

Tectonic Engineering  
Theresa Ranciato-Viele  
63-3 N. Branford Road  
Branford, CT 06405  
[Tranciato@Tectonicengineering.com](mailto:Tranciato@Tectonicengineering.com)  
203-606-5127

November 16, 2023

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

RE: **Notice of Exempt Modification to an existing 130' monopole located at 173 ½ West Rocks Road, Norwalk, Connecticut**

**Latitude: 41° 8' 36.64" / Longitude: -73° 25' 8.28"**

Dear Ms. Bachman:

This letter and attachments are submitted on behalf of Dish Wireless, LLC ("Dish"). Dish plans to install antennas and related equipment to the tower site at the existing 130' monopole tower facility located at 173 ½ West Rocks Road, Norwalk, Connecticut (See Original Facility Approval attached as Exhibit A) ("Facility"). The property and tower 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 tower 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 June 15, 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 tower 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 existing 130' height of the Tower as the Dish antennas will be installed at a height of 96'.

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 1.2560%.

## **Tower**

The Facility consists of a One hundred thirty foot (130') monopole tower located at 173 ½ West Rocks Road, Norwalk, Connecticut. As indicated above, the property and tower are owned by the First Norwalk Taxing District. The tower currently supports AT&T at the one hundred twenty six foot (126') centerlines AGL, Verizon at the one hundred sixteen foot (116') centerline AGL and T-Mobile at the one hundred six foot (106') centerline AGL. The antenna locations are set forth on Sheet A-2 of the attached drawings in Exhibit C.

### **A. TECHNICAL FEASIBILITY**

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

### **B. LEGAL FEASIBILITY**

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

### **C. ENVIRONMENTAL FEASIBILITY**

The proposed shared use of this Facility would have a minimal environmental impact. The installation of the Dish equipment at the 96' level of the existing tower would have an insignificant visual impact on the area surrounding the tower. The proposed Dish ground equipment would be installed within the

existing Facility compound. The Dish installation would not cause any significant alteration to the physical or environmental characteristics of the existing Facility. Additionally, as evidenced by Exhibit F, the proposed antennas would not increase the radio frequency emissions to a level at or above the Federal Communications Commission safety standards.

**D. ECONOMIC FEASIBILITY**

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

**E. PUBLIC SAFETY CONCERNS**

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

For the reasons set forth herein, the proposed shared use of the existing tower at 173 ½ West Rocks Road, Norwalk, satisfies the criteria stated in C.G.S. sec. 16-50aa, and supports the general goal of preventing the unnecessary proliferation of tower sites in Connecticut. Dish respectfully requests the Council issue an order approving the proposed shared use.

Respectfully submitted,  
Dish Wireless, LLC

By 

Theresa Ranciato-Viele, consultant  
63-3 N. Branford Road  
Branford, CT 06405  
[Tranciato@Tectonicengineering.com](mailto: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

<b>DOCKET NO. 489</b> – The First Taxing District Water Department of Norwalk application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance, and operation of a telecommunications facility located at 173½ West Rocks Road, Norwalk, Connecticut.	} Connecticut } Siting } Council
---	--

November 19, 2020

### Decision and Order

Pursuant to Connecticut General Statutes §16-50p and the foregoing Findings of Fact and Opinion, the Connecticut Siting Council (Council) finds that the effects associated with the construction, maintenance, and operation of a telecommunications facility, including effects on the natural environment, ecological balance, public health and safety, scenic, historic, and recreational values, agriculture, forests and parks, air and water purity, and fish, aquaculture and wildlife are not disproportionate, either alone or cumulatively with other effects, when compared to need, are not in conflict with the policies of the State concerning such effects, and are not sufficient reason to deny the application, and therefore directs that a Certificate of Environmental Compatibility and Public Need, as provided by General Statutes § 16-50k, be issued to The First Taxing District Water Department of Norwalk, hereinafter referred to as the Certificate Holder, for a telecommunications facility at 173 ½ West Rocks Road, Norwalk, Connecticut.

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

1. The tower shall be constructed as a monopole at a height of 130 feet above ground level to provide the proposed wireless services, sufficient to accommodate the antennas of New Cingular Wireless PCS, LLC, Cellco Partnership d/b/a Verizon Wireless, T-Mobile Northeast, LLC, Sprint Spectrum, and other entities, both public and private. The height of the tower may be extended after the date of this Decision and Order pursuant to regulations of the Federal Communications Commission.
2. The Certificate Holder shall prepare a Development and Management (D&M) Plan for this site in compliance with Sections 16-50j-75 through 16-50j-77 of the Regulations of Connecticut State Agencies. The D&M Plan shall be submitted to and approved by the Council prior to the commencement of facility construction and shall include:
  - a) final site plan(s) for development of the facility that employ the governing standard in the State of Connecticut for tower design in accordance with the currently adopted International Building Code and include specifications for the tower including finish/color, tower foundation, antennas and equipment compound including, but not limited to, fencing, radio and battery backup equipment, access road, utility installation, and emergency backup generators with fuel tanks;
  - b) the tower shall be designed with a yield point to ensure that the tower setback radius remains within the boundaries of the subject property;
  - c) construction plans for site clearing, grading, landscaping, water drainage and stormwater control, and erosion and sedimentation controls consistent with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control, as amended;
  - d) final landscaping plan for the tower compound;
  - e) final aquifer protection plan that includes, but is not limited to, a petroleum/hazardous material storage and spill prevention plan; and
  - f) proposed hours and days of the week for construction activities.

3. Prior to the commencement of operation, the Certificate Holder shall provide the Council worst-case modeling of the electromagnetic radio frequency power density of all proposed entities' antennas at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin No. 65, August 1997. The Certificate Holder shall ensure a recalculated report of the electromagnetic radio frequency power density be submitted to the Council if and when circumstances in operation cause a change in power density above the levels calculated and provided pursuant to this Decision and Order.
4. Upon the establishment of any new federal radio frequency standards applicable to frequencies of this facility, the facility granted herein shall be brought into compliance with such standards.
5. The Certificate Holder shall provide the Council with a copy of necessary permits from any other state or federal agency with concurrent jurisdiction prior to the commencement of construction.
6. The Certificate Holder shall permit public or private entities to share space on the proposed tower for fair consideration, or shall provide any requesting entity with specific legal, technical, environmental, or economic reasons precluding such tower sharing.
7. Unless otherwise approved by the Council, if the facility authorized herein is not fully constructed with at least one fully operational wireless telecommunications carrier providing wireless service within eighteen months from the date of the mailing of the Council's Findings of Fact, Opinion, and Decision and Order (collectively called "Final Decision"), this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made. The time between the filing and resolution of any appeals of the Council's Final Decision shall not be counted in calculating this deadline. Authority to monitor and modify this schedule, as necessary, is delegated to the Executive Director. The Certificate Holder shall provide written notice to the Executive Director of any schedule changes as soon as is practicable.
8. Any request for extension of the time period referred to in Condition 7 shall be filed with the Council not later than 60 days prior to the expiration date of this Certificate and shall be served on all parties and intervenors, as listed in the service list, and the City of Norwalk.
9. If the facility ceases to provide wireless services for a period of one year, this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council within 90 days from the one year period of cessation of service. The Certificate Holder may submit a written request to the Council for an extension of the 90 day period not later than 60 days prior to the expiration of the 90 day period.
10. Any nonfunctioning antenna, and associated antenna mounting equipment, on this facility shall be removed within 60 days of the date the antenna ceased to function.
11. In accordance with Section 16-50j-77 of the Regulations of Connecticut State Agencies, the Certificate Holder shall provide the Council with written notice two weeks prior to the commencement of site construction activities. In addition, the Certificate Holder shall provide the Council with written notice of the completion of site construction, and the commencement of site operation.
12. The Certificate Holder shall remit timely payments associated with annual assessments and invoices submitted by the Council for expenses attributable to the facility under Conn. Gen. Stat. §16-50v.

13. This Certificate may be transferred in accordance with Conn. Gen. Stat. §16-50k(b), provided both the Certificate Holder/transferor and the transferee are current with payments to the Council for their respective annual assessments and invoices under Conn. Gen. Stat. §16-50v. In addition, both the Certificate Holder/transferor and the transferee shall provide the Council a written agreement as to the entity responsible for any quarterly assessment charges under Conn. Gen. Stat. §16-50v(b)(2) that may be associated with this facility.
14. The Certificate Holder shall maintain the facility and associated equipment, including but not limited to, the tower, tower foundation, antennas, equipment compound, radio equipment, access road, utility line and landscaping in a reasonable physical and operational condition that is consistent with this Decision and Order and a Development and Management Plan to be approved by the Council.
15. If the Certificate Holder is a wholly-owned subsidiary of a corporation or other entity and is sold/transferred to another corporation or other entity, the Council shall be notified of such sale and/or transfer and of any change in contact information for the individual or representative responsible for management and operations of the Certificate Holder within 30 days of the sale and/or transfer.
16. This Certificate may be surrendered by the Certificate Holder upon written notification and acknowledgment by the Council.

We hereby direct that a copy of the Findings of Fact, Opinion, and Decision and Order be served on each person listed in the Service List, dated April 24, 2020, and notice of issuance published in the Norwalk Hour.

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

Exhibit B

Property Card



**173 1/2 WEST ROCKS RD**

**Location** 173 1/2 WEST ROCKS RD

**Mblu** 5/ 22A/ 18/ 0/

**Acct#** 13222

**Owner** FIRST TAXING DISTRICT

**Assessment** \$1,514,730

**Appraisal** \$2,163,900

**PID** 13222

**Building Count** 1

**Current Value**

Appraisal			
Valuation Year	Improvements	Land	Total
2018	\$1,451,940	\$711,960	\$2,163,900

Assessment			
Valuation Year	Improvements	Land	Total
2018	\$1,016,360	\$498,370	\$1,514,730

**Owner of Record**

**Owner** FIRST TAXING DISTRICT  
**Co-Owner** (WATER DEPT - WATER TANK)  
**Address** 3 BELDEN AVE  
 NORWALK, CT 06850-3303

**Sale Price** \$0  
**Certificate**  
**Book & Page** 365/140  
**Sale Date** 12/31/1940

**Ownership History**

Ownership History				
Owner	Sale Price	Certificate	Book & Page	Sale Date
FIRST TAXING DISTRICT	\$0		365/140	12/31/1940

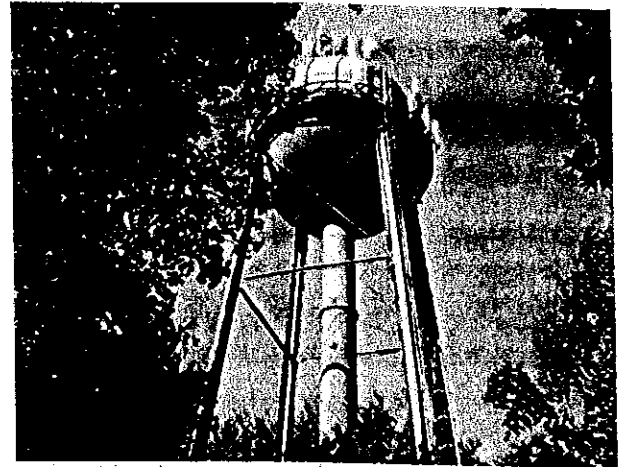
**Building Information**

**Building 1 : Section 1**

**Year Built:**  
**Living Area:** 0  
**Replacement Cost:** \$0  
**Building Percent Good:**  
**Replacement Cost**  
**Less Depreciation:** \$0

Field	Description
Style	Outbuildings
Model:	
Grade	
Stories	
Occupancy	
Exterior Wall 1	
Exterior Wall 2	
Roof Structure:	
Roof Cover	
Interior Wall 1	
Interior Wall 2	
Interior Floor 1	
Interior Floor 2	
Heat Fuel	
Heat Type	
AC Type	
Bedrooms	
Full Baths	
Half Baths	
Extra Fixtures	
Total Rooms	
Bath Style	
Kitchen Style	
Extra Kitchens	
Frame	
Insulation	
Bsmt Garage	
Foundation	
FBM Area	
FBM Quality	
Fireplaces	
# of Heat Systems	
Central Vac	
Solar HW	
Electrical	
Heat Percent	

### Building Photo



(PhotoHandler.ashx?pld=13222&bid=13222)

### Building Layout

Building Layout (ParcelSketch.ashx?pld=13222&bid=13222)

Building Sub-Areas (sq ft)	Legend
No Data for Building Sub-Areas	

### Extra Features

No Data for Extra Features

**Land**

**Land Use**

Use Code 920V  
 Description Mun Land Comm  
 Zone A1  
 Neighborhood C201

**Land Line Valuation**

Size (Acres) 1.90  
 Frontage  
 Depth  
 Assessed Value \$498,370  
 Appraised Value \$711,960

**Outbuildings**

Outbuildings						Legend
Code	Description	Sub Code	Sub Description	Size	Value	Bldg #
TWR	Water Tower			250000.00 GAL	\$1,125,000	1
FN6	Fence 6'			290.00 L.F.	\$2,640	1
SHD4	Cell Equip	FR	Frame	220.00 S.F.	\$33,000	1
SHD4	Cell Equip	FR	Frame	574.00 S.F.	\$86,100	1
SHD4	Cell Equip	FR	Frame	168.00 S.F.	\$25,200	1
SHD4	Cell Equip	FR	Frame	200.00 S.F.	\$30,000	1
CEL2	Cell Rooftop			4.00 UNITS	\$150,000	1

**Valuation History**

Appraisal			
Valuation Year	Improvements	Land	Total
2022	\$1,451,940	\$695,320	\$2,147,260
2022	\$1,451,940	\$695,320	\$2,147,260
2021	\$1,451,940	\$695,320	\$2,147,260

Assessment			
Valuation Year	Improvements	Land	Total
2022	\$1,016,360	\$486,720	\$1,503,080
2022	\$1,016,360	\$486,720	\$1,503,080
2021	\$1,016,360	\$486,720	\$1,503,080

Exhibit C  
Project Plans



**DISH Wireless L.L.C. SITE ID:**  
**NJJER01148C**  
**DISH Wireless L.L.C. SITE ADDRESS:**  
**173 WEST ROCKS ROAD**  
**NORWALK, CT 06851**

**CONNECTICUT CODE COMPLIANCE**

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 INTERPRETED TO PERMIT WORK NOT CONFORMING TO THESE CODES:

STATE CODE  
 2018 CT STATE BUILDING CODE/2015 IBC W/ CT AMENDMENTS  
 MUNICIPAL CODE  
 2018 CT STATE BUILDING CODE/2015 IBC W/ CT AMENDMENTS

**SHEET INDEX**

NO.	SHEET TITLE
1	TITLE SHEET
2	OVERALL SITE PLAN
3	ENLARGED SITE & EQUIPMENT PLAN
4	ELEVATIONAL ANTENNA LAYOUT & SCHEDULE
5	EQUIPMENT DETAILS
6	EQUIPMENT DETAILS
7	EQUIPMENT DETAILS
8	ELECTRICAL/FIBER ROUTE PLAN AND NOTES
9	ELECTRICAL DETAILS
10	ELECTRICAL ONE-LINE FAULT CALC & PANEL SCHEDULE
11	PFC NEUTRAL-TO-GROUND SCHEMATIC
12	GROUNDING PLANS AND NOTES
13	GROUNDING DETAILS
14	RF CABLE COLOR CODE
15	LEGEND AND ABBREVIATIONS
16	GENERAL NOTES
17	GENERAL NOTES
18	GENERAL NOTES

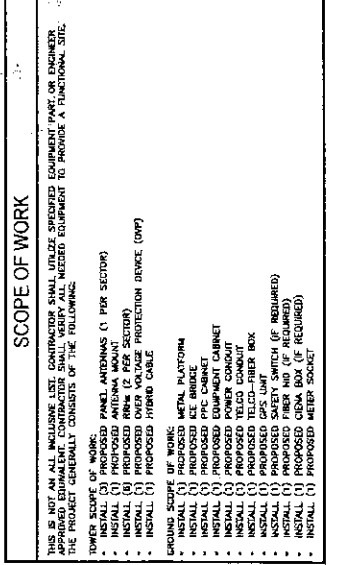
**SCOPE OF WORK**

THIS IS NOT AN ALL INCLUSIVE LIST. CONTRACTOR SHALL VERIFY ALL REQUIRED EQUIPMENT, PERMIT AND ENGINEER APPROVED EQUIPMENT. CONTRACTOR SHALL VERIFY ALL REQUIRED EQUIPMENT TO PROVIDE A FUNCTIONAL SITE. THE PROJECT GENERALLY CONSISTS OF THE FOLLOWING:

- INSTALL (1) PROPOSED PANEL ANTENNAS (1 PER SECTOR)
- INSTALL (1) PROPOSED RINX (2 PER SECTOR)
- INSTALL (1) PROPOSED OVER VOLTAGE PROTECTION DEVICE (OVP)
- INSTALL (1) PROPOSED HYBRID CABLE

WORKING SCOPE OF WORK:

- METAL IN-SITU FORM
- INSTALL (1) PROPOSED METAL CABINET
- INSTALL (1) PROPOSED PFC CABINET
- INSTALL (1) PROPOSED EQUIPMENT CABINET
- INSTALL (1) PROPOSED TELECOM CABINET
- INSTALL (1) PROPOSED TELCO CABINET
- INSTALL (1) PROPOSED GFS UNIT WITH (IF REQUIRED)
- INSTALL (1) PROPOSED FIBER END (IF REQUIRED)
- INSTALL (1) PROPOSED CISM BOX (IF REQUIRED)
- INSTALL (1) PROPOSED METER SOCKET



**SITE PHOTO**

**811**  
 UNDERGROUND SERVICE ALERT (UBA) 811  
 UTILITY NOTIFICATION CENTER OF CONNECTICUT  
 (800) 822-4425  
 WWW.811.CT.GOV

CALL 2 WORKING AND MULTI AGENCY FROM TO CONSTRUCTION

**GENERAL NOTES**

THE FACILITY IS UNMANNED AND NOT FOR HUMAN OCCUPANCY. A TECHNICAL SURVEY SHALL BE CONDUCTED TO DETERMINE THE EFFECT OF DISTURBANCE, NO SANITARY SERVICE, POTABLE WATER, OR TRASH DISPOSAL IS REQUIRED AND NO COMMERCIAL SERVICE IS PROPOSED.

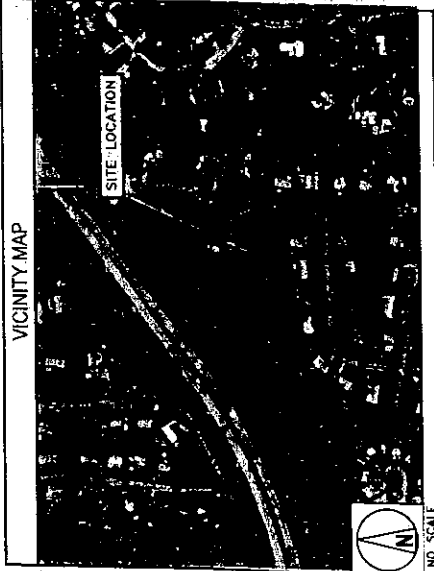
**11'x17' PLOT WILL BE HALF SCALE UNLESS OTHERWISE NOTED**

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.

