	65	76.68	2	0	0.00	30.48	0.00	27	Bolt Bear
DIAG PX - 3" DIA PIPE	12.57	1.2D + 1.0W 90 deg	50	65	135.90	3	0	0.00	73.13	0.00	17	Bolt Bear

Max Splice Forces	Pu (kip)	Load Case	phiRnt (kip)	Use %	Num Bolts	Bolt Type
Top Tension	173.97	0.9D + 1.0W 60 deg	0.00	0	0	
Top Compression	198.80	1.2D + 1.0W Normal	0.00	0		
Bot Tension	205.78	0.9D + 1.0W 60 deg	654.20	31	12	1 A325
Bot Compression	0.00		0.00	0		

Force/Stress Summary

Section: 5 1 Bot Elev (ft): 80.00 Height (ft): 20.000

Max Compression Member	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'y (ksi)	Phic Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG PSP - 8.75" OD x 0.5	-179.37	1.2D + 1.0W Normal	10.03	100	100	100	41.2	50.0	515.18	0	0	0.00	0.00	34	Member X
HORIZ PX - 2" DIA PIPE	-7.70	1.2D + 1.0W 90 deg	7.035	100	100	100	110.2	50.0	27.40	2	0	0.00	40.81	28	Member X
DIAG PX - 3" DIA PIPE	-14.11	1.2D + 1.0W 90 deg	12.59	100	100	100	132.6	50.0	38.81	3	0	0.00	84.24	36	Member X

Max Tension Member	Pu (kip)	Load Case	Fy (ksi)	Fu (ksi)	Phit Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Blk Shear phit Pn (kip)	Use %	Controls
LEG PSP - 8.75" OD x 0.5	154.03	1.2D + 1.0W 60 deg	50	65	583.15	0	0	0.00	0.00		26	Member
HORIZ PX - 2" DIA PIPE	7.92	1.2D + 1.0W 90 deg	50	65	66.60	2	0	0.00	32.73	0.00	24	Bolt Bear
DIAG PX - 3" DIA PIPE	13.29	1.2D + 1.0W 90 deg	50	65	135.90	3	0	0.00	73.13	0.00	18	Bolt Bear

Max Splice Forces	Pu (kip)	Load Case	phiRnt (kip)	Use %	Num Bolts	Bolt Type
Top Tension	137.28	0.9D + 1.0W 60 deg	0.00	0	0	
Top Compression	157.50	1.2D + 1.0W Normal	0.00	0		
Bot Tension	173.97	0.9D + 1.0W 60 deg	654.20	27	12	1 A325
Bot Compression	0.00		0.00	0		

Section: 6 1 Bot Elev (ft): 100.0 Height (ft): 20.000

Max Compression Member	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'y (ksi)	Phic Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG PX - 6" DIA PIPE	-142.65	1.2D + 1.0W Normal	6.68	100	100	100	36.5	50.0	342.89	0	0	0.00	0.00	41	Member X
HORIZ PST - 2" DIA PIPE	-7.66	1.2D + 1.0W 90 deg	6.072	100	100	100	92.6	50.0	25.73	2	0	0.00	24.02	29	Member X
DIAG PST - 2-1/2" DIA PIP	-11.88	1.2D + 1.0W 90 deg	9.258	100	100	100	117.3	50.0	27.97	3	0	0.00	47.50	42	Member X

Max Tension Member	Pu (kip)	Load Case	Fy (ksi)	Fu (ksi)	Phit Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Blk Shear phit Pn (kip)	Use %	Controls
LEG PX - 6" DIA PIPE	121.79	1.2D + 1.0W 60 deg	50	65	378.00	0	0	0.00	0.00		32	Member
HORIZ PST - 2" DIA PIPE	7.80	1.2D + 1.0W 90 deg	50	65	48.15	2	0	0.00	19.22	0.00	40	Bolt Bear
DIAG PST - 2-1/2" DIA PIP	11.69	1.2D + 1.0W 90 deg	50	65	76.68	3	0	0.00	41.17	0.00	28	Bolt Bear

Max Splice Forces	Pu (kip)	Load Case	phiRnt (kip)	Use %	Num Bolts	Bolt Type
Top Tension	93.65	0.9D + 1.0W 60 deg	0.00	0	0	
Top Compression	109.91	1.2D + 1.0W Normal	0.00	0		
Bot Tension	137.28	0.9D + 1.0W 60 deg	436.14	31	8	1 A325
Bot Compression	0.00		0.00	0		

Force/Stress Summary

Section: 7 1 Bot Elev (ft): 120.0 Height (ft): 20.000

Max Compression Member		Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'y (ksi)	Phic Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG	PSP - ROHN 5 EH	-93.73	1.2D + 1.0W Normal	6.68	100	100	100	43.6	50.0	239.34	0	0	0.00	0.00	39	Member X
HORIZ	PST - 1-1/2" DIA PIP	-7.20	1.2D + 1.0W 90 deg	5.030	100	100	100	96.9	50.0	18.10	2	0	0.00	22.62	39	Member X
DIAG	PST - 2-1/2" DIA PIP	-12.25	1.2D + 1.0W 90 deg	8.566	100	100	100	108.5	50.0	32.40	3	0	0.00	47.50	37	Member X

Max Tension Member		Pu (kip)	Load Case	Fy (ksi)	Fu (ksi)	Phit Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Blk Shear phit Pn (kip)	Use %	Controls
LEG	PSP - ROHN 5 EH	78.47	0.9D + 1.0W 60 deg	50	65	274.95	0	0	0.00	0.00		28	Member
HORIZ	PST - 1-1/2" DIA PIP	7.30	1.2D + 1.0W 90 deg	50	65	35.96	2	0	0.00	18.10	0.00	40	Bolt Bear
DIAG	PST - 2-1/2" DIA PIP	12.09	1.2D + 1.0W 90 deg	50	65	76.68	3	0	0.00	41.17	0.00	29	Bolt Bear

Max Splice Forces	Pu (kip)	Load Case	phiRnt (kip)	Use %	Num Bolts	Bolt Type
Top Tension	49.55	0.9D + 1.0W 60 deg	0.00	0	0	
Top Compression	60.70	1.2D + 1.0W Normal	0.00	0		
Bot Tension	93.65	0.9D + 1.0W 60 deg	327.10	29	6	1 A325
Bot Compression	0.00		0.00	0		

Section: 8 1 Bot Elev (ft): 140.0 Height (ft): 20.000

Max Compression Member		Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'y (ksi)	Phic Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG	PST - 4" DIA PIPE	-43.67	1.2D + 1.0W Normal	6.67	100	100	100	53.0	50.0	116.18	0	0	0.00	0.00	37	Member X
HORIZ	PST - 2" DIA PIPE	-5.96	1.2D + 1.0W 90 deg	4.325	100	100	100	66.0	50.0	35.03	2	0	0.00	24.02	17	Member X
DIAG	PST - 2-1/2" DIA PIP	-11.67	1.2D + 1.0W 90 deg	7.955	100	100	100	100.8	50.0	36.48	3	0	0.00	47.50	31	Member X

Max Tension Member		Pu (kip)	Load Case	Fy (ksi)	Fu (ksi)	Phit Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Blk Shear phit Pn (kip)	Use %	Controls
LEG	PST - 4" DIA PIPE	33.49	0.9D + 1.0W 60 deg	50	65	142.65	0	0	0.00	0.00		23	Member
HORIZ	PST - 2" DIA PIPE	6.07	1.2D + 1.0W 90 deg	50	65	48.15	2	0	0.00	19.22	0.00	31	Bolt Bear
DIAG	PST - 2-1/2" DIA PIP	11.42	1.2D + 1.0W 90 deg	50	65	76.68	3	0	0.00	41.17	0.00	27	Bolt Bear

Max Splice Forces	Pu (kip)	Load Case	phiRnt (kip)	Use %	Num Bolts	Bolt Type
Top Tension	9.01	0.9D + 1.0W 60 deg	0.00	0	0	
Top Compression	15.68	1.2D + 1.0W Normal	0.00	0		
Bot Tension	49.55	0.9D + 1.0W 60 deg	218.07	23	4	1 A325
Bot Compression	0.00		0.00	0		

Force/Stress Summary

Section: 9 1 Bot Elev (ft): 160.0 Height (ft): 20.000

Max Compression Member	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'y (ksi)	Phic Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG PST - 3" DIA PIPE	-7.25	1.2D + 1.0W Normal	6.67	100	100	100	69.0	50.0	70.87	0	0	0.00	0.00	10	Member X
HORIZ PST - 1-1/2" DIA PIP	-2.41	0.9D + 1.0W Normal	4.280	100	100	100	82.4	50.0	21.87	2	0	0.00	22.62	11	Member X
DIAG PST - 2" DIA PIPE	-4.42	1.2D + 1.0W 90 deg	7.931	100	100	100	120.9	50.0	16.53	3	0	0.00	36.04	26	Member X

Max Tension Member	Pu (kip)	Load Case	Fy (ksi)	Fu (ksi)	Phit Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Blk Shear phit Pn (kip)	Use %	Controls
LEG PST - 3" DIA PIPE	3.32	1.2D + 1.0W 60 deg	50	65	100.35	0	0	0.00	0.00		3	Member
HORIZ PST - 1-1/2" DIA PIP	2.33	1.2D + 1.0W 60 deg	50	65	35.96	2	0	0.00	18.10	0.00	12	Bolt Bear
DIAG PST - 2" DIA PIPE	4.29	1.2D + 1.0W 90 deg	50	65	48.15	3	0	0.00	31.23	0.00	13	Bolt Bear

Max Splice Forces	Pu (kip)	Load Case	phiRnt (kip)	Use %	Num Bolts	Bolt Type
Top Tension	0.00		0.00	0	0	
Top Compression	0.90	1.2D + 1.0Di + 1.0Wi	0.00	0		
Bot Tension	9.01	0.9D + 1.0W 60 deg	166.22	5	4	0.875" A325
Bot Compression	0.00		0.00	0		

Detailed Reactions

Load Case	Radius (ft)	Elevation (ft)	Azimuth (deg)	Node	FX (kip)	FY (kip)	FZ (kip)	(-) = Uplift (+) = Down
1.2D + 1.0W Normal	**14.75**	**00.00**	**0**	**1**	**0.00**	**333.72**	**-38.59**	
	14.75	**00.00**	**120**	**1a**	**11.11**	**-128.31**	**-12.20**	
	14.75	**00.00**	**240**	**1b**	**-11.11**	**-128.31**	**-12.20**	
1.2D + 1.0W 60 deg	**14.75**	**00.00**	**0**	**1**	**-4.88**	**179.72**	**-20.57**	
	14.75	**00.00**	**120**	**1a**	**-20.25**	**179.41**	**6.05**	
	14.75	**00.00**	**240**	**1b**	**-29.43**	**-282.02**	**-16.99**	
1.2D + 1.0W 90 deg	**14.75**	**00.00**	**0**	**1**	**-5.72**	**25.71**	**-2.46**	
	14.75	**00.00**	**120**	**1a**	**-30.64**	**292.11**	**14.46**	
	14.75	**00.00**	**240**	**1b**	**-26.65**	**-240.70**	**-12.00**	
0.9D + 1.0W Normal	**14.75**	**00.00**	**0**	**1**	**0.00**	**327.09**	**-37.98**	
	14.75	**00.00**	**120**	**1a**	**11.64**	**-134.63**	**-12.51**	
	14.75	**00.00**	**240**	**1b**	**-11.64**	**-134.63**	**-12.51**	
0.9D + 1.0W 60 deg	**14.75**	**00.00**	**0**	**1**	**-4.89**	**173.18**	**-19.95**	
	14.75	**00.00**	**120**	**1a**	**-19.72**	**172.88**	**5.74**	
	14.75	**00.00**	**240**	**1b**	**-29.96**	**-288.23**	**-17.29**	
0.9D + 1.0W 90 deg	**14.75**	**00.00**	**0**	**1**	**-5.72**	**19.28**	**-1.85**	
	14.75	**00.00**	**120**	**1a**	**-30.10**	**285.49**	**14.15**	
	14.75	**00.00**	**240**	**1b**	**-27.18**	**-246.94**	**-12.31**	
1.2D + 1.0Di + 1.0Wi Normal	**14.75**	**00.00**	**0**	**1**	**0.00**	**147.29**	**-15.13**	
	14.75	**00.00**	**120**	**1a**	**1.32**	**2.33**	**-2.69**	
	14.75	**00.00**	**240**	**1b**	**-1.32**	**2.33**	**-2.69**	
1.2D + 1.0Di + 1.0Wi 60 deg	**14.75**	**00.00**	**0**	**1**	**-1.66**	**98.97**	**-9.27**	
	14.75	**00.00**	**120**	**1a**	**-8.85**	**98.91**	**3.20**	
	14.75	**00.00**	**240**	**1b**	**-7.26**	**-45.93**	**-4.19**	
1.2D + 1.0Di + 1.0Wi 90 deg	**14.75**	**00.00**	**0**	**1**	**-1.93**	**50.65**	**-3.39**	
	14.75	**00.00**	**120**	**1a**	**-12.22**	**134.28**	**5.95**	
	14.75	**00.00**	**240**	**1b**	**-6.37**	**-32.97**	**-2.56**	
1.2D + 1.0Ev + 1.0Eh Normal M1	**14.75**	**00.00**	**0**	**1**	**0.00**	**45.84**	**-4.66**	
	14.75	**00.00**	**120**	**1a**	**-1.40**	**15.94**	**0.54**	
	14.75	**00.00**	**240**	**1b**	**1.40**	**15.94**	**0.54**	
1.2D + 1.0Ev + 1.0Eh 60 deg M1	**14.75**	**00.00**	**0**	**1**	**-0.23**	**35.88**	**-3.60**	
	14.75	**00.00**	**120**	**1a**	**-3.23**	**35.88**	**1.60**	
	14.75	**00.00**	**240**	**1b**	**0.36**	**5.98**	**0.21**	
1.2D + 1.0Ev + 1.0Eh 90 deg M1	**14.75**	**00.00**	**0**	**1**	**-0.27**	**25.91**	**-2.54**	
	14.75	**00.00**	**120**	**1a**	**-3.85**	**43.17**	**2.07**	
	14.75	**00.00**	**240**	**1b**	**0.54**	**8.65**	**0.47**	
0.9D - 1.0Ev + 1.0Eh Normal M1	**14.75**	**00.00**	**0**	**1**	**0.00**	**37.84**	**-3.87**	
	14.75	**00.00**	**120**	**1a**	**-0.72**	**7.96**	**0.15**	
	14.75	**00.00**	**240**	**1b**	**0.72**	**7.96**	**0.15**	
0.9D - 1.0Ev + 1.0Eh 60 deg M1	**14.75**	**00.00**	**0**	**1**	**-0.23**	**27.88**	**-2.81**	
	14.75	**00.00**	**120**	**1a**	**-2.55**	**27.88**	**1.21**	
	14.75	**00.00**	**240**	**1b**	**-0.32**	**-2.00**	**-0.18**	
0.9D - 1.0Ev + 1.0Eh 90 deg M1	**14.75**	**00.00**	**0**	**1**	**-0.27**	**17.92**	**-1.76**	
	14.75	**00.00**	**120**	**1a**	**-3.18**	**35.17**	**1.68**	

	14.75	**00.00**	**240**	**1b**	**-0.14**	**0.67**	**0.08**
1.0D + 1.0W Service Normal	**14.75**	**00.00**	**0**	**1**	**0.00**	**92.18**	**-10.43**
	14.75	**00.00**	**120**	**1a**	**1.29**	**-13.96**	**-2.08**
	14.75	**00.00**	**240**	**1b**	**-1.29**	**-13.96**	**-2.08**
1.0D + 1.0W Service 60 deg	**14.75**	**00.00**	**0**	**1**	**-1.16**	**56.80**	**-6.24**
	14.75	**00.00**	**120**	**1a**	**-5.98**	**56.73**	**2.12**
	14.75	**00.00**	**240**	**1b**	**-5.51**	**-49.27**	**-3.18**
1.0D + 1.0W Service 90 deg	**14.75**	**00.00**	**0**	**1**	**-1.34**	**21.42**	**-2.04**
	14.75	**00.00**	**120**	**1a**	**-8.40**	**82.62**	**4.08**
	14.75	**00.00**	**240**	**1b**	**-4.87**	**-39.78**	**-2.03**

Max Uplift:	288.23 (kip)	Moment Ice:	2,138.33 (kip-ft)	Moment:	6,815.53 (kip-ft)	1.2D + 1.0W Normal
Max Down:	333.72 (kip)	Total Down Ice:	151.95 (kip)	Total Down:	77.11 (kip)	
Max Shear:	38.59 (kip)	Total Shear Ice:	20.52 (kip)	Total Shear:	62.99 (kip)	

Deflections and Rotations

Load Case	Elevation (ft)	Deflection (ft)	Twist (deg)	Sway (deg)	Resultant (deg)
126 mph Normal with No Ice	133.33	0.409	0.0138	0.3914	0.3916
126 mph Normal with No Ice	146.67	0.504	0.0118	0.4448	0.4448
126 mph Normal with No Ice	153.33	0.556	0.0106	0.4380	0.4381
126 mph Normal with No Ice	160.00	0.611	0.0097	0.5532	0.5533
126 mph Normal with No Ice	166.67	0.666	0.0093	0.4479	0.4479
126 mph Normal with No Ice	180.00	0.774	0.0093	0.4642	0.4643
126 mph 60 degree with No Ice	133.33	0.408	0.0209	0.3895	0.3897
126 mph 60 degree with No Ice	146.67	0.503	0.0249	0.4338	0.4340
126 mph 60 degree with No Ice	153.33	0.555	0.0286	0.4663	0.4671
126 mph 60 degree with No Ice	160.00	0.608	0.0313	0.4323	0.4335
126 mph 60 degree with No Ice	166.67	0.663	0.0317	0.4763	0.4768
126 mph 60 degree with No Ice	180.00	0.770	0.0312	0.4644	0.4655
126 mph 90 degree with No Ice	133.33	0.408	-0.0188	0.3894	0.3898
126 mph 90 degree with No Ice	146.67	0.503	-0.0198	0.4303	0.4305
126 mph 90 degree with No Ice	153.33	0.554	-0.0211	0.4757	0.4762
126 mph 90 degree with No Ice	160.00	0.608	-0.0221	0.3835	0.3841
126 mph 90 degree with No Ice	166.67	0.662	-0.0222	0.4849	0.4851
126 mph 90 degree with No Ice	180.00	0.769	-0.0220	0.4650	0.4656
126 mph Normal with No Ice (Reduced DL)	133.33	0.409	0.0138	0.3908	0.3911
126 mph Normal with No Ice (Reduced DL)	146.67	0.504	0.0118	0.4442	0.4442
126 mph Normal with No Ice (Reduced DL)	153.33	0.556	0.0106	0.4374	0.4375
126 mph Normal with No Ice (Reduced DL)	160.00	0.610	0.0097	0.5526	0.5526
126 mph Normal with No Ice (Reduced DL)	166.67	0.665	0.0093	0.4473	0.4473
126 mph Normal with No Ice (Reduced DL)	180.00	0.773	0.0093	0.4636	0.4637
126 mph 60 deg with No Ice (Reduced DL)	133.33	0.408	0.0209	0.3891	0.3892
126 mph 60 deg with No Ice (Reduced DL)	146.67	0.502	0.0249	0.4333	0.4335
126 mph 60 deg with No Ice (Reduced DL)	153.33	0.554	0.0285	0.4657	0.4665
126 mph 60 deg with No Ice (Reduced DL)	160.00	0.608	0.0313	0.4317	0.4328
126 mph 60 deg with No Ice (Reduced DL)	166.67	0.662	0.0317	0.4757	0.4762
126 mph 60 deg with No Ice (Reduced DL)	180.00	0.769	0.0312	0.4638	0.4649
126 mph 90 deg with No Ice (Reduced DL)	133.33	0.408	-0.0188	0.3889	0.3893
126 mph 90 deg with No Ice (Reduced DL)	146.67	0.502	-0.0198	0.4297	0.4298
126 mph 90 deg with No Ice (Reduced DL)	153.33	0.554	-0.0211	0.4751	0.4756
126 mph 90 deg with No Ice (Reduced DL)	160.00	0.607	-0.0221	0.3828	0.3835
126 mph 90 deg with No Ice (Reduced DL)	166.67	0.661	-0.0222	0.4843	0.4844
126 mph 90 deg with No Ice (Reduced DL)	180.00	0.768	-0.0220	0.4644	0.4649
50 mph Normal with 1.00 in Radial Ice	133.33	0.125	0.0044	0.1144	0.1145
50 mph Normal with 1.00 in Radial Ice	146.67	0.152	0.0040	0.1286	0.1286
50 mph Normal with 1.00 in Radial Ice	153.33	0.167	0.0037	0.1282	0.1283
50 mph Normal with 1.00 in Radial Ice	160.00	0.183	0.0036	0.1508	0.1509
50 mph Normal with 1.00 in Radial Ice	166.67	0.199	0.0034	0.1316	0.1316
50 mph Normal with 1.00 in Radial Ice	180.00	0.230	0.0034	0.1345	0.1346
50 mph 60 deg with 1.00 in Radial Ice	133.33	0.125	0.0050	0.1140	0.1140
50 mph 60 deg with 1.00 in Radial Ice	146.67	0.153	0.0051	0.1258	0.1259
50 mph 60 deg with 1.00 in Radial Ice	153.33	0.167	0.0052	0.1335	0.1335
50 mph 60 deg with 1.00 in Radial Ice	160.00	0.183	0.0053	0.1274	0.1275
50 mph 60 deg with 1.00 in Radial Ice	166.67	0.199	0.0053	0.1369	0.1369
50 mph 60 deg with 1.00 in Radial Ice	180.00	0.230	0.0052	0.1344	0.1345
50 mph 90 deg with 1.00 in Radial Ice	133.33	0.125	-0.0056	0.1140	0.1140
50 mph 90 deg with 1.00 in Radial Ice	146.67	0.152	-0.0058	0.1257	0.1257
50 mph 90 deg with 1.00 in Radial Ice	153.33	0.167	-0.0060	0.1353	0.1354
50 mph 90 deg with 1.00 in Radial Ice	160.00	0.183	-0.0062	0.1186	0.1188
50 mph 90 deg with 1.00 in Radial Ice	166.67	0.198	-0.0061	0.1386	0.1386
50 mph 90 deg with 1.00 in Radial Ice	180.00	0.229	-0.0060	0.1346	0.1347
Seismic Normal M1	133.33	0.028	0.0012	0.0280	0.0280

