

# PROJECT NARRATIVE

May 3, 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  
90 North Plains Industrial Road, Wallingford, CT 06492  
Latitude: 41°28'50.740" / Longitude: -72°49'3.720"

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 90 North Plains Industrial Road in Wallingford (the "Property"). The existing 178-foot monopole is owned by American Tower Corporation ("ATC"). The underlying property is owned by R L R Investments LLC. 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 William W. Dickinson, Jr., Mayor of the Town of Wallingford, Justin Rossetti, Town of Wallingford Building Official and R L R Investments LLC. as the property owner.

## **Background**

This facility was originally permitted by the Town of Wallingford on October 22, 2001. A copy of the permit included in this filing. The existing ATC facility consists of a 178-foot self-support tower located within an existing leased area. Sprint/Nextel currently maintains antennas at the 182-foot level and the 118-122-foot levels. Clearwire Corporation currently maintains antennas at the 171-foot level. AT&T Mobility currently maintains antennas at the 160-foot level. T-Mobile currently maintains antennas at the 148-foot level. Verizon Wireless currently maintains antennas at the 138-foot level. Metro PCS currently maintains antennas at the 128-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 90 North Plains Industrial 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 106-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.

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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 90 North Plains Industrial 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 proposed shared use.

Sincerely,

*David Hoogasian*

**David Hoogasian**  
*Project Manager*

# LETTER OF AUTHORIZATION



**AMERICAN TOWER®**  
CORPORATION  
**LETTER OF AUTHORIZATION**

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

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

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

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

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

Signature: \_\_\_\_\_

Margaret Robinson, Senior Counsel  
US Tower Division

See attached Notary Block



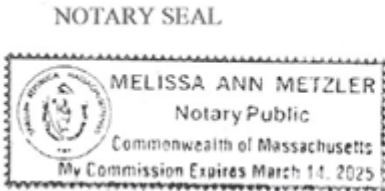
**LETTER OF AUTHORIZATION  
NETWORK BUILDING AND CONSULTING LLC/ DISH WIRELESS L.L.C**

**NOTARY BLOCK**

COMMONWEALTH OF MASSACHUSETTS  
County of Middlesex

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

WITNESS my hand and official seal, this 1<sup>st</sup> day of December, 2021.



Notary Public   
My Commission Expires: March 14, 2025

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

# ORIGINAL FACILITY APPROVAL



Application

Application # \_\_\_\_\_



# Town of Wallingford, Connecticut

## APPLICATION FOR SITE PLAN APPROVAL

Name of Applicant Naxtel Communications of the Mid-Atlantic, Inc. Date 1/6/98

Mailing Address 100 Corporate Place Phone 800-513-5400  
Rocky Hill, CT 06087

Interest in Property: Own \_\_\_\_\_ Rent \_\_\_\_\_ Lease  Option to Buy \_\_\_\_\_  
Other (Please specify) \_\_\_\_\_

Owner of Property Bilkaya Express Mailing Address 400 South Second Street  
Elizabeth, NJ 07208

Location of Building Lot 90 North Plains Industrial Road

Intended Use(s) Wireless Telecommunications Facility

Square Footage of Use(s) 250 sq. ft. Zoning District I-40 Lot Size 235, 972 sq. ft.

Name of Surveyor See Note 1 on Sheet C-2 Phone \_\_\_\_\_

Mailing Address \_\_\_\_\_

Name of Preparer of Site Plan Tectonic Engineering

Mailing Address P.O. Box 447, 515 Route 32, Highland Mills, NY 10930 Phone 914-328-8531

**If a sign permit is to be issued as part of site plan approval, complete the following section and show sign(s) and their location on site plan.**

Size of sign(s) \_\_\_\_\_

Type of sign(s) \_\_\_\_\_

\_\_\_\_\_  
Applicant's Signature

\_\_\_\_\_  
Company Name (If Applicable)

**FOR OFFICIAL USE:**

Application Submitted \_\_\_\_\_ Filing Fee Paid \_\_\_\_\_ Forwarded for Review \_\_\_\_\_

Comments: \_\_\_\_\_

Revi 10/98

80

WALLINGFORD PLANNING  
& ZONING COMMISSION



MUNICIPAL BUILDING  
WALLINGFORD • CONNECTICUT

INTER-DEPARTMENT REFERRAL

APPLICATION #  
202-99

NOTICE OF PROPOSED DEVELOPMENT

**RECEIVED**

DATE OF SUBMISSION: January 8, 1999  
DATE OF RECEIPT: January 11, 1999  
SCHEDULED MEETING: February 8, 1999

FEB 4 1999

WALLINGFORD  
PLANNING & ZONING

NAME AND APPLICATION OF PROPOSED DEVELOPMENT: Nextel Communications of the  
Mid-Atlantic, Inc./Site-Plan/90-North Plains Industrial Road/Wireless  
Telecommunications Facility

ACREAGE: \_\_\_\_\_ NO. OF LOTS: \_\_\_\_\_

LOCATION: 90 North Plains Industrial Road

NO. OF DWELLING UNITS: \_\_\_\_\_ OPEN SPACE ACREAGE: \_\_\_\_\_

REFERRED TO:

- |   |  |   |
|---|--|---|
| <input checked="" type="checkbox"/> ENGINEERING | <input type="checkbox"/> SOIL CONSERVA-<br>TION DISTRICT | <input type="checkbox"/> HEALTH                   |
| <input checked="" type="checkbox"/> FIRE        | <input type="checkbox"/> PARK AND<br>RECREATION          | <input type="checkbox"/> BUILDING                 |
| <input type="checkbox"/> SAFETY                 | <input type="checkbox"/> CONSERVATION                    | <input type="checkbox"/> EDUCATION                |
| <input type="checkbox"/> CORPORATION<br>COUNSEL | <input checked="" type="checkbox"/> ELECTRIC             | <input checked="" type="checkbox"/> WATER & SEWER |
|   | <input checked="" type="checkbox"/> INLAND/WETLANDS      | <input type="checkbox"/> PUBLIC WORKS             |

BOARD COMMENTS: \_\_\_\_\_

DEPARTMENT COMMENTS: Site plan #202-99 is unremarkable relative to the  
Connecticut Fire Safety Code. Access to the proposed complex should be  
considered by the developer/owner in design phase.

SIGNED BY: Thomas Harkness Acting Fire Marshal DATE: Feb. 1, 1999  
(Title)

TOTAL P.02

TOTAL P.01

CT-0003  
Verizon

FIELD COPY

# BUILDING PERMIT

TOWN OF WALLINGFORD, CONNECTICUT  
BUILDING DEPARTMENT  
46 SOUTH MAIN STREET  
TELEPHONE NO. (203) 294-2006

CK# 3547150

PERMIT NO. **14604** RICE  
(OWNER'S LICENSE)

DATE **10/20/01**  
ADDRESS **99 River W. E. Hartford**

APPLICANT **Verizon Wireless**

PERMIT TO **Cellular Towers** (NO. **13**) STORY (PROPOSED) RISE

AT (LOCATION) **90 North Plains Rd.** (CROSS STREET) AND (CROSS STREET) LOT SIZE

BETWEEN (CROSS STREET) AND (CROSS STREET) BLOCK

SUBDIVISION

BUILDING IS TO BE FT. WIDE BY FT. LONG BY FE. IN HEIGHT AND SHALL CONFORM IN CONSTRUCTION

TO TYPE USE GROUP BASEMENT WALLS OR FOUNDATION (TYPE)

REMARKS **9 Panel Antennas on East Tower** 906 1257 611

ESTIMATED COST \$ **75,000.** PERMIT FEE \$ **984**

AREA OR VOLUME (CUBIC SQUARE FEET)

OWNER **Spectra Site** BUILDING DEPT BY **APR**

ADDRESS **90 No. Pl. Hartford**

# ENGINEERING DRAWINGS



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

**BOHVN00140A**

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

**90 NORTH PLAINS INDUSTRIAL RD.  
WALLINGFORD, CT 06492**

**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**

SHEET NO.	SHEET TITLE
T-1	TITLE SHEET
A-1	OVERALL AND ENLARGED SITE PLAN
A-2	ELEVATION, ANTENNA LAYOUT AND SCHEDULE
A-3	EQUIPMENT DETAILS
A-4	EQUIPMENT DETAILS
A-5	EQUIPMENT DETAILS
E-1	ELECTRICAL/FIBER ROUTE PLAN AND NOTES
E-2	ELECTRICAL DETAILS
E-3	ELECTRICAL ONE-LINE, FAULT CALCS & PANEL SCHEDULE
G-1	GROUNDING PLANS AND NOTES
G-2	GROUNDING DETAILS
G-3	GROUNDING DETAILS
RF-1	RF CABLE COLOR CODE
RF-2	RF PLUMBING DIAGRAM
GN-1	LEGEND AND ABBREVIATIONS
GN-2	GENERAL NOTES
GN-3	GENERAL NOTES
GN-4	GENERAL NOTES

**SCOPE OF WORK**

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

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

- GROUND SCOPE OF WORK:**
- INSTALL (1) PROPOSED FIF RACK
  - INSTALL (1) PROPOSED PPC 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 CIENA BOX (IF REQUIRED)

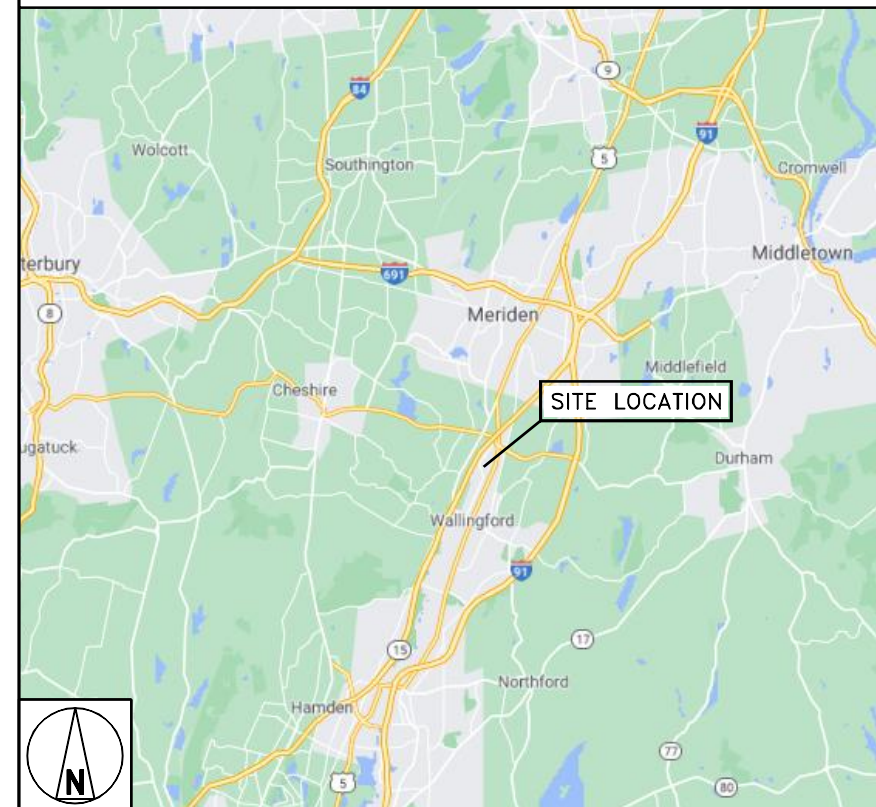
**SITE PHOTO**



**DIRECTIONS**

FROM HARTFORD TAKE I-91 SOUTH TO EXIT 15. TURN RIGHT ONTO RT 68. FOLLOW OVER RT 5 AND TURN LEFT ON NORTH INDUSTRIAL PLAINS ROAD. TOWER IS DOWN ON LEFT IN TRUCKING COMPANY COMPOUND.

**VICINITY MAP**



**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.

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

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

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

**SITE INFORMATION**

PROPERTY OWNER: R L R INVESTMENTS LLC  
ADDRESS: 600 GILLAM RD  
WILMINGTON, OH 45177

TOWER TYPE: MONOPOLE

TOWER CO SITE ID: 302467

TOWER APP NUMBER: 13701206

COUNTY: NEW HAVEN

LATITUDE (NAD 83): 41° 28' 50.740" N  
41.48076111

LONGITUDE (NAD 83): 72° 49' 3.720" W  
-72.8177000

ZONING JURISDICTION: CITY OF WALLINGFORD

ZONING DISTRICT: COMMERCIAL / INDUSTRIAL

PARCEL NUMBER: 63/15

OCCUPANCY GROUP: U

CONSTRUCTION TYPE: II-B

POWER COMPANY: WALLINGFORD ELECTRIC

TELEPHONE COMPANY: FRONTIER COMMUNICATIONS

**PROJECT DIRECTORY**

APPLICANT: DISH WIRELESS, L.L.C.  
5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120  
(303) 706-5008

TOWER OWNER: AMERICAN TOWER  
10 PRESIDENTIAL WAY  
WOBURN, MA 01801

ENGINEER: NB+C ENGINEERING SERVICES, LLC.  
8601 SIX FORKS ROAD, SUITE 540  
RALEIGH, NC 27615

SITE ACQUISITION: JEAN COTTRELL  
JEAN.COTTRELL@DISH.COM

CONSTRUCTION MANAGER: JAVIER SOTO  
JAVIER.SOTO@DISH.COM

RF ENGINEER: SYED ZAIDI  
SYED.ZAIDI@DISH.COM



5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



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

DRAWN BY:	CHECKED BY:	APPROVED BY:
PAT	BIW	BIW

RFDS REV #: 1

**CONSTRUCTION DOCUMENTS**

SUBMITTALS		
REV	DATE	DESCRIPTION
A	08/16/2021	ISSUED FOR REVIEW
0	10/08/2021	ISSUED FOR CONSTRUCTION
1	04/29/2022	ISSUED FOR CONSTRUCTION



IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

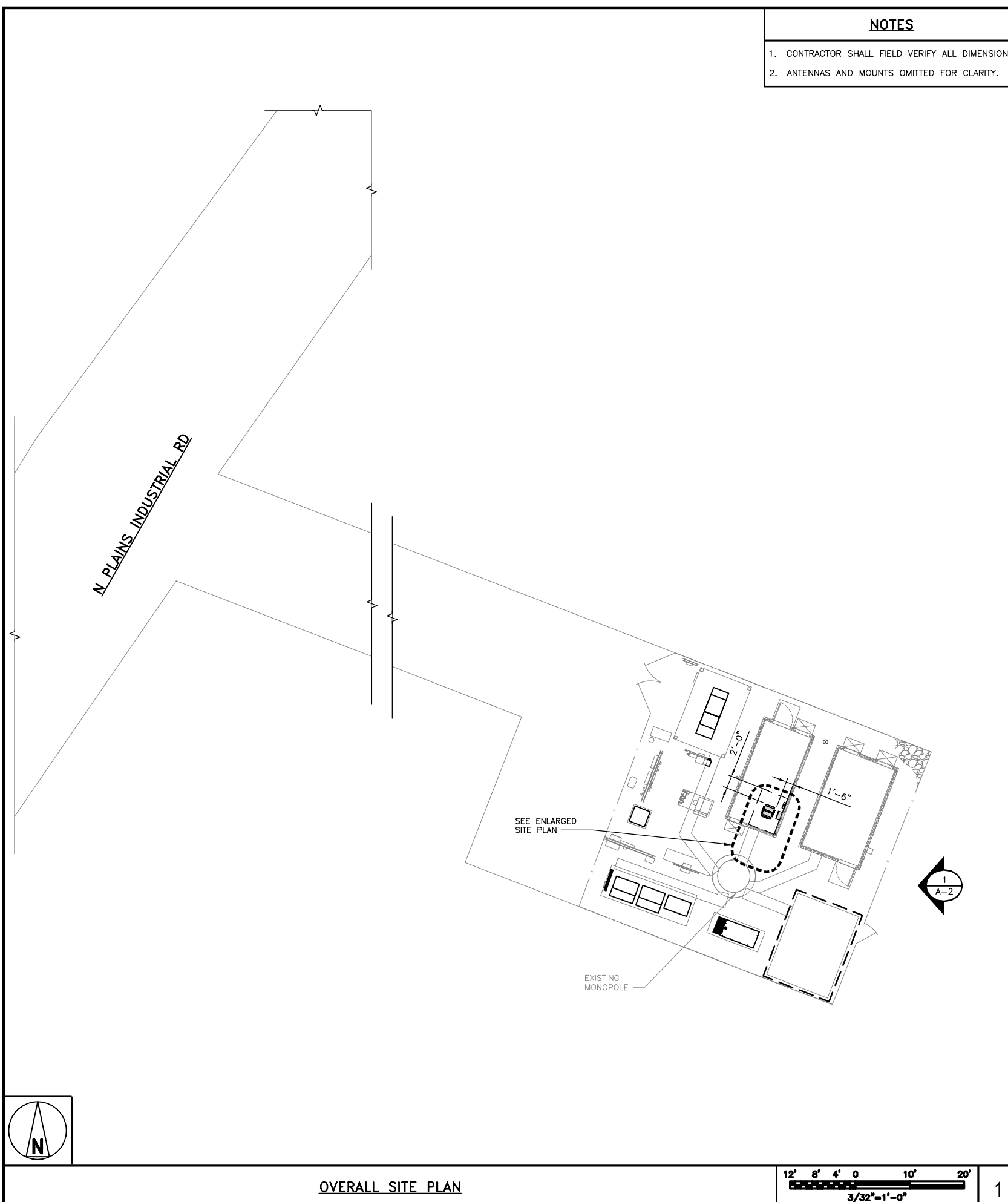
**A&E PROJECT NUMBER  
302467-13701206**

**DISH WIRELESS, L.L.C.  
PROJECT INFORMATION  
BOHVN00140A  
90 NORTH PLAINS INDUSTRIAL RD.  
WALLINGFORD, CT 06492**

**SHEET TITLE  
TITLE SHEET**

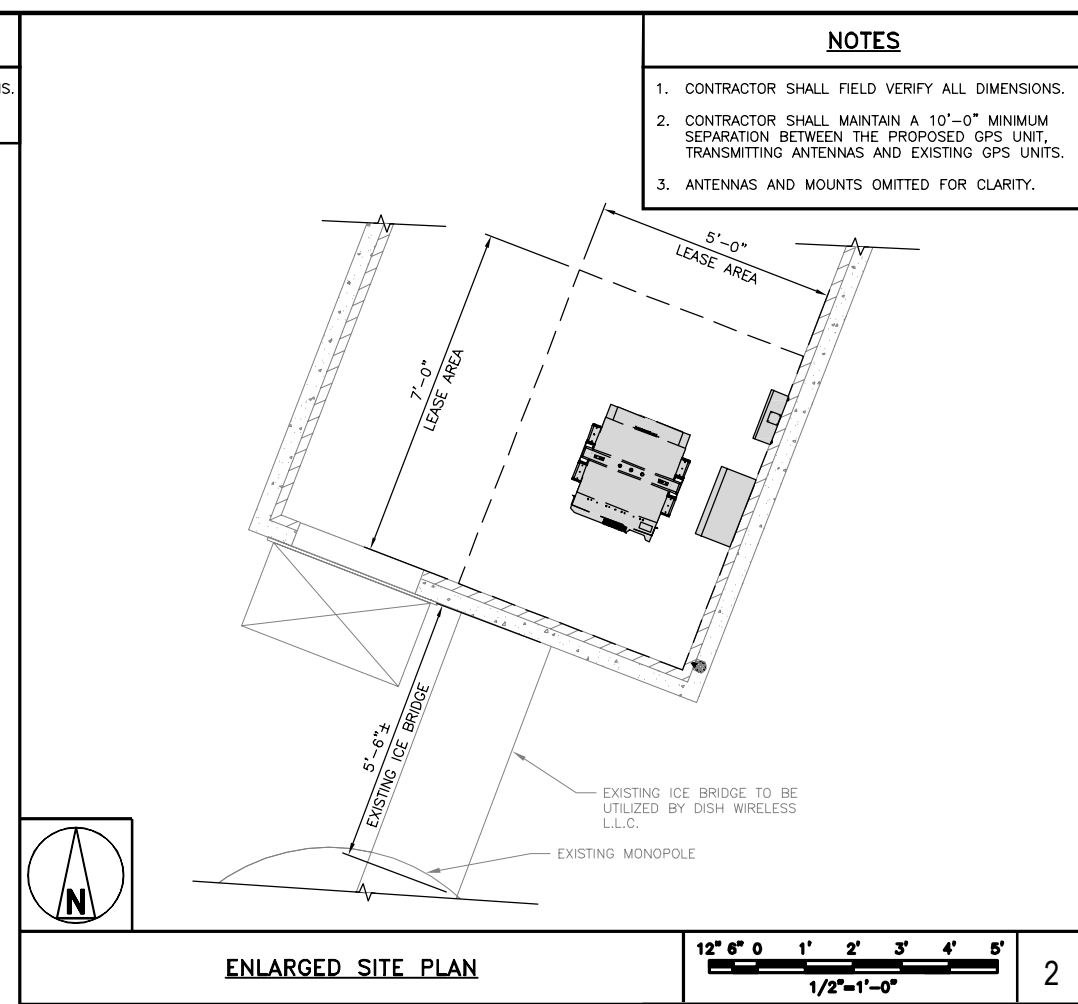
**SHEET NUMBER**

**T-1**



**NOTES**

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

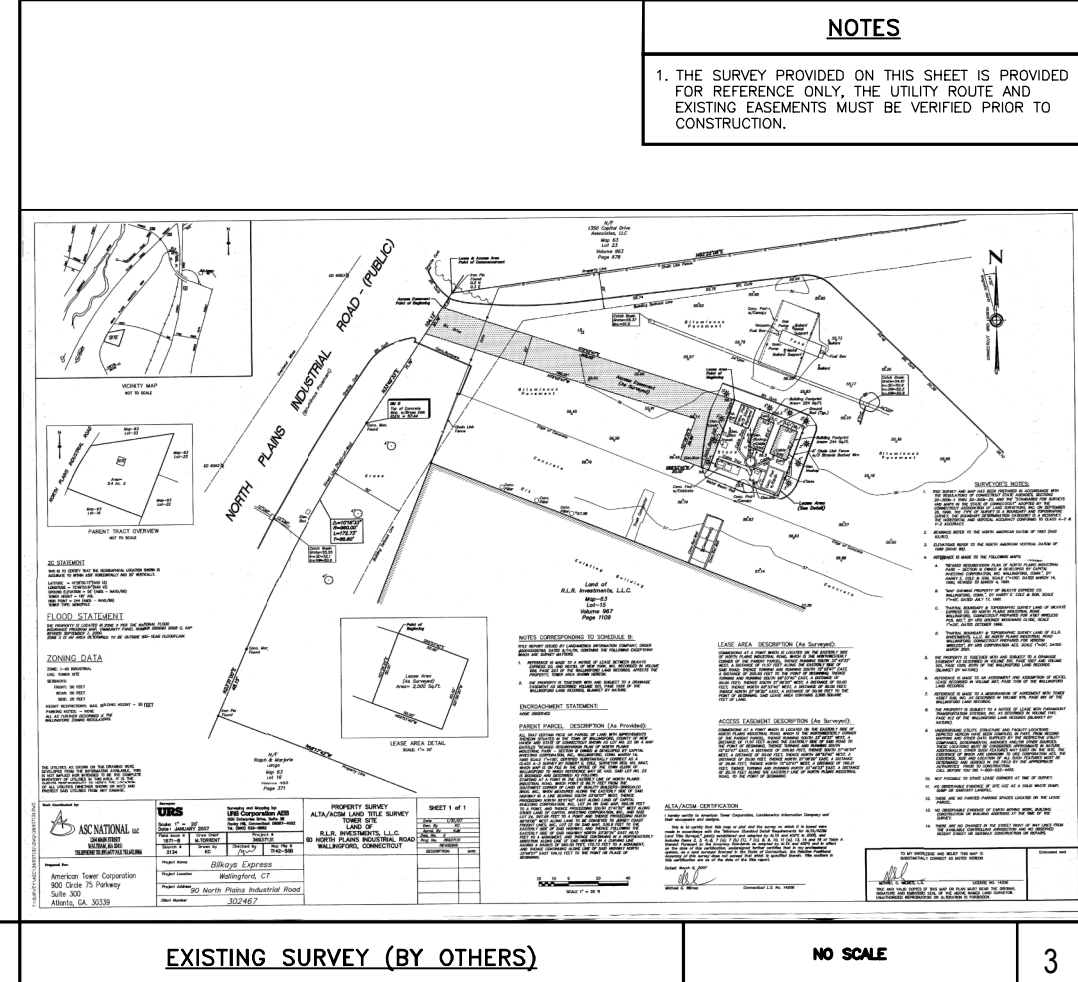


**NOTES**

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.

**NOTES**

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



**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:
PAT	BIW	BIW
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04/29/2022

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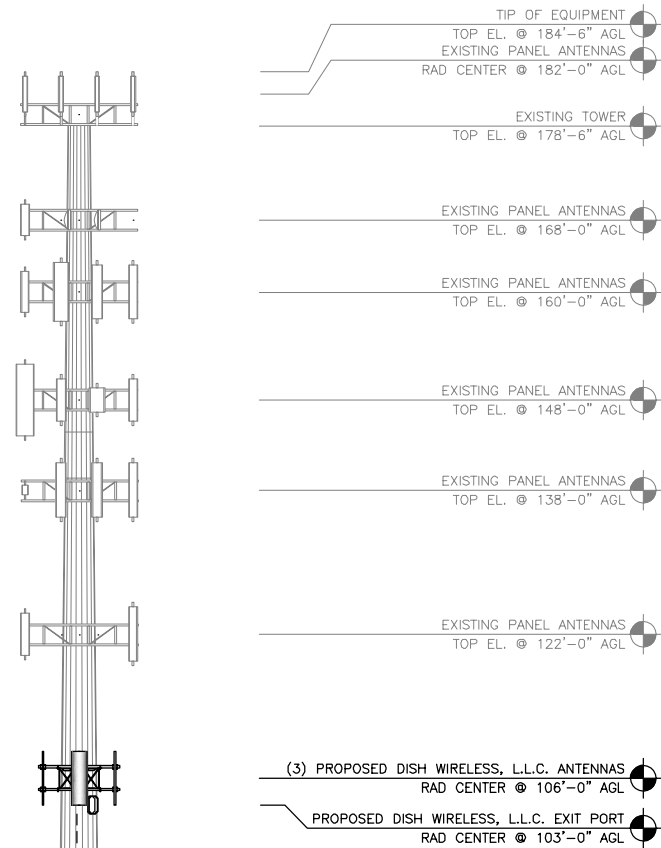
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90 NORTH PLAINS INDUSTRIAL RD.  
WALLINGFORD, CT 06492

**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.



(1) PROPOSED DISH WIRELESS, L.L.C. HYBRID CABLE ROUTED INSIDE THE POLE SHAFT PER ATC STRUCTURAL ANALYSIS

EXISTING ICE BRIDGE TO BE UTILIZED BY DISH WIRELESS L.L.C.

PROPOSED DISH WIRELESS, L.L.C. EQUIPMENT INSIDE EXISTING EQUIPMENT SHELTER

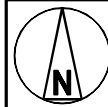
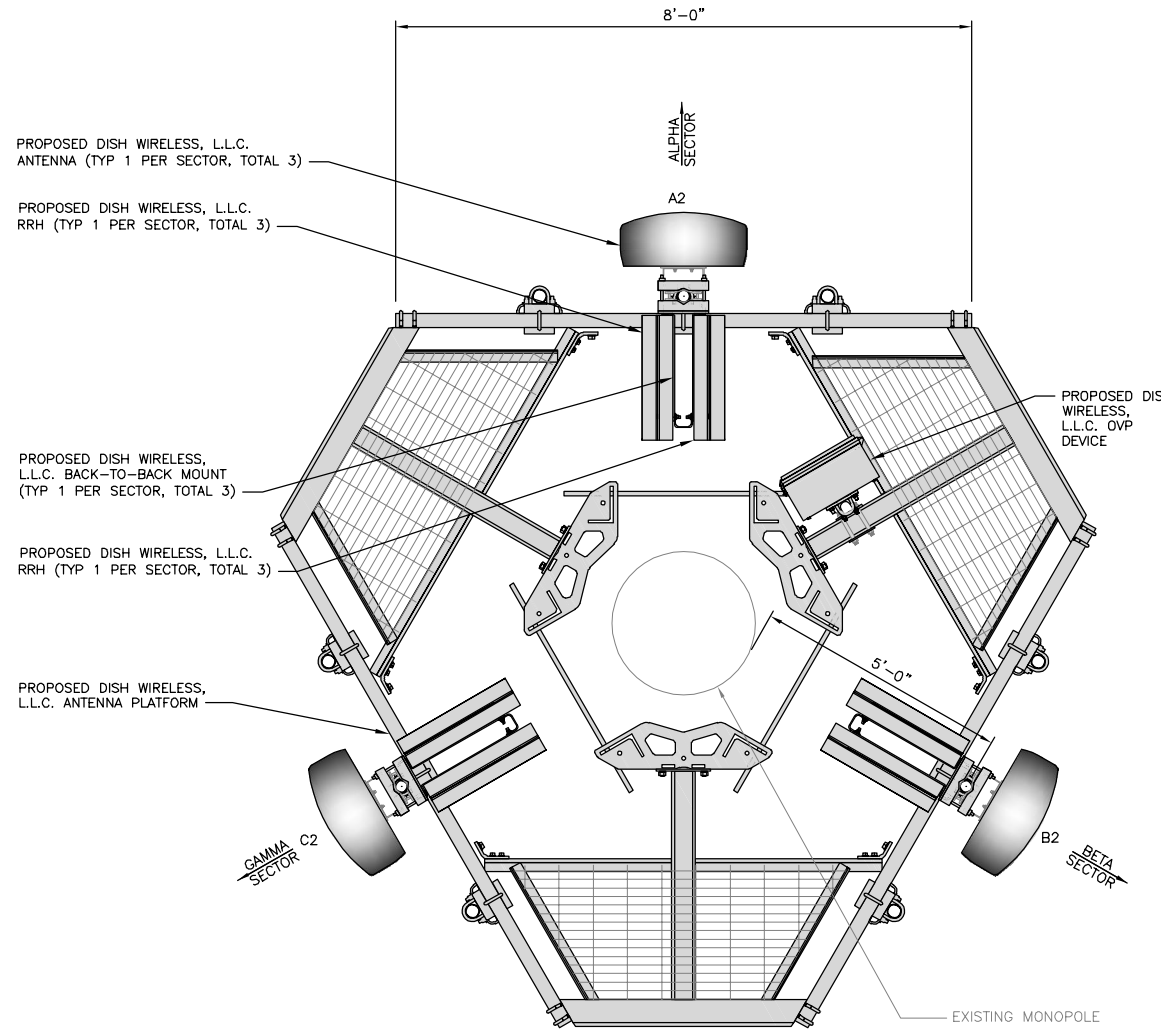
PROPOSED DISH WIRELESS, L.L.C. GPS UNIT

EXISTING ENTRY PORT

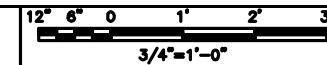
**PROPOSED EAST ELEVATION**



1



**ANTENNA LAYOUT**



2

SECTOR	POSITION	ANTENNA						TRANSMISSION CABLE
		EXISTING OR PROPOSED	MANUFACTURER - MODEL NUMBER	TECHNOLOGY	SIZE (HxW)	AZIMUTH	RAD CENTER	
ALPHA	A1	PROPOSED	JMA - MX08FR0665-21	5G	72.0" x 20.0"	0°	106'-0"	(1) HIGH-CAPACITY HYBRID CABLE (135' LONG)
BETA	B1	PROPOSED	JMA - MX08FR0665-21	5G	72.0" x 20.0"	120°	106'-0"	
GAMMA	C1	PROPOSED	JMA - MX08FR0665-21	5G	72.0" x 20.0"	240°	106'-0"	
SECTOR	POSITION	RRH		NOTES				
		MANUFACTURER - MODEL NUMBER	TECHNOLOGY					
ALPHA	A2	FUJITSU - TA08025-B605	N29, N71	<b>NOTES</b> 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.				
	A2	FUJITSU - TA08025-B604	N66, N70					
BETA	B2	FUJITSU - TA08025-B605	N29, N71					
	B2	FUJITSU - TA08025-B604	N66, N70					
GAMMA	C2	FUJITSU - TA08025-B605	N29, N71					
	C2	FUJITSU - TA08025-B604	N66, N70					
SECTOR	POSITION	OVP						
		MANUFACTURER - MODEL NUMBER	TECHNOLOGY					
ALPHA	-	RAYCAP - RDIDC-9181-PF-48	-					

**ANTENNA SCHEDULE**

NO SCALE

3



5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



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

DRAWN BY:	CHECKED BY:	APPROVED BY:
PAT	BIW	BIW

RFDS REV #: 1

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1	04/29/2022	ISSUED FOR CONSTRUCTION



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A&E PROJECT NUMBER  
**302467-13701206**

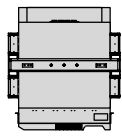
DISH WIRELESS, L.L.C.  
PROJECT INFORMATION  
**BOHVN00140A**  
90 NORTH PLAINS INDUSTRIAL RD.  
WALLINGFORD, CT 06492

SHEET TITLE  
**ELEVATION, ANTENNA LAYOUT AND SCHEDULE**

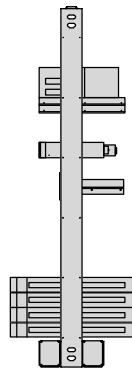
SHEET NUMBER

**A-2**

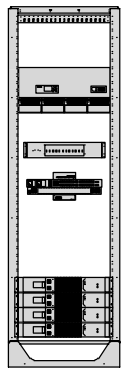
FIF RACK LOADED	
DIMENSIONS (HxWxD):	83.99"x26"x28.5"
WEIGHT:	±800 lbs



PLAN



SIDE

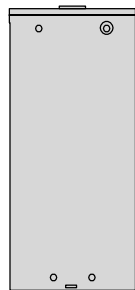


FRONT

GE BREAKER PANEL TLM1220RUCP	
ENCLOSURE DIM (HxWxD)	29"x13"x5"
TOTAL WEIGHT (EMPTY)	26 LBS
MAX VOLTAGE/MAX AMPS	240V/200A
ENCLOSURE RATING	OUTDOOR NEMA 3R



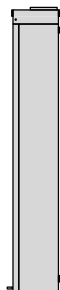
PLAN



FRONT



BACK



SIDE

FIF RACK DETAIL

NO SCALE

1

BREAKER PANEL DETAIL

NO SCALE

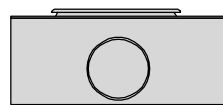
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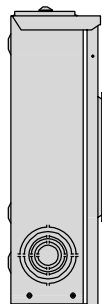
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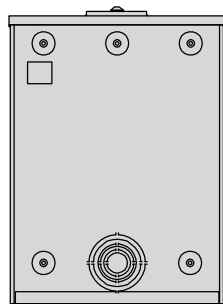
EATON METER SOCKET UNRRS213BEUSE	
METER SOCKET TYPE	RING
ENCLOSURE DIM (HxWxD)	16"x12"x6"
MAIN AMPERE RATING	200A
WEIGHT	18 LBS



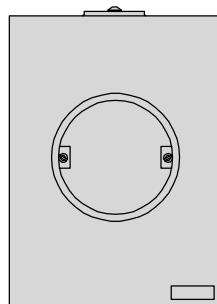
PLAN



SIDE



BACK



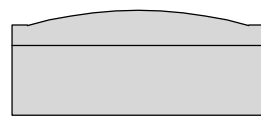
FRONT

METER SOCKET DETAIL

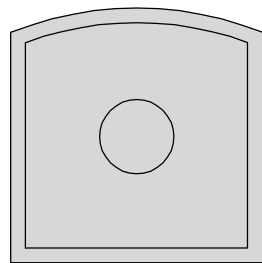
NO SCALE

4

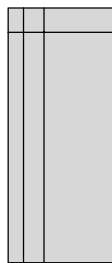
CIENA 3931 SERVICE DELIVERY SWITCH	
DIMENSIONS (HxWxD)	17.0"x16.8"x7.0" 431x427x178mm
WEIGHT	28.6 LBS/13.0 KG
POWER INPUT	60W MAX



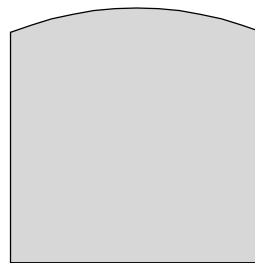
PLAN



FRONT



SIDE



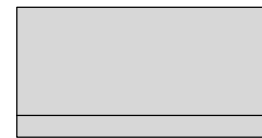
BACK

CIENA DETAIL

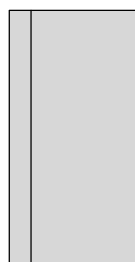
NO SCALE

5

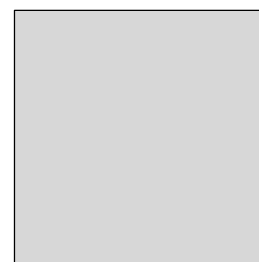
CHARLES FIBER TELCO ENCLOSURE CUBE-MP1818WB-A	
ENCLOSURE DIM (HxWxD)	18.0"x18.0"x9.25"
NEMA RATING	4X
THERMAL	SEALED
MOUNTING BACKBOARD	WOOD



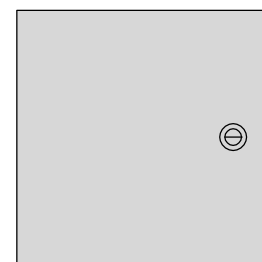
PLAN



SIDE



BACK

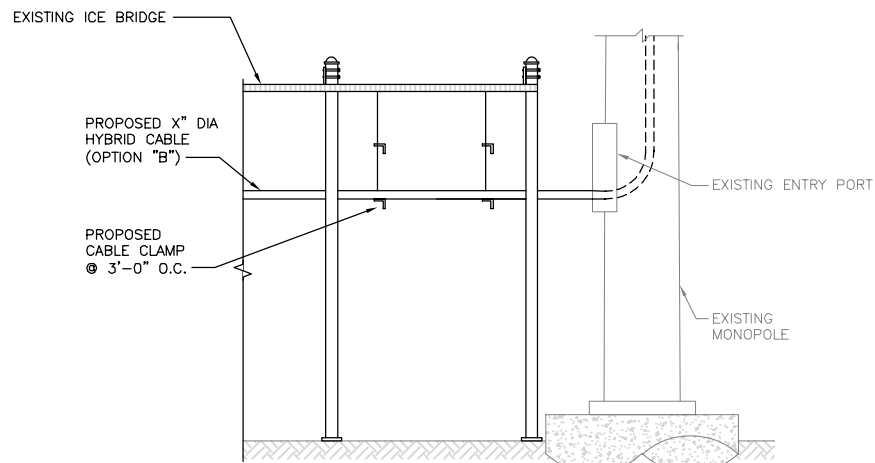


FRONT

FIBER TELCO ENCLOSURE DETAIL

NO SCALE

6



HYBRID CABLE RUN

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:

PAT BIW BIW

RFDS REV #: 1

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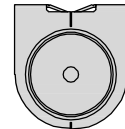
DISH WIRELESS, LLC.  
PROJECT INFORMATION  
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90 NORTH PLAINS INDUSTRIAL RD.  
WALLINGFORD, CT 06492

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EQUIPMENT DETAILS

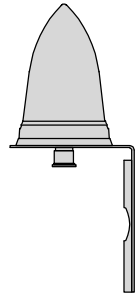
SHEET NUMBER  
A-3



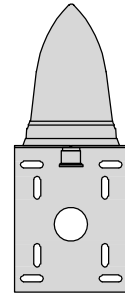
PCTEL GPSGL-TMG-SPI-40NCB	
DIMENSIONS (DIAxH) MM/INCH	81x184mm 3.2"x7.25"
WEIGHT W/ACCESSORIES	075 lbs
CONNECTOR	N-FEMALE
FREQUENCY RANGE	1590 ± 30MHz



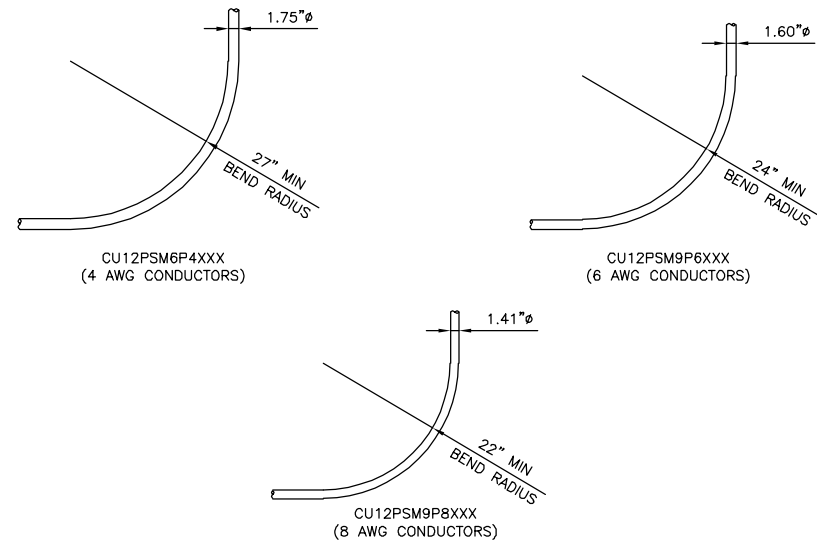
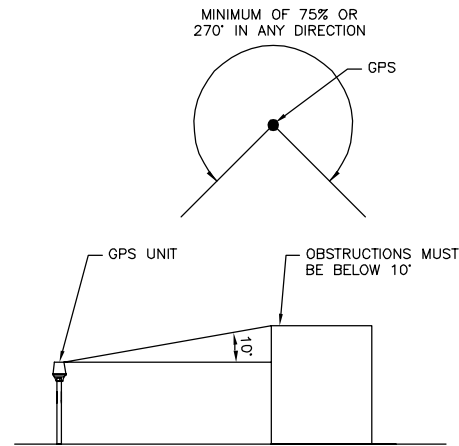
TOP



BACK



SIDE



GPS DETAIL

NO SCALE

1

GPS MINIMUM SKY VIEW REQUIREMENTS

NO SCALE

2

CABLES UNLIMITED HYBRID CABLE  
MINIMUM BEND RADIUSES

NO SCALE

3

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:  
PAT BIW BIW

RFDS REV #: 1

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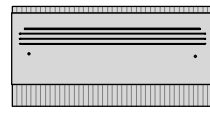
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DISH WIRELESS, L.L.C.  
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WALLINGFORD, CT 06492

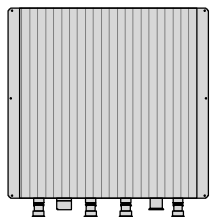
SHEET TITLE  
EQUIPMENT DETAILS

SHEET NUMBER  
A-4

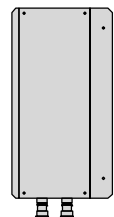
FUJITSU DUAL BAND TA08025-B604	
DIMENSIONS (HxWxD)	14.9"x15.7"x7.8"
WEIGHT	63.9 lbs
CONNECTOR TYPE	4.3-10 RF CONNECTOR
POWER SUPPLY	DC -58~-36V



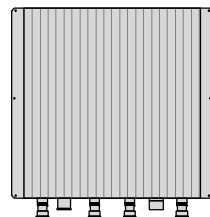
PLAN



BACK



SIDE



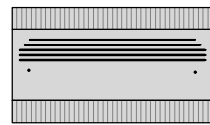
FRONT

RRH DETAIL

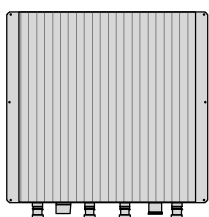
NO SCALE

1

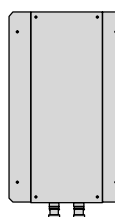
FUJITSU TRIPLE BAND TA08025-B605	
DIMENSIONS (HxWxD)	14.9"x15.7"x9"
WEIGHT	74.95 lbs
CONNECTOR TYPE	4.3-10 RF CONNECTOR
POWER SUPPLY	DC -58~-36V



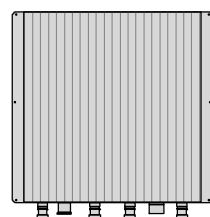
PLAN



BACK



SIDE



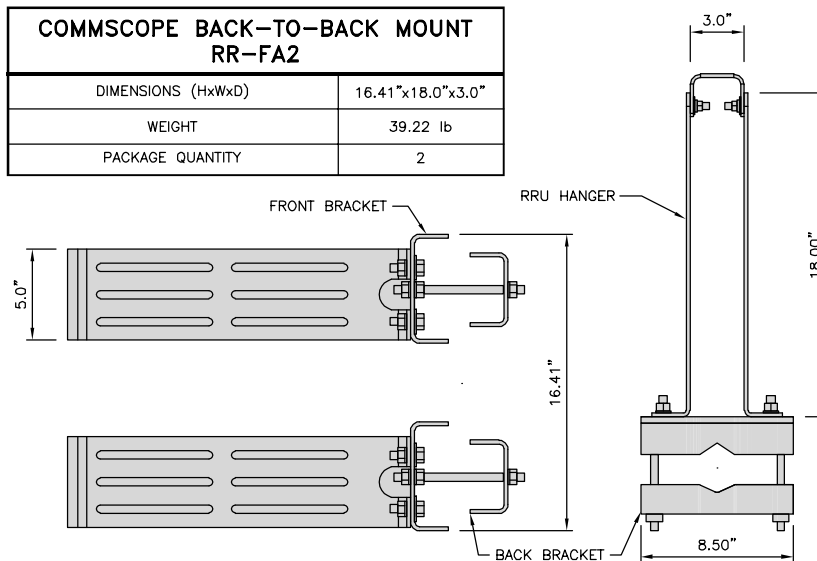
FRONT

RRH DETAIL

NO SCALE

2

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

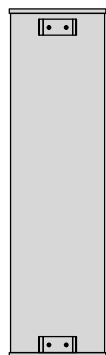
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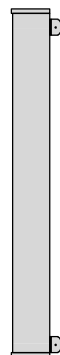
JMA WIRELESS MX08FRO665-21 ANTENNA	
DIMENSIONS (HxWxD)	72.0"x20.0"x8.0"
TOTAL WEIGHT	64.5 LB
RF PORTS, CONNECTOR TYPE	8 x 4.3-10 FEMALE



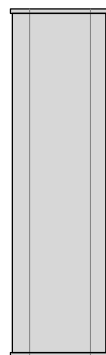
PLAN



BACK



SIDE



FRONT

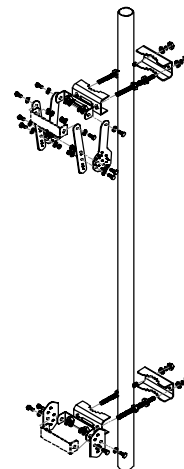
ANTENNA DETAIL

NO SCALE

4

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

NOTE:  
KIT #91900318: TOP AND BOTTOM BRACKETS FOR 4-, 6-, AND 8-FOOT ANTENNAS  
ANTENNA BRACKET NOT PART OF KIT



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

ANTENNA BRACKET DETAIL

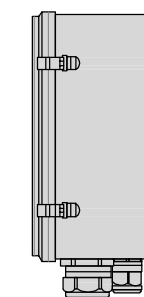
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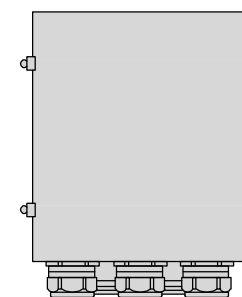
RAYCAP RDIDC-9181-PF-48 DC SURGE PROTECTION (OVP)	
DIMENSIONS (HxWxD)	18.98"x14.39"x8.15"
WEIGHT	21.82 LBS



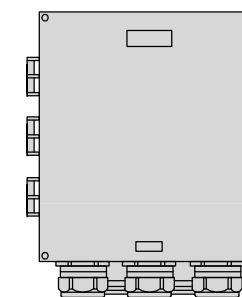
PLAN



SIDE



BACK



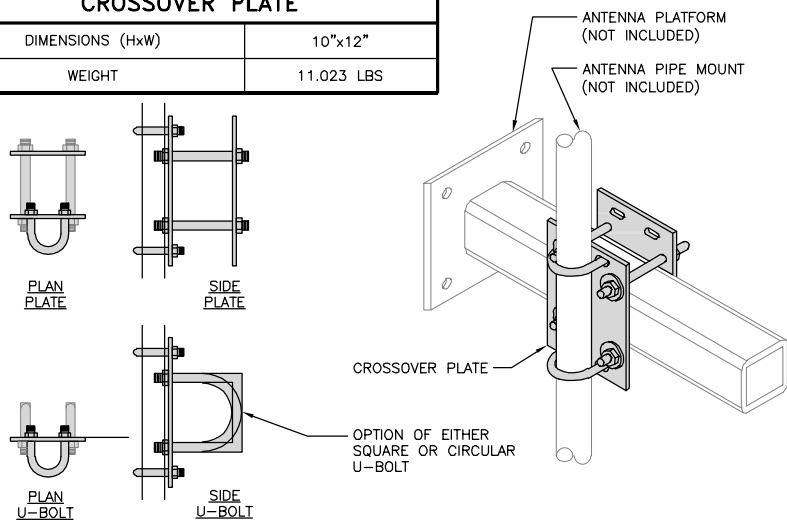
FRONT

SURGE SUPPRESSION DETAIL (OVP)

NO SCALE

6

COMMSCOPE XP-2040 CROSSOVER PLATE	
DIMENSIONS (HxW)	10"x12"
WEIGHT	11.023 LBS



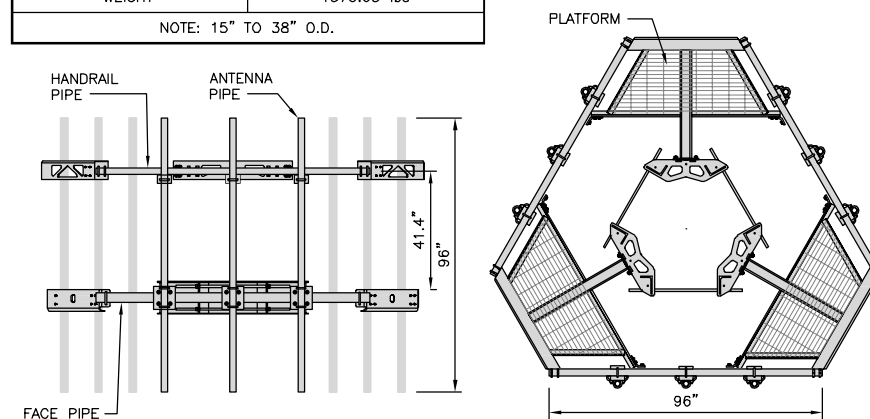
RRH/OVP MOUNT DETAIL

NO SCALE

7

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

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



ANTENNA PLATFORM DETAIL

NO SCALE

8

NOT USED

NO SCALE

9



5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



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

DRAWN BY:	CHECKED BY:	APPROVED BY:
PAT	BIW	BIW

RFDS REV #: 1

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DISH WIRELESS, L.L.C.  
PROJECT INFORMATION  
BOHVN00140A  
90 NORTH PLAINS INDUSTRIAL RD.  
WALLINGFORD, CT 06492

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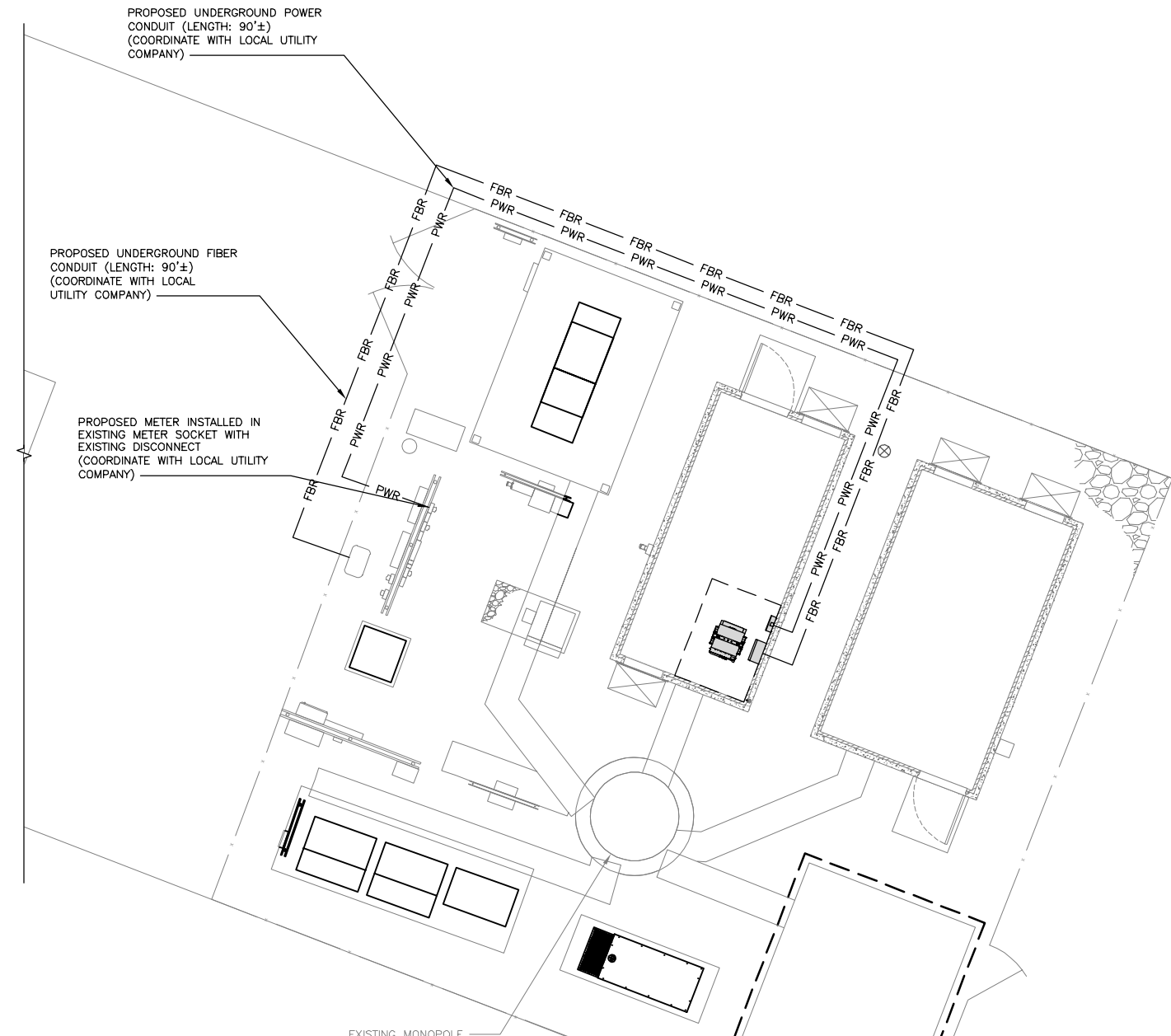
SHEET NUMBER  
A-5

**NOTES**

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

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

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



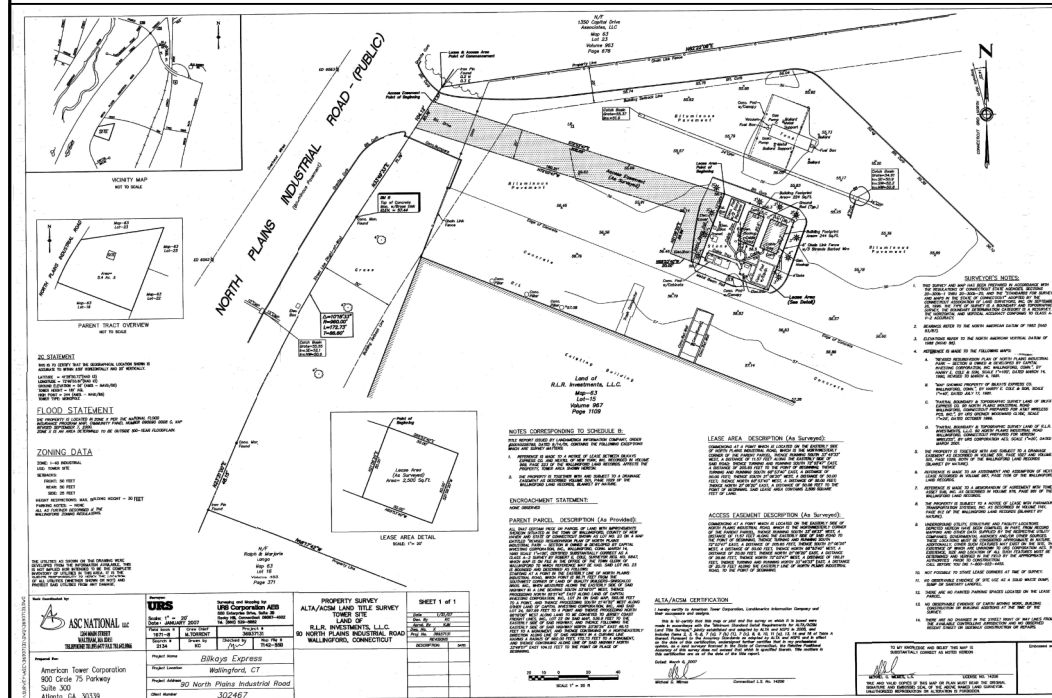
**ELECTRICAL NOTES**

NO SCALE

2

**NOTES**

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

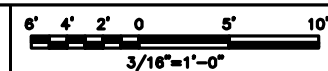


**EXISTING SURVEY (BY OTHERS)**

NO SCALE

3

**UTILITY ROUTE PLAN**



1



5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



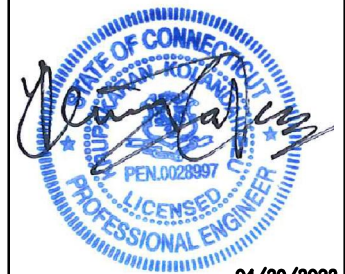
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8601 SIX FORKS ROAD, SUITE 540  
RALEIGH, NC 27615  
(919) 657-9131