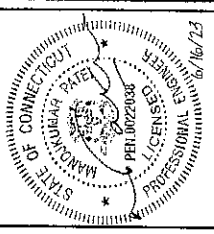
SITE INFORMATION		PROJECT DIRECTORY	
PROPERTY OWNER:	FIRST TOWER DISTRICT	APPLICANT:	DISH Wireless L.L.C. 5701 SOUTH SANTA FE DRIVE UTLINGTON, CO 80120
ADDRESS:	173 WEST ROCKS ROAD NORWALK, CT 06851	TOWER OWNER:	FIRST TOWER DISTRICT
TOWER TYPE:	MONOPOLE	SITE ADDRESS:	TECTONIC ENGINEERING CONSULTANTS GEOLOGISTS, SURVEYORS D.P.C., INC. 1279 ROUTE 300 NEWBURGH, NY 10953 (845) 397-0858
TOWER OR SITE ID:	N/A	SITE ACQUISITION:	TECTONIC ENGINEERING CONSULTANTS GEOLOGISTS, SURVEYORS D.P.C., INC. 1279 ROUTE 300 NEWBURGH, NY 10953 (845) 397-0858
COUNTY:	FARMFIELD	CONSTRUCTION MANAGER:	RAJAL ROSKOLOWSKI RAJAL.ROSKOLOWSKI@DISH.COM
LATITUDE (NAD 83):	41° 06' 36.64" N	RF ENGINEER:	PIYANJAN MAHARAJ PIYANJAN.MAHARAJ@DISH.COM
LONGITUDE (NAD 83):	73° 25' 00.00" W		
ZONING JURISDICTION:	CITY OF NORWALK		
ZONING DISTRICT:	A1		
PARCEL NUMBER:	5-22A-18-0		
POWER COMPANT:	EVERSOURCE		
TELEPHONE COMPANY:	T.B.D.		

**DIRECTIONS**

**DIRECTIONS FROM US ADP BOULEVARD, ROSELAND, NJ 07068:**  
 TAKE THE 1-287 EXIT TOWARD  
 WEST ONTO I-287 W VIA THE RAMP TO PARSONS. TAKE THE 1-287 EXIT TOWARD  
 US-46/WASHINGTON-KEEP RIGHT AT FORK. FOLLOW SIGN FOR I-287 N AND MERGE ONTO I-287 N.  
 TAKE EXIT 207 S TO WEST ONTO I-287 E. TAKE SIGN FOR WHITE  
 PLAINS/P/VE. TAKE EXIT 8 S-4 TOWARD HUTCHINSON FERRY/ARBITRARY MERGE ONTO WESTMINSTER AVE.  
 TAKE EXIT 1A TO I-287 N. TAKE EXIT 408 FOR MAIN AVENUE/TURN RIGHT ONTO MAIN AVE. TURN LEFT ONTO  
 CREEPING HOLLOW DR. SLIGHT LEFT TO STAY ON CREEPING HOLLOW DR. TURN RIGHT ONTO BUTTERNUT LN.  
 TURN RIGHT ONTO WEST ROCKS ROAD.



**VICINITY MAP**



DATE CHECKED BY:	APPROVED BY:
DATE	DATE
NAME	NAME
JOB	JOB
MP	MP
RFDS KEY #:	

**CONSTRUCTION DOCUMENTS**

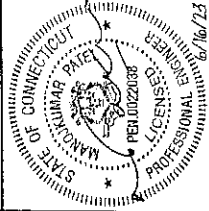
REV	DATE	DESCRIPTION
1	04/20/24	ISSUED FOR APPROVAL
2	04/20/24	ISSUED FOR BIDDING

PROJECT NUMBER: 10710.NJJER01148B  
 DISH WIRELESS PROJECT INFORMATION  
 NJJER01148C  
 173 WEST ROCKS ROAD  
 NORWALK, CT 06851

SHEET TITLE: TITLE SHEET  
 SHEET NUMBER: T-1



5701 SOUTH SADDLE GROVE  
LITTLETON, CO 80120



IT IS A VIOLATION OF LAW FOR ANY PERSON,  
UNLESS THEY ARE PROPERLY LICENSED, TO  
PREPARE, SEAL, SIGN OR ISSUE THIS DOCUMENT  
OR TO ALTER THIS DOCUMENT.

DRAWN BY: [ ] CHECKED BY: APPROVED BY: [ ]

DATE: [ ]

SCALE: [ ]

PROJECT NUMBER: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

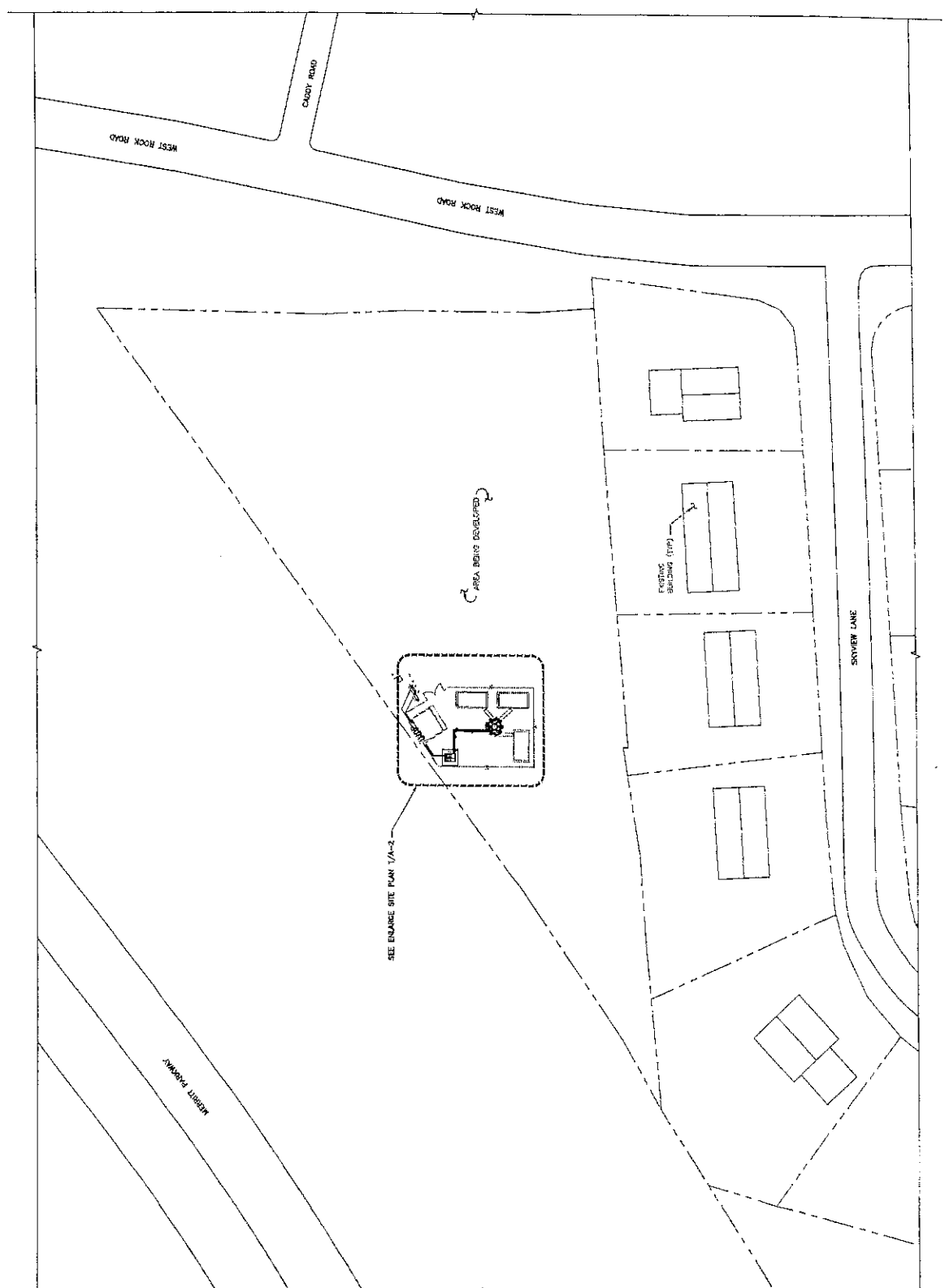
DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]



SEE ENHANCE SITE PLAN 1/A-2  
EXISTING BUILDING (FP)  
AREA BEING DEVELOPED  
WEST ROCK ROAD  
CUDDY ROAD  
STRYKER LANE

NOTE: THE SITE PLAN SHOWN IS BASED ON GOOGLE EARTH INFORMATION AND IS NOT BASED ON AN ACTUAL SURVEY.

SCALE: 1" = 30'

DATE: [ ]

PROJECT NUMBER: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

DESCRIPTION: [ ]

DATE: [ ]

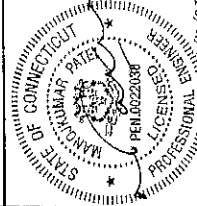
DESCRIPTION: [ ]



5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



10000 Tectonic Drive, Suite 100, Littleton, CO 80120  
Phone: (303) 533-8800  
www.tectonicinc.com



IT IS A VIOLATION OF LAW FOR ANY PERSON  
TO SIGN OR SEAL ANY DRAWING OR SPECIFICATION  
OR ANY OTHER DOCUMENT PREPARED BY ANOTHER  
PERSON WITHOUT BEING A LICENSED PROFESSIONAL ENGINEER  
TO SIGN THE DOCUMENT.

DATE: 02/12/23  
DRAWN BY: CHECKED BY: APPROVED BY: [Signature]

REVIS REV # 1  
DATE: 02/12/23

CONSTRUCTION DOCUMENTS

REV	DATE	DESCRIPTION
1	02/12/23	ISSUED FOR APPROVAL
2	02/12/23	ISSUED FOR PERMITS

AAE PROJECT NUMBER  
107710.NJ.01488

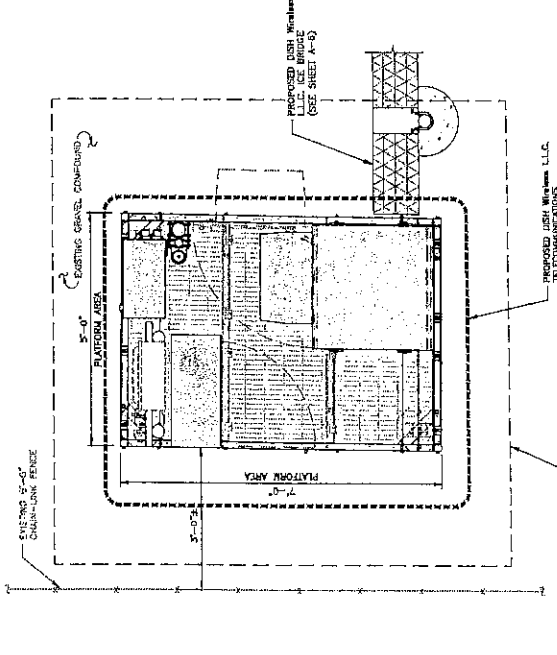
DISH WIRELESS PROJECT INFORMATION  
NJ.01488

173 WEST ROCKS ROAD  
NORWALK, CT 06851

SHEET TITLE  
ENLARGED SITE &  
EQUIPMENT PLAN

SHEET NUMBER  
A-1

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

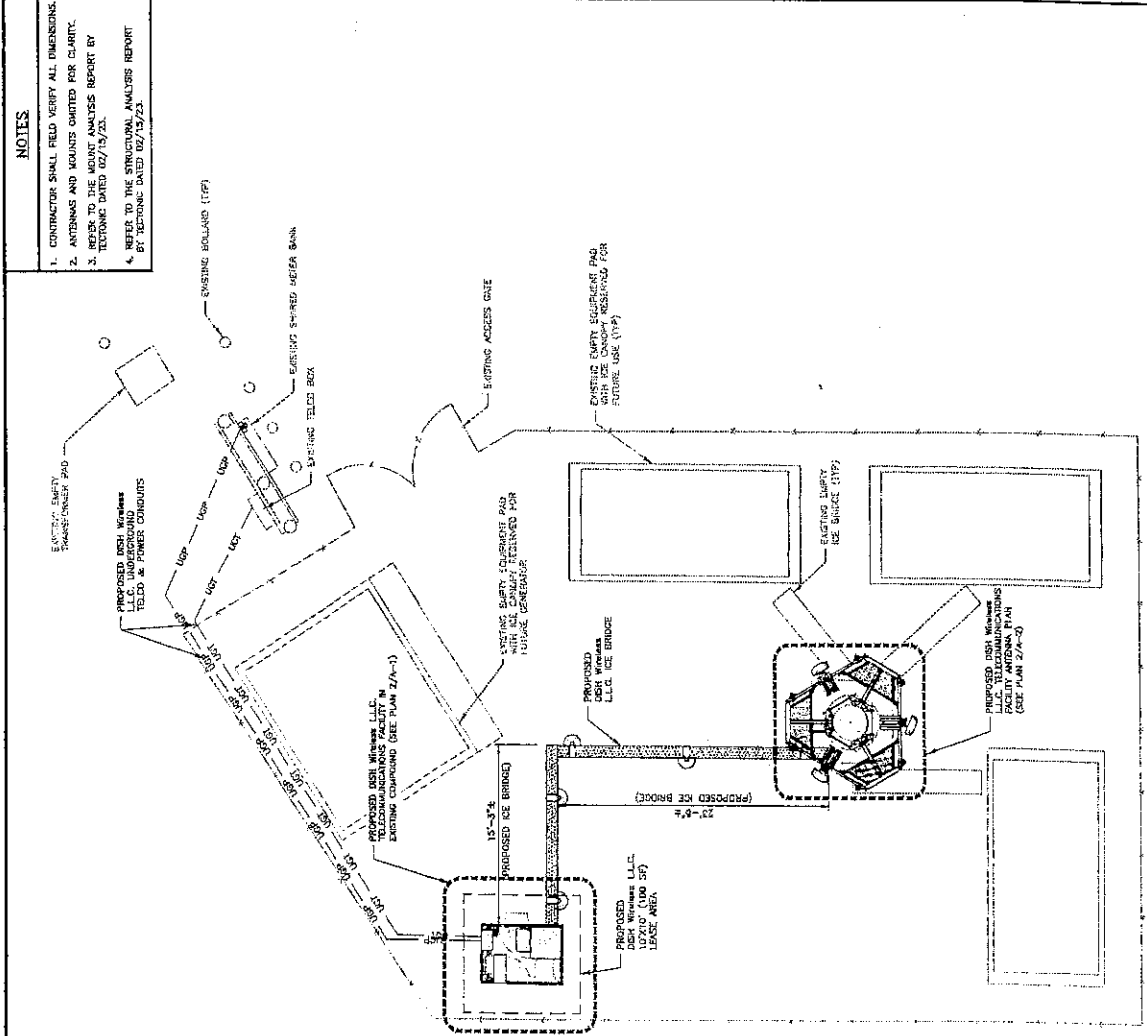


PROPOSED DISH WIRELESS L.L.C. LOOSE AREA  
10310' (100 SF) LOOSE AREA

PROPOSED DISH WIRELESS L.L.C. FACILITY IN EXISTING TELECOMMUNICATIONS COMPOUND (SEE PLAN 1/A-3)



- NOTES**
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
  2. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.
  3. REFER TO THE MOUNT ANALYSIS REPORT BY TECTONIC DATED 02/13/23.
  4. REFER TO THE STRUCTURAL ANALYSIS REPORT BY TECTONIC DATED 02/13/23.



- NOTES**
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
  2. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.
  3. REFER TO THE MOUNT ANALYSIS REPORT BY TECTONIC DATED 02/13/23.
  4. REFER TO THE STRUCTURAL ANALYSIS REPORT BY TECTONIC DATED 02/13/23.

ENLARGED SITE PLAN

EQUIPMENT PLAN

1

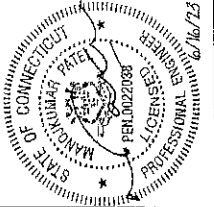
2



5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



1000 Main Street, Suite 200  
Hartford, CT 06103  
Phone: (860) 264-8800  
Fax: (860) 264-8801  
www.tectonicinc.com



U.S.A. WORKING OF LAW AND THE REGISTRATION UNDER THE PROFESSIONAL ENGINEERING ACT TO EXERCISE PROFESSIONAL ENGINEERING TO AVOID THE PENALTY.