Seismic Normal M1	146.67	0.035	0.0012	0.0320	0.0320
Seismic Normal M1	153.33	0.038	0.0012	0.0331	0.0331
Seismic Normal M1	160.00	0.042	0.0011	0.0338	0.0338
Seismic Normal M1	166.67	0.046	0.0011	0.0347	0.0347
Seismic Normal M1	180.00	0.054	0.0010	0.0341	0.0341
Seismic 60 deg M1	133.33	0.028	0.0012	0.0280	0.0280
Seismic 60 deg M1	146.67	0.035	0.0012	0.0317	0.0317
Seismic 60 deg M1	153.33	0.038	0.0012	0.0331	0.0331
Seismic 60 deg M1	160.00	0.042	0.0011	0.0339	0.0339
Seismic 60 deg M1	166.67	0.046	0.0011	0.0347	0.0347
Seismic 60 deg M1	180.00	0.054	0.0010	0.0342	0.0342
Seismic 90 deg M1	133.33	0.028	-0.0014	0.0280	0.0280
Seismic 90 deg M1	146.67	0.035	-0.0014	0.0319	0.0319
Seismic 90 deg M1	153.33	0.038	-0.0013	0.0331	0.0331
Seismic 90 deg M1	160.00	0.042	-0.0013	0.0339	0.0339
Seismic 90 deg M1	166.67	0.046	-0.0013	0.0347	0.0347
Seismic 90 deg M1	180.00	0.054	-0.0012	0.0342	0.0342
Seismic (Reduced DL) Normal M1	133.33	0.028	0.0012	0.0279	0.0279
Seismic (Reduced DL) Normal M1	146.67	0.035	0.0012	0.0319	0.0319
Seismic (Reduced DL) Normal M1	153.33	0.038	0.0012	0.0330	0.0330
Seismic (Reduced DL) Normal M1	160.00	0.042	0.0011	0.0338	0.0338
Seismic (Reduced DL) Normal M1	166.67	0.046	0.0011	0.0346	0.0346
Seismic (Reduced DL) Normal M1	180.00	0.054	0.0010	0.0340	0.0340
Seismic (Reduced DL) 60 deg M1	133.33	0.028	0.0012	0.0279	0.0279
Seismic (Reduced DL) 60 deg M1	146.67	0.035	0.0012	0.0316	0.0316
Seismic (Reduced DL) 60 deg M1	153.33	0.038	0.0012	0.0330	0.0330
Seismic (Reduced DL) 60 deg M1	160.00	0.042	0.0011	0.0338	0.0338
Seismic (Reduced DL) 60 deg M1	166.67	0.046	0.0011	0.0346	0.0346
Seismic (Reduced DL) 60 deg M1	180.00	0.054	0.0010	0.0341	0.0341
Seismic (Reduced DL) 90 deg M1	133.33	0.028	-0.0014	0.0279	0.0279
Seismic (Reduced DL) 90 deg M1	146.67	0.035	-0.0014	0.0318	0.0318
Seismic (Reduced DL) 90 deg M1	153.33	0.038	-0.0013	0.0330	0.0330
Seismic (Reduced DL) 90 deg M1	160.00	0.042	-0.0013	0.0338	0.0338
Seismic (Reduced DL) 90 deg M1	166.67	0.046	-0.0013	0.0346	0.0346
Seismic (Reduced DL) 90 deg M1	180.00	0.054	-0.0012	0.0341	0.0341
Serviceability - 60 mph Wind Normal	133.33	0.093	0.0031	0.0890	0.0890
Serviceability - 60 mph Wind Normal	146.67	0.115	0.0026	0.1011	0.1011
Serviceability - 60 mph Wind Normal	153.33	0.127	0.0023	0.0993	0.0994
Serviceability - 60 mph Wind Normal	160.00	0.139	0.0021	0.1254	0.1254
Serviceability - 60 mph Wind Normal	166.67	0.152	0.0019	0.1015	0.1015
Serviceability - 60 mph Wind Normal	180.00	0.176	0.0019	0.1052	0.1052
Serviceability - 60 mph Wind 60 deg	133.33	0.093	0.0036	0.0884	0.0884
Serviceability - 60 mph Wind 60 deg	146.67	0.115	0.0037	0.0982	0.0983
Serviceability - 60 mph Wind 60 deg	153.33	0.127	0.0038	0.1057	0.1057
Serviceability - 60 mph Wind 60 deg	160.00	0.139	0.0039	0.0980	0.0980
Serviceability - 60 mph Wind 60 deg	166.67	0.151	0.0038	0.1079	0.1079
Serviceability - 60 mph Wind 60 deg	180.00	0.175	0.0037	0.1052	0.1053
Serviceability - 60 mph Wind 90 deg	133.33	0.093	-0.0042	0.0884	0.0885
Serviceability - 60 mph Wind 90 deg	146.67	0.115	-0.0043	0.0978	0.0978
Serviceability - 60 mph Wind 90 deg	153.33	0.126	-0.0046	0.1078	0.1079
Serviceability - 60 mph Wind 90 deg	160.00	0.139	-0.0048	0.0869	0.0870
Serviceability - 60 mph Wind 90 deg	166.67	0.151	-0.0047	0.1099	0.1099
Serviceability - 60 mph Wind 90 deg	180.00	0.175	-0.0046	0.1054	0.1055

Maximum Reactions Summary

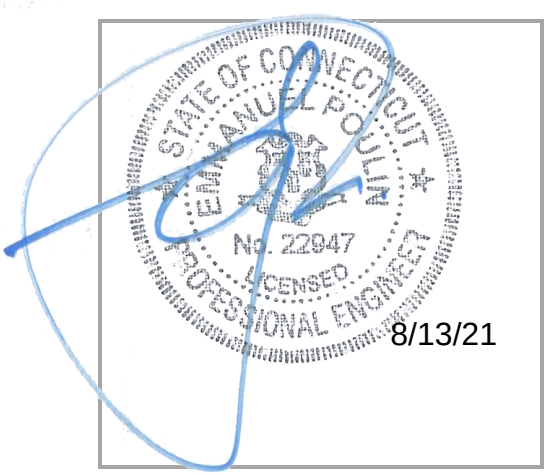
	Vertical (kip)				Horizontal (kip)		Moment (kip-ft)	
Anchor Group	DL+WL	DL+WL+IL	UpLift	Shear	DL+WL	DL+WL+IL	DL+WL	DL+WL+IL
Base	77.11	151.95	333.72	38.59	62.99	20.52	6815.53	2138.33

MOUNT ANALYSIS REPORT

August 13, 2021

Dish Wireless Site Name	BOBOS00025A
Dish Wireless Site Number	BOBOS00025A
ATC Site Name	Waterford CT, CT
ATC Site Number	411183
Infinigy Job Number	1197-F0001-C
Client	ATC
Carrier	Dish Wireless
Site Location	53 Dayton Rd Waterford, CT 06385 New London County 41.377831 N NAD83 72.139357 W NAD83
Mount Type	8.0 ft Sector Frames
Mount Elevation	142.0 ft AGL
Structural Usage Ratio	**42.4**
Overall Result	**Pass**

The enclosed mount structural analysis has been performed in accordance with the 2018 Connecticut State Building Code (2015 IBC) based on an ultimate 3-second gust wind speed of 135 mph. The evaluation criteria and applicable codes are presented in the next section of this report.



CONTENTS

1. INTRODUCTION

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

2. DESIGN/ANALYSIS PARAMETERS

Wind Speed	135 mph (3-Second Gust)
Wind Speed w/ ice	50 mph (3-Second Gust) w/ 1.5" 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 = 0.163 g / S_1 = 0.059 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 - 142.0 ft. AGL Sector Frames

Antenna Centerline (ft)	Qty.	Appurtenance Manufacturers	Appurtenance Models
142.0	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-411183 Rev 0, Site #BOBOS00025A, dated May 25, 2021
Mount Manufacturer Drawings	Commscope Document # MTC3975083, dated March 17, 2021
Structural Analysis Report	American Tower Corporation, Site #411183, dated June 23, 2021

5. RESULTS

Components	Capacity	Pass/Fail
Mount Pipes	27.0%	Pass
Horizontals	15.7%	Pass
Standoffs	42.4%	Pass
Connections	14.3%	Pass
MOUNT RATING =	**42.4 %**	**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 142.0 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

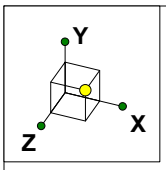
The antenna mounting system was properly fabricated, installed and maintained in accordance with its original design and manufacturer's specifications.
The configuration of antennas, mounts, and other appurtenances are as specified in the proposed loading configuration table.
All member connections are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

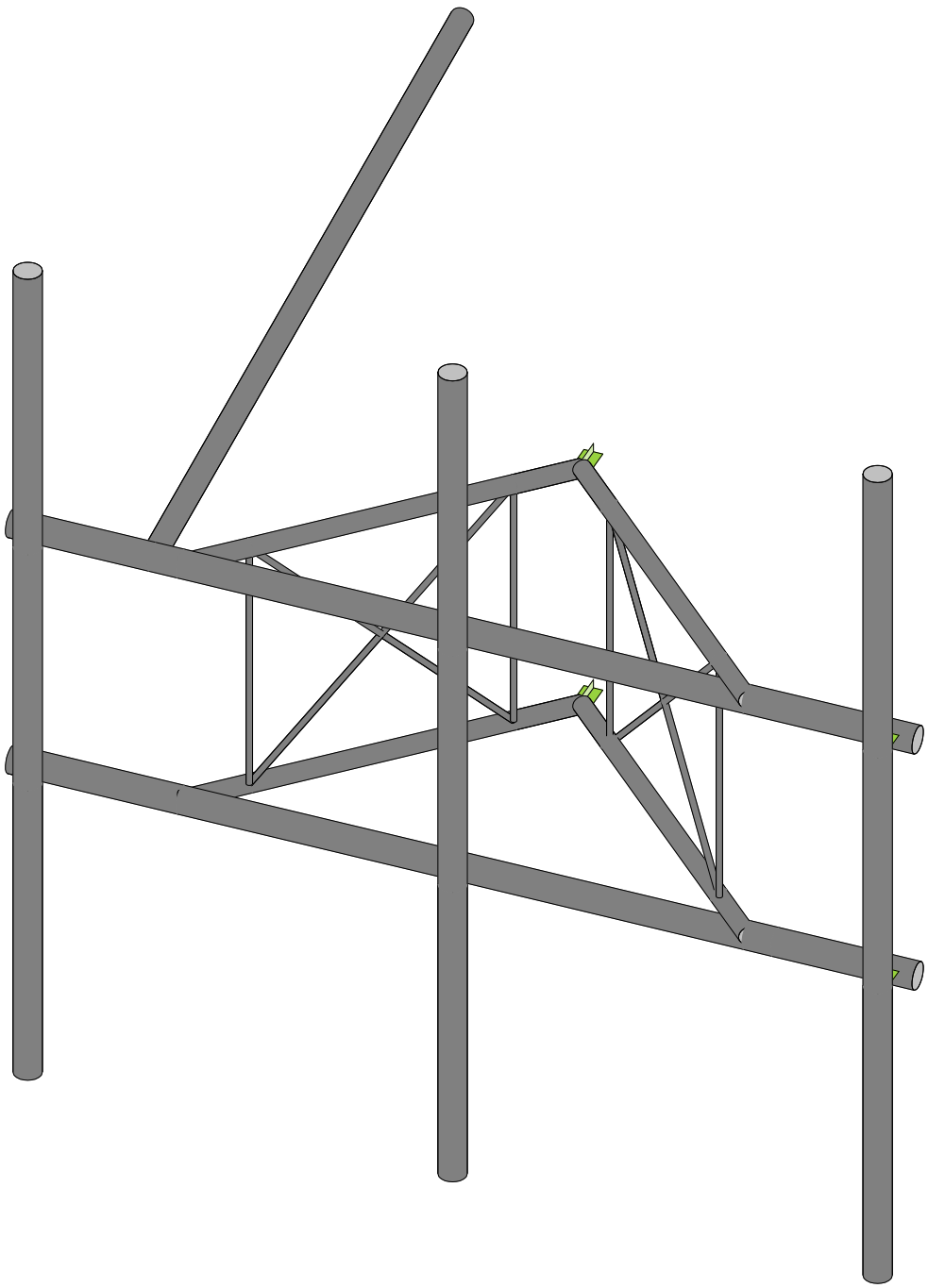
8. LIABILITY WAIVER AND LIMITATIONS

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.





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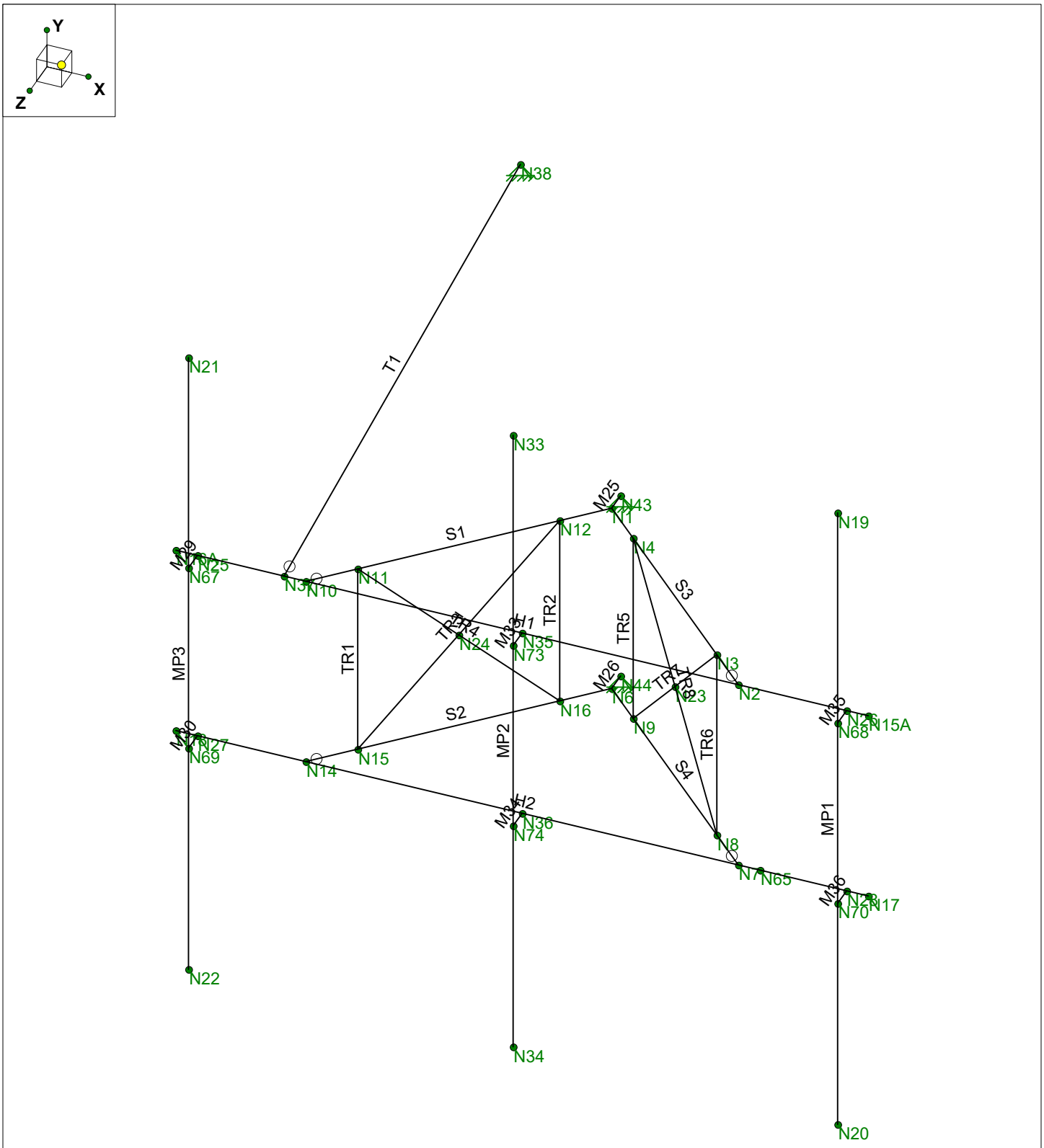

