Tectonic
PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.

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

May 3, 2023

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

RE: **Notice of Exempt Modification to an existing 150' monopole located at 3965 Congress Street, Fairfield, Connecticut**

Latitude: 41° 11' 18.02" / Longitude: -73° 17' 56.54"

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 150'monopole tower facility located at 3965 Congress Street, Fairfield, Connecticut (See Original Facility Approval attached as Exhibit A) ("Facility"). The property and tower are owned by The Town of Fairfield (See Fairfield 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 five foot (105') 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 April 28, 2023 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 Brenda L. Kupchick, First Selectwoman of the Town of Fairfield, Jim Wendt, Planning Director, and the property and tower owner, Town of Fairfield.

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 150' height of the Tower as the Dish antennas will be installed at a height of 105'.

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 6.0768%.

Tower

The Facility consists of a One hundred fifty foot (150') monopole tower located at 3965 Congress Street, Fairfield, Connecticut. As indicated above, the property and tower are owned by the Town of Fairfield. The tower currently supports Town of Fairfield antennas at the one hundred forty nine foot (149') centerline AGL, AT&T antennas at the one hundred twenty seven foot (127') foot centerline AGL, T-Mobile at the one hundred sixteen foot (116') centerline AGL, and Verizon Wireless at the eighty foot (80') 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 Fairfield to proceed with the proposed installation. Additionally, a Site Lease Agreement is attached as Exhibit G, granting Dish the authority from the tower owner to proceed with this application for shared use.

Tectonic

PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.

C. ENVIRONMENTAL FEASIBILITY

The proposed shared use of this Facility would have a minimal environmental impact. The installation of the Dish equipment at the 105' 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 3965 Congress Street, Fairfield, 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: Fairfield First Selectwoman, Brenda L. Kupchick
Sullivan Independence Hall
725 Old Post Road
Fairfield, CT 06824

Fairfield Planning Director, Jim Wendt
Sullivan Independence Hall
725 Old Post Road
Fairfield, CT 06824

Exhibit A

Original Facility Approval

Return

Town of Fairfield

Town Planning and Zoning Department

Zonning Compliance Permit

Hse Num: 3965 Street: Congress Street Map: 170 Parcel: 41 - Unit: 0000 Permit # 23333

Zone: AAA FIRM: Date: 05/25/1994 Occupancy/Use: per plans Receipt # 0

State Fee: $30.00

Description: 10' x 30' equipment shelter + 150' antenna Town Fee: $50.00

Applicant: Fairfield Town Of Total: $80.00

Print Date: 07/16/2019

STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

10 Franklin Square
New Britain, Connecticut 06051
Phone: (860) 827-2935
Fax: (860) 827-2950

March 10, 1999

Peter J. Tyrrell
Senior Counsel
Springwich Cellular Limited Partnership
500 Enterprise Drive
Rocky Hill, CT 06067-3900

RE: **TS-SCLP-051-990219** - Springwich Cellular Limited Partnership request for an order to approve tower sharing at an existing telecommunications facility located at 3965 Congress Street in Fairfield, Connecticut.

Dear Mr. Tyrrell:

At a public meeting held on March 9, 1999, the Connecticut Siting Council (Council) ruled that the shared use of this existing tower site is technically, legally, environmentally, and economically feasible and meets public safety concerns, and therefore, in compliance with General Statutes § 16-50aa, the Council has ordered the shared use of this facility to avoid the unnecessary proliferation of tower structures.

This facility has been carefully modeled to ensure that radio frequency emissions are conservatively below State and federal standards applicable to the frequency now used on this tower. Any additional change to this facility will require explicit notice to this agency pursuant to Regulations of Connecticut State Agencies Section 16-50j-73. Such notice shall include all relevant information regarding the proposed change with cumulative worst-case modeling of radio frequency exposure at the closest point uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin 65. Any deviation from this format may result in the Council implementing enforcement proceedings pursuant to General Statutes § 16-50u including, without limitation, imposition of expenses resulting from such failure and of civil penalties in an amount not less than one thousand dollars per day for each day of construction or operation in material violation.

This decision applies only to this request for tower sharing and is not applicable to any other request or construction.

The proposed shared use is to be implemented as specified in your letter dated February 19, 1999. Please notify the Council when all work is complete.

Very truly yours,

Mortimer A. Gelston
Chairman

MAG/sg

c: Honorable Kenneth A. Flatto, First Selectman, Town of Fairfield

Exhibit B

Property Card

3965 CONGRESS STREET

Location	3965 CONGRESS STREET	**Mblu**	170/ 41/ / /
Acct#	05308	**Owner**	FAIRFIELD TOWN OF
Assessment	$1,197,980	**Appraisal**	$1,711,400
PID	14189	**Building Count**	1

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2022	$544,300	$1,167,100	$1,711,400

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2022	$381,010	$816,970	$1,197,980

Owner of Record

Owner	FAIRFIELD TOWN OF	**Sale Price**	$0
Co-Owner		**Certificate**	
Care Of		**Book & Page**	0395/0523
Address	725 OLD POST ROAD FAIRFIELD, CT 06824	**Sale Date**	01/01/1800
		Qualified	U

Ownership History

Ownership History				
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Sale Date**
FAIRFIELD TOWN OF	$0		0395/0523	01/01/1800

Building Information

Building 1 : Section 1

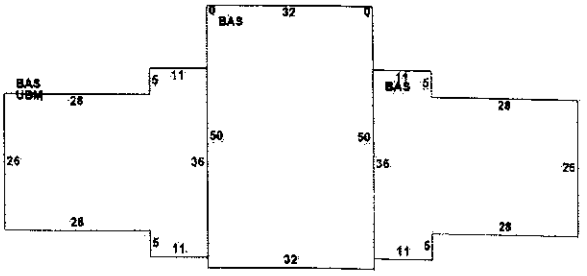
Year Built:	1959
Living Area:	3,848
Replacement Cost:	$716,134
Building Percent Good:	60
Replacement Cost Less Depreciation:	$429,700

Building Attributes	
Field	Description
Style:	Fire Station
Model	Ind/Comm
Grade	Average
Stories:	1
Occupancy	1.00
Exterior Wall 1	Vinyl Siding
Exterior Wall 2	Brick/Masonry
Roof Structure	Gable/Hip
Roof Cover	Asphalt
Interior Wall 1	Minim/Masonry
Interior Wall 2	Plywood Panel
Interior Floor 1	Concr-Finished
Interior Floor 2	Vinyl/Asphalt
Heating Fuel	Gas
Heating Type	Hot Water
AC Type	None
Struct Class	
Bldg Use	Fire Dept
Total Rooms	
Total Bedrms	00
Total Baths	0
Liv Area	
Effect Area	
1st Floor Use:	9032
Heat/AC	None
Frame Type	Masonry
Baths/Plumbing	Average
Ceiling/Wall	Ceil & Min Wl
Rooms/Prtns	Average
Wall Height	12.00
% Comn Wall	0.00

Building Photo

(https://images.vgsi.com/photos2/FairfieldCTPhotos/\0090\IMG_0197_906

Building Layout



(ParcelSketch.ashx?pid=14189&bid=13367)

Building Sub-Areas (sq ft)			
Code	Description	Gross Area	Living Area
BAS	First Floor	3,848	3,848
UBM	Basement, Unfinished	1,124	0
		4,972	3,848

Extra Features

Extra Features				
Code	Description	Size	Value	Bldg #
SPR1	SPRINKLERS-WET	4972.00 S.F.	$7,200	1

Land

Land Use

Use Code	9032
Description	Fire Dept
Zone	AAA
Neighborhood	C6
Alt Land Appr	No
Category	

Land Line Valuation

Size (Sqr Feet)	52272
Depth	0
Assessed Value	$816,970
Appraised Value	$1,167,100

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
PAV1	PAVING-ASPHALT			5000.00 S.F.	$16,700	1
LT1	LIGHTS-IN W/PL			1.00 UNITS	$800	1
SHD2	W/LIGHTS ETC			80.00 S.F.	$1,300	1
GEN3	GENERATOR			1.00 UNITS	$15,000	1
SHD5	CELL SHED			300.00 SF	$16,700	1
SHD5	CELL SHED			300.00 SF	$16,700	1
SHD5	CELL SHED			300.00 SF	$16,700	1
SHD5	CELL SHED			300.00 SF	$16,700	1
FN4	FENCE-8' CHAIN			600.00 L.F.	$6,800	1

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2021	$544,300	$1,167,100	$1,711,400
2020	$544,300	$1,167,100	$1,711,400
2019	$508,400	$833,500	$1,341,900

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2021	$381,010	$816,970	$1,197,980
2020	$381,010	$816,970	$1,197,980
2019	$355,880	$583,450	$939,330

(c) 2023 Vision Government Solutions, Inc. All rights reserved.

Exhibit C

Project Plans

dish wireless.

DISH Wireless L.L.C. SITE ID:

NJJER01121A

DISH Wireless L.L.C. SITE ADDRESS:

3965 CONGRESS STREET
FAIRFIELD, CT 06824

CONNECTICUT CODE OF 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

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
- RELOCATE EXISTING OMNI ANTENNAS TO TOP OF POLE AND INSTALL NEW CABLING

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

SITE PHOTO

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

811

GENERAL NOTES

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

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

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

SITE INFORMATION

PROPERTY OWNER:	TOWN OF FAIRFIELD
ADDRESS:	3965 CONGRESS STREET FAIRFIELD, CT 06824
TOWER TYPE:	MONOPOLE
TOWER CO SITE ID:	N/A
TOWER APP NUMBER:	N/A
COUNTY:	FAIRFIELD
LATITUDE (NAD 83):	41° 11' 18.18" N 41.188383 N
LONGITUDE (NAD 83):	73° 17' 56.48" W 73.299022 W
ZONING JURISDICTION:	TOWN OF FAIRFIELD/CT SITING COUNCIL
ZONING DISTRICT:	AAA
PARCEL NUMBER:	14189//170/41
OCCUPANCY GROUP:	U
CONSTRUCTION TYPE:	II-B
POWER COMPANY:	UNITED ILLUMINATING CO.
TELEPHONE COMPANY:	T.B.D

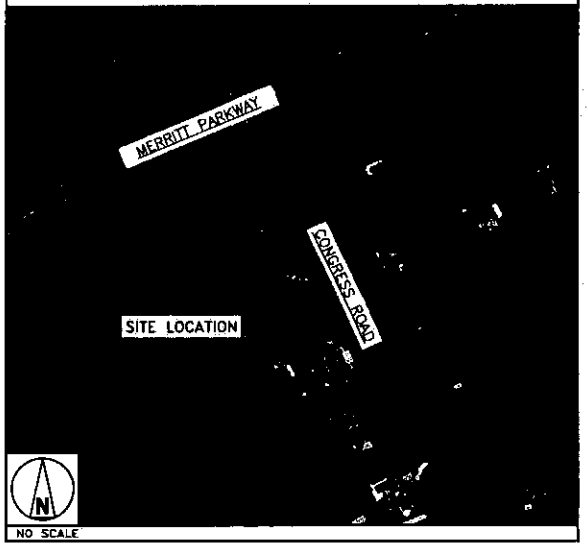
PROJECT DIRECTORY

APPLICANT:	DISH Wireless L.L.C. 5701 SOUTH SANTA FE DRIVE LITTLETON, CO 80120
SITE DESIGNER:	TECTONIC ENGINEERING CONSULTANTS, GEOLOGISTS & LAND SURVEYORS, D.P.C., INC 1279 ROUTE 300 NEWBURGH, NY 12550
SITE ACQUISITION:	TECTONIC ENGINEERING CONSULTANTS, GEOLOGISTS & LAND SURVEYORS, D.P.C., INC (845) 567-0656
CONSTRUCTION MANAGER:	RAFAL ROSOLOWSKI RAFAL.ROSOLOWSKI@DISH.COM
RF ENGINEER:	PAWAN MADAHAR PAWAN.MADAHAR@DISH.COM

DIRECTIONS

DIRECTIONS FROM DISH Wireless L.L.C. OFFICE/AIRPORT/DOWNTOWN:
GET ON I-280 W FROM LIVINGSTON AVE. HEAD NORTHEAST TOWARD ADP BLVD. TURN LEFT TOWARD ADP BLVD. TURN LEFT TOWARD ADP BLVD. TURN LEFT ONTO ADP BLVD. TURN RIGHT TOWARD CHOCTAW WAY. SLIGHT RIGHT ONTO CHOCTAW WAY. USE THE RIGHT LANE TO TURN RIGHT ONTO LIVINGSTON AVE. USE THE RIGHT LANE TO MERGE WITH I-280 W VIA THE RAMP TO FAIRSIPPANY. TAKE I-287 N AND CT-15 N TO CONGRESS ST IN FAIRFIELD. TAKE EXIT 44 FROM CT-15 N. MERGE WITH I-280 W. TAKE THE I-287 EXIT TOWARD US-46/MAHWAH/MORRISTOWN. KEEP LEFT AT THE Y JUNCTION TO CONTINUE ON I-287 E. FOLLOW SIGNS FOR WHITE PLAINS/RYE. TAKE EXIT 9 S-N TOWARD HUTCHINSON PKWY/MERRITT PKWY. MERGE WITH WESTCHESTER AVE. USE THE RIGHT LANE TO TAKE THE RAMP TO WESTCHESTER AVE/NORTH HUTCHINSON PKWY/MERRITT PKWY. MERGE WITH HUTCHINSON RIVER PKWY N. KEEP RIGHT AT THE Y JUNCTION TO STAY ON HUTCHINSON RIVER PKWY N. ENTERING CONNECTICUT, CONTINUE ONTO CT-15 N. TAKE EXIT 44 TOWARD CT-58/FAIRFIELD/REDDING. TURN RIGHT ONTO CONGRESS ST. DESTINATION WILL BE ON THE LEFT.

VICINITY MAP



NO SCALE

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

Tectonic

STATE OF CONNECTICUT
MANOJKUMAR PATEL
PEN.0022038
LICENSED
PROFESSIONAL ENGINEER
1/23/23

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:
JW	JD	MP

RFDS REV #: —

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	08/19/2022	ISSUED FOR LL REVIEW
1	04/28/2023	ISSUED FOR FILING

A&E PROJECT NUMBER

10710.NJJER01121A

DISH Wireless L.L.C.
PROJECT INFORMATION

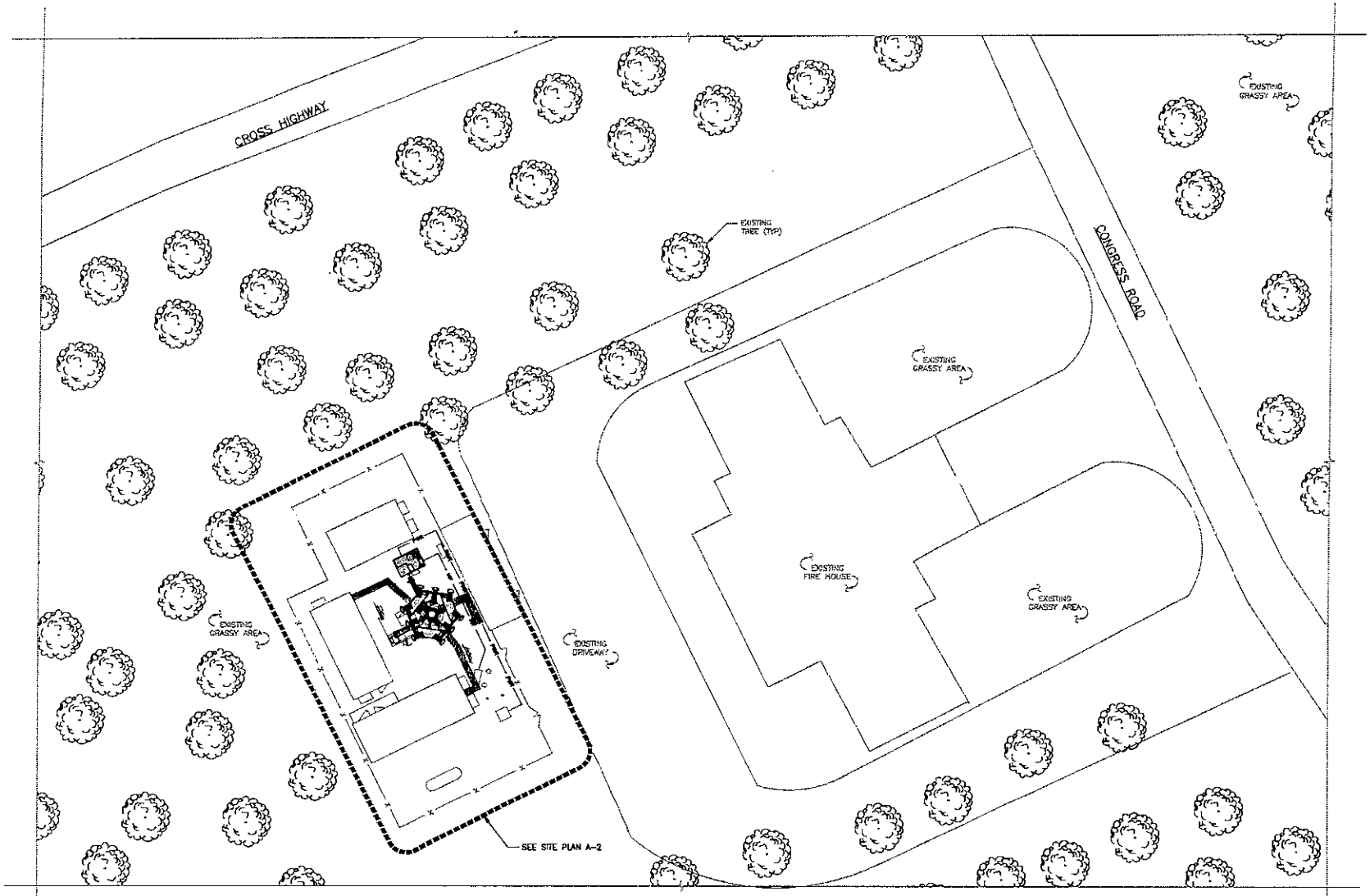
NJJER01121A
3965 CONGRESS STREET
FAIRFIELD, CT 06824

SHEET TITLE

TITLE SHEET

SHEET NUMBER

T-1



NOTE: THE SITE PLAN SHOWN IS BASED ON GIS/AERIAL INFORMATION AND IS NOT BASED ON AN ACTUAL SURVEY.

N

OVERALL SITE PLAN

32' 24'16' 8' 0 32' 64'

1/32"=1'-0"

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

Tectonic

Tectonic Engineering Consultants, Geologists & Land Surveyors, D.P.C.
Project Contact Info
1379 Route 300
Newburgh, NY 12550
Phone: (845) 567-3100
(800) 724-1633
www.tectonicengineering.com

STATE OF CONNECTICUT
MANOJKUMAR PATEL
PEN.0022038
LICENSED
PROFESSIONAL ENGINEER
1/28/22

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:
VS	JD	MP

RFDS REV #: ---

PRELIMINARY DOCUMENTS

SUBMITTALS

REV.	DATE	DESCRIPTION
A	11/15/2021	ISSUED FOR REVIEW
B	01/14/2022	ISSUED PER CLIENT COMMENTS

A&E PROJECT NUMBER

10710.NJJER01121A

DISH Wireless L.L.C.
PROJECT INFORMATION

NJJER01121A
3965 CONGRESS STREET
FAIRFIELD, CT 06824

SHEET TITLE

SITE PLAN

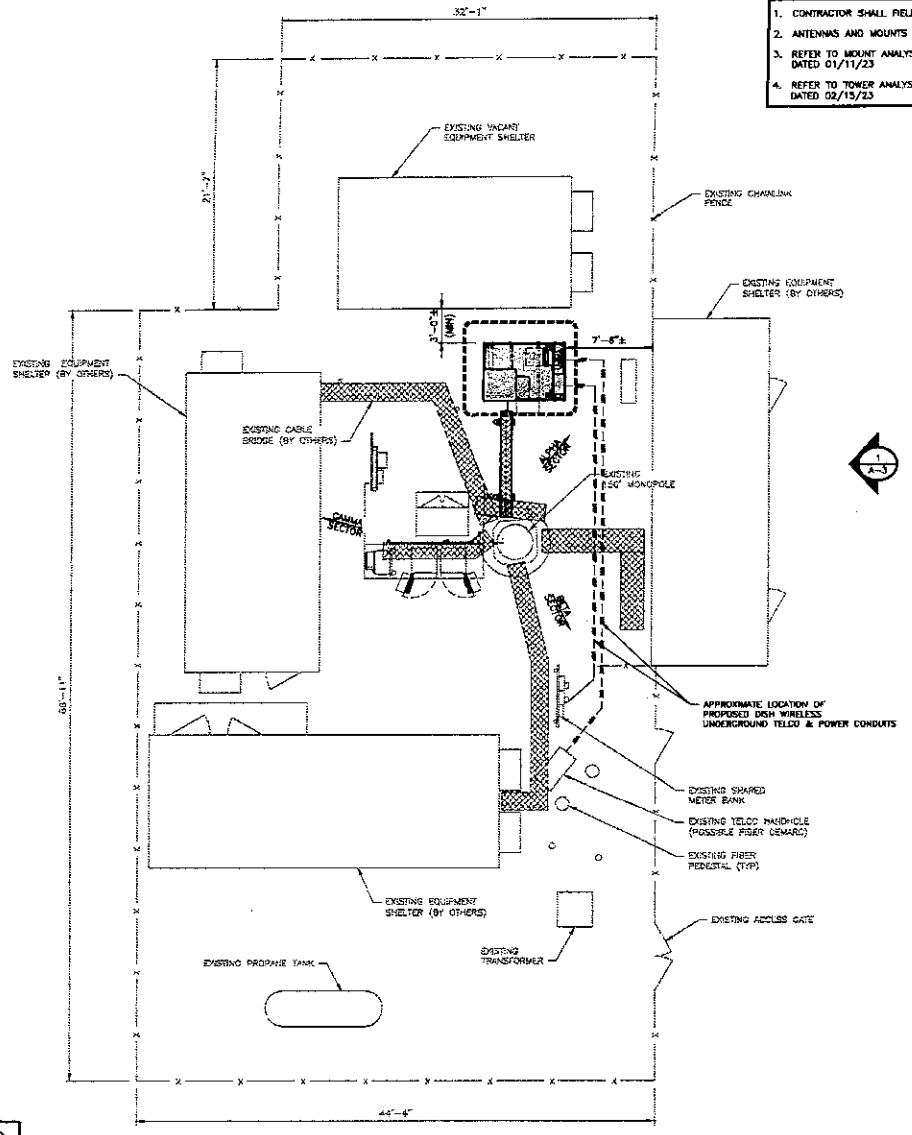
SHEET NUMBER

A-1

NOTES

1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.
3. REFER TO MOUNT ANALYSIS REPORT BY TECTONIC DATED 01/11/23
4. REFER TO TOWER ANALYSIS REPORT BY TECTONIC DATED 02/15/23

ANTENNA AZIMUTHS	
ALPHA	80°
BETA	200°
GAMMA	320°



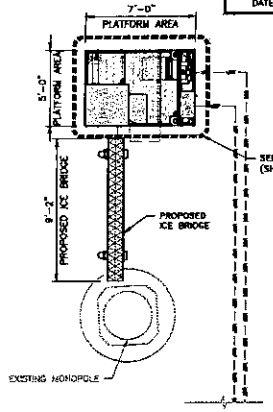
ENLARGED SITE PLAN

1/16"=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 MOUNT ANALYSIS REPORT BY TECTONIC DATED 01/11/23
5. REFER TO TOWER ANALYSIS REPORT BY TECTONIC DATED 02/15/23



NOTE

SEE SHEET A-4 FOR FULL SPECIFICATIONS ON THE EQUIPMENT PLATFORM.

ENLARGED EQUIPMENT PLAN

12" 6" 0 1' 2' 3' 4' 5' 6' 7'

3/8"=1'-0"

2

NOT USED

NO SCALE

3

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

Tectonic

Tectonic Engineering Consultants, Geotechnical, Land Development, Surveying, Telecommunications
Tectonic Engineering Consultants, Geologists & Land Surveyors, DPC, Inc.
Project Contact Info
1279 Route 300
Newburgh, NY 12550
Phone: (845) 567-3100
(800) 688-4831
www.tectonic-engineering.com

STATE OF CONNECTICUT
MANOJKUMAR PATEL
PEN.0022038
LICENSED
PROFESSIONAL ENGINEER
1/28/23

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:
JW	JO	MP

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	08/19/2022	ISSUED FOR LL REVIEW
1	04/28/2023	ISSUED FOR FILING

A&E PROJECT NUMBER

10710.NJJER01121A

DISH Wireless L.L.C.
PROJECT INFORMATION

NJJER01121A
3965 CONGRESS STREET
FAIRFIELD, CT 06824

SHEET TITLE

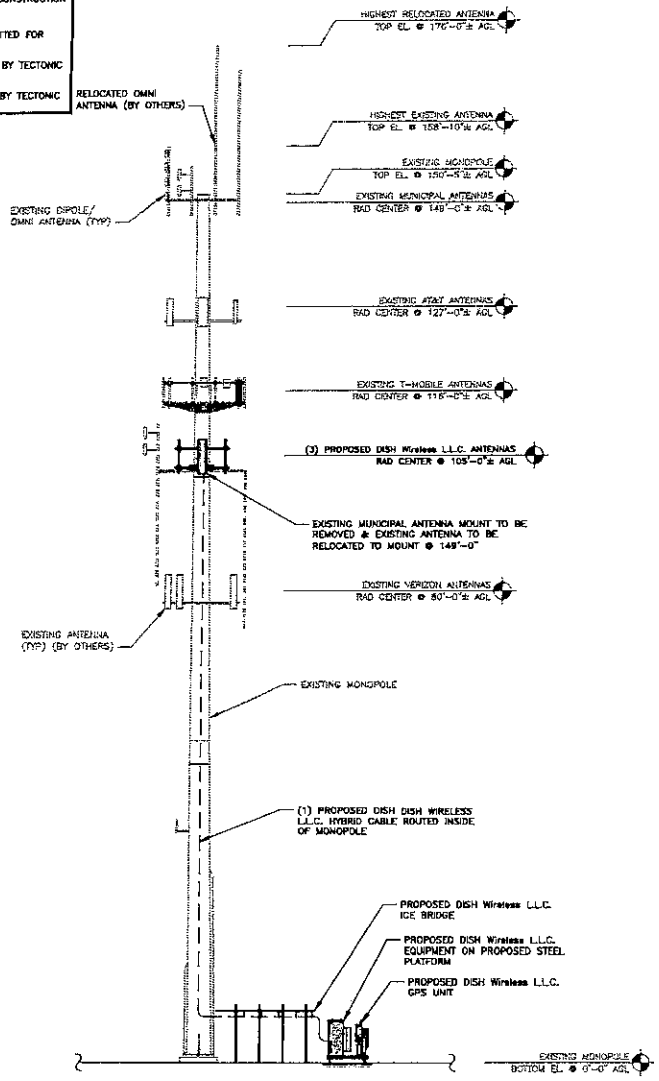
ENLARGED SITE PLAN & ENLARGED EQUIPMENT PLAN

SHEET NUMBER

A-2

NOTES

1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNA AND MW DISH SPECIFICATIONS REFER TO ANTENNA SCHEDULE AND TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS
3. EXISTING EQUIPMENT AND FENCE OMITTED FOR CLARITY.
4. REFER TO MOUNT ANALYSIS REPORT BY TECTONIC DATED 01/11/23
5. REFER TO TOWER ANALYSIS REPORT BY TECTONIC DATED 02/15/23



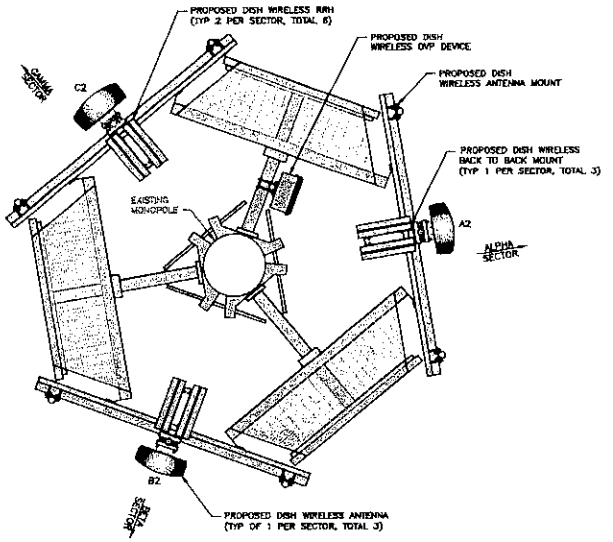
PROPOSED NORTH ELEVATION

8" 4' 2' 0 5' 10'
3/16"=1'-0"

1

NOTE

SEE SHEET A-7 FOR FULL ANTENNA, RADIO & MOUNT SPECIFICATIONS.



N

ANTENNA LAYOUT

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

2

SECTOR POS.	ANTENNA					TRANSMISSION CABLE	RRH			OVP
	EXISTING OR PROPOSED	MANUFACTURER – MODEL NUMBER	TECH	AZIMUTH	RAD CENTER	FEED LINE TYPE AND LENGTH	MANUFACTURER – MODEL NUMBER	TECH	POS.	MANUFACTURER MODEL
A2	PROPOSED	COMMSCOPE – FFVV-65B-R2	5G	80°	105'-0"	(1) HIGH-CAPACITY HYBRID CABLE (125' LONG)	FUJITSU – TA08025-B604	5G	A2	RAYCAP – RDIDC-9181-PF-48
							FUJITSU – TA08025-B605	5G	A2	
							---	---	---	
B2	PROPOSED	COMMSCOPE – FFVV-65B-R2	5G	200°	105'-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°	105'-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

NO SCALE

3

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

Tectonic
ENGINEERING CONSULTANTS, INCORPORATED
Tectonic Engineering Consultants, Geologists & Land Surveyors, D.P.C., Inc.
Professional Center Drive
1279 Route 300
Newburgh, NY 12550
Phone: (845) 567-3100
(800) 999-4031
www.tectonicengineering.com

STATE OF CONNECTICUT
MANOJKUMAR PATEL
PEN.0022038
LICENSED PROFESSIONAL ENGINEER
1/18/23

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:
JW	JQ	MP

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS

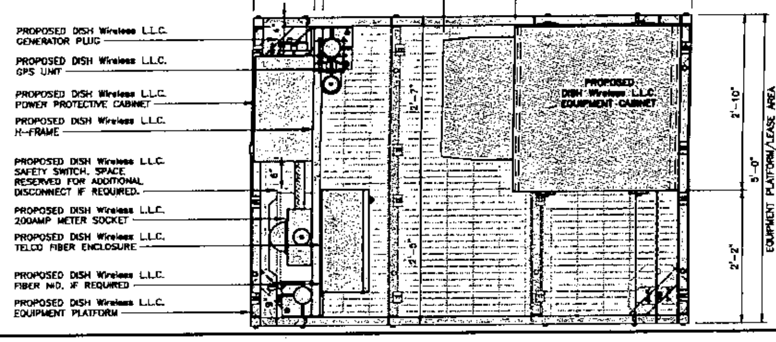
REV	DATE	DESCRIPTION
0	08/19/2022	ISSUED FOR LL REVIEW
1	04/28/2023	ISSUED FOR FILING

A&E PROJECT NUMBER
10710.NJJER01121A

DISH Wireless L.L.C.
PROJECT INFORMATION
NJJER01121A
3965 CONGRESS STREET
FAIRFIELD, CT 06824

SHEET TITLE
ELEVATION, ANTENNA LAYOUT AND SCHEDULE

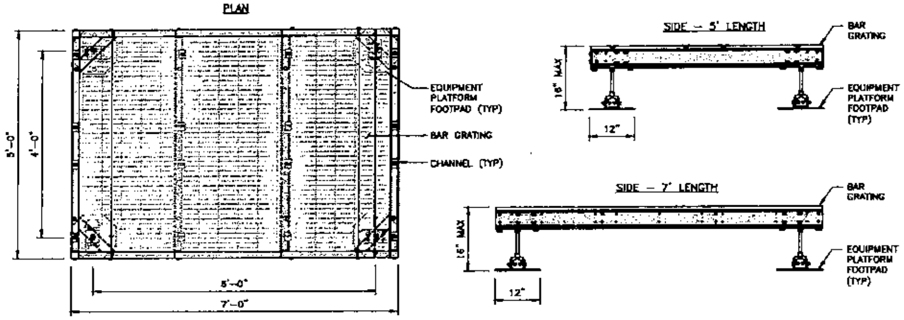
SHEET NUMBER
A-3



PLATFORM EQUIPMENT PLAN | 12" 9" 6" 3" 0 1' 2' 1"=1'-0" | 1

COMMSCOPE MTC4045LP 5X7 PLATFORM	
DIMENSIONS (HxWxD)	18"x84"x60"
TOTAL WEIGHT	423 LBS

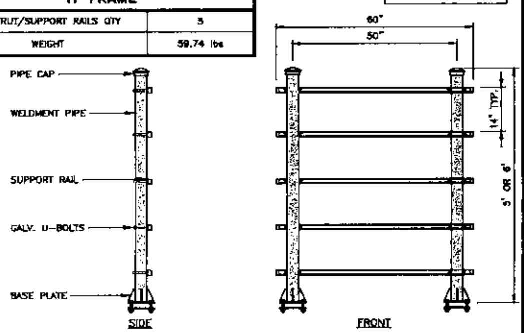
NOTE:
GC TO PROVIDE EXTENDED THREAD FOR PLATFORM IF REQUIRED HEIGHT EXCEEDS 17"



PLATFORM DETAIL | NO SCALE | 2

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

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

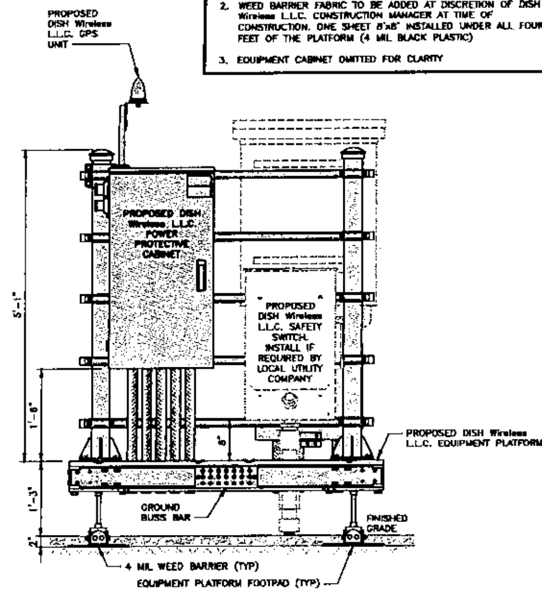


H-FRAME DETAIL | NO SCALE | 3

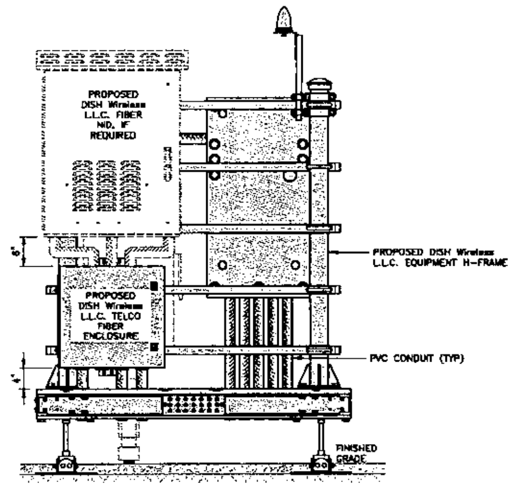
NOT USED | NO SCALE | 4

NOTES

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



FRONT ELEVATION



BACK ELEVATION

H-FRAME EQUIPMENT ELEVATION | 12" 9" 6" 3" 0 1' 2' 1"=1'-0" | 5

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

Tectonic

STATE OF CONNECTICUT
MANOJKUMAR PATEL
PEN.0022038
LICENSED PROFESSIONAL ENGINEER
1/28/23

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:
JW	JO	MP

RFDS REV #: ———

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	06/15/2022	ISSUED FOR LL REVIEW
1	04/26/2023	ISSUED FOR FILING

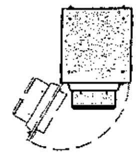
A&E PROJECT NUMBER
10710.NJJER01121A

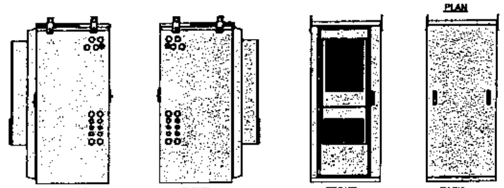
DISH Wireless L.L.C.
PROJECT INFORMATION
NJJER01121A
3965 CONGRESS STREET
FAIRFIELD, CT 06824

SHEET TITLE
EQUIPMENT PLATFORM AND H-FRAME DETAILS

SHEET NUMBER
A-4

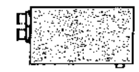
DELTA ELECTRONICS, INC. ESOA600-HCB04 (HEX)	
DIMENSIONS (HxWxD)	75"x32"x32"
WEIGHT (EMPTY)	825 lbs (approx.)

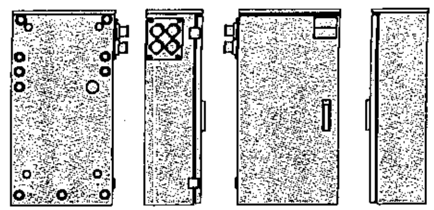




CABINET DETAIL NO SCALE 1

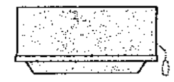
RAYCAP PPC RDIAC-2465-P-240-MTS	
ENCLOSURE DIMENSIONS (HxWxD):	39"x22.855"x12.593
WEIGHT:	80 lbs
OPERATING AC VOLTAGE	240/120 1 PHASE 3W+G

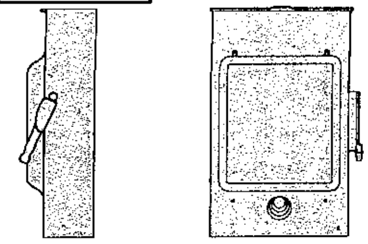




POWER PROTECTION CABINET (PPC) DETAIL NO SCALE 2

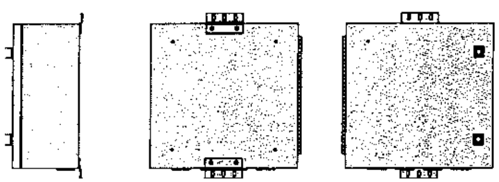
SQUARE D SAFETY SWITCHES D224NRB	
ENCLOSURE DIM (HxWxD)	29.25"x19.00"x8.50"
ENCLOSURE TYPE	NEMA 3R RAINPROOF
UL LISTED	FILE E-2875





SAFETY SWITCH DETAIL NO SCALE 3

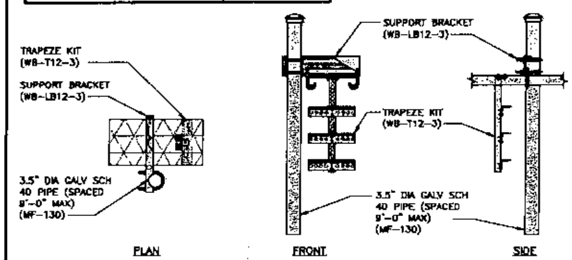
CHARLES CFIT-PF2020DSH1 FIBER TELCO ENCLOSURE	
ENCLOSURE DIMS (HxWxD)	20"x20"x9"
ENCLOSURE WEIGHT	20 lbs
MOUNTING	WALL
COMPLIANCE	TYPE 4



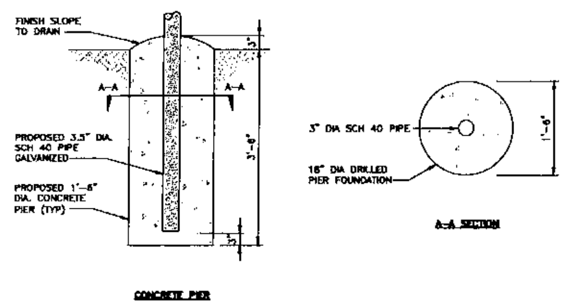
FIBER TELCO ENCLOSURE DETAIL NO SCALE 4

COMMSCOPE WB-K110-B WAVEGUIDE BRIDGE KIT	
DIMENSIONS (HxL)	180"x10'
WEIGHT/ VOLUME	325.0 LBS
CABLE RUN (QTY)	12

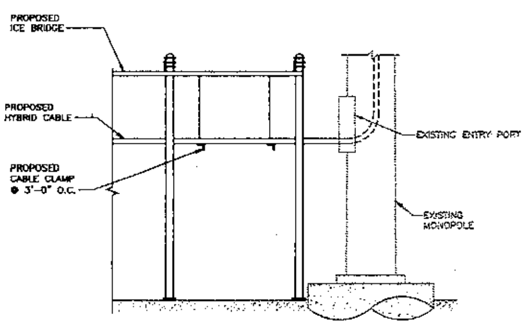
INCLUDED PRODUCTS:	WB-T12-3 TRAPEZE KIT, 3 RUNGS WB-LB12-3 SUPPORT BRACKET MF-130 DIRECT BURIAL PIPE COLUMN, 13'-4"



ICE BRIDGE DETAIL NO SCALE 5

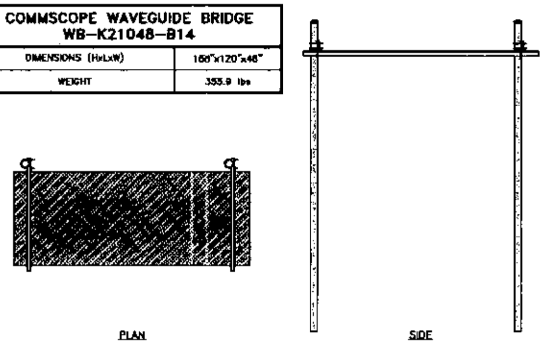


TYPICAL ICE BRIDGE CONCRETE PIER DETAIL NO SCALE 6



HYBRID CABLE RUN NO SCALE 7

COMMSCOPE WAVEGUIDE BRIDGE WB-K21048-B14	
DIMENSIONS (HxLxW)	168"x120"x48"
WEIGHT	355.9 lbs



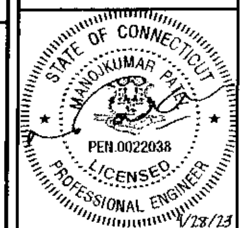
WAVEGUIDE BRIDGE DETAIL NO SCALE 8

NO SCALE 9

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

Tectonic



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:
JW	JQ	MP

RFDS REV #: ——

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	08/19/2022	ISSUED FOR LL REVIEW
1	04/28/2023	ISSUED FOR FILING

A&E PROJECT NUMBER
10710.NJJER01121A

DISH Wireless L.L.C.
PROJECT INFORMATION

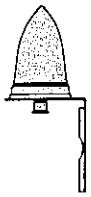
NJJER01121A
3965 CONGRESS STREET
FAIRFIELD, CT 06824

SHEET TITLE
EQUIPMENT DETAILS

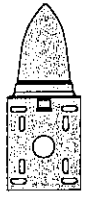
SHEET NUMBER
A-5

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

TOP

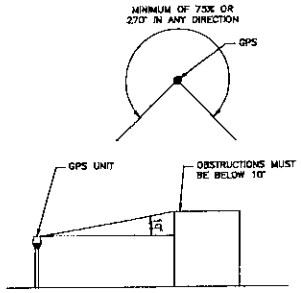


BACK

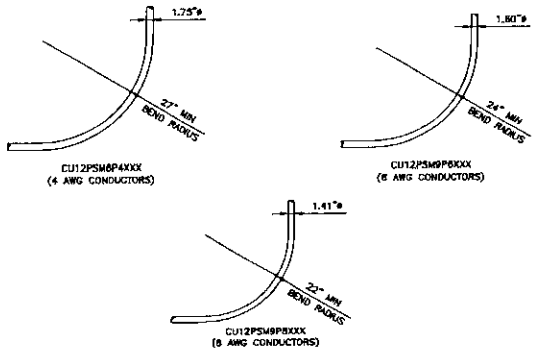


SIDE

GPS DETAIL | NO SCALE | 1



GPS MINIMUM SKY VIEW REQUIREMENTS | NO SCALE | 2



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

H-FRAME DETAIL | NO SCALE | 4

NOT USED | NO SCALE | 5

NOT USED | NO SCALE | 6

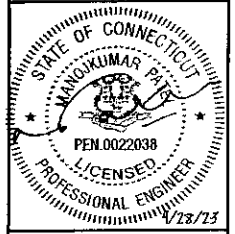
NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

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

Tectonic



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:
JW	JO	MP

RFDS REV #: ——

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	06/19/2023	ISSUED FOR LL REVIEW
1	04/28/2023	ISSUED FOR FILING

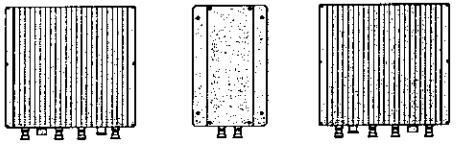
A&E PROJECT NUMBER
10710.NJJER01121A

DISH Wireless L.L.C.
PROJECT INFORMATION
NJJER01121A
3965 CONGRESS STREET
FAIRFIELD, CT 06824

SHEET TITLE
EQUIPMENT DETAILS

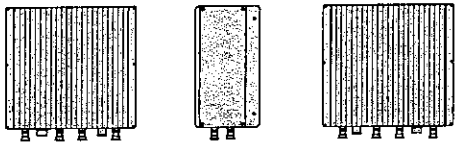
SHEET NUMBER
A-6

FUJITSU TRIPLE BAND TA08025-B605	
DIMENSIONS (HxWxD)	14.9"x15.7"x8"
WEIGHT	74.95 lbs
CONNECTOR TYPE	4.3-10 RF CONNECTOR
POWER SUPPLY	DC -58~-38V



RRH DETAIL | NO SCALE | 1

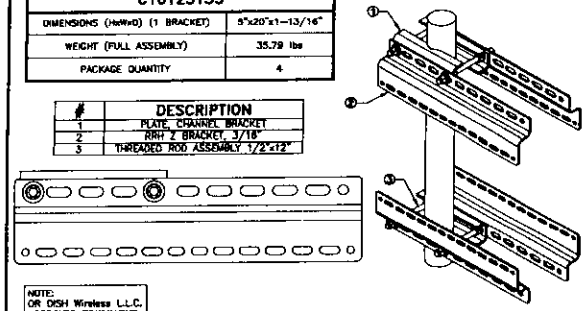
FUJITSU DUAL BAND TA08025-B604	
DIMENSIONS (HxWxD)	14.9"x15.7"x7.8"
WEIGHT	83.9 lbs
CONNECTOR TYPE	4.3-10 RF CONNECTOR
POWER SUPPLY	DC -58~-38V



RRH DETAIL | NO SCALE | 2

SABRE DOUBLE Z-BRACKET C10123155	
DIMENSIONS (HxWxD) (1 BRACKET)	9"x20"x1-13/16"
WEIGHT (FULL ASSEMBLY)	35.79 lbs
PACKAGE QUANTITY	4

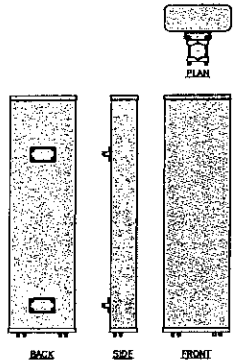
#	DESCRIPTION
1	PLATE CHANNEL BRACKET
2	RRH Z BRACKET, 3/16"
3	THREADED ROD ASSEMBLY 1/2"x12"



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

RRH MOUNT DETAIL | NO SCALE | 3

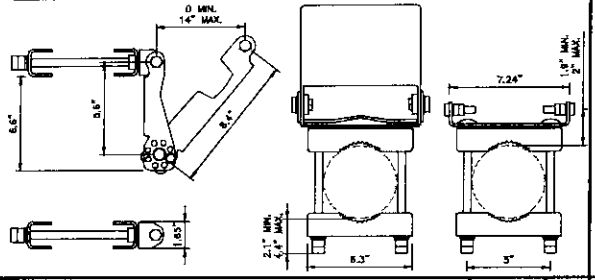
COMMSCOPE FFVV-65B-R2	
DIMENSIONS (HxWxD)(MM/IN)	1828x498x187 72"x19.6"x7.8"
RF CONNECTOR INTERFACE	4.3-10 FEMALE
WEIGHT	70.8 lbs
WEIGHT WITH BRACKETS	98.7 lbs



ANTENNA DETAIL | NO SCALE | 4

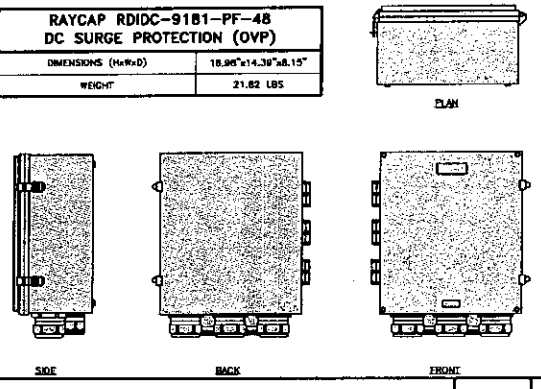
COMMSCOPE ANTENNA BRACKET BSAMNT-3	
DIAMETER COMPATIBILITY	2.362" - 4.528"
NET WEIGTH	13.669 lbs

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



NO SCALE | 5

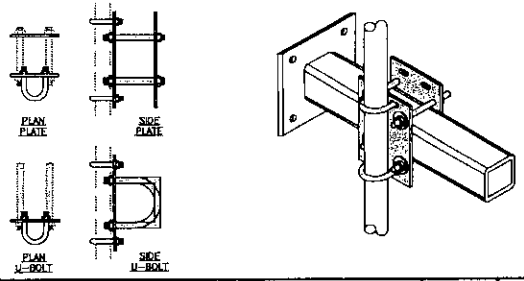
RAYCAP RDIDC-9181-PF-48 DC SURGE PROTECTION (OVP)	
DIMENSIONS (HxWxD)	18.98"x14.38"x8.15"
WEIGHT	21.82 LBS



SURGE SUPPRESSION DETAIL (OVP) | NO SCALE | 6

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

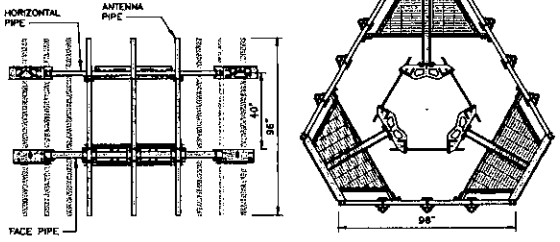
NOTE:
OR DISH Wireless L.L.C.
APPROVED EQUIVALENT



RRH/OVP MOUNT DETAIL | NO SCALE | 7

COMMSCOPE MC-PK8-DSH	
FACE WIDTH	95"
WEIGHT	1373.08 lbs
NOTE: 15" TO 38" O.D.	

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



ANTENNA PLATFORM DETAIL | NO SCALE | 8

NO SCALE | 9

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

Tectonic

STATE OF CONNECTICUT
MANOJKUMAR PATEL
PEN.0022038
LICENSED PROFESSIONAL ENGINEER
1/18/13

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:
JW	JQ	MP

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS

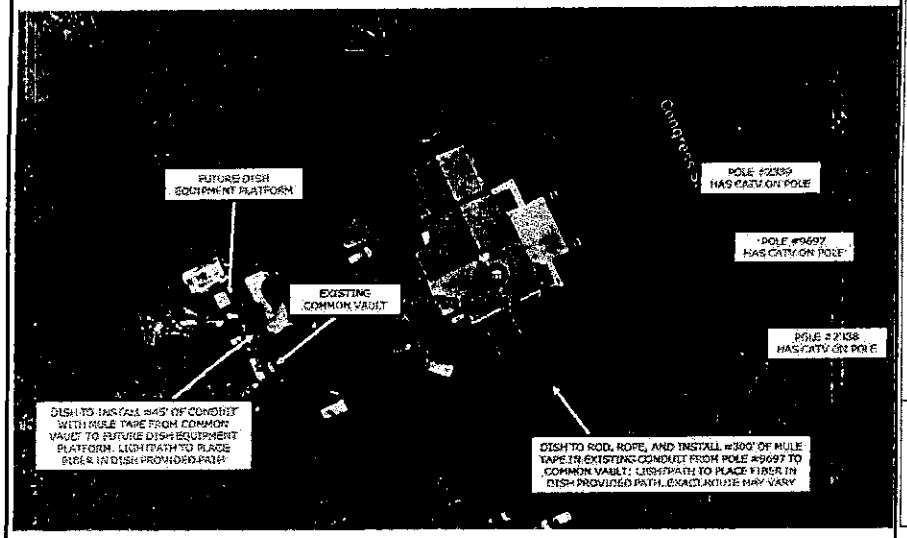
REV	DATE	DESCRIPTION
0	08/19/2022	ISSUED FOR LL REVIEW
1	04/28/2023	ISSUED FOR FILING

A&E PROJECT NUMBER
10710.NJJER01121A

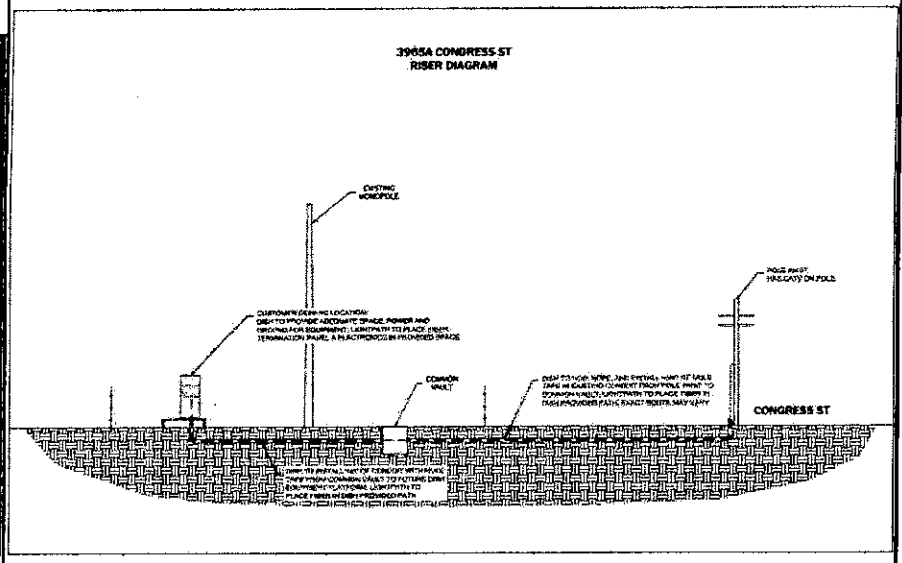
DISH Wireless L.L.C.
PROJECT INFORMATION
NJJER01121A
3965 CONGRESS STREET
FAIRFIELD, CT 06824

SHEET TITLE
EQUIPMENT DETAILS

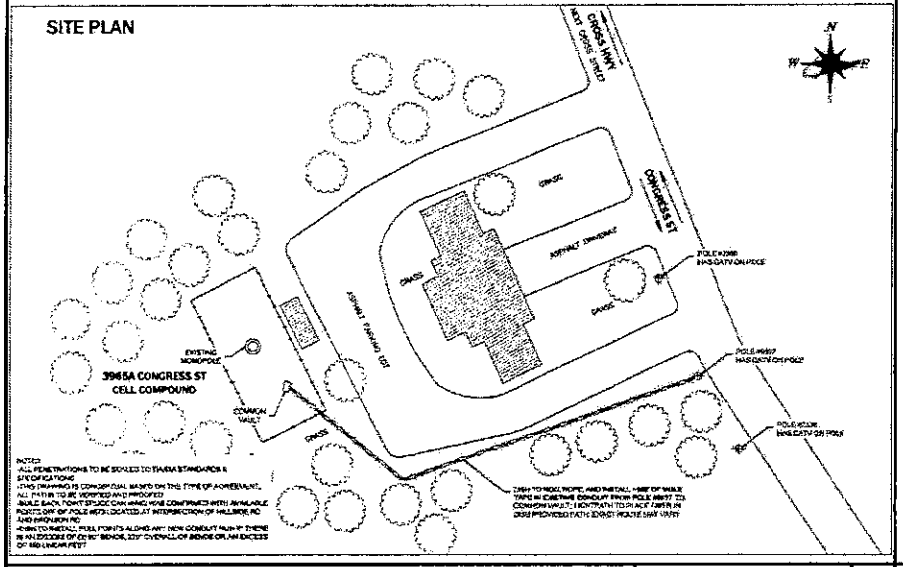
SHEET NUMBER
A-7



FIBER ROUTE AERIAL | NO SCALE | 1



FIBER RISER DIAGRAM | NO SCALE | 3



FIBER ROUTE PLAN | NO SCALE | 2

NOT USED | NO SCALE | 4

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

Tectonic

STATE OF CONNECTICUT
MANOJKUMAR PATEL
PEN.0022038
LICENSED
PROFESSIONAL ENGINEER
5/23/13

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:
JW	JO	MP

RFDS REV #: ----

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	05/10/2022	ISSUED FOR LL REVIEW
1	04/26/2023	ISSUED FOR FILING

A&E PROJECT NUMBER

10710-NJJER01121A

DISH Wireless L.L.C.
PROJECT INFORMATION

NJJER01121A
3965 CONGRESS STREET
FAIRFIELD, CT 06824

SHEET TITLE

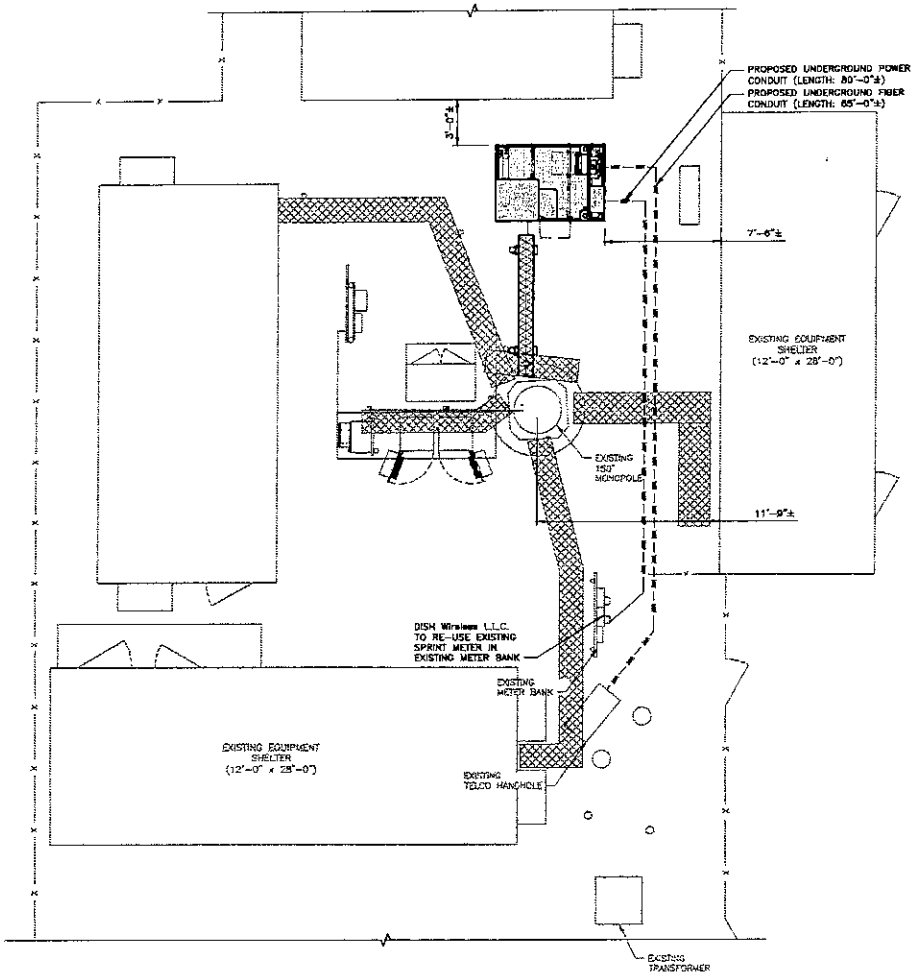
FIBER ROUTE
PLAN AND NOTES

SHEET NUMBER

FB-1

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 PROPERTY 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 COs, 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

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

Tectonic
ENGINEERING CONSULTANTS, INC.
Tectonic Engineering Consultants, Geologists & Land Surveyors, P.C., Inc.
Regional Licensed Info
1279 Route 300
Newburgh, NY 12550
Phone: (845) 567-0000
(800) 999-9831

STATE OF CONNECTICUT
MANOJKUMAR PATEL
PEN.0022038
LICENSED PROFESSIONAL ENGINEER
4/28/23

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:
JW	JO	MP

RFDS REV #: —

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	08/19/2022	ISSUED FOR LL REVIEW
1	04/28/2023	ISSUED FOR FILING

A&E PROJECT NUMBER
10710.NJJER01121A

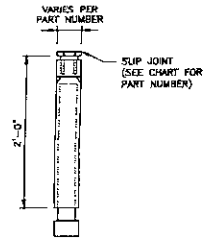
DISH Wireless L.L.C.
PROJECT INFORMATION
NJJER01121A
3965 CONGRESS STREET
FAIRFIELD, CT 06824

SHEET TITLE
ELECTRICAL/FIBER ROUTE PLAN AND NOTES

SHEET NUMBER
E-1

CARLON EXPANSION FITTINGS

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

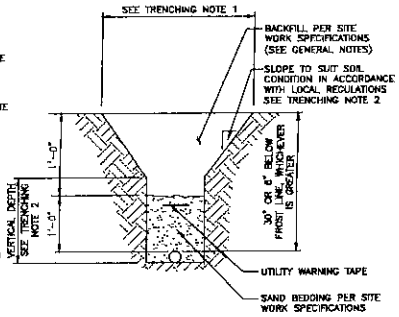


NOTE:
CONTRACTOR TO INSTALL EXPANSION FITTING SLIP JOINT AT METER CENTER CONDUIT TERMINATION, AS PER LOCAL UTILITY POLICY, ORDINANCE AND/OR SPECIFIED REQUIREMENT.

