Tectonic
PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.

Tectonic Engineering
Theresa Ranciato-Viele
63-3 N. Branford Road
Branford, CT 06405
Tranciato@Tectonicengineering.com
203-606-5127

January 9, 2023

Ms. Melanie Bachman, Executive Director
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051

RE: **Notice of Exempt Modification to an existing 130' monopole located at 76 East Ridge Road, Ridgefield, Connecticut**

Latitude: 41° 16' 50.88" / Longitude: -73° 29' 35.88"

Dear Ms. Bachman:

This letter and attachments are submitted on behalf of Dish Wireless, LLC ("Dish"). Dish plans to install antennas and related equipment to the tower site at the existing 148'monopole tower facility located at 76 East Ridge Road, Ridgefield, Connecticut (See Original Facility Approval attached as Exhibit A) ("Facility"). The property and tower are owned by The Town of Ridgefield (See Ridgefield Vision Appraisal information attached hereto as Exhibit B).

Dish proposes to install three (3) 600/1900/2100 MHz JMA – MX08Fr0665-21 antennas and six (6) FUJITSU TA08025 RRUs on the tower at the one hundred eighteen foot (118') centerline AGL. Dish further proposes to install one (1) 1.5" Hybrid Cable. Dish will also install its equipment cabinets on a 5' X 7' platform within its 10' X 15' lease area. The installation is shown on plans completed by Tectonic Engineering, dated December 12, 2022 and attached hereto as Exhibit C.

Dish requests that the Connecticut Siting Council ("Council") find that the proposed shared use of this Facility satisfies the criteria of C.G.S. sec. 16-50aa and accordingly issue an order approving the proposed shared use. This proposed installation constitutes an exempt modification pursuant to R.C.S.A. 16-50j-89. Pursuant to R.C.S.A. 16-50j-73, Dish is providing notice to Rudy Marconi, First Selectperson of the Town of Ridgefield, Alice Dew, Planning and Zoning Director, the property and tower owner, Town of Ridgefield.

Under the Council's regulations, Dish's plans do not constitute a modification subject to the Council's review in that:

Dish will not change the existing 130' height of the Tower as the Dish antennas will be installed at a height of 118'.

The proposed installation will not extend the existing boundaries of the compound as depicted in Exhibit C;

The proposed installation will not increase the noise levels at the facility by six (6) decibels or more, or to levels that exceed local and state criteria; and

The proposed antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard. The attached Exhibit F indicates that the combined site operations will result in a total power density of 6.1790%.

Tower

The Facility consists of a One thirty foot (130') monopole tower located at 76 East Ridge Road, Ridgefield, Connecticut. As indicated above, the property and tower are owned by the Town of Ridgefield. The tower currently supports Verizon antennas at the one hundred twenty eight foot (128'), Sprint at the one hundred eighteen foot (118') AGL, which antennas are to be removed, Town of Ridgefield antennas at the one hundred seven foot (107') and eighty seven foot (87') centerlines AGL, and T-Mobile at the one hundred foot (100') centerline AGL. The antenna locations are set forth on Sheet A-2 of the attached drawings in Exhibit C.

A. TECHNICAL FEASIBILTY

The existing monopole has been deemed structurally capable of supporting the proposed Dish loading. The structural and mount analyses are attached hereto as Exhibits D and E respectively.

B. LEGAL FEASIBILITY

C.G.S. Se. 16-50aa authorizes the Council to issue orders approving the shared use of existing towers such as the above referenced tower. Under the authority granted to the Council, an order of the Council approving the requested shared use would permit Dish to obtain a building permit from the Town of Ridgefield to proceed with the proposed installation. Additionally, a Supplement to The Master Lease Agreement is attached as Exhibit G, granting Dish the authority from the tower owner to proceed with this application for shared use.

C. ENVIRONMENTAL FEASIBILITY

The proposed shared use of this Facility would have a minimal environmental impact. The installation of the Dish equipment at the 118' level of the existing tower would have an insignificant visual impact on the area surrounding the tower. The proposed Dish ground equipment would be installed within the existing Facility compound. The Dish installation would not cause any significant alteration to the physical or environmental characteristics of the existing Facility. Additionally, as evidenced by Exhibit F, the proposed antennas would not increase the radio frequency emissions to a level at or above the Federal Communications Commission safety standards.

D. ECONOMIC FEASIBILTY

Dish has entered into a Lease Agreement (Exhibit G) with the Facility owner for the proposed colocation. Therefore, this shared use is economically feasible.

E. PUBLIC SAFETY CONCERNS

As set forth above, the tower is structurally capable of supporting the proposed Dish loading. Dish is not aware of any public safety concerns relative to the proposed sharing of the existing tower.

For the reasons set forth herein, the proposed shared use of the existing tower at 76 East Ridge Road, Ridgefield, satisfies the criteria stated in C.G.S. sec. 16-50aa, and supports the general goal of preventing the unnecessary proliferation of tower sites in Connecticut. Dish respectfully requests the Council issue an order approving the proposed shared use.

Respectfully submitted,
Dish Wireless, LLC

By _____
Theresa Ranciato-Viele, consultant
63-3 N. Branford Road
Branford, CT 06405
Tranciato@Tectonicengineering.com
203-606-5127

cc: Ridgefield First Selectperson, Rudy Marconi
400 Main Street
Ridgefield, CT 06877

Ridgefield Planning and Zoning Director, Alice Dew
Town Hall Annex
66 Prospect St.
Second Floor
Ridgefield, CT 06877

Exhibit A

Original Facility Approval

DOCKET NO. 113 - An application of Metro Mobile CTS of Fairfield County, Inc., for a Certificate of Environmental Compatibility and Public Need for cellular telephone antennas and associated equipment in the Town of Ridgefield, Connecticut.	: Connecticut : : Siting : Council :September 8, 1989

DECISION AND ORDER

Pursuant to the foregoing Opinion, the Connecticut Siting Council finds that the effects associated with the construction, operation, and maintenance of a cellular monopole tower and associated equipment at the proposed Ridgefield site, including effects on the natural environment; ecological balance; public health and safety; scenic, historic, and recreational values; forests and parks; air and water purity; and fish and wildlife, are not significant either alone or cumulatively with other effects, are not in conflict with the policies of the State concerning such effects, and are not sufficient reason to deny the application, and therefore directs that a Certificate of Environmental Compatibility and Public Need, as provided by Section 16-50k of the Connecticut General Statutes (CGS) be issued to Metro Mobile CTS of Fairfield County, Inc., for the construction, operation,and maintenance of a cellular telephone tower site and associated equipment at the proposed site on Governor Street in Ridgefield, Connecticut.

The facility shall be substantially constructed, operated, and maintained as specified in the Council's record on this matter, and subject to the following conditions:

1. The tower shall be a monopole no taller than necessary to provide the proposed service, and in no event shall the structure exceed a total height of 143 feet, including antennas.

2. The facility shall be constructed in accordance with applicable sections of the State of Connecticut Basic Building Code.
3. Unless necessary to comply with conditions of the Federal Aviation Administration, no lights shall be installed on this tower.
4. The Certificate Holder or its successor shall not oppose public or private entities who seek to share space on the tower unless technical reasons preclude such tower sharing.
5. The Certificate Holder or its successor shall notify the Council for acknowledgement or approval if and when directional antennas or any equipment other than that listed in this application are added to this facility.
6. If this facility does not provide, or permanently ceases to provide, cellular service following the completion of construction, this Decision and Order shall be void, and the tower and all associated equipment in this application shall be dismantled and removed or reapplication for any new use shall be made to the Council and a Certificate granted before any such new use is made.
7. The Certificate Holder shall comply with any future radio frequency (RF) standard, promulgated by State or federal regulatory agencies. Upon the establishment of any new governmental RF standards, the facility granted in this Decision and Order shall be brought into compliance with such standards.
8. Unless otherwise approved by the Council, this Decision and Order shall be void if all construction authorized herein is not completed within three years of the issuance of this Decision and Order, or within three years of the completion of any appeal taken in this Decision and Order.

Pursuant to Section 16-50p, we hereby direct that a copy of the Findings of Fact, Opinion, and Decision and Order be served on each person listed below. A notice of issuance shall be published in the Danbury News-Times, the Stamford Advocate, and the White Plains Reporter Dispatch.

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

The parties or intervenors to this proceeding are:

PARTY	ITS REPRESENTATIVE
Metro Mobile CTS of Fairfield County, Inc. 50 Rockland Road South Norwalk, CT 06854 ATTN: Phillip Mayberry General Manager	Jennifer Young Gaudet, Esq. David W. Bogan, Esq. Bryne, Slater, Sandler Shulman & Rouse, P.C. 330 Main Street P.O. Box 3216 Hartford, CT 06103 Fleischman and Walsh, P.C. 1400 16th Street, N.W. Suite 600 Washington, D.C. 20036 ATTN: Richard Rubin, Esq.
INTERVENOR	ITS REPRESENTATIVE
SNET Cellular, Inc. 227 Church Street New Haven, CT 06506	Peter J. Tyrrell Senior Attorney SNET Cellular, Inc. Room 1021 227 Church Street New Haven, CT 06506

CERTIFICATION

The undersigned members of the Connecticut Siting Council hereby certify that they have heard this case in Docket No. 113 or read the record thereof, and that we voted as follows:

Dated at New Britain, Connecticut the 8th day of September, 1989.

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

3441E-2

Exhibit B

Property Card

The Assessor's office is responsible for the maintenance of records on the ownership of properties. Assessments are computed at 70% of the estimated market value of real property at the time of the last revaluation which was 2012.

Information on the Property Records for the Municipality of Ridgefield was last updated on 8/6/2014.

Parcel Information

Location:	76 EAST RIDGE	Property Use:	Office	Primary Use:	Office Building
Unique ID:	E150204	Map Block Lot:	E15-0204	Acres:	1.90
490 Acres:	0.00	Zone:	RA	Volume / Page:	0182/0240
Developers Map / Lot:		Census:	2453		

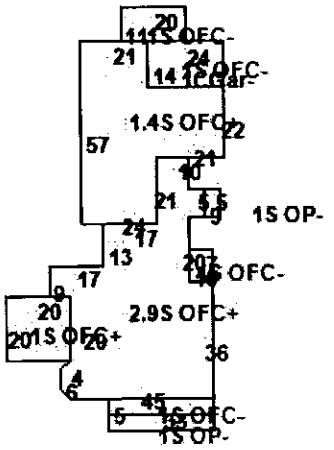
Value Information

	Appraised Value	70% Assessed Value
Land	1,600,000	1,120,010

	Appraised Value	70% Assessed Value
Buildings	1,037,348	726,140
Detached Outbuildings	293,220	205,250
Total	2,930,568	2,051,400

Building 1

Photo Not Available



Category:	Office	Use:	Office Building	Stories:	2.90

Above Grade:	10,921	Below Grade:	4,678	Below Grade Finish:	3,566
Construction:	Good	Year Built:	1930	Heating:	Hot Water
Fuel:	Oil	Cooling Percent:	100%	Siding:	Wood Shingles/Vinyl
Roof Material:	Asphalt Reg3 Tab				

Special Features

Attached Components

Type:	Construction:	Year Built:	Area:
Garage	Concrete Block/Frame	1930	336
Porch	Open	1930	330
Porch	Open	1930	45

Detached Outbuildings

Type:	Construction:	Year Built:	Length:	Width:	Area:
Garage	Detatched 1 Story Masonry	1930	0.00	0.00	4,320
Paving	Paving	1930	0.00	0.00	6,000
Shed	Average Shed	1930	0.00	0.00	144

MAP / LOT E15-0204 STREET 76 EAST RIDGE ZONING RA CARD NO. 1 OF 1 TYPE COMM./IND.

OWNER RIDGEFIELD TOWN OF

TRANSFER OF OWNERSHIP	Deed Reference	Date Mo Day Year	Selling Price
RIDGEFIELD TOWN OF	0182/240		

REMARKS

98-A-344, 8-17-98; POUR CONC. FOR EQUIP. CABINET FOR WIRELESS COMM.
ATTCHMNT OF ADDTN ANTENNAS ON EXIST COMM TOWER 97-A-119,4/10/97
INSTALL 9 TELECOM. ATENNAS 01-A-152;5/2/01;EMERGENCY GENERATOR
GP-11-115-8/23/11:AT PD REMOVE OIL BURNER AND REPLACE WITH GAS.

ASSESSED VALUE	NO	CODE	2007	NO	CODE		NO	CODE		NO	CODE		NO	CODE	
COMM. LAND	1.90	21	269,720												
COMM. BLDG	1	22	1,132,300												
COMM. OUT BUILDING	3	25	72,200												
TOTAL			1,474,220												

Census Tract 2453 Dev. Lot

Survey No.'s

	LAND VALUATION SIZE	LAND UNIT	SIZE ADJUSTMENT	TOPO / AMN	ESTIMATED LAND MARKET VALUE
PRIMARY SITE	1.90	650000	0.80	0.61	385320
COMM / IND. ACRES					
FRONT ACRES					
EXCESS ACRES					
TOTAL ACRES	1.90				385320

Inspection Date

Prior Assessment 1,327,130

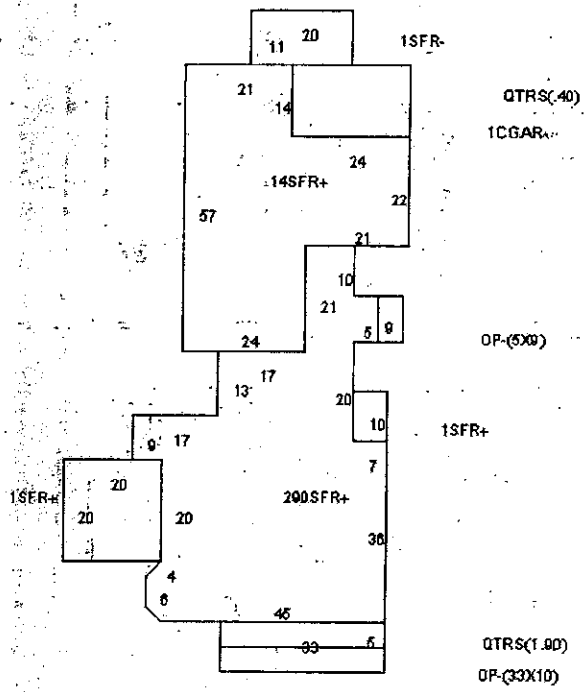
ESTIMATED MARKET VALUE

LAND VALUE	385,320
IMPROVEMENT VALUE	1,720,710
ESTIMATED MARKET VALUE	2,106,030

Town of Ridgefield

COMMENTS

POLICE STATION;BSMT=LOCKER RMS,1ST FLR=RECEPTION OFFICE+4 HOLDING CELLS,2ND FLR=CLASSRM+OFFICES & 3RD FLR=STORAGE;
01-R-15, 8/28/01; ACCENT PANELS: CO 8/29/02



PROPERTY FACTORS	
OCCUPANCY	OFFICE
CONSTRUCTION	WOOD FRAME
QUALITY	GOOD
STORY HEIGHT	2.75
SIDING TYPE	WOOD SHINGLE
FOUNDATION TYPE	STONE-BRICK
ROOF TYPE	HIP
ROOFING	ASPHALT
WALL FINISH	
FLOOR FINISH	
ELEVATOR / STOPS	
PLUMBING FIXTURES	41
HEATING	HOT WATER / OIL
% INSULATION	0
% AIR CONDITIONED	100%
% SPRINKLER	0
REMODEL YEAR	1989
ADDITION YEAR	
ECONOMIC LIFE	50
EFFECTIVE AGE	9
CONDITION	AVERAGE
FINISH PERCENT	100%

COMPUTATIONS			
DESCRIPTION	AREA	RATE	COST
MAIN	7,241	122	879,780
ADDITION	165	116	19,180
ADDITION	70	116	8,140
ADDITION	400	116	46,500
ADDITION	2,503	122	304,110
ADDITION	134	116	15,580
FINISH BSMT	3,566	40	143,210
UNFIN BSMT	1,189	22	25,990
ATT GARAGE	336	57	19,300
OP	330	49	16,040
OP	45	62	2,780
CLASS FACTOR			15
REPLACEMENT COST			1702720

SUMMARY OF IMPROVEMENTS

USE	STRY HGT	CONST	YR BLT	CONDITION	SIZE	AREA	REPLACEMENT COST	ACCUMLTD DEP NORM	ACCUMLTD DEP OBSOL	ESTIMATED VALUE
OFFICE	2.75	WOOD FRAME	1930	AVERAGE	SEE SKETCH	10,513	1,702,720	5		1,617,590
PAVING			1930	AVERAGE		6,000	34,740	50		17,370
GARAGE	1.0	RUBBLE/BRICK	1930	FAIR	80 X 54	4,320	211,330	60		84,530
SHED	1.0	AVERAGE SHED	1930	FAIR	18 X 8	144	4,430	60	30	1,240

GROSS LEASABLE AREA	10513	S.F.
BSMT UNFINISHED AREA	1189	S.F.
BSMT FINISHED AREA	3566	S.F.
UNFINISHED MEZZ. AREA		
FINISHED MEZZ. AREA		
MAIN BODY WALL HEIGHT	8	L.F.
MAIN BODY PERIMETER	264	L.F.

INSPECTOR KC DATE

TOTAL ESTIMATED IMPROVEMENT VALUE **103140**

Exhibit C

Project Plans

dish wireless.

DISH Wireless L.L.C. SITE ID:

NJJER01117A

DISH Wireless L.L.C. SITE ADDRESS:

76 EAST RIDGE ROAD
RIDGEFIELD, CT 06877

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	2022 CT STATE BUILDING CODE/2021 IBC W/ CT AMENDMENTS
MECHANICAL	2022 CT STATE BUILDING CODE/2021 IMC W/ CT AMENDMENTS
ELECTRICAL	2022 CT STATE BUILDING CODE/2020 NEC W/ CT AMENDMENTS

SHEET INDEX

SHEET NO.	SHEET TITLE
T-1	TITLE SHEET
SP-1	OVERALL SITE PLAN
A-1	ENLARGED SITE & EQUIPMENT PLAN
A-2	ELEVATION, ANTENNA LAYOUT & SCHEDULE
A-3	EQUIPMENT DETAILS
A-4	EQUIPMENT DETAILS
E-1	ELECTRICAL/FIBER ROUTE PLAN AND NOTES
E-2	ELECTRICAL DETAILS
E-3	ELECTRICAL ONE-LINE, FAULT CALCS & PANEL SCHEDULE
E-4	PPC NEUTRAL-TO-GROUND SCHEMATIC
G-1	GROUNDING PLANS AND NOTES
G-2	GROUNDING DETAILS
G-3	GROUNDING DETAILS
RF-1	RF CABLE COLOR CODE
GN-1	LEGEND AND ABBREVIATIONS
GN-2	RF SIGNAGE
GN-3	GENERAL NOTES
GN-4	GENERAL NOTES
GN-5	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 MOUNT
- INSTALL (6) PROPOSED RRHs (2 PER SECTOR)
- INSTALL (1) PROPOSED OVER VOLTAGE PROTECTION DEVICE (OVP)
- INSTALL (1) PROPOSED HYBRID CABLE

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

SITE PHOTO

UNDERGROUND SERVICE ALERT CBYD 811
UTILITY NOTIFICATION CENTER OF CONNECTICUT
(800) 922-4455
WWW.CBYD.COM
CALL 2 WORKING DAYS UTILITY NOTIFICATION PRIOR TO CONSTRUCTION

811

GENERAL NOTES

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

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

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

SITE INFORMATION

PROPERTY OWNER:	THE TOWN OF RIDGEFIELD
ADDRESS:	76 EAST RIDGE ROAD RIDGEFIELD, CT 06877
TOWER TYPE:	N/A
TOWER CO SITE ID:	N/A
COUNTY:	FAIRFIELD
LATITUDE (NAD 83):	41° 18' 30.99" N 41.280831 N
LONGITUDE (NAD 83):	73° 29' 34.22" W 73.492839 W
ZONING JURISDICTION:	TOWN OF RIDGEFIELD/CT SITING COUNCIL
ZONING DISTRICT:	RA-2
PARCEL NUMBER:	E150204
POWER COMPANY:	EVERSOURCE
TELEPHONE COMPANY:	T.B.D.

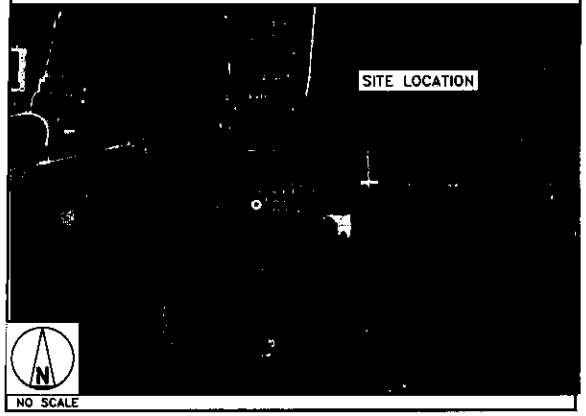
PROJECT DIRECTORY

APPLICANT:	DISH Wireless L.L.C. 5701 SOUTH SANTA FE DRIVE LITTLETON, CO 80120
TOWER OWNER:	TOWN OF RIDGEFIELD 400 MAIN STREET RIDGEFIELD, CT 06877
SITE DESIGNER:	TECTONIC ENGINEERING CONSULTANTS GEOLOGISTS, SURVEYORS D.P.C., INC. 1279 ROUTE 300 NEWBURGH, NY 10953 (845) 567-0858
SITE ACQUISITION:	TECTONIC ENGINEERING CONSULTANTS GEOLOGISTS, SURVEYORS D.P.C., INC. 1279 ROUTE 300 NEWBURGH, NY 10953 (845) 567-0858
CONSTRUCTION MANAGER:	RAFAL ROSOLOWSKI RAFAL.ROSOLOWSKI@DISH.COM
RF ENGINEER:	PAWAN MADAHAR PAWAN.MADAHAR@DISH.COM

DIRECTIONS

DIRECTIONS FROM 5 ADP BOULEVARD, ROSELAND, NJ 07068:
HEAD EAST ON ADP BLVD. TOWARD CHOCTAW WAY. TURN LEFT ONTO LIVINGSTON AVE. TURN RIGHT ON EAGLE ROCK AVE. TURN LEFT ON ROSELAND AVE. TURN LEFT ON BLOOMFIELD AVE. TURN RIGHT ONTO SMULL AVE. TURN LEFT ONTO MOUNTAIN AVE. CONTINUE ONTO W LINDSLEY RD. TURN LEFT ONTO CENTER AVE. TURN RIGHT ONTO MAIN STREET. TURN LEFT ONTO PATTERSON AVE. CONTINUE ONTO MCBRIDE AVE. SLIGHT LEFT TO STAY ON MCBRIDE AVE. CONTINUE ONTO ELLISON. TURN LEFT ONTO MAIN ST. TURN RIGHT ONTO RIVER ST. TURN RIGHT ONTO 1ST AVE. CONTINUE ONTO MAPLE AVE. TURN LEFT ONTO N FRANKLIN TPKE. TURN RIGHT ONTO SHERIDAN AVE. SLIGHT RIGHT TO STAY ON SHERIDAN AVE. CONTINUE ONTO W SADDLE RIVER RD. TURN RIGHT ONTO ALLENDALE RD. TURN LEFT ONTO E SADDLE RIVER RD. (ENTERING NEW YORK). TURN RIGHT ONTO MARGETTS RD. TURN LEFT ONTO HUNGRY HOLLOW RD. TURN RIGHT ONTO OLD NYACK TURNPIKE. CONTINUE ONTO S CENTRAL AVE. TURN RIGHT ONTO PIPETOWN HILL RD. TURN LEFT ONTO S PASCACK RD. TURNRIGHT ONTO N PASCACK RD. TURN RIGHT ONTO COUNTY RD 60 E. SLIGHT RIGHT TO STAY ON SMITH RD. TURN LEFT ONTO N MIDDLETOWN RD. CONTINUE ONTO S LITTLE TOR RD. TURN RIGHT ONTO IRION DR. TURN RIGHT ONTO TWIN ELMS LN. TURN LEFT TO STAY ON TWIN ELMS LN. TURN LEFT AFTER KEY BANK. TURN RIGHT ONTO CONGRERS RD. SLIGHT LEFT ONTO RIDGE RD. TURN RIGHT ONTO HAVERSTRAW RD. CONTINUE ONTO SHORT CLOVE RD. TURN RIGHT ONTO RIVERSIDE AVE. CONTINUE ONTO WEST ST. TURN RIGHT ONTO GIRLING DR. TURN RIGHT. TAKE THE OSSINING- HAVERSTRAW FERRY. TURN RIGHT TOWARD SECOR RD. TURN LEFT ONTO SECOR RD. CONTINUE ONTO MAIN ST. TURN LEFT ONTO ALBANY POST RD/S HIGHLAND AVE. TURN RIGHT ONTO NY-133 W/CROTON AVE. TURN LEFT ONTO NY-100 S/NY-133 W. TURN RIGHT ONTO STATION RD. TURN RIGHT ONTO MILLWOOD RD. TURN LEFT TOWARD N MOGER AVE. SLIGHT RIGHT ONTO BARKER ST. TURN LEFT ONTO GREEN LN/MCLAIN RD. TURN RIGHT ONTO GUARD HILL RD. TURN RIGHT ONTO CANTITOE ST. TURN LEFT ONTO NY-22 N. TURN RIGHT ONTO NY-137 S. SLIGHT RIGHT ONTO OLD STONE HILL RD. TURN LEFT ONTO NY-124 S. SLIGHT RIGHT ONTO HIGHVIEW RD.TURN RIGHT ONTO NY-35 W. TURN LEFT ONTO PEACEABLE ST. CONTINUE ONTO OLD SOUTH SALEM RD. TURN LEFT ONTO PEACEABLE ST. SLIGHT LEFT ONTO KING LN. TURN LEFT ONTO MAIN ST.TURN RIGHT ONTO GOVERNOR ST.

VICINITY MAP



NO SCALE

dish wireless.
5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

Tectonic
Tectonic Engineering Consultants, Geologists & Land Surveyors, D.P.C., Inc.
Project Contact Info
1279 Route 300
Newburgh, NY 12550
Phone: (845) 567-0858
(800) 928-4671
www.tectonicengineering.com

STATE OF CONNECTICUT
MANOJKUMAR PATEL
PEN.0022038
LICENSED
PROFESSIONAL ENGINEER
12/20/22

DRAWN BY:	CHECKED BY:	APPROVED BY:
NM	JQ	MP

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	12/12/22	ISSUED FOR FILING

A&E PROJECT NUMBER

10710.NJJER01117A

DISH WIRELESS PROJECT INFORMATION

NJJER01117A

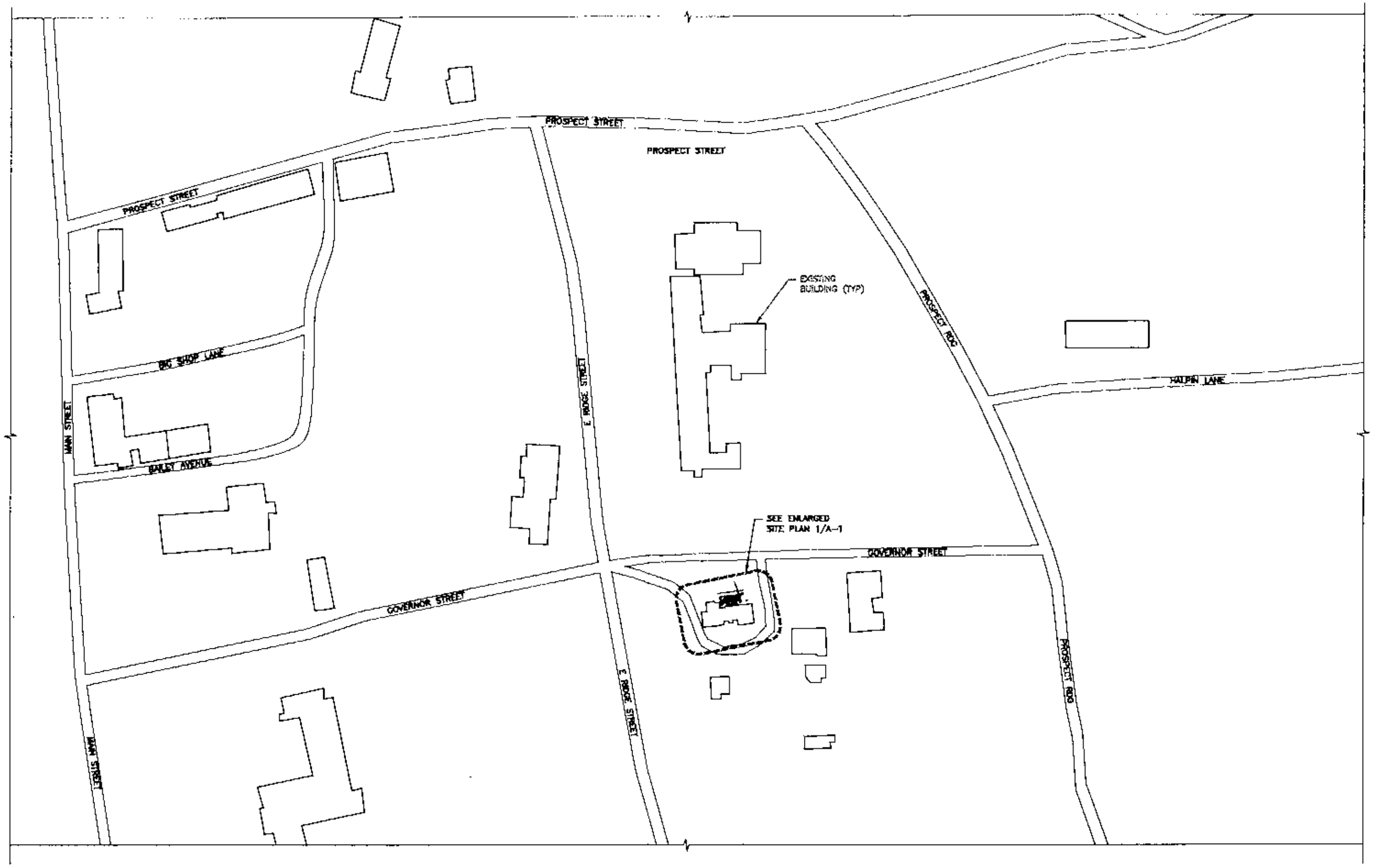
76 EAST RIDGE ROAD
RIDGEFIELD, CT 06877

SHEET TITLE

TITLE SHEET

SHEET NUMBER

T-1



NOTE: FOR SITE PLAN SHOWN REFERENCE "SITE SURVEY PLAN BY L-C ASSOCIATES INC. DATED 10/1/2002".

OVERALL SITE PLAN

200' 100' 0 200' 400'
1"=200'

1

dish wireless.
5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

Tectonic

STATE OF CONNECTICUT
MANOJKUMAR PATEL
PEN.0022038
LICENSED
PROFESSIONAL ENGINEER
12/20/22

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.

DRAWN BY:	CHECKED BY:	APPROVED BY:
NM	JO	MP

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	12/12/22	ISSUED FOR FILING

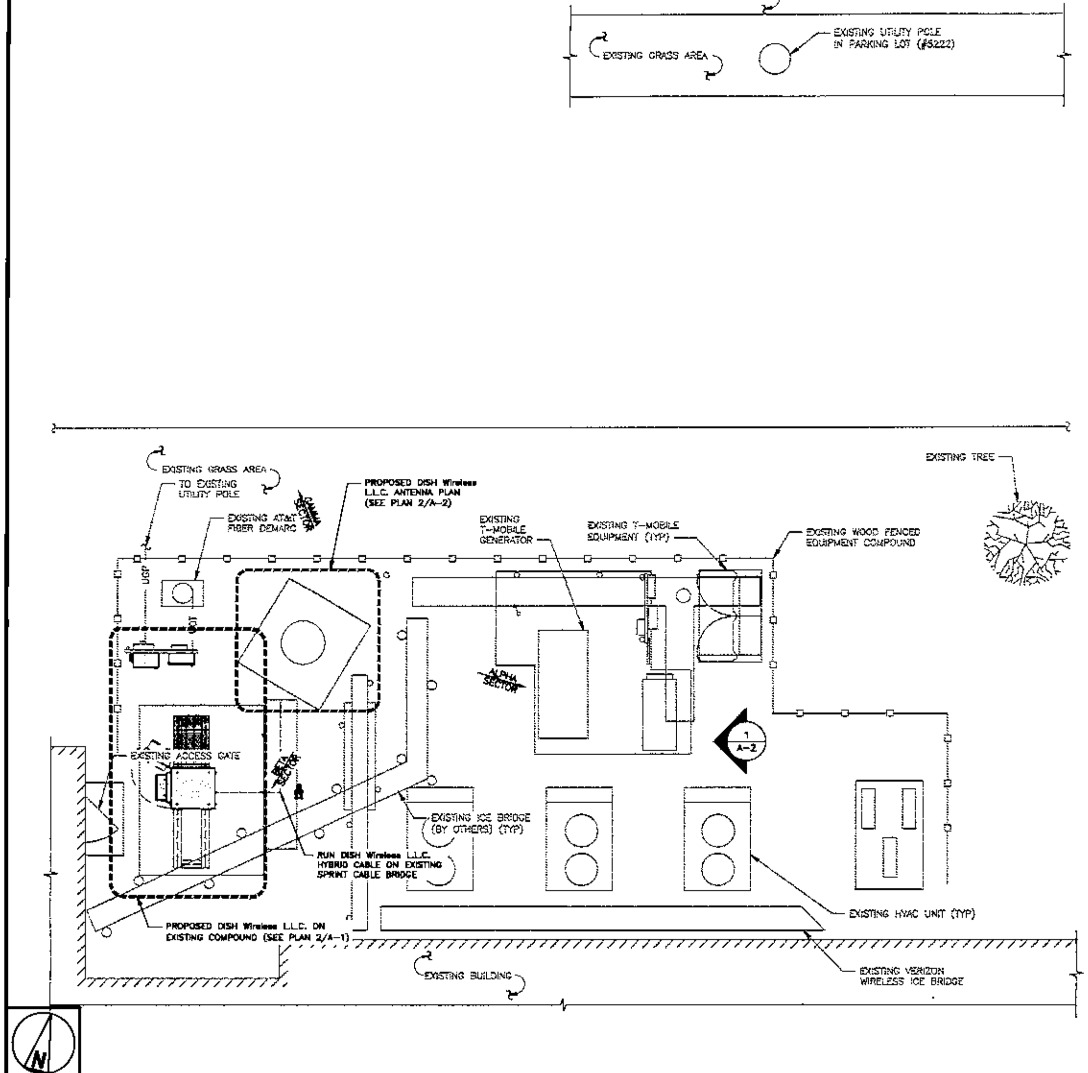
A&E PROJECT NUMBER
10710.NJJER01117A

DISH WIRELESS PROJECT INFORMATION
NJJER01117A

76 EAST RIDGE ROAD
RIDGEFIELD, CT 06877

SHEET TITLE
OVERALL SITE PLAN

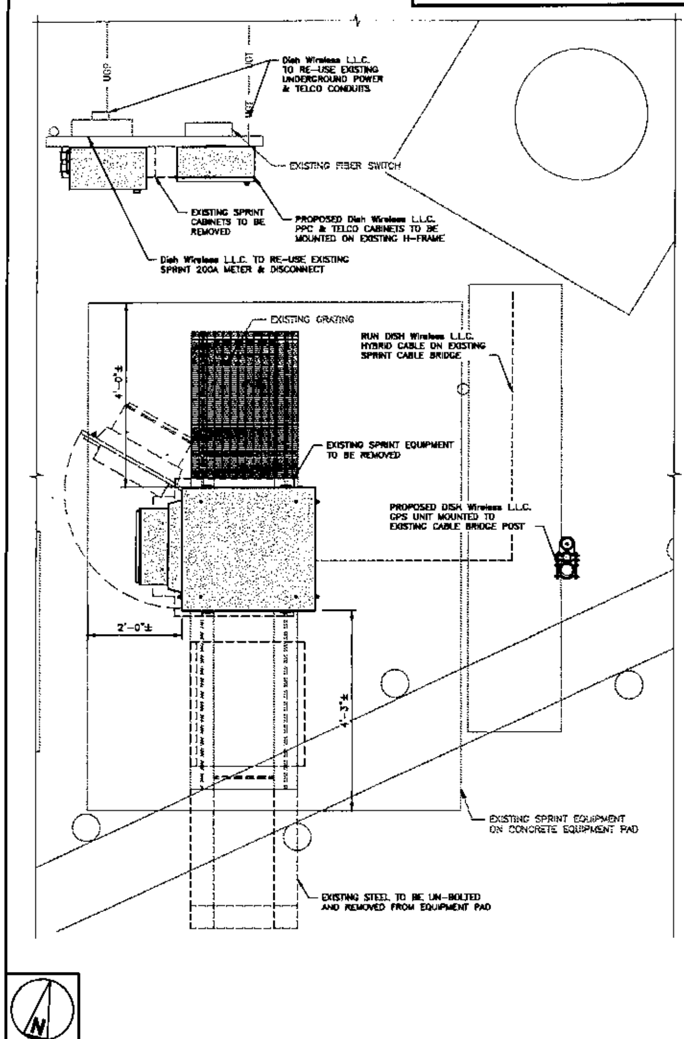
SHEET NUMBER
SP-1



NOTES

1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.
3. REFER TO THE STRUCTURAL ANALYSIS REPORT BY TECTONIC DATED 10/12/22.
4. REFER TO THE MOUNT ANALYSIS REPORT BY TECTONIC DATED 10/12/22.

ENLARGED SITE PLAN — 1/4"=1'-0" — 1



NOTES

1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. CONTRACTOR SHALL MAINTAIN A 10'-0" MINIMUM SEPARATION BETWEEN THE PROPOSED GPS UNIT, TRANSMITTING ANTENNAS AND EXISTING GPS UNITS.
3. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.
4. REFER TO THE STRUCTURAL ANALYSIS REPORT BY TECTONIC DATED 10/12/22.
5. REFER TO THE MOUNT ANALYSIS REPORT BY TECTONIC DATED 10/12/22.

EQUIPMENT PLAN — 3/4"=1'-0" — 2

dish wireless.
5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

Tectonic

STATE OF CONNECTICUT — MANOJKUMAR PATEL — PEN.0022038 — LICENSED PROFESSIONAL ENGINEER — 12/20/22

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.

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NM	JQ	MP

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

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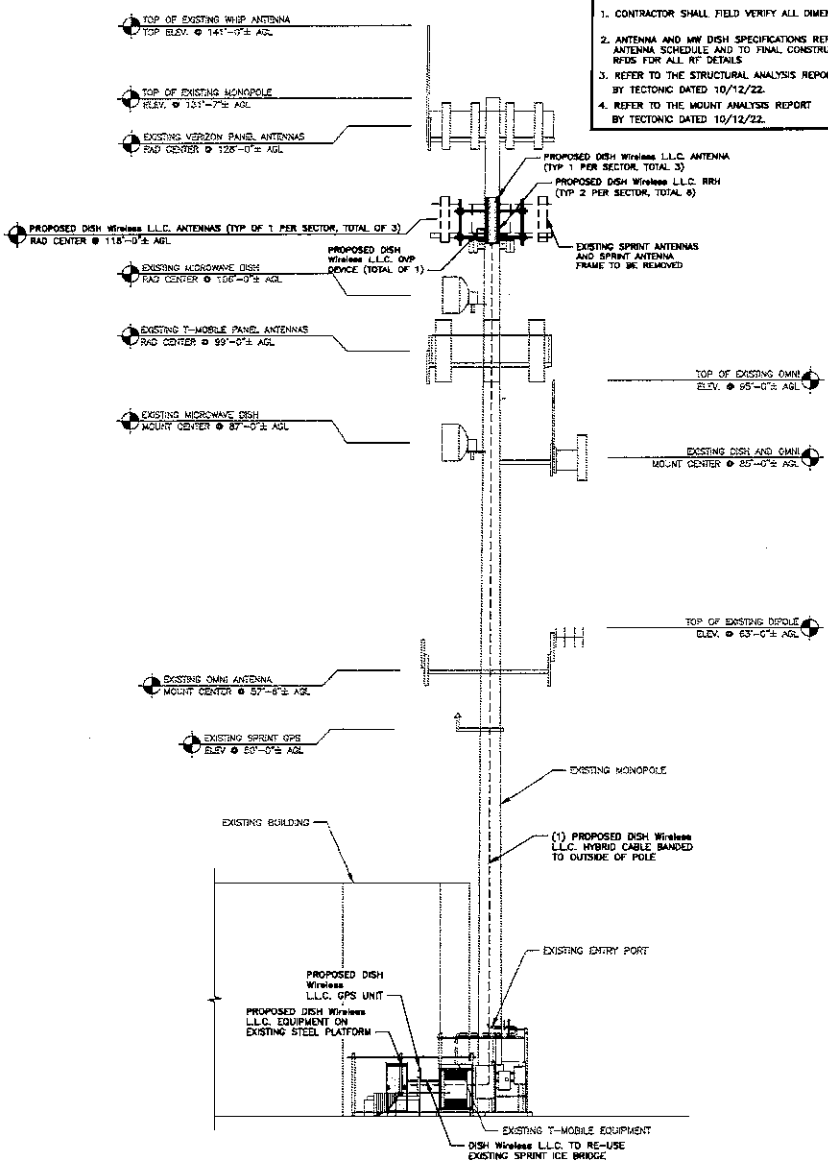
DISH WIRELESS PROJECT INFORMATION
NJJER01117A
76 EAST RIDGE ROAD
RIDGEFIELD, CT 06877

SHEET TITLE
ENLARGED SITE & EQUIPMENT PLAN

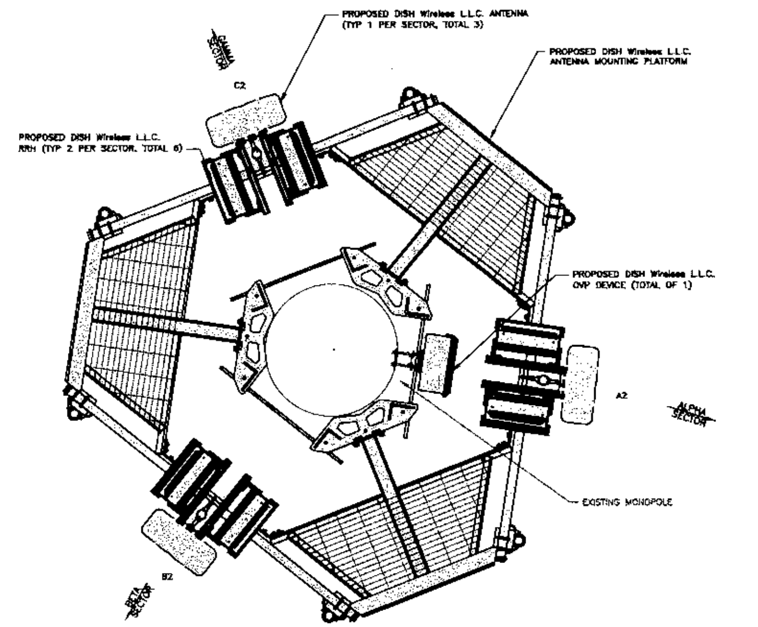
SHEET NUMBER
A-1

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. REFER TO THE STRUCTURAL ANALYSIS REPORT BY TECTONIC DATED 10/12/22.
4. REFER TO THE MOUNT ANALYSIS REPORT BY TECTONIC DATED 10/12/22.



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



NOTE: COLLAR TO BE INSTALLED AROUND EXISTING CABLING BANDED TO OUTSIDE OF POLE

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

SECTOR POS.	ANTENNA: EXISTING OR PROPOSED	ANTENNA: MANUFACTURER – MODEL NUMBER	ANTENNA: TECH	ANTENNA: AZIMUTH	ANTENNA: RAD CENTER	TRANSMISSION CABLE: FEED LINE TYPE AND LENGTH	RRH: MANUFACTURER – MODEL NUMBER	RRH: TECH	RRH: POS.	OVP: MANUFACTURER MODEL
A2	PROPOSED	COMMSCOPE FFVV-65B-R2	5G	100°	118'-0"	(1) HIGH-CAPACITY HYBRID CABLE (128' LONG)	FUJITSU – TA08025-B604	5G	A2	RAYCAP – RDIDC-9181-PF-48
							FUJITSU – TA08025-B605	5G	A2	
B2	PROPOSED	COMMSCOPE FFVV-65B-R2	5G	200°	118'-0"	SHARED W/ALPHA	FUJITSU – TA08025-B604	5G	B2	SHARED W/ALPHA
							FUJITSU – TA08025-B605	5G	B2	
C2	PROPOSED	COMMSCOPE FFVV-65B-R2	5G	320°	118'-0"	SHARED W/ALPHA	FUJITSU – TA08025-B604	5G	C2	SHARED W/ALPHA
							FUJITSU – TA08025-B605	5G	C2	

NOTES

1. CONTRACTOR TO REFER TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS.
2. ANTENNA AND RRH MODELS MAY CHANGE DUE TO EQUIPMENT AVAILABILITY. ALL EQUIPMENT CHANGES MUST BE APPROVED AND REMAIN IN COMPLIANCE WITH THE PROPOSED DESIGN AND STRUCTURAL ANALYSES.
3. AZIMUTHS ARE SUBJECT TO CHANGE AND NEED TO BE CONFIRMED WITH THE LATEST RFDS PRIOR TO THE START OF CONSTRUCTION.

ANTENNA SCHEDULE — 3

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LITTLETON, CO 80120

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STATE OF CONNECTICUT — MANOJKUMAR PATEL — PEN.0022038 — LICENSED — PROFESSIONAL ENGINEER — 12/20/22

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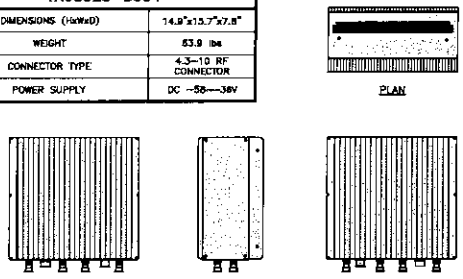
DISH WIRELESS PROJECT INFORMATION
NJJER01117A
76 EAST RIDGE ROAD
RIDGEFIELD, CT 06877

SHEET TITLE
ELEVATION, ANTENNA LAYOUT PLAN & SCHEDULE

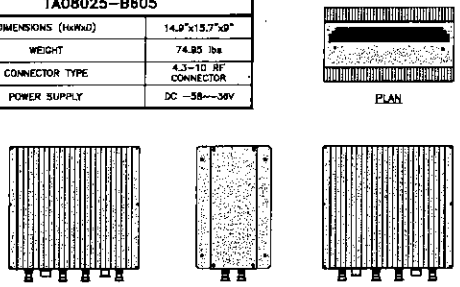
SHEET NUMBER
A-2

FUJITSU DUAL BAND TA08025-B604	
DIMENSIONS (HxWxD)	14.9"x15.7"x7.8"
WEIGHT	53.9 lbs
CONNECTOR TYPE	4.3-10 RF CONNECTOR
POWER SUPPLY	DC -58~-36V



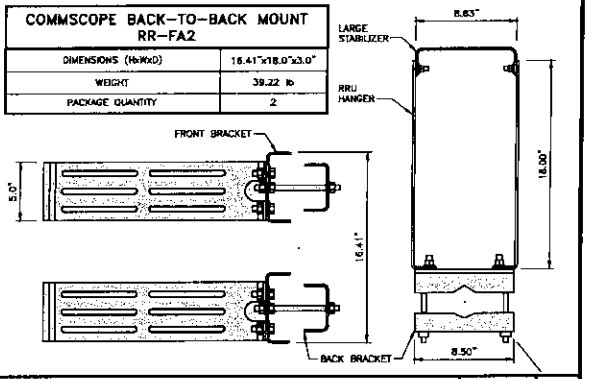
RRH DETAIL | NO SCALE | 1

FUJITSU TRIPLE BAND TA08025-B605	
DIMENSIONS (HxWxD)	14.9"x15.7"x9"
WEIGHT	74.85 lbs
CONNECTOR TYPE	4.3-10 RF CONNECTOR
POWER SUPPLY	DC -58~-36V



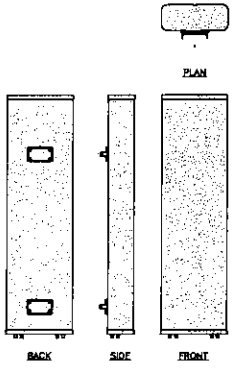
RRH DETAIL | NO SCALE | 2

COMMSCOPE BACK-TO-BACK MOUNT RR-FA2	
DIMENSIONS (HxWxD)	16.41"x18.0"x3.0"
WEIGHT	39.22 lb
PACKAGE QUANTITY	2



REMOTE RADIO MOUNT DETAIL | NO SCALE | 3

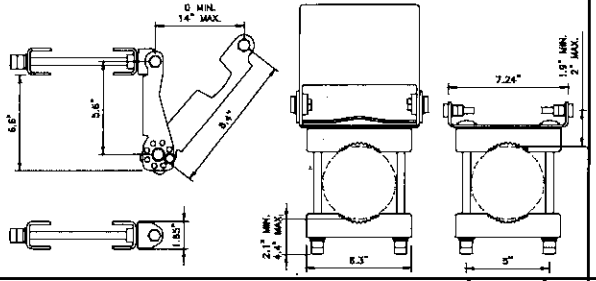
COMMSCOPE FFVV-65B-R2	
DIMENSIONS (HxWxD)(MM/IN)	1828x406x187 72"x19.6"x7.8"
RF CONNECTOR INTERFACE	4.3-10 FEMALE
WEIGHT	70.8 lbs
WEIGHT WITH BRACKETS	98.1 lbs



ANTENNA DETAIL | NO SCALE | 4

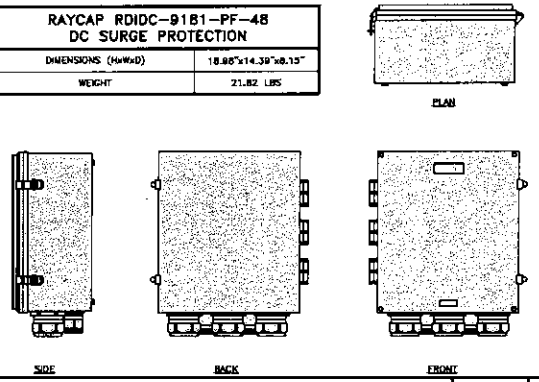
COMMSCOPE ANTENNA BRACKET BSAMNT-3	
DIAMETER COMPATIBILITY	2.382" - 4.525"
NET WEIGTH	13.669 lbs

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



ANTENNA BRACKET DETAIL | NO SCALE | 5

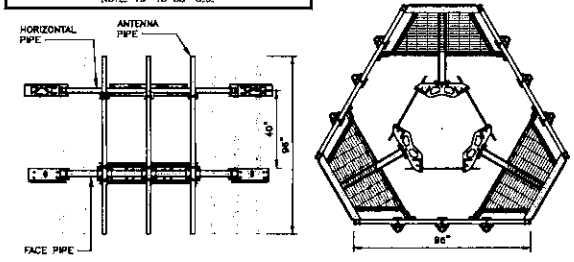
RAYCAP RDIDC-9181-PF-48 DC SURGE PROTECTION	
DIMENSIONS (HxWxD)	18.98"x14.39"x8.15"
WEIGHT	21.82 LBS



SURGE SUPPRESSION DETAIL | NO SCALE | 6

COMMSCOPE MC-PK8-DSH	
FACE WIDTH	96"
WEIGHT	1373.08 lbs
NOTE: 15" TO 36" O.D.	

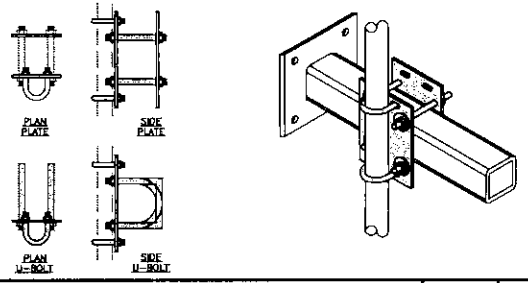
NOTE: OR DISH Wireless L.L.C. APPROVED EQUIVALENT



ANTENNA PLATFORM DETAIL | NO SCALE | 7

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

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



RRH/OVP MOUNT DETAIL | NO SCALE | 8

NOT USED | NO SCALE | 9

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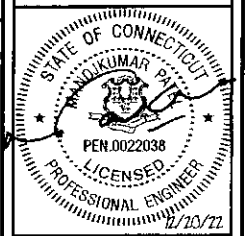
LITTLETON, CO 80120

Tectonic
Tectonic Engineering Consultants, Geologists & Land Surveyors, D.P.C., etc.
Poland Center Office
1279 Route 300
Newburgh, NY 12550
Phone: (845) 567-3100
(800) 724-1631
www.tectonicengineering.com



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10710.NJJER01117A

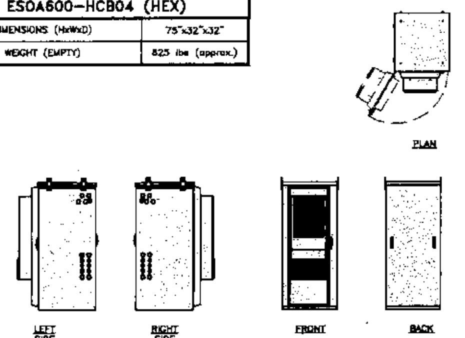
DISH WIRELESS PROJECT INFORMATION
NJJER01117A
76 EAST RIDGE ROAD
RIDGEFIELD, CT 06877

SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-3

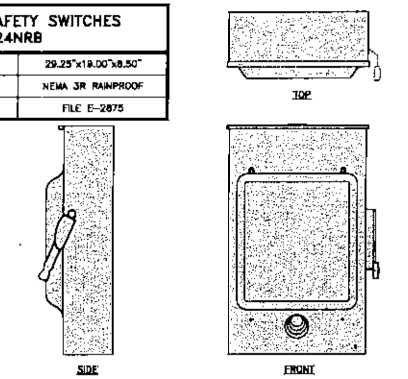
1. CABINET DETAIL — NO SCALE

DELTA ELECTRONICS, INC. ESOA600-HCB04 (HEX)	
DIMENSIONS (HxWxD)	75"x32"x32"
WEIGHT (EMPTY)	825 lbs (approx.)