DESIGNED BY: CHECKED BY: APPROVED BY: DRAWN BY: DATE: 10/16/93

REV: 1 DATE: 10/16/93 DESCRIPTION: 1. INITIAL DESIGN

CONSTRUCTION DOCUMENTS

REDS REV #:

DATE: 10/16/93

DESCRIPTION: 1. INITIAL DESIGN

DATE: 10/16/93

DESCRIPTION: 1. INITIAL DESIGN

DATE: 10/16/93

DESCRIPTION: 1. INITIAL DESIGN

DATE: 10/16/93

DESCRIPTION: 1. INITIAL DESIGN

DATE: 10/16/93

DESCRIPTION: 1. INITIAL DESIGN

DATE: 10/16/93

DESCRIPTION: 1. INITIAL DESIGN

DATE: 10/16/93

DESCRIPTION: 1. INITIAL DESIGN

DATE: 10/16/93

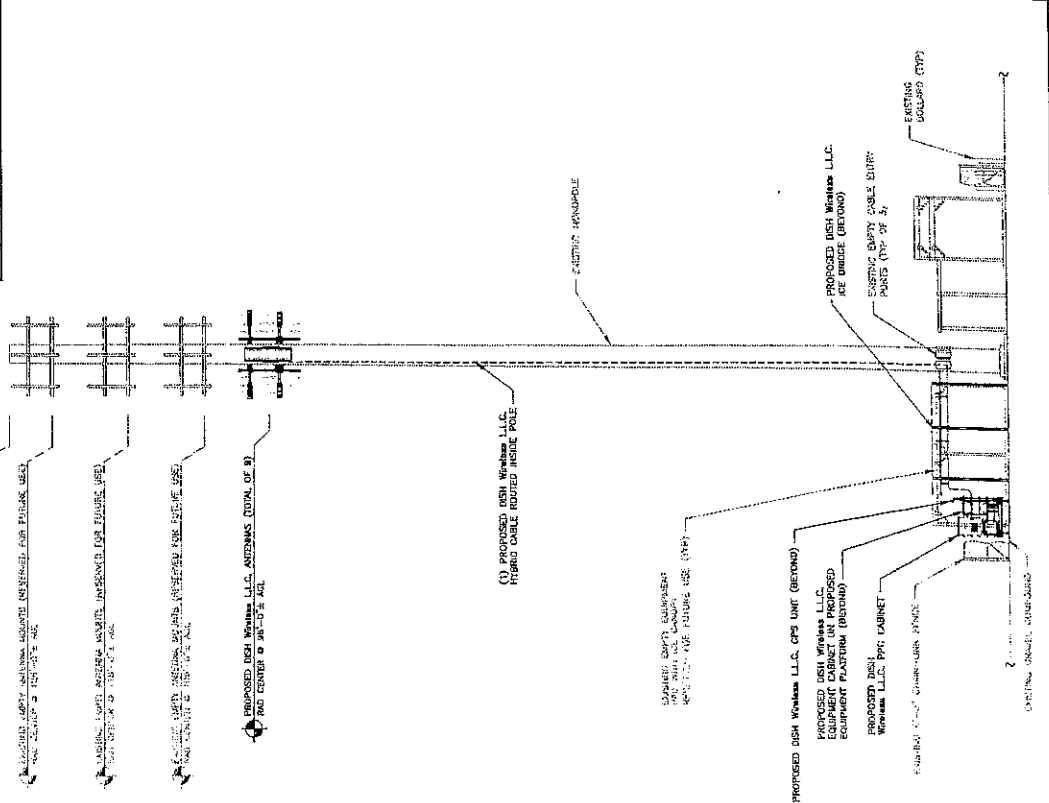
DESCRIPTION: 1. INITIAL DESIGN

DATE: 10/16/93

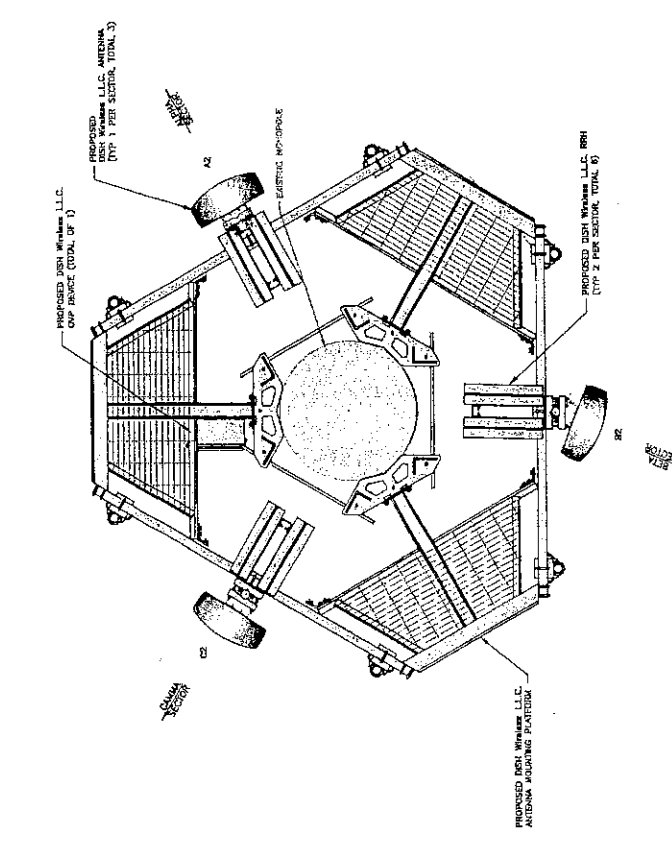
DESCRIPTION: 1. INITIAL DESIGN

DATE: 10/16/93

- NOTES:**
1. CONTRACTOR SHALL VERIFY ALL DIMENSIONS.
  2. ANTENNA AND RF DETAIL SPECIFICATIONS REFER TO ANTENNA SCHEDULE AND TO FINAL CONSTRUCTION REFS FOR ALL RF DETAILS.
  3. REFER TO THE MOUNT ANALYSIS REPORT BY TECTONIC DATED 02/16/93.
  4. REFER TO THE STRUCTURAL ANALYSIS REPORT BY TECTONIC DATED 02/16/93.



- NOTES:**
1. CONTRACTOR TO REFER TO FINAL CONSTRUCTION REFS FOR ALL RF DETAILS.
  2. ANTENNA AND RF DETAILS REFER TO ANTENNA SCHEDULE AND TO FINAL CONSTRUCTION REFS FOR ALL RF DETAILS.
  3. ALL DIMENSIONS ARE SUBJECT TO CHANGE AND NEED TO BE CONFIRMED WITH THE LATEST REFS PRIOR TO THE START OF CONSTRUCTION.



- NOTES:**
1. CONTRACTOR TO REFER TO FINAL CONSTRUCTION REFS FOR ALL RF DETAILS.
  2. ANTENNA AND RF DETAILS REFER TO ANTENNA SCHEDULE AND TO FINAL CONSTRUCTION REFS FOR ALL RF DETAILS.
  3. ALL DIMENSIONS ARE SUBJECT TO CHANGE AND NEED TO BE CONFIRMED WITH THE LATEST REFS PRIOR TO THE START OF CONSTRUCTION.

NOTE: COLLAR TO BE INSTALLED AROUND EXISTING CABLE BUNDLED TO OUTSIDE OF POLE.

ANTENNA LAYOUT

SECTOR POS.	EXISTING OR PROPOSED	ANTENNA MANUFACTURER - MODEL NUMBER	TECH	HEIGHT	RAO CENTER	FEED LINE TYPE AND LENGTH	TRANSMISSION CABLE	HRN MANUFACTURER - MODEL NUMBER	TECH	POS.	MANUFACTURER MODEL
A2	PROPOSED	COMSCOPE FV4-68B-R2	5G	80'	96'-0"	(1) HIGH CAPACITY (129' LONG)	SHARED W/ALPHA	FUJITSU - TA8025-8804	5G	A2	RYCAP - RDC2-815-PI-48
B2	PROPOSED	COMSCOPE FV4-68B-R2	5G	75'	96'-0"	SHARED W/ALPHA	SHARED W/ALPHA	FUJITSU - TA8025-8805	5G	B2	SHARED W/ALPHA
C2	PROPOSED	COMSCOPE FV4-68B-R2	5G	300'	96'-0"	SHARED W/ALPHA	SHARED W/ALPHA	FUJITSU - TA8025-8804	5G	C2	SHARED W/ALPHA
								FUJITSU - TA8025-8805	5G	C2	SHARED W/ALPHA

- NOTES:**
1. CONTRACTOR TO REFER TO FINAL CONSTRUCTION REFS FOR ALL RF DETAILS.
  2. ANTENNA AND RF DETAILS REFER TO ANTENNA SCHEDULE AND TO FINAL CONSTRUCTION REFS FOR ALL RF DETAILS.
  3. ALL DIMENSIONS ARE SUBJECT TO CHANGE AND NEED TO BE CONFIRMED WITH THE LATEST REFS PRIOR TO THE START OF CONSTRUCTION.

ANTENNA SCHEDULE

PROPOSED DISH Wireless L.L.C. ANTENNAS (TOTAL OF 9)  
RAO CENTER @ 96'-0" RAO

PROPOSED DISH Wireless L.L.C. ANTENNAS (TOTAL OF 3)  
RAO CENTER @ 96'-0" RAO

PROPOSED DISH Wireless L.L.C. ANTENNAS (TOTAL OF 3)  
RAO CENTER @ 96'-0" RAO

PROPOSED DISH Wireless L.L.C. ANTENNAS (TOTAL OF 3)  
RAO CENTER @ 96'-0" RAO

PROPOSED DISH Wireless L.L.C. ANTENNAS (TOTAL OF 3)  
RAO CENTER @ 96'-0" RAO

PROPOSED DISH Wireless L.L.C. ANTENNAS (TOTAL OF 3)  
RAO CENTER @ 96'-0" RAO

PROPOSED DISH Wireless L.L.C. ANTENNAS (TOTAL OF 3)  
RAO CENTER @ 96'-0" RAO

PROPOSED DISH Wireless L.L.C. ANTENNAS (TOTAL OF 3)  
RAO CENTER @ 96'-0" RAO

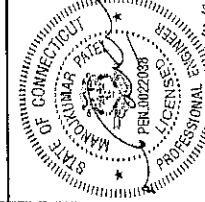
PROPOSED DISH Wireless L.L.C. ANTENNAS (TOTAL OF 3)  
RAO CENTER @ 96'-0" RAO

PROPOSED DISH Wireless L.L.C. ANTENNAS (TOTAL OF 3)  
RAO CENTER @ 96'-0" RAO



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

**Tectonic**  
 Professional Engineer  
 License No. PEK1002008  
 State of Connecticut  
 167/13



CONSTRUCTION DOCUMENTS

REV	DATE	DESCRIPTION
0	07/27/23	ISSUED FOR APPROVAL
1	08/17/23	ISSUED FOR BIDDING

DATE: 08/17/23  
 DRAWN BY: JG  
 CHECKED BY: JG  
 PROJECT NO: 1

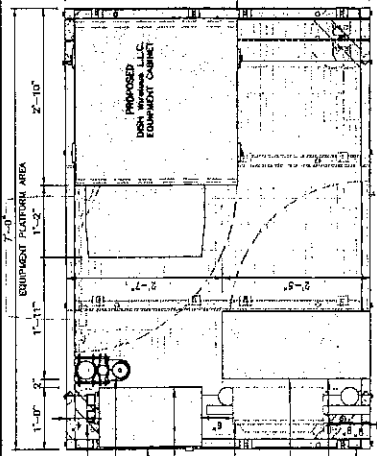
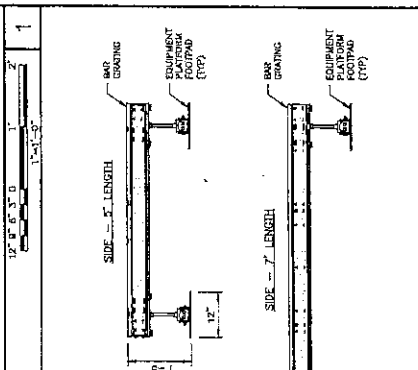
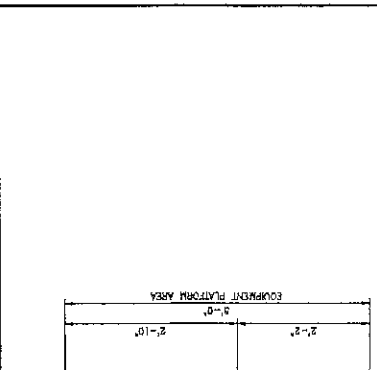
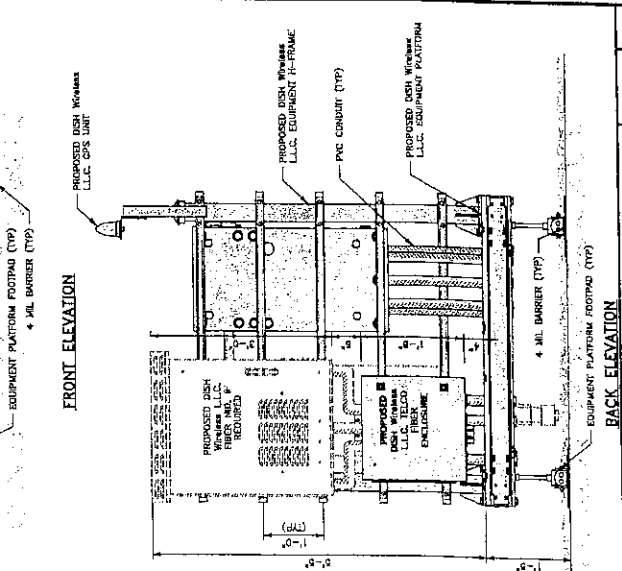
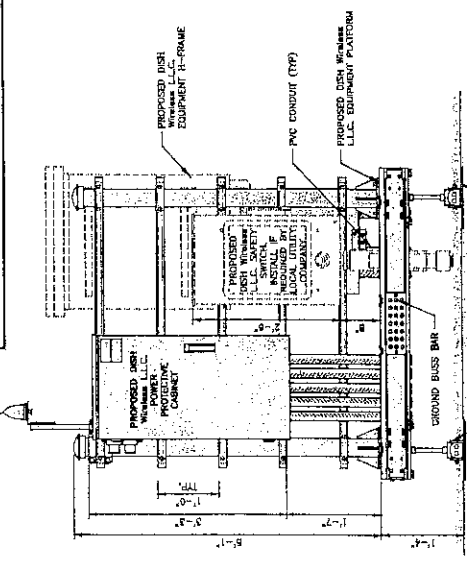
PROJECT NO: 1

PROJECT NAME: 173 WEST ROCKS ROAD  
 NORWALK, CT 06851

PROJECT TITLE: EQUIPMENT DETAILS

SHEET NUMBER: A-3

- NOTES**
- CONTRACTOR TO VERIFY MATERIALS MEET WITH A MINIMUM OF 2" CLEARANCE FROM EXISTING SURFACE.
  - WELDED BARRIER FENCES TO BE ADDED AT DISCRETION OF DISH WIRELESS LLC. CONSTRUCTION MANAGER AT TIME OF CONSTRUCTION. ONE SHEET 3"X6" INSTALLED UNDER ALL FOUR FEET OF THE PLATFORM (4 MIL BAR POSTING).
  - EQUIPMENT CABINET OMITTED FOR CLARITY.



PROPOSED DISH WIRELESS LLC. GENERATOR PILE	10'-0"
PROPOSED DISH WIRELESS LLC. UPS UNIT	1'-2"
PROPOSED DISH WIRELESS LLC. EQUIPMENT CABINET	2'-10"
PROPOSED DISH WIRELESS LLC. H-FRAME	7'-0"
PROPOSED DISH WIRELESS LLC. 1200 FRONT ENCLOSURE	1'-2"
PROPOSED DISH WIRELESS LLC. RISK NO. IF REQUIRED	1'-2"
PROPOSED DISH WIRELESS LLC. EQUIPMENT FOOTPAD	1'-2"

<b>ITEMSCOPE MTC40451P</b>	5
<b>5X7 PLATFORM</b>	587.74 lbs
TOTAL WEIGHT	423 LBS
PROVIDE BRACKETS FOR PLATFORM IF EXCEEDS 17'	

<b>COMMSCOPE MTC40451FD</b>	5
<b>H-FRAME</b>	587.74 lbs
WEIGHT	587.74 lbs
PIPE CAP	
WELDMENT PIPE	
SUPPORT RAIL	
GALK U-BOLTS	
BASE PLATE	

NO SCALE

NO SCALE

NO SCALE

NO SCALE

NO SCALE

NO SCALE

NO SCALE

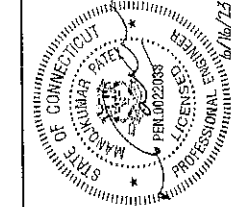
NO SCALE

NO SCALE

NO SCALE



5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



DATE: 09/19/23  
DRAWN BY: CHECKED BY: APPROVED BY:  
DATE: 09/19/23 DATE: 09/19/23  
NAME: JM JO: JFP  
RTDS REV #:

CONSTRUCTION DOCUMENTS

REV	DATE	DESCRIPTION
0	09/19/23	ISSUE FOR APPROVAL
1	09/19/23	ISSUE FOR PERMITS

PROJECT NUMBER  
10710.NJ.JERO1148B  
DSH WIRELESS PROJECT INFORMATION  
NJ.JERO1148C  
173 WEST ROCKS ROAD  
NORWALK, CT 06851

SHEET TITLE  
EQUIPMENT DETAILS  
SHEET NUMBER  
A-5

FUJITSU DUAL BAND TA08025-B604	
DIMENSIONS (HxWxD)	14.9" x 13.7" x 7.8"
WEIGHT	63.9 lbs
CONNECTOR TYPE	4.3-10 RP CONNECTOR
POWER SUPPLY	DC -58--36V

FRONT BACK SIDE

FUJITSU TRIPLE BAND TA08025-B605	
DIMENSIONS (HxWxD)	14.9" x 13.7" x 8"
WEIGHT	74.50 lbs
CONNECTOR TYPE	4.3-10 RP CONNECTOR
POWER SUPPLY	DC -58--36V

FRONT BACK SIDE

COMMSCOPE DUAL BAND FFVY-65B-R2	
DIMENSIONS (HxWxD)	18.87" x 14.37" x 4.15"
WEIGHT	21.22 LBS

FRONT BACK

COMMSCOPE BACK-TO-BACK MOUNT RR-FA2	
DIMENSIONS (HxWxD)	18.41" x 14.0" x 3.17"
WEIGHT	38.22 lb
PACKAGE QUANTITY	2

FRONT BACK

COMMSCOPE ANTENNA BRACKET BSAMNT-3	
DIMENSIONS (HxWxD)	2.302" x 4.528" x 13.699 in
NET WEIGHT	13.699 lbw

FRONT BACK SIDE

COMMSCOPE ANTENNA BRACKET BSAMNT-3	
DIMENSIONS (HxWxD)	2.302" x 4.528" x 13.699 in
NET WEIGHT	13.699 lbw

FRONT BACK SIDE

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

FRONT BACK

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

FRONT BACK

COMMSCOPE MC-PKB-DSH	
FACE WIDTH	9"
HEIGHT	1.323" (9.18 in)

FRONT BACK

NO SCALE

NO SCALE

NO SCALE

NO SCALE

NO SCALE

NO SCALE

NO SCALE

NO SCALE

NO SCALE

NO SCALE

NO SCALE

NO SCALE

NO SCALE

NO SCALE

NO SCALE

NO SCALE

NO SCALE

NO SCALE

NO SCALE

NO SCALE

NO SCALE

NO SCALE

NO SCALE

NO SCALE

NO SCALE

NO SCALE

NO SCALE

NO SCALE

NO SCALE

NO SCALE

NO SCALE

NO SCALE

NO SCALE

NO SCALE

NO SCALE

NO SCALE

NO SCALE

NO SCALE

NO SCALE

NO SCALE

NO SCALE

NO SCALE

NO SCALE

NO SCALE

NO SCALE

NO SCALE

NO SCALE

NO SCALE

NO SCALE

NO SCALE

NO SCALE

NO SCALE

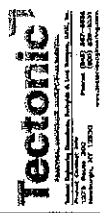
NO SCALE

NO SCALE

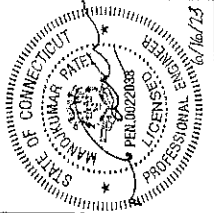
RRH DETAIL 1 NO SCALE  
RRH DETAIL 2 NO SCALE  
RRH DETAIL 3 NO SCALE  
ANTENNA BRACKET DETAIL 4 NO SCALE  
ANTENNA BRACKET DETAIL 5 NO SCALE  
SURGE SUPPRESSION DETAIL 6 NO SCALE  
SURGE SUPPRESSION DETAIL 7 NO SCALE  
SURGE SUPPRESSION DETAIL 8 NO SCALE  
SURGE SUPPRESSION DETAIL 9 NO SCALE



5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



10000 South Santa Fe Drive  
Littleton, CO 80120  
Phone: (303) 462-8888  
Fax: (303) 462-8889  
www.tectonicwireless.com



IT IS A VIOLATION OF LAW FOR ANY PERSON UNLESS HE OR SHE IS A LICENSED PROFESSIONAL ENGINEER TO ALTER THIS DOCUMENT.

DRAWN BY: [ ] CHECKED BY: [ ] APPROVED BY: [ ]  
DATE: [ ] DATE: [ ] DATE: [ ]  
SCALE: [ ] SCALE: [ ] SCALE: [ ]

CONSTRUCTION DOCUMENTS

REV	DATE	DESCRIPTION
0	04/20/23	ISSUED FOR APPROVAL
1	04/20/23	ISSUED FOR PLAC.