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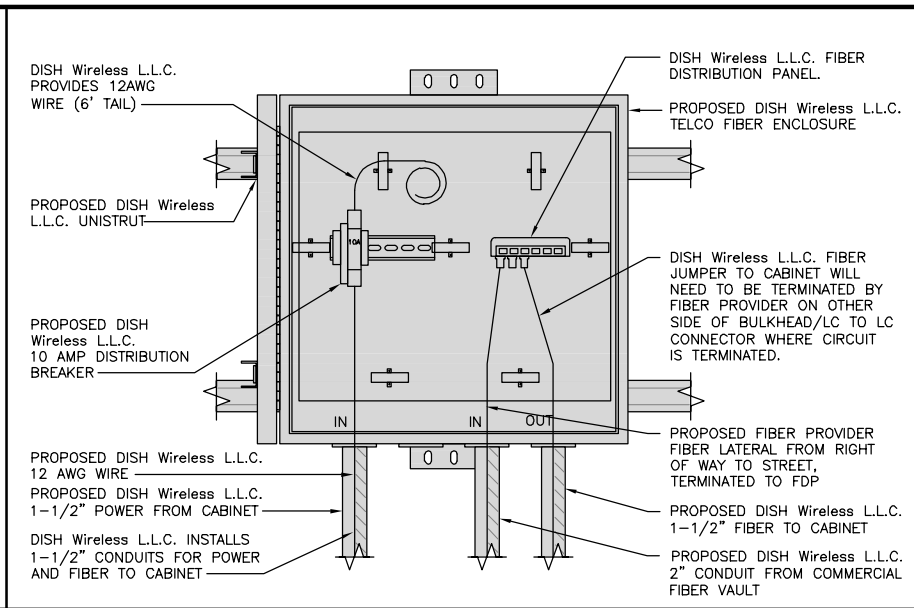
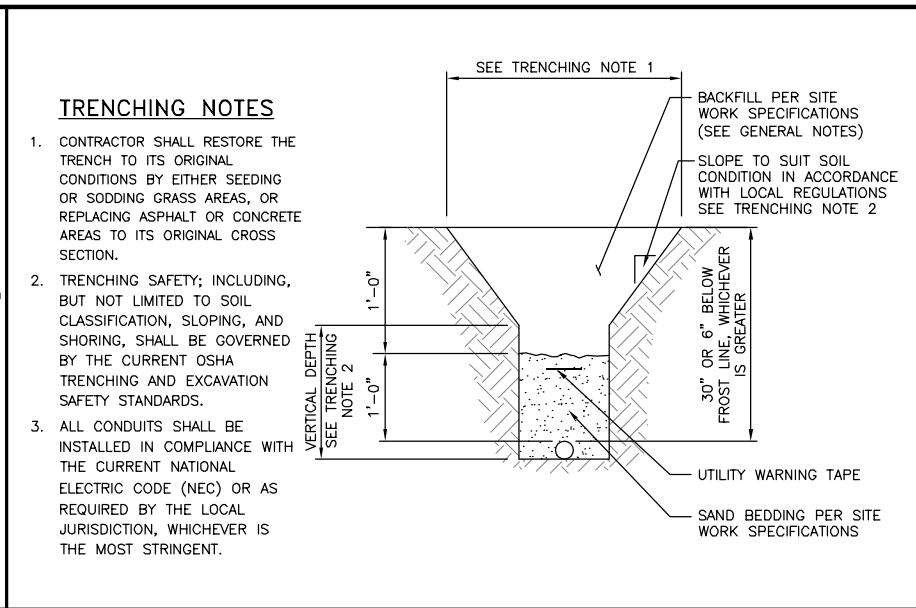
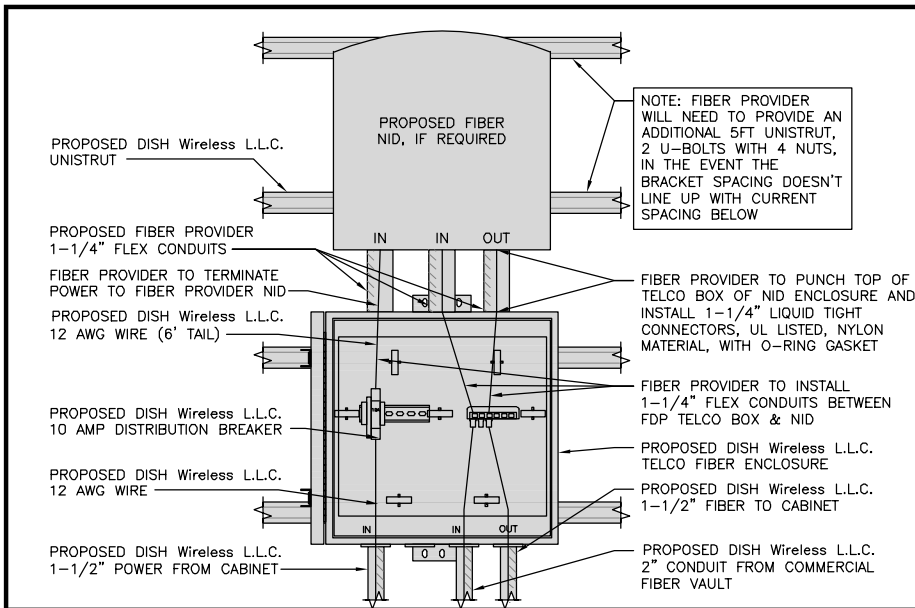
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BOHVN00140A  
90 NORTH PLAINS INDUSTRIAL RD.  
WALLINGFORD, CT 06492

SHEET TITLE  
ELECTRICAL/FIBER ROUTE  
PLAN AND NOTES

SHEET NUMBER

E-1



**LIT TELCO BOX - INTERIOR WIRING LAYOUT (OPTIONAL)** NO SCALE 1

**TYPICAL UNDERGROUND TRENCH DETAIL** NO SCALE 2

**DARK TELCO BOX - INTERIOR WIRING LAYOUT** NO SCALE 3

**NOT USED** NO SCALE 4

**NOT USED** NO SCALE 5

**NOT USED** NO SCALE 6

**NOT USED** NO SCALE 7

**NOT USED** NO SCALE 8

**NOT USED** NO SCALE 9



DRAWN BY:	CHECKED BY:	APPROVED BY:
PAT	BIW	BIW

RFDS REV #: 1

**CONSTRUCTION DOCUMENTS**

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1	04/29/2022	ISSUED FOR CONSTRUCTION



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A&E PROJECT NUMBER  
**302467-13701206**

DISH WIRELESS, L.L.C.  
PROJECT INFORMATION  
**BOHVN00140A**  
90 NORTH PLAINS INDUSTRIAL RD.  
WALLINGFORD, CT 06492

SHEET TITLE  
**ELECTRICAL DETAILS**

SHEET NUMBER  
**E-2**



5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



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

DRAWN BY:	CHECKED BY:	APPROVED BY:
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04/29/2022

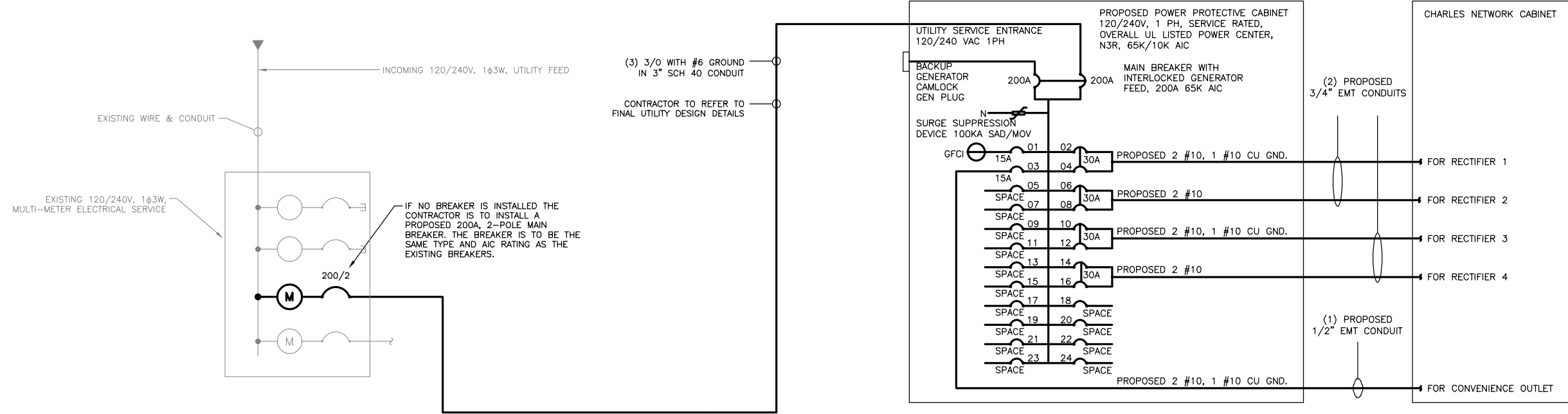
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WALLINGFORD, CT 06492

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

**SHEET NUMBER**  
E-3



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

**BREAKERS REQUIRED:**  
(4) 30A, 2P BREAKER - SQUARE D P/N:Q0230  
(2) 15A, 1P BREAKER - SQUARE D P/N:Q0115

PPC ONE-LINE DIAGRAM

NO SCALE 1

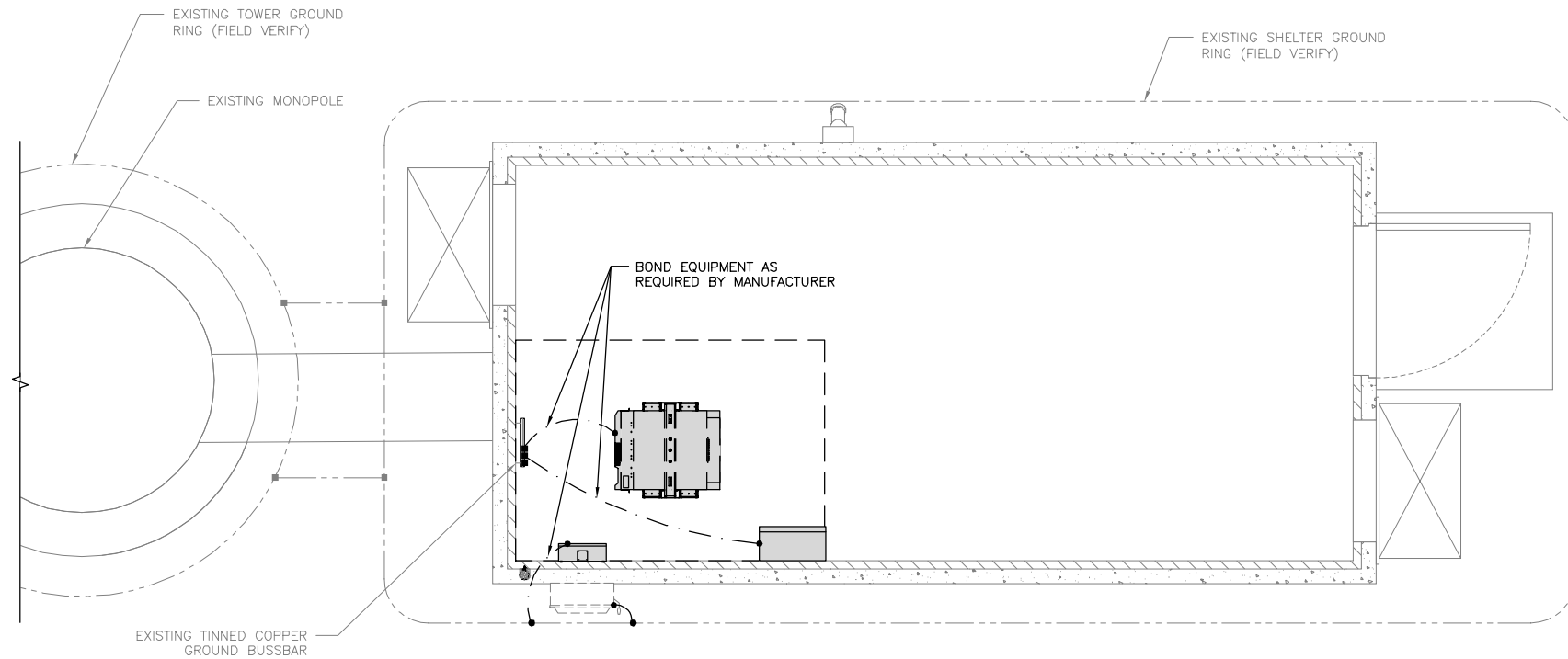
PROPOSED CHARLES PANEL SCHEDULE											
LOAD SERVED	VOLT AMPS (WATTS)		TRIP	CKT #	PHASE	CKT #	TRIP	VOLT AMPS (WATTS)		LOAD SERVED	
	L1	L2						L1	L2		
PPC GFCI OUTLET	180	180	15A	1	A	2		2880	2880	ABB/GE INFINITY RECTIFIER 1	
CHARLES GFCI OUTLET		180	15A	3	B	4	30A	2880	2880	ABB/GE INFINITY RECTIFIER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

PANEL SCHEDULE

NO SCALE 2

NOT USED

NO SCALE 3

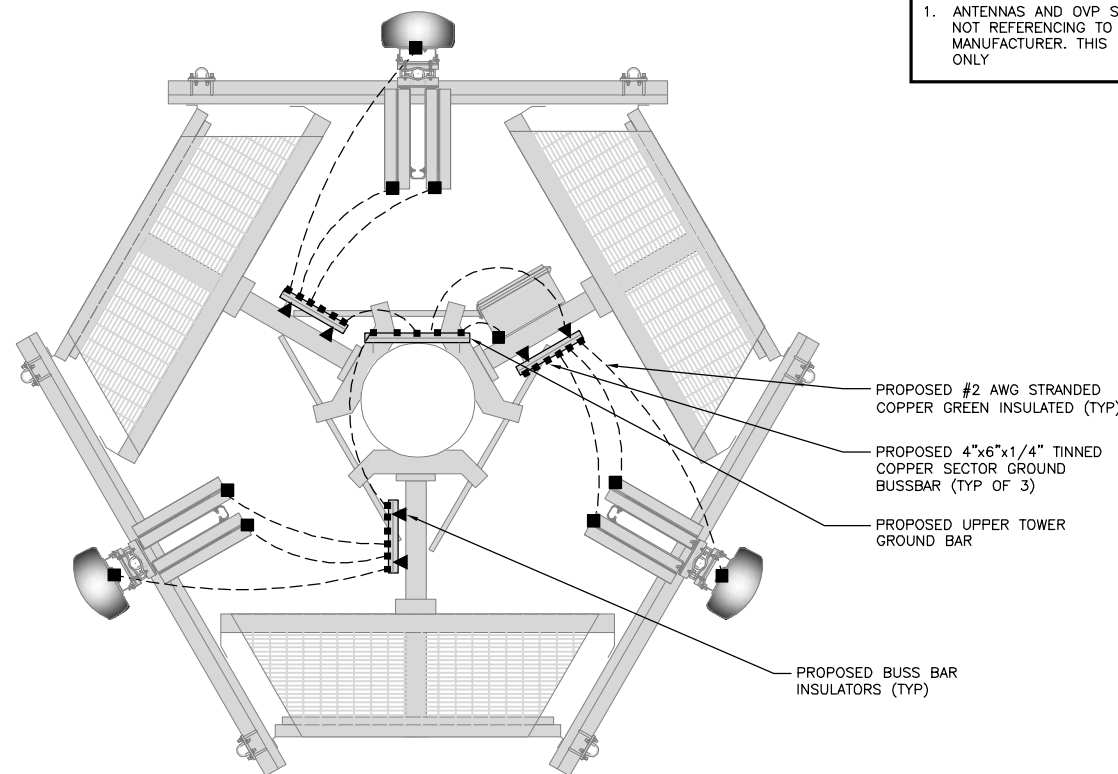


**TYPICAL EQUIPMENT GROUNDING PLAN**

NO SCALE 1

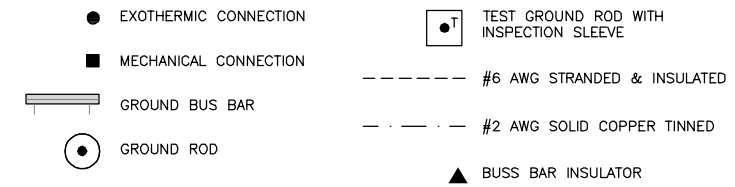
**NOTES**

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



**TYPICAL ANTENNA GROUNDING PLAN**

NO SCALE 2



**GROUNDING LEGEND**

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

**GROUNDING KEY NOTES**

- (A) EXTERIOR GROUND RING:** #2 AWG SOLID COPPER, BURIED AT A DEPTH OF AT LEAST 30 INCHES BELOW GRADE, OR 6 INCHES BELOW THE FROST LINE AND APPROXIMATELY 24 INCHES FROM THE EXTERIOR WALL OR FOOTING.
- (B) TOWER GROUND RING:** THE GROUND RING SYSTEM SHALL BE INSTALLED AROUND AN ANTENNA TOWER'S LEGS, AND/OR GUY ANCHORS. WHERE SEPARATE SYSTEMS HAVE BEEN PROVIDED FOR THE TOWER AND THE BUILDING, AT LEAST TWO BONDS SHALL BE MADE BETWEEN THE TOWER RING GROUND SYSTEM AND THE BUILDING RING GROUND SYSTEM USING MINIMUM #2 AWG SOLID COPPER CONDUCTORS.
- (C) INTERIOR GROUND RING:** #2 AWG STRANDED GREEN INSULATED COPPER CONDUCTOR EXTENDED AROUND THE PERIMETER OF THE EQUIPMENT AREA. ALL NON-TELECOMMUNICATIONS RELATED METALLIC OBJECTS FOUND WITHIN A SITE SHALL BE GROUNDED TO THE INTERIOR GROUND RING WITH #6 AWG STRANDED GREEN INSULATED CONDUCTOR.
- (D) BOND TO INTERIOR GROUND RING:** #2 AWG SOLID TINNED COPPER WIRE PRIMARY BONDS SHALL BE PROVIDED AT LEAST AT FOUR POINTS ON THE INTERIOR GROUND RING, LOCATED AT THE CORNERS OF THE BUILDING.
- (E) GROUND ROD:** UL LISTED COPPER CLAD STEEL, MINIMUM 5/8" DIAMETER BY EIGHT FEET LONG. GROUND RODS SHALL BE INSTALLED WITH INSPECTION SLEEVES. GROUND RODS SHALL BE DRIVEN TO THE DEPTH OF GROUND RING CONDUCTOR.
- (F) CELL REFERENCE GROUND BAR:** POINT OF GROUND REFERENCE FOR ALL COMMUNICATIONS EQUIPMENT FRAMES. ALL BONDS ARE MADE WITH #2 AWG UNLESS NOTED OTHERWISE STRANDED GREEN INSULATED COPPER CONDUCTORS. BOND TO GROUND RING WITH (2) #2 SOLID TINNED COPPER CONDUCTORS.
- (G) HATCH PLATE GROUND BAR:** BOND TO THE INTERIOR GROUND RING WITH TWO #2 AWG STRANDED GREEN INSULATED COPPER CONDUCTORS. WHEN A HATCH-PLATE AND A CELL REFERENCE GROUND BAR ARE BOTH PRESENT, THE CRGB MUST BE CONNECTED TO THE HATCH-PLATE AND TO THE INTERIOR GROUND RING USING (2) TWO #2 AWG STRANDED GREEN INSULATED COPPER CONDUCTORS EACH.
- (H) EXTERIOR CABLE ENTRY PORT GROUND BARS:** LOCATED AT THE ENTRANCE TO THE CELL SITE BUILDING. BOND TO GROUND RING WITH A #2 AWG SOLID TINNED COPPER CONDUCTORS WITH AN EXOTHERMIC WELD AND INSPECTION SLEEVE.
- (J) TELCO GROUND BAR:** BOND TO BOTH CELL REFERENCE GROUND BAR OR EXTERIOR GROUND RING.
- (K) FRAME BONDING:** THE BONDING POINT FOR TELECOM EQUIPMENT FRAMES SHALL BE THE GROUND BUS THAT IS NOT ISOLATED FROM THE EQUIPMENT'S METAL FRAMEWORK.
- (L) INTERIOR UNIT BONDS:** METAL FRAMES, CABINETS AND INDIVIDUAL METALLIC UNITS LOCATED WITH THE AREA OF THE INTERIOR GROUND RING REQUIRE A #6 AWG STRANDED GREEN INSULATED COPPER BOND TO THE INTERIOR GROUND RING.
- (M) FENCE AND GATE GROUNDING:** METAL FENCES WITHIN 7 FEET OF THE EXTERIOR GROUND RING OR OBJECTS BONDED TO THE EXTERIOR GROUND RING SHALL BE BONDED TO THE GROUND RING WITH A #2 AWG SOLID TINNED COPPER CONDUCTOR AT AN INTERVAL NOT EXCEEDING 25 FEET. BONDS SHALL BE MADE AT EACH GATE POST AND ACROSS GATE OPENINGS.
- (N) EXTERIOR UNIT BONDS:** METALLIC OBJECTS, EXTERNAL TO OR MOUNTED TO THE BUILDING, SHALL BE BONDED TO THE EXTERIOR GROUND RING. USING #2 TINNED SOLID COPPER WIRE.
- (P) ICE BRIDGE SUPPORTS:** EACH ICE BRIDGE LEG SHALL BE BONDED TO THE GROUND RING WITH #2 AWG BARE TINNED COPPER CONDUCTOR. PROVIDE EXOTHERMIC WELDS AT BOTH THE ICE BRIDGE LEG AND BURIED GROUND RING.
- (Q) DURING ALL DC POWER SYSTEM CHANGES INCLUDING DC SYSTEM CHANGE OUTS, RECTIFIER REPLACEMENTS OR ADDITIONS, BREAKER DISTRIBUTION CHANGES, BATTERY ADDITIONS, BATTERY REPLACEMENTS AND INSTALLATIONS OR CHANGES TO DC CONVERTER SYSTEMS IT SHALL BE REQUIRED THAT SERVICE CONTRACTORS VERIFY ALL DC POWER SYSTEMS ARE EQUIPPED WITH A MASTER DC SYSTEM RETURN GROUND CONDUCTOR FROM THE DC POWER SYSTEM COMMON RETURN BUS DIRECTLY CONNECTED TO THE CELL SITE REFERENCE GROUND BAR.**
- (R) TOWER TOP COLLECTOR BUSS BAR IS TO BE MECHANICALLY BONDED TO PROPOSED ANTENNA MOUNT COLLAR. REFER TO DISH WIRELESS, L.L.C. GROUNDING NOTES.**

**GROUNDING KEY NOTES**

NO SCALE 3



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SHEET TITLE  
**GROUNDING PLANS AND NOTES**

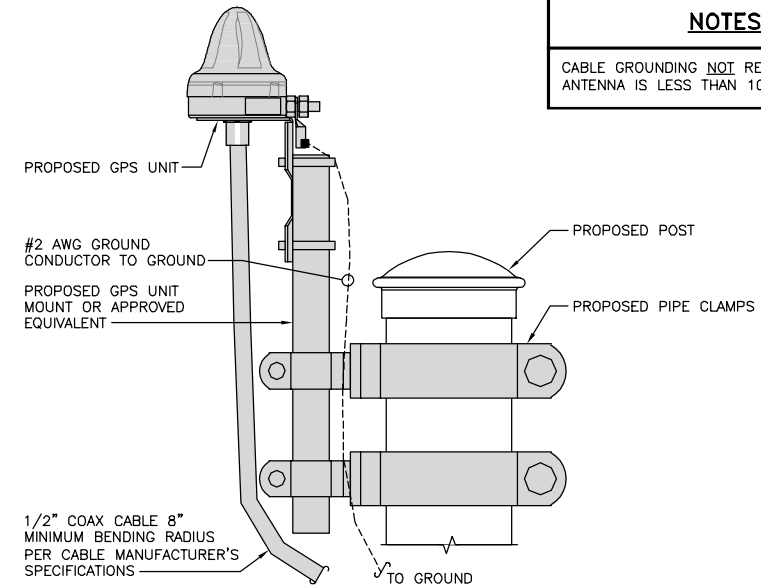
SHEET NUMBER  
**G-1**

**NOTES**

EQUIPMENT CABINET OMITTED FOR CLARITY

**NOTES**

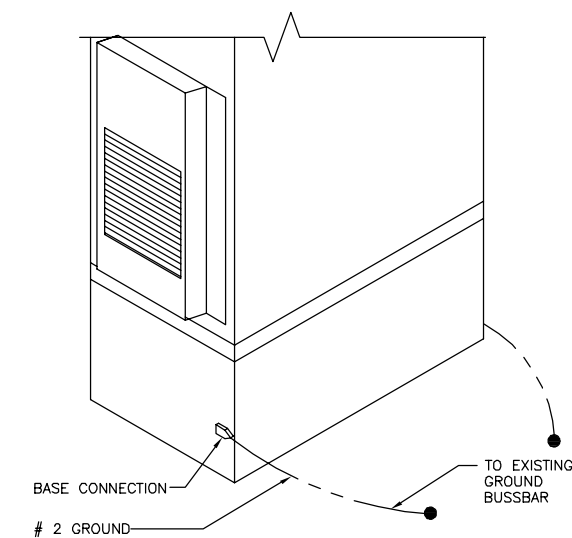
CABLE GROUNDING NOT REQUIRED WHEN ANTENNA IS LESS THAN 10' FROM CABINET



**TYPICAL GPS UNIT GROUNDING**

NO SCALE

2



**CABINET GROUNDING**

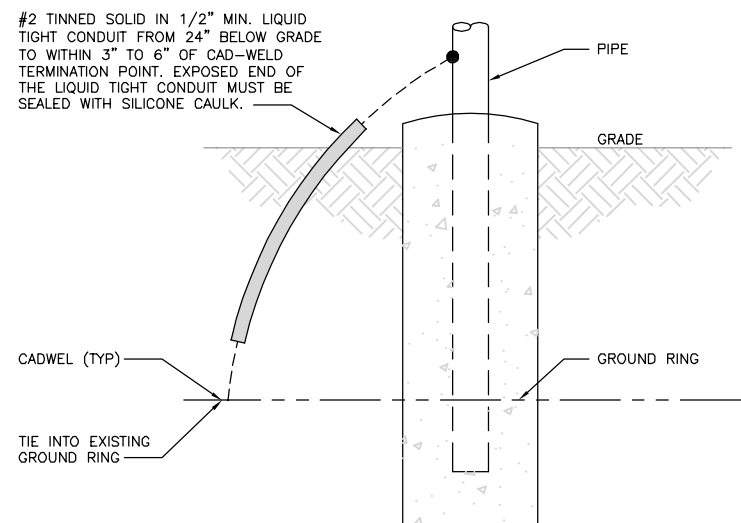
NO SCALE

3

**NOT USED**

NO SCALE

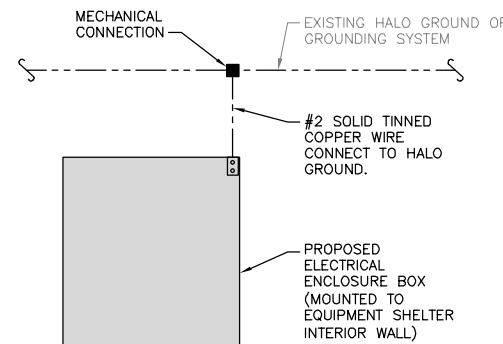
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**TRANSITIONING GROUND DETAIL**

NO SCALE

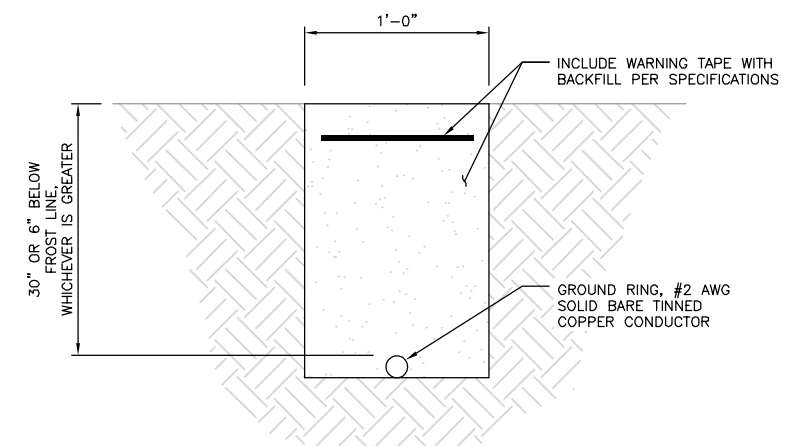
4



**TYPICAL INDOOR ELECTRICAL ENCLOSURE BOX GROUNDING DETAIL**

NO SCALE

5



**TYPICAL GROUND RING TRENCH**

NO SCALE

6

**dish**  
wireless.

5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120

**NB+C**  
TOTALLY COMMITTED.

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

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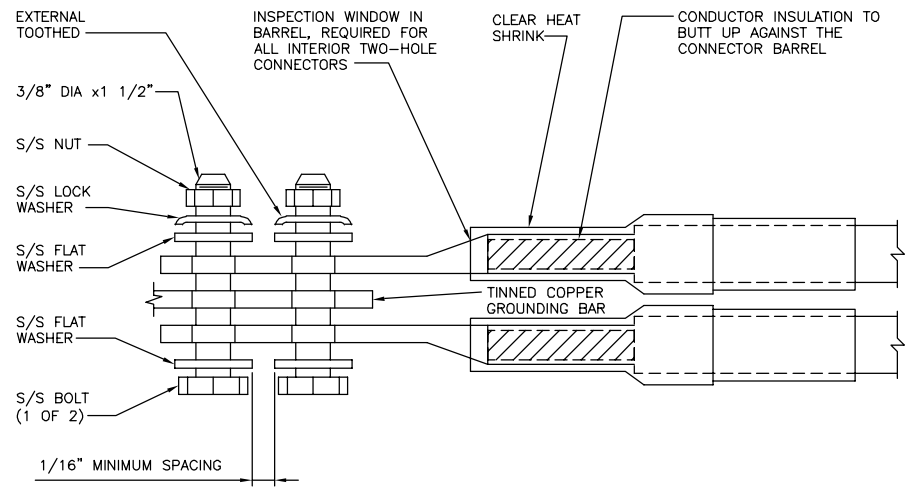
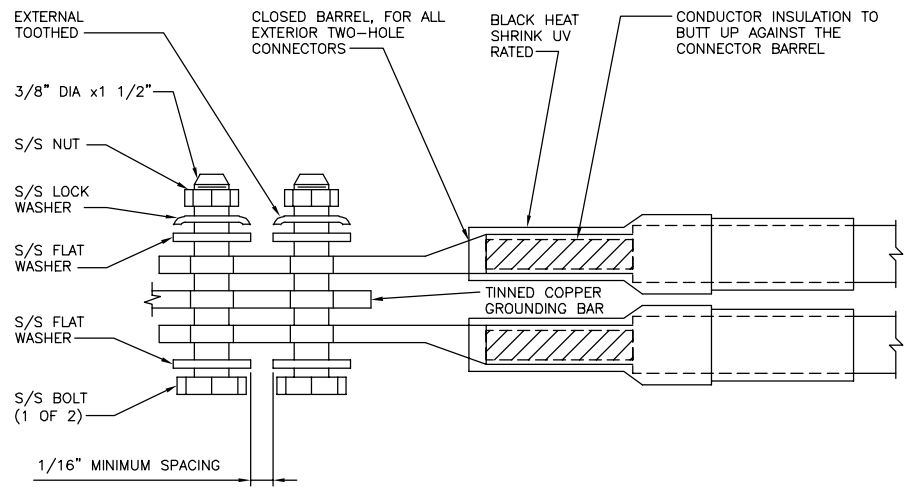
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SHEET TITLE  
**GROUNDING DETAILS**

SHEET NUMBER  
**G-2**

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



**dish**  
wireless.

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**TYPICAL GROUNDING NOTES**

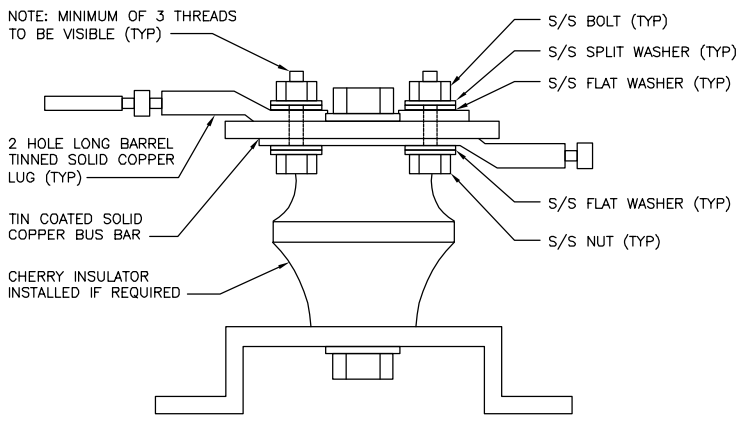
NO SCALE 1

**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

DRAWN BY: PAT  
CHECKED BY: BIW  
APPROVED BY: BIW

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SHEET TITLE  
GROUNDING DETAILS

SHEET NUMBER  
G-3



**RF JUMPER COLOR CODING**

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

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

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

ALPHA RRH				BETA RRH				GAMMA RRH			
PORT 1 + SLANT	PORT 2 - SLANT	PORT 3 + SLANT	PORT 4 - SLANT	PORT 1 + SLANT	PORT 2 - SLANT	PORT 3 + SLANT	PORT 4 - SLANT	PORT 1 + SLANT	PORT 2 - SLANT	PORT 3 + SLANT	PORT 4 - SLANT
RED	RED	RED	RED	BLUE	BLUE	BLUE	BLUE	GREEN	GREEN	GREEN	GREEN
ORANGE	ORANGE	RED	RED	ORANGE	ORANGE	BLUE	BLUE	ORANGE	ORANGE	GREEN	GREEN
	WHITE (-) PORT	ORANGE	ORANGE		WHITE (-) PORT	ORANGE	ORANGE		WHITE (-) PORT	ORANGE	ORANGE
			WHITE (-) PORT				WHITE (-) PORT				WHITE (-) PORT

MID-BAND RRH - (AWS BANDS N66+N70)

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

PORT 1 + SLANT	PORT 2 - SLANT	PORT 3 + SLANT	PORT 4 - SLANT	PORT 1 + SLANT	PORT 2 - SLANT	PORT 3 + SLANT	PORT 4 - SLANT	PORT 1 + SLANT	PORT 2 - SLANT	PORT 3 + SLANT	PORT 4 - SLANT
RED	RED	RED	RED	BLUE	BLUE	BLUE	BLUE	GREEN	GREEN	GREEN	GREEN
PURPLE	PURPLE	RED	RED	PURPLE	PURPLE	BLUE	BLUE	PURPLE	PURPLE	GREEN	GREEN
	WHITE (-) PORT	PURPLE	PURPLE		WHITE (-) PORT	PURPLE	PURPLE		WHITE (-) PORT	PURPLE	PURPLE
			WHITE (-) PORT				WHITE (-) PORT				WHITE (-) PORT

HYBRID/DISCREET CABLES

INCLUDE SECTOR BANDS BEING SUPPORTED ALONG WITH FREQUENCY BANDS

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

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

EXAMPLE 1	EXAMPLE 2	EXAMPLE 3
RED	RED	RED
BLUE	BLUE	
GREEN	GREEN	ORANGE
ORANGE	YELLOW	PURPLE
PURPLE		

FIBER JUMPERS TO RRHs

LOW-BAND RRH FIBER CABLES HAVE SECTOR STRIPE ONLY

LOW BAND RRH	HIGH BAND RRH	LOW BAND RRH	HIGH BAND RRH	LOW BAND RRH	HIGH BAND RRH
RED	RED	BLUE	BLUE	GREEN	GREEN
	PURPLE		PURPLE		PURPLE

POWER CABLES TO RRHs

LOW-BAND RRH POWER CABLES HAVE SECTOR STRIPE ONLY

LOW BAND RRH	HIGH BAND RRH	LOW BAND RRH	HIGH BAND RRH	LOW BAND RRH	HIGH BAND RRH
RED	RED	BLUE	BLUE	GREEN	GREEN
	PURPLE		PURPLE		PURPLE

RET MOTORS AT ANTENNAS

ANTENNA 1 LOW BAND/ "IN"	ANTENNA 1 HIGH BAND/ "IN"	ANTENNA 1 LOW BAND/ "IN"	ANTENNA 1 HIGH BAND/ "IN"	ANTENNA 1 LOW BAND/ "IN"	ANTENNA 1 HIGH BAND/ "IN"
RED	RED	BLUE	BLUE	GREEN	GREEN
	PURPLE		PURPLE		PURPLE

MICROWAVE RADIO LINKS

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

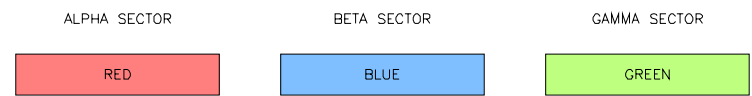
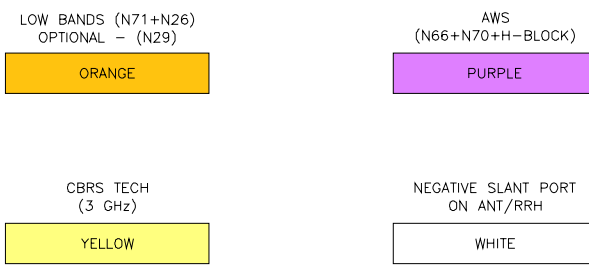
MICROWAVE CABLES WILL REQUIRE P-TOUCH LABELS INSIDE THE CABINET TO IDENTIFY THE LOCAL AND REMOTE SITE ID'S

FORWARD AZIMUTH OF 0-120 DEGREES		FORWARD AZIMUTH OF 120-240 DEGREES		FORWARD AZIMUTH OF 240-360 DEGREES	
PRIMARY	SECONDARY	PRIMARY	SECONDARY	PRIMARY	SECONDARY
WHITE	WHITE	WHITE	WHITE	WHITE	WHITE
RED	RED	BLUE	BLUE	GREEN	GREEN
WHITE	WHITE	WHITE	WHITE	WHITE	WHITE
	RED		BLUE		GREEN
	WHITE		WHITE		WHITE

RF CABLE COLOR CODES

NO SCALE

1



COLOR IDENTIFIER

NO SCALE

2

NOT USED

NO SCALE

3

NOT USED

NO SCALE

4



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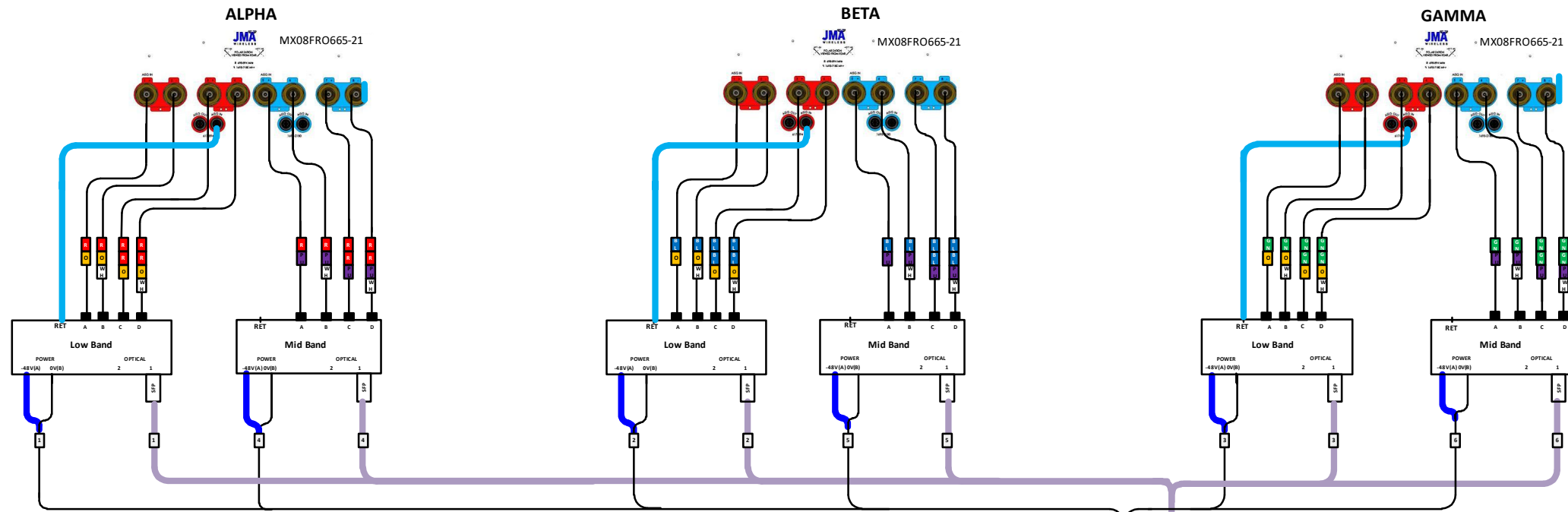
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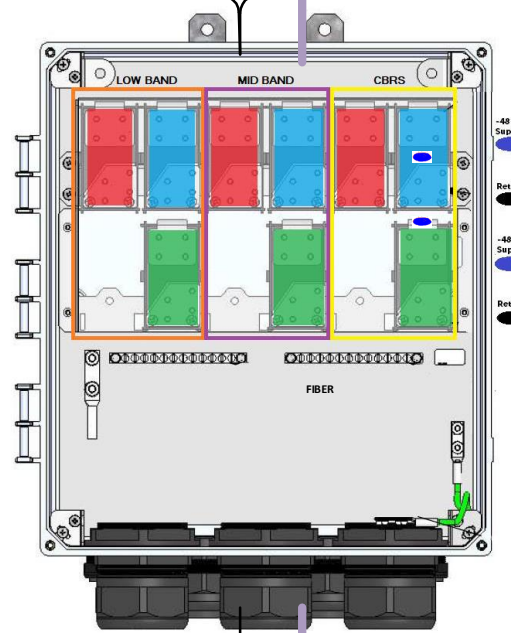
SHEET TITLE  
RF  
CABLE COLOR CODES

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	Te0/0/0/19	SM1 - Data 1
20	Te0/0/0/20	SM1 - Data 2
21	Te0/0/0/21	SM2 - Data 1
22	Te0/0/0/22	SM2 - Data 2
23	Te0/0/0/23	Reserved Uplink (EDC, LDC)
24	Te0/0/0/24	Blank/Future
25	Te0/0/0/25	Blank/Future
26	Te0/0/0/26	Fiber NIU
27	Te0/0/0/27	Fiber NIU
28	Te0/0/0/28	Blank/Future
29	Te0/0/0/29	Blank/Future

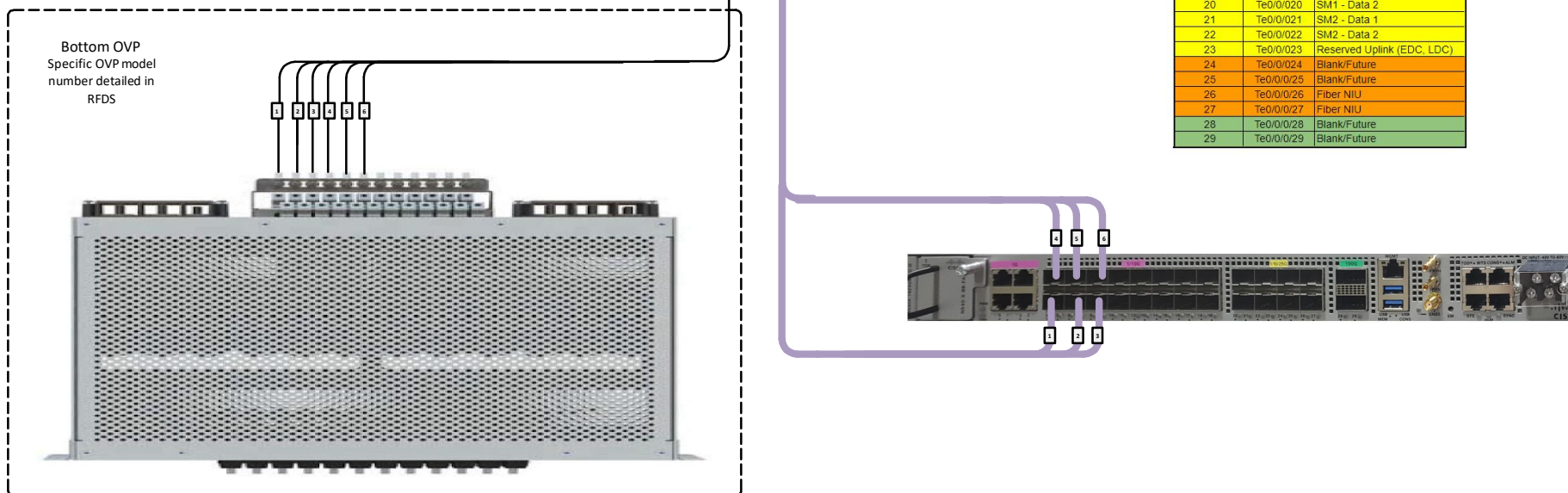
top

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)			
	SIZE	PCRM NO	DWG NO	REV
Quan Liu				3
5-Jan-2021	SCALE: None		SHEET	

PLUMBING DIAGRAM

NO SCALE

1

**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:

PAT BIW BIW

RFDS REV #: 1

CONSTRUCTION  
DOCUMENTS

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A&E PROJECT NUMBER  
302467-13701206

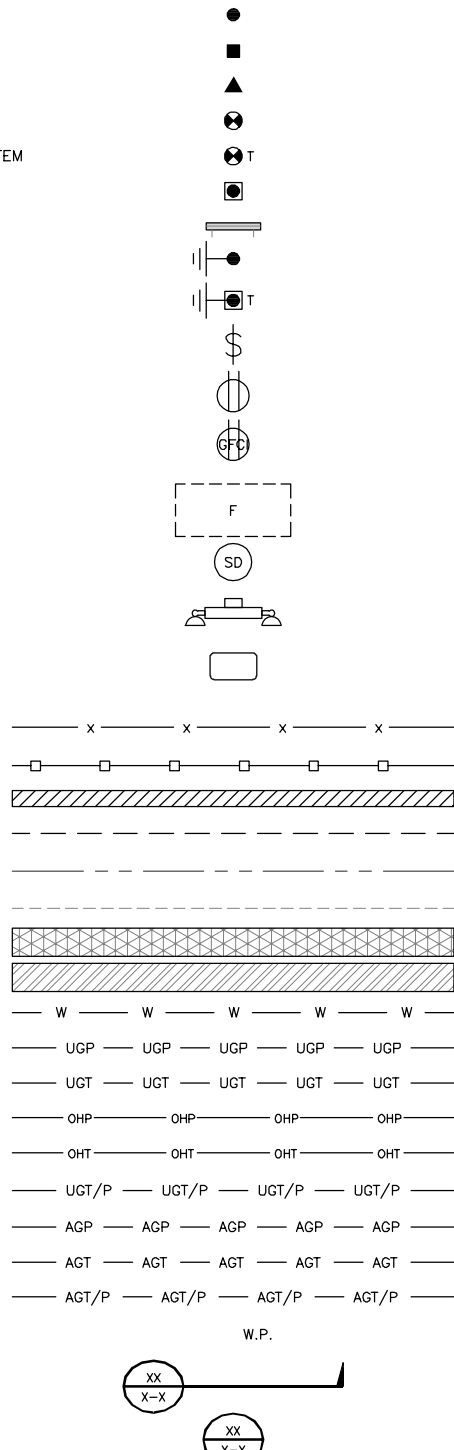
DISH WIRELESS, LLC.  
PROJECT INFORMATION  
BOHVN00140A  
90 NORTH PLAINS INDUSTRIAL RD.  
WALLINGFORD, CT 06492

SHEET TITLE  
RF  
PLUMBING DIAGRAM

SHEET NUMBER

RF-2

EXOTHERMIC CONNECTION  
 MECHANICAL CONNECTION  
 BUSS BAR INSULATOR  
 CHEMICAL ELECTROLYTIC GROUNDING SYSTEM  
 TEST CHEMICAL ELECTROLYTIC GROUNDING SYSTEM  
 EXOTHERMIC WITH INSPECTION SLEEVE  
 GROUNDING BAR  
 GROUND ROD  
 TEST GROUND ROD WITH INSPECTION SLEEVE  
 SINGLE POLE SWITCH  
 DUPLEX RECEPTACLE  
 DUPLEX GFCI RECEPTACLE  
 FLUORESCENT LIGHTING FIXTURE  
 (2) TWO LAMPS 48-T8  
 SMOKE DETECTION (DC)  
 EMERGENCY LIGHTING (DC)  
 SECURITY LIGHT W/PHOTOCELL LITHONIA ALXW  
 LED-1-25A400/51K-SR4-120-PE-DEBTD  
 CHAIN LINK FENCE  
 WOOD/WROUGHT IRON FENCE  
 WALL STRUCTURE  
 LEASE AREA  
 PROPERTY LINE (PL)  
 SETBACKS  
 ICE BRIDGE  
 CABLE TRAY  
 WATER LINE  
 UNDERGROUND POWER  
 UNDERGROUND TELCO  
 OVERHEAD POWER  
 OVERHEAD TELCO  
 UNDERGROUND TELCO/POWER  
 ABOVE GROUND POWER  
 ABOVE GROUND TELCO  
 ABOVE GROUND TELCO/POWER  
 WORKPOINT  
 SECTION REFERENCE  
 DETAIL REFERENCE



**LEGEND**

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

**ABBREVIATIONS**



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A&E PROJECT NUMBER  
**302467-13701206**

DISH WIRELESS, L.L.C.  
 PROJECT INFORMATION  
**BOHVN00140A**  
 90 NORTH PLAINS INDUSTRIAL RD.  
 WALLINGFORD, CT 06492

SHEET TITLE  
**LEGEND AND ABBREVIATIONS**

SHEET NUMBER  
**GN-1**

SITE ACTIVITY REQUIREMENTS:

1. NOTICE TO PROCEED – NO WORK SHALL COMMENCE PRIOR TO CONTRACTOR RECEIVING A WRITTEN NOTICE TO PROCEED (NTP) AND THE ISSUANCE OF A PURCHASE ORDER. PRIOR TO ACCESSING/ENTERING THE SITE YOU MUST CONTACT THE DISH WIRELESS, L.L.C. AND TOWER OWNER NOC & THE DISH WIRELESS, L.L.C. AND TOWER OWNER CONSTRUCTION MANAGER.
2. "LOOK UP" – DISH WIRELESS, L.L.C. AND TOWER OWNER SAFETY CLIMB REQUIREMENT:  
THE INTEGRITY OF THE SAFETY CLIMB AND ALL COMPONENTS OF THE CLIMBING FACILITY SHALL BE CONSIDERED DURING ALL STAGES OF DESIGN, INSTALLATION, AND INSPECTION. TOWER MODIFICATION, MOUNT REINFORCEMENTS, AND/OR EQUIPMENT INSTALLATIONS SHALL NOT COMPROMISE THE INTEGRITY OR FUNCTIONAL USE OF THE SAFETY CLIMB OR ANY COMPONENTS OF THE CLIMBING FACILITY ON THE STRUCTURE. THIS SHALL INCLUDE, BUT NOT BE LIMITED TO: PINCHING OF THE WIRE ROPE, BENDING OF THE WIRE ROPE FROM ITS SUPPORTS, DIRECT CONTACT OR CLOSE PROXIMITY TO THE WIRE ROPE WHICH MAY CAUSE FRICTIONAL WEAR, IMPACT TO THE ANCHORAGE POINTS IN ANY WAY, OR TO IMPEDE/BLOCK ITS INTENDED USE. ANY COMPROMISED SAFETY CLIMB, INCLUDING EXISTING CONDITIONS MUST BE TAGGED OUT AND REPORTED TO YOUR DISH WIRELESS, L.L.C. AND DISH WIRELESS, L.L.C. AND TOWER OWNER POC OR CALL THE NOC TO GENERATE A SAFETY CLIMB MAINTENANCE AND CONTRACTOR NOTICE TICKET.
3. PRIOR TO THE START OF CONSTRUCTION, ALL REQUIRED JURISDICTIONAL PERMITS SHALL BE OBTAINED. THIS INCLUDES, BUT IS NOT LIMITED TO, BUILDING, ELECTRICAL, MECHANICAL, FIRE, FLOOD ZONE, ENVIRONMENTAL, AND ZONING. AFTER ONSITE ACTIVITIES AND CONSTRUCTION ARE COMPLETED, ALL REQUIRED PERMITS SHALL BE SATISFIED AND CLOSED OUT ACCORDING TO LOCAL JURISDICTIONAL REQUIREMENTS.
4. ALL CONSTRUCTION MEANS AND METHODS; INCLUDING BUT NOT LIMITED TO, ERECTION PLANS, RIGGING PLANS, CLIMBING PLANS, AND RESCUE PLANS SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR RESPONSIBLE FOR THE EXECUTION OF THE WORK CONTAINED HEREIN, AND SHALL MEET ANSI/ASSE A10.48 (LATEST EDITION); FEDERAL, STATE, AND LOCAL REGULATIONS; AND ANY APPLICABLE INDUSTRY CONSENSUS STANDARDS RELATED TO THE CONSTRUCTION ACTIVITIES BEING PERFORMED. ALL RIGGING PLANS SHALL ADHERE TO ANSI/ASSE A10.48 (LATEST EDITION) AND DISH WIRELESS, L.L.C. AND TOWER OWNER STANDARDS, INCLUDING THE REQUIRED INVOLVEMENT OF A QUALIFIED ENGINEER FOR CLASS IV CONSTRUCTION, TO CERTIFY THE SUPPORTING STRUCTURE(S) IN ACCORDANCE WITH ANSI/TIA-322 (LATEST EDITION).
5. ALL SITE WORK TO COMPLY WITH DISH WIRELESS, L.L.C. AND TOWER OWNER INSTALLATION STANDARDS FOR CONSTRUCTION ACTIVITIES ON DISH WIRELESS, L.L.C. AND TOWER OWNER TOWER SITE AND LATEST VERSION OF ANSI/TIA-1019-A-2012 "STANDARD FOR INSTALLATION, ALTERATION, AND MAINTENANCE OF ANTENNA SUPPORTING STRUCTURES AND ANTENNAS."
6. IF THE SPECIFIED EQUIPMENT CAN NOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY DISH WIRELESS, L.L.C. AND TOWER OWNER PRIOR TO PROCEEDING WITH ANY SUCH CHANGE OF INSTALLATION.
7. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES. CONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
8. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
9. THE CONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES INCLUDING PRIVATE LOCATES SERVICES PRIOR TO THE START OF CONSTRUCTION.
10. ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY CONTRACTOR. EXTREME CAUTION SHOULD BE USED BY THE CONTRACTOR WHEN EXCAVATING OR DRILLING PIERS AROUND OR NEAR UTILITIES. CONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS WILL INCLUDE BUT NOT BE LIMITED TO A) FALL PROTECTION B) CONFINED SPACE C) ELECTRICAL SAFETY D) TRENCHING AND EXCAVATION E) CONSTRUCTION SAFETY PROCEDURES.
11. ALL SITE WORK SHALL BE AS INDICATED ON THE STAMPED CONSTRUCTION DRAWINGS AND DISH PROJECT SPECIFICATIONS, LATEST APPROVED REVISION.
12. CONTRACTOR SHALL KEEP THE SITE FREE FROM ACCUMULATING WASTE MATERIAL, DEBRIS, AND TRASH AT THE COMPLETION OF THE WORK. IF NECESSARY, RUBBISH, STUMPS, DEBRIS, STICKS, STONES AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.
13. ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, SUBJECT TO THE APPROVAL OF DISH WIRELESS, L.L.C. AND TOWER OWNER, AND/OR LOCAL UTILITIES.
14. THE CONTRACTOR SHALL PROVIDE SITE SIGNAGE IN ACCORDANCE WITH THE TECHNICAL SPECIFICATION FOR SITE SIGNAGE REQUIRED BY LOCAL JURISDICTION AND SIGNAGE REQUIRED ON INDIVIDUAL PIECES OF EQUIPMENT, ROOMS, AND SHELTERS.
15. THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE CARRIER'S EQUIPMENT AND TOWER AREAS.
16. THE SUB GRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION.
17. THE AREAS OF THE OWNERS PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE TOWER, EQUIPMENT OR DRIVEWAY, SHALL BE GRADED TO A UNIFORM SLOPE, AND STABILIZED TO PREVENT EROSION AS SPECIFIED ON THE CONSTRUCTION DRAWINGS AND/OR PROJECT SPECIFICATIONS.
18. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.
19. THE CONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.
20. CONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS AND RADIOS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
21. CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION. TRASH AND DEBRIS SHOULD BE REMOVED FROM SITE ON A DAILY BASIS.
22. NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUND. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.

