Tectonic

PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.

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

December 22, 2023

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

RE: **Notice of Exempt Modification to an existing watertank located at 11 Filbert Road, Norwalk, Connecticut**

Latitude: 41° 7' 6.84" / Longitude: -73° 23' 48.10"

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 site at the existing water tank facility located at 11 Filbert Road Road, Norwalk, Connecticut (See Original Facility Approval attached as Exhibit A) ("Facility"). The property and water tank are owned by The Town of Norwalk (See Norwalk 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 water tank at the ninety six foot (96') 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 November 9, 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 Harry Rilling, Mayor of the City of Norwalk, Steven Kleppin, Planning and Zoning Director, and the property and water tank owner, First Norwalk Taxing District.

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 height of the water tank as the Dish antennas will be installed at a height of 114'.

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 6.6898%.

Water Tank

The Facility consists of a One hundred twenty seven foot six inch (127.6') water tank located at 11 Filbert Road, Norwalk, Connecticut. As indicated above, the property and water tank are owned by the First Norwalk Taxing District. The water tank currently supports Verizon at the one hundred fourteen foot (114'). The antenna locations are set forth on Sheet A-2 of the attached drawings in Exhibit C.

A. TECHNICAL FEASIBILTY

The existing water tank 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 facilities such as the above referenced water tank. 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 Norwalk to proceed with the proposed installation. Additionally, a Site Lease Agreement is attached as Exhibit G, granting Dish the authority from the water tank owner to proceed with this application for shared use.

C. ENVIRONMENTAL FEASIBILITY

The proposed shared use of this Facility would have a minimal environmental impact. The installation of the Dish equipment at the 114' level of the existing water tank would have an insignificant visual impact on the area surrounding the water tank. 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.

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PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.

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 water tank 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 water tank.

For the reasons set forth herein, the proposed shared use of the existing water tank at 11 Filbert Road, Norwalk, satisfies the criteria stated in C.G.S. sec. 16-50aa, and supports the general goal of preventing the unnecessary proliferation of water tank 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: Norwalk Mayor, Harry Rilling
125 East St.
Norwalk, CT 06856

Norwalk Planning Director, Steven Kelppin
125 East St.
Room 129
Norwalk, CT 06856

First Norwalk Taxing District
3 Belden Ave.
Norwalk, CT 06850

Exhibit A

Original Facility Approval

STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL
136 Main Street, Suite 401
New Britain, Connecticut 06051-4225
Phone: 827-7682

Petition No. 305
Metro Mobile of Fairfield County, Inc.
Installation of cellular telecommunications antennas and equipment building at a water tank located in the Town of Norwalk, Connecticut.
Staff Report
May 6, 1993

Metro Mobile of Fairfield County, Inc. (Metro Mobile), is petitioning the Council under the regulations of State Agencies 16-50j-38 through 40 for a declaratory ruling that the installation of certain cellular telecommunications antennas on the sides of an existing water tank and construction of an equipment building adjacent to the base of the water tank will not have a substantial adverse environmental effect and, therefore, does not require a Certificate of environmental compatibility and public need from the Council. On April 30, 1993, Chairman Mortimer A. Gelston of the Connecticut Siting Council (Council), and Fred Cunliffe of the Council's staff reviewed this petition.

Metro Mobile proposes to install six panel antennas with reflectors, approximately three and one-half by one and one-half feet, around the sides of a water tank located at the end of Filbert Road in Norwalk, Connecticut. This existing water tank site is fenced, surrounded by vegetation, and is in a residential area. The existing water tank stands approximately 130 feet to which the antennas would be attached directly to the tank's support legs reaching an approximate total height of 119 feet above ground level Metro Mobile also proposes to construct a 500 square foot equipment building directly beneath the water tank. Exact dimensions would be governed by the confined space under the tower and final approval by the property owner. No clearing or landscaping would be necessary. Metro Mobile states that a building permit would be pursued following a Council ruling.

Metro Mobile contends that this project will have no effect on the ecology of the site, non-ionizing radio frequency will be below the DEP State standard, the proposed installation will not increase noise levels at the site boundary by six decibels or more, and the site boundaries will not be expanded by the project.

In conclusion, Metro Mobile requests that the Council issue a determination that the proposed project will not have a substantial adverse environmental effect and, therefore, does not require a Certificate from the Council. Staff is in agreement with the contentions of Metro Mobile and recommends approval of this petition.

Fred Cunliffe
Siting Analyst

6914E-3

Exhibit B

Property Card

11 FILBERT RD

Location	11 FILBERT RD	**Mblu**	5/ 4/ 199/ 0/
Acct#	16358	**Owner**	FIRST TAXING DISTRICT
Assessment	$1,220,440	**Appraisal**	$1,743,470
PID	16358	**Building Count**	1

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2023	$532,260	$1,211,210	$1,743,470

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2023	$372,590	$847,850	$1,220,440

Owner of Record

Owner	FIRST TAXING DISTRICT	**Sale Price**	$0
Co-Owner	(WATER DEPT - WATER TANK)	**Book & Page**	532/361
Address	3 BELDEN AVE NORWALK, CT 06850-3303	**Sale Date**	04/01/1960

Ownership History

Ownership History			
Owner	**Sale Price**	**Book & Page**	**Sale Date**
FIRST TAXING DISTRICT	$0	532/361	04/01/1960

Building Information

Building 1 : Section 1

Year Built: 1993
Living Area: 450

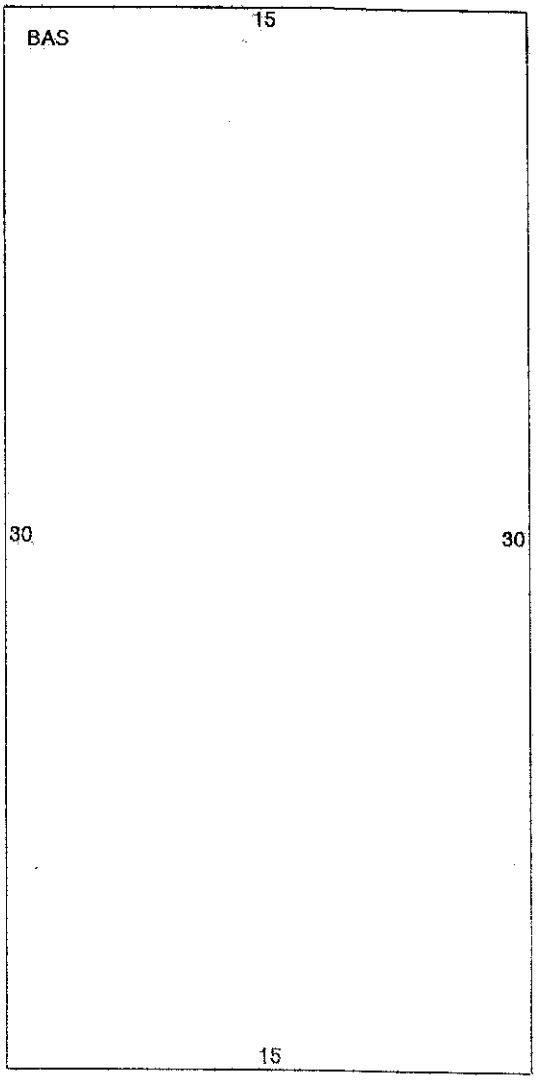
Building Attributes	
Field	**Description**
Style:	Warehouse
Model:	Industrial

Grade	C
Stories:	1.00
Occupancy	1.00
Exterior Wall 1	Aluminum Sidng
Exterior Wall 2	
Roof Structure	Gable
Roof Cover	Asphalt Shingl
Interior Wall 1	Drywall
Interior Wall 2	
Interior Floor 1	Minimum/Plywd
Interior Floor 2	
Heating Fuel	Electric
Heating Type	Forced Air
Heat/AC	Heat/AC Split
Frame	Wood
Plumbing	Average
Wall Height	

Building Photo

(https://Images.vgsi.com/photos/NorwalkCTPhotos//default.jpg)

Building Layout



(ParcelSketch.ashx?pid=16358&bid=16358)

Building Sub-Areas (sq ft)			Legend
Code	Description	Gross Area	Living Area
BAS	First Floor	450	450
		450	450

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code	924
Description	Wtr Treatmnt
Zone	B
Neighborhood	C330

Land Line Valuation

Size (Acres)	1.06
Assessed Value	$847,850
Appraised Value	$1,211,210

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
SHD1	Shed	CB	CindBk/Frame	450.00 S.F.	$3,940	1
TNK3	Tank >10K			1000000.00 GALS	$500,000	1
FN6	Fence 6'			500.00 L.F.	$4,550	1

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2022	$527,280	$1,103,060	$1,630,340
2022	$527,280	$1,103,060	$1,630,340
2021	$527,720	$1,103,060	$1,630,780
2020	$527,720	$1,103,060	$1,630,780
2019	$527,720	$1,103,060	$1,630,780
2018	$527,720	$1,103,060	$1,630,780
2017	$399,800	$770,040	$1,169,840

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2022	$369,100	$772,140	$1,141,240
2022	$369,100	$772,140	$1,141,240
2021	$369,410	$772,140	$1,141,550
2020	$369,410	$772,140	$1,141,550
2019	$369,410	$772,140	$1,141,550
2018	$369,410	$772,140	$1,141,550
2017	$279,870	$539,030	$818,900

Exhibit C

Project Plans

dish wireless™

Dish Wireless L.L.C. SITE ID:

NJJER01152C

Dish Wireless L.L.C. SITE ADDRESS:

FIRST DIST WATER DEPT
11 FILBERT ROAD
NORWALK, CT 06851

CONNECTICUT CODE COMPLIANCE

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

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

SHEET INDEX

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:

ANTENNA SCOPE OF WORK:
- INSTALL (3) PROPOSED PANEL ANTENNAS (1 PER SECTOR)
- INSTALL (6) PROPOSED RRHs (2 PER SECTOR)
- INSTALL (3) PROPOSED ANTENNA MOUNTS
- INSTALL PROPOSED JUMPERS
- INSTALL (3) PROPOSED OVP DEVICE (1 PER SECTOR)
- INSTALL (3) PROPOSED HYBRID CABLE (1 PER SECTOR)

EQUIPMENT SCOPE OF WORK:
- INSTALL (1) PROPOSED STEEL PLATFORM
- INSTALL (1) PROPOSED PPC CABINET
- INSTALL (1) PROPOSED EQUIPMENT CABINET
- INSTALL (1) PROPOSED POWER CONDUIT
- INSTALL (1) PROPOSED TELCO CONDUIT
- INSTALL (1) PROPOSED TELCO-FIBER BOX
- INSTALL (1) PROPOSED GPS UNIT
- INSTALL (1) PROPOSED SAFETY SWITCH (IF REQUIRED)
- INSTALL (1) PROPOSED CIENA BOX (IF REQUIRED)
- INSTALL CABLE BRIDGE SYSTEM

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:	FIRST DISTRICT WATER DEPARTMENT
ADDRESS:	11 FILBERT ROAD NORWALK, CT 06851
TOWER TYPE:	WATER TANK
TOWER CO SITE ID:	N/A
COUNTY:	FAIRFIELD
LATITUDE (NAD 83):	41° 07' 08.84" N 41.118467 N
LONGITUDE (NAD 83):	73° 23' 48.10" W 73.396694 W
ZONING JURISDICTION:	CITY OF NORWALK/CT SITING COUNCIL
ZONING DISTRICT:	B RESIDENTIAL
PARCEL NUMBER:	5-4-189-0
POWER COMPANY:	EVERSOURCE CT ELECTRIC
TELEPHONE COMPANY:	T.B.D.

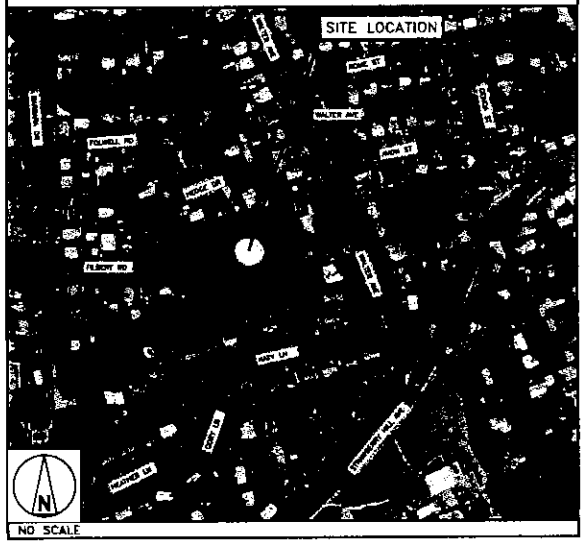
PROJECT DIRECTORY

APPLICANT:	Dish Wireless L.L.C. 5701 SOUTH SANTA FE DRIVE LITTLETON, CO 80120
TOWER OWNER:	FIRST TAXING DISTRICT WATER DEPT-WATER TANK
SITE DESIGNER:	TECTONIC ENGINEERING CONSULTANTS, GEOLOGISTS, & LAND SURVEYORS, D.P.C., INC. 1279 ROUTE 300 NEWBURGH, NY 10953 (845) 567-6656
SITE ACQUISITION:	TECTONIC ENGINEERING CONSULTANTS, GEOLOGISTS, & LAND SURVEYORS, D.P.C., INC. 1279 ROUTE 300 NEWBURGH, NY 10953 (845) 567-6656
CONSTRUCTION MANAGER:	RAFAL ROSOLOWSKI RAFAL.ROSOLOWSKI@DISH.COM
RF ENGINEER:	PAWAN MADAHAR PAWAN.MADAHAR@DISH.COM

DIRECTIONS

DIRECTIONS FROM 3 ADP BOULEVARD, ROSELAND, NJ 07068:
HEAD NORTHEAST ON ADP BLVD. TURN RIGHT TOWARD CHOCTAW WAY. TURN RIGHT ONTO LIVINGSTON AVE. TAKE THE RAMP ONTO I-280 E. AT EXIT 12 FOR GARDEN STATE PKWY N, CONTINUE ONTO NJ-444/GARDEN STATE PKWY. TAKE EXIT 14-1 TO MERGE ONTO I-287 E/I-87 S,KEEP LEFT AT THE FORK TO CONTINUE ON I-287 E, FOLLOW SIGNS FOR WHITE PLAINS/RYE. MERGE ONTO I-95 N, TAKE EXIT 18 TOWARD E NORWALK,TURN LEFT ONTO EAST AVE. TURN RIGHT ONTO SUNSET HILL AVE,CONTINUE ONTO TIERNEY ST, THEN TURN LEFT ONTO GEORGE AVE. TURN RIGHT ONTO FOLWELL RD, TURN RIGHT ONTO BARBARA DR, THEN LEFT ONTO FILBERT RD.

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
2/16/23

DRAWN BY:	CHECKED BY:	APPROVED BY:
NM	GL	MP

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

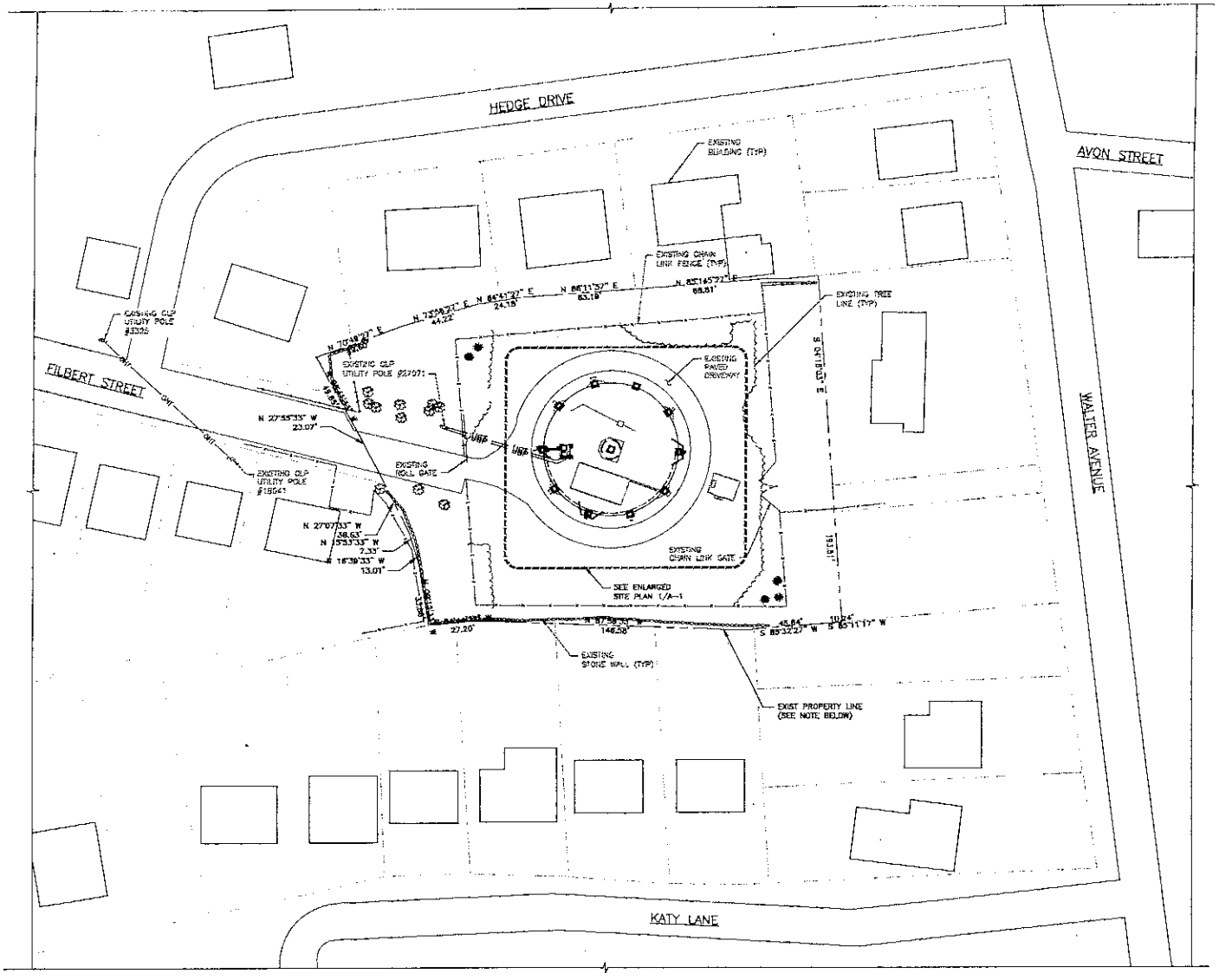
REV	DATE	DESCRIPTION
0	06/26/2023	ISSUED FOR PLANS
1	11/09/2023	PER UPDATED SA/MA

A&E PROJECT NUMBER
10710.NJJER01152C

Dish Wireless L.L.C. PROJECT INFORMATION
NJJER01152C
FIRST DIST WATER DEPT.
11 FILBERT ROAD
NORWALK, CT 06851

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1



NOTE: FOR SITE PLAN SHOWN REFERENCE "SITE SURVEY PLAN BY GREINER, INC, A.E.S. DATED 4/12/1993".

OVERALL SITE PLAN

1

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

Tectonic

STATE OF CONNECTICUT
MANOJKUMAR PATEL
PEN.0022638
LICENSED PROFESSIONAL ENGINEER
11/18/23

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:
NM	GL	MP

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	08/08/2023	ISSUED FOR FILING
1	11/09/2023	PER UPDATED SA/MA

A&E PROJECT NUMBER

10710.NJJER01152C

Dish Wireless LLC. PROJECT INFORMATION

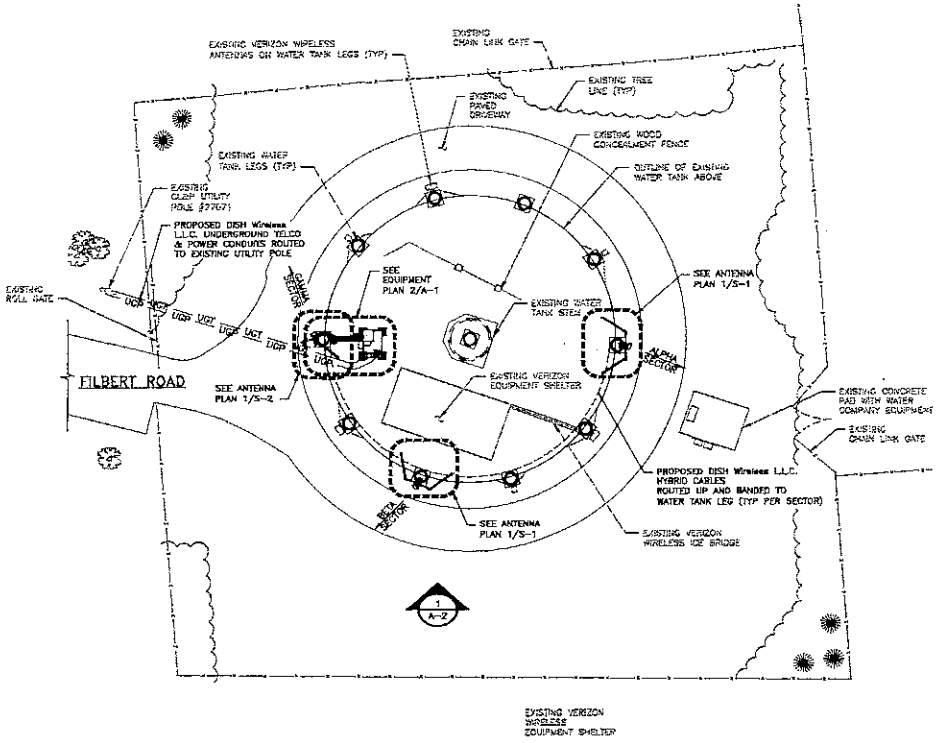
NJJER01152C
FIRST DIST WATER DEPT.
11 FILBERT ROAD
NORWALK, CT 06851

SHEET TITLE

OVERALL SITE PLAN

SHEET NUMBER

SP-1



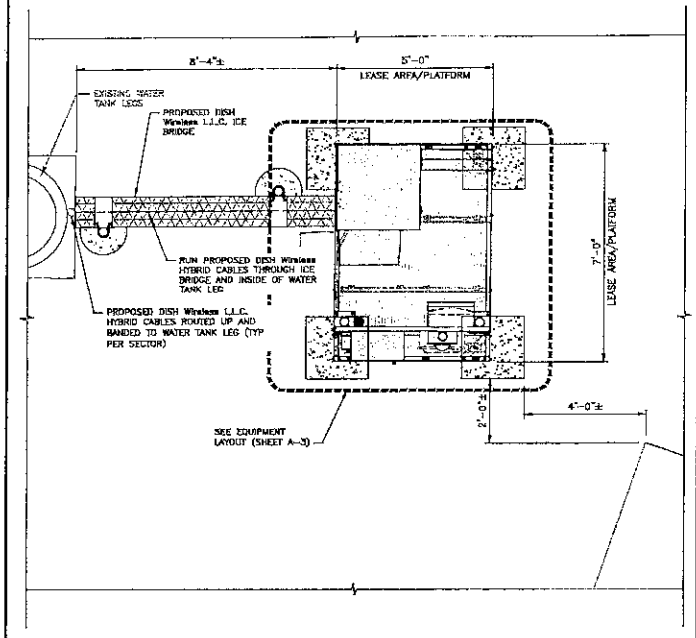
ENLARGED SITE PLAN

15' 12' 8' 4' 0 15' 32'
1/16"=1'-0"

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 10/31/23
4. REFER TO STRUCTURAL OPINION LETTER BY TECTONIC LETTER DATED 11/08/23



EQUIPMENT PLAN

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

2

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5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

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STATE OF CONNECTICUT
MANOJKUMAR PATEL
PER.0022038
LICENSED
PROFESSIONAL ENGINEER
12/12/23

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DRAWN BY:	CHECKED BY:	APPROVED BY:
NM	GL	MP

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	06/28/2023	ISSUED FOR PLNC
1	11/08/2023	PER UPDATED SA/WA

A&E PROJECT NUMBER

10710.NJJER01152C

Dish Wireless L.L.C. PROJECT INFORMATION

NJJER01152C
FIRST DIST WATER DEPT.
11 FILBERT ROAD
NORWALK, CT 06851

SHEET TITLE

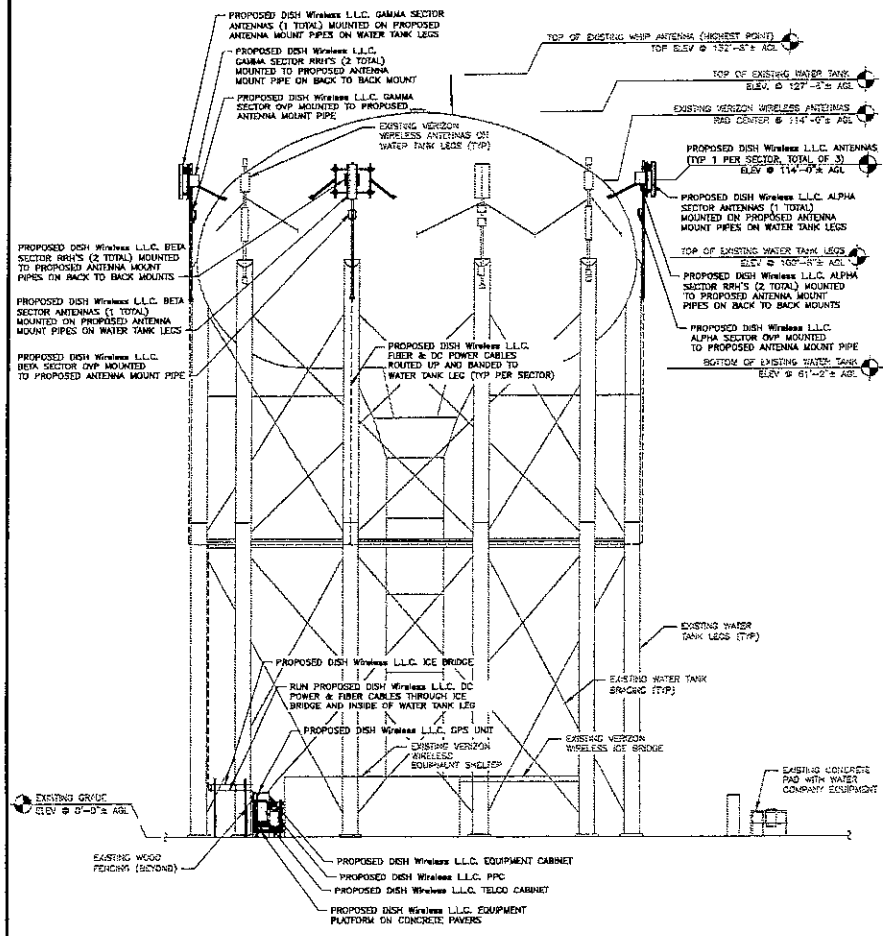
ENLARGED SITE & EQUIPMENT PLAN

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 10/31/23
4. REFER TO STRUCTURAL OPINION LETTER BY TECTONIC LETTER DATED 11/09/23

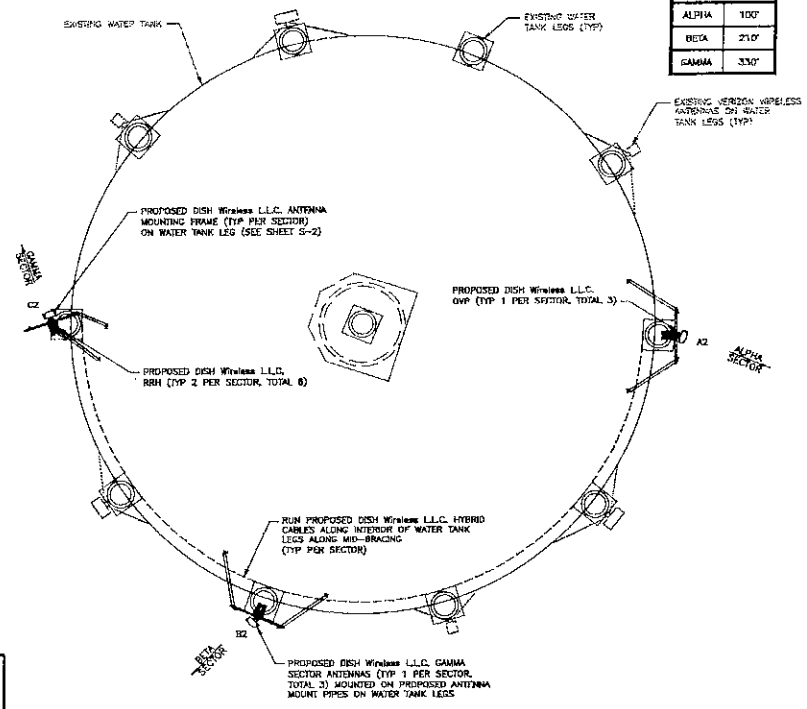


SOUTH ELEVATION

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

1

ANTENNA AZIMUTHS	
ALPHA	100°
BETA	210°
GAMMA	330°



ANTENNA LAYOUT

8" 4" 0 8" 16"
1/8"=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	100°	114'-0"	(1) HIGH-CAPACITY HYBRID CABLE (120'± LONG)	SAMSUNG – RF4450T-71A	5G	A2	RAYCAP – RDIDC-3045-PF-48
							SAMSUNG – RF4451D-70A	5G	A2	
B2	PROPOSED	COMMSCOPE – FFVV-65B-R2	5G	210°	114'-0"	(1) HIGH-CAPACITY HYBRID CABLE (120'± LONG)	SAMSUNG – RF4450T-71A	5G	B2	RAYCAP – RDIDC-3045-PF-48
							SAMSUNG – RF4451D-70A	5G	B2	
C2	PROPOSED	COMMSCOPE – FFVV-65B-R2	5G	330°	114'-0"	(1) HIGH-CAPACITY HYBRID CABLE (120'± LONG)	SAMSUNG – RF4450T-71A	5G	C2	RAYCAP – RDIDC-3045-PF-48
							SAMSUNG – RF4451D-70A	5G	C2	

NOTES:

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

ANTENNA SCHEDULE

3

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

Tectonic

STATE OF CONNECTICUT
MANOJKUMAR PATEL
PEN.0022638
LICENSED
PROFESSIONAL ENGINEER
11/18/23

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DRAWN BY:	CHECKED BY:	APPROVED BY:
NM	GL	MP

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	08/22/2023	ISSUED FOR FILING
1	11/09/2023	PER UPDATED SA/MA

A&E PROJECT NUMBER

10710.NJJER01152C

Dish Wireless L.L.C. PROJECT INFORMATION

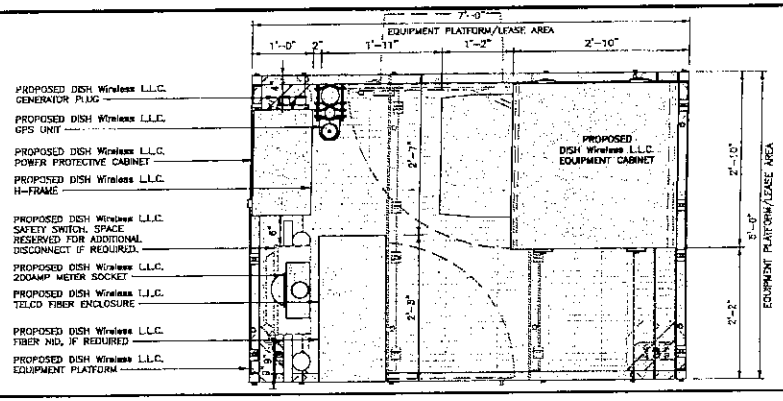
NJJER01152C
FIRST DIST WATER DEPT.
11 FILBERT ROAD
NORWALK, CT 06851

SHEET TITLE

ELEVATION, ANTENNA LAYOUT PLAN & SCHEDULE

SHEET NUMBER

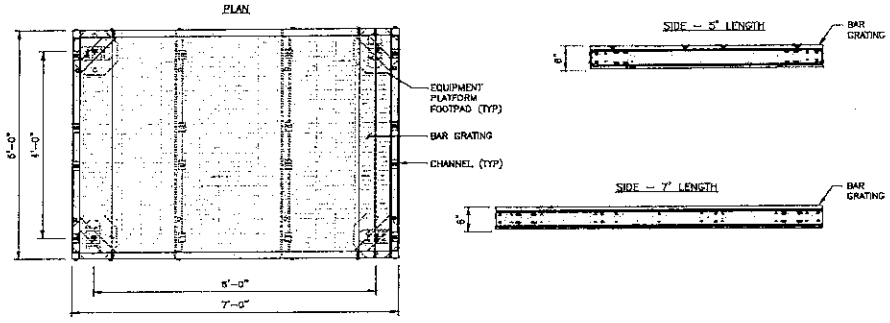
A-2



PLATFORM EQUIPMENT PLAN 1

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

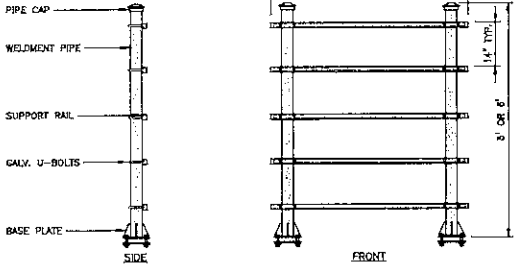
NOTE:
CC TO PROVIDE EXTENDED THREAD FOR PLATFORM IF REQUIRED HEIGHT EXCEEDS 17"



PLATFORM DETAIL NO SCALE 2

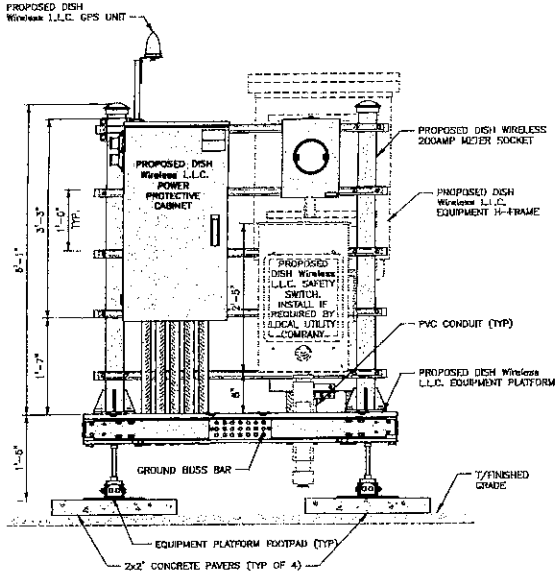
COMMSCOPE MTC4045HFLD H-FRAME	
UNISTRUT/SUPPORT RAILS QTY	5
WEIGHT	59.74 lbs

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

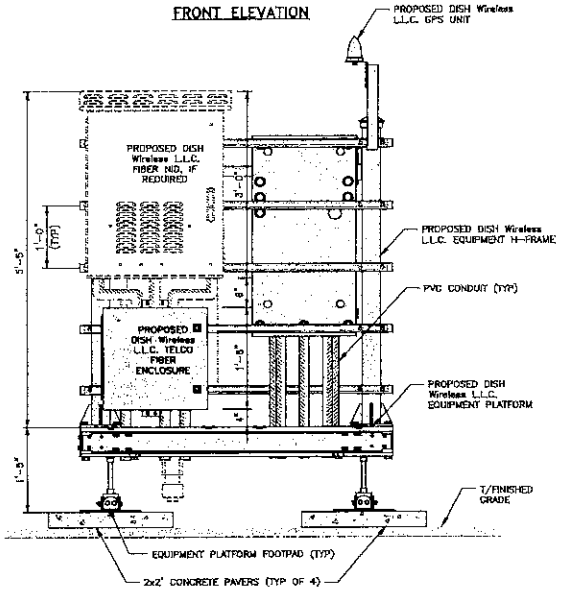


H-FRAME DETAIL NO SCALE 3

BATTERY DETAIL NO SCALE 4



FRONT ELEVATION



BACK ELEVATION

H-FRAME EQUIPMENT ELEVATION NO SCALE 5

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STATE OF CONNECTICUT
MANOJKUMAR PATEL
PEN.0022638
LICENSED
PROFESSIONAL ENGINEER
12/18/23

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DRAWN BY:	CHECKED BY:	APPROVED BY:
NM	GL	MP

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	08/28/2023	ISSUED FOR FILING
1	11/09/2023	PER UPDATED SA/SM

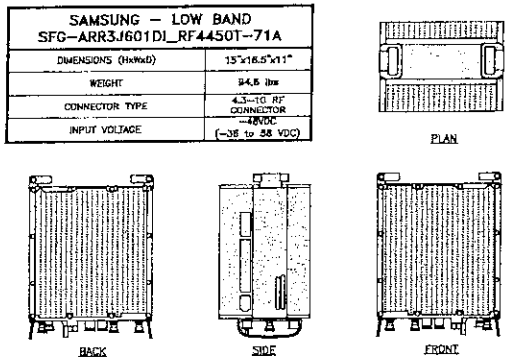
A&E PROJECT NUMBER
10710.NJJER01152C

Dish Wireless L.L.C. PROJECT INFORMATION
NJJER01152C
FIRST DIST WATER DEPT.
11 FILBERT ROAD
NORWALK, CT 06851

SHEET TITLE
EQUIPMENT DETAILS

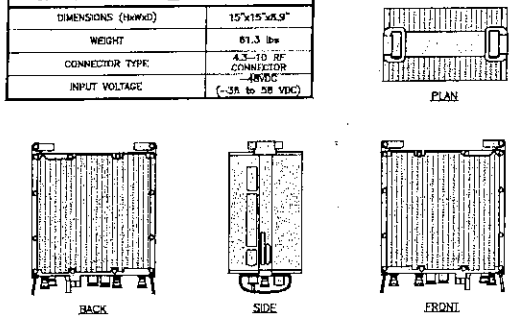
SHEET NUMBER
A-3

SAMSUNG – LOW BAND SFG–ARR3J601DI_RF4450T–71A	
DIMENSIONS (HxWxD)	15"x16.5"x11"
WEIGHT	94.6 lbs
CONNECTOR TYPE	4.3–10 RF CONNECTOR
INPUT VOLTAGE	–48VDC (–38 to 58 VDC)



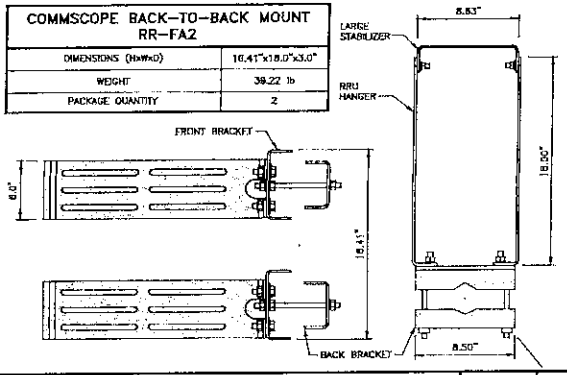
RRH DETAIL | NO SCALE | 1

SAMSUNG – MID BAND SFG–ARR3KM01DI_RF4451D–70A	
DIMENSIONS (HxWxD)	15"x15"x8.9"
WEIGHT	61.3 lbs
CONNECTOR TYPE	4.3–10 RF CONNECTOR
INPUT VOLTAGE	–48VDC (–38 to 58 VDC)



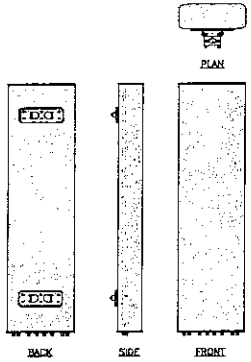
RRH DETAIL | NO SCALE | 2

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



REMOTE RADIO MOUNT DETAIL | NO SCALE | 3

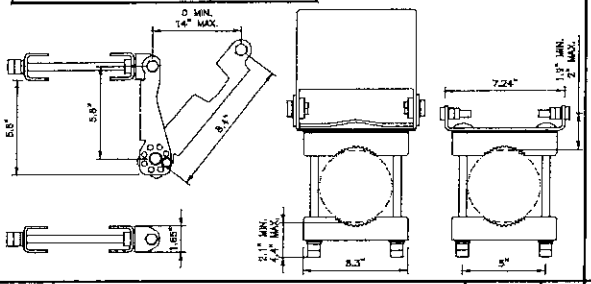
COMMSCOPE FFVV–65B–R2	
DIMENSIONS (HxWxD)(MM/IN)	1828x498x197 72"x19.6"x7.8"
RF CONNECTOR INTERFACE	4.3–10 FEMALE
WEIGHT	70.8 lbs
WEIGHT WITH BRACKETS	98.1 lbs



ANTENNA DETAIL | NO SCALE | 4

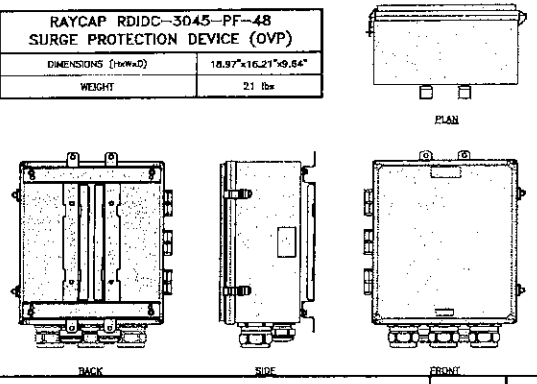
COMMSCOPE ANTENNA BRACKET BSAMNT–3	
DIAMETER COMPATIBILITY	2.362" – 4.528"
NET WEIGHT	13.669 lbs

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



ANTENNA BRACKET DETAIL | NO SCALE | 5

RAYCAP RDIDC–3045–PF–48 SURGE PROTECTION DEVICE (OVP)	
DIMENSIONS (HxWxD)	18.97"x16.21"x9.84"
WEIGHT	21 lbs



SURGE PROTECTION DEVICE DETAIL (OVP) | NO SCALE | 6

NO SCALE | 7

NO SCALE | 8

NOT USED | NO SCALE | 9

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STATE OF CONNECTICUT
MANOJKUMAR PATEL
PEN.0022038
LICENSED
PROFESSIONAL ENGINEER
11/13/23

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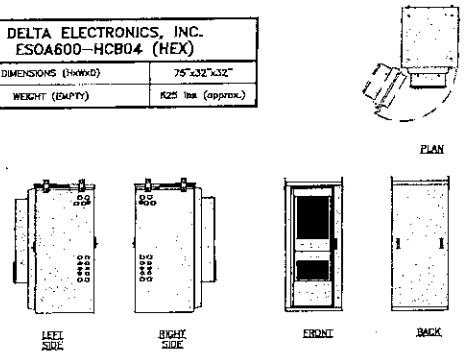
Dish Wireless L.L.C. PROJECT INFORMATION
NJJER01152C
FIRST DIST WATER DEPT.
11 FILBERT ROAD
NORWALK, CT 06851

SHEET TITLE
EQUIPMENT DETAILS

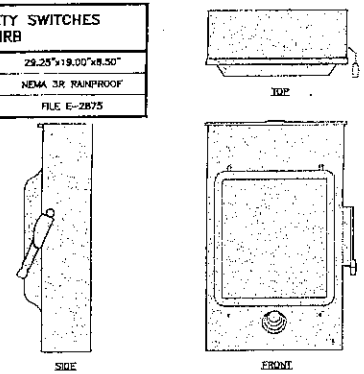
SHEET NUMBER
A-4

DELTA ELECTRONICS, INC. ESOA600-HCB04 (HEX)	
DIMENSIONS (HxWxD)	75"x32"x32"
WEIGHT (EMPTY)	625 lbs (approx.)