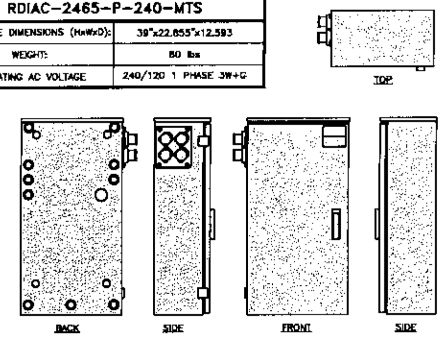
2. SAFETY SWITCH DETAIL — NO SCALE

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



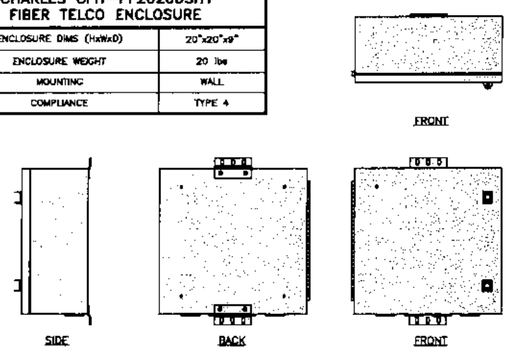
3. CABINET DETAIL — NO SCALE

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



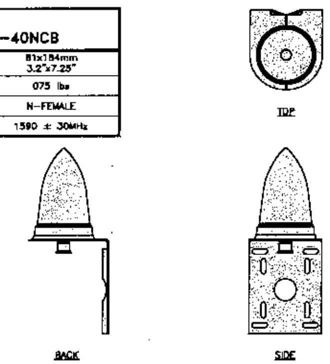
4. FIBER TELCO ENCLOSURE DETAIL — NO SCALE

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

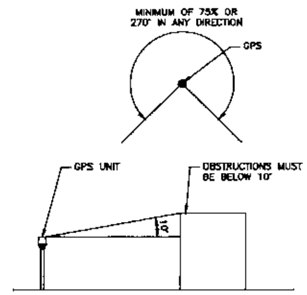


5. GPS DETAIL — NO SCALE

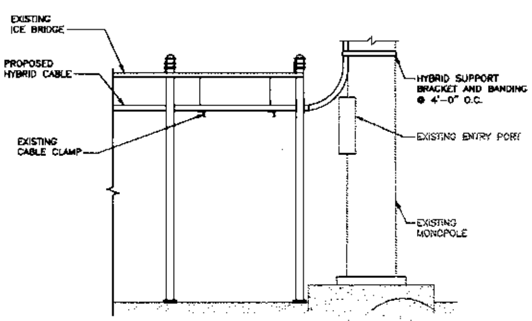
PCTEL GPSGL-TMG-SPI-40NCB	
DIMENSIONS (DIAxH) MM/INCH	81x184mm 3.2"x7.25"
WEIGHT W/ACCESSORIES	075 lbs
CONNECTOR	N-FEMALE
FREQUENCY RANGE	1590 ± 30MHz



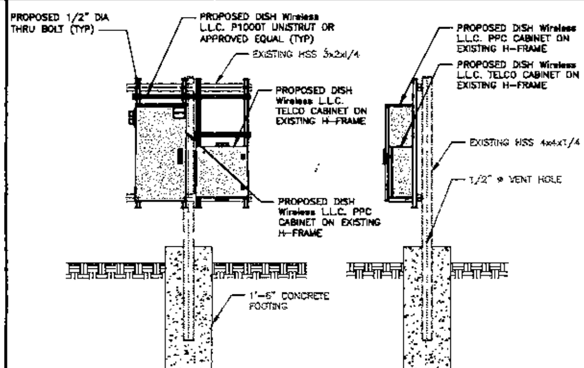
6. GPS MINIMUM SKY VIEW REQUIREMENTS — NO SCALE



7. HYBRID CABLE RUN — NO SCALE



8. H-FRAME DETAIL — NO SCALE



9. NOT USED — NO SCALE

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PEN.0022038 — STATE OF CONNECTICUT — MANOJKUMAR PATEL — LICENSED PROFESSIONAL ENGINEER — 12/20/22

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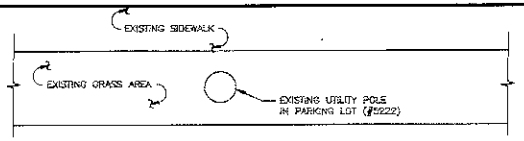
DISH WIRELESS PROJECT INFORMATION
NJJER01117A
76 EAST RIDGE ROAD
RIDGEFIELD, CT 06877

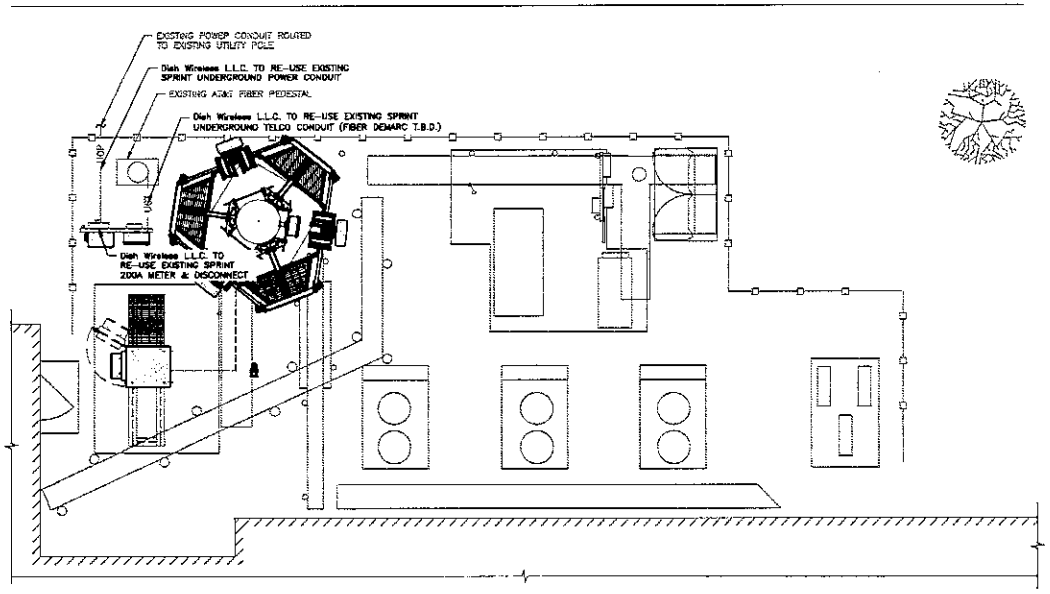
SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-4

NOTES

1. CONTRACTOR SHALL FIELD VERIFY ALL PROPOSED UNDERGROUND UTILITY CONDUIT ROUTE.
2. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.
3. DUE TO UTILITY EASEMENT RIGHTS SPECIFIED IN THE GROUND LEASE, CUSTOMER MAY INSTALL EQUIPMENT WITHIN SPECIFIED UTILITY EASEMENT AREA. "PWR" AND "FBR" PATH DEPICTED ON A-1 AND E-1 REPRESENT PLANNED ROUTING BASED ON BEST AVAILABLE INFORMATION INCLUDING BUT NOT LIMITED TO A SURVEY, EXHIBITS, METES AND BOUNDS OF THE UTILITY EASEMENT, FIELD VERIFICATION, PRIOR PROJECT DOCUMENTATION AND OTHER REAL PROPETY RIGHTS DOCUMENTS. WHEN INSTALLING THE UTILITIES PLEASE LOCATE AND FOLLOW EXISTING PATH. IF EXISTING PATH IS MATERIALLY INCONSISTENT WITH "PWR" AND "FBR" PATH DEPICTED ON A-1 AND E-1 AND SAID VARIANCE IS NOT NOTED ON CDs, PLEASE NOTIFY TOWER OWNER AS FURTHER COORDINATION MAY BE NEEDED.





UTILITY ROUTE PLAN

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

1

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

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

ELECTRICAL NOTES

NO SCALE

2

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LITTLETON, CO 80120

Tectonic
TELECOMMUNICATIONS ENGINEERING CONSULTANTS
Tectonic Engineering Consultants, Surveyors & Land Surveyors, D.P.C., Inc.
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Newburgh, NY 12550
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www.tectonicengineering.com

STATE OF CONNECTICUT
MANOJKUMAR PATEL
PEN.0022038
LICENSED
PROFESSIONAL ENGINEER
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DISH WIRELESS PROJECT INFORMATION
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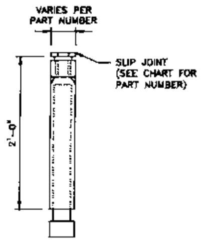
76 EAST RIDGE ROAD
RIDGEFIELD, CT 06877

SHEET TITLE
ELECTRICAL/FIGER ROUTE PLAN AND NOTES

SHEET NUMBER
E-1

CARLON EXPANSION FITTINGS				
COUPLING END PART#	MALE TERMINAL ADAPTER END PART#	SIZE	STD CTN QTY.	TRAVEL LENGTH
E945D	E945DX	1/2"	20	4"
E945E	E945EX	3/4"	15	4"
E945F	E945FX	1"	10	4"
E945G	E945GX	1 1/4"	5	4"
E945H	E945HX	1 1/2"	5	4"
E945J	E945JX	2"	15	8"
E945K	E945KX	2 1/2"	10	8"
E945L	E945LX	3"	10	8"
E945M	E945MX	3 1/2"	5	8"
E945N	E945NX	4"	5	8"
E945P	E945PX	5"	1	8"
E945R	E945RX	6"	1	8"

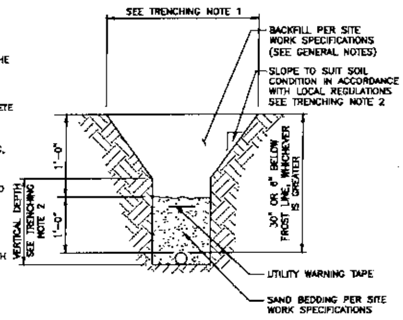


NOTE:
CONTRACTOR TO INSTALL EXPANSION FITTING SLIP JOINT AT METER CENTER CONDUIT TERMINATION, AS PER LOCAL UTILITY POLICY, ORDINANCE AND/OR SPECIFIED REQUIREMENT.

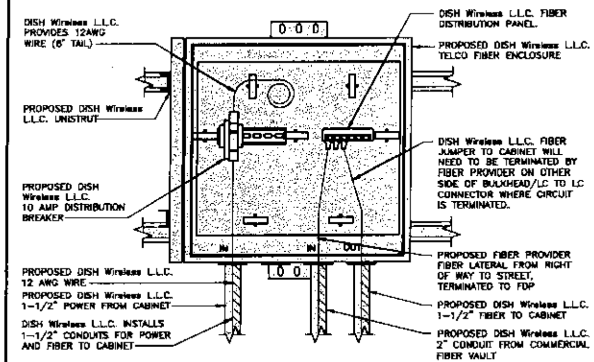
EXPANSION JOINT DETAIL — NO SCALE — 1

TRENCHING NOTES

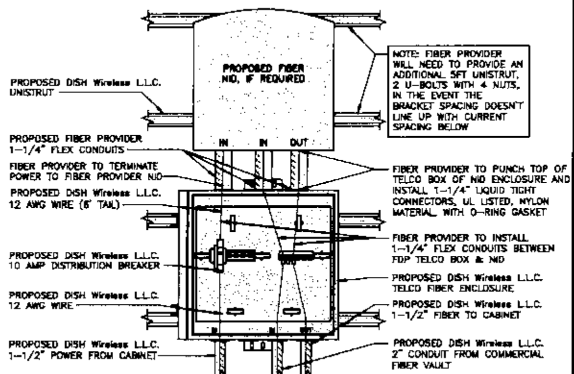
1. CONTRACTOR SHALL RESTORE THE TRENCH TO ITS ORIGINAL CONDITIONS BY EITHER SEEDING OR SODDING GRASS AREAS, OR REPLACING ASPHALT OR CONCRETE AREAS TO ITS ORIGINAL CROSS SECTION.
2. TRENCHING SAFETY; INCLUDING, BUT NOT LIMITED TO SOIL CLASSIFICATION, SLOPING, AND SHORING, SHALL BE GOVERNED BY THE CURRENT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



TYPICAL UNDERGROUND TRENCH DETAIL — NO SCALE — 2



DARK TELCO BOX – INTERIOR WIRING LAYOUT — NO SCALE — 3



LIT TELCO BOX – INTERIOR WIRING LAYOUT (OPTIONAL) — NO SCALE — 4

NOT USED — NO SCALE — 5

NOT USED — NO SCALE — 6

NOT USED — NO SCALE — 7

NOT USED — NO SCALE — 8

NOT USED — NO SCALE — 9

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5701 SOUTH SANTA FE DRIVE
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Tectonic

STATE OF CONNECTICUT — MANOJKUMAR PATEL — PEN.0022038 — LICENSED PROFESSIONAL ENGINEER — 12/20/22

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DRAWN BY:	CHECKED BY:	APPROVED BY:
NM	JQ	MP

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
0	12/12/22	ISSUED FOR FILING

A&E PROJECT NUMBER
10710.NJJER01117A

DISH WIRELESS PROJECT INFORMATION
NJJER01117A
76 EAST RIDGE ROAD
RIDGEFIELD, CT 06877

SHEET TITLE
ELECTRICAL DETAIL

SHEET NUMBER
E-2

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

BREAKERS REQUIRED: (OR EQUIVALENT MANUFACTURER)
(3) 40A, 2P BREAKER – SQUARE D P/N:Q0240
(2) 15A, 1P BREAKER – SQUARE D P/N:Q0115

NOTES

THE (2) CONDUITS WITH (4) CURRENT CARRYING CONDUCTORS EACH, SHALL APPLY THE ADJUSTMENT FACTOR OF 80% PER 2020 NEC TABLE 310.15(C)(1) FOR UL1015 WIRE. (ALL WIRE AND TERMINATION HARDWARE TO BE RATED 75°C)

#12 FOR 20A OCPD WIRE DERATING: 0.8 x 25A = 20.0A
#8 FOR 40A OCPD WIRE DERATING: 0.8 x 50A = 40.0A

CONDUIT SIZING: AT 40% FILL PER NEC CHAPTER 9, TABLE 4, ARTICLE 358.

1.0" CONDUIT – .3460 SQ. IN AREA
3.0" CONDUIT – 3.538 SQ. IN AREA

(2 CONDUIT): USING THWN-2, CU.
RECTIFIER CONDUCTORS

#8 – 0.0366 SQ. IN X 4 = 0.1464 SQ. IN
#8 – 0.0366 SQ. IN X 1 = 0.0366 SQ. IN <GROUND
TOTAL = 0.1830 SQ. IN

RECTIFIER & GFCI CONDUCTORS

#12 – 0.0133 SQ. IN X 2 = 0.0266 SQ. IN
#8 – 0.0366 SQ. IN X 2 = 0.0732 SQ. IN
#8 – 0.0366 SQ. IN X 1 = 0.0366 SQ. IN <GROUND
TOTAL = 0.1364 SQ. IN

1.0" EMT CONDUIT IS ADEQUATE TO HANDLE THE TOTAL OF (5) WIRES, INCLUDING GROUND WIRE, AS INDICATED ABOVE.

PPC FEED CONDUCTORS (1 CONDUIT): USING THWN, CU.

3/0 – 0.2679 SQ. IN X 3 = 0.8037 SQ. IN
#6 – 0.0507 SQ. IN X 1 = 0.0507 SQ. IN <GROUND
TOTAL = 0.8544 SQ. IN

3.0" SCH 40 PVC CONDUIT IS ADEQUATE TO HANDLE THE TOTAL OF (4) WIRES, INCLUDING GROUND WIRE, AS INDICATED ABOVE.

(1) OPTIONAL ALUMINUM SERVICE CONDUCTOR:
- 4/0 AL + #2 GRD MAY BE USED INSTEAD OF 3/0 CU + #6 GRD IF THE TOTAL LENGTH OF THE CONDUCTOR IS LESS THAN 300 FT FROM THE TRANSFORMER.
- ALUMINUM CONDUCTORS MUST BE 90°C TO CARRY THE FULL 200A LOAD REQUIRED
- ALUMINUM TO COPPER BUSS CONNECTIONS MUST MEET AND CONFORM TO ANSI AND BE UL LISTED. USE ANTI CORROSION CONDUCTIVE LUBRICANT ON CONNECTIONS

PPC ONE-LINE DIAGRAM | NO SCALE | 1

PANEL NAME	LOCATION																
DELTA	EQUIPMENT PLATFORM			VOLTAGE: 240/120 1Ø MAIN C/B: 200 AMPS BUS RATING: 200 AMPS								MOUNTING/ENCLOSURE: SURFACE/NEMA 3R AVAIL. FAULT CURRENT: SHORT CIRCUIT RATING: 65,000 / 10,000 SERIES RATED					
AMPS POLES	WIRE & CONDUIT	TYPE	DESCRIPTION	KVA	CKT	A		B	CKT	KVA	DESCRIPTION	TYPE	WIRE & CONDUIT	AMPS POLES			
15/1	2-#12, 1-#12G	R	INTERNAL GFCI	0.18	1	1.68			2	1.50	RECTIFIER	EQ	SEE ONE LINE	40/2			
15/1	SEE ONE LINE	R	CONVENIENCE OUTLET	0.18	3			1.68	4	1.50		EQ					
			SPACE		5	1.50			6	1.50	RECTIFIER	EQ	SEE ONE LINE	40/2			
			SPACE		7			1.50	8	1.50		EQ					
			SPACE		9	1.50			10	1.50	RECTIFIER	EQ	SEE ONE LINE	40/2			
			SPACE		11			1.50	12	1.50		EQ					
			SPACE		13				14		SPACE						
			SPACE		15				16		SPACE						
			SPACE		17				18		SPACE						
			SPACE		19				20		SPACE						
			SPACE		21				22		SPACE						
			SPACE		23				24		SPACE						
				PHASED LOAD		4.7		4.7	KVA								
											TOTAL CONNECTED LOAD		9.4 kVA	39 A			
											TOTAL DEMAND LOAD		9.4 kVA	39 A			

LOAD TYPE	DESCRIPTION	CONN. LOAD KVA	CONN. LOAD AMPS	DEMAND FACTOR	DESIGN LOAD KVA	DESIGN LOAD AMPS
L	LIGHTING	0.0	0.0	1.25	0.0	0.0
R	RECEPTACLE	0.4	1.5	NEC	0.4	1.5
M	MOTOR	0.0	0.0	NEC	0.0	0.0
H	HEATING	0.0	0.0	1.00	0.0	0.0
AC	HVAC	0.0	0.0	1.00	0.0	0.0
EQ	EQUIPMENT	9.0	37.5	1.00	9.0	37.5
E	EXISTING	0.0	0.0	1.25	0.0	0.0

*ALL EQUIPMENT LOADS CONSIDERED CONTINUOUS LOADS

PANEL SCHEDULE | NO SCALE | 2

NOT USED | NO SCALE | 3

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Tectonic

STATE OF CONNECTICUT
MANOJKUMAR PATEL
PEN.0022038
LICENSED PROFESSIONAL ENGINEER
12/20/22

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10710.NJJER01117A

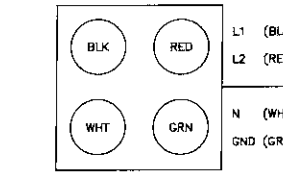
DISH WIRELESS PROJECT INFORMATION
NJJER01117A
76 EAST RIDGE ROAD
RIDGEFIELD, CT 06877

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

SHEET NUMBER
E-3

NOTES:

1. HAZARD OF ELECTRICAL SHOCK OR BURN. TURN OFF POWER SUPPLYING THIS EQUIPMENT BEFORE WORKING INSIDE.
2. 100 OR 200 AMP, 240 VOLTS, SINGLE PHASE ALTERNATING CURRENT CIRCUIT ONLY
3. GENERATOR SHORT CIRCUIT RATING: 10,000 / 20,000 AMPS RMS SYMMETRICAL, AMPERES AT 240 VOLTS
4. UTILITY SHORT CIRCUIT RATING: 65,000 AMPS RMS SYMMETRICAL, AMPERES AT 240 VOLTS
5. SUITABLE FOR USE AS SERVICE EQUIPMENT
6. SUITABLE FOR USE IN ACCORDANCE WITH ARTICLE 702 OF THE NATIONAL ELECTRIC CODE ANSI/NFPA 70
7. BONDED NEUTRAL WHEN INSTALLED AS SHOWN IN WIRING DIAGRAM
8. RAIN PROOF TYPE 3R
9. USE CU–AL WIRE 60–75 °C
10. EQUIPPED WITH SLIDE BAR MECHANICAL INTERLOCK
11. INTERLOCK PROHIBITS BOTH POWER SOURCES FROM BEING IN THE ON POSITION SIMULTANEOUSLY
12. EQUIPPED WITH SQUARE D BREAKERS OR ALTERNATIVE MANUFACTURER EQUIVALENT
13. WHEN REPLACE LOAD CENTER BREAKERS, USE ONLY SQUARE D (QO TYPE) OF THE SAME RATING OR EQUIVALENT
14. WHEN RESETTING BREAKERS TURN TO OFF POSITION, THEN TO ON POSITION
15. WARNING: MAKE CONTINUITY CHECK WITH OHM METER TO VERIFY CORRECT PHASING AND GROUNDING CONNECTIONS BEFORE POWER UP
16. VERIFY PIN OUT CONFIGURATION OF GENERATOR PRIOR TO USE.
17. RISK OF ELECTRIC SHOCK, BOTH ENDS OF DISCONNECTING MEANS MAY BE ENERGIZED. TEST BEFORE SERVICING
18. THIS SWITCH BOARD MAY CONTAIN A TAP ON THE SERVICE SIDE OF THE MAIN POWER DISCONNECT FOR REMOTE MONITORING OF UTILITY/STANDBY POWER
19. THE NORMAL AC POWER MONITORING CIRCUIT MUST UTILIZE A DISCONNECTING MEANS WITH A SHORT CIRCUIT RATING GREATER THAN THE AVAILABLE INTERRUPTING CURRENT
20. A RED PUSH–TO–TRIP BUTTON PROVIDES A MEANS TO MECHANICALLY TRIP THE CIRCUIT BREAKER. THIS ACTION EXERCISES THE TRIPPING PORTION OF THE MECHANISM AND ALLOWS MAINTENANCE CHECK ON THE BREAKER



CAM–LOCK GENERATOR RECEPTACLE

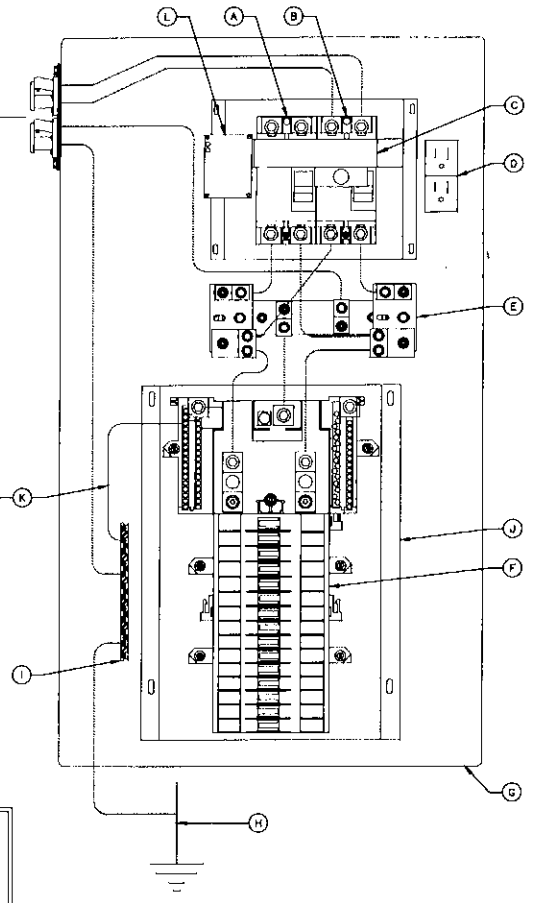
(AS VIEWED FROM OUTSIDE OF ENCLOSURE)
USE LINE UP PIN AS REFERENCE

REFER TO RECEPTACLE FOR MODEL NUMBER

DANGER:

HAZARD OF ELECTRICAL SHOCK OR BURN. TURN OFF POWER SUPPLYING THIS EQUIPMENT BEFORE WORKING INSIDE.

RAYCAP CUSTOMER SERVICE
(800) 890–2589



SUITABLE FOR USE AS SERVICE EQUIPMENT

ELECTRICAL RATING 120/240 VOLTS SINGLE PHASE 60 Hz	
NORMAL AC POWER 100A□ 200A□	GENERATOR POWER 100A□ 200A□

CAUTION:

- THE OPERATING HANDLE ASSUMES A CENTER POSITION WHEN THE CIRCUIT BREAKER IS TRIPPED
- THE BREAKER CAN BE RESET BY OPERATING THE HANDLE TO THE EXTREME OFF POSITION AND THEN TO ON
- SLIDE BAR MECHANICAL INTERLOCK TRANSFERS NORMAL AC POWER TO GENERATOR POWER. THE SLIDE BAR MECHANICAL INTERLOCK PROHIBITS BOTH POWER SOURCES FROM BEING IN THE ON POSITION SIMULTANEOUSLY
- TO TRANSFER FROM ON POWER SOURCE TO THE OTHER POWER SOURCE, SWITCH ON BREAKER TO THE OFF POSITION, MOVE THE SLIDE BAR TO THE OTHER SIDE AND THE SWITCH THE OTHER BREAKER TO THE ON POSITION

200A UTILITY FEED

THIS SWITCHBOARD UTILITY MAIN BREAKER IS SUITABLE FOR USE ON CIRCUIT CAPABLE OF DELIVERING NOT MORE THAN 65,000 RMS SYMMETRICAL AMPS, 240 VOLTS MAXIMUM.

LOAD SIZE CIRCUIT BREAKERS				LINE SIDE MAIN CIRCUIT BREAKER					
MFR.	TYPE	POLES	AMP RATING	MFR.	TYPE	AMP RATING	SYMMET. AMP RMS	VOLTS AC	PHASES
SQ–D	QO	1/2	15–100A	SQ–D	QGL	200A	65,000A	240V	2

200A GENERATOR FEED

THIS SWITCHBOARD GENERATOR POWER CIRCUIT IS SUITABLE FOR USE ON A CIRCUIT CAPABLE OF DELIVERING NOT MORE THAN 10,000 RMS SYMMETRICAL AMPS, 240 VOLTS MAXIMUM.

LOAD SIZE CIRCUIT BREAKERS				LINE SIDE MAIN CIRCUIT BREAKER					
MFR.	TYPE	POLES	AMP RATING	MFR.	TYPE	AMP RATING	SYMMET. AMP RMS	VOLTS AC	PHASES
SQ–D	QO	1/2	15–100A	SQ–D	QGL	200A	65,000A	240V	2

MAXIMUM CONTINUOUS LOADS NOT TO EXCEED 80% OF THE OVER–CURRENT PROTECTIVE DEVICE (CIRCUIT BREAKER AND FUSES) RATINGS EMPLOYED IN OTHER THAN MOTOR CIRCUITS, EXCEPT FOR THOSE CIRCUITS EMPLOYING CIRCUIT BREAKERS MARKED AS SUITABLE FOR CONTINUOUS OPERATION AT 100% OF THEIR RATINGS. CONDUCTORS ARE NOT TO ENTER OR LEAVE THE ENCLOSURE DIRECTLY OPPOSITE THE WIRING TERMINAL

NEUTRAL–TO–GROUND NOTES:

- WHEN THE PPC IS USED AS THE SERVICE ENTRANCE DEVICE, THE NEUTRAL TO GROUND BOND NEEDS TO BE ESTABLISHED IN THE PPC.
- WHEN THE SERVICE ENTRY DEVICE IS A MULTI–METER CENTER OR A PRE–PPC DISCONNECT IS USED AND HAS "NEUTRAL TO GROUND" ACCOMMODATIONS, THE NEUTRAL TO GROUND WIRE IN THE PPC IS NOT REQUIRED.
- THE GREEN #6 WIRE IS PROVIDED WITH THE PPC CABINET AS A SEPARATE UNINSTALLED PART TO BE INSTALLED BY CONTRACTOR IF NEEDED.

NEUTRAL–TO–GROUND CONDING JUMPER

INSTALLTION INSTRUCTIONS:

- IF REQUIRED, THE N–G BONDING KIT SHOULD BE INSTALLED BY QUALIFIED PERSONNEL
- ENSURE THE MAIN BREAKERS ARE OFF
- USE THE GREEN #6 WIRE PROVIDED WITH THE PPC
- INSTALL THE JUMPER AS SHOWN IN THE WIRING DIAGRAM
- TIGHTEN TERMINALS TO TORQUE VALUE SHOWN IN TORQUE TABLE
- PLACE THE PROVIDED "SERVICE" LABEL IN THE SPACE BELOW THE WORDS "AC POWER" LOCATED ABODE THE MAIN CIRCUIT BREAKER IN THE UPPER PORTION OF THE DEAD FRONT

LEGEND:

A. UTILITY DISCONNECT (SERVICE RATED)
B. GENERATOR DISCONNECT
C. MAIN DISCONNECT CIRCUIT BREAKERS W/ MECHANICAL INTERLOCK
D. GFCI RECEPTACLE 15A
E. SPD STRIKESORB KELVIN CONNECTION (TYP OF 2)
F. BREAKER PANEL – 24 POSITION (CONTRACTOR TO ADD APPROPRIATE BREAKER PER ONE–LINE DIAGRAM PANEL SCHEDULE)
G. POWER PROTECTION CABINET (PPC) (FULLY ASSEMBLED FROM MANUFACTURER)
H. CONTRACTOR TO ATTACH TO UNDERGROUND GROUNDING HALO OR INSTALL GROUND ROD WHEN REQUIRED BY CODE
I. GROUND BAR
J. SQUARE D Q SERIES LOAD CENTER
K. NETURAL–TO–GROUND (N–G) BONDING JUMPER (CONTRACTOR INSTALLED IF REQUIRED)
L. OPTIONAL SPD STATUS INDICATORS

RAYCAP POWER PROTECTION CABINET – RDIAC–2465–P–240–MTS (NEUTRAL–TO–GROUND)

NO SCALE | 1

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LITTLETON, CO 80120

Tectonic
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STATE OF CONNECTICUT
ANJUKUMAR PATEL
PEN.0022038
LICENSED
PROFESSIONAL ENGINEER
12/20/22

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10710.NJJER01117A

DISH WIRELESS PROJECT INFORMATION

NJJER01117A

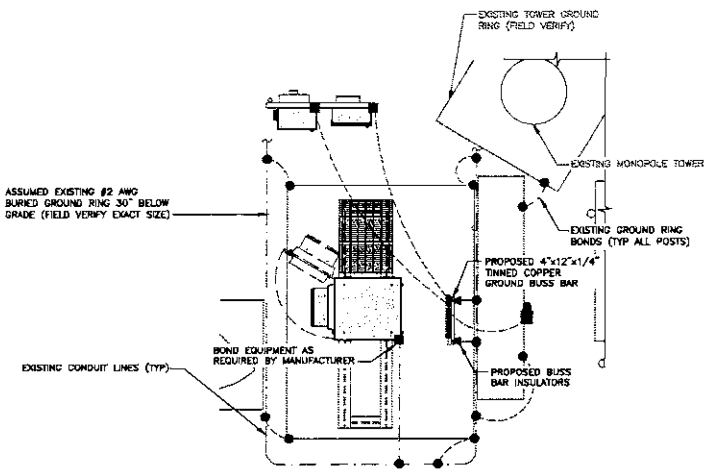
76 EAST RIDGE ROAD
RIDGEFIELD, CT 06877

SHEET TITLE

PPC NEUTRAL–TO–GROUND SCHEMATIC

SHEET NUMBER

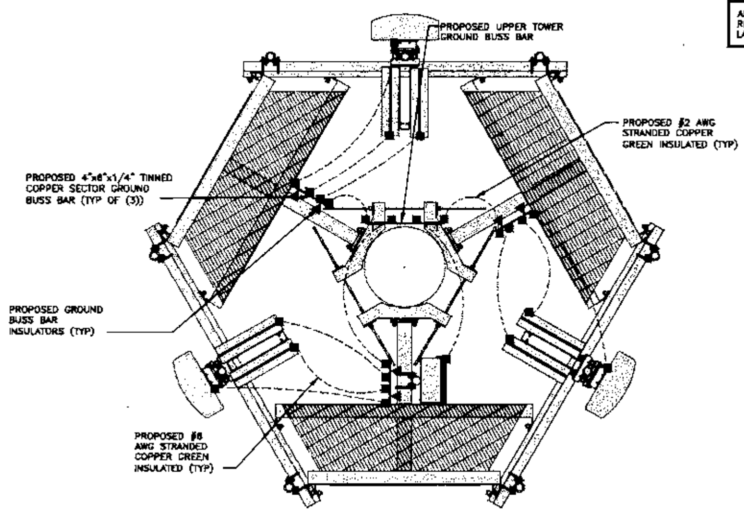
E-4



EQUIPMENT GROUNDING PLAN | NO SCALE | 1

NOTES

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



TYPICAL ANTENNA GROUNDING PLAN | NO SCALE | 2

- ● EXOTHERMIC CONNECTION
- ■ MECHANICAL CONNECTION
- GROUND BUS BAR
- GROUND ROD
- TEST GROUND ROD WITH INSPECTION SLEEVE
- #6 AWG STRANDED & INSULATED
- #2 AWG SOLID COPPER TINNED
- #2 AWG STRANDED & INSULATED
- ▲ BUSS BAR INSULATOR

GROUNDING LEGEND

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

GROUNDING KEY NOTES

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

REFER TO DISH Wireless L.L.C. GROUNDING NOTES.

GROUNDING KEY NOTES | NO SCALE | 3

dish wireless.
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LITTLETON, CO 80120

Tectonic

STATE OF CONNECTICUT — MANOJKUMAR PATEL — PEN.0022038 — LICENSED PROFESSIONAL ENGINEER — 12/20/22

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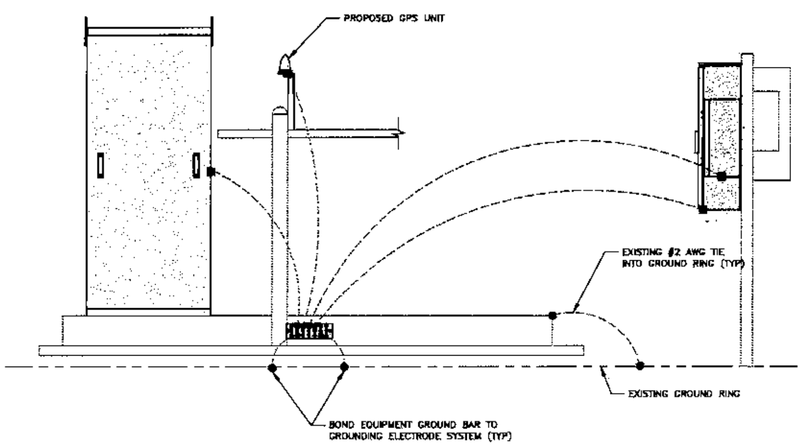
DISH WIRELESS PROJECT INFORMATION
NJJER01117A
76 EAST RIDGE ROAD
RIDGEFIELD, CT 06877

SHEET TITLE
GROUNDING PLANS AND NOTES

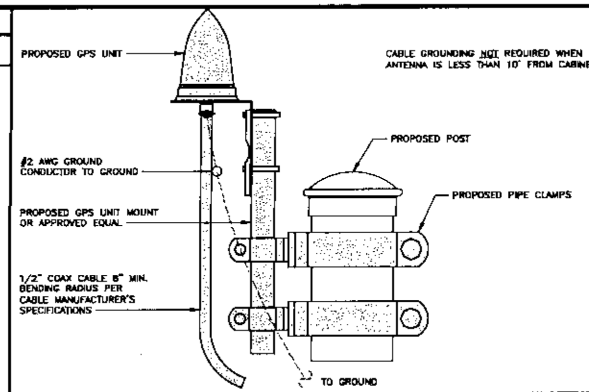
SHEET NUMBER
G-1

NOTES

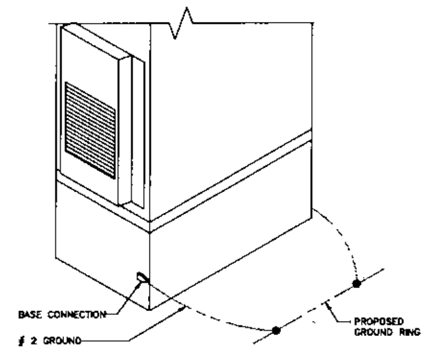
EQUIPMENT CABINET OMITTED FOR CLARITY



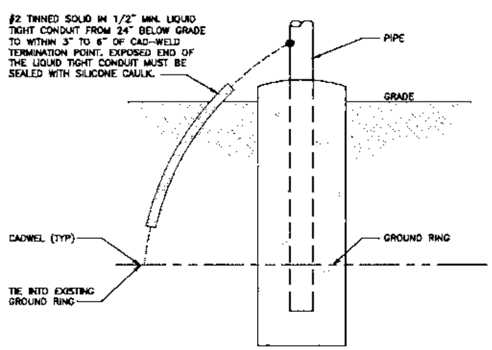
H-FRAME GROUNDING DETAIL | NO SCALE | 1



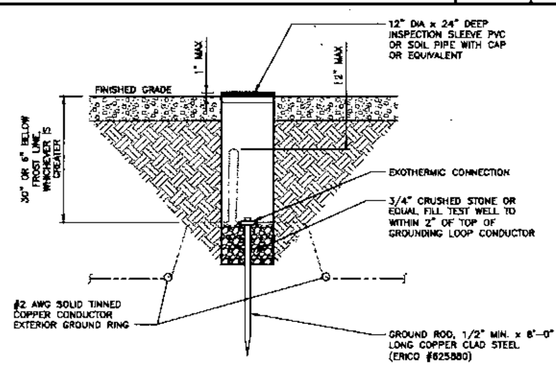
TYPICAL GPS UNIT GROUNDING | NO SCALE | 2



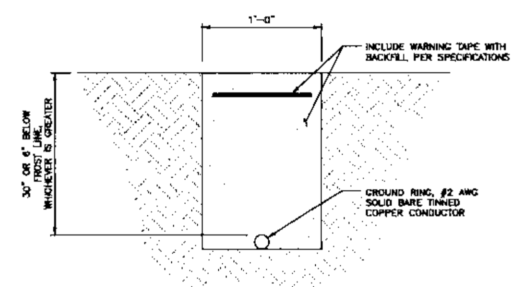
OUTDOOR CABINET GROUNDING | NO SCALE | 3



TRANSITIONING GROUND DETAIL (AS NEEDED) | NO SCALE | 4



TYPICAL TEST GROUND ROD WITH INSPECTION SLEEVE (AS NEEDED) | NO SCALE | 5



TYPICAL GROUND RING TRENCH (AS NEEDED) | NO SCALE | 6

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

Tectonic

STATE OF CONNECTICUT — MANOJKUMAR PATEL — PEN.0022038 — LICENSED PROFESSIONAL ENGINEER — 12/20/22

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.

DRAWN BY:	CHECKED BY:	APPROVED BY:
NM	JO	MP

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	12/12/22	ISSUED FOR FILING

A&E PROJECT NUMBER
10710.NJJER01117A

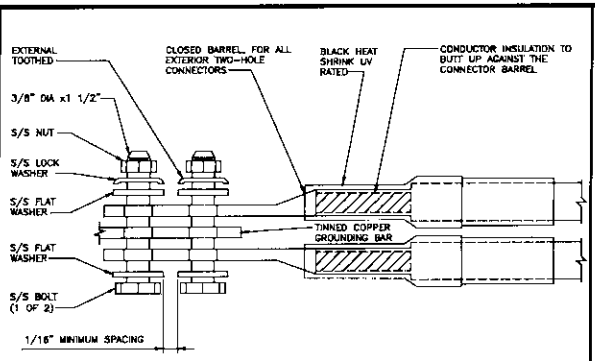
DISH WIRELESS PROJECT INFORMATION
NJJER01117A
76 EAST RIDGE ROAD
RIDGEFIELD, CT 06877

SHEET TITLE
GROUNDING DETAILS

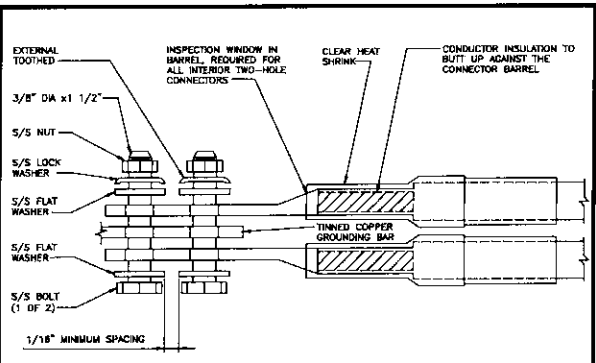
SHEET NUMBER
G-2

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

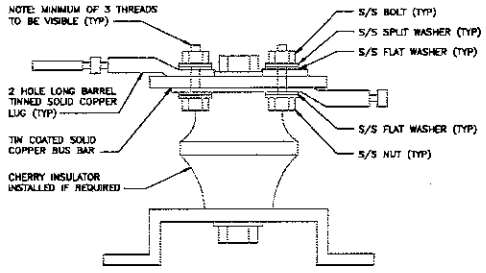
TYPICAL GROUNDING NOTES | NO SCALE | 1



TYPICAL EXTERIOR TWO HOLE LUG | NO SCALE | 2



TYPICAL INTERIOR TWO HOLE LUG | NO SCALE | 3



LUG DETAIL | NO SCALE | 4

NOT USED | NO SCALE | 5

NOT USED | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

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STATE OF CONNECTICUT
RAMDIKUMAR PATEL
PEN.0022038
LICENSED PROFESSIONAL ENGINEER
12/10/22

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NM	JQ	MP

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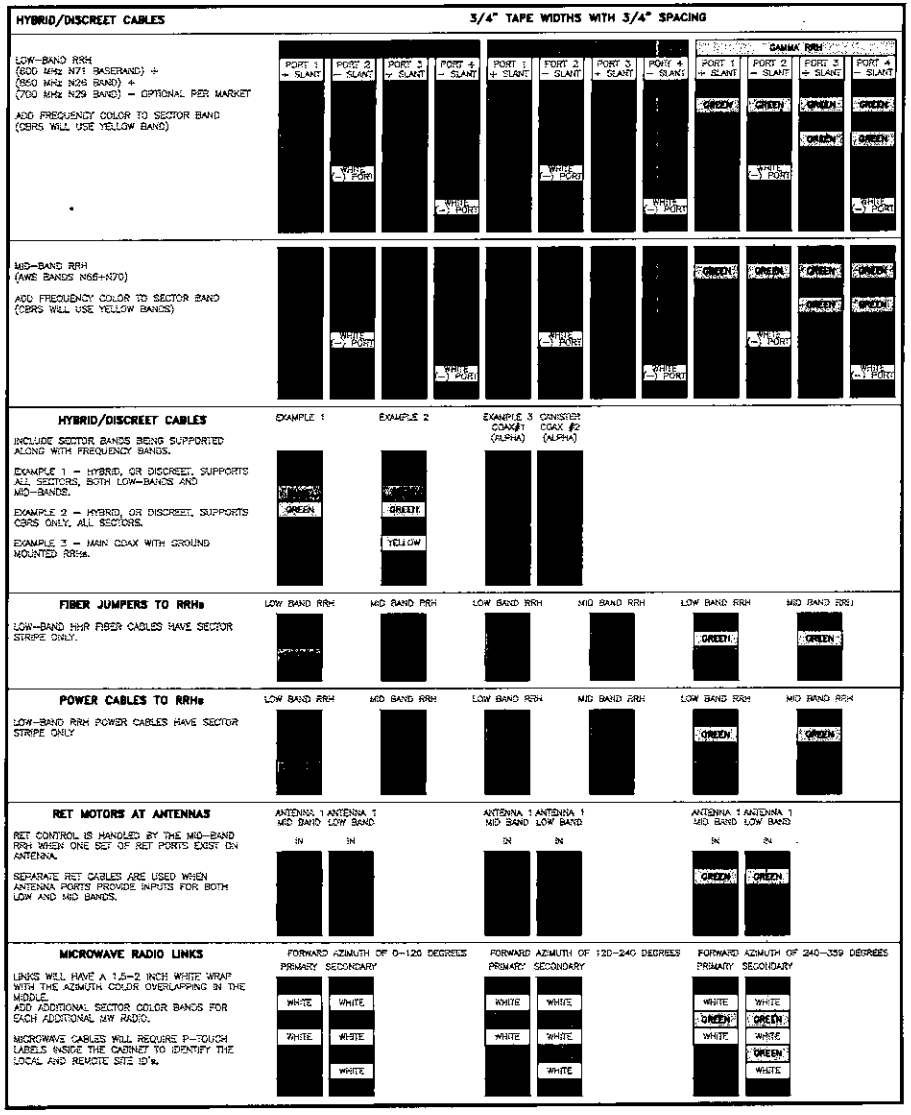
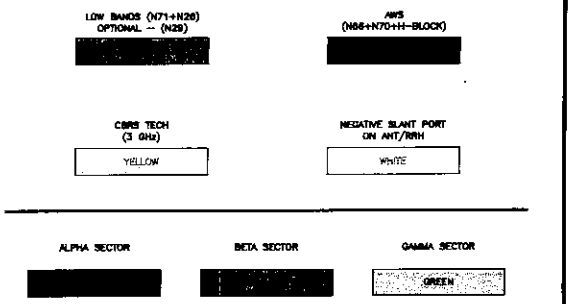
76 EAST RIDGE ROAD
RIDGEFIELD, CT 06877

SHEET TITLE
GROUNDING DETAILS

SHEET NUMBER
G-3



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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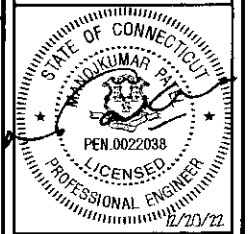
Tectonic
Telecommunications Engineering Consultants, Ecologists & Land Surveyors, D.P.C., Inc.
Regional Corporate Office
1279 Route 300
Newburgh, NY 12550
Phone: (845) 567-3656
(800) 829-4631



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DISH WIRELESS PROJECT INFORMATION
NJJER01117A
76 EAST RIDGE ROAD
RIDGEFIELD, CT 06877

SHEET TITLE
RF
CABLE COLOR CODES

SHEET NUMBER
G-3

LEGEND

EXOTHERMIC CONNECTION

MECHANICAL CONNECTION

CHEMICAL ELECTROLYTIC GROUNDING SYSTEM

TEST CHEMICAL ELECTROLYTIC GROUNDING SYSTEM

EXOTHERMIC WITH INSPECTION SLEEVE

GROUNDING BAR

GROUND ROD

TEST GROUND ROD WITH INSPECTION SLEEVE

SINGLE POLE SWITCH

DUPLEX RECEPTACLE

DUPLEX GFCI RECEPTACLE

FLUORESCENT LIGHTING FIXTURE
(2) TWO LAMPS 48-T8

SMOKE DETECTION (DC)

EMERGENCY LIGHTING (DC)

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

CHAIN LINK FENCE

WOOD/WROUGHT IRON FENCE

WALL STRUCTURE

LEASE AREA

PROPERTY LINE (PL)

SETBACKS

ICE BRIDGE

CABLE TRAY

WATER LINE

UNDERGROUND POWER

UNDERGROUND TELCO

OVERHEAD POWER

OVERHEAD TELCO

UNDERGROUND TELCO/POWER

ABOVE GROUND POWER

ABOVE GROUND TELCO

ABOVE GROUND TELCO/POWER

WORKPOINT

SECTION REFERENCE

DETAIL REFERENCE

ABBREVIATIONS

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

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STATE OF CONNECTICUT
PANDUKUMAR PATEL
PEN.0022038
LICENSED
PROFESSIONAL ENGINEER
12/12/22

DRAWN BY:	CHECKED BY:	APPROVED BY:
NM	JQ	MP

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

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10710.NJJER01117A

DISH WIRELESS PROJECT INFORMATION
NJJER01117A

76 EAST RIDGE ROAD
RIDGEFIELD, CT 06877

SHEET TITLE
LEGEND AND ABBREVIATIONS

SHEET NUMBER
GN-1

SIGN TYPES

TYPE	COLOR	COLOR CODE PURPOSE
INFORMATION	GREEN	"INFORMATIONAL SIGN" TO NOTIFY OTHERS OF SITE OWNERSHIP & CONTACT NUMBER AND POTENTIAL RF EXPOSURE.
NOTICE	BLUE	"NOTICE BEYOND THIS POINT" RF FIELDS BEYOND THIS POINT MAY EXCEED THE FCC GENERAL PUBLIC EXPOSURE LIMIT. OBEY ALL POSTED SIGNS AND SITE GUIDELINES FOR WORKING IN RF ENVIRONMENTS. IN ACCORDANCE WITH FEDERAL COMMUNICATIONS COMMISSION RULES ON RADIO FREQUENCY EMISSIONS 47 CFR-1.1307(b)
CAUTION	YELLOW	"CAUTION BEYOND THIS POINT" RF FIELDS BEYOND THIS POINT MAY EXCEED THE FCC GENERAL PUBLIC EXPOSURE LIMIT. OBEY ALL POSTED SIGNS AND SITE GUIDELINES FOR WORKING IN RF ENVIRONMENTS. IN ACCORDANCE WITH FEDERAL COMMUNICATIONS COMMISSION RULES ON RADIO FREQUENCY EMISSIONS 47 CFR-1.1307(b)
WARNING	ORANGE/RED	"WARNING BEYOND THIS POINT" RF FIELDS AT THIS SITE EXCEED FCC RULES FOR HUMAN EXPOSURE. FAILURE TO OBEY ALL POSTED SIGNS AND SITE GUIDELINES FOR WORKING IN RF ENVIRONMENTS COULD RESULT IN SERIOUS INJURY. IN ACCORDANCE WITH FEDERAL COMMUNICATIONS COMMISSION RULES ON RADIO FREQUENCY EMISSIONS 47 CFR-1.1307(b)

SIGN PLACEMENT:

- RF SIGNAGE PLACEMENT SHALL FOLLOW THE RECOMMENDATIONS OF AN EXISTING EME REPORT, CREATED BY A THIRD PARTY PREVIOUSLY AUTHORIZED BY DISH Wireless L.L.C.
- INFORMATION SIGN (GREEN) SHALL BE LOCATED ON EXISTING DISH Wireless L.L.C EQUIPMENT.
  A) IF THE INFORMATION SIGN IS A STICKER, IT SHALL BE PLACED ON EXISTING DISH Wireless L.L.C EQUIPMENT CABINET.
  B) IF THE INFORMATION SIGN IS A METAL SIGN IT SHALL BE PLACED ON EXISTING DISH Wireless L.L.C H-FRAME WITH A SECURE ATTACH METHOD.
- IF EME REPORT IS NOT AVAILABLE AT THE TIME OF CREATION OF CONSTRUCTION DOCUMENTS; PLEASE CONTACT DISH Wireless L.L.C. CONSTRUCTION MANAGER FOR FURTHER INSTRUCTION ON HOW TO PROCEED.

NOTES:

1. FOR DISH Wireless L.L.C. LOGO, SEE DISH Wireless L.L.C. DESIGN SPECIFICATIONS (PROVIDED BY DISH Wireless L.L.C.)
2. SITE ID SHALL BE APPLIED TO SIGNS USING "LASER ENGRAVING" OR ANY OTHER WEATHER RESISTANT METHOD (DISH Wireless L.L.C. APPROVAL REQUIRED)
3. TEXT FOR SIGNAGE SHALL INDICATE CORRECT SITE NAME AND NUMBER AS PER DISH Wireless L.L.C. CONSTRUCTION MANAGER RECOMMENDATIONS.
4. CABINET/SHELTER MOUNTING APPLICATION REQUIRES ANOTHER PLATE APPLIED TO THE FACE OF THE CABINET WITH WATER PROOF POLYURETHANE ADHESIVE
5. ALL SIGNS WILL BE SECURED WITH EITHER STAINLESS STEEL ZIP TIES OR STAINLESS STEEL TECH SCREWS
6. ALL SIGNS TO BE 8.5"x11" AND MADE WITH 0.04" OF ALUMINUM MATERIAL

INFORMATION

This is an access point to an area with transmitting antennas.

Obey all signs and barriers beyond this point.
Call the DISH Wireless L.L.C. NOC at 1-866-624-6874

Site ID: _____

THIS SIGN IS FOR REFERENCE PURPOSES ONLY

NOTICE

Transmitting Antenna(s)

Radio frequency fields beyond this point MAY *EXCEED* the FCC Occupational exposure limit.

Obey all posted signs and site guidelines for working in radio frequency environments.

Call the DISH Wireless L.L.C. NOC at 1-866-624-6874 prior to working beyond this point.

Site ID: _____

dish

THIS SIGN IS FOR REFERENCE PURPOSES ONLY

CAUTION

Transmitting Antenna(s)

Radio frequency fields beyond this point MAY *EXCEED* the FCC Occupational exposure limit.

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dish

THIS SIGN IS FOR REFERENCE PURPOSES ONLY

Transmitting Antenna(s)

Radio frequency fields beyond this point *EXCEED* the FCC Occupational exposure limit.

Obey all posted signs and site guidelines for working in radio frequency environments.

Call the DISH Wireless L.L.C. NOC at 1-866-624-6874 prior to working beyond this point.

Site ID: _____

dish

THIS SIGN IS FOR REFERENCE PURPOSES ONLY

RF SIGNAGE

dish wireless.
5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

Tectonic
1378 Route 300
Newburgh, NY 12550

STATE OF CONNECTICUT
MANJUKUMAR PATEL
PEN.0022038
LICENSED PROFESSIONAL ENGINEER
12/10/22

DRAWN BY:	CHECKED BY:	APPROVED BY:
NM	JQ	MP

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

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10710.NJJER01117A

DISH WIRELESS PROJECT INFORMATION
NJJER01117A
76 EAST RIDGE ROAD
RIDGEFIELD, CT 06877

SHEET TITLE
GENERAL NOTES

SHEET NUMBER
GN-2

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 AND TOWER OWNER NOC & THE DISH WIRELESS AND TOWER OWNER CONSTRUCTION MANAGER.

2. "LOOK UP" – DISH WIRELESS 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 AND DISH WIRELESS 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 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 AND TOWER OWNER INSTALLATION STANDARDS FOR CONSTRUCTION ACTIVITIES ON DISH WIRELESS 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 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 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

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 AND TOWER OWNER

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

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

dish wireless.

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STATE OF CONNECTICUT
RAVIKUMAR PATEL
PEN.0022038
LICENSED
PROFESSIONAL ENGINEER
11/10/22

DRAWN BY:	CHECKED BY:	APPROVED BY:
NM	JO	MP

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
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A&E PROJECT NUMBER

10710.NJJER01117A

DISH WIRELESS PROJECT INFORMATION

NJJER01117A

76 EAST RIDGE ROAD
RIDGEFIELD, CT 06877

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-3

CONCRETE, FOUNDATIONS, AND REINFORCING STEEL:

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

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

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

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

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

#4 BARS AND SMALLER 40 ksi

#5 BARS AND LARGER 60 ksi

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

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

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

ELECTRICAL INSTALLATION NOTES:

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

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

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

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

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

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

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

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

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

8. TIE WRAPS ARE NOT ALLOWED.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

dish wireless.

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Tectonic

STATE OF CONNECTICUT
MANOJKUMAR PATEL
PEN.0022038
LICENSED
PROFESSIONAL ENGINEER
12/20/22

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.

DRAWN BY:	CHECKED BY:	APPROVED BY:
NM	JQ	MP

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
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A&E PROJECT NUMBER
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DISH WIRELESS PROJECT INFORMATION
NJJER01117A

76 EAST RIDGE ROAD
RIDGEFIELD, CT 06877

SHEET TITLE
GENERAL NOTES

SHEET NUMBER
GN-4

GROUNDING NOTES:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

MASONRY NOTES:

1. DESIGN AND CONSTRUCTION OF ALL MASONRY WORK SHALL CONFORM TO ACI 530 AND 530.1 STANDARDS "BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES", AND "SPECIFICATIONS FOR MASONRY STRUCTURES".
2. CONCRETE MASONRY UNITS SHALL BE NORMAL WEIGHT HOLLOW LOAD BEARING UNITS CONFORMING TO ASTM C90 "LOADBEARING CONCRETE MASONRY UNITS", TYPE I (MOISTURE–CONTROLLED), GRADE N. COMPRESSIVE STRENGTH OF MASONRY (F'M) SHALL NOT BE LESS THAN 2,000 PSI. COLOR AND FINISH AS INDICATED, SUBJECT TO APPROVAL BY OWNER.
3. MORTAR SHALL CONFORM TO ACTM C270 "MORTAR FOR UNIT MASONRY" TYPE M OR S.
4. GROUT SHALL CONFORM TO ASTM C476 "GROUT FOR REINFORCED AND NON–REINFORCED MASONRY". ALL CELLS SHALL BE FILLED SOLID WITH GROUT AT REINFORCING.
5. ALL MASONRY SHALL BE CONSTRUCTED IN RUNNING BOND.
6. HORIZONTAL JOINT REINFORCING SHALL BE STANDARD WEIGHT LADDER TYPE (2–NO. 9 GAGE SIDE RODS) SPACED VERTICALLY AS INDICATED.
7. INJECT GROUT INTO WEAK MORTAR WHERE THERE IS SEPARATION BETWEEN JOINTS.

MASONRY REPAIR NOTES:

1. REPAIR ALL EXISTING BULKHEAD/PARAPET WALL CRACKS WITHIN 3 FEET RADIUS OF THE MOUNT ATTACHMENT POINTS.
2. CONTRACTOR IS RESPONSIBLE TO REPAIR ANY BRICK FRACTURE OR MORTAR CRACKS THAT MAY DEVELOP DURING CONSTRUCTION OF ANTENNA MOUNTS AND EQUIPMENT FRAME.
3. DO NOT HAMMER DRILL INTO EXISTING BULKHEAD/PARAPET.
4. CONTRACTOR TO REMOVE TAR/MASTIC ON THE EXISTING BULKHEAD/PARAPET AT EVERY MOUNT ATTACHMENT AND REPOINT MASONRY AS REQUIRED. A BEAD OF SILICONE SHALL BE APPLIED BEHIND AND ALL AROUND THE MOUNT ATTACHMENT TO MAKE IT WEATHERPROOF.
5. REPAIR WORK FOR BULKHEAD/PARAPET TO BE PREFORMED/COMPLETED IN TWO STAGES, AS FOLLOWS:

STAGE 1: OUTSIDE FACE

- REPAIR WORK TO BE DONE IN SECTIONS NOT TO EXCEED 4 FEET IN BULKHEAD/PARAPET LENGTH.
- RE–POINT ALL AREAS AND REPLACE ALL CRACKED/DAMAGED BRICK AS REQUIRED.
- REPLACE PARGING TO MATCH EXISTING BUILDING AND PAINT TO MATCH.
- RESEAL ALL ANCHOR HOLES WEATHER–TIGHT.

STAGE 2: INSIDE FACE/BELOW ROOF LINE

- REPAIR WORK TO BE DONE IN SECTIONS NOT TO EXCEED 4 FEET IN BULKHEAD/PARAPET LENGTH.
- REMOVE LOOSE BULKHEAD/PARAPET MEMBRANE A MAXIMUM OF 3 FEET FROM EDGE OF ATTACHMENT.
- RE–POINT ENTIRE AREA AS REQUIRED.
- RESEAL AND REPLACE BULKHEAD/PARAPET MEMBRANE AND FLASHING TO MATCH EXISTING.

HILTI TESTING NOTES:

IF REQUIRED PER HILTI SPECIFICATIONS. CONTRACTOR SHALL RETAIN HILTI TO TEST AND CERTIFY THE ADHESIVE ANCHORS SPECIFIED IN THE CONSTRUCTION DRAWINGS TO BE INSTALLED IN MASONRY. A MINIMUM OF ONE (1) ANCHOR PER CONNECTION SHALL BE TESTED. FOR ANTENNA MOUNTS, A MINIMUM OF 25% OF ANCHORS PER SECTOR SHALL BE TESTED. THE LOAD TO THE ANCHORS SHALL BE APPLIED USING A STEEL TEST FRAME THAT IS ADEQUATE TO CARRY THE PULL TEST LOADS. APPLY A TENSILE LOAD SPECIFIED AND RECOMMENDED BY THE ANCHOR MANUFACTURER ONTO THE ANCHOR TO BE TESTED. MAINTAIN THE LOAD FOR AT LEAST TWO MINUTES AFTER SPECIFIED LOAD IS REACHED. IF ANY TESTED ANCHOR IN A CONNECTION FAILS TO REACH THE SPECIFIED LOAD CAPACITY, ALL ANCHORS WITHIN THAT CONNECTION SHALL BE TESTED. ENGINEER OF RECORD OR A SPECIAL INSPECTOR SHALL BE PRESENT ON SITE DURING THE ANCHOR TESTS. TEST RESULTS SHALL BE DOCUMENTED BY HILTI AND FURNISHED TO ENGINEER OF RECORD UPON COMPLETION. ANCHORS WILL BE VISUALLY INSPECTED ALONG WITH THE SURROUNDINGS AFTER TESTING.

dish wireless.
5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

Tectonic

STATE OF CONNECTICUT
NANDKUMAR PATIL
PEN.0022038
LICENSED PROFESSIONAL ENGINEER
12/20/22

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.