ASB PROJECT NUMBER  
10710.NJER01148B

DISH WIRELESS PROJECT INFORMATION  
NJER01148C  
173 WEST ROCKS ROAD  
NORWALK, CT 06851

SHEET TITLE  
EQUIPMENT DETAILS

SHEET NUMBER  
A-5

RAYCAP PPC RDIAC-2465-P-240-MTS	
ENCLOSURE DIMENSIONS (HWXWD):	38"X22.85"X12.583"
WEIGHT:	20 lbs
OPERATING AC VOLTAGE:	240/120 1 PHASE 3W4G

CABINET DETAIL

NO SCALE

3

SQUARE D SAFETY SWITCHES D224NRB	
ENCLOSURE DIM (HWXWD):	24.25"X10.07"X6.50"
ENCLOSURE TYPE:	NEMA 3R RAINPROOF
UL LISTED:	FILE E-2876

SAFETY\_SWITCH DETAIL

NO SCALE

2

DELTA ELECTRONICS, INC. ES0A600-HCB04 (HEX)	
DIMENSIONS (HWXWD):	7.5"X3.5"X3.5"
WEIGHT (EMPTY):	6.25 lbs (approx)

CABINET DETAIL

NO SCALE

1

CHARLES CFTI-PE2020DSH1 FIBER TELCO ENCLOSURE	
ENCLOSURE DIMS (HWXWD):	20"X20"X8"
ENCLOSURE WEIGHT:	20 lbs
MOUNTING:	WALL
COMPLIANCE:	TYPE 4

FIBER TELCO ENCLOSURE DETAIL

NO SCALE

5

NO SCALE

4

NO SCALE

6

NO SCALE

9

NO SCALE

8

NO SCALE

7

NOT USED

NOT USED

NOT USED

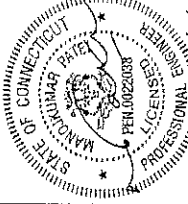
NOT USED



5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



10000 E. Harvard Ave. Suite 100  
Denver, CO 80231  
Phone: (303) 555-2200  
Fax: (303) 555-2201  
www.tectonicinc.com



IT IS A VIOLATION OF LAW FOR ANY PERSON TO REPRODUCE OR TRANSMIT THIS DOCUMENT WITHOUT THE WRITTEN PERMISSION OF THE PROFESSIONAL ENGINEER.

DRAWN BY: CHECKED BY: APPROVED BY:  
DATE: 10/16/13  
SCALE: AS SHOWN

CONSTRUCTION DOCUMENTS

REVISIONS  
NO. DATE DESCRIPTION  
1 10/16/13 ISSUED FOR APPROVAL  
2 10/16/13 ISSUED FOR PERMITS

AGE PROJECT NUMBER  
10710.NJER01148E

DISH WIRELESS PROJECT INFORMATION  
NJER01148C

173 WEST ROCKS ROAD  
NORWALK, CT 06851

SHEET TITLE  
EQUIPMENT DETAILS

SHEET NUMBER  
A-6

**COMMSCOPE WB-K110-B WAVEGUIDE BRIDGE KIT**

INCLUDED PRODUCTS	WB-K110-B TRAPEZE KIT, WB-LR12-3 SUPPORT BRACKET, MF-130 DIRECT BURIAL PIPE COLUMN, 13'-4"
DIMENSIONS (IN)	180"x10"
WEIGHT/ VOLUME	325.0 LBS
CABLE RUN (FT)	12

TRAPEZE KIT (WB-LR12-3)  
SUPPORT BRACKET (WB-LR12-3)  
3.5" DIA GALV SCH 40 PIPE (MAXIMUM 3'-0" SPAN) (MF-130)

TRAPEZE KIT (WB-LR12-3)  
SUPPORT BRACKET (WB-LR12-3)  
3.5" DIA GALV SCH 40 PIPE (MAXIMUM 3'-0" SPAN) (MF-130)

TRAPEZE KIT (WB-LR12-3)  
SUPPORT BRACKET (WB-LR12-3)  
3.5" DIA GALV SCH 40 PIPE (MAXIMUM 3'-0" SPAN) (MF-130)

TRAPEZE KIT (WB-LR12-3)  
SUPPORT BRACKET (WB-LR12-3)  
3.5" DIA GALV SCH 40 PIPE (MAXIMUM 3'-0" SPAN) (MF-130)

**COMMSCOPE WB-T12-3 TRAPEZE KIT**

DIMENSIONS (IN)	3'x12'x25"
WEIGHT	8.03 LBS
RUNGS (FT)	3

INCLUDED PRODUCTS: ANGLE BRACKET / ADJUSTING HARDWARE

SQUARE WASHER (TOP OF 5)  
GALVANIZED BOLT (TOP OF 6)  
RINGS, NON-CORROSION TRAPEZE (TOP OF 5)  
VERTICAL TRAPEZE

**HYBRID CABLE RUN**

RUN CABLES INSIDE MONOPOLE (TOP)  
CUSHIONY EPOXY JOINT  
SPRINGING HARDWARE

**ICE BRIDGE DETAIL**

FRONT NO SCALE 3  
SIDE NO SCALE

MINIMUM OF 25% OR 200" IN ANY DIRECTION

GPS UNIT

RESTRICTIONS MUST BE BELOW 10'

**ICE BRIDGE MOUNT DETAIL**

FRONT NO SCALE 2  
SIDE NO SCALE  
BACK NO SCALE

GPS DETAIL

PC/TEL	GPSGL-TMC-SPI-40NCB
DIMENSIONS (IN)	1.5" DIA
WEIGHT W/ACCESSORIES	0.75 LBS
CONNECTOR	N-FEMALE
FREQUENCY RANGE	1580 ± 30MHz

**CONCRETE PIER**

A-A SECTION

3" DIA SCH 40 PIPE FOR FOUNDATION

1" DIA DRILLED PER FOUNDATION

CONCRETE PIER

**GPS MINIMUM SKY VIEW REQUIREMENTS**

NO SCALE 6

**TYPICAL ICE BRIDGE CONCRETE PIER DETAIL**

NO SCALE 4

1.25%  
1.60%  
24" MIN BEND RADIUS  
CUT/SPLINERBOX (4 AIR CONDUCTIONS)

1.47%  
24" MIN BEND RADIUS  
CUT/SPLINERBOX (4 AIR CONDUCTIONS)

**CABLES UNLIMITED HYBRID CABLE MINIMUM BEND RADII**

NO SCALE 7

1.25%  
1.60%  
24" MIN BEND RADIUS  
CUT/SPLINERBOX (4 AIR CONDUCTIONS)

1.47%  
24" MIN BEND RADIUS  
CUT/SPLINERBOX (4 AIR CONDUCTIONS)

NOT USED 8 NO SCALE 9

**dish**  
wireless™

5701 SOUTH SMITH FE DRIVE  
LITTLETON, CO 80120

**Tectonic**  
Professional Engineering & Surveying, Inc.  
1777 S. Wadsworth Blvd., Suite 200  
Denver, CO 80202  
Phone: (303) 440-4400  
Fax: (303) 440-4401  
www.tectoniceng.com



IT IS A VIOLATION OF LAW FOR ANY PERSON TO PRACTICE PROFESSIONAL ENGINEERING WITHOUT BEING A LICENSED PROFESSIONAL ENGINEER.

DRAWN BY: CHECKED BY: APPROVED BY:  
TMM JGD JHP

RFDS REV #:  
1

**CONSTRUCTION DOCUMENTS**

REV	DATE	DESCRIPTION
0	04/03/23	ISSUED FOR APPROVAL
1	04/14/23	ISSUED FOR PLUMB

DATE PROJECT NUMBER  
10710.NJER01148B

TOSH WIRELESS PROJECT INFORMATION  
NJER01148C

173 WEST ROCKS ROAD  
NORWALK, CT 06851

SHEET TITLE  
ELECTRICAL/FIBER ROUTE  
PLAN AND NOTES

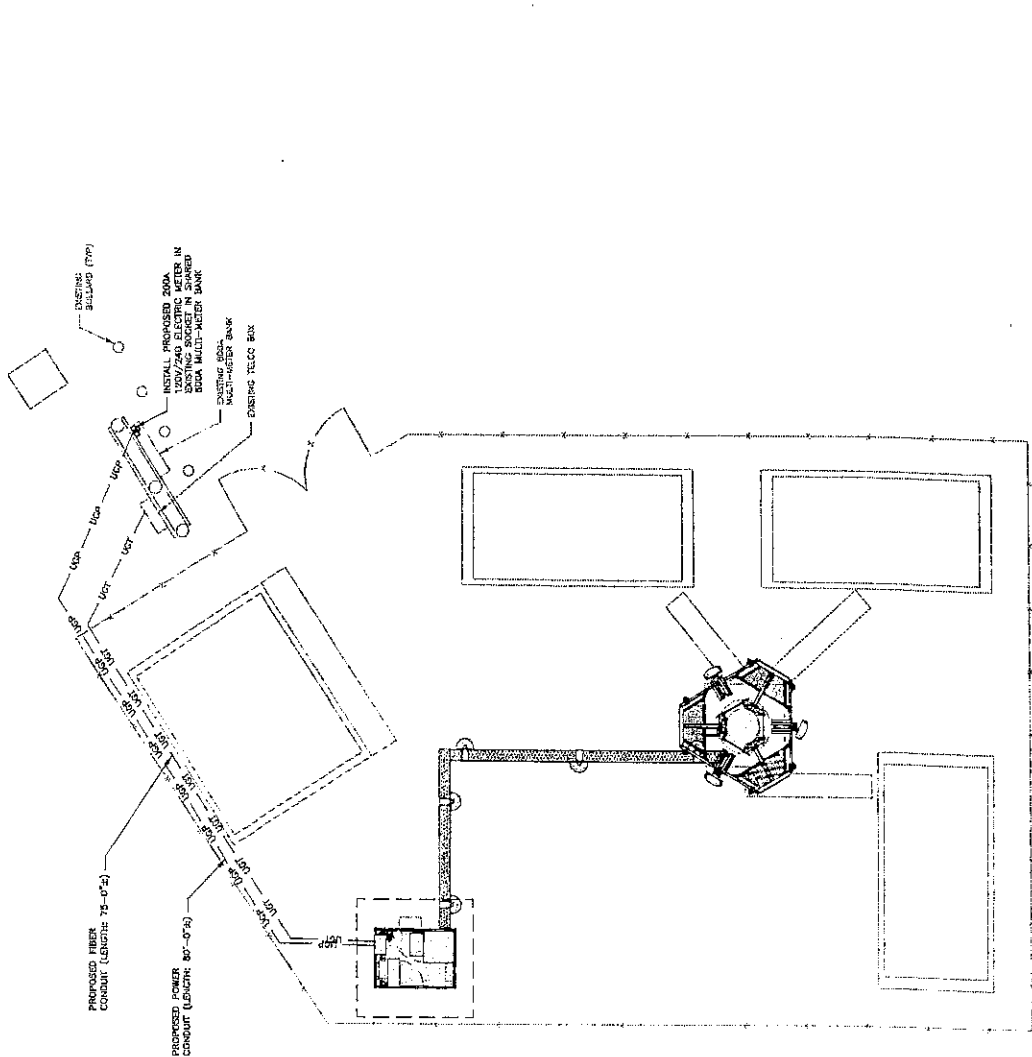
SHEET NUMBER  
E-1

10. PRIOR WORK SHALL BE CHECKED FOR EXISTING CONDUITS, PIPES, AND -48V CONDUCTORS. SEE DRAWINGS FOR LOCATION AND DEPTH. ALL WORK SHALL BE IN ACCORDANCE WITH THE PROJECT MANUAL.

- CONTRACTOR SHALL INSPECT THE EXISTING CONDITIONS PRIOR TO SUBMITTING A BID. ANY QUESTIONS ARISING FROM THE DRAWINGS OR PROJECT MANUAL SHALL BE BROUGHT UP DURING THE BID PERIOD WITH THE PROJECT MANAGER FOR CLARIFICATION, NOT AFTER THE CONTRACT HAS BEEN AWARDED.
- 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.
- LOCATION OF EQUIPMENT CONDUIT AND DEVICES SHOWN ON THE DRAWINGS ARE APPROXIMATE AND SHALL BE CORRELATED WITH FIELD CONDITIONS PRIOR TO CONSTRUCTION.
- CONDUIT INSTALLATION SHALL BE COORDINATED WITH THE MECHANICAL EQUIPMENT TO AVOID LOCATION CONFLICTS. VERIFY WITH THE MECHANICAL EQUIPMENT CONTRACTOR AND COMPLY AS REQUIRED.
- CONTRACTOR SHALL PROVIDE ALL BREAKERS, CONDUITS AND CIRCUITS AS REQUIRED BY THE NEC ARTICLE 314.
- CONTRACTOR SHALL PROVIDE ALL STRAIN RELIEF AND CABLE SUPPORTS FOR ALL CABLE ASSEMBLIES.
- INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS.
- 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, INDICATING EQUIPMENT CONTROLLED.
- INSTALL AN EQUIPMENT GROUNDING CONDUCTOR IN ALL CONDUITS PER THE SPECIFICATIONS AND SEC 250. THE EQUIPMENT GROUNDING CONDUCTORS SHALL BE BONDED AT ALL JUNCTION BOXES, PULL BOXES, AND ALL DISCONNECT SWITCHES, AND EQUIPMENT CABINETS.
- ALL NEW MATERIAL SHALL HAVE A U.L. LABEL.
- PANEL, SCHEDULE LOADS AND CIRCUIT ARRANGEMENTS REFLECT POST-CONSTRUCTION EQUIPMENT.
- CONTRACTOR SHALL BE RESPONSIBLE FOR AS-BUILT PANEL, SCHEDULE AND SITE DRAWINGS.
- ALL TRENCHES IN COMPOUND TO BE HAND DUG

**NOTES**

- CONTRACTOR SHALL FIELD VERIFY ALL PROPOSED UNDERGROUND UTILITY CONDUIT ROUTE.
- ANTENNAS AND MOUNTS LIMITED FOR CLARITY.
- DUE TO UTILITY EASEMENT RIGHTS SPECIFIED IN THE GROUND LEASE, CUSTOMER MAY INSTALL EQUIPMENT WITHIN EASEMENT LIMITS. THESE LIMITS SHALL BE LIMITED TO SERVICE EQUIPMENT, ANTENNAS AND MOUNTS OF THE UTILITY EXISTENT. FIELD VERIFICATION, PRIOR PROJECT DOCUMENTATION AND OTHER REAL PROPERTY RIGHTS DOCUMENTS, WHEN INSTALLING THE UTILITIES PLEASE LOCATE AND FOLLOW EXISTING PANELS. IF EXISTING PANELS ARE MATERIALLY INCONGRUENT WITH THE PROJECT MANUAL, THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING NECESSARY PERMISSIONS AND BE RESPONSIBLE FOR ANY DAMAGE TO EXISTING UTILITY STRUCTURES AND/OR EQUIPMENT.



NO SCALE

ELECTRICAL NOTES

1

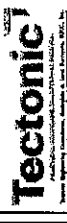


UTILITY ROUTE PLAN

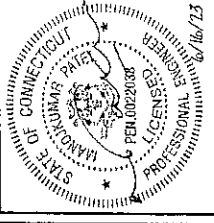
2



5701 SOUTH STATE ST. SUITE 100  
LITTLETON, CO 80120



10000 W. ALPINE DRIVE SUITE 100  
DENVER, CO 80231  
TEL: 303.755.8800  
WWW.TECTONICENGINEERS.COM



IF IT IS A VIOLATION OF LAW FOR ANY PERSON TO REPRODUCE OR TRANSMIT THIS DOCUMENT WITHOUT THE WRITTEN PERMISSION OF THE ENGINEER TO WHOM THIS DOCUMENT IS ISSUED.

DRAWN BY: [ ] CHECKED BY: [ ] APPROVED BY: [ ]  
DATE: [ ]  
JOB NO: [ ]  
SHEET NO: [ ]

CONSTRUCTION DOCUMENTS

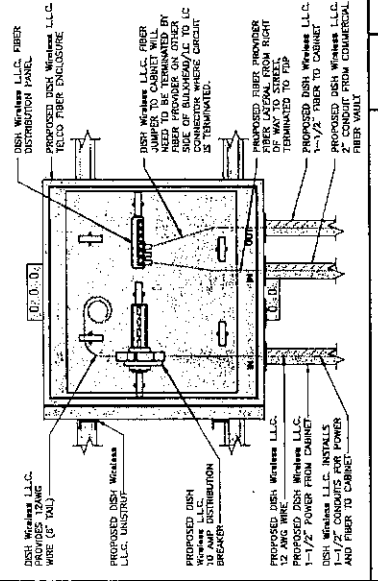
REV	DATE	DESCRIPTION
1	08/15/23	ISSUE FOR PERMIT
2	08/15/23	ISSUE FOR PERMIT
3	08/15/23	ISSUE FOR PERMIT

PROJECT NUMBER  
10710.NJER011489

PROJECT INFORMATION  
NJ/ER01148C  
175 WEST ROCKS ROAD  
NORWALK, CT 06851

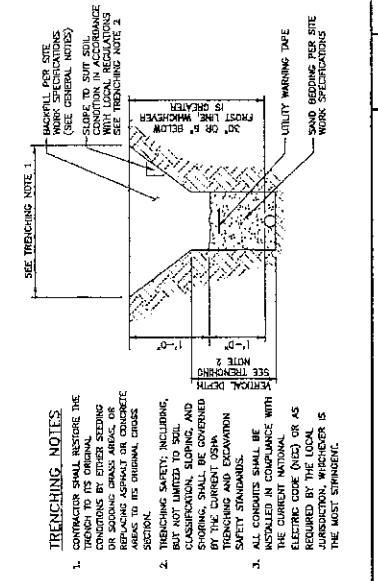
SHEET TITLE  
ELECTRICAL DETAIL

SHEET NUMBER  
E-2



**DARK TELCO BOX - INTERIOR WIRING LAYOUT**

NO SCALE



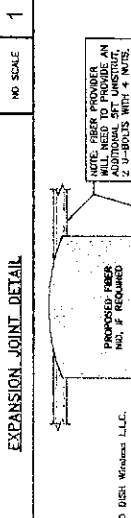
**TYPICAL UNDERGROUND TRENCH DETAIL**

NO SCALE

**CARLON EXPANSION FITTINGS**

PLUG END HALLS TERMINAL PART NUMBER	SLIP END PART NUMBER	SIZE	TRAVEL DIST. ON CTR.
EP450X	EP450	1/2"	29
EP450X	EP450	3/4"	15
EP450X	EP450	1"	10
EP450X	EP450	1 1/2"	5
EP450X	EP450	2"	15
EP450X	EP450	2 1/2"	10
EP450X	EP450	3"	10
EP450X	EP450	3 1/2"	5
EP450X	EP450	4"	5
EP450X	EP450	5"	1
EP450X	EP450	6"	1

NOTE: CONTRACTOR TO INSTALL EXPANSION FITTING SLIP JOINT AT CENTER OF CONDUIT. SEE DRAWING FOR SPECIFICATIONS AND/OR SPECIFIED REQUIREMENTS.