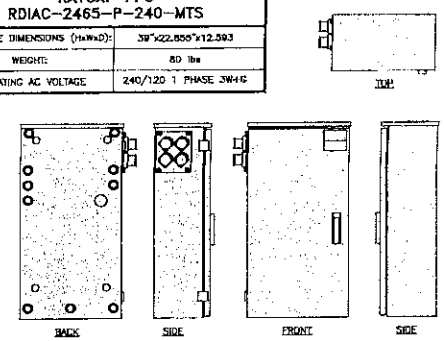
CABINET DETAIL | NO SCALE | 1

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



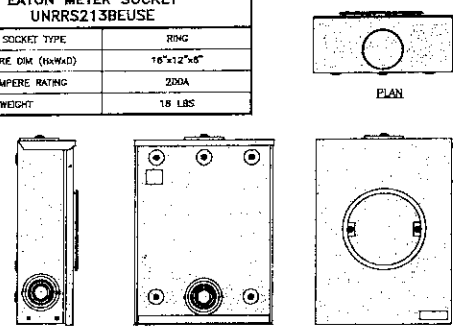
SAFETY SWITCH DETAIL | NO SCALE | 2

RAYCAP PPC RDIAC-2465-P-240-MTS	
ENCLOSURE DIMENSIONS (HxWxD):	39"x22.835"x12.593
WEIGHT:	80 lbs
OPERATING AC VOLTAGE	240/120 1 PHASE 3W+G



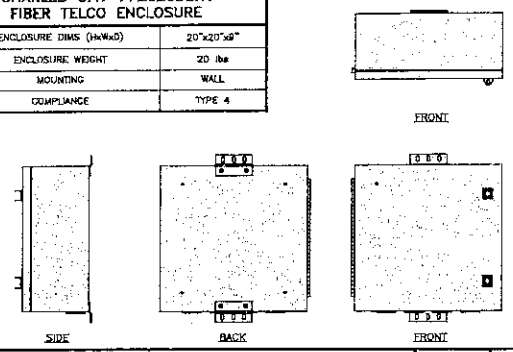
CABINET DETAIL | NO SCALE | 3

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

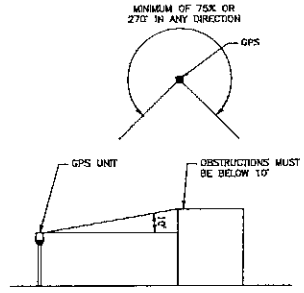


METER SOCKET DETAIL | NO SCALE | 4

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

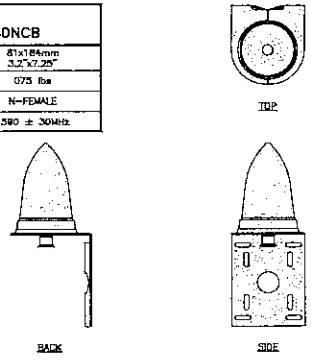


FIBER TELCO ENCLOSURE DETAIL | NO SCALE | 5



GPS MINIMUM SKY VIEW REQUIREMENTS | NO SCALE | 6

PCTEL GPSGL-TMG-SPI-40NCB	
DIMENSIONS (DIAxH) MM/INCH	81x184mm 3.2"x7.25"
WEIGHT W/ACCESSORIES	0.75 lbs
CONNECTOR	N-FEMALE
FREQUENCY RANGE	1590 ± 30MHz



GPS DETAIL | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

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STATE OF CONNECTICUT
MANOKUMAR PATEL
PEN.0022038
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12/18/23

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CONSTRUCTION DOCUMENTS

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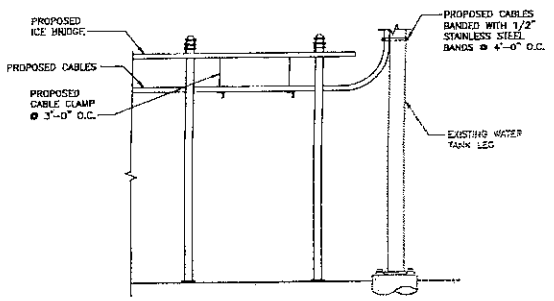
10710.NJJER01152C

Dish Wireless LLC. PROJECT INFORMATION
NJJER01152C
FIRST DIST WATER DEPT.
11 FILBERT ROAD
NORWALK, CT 06851

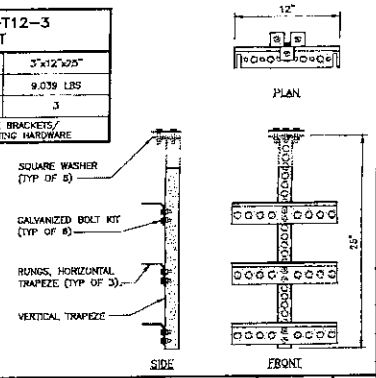
SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-5



CABLE RUN | NO SCALE | 1

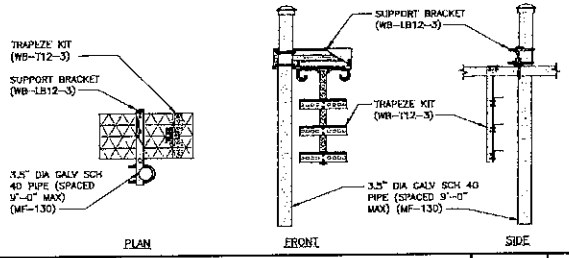
COMMSCOPE WB-T12-3 TRAPEZE KIT	
DIMENSIONS (HxWxL)	3"x12"x25"
WEIGHT	9.039 LBS
RUNGS (QTY)	3
INCLUDED PRODUCTS:	ANGLE BRACKETS/ MOUNTING HARDWARE



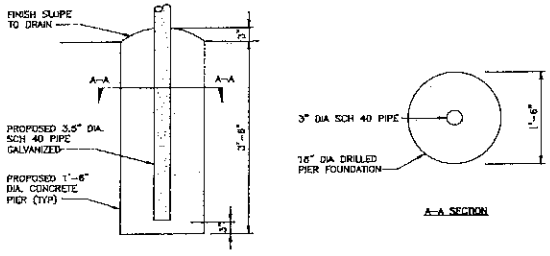
ICE BRIDGE MOUNT DETAIL | NO SCALE | 2

COMMSCOPE WB-K110-B WAVEGUIDE BRIDGE KIT	
DIMENSIONS (HxL)	160"x10'
WEIGHT/ VOLUME	325.0 LBS
CABLE RUN (QTY)	12

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

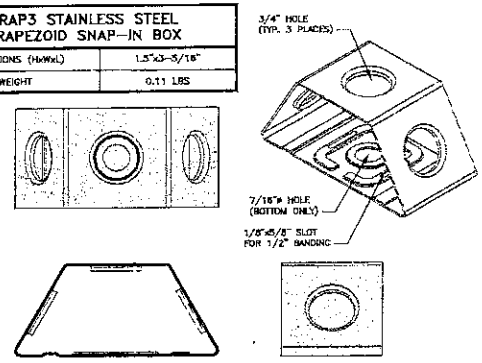


ICE BRIDGE DETAIL | NO SCALE | 3

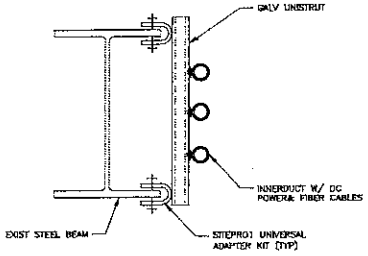


TYPICAL ICE BRIDGE CONCRETE PIER DETAIL | NO SCALE | 4

TRAP3 STAINLESS STEEL TRAPEZOID SNAP-IN BOX	
DIMENSIONS (HxWxL)	1.5"x3-5/16"
WEIGHT	0.11 LBS



HYBRID CABLE BRACKET | NO SCALE | 5



CABLES MOUNTING | NO SCALE | 6

NO SCALE | 7

NO SCALE | 8

NOT USED | NO SCALE | 9

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LITTLETON, CO 80120

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STATE OF CONNECTICUT
MANOJKUMAR PATEL
PEN.0022038
LICENSED PROFESSIONAL ENGINEER
11/18/23

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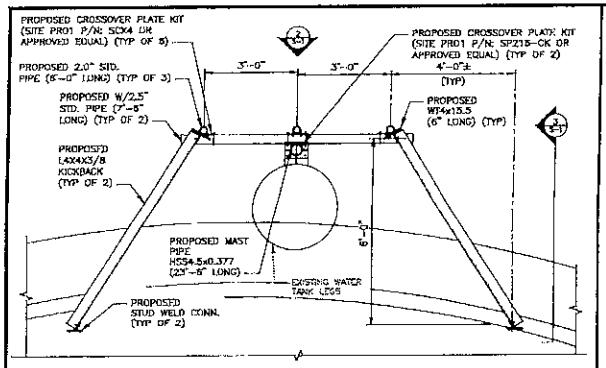
A&E PROJECT NUMBER
10710.NJJER01152C

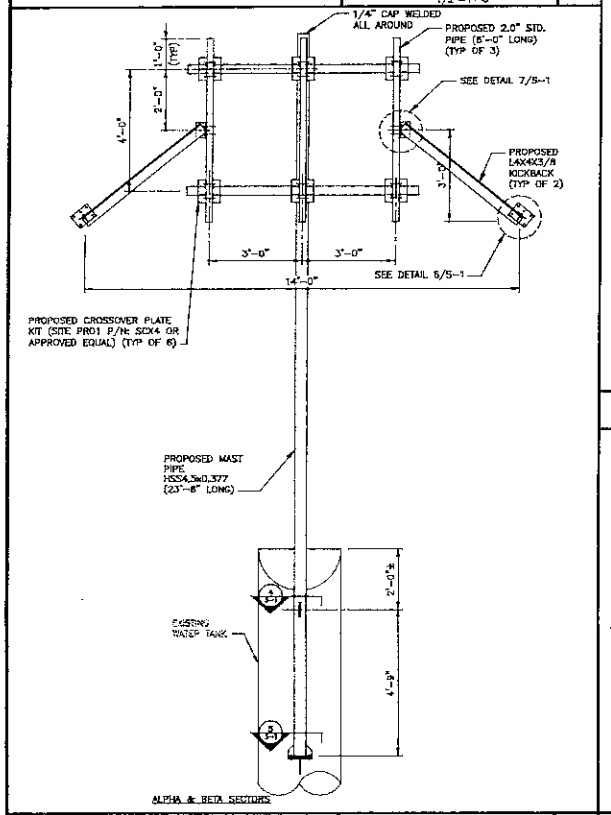
Dish Wireless L.L.C. PROJECT INFORMATION
NJJER01152C
FIRST DIST WATER DEPT.
11 FILBERT ROAD
NORWALK, CT 06851

SHEET TITLE
EQUIPMENT DETAILS

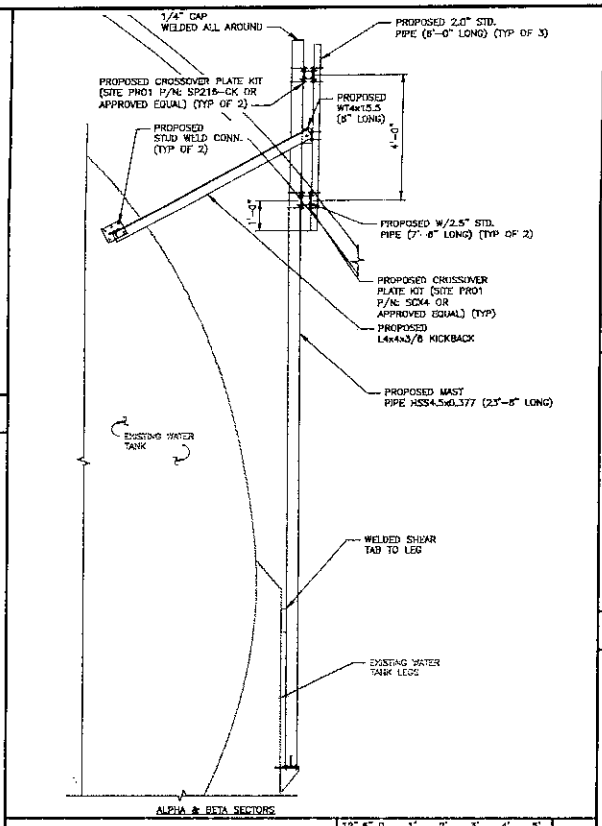
SHEET NUMBER
A-6



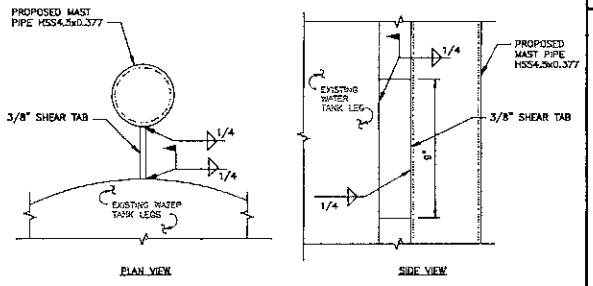
ANTENNA MOUNTING PLAN — 1/2"=1'-0" — 1



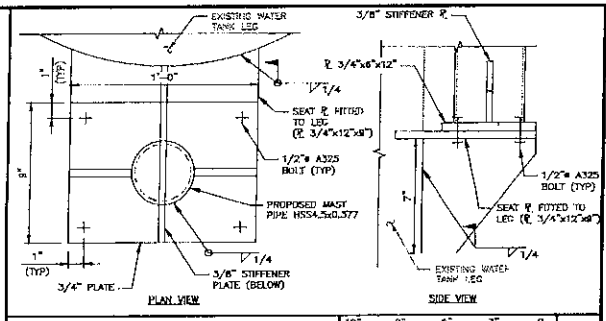
ANTENNA MOUNTING ELEVATION — 1/2"=1'-0" — 2



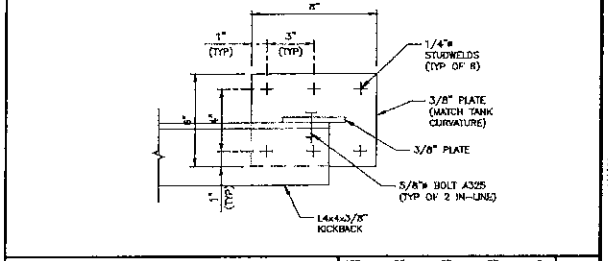
ANTENNA MOUNTING SECTION — 1/2"=1'-0" — 3



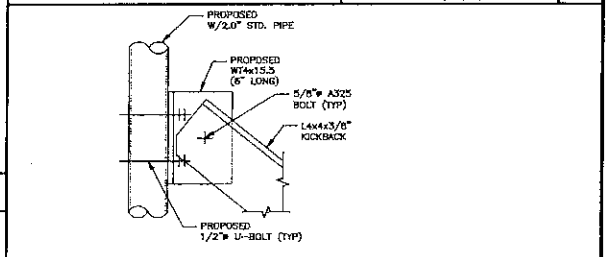
SECTION — 3/4"=1'-0" — 4



SECTION — 3/4"=1'-0" — 5



MOUNTING DETAIL — 3"=1'-0" — 6



DETAIL — 3"=1'-0" — 7

NOTES

1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.
3. REFER TO MOUNT ANALYSIS REPORT BY TECTONIC DATED 10/31/23
4. REFER TO STRUCTURAL OPINION LETTER BY TECTONIC LETTER DATED 11/09/23

NOT USED — NO SCALE — 8

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LITTLETON, CO 80120

Tectonic

STATE OF CONNECTICUT — MANOJKUMAR PATEL — PEN.0022838 — LICENSED PROFESSIONAL ENGINEER — 11/18/23

DRAWN BY:	CHECKED BY:	APPROVED BY:
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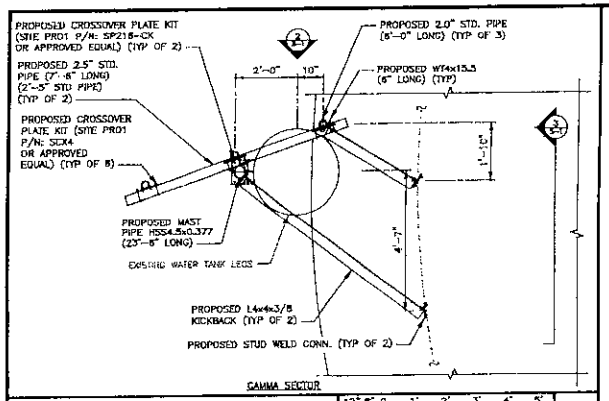
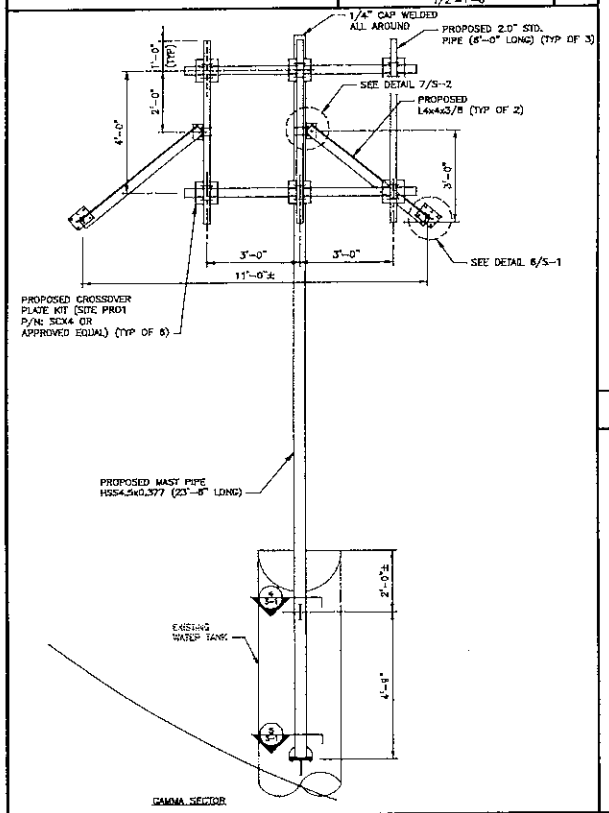
Dish Wireless LLC. PROJECT INFORMATION
NJJER01152C
FIRST DIST WATER DEPT.
11 FILBERT ROAD
NORWALK, CT 06851

SHEET TITLE
ALPHA & BETA MOUNTING PLAN, SECTIONS & DETAILS

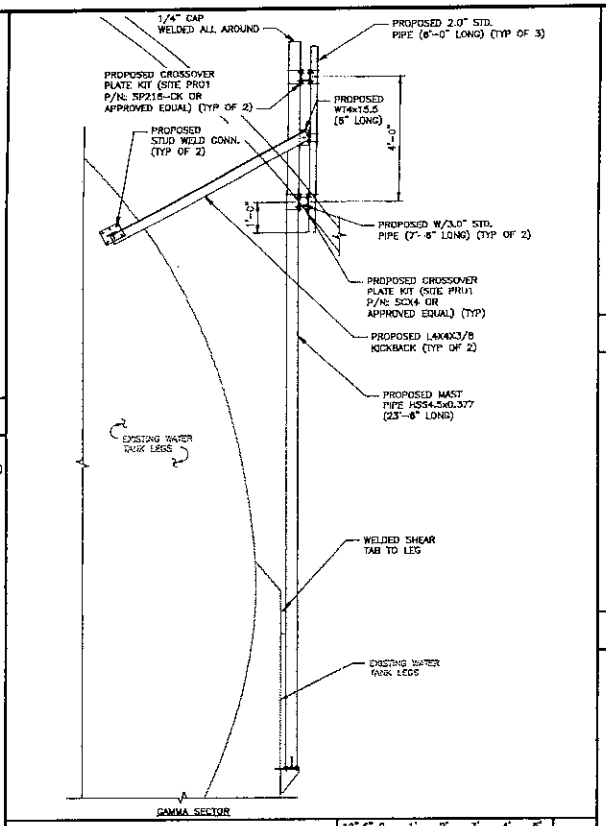
SHEET NUMBER
S-1



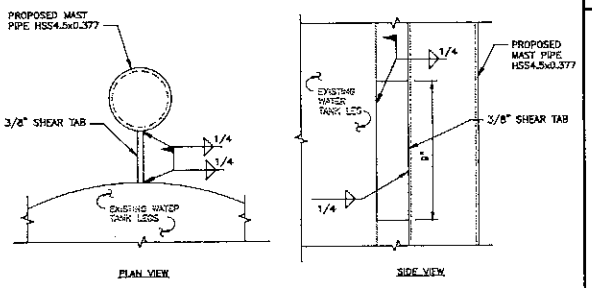
ANTENNA MOUNTING PLAN — 12" 6" 0 1' 2' 3' 4' 5' — 1/2"=1'-0" — 1



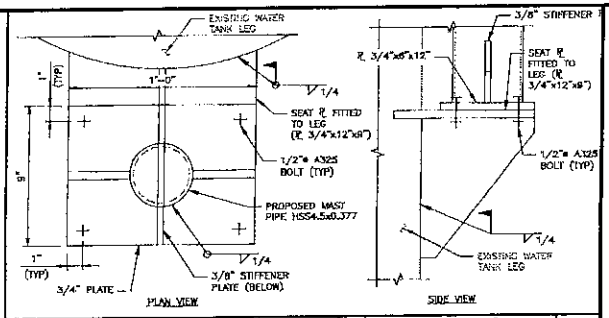
ANTENNA MOUNTING ELEVATION — 12" 6" 0 1' 2' 3' 4' 5' — 1/2"=1'-0" — 2



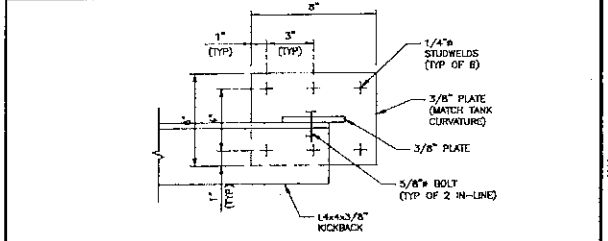
ANTENNA MOUNTING SECTION — 12" 6" 0 1' 2' 3' 4' 5' — 1/2"=1'-0" — 3



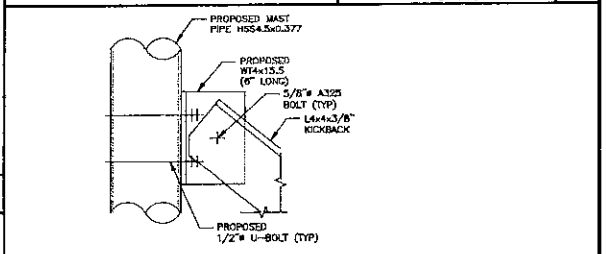
SECTION — 12" 9" 6" 3" 0 — 3"=1'-0" — 4



SECTION — 12" 9" 6" 3" 0 — 3"=1'-0" — 5



MOUNTING DETAIL — 12" 9" 6" 3" 0 — 3"=1'-0" — 6



DETAIL — 12" 9" 6" 3" 0 — 3"=1'-0" — 7

NOTES

1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.
3. REFER TO MOUNT ANALYSIS REPORT BY TECTONIC DATED 10/31/23
4. REFER TO STRUCTURAL OPINION LETTER BY TECTONIC LETTER DATED 11/09/23

NOT USED — NO SCALE — 8

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5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

Tectonic

STATE OF CONNECTICUT — MANOJKUMAR PATEL — PEN.0022033 — LICENSED PROFESSIONAL ENGINEER — 12/18/23

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:
NM	GL	MP

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	08/28/2023	ISSUED FOR FILING
1	11/09/2023	PER UPDATED SA/MA

A&E PROJECT NUMBER
10710.NJJER01152C

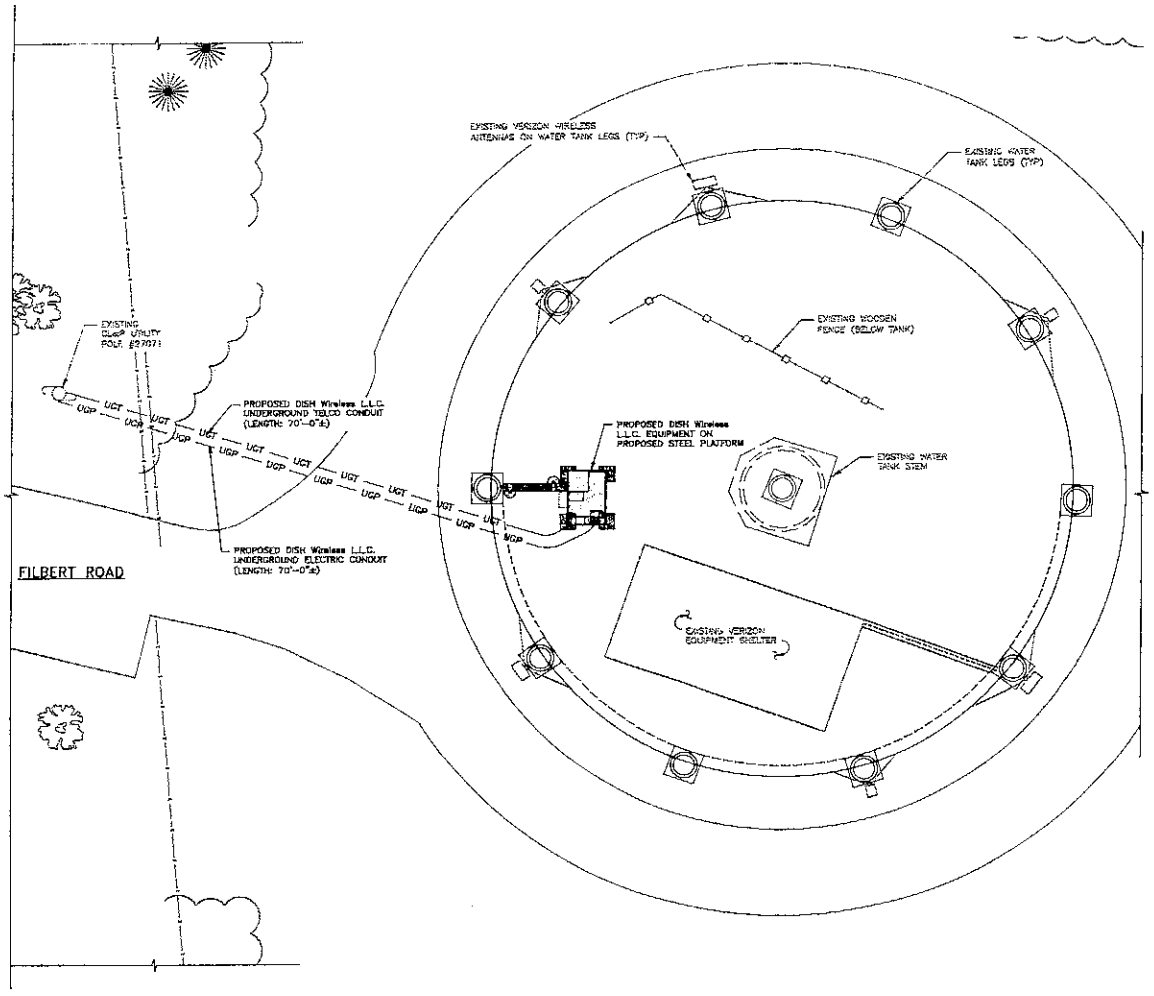
Dish Wireless LLC. PROJECT INFORMATION
NJJER01152C
FIRST DIST WATER DEPT.
11 FILBERT ROAD
NORWALK, CT 06851

SHEET TITLE
GAMMA SECTOR MOUNTING PLAN, SECTIONS & DETAILS

SHEET NUMBER
S-2

NOTES

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



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.

ELECTRICAL NOTES

NO SCALE

2

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STATE OF CONNECTICUT
MANOJKUMAR PATEL
PEN.0022033
LICENSED
PROFESSIONAL ENGINEER
12/18/23

DRAWN BY:	CHECKED BY:	APPROVED BY:
NM	GL	MP

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Dish Wireless L.L.C. PROJECT INFORMATION

NJJER01152C
FIRST DIST WATER DEPT.
11 FILBERT ROAD
NORWALK, CT 06851

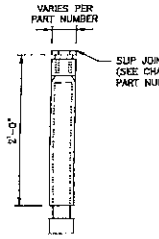
SHEET TITLE

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"

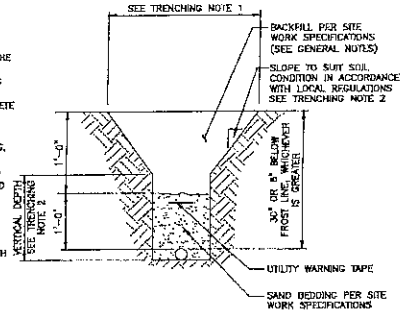


NOTE:
CONTRACTOR TO INSTALL EXPANSION FITTING SLIP JOINT AT METER CENTER CONDUIT TERMINATION, AS PER LOCAL UTILITY POLICY, ORDINANCE AND/OR SPECIFIED REQUIREMENT.

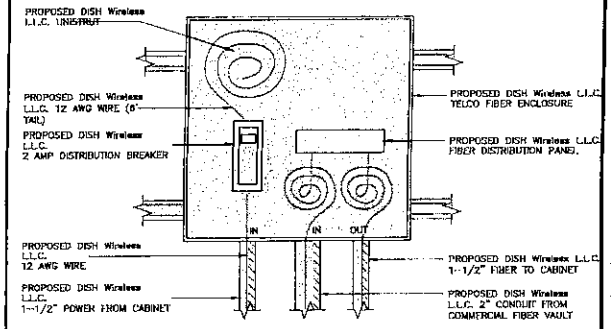
EXPANSION JOINT DETAIL | NO SCALE | 1

TRENCHING NOTES

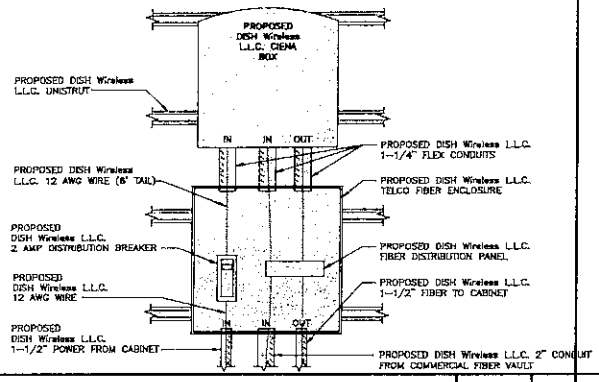
1. CONTRACTOR SHALL RESTORE THE TRENCH TO ITS ORIGINAL CONDITIONS BY EITHER SEEDING OR SODDING GRASS AREAS, OR REPLACING ASPHALT OR CONCRETE AREAS TO ITS ORIGINAL CROSS SECTION.
2. TRENCHING SAFETY; INCLUDING, BUT NOT LIMITED TO SOIL CLASSIFICATION, SLOPING, AND SHORING, SHALL BE GOVERNED BY THE CURRENT 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

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DRAWN BY:	CHECKED BY:	APPROVED BY:
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CONSTRUCTION DOCUMENTS

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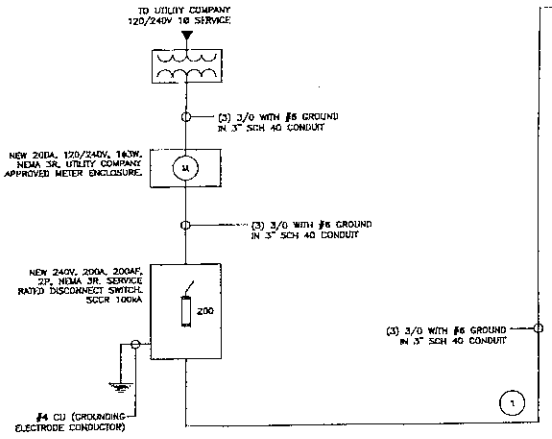
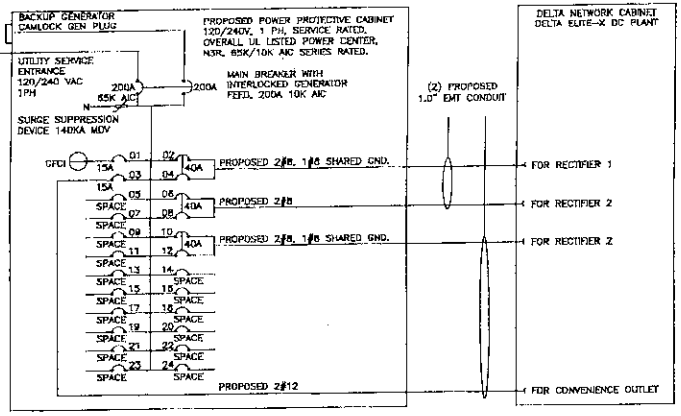
10710.NJJER01152C

Dish Wireless L.L.C. PROJECT INFORMATION
NJJER01152C
FIRST DIST WATER DEPT.
11 FILBERT ROAD
NORWALK, CT 06851

SHEET TITLE
ELECTRICAL DETAILS

SHEET NUMBER
E-2





NOTES

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

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

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

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

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

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

RECTIFIER & GFCI CONDUCTORS

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

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

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

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

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

1 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 + #6 GRD IF THE TOTAL LENGTH OF THE CONDUCTOR IS LESS THAN 300 FT FROM THE TRANSFORMER.
- ALUMINUM CONDUCTORS MUST BE 90°C TO CARRY THE RFI, 200A LOAD REQUIRED
- ALUMINUM TO COPPER BUSS CONNECTIONS MUST MEET AND CONFORM TO ANSI AND BE UL LISTED. USE ANTI CORROSION CONDUCTIVE LUBRICANT ON CONNECTIONS

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)

	CONDUCTOR SIZES					
DESIGN LOADS	250 kcmil AL	300 kcmil AL	3/0 CU	4/0 CU	250 kcmil CU	300 kcmil CU
DISH Wireless L.L.C. MAXIMUM CONTINUOUS LOAD (160A) (NEC ARTICLE 220 & 230 3% VOLTAGE DROP)	130'	155'	145'	180'	215'	255'
DISH Wireless L.L.C. MAXIMUM CONTINUOUS LOAD (140A) (NEC ARTICLE 220 & 230 3% VOLTAGE DROP)	220'	280'	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 CONDUIT OR RACEWAY. A POWER FACTOR LESS THAN 1 OR VOLTAGE LESS THAN 120 WILL RESULT IN SHORTER DISTANCES THAN SHOWN IN TABLE.

PPC ONE-LINE DIAGRAM | NO SCALE | 1

PANEL NAME	LOCATION	VOLTAGE: 240/120 1Ø	MOUNTING/ENCLOSURE: SURFACE/NEMA 3R
DELTA	EQUIPMENT PLATFORM	MAIN CB: 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	1.80		2	1.80	RECTIFIER	EQ	SEE ONE LINE	40/2
15/1	SEE ONE LINE	R	CONVENIENCE OUTLET	0.18	3		1.80	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	1.8	NEC	0.4	1.5
M	MOTOR	0.0	0.0	NEC	0.0	0.0
H	HEATING	0.0	0.0	1.00	0.0	0.0
AC	HVAC	0.0	0.0	1.00	0.0	0.0
EQ	EQUIPMENT	9.0	37.5	1.00	9.0	37.5
E	EXISTING	0.0	0.0	1.25	0.0	0.0

*ALL EQUIPMENT LOADS CONSIDERED CONTINUOUS LOADS

PANEL SCHEDULE | NO SCALE | 2

SHORT CIRCUIT CALCULATIONS | 3

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STATE OF CONNECTICUT
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PEN.0022638
LICENSED
PROFESSIONAL ENGINEER
12/15/23

DRAWN BY:	CHECKED BY:	APPROVED BY:
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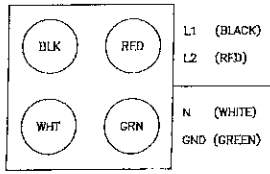
Dish Wireless L.L.C. PROJECT INFORMATION
NJJER01152C
FIRST DIST WATER DEPT.
11 FILBERT ROAD
NORWALK, CT 06851

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

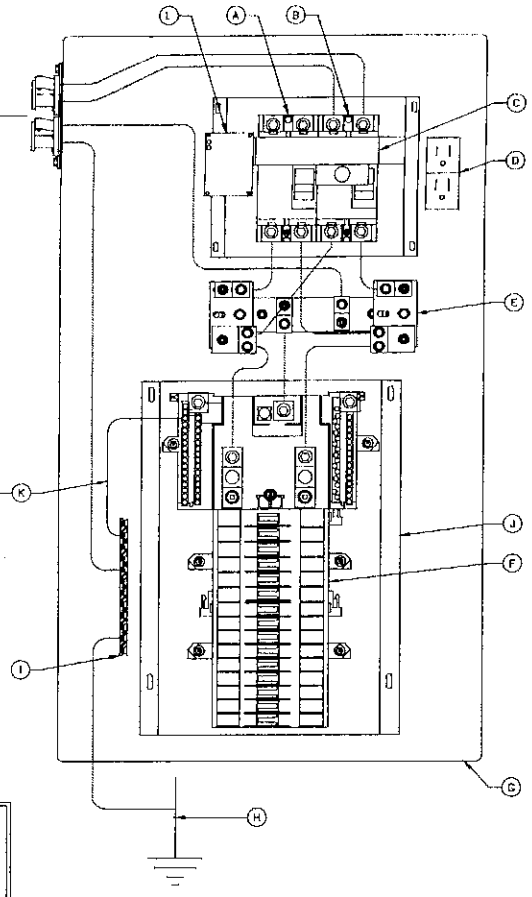
(AS VIEWED FROM OUTSIDE OF ENCLOSURE)
USE LINE UP PIN AS REFERENCE

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	GENERATOR POWER
100AC	100AC
200AC	200AC

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	QGL	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	QGL	200A	65,000A	240V	2

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

NEUTRAL-TO-GROUND NOTES:

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

NEUTRAL-TO-GROUND BONDING JUMPER

INSTALLATION INSTRUCTIONS:

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

LEGEND:

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

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

NO SCALE | 1

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CONSTRUCTION DOCUMENTS

SUBMITTALS

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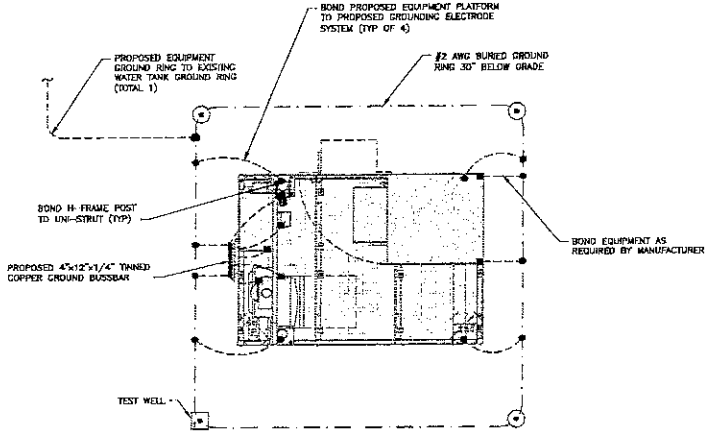
Dish Wireless L.L.C. PROJECT INFORMATION
NJJER01152C
FIRST DIST WATER DEPT.
11 FILBERT ROAD
NORWALK, CT 06851

SHEET TITLE
PPC NEUTRAL-TO-GROUND SCHEMATIC

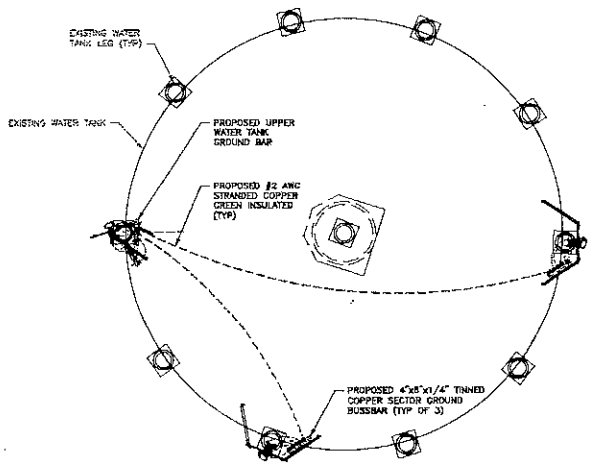
SHEET NUMBER
E-4



TYPICAL EQUIPMENT GROUNDING PLAN | NO SCALE | 1

NOTES

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



TYPICAL ANTENNA GROUNDING PLAN | NO SCALE | 2

- EXOTHERMIC CONNECTION
- MECHANICAL CONNECTION
- GROUND BUS BAR
- GROUND ROD
- TEST GROUND ROD WITH INSPECTION SLEEVE
- #2 AWG STRANDED & INSULATED
- #2 AWG SOLID COPPER TINNED

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.

(J) TELCO GROUND BAR: BOND TO BOTH CELL REFERENCE GROUND BAR AND EXTERIOR GROUND RING.

(K) FRAME BONDING: THE BONDING POINT FOR TELECOM EQUIPMENT FRAMES SHALL BE THE GROUND BUS THAT IS NOT ISOLATED FROM THE EQUIPMENTS METAL FRAMEWORK. BOND THE FRAME GROUND TO THE "I" SECTION OF THE CELL REFERENCE GROUND BAR OR SUPPLEMENTARY CONDUCTOR. (SHEET G3 DETAIL1)

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

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

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

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

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

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

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

GROUNDING KEY NOTES | NO SCALE | 3

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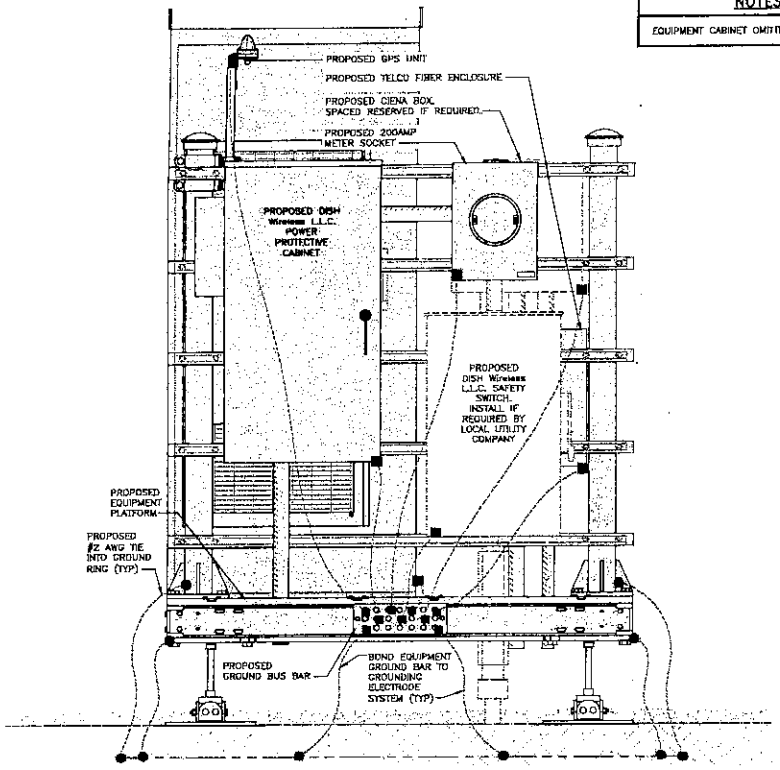
Dish Wireless L.L.C. PROJECT INFORMATION
NJJER01152C
FIRST DIST WATER DEPT.
11 FILBERT ROAD
NORWALK, CT 06851

SHEET TITLE
GROUNDING PLANS AND NOTES

SHEET NUMBER
G-1

NOTES

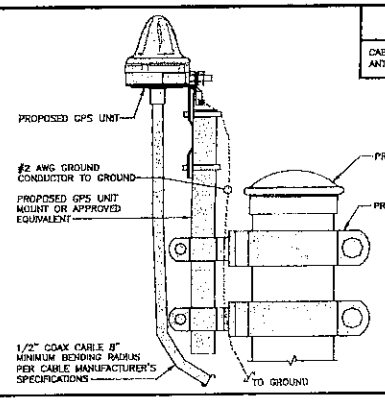
EQUIPMENT CABINET OMITTED FOR CLARITY



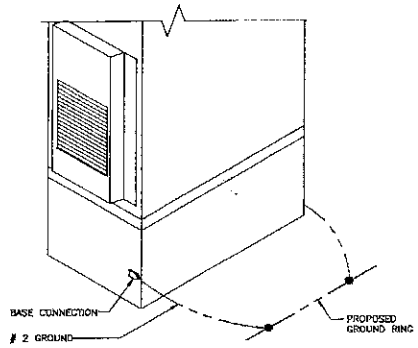
H-FRAME GROUNDING DETAIL | NO SCALE | 1

NOTES

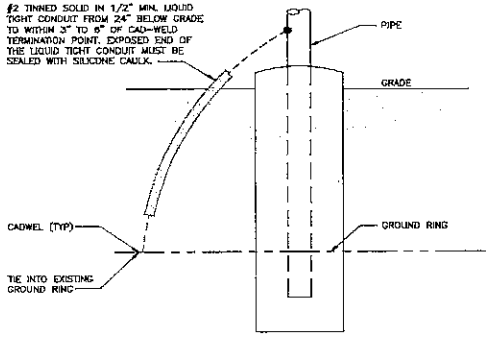
CABLE GROUNDING NOT REQUIRED WHEN ANTENNA IS LESS THAN 10' FROM CABINET



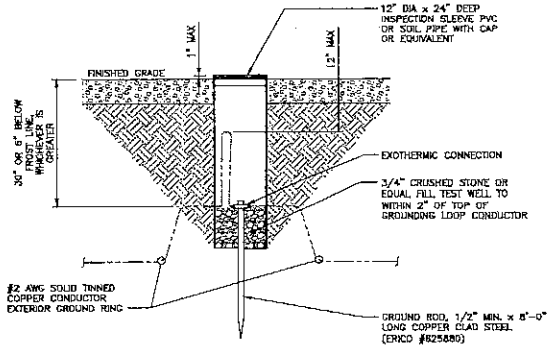
TYPICAL GPS UNIT GROUNDING | NO SCALE | 2



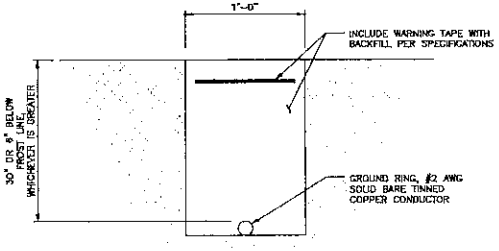
OUTDOOR CABINET GROUNDING | NO SCALE | 3



TRANSITIONING GROUND DETAIL | NO SCALE | 4



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



TYPICAL GROUND RING TRENCH | NO SCALE | 6

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Dish Wireless L.L.C. PROJECT INFORMATION

NJJER01152C
FIRST DIST WATER DEPT.
11 FILBERT ROAD
NORWALK, CT 06851

SHEET TITLE

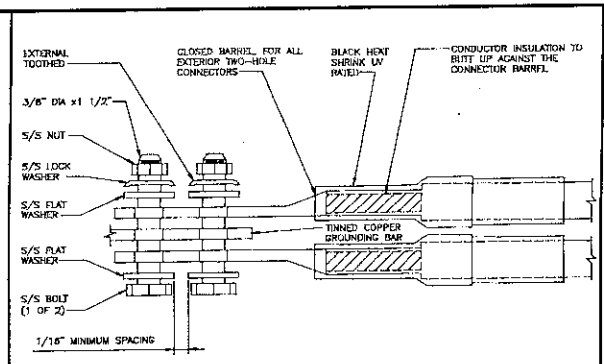
GROUNDING DETAILS

SHEET NUMBER

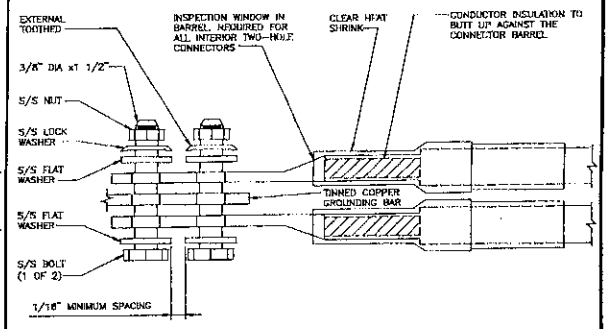
G-2

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 TB-8 STAINLESS STEEL INCLUDING LOCK WASHERS, COAT ALL SURFACES WITH AN ANTI-OXIDANT COMPOUND BEFORE MATING.
3. FOR GROUND BOND TO STEEL ONLY: COAT ALL SURFACES WITH AN ANTI-OXIDANT COMPOUND BEFORE MATING.
4. DO NOT INSTALL CABLE GROUNDING KIT AT A BEND AND ALWAYS DIRECT GROUND CONDUCTOR DOWN TO GROUNDING BUS.
5. NUT & WASHER SHALL BE PLACED ON THE FRONT SIDE OF THE GROUND BAR AND BOLTED ON THE BACK SIDE.
6. ALL GROUNDING PARTS AND EQUIPMENT TO BE SUPPLIED AND INSTALLED BY CONTRACTOR.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING ADDITIONAL GROUND BAR AS REQUIRED.
9. ENSURE THE WIRE INSULATION TERMINATION IS WITHIN 1/8" OF THE BARREL (NO SHINERS).

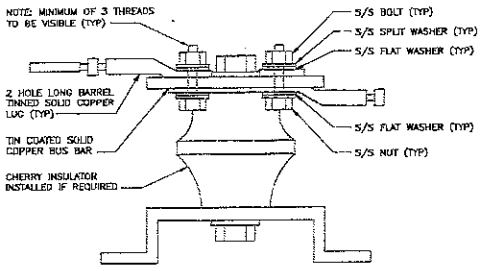
TYPICAL GROUNDING NOTES | NO SCALE | 1



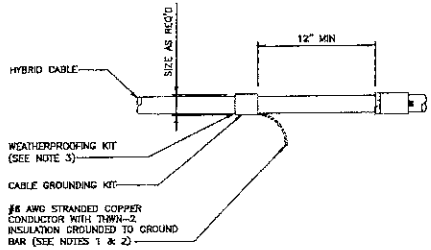
TYPICAL EXTERIOR TWO HOLE LUG | NO SCALE | 2



TYPICAL INTERIOR TWO HOLE LUG | NO SCALE | 3



LUG DETAIL | NO SCALE | 4



CONNECTION OF HYBRID CABLE GROUNDING KIT TO HYBRID TRUNK | NO SCALE | 5

NO SCALE | 6

NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

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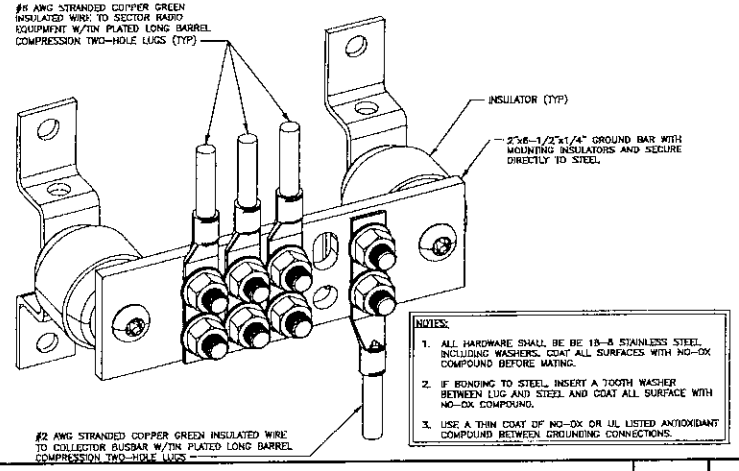
NJJER01152C
FIRST DIST WATER DEPT.
11 FILBERT ROAD
NORWALK, CT 06851

SHEET TITLE
GROUNDING DETAILS

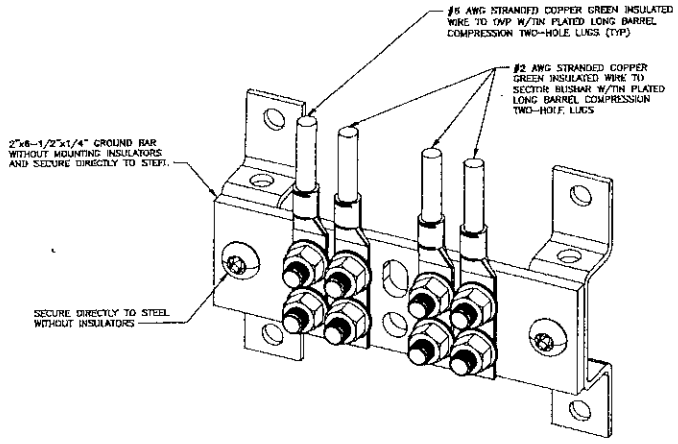
SHEET NUMBER
G-3



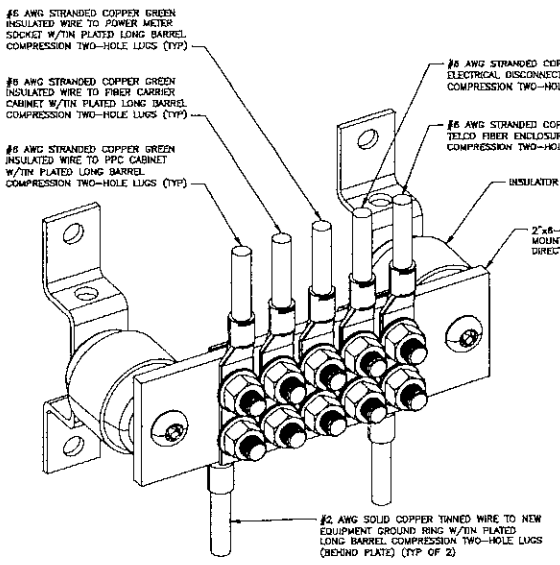
NOTES:

1. ALL HARDWARE SHALL BE BE 18-8 STAINLESS STEEL INCLUDING WASHERS. COAT ALL SURFACES WITH NO-OX COMPOUND BEFORE MATING.
2. IF BONDING TO STEEL, INSERT A TOOTH WASHER BETWEEN LUG AND STEEL AND COAT ALL SURFACE WITH NO-OX COMPOUND.
3. USE A THIN COAT OF NO-OX OR UL LISTED ANTIOXIDANT COMPOUND BETWEEN GROUNDING CONNECTIONS.