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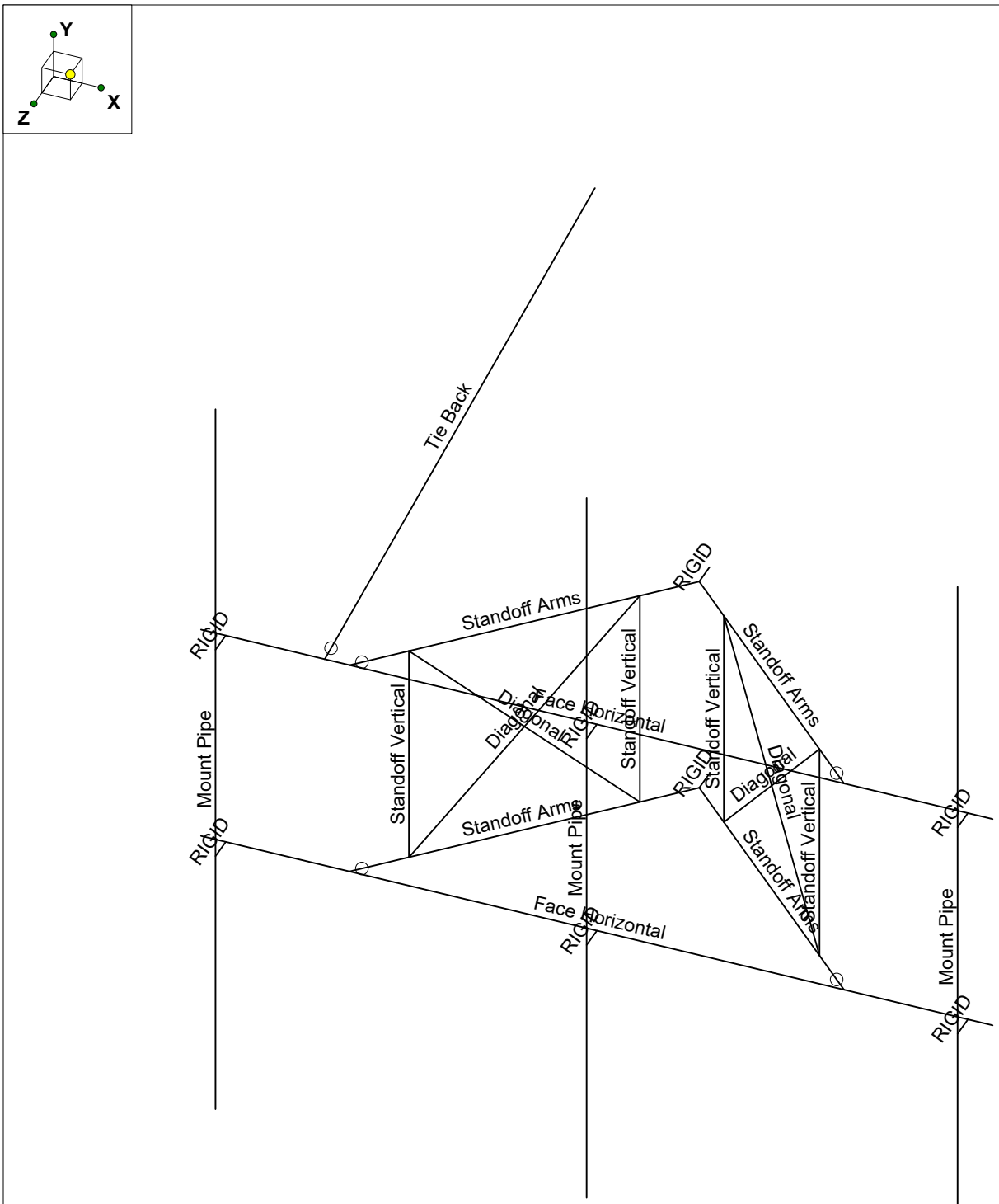

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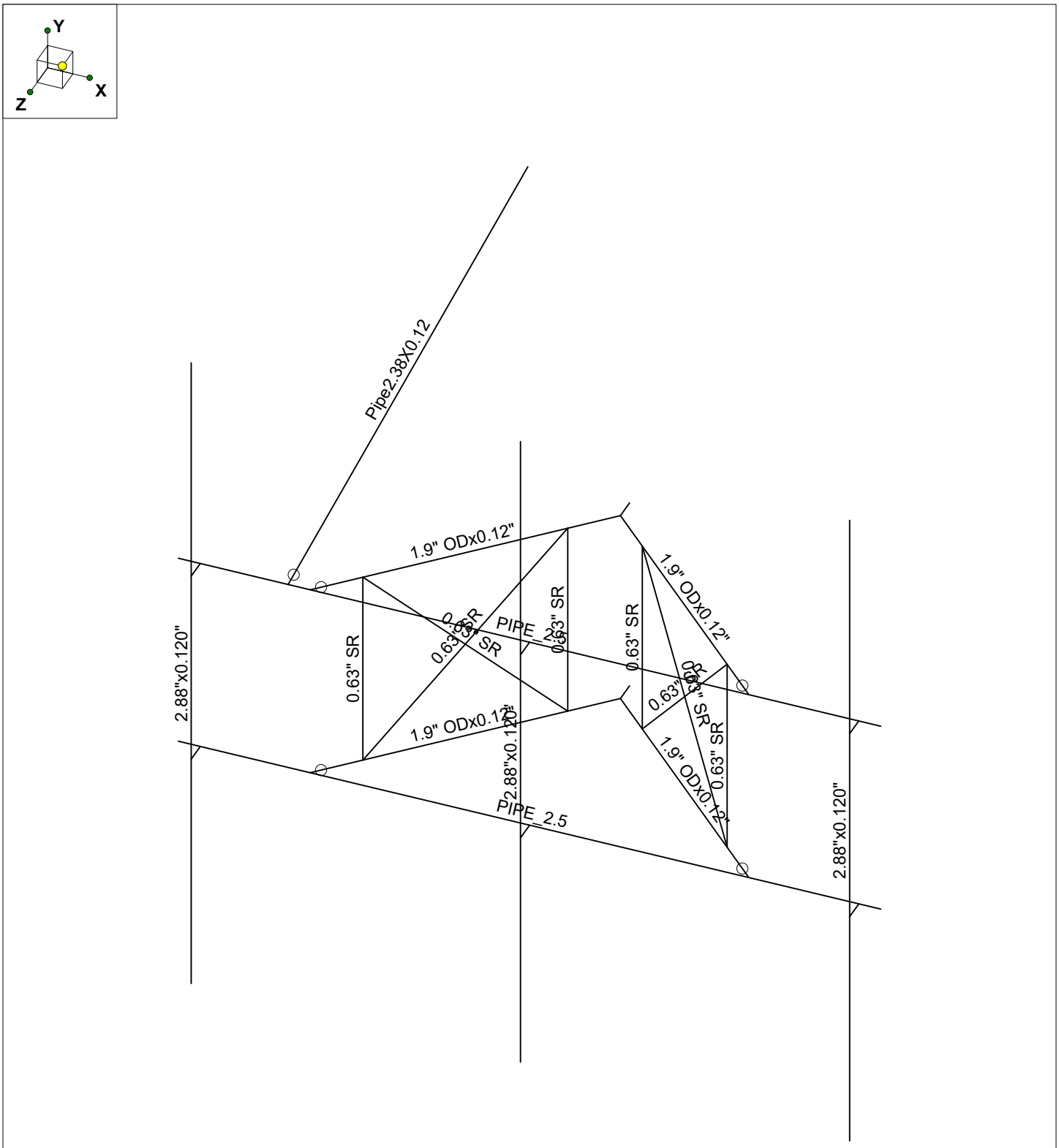

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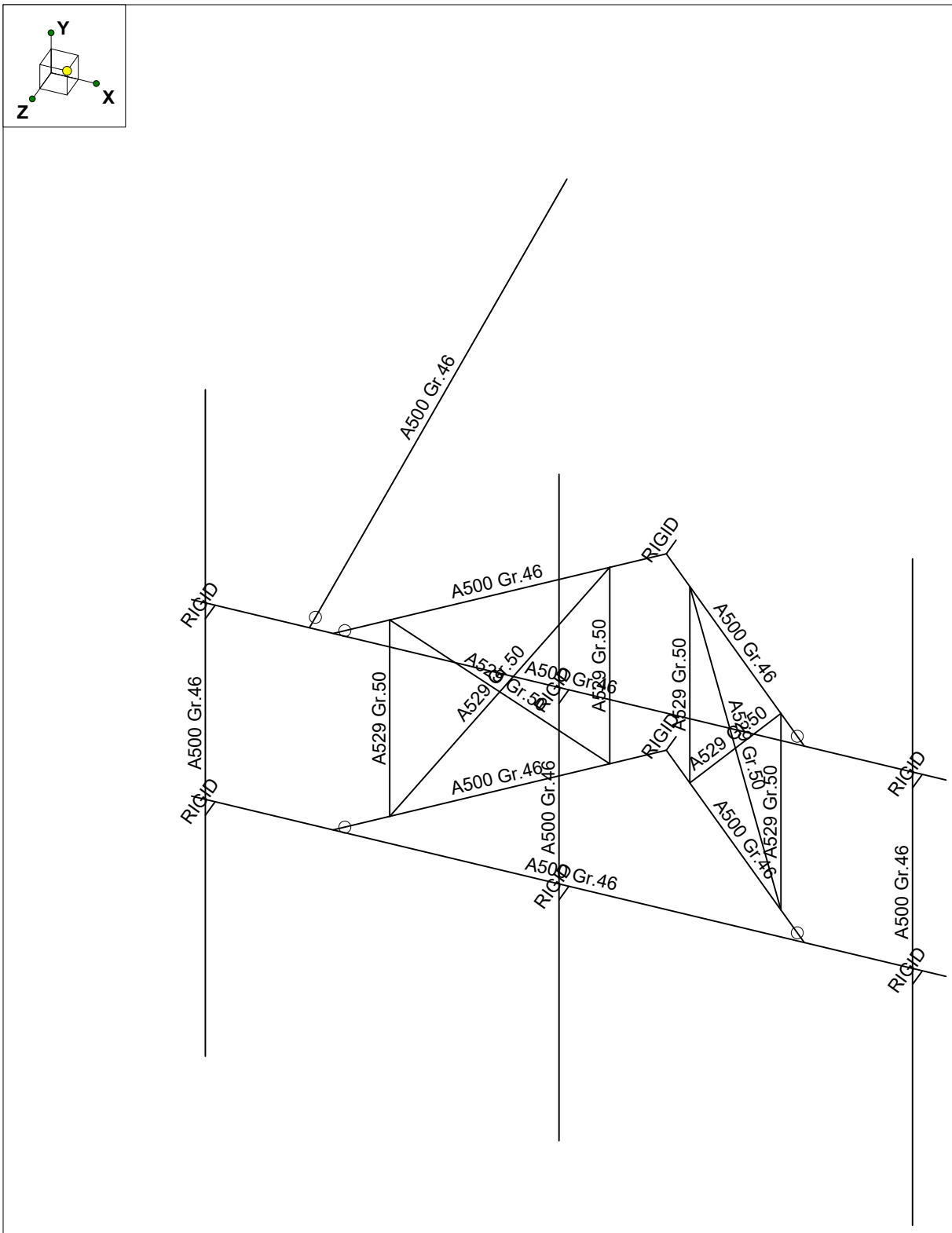

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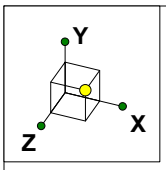

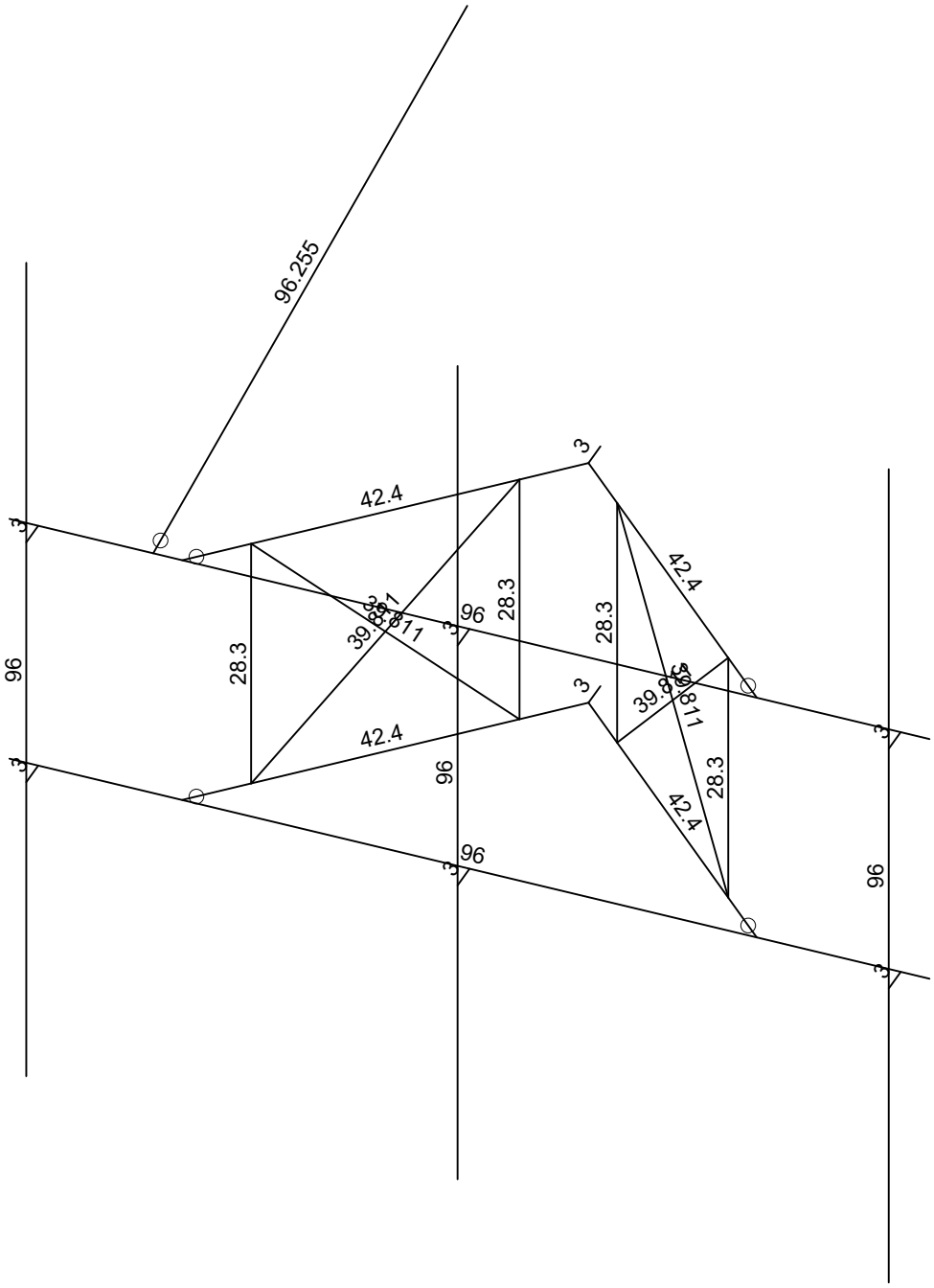

Member Length (in) Displayed
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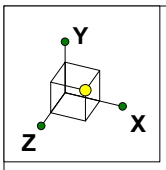

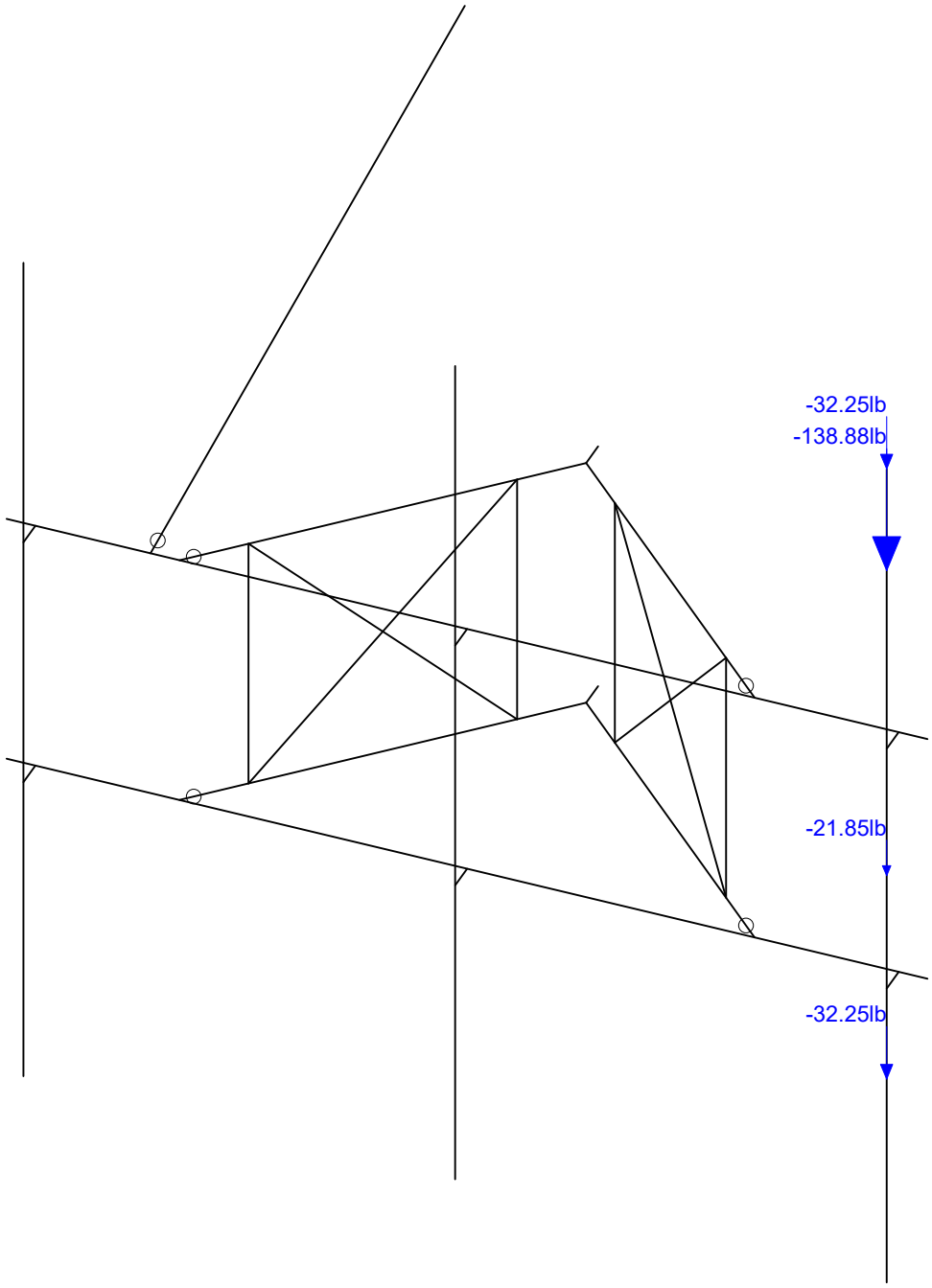

Loads: BLC 1, Self Weight
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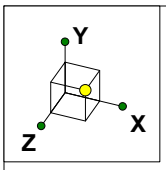