**EXPANSION JOINT DETAIL**

NO SCALE



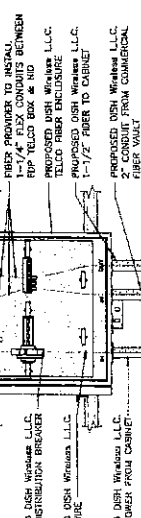
**TELCO BOX - INTERIOR WIRING LAYOUT (OPTIONAL)**

NO SCALE



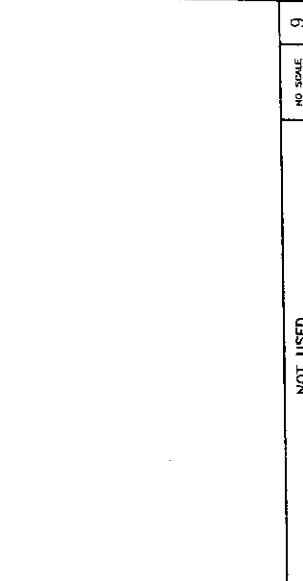
**TYPICAL UNDERGROUND TRENCH DETAIL (OPTIONAL)**

NO SCALE



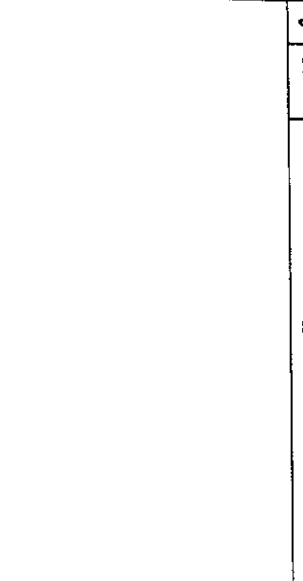
**TELCO BOX - INTERIOR WIRING LAYOUT (OPTIONAL)**

NO SCALE



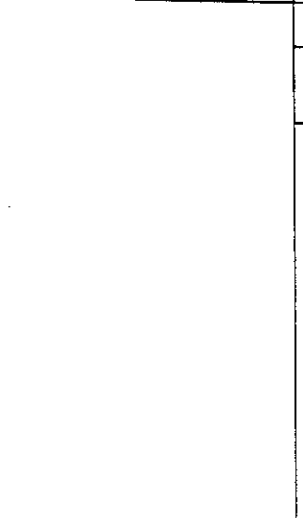
**TELCO BOX - INTERIOR WIRING LAYOUT (OPTIONAL)**

NO SCALE



**TELCO BOX - INTERIOR WIRING LAYOUT (OPTIONAL)**

NO SCALE



**TELCO BOX - INTERIOR WIRING LAYOUT (OPTIONAL)**

NO SCALE



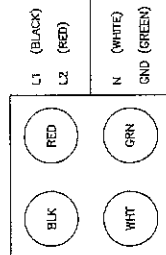
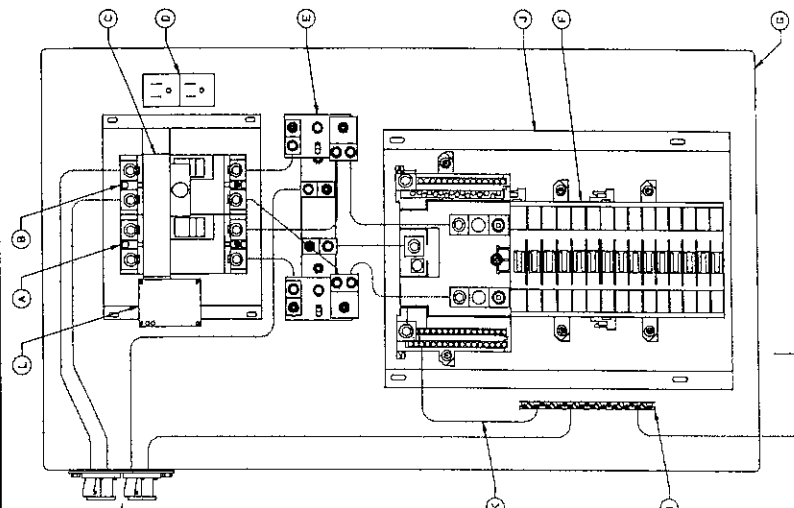
**CONSTRUCTION DOCUMENTS**

REV	DATE	DESCRIPTION
0	01/20/23	ISSUED FOR APPROVAL
1	01/20/23	ISSUED FOR FIELD

REVISION # 1

NAME	JOB	MAP

PROJECT NUMBER: 10710-NJUR01148B  
DISH WIRELESS PROJECT INFORMATION: NJUR01148C  
173 WEST ROCKS ROAD  
NORWALK, CT 06851  
SHEET TITLE: PPC NEUTRAL-TO-GROUND SCHEMATIC  
SHEET NUMBER: E-4



**CAUTION:**  
- WHEN THE PPC IS USED AS THE SERVICE ENTRANCE DEVICE, THE NEUTRAL TO GROUND BOND NEEDS TO BE ESTABLISHED IN THE PPC.  
- WHEN THE PPC IS USED AS A PRE-CONNECTED DEVICE, THE NEUTRAL TO GROUND WIRE IN THE GREEN #6 WIRE PROVIDED WITH THE PPC CABINET AS A SEPARATE UNINSTALLED PART TO BE INSTALLED BY CONTRACTOR IF NEEDED.  
- 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 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 WIRING AND POWER PROTECTION EQUIPMENT. THE SERVICE LABEL SHOULD BE PLACED IN THE POSITION OF THE USED PRODUCT.

- LEGEND:**
- A. UTILITY DISCONNECT (SERVICE RATED)
  - B. GENERATOR DISCONNECT
  - C. MAIN DISCONNECT CIRCUIT BREAKERS W/ MECHANICAL INTERLOCK
  - D. GFCI RECEPTACLE 15A
  - E. SPD STRIKEDOWN W/MAIN CONNECTION (TYP OF 2)
  - F. BREAKER PANEL - ON POSITION (CONTRACTOR TO ADD APPROPRIATE BREAKER PER ONE-LINE 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 O G SERIES LOAD CENTER
  - K. NEUTRAL-TO-GROUND (N-G) BONDING JUMPER (CONTRACTOR INSTALLED IF REQUIRED)
  - L. OPTIONAL SPD STATUS INDICATORS

WARD OF ELECTRICAL SHOCK OR BURN. TURN OFF POWER SUPPLYING THIS EQUIPMENT BEFORE WORKING INSIDE.  
TO OR 200 AMP, 240 VOLTS, SINGLE PHASE ALTERNATING CURRENT CIRCUIT ONLY  
GENERATOR SHORT CIRCUIT RATINGS: 10,000 / 20,000 AMPS RMS SYMMETRICAL, AMPERES AT 240 VOLTS  
UTILITY SHORT CIRCUIT RATINGS: 65,000 AMPS RMS SYMMETRICAL, AMPERES AT 240 VOLTS  
SUITABLE FOR USE AS SERVICE EQUIPMENT  
SUITABLE FOR USE IN ACCORDANCE WITH ARTICLE 702 OF THE NATIONAL ELECTRIC CODE (NEC)/NFPA 70  
UNGROUND NEUTRAL WHEN INSTALLED AS SHOWN IN WIRING DIAGRAM

ANY PROOF TYPE 3R  
E CU-AL WIRE 60-75 °C  
EQUIPPED WITH SLIDE BAR MECHANICAL INTERLOCK  
TERMINAL BLOCKS PROHIBITS BOTH POWER SOURCES FROM BEING IN THE ON POSITION SIMULTANEOUSLY  
EQUIPPED WITH SQUARE D BREAKERS OR ALTERNATIVE MANUFACTURER EQUIPMENT  
WHEN REPLACE LOAD CENTER BREAKERS, USE ONLY SQUARE D (OD TYPE) OF THE SAME RATING OR EQUIVALENT  
WHEN RESETTING BREAKERS TURN TO OFF POSITION, THEN TO ON POSITION  
WARNING: MAKE CONTINUITY CHECK WITH OHM METER TO VERIFY CORRECT PHASING AND GROUNDING CONNECTIONS BEFORE POWER

AREY PIN OUT CONFIGURATION OF GENERATOR PRIOR TO USE.  
RISK OF ELECTRIC SHOCK, BOTH ENDS OF DISCONNECTING MEANS MAY BE ENERGIZED. TEST BEFORE SERVICING  
THIS SWITCH BOARD MAY CONTAIN A TAP ON THE SERVICE SIDE OF THE MAIN POWER DISCONNECT FOR REMOTE MONITORING OF  
UTILITY/STANDBY POWER  
THE NORMAL AC POWER MONITORING CIRCUIT MUST UTILIZE A DISCONNECTING MEANS WITH A SHORT CIRCUIT RATING GREATER  
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.

- 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 PROHIBITS TRANSFER FROM ON POSITION TO GENERATORS FROM BEING IN THE ON POSITION SIMULTANEOUSLY
  - TO TRANSFER FROM ON POWER SOURCE TO THE OTHER POWER SOURCE, SWITCH ON BREAKER TO THE OFF POSITION, MOVE THE SLIDE BAR TO THE OTHER SIDE AND THE SWITCH THE OTHER BREAKER TO THE ON POSITION

**200A UTILITY FEED**

LOAD SIZE CIRCUIT BREAKERS	LINE SIZE MAIN CIRCUIT BREAKER	TYPE	MFR.	POLES	AMP RATING	TYPE	STAMMET, VOLTS AC	PHASES	
SU-P	60	2	15-100A	50-D	60L	200A	60,000A	240V	2

**200A GENERATOR FEED**

LOAD SIZE CIRCUIT BREAKERS	LINE SIZE MAIN CIRCUIT BREAKER	TYPE	MFR.	POLES	AMP RATING	TYPE	STAMMET, VOLTS AC	PHASES	
SU-P	60	2	15-100A	50-D	60L	200A	65,000A	240V	2

SUITABLE FOR USE AS SERVICE EQUIPMENT  
ELECTRICAL RATING 100/240 VOLTS SINGLE PHASE 3W/3L  
NORMAL AC POWER GENERATOR POWER 100/240V  
2000W

SWITCHBOARD UTILITY MAIN BREAKER IS SUITABLE FOR USE ON A CIRCUIT CHARGE OF BEARING NOT MORE THAN 10,000 RMS SYMMETRICAL AMPS, 240 VOLTS MAXIMUM.

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

MAXIMUM CONTINUOUS LOADS NOT TO EXCEED BOX OF THE OVER-CURRENT PROTECTIVE DEVICE (OCPD) RATING. THE OCPD RATING MUST BE AT LEAST 75% OF THE RATED CURRENT. THE OCPD RATING MUST BE SUITABLE FOR CONTINUOUS OPERATION AT 100% OF THEIR RATINGS. CONDUITS ARE NOT TO ENTER OR LEAVE THE ENCLOSURE DIRECTLY OPPOSITE THE WIRING TERMINAL.



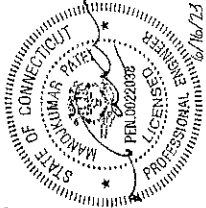




**dish** wireless™

5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120

**Tectonic**  
Professional Engineering  
10000 E. Harvard Ave., Suite 100  
Denver, CO 80231  
Phone: (303) 751-1000  
Fax: (303) 751-1001  
www.tectonicpe.com



IT IS A VIOLATION OF LAW FOR ANY PERSON, OTHER THAN A LICENSED PROFESSIONAL ENGINEER, TO ASSESS THE SEALS.

DRAWN BY: CHECKED BY: APPROVED BY:  
NM JS JP MP

REDS REV #:  
1

**CONSTRUCTION DOCUMENTS**

REV	DATE	DESCRIPTION
0	03/02/23	ISSUED FOR APPROVAL
1	04/19/23	ISSUED FOR PERMITS

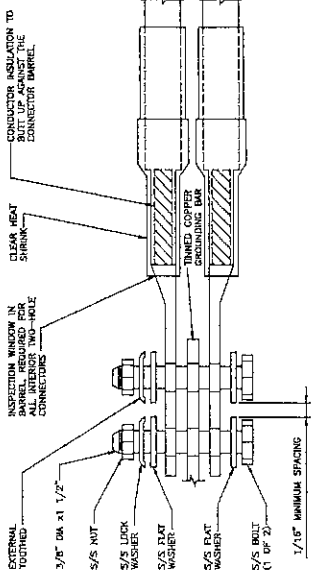
AKA PROJECT NUMBER  
10710-NJER011438

DISH WIRELESS PROJECT INFORMATION  
NJER011438

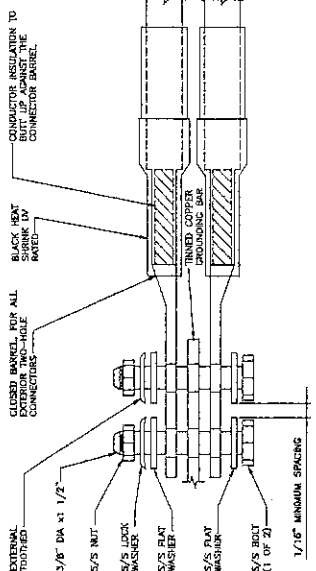
173 WEST ROCKS ROAD  
NORWALK, CT 06851

SHEET TITLE  
GROUNDING DETAILS

SHEET NUMBER  
G-3



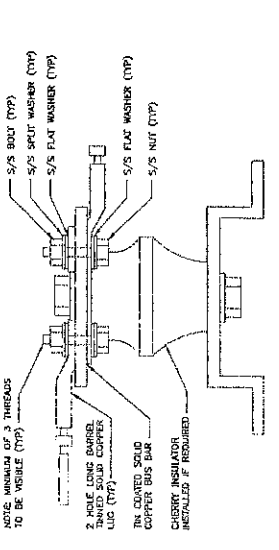
TYPICAL INTERIOR TWO HOLE LUG NO SCALE 3



TYPICAL EXTERIOR TWO HOLE LUG NO SCALE 2

- TYPICAL GROUNDING NOTES**
1. EXOTHERMIC WELD (C) TWO #2 AWG BARE TINNED SOLID COPPER CONDUCTORS TO GROUND FROM CONDUCTORS TO BUNDLED GROUND RING AND PROVIDE PARALLEL, EXOTHERMIC WELD.
  2. ALL EXTERIOR GROUNDING HARDWARE SHALL BE STAINLESS STEEL, 3/16\"/>

TYPICAL GROUNDING NOTES NO SCALE 1



LUG DETAIL NO SCALE 4

NOT USED NO SCALE 6

NOT USED NO SCALE 5

NOT USED NO SCALE 7

NOT USED NO SCALE 9

NOT USED NO SCALE 8

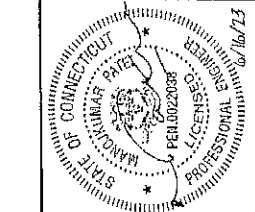
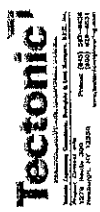
NOT USED NO SCALE 7







5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



IF A VENDOR, CONTRACTOR, OR SUBMITTER HAS BEEN NOTIFIED BY THE DIRECTOR OF A VIOLATION OF THE PROVISIONS OF A LICENSED PROFESSIONAL ENGINEER, DRAWN BY: CHECKED BY: APPROVED BY:

NAME: \_\_\_\_\_ JOB: \_\_\_\_\_ CITY: \_\_\_\_\_ STATE: \_\_\_\_\_

CONSTRUCTION DOCUMENTS

REV	DATE	DESCRIPTION
0	07/02/23	ISSUED FOR APPROVAL
1	08/19/23	ISSUED FOR PERMITS

AKA PROJECT NUMBER  
10710-NJUR011488

DISH WIRELESS PROJECT INFORMATION  
NJUR011488  
173 WEST ROCKS ROAD  
NORWALK, CT 06851

SHEET TITLE  
RF SIGNAGE

SHEET NUMBER  
GN-2

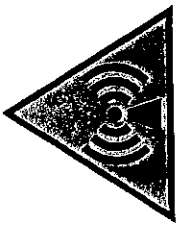
# INFORMATION

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



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: \_\_\_\_\_

THIS SIGN IS FOR REFERENCE PURPOSES ONLY

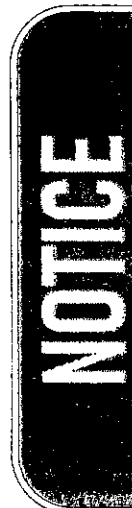


Transmitting Antenna(s)  
Radio frequency fields beyond this point MAY EXCEED the FCC Occupational exposure limit. Obey all posted signs and site guidelines for working in radio frequency environments. Call the DISH Wireless L.L.C. NOC at 1-866-624-6874 prior to working beyond this point.

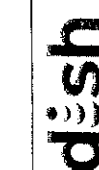


Site ID: \_\_\_\_\_

THIS SIGN IS FOR REFERENCE PURPOSES ONLY



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: \_\_\_\_\_

THIS SIGN IS FOR REFERENCE PURPOSES ONLY

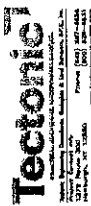
TYPE	COLOR	COLOR CODE	PURPOSE	SIGN TYPES
INFORMATION	GREEN		INTERNATIONAL SIGN TO NOTIFY OTHERS OF THE PRESENCE OF A TRANSMITTING ANTENNA AND PROVIDE THE LOCATION OF THE ANTENNA	INFORMATIONAL SIGN TO NOTIFY OTHERS OF THE PRESENCE OF A TRANSMITTING ANTENNA AND PROVIDE THE LOCATION OF THE ANTENNA
NOTICE	BLUE		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)	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 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 BEYOND THIS POINT RF FIELDS 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)	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 EMC REPORT, CREATED BY A THIRD PARTY PREVIOUSLY AUTHORIZED BY DISH Wireless L.L.C.
  - INFORMATION SIGN (GROSS) SHALL BE LOCATED ON EXISTING DISH Wireless L.L.C. EQUIPMENT.
  - IF THE INFORMATION SIGN IS A STICKER, IT SHALL BE PLACED ON EXISTING DISH Wireless L.L.C. A-FRAME WITH A SECURE ATTACH METHOD.
  - IF THE INFORMATION SIGN IS A METAL SIGN IT SHALL BE PLACED ON EXISTING DISH Wireless L.L.C. A-FRAME WITH A SECURE ATTACH METHOD.
  - FURTHER INSTRUCTION ON HOW TO PLACE SIGNS.
- 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 HOUSING 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 2"X 1" TIES OR STAINLESS STEEL TIEH SCREWS
  6. ALL SIGNS TO BE 6.5"x11" AND MADE WITH 0.04" OF ALUMINUM MATERIAL.