DRAWN BY:	CHECKED BY:	APPROVED BY:
NM	JQ	MP

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	12/12/22	ISSUED FOR FILING

A&E PROJECT NUMBER
10710.NJJER01117A

DISH WIRELESS PROJECT INFORMATION
NJJER01117A
76 EAST RIDGE ROAD
RIDGEFIELD, CT 06877

SHEET TITLE
GENERAL NOTES

SHEET NUMBER
GN-5

Exhibit D

Structural Analysis

Tectonic

PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.

Date: **October 12, 2022**

Structural Analysis Report – Revision 1

Carrier: Dish Wireless

Site ID: NJJER01117A
Site Data: 76 East Ridge Ave, Ridgefield, Fairfield County, CT 06877
Latitude *41° 16' 50.88"*, Longitude *-73° 29' 35.88"*
130 Foot Monopole

Tectonic Project Number: 10710.NJJER01117A

Tectonic Engineering Consultants, Geologists & Land Surveyors, D.P.C., Inc. is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above-mentioned tower.

The purpose of the analysis is to determine acceptability of the tower stress level. Based on our analysis we have determined the tower stress level for the structure and foundation to be:

Structure: **Sufficient – 86.2%**
Foundation: **Sufficient – 66.2%**

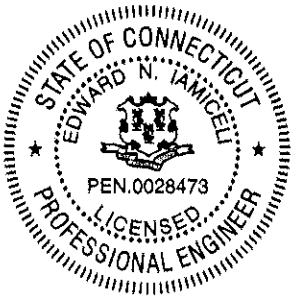
This analysis has been performed in accordance with the 2022 Connecticut State Building Code and the 2021 International Building Code based upon an ultimate 3-second gust wind speed of 125 mph per Appendix P as required for use in the ANSI/TIA-222-H-1-2019 Standard. Exposure Category B with a maximum topographic factor, Kzt, of 1.0 and Risk Category III were used in this analysis.

All modifications and equipment proposed in this report shall be installed in accordance with drawing for the determined available structural capacity to be effective.

We at Tectonic appreciate the opportunity of providing our continuing professional services to you and Dish Wireless. If you have any questions or need further assistance on this or any other projects please give us a call.

Structural analysis prepared by: John-Fritz Julien / Ian Marinaccio

Respectfully submitted by:
Tectonic Engineering Consultants, Geologists & Land Surveyors, D.P.C., Inc.



Edward N. Iamiceli, P.E.
Managing Director - Structural

Project Contact Info

1279 Route 300 | Newburgh, NY 12550
845.567.6656 Tel | 845.567.8703 Fax

tectonicengineering.com
Equal Opportunity Employer

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 130 ft monopole tower designed by Valmont in 1989 and previously analyzed by Centek Engineering in 2013. The tower has been modified per reinforcement drawings prepared by Tower Engineering Solutions in January of 2022.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-G
Risk Category:	III
Wind Speed:	125 mph ultimate 3-second gust *per the town of Ridgefield, CT*
Exposure Category:	B
Topographic Factor:	1
Ice Thickness:	0.75 in
Wind Speed with Ice:	50 mph
Service Wind Speed:	60 mph
Seismic S_1 / S_s:	0.243 / 0.057

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Carrier Designation	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Notes
118.0	Dish Wireless	3	CommScope	FFVV-65B-R2	1	1.6" Hybrid	-
		3	Fujitsu	TA08025-B605			
		3	Fujitsu	TA08025-B604			
		1	Raycap	RDIDC-9181-PF-48			
		1	CommScope	MC-PK8-DSH w/ Handrail			

3) ANALYSIS PROCEDURE

Table 2 - Documents Provided

Document	Remarks	Dated
Structural Analysis Report	Centek Engineering	11/13/2013
Foundation Mapping Report	FDH Engineering, Inc.	04/30/2014
Geotechnical Investigation Report	Tectonic	05/05/2014
Structural Modification Analysis Report	Infinigy Engineering, LLP	09/02/2021
Structural Modification Construction Drawing	Tower Engineering Solutions	01/14/2022
RFDS	Dish Wireless	02/22/2022
Mount Analysis Report	Tectonic	10/11/2022

3.1) Analysis Method

tnxTower (version 8.1.1.0), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

1) Tower and structures were built and maintained in accordance with the manufacturer's specifications.
2) The configuration of the proposed antennas, transmission cables, mounts and other appurtenances are as specified in Table 1.
3) The tower geometry and material grades are based on the structural analysis report by Centek Engineering, referenced above.
4) Existing Sprint load configurations are to be removed as such has not been considered in this analysis.
5) The pole and base reinforcement were found to be unnecessary in order for the tower to pass and was therefore not considered in this analysis. The existing flat plat reinforcement has been considered for projected wind area and weight.

This analysis is solely for the supporting tower structure, and it may be affected if any assumptions are not valid or have been made in error. Tectonic should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	130 - 110	Pole	TP20.6612x16.26x0.2188	1	-6.74	842.54	38.4	Pass
L2	110 - 89.92	Pole	TP25.08x20.6612x0.2188	2	-11.55	987.66	70.9	Pass
L3	89.92 - 74	Pole	TP28.1438x23.7446x0.3125	3	-15.07	1638.30	68.1	Pass
L4	74 - 54	Pole	TP32.543x28.1438x0.3125	4	-19.95	1897.27	83.3	Pass
L5	54 - 44.83	Pole	TP34.56x32.543x0.3125	5	-21.16	1956.63	86.2	Pass
L6	44.83 - 29.415	Pole	TP37.1987x32.9265x0.375	6	-27.74	2601.18	77.6	Pass
L7	29.415 - 9.415	Pole	TP41.5996x37.1987x0.375	7	-34.21	2912.05	83.2	Pass
L8	9.415 - 0	Pole	TP43.8x41.5996x0.375	8	-37.42	3067.49	85.1	Pass
							Summary	
						Pole (L5)	86.2	Pass
						Rating =	86.2	Pass

Table 5 - Tower Component Stresses vs. Capacity

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	76.5	Pass
1	Base Plate	0	42.4	Pass
1	Base Foundation (Soil Interaction)	0	40.8	Pass
1	Base Foundation (Structure)	0	66.2	Pass

Structure Rating (max from all components) =	**86.2%**

Notes:
1) See additional documentation in "Appendix B – Additional Calculations" for calculations supporting the % capacity consumed.

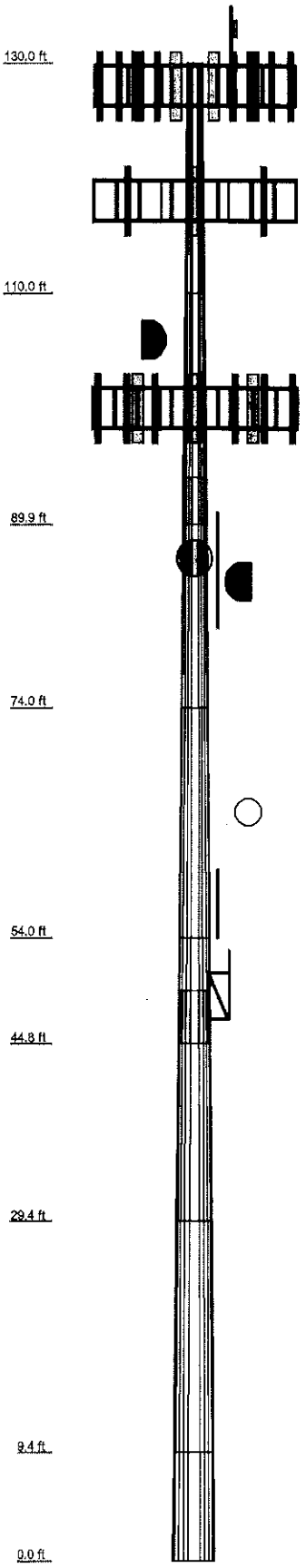
4.1) Result / Conclusions

The tower and its foundation have adequate capacity to support the proposed Dish Wireless load configurations. No modification is required at this time.

APPENDIX A

TNXTOWER OUTPUT

Section	6	5	4	3	2	1
Length (ft)	9.42	9.17	20.00	20.00	20.08	20.00
Number of Sides	12	12	12	12	12	12
Thickness (in)	0.3750	0.3125	0.3125	0.3125	0.2188	0.2188
Socket Length (ft)		4.59			4.08	
Top Dia (in)	41.5996	32.5430	28.1438	23.7446	20.6612	16.2600
Bot Dia (in)	43.8000	34.5600	32.5430	28.1438	25.0800	20.6612
Grade	A572-65					
Weight (K)	14.5	1.6	1.0	2.1	1.8	1.1	0.9



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
PD440-140	130	(2) Pipe Mount	118
BXA-80080/4CF_FP w/ Pipe Mount	128	(2) Pipe Mount	118
BXA-80080/4CF_FP w/ Pipe Mount	128	Dish Pipe Mount	106
BXA-80080/4CF_FP w/ Pipe Mount	128	VHLP3-11W-6WH/A	106
(2) JAHH-65B-R3B_TIA w/ Mount Pipe	128	AIR 6449 B41 w/ Mount Pipe	100
(2) JAHH-65B-R3B_TIA w/ Mount Pipe	128	AIR 6449 B41 w/ Mount Pipe	100
(2) JAHH-65B-R3B_TIA w/ Mount Pipe	128	AIR 32 B66Aa B2a w/ Mount Pipe	100
MT6407-77A	128	AIR 32 B66Aa B2a w/ Mount Pipe	100
MT6407-77A	128	AIR 32 B66Aa B2a w/ Mount Pipe	100
MT6407-77A	128	APXVAARR24_43-U-NA20_TIA w/ Mount Pipe	100
XXDWMM-12.5-65-8T-CBRS	128		
XXDWMM-12.5-65-8T-CBRS	128	APXVAARR24_43-U-NA20_TIA w/ Mount Pipe	100
XXDWMM-12.5-65-8T-CBRS	128		
CBC78T-DS-43-2X	128	APXVAARR24_43-U-NA20_TIA w/ Mount Pipe	100
CBC78T-DS-43-2X	128		
CBC78T-DS-43-2X	128	KRY 112 144/2	100
RT4401-48A	128	KRY 112 144/2	100
RT4401-48A	128	KRY 112 144/2	100
RT4401-48A	128	SDX1926Q-43	100
B2/B66 RRH-BR049	128	SDX1926Q-43	100
B2/B66 RRH-BR049	128	SDX1926Q-43	100
B2/B66 RRH-BR049	128	RADIO 4449 B71+B85	100
B5/B13 RRH-BR04C	128	RADIO 4449 B71+B85	100
B5/B13 RRH-BR04C	128	RADIO 4449 B71+B85	100
B5/B13 RRH-BR04C	128	RRUS 4415 B25	100
B5/B13 RRH-BR04C	128	RRUS 4415 B25	100
(2) Pipe Mount	128	RRUS 4415 B25	100
(2) Pipe Mount	128	Platform Mount	100
(2) Pipe Mount	128	AIR 6449 B41 w/ Mount Pipe	100
Platform Mount	128	Dish Pipe Mount	87
FFVV-65B-R2 w/ Mount Pipe	118	VHLP3-11W-6WH/A	87
FFVV-65B-R2 w/ Mount Pipe	118	Side Arm Mount	86
FFVV-65B-R2 w/ Mount Pipe	118	10' Omni	86
TA08025-B605	118	Small Dipole	86
TA08025-B605	118	Dish Pipe Mount	85
TA08025-B605	118	VHLP3-11W-6WH/A	85
TA08025-B604	118	2'x1' Yagi	59
TA08025-B604	118	Side Arm Mount	59
TA08025-B604	118	Small Dipole	57
RDIDC-9181-PF-48	118	Side Arm Mount	57
CommScope P/N: MC-PK8-DSH	118	GPS_A	50
(2) Pipe Mount	118		

MATERIAL STRENGTH

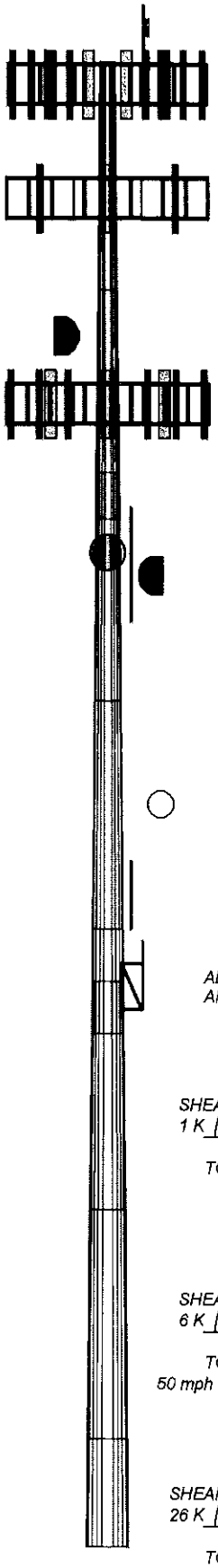
GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi			

Tectonic
1279 Route 300
Newburgh, NY 12550
Phone: (845) 567-6656
FAX: (845) 567-8703

Job: 10710.NJJER01117A - Rev 1			
Project: 130 ft Monopole			
Client: Dish Wireless	Drawn by: John-Fritz Julien	App'd:	
Code: TIA-222-H	Date: 10/12/22	Scale: N	
Path:		Dwg No.	

Section	6	5	4	3	2	1
Length (ft)	9.42	20.00	20.00	20.00	20.08	20.00
Number of Sides	12	12	12	12	12	12
Thickness (in)	0.3750	0.3750	0.3125	0.3125	0.2188	0.2188
Socket Length (ft)			4.59		4.08	
Top Dia (in)	41.5996	37.1987	32.9265	32.5430	28.1438	20.6612	16.2600
Bot Dia (in)	43.8000	41.5996	37.1987	34.5600	32.5430	25.0800	20.6612
Grade	A572-65						
Weight (K)	14.5	1.6	3.2	2.9	1.0	2.1	1.8	1.1	0.9

130.0 ft
110.0 ft
89.9 ft
74.0 ft
54.0 ft
44.8 ft
29.4 ft
9.4 ft
0.0 ft



ALL REACTIONS ARE FACTORED

AXIAL 39 K
SHEAR 1 K
MOMENT 104 kip-ft
TORQUE 0 kip-ft
SEISMIC

AXIAL 62 K
SHEAR 6 K
MOMENT 576 kip-ft
TORQUE 0 kip-ft
50 mph WIND - 1.0000 in ICE

AXIAL 37 K
SHEAR 26 K
MOMENT 2517 kip-ft
TORQUE 0 kip-ft
REACTIONS - 125 mph WIND

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi			

TOWER DESIGN NOTES

1. Tower is located in Fairfield County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-H Standard.
3. Tower designed for a 125 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category III.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. Seismic loads generated by Spreadsheet
9. Seismic calculations are in accordance with TIA-222-H-1
10. TOWER RATING: 86.2%

Tectonic
Tectonic
1279 Route 300
Newburgh, NY 12550
Phone: (845) 567-6656
FAX: (845) 567-8703

Job: 10710.NJJER01117A - Rev 1			
Project: 130 ft Monopole			
Client: Dish Wireless	Drawn by: John-Fritz Julien		App'd:
Code: TIA-222-H	Date: 10/11/22		Scale: N
Path:			Dwg No.

Tower Input Data

The tower is a monopole.
This tower is designed using the TIA-222-H standard.
The following design criteria apply:

- Tower is located in Fairfield County, Connecticut.
- Tower base elevation above sea level: 742.39 ft.
- Basic wind speed of 125 mph.
- Risk Category III.
- Exposure Category B.
- Simplified Topographic Factor Procedure for wind speed-up calculations is used.
- Topographic Category: 1.
- Crest Height: 0.00 ft.
- Nominal ice thickness of 1.0000 in.
- Ice thickness is considered to increase with height.
- Ice density of 56 pcf.
- A wind speed of 50 mph is used in combination with ice.
- Temperature drop of 50 °F.
- Deflections calculated using a wind speed of 60 mph.
- A non-linear (P-delta) analysis was used.
- Pressures are calculated at each section.
- Stress ratio used in pole design is 1.
- Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

	Consider Moments - Legs		Distribute Leg Loads As Uniform		Use ASCE 10 X-Brace Ly Rules
	Consider Moments - Horizontals		Assume Legs Pinned		Calculate Redundant Bracing Forces
	Consider Moments - Diagonals	√	Assume Rigid Index Plate		Ignore Redundant Members in FEA
	Use Moment Magnification	√	Use Clear Spans For Wind Area		SR Leg Bolts Resist Compression
√	Use Code Stress Ratios	√	Use Clear Spans For KL/r		All Leg Panels Have Same Allowable
	Use Code Safety Factors - Guys		Retension Guys To Initial Tension		Offset Girt At Foundation
	Escalate Ice	√	Bypass Mast Stability Checks	√	Consider Feed Line Torque
	Always Use Max Kz		Use Azimuth Dish Coefficients		Include Angle Block Shear Check
	Use Special Wind Profile	√	Project Wind Area of Appurt.		Use TIA-222-H Bracing Resist. Exemption
	Include Bolts In Member Capacity		Autocalc Torque Arm Areas		Use TIA-222-H Tension Splice Exemption
	Leg Bolts Are At Top Of Section		Add IBC .6D+W Combination		Poles
	Secondary Horizontal Braces Leg	√	Sort Capacity Reports By Component	√	Include Shear-Torsion Interaction
	Use Diamond Inner Bracing (4 Sided)		Triangulate Diamond Inner Bracing		Always Use Sub-Critical Flow
	SR Members Have Cut Ends	√	Treat Feed Line Bundles As Cylinder		Use Top Mounted Sockets
	SR Members Are Concentric		Ignore KL/ry For 60 Deg. Angle Legs		Pole Without Linear Attachments
					Pole With Shroud Or No Appurtenances
					Outside and Inside Corner Radii Are Known

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	130.00-110.00	20.00	0.00	12	16.2600	20.6612	0.2188	0.8752	A572-65 (65 ksi)
L2	110.00-89.92	20.08	4.08	12	20.6612	25.0800	0.2188	0.8752	A572-65

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L3	89.92-74.00	20.00	0.00	12	23.7446	28.1438	0.3125	1.2500	(65 ksi) A572-65 (65 ksi)
L4	74.00-54.00	20.00	0.00	12	28.1438	32.5430	0.3125	1.2500	A572-65 (65 ksi)
L5	54.00-44.83	9.17	4.59	12	32.5430	34.5600	0.3125	1.2500	A572-65 (65 ksi)
L6	44.83-29.42	20.00	0.00	12	32.9265	37.1987	0.3750	1.5000	A572-65 (65 ksi)
L7	29.42-9.42	20.00	0.00	12	37.1987	41.5996	0.3750	1.5000	A572-65 (65 ksi)
L8	9.42-0.00	9.42		12	41.5996	43.8000	0.3750	1.5000	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	16.7564	11.3016	371.1929	5.7427	8.4227	44.0706	752.1375	5.5623	3.7713	17.236
	21.3129	14.4024	768.2183	7.3184	10.7025	71.7793	1556.6186	7.0884	4.9508	22.627
L2	21.3129	14.4024	768.2183	7.3184	10.7025	71.7793	1556.6186	7.0884	4.9508	22.627
	25.8875	17.5156	1381.8325	8.9003	12.9914	106.3648	2799.9673	8.6207	6.1351	28.04
L3	25.4010	23.5785	1652.4299	8.3887	12.2997	134.3474	3348.2709	11.6046	5.5260	17.683
	29.0263	28.0052	2768.7928	9.9636	14.5785	189.9234	5610.3248	13.7833	6.7050	21.456
L4	29.0263	28.0052	2768.7928	9.9636	14.5785	189.9234	5610.3248	13.7833	6.7050	21.456
	33.5807	32.4319	4300.2287	11.5385	16.8573	255.0966	8713.4293	15.9620	7.8840	25.229
L5	33.5807	32.4319	4300.2287	11.5385	16.8573	255.0966	8713.4293	15.9620	7.8840	25.229
	35.6689	34.4615	5159.1537	12.2606	17.9021	288.1874	10453.844 1	16.9609	8.4246	26.959
L6	34.9697	39.3059	5316.0051	11.6534	17.0559	311.6810	10771.667 5	19.3452	7.8193	20.851
	38.3786	44.4646	7695.8175	13.1829	19.2689	399.3902	15593.812 7	21.8841	8.9642	23.905
L7	38.3786	44.4646	7695.8175	13.1829	19.2689	399.3902	15593.812 7	21.8841	8.9642	23.905
	42.9347	49.7787	10797.947 4	14.7584	21.5486	501.0980	21879.568 9	24.4995	10.1437	27.05
L8	42.9347	49.7787	10797.947 4	14.7584	21.5486	501.0980	21879.568 9	24.4995	10.1437	27.05
	45.2128	52.4357	12620.965 2	15.5461	22.6884	556.2739	25573.497 3	25.8073	10.7334	28.622

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 130.00-110.00				1	1	1			
L2 110.00-89.92				1	1	1			
L3 89.92-74.00				1	1	1			
L4 74.00-54.00				1	1	1			
L5 54.00-44.83				1	1	1			
L6 44.83-29.42				1	1	1			
L7 29.42-9.42				1	1	1			
L8 9.42-0.00				1	1	1			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
***										
7/8	C	No	Surface Ar (CaAa)	130.00 - 0.00	1	1	0.000 0.000	1.0300		0.54
MLE Hybrid 3Power/6Fiber RL 2(1-1/4)	B	No	Surface Ar (CaAa)	128.00 - 0.00	2	2	0.450 0.500	1.2500		1.00
**										
**										
EW63(ELLIPTICAL)	A	No	Surface Ar (CaAa)	85.00 - 0.00	3	3	-0.500 -0.400	2.0100		0.51
EW63(ELLIPTICAL)	A	No	Surface Ar (CaAa)	87.00 - 85.00	2	2	-0.500 -0.400	2.0100		0.51
EW63(ELLIPTICAL)	A	No	Surface Ar (CaAa)	106.00 - 87.00	1	1	-0.500 -0.400	2.0100		0.51
**										
7/8	B	No	Surface Ar (CaAa)	57.00 - 0.00	6	6	0.000 0.250	1.0300		0.54
7/8	B	No	Surface Ar (CaAa)	59.00 - 57.00	5	5	0.000 0.250	1.0300		0.54
7/8	B	No	Surface Ar (CaAa)	85.00 - 59.00	4	4	0.000 0.250	1.0300		0.54
7/8	B	No	Surface Ar (CaAa)	99.00 - 85.00	2	2	0.000 0.250	1.0300		0.54
*										
Step Bolts	C	No	Surface Ar (CaAa)	130.00 - 0.00	2	2	0.500 0.500	0.3750		2.00
Safety Line 3/8	C	No	Surface Ar (CaAa)	130.00 - 0.00	1	1	0.500 0.500	0.3750		0.22
*										
CU12PSM9P6XXX_6AWG	C	No	Surface Ar (CaAa)	118.00 - 0.00	1	1	0.000 0.000	1.6000		2.35
*										
PL1"x6" - Reinforcement	A	No	Surface Af (CaAa)	70.00 - 0.00	1	1	0.000 0.000	6.0000	14.0000	20.42
PL1"x6" - Reinforcement	B	No	Surface Af (CaAa)	70.00 - 0.00	1	1	0.000 0.000	6.0000	14.0000	20.42
PL1"x6" - Reinforcement	C	No	Surface Af (CaAa)	70.00 - 0.00	1	1	0.000 0.000	6.0000	14.0000	20.42
***										

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
7/8	A	No	No	Inside Pole	128.00 - 0.00	12	No Ice	0.00	0.54
							1/2" Ice	0.00	0.54
							1" Ice	0.00	0.54
1/2	A	No	No	Inside Pole	128.00 - 0.00	1	No Ice	0.00	0.15
							1/2" Ice	0.00	0.15
							1" Ice	0.00	0.15
MLC Hybrid 6Power/12Fiber(1-1/2")	A	No	No	Inside Pole	100.00 - 0.00	3	No Ice	0.00	0.98
							1/2" Ice	0.00	0.98
							1" Ice	0.00	0.98
7/8	A	No	No	Inside Pole	100.00 - 0.00	6	No Ice	0.00	0.54
							1/2" Ice	0.00	0.54
							1" Ice	0.00	0.54
**									
1/2	A	No	No	Inside Pole	50.00 - 0.00	1	No Ice	0.00	0.15
							1/2" Ice	0.00	0.15

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
***							1" Ice	0.00	0.15

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	130.00-110.00	A	0.000	0.000	0.000	0.000	0.12
		B	0.000	0.000	4.500	0.000	0.04
		C	0.000	0.000	5.590	0.000	0.11
L2	110.00-89.92	A	0.000	0.000	3.232	0.000	0.20
		B	0.000	0.000	6.890	0.000	0.05
		C	0.000	0.000	7.540	0.000	0.14
L3	89.92-74.00	A	0.000	0.000	8.024	0.000	0.22
		B	0.000	0.000	9.526	0.000	0.06
		C	0.000	0.000	5.978	0.000	0.11
L4	74.00-54.00	A	0.000	0.000	28.060	0.000	0.61
		B	0.000	0.000	30.064	0.000	0.41
		C	0.000	0.000	23.510	0.000	0.47
L5	54.00-44.83	A	0.000	0.000	14.700	0.000	0.32
		B	0.000	0.000	17.130	0.000	0.24
		C	0.000	0.000	12.613	0.000	0.25
L6	44.83-29.42	A	0.000	0.000	24.710	0.000	0.54
		B	0.000	0.000	28.795	0.000	0.40
		C	0.000	0.000	21.203	0.000	0.42
L7	29.42-9.42	A	0.000	0.000	32.060	0.000	0.70
		B	0.000	0.000	37.360	0.000	0.51
		C	0.000	0.000	27.510	0.000	0.55
L8	9.42-0.00	A	0.000	0.000	15.092	0.000	0.33
		B	0.000	0.000	17.587	0.000	0.24
		C	0.000	0.000	12.950	0.000	0.26

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	130.00-110.00	A	1.308	0.000	0.000	0.000	0.000	0.12
		B		0.000	0.000	11.511	0.000	0.13
		C		0.000	0.000	25.062	0.000	0.34
L2	110.00-89.92	A	1.284	0.000	0.000	7.363	0.000	0.29
		B		0.000	0.000	17.976	0.000	0.20
		C		0.000	0.000	29.838	0.000	0.42
L3	89.92-74.00	A	1.259	0.000	0.000	14.807	0.000	0.36
		B		0.000	0.000	22.130	0.000	0.25
		C		0.000	0.000	23.656	0.000	0.33
L4	74.00-54.00	A	1.228	0.000	0.000	41.147	0.000	0.94
		B		0.000	0.000	49.793	0.000	0.80
		C		0.000	0.000	48.696	0.000	0.87
L5	54.00-44.83	A	1.197	0.000	0.000	21.022	0.000	0.48
		B		0.000	0.000	26.805	0.000	0.44
		C		0.000	0.000	24.313	0.000	0.44
L6	44.83-29.42	A	1.163	0.000	0.000	35.339	0.000	0.81
		B		0.000	0.000	45.059	0.000	0.73
		C		0.000	0.000	40.871	0.000	0.75
L7	29.42-9.42	A	1.090	0.000	0.000	44.881	0.000	1.02
		B		0.000	0.000	56.954	0.000	0.91
		C		0.000	0.000	50.765	0.000	0.92

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L8	9.42-0.00	A	0.946	0.000	0.000	20.518	0.000	0.46
		B		0.000	0.000	25.863	0.000	0.40
		C		0.000	0.000	22.476	0.000	0.40

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	130.00-110.00	0.5371	1.6086	-0.1584	2.3633
L2	110.00-89.92	0.2992	2.0878	-0.2180	2.8112
L3	89.92-74.00	-0.0473	2.1101	-0.2933	2.5995
L4	74.00-54.00	0.0019	1.3638	-0.2280	2.0598
L5	54.00-44.83	0.3624	1.2016	0.0328	1.9684
L6	44.83-29.42	0.3770	1.2433	0.0352	2.0508
L7	29.42-9.42	0.4031	1.3183	0.0648	2.1335
L8	9.42-0.00	0.4240	1.3781	0.1078	2.1495

Note: For pole sections, center of pressure calculations do not consider feed line shielding.

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L1	2	7/8	110.00 - 130.00	1.0000	1.0000
L1	3	MLE Hybrid 3Power/6Fiber RL 2(1-1/4)	110.00 - 128.00	1.0000	1.0000
L1	22	Step Bolts	110.00 - 130.00	1.0000	1.0000
L1	23	Safety Line 3/8	110.00 - 130.00	1.0000	1.0000
L1	25	CU12PSM9P6XXX_6AWG	110.00 - 118.00	1.0000	1.0000
L2	2	7/8	89.92 - 110.00	1.0000	1.0000
L2	3	MLE Hybrid 3Power/6Fiber RL 2(1-1/4)	89.92 - 110.00	1.0000	1.0000
L2	11	EW63(ELLIPTICAL)	89.92 - 106.00	1.0000	1.0000
L2	18	7/8	89.92 - 99.00	1.0000	1.0000
L2	22	Step Bolts	89.92 - 110.00	1.0000	1.0000
L2	23	Safety Line 3/8	89.92 - 110.00	1.0000	1.0000
L2	25	CU12PSM9P6XXX_6AWG	89.92 - 110.00	1.0000	1.0000
L3	2	7/8	74.00 - 89.92	1.0000	1.0000
L3	3	MLE Hybrid 3Power/6Fiber RL 2(1-1/4)	74.00 - 89.92	1.0000	1.0000
L3	9	EW63(ELLIPTICAL)	74.00 - 85.00	1.0000	1.0000
L3	10	EW63(ELLIPTICAL)	85.00 - 87.00	1.0000	1.0000
L3	11	EW63(ELLIPTICAL)	87.00 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L3	17	7/8	89.92 - 74.00	1.0000	1.0000
L3	18	7/8	85.00 - 85.00	1.0000	1.0000
L3	22	Step Bolts	89.92 - 74.00	1.0000	1.0000
L3	23	Safety Line 3/8	89.92 - 74.00	1.0000	1.0000
L3	25	CU12PSM9P6XXX_6AWG	89.92 - 74.00	1.0000	1.0000
L4	2	7/8	89.92 - 54.00	1.0000	1.0000
L4	3	MLE Hybrid 3Power/6Fiber RL 2(1-1/4)	74.00 - 54.00	1.0000	1.0000
L4	9	EW63(ELLIPTICAL)	74.00 - 54.00	1.0000	1.0000
L4	15	7/8	74.00 - 57.00	1.0000	1.0000
L4	16	7/8	57.00 - 59.00	1.0000	1.0000
L4	17	7/8	59.00 - 74.00	1.0000	1.0000
L4	22	Step Bolts	74.00 - 54.00	1.0000	1.0000
L4	23	Safety Line 3/8	74.00 - 54.00	1.0000	1.0000
L4	25	CU12PSM9P6XXX_6AWG	74.00 - 54.00	1.0000	1.0000
L4	27	PL1"x6" - Reinforcement	74.00 - 70.00	1.0000	1.0000
L4	28	PL1"x6" - Reinforcement	74.00 - 70.00	1.0000	1.0000
L4	29	PL1"x6" - Reinforcement	74.00 - 70.00	1.0000	1.0000
L5	2	7/8	44.83 - 54.00	1.0000	1.0000
L5	3	MLE Hybrid 3Power/6Fiber RL 2(1-1/4)	44.83 - 54.00	1.0000	1.0000
L5	9	EW63(ELLIPTICAL)	44.83 - 54.00	1.0000	1.0000
L5	15	7/8	44.83 - 54.00	1.0000	1.0000
L5	22	Step Bolts	44.83 - 54.00	1.0000	1.0000
L5	23	Safety Line 3/8	44.83 - 54.00	1.0000	1.0000
L5	25	CU12PSM9P6XXX_6AWG	44.83 - 54.00	1.0000	1.0000
L5	27	PL1"x6" - Reinforcement	44.83 - 54.00	1.0000	1.0000
L5	28	PL1"x6" - Reinforcement	44.83 - 54.00	1.0000	1.0000
L5	29	PL1"x6" - Reinforcement	44.83 - 54.00	1.0000	1.0000
L6	2	7/8	29.42 - 44.83	1.0000	1.0000
L6	3	MLE Hybrid 3Power/6Fiber RL 2(1-1/4)	29.42 - 44.83	1.0000	1.0000
L6	9	EW63(ELLIPTICAL)	29.42 - 44.83	1.0000	1.0000
L6	15	7/8	29.42 - 44.83	1.0000	1.0000
L6	22	Step Bolts	29.42 - 44.83	1.0000	1.0000
L6	23	Safety Line 3/8	29.42 - 44.83	1.0000	1.0000
L6	25	CU12PSM9P6XXX_6AWG	29.42 - 44.83	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L6	27	PL1"x6" - Reinforcement	29.42 - 44.83	1.0000	1.0000
L6	28	PL1"x6" - Reinforcement	29.42 - 44.83	1.0000	1.0000
L6	29	PL1"x6" - Reinforcement	29.42 - 44.83	1.0000	1.0000
L7	2	7/8	9.42 - 29.42	1.0000	1.0000
L7	3	MLE Hybrid 3Power/6Fiber RL 2(1-1/4)	9.42 - 29.42	1.0000	1.0000
L7	9	EW63(ELLIPTICAL)	9.42 - 29.42	1.0000	1.0000
L7	15	7/8	9.42 - 29.42	1.0000	1.0000
L7	22	Step Bolts	9.42 - 29.42	1.0000	1.0000
L7	23	Safety Line 3/8	9.42 - 29.42	1.0000	1.0000
L7	25	CU12PSM9P6XXX_6AWG	9.42 - 29.42	1.0000	1.0000
L7	27	PL1"x6" - Reinforcement	9.42 - 29.42	1.0000	1.0000
L7	28	PL1"x6" - Reinforcement	9.42 - 29.42	1.0000	1.0000
L7	29	PL1"x6" - Reinforcement	9.42 - 29.42	1.0000	1.0000
L8	2	7/8	0.00 - 9.42	1.0000	1.0000
L8	3	MLE Hybrid 3Power/6Fiber RL 2(1-1/4)	0.00 - 9.42	1.0000	1.0000
L8	9	EW63(ELLIPTICAL)	0.00 - 9.42	1.0000	1.0000
L8	15	7/8	0.00 - 9.42	1.0000	1.0000
L8	22	Step Bolts	0.00 - 9.42	1.0000	1.0000
L8	23	Safety Line 3/8	0.00 - 9.42	1.0000	1.0000
L8	25	CU12PSM9P6XXX_6AWG	0.00 - 9.42	1.0000	1.0000
L8	27	PL1"x6" - Reinforcement	0.00 - 9.42	1.0000	1.0000
L8	28	PL1"x6" - Reinforcement	0.00 - 9.42	1.0000	1.0000
L8	29	PL1"x6" - Reinforcement	0.00 - 9.42	1.0000	1.0000

Effective Width of Flat Linear Attachments / Feed Lines

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L4	27	PL1"x6" - Reinforcement	54.00 - 70.00	Manual	1.0000
L4	28	PL1"x6" - Reinforcement	54.00 - 70.00	Manual	1.0000
L4	29	PL1"x6" - Reinforcement	54.00 - 70.00	Manual	1.0000
L5	27	PL1"x6" - Reinforcement	44.83 - 54.00	Manual	1.0000
L5	28	PL1"x6" - Reinforcement	44.83 - 54.00	Manual	1.0000
L5	29	PL1"x6" - Reinforcement	44.83 - 54.00	Manual	1.0000
L6	27	PL1"x6" - Reinforcement	29.42 - 44.83	Manual	1.0000
L6	28	PL1"x6" - Reinforcement	29.42 - 44.83	Manual	1.0000
L6	29	PL1"x6" - Reinforcement	29.42 - 44.83	Manual	1.0000
L7	27	PL1"x6" - Reinforcement	9.42 - 29.42	Manual	1.0000
L7	28	PL1"x6" - Reinforcement	9.42 - 29.42	Manual	1.0000
L7	29	PL1"x6" - Reinforcement	9.42 - 29.42	Manual	1.0000
L8	27	PL1"x6" - Reinforcement	0.00 - 9.42	Manual	1.0000
L8	28	PL1"x6" - Reinforcement	0.00 - 9.42	Manual	1.0000
L8	29	PL1"x6" - Reinforcement	0.00 - 9.42	Manual	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
***									
PD440-140	B	From Leg	3.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	2.66 4.44 6.22	2.66 4.44 6.22	0.02 0.03 0.05
*									
BXA-80080/4CF_FP w/ Pipe Mount	A	From Leg	4.00 0.00 0.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice	5.75 6.48 7.15	5.35 6.48 7.47	0.04 0.10 0.16
BXA-80080/4CF_FP w/ Pipe Mount	B	From Leg	4.00 0.00 0.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice	5.75 6.48 7.15	5.35 6.48 7.47	0.04 0.10 0.16
BXA-80080/4CF_FP w/ Pipe Mount	C	From Leg	4.00 0.00 0.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice	5.75 6.48 7.15	5.35 6.48 7.47	0.04 0.10 0.16
(2) JAHH-65B-R3B_TIA w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice	9.35 9.92 10.46	7.65 8.83 9.73	0.09 0.17 0.25
(2) JAHH-65B-R3B_TIA w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice	9.35 9.92 10.46	7.65 8.83 9.73	0.09 0.17 0.25
(2) JAHH-65B-R3B_TIA w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice	9.35 9.92 10.46	7.65 8.83 9.73	0.09 0.17 0.25
MT6407-77A	A	From Leg	4.00 0.00 0.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice	4.71 5.00 5.29	1.84 2.07 2.30	0.09 0.12 0.15
MT6407-77A	B	From Leg	4.00 0.00 0.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice	4.71 5.00 5.29	1.84 2.07 2.30	0.09 0.12 0.15
MT6407-77A	C	From Leg	4.00 0.00 0.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice	4.71 5.00 5.29	1.84 2.07 2.30	0.09 0.12 0.15
XXDWMM-12.5-65-8T-CBRS	A	From Leg	4.00 0.00 0.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice	0.52 0.61 0.72	1.53 1.69 1.85	0.02 0.04 0.05
XXDWMM-12.5-65-8T-CBRS	B	From Leg	4.00 0.00 0.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice	0.52 0.61 0.72	1.53 1.69 1.85	0.02 0.04 0.05
XXDWMM-12.5-65-8T-CBRS	C	From Leg	4.00 0.00 0.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice	0.52 0.61 0.72	1.53 1.69 1.85	0.02 0.04 0.05
CBC78T-DS-43-2X	A	From Leg	4.00 0.00 0.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice	0.37 0.45 0.53	0.51 0.60 0.70	0.02 0.03 0.04

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
CBC78T-DS-43-2X	B	From Leg	4.00 0.00 0.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice	0.37 0.45 0.53	0.51 0.60 0.70	0.02 0.03 0.04
CBC78T-DS-43-2X	C	From Leg	4.00 0.00 0.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice	0.37 0.45 0.53	0.51 0.60 0.70	0.02 0.03 0.04
RT4401-48A	A	From Leg	4.00 0.00 0.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice	1.16 1.29 1.44	0.56 0.67 0.78	0.02 0.03 0.04
RT4401-48A	B	From Leg	4.00 0.00 0.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice	1.16 1.29 1.44	0.56 0.67 0.78	0.02 0.03 0.04
RT4401-48A	C	From Leg	4.00 0.00 0.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice	1.16 1.29 1.44	0.56 0.67 0.78	0.02 0.03 0.04
B2/B66 RRH-BR049	A	From Leg	4.00 0.00 0.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice	1.88 2.05 2.22	1.25 1.39 1.54	0.08 0.10 0.12
B2/B66 RRH-BR049	B	From Leg	4.00 0.00 0.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice	1.88 2.05 2.22	1.25 1.39 1.54	0.08 0.10 0.12
B2/B66 RRH-BR049	C	From Leg	4.00 0.00 0.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice	1.88 2.05 2.22	1.25 1.39 1.54	0.08 0.10 0.12
B5/B13 RRH-BR04C	A	From Leg	4.00 0.00 0.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice	1.88 2.05 2.22	1.01 1.14 1.28	0.07 0.09 0.11
B5/B13 RRH-BR04C	B	From Leg	4.00 0.00 0.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice	1.88 2.05 2.22	1.01 1.14 1.28	0.07 0.09 0.11
B5/B13 RRH-BR04C	C	From Leg	4.00 0.00 0.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice	1.88 2.05 2.22	1.01 1.14 1.28	0.07 0.09 0.11
B5/B13 RRH-BR04C	A	From Leg	4.00 0.00 0.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice	1.88 2.05 2.22	1.01 1.14 1.28	0.07 0.09 0.11
(2) Pipe Mount	A	From Leg	4.00 0.00 0.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice	1.90 2.73 3.40	1.90 2.73 3.40	0.03 0.04 0.06
(2) Pipe Mount	B	From Leg	4.00 0.00 0.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice	1.90 2.73 3.40	1.90 2.73 3.40	0.03 0.04 0.06
(2) Pipe Mount	C	From Leg	4.00 0.00 0.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice	1.90 2.73 3.40	1.90 2.73 3.40	0.03 0.04 0.06
Platform Mount	C	None		0.0000	128.00	No Ice 1/2" Ice 1" Ice	39.73 45.91 52.26	39.73 45.91 52.26	1.40 2.09 2.88

**

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
FFVV-65B-R2 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	12.74 13.45 14.12	7.62 8.91 10.04	0.10 0.19 0.29
FFVV-65B-R2 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	12.74 13.45 14.12	7.62 8.91 10.04	0.10 0.19 0.29
FFVV-65B-R2 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	12.74 13.45 14.12	7.62 8.91 10.04	0.10 0.19 0.29
TA08025-B605	A	From Leg	4.00 0.00 0.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	1.96 2.14 2.32	1.19 1.33 1.48	0.07 0.09 0.11
TA08025-B605	B	From Leg	4.00 0.00 0.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	1.96 2.14 2.32	1.19 1.33 1.48	0.07 0.09 0.11
TA08025-B605	C	From Leg	4.00 0.00 0.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	1.96 2.14 2.32	1.19 1.33 1.48	0.07 0.09 0.11
TA08025-B604	A	From Leg	4.00 0.00 0.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	1.96 2.14 2.32	1.03 1.17 1.31	0.06 0.08 0.10
TA08025-B604	B	From Leg	4.00 0.00 0.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	1.96 2.14 2.32	1.03 1.17 1.31	0.06 0.08 0.10
TA08025-B604	C	From Leg	4.00 0.00 0.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	1.96 2.14 2.32	1.03 1.17 1.31	0.06 0.08 0.10
RDIDC-9181-PF-48	A	From Leg	4.00 0.00 0.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	1.87 2.04 2.21	1.07 1.20 1.35	0.02 0.04 0.06
CommScope P/N: MC-PK8-DSH	A	None		0.0000	118.00	No Ice 1/2" Ice 1" Ice	26.80 32.20 37.60	26.80 32.20 37.60	1.51 1.81 2.11
(2) Pipe Mount	A	From Leg	4.00 0.00 4.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	1.90 2.73 3.40	1.90 2.73 3.40	0.03 0.04 0.06
(2) Pipe Mount	B	From Leg	4.00 0.00 4.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	1.90 2.73 3.40	1.90 2.73 3.40	0.03 0.04 0.06
(2) Pipe Mount	C	From Leg	4.00 0.00 4.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	1.90 2.73 3.40	1.90 2.73 3.40	0.03 0.04 0.06
*									
**									
Dish Pipe Mount	C	None		0.0000	106.00	No Ice 1/2" Ice 1" Ice	1.32 1.58 1.84	1.32 1.58 1.84	0.07 0.08 0.09
*									
AIR 6449 B41 w/ Mount Pipe	A	From Leg	4.00 0.00	0.0000	100.00	No Ice 1/2"	6.90 7.74	4.32 5.37	0.13 0.19

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00			Ice	8.49	6.28	0.26
						1" Ice			
AIR 6449 B41 w/ Mount Pipe	B	From Leg	4.00	0.0000	100.00	No Ice	6.90	4.32	0.13
			0.00			1/2"	7.74	5.37	0.19
			0.00			Ice	8.49	6.28	0.26
						1" Ice			
AIR 6449 B41 w/ Mount Pipe	C	From Leg	4.00	0.0000	100.00	No Ice	6.90	4.32	0.13
			0.00			1/2"	7.74	5.37	0.19
			0.00			Ice	8.49	6.28	0.26
						1" Ice			
AIR 32 B66Aa B2a w/ Mount Pipe	A	From Leg	4.00	0.0000	100.00	No Ice	6.81	6.14	0.15
			0.00			1/2"	7.30	6.99	0.22
			0.00			Ice	7.76	7.73	0.28
						1" Ice			
AIR 32 B66Aa B2a w/ Mount Pipe	B	From Leg	4.00	0.0000	100.00	No Ice	6.81	6.14	0.15
			0.00			1/2"	7.30	6.99	0.22
			0.00			Ice	7.76	7.73	0.28
						1" Ice			
AIR 32 B66Aa B2a w/ Mount Pipe	C	From Leg	4.00	0.0000	100.00	No Ice	6.81	6.14	0.15
			0.00			1/2"	7.30	6.99	0.22
			0.00			Ice	7.76	7.73	0.28
						1" Ice			
APXVAARR24_43-U-NA20_TIA w/ Mount Pipe	A	From Leg	4.00	0.0000	100.00	No Ice	20.48	11.02	0.19
			0.00			1/2"	21.23	12.55	0.32
			0.00			Ice	21.99	14.10	0.47
						1" Ice			
APXVAARR24_43-U-NA20_TIA w/ Mount Pipe	B	From Leg	4.00	0.0000	100.00	No Ice	20.48	11.02	0.19
			0.00			1/2"	21.23	12.55	0.32
			0.00			Ice	21.99	14.10	0.47
						1" Ice			
APXVAARR24_43-U-NA20_TIA w/ Mount Pipe	C	From Leg	4.00	0.0000	100.00	No Ice	20.48	11.02	0.19
			0.00			1/2"	21.23	12.55	0.32
			0.00			Ice	21.99	14.10	0.47
						1" Ice			
KRY 112 144/2	A	From Leg	4.00	0.0000	100.00	No Ice	0.48	0.23	0.01
			0.00			1/2"	0.57	0.30	0.01
			0.00			Ice	0.66	0.38	0.02
						1" Ice			
KRY 112 144/2	B	From Leg	4.00	0.0000	100.00	No Ice	0.48	0.23	0.01
			0.00			1/2"	0.57	0.30	0.01
			0.00			Ice	0.66	0.38	0.02
						1" Ice			
KRY 112 144/2	C	From Leg	4.00	0.0000	100.00	No Ice	0.48	0.23	0.01
			0.00			1/2"	0.57	0.30	0.01
			0.00			Ice	0.66	0.38	0.02
						1" Ice			
SDX1926Q-43	A	From Leg	4.00	0.0000	100.00	No Ice	0.24	0.10	0.01
			0.00			1/2"	0.31	0.14	0.01
			0.00			Ice	0.38	0.19	0.01
						1" Ice			
SDX1926Q-43	B	From Leg	4.00	0.0000	100.00	No Ice	0.24	0.10	0.01
			0.00			1/2"	0.31	0.14	0.01
			0.00			Ice	0.38	0.19	0.01
						1" Ice			
SDX1926Q-43	C	From Leg	4.00	0.0000	100.00	No Ice	0.24	0.10	0.01
			0.00			1/2"	0.31	0.14	0.01
			0.00			Ice	0.38	0.19	0.01
						1" Ice			
RADIO 4449 B71+B85	A	From Leg	4.00	0.0000	100.00	No Ice	1.64	1.31	0.07
			0.00			1/2"	1.80	1.46	0.09
			0.00			Ice	1.97	1.61	0.11
						1" Ice			
RADIO 4449 B71+B85	B	From Leg	4.00	0.0000	100.00	No Ice	1.64	1.31	0.07
			0.00			1/2"	1.80	1.46	0.09
			0.00			Ice	1.97	1.61	0.11

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
							1" Ice			
RADIO 4449 B71+B85	C	From Leg	4.00		0.0000	100.00	No Ice	1.64	1.31	0.07
			0.00				1/2"	1.80	1.46	0.09
			0.00				Ice	1.97	1.61	0.11
							1" Ice			
RRUS 4415 B25	A	From Leg	4.00		0.0000	100.00	No Ice	1.64	0.68	0.04
			0.00				1/2"	1.80	0.79	0.06
			0.00				Ice	1.97	0.91	0.07
							1" Ice			
RRUS 4415 B25	B	From Leg	4.00		0.0000	100.00	No Ice	1.64	0.68	0.04
			0.00				1/2"	1.80	0.79	0.06
			0.00				Ice	1.97	0.91	0.07
							1" Ice			
RRUS 4415 B25	C	From Leg	4.00		0.0000	100.00	No Ice	1.64	0.68	0.04
			0.00				1/2"	1.80	0.79	0.06
			0.00				Ice	1.97	0.91	0.07
							1" Ice			
Platform Mount	A	None			0.0000	100.00	No Ice	31.07	31.07	1.34
							1/2"	34.82	34.82	1.97
							Ice	38.48	38.48	2.67
							1" Ice			
**										
Dish Pipe Mount	A	None			0.0000	87.00	No Ice	1.32	1.32	0.07
							1/2"	1.58	1.58	0.08
							Ice	1.84	1.84	0.09
							1" Ice			
*										
10' Omni	C	From Leg	4.00		0.0000	86.00	No Ice	2.88	2.88	0.06
			0.00				1/2"	3.91	3.91	0.08
			5.00				Ice	4.96	4.96	0.11
							1" Ice			
Small Dipole	C	From Leg	4.00		0.0000	86.00	No Ice	0.34	0.34	0.01
			0.00				1/2"	0.47	0.47	0.01
			0.00				Ice	0.61	0.61	0.02
							1" Ice			
Side Arm Mount	C	None			0.0000	86.00	No Ice	0.85	1.67	0.07
							1/2"	1.14	2.34	0.08
							Ice	1.43	3.01	0.09
							1" Ice			
**										
Dish Pipe Mount	B	None			0.0000	85.00	No Ice	1.32	1.32	0.07
							1/2"	1.58	1.58	0.08
							Ice	1.84	1.84	0.09
							1" Ice			
*										
Side Arm Mount	B	None			0.0000	59.00	No Ice	0.85	1.67	0.07
							1/2"	1.14	2.34	0.08
							Ice	1.43	3.01	0.09
							1" Ice			
2'x1' Yagi	B	From Leg	4.00		0.0000	59.00	No Ice	0.52	0.52	0.02
			0.00				1/2"	0.67	0.67	0.02
			0.00				Ice	0.83	0.83	0.03
							1" Ice			
*										
Side Arm Mount	B	None			0.0000	57.00	No Ice	0.85	1.67	0.07
							1/2"	1.14	2.34	0.08
							Ice	1.43	3.01	0.09
							1" Ice			
Small Dipole	C	From Leg	4.00		0.0000	57.00	No Ice	0.34	0.34	0.01
			0.00				1/2"	0.47	0.47	0.01
			0.00				Ice	0.61	0.61	0.02
							1" Ice			
*										
GPS_A	B	From Leg	1.00		0.0000	50.00	No Ice	0.26	0.26	0.00
			0.00				1/2"	0.32	0.32	0.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
*			0.00			Ice 1" Ice	0.39	0.39	0.01

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight K
**											
VHLP3-11W-6WH/A	C	Paraboloid w/Shroud (HP)	From Leg	2.00 0.00 0.00	Worst		106.00	3.27	No Ice 1/2" Ice 1" Ice	8.42 8.86 9.29	0.04 0.08 0.13
*											
VHLP3-11W-6WH/A	A	Paraboloid w/Shroud (HP)	From Leg	2.00 0.00 0.00	Worst		87.00	3.27	No Ice 1/2" Ice 1" Ice	8.42 8.86 9.29	0.04 0.08 0.13
**											
VHLP3-11W-6WH/A	B	Paraboloid w/Shroud (HP)	From Leg	2.00 0.00 0.00	Worst		85.00	3.27	No Ice 1/2" Ice 1" Ice	8.42 8.86 9.29	0.04 0.08 0.13
*											

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice
3	0.9 Dead+1.0 Wind 0 deg - No Ice
4	1.2 Dead+1.0 Wind 30 deg - No Ice
5	0.9 Dead+1.0 Wind 30 deg - No Ice
6	1.2 Dead+1.0 Wind 60 deg - No Ice
7	0.9 Dead+1.0 Wind 60 deg - No Ice
8	1.2 Dead+1.0 Wind 90 deg - No Ice
9	0.9 Dead+1.0 Wind 90 deg - No Ice
10	1.2 Dead+1.0 Wind 120 deg - No Ice
11	0.9 Dead+1.0 Wind 120 deg - No Ice
12	1.2 Dead+1.0 Wind 150 deg - No Ice
13	0.9 Dead+1.0 Wind 150 deg - No Ice
14	1.2 Dead+1.0 Wind 180 deg - No Ice
15	0.9 Dead+1.0 Wind 180 deg - No Ice
16	1.2 Dead+1.0 Wind 210 deg - No Ice
17	0.9 Dead+1.0 Wind 210 deg - No Ice
18	1.2 Dead+1.0 Wind 240 deg - No Ice
19	0.9 Dead+1.0 Wind 240 deg - No Ice
20	1.2 Dead+1.0 Wind 270 deg - No Ice
21	0.9 Dead+1.0 Wind 270 deg - No Ice
22	1.2 Dead+1.0 Wind 300 deg - No Ice
23	0.9 Dead+1.0 Wind 300 deg - No Ice
24	1.2 Dead+1.0 Wind 330 deg - No Ice
25	0.9 Dead+1.0 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp

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

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	130 - 110	Pole	Max Tension	15	0.00	0.00	0.00
			Max. Compression	26	-16.56	-0.29	0.65
			Max. Mx	8	-6.75	-157.18	0.35
			Max. My	2	-6.74	-0.05	158.28
			Max. Vy	8	11.08	-157.18	0.35
			Max. Vx	14	11.14	-0.05	-157.55
			Max. Torque	4			-0.43
L2	110 - 89.92	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-27.35	0.01	0.21
			Max. Mx	8	-11.58	-377.72	0.24
			Max. My	2	-11.57	-0.09	379.41
			Max. Vy	20	-17.43	377.68	0.24
			Max. Vx	14	17.45	-0.09	-379.07
			Max. Torque	25			0.83
L3	89.92 - 74	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-32.80	0.21	-0.19
			Max. Mx	20	-15.11	757.14	-0.06
			Max. My	14	-15.10	0.14	-758.92
			Max. Vy	8	20.18	-756.85	-0.06
			Max. Vx	14	20.20	0.14	-758.92
			Max. Torque	16			-1.34
L4	74 - 54	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-39.42	0.03	-0.52
			Max. Mx	8	-19.99	-1177.25	-0.28
			Max. My	14	-19.99	-0.01	-1179.19
			Max. Vy	8	21.97	-1177.25	-0.28
			Max. Vx	14	21.93	-0.01	-1179.19
			Max. Torque	23			0.25
L5	54 - 44.83	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-41.05	-0.05	-0.57
			Max. Mx	8	-21.20	-1278.73	-0.31
			Max. My	14	-21.19	-0.03	-1280.75
			Max. Vy	8	22.32	-1278.73	-0.31
			Max. Vx	14	22.39	-0.03	-1280.75
			Max. Torque	23			0.25
L6	44.83 - 29.415	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-49.75	-0.27	-0.73

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	8	-27.78	-1741.27	-0.45
			Max. My	14	-27.75	-0.15	-1749.36
			Max. Vy	8	23.85	-1741.27	-0.45
			Max. Vx	14	24.39	-0.15	-1749.36
			Max. Torque	23			0.25
L7	29.415 - 9.415	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-57.89	-0.50	-0.89
			Max. Mx	8	-34.23	-2230.90	-0.60
			Max. My	14	-34.22	-0.28	-2249.78
			Max. Vy	8	25.14	-2230.90	-0.60
			Max. Vx	14	25.67	-0.28	-2249.78
			Max. Torque	23			0.25
L8	9.415 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-61.76	-0.61	-0.96
			Max. Mx	8	-37.42	-2470.34	-0.67
			Max. My	14	-37.42	-0.35	-2494.27
			Max. Vy	8	25.75	-2470.34	-0.67
			Max. Vx	14	26.28	-0.35	-2494.27
			Max. Torque	23			0.24

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	33	61.76	0.00	-5.60
	Max. H_x	21	28.08	25.73	-0.00
	Max. H_z	3	28.08	0.00	25.68
	Max. M_x	2	2467.89	0.00	25.68
	Max. M_z	8	2470.34	-25.73	0.00
	Max. Torsion	23	0.24	22.69	13.13
	Min. Vert	19	28.08	22.19	-12.84
	Min. H_x	9	28.08	-25.73	-0.00
	Min. H_z	15	28.08	0.00	-26.27
	Min. M_x	14	-2494.27	0.00	-26.27
	Min. M_z	20	-2469.65	25.73	0.00
	Min. Torsion	11	-0.24	-22.19	-12.84