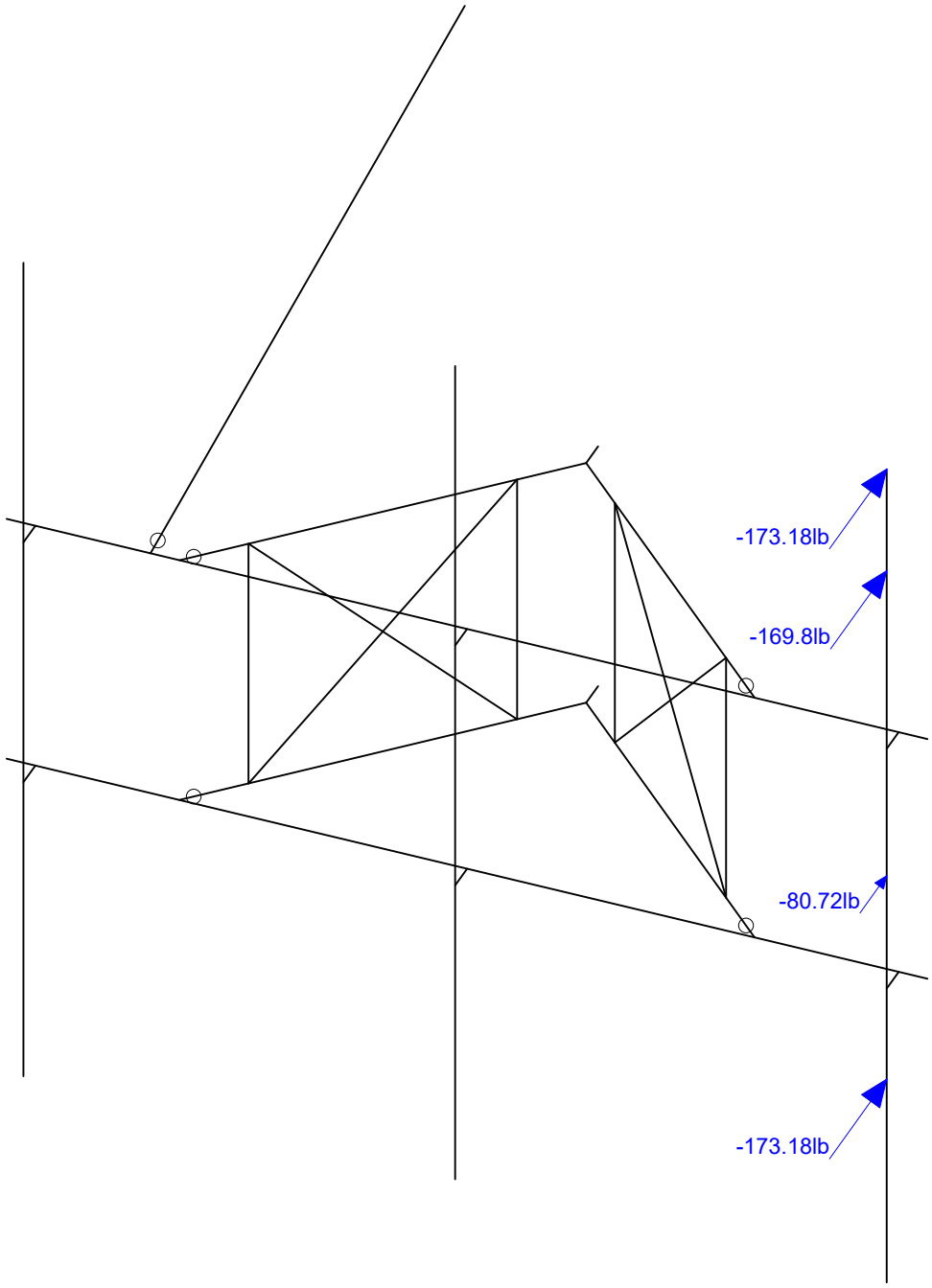

Loads: BLC 2, Wind Load AZI 0
Envelope Only Solution

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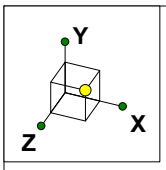

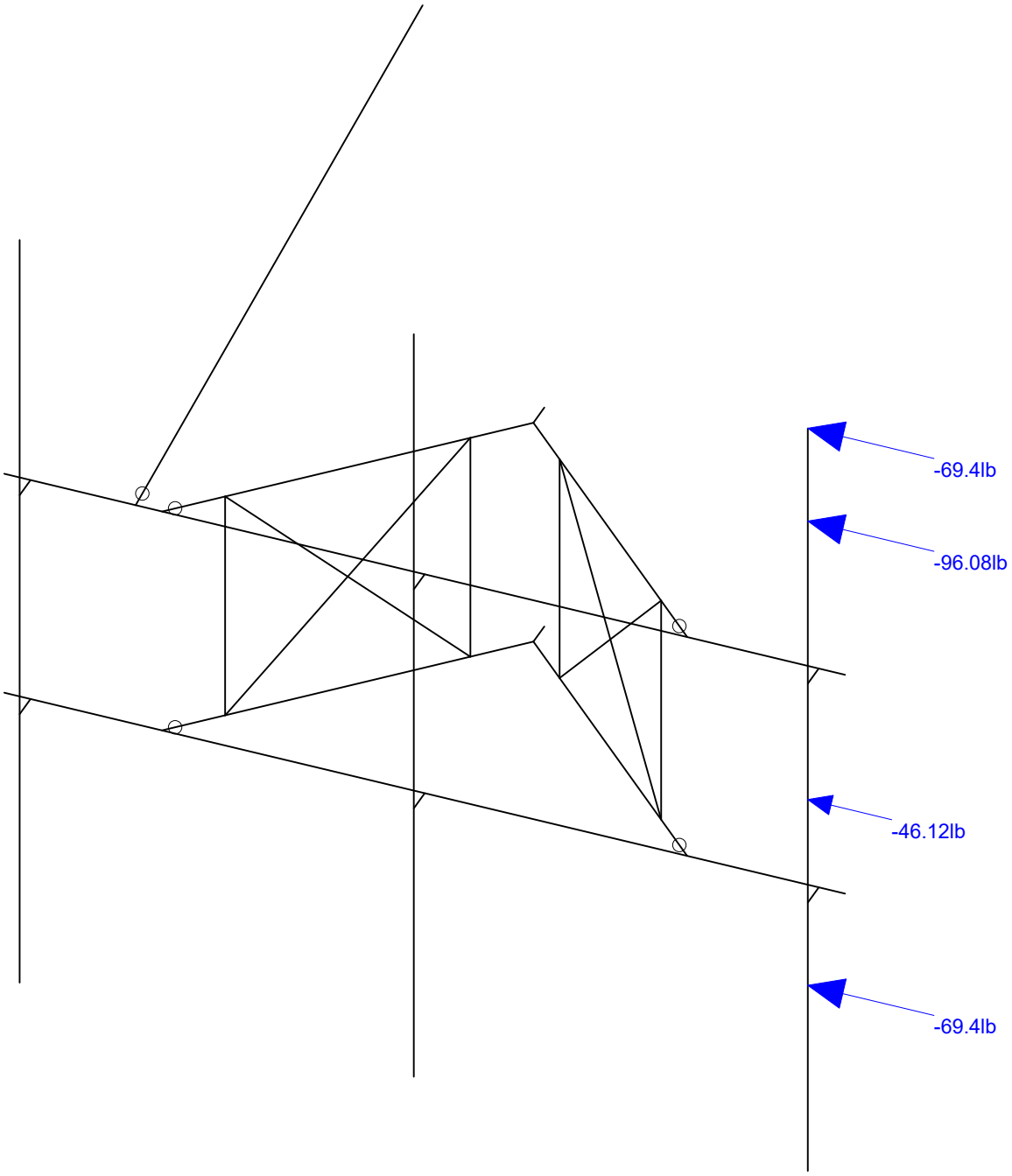

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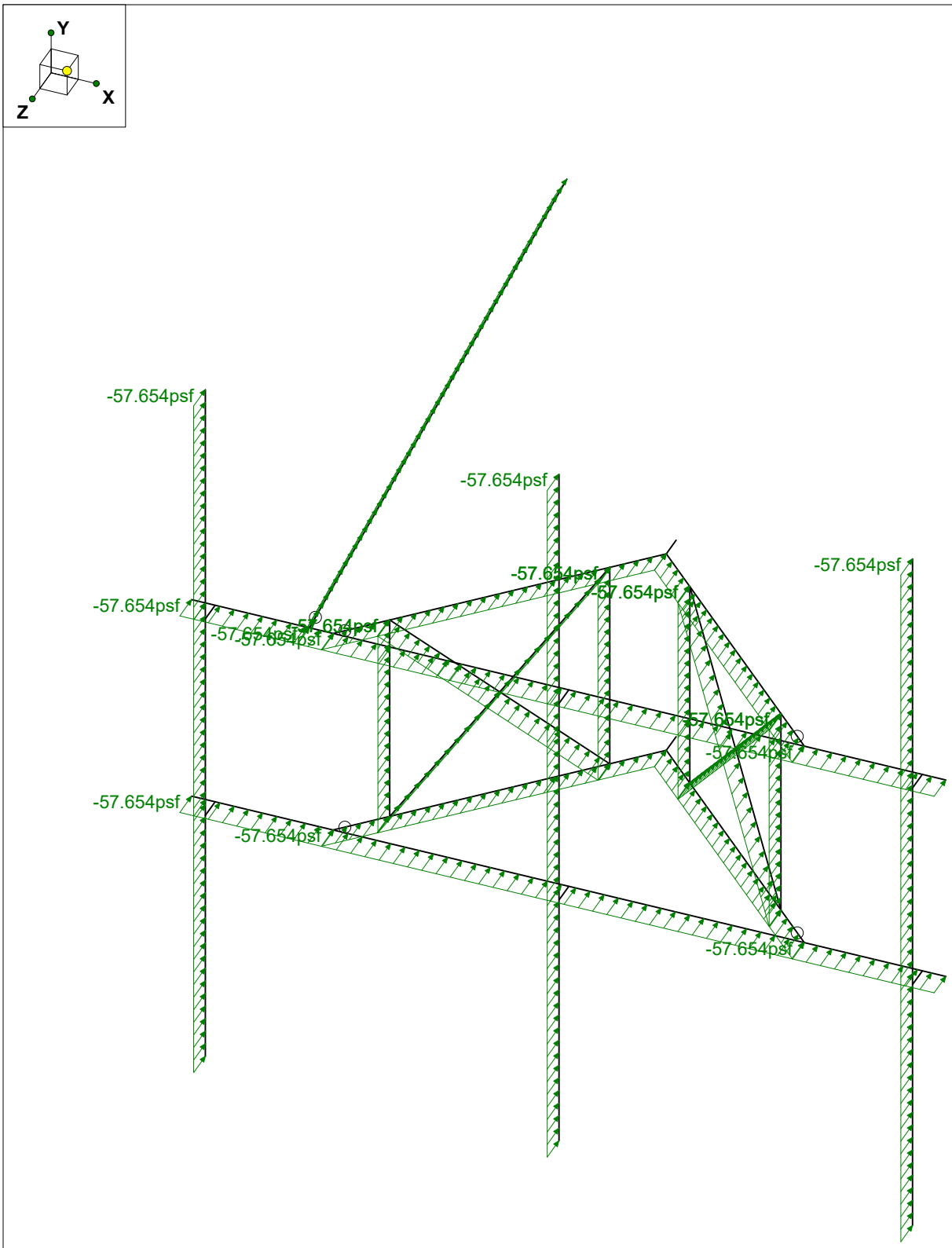

Loads: BLC 14, Distr. Wind Load Z
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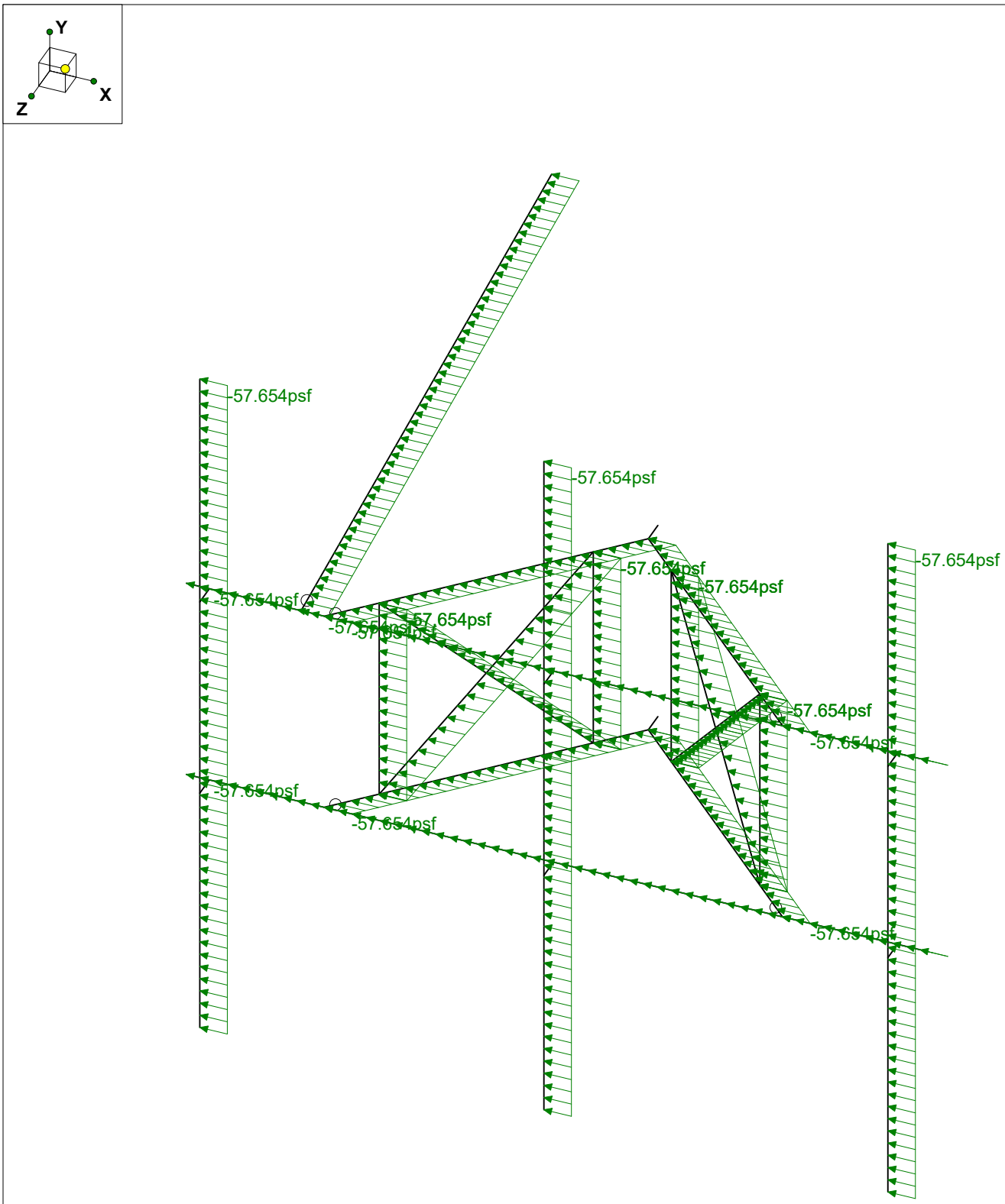

Loads: BLC 15, Distr. Wind Load X
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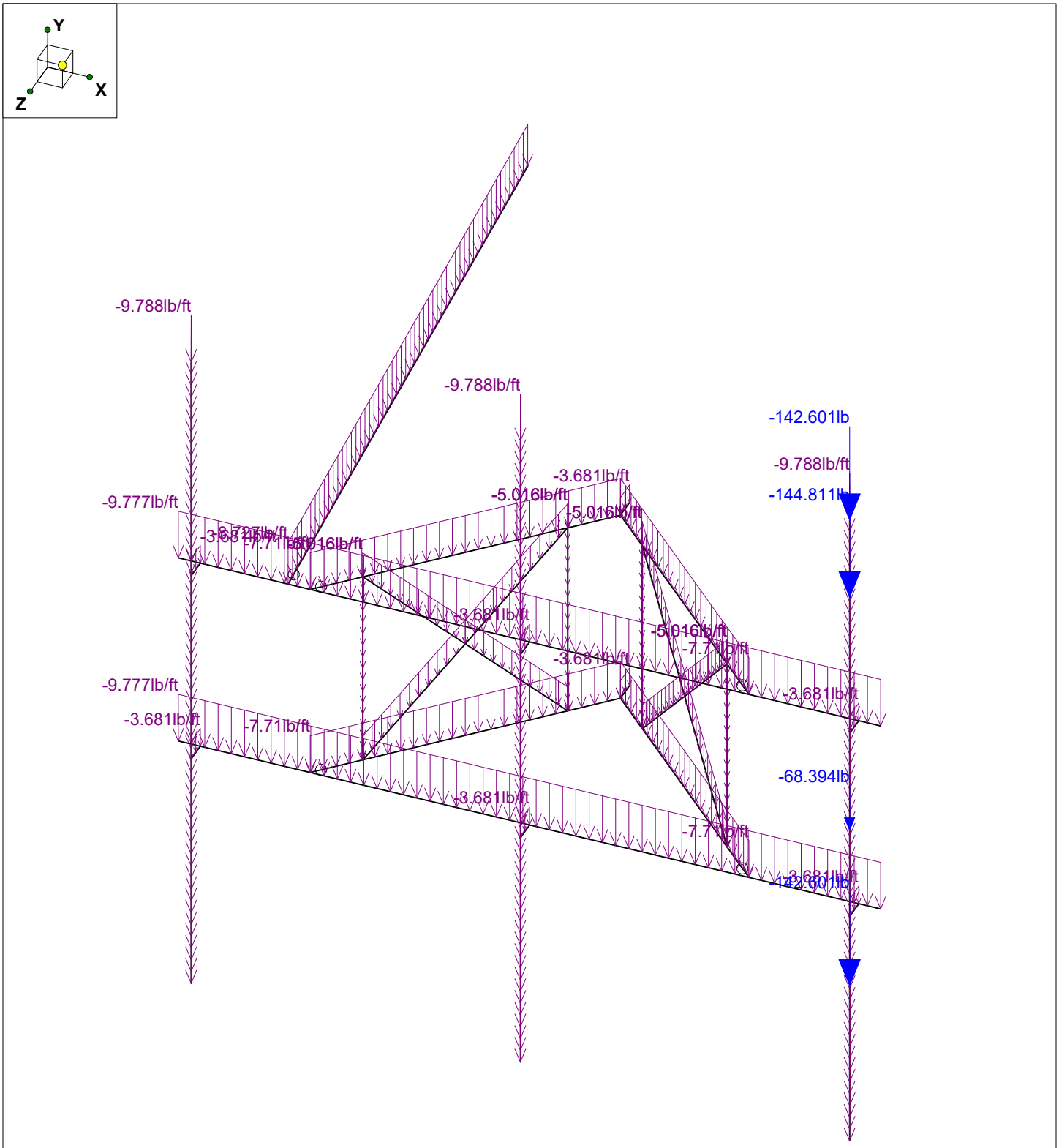

Loads: BLC 16, Ice Weight
Envelope Only Solution

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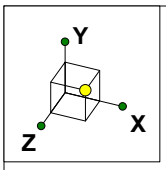