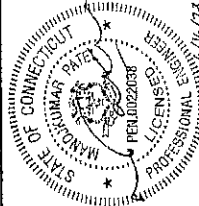
RF SIGNAGE



5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



Professional Engineer  
No. 101002038  
Professional Seal  
State of Colorado  
Tectonic Engineering, Inc.  
10000 E. North Ave., Suite 100  
Denver, CO 80231  
Phone: (303) 751-1100  
Fax: (303) 751-1101  
www.tectoniceng.com



DATE: 08/16/13  
BY: [Signature]  
FOR: [Signature]  
PROJECT: [Signature]

DRAWN BY	CHECKED BY	APPROVED BY
MM	JD	UP

REV #	DATE	DESCRIPTION
0	08/16/13	ISSUED FOR APPROVAL
1	08/17/13	ISSUED FOR BIDDING

### CONSTRUCTION DOCUMENTS

DATE	08/16/13
BY	[Signature]
FOR	[Signature]

AGE PROJECT NUMBER  
10710.NJUR01148B

DISH WIRELESS PROJECT INFORMATION  
NJUR01148C

173 WEST ROCKS ROAD  
NORWALK, CT 06851

SHEET TITLE  
GENERAL NOTES

SHEET NUMBER  
GN-3

#### GENERAL NOTES:

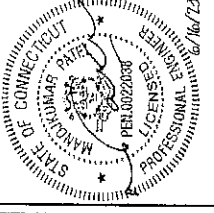
- FOR THE PURPOSE OF CONSTRUCTION DRAWINGS, THE FOLLOWING DEFINITIONS SHALL APPLY:  
CONTRACTOR-GENERAL CONTRACTOR RESPONSIBLE FOR CONSTRUCTION  
CARRIER-DISH Wireless L.L.C.  
TOWER OWNER-TOWER OWNER
- THESE DRAWINGS HAVE BEEN PREPARED USING STANDARDS OF PROFESSIONAL CARE AND COMPLETENESS NORMALLY EXERCISED 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 WORKFORCE 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.
- 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 METHODS, SEQUENCES, AND PROCEDURES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF UTILITIES, AND ALL NECESSARY 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.
- 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.
- 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.
- 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 FCC AND TOWER OWNER.
- 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.
- UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
- THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
- 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.
- CONTRACTOR IS TO PERFORM A SITE INVESTIGATION, BEFORE SUBMITTING BIDS, TO DETERMINE THE BEST ROUTING OF ALL CONDUITS FOR POWER, AND TELLER AND FOR GROUNDING CABLES AS SHOWN IN THE POWER, TELLER, AND GROUNDING PLAN DRAWINGS.
- 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.
- 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.
- CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION. TRASH AND DEBRIS SHOULD BE REMOVED FROM SITE ON A DAILY BASIS.

#### ACTIVITY REQUIREMENTS:

- NOTICE TO PROCEED - NO WORK SHALL COMMENCE PRIOR TO CONTRACTOR RECEIVING A WRITTEN NOTICE TO PROCEED AND THE ISSUANCE OF A PURCHASE ORDER. PRIOR TO ACCESSING/ENTERING THE SITE YOU MUST CONTACT THE DISH Wireless C. AND TOWER OWNER NOC & THE DISH Wireless L.L.C. AND TOWER OWNER CONSTRUCTION MANAGER.
- LOOK UP - DISH Wireless L.L.C. AND TOWER OWNER SAFETY CLIMB REQUIREMENT:  
INTEGRITY OF THE SAFETY CLIMB AND ALL COMPONENTS OF THE CLIMBING FACILITY SHALL BE CONSIDERED DURING ALL STAGES DESIGN, INSTALLATION AND INSPECTION. TOWER MODIFICATION, MOUNT REINFORCEMENTS, AND/OR EQUIPMENT INSTALLATIONS SHALL COMPROMISE THE INTEGRITY OR FUNCTIONAL USE OF THE SAFETY CLIMB OR ANY COMPONENTS OF THE CLIMBING FACILITY ON STRUCTURE. THIS SHALL INCLUDE, BUT NOT BE LIMITED TO: FINISHING OF THE WIRE ROPE, BENDING OF THE WIRE ROPE FROM SUPPORTS, DIRECT CONTACT OR CLOSE PROXIMITY TO THE WIRE ROPE WHICH MAY CAUSE FRICTIONAL WEAR, IMPACT TO THE HORAGE POINTS IN ANY WAY, OR TO IMPEDE/BLOCK ITS INTENDED USE. ANY COMPROMISED SAFETY CLIMB, INCLUDING EXISTING HORAGE POINTS MUST BE TAGGED OUT AND REPORTED TO YOUR DISH Wireless L.L.C. AND DISH Wireless L.L.C. AND TOWER OWNER POC. CALL THE NOC TO GENERATE A SAFETY CLIMB MAINTENANCE AND CONTRACTOR NOTICE TICKET.
- PRIOR TO THE START OF CONSTRUCTION, ALL REQUIRED JURISDICTIONAL PERMITS SHALL BE OBTAINED. THIS INCLUDES, BUT NOT LIMITED TO, BUILDING, ELECTRICAL, MECHANICAL, FIRE, FLOOD ZONE, ENVIRONMENTAL, AND ZONING. AFTER DENSE ACTIVITIES CONSTRUCTION ARE COMPLETED, ALL REQUIRED PERMITS SHALL BE SANSIEMED AND CLOSED OUT ACCORDING TO LOCAL JURISDICTIONAL REQUIREMENTS.
- ALL CONSTRUCTION MEANS AND METHODS, INCLUDING BUT NOT LIMITED TO, ERECTION PLANS, RIGGING PLANS, CLIMBING AND RESCUE PLANS SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR RESPONSIBLE FOR THE EXECUTION OF WORK ON-SITE HEREIN AND SHALL MEET ANSI/ASSE A10.48 (LATEST EDITION), FEDERAL, STATE, AND LOCAL REGULATIONS. CONTRACTOR SHALL PROVIDE TO ALL APPLICABLE JURISDICTIONS, DISH Wireless L.L.C. AND TOWER OWNER STANDARDS, INCLUDING NS SHALL WHERE TO ADVISES A10.48 (LATEST EDITION) AND DISH Wireless L.L.C. AND TOWER OWNER STANDARDS, INCLUDING REQUIRED INVOLVEMENT OF A QUALIFIED ENGINEER FOR CLASS IV CONSTRUCTION, TO CERTIFY THE SUPPORTING STRUCTURE(S) IN ACCORDANCE WITH ANSI/714-322 (LATEST EDITION).
- ALL SITE WORK TO COMPLY WITH DISH Wireless L.L.C. AND TOWER OWNER INSTALLATION STANDARDS FOR CONSTRUCTION LIMITS ON DISH Wireless L.L.C. AND TOWER OWNER TOWER SITE AND LATEST VERSION OF ANSI/714-1019-A-2012 STANDARD FOR TALLTATION, ALTERATION, AND MAINTENANCE OF ANTENNA SUPPORTING STRUCTURES AND ANTENNAS.
- IF THE SPECIFIED EQUIPMENT CAN NOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL PROPOSE ALTERNATIVE INSTALLATION FOR APPROVAL BY DISH Wireless L.L.C. AND TOWER OWNER PRIOR TO PROCEEDING WITH ANY SUCH CHANGE OF INSTALLATION.
- 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.
- THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
- THE CONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES INCLUDING PRIVATE LOCATES SERVICES PRIOR TO THE START OF CONSTRUCTION.
- 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 SHIELDED PERS AROUND OR NEAR UTILITIES. CONTRACTOR SHALL PROVIDE SAFETY TRIMMING LINES IN WORKING ORDER. THIS WILL INCLUDE (BUT NOT BE LIMITED TO A) PROTECTION B) COMPANED SPACE C) ELECTRICAL SAFETY D) TRENCHING AND EXCAVATION E) CONSTRUCTION SAFETY REQUIREMENTS.
- ALL SITE WORK SHALL BE AS INDICATED ON THE STAMPED CONSTRUCTION DRAWINGS AND DISH PROJECT SPECIFICATIONS, EXCEPT APPROVED REVISIONS.
- CONTRACTOR SHALL KEEP THE SITE FREE FROM ACCUMULATING WASTE MATERIAL, DEBRIS, AND TRASH AT THE COMPLETION OF WORK. IF NECESSARY, RUBBISH, STUMPS, DEBRIS, STICKS, STONES AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.
- 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. 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.
- THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE CARRIER'S EQUIPMENT AND TOWER AREAS. THE SUB GRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE LOCATION.
- THE AREAS OF THE OWNERS PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE TOWER, EQUIPMENT OR FENCING SHALL BE GRADED TO A UNIFORM SLOPE, AND STABILIZED TO PREVENT EROSION AS SPECIFIED ON THE CONSTRUCTION DRAWINGS AND/OR PROJECT SPECIFICATIONS.
- CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, IF USED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.
- 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.
- 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.
- CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION. TRASH AND DEBRIS SHOULD BE REMOVED FROM SITE ON A DAILY BASIS.
- 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.



5701 SOUTH STATE ST. DRIVE  
LITTLETON, CO 80120



IT IS A VIOLATION OF LAW FOR ANY PERSON, OTHER THAN A LICENSED PROFESSIONAL ENGINEER, TO ADD TO THIS DOCUMENT.

DATE	BY	DESCRIPTION

CONSTRUCTION DOCUMENTS

NO.	DATE	DESCRIPTION
1		
2		
3		

DATE CHECKED BY APPROVED BY

DATE CHECKED BY APPROVED BY

DATE CHECKED BY APPROVED BY

DATE CHECKED BY APPROVED BY

DATE CHECKED BY APPROVED BY

DATE CHECKED BY APPROVED BY

DATE CHECKED BY APPROVED BY

DATE CHECKED BY APPROVED BY

DATE CHECKED BY APPROVED BY

DATE CHECKED BY APPROVED BY

16. ELECTRICAL METALLIC TUBING (EMT) OR METAL-CLAD CABLE (MCC) 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 SPEEDWAY WIREWAY).

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

23. CONDUITS SHALL BE FASTENED SECURELY IN PLACE WITH APPROVED NON-PREPARED STRAPS AND HANGERS. EXPLOSIVE DEVICES (i.e. POWDER-ACTIVATED) 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 LOCKWAT 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 METEDED MULE TAPE PULL CORD INSTALLED.

REINFORCEMENT AND REINFORCING STEEL  
ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE ACI 301, ACI 318, ACI 338, ASTM A106, ASTM A148 AND THE DESIGN CONSTRUCTION SPECIFICATION FOR CAST-IN-PLACE CONCRETE.

UNLESS NOTED OTHERWISE, SOIL BEARING PRESSURE USED FOR DESIGN OF SLABS AND FOUNDATIONS IS ASSUMED TO BE 1000 LB/SQ FT.

ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH (f'c) OF 3000 psi AT 28 DAYS, UNLESS NOTED OTHERWISE. NO TESTS SHALL BE TAKEN UNTIL 72 HOURS AFTER PLACEMENT. TIME TO TIME OF PLACEMENT UNLESS APPROVED BY THE ENGINEER OF RECORD.

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

ALL STEEL REINFORCING SHALL CONFORM TO ASTM A615, ALL WELDED WIRE FABRIC (WWF) SHALL CONFORM TO ASTM A186, ALL REINFORCING SHALL BE CLASS 60 TENSION SPACES, UNLESS NOTED OTHERWISE. ALL HOOKS SHALL BE STANDARD 90 DEGREE HOOKS, UNLESS NOTED OTHERWISE. YIELD STRENGTH (Fy) OF STANDARD DEFORMED BARS ARE AS FOLLOWS:

- #6 BARS AND SMALLER 40 KSI
- #8 BARS AND LARGER 60 KSI

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"
- 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.

TYPICAL INSTALLATION NOTES:  
ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC AND ALL APPLICABLE LOCAL, STATE, AND LOCAL CODES/ORDINANCES.

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

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

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

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

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 EQUIVALENT) TO WHICH THEY ARE SUBMITTED. 22,000 AC 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 WORKING JURISDICTION.

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

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

TELEPHONE WIRING SHALL BE CLEARLY LABELED WITH PLASTIC LABELS.

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

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

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

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

ALL POWER AND GROUNDING CONNECTIONS SHALL BE GRAMP-STYLE. COMPRESSION WIRE LUGS AND WIRE NUTS BY THOMAS AND MORGAN (OR EQUAL). LUGS AND WIRE NUTS SHALL BE RATED FOR OPERATION NOT LESS THAN 75° C (165° F) IF AVAILABLE.

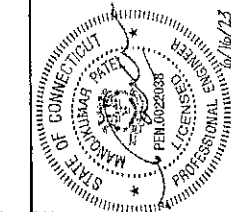
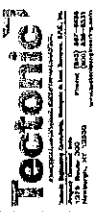
RACEWAY AND CABLE TRAY SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND THE NEC.

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





5781 SOUTH EAST AVE DRIVE  
LITTLETON, CO 80120



IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

DRAWN BY:	CHECKED BY:	APPROVED BY:
MA	JO	MP

**CONSTRUCTION DOCUMENTS**

REV	DATE	DESCRIPTION
0	10/27/23	ISSUED FOR APPROVAL
1	10/27/23	ISSUED FOR PERMITS

DATE	DESCRIPTION

AKA PROJECT NUMBER  
10710-NJLIER01148B

DASH WIRELESS PROJECT INFORMATION  
NJLIER01148C

173 WEST ROCKS ROAD  
NORWALK, CT 06851

SHEET TITLE  
GENERAL NOTES

SHEET NUMBER  
GN-5

**MASONRY NOTES:**

- 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".
- CONCRETE MASONRY UNITS SHALL BE NORMAL WEIGHT HOLLOW LOAD BEARING UNITS CONFORMING TO ASTM C90 "LOAD-BEARING CONCRETE MASONRY UNITS TYPE S". THE MASONRY UNITS SHALL HAVE A COMPRESSIVE STRENGTH OF MASONRY (FM) SHALL NOT BE LESS THAN 2800 PSI. COLOR AND FINISH AS INDICATED, SUBJECT TO APPROVAL BY OWNER.
- MORTAR SHALL CONFORM TO ASTM C270 "MORTAR FOR UNIT MASONRY" TYPE M OR S.
- GROUT SHALL CONFORM TO ASTM C476 "GROUT FOR REINFORCED AND NON-REINFORCED MASONRY". ALL CELLS SHALL BE FILLED SOLID WITH GROUT AT REINFORCING.
- ALL MASONRY SHALL BE CONSTRUCTED IN RUNNING BOND.
- HORIZONTAL JOINT REINFORCING SHALL BE STANDARD WEIGHT LADDER TYPE (2-No. 9 GAGE SIDE RODS) SPACED VERTICALLY AS INDICATED.
- INJECT GROUT INTO WEAK JOINTS WHERE THERE IS SEPARATION BETWEEN JOINTS.

**MASONRY REPAIR NOTES:**

- REPAIR ALL EXISTING BULKHEAD/PARAPET WALL CRACKS WITHIN 3 FEET RADII OF THE MOUNT ATTACHMENT POINTS.
- CONTRACTOR IS RESPONSIBLE TO REPAIR ANY BRICK FRACTURE OR MORTAR CRACKS THAT MAY DEVELOP DURING CONSTRUCTION OF ANTENNA MOUNTS AND EQUIPMENT FRAME.
- DO NOT HAMMER DRILL INTO EXISTING BULKHEAD/PARAPET.
- CONTRACTOR TO REMOVE PAR/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.
- REPAIR WORK FOR BULKHEAD/PARAPET TO BE PREPARED/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 POINTING TO MATCH EXISTING BUILDING AND PAINT TO MATCH.
  - RESAL 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 EXTERIOR AREA AS REQUIRED.
  - RESAL AND REPLACE BULKHEAD/PARAPET MEMBRANE AND FLASHING TO MATCH EXISTING.

**HILTI TESTING NOTES:**

IF REQUIRED PER HILT SPECIFICATIONS, CONTRACTOR SHALL RETAIN HILT 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 30 MINUTES. THE TENSILE LOAD IS REACHED. IF ANY TESTED ANCHOR IN A CONNECTION SPECIAL INSPECTOR SHALL BE PRESENT ON SITE DURING THE ANCHOR TESTS. CONNECTION SHALL BE RE-TESTED IF THE TEST RESULTS SHOW ANY DEFICIENCIES. HILT AND FURNISHED TO ENGINEER OF RECORD UPON COMPLETION. ANCHORS WILL BE VISUALLY INSPECTED ALONG WITH THE SURROUNDINGS AFTER TESTING.

**GROUNDING NOTES:**

ALL GROUNDING ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION AND AC POWER GESS'S) SHALL BE BONDED TOGETHER AT OR BELOW GRADE. BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC. 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. THE CONTRACTOR IS RESPONSIBLE FOR PROPERLY SEQUENCING GROUNDING AND UNDERGROUND CONDUIT INSTALLATION AS TO AVOID ANY LOSS OF CONTINUITY IN THE GROUNDING SYSTEM OR DAMAGE TO THE CONDUIT AND PROVIDE TESTING RESULTS. 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 OR APPROVED GROUNDING TYPE CONDUIT CLAMPS.

**GROUNDING CONDUCTORS:**

- METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUNDING CONDUCTORS. STRANDED COPPER CONDUCTORS IN GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BITS UPMENT.
- EACH CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL 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.
- ALL EXTERIOR GROUNDING CONDUCTORS BETWEEN EQUIPMENT/GROUND BARS AND THE GROUND RING SHALL BE #2 SOLID TINNED ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
- USE OF 90° BENDS IN THE PROTECTION GROUNDING CONDUCTORS SHALL BE AVOIDED WHEN 45° BENDS CAN BE ADEQUATELY PROTECTED.
- EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
- ALL GROUND CONNECTIONS ABOVE GRADE (INTERIOR AND EXTERIOR) SHALL BE FORMED USING HIGH PRESS CRIMPS. COMPRESSION GROUND CONNECTIONS MAY BE REPLACED BY EXOTHERMIC WELD CONNECTIONS.
- ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO THE BRIDGE AND THE TOWER GROUND CONNECTIONS.
- APPROVED ANTI-OXIDANT COATINGS (i.e. CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
- ALL EXTERIOR GROUND CONNECTIONS SHALL BE COATED WITH A CORROSION RESISTANT MATERIAL.
- MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND IN ACCORDANCE WITH THE NEC.
- BOND ALL METALLIC OBJECTS WITHIN 5 FT OF MAIN GROUND RING WITH (1) #2 BARE SOLID TINNED COPPER GROUND CONDUCTOR.

**GROUNDING CONDUCTORS:**

GROUNDING 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 SEVES THROUGH WALLS OR FLOORS. WHEN IT IS REQUIRED TO BE HOUSED IN CONDUIT TO MEET CODE REQUIREMENTS, LOCAL NOTIONS, NON-METALLIC MATERIAL SUCH AS PVC CONDUIT SHALL BE USED. WHERE USE OF METAL CONDUIT IS UNAVOIDABLE (i.e., METALLIC CONDUIT PROHIBITED BY LOCAL CODE) THE GROUND CONDUCTOR SHALL BE BONDED TO EACH END OF THE METAL CONDUIT. ALL GROUNDING THAT TRANSITION FROM BELOW GRADE TO ABOVE GRADE MUST BE #2 BARE SOLID TINNED COPPER IN 3/4" N-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).