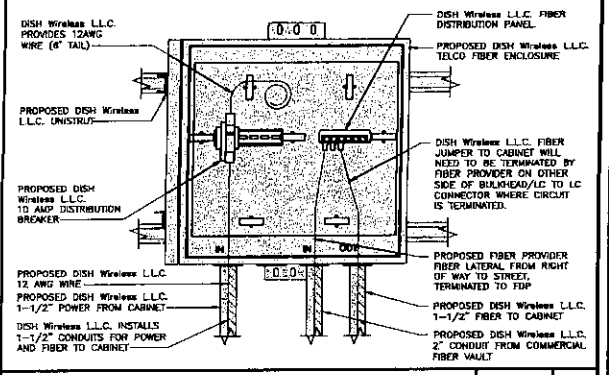
EXPANSION JOINT DETAIL | NO SCALE | 1

TRENCHING NOTES

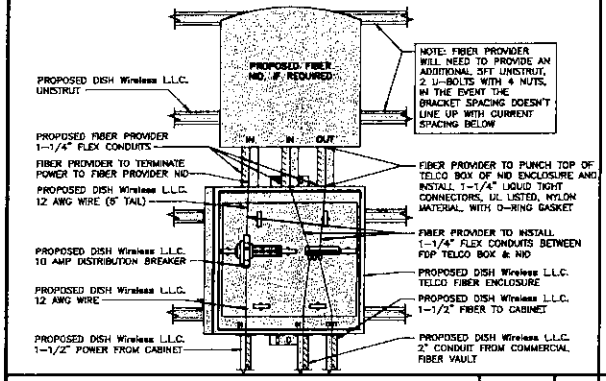
1. CONTRACTOR SHALL RESTORE THE TRENCH TO ITS ORIGINAL CONDITIONS BY EITHER SEEDING OR SODDING GRASS AREAS, OR REPLACING ASPHALT OR CONCRETE AREAS TO ITS ORIGINAL CROSS SECTION.
2. TRENCHING SAFETY; INCLUDING, BUT NOT LIMITED TO SOIL CLASSIFICATION, SLOPING, AND SHORING, SHALL BE GOVERNED BY THE CURRENT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



TYPICAL UNDERGROUND TRENCH DETAIL | NO SCALE | 2



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



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

NOT USED | NO SCALE | 5

NOT USED | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

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

Tectonic
PROFESSIONAL ENGINEERING CORPORATION
Tectonic Engineering Consultants, Surveyors & Land Surveyors, D.P.C., Inc.
Project Number Info
1279 Route 300
Newburgh, NY 12550
Phone: (845) 567-0580
(800) 724-1301
www.tectonicengineering.com

STATE OF CONNECTICUT
MANOJKUMAR PATEL
PEN.0022038
LICENSED PROFESSIONAL ENGINEER
4/28/23

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:
JW	JO	MP

RFDS REV #: —

CONSTRUCTION DOCUMENTS

SUBMITTALS

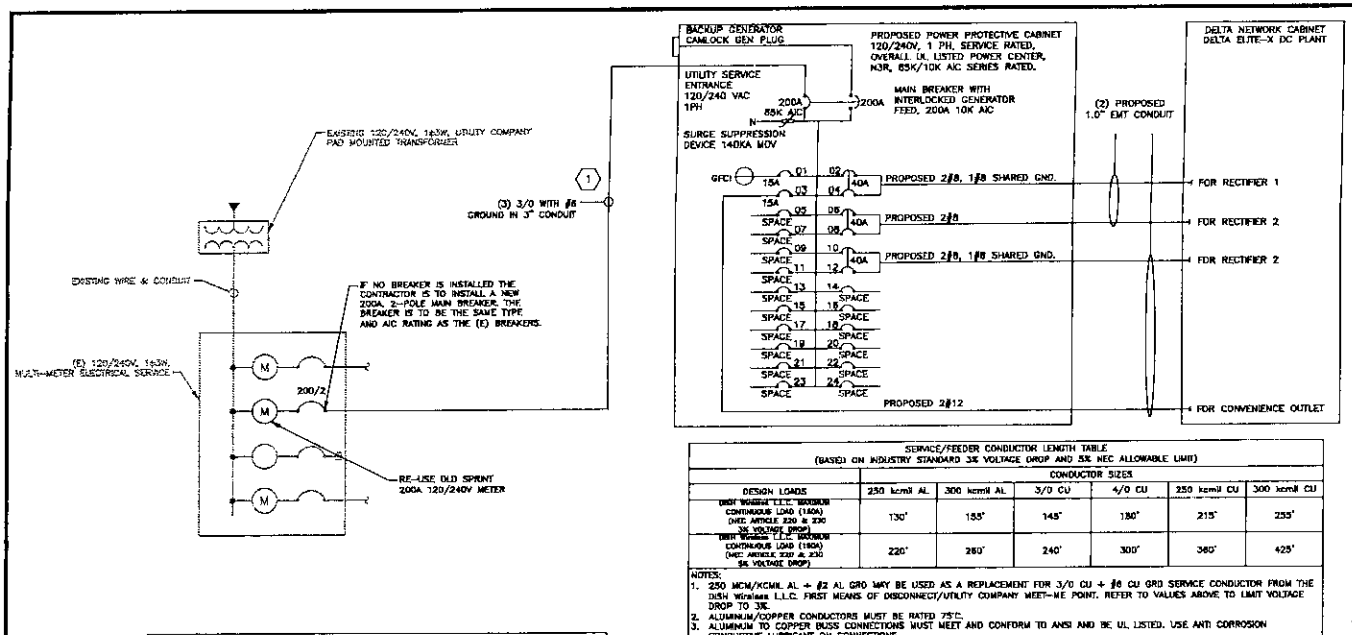
REV	DATE	DESCRIPTION
0	08/19/2022	ISSUED FOR LL POWER
1	04/28/2023	ISSUED FOR FILING

Adac PROJECT NUMBER
10710.NJJER01121A

DISH Wireless L.L.C.
PROJECT INFORMATION
NJJER01121A
3965 CONGRESS STREET
FAIRFIELD, CT 06824

SHEET TITLE
ELECTRICAL DETAILS

SHEET NUMBER
E-2



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

BREAKERS REQUIRED:
(3) 40A, 2P BREAKER – SQUARE D P/N:QO240
(2) 15A, 1P BREAKER – SQUARE D P/N:QO115

SERVICE/FEEDER CONDUCTOR LENGTH TABLE
(BASED ON INDUSTRY STANDARD 3% VOLTAGE DROP AND 5% NEC ALLOWABLE LIMIT)

DESIGN LOADS	CONDUCTOR SIZES					
	250 kcmil AL	300 kcmil AL	3/0 CU	4/0 CU	250 kcmil CU	300 kcmil CU
DISH Wireless L.L.C. EQUIPMENT CONTINUOUS LOAD (140A) (NEC ARTICLE 220 & 230 3% VOLTAGE DROP)	130'	155'	145'	180'	215'	255'
DISH Wireless L.L.C. EQUIPMENT CONTINUOUS LOAD (190A) (NEC ARTICLE 220 & 230 3% VOLTAGE DROP)	220'	260'	240'	300'	360'	425'

NOTES:
1. 250 MCM/KCMIL AL + #2 AL GRD MAY BE USED AS A REPLACEMENT FOR 3/0 CU + #6 CU GRD SERVICE CONDUCTOR FROM THE DISH Wireless L.L.C. FIRST MEANS OF DISCONNECT/UTILITY COMPANY METER POINT. REFER TO VALUES ABOVE TO LIMIT VOLTAGE DROP TO 3%.
2. ALUMINUM/COPPER CONDUCTORS MUST BE RATED 75°C.
3. ALUMINUM TO COPPER BUSS CONNECTIONS MUST MEET AND CONFORM TO ANSI AND BE UL LISTED. USE ANTI CORROSION CONDUCTIVE LUBRICANT ON CONNECTIONS
4. PPC MAIN DISCONNECT CIRCUIT BREAKERS ACCEPT #4 – 300KCMIL AL OR CU CONDUCTORS.
5. VOLTAGE DROP FOR SINGLE METER ENCLOSURE FED FROM TRANSFORMER WITH MULTIPLE CUSTOMERS IS CALCULATED FROM THE TRANSFORMER TO PPC. (SERVICE AND FEEDER CONDUCTOR LENGTH)
6. VOLTAGE DROP FOR MULTI-METER ENCLOSURE IS CALCULATED FROM THE METER TO PPC. (FEEDER CONDUCTOR LENGTH)
7. VOLTAGE DROP CALCULATIONS ARE BASED ON A POWER FACTOR OF 1. A LINE TO GROUND VOLTAGE PER CONDUCTOR OF 120V, NO CORRECTION FACTOR FOR AMBIENT TEMPERATURE OR ADJUSTMENT FACTOR FOR MORE THAN THREE CURRENT-CARRYING CONDUCTORS IN A SINGLE CONDUCT OR RACEWAY. A POWER FACTOR LESS THAN 1 OR VOLTAGE LESS THAN 120 WILL RESULT IN SHORTER DISTANCES THAN SHOWN IN TABLE.

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 – .3468 SQ. IN AREA
3.0" CONDUIT – 3.538 SQ. IN AREA

(2 CONDUIT): USING THWN-2, CU.
RECTIFIER CONDUCTORS
#6 – 0.0358 SQ. IN X 4 = 0.1484 SQ. IN
#8 – 0.0358 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) PPC FEED CONDUCTORS (1 CONDUIT): USING THWN, AL.
250kcmil AL – 0.3970 SQ. IN X 3 = 1.191 SQ. IN
#4 AL – 0.0824 SQ. IN X 1 = 0.0824 SQ.IN <GROUND
TOTAL = 1.2734 SQ. IN

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

OPTIONAL ALUMINUM SERVICE CONDUCTOR:
- 4/0 AL + #2 GRD MAY BE USED INSTEAD OF 3/0 CU + #8 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 BC UL LISTED. USE ANTI CORROSION CONDUCTIVE LUBRICANT ON CONNECTIONS

PPC ONE-LINE DIAGRAM

NO SCALE | 1

PANEL NAME	LOCATION	VOLTAGE: 240/120 1Ø	MOUNTING/ENCLOSURE: SURFACE/NEMA 3R
DELTA	EQUIPMENT PLATFORM	MAIN C/B: 200 AMPS	AVAIL. FAULT CURRENT:
		BUS RATING: 200 AMPS	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	1.80	RECTIFIER	EQ	SEE ONE LINE	40/2
15/1	SEE ONE LINE	R	CONVENIENCE OUTLET	0.18	3		1.68	4	1.80		EQ		
			SPACE		5	1.80		6	1.80	RECTIFIER	EQ	SEE ONE LINE	40/2
			SPACE		7		1.80	8	1.80		EQ		
			SPACE		9	1.80		10	1.80	RECTIFIER	EQ	SEE ONE LINE	40/2
			SPACE		11		1.80	12	1.80		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	1.9	NEC	0.4	1.9
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

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

Tectonic
PROFESSIONAL ENGINEERING CONSULTANTS
Tectonic Engineering Consultants, Geologists & Land Surveyors, D.P.C., Inc.
Phoenix Corporate Park
1279 Route 300
Newburgh, NY 12550
Phone: (845) 567-3100
Fax: (845) 567-3101
www.tectonicengineering.com

STATE OF CONNECTICUT
MANOJKUMAR PATEL
PEN.0022038
LICENSED
PROFESSIONAL ENGINEER
4/28/23

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:
JW	JO	MP

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	08/19/2022	ISSUED FOR LL REVIEW
1	04/28/2023	ISSUED FOR FILING

A&E PROJECT NUMBER
10710.NJJER01121A

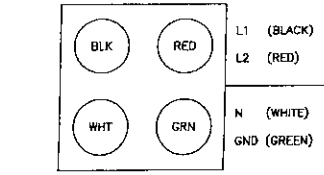
DISH Wireless L.L.C.
PROJECT INFORMATION
NJJER01121A
3965 CONGRESS STREET
FAIRFIELD, CT 06824

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

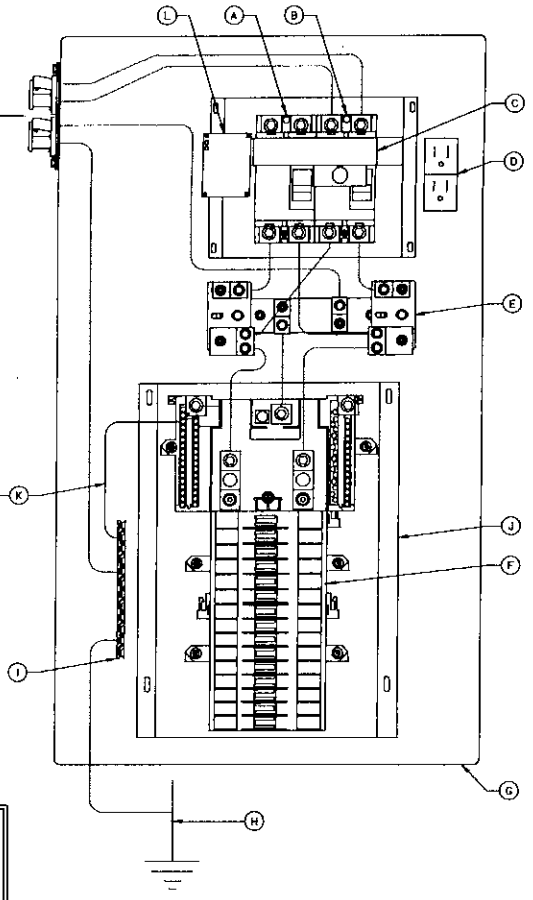
(AS VIEWED FROM OUTSIDE OF ENCLOSURE)
USE LINE UP PIN AS REFERENCE

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) 890–2559



SUITABLE FOR USE AS SERVICE EQUIPMENT

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

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

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.

200A UTILITY FEED

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	OGL	200A	65,000A	240V	2

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.

200A GENERATOR FEED

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	OGL	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 BONDING 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 ABOVE 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. NEUTRAL–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

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

Tectonic
Tectonic Engineering Consultants, Geologists & Land Surveyors, D.P.C., Inc.
1279 Route 300
Newburgh, NY 12550
Phone: (845) 567–0955
(800) 836–8631

STATE OF CONNECTICUT
MANOJKUMAR PATEL
PEN.0022038
LICENSED
PROFESSIONAL ENGINEER
4/28/23

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:
JW	JG	MP

RFDS REV #: ——

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	08/19/2022	ISSUED FOR LL REVIEW
1	04/28/2023	ISSUED FOR FILING

A&E PROJECT NUMBER

10710.NJJER01121A

DISH Wireless L.L.C.
PROJECT INFORMATION

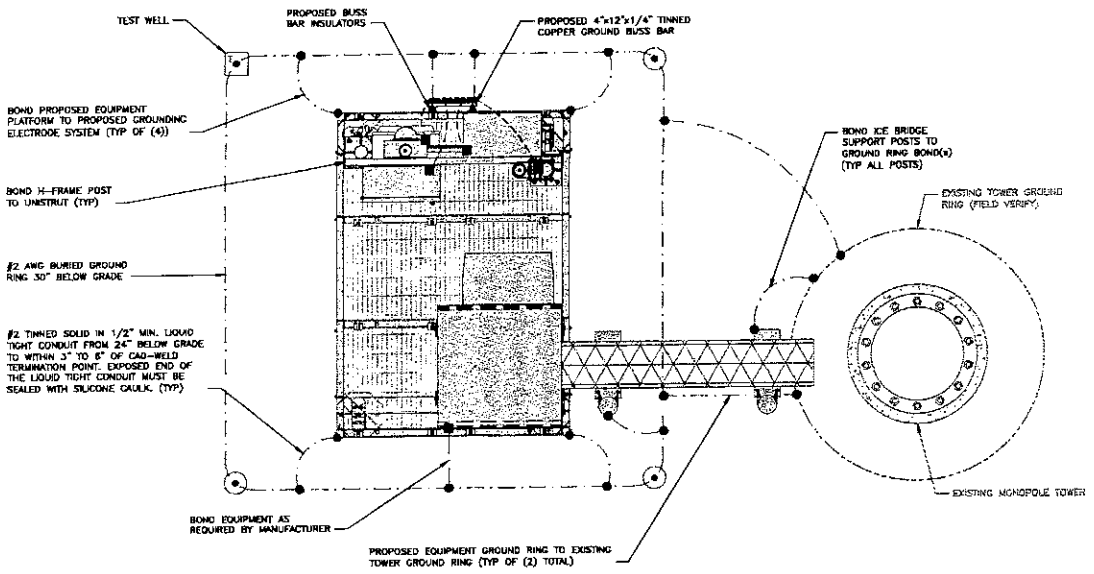
NJJER01121A
3965 CONGRESS STREET
FAIRFIELD, CT 06824

SHEET TITLE

PPC NEUTRAL–TO–GROUND SCHEMATIC

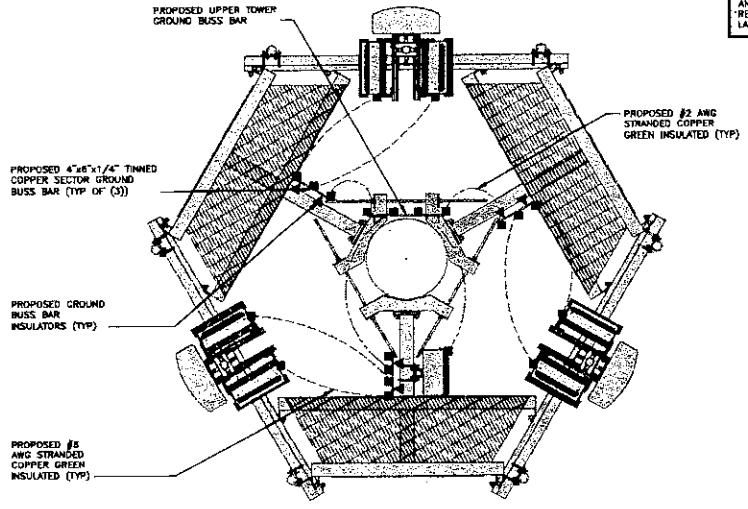
SHEET NUMBER

E-4



TYPICAL EQUIPMENT GROUNDING PLAN

NO SCALE | 1



TYPICAL ANTENNA GROUNDING PLAN

NO SCALE | 2

NOTES

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

- EXOTHERMIC CONNECTION
- MECHANICAL CONNECTION
- GROUND BUS BAR
- GROUND ROD
- TEST GROUND ROD WITH INSPECTION SLEEVE
- #6 AWG STRANDED & INSULATED
- #2 AWG SOLID COPPER TINNED
- #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.
5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

Tectonic
Tectonic Engineering Consultants, Geologists & Land Surveyors, D.P.C. Inc.
Regional Business Unit
1379 Route 300
Newburgh, NY 12550
Phone: (845) 567-3100
(800) 724-1633
www.tectonicengineering.com

STATE OF CONNECTICUT
MANOJKUMAR PATEL
PEN.0022038
LICENSED
PROFESSIONAL ENGINEER
4/23/14

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:
JW	JO	MP

RFDS REV #: ----

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	08/19/2022	ISSUED FOR LL REVIEW
1	04/28/2023	ISSUED FOR FILING

A&E PROJECT NUMBER
10710.NJJER01121A

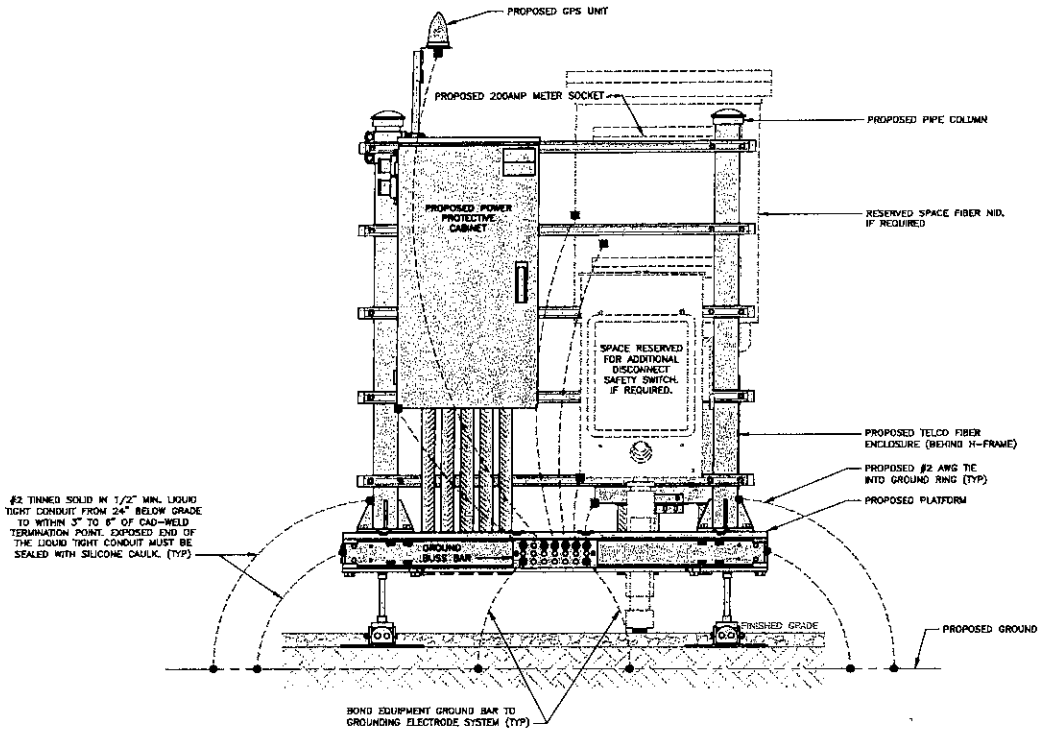
DISH Wireless L.L.C.
PROJECT INFORMATION
NJJER01121A
3965 CONGRESS STREET
FAIRFIELD, CT 06824

SHEET TITLE
GROUNDING PLANS AND NOTES

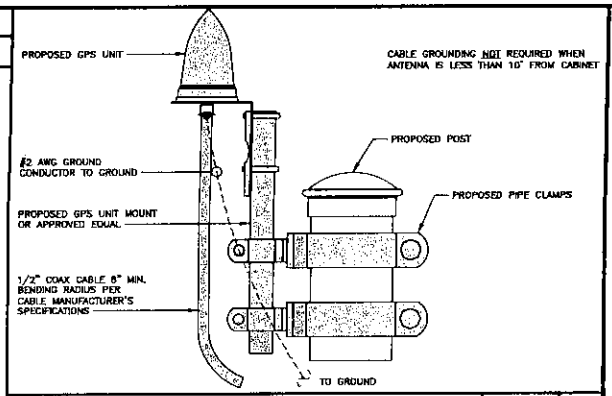
SHEET NUMBER
G-1

NOTES

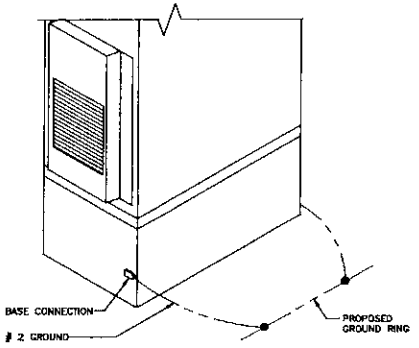
EQUIPMENT CABINET OMITTED FOR CLARITY



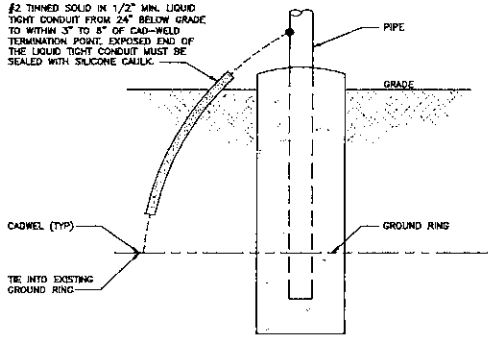
H-FRAME GROUNDING DETAIL | NO SCALE | 1



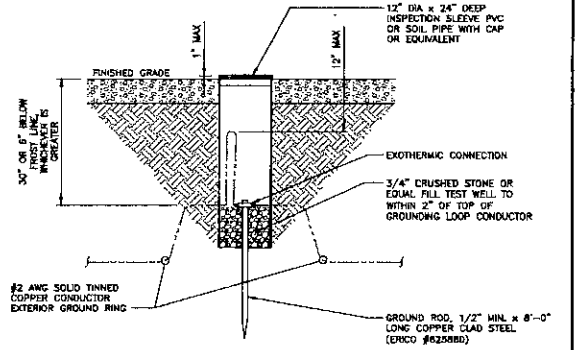
TYPICAL GPS UNIT GROUNDING | NO SCALE | 2



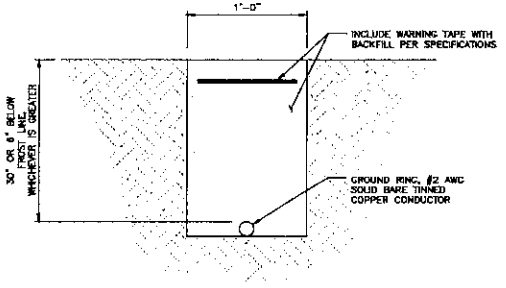
OUTDOOR CABINET GROUNDING | NO SCALE | 3



TRANSITIONING GROUND DETAIL | NO SCALE | 4



TYPICAL TEST GROUND ROD WITH INSPECTION SLEEVE | NO SCALE | 5



TYPICAL GROUND RING TRENCH | NO SCALE | 6

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

Tectonic

Tectonic Engineering Consultants, Surveyors & Land Planners, P.C., Inc.
Project Contact Info
1879 Route 300
Newburgh, NY 12550
Phone: (914) 561-0688
(800) 482-8611
www.tectonicengineering.com

STATE OF CONNECTICUT
MANOJKUMAR PATEL
PEN.0022038
LICENSED PROFESSIONAL ENGINEER
3/23/23

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:
JW	JG	MP

RFDS REV #:

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	08/19/2022	ISSUED FOR LL REVIEW
1	04/28/2023	ISSUED FOR FILING

A&E PROJECT NUMBER

10710.NJJER01121A

DISH Wireless L.L.C.
PROJECT INFORMATION

NJJER01121A
3965 CONGRESS STREET
FAIRFIELD, CT 06824

SHEET TITLE

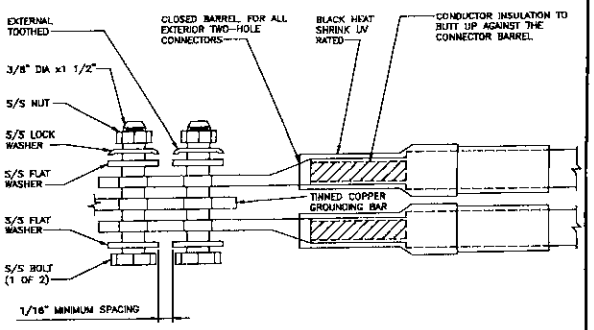
GROUNDING DETAILS

SHEET NUMBER

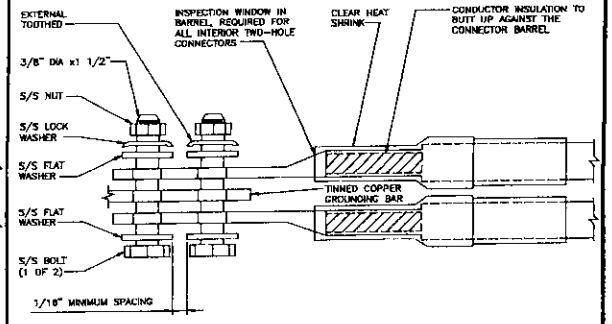
G-2

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).

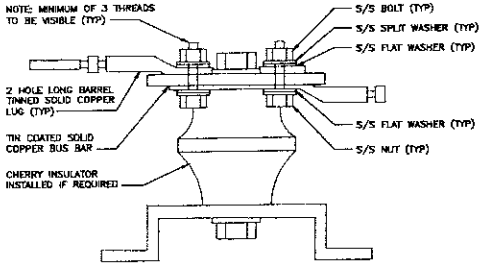
TYPICAL GROUNDING NOTES | NO SCALE | 1



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

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

Tectonic
Tectonic Engineering Consultants, Geologists & Land Surveyors, D.P.C., Inc.
Physical Address:
1279 Route 300
Newburgh, NY 12550
Phone: (914) 567-4858
(800) 520-3431
www.tectonicengineering.com

STATE OF CONNECTICUT
MANOJKUMAR PATEL
PEN.0022038
LICENSED
PROFESSIONAL ENGINEER
4/28/23

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:
JW	JO	MP

RFDS REV #: ——

CONSTRUCTION DOCUMENTS

SUBMITTALS

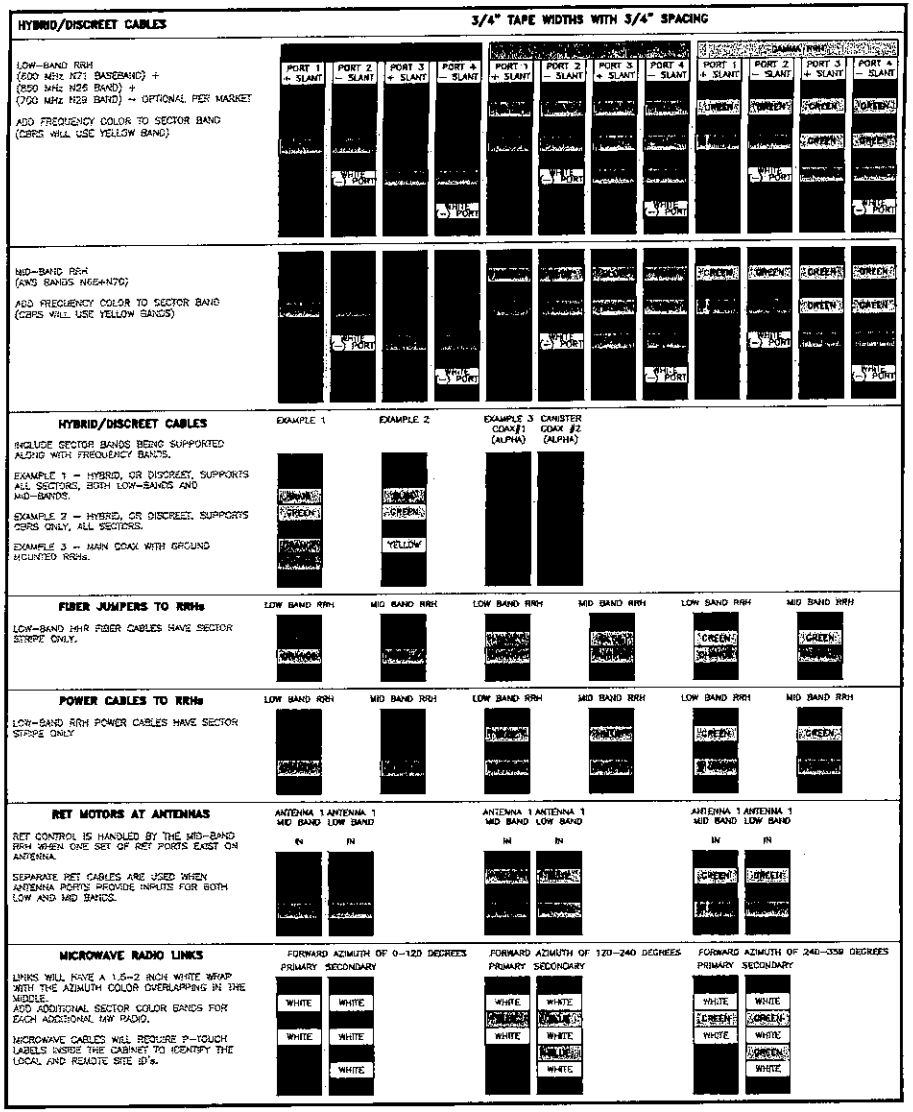
REV	DATE	DESCRIPTION
0	08/19/2022	ISSUED FOR LL REVIEW
1	04/28/2023	ISSUED FOR FILING

A&E PROJECT NUMBER
10710.NJJER01121A

DISH Wireless L.L.C.
PROJECT INFORMATION
NJJER01121A
3965 CONGRESS STREET
FAIRFIELD, CT 06824

SHEET TITLE
GROUNDING DETAILS

SHEET NUMBER
G-3



RF CABLE COLOR CODES | NO SCALE | 1

LOW BANDS (N71+N29) OPTIONAL - (N29)

AWS (N66+N70+H-BLOCK)

CBRS TECH (3 GHz)

YELLOW

NEGATIVE SLANT PORT ON ANT/RRH

WHITE

ALPHA SECTOR

BETA SECTOR

GAMMA SECTOR

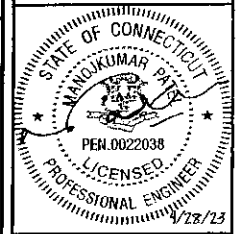
COLOR IDENTIFIER | NO SCALE | 2

NOT USED | NO SCALE | 3

NOT USED | NO SCALE | 4

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

Tectonic
Tectonic Engineering Consultants, Geologists & Land Surveyors, D.P.C., Inc.
Project Assistant Suite
1379 Route 300
Newburgh, NY 12550
Phone: (845) 567-4899
(800) 528-6631
www.tectonicengineering.com



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:
JW	JQ	MP

RFDS REV #: ----

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	06/19/2023	ISSUED FOR LL REVIEW
1	04/26/2023	ISSUED FOR PLANS

A&E PROJECT NUMBER

10710.NJJER01121A

DISH Wireless L.L.C.
PROJECT INFORMATION

NJJER01121A
3965 CONGRESS STREET
FAIRFIELD, CT 06824

SHEET TITLE

RF
CABLE COLOR CODES

SHEET NUMBER

RF-1

LEGEND

EXOTHERMIC CONNECTION

MECHANICAL CONNECTION

BUSS BAR INSULATOR

CHEMICAL ELECTROLYTIC GROUNDING SYSTEM

TEST CHEMICAL ELECTROLYTIC GROUNDING SYSTEM

EXOTHERMIC WITH INSPECTION SLEEVE

GROUNDING BAR

GROUND ROD

TEST GROUND ROD WITH INSPECTION SLEEVE

SINGLE POLE SWITCH

DUPLEX RECEPTACLE

DUPLEX GFCI RECEPTACLE

FLUORESCENT LIGHTING FIXTURE (2) TWO LAMPS 48-T8

SMOKE DETECTION (DC)

EMERGENCY LIGHTING (DC)

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

CHAIN LINK FENCE

WOOD/WROUGHT IRON FENCE

WALL STRUCTURE

LEASE AREA

PROPERTY LINE (PL)

SETBACKS

ICE BRIDGE

CABLE TRAY

WATER LINE

UNDERGROUND POWER

UNDERGROUND TELCO

OVERHEAD POWER

OVERHEAD TELCO

UNDERGROUND TELCO/POWER

ABOVE GROUND POWER

ABOVE GROUND TELCO

ABOVE GROUND TELCO/POWER

WORKPOINT

SECTION REFERENCE

DETAIL REFERENCE

ABBREVIATIONS

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

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

Tectonic

Project Control, Inc.
1378 Route 300
Newburgh, NY 12550
Phone: (845) 567-0888
(800) 888-8431
www.tectonicengineering.com

STATE OF CONNECTICUT
NANDKUMAR PATEL
PEN.0022038
LICENSED
PROFESSIONAL ENGINEER
1/28/23

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:
JW	JO	MP

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	08/19/2022	ISSUED FOR LL REVIEW
1	01/28/2023	ISSUED FOR FILING

A&E PROJECT NUMBER

10710.NJJER01121A

DISH Wireless L.L.C.
PROJECT INFORMATION

NJJER01121A
3965 CONGRESS STREET
FAIRFIELD, CT 06824

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.

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

WARNING

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
ENGINEERING CONSULTANTS, INC.

STATE OF CONNECTICUT
MANOJKUMAR PATEL
PEN.0022038
LICENSED PROFESSIONAL ENGINEER
9/25/13

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:
JW	JO	MP

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	09/19/2013	ISSUED FOR LL REVIEW
1	04/28/2013	ISSUED FOR FILING

A&E PROJECT NUMBER
10710.NJJER01121A

DISH Wireless L.L.C.
PROJECT INFORMATION
NJJER01121A
3965 CONGRESS STREET
FAIRFIELD, CT 06824

SHEET TITLE
RF SIGNAGE

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

GENERAL NOTES:

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

CONTRACTOR:GENERAL CONTRACTOR RESPONSIBLE FOR CONSTRUCTION

CARRIER:DISH Wireless L.L.C.

TOWER OWNER:TOWER OWNER

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

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

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

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

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

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

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

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

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

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

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

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

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

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

Tectonic

STATE OF CONNECTICUT
MANOJKUMAR PATEL
PEN.0022038
LICENSED
PROFESSIONAL ENGINEER
4/28/23

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:
JW	JQ	MP

RFDS REV #: ———

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	08/18/2022	ISSUED FOR LL REVIEW
1	04/28/2023	ISSUED FOR FILING

A&E PROJECT NUMBER

10710.NJJER01121A

DISH Wireless L.L.C.
PROJECT INFORMATION

NJJER01121A
3965 CONGRESS STREET
FAIRFIELD, CT 06824

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.
5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

Tectonic

STATE OF CONNECTICUT
MANOJKUMAR PATIL
PEN.0022038
LICENSED PROFESSIONAL ENGINEER
4/28/23

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:
JW	JO	MP

RFDS REV #: ——

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	06/15/2022	ISSUED FOR LL REVIEW
1	04/28/2023	ISSUED FOR FILING

A&E PROJECT NUMBER
10710.NJJER01121A

DISH Wireless L.L.C.
PROJECT INFORMATION
NJJER01121A
3965 CONGRESS STREET
FAIRFIELD, CT 06824

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 5 ft OF MAIN GROUND RING WITH (1) #2 BARE SOLID TINNED COPPER GROUND CONDUCTOR.

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

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

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

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

Tectonic

Tectonic Engineering Consultants, Geologists & Land Surveyors, D.P.C., Inc.
Physical Contact Info
1279 Route 300
Newburgh, NY 12550
Phone: (845) 567-3100
Fax: (845) 567-3232
www.tectonicengineering.com

STATE OF CONNECTICUT
MANOJKUMAR PATEL
PEN.0022038
LICENSED
PROFESSIONAL ENGINEER
1/28/23

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:
JW	JO	MP

RFDS REV #: —

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	08/19/2022	ISSUED FOR LL REVIEW
1	04/28/2023	ISSUED FOR FILING

A&E PROJECT NUMBER

10710.NJJER01121A

DISH Wireless L.L.C.
PROJECT INFORMATION

NJJER01121A
3965 CONGRESS STREET
FAIRFIELD, CT 06824

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-5

STRUCTURAL STEEL NOTES:

1. DESIGN AND CONSTRUCTION OF STRUCTURAL STEEL SHALL CONFORM TO THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION "SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS, ALLOWABLE STRESS DESIGN AND PLASTIC DESIGN".
2. STRUCTURAL STEEL WIDE FLANGE SHAPES SHALL CONFORM TO ASTM A992, "STEEL FOR STRUCTURAL SHAPES FOR USE IN BUILDING FRAMING", GRADE 50, UNLESS OTHERWISE INDICATED. IF THE MEMBER SIZES INDICATED ARE NOT AVAILABLE IN THIS GRADE, ASTM A572 "HIGH-STRENGTH LOW-ALLOY COLUMBIUM-VANADIUM STRUCTURAL STEEL", GRADE 50, MAY BE SUBSTITUTED.
3. HOLLOW STRUCTURAL SECTIONS (HSS) SHALL CONFORM TO ASTM A500 "COLD-FORMED WELDED & SEAMLESS CARBON STEEL STRUCTURAL TUBING IN ROUNDS AND SHAPES", GRADE C. SUBSTITUTION WITH ASTM A53 PIPE IS NOT ACCEPTABLE.
4. FIELD WELDING IS NOT PERMITTED, UNLESS SPECIFICALLY INDICATED OTHERWISE ON THESE DRAWINGS.
5. ALL FILLET WELDS SHALL BE MADE USING THE SHIELDED METAL ARC WELDING (SMAW) PROCESS WITH E70XX ELECTRODES UNLESS OTHERWISE NOTED.
6. MISCELLANEOUS STEEL, INCLUDING THREADED RODS, CHANNELS, ANGLES, PLATES, AND BARS SHALL CONFORM TO ASTM A36 "CARBON STRUCTURAL STEEL", UNLESS OTHERWISE INDICATED.
7. U-BOLTS SHALL CONFORM TO ASTM A36 OR A307 "CARBON STEEL BOLTS, STUDS, AND THREADED ROD 60000 PSI TENSILE STRENGTH". ALL U-BOLTS SHALL BE 1/2" DIAMETER IN 9/16" HOLES, UNLESS OTHERWISE NOTED. INSTALL DOUBLE NUTS ON ALL CONNECTIONS.
8. ANCHOR BOLTS SHALL CONFORM TO ASTM F1554 "ANCHOR BOLTS, STEEL, 36, 55, AND 105-KSI YIELD STRENGTH", GRADE 36.
9. STRUCTURAL CONNECTION BOLTS SHALL BE HIGH STRENGTH BOLTS CONFORMING TO ASTM A325 "STRUCTURAL BOLTS, STEEL, HEAT TREATED, 120/105 KSI MINIMUM TENSILE STRENGTH". BOLTS SHALL BE 3/4 INCH DIAMETER, TYPE X, UNLESS OTHERWISE NOTED.
10. MATCHING NUTS SHALL BE HEAVY HEX TYPE, CONFORMING TO ASTM A563 "CARBON AND ALLOY STEEL NUTS". WASHERS, WHERE REQUIRED, SHALL CONFORM TO ASTM F436 "HARDENED STEEL WASHERS".
11. FIELD CONNECTIONS SHALL BE BOLTED UNLESS OTHERWISE INDICATED. ALL BOLTED CONNECTIONS SHALL BE MADE WITH NOT LESS THAN TWO (2) HIGH STRENGTH BOLTS, OR EQUIVALENT WELD.
12. ALL STEEL SUPPORTS SHALL BE INSTALLED WITH DOUBLE NUTS AND SHALL BE INSTALLED SNUG TIGHT.
13. STRUCTURAL CONNECTIONS SHALL BE SNUG TIGHT IN ACCORDANCE WITH THE RESEARCH COUNCIL ON STRUCTURAL CONNECTIONS "SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS", UNLESS OTHERWISE NOTED.
14. BOLTS IN SLIP-CRITICAL CONNECTIONS SHALL BE FULLY PRETENSIONED BY THE TURN-OF-NUT METHOD IN ACCORDANCE WITH THE RESEARCH COUNCIL ON STRUCTURAL CONNECTIONS "SPECIFICATIONS FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS".
15. ANCHOR BOLTS SHALL BE TENSIONED BY THE TURN-OF-NUT METHOD AFTER GROUTING OF BASE PLATES.
16. ALL HOLES FOR BOLTS SHALL BE 1/16 INCH LARGER THAN THE BOLT DIAMETER WITH AN EDGE DISTANCE OF AT LEAST 1 1/2 TIMES THE BOLT DIAMETER AND A SPACING OF AT LEAST 3 TIMES THE BOLT DIAMETER. ALL BOLTS SHALL BE PROVIDED WITH PALNUTS OR LOCK NUTS
17. CONTRACTOR SHALL COMPLY WITH AWS D1.1 "STRUCTURAL WELDING CODE – STEEL" FOR PROCEDURES, APPEARANCE AND QUALITY OF WELDS, AND FOR METHODS USED IN CORRECTING WELDING. ALL WELDERS AND WELDING PROCESSES SHALL BE QUALIFIED IN ACCORDANCE WITH AWS "STANDARD QUALIFICATION PROCEDURES".
18. METAL DECK SHALL BE FORMED STEEL DECK AS MANUFACTURED BY VULCRAFT, INC. OR APPROVED EQUAL. DECK SHALL BE FABRICATED FROM GALVANIZED STEEL CONFORMING TO ASTM A653, "STEEL SHEET, ZINC-COATED (GALVANIZED) OR ZINC-IRON ALLOY-COATED (GALVANNEALED) BY THE HOT-DIP PROCESS", STRUCTURAL QUALITY. COATING SHALL CONFORM TO CLASSIFICATION G60.
19. ALL OPENINGS REQUIRED IN THE DECK WHICH ARE NOT SHOWN ON THE STRUCTURAL DRAWINGS SHALL BE CUT IN THE FIELD ONLY AS APPROVED BY THE ENGINEER.
20. GRATING SHALL BE TYPE "GW" GALVANIZED WELDED STEEL BAR GRATING AS MANUFACTURED BY MCNICHOLS, OR APPROVED EQUAL. BEARING BARS SHALL BE AS FOLLOWS:

EXTERIOR GRATING	1 1/4" X 3/16"	SERRATED	(UON)
INTERIOR GRATING	1 1/4" X 3/16"	PLAIN	(UON)
ALUMINUM	1 1/4"X3/16" GAL	SERIES	(UON)

BAND ALL EDGES, AND ATTACH TO SUPPORTING MEMBERS AT 18" ON CENTER WITH MODEL GG GALVANIZED G-CLIPS AS MANUFACTURED BY GRATING FASTENERS INC.

21. EXPANSION ANCHORS SHALL BE HILTI KWIK BOLT TZ2 OR APPROVED EQUAL. INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. MINIMUM EMBEDMENT SHALL BE 4-3/4" UNLESS OTHERWISE NOTED.
22. ADHESIVE ANCHOR ASSEMBLIES SHALL BE AS MANUFACTURED BY HILTI OR ENGINEER APPROVED EQUAL, AS FOLLOWS:

BASE MATERIAL	ANCHOR SYSTEM
HOLLOW CMU OR BRICK	HIT HY-270
CONCRETE	HIT HY-200

INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS.

23. HAMMER DRILLS ARE NOT TO BE USED WHEN DRILLING HOLES FOR SLEEVE OR EXPANSION BOLTS INSTALLED IN MASONRY BLOCKS/BRICKS.
24. ALL INTERIOR STRUCTURAL STEEL SHALL BE SHOP PRIME COATED WITH A RUST-INHIBITIVE PRIMER EXCEPT AREAS TO BE FIREPROOFED NEED NOT BE PAINTED. SURFACE PREPARATION SHALL BE IN ACCORDANCE WITH THE PAINT MANUFACTURER'S RECOMMENDATIONS. AREAS WHICH MAY BE INACCESSIBLE AFTER INSTALLATION SHALL RECEIVE TWO (2) COATS OF PRIMER. FINISH PAINT AS DIRECTED BY OWNER/CARRIER.
25. FIELD CONNECTIONS AND DAMAGED OR ABRADED AREAS OF SHOP PRIME COAT SHALL BE TOUCH-UP PAINTED WITH COMPATIBLE FIELD PRIMER.
26. ALL EXTERIOR STEEL SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT-DIP GALVANIZED) COATINGS ON IRON AND STEEL PRODUCTS", UNLESS OTHERWISE NOTED.
27. ALL EXTERIOR BOLTS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC COATING (HOT-DIP) ON IRON AND STEEL HARDWARE", UNLESS OTHERWISE NOTED.
28. DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED BY COLD GALVANIZING IN ACCORDANCE WITH ASTM A780 "REPAIR OF DAMAGED AND UNCOATED AREAS OF HOT-DIP GALVANIZED COATINGS", USING GALVANIZING COMPOUND AS MANUFACTURED BY ZINGA-USA OR ZINC KOTE, OR ENGINEER APPROVED EQUAL, WITH A MINIMUM METALLIC ZINC CONTENT OF 95% BY WEIGHT IN DRY FILM. DRY FINISHED COATING THICKNESS SHALL BE 3 MILS MINIMUM. DAMAGED AREAS OF STEEL SHALL BE REPAINTED TO MATCH ANY EXISTING FINISH (IF APPLICABLE).
29. STEEL WORK SHALL BE SUBJECT TO SPECIAL INSPECTIONS DURING CONSTRUCTION AS REQUIRED BY THE CODE.
30. CONTRACTOR TO REMOVE MASTIC ON THE EXISTING WALL/PARAPET AT EVERY STEEL SUPPORT ATTACHMENT AND REPOINT MASONRY AS REQUIRED. A BED OF SILICONE SHALL BE APPLIED ALL AROUND THE STEEL SUPPORT ATTACHMENT TO MAKE IT WEATHERPROOF.
31. ALL HOLES TO BE ADDED IN THE FIELD SHALL BE PUNCHED OR DRILLED. NO HOLE BURNING SHALL BE ALLOWED. REPAIR GALVANIZING IN ACCORDANCE WITH ASTM A780.
32. THE NOTES CONTAINED HEREIN ARE NOT PROJECT SPECIFIC. THE CONTRACTOR SHALL UTILIZE ALL NOTES WHICH SOLELY PERTAIN TO THE WORK DEPICTED ON THESE DRAWINGS.

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

Tectonic
OWNER
Tectonic Engineering Consultants, Geologists & Land Surveyors, D.P.C., Inc.
Regional Contact Info
1379 Route 300
Newburgh, NY 12550
Phone: (845) 567-3100
(845) 565-8161
www.tectonicengineering.com

STATE OF CONNECTICUT
MANOJKUMAR PATEL
PEN.0022038
LICENSED
PROFESSIONAL ENGINEER
4/23/13

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:
JW	JD	MP

RFDS REV #:

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	08/19/2022	ISSUED FOR LL REVIEW
1	04/26/2023	ISSUED FOR FILING

A&E PROJECT NUMBER
10710.NJJER01121A

DISH Wireless L.L.C.
PROJECT INFORMATION
NJJER01121A
3965 CONGRESS STREET
FAIRFIELD, CT 06824

SHEET TITLE
GENERAL NOTES

SHEET NUMBER
GN-6

Exhibit D

Structural Analysis

Tectonic

PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.

Date: **February 15, 2023**

Structural Analysis Report

Carrier: Dish Wireless

Site Number: NJJER01121A
Site Data: 3965 Congress Street, Fairfield, Fairfield County, CT 06824
Latitude *41° 11' 18.02"*, Longitude *-73° 17' 56.44"*
150 ft Monopole

Tectonic Project Number: 10710.NJJER01121A, Revision 3

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 Capacity – 85.5%**
Foundation: **Sufficient Capacity – 78.9%**

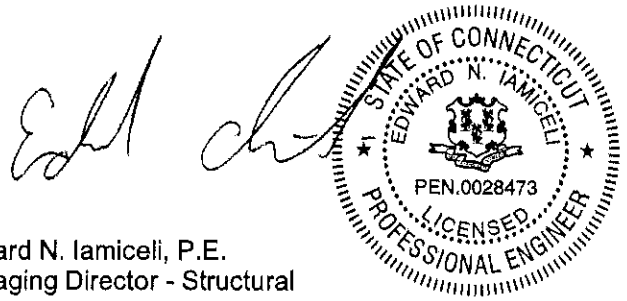
This analysis has been performed in accordance with the 2022 Connecticut State Building Code and the 2021 International Building Code based upon an ultimate 3-second gust wind speed of 130 mph per Appendix P as required for use in the ANSI/TIA-222-H-1-2019 Standard. Exposure Category B with a maximum 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 this analysis for the determined available structural capacity to be effective.

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

Structural analysis prepared by: 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 150 ft Monopole tower mapped by HighTower Solutions Inc.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	III
Wind Speed:	130 mph ultimate 3-second gust *per the town of Fairfield, CT*
Exposure Category:	B
Topographic Factor:	1
Ice Thickness:	1.0 in
Wind Speed with Ice:	50 mph
Service Wind Speed:	60 mph
Seismic S_1 / S_s:	0.22 / 0.055

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)	Note
105.0	Dish Wireless	1	commscope	MC-PK8-C Platform w/ Top Rail	1	Hybrid	-
		3	commscope	FFVV-65B-R2			
		3	fujitsu	TA08025-B605			
		3	fujitsu	TA08025-B604			
		1	raycap	RDIDC-9181-PF-48			

Table 2 - Existing and Reserved Antenna and Cable Information

Mounting Level (ft)	Carrier Designation	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
149.0	Unknown	1	-	12' Omni	2	7/8	1
		2	-	10' Dipole			
		3	-	13' T-Arms			
		1	-	15' Whip	3 1	7/8 1-1/4	3
		1	-	8' Dipole			
		2	-	20' Whip			
127.0	AT&T	1	tower mounts	13' Low-Profile Platform	6 2 1	1-1/4 13/16 Inner Duct	1
		3	cci	OPA65R-BU6D			
		3	cci	TPA65R-BU6D			
		3	ericsson	AIR6449			
		3	ericsson	AIR6419			
		3	ericsson	4478 RRH			
		3	ericsson	8843 RRH			
		3	sericsson	4449 RRH			
		3	ericsson	4415 RRH			
		3	raycap	DC6-48-60-18-8F			
		1	sitepro1	RMQLP-4120-H10			

Mounting Level (ft)	Carrier Designation	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
116.0	T-Mobile	1	sitepro1	12' Platform Mount (F4P-12W)	12 3	1-5/8 HCS 6x12 Hybrid	1
		1	sitepro1	HRK12 Support Rail Kit			
		3	commscope	SDX1926Q-43			
		3	ericsson	AIR 32 B66Aa B2a			
		3	ericsson	AIR 6449 B41			
		3	ericsson	RADIO 4449 B12/B71			
		3	ericsson	RRUS 4415 B25			
		3	rfs celwave	APXVARR24_43-C-NA20			
		3	-	Twin Style TMA			
104.0	Unknown	4	tower mounts	6' Standoff	-	-	2
80.0	Verizon Wireless	3	samsung telecommunication	MT6407-77A	-	-	4
		1	tower mounts	13' Modified Low Profile Platform	6 1	1-5/8 1-1/4	1
		6	commscope	JAHH-65B-R3B			
		3	samsung telecommunication	XXDWMM-12.5-65-8T-CBRS			
		3	samsung telecommunication	B5/B13 RRH-BR04C			
		3	samsung telecommunication	B2/B66 RRH-BR049			
		3	samsung telecommunication	CBRS RRH-RT4401-48A			
		3	commscope	CBC78T-DS-43-2X			
		1	raycap	RUSDC-6267-PF-48			
40.0	Sprint	1	tower mounts	3' Stand Off	1	3/8	1
		1	-	GPS			

Notes:
1) Existing equipment
2) Existing mounts to be removed, not considered in analysis
3) Existing equipment to be relocated from the 104' level
4) Reserved equipment to be installed by others

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Dated
Tower and Foundation Design Report	Paul J. Ford & Company	12/16/98
Structural Analysis Report	Dewberry Engineers, Inc.	01/29/19
Antenna/Coax Verification & Mount Mapping Report	HighTower Solutions, Inc.	06/06/19
Structural Analysis Report – Rev 1	Proterra Design Group, LLC	05/22/20
RFDS	Dish Wireless	09/07/21
Construction Drawings	Tectonic	10/20/21
Structural Analysis Report – Rev 1	Tectonic	10/25/21

Document	Remarks	Dated
Field Notes	Tectonic	11/08/21
Structural Analysis Report	Centek Engineering	08/29/22

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.

tnxTower was used to determine the loads on the modified structure. Additional calculations were performed to determine the stresses in the pole and in the reinforcing elements. These calculations are presented in Appendix B.

3.2) Assumptions

1) Tower and structures were built and maintained in accordance with the manufacturer's specifications.
2) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2.
3) The existing tower modifications have been installed in accordance with the original design drawings. The connections have been adequately designed to develop the full capacity of the reinforcing members.
4) The existing appurtenances at the 104 ft level are to be relocated to the 149 ft level and the existing mounts removed per the Exhibit Lease by Tectonic, referenced above.
5) The existing and reserved loading is based on the previous structural analysis by Centek Engineering, referenced above.

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	150 - 130	Pole	TP27.25x23.61x0.2813	1	-2.99	1429.03	7.2	Pass
L2	130 - 110	Pole	TP30.89x27.25x0.2813	2	-14.56	1621.91	29.7	Pass
L3	110 - 95.83	Pole	TP33.469x30.89x0.2813	3	-18.58	1708.71	43.2	Pass
L4	95.83 - 81	Pole	TP35.6055x31.9655x0.375	4	-23.36	2488.64	48.7	Pass
L5	81 - 61	Pole	TP39.2455x35.6055x0.375	5	-32.32	2745.76	67.5	Pass
L6	61 - 47.83	Pole	TP41.6425x39.2455x0.375	6	-34.13	2835.76	73.2	Pass
L7	47.83 - 34	Pole	TP43.4095x39.7695x0.4375	7	-41.39	3541.41	73.0	Pass
L8	34 - 29.5833	Pole	TP44.2134x43.4095x0.4375	8	-42.97	3607.65	75.3	Pass
L9	29.5833 - 14.67	Pole	TP46.9276x44.2134x0.716	9	-52.07	5435.17	85.5	Pass[1]
L10	14.67 - 0	Pole	TP49.5976x46.9276x0.91	10	-64.70	7277.94	74.9	Pass[1]
							Summary	
						Pole (L8)	75.3	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
						Reinforcing	85.5	Pass[1]
						Rating =	85.5	Pass[1]

Table 5 - Tower Component Stresses vs. Capacity

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	79.2	Pass
1	Base Plate	0	53.7	Pass
1	Base Foundation (Structure)	0	47.1	Pass
1	Base Foundation (Soil Interaction)	0	78.9	Pass

Structure Rating (max from all components) =	85.5%

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

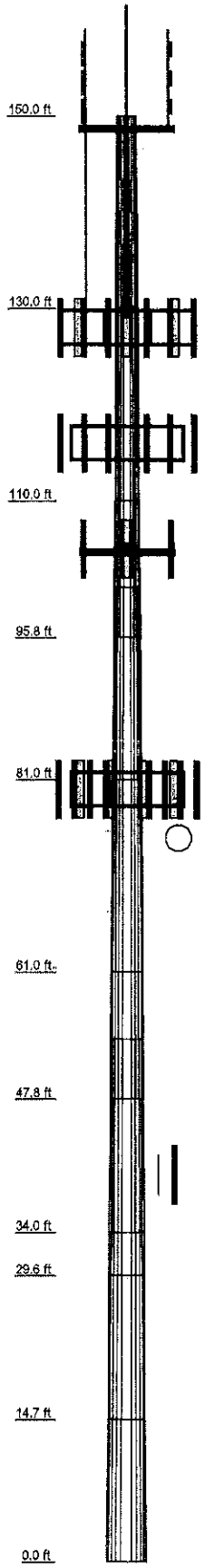
4.1) Recommendations

The tower and its foundation have sufficient capacity to carry the proposed load configuration. No modifications are required at this time.