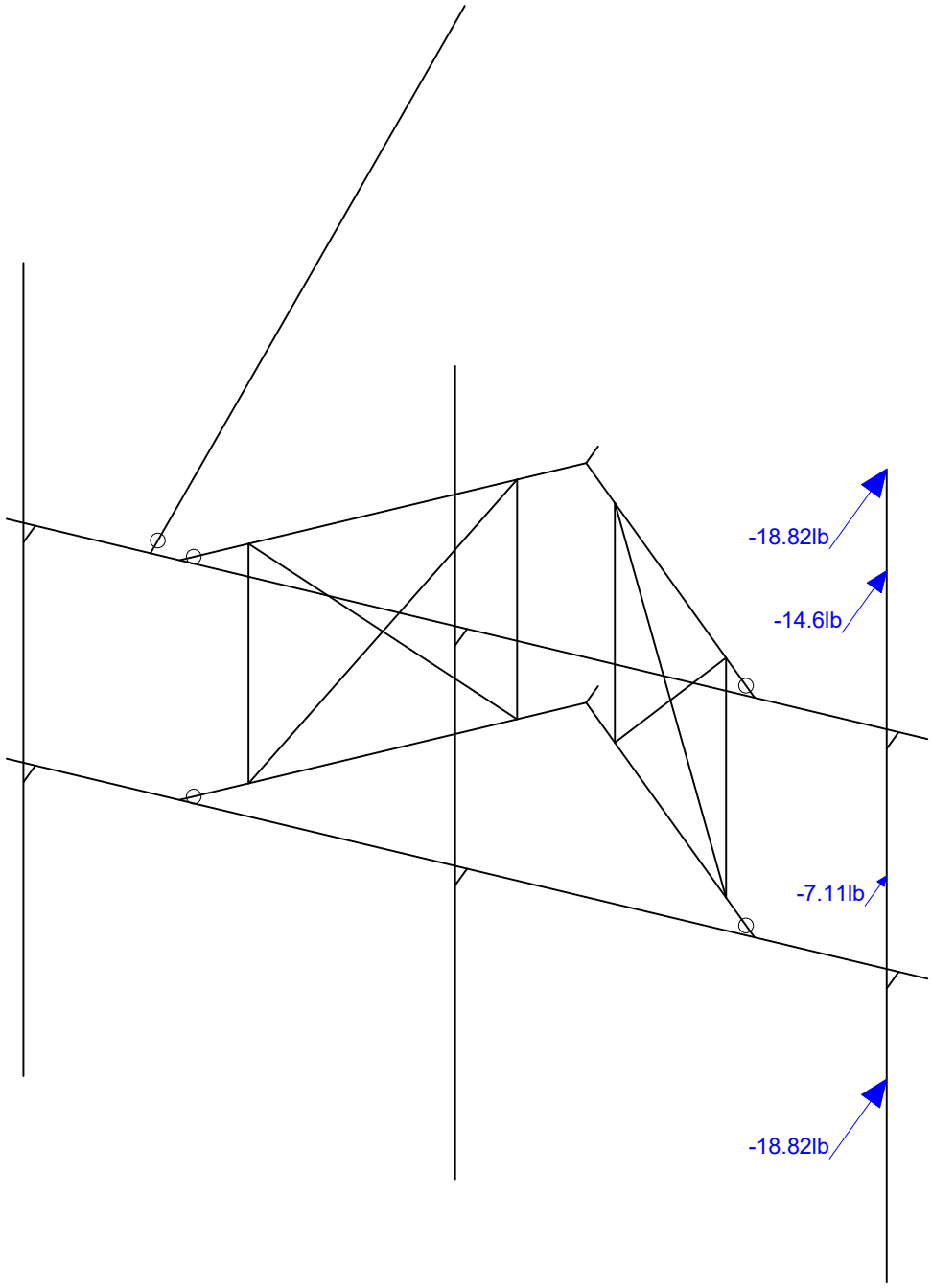

Loads: BLC 17, Ice Wind Load AZI 0
Envelope Only Solution

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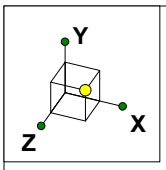

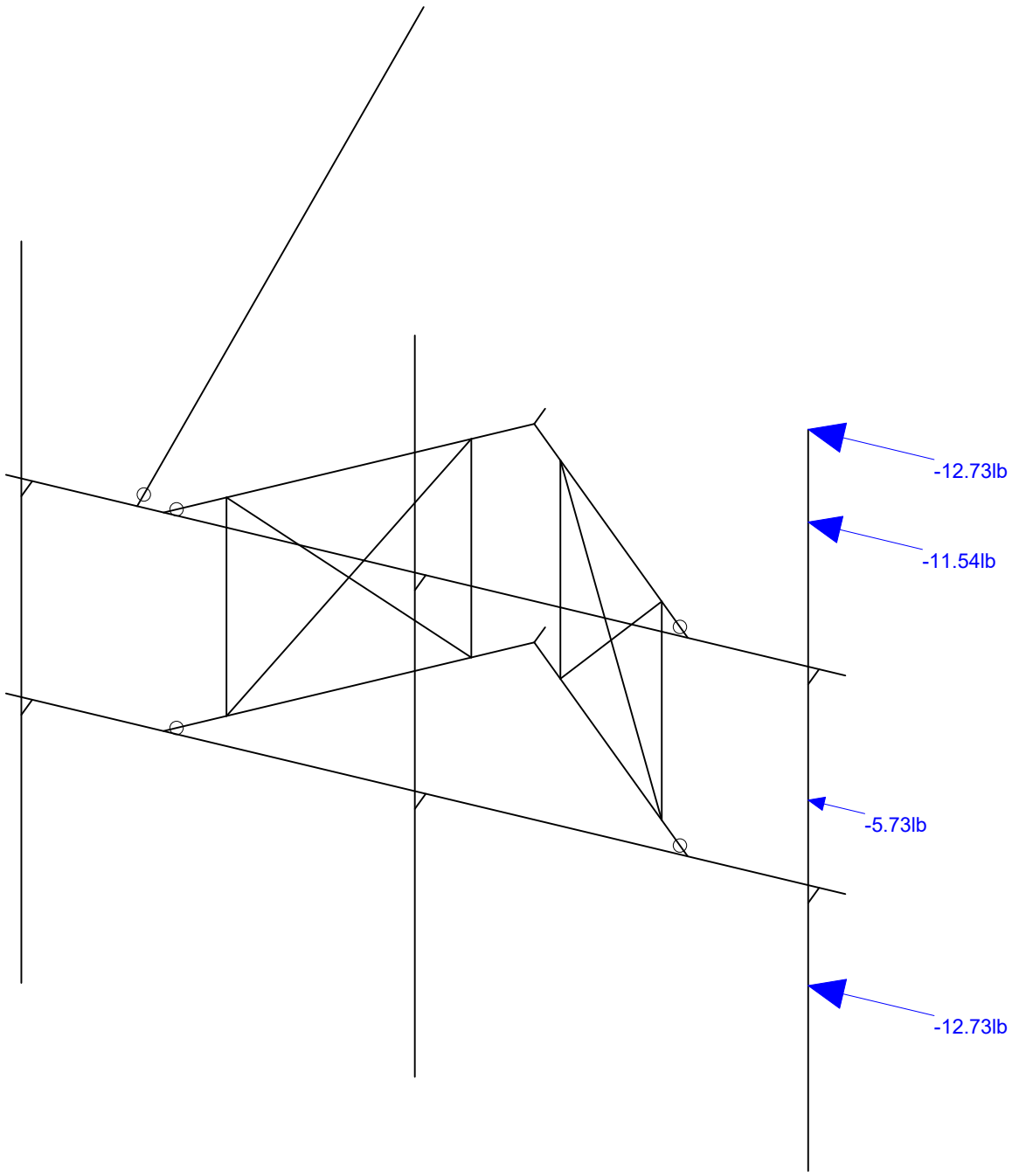

Loads: BLC 20, Ice Wind Load AZI 90
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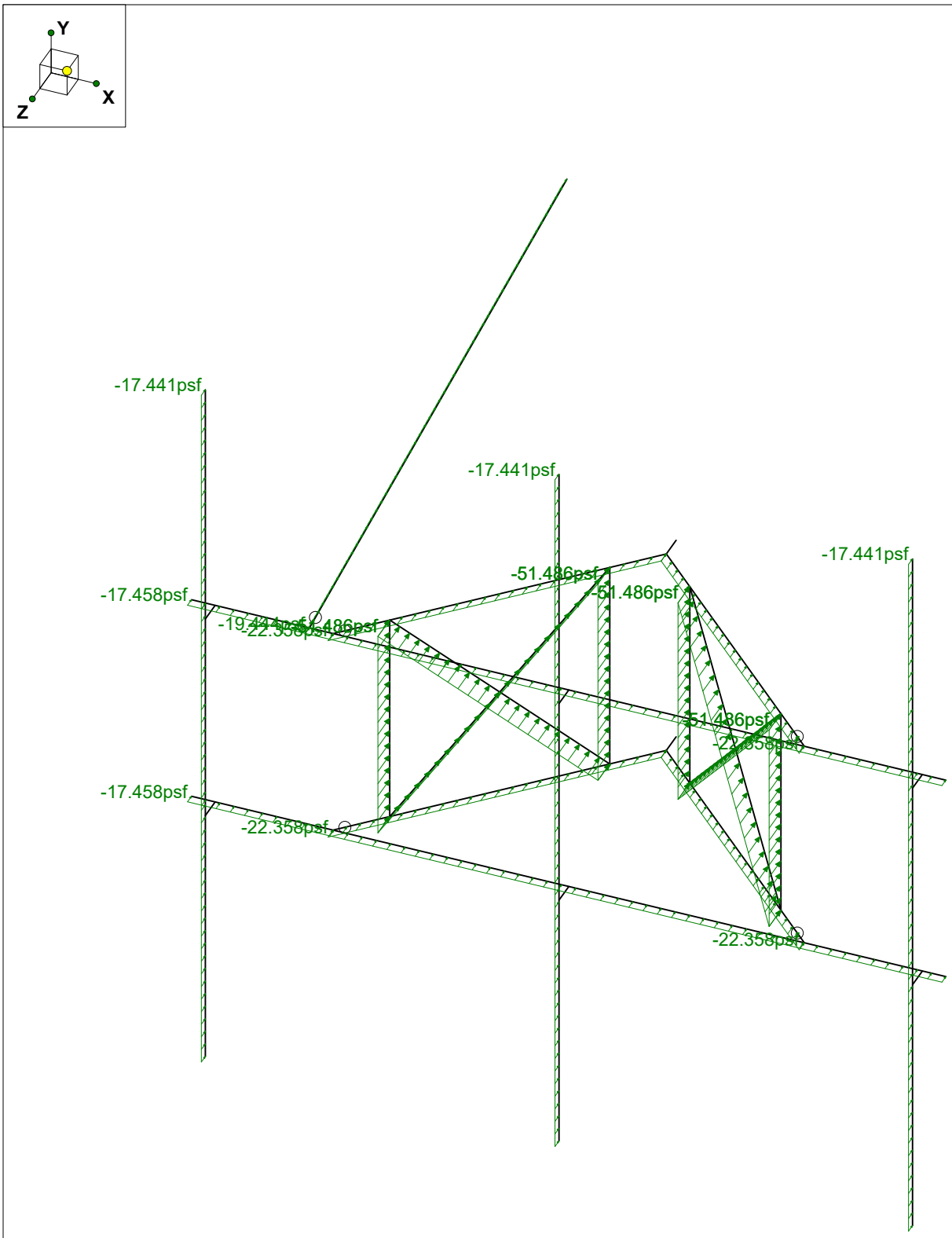

Loads: BLC 29, Distr. Ice Wind Load Z
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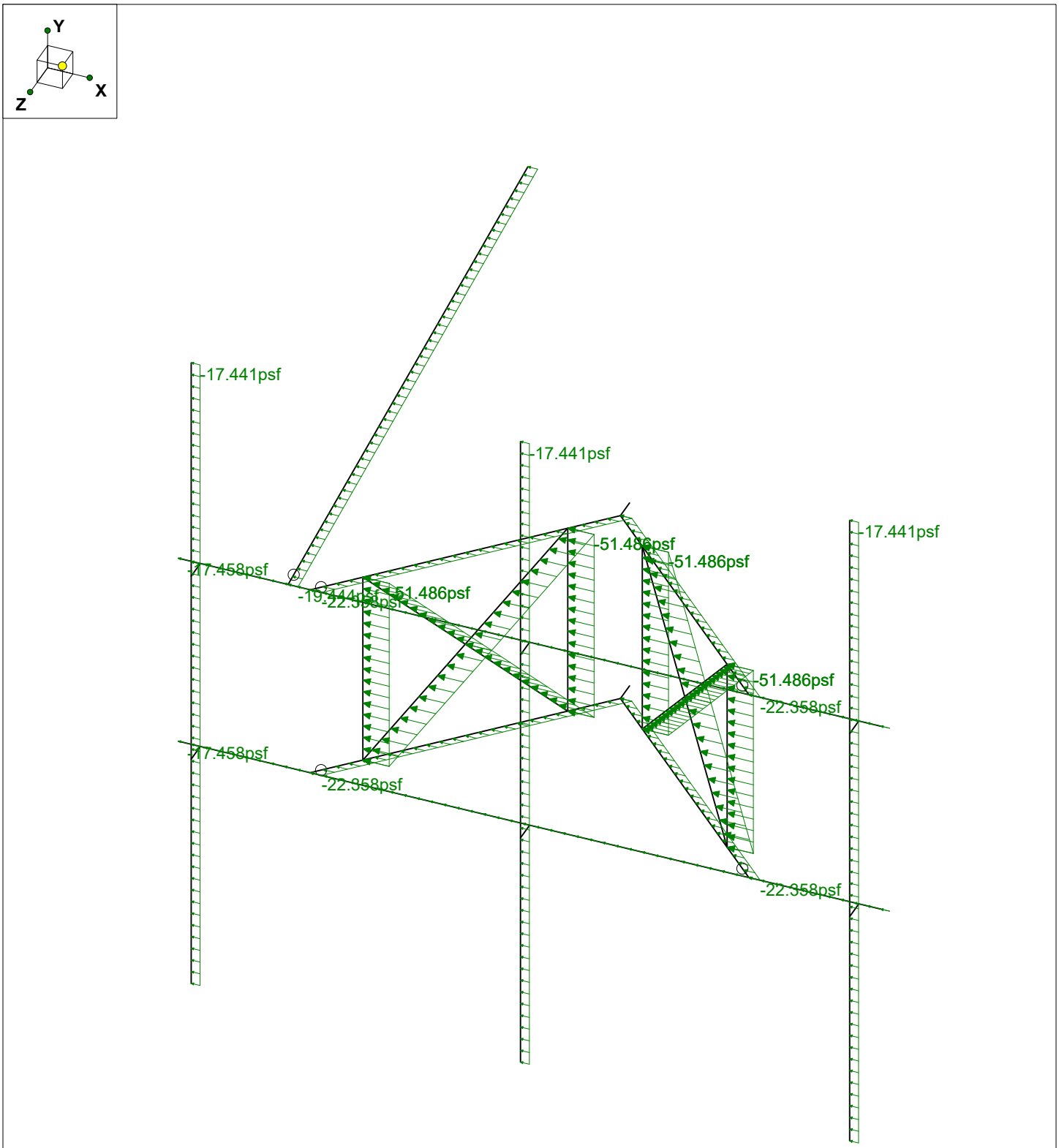

Loads: BLC 30, Distr. Ice Wind Load X
Envelope Only Solution

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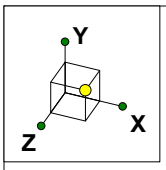

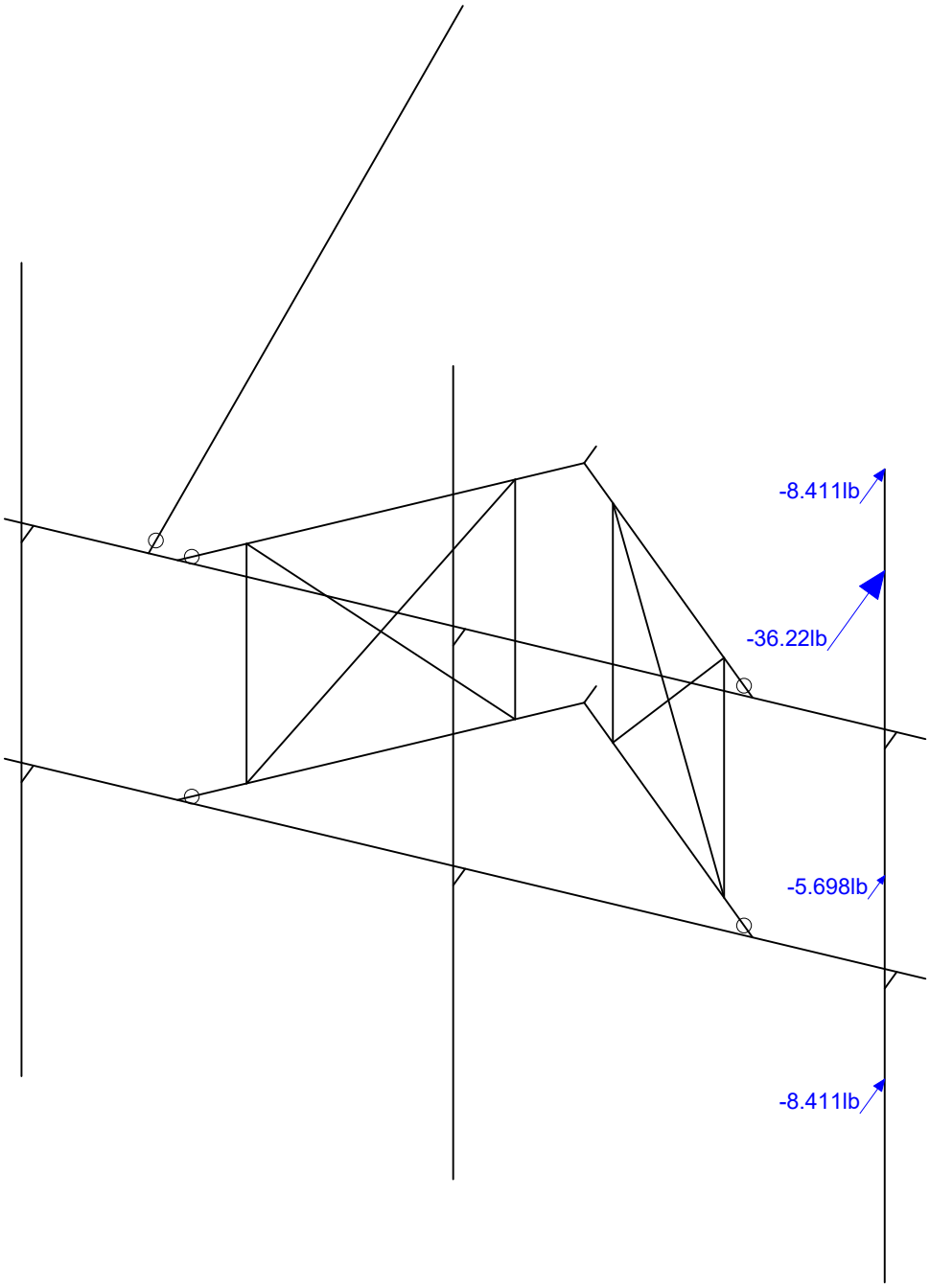

Loads: BLC 31, Seismic Load Z
Envelope Only Solution

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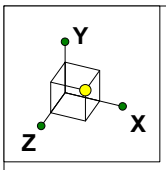