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	31.20	0.00	0.00	0.55	-0.28	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	37.43	0.00	-25.68	-2467.89	-0.35	-0.12
0.9 Dead+1.0 Wind 0 deg - No Ice	28.08	-0.00	-25.68	-2433.77	-0.26	-0.12
1.2 Dead+1.0 Wind 30 deg - No Ice	37.43	12.81	-22.24	-2137.18	-1230.67	-0.00
0.9 Dead+1.0 Wind 30 deg - No Ice	28.08	12.81	-22.24	-2107.66	-1213.50	0.00
1.2 Dead+1.0 Wind 60 deg - No Ice	37.43	22.69	-13.13	-1246.14	-2153.03	0.11
0.9 Dead+1.0 Wind 60 deg - No Ice	28.08	22.69	-13.13	-1229.10	-2123.23	0.12
1.2 Dead+1.0 Wind 90 deg - No Ice	37.43	25.73	0.00	0.67	-2470.34	0.19
0.9 Dead+1.0 Wind 90 deg - No Ice	28.08	25.73	0.00	0.50	-2435.98	0.21

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
1.2 Dead+1.0 Wind 120 deg - No Ice	37.43	22.19	12.84	1234.98	-2131.36	0.23
0.9 Dead+1.0 Wind 120 deg - No Ice	28.08	22.19	12.84	1217.66	-2101.68	0.24
1.2 Dead+1.0 Wind 150 deg - No Ice	37.43	13.22	22.96	2181.76	-1255.64	0.20
0.9 Dead+1.0 Wind 150 deg - No Ice	28.08	13.22	22.96	2151.50	-1238.24	0.21
1.2 Dead+1.0 Wind 180 deg - No Ice	37.43	0.00	26.27	2494.27	-0.35	0.12
0.9 Dead+1.0 Wind 180 deg - No Ice	28.08	-0.00	26.27	2459.66	-0.26	0.12
1.2 Dead+1.0 Wind 210 deg - No Ice	37.43	-12.81	22.24	2138.53	1229.98	0.00
0.9 Dead+1.0 Wind 210 deg - No Ice	28.08	-12.81	22.24	2108.67	1212.99	-0.00
1.2 Dead+1.0 Wind 240 deg - No Ice	37.43	-22.19	12.84	1234.98	2130.67	-0.11
0.9 Dead+1.0 Wind 240 deg - No Ice	28.08	-22.19	12.84	1217.66	2101.17	-0.12
1.2 Dead+1.0 Wind 270 deg - No Ice	37.43	-25.73	0.00	0.67	2469.65	-0.19
0.9 Dead+1.0 Wind 270 deg - No Ice	28.08	-25.73	0.00	0.50	2435.47	-0.21
1.2 Dead+1.0 Wind 300 deg - No Ice	37.43	-22.69	-13.13	-1246.15	2152.34	-0.23
0.9 Dead+1.0 Wind 300 deg - No Ice	28.08	-22.69	-13.13	-1229.10	2122.72	-0.24
1.2 Dead+1.0 Wind 330 deg - No Ice	37.43	-13.22	-22.96	-2180.42	1254.94	-0.20
0.9 Dead+1.0 Wind 330 deg - No Ice	28.08	-13.22	-22.96	-2150.50	1237.72	-0.21
1.2 Dead+1.0 Ice+1.0 Temp	61.76	0.00	0.00	0.96	-0.61	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	61.76	0.00	-5.60	-573.86	-0.64	0.02
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	61.76	2.79	-4.85	-496.84	-287.33	0.07
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	61.76	4.84	-2.80	-286.46	-497.30	0.10
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	61.76	5.59	0.00	1.04	-574.03	0.11
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	61.76	4.84	2.80	288.49	-497.21	0.08
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	61.76	2.79	4.85	498.92	-287.33	0.04
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	61.76	0.00	5.60	576.05	-0.64	-0.02
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	61.76	-2.79	4.85	498.92	286.06	-0.07
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	61.76	-4.84	2.80	288.49	495.93	-0.10
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	61.76	-5.59	0.00	1.04	572.75	-0.11
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	61.76	-4.84	-2.80	-286.46	496.02	-0.08
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	61.76	-2.79	-4.85	-496.84	286.06	-0.04
Dead+Wind 0 deg - Service	31.20	0.00	-5.29	-504.87	-0.28	-0.03
Dead+Wind 30 deg - Service	31.20	2.64	-4.58	-437.16	-252.19	-0.00
Dead+Wind 60 deg - Service	31.20	4.68	-2.71	-254.73	-441.06	0.02
Dead+Wind 90 deg - Service	31.20	5.30	0.00	0.56	-506.01	0.04
Dead+Wind 120 deg - Service	31.20	4.57	2.65	253.28	-436.60	0.05
Dead+Wind 150 deg - Service	31.20	2.73	4.73	447.18	-257.33	0.04
Dead+Wind 180 deg - Service	31.20	0.00	5.41	511.14	-0.28	0.03
Dead+Wind 210 deg - Service	31.20	-2.64	4.58	438.28	251.62	0.00

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead+Wind 240 deg - Service	31.20	-4.57	2.65	253.28	436.03	-0.02
Dead+Wind 270 deg - Service	31.20	-5.30	0.00	0.56	505.44	-0.04
Dead+Wind 300 deg - Service	31.20	-4.68	-2.71	-254.73	440.49	-0.05
Dead+Wind 330 deg - Service	31.20	-2.73	-4.73	-446.05	256.76	-0.04

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
1	0.00	-31.20	0.00	0.00	31.20	0.00	0.000%
2	0.00	-37.43	-25.68	0.00	37.43	25.68	0.000%
3	0.00	-28.08	-25.68	0.00	28.08	25.68	0.000%
4	12.81	-37.43	-22.24	-12.81	37.43	22.24	0.000%
5	12.81	-28.08	-22.24	-12.81	28.08	22.24	0.000%
6	22.69	-37.43	-13.13	-22.69	37.43	13.13	0.000%
7	22.69	-28.08	-13.13	-22.69	28.08	13.13	0.000%
8	25.73	-37.43	0.00	-25.73	37.43	0.00	0.000%
9	25.73	-28.08	0.00	-25.73	28.08	-0.00	0.000%
10	22.19	-37.43	12.84	-22.19	37.43	-12.84	0.000%
11	22.19	-28.08	12.84	-22.19	28.08	-12.84	0.000%
12	13.22	-37.43	22.96	-13.22	37.43	-22.96	0.000%
13	13.22	-28.08	22.96	-13.22	28.08	-22.96	0.000%
14	0.00	-37.43	26.27	0.00	37.43	-26.27	0.000%
15	0.00	-28.08	26.27	0.00	28.08	-26.27	0.000%
16	-12.81	-37.43	22.24	12.81	37.43	-22.24	0.000%
17	-12.81	-28.08	22.24	12.81	28.08	-22.24	0.000%
18	-22.19	-37.43	12.84	22.19	37.43	-12.84	0.000%
19	-22.19	-28.08	12.84	22.19	28.08	-12.84	0.000%
20	-25.73	-37.43	0.00	25.73	37.43	0.00	0.000%
21	-25.73	-28.08	0.00	25.73	28.08	-0.00	0.000%
22	-22.69	-37.43	-13.13	22.69	37.43	13.13	0.000%
23	-22.69	-28.08	-13.13	22.69	28.08	13.13	0.000%
24	-13.22	-37.43	-22.96	13.22	37.43	22.96	0.000%
25	-13.22	-28.08	-22.96	13.22	28.08	22.96	0.000%
26	0.00	-61.76	0.00	0.00	61.76	0.00	0.000%
27	0.00	-61.76	-5.60	0.00	61.76	5.60	0.000%
28	2.79	-61.76	-4.85	-2.79	61.76	4.85	0.000%
29	4.84	-61.76	-2.80	-4.84	61.76	2.80	0.000%
30	5.59	-61.76	0.00	-5.59	61.76	-0.00	0.000%
31	4.84	-61.76	2.80	-4.84	61.76	-2.80	0.000%
32	2.79	-61.76	4.85	-2.79	61.76	-4.85	0.000%
33	0.00	-61.76	5.60	0.00	61.76	-5.60	0.000%
34	-2.79	-61.76	4.85	2.79	61.76	-4.85	0.000%
35	-4.84	-61.76	2.80	4.84	61.76	-2.80	0.000%
36	-5.59	-61.76	0.00	5.59	61.76	-0.00	0.000%
37	-4.84	-61.76	-2.80	4.84	61.76	2.80	0.000%
38	-2.79	-61.76	-4.85	2.79	61.76	4.85	0.000%
39	0.00	-31.20	-5.29	0.00	31.20	5.29	0.000%
40	2.64	-31.20	-4.58	-2.64	31.20	4.58	0.000%
41	4.68	-31.20	-2.71	-4.68	31.20	2.71	0.000%
42	5.30	-31.20	0.00	-5.30	31.20	0.00	0.000%
43	4.57	-31.20	2.65	-4.57	31.20	-2.65	0.000%
44	2.73	-31.20	4.73	-2.73	31.20	-4.73	0.000%
45	0.00	-31.20	5.41	0.00	31.20	-5.41	0.000%
46	-2.64	-31.20	4.58	2.64	31.20	-4.58	0.000%
47	-4.57	-31.20	2.65	4.57	31.20	-2.65	0.000%
48	-5.30	-31.20	0.00	5.30	31.20	0.00	0.000%
49	-4.68	-31.20	-2.71	4.68	31.20	2.71	0.000%
50	-2.73	-31.20	-4.73	2.73	31.20	4.73	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	5	0.00000001	0.00008948
3	Yes	4	0.00000001	0.00091565
4	Yes	6	0.00000001	0.00054272
5	Yes	6	0.00000001	0.00015984
6	Yes	6	0.00000001	0.00054347
7	Yes	6	0.00000001	0.00015967
8	Yes	5	0.00000001	0.00007942
9	Yes	4	0.00000001	0.00083066
10	Yes	6	0.00000001	0.00054606
11	Yes	6	0.00000001	0.00016113
12	Yes	6	0.00000001	0.00054797
13	Yes	6	0.00000001	0.00016009
14	Yes	5	0.00000001	0.00008914
15	Yes	4	0.00000001	0.00091148
16	Yes	6	0.00000001	0.00054448
17	Yes	6	0.00000001	0.00016044
18	Yes	6	0.00000001	0.00054359
19	Yes	6	0.00000001	0.00016025
20	Yes	5	0.00000001	0.00007940
21	Yes	4	0.00000001	0.00083049
22	Yes	6	0.00000001	0.00054104
23	Yes	6	0.00000001	0.00015880
24	Yes	6	0.00000001	0.00055394
25	Yes	6	0.00000001	0.00016232
26	Yes	4	0.00000001	0.00000001
27	Yes	6	0.00000001	0.00026643
28	Yes	6	0.00000001	0.00037039
29	Yes	6	0.00000001	0.00036802
30	Yes	6	0.00000001	0.00026598
31	Yes	6	0.00000001	0.00037068
32	Yes	6	0.00000001	0.00036997
33	Yes	6	0.00000001	0.00026688
34	Yes	6	0.00000001	0.00036908
35	Yes	6	0.00000001	0.00037079
36	Yes	6	0.00000001	0.00026581
37	Yes	6	0.00000001	0.00036808
38	Yes	6	0.00000001	0.00036944
39	Yes	4	0.00000001	0.00022928
40	Yes	5	0.00000001	0.00011217
41	Yes	5	0.00000001	0.00011308
42	Yes	4	0.00000001	0.00022661
43	Yes	5	0.00000001	0.00011454
44	Yes	5	0.00000001	0.00011467
45	Yes	4	0.00000001	0.00023014
46	Yes	5	0.00000001	0.00011347
47	Yes	5	0.00000001	0.00011302
48	Yes	4	0.00000001	0.00022655
49	Yes	5	0.00000001	0.00011167
50	Yes	5	0.00000001	0.00011827

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	130 - 110	23.707	44	1.6427	0.0006
L2	110 - 89.92	16.996	44	1.5241	0.0011
L3	94 - 74	12.263	44	1.2860	0.0005
L4	74 - 54	7.394	44	1.0109	0.0002

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L5	54 - 44.83	3.837	44	0.6876	0.0001
L6	49.415 - 29.415	3.212	44	0.6141	0.0001
L7	29.415 - 9.415	1.110	44	0.3687	0.0001
L8	9.415 - 0	0.110	44	0.1124	0.0000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
130.00	PD440-140	44	23.707	1.6427	0.0006	17483
128.00	BXA-80080/4CF_FP w/ Pipe Mount	44	23.018	1.6363	0.0006	17483
118.00	FFVV-65B-R2 w/ Mount Pipe	44	19.611	1.5928	0.0009	7284
106.00	VHLP3-11W-6WH/A	44	15.746	1.4724	0.0010	4334
100.00	AIR 6449 B41 w/ Mount Pipe	44	13.955	1.3808	0.0008	4278
87.00	VHLP3-11W-6WH/A	44	10.420	1.1867	0.0003	3982
86.00	10' Omni	44	10.168	1.1733	0.0003	3949
85.00	VHLP3-11W-6WH/A	44	9.920	1.1600	0.0003	3918
59.00	Side Arm Mount	44	4.598	0.7711	0.0001	3471
57.00	Side Arm Mount	44	4.283	0.7376	0.0001	3468
50.00	GPS_A	44	3.288	0.6230	0.0001	4542

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	130 - 110	115.556	12	8.0263	0.0030
L2	110 - 89.92	82.881	12	7.4540	0.0050
L3	94 - 74	59.829	12	6.2884	0.0023
L4	74 - 54	36.091	12	4.9414	0.0010
L5	54 - 44.83	18.731	12	3.3595	0.0006
L6	49.415 - 29.415	15.680	12	3.0003	0.0005
L7	29.415 - 9.415	5.417	12	1.8005	0.0003
L8	9.415 - 0	0.536	12	0.5486	0.0001

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
130.00	PD440-140	12	115.556	8.0263	0.0030	3743
128.00	BXA-80080/4CF_FP w/ Pipe Mount	12	112.202	7.9961	0.0028	3743
118.00	FFVV-65B-R2 w/ Mount Pipe	12	95.617	7.7876	0.0045	1557
106.00	VHLP3-11W-6WH/A	12	76.798	7.2019	0.0050	920
100.00	AIR 6449 B41 w/ Mount Pipe	12	68.071	6.7530	0.0037	902
87.00	VHLP3-11W-6WH/A	12	50.844	5.8021	0.0015	832
86.00	10' Omni	12	49.618	5.7365	0.0014	825
85.00	VHLP3-11W-6WH/A	12	48.407	5.6714	0.0013	818
59.00	Side Arm Mount	12	22.444	3.7680	0.0007	717
57.00	Side Arm Mount	12	20.908	3.6041	0.0007	715
50.00	GPS_A	12	16.054	3.0440	0.0005	935

Compression Checks

Pole Design Data

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
L1	130 - 110 (1)	TP20.6612x16.26x0.2188	20.00	0.00	0.0	14.402 4	-6.74	842.54	0.008
L2	110 - 89.92 (2)	TP25.08x20.6612x0.2188	20.08	0.00	0.0	16.883 0	-11.55	987.66	0.012
L3	89.92 - 74 (3)	TP28.1438x23.7446x0.31 25	20.00	0.00	0.0	28.005 2	-15.07	1638.30	0.009
L4	74 - 54 (4)	TP32.543x28.1438x0.312 5	20.00	0.00	0.0	32.431 9	-19.95	1897.27	0.011
L5	54 - 44.83 (5)	TP34.56x32.543x0.3125	9.17	0.00	0.0	33.446 7	-21.16	1956.63	0.011
L6	44.83 - 29.415 (6)	TP37.1987x32.9265x0.37 5	20.00	0.00	0.0	44.464 6	-27.74	2601.18	0.011
L7	29.415 - 9.415 (7)	TP41.5996x37.1987x0.37 5	20.00	0.00	0.0	49.778 7	-34.21	2912.05	0.012
L8	9.415 - 0 (8)	TP43.8x41.5996x0.375	9.42	0.00	0.0	52.435 7	-37.42	3067.49	0.012

Pole Bending Design Data

Section No.	Elevation	Size	M_{ux}	ϕM_{nx}	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy}	ϕM_{ny}	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
	ft		kip-ft	kip-ft		kip-ft	kip-ft	
L1	130 - 110 (1)	TP20.6612x16.26x0.2188	158.28	423.01	0.374	0.00	423.01	0.000
L2	110 - 89.92 (2)	TP25.08x20.6612x0.2188	379.71	547.32	0.694	0.00	547.32	0.000
L3	89.92 - 74 (3)	TP28.1438x23.7446x0.31 25	762.00	1137.43	0.670	0.00	1137.43	0.000
L4	74 - 54 (4)	TP32.543x28.1438x0.312 5	1189.42	1449.03	0.821	0.00	1449.03	0.000
L5	54 - 44.83 (5)	TP34.56x32.543x0.3125	1293.05	1522.38	0.849	0.00	1522.38	0.000
L6	44.83 - 29.415 (6)	TP37.1987x32.9265x0.37 5	1767.10	2311.92	0.764	0.00	2311.92	0.000
L7	29.415 - 9.415 (7)	TP41.5996x37.1987x0.37 5	2270.73	2771.75	0.819	0.00	2771.75	0.000
L8	9.415 - 0 (8)	TP43.8x41.5996x0.375	2517.28	3005.39	0.838	0.00	3005.39	0.000

Pole Shear Design Data

Section No.	Elevation	Size	Actual V_u	ϕV_n	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u	ϕT_n	Ratio $\frac{T_u}{\phi T_n}$
	ft		K	K		kip-ft	kip-ft	
L1	130 - 110 (1)	TP20.6612x16.26x0.2188	11.14	252.76	0.044	0.37	454.51	0.001
L2	110 - 89.92 (2)	TP25.08x20.6612x0.2188	17.52	296.30	0.059	0.82	624.56	0.001
L3	89.92 - 74 (3)	TP28.1438x23.7446x0.31 25	20.44	491.49	0.042	0.20	1203.23	0.000
L4	74 - 54 (4)	TP32.543x28.1438x0.312 5	22.41	569.18	0.039	0.21	1613.68	0.000
L5	54 - 44.83 (5)	TP34.56x32.543x0.3125	22.81	586.99	0.039	0.21	1716.24	0.000
L6	44.83 - 29.415 (6)	TP37.1987x32.9265x0.37 5	24.50	780.35	0.031	0.20	2527.66	0.000
L7	29.415 -	TP41.5996x37.1987x0.37	25.88	873.62	0.030	0.20	3167.93	0.000

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
	9.415 (7)	5						
L8	9.415 - 0 (8)	TP43.8x41.5996x0.375	26.51	920.25	0.029	0.20	3515.15	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	130 - 110 (1)	0.008	0.374	0.000	0.044	0.001	0.384	1.000	4.8.2
L2	110 - 89.92 (2)	0.012	0.694	0.000	0.059	0.001	0.709	1.000	4.8.2
L3	89.92 - 74 (3)	0.009	0.670	0.000	0.042	0.000	0.681	1.000	4.8.2
L4	74 - 54 (4)	0.011	0.821	0.000	0.039	0.000	0.833	1.000	4.8.2
L5	54 - 44.83 (5)	0.011	0.849	0.000	0.039	0.000	0.862	1.000	4.8.2
L6	44.83 - 29.415 (6)	0.011	0.764	0.000	0.031	0.000	0.776	1.000	4.8.2
L7	29.415 - 9.415 (7)	0.012	0.819	0.000	0.030	0.000	0.832	1.000	4.8.2
L8	9.415 - 0 (8)	0.012	0.838	0.000	0.029	0.000	0.851	1.000	4.8.2

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	130 - 110	Pole	TP20.6612x16.26x0.2188	1	-6.74	842.54	38.4	Pass
L2	110 - 89.92	Pole	TP25.08x20.6612x0.2188	2	-11.55	987.66	70.9	Pass
L3	89.92 - 74	Pole	TP28.1438x23.7446x0.3125	3	-15.07	1638.30	68.1	Pass
L4	74 - 54	Pole	TP32.543x28.1438x0.3125	4	-19.95	1897.27	83.3	Pass
L5	54 - 44.83	Pole	TP34.56x32.543x0.3125	5	-21.16	1956.63	86.2	Pass
L6	44.83 - 29.415	Pole	TP37.1987x32.9265x0.375	6	-27.74	2601.18	77.6	Pass
L7	29.415 - 9.415	Pole	TP41.5996x37.1987x0.375	7	-34.21	2912.05	83.2	Pass
L8	9.415 - 0	Pole	TP43.8x41.5996x0.375	8	-37.42	3067.49	85.1	Pass
							Summary	
						Pole (L5)	86.2	Pass
						RATING =	**86.2**	**Pass**

APPENDIX B

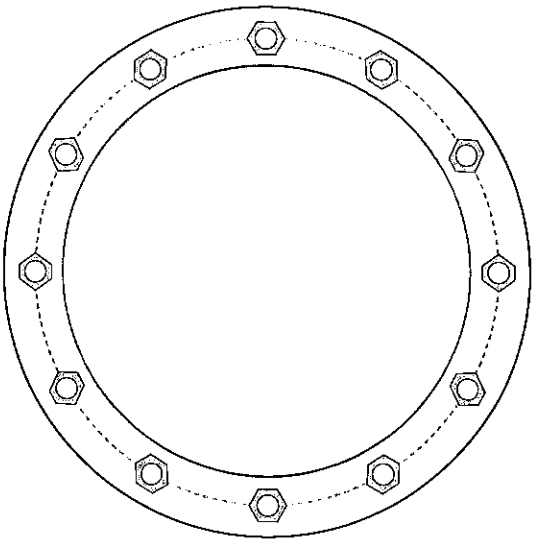
ADDITIONAL CALCULATIONS

Monopole Base Plate Connection

Site Info	
Work Order #:	10710.NJER01117A
Site Name:	NJER01117A

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	No
l_{ar} (in)	0

Applied Loads	
Moment (kip-ft)	2517.28
Axial Force (kips)	37.43
Shear Force (kips)	26.49



Connection Properties

Anchor Rod Data

(12) 2-1/4" ø bolts (A615-75 N; Fy=75 ksi, Fu=100 ksi) on 49.75" BC

Base Plate Data

56.5" OD x 2.5" Plate (A572-60; Fy=60 ksi, Fu=75 ksi)

Stiffener Data

N/A

Pole Data

43.8" x 0.375" 12-sided pole (A572-65; Fy=65 ksi, Fu=80 ksi)

Analysis Results

Anchor Rod Summary		*(units of kips, kip-in)*
Pu_c = 205.34	ϕPn_c = 268.39	**Stress Rating**
Vu = 2.21	ϕVn = 120.77	**76.5%**
Mu = n/a	ϕMn = n/a	**Pass**

Base Plate Summary		
Max Stress (ksi):	22.91	(Flexural)
Allowable Stress (ksi):	54	
Stress Rating:	**42.4%**	Pass

Analysis Date: 10/11/2022

Drilled Pier Foundation

Work Order # :	10710.NJJER01117A
Site Name:	NJJER01117A

TIA-222 Revison:	H
Tower Type:	Monopole

Applied Loads	Comp.	Uplift
Moment (kip-ft)	2517.28	
Axial Force (kips)	37.43	
Shear Force (kips)	26.49	

Material Properties		
Concrete Strength, f'c:	3	ksi
Rebar Strength, Fy:	60	ksi
Tie Yield Strength, Fyt:	40	ksi

Pier Design Data		
Depth	23	ft
Ext. Above Grade	0.5	ft
Pier Section 1		
From 0.5' above grade to 23' below grade		
Pier Diameter	6.5	ft
Rebar Quantity	23	
Rebar Size	11	
Clear Cover to Ties	4.5	in
Tie Size	4	
Tie Spacing	12	in

Rebar & Pier Options

Embedded Pole Inputs

Belled Pier Inputs

Analysis Results		
Soil Lateral Check	*Compression*	*Uplift*
$D_{v=0}$ (ft from TOC)	6.58	-
Soil Safety Factor	3.26	-
Max Moment (kip-ft)	2660.74	-
Rating	*40.8%*	-
Soil Vertical Check	*Compression*	*Uplift*
Skin Friction (kips)	159.29	-
End Bearing (kips)	812.45	-
Weight of Concrete (kips)	140.36	-
Total Capacity (kips)	971.74	-
Axial (kips)	177.79	-
Rating	*18.3%*	-
Reinforced Concrete Flexure	*Compression*	*Uplift*
Critical Depth (ft from TOC)	6.29	-
Critical Moment (kip-ft)	2660.19	-
Critical Moment Capacity	5077.10	-
Rating	*52.4%*	-
Reinforced Concrete Shear	*Compression*	*Uplift*
Critical Depth (ft from TOC)	17.37	-
Critical Shear (kip)	342.08	-
Critical Shear Capacity	516.65	-
Rating	*66.2%*	-

Soil Interaction Rating	**40.8%**
Structural Foundation Rating	**66.2%**

Soil Profile

Groundwater Depth	N/A	# of Layers	3

Layer	Top (ft)	Bottom (ft)	Thickness (ft)	γ_{soil} (pcf)	$\gamma_{concrete}$ (pcf)	Cohesion (ksf)	Angle of Friction (degrees)	Calculated Ultimate Skin Friction Comp (ksf)	Calculated Ultimate Skin Friction Uplift (ksf)	Ultimate Skin Friction Comp Override (ksf)	Ultimate Skin Friction Uplift Override (ksf)	Ult. Net Bearing Capacity (ksf)	SPT Blow Count	Soil Type
1	0	3.33	3.33	115	150			0.000	0.000					Cohesionless
2	3.33	8	4.67	115	150		30	0.000	0.000	0.30	0.30			Cohesionless
3	8	23	15	115	150		38	0.000	0.000	0.60	0.60	30		Cohesionless

Seismic Calculations

Work Order #: 10710.NJJER01117A
Site Name: NJJER01117A
Rev: 1

Location

	Decimal Degrees		Deg	Min	Sec
Lat:	41.280800	+	41	16	50.88
Long:	-73.276633	-	73	16	35.88

Code and Site Parameters

Seismic Design Code: TIA-222-H-1
Site Soil: D (Default) Stiff Soil (Default)
Risk Category: III

USGS Seismic Reference

S_S:	0.2160	g
S_1:	0.0550	g
T_L:	6	s

Seismic Design Category Determination

Importance Factor, I_e:	1.25
Acceleration-based site coefficient, F_a:	1.6000
Velocity-based site coefficient, F_v:	2.4000

Design spectral response acceleration short period, S_{DS}:	0.2304	g
Design spectral response acceleration 1 s period, S_{D1}:	0.0880	g
T_s:	0.3819	

Seismic Design Category Based on S_{DS}:	B
Seismic Design Category Based on S_{D1}:	B
Seismic Design Category Based on S_1:	N/A

Controlling Seismic Design Category:

Analysis Date: 10/11/2022

Work Order #:	10710.NJJER01117A	
Site Name:	NJJER01117A	Rev: 1

Tower Details

Tower Type:	Tapered Monopole		
Height, h:	130	ft	
Effective Seismic Weight, W:	31.17	kips	
Amplification Factor, A_s:	1.0		2.7.8.1

Seismic Base Shear

Response Modification Factor, R:	1.5		
Discrete Appurtenance Weight in Top 1/3 of Structure, W_u:	8.967359	kips	
W_t:	22.2073568	kips	
E:	29000.0	ksi	
g:	386.088	in/s^2	
Average Moment of Inertia, I_{avg}:	4429.701373	in^4	
F_a:	0.264333527	hz	
Approximate Fundamental Period Monopole, T_a:	3.7831	s	2.7.7.1.3.3
Seismic Response Coefficient, C_s	0.1920		2.7.7.1.1
Seismic Response Coefficient Max 1, C_{smax}	0.0194		2.7.7.1.1
Seismic Response Coefficient Max 2, C_{smax}	N/A		2.7.7.1.1
Seismic Response Coefficient Min 1, C_{smin}	0.0300		2.7.7.1.1
Seismic Response Coefficient Min 2, C_{smin}	N/A		2.7.7.1.1
Controlling Seismic Response Coefficient, C_{sc}	0.0300		
Seismic Base Shear, V		kips	2.7.7.1.1

Vertical Distribution Factors

Period Related Exponent, k:	2.000
Sum of $w_i h_i^k$	195182.39

Analysis Date: 10/11/2022

Section Number	Length	Top Height	Mid Height, h,	Section Weight, w,	w,h,	C,,	F,	F,,
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1 - 2	10.00	120.00	115.00	0.4630	6123.70	0.0314	0.0293	0.0213
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
2 - 2	10.00	109.92	104.92	0.5161	5681.80	0.0291	0.0272	0.0238
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
3 - 1	10.00	94.00	89.00	0.8388	6643.97	0.0340	0.0318	0.0387
[illegible]	10.00	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4 - 1	10.00	74.00	69.00	0.9892	4709.55	0.0241	0.0226	0.0456
[illegible]	10.00	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
5 - 1	9.17	54.00	49.42	1.0422	2544.79	0.0130	0.0122	0.0480
[illegible]	10.00	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
6 - 2	10.00	39.42	34.42	1.4670	1737.56	0.0089	0.0083	0.0676
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
7 - 2	10.00	19.42	14.42	1.6463	342.09	0.0018	0.0016	0.0759
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
			Sum	[redacted]				

Name	h,	w,	w_h'	C_	F_	F_
amphenol BXA-80080/4CF_FP w/ Pipe Mount	128.00	0.0400	655.36	0.0034	0.0031	0.0018
amphenol BXA-80080/4CF_FP w/ Pipe Mount	128.00	0.0400	655.36	0.0034	0.0031	0.0018
(2) commscope JAHH-65B-R3B_TIA w/ Mount Pipe	128.00	0.1800	2949.12	0.0151	0.0141	0.0083
samsung telecommunications MT6407-77A	128.00	0.0900	1474.56	0.0076	0.0071	0.0041
samsung telecommunications MT6407-77A	128.00	0.0900	1474.56	0.0076	0.0071	0.0041
samsung telecommunications XXDWMM-12.5-65-8T-CBRS	128.00	0.0200	327.68	0.0017	0.0016	0.0009
commscope CBC78T-DS-43-2X	128.00	0.0200	327.68	0.0017	0.0016	0.0009
commscope CBC78T-DS-43-2X	128.00	0.0200	327.68	0.0017	0.0016	0.0009
samsung telecommunications RT4401-48A	128.00	0.0200	327.68	0.0017	0.0016	0.0009
samsung telecommunications B2/B66 RRH-BR049	128.00	0.0800	1310.72	0.0067	0.0063	0.0037
samsung telecommunications B2/B66 RRH-BR049	128.00	0.0800	1310.72	0.0067	0.0063	0.0037
samsung telecommunications B5/B13 RRH-BR04C	128.00	0.0700	1146.88	0.0059	0.0055	0.0032
samsung telecommunications B5/B13 RRH-BR04C	128.00	0.0700	1146.88	0.0059	0.0055	0.0032
(2) Pipe Mount	128.00	0.0600	983.04	0.0050	0.0047	0.0028
tower mounts Platform Mount [LP 601-1_KCKR]	128.00	1.3970	22888.45	0.1173	0.1097	0.0644
commscope FFVV-65B-R2 w/ Mount Pipe	118.00	0.1000	1392.40	0.0071	0.0067	0.0046
fujitsu TA08025-B605	118.00	0.0700	974.68	0.0050	0.0047	0.0032
fujitsu TA08025-B605	118.00	0.0700	974.68	0.0050	0.0047	0.0032
fujitsu TA08025-B604	118.00	0.0600	835.44	0.0043	0.0040	0.0028
raycap RDIDC-9181-PF-48	118.00	0.0200	278.48	0.0014	0.0013	0.0009
(2) Pipe Mount	118.00	0.0600	835.44	0.0043	0.0040	0.0028
(2) Pipe Mount	118.00	0.0600	835.44	0.0043	0.0040	0.0028
ericsson AIR 6449 B41 w/ Mount Pipe	100.00	0.1300	1300.00	0.0067	0.0062	0.0060
ericsson AIR 6449 B41 w/ Mount Pipe	100.00	0.1300	1300.00	0.0067	0.0062	0.0060
ericsson AIR 32 B66Aa B2a w/ Mount Pipe	100.00	0.1500	1500.00	0.0077	0.0072	0.0069
rfs celwave APXVAARR24_43-U-NA20_TIA w/ Mount Pipe	100.00	0.1900	1900.00	0.0097	0.0091	0.0088
rfs celwave APXVAARR24_43-U-NA20_TIA w/ Mount Pipe	100.00	0.1900	1900.00	0.0097	0.0091	0.0088
ericsson KRY 112 144/2	100.00	0.0097	97.00	0.0005	0.0005	0.0004
ericsson KRY 112 144/2	100.00	0.0097	97.00	0.0005	0.0005	0.0004
commscope SDX1926Q-43	100.00	0.0062	61.73	0.0003	0.0003	0.0003
commscope SDX1926Q-43	100.00	0.0062	61.73	0.0003	0.0003	0.0003
commscope SDX1926Q-43	100.00	0.0062	61.73	0.0003	0.0003	0.0003
ericsson RADIO 4449 B71+B85	100.00	0.0700	700.00	0.0036	0.0034	0.0032
ericsson RADIO 4449 B71+B85	100.00	0.0700	700.00	0.0036	0.0034	0.0032
ericsson RADIO 4449 B71+B85	100.00	0.0700	700.00	0.0036	0.0034	0.0032
ericsson RRUS 4415 B25	100.00	0.0400	400.00	0.0020	0.0019	0.0018
ericsson RRUS 4415 B25	100.00	0.0400	400.00	0.0020	0.0019	0.0018
ericsson RRUS 4415 B25	100.00	0.0400	400.00	0.0020	0.0019	0.0018
Platform Mount	100.00	1.3433	13433.00	0.0688	0.0644	0.0619
Dish Pipe Mount	87.00	0.0650	491.99	0.0025	0.0024	0.0030
10' Omni	86.00	0.0600	443.76	0.0023	0.0021	0.0028
Small Dipole	86.00	0.0073	54.14	0.0003	0.0003	0.0003
Side Arm Mount	86.00	0.0650	490.74	0.0025	0.0023	0.0030
Dish Pipe Mount	85.00	0.0650	469.63	0.0024	0.0023	0.0030
Side Arm Mount	59.00	0.0650	226.27	0.0012	0.0011	0.0030
yagi antennas 2'x1' Yagi	59.00	0.0200	69.62	0.0004	0.0003	0.0009
Side Arm Mount	57.00	0.0650	211.19	0.0011	0.0010	0.0030
Small Dipole	57.00	0.0073	23.78	0.0001	0.0001	0.0003
gps GPS_A	50.00	0.0009	2.18	0.0000	0.0000	0.0000
VHLP3-11W-6WH/A	106.00	0.0400	449.44	0.0023	0.0022	0.0018
VHLP3-11W-6WH/A	87.00	0.0400	302.76	0.0016	0.0015	0.0018
VHLP3-11W-6WH/A	85.00	0.0400	289.00	0.0015	0.0014	0.0018
		Sum				

Name	Start Height	End Height	h_	w_	w_h_	C_	F_	F_
7/8 From 0 to 130	110.00	120.00	115.00	0.0054	71.42	0.0004	0.0003	0.0002
7/8 From 0 to 130	90.00	100.00	95.00	0.0054	48.74	0.0002	0.0002	0.0002
7/8 From 0 to 130	70.00	80.00	75.00	0.0054	30.38	0.0002	0.0001	0.0002
7/8 From 0 to 130	50.00	60.00	55.00	0.0054	16.34	0.0001	0.0001	0.0002
7/8 From 0 to 130	30.00	40.00	35.00	0.0054	6.62	0.0000	0.0000	0.0002
7/8 From 0 to 130	10.00	20.00	15.00	0.0054	1.22	0.0000	0.0000	0.0002
(2) MLE Hybrid 3Power/6Fiber RL 2(1-1/4) From 0 to 128	120.00	128.00	124.00	0.0160	246.02	0.0013	0.0012	0.0007
(2) MLE Hybrid 3Power/6Fiber RL 2(1-1/4) From 0 to 128	100.00	110.00	105.00	0.0200	220.50	0.0011	0.0011	0.0009
(2) MLE Hybrid 3Power/6Fiber RL 2(1-1/4) From 0 to 128	80.00	90.00	85.00	0.0200	144.50	0.0007	0.0007	0.0009
(2) MLE Hybrid 3Power/6Fiber RL 2(1-1/4) From 0 to 128	60.00	70.00	65.00	0.0200	84.50	0.0004	0.0004	0.0009
(2) MLE Hybrid 3Power/6Fiber RL 2(1-1/4) From 0 to 128	40.00	50.00	45.00	0.0200	40.50	0.0002	0.0002	0.0009
(2) MLE Hybrid 3Power/6Fiber RL 2(1-1/4) From 0 to 128	20.00	30.00	25.00	0.0200	12.50	0.0001	0.0001	0.0009
(2) MLE Hybrid 3Power/6Fiber RL 2(1-1/4) From 0 to 128	0.00	10.00	5.00	0.0200	0.50	0.0000	0.0000	0.0009
(12) 7/8 From 0 to 128	110.00	120.00	115.00	0.0648	856.98	0.0044	0.0041	0.0030
(12) 7/8 From 0 to 128	90.00	100.00	95.00	0.0648	584.82	0.0030	0.0028	0.0030
(12) 7/8 From 0 to 128	70.00	80.00	75.00	0.0648	364.50	0.0019	0.0017	0.0030
(12) 7/8 From 0 to 128	50.00	60.00	55.00	0.0648	196.02	0.0010	0.0009	0.0030
(12) 7/8 From 0 to 128	30.00	40.00	35.00	0.0648	79.38	0.0004	0.0004	0.0030
(12) 7/8 From 0 to 128	10.00	20.00	15.00	0.0648	14.58	0.0001	0.0001	0.0030
1/2 From 0 to 128	120.00	128.00	124.00	0.0012	18.45	0.0001	0.0001	0.0001
1/2 From 0 to 128	100.00	110.00	105.00	0.0015	16.54	0.0001	0.0001	0.0001
1/2 From 0 to 128	80.00	90.00	85.00	0.0015	10.84	0.0001	0.0001	0.0001
1/2 From 0 to 128	60.00	70.00	65.00	0.0015	6.34	0.0000	0.0000	0.0001
1/2 From 0 to 128	40.00	50.00	45.00	0.0015	3.04	0.0000	0.0000	0.0001
1/2 From 0 to 128	20.00	30.00	25.00	0.0015	0.94	0.0000	0.0000	0.0001
1/2 From 0 to 128	0.00	10.00	5.00	0.0015	0.04	0.0000	0.0000	0.0001
(3) andrew EW63(ELLIPTICAL) From 0 to 85	70.00	80.00	75.00	0.0153	86.06	0.0004	0.0004	0.0007
(3) andrew EW63(ELLIPTICAL) From 0 to 85	50.00	60.00	55.00	0.0153	46.28	0.0002	0.0002	0.0007
(3) andrew EW63(ELLIPTICAL) From 0 to 85	30.00	40.00	35.00	0.0153	18.74	0.0001	0.0001	0.0007
(3) andrew EW63(ELLIPTICAL) From 0 to 85	10.00	20.00	15.00	0.0153	3.44	0.0000	0.0000	0.0007
(2) andrew EW63(ELLIPTICAL) From 85 to 87	85.00	87.00	86.00	0.0020	15.09	0.0001	0.0001	0.0001
andrew EW63(ELLIPTICAL) From 87 to 106	90.00	100.00	95.00	0.0051	46.03	0.0002	0.0002	0.0002
(3) huber and suhner MLC Hybrid 6Power/12Fiber(1-1/2") From 0 to 100	90.00	100.00	95.00	0.0295	266.28	0.0014	0.0013	0.0014
(3) huber and suhner MLC Hybrid 6Power/12Fiber(1-1/2") From 0 to 100	70.00	80.00	75.00	0.0295	165.97	0.0009	0.0008	0.0014
(3) huber and suhner MLC Hybrid 6Power/12Fiber(1-1/2") From 0 to 100	50.00	60.00	55.00	0.0295	89.25	0.0005	0.0004	0.0014
(3) huber and suhner MLC Hybrid 6Power/12Fiber(1-1/2") From 0 to 100	30.00	40.00	35.00	0.0295	36.14	0.0002	0.0002	0.0014
(3) huber and suhner MLC Hybrid 6Power/12Fiber(1-1/2") From 0 to 100	10.00	20.00	15.00	0.0295	6.64	0.0000	0.0000	0.0014
(6) 7/8 From 0 to 100	90.00	100.00	95.00	0.0324	292.41	0.0015	0.0014	0.0015
(6) 7/8 From 0 to 100	70.00	80.00	75.00	0.0324	182.25	0.0009	0.0009	0.0015
(6) 7/8 From 0 to 100	50.00	60.00	55.00	0.0324	98.01	0.0005	0.0005	0.0015

(6) 7/8 From 0 to 100	30.00	40.00	35.00	0.0324	39.69	0.0002	0.0002	0.0015
(6) 7/8 From 0 to 100	20.00	30.00	25.00	0.0324	20.25	0.0001	0.0001	0.0015
(6) 7/8 From 0 to 100	10.00	20.00	15.00	0.0324	7.29	0.0000	0.0000	0.0015
(6) 7/8 From 0 to 100	[illegible]	[illegible]	[illegible]	0.0324	[illegible]	0.0000	[illegible]	[illegible]
(6) 7/8 From 0 to 57	50.00	57.00	53.50	0.0227	64.92	0.0003	0.0003	0.0010
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(6) 7/8 From 0 to 57	30.00	40.00	35.00	0.0324	39.69	0.0002	0.0002	0.0015
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(6) 7/8 From 0 to 57	10.00	20.00	15.00	0.0324	7.29	0.0000	0.0000	0.0015
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(5) 7/8 From 57 to 59	57.00	59.00	58.00	0.0054	18.17	0.0001	0.0001	0.0002
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(4) 7/8 From 59 to 85	70.00	80.00	75.00	0.0216	121.50	0.0006	0.0006	0.0010
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(4) 7/8 From 59 to 85	59.00	60.00	59.50	0.0022	7.65	0.0000	0.0000	0.0001
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(2) 7/8 From 85 to 99	85.00	90.00	87.50	0.0054	41.34	0.0002	0.0002	0.0002
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1/2 From 0 to 50	30.00	40.00	35.00	0.0015	1.84	0.0000	0.0000	0.0001
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1/2 From 0 to 50	10.00	20.00	15.00	0.0015	0.34	0.0000	0.0000	0.0001
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(2) miscl Step Bolts From 0 to 130	120.00	130.00	125.00	0.0400	625.00	0.0032	0.0030	0.0018
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(2) miscl Step Bolts From 0 to 130	100.00	110.00	105.00	0.0400	441.00	0.0023	0.0021	0.0018
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(2) miscl Step Bolts From 0 to 130	80.00	90.00	85.00	0.0400	289.00	0.0015	0.0014	0.0018
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(2) miscl Step Bolts From 0 to 130	60.00	70.00	65.00	0.0400	169.00	0.0009	0.0008	0.0018
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(2) miscl Step Bolts From 0 to 130	40.00	50.00	45.00	0.0400	81.00	0.0004	0.0004	0.0018
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(2) miscl Step Bolts From 0 to 130	20.00	30.00	25.00	0.0400	25.00	0.0001	0.0001	0.0018
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(2) miscl Step Bolts From 0 to 130	0.00	10.00	5.00	0.0400	1.00	0.0000	0.0000	0.0018
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
miscl Safety Line 3/8 From 0 to 130	110.00	120.00	115.00	0.0022	29.10	0.0001	0.0001	0.0001
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
miscl Safety Line 3/8 From 0 to 130	90.00	100.00	95.00	0.0022	19.86	0.0001	0.0001	0.0001
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
miscl Safety Line 3/8 From 0 to 130	70.00	80.00	75.00	0.0022	12.38	0.0001	0.0001	0.0001
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
miscl Safety Line 3/8 From 0 to 130	50.00	60.00	55.00	0.0022	6.66	0.0000	0.0000	0.0001
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
miscl Safety Line 3/8 From 0 to 130	30.00	40.00	35.00	0.0022	2.70	0.0000	0.0000	0.0001
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
miscl Safety Line 3/8 From 0 to 130	10.00	20.00	15.00	0.0022	0.50	0.0000	0.0000	0.0001
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
CU12PSM9P6XXX_6AWG From 0 to 118	110.00	118.00	114.00	0.0188	243.91	0.0012	0.0012	0.0009
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
CU12PSM9P6XXX_6AWG From 0 to 118	90.00	100.00	95.00	0.0235	211.73	0.0011	0.0010	0.0011
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
CU12PSM9P6XXX_6AWG From 0 to 118	70.00	80.00	75.00	0.0235	131.96	0.0007	0.0006	0.0011
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
CU12PSM9P6XXX_6AWG From 0 to 118	50.00	60.00	55.00	0.0235	70.97	0.0004	0.0003	0.0011
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
CU12PSM9P6XXX_6AWG From 0 to 118	30.00	40.00	35.00	0.0235	28.74	0.0001	0.0001	0.0011
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
CU12PSM9P6XXX_6AWG From 0 to 118	10.00	20.00	15.00	0.0235	5.28	0.0000	0.0000	0.0011
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
PL1"x6" - Reinforcement From 0 to 70	60.00	70.00	65.00	0.2042	862.58	0.0044	0.0041	0.0094
PL1"x6" - Reinforcement From 0 to 70	50.00	60.00	55.00	0.2042	617.58	0.0032	[illegible]	[illegible]
PL1"x6" - Reinforcement From 0 to 70	40.00	50.00	45.00	0.2042	413.42	0.0021	0.0020	0.0094
PL1"x6" - Reinforcement From 0 to 70	30.00	40.00	35.00	0.2042	250.10	0.0013	0.0012	0.0094
PL1"x6" - Reinforcement From 0 to 70	20.00	30.00	25.00	0.2042	127.60	0.0007	0.0006	0.0094
PL1"x6" - Reinforcement From 0 to 70	10.00	20.00	15.00	0.2042	45.94	0.0002	0.0002	0.0094
PL1"x6" - Reinforcement From 0 to 70	0.00	10.00	5.00	0.2042	5.10	0.0000	0.0000	0.0094
PL1"x6" - Reinforcement From 0 to 70	60.00	70.00	65.00	0.2042	862.58	0.0044	0.0041	0.0094
PL1"x6" - Reinforcement From 0 to 70	50.00	60.00	55.00	0.2042	617.58	0.0032	0.0030	0.0094
PL1"x6" - Reinforcement From 0 to 70	40.00	50.00	45.00	0.2042	413.42	0.0021	0.0020	0.0094
PL1"x6" - Reinforcement From 0 to 70	30.00	40.00	35.00	0.2042	250.10	0.0013	0.0012	0.0094
PL1"x6" - Reinforcement From 0 to 70	20.00	30.00	25.00	0.2042	127.60	0.0007	0.0006	0.0094
PL1"x6" - Reinforcement From 0 to 70	10.00	20.00	15.00	0.2042	45.94	0.0002	0.0002	0.0094
PL1"x6" - Reinforcement From 0 to 70	0.00	10.00	5.00	0.2042	5.10	0.0000	0.0000	0.0094
PL1"x6" - Reinforcement From 0 to 70	60.00	70.00	65.00	0.2042	862.58	0.0044	0.0041	0.0094
PL1"x6" - Reinforcement From 0 to 70	50.00	60.00	55.00	0.2042	617.58	0.0032	0.0030	0.0094
PL1"x6" - Reinforcement From 0 to 70	40.00	50.00	45.00	0.2042	413.42	0.0021	0.0020	0.0094
PL1"x6" - Reinforcement From 0 to 70	30.00	40.00	35.00	0.2042	250.10	0.0013	0.0012	0.0094
PL1"x6" - Reinforcement From 0 to 70	20.00	30.00	25.00	0.2042	127.60	0.0007	0.0006	0.0094
PL1"x6" - Reinforcement From 0 to 70	10.00	20.00	15.00	0.2042	45.94	0.0002	0.0002	0.0094
PL1"x6" - Reinforcement From 0 to 70	0.00	10.00	5.00	0.2042	5.10	0.0000	0.0000	0.0094
			Sum	[redacted]				

Municipality	Basic Design Wind Speeds, V (mph)				Allowable Stress Design Wind Speeds, V_{asd} (mph)				Ground Snow Load p_g (psf)	MCE Ground Accelerations		Wind-Borne Debris Region[1]		Hurricane-Prone Region
	Risk Cat. I	Risk Cat. II	Risk Cat. III	Risk Cat. IV	Risk Cat. I	Risk Cat. II	Risk Cat. III	Risk Cat. IV		S_S (g)	S_1 (g)	Risk Cat. III Occup. I-2	Risk Cat. IV	
New Milford	110	115	125	130	85	89	97	101	35	0.198	0.055			
Newington	110	120	130	135	85	93	101	105	30	0.195	0.055			Yes
Newtown	110	120	130	130	85	93	101	101	30	0.209	0.055			Yes
Norfolk	105	115	125	130	81	89	97	101	40	0.165	0.054			
North Branford	115	125	135	135	89	97	105	105	30	0.204	0.054			Yes
North Canaan	105	115	125	130	81	89	97	101	40	0.164	0.054			
North Haven	110	120	130	135	85	93	101	105	30	0.204	0.054			Yes
North Stonington	120	130	140	140	93	101	108	108	30	0.186	0.052			Yes
Norwalk	110	120	130	135	85	93	101	105	30	0.240	0.056		Type B	Yes
Norwich	115	125	135	140	89	97	105	108	30	0.194	0.054			Yes
Old Lyme	120	130	135	140	93	101	105	108	30	0.201	0.053	Type B	Type B	Yes
Old Saybrook	120	130	135	140	93	101	105	108	30	0.202	0.053	Type B	Type B	Yes
Orange	110	120	130	135	85	93	101	105	30	0.201	0.054			Yes
Oxford	110	120	130	135	85	93	101	105	30	0.199	0.054			Yes
Plainfield	115	125	135	140	89	97	105	108	30	0.187	0.054			Yes
Plainville	110	120	130	135	85	93	101	105	35	0.191	0.055			Yes
Plymouth	110	120	125	130	85	93	97	101	35	0.185	0.054			Yes
Pomfret	115	125	130	135	89	97	101	105	40	0.182	0.055			Yes
Portland	110	120	130	135	85	93	101	105	30	0.208	0.056			Yes
Preston	120	125	135	140	93	97	105	108	30	0.191	0.053			Yes
Prospect	110	120	130	135	85	93	101	105	30	0.197	0.054			Yes
Putnam	115	125	130	135	89	97	101	105	40	0.184	0.055			Yes
Redding	110	120	125	130	85	93	97	101	30	0.228	0.056			Yes
Ridgefield	110	120	125	130	85	93	97	101	30	0.243	0.057			Yes
Rocky Hill	110	120	130	135	85	93	101	105	30	0.200	0.055			Yes
Roxbury	110	120	125	130	85	93	97	101	35	0.196	0.054			Yes
Salem	115	125	135	140	89	97	105	108	30	0.205	0.055			Yes
Salisbury	105	115	125	130	81	89	97	101	40	0.116	0.054			
Scotland	115	125	135	135	89	97	105	105	30	0.188	0.054			Yes
Seymour	110	120	130	135	85	93	101	105	30	0.200	0.054			Yes
Sharon	105	115	125	130	81	89	97	101	40	0.171	0.054			
Shelton	110	120	130	135	85	93	101	105	30	0.203	0.054			Yes

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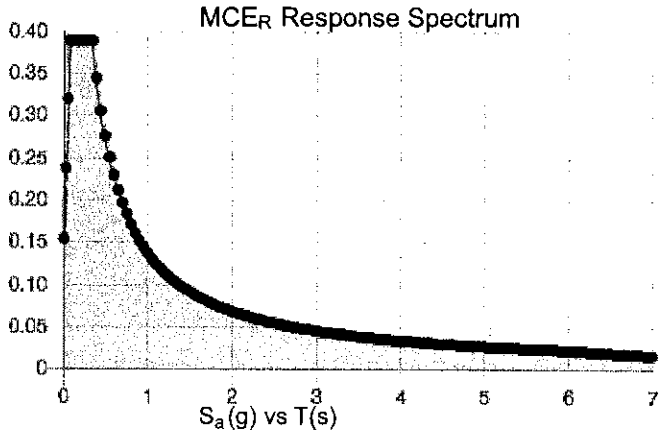
Seismic

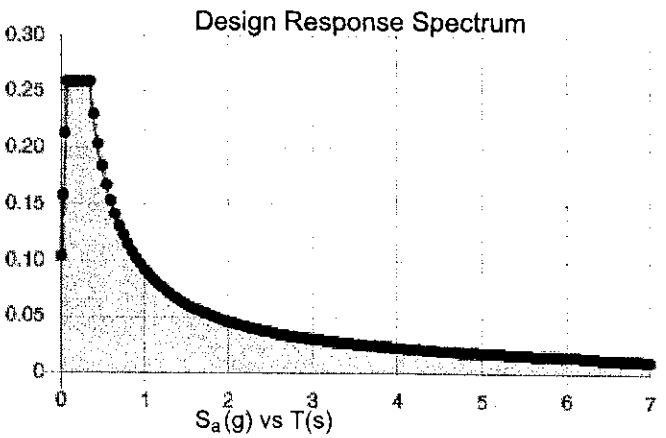
Site Soil Class: D - Default (see Section 11.4.3)

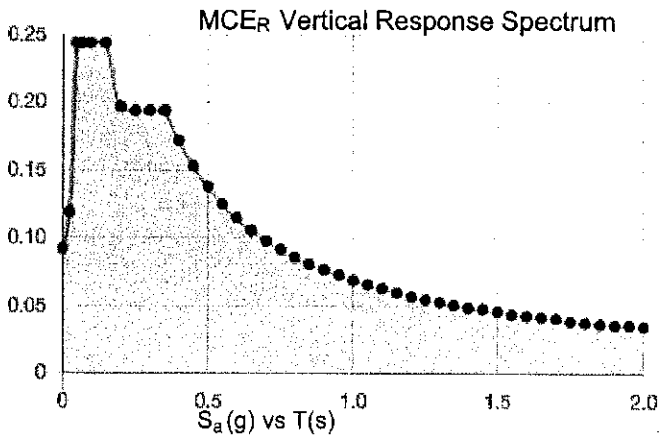
Results:

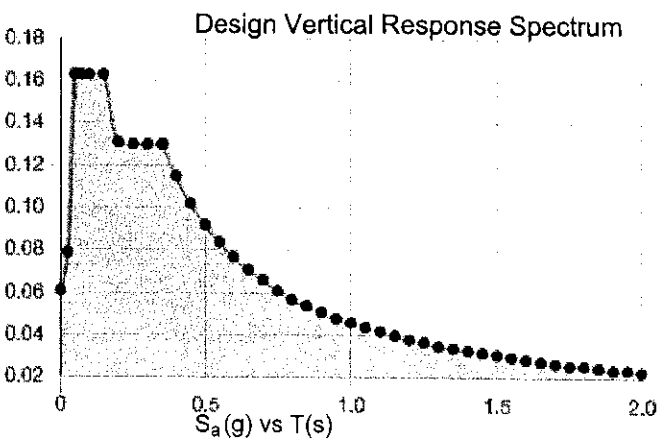
S_S :	0.243	S_{D1} :	0.092
S_1 :	0.057	T_L :	6
F_a :	1.6	PGA :	0.143
F_v :	2.4	PGA_M :	0.217
S_{MS} :	0.389	F_{PGA} :	1.513
S_{M1} :	0.138	I_e :	1.25
S_{DS} :	0.259	C_V :	0.786

Seismic Design Category B









Data Accessed: **Mon Oct 10 2022**

Date Source:

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

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Ice

Results:

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

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

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

Exhibit E

Mount Analysis

Tectonic

PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.

Date: **October 12, 2022**

Proposed Mount Analysis Report – Revision 1

Project Information:

Carrier:	Dish Wireless
Site Number:	NJJER01117A
Site Address:	76 East Ridge Ave, Ridgefield, Fairfield County, CT 06877
Site Type:	Platform w/ Railing Mount on Monopole

Tectonic Project Number: 10710.NJJER01117A

Tectonic Engineering Consultants, Geologists & Land Surveyors, D.P.C., Inc. is pleased to submit this **"Mount Analysis Report"** to determine the structural integrity of the above-mentioned proposed mount.

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

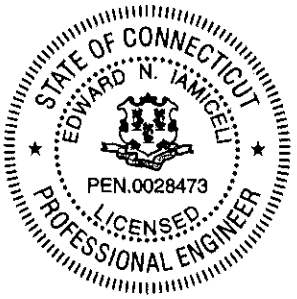
Mount: **Sufficient – 30%**

This analysis has been performed in accordance with the 2022 Connecticut State Building Code and the 2021 International Building Code based upon an ultimate 3-second gust wind speed of 125 mph per Appendix P as required for use in the ANSI/TIA-222-H-1-2019 Standard. Exposure Category B with a maximum topographic factor, Kzt, of 1.0 and Risk Category III was used in this analysis.

We at Tectonic appreciate the opportunity of providing our continuing professional services to you and Dish Wireless. If you have any questions or need further assistance on this or any other projects, please give us a call.

Structural analysis prepared by: John-Fritz Julien / Ian Marinaccio

Respectfully submitted by:
Tectonic Engineering Consultants, Geologists & Land Surveyors D.P.C., Inc.



Edward N. Iamiceli, P.E.
Managing Director - Structural

Project Contact Info

1279 Route 300 | Newburgh, NY 12550
845.567.6656 Tel | 845.567.8703 Fax

tectonicengineering.com
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TABLE OF CONTENTS

1) INTRODUCTION

Analysis of the proposed antenna mounts due to the loading of the proposed antennas, equipment, and related appurtenances. The proposed mount is a platform mount manufactured by CommScope, P/N: MC-PK8-DSH with a handrail.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	III
Wind Speed:	125 mph
Exposure Category:	B
Topographic Factor:	1.0
Ice Thickness:	1.0 in
Wind Speed with Ice:	50 mph
Maintenance Load:	30 mph
Seismic S_s / S_1:	0.243 / 0.057

Table 1 - Proposed Equipment Loading Information

Mounting Level (ft)	Carrier Designation	Number of Antennas	Antenna Manufacturer	Antenna Model	Proposed Mount Type	Note
118.0	Dish Wireless	3	JMA	FFVV-65B-R2	CommScope MC-PK8-DSH w/ HR	1
		3	Fujitsu	TA08025-B604 RRH		
		3	Fujitsu	TA08025-B605 RRH		
		1	Raycap	RDIDC-9181-PF-48		

Note:
1) Proposed equipment to be installed on the proposed mounts.