SECTOR GROUND BUSBAR DETAIL | NO SCALE | 1



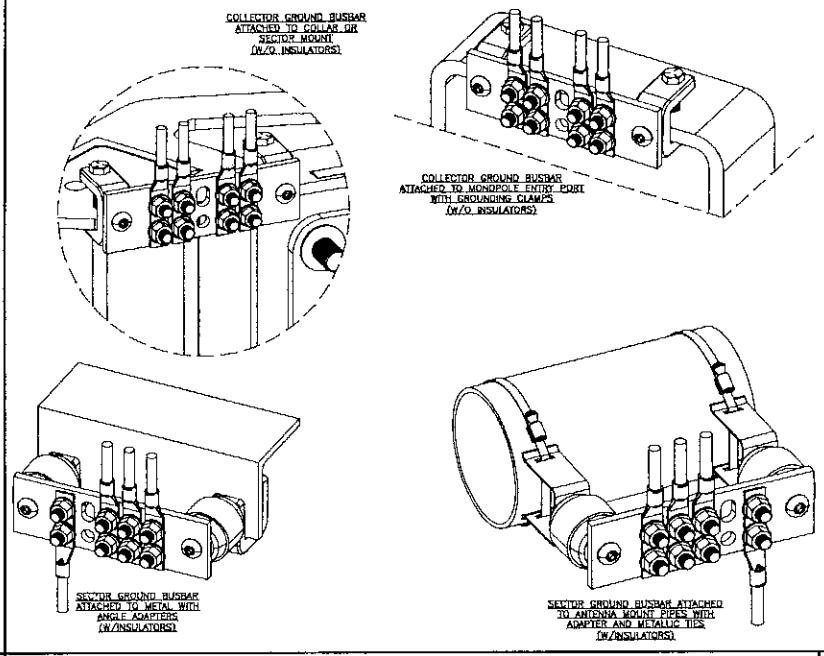
UPPER TOWER GROUND BUSBAR DETAIL | NO SCALE | 2



NOTES:

1. IN CASES OF SHEATHED STRANDED WIRES, CONNECTOR SHALL HAVE INSPECTION WINDOW AND NO MORE THAN 1/8" GAP BETWEEN CONNECTOR BODY AND SHEATH.

EQUIPMENT GROUND BUSBAR DETAIL | NO SCALE | 3



GROUND BUSBAR ATTACHMENT OPTIONS | NO SCALE | 4

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FIRST DIST WATER DEPT.
11 FILBERT ROAD
NORWALK, CT 06851

SHEET TITLE
GROUNDING DETAILS

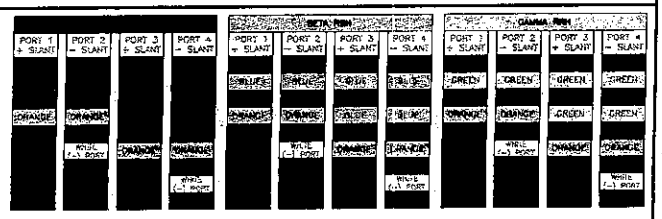
SHEET NUMBER
G-4

RF JUMPER COLOR CODING

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

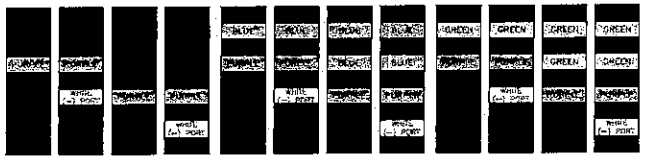
LOW BAND RRH –
(600MHz N71 BASEBAND) +
(850MHz N26 BAND) +
(700MHz N28 BAND) – OPTIONAL PER MARKET

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



MID-BAND RRH –
(AWS BANDS N66+N70)

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

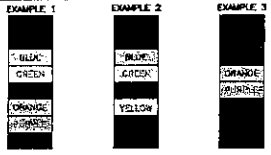


HYBRID/DISCREET CABLES

INCLUDE SECTOR BANDS BEING SUPPORTED ALONG WITH FREQUENCY BANDS

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

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

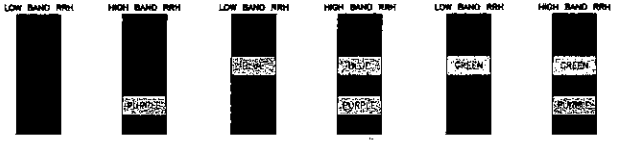


FIBER JUMPERS TO RRHs

LOW-BAND RRH FIBER CABLES HAVE SECTOR STRIPE ONLY

POWER CABLES TO RRHs

LOW-BAND RRH POWER CABLES HAVE SECTOR STRIPE ONLY



RET MOTORS AT ANTENNAS

MICROWAVE RADIO LINKS

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

MICROWAVE CABLES WILL REQUIRE 1"–TOUCH LABELS INSIDE THE CABINET TO IDENTIFY THE LOCAL AND REMOTE SITE ID'S

RF CABLE COLOR CODES | NO SCALE | 1

LOW BANDS (N71+N26) OPTIONAL – (N28)

AWS (N66+N70+H–BLOCK)

CBRS TECH (3 GHz)

NEGATIVE SLANT PORT ON ANT/RRH

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

STATE OF CONNECTICUT
MANOJKUMAR PATEL
PEN.0022038
LICENSED
PROFESSIONAL ENGINEER
12/18/25

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
NM	GL	MP

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	08/20/2025	ISSUED FOR FILING
1	11/06/2025	PER UPDATED SA/MA

A&E PROJECT NUMBER
10710.NJJER01152C

Dish Wireless LLC. PROJECT INFORMATION

NJJER01152C
FIRST DIST WATER DEPT.
11 FILBERT ROAD
NORWALK, CT 06851

SHEET TITLE
RF CABLE COLOR CODES

SHEET NUMBER
RF-1

EXOTHERMIC CONNECTION

MECHANICAL CONNECTION

CHEMICAL ELECTROLYTIC GROUNDING SYSTEM

TEST CHEMICAL ELECTROLYTIC GROUNDING SYSTEM

EXOTHERMIC WITH INSPECTION SLEEVE

GROUNDING BAR

GROUND ROD

TEST GROUND ROD WITH INSPECTION SLEEVE

SINGLE POLE SWITCH

DUPLEX RECEPTACLE

DUPLEX GFCI RECEPTACLE

FLUORESCENT LIGHTING FIXTURE (2) TWO LAMPS 48-TB

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

LEGEND

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

ABBREVIATIONS

dish wireless.

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RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

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0	08/28/2023	ISSUED FOR REVIEW
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A&E PROJECT NUMBER

10710.NJJER01152C

Dish Wireless L.L.C. PROJECT INFORMATION

NJJER01152C
FIRST DIST WATER DEPT.
11 FILBERT ROAD
NORWALK, CT 06851

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

STATE OF CONNECTICUT
MANOJKUMAR PATEL
PEN.0022038
LICENSED PROFESSIONAL ENGINEER
2/13/23

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DRAWN BY:	CHECKED BY:	APPROVED BY:
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CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
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A&E PROJECT NUMBER

10710.NJJER01152C

Dish Wireless L.L.C. PROJECT INFORMATION

NJJER01152C
FIRST DIST WATER DEPT.
11 FILBERT ROAD
NORWALK, CT 06851

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 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.0022838
LICENSED
PROFESSIONAL ENGINEER
12/18/23

DRAWN BY:	CHECKED BY:	APPROVED BY:
NM	GL	MP

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
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1	11/09/2023	PER UPDATED SA/MA

A&E PROJECT NUMBER

10710.NJJER01152C

Dish Wireless L.L.C. PROJECT INFORMATION

NJJER01152C
FIRST DIST WATER DEPT.
11 FILBERT ROAD
NORWALK, CT 06851

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-3

CONCRETE, FOUNDATIONS, AND REINFORCING STEEL:

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

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

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

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

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

#4 BARS AND SMALLER 40 ksi

#5 BARS AND LARGER 60 ksi

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

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

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

ELECTRICAL INSTALLATION NOTES:

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

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

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

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

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

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

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

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

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

8. TIE WRAPS ARE NOT ALLOWED.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

dish wireless.

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Dish Wireless L.L.C. PROJECT INFORMATION

NJJER01152C
FIRST DIST WATER DEPT.
11 FILBERT ROAD
NORWALK, CT 06851

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.

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Dish Wireless LLC. PROJECT INFORMATION

NJJER01152C
FIRST DIST WATER DEPT.
11 FILBERT ROAD
NORWALK, CT 06851

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-5

STRUCTURAL 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 MONICHOLS, OR APPROVED EQUAL. BEARING BARS SHALL BE AS FOLLOWS:

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

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.

HILTI TESTING NOTES:

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

MASONRY NOTES:

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

MASONRY REPAIR NOTES:

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

STAGE 1: OUTSIDE FACE

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

STAGE 2: INSIDE FACE/BELOW ROOF LINE

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

dish wireless.

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LITTLETON, CO 80120

Tectonic

STATE OF CONNECTICUT
MANOJKUMAR PATEL
PEN.0022038
LICENSED
PROFESSIONAL ENGINEER
10/18/23

DRAWN BY:	CHECKED BY:	APPROVED BY:
NM	GL	MP

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	08/28/2023	ISSUED FOR PCNC
1	11/08/2023	PER UPDATED SA/MA

A&E PROJECT NUMBER

10710.NJJER01152C

Dish Wireless L.L.C. PROJECT INFORMATION

NJJER01152C
FIRST DIST WATER DEPT.
11 FILBERT ROAD
NORWALK, CT 06851

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-6

GENERAL:

1. WELDING STUDS SHALL BE TYPE TFTC FLANGED THREADED LOW CARBON COPPER COATED STEEL STUDS, GRADE 1010 THROUGH 1020, CONFORMING TO ASTM A108 "STEEL BAR, CARBON AND ALLOY, COLD FINISHED" AS MANUFACTURED BY NELSON STUD WELDING, INC. OR APPROVED EQUAL. ALL STUDS SHALL BE 1/4" DIAMETER BY 2 1/8" LONG, UNLESS OTHERWISE NOTED ON THE CONSTRUCTION DRAWINGS.
2. STUDS MUST BE WELDED BY THE CAPACITOR DISCHARGE METHOD, USING THE NELSON NCD 100 OR 150 SYSTEM, AS MANUFACTURED AND MARKETED BY NELSON STUD WELDING, ELYRIA OHIO, (800) 835-9353 OR (440) 329-0400, OR APPROVED EQUAL. FILLET WELDS ARE NOT ACCEPTABLE.
3. CONTRACTOR SHALL RECEIVE IN WRITING THE OWNER'S REQUIREMENTS FOR TANK INSPECTIONS PRIOR TO COMMENCING WITH THE WORK ON THE TANK. UPON THE COMPLETION OF CONSTRUCTION, THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING A WRITTEN RELEASE FROM THE OWNER STATING THAT ALL WORK WAS PERFORMED IN ACCORDANCE WITH THE CONSTRUCTION DOCUMENTS AND THE OWNERS WRITTEN REQUIREMENTS, AND RELEASES ALL LIABILITY TO THE CONTRACTOR, THE ENGINEER, THE APPLICANT, AND THE STUD MANUFACTURER.
4. CONTRACTOR SHALL COMPLY WITH AWS D1.1 "STRUCTURAL WELDING CODE-STEEL" AND AWS C5.4 "RECOMMENDED PRACTICES FOR STUD WELDING" 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". CONTRACTOR SHALL ADHERE TO AWS RECOMMENDED "SAFE PRACTICES FOR WELDING".
5. WELDING PARAMETERS, MACHINE POWER AND DWELL TIME SHALL BE QUALIFIED FOR THE WELDING POSITION, MATERIAL THICKNESS AND STUD SIZE TO BE USED. IF CHANGES IN THE SET-UP OCCUR AS DEFINED IN AWS D1.1, THE PROCEDURE MUST BE REQUALIFIED.
6. CONTRACTOR SHALL SUBMIT CERTIFICATION OF WELDERS FOR STUD WELDING TO THE ENGINEER AND OWNER PRIOR TO COMMENCEMENT OF THE WORK.
7. THE INSTALLATION OF WELDED STUDS SHALL BE PERFORMED ONLY DURING PERIODS OF CLEAR WEATHER.
8. ALL NUTS, WASHERS, AND OTHER HARDWARE INSTALLED ON WELDED STUDS SHALL BE STAINLESS STEEL OR NYLON, AS SHOWN. GALVANIZED OR PLATED CARBON STEEL HARDWARE IS NOT ACCEPTABLE. RUBBER OR PLASTIC WASHERS SHALL NOT BE USED.

SURFACE PREPARATION:

1. CLEANING PROCEDURES SHALL BE VERIFIED AS MEETING THE MINIMUM REQUIREMENTS PER THE AWS WELDING HANDBOOK, VOLUME 2-PART 1: WELDING PROCESSES, "QUALITY CONTROL AND INSPECTION" FOR STUD WELDING. IF THE EXISTING COATING SYSTEM CONTAINS LEAD OR OTHER POTENTIALLY HAZARDOUS MATERIALS, SPECIAL PROCEDURES FOR REMOVAL AND DISPOSAL WILL BE REQUIRED.
2. PREPARE SURFACE TO BE WELDED BY SPOT REMOVING PAINT TO BARE METAL IN ACCORDANCE WITH THE STEEL STRUCTURES PAINTING COUNCIL SSPC-SP11 "POWER TOOL CLEANING TO BARE METAL". USE A 3M CLEAN STRIP XT DISC, ROTARY BURR, OR ROTARY FILE. THE USE OF A SOLID GRINDING STONE, FLAP WHEEL, OR WIRE WHEEL IS NOT ACCEPTABLE.
3. FOLLOW POWER TOOL CLEANING WITH A NON-FLAMMABLE SOLVENT CLEANING TO REMOVE ANY OILS, CONTAMINANTS, RUST, OR DIRT IN ACCORDANCE WITH SSPC-SP1 "SOLVENT CLEANING" PRIOR TO STUD WELDING.

STUD QUALIFICATION TESTING AND SAMPLING:

1. THE QUALIFICATION OF STUD APPLICATION AND PRE-PRODUCTION TESTING SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF CHAPTER 7 "STUD WELDING" OF AWS D1.1. INITIAL QUALIFICATION TESTING SHALL BE PERFORMED UNDER INSPECTION BY THE ENGINEER.
2. STUD APPLICATION SHALL BE QUALIFIED BY STUD WELDING TEN (10) SPECIMENS CONSECUTIVELY TO ASTM A36 STEEL BASE MATERIALS USING RECOMMENDED PROCEDURES AND SETTINGS FOR EACH DIAMETER, POSITION, AND SURFACE GEOMETRY. ALL TEN SPECIMENS SHALL BE TORQUE TESTED TO FAILURE. STUD APPLICATION SHALL BE CONSIDERED QUALIFIED IF ALL TEST SPECIMENS ARE TORQUED TO DESTRUCTION WITHOUT FAILURE IN THE WELD. IN ADDITION, PRIOR TO PRODUCTION, CONTRACTOR SHALL PREPARE SIX (6) STUD WELDED SAMPLES USING A36 STEEL PLATES WITH THICKNESS EQUAL TO EACH OF THE PLATE THICKNESSES OF THE WATER TANK TO BE WELDED. THE SIDE OPPOSITE THE STUD WELD SHALL HAVE A SIMILAR COATING (MINIMUM DFT=6 MIL) TO THE EXISTING INTERIOR COATING OF THE WATER TANK. SAMPLES SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL.
3. BEFORE PRODUCTION, AT THE START OF EVERY SHIFT AND FOR EACH PARTICULAR SETUP, TESTING SHALL BE PERFORMED ON THE FIRST TWO (2) STUDS THAT ARE WELDED. IN PLACE OF THE ACTUAL PRODUCTION STUD, TESTING MAY BE PERFORMED ON A MATERIAL SIMILAR TO THE PRODUCTION MEMBER IN THICKNESS AND PROPERTIES. TESTING SHALL INCLUDE A VISUAL EXAMINATION OF THE STUD WELD FOR A FULL 360 DEGREE FLASH. IN ADDITION, THE TEST SHALL INCLUDE TORQUE TESTING THE STUDS IN ACCORDANCE WITH THE FOLLOWING CRITERIA:

STUD SIZE	TESTING TORQUE
1/4" (1/4-20 UNC)	5.9 FT-LB

4. IF FAILURE OCCURS, THE PROCEDURE SHALL BE CORRECTED AND TWO (2) MORE STUDS SHALL BE WELDED AND TESTED.
5. PRIOR TO PRODUCTION, CONTRACTOR SHALL PERFORM THREE (3) TEST WELDS ON THE WATER TANK IN A LOCATION SPECIFIED BY THE TANK OWNER TO VERIFY THAT NO DAMAGE WILL OCCUR TO THE COATING SYSTEM ON THE INTERIOR OF THE TANK. ANY AND ALL DAMAGE TO THE INTERIOR COATING SHALL BE REPAIRED TO THE OWNER'S SATISFACTION. IF DAMAGE DOES OCCUR, THE PROCEDURE SHALL BE REEVALUATED BY THE ENGINEER, CONSTRUCTION MANAGER, AND OWNER'S AUTHORIZED REPRESENTATIVE BEFORE COMMENCING WITH THE WORK.

PROTECTIVE COATING:

1. IMMEDIATELY AFTER WELDED STUDS HAVE COOLED TO AMBIENT TEMPERATURE, AND PRIOR TO INSTALLATION OF ATTACHMENTS, NUTS, OR HARDWARE, APPLY LIQUID COLD GALVANIZING COMPOUND (OR OTHER COATING MATERIAL APPROVED BY THE TANK OWNER) TO THE THREADED PORTION OF EACH STUD TO PREVENT CORRISION PRIOR TO APPLICATION OF FINISH PAINT.

REPAINTING:

1. ALL SURFACE PREPARATION AND RECOATING OF STEEL SURFACES SHALL BE PERFORMED BY A PAINTING CONTRACTOR THAT HAS BEEN PRE-QUALIFIED BY THE TANK OWNER.
2. ALL PAINTED SURFACES AFFECTED BY WELDING OPERATIONS SHALL BE REPAINTED TO MATCH ADJACENT EXISTING SURFACES. PAINTING SHALL INCLUDE COATING OF THE STUDS AND HARDWARE.
3. PRIOR TO REPAINTING, SURFACES SHALL BE SOLVENT CLEANED TO REMOVE ANY OILS, CONTAMINANTS, RUST, OR DIRT IN ACCORDANCE WITH THE STEEL STRUCTURES PAINTING COUNCIL SSPC-SP1 "SOLVENT CLEANING" PRIOR TO REPAINTING.
4. PAINT USED TO REPAIR INTERIOR COATING SHALL MATCH THE EXISTING COATING SYSTEM OF THE TANK OR SHALL BE A SIMILAR SYSTEM COMPATIBLE WITH THE EXISTING SYSTEM AND ACCEPTABLE TO THE OWNER. VERIFY EXISTING COATING SYSTEM WITH THE TANK OWNER.
5. UNLESS OTHERWISE APPROVED BY THE TANK OWNER, EXTERIOR STEEL SHALL BE PAINTED WITH 1 COAT EPOXY PRIMER (DFT=5-7 MIL) AND 2 COATS POLYURETHANE FINISH (DFT=4-6 MIL EACH) WITH COLOR TO MATCH EXISTING SURFACE. PAINT SHALL BE AS MANUFACTURED BY SHERWIN WILLIAMS, CLEVELAND, OHIO, (800) 321-8194 OR EQUAL COATING TO MATCH EXISTING. CONTRACTOR SHALL VERIFY OWNER'S PAINT REQUIREMENTS PRIOR TO COMMENCEMENT OF THE WORK.
6. CONTRACTOR SHALL VERIFY THAT COATING SYSTEMS ARE COMPATIBLE WITH THE EXISTING SYSTEMS BY ADHESION TESTING PER ASTM D3359 "MEASURING ADHESION BY TAPE TEST".
7. CONTRACTOR SHALL VERIFY THAT CANS OF THE PRODUCT ARE NOT BEYOND THE MANUFACTURER'S RECOMMENDED SHELF LIFE. ASSURE THOROUGH MIXING OF PREMEASURED TWO COMPONENT COATING SYSTEMS.
8. SURFACE CLEANING SHALL BE FOLLOWED WITH PRIMER COAT ON THE SAME DAY.
9. PAINT MUST BE APPLIED AT SURFACE AND AMBIENT TEMPERATURES BETWEEN 50 DEGREES AND 120 DEGREES FAHRENHEIT. NO PAINTING SHALL BE DONE IF RELATIVE HUMIDITY IS ABOVE 80%%%. THE AMBIENT TEMPERATURE BEFORE THE START OF COATING APPLICATION MUST AT BE LEAST 5 DEGREES FAHRENHEIT ABOVE THE DEW POINT AS DETERMINED BY CONVENTIONAL ACCEPTED STANDARDS.
10. PAINT SHALL BE APPLIED USING A NATURAL BRISTLE BRUSH FOR A SMOOTH BRUSH FINISH.
11. PAINT SHALL BE FEATHERED OUT AT TIE-IN AREAS OF EXISTING COATING. PAINT SHALL BE WORKED IN AND AROUND IRREGULARITIES IN THE SURFACE.
12. PAINTING WORK SHALL BE SUBJECT TO INSPECTION ON COMPLETION, AND SHALL BE TOUCHED UP OR RECOATED TO THE SATISFACTION OF THE OWNER.

dish wireless

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11/18/23

DRAWN BY:	CHECKED BY:	APPROVED BY:
NM	GL	MP

RFDS REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	08/28/2023	ISSUED FOR FILING
1	11/08/2023	PER UPDATED SA/MA

A&E PROJECT NUMBER

10710.NJJER01152C

Dish Wireless LLC. PROJECT INFORMATION

NJJER01152C
FIRST DIST WATER DEPT.
11 FILBERT ROAD
NORWALK, CT 06851

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-7

Exhibit D

Structural Analysis

Tectonic

PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.

Date: **December 12, 2023**

Structural Opinion Letter

Project Information:

Carrier:	Dish Wireless
Site Name:	NJJER01152C
Site Address:	11 Filbert Rd, Norwalk, Fairfield County, CT 06851
Site Type:	Water Tank Mounted Antennas

Tectonic Project Number: 10710.NJJER01152C, Revision 1

Tectonic Engineering Consultants, Geologists & Land Surveyors, D.P.C., Inc. (Tectonic) is pleased to submit this "**Structural Opinion Letter**" to determine the structural integrity of the above-mentioned water tank structure. Tectonic performed a limited visual inspection from ground of the existing water tank on March 14, 2021. In addition, the following documents were assessed:

- Proposed Mount Analysis by Tectonic Engineering, dated October 31, 2023.
- RFDS by Dish Wireless, dates April 29, 2022.
- Lease Exhibit by Tectonic, dated April 11, 2022.
- Structural Analysis Report by On Air Engineering, LLC, dated March 20, 2020.

Based on our visual inspection and information provided, the tank currently supports one carrier on steel pipe masts connected to the legs at a RAD elevation of approximately hundred and fourteen feet (114'-0") above ground level. Dish Wireless is proposing to install new mounting frames supported on pipe masts in a similar fashion with three (3) new panel antennas, six (6) new RRH modules and three (3) new OVP units. The final configuration upon this installation will be as follows:

Mounting Level (ft)	Carrier Designation	Quantity	Equipment Manufacturer	Equipment Model	Number of Feed Lines	Feed Line Size (in)	Note
114.0	Dish Wireless	3	Commscope	FFVV-65B-R2	3	1.6" Hybrid	1
		3	Samsung	RF4450t-71A			
		3	Samsung	RF4451d-70A			
		3	Raycap	RDIDC-9181-PF-48			

Notes:

1) Proposed equipment to be mounted to new pipe frames designed in a separate analysis by Tectonic.

Project Contact Info

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Tectonic

PRACTICAL SOLUTIONS, EXCEPTIONAL SERVICE

The existing water tank and foundation drawings were not made available at the time of this report; therefore, the tank has not been evaluated in detail. However, based on our review of the structural analysis report referenced above, the increase in the wind area and weight per antenna mount is minimal compared to the overall size and weight of the tank. The increase in vertical and lateral load is less than 10% and 5%, respectively. This is based on estimations from field notes and assumptions of the existing water tank structure. As per the Connecticut Building Code and 2021 IEBC, no further analysis is required. Therefore, we believe the existing water tank and supporting foundation are adequate to support the proposed Dish Wireless upgrade.

This structural opinion is based on a limited visual inspection from ground and information provided by the client. We assume that the water tank and its foundation were manufactured and constructed in accordance with the approved design drawings, the tank has been properly maintained in accordance with industry standards, and all existing members and connections are intact. 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 the structural loads prior to implementation.

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.

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

STATE OF CONNECTICUT
EDWARD N. IAMICELI
PEN.0028473
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Edward N. Iamiceli, P.E.
Managing Director - Structural

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Exhibit E

Mount Analysis

Tectonic

PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.

Date: **October 31, 2023**

Proposed Mount Analysis Report

Project Information:

Carrier:	Dish Wireless
Site Number:	NJJER01152C
Site Address:	11 Filbert Rd, Norwalk, Fairfield County, CT 06851
Site Type:	Pipe Mast on Water Tank

Tectonic Project Number: 10710.NJJER01152C, Revision 1

Tectonic Engineering Consultants, Geologists & Land Surveyors, D.P.C., Inc. (Tectonic) 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 – 90 %**

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.

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

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

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TABLE OF CONTENTS

1) INTRODUCTION

Analysis of the proposed antenna mounts due to the loading of the proposed antennas, equipment, and related appurtenances. The proposed mount is a sector frame on a pipe mast to be installed onto the water tank leg and kickback to the tank roof.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	III
Wind Speed:	130 mph
Exposure Category:	B
Topographic Factor:	1.0
Ice Thickness:	in
Wind Speed with Ice:	mph
Maintenance Wind Speed Load:	30 mph

Table 1 - Proposed Equipment Loading Information

Mounting Level (ft)	Carrier Designation	Number of Antennas	Antenna Manufacturer	Antenna Model	Proposed Mount Type	Note
114.0	Dish Wireless	3	Commscope	FFVV-65B-R2	(3) Pipe Masts	1
		3	Samsung	RF4450t-71A		
		3	Samsung	RF4451d-70A		
		3	Raycap	RDIDC-9181-PF-48		

Notes:
1) Proposed equipment to be installed on the proposed mounts.
2) Reserved equipment considered for design.

3) ANALYSIS PROCEDURE

Table 2 - Documents Provided

Document	Remarks	Dated
RFDS	Dish Wireless	04/29/2022
Lease Exhibit	Tectonic	04/11/2022
Field Notes & Photos	Tectonic	03/14/2022
Structural Analysis Report	On Air Engineering, LLC	03/20/2020
Water Tank Analysis Report	Tectonic	06/09/2022

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

Notes	Component	Mount Centerline (ft)	% Capacity	Pass / Fail
1	Face Horizontal	114.0	90	Pass
	Mount Pipe		69	Pass
	Mast Pipe		67	Pass
2	Mast Connection		66	Pass
	Kickback Connection		45	Pass
Structure Rating (max from all components) =				**90%**

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 mast pipe mount and connections have 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 water tank. The tank is to be evaluated 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

Tectonic	Job No.: 10710.NJJER01152C, Rev 1			
PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.	Sheet No.:	1	of	4
	Calculated By:	IM	Date :	10/31/23
	Checked By:		Date :	

WIND AND ICE LOADS PER TIA-222-H

W.O.	10710.NJJER01152C, Rev 1
Project Name	NJJER01152C
Location	11 Filbert Rd, Norwalk, CT 06851
County	Fairfield

Tower Type	WT	Water Tank
Structure Height	127.5	ft
Supporting Str Height	0	ft Or ground mounted
Risk Category	III	Substantial risk
Exposure Category	C	Open terrain
Topo Category	1	Flat or rolling terrain
Height of crest	0	ft
Mean elevation (zs)	119.46	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	1.00
K_c	1.00
K_t	N/A
f	N/A
z_g	900
α	9.5
$K_{z,min}$	0.85
K_d	0.95
G_h	1.00

Height	z (ft)	114
	Kh	N/A
	Kzt	1.00
	Kz	1.30
	Kiz	1.13
Wind Pressure, qz (psf)	No Ice	53.24
	With Ice	7.88
	Maintenance	2.84
(tiz)	Ice Thk	1.41
Appurtenances (qzGh)	No Ice	53.24
	With Ice	7.88
	Maintenance	2.84

Tectonic

Job No.	10710.NJJER01152C, Rev 1		
Sheet No.	2	of	4
Calculated By	IM	Date :	10/31/23
Checked By		Date :	

Equipment Information

Shielding factor, Ka: 0.9 — 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 (Aa)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)
FFVV-65B-R2	P	3	114	6.00	19.61	7.76	Flat	1.25	1.48	9.80	33.12	3.88	15.45	588	274	71.9	215.6
RF4450T-71A	P	3	114	1.38	15.00	11.02	Flat	1.20	1.20	1.72	5.57	1.26	4.09	99	73	94.6	283.7
RF4451D-70A	P	3	114	1.25	15.00	8.90	Flat	1.20	1.20	1.56	5.06	0.93	3.00	90	53	61.3	183.9
RDIDC-9181-PF-48	P	3	114	1.58	14.39	8.15	Flat	1.20	1.20	1.90	6.15	1.07	3.48	109	62	21.8	65.5
										∑(CaAA)N	49.90	∑(CaAA)T	26.02				749

WIND WITH ICE

Ice Thk = 1.41 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	114	6.23	22.44	10.59	Cylindrical	0.72	0.72	11.65	22.61	5.50	10.67	59	28	27.4	180.6
RF4450T-71A	P	3	114	1.61	17.83	13.85	Cylindrical	0.7	0.7	2.39	4.52	1.86	3.51	12	9	6.0	39.4
RF4451D-70A	P	3	114	1.49	17.83	11.73	Cylindrical	0.7	0.7	2.21	4.17	1.45	2.75	11	7	5.0	32.9
RDIDC-9181-PF-48	P	3	114	1.82	17.22	10.98	Cylindrical	0.7	0.7	2.61	4.93	1.66	3.14	13	8	5.9	39.2
										∑(CaAA)N	36.23	∑(CaAA)T	20.07				292

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	114	6.00	19.61	7.76	Flat	1.25	1.48	9.80	33.12	3.88	15.45	31	15
RF4450T-71A	P	3	114	1.38	15.00	11.02	Flat	1.20	1.20	1.72	5.57	1.26	4.09	5	4
RF4451D-70A	P	3	114	1.25	15.00	8.90	Flat	1.20	1.20	1.56	5.06	0.93	3.00	5	3
RDIDC-9181-PF-48	P	3	114	1.58	14.39	8.15	Flat	1.20	1.20	1.90	6.15	1.07	3.48	6	3
										∑(CaAA)N	49.90	∑(CaAA)T	26.02		

Tectonic

Job No. 0710.NJJER01152C, Rev			
Sheet No.	3	of	4
Calculated By	IM	Date :	10/31/23
Checked By		Date :	

Mounting System Information

Mount Center Line:	114 ft

Reduction Factor = 0.9 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)
Face Horizontal - 2.5 STD	2	7.00	2.88	2.88	Cylindrical	1.2	3.62	13.8	10.53	5.0	7.19	4.0	1.5
Mount Pipe - 2.0 STD	3	6.00	2.38	2.38	Cylindrical	1.2	3.85	11.4	11.19	4.1	8.43	3.7	1.3
Mast Pipe - 4.0 STD	1	23.00	4.50	4.50	Cylindrical	1.2	9.32	21.6	27.08	7.8	15.17	5.2	1.9
Kickback - L4x4x3/8	2	8.00	4.00	4.00	Flat	2	9.60	31.9	21.33	8.8	16.39	8.1	2.9

Tectonic	Job No. 10710.NJJER01152C, Rev 1			
PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.	Sheet No.	4	of	4
	Calculated By	IM	Date :	10/31/23
	Checked By		Date :	

Seismic Check

Tower Information

Tower Type:	WT	
Structure Height	127.5	ft
Supporting Structure Height	0	ft
Mount Height	114	ft

Geographic Information

City:	Norwalk		
State:	Connecticut		
County:	Fairfield		
Latitude:	41.118626	Longitude:	-73.396752

Seismic Information

Risk Category	III		
Importance Factor	1.25		
Site Soil Classificaiton	D		TIA Table 2-10
S_s	0.238		https://asce7hazardtool.online/
S_1	0.056		
F_a	1.6		(Table 2-11, interpolation allowed)
F_V	2.4		(Table 2-12, interpolation allowed)
S_{DS}	0.254		Section 2.7.5
S_{D1}	0.090		
R	2.00		Section 16.7
As	3.00		Section 16.7 & 2.7.8
Cs	0.16	>	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)	Horz. Seismic load (Eh, lbs)
FFVV-65B-R2	P	3	114	72	11	11	34
RF4450T-71A	P	3	114	95	15	14	45
RF4451D-70A	P	3	114	61	10	9	29
RDIDC-9181-PF-48	P	3	114	22	3	3	10

Mounting System (Discrete Appurtenances)

Ev =0.2S_{DS} * D	0.0508 x D	"D" is the dead weight of the mount members.
Eh= rho * Q_E	0.16 x W	"W" total weight of structure above ground

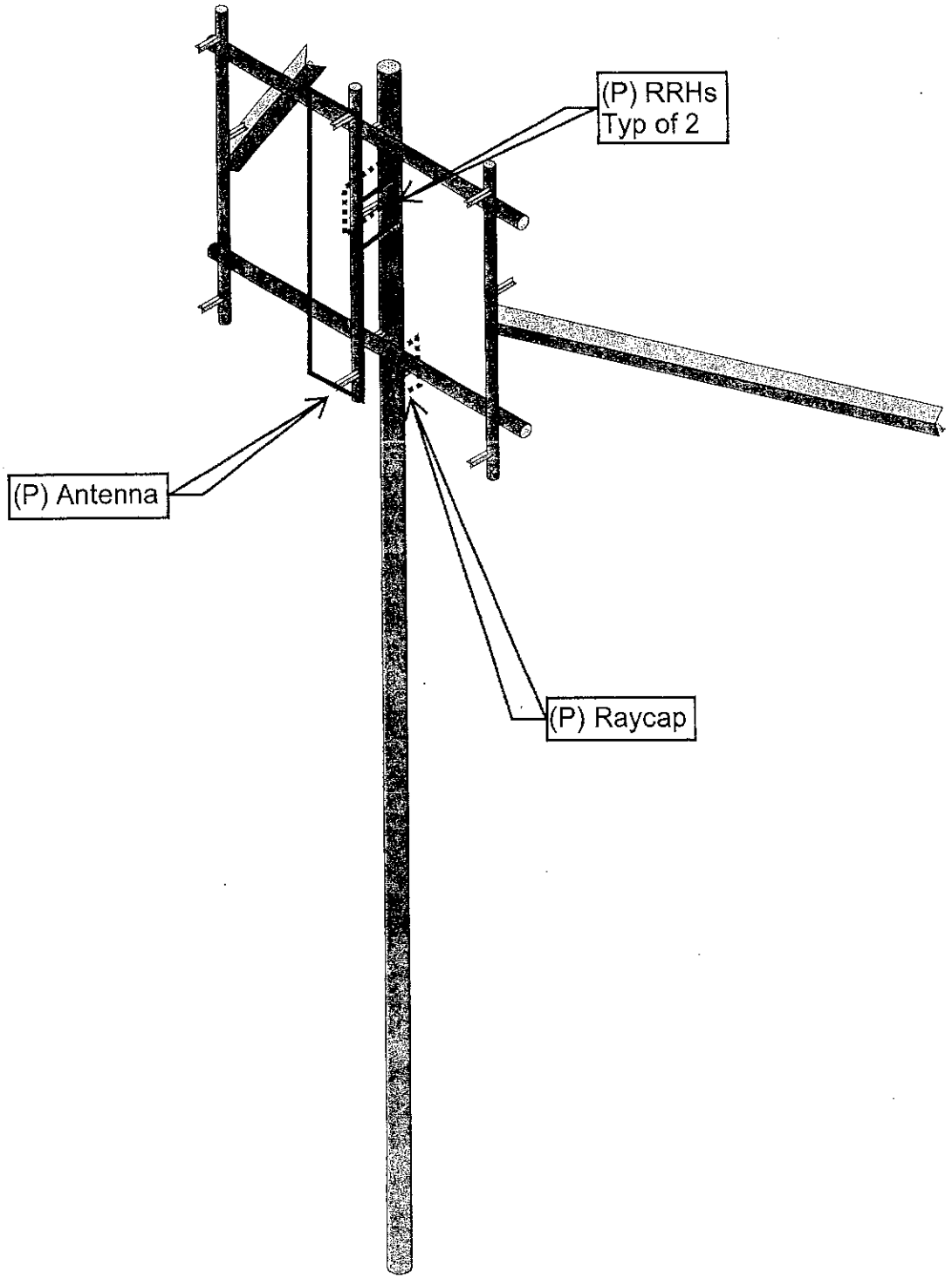
Notes:

1. Wind loads govern over Seismic loads

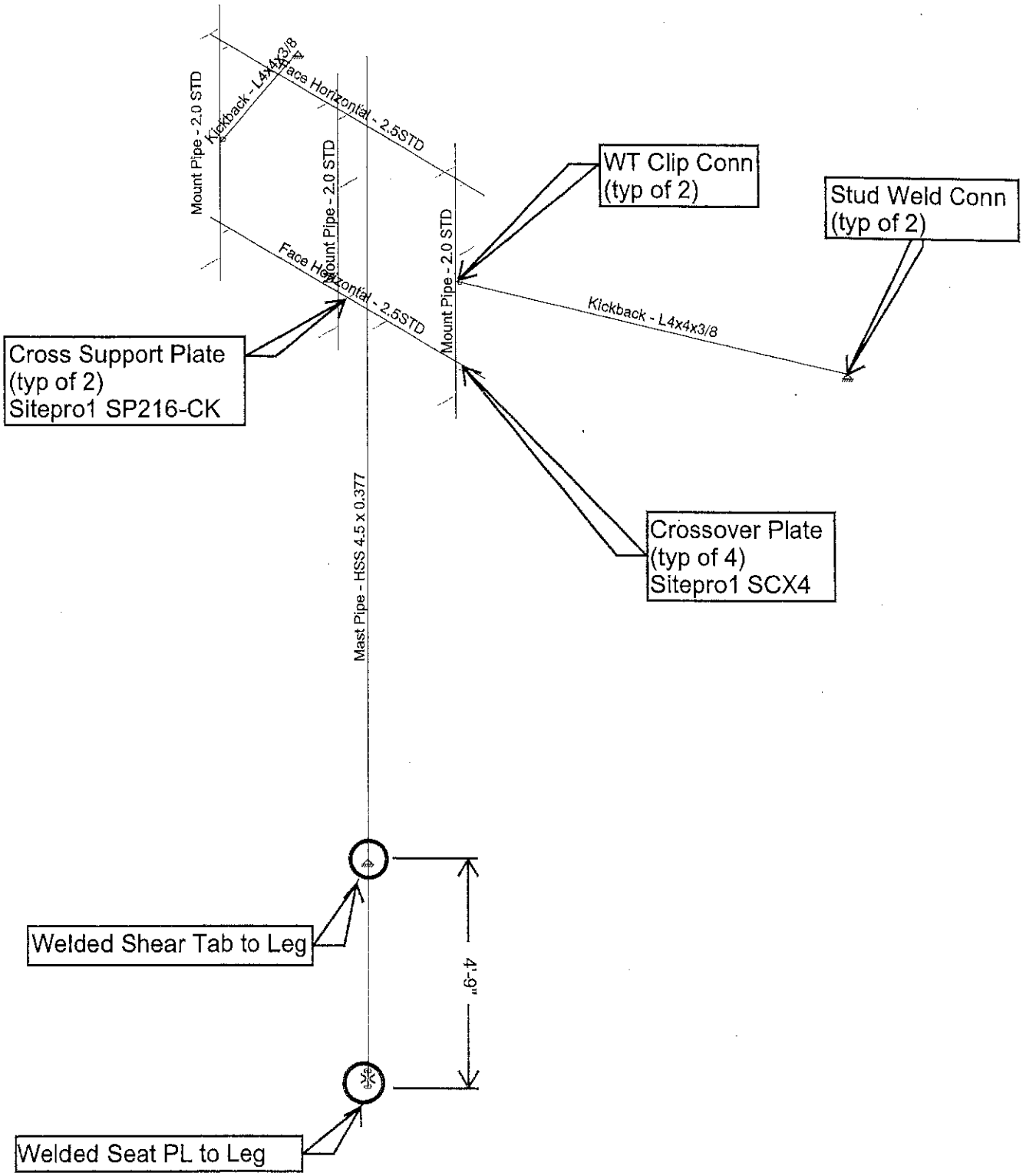
APPENDIX B

WIRE FRAME AND RENDERED MODELS

PROPOSED ANTENNA CONFIGURATION



PROPOSED MOUNT MEMBERS



Tectonic

tectonicengineering.com
(800) 829-6531

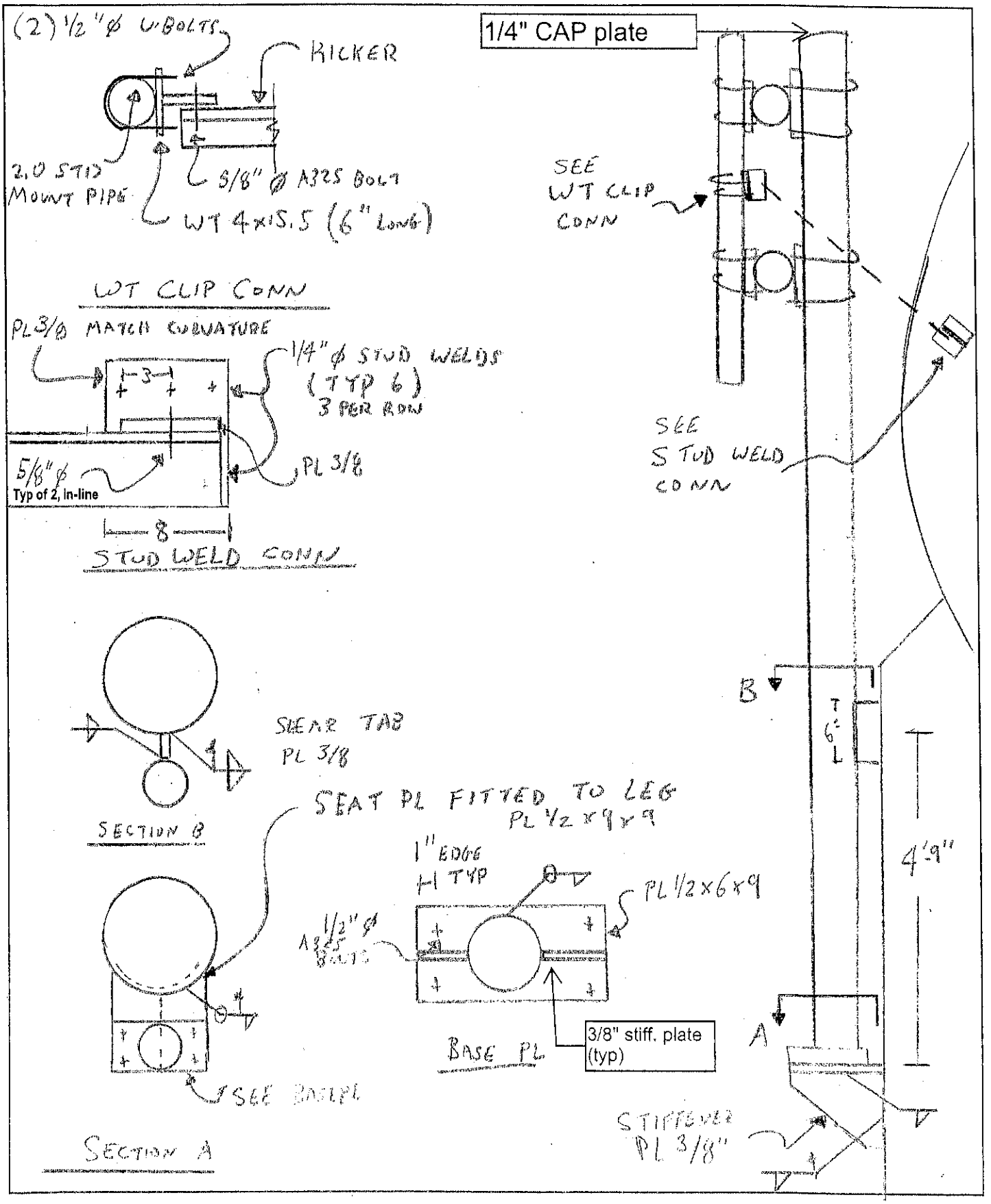
JOB 10710. NJJE R01152. C

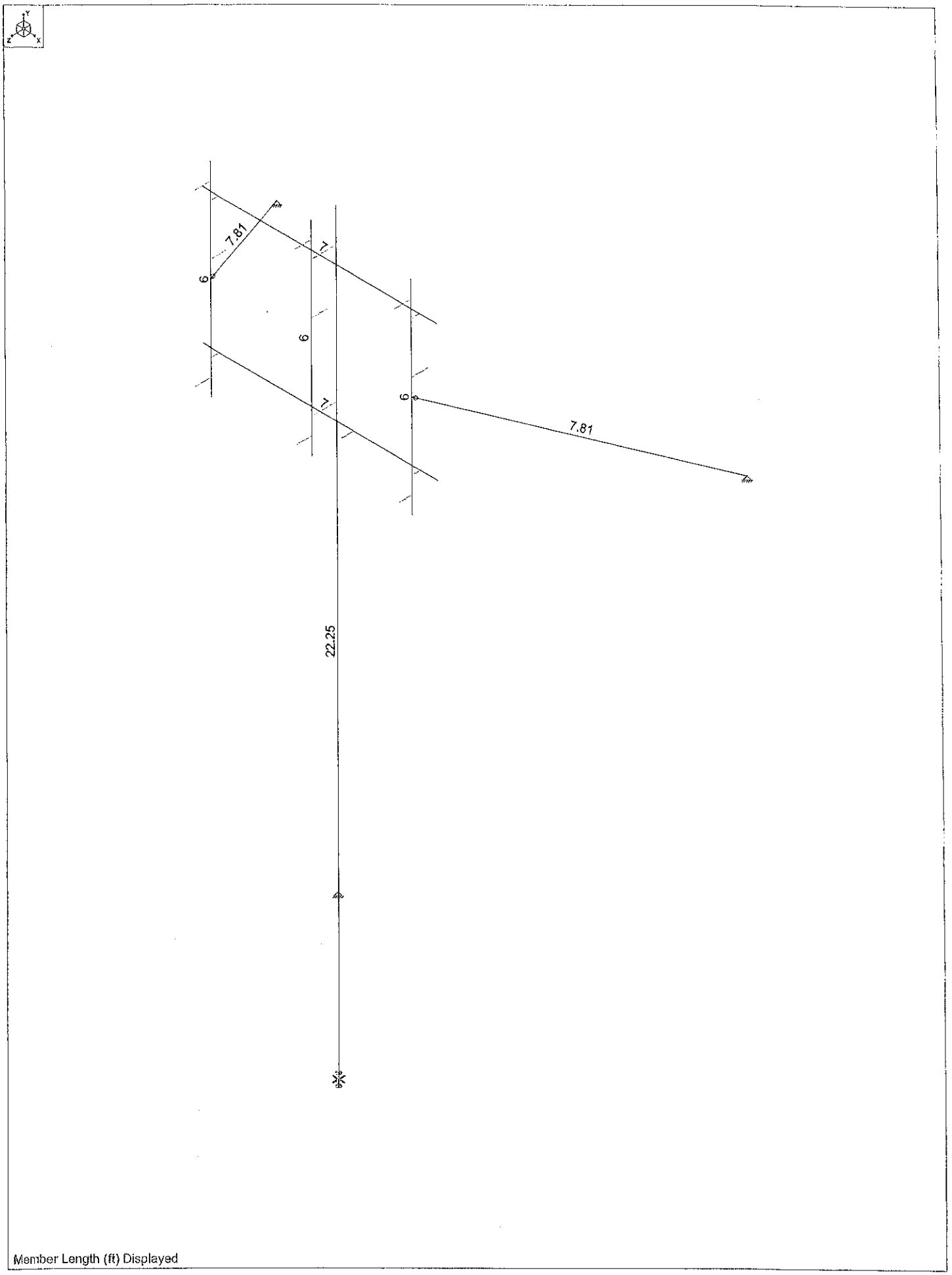
SHEET NO. _____ OF _____

CALCULATED BY IM DATE 6/8/22

CHECKED BY _____ DATE _____

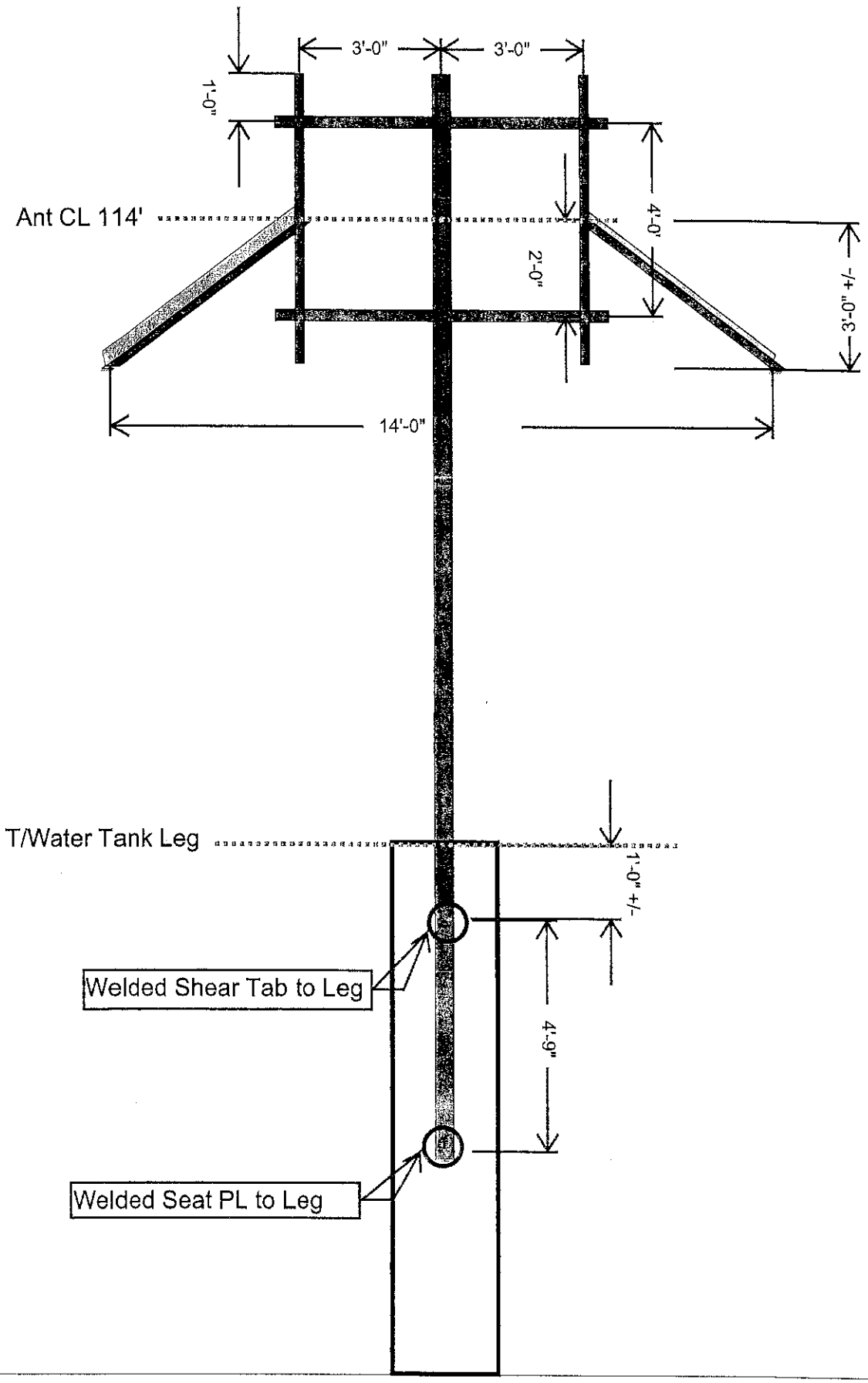
SCALE _____



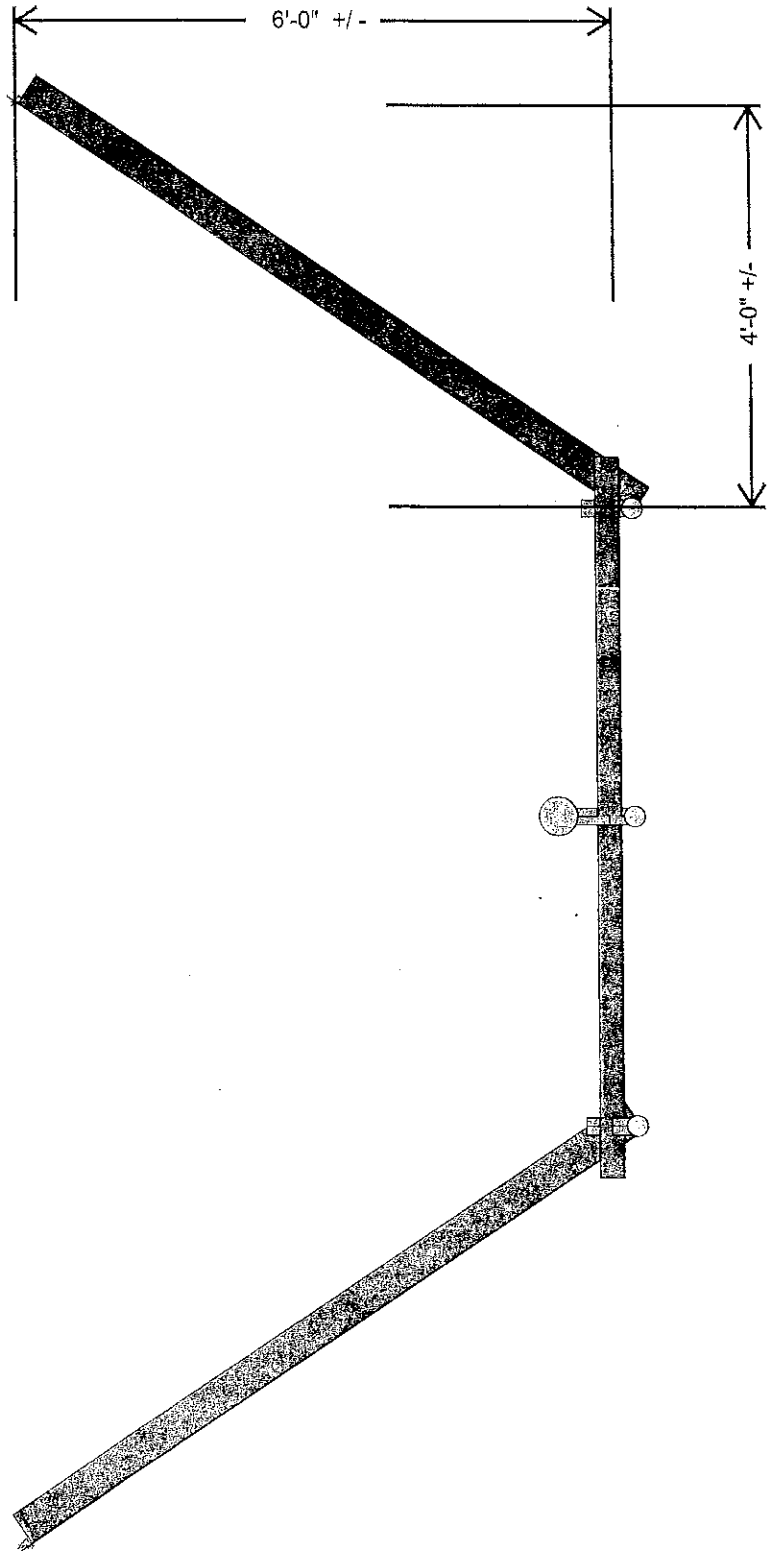


Member Length (ft) Displayed

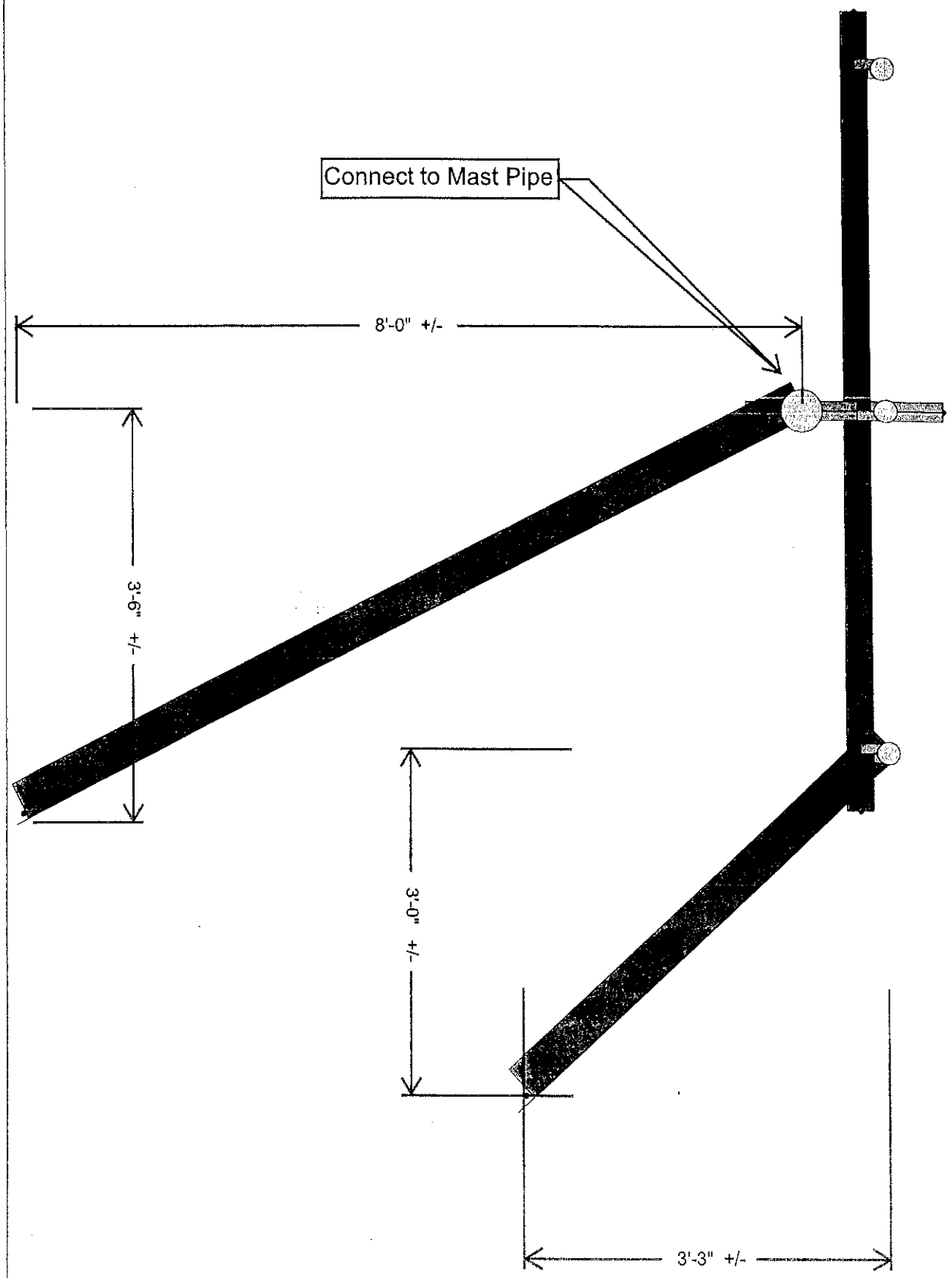
FRONT VIEW

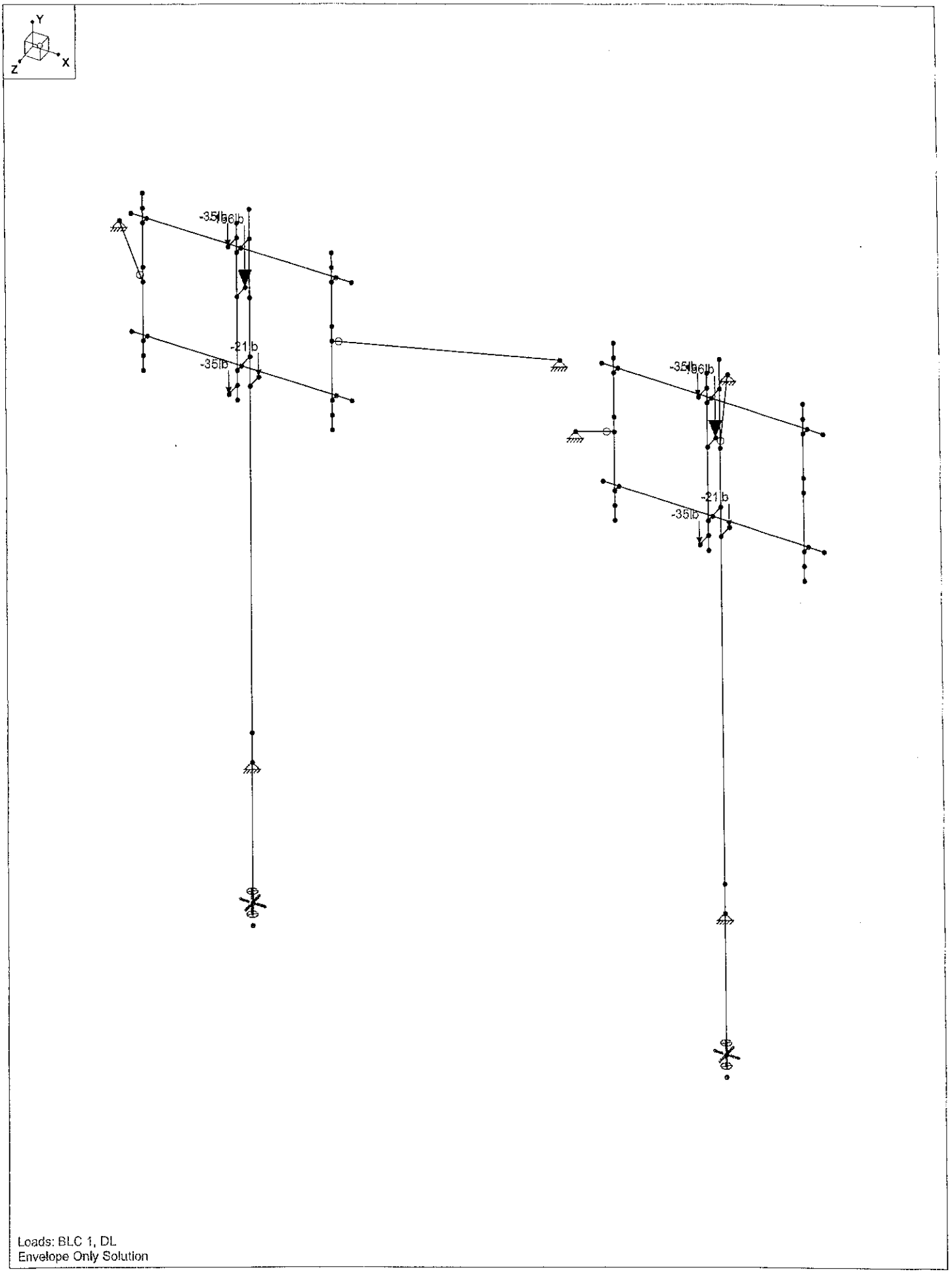

3'-0"
3'-0"
1'-0"
Ant CL 114'
4'-0'
2'-0"
3'-0" +/-
14'-0"
T/Water Tank Leg
1'-0" +/-
Welded Shear Tab to Leg
4'-9"
Welded Seat PL to Leg

PLAN VIEW
ALPHA & BETA

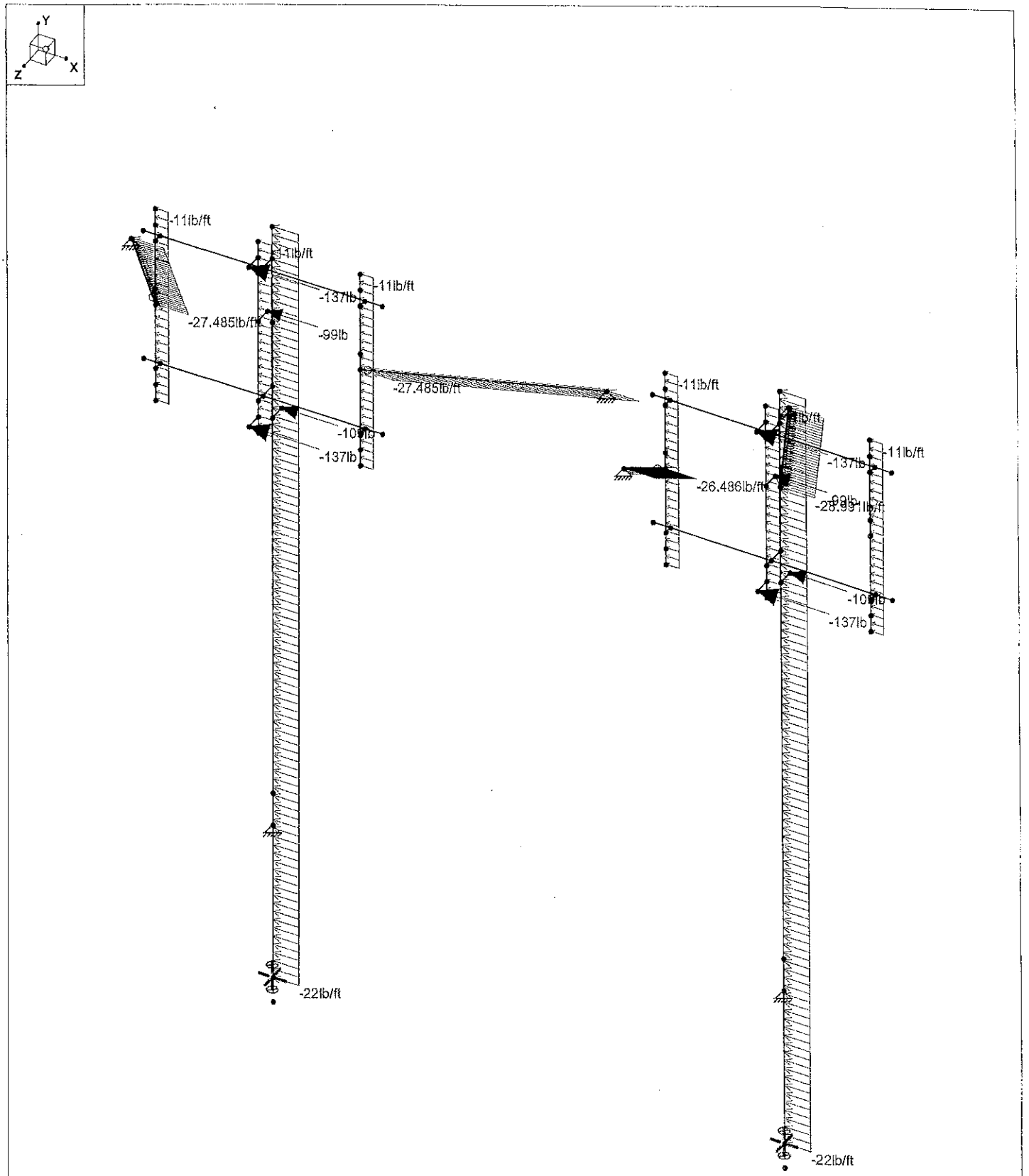


PLAN VIEW
GAMMA

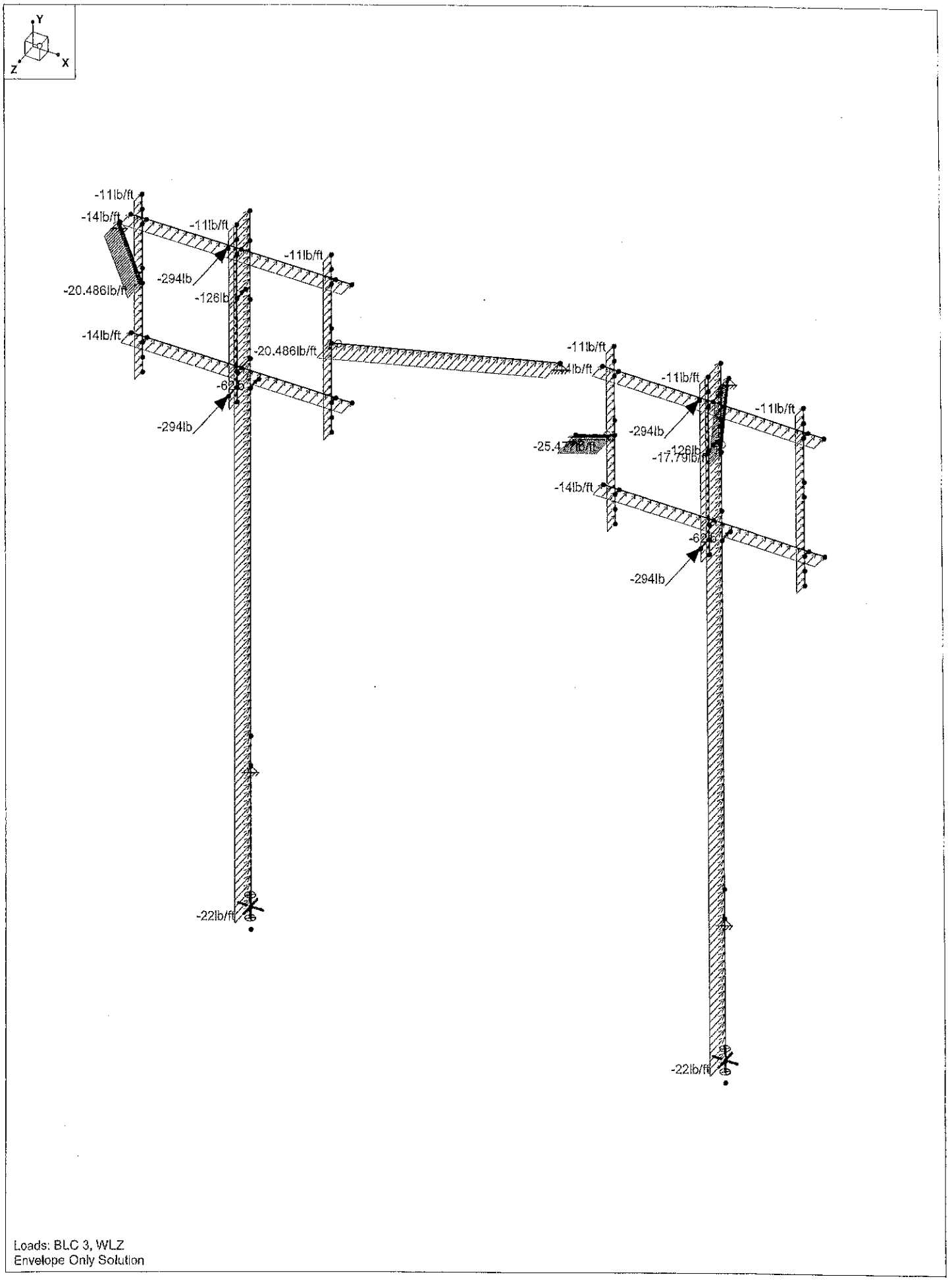




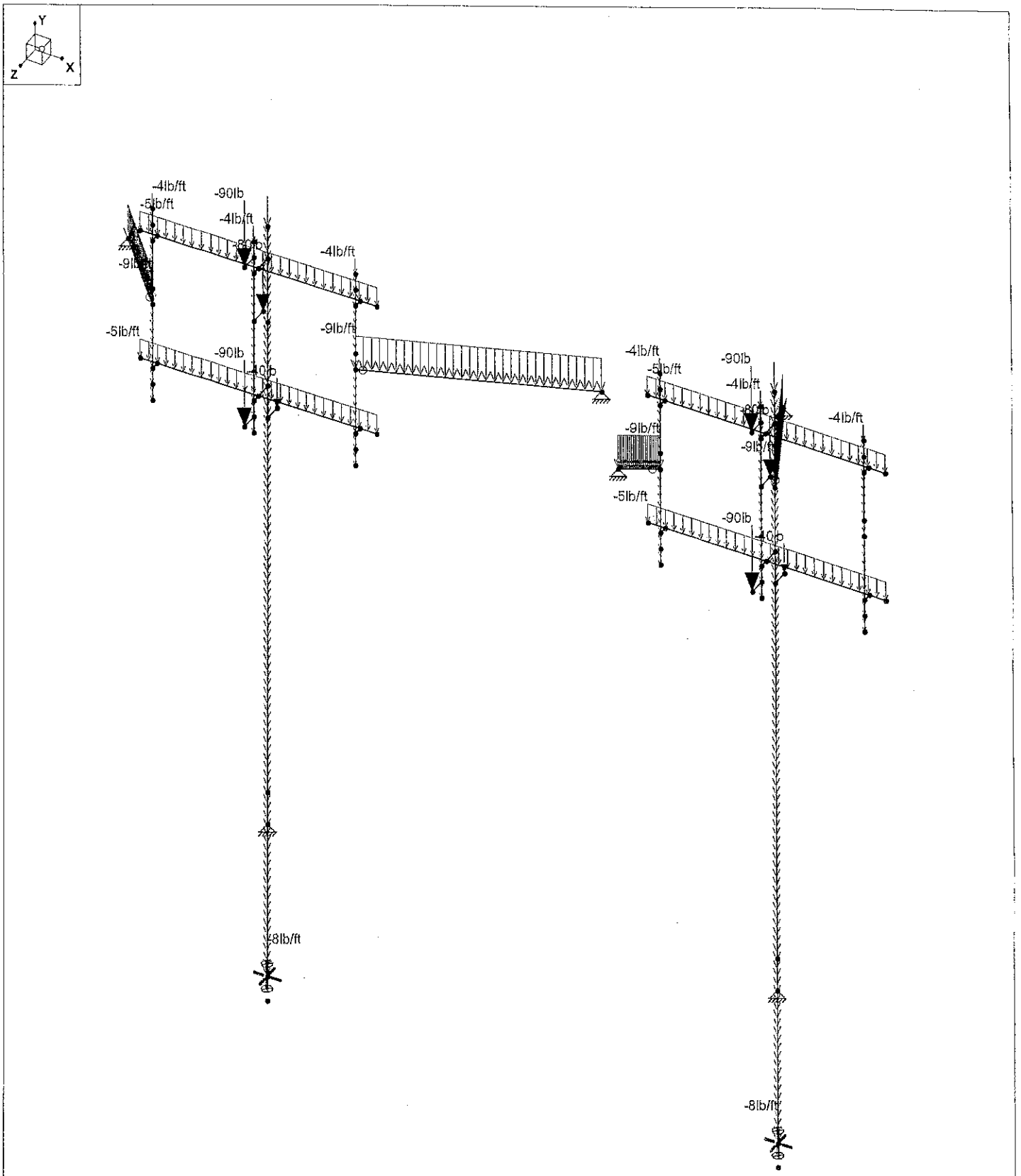
Loads: BLC 1, DL
Envelope Only Solution



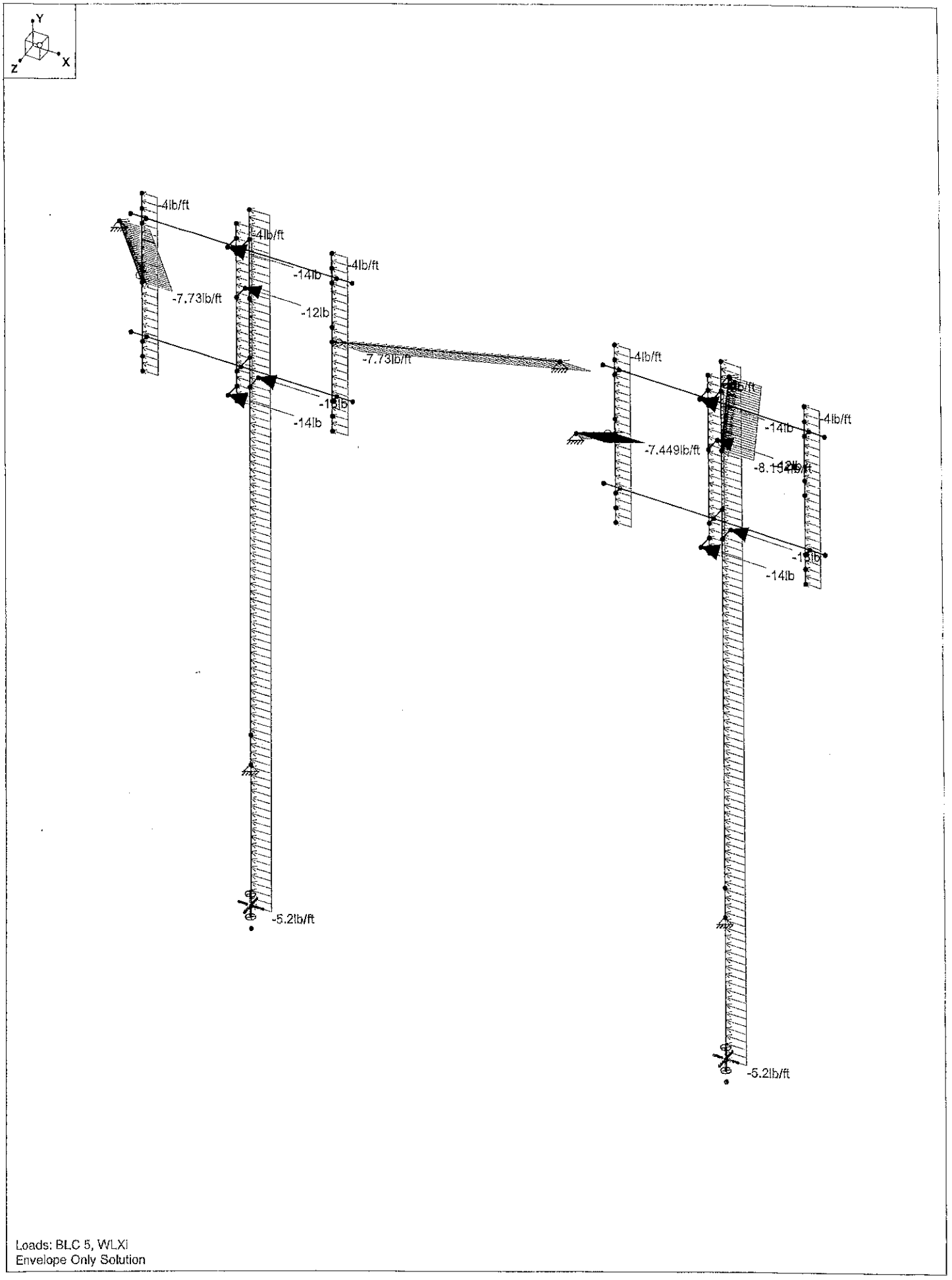
Loads: BLC 2, WLX
Envelope Only Solution



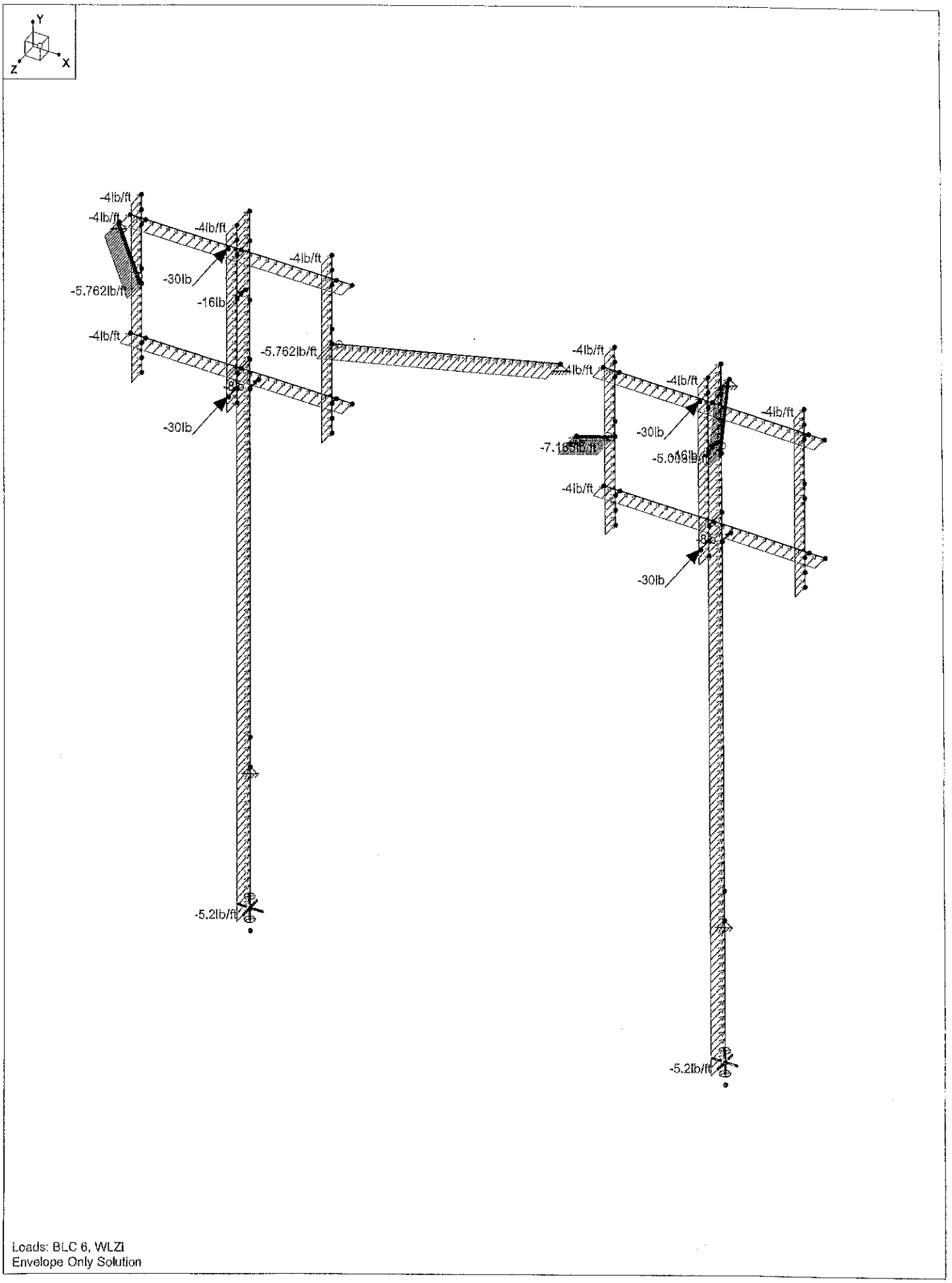
Loads: BLC 3, WLZ
Envelope Only Solution



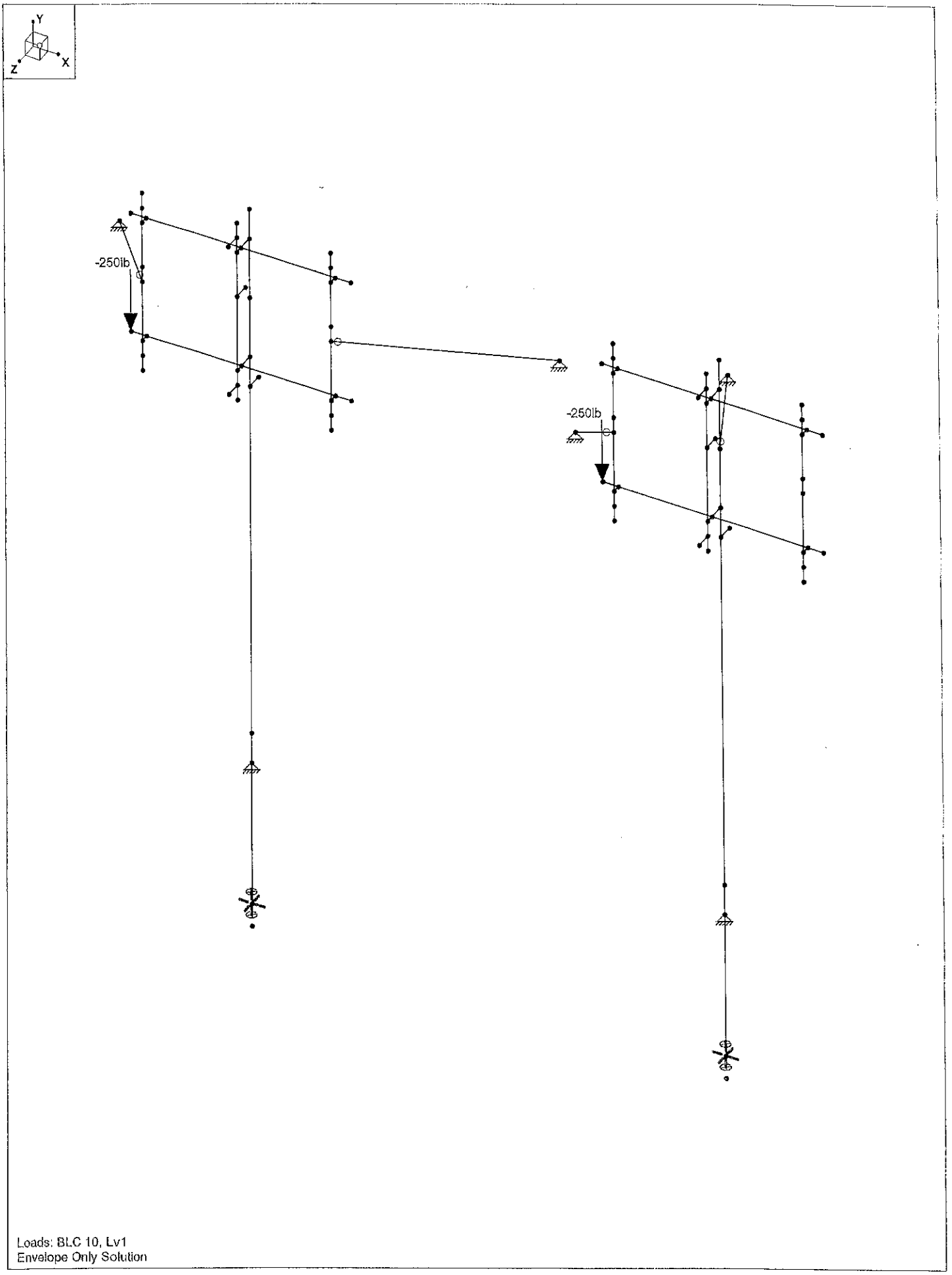
Loads: BLC 4, DLi
Envelope Only Solution



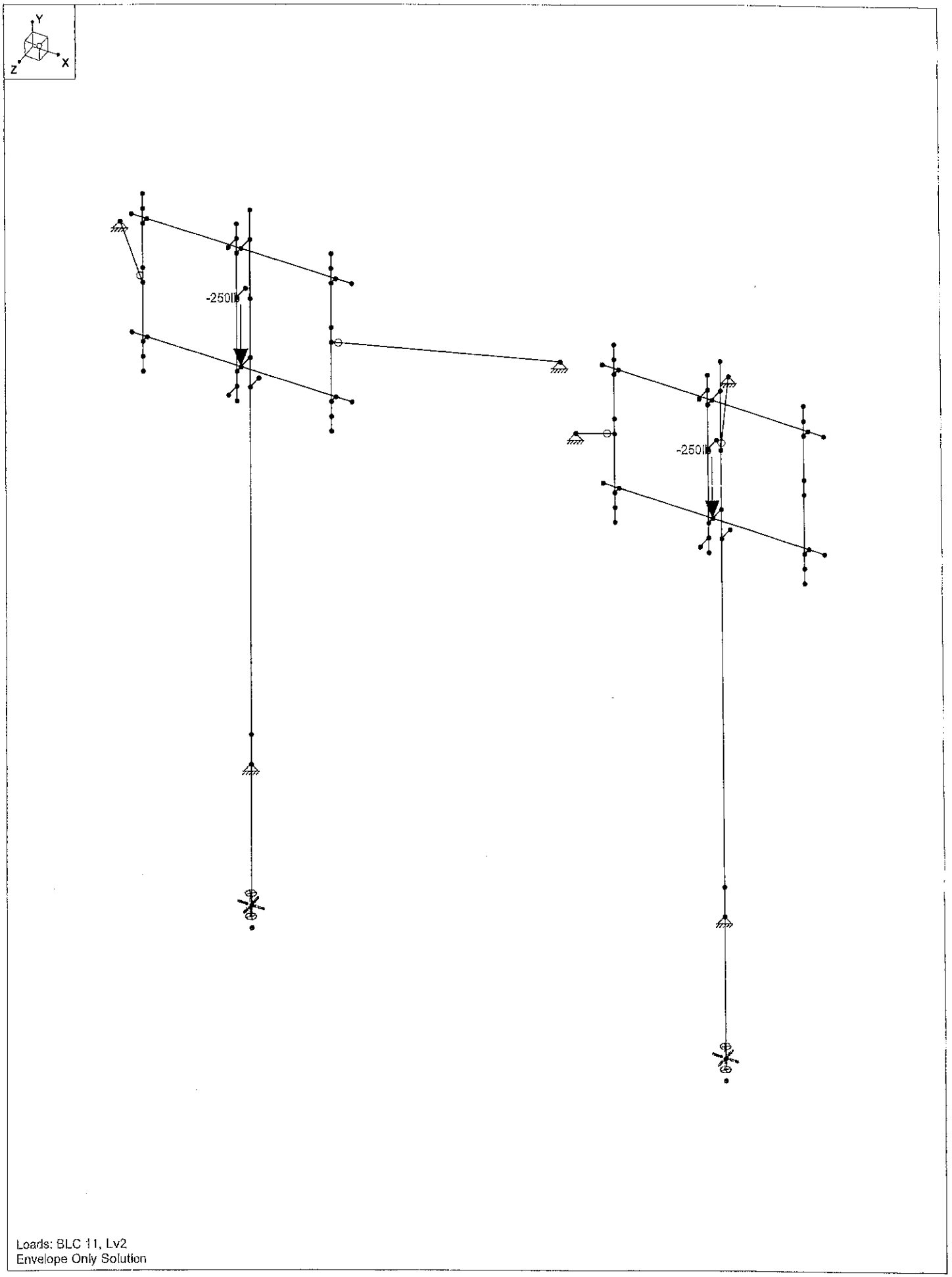
Loads: BLC 5, WLXI
Envelope Only Solution



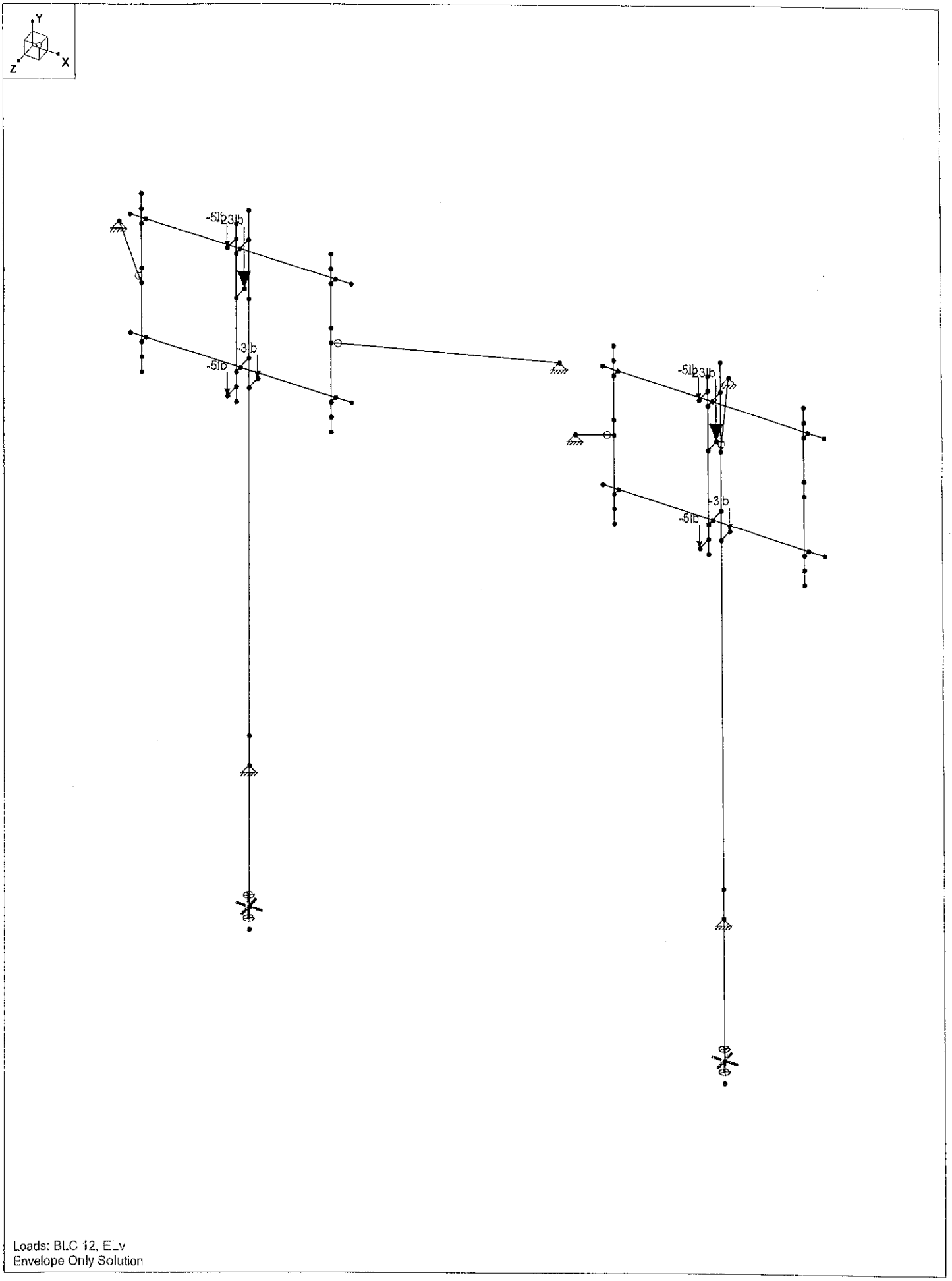
Loads: BLC 6, WLZi
Envelope Only Solution