APPENDIX A

TNXTOWER OUTPUT

Section	10	9	8	7	6	5	4	3	2	1
Length (ft)	14.67	14.91	4.42	20.00	13.17	20.00	20.00	14.17	20.00	20.00
Number of Sides	12	12	12	12	12	12	12	12	12	12
Thickness (in)	0.9100	0.7160	0.4375	0.4375	0.3750	0.3750	0.3750	0.2813	0.2813	0.2813
Socket Length (ft)					6.17			5.17		
Top Dia (in)	46.9276	44.2134	43.4095	39.7695	39.2455	35.6055	31.9655	30.8900	27.2500	23.6100
Bot Dia (in)	49.5976	46.9276	44.2134	43.4095	41.6425	39.2455	35.6055	33.4690	30.8900	27.2500
Grade	66.682708ksi			A572-65						
Weight (K) 29.7	6.9	5.2	0.9	3.9	2.2	3.0	2.7	1.4	1.8	1.6



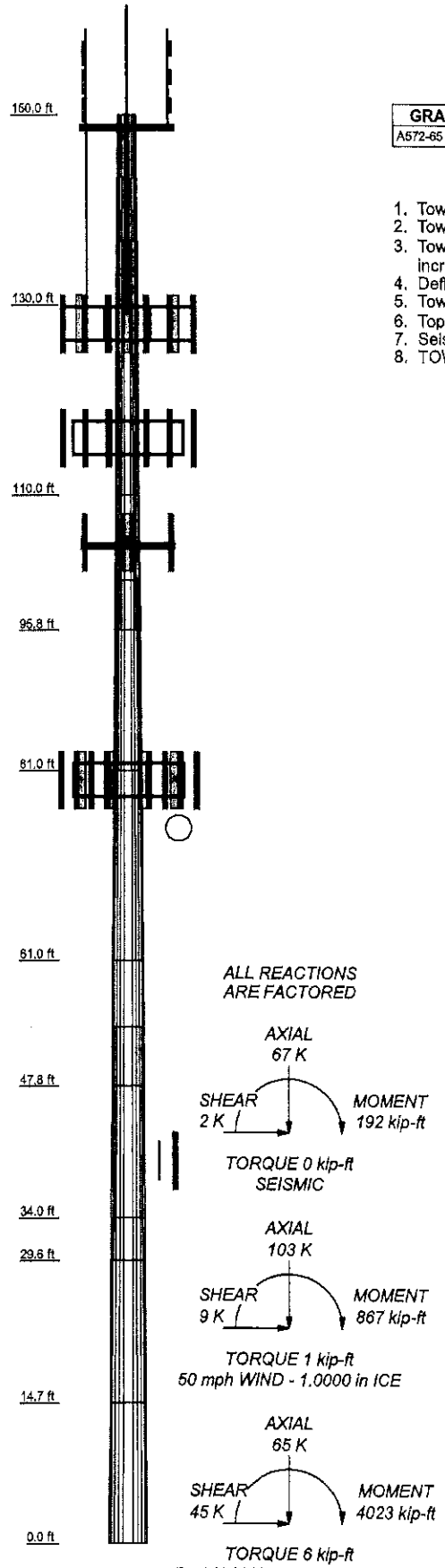
DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
10' x 1.5" Dia Dipole	149	(2) AIR 32 B66Aa B2a w/ Mount Pipe	116
10' x 1.5" Dia Dipole	149	AIR 32 B66Aa B2a w/ Mount Pipe	116
12' x 3" Dia Omni	149	(2) AIR 6449 B41 w/ Mount Pipe	116
13' T-Arms	149	AIR 6449 B41 w/ Mount Pipe	116
(4) 2" STD Pipe (2.375 OD)x6'-0"	149	SitePro1 HRK12 Handrail kit	116
(4) 2" STD Pipe (2.375 OD)x6'-0"	149	12' SitePro1 Platform Mount (F4P-12W)	116
(4) 2" STD Pipe (2.375 OD)x6'-0"	149	8' Platform Mount (MC-PK8-DSH)	105
8' x 2" Dia Dipole	149	Top Rail	105
15'x1.25" Dia Whips	149	RDIDC-9181-PF-48	105
20' x 2" Dia Whips	149	(2) 8' long Pipe	105
20' x 2" Dia Whips	149	(2) 8' long Pipe	105
SitePro RMQLP-4120-H10	128	(2) 8' long Pipe	105
OPA65R-BU6D_TIA w/ Mount Pipe	128	FFVV-65B-R2 w/ Mount Pipe	105
OPA65R-BU6D_TIA w/ Mount Pipe	128	FFVV-65B-R2 w/ Mount Pipe	105
OPA65R-BU6D_TIA w/ Mount Pipe	128	FFVV-65B-R2 w/ Mount Pipe	105
TPA65R-BU6D_TIA w/ Mount Pipe	128	TA08025-B605	105
TPA65R-BU6D_TIA w/ Mount Pipe	128	TA08025-B605	105
TPA65R-BU6D_TIA w/ Mount Pipe	128	TA08025-B605	105
AIR6449 B77D + AIR6419 B77G w/ Mount Pipe	128	TA08025-B604	105
AIR6449 B77D + AIR6419 B77G w/ Mount Pipe	128	TA08025-B604	105
AIR6449 B77D + AIR6419 B77G w/ Mount Pipe	128	TA08025-B604	105
RADIO 4478	128	CBC78T-DS-43-2X	80
RADIO 4478	128	CBC78T-DS-43-2X	80
RADIO 4478	128	CBC78T-DS-43-2X	80
RADIO 8843	128	RVZDC-6627-PF-48	80
RADIO 8843	128	13' Low Profile Platform	80
RADIO 8843	128	HRK14 SitePro1 Top Rail Kit	80
RADIO 4449	128	PRK-1245	80
RADIO 4449	128	B5/B13 RRH-BR04C	80
RADIO 4449	128	B5/B13 RRH-BR04C	80
RADIO 4415 B30	128	B5/B13 RRH-BR04C	80
RADIO 4415 B30	128	B2/B66 RRH-BR049	80
RADIO 4415 B30	128	B2/B66 RRH-BR049	80
DC6-48-60-18-8F	128	B2/B66 RRH-BR049	80
DC6-48-60-18-8F	128	XXDWMM-12.5-65-8T-CBRS	80
DC6-48-60-18-8F	128	XXDWMM-12.5-65-8T-CBRS	80
(2) RADIO 4449 B12/B71	116	XXDWMM-12.5-65-8T-CBRS	80
RADIO 4449 B12/B71	116	(2) JAHH-65B-R3B_TIA w/ Mount Pipe	80
(2) RRUS 4415 B25	116	(2) JAHH-65B-R3B_TIA w/ Mount Pipe	80
RRUS 4415 B25	116	(2) JAHH-65B-R3B_TIA w/ Mount Pipe	80
(2) SDX1926Q-43	116	CBRS RRH-RT4401-48A	80
SDX1926Q-43	116	CBRS RRH-RT4401-48A	80
(2) Twin Style TMA	116	CBRS RRH-RT4401-48A	80
Twin Style TMA	116	MT6407-77A w/ Mount Pipe	80
(2) APXVARR24_43-C-NA20 w/ Mount Pipe	116	MT6407-77A w/ Mount Pipe	80
APXVARR24_43-C-NA20 w/ Mount Pipe	116	MT6407-77A w/ Mount Pipe	80
		3' Stand Off	40
		GPS_A	40

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

Job: 10710.NJJER01121A - Revision 3		
Project: 150' Monopole		
Client: Dish Wireless	Drawn by: Ian Marinaccio	App'd:
Code: TIA-222-H	Date: 02/15/23	Scale: N
Path:		Dwg No.

Section	10	9	8	7	6	5	4	3	2	1
Length (ft)	14.67	14.91	4.42	20.00	13.17	20.00	20.00	14.17	20.00	20.00
Number of Sides	12	12	12	12	12	12	12	12	12	12
Thickness (in)	0.9100	0.7160	0.4375	0.4375	0.3750	0.3750	0.3750	0.2813	0.2813	0.2813
Socket Length (ft)					6.17			5.17		
Top Dia (in)	46.9276	44.2134	43.4095	39.7695	39.2455	35.6055	31.9655	30.8900	27.2500	23.6100
Bot Dia (in)	49.5976	46.9276	44.2134	43.4095	41.6425	39.2455	35.6055	33.4690	30.8900	27.2500
Grade	56.682708ksi				A572-65					
Weight (K) 29.7	6.9	5.2	0.9	3.9	2.2	3.0	2.7	1.4	1.8	1.6



ALL REACTIONS ARE FACTORED

AXIAL 67 K
SHEAR 2 K
MOMENT 192 kip-ft
TORQUE 0 kip-ft
SEISMIC

AXIAL 103 K
SHEAR 9 K
MOMENT 867 kip-ft
TORQUE 1 kip-ft
50 mph WIND - 1.0000 in ICE

AXIAL 65 K
SHEAR 45 K
MOMENT 4023 kip-ft
TORQUE 6 kip-ft
REACTIONS - 130 mph WIND

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi	56.682708ksi	57 ksi	72 ksi

TOWER DESIGN NOTES

1. Tower designed for Exposure B to the TIA-222-H Standard.
2. Tower designed for a 130 mph basic wind in accordance with the TIA-222-H Standard.
3. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 60 mph wind.
5. Tower Risk Category III.
6. Topographic Category 1 with Crest Height of 0.00 ft
7. Seismic calculations are in accordance with TIA-222-H-1
8. TOWER RATING: 85.5%

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

Job: *10710.NJJER01121A - Revision 3*		
Project: *150' Monopole*		
Client: Dish Wireless	Drawn by: Ian Marinaccio	App'd:
Code: TIA-222-H	Date: 02/15/23	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 base elevation above sea level: 13.00 ft.
- Basic wind speed of 130 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.
- Seismic calculations are in accordance with TIA-222-H-1.
- TOWER RATING: 85.5%.
- 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*	*Section Length*	*Splice Length*	*Number of Sides*	*Top Diameter*	*Bottom Diameter*	*Wall Thickness*	*Bend Radius*	*Pole Grade*
	ft	*ft*	*ft*		*in*	*in*	*in*	*in*	
L1	150.00-130.00	20.00	0.00	12	23.6100	27.2500	0.2813	1.1252	A572-65 (65 ksi)

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
L2	130.00-110.00	20.00	0.00	12	27.2500	30.8900	0.2813	1.1252	A572-65 (65 ksi)
L3	110.00-95.83	14.17	5.17	12	30.8900	33.4690	0.2813	1.1252	A572-65 (65 ksi)
L4	95.83-81.00	20.00	0.00	12	31.9655	35.6055	0.3750	1.5000	A572-65 (65 ksi)
L5	81.00-61.00	20.00	0.00	12	35.6055	39.2455	0.3750	1.5000	A572-65 (65 ksi)
L6	61.00-47.83	13.17	6.17	12	39.2455	41.6425	0.3750	1.5000	A572-65 (65 ksi)
L7	47.83-34.00	20.00	0.00	12	39.7695	43.4095	0.4375	1.7500	A572-65 (65 ksi)
L8	34.00-29.58	4.42	0.00	12	43.4095	44.2134	0.4375	1.7500	A572-65 (65 ksi)
L9	29.58-14.67	14.91	0.00	12	44.2134	46.9276	0.7160	2.8640	56.682708ksi (57 ksi)
L10	14.67-0.00	14.67		12	46.9276	49.5976	0.9100	3.6400	56.682708ksi (57 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	24.3436	21.1308	1467.8550	8.3517	12.2300	120.0211	2974.2723	10.3999	5.5736	19.814
	28.1121	24.4279	2267.7368	9.6548	14.1155	160.6557	4595.0496	12.0227	6.5491	23.282
L2	28.1121	24.4279	2267.7368	9.6548	14.1155	160.6557	4595.0496	12.0227	6.5491	23.282
	31.8805	27.7250	3315.4927	10.9579	16.0010	207.2048	6718.0872	13.6454	7.5246	26.75
L3	31.8805	27.7250	3315.4927	10.9579	16.0010	207.2048	6718.0872	13.6454	7.5246	26.75
	34.5504	30.0610	4226.1316	11.8812	17.3369	243.7645	8563.2885	14.7951	8.2158	29.207
L4	33.9349	38.1455	4858.9306	11.3094	16.5581	293.4473	9845.5106	18.7740	7.5617	20.165
	36.7292	42.5408	6739.5147	12.6125	18.4436	365.4114	13656.083 9	20.9373	8.5373	22.766
L5	36.7292	42.5408	6739.5147	12.6125	18.4436	365.4114	13656.083 9	20.9373	8.5373	22.766
	40.4976	46.9361	9051.7678	13.9156	20.3292	445.2601	18341.335 6	23.1005	9.5128	25.367
L6	40.4976	46.9361	9051.7678	13.9156	20.3292	445.2601	18341.335 6	23.1005	9.5128	25.367
	42.9792	49.8304	10831.685 8	14.7737	21.5708	502.1460	21947.932 1	24.5250	10.1552	27.08
L7	42.1806	55.4090	10941.029 0	14.0809	20.6006	531.1023	22169.491 0	27.2706	9.4857	21.682
	44.7865	60.5368	14268.470 8	15.3840	22.4861	634.5453	28911.790 1	29.7944	10.4613	23.911
L8	44.7865	60.5368	14268.470 8	15.3840	22.4861	634.5453	28911.790 1	29.7944	10.4613	23.911
	45.6187	61.6693	15084.270 0	15.6718	22.9025	658.6291	30564.820 5	30.3517	10.6767	24.404
L9	45.5205	100.2841	24218.313 7	15.5721	22.9025	1057.4516	49072.869 5	49.3568	9.9303	13.869
	48.3305	106.5418	29040.769 1	16.5438	24.3085	1194.6754	58844.471 6	52.4366	10.6577	14.885
L10	48.2620	134.8408	36446.460 9	16.4743	24.3085	1499.3298	73850.411 0	66.3645	10.1378	11.14
	51.0262	142.6643	43165.559 9	17.4301	25.6915	1680.1469	87465.127 2	70.2150	10.8533	11.927

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 150.00-130.00				1	1	1			

Tower Elevation ft	Gusset Area (per face) ft²	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L2 130.00-110.00				1	1	1			
L3 110.00-95.83				1	1	1			
L4 95.83-81.00				1	1	1			
L5 81.00-61.00				1	1	1			
L6 61.00-47.83				1	1	1			
L7 47.83-34.00				1	1	1			
L8 34.00-29.58				1	1	1			
L9 29.58-14.67				1	1	1			
L10 14.67-0.00				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
Black Cable .4"	C	No	Surface Ar (CaAa)	128.00 - 0.00	1	1	0.000 0.000	0.5200		0.14
PWRT-608-S(13/16")	C	No	Surface Ar (CaAa)	128.00 - 0.00	2	2	0.000 0.000	0.8200		0.62
FLC 114-50J(1-1/4) *	A	No	Surface Ar (CaAa)	128.00 - 0.00	6	6	0.000 0.000	1.5800		0.70
FLC 114-50J(1-1/4") ***	C	No	Surface Ar (CaAa)	80.00 - 0.00	1	1	-0.300 -0.000	1.5800		0.70
LCF158-50A(1-5/8")	A	No	Surface Ar (CaAa)	116.00 - 0.00	12	12	0.000 0.000	1.9800		0.80
HCS 6X12 4AWG(1-5/8) **	A	No	Surface Ar (CaAa)	116.00 - 0.00	3	3	0.000 0.000	1.6600		2.40
Step Bolts	C	No	Surface Ar (CaAa)	140.00 - 12.25	1	1	0.000 0.000	0.3750		2.00
Safety Line 3/8 **	C	No	Surface Ar (CaAa)	150.00 - 12.25	1	1	0.000 0.000	0.3750		0.22
WT6x25 Reinforcement	A	No	Surface Ar (CaAa)	15.94 - 0.00	1	1	0.000 0.000	8.0000		25.00
WT6x25 Reinforcement	A	No	Surface Ar (CaAa)	15.94 - 0.00	1	1	0.500 0.500	8.0000		25.00
WT6x25 Reinforcement	B	No	Surface Ar (CaAa)	15.94 - 0.00	1	1	0.250 0.250	8.0000		25.00
WT6x25 Reinforcement	C	No	Surface Ar (CaAa)	15.94 - 0.00	1	1	0.000 0.000	8.0000		25.00
WT6x25 Reinforcement	A	No	Surface Ar (CaAa)	31.00 - 0.00	1	1	-0.250 -0.250	8.0000		25.00
WT6x25 Reinforcement	A	No	Surface Ar (CaAa)	31.00 - 0.00	1	1	0.250 0.250	8.0000		25.00
WT6x25 Reinforcement	B	No	Surface Ar (CaAa)	31.00 - 0.00	1	1	0.000 0.000	8.0000		25.00
WT6x25 Reinforcement **	C	No	Surface Ar (CaAa)	31.00 - 0.00	1	1	0.250 0.250	8.0000		25.00
CU12PSM9P6XXX_6A	C	No	Surface Ar	105.00 -	1	1	0.000	1.6000		2.35

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
WG *			(CaAa)	0.00			0.000			

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 ft²/ft	Weight plf
Inner Duct	C	No	No	Inside Pole	128.00 - 0.00	1	No Ice	0.00	1.16
							1/2" Ice	0.00	1.16
							1" Ice	0.00	1.16
*									
AVA5-50(7/8")	C	No	No	Inside Pole	149.00 - 0.00	5	No Ice	0.00	0.30
							1/2" Ice	0.00	0.30
							1" Ice	0.00	0.30
LCF114-50J(1-1/4")	C	No	No	Inside Pole	149.00 - 0.00	1	No Ice	0.00	0.70
							1/2" Ice	0.00	0.70
							1" Ice	0.00	0.70
*									
*									

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft²	A_F ft²	C_AA_A In Face ft²	C_AA_A Out Face ft²	Weight K
L1	150.00-130.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	1.125	0.000	0.07
L2	130.00-110.00	A	0.000	0.000	34.308	0.000	0.18
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	5.388	0.000	0.13
L3	110.00-95.83	A	0.000	0.000	54.158	0.000	0.30
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	5.591	0.000	0.12
L4	95.83-81.00	A	0.000	0.000	56.680	0.000	0.31
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	6.688	0.000	0.14
L5	81.00-61.00	A	0.000	0.000	76.440	0.000	0.42
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	12.022	0.000	0.20
L6	61.00-47.83	A	0.000	0.000	50.336	0.000	0.28
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	8.021	0.000	0.13
L7	47.83-34.00	A	0.000	0.000	52.858	0.000	0.29
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	8.422	0.000	0.14
L8	34.00-29.58	A	0.000	0.000	19.147	0.000	0.16
		B	0.000	0.000	1.133	0.000	0.04
		C	0.000	0.000	3.823	0.000	0.08
L9	29.58-14.67	A	0.000	0.000	82.892	0.000	1.12
		B	0.000	0.000	12.947	0.000	0.40
		C	0.000	0.000	22.029	0.000	0.55
L10	14.67-0.00	A	0.000	0.000	103.013	0.000	1.78
		B	0.000	0.000	23.472	0.000	0.73
		C	0.000	0.000	31.487	0.000	0.85

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	150.00-130.00	A	1.329	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	9.096	0.000	0.15
L2	130.00-110.00	A	1.308	0.000	0.000	52.697	0.000	0.66
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	27.189	0.000	0.37
L3	110.00-95.83	A	1.288	0.000	0.000	81.390	0.000	1.04
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	24.053	0.000	0.34
L4	95.83-81.00	A	1.269	0.000	0.000	85.181	0.000	1.09
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	27.359	0.000	0.39
L5	81.00-61.00	A	1.241	0.000	0.000	114.169	0.000	1.43
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	43.626	0.000	0.60
L6	61.00-47.83	A	1.209	0.000	0.000	74.860	0.000	0.92
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	28.461	0.000	0.39
L7	47.83-34.00	A	1.175	0.000	0.000	78.611	0.000	0.97
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	29.887	0.000	0.41
L8	34.00-29.58	A	1.146	0.000	0.000	27.812	0.000	0.41
		B		0.000	0.000	1.458	0.000	0.05
		C		0.000	0.000	10.654	0.000	0.18
L9	29.58-14.67	A	1.105	0.000	0.000	116.646	0.000	2.19
		B		0.000	0.000	16.522	0.000	0.60
		C		0.000	0.000	46.806	0.000	1.00
L10	14.67-0.00	A	0.989	0.000	0.000	139.507	0.000	3.00
		B		0.000	0.000	29.273	0.000	1.05
		C		0.000	0.000	51.173	0.000	1.34

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	150.00-130.00	0.0000	0.3443	0.0000	1.7759
L2	130.00-110.00	-5.3763	-2.1819	-4.2572	-0.0653
L3	110.00-95.83	-8.2237	-3.7913	-6.4734	-1.5944
L4	95.83-81.00	-8.4491	-3.7540	-6.6869	-1.4507
L5	81.00-61.00	-8.5538	-3.4464	-6.7482	-0.9848
L6	61.00-47.83	-8.9013	-3.5681	-7.1137	-1.0536
L7	47.83-34.00	-9.0986	-3.6475	-7.3154	-1.0829
L8	34.00-29.58	-9.0663	-3.6684	-7.5325	-1.3830
L9	29.58-14.67	-8.0392	-3.3824	-7.5762	-1.7921
L10	14.67-0.00	-6.6172	-3.6075	-6.6125	-2.7453

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	18	Step Bolts	130.00 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L1	19	Safety Line 3/8	140.00 - 130.00	1.0000	1.0000
L2	1	Black Cable .4"	150.00 - 110.00	1.0000	1.0000
L2	2	PWRT-608-S(13/16")	128.00 - 110.00	1.0000	1.0000
L2	3	FLC 114-50J(1-1/4)	128.00 - 110.00	1.0000	1.0000
L2	15	LCF158-50A(1-5/8")	128.00 - 110.00	1.0000	1.0000
L2	16	HCS 6X12 4AWG(1-5/8)	116.00 - 110.00	1.0000	1.0000
L2	18	Step Bolts	116.00 - 110.00	1.0000	1.0000
L2	19	Safety Line 3/8	130.00 - 110.00	1.0000	1.0000
L3	1	Black Cable .4"	130.00 - 95.83	1.0000	1.0000
L3	2	PWRT-608-S(13/16")	110.00 - 95.83	1.0000	1.0000
L3	3	FLC 114-50J(1-1/4)	110.00 - 95.83	1.0000	1.0000
L3	15	LCF158-50A(1-5/8")	110.00 - 95.83	1.0000	1.0000
L3	16	HCS 6X12 4AWG(1-5/8)	110.00 - 95.83	1.0000	1.0000
L3	18	Step Bolts	110.00 - 95.83	1.0000	1.0000
L3	19	Safety Line 3/8	110.00 - 95.83	1.0000	1.0000
L3	30	CU12PSM9P6XXX_6AWG	110.00 - 95.83	1.0000	1.0000
L4	1	Black Cable .4"	105.00 - 81.00	1.0000	1.0000
L4	2	PWRT-608-S(13/16")	95.83 - 81.00	1.0000	1.0000
L4	3	FLC 114-50J(1-1/4)	95.83 - 81.00	1.0000	1.0000
L4	15	LCF158-50A(1-5/8")	95.83 - 81.00	1.0000	1.0000
L4	16	HCS 6X12 4AWG(1-5/8)	95.83 - 81.00	1.0000	1.0000
L4	18	Step Bolts	95.83 - 81.00	1.0000	1.0000
L4	19	Safety Line 3/8	95.83 - 81.00	1.0000	1.0000
L4	30	CU12PSM9P6XXX_6AWG	95.83 - 81.00	1.0000	1.0000
L5	1	Black Cable .4"	95.83 - 61.00	1.0000	1.0000
L5	2	PWRT-608-S(13/16")	81.00 - 61.00	1.0000	1.0000
L5	3	FLC 114-50J(1-1/4)	81.00 - 61.00	1.0000	1.0000
L5	10	FLC 114-50J(1-1/4")	81.00 - 61.00	1.0000	1.0000
L5	15	LCF158-50A(1-5/8")	80.00 - 61.00	1.0000	1.0000
L5	16	HCS 6X12 4AWG(1-5/8)	81.00 - 61.00	1.0000	1.0000
L5	18	Step Bolts	81.00 - 61.00	1.0000	1.0000
L5	19	Safety Line 3/8	81.00 - 61.00	1.0000	1.0000
L5	30	CU12PSM9P6XXX_6AWG	81.00 - 61.00	1.0000	1.0000
L6	1	Black Cable .4"	61.00 - 47.83	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L6	2	PWRT-608-S(13/16")	47.83 - 61.00	1.0000	1.0000
L6	3	FLC 114-50J(1-1/4)	47.83 - 61.00	1.0000	1.0000
L6	10	FLC 114-50J(1-1/4")	47.83 - 61.00	1.0000	1.0000
L6	15	LCF158-50A(1-5/8")	47.83 - 61.00	1.0000	1.0000
L6	16	HCS 6X12 4AWG(1-5/8)	47.83 - 61.00	1.0000	1.0000
L6	18	Step Bolts	47.83 - 61.00	1.0000	1.0000
L6	19	Safety Line 3/8	47.83 - 61.00	1.0000	1.0000
L6	30	CU12PSM9P6XXX_6AWG	47.83 - 61.00	1.0000	1.0000
L7	1	Black Cable .4"	34.00 - 47.83	1.0000	1.0000
L7	2	PWRT-608-S(13/16")	34.00 - 47.83	1.0000	1.0000
L7	3	FLC 114-50J(1-1/4)	34.00 - 47.83	1.0000	1.0000
L7	10	FLC 114-50J(1-1/4")	34.00 - 47.83	1.0000	1.0000
L7	15	LCF158-50A(1-5/8")	34.00 - 47.83	1.0000	1.0000
L7	16	HCS 6X12 4AWG(1-5/8)	34.00 - 47.83	1.0000	1.0000
L7	18	Step Bolts	34.00 - 47.83	1.0000	1.0000
L7	19	Safety Line 3/8	34.00 - 47.83	1.0000	1.0000
L7	30	CU12PSM9P6XXX_6AWG	34.00 - 47.83	1.0000	1.0000
L8	1	Black Cable .4"	29.58 - 34.00	1.0000	1.0000
L8	2	PWRT-608-S(13/16")	29.58 - 34.00	1.0000	1.0000
L8	3	FLC 114-50J(1-1/4)	29.58 - 34.00	1.0000	1.0000
L8	10	FLC 114-50J(1-1/4")	29.58 - 34.00	1.0000	1.0000
L8	15	LCF158-50A(1-5/8")	29.58 - 34.00	1.0000	1.0000
L8	16	HCS 6X12 4AWG(1-5/8)	29.58 - 34.00	1.0000	1.0000
L8	18	Step Bolts	29.58 - 34.00	1.0000	1.0000
L8	19	Safety Line 3/8	29.58 - 34.00	1.0000	1.0000
L8	25	WT6x25 Reinforcement	29.58 - 31.00	1.0000	1.0000
L8	26	WT6x25 Reinforcement	29.58 - 31.00	1.0000	1.0000
L8	27	WT6x25 Reinforcement	29.58 - 31.00	1.0000	1.0000
L8	28	WT6x25 Reinforcement	29.58 - 31.00	1.0000	1.0000
L8	30	CU12PSM9P6XXX_6AWG	29.58 - 34.00	1.0000	1.0000
L9	1	Black Cable .4"	14.67 - 29.58	1.0000	1.0000
L9	2	PWRT-608-S(13/16")	14.67 - 29.58	1.0000	1.0000
L9	3	FLC 114-50J(1-1/4)	14.67 - 29.58	1.0000	1.0000
L9	10	FLC 114-50J(1-1/4")	14.67 - 29.58	1.0000	1.0000
L9	15	LCF158-50A(1-5/8")	14.67 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L9	16	HCS 6X12 4AWG(1-5/8)	29.58 - 14.67	1.0000	1.0000
L9	18	Step Bolts	29.58 - 14.67	1.0000	1.0000
L9	19	Safety Line 3/8	29.58 - 14.67	1.0000	1.0000
L9	21	WT6x25 Reinforcement	29.58 - 14.67	1.0000	1.0000
L9	22	WT6x25 Reinforcement	15.94 - 14.67	1.0000	1.0000
L9	23	WT6x25 Reinforcement	15.94 - 14.67	1.0000	1.0000
L9	24	WT6x25 Reinforcement	15.94 - 14.67	1.0000	1.0000
L9	25	WT6x25 Reinforcement	15.94 - 14.67	1.0000	1.0000
L9	26	WT6x25 Reinforcement	29.58 - 14.67	1.0000	1.0000
L9	27	WT6x25 Reinforcement	29.58 - 14.67	1.0000	1.0000
L9	28	WT6x25 Reinforcement	29.58 - 14.67	1.0000	1.0000
L9	30	CU12PSM9P6XXX_6AWG	29.58 - 14.67	1.0000	1.0000
L10	1	Black Cable .4"	29.58 - 0.00	1.0000	1.0000
L10	2	PWRT-608-S(13/16")	14.67 - 0.00	1.0000	1.0000
L10	3	FLC 114-50J(1-1/4)	14.67 - 0.00	1.0000	1.0000
L10	10	FLC 114-50J(1-1/4")	14.67 - 0.00	1.0000	1.0000
L10	15	LCF158-50A(1-5/8")	14.67 - 0.00	1.0000	1.0000
L10	16	HCS 6X12 4AWG(1-5/8)	14.67 - 0.00	1.0000	1.0000
L10	18	Step Bolts	14.67 - 12.25	1.0000	1.0000
L10	19	Safety Line 3/8	14.67 - 12.25	1.0000	1.0000
L10	21	WT6x25 Reinforcement	14.67 - 0.00	1.0000	1.0000
L10	22	WT6x25 Reinforcement	14.67 - 0.00	1.0000	1.0000
L10	23	WT6x25 Reinforcement	14.67 - 0.00	1.0000	1.0000
L10	24	WT6x25 Reinforcement	14.67 - 0.00	1.0000	1.0000
L10	25	WT6x25 Reinforcement	14.67 - 0.00	1.0000	1.0000
L10	26	WT6x25 Reinforcement	14.67 - 0.00	1.0000	1.0000
L10	27	WT6x25 Reinforcement	14.67 - 0.00	1.0000	1.0000
L10	28	WT6x25 Reinforcement	14.67 - 0.00	1.0000	1.0000
L10	30	CU12PSM9P6XXX_6AWG	14.67 - 0.00	1.0000	1.0000

User Defined Loads - Seismic

Description	Elevation	Offset From Centroid	Azimuth Angle	E_v	E_{hx}	E_{hz}	E_h
	ft	ft	°	K	K	K	K
CCISeismic Tower Section 1 - 1	145.00	0.00	0.0000	0.04	0.00	0.00	0.07
CCISeismic Tower Section 1 - 2	135.00	0.00	0.0000	0.04	0.00	0.00	0.07
CCISeismic Tower Section 2 - 1	125.00	0.00	0.0000	0.04	0.00	0.00	0.06
CCISeismic Tower Section 2 - 2	115.00	0.00	0.0000	0.04	0.00	0.00	0.06
CCISeismic Tower Section 3 - 1	107.92	0.00	0.0000	0.02	0.00	0.00	0.02
CCISeismic Tower Section 3 -	100.83	0.00	0.0000	0.05	0.00	0.00	0.05

Description	Elevation	Offset From Centroid	Azimuth Angle	E_v	E_{hx}	E_{hz}	E_h
	ft	ft	°	K	K	K	K
2							
CCISeismic Tower Section 4 - 1	96.00	0.00	0.0000	0.06	0.00	0.00	0.06
CCISeismic Tower Section 4 - 2	86.00	0.00	0.0000	0.07	0.00	0.00	0.05
CCISeismic Tower Section 5 - 1	76.00	0.00	0.0000	0.07	0.00	0.00	0.04
CCISeismic Tower Section 5 - 2	66.00	0.00	0.0000	0.07	0.00	0.00	0.03
CCISeismic Tower Section 6 - 1	59.42	0.00	0.0000	0.02	0.00	0.00	0.01
CCISeismic Tower Section 6 - 2	52.83	0.00	0.0000	0.08	0.00	0.00	0.02
CCISeismic Tower Section 7 - 1	49.00	0.00	0.0000	0.09	0.00	0.00	0.02
CCISeismic Tower Section 7 - 2	39.00	0.00	0.0000	0.10	0.00	0.00	0.01
CCISeismic Tower Section 8 - 1	31.79	0.00	0.0000	0.04	0.00	0.00	0.00
CCISeismic Tower Section 9 - 1	27.13	0.00	0.0000	0.08	0.00	0.00	0.01
CCISeismic Tower Section 9 - 2	19.67	0.00	0.0000	0.17	0.00	0.00	0.01
CCISeismic Tower Section 10 - 1	12.34	0.00	0.0000	0.10	0.00	0.00	0.00
CCISeismic Tower Section 10 - 2	5.00	0.00	0.0000	0.23	0.00	0.00	0.00
CCISeismic 3' Stand Off	40.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic (2) commscope JAHH-65B-R3B_TIA w/ Mount Pipe	80.00	0.00	0.0000	0.01	0.00	0.00	0.01
CCISeismic (2) commscope JAHH-65B-R3B_TIA w/ Mount Pipe	80.00	0.00	0.0000	0.01	0.00	0.00	0.01
CCISeismic (2) commscope JAHH-65B-R3B_TIA w/ Mount Pipe	80.00	0.00	0.0000	0.01	0.00	0.00	0.01
CCISeismic samsung telecommunications CBRS RRH-RT4401-48A	80.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic samsung telecommunications CBRS RRH-RT4401-48A	80.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic samsung telecommunications CBRS RRH-RT4401-48A	80.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic samsung telecommunications MT6407-77A w/ Mount Pipe	80.00	0.00	0.0000	0.01	0.00	0.00	0.00
CCISeismic samsung telecommunications MT6407-77A w/ Mount Pipe	80.00	0.00	0.0000	0.01	0.00	0.00	0.00
CCISeismic samsung telecommunications MT6407-77A w/ Mount Pipe	80.00	0.00	0.0000	0.01	0.00	0.00	0.00
CCISeismic samsung telecommunications B5/B13 RRH-BR04C	80.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic samsung telecommunications B5/B13 RRH-BR04C	80.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic samsung telecommunications B5/B13 RRH-BR04C	80.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic samsung telecommunications B2/B66 RRH-BR049	80.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic samsung	80.00	0.00	0.0000	0.00	0.00	0.00	0.00

Description	Elevation	Offset From Centroid	Azimuth Angle	E_v	E_{hx}	E_{hz}	E_h
	ft	ft	°	K	K	K	K
telecommunications B2/B66 RRH-BR049							
CCISeismic samsung telecommunications B2/B66 RRH-BR049	80.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic samsung telecommunications XXDWMM-12.5-65-8T-CBRS	80.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic samsung telecommunications XXDWMM-12.5-65-8T-CBRS	80.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic samsung telecommunications XXDWMM-12.5-65-8T-CBRS	80.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic commscope CBC78T-DS-43-2X	80.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic commscope CBC78T-DS-43-2X	80.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic commscope CBC78T-DS-43-2X	80.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic raycap RVZDC-6627-PF-48	80.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic 13' Low Profile Platform	80.00	0.00	0.0000	0.08	0.00	0.00	0.05
CCISeismic HRK14 SitePro1 Top Rail Kit	80.00	0.00	0.0000	0.01	0.00	0.00	0.01
CCISeismic PRK-1245	80.00	0.00	0.0000	0.01	0.00	0.00	0.01
CCISeismic commscope FFVV-65B-R2 w/ Mount Pipe	105.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic commscope FFVV-65B-R2 w/ Mount Pipe	105.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic commscope FFVV-65B-R2 w/ Mount Pipe	105.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic fujitsu TA08025-B605	105.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic fujitsu TA08025-B605	105.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic fujitsu TA08025-B605	105.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic fujitsu TA08025-B604	105.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic fujitsu TA08025-B604	105.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic fujitsu TA08025-B604	105.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic raycap RDIDC-9181-PF-48	105.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic (2) 8' long Pipe	105.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic (2) 8' long Pipe	105.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic (2) 8' long Pipe	105.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic 8' Platform Mount (MC-PK8-DSH)	105.00	0.00	0.0000	0.06	0.00	0.00	0.06
CCISeismic Top Rail	105.00	0.00	0.0000	0.01	0.00	0.00	0.01
CCISeismic (2) ericsson RADIO 4449 B12/B71	116.00	0.00	0.0000	0.01	0.00	0.00	0.01
CCISeismic ericsson RADIO 4449 B12/B71	116.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic (2) ericsson RRUS 4415 B25	116.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic ericsson RRUS 4415 B25	116.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic (2) commscope SDX1926Q-43	116.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic commscope SDX1926Q-43	116.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic (2) Twin Style TMA	116.00	0.00	0.0000	0.01	0.00	0.00	0.01
CCISeismic Twin Style TMA	116.00	0.00	0.0000	0.00	0.00	0.00	0.00

Description	Elevation	Offset From Centroid	Azimuth Angle	E_v	E_{hx}	E_{hz}	E_h
	ft	ft	°	K	K	K	K
CCISeismic (2) rfs celwave APXVARR24_43-C-NA20 w/ Mount Pipe	116.00	0.00	0.0000	0.01	0.00	0.00	0.02
CCISeismic rfs celwave APXVARR24_43-C-NA20 w/ Mount Pipe	116.00	0.00	0.0000	0.01	0.00	0.00	0.01
CCISeismic (2) ericsson AIR 32 B66Aa B2a w/ Mount Pipe	116.00	0.00	0.0000	0.01	0.00	0.00	0.02
CCISeismic ericsson AIR 32 B66Aa B2a w/ Mount Pipe	116.00	0.00	0.0000	0.01	0.00	0.00	0.01
CCISeismic (2) ericsson AIR 6449 B41 w/ Mount Pipe	116.00	0.00	0.0000	0.01	0.00	0.00	0.02
CCISeismic ericsson AIR 6449 B41 w/ Mount Pipe	116.00	0.00	0.0000	0.01	0.00	0.00	0.01
CCISeismic SitePro1 HRK12 Handrail kit	116.00	0.00	0.0000	0.01	0.00	0.00	0.02
CCISeismic 12' SitePro1 Platform Mount (F4P-12W)	116.00	0.00	0.0000	0.13	0.00	0.00	0.17
CCISeismic SitePro RMQLP-4120-H10	128.00	0.00	0.0000	0.08	0.00	0.00	0.13
CCISeismic cci antennas OPA65R-BU6D_TIA w/ Mount Pipe	128.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic cci antennas OPA65R-BU6D_TIA w/ Mount Pipe	128.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic cci antennas OPA65R-BU6D_TIA w/ Mount Pipe	128.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic cci antennas TPA65R-BU6D_TIA w/ Mount Pipe	128.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic cci antennas TPA65R-BU6D_TIA w/ Mount Pipe	128.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic cci antennas TPA65R-BU6D_TIA w/ Mount Pipe	128.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic ericsson AIR6449 B77D + AIR6419 B77G w/ Mount Pipe	128.00	0.00	0.0000	0.01	0.00	0.00	0.01
CCISeismic ericsson AIR6449 B77D + AIR6419 B77G w/ Mount Pipe	128.00	0.00	0.0000	0.01	0.00	0.00	0.01
CCISeismic ericsson AIR6449 B77D + AIR6419 B77G w/ Mount Pipe	128.00	0.00	0.0000	0.01	0.00	0.00	0.01
CCISeismic ericsson RADIO 4478	128.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic ericsson RADIO 4478	128.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic ericsson RADIO 4478	128.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic ericsson RADIO 8843	128.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic ericsson RADIO 8843	128.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic ericsson RADIO 8843	128.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic ericsson RADIO 4449	128.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic ericsson RADIO 4449	128.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic ericsson RADIO 4449	128.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic ericsson RADIO 4415 B30	128.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic ericsson RADIO	128.00	0.00	0.0000	0.00	0.00	0.00	0.00

Description	Elevation	Offset From Centroid	Azimuth Angle	E_v	E_{hx}	E_{hz}	E_h
	ft	ft	°	K	K	K	K
4415 B30 CCISeismic ericsson RADIO 4415 B30	128.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic raycap DC6-48-60-18-8F	128.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic raycap DC6-48-60-18-8F	128.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic raycap DC6-48-60-18-8F	128.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic 10' x 1.5" Dia Dipole	149.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic 10' x 1.5" Dia Dipole	149.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic miscl 12' x 3" Dia Omni	149.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic 13' T-Arms	149.00	0.00	0.0000	0.04	0.00	0.00	0.08
CCISeismic (4) pipe mounts 2" STD Pipe (2.375 OD)x6'-0"	149.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic (4) pipe mounts 2" STD Pipe (2.375 OD)x6'-0"	149.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic (4) pipe mounts 2" STD Pipe (2.375 OD)x6'-0"	149.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic 8' x 2" Dia Dipole	149.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic 15'x1.25" Dia Whips	149.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic 20' x 2" Dia Whips	149.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic 20' x 2" Dia Whips	149.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic Black Cable .4" From 0 to 128 (120ft to128ft)	124.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic Black Cable .4" From 0 to 128 (110ft to120ft)	115.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic Black Cable .4" From 0 to 128 (100ft to110ft)	105.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic Black Cable .4" From 0 to 128 (90ft to100ft)	95.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic Black Cable .4" From 0 to 128 (80ft to90ft)	85.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic Black Cable .4" From 0 to 128 (70ft to80ft)	75.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic Black Cable .4" From 0 to 128 (60ft to70ft)	65.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic Black Cable .4" From 0 to 128 (50ft to60ft)	55.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic Black Cable .4" From 0 to 128 (40ft to50ft)	45.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic Black Cable .4" From 0 to 128 (30ft to40ft)	35.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic Black Cable .4" From 0 to 128 (20ft to30ft)	25.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic Black Cable .4" From 0 to 128 (10ft to20ft)	15.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic Black Cable .4" From 0 to 128 (0ft to10ft)	5.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic (2) commscope PWRT-608-S(13/16") From 0 to 128 (120ft to128ft)	124.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic (2) commscope PWRT-608-S(13/16") From 0 to 128 (110ft to120ft)	115.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic (2) commscope PWRT-608-S(13/16") From 0 to 128 (100ft to110ft)	105.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic (2) commscope PWRT-608-S(13/16") From 0 to 128 (90ft to100ft)	95.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic (2) commscope	85.00	0.00	0.0000	0.00	0.00	0.00	0.00

Description	Elevation	Offset From Centroid	Azimuth Angle	E_v	E_{hx}	E_{hz}	E_h
	ft	ft	°	K	K	K	K
PWRT-608-S(13/16") From 0 to 128 (80ft to90ft) CCISeismic (2) commscope	75.00	0.00	0.0000	0.00	0.00	0.00	0.00
PWRT-608-S(13/16") From 0 to 128 (70ft to80ft) CCISeismic (2) commscope	65.00	0.00	0.0000	0.00	0.00	0.00	0.00
PWRT-608-S(13/16") From 0 to 128 (60ft to70ft) CCISeismic (2) commscope	55.00	0.00	0.0000	0.00	0.00	0.00	0.00
PWRT-608-S(13/16") From 0 to 128 (50ft to60ft) CCISeismic (2) commscope	45.00	0.00	0.0000	0.00	0.00	0.00	0.00
PWRT-608-S(13/16") From 0 to 128 (40ft to50ft) CCISeismic (2) commscope	35.00	0.00	0.0000	0.00	0.00	0.00	0.00
PWRT-608-S(13/16") From 0 to 128 (30ft to40ft) CCISeismic (2) commscope	25.00	0.00	0.0000	0.00	0.00	0.00	0.00
PWRT-608-S(13/16") From 0 to 128 (20ft to30ft) CCISeismic (2) commscope	15.00	0.00	0.0000	0.00	0.00	0.00	0.00
PWRT-608-S(13/16") From 0 to 128 (10ft to20ft) CCISeismic (2) commscope	5.00	0.00	0.0000	0.00	0.00	0.00	0.00
PWRT-608-S(13/16") From 0 to 128 (0ft to10ft) CCISeismic (6) rfs celwave	124.00	0.00	0.0000	0.00	0.00	0.00	0.00
FLC 114-50J(1-1/4) From 0 to 128 (120ft to128ft) CCISeismic (6) rfs celwave	115.00	0.00	0.0000	0.00	0.00	0.00	0.00
FLC 114-50J(1-1/4) From 0 to 128 (110ft to120ft) CCISeismic (6) rfs celwave	105.00	0.00	0.0000	0.00	0.00	0.00	0.00
FLC 114-50J(1-1/4) From 0 to 128 (100ft to110ft) CCISeismic (6) rfs celwave	95.00	0.00	0.0000	0.00	0.00	0.00	0.00
FLC 114-50J(1-1/4) From 0 to 128 (90ft to100ft) CCISeismic (6) rfs celwave	85.00	0.00	0.0000	0.00	0.00	0.00	0.00
FLC 114-50J(1-1/4) From 0 to 128 (80ft to90ft) CCISeismic (6) rfs celwave	75.00	0.00	0.0000	0.00	0.00	0.00	0.00
FLC 114-50J(1-1/4) From 0 to 128 (70ft to80ft) CCISeismic (6) rfs celwave	65.00	0.00	0.0000	0.00	0.00	0.00	0.00
FLC 114-50J(1-1/4) From 0 to 128 (60ft to70ft) CCISeismic (6) rfs celwave	55.00	0.00	0.0000	0.00	0.00	0.00	0.00
FLC 114-50J(1-1/4) From 0 to 128 (50ft to60ft) CCISeismic (6) rfs celwave	45.00	0.00	0.0000	0.00	0.00	0.00	0.00
FLC 114-50J(1-1/4) From 0 to 128 (40ft to50ft) CCISeismic (6) rfs celwave	35.00	0.00	0.0000	0.00	0.00	0.00	0.00
FLC 114-50J(1-1/4) From 0 to 128 (30ft to40ft) CCISeismic (6) rfs celwave	25.00	0.00	0.0000	0.00	0.00	0.00	0.00
FLC 114-50J(1-1/4) From 0 to 128 (20ft to30ft) CCISeismic (6) rfs celwave	15.00	0.00	0.0000	0.00	0.00	0.00	0.00
FLC 114-50J(1-1/4) From 0 to 128 (10ft to20ft) CCISeismic (6) rfs celwave	5.00	0.00	0.0000	0.00	0.00	0.00	0.00
FLC 114-50J(1-1/4) From 0 to 128 (0ft to10ft) CCISeismic Inner Duct From	124.00	0.00	0.0000	0.00	0.00	0.00	0.00
0 to 128 (120ft to128ft) CCISeismic Inner Duct From	115.00	0.00	0.0000	0.00	0.00	0.00	0.00

Description	Elevation	Offset From Centroid	Azimuth Angle	E_v	E_{hx}	E_{hz}	E_h
	ft	ft	°	K	K	K	K
0 to 128 (110ft to120ft) CCISeismic Inner Duct From	105.00	0.00	0.0000	0.00	0.00	0.00	0.00
0 to 128 (100ft to110ft) CCISeismic Inner Duct From	95.00	0.00	0.0000	0.00	0.00	0.00	0.00
0 to 128 (90ft to100ft) CCISeismic Inner Duct From	85.00	0.00	0.0000	0.00	0.00	0.00	0.00
0 to 128 (80ft to90ft) CCISeismic Inner Duct From	75.00	0.00	0.0000	0.00	0.00	0.00	0.00
0 to 128 (70ft to80ft) CCISeismic Inner Duct From	65.00	0.00	0.0000	0.00	0.00	0.00	0.00
0 to 128 (60ft to70ft) CCISeismic Inner Duct From	55.00	0.00	0.0000	0.00	0.00	0.00	0.00
0 to 128 (50ft to60ft) CCISeismic Inner Duct From	45.00	0.00	0.0000	0.00	0.00	0.00	0.00
0 to 128 (40ft to50ft) CCISeismic Inner Duct From	35.00	0.00	0.0000	0.00	0.00	0.00	0.00
0 to 128 (30ft to40ft) CCISeismic Inner Duct From	25.00	0.00	0.0000	0.00	0.00	0.00	0.00
0 to 128 (20ft to30ft) CCISeismic Inner Duct From	15.00	0.00	0.0000	0.00	0.00	0.00	0.00
0 to 128 (10ft to20ft) CCISeismic Inner Duct From	5.00	0.00	0.0000	0.00	0.00	0.00	0.00
0 to 128 (0ft to10ft) CCISeismic (5) andrew	144.50	0.00	0.0000	0.00	0.00	0.00	0.00
AVA5-50(7/8") From 0 to 149 (140ft to149ft) CCISeismic (5) andrew	135.00	0.00	0.0000	0.00	0.00	0.00	0.00
AVA5-50(7/8") From 0 to 149 (130ft to140ft) CCISeismic (5) andrew	125.00	0.00	0.0000	0.00	0.00	0.00	0.00
AVA5-50(7/8") From 0 to 149 (120ft to130ft) CCISeismic (5) andrew	115.00	0.00	0.0000	0.00	0.00	0.00	0.00
AVA5-50(7/8") From 0 to 149 (110ft to120ft) CCISeismic (5) andrew	105.00	0.00	0.0000	0.00	0.00	0.00	0.00
AVA5-50(7/8") From 0 to 149 (100ft to110ft) CCISeismic (5) andrew	95.00	0.00	0.0000	0.00	0.00	0.00	0.00
AVA5-50(7/8") From 0 to 149 (90ft to100ft) CCISeismic (5) andrew	85.00	0.00	0.0000	0.00	0.00	0.00	0.00
AVA5-50(7/8") From 0 to 149 (80ft to90ft) CCISeismic (5) andrew	75.00	0.00	0.0000	0.00	0.00	0.00	0.00
AVA5-50(7/8") From 0 to 149 (70ft to80ft) CCISeismic (5) andrew	65.00	0.00	0.0000	0.00	0.00	0.00	0.00
AVA5-50(7/8") From 0 to 149 (60ft to70ft) CCISeismic (5) andrew	55.00	0.00	0.0000	0.00	0.00	0.00	0.00
AVA5-50(7/8") From 0 to 149 (50ft to60ft) CCISeismic (5) andrew	45.00	0.00	0.0000	0.00	0.00	0.00	0.00
AVA5-50(7/8") From 0 to 149 (40ft to50ft) CCISeismic (5) andrew	35.00	0.00	0.0000	0.00	0.00	0.00	0.00
AVA5-50(7/8") From 0 to 149 (30ft to40ft) CCISeismic (5) andrew	25.00	0.00	0.0000	0.00	0.00	0.00	0.00
AVA5-50(7/8") From 0 to 149 (20ft to30ft) CCISeismic (5) andrew	15.00	0.00	0.0000	0.00	0.00	0.00	0.00
AVA5-50(7/8") From 0 to 149 (10ft to20ft) CCISeismic (5) andrew	5.00	0.00	0.0000	0.00	0.00	0.00	0.00
AVA5-50(7/8") From 0 to 149 (0ft to10ft)							

Description	Elevation	Offset From Centroid	Azimuth Angle	E_v	E_{hx}	E_{hz}	E_h
	ft	ft	°	K	K	K	K
CCISeismic rfs celwave LCF114-50J(1-1/4") From 0 to 149 (140ft to149ft)	144.50	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic rfs celwave LCF114-50J(1-1/4") From 0 to 149 (130ft to140ft)	135.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic rfs celwave LCF114-50J(1-1/4") From 0 to 149 (120ft to130ft)	125.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic rfs celwave LCF114-50J(1-1/4") From 0 to 149 (110ft to120ft)	115.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic rfs celwave LCF114-50J(1-1/4") From 0 to 149 (100ft to110ft)	105.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic rfs celwave LCF114-50J(1-1/4") From 0 to 149 (90ft to100ft)	95.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic rfs celwave LCF114-50J(1-1/4") From 0 to 149 (80ft to90ft)	85.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic rfs celwave LCF114-50J(1-1/4") From 0 to 149 (70ft to80ft)	75.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic rfs celwave LCF114-50J(1-1/4") From 0 to 149 (60ft to70ft)	65.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic rfs celwave LCF114-50J(1-1/4") From 0 to 149 (50ft to60ft)	55.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic rfs celwave LCF114-50J(1-1/4") From 0 to 149 (40ft to50ft)	45.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic rfs celwave LCF114-50J(1-1/4") From 0 to 149 (30ft to40ft)	35.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic rfs celwave LCF114-50J(1-1/4") From 0 to 149 (20ft to30ft)	25.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic rfs celwave LCF114-50J(1-1/4") From 0 to 149 (10ft to20ft)	15.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic rfs celwave LCF114-50J(1-1/4") From 0 to 149 (0ft to10ft)	5.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic rfs celwave FLC 114-50J(1-1/4") From 0 to 80 (70ft to80ft)	75.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic rfs celwave FLC 114-50J(1-1/4") From 0 to 80 (60ft to70ft)	65.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic rfs celwave FLC 114-50J(1-1/4") From 0 to 80 (50ft to60ft)	55.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic rfs celwave FLC 114-50J(1-1/4") From 0 to 80 (40ft to50ft)	45.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic rfs celwave FLC 114-50J(1-1/4") From 0 to 80 (30ft to40ft)	35.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic rfs celwave FLC 114-50J(1-1/4") From 0 to 80 (20ft to30ft)	25.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic rfs celwave FLC 114-50J(1-1/4") From 0 to 80 (10ft to20ft)	15.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic rfs celwave FLC 114-50J(1-1/4") From 0 to 80	5.00	0.00	0.0000	0.00	0.00	0.00	0.00

Description	Elevation	Offset From Centroid	Azimuth Angle	E_v	E_{hx}	E_{hz}	E_h
	ft	ft	°	K	K	K	K
(0ft to10ft)							
CCISeismic (12) rfs celwave LCF158-50A(1-5/8") From 0 to 116 (110ft to116ft)	113.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic (12) rfs celwave LCF158-50A(1-5/8") From 0 to 116 (100ft to110ft)	105.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic (12) rfs celwave LCF158-50A(1-5/8") From 0 to 116 (90ft to100ft)	95.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic (12) rfs celwave LCF158-50A(1-5/8") From 0 to 116 (80ft to90ft)	85.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic (12) rfs celwave LCF158-50A(1-5/8") From 0 to 116 (70ft to80ft)	75.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic (12) rfs celwave LCF158-50A(1-5/8") From 0 to 116 (60ft to70ft)	65.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic (12) rfs celwave LCF158-50A(1-5/8") From 0 to 116 (50ft to60ft)	55.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic (12) rfs celwave LCF158-50A(1-5/8") From 0 to 116 (40ft to50ft)	45.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic (12) rfs celwave LCF158-50A(1-5/8") From 0 to 116 (30ft to40ft)	35.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic (12) rfs celwave LCF158-50A(1-5/8") From 0 to 116 (20ft to30ft)	25.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic (12) rfs celwave LCF158-50A(1-5/8") From 0 to 116 (10ft to20ft)	15.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic (12) rfs celwave LCF158-50A(1-5/8") From 0 to 116 (0ft to10ft)	5.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic (3) ericsson HCS 6X12 4AWG(1-5/8) From 0 to 116 (110ft to116ft)	113.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic (3) ericsson HCS 6X12 4AWG(1-5/8) From 0 to 116 (100ft to110ft)	105.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic (3) ericsson HCS 6X12 4AWG(1-5/8) From 0 to 116 (90ft to100ft)	95.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic (3) ericsson HCS 6X12 4AWG(1-5/8) From 0 to 116 (80ft to90ft)	85.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic (3) ericsson HCS 6X12 4AWG(1-5/8) From 0 to 116 (70ft to80ft)	75.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic (3) ericsson HCS 6X12 4AWG(1-5/8) From 0 to 116 (60ft to70ft)	65.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic (3) ericsson HCS 6X12 4AWG(1-5/8) From 0 to 116 (50ft to60ft)	55.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic (3) ericsson HCS 6X12 4AWG(1-5/8) From 0 to 116 (40ft to50ft)	45.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic (3) ericsson HCS 6X12 4AWG(1-5/8) From 0 to 116 (30ft to40ft)	35.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic (3) ericsson HCS 6X12 4AWG(1-5/8) From 0 to 116 (20ft to30ft)	25.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic (3) ericsson HCS	15.00	0.00	0.0000	0.00	0.00	0.00	0.00

Description	Elevation	Offset From Centroid	Azimuth Angle	E_v	E_{hx}	E_{hz}	E_h
	ft	ft	°	K	K	K	K
6X12 4AWG(1-5/8) From 0 to 116 (10ft to20ft) CCISeismic (3) ericsson HCS 6X12 4AWG(1-5/8) From 0 to 116 (0ft to10ft)	5.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic miscl Step Bolts From 12.25 to 140 (130ft to140ft)	135.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic miscl Step Bolts From 12.25 to 140 (120ft to130ft)	125.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic miscl Step Bolts From 12.25 to 140 (110ft to120ft)	115.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic miscl Step Bolts From 12.25 to 140 (100ft to110ft)	105.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic miscl Step Bolts From 12.25 to 140 (90ft to100ft)	95.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic miscl Step Bolts From 12.25 to 140 (80ft to90ft)	85.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic miscl Step Bolts From 12.25 to 140 (70ft to80ft)	75.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic miscl Step Bolts From 12.25 to 140 (60ft to70ft)	65.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic miscl Step Bolts From 12.25 to 140 (50ft to60ft)	55.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic miscl Step Bolts From 12.25 to 140 (40ft to50ft)	45.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic miscl Step Bolts From 12.25 to 140 (30ft to40ft)	35.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic miscl Step Bolts From 12.25 to 140 (20ft to30ft)	25.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic miscl Step Bolts From 12.25 to 140 (12.25ft to20ft)	16.13	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic miscl Safety Line 3/8 From 12.25 to 150 (140ft to150ft)	145.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic miscl Safety Line 3/8 From 12.25 to 150 (130ft to140ft)	135.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic miscl Safety Line 3/8 From 12.25 to 150 (120ft to130ft)	125.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic miscl Safety Line 3/8 From 12.25 to 150 (110ft to120ft)	115.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic miscl Safety Line 3/8 From 12.25 to 150 (100ft to110ft)	105.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic miscl Safety Line 3/8 From 12.25 to 150 (90ft to100ft)	95.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic miscl Safety Line 3/8 From 12.25 to 150 (80ft to90ft)	85.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic miscl Safety Line 3/8 From 12.25 to 150 (70ft to80ft)	75.00	0.00	0.0000	0.00	0.00	0.00	0.00