3) ANALYSIS PROCEDURE

Table 2 - Documents Provided

Document	Remarks	Dated
Mount Assembly Drawings	CommScope, P/N: MC-PK8- DSH	03/17/2021
RFDS	Dish Wireless	02/22/2022
Field Notes & Photos	Tectonic	03/14/2022
Construction Drawings	Tectonic	10/12/2022

3.1) Analysis Method

A tool internally developed, using Microsoft Excel, was used to calculate wind loading on all appurtenances and mount members. This information was then used in conjunction with another program, RISA-3D, which is a commercially available analysis software package, used to check the antenna mounting system and calculate member stresses for various loading cases. The selected output from the analysis is included in Appendices B and C.

3.2) Assumptions

1) The antenna mounting system was properly fabricated, installed, and maintained in good condition in accordance with its original design, TIA Standards, and/or manufacturer's specifications.
2) The configuration of antennas, mounts, and other appurtenances are as specified in Table 1.
3) All member connections are assumed to have been designed to meet or exceed the load carrying capacity of the connected member unless otherwise specified in this report.
4) Member length and sizes are based solely on the assembly drawing by CommScope, referenced above.

5) Steel grades have been assumed as follows, unless noted otherwise:

Channel, Solid Round, Angle, Plate	ASTM A36 (GR 36)
HSS (Rectangular)	ASTM 500 (GR B-46)
Pipe	ASTM A53 (GR 35)
Connection Bolts	ASTM A325

This analysis may be affected if any assumptions are not valid or have been made in error. Tectonic should be notified to determine the effect on the structural integrity of the mount.

4) ANALYSIS RESULTS

Table 3 - Mount Component Stresses vs. Capacity (Platform Mount)

Notes	Component	Mount Centerline (ft)	% Capacity	Pass / Fail
1	Standoff End Plate	118.0	27	Pass
	Grating Support Angle		11	Pass
	Face Horizontal		19	Pass
	Mount Pipe		23	Pass
	Standoff Channel		29	Pass
	Standoff		26	Pass
	Rail Connector		19	Pass
	Railing		18	Pass
2	Collar Connection		30	Pass
Structure Rating (max from all components) =				**30 %**

Notes:

1) See additional documentation in "Appendix C - Analysis Output" for calculations supporting the % capacity consumed.
2) See additional documentation in "Appendix D – Additional Calculations" for calculations supporting the % capacity consumed.

4.1) Result / Conclusions

The proposed platform mount has adequate capacity to support the proposed antenna and equipment installation as detailed in the following report.

This structural analysis only includes evaluation of the antenna mounts and not the monopole. The monopole is to be analyzed under a separate structural analysis by Tectonic.

Contractor shall field verify existing conditions and recommendations as noted on the construction drawings and notify the design engineer of any discrepancies prior to construction. Any further changes to the antenna and/or appurtenance configuration should be reviewed with respect to their effect on structural loads prior to implementation.

APPENDIX A

SOFTWARE INPUT CALCULATIONS

Municipality	Basic Design Wind Speeds, V (mph)				Allowable Stress Design Wind Speeds, V_{asd} (mph)				Ground Snow Load p_g (psf)	MCE Ground Accelerations		Wind-Borne Debris Region[1]		Hurricane-Prone Region
	Risk Cat. I	Risk Cat. II	Risk Cat. III	Risk Cat. IV	Risk Cat. I	Risk Cat. II	Risk Cat. III	Risk Cat. IV		S_S (g)	S_1 (g)	Risk Cat. III Occup. I-2	Risk Cat. IV	
New Milford	110	115	125	130	85	89	97	101	35	0.198	0.055			
Newington	110	120	130	135	85	93	101	105	30	0.195	0.055			Yes
Newtown	110	120	130	130	85	93	101	101	30	0.209	0.055			Yes
Norfolk	105	115	125	130	81	89	97	101	40	0.165	0.054			
North Branford	115	125	135	135	89	97	105	105	30	0.204	0.054			Yes
North Canaan	105	115	125	130	81	89	97	101	40	0.164	0.054			
North Haven	110	120	130	135	85	93	101	105	30	0.204	0.054			Yes
North Stonington	120	130	140	140	93	101	108	108	30	0.186	0.052			Yes
Norwalk	110	120	130	135	85	93	101	105	30	0.240	0.056		Type B	Yes
Norwich	115	125	135	140	89	97	105	108	30	0.194	0.054			Yes
Old Lyme	120	130	135	140	93	101	105	108	30	0.201	0.053	Type B	Type B	Yes
Old Saybrook	120	130	135	140	93	101	105	108	30	0.202	0.053	Type B	Type B	Yes
Orange	110	120	130	135	85	93	101	105	30	0.201	0.054			Yes
Oxford	110	120	130	135	85	93	101	105	30	0.199	0.054			Yes
Plainfield	115	125	135	140	89	97	105	108	30	0.187	0.054			Yes
Plainville	110	120	130	135	85	93	101	105	35	0.191	0.055			Yes
Plymouth	110	120	125	130	85	93	97	101	35	0.185	0.054			Yes
Pomfret	115	125	130	135	89	97	101	105	40	0.182	0.055			Yes
Portland	110	120	130	135	85	93	101	105	30	0.208	0.056			Yes
Preston	120	125	135	140	93	97	105	108	30	0.191	0.053			Yes
Prospect	110	120	130	135	85	93	101	105	30	0.197	0.054			Yes
Putnam	115	125	130	135	89	97	101	105	40	0.184	0.055			Yes
Redding	110	120	125	130	85	93	97	101	30	0.228	0.056			Yes
Ridgefield	110	120	125	130	85	93	97	101	30	0.243	0.057			Yes
Rocky Hill	110	120	130	135	85	93	101	105	30	0.200	0.055			Yes
Roxbury	110	120	125	130	85	93	97	101	35	0.196	0.054			Yes
Salem	115	125	135	140	89	97	105	108	30	0.205	0.055			Yes
Salisbury	105	115	125	130	81	89	97	101	40	0.116	0.054			
Scotland	115	125	135	135	89	97	105	105	30	0.188	0.054			Yes
Seymour	110	120	130	135	85	93	101	105	30	0.200	0.054			Yes
Sharon	105	115	125	130	81	89	97	101	40	0.171	0.054			
Shelton	110	120	130	135	85	93	101	105	30	0.203	0.054			Yes

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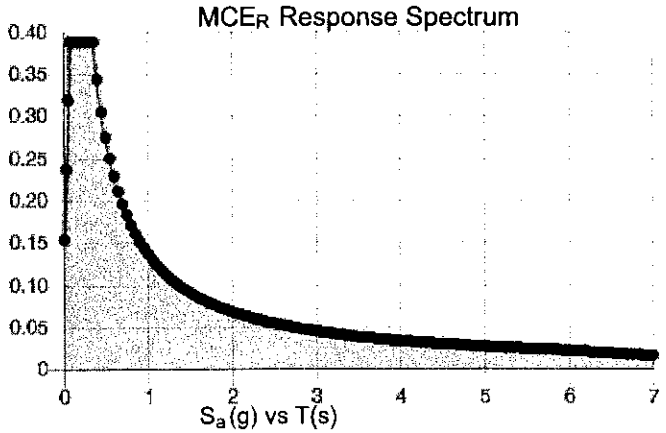
Seismic

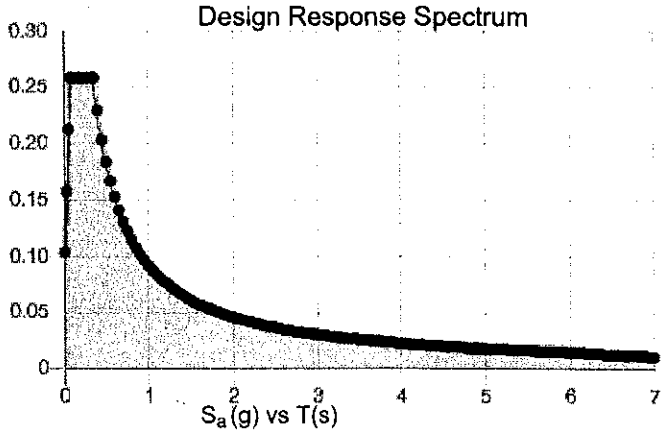
Site Soil Class: D - Default (see Section 11.4.3)

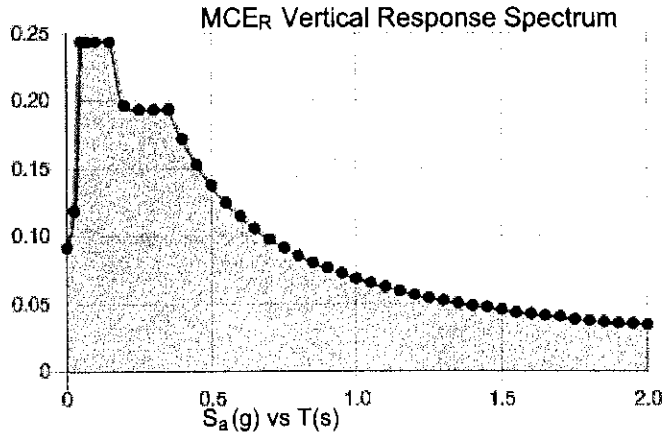
Results:

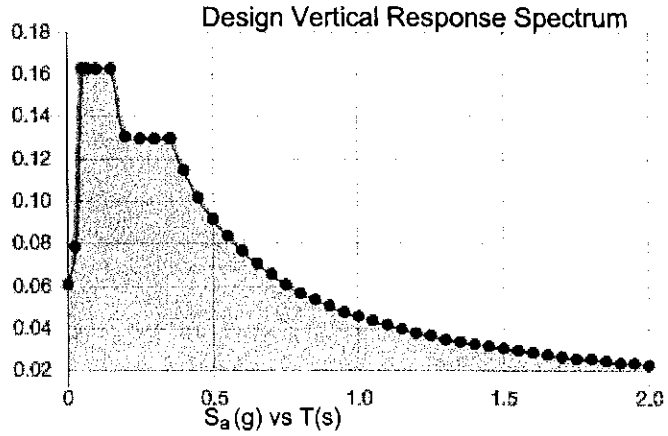
S_S :	0.243	S_{D1} :	0.092
S_1 :	0.057	T_L :	6
F_a :	1.6	PGA :	0.143
F_v :	2.4	PGA_M :	0.217
S_{MS} :	0.389	F_{PGA} :	1.513
S_{M1} :	0.138	I_e :	1.25
S_{DS} :	0.259	C_v :	0.786

Seismic Design Category B









Data Accessed: **Mon Oct 10 2022**

Date Source:

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

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Ice

Results:

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

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

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

Tectonic	Job No.:	10710.NJJER01117A		
PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.	Sheet No.:	1	of	4
	Calculated By:	JJ	Date :	10/12/22
	Checked By:	IM	Date :	10/12/22

WIND AND ICE LOADS PER TIA-222-H

Work Order #:	[redacted]
Site Name:	
Location:	
County:	

Tower Type	[redacted]	Monopole
Structure Height		ft
Supporting Str Height		Ground Mounted
Risk Category		Substanial risk
Exposure Category		Suburban/wooded/obstructed
Topo Category		Flat or rolling terrain
Height of crest		ft
Mean elevation (zs)		ft

Basic Wind Speed (3-sec gust):		
Without ice	[redacted]	mph
With ice		mph
Maintenance Wind		mph
Ice thickness		in

Importance Factor	
Ice thickness	1.15
Earthquake	1.25
Supporting Data:	
K_s	1.00
K_e	0.97
K_c	0.90
K_t	N/A
f	N/A
z_g	1200
α	7
$K_{z,min}$	0.7
K_d	0.95
G_h	1.00

Height	z (ft)*	[redacted]
	Kh	N/A
	Kzt	1.00
	Kz	1.04
	Kiz	1.14
Wind Pressure, qz (psf)	No Ice	38.33
	With Ice	6.13
	Service	2.21
(tiz)	Ice Thk	1.42
Appurtenances (qzGh)	No Ice	38.33
	With Ice	6.13
	Service	2.21

Note : *Ultimate 3-second gust wind speed of 125 mph per Appendix P.

Tectonic
PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.

Job No.	10710.NJJER01117A		
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Checked By	IM	Date :	10/12/22

Equipment Information

Shielding factor, Ka [redacted] Section 16.6

WIND WITHOUT ICE

Antenna Configuration	(E) or (P)	Qty	z (ft)	Length or Diameter (ft)	Width (in)	Depth (in)	Flat or Cylindrical?	Antenna $(Ca)_N$	Antenna $(Ca)_T$	Face Normal $(A_a)_N$ (ft^2)	Windward Face Normal $(C_aA_a)_N$ (ft^2)	Side Face $(A_a)_T$ (ft^2)	Wind ward Side Face (CaAa)T (ft^2)	Normal Antenna Wind Load Each (lb)	Transverse Antenna Wind Load Each (lb)	Antenna Weight (lb)	Total Weight (lb)
[redacted]			118	6.00	19.60	7.80	[redacted]	1.25	1.47	9.80	11.04	3.90	5.18	423	198	70.8	70.8
			118	1.24	15.70	7.80		1.20	1.20	1.62	1.75	0.81	0.87	67	33	63.9	63.9
			118	1.24	15.70	9.00		1.20	1.20	1.62	1.75	0.93	1.01	67	39	74.9	74.9
			118	1.58	14.39	8.15		1.20	1.20	1.90	2.05	1.07	1.16	79	44	21.3	21.3
										$\sum(CaAa)_N$	16.60	$\sum(CaAa)_T$	8.21				231

Note: Appurtenances listed above are to be installed along three (3) sectors

WIND WITH ICE

Ice Thk = 1.42 in

Antenna Configuration	(E) or (P)	Qty	z (ft)	Length or Diameter (ft)	Width (in)	Depth (in)	Flat or Cylindrical?	Antenna $(Ca)_N$	Antenna $(Ca)_T$	Face Normal $(A_a)_N$ (ft^2)	Windward Face Normal $(C_aA_a)_N$ (ft^2)	Side Face $(A_a)_T$ (ft^2)	Windward Side Face (CaAa)T (ft^2)	Normal Antenna Wind Load Each (lb)	Transverse Antenna Wind Load Each (lb)	Ice Area for Weight (ft^2)	Ice Weight Alone (lbs)
FFVV-65B-R2	P	1	118	6.24	22.44	10.64	Cylindrical	0.72	0.72	11.66	7.54	5.53	3.58	46	22	27.4	181.6
TA08025-B604-RRH	P	1	118	1.48	18.54	10.64	Cylindrical	0.7	0.7	2.28	1.44	1.31	0.83	9	5	4.9	32.2
TA08025-B605-RRH	P	1	118	1.48	18.54	11.84	Cylindrical	0.7	0.7	2.28	1.44	1.46	0.92	9	6	5.1	33.9
RDIDC-9181-PF-48	P	1	118	1.82	17.23	10.99	Cylindrical	0.7	0.7	2.61	1.64	1.67	1.05	10	6	5.9	39.4
										$\sum(CaAa)_N$	12.06	$\sum(CaAa)_T$	6.37				287

MAINTENANCE WIND

Antenna Configuration	(E) or (P)	Qty	z (ft)	Length or Diameter (ft)	Width (in)	Depth (in)	Flat or Cylindrical?	Antenna $(Ca)_N$	Antenna $(Ca)_T$	Face Normal $(A_a)_N$ (ft^2)	Windward Face Normal $(C_aA_a)_N$ (ft^2)	Side Face $(A_a)_T$ (ft^2)	Windward Side Face (CaAa)T (ft^2)	Normal Antenna Wind Load Each (lb)	Transverse Antenna Wind Load Each (lb)
FFVV-65B-R2	P	1	118	6.00	19.60	7.80	Flat	1.25	1.47	9.80	11.04	3.90	5.18	24	11
TA08025-B604-RRH	P	1	118	1.24	15.70	7.80	Flat	1.20	1.20	1.62	1.75	0.81	0.87	4	2
TA08025-B605-RRH	P	1	118	1.24	15.70	9.00	Flat	1.20	1.20	1.62	1.75	0.93	1.01	4	2
RDIDC-9181-PF-48	P	1	118	1.58	14.39	8.15	Flat	1.20	1.20	1.90	2.05	1.07	1.16	5	3
										$\sum(CaAa)_N$	16.60	$\sum(CaAa)_T$	8.21		

Tectonic
PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.

Job No.	10710.NJJER01117A		
Sheet No.	3	of	4
Calculated By	JJ	Date :	10/12/22
Checked By	IM	Date :	10/12/22

Mounting System Information

Mount Center Line:	118 ft

									Reduction Factor =			Section 16.6	
Mount Part	**Quantity**	**Length (ft)**	**Projected Width (in)**	**Depth (in)**	**Flat or Cylindrical?**	**Force Coefficient**	**Projected Area (ft^2)**	**Wind Force (lbs/ft)**	**Ice Weight Area (ft^2)**	**Ice Weight (lbs/ft)**	**Projected Area with Ice (ft^2)**	**Wind Force Ice (lbs/ft)**	**Maintenance Wind Force (lbs/ft)**
[redacted]						2	9.75	41.5	10.31	7.6	14.01	9.5	2.4
						2	3.00	38.3	3.19	7.0	4.42	9.0	2.2
						2	5.00	12.8	10.00	4.4	12.10	4.9	0.7
						1.2	8.40	13.4	21.98	6.1	15.22	3.9	0.8
						1.2	20.70	11.0	54.17	5.0	41.15	3.5	0.6
						2	9.30	21.6	14.96	6.0	17.10	6.4	1.2
						2	6.84	25.6	13.68	8.8	11.70	7.0	1.5
						2	9.90	42.2	16.58	12.2	14.16	9.6	2.4
						1.2	8.63	11.0	22.57	5.0	17.14	3.5	0.6

Note:
Note: The member sizes are based on the assembly drawings by Commscope, date 03/17/21

Tectonic				
PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.	Job No.	10710.NJJER01117A		
	Sheet No.	4	of	4
	Calculated By	JJ	Date :	10/12/22
	Checked By	IM	Date :	10/12/22

Seismic Check

Tower Information

Tower Type:	MP	
Structure Height	130	ft
Supporting Structure Height	GM	ft
Mount Height	118	ft

Geographic Information

City: [redacted]
State:
County:
Latitude: [redacted] Longitude: [redacted]

Seismic Information

Risk Category	III		
Importance Factor	1.25		
Site Soil Classification	[redacted]		Table 2-10
S_s			https://asce7hazardtool.online/
S_1			
F_a			(Table 2-11, interpolation allowed)
F_V			(Table 2-12, interpolation allowed)
S_{DS}	0.260		Section 2.7.5
S_{D1}	0.092		
R	[redacted]		Section 16.7
As	1.00		Section 16.7 & 2.7.8
Cs	0.22	>	0.03

Equivalent Lateral Force Procedure

Equipment (Discrete Appurtenances)

Antenna Configuration	(E) or (P)	Qty	z (ft)	Antenna Weight (lb)	Shear Vs= Cs*W (lbs)	Vert. Seismic load (Ev, lbs)	Seismic load (Eh, lbs)
FFVV-65B-R2	P	1	118	71	16	4	16
TA08025-B604-RRH	P	1	118	64	14	3	14
TA08025-B605-RRH	P	1	118	75	16	4	16
RDIDC-9181-PF-48	P	1	118	21	5	1	5

Mounting System (Discrete Appurtenances)

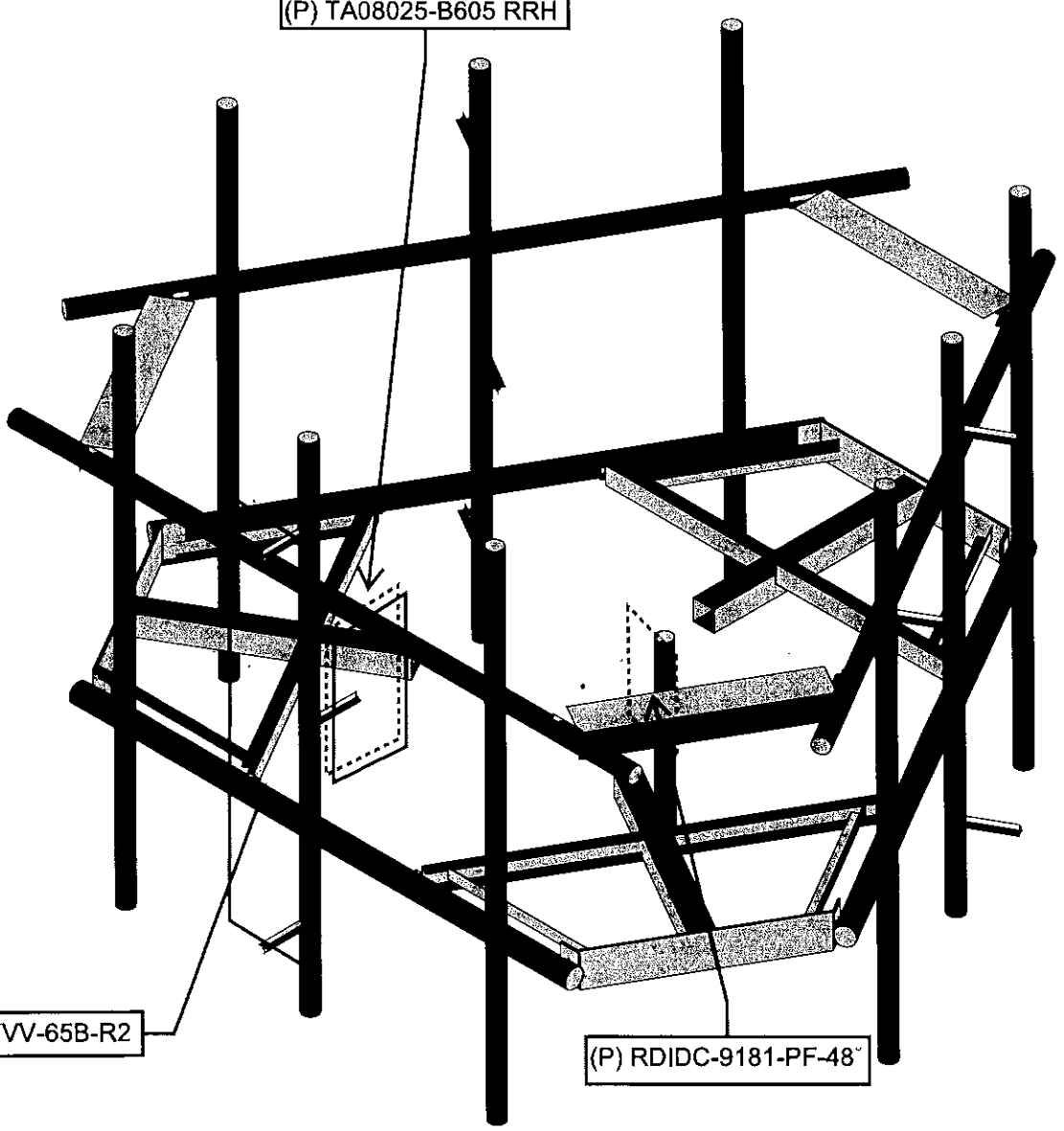
Ev =0.2S_{DS} * D	0.052 x D	"D" is the dead weight of the mount members.
Eh= rho * Q_E	0.22 x W	"W" total weight of structure above ground

Notes:
1. Wind loads govern over Seismic loads

APPENDIX B

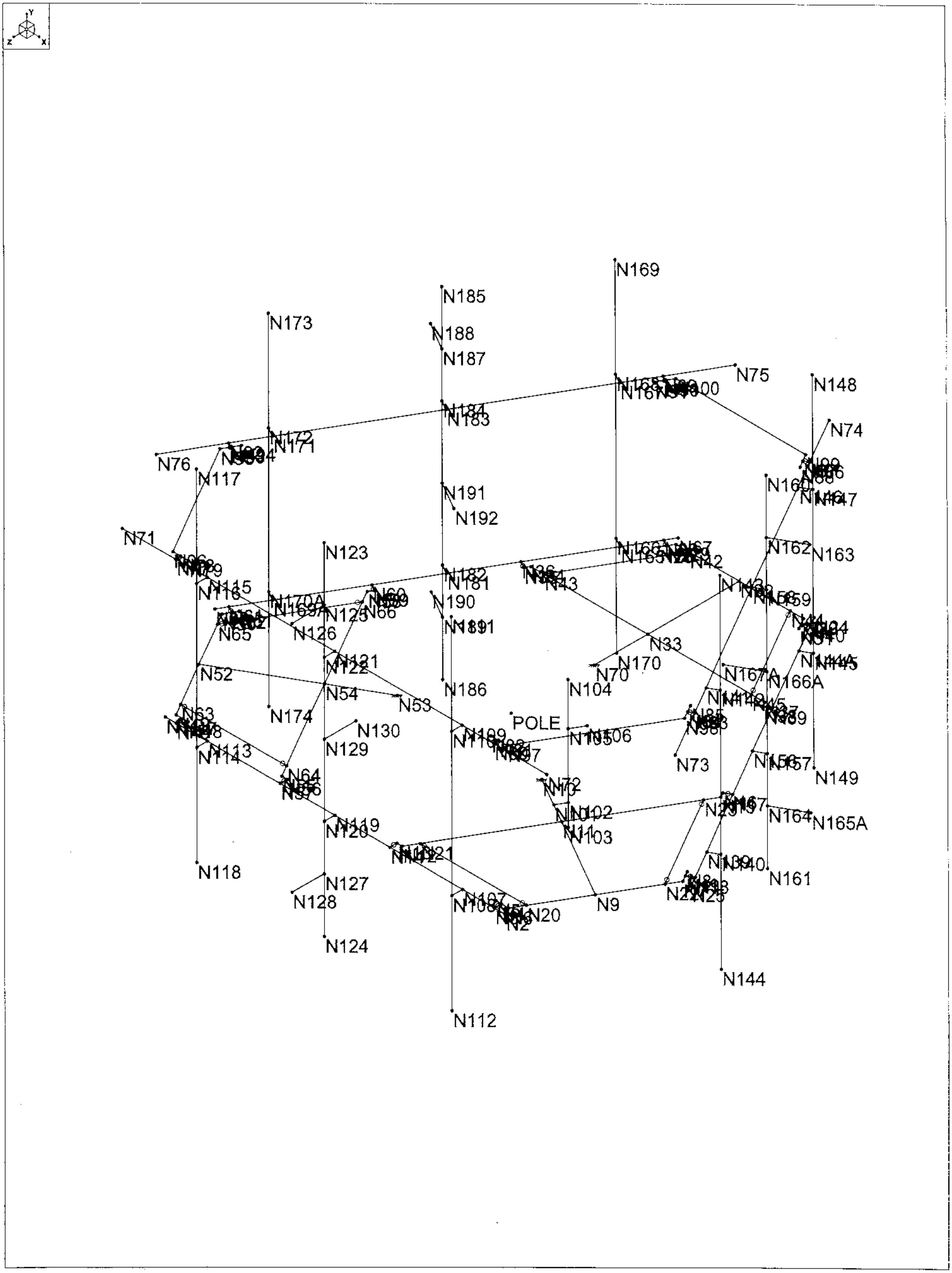
WIRE FRAME AND RENDERED MODELS

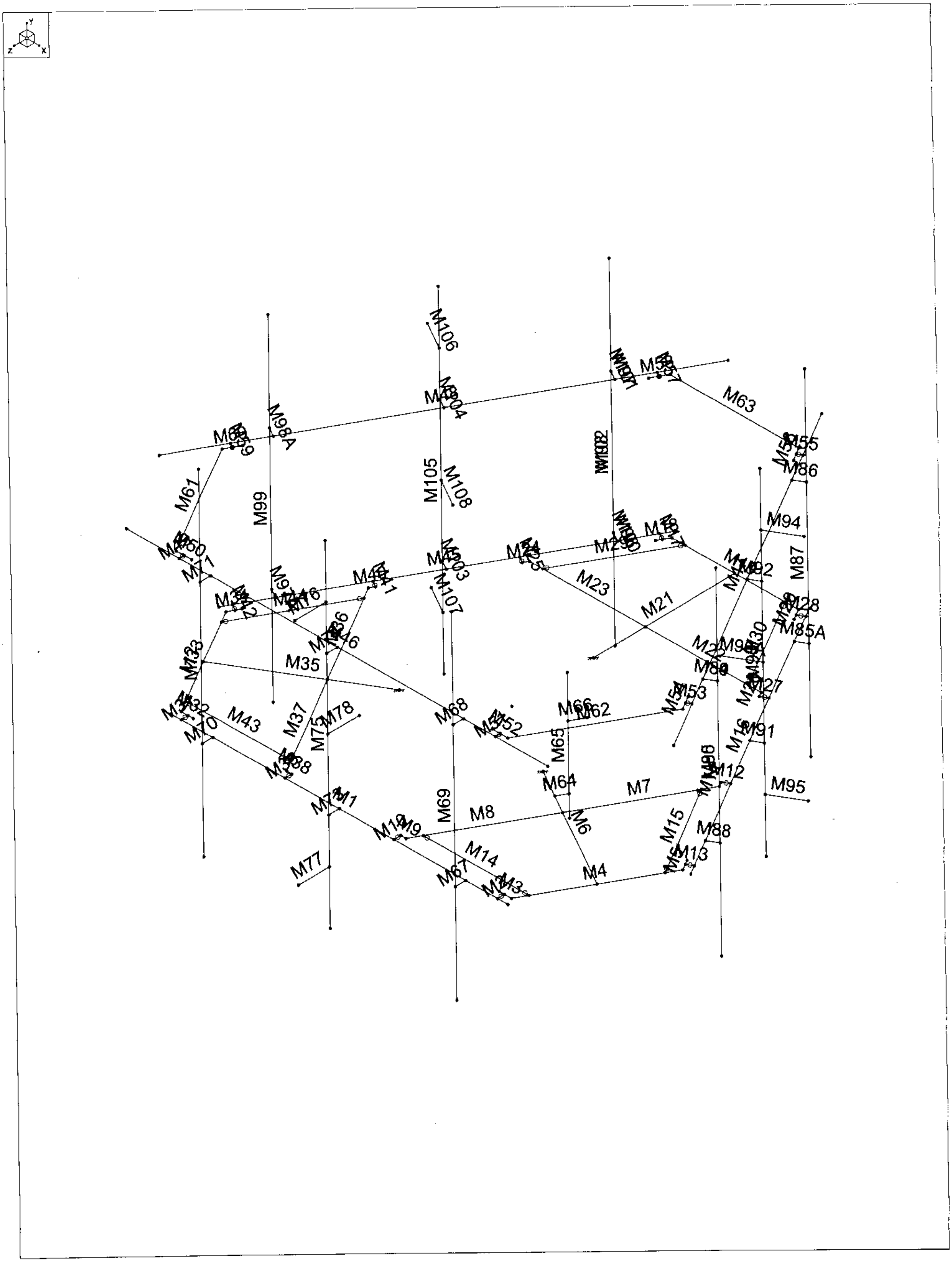
Proposed Platform Mount



(P) PROPOSED

NOTES:
1) PROPOSED ANTENNAS AND MOUNTING PIPES HAVE BEEN VERTICALLY CENTERED ALONG THE EXISTING MOUNT (NO OFFSET).
2) LISTED PROPOSED APPURTENANCES ABOVE ARE TYPICAL FOR ALL SECTORS.


Y
Z
X
N169
N185
N173
N188
N187
N75
N148
N184
N183
N74
N172
N171
N76
N117
N191
N160
N192
N71
N123
N162
N163
N182
N181
N42
N43
N115
N116
N170A
N125
N66
N190
N126
N65
N33
N170
N70
N121
N122
N52
N54
N53
N186
N104
N167A
N166A
N174
N63
POLE
N130
N129
N113
N114
N73
N149
N64
N72
N102
N103
N164
N165A
N119
N120
N118
N127
N128
N107
N20
N9
N2
N25
N161
N124
N144
N112


M106
M104
M63
M55
M86
M61
M99
M98A
M105
M108
M94
M87
M23
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M28
M85A
M107
M103
M71
M35
M33
M43
M37
M78
M68
M66
M62
M53
M52
M65
M64
M7
M8
M6
M9
M1
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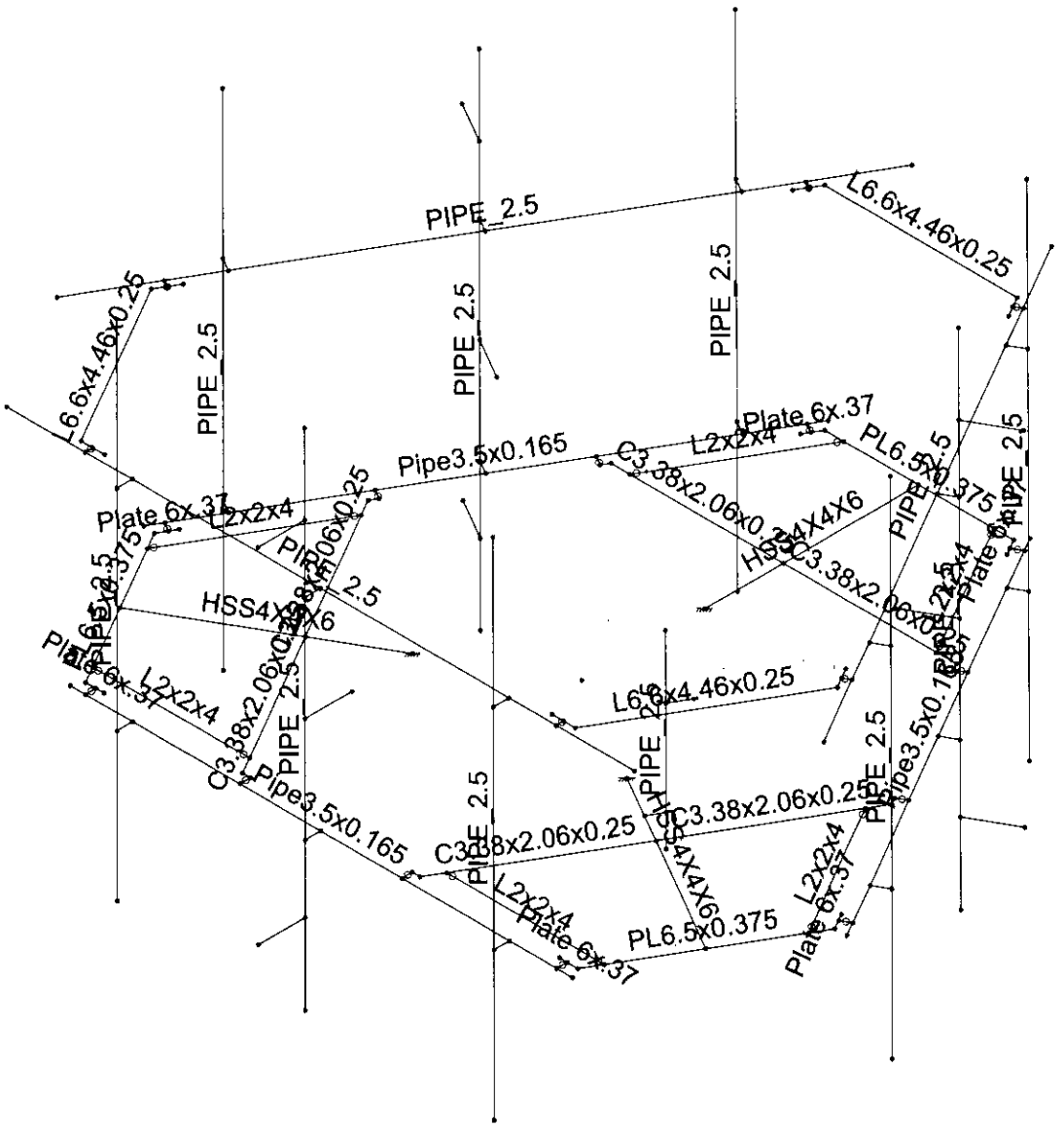
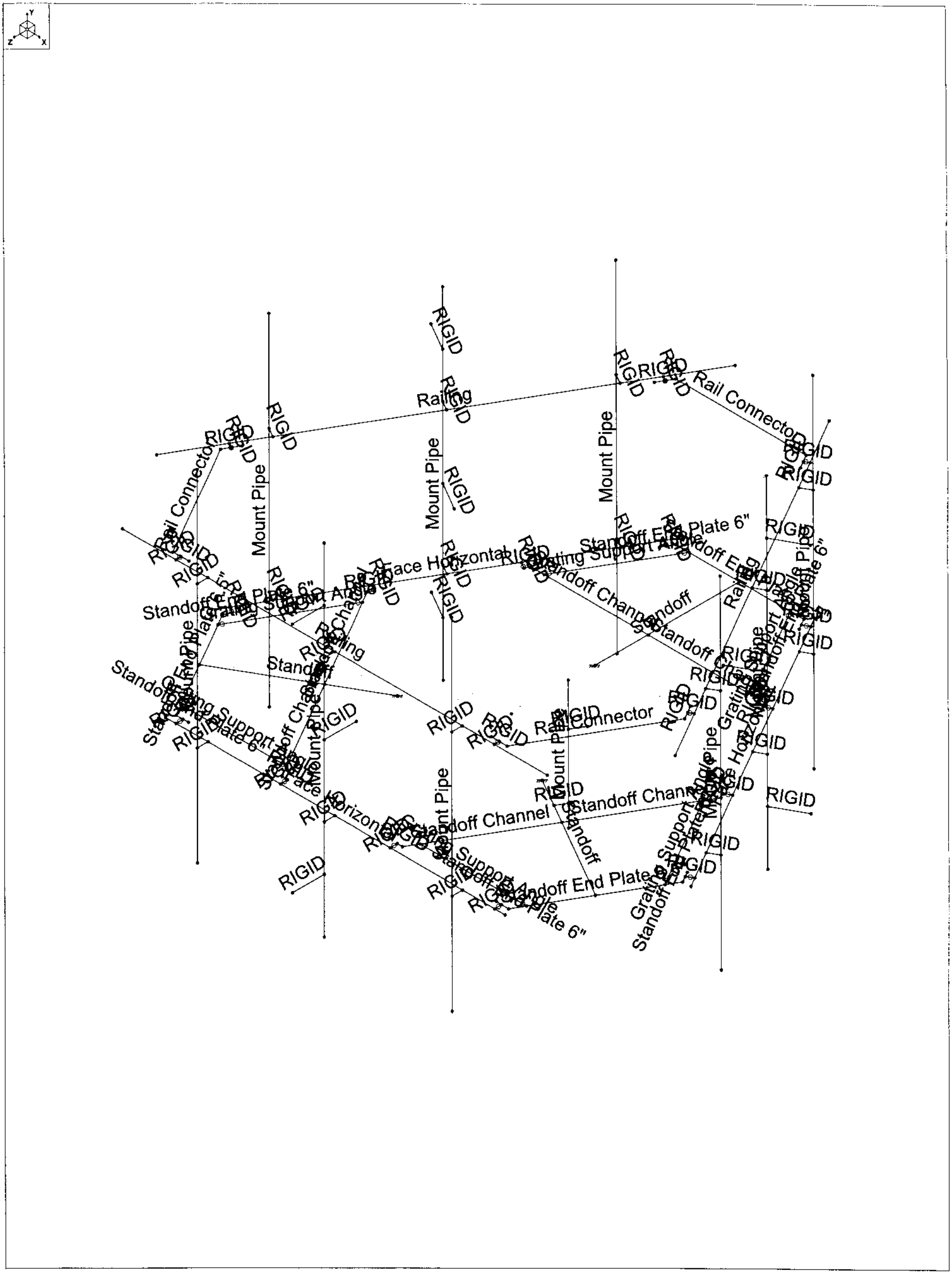
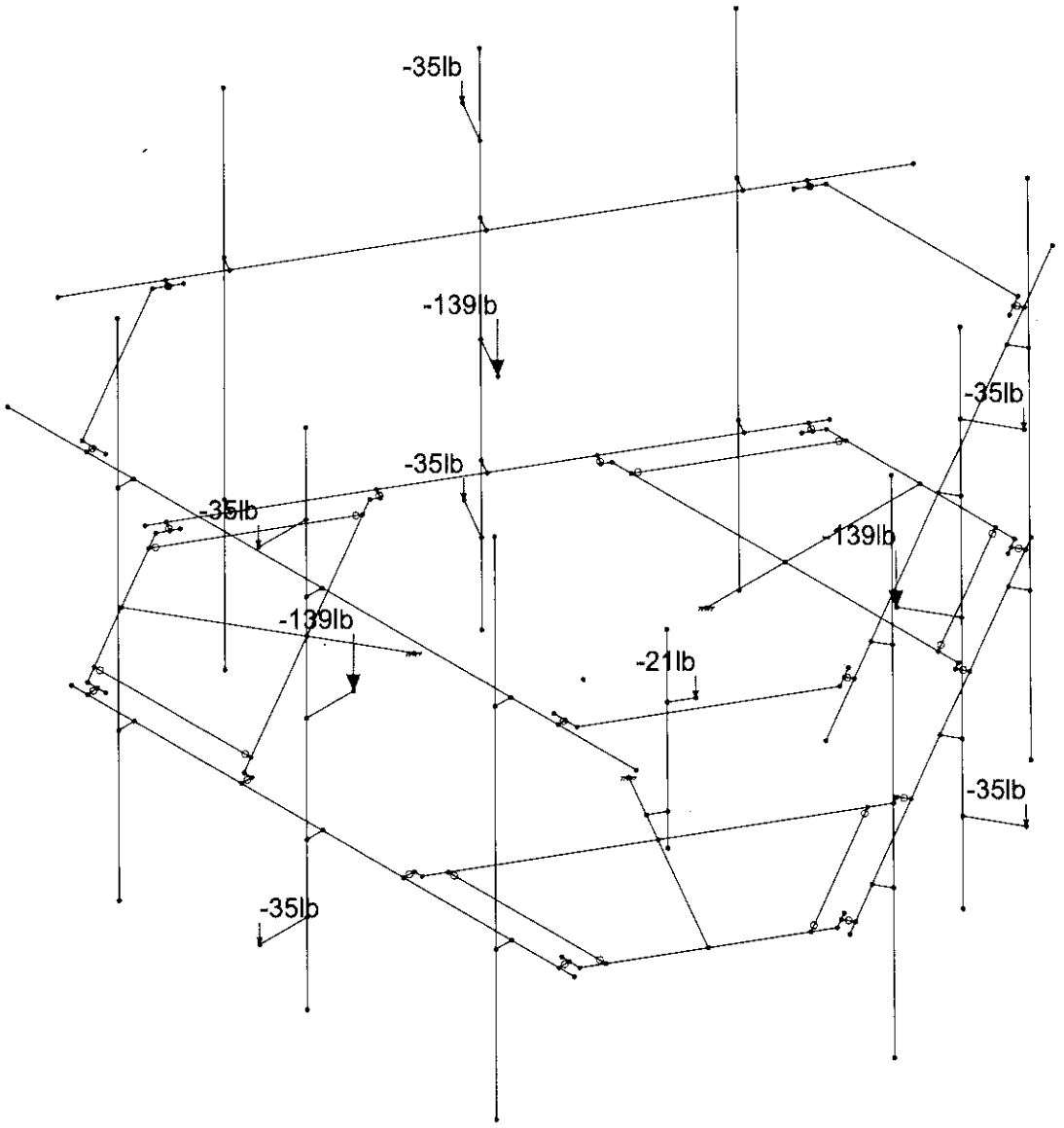
M95
M27
M70
M77

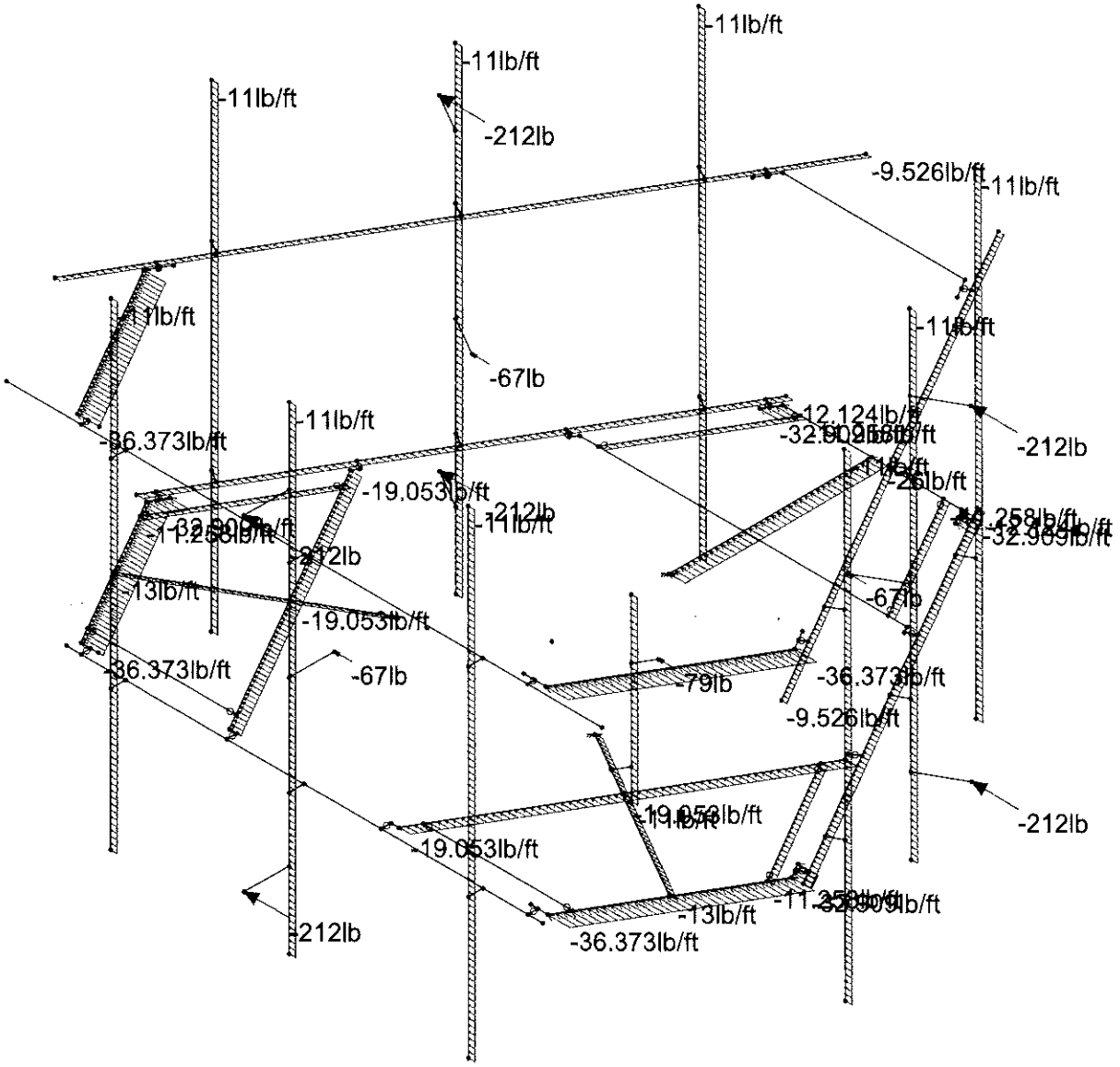

PIPE_2.5
L6.6x4.46x0.25
PIPE_2.5
PIPE_2.5
PIPE_2.5
L6.6x4.46x0.25
Plate 6x.37
Pipe3.5x0.165
L2x2x4
C3.38x2.06x0.25
PL6.5x0.375
Plate 6x.37
L2x2x4
HSS4X4X6
PIPE_2.5
PIPE_2.5
HSS4X4X6
L6.6x4.46x0.25
L2x2x4
C3.38x2.06x0.25
PIPE_2.5
Pipe3.5x0.165
C3.38x2.06x0.25
PIPE_2.5
HSS4X4X6
C3.38x2.06x0.25
PIPE_2.5
L2x2x4
Plate 6x.37
PL6.5x0.375
L2x2x4
Plate 6x.37



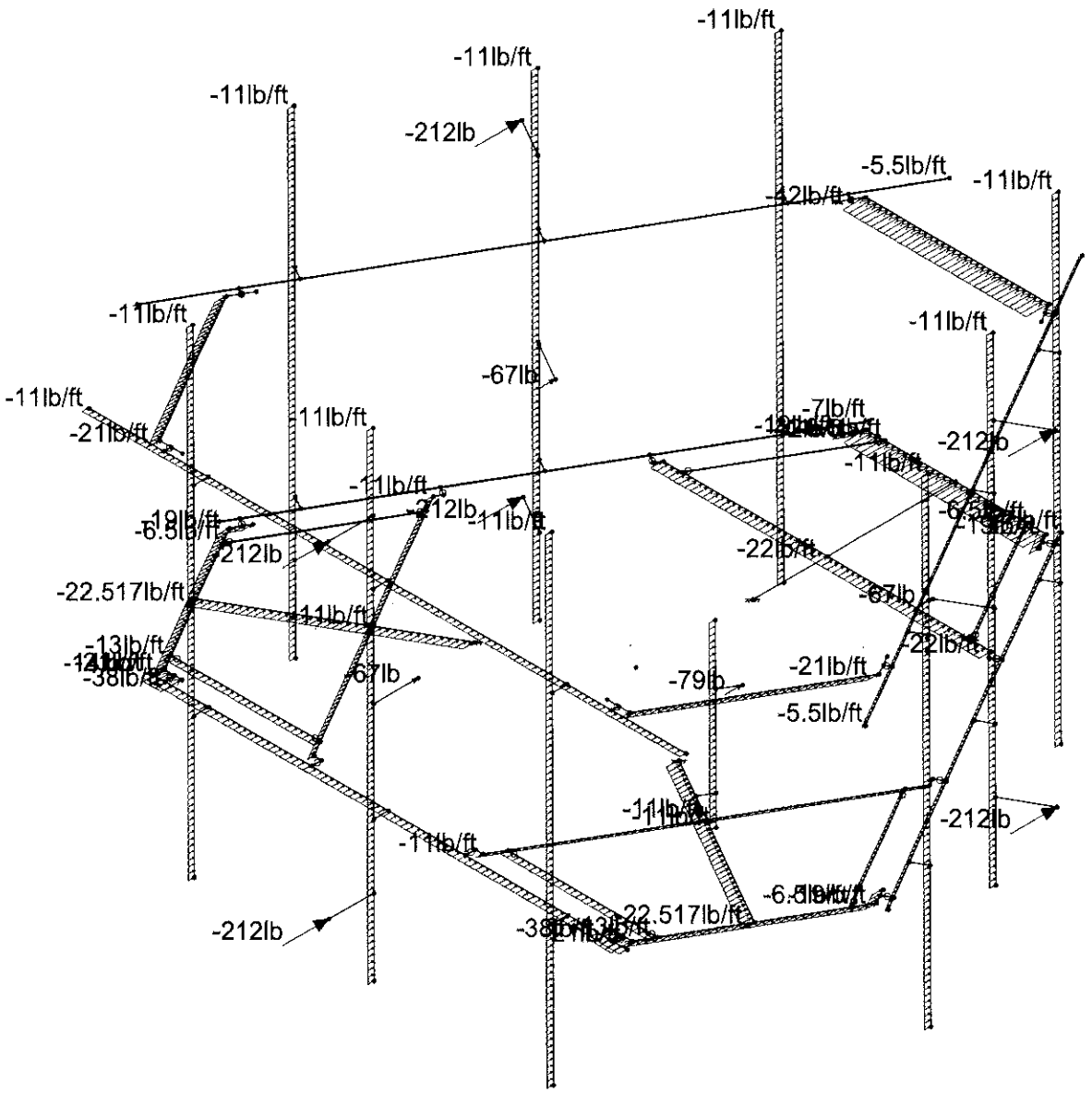
Railing
Rail Connector
Mount Pipe
RIGID
Standoff
Standoff Channel
Standoff End Plate 6"
Grating Support Angle
Face Horizontal