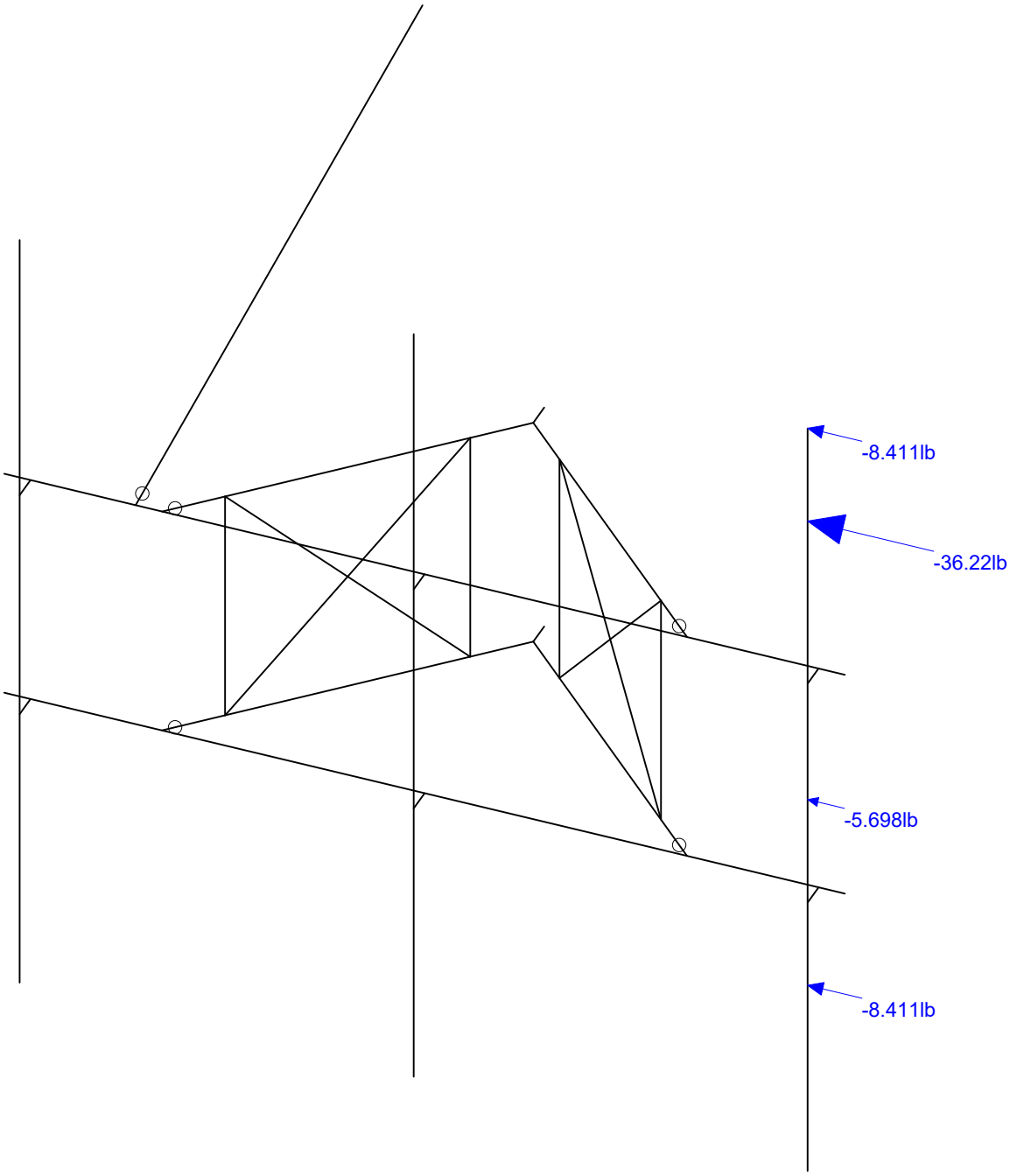

Loads: BLC 32, Seismic Load X
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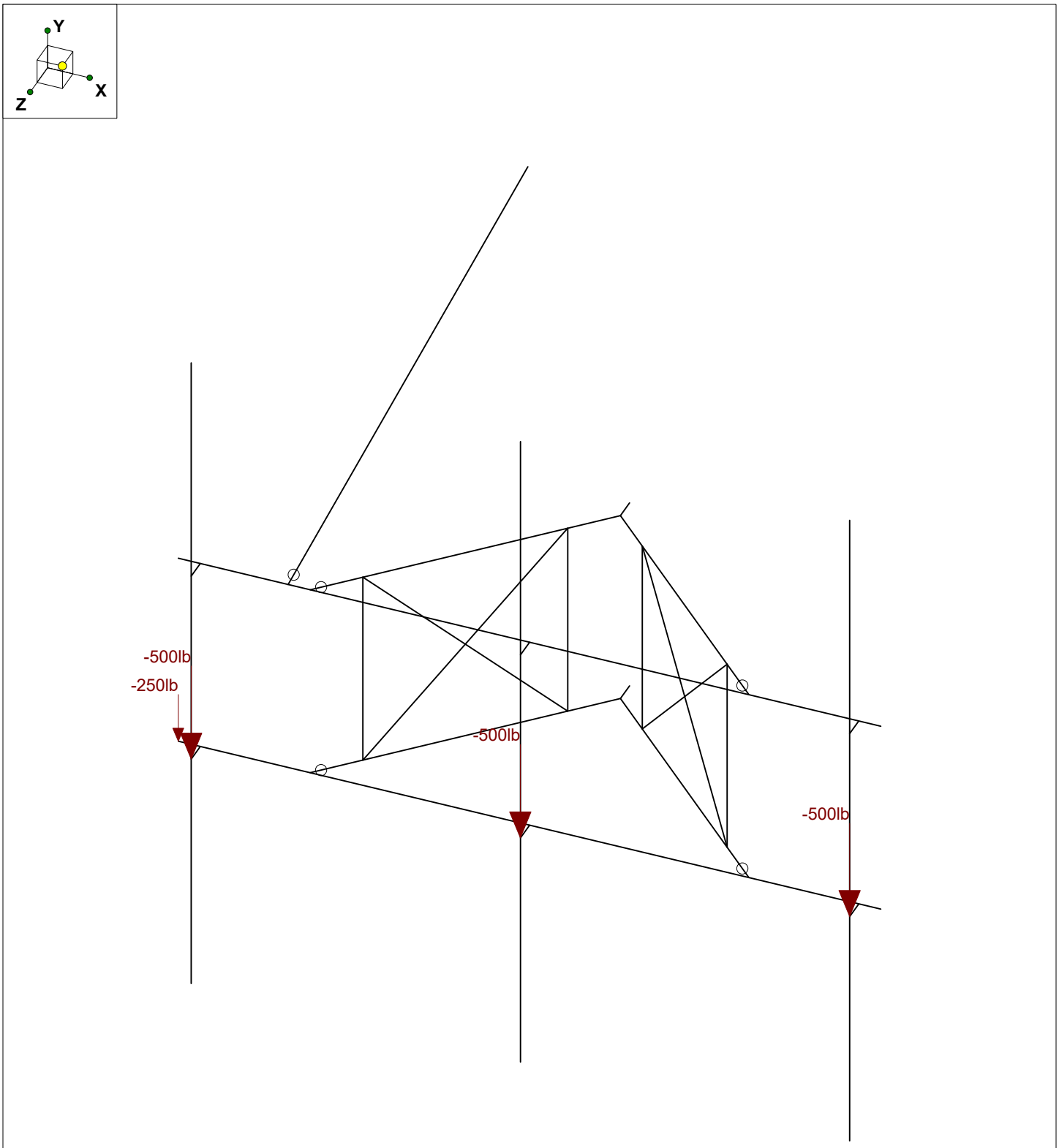

Loads: LL - Live Load
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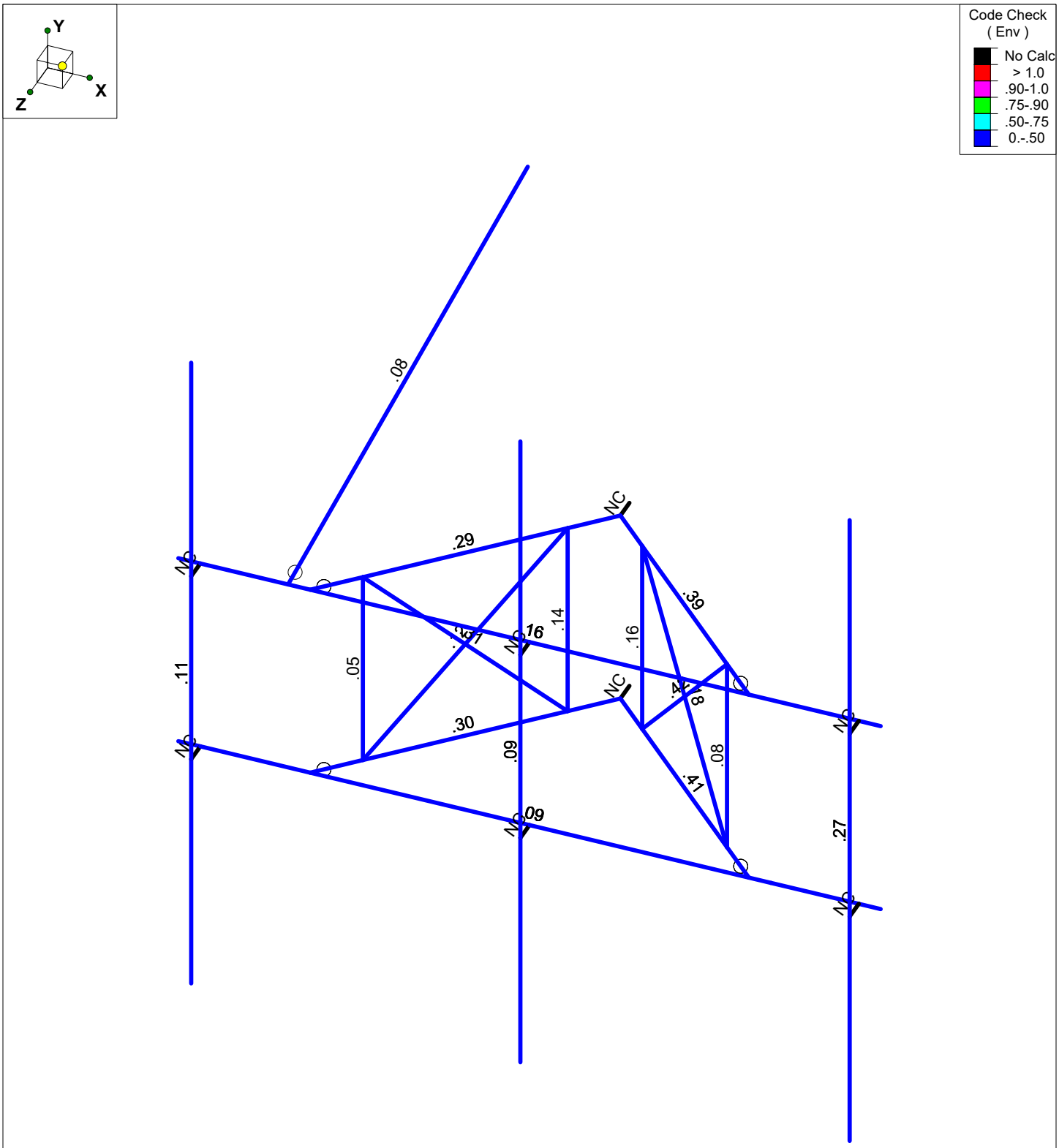

Member Code Checks Displayed (Enveloped)
Envelope Only Solution

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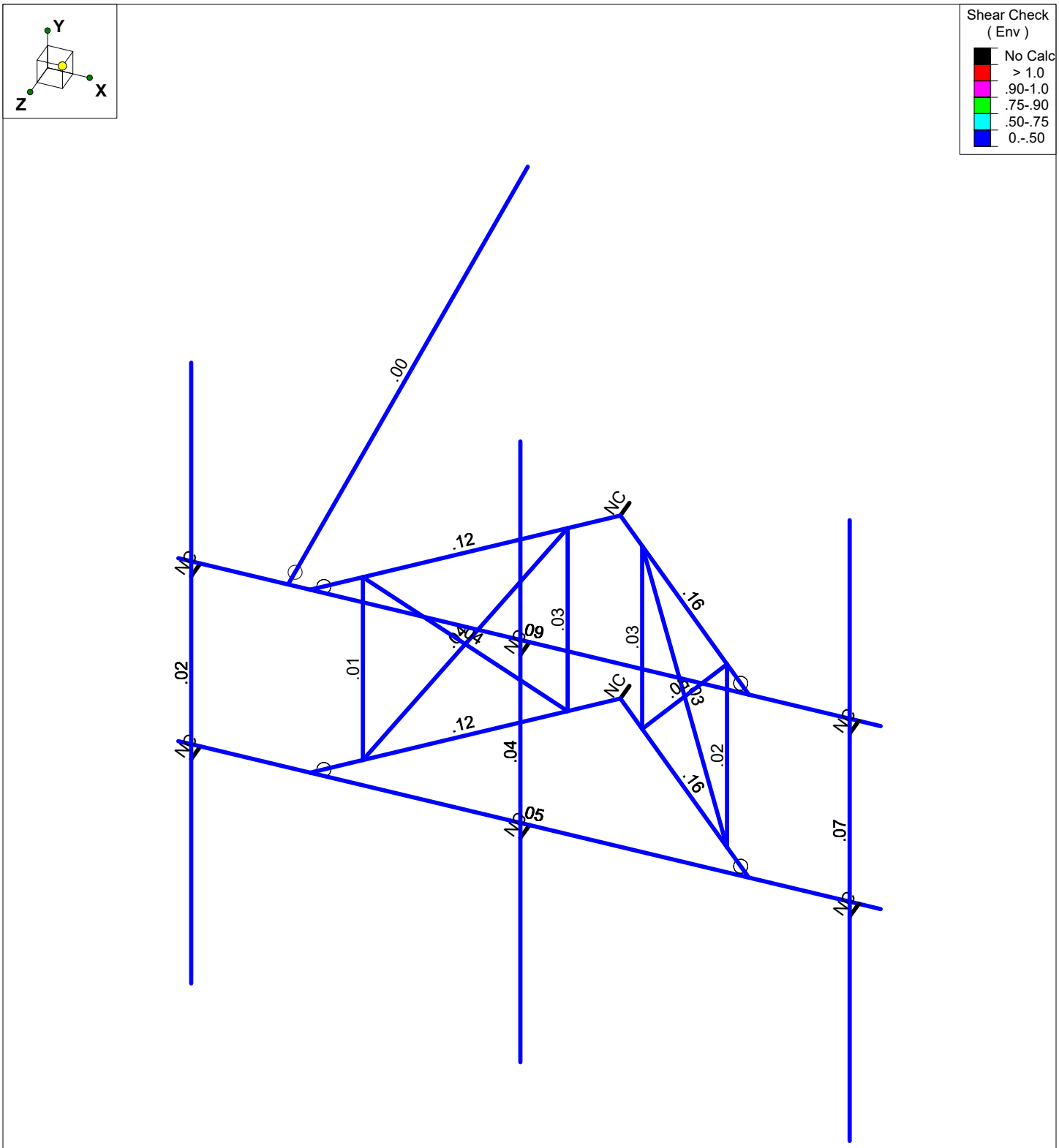

Member Shear Checks Displayed (Enveloped)
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Program Inputs

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:	213.41	ft *Rev H

MOUNT INFORMATION		
Mount Type:	Sector Frame	
Num Sectors:	3	
Centerline AGL:	142.00	ft
Tower Height AGL:	180.00	ft

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

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

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

WIND AND ICE DATA		
Ultimate Wind (V_{ult}):	135	mph
Design Wind (V):	N/A	mph
Ice Wind (V_{ice}):	50	mph
Base Ice Thickness (t_i):	1.5	in
Flat Pressure:	96.089	psf
Round Pressure:	57.654	psf
Ice Wind Pressure:	7.909	psf

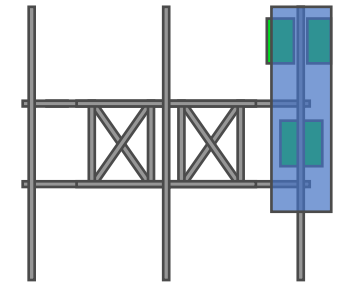
SEISMIC DATA		
Short-Period Accel. (S_s):	0.163	g
1-Second Accel. (S_1):	0.059	g
Short-Period Design (S_{DS}):	0.174	
1-Second Design (S_{D1}):	0.094	
Short-Period Coeff. (F_a):	1.600	
1-Second Coeff. (F_v):	2.400	
Amplification Factor (A_s):	3.000	
Response Mod. Coeff. (R):	2.000	

INFINIGY
FROM ZERO TO INFINIGY
the solutions are endless

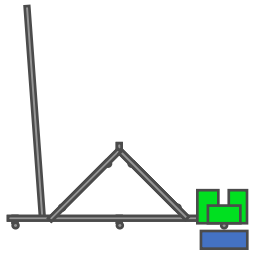
Infinigy Load Calculator V2.1.7

Program Inputs

ELEVATION VIEW



PLAN VIEW



INFINIGY
FROM ZERO TO INFINIGY
the solutions are endless

Infinigy Load Calculator V2.1.7

APPURTENANCE INFORMATION

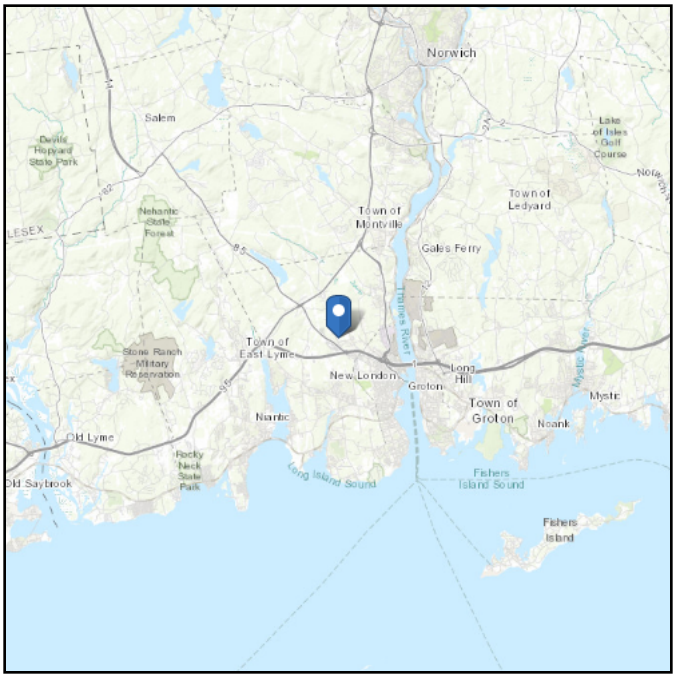
Appurtenance Name	Elevation	Qty.	K_a	q_z (psf)	EPA_N (ft^2)	EPA_T (ft^2)	Wind F_z (lbs)	Wind F_x (lbs)	Weight (lbs)	Seismic F (lbs)	Member (α sector)
JMA WIRELESS MX08FRO665-21	142.0	3	0.90	48.04	8.01	3.21	346.35	138.80	64.50	16.82	MP1
FUJITSU TA08025-B605	142.0	3	0.90	48.04	1.96	1.19	84.90	51.42	74.95	19.55	MP1
FUJITSU TA08025-B604	142.0	3	0.90	48.04	1.96	1.03	84.90	44.66	63.93	16.67	MP1
RAYCAP RDIDC-9181-PF-48	142.0	1	0.90	48.04	1.87	1.07	80.72	46.12	21.85	5.70	MP1

ASCE 7 Hazards Report

Address:
No Address at This Location

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

Elevation: 213.41 ft (NAVD 88)
Latitude: 41.377831
Longitude: -72.139357



Wind

Results:

Wind Speed:	135 mph per Waterford City Requirements in WSEL
10-year MRI	79 Vmph
25-year MRI	89 Vmph
50-year MRI	99 Vmph
100-year MRI	109 Vmph

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

Date Accessed: Fri Aug 13 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 7-10 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).

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

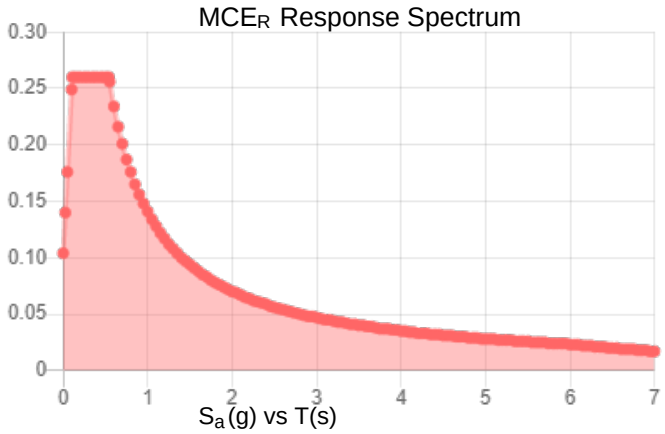
Seismic

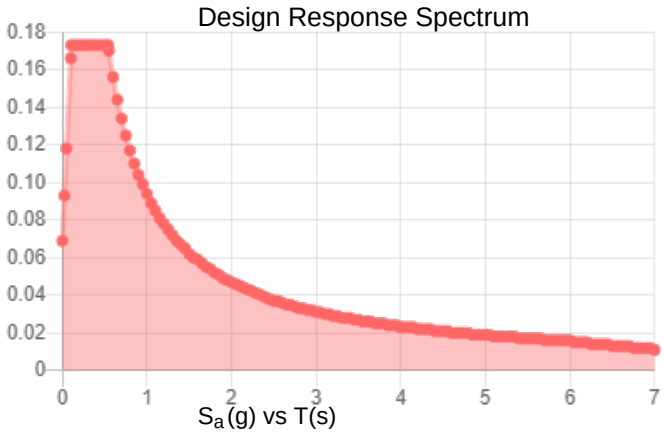
Site Soil Class: D - Stiff Soil

Results:

S_S :	0.163	S_{DS} :	0.173
S_1 :	0.059	S_{D1} :	0.094
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.081
S_{MS} :	0.26	PGA_M :	0.13
S_{M1} :	0.141	F_{PGA} :	1.6
		I_e :	1

Seismic Design Category B





Data Accessed: Fri Aug 13 2021

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

Ice

Results:

Ice Thickness:	0.75 in.
Concurrent Temperature:	15 F
Gust Speed:	50 mph
Data Source:	Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8
Date Accessed:	Fri Aug 13 2021

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

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

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

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...
11	TR3	Diagonal	39.811			Lbyy			.7	.7		Late...