Description	Elevation ft	Offset From Centroid ft	Azimuth Angle °	E_v K	E_{hx} K	E_{hz} K	E_h K
CCISeismic miscl Safety Line 3/8 From 12.25 to 150 (60ft to70ft)	65.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic miscl Safety Line 3/8 From 12.25 to 150 (50ft to60ft)	55.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic miscl Safety Line 3/8 From 12.25 to 150 (40ft to50ft)	45.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic miscl Safety Line 3/8 From 12.25 to 150 (30ft to40ft)	35.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic miscl Safety Line 3/8 From 12.25 to 150 (20ft to30ft)	25.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic miscl Safety Line 3/8 From 12.25 to 150 (12.25ft to20ft)	16.13	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic WT6x25 Reinforcement From 0 to 15.94 (10ft to15.94ft)	12.97	0.00	0.0000	0.01	0.00	0.00	0.00
CCISeismic WT6x25 Reinforcement From 0 to 15.94 (0ft to10ft)	5.00	0.00	0.0000	0.01	0.00	0.00	0.00
CCISeismic WT6x25 Reinforcement From 0 to 15.94 (10ft to15.94ft)	12.97	0.00	0.0000	0.01	0.00	0.00	0.00
CCISeismic WT6x25 Reinforcement From 0 to 15.94 (0ft to10ft)	5.00	0.00	0.0000	0.01	0.00	0.00	0.00
CCISeismic WT6x25 Reinforcement From 0 to 15.94 (10ft to15.94ft)	12.97	0.00	0.0000	0.01	0.00	0.00	0.00
CCISeismic WT6x25 Reinforcement From 0 to 15.94 (0ft to10ft)	5.00	0.00	0.0000	0.01	0.00	0.00	0.00
CCISeismic WT6x25 Reinforcement From 0 to 15.94 (10ft to15.94ft)	12.97	0.00	0.0000	0.01	0.00	0.00	0.00
CCISeismic WT6x25 Reinforcement From 0 to 15.94 (0ft to10ft)	5.00	0.00	0.0000	0.01	0.00	0.00	0.00
CCISeismic WT6x25 Reinforcement From 0 to 31 (30ft to31ft)	30.50	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic WT6x25 Reinforcement From 0 to 31 (20ft to30ft)	25.00	0.00	0.0000	0.01	0.00	0.00	0.00
CCISeismic WT6x25 Reinforcement From 0 to 31 (10ft to20ft)	15.00	0.00	0.0000	0.01	0.00	0.00	0.00
CCISeismic WT6x25 Reinforcement From 0 to 31 (0ft to10ft)	5.00	0.00	0.0000	0.01	0.00	0.00	0.00
CCISeismic WT6x25 Reinforcement From 0 to 31 (30ft to31ft)	30.50	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic WT6x25 Reinforcement From 0 to 31 (20ft to30ft)	25.00	0.00	0.0000	0.01	0.00	0.00	0.00
CCISeismic WT6x25 Reinforcement From 0 to 31 (10ft to20ft)	15.00	0.00	0.0000	0.01	0.00	0.00	0.00
CCISeismic WT6x25 Reinforcement From 0 to 31 (0ft to10ft)	5.00	0.00	0.0000	0.01	0.00	0.00	0.00
CCISeismic WT6x25 Reinforcement From 0 to 31	30.50	0.00	0.0000	0.00	0.00	0.00	0.00

Description	Elevation	Offset From Centroid	Azimuth Angle	E_v	E_{hx}	E_{hz}	E_h
	ft	ft	°	K	K	K	K
(30ft to31ft) CCISeismic WT6x25 Reinforcement From 0 to 31 (20ft to30ft)	25.00	0.00	0.0000	0.01	0.00	0.00	0.00
CCISeismic WT6x25 Reinforcement From 0 to 31 (10ft to20ft)	15.00	0.00	0.0000	0.01	0.00	0.00	0.00
CCISeismic WT6x25 Reinforcement From 0 to 31 (0ft to10ft)	5.00	0.00	0.0000	0.01	0.00	0.00	0.00
CCISeismic WT6x25 Reinforcement From 0 to 31 (30ft to31ft)	30.50	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic WT6x25 Reinforcement From 0 to 31 (20ft to30ft)	25.00	0.00	0.0000	0.01	0.00	0.00	0.00
CCISeismic WT6x25 Reinforcement From 0 to 31 (10ft to20ft)	15.00	0.00	0.0000	0.01	0.00	0.00	0.00
CCISeismic WT6x25 Reinforcement From 0 to 31 (0ft to10ft)	5.00	0.00	0.0000	0.01	0.00	0.00	0.00
CCISeismic CU12PSM9P6XXX_6AWG From 0 to 105 (100ft to105ft)	102.50	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic CU12PSM9P6XXX_6AWG From 0 to 105 (90ft to100ft)	95.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic CU12PSM9P6XXX_6AWG From 0 to 105 (80ft to90ft)	85.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic CU12PSM9P6XXX_6AWG From 0 to 105 (70ft to80ft)	75.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic CU12PSM9P6XXX_6AWG From 0 to 105 (60ft to70ft)	65.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic CU12PSM9P6XXX_6AWG From 0 to 105 (50ft to60ft)	55.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic CU12PSM9P6XXX_6AWG From 0 to 105 (40ft to50ft)	45.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic CU12PSM9P6XXX_6AWG From 0 to 105 (30ft to40ft)	35.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic CU12PSM9P6XXX_6AWG From 0 to 105 (20ft to30ft)	25.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic CU12PSM9P6XXX_6AWG From 0 to 105 (10ft to20ft)	15.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic CU12PSM9P6XXX_6AWG From 0 to 105 (0ft to10ft)	5.00	0.00	0.0000	0.00	0.00	0.00	0.00

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
GPS_A	B	From Leg	4.00 0.00 0.00	0.0000	40.00	No Ice 1/2" Ice 1" Ice	0.26 0.32 0.39	0.26 0.32 0.39	0.00 0.00 0.01
3' Stand Off	B	From Leg	2.00 0.00 0.00	0.0000	40.00	No Ice 1/2" Ice 1" Ice	0.85 1.14 1.43	1.67 2.34 3.01	0.07 0.08 0.09
Verizon (2) JAHH-65B-R3B_TIA w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	80.00	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	80.00	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	80.00	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
CBRS RRH-RT4401-48A	A	From Leg	4.00 0.00 0.00	0.0000	80.00	No Ice 1/2" Ice 1" Ice	1.54 1.70 1.86	0.75 0.87 0.99	0.02 0.04 0.05
CBRS RRH-RT4401-48A	B	From Leg	4.00 0.00 0.00	0.0000	80.00	No Ice 1/2" Ice 1" Ice	1.54 1.70 1.86	0.75 0.87 0.99	0.02 0.04 0.05
CBRS RRH-RT4401-48A	C	From Leg	4.00 0.00 0.00	0.0000	80.00	No Ice 1/2" Ice 1" Ice	1.54 1.70 1.86	0.75 0.87 0.99	0.02 0.04 0.05
MT6407-77A w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	80.00	No Ice 1/2" Ice 1" Ice	5.91 6.73 7.45	3.74 4.79 5.70	0.12 0.17 0.22
MT6407-77A w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	80.00	No Ice 1/2" Ice 1" Ice	5.91 6.73 7.45	3.74 4.79 5.70	0.12 0.17 0.22
MT6407-77A w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	80.00	No Ice 1/2" Ice 1" Ice	5.91 6.73 7.45	3.74 4.79 5.70	0.12 0.17 0.22
B5/B13 RRH-BR04C	A	From Leg	4.00 0.00 0.00	0.0000	80.00	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	80.00	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	80.00	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
B2/B66 RRH-BR049	A	From Leg	4.00 0.00 0.00	0.0000	80.00	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	80.00	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

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
B2/B66 RRH-BR049	C	From Leg	4.00 0.00 0.00	0.0000	80.00	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
XXDWMM-12.5-65-8T-CBRS	A	From Leg	4.00 0.00 0.00	0.0000	80.00	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	80.00	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	80.00	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	80.00	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	B	From Leg	4.00 0.00 0.00	0.0000	80.00	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	80.00	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
RVZDC-6627-PF-48	C	From Leg	4.00 0.00 0.00	0.0000	80.00	No Ice 1/2" Ice 1" Ice	3.79 4.04 4.30	2.51 2.73 2.95	0.03 0.06 0.10
13' Low Profile Platform	C	None		0.0000	80.00	No Ice 1/2" Ice 1" Ice	24.33 30.22 36.11	24.33 30.22 36.11	1.65 2.03 2.41
HRK14 SitePro1 Top Rail Kit	C	From Leg	0.00 0.00 3.00	0.0000	80.00	No Ice 1/2" Ice 1" Ice	4.56 6.39 8.18	4.56 6.39 8.18	0.25 0.31 0.40
PRK-1245	C	From Leg	0.00 0.00 3.00	0.0000	80.00	No Ice 1/2" Ice 1" Ice	11.84 16.96 22.08	11.84 16.96 22.08	0.28 0.30 0.32
Dish FFVV-65B-R2 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	105.00	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	105.00	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	105.00	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	105.00	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	105.00	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

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
TA08025-B605	C	From Leg	4.00 0.00 0.00	0.0000	105.00	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	105.00	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	105.00	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	105.00	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	C	From Face	4.00 0.00 0.00	0.0000	105.00	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
(2) 8' long Pipe	A	From Leg	4.00 0.00 0.00	0.0000	105.00	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) 8' long Pipe	B	From Leg	4.00 0.00 0.00	0.0000	105.00	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) 8' long Pipe	C	From Leg	4.00 0.00 0.00	0.0000	105.00	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
8' Platform Mount (MC-PK8-DSH)	C	None		0.0000	105.00	No Ice 1/2" Ice 1" Ice	19.42 22.01 24.60	18.40 20.72 23.04	1.24 1.62 2.00
Top Rail	C	None		0.0000	105.00	No Ice 1/2" Ice 1" Ice	4.56 6.39 8.22	4.56 6.39 8.22	0.25 0.31 0.37
T-Mobile (2) RADIO 4449 B12/B71	B	From Leg	4.00 0.00 0.00	0.0000	116.00	No Ice 1/2" Ice 1" Ice	1.65 1.81 1.98	1.16 1.30 1.45	0.07 0.09 0.11
RADIO 4449 B12/B71	C	From Leg	4.00 0.00 0.00	0.0000	116.00	No Ice 1/2" Ice 1" Ice	1.65 1.81 1.98	1.16 1.30 1.45	0.07 0.09 0.11
(2) RRUS 4415 B25	B	From Leg	4.00 0.00 0.00	0.0000	116.00	No Ice 1/2" Ice 1" Ice	1.64 1.80 1.97	0.68 0.79 0.91	0.04 0.06 0.07
RRUS 4415 B25	C	From Leg	4.00 0.00 0.00	0.0000	116.00	No Ice 1/2" Ice 1" Ice	1.64 1.80 1.97	0.68 0.79 0.91	0.04 0.06 0.07
(2) SDX1926Q-43	B	From Leg	4.00 0.00 0.00	0.0000	116.00	No Ice 1/2" Ice 1" Ice	0.24 0.31 0.38	0.10 0.14 0.19	0.01 0.01 0.01
SDX1926Q-43	C	From Leg	4.00 0.00 0.00	0.0000	116.00	No Ice 1/2" Ice 1" Ice	0.24 0.31 0.38	0.10 0.14 0.19	0.01 0.01 0.01

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
(2) Twin Style TMA	B	From Leg	4.00 0.00 0.00	0.0000	116.00	No Ice 1/2" Ice 1" Ice	6.68 7.07 7.48	3.48 4.12 4.78	0.07 0.12 0.18
Twin Style TMA	C	From Leg	4.00 0.00 0.00	0.0000	116.00	No Ice 1/2" Ice 1" Ice	6.68 7.07 7.48	3.48 4.12 4.78	0.07 0.12 0.18
(2) APXVARR24_43-C-NA20 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	116.00	No Ice 1/2" Ice 1" Ice	11.65 12.36 13.09	6.52 7.17 7.84	0.13 0.24 0.37
APXVARR24_43-C-NA20 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	116.00	No Ice 1/2" Ice 1" Ice	11.65 12.36 13.09	6.52 7.17 7.84	0.13 0.24 0.37
(2) AIR 32 B66Aa B2a w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	116.00	No Ice 1/2" Ice 1" Ice	6.81 7.30 7.76	6.14 6.99 7.73	0.15 0.22 0.28
AIR 32 B66Aa B2a w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	116.00	No Ice 1/2" Ice 1" Ice	6.81 7.30 7.76	6.14 6.99 7.73	0.15 0.22 0.28
(2) AIR 6449 B41 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	116.00	No Ice 1/2" Ice 1" Ice	6.90 7.74 8.49	4.32 5.37 6.28	0.13 0.19 0.26
AIR 6449 B41 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	116.00	No Ice 1/2" Ice 1" Ice	6.90 7.74 8.49	4.32 5.37 6.28	0.13 0.19 0.26
SitePro1 HRK12 Handrail kit	C	None		0.0000	116.00	No Ice 1/2" Ice 1" Ice	4.80 6.70 8.60	4.80 6.70 8.60	0.25 0.29 0.34
12' SitePro1 Platform Mount (F4P-12W)	C	None		0.0000	116.00	No Ice 1/2" Ice 1" Ice	58.68 66.01 73.41	58.68 66.01 73.41	2.75 3.84 5.07
AT&T SitePro RMQLP-4120-H10	C	None		0.0000	128.00	No Ice 1/2" Ice 1" Ice	26.56 33.67 40.39	26.56 33.67 40.39	1.71 2.26 2.95
OPA65R-BU6D_TIA w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice	13.11 13.71 14.28	7.32 8.49 9.37	0.09 0.18 0.28
OPA65R-BU6D_TIA w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice	13.11 13.71 14.28	7.32 8.49 9.37	0.09 0.18 0.28
OPA65R-BU6D_TIA w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice	13.11 13.71 14.28	7.32 8.49 9.37	0.09 0.18 0.28
TPA65R-BU6D_TIA w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice	13.11 13.71 14.28	7.32 8.49 9.37	0.10 0.19 0.29
TPA65R-BU6D_TIA w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice	13.11 13.71 14.28	7.32 8.49 9.37	0.10 0.19 0.29

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
TPA65R-BU6D_TIA w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice	13.11 13.71 14.28	7.32 8.49 9.37	0.10 0.19 0.29
AIR6449 B77D + AIR6419 B77G w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice	9.15 9.87 10.54	6.75 7.97 9.02	0.19 0.27 0.35
AIR6449 B77D + AIR6419 B77G w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice	9.15 9.87 10.54	6.75 7.97 9.02	0.19 0.27 0.35
AIR6449 B77D + AIR6419 B77G w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice	9.15 9.87 10.54	6.75 7.97 9.02	0.19 0.27 0.35
RADIO 4478	A	From Leg	4.00 0.00 0.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice	1.63 1.78 1.95	1.00 1.13 1.27	0.06 0.07 0.09
RADIO 4478	B	From Leg	4.00 0.00 0.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice	1.63 1.78 1.95	1.00 1.13 1.27	0.06 0.07 0.09
RADIO 4478	C	From Leg	4.00 0.00 0.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice	1.63 1.78 1.95	1.00 1.13 1.27	0.06 0.07 0.09
RADIO 8843	A	From Leg	4.00 0.00 0.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice	1.98 2.16 2.34	1.70 1.86 2.04	0.08 0.10 0.12
RADIO 8843	B	From Leg	4.00 0.00 0.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice	1.98 2.16 2.34	1.70 1.86 2.04	0.08 0.10 0.12
RADIO 8843	C	From Leg	4.00 0.00 0.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice	1.98 2.16 2.34	1.70 1.86 2.04	0.08 0.10 0.12
RADIO 4449	A	From Leg	4.00 0.00 0.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice	1.98 2.16 2.34	1.41 1.57 1.73	0.07 0.09 0.11
RADIO 4449	B	From Leg	4.00 0.00 0.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice	1.98 2.16 2.34	1.41 1.57 1.73	0.07 0.09 0.11
RADIO 4449	C	From Leg	4.00 0.00 0.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice	1.98 2.16 2.34	1.41 1.57 1.73	0.07 0.09 0.11
RADIO 4415 B30	A	From Leg	4.00 0.00 0.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice	1.64 1.80 1.97	0.64 0.75 0.87	0.04 0.05 0.07
RADIO 4415 B30	B	From Leg	4.00 0.00 0.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice	1.64 1.80 1.97	0.64 0.75 0.87	0.04 0.05 0.07
RADIO 4415 B30	C	From Leg	4.00 0.00 0.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice	1.64 1.80 1.97	0.64 0.75 0.87	0.04 0.05 0.07
DC6-48-60-18-8F	A	From Leg	4.00	0.0000	128.00	No Ice	0.92	0.92	0.02

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00			1/2" Ice	1.46	1.46	0.04
			0.00			1" Ice	1.64	1.64	0.06
DC6-48-60-18-8F	B	From Leg	4.00	0.0000	128.00	No Ice	0.92	0.92	0.02
			0.00			1/2" Ice	1.46	1.46	0.04
			0.00			1" Ice	1.64	1.64	0.06
DC6-48-60-18-8F	C	From Leg	4.00	0.0000	128.00	No Ice	0.92	0.92	0.02
			0.00			1/2" Ice	1.46	1.46	0.04
			0.00			1" Ice	1.64	1.64	0.06
****									
****									
10' x 1.5" Dia Dipole	B	From Leg	4.00	0.0000	149.00	No Ice	2.00	2.00	0.02
			0.00			1/2" Ice	3.02	3.02	0.04
			5.00			1" Ice	4.07	4.07	0.06
10' x 1.5" Dia Dipole	C	From Leg	4.00	0.0000	149.00	No Ice	2.00	2.00	0.02
			0.00			1/2" Ice	3.02	3.02	0.04
			5.00			1" Ice	4.07	4.07	0.06
12' x 3" Dia Omni	A	From Leg	4.00	0.0000	149.00	No Ice	3.60	3.60	0.04
			0.00			1/2" Ice	4.83	4.83	0.07
			5.00			1" Ice	6.08	6.08	0.10
13' T-Arms	C	None		0.0000	149.00	No Ice	11.59	11.59	0.77
						1/2" Ice	15.44	15.44	0.99
						1" Ice	19.29	19.29	1.21
(4) 2" STD Pipe (2.375 OD)x6'-0"	A	From Leg	4.00	0.0000	149.00	No Ice	1.43	1.43	0.02
			0.00			1/2" Ice	1.92	1.92	0.03
			0.00			1" Ice	2.29	2.29	0.05
(4) 2" STD Pipe (2.375 OD)x6'-0"	B	From Leg	4.00	0.0000	149.00	No Ice	1.43	1.43	0.02
			0.00			1/2" Ice	1.92	1.92	0.03
			0.00			1" Ice	2.29	2.29	0.05
(4) 2" STD Pipe (2.375 OD)x6'-0"	C	From Leg	4.00	0.0000	149.00	No Ice	1.43	1.43	0.02
			0.00			1/2" Ice	1.92	1.92	0.03
			0.00			1" Ice	2.29	2.29	0.05
8' x 2" Dia Dipole	C	From Leg	4.00	0.0000	149.00	No Ice	1.60	1.60	0.02
			0.00			1/2" Ice	2.42	2.42	0.03
			4.00			1" Ice	3.24	3.24	0.05
15'x1.25" Dia Whips	A	From Leg	4.00	0.0000	149.00	No Ice	1.88	1.88	0.02
			0.00			1/2" Ice	3.39	3.39	0.04
			7.50			1" Ice	4.93	4.93	0.06
20' x 2" Dia Whips	C	From Leg	4.00	0.0000	149.00	No Ice	4.00	4.00	0.02
			0.00			1/2" Ice	6.03	6.03	0.05
			-10.00			1" Ice	8.07	8.07	0.09
20' x 2" Dia Whips	A	From Leg	4.00	0.0000	149.00	No Ice	4.00	4.00	0.02
			0.00			1/2" Ice	6.03	6.03	0.05
			-10.00			1" Ice	8.07	8.07	0.09
**									

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
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
51	1.2 Dead+1.0 Ev+1.0 Eh 0 deg
52	0.9 Dead-1.0 Ev+1.0 Eh 0 deg
53	1.2 Dead+1.0 Ev+1.0 Eh 30 deg
54	0.9 Dead-1.0 Ev+1.0 Eh 30 deg
55	1.2 Dead+1.0 Ev+1.0 Eh 60 deg
56	0.9 Dead-1.0 Ev+1.0 Eh 60 deg
57	1.2 Dead+1.0 Ev+1.0 Eh 90 deg
58	0.9 Dead-1.0 Ev+1.0 Eh 90 deg
59	1.2 Dead+1.0 Ev+1.0 Eh 120 deg
60	0.9 Dead-1.0 Ev+1.0 Eh 120 deg
61	1.2 Dead+1.0 Ev+1.0 Eh 150 deg
62	0.9 Dead-1.0 Ev+1.0 Eh 150 deg
63	1.2 Dead+1.0 Ev+1.0 Eh 180 deg
64	0.9 Dead-1.0 Ev+1.0 Eh 180 deg
65	1.2 Dead+1.0 Ev+1.0 Eh 210 deg
66	0.9 Dead-1.0 Ev+1.0 Eh 210 deg
67	1.2 Dead+1.0 Ev+1.0 Eh 240 deg

Comb. No.	Description
68	0.9 Dead-1.0 Ev+1.0 Eh 240 deg
69	1.2 Dead+1.0 Ev+1.0 Eh 270 deg
70	0.9 Dead-1.0 Ev+1.0 Eh 270 deg
71	1.2 Dead+1.0 Ev+1.0 Eh 300 deg
72	0.9 Dead-1.0 Ev+1.0 Eh 300 deg
73	1.2 Dead+1.0 Ev+1.0 Eh 330 deg
74	0.9 Dead-1.0 Ev+1.0 Eh 330 deg

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	150 - 130	Pole	Max Tension	3	0.00	-0.00	-0.00
			Max. Compression	26	-5.96	0.91	0.72
			Max. Mx	20	-2.99	65.89	0.10
			Max. My	2	-3.00	0.11	65.78
			Max. Vy	8	4.57	-65.48	0.05
			Max. Vx	14	4.57	0.06	-65.39
			Max. Torque	16			-1.78
L2	130 - 110	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-31.27	-5.85	-12.57
			Max. Mx	8	-14.55	-327.25	-6.57
			Max. My	14	-14.64	-4.08	-324.94
			Max. Vy	8	19.60	-327.25	-6.57
			Max. Vx	14	18.83	-4.08	-324.94
			Max. Torque	6			-6.42
L3	110 - 95.83	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-39.20	-5.01	-12.95
			Max. Mx	8	-18.57	-520.79	-8.70
			Max. My	14	-18.67	-5.81	-511.99
			Max. Vy	8	23.84	-520.79	-8.70
			Max. Vx	14	23.09	-5.81	-511.99
			Max. Torque	6			-6.60
L4	95.83 - 81	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-46.63	-2.99	-12.90
			Max. Mx	8	-23.34	-1022.18	-13.20
			Max. My	14	-23.43	-9.65	-998.71
			Max. Vy	20	-26.32	1018.37	2.49
			Max. Vx	14	25.55	-9.65	-998.71
			Max. Torque	6			-6.60
L5	81 - 61	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-61.72	1.00	-13.94
			Max. Mx	8	-32.32	-1668.80	-17.83
			Max. My	14	-32.42	-12.14	-1625.33
			Max. Vy	20	-33.98	1668.38	6.06
			Max. Vx	14	32.56	-12.14	-1625.33
			Max. Torque	20			6.92
L6	61 - 47.83	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-64.27	1.82	-13.90
			Max. Mx	20	-34.13	1909.50	7.51
			Max. My	14	-34.22	-13.29	-1855.53
			Max. Vy	20	-34.87	1909.50	7.51
			Max. Vx	14	33.26	-13.29	-1855.53
			Max. Torque	20			6.91
L7	47.83 - 34	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-74.14	3.79	-13.95
			Max. Mx	20	-41.39	2634.31	11.41
			Max. My	14	-41.46	-16.70	-2542.59
			Max. Vy	20	-37.45	2634.31	11.41
			Max. Vx	14	35.36	-16.70	-2542.59
			Max. Torque	20			7.04
L8	34 - 29.5833	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-76.22	4.43	-13.80
			Max. Mx	20	-42.97	2801.36	12.31
			Max. My	14	-43.03	-17.25	-2699.42
			Max. Vy	20	-38.12	2801.36	12.31

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vx	14	35.73	-17.25	-2699.42
			Max. Torque	20			7.03
L9	29.5833 - 14.67	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-87.70	7.54	-12.73
			Max. Mx	20	-52.07	3392.38	15.74
			Max. My	14	-52.10	-18.43	-3251.13
			Max. Vy	20	-40.97	3392.38	15.74
			Max. Vx	14	38.39	-18.43	-3251.13
			Max. Torque	20			6.95
L10	14.67 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-102.97	11.72	-10.85
			Max. Mx	20	-64.70	4022.76	19.67
			Max. My	14	-64.70	-18.67	-3837.24
			Max. Vy	20	-44.67	4022.76	19.67
			Max. Vx	14	41.72	-18.67	-3837.24
			Max. Torque	20			6.51

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	26	102.97	0.00	-0.00
	Max. H_x	20	64.71	44.66	0.18
	Max. H_z	3	48.53	0.18	41.70
	Max. M_x	2	3829.35	0.18	41.70
	Max. M_z	8	4012.92	-44.66	-0.18
	Max. Torsion	20	5.74	44.66	0.18
	Min. Vert	64	45.98	0.00	-1.62
	Min. H_x	8	64.71	-44.66	-0.18
	Min. H_z	14	64.71	-0.18	-41.70
	Min. M_x	14	-3837.24	-0.18	-41.70
	Min. M_z	20	-4022.76	44.66	0.18
	Min. Torsion	8	-5.74	-44.66	-0.18

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	53.92	0.00	0.00	3.17	4.08	-0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	64.71	-0.18	-41.70	-3829.35	28.52	-0.47
0.9 Dead+1.0 Wind 0 deg - No Ice	48.53	-0.18	-41.70	-3796.28	27.05	-0.51
1.2 Dead+1.0 Wind 30 deg - No Ice	64.71	22.16	-37.94	-3418.62	-2000.83	2.13
0.9 Dead+1.0 Wind 30 deg - No Ice	48.53	22.16	-37.94	-3389.58	-1984.41	2.04
1.2 Dead+1.0 Wind 60 deg - No Ice	64.71	36.64	-20.69	-1892.78	-3378.98	5.09
0.9 Dead+1.0 Wind 60 deg - No Ice	48.53	36.64	-20.69	-1876.98	-3350.06	4.97
1.2 Dead+1.0 Wind 90 deg - No Ice	64.71	44.66	0.18	27.51	-4012.92	5.74
0.9 Dead+1.0 Wind 90 deg - No Ice	48.53	44.66	0.18	26.22	-3978.78	5.63
1.2 Dead+1.0 Wind 120 deg - No Ice	64.71	36.62	20.89	1940.00	-3400.00	5.50
0.9 Dead+1.0 Wind 120 deg	48.53	36.62	20.89	1921.68	-3370.84	5.42

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
- No Ice						
1.2 Dead+1.0 Wind 150 deg - No Ice	64.71	21.35	36.17	3337.83	-1976.90	3.46
0.9 Dead+1.0 Wind 150 deg - No Ice	48.53	21.35	36.17	3307.09	-1960.45	3.44
1.2 Dead+1.0 Wind 180 deg - No Ice	64.71	0.18	41.70	3837.24	-18.67	0.47
0.9 Dead+1.0 Wind 180 deg - No Ice	48.53	0.18	41.70	3802.05	-19.66	0.51
1.2 Dead+1.0 Wind 210 deg - No Ice	64.71	-22.16	37.94	3426.49	2010.70	-2.13
0.9 Dead+1.0 Wind 210 deg - No Ice	48.53	-22.16	37.94	3395.32	1991.80	-2.04
1.2 Dead+1.0 Wind 240 deg - No Ice	64.71	-36.64	20.69	1900.63	3388.84	-5.09
0.9 Dead+1.0 Wind 240 deg - No Ice	48.53	-36.64	20.69	1882.71	3357.45	-4.97
1.2 Dead+1.0 Wind 270 deg - No Ice	64.71	-44.66	-0.18	-19.67	4022.76	-5.74
0.9 Dead+1.0 Wind 270 deg - No Ice	48.53	-44.66	-0.18	-20.49	3986.15	-5.63
1.2 Dead+1.0 Wind 300 deg - No Ice	64.71	-36.62	-20.89	-1932.14	3409.82	-5.50
0.9 Dead+1.0 Wind 300 deg - No Ice	48.53	-36.62	-20.89	-1915.94	3378.21	-5.42
1.2 Dead+1.0 Wind 330 deg - No Ice	64.71	-21.35	-36.17	-3329.94	1986.73	-3.46
0.9 Dead+1.0 Wind 330 deg - No Ice	48.53	-21.35	-36.17	-3301.33	1967.82	-3.44
1.2 Dead+1.0 Ice+1.0 Temp	102.97	-0.00	0.00	10.85	11.72	-0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	102.97	-0.02	-8.44	-828.91	14.85	-0.17
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	102.97	4.32	-7.43	-717.35	-412.73	0.42
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	102.97	7.38	-4.20	-406.31	-724.07	1.11
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	102.97	8.76	0.02	14.02	-843.76	1.33
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	102.97	7.38	4.23	433.52	-727.10	1.28
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	102.97	4.28	7.32	740.26	-416.86	0.84
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	102.97	0.02	8.44	850.81	8.71	0.17
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	102.97	-4.32	7.43	739.25	436.29	-0.43
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	102.97	-7.38	4.20	428.22	747.63	-1.12
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	102.97	-8.76	-0.02	7.88	867.32	-1.34
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	102.97	-7.38	-4.23	-411.61	750.66	-1.29
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	102.97	-4.28	-7.32	-718.35	440.42	-0.85
Dead+Wind 0 deg - Service	53.92	-0.03	-7.95	-724.10	8.57	-0.09
Dead+Wind 30 deg - Service	53.92	4.22	-7.23	-646.21	-376.51	0.40
Dead+Wind 60 deg - Service	53.92	6.99	-3.95	-356.65	-637.98	0.96
Dead+Wind 90 deg - Service	53.92	8.52	0.03	7.72	-758.33	1.09
Dead+Wind 120 deg - Service	53.92	6.98	3.98	370.62	-641.97	1.05
Dead+Wind 150 deg - Service	53.92	4.07	6.90	635.85	-371.94	0.66
Dead+Wind 180 deg - Service	53.92	0.03	7.95	730.59	-0.37	0.09
Dead+Wind 210 deg - Service	53.92	-4.22	7.23	652.71	384.70	-0.40
Dead+Wind 240 deg - Service	53.92	-6.99	3.95	363.15	646.18	-0.96
Dead+Wind 270 deg -	53.92	-8.52	-0.03	-1.22	766.53	-1.09

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
Service						
Dead+Wind 300 deg - Service	53.92	-6.98	-3.98	-364.12	650.17	-1.05
Dead+Wind 330 deg - Service	53.92	-4.07	-6.90	-629.35	380.13	-0.66
1.2 Dead+1.0 Ev+1.0 Eh 0 deg	67.25	0.00	-1.62	-181.36	4.92	0.01
0.9 Dead-1.0 Ev+1.0 Eh 0 deg	45.98	0.00	-1.62	-180.14	3.69	0.01
1.2 Dead+1.0 Ev+1.0 Eh 30 deg	67.25	0.81	-1.40	-156.53	-87.75	0.02
0.9 Dead-1.0 Ev+1.0 Eh 30 deg	45.98	0.81	-1.40	-155.62	-87.83	0.01
1.2 Dead+1.0 Ev+1.0 Eh 60 deg	67.25	1.40	-0.81	-88.69	-155.60	0.02
0.9 Dead-1.0 Ev+1.0 Eh 60 deg	45.98	1.40	-0.81	-88.63	-154.82	0.02
1.2 Dead+1.0 Ev+1.0 Eh 90 deg	67.25	1.62	0.00	3.98	-180.43	0.02
0.9 Dead-1.0 Ev+1.0 Eh 90 deg	45.98	1.62	0.00	2.89	-179.34	0.02
1.2 Dead+1.0 Ev+1.0 Eh 120 deg	67.25	1.40	0.81	96.66	-155.60	0.02
0.9 Dead-1.0 Ev+1.0 Eh 120 deg	45.98	1.40	0.81	94.40	-154.82	0.01
1.2 Dead+1.0 Ev+1.0 Eh 150 deg	67.25	0.81	1.40	164.50	-87.76	0.00
0.9 Dead-1.0 Ev+1.0 Eh 150 deg	45.98	0.81	1.40	161.40	-87.83	0.00
1.2 Dead+1.0 Ev+1.0 Eh 180 deg	67.25	0.00	1.62	189.34	4.92	-0.01
0.9 Dead-1.0 Ev+1.0 Eh 180 deg	45.98	0.00	1.62	185.92	3.69	-0.01
1.2 Dead+1.0 Ev+1.0 Eh 210 deg	67.25	-0.81	1.40	164.50	97.60	-0.02
0.9 Dead-1.0 Ev+1.0 Eh 210 deg	45.98	-0.81	1.40	161.40	95.21	-0.01
1.2 Dead+1.0 Ev+1.0 Eh 240 deg	67.25	-1.40	0.81	96.66	165.44	-0.03
0.9 Dead-1.0 Ev+1.0 Eh 240 deg	45.98	-1.40	0.81	94.40	162.20	-0.02
1.2 Dead+1.0 Ev+1.0 Eh 270 deg	67.25	-1.62	0.00	3.98	190.27	-0.02
0.9 Dead-1.0 Ev+1.0 Eh 270 deg	45.98	-1.62	0.00	2.89	186.72	-0.02
1.2 Dead+1.0 Ev+1.0 Eh 300 deg	67.25	-1.40	-0.81	-88.69	165.44	-0.02
0.9 Dead-1.0 Ev+1.0 Eh 300 deg	45.98	-1.40	-0.81	-88.63	162.20	-0.01
1.2 Dead+1.0 Ev+1.0 Eh 330 deg	67.25	-0.81	-1.40	-156.54	97.60	-0.00
0.9 Dead-1.0 Ev+1.0 Eh 330 deg	45.98	-0.81	-1.40	-155.62	95.20	-0.00

Solution Summary

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
1	0.00	-53.92	0.00	0.00	53.92	-0.00	0.000%
2	-0.18	-64.71	-41.70	0.18	64.71	41.70	0.000%
3	-0.18	-48.53	-41.70	0.18	48.53	41.70	0.000%
4	22.16	-64.71	-37.94	-22.16	64.71	37.94	0.000%
5	22.16	-48.53	-37.94	-22.16	48.53	37.94	0.000%
6	36.64	-64.71	-20.69	-36.64	64.71	20.69	0.000%
7	36.64	-48.53	-20.69	-36.64	48.53	20.69	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
8	44.66	-64.71	0.18	-44.66	64.71	-0.18	0.000%
9	44.66	-48.53	0.18	-44.66	48.53	-0.18	0.000%
10	36.62	-64.71	20.89	-36.62	64.71	-20.89	0.000%
11	36.62	-48.53	20.89	-36.62	48.53	-20.89	0.000%
12	21.35	-64.71	36.17	-21.35	64.71	-36.17	0.000%
13	21.35	-48.53	36.17	-21.35	48.53	-36.17	0.000%
14	0.18	-64.71	41.70	-0.18	64.71	-41.70	0.000%
15	0.18	-48.53	41.70	-0.18	48.53	-41.70	0.000%
16	-22.16	-64.71	37.94	22.16	64.71	-37.94	0.000%
17	-22.16	-48.53	37.94	22.16	48.53	-37.94	0.000%
18	-36.64	-64.71	20.69	36.64	64.71	-20.69	0.000%
19	-36.64	-48.53	20.69	36.64	48.53	-20.69	0.000%
20	-44.66	-64.71	-0.18	44.66	64.71	0.18	0.000%
21	-44.66	-48.53	-0.18	44.66	48.53	0.18	0.000%
22	-36.62	-64.71	-20.89	36.62	64.71	20.89	0.000%
23	-36.62	-48.53	-20.89	36.62	48.53	20.89	0.000%
24	-21.35	-64.71	-36.17	21.35	64.71	36.17	0.000%
25	-21.35	-48.53	-36.17	21.35	48.53	36.17	0.000%
26	0.00	-102.97	0.00	0.00	102.97	-0.00	0.000%
27	-0.02	-102.97	-8.44	0.02	102.97	8.44	0.000%
28	4.32	-102.97	-7.43	-4.32	102.97	7.43	0.000%
29	7.38	-102.97	-4.20	-7.38	102.97	4.20	0.000%
30	8.76	-102.97	0.02	-8.76	102.97	-0.02	0.000%
31	7.38	-102.97	4.23	-7.38	102.97	-4.23	0.000%
32	4.28	-102.97	7.32	-4.28	102.97	-7.32	0.000%
33	0.02	-102.97	8.44	-0.02	102.97	-8.44	0.000%
34	-4.32	-102.97	7.43	4.32	102.97	-7.43	0.000%
35	-7.38	-102.97	4.20	7.38	102.97	-4.20	0.000%
36	-8.76	-102.97	-0.02	8.76	102.97	0.02	0.000%
37	-7.38	-102.97	-4.23	7.38	102.97	4.23	0.000%
38	-4.28	-102.97	-7.32	4.28	102.97	7.32	0.000%
39	-0.03	-53.92	-7.95	0.03	53.92	7.95	0.000%
40	4.22	-53.92	-7.23	-4.22	53.92	7.23	0.000%
41	6.99	-53.92	-3.95	-6.99	53.92	3.95	0.000%
42	8.52	-53.92	0.03	-8.52	53.92	-0.03	0.000%
43	6.98	-53.92	3.98	-6.98	53.92	-3.98	0.000%
44	4.07	-53.92	6.90	-4.07	53.92	-6.90	0.000%
45	0.03	-53.92	7.95	-0.03	53.92	-7.95	0.000%
46	-4.22	-53.92	7.23	4.22	53.92	-7.23	0.000%
47	-6.99	-53.92	3.95	6.99	53.92	-3.95	0.000%
48	-8.52	-53.92	-0.03	8.52	53.92	0.03	0.000%
49	-6.98	-53.92	-3.98	6.98	53.92	3.98	0.000%
50	-4.07	-53.92	-6.90	4.07	53.92	6.90	0.000%
51	0.00	-67.25	-1.62	0.00	67.25	1.62	0.000%
52	0.00	-45.98	-1.62	0.00	45.98	1.62	0.000%
53	0.81	-67.25	-1.40	-0.81	67.25	1.40	0.000%
54	0.81	-45.98	-1.40	-0.81	45.98	1.40	0.000%
55	1.40	-67.25	-0.81	-1.40	67.25	0.81	0.000%
56	1.40	-45.98	-0.81	-1.40	45.98	0.81	0.000%
57	1.62	-67.25	0.00	-1.62	67.25	-0.00	0.000%
58	1.62	-45.98	0.00	-1.62	45.98	-0.00	0.000%
59	1.40	-67.25	0.81	-1.40	67.25	-0.81	0.000%
60	1.40	-45.98	0.81	-1.40	45.98	-0.81	0.000%
61	0.81	-67.25	1.40	-0.81	67.25	-1.40	0.000%
62	0.81	-45.98	1.40	-0.81	45.98	-1.40	0.000%
63	0.00	-67.25	1.62	0.00	67.25	-1.62	0.000%
64	0.00	-45.98	1.62	0.00	45.98	-1.62	0.000%
65	-0.81	-67.25	1.40	0.81	67.25	-1.40	0.000%
66	-0.81	-45.98	1.40	0.81	45.98	-1.40	0.000%
67	-1.40	-67.25	0.81	1.40	67.25	-0.81	0.000%
68	-1.40	-45.98	0.81	1.40	45.98	-0.81	0.000%
69	-1.62	-67.25	0.00	1.62	67.25	-0.00	0.000%
70	-1.62	-45.98	0.00	1.62	45.98	-0.00	0.000%
71	-1.40	-67.25	-0.81	1.40	67.25	0.81	0.000%
72	-1.40	-45.98	-0.81	1.40	45.98	0.81	0.000%
73	-0.81	-67.25	-1.40	0.81	67.25	1.40	0.000%
74	-0.81	-45.98	-1.40	0.81	45.98	1.40	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	0.00006887
3	Yes	4	0.00000001	0.00090913
4	Yes	6	0.00000001	0.00009831
5	Yes	5	0.00000001	0.00097832
6	Yes	6	0.00000001	0.00007962
7	Yes	5	0.00000001	0.00079484
8	Yes	5	0.00000001	0.00045323
9	Yes	5	0.00000001	0.00020706
10	Yes	6	0.00000001	0.00010121
11	Yes	6	0.00000001	0.00003307
12	Yes	6	0.00000001	0.00008895
13	Yes	5	0.00000001	0.00088463
14	Yes	5	0.00000001	0.00012985
15	Yes	5	0.00000001	0.00005923
16	Yes	6	0.00000001	0.00008572
17	Yes	5	0.00000001	0.00085008
18	Yes	6	0.00000001	0.00010140
19	Yes	6	0.00000001	0.00003337
20	Yes	5	0.00000001	0.00038507
21	Yes	5	0.00000001	0.00017592
22	Yes	6	0.00000001	0.00008385
23	Yes	5	0.00000001	0.00083656
24	Yes	6	0.00000001	0.00009360
25	Yes	5	0.00000001	0.00093545
26	Yes	4	0.00000001	0.00022141
27	Yes	5	0.00000001	0.00054541
28	Yes	5	0.00000001	0.00064671
29	Yes	5	0.00000001	0.00064223
30	Yes	5	0.00000001	0.00058484
31	Yes	5	0.00000001	0.00070998
32	Yes	5	0.00000001	0.00069185
33	Yes	5	0.00000001	0.00058628
34	Yes	5	0.00000001	0.00068592
35	Yes	5	0.00000001	0.00070549
36	Yes	5	0.00000001	0.00058554
37	Yes	5	0.00000001	0.00065018
38	Yes	5	0.00000001	0.00065314
39	Yes	4	0.00000001	0.00012697
40	Yes	4	0.00000001	0.00057971
41	Yes	4	0.00000001	0.00040467
42	Yes	4	0.00000001	0.00040345
43	Yes	4	0.00000001	0.00063204
44	Yes	4	0.00000001	0.00042278
45	Yes	4	0.00000001	0.00013791
46	Yes	4	0.00000001	0.00042023
47	Yes	4	0.00000001	0.00067553
48	Yes	4	0.00000001	0.00039107
49	Yes	4	0.00000001	0.00039291
50	Yes	4	0.00000001	0.00048154
51	Yes	4	0.00000001	0.00004080
52	Yes	4	0.00000001	0.00001976
53	Yes	4	0.00000001	0.00004711
54	Yes	4	0.00000001	0.00002405
55	Yes	4	0.00000001	0.00004723
56	Yes	4	0.00000001	0.00002387
57	Yes	4	0.00000001	0.00004423
58	Yes	4	0.00000001	0.00002100
59	Yes	4	0.00000001	0.00005538
60	Yes	4	0.00000001	0.00002663
61	Yes	4	0.00000001	0.00005343
62	Yes	4	0.00000001	0.00002653
63	Yes	4	0.00000001	0.00004661
64	Yes	4	0.00000001	0.00002184

65	Yes	4	0.00000001	0.00005281
66	Yes	4	0.00000001	0.00002623
67	Yes	4	0.00000001	0.00005296
68	Yes	4	0.00000001	0.00002652
69	Yes	4	0.00000001	0.00004389
70	Yes	4	0.00000001	0.00002089
71	Yes	4	0.00000001	0.00004690
72	Yes	4	0.00000001	0.00002376
73	Yes	4	0.00000001	0.00004665
74	Yes	4	0.00000001	0.00002379

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	150 - 130	16.587	42	0.8987	0.0047
L2	130 - 110	12.847	42	0.8845	0.0054
L3	110 - 95.83	9.260	48	0.8183	0.0051
L4	101 - 81	7.779	48	0.7601	0.0040
L5	81 - 61	4.831	48	0.6315	0.0027
L6	61 - 47.83	2.555	48	0.4493	0.0016
L7	54 - 34	1.948	48	0.3784	0.0012
L8	34 - 29.5833	0.667	48	0.2119	0.0006
L9	29.5833 - 14.67	0.492	48	0.1678	0.0004
L10	14.67 - 0	0.114	48	0.0740	0.0002

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
149.00	10' x 1.5" Dia Dipole	42	16.399	0.8984	0.0047	156051
145.00	CCISeismic Tower Section 1 - 1	42	15.648	0.8969	0.0049	156051
144.50	CCISeismic (5) andrew AVA5-50(7/8") From 0 to 149 (140ft to149ft)	42	15.554	0.8967	0.0049	141865
135.00	CCISeismic Tower Section 1 - 2	42	13.776	0.8906	0.0052	52017
128.00	SitePro RMQLP-4120-H10	42	12.477	0.8813	0.0054	31098
125.00	CCISeismic Tower Section 2 - 1	42	11.925	0.8754	0.0055	23956
124.00	CCISeismic Black Cable ,4" From 0 to 128 (120ft to128ft)	42	11.741	0.8731	0.0055	21861
116.00	(2) RADIO 4449 B12/B71	42	10.300	0.8478	0.0054	12806
115.00	CCISeismic Tower Section 2 - 2	42	10.124	0.8435	0.0054	12176
113.00	CCISeismic (12) rfs celwave LCF158-50A(1-5/8") From 0 to 116 (110ft to116ft)	48	9.774	0.8343	0.0053	11120
107.92	CCISeismic Tower Section 3 - 1	48	8.909	0.8056	0.0048	10122
105.00	FFVV-65B-R2 w/ Mount Pipe	48	8.427	0.7867	0.0045	10420
102.50	CCISeismic CU12PSM9P6XXX_6AWG From 0 to 105 (100ft to105ft)	48	8.020	0.7700	0.0042	10640
100.83	CCISeismic Tower Section 3 - 2	48	7.752	0.7590	0.0040	10581
96.00	CCISeismic Tower Section 4 - 1	48	6.993	0.7286	0.0036	9540
95.00	CCISeismic Black Cable ,4" From 0 to 128 (90ft to100ft)	48	6.839	0.7225	0.0035	9297
86.00	CCISeismic Tower Section 4 - 2	48	5.515	0.6662	0.0030	7560
85.00	CCISeismic Black Cable ,4" From 0 to 128 (80ft to90ft)	48	5.375	0.6596	0.0029	7407
80.00	(2) JAHH-65B-R3B_TIA w/ Mount Pipe	48	4.700	0.6239	0.0027	6779
76.00	CCISeismic Tower Section 5 - 1	48	4.191	0.5918	0.0025	6436
75.00	CCISeismic Black Cable ,4" From 0 to 128 (70ft to80ft)	48	4.068	0.5834	0.0024	6359

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
66.00	CCISeismic Tower Section 5 - 2	48	3.050	0.4999	0.0018	5743
65.00	CCISeismic Black Cable .4" From 0 to 128 (60ft to70ft)	48	2.946	0.4900	0.0018	5684
59.42	CCISeismic Tower Section 6 - 1	48	2.410	0.4328	0.0015	6057
55.00	CCISeismic Black Cable .4" From 0 to 128 (50ft to60ft)	48	2.030	0.3879	0.0012	7628
52.83	CCISeismic Tower Section 6 - 2	48	1.854	0.3677	0.0012	7996
49.00	CCISeismic Tower Section 7 - 1	48	1.562	0.3352	0.0010	7441
45.00	CCISeismic Black Cable .4" From 0 to 128 (40ft to50ft)	48	1.282	0.3040	0.0009	6696
40.00	GPS_A	48	0.972	0.2650	0.0007	5951
39.00	CCISeismic Tower Section 7 - 2	48	0.916	0.2568	0.0007	5822
35.00	CCISeismic Black Cable .4" From 0 to 128 (30ft to40ft)	48	0.713	0.2215	0.0006	5611
31.79	CCISeismic Tower Section 8 - 1	48	0.575	0.1896	0.0005	6485
30.50	CCISeismic WT6x25 Reinforcement From 0 to 31 (30ft to31ft)	48	0.525	0.1766	0.0004	7105
27.13	CCISeismic Tower Section 9 - 1	48	0.408	0.1466	0.0004	8282
25.00	CCISeismic Black Cable .4" From 0 to 128 (20ft to30ft)	48	0.342	0.1308	0.0003	8409
19.67	CCISeismic Tower Section 9 - 2	48	0.205	0.0989	0.0002	8422
16.13	CCISeismic misc Step Bolts From 12.25 to 140 (12.25ft to20ft)	48	0.137	0.0811	0.0002	8603
15.00	CCISeismic Black Cable .4" From 0 to 128 (10ft to20ft)	48	0.119	0.0756	0.0002	8840
12.97	CCISeismic WT6x25 Reinforcement From 0 to 15.94 (10ft to15.94ft)	48	0.091	0.0657	0.0001	9718
12.34	CCISeismic Tower Section 10 - 1	48	0.083	0.0625	0.0001	10133
5.00	CCISeismic Tower Section 10 - 2	48	0.023	0.0256	0.0001	24744

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	150 - 130	87.378	8	4.7248	0.0247
L2	130 - 110	67.711	8	4.6467	0.0285
L3	110 - 95.83	48.846	20	4.3059	0.0266
L4	101 - 81	41.013	20	4.0078	0.0210
L5	81 - 61	25.454	20	3.3325	0.0144
L6	61 - 47.83	13.453	20	2.3684	0.0082
L7	54 - 34	10.255	20	1.9938	0.0063
L8	34 - 29.5833	3.509	20	1.1153	0.0030
L9	29.5833 - 14.67	2.585	20	0.8826	0.0022
L10	14.67 - 0	0.598	20	0.3889	0.0008

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
149.00	10' x 1.5" Dia Dipole	8	86.390	4.7229	0.0249	31894
145.00	CCISeismic Tower Section 1 - 1	8	82.438	4.7146	0.0258	31894
144.50	CCISeismic (5) andrew AVA5-50(7/8") From 0 to 149 (140ft to149ft)	8	81.945	4.7135	0.0259	28995
135.00	CCISeismic Tower Section 1 - 2	8	72.596	4.6793	0.0277	10630
128.00	SitePro RMQLP-4120-H10	8	65.767	4.6296	0.0287	6114

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
125.00	CCISeismic Tower Section 2 - 1	8	62.867	4.5987	0.0290	4618
124.00	CCISeismic Black Cable .4" From 0 to 128 (120ft to128ft)	8	61.905	4.5868	0.0290	4247
116.00	(2) RADIO 4449 B12/B71	8	54.331	4.4558	0.0287	2568
115.00	CCISeismic Tower Section 2 - 2	8	53.403	4.4342	0.0285	2446
113.00	CCISeismic (12) rfs celwave LCF158-50A(1-5/8") From 0 to 116 (110ft to116ft)	20	51.562	4.3871	0.0279	2242
107.92	CCISeismic Tower Section 3 - 1	20	46.990	4.2417	0.0255	2037
105.00	FFVV-65B-R2 w/ Mount Pipe	20	44.437	4.1448	0.0236	2081
102.50	CCISeismic CU12PSM9P6XXX_6AWG From 0 to 105 (100ft to105ft)	20	42.287	4.0589	0.0220	2111
100.83	CCISeismic Tower Section 3 - 2	20	40.870	4.0021	0.0211	2093
96.00	CCISeismic Tower Section 4 - 1	20	36.861	3.8441	0.0188	1872
95.00	CCISeismic Black Cable .4" From 0 to 128 (90ft to100ft)	20	36.050	3.8121	0.0185	1822
86.00	CCISeismic Tower Section 4 - 2	20	29.060	3.5168	0.0158	1467
85.00	CCISeismic Black Cable .4" From 0 to 128 (80ft to90ft)	20	28.321	3.4817	0.0156	1436
80.00	(2) JAHH-65B-R3B_TIA w/ Mount Pipe	20	24.760	3.2926	0.0143	1309
76.00	CCISeismic Tower Section 5 - 1	20	22.074	3.1226	0.0130	1240
75.00	CCISeismic Black Cable .4" From 0 to 128 (70ft to80ft)	20	21.427	3.0776	0.0127	1224
66.00	CCISeismic Tower Section 5 - 2	20	16.058	2.6362	0.0098	1098
65.00	CCISeismic Black Cable .4" From 0 to 128 (60ft to70ft)	20	15.515	2.5837	0.0094	1086
59.42	CCISeismic Tower Section 6 - 1	20	12.687	2.2813	0.0077	1153
55.00	CCISeismic Black Cable .4" From 0 to 128 (50ft to60ft)	20	10.685	2.0443	0.0066	1449
52.83	CCISeismic Tower Section 6 - 2	20	9.761	1.9372	0.0061	1518
49.00	CCISeismic Tower Section 7 - 1	20	8.220	1.7660	0.0054	1412
45.00	CCISeismic Black Cable .4" From 0 to 128 (40ft to50ft)	20	6.743	1.6012	0.0047	1271
40.00	GPS_A	20	5.112	1.3954	0.0039	1129
39.00	CCISeismic Tower Section 7 - 2	20	4.817	1.3523	0.0038	1105
35.00	CCISeismic Black Cable .4" From 0 to 128 (30ft to40ft)	20	3.747	1.1662	0.0031	1065
31.79	CCISeismic Tower Section 8 - 1	20	3.023	0.9975	0.0026	1230
30.50	CCISeismic WT6x25 Reinforcement From 0 to 31 (30ft to31ft)	20	2.761	0.9290	0.0024	1348
27.13	CCISeismic Tower Section 9 - 1	20	2.142	0.7709	0.0019	1572
25.00	CCISeismic Black Cable .4" From 0 to 128 (20ft to30ft)	20	1.796	0.6878	0.0016	1597
19.67	CCISeismic Tower Section 9 - 2	20	1.078	0.5198	0.0011	1601
16.13	CCISeismic miscl Step Bolts From 12.25 to 140 (12.25ft to20ft)	20	0.718	0.4261	0.0009	1636
15.00	CCISeismic Black Cable .4" From 0 to 128 (10ft to20ft)	20	0.624	0.3973	0.0008	1681
12.97	CCISeismic WT6x25 Reinforcement From 0 to 15.94 (10ft to15.94ft)	20	0.477	0.3450	0.0007	1848
12.34	CCISeismic Tower Section 10 - 1	20	0.436	0.3285	0.0007	1927
5.00	CCISeismic Tower Section 10 - 2	20	0.123	0.1345	0.0003	4706

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	150 - 130 (1)	TP27.25x23.61x0.2813	20.00	0.00	0.0	24.4279	-2.99	1429.03	0.002
L2	130 - 110 (2)	TP30.89x27.25x0.2813	20.00	0.00	0.0	27.7250	-14.56	1621.91	0.009
L3	110 - 95.83 (3)	TP33.469x30.89x0.2813	14.17	0.00	0.0	29.2087	-18.58	1708.71	0.011
L4	95.83 - 81 (4)	TP35.6055x31.9655x0.375	20.00	0.00	0.0	42.5408	-23.36	2488.64	0.009
L5	81 - 61 (5)	TP39.2455x35.6055x0.375	20.00	0.00	0.0	46.9361	-32.32	2745.76	0.012
L6	61 - 47.83 (6)	TP41.6425x39.2455x0.375	13.17	0.00	0.0	48.4745	-34.13	2835.76	0.012
L7	47.83 - 34 (7)	TP43.4095x39.7695x0.4375	20.00	0.00	0.0	60.5368	-41.39	3541.41	0.012
L8	34 - 29.5833 (8)	TP44.2134x43.4095x0.4375	4.42	0.00	0.0	61.6693	-42.97	3607.65	0.012
L9	29.5833 - 14.67 (9)	TP46.9276x44.2134x0.716	14.91	0.00	0.0	106.5420	-52.07	5435.17	0.010
L10	14.67 - 0 (10)	TP49.5976x46.9276x0.91	14.67	0.00	0.0	142.6640	-64.70	7277.94	0.009

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	150 - 130 (1)	TP27.25x23.61x0.2813	65.93	938.17	0.070	0.00	938.17	0.000
L2	130 - 110 (2)	TP30.89x27.25x0.2813	329.47	1151.21	0.286	0.00	1151.21	0.000
L3	110 - 95.83 (3)	TP33.469x30.89x0.2813	523.02	1248.94	0.419	0.00	1248.94	0.000
L4	95.83 - 81 (4)	TP35.6055x31.9655x0.375	1024.18	2149.27	0.477	0.00	2149.27	0.000
L5	81 - 61 (5)	TP39.2455x35.6055x0.375	1668.89	2524.17	0.661	0.00	2524.17	0.000
L6	61 - 47.83 (6)	TP41.6425x39.2455x0.375	1909.52	2657.78	0.718	0.00	2657.78	0.000
L7	47.83 - 34 (7)	TP43.4095x39.7695x0.4375	2634.33	3672.79	0.717	0.00	3672.79	0.000
L8	34 - 29.5833 (8)	TP44.2134x43.4095x0.4375	2801.38	3785.67	0.740	0.00	3785.67	0.000
L9	29.5833 - 14.67 (9)	TP46.9276x44.2134x0.716	3392.42	6399.30	0.530	0.00	6399.30	0.000
L10	14.67 - 0 (10)	TP49.5976x46.9276x0.91	4022.80	8999.75	0.447	0.00	8999.75	0.000

Pole Shear Design Data

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 $\frac{T_u}{\phi T_n}$
L1	150 - 130 (1)	TP27.25x23.61x0.2813	4.57	428.71	0.011	0.17	1017.01	0.000
L2	130 - 110 (2)	TP30.89x27.25x0.2813	19.59	486.57	0.040	3.86	1310.07	0.003
L3	110 - 95.83 (3)	TP33.469x30.89x0.2813	23.84	512.61	0.046	4.04	1454.03	0.003
L4	95.83 - 81 (4)	TP35.6055x31.9655x0.375	26.30	746.59	0.035	4.03	2313.67	0.002
L5	81 - 61 (5)	TP39.2455x35.6055x0.375	33.98	823.73	0.041	6.91	2816.47	0.002
L6	61 - 47.83 (6)	TP41.6425x39.2455x0.375	34.87	850.73	0.041	6.91	3004.12	0.002
L7	47.83 - 34 (7)	TP43.4095x39.7695x0.4375	37.45	1062.42	0.035	7.03	4015.90	0.002

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 $\frac{T_u}{\phi T_n}$
L8	34 - 29.5833 (8)	TP44.2134x43.4095x0.4375	38.12	1082.30	0.035	6.97	4167.55	0.002
L9	29.5833 - 14.67 (9)	TP46.9276x44.2134x0.716	40.97	1630.55	0.025	6.55	6628.04	0.001
L10	14.67 - 0 (10)	TP49.5976x46.9276x0.91	44.68	2183.38	0.020	5.80	9350.75	0.001