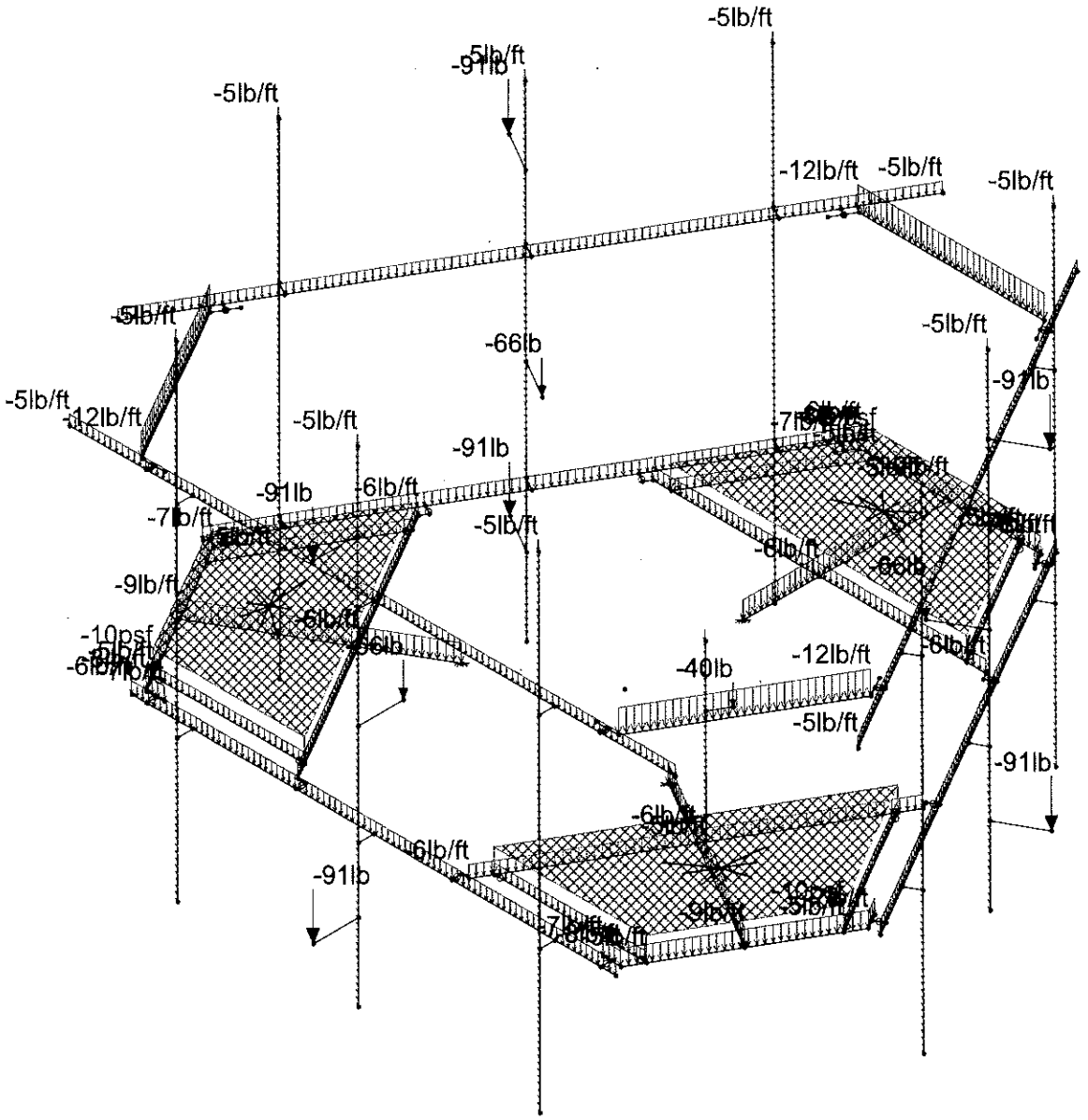
Loads: BLC 1, DL



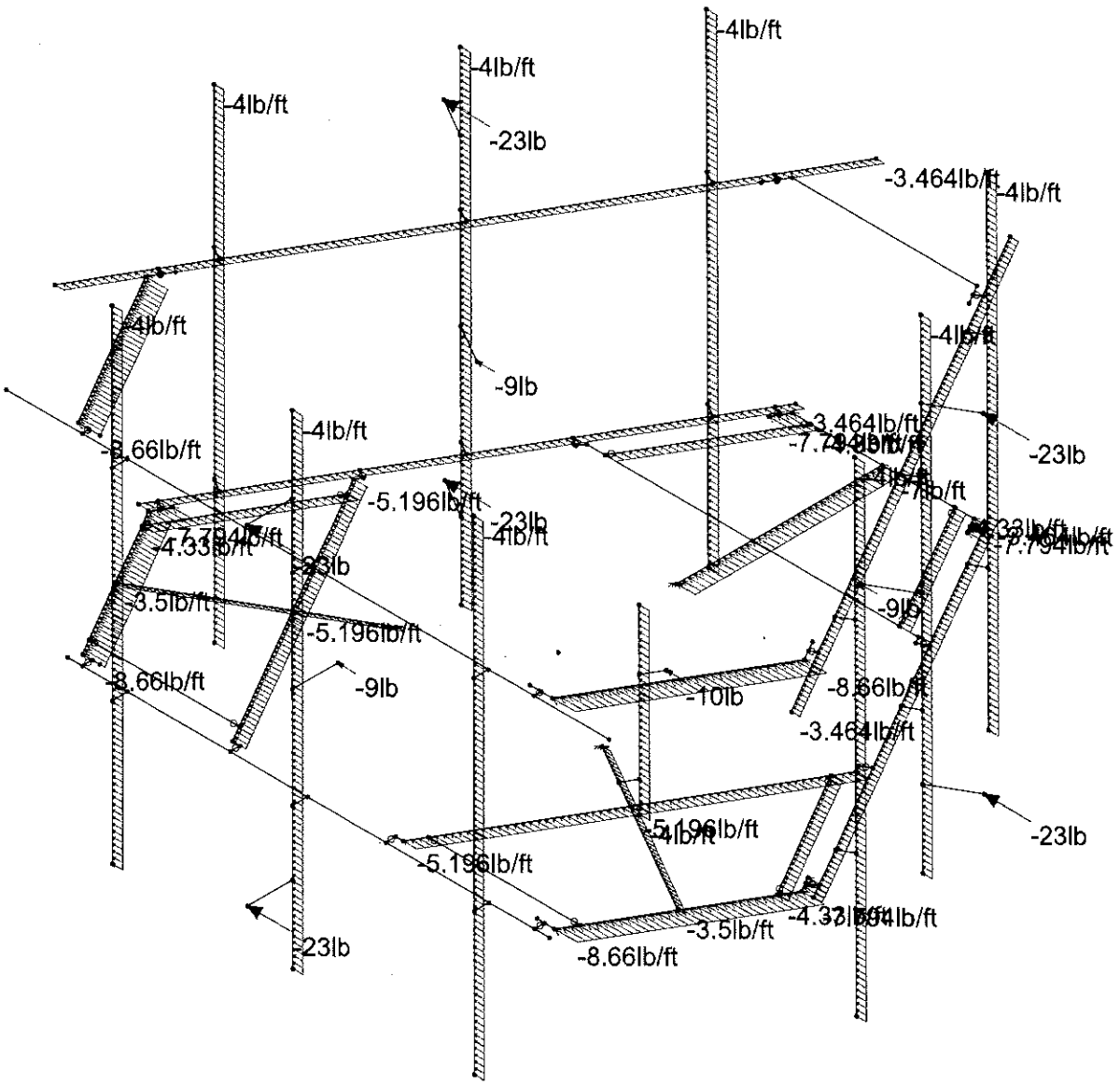
Loads: BLC 2, WLX



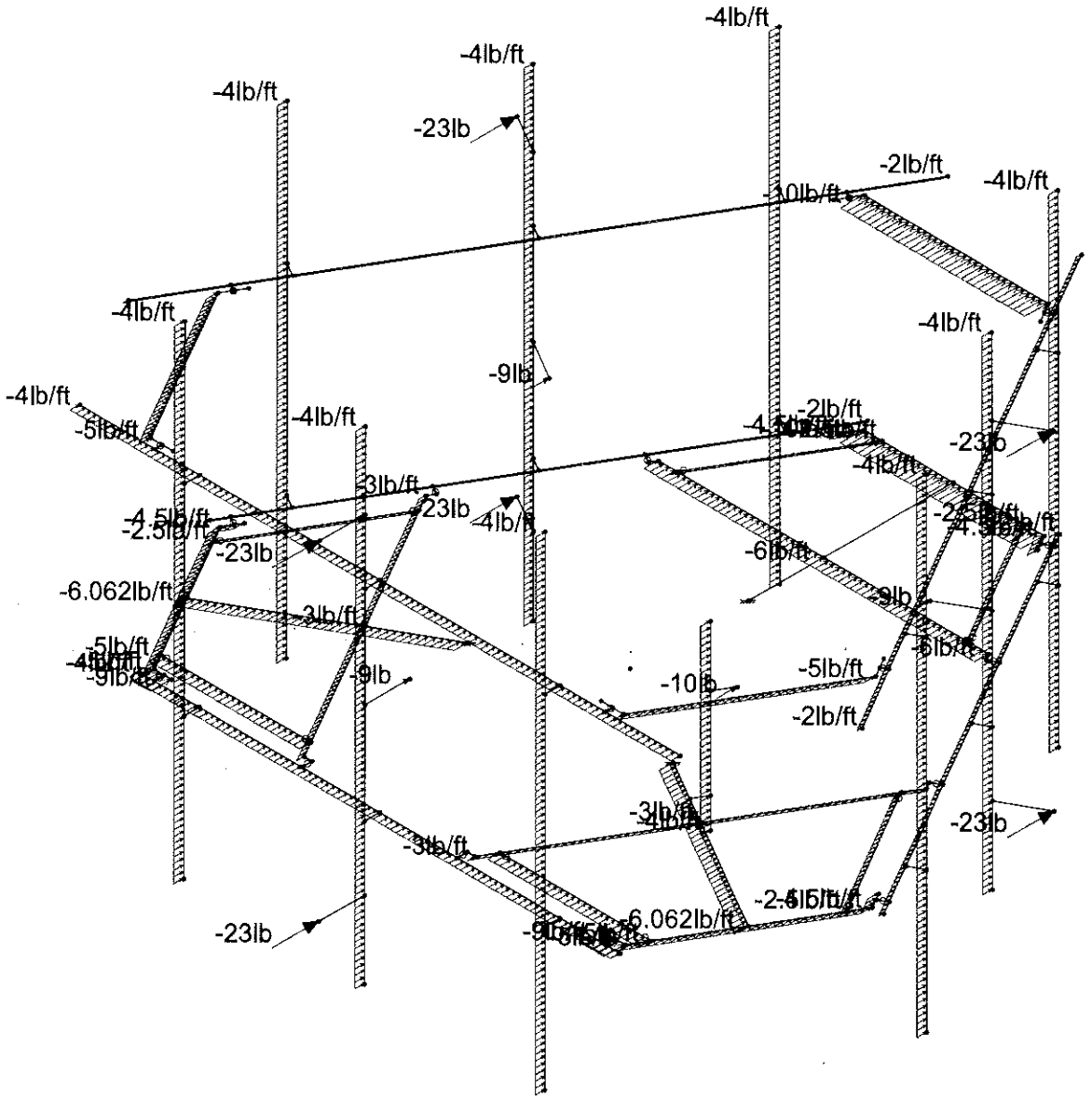
Loads: BLC 3, WLZ



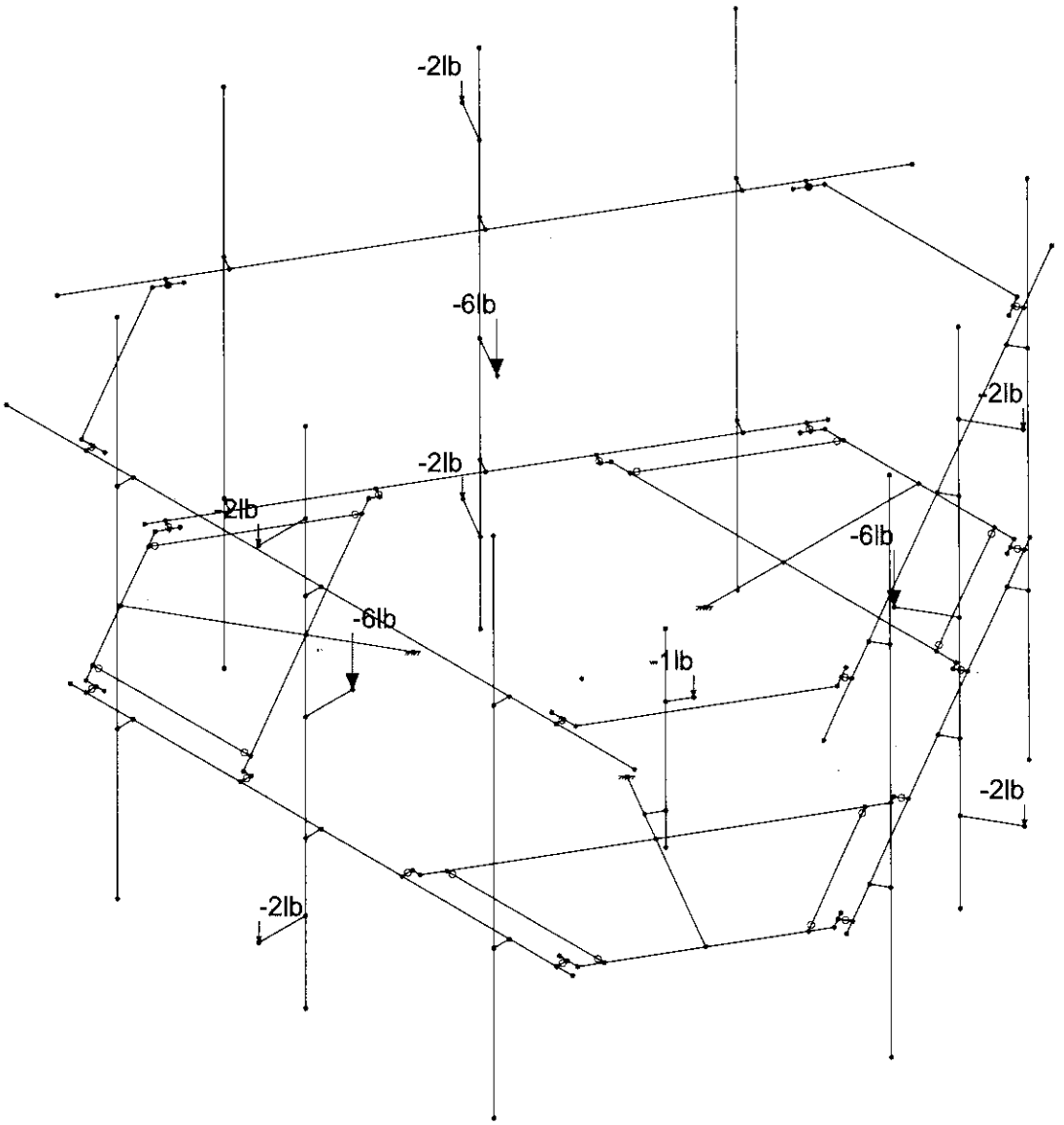
Loads: BLC 4, DLi



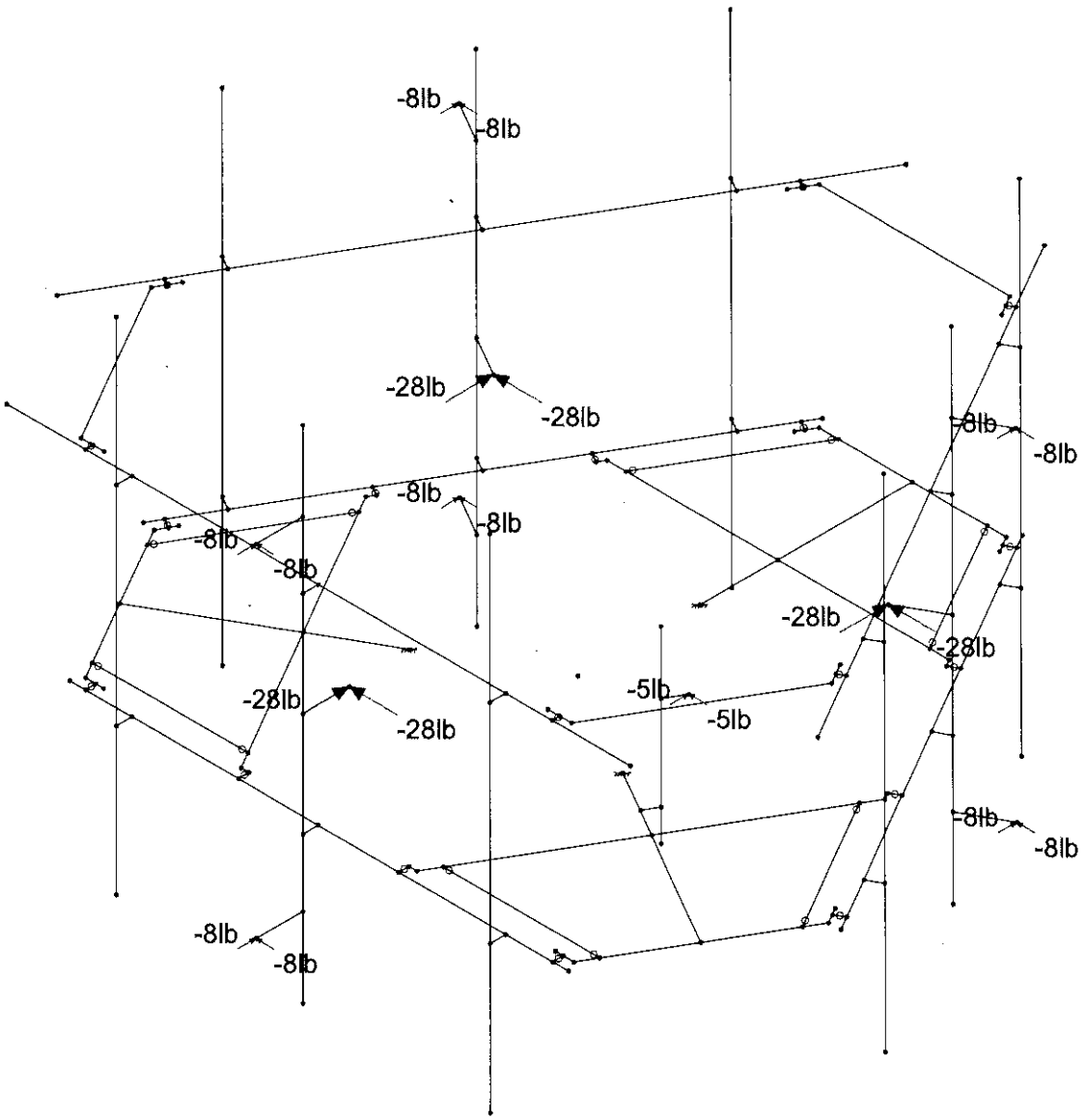
Loads: BLC 5, WLXi



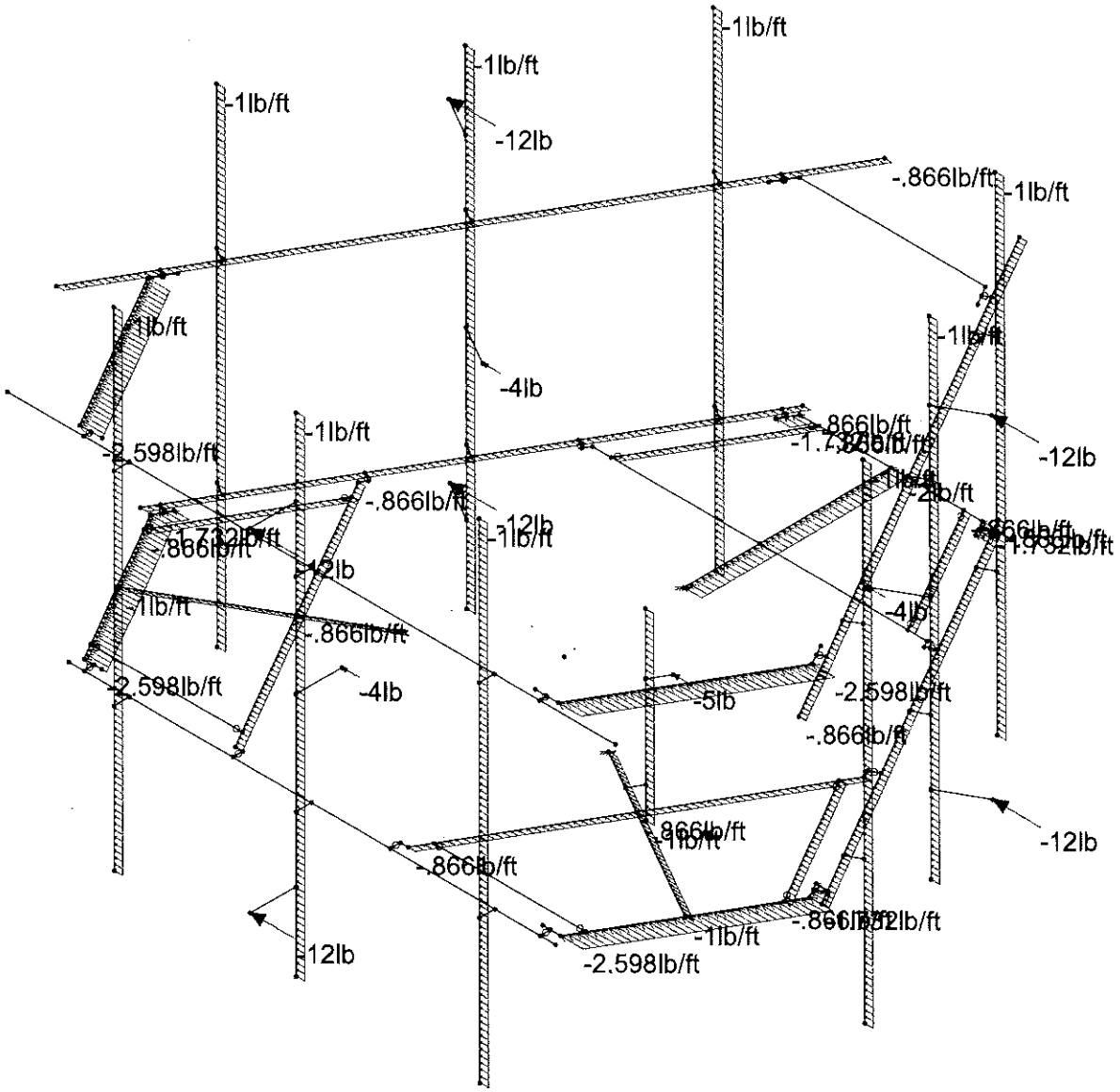
Loads: BLC 6, WLZi



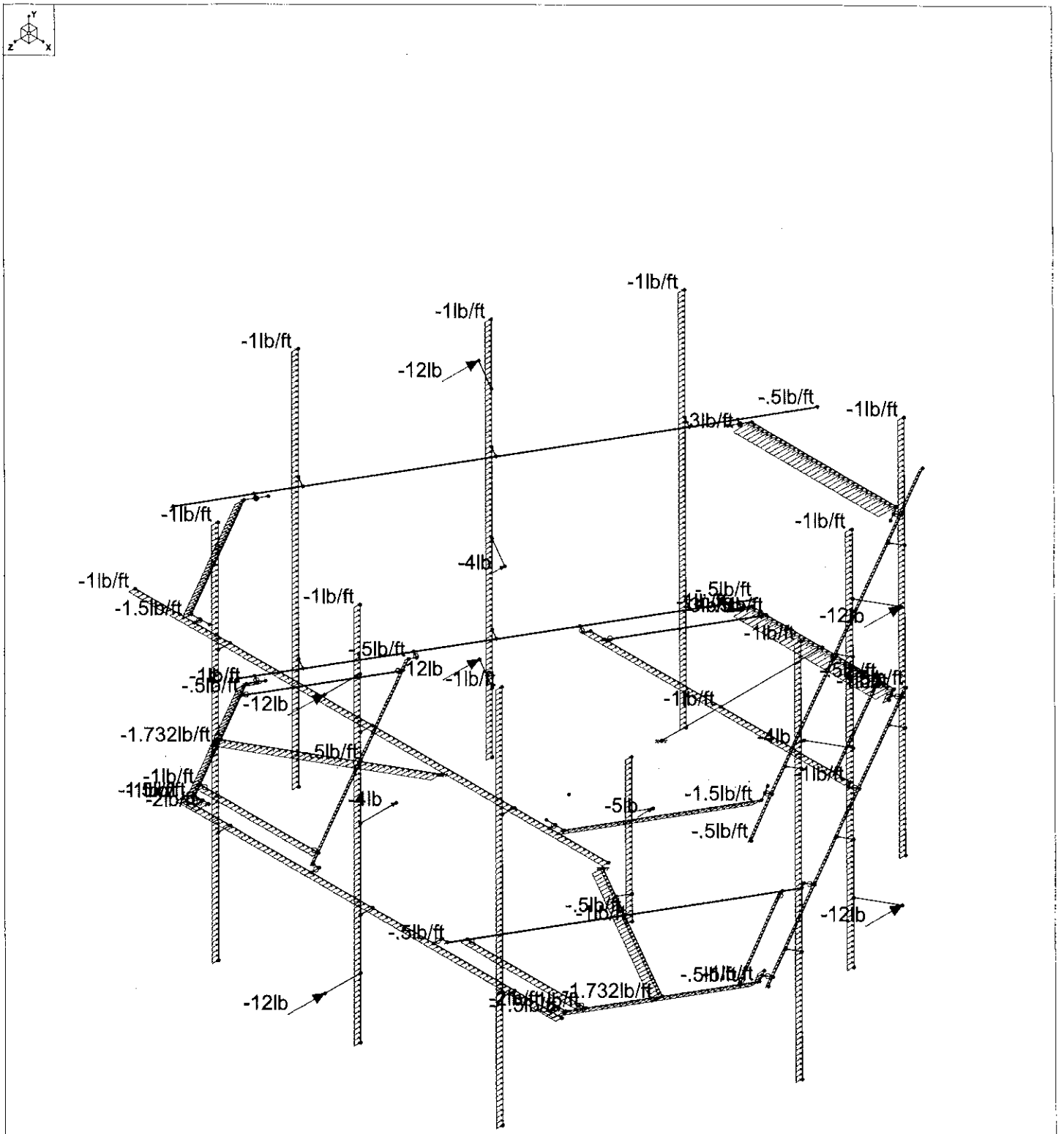
Loads: BLC 7, ELv



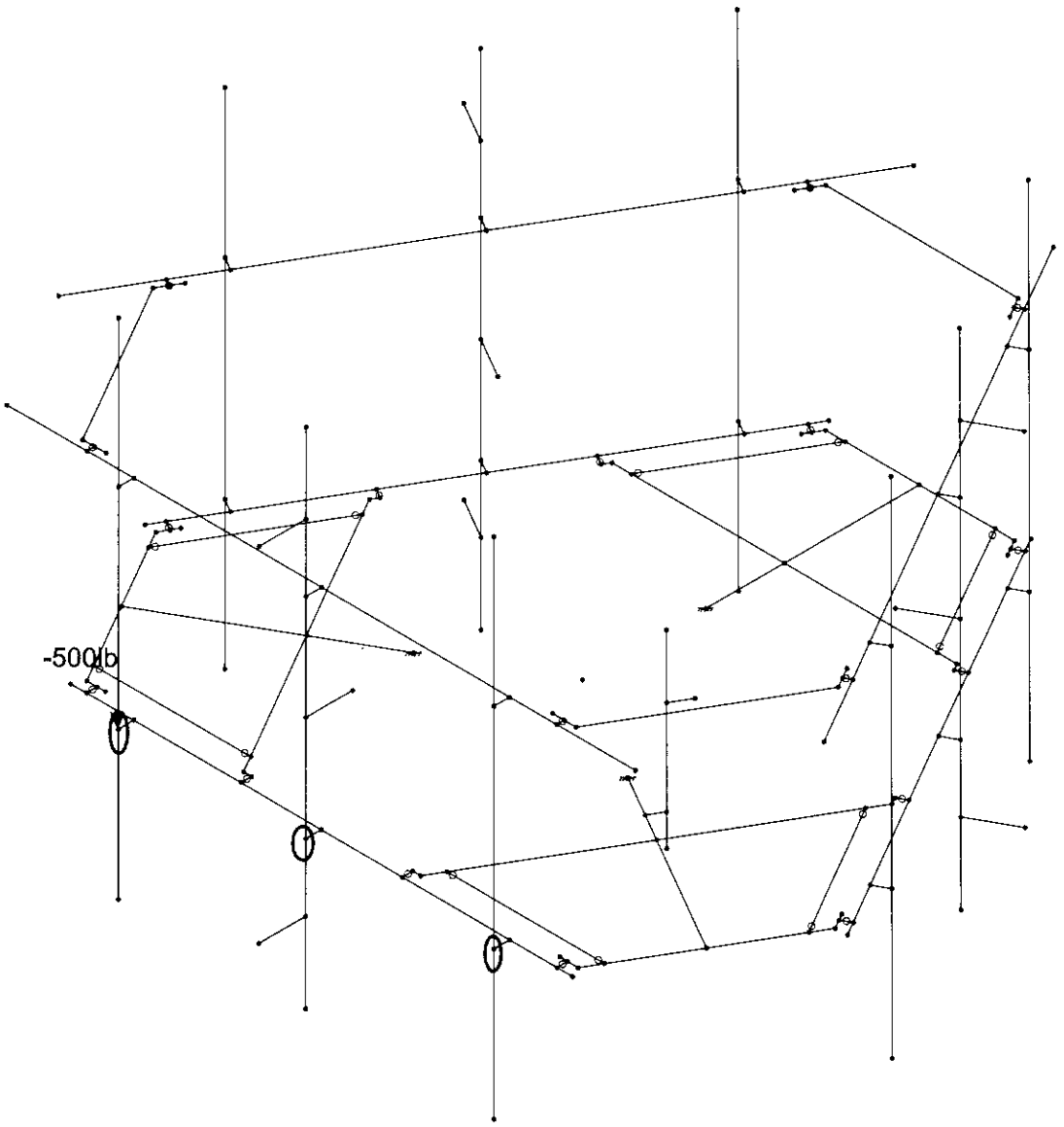
Loads: BLC 8, ELh



Loads: BLC 9, WLX (MAINT)

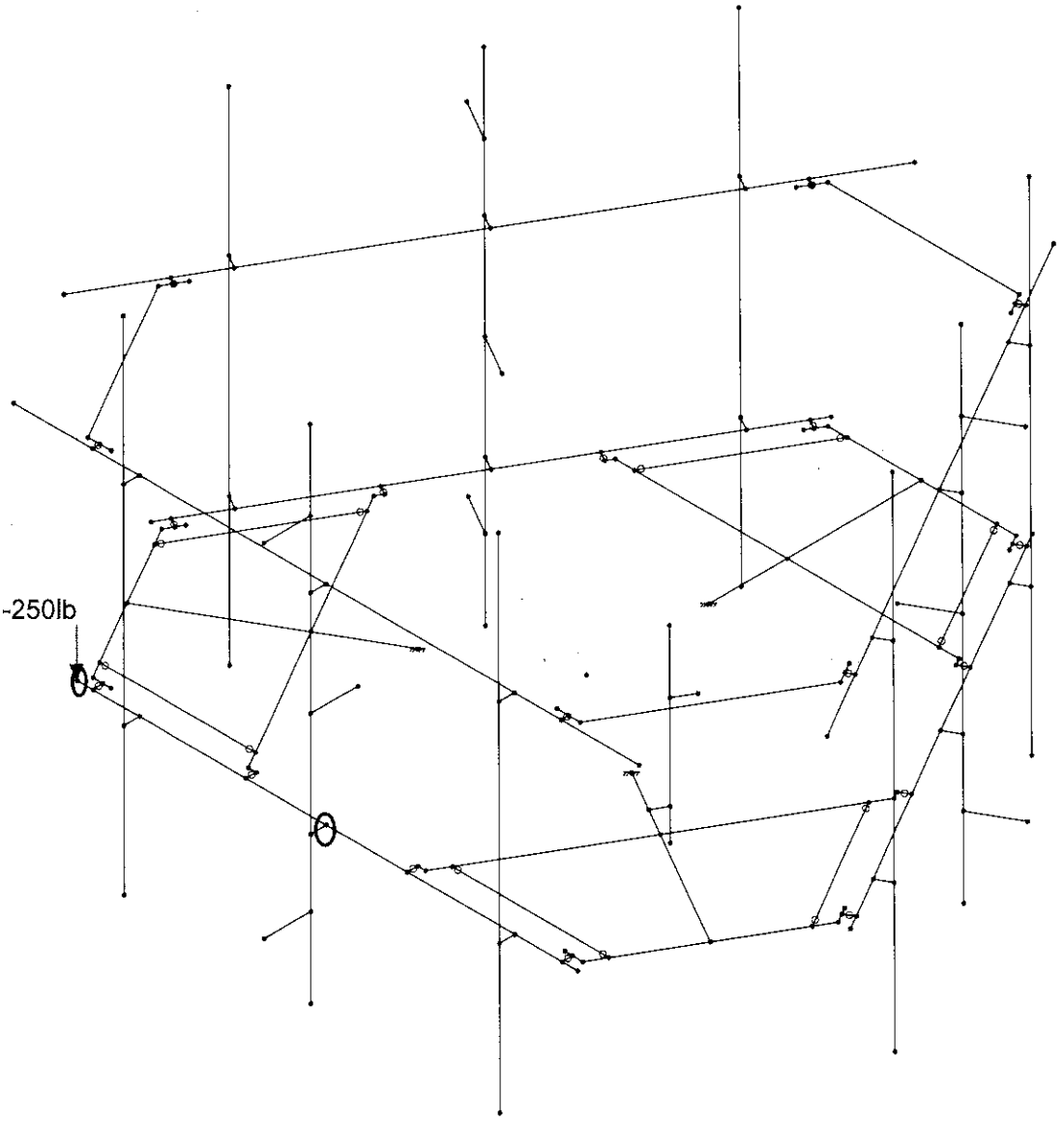


Loads: BLC 10, WLZ (MAINT)



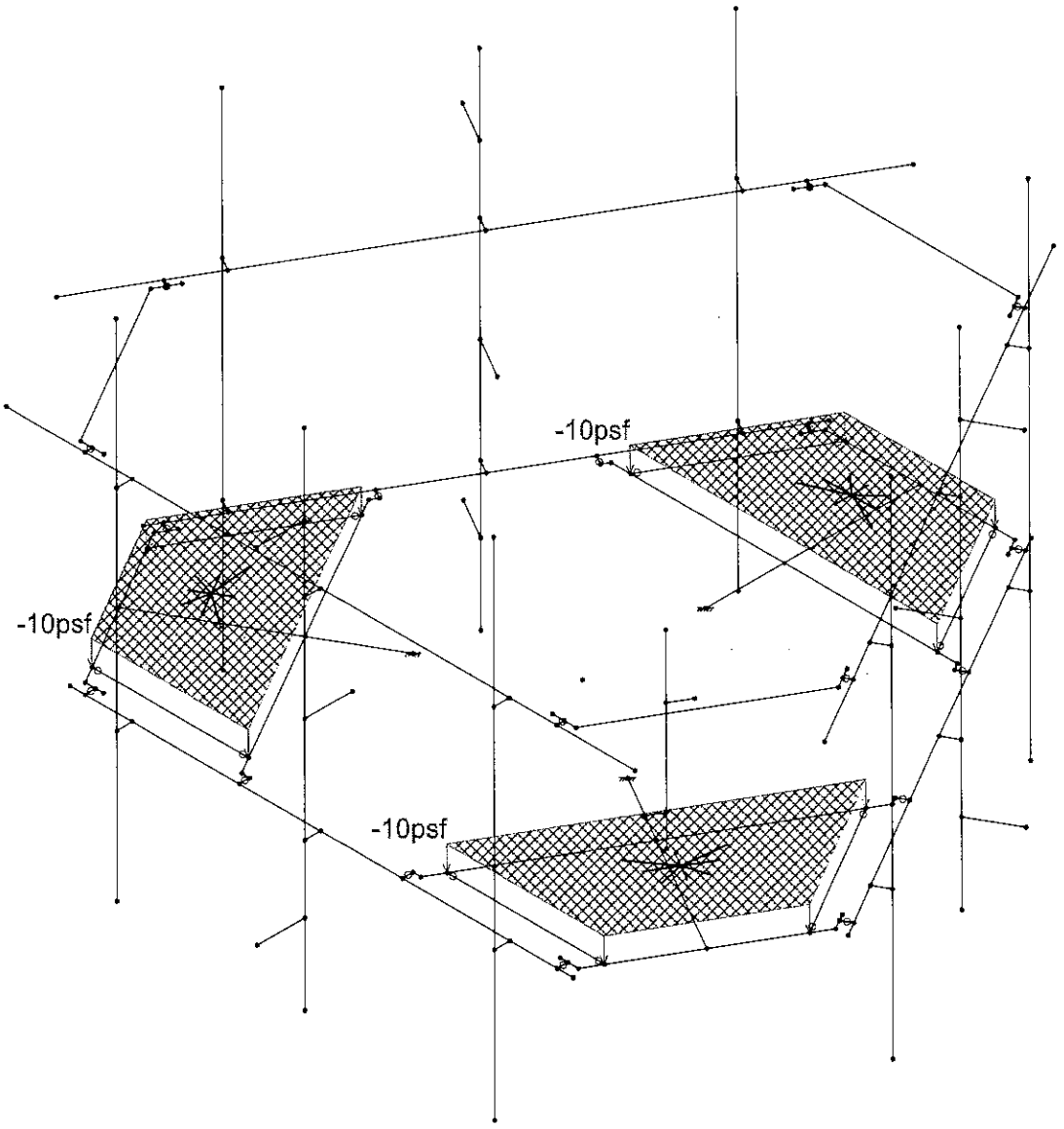
*500 lbs man load, typ of 3

Loads: BLC 11, Lm1



*250 lbs vertical load, typ of 2

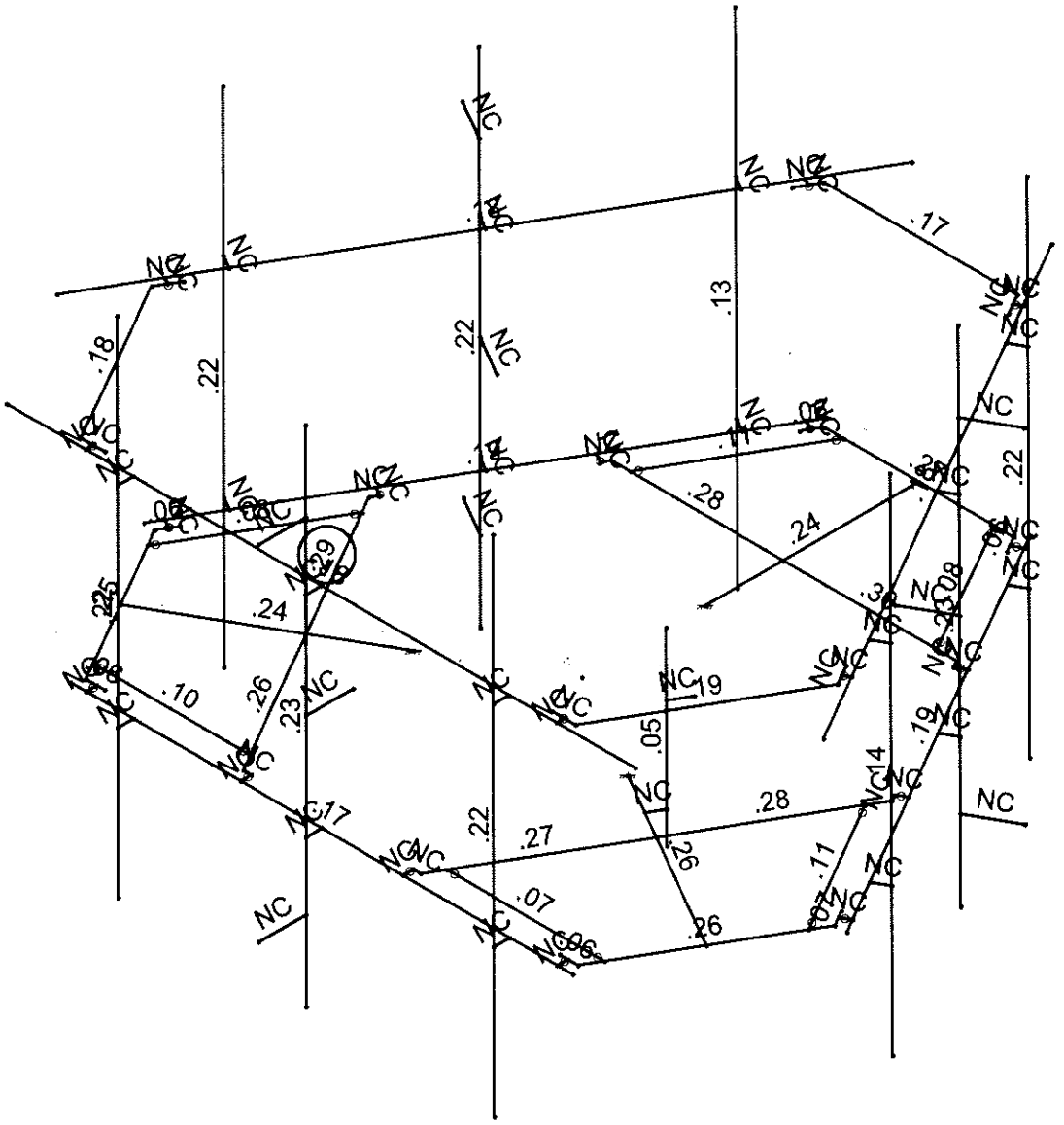
Loads: BLC 14, Lv1



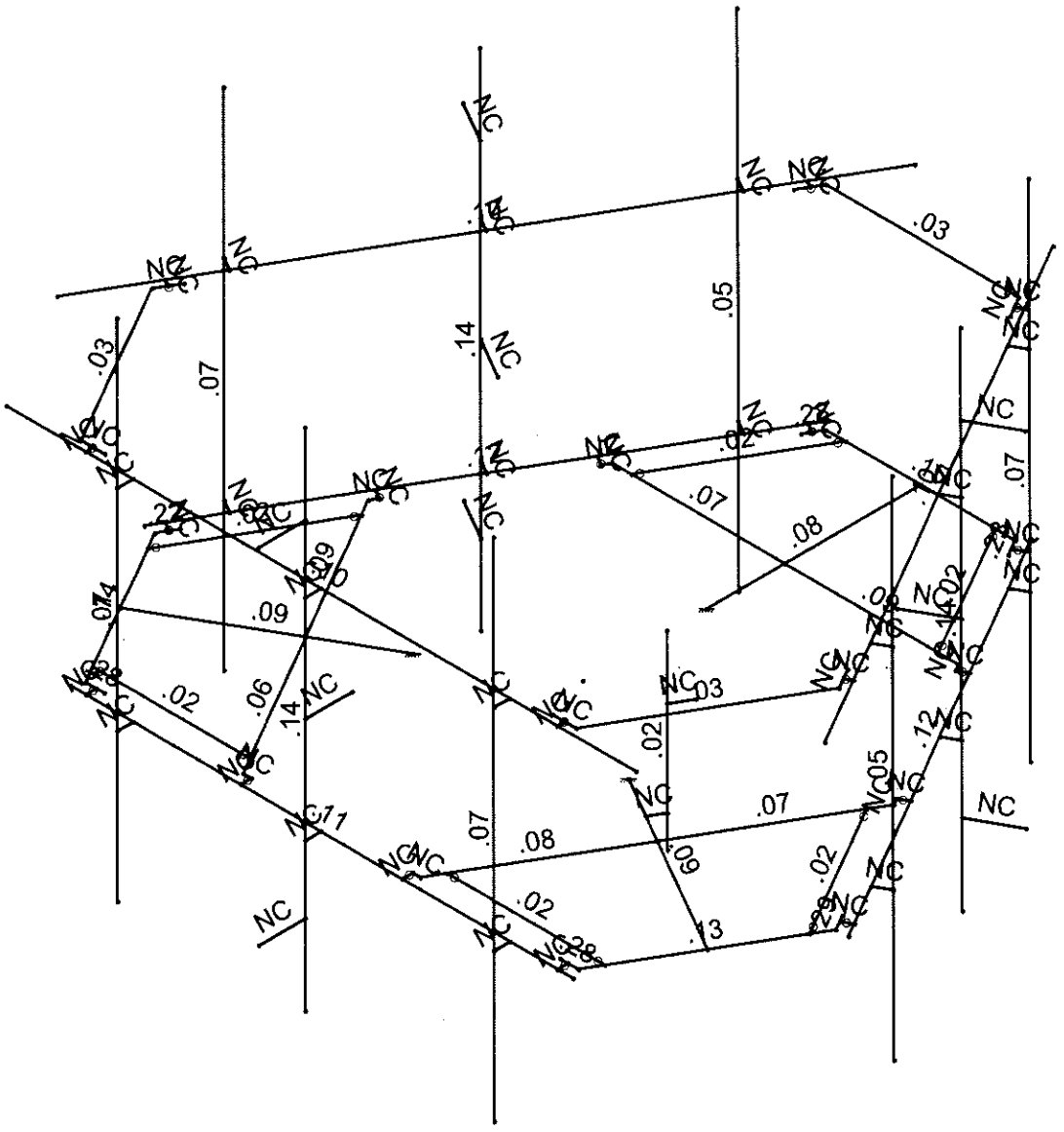
Loads: BLC 16, DL (Strd)

APPENDIX C

SOFTWARE ANALYSIS OUTPUT



Member Code Checks Displayed (Enveloped)
Envelope Only Solution



Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (/1E..	Density[k/ft...	Yield[ksi]	Ry	Fu[ksi]	Rt
1	A992	29000	11154	.3	.65	.49	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	.3	.65	.49	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	.3	.65	.527	42	1.4	58	1.3
5	A500 Gr.B Rect	29000	11154	.3	.65	.527	46	1.4	58	1.3
6	A53 Gr.B	29000	11154	.3	.65	.49	35	1.6	60	1.2
7	A1085	29000	11154	.3	.65	.49	50	1.4	65	1.3

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design R...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Standoff End Plate 6.5"	PL6.5x0.375	Beam	RECT	A36 Gr.36	Typical	2.438	.029	8.582	.11
2	Standoff End Plate 6"	Plate 6x.37	Beam	RECT	A36 Gr.36	Typical	2.22	.025	6.66	.097
3	Grating Support Angle	L2x2x4	Beam	Single An...	A36 Gr.36	Typical	.944	.346	.346	.021
4	Face Horizontal	Pipe3.5x0.165	Beam	Pipe	A53 Gr.B	Typical	1.729	2.409	2.409	4.819
5	Mount Pipe	PIPE 2.5	Column	Pipe	A53 Gr.B	Typical	1.61	1.45	1.45	2.89
6	Standoff Channel	C3.38x2.06x0.25	Beam	Channel	A36 Gr.36	Typical	1.75	.715	3.026	.034
7	Standoff	HSS4X4X6	Beam	SquareT...	A500 Gr.B R...	Typical	4.78	10.3	10.3	17.5
8	Rail Connector	L6.6x4.46x0.25	Beam	Single An...	A36 Gr.36	Typical	2.703	4.759	12.473	.055
9	Railing	PIPE 2.5	Beam	Pipe	A53 Gr.B	Typical	1.61	1.45	1.45	2.89
10	OVP Pipe	PIPE_2.5	Beam	Pipe	A53 Gr.B	Typical	1.61	1.45	1.45	2.89

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distribut...	Area(Me...	Surface(...
1	DL	DL				10				
2	WLX	WLX				10		45		
3	WLZ	WLZ				10		45		
4	DLi	OL1				10		45	3	
5	WLXi	WLX				10		45		
6	WLZi	WLZ				10		45		
7	ELv	ELY		-.052		10				
8	ELh	ELZ	-.22		-.22	20				
9	WLX (MAINT)	WL+X				10		45		
10	WLZ (MAINT)	WL+Z				10		45		
11	Lm1	OL1				1				
12	Lm2	OL2				1				
13	Lm3	OL3				1				
14	Lv1	OL4					1			
15	Lv2	OL5					1			
16	DL (Strd)	OL6		-1.05					3	
17	BLC 16 Transient ...	None						18		
18	BLC 4 Transient Ar..	None						18		

Load Combinations

	Description	S...	P...	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
1	**LRFD**																									
2	1.4D	Yes	Y		1	1.4	16	1.4																		
3	1.2D+(WLX+WLZ) - 0 Deg	Yes	Y		1	1.2	2	1	16	1.2																
4	1.2D+(WLX+WLZ) - 30 Deg	Yes	Y		1	1.2	2	.866	3	.5	16	1.2														
5	1.2D+(WLX+WLZ) - 60 Deg	Yes	Y		1	1.2	2	.5	3	.866	16	1.2														
6	1.2D+(WLX+WLZ) - 90 Deg	Yes	Y		1	1.2	2		3	1	16	1.2														
7	1.2D+(WLX+WLZ) - 120 Deg	Yes	Y		1	1.2	2	-.5	3	.866	16	1.2														

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...
8	1.2D+(WLX+WLZ) - 150 Deg	Yes	Y		1	1.2	2	-.8...	3	.5	16	1.2												
9	1.2D+(WLX+WLZ) - 180 Deg	Yes	Y		1	1.2	2	-1	3		16	1.2												
10	1.2D+(WLX+WLZ) - 210 Deg	Yes	Y		1	1.2	2	-.8...	3	-.5	16	1.2												
11	1.2D+(WLX+WLZ) - 240 Deg	Yes	Y		1	1.2	2	-.5	3	-.8...	16	1.2												
12	1.2D+(WLX+WLZ) - 270 Deg	Yes	Y		1	1.2	2		3	-1	16	1.2												
13	1.2D+(WLX+WLZ) - 300 Deg	Yes	Y		1	1.2	2	.5	3	-.8...	16	1.2												
14	1.2D+(WLX+WLZ) - 330 Deg	Yes	Y		1	1.2	2	.866	3	-.5	16	1.2												
15	**Wind Load with Ice**																							
16	1.2D+1.0Di+1.0(WLXi+WLZi) - ...	Yes	Y		1	1.2	4	1	5	1	6		16	1.2										
17	1.2D+1.0Di+1.0(WLXi+WLZi) - ...	Yes	Y		1	1.2	4	1	5	.866	6	.5	16	1.2										
18	1.2D+1.0Di+1.0(WLXi+WLZi) - ...	Yes	Y		1	1.2	4	1	5	.5	6	.866	16	1.2										
19	1.2D+1.0Di+1.0(WLXi+WLZi) - ...	Yes	Y		1	1.2	4	1	5		6	1	16	1.2										
20	1.2D+1.0Di+1.0(WLXi+WLZi) - ...	Yes	Y		1	1.2	4	1	5	-.5	6	.866	16	1.2										
21	1.2D+1.0Di+1.0(WLXi+WLZi) - ...	Yes	Y		1	1.2	4	1	5	-.8...	6	.5	16	1.2										
22	1.2D+1.0Di+1.0(WLXi+WLZi) - ...	Yes	Y		1	1.2	4	1	5	-1	6		16	1.2										
23	1.2D+1.0Di+1.0(WLXi+WLZi) - ...	Yes	Y		1	1.2	4	1	5	-.8...	6	-.5	16	1.2										
24	1.2D+1.0Di+1.0(WLXi+WLZi) - ...	Yes	Y		1	1.2	4	1	5	-.5	6	-.8...	16	1.2										
25	1.2D+1.0Di+1.0(WLXi+WLZi) - ...	Yes	Y		1	1.2	4	1	5		6	-1	16	1.2										
26	1.2D+1.0Di+1.0(WLXi+WLZi) - ...	Yes	Y		1	1.2	4	1	5	.5	6	-.8...	16	1.2										
27	1.2D+1.0Di+1.0(WLXi+WLZi) - ...	Yes	Y		1	1.2	4	1	5	.866	6	-.5	16	1.2										
28	**Seismic Load**																							
29	1.2D+ELv+ELh	Yes	Y		1	1.2	7	1	8	1	16	1.2												
30	**Maintenance Load (With Servi..																							
31	1.2D+1.5Lm1+1.0WLX (service)	Yes	Y		1	1.2	11	1.5	9	1	10		16	1.2										
32	1.2D+1.5Lm1+1.0WLZ (service)	Yes	Y		1	1.2	11	1.5	9		10	1	16	1.2										
33	1.2D+1.5Lm1+1.0(WLX+WLZ, ...	Yes	Y		1	1.2	11	1.5	9	1	10		16	1.2										
34	1.2D+1.5Lm1+1.0(WLX+WLZ, ...	Yes	Y		1	1.2	11	1.5	9	.87	10	.5	16	1.2										
35	1.2D+1.5Lm1+1.0(WLX+WLZ, ...	Yes	Y		1	1.2	11	1.5	9	.5	10	.87	16	1.2										
36	1.2D+1.5Lm1+1.0(WLX+WLZ, ...	Yes	Y		1	1.2	11	1.5	9		10	1	16	1.2										
37	1.2D+1.5Lm1+1.0(WLX+WLZ, ...	Yes	Y		1	1.2	11	1.5	9	-.5	10	.87	16	1.2										
38	1.2D+1.5Lm1+1.0(WLX+WLZ, ...	Yes	Y		1	1.2	11	1.5	9	-.87	10	.5	16	1.2										
39	1.2D+1.5Lm1+1.0(WLX+WLZ, ...	Yes	Y		1	1.2	11	1.5	9	-1	10		16	1.2										
40	1.2D+1.5Lm1+1.0(WLX+WLZ, ...	Yes	Y		1	1.2	11	1.5	9	-.87	10	-.5	16	1.2										
41	1.2D+1.5Lm1+1.0(WLX+WLZ, ...	Yes	Y		1	1.2	11	1.5	9	-.5	10	-.87	16	1.2										
42	1.2D+1.5Lm1+1.0(WLX+WLZ, ...	Yes	Y		1	1.2	11	1.5	9		10	-1	16	1.2										
43	1.2D+1.5Lm1+1.0(WLX+WLZ, ...	Yes	Y		1	1.2	11	1.5	9	.5	10	-.87	16	1.2										
44	1.2D+1.5Lm1+1.0(WLX+WLZ, ...	Yes	Y		1	1.2	11	1.5	9	.87	10	-.5	16	1.2										
45	**Maintenance Load (With Servi..																							
46	1.2D+1.5Lm2+1.0WLX (service)	Yes	Y		1	1.2	12	1.5	9	1	10		16	1.2										
47	1.2D+1.5Lm2+1.0WLZ (service)	Yes	Y		1	1.2	12	1.5	9		10	1	16	1.2										
48	1.2D+1.5Lm2+1.0(WLX+WLZ, ...	Yes	Y		1	1.2	12	1.5	9	1	10		16	1.2										
49	1.2D+1.5Lm2+1.0(WLX+WLZ, ...	Yes	Y		1	1.2	12	1.5	9	.87	10	.5	16	1.2										
50	1.2D+1.5Lm2+1.0(WLX+WLZ, ...	Yes	Y		1	1.2	12	1.5	9	.5	10	.87	16	1.2										
51	1.2D+1.5Lm2+1.0(WLX+WLZ, ...	Yes	Y		1	1.2	12	1.5	9		10	1	16	1.2										
52	1.2D+1.5Lm2+1.0(WLX+WLZ, ...	Yes	Y		1	1.2	12	1.5	9	-.5	10	.87	16	1.2										
53	1.2D+1.5Lm2+1.0(WLX+WLZ, ...	Yes	Y		1	1.2	12	1.5	9	-.87	10	.5	16	1.2										
54	1.2D+1.5Lm2+1.0(WLX+WLZ, ...	Yes	Y		1	1.2	12	1.5	9	-1	10		16	1.2										
55	1.2D+1.5Lm2+1.0(WLX+WLZ, ...	Yes	Y		1	1.2	12	1.5	9	-.87	10	-.5	16	1.2										
56	1.2D+1.5Lm2+1.0(WLX+WLZ, ...	Yes	Y		1	1.2	12	1.5	9	-.5	10	-.87	16	1.2										
57	1.2D+1.5Lm2+1.0(WLX+WLZ, ...	Yes	Y		1	1.2	12	1.5	9		10	-1	16	1.2										
58	1.2D+1.5Lm2+1.0(WLX+WLZ, ...	Yes	Y		1	1.2	12	1.5	9	.5	10	-.87	16	1.2										
59	1.2D+1.5Lm2+1.0(WLX+WLZ, ...	Yes	Y		1	1.2	12	1.5	9	.87	10	-.5	16	1.2										
60	**Maintenance Load (With Servi..																							
61	1.2D+1.5Lm3+1.0WLX (service)	Yes	Y		1	1.2	13	1.5	9	1	10		16	1.2										
62	1.2D+1.5Lm3+1.0WLZ (service)	Yes	Y		1	1.2	13	1.5	9		10	1	16	1.2										
63	1.2D+1.5Lm3+1.0(WLX+WLZ, ...	Yes	Y		1	1.2	13	1.5	9	1	10		16	1.2										
64	1.2D+1.5Lm3+1.0(WLX+WLZ, ...	Yes	Y		1	1.2	13	1.5	9	.87	10	.5	16	1.2										

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...
65	1.2D+1.5Lm3+1.0(WLX+WLZ, ...	Yes	Y		1	1.2	13	1.5	9	.5	10	.87	16	1.2										
66	1.2D+1.5Lm3+1.0(WLX+WLZ, ...	Yes	Y		1	1.2	13	1.5	9		10	1	16	1.2										
67	1.2D+1.5Lm3+1.0(WLX+WLZ, ...	Yes	Y		1	1.2	13	1.5	9	-.5	10	.87	16	1.2										
68	1.2D+1.5Lm3+1.0(WLX+WLZ, ...	Yes	Y		1	1.2	13	1.5	9	-.87	10	.5	16	1.2										
69	1.2D+1.5Lm3+1.0(WLX+WLZ, ...	Yes	Y		1	1.2	13	1.5	9	-1	10		16	1.2										
70	1.2D+1.5Lm3+1.0(WLX+WLZ, ...	Yes	Y		1	1.2	13	1.5	9	-.87	10	-.5	16	1.2										
71	1.2D+1.5Lm3+1.0(WLX+WLZ, ...	Yes	Y		1	1.2	13	1.5	9	-.5	10	-.87	16	1.2										
72	1.2D+1.5Lm3+1.0(WLX+WLZ, ...	Yes	Y		1	1.2	13	1.5	9		10	-1	16	1.2										
73	1.2D+1.5Lm3+1.0(WLX+WLZ, ...	Yes	Y		1	1.2	13	1.5	9	.5	10	-.87	16	1.2										
74	1.2D+1.5Lm3+1.0(WLX+WLZ, ...	Yes	Y		1	1.2	13	1.5	9	.87	10	-.5	16	1.2										
75	***Man Vertical Load***		Y																					
76	1.2D+1.5Lv1	Yes	Y		1	1.2	14	1.5	16	1.2														
77	1.2D+1.5Lv2	Yes	Y		1	1.2	15	1.5	16	1.2														

Envelope Joint Reactions

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N10	max	1233.801	14	1935.457	23	1878.775	7	.657	3	2.173	13	4.242	10
2		min	-1231.106	8	68.964	4	-1872.493	13	-2.922	69	-2.159	7	-.812	4
3	N53	max	1074.196	4	1755.001	27	1738.413	5	.66	9	2.05	5	.821	8
4		min	-1082.059	10	-26.463	8	-1743.148	11	-2.891	31	-2.046	11	-3.88	14
5	N70	max	1992.713	3	1865.338	19	573.067	6	4.738	6	1.962	9	.708	3
6		min	-1987.611	9	12.108	12	-582.262	12	-.909	12	-1.946	3	-.83	9
7	Totals:	max	3916.87	3	4931.761	27	4076.407	6						
8		min	-3916.872	9	2701.8	8	-4076.406	12						

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

	Member	Shape	Code ...	Loc[ft]	LC	Shear...	Loc[...	Dir	LC	phi*Pn...	phi*Pnt...	phi*Mn...	phi*Mn...	Cb	Eqn
1	M22	C3.38x2.06x0....	.298	2.75	6	.093	.286	z	11	47760....	56700	2.203	5.752	1...	H1-1b
2	M36	C3.38x2.06x0....	.289	2.75	14	.089	.286	z	7	47760....	56700	2.203	5.752	1...	H1-1b
3	M23	C3.38x2.06x0....	.282	0	6	.068	2.464	z	7	47760....	56700	2.203	5.752	1...	H1-1b
4	M7	C3.38x2.06x0....	.278	0	10	.067	2.464	z	11	47760....	56700	2.203	5.752	1...	H1-1b
5	M8	C3.38x2.06x0....	.269	2.75	10	.079	.286	z	3	47760....	56700	2.203	5.752	1...	H1-1b
6	M19	PL6.5x0.375	.268	1.5	5	.151	3	y	11	4979.1...	78975	.617	8.88	1...	H1-1b
7	M37	C3.38x2.06x0....	.265	0	14	.058	2.464	z	14	47760....	56700	2.203	5.752	1...	H1-1b
8	M4	PL6.5x0.375	.259	1.5	11	.133	0	y	3	4979.1...	78975	.617	9.118	1...	H1-1b
9	M6	HSS4X4X6	.258	3.417	11	.088	2.634	y	68	187775...	197892	22.046	22.046	1...	H1-1b
10	M33	PL6.5x0.375	.255	1.5	13	.144	3	y	7	4979.1...	78975	.617	9.004	1...	H1-1b
11	M21	HSS4X4X6	.244	3.417	5	.082	3.417	z	9	187775...	197892	22.046	22.046	1...	H1-1b
12	M35	HSS4X4X6	.237	3.417	13	.090	3.417	y	34	187775...	197892	22.046	22.046	1...	H1-1b
13	M75	PIPE_2.5	.231	5.667	9	.138	4		9	30038....	50715	3.596	3.596	3...	H1-1b
14	M93	PIPE_2.5	.229	5.667	5	.141	4		5	30038....	50715	3.596	3.596	2...	H1-1b
15	M105	PIPE_2.5	.223	5.667	13	.138	4		13	30038....	50715	3.596	3.596	2...	H1-1b
16	M87	PIPE_2.5	.220	5.667	5	.066	5.667		3	30038....	50715	3.596	3.596	3...	H1-1b
17	M72	PIPE_2.5	.220	5.667	3	.066	5.667		5	30038....	50715	3.596	3.596	3...	H1-1b
18	M69	PIPE_2.5	.218	5.667	9	.068	5.667		7	30038....	50715	3.596	3.596	3...	H1-1b
19	M99	PIPE_2.5	.216	5.667	13	.067	5.667		11	30038....	50715	3.596	3.596	2...	H1-1b
20	M16	Pipe3.5x0.165	.190	5.333	5	.122	5.25		11	38821....	54463.5	4.822	4.822	1...	H1-1b
21	M62	L6.6x4.46x0.25	.189	3.06	3	.031	3.06	y	13	51620....	87561	2.465	7.125	1...	H2-1
22	M45	Pipe3.5x0.165	.186	5.333	7	.120	2.75		7	38821....	54463.5	4.822	4.822	1...	H1-1b
23	M46	PIPE_2.5	.184	7.917	9	.104	2.083		14	22373....	50715	3.596	3.596	1...	H1-1b
24	M47	PIPE_2.5	.182	2.083	11	.104	7.917		6	22373....	50715	3.596	3.596	1...	H1-1b
25	M61	L6.6x4.46x0.25	.180	0	9	.028	0	y	5	51620....	87561	2.465	7.125	1...	H2-1
26	M48	PIPE_2.5	.180	2.083	7	.103	2.083		6	22373....	50715	3.596	3.596	1...	H1-1b
27	M63	L6.6x4.46x0.25	.171	3.06	11	.028	0	y	9	51620....	87561	2.465	7.125	1...	H2-1

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

	Member	Shape	Code ...	Loc[ft]	LC	Shear..	Loc[...	Dir	LC	phi*Pn...	phi*Pnt...	phi*Mn...	phi*Mn...	Cb	Eqn
28	M1	Pipe3.5x0.165	.167	2.667	9	.107	2.75		3	38821....	54463.5	4.822	4.822	1...	H1-1b
29	M85	PIPE_2.5	.136	5.667	11	.054	5.667		13	30038....	50715	3.596	3.596	2...	H1-1b
30	M90	PIPE_2.5	.136	5.667	11	.054	5.667		13	30038....	50715	3.596	3.596	2...	H1-1b
31	M98	PIPE_2.5	.134	5.667	7	.052	5.667		9	30038....	50715	3.596	3.596	3...	H1-1b
32	M102	PIPE_2.5	.134	5.667	7	.052	5.667		9	30038....	50715	3.596	3.596	3...	H1-1b
33	M29	L2x2x4	.115	0	13	.018	0	z	16	22280....	30585.6	.691	1.577	1...	H2-1
34	M15	L2x2x4	.112	0	5	.018	2.502	z	68	22280....	30585.6	.691	1.577	1...	H2-1
35	M43	L2x2x4	.097	0	9	.018	0	z	24	22280....	30585.6	.691	1.577	1...	H2-1
36	M30	L2x2x4	.081	0	5	.022	2.502	y	10	22280....	30585.6	.691	1.577	2...	H2-1
37	M44	L2x2x4	.077	0	13	.021	2.502	y	6	22280....	30585.6	.691	1.577	2...	H2-1
38	M14	L2x2x4	.067	0	9	.021	2.502	y	14	22280....	30585.6	.691	1.577	2...	H2-1
39	M5	Plate 6x.37	.066	.164	6	.286	0	y	11	67974....	71928	.554	8.991	2...	H1-1b
40	M34	Plate 6x.37	.064	.164	6	.223	0	y	13	67974....	71928	.554	8.991	1...	H1-1b
41	M18	Plate 6x.37	.063	.128	14	.283	.292	y	7	67974....	71928	.554	8.991	2...	H1-1b
42	M20	Plate 6x.37	.063	.164	10	.227	0	y	5	67974....	71928	.554	8.991	1...	H1-1b
43	M3	Plate 6x.37	.055	.128	14	.279	.292	y	69	67974....	71928	.554	8.991	1...	H1-1b
44	M32	Plate 6x.37	.055	.128	10	.279	.292	y	33	67974....	71928	.554	8.991	2...	H1-1b
45	M65	PIPE_2.5	.045	.5	7	.015	.5		10	47114....	50715	3.596	3.596	1...	H1-1b

The maximum member stress is at 29% of its capacity, therefore the proposed mount will have sufficient capacity to support the proposed load configurations upon installations.