GENERAL NOTES:

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:  
CONTRACTOR: GENERAL CONTRACTOR RESPONSIBLE FOR CONSTRUCTION  
CARRIER: DISH WIRELESS, L.L.C.  
TOWER OWNER: TOWER OWNER
2. THESE DRAWINGS HAVE BEEN PREPARED USING STANDARDS OF PROFESSIONAL CARE AND COMPLETENESS NORMALLY EXERCISED UNDER SIMILAR CIRCUMSTANCES BY REPUTABLE ENGINEERS IN THIS OR SIMILAR LOCALITIES. IT IS ASSUMED THAT THE WORK DEPICTED WILL BE PERFORMED BY AN EXPERIENCED CONTRACTOR AND/OR WORKPEOPLE WHO HAVE A WORKING KNOWLEDGE OF THE APPLICABLE CODE STANDARDS AND REQUIREMENTS AND OF INDUSTRY ACCEPTED STANDARD GOOD PRACTICE. AS NOT EVERY CONDITION OR ELEMENT IS (OR CAN BE) EXPLICITLY SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL USE INDUSTRY ACCEPTED STANDARD GOOD PRACTICE FOR MISCELLANEOUS WORK NOT EXPLICITLY SHOWN.
3. THESE DRAWINGS REPRESENT THE FINISHED STRUCTURE. THEY DO NOT INDICATE THE MEANS OR METHODS OF CONSTRUCTION. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES. THE CONTRACTOR SHALL PROVIDE ALL MEASURES NECESSARY FOR PROTECTION OF LIFE AND PROPERTY DURING CONSTRUCTION. SUCH MEASURES SHALL INCLUDE, BUT NOT BE LIMITED TO, BRACING, FORMWORK, SHORING, ETC. SITE VISITS BY THE ENGINEER OR HIS REPRESENTATIVE WILL NOT INCLUDE INSPECTION OF THESE ITEMS AND IS FOR STRUCTURAL OBSERVATION OF THE FINISHED STRUCTURE ONLY.
4. NOTES AND DETAILS IN THE CONSTRUCTION DRAWINGS SHALL TAKE PRECEDENCE OVER GENERAL NOTES AND TYPICAL DETAILS. WHERE NO DETAILS ARE SHOWN, CONSTRUCTION SHALL CONFORM TO SIMILAR WORK ON THE PROJECT, AND/OR AS PROVIDED FOR IN THE CONTRACT DOCUMENTS. WHERE DISCREPANCIES OCCUR BETWEEN PLANS, DETAILS, GENERAL NOTES, AND SPECIFICATIONS, THE GREATER, MORE STRICT REQUIREMENTS, SHALL GOVERN. IF FURTHER CLARIFICATION IS REQUIRED CONTACT THE ENGINEER OF RECORD.
5. SUBSTANTIAL EFFORT HAS BEEN MADE TO PROVIDE ACCURATE DIMENSIONS AND MEASUREMENTS ON THE DRAWINGS TO ASSIST IN THE FABRICATION AND/OR PLACEMENT OF CONSTRUCTION ELEMENTS BUT IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY THE DIMENSIONS, MEASUREMENTS, AND/OR CLEARANCES SHOWN IN THE CONSTRUCTION DRAWINGS PRIOR TO FABRICATION OR CUTTING OF ANY NEW OR EXISTING CONSTRUCTION ELEMENTS. IF IT IS DETERMINED THAT THERE ARE DISCREPANCIES AND/OR CONFLICTS WITH THE CONSTRUCTION DRAWINGS THE ENGINEER OF RECORD IS TO BE NOTIFIED AS SOON AS POSSIBLE.
6. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING CONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CARRIER POC AND TOWER OWNER.
7. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES. CONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
8. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
9. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
10. IF THE SPECIFIED EQUIPMENT CAN NOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY THE CARRIER AND TOWER OWNER PRIOR TO PROCEEDING WITH ANY SUCH CHANGE OF INSTALLATION.
11. CONTRACTOR IS TO PERFORM A SITE INVESTIGATION, BEFORE SUBMITTING BIDS, TO DETERMINE THE BEST ROUTING OF ALL CONDUITS FOR POWER, AND TELCO AND FOR GROUNDING CABLES AS SHOWN IN THE POWER, TELCO, AND GROUNDING PLAN DRAWINGS.
12. THE CONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE TO THE SATISFACTION OF DISH WIRELESS, L.L.C. AND TOWER OWNER
13. CONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
14. CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION. TRASH AND DEBRIS SHOULD BE REMOVED FROM SITE ON A DAILY BASIS.



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PROJECT INFORMATION  
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WALLINGFORD, CT 06492

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 SPECIMATE WIREWAY).
22. SLOTTED WIRING DUCT SHALL BE PVC AND INCLUDE COVER (PANDUIT TYPE E OR EQUAL).
23. CONDUITS SHALL BE FASTENED SECURELY IN PLACE WITH APPROVED NON-PERFORATED STRAPS AND HANGERS. EXPLOSIVE DEVICES (i.e. POWDER-ACTUATED) FOR ATTACHING HANGERS TO STRUCTURE WILL NOT BE PERMITTED. CLOSELY FOLLOW THE LINES OF THE STRUCTURE, MAINTAIN CLOSE PROXIMITY TO THE STRUCTURE AND KEEP CONDUITS IN TIGHT ENVELOPES. CHANGES IN DIRECTION TO ROUTE AROUND OBSTACLES SHALL BE MADE WITH CONDUIT OUTLET BODIES. CONDUIT SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER. PARALLEL AND PERPENDICULAR TO STRUCTURE WALL AND CEILING LINES. ALL CONDUIT SHALL BE FISHED TO CLEAR OBSTRUCTIONS. ENDS OF CONDUITS SHALL BE TEMPORARILY CAPPED FLUSH TO FINISH GRADE TO PREVENT CONCRETE, PLASTER OR DIRT FROM ENTERING. CONDUITS SHALL BE RIGIDLY CLAMPED TO BOXES BY GALVANIZED MALLEABLE IRON BUSHING ON INSIDE AND GALVANIZED MALLEABLE IRON LOCKNUT ON OUTSIDE AND INSIDE.
24. EQUIPMENT CABINETS, TERMINAL BOXES, JUNCTION BOXES AND PULL BOXES SHALL BE GALVANIZED OR EPOXY-COATED SHEET STEEL. SHALL MEET OR EXCEED UL 50 AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND NEMA 3 (OR BETTER) FOR EXTERIOR LOCATIONS.
25. METAL RECEPTACLE, SWITCH AND DEVICE BOXES SHALL BE GALVANIZED, EPOXY-COATED OR NON-CORRODING; SHALL MEET OR EXCEED UL 514A AND NEMA OS 1 AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND WEATHER PROTECTED (WP OR BETTER) FOR EXTERIOR LOCATIONS.
26. NONMETALLIC RECEPTACLE, SWITCH AND DEVICE BOXES SHALL MEET OR EXCEED NEMA OS 2 (NEWEST REVISION) AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND WEATHER PROTECTED (WP OR BETTER) FOR EXTERIOR LOCATIONS.
27. THE CONTRACTOR SHALL NOTIFY AND OBTAIN NECESSARY AUTHORIZATION FROM THE CARRIER AND/OR DISH WIRELESS, L.L.C. AND TOWER OWNER BEFORE COMMENCING WORK ON THE AC POWER DISTRIBUTION PANELS.
28. THE CONTRACTOR SHALL PROVIDE NECESSARY TAGGING ON THE BREAKERS, CABLES AND DISTRIBUTION PANELS IN ACCORDANCE WITH THE APPLICABLE CODES AND STANDARDS TO SAFEGUARD LIFE AND PROPERTY.
29. INSTALL LAMICOID LABEL ON THE METER CENTER TO SHOW "DISH WIRELESS, L.L.C."
30. ALL EMPTY/SPARE CONDUITS THAT ARE INSTALLED ARE TO HAVE A METERED MULE TAPE PULL CORD INSTALLED.



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PAT	BIW	BIW

RFDS REV #: 1

**CONSTRUCTION DOCUMENTS**

SUBMITTALS		
REV	DATE	DESCRIPTION
A	08/16/2021	ISSUED FOR REVIEW
0	10/08/2021	ISSUED FOR CONSTRUCTION
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A&E PROJECT NUMBER  
**302467-13701206**

DISH WIRELESS, L.L.C.  
PROJECT INFORMATION  
**BOHVN00140A**  
90 NORTH PLAINS INDUSTRIAL RD.  
WALLINGFORD, CT 06492

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 GROUND AND MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH #6 COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
5. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.
6. EACH CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, #6 STRANDED COPPER OR LARGER FOR INDOOR BTS; #2 BARE SOLID TINNED COPPER FOR OUTDOOR BTS.
7. CONNECTIONS TO THE GROUND BUS SHALL NOT BE DOUBLED UP OR STACKED BACK TO BACK CONNECTIONS ON OPPOSITE SIDE OF THE GROUND BUS ARE PERMITTED.
8. ALL EXTERIOR GROUND CONDUCTORS BETWEEN EQUIPMENT/GROUND BARS AND THE GROUND RING SHALL BE #2 SOLID TINNED COPPER UNLESS OTHERWISE INDICATED.
9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
10. USE OF 90° BENDS IN THE PROTECTION GROUNDING CONDUCTORS SHALL BE AVOIDED WHEN 45° BENDS CAN BE ADEQUATELY SUPPORTED.
11. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
12. ALL GROUND CONNECTIONS ABOVE GRADE (INTERIOR AND EXTERIOR) SHALL BE FORMED USING HIGH PRESS CRIMPS.
13. COMPRESSION GROUND CONNECTIONS MAY BE REPLACED BY EXOTHERMIC WELD CONNECTIONS.
14. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO THE BRIDGE AND THE TOWER GROUND BAR.
15. APPROVED ANTIOXIDANT COATINGS (i.e. CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
16. ALL EXTERIOR GROUND CONNECTIONS SHALL BE COATED WITH A CORROSION RESISTANT MATERIAL.
17. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
18. BOND ALL METALLIC OBJECTS WITHIN 6 ft OF MAIN GROUND RING WITH (1) #2 BARE SOLID TINNED COPPER GROUND CONDUCTOR.
19. GROUND CONDUCTORS USED FOR THE FACILITY GROUNDING AND LIGHTNING PROTECTION SYSTEMS SHALL NOT BE ROUTED THROUGH METALLIC OBJECTS THAT FORM A RING AROUND THE CONDUCTOR, SUCH AS METALLIC CONDUITS, METAL SUPPORT CLIPS OR SLEEVES THROUGH WALLS OR FLOORS. WHEN IT IS REQUIRED TO BE HOUSED IN CONDUIT TO MEET CODE REQUIREMENTS OR LOCAL CONDITIONS, NON-METALLIC MATERIAL SUCH AS PVC CONDUIT SHALL BE USED. WHERE USE OF METAL CONDUIT IS UNAVOIDABLE (i.e., NONMETALLIC CONDUIT PROHIBITED BY LOCAL CODE) THE GROUND CONDUCTOR SHALL BE BONDED TO EACH END OF THE METAL CONDUIT.
20. ALL GROUNDS THAT TRANSITION FROM BELOW GRADE TO ABOVE GRADE MUST BE #2 BARE SOLID TINNED COPPER IN 3/4" NON-METALLIC, FLEXIBLE CONDUIT FROM 24" BELOW GRADE TO WITHIN 3" TO 6" OF CAD-WELD TERMINATION POINT. THE EXPOSED END OF THE CONDUIT MUST BE SEALED WITH SILICONE CAULK. (ADD TRANSITIONING GROUND STANDARD DETAIL AS WELL).
21. BUILDINGS WHERE THE MAIN GROUNDING CONDUCTORS ARE REQUIRED TO BE ROUTED TO GRADE, THE CONTRACTOR SHALL ROUTE TWO GROUNDING CONDUCTORS FROM THE ROOFTOP, TOWERS, AND WATER TOWERS GROUNDING RING, TO THE EXISTING GROUNDING SYSTEM, THE GROUNDING CONDUCTORS SHALL NOT BE SMALLER THAN 2/0 COPPER. ROOFTOP GROUNDING RING SHALL BE BONDED TO THE EXISTING GROUNDING SYSTEM, THE BUILDING STEEL COLUMNS, LIGHTNING PROTECTION SYSTEM, AND BUILDING MAIN WATER LINE (FERROUS OR NONFERROUS METAL PIPING ONLY). DO NOT ATTACH GROUNDING TO FIRE SPRINKLER SYSTEM PIPES.

STRUCTURAL STEEL NOTES:

1. STRUCTURAL STEEL SHALL CONFORM TO THE LATEST EDITION OF THE AISC "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS."
2. STRUCTURAL STEEL ROLLED SHAPES, PLATES AND BARS SHALL CONFORM TO THE FOLLOWING ASTM DESIGNATIONS:
  - A. ASTM A-572, GRADE 50 – ALL W SHAPES, UNLESS NOTED OR A992 OTHERWISE
  - B. ASTM A-36 – ALL OTHER ROLLED SHAPES, PLATES AND BARS UNLESS NOTED OTHERWISE.
  - C. ASTM A-500, GRADE B – HSS SECTION (SQUARE, RECTANGULAR, AND ROUND)
  - D. ASTM A-325, TYPE SC OR N – ALL BOLTS FOR CONNECTING STRUCTURAL MEMBERS
  - E. ASTM F-1554 07 – ALL ANCHOR BOLTS, UNLESS NOTED OTHERWISE
3. ALL EXPOSED STRUCTURAL STEEL MEMBERS SHALL BE HOT-DIPPED GALVANIZED AFTER FABRICATION PER ASTM A123. EXPOSED STEEL HARDWARE AND ANCHOR BOLTS SHALL BE GALVANIZED PER ASTM A153 OR B695.
4. ALL FIELD CUT SURFACES, FIELD DRILLED HOLES AND GROUND SURFACES WHERE EXISTING PAINT OR GALVANIZATION REMOVAL WAS REQUIRED SHALL BE REPAIRED WITH (2) BRUSHED COATS OF ZRC GALVILITE COLD GALVANIZING COMPOUND PER ASTM A780 AND MANUFACTURER'S RECOMMENDATIONS.
5. DO NOT DRILL HOLES THROUGH STRUCTURAL STEEL MEMBERS EXCEPT AS SHOWN AND DETAILED ON STRUCTURAL DRAWINGS.
6. CONNECTIONS:
  - A. ALL WELDING TO BE PERFORMED BY AWS CERTIFIED WELDERS AND CONDUCTED IN ACCORDANCE WITH THE LATEST EDITION OF THE AWS WELDING CODE D1.1.
  - B. ALL WELDS SHALL BE INSPECTED VISUALLY. 25% OF WELDS SHALL BE INSPECTED WITH DYE PENETRANT OR MAGNETIC PARTICLE TO MEET THE ACCEPTANCE CRITERIA OF AWS D1.1. REPAIR ALL WELDS AS NECESSARY.
  - C. INSPECTION SHALL BE PERFORMED BY AN AWS CERTIFIED WELD INSPECTOR.
  - D. IT IS THE CONTRACTORS RESPONSIBILITY TO PROVIDE BURNING/WELDING PERMITS AS REQUIRED BY LOCAL GOVERNING AUTHORITY AND IF REQUIRED SHALL HAVE FIRE DEPARTMENT DETAIL FOR ANY WELDING ACTIVITY.
  - E. ALL ELECTRODES TO BE LOW HYDROGEN, MATCHING FILLER METAL, PER AWS D1.1, UNLESS NOTED OTHERWISE.
  - F. MINIMUM WELD SIZE TO BE 0.1875 INCH FILLET WELDS, UNLESS NOTED OTHERWISE.
  - G. PRIOR TO FIELD WELDING GALVANIZING MATERIAL, CONTRACTOR SHALL GRIND OFF GALVANIZING 1/2" BEYOND ALL FIELD WELD SURFACES. AFTER WELD AND WELD INSPECTION IS COMPLETE, REPAIR ALL GROUND AND WELDED SURFACES WITH ZRC GALVILITE COLD GALVANIZING COMPOUND PER ASTM A780 AND MANUFACTURERS RECOMMENDATIONS.
  - H. THE CONTRACTOR SHALL PROVIDE ADEQUATE SHORING AND/OR BRACING WHERE REQUIRED DURING CONSTRUCTION UNTIL ALL CONNECTIONS ARE COMPLETE.
  - I. ANY FIELD CHANGES OR SUBSTITUTIONS SHALL HAVE PRIOR APPROVAL FROM THE ENGINEER, AND DISH WIRELESS L.L.C. PROJECT MANAGER IN WRITING



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A&E PROJECT NUMBER  
**302467-13701206**

DISH WIRELESS, L.L.C.  
PROJECT INFORMATION  
**BOHVN00140A**  
90 NORTH PLAINS INDUSTRIAL RD.  
WALLINGFORD, CT 06492

SHEET TITLE  
**GENERAL NOTES**

SHEET NUMBER  
**GN-4**

ENGINEERING:  
STRUCTURAL ANALYSIS  
MOUNT ANALYSIS



**AMERICAN TOWER®**  
CORPORATION

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## Structural Analysis Report

**Structure** : 178.5 ft Monopole  
**ATC Site Name** : Bilkays Express, CT  
**ATC Asset Number** : 302467  
**Engineering Number** : 13701206\_C3\_03  
**Proposed Carrier** : DISH WIRELESS L.L.C.  
**Carrier Site Name** : BOHVN00140A  
**Carrier Site Number** : BOHVN00140A  
**Site Location** : 90 North Plains Industrial Rd.  
Wallingford, CT 06492-2334  
41.480800,-72.817700  
**County** : New Haven  
**Date** : August 2, 2021  
**Max Usage** : 70%  
**Result** : Pass

Prepared By:  
Faisal Wakid  
Structural Engineer

*Faisal Wakid*

Reviewed By:



**COA: PEC.0001553**





**Table of Contents**

Introduction .....	1
Supporting Documents .....	1
Analysis .....	1
Conclusion.....	1
Existing and Reserved Equipment .....	2&3
Equipment to be Removed.....	3
Proposed Equipment .....	3
Structure Usages .....	4
Foundations .....	4
Deflection and Sway .....	4
Standard Conditions .....	5
Calculations .....	Attached



## Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 178.5 ft monopole to reflect the change in loading by DISH WIRELESS L.L.C..

## Supporting Documents

<b>Tower Drawings</b>	FWT Job #18357, dated March 19, 1999
<b>Foundation Drawing</b>	FWT Job #18357, dated March 19, 1999
<b>Geotechnical Report</b>	Tectonic Work Order #1170.C947C, dated March 11, 1999

## 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.

<b>Basic Wind Speed:</b>	119 mph (3-Second Gust)
<b>Basic Wind Speed w/ Ice:</b>	50 mph (3-Second Gust) w/ 1" radial ice concurrent
<b>Code:</b>	ANSI/TIA-222-H / 2015 IBC / 2018 Connecticut State Building Code
<b>Exposure Category:</b>	B
<b>Risk Category:</b>	II
<b>Topographic Factor Procedure:</b>	Method 1
<b>Topographic Category:</b>	1
<b>Crest Height (H):</b>	0 ft
<b>Spectral Response:</b>	$S_s = 0.20, S_1 = 0.05$
<b>Site Class:</b>	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](mailto: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. <sup>1</sup> (ft)	Qty	Equipment	Mount Type	Lines	Carrier
182.0	12	Decibel DB844H90E-XY	Triangular Low Profile Platform	(12) 1 5/8" Coax	SPRINT NEXTEL
171.0	2	DragonWave Horizon Compact	Collar	(2) 1/2" Coax (6) 5/16" (0.31"-7.9mm) Coax	CLEARWIRE CORPORATION
	1	DragonWave A-ANT-18G-2-C			
	1	DragonWave A-ANT-11G-2-C			
	3	Argus LLPX310R			
	3	NextNet BTS-2500			
165.0	1	Generic 18" x 12" Junction Box		(1) 2" conduit	
160.0	3	Quintel QS66512-2	Triangular Platform with Handrails	(2) 0.39" (10mm) Fiber Trunk (6) 0.78" (19.7mm) 8 AWG 6 (12) 1 5/8" Coax (4) 2" conduit (1) 3/8" (0.38"-9.5mm) RET Control Cable	AT&T MOBILITY
	3	Powerwave Allgon 7770.00			
	3	Kathrein Scala 80010965			
	1	Raycap DC6-48-60-18-8C-EV			
	6	Powerwave Allgon 7020			
	9	Kaelus DBCT108F1V92-1			
	6	Powerwave Allgon LGP21401			
	2	Raycap DC6-48-60-18-8F (23.5" Height)			
	3	Ericsson RRUS 4426 B66			
	3	Ericsson RRUS 4478 B14			
	3	Ericsson RRUS 4478 B5 (56.1 lbs)			
	3	Ericsson RRUS 32 B2			
	3	Ericsson RRUS 11 (Band 7)			
	3	Ericsson RRUS-32 (77 lbs)			
148.0	3	Ericsson Radio 4449 B71 B85A	T-Arm with Working Platforms and Handrail Reinforcements	(4) 1 1/4" Hybriflex Cable (6) 1 5/8" Coax	T-MOBILE
	3	Ericsson KRY 112 144/1			
	3	RFS APXVAARR24_43-U-NA20			
	3	Ericsson AIR32 B66Aa/B2a			
	3	Ericsson RRUS 4415 B25			
	3	Ericsson AIR 21, 1.3M, B2A B4P (91.5 lbs)			
	3	Ericsson Air6449 B41			
138.0	6	Commscope JAHH-65B-R3B	Triangular Platform with Handrails	(12) 1 5/8" Coax (2) 1 5/8" Hybriflex	VERIZON WIRELESS
	3	Andrew SBNHH-1D65B			
	3	Samsung MT6407-77A			
	2	RFS DB-T1-6Z-8AB-OZ			
	3	Commscope CBC78T-DS-43-2X			
	3	Samsung Outdoor CBRS 20W RRH			
	3	Samsung Outdoor CBRS 20W RRH –Clip-on Antenna			
	3	Samsung B5/B13 RRH-BR04C			
	3	Samsung B2/B66A RRH-BR049			
128.0	3	RFS APXV18-206517S-C	Flush	(6) 1 5/8" Coax (1) 7/8" Coax	METRO PCS INC
	1	Nortel NTGB01MA			



Elev. <sup>1</sup> (ft)	Qty	Equipment	Mount Type	Lines	Carrier
122.0	3	Alcatel-Lucent TD-RRH8x20-25 w/ Solar Shield	Triangular Low Profile Platform	(4) 1 1/4" Hybriflex Cable	SPRINT NEXTEL
	3	Alcatel-Lucent 1900 MHz 4X45 RRH			
	3	Alcatel-Lucent 800 MHz RRH			
118.0	3	RFS APXV9TM14-ALU-I20*			
	3	RFS APXVSPP18-C-A20			
20.0	1	PCTEL GPS-TMG-HR-26N	Stand-Off	(1) 1/2" Coax	

**Equipment to be Removed**

Elev. <sup>1</sup> (ft)	Qty	Equipment	Mount Type	Lines	Carrier
No loading was considered as removed as part of this analysis.					

**Proposed Equipment**

Elev. <sup>1</sup> (ft)	Qty	Equipment	Mount Type	Lines	Carrier
106.0	1	Commscope RDIDC-9181-PF-48	Triangular Platform with Handrails	(1) 1.60" (40.6mm) Hybrid	DISH WIRELESS L.L.C.
	3	Fujitsu TA08025-B604			
	3	Fujitsu TA08025-B605			
	3	JMA Wireless MX08FRO665-21			

<sup>1</sup> Contracted elevations are shown for appurtenances within contracted installation tolerances. Appurtenances outside of contract limits are shown at installed elevations.

Install proposed lines outside the pole shaft. Stacking lines is not allowed.



**Structure Usages**

Structural Component	Controlling Usage	Pass/Fail
Anchor Bolts	70%	Pass
Shaft	59%	Pass
Base Plate	12%	Pass

**Foundations**

Reaction Component	Analysis Reactions	% of Usage
Moment (Kips-Ft)	5,275.6	68%
Axial (Kips)	86.2	27%
Shear (Kips)	43.3	58%

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

**Deflection and Sway\***

Antenna Elevation (ft)	Antenna	Carrier	Deflection (ft)	Sway (Rotation) (°)
171.0	DragonWave A-ANT-11G-2-C	CLEARWIRE CORPORATION	1.390	0.826
	DragonWave A-ANT-18G-2-C			
106.0	Commscope RDIDC-9181-PF-48	DISH WIRELESS L.L.C.	0.544	0.604
	Fujitsu TA08025-B604			
	Fujitsu TA08025-B605			
	JMA Wireless MX08FRO665-21			

\*Deflection and Sway was evaluated considering a design wind speed of 60 mph (3-Second Gust) per ANSI/TIA-222-H



## 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

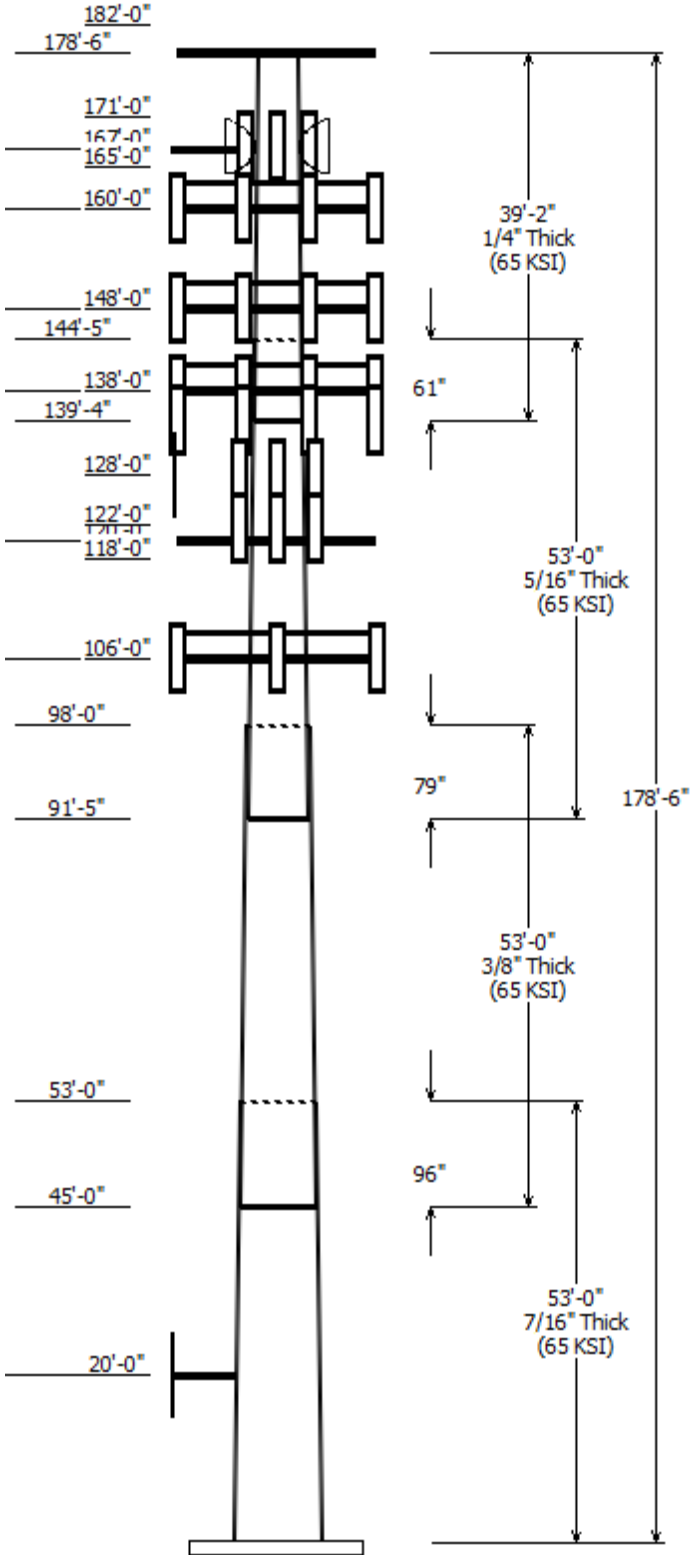
It is the responsibility of the client to ensure that the information provided to A.T. Engineering Service, PLLC and used in the performance of our engineering services is correct and complete.

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.

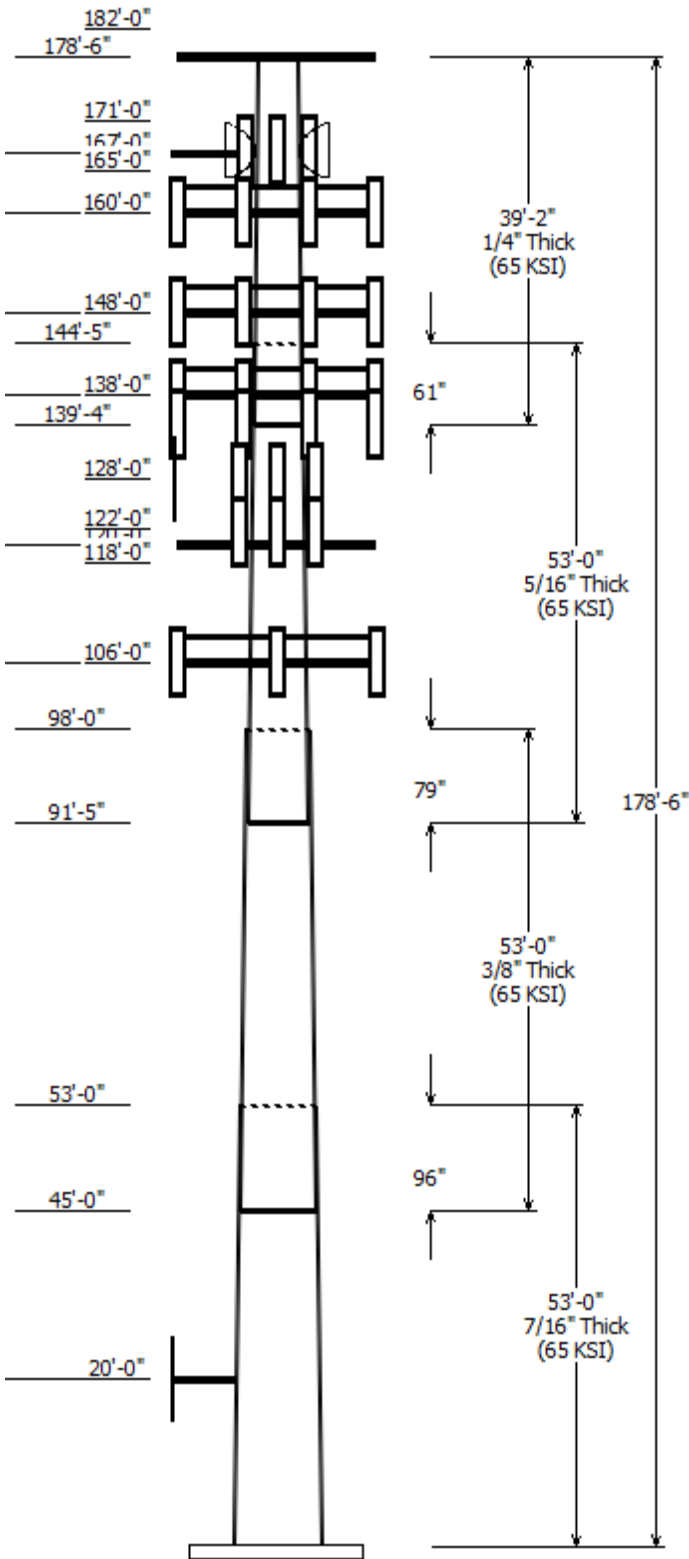
All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. A.T. Engineering Service, PLLC is not responsible for the conclusions, opinions and recommendations made by others based on the information supplied herein.

Job Information	
Client : DISH WIRELESS L.L.C.	
Pole : 302467	Code: ANSI/TIA-222-H
Location : Bilkays Express, CT	
Description : 178.5' FWT Monopole	Risk Category : II
Shape : 18 Sides	Exposure : B
Height : 178.50 (ft)	Topo Method : Method 1
Base Elev (ft): 0.00	Topographic Category : 1
Taper: 0.25140(in/ft)	



Sections Properties							
Section	Length (ft)	Diameter (in)		Thick (in)	Joint Type	Overlap Length (in)	Steel Grade
		Across Flats Top	Across Flats Bottom				
1	53.000	58.67	72.00	0.438		0.000	18 Sides 65
2	53.000	48.11	61.43	0.375	Slip Joint	96.000	18 Sides 65
3	53.000	37.06	50.39	0.313	Slip Joint	79.000	18 Sides 65
4	39.167	29.00	38.84	0.250	Slip Joint	61.000	18 Sides 65

Discrete Appurtenance			
Attach Elev (ft)	Force Elev (ft)	Qty	Description
182.000	182.000	12	Decibel DB844H90E-XY
178.500	178.500	1	Flat Low Profile Platform
171.000	168.000	1	DragonWave A-ANT-18G-2-C
171.000	168.000	1	DragonWave A-ANT-11G-2-C
171.000	168.000	3	Argus LLPX310R
171.000	168.000	3	NextNet BTS-2500
171.000	168.000	2	DragonWave Horizon Compact
167.000	167.000	1	Side Arms
165.000	165.000	1	Generic 18" x 12" Junction Box
160.000	160.000	3	Kathrein Scala 80010965
160.000	160.000	3	CCI OPA-65R-LCUU-H6
160.000	160.000	3	Quintel QS66512-2
160.000	160.000	3	Powerwave Allgon 7770.00
160.000	160.000	1	Raycap DC6-48-60-18-8C-EV
160.000	160.000	3	Ericsson RRUS-32 (77 lbs)
160.000	160.000	3	Ericsson RRUS 11 (Band 7)
160.000	158.000	3	Ericsson RRUS 32 B2
160.000	160.000	3	Ericsson RRUS 4478 B5 (56.1 lb
160.000	160.000	3	Ericsson RRUS 4478 B14
160.000	160.000	3	Ericsson RRUS 4426 B66
160.000	160.000	2	Raycap DC6-48-60-18-8F (23.5"
160.000	160.000	6	Powerwave Allgon LGP21401
160.000	160.000	9	Kaelus DBCT108F1V92-1
160.000	160.000	6	Powerwave Allgon 7020
160.000	160.000	1	Generic Flat Platform with Han
148.000	148.000	3	RFS APXVAARR24_43-U-NA20
148.000	148.000	3	Ericsson AIR32 B66Aa/B2a
148.000	148.000	3	Ericsson AIR 21, 1.3M, B2A B4P
148.000	148.000	3	Ericsson Air6449 B41
148.000	148.000	3	Ericsson RRUS 4415 B25
148.000	148.000	3	Ericsson Radio 4449 B71 B85A
148.000	152.000	3	Ericsson KRY 112 144/1
148.000	148.000	1	Generic Round Platform with
138.000	138.000	1	Generic Round Platform with
138.000	136.000	6	Commscope JAHH-65B-R3B
138.000	138.000	2	Andrew SBNHH-1D65B
138.000	140.000	3	RFS DB-T1-6Z-8AB-0Z
138.000	138.000	3	Samsung MT6407-77A
138.000	138.000	3	Samsung B2/B66A RRH-BR049
138.000	138.000	3	Samsung B5/B13 RRH-BR04C
138.000	138.000	3	Samsung Outdoor CBRS 20W
138.000	138.000	3	Samsung Outdoor CBRS 20W
138.000	138.000	3	Commscope CBC78T-DS-43-2X
128.000	128.000	3	RFS APXV18-206517S-C



128.000	128.000	1	Nortel NTGB01MA
122.000	122.000	3	Alcatel-Lucent 1900 MHz 4X45
122.000	122.000	3	Alcatel-Lucent 800 MHz RRH
122.000	122.000	3	Alcatel-Lucent TD-RRH8x20-25
120.000	120.000	1	Round Low Profile Platform
118.000	122.000	3	RFS APXVSP18-C-A20
118.000	122.000	3	RFS APXV9TM14-ALU-I20*
106.000	106.000	1	Generic Flat Platform with Han
106.000	106.000	3	JMA Wireless MX08FRO665-21
106.000	106.000	3	Fujitsu TA08025-B605
106.000	106.000	3	Fujitsu TA08025-B604
106.000	106.000	1	Commscope RDIDC-9181-PF-48
20.000	20.000	1	Standoff
20.000	20.000	1	PCTEL GPS-TMG-HR-26N

### Linear Appurtenance

Elev (ft)		Description	Exposed To Wind
From	To		
0.000	20.000	1/2" Coax	Yes
0.000	106.0	1.60" (40.6mm)	Yes
0.000	116.0	1 1/4" Hybriflex	Yes
0.000	118.0	1 1/4" Hybriflex	Yes
0.000	128.0	1 5/8" Coax	Yes
0.000	128.0	7/8" Coax	No
0.000	138.0	1 5/8" Coax	No
0.000	138.0	1 5/8" Hybriflex	Yes
0.000	148.0	1 1/4" Hybriflex	Yes
0.000	148.0	1 5/8" Coax	Yes
0.000	160.0	0.39" (10mm)	No
0.000	160.0	0.78" (19.7mm) 8	No
0.000	160.0	1 5/8" Coax	No
0.000	160.0	2" conduit	No
0.000	160.0	2" conduit	No
0.000	160.0	3/8" (0.38")	No
0.000	165.0	2" conduit	Yes
0.000	171.0	1/2" Coax	Yes
0.000	171.0	5/16" (0.31")	No
0.000	182.0	1 5/8" Coax	No

### Load Cases

1.2D + 1.0W	119 mph with No Ice
0.9D + 1.0W	119 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph with 1.00 in Radial Ice
1.2D + 1.0Ev + 1.0Eh	Seismic
0.9D - 1.0Ev + 1.0Eh	Seismic (Reduced DL)
1.0D + 1.0W	Serviceability 60 mph

### Reactions

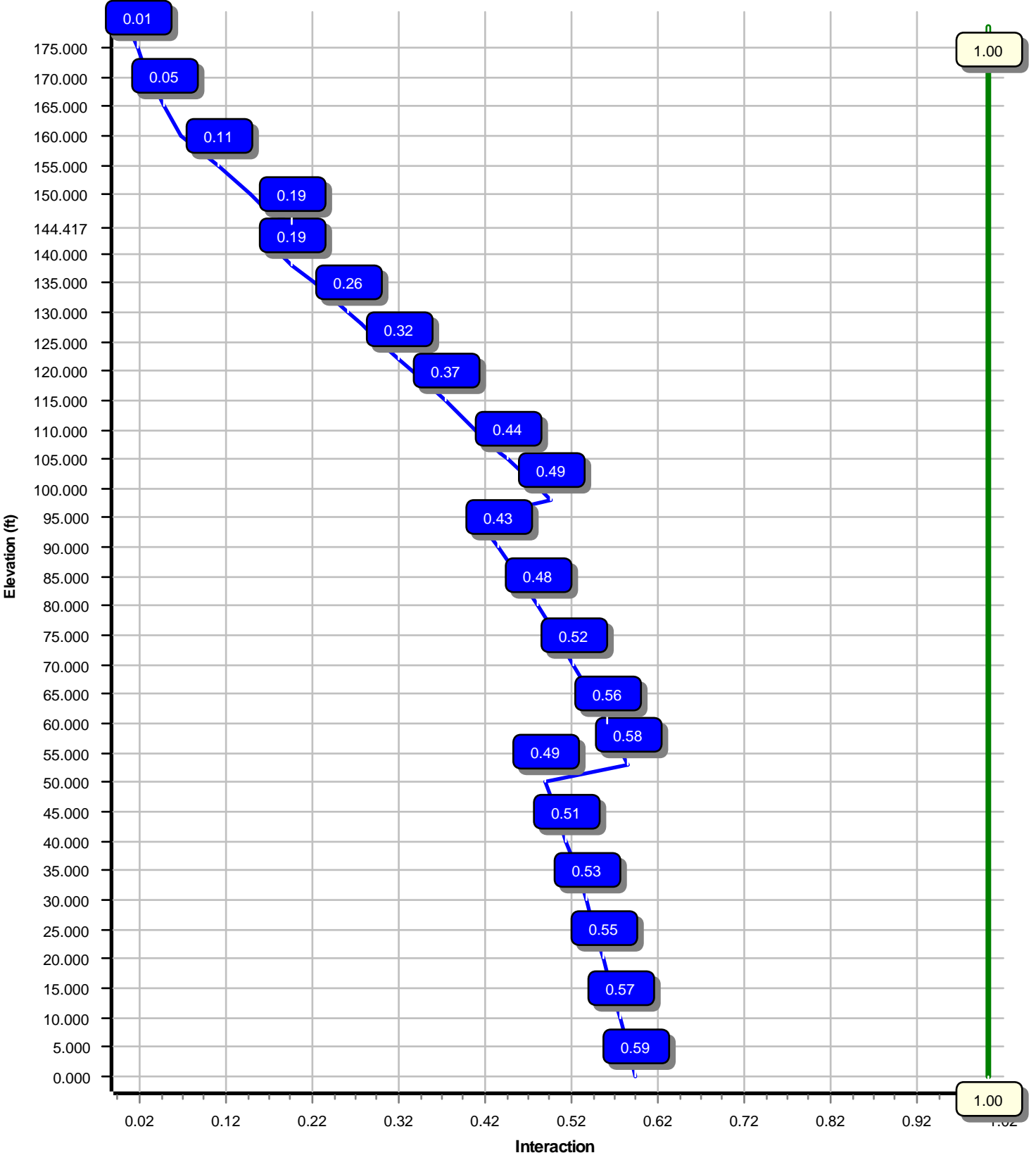
Load Case	Moment (kip-ft)	Shear (kip)	Axial (kip)
1.2D + 1.0W	5275.58	43.33	86.15
0.9D + 1.0W	5221.23	43.31	64.60
1.2D + 1.0Di + 1.0Wi	1283.64	10.61	117.94
1.2D + 1.0Ev + 1.0Eh	300.51	2.16	86.79
0.9D - 1.0Ev + 1.0Eh	296.51	2.16	59.75
1.0D + 1.0W	1192.27	9.85	71.83

### Dish Deflections

Load Case	Attach Elev (ft)	Deflection (in)	Rotation (deg)
1.0D + 1.0W	171.00	16.686	0.826
1.0D + 1.0W	171.00	16.686	0.826



Load Case : 1.2D + 1.0W  
Max Ratio 59.12% at 0.0 ft



Site Number: 302467

Code: ANSI/TIA-222-H

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Site Name: Bilkays Express, CT

Engineering Number: 13701206\_C3\_03

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Customer: DISH WIRELESS L.L.C.

Analysis Parameters

Location :	New Haven County, CT	Height (ft) :	178.5
Code :	ANSI/TIA-222-H	Base Diameter (in) :	72.00
Shape :	18 Sides	Top Diameter (in) :	29.00
Pole Type :	Taper	Taper (in/ft) :	0.251
Pole Manufacturer :	FWT	Rotation (deg) :	0.00
Kd (non-service) :	0.95	Ke :	1.00

Ice & Wind Parameters

Exposure Category:	B	Design Wind Speed Without Ice:	119 mph
Risk Category:	II	Design Wind Speed With Ice:	50 mph
Topographic Factor Procedure:	Method 1	Operational Wind Speed:	60 mph
Topographic Category:	1	Design Ice Thickness:	1.00 in
Crest Height:	0 ft	HMSL:	57.00 ft

Seismic Parameters

Analysis Method:	Equivalent Lateral Force Method		
Site Class:	D - Stiff Soil		
Period Based on Rayleigh Method (sec):	2.37		
$T_L$ (sec):	6	$p$ :	1
$S_s$ :	0.205	$S_1$ :	0.055
$F_a$ :	1.600	$F_v$ :	2.400
$S_{ds}$ :	0.219	$S_{d1}$ :	0.088
		$C_s$ :	0.030
		$C_s$ Max:	0.030
		$C_s$ Min:	0.030

Load Cases

1.2D + 1.0W	119 mph with No Ice
0.9D + 1.0W	119 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph with 1.00 in Radial Ice
1.2D + 1.0Ev + 1.0Eh	Seismic
0.9D - 1.0Ev + 1.0Eh	Seismic (Reduced DL)
1.0D + 1.0W	Serviceability 60 mph

Site Number: 302467

Code: ANSI/TIA-222-H

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Site Name: Bilkays Express, CT

Engineering Number: 13701206\_C3\_03

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Customer: DISH WIRELESS L.L.C.

**Shaft Section Properties**

Sect Info	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Joint Len (in)	Weight (lb)	Bottom						Top						
							Dia (in)	Elev (ft)	Area (in <sup>2</sup> )	Ix (in <sup>4</sup> )	W/t Ratio	D/t Ratio	Dia (in)	Elev (ft)	Area (in <sup>2</sup> )	Ix (in <sup>4</sup> )	W/t Ratio	D/t Ratio	Taper (in/ft)
1-18	53.000	0.4375	65		0.00	16,253	72.00	0.00	99.37	64295.3	27.26	164.57	58.67	53.00	80.87	34653.6	21.89	134.12	0.251401
2-18	53.000	0.3750	65	Slip	96.00	11,677	61.43	45.00	72.68	34236.4	27.12	163.83	48.11	98.00	56.82	16359.2	20.86	128.30	0.251401
3-18	53.000	0.3125	65	Slip	79.00	7,766	50.39	91.42	49.67	15739.6	26.67	161.26	37.06	144.42	36.46	6222.7	19.15	118.62	0.251401
4-18	39.167	0.2500	65	Slip	61.00	3,561	38.84	139.33	30.63	5764.1	25.64	155.39	29.00	178.50	22.81	2382.3	18.69	116.00	0.251401
Shaft Weight						39,257													

**Discrete Appurtenance Properties**

Attach Elev (ft)	Description	Qty	Ka	Vert Ecc (ft)	Weight (lb)	No Ice EPAa (sf)	Orientation Factor	Weight (lb)	Ice EPAa (sf)	Orientation Factor
182.00	Decibel DB844H90E-XY	12	0.80	0.000	14.00	3.615	0.73	83.10	3.626	0.73
178.50	Flat Low Profile Platform	1	1.00	0.000	1,500.00	26.100	1.00	1,939.97	39.065	1.00
171.00	DragonWave Horizon Compact	2	1.00	-3.000	10.60	0.721	0.50	25.82	1.106	0.50
171.00	NextNet BTS-2500	3	1.00	-3.000	35.00	1.817	0.50	66.38	2.437	0.50
171.00	Argus LLPX310R	3	1.00	-3.000	28.60	4.292	0.63	89.58	5.411	0.63
171.00	DragonWave A-ANT-11G-2-C	1	1.00	-3.000	27.00	4.688	1.00	92.94	5.550	1.00
171.00	DragonWave A-ANT-18G-2-C	1	1.00	-3.000	27.10	4.688	1.00	93.13	5.550	1.00
167.00	Side Arms	1	1.00	0.000	560.00	8.500	1.00	875.93	13.295	1.00
165.00	Generic 18" x 12" Junction Box	1	1.00	0.000	15.00	1.800	1.00	52.63	2.406	1.00
160.00	Powerwave Allgon 7020	6	0.75	0.000	2.20	0.339	0.50	9.05	0.614	0.50
160.00	Kaelus DBCT108F1V92-1	9	0.75	0.000	13.90	0.633	0.50	30.79	0.999	0.50
160.00	Powerwave Allgon LGP21401	6	0.75	0.000	14.10	1.104	0.50	30.85	1.583	0.50
160.00	Raycap DC6-48-60-18-8F (23.5"	2	0.75	0.000	20.00	1.260	1.00	55.35	1.702	1.00
160.00	Ericsson RRUS 4426 B66	3	0.75	0.000	48.40	1.650	0.50	78.37	2.220	0.50
160.00	Ericsson RRUS 4478 B14	3	0.75	0.000	59.40	2.021	0.50	100.60	2.654	0.50
160.00	Ericsson RRUS 4478 B5 (56.1 lbs)	3	0.75	0.000	56.10	2.036	0.50	96.35	2.671	0.50
160.00	Ericsson RRUS 32 B2	3	0.75	-2.000	53.00	2.743	0.50	102.37	3.528	0.50
160.00	Ericsson RRUS 11 (Band 7)	3	0.75	0.000	50.70	2.791	0.50	99.31	3.527	0.50
160.00	Ericsson RRUS-32 (77 lbs)	3	0.75	0.000	77.00	3.314	0.50	142.29	4.176	0.50
160.00	Raycap DC6-48-60-18-8C-EV	1	0.75	0.000	16.00	4.788	1.00	102.69	5.775	1.00
160.00	Powerwave Allgon 7770.00	3	0.75	0.000	35.00	5.508	0.65	118.85	6.199	0.65
160.00	Quintel QS66512-2	3	0.75	0.000	111.00	8.133	0.74	244.77	10.004	0.74
160.00	CCI OPA-65R-LCUU-H6	3	0.75	0.000	73.00	9.658	0.66	209.63	11.519	0.66
160.00	Kathrein Scala 80010965	3	0.75	0.000	97.60	13.814	0.62	276.57	15.862	0.62
160.00	Generic Flat Platform with	1	1.00	0.000	2,500.00	42.400	1.00	3,692.55	56.479	1.00
148.00	Ericsson KRY 112 144/1	3	0.75	4.000	11.00	0.351	0.50	18.17	0.622	0.50
148.00	Ericsson Radio 4449 B71 B85A	3	0.75	0.000	75.00	1.650	0.50	115.08	2.216	0.50
148.00	Ericsson RRUS 4415 B25	3	0.75	0.000	46.00	1.842	0.50	78.68	2.440	0.50
148.00	Ericsson Air6449 B41	3	0.75	0.000	104.00	5.682	0.63	194.83	6.740	0.63
148.00	Ericsson AIR 21, 1.3M, B2A B4P	3	0.75	0.000	91.50	6.037	0.70	188.53	7.466	0.70
148.00	Ericsson AIR32 B66Aa/B2a	3	0.75	0.000	132.20	6.510	0.71	238.57	7.970	0.71
148.00	RFS APXVAARR24_43-U-NA20	3	0.75	0.000	127.90	20.243	0.63	389.54	22.715	0.63
148.00	Generic Round Platform with	1	1.00	0.000	2,500.00	27.200	1.00	3,579.48	43.491	1.00
138.00	Commscope CBC78T-DS-43-2X	3	0.75	0.000	20.70	0.552	0.50	35.32	0.888	0.50
138.00	Samsung Outdoor CBRS 20W	3	0.75	0.000	18.60	0.857	0.50	34.48	1.272	0.50
138.00	Samsung Outdoor CBRS 20W	3	0.75	0.000	4.40	0.892	0.50	16.31	1.315	0.50
138.00	Samsung B5/B13 RRH-BR04C	3	0.75	0.000	70.30	1.875	0.50	108.15	2.472	0.50
138.00	Samsung B2/B66A RRH-BR049	3	0.75	0.000	84.40	1.875	0.50	126.62	2.472	0.50
138.00	Samsung MT6407-77A	3	0.75	0.000	81.60	4.709	0.61	149.05	5.714	0.61
138.00	RFS DB-T1-6Z-8AB-OZ	2	0.75	2.000	44.00	4.800	0.72	127.29	5.740	0.72
138.00	Andrew SBNHH-1D65B	3	0.75	0.000	50.70	8.173	0.69	166.82	10.046	0.69
138.00	Commscope JAHH-65B-R3B	6	0.75	-2.000	60.60	9.113	0.69	194.48	10.949	0.69
138.00	Generic Round Platform with	1	1.00	0.000	2,500.00	27.200	1.00	3,571.88	43.376	1.00
128.00	Nortel NTGB01MA	1	1.00	0.000	1.00	0.090	1.00	4.55	0.206	1.00
128.00	RFS APXV18-206517S-C	3	1.00	0.000	26.40	5.160	0.68	87.25	6.713	0.68
122.00	Alcatel-Lucent 800 MHz RRH	3	0.80	0.000	53.00	2.134	0.50	101.26	2.774	0.50
122.00	Alcatel-Lucent 1900 MHz 4X45	3	0.80	0.000	60.00	2.322	0.50	112.69	3.029	0.50

Site Number: 302467

Code: ANSI/TIA-222-H

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Site Name: Bilkays Express, CT

Engineering Number: 13701206\_C3\_03

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Customer: DISH WIRELESS L.L.C.