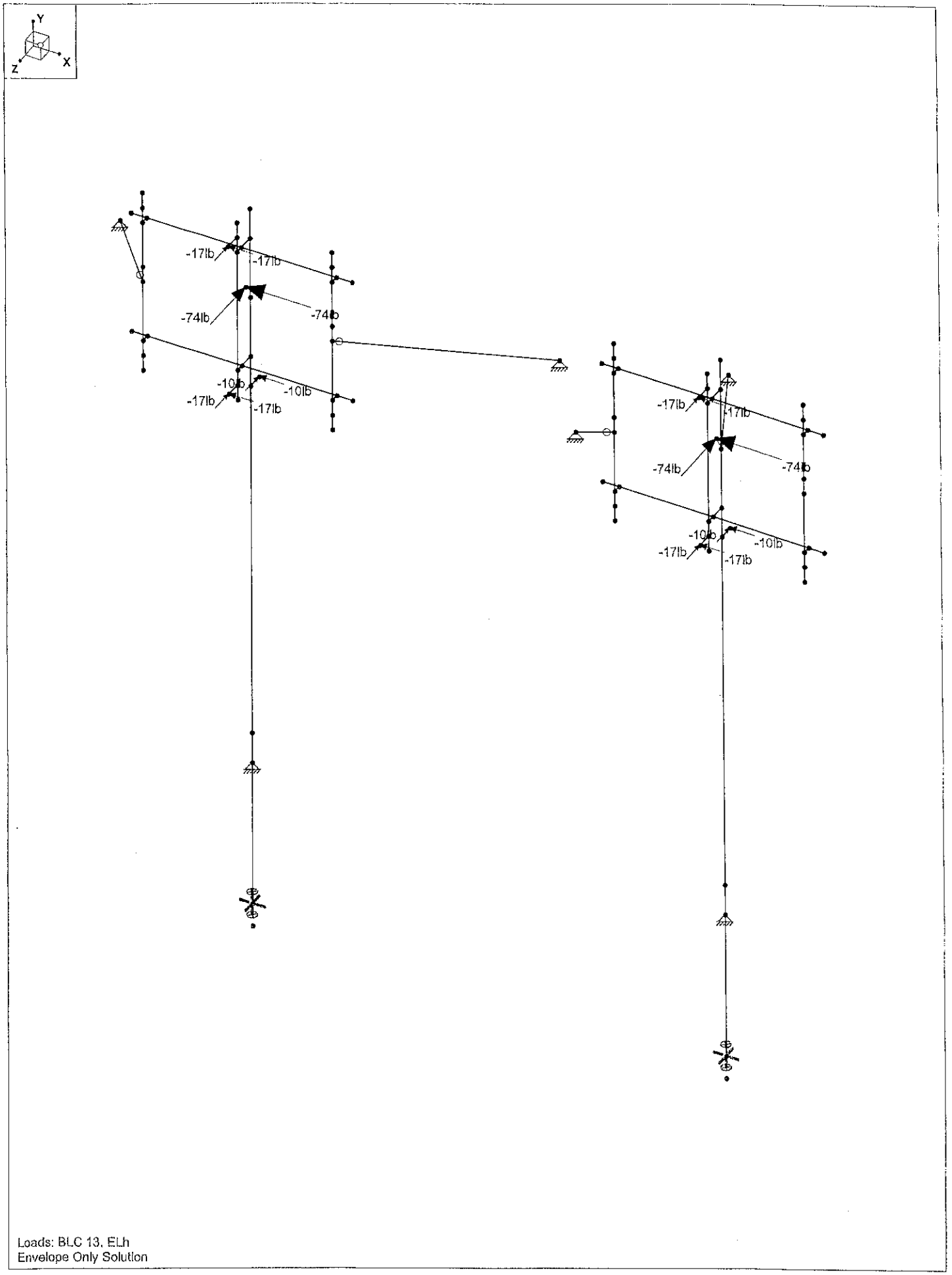
Loads: BLC 10, Lv1
Envelope Only Solution



Loads: BLC 11, Lv2
Envelope Only Solution



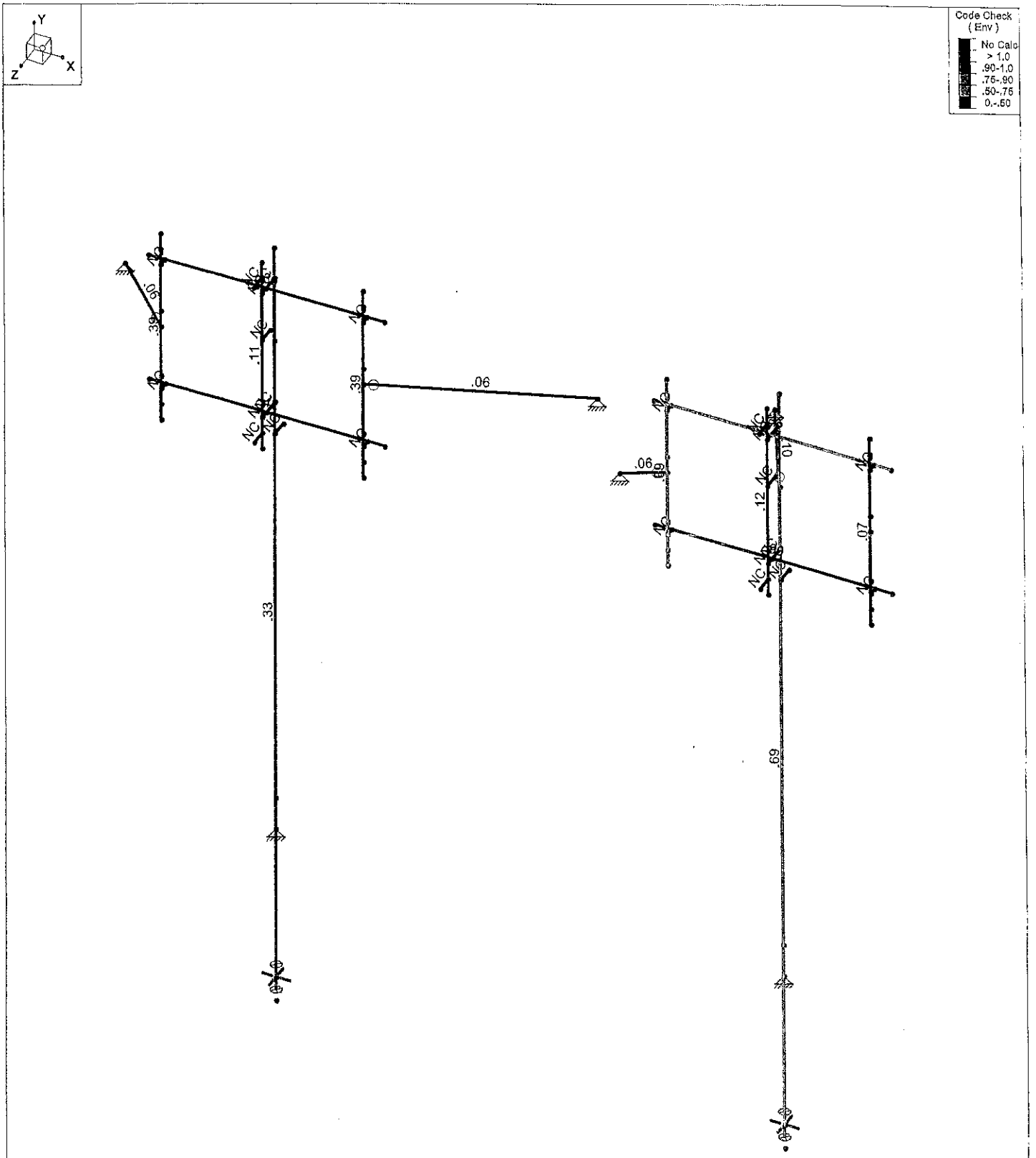
Loads: BLC 12, ELv
Envelope Only Solution



Loads: BLC 13, ELh
Envelope Only Solution

APPENDIX C

SOFTWARE ANALYSIS OUTPUT



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (\1E5 F)	Density[k/...	Yield[ksi]	Ry	Fu[ksi]	Rt
1	A992	29000	11154	.3	.65	.49	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	.3	.65	.49	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	.3	.65	.527	42	1.4	58	1.3
5	A500 Gr.B Rect	29000	11154	.3	.65	.527	46	1.4	58	1.3
6	A53 Gr.B	29000	11154	.3	.65	.49	35	1.6	60	1.2
7	A1085	29000	11154	.3	.65	.49	50	1.4	65	1.3

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design...	A [in2]	Iyy [in...	Izz [in...	J [in4]
1	Face Horizontal - 2.5STD	PIPE_2.5	Beam	Pipe	A53 Gr.B	Typical	1.61	1.45	1.45	2.89
2	Mount Pipe - 2.0 STD	PIPE_2.0	Column	Pipe	A53 Gr.B	Typical	1.02	.627	.627	1.25
3	Mast Pipe - HSS 4.5 x 0.377	HSS4.500X0.337	Column	Pipe	A500 Gr.B R...	Typical	4.12	9.07	9.07	18.1
4	Kickback - L4x4x3/8	L4X4X6	Beam	Single Angle	A36 Gr.36	Typical	2.86	4.32	4.32	.141

Basic Load Cases

	BLC Description	Category	X Gra...	Y Gra...	Z Grav...	Joint	Point	Distri...	Area(Me...	Surface(Plate/...
1	DL	DL		-1.05		10				
2	WLX	WLX				10		16		
3	WLZ	WLZ				10		16		
4	DLi	OL1				10		16		
5	WLXi	WLX				10		16		
6	WLZi	WLZ				10		16		
7	WLX (MAINT)	WL+X								
8	WLZ (MAINT)	WL+Z								
9	Lm1	OL1								
10	Lv1	OL5				2				
11	Lv2	OL6				2				
12	ELv	ELY		.051		10				
13	ELh	ELZ	-.16		-.16	20				

Load Combinations

	Description	So...	PDelta	SRSS	BLC	Fa...	BLC	Factor	BLC	Factor	B...	Fact...	B...	Fa...	B...	Fa...	B...	Fac...
1	**LRFD**		Y															
2	1.4D	Yes	Y		1	1.4												
3	1.2D+(WLX+WLZ) - 0 Deg	Yes	Y		1	1.2	2	1	3									
4	1.2D+(WLX+WLZ) - 30 Deg	Yes	Y		1	1.2	2	.866	3	.5								
5	1.2D+(WLX+WLZ) - 60 Deg	Yes	Y		1	1.2	2	.5	3	.866								
6	1.2D+(WLX+WLZ) - 90 Deg	Yes	Y		1	1.2	2		3	1								
7	1.2D+(WLX+WLZ) - 120 Deg	Yes	Y		1	1.2	2	-.5	3	.866								
8	1.2D+(WLX+WLZ) - 150 Deg	Yes	Y		1	1.2	2	-.866	3	.5								
9	1.2D+(WLX+WLZ) - 180 Deg	Yes	Y		1	1.2	2	-1	3									
10	1.2D+(WLX+WLZ) - 210 Deg	Yes	Y		1	1.2	2	-.866	3	-.5								
11	1.2D+(WLX+WLZ) - 240 Deg	Yes	Y		1	1.2	2	-.5	3	-.866								
12	1.2D+(WLX+WLZ) - 270 Deg	Yes	Y		1	1.2	2		3	-1								
13	1.2D+(WLX+WLZ) - 300 Deg	Yes	Y		1	1.2	2	.5	3	-.866								
14	1.2D+(WLX+WLZ) - 330 Deg	Yes	Y		1	1.2	2	.866	3	-.5								
15	**Wind Load with Ice**		Y															
16	1.2D+1.0Di+1.0(WLXi+WLZi) - 0 ...	Yes	Y		1	1.2	4	1	5	1	6							
17	1.2D+1.0Di+1.0(WLXi+WLZi) - 3...	Yes	Y		1	1.2	4	1	5	.866	6	.5						
18	1.2D+1.0Di+1.0(WLXi+WLZi) - 6...	Yes	Y		1	1.2	4	1	5	.5	6	.866						

Load Combinations (Continued)

	Description	So..	PDelta	SRSS	BLC	Fa...	BLC	Factor	BLC	Factor	B...	Fact..	B...	Fa..	B...	Fa...	B..	Fac...
19	1.2D+1.0Di+1.0(WLXi+WLZi) - 9...	Yes	Y		1	1.2	4	1	5		6	1						
20	1.2D+1.0Di+1.0(WLXi+WLZi) - 1...	Yes	Y		1	1.2	4	1	5	-.5	6	.866						
21	1.2D+1.0Di+1.0(WLXi+WLZi) - 1...	Yes	Y		1	1.2	4	1	5	-.866	6	.5						
22	1.2D+1.0Di+1.0(WLXi+WLZi) - 1...	Yes	Y		1	1.2	4	1	5	-1	6							
23	1.2D+1.0Di+1.0(WLXi+WLZi) - 2...	Yes	Y		1	1.2	4	1	5	-.866	6	-.5						
24	1.2D+1.0Di+1.0(WLXi+WLZi) - 2...	Yes	Y		1	1.2	4	1	5	-.5	6	-.866						
25	1.2D+1.0Di+1.0(WLXi+WLZi) - 2...	Yes	Y		1	1.2	4	1	5		6	-1						
26	1.2D+1.0Di+1.0(WLXi+WLZi) - 3...	Yes	Y		1	1.2	4	1	5	.5	6	-.866						
27	1.2D+1.0Di+1.0(WLXi+WLZi) - 3...	Yes	Y		1	1.2	4	1	5	.866	6	-.5						
28	**Maintenance Load** Location 1		Y															
29	1.2D+1.5Lm1+1.0(WLX+WLZ, S...		Y		1	1.2	9	1.5	7	1	8							
30	1.2D+1.5Lm1+1.0(WLX+WLZ, S...		Y		1	1.2	9	1.5	7	.87	8	.5						
31	1.2D+1.5Lm1+1.0(WLX+WLZ, S...		Y		1	1.2	9	1.5	7	.5	8	.87						
32	1.2D+1.5Lm1+1.0(WLX+WLZ, S...		Y		1	1.2	9	1.5	7		8	1						
33	1.2D+1.5Lm1+1.0(WLX+WLZ, S...		Y		1	1.2	9	1.5	7	-.5	8	.87						
34	1.2D+1.5Lm1+1.0(WLX+WLZ, S...		Y		1	1.2	9	1.5	7	-.87	8	.5						
35	1.2D+1.5Lm1+1.0(WLX+WLZ, S...		Y		1	1.2	9	1.5	7	-1	8							
36	1.2D+1.5Lm1+1.0(WLX+WLZ, S...		Y		1	1.2	9	1.5	7	-.87	8	-.5						
37	1.2D+1.5Lm1+1.0(WLX+WLZ, S...		Y		1	1.2	9	1.5	7	-.5	8	-.87						
38	1.2D+1.5Lm1+1.0(WLX+WLZ, S...		Y		1	1.2	9	1.5	7		8	-1						
39	1.2D+1.5Lm1+1.0(WLX+WLZ, S...		Y		1	1.2	9	1.5	7	.5	8	-.87						
40	1.2D+1.5Lm1+1.0(WLX+WLZ, S...		Y		1	1.2	9	1.5	7	.87	8	-.5						
41	***Man Vertical Load***		Y															
42	1.2D+1.5Lv1	Yes	Y		1	1.2	10	1.5										
43	1.2D+1.5Lv2	Yes	Y		1	1.2	11	1.5										
44	**Seismic Load**		Y															
45	1.2D+ELv+ELh	Yes	Y		1	1.2	12	1	13	1								

Envelope Joint Reactions

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N2	max	2805.107	14	1762.03	23	1191.209	7	0	45	0	45	0	45
2		min	-2314.971	8	312.899	4	-1282.026	13	0	2	0	2	0	2
3	N6	max	1424.731	8	64.121	27	835.041	14	0	45	3.559	8	0	45
4		min	-1798.705	14	43.295	45	-677.448	7	0	2	-5.169	14	0	2
5	N33	max	1102.16	14	1220.365	14	1504.009	14	0	45	0	45	0	45
6		min	-1274.354	8	-1091.605	8	-1006.847	8	0	2	0	2	0	2
7	N34	max	1119.603	7	958.87	7	2100.809	7	0	45	0	45	0	45
8		min	-979.042	12	-951.834	13	-2456.636	13	0	2	0	2	0	2
9	N56	max	1529.772	3	1836.104	25	416.125	6	0	45	0	45	0	45
10		min	-1529.775	9	198.908	6	-316.662	12	0	2	0	2	0	2
11	N60	max	867.996	9	64.121	27	62.875	12	0	45	3.292	9	0	45
12		min	-867.993	3	43.295	45	-105.849	6	0	2	-3.292	3	0	2
13	N87	max	669.702	5	518.763	5	1030.17	5	0	45	0	45	0	45
14		min	-713.027	11	-438.195	11	-1027.253	11	0	2	0	2	0	2
15	N88	max	713.028	13	518.767	7	1030.196	7	0	45	0	45	0	45
16		min	-669.7	7	-438.198	13	-1027.267	13	0	2	0	2	0	2
17	Totals:	max	3205.44	3	3718.551	25	3978.132	6						
18		min	-3205.417	9	2195.206	6	-3978.177	12						

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

	Member	Shape	Code Ch..	Loc[ft]	LC	Shear C...	Loc[...	Dir	LC	phi*Pnc [lb]	phi*Pnt ..	phi*Mn y-y [k..	phi*M.....	Eqn
1	M5	PIPE_2.5	.901	3.5	14	.244	3.5		14	33961.614	50715	3.596	3.596	... H1-1b
2	M4	PIPE_2.5	.719	3.5	14	.188	3.5		14	33961.614	50715	3.596	3.596	... H1-1b
3	M24A	PIPE_2.0	.691	3	14	.137	2.5		14	20866.733	32130	1.872	1.872	... H1-1b

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

	Member	Shape	Code Ch..	Loc[ft]	LC	Shear C...	Loc[...	Dir	LC	phi*Pnc [lb]	phi*Pnt ...	phi*Mn y-y [k..	phi*M....	Eqn
4	M1	HSS4.500X0.337	.686	4.896	14	.384	4.651		14	25766.114	155736	17.325	17.325	... H3-6
5	M31	PIPE_2.5	.421	3.5	14	.127	6.49		8	33961.614	50715	3.596	3.596	... H1-1b
6	M51	PIPE_2.0	.391	3	13	.070	3		13	20866.733	32130	1.872	1.872	... H1-1b
7	M50	PIPE_2.0	.391	3	11	.070	3		11	20866.733	32130	1.872	1.872	... H1-1b
8	M30	PIPE_2.5	.355	3.5	13	.115	6.49		13	33961.614	50715	3.596	3.596	... H1-1b
9	M27A	HSS4.500X0.337	.331	4.896	9	.237	4.651		9	25766.114	155736	17.325	17.325	... H3-6
10	M14	PIPE_2.0	.121	.5	13	.113	5		14	20866.733	32130	1.872	1.872	... H1-1b
11	M38	PIPE_2.0	.115	1	12	.077	5		9	20866.733	32130	1.872	1.872	1 H1-1b
12	M18	L4X4X6	.101	4.25	7	.004	8.326	z	14	38976.223	92664	4.398	8.549	... H2-1
13	M25A	PIPE_2.0	.073	5	14	.035	1		14	20866.733	32130	1.872	1.872	... H1-1b
14	M39	L4X4X6	.062	3.986	3	.003	0	z	14	43248.126	92664	4.398	8.678	... H2-1
15	M40	L4X4X6	.061	3.905	3	.003	0	z	10	43248.126	92664	4.398	8.678	... H2-1
16	M17	L4X4X6	.057	2.711	14	.002	0	z	14	65135.384	92664	4.398	9.375	... H2-1

APPENDIX D

ADDITIONAL CALCULATIONS

Tectonic

PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.

Job No. 10710.NJJER01152C
Calculated By: IM Date : 10/31/23
Checked By: Date :

Connection Details		
Bolt Details		
Bolt Quantity =	4	
Bolt Diameter =	0.5	in
Vertical Spacing =	4	in
Horizontal Spacing =	7	in
Bolt Grade =	A325	
Bolt F_u, if "Other" =	N/A	ksi

Loading Details		
Seated Plate - N6 - Env.		
Shear, X =	1.799	k
Shear, Z =	0.835	k
Tension, Y =	0	k
Mx =	0	k-ft
Mz =	0	k-ft
Torsion, My =	5.169	k-ft

1 - Tensile Capacity

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

Φ =	0.75	
F_{nt} =	90	ksi
A_b =	0.19635	in^2
$ΦR_{nt}$ =	13.25	k
T_{max} =	0.00	k

AISC [Table J3.2]

ΦRnt > Tmax

0% **OK**

2 - Shear Capacity

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

Φ =	0.75	
F_{nv} =	54	ksi
A_b =	0.19635	in^2
$ΦR_{nv}$ =	7.95	k
V_{max} =	4.34	k

AISC [Table J3.2]

ΦRnv > Vmax

55% **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} =	68	ksi
A_b =	0.19635	in^2
$ΦR'_{nt}$ =	9.99	k
T_{max} =	0.00	k

ΦR'nt > Tmax

0% **OK**

Tectonic

PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.

Job No. 10710.NJJER01152C
Calculated By: IM Date : 10/31/23
Checked By: Date :

Connection Details		
Weld Details		
Weld Type	Fillet	
Electrodes	70	XX
Size of Weld =	0.1875	in
Pipe Diameter =	4.50	in
Pipe Thickness =	0.34	in
Plate Details		
Height/Width =	6.00	in
Thickness =	0.75	in
F_y =	36	ksi

4 - Weld Capacity

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

AISC [Table J2.5]

Φ =	0.75	
ΦF_{nw}=	31.50	ksi
$f_{V,max}$ =	20.663	ksi
$f_{b,max}$ =	0.00	ksi

Min(ΦFnw,ΦFnbm) > √(fv,max+fm,max)

66% **OK**

5 - Plate Capacity

Φ =	0.9	
ΦF_{byy} =	32.40	ksi
f_b =	0.00	ksi

ΦFbyy > Fb

0% **OK**

Tectonic

PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.

Job No. 10710.NJJER01152C
Calculated By: IM Date : 10/31/23
Checked By: Date :

Connection Details		
Weld Details		
Weld Type	Fillet	
Electrodes	70	XX
Size of Weld =	0.1875	in
Height =	6.00	in
Width =	0.50	in
Plate Details		
Height/Width =	6.00	in
Thickness =	0.5	in
F_y =	36	ksi

Loading Details		
Shear Tab - Node N2 - Env.		
Shear, X =	2.805	k
Shear, Y =	1.762	k
Tension, Z =	1.282	k
Mx =	0	k-ft
My =	0	k-ft
Torsion, Mz =	0	k-ft

1- Weld Capacity

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

AISC [Table J2.5]

Φ =	0.75	
ΦF_{nw}=	31.50	ksi
$f_{V,max}$ =	2.061	ksi
$f_{b,max}$ =	0.00	ksi

Min(ΦFnw,ΦFnbm) > √(fv,max+fm,max)

7% **OK**

2 - Plate Capacity

Φ =	0.9	
ΦF_{byy} =	32.40	ksi
f_b =	15.44	ksi

ΦFbyy > Fb

48% **OK**

Tectonic

PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.

Job No. 10710.NJJER01152C
Calculated By: IM Date : 10/31/23
Checked By: Date :

Proposed Stud Weld Check

Design connection per AISC Steel Manual [LRFD].

Connection Details

Steel Stud Weld Information

Quantity =	6	
Diameter =	0.25	in
Threaded Area =	0.0317	in^2
Vertical Spacing =	6	in
Horizontal Spacing =	6	in
Grade =	A29/A108	
F_{nt} =	45.8	ksi
F_{nv} =	27.5	ksi

Note: For Nelson 1/4" Standard Stud

Loading Details

Kicker - N33/34 - Env.

Shear, X =	1.274	k
Shear, Y =	-1.22	k
Tension, Z =	2.457	k
Mx =	0	k-ft
My =	0	k-ft
Mz =	0	k-ft
	[Table J3.2]	
	[Table J3.2]	

1 - Tensile Capacity

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

φ =	0.75	
F_{nt} =	46	ksi
A_b =	0.0317	in^2
φR_{nt} =	1.09	k
T_{max} =	0.41	k

Rnt > Tmax

38% **OK**

2 - Shear Capacity

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

φ =	0.75	
F_{nv} =	27	ksi
A_b =	0.0317	in^2
φR_{nv} =	0.65	k
V_{max} =	0.29	k

Rnv > Vmax

45% **OK**

3 - Combined Tension and Shear Capacity

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

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

φ =	0.75	
F'_{nt} =	39	ksi
A_b =	0.0317	in^2
$\varphi R'_{nt}$ =	0.92	k
T_{max} =	0.41	k

R'nt > Tmax

44% **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:	NJJER01152C
Site Address:	11 Filbert Road Norwalk, CT
Latitude:	N 41.118467
Longitude:	W 73.396694
Structure type:	Water tower
Report date:	November 6, 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 water tower located at 11 Filbert Road in Norwalk, CT. DISH refers to the antenna site by the code "NJJER01152C", 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 Verizon Wireless. Note 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 6.6898 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 14 times below the FCC limit for safe, continuous exposure of the general public. DISH guidelines, and consistent with FCC guidance on rooftop compliance, it is recommended that three Caution signs and NOC Information signs be installed at the base of the water tower.
- 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:

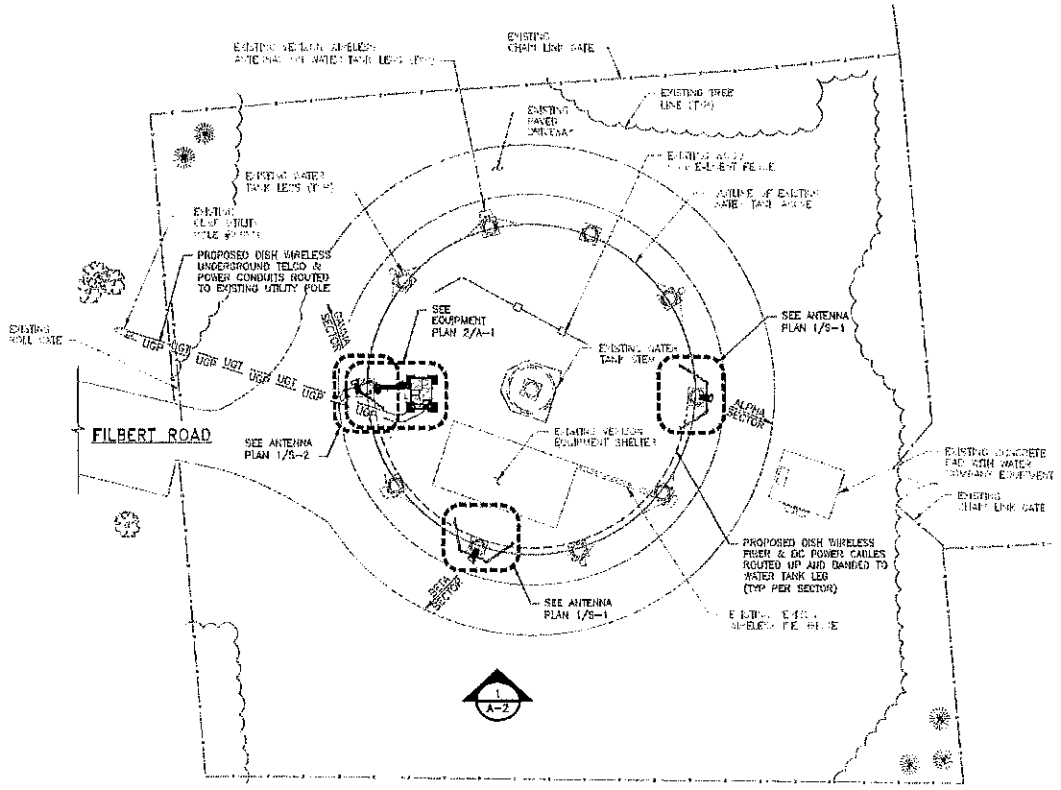
- relevant technical data on the proposed DISH antenna operations at the site, as well as on the existing Verizon Wireless antenna operations;
- a description of the applicable FCC mathematical model for calculating RF levels, and application of the relevant technical data to that model;
- analysis of 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.

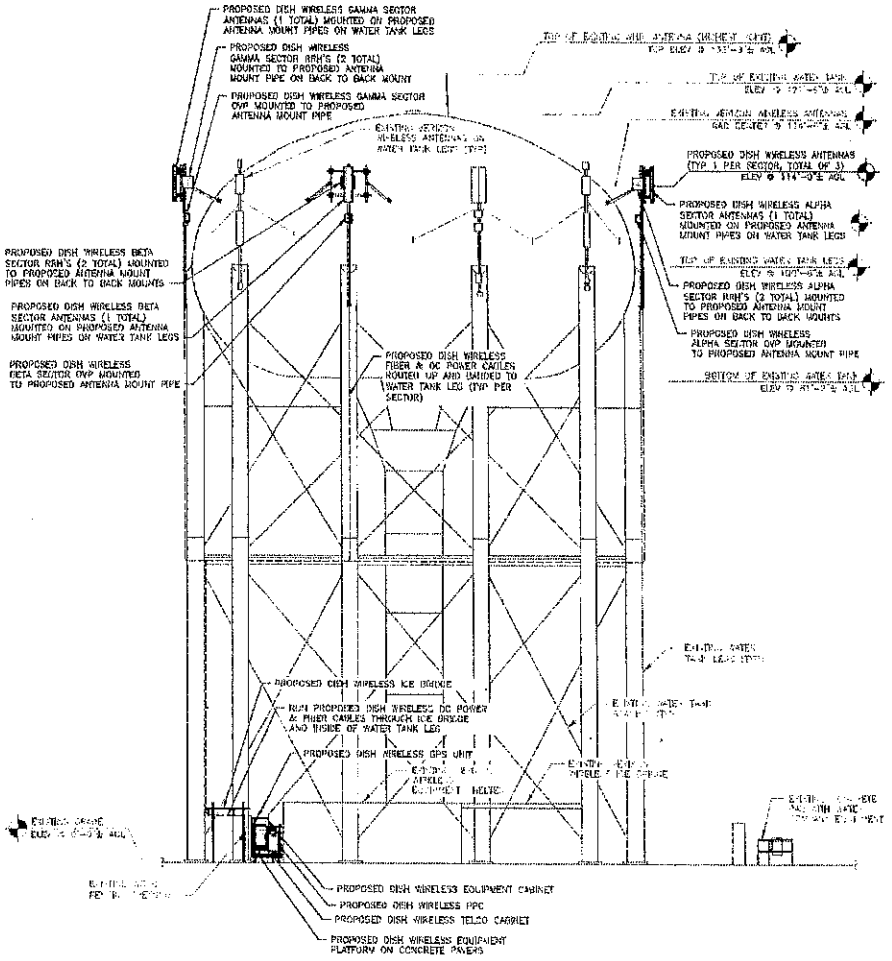
Antenna and Transmission Data

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)	Z AGL (ft)	Ant. Gain (dBd)	B/W	Azimuth (Deg.)	EDT	MDT
❶	DISH	JMA Wireless	MX08FRO665-21	Panel	600	6	120	1637	114.0	11.46	68	60	2	0
❶	DISH	JMA Wireless	MX08FRO665-21	Panel	2000	6	160	6011	114.0	16.16	62	60	2	0
❶	DISH	JMA Wireless	MX08FRO665-21	Panel	2100	6	160	7567	114.0	16.66	64	60	2	0
❶	DISH	JMA Wireless	MX08FRO665-21	Panel	600	6	120	1637	114.0	11.46	68	160	2	0
❶	DISH	JMA Wireless	MX08FRO665-21	Panel	2000	6	160	6011	114.0	16.16	62	160	2	0
❶	DISH	JMA Wireless	MX08FRO665-21	Panel	2100	6	160	7567	114.0	16.66	64	160	2	0
❶	DISH	JMA Wireless	MX08FRO665-21	Panel	600	6	120	1637	114.0	11.46	68	260	2	0
❶	DISH	JMA Wireless	MX08FRO665-21	Panel	2000	6	160	6011	114.0	16.16	62	260	2	0
❶	DISH	JMA Wireless	MX08FRO665-21	Panel	2100	6	160	7567	114.0	16.66	64	260	2	0

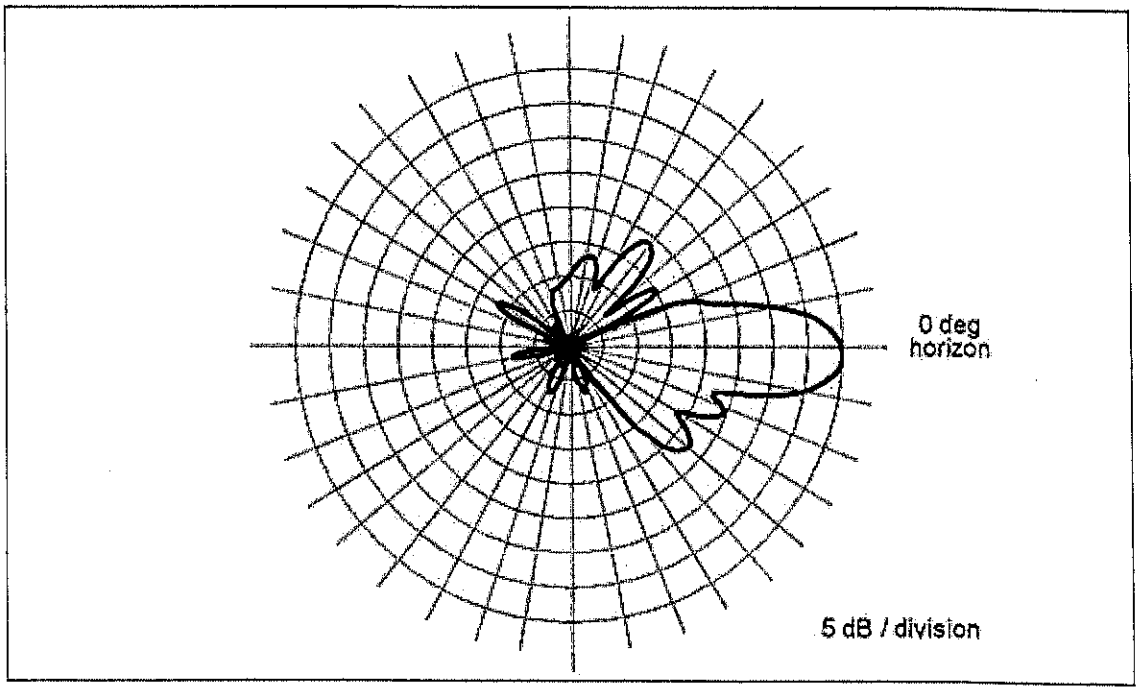
The area below the antennas, at street level, is of interest in terms of potential "uncontrolled" exposure of the general public, so the antenna's vertical-plane emission characteristic is used in the calculations, as it is a key determinant of the relative amount of RF emissions in the "downward" direction.

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. JMA Wireless MX08FRO665-21– 600 MHz Vertical-plane Pattern



As noted at the outset, there is an existing wireless antenna operation by Verizon Wireless to include in the compliance assessment and we will conservatively assume operation with maximum channel capacity and at maximum transmitter power per channel to be used in each of its 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
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

$10^{(Gmax-Vdisc/10)}$	=	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.

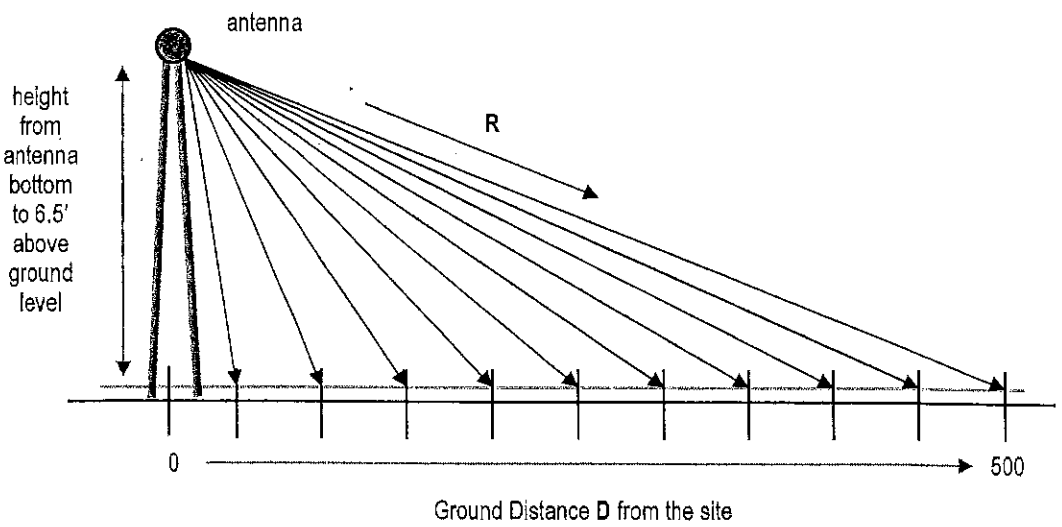


Figure 2. Street-level MPE% Calculation Geometry

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.

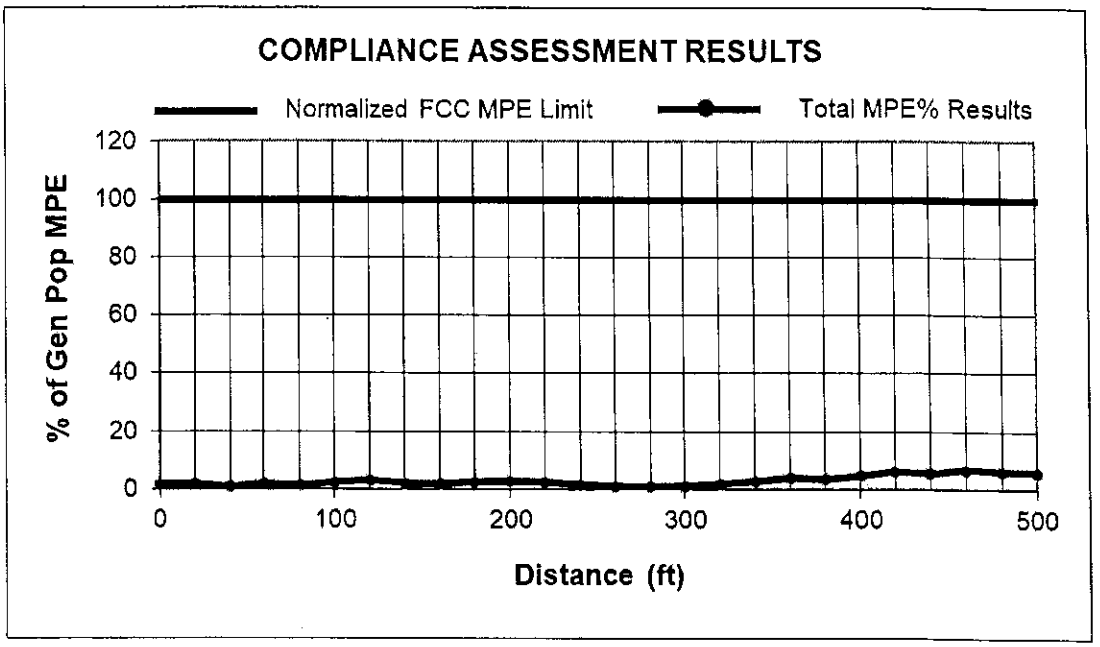
The net result of these assumptions is to intentionally and significantly overstate the calculated RF levels relative to the levels that will actually result from the antenna operations – and the purpose of this conservatism is to allow very "safe-side" conclusions about compliance.

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.

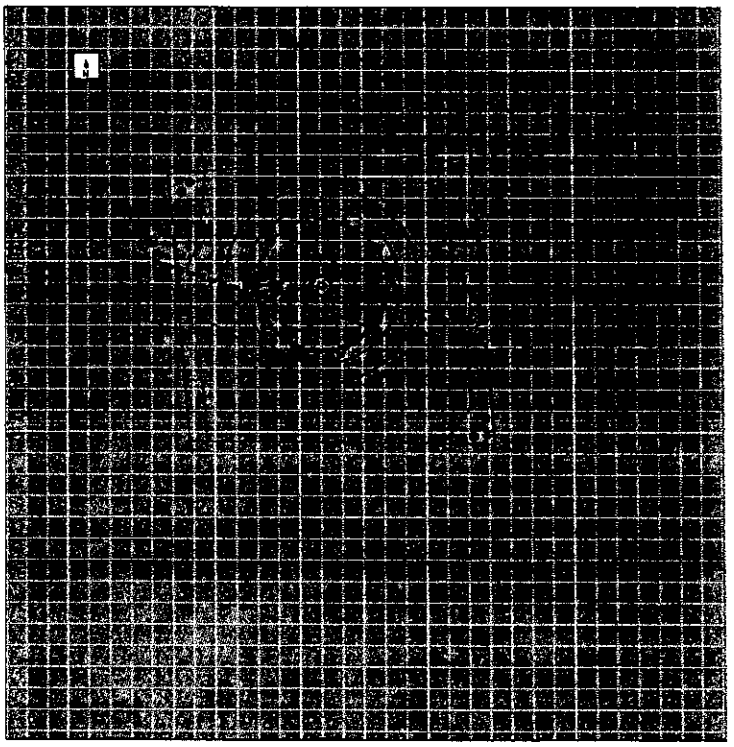
Ground Distance (ft)	DISH 600 MHz MPE%	DISH 2000 MHz MPE%	DISH 2100 MHz MPE%	Verizon Wireless MPE%	Total MPE%
0	0.0446	0.0021	0.0003	1.5472	1.5942
20	0.0868	0.0037	0.0049	1.5970	1.6924
40	0.1806	0.0134	0.0391	0.6082	0.8413
60	0.0775	0.0381	0.1137	1.4636	1.6929
80	0.0457	0.2129	0.0441	0.9657	1.2684
100	0.2055	0.1779	0.3717	1.4734	2.2285
120	0.2864	0.2456	0.2953	2.1245	2.9518
140	0.1667	0.0574	0.1863	1.6117	2.0221
160	0.0750	0.0248	0.0043	1.6034	1.7075
180	0.0357	0.0040	0.0627	2.3275	2.4299
200	0.0279	0.0789	0.0321	2.5197	2.6586
220	0.0210	0.0734	0.1249	2.1329	2.3522
240	0.0116	0.0139	0.0723	1.3814	1.4792
260	0.0100	0.0851	0.0236	0.8907	1.0094
280	0.0172	0.1101	0.0663	0.6858	0.8794
300	0.0323	0.0931	0.1056	0.9021	1.1331
320	0.0568	0.0513	0.1051	1.5201	1.7333
340	0.0915	0.0163	0.0696	2.4270	2.6044
360	0.1360	0.0043	0.0307	3.6501	3.8211
380	0.1906	0.0041	0.0096	3.2981	3.5024
400	0.2533	0.0033	0.0031	4.3674	4.6271
420	0.3220	0.0066	0.0020	5.7197	6.0503
440	0.2949	0.0060	0.0018	5.2342	5.5369
460	**0.3623**	**0.0235**	**0.0090**	**6.2950**	**6.6898**
480	0.3340	0.0217	0.0083	5.8007	6.1647
500	0.3980	0.0505	0.0296	5.3366	5.8147

As indicated, the maximum calculated overall RF level is 6.6898 percent of the FCC MPE limit – well below the 100-percent reference for compliance.

A graph of the overall calculation results, provided on the next page, 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 below.



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 6.6898 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 water tower.

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

11/6/23
Date

Appendix A. Documents Used to Prepare the Analysis

RFDS: RFDS-NJJER01152C-Preliminary-20220429-v.1_20220429111517

CD: NJJER01152C_PrelimCD_20230105085829

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.

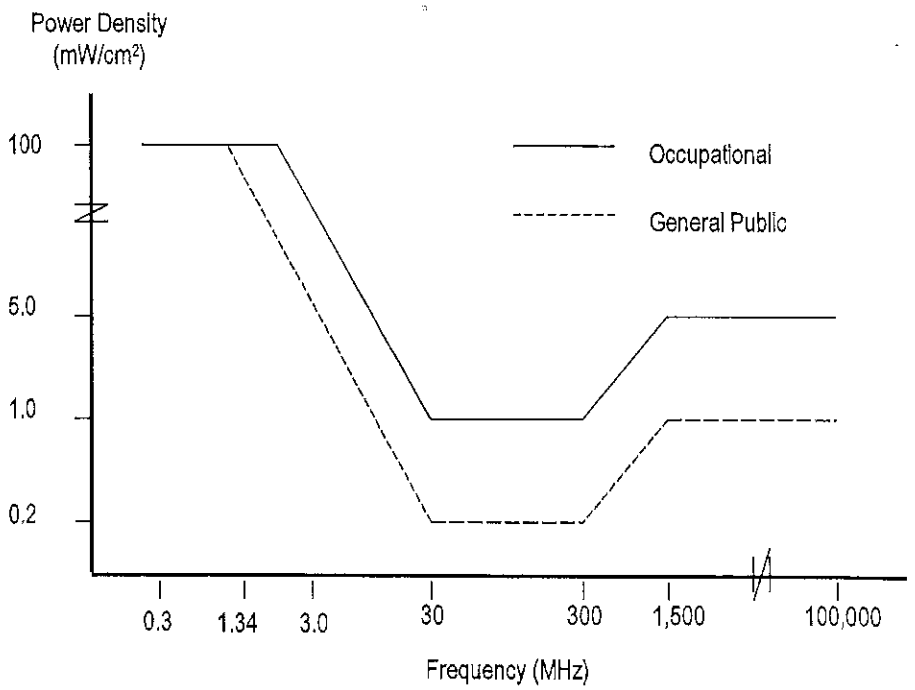
The specified continuous exposure MPE limits are based on known variation of human body susceptibility in different frequency ranges, and a Specific Absorption Rate (SAR) of 4 watts per kilogram, which is universally considered to accurately represent human capacity to dissipate incident RF energy (in 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/cm²)	General Public Exposure (mW/cm²)
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.