**GROUNDING CONDUCTORS:**

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

# Exhibit D

## Structural Analysis



Date: February 15, 2023

### Structural Analysis Report

**Project Information:**

<b>Carrier:</b>	Dish Wireless
<b>Site Number:</b>	NJJER01148C
<b>Site Address:</b>	173 West Rocks Road, Norwalk, Fairfield County, CT 06851
<b>Site Type:</b>	130 ft Monopole

**Tectonic Project Number:** 10710.NJJER01148C

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

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

Structure:	<b>Sufficient Capacity – 32.8 %</b>
Foundation:	<b>Sufficient Capacity – 81.5 %</b>

This analysis has been performed in accordance with the 2022 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 120 mph per Appendix P as required for use in the ANSI/TIA-222-H Standard. Exposure Category B with a maximum topographic factor, Kzt, of 1.0 and Risk Category II were used in this analysis.

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

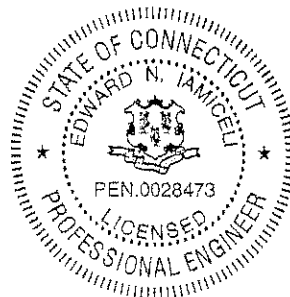
We at Tectonic appreciate the opportunity of providing our continuing professional services to you. If you have any questions or need further assistance on this or any other projects please give us a call.

Structural analysis prepared by: Graham Evans / Veronica Elson

Respectfully submitted by:

*Tectonic Engineering Consultants, Geologists & Land Surveyors, D.P.C., Inc.*

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



**Project Contact Info**

1375 Route 600 • Norwalk, CT 06856  
346.917.8600 Fax: 346.973.7733 Fax

## TABLE OF CONTENTS

### 1) INTRODUCTION

### 2) ANALYSIS CRITERIA

Table 1 - Proposed Equipment Loading Information

Table 2 – Existing/Reserved Equipment Loading Information

### 3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

3.1) Analysis Method

3.2) Assumptions

### 4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Table 5 – Tower Component Stresses vs. Capacity

4.1) Results / Conclusions

### 5) APPENDIX A

tnxTower Output

### 6) APPENDIX B

Additional Calculations

### 7) APPENDIX C

References

**1) INTRODUCTION**

This tower is a 130 ft Monopole tower designed by Valmont In 2021.

**2) ANALYSIS CRITERIA**

<b>TIA-222 Revision:</b>	TIA-222-H
<b>Risk Category:</b>	II
<b>Wind Speed:</b>	120 mph
<b>Exposure Category:</b>	B
<b>Topographic Factor:</b>	1
<b>Ice Thickness:</b>	1 in
<b>Wind Speed with Ice:</b>	50 mph
<b>Seismic Ss / S1:</b>	0.240 / 0.057
<b>Service Wind Speed:</b>	60 mph

**Table 1 - Proposed Equipment Loading Information**

Mounting Level (ft)	Carrier Designation	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
96.0	Dish	1	Commscope	8' Platform Mount w/ Top Rail (MC-PK8-DSH)	1	Hybrid
		3	Commscope	FFVV-65B-R2		
		3	Fujitsu	TA08025-B604		
		3	Fujitsu	TA08025-B605		
		1	Raycap	RDIDC-9181-PF-48		

**Table 2 - Existing/Reserved Equipment Loading Information**

Mounting Level (ft)	Carrier Designation	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
126.0	AT&T	3	CCI	DMP65R-BU6DA	2 6	DC Fiber DC Power
		3	CCI	TPA65R-BU6DA-K		
		3	Ericsson	B2/B66A 8843 RRH		
		3	Ericsson	B5/B12 4449 RRH		
		3	Ericsson	RRUS 4415 4T4R		
		3	Ericsson	Radio 4478 B14		
		3	Raycap	DC6-48-60-0-8C-EV		
		3	Site Pro 1	6' Double T-Arm		
116.0	Verizon	6	JMA	MX06FRO660-03	1	Hybrid
		3	Samsung	MT6407-77A		
		3	Samsung	CBRS RRH-RT 4401-48A w/ XXDWMM-12.5-65-8T		
		3	Samsung	B2/B66A RRH (RF4439d-25A)		
		3	Samsung	B5/B13 RRH (RF4440d-13A)		
		1	Raycap	RDC-6627-PF-48		
		3	Site Pro 1	6' Double T-Arm		

Mounting Level (ft)	Carrier Designation	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
106.0	T-Mobile	3	Commscope	VV-65A-R1B	3	Hybrid
		3	Ericsson	AIR6419 B41		
		3	Ericsson	Radio 4460 B25/B66		
		3	Ericsson	Radio 4480 B71/B85		
		3	RFS	APXVAALL24_43-U-NA20		
		3	Site Pro 1	6' Double T-Arm		

### 3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Dated
Field Notes & Photos	Tectonic	7/13/2022
Construction Drawings	APT	9/21/2022
Structural Analysis Report	All-Points	9/21/2022

#### 3.1) Analysis Method

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

#### 3.2) Assumptions

- 1) Tower and structures were built and maintained in accordance with the manufacturer's specifications.
- 2) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2.
- 3) Original design criteria was unavailable at the time of this report. Therefore, the tower geometry, grades, and original base reactions are based on the previous structural analysis report by All-Points, referenced above.

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

### 4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)\*

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P allow (K)	% Capacity	Pass / Fail
L1	130 - 120	Pole	TP29.07x26.71x0.25	1	-5.12	1404.71	3.3	Pass
L2	120 - 110	Pole	TP31.43x29.07x0.25	2	-10.48	1519.74	10.3	Pass
L3	110 - 100	Pole	TP33.7874x31.43x0.375	3	-16.31	2442.81	11.9	Pass
L4	100 - 90	Pole	TP36.1447x33.7874x0.375	4	-20.99	2615.16	17.6	Pass
L5	90 - 79.33	Pole	TP38.66x36.1447x0.375	5	-22.00	2701.33	20.2	Pass
L6	79.33 - 75	Pole	TP38.931x36.5734x0.438	6	-25.39	3287.07	21.8	Pass
L7	75 - 65	Pole	TP41.2866x38.931x0.438	7	-27.92	3488.38	24.9	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L8	65 - 55	Pole	TP43.6462x41.2886x0.438	8	-30.58	3689.71	27.6	Pass
L9	55 - 41.92	Pole	TP46.73x43.6462x0.438	9	-32.39	3820.57	29.2	Pass
L10	41.92 - 38.5	Pole	TP46.66x44.3027x0.5	10	-37.27	4499.74	27.9	Pass
L11	38.5 - 28.5	Pole	TP49.0173x46.66x0.5	11	-40.63	4729.55	29.3	Pass
L12	28.5 - 18.5	Pole	TP51.3747x49.0173x0.5	12	-44.15	4959.34	30.7	Pass
L13	18.5 - 8.5	Pole	TP53.732x51.3747x0.5	13	-47.82	5189.13	31.9	Pass
L14	8.5 - 1	Pole	TP55.5x53.732x0.5	14	-50.60	5361.48	32.8	Pass
							Summary	
						Pole (L14)	32.8	Pass
						Rating =	32.8	Pass

\* Rating per TIA-222-H Section 15.5

Table 5 - Tower Component Stresses vs. Capacity

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1,2	Base Foundation	0	81.5	Pass

<b>Structure Rating (max from all components) =</b>	<b>33%</b>
---	------------

Notes:

- 1) See additional documentation in "Appendix B -- Additional Calculations" for calculations supporting the % capacity consumed.
- 2) Foundation capacity determined by comparing analysis reactions to original design reactions.

#### 4.1) Results / Conclusions

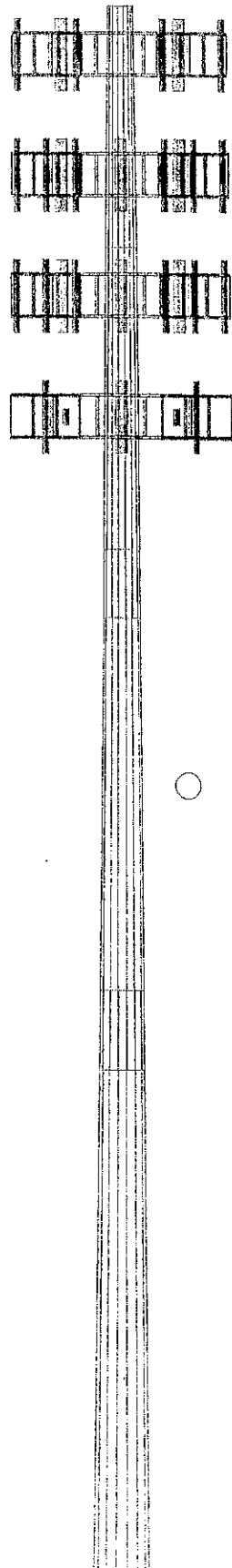
The tower and its foundation have sufficient capacity to support the proposed Dish Wireless load configuration as well as the existing and reserved loadings. No modification is required at this time.

**APPENDIX A**  
**TNXTOWER OUTPUT**



Setback	4	47.50	18	0.5000	44.3027	55.5000	12.7	1.0 ft.
Length (ft)	20.00	30.67	43.08	0.4380	36.5734	46.7300	8.4	41.9 ft.
Number of Sides	18	18	18	0.4380	36.5734	46.7300	8.4	79.3 ft.
Thickness (in)	0.2500	0.3750	0.4380	0.4380	0.4380	0.4380	0.4380	110.0 ft.
Socket Length (ft)	26.7100	31.4300	38.6600	31.4300	38.6600	31.4300	38.6600	1.6
Top Dia (in)	31.4300	38.6600	46.7300	31.4300	38.6600	46.7300	31.4300	
Bot Dia (in)	31.4300	38.6600	46.7300	31.4300	38.6600	46.7300	31.4300	
Grade								
Weight (K)	26.9	4.3	8.4	4.3	8.4	4.3	8.4	

1.0 ft. 41.9 ft. 79.3 ft. 110.0 ft.



### DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
CCI DMP65R-BU6DA	126	Samsung B5/B13 RRH (RF4440d-13A)	116
CCI DMP65R-BU6DA	126	Samsung B5/B13 RRH (RF4440d-13A)	116
CCI DMP65R-BU6DA	126	Samsung B5/B13 RRH (RF4440d-13A)	116
CCI TPA65R-BU6DA-K	126	Raycap RDC-8627-PF-48	116
CCI TPA65R-BU6DA-K	126	(5) 8x2 7/8" Pipe Mount	116
CCI TPA65R-BU6DA-K	126	(5) 8x2 7/8" Pipe Mount	116
Ericsson Radio 4478 B14	126	(6) 8x2 7/8" Pipe Mount	116
Ericsson Radio 4478 B14	126	SitePro1 8' Double T-Arm	116
Ericsson Radio 4478 B14	126	Commscope VV-65A-R1B	106
Ericsson B2/B66A 8843 RRH	126	Commscope VV-65A-R1B	106
Ericsson B2/B66A 8843 RRH	126	Commscope VV-65A-R1B	106
Ericsson B2/B66A 8843 RRH	126	RFS APXVAALL24_43-U-NA20	106
Ericsson RRUIS 4415 4T4R	126	RFS APXVAALL24_43-U-NA20	106
Ericsson RRUIS 4415 4T4R	126	RFS APXVAALL24_43-U-NA20	106
Ericsson B5/B12 4449 RRH	126	Ericsson AIR6419 B41	106
Ericsson B5/B12 4449 RRH	126	Ericsson AIR6419 B41	106
Ericsson B5/B12 4449 RRH	126	Ericsson AIR6419 B41	106
Ericsson B5/B12 4449 RRH	126	Ericsson Radio 4460 B25/B66	106
Raycap DC8-48-60-0-8C-EV	126	Ericsson Radio 4460 B25/B66	106
Raycap DC8-48-60-0-8C-EV	126	Ericsson Radio 4460 B25/B66	106
Raycap DC8-48-60-0-8C-EV	126	Ericsson Radio 4460 B71/B85	106
(5) 8x2 7/8" Pipe Mount	126	Ericsson Radio 4480 B71/B85	106
(5) 8x2 7/8" Pipe Mount	126	Ericsson Radio 4480 B71/B85	106
(5) 8x2 7/8" Pipe Mount	126	Ericsson Radio 4480 B71/B85	106
SitePro1 8' Double T-Arm	126	(5) 8x2 7/8" Pipe Mount	106
(2) JMA MX06FRO660-03	116	(5) 8x2 7/8" Pipe Mount	106
(2) JMA MX06FRO660-03	116	(6) 8x2 7/8" Pipe Mount	106
(2) JMA MX06FRO660-03	116	SitePro1 8' Double T-Arm	106
Samsung MT6407-77A	116	FFVY-65B-R2 w/ Mount Pipe	96
Samsung MT6407-77A	116	FFVY-65B-R2 w/ Mount Pipe	96
Samsung MT6407-77A	116	FFVY-65B-R2 w/ Mount Pipe	96
Samsung CBR8 RRH-RT 4401-48A w/ XXDWMM-12.5-65-8T	116	TA08025-B605	96
Samsung CBR8 RRH-RT 4401-48A w/ XXDWMM-12.5-65-8T	116	TA08025-B605	96
Samsung CBR8 RRH-RT 4401-48A w/ XXDWMM-12.5-65-8T	116	TA08025-B605	96
Samsung CBR8 RRH-RT 4401-48A w/ XXDWMM-12.5-65-8T	116	TA08025-B604	96
Samsung CBR8 RRH-RT 4401-48A w/ XXDWMM-12.5-65-8T	116	TA08025-B604	96
Samsung B2/B66A RRH (RF4439d-25A)	116	TA08025-B604	96
Samsung B2/B66A RRH (RF4439d-25A)	116	RDIC-9181-PF-48	96
Samsung B2/B66A RRH (RF4439d-25A)	116	(2) 8' x 2" STD Pipe	96
Samsung B2/B66A RRH (RF4439d-25A)	116	(2) 8' x 2" STD Pipe	96
Samsung B2/B66A RRH (RF4439d-25A)	116	(2) 8' x 2" STD Pipe	96
Samsung B2/B66A RRH (RF4439d-25A)	116	8' Platform Mount (MC-FK8-DSH)	96
		Top Rail	96

### MATERIAL STRENGTH

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

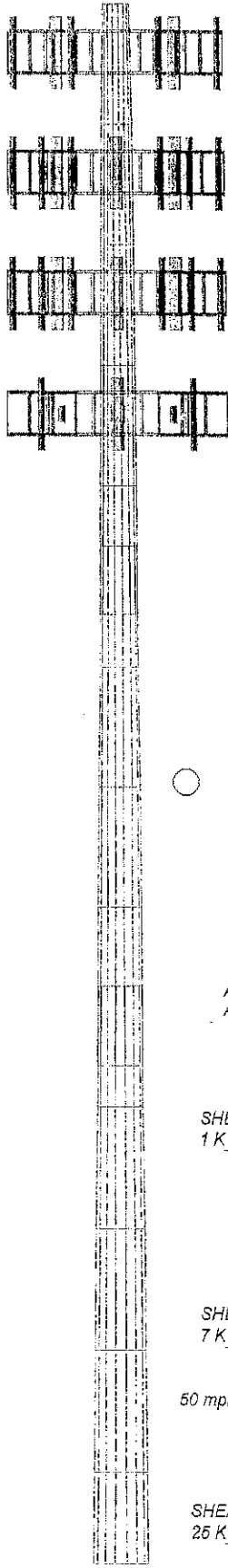
### TOWER DESIGN NOTES

1. Tower designed for Exposure B to the TIA-222-H Standard.
2. Tower designed for a 120 mph basic wind in accordance with the TIA-222-H Standard.
3. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 60 mph wind.
5. Tower Risk Category II.
6. Topographic Category 1 with Crest Height of 0.00 ft

**Tectonic Engineering**  
 1279 Route 300  
 Newburgh, NY 12550  
 Job: 10710.NJER01148C  
 Project: 130' Monopole  
 Client: Dish Wireless  
 Drawn by: [Name]

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	10.00	18	0.2500		26.7100	29.0700	A572-65	0.7
2	10.00	18	0.2500		26.7100	29.0700	A572-65	0.8
3	10.00	18	0.3750		31.4300	33.7874	A572-65	1.3
4	10.00	18	0.3750		33.7874	36.1447	A572-65	1.4
5	10.67	18	0.3750	5.67	36.1447	38.6600	A572-65	1.6
6	10.00	18	0.4380		36.5734	38.9310	A572-65	1.8
7	10.00	18	0.4380		38.9310	41.2886	A572-65	1.9
8	10.00	18	0.4380		41.2886	43.6462	A572-65	2.0
9	13.08	18	0.4380	6.59	43.6462	46.7300	A572-65	2.8
10	10.00	18	0.5000		44.3027	46.6600	A572-65	2.4
11	10.00	18	0.5000		46.6600	49.0173	A572-65	2.6
12	10.00	18	0.5000		49.0173	51.3747	A572-65	2.7
13	10.00	18	0.5000		51.3747	53.7320	A572-65	2.8
14	7.50	18	0.5000		53.7320	55.5000	A572-65	2.2

130.0 ft  
120.0 ft  
110.0 ft  
100.0 ft  
90.0 ft  
79.3 ft  
76.0 ft  
65.0 ft  
55.0 ft  
41.9 ft  
38.5 ft  
28.5 ft  
18.5 ft  
8.5 ft  
1.0 ft



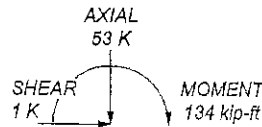
### MATERIAL STRENGTH

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

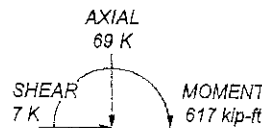
### TOWER DESIGN NOTES

1. Tower designed for Exposure B to the TIA-222-H Standard.
2. Tower designed for a 120 mph basic wind in accordance with the TIA-222-H Standard.
3. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 60 mph wind.
5. Tower Risk Category II.
6. Topographic Category 1 with Crest Height of 0.00 ft
7. Seismic loads generated by spreadsheet
8. Seismic calculations are in accordance with TIA-222-H-1
9. TOWER RATING: 32.8%

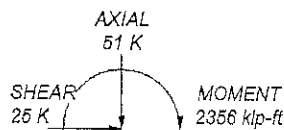
ALL REACTIONS  
ARE FACTORED



TORQUE 0 kip-ft  
SEISMIC



TORQUE 0 kip-ft  
50 mph WIND - 1.0000 in ICE



TORQUE 0 kip-ft  
REACTIONS - 120 mph WIND

## Tower Input Data

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

- Tower base elevation above sea level: 222.49 ft.
- Basic wind speed of 120 mph.
- Risk Category II.
- Exposure Category B.
- Simplified Topographic Factor Procedure for wind speed-up calculations is used.
- Topographic Category: 1.
- Crest Height: 0.00 ft.
- Nominal ice thickness of 1.0000 in.
- Ice thickness is considered to increase with height.
- Ice density of 56 pcf.
- A wind speed of 50 mph is used in combination with ice.
- Temperature drop of 50 °F.
- Deflections calculated using a wind speed of 60 mph.
- Seismic loads generated by spreadsheet.
- Seismic calculations are in accordance with TIA-222-H-1.
- A non-linear (P-delta) analysis was used.
- Pressures are calculated at each section.
- Stress ratio used in pole design is 1.05.
- Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