122.00	Alcatel-Lucent TD-RRH8x20-25	3	0.80	0.000	70.00	4.046	0.50	131.79	4.914	0.50
120.00	Round Low Profile Platform	1	1.00	0.000	1,500.00	21.700	1.00	1,922.91	34.232	1.00
118.00	RFS APXV9TM14-ALU-I20*	3	0.80	4.000	55.10	6.342	0.66	144.79	7.761	0.66
118.00	RFS APXVSP18-C-A20	3	0.80	4.000	57.00	8.024	0.69	169.36	9.841	0.69
106.00	Commscope RDIDC-9181-PF-48	1	0.75	0.000	21.90	1.867	1.00	58.60	2.447	1.00
106.00	Fujitsu TA08025-B604	3	0.75	0.000	63.90	1.962	0.50	101.51	2.555	0.50
106.00	Fujitsu TA08025-B605	3	0.75	0.000	75.00	1.962	0.50	115.40	2.555	0.50
106.00	JMA Wireless MX08FRO665-21	3	0.75	0.000	64.50	12.489	0.64	230.26	14.301	0.64
106.00	Generic Flat Platform with	1	1.00	0.000	2,500.00	42.400	1.00	3,645.71	55.926	1.00
20.00	PCTEL GPS-TMG-HR-26N	1	1.00	0.000	0.60	0.090	1.00	3.21	0.187	1.00
20.00	Standoff	1	1.00	0.000	75.00	2.500	1.00	122.67	3.438	1.00
Totals	Num Loadings:58				165			21,151.30		36,895.02

Linear Appurtenance Properties Load Case Azimuth (deg) :

Elev From (ft)	Elev To (ft)	Qty	Description	Coax Dia (in)	Coax Wt (lb/ft)	Max Coax / Flat	Dist Between Rows	Dist Between Cols	Azimuth (deg)	Dist From Face (in)	Exposed To Wind	Carrier
0.00	182.00	12	1 5/8" Coax	1.98	0.82	N	0	0.00	0.00	0	N	SPRINT NEXTEL
0.00	171.00	2	1/2" Coax	0.63	0.15	N	2	0.50	0.50	130	Y	CLEARWIRE
0.00	171.00	6	5/16" (0.31"-7.9mm)	0.31	0.05	N	0	0.00	0.00	0	N	CLEARWIRE
0.00	165.00	1	2" conduit	2.38	3.65	N	1	0.50	0.50	135	Y	CLEARWIRE
0.00	160.00	2	0.39" (10mm) Fiber	0.39	0.06	N	0	0.00	0.00	0	N	AT&T MOBILITY
0.00	160.00	6	0.78" (19.7mm) 8 AWG	0.78	0.59	N	0	0.00	0.00	0	N	AT&T MOBILITY
0.00	160.00	12	1 5/8" Coax	1.98	0.82	N	0	0.00	0.00	0	N	AT&T MOBILITY
0.00	160.00	1	2" conduit	2.38	3.65	N	0	0.00	0.00	0	N	AT&T MOBILITY
0.00	160.00	3	2" conduit	2.38	3.65	N	0	0.00	0.00	0	N	AT&T MOBILITY
0.00	160.00	1	3/8" (0.38"- 9.5mm)	0.38	0.23	N	0	0.00	0.00	0	N	AT&T MOBILITY
0.00	148.00	4	1 1/4" Hybriflex Cable	1.54	1.00	N	1	0.50	0.50	265	Y	T-MOBILE
0.00	148.00	6	1 5/8" Coax	1.98	0.82	N	6	0.50	0.50	260	Y	T-MOBILE
0.00	138.00	12	1 5/8" Coax	1.98	0.82	N	0	0.00	0.00	0	N	VERIZON WIRELESS
0.00	138.00	2	1 5/8" Hybriflex	1.98	1.30	N	2	0.00	0.00	0	Y	VERIZON WIRELESS
0.00	128.00	6	1 5/8" Coax	1.98	0.82	N	6	0.50	0.50	200	Y	METRO PCS INC
0.00	128.00	1	7/8" Coax	1.09	0.33	N	0	0.00	0.00	0	N	METRO PCS INC
0.00	118.00	3	1 1/4" Hybriflex Cable	1.54	1.00	N	3	0.50	0.50	170	Y	SPRINT NEXTEL
0.00	116.00	1	1 1/4" Hybriflex Cable	1.54	1.00	N	1	0.50	0.50	175	Y	SPRINT NEXTEL
0.00	106.00	1	1.60" (40.6mm) Hybrid	1.60	2.34	N	1	0.50	0.50	0	Y	DISH WIRELESS
0.00	20.00	1	1/2" Coax	0.63	0.15	N	1	0.50	0.50	180	Y	SPRINT NEXTEL

Segment Properties (Max Len : 5. ft)

Seg Top Elev (ft)	Description	Thick (in)	Flat Dia (in)	Area (in <sup>2</sup> )	Ix (in <sup>4</sup> )	W/t Ratio	D/t Ratio	F'y (ksi)	S (in <sup>3</sup> )	Z (in <sup>3</sup> )	Weight (lb)
0.00		0.4375	72.000	99.370	64,295.3	27.26	164.57	69.3	1758.	0.0	0.0
5.00		0.4375	70.743	97.624	60,966.4	26.75	161.70	69.9	1697.	0.0	1,675.8
10.00		0.4375	69.486	95.879	57,754.4	26.24	158.83	70.5	1637.	0.0	1,646.1
15.00		0.4375	68.229	94.134	54,657.3	25.74	155.95	71.1	1577.	0.0	1,616.4
20.00		0.4375	66.972	92.388	51,672.9	25.23	153.08	71.7	1519.	0.0	1,586.7
25.00		0.4375	65.715	90.643	48,799.2	24.72	150.21	72.3	1462.	0.0	1,557.0
30.00		0.4375	64.458	88.897	46,034.1	24.22	147.33	72.9	1406.	0.0	1,527.3
35.00		0.4375	63.201	87.152	43,375.4	23.71	144.46	73.5	1351.	0.0	1,497.6
40.00		0.4375	61.944	85.406	40,821.1	23.20	141.59	74.1	1298.	0.0	1,467.9
45.00	Bot - Section 2	0.4375	60.687	83.661	38,369.2	22.70	138.71	74.7	1245.	0.0	1,438.2
50.00		0.4375	59.430	81.915	36,017.4	22.19	135.84	75.3	1193.	0.0	2,632.3
53.00	Top - Section 1	0.3750	59.426	70.283	30,963.7	26.18	158.47	70.6	1026.	0.0	1,552.9
55.00		0.3750	58.923	69.684	30,179.4	25.94	157.13	70.9	1008.	0.0	476.3
60.00		0.3750	57.666	68.188	28,277.0	25.35	153.78	71.6	965.8	0.0	1,172.9
65.00		0.3750	56.409	66.692	26,456.3	24.76	150.42	72.3	923.8	0.0	1,147.4
70.00		0.3750	55.152	65.196	24,715.5	24.17	147.07	73.0	882.7	0.0	1,122.0
75.00		0.3750	53.895	63.700	23,052.8	23.58	143.72	73.7	842.5	0.0	1,096.5
80.00		0.3750	52.638	62.204	21,466.3	22.99	140.37	74.4	803.2	0.0	1,071.1
85.00		0.3750	51.381	60.708	19,954.4	22.40	137.02	75.1	764.9	0.0	1,045.6
90.00		0.3750	50.124	59.212	18,515.2	21.81	133.66	75.8	727.6	0.0	1,020.1
91.42	Bot - Section 3	0.3750	49.768	58.788	18,120.3	21.64	132.71	76.0	717.1	0.0	284.4
95.00		0.3750	48.867	57.715	17,146.9	21.21	130.31	76.4	691.1	0.0	1,310.5
98.00	Top - Section 2	0.3125	48.738	48.030	14,230.2	25.74	155.96	71.1	575.1	0.0	1,078.7
100.0		0.3125	48.235	47.531	13,791.5	25.45	154.35	71.5	563.2	0.0	325.2
105.0		0.3125	46.978	46.285	12,734.5	24.74	150.33	72.3	533.9	0.0	798.1
106.0		0.3125	46.727	46.035	12,529.8	24.60	149.52	72.5	528.2	0.0	157.1
110.0		0.3125	45.721	45.038	11,732.9	24.03	146.31	73.1	505.4	0.0	619.8
115.0		0.3125	44.464	43.791	10,785.2	23.33	142.28	74.0	477.8	0.0	755.7
118.0		0.3125	43.710	43.043	10,241.9	22.90	139.87	74.5	461.5	0.0	443.2
120.0		0.3125	43.207	42.544	9,890.0	22.62	138.26	74.8	450.8	0.0	291.2
122.0		0.3125	42.704	42.046	9,546.3	22.33	136.65	75.1	440.3	0.0	287.8
125.0		0.3125	41.950	41.298	9,045.8	21.91	134.24	75.6	424.7	0.0	425.4
128.0		0.3125	41.196	40.550	8,563.1	21.48	131.83	76.1	409.4	0.0	417.8
130.0		0.3125	40.693	40.051	8,251.0	21.20	130.22	76.5	399.4	0.0	274.3
135.0		0.3125	39.436	38.804	7,504.2	20.49	126.19	77.3	374.8	0.0	670.8
138.0		0.3125	38.682	38.056	7,078.5	20.06	123.78	77.8	360.4	0.0	392.3
139.3	Bot - Section 4	0.3125	38.347	37.724	6,894.6	19.87	122.71	78.0	354.1	0.0	171.9
140.0		0.3125	38.179	37.557	6,803.9	19.78	122.17	78.1	351.0	0.0	154.7
144.4	Top - Section 3	0.2500	37.569	29.611	5,210.3	24.73	150.27	72.3	273.2	0.0	1,007.8
145.0		0.2500	37.422	29.495	5,149.1	24.63	149.69	72.4	271.0	0.0	58.7
148.0		0.2500	36.668	28.896	4,842.0	24.10	146.67	73.1	260.1	0.0	298.0
150.0		0.2500	36.165	28.497	4,644.2	23.74	144.66	73.5	252.9	0.0	195.3
155.0		0.2500	34.908	27.500	4,173.4	22.86	139.63	74.5	235.5	0.0	476.4
160.0		0.2500	33.651	26.503	3,735.6	21.97	134.60	75.6	218.6	0.0	459.4
165.0		0.2500	32.394	25.505	3,329.5	21.08	129.58	76.6	202.4	0.0	442.4
167.0		0.2500	31.891	25.106	3,175.7	20.73	127.56	77.0	196.1	0.0	172.2
170.0		0.2500	31.137	24.508	2,954.0	20.20	124.55	77.6	186.9	0.0	253.2
171.0		0.2500	30.886	24.308	2,882.4	20.02	123.54	77.9	183.8	0.0	83.1
175.0		0.2500	29.880	23.510	2,607.8	19.31	119.52	78.7	171.9	0.0	325.4
178.5		0.2500	29.000	22.812	2,382.3	18.69	116.00	79.4	161.8	0.0	275.8
											39,257.1

<b>Load Case: 1.2D + 1.0W</b>	<b>119 mph with No Ice</b>	<b>24 Iterations</b>
Gust Response Factor :1.10		
Dead Load Factor :1.20		
Wind Load Factor :1.00		

**Applied Segment Forces Summary**

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces		Sum of Forces				
		Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		291.7	0.0					0.0	0.0	291.7	0.0	0.0	0.0
5.00		578.2	2,011.0					0.0	453.1	578.2	2,464.1	0.0	0.0
10.00		568.5	1,975.3					0.0	453.1	568.5	2,428.5	0.0	0.0
15.00		561.9	1,939.7					0.0	453.1	561.9	2,392.8	0.0	0.0
20.00	Appurtenance(s)	558.0	1,904.1	68.5	0.0	0.0	90.7	0.0	453.1	626.5	2,447.9	0.0	0.0
25.00		554.0	1,868.4					0.0	452.2	554.0	2,320.7	0.0	0.0
30.00		556.8	1,832.8					0.0	452.2	556.8	2,285.0	0.0	0.0
35.00		571.1	1,797.2					0.0	452.2	571.1	2,249.4	0.0	0.0
40.00		589.3	1,761.5					0.0	452.2	589.3	2,213.8	0.0	0.0
45.00	Bot - Section 2	609.1	1,725.9					0.0	452.2	609.1	2,178.1	0.0	0.0
50.00		499.7	3,158.8					0.0	452.2	499.7	3,611.0	0.0	0.0
53.00	Top - Section 1	316.0	1,863.5					0.0	271.3	316.0	2,134.8	0.0	0.0
55.00		447.1	571.5					0.0	180.9	447.1	752.4	0.0	0.0
60.00		646.6	1,407.4					0.0	452.2	646.6	1,859.7	0.0	0.0
65.00		657.1	1,376.9					0.0	452.2	657.1	1,829.1	0.0	0.0
70.00		666.8	1,346.4					0.0	452.2	666.8	1,798.6	0.0	0.0
75.00		675.6	1,315.8					0.0	452.2	675.6	1,768.0	0.0	0.0
80.00		683.8	1,285.3					0.0	452.2	683.8	1,737.5	0.0	0.0
85.00		691.4	1,254.7					0.0	452.2	691.4	1,706.9	0.0	0.0
90.00		446.6	1,224.2					0.0	452.2	446.6	1,676.4	0.0	0.0
91.42	Bot - Section 3	354.1	341.3					0.0	128.1	354.1	469.4	0.0	0.0
95.00		469.8	1,572.6					0.0	324.1	469.8	1,896.7	0.0	0.0
98.00	Top - Section 2	357.2	1,294.5					0.0	271.3	357.2	1,565.8	0.0	0.0
100.00		500.6	390.2					0.0	180.9	500.6	571.1	0.0	0.0
105.00		430.1	957.7					0.0	452.2	430.1	1,409.9	0.0	0.0
106.00	Appurtenance(s)	361.0	188.5	2,514.7	0.0	0.0	3,758.5	0.0	90.4	2,875.7	4,037.5	0.0	0.0
110.00		652.7	743.8					0.0	350.5	652.7	1,094.3	0.0	0.0
115.00		583.1	906.8					0.0	438.2	583.1	1,345.0	0.0	0.0
118.00	Appurtenance(s)	366.3	531.9	922.7	0.0	3,690.8	403.6	0.0	260.5	1,289.0	1,195.9	0.0	0.0
120.00	Appurtenance(s)	294.0	349.5	854.1	0.0	0.0	1,800.0	0.0	165.7	1,148.1	2,315.2	0.0	0.0
122.00	Appurtenance(s)	368.8	345.4	403.4	0.0	0.0	658.8	0.0	165.7	772.2	1,169.9	0.0	0.0
125.00		444.0	510.5					0.0	248.5	444.0	759.0	0.0	0.0
128.00	Appurtenance(s)	371.3	501.3	425.6	0.0	0.0	96.2	0.0	248.5	796.9	846.1	0.0	0.0
130.00		522.0	329.1					0.0	153.1	522.0	482.2	0.0	0.0
135.00		593.5	805.0					0.1	382.7	593.5	1,187.7	0.0	0.0
138.00	Appurtenance(s)	317.1	470.8	3,544.9	0.0	-1,882.0	4,732.4	0.3	229.6	3,862.3	5,432.8	0.0	0.0
139.33	Bot - Section 4	145.7	206.3					0.2	82.1	145.9	288.4	0.0	0.0
140.00		368.1	185.7					0.1	41.1	368.2	226.7	0.0	0.0
144.42	Top - Section 3	360.9	1,209.4					0.9	272.1	361.8	1,481.5	0.0	0.0
145.00		253.8	70.4					0.1	35.9	253.9	106.3	0.0	0.0
148.00	Appurtenance(s)	306.3	357.6	3,685.1	0.0	66.5	5,115.4	0.7	184.8	3,992.1	5,657.8	0.0	0.0
150.00		325.5	234.4					0.0	101.8	325.5	336.2	0.0	0.0
155.00		456.5	571.6					0.0	254.5	456.5	826.2	0.0	0.0
160.00	Appurtenance(s)	444.1	551.3	5,334.3	0.0	-262.8	5,715.0	0.0	254.5	5,778.3	6,520.8	0.0	0.0
165.00	Appurtenance(s)	304.6	530.9	77.6	0.0	0.0	18.0	0.0	84.5	382.2	633.5	0.0	0.0
167.00	Appurtenance(s)	212.4	206.7	367.7	0.0	0.0	672.0	0.0	25.1	580.0	903.7	0.0	0.0
170.00		168.3	303.9					0.0	37.6	168.3	341.5	0.0	0.0
171.00	Appurtenance(s)	205.7	99.7	907.1	0.0	-2,721.2	319.3	0.0	12.5	1,112.8	431.5	0.0	0.0

Site Number: 302467

Code: ANSI/TIA-222-H

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Site Name: Bilkays Express, CT

Engineering Number: 13701206\_C3\_03

8/2/2021 4:14:17 PM

Customer: DISH WIRELESS L.L.C.

Load Case: 1.2D + 1.0W

119 mph with No Ice

24 Iterations

Gust Response Factor :1.10

Dead Load Factor :1.20

Wind Load Factor :1.00

175.00		303.9	390.5					0.0	47.2	303.9	437.8	0.0	0.0
178.50	Appurtenance(s)	139.9	331.0	1,150.7	0.0	0.0	1,800.0	0.0	41.3	1,290.6	2,172.3	0.0	0.0
Totals:										42,409.2	85,997.2	0.00	0.00

**Load Case: 1.2D + 1.0W**

119 mph with No Ice

24 Iterations

Gust Response Factor :1.10  
 Dead Load Factor :1.20  
 Wind Load Factor :1.00

**Calculated Forces**

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-86.15	-43.33	0.00	-5,275.58	0.00	5,275.58	6,201.63	1,743.94	11,271.7	9,147.40	0.00	0.00	0.591
5.00	-83.60	-42.92	0.00	-5,058.94	0.00	5,058.94	6,145.05	1,713.31	10,879.2	8,903.77	0.06	-0.11	0.582
10.00	-81.09	-42.51	0.00	-4,844.36	0.00	4,844.36	6,086.60	1,682.68	10,493.7	8,660.43	0.24	-0.23	0.573
15.00	-78.62	-42.09	0.00	-4,631.84	0.00	4,631.84	6,026.28	1,652.04	10,115.2	8,417.51	0.55	-0.35	0.564
20.00	-76.09	-41.61	0.00	-4,421.39	0.00	4,421.39	5,964.08	1,621.41	9,743.60	8,175.18	0.98	-0.46	0.554
25.00	-73.69	-41.18	0.00	-4,213.37	0.00	4,213.37	5,900.01	1,590.78	9,378.96	7,933.57	1.53	-0.58	0.544
30.00	-71.32	-40.75	0.00	-4,007.45	0.00	4,007.45	5,834.07	1,560.15	9,021.26	7,692.84	2.20	-0.70	0.534
35.00	-69.00	-40.30	0.00	-3,803.70	0.00	3,803.70	5,766.26	1,529.51	8,670.52	7,453.12	3.00	-0.82	0.523
40.00	-66.71	-39.81	0.00	-3,602.23	0.00	3,602.23	5,696.58	1,498.88	8,326.74	7,214.56	3.93	-0.95	0.512
45.00	-64.46	-39.30	0.00	-3,403.16	0.00	3,403.16	5,625.02	1,468.25	7,989.90	6,977.32	4.99	-1.07	0.500
50.00	-60.79	-38.84	0.00	-3,206.64	0.00	3,206.64	5,551.60	1,437.62	7,660.03	6,741.53	6.17	-1.19	0.487
53.00	-58.62	-38.54	0.00	-3,090.13	0.00	3,090.13	4,466.37	1,233.46	6,578.51	5,434.80	6.95	-1.26	0.583
55.00	-57.81	-38.17	0.00	-3,013.05	0.00	3,013.05	4,445.78	1,222.96	6,466.97	5,363.40	7.49	-1.31	0.576
60.00	-55.88	-37.61	0.00	-2,822.20	0.00	2,822.20	4,392.99	1,196.70	6,192.29	5,185.21	8.94	-1.45	0.558
65.00	-53.98	-37.04	0.00	-2,634.13	0.00	2,634.13	4,338.33	1,170.45	5,923.57	5,007.61	10.53	-1.59	0.539
70.00	-52.12	-36.44	0.00	-2,448.95	0.00	2,448.95	4,281.80	1,144.19	5,660.81	4,830.75	12.27	-1.73	0.520
75.00	-50.29	-35.83	0.00	-2,266.73	0.00	2,266.73	4,223.39	1,117.93	5,404.01	4,654.77	14.15	-1.86	0.500
80.00	-48.49	-35.20	0.00	-2,087.58	0.00	2,087.58	4,163.12	1,091.68	5,153.18	4,479.82	16.18	-2.00	0.479
85.00	-46.73	-34.56	0.00	-1,911.57	0.00	1,911.57	4,100.97	1,065.42	4,908.30	4,306.05	18.34	-2.13	0.456
90.00	-45.02	-34.11	0.00	-1,738.79	0.00	1,738.79	4,036.95	1,039.16	4,669.38	4,133.61	20.64	-2.26	0.433
91.42	-44.53	-33.79	0.00	-1,690.46	0.00	1,690.46	4,018.47	1,031.72	4,602.78	4,085.01	21.31	-2.30	0.426
95.00	-42.61	-33.31	0.00	-1,569.39	0.00	1,569.39	3,971.06	1,012.91	4,436.43	3,962.63	23.07	-2.39	0.408
98.00	-41.02	-32.93	0.00	-1,469.47	0.00	1,469.47	3,074.73	842.93	3,686.72	3,067.88	24.60	-2.46	0.494
100.00	-40.42	-32.47	0.00	-1,403.62	0.00	1,403.62	3,057.08	834.18	3,610.56	3,018.39	25.64	-2.51	0.480
105.00	-38.98	-32.03	0.00	-1,241.28	0.00	1,241.28	3,011.64	812.29	3,423.66	2,895.03	28.35	-2.65	0.443
106.00	-35.05	-29.01	0.00	-1,209.25	0.00	1,209.25	3,002.33	807.92	3,386.87	2,870.43	28.91	-2.68	0.434
110.00	-33.93	-28.37	0.00	-1,093.21	0.00	1,093.21	2,964.33	790.41	3,241.72	2,772.28	31.19	-2.78	0.407
115.00	-32.57	-27.78	0.00	-951.34	0.00	951.34	2,915.15	768.53	3,064.74	2,650.30	34.17	-2.91	0.371
118.00	-31.42	-26.46	0.00	-864.31	0.00	864.31	2,884.74	755.41	2,960.94	2,577.54	36.02	-2.98	0.347
120.00	-29.14	-25.22	0.00	-811.38	0.00	811.38	2,864.09	746.65	2,892.74	2,529.23	37.28	-3.02	0.332
122.00	-27.99	-24.41	0.00	-760.95	0.00	760.95	2,843.15	737.90	2,825.33	2,481.09	38.56	-3.07	0.318
125.00	-27.23	-23.96	0.00	-687.71	0.00	687.71	2,811.17	724.77	2,725.70	2,409.22	40.51	-3.13	0.296
128.00	-26.41	-23.14	0.00	-615.83	0.00	615.83	2,778.51	711.65	2,627.86	2,337.78	42.50	-3.20	0.274
130.00	-25.93	-22.62	0.00	-569.55	0.00	569.55	2,756.37	702.89	2,563.63	2,290.41	43.84	-3.23	0.259
135.00	-24.76	-21.99	0.00	-456.45	0.00	456.45	2,699.70	681.01	2,406.52	2,172.95	47.28	-3.32	0.220
138.00	-19.55	-17.83	0.00	-390.48	0.00	390.48	2,664.80	667.88	2,314.65	2,103.19	49.38	-3.37	0.194
139.33	-19.26	-17.67	0.00	-366.71	0.00	366.71	2,649.07	662.05	2,274.38	2,072.36	50.33	-3.39	0.185
140.00	-19.05	-17.30	0.00	-354.93	0.00	354.93	2,641.16	659.13	2,254.39	2,056.99	50.80	-3.40	0.180
144.42	-17.58	-16.86	0.00	-278.52	0.00	278.52	1,927.04	519.68	1,751.62	1,481.39	53.98	-3.46	0.198
145.00	-17.48	-16.61	0.00	-268.69	0.00	268.69	1,922.70	517.63	1,737.88	1,472.21	54.40	-3.47	0.193
148.00	-12.07	-12.29	0.00	-218.80	0.00	218.80	1,899.96	507.13	1,668.08	1,425.08	56.59	-3.51	0.160
150.00	-11.75	-11.95	0.00	-194.22	0.00	194.22	1,884.42	500.13	1,622.34	1,393.78	58.07	-3.53	0.146
155.00	-10.94	-11.45	0.00	-134.48	0.00	134.48	1,844.28	482.63	1,510.78	1,316.02	61.79	-3.58	0.109



Site Number: 302467

Code: ANSI/TIA-222-H

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Site Name: Bilkays Express, CT

Engineering Number: 13701206\_C3\_03

8/2/2021 4:14:17 PM

Customer: DISH WIRELESS L.L.C.

Load Case: 1.2D + 1.0W

119 mph with No Ice

24 Iterations

Gust Response Factor :1.10

Dead Load Factor :1.20

Wind Load Factor :1.00

160.00	-4.80	-5.28	0.00	-77.23	0.00	77.23	1,802.26	465.12	1,403.19	1,239.06	65.56	-3.62	0.065
165.00	-4.19	-4.85	0.00	-50.86	0.00	50.86	1,758.37	447.62	1,299.57	1,163.05	69.36	-3.64	0.046
167.00	-3.32	-4.22	0.00	-41.15	0.00	41.15	1,740.29	440.62	1,259.24	1,132.94	70.89	-3.65	0.038
170.00	-2.99	-4.03	0.00	-28.49	0.00	28.49	1,712.61	430.11	1,199.93	1,088.14	73.19	-3.66	0.028
171.00	-2.63	-2.89	0.00	-24.46	0.00	24.46	1,703.23	426.61	1,180.48	1,073.30	73.95	-3.66	0.024
175.00	-2.21	-2.56	0.00	-12.89	0.00	12.89	1,664.97	412.61	1,104.26	1,014.48	77.02	-3.67	0.014
178.50	0.00	-2.41	0.00	-3.93	0.00	3.93	1,630.52	400.36	1,039.66	963.73	79.71	-3.67	0.004

<b>Load Case:</b> 0.9D + 1.0W	119 mph with No Ice (Reduced DL)	23 Iterations
Gust Response Factor :1.10		
Dead Load Factor :0.90		
Wind Load Factor :1.00		

**Applied Segment Forces Summary**

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces		Sum of Forces				
		Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		291.7	0.0					0.0	0.0	291.7	0.0	0.0	0.0
5.00		578.2	1,508.2					0.0	339.8	578.2	1,848.1	0.0	0.0
10.00		568.5	1,481.5					0.0	339.8	568.5	1,821.4	0.0	0.0
15.00		561.9	1,454.8					0.0	339.8	561.9	1,794.6	0.0	0.0
20.00	Appurtenance(s)	558.0	1,428.1	68.5	0.0	0.0	68.0	0.0	339.8	626.5	1,835.9	0.0	0.0
25.00		554.0	1,401.3					0.0	339.2	554.0	1,740.5	0.0	0.0
30.00		556.8	1,374.6					0.0	339.2	556.8	1,713.8	0.0	0.0
35.00		571.1	1,347.9					0.0	339.2	571.1	1,687.0	0.0	0.0
40.00		589.3	1,321.1					0.0	339.2	589.3	1,660.3	0.0	0.0
45.00	Bot - Section 2	609.1	1,294.4					0.0	339.2	609.1	1,633.6	0.0	0.0
50.00		499.7	2,369.1					0.0	339.2	499.7	2,708.3	0.0	0.0
53.00	Top - Section 1	316.0	1,397.6					0.0	203.5	316.0	1,601.1	0.0	0.0
55.00		447.1	428.6					0.0	135.7	447.1	564.3	0.0	0.0
60.00		646.6	1,055.6					0.0	339.2	646.6	1,394.7	0.0	0.0
65.00		657.1	1,032.7					0.0	339.2	657.1	1,371.8	0.0	0.0
70.00		666.8	1,009.8					0.0	339.2	666.8	1,348.9	0.0	0.0
75.00		675.6	986.9					0.0	339.2	675.6	1,326.0	0.0	0.0
80.00		683.8	963.9					0.0	339.2	683.8	1,303.1	0.0	0.0
85.00		691.4	941.0					0.0	339.2	691.4	1,280.2	0.0	0.0
90.00		446.6	918.1					0.0	339.2	446.6	1,257.3	0.0	0.0
91.42	Bot - Section 3	354.1	256.0					0.0	96.1	354.1	352.1	0.0	0.0
95.00		469.8	1,179.4					0.0	243.1	469.8	1,422.5	0.0	0.0
98.00	Top - Section 2	357.2	970.8					0.0	203.5	357.2	1,174.3	0.0	0.0
100.00		500.6	292.7					0.0	135.7	500.6	428.3	0.0	0.0
105.00		430.1	718.3					0.0	339.2	430.1	1,057.4	0.0	0.0
106.00	Appurtenance(s)	361.0	141.4	2,514.7	0.0	0.0	2,818.9	0.0	67.8	2,875.7	3,028.1	0.0	0.0
110.00		652.7	557.8					0.0	262.9	652.7	820.7	0.0	0.0
115.00		583.1	680.1					0.0	328.6	583.1	1,008.7	0.0	0.0
118.00	Appurtenance(s)	366.3	398.9	922.7	0.0	3,690.8	302.7	0.0	195.4	1,289.0	896.9	0.0	0.0
120.00	Appurtenance(s)	294.0	262.1	854.1	0.0	0.0	1,350.0	0.0	124.3	1,148.1	1,736.4	0.0	0.0
122.00	Appurtenance(s)	368.8	259.1	403.4	0.0	0.0	494.1	0.0	124.3	772.2	877.4	0.0	0.0
125.00		444.0	382.9					0.0	186.4	444.0	569.2	0.0	0.0
128.00	Appurtenance(s)	371.3	376.0	425.6	0.0	0.0	72.2	0.0	186.4	796.9	634.5	0.0	0.0
130.00		522.0	246.8					0.0	114.8	522.0	361.6	0.0	0.0
135.00		593.5	603.7					0.1	287.0	593.5	890.7	0.0	0.0
138.00	Appurtenance(s)	317.1	353.1	3,544.9	0.0	-1,882.0	3,549.3	0.3	172.2	3,862.3	4,074.6	0.0	0.0
139.33	Bot - Section 4	145.7	154.7					0.2	61.6	145.9	216.3	0.0	0.0
140.00		368.1	139.2					0.1	30.8	368.2	170.0	0.0	0.0
144.42	Top - Section 3	360.9	907.0					0.9	204.1	361.8	1,111.1	0.0	0.0
145.00		253.8	52.8					0.1	27.0	253.9	79.7	0.0	0.0
148.00	Appurtenance(s)	306.3	268.2	3,685.1	0.0	66.5	3,836.5	0.7	138.6	3,992.1	4,243.4	0.0	0.0
150.00		325.5	175.8					0.0	76.4	325.5	252.1	0.0	0.0
155.00		456.5	428.7					0.0	190.9	456.5	619.6	0.0	0.0
160.00	Appurtenance(s)	444.1	413.5	5,334.3	0.0	-262.8	4,286.2	0.0	190.9	5,778.3	4,890.6	0.0	0.0
165.00	Appurtenance(s)	304.6	398.2	77.6	0.0	0.0	13.5	0.0	63.4	382.2	475.1	0.0	0.0
167.00	Appurtenance(s)	212.4	155.0	367.7	0.0	0.0	504.0	0.0	18.8	580.0	677.8	0.0	0.0
170.00		168.3	227.9					0.0	28.2	168.3	256.1	0.0	0.0
171.00	Appurtenance(s)	205.7	74.7	907.1	0.0	-2,721.2	239.5	0.0	9.4	1,112.8	323.6	0.0	0.0

Site Number: 302467

Code: ANSI/TIA-222-H

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Site Name: Bilkays Express, CT

Engineering Number: 13701206\_C3\_03

8/2/2021 4:14:22 PM

Customer: DISH WIRELESS L.L.C.

Load Case: 0.9D + 1.0W

119 mph with No Ice (Reduced DL)

23 Iterations

Gust Response Factor :1.10

Dead Load Factor :0.90

Wind Load Factor :1.00

175.00		303.9	292.9					0.0	35.4	303.9	328.3	0.0	0.0
178.50	Appurtenance(s)	139.9	248.3	1,150.7	0.0	0.0	1,350.0	0.0	31.0	1,290.6	1,629.3	0.0	0.0
Totals:										42,409.2	64,497.9	0.00	0.00

**Load Case: 0.9D + 1.0W**

119 mph with No Ice (Reduced DL)

23 Iterations

Gust Response Factor :1.10

Dead Load Factor :0.90

Wind Load Factor :1.00

**Calculated Forces**

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-64.60	-43.31	0.00	-5,221.23	0.00	5,221.23	6,201.63	1,743.94	11,271.7	9,147.40	0.00	0.00	0.582
5.00	-62.67	-42.85	0.00	-5,004.71	0.00	5,004.71	6,145.05	1,713.31	10,879.2	8,903.77	0.06	-0.11	0.573
10.00	-60.77	-42.40	0.00	-4,790.46	0.00	4,790.46	6,086.60	1,682.68	10,493.7	8,660.43	0.24	-0.23	0.564
15.00	-58.89	-41.95	0.00	-4,578.48	0.00	4,578.48	6,026.28	1,652.04	10,115.2	8,417.51	0.54	-0.34	0.554
20.00	-56.98	-41.42	0.00	-4,368.75	0.00	4,368.75	5,964.08	1,621.41	9,743.60	8,175.18	0.97	-0.46	0.545
25.00	-55.16	-40.97	0.00	-4,161.64	0.00	4,161.64	5,900.01	1,590.78	9,378.96	7,933.57	1.51	-0.58	0.535
30.00	-53.36	-40.50	0.00	-3,956.81	0.00	3,956.81	5,834.07	1,560.15	9,021.26	7,692.84	2.18	-0.69	0.524
35.00	-51.60	-40.02	0.00	-3,754.30	0.00	3,754.30	5,766.26	1,529.51	8,670.52	7,453.12	2.97	-0.81	0.513
40.00	-49.87	-39.51	0.00	-3,554.23	0.00	3,554.23	5,696.58	1,498.88	8,326.74	7,214.56	3.89	-0.93	0.502
45.00	-48.16	-38.97	0.00	-3,356.70	0.00	3,356.70	5,625.02	1,468.25	7,989.90	6,977.32	4.93	-1.05	0.490
50.00	-45.40	-38.49	0.00	-3,161.85	0.00	3,161.85	5,551.60	1,437.62	7,660.03	6,741.53	6.10	-1.18	0.478
53.00	-43.77	-38.19	0.00	-3,046.37	0.00	3,046.37	4,466.37	1,233.46	6,578.51	5,434.80	6.86	-1.25	0.571
55.00	-43.15	-37.80	0.00	-2,969.98	0.00	2,969.98	4,445.78	1,222.96	6,466.97	5,363.40	7.40	-1.30	0.564
60.00	-41.68	-37.22	0.00	-2,780.97	0.00	2,780.97	4,392.99	1,196.70	6,192.29	5,185.21	8.83	-1.43	0.547
65.00	-40.24	-36.62	0.00	-2,594.87	0.00	2,594.87	4,338.33	1,170.45	5,923.57	5,007.61	10.41	-1.57	0.528
70.00	-38.83	-36.01	0.00	-2,411.76	0.00	2,411.76	4,281.80	1,144.19	5,660.81	4,830.75	12.12	-1.70	0.509
75.00	-37.44	-35.38	0.00	-2,231.71	0.00	2,231.71	4,223.39	1,117.93	5,404.01	4,654.77	13.98	-1.84	0.489
80.00	-36.08	-34.74	0.00	-2,054.81	0.00	2,054.81	4,163.12	1,091.68	5,153.18	4,479.82	15.98	-1.97	0.468
85.00	-34.75	-34.08	0.00	-1,881.14	0.00	1,881.14	4,100.97	1,065.42	4,908.30	4,306.05	18.11	-2.10	0.446
90.00	-33.46	-33.63	0.00	-1,710.75	0.00	1,710.75	4,036.95	1,039.16	4,669.38	4,133.61	20.38	-2.23	0.423
91.42	-33.09	-33.30	0.00	-1,663.10	0.00	1,663.10	4,018.47	1,031.72	4,602.78	4,085.01	21.04	-2.26	0.416
95.00	-31.64	-32.82	0.00	-1,543.77	0.00	1,543.77	3,971.06	1,012.91	4,436.43	3,962.63	22.78	-2.35	0.399
98.00	-30.45	-32.45	0.00	-1,445.31	0.00	1,445.31	3,074.73	842.93	3,686.72	3,067.88	24.28	-2.43	0.482
100.00	-29.99	-31.98	0.00	-1,380.42	0.00	1,380.42	3,057.08	834.18	3,610.56	3,018.39	25.31	-2.48	0.469
105.00	-28.91	-31.54	0.00	-1,220.54	0.00	1,220.54	3,011.64	812.29	3,423.66	2,895.03	27.98	-2.61	0.433
106.00	-25.98	-28.56	0.00	-1,189.00	0.00	1,189.00	3,002.33	807.92	3,386.87	2,870.43	28.53	-2.64	0.424
110.00	-25.14	-27.92	0.00	-1,074.77	0.00	1,074.77	2,964.33	790.41	3,241.72	2,772.28	30.79	-2.74	0.397
115.00	-24.11	-27.33	0.00	-935.18	0.00	935.18	2,915.15	768.53	3,064.74	2,650.30	33.73	-2.86	0.362
118.00	-23.26	-26.02	0.00	-849.51	0.00	849.51	2,884.74	755.41	2,960.94	2,577.54	35.55	-2.93	0.339
120.00	-21.56	-24.80	0.00	-797.48	0.00	797.48	2,864.09	746.65	2,892.74	2,529.23	36.79	-2.98	0.324
122.00	-20.70	-24.00	0.00	-747.88	0.00	747.88	2,843.15	737.90	2,825.33	2,481.09	38.05	-3.02	0.310
125.00	-20.13	-23.55	0.00	-675.88	0.00	675.88	2,811.17	724.77	2,725.70	2,409.22	39.97	-3.09	0.289
128.00	-19.52	-22.73	0.00	-605.24	0.00	605.24	2,778.51	711.65	2,627.86	2,337.78	41.93	-3.15	0.267
130.00	-19.17	-22.22	0.00	-559.77	0.00	559.77	2,756.37	702.89	2,563.63	2,290.41	43.26	-3.19	0.252
135.00	-18.29	-21.59	0.00	-448.70	0.00	448.70	2,699.70	681.01	2,406.52	2,172.95	46.64	-3.27	0.214
138.00	-14.43	-17.51	0.00	-383.92	0.00	383.92	2,664.80	667.88	2,314.65	2,103.19	48.71	-3.32	0.189
139.33	-14.22	-17.36	0.00	-360.57	0.00	360.57	2,649.07	662.05	2,274.38	2,072.36	49.64	-3.34	0.180
140.00	-14.06	-16.99	0.00	-349.00	0.00	349.00	2,641.16	659.13	2,254.39	2,056.99	50.11	-3.35	0.176
144.42	-12.96	-16.57	0.00	-273.97	0.00	273.97	1,927.04	519.68	1,751.62	1,481.39	53.24	-3.41	0.193
145.00	-12.89	-16.32	0.00	-264.30	0.00	264.30	1,922.70	517.63	1,737.88	1,472.21	53.66	-3.42	0.187
148.00	-8.89	-12.08	0.00	-215.29	0.00	215.29	1,899.96	507.13	1,668.08	1,425.08	55.82	-3.46	0.156
150.00	-8.65	-11.75	0.00	-191.13	0.00	191.13	1,884.42	500.13	1,622.34	1,393.78	57.27	-3.48	0.142
155.00	-8.05	-11.26	0.00	-132.40	0.00	132.40	1,844.28	482.63	1,510.78	1,316.02	60.94	-3.53	0.106

Site Number: 302467

Code: ANSI/TIA-222-H

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Site Name: Bilkays Express, CT

Engineering Number: 13701206\_C3\_03

8/2/2021 4:14:22 PM

Customer: DISH WIRELESS L.L.C.

Load Case: 0.9D + 1.0W

119 mph with No Ice (Reduced DL)

23 Iterations

Gust Response Factor :1.10

Dead Load Factor :0.90

Wind Load Factor :1.00

160.00	-3.52	-5.19	0.00	-76.10	0.00	76.10	1,802.26	465.12	1,403.19	1,239.06	64.66	-3.57	0.064
165.00	-3.07	-4.78	0.00	-50.15	0.00	50.15	1,758.37	447.62	1,299.57	1,163.05	68.40	-3.59	0.045
167.00	-2.43	-4.16	0.00	-40.59	0.00	40.59	1,740.29	440.62	1,259.24	1,132.94	69.91	-3.60	0.037
170.00	-2.19	-3.98	0.00	-28.11	0.00	28.11	1,712.61	430.11	1,199.93	1,088.14	72.17	-3.61	0.027
171.00	-1.93	-2.84	0.00	-24.13	0.00	24.13	1,703.23	426.61	1,180.48	1,073.30	72.92	-3.61	0.024
175.00	-1.62	-2.52	0.00	-12.75	0.00	12.75	1,664.97	412.61	1,104.26	1,014.48	75.95	-3.62	0.014
178.50	0.00	-2.41	0.00	-3.93	0.00	3.93	1,630.52	400.36	1,039.66	963.73	78.60	-3.62	0.004

<b>Load Case:</b> 1.2D + 1.0Di + 1.0Wi	50 mph with 1.00 in Radial Ice	23 Iterations
Gust Response Factor :1.10	Ice Dead Load Factor :1.00	
Dead Load Factor :1.20		Ice Importance Factor :1.00
Wind Load Factor :1.00		

**Applied Segment Forces Summary**

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces		Sum of Forces				
		Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		86.5	0.0					0.0	0.0	86.5	0.0	0.0	0.0
5.00		171.6	2,357.2					0.0	652.6	171.6	3,009.8	0.0	0.0
10.00		169.0	2,355.4					0.0	671.4	169.0	3,026.8	0.0	0.0
15.00		166.2	2,332.8					0.0	681.1	166.2	3,013.9	0.0	0.0
20.00	Appurtenance(s)	163.3	2,303.4	16.9	0.0	0.0	127.6	0.0	687.7	180.2	3,118.8	0.0	0.0
25.00		160.4	2,270.5					0.0	688.8	160.4	2,959.3	0.0	0.0
30.00		159.4	2,235.4					0.0	692.9	159.4	2,928.3	0.0	0.0
35.00		161.6	2,198.8					0.0	696.5	161.6	2,895.2	0.0	0.0
40.00		164.7	2,161.0					0.0	699.6	164.7	2,860.6	0.0	0.0
45.00	Bot - Section 2	168.1	2,122.4					0.0	702.3	168.1	2,824.8	0.0	0.0
50.00		136.5	3,556.5					0.0	704.8	136.5	4,261.4	0.0	0.0
53.00	Top - Section 1	85.8	2,101.2					0.0	424.0	85.8	2,525.2	0.0	0.0
55.00		120.7	729.4					0.0	283.1	120.7	1,012.5	0.0	0.0
60.00		172.9	1,796.3					0.0	709.2	172.9	2,505.5	0.0	0.0
65.00		173.2	1,760.7					0.0	711.1	173.2	2,471.8	0.0	0.0
70.00		173.2	1,724.7					0.0	712.9	173.2	2,437.6	0.0	0.0
75.00		172.8	1,688.4					0.0	714.6	172.8	2,403.0	0.0	0.0
80.00		172.1	1,651.8					0.0	716.2	172.1	2,368.0	0.0	0.0
85.00		171.1	1,615.0					0.0	717.7	171.1	2,332.7	0.0	0.0
90.00		109.3	1,578.0					0.0	719.1	109.3	2,297.1	0.0	0.0
91.42	Bot - Section 3	85.4	441.2					0.0	204.0	85.4	645.2	0.0	0.0
95.00		112.3	1,824.6					0.0	516.5	112.3	2,341.1	0.0	0.0
98.00	Top - Section 2	84.9	1,503.1					0.0	432.9	84.9	1,936.0	0.0	0.0
100.00		117.8	528.2					0.0	288.9	117.8	817.1	0.0	0.0
105.00		100.7	1,295.2					0.0	723.0	100.7	2,018.2	0.0	0.0
106.00	Appurtenance(s)	83.0	255.8	564.0	0.0	0.0	5,246.3	0.0	144.7	647.1	5,646.9	0.0	0.0
110.00		148.3	1,008.1					0.0	562.3	148.3	1,570.3	0.0	0.0
115.00		130.6	1,229.7					0.7	703.8	131.2	1,933.5	0.0	0.0
118.00	Appurtenance(s)	80.8	723.1	199.6	0.0	798.4	876.1	0.9	417.5	281.3	2,016.7	0.0	0.0
120.00	Appurtenance(s)	64.1	475.8	237.9	0.0	0.0	2,129.9	0.9	257.5	302.8	2,863.2	0.0	0.0
122.00	Appurtenance(s)	79.5	470.5	89.8	0.0	0.0	1,039.8	1.0	257.6	170.3	1,767.9	0.0	0.0
125.00		94.7	695.3					1.9	386.6	96.6	1,081.9	0.0	0.0
128.00	Appurtenance(s)	78.2	683.3	98.4	0.0	0.0	241.7	2.3	386.9	178.9	1,311.9	0.0	0.0
130.00		107.9	449.3					1.8	219.4	109.7	668.6	0.0	0.0
135.00		122.2	1,097.1					5.3	548.8	127.5	1,645.9	0.0	0.0
138.00	Appurtenance(s)	65.4	643.3	841.5	0.0	-399.6	7,050.3	3.8	329.6	910.7	8,023.2	0.0	0.0
139.33	Bot - Section 4	30.1	282.5					1.8	119.6	31.9	402.1	0.0	0.0
140.00		76.2	224.1					0.9	59.8	77.1	283.9	0.0	0.0
144.42	Top - Section 3	74.7	1,457.4					6.8	396.6	81.5	1,853.9	0.0	0.0
145.00		52.7	103.1					0.9	52.4	53.6	155.5	0.0	0.0
148.00	Appurtenance(s)	73.1	522.7	853.4	0.0	20.8	7,458.9	5.0	269.6	931.5	8,251.2	0.0	0.0
150.00		100.5	343.1					0.0	111.2	100.5	454.3	0.0	0.0
155.00		141.2	835.0					0.0	278.1	141.2	1,113.1	0.0	0.0
160.00	Appurtenance(s)	137.7	806.3	1,190.0	0.0	-59.7	8,966.4	0.0	278.2	1,327.7	10,050.9	0.0	0.0
165.00	Appurtenance(s)	94.6	777.5	18.3	0.0	0.0	47.6	0.0	108.3	112.9	933.4	0.0	0.0
167.00	Appurtenance(s)	66.1	304.0	101.5	0.0	0.0	920.7	0.0	30.3	167.7	1,255.1	0.0	0.0
170.00		52.5	446.8					0.0	45.5	52.5	492.4	0.0	0.0
171.00	Appurtenance(s)	64.2	147.0	199.6	0.0	-598.7	665.6	0.0	15.2	263.8	827.7	0.0	0.0

Site Number: 302467

Code: ANSI/TIA-222-H

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Site Name: Bilkays Express, CT

Engineering Number: 13701206\_C3\_03

8/2/2021 4:14:27 PM

Customer: DISH WIRELESS L.L.C.

Load Case: 1.2D + 1.0Di + 1.0Wi

50 mph with 1.00 in Radial Ice

23 Iterations

Gust Response Factor :1.10

Ice Dead Load Factor :1.00

Dead Load Factor :1.20

Ice Importance Factor :1.00

Wind Load Factor :1.00

175.00	95.1	574.2						0.0	47.2	95.1	621.4	0.0	0.0
178.50	Appurtenance(s)	43.8	487.5	304.0	0.0	0.0	2,147.0	0.0	41.3	347.9	2,675.8	0.0	0.0
Totals:										10,465.6	116,910.	0.00	0.00

Site Number: 302467

Code: ANSI/TIA-222-H

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Site Name: Bilkays Express, CT

Engineering Number: 13701206\_C3\_03

8/2/2021 4:14:27 PM

Customer: DISH WIRELESS L.L.C.

Load Case: 1.2D + 1.0Di + 1.0Wi

50 mph with 1.00 in Radial Ice

23 Iterations

Gust Response Factor :1.10

Ice Dead Load Factor :1.00

Dead Load Factor :1.20

Ice Importance Factor :1.00

Wind Load Factor :1.00

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-117.94	-10.61	0.00	-1,283.64	0.00	1,283.64	6,201.63	1,743.94	11,271.7	9,147.40	0.00	0.00	0.159
5.00	-114.92	-10.49	0.00	-1,230.61	0.00	1,230.61	6,145.05	1,713.31	10,879.2	8,903.77	0.02	-0.03	0.157
10.00	-111.89	-10.38	0.00	-1,178.15	0.00	1,178.15	6,086.60	1,682.68	10,493.7	8,660.43	0.06	-0.06	0.154
15.00	-108.87	-10.26	0.00	-1,126.28	0.00	1,126.28	6,026.28	1,652.04	10,115.2	8,417.51	0.13	-0.08	0.152
20.00	-105.75	-10.13	0.00	-1,074.99	0.00	1,074.99	5,964.08	1,621.41	9,743.60	8,175.18	0.24	-0.11	0.149
25.00	-102.79	-10.01	0.00	-1,024.35	0.00	1,024.35	5,900.01	1,590.78	9,378.96	7,933.57	0.37	-0.14	0.147
30.00	-99.85	-9.90	0.00	-974.29	0.00	974.29	5,834.07	1,560.15	9,021.26	7,692.84	0.54	-0.17	0.144
35.00	-96.95	-9.77	0.00	-924.82	0.00	924.82	5,766.26	1,529.51	8,670.52	7,453.12	0.73	-0.20	0.141
40.00	-94.09	-9.65	0.00	-875.95	0.00	875.95	5,696.58	1,498.88	8,326.74	7,214.56	0.96	-0.23	0.138
45.00	-91.26	-9.51	0.00	-827.71	0.00	827.71	5,625.02	1,468.25	7,989.90	6,977.32	1.21	-0.26	0.135
50.00	-86.99	-9.39	0.00	-780.14	0.00	780.14	5,551.60	1,437.62	7,660.03	6,741.53	1.50	-0.29	0.131
53.00	-84.47	-9.32	0.00	-751.96	0.00	751.96	4,466.37	1,233.46	6,578.51	5,434.80	1.69	-0.31	0.157
55.00	-83.45	-9.22	0.00	-733.33	0.00	733.33	4,445.78	1,222.96	6,466.97	5,363.40	1.82	-0.32	0.156
60.00	-80.94	-9.08	0.00	-687.21	0.00	687.21	4,392.99	1,196.70	6,192.29	5,185.21	2.17	-0.35	0.151
65.00	-78.47	-8.94	0.00	-641.79	0.00	641.79	4,338.33	1,170.45	5,923.57	5,007.61	2.56	-0.39	0.146
70.00	-76.03	-8.79	0.00	-597.08	0.00	597.08	4,281.80	1,144.19	5,660.81	4,830.75	2.98	-0.42	0.141
75.00	-73.62	-8.65	0.00	-553.11	0.00	553.11	4,223.39	1,117.93	5,404.01	4,654.77	3.44	-0.45	0.136
80.00	-71.25	-8.49	0.00	-509.88	0.00	509.88	4,163.12	1,091.68	5,153.18	4,479.82	3.93	-0.49	0.131
85.00	-68.91	-8.34	0.00	-467.41	0.00	467.41	4,100.97	1,065.42	4,908.30	4,306.05	4.46	-0.52	0.125
90.00	-66.61	-8.23	0.00	-425.70	0.00	425.70	4,036.95	1,039.16	4,669.38	4,133.61	5.02	-0.55	0.120
91.42	-65.97	-8.16	0.00	-414.04	0.00	414.04	4,018.47	1,031.72	4,602.78	4,085.01	5.19	-0.56	0.118
95.00	-63.62	-8.05	0.00	-384.79	0.00	384.79	3,971.06	1,012.91	4,436.43	3,962.63	5.61	-0.58	0.113
98.00	-61.69	-7.96	0.00	-360.65	0.00	360.65	3,074.73	842.93	3,686.72	3,067.88	5.99	-0.60	0.138
100.00	-60.87	-7.86	0.00	-344.73	0.00	344.73	3,057.08	834.18	3,610.56	3,018.39	6.24	-0.61	0.134
105.00	-58.85	-7.76	0.00	-305.44	0.00	305.44	3,011.64	812.29	3,423.66	2,895.03	6.90	-0.65	0.125
106.00	-53.21	-7.06	0.00	-297.68	0.00	297.68	3,002.33	807.92	3,386.87	2,870.43	7.04	-0.65	0.122
110.00	-51.63	-6.92	0.00	-269.44	0.00	269.44	2,964.33	790.41	3,241.72	2,772.28	7.59	-0.68	0.115
115.00	-49.70	-6.79	0.00	-234.85	0.00	234.85	2,915.15	768.53	3,064.74	2,650.30	8.32	-0.71	0.106
118.00	-47.69	-6.49	0.00	-213.70	0.00	213.70	2,884.74	755.41	2,960.94	2,577.54	8.77	-0.73	0.100
120.00	-44.82	-6.16	0.00	-200.72	0.00	200.72	2,864.09	746.65	2,892.74	2,529.23	9.08	-0.74	0.095
122.00	-43.06	-5.98	0.00	-188.40	0.00	188.40	2,843.15	737.90	2,825.33	2,481.09	9.39	-0.75	0.091
125.00	-41.98	-5.88	0.00	-170.46	0.00	170.46	2,811.17	724.77	2,725.70	2,409.22	9.87	-0.77	0.086
128.00	-40.67	-5.69	0.00	-152.83	0.00	152.83	2,778.51	711.65	2,627.86	2,337.78	10.36	-0.78	0.080
130.00	-40.00	-5.58	0.00	-141.45	0.00	141.45	2,756.37	702.89	2,563.63	2,290.41	10.68	-0.79	0.076
135.00	-38.35	-5.44	0.00	-113.54	0.00	113.54	2,699.70	681.01	2,406.52	2,172.95	11.52	-0.81	0.067
138.00	-30.34	-4.42	0.00	-97.21	0.00	97.21	2,664.80	667.88	2,314.65	2,103.19	12.04	-0.82	0.058
139.33	-29.94	-4.39	0.00	-91.32	0.00	91.32	2,649.07	662.05	2,274.38	2,072.36	12.27	-0.83	0.055
140.00	-29.66	-4.31	0.00	-88.39	0.00	88.39	2,641.16	659.13	2,254.39	2,056.99	12.39	-0.83	0.054
144.42	-27.80	-4.20	0.00	-69.36	0.00	69.36	1,927.04	519.68	1,751.62	1,481.39	13.16	-0.85	0.061
145.00	-27.65	-4.15	0.00	-66.91	0.00	66.91	1,922.70	517.63	1,737.88	1,472.21	13.27	-0.85	0.060
148.00	-19.41	-3.10	0.00	-54.43	0.00	54.43	1,899.96	507.13	1,668.08	1,425.08	13.80	-0.86	0.048
150.00	-18.96	-3.00	0.00	-48.23	0.00	48.23	1,884.42	500.13	1,622.34	1,393.78	14.17	-0.86	0.045
155.00	-17.85	-2.84	0.00	-33.25	0.00	33.25	1,844.28	482.63	1,510.78	1,316.02	15.08	-0.88	0.035



Site Number: 302467

Code: ANSI/TIA-222-H

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Site Name: Bilkays Express, CT

Engineering Number: 13701206\_C3\_03

8/2/2021 4:14:27 PM

Customer: DISH WIRELESS L.L.C.

Load Case: 1.2D + 1.0Di + 1.0Wi

50 mph with 1.00 in Radial Ice

23 Iterations

Gust Response Factor :1.10

Ice Dead Load Factor :1.00

Dead Load Factor :1.20

Ice Importance Factor :1.00

Wind Load Factor :1.00

160.00	-7.82	-1.36	0.00	-19.04	0.00	19.04	1,802.26	465.12	1,403.19	1,239.06	16.00	-0.89	0.020
165.00	-6.88	-1.23	0.00	-12.24	0.00	12.24	1,758.37	447.62	1,299.57	1,163.05	16.93	-0.89	0.014
167.00	-5.63	-1.05	0.00	-9.78	0.00	9.78	1,740.29	440.62	1,259.24	1,132.94	17.31	-0.89	0.012
170.00	-5.14	-0.99	0.00	-6.64	0.00	6.64	1,712.61	430.11	1,199.93	1,088.14	17.87	-0.90	0.009
171.00	-4.32	-0.71	0.00	-5.65	0.00	5.65	1,703.23	426.61	1,180.48	1,073.30	18.06	-0.90	0.008
175.00	-3.70	-0.60	0.00	-2.81	0.00	2.81	1,664.97	412.61	1,104.26	1,014.48	18.81	-0.90	0.005
178.50	0.00	-0.55	0.00	-0.70	0.00	0.70	1,630.52	400.36	1,039.66	963.73	19.47	-0.90	0.001

<b>Load Case: 1.0D + 1.0W</b>	<b>Serviceability 60 mph</b>	<b>22 Iterations</b>
Gust Response Factor :1.10		
Dead Load Factor :1.00		
Wind Load Factor :1.00		

**Applied Segment Forces Summary**

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces		Sum of Forces				
		Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		66.3	0.0					0.0	0.0	66.3	0.0	0.0	0.0
5.00		131.5	1,675.8					0.0	377.6	131.5	2,053.4	0.0	0.0
10.00		129.3	1,646.1					0.0	377.6	129.3	2,023.7	0.0	0.0
15.00		127.8	1,616.4					0.0	377.6	127.8	1,994.0	0.0	0.0
20.00	Appurtenance(s)	126.9	1,586.7	15.6	0.0	0.0	75.6	0.0	377.6	142.5	2,039.9	0.0	0.0
25.00		126.0	1,557.0					0.0	376.9	126.0	1,933.9	0.0	0.0
30.00		126.6	1,527.3					0.0	376.9	126.6	1,904.2	0.0	0.0
35.00		129.9	1,497.6					0.0	376.9	129.9	1,874.5	0.0	0.0
40.00		134.0	1,467.9					0.0	376.9	134.0	1,844.8	0.0	0.0
45.00	Bot - Section 2	138.6	1,438.2					0.0	376.9	138.6	1,815.1	0.0	0.0
50.00		113.7	2,632.3					0.0	376.9	113.7	3,009.2	0.0	0.0
53.00	Top - Section 1	71.9	1,552.9					0.0	226.1	71.9	1,779.0	0.0	0.0
55.00		101.7	476.3					0.0	150.7	101.7	627.0	0.0	0.0
60.00		147.1	1,172.9					0.0	376.9	147.1	1,549.7	0.0	0.0
65.00		149.5	1,147.4					0.0	376.9	149.5	1,524.3	0.0	0.0
70.00		151.7	1,122.0					0.0	376.9	151.7	1,498.8	0.0	0.0
75.00		153.7	1,096.5					0.0	376.9	153.7	1,473.4	0.0	0.0
80.00		155.5	1,071.1					0.0	376.9	155.5	1,447.9	0.0	0.0
85.00		157.3	1,045.6					0.0	376.9	157.3	1,422.5	0.0	0.0
90.00		101.6	1,020.1					0.0	376.9	101.6	1,397.0	0.0	0.0
91.42	Bot - Section 3	80.5	284.4					0.0	106.8	80.5	391.2	0.0	0.0
95.00		106.9	1,310.5					0.0	270.1	106.9	1,580.6	0.0	0.0
98.00	Top - Section 2	81.3	1,078.7					0.0	226.1	81.3	1,304.8	0.0	0.0
100.00		113.9	325.2					0.0	150.7	113.9	475.9	0.0	0.0
105.00		97.8	798.1					0.0	376.9	97.8	1,174.9	0.0	0.0
106.00	Appurtenance(s)	82.1	157.1	572.0	0.0	0.0	3,132.1	0.0	75.4	654.1	3,364.5	0.0	0.0
110.00		148.5	619.8					0.0	292.1	148.5	911.9	0.0	0.0
115.00		132.6	755.7					0.0	365.2	132.6	1,120.8	0.0	0.0
118.00	Appurtenance(s)	83.3	443.2	209.9	0.0	839.5	336.3	0.0	217.1	293.2	996.6	0.0	0.0
120.00	Appurtenance(s)	66.9	291.2	194.3	0.0	0.0	1,500.0	0.0	138.1	261.1	1,929.3	0.0	0.0
122.00	Appurtenance(s)	83.9	287.8	91.8	0.0	0.0	549.0	0.0	138.1	175.7	974.9	0.0	0.0
125.00		101.0	425.4					0.0	207.1	101.0	632.5	0.0	0.0
128.00	Appurtenance(s)	84.4	417.8	96.8	0.0	0.0	80.2	0.0	207.1	181.3	705.1	0.0	0.0
130.00		118.7	274.3					0.0	127.6	118.7	401.8	0.0	0.0
135.00		135.0	670.8					0.0	318.9	135.0	989.7	0.0	0.0
138.00	Appurtenance(s)	72.1	392.3	806.3	0.0	-428.1	3,943.7	0.1	191.3	878.5	4,527.3	0.0	0.0
139.33	Bot - Section 4	33.1	171.9					0.0	68.5	33.2	240.4	0.0	0.0
140.00		83.7	154.7					0.0	34.2	83.7	188.9	0.0	0.0
144.42	Top - Section 3	82.1	1,007.8					0.2	226.8	82.3	1,234.6	0.0	0.0
145.00		57.7	58.7					0.0	29.9	57.8	88.6	0.0	0.0
148.00	Appurtenance(s)	69.7	298.0	838.2	0.0	15.1	4,262.8	0.2	154.0	908.0	4,714.9	0.0	0.0
150.00		74.0	195.3					0.0	84.8	74.0	280.1	0.0	0.0
155.00		103.8	476.4					0.0	212.1	103.8	688.5	0.0	0.0
160.00	Appurtenance(s)	101.0	459.4	1,213.3	0.0	-59.8	4,762.5	0.0	212.1	1,314.3	5,434.0	0.0	0.0
165.00	Appurtenance(s)	69.3	442.4	17.6	0.0	0.0	15.0	0.0	70.5	86.9	527.9	0.0	0.0
167.00	Appurtenance(s)	48.3	172.2	83.6	0.0	0.0	560.0	0.0	20.9	131.9	753.1	0.0	0.0
170.00		38.3	253.2					0.0	31.3	38.3	284.6	0.0	0.0
171.00	Appurtenance(s)	46.8	83.1	206.3	0.0	-619.0	266.1	0.0	10.4	253.1	359.6	0.0	0.0

Site Number: 302467

Code: ANSI/TIA-222-H

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Site Name: Bilkays Express, CT

Engineering Number: 13701206\_C3\_03

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Customer: DISH WIRELESS L.L.C.

Load Case: 1.0D + 1.0W

Serviceability 60 mph

22 Iterations

Gust Response Factor :1.10

Dead Load Factor :1.00

Wind Load Factor :1.00

175.00		69.1	325.4					0.0	39.4	69.1	364.8	0.0	0.0
178.50	Appurtenance(s)	31.8	275.8	261.7	0.0	0.0	1,500.0	0.0	34.4	293.6	1,810.3	0.0	0.0
Totals:										9,646.38	71,664.3	0.00	0.00



Site Number: 302467

Code: ANSI/TIA-222-H

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Site Name: Bilkays Express, CT

Engineering Number: 13701206\_C3\_03

8/2/2021 4:14:32 PM

Customer: DISH WIRELESS L.L.C.