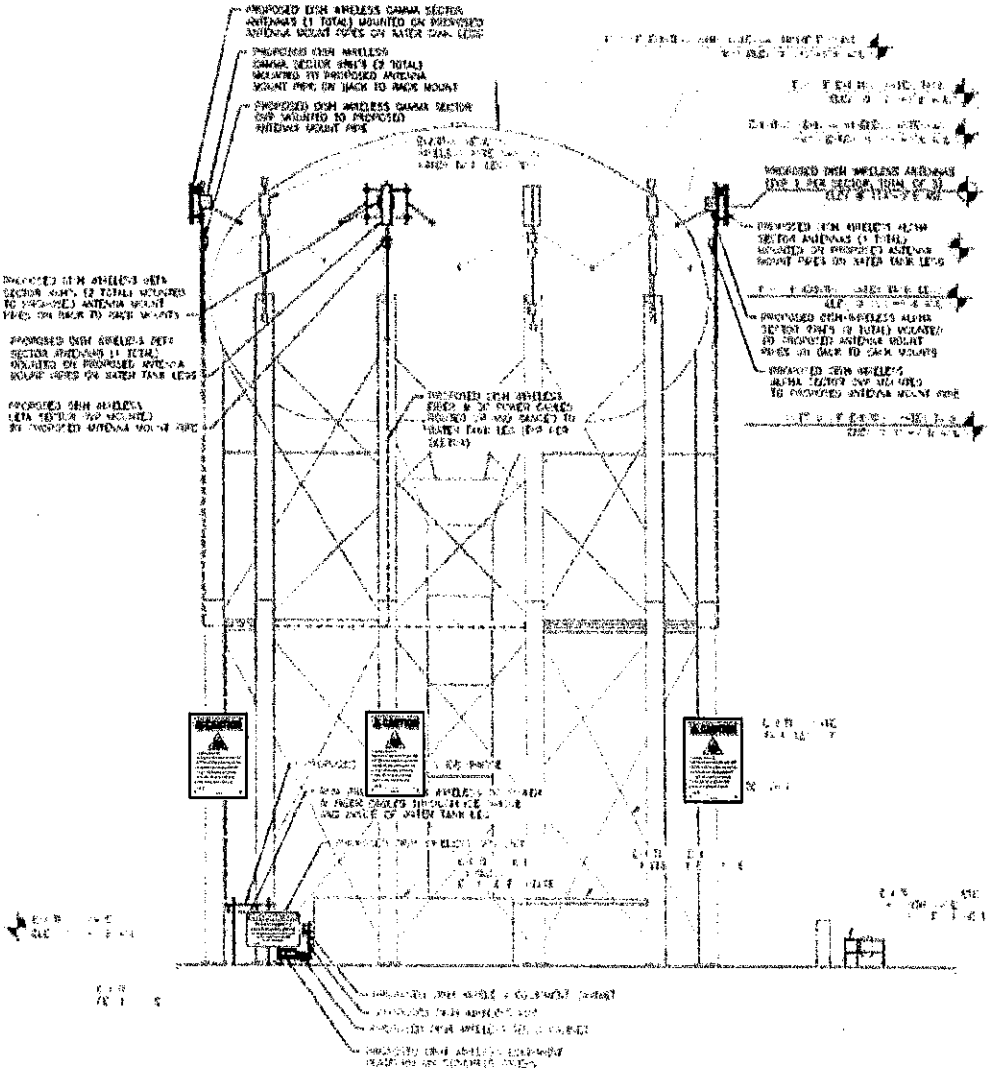
FCC Report and Order, Notice of Proposed Rulemaking, Memorandum Opinion and Order (FCC 19-126), *Proposed Changes in the Commission's Rules Regarding Human Exposure to Radiofrequency Electromagnetic Fields; Reassessment of Federal Communications Commission Radiofrequency Exposure Limits and Policies,*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

Lease Agreement

LEASE AGREEMENT
(Water Tank Installation)

THIS LEASE AGREEMENT ("**Lease**") is made this _____ day of_____, 2023 by and between the **FIRST TAXING DISTRICT OF THE CITY OF NORWALK**, a Connecticut Municipal Corporation, having an address at 12 New Canaan Avenue, Norwalk, Connecticut 06851 ("**District**"), and **DISH WIRELESS L.L.C.**, a Colorado limited liability company, with its principal offices at 9601 S. Meridian Boulevard, Englewood, Colorado 80112 ("**Lessee**"). The District and Lessee are at times collectively referred to hereinafter as the "**Parties**" or individually as the "**Party**."

RECITALS

WHEREAS, District is the owner of certain real property located at 11 Filbert Road, in the City of Norwalk, County of Fairfield and State of Connecticut more particularly described and/or depicted in **Exhibit A** attached hereto and made a part hereof (the "**District Property**"), which District Property is improved with a water tank structure ("**Water Tank**"); and

WHEREAS, Lessee desires to lease a portion of the ground space adjacent to the Water Tank and license certain portions of the exterior of the Water Tank for the development of a wireless communications facility (a "**Wireless Facility**"); and

WHEREAS, District is willing to enter into a lease with Lessee, subject to the terms and conditions set forth herein.

NOW THEREFORE, the Parties hereto, in consideration of the mutual covenants contained herein and intending to be legally bound hereby, agree as follows:

1. **LEASE OF PREMISES; LICENSE OF WATER TANK SPACE**. District hereby leases to Lessee, and Lessee leases from District, approximately 100 square feet of ground space located adjacent to the Water Tank and within a fence-enclosed area on the District Property (the "**Equipment Compound**"), as more particularly shown on **Exhibit B** attached hereto and made a part hereof ("**Ground Space**"), for the installation, operation, and maintenance of wireless communications equipment associated with a Wireless Facility operated by Lessee ("**Ground Equipment**"). The foregoing leasehold is granted and demised to Lessee together with:

(a) a license to install, operate and maintain: (i) pipe-mounted antennas (the "**Antennas**") on the exterior perimeter surface of the Water Tank at a centerline height of one-hundred and fourteen (114) feet +/- above ground level with a minimum of five (5) feet in each vertical direction of separation from adjacent occupants on the Water Tank (the "**Antenna Space**"); and (ii) cables, wires, conduits, poles, and/or pipes and related connectors and anchors (collectively, the "**Cables**") running between the Antennas, the Ground Equipment, and that proposed point of connection to public utilities at the telco connection point identified on **Exhibit B** on the District Property (the "**Cable Space**"). The Antennas, Cables, Antenna Space and Cable Space are more particularly shown on **Exhibit B** attached hereto, and the space occupied by such Antenna Space and Cable Space as shown therein are hereinafter referred to as the "**License Areas**". If the existing utility sources located on the District Property are insufficient for Lessee's permitted use, the District agrees to grant Lessee and/or the applicable third party utility provider

the right, at Lessee's sole cost and expense, to install such utilities on, over and/or under the District Property as is reasonably necessary for Lessee's permitted use, provided that the location of such utilities shall be approved in advance by the District, such approval not to be unreasonably withheld, conditioned, or delayed and such approval not to be contingent on any additional rent or other consideration; provided, however: (i) the parties acknowledge and agree that the District may require the location of such utilities to be configured in a manner that maximizes further development of the Equipment Compound, or other considerations reasonably relevant to the District's business, and that location required by the District as a condition of approval may be determined independently of relevant economic or cost factors or of convenience to the Lessee or its contractors or utility provider(s); and (ii) the District reserves the right to condition any further rights granted to such parties upon the right or ability of the District to relocate such utilities, connections, and/or the Cable Space as needed from time to time at no cost to Lessee, as may be necessary or desirable to facilitate further development within the Equipment Compound (or equivalent alternative facilities) and/or in furtherance of the District's business. The Parties agree and acknowledge that for any relocation of such utilities pursuant to this Section 1(a), the Parties shall work together in good faith to coordinate such relocation, including coordination with Lessee to facilitate the use of a Temporary Coverage Solution as Lessee reasonably determines is necessary.

(b) the non-exclusive right to access the Ground Space, over the District Property, from the nearest public right-of-way, identified as 11 Filbert Road, Norwalk, Connecticut, by foot or by motor vehicle, 24 hours per day, 7 days per week and at no additional cost or expense to Lessee, for the installation, maintenance and repair of the Wireless Facility, provided such access may not unreasonably interfere with, compromise, reduce in capacity, or otherwise disrupt: (i) any of the District's utility connections or (ii) the District's use and operation of the Water Tank or the District Property (the foregoing, collectively, "**Access Rights**").

The Ground Space is hereinafter sometimes referred to as the "**Leasehold Area**". The Leasehold Area and the License Areas are hereinafter referred to collectively as the "**Premises**". The Ground Equipment, the Antennas and the Cables are sometimes hereinafter referred to collectively as the "**Equipment**".

Notwithstanding the fact that this Lessee's rights to the License Areas is a license and that a license is normally revocable at will by the grantor, the parties hereto agree that the license granted by this Lease for the License Areas is not revocable at will and that this Lease can only be terminated in accordance with the provisions of this Lease or otherwise as ordered by a court of competent jurisdiction.

2. **TERM.**

(a) This Lease shall be effective as of the date of execution by both Parties (the "**Effective Date**") and be for an initial term of five (5) years ("**Initial Term**"). The Initial Term shall commence (the "**Commencement Date**") on the earlier to occur of the first (1st) day of the month following the date of either: (i) commencement of Lessee's installation of the Wireless Facility; or (ii) the two hundred seventieth (270th) calendar day following the Effective Date. Notwithstanding anything stated herein, with respect to (i) in the immediately preceding sentence, the Parties acknowledge that Lessee's preparation of the Premises to accommodate electric,

telephone, fiber and other utilities for Lessee's installation shall not constitute Lessee's installation of its communications equipment nor shall it trigger the Commencement Date.

(b) The term of the Lease shall automatically renew for four (4) additional periods of five (5) years each (each, an "**Extended Term**") provided Lessee is not then in default hereunder, unless Lessee elects, in Lessee's sole and absolute discretion, not to renew the Lease at the end of the then-current term by giving the District written notice at least one hundred eighty days (180) days prior to the expiration of the Initial Term or the current Extended Term, as applicable.

(c) The Initial Term, together with any Extended Term(s), shall be collectively referred to herein as the "**Term**."

3. **PERMITTED USE**. Lessee shall use the Premises for the purpose of constructing, maintaining, repairing, and operating a Wireless Facility ("**Permitted Use**"), and for no other use. During the Term, without incurring any increase in the then-current Base Rent or other modification of the terms and conditions set forth in this Lease, Lessee shall have the right to replace, repair, add or otherwise modify its Ground Equipment within the Ground Space, including without limitation, any modification, repair, addition, or otherwise necessary in order for Lessee to remain in compliance with any current or future federal, state, or local mandated application, including emergency 911 communication services, provided that at all times (i) Lessee shall not materially interfere with the operations of the District's and delivery of services: (ii) Lessee shall restore any and all damage caused by any of the foregoing activities; and (iii) Lessee shall be solely responsible for any and all permitting and approvals required for such changes. Except as permitted pursuant to the foregoing sentence, Lessee shall not otherwise modify any portion of the Wireless Facility depicted in **Exhibit B** without first obtaining the District's written consent, which shall not be unreasonably withheld conditioned or delayed. The parties acknowledge that any requested modification of the Antennas and Cables shall require a structural analysis of weight and wind loading upon the Water Tank conforming to the requirements of Section 7 herein. Lessee shall reimburse the District for all actual and reasonable professional fees and costs incurred by the District in connection with independently evaluating Lessee's request for any such modification.

4. **RENT**.

(a) Commencing on the Commencement Date, Base rent shall be due at an annual rental of Forty Two Thousand and 00/100 Dollars ($42,000.00), as the same may be adjusted as set forth in subsection 4(c) below, and shall be paid to the District in equal monthly installments of Three Thousand Five Hundred and 00/100 Dollars ($3,500.00), in advance, on the first day of each month during the Term ("**Base Rent**"), at the address set forth above, or to such other person, firm, or address as the District may, from time to time, designate in writing at least sixty (60) days in advance of any rental payment date by written notice given to Lessee. In any partial month of the Term, the Base Rent will be prorated accordingly. The first Base Rent payment shall be made within twenty (20) business days of the Commencement Date. The Parties acknowledge and agree that, notwithstanding anything to the contrary set forth in this Lease, Lessee's obligation to pay Base Rent or any other amount due hereunder is contingent upon Lessee's receipt of an IRS approved W-9 form setting forth the tax identification number of the District (or of the person or entity to whom Base Rent is to be made payable, if applicable).

(b) If any Base Rent or other payment due hereunder is not received by the District on or before the tenth (10th) day following the date upon which such payment is due, Lessee shall pay to the District a late charge equal to five (5%) percent multiplied by such past due amount as additional rent hereunder. All amounts more than thirty (30) days past due shall accrue interest at the lesser of the maximum annual rate of interest permitted by applicable law or twelve (12%) per annum as additional rent. Any applicable late fee shall be paid within thirty (30) days of Lessee's receipt of an invoice thereof from the District.

(c) Base Rent shall increase by three percent (3%) of the then current Base Rent on each anniversary of the Commencement Date thereafter (including during any Extended Term hereunder).

(d) No payment by Lessee or receipt by the District of a lesser amount than the Base Rent payable hereunder shall be deemed to be other than a payment on account to be credited against monies owed the District hereunder, in such order as the District may reasonably determine, nor shall any restrictive endorsement, statement or name on any check or any check or any letter accompanying any check or payment delivered to the District be deemed, declared, or interpreted an accord and satisfaction. The District may accept and deposit such check or payment without notice to Lessee and without the same operating as a satisfaction or an acceptance of satisfaction by the District and without prejudice of the District's right to recover the balance of any monies due hereunder, or to pursue any other remedy provided herein or by law.

5. **CONDITION OF PROPERTY**. Lessee covenants and agrees that Lessee has inspected and examined the Premises and has determined that the Premises are in all respects acceptable to and suitable for Lessee's Permitted Use. Lessee acknowledges that the Premises are being delivered to Lessee in their "AS IS" condition and the District makes no representation or warranty of any kind with respect thereto.

6. **GOVERNMENT APPROVALS**. It is understood and agreed that Lessee's ability to effectuate any Permitted Use at the Premises is contingent upon its obtaining, at Lessee's sole cost and expense, (i) a satisfactory structural analysis showing that the Water Tank is suitable for Lessee's Permitted Use; and (ii) all of the certificates, permits, and other approvals that may be required by any Federal, State, or Local authorities in connection with Lessee's installation and operation of a Wireless Facility and conduct of the Permitted Use (collectively, "**Government Approvals**"). The District shall use commercially reasonable efforts, at no cost to the District, to cooperate with Lessee in its effort to obtain the Government Approvals, provided, however Lessee shall take no action to re-zone the District Property, and the District shall have no obligation to execute or permit any petitions or applications to such effect. In order to facilitate such cooperation, Lessee shall provide to District for the District's review copies of any application or other filing done by Lessee on behalf of the District at least ten (10) days in advance of the proposed filing date. Lessee shall endeavor to obtain all Governmental Approvals prior to the two hundred seventieth (270th) calendar day following the Effective Date (the "**Approvals Period**"); provided, however, in all circumstances Lessee shall obtain all such Governmental Approvals prior to any commencement of installation of the Wireless Facility. In the event that, prior to expiration of the Approvals Period, (i) any such applications for such Governmental Approvals should be finally rejected; (ii) any Governmental Approval issued to Lessee is canceled, expires, lapses, or is otherwise withdrawn or terminated by the issuing governmental authority; (iii) Lessee

determines that such Governmental Approvals may not be obtained in a timely manner; or (iv) a structural analysis shows that the Water Tank is not suitable for Lessee's Permitted Use; then, Lessee shall have the right to terminate this Lease subject to the payment of any rent becoming due and payable prior to the effective date of such termination. Notice of Lessee's exercise of its right to terminate shall be in writing and shall be effective within thirty (30) days of the date of such notice, or upon such later date as designated by Lessee (but not more than ninety (90) days from the date of such notice, in any event). All rents paid to said termination date shall be retained by the District. Upon such termination, this Lease shall be of no further force or effect except to the extent of the representations, warranties, and indemnities made by each Party to the other hereunder.

7. **STRUCTURAL ANALYSIS**. Before constructing and/or erecting any portion of the Wireless Facility on the District Property, Lessee shall, at Lessee's sole cost and expense, obtain a satisfactory structural analysis or structural letter confirming that the Wireless Facility will not materially impact the Water Tank's structural integrity. Any such analysis or letter shall be certified to the District and shall be signed and sealed by a licensed professional engineer. Lessee shall provide the District an original of any such letter or analysis prepared Lessee at least fifteen (15) days before constructing and/or erecting any portion of the Wireless Facility on the District Property.

8. **SURVEY**. At Lessee's sole cost and expense, Lessee is hereby given the right to survey, test, and conduct any other reasonable investigations needed to determine if the location of the Premises is suitable for the Permitted Uses provided herein.

9. **MAINTENANCE**.

(a) Lessee shall keep and maintain Premises in good condition, reasonable wear and tear and damage from the elements excepted. The District, at its sole cost and expense, shall maintain and repair the Water Tank in good and ordinary structural condition and any relevant Water Tank lighting systems. The District shall have no obligation to secure the Premises and shall not be liable for any losses suffered by Lessee as a result of Lessee's failure to so secure the Premises.

(b) Notwithstanding anything to the contrary contained herein, in the event the District requires the demolition or renovation of the Water Tank or the relocation (collectively, the "**Relocation**") of the Premises (or a portion thereof) and/or the Wireless Facility (or a portion thereof), the District shall have the right to send a written notice ("**Relocation Notice**") to Lessee to relocate the Premises (or a portion thereof) and/or the Wireless Facility (or a portion thereof), to another structure on the District Property or upon a replacement of the Water Tank (the "**Alternate Site**") that is reasonably similar in height to the existing Water Tank. The Relocation Notice shall specify the date of the Relocation which must be at least twelve (12) months subsequent to the effective date of the Relocation Notice. In the event that Lessee deems that the recommended Alternate Site is unsuitable for Lessee's purposes hereunder, Lessee shall have the right to terminate this Lease upon notice to the District not less than one (1) month prior to the planned Relocation date. Further, upon Lessee's request, the Parties shall work in good faith to allow Lessee to place and use a Temporary Coverage Solution (as defined below) in a mutually agreed upon location at the Property during any relocation, and/or, in the event Lessee determines

the Alternate Site is not suitable, as may be necessary to accommodate Lessee's ongoing use of the Property after any applicable Relocation date for up to six (6) months thereafter. Any use of a Temporary Coverage Solution shall be subject to all applicable local, state and federal regulations applicable thereto and any relevant terms and conditions of this Lease. Lessee shall not be required to permanently relocate its equipment to an Alternate Site more than one (1) time during the Term; provided no such limitation shall be made upon Temporary Relocations required for maintenance and upkeep of the Water Tank pursuant to subsection (c) below. Lessee shall pay all costs for relocating Lessee's equipment to the Alternate Site or the Temporary Coverage Solution. "**Temporary Coverage Solution**" means a "cell on wheels" or a functionally equivalent mobile structure or other interim cell siting arrangement and all equipment necessary or advisable for the operation thereof.

(c) Upon request of the District, Lessee agrees to relocate its Wireless Facility (or one or more portion thereof) on a temporary basis to another location on the Property, hereinafter referred to as the "**Temporary Relocation**," for the purpose of the District performing maintenance, repair or similar work at the Water Tank or the District Property, provided:

(i) The Temporary Relocation is similar to Lessee's existing location in size and is fully compatible for Lessee's use, in Lessee's reasonable determination;

(ii) the District gives Lessee at least ninety (90) days written notice prior to requiring Lessee to relocate (except in the event of an emergency, in which case the District shall provide as much notice as is reasonably feasible based upon the circumstances, and in which event the District will, upon Lessee's request, coordinate with Lessee to facilitate the use of a Temporary Coverage Solution during the Period of such Temporary Relocation);

(iii) Lessee's use at the Premises is not interrupted or diminished during the relocation and Lessee is allowed, if necessary, in Lessee's reasonable determination, to place a temporary installation on the Property during any such relocation (which temporary installation must be removed by Lessee after completion of such Temporary Relocation and Lessee returning to its original location);

(iv) Upon the completion of any maintenance, repair or similar work by the District, Lessee is permitted to return to its original location from the temporary location with all reasonable costs incurred by Lessee for the same being paid by the District.

10. **UTILITIES.**

(a) Lessee shall be responsible for paying on a monthly or quarterly basis all utilities charges for electricity, water, gas, telephone service and any other utility used or consumed by Lessee. The District will not be responsible for interference with, interruption of or failure, beyond the reasonable control of the District, of such utility services furnished or supplied by the District.

(b) Lessee shall have the right to install new or improve present utilities on the Leased Property, at Lessee's expense, reasonably necessary to carry on any Permitted Use.

(c) Lessee shall furnish and install, at Lessee's sole cost and expense, an electrical meter at the Premises for the measurement of electrical power used by Lessee's installation.

(d) The Parties acknowledge and agree that independent third-party providers of utility services, including but not limited to, fiber, gas, electric and telephone, shall be provided with reasonable access over the District Property to permit connection by Lessee at a point located within the License Areas.

11. **TAXES**. Lessee shall have the responsibility to pay any personal property, real estate taxes, assessments, or charges owed on the District Property which is the result of any use of the Premises by Lessee.

12. **ENVIRONMENTAL**.

(a) Lessee shall not cause or permit any Hazardous Material to be used, stored, generated, or disposed of on or in the Premises or the District Property by Lessee, Lessee's agents, employees, contractors, or invitees except in conformity with all applicable laws. If Hazardous Materials are used, stored, generated, or disposed of on or in the Premises or the District Property, of if the Premises or the District Property become contaminated in any manner for which Lessee is legally liable, Lessee shall indemnify, defend, and hold harmless the District, its officers, directors, trustees, shareholders, members, partners, employees, and agents from any and all claims demands, causes of action, damages, fines, judgments, penalties, costs, liabilities, expenses or losses of whatever kind or nature, known or unknown, contingent or otherwise, to the extent arising during or after the Term and to the extent arising as a result of that contamination by Lessee. Without limitation of the foregoing, if Lessee causes or permits the presence of any Hazardous Material on the Premises or the District Property and the presence of such Hazardous Material results in contamination, Lessee shall promptly, at its sole expense, take any and all necessary actions to return the Premises or the District Property to the condition existing prior to the presence of any such Hazardous Material on the Premises or District Property. Lessee shall first obtain the District's approval for any such remedial action. This indemnification includes, without limitation, any and all costs incurred because of any investigation of the site or any cleanup, removal, or restoration mandated by a federal, state, or local agency or political subdivision arising from such environmental condition caused by Lessee. The provisions of this subsection 12(a) shall be in addition to any other obligations and liabilities may have to the District at law or equity and shall survive the transactions contemplated herein and shall survive the termination of this Lease.

(b) Lessee shall not discharge, leak, or emit, or permit to be discharged, leaked, or emitted, any material into the atmosphere, ground, sewer system, or any body of water, if that material does or may pollute or contaminate the same, or may adversely affect (i) the health, welfare, or safety of persons, whether located on the Premises, District Property, or elsewhere, (ii) the condition, use or enjoyment of the Premises, District Property, or any other real or personal property; or (iii) the quality and quality of the District's water supply.

(c) Due to the nature and purpose of the District Property, including the Water Tank, as a public water purveyor and distributor, Lessee expressly acknowledges the importance of maintaining, protecting, and preventing any change in the quality and quantity of the water located and stored at the District Property ("**District Water**"). In the event that Lessee's use of the

Premises results in any change in the quality and/or quantity of District Water due to a discharge, leak, or emission of any potential pollutant or contaminate, in addition to the remedial actions provided in subsection (a) above, Lessee also agrees to undertake all best efforts necessary to restore the quality and quantity of District Water or fully compensate the District for costs of securing and supplying replacement water to fulfill the District's obligations as a local water purveyor. Following a change in quality and/or quantity of District Water attributable to Lessee, Lessee shall conduct or cause to be conducted at Lessee's sole expense, tests of the District Water by an independent testing laboratory approved in writing by the District for the entire array of chemicals and agents utilized by Lessee in its use and occupancy of the Premises and continue periodic testing of District Water until District Water is deemed safe for human consumption under the applicable federal, state, and/or local drinking water standards. Lessee shall provide the District complete copies of any such test results and data at Lessee's sole cost and expense.

(d) As used herein, the term "**Hazardous Material**" shall mean any substance that is toxic, ignitable, reactive, or corrosive and that is now or hereafter regulated by any local government, the state where the Property is located, or the United States Government, including without limitation, asbestos, polychlorobiphenyls (PCBs), perfluoroalkyl and polyfluoroalkyl substances (PFAS), petroleum products or distillates, any and all material or substances that are defined as "hazardous waste," "extremely hazardous waste," or a "hazardous substance" pursuant to state, federal, or local Law.

(e) The District understands and agrees that notwithstanding anything contained in this Lease to the contrary, except to the extent directly attributable to Lessee, in no event shall Lessee have any liability whatsoever with respect to any claim related to Hazardous Material that was on, about, adjacent to, under or near the District Property prior to the Effective Date, or that was generated, possessed, used, stored, released, spilled, treated, transported, manufactured, refined, handled, produced or disposed of on, about, adjacent to, under or near the Property by Landlord, its agents, employees, contractors or invitees.

13. **TITLE; QUIET ENJOYMENT**. The District represents that it is the owner in fee simple of the District Property and the Premises and the District has the right to grant the rights set forth in this Lease. Upon paying Rent and performing Lessee's obligations hereunder, Lessee shall peaceably and quietly hold and enjoy the Premises for the term of this Lease.

14. **ASSIGNMENT/SUBLEASE**. Except with the prior written consent of the District, which consent will not be unreasonably withheld, conditioned or delayed, Lessee shall not transfer nor assign this Lease or any rights hereunder, nor sublet and/or sublicense the Premises or License Areas, as applicable, or any portion of the District Property, nor grant any interest, privilege or license whatsoever in connection with this Lease. Any such action taken without the express written approval, assignment and assumption of Lease by assignee will constitute a violation of this Lease by Lessee and a trespass by any sublessee of Lessee or assignee. If the District consents to an assignment by Lessee, or any sublease and/or sublicense by Lessee to a third-party, Lessee shall remain liable for all obligations provided herein.

Notwithstanding the foregoing, Lessee may assign or transfer some or all of its rights and/or obligations under the Lease to: (i) an Affiliate (as defined below); (ii) a successor entity to its business, whether by merger or by sale of all or substantially all of its assets or stock; and/or

(iii) any other entity directly or indirectly controlling, controlled by or under common control with any of the foregoing, and in each case, such assignment or transfer shall not be considered an assignment under this Section 14 requiring consent and the District shall have no right to delay, alter or impede such assignment or transfer. For clarity, and the avoidance of doubt, neither: (a) a change in ownership of Lessee as a result of a merger, consolidation or reorganization; nor (b) the sale of all or substantially all of the assets of Lessee, shall be considered an assignment under this Section 14 requiring the District's consent. "**Affiliate(s)**" means, with respect to a Party, any person or entity, directly or indirectly, controlling, controlled by, or under common control with such Party, in each case for so long as such control continues. For purposes of this definition, "control" shall mean (i) the ownership, directly or indirectly, or at least fifty percent (50%) of either: (a) the voting rights attached to issued voting shares; or (b) the power to elect fifty percent (50%) of the directors of such entity, or (ii) the ability to direct the actions of the entity.

Should the District, at any time during the Term, sell or transfer all or any part of the Premises or the Water Tank thereon to a purchaser other than Lessee, then, in such instance, such transfer shall be subject to this Lease and the District shall take commercially reasonable efforts to require any such purchaser or transferee to recognize Lessee's rights under the terms of this Lease in a written instrument signed by the District and the third party transferee. Notwithstanding the foregoing, the District shall not be required to obtain such written instrument for any transfer to any governmental entity or quasi-governmental entity.

15. **INDEMNIFICATION**. Except to the extent caused by the breach of this Lease by the District or the negligence or willful misconduct of the District, its officers, agents, employees, contractors, or any other person or entity for whom the District is legally responsible, Lessee agrees to indemnify, defend and hold the District harmless from and against any and all injury, loss, damage or liability, costs or expenses in connection with a third party claim (including reasonable attorneys' fees and court costs) arising directly from (i) Lessee's installation, use, maintenance, repair or removal of the Wireless Facility, (ii) Lessee's use, maintenance, and occupancy of the Premises (collectively (i) and (ii) are hereinafter referred to as "**Lessee's Use**"), or (iii) Lessee's breach of any provision of this Lease. The foregoing provisions shall be in addition to any other indemnities granted by Lessee in favor of the District under this Lease, and shall survive any termination or expiration of this Lease.

The absence of the District's indemnity to Lessee under this Lease shall not be construed to limit or waive any statutory or legal rights in equity or at law that Lessee may have against the District for (i) the negligent, willful or intentional acts or omissions of the District its officers, agents, employees, contractors, or any other person or entity for whom the District is legally responsible, in connection with this Lease; (ii) the District's breach of this Lease; or (iii) a breach of any representation, warranty or covenant of the District contained or incorporated in this Lease.

16. **INSURANCE**. Lessee, at its own expense, shall maintain in full force and effect for the duration of the Lease Term a combined single limit policy of bodily injury and property damage insurance, with a limit of not less than $1,000,000.00 per occurrence and $2,000,000.00 aggregate, insuring both the District and Lessee against all liability arising out of Lessee's use, occupancy, or maintenance of the Premises, which policy shall be endorsed as a primary insurance to the District. Any such policy shall contain a provision for a thirty (30) days' notice of cancellation to the

District; there will be an exception for non-payment of premium, which is ten (10) days' notice of cancellation. The Parties agree and hereby waive and release any and all rights of action for negligence against the other Party which may hereafter arise on account of damage to the Premises or the Property, resulting from any fire, or other casualty which is insurable under "Causes of Loss – Special Form" property damage insurance or for the kind covered by standard fire insurance policies with extended coverage, regardless of whether or not, or in what amounts, such insurance is now or hereafter carried by the Parties, even if any such fire or other casualty shall have been caused by the fault or negligence of the other Party. These waivers and releases shall apply between the Parties and they shall also apply to any claims under or through either Party as a result of any asserted right of subrogation. All such policies of insurance obtained by the Parties concerning the Premises or the Property shall waive the insurer's right of subrogation against the other Party.

Throughout the Term, the District shall maintain, at the District's sole cost and expense, Commercial General Liability of not less than $1,000,000 per occurrence and $2,000,000 aggregate. The insurance required of the District hereunder may be maintained by a blanket or master policy that includes properties other than the District Property.

17. **TERMINATION**. This Lease may be terminated, without penalty or further liability, as follows:

(a) By Lessee upon written notice to the District, if the Lessee is unable to obtain or maintain any Government Approvals necessary for the construction or operation of any Permitted Use at the Premises prior to the expiration of the Approvals Period; or

(b) By Lessee upon not less than sixty (60) days' prior written notice to the District for any reason or no reason, so long as Lessee pays the District a termination fee equal to six (6) months' Base Rent, at the then-current rate, provided, however, that no such termination fee will be payable on account of the termination of this Lease by Lessee under any termination right provided under any other section of this Lease.

18. **HOLDOVER**. In the event that Lessee does not vacate the Premises and continues to use and occupy the Premises after the expiration of the Term ("**Holdover**"), in addition to the remedies available to the District under this Lease, Lessee shall pay the District Base Rent for any duration beyond the Term for which Lessee is a Holdover at a rate of one hundred and twenty-five percent (125%) of the applicable monthly Base Rent in effect at the end of the Term. In no event shall any Holdover be granted or have reinstated any leasehold rights or any right to remain in occupancy for any period of time due to the Holdover's payment for use and occupancy under this section and the District's acceptance thereof.

19. **REMOVAL AND RESTORATION**. The Wireless Facility and any other property brought onto the District Property by Lessee will be and remain Lessee's personal property and, at Lessee's option, may be removed by Lessee at any time during the Term. The District covenants and agrees that no portion of the Wireless Facility constructed, erected, or placed on the District Property by Lessee will become, or be considered as being affixed or a part of, the District Property, it being the specific intention of the District that all improvements of every kind and nature constructed, erected, or placed by Lessee on the District Property will be and remain the personal property of Lessee and may be removed by Lessee at any time during, or at the end of,

the Term. Lessee shall repair any damage to the Premises, the Water Tank or the District Property resulting from Lessee's removal activities. In the event that any portion of the Wireless Facility, or any other property of Lessee, is not removed within sixty (60) days after the later of the end of the Term, termination of this Lease, or cessation of Lessee's operation of the Wireless Facility, the District may send notice to Lessee of such failure to remove and if not removed within thirty (30) days of such notice, such shall be deemed abandoned and may be removed by the District at Lessee's sole cost and expense which actual and reasonable costs shall become due and payable thirty (30) days after Lessee's receipt of an invoice therefore from the District.

20. **CONDEMNATION**. In the event of any condemnation of all of the District Property or the entirety of the Premises, this Lease shall terminate as of the date the condemning authority takes title or possession, whichever occurs first. If as a result of a partial condemnation of the Premises, Lessee, in Lessee's sole discretion, is unable to use the Premises for the purposes intended hereunder, or such condemnation may reasonably be expected, in Lessee's reasonable determination, to disrupt Lessee's operations at the Premises for more than one-hundred-twenty (120) days, Lessee may, at its option, to be exercised in writing within thirty (30) days after the condemning authority shall have taken possession, terminate this Lease as of the date the condemning authority takes such possession. All compensation awarded for any condemnation (or the proceeds of private sale in lieu thereof) shall be the property of the District and Lessee hereby assigns all of its interest in any such award to the District. Any such notice of termination shall cause this Lease to expire with the same force and effect as though the date set forth in such notice were the date originally set as the expiration date of this Lease and the Parties shall make an appropriate adjustment as of such termination date with respect to payments due to the other under this Lease. If Lessee does not terminate this Lease in accordance with the foregoing, this Lease shall remain in full force and effect as to the portion of the Premises remaining, except that the rent shall be reduced in the same proportion as the rentable area of the Premises taken bears to the total rentable area of the Premises. In the event that this Lease is not terminated by reason of such condemnation, the District shall promptly repair any damage to the Premises caused by such condemning authority to the extent of condemnation proceeds (excluding any proceeds for land) actually received. The parties shall each be entitled to pursue their own separate awards in the condemnation proceeds provided that any award to Lessee may not reduce any potential award to the District.

21. **CASUALTY**. In the event of damage by fire or other casualty to the Premises that cannot be reasonably be expected to be repaired within one-hundred-twenty (120) days following same or, if the Water Tank or District Property is damaged by fire or other casualty so that such damage may reasonably be expected to disrupt Lessee's Permitted Uses at the Premises for more than one-hundred-twenty (120) days, then Lessee may, at any time following such fire or other casualty, provided the District has not completed the restoration required to permit Lessee to resume Permitted Uses at the Premises, terminate this Lease upon thirty (30) days prior written notice to the District. Any such notice of termination shall cause this Lease to expire with the same force and effect as though the date set forth in such notice were the date originally set as the expiration date of this Lease and the parties shall make an appropriate adjustment, as of such termination date, with respect to payments due to the other under this Lease. Notwithstanding the foregoing, Base Rent shall abate during the period of repair following such fire or other casualty in proportion to the degree to which Lessee's Permitted Uses of the Premises is impaired.

22. **SECURITY**. The Parties recognize and agree that Lessee shall have the right to safeguard and protect its Ground Equipment. Lessee may elect, at its expense, to construct such enclosures and/or fences as Lessee reasonably determines to be necessary to secure the Ground Space and Ground Equipment, provided that such enclosures and/or fencing does not interfere with the District's access to, use of, or operations on the District Property or Water Tank.

23. **DEFAULT**.

(a) For the purpose of this Lease, a "**Default**" shall mean any breach of this Lease which goes uncured within the applicable cure periods and extensions, if any. The failure of either Party to perform any of its obligations pursuant to this Lease shall constitute a Default.

(b) Except as provided in subsection (c) below for monetary default, the non-defaulting Party shall give the defaulting Party written notice of such Default, and the defaulting Party shall cure such Default within thirty (30) days after receipt of such notice. In the event any such Default cannot reasonably be cured within such thirty (30) day period, if the defaulting Party shall proceed promptly after the receipt of such notice to cure such Default, and shall pursue curing such Default with due diligence, then the time for curing shall be extended for such period of time as may be necessary to complete such curing, however, in no event shall this extension of time be in excess of ninety (90) days, unless agreed upon in writing by the non-defaulting Party. A Party may not maintain an action to pursue any of the remedies available at law or under this Lease for Default against a defaulting Party unless and until the defaulting Party has failed to cure the breach within the time periods provided in this section.

(c) If either Party is in default under this Lease for a period of twenty (20) business days following receipt of notice from the other Party with respect to a default which may solely be cured by the payment of money, the non-defaulting Party may pursue any of the remedies available to the non-defaulting Party at law, in equity, or under this Lease for Default against the defaulting Party. Notwithstanding the foregoing, the District shall only be required to provide Lessee with two (2) notices of default in any given calendar year with respect to Lessee's failure to pay any sums becoming due and owing, and if any subsequent non-payment by Lessee occurs in such calendar year, the District may proceed to any of the remedies available without providing any further notice or cure; provided however, the second notice shall include the following (in all caps and bold font): "**LESSEE IS HEREBY ON NOTICE THAT THIS IS THE SECOND NOTICE OF FAILURE BY LESSEE TO MAKE TIMELY PAYMENT IN THE CURRENT CALENDAR YEAR, AND IF LESSEE AGAIN FAILS TO MAKE TIMELY PAYMENT DURING THIS CALENDAR YEAR, LESSEE SHALL BE IN DEFAULT WITHOUT FURTHER NOTICE OR GRACE PERIOD.**"

24. **REMEDIES**. Should the defaulting Party fail to cure a default under this Lease, the non-defaulting Party shall have all remedies available either at law or in equity, including the right to terminate this Lease.

25. **NOTICE OF LEASE**. The Parties agrees to execute a notice of this Lease, consistent with the requirements of Connecticut General Statutes Section 47-19, and thereafter record such notice in the City of Norwalk land records. Upon expiration or earlier termination of this Lease, Lessee shall execute within thirty (30) days after the District's written request, an instrument terminating such notice of Lease (which obligation shall survive expiration or termination of this Lease).

26. **NOTICES**. All notices, requests and demands hereunder will be given by first class certified or registered mail, return receipt requested, or by a nationally recognized overnight courier, postage prepaid, to be effective when properly sent and received, refused or returned undelivered. Notices will be addressed to the parties hereto as follows:

If to Lessee:	Dish Wireless L.L.C. Attn: Lease Administration 5701 South Santa Fe Drive Littleton, CO 80120
If to District:	First Taxing District of the City of Norwalk Attn: Manager 12 New Canaan Avenue Norwalk, Connecticut 06851
With a copy to:	Pullman & Comley LLC 90 State House Square Hartford, CT 06103 Attn: M. A. Ceccorulli, Esq.

Either party hereto may change the place for the giving of notice to it by thirty (30) days' prior written notice to the other party hereto as provided herein.

27. **ESTOPPEL CERTIFICATES**. Lessee, at any time, and from time to time, upon thirty (30) days' notice from the District, shall execute, acknowledge and deliver to the District, and/or to any other person, firm or corporation specified by the District, a statement certifying that this Lease is unmodified and in full force and effect (or, if there have been modifications, that the same is in full force and effect as modified and stating the modifications), stating the dates to which the rent and additional rent have been paid, and stating whether or not there exists any known default by the District under this Lease, and, if so, specifying each such default.

28. **MECHANICS' LIENS**. If any mechanic's, laborer's or materialman's lien shall be filed against any portion of the District Property on account of services performed in or on the District Property by Lessee or Lessee's contractors, subcontractors, mechanics, laborers, suppliers or any other person or entity, Lessee, within thirty (30) days after notice of the filing thereof, will cause the same to be discharged of record by payment, deposit bond, order of court of competent jurisdiction or otherwise. If Lessee shall fail to cause such lien to be discharged within the period aforesaid, then, in addition to any other right or remedy, the District may, but shall not be obligated to, discharge the same by paying the amount claimed to be due. Any amount so paid by the District and all costs and expenses incurred by the District in connection therewith, together with interest

thereon at the rate of twelve (12%) percent per annum from the respective dates of the District's making of the payment or incurring of the cost and expense shall constitute additional rent payable by Lessee under this Lease and shall be paid by Lessee to the District within thirty (30) days of demand.

29. **INSPECTION**. The District or its authorized agents shall at all reasonable times, upon twenty-four (24) hours prior notice, have the right to enter the Premises to inspect the same with a representative of Lessee. The District reserves the right to enter the Premises from time to time upon prior notice for the purposes of performing maintenance, repairs and improvements to the Water Tank and the District Property, provided the District shall take no action that will knowingly interfere with the performance of the Wireless Facility.

30. **WAIVERS**. Lessee represents, warrants and acknowledges that the transaction of which this Lease is a part is a "commercial transaction" as defined by the statutes of the State of Connecticut. THE LESSEE HEREBY WAIVES ALL RIGHTS TO NOTICE AND PRIOR COURT HEARING OR COURT ORDER UNDER CONNECTICUT GENERAL STATUTES SECTIONS 52-278a ET SEQ. AS AMENDED OR UNDER ANY OTHER STATE OR FEDERAL LAW WITH RESPECT TO ANY AND ALL PREJUDGMENT REMEDIES, THE LANDLORD MAY EMPLOY TO ENFORCE ITS RIGHTS AND REMEDIES HEREUNDER. THE LESSEE FURTHER CONSENTS TO THE ISSUANCE OF ANY PREJUDGMENT REMEDIES WITHOUT A BOND AND AGREES NOT TO REQUEST OR FILE MOTIONS SEEKING TO REQUIRE THE POSTING OF A BOND UNDER PUBLIC ACT 93-431 IN CONNECTION WITH THE LANDLORD'S EXERCISE OF ANY PREJUDGMENT REMEDY.

31. **MISCELLANEOUS**.

(a) **Amendment/Waiver.** This Lease cannot be amended, modified or revised unless done in writing and signed by District and Lessee. No provision may be waived except in a writing signed by both parties. The failure by a party to enforce any provision of this Lease or to require performance by the other party will not be construed to be a waiver, or in any way affect the right of either party to enforce such provision thereafter.

(b) **Limitation of Liability**. Except for the indemnity obligations set forth in this Lease, and otherwise notwithstanding anything to the contrary in this Lease, Lessee and District each waives any claims that each may have against the other with respect to consequential, incidental or special damages, however caused, based on any theory of liability.

(c) **Compliance with Law**. Lessee agrees to comply with all federal, state and local laws, orders, rules and regulations applicable to Lessee's Permitted Use of the Premises and the District Property.

(d) **Bind and Benefit**. The terms and conditions contained in this Lease will run with the Premises and bind and inure to the benefit of the parties, their respective heirs, executors, administrators, successors and assigns.

(e) **Entire Agreement**. This Lease and the exhibits attached hereto, all being a part hereof, constitute the entire agreement of the parties hereto and will supersede all prior offers,

negotiations and agreements with respect to the subject matter of this Lease. Except as otherwise stated in this Lease, each party shall bear its own fees and expenses (including the fees and expenses of its agents, brokers, representatives, attorneys, and accountants) incurred in connection with the negotiation, drafting, execution and performance of this Lease and the transactions it contemplates.

(f) **Governing Law.** This Lease will be governed by the laws of the state of Connecticut and without regard to any existing or potential conflicts of law.

(g) **Interpretation.** Unless otherwise specified, the following rules of construction and interpretation apply: (i) captions are for convenience and reference only and in no way define or limit the construction of the terms and conditions hereof; (ii) use of the term "including" will be interpreted to mean "including but not limited to"; (iii) whenever a party's consent is required under this Lease, except as otherwise stated in the Lease or as same may be duplicative, such consent will not be unreasonably withheld, conditioned or delayed; (iv) exhibits are an integral part of this Lease and are incorporated by reference into this Lease; (v) use of the terms "termination" or "expiration" are interchangeable; (vi) reference to a default will take into consideration any applicable notice, grace and cure periods; (vii) to the extent there is any issue with respect to any alleged, perceived or actual ambiguity in this Lease, the ambiguity shall not be resolved on the basis of who drafted the Lease; (viii) the singular use of words includes the plural where appropriate; and (ix) if any provision of this Lease is held invalid, illegal or unenforceable, the remaining provisions of this Lease shall remain in full force if the overall purpose of the Lease is not rendered impossible and the original purpose, intent or consideration is not materially impaired.

(h) **Survival.** Any provisions of this Lease relating to indemnification shall survive the termination or expiration hereof. In addition, any terms and conditions contained in this Lease that by their sense and context are intended to survive the termination or expiration of this Lease shall so survive.

(i) **Submission of Agreement.** The submission of this Lease to any party for examination or consideration does not constitute an offer, reservation of or option for the Premises based on the terms set forth herein. This Lease shall only become effective as a binding Lease upon the handwritten legal execution, acknowledgment and delivery hereof by the District and Lessee.

(j) **Counterparts.** This Lease may be executed in two (2) or more counterparts, all of which shall be considered one and the same agreement and shall become effective when one or more counterparts have been signed by each of the parties. All parties need not sign the same counterpart.

(k) **Attorneys' Fees.** In the event that any dispute between the parties related to this Lease should result in litigation, the prevailing party in such litigation shall be entitled to recover from the other party all reasonable fees and expenses of enforcing any right of the prevailing party, including reasonable attorneys' fees and expenses. Prevailing party means the party determined by the court to have most nearly prevailed even if such party did not prevail in all matters.

(l) RESERVED.

(m) **Further Acts**. Upon request, both Parties will cause to be promptly and duly taken, executed, acknowledged and delivered all such further acts, documents, and assurances as the other Party may request from time to time in order to effectuate, carry out and perform all of the terms, provisions and conditions of this Lease and all transactions and Permitted Use contemplated by this Lease.

(n) **Force Majeure**. District shall be excused for the period of any delay in the performance of any obligation hereunder when prevented from so doing by causes beyond its control, including labor disputes, civil commotion, hostilities, sabotage, governmental regulations or controls, fire or other casualty, inability to obtain any material, financing or services, pandemics (such as the Covid-19 pandemic) and acts of God (sometimes referred to herein as "**Force Majeure**"). Lessee shall similarly be excused for Force Majeure delay in the performance of any obligation hereunder, provided that nothing contained in this Section shall be deemed to excuse or permit any delay in the payment of Base Rent or any additional amount due hereunder, or any delay in the cure of any default which may be cured by the payment of money.

32. **INTERFERENCE**. Prior to or concurrent with the execution of this Agreement, the District has provided or will provide Lessee with a list of radio frequency user(s) and frequencies used on the District Property as of the Effective Date. Lessee warrants that its use of the Premises will not interfere with those existing radio frequency uses on the District Property, as long as those existing radio frequency user(s) operate and continue to operate within their respective frequencies and in accordance with all applicable laws and regulations. In the event any Lessee's equipment causes such interference, and after the District has notified Lessee in writing of such interference, Lessee shall provide the District with a report containing (i) a remediation plan to abate or eliminate the interference; (ii) an estimate of the time required to complete such interference abatement; (iii) additional information that may assist the District or other frequency user(s) in conducting their respective activities pending completion of interference abatement. Lessee will take all steps necessary to correct and eliminate the interference, including but not limited to powering down such equipment and later powering up such equipment for intermittent testing. If Lessee cannot abate or eliminate the interference, Lessee shall either remove or relocate its equipment to an alternative location that does not cause interference with the District's systems or Lessee may otherwise terminate this Lease by written notice to the District and Lessee shall have no further liability hereunder from and after the date of such termination. In no event will the District be entitled to terminate this Lease or relocate the equipment as long as Lessee is making a good faith effort to remedy the interference issue. The District agrees that the District and/or any other tenants or licensees of the District Property who currently have or in the future take possession of the Property will be permitted to install only such equipment that is of the type and frequency which will not cause harmful interference which is measurable in accordance with then-existing industry standards to the then existing equipment of Lessee. Notwithstanding the foregoing, the District shall, at all times, be allowed to utilize the District Property for its intended purposes and any interference caused by the use of equipment, or operations by, the District or other governmental or quasi-governmental entities on the District Property shall not be deemed a material breach hereunder.