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	150 - 130 (1)	0.002	0.070	0.000	0.011	0.000	0.072	1.000	4.8.2
L2	130 - 110 (2)	0.009	0.286	0.000	0.040	0.003	0.297	1.000	4.8.2
L3	110 - 95.83 (3)	0.011	0.419	0.000	0.046	0.003	0.432	1.000	4.8.2
L4	95.83 - 81 (4)	0.009	0.477	0.000	0.035	0.002	0.487	1.000	4.8.2
L5	81 - 61 (5)	0.012	0.661	0.000	0.041	0.002	0.675	1.000	4.8.2
L6	61 - 47.83 (6)	0.012	0.718	0.000	0.041	0.002	0.732	1.000	4.8.2
L7	47.83 - 34 (7)	0.012	0.717	0.000	0.035	0.002	0.730	1.000	4.8.2
L8	34 - 29.5833 (8)	0.012	0.740	0.000	0.035	0.002	0.753	1.000	4.8.2
L9	29.5833 - 14.67 (9)	0.010	0.530	0.000	0.025	0.001	0.540	1.000	4.8.2
L10	14.67 - 0 (10)	0.009	0.447	0.000	0.020	0.001	0.456	1.000	4.8.2

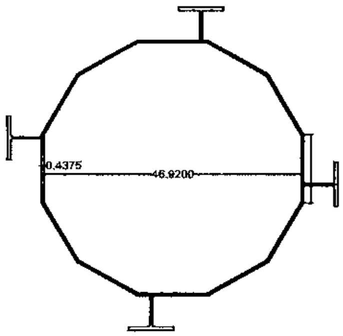
Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	150 - 130	Pole	TP27.25x23.61x0.2813	1	-2.99	1429.03	7.2	Pass
L2	130 - 110	Pole	TP30.89x27.25x0.2813	2	-14.56	1621.91	29.7	Pass
L3	110 - 95.83	Pole	TP33.469x30.89x0.2813	3	-18.58	1708.71	43.2	Pass
L4	95.83 - 81	Pole	TP35.6055x31.9655x0.375	4	-23.36	2488.64	48.7	Pass
L5	81 - 61	Pole	TP39.2455x35.6055x0.375	5	-32.32	2745.76	67.5	Pass
L6	61 - 47.83	Pole	TP41.6425x39.2455x0.375	6	-34.13	2835.76	73.2	Pass
L7	47.83 - 34	Pole	TP43.4095x39.7695x0.4375	7	-41.39	3541.41	73.0	Pass
L8	34 - 29.5833	Pole	TP44.2134x43.4095x0.4375	8	-42.97	3607.65	75.3	Pass
L9	29.5833 - 14.67	Pole	TP46.9276x44.2134x0.716	9	-52.07	5435.17	54.0	Pass
L10	14.67 - 0	Pole	TP49.5976x46.9276x0.91	10	-64.70	7277.94	45.6	Pass
							Summary	
						Pole (L8)	75.3	Pass
						RATING =	**75.3**	**Pass**

APPENDIX B

ADDITIONAL CALCULATIONS

AT 14.67'



POLE

Area:	85.3885 sq in
Perimeter:	296.9166 in
Bounding box:	X: 65.8516 — 112.7716 in
	Y: −189.1766 — −142.2566 in
Centroid:	X: 89.3116 in
	Y: −165.7166 in
Moments of inertia:	X: 1613781.1849 sq in sq in
	Y: 539859.8533 sq in sq in
Product of inertia:	XY: 967778.7100 sq in sq in
Radii of gyration:	X: 166.5466 in
	Y: 90.8468 in
Principal moments (sq in sq in) and X-Y directions about centroid:	
	I: 18084.2249 along [0.8944 0.4472]
	J: 18084.2249 along [−0.4472 0.8944]

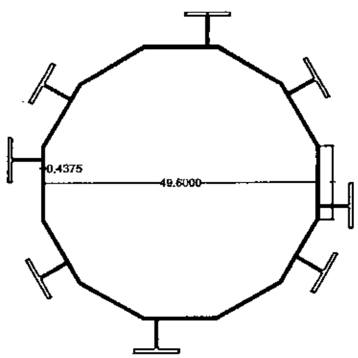
MODS

Area:	28.9932 sq in
Perimeter:	112.1296 in
Bounding box:	X: 59.7566 — 119.8666 in
	Y: −195.2716 — −136.1616 in
Centroid:	X: 89.6315 in
	Y: −165.0423 in
Moments of inertia:	X: 801792.6867 sq in sq in
	Y: 244894.5795 sq in sq in
Product of inertia:	XY: 428796.7985 sq in sq in
Radii of gyration:	X: 166.2963 in
	Y: 91.9242 in
Principal moments (sq in sq in) and X-Y directions about centroid:	
	I: 11980.7502 along [0.7452 0.6669]
	J: 12165.1666 along [−0.6669 0.7452]

POLE + MODS

Area:	94.3817 sq in
Perimeter:	411.0463 in
Bounding box:	X: 59.7566 — 119.8666 in
	Y: −195.2716 — −136.1616 in
Centroid:	X: 89.4096 in
	Y: −165.5094 in
Moments of inertia:	X: 2615573.7538 sq in sq in
	Y: 784654.4320 sq in sq in
Product of inertia:	XY: 1396576.5066 sq in sq in
Radii of gyration:	X: 166.4714 in
	Y: 91.1791 in
Principal moments (sq in sq in) and X-Y directions about centroid:	
	I: 30046.6787 along [0.7319 0.6815]
	J: 30248.9780 along [−0.6815 0.7319]

AT BASE



POLE

Area:	69.1686 sq in
Perimeter:	316.1533 in
Bounding box:	X: 60.8644 — 110.4644 in
	Y: −105.4429 — −55.8429 in
Centroid:	X: 85.6644 in
	Y: −80.6429 in
Moments of inertia:	X: 471153.2035 sq in sq in
	Y: 529808.4184 sq in sq in
Product of inertia:	XY: 477763.0396 sq in sq in
Radii of gyration:	X: 82.5366 in
	Y: 87.4515 in
Principal moments (sq in sq in) and X-Y directions about centroid:	
	I: 21386.8362 along [1.0000 0.0000]
	J: 21386.8362 along [0.0000 1.0000]

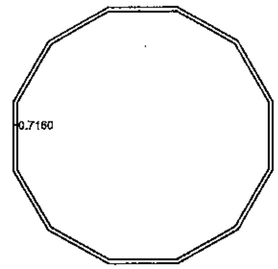
MODS

Area:	57.9865 sq in
Perimeter:	224.2561 in
Bounding box:	X: 54.7694 — 116.5594 in
	Y: −111.5379 — −49.7479 in
Centroid:	X: 85.7328 in
	Y: −80.2128 in
Moments of inertia:	X: 394985.7852 sq in sq in
	Y: 456713.8747 sq in sq in
Product of inertia:	XY: 398478.9633 sq in sq in
Radii of gyration:	X: 82.5330 in
	Y: 88.7480 in
Principal moments (sq in sq in) and X-Y directions about centroid:	
	I: 21857.5565 along [0.9995 0.0331]
	J: 30516.6287 along [−0.0331 0.9995]

POLE + MODS

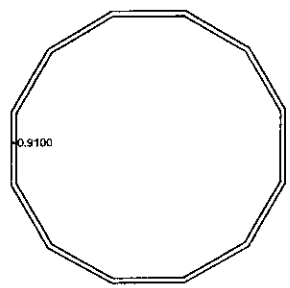
Area:	127.1450 sq in
Perimeter:	540.4124 in
Bounding box:	X: 54.7694 — 116.5594 in
	Y: −111.5379 — −49.7479 in
Centroid:	X: 85.6956 in
	Y: −80.4467 in
Moments of inertia:	X: 866138.9687 sq in sq in
	Y: 986522.2911 sq in sq in
Product of inertia:	XY: 876242.0029 sq in sq in
Radii of gyration:	X: 82.5361 in
	Y: 88.0452 in
Principal moments (sq in sq in) and X-Y directions about centroid:	
	I: 43269.1646 along [0.9994 0.0333]
	J: 51911.8804 along [−0.0333 0.9994]

EQUIVALENT THICKNESS



Equivalent Thickness

Area:	106.3717 sq in
Perimeter:	297.1276 in
Bounding box:	X: 368.1289 — 415.0489 in
	Y: −92.0642 — −45.1642 in
Centroid:	X: 391.5889 in
	Y: −68.6242 in
Moments of inertia:	X: 530005.4452 sq in sq in
	Y: 16340317.7476 sq in sq in
Product of inertia:	XY: 2858470.3899 sq in sq in
Radii of gyration:	X: 70.5874 in
	Y: 391.9378 in
Principal moments (sq in sq in) and X-Y directions about centroid:	
	I: 29071.7356 along [1.0000 0.0000]
	J: 29071.7356 along [0.0000 1.0000]



Equivalent Thickness

Area:	142.4872 sq in
Perimeter:	313.1147 in
Bounding box:	X: 367.1392 — 416.7392 in
	Y: −192.7632 — −143.1632 in
Centroid:	X: 391.9392 in
	Y: −167.9632 in
Moments of inertia:	X: [illegible] sq in sq in
	Y: [illegible] sq in sq in
Product of inertia:	XY: [illegible] sq in sq in
Radii of gyration:	X: [illegible] in
	Y: [illegible] in
Principal moments (sq in sq in) and X-Y directions about centroid:	
	I: 43244.1461 along [[illegible]]
	J: 43244.1461 along [[illegible]]

Tectonic

W.O.	10710.NJJER01121A	Report Date:	2/15/2023
Client:	Dish Wireless	Revision:	3
Site Name:	NJJER01121A	Prepared By:	IM

CHECK FOR REINFORCING MEMBER

SECTION	0'-14.67'
Fy	65 ksi
Moment @ Base	4022.8 kip-ft
Y_{POLE} @ Bottom	24.81 in
Y_{REINF} @ Bottom	30.13 in

Reinf. Member	(8) WT6x25	
Area	7.30	in^2
Capacity	327.6	kips

POLE ELEVATION	Moment of Inertia (in^4)		
	w/o Reinforcement	w/Reinforcement	Reinforcement
Base	21396	43283	21887

Moment distribution within the pole and the reinforcing plates

AT BASE	Ratios of the moments	Approx Moment Distribution (kip-ft)	Axial Force in Plate (kips)
Pole Section	0.49	1989	
Reinforcing Plate	0.51	2034	245

Max Percentage Stress of the reinforcing member = 74.9% Pass

Tectonic

W.O.	10710.NJJER01121A	Report Date:	2/15/2023
Client:	Dish Wireless	Revision:	3
Site Name:	NJJER01121A	Prepared By:	IM

CHECK FOR REINFORCING MEMBER

SECTION	14.67'-31'			
Fy	65 ksi	Reinf. Member	(4) WT6x25	
Moment @ Base	3392.4 kip-ft	Area	7.30	in^2
Y_{POLE} @ Bottom	23.4375 in	Capacity	327.6	kips
Y_{REINF} @ Bottom	28.50 in			

POLE ELEVATION	Moment of Inertia (in^4)		
	w/o Reinforcement	w/Reinforcement	Reinforcement
@ 14.67	18084	30239	12155

Moment distribution within the pole and the reinforcing plates

AT BASE	Ratios of the moments	Approx Moment Distribution (kip-ft)	Axial Force in Plate (kips)
Pole Section	0.60	2029	
Reinforcing Plate	0.40	1364	280

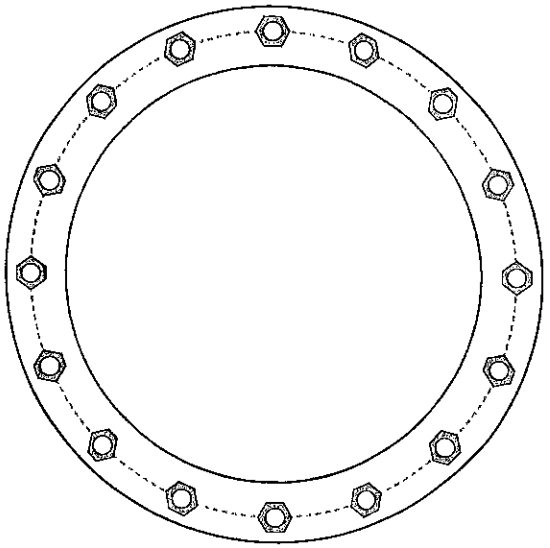
Max Percentage Stress of the reinforcing member = 85.5% Pass

Monopole Base Plate Connection

Site Info	
Work Order #:	10710.NJER01121A
Site Name:	NJER01121A
Rev:	3

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

Applied Loads	
Moment (kip-ft)	4022.80
Axial Force (kips)	64.70
Shear Force (kips)	44.68



Connection Properties

Anchor Rod Data

(16) 2-1/4" ø bolts (A615-75 N; Fy=75 ksi, Fu=100 ksi) on 57.85" BC

Base Plate Data

63.85" OD x 2.75" Plate (A633 Gr. E; Fy=60 ksi, Fu=75 ksi)

Stiffener Data

N/A

Pole Data

49.597565" x 0.4375" 12-sided pole (A572-65; Fy=65 ksi, Fu=80 ksi)

Analysis Results

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

Pu_c = 212.53	ϕPn_c = 268.39	**Stress Rating**
Vu = 2.79	ϕVn = 120.77	**79.2%**
Mu = n/a	ϕMn = n/a	Pass

Base Plate Summary

Max Stress (ksi):	29.02	(Flexural)
Allowable Stress (ksi):	54	
Stress Rating:	**53.7%**	Pass

Analysis Date: 2/15/2023

Drilled Pier Foundation

WO # :	10710.NJJER01121A
Site Name:	NJJER01121A
Rev:	3

TIA-222 Revison:	H
Tower Type:	Monopole

Applied Loads	Comp.	Uplift
Moment (kip-ft)	4022.8	
Axial Force (kips)	64.7	
Shear Force (kips)	44.68	

Material Properties		
Concrete Strength, f'c:	3	ksi
Rebar Strength, Fy:	60	ksi

Pier Design Data		
Depth	26.5	ft
Ext. Above Grade	1	ft
Pier Section 1		
From 1' above grade to 26.5' below grade		
Pier Diameter	7	ft
Rebar Quantity	40	
Rebar Size	11	
Clear Cover to Ties	4	in
Tie Size	4	

Analysis Results		
Soil Lateral Capacity	*Compression*	*Uplift*
D_{cal} (ft from TOC)	6.71	-
Soil Safety Factor	1.69	-
Max Moment (kip-ft)	4316.87	-
Rating	*78.9%*	-
Soil Vertical Capacity	*Compression*	*Uplift*
Skin Friction (kips)	262.46	-
End Bearing (kips)	0.00	-
Weight of Concrete (kips)	129.98	-
Total Capacity (kips)	262.46	-
Axial (kips)	194.68	-
Rating	*74.2%*	-
Reinforced Concrete Capacity	*Compression*	*Uplift*
Critical Depth (ft from TOC)	6.90	-
Critical Moment (kip-ft)	4316.40	-
Critical Moment Capacity	9155.31	-
Rating	*47.1%*	-

Soil Interaction Rating	**78.9%**
Structural Foundation Rating	**47.1%**

Soil Profile

Groundwater Depth	5.5	ft	
# 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. Gross Bearing Capacity (ksf)	SPT Blow Count	Soil Type
1	0	4	4	120	150	0	0	0.000	0.000	0.00	0.00		0	Cohesionless
2	4	5.5	1.5	120	150	0	35	0.687	0.687				20	Cohesionless
3	5.5	26.5	21	42.6	87.6	0	30	0.709	0.709			0	10	Cohesionless

SEISMIC LOAD CALCULATIONS

Site Info	
Work Order #:	10710.NJER01121A
Site Name:	NJER01121A
Rev:	3

Location

	Decimal Degrees		Deg	Min	Sec
Lat:	41.188339		41	11	18.02
Long:	-73.299011	-	73	17	56.44

Code and Site Parameters

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

USGS Seismic Reference			
	S_S:	0.2220	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}:	0.2368	g
Design spectral response acceleration 1 s period, S_{D1}:	0.0880	g
T_s:	0.3716	

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:

Tower Details

Tower Type:	Tapered Monopole		
Height, h:	150	ft	
Effective Seismic Weight, W:	58.06	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:	15.016419	kips	
W_L:	43.04326032	kips	
E:	29000.0	ksi	
g:	386.088	in/s^2	
Average Moment of Inertia, I_{avg}:	11457.48645	in^4	
F_a:	0.257677972	hz	
Approximate Fundamental Period Monopole, T_a:	3.8808	s	2.7.7.1.3.3
Seismic Response Coefficient, C_s	0.1973		2.7.7.1.1
Seismic Response Coefficient Max 1, C_{smax}	0.0189		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 $w_i h_i^k$	410005.28

Tower Section Loads								
Section Number	Length	Top Height	Mid Height, h_z	Section Weight, w_z	$w_z h_z^k$	C_{z1}	F_{z1}	F_{z2}
1 - 2	10.00	140.00	135.00	0.8020	14616.98	0.0357	0.0621	0.0380
2 - 2	10.00	120.00	115.00	0.9141	12088.45	0.0295	0.0514	0.0433
3 - 2	10.00	105.83	100.83	0.9934	10099.95	0.0246	0.0429	0.0470
4 - 2	10.00	91.00	86.00	1.4082	10414.75	0.0254	0.0442	0.0667
5 - 2	10.00	71.00	66.00	1.5575	6784.51	0.0165	0.0288	0.0738
6 - 2	10.00	57.83	52.83	1.6559	4621.51	0.0113	0.0196	0.0784
7 - 2	10.00	44.00	39.00	2.0184	3062.42	0.0075	0.0130	0.0954
9 - 1	4.91	29.58	27.13	1.6914	1244.66	0.0030	0.0053	0.0801
10 - 1	4.67	14.67	12.34	2.1594	328.56	0.0008	0.0014	0.1023
			Sum					

Discrete Loads						
Name	h_i	w_i	$w_i h_i^2$	C_{A_i}	F_{a_i}	F_{w_i}
3' Stand Off	40.00	0.0650	104.00	0.0003	0.0004	0.0031
(2) commscope JAHH-65B-R3B_TIA w/ Mount Pipe	80.00	0.1800	1152.00	0.0028	0.0049	0.0085
amphenol BXA-70063-6CF-EDIN-X w/ Mount Pipe	80.00	0.0400	256.00	0.0006	0.0011	0.0019
amphenol BXA-70063-6CF-EDIN-X w/ Mount Pipe	80.00	0.0400	256.00	0.0006	0.0011	0.0019
samsung telecommunications CBRS RRH-RT4401-48A	80.00	0.0200	128.00	0.0003	0.0005	0.0009
samsung telecommunications B5/B13 RRH-BR04C	80.00	0.0700	448.00	0.0011	0.0019	0.0033
samsung telecommunications B5/B13 RRH-BR04C	80.00	0.0700	448.00	0.0011	0.0019	0.0033
samsung telecommunications B2/B66 RRH-BR049	80.00	0.0800	512.00	0.0012	0.0022	0.0038
samsung telecommunications XXDWMM-12.5-65-8T-CBRS	80.00	0.0200	128.00	0.0003	0.0005	0.0009
samsung telecommunications XXDWMM-12.5-65-8T-CBRS	80.00	0.0200	128.00	0.0003	0.0005	0.0009
commscope CBC78T-DS-43-2X	80.00	0.0200	128.00	0.0003	0.0005	0.0009
raycap RUSDC-6267-PF-48	80.00	0.0200	128.00	0.0003	0.0005	0.0009
HRK14 SitePro1 Top Rail Kit	80.00	0.2450	1568.00	0.0038	0.0067	0.0116
commscope FFVV-65B-R2 w/ Mount Pipe	105.00	0.1000	1102.50	0.0027	0.0047	0.0047
commscope FFVV-65B-R2 w/ Mount Pipe	105.00	0.1000	1102.50	0.0027	0.0047	0.0047
fujitsu TA08025-B605	105.00	0.0700	771.75	0.0019	0.0033	0.0033
fujitsu TA08025-B604	105.00	0.0600	661.50	0.0016	0.0028	0.0028
fujitsu TA08025-B604	105.00	0.0600	661.50	0.0016	0.0028	0.0028
(2) 8' long Pipe	105.00	0.0600	661.50	0.0016	0.0028	0.0028
(2) 8' long Pipe	105.00	0.0600	661.50	0.0016	0.0028	0.0028
Top Rail	105.00	0.2500	2756.25	0.0067	0.0117	0.0118
ericsson RADIO 4449 B12/B71	116.00	0.0700	941.92	0.0023	0.0040	0.0033
ericsson RRUS 4415 B25	116.00	0.0400	538.24	0.0013	0.0023	0.0019
commscope SDX1926Q-43	116.00	0.0062	83.06	0.0002	0.0004	0.0003
Twin Style TMA	116.00	0.0700	941.92	0.0023	0.0040	0.0033
rfs celwave APXVARR24_43-C-NA20 w/ Mount Pipe	116.00	0.1297	1745.38	0.0043	0.0074	0.0061
ericsson AIR 32 B66Aa B2a w/ Mount Pipe	116.00	0.1500	2018.40	0.0049	0.0086	0.0071
ericsson AIR 6449 B41 w/ Mount Pipe	116.00	0.1300	1749.28	0.0043	0.0074	0.0062
12' SitePro1 Platform Mount (F4P-12W)	116.00	2.7500	37004.00	0.0903	0.1572	0.1302
cci antennas HPA-65R-BUU-H6_TIA w/ Mount Pipe	127.00	0.0700	1129.03	0.0028	0.0048	0.0033
(2) powerwave technologies 7770.00 w/ Mount Pipe	127.00	0.1200	1935.48	0.0047	0.0082	0.0057
(2) powerwave technologies 7770.00 w/ Mount Pipe	127.00	0.1200	1935.48	0.0047	0.0082	0.0057
powerwave technologies LGP21401	127.00	0.0100	161.29	0.0004	0.0007	0.0005
13' Low-Profile Platform	127.00	1.3350	21532.22	0.0525	0.0915	0.0632
kathrein 80010965_TIA w/ Mount Pipe	127.00	0.1400	2258.06	0.0055	0.0096	0.0066
ericsson RADIO 4415 B30	127.00	0.0400	645.16	0.0016	0.0027	0.0019
ericsson RADIO 4415 B30	127.00	0.0400	645.16	0.0016	0.0027	0.0019
ericsson RRUS 4449 B5/B12	127.00	0.0700	1129.03	0.0028	0.0048	0.0033
raycap DC6-48-60-18-8F	127.00	0.0200	322.58	0.0008	0.0014	0.0009
ericsson RRUS 11	129.00	0.0500	832.05	0.0020	0.0035	0.0024

ericsson RRUS 11	129.00	0.0500	832.05	0.0020	0.0035	0.0024
ericsson RRUS 11	129.00	0.0500	832.05	0.0020	0.0035	0.0024
ericsson RRUS 12	129.00	0.0600	998.46	0.0024	0.0042	0.0028
ericsson RRUS 12	129.00	0.0600	998.46	0.0024	0.0042	0.0028
ericsson RRU A2	129.00	0.0200	332.82	0.0008	0.0014	0.0009
ericsson RRU A2	129.00	0.0200	332.82	0.0008	0.0014	0.0009
ericsson RRUS A2 B13	138.00	0.0800	1523.52	0.0037	0.0065	0.0038
ericsson RRUS A2 B13	138.00	0.0800	1523.52	0.0037	0.0065	0.0038
ericsson RRUS 32 B30	138.00	0.0600	1142.64	0.0028	0.0049	0.0028
commscope DT465B-2XR-V2 w/ Mount Pipe	138.00	0.0912	1736.05	0.0042	0.0074	0.0043
commscope DT465B-2XR-V2 w/ Mount Pipe	138.00	0.0912	1736.05	0.0042	0.0074	0.0043
rfs celwave APXVSPP18-C-A20_TIA w/ Mount Pipe	138.00	0.1000	1904.40	0.0046	0.0081	0.0047
alcatel lucent FD-RRH-2x50-800	138.00	0.0500	952.20	0.0023	0.0040	0.0024
alcatel lucent FD-RRH-2x50-800	138.00	0.0500	952.20	0.0023	0.0040	0.0024
alcatel lucent RRH4X45-19	138.00	0.0900	1713.96	0.0042	0.0073	0.0043
13' Low-Profile Platform	138.00	1.7750	33803.10	0.0824	0.1436	0.0841
pipe mounts 2" STD Pipe (2.375 OD)x6'-0"	138.00	0.0200	380.88	0.0009	0.0016	0.0009
10' x 1.5" Dia Dipole	149.00	0.0200	444.02	0.0011	0.0019	0.0009
10' x 1.5" Dia Dipole	149.00	0.0200	444.02	0.0011	0.0019	0.0009
misc 12' x 3" Dia Omni	149.00	0.0400	888.04	0.0022	0.0038	0.0019
(4) pipe mounts 2" STD Pipe (2.375 OD)x6'-0"	149.00	0.0800	1776.08	0.0043	0.0075	0.0038
(4) pipe mounts 2" STD Pipe (2.375 OD)x6'-0"	149.00	0.0800	1776.08	0.0043	0.0075	0.0038
15'x1.25" Dia Whips	149.00	0.0200	444.02	0.0011	0.0019	0.0009
20' x 2" Dia Whips	149.00	0.0200	444.02	0.0011	0.0019	0.0009
		Sum				

Linear Loads								
Name	Start Height	End Height	h_i	w_i	$w_i h_i^2$	C_{A_i}	F_{A_i}	F_{z_i}
Black Cable .4" From 0 to 127	110.00	120.00	115.00	0.0014	18.52	0.0000	0.0001	0.0001
Black Cable .4" From 0 to 127	90.00	100.00	95.00	0.0014	12.64	0.0000	0.0001	0.0001
Black Cable .4" From 0 to 127	70.00	80.00	75.00	0.0014	7.88	0.0000	0.0000	0.0001
Black Cable .4" From 0 to 127	50.00	60.00	55.00	0.0014	4.24	0.0000	0.0000	0.0001
Black Cable .4" From 0 to 127	30.00	40.00	35.00	0.0014	1.72	0.0000	0.0000	0.0001
Black Cable .4" From 0 to 127	10.00	20.00	15.00	0.0014	0.32	0.0000	0.0000	0.0001
(2) commscope PWRT-608-S(13/16") From 0 to 127	120.00	127.00	123.50	0.0087	132.39	0.0003	0.0006	0.0004
(2) commscope PWRT-608-S(13/16") From 0 to 127	100.00	110.00	105.00	0.0124	136.71	0.0003	0.0006	0.0006
(2) commscope PWRT-608-S(13/16") From 0 to 127	80.00	90.00	85.00	0.0124	89.59	0.0002	0.0004	0.0006
(2) commscope PWRT-608-S(13/16") From 0 to 127	60.00	70.00	65.00	0.0124	52.39	0.0001	0.0002	0.0006
(2) commscope PWRT-608-S(13/16") From 0 to 127	40.00	50.00	45.00	0.0124	25.11	0.0001	0.0001	0.0006
(2) commscope PWRT-608-S(13/16") From 0 to 127	20.00	30.00	25.00	0.0124	7.75	0.0000	0.0000	0.0006
(2) commscope PWRT-608-S(13/16") From 0 to 127	0.00	10.00	5.00	0.0124	0.31	0.0000	0.0000	0.0006
(12) rfs celwave FLC 114-50J(1-1/4) From 0 to 127	110.00	120.00	115.00	0.0840	1110.90	0.0027	0.0047	0.0040
(12) rfs celwave FLC 114-50J(1-1/4) From 0 to 127	90.00	100.00	95.00	0.0840	758.10	0.0018	0.0032	0.0040
(12) rfs celwave FLC 114-50J(1-1/4) From 0 to 127	70.00	80.00	75.00	0.0840	472.50	0.0012	0.0020	0.0040
(12) rfs celwave FLC 114-50J(1-1/4) From 0 to 127	50.00	60.00	55.00	0.0840	254.10	0.0006	0.0011	0.0040
(12) rfs celwave FLC 114-50J(1-1/4) From 0 to 127	30.00	40.00	35.00	0.0840	102.90	0.0003	0.0004	0.0040
(12) rfs celwave FLC 114-50J(1-1/4) From 0 to 127	10.00	20.00	15.00	0.0840	18.90	0.0000	0.0001	0.0040
Inner Duct From 0 to 127	120.00	127.00	123.50	0.0081	123.85	0.0003	0.0005	0.0004
Inner Duct From 0 to 127	100.00	110.00	105.00	0.0116	127.89	0.0003	0.0005	0.0005
Inner Duct From 0 to 127	80.00	90.00	85.00	0.0116	83.81	0.0002	0.0004	0.0005
Inner Duct From 0 to 127	60.00	70.00	65.00	0.0116	49.01	0.0001	0.0002	0.0005
Inner Duct From 0 to 127	40.00	50.00	45.00	0.0116	23.49	0.0001	0.0001	0.0005
Inner Duct From 0 to 127	20.00	30.00	25.00	0.0116	7.25	0.0000	0.0000	0.0005
Inner Duct From 0 to 127	0.00	10.00	5.00	0.0116	0.29	0.0000	0.0000	0.0005
(6) andrew AVA5-50(7/8") From 0 to 149	130.00	140.00	135.00	0.0180	328.05	0.0008	0.0014	0.0009
(6) andrew AVA5-50(7/8") From 0 to 149	110.00	120.00	115.00	0.0180	238.05	0.0006	0.0010	0.0009
(6) andrew AVA5-50(7/8") From 0 to 149	90.00	100.00	95.00	0.0180	162.45	0.0004	0.0007	0.0009
(6) andrew AVA5-50(7/8") From 0 to 149	70.00	80.00	75.00	0.0180	101.25	0.0002	0.0004	0.0009
(6) andrew AVA5-50(7/8") From 0 to 149	50.00	60.00	55.00	0.0180	54.45	0.0001	0.0002	0.0009
(6) andrew AVA5-50(7/8") From 0 to 149	30.00	40.00	35.00	0.0180	22.05	0.0001	0.0001	0.0009
(6) andrew AVA5-50(7/8") From 0 to 149	10.00	20.00	15.00	0.0180	4.05	0.0000	0.0000	0.0009
(2) andrew AVA5-50(7/8") From 104 to 149	140.00	149.00	144.50	0.0054	112.75	0.0003	0.0005	0.0003
(2) andrew AVA5-50(7/8") From 104 to 149	120.00	130.00	125.00	0.0060	93.75	0.0002	0.0004	0.0003
(2) andrew AVA5-50(7/8") From 104 to 149	104.00	110.00	107.00	0.0036	41.22	0.0001	0.0002	0.0002
rfs celwave LCF114-50J(1-1/4") From 0 to 149	130.00	140.00	135.00	0.0070	127.58	0.0003	0.0005	0.0003
rfs celwave LCF114-50J(1-1/4") From 0 to 149	110.00	120.00	115.00	0.0070	92.58	0.0002	0.0004	0.0003
rfs celwave LCF114-50J(1-1/4") From 0 to 149	90.00	100.00	95.00	0.0070	63.18	0.0002	0.0003	0.0003
rfs celwave LCF114-50J(1-1/4") From 0 to 149	70.00	80.00	75.00	0.0070	39.38	0.0001	0.0002	0.0003

rfs celwave LCF114-50J(1-1/4") From 0 to 149	90.00	70.00	65.00	0.0070	29.58	0.0001	0.0001	0.0003
rfs celwave LCF114-50J(1-1/4") From 0 to 149	50.00	60.00	55.00	0.0070	21.18	0.0001	0.0001	0.0003
rfs celwave LCF114-50J(1-1/4") From 0 to 149	30.00	40.00	35.00	0.0070	8.58	0.0000	0.0000	0.0003
rfs celwave LCF114-50J(1-1/4") From 0 to 149	10.00	20.00	15.00	0.0070	1.58	0.0000	0.0000	0.0003
(6) nk cables RF 1 5/8 inch-50(1-5/8") From 0 to 80	70.00	80.00	75.00	0.0582	327.38	0.0008	0.0014	0.0028
(6) nk cables RF 1 5/8 inch-50(1-5/8") From 0 to 80	50.00	60.00	55.00	0.0582	176.06	0.0004	0.0007	0.0028
(6) nk cables RF 1 5/8 inch-50(1-5/8") From 0 to 80	30.00	40.00	35.00	0.0582	71.30	0.0002	0.0003	0.0028
(6) nk cables RF 1 5/8 inch-50(1-5/8") From 0 to 80	10.00	20.00	15.00	0.0582	13.10	0.0000	0.0001	0.0028
rfs celwave FLC 114-50J(1-1/4") From 0 to 80	70.00	80.00	75.00	0.0070	39.38	0.0001	0.0002	0.0003
rfs celwave FLC 114-50J(1-1/4") From 0 to 80	50.00	60.00	55.00	0.0070	21.18	0.0001	0.0001	0.0003
rfs celwave FLC 114-50J(1-1/4") From 0 to 80	30.00	40.00	35.00	0.0070	8.58	0.0000	0.0000	0.0003
rfs celwave FLC 114-50J(1-1/4") From 0 to 80	10.00	20.00	15.00	0.0070	1.58	0.0000	0.0000	0.0003
rfs celwave FLC78-50J(7/8") From 0 to 138	130.00	138.00	134.00	0.0032	57.46	0.0001	0.0002	0.0002
rfs celwave FLC78-50J(7/8") From 0 to 138	110.00	120.00	115.00	0.0040	52.90	0.0001	0.0002	0.0002
rfs celwave FLC78-50J(7/8") From 0 to 138	90.00	100.00	95.00	0.0040	36.10	0.0001	0.0002	0.0002
rfs celwave FLC78-50J(7/8") From 0 to 138	70.00	80.00	75.00	0.0040	22.50	0.0001	0.0001	0.0002
rfs celwave FLC78-50J(7/8") From 0 to 138	50.00	60.00	55.00	0.0040	12.10	0.0000	0.0001	0.0002
rfs celwave FLC78-50J(7/8") From 0 to 138	30.00	40.00	35.00	0.0040	4.90	0.0000	0.0000	0.0002
rfs celwave FLC78-50J(7/8") From 0 to 138	10.00	20.00	15.00	0.0040	0.90	0.0000	0.0000	0.0002
(3) rfs celwave FLC 114-50J(1-1/4") From 0 to 138	130.00	138.00	134.00	0.0168	301.66	0.0007	0.0013	0.0008
(3) rfs celwave FLC 114-50J(1-1/4") From 0 to 138	110.00	120.00	115.00	0.0210	277.73	0.0007	0.0012	0.0010
(3) rfs celwave FLC 114-50J(1-1/4") From 0 to 138	90.00	100.00	95.00	0.0210	189.53	0.0005	0.0008	0.0010
(3) rfs celwave FLC 114-50J(1-1/4") From 0 to 138	70.00	80.00	75.00	0.0210	118.13	0.0003	0.0005	0.0010
(3) rfs celwave FLC 114-50J(1-1/4") From 0 to 138	50.00	60.00	55.00	0.0210	63.53	0.0002	0.0003	0.0010
(3) rfs celwave FLC 114-50J(1-1/4") From 0 to 138	30.00	40.00	35.00	0.0210	25.73	0.0001	0.0001	0.0010
(3) rfs celwave FLC 114-50J(1-1/4") From 0 to 138	10.00	20.00	15.00	0.0210	4.73	0.0000	0.0000	0.0010
(12) rfs celwave LCF158-50A(1-5/8") From 0 to 116	110.00	116.00	113.00	0.0576	735.49	0.0018	0.0031	0.0027
(12) rfs celwave LCF158-50A(1-5/8") From 0 to 116	90.00	100.00	95.00	0.0960	866.40	0.0021	0.0037	0.0045
(12) rfs celwave LCF158-50A(1-5/8") From 0 to 116	70.00	80.00	75.00	0.0960	540.00	0.0013	0.0023	0.0045
(12) rfs celwave LCF158-50A(1-5/8") From 0 to 116	50.00	60.00	55.00	0.0960	290.40	0.0007	0.0012	0.0045
(12) rfs celwave LCF158-50A(1-5/8") From 0 to 116	30.00	40.00	35.00	0.0960	117.60	0.0003	0.0005	0.0045
(12) rfs celwave LCF158-50A(1-5/8") From 0 to 116	10.00	20.00	15.00	0.0960	21.60	0.0001	0.0001	0.0045
(3) ericsson HCS 6X12 4AWG(1-5/8) From 0 to 116	110.00	116.00	113.00	0.0432	551.62	0.0013	0.0023	0.0020
(3) ericsson HCS 6X12 4AWG(1-5/8) From 0 to 116	90.00	100.00	95.00	0.0720	649.80	0.0016	0.0028	0.0034
(3) ericsson HCS 6X12 4AWG(1-5/8) From 0 to 116	70.00	80.00	75.00	0.0720	405.00	0.0010	0.0017	0.0034
(3) ericsson HCS 6X12 4AWG(1-5/8) From 0 to 116	50.00	60.00	55.00	0.0720	217.80	0.0005	0.0009	0.0034
(3) ericsson HCS 6X12 4AWG(1-5/8) From 0 to 116	30.00	40.00	35.00	0.0720	88.20	0.0002	0.0004	0.0034
(3) ericsson HCS 6X12 4AWG(1-5/8) From 0 to 116	10.00	20.00	15.00	0.0720	16.20	0.0000	0.0001	0.0034
misc Step Bolts From 12.25 to 140	130.00	140.00	135.00	0.0200	364.50	0.0009	0.0015	0.0009
misc Step Bolts From 12.25 to 140	110.00	120.00	115.00	0.0200	264.50	0.0006	0.0011	0.0009
misc Step Bolts From 12.25 to 140	90.00	100.00	95.00	0.0200	180.50	0.0004	0.0008	0.0009
misc Step Bolts From 12.25 to 140	70.00	80.00	75.00	0.0200	112.50	0.0003	0.0005	0.0009
misc Step Bolts From 12.25 to 140	50.00	60.00	55.00	0.0200	60.50	0.0001	0.0003	0.0009

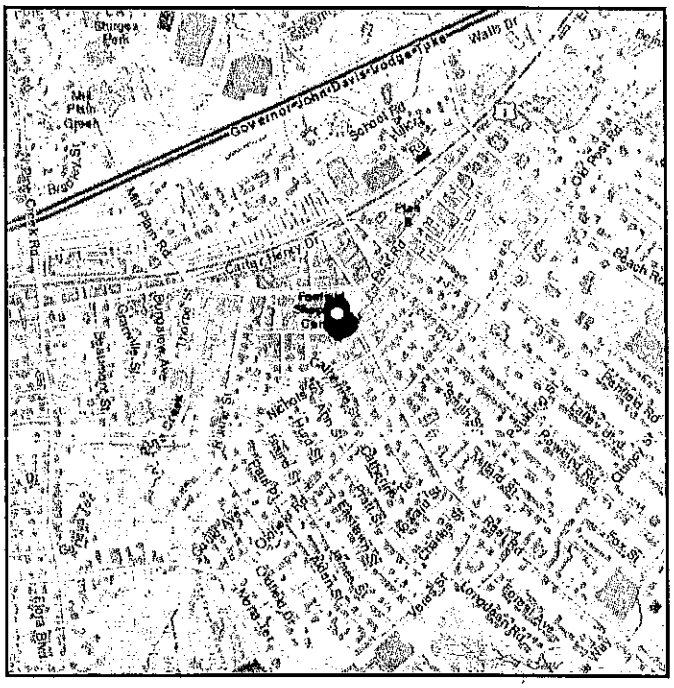
misc Step Bolts From 12.25 to 140	40.00	50.00	45.00	0.0200	40.50	0.0001	0.0002	0.0009
misc Step Bolts From 12.25 to 140	30.00	40.00	35.00	0.0200	24.50	0.0001	0.0001	0.0009
misc Step Bolts From 12.25 to 140	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
misc Step Bolts From 12.25 to 140	12.25	20.00	16.13	0.0155	4.03	0.0000	0.0000	0.0007
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
misc Safety Line 3/8 From 12.25 to 150	130.00	140.00	135.00	0.0022	40.10	0.0001	0.0002	0.0001
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
misc Safety Line 3/8 From 12.25 to 150	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]
misc Safety Line 3/8 From 12.25 to 150	90.00	100.00	95.00	0.0022	19.86	0.0000	0.0001	0.0001
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
misc Safety Line 3/8 From 12.25 to 150	70.00	80.00	75.00	0.0022	12.38	0.0000	0.0001	0.0001
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
misc Safety Line 3/8 From 12.25 to 150	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]
misc Safety Line 3/8 From 12.25 to 150	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]
misc Safety Line 3/8 From 12.25 to 150	12.25	20.00	16.13	0.0017	0.44	0.0000	0.0000	0.0001
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
WT6x25 Reinforcement From 0 to 15.94	0.00	10.00	5.00	0.2500	6.25	0.0000	0.0000	0.0118
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
WT6x25 Reinforcement From 0 to 15.94	0.00	10.00	5.00	0.2500	6.25	0.0000	0.0000	0.0118
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
WT6x25 Reinforcement From 0 to 15.94	0.00	10.00	5.00	0.2500	6.25	0.0000	0.0000	0.0118
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
WT6x25 Reinforcement From 0 to 15.94	0.00	10.00	5.00	0.2500	6.25	0.0000	0.0000	0.0118
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
WT6x25 Reinforcement From 0 to 31	20.00	30.00	25.00	0.2500	156.25	0.0004	0.0007	0.0118
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
WT6x25 Reinforcement From 0 to 31	0.00	10.00	5.00	0.2500	6.25	0.0000	0.0000	0.0118
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
WT6x25 Reinforcement From 0 to 31	20.00	30.00	25.00	0.2500	156.25	0.0004	0.0007	0.0118
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
WT6x25 Reinforcement From 0 to 31	0.00	10.00	5.00	0.2500	6.25	0.0000	0.0000	0.0118
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
WT6x25 Reinforcement From 0 to 31	20.00	30.00	25.00	0.2500	156.25	0.0004	0.0007	0.0118
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
WT6x25 Reinforcement From 0 to 31	0.00	10.00	5.00	0.2500	6.25	0.0000	0.0000	0.0118
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
WT6x25 Reinforcement From 0 to 31	20.00	30.00	25.00	0.2500	156.25	0.0004	0.0007	0.0118
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
WT6x25 Reinforcement From 0 to 31	0.00	10.00	5.00	0.2500	6.25	0.0000	0.0000	0.0118
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
CU12PSM9P6XXX_6AWG From 0 to 105	90.00	100.00	95.00	0.0235	211.73	0.0005	0.0009	0.0011
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
CU12PSM9P6XXX_6AWG From 0 to 105	70.00	80.00	75.00	0.0235	131.96	0.0003	0.0006	0.0011
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
CU12PSM9P6XXX_6AWG From 0 to 105	50.00	60.00	55.00	0.0235	70.97	0.0002	0.0003	0.0011
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
CU12PSM9P6XXX_6AWG From 0 to 105	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 105	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]
				Sum	[redacted]			

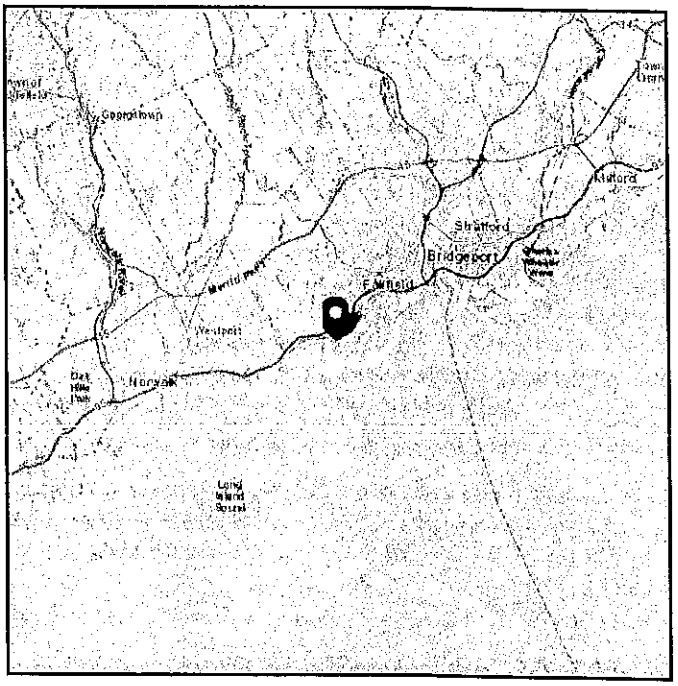
ASCE 7 Hazards Report

Address:
No Address at This Location

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

Latitude: 41.139692
Longitude: -73.2578
Elevation: 13.28 ft (NAVD 88)





Wind

Results:

Wind Speed	129 Vmph
10-year MRI	75 Vmph
25-year MRI	85 Vmph
50-year MRI	90 Vmph
100-year MRI	98 Vmph

USE 130 PER CT CODE

Data Source: ASCE/SEI 7-16, Fig. 26.5-1C and Figs. CC.2-1–CC.2-4, and Section 26.5.2
Date Accessed: Tue Jan 10 2023

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-16 Standard. Wind speeds correspond to approximately a 3% probability of exceedance in 50 years (annual exceedance probability = 0.000588, MRI = 1,700 years).

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

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	
Cornwall	105	115	125	130	81	89	97	101	40	0.172	0.054			
Coventry	110	120	130	135	85	93	101	105	30	0.188	0.055			Yes
Cromwell	110	120	130	135	85	93	101	105	30	0.207	0.056			Yes
Danbury	110	120	125	130	85	93	97	101	30	0.225	0.056			Yes
Darien	110	120	130	135	85	93	101	105	30	0.250	0.057		Type B	Yes
Deep River	115	125	135	140	89	97	105	108	30	0.210	0.054			Yes
Derby	110	120	130	135	85	93	101	105	30	0.202	0.054			Yes
Durham	110	120	130	135	85	93	101	105	30	0.211	0.055			Yes
East Granby	110	120	125	130	85	93	97	101	35	0.173	0.054			Yes
East Haddam	115	125	135	135	89	97	105	105	30	0.214	0.056			Yes
East Hampton	110	125	130	135	85	97	101	105	30	0.210	0.056			Yes
East Hartford	110	120	130	135	85	93	101	105	30	0.191	0.055			Yes
East Haven	110	125	135	135	85	97	105	105	30	0.200	0.053	Type B	Type B	Yes
East Lyme	120	130	135	140	93	101	105	108	30	0.198	0.053	Type B	Type B	Yes
East Windsor	110	120	130	135	85	93	101	105	30	0.177	0.055			Yes
Eastford	110	120	130	135	85	93	101	105	40	0.180	0.055			Yes
Easton	110	120	130	135	85	93	101	105	30	0.218	0.055			Yes
Ellington	110	120	130	135	85	93	101	105	35	0.178	0.055			Yes
Enfield	110	120	125	130	85	93	97	101	35	0.172	0.055			Yes
Essex	115	125	135	140	89	97	105	108	30	0.207	0.054			Yes
Fairfield	110	120	130	135	85	93	101	105	30	0.219	0.055		Type B	Yes
Farmington	110	120	130	135	85	93	101	105	35	0.188	0.055			Yes
Franklin	115	125	135	140	89	97	105	108	30	0.195	0.054			Yes
Glastonbury	110	120	130	135	85	93	101	105	30	0.200	0.055			Yes
Goshen	110	115	125	130	85	89	97	101	40	0.172	0.054			
Granby	110	120	125	130	85	93	97	101	35	0.171	0.054			Yes
Greenwich	110	120	130	135	85	93	101	105	30	0.274	0.059		Type B	Yes
Griswold	120	125	135	140	93	97	105	108	30	0.189	0.054			Yes
Groton	120	130	140	140	93	101	108	108	30	0.190	0.052	Type B	Type A	Yes
Guilford	115	125	135	140	89	97	105	108	30	0.204	0.054	Type B	Type B	Yes
Haddam	115	125	135	135	89	97	105	105	30	0.214	0.055			Yes
Hamden	110	120	130	135	85	93	101	105	30	0.202	0.054			Yes

ASCE
AMERICAN SOCIETY OF CIVIL ENGINEERS

Seismic

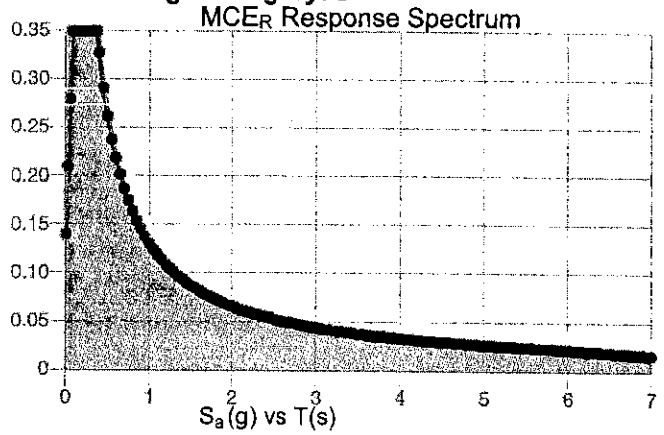
D - Default (see Section 11.4.3)

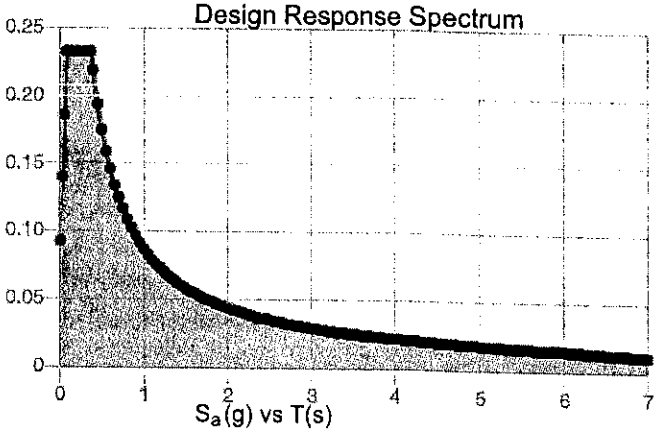
Site Soil Class:

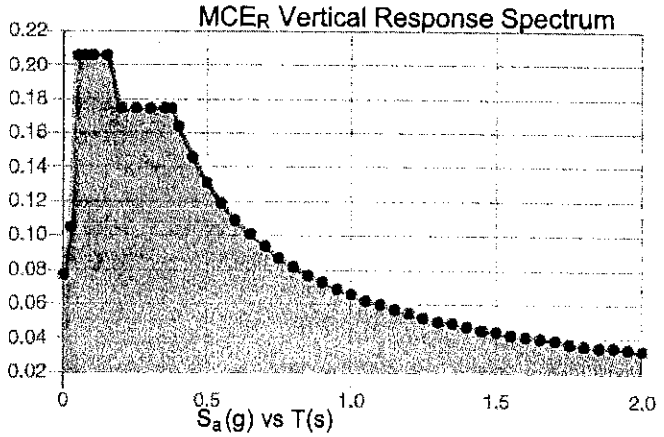
Results:

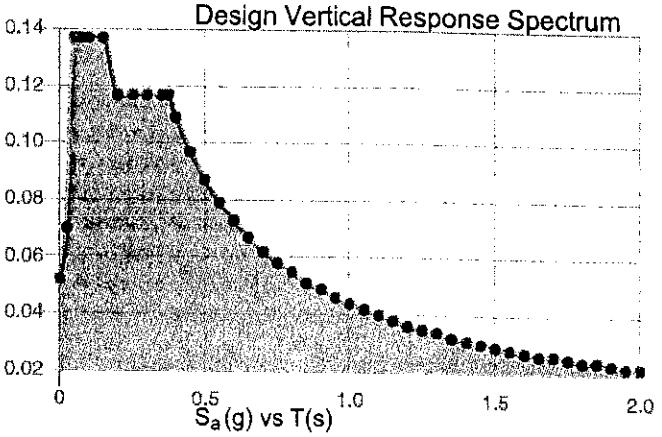
S_S :	0.219	S_{D1} :	0.087
S_1 :	0.055	T_L :	6
F_a :	1.6	PGA :	0.126
F_v :	2.4	PGA_M :	0.195
S_{MS} :	0.35	F_{PGA} :	1.549
S_{M1} :	0.131	I_e :	1.25
S_{DS} :	0.233	C_v :	0.737

Seismic Design Category: B









Data Accessed: **Tue Jan 10 2023**

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.

ASCE
AMERICAN SOCIETY OF CIVIL ENGINEERS

Ice

Results:

Ice Thickness:	1.00 in.
Concurrent Temperature:	15 F
Gust Speed	50 mph
Data Source:	Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8
Date Accessed:	Tue Jan 10 2023

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.

The ASCE 7 Hazard Tool is provided for your convenience, for informational purposes only, and is provided "as is" and without warranties of any kind. The location data included herein has been obtained from information developed, produced, and maintained by third party providers; or has been extrapolated from maps incorporated in the ASCE 7 standard. While ASCE has made every effort to use data obtained from reliable sources or methodologies, ASCE does not make any representations or warranties as to the accuracy, completeness, reliability, currency, or quality of any data provided herein. Any third-party links provided by this Tool should not be construed as an endorsement, affiliation, relationship, or sponsorship of such third-party content by or from ASCE.

ASCE does not intend, nor should anyone interpret, the results provided by this Tool to replace the sound judgment of a competent professional, having knowledge and experience in the appropriate field(s) of practice, nor to substitute for the standard of care required of such professionals in interpreting and applying the contents of this Tool or the ASCE 7 standard.

In using this Tool, you expressly assume all risks associated with your use. Under no circumstances shall ASCE or its officers, directors, employees, members, affiliates, or agents be liable to you or any other person for any direct, indirect, special, incidental, or consequential damages arising from or related to your use of, or reliance on, the Tool or any information obtained therein. To the fullest extent permitted by law, you agree to release and hold harmless ASCE from any and all liability of any nature arising out of or resulting from any use of data provided by the ASCE 7 Hazard Tool.

Exhibit E

Mount Analysis

Tectonic

PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.

Date: **January 11, 2023**

Proposed Mount Analysis Report

Project Information:

Carrier:	Dish Wireless
Site Number:	NJJER01121A
Site Address:	3965 Congress Street, Fairfield, Fairfield County, CT 06824
Site Type:	Platform w/ Railing Mount on Monopole

Tectonic Project Number: 10710.NJJER01121A, Revision 1

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:

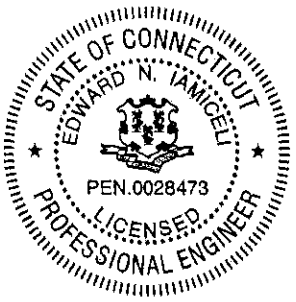
Mount: **Sufficient – 29%**

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 130 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: Ian Marinaccio / John-Fritz Julien

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

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:	130 mph ultimate 3-second gust *per the town of Fairfield, CT*
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:	0.22 / 0.055

Table 1 - Proposed Equipment Loading Information

Mounting Level (ft)	Carrier Designation	Number of Antennas	Antenna Manufacturer	Antenna Model	Proposed Mount Type	Note
105.0	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
Field Notes & Photos	Tectonic	05/05/2021
RFDS	Dish Wireless	09/07/2021
Construction Drawings	Tectonic	01/14/2022

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 Tables 1 and 2.
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	105.0	25	Pass
	Grating Support Angle		10	Pass
	Face Horizontal		17	Pass
	Mount Pipe		21	Pass
	Standoff Channel		29	Pass
	Standoff		25	Pass
	Rail Connector		17	Pass
	Railing		17	Pass
2	Collar Connection		29	Pass
Structure Rating (max from all components) =				**29 %**

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 has been 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	
Cornwall	105	115	125	130	81	89	97	101	40	0.172	0.054			
Coventry	110	120	130	135	85	93	101	105	30	0.188	0.055			Yes
Cromwell	110	120	130	135	85	93	101	105	30	0.207	0.056			Yes
Danbury	110	120	125	130	85	93	97	101	30	0.225	0.056			Yes
Darien	110	120	130	135	85	93	101	105	30	0.250	0.057		Type B	Yes
Deep River	115	125	135	140	89	97	105	108	30	0.210	0.054			Yes
Derby	110	120	130	135	85	93	101	105	30	0.202	0.054			Yes
Durham	110	120	130	135	85	93	101	105	30	0.211	0.055			Yes
East Granby	110	120	125	130	85	93	97	101	35	0.173	0.054			Yes
East Haddam	115	125	135	135	89	97	105	105	30	0.214	0.056			Yes
East Hampton	110	125	130	135	85	97	101	105	30	0.210	0.056			Yes
East Hartford	110	120	130	135	85	93	101	105	30	0.191	0.055			Yes
East Haven	110	125	135	135	85	97	105	105	30	0.200	0.053	Type B	Type B	Yes
East Lyme	120	130	135	140	93	101	105	108	30	0.198	0.053	Type B	Type B	Yes
East Windsor	110	120	130	135	85	93	101	105	30	0.177	0.055			Yes
Eastford	110	120	130	135	85	93	101	105	40	0.180	0.055			Yes
Easton	110	120	130	135	85	93	101	105	30	0.218	0.055			Yes
Ellington	110	120	130	135	85	93	101	105	35	0.178	0.055			Yes
Enfield	110	120	125	130	85	93	97	101	35	0.172	0.055			Yes
Essex	115	125	135	140	89	97	105	108	30	0.207	0.054			Yes
Fairfield	110	120	130	135	85	93	101	105	30	0.219	0.055		Type B	Yes
Farmington	110	120	130	135	85	93	101	105	35	0.188	0.055			Yes
Franklin	115	125	135	140	89	97	105	108	30	0.195	0.054			Yes
Glastonbury	110	120	130	135	85	93	101	105	30	0.200	0.055			Yes
Goshen	110	115	125	130	85	89	97	101	40	0.172	0.054			
Granby	110	120	125	130	85	93	97	101	35	0.171	0.054			Yes
Greenwich	110	120	130	135	85	93	101	105	30	0.274	0.059		Type B	Yes
Griswold	120	125	135	140	93	97	105	108	30	0.189	0.054			Yes
Groton	120	130	140	140	93	101	108	108	30	0.190	0.052	Type B	Type A	Yes
Guilford	115	125	135	140	89	97	105	108	30	0.204	0.054	Type B	Type B	Yes
Haddam	115	125	135	135	89	97	105	105	30	0.214	0.055			Yes
Hamden	110	120	130	135	85	93	101	105	30	0.202	0.054			Yes

ASCE
AMERICAN SOCIETY OF CIVIL ENGINEERS

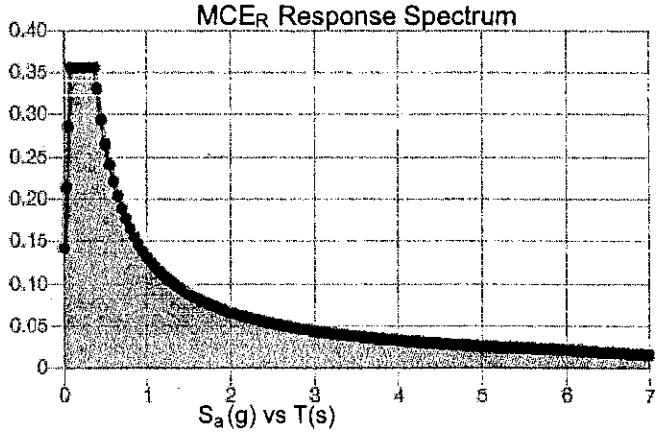
Seismic

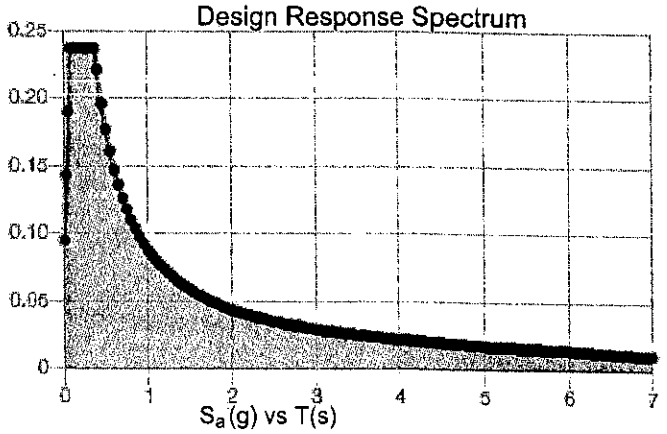
Site Soil Class: D - Default (see Section 11.4.3)

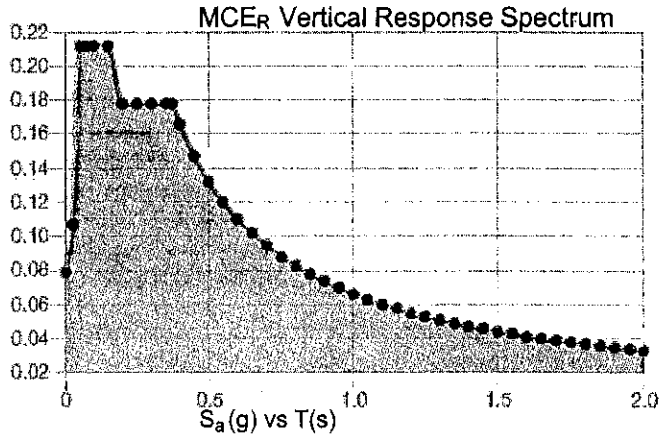
Results:

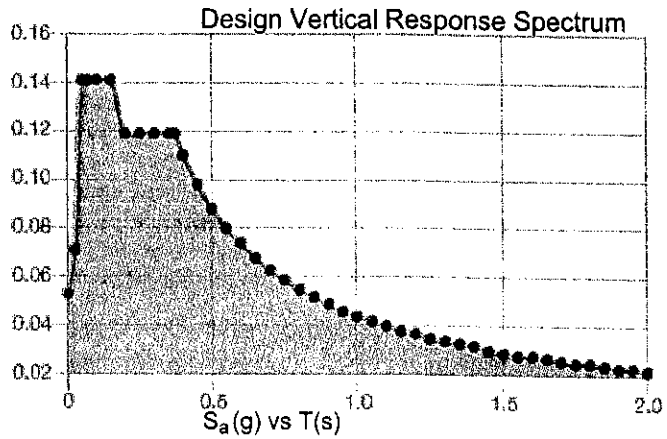
S_S :	0.222	S_{D1} :	0.088
S_1 :	0.055	T_L :	6
F_a :	1.6	PGA :	0.128
F_v :	2.4	PGA_M :	0.198
S_{MS} :	0.356	F_{PGA} :	1.543
S_{M1} :	0.132	I_e :	1
S_{DS} :	0.237	C_V :	0.745

Seismic Design Category B









Data Accessed: **Wed Oct 12 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.