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Lengt...	Lbyy[in]	Lbzz[in]	Lcomp t...	Lcomp b...	L-tor...	Kyy	Kzz	Cb	Func...
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

Material Takeoff

	Material	Size	Pieces	Length[in]	Weight[LB]
1	General				
2	RIGID		8	24	0
3	Total General		8	24	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						26		

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						26		
16	Ice Weight	OL1					5	26		
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						26		
30	Distr. Ice Wind L...	OL3						26		
31	Seismic Load Z	ELZ			-.261		5			
32	Seismic Load X	ELX	-.261				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	.865	31	1	32																	
52	(0.9 - 0.2Sds)DL + 1.0E AZI 30	Y...	Y		1	.865	31	.866	32	.5																
53	(0.9 - 0.2Sds)DL + 1.0E AZI 60	Y...	Y		1	.865	31	.5	32	.866																
54	(0.9 - 0.2Sds)DL + 1.0E AZI 90	Y...	Y		1	.865	31		32	1																
55	(0.9 - 0.2Sds)DL + 1.0E AZI 1...	Y...	Y		1	.865	31	-.5	32	.866																
56	(0.9 - 0.2Sds)DL + 1.0E AZI 1...	Y...	Y		1	.865	31	-.8...	32	.5																
57	(0.9 - 0.2Sds)DL + 1.0E AZI 1...	Y...	Y		1	.865	31	-1	32																	
58	(0.9 - 0.2Sds)DL + 1.0E AZI 2...	Y...	Y		1	.865	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	.865	31	-.5	32	-.8...															
60	(0.9 - 0.2Sds)DL + 1.0E AZI 2...	Y...	Y		1	.865	31		32	-1															
61	(0.9 - 0.2Sds)DL + 1.0E AZI 3...	Y...	Y		1	.865	31	.5	32	-.8...															
62	(0.9 - 0.2Sds)DL + 1.0E AZI 3...	Y...	Y		1	.865	31	.866	32	-.5															
63	1.0DL + 1.5LL + 1.0SWL (60 ...	Y...	Y		1	1	2	.198	14	.198	15		33	1.5											
64	1.0DL + 1.5LL + 1.0SWL (60 ...	Y...	Y		1	1	3	.198	14	.171	15	.099	33	1.5											
65	1.0DL + 1.5LL + 1.0SWL (60 ...	Y...	Y		1	1	4	.198	14	.099	15	.171	33	1.5											
66	1.0DL + 1.5LL + 1.0SWL (60 ...	Y...	Y		1	1	5	.198	14		15	.198	33	1.5											
67	1.0DL + 1.5LL + 1.0SWL (60 ...	Y...	Y		1	1	6	.198	14	-.0...	15	.171	33	1.5											
68	1.0DL + 1.5LL + 1.0SWL (60 ...	Y...	Y		1	1	7	.198	14	-.1...	15	.099	33	1.5											
69	1.0DL + 1.5LL + 1.0SWL (60 ...	Y...	Y		1	1	8	.198	14	-.1...	15		33	1.5											
70	1.0DL + 1.5LL + 1.0SWL (60 ...	Y...	Y		1	1	9	.198	14	-.1...	15	-.0...	33	1.5											
71	1.0DL + 1.5LL + 1.0SWL (60 ...	Y...	Y		1	1	10	.198	14	-.0...	15	-.1...	33	1.5											
72	1.0DL + 1.5LL + 1.0SWL (60 ...	Y...	Y		1	1	11	.198	14		15	-.1...	33	1.5											
73	1.0DL + 1.5LL + 1.0SWL (60 ...	Y...	Y		1	1	12	.198	14	.099	15	-.1...	33	1.5											
74	1.0DL + 1.5LL + 1.0SWL (60 ...	Y...	Y		1	1	13	.198	14	.171	15	-.0...	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	.049	14	.049	15												
77	1.2DL + 1.5LM-MP1 + 1SWL (...	Y...	Y		1	1.2	34	1.5	3	.049	14	.043	15	.025											
78	1.2DL + 1.5LM-MP1 + 1SWL (...	Y...	Y		1	1.2	34	1.5	4	.049	14	.025	15	.043											
79	1.2DL + 1.5LM-MP1 + 1SWL (...	Y...	Y		1	1.2	34	1.5	5	.049	14		15	.049											
80	1.2DL + 1.5LM-MP1 + 1SWL (...	Y...	Y		1	1.2	34	1.5	6	.049	14	-.0...	15	.043											
81	1.2DL + 1.5LM-MP1 + 1SWL (...	Y...	Y		1	1.2	34	1.5	7	.049	14	-.0...	15	.025											
82	1.2DL + 1.5LM-MP1 + 1SWL (...	Y...	Y		1	1.2	34	1.5	8	.049	14	-.0...	15												
83	1.2DL + 1.5LM-MP1 + 1SWL (...	Y...	Y		1	1.2	34	1.5	9	.049	14	-.0...	15	-.0...											
84	1.2DL + 1.5LM-MP1 + 1SWL (...	Y...	Y		1	1.2	34	1.5	10	.049	14	-.0...	15	-.0...											
85	1.2DL + 1.5LM-MP1 + 1SWL (...	Y...	Y		1	1.2	34	1.5	11	.049	14		15	-.0...											
86	1.2DL + 1.5LM-MP1 + 1SWL (...	Y...	Y		1	1.2	34	1.5	12	.049	14	.025	15	-.0...											
87	1.2DL + 1.5LM-MP1 + 1SWL (...	Y...	Y		1	1.2	34	1.5	13	.049	14	.043	15	-.0...											
88	1.2DL + 1.5LM-MP2 + 1SWL (...	Y...	Y		1	1.2	35	1.5	2	.049	14	.049	15												
89	1.2DL + 1.5LM-MP2 + 1SWL (...	Y...	Y		1	1.2	35	1.5	3	.049	14	.043	15	.025											
90	1.2DL + 1.5LM-MP2 + 1SWL (...	Y...	Y		1	1.2	35	1.5	4	.049	14	.025	15	.043											
91	1.2DL + 1.5LM-MP2 + 1SWL (...	Y...	Y		1	1.2	35	1.5	5	.049	14		15	.049											
92	1.2DL + 1.5LM-MP2 + 1SWL (...	Y...	Y		1	1.2	35	1.5	6	.049	14	-.0...	15	.043											
93	1.2DL + 1.5LM-MP2 + 1SWL (...	Y...	Y		1	1.2	35	1.5	7	.049	14	-.0...	15	.025											
94	1.2DL + 1.5LM-MP2 + 1SWL (...	Y...	Y		1	1.2	35	1.5	8	.049	14	-.0...	15												
95	1.2DL + 1.5LM-MP2 + 1SWL (...	Y...	Y		1	1.2	35	1.5	9	.049	14	-.0...	15	-.0...											
96	1.2DL + 1.5LM-MP2 + 1SWL (...	Y...	Y		1	1.2	35	1.5	10	.049	14	-.0...	15	-.0...											
97	1.2DL + 1.5LM-MP2 + 1SWL (...	Y...	Y		1	1.2	35	1.5	11	.049	14		15	-.0...											
98	1.2DL + 1.5LM-MP2 + 1SWL (...	Y...	Y		1	1.2	35	1.5	12	.049	14	.025	15	-.0...											
99	1.2DL + 1.5LM-MP2 + 1SWL (...	Y...	Y		1	1.2	35	1.5	13	.049	14	.043	15	-.0...											
100	1.2DL + 1.5LM-MP3 + 1SWL (...	Y...	Y		1	1.2	36	1.5	2	.049	14	.049	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	.049	14	.043	15	.025										
102	1.2DL + 1.5LM-MP3 + 1SWL (...	Y...	Y		1	1.2	36	1.5	4	.049	14	.025	15	.043										
103	1.2DL + 1.5LM-MP3 + 1SWL (...	Y...	Y		1	1.2	36	1.5	5	.049	14		15	.049										
104	1.2DL + 1.5LM-MP3 + 1SWL (...	Y...	Y		1	1.2	36	1.5	6	.049	14	-.0...	15	.043										
105	1.2DL + 1.5LM-MP3 + 1SWL (...	Y...	Y		1	1.2	36	1.5	7	.049	14	-.0...	15	.025										
106	1.2DL + 1.5LM-MP3 + 1SWL (...	Y...	Y		1	1.2	36	1.5	8	.049	14	-.0...	15											
107	1.2DL + 1.5LM-MP3 + 1SWL (...	Y...	Y		1	1.2	36	1.5	9	.049	14	-.0...	15	-.0...										
108	1.2DL + 1.5LM-MP3 + 1SWL (...	Y...	Y		1	1.2	36	1.5	10	.049	14	-.0...	15	-.0...										
109	1.2DL + 1.5LM-MP3 + 1SWL (...	Y...	Y		1	1.2	36	1.5	11	.049	14		15	-.0...										
110	1.2DL + 1.5LM-MP3 + 1SWL (...	Y...	Y		1	1.2	36	1.5	12	.049	14	.025	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	Reaction	Reaction	Reaction			
4	N43	Reaction	Reaction	Reaction			
5	N44	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	N38	...	106.978	6	49.009	37	1047.7...	7	0	110	0	110	0	110
2		...	-107.345	12	10.052	55	-1048.6...	25	0	1	0	1	0	1
3	N43	...	804.918	78	879.145	31	1343.7...	25	0	110	0	110	0	110
4		...	-1630.983	96	180.632	20	-2488.5...	7	0	1	0	1	0	1
5	N44	...	1614.784	91	839.077	37	2086.7...	27	0	110	0	110	0	110
6		...	-788.42	85	177.304	14	176.575	20	0	1	0	1	0	1
7	Totals:	...	824.193	17	1762.8...	31	1304.8...	2						
8		...	-824.193	23	413.083	53	-1304.8...	20						

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	MP1	Y	-21.85	48

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	-173.18	0
3	MP1	X	0	72
4	MP1	Z	-173.18	72
5	MP1	X	0	12
6	MP1	Z	-84.9	12
7	MP1	X	0	12
8	MP1	Z	-84.9	12
9	MP1	X	0	48
10	MP1	Z	-80.72	48

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	-73.62	0
2	MP1	Z	-127.51	0
3	MP1	X	-73.62	72
4	MP1	Z	-127.51	72
5	MP1	X	-38.27	12
6	MP1	Z	-66.28	12
7	MP1	X	-37.42	12
8	MP1	Z	-64.82	12
9	MP1	X	-36.03	48
10	MP1	Z	-62.41	48

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	-82.57	0
2	MP1	Z	-47.67	0
3	MP1	X	-82.57	72
4	MP1	Z	-47.67	72
5	MP1	X	-51.78	12
6	MP1	Z	-29.89	12
7	MP1	X	-47.39	12
8	MP1	Z	-27.36	12
9	MP1	X	-47.43	48
10	MP1	Z	-27.39	48

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	-69.4	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	-69.4	72
4	MP1	Z	0	72
5	MP1	X	-51.42	12
6	MP1	Z	0	12
7	MP1	X	-44.66	12
8	MP1	Z	0	12
9	MP1	X	-46.12	48
10	MP1	Z	0	48

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	-82.57	0
2	MP1	Z	47.67	0
3	MP1	X	-82.57	72
4	MP1	Z	47.67	72
5	MP1	X	-51.78	12
6	MP1	Z	29.89	12
7	MP1	X	-47.39	12
8	MP1	Z	27.36	12
9	MP1	X	-47.43	48
10	MP1	Z	27.39	48

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	-73.62	0
2	MP1	Z	127.51	0
3	MP1	X	-73.62	72
4	MP1	Z	127.51	72
5	MP1	X	-38.27	12
6	MP1	Z	66.28	12
7	MP1	X	-37.42	12
8	MP1	Z	64.82	12
9	MP1	X	-36.03	48
10	MP1	Z	62.41	48

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	173.18	0
3	MP1	X	0	72
4	MP1	Z	173.18	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	84.9	12
7	MP1	X	0	12
8	MP1	Z	84.9	12
9	MP1	X	0	48
10	MP1	Z	80.72	48

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	73.62	0
2	MP1	Z	127.51	0
3	MP1	X	73.62	72
4	MP1	Z	127.51	72
5	MP1	X	38.27	12
6	MP1	Z	66.28	12
7	MP1	X	37.42	12
8	MP1	Z	64.82	12
9	MP1	X	36.03	48
10	MP1	Z	62.41	48

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	82.57	0
2	MP1	Z	47.67	0
3	MP1	X	82.57	72
4	MP1	Z	47.67	72
5	MP1	X	51.78	12
6	MP1	Z	29.89	12
7	MP1	X	47.39	12
8	MP1	Z	27.36	12
9	MP1	X	47.43	48
10	MP1	Z	27.39	48

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	69.4	0
2	MP1	Z	0	0
3	MP1	X	69.4	72
4	MP1	Z	0	72
5	MP1	X	51.42	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	44.66	12
8	MP1	Z	0	12
9	MP1	X	46.12	48
10	MP1	Z	0	48

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	82.57	0
2	MP1	Z	-47.67	0
3	MP1	X	82.57	72
4	MP1	Z	-47.67	72
5	MP1	X	51.78	12
6	MP1	Z	-29.89	12
7	MP1	X	47.39	12
8	MP1	Z	-27.36	12
9	MP1	X	47.43	48
10	MP1	Z	-27.39	48

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	73.62	0
2	MP1	Z	-127.51	0
3	MP1	X	73.62	72
4	MP1	Z	-127.51	72
5	MP1	X	38.27	12
6	MP1	Z	-66.28	12
7	MP1	X	37.42	12
8	MP1	Z	-64.82	12
9	MP1	X	36.03	48
10	MP1	Z	-62.41	48

Member Point Loads (BLC 16 : Ice Weight)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	Y	-142.601	0
2	MP1	Y	-142.601	72
3	MP1	Y	-74.694	12
4	MP1	Y	-70.118	12
5	MP1	Y	-68.394	48

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	-18.82	0
3	MP1	X	0	72
4	MP1	Z	-18.82	72
5	MP1	X	0	12
6	MP1	Z	-7.3	12
7	MP1	X	0	12
8	MP1	Z	-7.3	12
9	MP1	X	0	48
10	MP1	Z	-7.11	48

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	-8.65	0
2	MP1	Z	-14.98	0
3	MP1	X	-8.65	72
4	MP1	Z	-14.98	72
5	MP1	X	-3.48	12
6	MP1	Z	-6.02	12
7	MP1	X	-3.44	12
8	MP1	Z	-5.96	12
9	MP1	X	-3.38	48
10	MP1	Z	-5.86	48

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	-12.34	0
2	MP1	Z	-7.13	0
3	MP1	X	-12.34	72
4	MP1	Z	-7.13	72
5	MP1	X	-5.42	12
6	MP1	Z	-3.13	12
7	MP1	X	-5.23	12
8	MP1	Z	-3.02	12
9	MP1	X	-5.26	48
10	MP1	Z	-3.04	48

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	-12.73	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	-12.73	72
4	MP1	Z	0	72
5	MP1	X	-5.92	12
6	MP1	Z	0	12
7	MP1	X	-5.62	12
8	MP1	Z	0	12
9	MP1	X	-5.73	48
10	MP1	Z	0	48

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	-12.34	0
2	MP1	Z	7.13	0
3	MP1	X	-12.34	72
4	MP1	Z	7.13	72
5	MP1	X	-5.42	12
6	MP1	Z	3.13	12
7	MP1	X	-5.23	12
8	MP1	Z	3.02	12
9	MP1	X	-5.26	48
10	MP1	Z	3.04	48

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	-8.65	0
2	MP1	Z	14.98	0
3	MP1	X	-8.65	72
4	MP1	Z	14.98	72
5	MP1	X	-3.48	12
6	MP1	Z	6.02	12
7	MP1	X	-3.44	12
8	MP1	Z	5.96	12
9	MP1	X	-3.38	48
10	MP1	Z	5.86	48

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	18.82	0
3	MP1	X	0	72
4	MP1	Z	18.82	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	7.3	12
7	MP1	X	0	12
8	MP1	Z	7.3	12
9	MP1	X	0	48
10	MP1	Z	7.11	48

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	8.65	0
2	MP1	Z	14.98	0
3	MP1	X	8.65	72
4	MP1	Z	14.98	72
5	MP1	X	3.48	12
6	MP1	Z	6.02	12
7	MP1	X	3.44	12
8	MP1	Z	5.96	12
9	MP1	X	3.38	48
10	MP1	Z	5.86	48

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	12.34	0
2	MP1	Z	7.13	0
3	MP1	X	12.34	72
4	MP1	Z	7.13	72
5	MP1	X	5.42	12
6	MP1	Z	3.13	12
7	MP1	X	5.23	12
8	MP1	Z	3.02	12
9	MP1	X	5.26	48
10	MP1	Z	3.04	48

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	12.73	0
2	MP1	Z	0	0
3	MP1	X	12.73	72
4	MP1	Z	0	72
5	MP1	X	5.92	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	5.62	12
8	MP1	Z	0	12
9	MP1	X	5.73	48
10	MP1	Z	0	48

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	12.34	0
2	MP1	Z	-7.13	0
3	MP1	X	12.34	72
4	MP1	Z	-7.13	72
5	MP1	X	5.42	12
6	MP1	Z	-3.13	12
7	MP1	X	5.23	12
8	MP1	Z	-3.02	12
9	MP1	X	5.26	48
10	MP1	Z	-3.04	48

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	8.65	0
2	MP1	Z	-14.98	0
3	MP1	X	8.65	72
4	MP1	Z	-14.98	72
5	MP1	X	3.48	12
6	MP1	Z	-6.02	12
7	MP1	X	3.44	12
8	MP1	Z	-5.96	12
9	MP1	X	3.38	48
10	MP1	Z	-5.86	48

Member Point Loads (BLC 31 : Seismic Load Z)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	Z	-8.411	0
2	MP1	Z	-8.411	72
3	MP1	Z	-19.547	12
4	MP1	Z	-16.673	12
5	MP1	Z	-5.698	48

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	-8.411	0
2	MP1	X	-8.411	72
3	MP1	X	-19.547	12
4	MP1	X	-16.673	12
5	MP1	X	-5.698	48

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	-57.654	-57.654	0	%100
2	S4	SZ	-57.654	-57.654	0	%100
3	TR6	SZ	-57.654	-57.654	0	%100
4	TR5	SZ	-57.654	-57.654	0	%100
5	TR8	SZ	-57.654	-57.654	0	%100
6	TR7	SZ	-57.654	-57.654	0	%100
7	S1	SZ	-57.654	-57.654	0	%100
8	S2	SZ	-57.654	-57.654	0	%100
9	TR1	SZ	-57.654	-57.654	0	%100
10	TR2	SZ	-57.654	-57.654	0	%100
11	TR3	SZ	-57.654	-57.654	0	%100
12	TR4	SZ	-57.654	-57.654	0	%100
13	H1	SZ	-57.654	-57.654	0	%100
14	H2	SZ	-57.654	-57.654	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	-57.654	-57.654	0	%100
16	MP1	SZ	-57.654	-57.654	0	%100
17	MP2	SZ	-57.654	-57.654	0	%100
18	T1	SZ	-57.654	-57.654	0	%100
19	M29	SZ	0	0	0	%100
20	M30	SZ	0	0	0	%100
21	M33	SZ	0	0	0	%100
22	M34	SZ	0	0	0	%100
23	M35	SZ	0	0	0	%100
24	M36	SZ	0	0	0	%100
25	M25	SZ	0	0	0	%100
26	M26	SZ	0	0	0	%100