[No further text on this page – signature page follows]

IN WITNESS WHEREOF, the parties have caused this Lease to be effective as of the Effective Date.

DISTRICT:

THE FIRST TAXING DISTRICT OF THE CITY OF NORWALK

By: _____
Print Name: Jalin T. Sead
Its: Chair, District Commissioner
Date: 9/26/2023

By: _____
Print Name: Thomas Cullen, Esq.
Its: District Commissioner
Date: 9/26/2023

By: _____
Print Name: Elsa Peterson Obuchowski
Its: District Commissioner
Date: 9/26/2023

LESSEE:

DISH WIRELESS L.L.C

By: _____
Print Name: _____
Its: _____
Date: _____

Site Number: NJJER01152C

LCS

EXHIBIT A

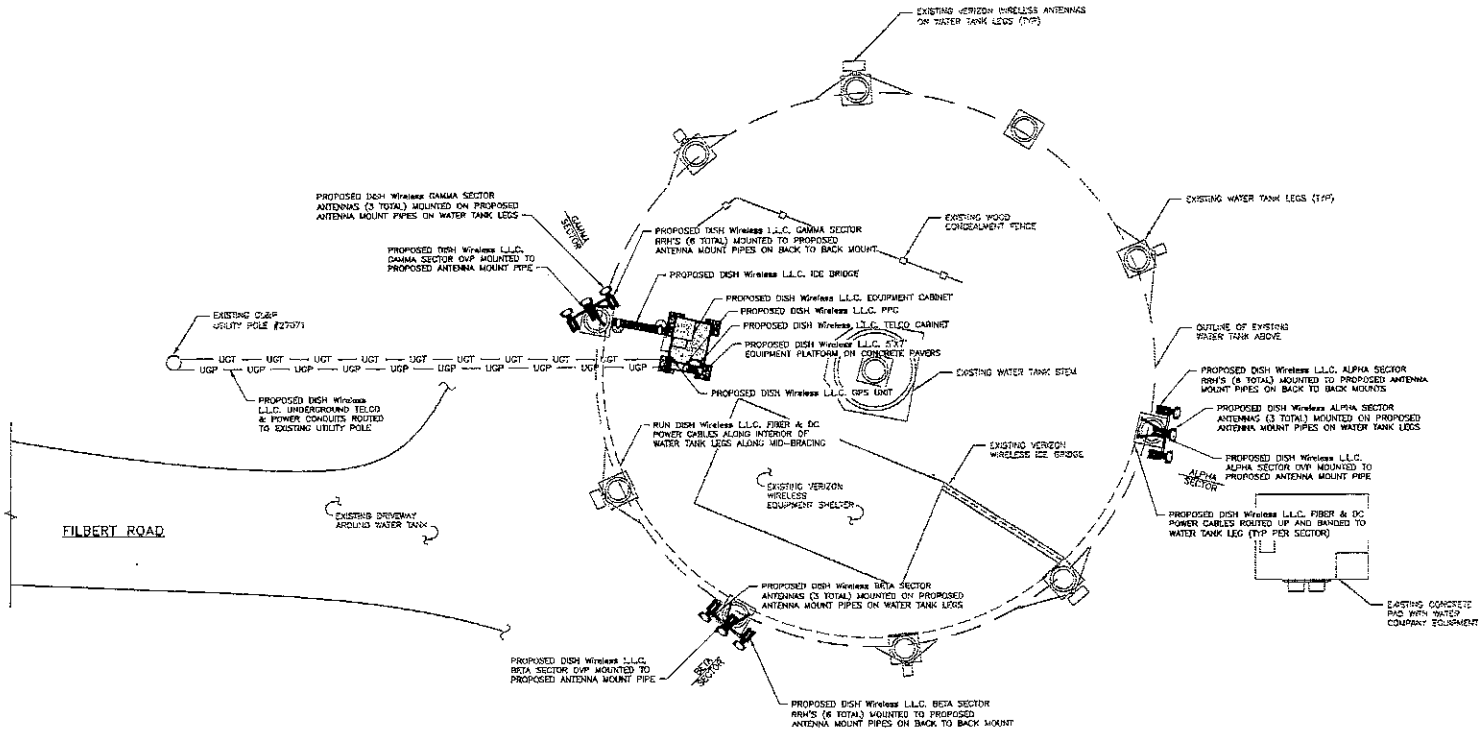
District Property

All that certain tract or parcel of land, situated in the Town of Norwalk, County of Fairfield and State of Connecticut, in area 46,131 square feet, and shown and delineated as parcel 3 on a certain map which has been approved by the Planning Commission and by the Common Council of the City of Norwalk and is on file in the office of the Town Clerk of the Town of Norwalk, and is entitled "Map of Property Prepared For Sidney I. Asp Norwalk, Conn. Scale 1"=30' Feb. 22, 1960 Revised Feb. 25, 1960 By Leo Leonard, Jr., Civil Engr. & Surveyor, Norwalk, Conn.". Said parcel 3 is generally bounded northerly for a distance of 283.53 feet, more or less, by land now or formerly of Leonard and Estella Tuozzolo, by land now or formerly of Mary Tuozzolo and by land now or formerly of Vito Tuozzolo; easterly 193.51 feet by other land of Sidney I. Asp and Anne Ayres Asp; southerly 229.66 feet, more or less, by land now or formerly of Mary Caratone; and westerly 165.48 feet by land now or formerly of John U. and Anna B. O'Neill, by Filbert Road, and by land now or formerly of Vito Tuozzolo.

NOTE

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

ANTENNA AZIMUTHS	
ALPHA	100°
BETA	210°
GAMMA	330°



ENLARGED SITE PLAN

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

1

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

Tectonic Engineering Consultants, Geologists & Land Surveyors, D.P.C. Inc.
Principal Contact info:
12179 Route 300
Newburgh, NY 12550
Phone: (914) 567-4868
(800) 829-8531
www.tectonicengineering.com

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DRAWN BY:	CHECKED BY:	APPROVED BY:
JW	JQ	MP

RFDS REV #: ----

LEASE EXHIBIT

SUBMITTALS

REV	DATE	DESCRIPTION
A	04/11/22	ISSUED FOR REVIEW

A&E PROJECT NUMBER
10710.NJJER01152C

DISH WIRELESS PROJECT INFORMATION
NJJER01152C

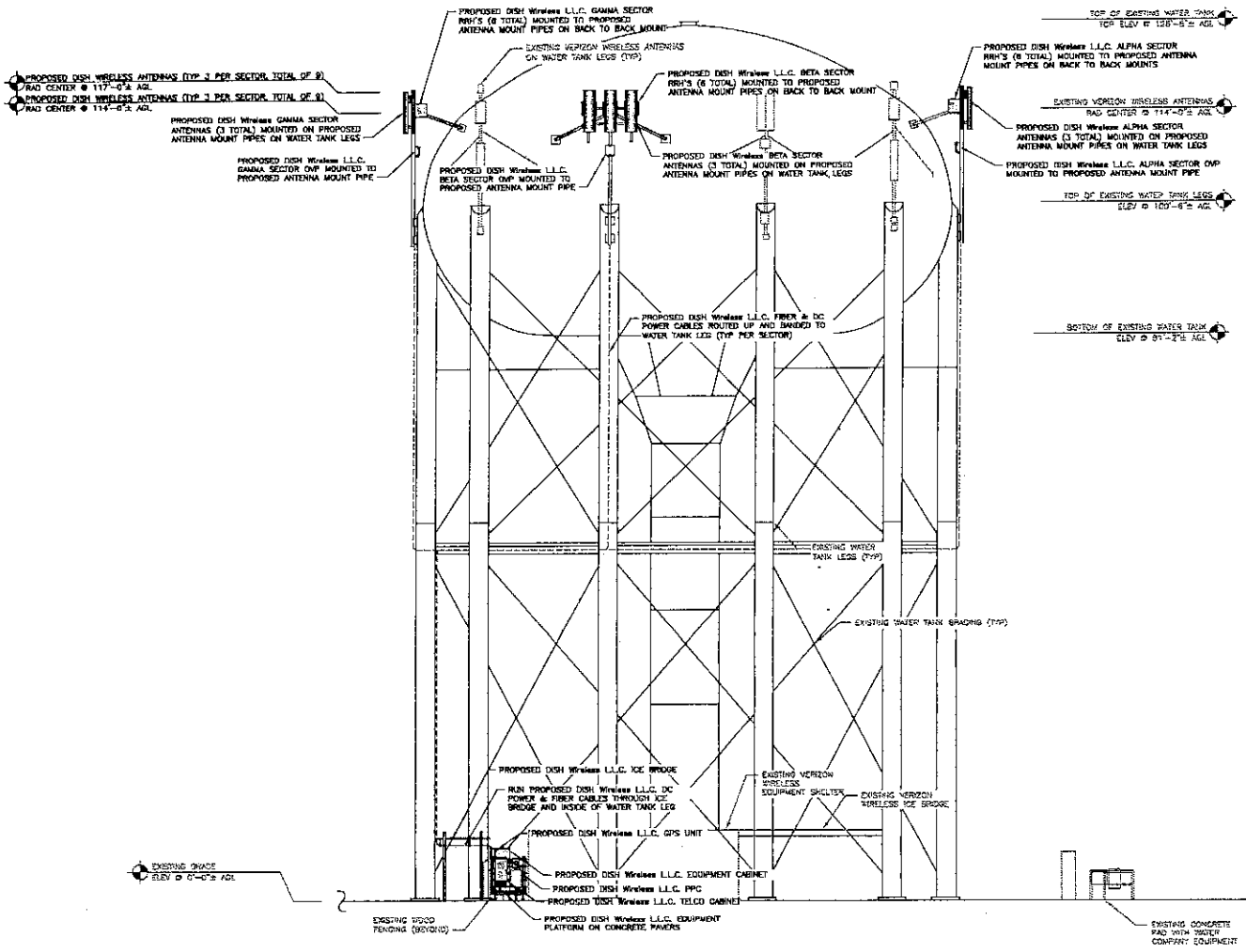
FIRST DIST WATER DEPT.
NORWALK, CT 06851

SHEET TITLE
ENLARGED SITE PLAN

SHEET NUMBER
LE-1

NOTE

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



PROPOSED ELEVATION

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

2

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

Tectonic
Tectonic Engineering Consultants, Geologists & Land Surveyors, D.P.C., Inc.
Professional Corporation
1379 Route 300
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(800) 833-9831

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DRAWN BY:	CHECKED BY:	APPROVED BY:
JW	JQ	MP

RFDS REV #: ——

LEASE EXHIBIT

SUBMITTALS

REV	DATE	DESCRIPTION
A	04/11/22	ISSUED FOR REVIEW

A&E PROJECT NUMBER
10710.NJJER01152C

DISH WIRELESS PROJECT INFORMATION
NJJER01152C

FIRST DIST WATER DEPT.
NORWALK, CT 06851

SHEET TITLE
ELEVATION

SHEET NUMBER
LE-2

Exhibit F

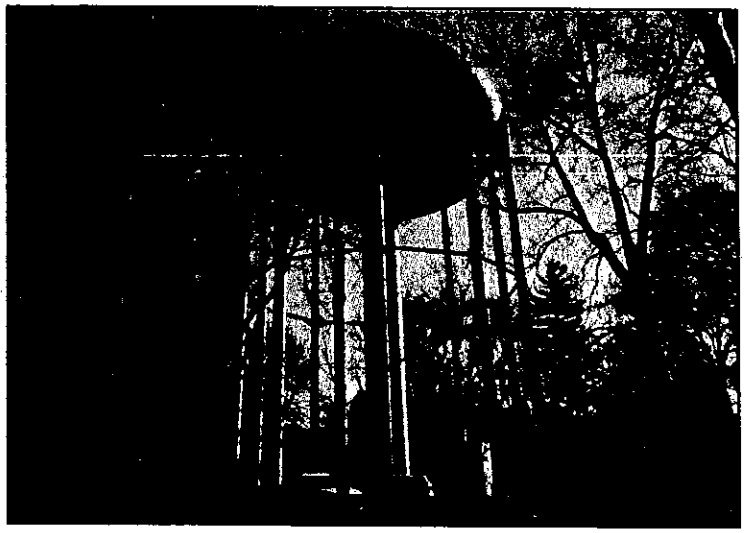
Emissions Report

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:	NJJER01152C
Site Address:	11 Filbert Road Norwalk, CT
Latitude:	N 41.118467
Longitude:	W 73.396694
Structure type:	Water tower
Report date:	November 6, 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 water tower located at 11 Filbert Road in Norwalk, CT. DISH refers to the antenna site by the code "NJJER01152C", 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 Verizon Wireless. Note 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 6.6898 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 14 times below the FCC limit for safe, continuous exposure of the general public. DISH guidelines, and consistent with FCC guidance on rooftop compliance, it is recommended that three Caution signs and NOC Information signs be installed at the base of the water tower.
- 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:

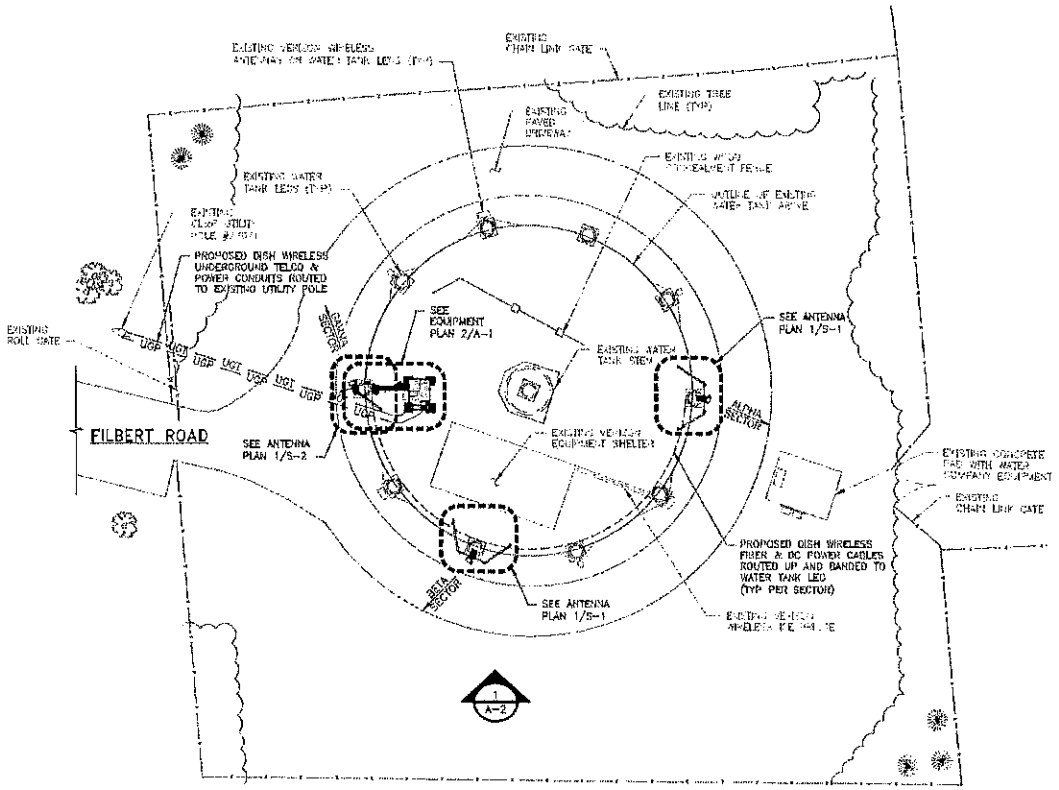
- relevant technical data on the proposed DISH antenna operations at the site, as well as on the existing Verizon Wireless antenna operations;
- a description of the applicable FCC mathematical model for calculating RF levels, and application of the relevant technical data to that model;
- analysis of 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.

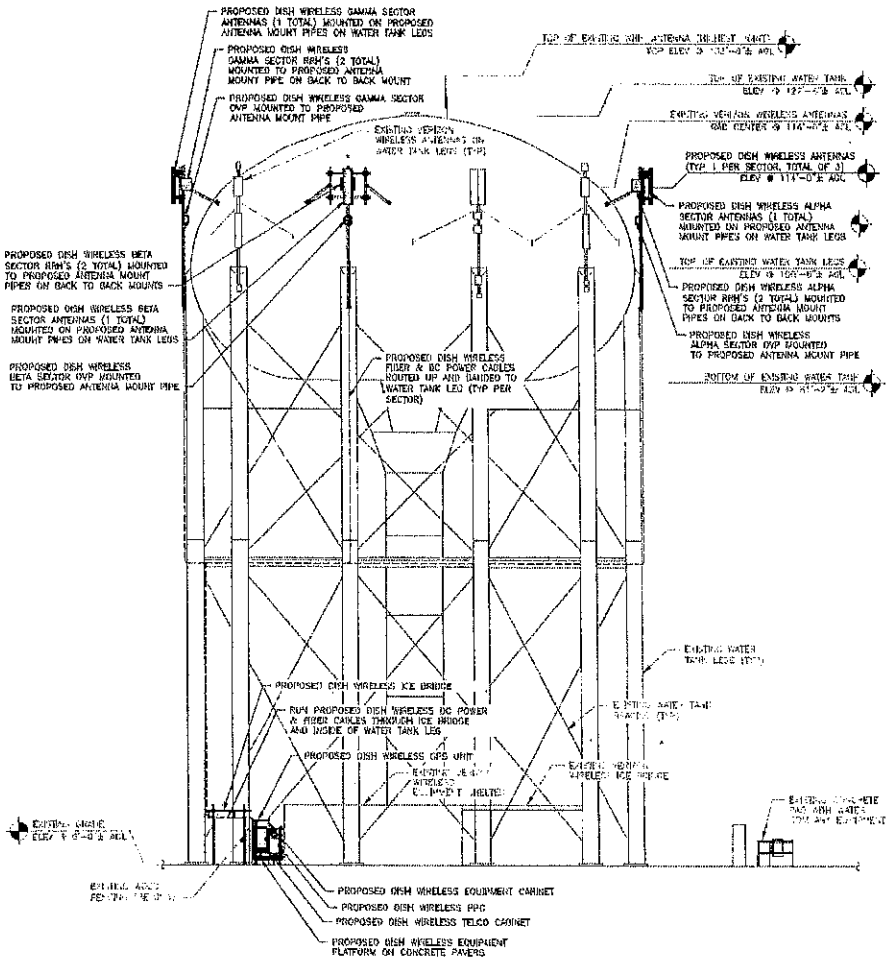
Antenna and Transmission Data

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)	RZ AGL (ft)	Ant. Gain (dBd)	BW	Azimuth	ED	MDT
1	DISH	JMA Wireless	MX08FRO665-21	Panel	600	6	120	1637	114.0	11.46	68	60	2	0
2	DISH	JMA Wireless	MX08FRO665-21	Panel	2000	6	160	6011	114.0	16.16	62	60	2	0
3	DISH	JMA Wireless	MX08FRO665-21	Panel	2100	6	160	7567	114.0	16.66	64	60	2	0
4	DISH	JMA Wireless	MX08FRO665-21	Panel	600	6	120	1637	114.0	11.46	68	160	2	0
5	DISH	JMA Wireless	MX08FRO665-21	Panel	2000	6	160	6011	114.0	16.16	62	160	2	0
6	DISH	JMA Wireless	MX08FRO665-21	Panel	2100	6	160	7567	114.0	16.66	64	160	2	0
7	DISH	JMA Wireless	MX08FRO665-21	Panel	600	6	120	1637	114.0	11.46	68	260	2	0
8	DISH	JMA Wireless	MX08FRO665-21	Panel	2000	6	160	6011	114.0	16.16	62	260	2	0
9	DISH	JMA Wireless	MX08FRO665-21	Panel	2100	6	160	7567	114.0	16.66	64	260	2	0

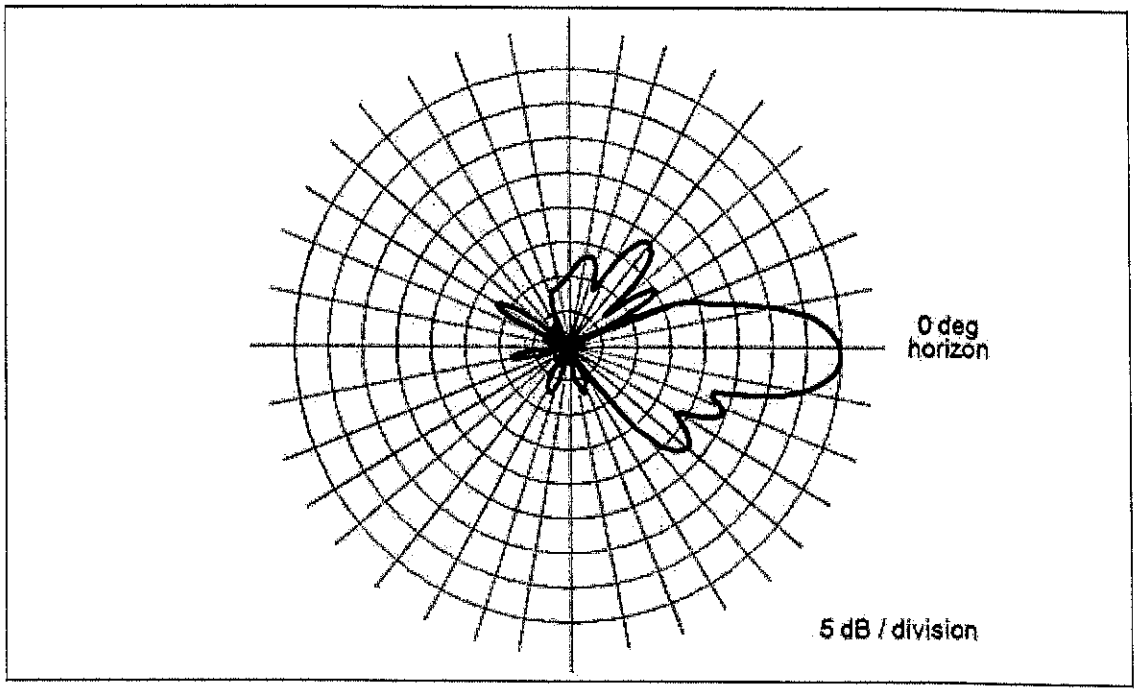
The area below the antennas, at street level, is of interest in terms of potential "uncontrolled" exposure of the general public, so the antenna's vertical-plane emission characteristic is used in the calculations, as it is a key determinant of the relative amount of RF emissions in the "downward" direction.

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 $1/100^{th}$ of the maximum that occurs in the main beam (at 0 degrees); at 30 dB, the energy is only $1/1000^{th}$ 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. JMA Wireless MX08FRO665-21– 600 MHz Vertical-plane Pattern



As noted at the outset, there is an existing wireless antenna operation by Verizon Wireless to include in the compliance assessment and we will conservatively assume operation with maximum channel capacity and at maximum transmitter power per channel to be used in each of its 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
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:

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

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.

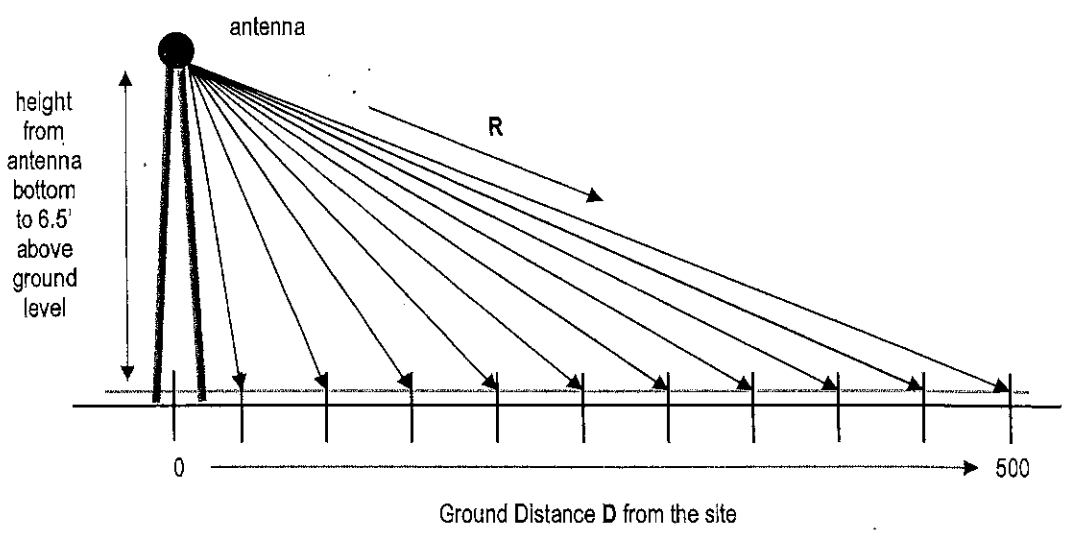


Figure 2. Street-level MPE% Calculation Geometry

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.

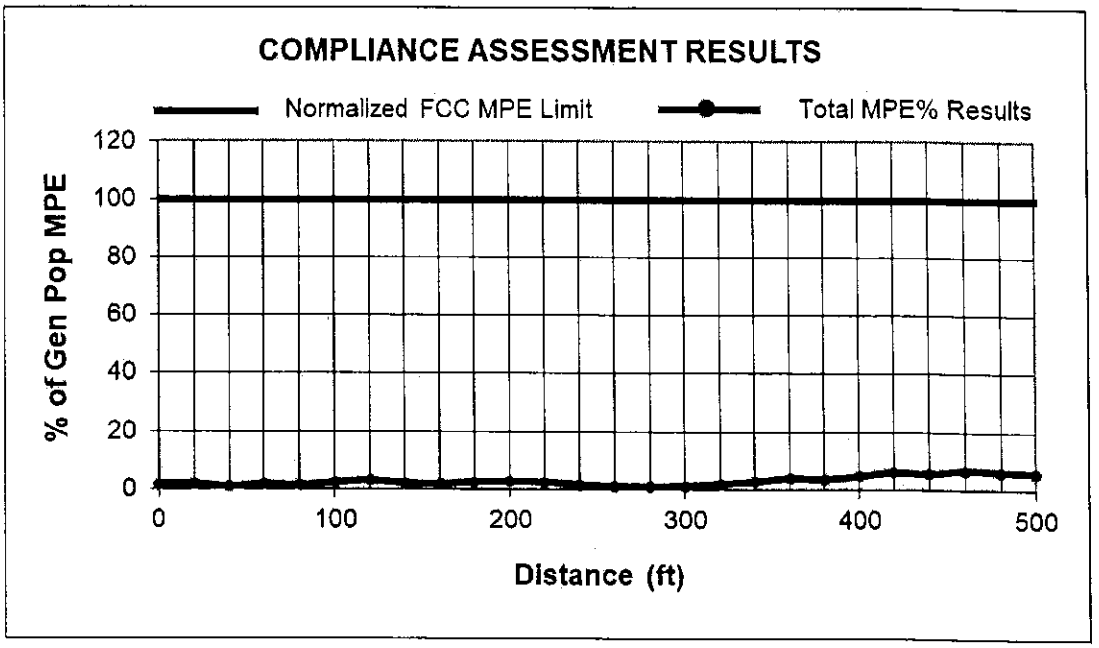
The net result of these assumptions is to intentionally and significantly overstate the calculated RF levels relative to the levels that will actually result from the antenna operations – and the purpose of this conservatism is to allow very "safe-side" conclusions about compliance.

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.

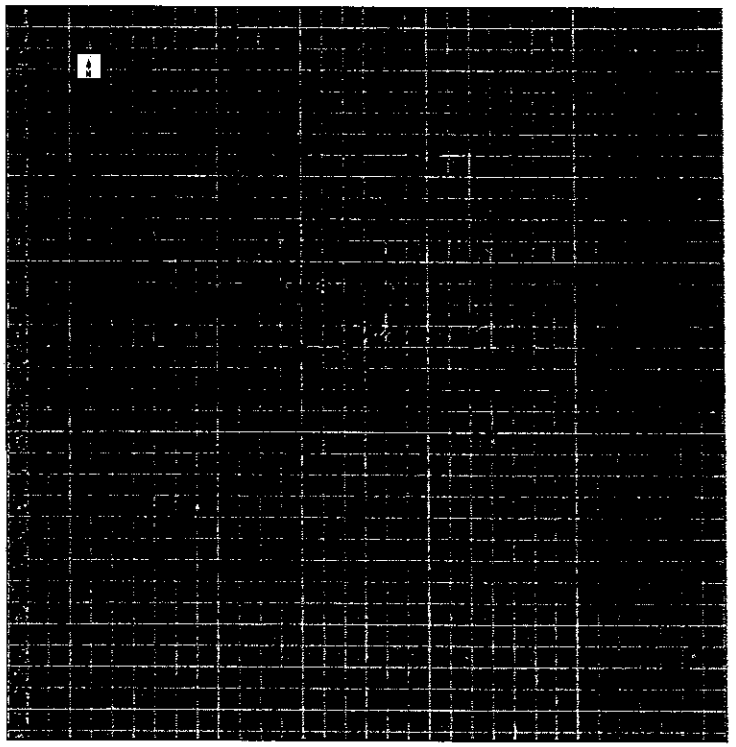
Ground Distance (ft)	DISH 600 MHz MPE%	DISH 2000 MHz MPE%	DISH 2100 MHz MPE%	Verizon Wireless MPE%	Total MPE%
0	0.0446	0.0021	0.0003	1.5472	1.5942
20	0.0868	0.0037	0.0049	1.5970	1.6924
40	0.1806	0.0134	0.0391	0.6082	0.8413
60	0.0775	0.0381	0.1137	1.4636	1.6929
80	0.0457	0.2129	0.0441	0.9657	1.2684
100	0.2055	0.1779	0.3717	1.4734	2.2285
120	0.2864	0.2456	0.2953	2.1245	2.9518
140	0.1667	0.0574	0.1863	1.6117	2.0221
160	0.0750	0.0248	0.0043	1.6034	1.7075
180	0.0357	0.0040	0.0627	2.3275	2.4299
200	0.0279	0.0789	0.0321	2.5197	2.6586
220	0.0210	0.0734	0.1249	2.1329	2.3522
240	0.0116	0.0139	0.0723	1.3814	1.4792
260	0.0100	0.0851	0.0236	0.8907	1.0094
280	0.0172	0.1101	0.0663	0.6858	0.8794
300	0.0323	0.0931	0.1056	0.9021	1.1331
320	0.0568	0.0513	0.1051	1.5201	1.7333
340	0.0915	0.0163	0.0696	2.4270	2.6044
360	0.1360	0.0043	0.0307	3.6501	3.8211
380	0.1906	0.0041	0.0096	3.2981	3.5024
400	0.2533	0.0033	0.0031	4.3674	4.6271
420	0.3220	0.0066	0.0020	5.7197	6.0503
440	0.2949	0.0060	0.0018	5.2342	5.5369
460	**0.3623**	**0.0235**	**0.0090**	**6.2950**	**6.6898**
480	0.3340	0.0217	0.0083	5.8007	6.1647
500	0.3980	0.0505	0.0296	5.3366	5.8147

As indicated, the maximum calculated overall RF level is 6.6898 percent of the FCC MPE limit – well below the 100-percent reference for compliance.

A graph of the overall calculation results, provided on the next page, 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 below.



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 6.6898 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 water tower.

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

11/6/23
Date

Appendix A. Documents Used to Prepare the Analysis

RFDS: RFDS-NJJER01152C-Preliminary-20220429-v.1_20220429111517

CD: NJJER01152C_PrelimCD_20230105085829

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.

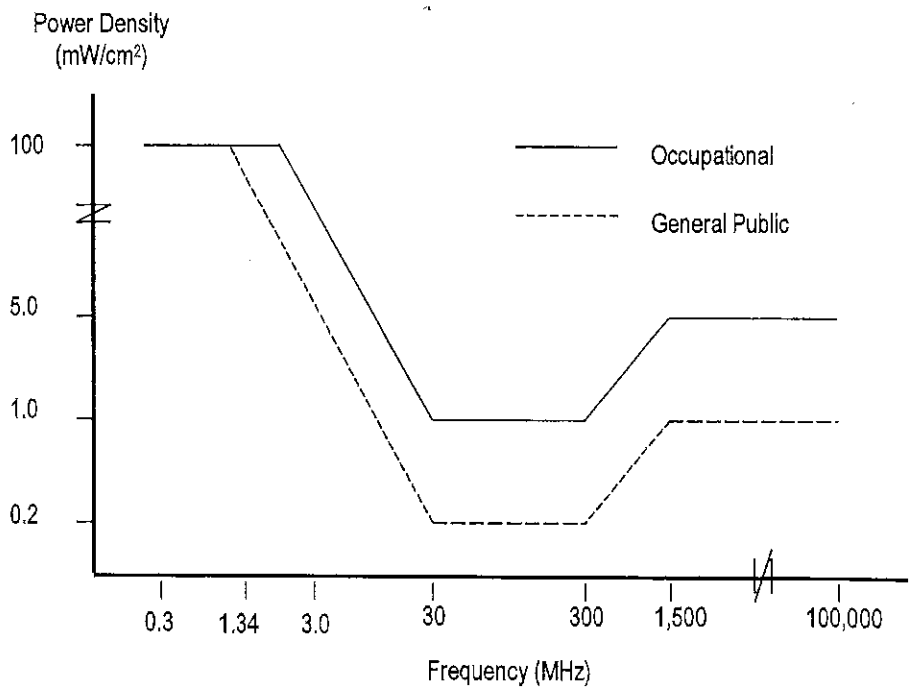
The specified continuous exposure MPE limits are based on known variation of human body susceptibility in different frequency ranges, and a Specific Absorption Rate (SAR) of 4 watts per kilogram, which is universally considered to accurately represent human capacity to dissipate incident RF energy (in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

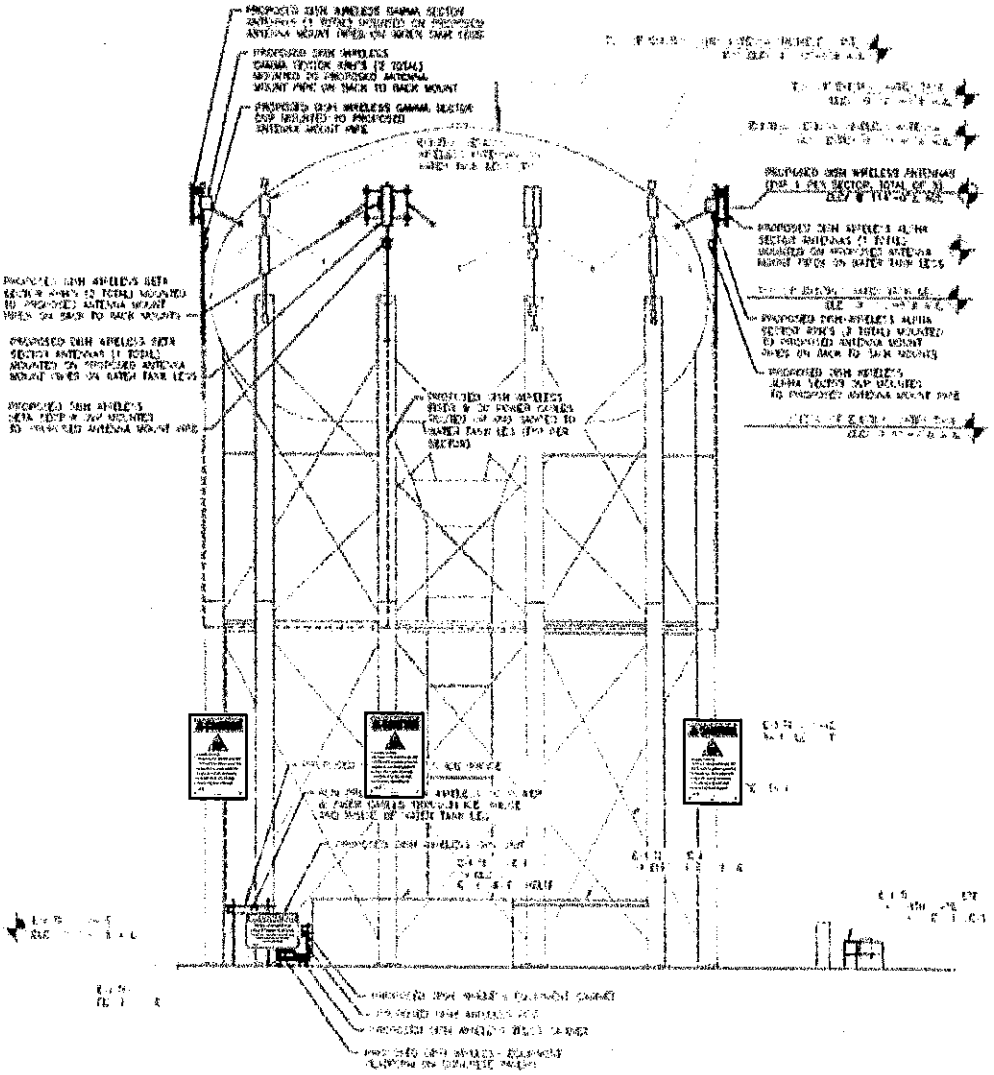
FCC Report and Order, Notice of Proposed Rulemaking, Memorandum Opinion and Order (FCC 19-126), *Proposed Changes in the Commission's Rules Regarding Human Exposure to Radiofrequency Electromagnetic Fields; Reassessment of Federal Communications Commission Radiofrequency Exposure Limits and Policies,*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

Lease Agreement

LEASE AGREEMENT
(Water Tank Installation)

THIS LEASE AGREEMENT ("**Lease**") is made this _____ day of_____, 2023 by and between the **FIRST TAXING DISTRICT OF THE CITY OF NORWALK**, a Connecticut Municipal Corporation, having an address at 12 New Canaan Avenue, Norwalk, Connecticut 06851 ("**District**"), and **DISH WIRELESS L.L.C.**, a Colorado limited liability company, with its principal offices at 9601 S. Meridian Boulevard, Englewood, Colorado 80112 ("**Lessee**"). The District and Lessee are at times collectively referred to hereinafter as the "**Parties**" or individually as the "**Party**."

RECITALS

WHEREAS, District is the owner of certain real property located at 11 Filbert Road, in the City of Norwalk, County of Fairfield and State of Connecticut more particularly described and/or depicted in **Exhibit A** attached hereto and made a part hereof (the "**District Property**"), which District Property is improved with a water tank structure ("**Water Tank**"); and

WHEREAS, Lessee desires to lease a portion of the ground space adjacent to the Water Tank and license certain portions of the exterior of the Water Tank for the development of a wireless communications facility (a "**Wireless Facility**"); and

WHEREAS, District is willing to enter into a lease with Lessee, subject to the terms and conditions set forth herein.

NOW THEREFORE, the Parties hereto, in consideration of the mutual covenants contained herein and intending to be legally bound hereby, agree as follows:

1. **LEASE OF PREMISES; LICENSE OF WATER TANK SPACE**. District hereby leases to Lessee, and Lessee leases from District, approximately 100 square feet of ground space located adjacent to the Water Tank and within a fence-enclosed area on the District Property (the "**Equipment Compound**"), as more particularly shown on **Exhibit B** attached hereto and made a part hereof ("**Ground Space**"), for the installation, operation, and maintenance of wireless communications equipment associated with a Wireless Facility operated by Lessee ("**Ground Equipment**"). The foregoing leasehold is granted and demised to Lessee together with:

(a) a license to install, operate and maintain: (i) pipe-mounted antennas (the "**Antennas**") on the exterior perimeter surface of the Water Tank at a centerline height of one-hundred and fourteen (114) feet +/- above ground level with a minimum of five (5) feet in each vertical direction of separation from adjacent occupants on the Water Tank (the "**Antenna Space**"); and (ii) cables, wires, conduits, poles, and/or pipes and related connectors and anchors (collectively, the "**Cables**") running between the Antennas, the Ground Equipment, and that proposed point of connection to public utilities at the telco connection point identified on **Exhibit B** on the District Property (the "**Cable Space**"). The Antennas, Cables, Antenna Space and Cable Space are more particularly shown on **Exhibit B** attached hereto, and the space occupied by such Antenna Space and Cable Space as shown therein are hereinafter referred to as the "**License Areas**". If the existing utility sources located on the District Property are insufficient for Lessee's permitted use, the District agrees to grant Lessee and/or the applicable third party utility provider

the right, at Lessee's sole cost and expense, to install such utilities on, over and/or under the District Property as is reasonably necessary for Lessee's permitted use, provided that the location of such utilities shall be approved in advance by the District, such approval not to be unreasonably withheld, conditioned, or delayed and such approval not to be contingent on any additional rent or other consideration; provided, however: (i) the parties acknowledge and agree that the District may require the location of such utilities to be configured in a manner that maximizes further development of the Equipment Compound, or other considerations reasonably relevant to the District's business, and that location required by the District as a condition of approval may be determined independently of relevant economic or cost factors or of convenience to the Lessee or its contractors or utility provider(s); and (ii) the District reserves the right to condition any further rights granted to such parties upon the right or ability of the District to relocate such utilities, connections, and/or the Cable Space as needed from time to time at no cost to Lessee, as may be necessary or desirable to facilitate further development within the Equipment Compound (or equivalent alternative facilities) and/or in furtherance of the District's business. The Parties agree and acknowledge that for any relocation of such utilities pursuant to this Section 1(a), the Parties shall work together in good faith to coordinate such relocation, including coordination with Lessee to facilitate the use of a Temporary Coverage Solution as Lessee reasonably determines is necessary.

(b) the non-exclusive right to access the Ground Space, over the District Property, from the nearest public right-of-way, identified as 11 Filbert Road, Norwalk, Connecticut, by foot or by motor vehicle, 24 hours per day, 7 days per week and at no additional cost or expense to Lessee, for the installation, maintenance and repair of the Wireless Facility, provided such access may not unreasonably interfere with, compromise, reduce in capacity, or otherwise disrupt: (i) any of the District's utility connections or (ii) the District's use and operation of the Water Tank or the District Property (the foregoing, collectively, "**Access Rights**").

The Ground Space is hereinafter sometimes referred to as the "**Leasehold Area**". The Leasehold Area and the License Areas are hereinafter referred to collectively as the "**Premises**". The Ground Equipment, the Antennas and the Cables are sometimes hereinafter referred to collectively as the "**Equipment**".

Notwithstanding the fact that this Lessee's rights to the License Areas is a license and that a license is normally revocable at will by the grantor, the parties hereto agree that the license granted by this Lease for the License Areas is not revocable at will and that this Lease can only be terminated in accordance with the provisions of this Lease or otherwise as ordered by a court of competent jurisdiction.

2. **TERM.**

(a) This Lease shall be effective as of the date of execution by both Parties (the "**Effective Date**") and be for an initial term of five (5) years ("**Initial Term**"). The Initial Term shall commence (the "**Commencement Date**") on the earlier to occur of the first (1st) day of the month following the date of either: (i) commencement of Lessee's installation of the Wireless Facility; or (ii) the two hundred seventieth (270th) calendar day following the Effective Date. Notwithstanding anything stated herein, with respect to (i) in the immediately preceding sentence, the Parties acknowledge that Lessee's preparation of the Premises to accommodate electric,

telephone, fiber and other utilities for Lessee's installation shall not constitute Lessee's installation of its communications equipment nor shall it trigger the Commencement Date.

(b) The term of the Lease shall automatically renew for four (4) additional periods of five (5) years each (each, an "**Extended Term**") provided Lessee is not then in default hereunder, unless Lessee elects, in Lessee's sole and absolute discretion, not to renew the Lease at the end of the then-current term by giving the District written notice at least one hundred eighty days (180) days prior to the expiration of the Initial Term or the current Extended Term, as applicable.

(c) The Initial Term, together with any Extended Term(s), shall be collectively referred to herein as the "**Term**."

3. **PERMITTED USE**. Lessee shall use the Premises for the purpose of constructing, maintaining, repairing, and operating a Wireless Facility ("**Permitted Use**"), and for no other use. During the Term, without incurring any increase in the then-current Base Rent or other modification of the terms and conditions set forth in this Lease, Lessee shall have the right to replace, repair, add or otherwise modify its Ground Equipment within the Ground Space, including without limitation, any modification, repair, addition, or otherwise necessary in order for Lessee to remain in compliance with any current or future federal, state, or local mandated application, including emergency 911 communication services, provided that at all times (i) Lessee shall not materially interfere with the operations of the District's and delivery of services; (ii) Lessee shall restore any and all damage caused by any of the foregoing activities; and (iii) Lessee shall be solely responsible for any and all permitting and approvals required for such changes. Except as permitted pursuant to the foregoing sentence, Lessee shall not otherwise modify any portion of the Wireless Facility depicted in **Exhibit B** without first obtaining the District's written consent, which shall not be unreasonably withheld conditioned or delayed. The parties acknowledge that any requested modification of the Antennas and Cables shall require a structural analysis of weight and wind loading upon the Water Tank conforming to the requirements of Section 7 herein. Lessee shall reimburse the District for all actual and reasonable professional fees and costs incurred by the District in connection with independently evaluating Lessee's request for any such modification.

4. **RENT**.

(a) Commencing on the Commencement Date, Base rent shall be due at an annual rental of Forty Two Thousand and 00/100 Dollars ($42,000.00), as the same may be adjusted as set forth in subsection 4(c) below, and shall be paid to the District in equal monthly installments of Three Thousand Five Hundred and 00/100 Dollars ($3,500.00), in advance, on the first day of each month during the Term ("**Base Rent**"), at the address set forth above, or to such other person, firm, or address as the District may, from time to time, designate in writing at least sixty (60) days in advance of any rental payment date by written notice given to Lessee. In any partial month of the Term, the Base Rent will be prorated accordingly. The first Base Rent payment shall be made within twenty (20) business days of the Commencement Date. The Parties acknowledge and agree that, notwithstanding anything to the contrary set forth in this Lease, Lessee's obligation to pay Base Rent or any other amount due hereunder is contingent upon Lessee's receipt of an IRS approved W-9 form setting forth the tax identification number of the District (or of the person or entity to whom Base Rent is to be made payable, if applicable).

(b) If any Base Rent or other payment due hereunder is not received by the District on or before the tenth (10th) day following the date upon which such payment is due, Lessee shall pay to the District a late charge equal to five (5%) percent multiplied by such past due amount as additional rent hereunder. All amounts more than thirty (30) days past due shall accrue interest at the lesser of the maximum annual rate of interest permitted by applicable law or twelve (12%) per annum as additional rent. Any applicable late fee shall be paid within thirty (30) days of Lessee's receipt of an invoice thereof from the District.

(c) Base Rent shall increase by three percent (3%) of the then current Base Rent on each anniversary of the Commencement Date thereafter (including during any Extended Term hereunder).

(d) No payment by Lessee or receipt by the District of a lesser amount than the Base Rent payable hereunder shall be deemed to be other than a payment on account to be credited against monies owed the District hereunder, in such order as the District may reasonably determine, nor shall any restrictive endorsement, statement or name on any check or any check or any letter accompanying any check or payment delivered to the District be deemed, declared, or interpreted an accord and satisfaction. The District may accept and deposit such check or payment without notice to Lessee and without the same operating as a satisfaction or an acceptance of satisfaction by the District and without prejudice of the District's right to recover the balance of any monies due hereunder, or to pursue any other remedy provided herein or by law.