ASCE
AMERICAN SOCIETY OF CIVIL ENGINEERS

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:	Wed Oct 12 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.

The ASCE 7 Hazard Tool is provided for your convenience, for informational purposes only, and is provided "as is" and without warranties of any kind. The location data included herein has been obtained from information developed, produced, and maintained by third party providers; or has been extrapolated from maps incorporated in the ASCE 7 standard. While ASCE has made every effort to use data obtained from reliable sources or methodologies, ASCE does not make any representations or warranties as to the accuracy, completeness, reliability, currency, or quality of any data provided herein. Any third-party links provided by this Tool should not be construed as an endorsement, affiliation, relationship, or sponsorship of such third-party content by or from ASCE.

ASCE does not intend, nor should anyone interpret, the results provided by this Tool to replace the sound judgment of a competent professional, having knowledge and experience in the appropriate field(s) of practice, nor to substitute for the standard of care required of such professionals in interpreting and applying the contents of this Tool or the ASCE 7 standard.

In using this Tool, you expressly assume all risks associated with your use. Under no circumstances shall ASCE or its officers, directors, employees, members, affiliates, or agents be liable to you or any other person for any direct, indirect, special, incidental, or consequential damages arising from or related to your use of, or reliance on, the Tool or any information obtained therein. To the fullest extent permitted by law, you agree to release and hold harmless ASCE from any and all liability of any nature arising out of or resulting from any use of data provided by the ASCE 7 Hazard Tool.

Tectonic
PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.

Job No.:	10710.NJJER01121A, Rev 1		
Sheet No.:	1	of	4
Calculated By:	IM	Date :	01/11/23
Checked By:	JJ	Date :	01/11/23

WIND AND ICE LOADS PER TIA-222-H

Work Order #:	10710.NJJER01121A, Rev 1
Site Name:	NJJER01121A
Location:	3965 Congress Street, Fairfield, CT 06824
County:	Fairfield

Tower Type	MP	Monopole
Structure Height	150	ft
Supporting Str Height	GM	Ground Mounted
Risk Category	II	Substantial risk
Exposure Category	B	Suburban/wooded/obstructed
Topo Category	1	Flat or rolling terrain
Height of crest	0	ft
Mean elevation (zs)	274	ft

Basic Wind Speed (3-sec gust):		
Without ice	130	mph*
With ice	50	mph
Maintenance Wind	30	mph
Ice thickness	1.00	in

Importance Factor	
Ice thickness	1.15
Earthquake	1.25
Supporting Data:	
K_s	1.00
K_e	0.99
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)	105
	Kh	N/A
	Kzt	1.00
	Kz	1.00
	Kiz	1.12
Wind Pressure, qz (psf)	No Ice	40.79
	With Ice	6.03
	Service	2.17
(tiz)	Ice Thk	1.40
Appurtenances (qzGh)	No Ice	40.79
	With Ice	6.03
	Service	2.17

Note : *Ultimate 3-second gust wind speed of 130 mph per Appendix P.

Tectonic

PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.

Job No. 10710.NJJER01121A, Rev 1

Sheet No.	2	of	4
Calculated By	IM	Date :	01/11/23
Checked By	JJ	Date :	01/11/23

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]	[redacted]	[redacted]	105	6.00	19.60	7.80	[redacted]	1.25	1.47	9.80	33.13	3.90	15.53	450	211	70.8	212.4
[redacted]	[redacted]	[redacted]	105	1.24	15.70	7.80	[redacted]	1.20	1.20	1.62	5.26	0.81	2.61	72	36	63.9	191.7
[redacted]	[redacted]	[redacted]	105	1.24	15.70	9.00	[redacted]	1.20	1.20	1.62	5.26	0.93	3.02	72	41	74.9	224.7
[redacted]	[redacted]	[redacted]	105	1.58	14.39	8.15	[redacted]	1.20	1.20	1.90	2.05	1.07	1.16	84	47	21.3	21.3
										$\sum(CaAA)_N$	45.71	$\sum(CaAA)_T$	22.32				650

WIND WITH ICE

Ice Thk = 1.40 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	3	105	6.23	22.41	10.61	Cylindrical	0.72	0.72	11.64	22.59	5.51	10.69	45	22	27.4	179.4
TA08025-B604-RRH	P	3	105	1.48	18.51	10.61	Cylindrical	0.7	0.7	2.28	4.30	1.30	2.47	9	5	4.9	31.8
TA08025-B605-RRH	P	3	105	1.48	18.51	11.81	Cylindrical	0.7	0.7	2.28	4.30	1.45	2.74	9	6	5.1	33.5
RDIDC-9181-PF-48	P	1	105	1.82	17.20	10.96	Cylindrical	0.7	0.7	2.60	1.64	1.66	1.04	10	6	5.9	38.9
										$\sum(CaAA)_N$	32.83	$\sum(CaAA)_T$	16.94				284

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	3	105	6.00	19.60	7.80	Flat	1.25	1.47	9.80	33.13	3.90	15.53	24	11
TA08025-B604-RRH	P	3	105	1.24	15.70	7.80	Flat	1.20	1.20	1.62	5.26	0.81	2.61	4	2
TA08025-B605-RRH	P	3	105	1.24	15.70	9.00	Flat	1.20	1.20	1.62	5.26	0.93	3.02	4	2
RDIDC-9181-PF-48	P	1	105	1.58	14.39	8.15	Flat	1.20	1.20	1.90	2.05	1.07	1.16	4	3
										$\sum(CaAA)_N$	45.71	$\sum(CaAA)_T$	22.32		

Tectonic
PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.

Job No.	10710.NJJER01121A, Rev 1		
Sheet No.	3	of	4
Calculated By	JJ	Date :	01/11/23
Checked By	JJ	Date :	01/11/23

Mounting System Information

Mount Center Line:	105 ft

Reduction Factor = [redacted] 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	44.2	10.31	7.5	13.96	9.4	2.4
[redacted]						2	3.00	40.8	3.19	7.0	4.40	8.9	2.2
[redacted]						2	5.00	13.6	10.00	4.4	12.02	4.8	0.7
[redacted]						1.2	8.40	14.3	21.98	6.0	15.14	3.8	0.8
[redacted]						1.2	20.70	11.7	54.17	4.9	40.91	3.4	0.6
[redacted]						2	9.30	23.0	14.96	5.9	17.01	6.2	1.2
[redacted]						2	6.84	27.2	13.68	8.7	11.64	6.8	1.4
[redacted]						2	9.90	44.9	16.58	12.1	14.11	9.5	2.4
[redacted]						1.2	8.63	11.7	22.57	4.9	17.05	3.4	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.NJJER01121A, Rev 1			
Sheet No.	4	of	4
Calculated By	IM	Date :	01/11/23
Checked By	JJ	Date :	01/11/23

Seismic Check

Tower Information

Tower Type:	MP	
Structure Height	150	ft
Supporting Structure Height	GM	ft
Mount Height	105	ft

Geographic Information

City:	Fairfield		
State:	Connecticut		
County:	Fairfield		
Latitude:	41.183383	Longitude:	-73.249022

Seismic Information

Risk Category	III		
Importance Factor	1.25		
Site Soil Classification	D		Table 2-10
S_s	0.2		https://asce7hazardtool.online/
S_1	0.07		
F_a	1.6		(Table 2-11, interpolation allowed)
F_V	2.4		(Table 2-12, interpolation allowed)
S_{DS}	0.237		Section 2.7.5
S_{D1}	0.088		
R	3.0		Section 16.7
As	1.00		Section 16.7 & 2.7.8
Cs	0.15	>	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	3	105	71	11	3	11
TA08025-B604-RRH	P	3	105	64	10	3	10
TA08025-B605-RRH	P	3	105	75	11	4	11
RDIDC-9181-PF-48	P	1	105	21	3	1	3

Mounting System (Discrete Appurtenances)

Ev =0.2S_{DS} * D	0.0474 x D	"D" is the dead weight of the mount members.
Eh= rho * Q_E	0.15 x W	"W" total weight of structure above ground

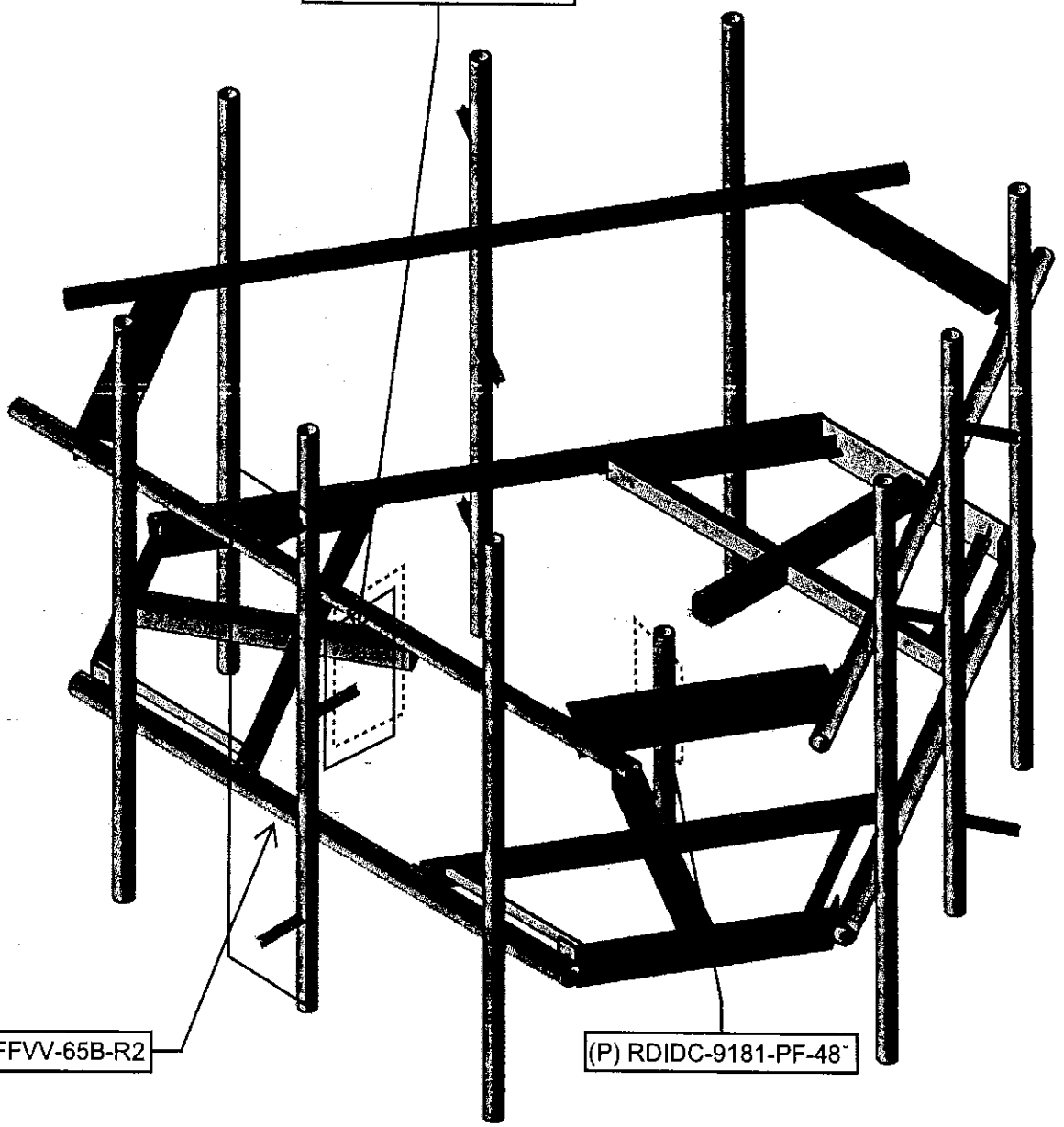
Notes:

1. Wind loads govern over Seismic loads

APPENDIX B

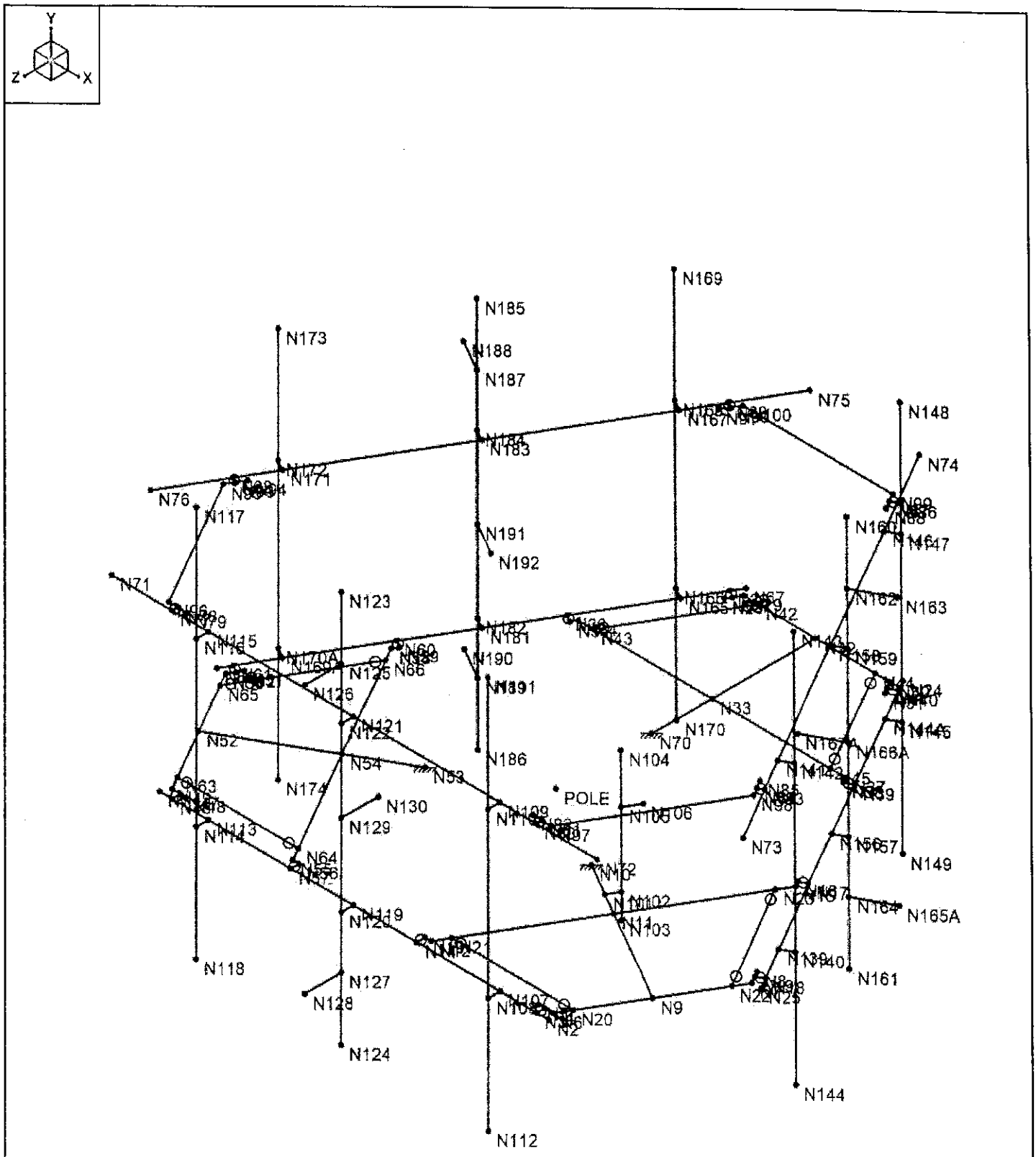
WIRE FRAME AND RENDERED MODELS

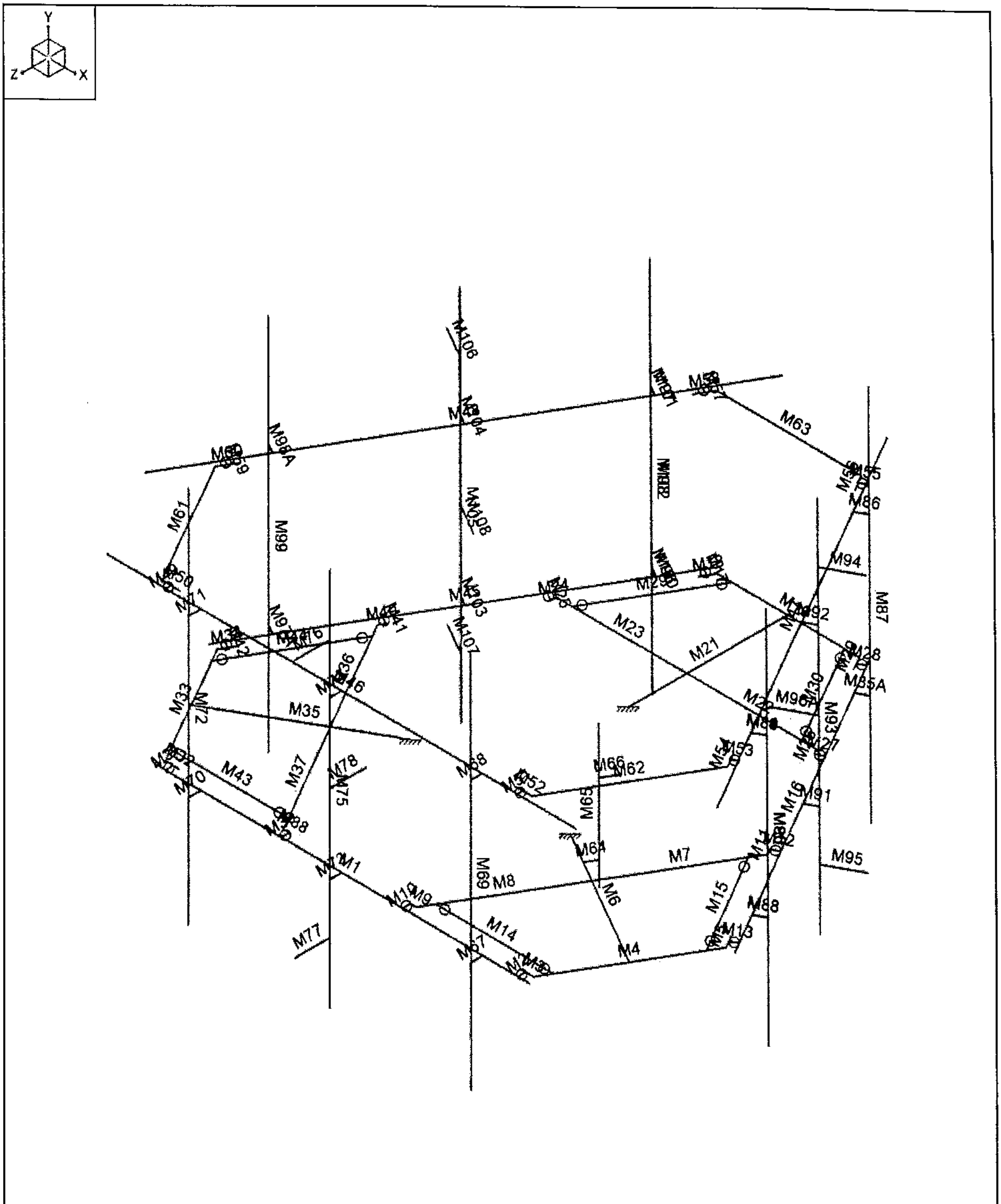
Proposed Platform Mount

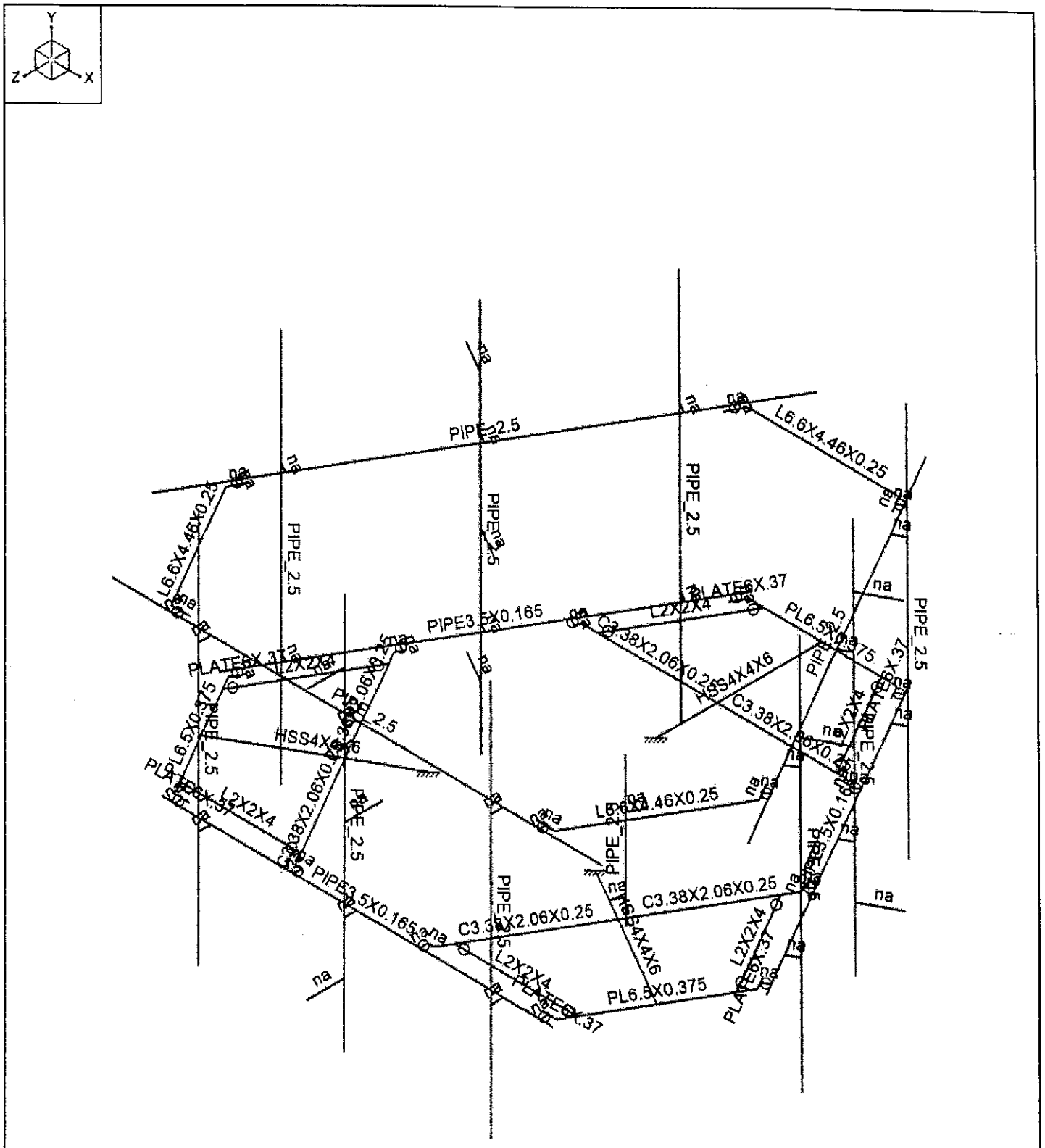


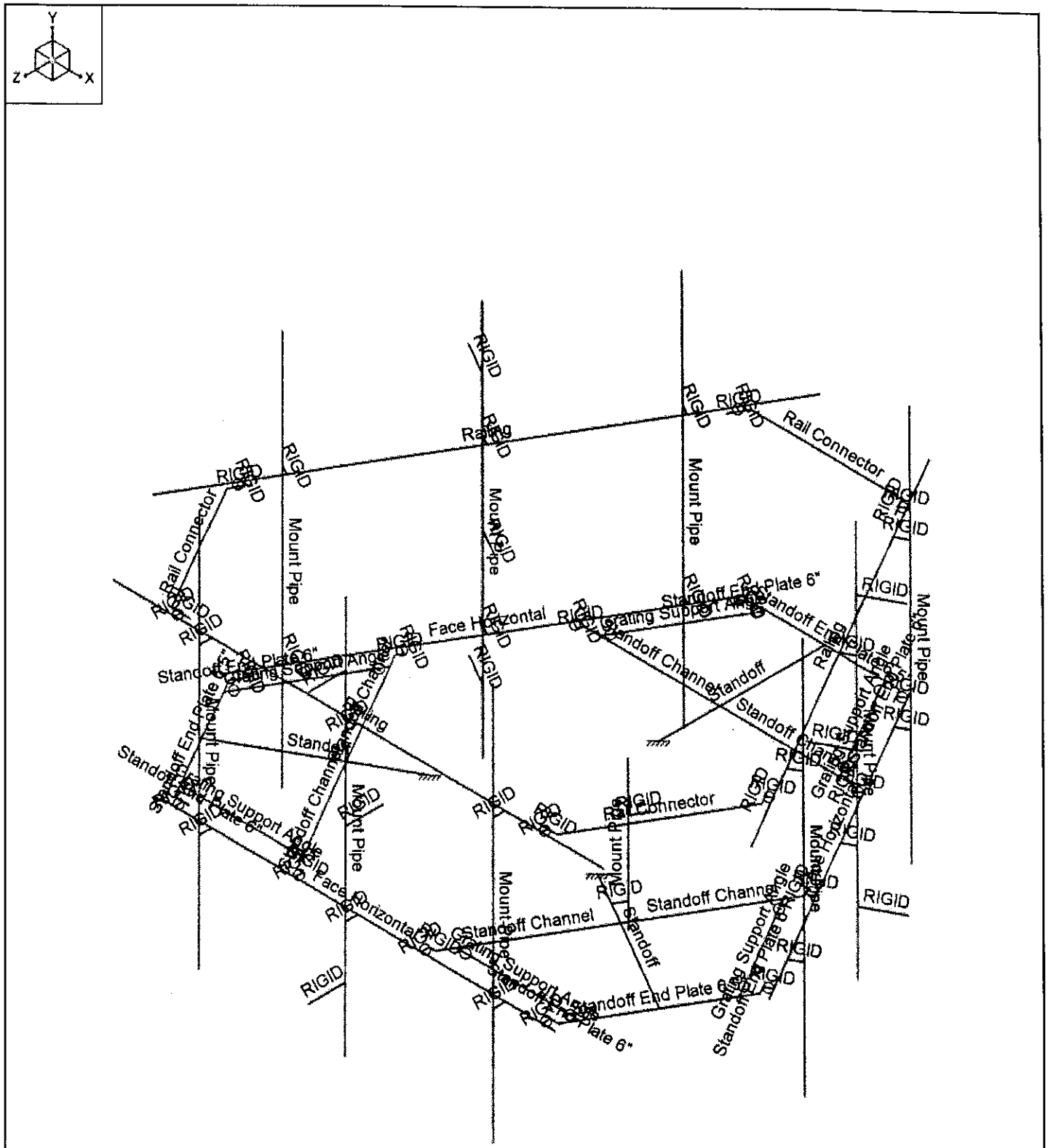
(P) PROPOSED

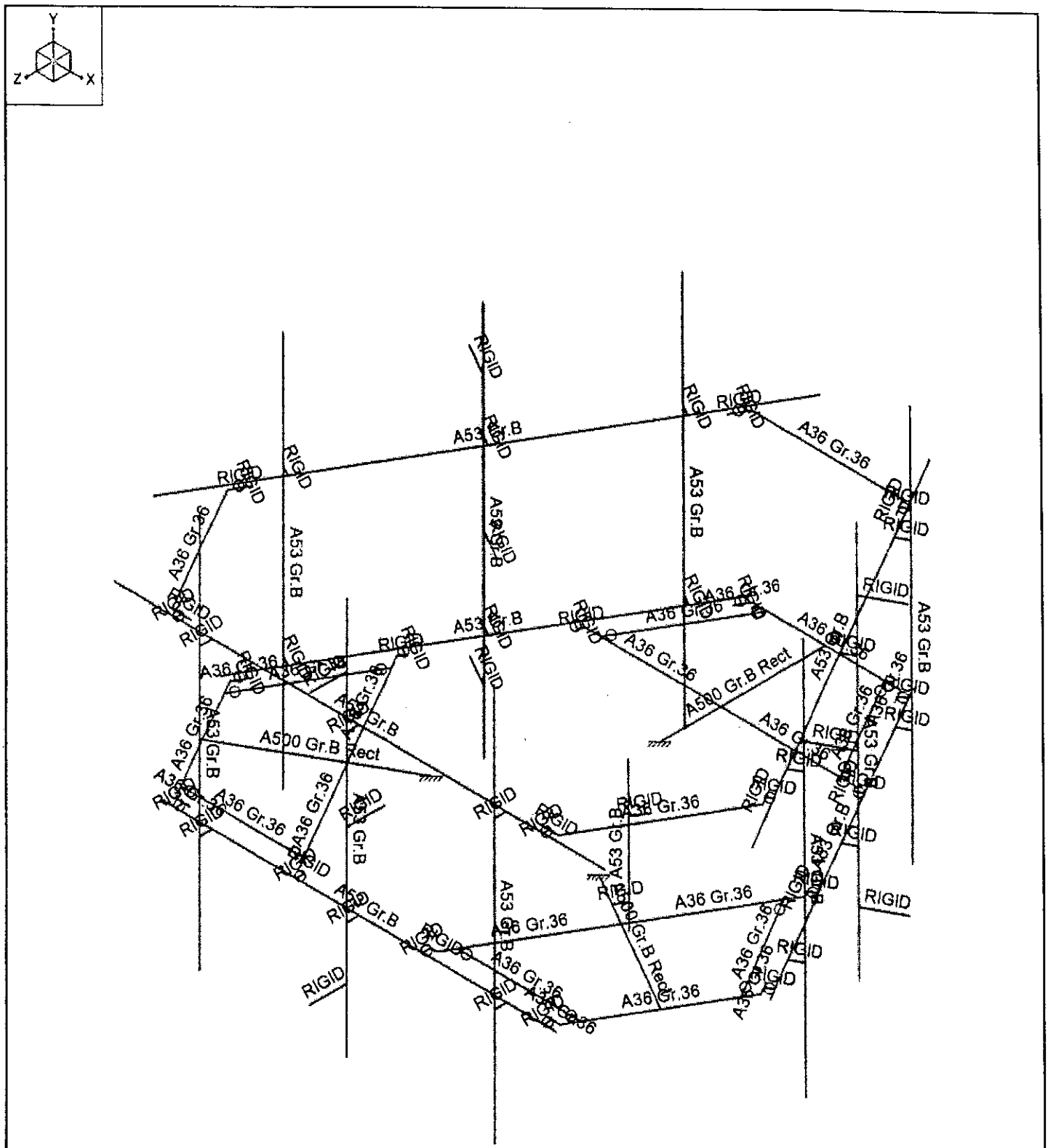
NOTES:
1) PROPOSED ANTENNAS AND MOUNTING PIPES HAVE BEEN VERTICALLY CENTERED ALONG THE EXISTING MOUNT (NO OFFSET).
2) LISTED PROPOSED APPURTENANCES ABOVE ARE TYPICAL FOR ALL SECTORS.

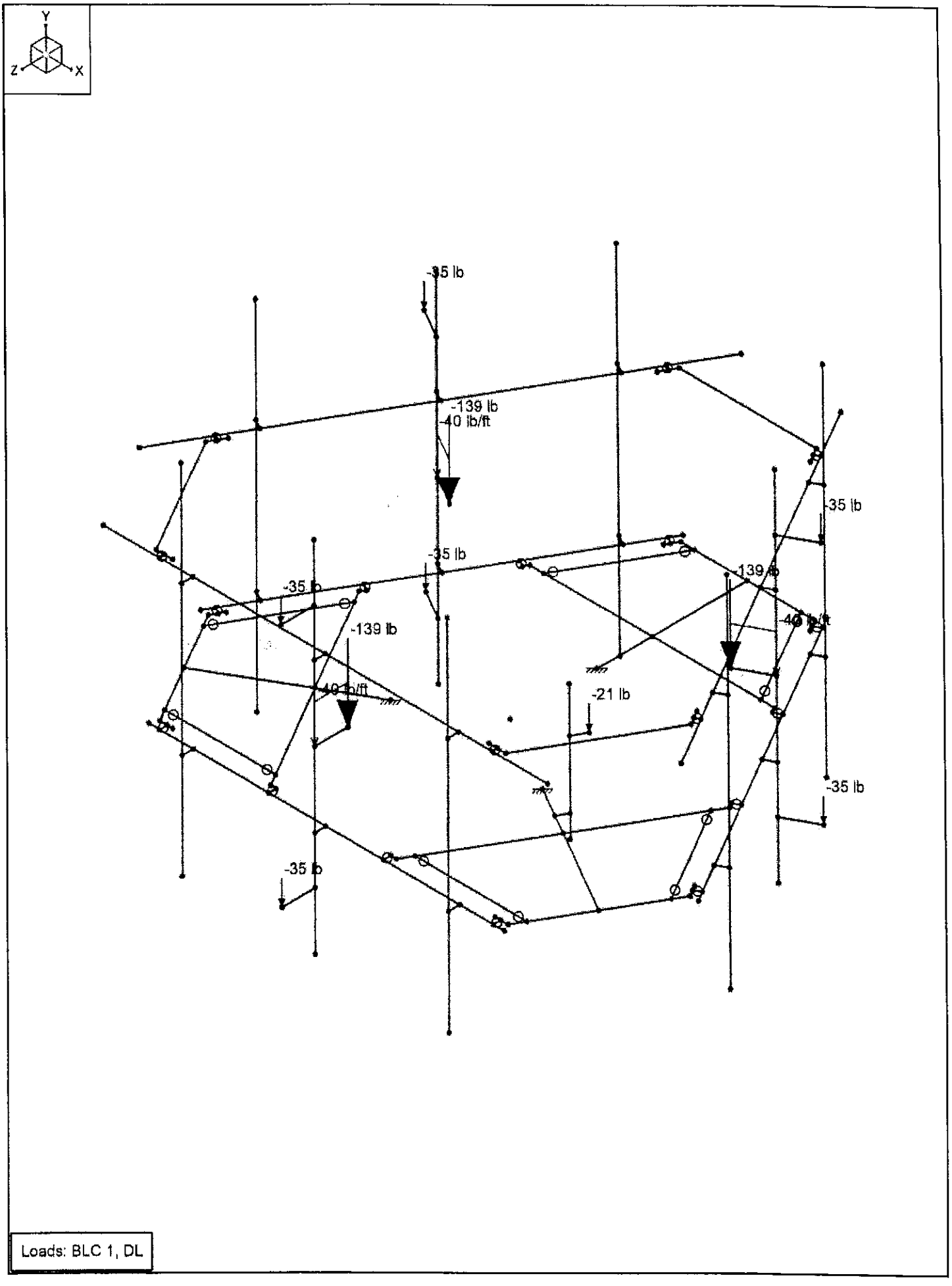

Y
Z
X
N169
N185
N173
N188
N187
N75
N148
N74
N183
N172
N171
N76
N117
N191
N192
N160
N147
N71
N123
N162
N163
N181
N190
N125
N66
N65
N126
N121
N52
N54
N53
N186
N104
N174
N130
N129
POLE
N73
N149
N64
N119
N120
N164
N165A
N118
N127
N128
N161
N124
N144
N112
N9
N20
N2

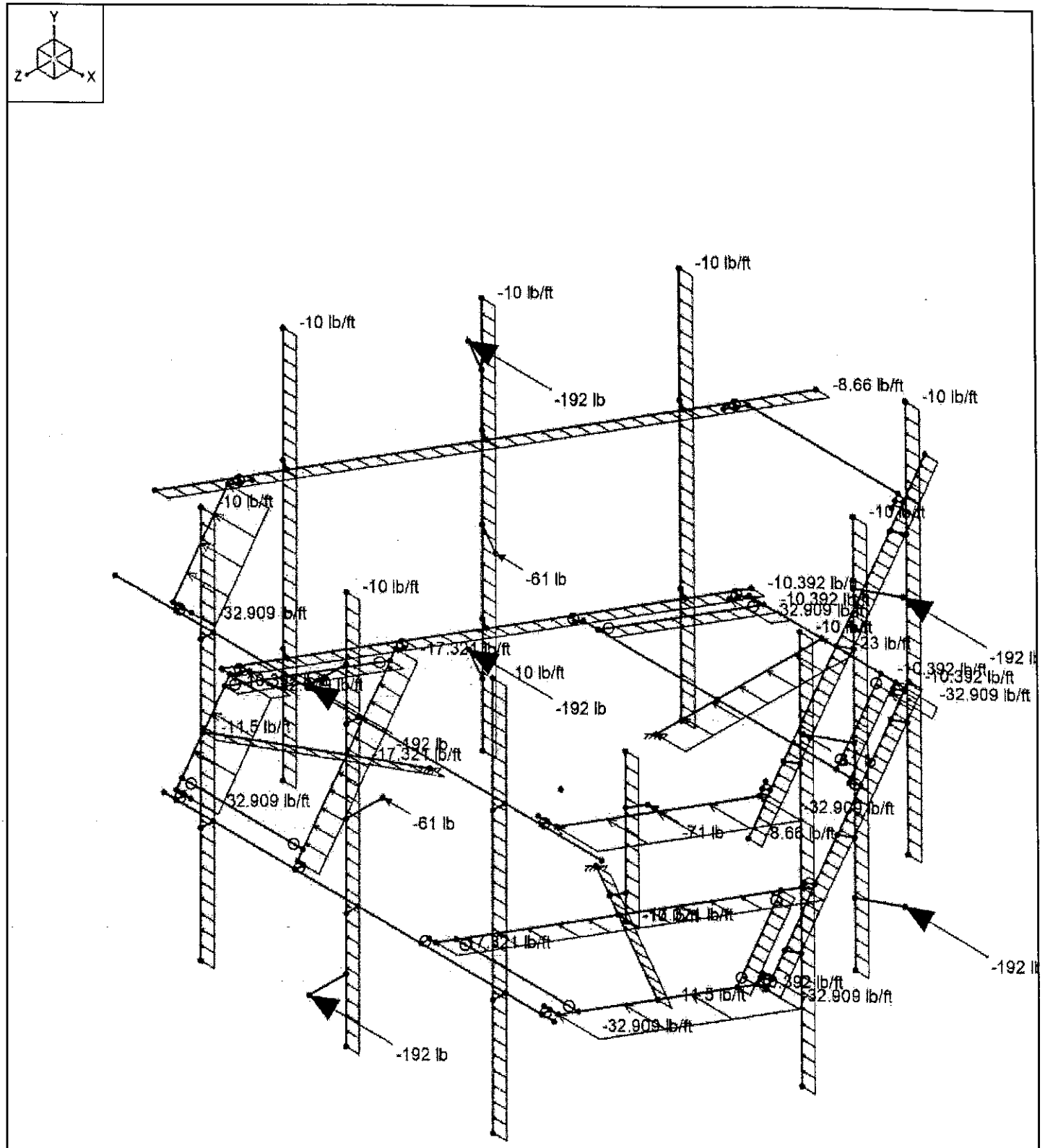

Y
X
Z
M106
M104
M63
M55
M61
M99
M98A
M86
M94
M87
M50
M71
M29
M103
M107
M23
M21
M92
M28
M85A
M30
M93
M27
M35
M33
M72
M43
M37
M36
M78
M75
M68
M52
M66
M62
M65
M53
M64
M7
M8
M69
M6
M4
M14
M15
M13
M16
M91
M95
M88
M77
M10
M1
M9

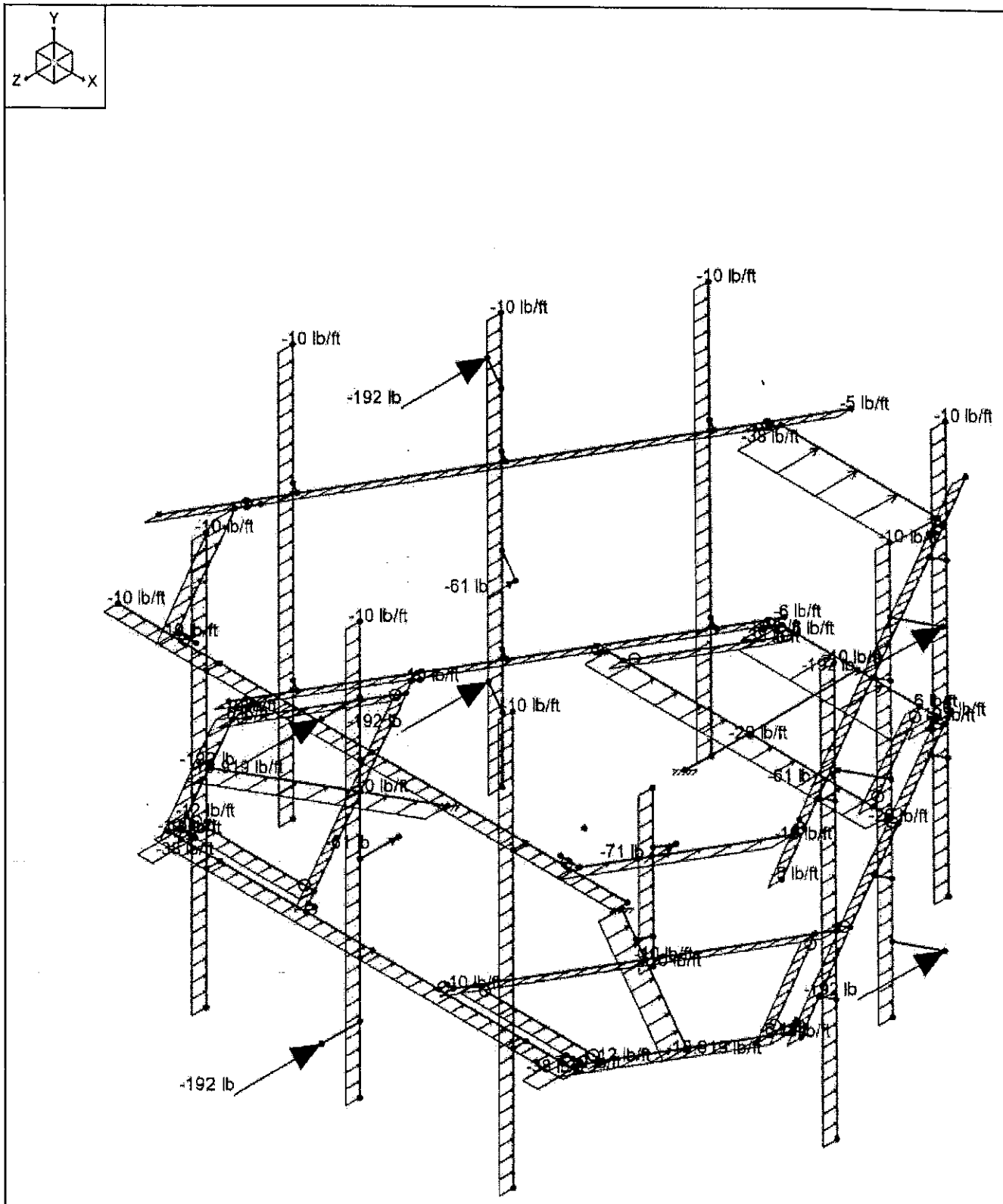

Y
Z
X
PIPE_2.5
L6.6X4.46X0.25
PLATE6X.37
L2X2X4
PIPE3.5X0.165
C3.38X2.06X0.25
HSS4X4X6
PL6.5X0.375
na


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

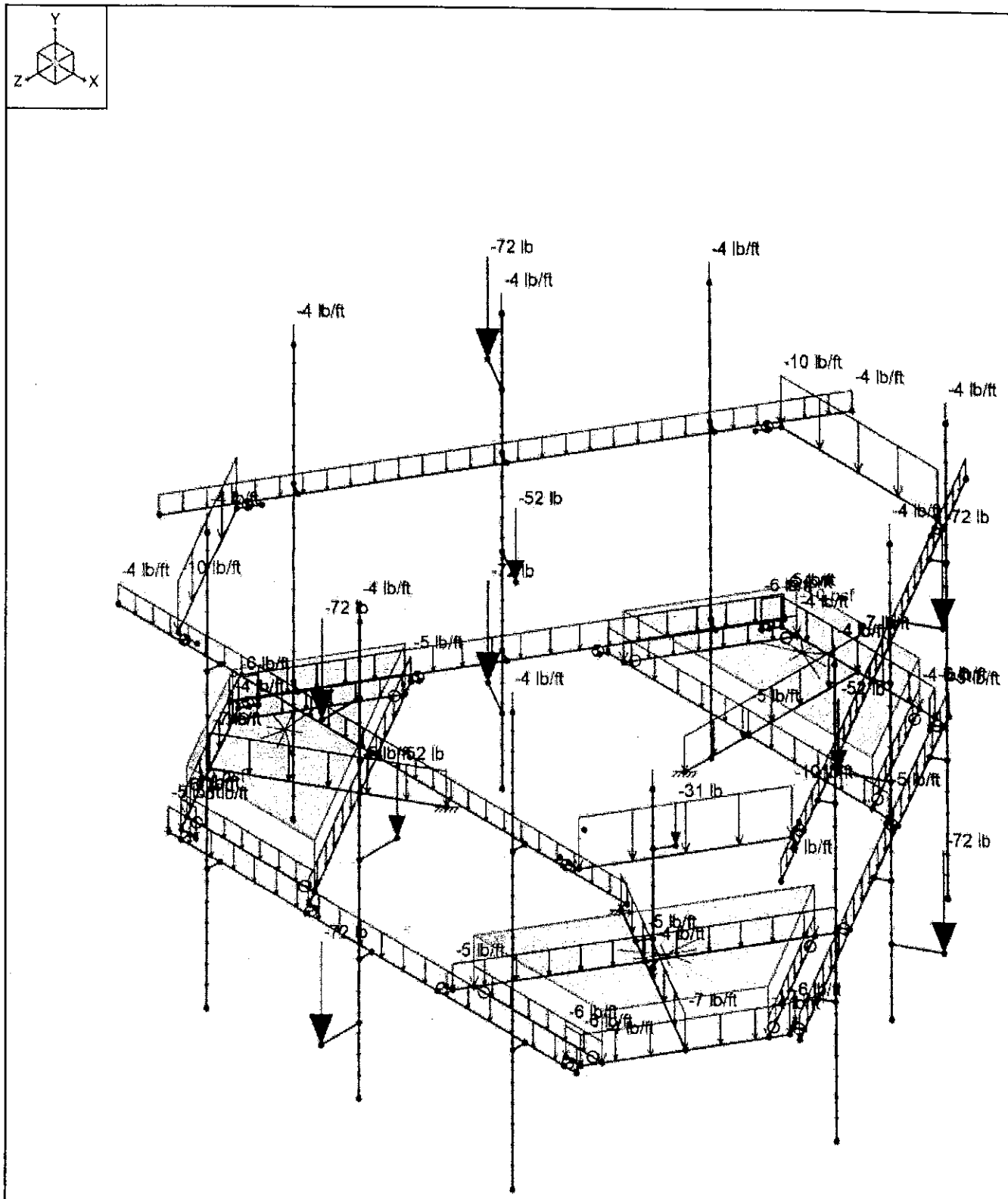

Y
Z
X
RIGID
A53 Gr.B
A36 Gr.36
A500 Gr.B Rect


Y
Z
X
-35 lb
-139 lb
-40 lb/ft
-35 lb
-35 lb
-35 lb
-139 lb
-40 lb/ft
-21 lb
-35 lb
-35 lb
Loads: BLC 1, DL

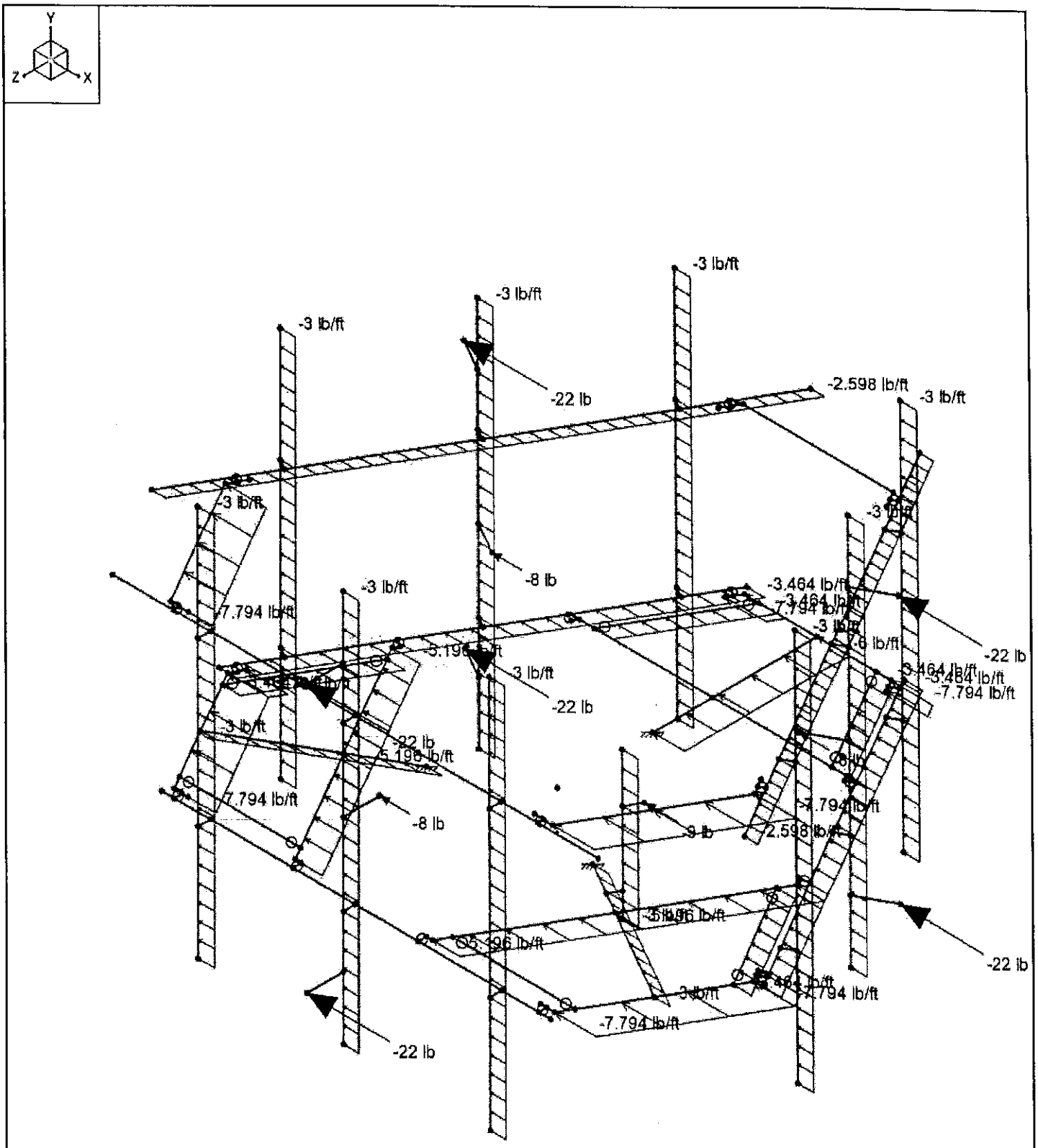

Y
Z
X
-10 lb/ft
-10 lb/ft
-10 lb/ft
-192 lb
-8.66 lb/ft
-10 lb/ft
10 lb/ft
-10 lb/ft
-61 lb
-10 lb/ft
32.909 lb/ft
-10.392 lb/ft
-10.392 lb/ft
32.909 lb/ft
-10 lb/ft
-17.321 lb/ft
23 lb/ft
-192 lb
10 lb/ft
-10.392 lb/ft
-10.392 lb/ft
-32.909 lb/ft
-192 lb
-14.5 lb/ft
-192 lb
-17.321 lb/ft
32.909 lb/ft
-61 lb
-32.909 lb/ft
-71 lb
-8.66 lb/ft
-14.5 lb/ft
-17.321 lb/ft
-192 lb
-10.392 lb/ft
-14.5 lb/ft
-32.909 lb/ft
-32.909 lb/ft
-192 lb
Loads: BLC 2, WLX