APPENDIX D

ADDITIONAL CALCULATIONS

Tectonic
PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.

Job No. 10710.NJJER01117A
Calculated By: JJ Date : 10/12/22
Checked By: IM Date : 10/12/22

Connection Details		
Bolt Details		
Bolt Quantity =		
Bolt Diameter =		in
Vertical Spacing =		in
Horizontal Spacing =		in
Bolt Grade =		
Bolt F_u, if "Other" =		ksi

Loading Details		
Node N70, LC5		
Shear, X =		k
Shear, Y =		k
Tension, Z =		k
Mx =		k-ft
My =		k-ft
Torsion, Mz =		k-ft

1 - Tensile Capacity

$$R_{nt} = F_{nt}A_b$$ AISC [Eqn. J3-1]

Φ =	0.75	
F_{nt} =	90	ksi
A_b =	0.307	in^2
ΦR_{nt} =	20.72	k
T_{max} =	4.72	k

AISC [Table J3.2]

ΦRnt > Tmax

OK

2 - Shear Capacity

$$R_{nv} = F_{nv}A_b$$ AISC [Eqn. J3-1]

Φ =	0.75	
F_{nv} =	54	ksi
A_b =	0.307	in^2
ΦR_{nv} =	12.43	k
V_{max} =	0.72	k

AISC [Table J3.2]

ΦRnv > Vmax

OK

3 - Combined Tension and Shear Capacity

$$R'_{nt} = F'_{nt}A_b$$ AISC [Eqn. J3-2]

$$F'_{nt} = 1.3F_{nt} - \frac{F_{nt}}{\phi F_{nv}} f_{rv} \leq F_{nt}$$ AISC [Eqn. J3-3a]

Φ =	0.75	
F'_{nt} =	90	ksi
A_b =	0.307	in^2
$\Phi R'_{nt}$ =	20.72	k
T_{max} =	4.72	k

ΦR'nt > Tmax

OK

Tectonic

PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.

Job No. 10710.NJJER01117A
Calculated By: JJ Date : 10/12/22
Checked By: IM Date : 10/12/22

Connection Details		
Weld Details		
Weld Type		
# of Sides		
Electrodes		XX
Size of Weld =		in
HSS Height =		in
HSS Width =		in
HSS Thickness =		in
Plate Details		
Height/Width =		in
Thickness =		in
F_y =		ksi

4 - Weld Capacity

$$F_{nw} = 0.6F_{EXX}$$

AISC [Table J2.5]

Φ =	0.75	
ΦF_{nw} =	63.00	ksi
$f_{v,max}$ =	1.134	ksi
$f_{b,max}$ =	14.96	ksi

Min(ΦFnw,ΦFnbm) > √(fv,max+fm,max)

[redacted] **OK**

5 - Plate Capacity

Φ =	0.9	
ΦF_{byy} =	45.00	ksi
f_b =	13.71	ksi

ΦFbyy > Fb

[redacted] **OK**

Exhibit F

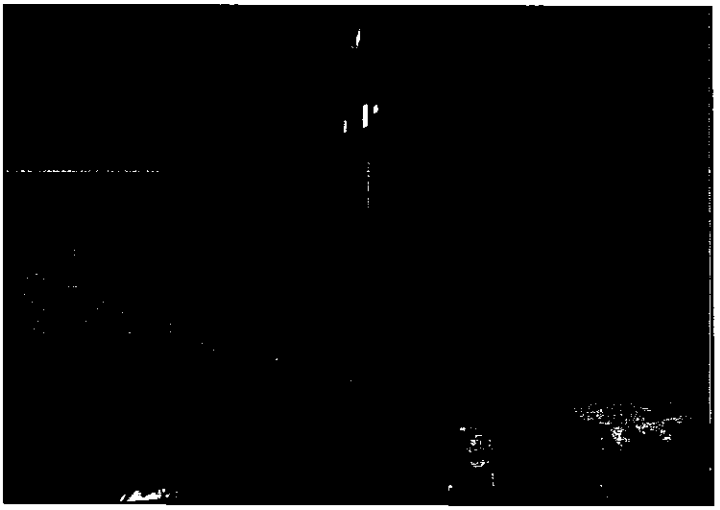
Emissions Report

APPROVED
By Pawan Madahar at 5:22 pm, Nov 29, 2022

Pinnacle Telecom Group

Professional and Technical Services

Antenna Site FCC RF Compliance Assessment and Report for Municipal Submission



Prepared for:	DISH Wireless, LLC
Site ID:	NJJER01117A
Site Address:	76 East Ridge Road Ridgefield, CT
Latitude:	N 41.280831
Longitude:	W 73.492839
Structure type:	Monopole
Report date:	November 21, 2022
Compliance Conclusion:	DISH Wireless, LLC will be in compliance with the rules and regulations as described in OET Bulletin 65, following the implementation of the proposed mitigation as detailed in the report.

14 Ridgedale Avenue - Suite 260 • Cedar Knolls, NJ 07927 • 973-451-1630

Contents

Introduction and Summary

At the request of DISH Wireless, LLC ("DISH"), Pinnacle Telecom Group has performed an independent expert assessment of radiofrequency (RF) levels and related FCC compliance for proposed wireless base station antenna operations on an existing monopole located at 76 East Ridge Road in Ridgefield, CT. DISH refers to the antenna site by the code "NJJER01117A", and its proposed operation involves directional panel antennas and transmission in the 600 MHz, 2000 MHz and 2100 MHz frequency bands licensed to it by the FCC.

The FCC requires all wireless antenna operators to perform an assessment of potential human exposure to radiofrequency (RF) fields emanating from all the transmitting antennas at a site whenever antenna operations are added or modified, and to ensure compliance with the Maximum Permissible Exposure (MPE) limit in the FCC's regulations. In this case, the compliance assessment needs to take into account the RF effects of other existing antenna operations at the site by T-Mobile, Verizon Wireless, Ridgefield Fire Department, Ridgefield Public Schools and the Town of Ridgefield. Note that FCC regulations require any future antenna collocators to assess and assure continuing compliance based on the cumulative effects of all then-proposed and then-existing antennas at the site.

This report describes a mathematical analysis of RF levels resulting around the site in areas of unrestricted public access, that is, at street level around the site. The compliance analysis employs a standard FCC formula for calculating the effects of the antennas in a very conservative manner, in order to overstate the RF levels and to ensure "safe-side" conclusions regarding compliance with the FCC limit for safe continuous exposure of the general public.

The results of a compliance assessment can be described in layman's terms by expressing the calculated RF levels as simple percentages of the FCC MPE limit. If the normalized reference for that limit is 100 percent, then calculated RF levels higher than 100 percent indicate the MPE limit is exceeded and there is a need to mitigate the potential exposure. On the other hand, calculated RF levels consistently below 100 percent serve as a clear and sufficient demonstration of

compliance with the MPE limit. We can (and will) also describe the overall worst-case result via the "plain-English" equivalent "times-below-the-limit" factor.

The result of the RF compliance assessment in this case is as follows:

- At street level, the conservatively calculated maximum RF level from the combination of proposed and existing antenna operations at the site is 6.1790 percent of the FCC general population MPE limit – well below the 100-percent reference for compliance. In other words, the worst-case calculated RF level – intentionally and significantly overstated by the calculations – is still more than 16 times below the FCC limit for safe, continuous exposure of the general public.
- A supplemental analysis of the RF levels at the same height as the DISH antennas indicate that the FCC MPE limit is potentially exceeded. Therefore, it is recommended that three Caution signs and NOC Information signs be installed at the base of the monopole.
- The results of the calculations, along with the proposed mitigation, combine to satisfy the FCC requirements and associated guidelines on RF compliance at street level around the site. Moreover, because of the significant conservatism incorporated in the analysis, RF levels actually caused by the antennas will be lower than these calculations indicate.

The remainder of this report provides the following:

- relevant technical data on the proposed DISH antenna operations at the site, as well as on the other existing antenna operations;
- a description of the applicable FCC mathematical model for calculating RF levels, and application of the relevant technical data to that model;
- analysis of the results of the calculations against the FCC MPE limit, and the compliance conclusion for the site.

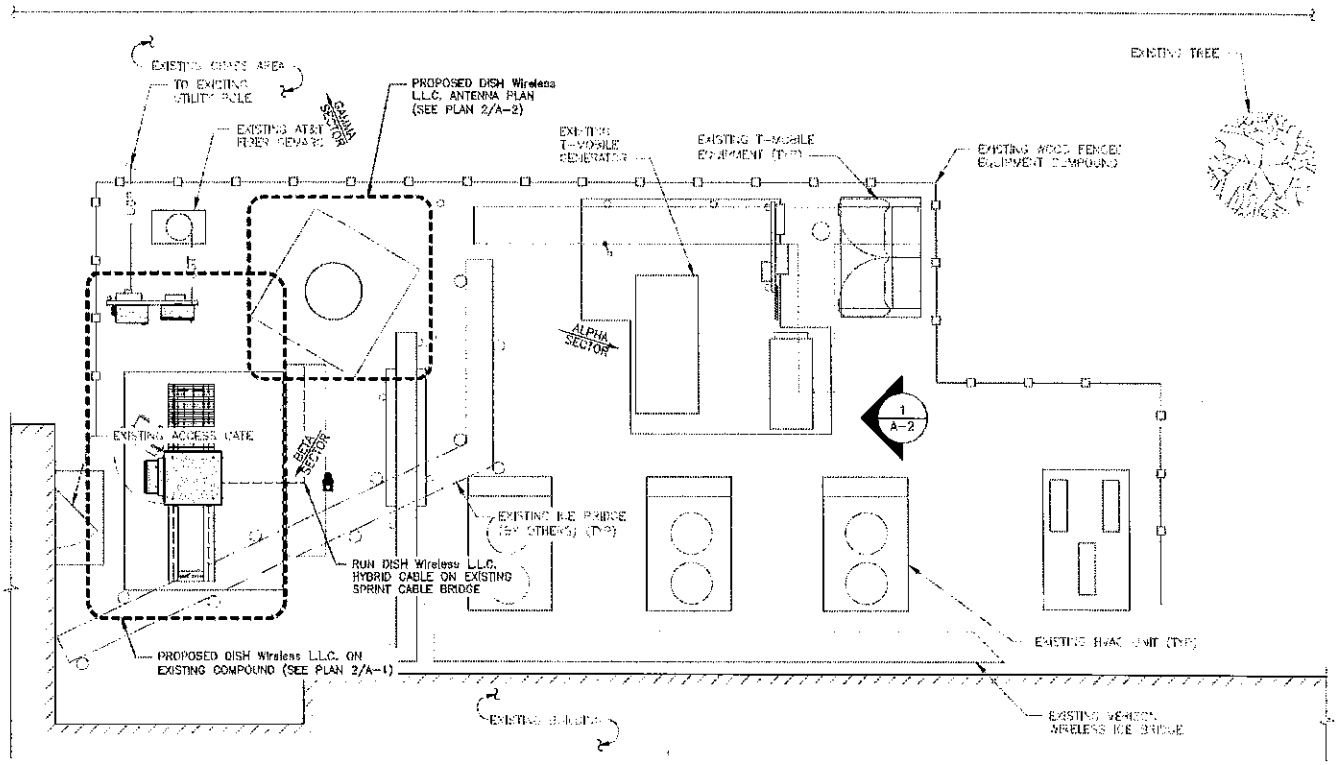
In addition, four Appendices are included. Appendix A provides information on the documents used to prepare the analysis. Appendix B provides background on the FCC MPE limit. Appendix C details the proposed mitigation to satisfy the FCC

requirements and associated guidelines on RF compliance. Appendix D provides a summary of the qualifications of the expert certifying FCC compliance for this site.

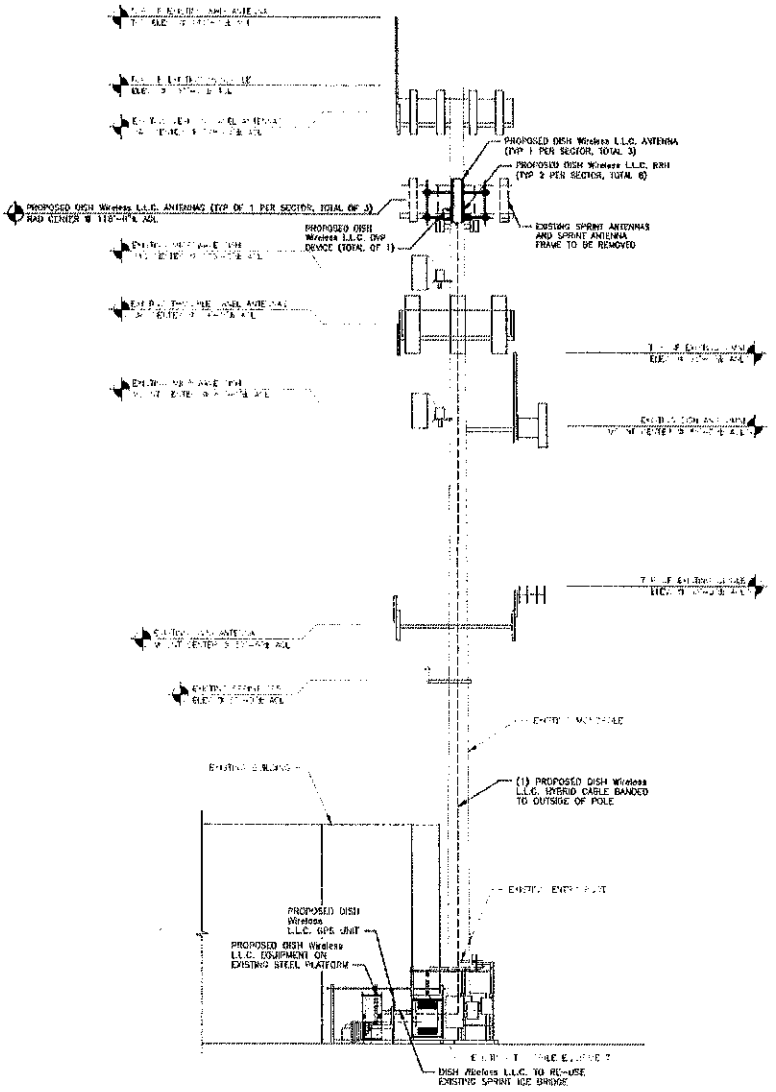
Antenna and Transmission Data

The plan and elevation views that follow, extracted from the site drawings, illustrate the mounting positions of the DISH antennas at the site.

Plan View:



Elevation View:



The table that follows summarizes the relevant data for the proposed DISH antenna operations. Note that the "Z" height references the centerline of the antenna.

Ant. ID	Carrier	Antenna Manufacturer	Antenna Model	Ant. Type	Freq (MHz)	Ant. Dim. (ft.)	Total Input Power (watts)	Total ERP (watts)	RCL AGL (ft)	Ant. Gain (dBd)	H-BW	Azimuth	EDT	MDT
1	DISH	Commscope	FFVV-65B-R2	Panel	600	6	120	2110	116.0	12.46	64	100	2	0
1	DISH	Commscope	FFVV-65B-R2	Panel	2000	6	160	7396	116.0	16.66	67	100	2	0
1	DISH	Commscope	FFVV-65B-R2	Panel	2100	6	160	7396	116.0	16.66	67	100	2	0
2	DISH	Commscope	FFVV-65B-R2	Panel	600	6	120	2110	116.0	12.46	64	200	2	0
2	DISH	Commscope	FFVV-65B-R2	Panel	2000	6	160	7396	116.0	16.66	67	200	2	0
2	DISH	Commscope	FFVV-65B-R2	Panel	2100	6	160	7396	116.0	16.66	67	200	2	0
3	DISH	Commscope	FFVV-65B-R2	Panel	600	6	120	2110	116.0	12.46	64	320	2	0
3	DISH	Commscope	FFVV-65B-R2	Panel	2000	6	160	7396	116.0	16.66	67	320	2	0
3	DISH	Commscope	FFVV-65B-R2	Panel	2100	6	160	7396	116.0	16.66	67	320	2	0

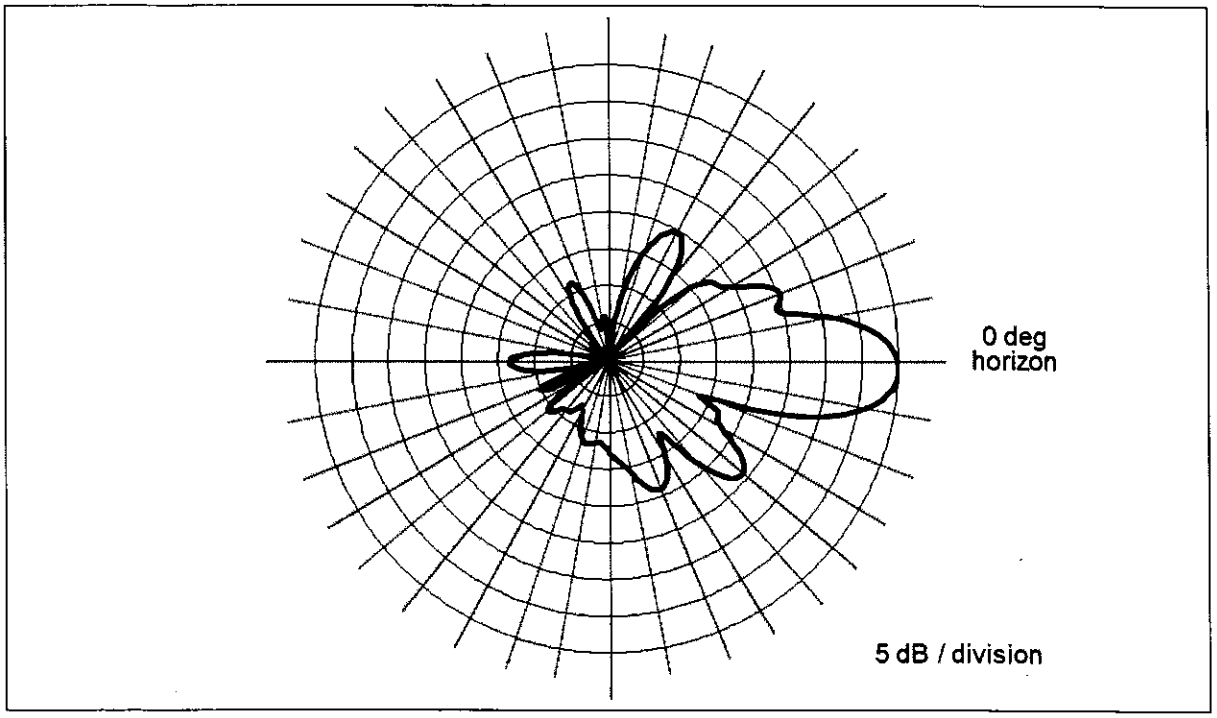
The area below the antennas, at street level, is of interest in terms of potential "uncontrolled" exposure of the general public, so the antenna's vertical-plane emission characteristic is used in the calculations, as it is a key determinant of the relative amount of RF emissions in the "downward" direction.

By way of illustration, Figure 1 that follows shows the vertical-plane radiation pattern of the proposed antenna model in the 600 MHz frequency band. In this type of antenna radiation pattern diagram, the antenna is effectively pointed at the three o'clock position (the horizon) and the relative strength of the pattern at different angles is described using decibel units.

Note that the use of a decibel scale to describe the relative pattern at different angles actually serves to significantly understate the actual focusing effects of the antenna. Where the antenna pattern reads 20 dB the relative RF energy emitted at the corresponding downward angle is 1/100th of the maximum that occurs in the main beam (at 0 degrees); at 30 dB, the energy is only 1/1000th of the maximum.

Finally, note that the automatic pattern-scaling feature of our internal software may skew side-by-side visual comparisons of different antenna models, or even different parties' depictions of the same antenna model.

Figure 1. Commscope FFVV-65B-R2 – 600 MHz Vertical-plane Pattern



As noted at the outset, there are existing antenna operations to include in the compliance assessment. For each of the wireless operators, we will conservatively assume operation with maximum channel capacity and at maximum transmitter power per channel to be used by each wireless operator in each of their respective FCC-licensed frequency bands. For each of the other operators, we will rely on the transmission parameters in their respective FCC licenses.

The table that follows summarizes the relevant data for the collocated antenna operations.

Carrier	Antenna Manufacturer	Antenna Model	Type	Freq (MHz)	Total ERP (watts)	Ant. Gain (dBd)	Azimuth
T-Mobile	Generic	Generic	Panel	600	3163	12.96	N/A
T-Mobile	Generic	Generic	Panel	700	867	13.36	N/A
T-Mobile	Generic	Generic	Panel	1900	4123	15.36	N/A
T-Mobile	Generic	Generic	Panel	1900	1452	15.60	N/A
T-Mobile	Generic	Generic	Panel	2100	4626	15.86	N/A
T-Mobile	Generic	Generic	Panel	1900	1419	15.50	N/A
T-Mobile	Generic	Generic	Panel	2500	12804	22.35	N/A
Verizon Wireless	Generic	Generic	Panel	746	2400	11.76	N/A
Verizon Wireless	Generic	Generic	Panel	869	5166	12.36	N/A
Verizon Wireless	Generic	Generic	Panel	1900	5372	15.26	N/A
Verizon Wireless	Generic	Generic	Panel	2100	5625	15.46	N/A
Ridgefield Fire Dept.	Generic	Generic	Omnidirectional	49	100	3.36	N/A
Ridgefield Fire Dept.	Generic	Generic	Omnidirectional	154	15	3.36	N/A
Ridgefield Fire Dept.	Generic	Generic	Dish	11000	202	36.36	N/A
Ridgefield Fire Dept.	Generic	Generic	Dish	11000	202	36.36	N/A
Ridgefield Fire Dept.	Generic	Generic	Dish	11000	122	36.36	N/A
Ridgefield Public Schools	Generic	Generic	Omnidirectional	461	25	3.0	N/A
Town of Ridgefield	Generic	Generic	Omnidirectional	154	32	3.36	N/A
Town of Ridgefield	Generic	Generic	Omnidirectional	154	315	3.36	N/A

Compliance Analysis

FCC Office of Engineering and Technology Bulletin 65 ("OET Bulletin 65") provides guidelines for mathematical models to calculate the RF levels at various points around transmitting antennas. Different models apply in different areas around antennas, with one model applying to street level around a site, and another applying to the same height as the antennas. We will address each area of interest in turn in the subsections that follow.

Street Level Analysis

At street-level around an antenna site (in what is called the "far field" of the antennas), the RF levels are directly proportional to the total antenna input power and the relative antenna gain in the downward direction of interest – and the levels are otherwise inversely proportional to the square of the straight-line distance to the antenna.

Conservative calculations also assume the potential RF exposure is enhanced by reflection of the RF energy from the intervening ground. Our calculations will assume a 100% "perfect", mirror-like reflection, which is the absolute worst-case scenario.

The formula for street-level compliance assessment for any given wireless antenna operation is as follows:

$$MPE\% = (100 * Chans * TxPower * 10^{(Gmax-Vdisc/10)} * 4) / (MPE * 4\pi * R^2)$$

where

MPE%	=	RF level, expressed as a percentage of the MPE limit applicable to continuous exposure of the general public
100	=	factor to convert the raw result to a percentage
Chans	=	maximum number of RF channels per sector
TxPower	=	maximum transmitter power per channel, in milliwatts

$10^{(Gmax-Vdlsc/10)}$	=	numeric equivalent of the relative antenna gain in the downward direction of interest; data on the antenna vertical-plane pattern is taken from manufacturer specifications
4	=	factor to account for a 100-percent-efficient energy reflection from the ground, and the squared relationship between RF field strength and power density ($2^2 = 4$)
MPE	=	FCC general population MPE limit
R	=	straight-line distance from the RF source to the point of interest, centimeters

The MPE% calculations are performed out to a distance of 500 feet from the facility to points 6.5 feet (approximately two meters, the FCC-recommended standing height) off the ground, as illustrated in Figure 2, below.

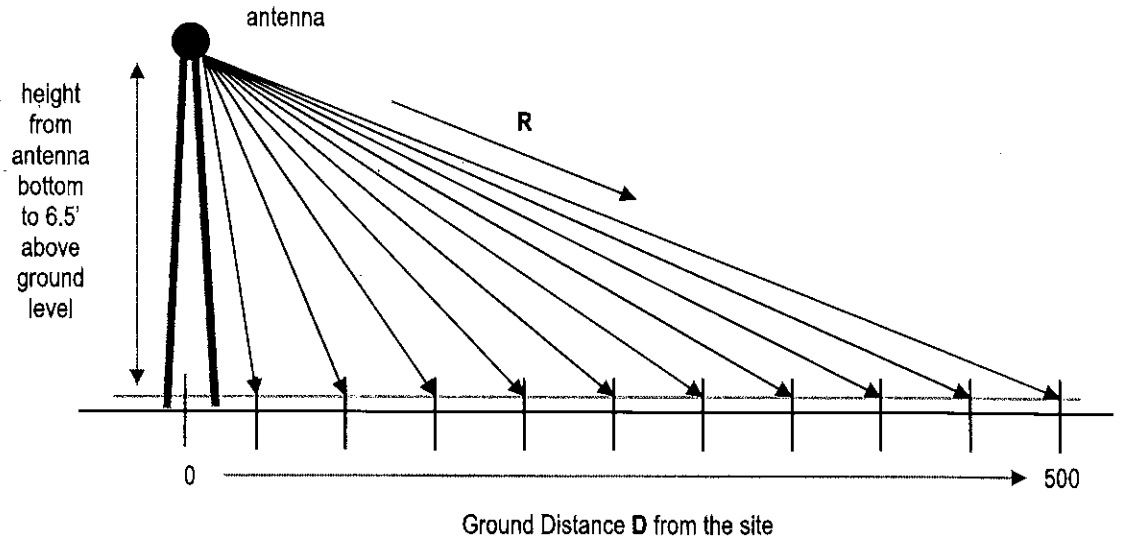


Figure 2. Street-level MPE% Calculation Geometry

It is popularly understood that the farther away one is from an antenna, the lower the RF level – which is generally but not universally correct. The results of MPE% calculations fairly close to the site will reflect the variations in the vertical-plane antenna pattern as well as the variation in straight-line distance to the antenna.

Therefore, RF levels may actually increase slightly with increasing distance within the range of zero to 500 feet from the site. As the distance approaches 500 feet and beyond, though, the antenna pattern factor becomes less significant, the RF levels become primarily distance-controlled and, as a result, the RF levels generally decrease with increasing distance. In any case, the RF levels more than 500 feet from a wireless antenna site are well understood to be sufficiently low to be comfortably in compliance.

According to the FCC, when directional antennas (such as panels) are used, compliance assessments are based on the RF effect of a single (facing) antenna sector, as the effects of directional antennas pointed away from the point(s) of interest are considered insignificant. If the different parameters apply in the different sectors, compliance is based on the worst-case parameters.

Street level FCC compliance for a collocated antenna site is assessed in the following manner. At each distance point along the ground, an MPE% calculation is made for each antenna operation (including each frequency band), and the sum of the individual MPE% contributions at each point is compared to 100 percent, the normalized reference for compliance with the MPE limit. We refer to the sum of the individual MPE% contributions as "total MPE%", and any calculated total MPE% result exceeding 100 percent is, by definition, higher than the FCC limit and represents non-compliance and a need to mitigate the potential exposure. If all results are consistently below 100 percent, on the other hand, that set of results serves as a clear and sufficient demonstration of compliance with the MPE limit.

Note that the following conservative methodology and assumptions are incorporated into the MPE% calculations on a general basis:

1. The antennas are assumed to be operating continuously at maximum power and maximum channel capacity.
2. The power-attenuation effects of shadowing or other obstructions to the line-of-sight path from the antenna to the point of interest are ignored.
3. The calculations intentionally minimize the distance factor (R) by assuming a 6'6" human and performing the calculations from the bottom (rather than

the centerline) of each operator's lowest-mounted antenna, as applicable.

4. The calculations also conservatively take into account, when applicable, the different technical characteristics and related RF effects of the use of multiple antennas for transmission in the same frequency band.
5. The RF exposure at ground level is assumed to be 100-percent enhanced (increased) via a "perfect" field reflection from the intervening ground.

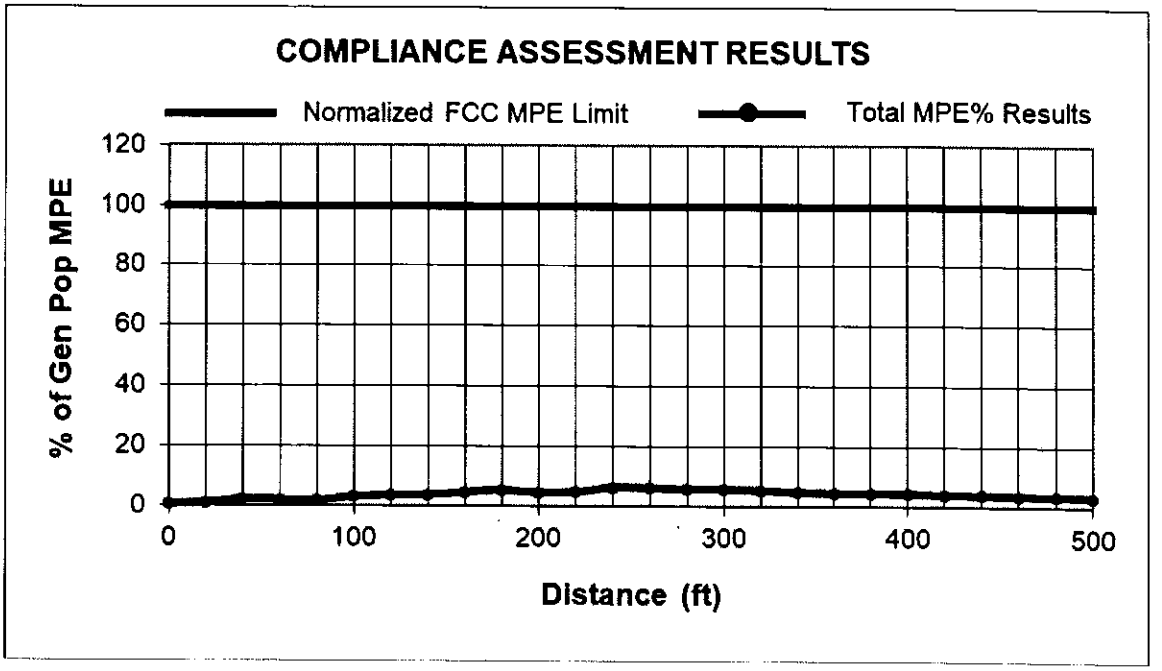
The net result of these assumptions is to intentionally and significantly overstate the calculated RF levels relative to the levels that will actually result from the antenna operations – and the purpose of this conservatism is to allow very "safe-side" conclusions about compliance.

The table that follows provides the results of the MPE% calculations for each antenna operation, with the overall worst-case calculated result highlighted in bold in the last column. Note that the transmission parameters for each DISH antenna sector are identical, and the calculations reflect the worst-case result for any/all sectors.

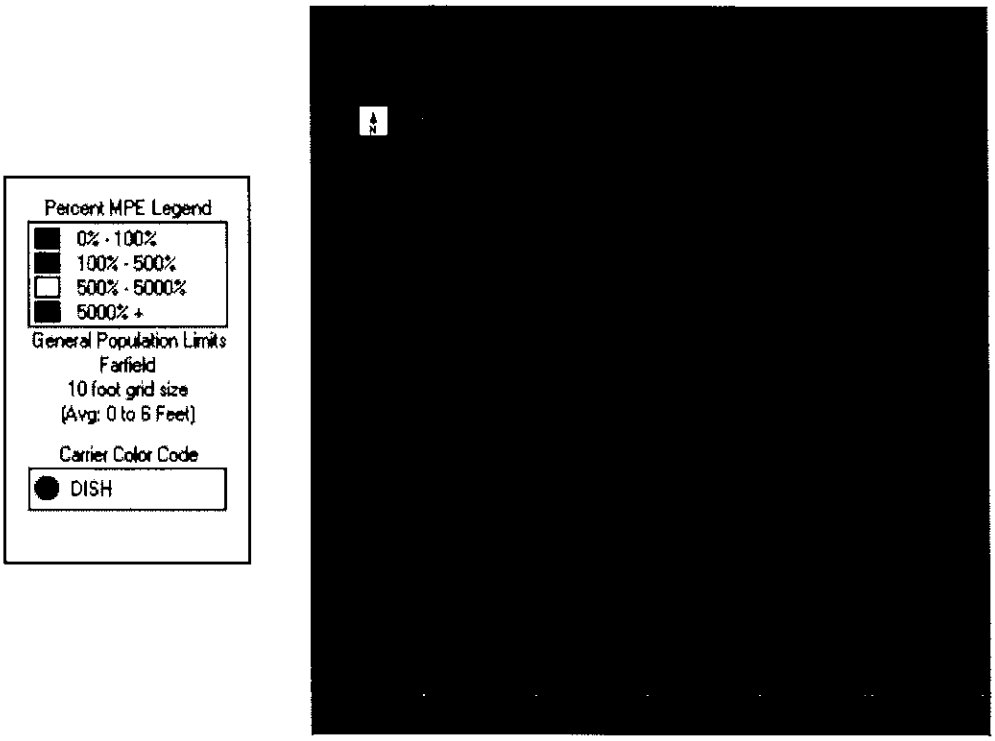
Ground Distance (ft)	DISH 600 MHz MPE%	DISH 2000 MHz MPE%	DISH 2100 MHz MPE%	T-Mobile MPE%	Verizon Wireless MPE%	Ridgefield Fire Dept. MPE%	Ridgefield Public Schools MPE%	Town of Ridgefield MPE%	Total MPE%
0	0.0429	0.0020	0.0003	0.4938	0.0068	0.0011	0.0011	0.0003	0.5483
20	0.0837	0.0036	0.0048	0.7023	0.0167	0.0955	0.1301	0.0135	1.0502
40	0.1747	0.0130	0.0378	1.7114	0.0285	0.2889	0.0039	0.0328	2.2910
60	0.0753	0.0370	0.1105	1.2536	0.0252	0.4714	0.0761	0.0374	2.0865
80	0.0334	0.1530	0.0058	0.6481	0.2250	0.6077	0.1272	0.0240	1.8242
100	0.2014	0.1744	0.3644	0.8830	0.6045	0.6447	0.1613	0.0076	3.0413
120	0.2817	0.2416	0.2905	1.2945	0.5736	0.6237	0.1565	0.0010	3.4631
140	0.1900	0.1149	0.2484	2.1714	0.2431	0.5785	0.1381	0.0018	3.6862
160	0.0741	0.0246	0.0043	3.6366	0.1139	0.5279	0.1260	0.0074	4.5148
180	0.0354	0.0040	0.0621	4.5117	0.0419	0.4631	0.1053	0.0127	5.2362
200	0.0277	0.0325	0.0175	3.8164	0.0716	0.4194	0.0921	0.0198	4.4970
220	0.0209	0.0729	0.1240	3.8966	0.1180	0.3655	0.0801	0.0248	4.7028
240	**0.0115**	**0.0138**	**0.0718**	**5.4913**	**0.1623**	**0.3283**	**0.0708**	**0.0292**	**6.1790**
260	0.0081	0.0326	0.0224	5.3490	0.1755	0.2974	0.0619	0.0345	5.9814
280	0.0171	0.1096	0.0660	4.9827	0.1594	0.2655	0.0535	0.0393	5.6931
300	0.0322	0.0927	0.1052	4.9690	0.1348	0.2376	0.0489	0.0401	5.6605
320	0.0566	0.0512	0.1047	4.6709	0.1036	0.2138	0.0431	0.0402	5.2841
340	0.0912	0.0162	0.0694	4.2192	0.0692	0.1976	0.0382	0.0405	4.7415
360	0.1356	0.0043	0.0306	4.0107	0.0446	0.1798	0.0349	0.0410	4.4815
380	0.1901	0.0041	0.0096	3.8698	0.0439	0.1642	0.0314	0.0407	4.3538
400	0.2527	0.0033	0.0031	3.7432	0.0641	0.1506	0.0283	0.0407	4.2860
420	0.2306	0.0030	0.0029	3.4891	0.0822	0.1388	0.0257	0.0408	4.0131
440	0.2943	0.0060	0.0018	3.2879	0.0754	0.1274	0.0235	0.0374	3.8537
460	0.2705	0.0055	0.0017	3.1296	0.0722	0.1181	0.0215	0.0369	3.6560
480	0.3335	0.0216	0.0083	2.8980	0.0462	0.1098	0.0197	0.0365	3.4736
500	0.3085	0.0200	0.0077	2.6780	0.0428	0.1016	0.0182	0.0337	3.2105

As indicated, the maximum calculated overall RF level is 6.1790 percent of the FCC MPE limit – well below the 100-percent reference for compliance.

A graph of the overall calculation results, shown below, perhaps provides a clearer *visual* illustration of the relative compliance of the calculated RF levels. The line representing the overall calculation results shows an obviously clear, consistent margin to the FCC MPE limit.



The graphic output for the areas at street level surrounding the site is reproduced on the next page.

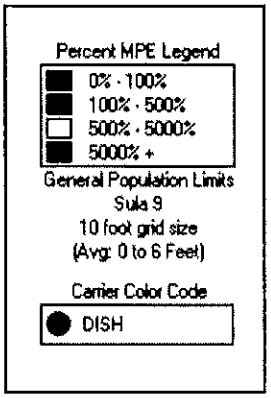


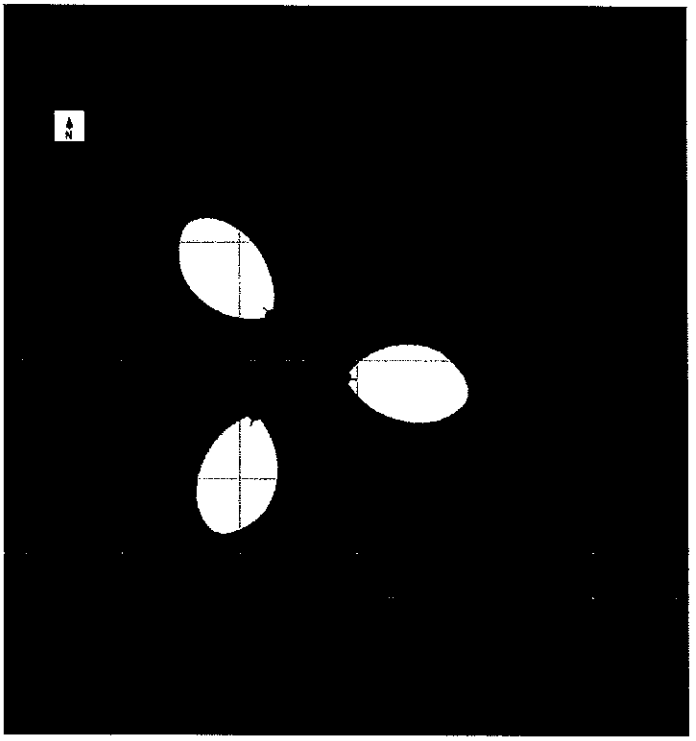
Near-field Analysis

The compliance analysis for the same height as the antennas is performed using the RoofMaster program by Waterford Consultants.

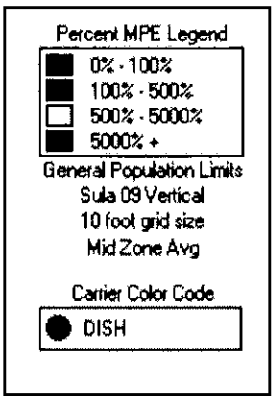
RF levels in the near field of an antenna depend on the power input to the antenna, the antenna's length and horizontal beamwidth, the mounting height of the antenna above nearby standing level, and one's position and distance from the antenna. RF levels in front of a directional antenna are higher than they are to the sides or rear, and in any given horizontal direction are inversely proportional to the straight-line distance to the antenna.

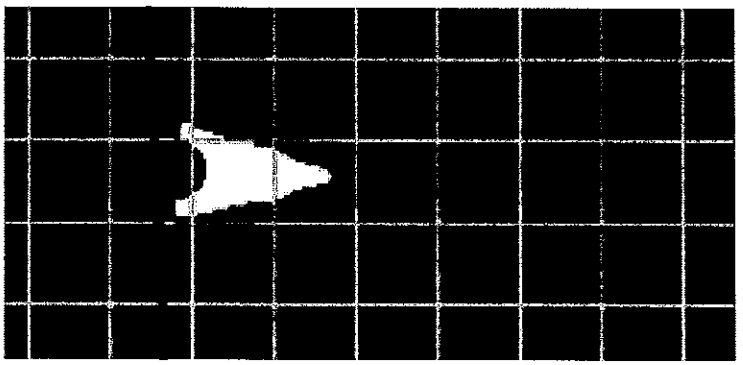
The RoofMaster graphic outputs for the same height as the DISH antennas are reproduced on the next page.





RoofMaster – Same Height as the Antennas – Alpha / Beta / Gamma sectors





RoofMaster – Same Height as the Antennas – Alpha / Beta / Gamma sectors

Compliance Conclusion

According to the FCC, the MPE limit has been constructed in such a manner that continuous human exposure to RF fields up to and including 100 percent of the MPE limit is acceptable and safe.

The conservative analysis in this case shows that the maximum calculated RF level from the combination of proposed and existing antenna operations at street level around the site is 6.1790 percent of the FCC general population MPE limit. At the same height as the antennas, the analysis shows that the calculated RF levels potentially exceed the FCC MPE limit. Per DISH guidelines, and consistent with FCC guidance on compliance, it is recommended that three Caution signs and NOC Information signs be installed at the base of the monopole.

The results of the calculations, along with the described RF mitigation, combine to satisfy the FCC's RF compliance requirements and associated guidelines on compliance.

Moreover, because of the extremely conservative calculation methodology and operational assumptions we applied in the analysis, RF levels actually caused by the antennas will be significantly lower than the calculation results here indicate.

Certification

It is the policy of Pinnacle Telecom Group that all FCC RF compliance assessments are reviewed, approved, and signed by the firm's Chief Technical Officer who certifies as follows:

1. I have read and fully understand the FCC regulations concerning RF safety and the control of human exposure to RF fields (47 CFR 1.1301 *et seq*).
2. To the best of my knowledge, the statements and information disclosed in this report are true, complete and accurate.
3. The analysis of site RF compliance provided herein is consistent with the applicable FCC regulations, additional guidelines issued by the FCC, and industry practice.
4. The results of the analysis indicate that the subject antenna operations will be in compliance with the FCC regulations concerning the control of potential human exposure to the RF emissions from antennas.

11/21/22

Daniel J. Collins
Chief Technical Officer
Pinnacle Telecom Group, LLC

Date

Appendix A. Documents Used to Prepare the Analysis

RFDS: RFDS-NJJER01600C-Final-20221115-v.0_20221115130027

CD: NJJER01600C_FinalStampedCDs_20221111110213

Appendix B. Background on the FCC MPE Limit

As directed by the Telecommunications Act of 1996, the FCC has established limits for maximum continuous human exposure to RF fields.

The FCC maximum permissible exposure (MPE) limits represent the consensus of federal agencies and independent experts responsible for RF safety matters. Those agencies include the National Council on Radiation Protection and Measurements (NCRP), the Occupational Safety and Health Administration (OSHA), the National Institute for Occupational Safety and Health (NIOSH), the American National Standards Institute (ANSI), the Environmental Protection Agency (EPA), and the Food and Drug Administration (FDA). In formulating its guidelines, the FCC also considered input from the public and technical community – notably the Institute of Electrical and Electronics Engineers (IEEE).

The FCC's RF exposure guidelines are incorporated in Section 1.301 *et seq* of its Rules and Regulations (47 CFR 1.1301-1.1310). Those guidelines specify MPE limits for both occupational and general population exposure.

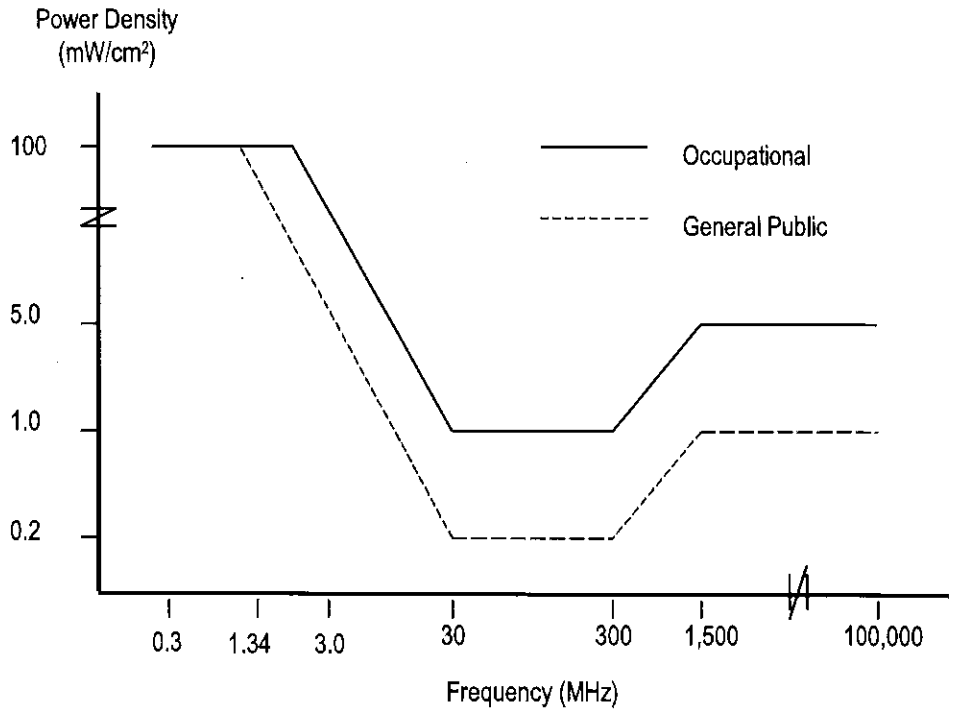
The specified continuous exposure MPE limits are based on known variation of human body susceptibility in different frequency ranges, and a Specific Absorption Rate (SAR) of 4 watts per kilogram, which is universally considered to accurately represent human capacity to dissipate incident RF energy (in the form of heat). The occupational MPE guidelines incorporate a safety factor of 10 or greater with respect to RF levels known to represent a health hazard, and an additional safety factor of five is applied to the MPE limits for general population exposure. Thus, the general population MPE limit has a built-in safety factor of more than 50. The limits were constructed to appropriately protect humans of both sexes and all ages and sizes and under all conditions – and continuous exposure at levels equal to or below the applicable MPE limits is considered to result in no adverse health effects or even health risk.

The reason for *two* tiers of MPE limits is based on an understanding and assumption that members of the general public are unlikely to have had appropriate RF safety training and may not be aware of the exposures they receive; occupational exposure in controlled environments, on the other hand, is assumed to involve individuals who have had such training, are aware of the exposures, and know how to maintain a safe personal work environment.

The FCC's RF exposure limits are expressed in two equivalent forms, using alternative units of field strength (expressed in volts per meter, or V/m), and power density (expressed in milliwatts per square centimeter, or mW/cm^2). The table on the next page lists the FCC limits for both occupational and general population exposures, using the mW/cm^2 reference, for the different radio frequency ranges.

Frequency Range (F) (MHz)	Occupational Exposure (mW/cm^2)	General Public Exposure (mW/cm^2)
0.3 - 1.34	100	100
1.34 - 3.0	100	$180 / F^2$
3.0 - 30	$900 / F^2$	$180 / F^2$
30 - 300	1.0	0.2
300 - 1,500	F / 300	F / 1500
1,500 - 100,000	5.0	1.0

The diagram below provides a graphical illustration of both the FCC's occupational and general population MPE limits.



Because the FCC's RF exposure limits are frequency-shaped, the exact MPE limits applicable to the instant situation depend on the frequency range used by the systems of interest.

The most appropriate method of determining RF compliance is to calculate the RF power density attributable to a particular system and compare that to the MPE limit applicable to the operating frequency in question. The result is usually expressed as a percentage of the MPE limit.

For potential exposure from multiple systems, the respective percentages of the MPE limits are added, and the total percentage compared to 100 (percent of the limit). If the result is less than 100, the total exposure is in compliance; if it is more than 100, exposure mitigation measures are necessary to achieve compliance.

Note that the FCC "categorically excludes" all "non-building-mounted" wireless antenna operations whose mounting heights are more than 10 meters (32.8 feet) from the routine requirement to demonstrate compliance with the MPE limit, because such operations "are deemed, individually and cumulatively, to have no significant effect on the human environment". The categorical exclusion also applies to *all* point-to-point antenna operations, regardless of the type of structure they're mounted on. Note that the FCC considers any facility qualifying for the categorical exclusion to be automatically in compliance.

In addition, FCC Rules and Regulations Section 1.1307(b)(3) describes a provision known in the industry as "the 5% rule". It describes that when a specific location – like a spot on a rooftop – is subject to an overall exposure level exceeding the applicable MPE limit, operators with antennas whose MPE% contributions at the point of interest are less than 5% are exempted from the obligation otherwise shared by all operators to bring the site into compliance, and those antennas are automatically deemed by the FCC to satisfy the rooftop compliance requirement.

FCC References on RF Compliance

47 CFR, FCC Rules and Regulations, Part 1 (Practice and Procedure), Section 1.1310 (Radiofrequency radiation exposure limits).

FCC Second Memorandum Opinion and Order and Notice of Proposed Rulemaking (FCC 97-303), *In the Matter of Procedures for Reviewing Requests for Relief From State and Local Regulations Pursuant to Section 332(c)(7)(B)(v) of the Communications Act of 1934 (WT Docket 97-192), Guidelines for Evaluating the Environmental Effects of Radiofrequency Radiation (ET Docket 93-62), and Petition for Rulemaking of the Cellular Telecommunications Industry Association Concerning Amendment of the Commission's Rules to Preempt State and Local Regulation of Commercial Mobile Radio Service Transmitting Facilities*, released August 25, 1997.

FCC First Memorandum Opinion and Order, ET Docket 93-62, *In the Matter of Guidelines for Evaluating the Environmental Effects of Radiofrequency Radiation*, released December 24, 1996.

FCC Report and Order, ET Docket 93-62, *In the Matter of Guidelines for Evaluating the Environmental Effects of Radiofrequency Radiation*, released August 1, 1996.

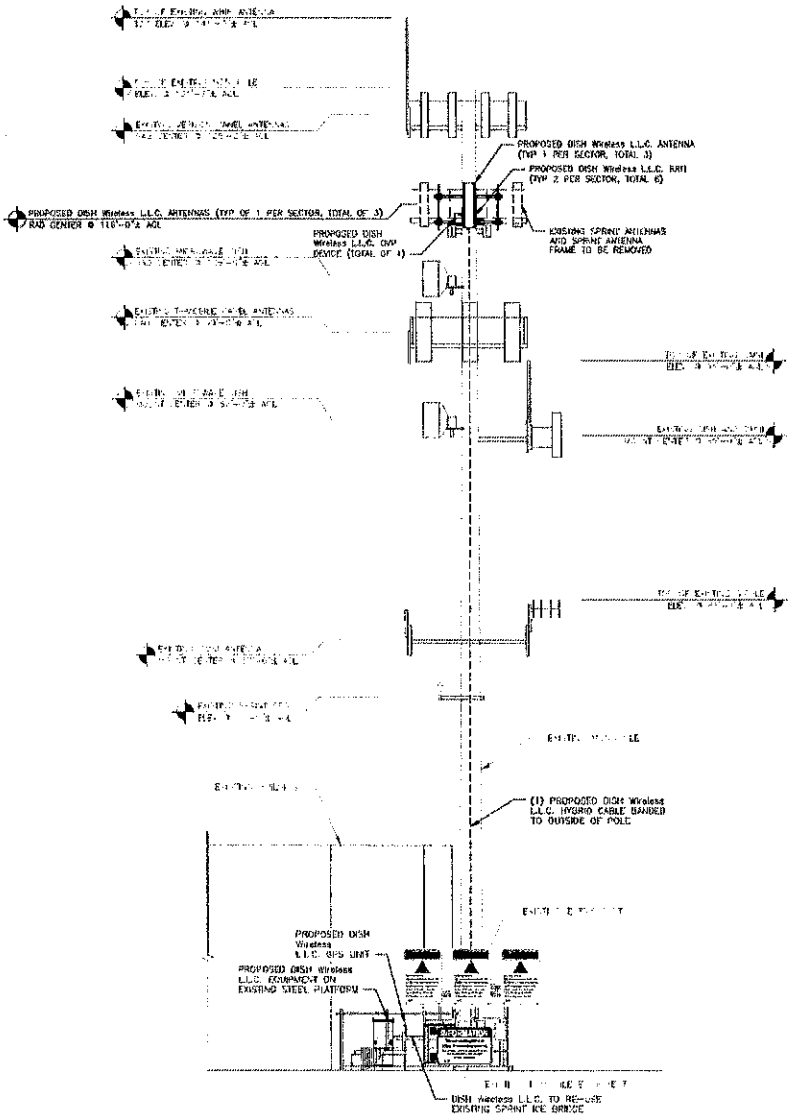
FCC Report and Order, Notice of Proposed Rulemaking, Memorandum Opinion and Order (FCC 19-126), *Proposed Changes in the Commission's Rules Regarding Human Exposure to Radiofrequency Electromagnetic Fields; Reassessment of Federal Communications Commission Radiofrequency Exposure Limits and Policies,* released December 4, 2019.

FCC Office of Engineering and Technology (OET) Bulletin 65, "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields", Edition 97-01, August 1997.

FCC Office of Engineering and Technology (OET) Bulletin 56, "Questions and Answers About Biological Effects and Potential Hazards of RF Radiation", edition 4, August 1999.