5. **CONDITION OF PROPERTY**. Lessee covenants and agrees that Lessee has inspected and examined the Premises and has determined that the Premises are in all respects acceptable to and suitable for Lessee's Permitted Use. Lessee acknowledges that the Premises are being delivered to Lessee in their "AS IS" condition and the District makes no representation or warranty of any kind with respect thereto.

6. **GOVERNMENT APPROVALS**. It is understood and agreed that Lessee's ability to effectuate any Permitted Use at the Premises is contingent upon its obtaining, at Lessee's sole cost and expense, (i) a satisfactory structural analysis showing that the Water Tank is suitable for Lessee's Permitted Use; and (ii) all of the certificates, permits, and other approvals that may be required by any Federal, State, or Local authorities in connection with Lessee's installation and operation of a Wireless Facility and conduct of the Permitted Use (collectively, "**Government Approvals**"). The District shall use commercially reasonable efforts, at no cost to the District, to cooperate with Lessee in its effort to obtain the Government Approvals, provided, however Lessee shall take no action to re-zone the District Property, and the District shall have no obligation to execute or permit any petitions or applications to such effect. In order to facilitate such cooperation, Lessee shall provide to District for the District's review copies of any application or other filing done by Lessee on behalf of the District at least ten (10) days in advance of the proposed filing date. Lessee shall endeavor to obtain all Governmental Approvals prior to the two hundred seventieth (270th) calendar day following the Effective Date (the "**Approvals Period**"); provided, however, in all circumstances Lessee shall obtain all such Governmental Approvals prior to any commencement of installation of the Wireless Facility. In the event that, prior to expiration of the Approvals Period, (i) any such applications for such Governmental Approvals should be finally rejected; (ii) any Governmental Approval issued to Lessee is canceled, expires, lapses, or is otherwise withdrawn or terminated by the issuing governmental authority; (iii) Lessee

determines that such Governmental Approvals may not be obtained in a timely manner; or (iv) a structural analysis shows that the Water Tank is not suitable for Lessee's Permitted Use; then, Lessee shall have the right to terminate this Lease subject to the payment of any rent becoming due and payable prior to the effective date of such termination. Notice of Lessee's exercise of its right to terminate shall be in writing and shall be effective within thirty (30) days of the date of such notice, or upon such later date as designated by Lessee (but not more than ninety (90) days from the date of such notice, in any event). All rents paid to said termination date shall be retained by the District. Upon such termination, this Lease shall be of no further force or effect except to the extent of the representations, warranties, and indemnities made by each Party to the other hereunder.

7. **STRUCTURAL ANALYSIS**. Before constructing and/or erecting any portion of the Wireless Facility on the District Property, Lessee shall, at Lessee's sole cost and expense, obtain a satisfactory structural analysis or structural letter confirming that the Wireless Facility will not materially impact the Water Tank's structural integrity. Any such analysis or letter shall be certified to the District and shall be signed and sealed by a licensed professional engineer. Lessee shall provide the District an original of any such letter or analysis prepared Lessee at least fifteen (15) days before constructing and/or erecting any portion of the Wireless Facility on the District Property.

8. **SURVEY**. At Lessee's sole cost and expense, Lessee is hereby given the right to survey, test, and conduct any other reasonable investigations needed to determine if the location of the Premises is suitable for the Permitted Uses provided herein.

9. **MAINTENANCE**.

(a) Lessee shall keep and maintain Premises in good condition, reasonable wear and tear and damage from the elements excepted. The District, at its sole cost and expense, shall maintain and repair the Water Tank in good and ordinary structural condition and any relevant Water Tank lighting systems. The District shall have no obligation to secure the Premises and shall not be liable for any losses suffered by Lessee as a result of Lessee's failure to so secure the Premises.

(b) Notwithstanding anything to the contrary contained herein, in the event the District requires the demolition or renovation of the Water Tank or the relocation (collectively, the "**Relocation**") of the Premises (or a portion thereof) and/or the Wireless Facility (or a portion thereof), the District shall have the right to send a written notice ("**Relocation Notice**") to Lessee to relocate the Premises (or a portion thereof) and/or the Wireless Facility (or a portion thereof), to another structure on the District Property or upon a replacement of the Water Tank (the "**Alternate Site**") that is reasonably similar in height to the existing Water Tank. The Relocation Notice shall specify the date of the Relocation which must be at least twelve (12) months subsequent to the effective date of the Relocation Notice. In the event that Lessee deems that the recommended Alternate Site is unsuitable for Lessee's purposes hereunder, Lessee shall have the right to terminate this Lease upon notice to the District not less than one (1) month prior to the planned Relocation date. Further, upon Lessee's request, the Parties shall work in good faith to allow Lessee to place and use a Temporary Coverage Solution (as defined below) in a mutually agreed upon location at the Property during any relocation, and/or, in the event Lessee determines

the Alternate Site is not suitable, as may be necessary to accommodate Lessee's ongoing use of the Property after any applicable Relocation date for up to six (6) months thereafter. Any use of a Temporary Coverage Solution shall be subject to all applicable local, state and federal regulations applicable thereto and any relevant terms and conditions of this Lease. Lessee shall not be required to permanently relocate its equipment to an Alternate Site more than one (1) time during the Term; provided no such limitation shall be made upon Temporary Relocations required for maintenance and upkeep of the Water Tank pursuant to subsection (c) below. Lessee shall pay all costs for relocating Lessee's equipment to the Alternate Site or the Temporary Coverage Solution. **"Temporary Coverage Solution"** means a "cell on wheels" or a functionally equivalent mobile structure or other interim cell siting arrangement and all equipment necessary or advisable for the operation thereof.

(c) Upon request of the District, Lessee agrees to relocate its Wireless Facility (or one or more portion thereof) on a temporary basis to another location on the Property, hereinafter referred to as the "**Temporary Relocation**," for the purpose of the District performing maintenance, repair or similar work at the Water Tank or the District Property, provided:

(i) The Temporary Relocation is similar to Lessee's existing location in size and is fully compatible for Lessee's use, in Lessee's reasonable determination;

(ii) the District gives Lessee at least ninety (90) days written notice prior to requiring Lessee to relocate (except in the event of an emergency, in which case the District shall provide as much notice as is reasonably feasible based upon the circumstances, and in which event the District will, upon Lessee's request, coordinate with Lessee to facilitate the use of a Temporary Coverage Solution during the Period of such Temporary Relocation);

(iii) Lessee's use at the Premises is not interrupted or diminished during the relocation and Lessee is allowed, if necessary, in Lessee's reasonable determination, to place a temporary installation on the Property during any such relocation (which temporary installation must be removed by Lessee after completion of such Temporary Relocation and Lessee returning to its original location);

(iv) Upon the completion of any maintenance, repair or similar work by the District, Lessee is permitted to return to its original location from the temporary location with all reasonable costs incurred by Lessee for the same being paid by the District.

10. **UTILITIES**.

(a) Lessee shall be responsible for paying on a monthly or quarterly basis all utilities charges for electricity, water, gas, telephone service and any other utility used or consumed by Lessee. The District will not be responsible for interference with, interruption of or failure, beyond the reasonable control of the District, of such utility services furnished or supplied by the District.

(b) Lessee shall have the right to install new or improve present utilities on the Leased Property, at Lessee's expense, reasonably necessary to carry on any Permitted Use.

(c) Lessee shall furnish and install, at Lessee's sole cost and expense, an electrical meter at the Premises for the measurement of electrical power used by Lessee's installation.

(d) The Parties acknowledge and agree that independent third-party providers of utility services, including but not limited to, fiber, gas, electric and telephone, shall be provided with reasonable access over the District Property to permit connection by Lessee at a point located within the License Areas.

11. **TAXES**. Lessee shall have the responsibility to pay any personal property, real estate taxes, assessments, or charges owed on the District Property which is the result of any use of the Premises by Lessee.

12. **ENVIRONMENTAL**.

(a) Lessee shall not cause or permit any Hazardous Material to be used, stored, generated, or disposed of on or in the Premises or the District Property by Lessee, Lessee's agents, employees, contractors, or invitees except in conformity with all applicable laws. If Hazardous Materials are used, stored, generated, or disposed of on or in the Premises or the District Property, of if the Premises or the District Property become contaminated in any manner for which Lessee is legally liable, Lessee shall indemnify, defend, and hold harmless the District, its officers, directors, trustees, shareholders, members, partners, employees, and agents from any and all claims demands, causes of action, damages, fines, judgments, penalties, costs, liabilities, expenses or losses of whatever kind or nature, known or unknown, contingent or otherwise, to the extent arising during or after the Term and to the extent arising as a result of that contamination by Lessee. Without limitation of the foregoing, if Lessee causes or permits the presence of any Hazardous Material on the Premises or the District Property and the presence of such Hazardous Material results in contamination, Lessee shall promptly, at its sole expense, take any and all necessary actions to return the Premises or the District Property to the condition existing prior to the presence of any such Hazardous Material on the Premises or District Property. Lessee shall first obtain the District's approval for any such remedial action. This indemnification includes, without limitation, any and all costs incurred because of any investigation of the site or any cleanup, removal, or restoration mandated by a federal, state, or local agency or political subdivision arising from such environmental condition caused by Lessee. The provisions of this subsection 12(a) shall be in addition to any other obligations and liabilities may have to the District at law or equity and shall survive the transactions contemplated herein and shall survive the termination of this Lease.

(b) Lessee shall not discharge, leak, or emit, or permit to be discharged, leaked, or emitted, any material into the atmosphere, ground, sewer system, or any body of water, if that material does or may pollute or contaminate the same, or may adversely affect (i) the health, welfare, or safety of persons, whether located on the Premises, District Property, or elsewhere, (ii) the condition, use or enjoyment of the Premises, District Property, or any other real or personal property; or (iii) the quality and quality of the District's water supply.

(c) Due to the nature and purpose of the District Property, including the Water Tank, as a public water purveyor and distributor, Lessee expressly acknowledges the importance of maintaining, protecting, and preventing any change in the quality and quantity of the water located and stored at the District Property ("**District Water**"). In the event that Lessee's use of the

Premises results in any change in the quality and/or quantity of District Water due to a discharge, leak, or emission of any potential pollutant or contaminate, in addition to the remedial actions provided in subsection (a) above, Lessee also agrees to undertake all best efforts necessary to restore the quality and quantity of District Water or fully compensate the District for costs of securing and supplying replacement water to fulfill the District's obligations as a local water purveyor. Following a change in quality and/or quantity of District Water attributable to Lessee, Lessee shall conduct or cause to be conducted at Lessee's sole expense, tests of the District Water by an independent testing laboratory approved in writing by the District for the entire array of chemicals and agents utilized by Lessee in its use and occupancy of the Premises and continue periodic testing of District Water until District Water is deemed safe for human consumption under the applicable federal, state, and/or local drinking water standards. Lessee shall provide the District complete copies of any such test results and data at Lessee's sole cost and expense.

(d) As used herein, the term "**Hazardous Material**" shall mean any substance that is toxic, ignitable, reactive, or corrosive and that is now or hereafter regulated by any local government, the state where the Property is located, or the United States Government, including without limitation, asbestos, polychlorobiphenyls (PCBs), perfluoroalkyl and polyfluoroalkyl substances (PFAS), petroleum products or distillates, any and all material or substances that are defined as "hazardous waste," "extremely hazardous waste," or a "hazardous substance" pursuant to state, federal, or local Law.

(e) The District understands and agrees that notwithstanding anything contained in this Lease to the contrary, except to the extent directly attributable to Lessee, in no event shall Lessee have any liability whatsoever with respect to any claim related to Hazardous Material that was on, about, adjacent to, under or near the District Property prior to the Effective Date, or that was generated, possessed, used, stored, released, spilled, treated, transported, manufactured, refined, handled, produced or disposed of on, about, adjacent to, under or near the Property by Landlord, its agents, employees, contractors or invitees.

13. **TITLE; QUIET ENJOYMENT**. The District represents that it is the owner in fee simple of the District Property and the Premises and the District has the right to grant the rights set forth in this Lease. Upon paying Rent and performing Lessee's obligations hereunder, Lessee shall peaceably and quietly hold and enjoy the Premises for the term of this Lease.

14. **ASSIGNMENT/SUBLEASE**. Except with the prior written consent of the District, which consent will not be unreasonably withheld, conditioned or delayed, Lessee shall not transfer nor assign this Lease or any rights hereunder, nor sublet and/or sublicense the Premises or License Areas, as applicable, or any portion of the District Property, nor grant any interest, privilege or license whatsoever in connection with this Lease. Any such action taken without the express written approval, assignment and assumption of Lease by assignee will constitute a violation of this Lease by Lessee and a trespass by any sublessee of Lessee or assignee. If the District consents to an assignment by Lessee, or any sublease and/or sublicense by Lessee to a third-party, Lessee shall remain liable for all obligations provided herein.

Notwithstanding the foregoing, Lessee may assign or transfer some or all of its rights and/or obligations under the Lease to: (i) an Affiliate (as defined below); (ii) a successor entity to its business, whether by merger or by sale of all or substantially all of its assets or stock; and/or

(iii) any other entity directly or indirectly controlling, controlled by or under common control with any of the foregoing, and in each case, such assignment or transfer shall not be considered an assignment under this Section 14 requiring consent and the District shall have no right to delay, alter or impede such assignment or transfer. For clarity, and the avoidance of doubt, neither: (a) a change in ownership of Lessee as a result of a merger, consolidation or reorganization; nor (b) the sale of all or substantially all of the assets of Lessee, shall be considered an assignment under this Section 14 requiring the District's consent. "**Affiliate(s)**" means, with respect to a Party, any person or entity, directly or indirectly, controlling, controlled by, or under common control with such Party, in each case for so long as such control continues. For purposes of this definition, "control" shall mean (i) the ownership, directly or indirectly, or at least fifty percent (50%) of either: (a) the voting rights attached to issued voting shares; or (b) the power to elect fifty percent (50%) of the directors of such entity, or (ii) the ability to direct the actions of the entity.

Should the District, at any time during the Term, sell or transfer all or any part of the Premises or the Water Tank thereon to a purchaser other than Lessee, then, in such instance, such transfer shall be subject to this Lease and the District shall take commercially reasonable efforts to require any such purchaser or transferee to recognize Lessee's rights under the terms of this Lease in a written instrument signed by the District and the third party transferee. Notwithstanding the foregoing, the District shall not be required to obtain such written instrument for any transfer to any governmental entity or quasi-governmental entity.

15. **INDEMNIFICATION**. Except to the extent caused by the breach of this Lease by the District or the negligence or willful misconduct of the District, its officers, agents, employees, contractors, or any other person or entity for whom the District is legally responsible, Lessee agrees to indemnify, defend and hold the District harmless from and against any and all injury, loss, damage or liability, costs or expenses in connection with a third party claim (including reasonable attorneys' fees and court costs) arising directly from (i) Lessee's installation, use, maintenance, repair or removal of the Wireless Facility, (ii) Lessee's use, maintenance, and occupancy of the Premises (collectively (i) and (ii) are hereinafter referred to as "**Lessee's Use**"), or (iii) Lessee's breach of any provision of this Lease. The foregoing provisions shall be in addition to any other indemnities granted by Lessee in favor of the District under this Lease, and shall survive any termination or expiration of this Lease.

The absence of the District's indemnity to Lessee under this Lease shall not be construed to limit or waive any statutory or legal rights in equity or at law that Lessee may have against the District for (i) the negligent, willful or intentional acts or omissions of the District its officers, agents, employees, contractors, or any other person or entity for whom the District is legally responsible, in connection with this Lease; (ii) the District's breach of this Lease; or (iii) a breach of any representation, warranty or covenant of the District contained or incorporated in this Lease.

16. **INSURANCE**. Lessee, at its own expense, shall maintain in full force and effect for the duration of the Lease Term a combined single limit policy of bodily injury and property damage insurance, with a limit of not less than $1,000,000.00 per occurrence and $2,000,000.00 aggregate, insuring both the District and Lessee against all liability arising out of Lessee's use, occupancy, or maintenance of the Premises, which policy shall be endorsed as a primary insurance to the District. Any such policy shall contain a provision for a thirty (30) days' notice of cancellation to the

District; there will be an exception for non-payment of premium, which is ten (10) days' notice of cancellation. The Parties agree and hereby waive and release any and all rights of action for negligence against the other Party which may hereafter arise on account of damage to the Premises or the Property, resulting from any fire, or other casualty which is insurable under "Causes of Loss – Special Form" property damage insurance or for the kind covered by standard fire insurance policies with extended coverage, regardless of whether or not, or in what amounts, such insurance is now or hereafter carried by the Parties, even if any such fire or other casualty shall have been caused by the fault or negligence of the other Party. These waivers and releases shall apply between the Parties and they shall also apply to any claims under or through either Party as a result of any asserted right of subrogation. All such policies of insurance obtained by the Parties concerning the Premises or the Property shall waive the insurer's right of subrogation against the other Party.

Throughout the Term, the District shall maintain, at the District's sole cost and expense, Commercial General Liability of not less than $1,000,000 per occurrence and $2,000,000 aggregate. The insurance required of the District hereunder may be maintained by a blanket or master policy that includes properties other than the District Property.

17. **TERMINATION**. This Lease may be terminated, without penalty or further liability, as follows:

(a) By Lessee upon written notice to the District, if the Lessee is unable to obtain or maintain any Government Approvals necessary for the construction or operation of any Permitted Use at the Premises prior to the expiration of the Approvals Period; or

(b) By Lessee upon not less than sixty (60) days' prior written notice to the District for any reason or no reason, so long as Lessee pays the District a termination fee equal to six (6) months' Base Rent, at the then-current rate, provided, however, that no such termination fee will be payable on account of the termination of this Lease by Lessee under any termination right provided under any other section of this Lease.

18. **HOLDOVER**. In the event that Lessee does not vacate the Premises and continues to use and occupy the Premises after the expiration of the Term ("**Holdover**"), in addition to the remedies available to the District under this Lease, Lessee shall pay the District Base Rent for any duration beyond the Term for which Lessee is a Holdover at a rate of one hundred and twenty-five percent (125%) of the applicable monthly Base Rent in effect at the end of the Term. In no event shall any Holdover be granted or have reinstated any leasehold rights or any right to remain in occupancy for any period of time due to the Holdover's payment for use and occupancy under this section and the District's acceptance thereof.

19. **REMOVAL AND RESTORATION**. The Wireless Facility and any other property brought onto the District Property by Lessee will be and remain Lessee's personal property and, at Lessee's option, may be removed by Lessee at any time during the Term. The District covenants and agrees that no portion of the Wireless Facility constructed, erected, or placed on the District Property by Lessee will become, or be considered as being affixed or a part of, the District Property, it being the specific intention of the District that all improvements of every kind and nature constructed, erected, or placed by Lessee on the District Property will be and remain the personal property of Lessee and may be removed by Lessee at any time during, or at the end of,

the Term. Lessee shall repair any damage to the Premises, the Water Tank or the District Property resulting from Lessee's removal activities. In the event that any portion of the Wireless Facility, or any other property of Lessee, is not removed within sixty (60) days after the later of the end of the Term, termination of this Lease, or cessation of Lessee's operation of the Wireless Facility, the District may send notice to Lessee of such failure to remove and if not removed within thirty (30) days of such notice, such shall be deemed abandoned and may be removed by the District at Lessee's sole cost and expense which actual and reasonable costs shall become due and payable thirty (30) days after Lessee's receipt of an invoice therefore from the District.

20. **CONDEMNATION**. In the event of any condemnation of all of the District Property or the entirety of the Premises, this Lease shall terminate as of the date the condemning authority takes title or possession, whichever occurs first. If as a result of a partial condemnation of the Premises, Lessee, in Lessee's sole discretion, is unable to use the Premises for the purposes intended hereunder, or such condemnation may reasonably be expected, in Lessee's reasonable determination, to disrupt Lessee's operations at the Premises for more than one-hundred-twenty (120) days, Lessee may, at its option, to be exercised in writing within thirty (30) days after the condemning authority shall have taken possession, terminate this Lease as of the date the condemning authority takes such possession. All compensation awarded for any condemnation (or the proceeds of private sale in lieu thereof) shall be the property of the District and Lessee hereby assigns all of its interest in any such award to the District. Any such notice of termination shall cause this Lease to expire with the same force and effect as though the date set forth in such notice were the date originally set as the expiration date of this Lease and the Parties shall make an appropriate adjustment as of such termination date with respect to payments due to the other under this Lease. If Lessee does not terminate this Lease in accordance with the foregoing, this Lease shall remain in full force and effect as to the portion of the Premises remaining, except that the rent shall be reduced in the same proportion as the rentable area of the Premises taken bears to the total rentable area of the Premises. In the event that this Lease is not terminated by reason of such condemnation, the District shall promptly repair any damage to the Premises caused by such condemning authority to the extent of condemnation proceeds (excluding any proceeds for land) actually received. The parties shall each be entitled to pursue their own separate awards in the condemnation proceeds provided that any award to Lessee may not reduce any potential award to the District.

21. **CASUALTY**. In the event of damage by fire or other casualty to the Premises that cannot be reasonably be expected to be repaired within one-hundred-twenty (120) days following same or, if the Water Tank or District Property is damaged by fire or other casualty so that such damage may reasonably be expected to disrupt Lessee's Permitted Uses at the Premises for more than one-hundred-twenty (120) days, then Lessee may, at any time following such fire or other casualty, provided the District has not completed the restoration required to permit Lessee to resume Permitted Uses at the Premises, terminate this Lease upon thirty (30) days prior written notice to the District. Any such notice of termination shall cause this Lease to expire with the same force and effect as though the date set forth in such notice were the date originally set as the expiration date of this Lease and the parties shall make an appropriate adjustment, as of such termination date, with respect to payments due to the other under this Lease. Notwithstanding the foregoing, Base Rent shall abate during the period of repair following such fire or other casualty in proportion to the degree to which Lessee's Permitted Uses of the Premises is impaired.

22. **SECURITY**. The Parties recognize and agree that Lessee shall have the right to safeguard and protect its Ground Equipment. Lessee may elect, at its expense, to construct such enclosures and/or fences as Lessee reasonably determines to be necessary to secure the Ground Space and Ground Equipment, provided that such enclosures and/or fencing does not interfere with the District's access to, use of, or operations on the District Property or Water Tank.

23. **DEFAULT**.

(a) For the purpose of this Lease, a "**Default**" shall mean any breach of this Lease which goes uncured within the applicable cure periods and extensions, if any. The failure of either Party to perform any of its obligations pursuant to this Lease shall constitute a Default.

(b) Except as provided in subsection (c) below for monetary default, the non-defaulting Party shall give the defaulting Party written notice of such Default, and the defaulting Party shall cure such Default within thirty (30) days after receipt of such notice. In the event any such Default cannot reasonably be cured within such thirty (30) day period, if the defaulting Party shall proceed promptly after the receipt of such notice to cure such Default, and shall pursue curing such Default with due diligence, then the time for curing shall be extended for such period of time as may be necessary to complete such curing, however, in no event shall this extension of time be in excess of ninety (90) days, unless agreed upon in writing by the non-defaulting Party. A Party may not maintain an action to pursue any of the remedies available at law or under this Lease for Default against a defaulting Party unless and until the defaulting Party has failed to cure the breach within the time periods provided in this section.

(c) If either Party is in default under this Lease for a period of twenty (20) business days following receipt of notice from the other Party with respect to a default which may solely be cured by the payment of money, the non-defaulting Party may pursue any of the remedies available to the non-defaulting Party at law, in equity, or under this Lease for Default against the defaulting Party. Notwithstanding the foregoing, the District shall only be required to provide Lessee with two (2) notices of default in any given calendar year with respect to Lessee's failure to pay any sums becoming due and owing, and if any subsequent non-payment by Lessee occurs in such calendar year, the District may proceed to any of the remedies available without providing any further notice or cure; provided however, the second notice shall include the following (in all caps and bold font): "**LESSEE IS HEREBY ON NOTICE THAT THIS IS THE SECOND NOTICE OF FAILURE BY LESSEE TO MAKE TIMELY PAYMENT IN THE CURRENT CALENDAR YEAR, AND IF LESSEE AGAIN FAILS TO MAKE TIMELY PAYMENT DURING THIS CALENDAR YEAR, LESSEE SHALL BE IN DEFAULT WITHOUT FURTHER NOTICE OR GRACE PERIOD.**"

24. **REMEDIES**. Should the defaulting Party fail to cure a default under this Lease, the non-defaulting Party shall have all remedies available either at law or in equity, including the right to terminate this Lease.

25. **NOTICE OF LEASE**. The Parties agrees to execute a notice of this Lease, consistent with the requirements of Connecticut General Statutes Section 47-19, and thereafter record such notice in the City of Norwalk land records. Upon expiration or earlier termination of this Lease, Lessee shall execute within thirty (30) days after the District's written request, an instrument terminating such notice of Lease (which obligation shall survive expiration or termination of this Lease).

26. **NOTICES**. All notices, requests and demands hereunder will be given by first class certified or registered mail, return receipt requested, or by a nationally recognized overnight courier, postage prepaid, to be effective when properly sent and received, refused or returned undelivered. Notices will be addressed to the parties hereto as follows:

If to Lessee:	Dish Wireless L.L.C. Attn: Lease Administration 5701 South Santa Fe Drive Littleton, CO 80120
If to District:	First Taxing District of the City of Norwalk Attn: Manager 12 New Canaan Avenue Norwalk, Connecticut 06851
With a copy to:	Pullman & Comley LLC 90 State House Square Hartford, CT 06103 Attn: M. A. Ceccorulli, Esq.

Either party hereto may change the place for the giving of notice to it by thirty (30) days' prior written notice to the other party hereto as provided herein.

27. **ESTOPPEL CERTIFICATES**. Lessee, at any time, and from time to time, upon thirty (30) days' notice from the District, shall execute, acknowledge and deliver to the District, and/or to any other person, firm or corporation specified by the District, a statement certifying that this Lease is unmodified and in full force and effect (or, if there have been modifications, that the same is in full force and effect as modified and stating the modifications), stating the dates to which the rent and additional rent have been paid, and stating whether or not there exists any known default by the District under this Lease, and, if so, specifying each such default.

28. **MECHANICS' LIENS**. If any mechanic's, laborer's or materialman's lien shall be filed against any portion of the District Property on account of services performed in or on the District Property by Lessee or Lessee's contractors, subcontractors, mechanics, laborers, suppliers or any other person or entity, Lessee, within thirty (30) days after notice of the filing thereof, will cause the same to be discharged of record by payment, deposit bond, order of court of competent jurisdiction or otherwise. If Lessee shall fail to cause such lien to be discharged within the period aforesaid, then, in addition to any other right or remedy, the District may, but shall not be obligated to, discharge the same by paying the amount claimed to be due. Any amount so paid by the District and all costs and expenses incurred by the District in connection therewith, together with interest

thereon at the rate of twelve (12%) percent per annum from the respective dates of the District's making of the payment or incurring of the cost and expense shall constitute additional rent payable by Lessee under this Lease and shall be paid by Lessee to the District within thirty (30) days of demand.

29. **INSPECTION**. The District or its authorized agents shall at all reasonable times, upon twenty-four (24) hours prior notice, have the right to enter the Premises to inspect the same with a representative of Lessee. The District reserves the right to enter the Premises from time to time upon prior notice for the purposes of performing maintenance, repairs and improvements to the Water Tank and the District Property, provided the District shall take no action that will knowingly interfere with the performance of the Wireless Facility.

30. **WAIVERS**. Lessee represents, warrants and acknowledges that the transaction of which this Lease is a part is a "commercial transaction" as defined by the statutes of the State of Connecticut. THE LESSEE HEREBY WAIVES ALL RIGHTS TO NOTICE AND PRIOR COURT HEARING OR COURT ORDER UNDER CONNECTICUT GENERAL STATUTES SECTIONS 52-278a ET SEQ. AS AMENDED OR UNDER ANY OTHER STATE OR FEDERAL LAW WITH RESPECT TO ANY AND ALL PREJUDGMENT REMEDIES, THE LANDLORD MAY EMPLOY TO ENFORCE ITS RIGHTS AND REMEDIES HEREUNDER. THE LESSEE FURTHER CONSENTS TO THE ISSUANCE OF ANY PREJUDGMENT REMEDIES WITHOUT A BOND AND AGREES NOT TO REQUEST OR FILE MOTIONS SEEKING TO REQUIRE THE POSTING OF A BOND UNDER PUBLIC ACT 93-431 IN CONNECTION WITH THE LANDLORD'S EXERCISE OF ANY PREJUDGMENT REMEDY.

31. **MISCELLANEOUS**.

(a) **Amendment/Waiver**. This Lease cannot be amended, modified or revised unless done in writing and signed by District and Lessee. No provision may be waived except in a writing signed by both parties. The failure by a party to enforce any provision of this Lease or to require performance by the other party will not be construed to be a waiver, or in any way affect the right of either party to enforce such provision thereafter.

(b) **Limitation of Liability**. Except for the indemnity obligations set forth in this Lease, and otherwise notwithstanding anything to the contrary in this Lease, Lessee and District each waives any claims that each may have against the other with respect to consequential, incidental or special damages, however caused, based on any theory of liability.

(c) **Compliance with Law**. Lessee agrees to comply with all federal, state and local laws, orders, rules and regulations applicable to Lessee's Permitted Use of the Premises and the District Property.

(d) **Bind and Benefit**. The terms and conditions contained in this Lease will run with the Premises and bind and inure to the benefit of the parties, their respective heirs, executors, administrators, successors and assigns.

(e) **Entire Agreement**. This Lease and the exhibits attached hereto, all being a part hereof, constitute the entire agreement of the parties hereto and will supersede all prior offers,

negotiations and agreements with respect to the subject matter of this Lease. Except as otherwise stated in this Lease, each party shall bear its own fees and expenses (including the fees and expenses of its agents, brokers, representatives, attorneys, and accountants) incurred in connection with the negotiation, drafting, execution and performance of this Lease and the transactions it contemplates.

(f) **Governing Law.** This Lease will be governed by the laws of the state of Connecticut and without regard to any existing or potential conflicts of law.

(g) **Interpretation.** Unless otherwise specified, the following rules of construction and interpretation apply: (i) captions are for convenience and reference only and in no way define or limit the construction of the terms and conditions hereof; (ii) use of the term "including" will be interpreted to mean "including but not limited to"; (iii) whenever a party's consent is required under this Lease, except as otherwise stated in the Lease or as same may be duplicative, such consent will not be unreasonably withheld, conditioned or delayed; (iv) exhibits are an integral part of this Lease and are incorporated by reference into this Lease; (v) use of the terms "termination" or "expiration" are interchangeable; (vi) reference to a default will take into consideration any applicable notice, grace and cure periods; (vii) to the extent there is any issue with respect to any alleged, perceived or actual ambiguity in this Lease, the ambiguity shall not be resolved on the basis of who drafted the Lease; (viii) the singular use of words includes the plural where appropriate; and (ix) if any provision of this Lease is held invalid, illegal or unenforceable, the remaining provisions of this Lease shall remain in full force if the overall purpose of the Lease is not rendered impossible and the original purpose, intent or consideration is not materially impaired.

(h) **Survival.** Any provisions of this Lease relating to indemnification shall survive the termination or expiration hereof. In addition, any terms and conditions contained in this Lease that by their sense and context are intended to survive the termination or expiration of this Lease shall so survive.

(i) **Submission of Agreement.** The submission of this Lease to any party for examination or consideration does not constitute an offer, reservation of or option for the Premises based on the terms set forth herein. This Lease shall only become effective as a binding Lease upon the handwritten legal execution, acknowledgment and delivery hereof by the District and Lessee.

(j) **Counterparts.** This Lease may be executed in two (2) or more counterparts, all of which shall be considered one and the same agreement and shall become effective when one or more counterparts have been signed by each of the parties. All parties need not sign the same counterpart.

(k) **Attorneys' Fees.** In the event that any dispute between the parties related to this Lease should result in litigation, the prevailing party in such litigation shall be entitled to recover from the other party all reasonable fees and expenses of enforcing any right of the prevailing party, including reasonable attorneys' fees and expenses. Prevailing party means the party determined by the court to have most nearly prevailed even if such party did not prevail in all matters.

(l) RESERVED.

(m) **Further Acts**. Upon request, both Parties will cause to be promptly and duly taken, executed, acknowledged and delivered all such further acts, documents, and assurances as the other Party may request from time to time in order to effectuate, carry out and perform all of the terms, provisions and conditions of this Lease and all transactions and Permitted Use contemplated by this Lease.

(n) **Force Majeure**. District shall be excused for the period of any delay in the performance of any obligation hereunder when prevented from so doing by causes beyond its control, including labor disputes, civil commotion, hostilities, sabotage, governmental regulations or controls, fire or other casualty, inability to obtain any material, financing or services, pandemics (such as the Covid-19 pandemic) and acts of God (sometimes referred to herein as "**Force Majeure**"). Lessee shall similarly be excused for Force Majeure delay in the performance of any obligation hereunder, provided that nothing contained in this Section shall be deemed to excuse or permit any delay in the payment of Base Rent or any additional amount due hereunder, or any delay in the cure of any default which may be cured by the payment of money.

32. **INTERFERENCE**. Prior to or concurrent with the execution of this Agreement, the District has provided or will provide Lessee with a list of radio frequency user(s) and frequencies used on the District Property as of the Effective Date. Lessee warrants that its use of the Premises will not interfere with those existing radio frequency uses on the District Property, as long as those existing radio frequency user(s) operate and continue to operate within their respective frequencies and in accordance with all applicable laws and regulations. In the event any Lessee's equipment causes such interference, and after the District has notified Lessee in writing of such interference, Lessee shall provide the District with a report containing (i) a remediation plan to abate or eliminate the interference; (ii) an estimate of the time required to complete such interference abatement; (iii) additional information that may assist the District or other frequency user(s) in conducting their respective activities pending completion of interference abatement. Lessee will take all steps necessary to correct and eliminate the interference, including but not limited to powering down such equipment and later powering up such equipment for intermittent testing. If Lessee cannot abate or eliminate the interference, Lessee shall either remove or relocate its equipment to an alternative location that does not cause interference with the District's systems or Lessee may otherwise terminate this Lease by written notice to the District and Lessee shall have no further liability hereunder from and after the date of such termination. In no event will the District be entitled to terminate this Lease or relocate the equipment as long as Lessee is making a good faith effort to remedy the interference issue. The District agrees that the District and/or any other tenants or licensees of the District Property who currently have or in the future take possession of the Property will be permitted to install only such equipment that is of the type and frequency which will not cause harmful interference which is measurable in accordance with then-existing industry standards to the then existing equipment of Lessee. Notwithstanding the foregoing, the District shall, at all times, be allowed to utilize the District Property for its intended purposes and any interference caused by the use of equipment, or operations by, the District or other governmental or quasi-governmental entities on the District Property shall not be deemed a material breach hereunder.

[No further text on this page – signature page follows]

IN WITNESS WHEREOF, the parties have caused this Lease to be effective as of the Effective Date.

DISTRICT:

THE FIRST TAXING DISTRICT OF THE CITY OF NORWALK

By: _____
Print Name: Jalin T. Sead
Its: Chair, District Commissioner
Date: 9/26/2023

By: _____
Print Name: Thomas Cullen, Esq.
Its: District Commissioner
Date: 9/20/2023

By: _____
Print Name: Elsa Peterson Obuchowski
Its: District Commissioner
Date: 9/26/2023

LESSEE:

DISH WIRELESS L.L.C

By: _____
Print Name: _____
Its: _____
Date: _____

Site Number: NJJER01152C

LCS

EXHIBIT A

District Property

All that certain tract or parcel of land, situated in the Town of Norwalk, County of Fairfield and State of Connecticut, in area 46,131 square feet, and shown and delineated as parcel 3 on a certain map which has been approved by the Planning Commission and by the Common Council of the City of Norwalk and is on file in the office of the Town Clerk of the Town of Norwalk, and is entitled "Map of Property Prepared For Sidney I. Asp Norwalk, Conn. Scale 1"=30' Feb. 22, 1960 Revised Feb. 25, 1960 By Leo Leonard, Jr., Civil Engr. & Surveyor, Norwalk, Conn.". Said parcel 3 is generally bounded northerly for a distance of 283.53 feet, more or less, by land now or formerly of Leonard and Estella Tuozzolo, by land now or formerly of Mary Tuozzolo and by land now or formerly of Vito Tuozzolo; easterly 193.51 feet by other land of Sidney I. Asp and Anne Ayres Asp; southerly 229.66 feet, more or less, by land now or formerly of Mary Caratone; and westerly 165.48 feet by land now or formerly of John D. and Anna B. O'Neill, by Filbert Road, and by land now or formerly of Vito Tuozzolo.

EXHIBIT B

Ground Space and License Areas

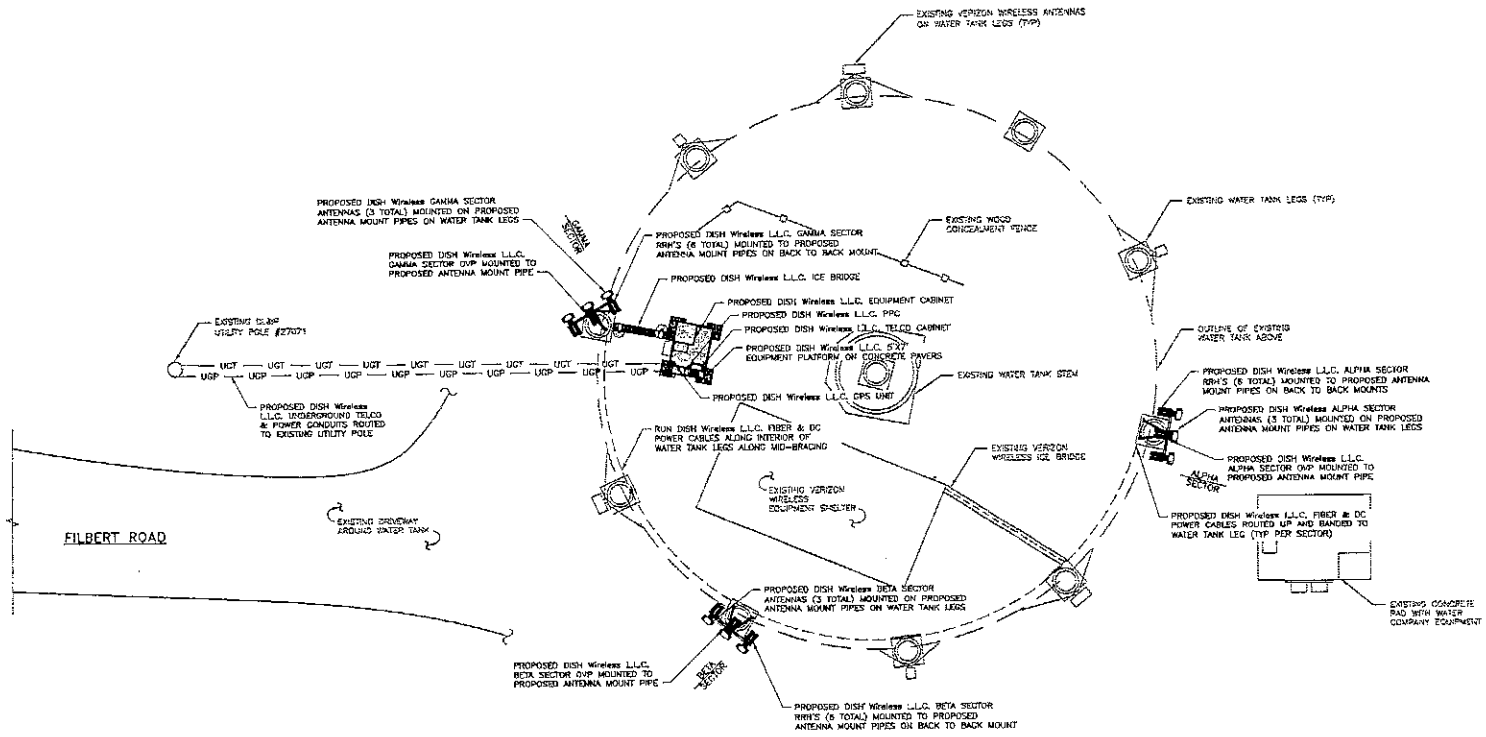
See attached drawings.

NOTE: LESSEE may be referred to in the attached as "DISH Wireless L.L.C.".

NOTE

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

ANTENNA AZIMUTHS	
ALPHA	100°
BETA	210°
GAMMA	330°



ENLARGED SITE PLAN

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

1

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

Tectonic
Architecture, Structures, Geotechnical Services
Tectonic Engineering Consultants, Geologists & Land Surveyors, D.P.C. Inc.
Affiliate Offices:
1276 Route 300
Newburgh, NY 12550
Phone: (845) 567-9694
(800) 828-8531
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 #: ----

LEASE EXHIBIT

SUBMITTALS

REV	DATE	DESCRIPTION
A	04/11/22	ISSUED FOR REVIEW

A&E PROJECT NUMBER
10710.NJJER01152C

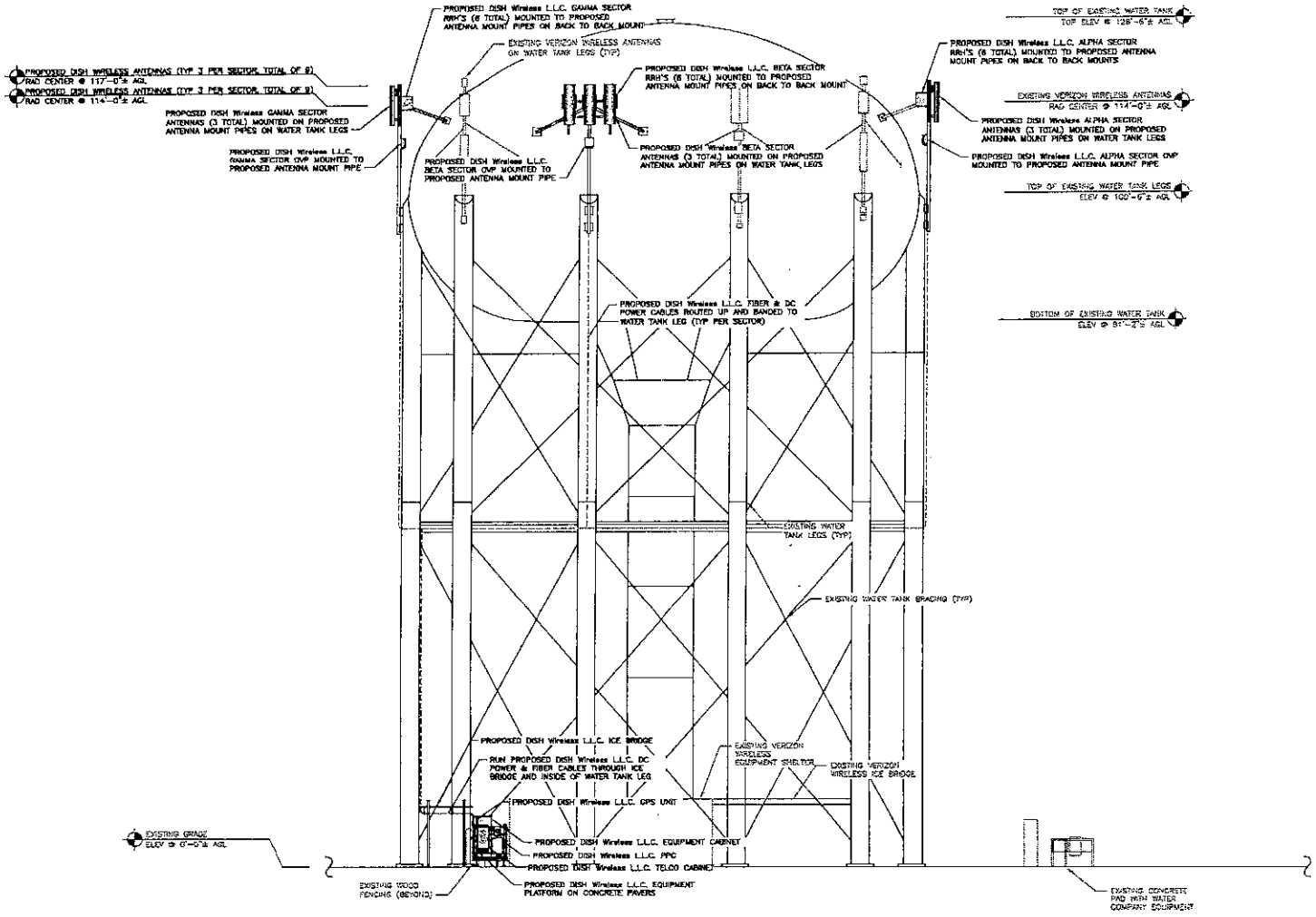
DISH WIRELESS PROJECT INFORMATION
NJJER01152C
FIRST DIST WATER DEPT.
NORWALK, CT 06851

SHEET TITLE
ENLARGED SITE PLAN

SHEET NUMBER
LE-1

NOTE

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



PROPOSED ELEVATION

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

2

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

Tectonic
1379 Route 300
Newburgh, NY 12550
Phone: (845) 567-4896
(800) 639-4031

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 #:

LEASE EXHIBIT

SUBMITTALS

REV	DATE	DESCRIPTION
A	04/11/22	ISSUED FOR REVIEW

A&E PROJECT NUMBER
10710.NJJER01152C

DISH WIRELESS PROJECT INFORMATION
NJJER01152C

FIRST DIST WATER DEPT.
NORWALK, CT 06851

SHEET TITLE
ELEVATION

SHEET NUMBER
LE-2

Exhibit G

Mailing Receipts

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

LTR 1 OF 1

CT 069 9-04

SHIP TO:

FIRST NORWALK TAXING DISTRICT
12 NEW CANAAN AVE.
NORWALK CT 06851

UPS 2ND DAY AIR
TRACKING #: 1Z E05 345 02 6619 9705

2

BILLING: P/P

WS 26.0.6 SHARP MX-3070 03.0A 01/2024

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

1ZE053450266199705

Service

UPS 2nd Day Air®

Delivered On

01/17/2024 11:11 A.M.

Delivered To

12 NEW CANAAN AVE
NORWALK, CT, 06851, US

Received By

ANTHONY

Left At

Office

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

Sincerely,

UPS

Tracking results provided by UPS: 01/18/2024 9:26 A.M. EST

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

LTR 1 OF 1

CT 069 9-04

UPS 2ND DAY AIR
TRACKING #: 1Z E05 345 02 6668 2601

2

SHIP TO:

HON. HARRY RILLING
125 EAST AVE.
NORWALK CT 06856

BILLING: P/P

WS 26.0.6 SHARP MX-3070 03.0A 01/2024

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

1ZE053450266682601

Service

UPS 2nd Day Air®

Delivered On

01/04/2024 11:46 A.M.

Delivered To

125 EAST AVE
NORWALK, CT, 06856, US

Received By

MAYOR

Left At

Inside Delivery

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

Sincerely,

UPS

Tracking results provided by UPS: 01/11/2024 6:55 A.M. EST

LTR 1 OF 1

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

SHIP TO:

DIRECTOR PLANNING AND ZONING
MR. STEVEN KLEPPIN
125 EAST AVE.
NORWALK CT 06856

CT 069 9-04

UPS 2ND DAY AIR
TRACKING #: 1Z E05 345 02 6448 2410

2

BILLING: P/P

WS 26.0.6 SHARP MX-3070 03.0A 01/2024

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

1ZE053450264482410

Service

UPS 2nd Day Air®

Delivered On

01/04/2024 11:48 A.M.

Delivered To

125 EAST AVE
NORWALK, CT, 06856, US

Received By

ZECCOLA

Left At

Inside Delivery

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

Sincerely,

UPS

Tracking results provided by UPS: 01/11/2024 6:56 A.M. EST