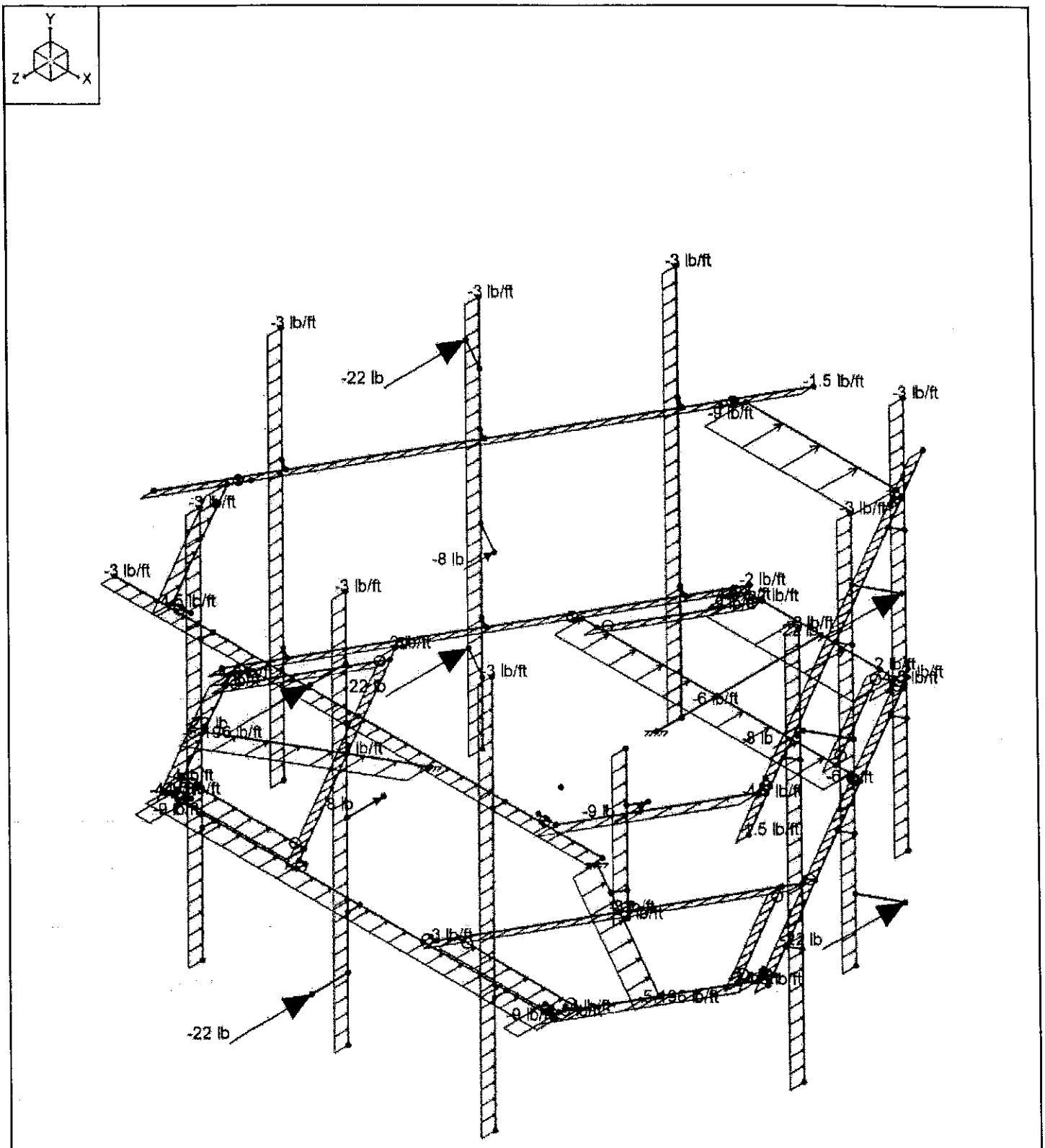
Loads: BLC 3, WLZ



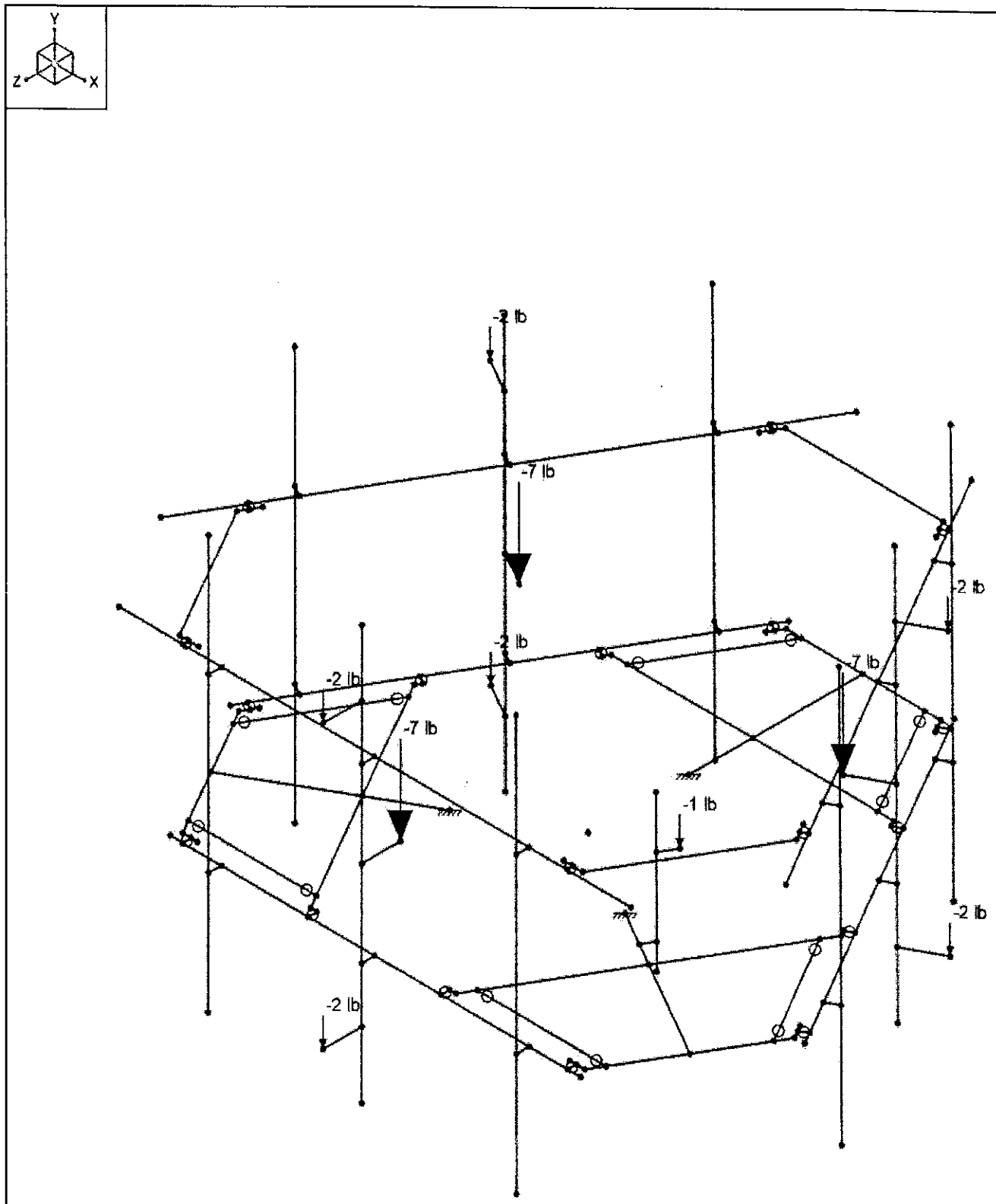
Loads: BLC 4, DL



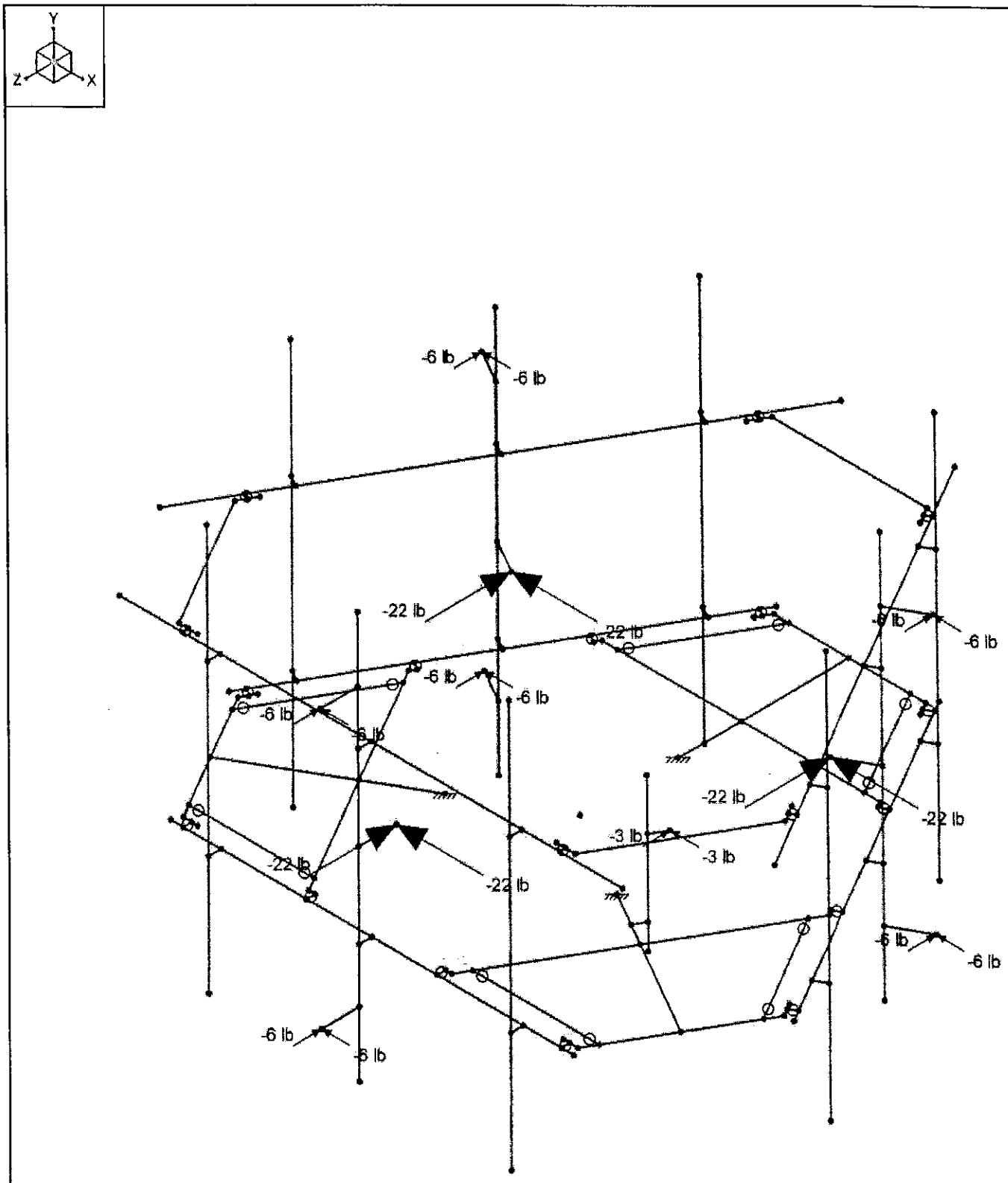
Loads: BLC 5, WLXi



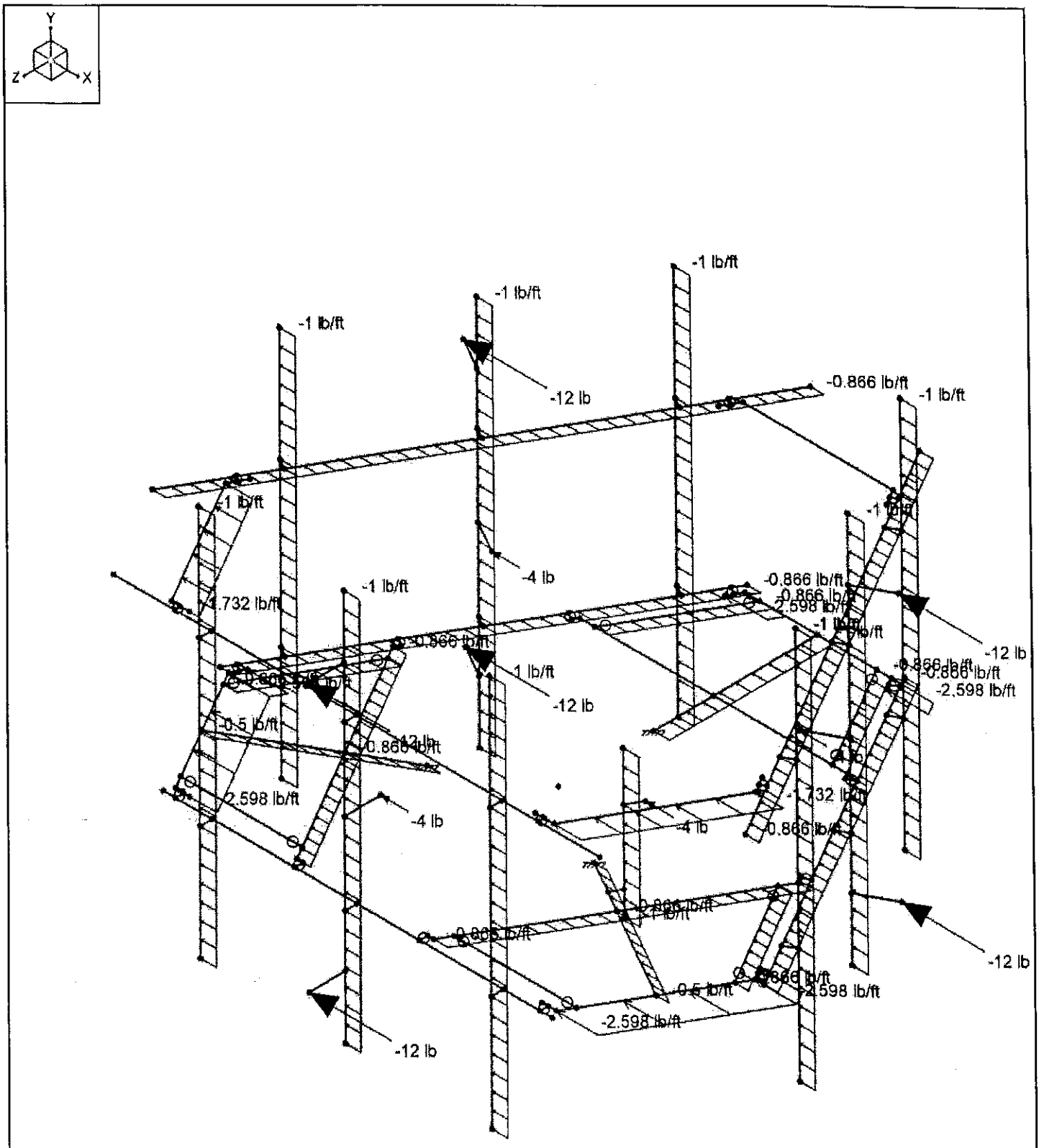
Loads: BLC 6, WLZi



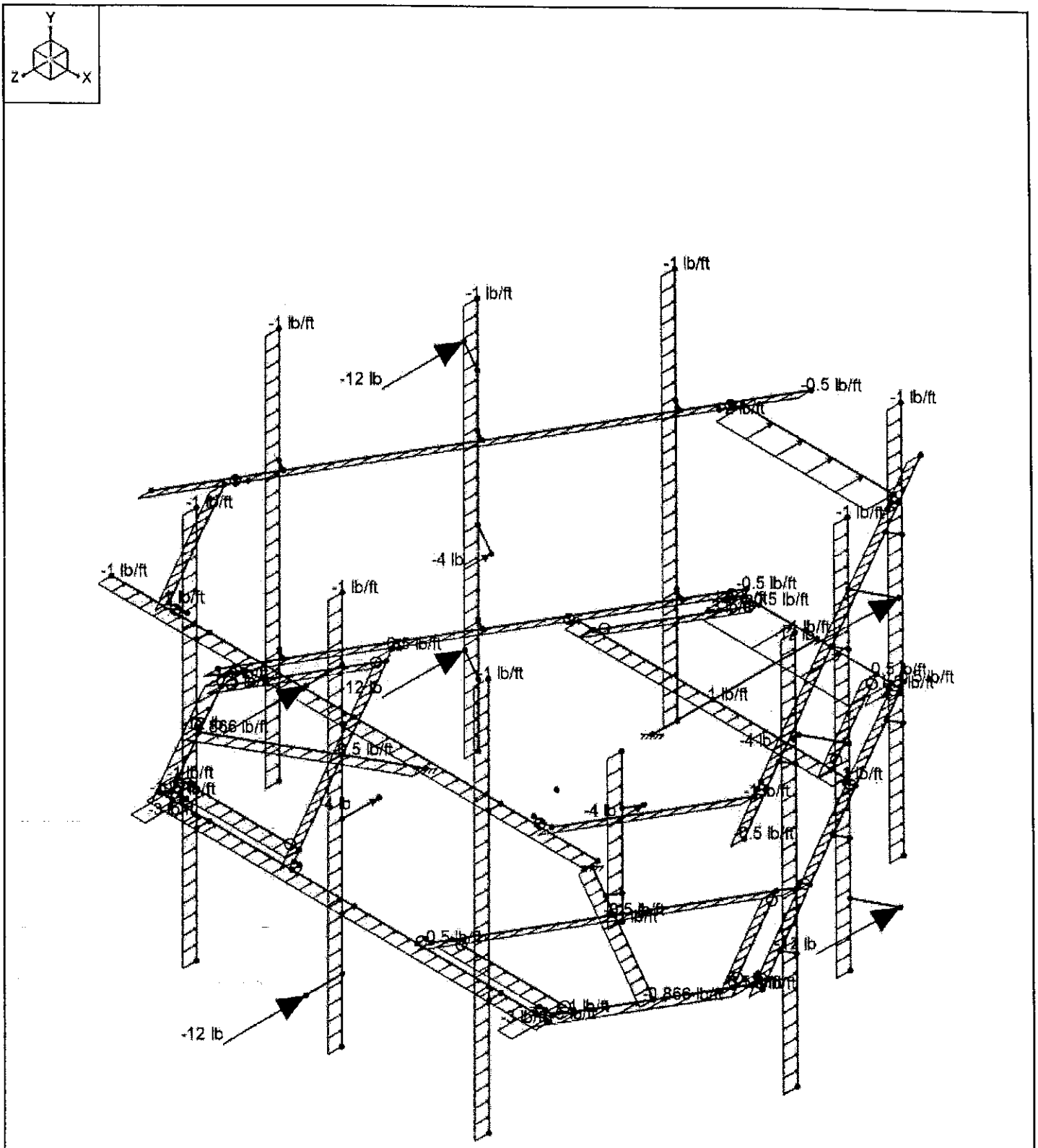
Loads: BLC 7, ELv



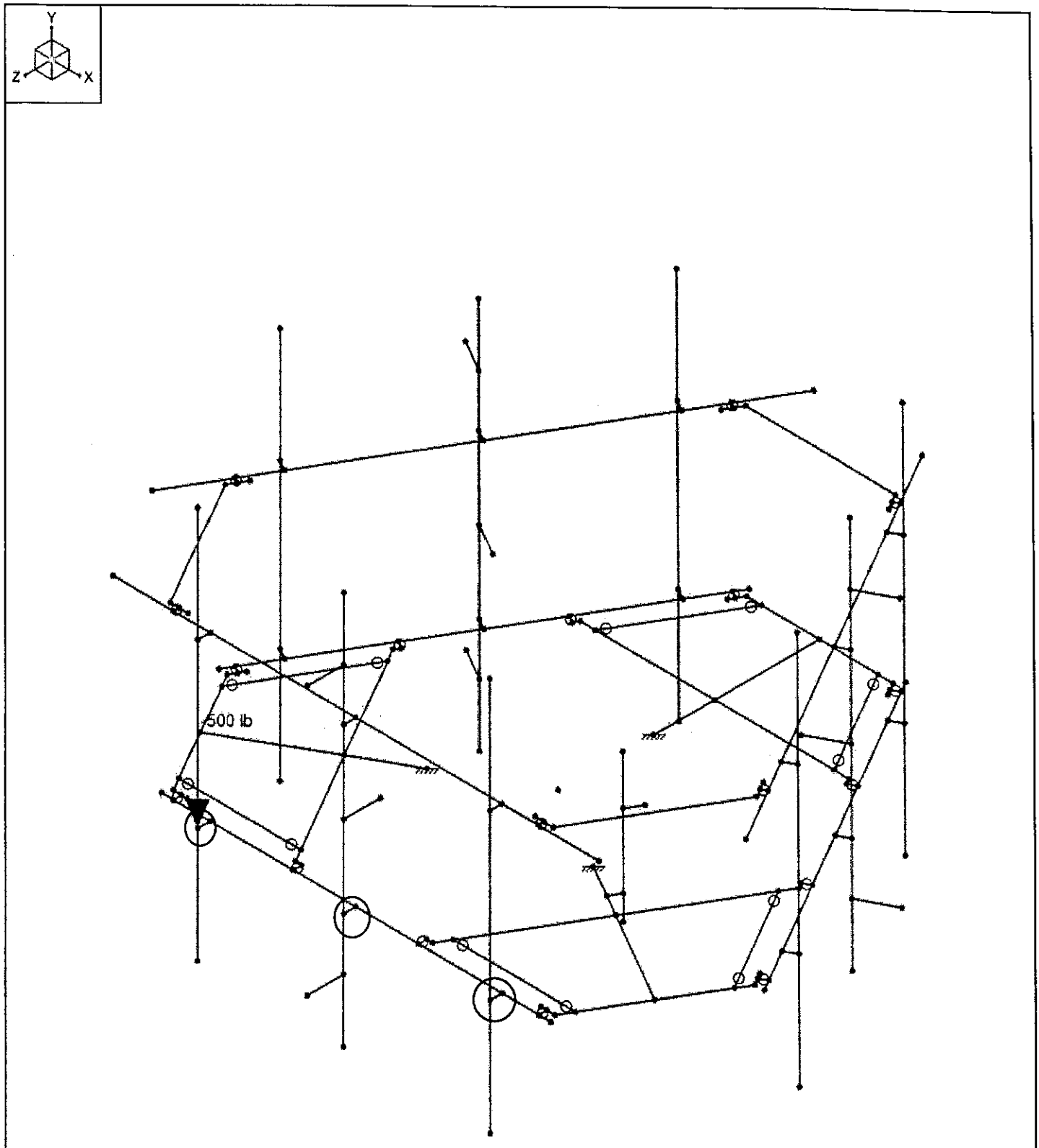
Loads: BLC 8, ELh



Loads: BLC 9, WLX (MAINT)

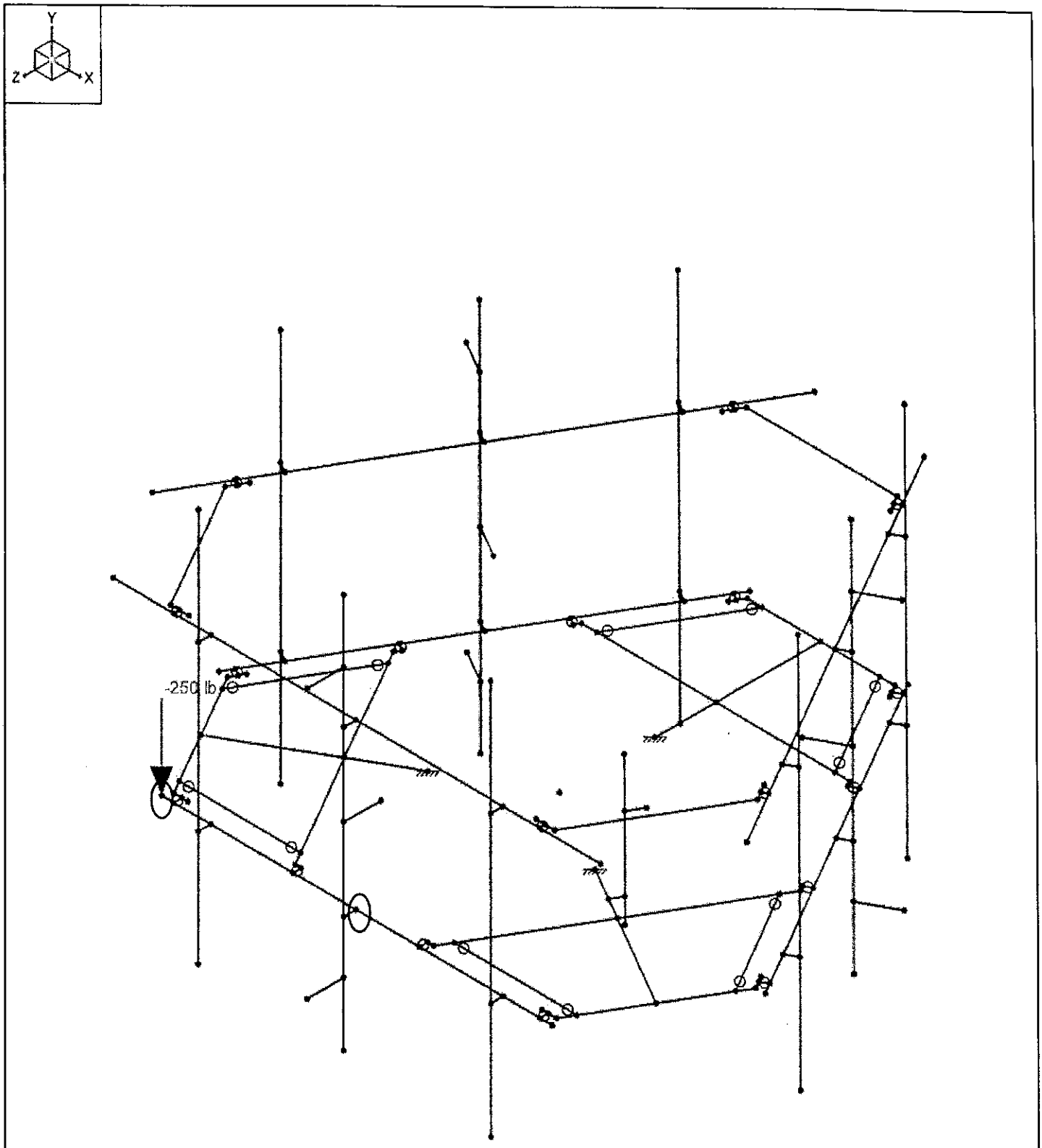


Loads: BLC 10, WLZ (MAINT)



*500 lbs man load considered, typ of 3

Loads: BLC 11, Lm1

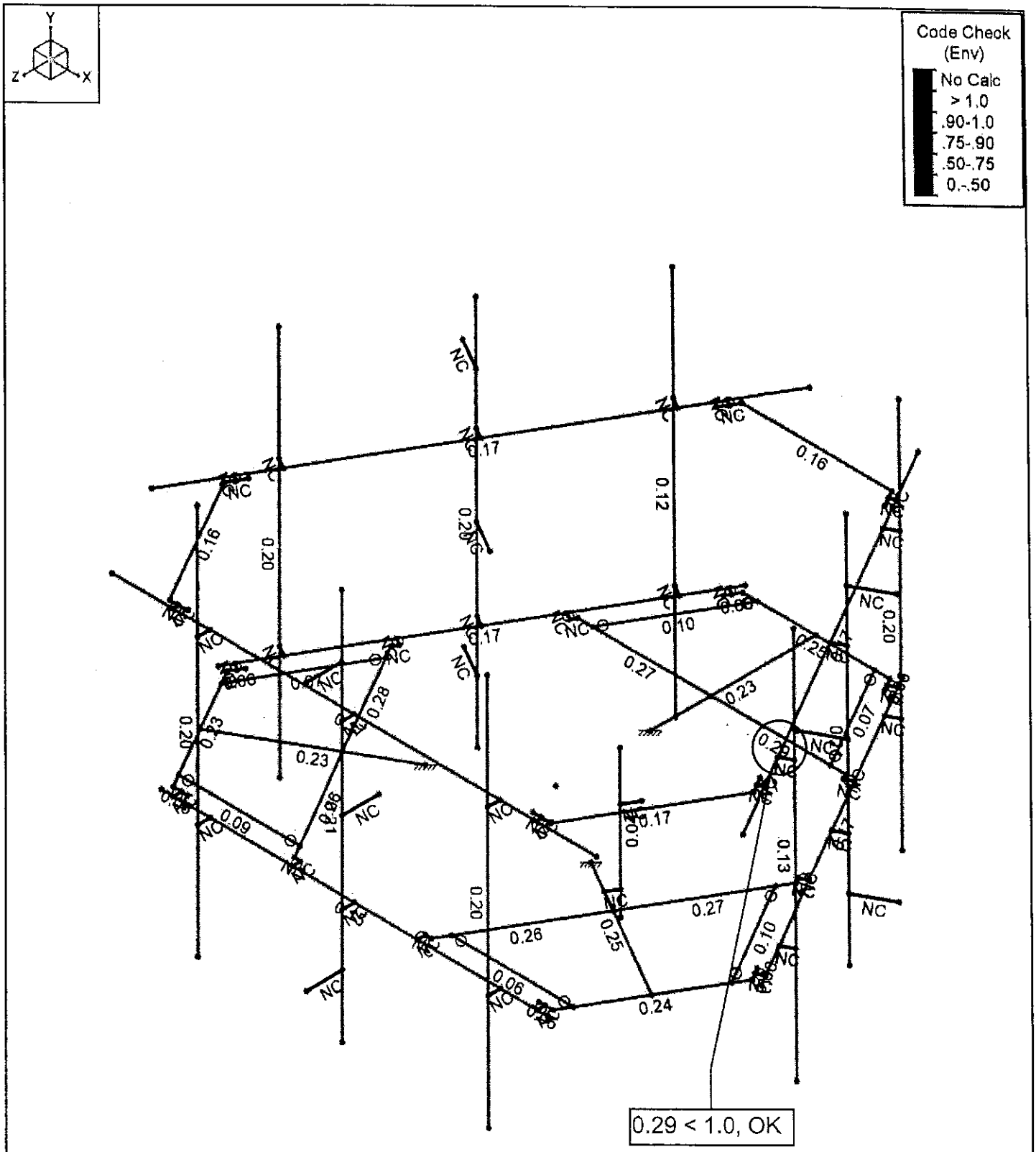


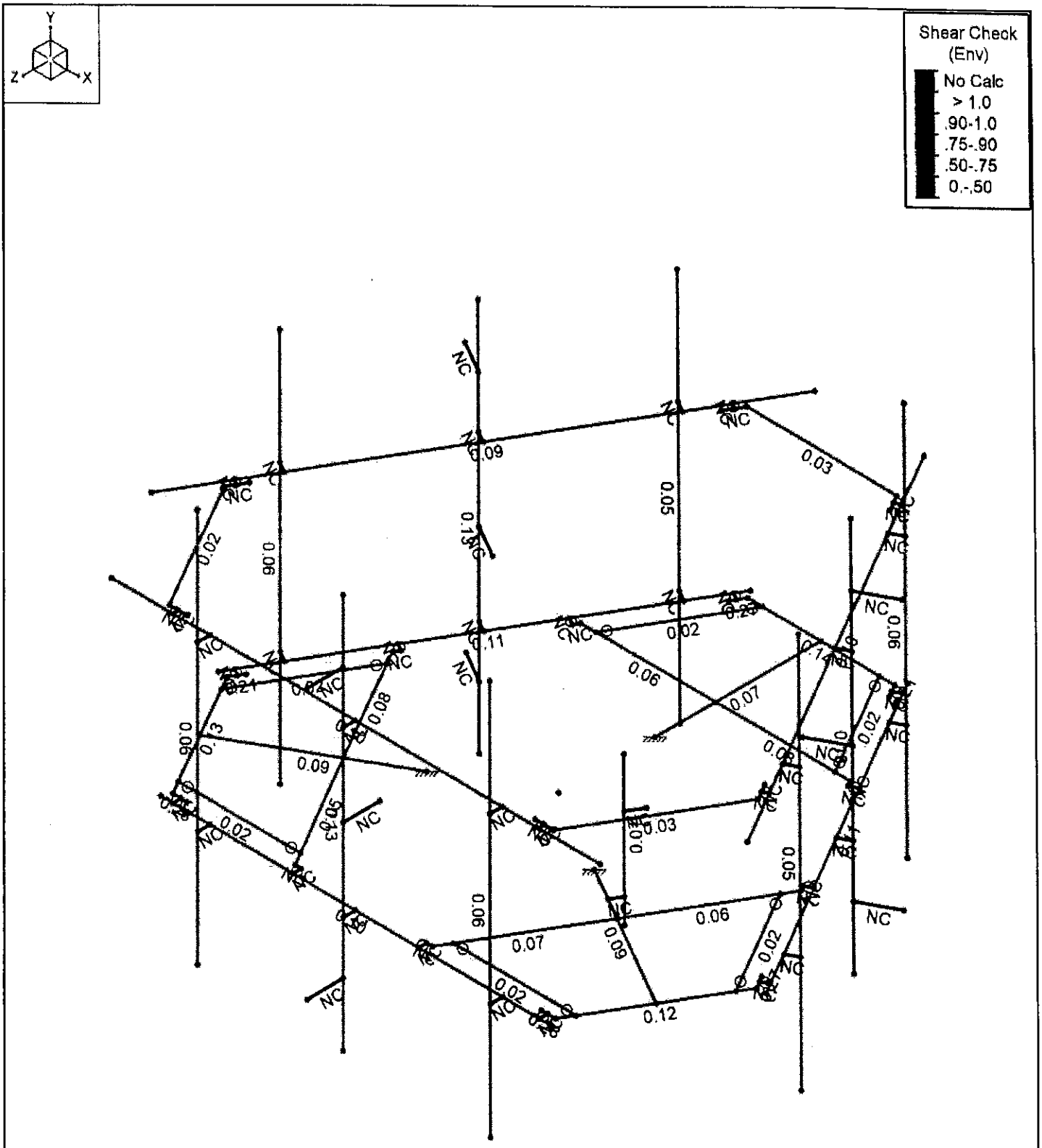
*250 lbs maintenance vertical load considered, typ of 2

Loads: BLC 14, Lv1

APPENDIX C

SOFTWARE ANALYSIS OUTPUT


Y
Z
X
Code Check
(Env)
No Calc
> 1.0
.90-1.0
.75-.90
.50-.75
0.-.50
0.29 < 1.0, OK
Member Code Checks Displayed (Enveloped)
Envelope Only Solution


Y
Z
X
Shear Check
(Env)
No Calc
> 1.0
.90-1.0
.75-.90
.50-.75
0.-.50
NC
0.09
0.03
0.05
0.13
0.02
0.06
0.11
0.23
0.12
0.07
0.08
0.13
0.09
0.03
0.06
0.07
0.09
0.02
0.12
Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [1e^{5}°F^{-1}]	Density [k/ft^3]	Yield [ksi]	Ry	Fu [ksi]	Rt
1	A992	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	0.3	0.65	0.49	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	0.3	0.65	0.527	42	1.4	58	1.3
5	A500 Gr.B Rect	29000	11154	0.3	0.65	0.527	46	1.4	58	1.3
6	A53 Gr.B	29000	11154	0.3	0.65	0.49	35	1.6	60	1.2
7	A1085	29000	11154	0.3	0.65	0.49	50	1.4	65	1.3

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rule	Area [in^2]	Iyy [in^4]	Izz [in^4]	J [in^4]
1	Standoff End Plate 6.5"	PL6.5X0.375	Beam	RECT	A36 Gr.36	Typical	2.438	0.029	8.582	0.11
2	Standoff End Plate 6"	PLATE6X.37	Beam	RECT	A36 Gr.36	Typical	2.22	0.025	6.66	0.097
3	Grating Support Angle	L2X2X4	Beam	Single Angle	A36 Gr.36	Typical	0.944	0.346	0.346	0.021
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	0.715	3.026	0.034
7	Standoff	HSS4X4X6	Beam	SquareTube	A500 Gr.B Rect	Typical	4.78	10.3	10.3	17.5
8	Rail Connector	L6.6X4.46X0.25	Beam	Single Angle	A36 Gr.36	Typical	2.703	4.759	12.473	0.055
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	Nodal	Point	Distributed	Area(Member)
1	DL	DL				10		3	
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		-0.047		10			
8	ELh	ELZ	-0.15		-0.15	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 4 Transient Area Loads	None						18	
18	BLC 16 Transient Area Loads	None						18	

Load Combinations

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
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	0.866	3	0.5	16	1.2		
5	1.2D+(WLX+WLZ) - 60 Deg	Yes	Y	1	1.2	2	0.5	3	0.866	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	-0.5	3	0.866	16	1.2		

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
8	1.2D+(WLX+WLZ) - 150 Deg	Yes	Y	1	1.2	2	-0.866	3	0.5	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	-0.866	3	-0.5	16	1.2		
11	1.2D+(WLX+WLZ) - 240 Deg	Yes	Y	1	1.2	2	-0.5	3	-0.866	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	0.5	3	-0.866	16	1.2		
14	1.2D+(WLX+WLZ) - 330 Deg	Yes	Y	1	1.2	2	0.866	3	-0.5	16	1.2		
15	**Wind Load with Ice**												
16	1.2D+1.0Di+1.0(WLXi+WLZi) - 0 Deg	Yes	Y	1	1.2	4	1	5	1	6		16	1.2
17	1.2D+1.0Di+1.0(WLXi+WLZi) - 30 Deg	Yes	Y	1	1.2	4	1	5	0.866	6	0.5	16	1.2
18	1.2D+1.0Di+1.0(WLXi+WLZi) - 60 Deg	Yes	Y	1	1.2	4	1	5	0.5	6	0.866	16	1.2
19	1.2D+1.0Di+1.0(WLXi+WLZi) - 90 Deg	Yes	Y	1	1.2	4	1	5		6	1	16	1.2
20	1.2D+1.0Di+1.0(WLXi+WLZi) - 120 Deg	Yes	Y	1	1.2	4	1	5	-0.5	6	0.866	16	1.2
21	1.2D+1.0Di+1.0(WLXi+WLZi) - 150 Deg	Yes	Y	1	1.2	4	1	5	-0.866	6	0.5	16	1.2
22	1.2D+1.0Di+1.0(WLXi+WLZi) - 180 Deg	Yes	Y	1	1.2	4	1	5	-1	6		16	1.2
23	1.2D+1.0Di+1.0(WLXi+WLZi) - 210 Deg	Yes	Y	1	1.2	4	1	5	-0.866	6	-0.5	16	1.2
24	1.2D+1.0Di+1.0(WLXi+WLZi) - 240 Deg	Yes	Y	1	1.2	4	1	5	-0.5	6	-0.866	16	1.2
25	1.2D+1.0Di+1.0(WLXi+WLZi) - 270 Deg	Yes	Y	1	1.2	4	1	5		6	-1	16	1.2
26	1.2D+1.0Di+1.0(WLXi+WLZi) - 300 Deg	Yes	Y	1	1.2	4	1	5	0.5	6	-0.866	16	1.2
27	1.2D+1.0Di+1.0(WLXi+WLZi) - 330 Deg	Yes	Y	1	1.2	4	1	5	0.866	6	-0.5	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 Service Load)** Location 1												
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, Service) - 0 Deg	Yes	Y	1	1.2	11	1.5	9	1	10		16	1.2
34	1.2D+1.5Lm1+1.0(WLX+WLZ, Service) - 30 Deg	Yes	Y	1	1.2	11	1.5	9	0.87	10	0.5	16	1.2
35	1.2D+1.5Lm1+1.0(WLX+WLZ, Service) - 60 Deg	Yes	Y	1	1.2	11	1.5	9	0.5	10	0.87	16	1.2
36	1.2D+1.5Lm1+1.0(WLX+WLZ, Service) - 90 Deg	Yes	Y	1	1.2	11	1.5	9		10	1	16	1.2
37	1.2D+1.5Lm1+1.0(WLX+WLZ, Service) - 120 Deg	Yes	Y	1	1.2	11	1.5	9	-0.5	10	0.87	16	1.2
38	1.2D+1.5Lm1+1.0(WLX+WLZ, Service) - 150 Deg	Yes	Y	1	1.2	11	1.5	9	-0.87	10	0.5	16	1.2
39	1.2D+1.5Lm1+1.0(WLX+WLZ, Service) - 180 Deg	Yes	Y	1	1.2	11	1.5	9	-1	10		16	1.2
40	1.2D+1.5Lm1+1.0(WLX+WLZ, Service) - 210 Deg	Yes	Y	1	1.2	11	1.5	9	-0.87	10	-0.5	16	1.2
41	1.2D+1.5Lm1+1.0(WLX+WLZ, Service) - 240 Deg	Yes	Y	1	1.2	11	1.5	9	-0.5	10	-0.87	16	1.2
42	1.2D+1.5Lm1+1.0(WLX+WLZ, Service) - 270 Deg	Yes	Y	1	1.2	11	1.5	9		10	-1	16	1.2
43	1.2D+1.5Lm1+1.0(WLX+WLZ, Service) - 300 Deg	Yes	Y	1	1.2	11	1.5	9	0.5	10	-0.87	16	1.2
44	1.2D+1.5Lm1+1.0(WLX+WLZ, Service) - 330 Deg	Yes	Y	1	1.2	11	1.5	9	0.87	10	-0.5	16	1.2
45	**Maintenance Load (With Service Load)** Location 2												
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, Service) - 0 Deg	Yes	Y	1	1.2	12	1.5	9	1	10		16	1.2
49	1.2D+1.5Lm2+1.0(WLX+WLZ, Service) - 30 Deg	Yes	Y	1	1.2	12	1.5	9	0.87	10	0.5	16	1.2
50	1.2D+1.5Lm2+1.0(WLX+WLZ, Service) - 60 Deg	Yes	Y	1	1.2	12	1.5	9	0.5	10	0.87	16	1.2
51	1.2D+1.5Lm2+1.0(WLX+WLZ, Service) - 90 Deg	Yes	Y	1	1.2	12	1.5	9		10	1	16	1.2
52	1.2D+1.5Lm2+1.0(WLX+WLZ, Service) - 120 Deg	Yes	Y	1	1.2	12	1.5	9	-0.5	10	0.87	16	1.2
53	1.2D+1.5Lm2+1.0(WLX+WLZ, Service) - 150 Deg	Yes	Y	1	1.2	12	1.5	9	-0.87	10	0.5	16	1.2
54	1.2D+1.5Lm2+1.0(WLX+WLZ, Service) - 180 Deg	Yes	Y	1	1.2	12	1.5	9	-1	10		16	1.2
55	1.2D+1.5Lm2+1.0(WLX+WLZ, Service) - 210 Deg	Yes	Y	1	1.2	12	1.5	9	-0.87	10	-0.5	16	1.2
56	1.2D+1.5Lm2+1.0(WLX+WLZ, Service) - 240 Deg	Yes	Y	1	1.2	12	1.5	9	-0.5	10	-0.87	16	1.2
57	1.2D+1.5Lm2+1.0(WLX+WLZ, Service) - 270 Deg	Yes	Y	1	1.2	12	1.5	9		10	-1	16	1.2
58	1.2D+1.5Lm2+1.0(WLX+WLZ, Service) - 300 Deg	Yes	Y	1	1.2	12	1.5	9	0.5	10	-0.87	16	1.2
59	1.2D+1.5Lm2+1.0(WLX+WLZ, Service) - 330 Deg	Yes	Y	1	1.2	12	1.5	9	0.87	10	-0.5	16	1.2
60	**Maintenance Load (With Service Load)** Location3												
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

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
63	1.2D+1.5Lm3+1.0(WLX+WLZ, Service) - 0 Deg	Yes	Y	1	1.2	13	1.5	9	1	10		16	1.2
64	1.2D+1.5Lm3+1.0(WLX+WLZ, Service) - 30 Deg	Yes	Y	1	1.2	13	1.5	9	0.87	10	0.5	16	1.2
65	1.2D+1.5Lm3+1.0(WLX+WLZ, Service) - 60 Deg	Yes	Y	1	1.2	13	1.5	9	0.5	10	0.87	16	1.2
66	1.2D+1.5Lm3+1.0(WLX+WLZ, Service) - 90 Deg	Yes	Y	1	1.2	13	1.5	9		10	1	16	1.2
67	1.2D+1.5Lm3+1.0(WLX+WLZ, Service) - 120 Deg	Yes	Y	1	1.2	13	1.5	9	-0.5	10	0.87	16	1.2
68	1.2D+1.5Lm3+1.0(WLX+WLZ, Service) - 150 Deg	Yes	Y	1	1.2	13	1.5	9	-0.87	10	0.5	16	1.2
69	1.2D+1.5Lm3+1.0(WLX+WLZ, Service) - 180 Deg	Yes	Y	1	1.2	13	1.5	9	-1	10		16	1.2
70	1.2D+1.5Lm3+1.0(WLX+WLZ, Service) - 210 Deg	Yes	Y	1	1.2	13	1.5	9	-0.87	10	-0.5	16	1.2
71	1.2D+1.5Lm3+1.0(WLX+WLZ, Service) - 240 Deg	Yes	Y	1	1.2	13	1.5	9	-0.5	10	-0.87	16	1.2
72	1.2D+1.5Lm3+1.0(WLX+WLZ, Service) - 270 Deg	Yes	Y	1	1.2	13	1.5	9		10	-1	16	1.2
73	1.2D+1.5Lm3+1.0(WLX+WLZ, Service) - 300 Deg	Yes	Y	1	1.2	13	1.5	9	0.5	10	-0.87	16	1.2
74	1.2D+1.5Lm3+1.0(WLX+WLZ, Service) - 330 Deg	Yes	Y	1	1.2	13	1.5	9	0.87	10	-0.5	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 Node Reactions

	Node Label		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N10	max	1116.71	14	1789.927	23	1700.34	7	0.477	3	1.968	13	4.072	10
2		min	-1114.838	8	185.802	4	-1694.242	13	-2.954	69	-1.954	7	-0.512	4
3	N53	max	972.702	4	1681.59	44	1572.923	5	0.482	9	1.856	5	0.539	8
4		min	-979.759	10	90.741	8	-1577.973	11	-2.923	31	-1.852	11	-3.727	14
5	N70	max	1802.511	3	1760.709	6	520.233	6	4.552	6	1.775	9	0.638	3
6		min	-1797.381	9	131.235	12	-527.569	12	-0.572	12	-1.76	3	-0.759	9
7	Totals:	max	3544.585	3	4639.638	27	3689.213	6						
8		min	-3544.587	9	2809.801	8	-3689.211	12						

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

	Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc[ft]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [k-ft]	phi*Mn z-z [k-ft]	Cb	Eqn
1	M22	C3.38X2.06X0.25	0.286	2.75	6	0.085	0.286	z	11	47760.074	56700	2.203	5.752	1.614	H1-1b
2	M36	C3.38X2.06X0.25	0.278	2.75	14	0.082	0.286	z	7	47760.074	56700	2.203	5.752	1.614	H1-1b
3	M23	C3.38X2.06X0.25	0.271	0	6	0.062	2.464	z	7	47760.074	56700	2.203	5.752	1.671	H1-1b
4	M7	C3.38X2.06X0.25	0.267	0	10	0.062	2.464	z	11	47760.074	56700	2.203	5.752	1.673	H1-1b
5	M8	C3.38X2.06X0.25	0.26	2.75	10	0.073	0.286	z	3	47760.074	56700	2.203	5.752	1.618	H1-1b
6	M37	C3.38X2.06X0.25	0.255	0	14	0.054	2.464	z	14	47760.074	56700	2.203	5.752	1.667	H1-1b
7	M19	PL6.5X0.375	0.247	1.5	5	0.139	3	y	11	4979.135	78975	0.617	8.849	1.349	H1-1b
8	M6	HSS4X4X6	0.245	3.417	11	0.089	2.634	y	68	187775.062	197892	22.046	22.046	1.903	H1-1b
9	M4	PL6.5X0.375	0.239	1.5	11	0.122	0	y	3	4979.135	78975	0.617	9.097	1.387	H1-1b
10	M33	PL6.5X0.375	0.235	1.5	13	0.133	3	y	7	4979.135	78975	0.617	8.98	1.369	H1-1b
11	M21	HSS4X4X6	0.233	3.417	5	0.075	3.417	z	9	187775.062	197892	22.046	22.046	1.872	H1-1b
12	M35	HSS4X4X6	0.226	3.417	13	0.09	3.417	y	34	187775.062	197892	22.046	22.046	1.881	H1-1b
13	M75	PIPE 2.5	0.211	5.667	9	0.125	4		9	30038.461	50715	3.596	3.596	1	H1-1b
14	M93	PIPE 2.5	0.209	5.667	5	0.128	4		5	30038.461	50715	3.596	3.596	1	H1-1b
15	M87	PIPE 2.5	0.204	5.667	5	0.06	5.667		3	30038.461	50715	3.596	3.596	1	H1-1b
16	M72	PIPE 2.5	0.204	5.667	3	0.061	5.667		5	30038.461	50715	3.596	3.596	1	H1-1b
17	M105	PIPE 2.5	0.203	5.667	13	0.126	4		13	30038.461	50715	3.596	3.596	1	H1-1b
18	M69	PIPE 2.5	0.202	5.667	9	0.063	5.667		7	30038.461	50715	3.596	3.596	1	H1-1b
19	M99	PIPE 2.5	0.2	5.667	13	0.062	5.667		11	30038.461	50715	3.596	3.596	1	H1-1b
20	M16	PIPE3.5X0.165	0.173	5.333	5	0.111	5.25		11	38821.879	54463.5	4.822	4.822	1	H1-1b
21	M62	L6.6X4.46X0.25	0.172	3.06	3	0.028	3.06	y	13	51620.642	87561	2.465	7.125	1.424	H2-1
22	M46	PIPE 2.5	0.169	7.917	9	0.096	2.083		14	22373.407	50715	3.596	3.596	1	H1-1b
23	M45	PIPE3.5X0.165	0.168	5.333	7	0.11	2.75		7	38821.879	54463.5	4.822	4.822	1	H1-1b
24	M47	PIPE 2.5	0.168	2.083	11	0.095	7.917		6	22373.407	50715	3.596	3.596	1	H1-1b

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

	Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc[ft]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [k-ft]	phi*Mn z-z [k-ft]	Cb	Eqn
25	M48	PIPE_2.5	0.166	2.083	7	0.094	2.083		6	22373.407	50715	3.596	3.596	1	H1-1b
26	M61	L6.6X4.46X0.25	0.164	0	9	0.025	0	y	5	51620.642	87561	2.465	7.125	1.303	H2-1
27	M63	L6.6X4.46X0.25	0.156	3.06	11	0.026	3.06	y	9	51620.642	87561	2.465	7.125	1.356	H2-1
28	M1	PIPE3.5X0.165	0.151	2.667	9	0.098	2.75		3	38821.879	54463.5	4.822	4.822	1	H1-1b
29	M85	PIPE_2.5	0.126	5.667	11	0.049	5.667		13	30038.461	50715	3.596	3.596	1	H1-1b
30	M90	PIPE_2.5	0.126	5.667	11	0.049	5.667		13	30038.461	50715	3.596	3.596	1	H1-1b
31	M98	PIPE_2.5	0.124	5.667	7	0.047	5.667		9	30038.461	50715	3.596	3.596	1	H1-1b
32	M102	PIPE_2.5	0.124	5.667	7	0.047	5.667		9	30038.461	50715	3.596	3.596	1	H1-1b
33	M29	L2X2X4	0.104	0	13	0.017	0	z	16	22280.388	30585.6	0.691	1.577	1.169	H2-1
34	M15	L2X2X4	0.102	0	5	0.019	2.502	z	68	22280.388	30585.6	0.691	1.577	1.159	H2-1
35	M43	L2X2X4	0.088	0	9	0.017	0	z	24	22280.388	30585.6	0.691	1.577	1.163	H2-1
36	M30	L2X2X4	0.073	0	5	0.021	2.502	y	10	22280.388	30585.6	0.691	1.577	1.5	H2-1
37	M44	L2X2X4	0.07	0	13	0.02	2.502	y	6	22280.388	30585.6	0.691	1.577	1.5	H2-1
38	M14	L2X2X4	0.061	0	9	0.02	2.502	y	14	22280.388	30585.6	0.691	1.577	1.5	H2-1
39	M5	PLATE6X.37	0.06	0.164	6	0.269	0	y	11	67974.739	71928	0.554	8.991	2.794	H1-1b
40	M34	PLATE6X.37	0.058	0.164	6	0.21	0	y	13	67974.739	71928	0.554	8.991	1.469	H1-1b
41	M18	PLATE6X.37	0.058	0.128	14	0.266	0.292	y	7	67974.739	71928	0.554	8.991	2.951	H1-1b
42	M20	PLATE6X.37	0.057	0.164	10	0.214	0	y	5	67974.739	71928	0.554	8.991	1.46	H1-1b
43	M32	PLATE6X.37	0.051	0.128	10	0.281	0.292	y	33	67974.739	71928	0.554	8.991	2.628	H1-1b
44	M3	PLATE6X.37	0.051	0.128	14	0.282	0.292	y	69	67974.739	71928	0.554	8.991	1.488	H1-1b
45	M65	PIPE_2.5	0.041	0.5	7	0.014	0.5		10	47114.007	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.NJJER01121A, R1
Calculated By: IM Date : 1/11/23
Checked By: JJ Date : 1/11/23

Connection Details		
Bolt Details		
Bolt Quantity =	3	
Bolt Diameter =	0.625	in
Vertical Spacing =	7	in
Horizontal Spacing =	7	in
Bolt Grade =	A325	
Bolt F_u if "Other" =	N/A	ksi

Loading Details		
Node N70, LC5		
Shear, X =	0.749	k
Shear, Y =	0.5	k
Tension, Z =	0.62	k
Mx =	0.197	k-ft
My =	0.312	k-ft
Torsion, Mz =	0.002	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} =	4.50	k

AISC [Table J3.2]

ΦRnt > Tmax
22%
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} =	0.67	k

AISC [Table J3.2]

ΦRnv > Vmax
5%
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
$ΦR'_{nt}$ =	20.72	k
T_{max} =	4.50	k

ΦR'nt > Tmax
22%
OK

Tectonic
PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.

Job No. 10710.NJJER01121A, R1
Calculated By: IM Date : 1/11/23
Checked By: JJ Date : 1/11/23

Connection Details		
Weld Details		
Weld Type	Fillet	
# of Sides	2	
Electrodes	70	XX
Size of Weld =	0.25	in
HSS Height =	4.00	in
HSS Width =	4.00	in
HSS Thickness =	0.38	in
Plate Details		
Height/Width =	9.00	in
Thickness =	0.625	in
F_y =	50	ksi

4 - Weld Capacity

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

AISC [Table J2.5]

Φ =	0.75	
ΦF_{nw} =	63.00	ksi
$f_{v,max}$ =	1.043	ksi
$f_{b,max}$ =	14.40	ksi

Min(ΦFnw,ΦFnbm) > √(fv,max+fm,max)

0.0% **OK**

5 - Plate Capacity

Φ =	0.9	
ΦF_{byy} =	45.00	ksi
f_b =	13.06	ksi

ΦFbyy > Fb

0.0% **OK**

Exhibit F

Emissions Report

Pinnacle Telecom Group

Professional and Technical Services

Telecom Consulting

Antenna Site FCC RF Compliance Assessment and Report for Municipal Submission

Prepared for:	DISH Wireless, LLC
Site ID:	NJJER01121A
Site Address:	3965 Congress Street Fairfield, CT
Latitude:	N 41.188383
Longitude:	W 73.299022
Structure type:	Monopole
Report date:	April 25, 2023
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 3965 Congress Street in Fairfield CT. DISH refers to the antenna site by the code "NJJER01121A", 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 AT&T, Sprint, T-Mobile, and Verizon Wireless. Note that while the site drawings indicate there may be other antennas at the site, a search of FCC records indicates there are no other licensed transmitting antenna operations to include in the compliance assessment for the site. 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 6.0768 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. Per DISH guidelines, and consistent with FCC guidance on rooftop compliance, 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

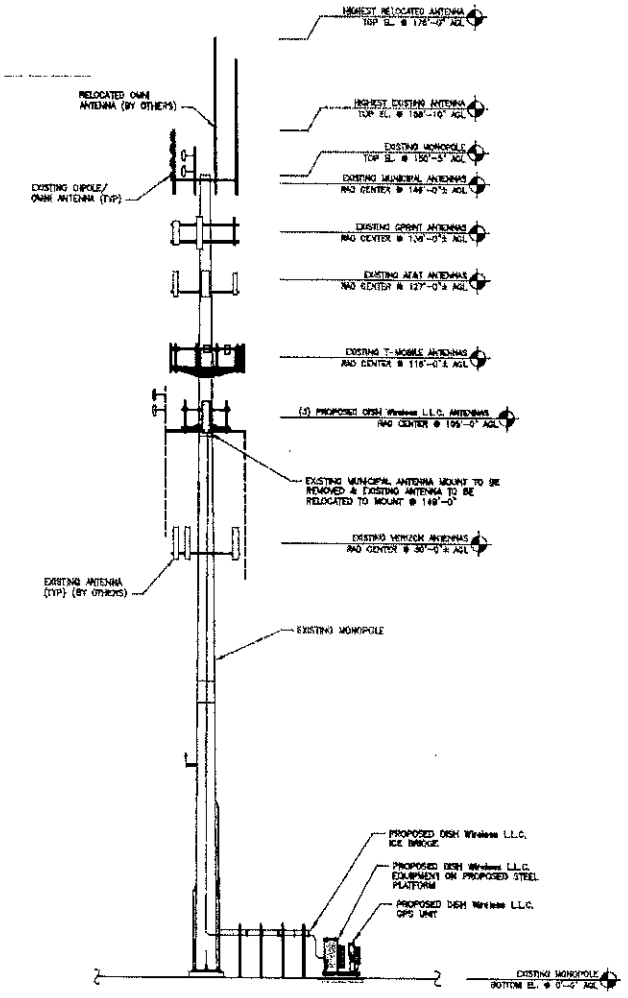
a summary of the qualifications of the expert certifying FCC compliance for this site.

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	Type	Freq (MHz)	Ant. Dim. (ft)	Total Input Power (watts)	Total ERP (watts)	Ant. AGL (ft)	Ant. Gain (dBd)	BW	Azimuth	EDT	MDT
1	DISH	Commscope	FFVV-65B-R2	Panel	600	6	120	2110	105.0	12.46	64	80	3	0
1	DISH	Commscope	FFVV-65B-R2	Panel	2000	6	160	7396	105.0	16.66	67	80	2	0
1	DISH	Commscope	FFVV-65B-R2	Panel	2100	6	160	7396	105.0	16.66	67	80	2	0
2	DISH	Commscope	FFVV-65B-R2	Panel	600	6	120	2110	105.0	12.46	64	200	8	0
2	DISH	Commscope	FFVV-65B-R2	Panel	2000	6	160	7396	105.0	16.66	67	200	2	0
2	DISH	Commscope	FFVV-65B-R2	Panel	2100	6	160	7396	105.0	16.66	67	200	2	0
3	DISH	Commscope	FFVV-65B-R2	Panel	600	6	120	2110	105.0	12.46	64	320	3.5	0
3	DISH	Commscope	FFVV-65B-R2	Panel	2000	6	160	7396	105.0	16.66	67	320	2	0
3	DISH	Commscope	FFVV-65B-R2	Panel	2100	6	160	7396	105.0	16.66	67	320	2	0

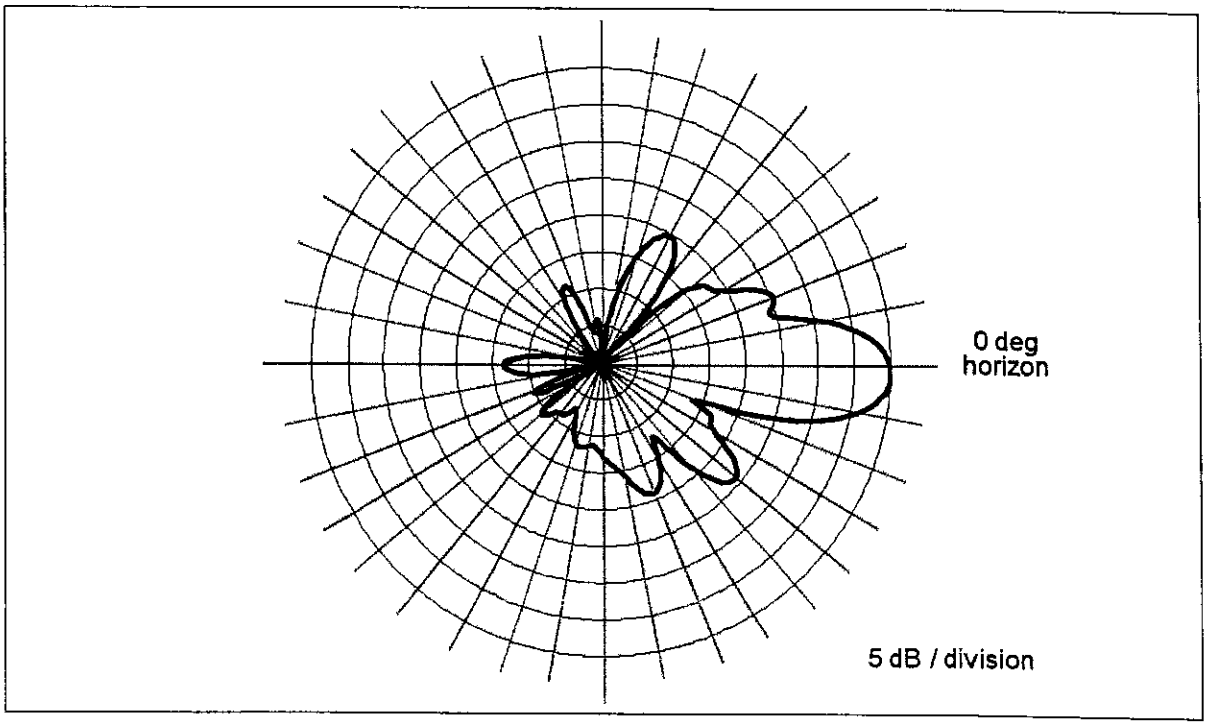
The area below the antennas, at street level, is of interest in terms of potential "uncontrolled" exposure of the general public, so the antenna's vertical-plane emission characteristic is used in the calculations, as it is a key determinant of the relative amount of RF emissions in the "downward" direction.

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 other existing wireless 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.

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
AT&T	Generic	Generic	Panel	700	4945	11.26	N/A
AT&T	Generic	Generic	Panel	850	2400	11.76	N/A
AT&T	Generic	Generic	Panel	1900	5756	15.56	N/A
AT&T	Generic	Generic	Panel	2100	5890	15.66	N/A
AT&T	Generic	Generic	Panel	2300	4131	16.16	N/A
Sprint	Generic	Generic	Panel	800	2168	13.36	N/A
Sprint	Generic	Generic	Panel	1900	6168	15.86	N/A
Sprint	Generic	Generic	Panel	2500	4669	15.90	N/A
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

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.

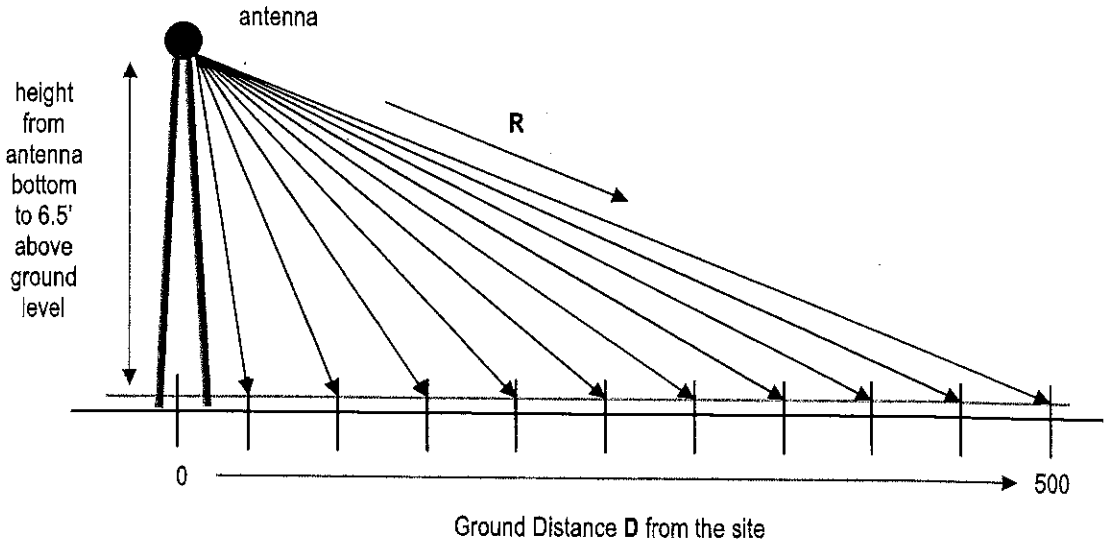


Figure 2. Street-level MPE% Calculation Geometry

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.