Load Case: 1.0D + 1.0W

Serviceability 60 mph

22 Iterations

Gust Response Factor :1.10

Dead Load Factor :1.00

Wind Load Factor :1.00

160.00	-4.25	-1.19	0.00	-17.42	0.00	17.42	1,802.26	465.12	1,403.19	1,239.06	14.79	-0.82	0.016
165.00	-3.73	-1.09	0.00	-11.48	0.00	11.48	1,758.37	447.62	1,299.57	1,163.05	15.65	-0.82	0.012
167.00	-2.97	-0.95	0.00	-9.29	0.00	9.29	1,740.29	440.62	1,259.24	1,132.94	15.99	-0.82	0.010
170.00	-2.69	-0.91	0.00	-6.43	0.00	6.43	1,712.61	430.11	1,199.93	1,088.14	16.51	-0.83	0.007
171.00	-2.33	-0.65	0.00	-5.52	0.00	5.52	1,703.23	426.61	1,180.48	1,073.30	16.69	-0.83	0.007
175.00	-1.97	-0.58	0.00	-2.92	0.00	2.92	1,664.97	412.61	1,104.26	1,014.48	17.38	-0.83	0.004
178.50	0.00	-0.55	0.00	-0.89	0.00	0.89	1,630.52	400.36	1,039.66	963.73	17.99	-0.83	0.001

Equivalent Lateral Forces Method Analysis

Spectral Response Acceleration for Short Period ( $S_s$ ):	0.20
Spectral Response Acceleration at 1.0 Second Period ( $S_{d1}$ ):	0.05
Long-Period Transition Period ( $T_L$ ):	6
Importance Factor ( $I_E$ ):	1.00
Site Coefficient $F_a$ :	1.60
Site Coefficient $F_v$ :	2.40
Response Modification Coefficient (R):	1.50
Design Spectral Response Acceleration at Short Period ( $S_{ds}$ ):	0.22
Design Spectral Response Acceleration at 1.0 Second Period ( $S_{d1}$ ):	0.09
Seismic Response Coefficient ( $C_s$ ):	0.03
Upper Limit $C_s$	0.03
Lower Limit $C_s$	0.03
Period based on Rayleigh Method (sec):	2.37
Redundancy Factor ( $\rho$ ):	1.00
Seismic Force Distribution Exponent (k):	1.94
Total Unfactored Dead Load:	71.83 k
Seismic Base Shear (E):	2.15 k

Load Case 1.2D + 1.0Ev + 1.0Eh

Seismic

Segment	Height Above Base (ft)	Weight (lb)	$W_z$ (lb-ft)	$C_{vx}$	Horizontal Force (lb)	Vertical Force (lb)
49	176.75	310	6,979	0.012	26	386
48	173.00	365	7,871	0.013	29	454
47	170.50	93	1,961	0.003	7	116
46	168.50	285	5,835	0.010	21	354
45	166.00	193	3,846	0.007	14	240
44	162.50	513	9,803	0.017	36	638
43	157.50	671	12,081	0.021	44	835
42	152.50	688	11,636	0.020	43	856
41	149.00	280	4,527	0.008	17	348
40	146.50	452	7,069	0.012	26	562
39	144.71	89	1,353	0.002	5	110
38	142.21	1,235	18,225	0.031	67	1,535
37	139.67	189	2,693	0.005	10	235
36	138.67	240	3,379	0.006	12	299
35	136.50	584	7,959	0.014	29	726
34	132.50	990	12,741	0.022	47	1,231
33	129.00	402	4,912	0.008	18	500
32	126.50	625	7,354	0.013	27	777
31	123.50	632	7,105	0.012	26	787
30	121.00	426	4,599	0.008	17	530
29	119.00	429	4,488	0.008	16	534
28	116.50	660	6,625	0.011	24	821
27	112.50	1,121	10,510	0.018	39	1,394
26	108.00	912	7,901	0.013	29	1,134
25	105.50	232	1,925	0.003	7	289

24	102.50	1,175	9,200	0.016	34	1,461
23	99.00	476	3,484	0.006	13	592
22	96.50	1,305	9,091	0.015	33	1,623
21	93.21	1,581	10,296	0.018	38	1,966
20	90.71	391	2,418	0.004	9	487
19	87.50	1,397	8,052	0.014	29	1,737
18	82.50	1,422	7,316	0.012	27	1,769
17	77.50	1,448	6,598	0.011	24	1,801
16	72.50	1,473	5,900	0.010	22	1,832
15	67.50	1,499	5,227	0.009	19	1,864
14	62.50	1,524	4,579	0.008	17	1,896
13	57.50	1,550	3,962	0.007	15	1,927
12	54.00	627	1,419	0.002	5	780
11	51.50	1,779	3,674	0.006	13	2,213
10	47.50	3,009	5,314	0.009	19	3,743
9	42.50	1,815	2,584	0.004	9	2,257
8	37.50	1,845	2,061	0.004	8	2,294
7	32.50	1,874	1,587	0.003	6	2,331
6	27.50	1,904	1,167	0.002	4	2,368
5	22.50	1,934	803	0.001	3	2,405
4	17.50	1,964	502	0.001	2	2,443
3	12.50	1,994	265	0.000	1	2,480
2	7.50	2,024	100	0.000	0	2,517
1	2.50	2,053	12	0.000	0	2,554
Decibel DB844H90E-XY	178.50	168	3,852	0.007	14	209
Flat Low Profile Pla	178.50	1,500	34,389	0.058	126	1,866
DragonWave Horizon C	171.00	21	447	0.001	2	26
NextNet BTS-2500	171.00	105	2,215	0.004	8	131
Argus LLPX310R	171.00	86	1,810	0.003	7	107
DragonWave A-ANT-11G	171.00	27	570	0.001	2	34
DragonWave A-ANT-18G	171.00	27	572	0.001	2	34
Side Arms	167.00	560	11,285	0.019	41	696
Generic 18" x 12" Ju	165.00	15	295	0.001	1	19
Powerwave Allgon 702	160.00	13	245	0.000	1	16
Kaelus DBCT108F1V92-	160.00	125	2,320	0.004	9	156
Powerwave Allgon LGP	160.00	85	1,569	0.003	6	105
Raycap DC6-48-60-18-	160.00	40	742	0.001	3	50
Ericsson RRUS 4426 B	160.00	145	2,693	0.005	10	181
Ericsson RRUS 4478 B	160.00	178	3,305	0.006	12	222
Ericsson RRUS 4478 B	160.00	168	3,122	0.005	11	209
Ericsson RRUS 32 B2	160.00	159	2,949	0.005	11	198
Ericsson RRUS 11 (Ba	160.00	152	2,821	0.005	10	189
Ericsson RRUS-32 (77	160.00	231	4,285	0.007	16	287
Raycap DC6-48-60-18-	160.00	16	297	0.001	1	20
Powerwave Allgon 777	160.00	105	1,948	0.003	7	131
Quintel QS66512-2	160.00	333	6,177	0.010	23	414
CCI OPA-65R-LCUU-H6	160.00	219	4,062	0.007	15	272
Kathrein Scala 80010	160.00	293	5,431	0.009	20	364
Generic Flat Platfor	160.00	2,500	46,371	0.079	170	3,109
Ericsson KRY 112 144	148.00	33	526	0.001	2	41
Ericsson Radio 4449	148.00	225	3,589	0.006	13	280
Ericsson RRUS 4415 B	148.00	138	2,201	0.004	8	172
Ericsson Air6449 B41	148.00	312	4,976	0.008	18	388
Ericsson AIR 21, 1.3	148.00	275	4,378	0.007	16	341
Ericsson AIR32 B66Aa	148.00	397	6,325	0.011	23	493
RFS APXVAARR24_43-U-	148.00	384	6,120	0.010	22	477
Generic Round Platfo	148.00	2,500	39,873	0.068	146	3,109
Commscope CBC78T-DS-	138.00	62	865	0.001	3	77
Samsung Outdoor CBRS	138.00	56	777	0.001	3	69
Samsung Outdoor CBRS	138.00	13	184	0.000	1	16
Samsung B5/B13 RRH-B	138.00	211	2,937	0.005	11	262
Samsung B2/B66A RRH-	138.00	253	3,527	0.006	13	315
Samsung MT6407-77A	138.00	245	3,410	0.006	12	304
RFS DB-T1-6Z-8AB-OZ	138.00	88	1,226	0.002	4	109

Site Number: 302467

Code: ANSI/TIA-222-H

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Site Name: Bilkays Express, CT

Engineering Number: 13701206\_C3\_03

8/2/2021 4:14:32 PM

Customer: DISH WIRELESS L.L.C.

Andrew SBNHH-1D65B	138.00	152	2,119	0.004	8	189
Commscope JAHH-65B-R	138.00	364	5,064	0.009	19	452
Generic Round Platfo	138.00	2,500	34,821	0.059	128	3,109
Nortel NTGB01MA	128.00	1	12	0.000	0	1
RFS APXV18-206517S-C	128.00	79	954	0.002	3	99
Alcatel-Lucent 800 M	122.00	159	1,744	0.003	6	198
Alcatel-Lucent 1900	122.00	180	1,975	0.003	7	224
Alcatel-Lucent TD-RR	122.00	210	2,304	0.004	8	261
Round Low Profile PI	120.00	1,500	15,939	0.027	58	1,866
RFS APXV9TM14-ALU-I2	118.00	165	1,700	0.003	6	206
RFS APXVSP18-C-A20	118.00	171	1,759	0.003	6	213
Commscope RDIDC-9181	106.00	22	183	0.000	1	27
Fujitsu TA08025-B604	106.00	192	1,602	0.003	6	238
Fujitsu TA08025-B605	106.00	225	1,880	0.003	7	280
JMA Wireless MX08FRO	106.00	193	1,617	0.003	6	241
Generic Flat Platfor	106.00	2,500	20,891	0.036	77	3,109
PCTEL GPS-TMG-HR-26N	20.00	1	0	0.000	0	1
Standoff	20.00	75	25	0.000	0	93
		71,832	588,263	1.000	2,155	89,340

Load Case 0.9D - 1.0Ev + 1.0Eh

Seismic (Reduced DL)

Segment	Height Above Base (ft)	Weight (lb)	W <sub>z</sub> (lb-ft)	C <sub>vx</sub>	Horizontal Force (lb)	Vertical Force (lb)
49	176.75	310	6,979	0.012	26	266
48	173.00	365	7,871	0.013	29	312
47	170.50	93	1,961	0.003	7	80
46	168.50	285	5,835	0.010	21	244
45	166.00	193	3,846	0.007	14	165
44	162.50	513	9,803	0.017	36	439
43	157.50	671	12,081	0.021	44	575
42	152.50	688	11,636	0.020	43	590
41	149.00	280	4,527	0.008	17	240
40	146.50	452	7,069	0.012	26	387
39	144.71	89	1,353	0.002	5	76
38	142.21	1,235	18,225	0.031	67	1,057
37	139.67	189	2,693	0.005	10	162
36	138.67	240	3,379	0.006	12	206
35	136.50	584	7,959	0.014	29	500
34	132.50	990	12,741	0.022	47	847
33	129.00	402	4,912	0.008	18	344
32	126.50	625	7,354	0.013	27	535
31	123.50	632	7,105	0.012	26	542
30	121.00	426	4,599	0.008	17	365
29	119.00	429	4,488	0.008	16	368
28	116.50	660	6,625	0.011	24	565
27	112.50	1,121	10,510	0.018	39	960
26	108.00	912	7,901	0.013	29	781
25	105.50	232	1,925	0.003	7	199
24	102.50	1,175	9,200	0.016	34	1,006
23	99.00	476	3,484	0.006	13	408
22	96.50	1,305	9,091	0.015	33	1,117
21	93.21	1,581	10,296	0.018	38	1,353
20	90.71	391	2,418	0.004	9	335
19	87.50	1,397	8,052	0.014	29	1,196
18	82.50	1,422	7,316	0.012	27	1,218
17	77.50	1,448	6,598	0.011	24	1,240
16	72.50	1,473	5,900	0.010	22	1,262
15	67.50	1,499	5,227	0.009	19	1,283
14	62.50	1,524	4,579	0.008	17	1,305
13	57.50	1,550	3,962	0.007	15	1,327



12	54.00	627	1,419	0.002	5	537
11	51.50	1,779	3,674	0.006	13	1,523
10	47.50	3,009	5,314	0.009	19	2,577
9	42.50	1,815	2,584	0.004	9	1,554
8	37.50	1,845	2,061	0.004	8	1,580
7	32.50	1,874	1,587	0.003	6	1,605
6	27.50	1,904	1,167	0.002	4	1,630
5	22.50	1,934	803	0.001	3	1,656
4	17.50	1,964	502	0.001	2	1,682
3	12.50	1,994	265	0.000	1	1,707
2	7.50	2,024	100	0.000	0	1,733
1	2.50	2,053	12	0.000	0	1,758
Decibel DB844H90E-XY	178.50	168	3,852	0.007	14	144
Flat Low Profile Pla	178.50	1,500	34,389	0.058	126	1,284
DragonWave Horizon C	171.00	21	447	0.001	2	18
NextNet BTS-2500	171.00	105	2,215	0.004	8	90
Argus LLPX310R	171.00	86	1,810	0.003	7	73
DragonWave A-ANT-11G	171.00	27	570	0.001	2	23
DragonWave A-ANT-18G	171.00	27	572	0.001	2	23
Side Arms	167.00	560	11,285	0.019	41	480
Generic 18" x 12" Ju	165.00	15	295	0.001	1	13
Powerwave Allgon 702	160.00	13	245	0.000	1	11
Kaelus DBCT108F1V92-	160.00	125	2,320	0.004	9	107
Powerwave Allgon LGP	160.00	85	1,569	0.003	6	72
Raycap DC6-48-60-18-	160.00	40	742	0.001	3	34
Ericsson RRUS 4426 B	160.00	145	2,693	0.005	10	124
Ericsson RRUS 4478 B	160.00	178	3,305	0.006	12	153
Ericsson RRUS 4478 B	160.00	168	3,122	0.005	11	144
Ericsson RRUS 32 B2	160.00	159	2,949	0.005	11	136
Ericsson RRUS 11 (Ba	160.00	152	2,821	0.005	10	130
Ericsson RRUS-32 (77	160.00	231	4,285	0.007	16	198
Raycap DC6-48-60-18-	160.00	16	297	0.001	1	14
Powerwave Allgon 777	160.00	105	1,948	0.003	7	90
Quintel QS66512-2	160.00	333	6,177	0.010	23	285
CCI OPA-65R-LCUU-H6	160.00	219	4,062	0.007	15	188
Kathrein Scala 80010	160.00	293	5,431	0.009	20	251
Generic Flat Platfor	160.00	2,500	46,371	0.079	170	2,141
Ericsson KRY 112 144	148.00	33	526	0.001	2	28
Ericsson Radio 4449	148.00	225	3,589	0.006	13	193
Ericsson RRUS 4415 B	148.00	138	2,201	0.004	8	118
Ericsson Air6449 B41	148.00	312	4,976	0.008	18	267
Ericsson AIR 21, 1.3	148.00	275	4,378	0.007	16	235
Ericsson AIR32 B66Aa	148.00	397	6,325	0.011	23	340
RFS APXVAARR24_43-U-	148.00	384	6,120	0.010	22	329
Generic Round Platfo	148.00	2,500	39,873	0.068	146	2,141
Commscope CBC78T-DS-	138.00	62	865	0.001	3	53
Samsung Outdoor CBRS	138.00	56	777	0.001	3	48
Samsung Outdoor CBRS	138.00	13	184	0.000	1	11
Samsung B5/B13 RRH-B	138.00	211	2,937	0.005	11	181
Samsung B2/B66A RRH-	138.00	253	3,527	0.006	13	217
Samsung MT6407-77A	138.00	245	3,410	0.006	12	210
RFS DB-T1-6Z-8AB-0Z	138.00	88	1,226	0.002	4	75
Andrew SBNHH-1D65B	138.00	152	2,119	0.004	8	130
Commscope JAHH-65B-R	138.00	364	5,064	0.009	19	311
Generic Round Platfo	138.00	2,500	34,821	0.059	128	2,141
Nortel NTGB01MA	128.00	1	12	0.000	0	1
RFS APXV18-206517S-C	128.00	79	954	0.002	3	68
Alcatel-Lucent 800 M	122.00	159	1,744	0.003	6	136
Alcatel-Lucent 1900	122.00	180	1,975	0.003	7	154
Alcatel-Lucent TD-RR	122.00	210	2,304	0.004	8	180
Round Low Profile PI	120.00	1,500	15,939	0.027	58	1,284
RFS APXV9TM14-ALU-I2	118.00	165	1,700	0.003	6	142
RFS APXVSP18-C-A20	118.00	171	1,759	0.003	6	146
Commscope RDIDC-9181	106.00	22	183	0.000	1	19

Site Number: 302467

Code: ANSI/TIA-222-H

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Site Name: Bilkays Express, CT

Engineering Number: 13701206\_C3\_03

8/2/2021 4:14:32 PM

Customer: DISH WIRELESS L.L.C.

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Fujitsu TA08025-B604	106.00	192	1,602	0.003	6	164
Fujitsu TA08025-B605	106.00	225	1,880	0.003	7	193
JMA Wireless MX08FRO	106.00	193	1,617	0.003	6	166
Generic Flat Platfor	106.00	2,500	20,891	0.036	77	2,141
PCTEL GPS-TMG-HR-26N	20.00	1	0	0.000	0	1
Standoff	20.00	75	25	0.000	0	64
		71,832	588,263	1.000	2,155	61,508

Load Case 1.2D + 1.0Ev + 1.0Eh

Seismic

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-86.79	-2.16	0.00	-300.51	0.00	300.51	6,201.63	1,743.94	11,271.7	9,147.40	0.00	0.00	0.047
5.00	-84.27	-2.17	0.00	-289.71	0.00	289.71	6,145.05	1,713.31	10,879.2	8,903.77	0.00	-0.01	0.046
10.00	-81.79	-2.18	0.00	-278.87	0.00	278.87	6,086.60	1,682.68	10,493.7	8,660.43	0.01	-0.01	0.046
15.00	-79.35	-2.18	0.00	-267.99	0.00	267.99	6,026.28	1,652.04	10,115.2	8,417.51	0.03	-0.02	0.045
20.00	-76.85	-2.19	0.00	-257.08	0.00	257.08	5,964.08	1,621.41	9,743.60	8,175.18	0.06	-0.03	0.044
25.00	-74.48	-2.19	0.00	-246.13	0.00	246.13	5,900.01	1,590.78	9,378.96	7,933.57	0.09	-0.03	0.044
30.00	-72.15	-2.19	0.00	-235.17	0.00	235.17	5,834.07	1,560.15	9,021.26	7,692.84	0.13	-0.04	0.043
35.00	-69.85	-2.19	0.00	-224.21	0.00	224.21	5,766.26	1,529.51	8,670.52	7,453.12	0.17	-0.05	0.042
40.00	-67.59	-2.19	0.00	-213.24	0.00	213.24	5,696.58	1,498.88	8,326.74	7,214.56	0.23	-0.05	0.041
45.00	-63.85	-2.17	0.00	-202.29	0.00	202.29	5,625.02	1,468.25	7,989.90	6,977.32	0.29	-0.06	0.040
50.00	-61.64	-2.17	0.00	-191.42	0.00	191.42	5,551.60	1,437.62	7,660.03	6,741.53	0.36	-0.07	0.039
53.00	-60.86	-2.16	0.00	-184.93	0.00	184.93	4,466.37	1,233.46	6,578.51	5,434.80	0.40	-0.07	0.048
55.00	-58.93	-2.15	0.00	-180.60	0.00	180.60	4,445.78	1,222.96	6,466.97	5,363.40	0.43	-0.08	0.047
60.00	-57.03	-2.14	0.00	-169.84	0.00	169.84	4,392.99	1,196.70	6,192.29	5,185.21	0.52	-0.09	0.046
65.00	-55.17	-2.13	0.00	-159.14	0.00	159.14	4,338.33	1,170.45	5,923.57	5,007.61	0.61	-0.09	0.045
70.00	-53.34	-2.11	0.00	-148.51	0.00	148.51	4,281.80	1,144.19	5,660.81	4,830.75	0.72	-0.10	0.043
75.00	-51.54	-2.09	0.00	-137.97	0.00	137.97	4,223.39	1,117.93	5,404.01	4,654.77	0.83	-0.11	0.042
80.00	-49.77	-2.07	0.00	-127.52	0.00	127.52	4,163.12	1,091.68	5,153.18	4,479.82	0.95	-0.12	0.040
85.00	-48.03	-2.04	0.00	-117.19	0.00	117.19	4,100.97	1,065.42	4,908.30	4,306.05	1.07	-0.13	0.039
90.00	-47.54	-2.03	0.00	-106.99	0.00	106.99	4,036.95	1,039.16	4,669.38	4,133.61	1.21	-0.13	0.038
91.42	-45.58	-1.99	0.00	-104.11	0.00	104.11	4,018.47	1,031.72	4,602.78	4,085.01	1.25	-0.14	0.037
95.00	-43.95	-1.96	0.00	-96.97	0.00	96.97	3,971.06	1,012.91	4,436.43	3,962.63	1.36	-0.14	0.036
98.00	-43.36	-1.95	0.00	-91.08	0.00	91.08	3,074.73	842.93	3,686.72	3,067.88	1.45	-0.15	0.044
100.00	-41.90	-1.92	0.00	-87.18	0.00	87.18	3,057.08	834.18	3,610.56	3,018.39	1.51	-0.15	0.043
105.00	-41.61	-1.91	0.00	-77.60	0.00	77.60	3,011.64	812.29	3,423.66	2,895.03	1.67	-0.16	0.041
106.00	-36.58	-1.78	0.00	-75.69	0.00	75.69	3,002.33	807.92	3,386.87	2,870.43	1.70	-0.16	0.039
110.00	-35.19	-1.74	0.00	-68.58	0.00	68.58	2,964.33	790.41	3,241.72	2,772.28	1.84	-0.17	0.037
115.00	-34.37	-1.72	0.00	-59.89	0.00	59.89	2,915.15	768.53	3,064.74	2,650.30	2.02	-0.17	0.034
118.00	-33.41	-1.69	0.00	-54.74	0.00	54.74	2,884.74	755.41	2,960.94	2,577.54	2.13	-0.18	0.033
120.00	-31.02	-1.60	0.00	-51.37	0.00	51.37	2,864.09	746.65	2,892.74	2,529.23	2.21	-0.18	0.031
122.00	-29.55	-1.55	0.00	-48.16	0.00	48.16	2,843.15	737.90	2,825.33	2,481.09	2.28	-0.18	0.030
125.00	-28.77	-1.53	0.00	-43.50	0.00	43.50	2,811.17	724.77	2,725.70	2,409.22	2.40	-0.19	0.028
128.00	-28.17	-1.50	0.00	-38.93	0.00	38.93	2,778.51	711.65	2,627.86	2,337.78	2.52	-0.19	0.027
130.00	-26.94	-1.46	0.00	-35.92	0.00	35.92	2,756.37	702.89	2,563.63	2,290.41	2.60	-0.20	0.025
135.00	-26.22	-1.43	0.00	-28.64	0.00	28.64	2,699.70	681.01	2,406.52	2,172.95	2.81	-0.20	0.023
138.00	-21.01	-1.19	0.00	-24.37	0.00	24.37	2,664.80	667.88	2,314.65	2,103.19	2.94	-0.20	0.019
139.33	-20.78	-1.18	0.00	-22.77	0.00	22.77	2,649.07	662.05	2,274.38	2,072.36	3.00	-0.21	0.019
140.00	-19.24	-1.11	0.00	-21.99	0.00	21.99	2,641.16	659.13	2,254.39	2,056.99	3.02	-0.21	0.018
144.42	-19.13	-1.11	0.00	-17.07	0.00	17.07	1,927.04	519.68	1,751.62	1,481.39	3.22	-0.21	0.021
145.00	-18.57	-1.08	0.00	-16.43	0.00	16.43	1,922.70	517.63	1,737.88	1,472.21	3.24	-0.21	0.021
148.00	-12.92	-0.79	0.00	-13.19	0.00	13.19	1,899.96	507.13	1,668.08	1,425.08	3.38	-0.21	0.016
150.00	-12.06	-0.75	0.00	-11.60	0.00	11.60	1,884.42	500.13	1,622.34	1,393.78	3.46	-0.21	0.015
155.00	-11.23	-0.70	0.00	-7.85	0.00	7.85	1,844.28	482.63	1,510.78	1,316.02	3.69	-0.22	0.012
160.00	-4.67	-0.32	0.00	-4.34	0.00	4.34	1,802.26	465.12	1,403.19	1,239.06	3.92	-0.22	0.006
165.00	-4.41	-0.30	0.00	-2.75	0.00	2.75	1,758.37	447.62	1,299.57	1,163.05	4.15	-0.22	0.005
167.00	-3.36	-0.24	0.00	-2.15	0.00	2.15	1,740.29	440.62	1,259.24	1,132.94	4.24	-0.22	0.004
170.00	-3.24	-0.23	0.00	-1.45	0.00	1.45	1,712.61	430.11	1,199.93	1,088.14	4.38	-0.22	0.003

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Site Number: 302467

Code: ANSI/TIA-222-H

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Site Name: Bilkays Express, CT

Engineering Number: 13701206\_C3\_03

8/2/2021 4:14:32 PM

Customer: DISH WIRELESS L.L.C.

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171.00	-2.46	-0.18	0.00	-1.22	0.00	1.22	1,703.23	426.61	1,180.48	1,073.30	4.43	-0.22	0.003
175.00	-2.07	-0.15	0.00	-0.52	0.00	0.52	1,664.97	412.61	1,104.26	1,014.48	4.61	-0.22	0.002
178.50	0.00	-0.14	0.00	0.00	0.00	0.00	1,630.52	400.36	1,039.66	963.73	4.77	-0.22	0.000

Site Number: 302467

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Site Name: Bilkays Express, CT

Engineering Number: 13701206\_C3\_03

8/2/2021 4:14:32 PM

Customer: DISH WIRELESS L.L.C.

Load Case 0.9D - 1.0Ev + 1.0Eh

Seismic (Reduced DL)

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-59.75	-2.16	0.00	-296.51	0.00	296.51	6,201.63	1,743.94	11,271.7	9,147.40	0.00	0.00	0.042
5.00	-58.02	-2.16	0.00	-285.73	0.00	285.73	6,145.05	1,713.31	10,879.2	8,903.77	0.00	-0.01	0.042
10.00	-56.31	-2.17	0.00	-274.91	0.00	274.91	6,086.60	1,682.68	10,493.7	8,660.43	0.01	-0.01	0.041
15.00	-54.63	-2.17	0.00	-264.07	0.00	264.07	6,026.28	1,652.04	10,115.2	8,417.51	0.03	-0.02	0.040
20.00	-52.91	-2.18	0.00	-253.20	0.00	253.20	5,964.08	1,621.41	9,743.60	8,175.18	0.06	-0.03	0.040
25.00	-51.27	-2.18	0.00	-242.32	0.00	242.32	5,900.01	1,590.78	9,378.96	7,933.57	0.09	-0.03	0.039
30.00	-49.67	-2.18	0.00	-231.44	0.00	231.44	5,834.07	1,560.15	9,021.26	7,692.84	0.12	-0.04	0.039
35.00	-48.09	-2.17	0.00	-220.57	0.00	220.57	5,766.26	1,529.51	8,670.52	7,453.12	0.17	-0.05	0.038
40.00	-46.53	-2.17	0.00	-209.70	0.00	209.70	5,696.58	1,498.88	8,326.74	7,214.56	0.22	-0.05	0.037
45.00	-43.96	-2.15	0.00	-198.86	0.00	198.86	5,625.02	1,468.25	7,989.90	6,977.32	0.28	-0.06	0.036
50.00	-42.43	-2.14	0.00	-188.11	0.00	188.11	5,551.60	1,437.62	7,660.03	6,741.53	0.35	-0.07	0.036
53.00	-41.90	-2.14	0.00	-181.69	0.00	181.69	4,466.37	1,233.46	6,578.51	5,434.80	0.40	-0.07	0.043
55.00	-40.57	-2.12	0.00	-177.41	0.00	177.41	4,445.78	1,222.96	6,466.97	5,363.40	0.43	-0.08	0.042
60.00	-39.26	-2.11	0.00	-166.79	0.00	166.79	4,392.99	1,196.70	6,192.29	5,185.21	0.51	-0.08	0.041
65.00	-37.98	-2.10	0.00	-156.23	0.00	156.23	4,338.33	1,170.45	5,923.57	5,007.61	0.60	-0.09	0.040
70.00	-36.72	-2.08	0.00	-145.75	0.00	145.75	4,281.80	1,144.19	5,660.81	4,830.75	0.70	-0.10	0.039
75.00	-35.48	-2.06	0.00	-135.37	0.00	135.37	4,223.39	1,117.93	5,404.01	4,654.77	0.81	-0.11	0.037
80.00	-34.26	-2.03	0.00	-125.09	0.00	125.09	4,163.12	1,091.68	5,153.18	4,479.82	0.93	-0.12	0.036
85.00	-33.06	-2.00	0.00	-114.93	0.00	114.93	4,100.97	1,065.42	4,908.30	4,306.05	1.06	-0.12	0.035
90.00	-32.73	-2.00	0.00	-104.91	0.00	104.91	4,036.95	1,039.16	4,669.38	4,133.61	1.19	-0.13	0.033
91.42	-31.38	-1.96	0.00	-102.08	0.00	102.08	4,018.47	1,031.72	4,602.78	4,085.01	1.23	-0.13	0.033
95.00	-30.26	-1.93	0.00	-95.06	0.00	95.06	3,971.06	1,012.91	4,436.43	3,962.63	1.33	-0.14	0.032
98.00	-29.85	-1.91	0.00	-89.28	0.00	89.28	3,074.73	842.93	3,686.72	3,067.88	1.42	-0.14	0.039
100.00	-28.84	-1.88	0.00	-85.46	0.00	85.46	3,057.08	834.18	3,610.56	3,018.39	1.48	-0.15	0.038
105.00	-28.65	-1.88	0.00	-76.05	0.00	76.05	3,011.64	812.29	3,423.66	2,895.03	1.64	-0.16	0.036
106.00	-25.18	-1.74	0.00	-74.18	0.00	74.18	3,002.33	807.92	3,386.87	2,870.43	1.68	-0.16	0.034
110.00	-24.22	-1.70	0.00	-67.21	0.00	67.21	2,964.33	790.41	3,241.72	2,772.28	1.81	-0.16	0.032
115.00	-23.66	-1.68	0.00	-58.69	0.00	58.69	2,915.15	768.53	3,064.74	2,650.30	1.99	-0.17	0.030
118.00	-23.00	-1.65	0.00	-53.64	0.00	53.64	2,884.74	755.41	2,960.94	2,577.54	2.10	-0.18	0.029
120.00	-21.35	-1.57	0.00	-50.34	0.00	50.34	2,864.09	746.65	2,892.74	2,529.23	2.17	-0.18	0.027
122.00	-20.34	-1.52	0.00	-47.20	0.00	47.20	2,843.15	737.90	2,825.33	2,481.09	2.25	-0.18	0.026
125.00	-19.81	-1.49	0.00	-42.63	0.00	42.63	2,811.17	724.77	2,725.70	2,409.22	2.36	-0.19	0.025
128.00	-19.39	-1.47	0.00	-38.14	0.00	38.14	2,778.51	711.65	2,627.86	2,337.78	2.48	-0.19	0.023
130.00	-18.55	-1.42	0.00	-35.20	0.00	35.20	2,756.37	702.89	2,563.63	2,290.41	2.56	-0.19	0.022
135.00	-18.05	-1.40	0.00	-28.07	0.00	28.07	2,699.70	681.01	2,406.52	2,172.95	2.76	-0.20	0.020
138.00	-14.46	-1.17	0.00	-23.89	0.00	23.89	2,664.80	667.88	2,314.65	2,103.19	2.89	-0.20	0.017
139.33	-14.30	-1.16	0.00	-22.33	0.00	22.33	2,649.07	662.05	2,274.38	2,072.36	2.95	-0.20	0.016
140.00	-13.25	-1.09	0.00	-21.55	0.00	21.55	2,641.16	659.13	2,254.39	2,056.99	2.97	-0.20	0.015
144.42	-13.17	-1.09	0.00	-16.74	0.00	16.74	1,927.04	519.68	1,751.62	1,481.39	3.16	-0.21	0.018
145.00	-12.78	-1.06	0.00	-16.11	0.00	16.11	1,922.70	517.63	1,737.88	1,472.21	3.19	-0.21	0.018
148.00	-8.89	-0.78	0.00	-12.93	0.00	12.93	1,899.96	507.13	1,668.08	1,425.08	3.32	-0.21	0.014
150.00	-8.31	-0.73	0.00	-11.38	0.00	11.38	1,884.42	500.13	1,622.34	1,393.78	3.41	-0.21	0.013
155.00	-7.73	-0.69	0.00	-7.71	0.00	7.71	1,844.28	482.63	1,510.78	1,316.02	3.63	-0.21	0.010
160.00	-3.21	-0.31	0.00	-4.27	0.00	4.27	1,802.26	465.12	1,403.19	1,239.06	3.85	-0.21	0.005
165.00	-3.04	-0.30	0.00	-2.71	0.00	2.71	1,758.37	447.62	1,299.57	1,163.05	4.08	-0.22	0.004
167.00	-2.31	-0.23	0.00	-2.11	0.00	2.11	1,740.29	440.62	1,259.24	1,132.94	4.17	-0.22	0.003
170.00	-2.23	-0.22	0.00	-1.42	0.00	1.42	1,712.61	430.11	1,199.93	1,088.14	4.30	-0.22	0.003

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Site Number: 302467

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Site Name: Bilkays Express, CT

Engineering Number: 13701206\_C3\_03

8/2/2021 4:14:32 PM

Customer: DISH WIRELESS L.L.C.

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171.00	-1.69	-0.17	0.00	-1.20	0.00	1.20	1,703.23	426.61	1,180.48	1,073.30	4.35	-0.22	0.002
175.00	-1.43	-0.15	0.00	-0.51	0.00	0.51	1,664.97	412.61	1,104.26	1,014.48	4.53	-0.22	0.001
178.50	0.00	-0.14	0.00	0.00	0.00	0.00	1,630.52	400.36	1,039.66	963.73	4.69	-0.22	0.000

Site Number: 302467

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Site Name: Bilkays Express, CT

Engineering Number: 13701206\_C3\_03

8/2/2021 4:14:32 PM

Customer: DISH WIRELESS L.L.C.

## Analysis Summary

Load Case	Reactions						Max Usage	
	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)	Elev (ft)	Interaction Ratio
1.2D + 1.0W	43.33	0.00	86.15	0.00	0.00	5275.58	0.00	0.59
0.9D + 1.0W	43.31	0.00	64.60	0.00	0.00	5221.23	0.00	0.58
1.2D + 1.0Di + 1.0Wi	10.61	0.00	117.94	0.00	0.00	1283.64	0.00	0.16
1.2D + 1.0Ev + 1.0Eh	2.16	0.00	86.79	0.00	0.00	300.51	53.00	0.05
0.9D - 1.0Ev + 1.0Eh	2.16	0.00	59.75	0.00	0.00	296.51	53.00	0.04
1.0D + 1.0W	9.85	0.00	71.83	0.00	0.00	1192.27	0.00	0.14

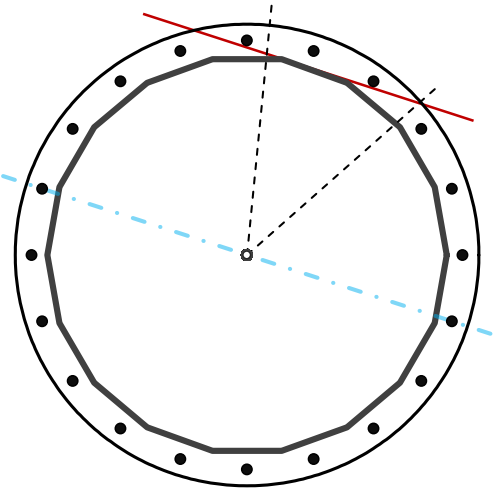
## Base Plate & Anchor Rod Analysis

Pole Dimensions		
Number of Sides	18	-
Diameter	72	in
Thickness	7/16	in
Orientation Offset	0	°

Base Reactions		
Moment, Mu	5,275.6	k-ft
Axial, Pu	86.2	k
Shear, Vu	43.3	k
Neutral Axis	342	°

Report Capacities		
Component	Capacity	Result
Base Plate	12%	Pass
Anchor Rods	70%	Pass
Dwyidag	-	-

Base Plate		
Shape	Round	-
Diameter, $\phi$	85	in
Thickness	2 3/4	in
Grade	A633 Gr. E	
Yield Strength, Fy	60	ksi
Tensile Strength, Fu	80	ksi
Clip	N/A	in
Orientation Offset	0	°
Anchor Rod Detail	d	$\eta=0.5$
Clear Distance	3 1/2	in
Applied Moment, Mu	381.4	k
Bending Stress, $\phi Mn$	3285.5	k



Original Anchor Rods		
Arrangement	Radial	-
Quantity	20	-
Diameter, $\phi$	2 1/4	in
Bolt Circle	79	in
Grade	A615-75	
Yield Strength, Fy	75	ksi
Tensile Strength, Fu	100	ksi
Spacing	12.4	in
Orientation Offset	0	°
Applied Force, Pu	169.5	k
Anchor Rods, $\phi Pn$	243.6	k



# Calculations for Monopole Base Plate & Anchor Rod Analysis

## Reaction Distribution

Reaction	Shear Vu	Moment Mu	Factor
-	k	k-ft	-
Base Forces	43.3	5275.6	1.00
Anchor Rod Forces	43.3	5275.6	1.00
Additional Bolt (Grp1) Forces	0.0	0.0	0.00
Additional Bolt (Grp2) Forces	0.0	0.0	0.00
Dywidag Forces	0.0	0.0	0.00
Stiffener Forces	0.0	0.0	0.00

## Geometric Properties

Section	Gross Area	Net Area	Individual Inertia	Threads per Inch	Moment of Inertia
-	in <sup>2</sup>	in <sup>2</sup>	in <sup>4</sup>	#	in <sup>4</sup>
Pole	97.8602	5.4367	0.3479		62651.39
Bolt	3.9761	3.2477	0.8393	4.5	47687.92
Bolt1	0.0000	0.0000	0.0000	0	0.00
Bolt2	0.0000	0.0000	0.0000	0	0.00
Dywidag	0.0000	0.0000	0.0000		0.00
Stiffener	0.0000	0.0000	0.0000		0.00

Base Plate		
Shape	Round	-
Diameter, D	85	in
Thickness, t	2.75	in
Yield Strength, Fy	60	ksi
Tensile Strength, Fu	80	ksi
Base Plate Chord	45.177	in
Detail Type	d	-
Detail Factor	0.50	-
Clear Distance	3.5	-

Anchor Rods		
Anchor Rod Quantity, N	20	-
Rod Diameter, d	2.25	in
Bolt Circle, BC	79	in
Yield Strength, Fy	75	ksi
Tensile Strength, Fu	100	ksi
Applied Axial, Pu	169.5	k
Applied Shear, Vu	1.1	k
Compressive Capacity, φPn	243.6	k
Tensile Capacity, φRnt	0.696	OK
Interaction Capacity	0.705	OK

External Base Plate		
Chord Length AA	37.950	in
Additional AA	5.500	in
Section Modulus, Z	82.148	in <sup>3</sup>
Applied Moment, Mu	502.4	k-ft
Bending Capacity, φMn	4436.0	k-ft
Capacity, Mu/φMn	0.113	OK
Chord Length AB	35.756	in
Additional AB	5.500	in
Section Modulus, Z	78.000	in <sup>3</sup>
Applied Moment, Mu	287.1	k-ft
Bending Capacity, φMn	4212.0	k-ft
Capacity, Mu/φMn	0.068	OK
Bend Line Length	32.181	in
Additional Bend Line	0.000	in
Section Modulus, Z	60.843	in <sup>3</sup>
Applied Moment, Mu	381.4	k-ft
Bending Capacity, φMn	3285.5	k-ft
Capacity, Mu/φMn	0.116	OK

Internal Base Plate		
Arc Length	0.000	in
Section Modulus, Z	0.000	in <sup>3</sup>
Moment Arm	0.000	in
Applied Moment, Mu	0.0	k-ft
Bending Capacity, φMn	0.0	k-ft
Capacity, Mu/φMn		

## Pier Foundation Analysis (ANSI/TIA-222-H)

### Foundation Analysis Parameters

Pier Diameter	$D$	8.50	ft
Pier Embedment	$L-h$	29.5	ft
Pier Height above Ground	$H$	0.50	ft
Water Table Depth [BGL]	$GW$	6	ft
Pullout Angle	$\Theta$	30	°
Unit Weight of Concrete		150	pcf
Uplift Skin Friction Factor		0.750	

### Reactions

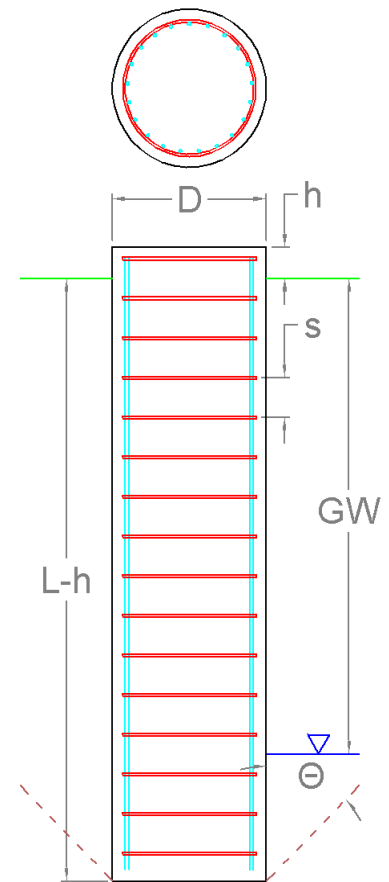
Moment, $M_u$	5,275.6	k-ft
Shear, $V_u$	43.3	k
Axial, $P_u$	86.2	k
Uplift, $T_u$	0.0	k

### Soil Properties

Layer Depth (ft)		Unit Weight	Cohesion	Friction Angle	Ultimate Skin Friction	Ultimate Bearing Pressure
TOP	BTM	pcf	psf	°	psf	psf
0.0	5.0	120	0	0	0	0
5.0	15.0	122	0	34	480	0
15.0	20.0	122	0	34	690	0
20.0	30.5	122	0	34	820	5,000

### Soil Strength Capacities

Volume of Concrete	1,702.4	ft <sup>3</sup>
Weight of Concrete [Buoyancy Considered]	172.1	k
Average Soil Unit Weight	72.0	pcf
Skin Friction Resistance	428.3	k
Compressive Bearing Resistance	283.7	k
Pullout Weight [Minus Concrete Weight]	1,127.5	k
Compressive Force, $P_u$	143.1	k
Nominal Compressive Capacity, $\phi_s P_n$	534.0	k
$P_u / \phi_s P_n$	<b>26.8%</b>	
Total Lateral Resistance	2,738.2	k
Inflection Point [BGL]	20.5	ft
Moment at Inflection Point, $M_D$	6,183.9	k-ft
Nominal Moment Capacity, $\phi_s M_n$	12,239.4	k-ft
$M_D / \phi_s M_n$	<b>50.5%</b>	



### Pier Strength Capacities

Concrete Compressive Strength, $f'_c$	3,000	psi
Rebar Size #	11	
Rebar Area (Single)	1.56	in <sup>2</sup>
Rebar Quantity	27	
Rebar Yield Strength, $F_y$	60	ksi
Vertical Rebar Clear Cover	4	in
Tie Rebar Size #	5	
Tie Rebar Area (Single)	0.31	in <sup>2</sup>
Tie Rebar Spacing	18.0	in
Tie Rebar Yield Strength, $F_y$	40	ksi
Rebar Cage Diameter	91.34	in
Strength Bending/Tension Reduction Factor, $\phi_B$	0.90	
Strength Shear Reduction Factor, $\phi_V$	0.75	
Strength Compression Reduction Factor, $\phi_C$	0.65	
Steel Elastic Modulus	29,000	ksi
Design Moment, $M_u$	5,304.0	k-ft
Moment Capacity, $\phi_B M_n$	7,837.9	k-ft
$M_u / \phi_B M_n$	<b>67.7%</b>	
Design Shear, $V_u$	443.6	k
Shear Capacity, $\phi_V V_n$	759.2	k
$V_u / \phi_V V_n$	<b>58.4%</b>	
Design Compression, $P_u$	143.1	k
Compression Capacity, $\phi_P P_n$	12,093.4	k
$P_u / \phi_P P_n$	<b>1.2%</b>	
Bending Reinforcement Ratio	0.005	



# INFINIGY

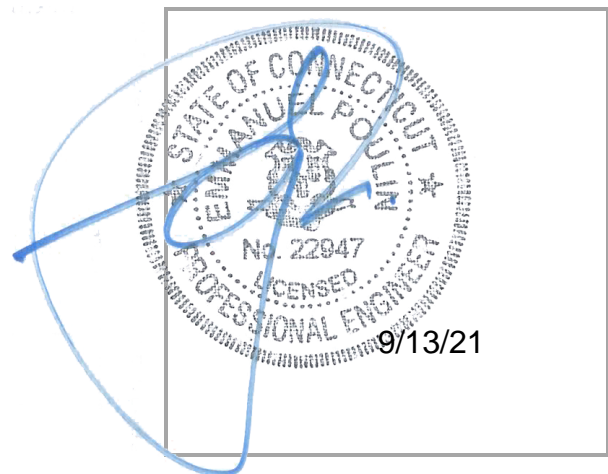
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## MOUNT ANALYSIS REPORT

September 14, 2021

Dish Wireless Site Name	BOHVN00140A
Dish Wireless Site Number	BOHVN00140A
ATC Site Name	Bilkays Express, CT
ATC Site Number	302467
Infinigy Job Number	1197-F0001-B
Client	ATC
Carrier	Dish Wireless
Site Location	90 North Plains Industrial Rd. Wallingford, CT 06492 New Haven County 41.480761 N NAD83 72.817700 W NAD83
Mount Type	8.0 ft Platform
Mount Elevation	108.0 ft AGL
Structural Usage Ratio	<b>28.3</b>
<b>Overall Result</b>	<b>Pass</b>

The enclosed mount structural analysis has been performed in accordance with the 2018 Connecticut State Building Code (2015 IBC) based on an ultimate 3-second gust wind speed of 119 mph. The evaluation criteria and applicable codes are presented in the next section of this report.



**CONTENTS**

1. Introduction
2. Design/Analysis Parameters
3. Proposed Loading Configuration
4. Supporting Documentation
5. Results
6. Recommendations
7. Assumptions
8. Liability Waiver and Limitations
9. Calculations

**1. INTRODUCTION**

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

**2. DESIGN/ANALYSIS PARAMETERS**

Wind Speed	119 mph (3-Second Gust)
Wind Speed w/ ice	50 mph (3-Second Gust) w/ 1.0" ice
Code / Standard	TIA-222-H
Adopted Code	2018 Connecticut State Building Code (2015 IBC)
Risk Category	II
Exposure Category	B
Topographic Category	1
Calculated Crest Height	0 ft.
Seismic Spectral Response	$S_s = 0.205 \text{ g} / S_1 = 0.055 \text{ g}$
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 - 108.0 ft. AGL Platform**

Antenna Centerline (ft)	Qty.	Appurtenance Manufacturers	Appurtenance Models
108.0	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-302467 Rev 1, Site #BOHVN00140A, dated July 09, 2021
Mount Manufacturer Drawings	Commscope Document # MC-PK8-DSH, dated March 08, 2021
Structural Analysis Report	ATC, Asset #302467, dated August 02, 2021

## 5. RESULTS

Components	Capacity	Pass/Fail
Mount Pipes	17.3%	Pass
Horizontals	10.4%	Pass
Standoffs	26.5%	Pass
Handrails	20.7%	Pass
Connections	28.3%	Pass
<b>MOUNT RATING =</b>	<b>28.3 %</b>	<b>Pass</b>

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 108.0 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, Solid Round, Plate, Built-up Angle	ASTM A1011 36 KSI
Structural Angle	ASTM A529 Gr. 50
HSS (Rectangular)	ASTM A500-B GR 46
HSS (Circular)	ASTM A500-B GR 42
Pipe	ASTM A500 Gr C
Connection Bolts	ASTM A325
U-Bolts	ASTM A307
All bolted connections are pretensioned in accordance with Table 8.2 of the RCSC 2014 Standard	

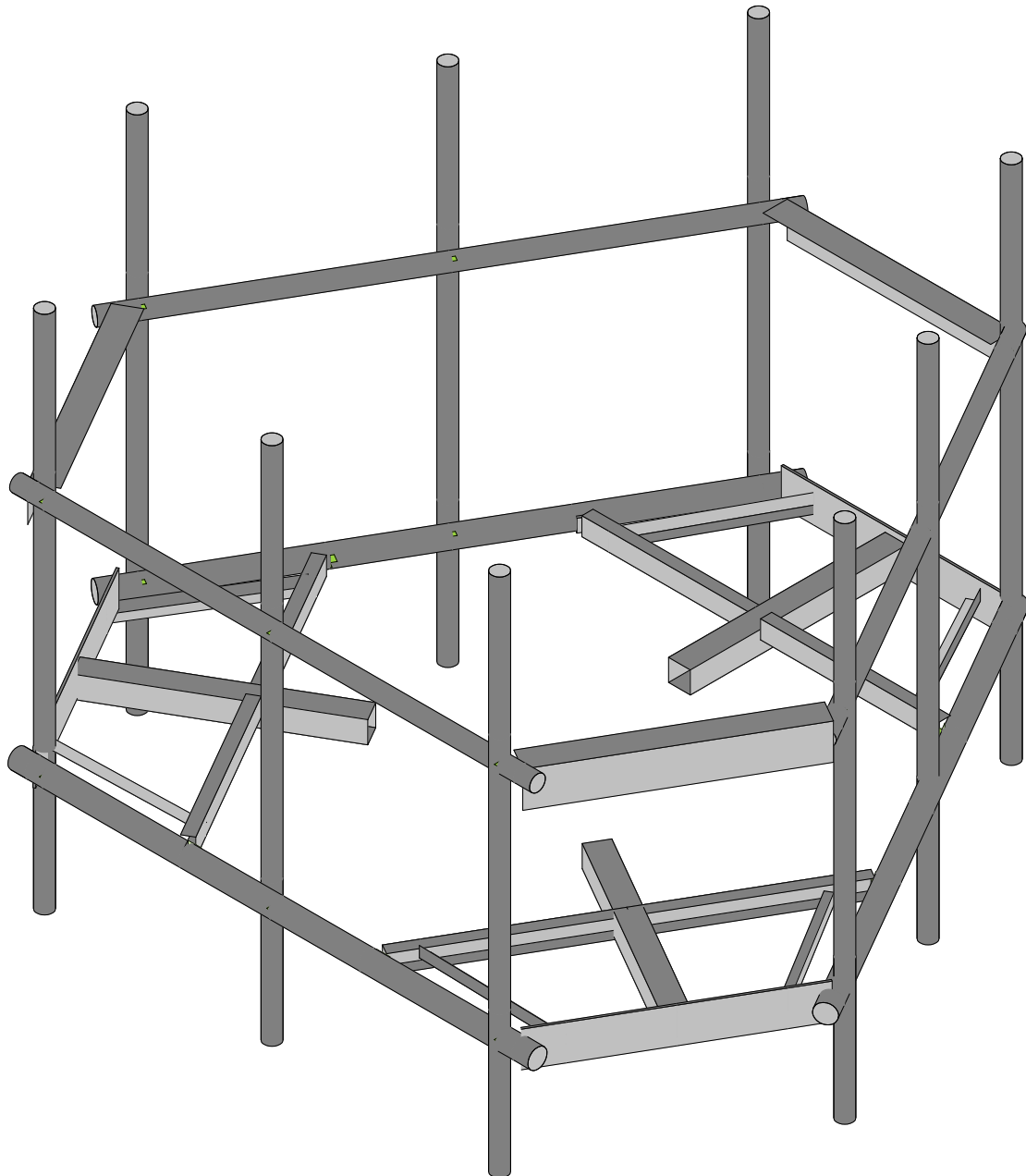
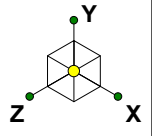
**8. LIABILITY WAIVER AND LIMITATIONS**

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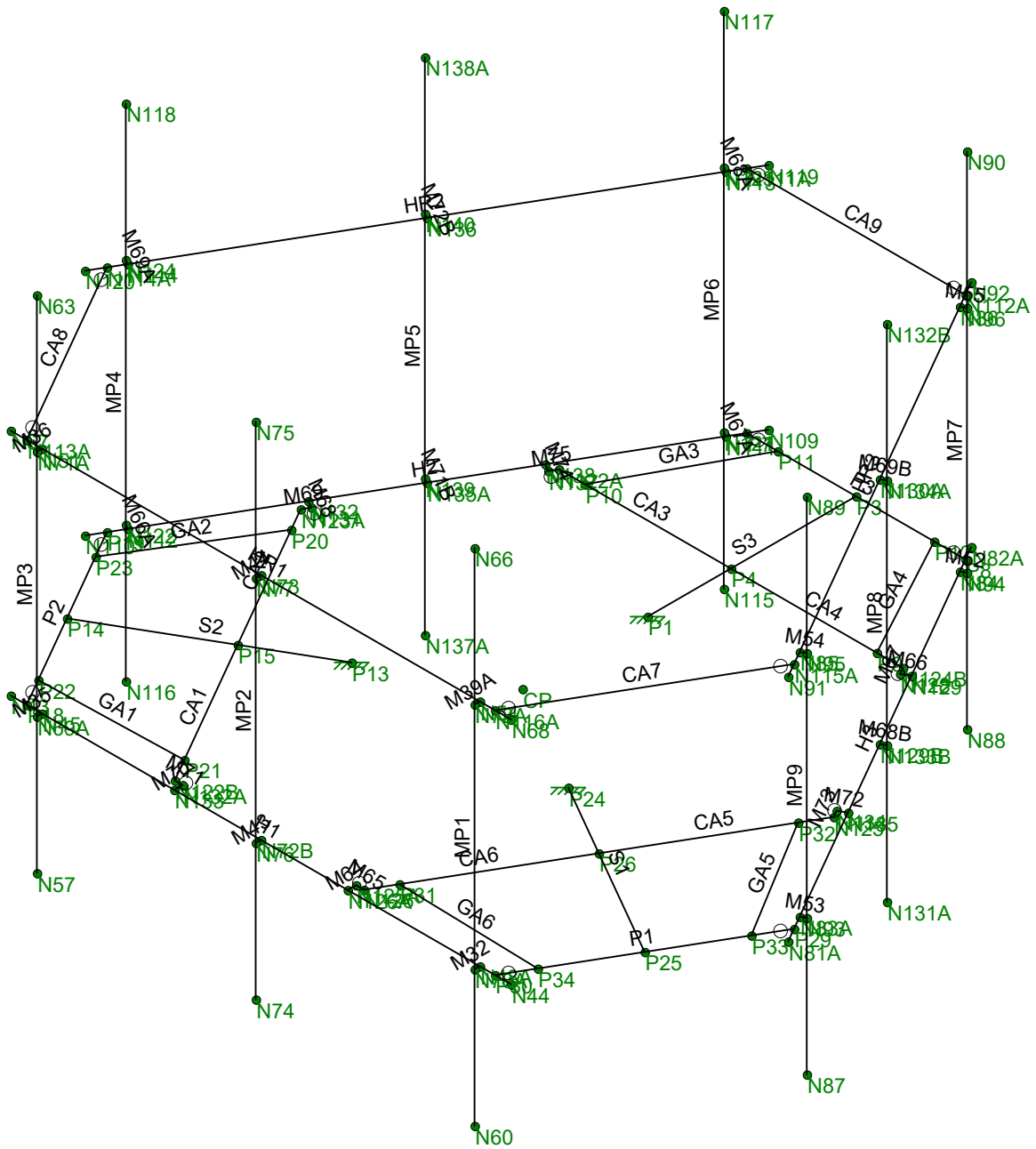
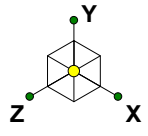
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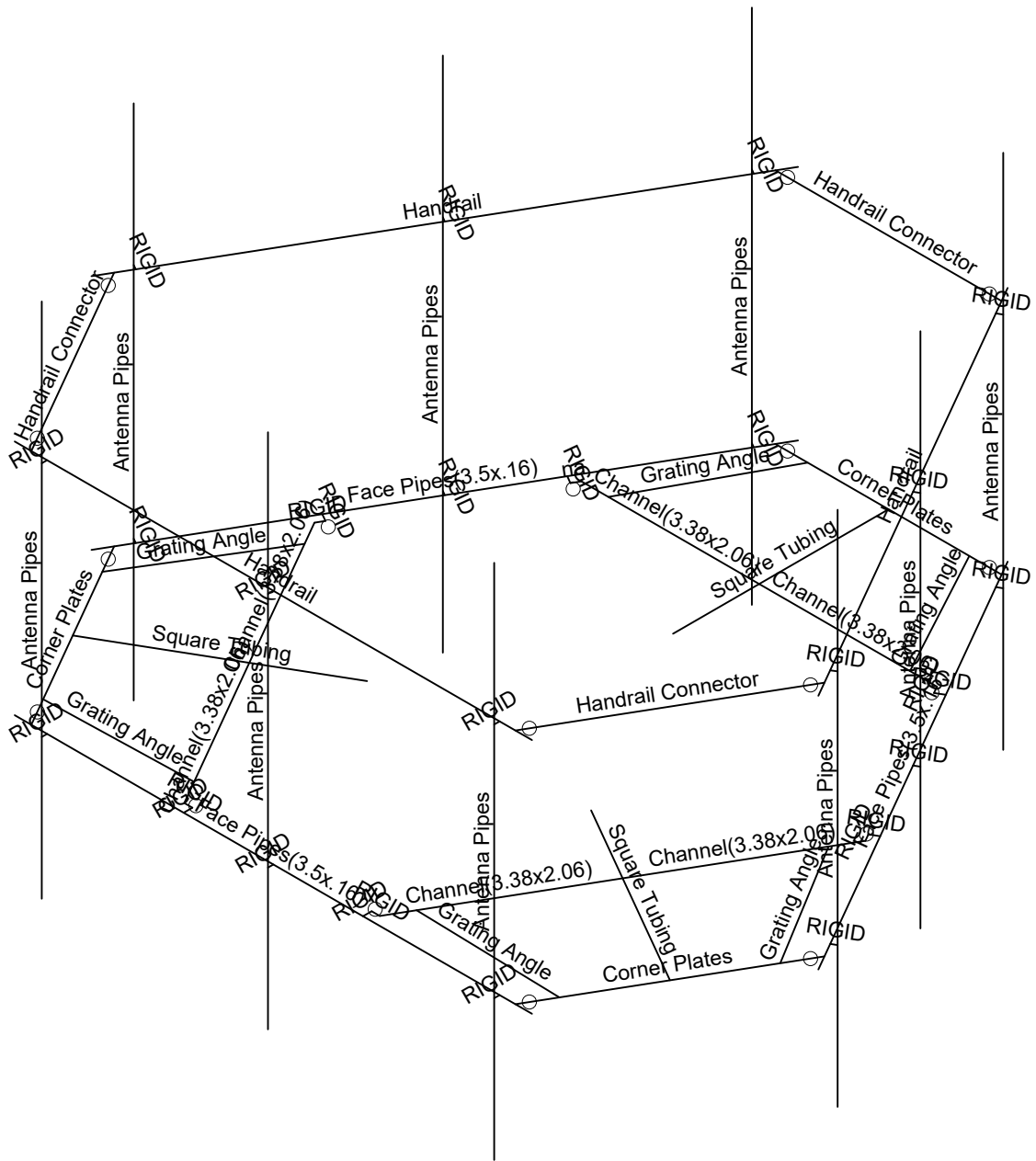
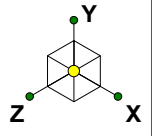
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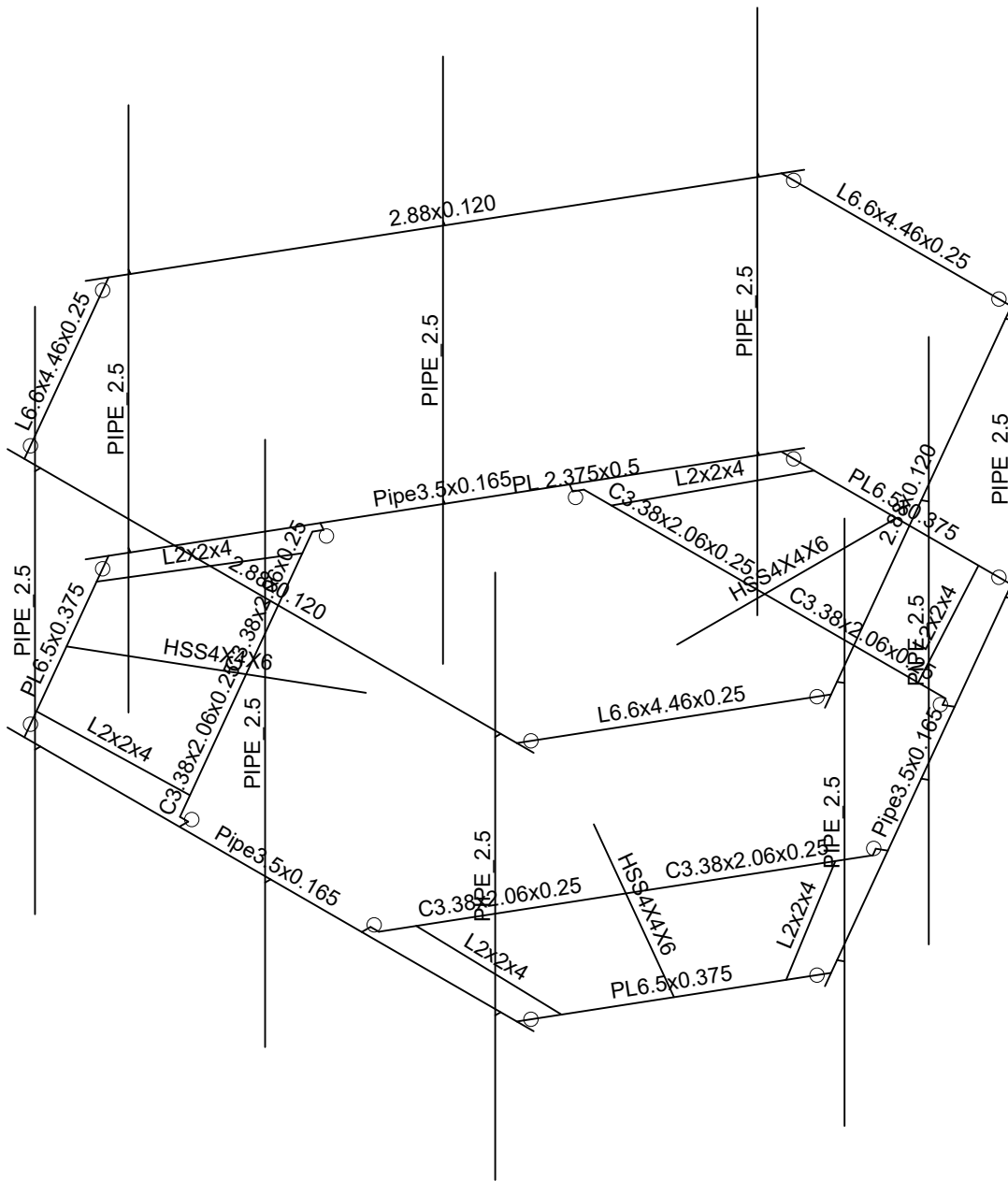
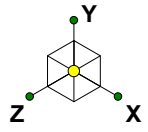
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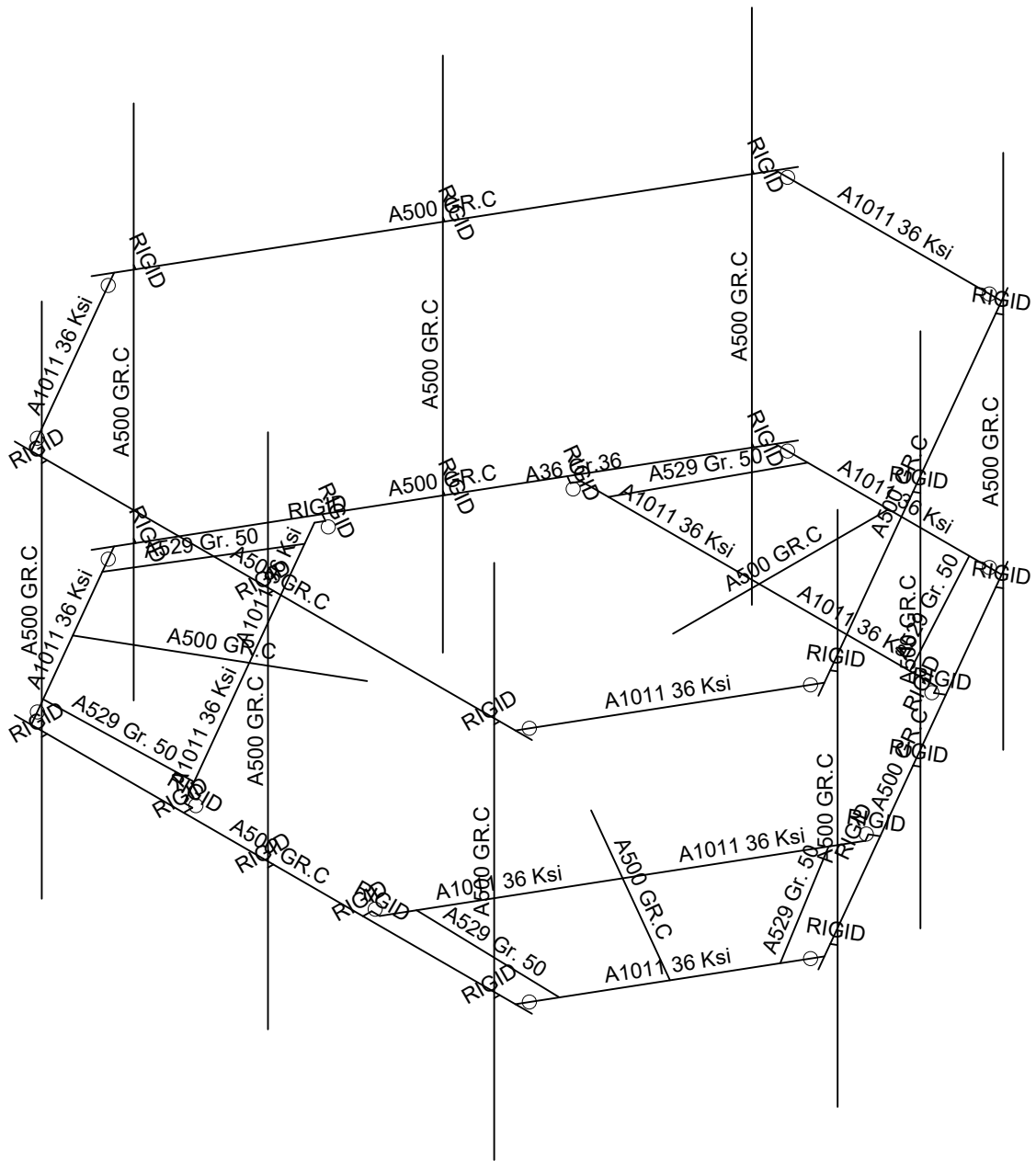
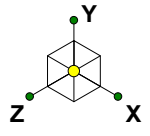
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Member Shapes