Appendix C. Proposed Signage

Final Compliance Configuration							
	GUIDELINES	NOTICE	CAUTION	WARNING	NOC INFO	BARRIER/MARKER	
Access Point(s)	0	0	0	0	1	0	
Alpha	0	0	1	0	0	0	
Beta	0	0	1	0	0	0	
Gamma	0	0	1	0	0	0	



Appendix D. Summary of Expert Qualifications

Daniel J. Collins, Chief Technical Officer, Pinnacle Telecom Group, LLC

Synopsis:	• 40+ years of experience in all aspects of wireless system engineering, related regulation, and RF exposure • Has performed or led RF exposure compliance assessments on more than 20,000 antenna sites since the latest FCC regulations went into effect in 1997 • Has provided testimony as an RF compliance expert more than 1,500 times since 1997 • Have been accepted as an FCC compliance expert in New York, New Jersey, Connecticut, Pennsylvania and more than 40 other states, as well as by the FCC
Education:	• B.E.E., City College of New York (Sch. Of Eng.), 1971 • M.B.A., 1982, Fairleigh Dickinson University, 1982 • Bronx High School of Science, 1966
Current Responsibilities:	• Leads all PTG staff work involving RF safety and FCC compliance, microwave and satellite system engineering, and consulting on wireless technology and regulation
Prior Experience:	• Edwards & Kelcey, VP – RF Engineering and Chief Information Technology Officer, 1996-99 • Bellcore (a Bell Labs offshoot after AT&T's 1984 divestiture), Executive Director – Regulation and Public Policy, 1983-96 • AT&T (Corp. HQ), Division Manager – RF Engineering, and Director – Radio Spectrum Management, 1977-83 • AT&T Long Lines, Group Supervisor – Microwave Radio System Design, 1972-77
Specific RF Safety / Compliance Experience:	• Involved in RF exposure matters since 1972 • Have had lead corporate responsibility for RF safety and compliance at AT&T, Bellcore, Edwards & Kelcey, and PTG • While at AT&T, helped develop the mathematical models for calculating RF exposure levels • Have been relied on for compliance by all major wireless carriers, as well as by the federal government, several state and local governments, equipment manufacturers, system integrators, and other consulting / engineering firms
Other Background:	• Author, *Microwave System Engineering* (AT&T, 1974) • Co-author and executive editor, *A Guide to New Technologies and Services* (Bellcore, 1993) • National Spectrum Management Association (NSMA) – former three-term President and Chairman of the Board of Directors; was founding member, twice-elected Vice President, long-time member of the Board, and was named an NSMA Fellow in 1991 • Have published more than 35 articles in industry magazines

Exhibit G

Lease Agreement

TOWER CELL SITE LEASE AGREEMENT

This Tower Cell Site Lease Agreement (the "**Agreement**") is made and effective as of December 13, 2022 (the "**Effective Date**"), by and between Town of Ridgefield, a Connecticut Municipal Corporation, having a place of business at 400 Main Street, Ridgefield, CT 06877 ("**Landlord**"), and DISH Wireless L.L.C., a Colorado limited liability company having a place of business at 9601 S. Meridian Blvd., Englewood, Colorado 80112 ("**Tenant**," and together with Landlord, the "**Parties**," each a "**Party**").

WITNESSETH:

1. Definitions.

"**Affiliate(s)**" means, with respect to a Party, any person or entity, directly or indirectly, controlling, controlled by, or under common control with such Party, in each case for so long as such control continues. For purposes of this definition, "control" shall mean (i) the ownership, directly or indirectly, or at least fifty percent (50%) of either: (a) the voting rights attached to issued voting shares; or (b) the power to elect fifty percent (50%) of the directors of such entity, or (ii) the ability to direct the actions of the entity. Notwithstanding the preceding, for purposes of this Agreement, EchoStar Corporation and its direct and indirect subsidiaries shall not be deemed to be "Affiliates" of Tenant unless after the Effective Date any such entity qualifies as a direct or indirect subsidiary of DISH Network Corporation.

"**Applicable Law**" means any applicable federal, state or local act, law, statute, ordinance, building code, rule, regulation or permit, or any order, judgment, consent or approval of any Governmental Authority having jurisdiction over the Parties or this Agreement.

"**Cable Space**" means the additional leased ground space on the Property for the installation, use, operation, modification, repair, replacement, monitoring and maintenance of wires, cables, fiber/T-1, conduits, pipes running between and among the Equipment Space, Tower Space and/or public right of way, and to all necessary electrical, fiber and telephone utility sources located on the Property.

"**Equipment Space**" means the leased ground space where cabinets, generators, cabling, conduit, backhaul fiber, electrical feeds and similar supporting communications equipment are located.

"**Governmental Authority**" means any: (i) federal, state, county, municipal, tribal or other local government and any political subdivision thereof having jurisdiction over the Parties or this Agreement; (ii) any court or administrative tribunal exercising proper jurisdiction; or (iii) any other governmental, quasi-governmental, self-regulatory, judicial, public or statutory instrumentality, authority, body, agency, bureau or entity of competent jurisdiction.

"**Installation**" means the installation of Tenant's Equipment at the Premises.

"**Property**" means that certain parcel of real property upon which the Tower and Ground Space are located.

"**Tower**" means the structure located on the Property upon which Tenant's antennas, radios, and related communication equipment are mounted, but does not include the ground space used for the placement of cabinets, generators, cabling, conduit, backhaul fiber, electrical feeds and similar supporting communications equipment are located.

"**Tower Space**" means that portion of the Tower designated for use by the Tenant for the installation, use, operation, modification, repair, replacement, monitoring and maintenance of antennas, radios, cables/coax, nodes, and/or related equipment, which will be comprised of a radiation center with a minimum of five (5) feet in each vertical direction of separation from adjacent occupants on the Tower.

2. Premises, Term, Rent and Contingencies.

2.1 Premises. Landlord has the right to grant the rights set forth in this Agreement as they pertain to the Property located at 76 East Ridge Road, Ridgefield, Connecticut 06877, as more particularly described in Exhibit A, attached to and incorporated herein. In consideration of the obligations of Landlord and Tenant set forth herein, Landlord leases to Tenant, and Tenant hereby leases from Landlord: (i) a portion of Landlord's Tower located on the Property for the installation of Tenant's Equipment in the Tower Space; (ii) approximately 100 square feet of ground space ("**Ground Space**") for Tenant's use as Equipment Space; and (iii) additional space on the Property to be used as Cable Space. The Tower Space, Ground Space, Equipment Space and Cable Space are collectively referred to as the "**Premises**" and are depicted on the drawings attached hereto and incorporated herein as Exhibit B. Tenant shall have the right, but not the obligation, to prepare a survey of the Property, Tower Space, Equipment Space, Ground Space, Cable Space, and/or the Easements (as defined below) and said survey may, at Tenant's election, replace Exhibit B. Promptly following Tenant's request, Landlord shall provide Tenant any existing surveys of the Premises in Landlord's possession.

2.2 Term. This Agreement shall be effective as of the Effective Date. The initial term of this Agreement (the "**Initial Term**") will commence on the first (1st) day of the month following the commencement of Tenant's Installation (the "**Commencement Date**"), and will expire on the last day of the month that is sixty (60) months after the Commencement Date unless terminated sooner, renewed or extended in accordance with this Agreement. The Initial Term shall automatically be extended for up to four (4) additional terms of sixty (60) months each (each, a "**Renewal Term**") unless Tenant elects, in Tenant's sole and absolute discretion, not to renew the lease at the end of the then-current term by giving Landlord written Notice at least ninety days (90) days prior to the end of the then-current term. The Parties agree that each Party has vested rights hereunder and that this Agreement constitutes a binding and valid obligation of each Party as of the Effective Date, subject to the Contingencies (as defined in Section 2.4 below). The Initial Term and any applicable Renewal Term(s) may be referred to collectively as the "**Term**".

2.3 Rent. Beginning on the Commencement Date, and for each month thereafter during the Term, Tenant shall pay to Landlord rent for the Premises ("**Rent**") in advance, without Notice, demand or set-off (except as otherwise set forth herein), in the amount of Three Thousand Five Hundred Twenty-Five and 00/100 Dollars ($3,525.00). All payments shall be made on or before the first day of the applicable month, at such places as may be designated in writing from time to time by Landlord at least thirty (30) days in advance of the first affected payment, except that all payments due hereunder for any fractional calendar month shall be prorated based upon the number of days during said month that the payment obligation was in force (collectively, the "**Payment Terms**"). The Parties acknowledge and agree that, notwithstanding anything to the contrary set forth in this Section 2.3, Tenant's obligation to pay Rent or any other amount due hereunder is contingent upon Tenant's receipt of an IRS approved W-9 form setting forth the tax identification number of Landlord (or of the person or entity to whom Rent is to be made payable, if applicable). Upon the commencement of each anniversary of the Commencement Date, the Rent shall be automatically increased by four percent (4%) of the then-current Rent.

2.4 Contingencies. The Parties acknowledge and agree that Tenant's ability to lawfully use the Premises is contingent upon Tenant obtaining each of the following: (a) a satisfactory structural analysis showing that the Tower is suitable for Tenant's Permitted Use ("**Structural Analysis**"); and (b) all certificates, permits, approvals and other authorizations that may be required by any Governmental Authority in accordance with Applicable Law (collectively, the "**Governmental Approvals**"). Tenant will endeavor to obtain all Governmental Approvals promptly following the Effective Date. Landlord hereby authorizes Tenant to file and submit for Governmental Approvals, at Tenant's sole cost and expense. Landlord shall: (x) cooperate with Tenant in Tenant's efforts to obtain such Governmental Approvals; (y) promptly execute and deliver any and all documents necessary to obtain and maintain Government Approvals; and (z) take no action that would adversely affect Tenant's ability to obtain Governmental Approvals. Prior to the Commencement Date, if: (i) a structural analysis shows that the Tower is not suitable for Tenant's Permitted Use; (ii) any application for Governmental Approvals is rejected, conditioned, materially delayed or otherwise not approved for any or no reason; or (iii) Tenant determines, in Tenant's sole and absolute discretion, that such Governmental Approvals cannot be obtained in a timely and

commercially reasonable manner, then, following the occurrence of any of the events set forth in clauses (i) through (iii) (collectively, the "**Contingencies**"), Tenant shall have the right to terminate this Agreement immediately upon Notice to Landlord and without penalty or further obligation to Landlord, its employees, officers, agents or lenders. If this Agreement is terminated in accordance with this Section 2.4, this Agreement shall be of no further force or effect (except as set forth to the contrary herein). If, following the Commencement Date, and through no fault of Tenant, any Governmental Approval issued to Tenant is canceled, expires, lapses or is otherwise withdrawn or terminated by the applicable Governmental Authority, then Tenant shall have the right to terminate this Agreement upon ninety (90) days' written Notice to Landlord without penalty or further obligation to Landlord, its employees, officers, agents or lenders.

3. Use, Access and Installation.

3.1 Tenant's Permitted Use. Landlord agrees that Tenant may use the Premises for the purpose of the installation, operation, and management of a telecommunications facility, including, without limitation, antennas, nodes, wires, cables, conduits, piping, electrical and utility lines, and other related equipment or personal property (collectively, "**Tenant's Equipment**"), which shall include the right, subject to Section 3.3 below, to replace, repair, add, or otherwise modify Tenant's Equipment or any portion thereof and the frequencies over which Tenant's Equipment operates ("**Tenant's Permitted Use**"). Promptly following Tenant's request, Landlord shall provide the most recent structural analysis (if any) in Landlord's possession to facilitate Tenant or its designee's production of a Structural Analysis. Landlord hereby grants permission to Tenant to install, maintain and operate on the Property the Tenant's Equipment set forth in Exhibit C, attached hereto and incorporated herein by reference.

3.2 Access. The Parties acknowledge that the Premises are located at a police station and agree that commencing on the Effective Date and continuing throughout the Term, other than in the event of an emergency, Tenant, its employees, agents and contractors shall have unrestricted access to the Premises 24 hours per day, 7 days per week provided Tenant provides at least twenty four hours prior notice of Tenant's intent to access the Premises and at no additional cost or expense to Tenant. Further, Landlord grants to Tenant: (i) the right of ingress and egress to the Property and the Premises; (ii) access to the Property from all public streets within and bordering the Property; and (iii) access to the Property from any and all public right-of-way(s) adjacent to the Property and the Premises.

3.3 Installation of Tenant's Equipment. Following Tenant's initial Installation, Tenant shall be permitted to: (i) modify or add additional frequencies or technologies; and (ii) replace, modify or add equipment within the Premises (as long as doing so does not cause a material adverse effect on the structural integrity of the Tower); in either case, without incurring any increase in the then-current Rent or other modification of the terms and conditions set forth in this Agreement.

4. Utilities, Liens and Taxes.

4.1 Utilities. Tenant shall be solely responsible for cost of the electrical utilities used to power Tenant's Equipment. Tenant may have its own utility meter installed in a mutually agreed upon location. If separate metering is not commercially reasonable, then Tenant may install a utility sub meter on Landlord's main utility meter, which Landlord shall read and bill to Tenant on a monthly basis (without mark-up) for Tenant's utility consumption and provide Tenant with documentation to substantiate all invoiced amounts. Tenant's actual utility usage charges shall be paid by Tenant to Landlord (each without mark-up) within sixty (60) days following Tenant's receipt of an undisputed invoice and documentation substantiating all invoiced amounts. Landlord grants to Tenant and its utility providers non-exclusive easement(s) for utilities, including, without limitation, fiber optic cabling and electrical power as may be reasonably necessary for utilization of Tenant's Equipment at the Premises ("**Easement**"). The Parties acknowledge and agree that independent third-party providers of utility services, including but not limited to, fiber, gas, electric and telephone, may utilize the Easements. If required by any such third-party provider, Landlord agrees to execute a separate recordable document or other reasonable documentation evidencing such rights without the payment of additional consideration. The Parties acknowledge and agree that Tenant may wish to obtain real property rights or interests from third-parties and, if requested, Landlord shall promptly provide

commercially reasonable assistance to Tenant with respect to obtaining such rights. Landlord also grants to Tenant: (a) the right to use any fiber installed at the Property to support Tenant's Installation, if available; and (b) the right to install such fiber services on, through, over and/or under the Property in available conduit. It is expressly acknowledged and agreed that independent third party providers of utility services, including, but not limited to, fiber, may utilize the Easements and conduit for the installation of lines, equipment, and all necessary appurtenances, without the execution of any further documentation. In the event that the existing electric, gas, telephone, cable or fiber utility sources located on the Property are insufficient for Tenant's Permitted Use, Landlord agrees to grant Tenant and/or the applicable third-party utility or fiber provider the right, at Tenant's sole cost and expense, to install such utilities on, over and/or under the Property as is necessary for Tenant's Permitted Use, provided that the location of such utilities shall be mutually agreed upon by Landlord and Tenant prior to the commencement of installation thereof. The Easements are depicted on the drawings attached hereto and incorporated herein as Exhibit B.

4.2 Liens. Tenant will use commercially reasonable efforts to prevent any lien from attaching to the Property or any part thereof. If any lien is filed purporting to be for labor or material furnished or to be furnished at the request of Tenant, then Tenant shall do all acts necessary to discharge such lien by payment, satisfaction or posting of bond within ninety (90) days of receipt of Notice of the same from Landlord; provided, that Tenant may contest any such lien if Tenant provides Landlord with cash or a letter of credit in the amount of said lien as security for its payment within such ninety (90) day period, and thereafter diligently contests such lien. In the event Tenant fails to deposit the aforementioned security with Landlord and fails to pay any lien claim after entry of final judgment in favor of the claimant, then Landlord shall have the right to expend all sums reasonably necessary to discharge the lien claim.

4.3 Real Estate Taxes. Landlord shall pay all Taxes that accrue against the Property and/or Tower during the Term, which shall be deemed to be included as part of the Rent charged to Tenant. "**Taxes**" means any present or future federal, state, county, municipal or local taxes, assessments, levies, benefit charges, and/or other governmental and/or private impositions (including business park charges and dues), levied, assessed and/or agreed to be imposed upon the Property and/or Tower, or upon the rent due and payable hereunder, whether or not now customary or within the contemplation of the Parties hereto and regardless of whether the same shall be extraordinary or ordinary, general or special, or similar or dissimilar to any of the foregoing, but shall not include any inheritance, estate, succession, income, profits or franchise tax. If any such tax or excise is levied or assessed directly against Tenant, then Tenant shall be responsible for and shall pay the same at such times and in such manner as the taxing authority requires. Tenant shall be liable for all taxes levied or assessed against Tenant's personal property or Tenant's fixtures placed in the Premises, whether levied or assessed against Landlord or Tenant. Landlord shall reasonably cooperate with Tenant, at Tenant's expense, in filing, prosecuting and perfecting any appeal or challenge to Taxes as set forth in the preceding sentence, including but not limited to, executing any consent, appeal or other similar document. If, as a result of any appeal or challenge by Tenant, there is a reduction, credit or repayment received by Landlord for any Taxes previously paid by Tenant, Landlord agrees to promptly reimburse to Tenant the amount of said reduction, credit or repayment. If Tenant does not have the standing rights to pursue a good faith and reasonable dispute of any Taxes under this section, Landlord will pursue such dispute at Tenant's sole cost and expense upon written request of Tenant.

5. Interference and Structure Damage.

5.1 Interference. Tenant agrees to use commercially reasonable efforts to ensure that Tenant's Equipment does not cause measurable Interference (as defined below) with the electronic equipment, operations of, or other telecommunications equipment installed at the Property as of the Effective Date. Following Tenant's Installation, Landlord agrees not to install or to permit others to install any structure or equipment which would block or otherwise interfere with any transmission or reception by Tenant's Equipment (whether such blockage or interference is in the form of an emission, radiation, induction, harmonic, a physical barrier or otherwise ("**Interference**"). If Interference continues for a period more than seventy-two (72) hours following a Party's receipt of notification thereof, Landlord shall cause any interfering party to cease operating and/or relocate the source of Interference or to reduce the power sufficiently to minimize the Interference until such Interference can

be remedied. Landlord represents, warrants and covenants that all leases, subleases, or other agreements entered into by Landlord or any Affiliate of Landlord for the installation of equipment used for any service utilizing in whole or in part the transmission or reception of any radio frequency(ies) at the Property contain or will contain language prohibiting interference to any then pre-existing use of the Property. The Parties acknowledge and agree that there will not be an adequate remedy at law for noncompliance with the provisions of this Section 5.1, and therefore either Party shall have the right to equitable remedies, including, without limitation, injunctive relief and specific performance.

5.2 Structure Unfit For Tenant's Permitted Use. In the event that all or a substantial portion of the Tower is destroyed, damaged or otherwise unfit for Tenant's occupancy in accordance with the Tenant's Permitted Use (as determined by Tenant in its reasonable discretion) and the Tower cannot be restored, or rebuilt, by Landlord within sixty (60) days to a condition which is fit for Tenant's occupancy in accordance with the Tenant's Permitted Use (as determined by Tenant in its reasonable discretion), then Tenant may elect to immediately terminate this Agreement by written Notice to Landlord without penalty or further obligation to Landlord, its employees, officers, agents or lenders. Landlord shall inform Tenant whether Landlord intends to rebuild, repair or replace the Tower as soon as possible under the circumstances, but in all cases within ten (10) days following Landlord's discovery of such condition. In the event Tenant does not elect to terminate this Agreement, then Landlord shall promptly commence and diligently pursue to completion the restoration or repair of the Tower in accordance with prevailing tower industry standards, at Landlord's sole cost and expense. If such restoration or repair cannot reasonably be undertaken without moving Tenant's Equipment, then, at Landlord's sole cost and expense, Tenant may remove Tenant's Equipment from the Tower, thereafter replacing Tenant's Equipment on the Tower as soon as reasonably possible. Tenant shall be entitled to deploy and use a mobile structure, temporary power solution or other interim cell siting arrangement in a location mutually agreed upon by the Parties in good faith, and to an abatement of its Rent obligation (and/or a pro rata refund of prepaid Rent, as applicable) until such time that the affected facility is replaced or otherwise restored to a condition fit for Tenant's occupancy in accordance with the Tenant's Permitted Use (as determined by Tenant in its reasonable discretion).

6. Maintenance and Repair Obligations.

6.1 Landlord Maintenance of the Tower. Landlord represents and warrants that: (i) its operation of the Tower and Property (exclusive of Tenant's Equipment), including, without limitation, any required or advisable lighting systems, currently complies with, and will be maintained throughout the Term of this Agreement in accordance with, all Applicable Laws. Landlord shall at all times throughout the Term maintain, at its sole cost and expense, the Tower and the Property, including, without limitation, the lighting systems, transmission lines, equipment and building(s) in good operating condition. In no event shall Landlord access, power down, move, modify or otherwise alter Tenant's Equipment without Tenant's prior written consent (email being sufficient).

6.2 Tenant Maintenance of Tenant's Equipment. Tenant assumes sole responsibility for the maintenance, repair and/or replacement of Tenant's Equipment, except as set forth in Section 6.1. Tenant agrees to perform all maintenance, repair or replacement of Tenant's Equipment (**"Tenant Maintenance"**) in accordance with Applicable Law, and in a good and workmanlike manner. Tenant acknowledges and agrees that Tenant shall not be permitted to conduct Tenant Maintenance in a manner that would materially increase the size of the Premises.

7. Surrender and Hold Over.

7.1 Surrender. Except as set forth to the contrary herein, within ninety (90) days following the expiration or termination of the Term of this Agreement (including any period(s) of renewal or extension) (the **"Equipment Removal Period"**) in each case in accordance with the terms of this Agreement, Tenant will surrender the Premises to Landlord in a condition similar to that which existed on the Commencement Date, normal wear and tear excepted, together with all additions, alterations and improvements thereto provided, however, that Tenant shall have no obligation to remove any Tenant's Equipment or other objects that are below the surface of the Property (such as cables) or any concrete or equivalent installation pad. The Parties acknowledge and agree that Rent will

not accrue during the Equipment Removal Period, provided, however, that if Tenant fails to remove Tenant's Equipment during the Equipment Removal Period, Tenant will be deemed to be in Hold Over (as defined in Section 7.2 below) until such time as Tenant removes Tenant's Equipment from the Premises in accordance with this Section 7.1. Nothing herein, however, shall prohibit Tenant from accessing the Premises of removing all or any portion of Tenant's Equipment from the Premises at any time during the Term or the Equipment Removal Period. Tenant shall repair any damage to the Premises caused by the removal of Tenant's Equipment.

7.2 Holding Over. If Tenant occupies the Premises beyond the Equipment Removal Period without Landlord's written consent ("**Hold Over**"), Tenant will be deemed to occupy the Premises on a month-to-month basis, terminable by either Party on thirty (30) days' written Notice to the other Party, and all of the terms and provisions of this Agreement shall be applicable during that period, except that Tenant shall pay Landlord a rental equal to one hundred twenty-five percent (125%) of the monthly Rent applicable hereunder at the expiration of the Term or applicable Renewal Term, prorated for the number of days of such holding over.

8. Default, Remedies and Termination.

8.1 Default. If any one (1) or more of the following events (each, an "**Event of Default**") occurs during the Term, then the non-defaulting Party may elect one or more of the remedies set forth below in this Section 8 or seek any other remedy available at law or in equity: (a) a Party's failure to make any payment required by this Agreement within thirty (30) days after such Party's receipt of written Notice from the other Party of such failure to pay; (b) failure by either Party to observe or perform any of the covenants or other provisions of this Agreement to which either Party is bound by this Agreement where such failure: (1) continues for a period of thirty (30) days after written Notice thereof from the non-defaulting Party, provided, however, that if the event for which the Notice is given is of a nature that may not be reasonably cured within said thirty (30) day period, then such Party shall not be in default for so long as such Party commences to cure the failure within the thirty (30) day period and diligently pursues it to conclusion; and/or (2) based upon Tenant's reasonable determination, materially affects Tenant's ability to transmit or receive wireless communications signals to or from the Premises; (c) either Party files a petition in bankruptcy or insolvency or for reorganization or arrangement under the bankruptcy laws of the United States or under any insolvency act of any state, or admits the material allegations of any such petition by answer or otherwise, or is dissolved or makes an assignment for the benefit of creditors; and/or (d) involuntary proceedings under any such bankruptcy law or insolvency act or for the dissolution of either Party are instituted against either Party, or a receiver or trustee is appointed for all or substantially all of the property of either Party, and such proceeding is not dismissed, or such receivership or trusteeship vacated within sixty (60) days after such institution or appointment.

8.2 Remedies and Termination. Upon the occurrence of any uncured Event of Default, the non-defaulting Party may thereafter terminate this Agreement immediately upon written Notice to the other Party without prejudice to any other remedies the non-defaulting Party may have at law or in equity. Further, Tenant shall have the right, but not the obligation, to terminate this Agreement without further liability upon thirty (30) days prior written Notice to Landlord due to any one or more of the following: (i) changes in Applicable Law which prohibit or adversely affect Tenant's ability to operate Tenant's Equipment at the Premises; (ii) Tenant, in its sole discretion, determines that Tenant's Permitted Use of the Premises is obsolete or unnecessary; (iii) Landlord or a third party installs any structure, equipment, or other item on the Structure, Property or an adjacent property, which blocks, hinders, limits, or prevents Tenant from being able to use the Tenant Equipment for Tenant's Permitted Use.

[Remainder of page intentionally left blank.]

9. Limitation of Liability and Indemnification.

9.1 Limitation of Liability. EXCEPT FOR EACH PARTY'S INDEMNIFICATION OBLIGATIONS SET FORTH BELOW IN THIS SECTION 9, NEITHER PARTY NOR ANY OF ITS AGENTS, CONTRACTORS OR EMPLOYEES, SHALL BE LIABLE TO THE OTHER PARTY OR ANY PERSON CLAIMING THROUGH THAT PARTY FOR ANY EXEMPLARY, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES FOR ANY CAUSE WHATSOEVER, INCLUDING, WITHOUT LIMITATION, CLAIMS CAUSED BY OR RESULTING FROM THE NEGLIGENCE, GROSS NEGLIGENCE OR WILLFUL MISCONDUCT OF THAT PARTY, ITS AGENTS, CONTRACTORS OR EMPLOYEES.

9.2 Tenant's Indemnity. Except to the extent caused by the breach of this Agreement by Landlord or the acts or omissions of Landlord, its officers, agents, employees, contractors, or any other person or entity for whom Landlord is legally responsible, Tenant shall defend, indemnify and hold Landlord and its officers, directors, shareholders, employees, agents and representatives harmless from and against any and all claims, demands, litigation, settlements, judgments, damages, liabilities, costs and expenses (including, without limitation, reasonable attorneys' fees) arising directly or indirectly out of: (i) any act or omission of Tenant, its officers, agents, employees, contractors, or any other person or entity for whom Tenant is legally responsible; or (ii) a breach of any representation, warranty or covenant of Tenant contained or incorporated in this Agreement. Tenant's obligations under this Section 9.2 shall survive the expiration or earlier termination of this Agreement for two (2) years.

9.3 Landlord's Indemnity. Except to the extent caused by the breach of this Agreement by Tenant or the acts or omissions of Tenant, its officers, agents, employees, contractors, or any other person or entity for whom Tenant is legally responsible, Landlord shall defend, indemnify and hold Tenant, its officers, directors, shareholders, employees, agents and representatives harmless from and against any and all claims, demands, litigation, settlements, judgments, damages, liabilities, costs and expenses (including, without limitation, reasonable attorneys' fees) arising directly or indirectly out of: (i) any act or omission of Landlord, its officers, agents, employees, contractors or any other person or entity for whom Landlord is legally responsible; (ii) a breach of any representation, warranty or covenant of Landlord contained or incorporated in this Agreement; and/or (iii) the generation, possession, use, storage, presence, release, spill, treatment, transportation, manufacture, refinement, handling, production and/or disposal of Hazardous Substances (as defined in Section 11) in, on, about, adjacent to, under or near the Premises and/or the Property, and/or any contamination of the Premises and/or the Property by any Hazardous Substance, but only to the extent not caused by Tenant or its employees, agents, customers/invitees or contractors. Landlord's obligations under this Section 9.3 shall survive the expiration or earlier termination of this Agreement for two (2) years.

9.4 Indemnification Procedure. The Party seeking indemnification (the "**Indemnified Party**") shall promptly send Notice to the Party from whom indemnification is being sought (the "**Indemnifying Party**") of the claim or suit for which indemnification is sought. The Indemnified Party shall not make any admission as to liability or agree to any settlement of or compromise any claim without the prior written consent of the Indemnifying Party. The Indemnified Party shall, at the Indemnifying Party's request and expense, give the Indemnifying Party all reasonable assistance in connection with such negotiations and litigation.

10. Insurance.

10.1 Landlord Obligations. Throughout the Term, Landlord shall maintain, at Landlord's sole cost and expense, the following insurance coverage: (i) Commercial General Liability of not less than $1,000,000 per occurrence and $2,000,000 aggregate; and (ii) such other insurance policies as may be deemed normal and customary for substantially similar properties, including, without limitation, coverage for loss of rent. All such policies shall be endorsed to include Tenant as an additional insured. Subject to the policy minimums set forth above in this Section 10.1, the insurance required of Landlord hereunder may be maintained by a blanket or master policy that includes properties other than the Property.

10.2 Tenant Obligations. Throughout the Term, Tenant shall maintain, at Tenant's sole cost and expense, the following insurance coverage: (i) workers' compensation insurance with no less than the minimum limits required by Applicable Law; (ii) employer's liability insurance with such limits as required by Applicable Law; and (iii) Commercial General Liability with a minimum limit of $1,000,000 per occurrence and $2,000,000 aggregate. All such policies shall be endorsed to include Landlord as additional insured.

10.3 Insurance Requirements. All policies required to be maintained by this Section 10 shall be issued by insurers that are (1) licensed to do business in the state in which the Property are located, and (2) rated A- or better by Best's Key Rating Guide.

10.4 Waiver of Subrogation. To the fullest extent permitted by law, Landlord and Tenant for themselves and any and all parties claiming under or through them, including, without limitation, their respective insurers, hereby mutually release and discharge each other and the other's Affiliates, and their respective officers, directors, shareholders, agents, employees, contractors, and/or any other person or entity for whom a Party is legally responsible from any claims for damage to any person or to the Premises or any other real or personal property that are or are claimed to have been caused by or result from risks insured against under any insurance policies carried by the waiving party and in force at the time of such damage and hereby waive any right of subrogation that might otherwise exist in or accrue to any person on account thereof. All policies required to be carried by either Party herein shall contain an endorsement in favor of the other Party waiving the insurance company's right of subrogation against such other Party. THIS RELEASE SHALL APPLY EVEN IF THE LOSS OR DAMAGE IS CAUSED BY THE FAULT OR NEGLIGENCE OF A PARTY HERETO OR BY ANY PERSON FOR WHICH SUCH PARTY IS RESPONSIBLE. EACH PARTY AGREES TO NOTIFY ITS INSURANCE CARRIER(S) OF THIS PROVISION.

11. Representations and Warranties. Landlord represents, warrants and covenants that: (a) Landlord has good and sufficient title and interest to the Premises, whether by ownership, license, lease or otherwise and has the right to grant the rights set forth in this Agreement; (b) there are no liens, judgments or other title matters materially and adversely affecting Landlord's title to or interest in the Property; (c) there are no covenants, easements or restrictions that prevent the use of the Premises for Tenant's Permitted Use; (d) the Property and the Premises are in good repair and suitable for Tenant's Permitted Use; (e) in the event a third party other than Landlord owns or controls any rights to, or Landlord subleases any portion of the Property, Landlord has obtained all rights necessary to enter into this Agreement; and (f) Landlord has not and shall not cause, knowingly permit or, fail to remediate in accordance with Applicable Law (at Landlord's sole cost and expense) any hazardous substance (as such phrase is defined by the Comprehensive Environmental Response, Compensation and Liability Act, 42 USC §9601 et seq. ("**Hazardous Substance**") to be placed, stored, treated, released, spilled, transported or disposed of on, under, at or from the Property in violation of any applicable environmental laws during the term of this Agreement. Landlord understands and agrees that notwithstanding anything contained in this Agreement to the contrary, in no event shall Tenant have any liability whatsoever with respect to any Hazardous Substance that was on, about, adjacent to, under or near the Property prior to the Effective Date, or that was generated, possessed, used, stored, released, spilled, treated, transported, manufactured, refined, handled, produced or disposed of on, about, adjacent to, under or near the Property by: (1) Landlord, its agents, employees, contractors or invitees; or (2) any third party who is not an employee, agent, contractor or invitee of Tenant.

Tenant and Landlord each represent, warrant and covenant to the other Party that: (i) it is a duly constituted organization (corporation, limited partnership, limited liability company, partnership, non-profit corporation, etc.) in good standing in its State of organization and qualified to do business in the State in which the Premises is located to the extent required by Applicable Law; (ii) it has filed all forms, reports, fees and other documents necessary to materially comply with Applicable Laws as and when due; (iii) it has all rights, power and authority necessary to enter into and to execute and deliver this Agreement and to perform its obligations (and in the case of Landlord grant any rights) hereunder; (iv) neither the execution and delivery of this Agreement, nor the consummation of the transactions contemplated hereby or thereby will violate any constitution, statute, regulation, rule, injunction, judgment, order, decree, ruling, charge, or other restriction of any government, governmental agency, or court to which it or any of its Affiliates are subject; and (v) the transaction contemplated by this Agreement does not require

the consent of any other party, will not result in a breach of or default under any third party agreement, and will not otherwise cause any such third party agreement to cease to be legal, valid, binding, enforceable and in full force and effect.

12. Miscellaneous.

12.1 Assignment. Landlord may assign or otherwise transfer any of its rights or obligations under this Agreement to any third party without the prior written approval of Tenant. Notwithstanding the foregoing, Tenant may assign or transfer some or all of its rights and/or obligations under the Agreement to: (i) an Affiliate; (ii) a successor entity to its business, whether by merger or by sale of all or substantially all of its assets or stock; (iii) any entity in which Tenant or its Affiliates have any direct or indirect equity investment; and/or (iv) any other entity directly or indirectly controlling, controlled by or under common control with any of the foregoing, and in each case, such assignment or transfer shall not be considered an assignment under this Section 12.1 requiring consent and Landlord shall have no right to delay, alter or impede such assignment or transfer. For clarity, and the avoidance of doubt, neither: (a) a change in ownership of Tenant as a result of a merger, consolidation or reorganization; nor (b) the sale of all or substantially all of the assets of Tenant shall be considered an assignment under this Section 12.1 requiring Landlord's consent, and Landlord shall have no right to delay, alter or impede any of the foregoing transactions.

12.2 Rights Upon Sale of Premises or Tower. Should Landlord, at any time during the Term, sell or transfer all or any part of the Premises or the Tower thereon to a purchaser other than Tenant, such transfer shall be subject to this Agreement and Landlord shall require any such purchaser or transferee to recognize Tenant's rights under the terms of this Agreement in a written instrument signed by Landlord and the third party transferee. In the event that Landlord completes any such transfer without executing such a written instrument, then Landlord shall not be released from its obligations to Tenant under this Agreement, and Tenant shall have the right to look to Landlord and the third party for the full performance of this Agreement.

12.3 Subordination and Non-Disturbance. At Landlord's option, this Agreement shall be subordinate to any mortgage, deed of trust, or other security agreement (each a "**Mortgage**") by Landlord which, from time to time, may encumber all or part of the Property; provided, however, the lender under every such Mortgage shall, in the event of a foreclosure of Landlord's interest, recognize the validity of this Agreement and Tenant's right to remain in occupancy of and have access to the Premises, as long as no Event of Default by Tenant exists under this Agreement. If the Property is encumbered by a Mortgage as of the Effective Date, then Landlord shall, promptly following Tenant's request, obtain and furnish to Tenant a non-disturbance agreement, in recordable form, for each such Mortgage. If Landlord defaults in any payment or other performance obligations under any Mortgage encumbering the Property, Tenant may, at its option (but without any obligation), cure or correct such default and, upon doing so, Tenant: (a) shall be subrogated to any and all rights, titles, liens, and/or equities of the holders of such Mortgage; and (b) may offset the full amount against any Rent or other amount owed by Tenant to Landlord under this Agreement.

12.4 Condemnation. If all or any portion of the Premises is condemned, taken by a Governmental Authority or otherwise appropriated by the exercise of the right of eminent domain or a deed or conveyance in lieu of eminent domain (each, a "**Taking**"), either Party hereto shall have the right, but not the obligation, to terminate this Agreement immediately upon Notice to the other Party. If either Party elects to terminate this Agreement, the Rent set forth herein shall be abated, and Tenant's liability therefor will cease as of the date of such Taking, this Agreement shall terminate as of said date, and any prepaid rent shall be returned to Tenant. If this Agreement is not terminated as herein provided, then it shall continue in full force and effect, and Landlord shall, within a reasonable time after possession is physically taken by the condemning authority restore the remaining portion of the Premises to render it reasonably suitable for the uses permitted by this Agreement and the Rent shall be proportionately and equitably reduced. Notwithstanding the foregoing, Landlord shall not be obligated to expend an amount greater than the proceeds received from the condemning authority less all expenses reasonably incurred in connection therewith (including attorneys' fees) for the restoration. All compensation awarded in connection with a Taking shall be the property of Landlord, provided that if allowed under Applicable Law, Tenant may apply for and keep

as its property a separate award for (i) the value of Tenant's leasehold interest; (ii) the value of Tenant's Equipment or other personal property of Tenant; (iii) Tenant's relocation expenses; and (iv) damages to Tenant's business incurred as a result of such Taking.

12.5 Recording. If requested by Tenant, Landlord and Tenant agree to execute a Memorandum of Lease that Tenant may record, at Tenant's sole cost and expense, with the appropriate recording officer. The date set forth in the Memorandum of Lease is for recording purposes only, and bears no reference to commencement of either the Term or rent payments of any kind.

12.6 Force Majeure. Notwithstanding anything to the contrary in this Agreement, neither Party shall be liable to the other Party for nonperformance or delay in performance of any of its obligations under this Agreement due to causes beyond its reasonable control, including, without limitation, strikes, lockouts, pandemics, labor troubles, acts of God, accidents, technical failure governmental restrictions, insurrections, riots, enemy act, war, civil commotion, fire, explosion, flood, windstorm, earthquake, natural disaster or other casualty ("**Force Majeure**"). Upon the occurrence of a Force Majeure condition, the affected Party shall immediately notify the other Party with as much detail as possible and shall promptly inform the other Party of any further developments. Immediately after the Force Majeure event is removed or abates, the affected Party shall perform such obligations with all due speed. Neither Party shall be deemed in default of this Agreement to the extent that a delay or other breach is due to or related to a Force Majeure event. A proportion of the Rent herein reserved, according to the extent that such Force Majeure event shall interfere with the full enjoyment and use of the Premises, shall be suspended and abated from the date of commencement of such Force Majeure event until the date that such Force Majeure event subsides. If such Force Majeure event prevents the affected Party from performing its obligations under this Agreement, in whole or in part, for a period of forty-five (45) or more days, then the other Party may terminate this Agreement immediately upon Notice to the affected Party.

12.7 Successors and Assigns. The respective rights and obligations provided in this Agreement shall bind and shall inure to the benefit of the Parties hereto, their legal representative, heirs, successors and permitted assigns. No rights however, shall inure to the benefit of any assignee, unless such assignment shall have been made in accordance with Section 12.1 of this Agreement.

12.8 Governing Law and Construction. This Agreement shall be construed, governed and enforced in accordance with the laws of the state in which the Premises is located. Landlord and Tenant acknowledge and agree that they and their counsel have reviewed, or have been given a reasonable opportunity to review, this Agreement and that the normal rule of construction to the effect that any ambiguities are to be resolved against the drafting party shall not be employed in the interpretation of this Agreement or any amendments hereto.

12.9 Person; Gender; Number; Section Headings. As used in this Agreement, the word "person" means and includes, where appropriate, an individual, corporation, partnership or other entity; the plural shall be substituted for the singular, and the singular for the plural, where appropriate; and words of any gender shall include any other gender. The section and paragraph headings contained in this Agreement are solely for reference purposes, and shall not affect in any way the meaning or interpretation of this Agreement.

12.10 Severability. Each provision of this Agreement shall be construed as separable and divisible from every other provision and the enforceability of any one provision shall not limit the enforceability, in whole or in part, of any other provision. In the event that a court or administrative body of competent jurisdiction holds any provision of this Agreement to be invalid, illegal, void or less than fully enforceable as to time, scope or otherwise, such provision shall be construed by limiting and reducing it so that such provision is valid, legal and fully enforceable while preserving to the greatest extent permissible the original intent of the parties; the remaining terms and conditions of this Agreement shall not be affected by such alteration, and shall remain in full force and effect.

12.11 Waiver. It is agreed that, except as expressly set forth in this Agreement, the rights and remedies herein provided in case of default or breach by either Landlord or Tenant are cumulative and shall not affect in any manner any other remedies that the non-breaching Party may have by reason of such default or breach. The exercise

of any right or remedy herein provided shall be without prejudice to the right to exercise any other right or remedy provided herein, at law, in equity or otherwise.

12.12 Notice. Unless explicitly set forth to the contrary herein, all notices or requests that are required or permitted to be given pursuant to this Agreement must be given in writing and must be sent by facsimile transmission (solely in the case of notices or requests sent to Tenant), by email (solely in the case of notices or requests sent to Landlord), or by first-class certified mail, postage prepaid, or by overnight courier service, charges prepaid, to the party to be notified, addressed to such party at the address(es), email address(es) or fax number(s) set forth below, or such other address(es), email address(es) or fax number(s) as such Party may have substituted by written notice (given in accordance with this Section 12.12) to the other Party ("**Notice**"). The sending of such Notice to the proper email address (in the case of email transmission), the sending of such Notice with confirmation of receipt of the complete transmission (in the case of facsimile transmission) or the receipt of such Notice (in the case of delivery by first-class certified mail or by overnight courier service) will constitute the giving thereof.

If to be given to Landlord:
Town of Ridgefield
Attn: First Selectperson

If by overnight courier service:
400 Main St.
Ridgefield, CT 06877

If by first-class certified mail:

400 Main St.
Ridgefield, CT 06877

If by email:
Email address: selectman@ridgefieldct.org

If to be given to Tenant:
DISH Wireless L.L.C.
Attn: Lease Administration

If by overnight courier service:
5701 South Santa Fe Drive
Littleton, Colorado 80120

If by first-class certified mail:
P.O. Box 6655
Englewood, Colorado 80155

If by facsimile:
Fax #: (303) 723-2050

cc: DISH Wireless L.L.C.
Attn: Office of the General Counsel

If by overnight courier service:
5701 South Santa Fe Drive
Littleton, Colorado 80120

If by first-class certified mail:
P.O. Box 6655
Englewood, Colorado 80155

If by facsimile:
Fax #: (303) 723-1699

12.13 Entire Agreement. This Agreement sets forth the entire, final and complete understanding between the Parties hereto relevant to the subject matter of this Agreement, and it supersedes and replaces all previous understandings or agreements, written, oral, or implied, relevant to the subject matter of this Agreement made or existing before the date of this Agreement. Except as expressly provided by this Agreement, no waiver or modification of any of the terms or conditions of this Agreement shall be effective unless in writing and signed by both Parties. Any provision of this Agreement that logically would be expected to survive termination or expiration, shall survive for a reasonable time period under the circumstances, whether or not specifically provided in this Agreement.

12.14 Compliance with Law. Each Party shall, with respect to its actions and/or inactions pursuant to and in connection with this Agreement, comply with all applicable statutes, laws, rules, ordinances, codes and governmental or quasi-governmental orders or regulations (in each case, whether federal, state, local or otherwise) and all amendments thereto, now enacted or hereafter promulgated and in force during the Term of this Agreement, a Renewal Term or any extension of either of the foregoing.

12.15 Counterparts. This Agreement may be executed in any number of identical counterparts and, as so executed, shall constitute one agreement, binding on all the Parties hereto, notwithstanding that all the Parties are not signatories to the original or the same counterpart. Execution of this Agreement by facsimile or electronic signature shall be effective to create a binding agreement and, if requested, Landlord and Tenant agree to exchange original signed counterparts in their possession.

12.16 Attorneys' Fees. If an action is brought by either Party for breach of any lease covenant and/or to enforce or interpret any provision of this Agreement, the prevailing Party shall be entitled to recover its costs, expenses and reasonable attorneys' fees, both at trial and on appeal, in addition to all other sums allowed by law.

12.17 Incorporation of Exhibits. All exhibits referenced herein and attached hereto are hereby incorporated herein in their entirety by this reference.

[*Remainder of page intentionally left blank. Signature page follows.*]

IN WITNESS WHEREOF, the Parties have caused their duly authorized representatives to execute this Agreement as of the Effective Date.

LANDLORD:

TOWN OF RIDGEFIELD

By: _____

Name: Rudy Marconi

Its: First Selectman

TENANT:

DISH WIRELESS L.L.C.

By: _____

Name: Dave Mayo
Executive VP
DISH Wireless

Its: 11/8/22

EXHIBIT A

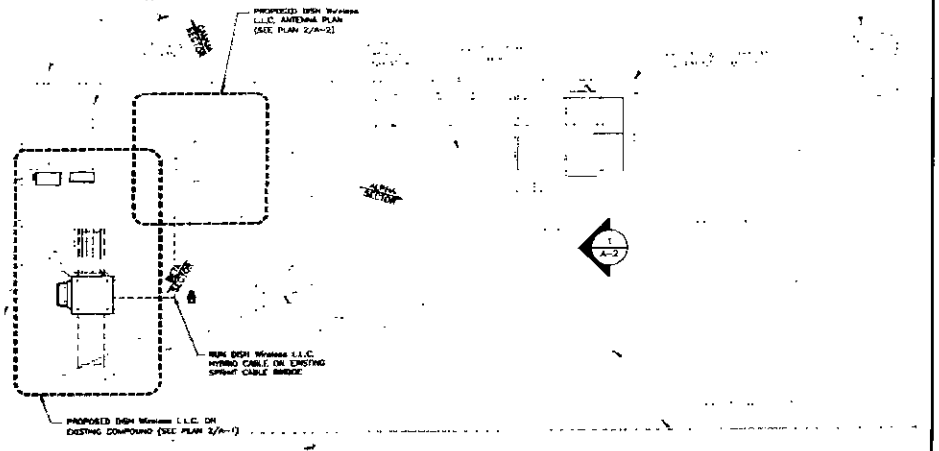
LEGAL DESCRIPTION OF PROPERTY

All that certain piece or parcel of land, together with the buildings and improvements thereon, situated in the Town of Ridgefield, County of Fairfield and State of Connecticut, situated at the corner of East Ridge Avenue and Governor Street and is bounded on the North by Governor Street; on the East by land now or formerly of George L. Rockwell; on the South by land now or formerly of George L. Tator and on the West by East Ridge Avenue and more particularly described as follows:

Beginning at the corner of Governor Street and East Ridge Avenue at a point thirty-one (31) feet westerly from the iron fence; thence running south or in a southerly direction two hundred and fifteen (215) feet to a stone bound on the line of the land of George T. Tator; thence in an easterly direction along land of said Tator four hundred and sixty-eight (468) feet to land of George L. Rockwell; thence North or Northerly along land of the said George L. Rockwell seventy-two (72) feet; thence West or Westerly along land of said George L. Rockwell ninety-four (94) feet; thence in a northwesterly direction forty-four (44) feet and six (6) inches still along land of the said George L. Rockwell; thence North or Northerly still along land of the said George L. Rockwell one hundred and fifteen feet and eight inches to Governor Street; thence west or westerly along said Governor Street three hundred and sixty-six (366) feet and two (2) inches to East Ridge Avenue at the point or place of beginning.

NOTES

1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.
3. REFER TO THE STRUCTURAL ANALYSIS REPORT BY TECTONIC DATED 10/12/22.
4. REFER TO THE MOUNT ANALYSIS REPORT BY TECTONIC DATED 10/12/22.



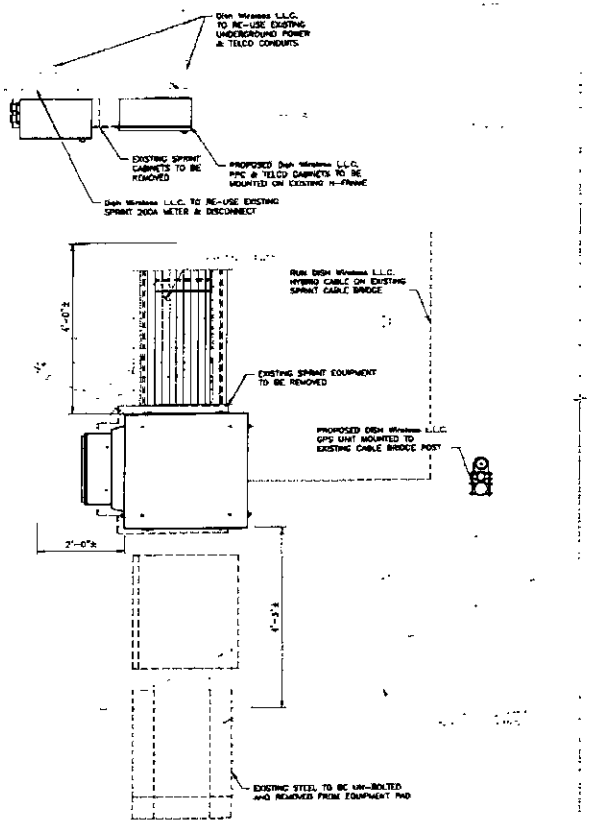
ENLARGED SITE PLAN

1/4"=1'-0"

1

NOTES

1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. CONTRACTOR SHALL MAINTAIN A 10'-0" MINIMUM SEPARATION BETWEEN THE PROPOSED GPS UNIT, TRANSMITTING ANTENNAS AND EXISTING GPS UNITS.
3. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.
4. REFER TO THE STRUCTURAL ANALYSIS REPORT BY TECTONIC DATED 10/12/22.
5. REFER TO THE MOUNT ANALYSIS REPORT BY TECTONIC DATED 10/12/22



EQUIPMENT PLAN

3/4"=1'-0"

2

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

Tectonic

Tectonic Engineering Consultants, Surveyors & Land Planners, P.C.

DRAWN BY:	CHECKED BY:	APPROVED BY:
NM	JQ	MP

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	09/06/22	ISSUED FOR REVIEW
B	09/19/22	ISSUED FOR CLIENT COMMENTS
C	10/13/22	REVISED LEASE AREA

A&E PROJECT NUMBER

10710.NJJER01117A

DISH WIRELESS PROJECT INFORMATION

NJJER01117A

76 EAST RIDGE ROAD
RIDGEFIELD, CT 06877

SHEET TITLE

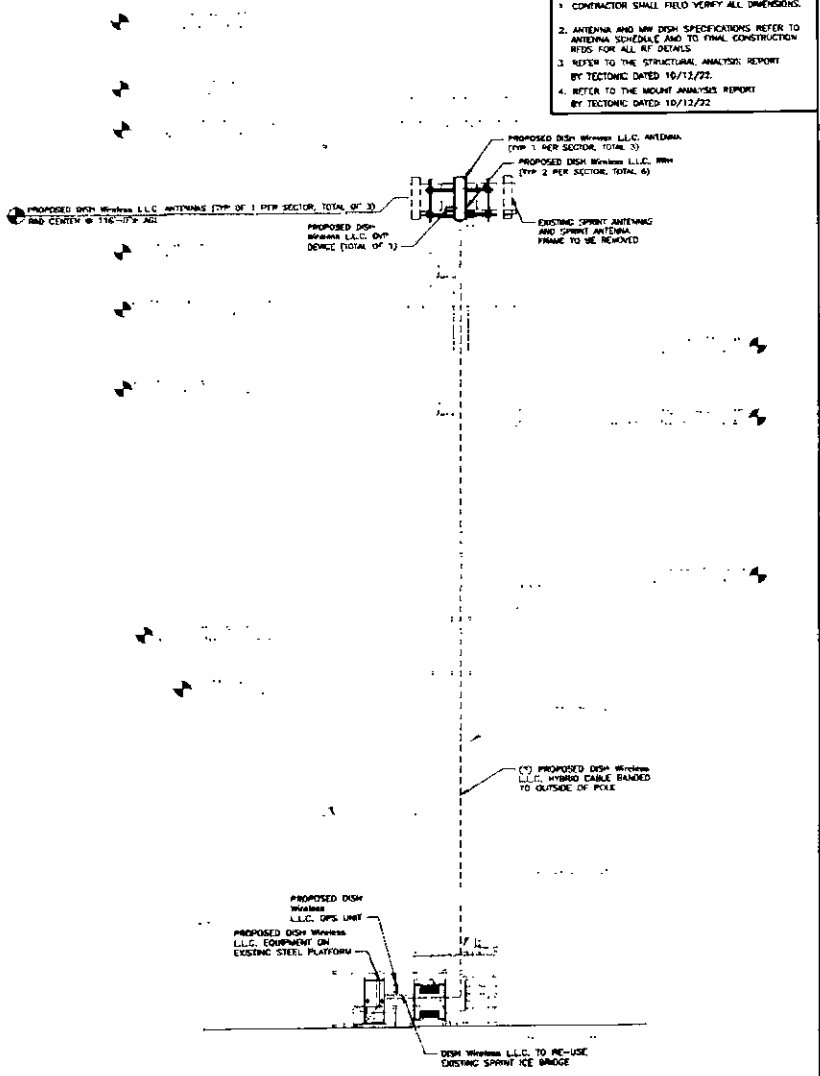
ENLARGED SITE & EQUIPMENT PLAN

SHEET NUMBER

A-1 HSG

NOTES

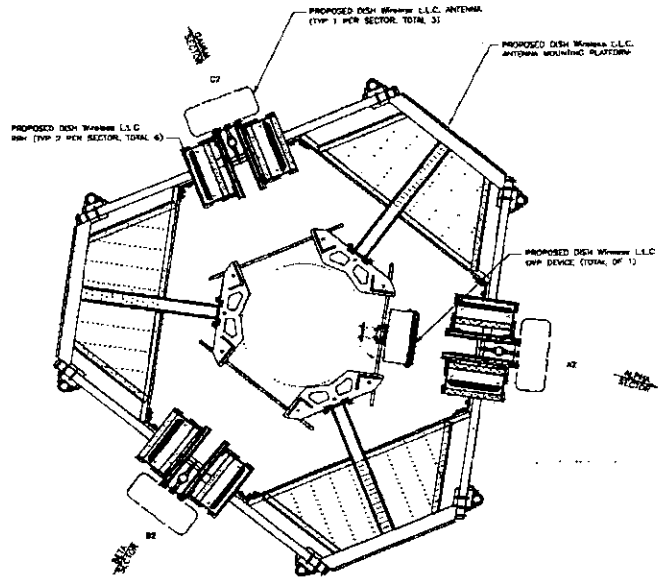
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNA AND RRH DISH SPECIFICATIONS REFER TO ANTENNA SCHEDULE AND TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS.
3. REFER TO THE STRUCTURAL ANALYSIS REPORT BY TECTONIC DATED 10/12/22.
4. REFER TO THE MOUNT ANALYSIS REPORT BY TECTONIC DATED 10/12/22



NORTH ELEVATION

12" 8" 4" 0 10" 20"
3/32"=1'-0"

1



NOTE: COLLAR TO BE INSTALLED AROUND EXISTING CABLING BANDED TO OUTSIDE OF POLE

ANTENNA LAYOUT

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

2

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

Tectonic

DRAWN BY:	CHECKED BY:	APPROVED BY:
NM	JD	MP

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	08/08/22	ISSUED FOR REVIEW
B	09/19/22	ISSUED FOR CLIENT COMMENTS
C	10/12/22	ISSUED FOR FINAL

A&E PROJECT NUMBER

10710.NJJER01117A

DISH WIRELESS PROJECT INFORMATION

NJJER01117A

76 EAST RIDGE ROAD
RIDGEFIELD, CT 06877

SHEET TITLE

ELEVATION, ANTENNA LAYOUT PLAN & SCHEDULE

SHEET NUMBER

A-2 HSG

EXHIBIT C

TENANT'S EQUIPMENT

Carrier Designation	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
Dish Wireless	3	CommScope	FFVV-65B-R2	1	1.6" Hybrid
	3	Fujitsu	TA08025-B605		
	3	Fujitsu	TA08025-B604		
	1	Raycap	RDIDC-9181-PF-48		
	1	CommScope	MC-PK8-DSH w/ Handrail		

Exhibit H

Mailing Receipts

LTR 1 OF 1

FROM:
LEV MAYZLER
(203) 488-0712
CONSTRUCTION SERVICES OF BRANF
63-3 NORTH BRANFORD ROAD
BRANFORD CT 06405-2848

SHIP TO:

MS. ALICE DEW
66 PROSPECT ST.
SECOND FL
TOWN HALL ANNEX
RIDGEFIELD CT 06877

CT 068 0-02

UPS 2ND DAY AIR **2**
TRACKING #: 1Z E05 345 02 6305 7113

BILLING: P/P

WS 22.0.17 SHARP MX-3070 02.0A 01/2023

Fold here and place in label pouch

Proof of Delivery

Dear Customer,

This notice serves as proof of delivery for the shipment listed below.

Tracking Number
1ZE053450263057113

Service

UPS 2nd Day Air®

Delivered On

01/12/2023 10:25 A.M.

Delivered To

66 PROSPECT ST
RIDGEFIELD, CT, 06877, US

Received By

ASPAR

Left At

Office

Please print for your records as photo and details are only available for a limited time.

Sincerely,

UPS

Tracking results provided by UPS: 01/13/2023 6:48 A.M. EST

LTR 1 OF 1

FROM:
LEV MAYZLER
(203) 488-0712
CONSTRUCTION SERVICES OF BRANF
63-3 NORTH BRANFORD ROAD
BRANFORD CT 06405-2848

SHIP TO:

TOWN OF RIDGEFIELD
HON. RUDY MARCONI
400 MAIN ST.
RIDGEFIELD CT 06877

CT 068 0-02

UPS 2ND DAY AIR **2**
TRACKING #: 1Z E05 345 02 6216 4900

BILLING: P/P

WS 22.0.17 SHARP MX-3070 02.0A 01/2023

Fold here and place in label pouch

Proof of Delivery

Dear Customer,

This notice serves as proof of delivery for the shipment listed below.

Tracking Number
1ZE053450262164900

Service

UPS 2nd Day Air®

Delivered On

01/12/2023 12:30 P.M.

Delivered To

RIDGEFIELD TAX COLLECTOR
400 MAIN ST
RIDGEFIELD, CT, 06877, US

Received By

BATTEN

Left At

Receiver

Please print for your records as photo and details are only available for a limited time.

Sincerely,

UPS

Tracking results provided by UPS: 01/13/2023 6:49 A.M. EST