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

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magn...	Start Location...	End Location[in,%]
1	S3	SX	-57.654	-57.654	0	%100
2	S4	SX	-57.654	-57.654	0	%100
3	TR6	SX	-57.654	-57.654	0	%100
4	TR5	SX	-57.654	-57.654	0	%100
5	TR8	SX	-57.654	-57.654	0	%100
6	TR7	SX	-57.654	-57.654	0	%100
7	S1	SX	-57.654	-57.654	0	%100
8	S2	SX	-57.654	-57.654	0	%100
9	TR1	SX	-57.654	-57.654	0	%100
10	TR2	SX	-57.654	-57.654	0	%100
11	TR3	SX	-57.654	-57.654	0	%100
12	TR4	SX	-57.654	-57.654	0	%100
13	H1	SX	-57.654	-57.654	0	%100
14	H2	SX	-57.654	-57.654	0	%100
15	MP3	SX	-57.654	-57.654	0	%100
16	MP1	SX	-57.654	-57.654	0	%100
17	MP2	SX	-57.654	-57.654	0	%100
18	T1	SX	-57.654	-57.654	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 16 : Ice Weight)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magn...	Start Location...	End Location[in,%]
1	S3	Y	-7.71	-7.71	0	%100
2	S4	Y	-7.71	-7.71	0	%100
3	TR6	Y	-5.016	-5.016	0	%100
4	TR5	Y	-5.016	-5.016	0	%100
5	TR8	Y	-5.016	-5.016	0	%100
6	TR7	Y	-5.016	-5.016	0	%100
7	S1	Y	-7.71	-7.71	0	%100
8	S2	Y	-7.71	-7.71	0	%100
9	TR1	Y	-5.016	-5.016	0	%100
10	TR2	Y	-5.016	-5.016	0	%100
11	TR3	Y	-5.016	-5.016	0	%100
12	TR4	Y	-5.016	-5.016	0	%100
13	H1	Y	-9.777	-9.777	0	%100
14	H2	Y	-9.777	-9.777	0	%100
15	MP3	Y	-9.788	-9.788	0	%100
16	MP1	Y	-9.788	-9.788	0	%100
17	MP2	Y	-9.788	-9.788	0	%100
18	T1	Y	-8.727	-8.727	0	%100
19	M29	Y	-3.681	-3.681	0	%100
20	M30	Y	-3.681	-3.681	0	%100
21	M33	Y	-3.681	-3.681	0	%100
22	M34	Y	-3.681	-3.681	0	%100
23	M35	Y	-3.681	-3.681	0	%100
24	M36	Y	-3.681	-3.681	0	%100
25	M25	Y	-3.681	-3.681	0	%100
26	M26	Y	-3.681	-3.681	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	-22.358	-22.358	0	%100
2	S4	SZ	-22.358	-22.358	0	%100
3	TR6	SZ	-51.486	-51.486	0	%100
4	TR5	SZ	-51.486	-51.486	0	%100
5	TR8	SZ	-51.486	-51.486	0	%100
6	TR7	SZ	-51.486	-51.486	0	%100
7	S1	SZ	-22.358	-22.358	0	%100
8	S2	SZ	-22.358	-22.358	0	%100
9	TR1	SZ	-51.486	-51.486	0	%100
10	TR2	SZ	-51.486	-51.486	0	%100
11	TR3	SZ	-51.486	-51.486	0	%100
12	TR4	SZ	-51.486	-51.486	0	%100
13	H1	SZ	-17.458	-17.458	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,%]
14	H2	SZ	-17.458	-17.458	0	%100
15	MP3	SZ	-17.441	-17.441	0	%100
16	MP1	SZ	-17.441	-17.441	0	%100
17	MP2	SZ	-17.441	-17.441	0	%100
18	T1	SZ	-19.444	-19.444	0	%100
19	M29	SZ	0	0	0	%100
20	M30	SZ	0	0	0	%100
21	M33	SZ	0	0	0	%100
22	M34	SZ	0	0	0	%100
23	M35	SZ	0	0	0	%100
24	M36	SZ	0	0	0	%100
25	M25	SZ	0	0	0	%100
26	M26	SZ	0	0	0	%100

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

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magn...	Start Location...	End Location[in,%]
1	S3	SX	-22.358	-22.358	0	%100
2	S4	SX	-22.358	-22.358	0	%100
3	TR6	SX	-51.486	-51.486	0	%100
4	TR5	SX	-51.486	-51.486	0	%100
5	TR8	SX	-51.486	-51.486	0	%100
6	TR7	SX	-51.486	-51.486	0	%100
7	S1	SX	-22.358	-22.358	0	%100
8	S2	SX	-22.358	-22.358	0	%100
9	TR1	SX	-51.486	-51.486	0	%100
10	TR2	SX	-51.486	-51.486	0	%100
11	TR3	SX	-51.486	-51.486	0	%100
12	TR4	SX	-51.486	-51.486	0	%100
13	H1	SX	-17.458	-17.458	0	%100
14	H2	SX	-17.458	-17.458	0	%100
15	MP3	SX	-17.441	-17.441	0	%100
16	MP1	SX	-17.441	-17.441	0	%100
17	MP2	SX	-17.441	-17.441	0	%100
18	T1	SX	-19.444	-19.444	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 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	.424	39.811	27	.025	19.905		85	4409....	1402...	147.2...	147.295	2....	H1-1a
2	S4	1.9" ODx0.1...	.412	35.333	30	.157	42.4		28	2049...	2777...	1314....	1314.45	1....	H1-1b
3	S3	1.9" ODx0.1...	.392	35.333	31	.158	42.4		30	2049...	2777...	1314....	1314.45	1....	H1-1b
4	TR4	0.63" SR	.311	39.811	87	.038	19.905		30	4409....	1402...	147.2...	147.295	2....	H1-1a
5	S2	1.9" ODx0.1...	.299	35.333	85	.117	42.4		84	2049...	2777...	1314....	1314.45	1....	H1-1b
6	S1	1.9" ODx0.1...	.287	35.333	81	.118	42.4		87	2049...	2777...	1314....	1314.45	1.83	H1-1b
7	MP1	2.88"x0.120"	.270	33	2	.074	33		2	2249...	43056	3156....	3156.75	3....	H1-1b
8	TR8	0.63" SR	.175	0	32	.025	19.905		81	2249....	1402...	147.2...	147.295	2....	H1-1b
9	TR5	0.63" SR	.158	28.3	27	.034	0		95	5162....	1402...	147.2...	147.295	2....	H1-1b
10	H1	PIPE 2.5	.157	77	8	.088	78		2	3348...	66654	4726.5	4726.5	1....	H1-1b
11	TR2	0.63" SR	.137	0	32	.035	0		95	5162....	1402...	147.2...	147.295	2....	H1-1b
12	TR3	0.63" SR	.122	0	81	.036	19.905		36	2249....	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	H2	PIPE 2.5	.090	93	96	.048	78		94	3348...	66654	4726.5	4726.5	2....	H1-1b
15	MP2	2.88"x0.120"	.086	33	8	.039	33		93	2249...	43056	3156....	3156.75	4....	H1-1b
16	T1	Pipe2.38X0....	.079	0	7	.005	96.255		36	1328...	3527...	2114....	2114.85	1....	H1-1...
17	TR6	0.63" SR	.078	0	93	.016	28.3		98	5162....	1402...	147.2...	147.295	2....	H1-1b
18	TR1	0.63" SR	.054	28.3	77	.015	0		98	5162....	1402...	147.2...	147.295	2....	H1-1b

INFINIGY

FROM ZERO TO INFINIGY

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Bolt Calculation Tool, V1.5.1

PROJECT DATA	
Site Name:	BOBOS00025A
Site Number:	BOBOS00025A
Connection Description:	Sector Frame to Tower Leg

MAXIMUM BOLT LOADS		
Bolt Tension:	1244.28	lbs
Bolt Shear:	875.54	lbs

WORST CASE BOLT LOADS[1]		
Bolt Tension:	0.00	lbs
Bolt Shear:	875.54	lbs

WORST CASE CONNECTION SLIP LOADS[2]		
Sliding Force:	857.66	lbs
Torsion About Leg:	0.00	lbs-ft

BOLT PROPERTIES		
Bolt Type:	Threaded Rod	-
Bolt Diameter:	0.625	in
Bolt Grade:	A449	-
# of Threaded Rods:	2	-
Leg Diameter:	5.563	in
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.*

[2] *Worst Case slip loads correspond to Load combination #32 on member M25 in RISA 3D, which causes the maximum slip demand on the connection.*

Member Information
I nodes of M25, M26

BOLT CHECK		
Tensile Strength	20340.15	
Shear Strength	13805.83	
Max Tensile Usage	6.1%	
Max Shear Usage	6.3%	
Interaction Check (Worst Case)	0.00	***≤1.05***
Result	Pass	

SLIP CHECK (WORST CASE)		
Torsional Slip Resistance	1389.67	
Sliding Resistance	5995.34	
Torsional Slip Usage	0.0%	
Sliding Usage	14.3%	
Interaction Check	0.02	***≤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: BOBOS00025A

BOBOS00025A
53 Dayton Road
Waterford, Connecticut 06385

April 18, 2022

EBI Project Number: 62220033391

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**31.06%**

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

April 18, 2022

Dish Wireless

Emissions Analysis for Site: BOBOS00025A - BOBOS00025A

EBI Consulting was directed to analyze the proposed Dish Wireless facility located at **53 Dayton Road** in **Waterford, 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 53 Dayton Road in Waterford, Connecticut using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since Dish Wireless is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 20 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was focused at the base of the tower. For this report, the sample point is the top of a 6-foot person standing at the base of the tower.

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

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

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

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

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

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

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

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

7) The antenna mounting height centerline of the proposed antennas is 144 feet above ground level (AGL).

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

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

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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):	144 feet	Height (AGL):	144 feet	Height (AGL):	144 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 %:	**1.24%**	Antenna B1 MPE %:	**1.24%**	Antenna C1 MPE %:	**1.24%**

Site Composite MPE %	
Carrier	**MPE %**
Dish Wireless (Max at Sector A):	1.24%
AT&T	4.79%
T-Mobile	7.41%
Verizon	16.84%
Metro PCS	0.55%
Public Safety	0.23%
Site Total MPE % :	31.06%

Dish Wireless MPE % Per Sector	
Dish Wireless Sector A Total:	1.24%
Dish Wireless Sector B Total:	1.24%
Dish Wireless Sector C Total:	1.24%
Site Total MPE % :	31.06%

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	144.0	1.69	600 MHz n71	400	0.42%
Dish Wireless 1900 MHz n70	4	542.70	144.0	4.10	1900 MHz n70	1000	0.41%
Dish Wireless 2190 MHz n66	4	542.70	144.0	4.10	2190 MHz n66	1000	0.41%
						Total:	**1.24%**

• 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:	1.24%
Sector B:	1.24%
Sector C:	1.24%
Dish Wireless Maximum MPE % (Sector A):	1.24%
Site Total:	31.06%
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **31.06%** 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

53 DAYTON ROAD

Location	53 DAYTON ROAD	**Mblu**	92/ / 1844/ /
Acct#	00158300	**Owner**	COHANZIE FIRE COMPANY NO 5 INC
Assessment	$1,335,410	**Appraisal**	$1,907,740
PID	1844	**Building Count**	2

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2017	$981,150	$926,590	$1,907,740
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2017	$686,800	$648,610	$1,335,410

Parcel Addreses

Additional Addresses		
Address	**City, State Zip**	**Type**
53 DAYTON ROAD		Secondary

Owner of Record

Owner	COHANZIE FIRE COMPANY NO 5 INC	**Sale Price**	$0
Co-Owner		**Certificate**	
		Book & Page	0095/0157
		Sale Date	11/12/1952
		Instrument	00

Ownership History

Ownership History					
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Instrument**	**Sale Date**
COHANZIE FIRE COMPANY NO 5 INC	$0		0095/0157	00	11/12/1952

Building Information

Building 1 : Section 1

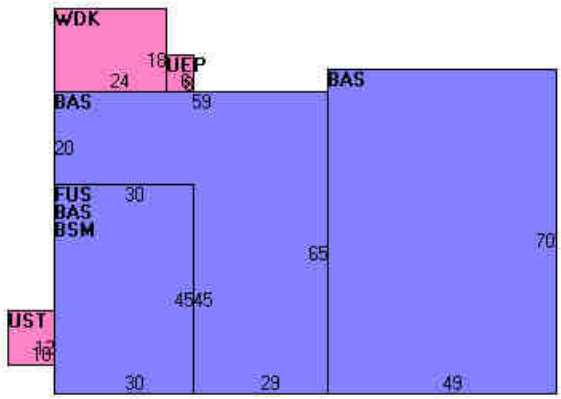
Year Built: 1950
Living Area: 8,615
Replacement Cost: $803,074
Building Percent Good: 68

Building Attributes	
Field	**Description**
STYLE	Fire Station
MODEL	Comm/Ind
Grade	Above Ave
Stories:	1.00
Occupancy	1.00
Exterior Wall 1	Vinyl Siding
Exterior Wall 2	Brick Veneer
Roof Structure	Gambrel
Roof Cover	Asphalt
Interior Wall 1	Plaster
Interior Wall 2	Drywall
Interior Floor 1	Concrete
Interior Floor 2	Comp Tile
Heating Fuel	Oil
Heating Type	Hot Water
% Central Air	0
Foundation	Poured Conc
Bldg Use	Exempt Comm
Total Rooms	0
Total Bedrms	0
Total Fixtures	22
% Wet Sprinkler	100
% Dry Sprinkler	
1st Floor Use	
Heat/AC	Typical
Frame Type	MASONRY
Baths/Plumbing	AVERAGE
% Finished	60
Class	C
Wall Height	11.00
Usrfld 214	

Building Photo

(https://images.vgsi.com/photos/WaterfordCTPhotos//\00\00\88\39.JPG)

Building Layout



(https://images.vgsi.com/photos/WaterfordCTPhotos//Sketches/1844_1844

Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
BAS	First Floor	7,265	7,265
FUS	Finished Upper Story	1,350	1,350
BSM	Basement	1,350	0
UEP	Unfin. Enclosed Porch	48	0
UST	Unfinished Utility Area	120	0
WDK	Deck	432	0
		10,565	8,615

Building 2 : Section 1

Year Built: 1950
Living Area: 3,360

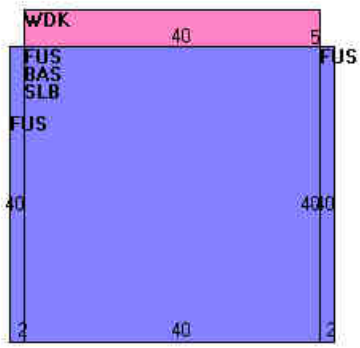
Replacement Cost: $368,762
Building Percent Good: 62

Building Attributes : Bldg 2 of 2	
Field	**Description**
STYLE	Fire Station
MODEL	Comm/Ind
Grade	Above Ave
Stories:	2.00
Occupancy	1.00
Exterior Wall 1	Vinyl Siding
Exterior Wall 2	Brick Veneer
Roof Structure	Gambrel
Roof Cover	Asphalt
Interior Wall 1	Plaster
Interior Wall 2	Drywall
Interior Floor 1	Concrete
Interior Floor 2	Comp Tile
Heating Fuel	Oil
Heating Type	Forced Hot Air
% Central Air	0
Foundation	Poured Conc
Bldg Use	Exempt Comm
Total Rooms	0
Total Bedrms	0
Total Fixtures	0
% Wet Sprinkler	
% Dry Sprinkler	
1st Floor Use	
Heat/AC	Typical
Frame Type	MASONRY
Baths/Plumbing	LIGHT
% Finished	0
Class	C
Wall Height	11.00
Usrfld 214	

Building Photo

(https://images.vgsi.com/photos/WaterfordCTPhotos//default.jpg)

Building Layout



(https://images.vgsi.com/photos/WaterfordCTPhotos//Sketches/1844_2007

Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
FUS	Finished Upper Story	1,760	1,760
BAS	First Floor	1,600	1,600
SLB	Slab	1,600	0
WDK	Deck	200	0
		5,160	3,360

Extra Features

Extra Features				Legend
Code	**Description**	**Size**	**Value**	**Bldg #**
FBM	Finished Bsmt	475.00 S.F.	$3,230	1

Land

Land Use

Use Code	920
Description	Exempt Comm
Zone	R-40
Neighborhood	200
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	9.91
Frontage	0
Depth	0
Assessed Value	$648,610
Appraised Value	$926,590

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
FN1	Fence			928.00 L.F.	$7,660	2
FGR1	Garage	MS	Masonry	220.00 S.F.	$3,300	1
LSUM	Lump Sum			120000.00 UNITS	$90,000	2
PAV1	Paving	AS	Asphalt	39900.00 S.F.	$62,340	1
SHD1	Shed	FR	Frame	800.00 S.F.	$6,000	1
FN1	Fence			1408.00 L.F.	$7,740	1
FOP	Porch			1600.00 S.F.	$24,000	1
LSUM	Lump Sum			4320.00 UNITS	$2,160	1

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2021	$981,150	$926,590	$1,907,740
2020	$981,150	$926,590	$1,907,740

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2021	$686,800	$648,610	$1,335,410
2020	$686,800	$648,610	$1,335,410

NOTIFICATIONS

June 23, 2022

Dear Customer,

The following is the proof-of-delivery for tracking number: 777141454221

Delivery Information:

Status:	Delivered	**Delivered To:**	Receptionist/Front Desk
Signed for by:	T.THOMPSON	**Delivery Location:**	15 ROPE FERRY RD
Service type:	FedEx 2Day		
Special Handling:	Deliver Weekday		WATERFORD, CT, 06385
		Delivery date:	Jun 21, 2022 10:04

Shipping Information:

Tracking number:	777141454221	**Ship Date:**	Jun 17, 2022
		Weight:	1.0 LB/0.45 KG

Recipient:
Steve Cardelle,
Waterford Town Hall
15 Rope Ferry Road
WATERFORD, CT, US, 06385

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

Reference 100814

Thank you for choosing FedEx

June 23, 2022

Dear Customer,

The following is the proof-of-delivery for tracking number: 777141637305

Delivery Information:

Status:	Delivered	**Delivered To:**	Receptionist/Front Desk
Signed for by:	T.BRYAN	**Delivery Location:**	53 DAYTON RD
Service type:	FedEx 2Day		
Special Handling:	Deliver Weekday		WATERFORD, CT, 06385
		Delivery date:	Jun 21, 2022 16:10

Shipping Information:

Tracking number:	777141637305	**Ship Date:**	Jun 17, 2022
		Weight:	1.0 LB/0.45 KG

Recipient:
Cohanzie Fire Company No. 5, Inc.,
53 Dayton Road
WATERFORD, CT, US, 06385

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

Reference 100814

Thank you for choosing FedEx

June 23, 2022

Dear Customer,

The following is the proof-of-delivery for tracking number: 777141407903

Delivery Information:

Status:	Delivered	**Delivered To:**	Receptionist/Front Desk
Signed for by:	T.THOMPSON	**Delivery Location:**	15 ROPE FERRY RD
Service type:	FedEx 2Day		
Special Handling:	Deliver Weekday		WATERFORD, CT, 06385
		Delivery date:	Jun 21, 2022 10:04

Shipping Information:

Tracking number:	777141407903	**Ship Date:**	Jun 17, 2022
		Weight:	1.0 LB/0.45 KG

Recipient:
Robert J. Brule,
Waterford Town Hall
15 Rope Ferry Road
WATERFORD, CT, US, 06385

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

Reference 100814

Thank you for choosing FedEx