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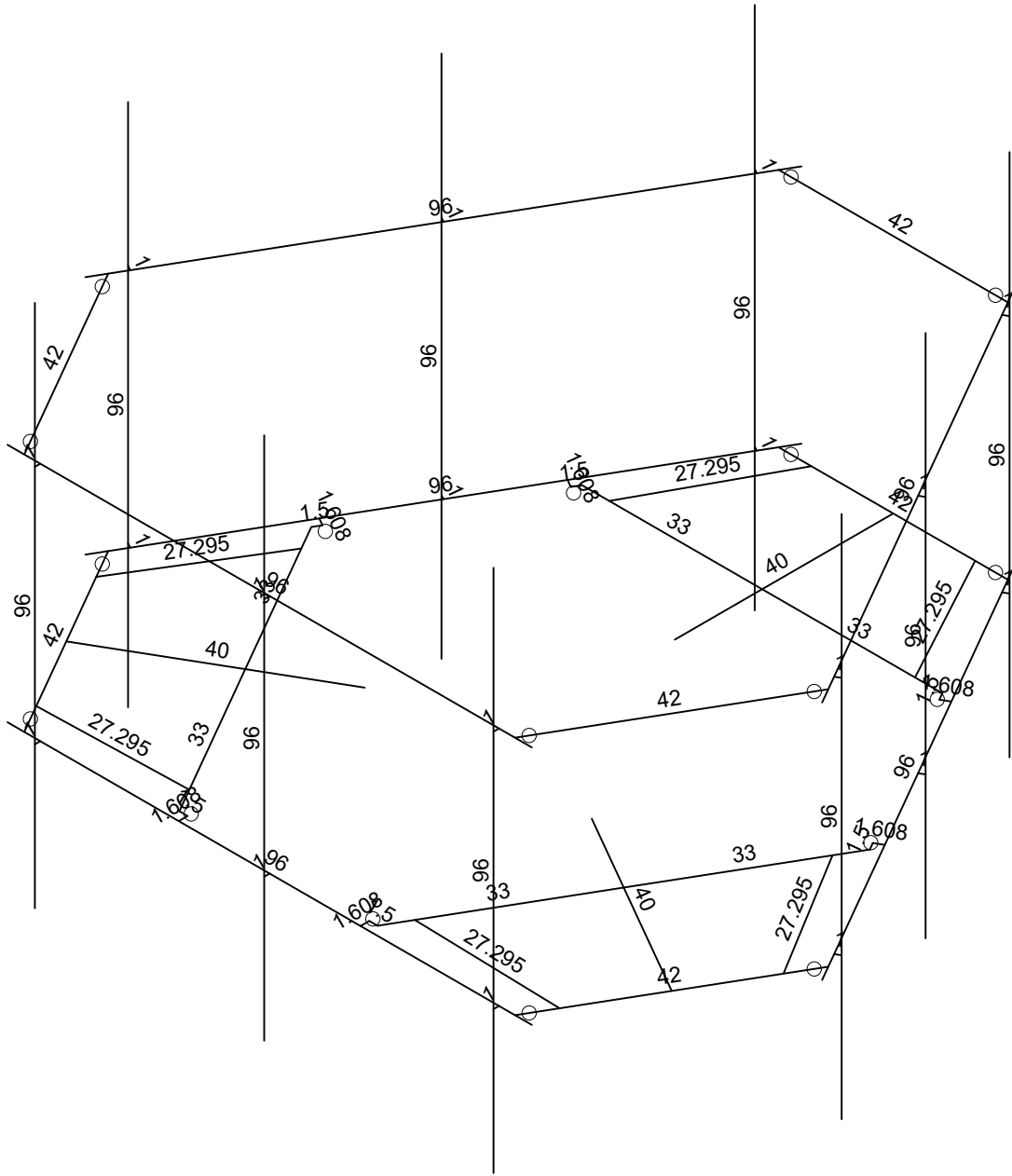
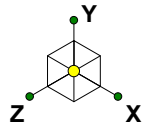
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Material Sets

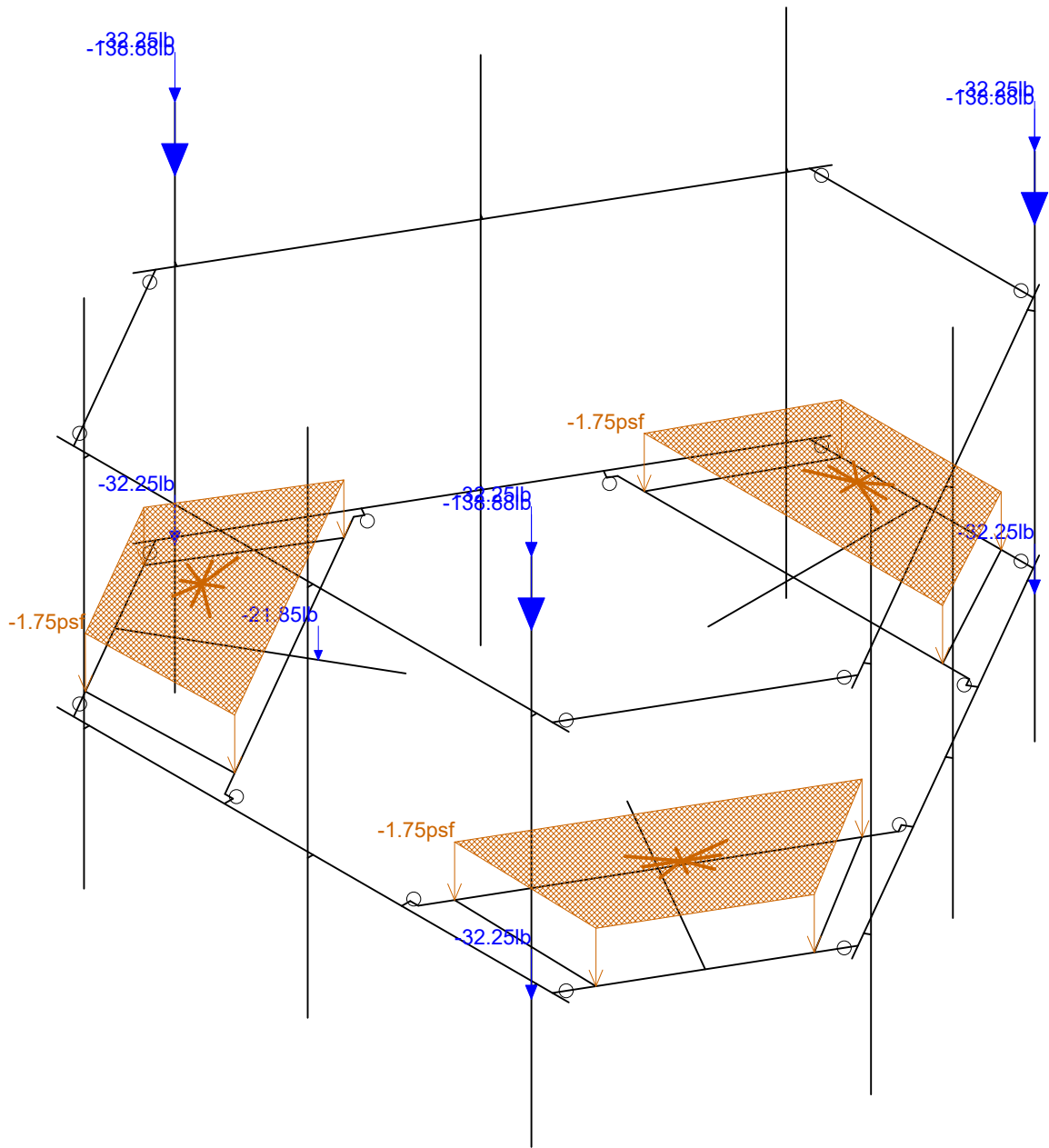
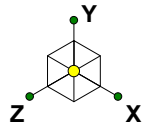
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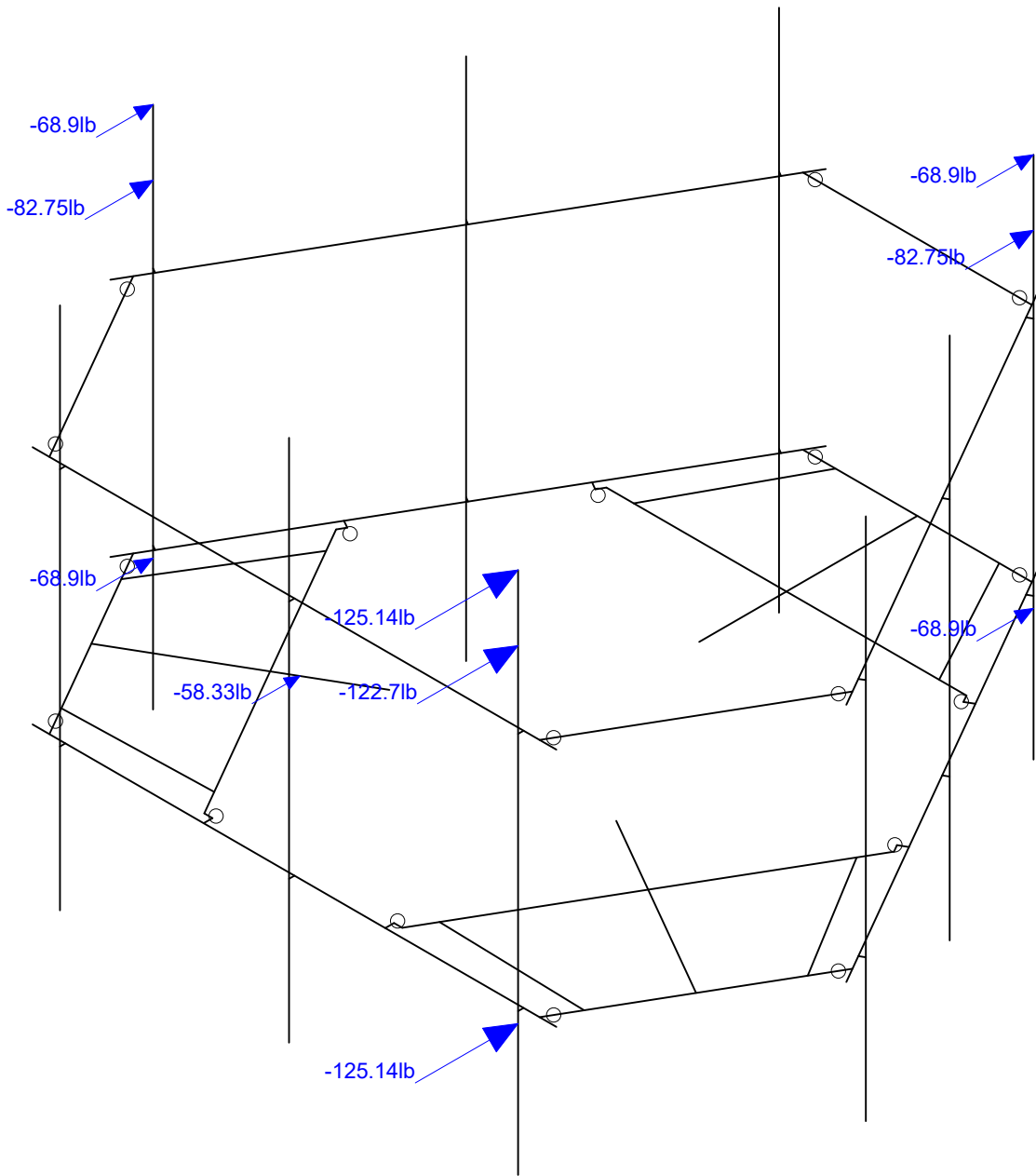
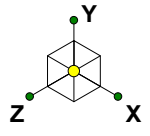
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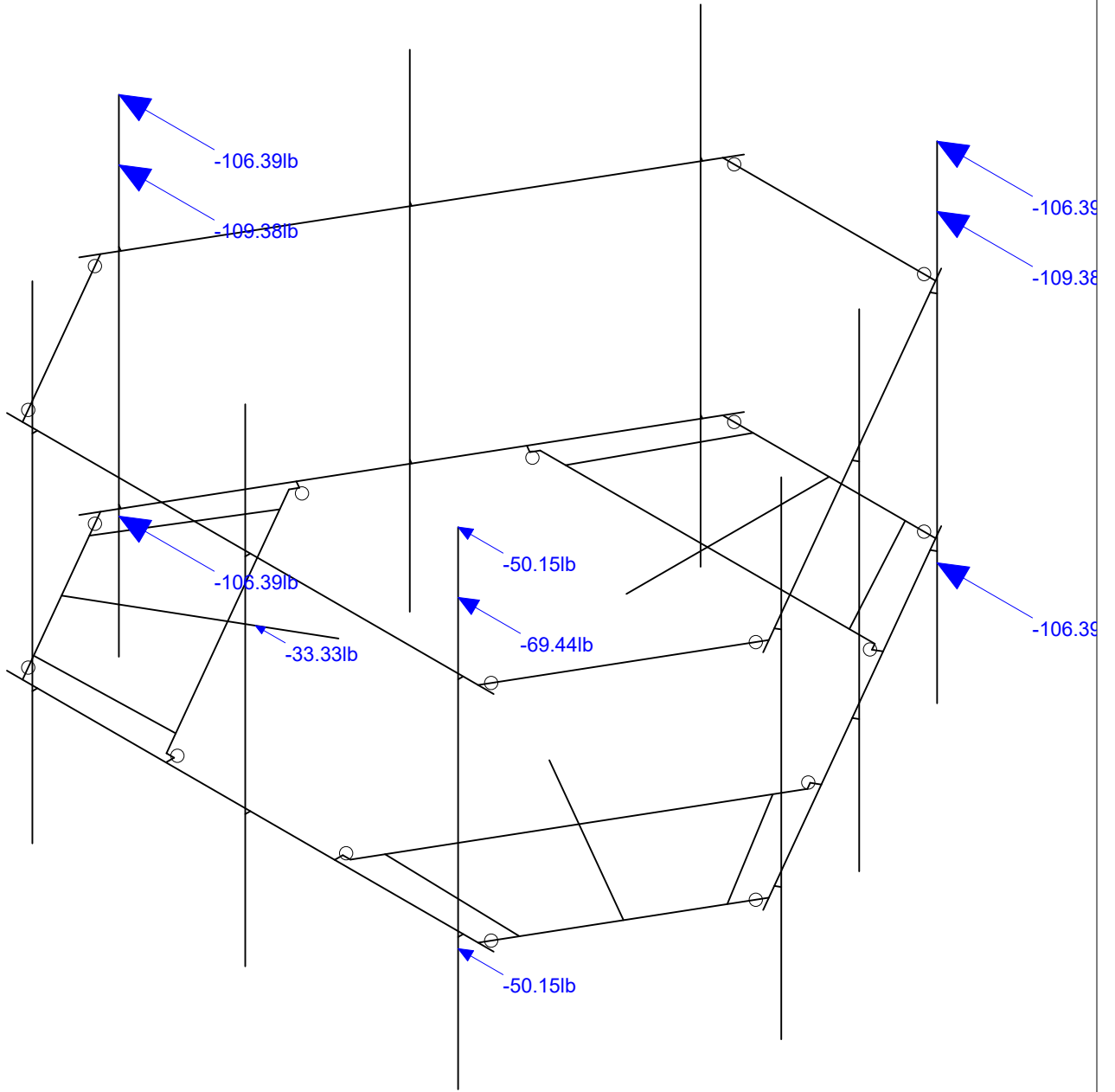
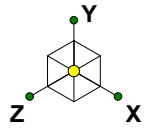
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Wind Load AZI 000

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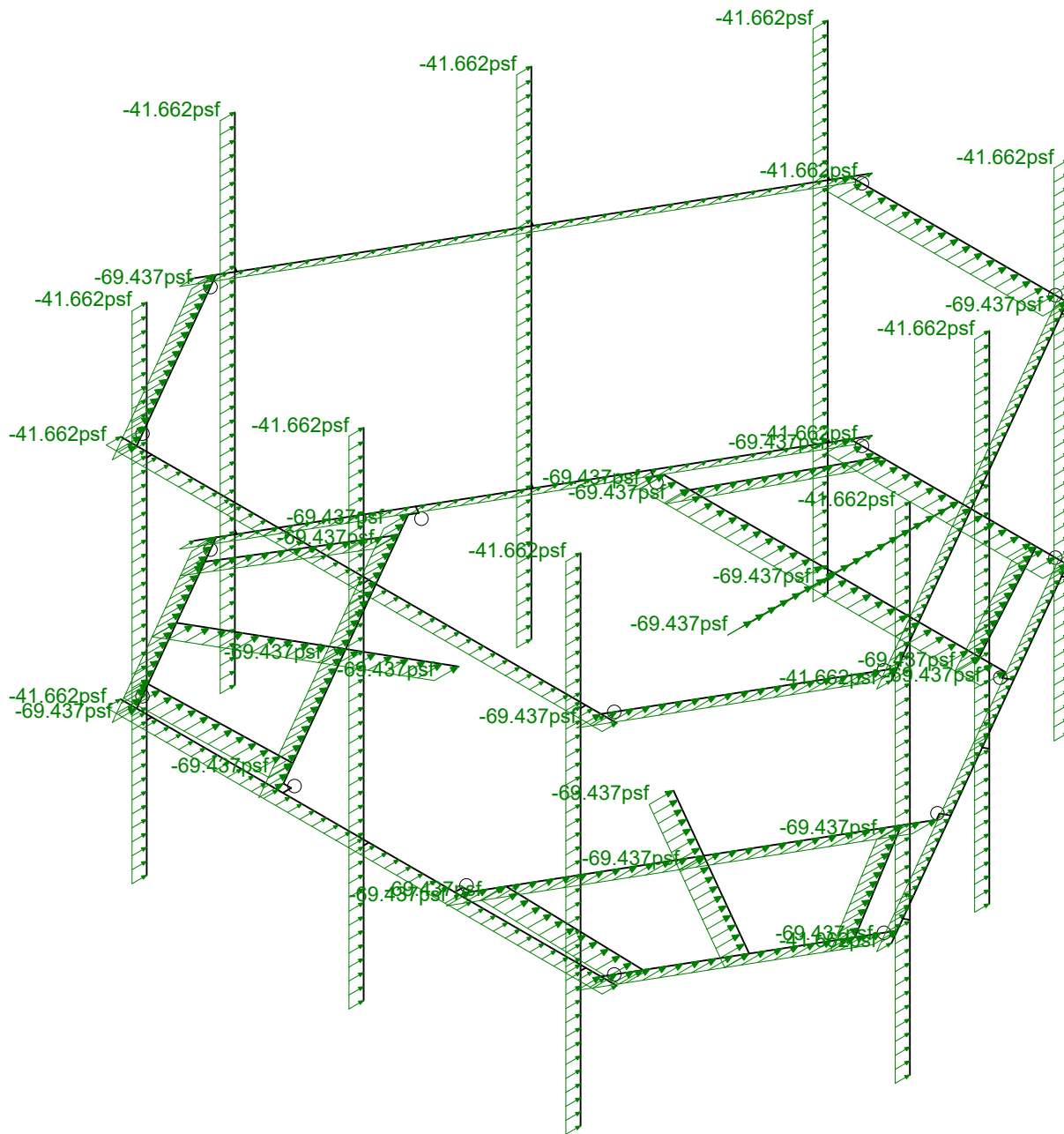
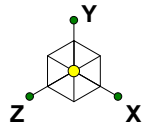
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Wind Load AZI 090

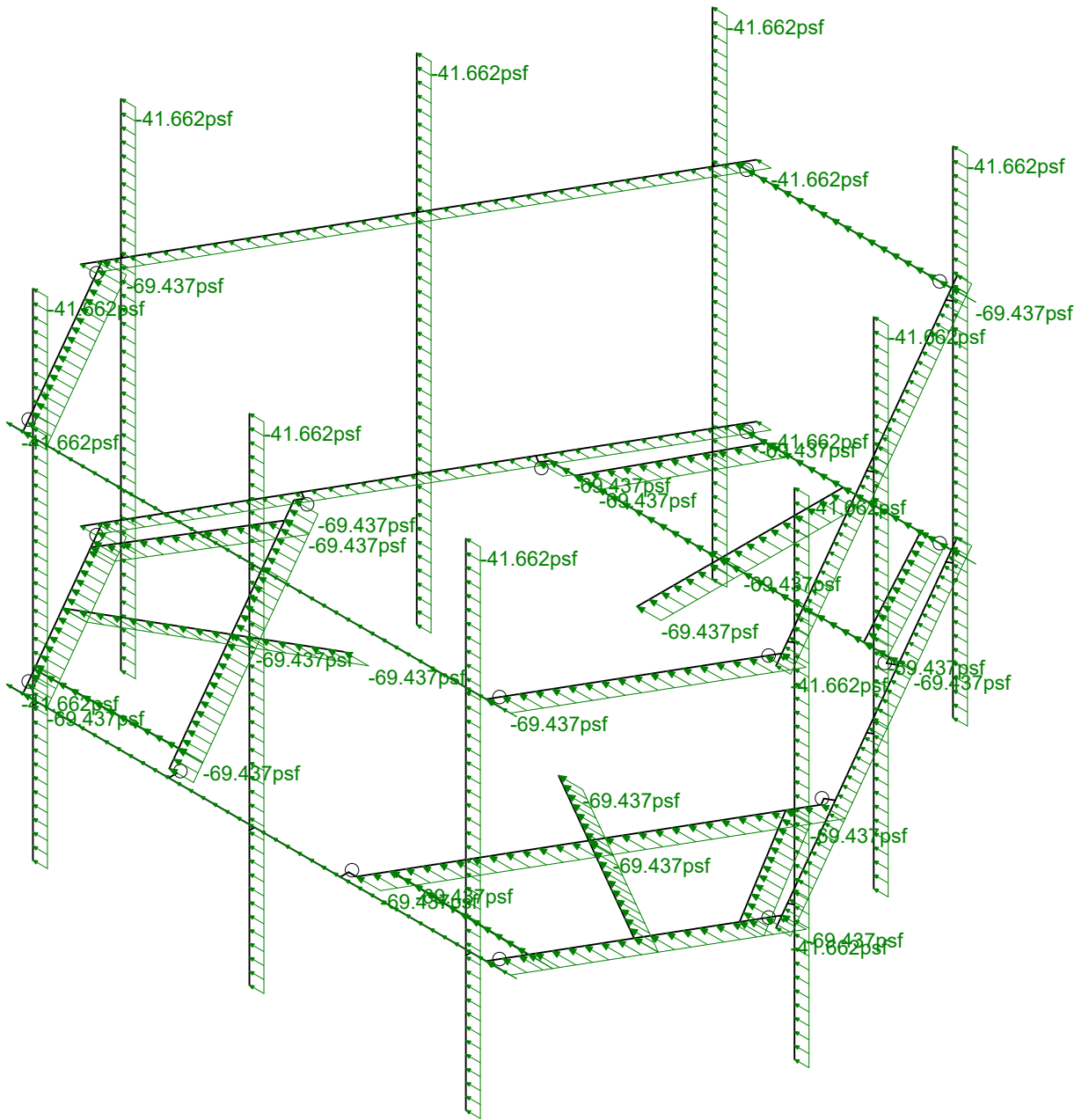
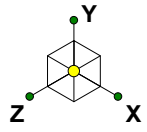
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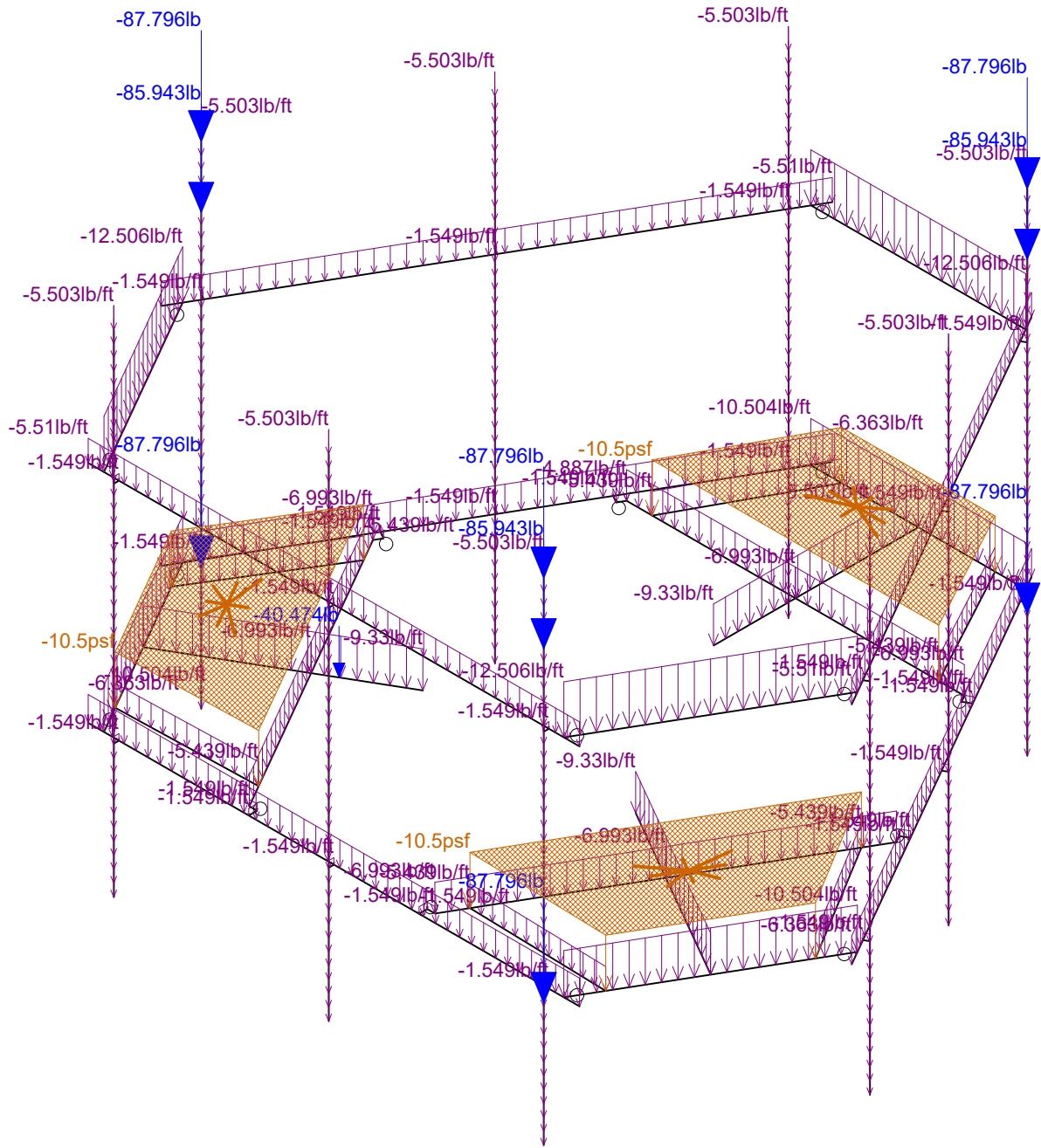
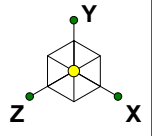


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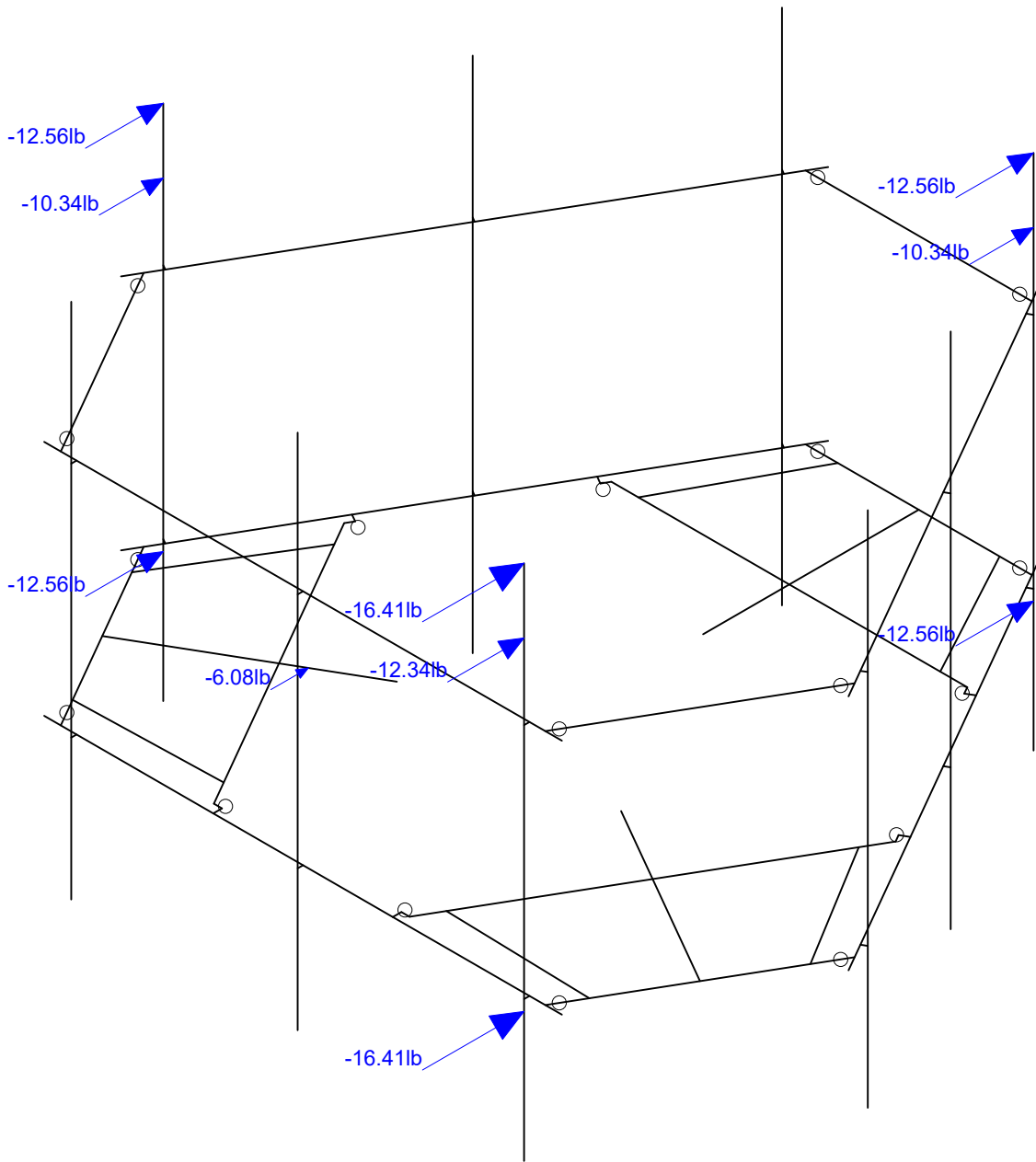
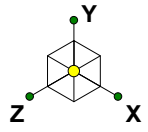
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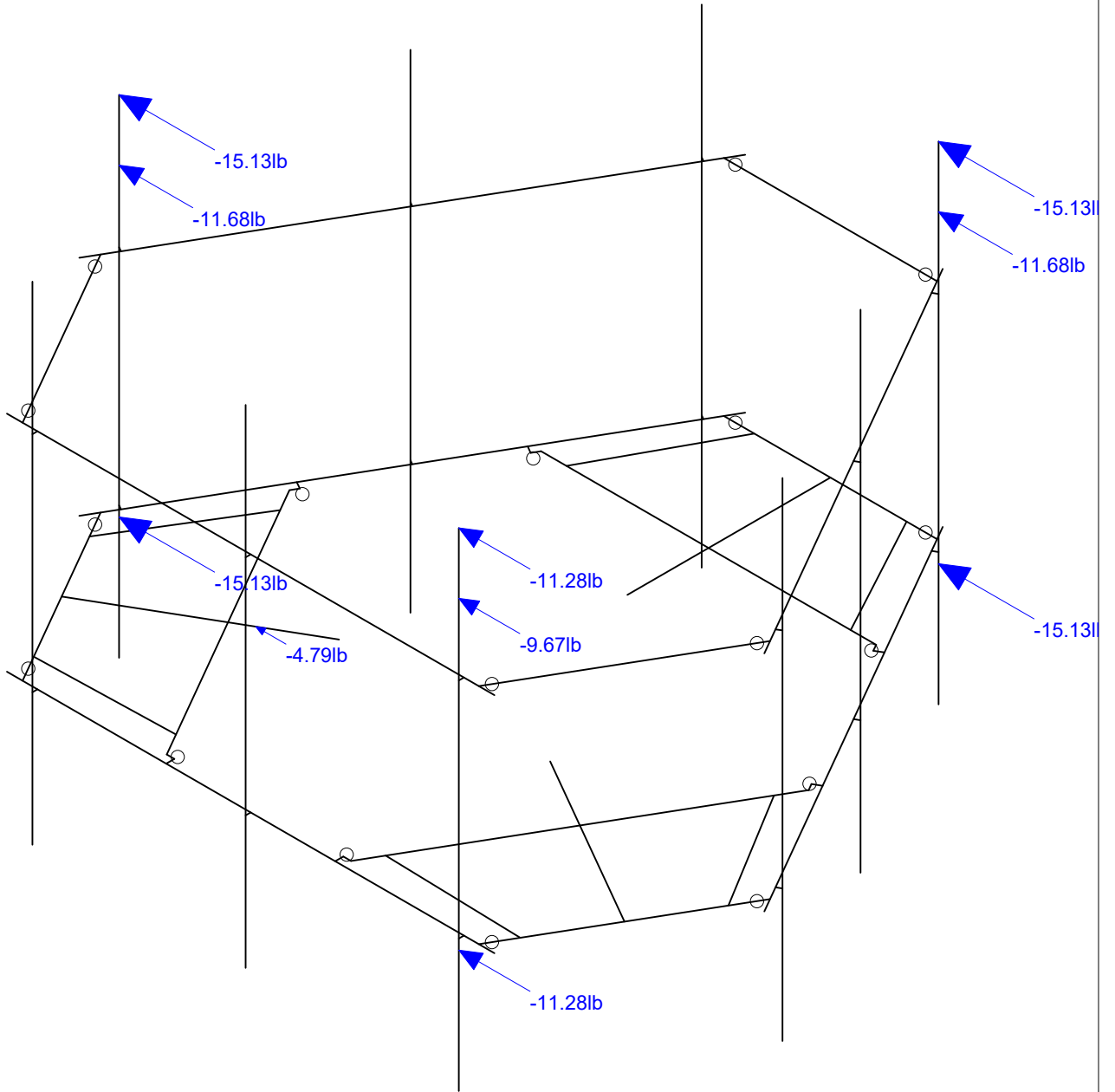
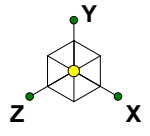
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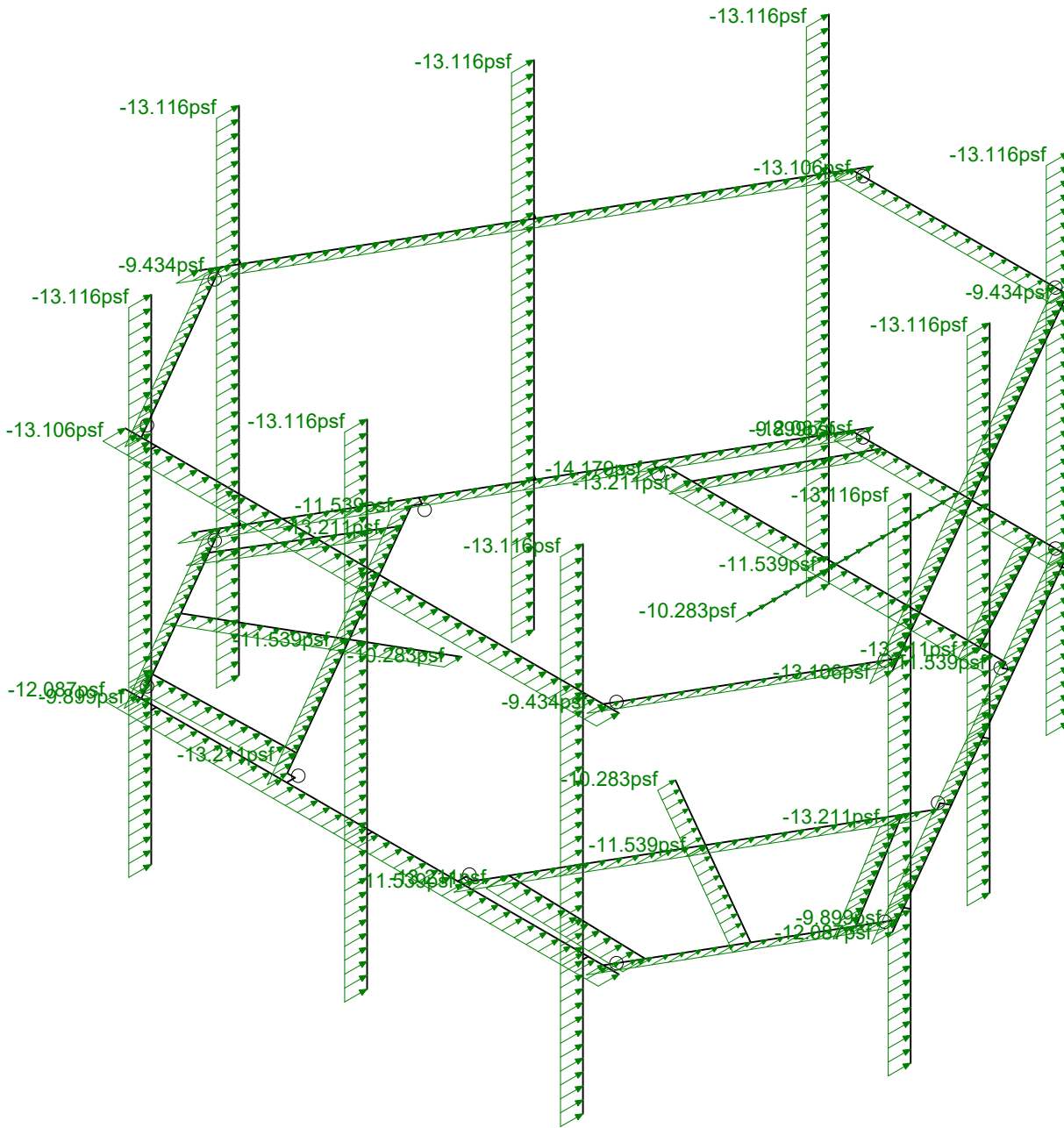
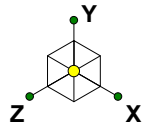
Loads: BLC 17, Ice Wind Load AZI 0  
Envelope Only Solution

Infinigy Engineering, PLLC	BOHVN00140A	Ice + Wind Load AZI 000
PSM		Sept 14, 2021 at 11:02 AM
1197-F0001-B		BOHVN00140A_loaded.r3d



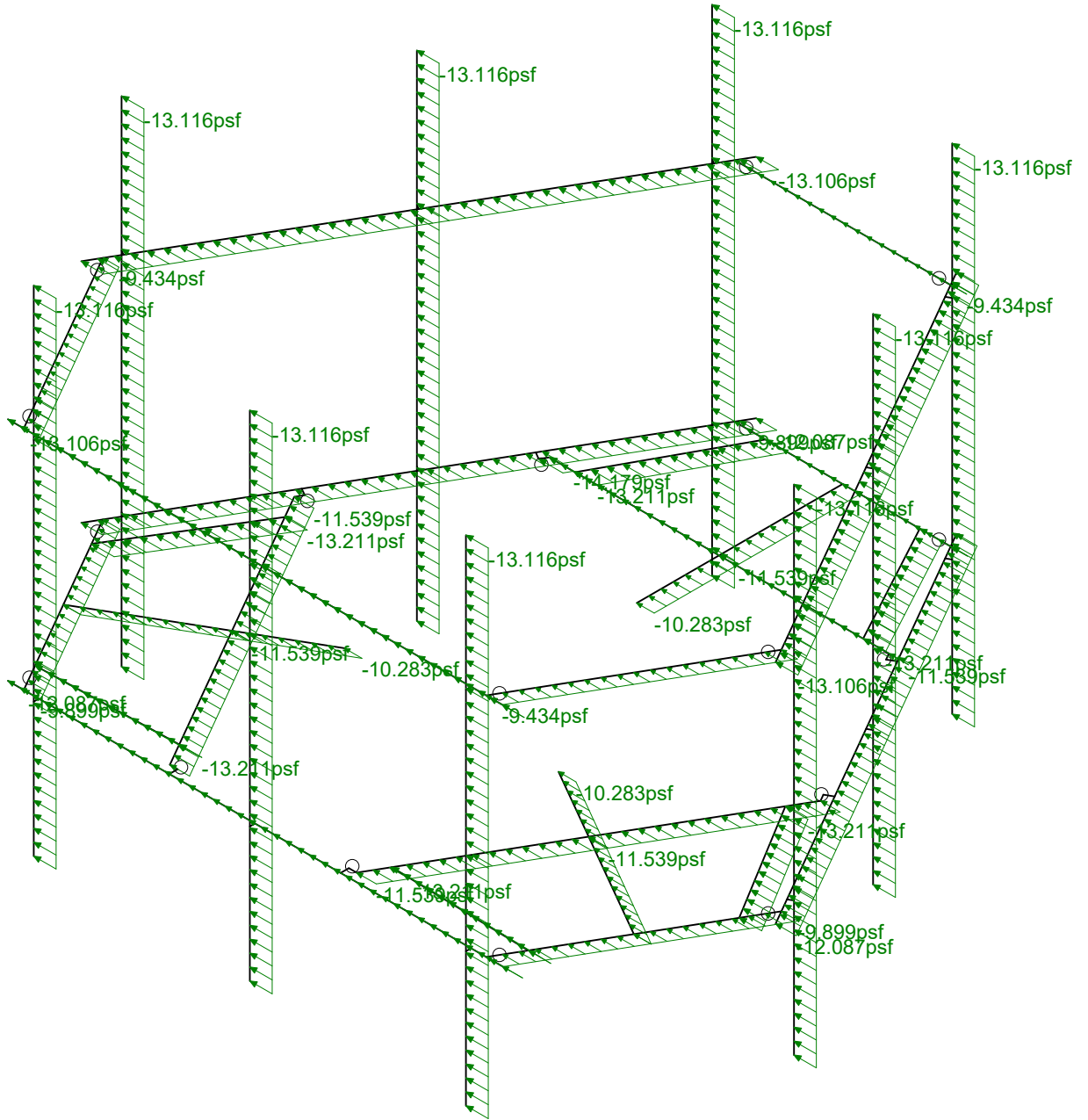
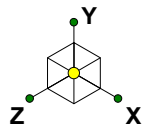
Loads: BLC 20, Ice Wind Load AZI 90  
Envelope Only Solution

Infinigy Engineering, PLLC	BOHVN00140A	Ice + Wind Load AZI 090
PSM		Sept 14, 2021 at 11:03 AM
1197-F0001-B		BOHVN00140A_loaded.r3d



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

Infinigy Engineering, PLLC	BOHVN00140A	Distr Ice + Wind Load AZI 000
PSM		Sept 14, 2021 at 11:03 AM
1197-F0001-B		BOHVN00140A_loaded.r3d



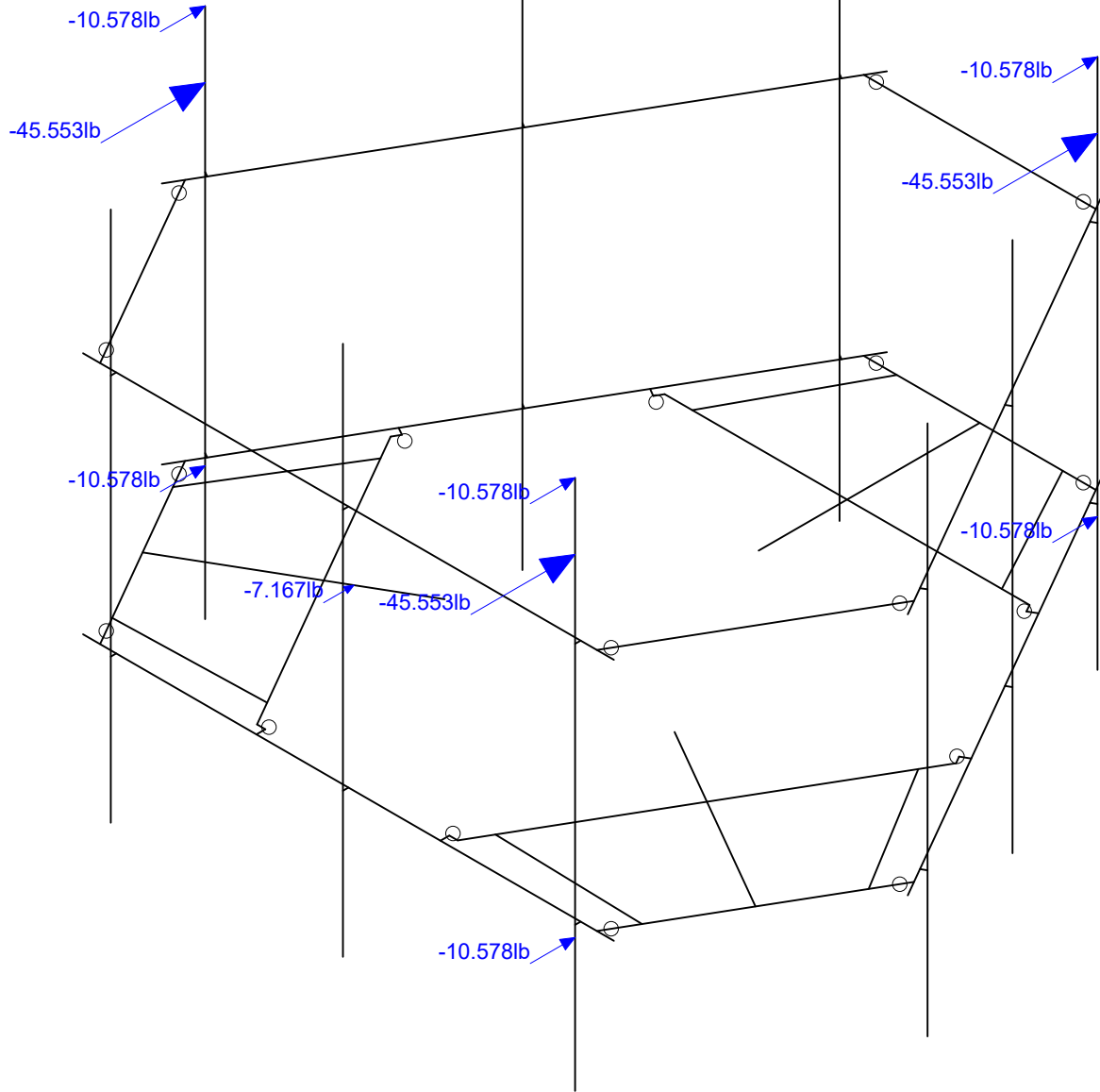
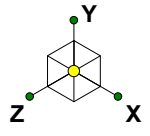
Loads: BLC 30, Distr. Ice Wind Load X  
Envelope Only Solution

Infinigy Engineering, PLLC  
PSM  
1197-F0001-B

BOHVN00140A

Distr Ice + Wind Load AZI 090  
Sept 14, 2021 at 11:03 AM  
BOHVN00140A\_loaded.r3d





Loads: BLC 31, Seismic Load Z  
Envelope Only Solution

Infinigy Engineering, PLLC

PSM

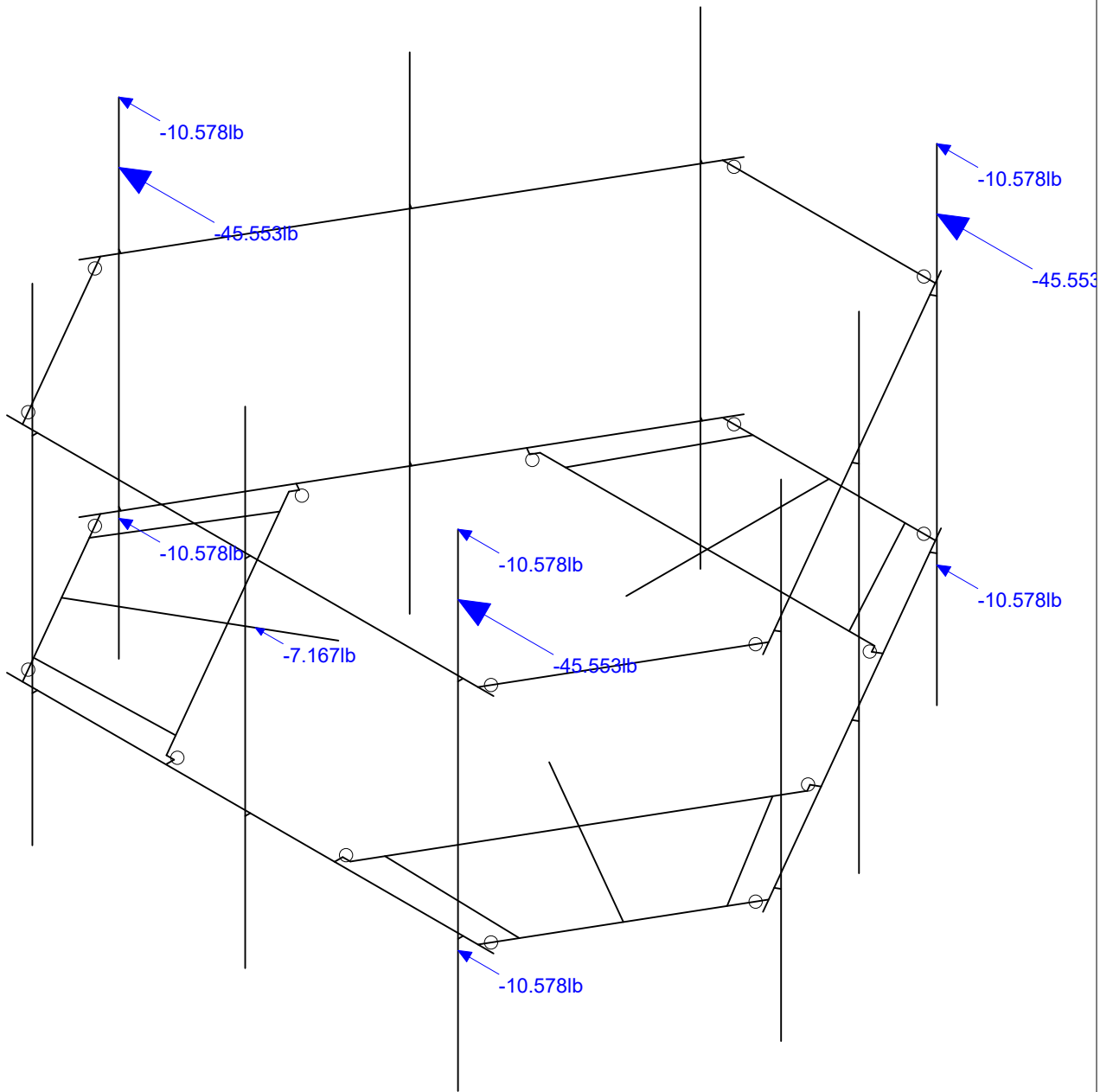
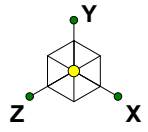
1197-F0001-B