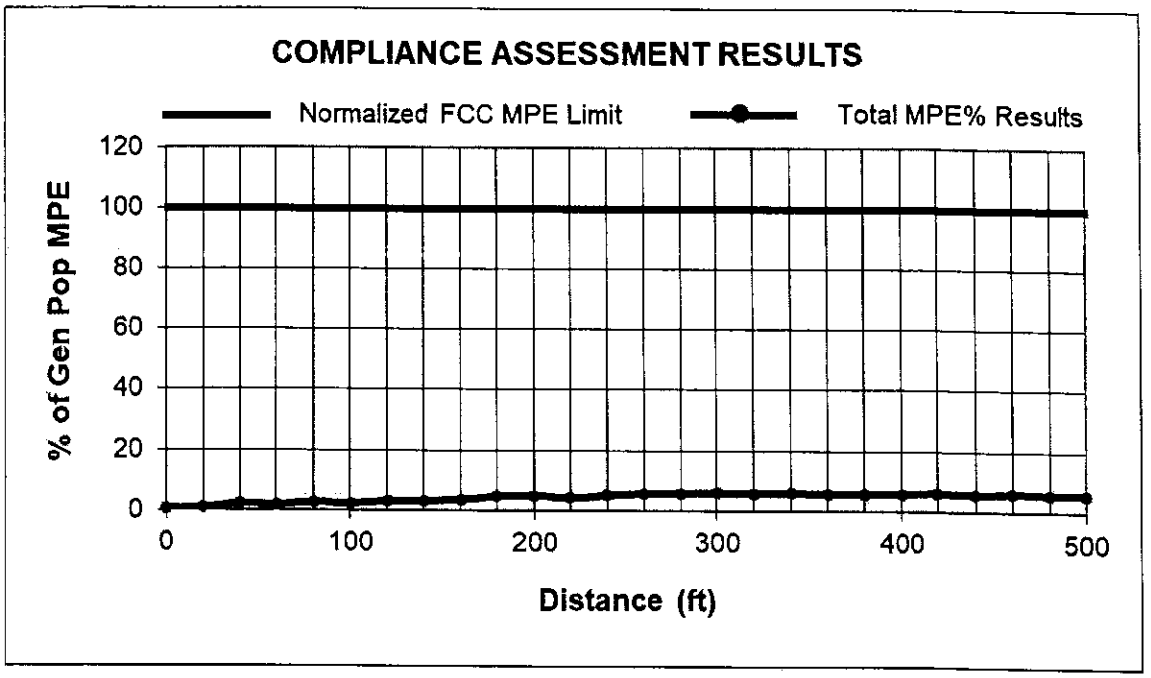
The net result of these assumptions is to intentionally and significantly overstate the calculated RF levels relative to the levels that will actually result from the antenna operations – and the purpose of this conservatism is to allow very "safe-side" conclusions about compliance.

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.

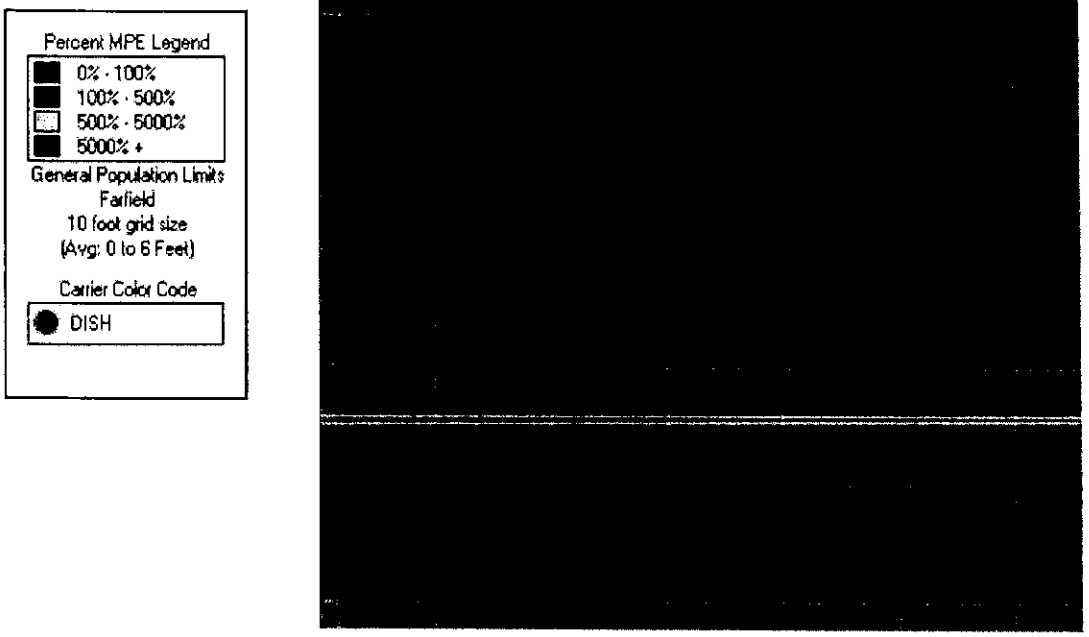
Ground Distance (ft)	DISH 600 MHz MPE%	DISH 2000 MHz MPE%	DISH 2100 MHz MPE%	AT&T MPE%	Sprint MPE%	T-Mobile MPE%	Verizon Wireless MPE%	Total MPE%
0	0.0009	0.0025	0.0004	0.0797	0.0202	0.4283	0.0605	0.5925
20	0.0068	0.0063	0.0092	0.0901	0.0105	0.6097	0.1678	0.9004
40	0.0187	0.0362	0.0275	0.1873	0.0081	1.4148	0.4905	2.1831
60	0.0053	0.0019	0.1237	0.2985	0.0108	1.1340	0.3254	1.8996
80	0.1142	0.3019	0.2387	0.4823	0.0226	0.5327	0.9898	2.6822
100	0.0807	0.2468	0.3658	0.3721	0.0144	0.4716	0.8331	2.3845
120	0.0685	0.2235	0.3667	0.1998	0.0464	1.1032	1.1299	3.1380
140	0.0529	0.0126	0.0323	0.2826	0.0362	1.8626	0.8632	3.1424
160	0.0003	0.0050	0.0782	0.5824	0.0539	2.4823	0.4680	3.6701
180	0.0623	0.0967	0.0393	0.7975	0.0480	3.4728	0.1651	4.6817
200	0.1203	0.0886	0.1508	0.8253	0.0594	3.5846	0.1580	4.9870
220	0.1209	0.0166	0.0861	0.7128	0.1022	2.8976	0.3445	4.2807
240	0.0532	0.1001	0.0278	0.5949	0.0769	3.7422	0.4670	5.0621
260	0.0151	0.1282	0.0772	0.4953	0.0562	4.3182	0.6230	5.7132
280	0.0249	0.0665	0.1360	0.3496	0.0466	4.4204	0.7947	5.8387
300	0.0987	0.0208	0.0888	0.2325	0.0322	4.4841	0.9905	5.9476
320	0.2224	0.0055	0.0387	0.1408	0.0198	4.2602	1.1839	5.8713
340	0.3877	0.0051	0.0119	0.1049	0.0358	4.0142	1.3844	5.9440
360	0.5811	0.0040	0.0039	0.1479	0.0534	3.7719	1.2405	5.8027
380	0.5251	0.0036	0.0035	0.2502	0.0597	3.5767	1.4132	5.8320
400	0.7067	0.0073	0.0022	0.3964	0.0520	3.2809	1.2797	5.7252
420	**0.8750**	**0.0282**	**0.0108**	**0.5564**	**0.0466**	**3.1287**	**1.4311**	**6.0768**
440	0.8008	0.0258	0.0099	0.5103	0.0306	3.0445	1.3072	5.7291
460	0.9238	0.0597	0.0350	0.6507	0.0385	2.8282	1.5031	6.0390
480	0.8513	0.0550	0.0322	0.7868	0.0265	2.6784	1.3831	5.8133
500	0.9266	0.0757	0.0607	0.7284	0.0374	2.5747	1.2768	5.6803

As indicated, the maximum calculated overall RF level is 6.0768 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.



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 6.0768 percent of the FCC general population 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.

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

4/25/23
Date

Appendix A. Documents Used to Prepare the Analysis

RFDS: RFDS-NJJER01121A-Preliminary-20230322-v.2_20230322142724

CD: NJJER01121A_PrelimCD_20220114140032

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.

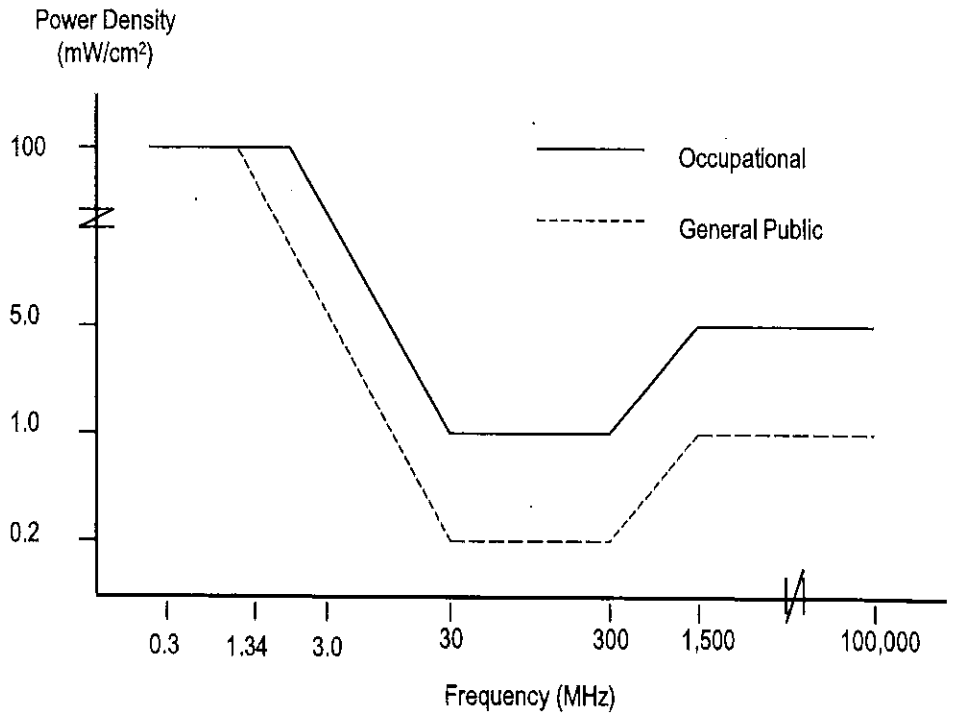
The specified continuous exposure MPE limits are based on known variation of human body susceptibility in different frequency ranges, and a Specific Absorption Rate (SAR) of 4 watts per kilogram, which is universally considered to accurately represent human capacity to dissipate incident RF energy (in 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.

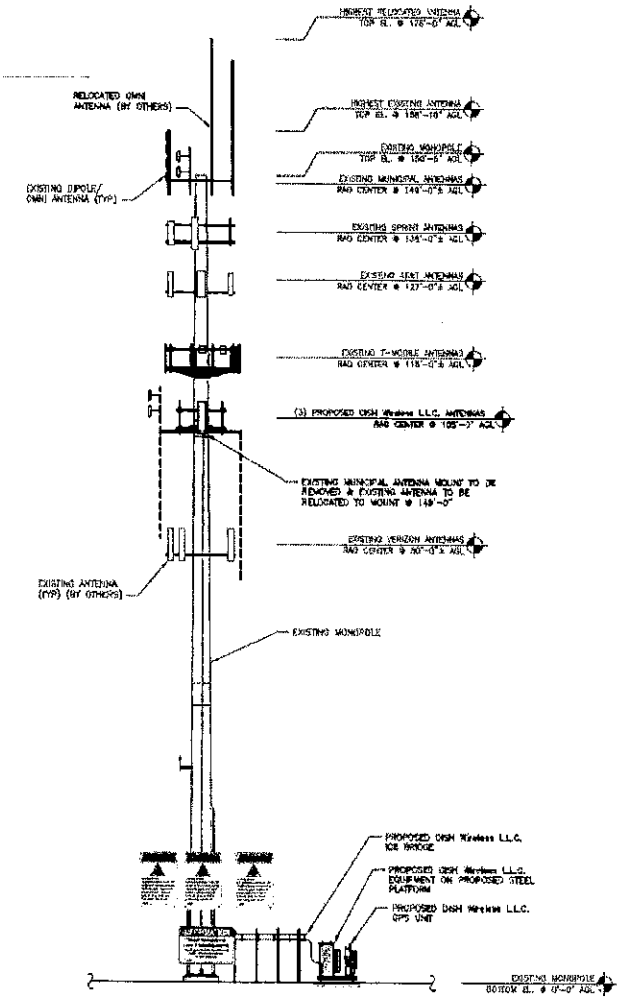
FCC Report and Order, Notice of Proposed Rulemaking, Memorandum Opinion and Order (FCC 19-126), *Proposed Changes in the Commission's Rules Regarding Human Exposure to Radiofrequency Electromagnetic Fields; Reassessment of Federal Communications Commission Radiofrequency Exposure Limits and Policies,*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

DocuSign Envelope ID: 121CE66D-28D0-443C-90BB-132D3FA276FD

SITE LEASE AGREEMENT

This Site Lease Agreement (the "**Agreement**") is made and effective as of the date the last Party executes this Agreement (the "**Effective Date**"), by and between the TOWN OF FAIRFIELD, a Connecticut municipal corporation, with an address of 611 Old Post Road, Fairfield, CT 06824 ("**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**").

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 managers 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.

"**Equipment**" means and includes the antennas, cables, wires, conduits, fasteners, connectors, cabinets and the like designed to transmit and receive radio frequency signals and customarily associated with a cellular telecommunications tower.

"**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 is located.

"**Tower**" means that certain monopole tower located on the Property.

"**Upgrade Protocol**" means the Landlord's Telecommunications Facility Upgrade Protocol, a copy of which is attached as Exhibit C.

2. Premises, Term, Rent and Contingencies.

2.1 Premises. Landlord is the owner of the Property located at 3965 Congress Street, Fairfield, Connecticut 06824, as more particularly described in Exhibit A. Landlord leases to Tenant approximately 400 square feet of space for Tenant's Equipment in connection with the use and operation

DocuSign Envelope ID: 121CE66D-28D0-443C-90BB-132D3FA276FD

of its facilities as such are initially described in Exhibit B, collectively referred to as the **"Premises"**. Landlord also grants to Tenant: (a) the right to use any available electrical systems and/or fiber installed at the Property to support Tenant's Installation: and (b) any easements on, over, under, and across the Property for utilities, fiber and access to the Premises. Landlord agrees that providers of utility or fiber services may use such easement(s) and/or available conduit(s) for the installation of any Equipment necessary to provide utility or fiber service. If the existing utility or fiber sources located within the Premises or 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 or fiber on, over and/or under the Property as is necessary for Tenant's Permitted Use; provided that Landlord and Tenant shall mutually agree on the location of such installation(s).

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 later of sixty (60) days after the Effective Date or 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 one hundred eighty (180) months after the Commencement Date unless terminated sooner, renewed or extended in accordance with this Agreement. The Initial Term shall automatically renew for one (1) additional term of sixty (60) months (the "**Renewal Term**" and together with the Initial Term, the "**Term**"). However, Tenant may, in Tenant's sole and absolute discretion, elect not to renew the lease at the end of the Initial Term by giving Landlord written Notice at least ninety (90) days prior to the end of the Initial Term. The Parties agree that, subject to the Contingencies, this Agreement constitutes a binding and valid obligation on each Party and that each Party has vested rights in this Agreement as of the Effective Date.

2.3 Rent. Beginning on the Commencement Date and continuing through the term of this Agreement, Tenant shall pay Landlord rent for the Premises ("**Rent**") in the amount Seventy Six Thousand and 00/100 Dollars ($76,000.00) per year. The first Rent payment shall be made within sixty (60) days of the Commencement Date, with subsequent payments due on each anniversary of the Commencement Date. On each anniversary of the Commencement Date, the Rent shall be automatically increased by three percent (3%) of the then-current Rent. Payments shall be delivered to the address designated by Landlord in Section 12.10, or by electronic payment. All payments for any fractional month shall be prorated based upon the number of days during such month that the payment obligation was in force ("**Payment Terms**"). Tenant shall require receipt of a validly completed IRS approved W-9 form (or its equivalent) prior to paying any Rent or any other amount(s) due under this Agreement. Tenant will pay Landlord a fee of $50.00 for any check returned for any reason by Landlord's bank. If the Tenant fails to pay all Rent due and owing by the tenth (10th) day following each successive anniversary of the Commencement Date during the Term, then after five (5) days' notice from Landlord to Tenant without cure, Landlord may impose a late fee equal to five percent (5%) of any amounts more than fifteen (15) days overdue in order to reimburse Landlord for the extra administrative time involved in collecting such amounts, and any payment more than fifteen (15) days overdue will bear interest from the date due to the date of actual payment at the lesser of eighteen percent (18%) per annum or the highest lawful rate permitted by state or federal law.

2.4 Rent Guarantee. All Rent due for the Initial Term and, unless Tenant elects not to renew this Agreement, the Renewal Term, is guaranteed by Tenant to Landlord, meaning that Tenant will not be released from its payment obligations under this Agreement if Tenant terminates this Agreement except if the reason for the termination is: (a) that Tenant is unable to operate the Installation due an event described in Section 8.4, Force Majeure (Section 12.5), or (c) Taking (Section 12.3); or (b) an event of Landlord's default (Section 8.2) which remains uncured beyond all applicable cure and grace periods.

DocuSign Envelope ID: 121CE66D-28D0-443C-90BB-132D3FA276FD

2.5 Site Development Fee. Tenant shall pay Landlord a one (1) time fee in the amount of Five Thousand and 00/100 Dollars ($5,000.00) to defray Landlord's costs associated with engineering and legal review fees, which is a condition precedent to Tenant's use of the Premises ("**Site Development Fee**"). Tenant shall pay the Site Development Fee to Landlord within sixty (60) days following the Effective Date The Site Development Fee shall be non-refundable.

2.6 Contingencies. Tenant's ability to lawfully use the Premises is contingent upon Tenant obtaining 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. Landlord hereby authorizes Tenant, at Tenant's sole cost and expense, to file and submit for the Governmental Approvals. Landlord shall: (a) cooperate with Tenant in Tenant's efforts to obtain the Governmental Approvals; (b) promptly execute and deliver all documents necessary to obtain and maintain the Government Approvals; and (c) not take any action that would adversely affect Tenant's ability to obtain and/or maintain the Governmental Approvals. If any application for a Governmental Approval is rejected, conditioned, materially delayed or otherwise not approved for any or no reason ("**Contingencies**"), then, Tenant shall have the right, in its sole and absolute discretion, to terminate this Agreement immediately upon Notice to Landlord, without penalty or further obligation to Landlord (or Landlord's affiliates, employees, officers, agents or lenders). If, following the Commencement Date, and through no fault of Tenant, any Governmental Approval, related to this Premises, issued to Tenant is canceled, expires, lapses or is otherwise withdrawn or terminated by the applicable Governmental Authority, then Tenant shall have the right, in its sole and absolute discretion, to terminate this Agreement upon ninety (90) days' Notice to Landlord without penalty or further obligation to Landlord (or Landlord's affiliates, employees, officers, agents or lenders). If this Agreement is terminated, this Agreement shall be of no further force or effect (except as set forth to the contrary herein).

3. Use, Access and Modifications to Tenant's Equipment.

3.1 Tenant's Permitted Use. Tenant shall have the right to use the Premises for the purpose of the installation, operation, maintenance and management of a telecommunications facility (including, without limitation, installation of Tenant's Equipment) ("**Tenant's Permitted Use**"). Subject to Tenant's compliance with the Upgrade Protocol, Tenant's Permitted Use includes the right to replace, repair, upgrade, or otherwise modify any or all of Tenant's Equipment and the frequencies over which Tenant's Equipment operates. If radio frequency signage and/or barricades are required by Applicable Law, then Tenant shall have the right to install the same on the Property.

3.2 Access. Commencing on the Effective Date and continuing throughout the Term and subject to Section 6.3, Tenant, its employees, agents and contractors shall have unrestricted access to the Premises. Further, Landlord grants to Tenant the right of ingress and egress to the Tower and the Premises.

3.3 Maintenance, Repairs, Modifications and Upgrades. The drawings and descriptions indicated on Exhibit B specifically describe the quantity of Equipment, the numbers, and locations of antennas, and the locations of cables to be installed within the Premises. In the event of a conflict between the general description set forth above, and the specific descriptions drawn and depicted on Exhibit B, then Exhibit B shall govern. The descriptions and depictions indicated on Exhibit B are specific to the equipment and specifications on Exhibit B. Tenant has no future right to modify Exhibit B after the

DocuSign Envelope ID: 121CE66D-28D0-443C-90BB-132D3FA276FD

Effective Date without a duly executed written amendment to this Agreement. Tenant shall have the right to complete the installation of the Equipment indicated on Exhibit B and to maintain and repair the Equipment indicated on Exhibit B without Landlord's consent. All modifications and upgrades of Tenant's Equipment are subject to the Upgrade Protocol attached as Exhibit C. Tenant shall not attempt to circumvent the Upgrade Protocol or commence modification or upgrade work unless and until Tenant has fully complied with the Upgrade Protocol.

4. Utilities, Liens and Taxes.

4.1 Utilities. Tenant shall furnish and install an electrical meter at the Premises for the measurement of electrical power used by Tenant at the Premises and Tenant shall pay the utility company directly. So long as this Agreement remains in effect, Landlord at all times shall provide Tenant with access to the utilities at the Property so that the Premises shall have electrical, gas and telephone service. In connection with the electric, gas and telephone utility sources located on the Property that is/are necessary for Tenant to operate its Installation, Landlord agrees to grant the local utility provider the right to install its equipment or other improvements on, over and/or under the Property and Landlord shall cooperate in connection therewith, including without limitation, executing any documents, permitting any testing and performing any work such utility provider requires in connection with same.

4.2 Liens. Tenant will use commercially reasonable efforts to prevent any lien from attaching to the Tower, Premises or the Property. 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 the lien as security for its payment within the ninety (90) day period, and thereafter diligently contests such lien. If Tenant fails to deposit the 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 Taxes. Landlord acknowledges that the Property and the Tower are at present exempt from real property taxation because Landlord is a municipality. Tenant shall be liable for all taxes against Tenant's Equipment, personal property or fixtures placed in the Premises, whether levied or assessed against Landlord or Tenant. Landlord shall reasonably cooperate with Tenant, at Tenant's expense, in any appeal or challenge to taxes. 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 the 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 Relocation of Tenant's Equipment.

5.1 Interference. Tenant shall not cause Interference (as defined below) with any other equipment installed on the Tower as of the Effective Date. Following the Effective Date, Landlord shall not install, or to permit others to install, any structure or equipment which could block or otherwise interfere with any transmission or reception by Tenant's Equipment ("**Interference**"). If Interference continues for a period more than forty-eight (48) 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 the Interference can be remedied.

DocuSign Envelope ID: 121CE66D-28D0-443C-90BB-132D3FA276FD

5.2 Relocation of Tenant's Equipment. Following Tenant's receipt of a written Notice from Landlord, Tenant agrees to temporarily relocate Tenant's Equipment to a mutually agreed upon location on the Property (a "**Temporary Location**") to facilitate Landlord's performance of maintenance, repair or similar work at the Property or on the Tower, provided that: (a) Tenant shall pay the costs of the Temporary Relocation of Tenant's Equipment and receive a rental abatement until Tenant recoups all of the cost of the Temporary Relocation of Tenant's Equipment as well as the costs incurred by Tenant in moving Tenant's Equipment back to the original location; (b) Landlord gives Tenant at least six (6) months prior written Notice (except in the case of a bona fide emergency which is reasonably likely to result in damage or injury to persons, the Tower or the Property (an "**Emergency**"), in which event Landlord will provide the greatest amount of notice possible under the circumstances; and (c) except for an Emergency Tenant shall not be required to relocate Tenant's Equipment to a Temporary Location more than one (1) time within any five (5) year period. If Tenant's use of the Temporary Location requires Tenant to undergo re-zoning or re-permitting, Landlord shall not require Tenant to relocate Tenant's Equipment, absent an Emergency, until Tenant's receipt of all Governmental Approvals applicable to Tenant's use of the Temporary Location.

6. Maintenance and Repair Obligations.

6.1 Landlord's Maintenance of the Tower. Landlord represents and warrants that, as of the Effective Date, the Tower, the Tower's systems and all structural elements of the Tower are in compliance with Applicable Law. Throughout the term of this Agreement, Landlord shall maintain, at its sole cost and expense, the Tower and the Property (but not Tenant's Equipment located thereon) in good operating condition. Landlord shall not have any obligation to maintain, repair or replace Tenant's Equipment except to the extent required due to the acts and/or omissions of Landlord, Landlord's agents or contractors. Landlord agrees to safeguard Tenant's Equipment with the same standard of care it uses to protect its own property, but in no event less than reasonable care.

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 shall perform all maintenance, repair or replacement of Tenant's Equipment ("**Tenant Maintenance**") in accordance with Applicable Law, and in a good and workmanlike manner.

6.3 Access to Premises. Landlord shall allow Tenant access to the Premises during ordinary business hours (8:00 a.m. – 4:30 p.m., Monday through Friday) for regular or routine maintenance and repairs, and twenty-four (24) hours a day, seven (7) days a week for unscheduled repairs and other emergency purposes. If Tenant needs access after ordinary business hours, Tenant will endeavor to give Landlord prior notice, if feasible. Except for emergency access, prior to access to the Property, Tenant shall provide a minimum of 24 hours' prior e-mail and telephone notice to the Landlord's Designated Site Representative so that arrangements can be made for an employee or consultant of the Landlord to accompany the contractors or technicians. As of the Effective Date, the **"Designated Site Representative"** is Jared Schmitt, Chief Fiscal Officer, (203) 256-3032, JSchmitt@fairfieldcdt.org. Landlord reserves the right to change the name and/or contact information of the Designated Site Representative upon written notice to the Tenant. All contractors and technicians must carry and provide proper identification at all times. If, after Tenant's initial installation as indicated on Exhibit B, Tenant's presence at the Property exceeds three one-half days per calendar month, Tenant shall reimburse the Landlord to cover the actual commercially reasonable costs associated with having an employee or consultant on site beyond the three one-half days. A half day shall be calculated as any time beyond four (4) hours. Any time beyond four (4) hours on any given day shall be counted as a second 1/2 day. Except in the event of an emergency, no

DocuSign Envelope ID: 121CE66D-28D0-443C-90BB-132D3FA276FD

work shall be permitted on weekends or holidays unless specifically authorized by the Designated Site Representative. Landlord shall permit emergency work or a project having extenuating circumstances on weekends, holidays or outside ordinary 8:00 a.m. to 4:30 p.m. business hours, provided Tenant agrees to reimbursement of the Landlord's employee or consultant, at an hourly rate of $150.00 per hour. In order for any inspection, repair, maintenance, modification or upgrade work to be performed which will include the need for any climbing on the Tower, the following information/documentation will be required: (a) a letter describing the scope of work to be done; (b) letter indicating that the contractor or contractors, is/are authorized to perform the work on behalf of the Tenant; (c) photo ID for each technician who will be on site; (d) a climbing certificate/certification for each technician who will be climbing the Tower; and (e) an insurance certificate or certificates indicating that each firm employing the technician or technicians has current insurance coverage with limits at least as high as those described in Section 10.2 and including the Landlord as certificate holder and additional insured.

6.4 Inspections. Landlord has the right to retain an independent engineering firm to conduct annual structural and safety inspections of the Premises and the Tower. Tenant will pay its proportionate share (i. e., 1/3 or ¼, depending on the number of carriers co-locating on the Tower) of the cost of each annual inspection within sixty (60) days of receipt of an invoice from Landlord. Landlord will deliver to Tenant a copy of each inspection report upon request. If an inspection report commissioned by Landlord contains a recommendation by the engineering firm for repair or improvement of Tenant's Installation or a recommendation that Tenant modify Tenant's Equipment for the safety and integrity of, then Tenant shall comply with the recommendation within a commercially reasonable period of time, not to exceed sixty (60) days, at Tenant's sole cost and expense.

6.5 Construction. Tenant shall cause all construction to occur lien-free and in compliance with all applicable laws and ordinances. Landlord acknowledges that it shall neither interfere with any aspects of construction nor attempt to direct construction personnel as to the location of or method of construction of the Installation. The Tenant's Installation shall remain the exclusive property of Tenant and shall not be considered fixtures.

7. Surrender and Hold Over.

7.1 Surrender. Within ninety (90) days following the expiration or termination of this Agreement (the "**Equipment Removal Period**"), Tenant will surrender the Premises to Landlord in a condition similar to that which existed immediately prior to Tenant's Installation together with any additions, alterations and improvements to the Premises, in either case, normal wear and tear excepted. Rent will accrue during the Equipment Removal Period. If Tenant's Equipment is not removed prior to the expiration of the Equipment Removal Period, Tenant will be deemed to be in Hold Over (as defined in Section 7.2) until Tenant's Equipment is removed from the Premises. Tenant shall have the right to access the Premises or remove any or all of Tenant's Equipment from the Premises at any time during the Term or the Equipment Removal Period. Tenant will, at Tenant's expense, promptly repair any and all damage to the Tower and the Premises caused by Tenant's contractors and technicians while removing Tenant's Equipment. If Tenant fails to promptly repair any damage to the Tower caused by Tenant's contractors and technicians while removing Tenant's Equipment, Landlord may, but shall have no obligation to, repair the damage and forward an invoice or invoices and supporting documentation to Tenant for payment. Tenant will pay any invoices delivered by Landlord pursuant to the immediately preceding sentence within sixty (60) days of receipt.

DocuSign Envelope ID: 121CE66D-28D0-443C-90BB-132D3FA276FD

7.2 Hold Over. If Tenant occupies the Premises beyond the Equipment Removal Period or any period upon lease expiration, 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. All of the terms and provisions of this Agreement shall be applicable during the Hold Over period, except that Tenant shall pay Landlord a rental fee at the rate of one hundred fifty (150%) of the Rent applicable at the expiration or termination of the Agreement. Tenant's payments shall be paid on the first day of each month in advance for the duration of the Hold Over.

8. Default, Remedies and Termination.

8.1 Default By Tenant. If there is a breach by Tenant with respect to any of the provisions of this Agreement or Tenant's obligations under this Agreement, including, without limitation, the timely payment of Rent, Landlord shall give Tenant written notice of the breach. After receipt of written notice, Tenant shall have thirty (30) days in which to cure any monetary breach and thirty (30) days in which to cure any non-monetary breach, provided that Tenant shall have such extended period as may be required beyond the thirty (30) days if the nature of the cure is such that it reasonably requires more than thirty (30) days, and Tenant commences the cure within the thirty (30) day period and thereafter continuously and diligently pursues the cure to completion. Landlord may not maintain any action or effect any remedies for default against Tenant unless and until Tenant has failed to cure the breach within the time periods provided in this Section.

8.2 Default By Landlord. If there is a breach by Landlord with respect to any of the provisions of this Agreement or Landlord's obligations under this Agreement, Tenant shall give Landlord written notice of the breach. After receipt of the written notice, Landlord shall have thirty (30) days in which to cure the breach, provided that Landlord shall have such extended period as may be required beyond the thirty (30) days if the nature of the cure is such that it reasonably requires more than thirty (30) days and Landlord commences the cure within the thirty (30) day period and thereafter continuously and diligently pursues the cure to completion. Tenant may not maintain any action or effect any remedies for default against Landlord unless and until Landlord has failed to cure the breach within the time periods provided in this Section. Notwithstanding the foregoing to the contrary, it shall be a default under this Agreement if Landlord fails, within five (5) days after receipt of written notice of breach, to perform an obligation required to be performed by Landlord if the failure to perform the obligation interferes with Tenant's ability to conduct its business at the Property; provided, however, that if the nature of Landlord's obligation is such that more than five (5) days after such notice is reasonably required for its performance, then it shall not be a default under this Agreement if performance is commenced within the five (5) day period and thereafter diligently pursued to completion.

8.3 Remedies. Upon a default beyond all applicable notice and cure periods, the non-defaulting Party may at its option (but without obligation to do so), perform the defaulting Party's duty or obligation on the defaulting Party's behalf, including but not limited to the obtaining of reasonably required insurance policies. The costs and expenses of any such performance by the non-defaulting Party shall be due and payable by the defaulting Party upon invoice therefor. In the event of a default beyond all applicable notice and cure periods, by either Party with respect to a material provision of this Agreement, without limiting the non-defaulting Party in the exercise of any right or remedy which the non-defaulting Party may have by reason of such default, the non-defaulting Party may terminate this Agreement immediately upon written Notice to the other Party.

DocuSign Envelope ID: 121CE66D-28D0-443C-90BB-132D3FA276FD

8.4 Termination. Tenant shall have the right 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) Landlord or a third party installs any structure, equipment, or other item which blocks, hinders, limits, or prevents Tenant from being able to use the Tenant Equipment for Tenant's Permitted Use.

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 agents, employees, contractors, or any other person or entity for whom Landlord is legally responsible, Tenant shall defend, indemnify and hold Landlord and its elected and appointed officials, employees, agents and representatives ("**Landlord's Representatives**") harmless from and against any and all claims, demands, litigation, settlements, judgments, damages, liabilities, costs and expenses (including, without limitation, reasonable attorneys' fees) (individually or collectively, a "**Claim**") 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 ("**Tenant's Representatives**"); 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.

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 or Tenant's Representatives, Landlord shall defend, indemnify and hold Tenant, its officers, directors, shareholders, employees, agents and representatives harmless from and against any and all Claims arising directly or indirectly out of: (i) any act or omission of Landlord, its 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 in, on, about, adjacent to, under or near the Premises, the Tower and/or the Property, and/or any contamination of the Premises, the Tower and/or the Property by any Hazardous Substance, but only to the extent not caused by Tenant or Tenant's Representatives. Landlord's obligations under this Section 9.3 shall survive the expiration or earlier termination of this Agreement.

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 request and expense, give the Indemnifying Party all reasonable assistance in connection with those negotiations and

DocuSign Envelope ID: 121CE66D-28D0-443C-90BB-132D3FA276FD

litigation.

10. Insurance.

10.1 Landlord Obligations. Throughout the Term, Landlord shall maintain, at Landlord's sole cost and expense, the following insurance coverage Commercial General Liability, from a company or companies with an A.M. Best rating of A (VII) or better of not less than $1,000,000 per occurrence and $2,000,000 aggregate. 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 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 coverages from a company or companies with an A.M. Best rating of A- (VII) or better. The insurance shall protect the Landlord from claims that may arise out of or result from the Tenant's obligations under this Agreement or from the obligations of any contractor or any other person or entity directly or indirectly employed by Tenant or by anyone for whose acts Tenant may be liable. For each policy required by this Agreement, Tenant shall, before the execution of this Agreement by the Landlord, provide the Landlord with certificates of insurance. Tenant shall provide updated certificates of insurance at least ten (10) days before any renewal of any such coverage. The certificates shall require notice of cancellation to the Landlord according to policy provisions.

A. Workers Compensation:

Tenant shall provide workers compensation insurance required by law with employer's liability limits for at least the amounts of liability for bodily injury by accident of $500,000 each accident and bodily injury by disease of $500,000 including a waiver of subrogation.

B. Commercial General Liability Insurance:

Tenant shall provide commercial general liability insurance including products and completed operations and including XCU coverage if applicable. Limits shall be at least: Bodily injury & property damage coverage with an occurrence limit of $1,000,000; Personal & advertising injury limit of $1,000,000 per occurrence; General aggregate limit of $2,000,000 (other than products and completed operations); Products and completed operations aggregate limit of $2,000,000.

- The policy shall name the Town as an additional insured and include ISO Form CG 2010 (04/13) and CG 2037 (04/13) or equivalent.
- Coverage will be provided on an occurrence basis and shall be primary and shall not contribute in any way to any insurance or self-insured retention carried by the Landlord.
- Coverage shall contain a broad form contractual liability endorsement or wording within the policy form to comply with the hold harmless and indemnity provision(s) of all agreements between the Landlord and the Tenant.
- Deductible and self-insured retentions shall be declared and are subject to the approval of the Landlord.

C. Commercial Automobile Insurance:

DocuSign Envelope ID: 121CE66D-28D0-443C-90BB-132D3FA276FD

Tenant shall provide commercial automobile insurance for any owned, non-owned or hired autos, in the amount of $1,000,000 each accident covering bodily injury and property damage on a combined single limit basis. The policy shall name the Landlord as an additional insured and provide a waiver of subrogation.

D. Umbrella or Excess Liability Insurance:

Tenant shall provide an umbrella or excess liability policy in excess (without restriction or limitation) of those limits and coverages described in items (A) through (C). The policy shall contain limits of liability in the amount of $5,000,000 each occurrence and $5,000,000 in the aggregate.

10.3 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.

11.1 Representations and Warranties. Landlord represents, warrants and covenants that: (a) Landlord has the right and authority to execute and perform this Agreement and has taken all necessary action to approve this Agreement which would include having this agreement approved by the Landlord's Board of Selectwomen; (b) there are no liens, judgments or other title matters materially and adversely affecting Landlord's title to the Property; (c) there are no covenants, easements or restrictions that prevent the use of the Premises for Tenant's Permitted Use; (d) the Tower and the Premises are in good repair and suitable for Tenant's Permitted Use; (e) Landlord will comply with all federal, state, and local laws in connection with any substances brought on to the Property and/or Tower that are identified as toxic or hazardous by any Applicable Law, ordinance or regulation ("**Hazardous Substance**"); and (f) Tenant's use and quiet enjoyment of the Premises shall not be disturbed. In no event shall Tenant have any liability with respect to any Hazardous Substance that was on, about, adjacent to, under or near the Tower 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 and/or Tower by: (i) Landlord, its agents, employees, contractors or invitees; or (ii) any third party who is not an employee, agent, contractor or invitee of Tenant.

12. Miscellaneous.

12.1 Assignment. Neither Party may assign or otherwise transfer any of its rights or obligations under this Agreement to any third party without the prior written approval of the other Party, which

DocuSign Envelope ID: 121CE66D-28D0-443C-90BB-132D3FA276FD

consent shall not be unreasonably withheld, conditioned or delayed. Notwithstanding the foregoing, either Party 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, consolidation, reorganization, or by sale of all or substantially all of its assets or stock; (iii) any entity in which a Party 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, transfer or other such transaction shall not be considered an assignment under this Section 12.1 requiring consent and the non-assigning Party shall have no right to delay, alter or impede such assignment or transfer.

12.2 Rights Upon Sale of Property or Tower. Should Landlord, at any time during the Term, sell or transfer all or any part of the Property or the Tower 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. If 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 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 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 such 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.

12.4 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.

12.5 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, acts of God, accidents, technical failure governmental restrictions, insurrections, riots, enemy act, war, 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

DocuSign Envelope ID: 121CE66D-28D0-443C-90BB-132D3FA276FD

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.

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

12.7 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. 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.

12.8 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. If 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.

12.9 Waiver; Remedies. 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. In addition to, and not in limitation of, the preceding, the Parties acknowledge and agree that there will not be an adequate remedy at law for noncompliance with the provisions of Section 5, and therefore either Party shall have the right to equitable remedies, including, without limitation, injunctive relief and specific performance.

12.10 Notice. All notices or requests that are required or permitted to be given pursuant to this Agreement must be given in writing by certified US mail (postage pre-paid) with return receipt requested or by courier service (charges prepaid), or solely in the case of notice to Landlord by email, to the party to be notified, addressed to such party at the address(es) or email address(es) 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 12.10) to the other Party ("**Notice**"). The sending of such Notice to the proper email address (in the case of email transmission) or the receipt of such Notice (in the case of delivery by first-class certified mail or by courier service) will constitute the giving thereof.

DocuSign Envelope ID: 121CE66D-28D0-443C-90BB-132D3FA276FD

If to be given to Landlord:
The Town of Fairfield
Attention First Selectwoman
611 Old Post Road
Fairfield, CT 06824

If to be given to Tenant:
DISH Wireless L.L.C.
Attn: Lease Administration
5701 South Santa Fe Drive
Littleton, Colorado 80120

12.11 Entire Agreement. This Agreement sets forth the entire, final and complete understanding between the Parties hereto regarding the subject matter of this Agreement, and it supersedes and replaces all previous understandings or agreements, written, oral, or implied, regarding 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.

12.12 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.

12.13 Counterparts. This Agreement may be executed in any number of identical counterparts and, if 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.

12.14 Attorneys' Fees. If an action is brought by either Party for breach of any 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.

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

{This space intentionally left blank. The next page is the signature page.}

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

LANDLORD:

TOWN OF FAIRFIELD

DocuSigned by:

By: Thomas R. Bremer

Name: Thomas R. Bremer

Its: Chief Administrative Officer

TENANT:

DISH WIRELESS L.L.C.

DocuSigned by:

By:

Name: Dave Mayo

Its: EVP

DocuSigned by:

Mike Fox

3/21/2023

{Signature page to Site Lease Agreement}

DocuSign Envelope ID: 121CE66D-28D0-443C-90BB-132D3FA276FD

EXHIBIT A

LEGAL DESCRIPTION OF PROPERTY

Assessor's Map No. 170, Lot No. 41, State of Connecticut, County of Fairfield, Town of Fairfield that certain piece or parcel of land, with the buildings and improvements thereon, if any, situated in the Town and County of Fairfield and State of Connecticut, containing 1.2 acres, more or less, and bounded and described as follows:

Beginning at a point in the westerly line of Congress Street where the boundary line separating land now or formerly of Francis J. and Mary Helen O'Hara from Land herein described intersects said line of Congress Street;

Thence south 14 02" east along the westerly line of Congress Street, 166.14 feet;

Thence south 74 05' 30" west along land now or formerly of Paul and Elsa Heetmen, 300.06 feet;

Thence north 9 35' 35" west along now or formerly of said Francis J. and Mary Helen O'Hara. 192.01 feet;

Thence north 79 04' 40" east along land now or formerly of said Francis J. and Mary Helen O'Hara, 285.38 feet to the point of beginning.

DocuSign Envelope ID: 121CE66D-28D0-443C-90BB-132D3FA276FD

EXHIBIT B

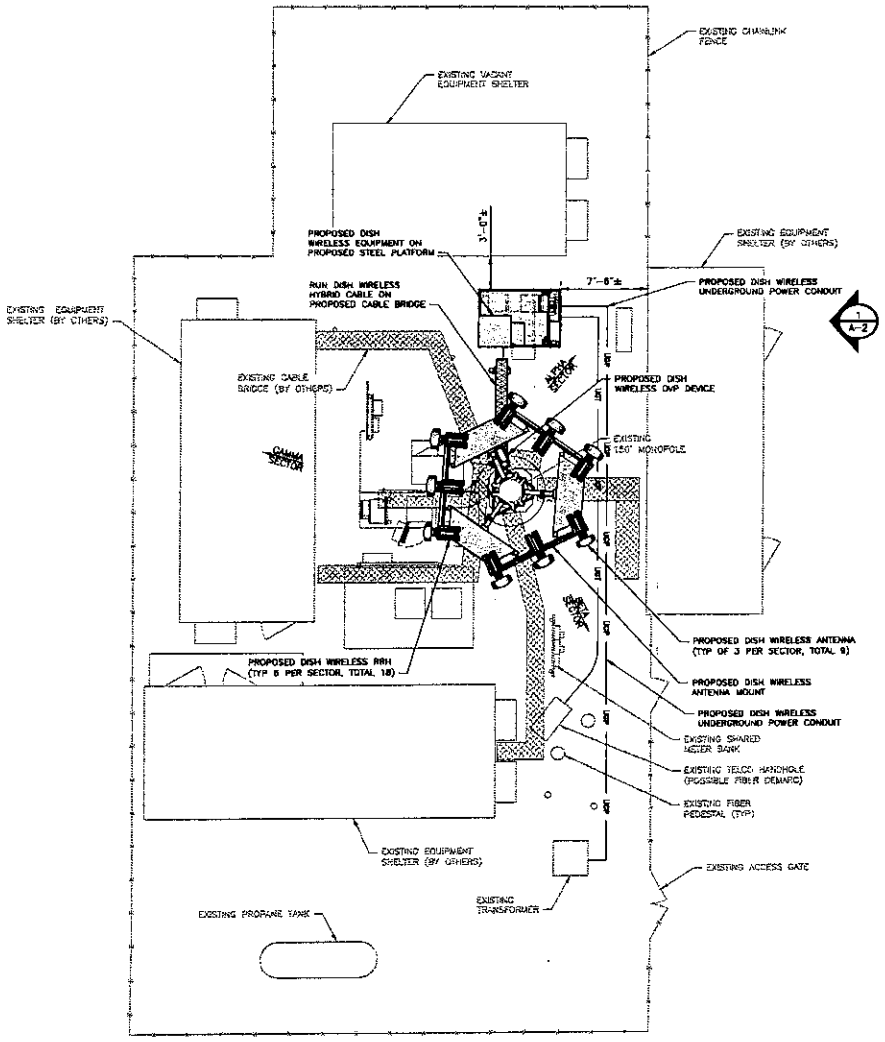
SITE PLAN

[Attached]

DocuSign Envelope ID: 121CE66D-28D0-443C-90BB-132D3FA276FD

NOTE

PROPOSED INSTALLATION TO BE STRUCTURALLY ANALYZED BY PROFESSIONAL ENGINEER LICENSED IN THE STATE OF CONNETICUT.



ENLARGED SITE PLAN

6' 4' 2' 0 5' 10'
3/16"=1'-0"

1

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

Tectonic

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:
VS	JQ	MP

RFDS REV #:

LEASE EXHIBIT

SUBMITTALS

REV	DATE	DESCRIPTION
A	06/28/21	ISSUED FOR REVIEW

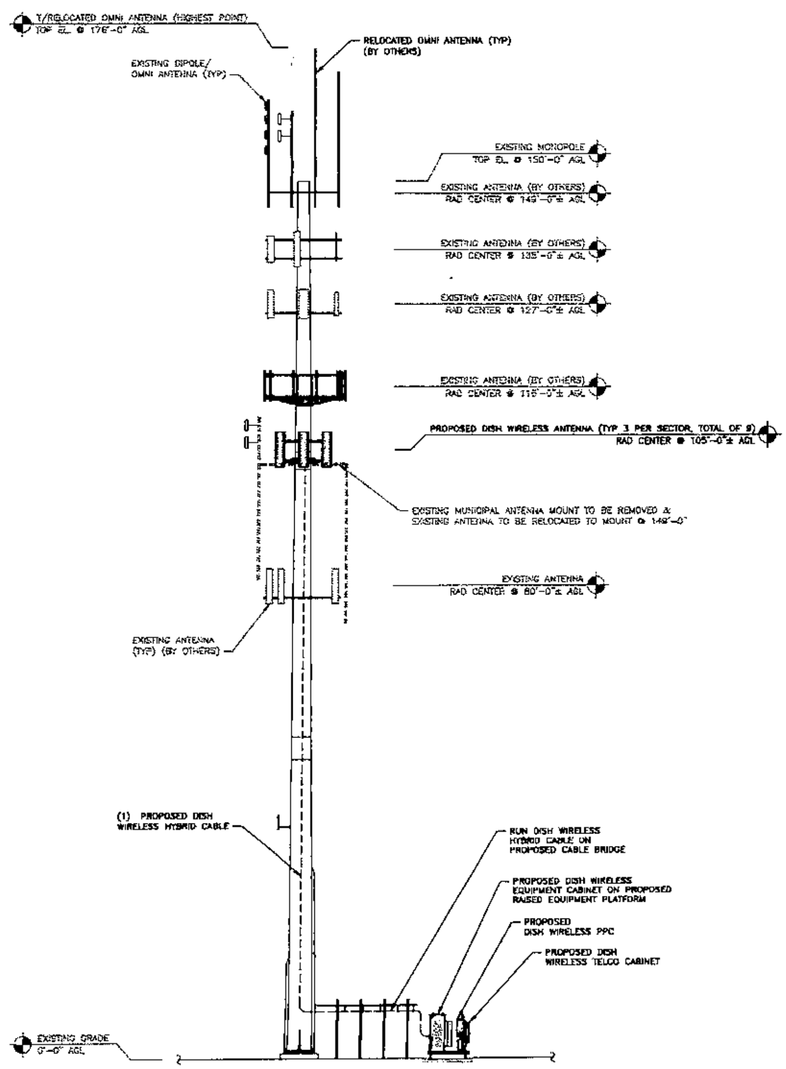
A&E PROJECT NUMBER
10710.NJJER01121A

DISH WIRELESS PROJECT INFORMATION
NJJER01121A
3965 CONGRESS STREET
FAIRFIELD, CT 06824

SHEET TITLE
ENLARGED SITE PLAN

SHEET NUMBER
A-1 HSG

DocuSign Envelope ID: 121CE66D-28D0-443C-90BB-132D3FA276FD



ELEVATION

1

NOTE

PROPOSED INSTALLATION TO BE STRUCTURALLY ANALYZED BY PROFESSIONAL ENGINEER LICENSED IN THE STATE OF CONNECTICUT.

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

Tectonic

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:
VS	JQ	MP

RFDS REV #: —

LEASE
EXHIBIT

SUBMITTALS

REV	DATE	DESCRIPTION
A	06/26/21	ISSUED FOR REVIEW

A&E PROJECT NUMBER
10710.NJJER01121A

DISH WIRELESS PROJECT INFORMATION
NJJER01121A

3965 CONGRESS STREET
FAIRFIELD, CT 06824

SHEET TITLE
ELEVATION

SHEET NUMBER
A-2 HSG

DocuSign Envelope ID: 121CE66D-28D0-443C-90BB-132D3FA276FD

EXHIBIT C

THE TOWN OF FAIRFIELD

TELECOMMUNICATIONS FACILITY UPGRADE PROTOCOL

A. All equipment upgrade submissions must comply with all applicable ordinances and regulations of the Town of Fairfield and all applicable regulations, rules, standards, requirements and conditions of the Connecticut Siting Council.

B. Initial written submission of Tenant's proposed equipment upgrades must be delivered to The Town of Fairfield, 611 Old Post Road, Fairfield, CT 06824, Attention: Chief Financial Officer. The initial submission ("Initial Submission") must include:

(1) Copy of existing As-Built on file with Tenant, encompassing the telecommunications equipment that will be upgraded or changed in some manner;

(2) Drawings showing proposed equipment upgrades or changes and a detailed written scope of work including plans and specifications describing the proposed equipment upgrades or changes ("Scope of Work"); and

(3) Estimated construction schedule, detailing length of time for Tenant to perform construction work.

C. Upon review of the Initial Submission, the Landlord may make reasonable written requests for additional related documentation and/or modifications.

D. Upon receipt of a request under Paragraph C, Tenant shall supply the additional related documentation and/or make modifications to the Initial Submission, as reasonably requested by the Landlord.

E. A "Final Submittal" shall be made by the Tenant to the Landlord in the same manner described for the Initial Submission in Paragraph B. The Final Submittal shall include the following.

(1) Final plans and specifications for the proposed equipment changes, and a revised Scope of Work, if different from what was provided in the Initial Submission.

(2) A Radio-frequency (RF) emissions report by a licensed engineer or other qualified professional, if Tenant 's proposed upgrades or changes include the addition of new antennas, to show compliance with any existing equipment and FCC regulations regarding RF emissions.

(3) Final construction schedule, detailing the length of time for Tenant to perform the proposed work ("Construction Schedule").

DocuSign Envelope ID: 121CE66D-28D0-443C-90BB-132D3FA276FD

(4) A deposit, in an amount not to exceed $5,000.00, to cover all reasonable costs incurred by Landlord related to the proposed work, including, but not limited to, expenses incurred by the Landlord for the review of the drawings and Scope of Work by Landlord's staff or Landlord's outside engineering firm and any related supervision or inspection fees, regardless of whether the proposed upgrades or changes will involve work on the Tower, the ground, a roof or all of the above. Landlord shall access the deposit only pursuant to the terms set forth in Paragraph O below.

(5) If, after review, Landlord determines that the proposed upgrade will impact the structural integrity of the Tower or building, an appropriate engineering study will be undertaken. Landlord will provide Tenant with a written explanation of the reasons for the structural integrity study. The actual costs of the structural integrity study shall be paid by the Tenant. The study shall be performed by an engineer selected by the Landlord. Tenant will be responsible for the cost of any and all structural modifications or reinforcements of the Tower or the building that may be required in order to accommodate any new or modified equipment added by Tenant in connection with an upgrade. Tenant shall include any and all structural modifications and reinforcements in the Scope of Work and the Construction Schedule. Landlord shall have the right to deny authorization for any modifications to the building or Property that will, in the Landlord's judgment, materially interfere with operations of the Fairfield Fire Department or diminish the usable space within the building.

(6) If the proposed upgrades require additional ground space, rooftop space or Tower space or additional antennae or any other equipment to be added, the Landlord will be entitled to a reasonable increase in the rental fee due under the Lease. Tenant shall not start work until the Landlord and Tenant have agreed upon the amount of the rental fee increase. If the Landlord and Tenant are unable to reach agreement upon the amount of the rental fee increase, then Tenant shall not start work until the amount of the rental fee increase has been determined pursuant to Paragraph R.

F. Following the Final Submittal, the Landlord and Tenant will cooperate with each other in finalizing any further changes or modifications agreed upon by both parties.

G. Landlord's consent and/or approval of the proposed equipment upgrades or changes shall not be unreasonably withheld, conditioned, delayed or denied.

H. When the Final Submission is approved by the Landlord, the Landlord will deliver a written Notice to Proceed delineating the approved Scope of Work and Construction Schedule. The Notice to Proceed will set forth the name, phone number and email address of the agent or representative of the Landlord who Tenant should contact to coordinate the approved work and access to the site.

I. Tenant shall confirm the date and time that Tenant and its agents and representatives will

DocuSign Envelope ID: 121CE66D-28D0-443C-90BB-132D3FA276FD

perform the upgrade work and the names of the Tenant agents and/or representatives who will be entering the property to perform/supervise the work. Prior to accessing the Property to perform the upgrade work the Tenant shall provide a minimum of 48 hours' prior notice, by contacting the Landlord agent/representative referenced in Paragraph H, at the phone number and email address provided. The Landlord agent/representative will be reasonably available by phone during normal business hours and will not unreasonably delay Tenant's ability to access the property to perform the upgrade work. Once Tenant has notified the Landlord as indicated above, the Landlord will provide access to Tenant in furtherance of the Notice to Proceed, within 48 hours.

J. The Landlord, its engineer and/or inspector may be on site to inspect the work and confirm compliance with the Notice to Proceed. Actual costs of inspection shall be paid by the Tenant within sixty (60) days of receipt of an invoice together with reasonable supporting documentation evidencing the costs.

K. The upgrade work shall take place during normal business hours (Monday through Friday 8:00 a.m. to 4:30 p.m.). No upgrade work shall be permitted on weekends or holidays recognized by the Town of Fairfield. Notwithstanding the foregoing, the Landlord will consider permitting work on weekends, holidays or outside of the aforementioned normal business hours, provided Tenant agrees to the full reimbursement for any actual, reasonable expenses associated with the time spent by Landlord's engineer or inspector monitoring the work, such expenses to be paid within sixty (60) days of receipt of an invoice together with reasonable supporting documentation evidencing the expenses.

L. Absent unforeseen and/or extenuating circumstances, Tenant shall have sixty (60) calendar days to complete construction/upgrades after the work has started. Construction will be deemed started when physical work at the site begins by Tenant.

M. Upon substantial completion of the work, Tenant shall submit to Landlord written notice indicating the substantial completion of the upgrades or changes to allow the Landlord to schedule an engineering inspection. Within thirty (30) days of the Landlord's receipt of Tenant's written notice of substantial completion, the Landlord shall submit to Tenant a written acceptance of the work or a reasonable punch list of items to be completed and/or addressed. Punch list items must be directly related to the Tenant's recently performed upgrades or changes and construction shall be deemed complete if a punch list is not submitted within the thirty (30) day period. Tenant shall use reasonable efforts to complete all punch list items within thirty (30) days of the receipt of the punch list. If the items on the punch list are not completed within said thirty (30) days, Landlord shall, upon ten (10) days' notice to Tenant, have the option of completing such items at Tenant's expense, provided that Landlord itemizes to Tenant all reasonable expenditures incurred and Tenant has not completed same following the ten (10) days' notice.

N. Once all work has been approved by Landlord or its engineer, Tenant shall submit at its cost and expense: (1) New As-Built drawings by an engineer or architect licensed in Connecticut, if the upgrade modifications are substantial, or new As-Built addendum report by an engineer or architect licensed in Connecticut to reflect minor upgrade

DocuSign Envelope ID: 121CE66D-28D0-443C-90BB-132D3FA276FD

modifications; and (2) Color photographs of the completed work.

O. The Landlord shall submit a final, detailed bill to Tenant detailing the time and work reasonably performed, within sixty (60) days after Tenant's completion of the work. Landlord may use the Deposit to pay such final bill. If the bill exceeds the Deposit, Tenant shall pay the excess within sixty (60) days after receipt of the bill. If the bill is less than the Deposit, a refund shall be made within sixty (60) days thereafter.

P. This Upgrade Protocol is applicable only to work where Tenant seeks to upgrade or modify its existing equipment installation. It does not apply to: (1) maintenance or repair of any existing equipment; and (2) replacement of broken or non-functioning equipment with like kind or similar equipment.

Q. To the extent that any proposed upgrade work at the site is relatively minor and has little impact on the site, the Lessor may waive some or all of the formalities of this Upgrade Protocol provided that any such waiver must be in writing.

R. If Landlord and Tenant are unable to reach agreement upon the amount of a rental fee increase due under Paragraph E(6), then the amount of the rental fee increase shall be determined as follows.

(1) Negotiation. First, representatives of Tenant and Landlord shall meet either alone or together with their respective advisors, in the spirit of good faith, to attempt to negotiate a resolution of the dispute by mutual agreement in writing.

(2) Arbitration. If Landlord and Tenant are unable to resolve the dispute by mutual agreement under Paragraph R(1) within two (2) weeks following the initiation of negotiations between the parties thereunder, then, upon demand of either Landlord or Tenant, the dispute shall be submitted to binding arbitration in accordance with the Commercial Arbitration Rules of the American Arbitration Association (the "Commercial Arbitration Rules"). The parties may agree upon one (1) arbitrator. If they cannot so agree within two (2) weeks following demand for arbitration, then each party shall select an arbitrator, and the arbitrators so selected shall select a third arbitrator (the "Deciding Arbitrator"), and the decision of the Deciding Arbitrator shall be binding and conclusive. If either party refuses or fails to join in the appointment of an arbitrator, an arbitrator shall be appointed in accordance with the Commercial Arbitration Rules. All arbitration hearings shall take place in Fairfield County, Connecticut.

(3) Controls Over Statutes and Regulations. Landlord and Tenant agree that the method of determining the rental fee increase under this Paragraph R shall apply as between them in lieu of any applicable mechanism prescribed under the statutes or regulations of the State of Connecticut, including, without limitation CGS Section 16-50aa(d)(1). Landlord and Tenant waive the right to proceed under CGS Section 16-50aa(d)(1) in connection with the determination of the rental fee increase due under Paragraph E(6).

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:

SULLIVAN INDEPRENDENCE HALL
HON. BRENDA L. KUPCHICK
725 OLD POST RD.
FAIRFIELD CT 06824

CT 066 9-06

UPS 2ND DAY AIR **2**

TRACKING #: 1Z E05 345 02 6647 0929

BILLING: P/P

WS 26.0.6 SHARP MX-4070 18.0A 04/2023

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

1ZE053450265293131

Service

UPS 2nd Day Air®

Delivered On

05/08/2023 10:24 A.M.

Delivered To

725 OLD POST RD
FAIRFIELD, CT, 06824, US

Received By

PLAN ZONE

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: 05/09/2023 7:20 A.M. EST