BOHVN00140A

Seismic Load AZI 000

Sept 14, 2021 at 11:03 AM

BOHVN00140A\_loaded.r3d

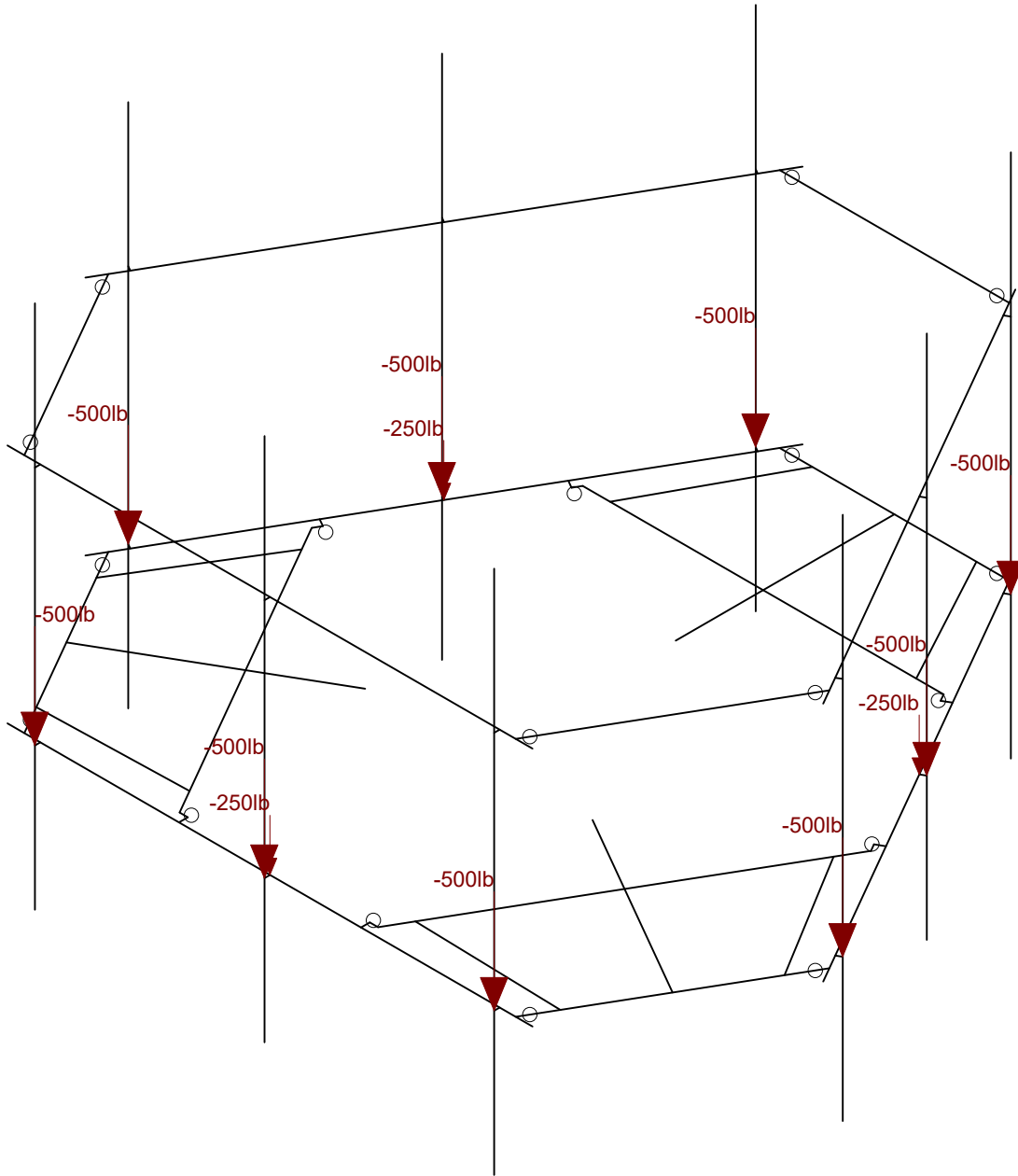
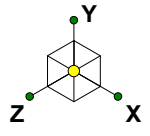


Loads: BLC 32, Seismic Load X  
Envelope Only Solution

Infinigy Engineering, PLLC  
PSM  
1197-F0001-B

BOHVN00140A

Seismic Load AZI 090  
Sept 14, 2021 at 11:04 AM  
BOHVN00140A\_loaded.r3d

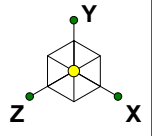


Loads: LL - Live Load  
Envelope Only Solution

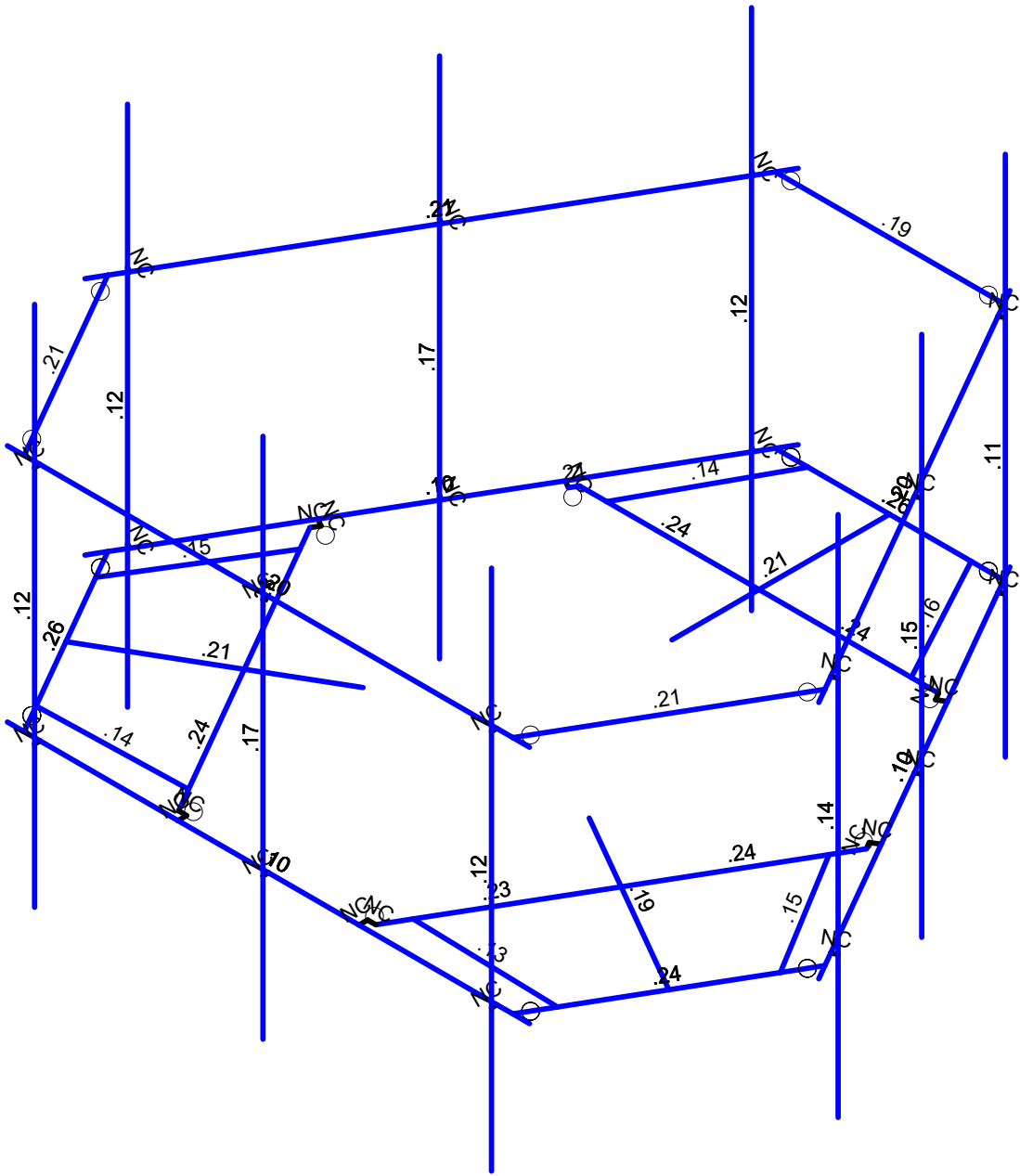
Infinigy Engineering, PLLC  
PSM  
1197-F0001-B

BOHVN00140A

Non-concurrent Live Loads  
Sept 14, 2021 at 11:04 AM  
BOHVN00140A\_loaded.r3d

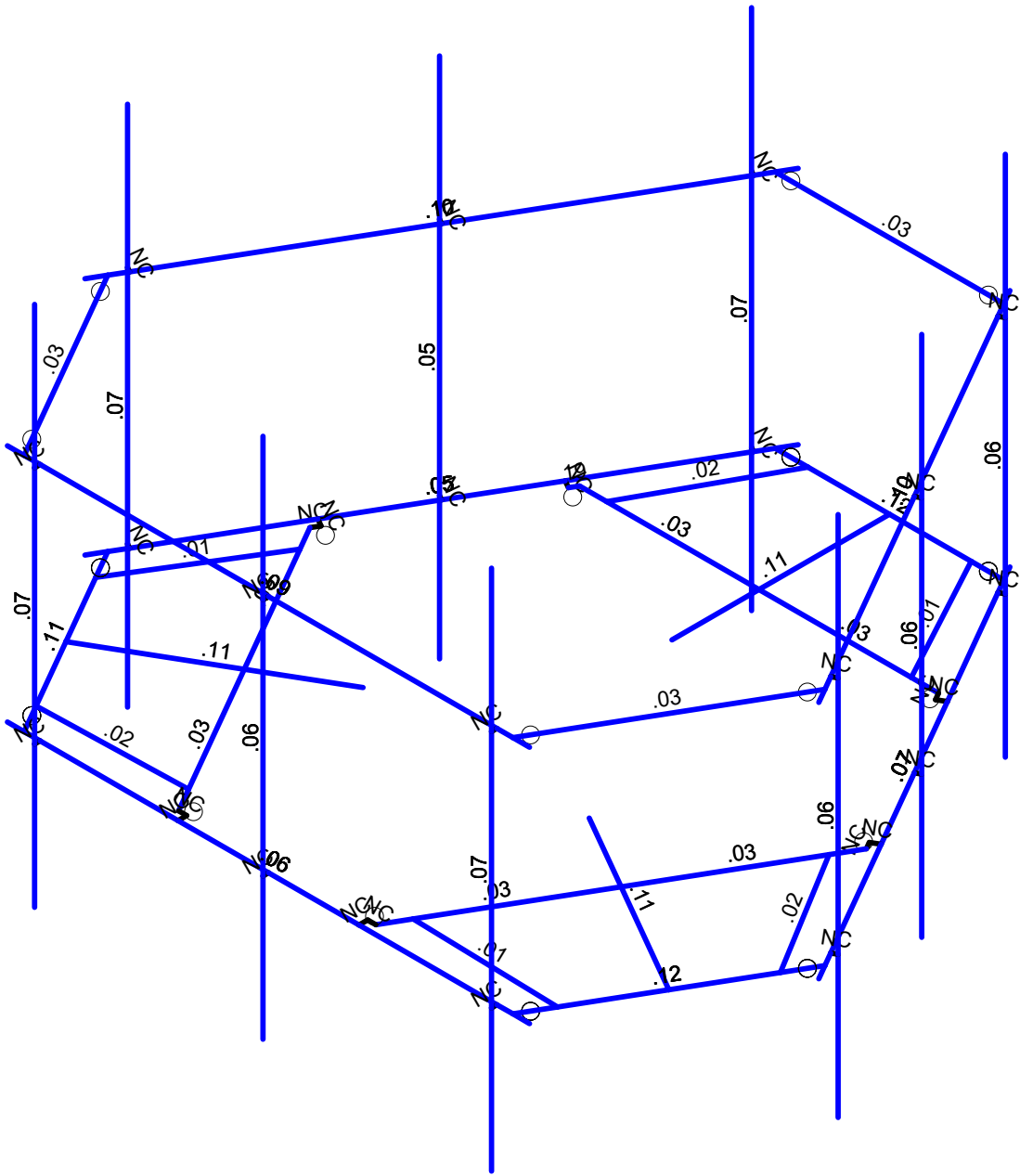
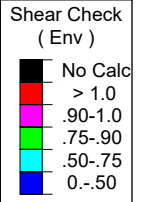
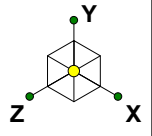


Code Check (Env)	
Black	No Calc
Red	> 1.0
Magenta	.90-1.0
Green	.75-.90
Cyan	.50-.75
Blue	0-.50



Member Code Checks Displayed (Enveloped)  
Envelope Only Solution

Infinigy Engineering, PLLC	BOHVN00140A	Bending Check
PSM		Sept 14, 2021 at 11:04 AM
1197-F0001-B		BOHVN00140A_loaded.r3d



Member Shear Checks Displayed (Enveloped)  
Envelope Only Solution

Infinigy Engineering, PLLC	BOHVN00140A	Shear Check
PSM		Sept 14, 2021 at 11:04 AM
1197-F0001-B		BOHVN00140A_loaded.r3d

## Program Inputs

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

SITE INFORMATION		
Risk Category:	II	
Exposure Category:	B	
Topo Factor Procedure:	Method 1, Category 1	
Site Class:	D - Stiff Soil (Assumed)	
Ground Elevation:	57.61	ft *Rev H

MOUNT INFORMATION		
Mount Type:	Platform	
Num Sectors:	3	
Centerline AGL:	108.00	ft
Tower Height AGL:	178.50	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 ( $K_e$ ):	0.998	*Rev H Only
Rooftop Speed-Up ( $K_s$ ):	1.000	*Rev H Only
Topographic Factor ( $K_{zt}$ ):	1.000	
Gust Effect Factor ( $G_h$ ):	1.000	

CODE STANDARDS		
Building Code:	2015 IBC	
TIA Standard:	TIA-222-H	
ASCE Standard:	ASCE 7-16	

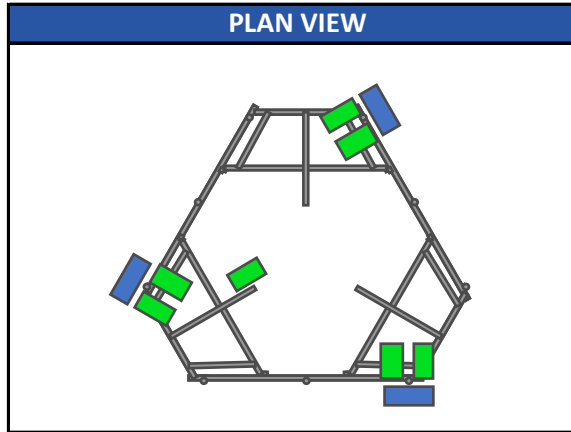
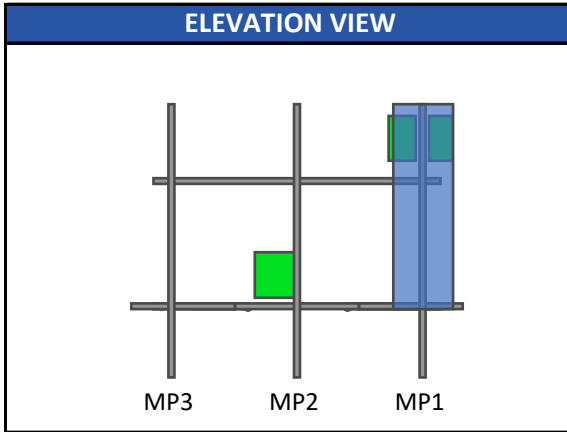
WIND AND ICE DATA		
Ultimate Wind ( $V_{ult}$ ):	119	mph
Design Wind ( $V$ ):	N/A	mph
Ice Wind ( $V_{ice}$ ):	50	mph
Base Ice Thickness ( $t_i$ ):	1	in
Flat Pressure:	69.437	psf
Round Pressure:	41.662	psf
Ice Wind Pressure:	7.355	psf

SEISMIC DATA		
Short-Period Accel. ( $S_s$ ):	0.205	g
1-Second Accel. ( $S_1$ ):	0.055	g
Short-Period Design ( $S_{DS}$ ):	0.219	
1-Second Design ( $S_{D1}$ ):	0.088	
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 Load Calculator V2.1.7

# Program Inputs



Infinigy Load Calculator V2.1.7

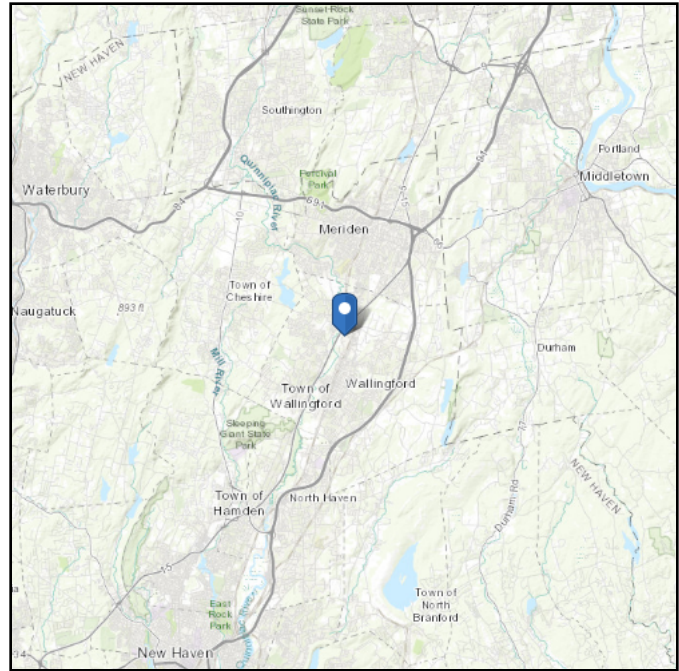
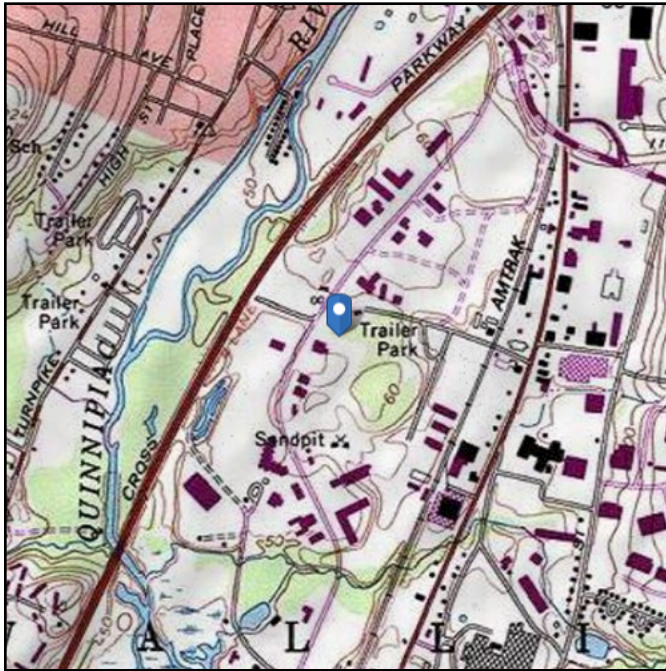
APPURTENANCE INFORMATION											
Appurtenance Name	Elevation	Qty.	$K_a$	$q_z$ (psf)	$EPA_N$ (ft <sup>2</sup> )	$EPA_T$ (ft <sup>2</sup> )	Wind $F_z$ (lbs)	Wind $F_x$ (lbs)	Weight (lbs)	Seismic F (lbs)	Member ( $\alpha$ sector)
JMA WIRELESS MX08FRO665-21	108.0	3	0.90	34.72	8.01	3.21	250.29	100.30	64.50	21.16	MP1
FUJITSU TA08025-B605	108.0	3	0.90	34.72	1.96	1.19	61.35	37.16	74.95	24.58	MP1
FUJITSU TA08025-B604	108.0	3	0.90	34.72	1.96	1.03	61.35	32.28	63.93	20.97	MP1
RAYCAP RDIDC-9181-PF-48	108.0	1	0.90	34.72	1.87	1.07	58.33	33.33	21.85	7.17	S2

# ASCE 7 Hazards Report

**Address:**  
No Address at This Location

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

**Elevation:** 57.61 ft (NAVD 88)  
**Latitude:** 41.480761  
**Longitude:** -72.8177



## Wind

### Results:

Wind Speed:	119 Vmph
10-year MRI	75 Vmph
25-year MRI	84 Vmph
50-year MRI	90 Vmph
100-year MRI	98 Vmph

Data Source: ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2  
Date Accessed: Tue Sep 14 2021

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

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

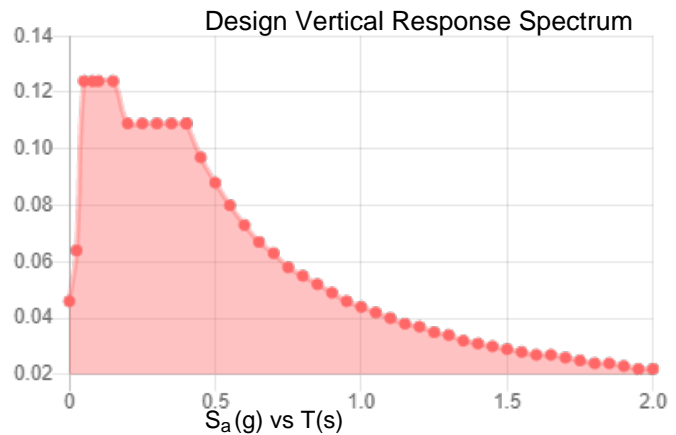
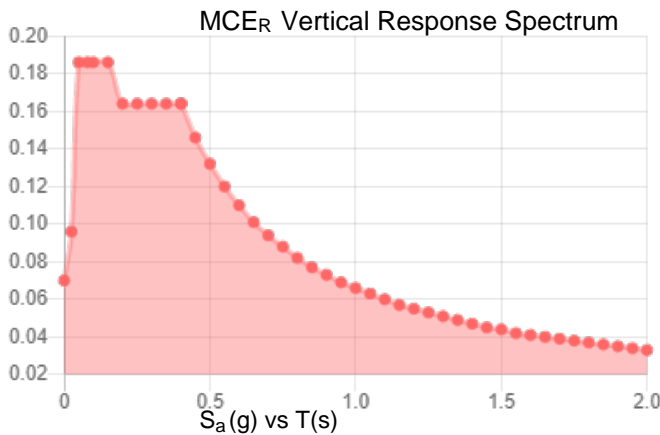
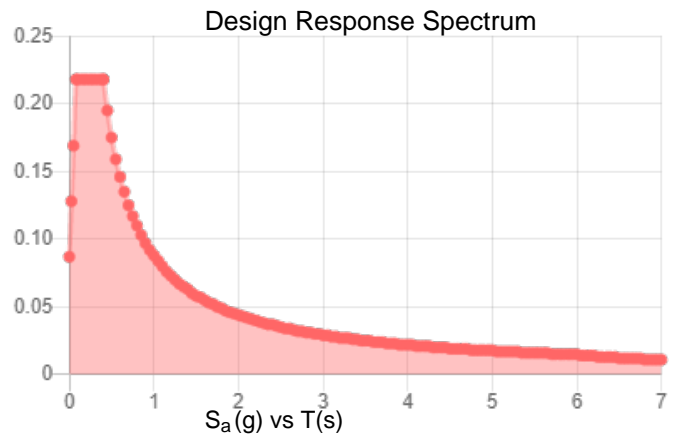
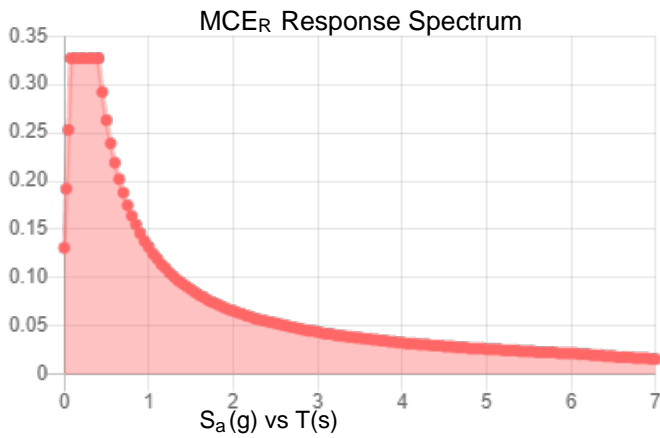


**Site Soil Class:** D - Default (see Section 11.4.3)

**Results:**

$S_s$ :	0.205	$S_{D1}$ :	0.088
$S_1$ :	0.055	$T_L$ :	6
$F_a$ :	1.6	PGA :	0.114
$F_v$ :	2.4	PGA <sub>M</sub> :	0.179
$S_{MS}$ :	0.327	$F_{PGA}$ :	1.572
$S_{M1}$ :	0.132	$I_e$ :	1
$S_{DS}$ :	0.218	$C_v$ :	0.709

**Seismic Design Category** B



**Data Accessed:**

Tue Sep 14 2021

**Date Source:**

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

## Ice

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**Results:**

Ice Thickness: 1.00 in.  
Concurrent Temperature: 15 F  
Gust Speed: 50 mph

**Data Source:** Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8

**Date Accessed:** Tue Sep 14 2021

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

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

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**Member Primary Data**

	Label	I Joint	J Joint	K Joint	Rotate(...)	Section/Shape	Type	Design List	Material	Design Rules
1	S3	P1	P3			Square Tubing	Beam	None	A500 GR.C	Typical
2	GA4	P9	P12		270	Grating Angle	Beam	None	A529 Gr. 50	Typical
3	GA3	P10	P11			Grating Angle	Beam	None	A529 Gr. 50	Typical
4	P3	P7	P8			Corner Plates	Beam	None	A1011 36 Ksi	Typical
5	S2	P13	P14			Square Tubing	Beam	None	A500 GR.C	Typical
6	GA2	P20	P23		270	Grating Angle	Beam	None	A529 Gr. 50	Typical
7	GA1	P21	P22			Grating Angle	Beam	None	A529 Gr. 50	Typical
8	P2	P18	P19			Corner Plates	Beam	None	A1011 36 Ksi	Typical
9	S1	P24	P25			Square Tubing	Beam	None	A500 GR.C	Typical
10	GA6	P31	P34		270	Grating Angle	Beam	None	A529 Gr. 50	Typical
11	GA5	P32	P33			Grating Angle	Beam	None	A529 Gr. 50	Typical
12	P1	P29	P30			Corner Plates	Beam	None	A1011 36 Ksi	Typical
13	H1	N43	N44			Face Pipes(3.5x.16)	Beam	None	A500 GR.C	Typical
14	MP1	N66	N60			Antenna Pipes	Beam	None	A500 GR.C	Typical
15	MP3	N63	N57			Antenna Pipes	Beam	None	A500 GR.C	Typical
16	HR1	N67	N68			Handrail	Beam	None	A500 GR.C	Typical
17	CA8	N114A	N113A		180	Handrail Connector	Beam	None	A1011 36 Ksi	Typical
18	CA9	N112A	N111A		180	Handrail Connector	Beam	None	A1011 36 Ksi	Typical
19	CA7	N116A	N115A		180	Handrail Connector	Beam	None	A1011 36 Ksi	Typical
20	M32	N48A	N70A			RIGID	None	None	RIGID	Typical
21	M35	N45	N69A			RIGID	None	None	RIGID	Typical
22	M36	N51	N71A			RIGID	None	None	RIGID	Typical
23	M39A	N54	N72A			RIGID	None	None	RIGID	Typical
24	CA3	P4	N122A			Channel(3.38x2.06)	Beam	None	A1011 36 Ksi	Typical
25	CA4	N124B	P4			Channel(3.38x2.06)	Beam	None	A1011 36 Ksi	Typical
26	CA1	P15	N122B			Channel(3.38x2.06)	Beam	None	A1011 36 Ksi	Typical
27	CA2	N123A	P15			Channel(3.38x2.06)	Beam	None	A1011 36 Ksi	Typical
28	CA5	P26	N125			Channel(3.38x2.06)	Beam	None	A1011 36 Ksi	Typical
29	CA6	N126	P26			Channel(3.38x2.06)	Beam	None	A1011 36 Ksi	Typical
30	M64	N126A	N125A			RIGID	None	None	RIGID	Typical
31	M65	N126	N125A			RIGID	None	None	RIGID	Typical
32	M66	N129	N128			RIGID	None	None	RIGID	Typical
33	M67	N124B	N128			RIGID	None	None	RIGID	Typical
34	M68	N132	N131			RIGID	None	None	RIGID	Typical
35	M69	N123A	N131			RIGID	None	None	RIGID	Typical
36	M70	N133	N132A			RIGID	None	None	RIGID	Typical
37	M71	N122B	N132A			RIGID	None	None	RIGID	Typical
38	M72	N135	N134			RIGID	None	None	RIGID	Typical
39	M73	N125	N134			RIGID	None	None	RIGID	Typical
40	M74	N138	N137			RIGID	None	None	RIGID	Typical
41	M75	N122A	N137			PL 2.375x0.5	None	None	A36 Gr.36	Typical

**Member Primary Data (Continued)**

	Label	I Joint	J Joint	K Joint	Rotate(...)	Section/Shape	Type	Design List	Material	Design Rules
42	MP2	N75	N74			Antenna Pipes	Beam	None	A500 GR.C	Typical
43	M43	N72B	N76			RIGID	None	None	RIGID	Typical
44	M44	N73	N77			RIGID	None	None	RIGID	Typical
45	H3	N81A	N82A			Face Pipes(3.5x.16)	Beam	None	A500 GR.C	Typical
46	MP7	N90	N88			Antenna Pipes	Beam	None	A500 GR.C	Typical
47	MP9	N89	N87			Antenna Pipes	Beam	None	A500 GR.C	Typical
48	HR3	N91	N92			Handrail	Beam	None	A500 GR.C	Typical
49	M52	N84	N94			RIGID	None	None	RIGID	Typical
50	M53	N83A	N93			RIGID	None	None	RIGID	Typical
51	M54	N85	N95			RIGID	None	None	RIGID	Typical
52	M55	N86	N96			RIGID	None	None	RIGID	Typical
53	H2	N109	N110			Face Pipes(3.5x.16)	Beam	None	A500 GR.C	Typical
54	MP4	N118	N116			Antenna Pipes	Beam	None	A500 GR.C	Typical
55	MP6	N117	N115			Antenna Pipes	Beam	None	A500 GR.C	Typical
56	HR2	N119	N120			Handrail	Beam	None	A500 GR.C	Typical
57	M66A	N112	N122			RIGID	None	None	RIGID	Typical
58	M67A	N111	N121			RIGID	None	None	RIGID	Typical
59	M68A	N113	N123			RIGID	None	None	RIGID	Typical
60	M69A	N114	N124			RIGID	None	None	RIGID	Typical
61	MP8	N132B	N131A			Antenna Pipes	Beam	None	A500 GR.C	Typical
62	M68B	N129B	N133B			RIGID	None	None	RIGID	Typical
63	M69B	N130A	N134A			RIGID	None	None	RIGID	Typical
64	MP5	N138A	N137A			Antenna Pipes	Beam	None	A500 GR.C	Typical
65	M71B	N135A	N139			RIGID	None	None	RIGID	Typical
66	M72B	N136	N140			RIGID	None	None	RIGID	Typical

**Hot Rolled Steel Design Parameters**

	Label	Shape	Lengt...	Lbby[in]	Lbzz[in]	Lcomp t...	Lcomp b...	L-tor...	Kyy	Kzz	Cb	Func...
1	S3	Square Tubing	40			Lbby						Late...
2	GA4	Grating Angle	27.295			Lbby						Late...
3	GA3	Grating Angle	27.295			Lbby						Late...
4	P3	Corner Plates	42			Lbby						Late...
5	S2	Square Tubing	40			Lbby						Late...
6	GA2	Grating Angle	27.295			Lbby						Late...
7	GA1	Grating Angle	27.295			Lbby						Late...
8	P2	Corner Plates	42			Lbby						Late...
9	S1	Square Tubing	40			Lbby						Late...
10	GA6	Grating Angle	27.295			Lbby						Late...
11	GA5	Grating Angle	27.295			Lbby						Late...
12	P1	Corner Plates	42			Lbby						Late...
13	H1	Face Pipes(3.5x.16)	96			Lbby						Late...



**Hot Rolled Steel Design Parameters (Continued)**

	Label	Shape	Lenqt...	Lbby[in]	Lbzz[in]	Lcomp t...	Lcomp b...	L-tor...	Kyy	Kzz	Cb	Func...
14	MP1	Antenna Pipes	96			Lbyy						Late...
15	MP3	Antenna Pipes	96			Lbyy						Late...
16	HR1	Handrail	96			Lbyy						Late...
17	CA8	Handrail Connector	42			Lbyy						Late...
18	CA9	Handrail Connector	42			Lbyy						Late...
19	CA7	Handrail Connector	42			Lbyy						Late...
20	CA3	Channel(3.38x2.06)	33			Lbyy						Late...
21	CA4	Channel(3.38x2.06)	33			Lbyy						Late...
22	CA1	Channel(3.38x2.06)	33			Lbyy						Late...
23	CA2	Channel(3.38x2.06)	33			Lbyy						Late...
24	CA5	Channel(3.38x2.06)	33			Lbyy						Late...
25	CA6	Channel(3.38x2.06)	33			Lbyy						Late...
26	M75	PL 2.375x0.5	1.5			Lbyy						Late...
27	MP2	Antenna Pipes	96			Lbyy						Late...
28	H3	Face Pipes(3.5x.16)	96			Lbyy						Late...
29	MP7	Antenna Pipes	96			Lbyy						Late...
30	MP9	Antenna Pipes	96			Lbyy						Late...
31	HR3	Handrail	96			Lbyy						Late...
32	H2	Face Pipes(3.5x.16)	96			Lbyy						Late...
33	MP4	Antenna Pipes	96			Lbyy						Late...
34	MP6	Antenna Pipes	96			Lbyy						Late...
35	HR2	Handrail	96			Lbyy						Late...
36	MP8	Antenna Pipes	96			Lbyy						Late...
37	MP5	Antenna Pipes	96			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						Yes			None
2	GA4						Yes			None
3	GA3						Yes			None
4	P3	BenPIN	BenPIN				Yes	Default		None
5	S2						Yes			None
6	GA2						Yes			None
7	GA1						Yes			None
8	P2	BenPIN	BenPIN				Yes	Default		None
9	S1						Yes	Default		None
10	GA6						Yes			None
11	GA5						Yes			None
12	P1	BenPIN	BenPIN				Yes	Default		None
13	H1						Yes			None
14	MP1						Yes	+y+3		None



**Member Advanced Data (Continued)**

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Defl Ra..	Analysis ...	Inactive	Seismi...
15	MP3						Yes		+y+3		None
16	HR1						Yes				None
17	CA8	00000X	00000X				Yes				None
18	CA9	00000X	00000X				Yes				None
19	CA7	00000X	00000X				Yes	Default			None
20	M32						Yes	** NA **			None
21	M35						Yes	** NA **			None
22	M36						Yes	** NA **			None
23	M39A						Yes	** NA **			None
24	CA3						Yes	Default			None
25	CA4						Yes	Default			None
26	CA1						Yes	Default			None
27	CA2						Yes	Default			None
28	CA5						Yes	Default			None
29	CA6						Yes	Default			None
30	M64	BenPIN					Yes	** NA **			None
31	M65						Yes	** NA **			None
32	M66	BenPIN					Yes	** NA **			None
33	M67						Yes	** NA **			None
34	M68	BenPIN					Yes	** NA **			None
35	M69						Yes	** NA **			None
36	M70	BenPIN					Yes	** NA **			None
37	M71						Yes	** NA **			None
38	M72	BenPIN					Yes	** NA **			None
39	M73						Yes	** NA **			None
40	M74	BenPIN					Yes	** NA **			None
41	M75						Yes	** NA **			None
42	MP2						Yes		+y+3		None
43	M43						Yes	** NA **			None
44	M44						Yes	** NA **			None
45	H3						Yes				None
46	MP7						Yes		+y+3		None
47	MP9						Yes		+y+3		None
48	HR3						Yes				None
49	M52						Yes	** NA **			None
50	M53						Yes	** NA **			None
51	M54						Yes	** NA **			None
52	M55						Yes	** NA **			None
53	H2						Yes				None
54	MP4						Yes		+y+3		None
55	MP6						Yes		+y+3		None
56	HR2						Yes				None

**Member Advanced Data (Continued)**

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical Defl	Ra..Analysis ...	Inactive	Seismi...
57	M66A						Yes	** NA **		None
58	M67A						Yes	** NA **		None
59	M68A						Yes	** NA **		None
60	M69A						Yes	** NA **		None
61	MP8						Yes		+y+3	None
62	M68B						Yes	** NA **		None
63	M69B						Yes	** NA **		None
64	MP5						Yes		+y+3	None
65	M71B						Yes	** NA **		None
66	M72B						Yes	** NA **		None

**Material Takeoff**

	Material	Size	Pieces	Length[in]	Weight[LB]
1	General				
2	RIGID		29	35.1	0
3	Total General		29	35.1	0
4					
5	Hot Rolled Steel				
6	A1011 36 Ksi	C3.38x2.06x0.25	6	198	98.255
7	A1011 36 Ksi	PL6.5x0.375	3	126	87.09
8	A1011 36 Ksi	L6.6x4.46x0.25	3	126	96.558
9	A36 Gr.36	PL 2.375x0.5	1	1.5	.505
10	A500 GR.C	2.88x0.120	3	288	84.974
11	A500 GR.C	HSS4X4X6	3	120	162.653
12	A500 GR.C	Pipe3.5x0.165	3	288	141.202
13	A500 GR.C	PIPE 2.5	9	864	394.45
14	A529 Gr. 50	L2x2x4	6	163.8	43.838
15	Total HR Steel		37	2175.3	1109.525

**Hot Rolled Steel Section Sets**

	Label	Shape	Type	Design List	Material	Design... A [in2]	Iyy [in...lzz [in... J [in4]
1	Corner Plates	PL6.5x0.375	Beam	None	A1011 ...	Typical 2.438	.029 8.582 .11
2	6"x0.37" Plate	Plate 6x.37	Beam	None	A1011 ...	Typical 2.22	.025 6.66 .097
3	Grating Angle	L2x2x4	Beam	None	A529 G...	Typical .944	.346 .346 .021
4	Face Pipes(3.5x.1...	Pipe3.5x0.165	Beam	None	A500 G...	Typical 1.729	2.409 2.409 4.819
5	Antenna Pipes	PIPE 2.5	Beam	None	A500 G...	Typical 1.61	1.45 1.45 2.89
6	Channel(3.38x2.06)	C3.38x2.06x0.25	Beam	None	A1011 ...	Typical 1.75	.715 3.026 .034
7	Square Tubing	HSS4X4X6	Beam	None	A500 G...	Typical 4.78	10.3 10.3 17.5
8	Handrail Connector	L6.6x4.46x0.25	Beam	None	A1011 ...	Typical 2.703	4.759 12.473 .055



**Hot Rolled Steel Section Sets (Continued)**

	Label	Shape	Type	Design List	Material	Design... A [in2]	Iyy [in...Izz [in... J [in4]
9	Handrail	2.88x0.120	Beam	None	A500 G...	Typical	1.04 .993 .993 1.985

**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			13		3	
2	Wind Load AZI 0	WLZ					26			
3	Wind Load AZI 30	None					26			
4	Wind Load AZI 60	None					26			
5	Wind Load AZI 90	WLX					26			
6	Wind Load AZI 1...	None					26			
7	Wind Load AZI 1...	None					26			
8	Wind Load AZI 1...	None					26			
9	Wind Load AZI 2...	None					26			
10	Wind Load AZI 2...	None					26			
11	Wind Load AZI 2...	None					26			
12	Wind Load AZI 3...	None					26			
13	Wind Load AZI 3...	None					26			
14	Distr. Wind Load Z	WLZ						66		
15	Distr. Wind Load X	WLX						66		
16	Ice Weight	OL1					13	66	3	
17	Ice Wind Load A...	OL2					26			
18	Ice Wind Load A...	None					26			
19	Ice Wind Load A...	None					26			
20	Ice Wind Load A...	OL3					26			
21	Ice Wind Load A...	None					26			
22	Ice Wind Load A...	None					26			
23	Ice Wind Load A...	None					26			
24	Ice Wind Load A...	None					26			
25	Ice Wind Load A...	None					26			
26	Ice Wind Load A...	None					26			
27	Ice Wind Load A...	None					26			
28	Ice Wind Load A...	None					26			
29	Distr. Ice Wind L...	OL2						66		
30	Distr. Ice Wind L...	OL3						66		
31	Seismic Load Z	ELZ			-.328		13			
32	Seismic Load X	ELX	-.328				13			
33	Service Live Loa...	LL					3			
34	Maintenance Loa...	LL					1			
35	Maintenance Loa...	LL					1			
36	Maintenance Loa...	LL					1			
37	Maintenance Loa...	LL					1			





**Basic Load Cases (Continued)**

	BLC Description	Category	X Gr...	Y Gr...	Z Gr...	Joint	Point	Distributed	Area(Memb...	Surface(Plate/Wall)
38	Maintenance Loa...	LL				1				
39	Maintenance Loa...	LL				1				
40	Maintenance Loa...	LL				1				
41	Maintenance Loa...	LL				1				
42	Maintenance Loa...	LL				1				
43	BLC 1 Transient ...	None						9		
44	BLC 16 Transien...	None						9		

**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...B...	Fa...B...	Fa...B...	Fa...B...	Fa...B...	Fa...B...	
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										
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								



**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...B...	Fa...B...	Fa...B...	Fa...B...	Fa...B...
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	.856	.31	1	32											
52	(0.9 - 0.2Sds)DL + 1.0E AZI 30	Y...	Y	1	.856	.31	.866	32	.5										
53	(0.9 - 0.2Sds)DL + 1.0E AZI 60	Y...	Y	1	.856	.31	.5	32	.866										
54	(0.9 - 0.2Sds)DL + 1.0E AZI 90	Y...	Y	1	.856	.31		32	1										
55	(0.9 - 0.2Sds)DL + 1.0E AZI 1..	Y...	Y	1	.856	.31	-.5	32	.866										
56	(0.9 - 0.2Sds)DL + 1.0E AZI 1..	Y...	Y	1	.856	.31	-8...	32	.5										
57	(0.9 - 0.2Sds)DL + 1.0E AZI 1..	Y...	Y	1	.856	.31	-1	32											
58	(0.9 - 0.2Sds)DL + 1.0E AZI 2..	Y...	Y	1	.856	.31	-8...	32	-.5										
59	(0.9 - 0.2Sds)DL + 1.0E AZI 2..	Y...	Y	1	.856	.31	-.5	32	-8...										
60	(0.9 - 0.2Sds)DL + 1.0E AZI 2..	Y...	Y	1	.856	.31		32	-1										
61	(0.9 - 0.2Sds)DL + 1.0E AZI 3..	Y...	Y	1	.856	.31	.5	32	-8...										
62	(0.9 - 0.2Sds)DL + 1.0E AZI 3..	Y...	Y	1	.856	.31	.866	32	-.5										
63	1.0DL + 1.5LL + 1.0SWL (60 ...	Y...	Y	1	1	2	.254	14	.254	15		33	1.5						
64	1.0DL + 1.5LL + 1.0SWL (60 ...	Y...	Y	1	1	3	.254	14	.22	15	.127	33	1.5						
65	1.0DL + 1.5LL + 1.0SWL (60 ...	Y...	Y	1	1	4	.254	14	.127	15	.22	33	1.5						
66	1.0DL + 1.5LL + 1.0SWL (60 ...	Y...	Y	1	1	5	.254	14		15	.254	33	1.5						
67	1.0DL + 1.5LL + 1.0SWL (60 ...	Y...	Y	1	1	6	.254	14	-.1...	15	.22	33	1.5						
68	1.0DL + 1.5LL + 1.0SWL (60 ...	Y...	Y	1	1	7	.254	14	-.22	15	.127	33	1.5						
69	1.0DL + 1.5LL + 1.0SWL (60 ...	Y...	Y	1	1	8	.254	14	-.2...	15		33	1.5						
70	1.0DL + 1.5LL + 1.0SWL (60 ...	Y...	Y	1	1	9	.254	14	-.22	15	-.1...	33	1.5						
71	1.0DL + 1.5LL + 1.0SWL (60 ...	Y...	Y	1	1	10	.254	14	-.1...	15	-.22	33	1.5						
72	1.0DL + 1.5LL + 1.0SWL (60 ...	Y...	Y	1	1	11	.254	14		15	-.2...	33	1.5						
73	1.0DL + 1.5LL + 1.0SWL (60 ...	Y...	Y	1	1	12	.254	14	.127	15	-.22	33	1.5						



**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...
74	1.0DL + 1.5LL + 1.0SWL (60 ...	Y...	Y		1	1	13	.254	14	.22	15	-1...	33	1.5								
75	1.2DL + 1.5LL	Y...	Y		1	1.2	33	1.5														
76	1.2DL + 1.5LM-MP1 + 1SWL (...Y...	Y			1	1.2	34	1.5	2	.064	14	.064	15									
77	1.2DL + 1.5LM-MP1 + 1SWL (...Y...	Y			1	1.2	34	1.5	3	.064	14	.055	15	.032								
78	1.2DL + 1.5LM-MP1 + 1SWL (...Y...	Y			1	1.2	34	1.5	4	.064	14	.032	15	.055								
79	1.2DL + 1.5LM-MP1 + 1SWL (...Y...	Y			1	1.2	34	1.5	5	.064	14		15	.064								
80	1.2DL + 1.5LM-MP1 + 1SWL (...Y...	Y			1	1.2	34	1.5	6	.064	14	-0...	15	.055								
81	1.2DL + 1.5LM-MP1 + 1SWL (...Y...	Y			1	1.2	34	1.5	7	.064	14	-0...	15	.032								
82	1.2DL + 1.5LM-MP1 + 1SWL (...Y...	Y			1	1.2	34	1.5	8	.064	14	-0...	15									
83	1.2DL + 1.5LM-MP1 + 1SWL (...Y...	Y			1	1.2	34	1.5	9	.064	14	-0...	15	-0...								
84	1.2DL + 1.5LM-MP1 + 1SWL (...Y...	Y			1	1.2	34	1.5	10	.064	14	-0...	15	-0...								
85	1.2DL + 1.5LM-MP1 + 1SWL (...Y...	Y			1	1.2	34	1.5	11	.064	14		15	-0...								
86	1.2DL + 1.5LM-MP1 + 1SWL (...Y...	Y			1	1.2	34	1.5	12	.064	14	.032	15	-0...								
87	1.2DL + 1.5LM-MP1 + 1SWL (...Y...	Y			1	1.2	34	1.5	13	.064	14	.055	15	-0...								
88	1.2DL + 1.5LM-MP2 + 1SWL (...Y...	Y			1	1.2	35	1.5	2	.064	14	.064	15									
89	1.2DL + 1.5LM-MP2 + 1SWL (...Y...	Y			1	1.2	35	1.5	3	.064	14	.055	15	.032								
90	1.2DL + 1.5LM-MP2 + 1SWL (...Y...	Y			1	1.2	35	1.5	4	.064	14	.032	15	.055								
91	1.2DL + 1.5LM-MP2 + 1SWL (...Y...	Y			1	1.2	35	1.5	5	.064	14		15	.064								
92	1.2DL + 1.5LM-MP2 + 1SWL (...Y...	Y			1	1.2	35	1.5	6	.064	14	-0...	15	.055								
93	1.2DL + 1.5LM-MP2 + 1SWL (...Y...	Y			1	1.2	35	1.5	7	.064	14	-0...	15	.032								
94	1.2DL + 1.5LM-MP2 + 1SWL (...Y...	Y			1	1.2	35	1.5	8	.064	14	-0...	15									
95	1.2DL + 1.5LM-MP2 + 1SWL (...Y...	Y			1	1.2	35	1.5	9	.064	14	-0...	15	-0...								
96	1.2DL + 1.5LM-MP2 + 1SWL (...Y...	Y			1	1.2	35	1.5	10	.064	14	-0...	15	-0...								
97	1.2DL + 1.5LM-MP2 + 1SWL (...Y...	Y			1	1.2	35	1.5	11	.064	14		15	-0...								
98	1.2DL + 1.5LM-MP2 + 1SWL (...Y...	Y			1	1.2	35	1.5	12	.064	14	.032	15	-0...								
99	1.2DL + 1.5LM-MP2 + 1SWL (...Y...	Y			1	1.2	35	1.5	13	.064	14	.055	15	-0...								
100	1.2DL + 1.5LM-MP3 + 1SWL (...Y...	Y			1	1.2	36	1.5	2	.064	14	.064	15									
101	1.2DL + 1.5LM-MP3 + 1SWL (...Y...	Y			1	1.2	36	1.5	3	.064	14	.055	15	.032								
102	1.2DL + 1.5LM-MP3 + 1SWL (...Y...	Y			1	1.2	36	1.5	4	.064	14	.032	15	.055								
103	1.2DL + 1.5LM-MP3 + 1SWL (...Y...	Y			1	1.2	36	1.5	5	.064	14		15	.064								
104	1.2DL + 1.5LM-MP3 + 1SWL (...Y...	Y			1	1.2	36	1.5	6	.064	14	-0...	15	.055								
105	1.2DL + 1.5LM-MP3 + 1SWL (...Y...	Y			1	1.2	36	1.5	7	.064	14	-0...	15	.032								
106	1.2DL + 1.5LM-MP3 + 1SWL (...Y...	Y			1	1.2	36	1.5	8	.064	14	-0...	15									
107	1.2DL + 1.5LM-MP3 + 1SWL (...Y...	Y			1	1.2	36	1.5	9	.064	14	-0...	15	-0...								
108	1.2DL + 1.5LM-MP3 + 1SWL (...Y...	Y			1	1.2	36	1.5	10	.064	14	-0...	15	-0...								
109	1.2DL + 1.5LM-MP3 + 1SWL (...Y...	Y			1	1.2	36	1.5	11	.064	14		15	-0...								
110	1.2DL + 1.5LM-MP3 + 1SWL (...Y...	Y			1	1.2	36	1.5	12	.064	14	.032	15	-0...								
111	1.2DL + 1.5LM-MP3 + 1SWL (...Y...	Y			1	1.2	36	1.5	13	.064	14	.055	15	-0...								
112	1.2DL + 1.5LM-MP4 + 1SWL (...Y...	Y			1	1.2	37	1.5	2	.064	14	.064	15									
113	1.2DL + 1.5LM-MP4 + 1SWL (...Y...	Y			1	1.2	37	1.5	3	.064	14	.055	15	.032								
114	1.2DL + 1.5LM-MP4 + 1SWL (...Y...	Y			1	1.2	37	1.5	4	.064	14	.032	15	.055								
115	1.2DL + 1.5LM-MP4 + 1SWL (...Y...	Y			1	1.2	37	1.5	5	.064	14		15	.064								



**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...B...	Fa...B...	Fa...B...	Fa...B...	Fa...B...
116	1.2DL + 1.5LM-MP4 + 1SWL (...Y...)	Y		1	1.2	37	1.5	6	.064	14	-0...	15	.055						
117	1.2DL + 1.5LM-MP4 + 1SWL (...Y...)	Y		1	1.2	37	1.5	7	.064	14	-0...	15	.032						
118	1.2DL + 1.5LM-MP4 + 1SWL (...Y...)	Y		1	1.2	37	1.5	8	.064	14	-0...	15							
119	1.2DL + 1.5LM-MP4 + 1SWL (...Y...)	Y		1	1.2	37	1.5	9	.064	14	-0...	15	-0...						
120	1.2DL + 1.5LM-MP4 + 1SWL (...Y...)	Y		1	1.2	37	1.5	10	.064	14	-0...	15	-0...						
121	1.2DL + 1.5LM-MP4 + 1SWL (...Y...)	Y		1	1.2	37	1.5	11	.064	14		15	-0...						
122	1.2DL + 1.5LM-MP4 + 1SWL (...Y...)	Y		1	1.2	37	1.5	12	.064	14	.032	15	-0...						
123	1.2DL + 1.5LM-MP4 + 1SWL (...Y...)	Y		1	1.2	37	1.5	13	.064	14	.055	15	-0...						
124	1.2DL + 1.5LM-MP5 + 1SWL (...Y...)	Y		1	1.2	38	1.5	2	.064	14	.064	15							
125	1.2DL + 1.5LM-MP5 + 1SWL (...Y...)	Y		1	1.2	38	1.5	3	.064	14	.055	15	.032						
126	1.2DL + 1.5LM-MP5 + 1SWL (...Y...)	Y		1	1.2	38	1.5	4	.064	14	.032	15	.055						
127	1.2DL + 1.5LM-MP5 + 1SWL (...Y...)	Y		1	1.2	38	1.5	5	.064	14		15	.064						
128	1.2DL + 1.5LM-MP5 + 1SWL (...Y...)	Y		1	1.2	38	1.5	6	.064	14	-0...	15	.055						
129	1.2DL + 1.5LM-MP5 + 1SWL (...Y...)	Y		1	1.2	38	1.5	7	.064	14	-0...	15	.032						
130	1.2DL + 1.5LM-MP5 + 1SWL (...Y...)	Y		1	1.2	38	1.5	8	.064	14	-0...	15							
131	1.2DL + 1.5LM-MP5 + 1SWL (...Y...)	Y		1	1.2	38	1.5	9	.064	14	-0...	15	-0...						
132	1.2DL + 1.5LM-MP5 + 1SWL (...Y...)	Y		1	1.2	38	1.5	10	.064	14	-0...	15	-0...						
133	1.2DL + 1.5LM-MP5 + 1SWL (...Y...)	Y		1	1.2	38	1.5	11	.064	14		15	-0...						
134	1.2DL + 1.5LM-MP5 + 1SWL (...Y...)	Y		1	1.2	38	1.5	12	.064	14	.032	15	-0...						
135	1.2DL + 1.5LM-MP5 + 1SWL (...Y...)	Y		1	1.2	38	1.5	13	.064	14	.055	15	-0...						
136	1.2DL + 1.5LM-MP6 + 1SWL (...Y...)	Y		1	1.2	39	1.5	2	.064	14	.064	15							
137	1.2DL + 1.5LM-MP6 + 1SWL (...Y...)	Y		1	1.2	39	1.5	3	.064	14	.055	15	.032						
138	1.2DL + 1.5LM-MP6 + 1SWL (...Y...)	Y		1	1.2	39	1.5	4	.064	14	.032	15	.055						
139	1.2DL + 1.5LM-MP6 + 1SWL (...Y...)	Y		1	1.2	39	1.5	5	.064	14		15	.064						
140	1.2DL + 1.5LM-MP6 + 1SWL (...Y...)	Y		1	1.2	39	1.5	6	.064	14	-0...	15	.055						
141	1.2DL + 1.5LM-MP6 + 1SWL (...Y...)	Y		1	1.2	39	1.5	7	.064	14	-0...	15	.032						
142	1.2DL + 1.5LM-MP6 + 1SWL (...Y...)	Y		1	1.2	39	1.5	8	.064	14	-0...	15							
143	1.2DL + 1.5LM-MP6 + 1SWL (...Y...)	Y		1	1.2	39	1.5	9	.064	14	-0...	15	-0...						
144	1.2DL + 1.5LM-MP6 + 1SWL (...Y...)	Y		1	1.2	39	1.5	10	.064	14	-0...	15	-0...						
145	1.2DL + 1.5LM-MP6 + 1SWL (...Y...)	Y		1	1.2	39	1.5	11	.064	14		15	-0...						
146	1.2DL + 1.5LM-MP6 + 1SWL (...Y...)	Y		1	1.2	39	1.5	12	.064	14	.032	15	-0...						
147	1.2DL + 1.5LM-MP6 + 1SWL (...Y...)	Y		1	1.2	39	1.5	13	.064	14	.055	15	-0...						
148	1.2DL + 1.5LM-MP7 + 1SWL (...Y...)	Y		1	1.2	40	1.5	2	.064	14	.064	15							
149	1.2DL + 1.5LM-MP7 + 1SWL (...Y...)	Y		1	1.2	40	1.5	3	.064	14	.055	15	.032						
150	1.2DL + 1.5LM-MP7 + 1SWL (...Y...)	Y		1	1.2	40	1.5	4	.064	14	.032	15	.055						
151	1.2DL + 1.5LM-MP7 + 1SWL (...Y...)	Y		1	1.2	40	1.5	5	.064	14		15	.064						
152	1.2DL + 1.5LM-MP7 + 1SWL (...Y...)	Y		1	1.2	40	1.5	6	.064	14	-0...	15	.055						
153	1.2DL + 1.5LM-MP7 + 1SWL (...Y...)	Y		1	1.2	40	1.5	7	.064	14	-0...	15	.032						
154	1.2DL + 1.5LM-MP7 + 1SWL (...Y...)	Y		1	1.2	40	1.5	8	.064	14	-0...	15							
155	1.2DL + 1.5LM-MP7 + 1SWL (...Y...)	Y		1	1.2	40	1.5	9	.064	14	-0...	15	-0...						
156	1.2DL + 1.5LM-MP7 + 1SWL (...Y...)	Y		1	1.2	40	1.5	10	.064	14	-0...	15	-0...						
157	1.2DL + 1.5LM-MP7 + 1SWL (...Y...)	Y		1	1.2	40	1.5	11	.064	14		15	-0...						

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

**Joint Boundary Conditions**

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
1	P24	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
2	P13	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
3	P1	Reaction	Reaction	Reaction	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	P24	767.25	6	1496.31	35	1167.61	13	623.335	16	1473.402	19	3667.78	132
2		-751.669	24	-321.4...	16	-1159.4...	19	-3176.61	84	-1491.505	13	-1196.894	16
3	P13	936.601	4	1781.6...	31	1234.7...	15	635.222	24	1655.89	15	945.404	24
4		-933.997	22	-226.3...	24	-1242.9...	9	-2807.4...	92	-1703.317	9	-4319.099	140
5	P1	1202.728	17	1601.7...	27	622.884	2	4149.6...	2	1374.488	11	1578.441	115

**Envelope Joint Reactions (Continued)**

Joint	X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
6	-1220.975	11	-307.2...	20	-625.975	20	-1311.4...	20	-1323.352	17	-857.197	157
7	Totals: ... 2767.27	5	4396.5...	34	2931.0...	14						
8	-2767.262	23	1523.3...	53	-2931.02	8						

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in, %]
1	MP1	Y	-32.25	0
2	MP1	Y	-32.25	72
3	MP1	Y	-74.95	12
4	MP1	Y	-63.93	12
5	S2	Y	-21.85	12
6	MP4	Y	-32.25	0
7	MP4	Y	-32.25	72
8	MP4	Y	-74.95	12
9	MP4	Y	-63.93	12
10	MP7	Y	-32.25	0
11	MP7	Y	-32.25	72
12	MP7	Y	-74.95	12
13	MP7	Y	-63.93	12

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in, %]
1	MP1	X	0	0
2	MP1	Z	-125.14	0
3	MP1	X	0	72
4	MP1	Z	-125.14	72
5	MP1	X	0	12
6	MP1	Z	-61.35	12
7	MP1	X	0	12
8	MP1	Z	-61.35	12
9	S2	X	0	12
10	S2	Z	-58.33	12
11	MP4	X	0	0
12	MP4	Z	-68.9	0
13	MP4	X	0	72
14	MP4	Z	-68.9	72
15	MP4	X	0	12
16	MP4	Z	-43.21	12
17	MP4	X	0	12
18	MP4	Z	-39.54	12

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
19	MP7	X	0	0
20	MP7	Z	-68.9	0
21	MP7	X	0	72
22	MP7	Z	-68.9	72
23	MP7	X	0	12
24	MP7	Z	-43.21	12
25	MP7	X	0	12
26	MP7	Z	-39.54	12

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	-53.2	0
2	MP1	Z	-92.14	0
3	MP1	X	-53.2	72
4	MP1	Z	-92.14	72
5	MP1	X	-27.65	12
6	MP1	Z	-47.89	12
7	MP1	X	-27.04	12
8	MP1	Z	-46.84	12
9	S2	X	-26.04	12
10	S2	Z	-45.1	12
11	MP4	X	-53.2	0
12	MP4	Z	-92.14	0
13	MP4	X	-53.2	72
14	MP4	Z	-92.14	72
15	MP4	X	-27.65	12
16	MP4	Z	-47.89	12
17	MP4	X	-27.04	12
18	MP4	Z	-46.84	12
19	MP7	X	-25.08	0
20	MP7	Z	-43.43	0
21	MP7	X	-25.08	72
22	MP7	Z	-43.43	72
23	MP7	X	-18.58	12
24	MP7	Z	-32.18	12
25	MP7	X	-16.14	12
26	MP7	Z	-27.95	12

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	-59.67	0



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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
2	MP1	Z	-34.45	0
3	MP1	X	-59.67	72
4	MP1	Z	-34.45	72
5	MP1	X	-37.42	12
6	MP1	Z	-21.6	12
7	MP1	X	-34.25	12
8	MP1	Z	-19.77	12
9	S2	X	-34.28	12
10	S2	Z	-19.79	12
11	MP4	X	-108.38	0
12	MP4	Z	-62.57	0
13	MP4	X	-108.38	72
14	MP4	Z	-62.57	72
15	MP4	X	-53.13	12
16	MP4	Z	-30.68	12
17	MP4	X	-53.13	12
18	MP4	Z	-30.68	12
19	MP7	X	-59.67	0
20	MP7	Z	-34.45	0
21	MP7	X	-59.67	72
22	MP7	Z	-34.45	72
23	MP7	X	-37.42	12
24	MP7	Z	-21.6	12
25	MP7	X	-34.25	12
26	MP7	Z	-19.77	12

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	-50.15	0
2	MP1	Z	0	0
3	MP1	X	-50.15	72
4	MP1	Z	0	72
5	MP1	X	-37.16	12
6	MP1	Z	0	12
7	MP1	X	-32.28	12
8	MP1	Z	0	12
9	S2	X	-33.33	12
10	S2	Z	0	12
11	MP4	X	-106.39	0
12	MP4	Z	0	0
13	MP4	X	-106.39	72
14	MP4	Z	0	72



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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
15	MP4	X	-55.3	12
16	MP4	Z	0	12
17	MP4	X	-54.08	12
18	MP4	Z	0	12
19	MP7	X	-106.39	0
20	MP7	Z	0	0
21	MP7	X	-106.39	72
22	MP7	Z	0	72
23	MP7	X	-55.3	12
24	MP7	Z	0	12
25	MP7	X	-54.08	12
26	MP7	Z	0	12

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	-59.67	0
2	MP1	Z	34.45	0
3	MP1	X	-59.67	72
4	MP1	Z	34.45	72
5	MP1	X	-37.42	12
6	MP1	Z	21.6	12
7	MP1	X	-34.25	12
8	MP1	Z	19.77	12
9	S2	X	-34.28	12
10	S2	Z	19.79	12
11	MP4	X	-59.67	0
12	MP4	Z	34.45	0
13	MP4	X	-59.67	72
14	MP4	Z	34.45	72
15	MP4	X	-37.42	12
16	MP4	Z	21.6	12
17	MP4	X	-34.25	12
18	MP4	Z	19.77	12
19	MP7	X	-108.38	0
20	MP7	Z	62.57	0
21	MP7	X	-108.38	72
22	MP7	Z	62.57	72
23	MP7	X	-53.13	12
24	MP7	Z	30.68	12
25	MP7	X	-53.13	12
26	MP7	Z	30.68	12



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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	-53.2	0
2	MP1	Z	92.14	0
3	MP1	X	-53.2	72
4	MP1	Z	92.14	72
5	MP1	X	-27.65	12
6	MP1	Z	47.89	12
7	MP1	X	-27.04	12
8	MP1	Z	46.84	12
9	S2	X	-26.04	12
10	S2	Z	45.1	12
11	MP4	X	-25.08	0
12	MP4	Z	43.43	0
13	MP4	X	-25.08	72
14	MP4	Z	43.43	72
15	MP4	X	-18.58	12
16	MP4	Z	32.18	12
17	MP4	X	-16.14	12
18	MP4	Z	27.95	12
19	MP7	X	-53.2	0
20	MP7	Z	92.14	0
21	MP7	X	-53.2	72
22	MP7	Z	92.14	72
23	MP7	X	-27.65	12
24	MP7	Z	47.89	12
25	MP7	X	-27.04	12
26	MP7	Z	46.84	12

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	0	0
2	MP1	Z	125.14	0
3	MP1	X	0	72
4	MP1	Z	125.14	72
5	MP1	X	0	12
6	MP1	Z	61.35	12
7	MP1	X	0	12
8	MP1	Z	61.35	12
9	S2	X	0	12
10	S2	Z	58.33	12
11	MP4	X	0	0
12	MP4	Z	68.9	0
13	MP4	X	0	72



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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
14	MP4	Z	68.9	72
15	MP4	X	0	12
16	MP4	Z	43.21	12
17	MP4	X	0	12
18	MP4	Z	39.54	12
19	MP7	X	0	0
20	MP7	Z	68.9	0
21	MP7	X	0	72
22	MP7	Z	68.9	72
23	MP7	X	0	12
24	MP7	Z	43.21	12
25	MP7	X	0	12
26	MP7	Z	39.54	12

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	53.2	0
2	MP1	Z	92.14	0
3	MP1	X	53.2	72
4	MP1	Z	92.14	72
5	MP1	X	27.65	12
6	MP1	Z	47.89	12
7	MP1	X	27.04	12
8	MP1	Z	46.84	12
9	S2	X	26.04	12
10	S2	Z	45.1	12
11	MP4	X	53.2	0
12	MP4	Z	92.14	0
13	MP4	X	53.2	72
14	MP4	Z	92.14	72
15	MP4	X	27.65	12
16	MP4	Z	47.89	12
17	MP4	X	27.04	12
18	MP4	Z	46.84	12
19	MP7	X	25.08	0
20	MP7	Z	43.43	0
21	MP7	X	25.08	72
22	MP7	Z	43.43	72
23	MP7	X	18.58	12
24	MP7	Z	32.18	12
25	MP7	X	16.14	12
26	MP7	Z	27.95	12



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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	59.67	0
2	MP1	Z	34.45	0
3	MP1	X	59.67	72
4	MP1	Z	34.45	72
5	MP1	X	37.42	12
6	MP1	Z	21.6	12
7	MP1	X	34.25	12
8	MP1	Z	19.77	12
9	S2	X	34.28	12
10	S2	Z	19.79	12
11	MP4	X	108.38	0
12	MP4	Z	62.57	0
13	MP4	X	108.38	72
14	MP4	Z	62.57	72
15	MP4	X	53.13	12
16	MP4	Z	30.68	12
17	MP4	X	53.13	12
18	MP4	Z	30.68	12
19	MP7	X	59.67	0
20	MP7	Z	34.45	0
21	MP7	X	59.67	72
22	MP7	Z	34.45	72
23	MP7	X	37.42	12
24	MP7	Z	21.6	12
25	MP7	X	34.25	12
26	MP7	Z	19.77	12

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	50.15	0
2	MP1	Z	0	0
3	MP1	X	50.15	72
4	MP1	Z	0	72
5	MP1	X	37.16	12
6	MP1	Z	0	12
7	MP1	X	32.28	12
8	MP1	Z	0	12
9	S2	X	33.33	12
10	S2	Z	0	12
11	MP4	X	106.39	0
12	MP4	Z	0	0
13	MP4	X	106.39	72



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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
14	MP4	Z	0	72
15	MP4	X	55.3	12
16	MP4	Z	0	12
17	MP4	X	54.08	12
18	MP4	Z	0	12
19	MP7	X	106.39	0
20	MP7	Z	0	0
21	MP7	X	106.39	72
22	MP7	Z	0	72
23	MP7	X	55.3	12
24	MP7	Z	0	12
25	MP7	X	54.08	12
26	MP7	Z	0	12

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	59.67	0
2	MP1	Z	-34.45	0
3	MP1	X	59.67	72
4	MP1	Z	-34.45	72
5	MP1	X	37.42	12
6	MP1	Z	-21.6	12
7	MP1	X	34.25	12
8	MP1	Z	-19.77	12
9	S2	X	34.28	12
10	S2	Z	-19.79	12
11	MP4	X	59.67	0
12	MP4	Z	-34.45	0
13	MP4	X	59.67	72
14	MP4	Z	-34.45	72
15	MP4	X	37.42	12
16	MP4	Z	-21.6	12
17	MP4	X	34.25	12
18	MP4	Z	-19.77	12
19	MP7	X	108.38	0
20	MP7	Z	-62.57	0
21	MP7	X	108.38	72
22	MP7	Z	-62.57	72
23	MP7	X	53.13	12
24	MP7	Z	-30.68	12
25	MP7	X	53.13	12
26	MP7	Z	-30.68	12



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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	53.2	0
2	MP1	Z	-92.14	0
3	MP1	X	53.2	72
4	MP1	Z	-92.14	72
5	MP1	X	27.65	12
6	MP1	Z	-47.89	12
7	MP1	X	27.04	12
8	MP1	Z	-46.84	12
9	S2	X	26.04	12
10	S2	Z	-45.1	12
11	MP4	X	25.08	0
12	MP4	Z	-43.43	0
13	MP4	X	25.08	72
14	MP4	Z	-43.43	72
15	MP4	X	18.58	12
16	MP4	Z	-32.18	12
17	MP4	X	16.14	12
18	MP4	Z	-27.95	12
19	MP7	X	53.2	0
20	MP7	Z	-92.14	0
21	MP7	X	53.2	72
22	MP7	Z	-92.14	72
23	MP7	X	27.65	12
24	MP7	Z	-47.89	12
25	MP7	X	27.04	12
26	MP7	Z	-46.84	12

**Member Point Loads (BLC 16 : Ice Weight)**

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	Y	-87.796	0
2	MP1	Y	-87.796	72
3	MP1	Y	-44.403	12
4	MP1	Y	-41.54	12
5	S2	Y	-40.474	12
6	MP4	Y	-87.796	0
7	MP4	Y	-87.796	72
8	MP4	Y	-44.403	12
9	MP4	Y	-41.54	12
10	MP7	Y	-87.796	0
11	MP7	Y	-87.796	72
12	MP7	Y	-44.403	12
13	MP7	Y	-41.54	12



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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	0	0
2	MP1	Z	-16.41	0
3	MP1	X	0	72
4	MP1	Z	-16.41	72
5	MP1	X	0	12
6	MP1	Z	-6.17	12
7	MP1	X	0	12
8	MP1	Z	-6.17	12
9	S2	X	0	12
10	S2	Z	-6.08	12
11	MP4	X	0	0
12	MP4	Z	-12.56	0
13	MP4	X	0	72
14	MP4	Z	-12.56	72
15	MP4	X	0	12
16	MP4	Z	-5.27	12
17	MP4	X	0	12
18	MP4	Z	-5.07	12
19	MP7	X	0	0
20	MP7	Z	-12.56	0
21	MP7	X	0	72
22	MP7	Z	-12.56	72
23	MP7	X	0	12
24	MP7	Z	-5.27	12
25	MP7	X	0	12
26	MP7	Z	-5.07	12

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	-7.56	0
2	MP1	Z	-13.1	0
3	MP1	X	-7.56	72
4	MP1	Z	-13.1	72
5	MP1	X	-2.94	12
6	MP1	Z	-5.09	12
7	MP1	X	-2.9	12
8	MP1	Z	-5.03	12
9	S2	X	-2.88	12
10	S2	Z	-4.99	12
11	MP4	X	-7.56	0
12	MP4	Z	-13.1	0
13	MP4	X	-7.56	72



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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
14	MP4	Z	-13.1	72
15	MP4	X	-2.94	12
16	MP4	Z	-5.09	12
17	MP4	X	-2.9	12
18	MP4	Z	-5.03	12
19	MP7	X	-5.64	0
20	MP7	Z	-9.77	0
21	MP7	X	-5.64	72
22	MP7	Z	-9.77	72
23	MP7	X	-2.49	12
24	MP7	Z	-4.31	12
25	MP7	X	-2.35	12
26	MP7	Z	-4.07	12

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	-10.88	0
2	MP1	Z	-6.28	0
3	MP1	X	-10.88	72
4	MP1	Z	-6.28	72
5	MP1	X	-4.57	12
6	MP1	Z	-2.64	12
7	MP1	X	-4.39	12
8	MP1	Z	-2.53	12
9	S2	X	-4.43	12
10	S2	Z	-2.56	12
11	MP4	X	-14.21	0
12	MP4	Z	-8.21	0
13	MP4	X	-14.21	72
14	MP4	Z	-8.21	72
15	MP4	X	-5.35	12
16	MP4	Z	-3.09	12
17	MP4	X	-5.35	12
18	MP4	Z	-3.09	12
19	MP7	X	-10.88	0
20	MP7	Z	-6.28	0
21	MP7	X	-10.88	72
22	MP7	Z	-6.28	72
23	MP7	X	-4.57	12
24	MP7	Z	-2.64	12
25	MP7	X	-4.39	12
26	MP7	Z	-2.53	12





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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	-11.28	0
2	MP1	Z	0	0
3	MP1	X	-11.28	72
4	MP1	Z	0	72
5	MP1	X	-4.97	12
6	MP1	Z	0	12
7	MP1	X	-4.7	12
8	MP1	Z	0	12
9	S2	X	-4.79	12
10	S2	Z	0	12
11	MP4	X	-15.13	0
12	MP4	Z	0	0
13	MP4	X	-15.13	72
14	MP4	Z	0	72
15	MP4	X	-5.87	12
16	MP4	Z	0	12
17	MP4	X	-5.81	12
18	MP4	Z	0	12
19	MP7	X	-15.13	0
20	MP7	Z	0	0
21	MP7	X	-15.13	72
22	MP7	Z	0	72
23	MP7	X	-5.87	12
24	MP7	Z	0	12
25	MP7	X	-5.81	12
26	MP7	Z	0	12

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	-10.88	0
2	MP1	Z	6.28	0
3	MP1	X	-10.88	72
4	MP1	Z	6.28	72
5	MP1	X	-4.57	12
6	MP1	Z	2.64	12
7	MP1	X	-4.39	12
8	MP1	Z	2.53	12
9	S2	X	-4.43	12
10	S2	Z	2.56	12
11	MP4	X	-10.88	0
12	MP4	Z	6.28	0
13	MP4	X	-10.88	72



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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
14	MP4	Z	6.28	72
15	MP4	X	-4.57	12
16	MP4	Z	2.64	12
17	MP4	X	-4.39	12
18	MP4	Z	2.53	12
19	MP7	X	-14.21	0
20	MP7	Z	8.21	0
21	MP7	X	-14.21	72
22	MP7	Z	8.21	72
23	MP7	X	-5.35	12
24	MP7	Z	3.09	12
25	MP7	X	-5.35	12
26	MP7	Z	3.09	12

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	-7.56	0
2	MP1	Z	13.1	0
3	MP1	X	-7.56	72
4	MP1	Z	13.1	72
5	MP1	X	-2.94	12
6	MP1	Z	5.09	12
7	MP1	X	-2.9	12
8	MP1	Z	5.03	12
9	S2	X	-2.88	12
10	S2	Z	4.99	12
11	MP4	X	-5.64	0
12	MP4	Z	9.77	0
13	MP4	X	-5.64	72
14	MP4	Z	9.77	72
15	MP4	X	-2.49	12
16	MP4	Z	4.31	12
17	MP4	X	-2.35	12
18	MP4	Z	4.07	12
19	MP7	X	-7.56	0
20	MP7	Z	13.1	0
21	MP7	X	-7.56	72
22	MP7	Z	13.1	72
23	MP7	X	-2.94	12
24	MP7	Z	5.09	12
25	MP7	X	-2.9	12
26	MP7	Z	5.03	12

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	0	0
2	MP1	Z	16.41	0
3	MP1	X	0	72
4	MP1	Z	16.41	72
5	MP1	X	0	12
6	MP1	Z	6.17	12
7	MP1	X	0	12
8	MP1	Z	6.17	12
9	S2	X	0	12
10	S2	Z	6.08	12
11	MP4	X	0	0
12	MP4	Z	12.56	0
13	MP4	X	0	72
14	MP4	Z	12.56	72
15	MP4	X	0	12
16	MP4	Z	5.27	12
17	MP4	X	0	12
18	MP4	Z	5.07	12
19	MP7	X	0	0
20	MP7	Z	12.56	0
21	MP7	X	0	72
22	MP7	Z	12.56	72
23	MP7	X	0	12
24	MP7	Z	5.27	12
25	MP7	X	0	12
26	MP7	Z	5.07	12

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	7.56	0
2	MP1	Z	13.1	0
3	MP1	X	7.56	72
4	MP1	Z	13.1	72
5	MP1	X	2.94	12
6	MP1	Z	5.09	12
7	MP1	X	2.9	12
8	MP1	Z	5.03	12
9	S2	X	2.88	12
10	S2	Z	4.99	12
11	MP4	X	7.56	0
12	MP4	Z	13.1	0
13	MP4	X	7.56	72



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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
14	MP4	Z	13.1	72
15	MP4	X	2.94	12
16	MP4	Z	5.09	12
17	MP4	X	2.9	12
18	MP4	Z	5.03	12
19	MP7	X	5.64	0
20	MP7	Z	9.77	0
21	MP7	X	5.64	72
22	MP7	Z	9.77	72
23	MP7	X	2.49	12
24	MP7	Z	4.31	12
25	MP7	X	2.35	12
26	MP7	Z	4.07	12

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	10.88	0
2	MP1	Z	6.28	0
3	MP1	X	10.88	72
4	MP1	Z	6.28	72
5	MP1	X	4.57	12
6	MP1	Z	2.64	12
7	MP1	X	4.39	12
8	MP1	Z	2.53	12
9	S2	X	4.43	12
10	S2	Z	2.56	12
11	MP4	X	14.21	0
12	MP4	Z	8.21	0
13	MP4	X	14.21	72
14	MP4	Z	8.21	72
15	MP4	X	5.35	12
16	MP4	Z	3.09	12
17	MP4	X	5.35	12
18	MP4	Z	3.09	12
19	MP7	X	10.88	0
20	MP7	Z	6.28	0
21	MP7	X	10.88	72
22	MP7	Z	6.28	72
23	MP7	X	4.57	12
24	MP7	Z	2.64	12
25	MP7	X	4.39	12
26	MP7	Z	2.53	12



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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	11.28	0
2	MP1	Z	0	0
3	MP1	X	11.28	72
4	MP1	Z	0	72
5	MP1	X	4.97	12
6	MP1	Z	0	12
7	MP1	X	4.7	12
8	MP1	Z	0	12
9	S2	X	4.79	12
10	S2	Z	0	12
11	MP4	X	15.13	0
12	MP4	Z	0	0
13	MP4	X	15.13	72
14	MP4	Z	0	72
15	MP4	X	5.87	12
16	MP4	Z	0	12
17	MP4	X	5.81	12
18	MP4	Z	0	12
19	MP7	X	15.13	0
20	MP7	Z	0	0
21	MP7	X	15.13	72
22	MP7	Z	0	72
23	MP7	X	5.87	12
24	MP7	Z	0	12
25	MP7	X	5.81	12
26	MP7	Z	0	12

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	10.88	0
2	MP1	Z	-6.28	0
3	MP1	X	10.88	72
4	MP1	Z	-6.28	72
5	MP1	X	4.57	12
6	MP1	Z	-2.64	12
7	MP1	X	4.39	12
8	MP1	Z	-2.53	12
9	S2	X	4.43	12
10	S2	Z	-2.56	12
11	MP4	X	10.88	0
12	MP4	Z	-6.28	0
13	MP4	X	10.88	72



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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
14	MP4	Z	-6.28	72
15	MP4	X	4.57	12
16	MP4	Z	-2.64	12
17	MP4	X	4.39	12
18	MP4	Z	-2.53	12
19	MP7	X	14.21	0
20	MP7	Z	-8.21	0
21	MP7	X	14.21	72
22	MP7	Z	-8.21	72
23	MP7	X	5.35	12
24	MP7	Z	-3.09	12
25	MP7	X	5.35	12
26	MP7	Z	-3.09	12

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	7.56	0
2	MP1	Z	-13.1	0
3	MP1	X	7.56	72
4	MP1	Z	-13.1	72
5	MP1	X	2.94	12
6	MP1	Z	-5.09	12
7	MP1	X	2.9	12
8	MP1	Z	-5.03	12
9	S2	X	2.88	12
10	S2	Z	-4.99	12
11	MP4	X	5.64	0
12	MP4	Z	-9.77	0
13	MP4	X	5.64	72
14	MP4	Z	-9.77	72
15	MP4	X	2.49	12
16	MP4	Z	-4.31	12
17	MP4	X	2.35	12
18	MP4	Z	-4.07	12
19	MP7	X	7.56	0
20	MP7	Z	-13.1	0
21	MP7	X	7.56	72
22	MP7	Z	-13.1	72
23	MP7	X	2.94	12
24	MP7	Z	-5.09	12
25	MP7	X	2.9	12
26	MP7	Z	-5.03	12



**Member Point Loads (BLC 31 : Seismic Load Z)**

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	Z	-10.578	0
2	MP1	Z	-10.578	72
3	MP1	Z	-24.584	12
4	MP1	Z	-20.969	12
5	S2	Z	-7.167	12
6	MP4	Z	-10.578	0
7	MP4	Z	-10.578	72
8	MP4	Z	-24.584	12
9	MP4	Z	-20.969	12
10	MP7	Z	-10.578	0
11	MP7	Z	-10.578	72
12	MP7	Z	-24.584	12
13	MP7	Z	-20.969	12

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

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP1	X	-10.578	0
2	MP1	X	-10.578	72
3	MP1	X	-24.584	12
4	MP1	X	-20.969	12
5	S2	X	-7.167	12
6	MP4	X	-10.578	0
7	MP4	X	-10.578	72
8	MP4	X	-24.584	12
9	MP4	X	-20.969	12
10	MP7	X	-10.578	0
11	MP7	X	-10.578	72
12	MP7	X	-24.584	12
13	MP7	X	-20.969	12

**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	N72B	L	Y	-250
2	N135A	L	Y	-250
3	N129B	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	N70A	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	N69A	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	N76	L	Y	-500

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

	Joint Label	L,D,M	Direction	Magnitude[(lb,lb-ft), (in,rad), (lb*s^2/in, lb*s^2*in)]
1	N94	L	Y	-500

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

	Joint Label	L,D,M	Direction	Magnitude[(lb,lb-ft), (in,rad), (lb*s^2/in, lb*s^2*in)]
1	N93	L	Y	-500

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

	Joint Label	L,D,M	Direction	Magnitude[(lb,lb-ft), (in,rad), (lb*s^2/in, lb*s^2*in)]
1	N122	L	Y	-500

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

	Joint Label	L,D,M	Direction	Magnitude[(lb,lb-ft), (in,rad), (lb*s^2/in, lb*s^2*in)]
1	N121	L	Y	-500

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

	Joint Label	L,D,M	Direction	Magnitude[(lb,lb-ft), (in,rad), (lb*s^2/in, lb*s^2*in)]
1	N133B	L	Y	-500

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

	Joint Label	L,D,M	Direction	Magnitude[(lb,lb-ft), (in,rad), (lb*s^2/in, lb*s^2*in)]
1	N139	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	-69.437	-69.437	0	%100
2	GA4	SZ	-69.437	-69.437	0	%100
3	GA3	SZ	-69.437	-69.437	0	%100
4	P3	SZ	-69.437	-69.437	0	%100
5	S2	SZ	-69.437	-69.437	0	%100
6	GA2	SZ	-69.437	-69.437	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, %]
7	GA1	SZ	-69.437	-69.437	0	%100
8	P2	SZ	-69.437	-69.437	0	%100
9	S1	SZ	-69.437	-69.437	0	%100
10	GA6	SZ	-69.437	-69.437	0	%100
11	GA5	SZ	-69.437	-69.437	0	%100
12	P1	SZ	-69.437	-69.437	0	%100
13	H1	SZ	-41.662	-41.662	0	%100
14	MP1	SZ	-41.662	-41.662	0	%100
15	MP3	SZ	-41.662	-41.662	0	%100
16	HR1	SZ	-41.662	-41.662	0	%100
17	CA8	SZ	-69.437	-69.437	0	%100
18	CA9	SZ	-69.437	-69.437	0	%100
19	CA7	SZ	-69.437	-69.437	0	%100
20	M32	SZ	0	0	0	%100
21	M35	SZ	0	0	0	%100
22	M36	SZ	0	0	0	%100
23	M39A	SZ	0	0	0	%100
24	CA3	SZ	-69.437	-69.437	0	%100
25	CA4	SZ	-69.437	-69.437	0	%100
26	CA1	SZ	-69.437	-69.437	0	%100
27	CA2	SZ	-69.437	-69.437	0	%100
28	CA5	SZ	-69.437	-69.437	0	%100
29	CA6	SZ	-69.437	-69.437	0	%100
30	M64	SZ	0	0	0	%100
31	M65	SZ	0	0	0	%100
32	M66	SZ	0	0	0	%100
33	M67	SZ	0	0	0	%100
34	M68	SZ	0	0	0	%100
35	M69	SZ	0	0	0	%100
36	M70	SZ	0	0	0	%100
37	M71	SZ	0	0	0	%100
38	M72	SZ	0	0	0	%100
39	M73	SZ	0	0	0	%100
40	M74	SZ	0	0	0	%100
41	M75	SZ	-69.437	-69.437	0	%100
42	MP2	SZ	-41.662	-41.662	0	%100
43	M43	SZ	0	0	0	%100
44	M44	SZ	0	0	0	%100
45	H3	SZ	-41.662	-41.662	0	%100
46	MP7	SZ	-41.662	-41.662	0	%100
47	MP9	SZ	-41.662	-41.662	0	%100
48	HR3	SZ	-41.662	-41.662	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, %]
49	M52	SZ	0	0	0	%100
50	M53	SZ	0	0	0	%100
51	M54	SZ	0	0	0	%100
52	M55	SZ	0	0	0	%100
53	H2	SZ	-41.662	-41.662	0	%100
54	MP4	SZ	-41.662	-41.662	0	%100
55	MP6	SZ	-41.662	-41.662	0	%100
56	HR2	SZ	-41.662	-41.662	0	%100
57	M66A	SZ	0	0	0	%100
58	M67A	SZ	0	0	0	%100
59	M68A	SZ	0	0	0	%100
60	M69A	SZ	0	0	0	%100
61	MP8	SZ	-41.662	-41.662	0	%100
62	M68B	SZ	0	0	0	%100
63	M69B	SZ	0	0	0	%100
64	MP5	SZ	-41.662	-41.662	0	%100
65	M71B	SZ	0	0	0	%100
66	M72B	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	-69.437	-69.437	0	%100
2	GA4	SX	-69.437	-69.437	0	%100
3	GA3	SX	-69.437	-69.437	0	%100
4	P3	SX	-69.437	-69.437	0	%100
5	S2	SX	-69.437	-69.437	0	%100
6	GA2	SX	-69.437	-69.437	0	%100
7	GA1	SX	-69.437	-69.437	0	%100
8	P2	SX	-69.437	-69.437	0	%100
9	S1	SX	-69.437	-69.437	0	%100
10	GA6	SX	-69.437	-69.437	0	%100
11	GA5	SX	-69.437	-69.437	0	%100
12	P1	SX	-69.437	-69.437	0	%100
13	H1	SX	-41.662	-41.662	0	%100
14	MP1	SX	-41.662	-41.662	0	%100
15	MP3	SX	-41.662	-41.662	0	%100
16	HR1	SX	-41.662	-41.662	0	%100
17	CA8	SX	-69.437	-69.437	0	%100
18	CA9	SX	-69.437	-69.437	0	%100
19	CA7	SX	-69.437	-69.437	0	%100
20	M32	SX	0	0	0	%100
21	M35	SX	0	0	0	%100



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

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magn...	Start Location...	End Location[in,%]
22	M36	SX	0	0	0	%100
23	M39A	SX	0	0	0	%100
24	CA3	SX	-69.437	-69.437	0	%100
25	CA4	SX	-69.437	-69.437	0	%100
26	CA1	SX	-69.437	-69.437	0	%100
27	CA2	SX	-69.437	-69.437	0	%100
28	CA5	SX	-69.437	-69.437	0	%100
29	CA6	SX	-69.437	-69.437	0	%100
30	M64	SX	0	0	0	%100
31	M65	SX	0	0	0	%100
32	M66	SX	0	0	0	%100
33	M67	SX	0	0	0	%100
34	M68	SX	0	0	0	%100
35	M69	SX	0	0	0	%100
36	M70	SX	0	0	0	%100
37	M71	SX	0	0	0	%100
38	M72	SX	0	0	0	%100
39	M73	SX	0	0	0	%100
40	M74	SX	0	0	0	%100
41	M75	SX	-69.437	-69.437	0	%100
42	MP2	SX	-41.662	-41.662	0	%100
43	M43	SX	0	0	0	%100
44	M44	SX	0	0	0	%100
45	H3	SX	-41.662	-41.662	0	%100
46	MP7	SX	-41.662	-41.662	0	%100
47	MP9	SX	-41.662	-41.662	0	%100
48	HR3	SX	-41.662	-41.662	0	%100
49	M52	SX	0	0	0	%100
50	M53	SX	0	0	0	%100
51	M54	SX	0	0	0	%100
52	M55	SX	0	0	0	%100
53	H2	SX	-41.662	-41.662	0	%100
54	MP4	SX	-41.662	-41.662	0	%100
55	MP6	SX	-41.662	-41.662	0	%100
56	HR2	SX	-41.662	-41.662	0	%100
57	M66A	SX	0	0	0	%100
58	M67A	SX	0	0	0	%100
59	M68A	SX	0	0	0	%100
60	M69A	SX	0	0	0	%100
61	MP8	SX	-41.662	-41.662	0	%100
62	M68B	SX	0	0	0	%100
63	M69B	SX	0	0	0	%100



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

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magn...	Start Location...	End Location[in,%]
64	MP5	SX	-41.662	-41.662	0	%100
65	M71B	SX	0	0	0	%100
66	M72B	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	-9.33	-9.33	0	%100
2	GA4	Y	-5.439	-5.439	0	%100
3	GA3	Y	-5.439	-5.439	0	%100
4	P3	Y	-10.504	-10.504	0	%100
5	S2	Y	-9.33	-9.33	0	%100
6	GA2	Y	-5.439	-5.439	0	%100
7	GA1	Y	-5.439	-5.439	0	%100
8	P2	Y	-10.504	-10.504	0	%100
9	S1	Y	-9.33	-9.33	0	%100
10	GA6	Y	-5.439	-5.439	0	%100
11	GA5	Y	-5.439	-5.439	0	%100
12	P1	Y	-10.504	-10.504	0	%100
13	H1	Y	-6.363	-6.363	0	%100
14	MP1	Y	-5.503	-5.503	0	%100
15	MP3	Y	-5.503	-5.503	0	%100
16	HR1	Y	-5.51	-5.51	0	%100
17	CA8	Y	-12.506	-12.506	0	%100
18	CA9	Y	-12.506	-12.506	0	%100
19	CA7	Y	-12.506	-12.506	0	%100
20	M32	Y	-1.549	-1.549	0	%100
21	M35	Y	-1.549	-1.549	0	%100
22	M36	Y	-1.549	-1.549	0	%100
23	M39A	Y	-1.549	-1.549	0	%100
24	CA3	Y	-6.993	-6.993	0	%100
25	CA4	Y	-6.993	-6.993	0	%100
26	CA1	Y	-6.993	-6.993	0	%100
27	CA2	Y	-6.993	-6.993	0	%100
28	CA5	Y	-6.993	-6.993	0	%100
29	CA6	Y	-6.993	-6.993	0	%100
30	M64	Y	-1.549	-1.549	0	%100
31	M65	Y	-1.549	-1.549	0	%100
32	M66	Y	-1.549	-1.549	0	%100
33	M67	Y	-1.549	-1.549	0	%100
34	M68	Y	-1.549	-1.549	0	%100
35	M69	Y	-1.549	-1.549	0	%100
36	M70	Y	-1.549	-1.549	0	%100



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

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magn...	Start Location...	End Location[in,%]
37	M71	Y	-1.549	-1.549	0	%100
38	M72	Y	-1.549	-1.549	0	%100
39	M73	Y	-1.549	-1.549	0	%100
40	M74	Y	-1.549	-1.549	0	%100
41	M75	Y	-4.887	-4.887	0	%100
42	MP2	Y	-5.503	-5.503	0	%100
43	M43	Y	-1.549	-1.549	0	%100
44	M44	Y	-1.549	-1.549	0	%100
45	H3	Y	-6.363	-6.363	0	%100
46	MP7	Y	-5.503	-5.503	0	%100
47	MP9	Y	-5.503	-5.503	0	%100
48	HR3	Y	-5.51	-5.51	0	%100
49	M52	Y	-1.549	-1.549	0	%100
50	M53	Y	-1.549	-1.549	0	%100
51	M54	Y	-1.549	-1.549	0	%100
52	M55	Y	-1.549	-1.549	0	%100
53	H2	Y	-6.363	-6.363	0	%100
54	MP4	Y	-5.503	-5.503	0	%100
55	MP6	Y	-5.503	-5.503	0	%100
56	HR2	Y	-5.51	-5.51	0	%100
57	M66A	Y	-1.549	-1.549	0	%100
58	M67A	Y	-1.549	-1.549	0	%100
59	M68A	Y	-1.549	-1.549	0	%100
60	M69A	Y	-1.549	-1.549	0	%100
61	MP8	Y	-5.503	-5.503	0	%100
62	M68B	Y	-1.549	-1.549	0	%100
63	M69B	Y	-1.549	-1.549	0	%100
64	MP5	Y	-5.503	-5.503	0	%100
65	M71B	Y	-1.549	-1.549	0	%100
66	M72B	Y	-1.549	-1.549	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	-10.283	-10.283	0	%100
2	GA4	SZ	-13.211	-13.211	0	%100
3	GA3	SZ	-13.211	-13.211	0	%100
4	P3	SZ	-9.899	-9.899	0	%100
5	S2	SZ	-10.283	-10.283	0	%100
6	GA2	SZ	-13.211	-13.211	0	%100
7	GA1	SZ	-13.211	-13.211	0	%100
8	P2	SZ	-9.899	-9.899	0	%100
9	S1	SZ	-10.283	-10.283	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,%]
10	GA6	SZ	-13.211	-13.211	0	%100
11	GA5	SZ	-13.211	-13.211	0	%100
12	P1	SZ	-9.899	-9.899	0	%100
13	H1	SZ	-12.087	-12.087	0	%100
14	MP1	SZ	-13.116	-13.116	0	%100
15	MP3	SZ	-13.116	-13.116	0	%100
16	HR1	SZ	-13.106	-13.106	0	%100
17	CA8	SZ	-9.434	-9.434	0	%100
18	CA9	SZ	-9.434	-9.434	0	%100
19	CA7	SZ	-9.434	-9.434	0	%100
20	M32	SZ	0	0	0	%100
21	M35	SZ	0	0	0	%100
22	M36	SZ	0	0	0	%100
23	M39A	SZ	0	0	0	%100
24	CA3	SZ	-11.539	-11.539	0	%100
25	CA4	SZ	-11.539	-11.539	0	%100
26	CA1	SZ	-11.539	-11.539	0	%100
27	CA2	SZ	-11.539	-11.539	0	%100
28	CA5	SZ	-11.539	-11.539	0	%100
29	CA6	SZ	-11.539	-11.539	0	%100
30	M64	SZ	0	0	0	%100
31	M65	SZ	0	0	0	%100
32	M66	SZ	0	0	0	%100
33	M67	SZ	0	0	0	%100
34	M68	SZ	0	0	0	%100
35	M69	SZ	0	0	0	%100
36	M70	SZ	0	0	0	%100
37	M71	SZ	0	0	0	%100
38	M72	SZ	0	0	0	%100
39	M73	SZ	0	0	0	%100
40	M74	SZ	0	0	0	%100
41	M75	SZ	-14.179	-14.179	0	%100
42	MP2	SZ	-13.116	-13.116	0	%100
43	M43	SZ	0	0	0	%100
44	M44	SZ	0	0	0	%100
45	H3	SZ	-12.087	-12.087	0	%100
46	MP7	SZ	-13.116	-13.116	0	%100
47	MP9	SZ	-13.116	-13.116	0	%100
48	HR3	SZ	-13.106	-13.106	0	%100
49	M52	SZ	0	0	0	%100
50	M53	SZ	0	0	0	%100
51	M54	SZ	0	0	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,%]
52	M55	SZ	0	0	0	%100
53	H2	SZ	-12.087	-12.087	0	%100
54	MP4	SZ	-13.116	-13.116	0	%100
55	MP6	SZ	-13.116	-13.116	0	%100
56	HR2	SZ	-13.106	-13.106	0	%100
57	M66A	SZ	0	0	0	%100
58	M67A	SZ	0	0	0	%100
59	M68A	SZ	0	0	0	%100
60	M69A	SZ	0	0	0	%100
61	MP8	SZ	-13.116	-13.116	0	%100
62	M68B	SZ	0	0	0	%100
63	M69B	SZ	0	0	0	%100
64	MP5	SZ	-13.116	-13.116	0	%100
65	M71B	SZ	0	0	0	%100
66	M72B	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	-10.283	-10.283	0	%100
2	GA4	SX	-13.211	-13.211	0	%100
3	GA3	SX	-13.211	-13.211	0	%100
4	P3	SX	-9.899	-9.899	0	%100
5	S2	SX	-10.283	-10.283	0	%100
6	GA2	SX	-13.211	-13.211	0	%100
7	GA1	SX	-13.211	-13.211	0	%100
8	P2	SX	-9.899	-9.899	0	%100
9	S1	SX	-10.283	-10.283	0	%100
10	GA6	SX	-13.211	-13.211	0	%100
11	GA5	SX	-13.211	-13.211	0	%100
12	P1	SX	-9.899	-9.899	0	%100
13	H1	SX	-12.087	-12.087	0	%100
14	MP1	SX	-13.116	-13.116	0	%100
15	MP3	SX	-13.116	-13.116	0	%100
16	HR1	SX	-13.106	-13.106	0	%100
17	CA8	SX	-9.434	-9.434	0	%100
18	CA9	SX	-9.434	-9.434	0	%100
19	CA7	SX	-9.434	-9.434	0	%100
20	M32	SX	0	0	0	%100
21	M35	SX	0	0	0	%100
22	M36	SX	0	0	0	%100
23	M39A	SX	0	0	0	%100
24	CA3	SX	-11.539	-11.539	0	%100

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

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magn...	Start Location...	End Location[in, %]
25	CA4	SX	-11.539	-11.539	0	%100
26	CA1	SX	-11.539	-11.539	0	%100
27	CA2	SX	-11.539	-11.539	0	%100
28	CA5	SX	-11.539	-11.539	0	%100
29	CA6	SX	-11.539	-11.539	0	%100
30	M64	SX	0	0	0	%100
31	M65	SX	0	0	0	%100
32	M66	SX	0	0	0	%100
33	M67	SX	0	0	0	%100
34	M68	SX	0	0	0	%100
35	M69	SX	0	0	0	%100
36	M70	SX	0	0	0	%100
37	M71	SX	0	0	0	%100
38	M72	SX	0	0	0	%100
39	M73	SX	0	0	0	%100
40	M74	SX	0	0	0	%100
41	M75	SX	-14.179	-14.179	0	%100
42	MP2	SX	-13.116	-13.116	0	%100
43	M43	SX	0	0	0	%100
44	M44	SX	0	0	0	%100
45	H3	SX	-12.087	-12.087	0	%100
46	MP7	SX	-13.116	-13.116	0	%100
47	MP9	SX	-13.116	-13.116	0	%100
48	HR3	SX	-13.106	-13.106	0	%100
49	M52	SX	0	0	0	%100
50	M53	SX	0	0	0	%100
51	M54	SX	0	0	0	%100
52	M55	SX	0	0	0	%100
53	H2	SX	-12.087	-12.087	0	%100
54	MP4	SX	-13.116	-13.116	0	%100
55	MP6	SX	-13.116	-13.116	0	%100
56	HR2	SX	-13.106	-13.106	0	%100
57	M66A	SX	0	0	0	%100
58	M67A	SX	0	0	0	%100
59	M68A	SX	0	0	0	%100
60	M69A	SX	0	0	0	%100
61	MP8	SX	-13.116	-13.116	0	%100
62	M68B	SX	0	0	0	%100
63	M69B	SX	0	0	0	%100
64	MP5	SX	-13.116	-13.116	0	%100
65	M71B	SX	0	0	0	%100
66	M72B	SX	0	0	0	%100



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

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magn...	Start Location...	End Location[in, %]
1	S2	Y	-3.185	-3.185	16.404	40
2	GA2	Y	-1.605	-1.605	3.828	27.295
3	GA1	Y	-1.605	-1.605	3.828	27.295
4	S3	Y	-3.185	-3.185	16.404	40
5	GA4	Y	-1.605	-1.605	3.828	27.295
6	GA3	Y	-1.605	-1.605	3.828	27.295
7	S1	Y	-3.185	-3.185	16.404	40
8	GA6	Y	-1.605	-1.605	3.828	27.295
9	GA5	Y	-1.605	-1.605	3.828	27.295

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

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magn...	Start Location...	End Location[in, %]
1	S2	Y	-19.112	-19.112	16.404	40
2	GA2	Y	-9.631	-9.631	3.828	27.295
3	GA1	Y	-9.631	-9.631	3.828	27.295
4	S3	Y	-19.112	-19.112	16.404	40
5	GA4	Y	-9.631	-9.631	3.828	27.295
6	GA3	Y	-9.631	-9.631	3.828	27.295
7	S1	Y	-19.112	-19.112	16.404	40
8	GA6	Y	-9.631	-9.631	3.828	27.295
9	GA5	Y	-9.631	-9.631	3.828	27.295

**Member Area Loads (BLC 1 : Self Weight)**

	Joint A	Joint B	Joint C	Joint D	Direction	Distribution	Magnitude[psf]
1	P22	P21	P20	P23	Y	Two Way	-1.75
2	P10	P11	P12	P9	Y	Two Way	-1.75
3	P31	P34	P33	P32	Y	Two Way	-1.75

**Member Area Loads (BLC 16 : Ice Weight)**

	Joint A	Joint B	Joint C	Joint D	Direction	Distribution	Magnitude[psf]
1	P22	P21	P20	P23	Y	Two Way	-10.5
2	P10	P11	P12	P9	Y	Two Way	-10.5
3	P31	P34	P33	P32	Y	Two Way	-10.5

**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	P3	PL6.5x0.375	.265	21	2	.124 36.312	y	5	3658...	78975	616.9...	8007.525	1.... H1-1b
2	P2	PL6.5x0.375	.260	21	6	.112 36.312	y	10	3658...	78975	616.9...	7981.186	1.42 H1-1b
3	CA4	C3.38x2.06...	.244	33	2	.033 33	y	115	4776...	56700	2202...	5751.945	1.... H1-1b



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

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
4	P1	PL6.5x0.375	.242	21	10	.123	36.312	y	2	3658...	78975	616.9...	8005.804	1...	H1-1b
5	CA5	C3.38x2.06...	.242	0	10	.032	28.187	y	28	4776...	56700	2202...	5751.945	1...	H1-1b
6	CA1	C3.38x2.06...	.238	0	6	.034	28.188	y	36	4776...	56700	2202...	5751.945	1...	H1-1b
7	CA3	C3.38x2.06...	.237	0	2	.034	28.188	y	32	4776...	56700	2202...	5751.945	1.62	H1-1b
8	CA2	C3.38x2.06...	.231	33	6	.033	33	y	143	4776...	56700	2202...	5751.945	1...	H1-1b
9	CA6	C3.38x2.06...	.228	33	10	.032	33	y	87	4776...	56700	2202...	5751.945	1...	H1-1b
10	S2	HSS4X4X6	.214	0	7	.110	0	y	142	1882...	1978...	2204...	22045.5	1...	H1-1b
11	CA8	L6.6x4.46x0...	.210	41.562	22	.030	42	z	4	5117...	87561	2464...	7125.374	1...	H2-1
12	M75	PL 2.375x0.5	.209	1.5	12	.185	0	y	173	3825...	38475	400.7...	1903.711	2...	H1-1b
13	S3	HSS4X4X6	.207	0	13	.111	0	y	114	1882...	1978...	2204...	22045.5	1...	H1-1b
14	HR2	2.88x0.120	.207	90	3	.103	92		4	2249...	4307...	3155...	3155.674	1...	H1-1b
15	CA7	L6.6x4.46x0...	.206	41.562	3	.028	42	z	8	5117...	87561	2464...	7125.374	1...	H2-1
16	HR3	2.88x0.120	.203	6	2	.096	92		6	2249...	4307...	3155...	3155.674	1...	H1-1b
17	HR1	2.88x0.120	.199	6	4	.091	6		4	2249...	4307...	3155...	3155.674	1...	H1-1b
18	S1	HSS4X4X6	.190	0	9	.107	0	y	86	1882...	1978...	2204...	22045.5	1.83	H1-1b
19	CA9	L6.6x4.46x0...	.188	41.562	18	.026	42	z	12	5117...	87561	2464...	7125.374	1...	H2-1
20	MP2	PIPE 2.5	.173	70	5	.062	70		5	3348...	66654	4726.5	4726.5	4...	H1-1b
21	MP5	PIPE 2.5	.168	70	7	.052	70		7	3348...	66654	4726.5	4726.5	4...	H1-1b
22	GA4	L2x2x4	.160	0	2	.011	27.295	y	9	2952...	42480	959.63	2190.068	2...	H2-1
23	MP8	PIPE 2.5	.150	70	9	.065	70		3	3348...	66654	4726.5	4726.5	4...	H1-1b
24	GA5	L2x2x4	.150	0	9	.015	27.295	z	2	2952...	42480	959.63	2190.068	2...	H2-1
25	GA2	L2x2x4	.146	0	12	.012	0	y	12	2952...	42480	959.63	2190.068	2...	H2-1
26	GA1	L2x2x4	.137	0	6	.015	27.295	y	34	2952...	42480	959.63	2190.068	2...	H2-1
27	MP9	PIPE 2.5	.135	70	2	.061	70		7	3348...	66654	4726.5	4726.5	3...	H1-1b
28	GA3	L2x2x4	.135	0	7	.016	27.295	y	30	2952...	42480	959.63	2190.068	2...	H2-1
29	GA6	L2x2x4	.135	0	4	.011	0	y	4	2952...	42480	959.63	2190.068	2...	H2-1
30	MP6	PIPE 2.5	.124	70	7	.066	70		6	3348...	66654	4726.5	4726.5	4.63	H1-1b
31	MP1	PIPE 2.5	.120	70	11	.074	26		8	3348...	66654	4726.5	4726.5	2...	H1-1b
32	MP3	PIPE 2.5	.118	70	5	.067	70		3	3348...	66654	4726.5	4726.5	4...	H1-1b
33	MP4	PIPE 2.5	.117	70	7	.067	26		4	3348...	66654	4726.5	4726.5	1...	H1-1b
34	MP7	PIPE 2.5	.114	70	9	.060	26		6	3348...	66654	4726.5	4726.5	3...	H1-1b
35	H3	Pipe3.5x0.1...	.104	31	2	.066	90		2	4587...	7158...	6337...	6337.65	1...	H1-1b
36	H1	Pipe3.5x0.1...	.099	31	10	.058	48		4	4587...	7158...	6337...	6337.65	2...	H1-1b
37	H2	Pipe3.5x0.1...	.099	31	6	.050	90		143	4587...	7158...	6337...	6337.65	1...	H1-1b

## Bolt Calculation Tool, V1.5.1

PROJECT DATA	
Site Name:	BOHVN00140A
Site Number:	BOHVN00140A
Connection Description:	Platform to Monopole

MAXIMUM BOLT LOADS		
Bolt Tension:	5762.20	lbs
Bolt Shear:	1629.22	lbs

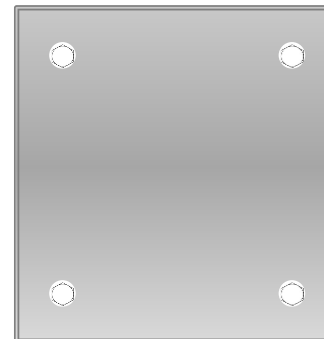
WORST CASE BOLT LOADS <sup>1</sup>		
Bolt Tension:	5762.20	lbs
Bolt Shear:	724.26	lbs

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

<sup>1</sup> Worst case bolt loads correspond to Load combination #7 on member S2 in RISA-3D, which causes the maximum demand on the bolts.

Member Information
I nodes of S3, S2, S1

BOLT CHECK		
Tensile Strength	20340.15	
Shear Strength	13805.83	
Max Tensile Usage	28.3%	
Max Shear Usage	11.8%	
Interaction Check (Worst Case)	0.08	≤1.05
Result	Pass	



# POWER DENSITY STUDY

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

Dish Wireless Existing Facility

Site ID: 6221004006

BOHVN00140A

BOHVN00140A

90 North Plains Industrial Road, Connecticut 06492

**October 27, 2021**

**EBI Project Number: 6221004006**

Site Compliance Summary	
Compliance Status:	<b>COMPLIANT</b>
Site total MPE% of FCC general population allowable limit:	<b>29.37%</b>

October 27, 2021

Dish Wireless

Emissions Analysis for Site: 6221004006 - BOHVN00140A

EBI Consulting was directed to analyze the proposed Dish Wireless facility located at **BOHVN00140A** in **90 North Plains Industrial Road, 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 97-01 and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter ( $\mu\text{W}/\text{cm}^2$ ). The number of  $\mu\text{W}/\text{cm}^2$  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 ( $\mu\text{W}/\text{cm}^2$ ). The general population exposure limits for the 600 MHz and 700 MHz frequency bands are approximately  $400 \mu\text{W}/\text{cm}^2$  and  $467 \mu\text{W}/\text{cm}^2$ , respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 11 GHz frequency bands is  $1000 \mu\text{W}/\text{cm}^2$ . 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 BOHVN00140A in 90 North Plains Industrial Road, 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 106 feet above ground level (AGL).
- 8) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.
- 9) All calculations were done with respect to uncontrolled / general population threshold limits.



## Dish Wireless Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	JMA MX08FRO665-21	Make / Model:	JMA MX08FRO665-21	Make / Model:	JMA MX08FRO665-21
Frequency Bands:	600 MHz / 1900 MHz / 2190 MHz	Frequency Bands:	600 MHz / 1900 MHz / 2190 MHz	Frequency Bands:	600 MHz / 1900 MHz / 2190 MHz
Gain:	17.45 dBd / 22.65 dBd / 22.65 dBd	Gain:	17.45 dBd / 22.65 dBd / 22.65 dBd	Gain:	17.45 dBd / 22.65 dBd / 22.65 dBd
Height (AGL):	106 feet	Height (AGL):	106 feet	Height (AGL):	106 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 AI MPE %:	<b>2.37%</b>	Antenna BI MPE %:	<b>2.37%</b>	Antenna CI MPE %:	<b>2.37%</b>

Site Composite MPE %	
Carrier	MPE %
Dish Wireless (Max at Sector A):	2.37%
Sprint	1.19%
Clearwire	0.07%
Metro PCS	0.82%
T-Mobile	9.83%
XM Sat Radio	0.12%
AT&T	4.36%
Nextel	0.45%
Verizon	10.16%
<b>Site Total MPE % :</b>	<b>29.37%</b>

Dish Wireless MPE % Per Sector	
Dish Wireless Sector A Total:	2.37%
Dish Wireless Sector B Total:	2.37%
Dish Wireless Sector C Total:	2.37%
<b>Site Total MPE % :</b>	<b>29.37%</b>

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 ( $\mu\text{W}/\text{cm}^2$ )	Frequency (MHz)	Allowable MPE ( $\mu\text{W}/\text{cm}^2$ )	Calculated % MPE
Dish Wireless 600 MHz n71	4	223.68	106.0	3.22	600 MHz n71	400	0.80%
Dish Wireless 1900 MHz n70	4	542.70	106.0	7.80	1900 MHz n70	1000	0.78%
Dish Wireless 2190 MHz n66	4	542.70	106.0	7.80	2190 MHz n66	1000	0.78%
						<b>Total:</b>	<b>2.37%</b>

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

## Summary

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

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

Dish Wireless Sector	Power Density Value (%)
Sector A:	2.37%
Sector B:	2.37%
Sector C:	2.37%
Dish Wireless Maximum MPE % (Sector A):	2.37%
Site Total:	29.37%
Site Compliance Status:	<b>COMPLIANT</b>

The anticipated composite MPE value for this site assuming all carriers present is **29.37%** 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

(1 of 1)

**Lot Classification: Industrial**

---

**LOCATION:** 90 NORTH PLAINS IND RD  
**OWNER 1:** R L R INVESTMENTS LLC  
**OWNER 2:**  
**MAIL ADDRESS:** 600 GILLAM RD  
**MAIL CITY:** WILMINGTON  
**MAIL STATE:** OH  
**MAIL ZIP:** 45177  
**SALE DATE:** 9/11/2000, 8:00 PM  
**SALE PRICE:** 950,000.00  
**OCC DESCRIPTION:** TRK TERM M96  
**STYLE DESCRIPTION:** Warehouse  
**BUILDING LIVING AREA:** 40000  
**YEAR BUILT:** 1981  
**STORIES:** 1  
**OCCUPANCY:** 1  
**INTERIOR FLOOR 1:** Concr Abv Grad  
**INTERIOR FLOOR 2:**  
**INTERIOR WALL 1:** Minim/Masonry  
**INTERIOR WALL 2:**  
**EXTERIOR WALL 1:** Brick/Masonry  
**EXTERIOR WALL 2:** Pre-finsh Metl  
**ROOF COVER:** Metal/Tin  
**ROOF STRUCTURE:** Gable  
**HEAT TYPE:** Radiant  
**HEAT FUEL:** Gas  
**AC TYPE:** Partial  
**BATHS / PLUMB:**  
**CEILING / WALL:** Ceil & Min WL  
**FRAME TYPE:** Steel  
**HEAT / AC:** Heat/Min  
**ROOMS / PATRN:** Average  
**WALL HEIGHT:** 14  
**LAND ZONE:** I40  
**LAND USE CODE:** 3140  
**LAND USE DESCRIPTION:** TRK TERM M96

# NOTIFICATIONS



May 11, 2022

Dear Customer,

The following is the proof-of-delivery for tracking number: 776755363583

---

**Delivery Information:**

---

<b>Status:</b>	Delivered	<b>Delivered To:</b>	Shipping/Receiving
<b>Signed for by:</b>	S.IGNATURE ON FILE	<b>Delivery Location:</b>	45 S MAIN ST
<b>Service type:</b>	FedEx 2Day		
<b>Special Handling:</b>	Deliver Weekday		WALLINGFORD, CT, 06492
		<b>Delivery date:</b>	May 6, 2022 10:00

---

**Shipping Information:**

---

<b>Tracking number:</b>	776755363583	<b>Ship Date:</b>	May 3, 2022
		<b>Weight:</b>	1.0 LB/0.45 KG

**Recipient:**  
William W. Dickinson, Jr., Office of the Mayor  
45 South Main Street  
WALLINGFORD, CT, US, 06492

**Shipper:**  
Dave Hoogasian, NB+C  
100 Apollo Dr.  
Suite 303  
CHELMSFORD, MA, US, 01824

**Reference** 100814

Thank you for choosing FedEx



May 11, 2022

Dear Customer,

The following is the proof-of-delivery for tracking number: 776755295770

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**Delivery Information:**

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<b>Status:</b>	Delivered	<b>Delivered To:</b>	Shipping/Receiving
<b>Signed for by:</b>	S.IGNATURE ON FILE	<b>Delivery Location:</b>	45 S MAIN ST
<b>Service type:</b>	FedEx 2Day		
<b>Special Handling:</b>	Deliver Weekday		WALLINGFORD, CT, 06492
		<b>Delivery date:</b>	May 6, 2022 10:00

---

**Shipping Information:**

---

<b>Tracking number:</b>	776755295770	<b>Ship Date:</b>	May 3, 2022
		<b>Weight:</b>	1.0 LB/0.45 KG

**Recipient:**  
Justin Rossetti, Wallingford Building Dept.  
45 South Main Street  
WALLINGFORD, CT, US, 06492

**Shipper:**  
Dave Hoogasian, NB+C  
100 Apollo Dr.  
Suite 303  
CHELMSFORD, MA, US, 01824

**Reference** 100814

Thank you for choosing FedEx



Dear Customer,

The following is the proof-of-delivery for tracking number: 776755419454

---

**Delivery Information:**

---

<b>Status:</b>	Delivered	<b>Delivered To:</b>	Receptionist/Front Desk
<b>Signed for by:</b>	B.FARRELL	<b>Delivery Location:</b>	600 GILLIAM RD
<b>Service type:</b>	FedEx 2Day		
<b>Special Handling:</b>	Deliver Weekday		WILMINGTON, OH, 45177
		<b>Delivery date:</b>	May 5, 2022 10:04

---

**Shipping Information:**

---

<b>Tracking number:</b>	776755419454	<b>Ship Date:</b>	May 3, 2022
		<b>Weight:</b>	1.0 LB/0.45 KG

**Recipient:**  
RLR Investments LLC, RLR Investments LLC  
600 Gilliam Rd  
WILMINGTON, OH, US, 45177

**Shipper:**  
Dave Hoogasian, NB+C  
100 Apollo Dr.  
Suite 303  
CHELMSFORD, MA, US, 01824

**Reference** 100814