## Options

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

## Tapered Pole Section Geometry

Section	Elevation	Section Length	Splice Length	Number of Sides	Top Diameter	Bottom Diameter	Wall Thickness	Bend Radius	Pole Grade
	ft	ft	ft		In	In	In	In	
L1	130.00-120.00	10.00	0.00	18	26.7100	28.0700	0.2500	1.0000	A572-65 (65 ksi)

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L2	120.00-110.00	10.00	0.00	18	29.0700	31.4300	0.2500	1.0000	A572-65 (65 ksi)
L3	110.00-100.00	10.00	0.00	18	31.4300	33.7874	0.3750	1.5000	A572-65 (65 ksi)
L4	100.00-90.00	10.00	0.00	18	33.7874	36.1447	0.3750	1.5000	A572-65 (65 ksi)
L5	90.00-79.33	10.67	5.67	18	36.1447	38.6600	0.3750	1.5000	A572-65 (65 ksi)
L6	79.33-75.00	10.00	0.00	18	36.5734	38.9310	0.4380	1.7520	A572-65 (65 ksi)
L7	75.00-65.00	10.00	0.00	18	38.9310	41.2886	0.4380	1.7520	A572-65 (65 ksi)
L8	65.00-55.00	10.00	0.00	18	41.2886	43.6462	0.4380	1.7520	A572-65 (65 ksi)
L9	55.00-41.92	13.08	6.58	18	43.6462	46.7300	0.4380	1.7520	A572-65 (65 ksi)
L10	41.92-38.50	10.00	0.00	18	44.3027	46.6600	0.5000	2.0000	A572-65 (65 ksi)
L11	38.50-28.50	10.00	0.00	18	46.6600	49.0173	0.5000	2.0000	A572-65 (65 ksi)
L12	28.50-18.50	10.00	0.00	18	49.0173	51.3747	0.5000	2.0000	A572-65 (65 ksi)
L13	18.50-8.50	10.00	0.00	18	51.3747	53.7320	0.5000	2.0000	A572-65 (65 ksi)
L14	8.50-1.00	7.50		18	53.7320	55.5000	0.5000	2.0000	A572-65 (65 ksi)

### Tapered Pole Properties

Section	Tip Dia. in	Area in <sup>2</sup>	I in <sup>4</sup>	r in	C in	I/C in <sup>3</sup>	J in <sup>4</sup>	I/Q in <sup>2</sup>	w in	w/t
L1	27.0835	20.9960	1857.1796	9.3933	13.5687	136.8725	3716.8029	10.5000	4.2610	17.044
L2	29.4799	22.8687	2399.7517	10.2311	14.7676	162.5016	4802.6611	11.4365	4.6763	18.705
L3	31.8763	24.7413	3038.8741	11.0689	15.9664	190.3288	6081.7469	12.3730	5.0917	20.367
L4	34.2507	39.7691	5609.1465	11.8614	17.1640	326.7976	11225.673	19.8883	5.2866	14.098
L5	36.6444	42.5749	6882.1117	12.6982	18.3615	374.8119	13773.279	21.2915	5.7015	15.204
L6	39.1985	45.5687	8438.4289	13.5912	19.6393	429.6710	16887.961	22.7887	6.1442	16.384
L7	39.4640	53.5134	10017.601	13.6650	19.7769	506.5292	20048.383	26.7618	6.0810	13.884
L8	41.8580	56.7910	11973.313	14.5020	20.9746	570.8478	23962.381	28.4009	6.4959	14.831
L9	44.2520	60.0686	14168.311	15.3389	22.1723	639.0099	28355.265	30.0400	6.9109	15.778
L10	47.3833	64.3557	17423.536	16.4337	23.7388	733.9675	34869.999	32.1840	7.4536	17.017
L11	46.4840	69.5149	16850.649	15.5500	22.5058	748.7259	33723.470	34.7640	6.9173	13.835
L12	47.3027	73.2559	19720.241	16.3868	23.7033	831.9623	39466.431	36.6349	7.3322	14.864

Section	Tip Dia. in	Area in <sup>2</sup>	I in <sup>4</sup>	r in	C in	I/C in <sup>3</sup>	J in <sup>4</sup>	I/Q in <sup>2</sup>	W in	w/t
L11	47.3027	73.2559	19720.241	16.3868	23.7033	831.9623	39466.431	36.6349	7.3322	14.664
	49.6964	76.9970	22898.416	17.2237	24.9008	919.5852	45826.964	38.5058	7.7471	15.494
L12	49.6964	76.9970	22898.416	17.2237	24.9008	919.5852	45826.964	38.5058	7.7471	15.494
	52.0901	80.7381	26400.934	18.0605	26.0983	1011.5946	52836.607	40.3767	8.1619	16.324
L13	52.0901	80.7381	26400.934	18.0605	26.0983	1011.5946	52836.607	40.3767	8.1619	16.324
	54.4838	84.4792	30243.552	18.8974	27.2959	1107.9906	60526.899	42.2476	8.5768	17.154
L14	54.4838	84.4792	30243.552	18.8974	27.2959	1107.9906	60526.899	42.2476	8.5768	17.154
	56.2790	87.2850	33358.187	19.5250	28.1940	1183.1662	66760.268	43.6508	8.8880	17.776

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor Ar	Adjust. Factor Ar	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontals	Double Angle Stitch Bolt Spacing Redundants
ft	ft <sup>2</sup>	in					in	in	in
L1 130.00-120.00				1	1	1			
L2 120.00-110.00				1	1	1			
L3 110.00-100.00				1	1	1			
L4 100.00-90.00				1	1	1			
L5 90.00-79.33				1	1	1			
L6 79.33-75.00				1	1	1			
L7 75.00-65.00				1	1	1			
L8 65.00-55.00				1	1	1			
L9 55.00-41.92				1	1	1			
L10 41.92-38.50				1	1	1			
L11 38.50-28.50				1	1	1			
L12 28.50-18.50				1	1	1			
L13 18.50-8.50				1	1	1			
L14 8.50-1.00				1	1	1			

**Feed Line/Linear Appurtenances - Entered As Round Or Flat**

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter r in	Weight plf
Step Bolts	B	No	Surface Ar (CaAa)	130.00 - 9.00	1	1	0.000 0.000	0.3750		2.00
Safety Line 3/8	B	No	Surface Ar (CaAa)	130.00 - 9.00	1	1	0.000 0.000	0.3750		0.22

**Feed Line/Linear Appurtenances - Entered As Area**

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C <sub>A</sub> A <sub>A</sub> ft <sup>2</sup> /ft	Weight plf
***									
3/4" power 6AWG6	C	No	No	Inside Pole	126.00 - 4.00	6	No Ice	0.00	0.58
							1/2" Ice	0.00	0.58
							1" Ice	0.00	0.58
5/16" Fiber	C	No	No	Inside Pole	126.00 - 4.00	2	No Ice	0.00	0.25
							1/2" Ice	0.00	0.25
							1" Ice	0.00	0.25
***									
12x24 Hybrid	C	No	No	Inside Pole	116.00 - 4.00	1	No Ice	0.00	3.04
							1/2" Ice	0.00	3.04
							1" Ice	0.00	3.04
***									
6x24 Hyrbld	C	No	No	Inside Pole	106.00 - 4.00	3	No Ice	0.00	2.22
							1/2" Ice	0.00	2.22
							1" Ice	0.00	2.22
***									
CU12PSM9P6XXX_6AWG	C	No	No	Inside Pole	96.00 - 4.00	1	No Ice	0.00	2.35
							1/2" Ice	0.00	2.35
							1" Ice	0.00	2.35
***									

**Feed Line/Linear Appurtenances Section Areas**

Tower Section n	Tower Elevation ft	Face	A <sub>R</sub> ft <sup>2</sup>	A <sub>F</sub> ft <sup>2</sup>	C <sub>A</sub> A <sub>A</sub> In Face ft <sup>2</sup>	C <sub>A</sub> A <sub>A</sub> Out Face ft <sup>2</sup>	Weight K
L1	130.00-120.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.750	0.000	0.02
		C	0.000	0.000	0.000	0.000	0.02
L2	120.00-110.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.750	0.000	0.02
		C	0.000	0.000	0.000	0.000	0.06
L3	110.00-100.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.750	0.000	0.02
		C	0.000	0.000	0.000	0.000	0.11
L4	100.00-90.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.750	0.000	0.02
		C	0.000	0.000	0.000	0.000	0.15
L5	90.00-79.33	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.800	0.000	0.02
		C	0.000	0.000	0.000	0.000	0.17
L6	79.33-75.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.325	0.000	0.01
		C	0.000	0.000	0.000	0.000	0.07
L7	75.00-65.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.750	0.000	0.02
		C	0.000	0.000	0.000	0.000	0.16
L8	65.00-55.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.750	0.000	0.02
		C	0.000	0.000	0.000	0.000	0.16
L9	55.00-41.92	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.981	0.000	0.03
		C	0.000	0.000	0.000	0.000	0.21
L10	41.92-38.50	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.257	0.000	0.01
		C	0.000	0.000	0.000	0.000	0.05
L11	38.50-28.50	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.750	0.000	0.02
		C	0.000	0.000	0.000	0.000	0.16

Tower Section n	Tower Elevation ft	Face	A <sub>R</sub> ft <sup>2</sup>	A <sub>F</sub> ft <sup>2</sup>	C <sub>A</sub> A <sub>A</sub> In Face ft <sup>2</sup>	C <sub>A</sub> A <sub>A</sub> Out Face ft <sup>2</sup>	Weight K
L12	28.50-18.50	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.750	0.000	0.02
		C	0.000	0.000	0.000	0.000	0.16
L13	18.50-8.50	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.713	0.000	0.02
		C	0.000	0.000	0.000	0.000	0.16
L14	8.50-1.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.07

**Feed Line/Linear Appurtenances Section Areas - With Ice**

Tower Section n	Tower Elevation ft	Face or Leg	Ice Thickness in	A <sub>R</sub> ft <sup>2</sup>	A <sub>F</sub> ft <sup>2</sup>	C <sub>A</sub> A <sub>A</sub> In Face ft <sup>2</sup>	C <sub>A</sub> A <sub>A</sub> Out Face ft <sup>2</sup>	Weight K
L1	130.00-120.00	A	1.142	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	5.320	0.000	0.06
		C		0.000	0.000	0.000	0.000	0.02
L2	120.00-110.00	A	1.133	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	5.282	0.000	0.06
		C		0.000	0.000	0.000	0.000	0.06
L3	110.00-100.00	A	1.123	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	5.241	0.000	0.06
		C		0.000	0.000	0.000	0.000	0.11
L4	100.00-90.00	A	1.111	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	5.196	0.000	0.06
		C		0.000	0.000	0.000	0.000	0.15
L5	90.00-79.33	A	1.099	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	5.490	0.000	0.07
		C		0.000	0.000	0.000	0.000	0.17
L6	79.33-75.00	A	1.089	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	2.228	0.000	0.03
		C		0.000	0.000	0.000	0.000	0.07
L7	75.00-65.00	A	1.078	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	5.062	0.000	0.06
		C		0.000	0.000	0.000	0.000	0.16
L8	65.00-55.00	A	1.062	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	4.996	0.000	0.06
		C		0.000	0.000	0.000	0.000	0.16
L9	55.00-41.92	A	1.039	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	6.417	0.000	0.08
		C		0.000	0.000	0.000	0.000	0.21
L10	41.92-38.50	A	1.020	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	1.678	0.000	0.02
		C		0.000	0.000	0.000	0.000	0.05
L11	38.50-28.50	A	1.001	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	4.756	0.000	0.06
		C		0.000	0.000	0.000	0.000	0.16
L12	28.50-18.50	A	0.966	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	4.616	0.000	0.05
		C		0.000	0.000	0.000	0.000	0.16
L13	18.50-8.50	A	0.914	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	4.187	0.000	0.05
		C		0.000	0.000	0.000	0.000	0.16
L14	8.50-1.00	A	0.823	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.07

**Feed Line Center of Pressure**

Section	Elevation	CP <sub>x</sub>	CP <sub>z</sub>	CP <sub>x</sub> Ice	CP <sub>z</sub> Ice
	ft	in	in	in	in
L1	130.00-120.00	0.5112	-0.2952	1.8143	-1.0475
L2	120.00-110.00	0.5123	-0.2958	1.8323	-1.0579
L3	110.00-100.00	0.5136	-0.2965	1.8463	-1.0660
L4	100.00-90.00	0.5144	-0.2970	1.8549	-1.0709
L5	90.00-79.33	0.5151	-0.2974	1.8593	-1.0735
L6	79.33-75.00	0.5155	-0.2976	1.8680	-1.0785
L7	75.00-65.00	0.5159	-0.2979	1.8534	-1.0701
L8	65.00-55.00	0.5164	-0.2982	1.8473	-1.0665
L9	55.00-41.92	0.5170	-0.2985	1.8331	-1.0584
L10	41.92-38.50	0.5173	-0.2986	1.8400	-1.0623
L11	38.50-28.50	0.5175	-0.2988	1.7967	-1.0373
L12	28.50-18.50	0.5179	-0.2990	1.7596	-1.0159
L13	18.50-8.50	0.4924	-0.2843	1.6162	-0.9331
L14	8.50-1.00	0.0000	0.0000	0.0000	0.0000

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

### Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
L1	2	Step Bolts	120.00 - 130.00	1.0000	1.0000
L1	3	Safety Line 3/8	120.00 - 130.00	1.0000	1.0000
L2	2	Step Bolts	110.00 - 120.00	1.0000	1.0000
L2	3	Safety Line 3/8	110.00 - 120.00	1.0000	1.0000
L3	2	Step Bolts	100.00 - 110.00	1.0000	1.0000
L3	3	Safety Line 3/8	100.00 - 110.00	1.0000	1.0000
L4	2	Step Bolts	90.00 - 100.00	1.0000	1.0000
L4	3	Safety Line 3/8	90.00 - 100.00	1.0000	1.0000
L5	2	Step Bolts	79.33 - 90.00	1.0000	1.0000
L5	3	Safety Line 3/8	79.33 - 90.00	1.0000	1.0000
L6	2	Step Bolts	75.00 - 79.33	1.0000	1.0000
L6	3	Safety Line 3/8	75.00 - 79.33	1.0000	1.0000
L7	2	Step Bolts	65.00 - 75.00	1.0000	1.0000
L7	3	Safety Line 3/8	65.00 - 75.00	1.0000	1.0000
L8	2	Step Bolts	55.00 - 65.00	1.0000	1.0000
L8	3	Safety Line 3/8	55.00 - 65.00	1.0000	1.0000
L9	2	Step Bolts	41.92 - 55.00	1.0000	1.0000
L9	3	Safety Line 3/8	41.92 - 55.00	1.0000	1.0000
L10	2	Step Bolts	38.50 - 41.92	1.0000	1.0000
L10	3	Safety Line 3/8	38.50 - 41.92	1.0000	1.0000



Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
L11	2	Step Bolts	28.50 - 38.50	1.0000	1.0000
L11	3	Safety Line 3/8	28.50 - 38.50	1.0000	1.0000
L12	2	Step Bolts	18.50 - 28.50	1.0000	1.0000
L12	3	Safety Line 3/8	18.50 - 28.50	1.0000	1.0000
L13	2	Step Bolts	9.00 - 18.50	1.0000	1.0000
L13	3	Safety Line 3/8	9.00 - 18.50	1.0000	1.0000

### User Defined Loads - Seismic

Description	Elevation	Offset From Centroid	Azimuth Angle	E <sub>v</sub>	E <sub>nx</sub>	E <sub>nz</sub>	E <sub>n</sub>
	ft	ft	°	K	K	K	K
Tower Section 1 - 1	125.00	0.00	0.0000	0.04	0.00	0.00	0.05
Tower Section 2 - 1	115.00	0.00	0.0000	0.04	0.00	0.00	0.05
Tower Section 3 - 1	105.00	0.00	0.0000	0.07	0.00	0.00	0.06
Tower Section 4 - 1	95.00	0.00	0.0000	0.07	0.00	0.00	0.06
Tower Section 5 - 1	89.67	0.00	0.0000	0.01	0.00	0.00	0.00
Tower Section 5 - 2	84.33	0.00	0.0000	0.08	0.00	0.00	0.05
Tower Section 6 - 1	80.00	0.00	0.0000	0.09	0.00	0.00	0.05
Tower Section 7 - 1	70.00	0.00	0.0000	0.10	0.00	0.00	0.04
Tower Section 8 - 1	60.00	0.00	0.0000	0.10	0.00	0.00	0.03
Tower Section 9 - 1	53.46	0.00	0.0000	0.03	0.00	0.00	0.01
Tower Section 9 - 2	46.92	0.00	0.0000	0.11	0.00	0.00	0.02
Tower Section 10 - 1	43.50	0.00	0.0000	0.12	0.00	0.00	0.02
Tower Section 11 - 1	33.50	0.00	0.0000	0.13	0.00	0.00	0.01
Tower Section 12 - 1	23.50	0.00	0.0000	0.14	0.00	0.00	0.01
Tower Section 13 - 1	13.50	0.00	0.0000	0.14	0.00	0.00	0.00
Tower Section 14 - 1	4.75	0.00	0.0000	0.11	0.00	0.00	0.00
CCI DMP65R-BU6DA	126.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCI DMP65R-BU6DA	126.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCI DMP65R-BU6DA	126.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCI TPA65R-BU6DA-K	126.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCI TPA65R-BU6DA-K	126.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCI TPA65R-BU6DA-K	126.00	0.00	0.0000	0.00	0.00	0.00	0.01
Ericsson Radio 4478 B14	126.00	0.00	0.0000	0.00	0.00	0.00	0.00
Ericsson Radio 4478 B14	126.00	0.00	0.0000	0.00	0.00	0.00	0.00
Ericsson Radio 4478 B14	126.00	0.00	0.0000	0.00	0.00	0.00	0.00
Ericsson B2/B66A 8843 RRH	126.00	0.00	0.0000	0.00	0.00	0.00	0.00
Ericsson B2/B66A 8843 RRH	126.00	0.00	0.0000	0.00	0.00	0.00	0.00
Ericsson B2/B66A 8843 RRH	126.00	0.00	0.0000	0.00	0.00	0.00	0.00
Ericsson RRUS 4415 4T4R	126.00	0.00	0.0000	0.00	0.00	0.00	0.00
Ericsson RRUS 4415 4T4R	126.00	0.00	0.0000	0.00	0.00	0.00	0.00
Ericsson RRUS 4415 4T4R	126.00	0.00	0.0000	0.00	0.00	0.00	0.00
Ericsson B5/B12 4449 RRH	126.00	0.00	0.0000	0.00	0.00	0.00	0.01
Ericsson B5/B12 4449 RRH	126.00	0.00	0.0000	0.00	0.00	0.00	0.01
Ericsson B5/B12 4449 RRH	126.00	0.00	0.0000	0.00	0.00	0.00	0.01
Raycap DC6-48-60-0-8C-EV	126.00	0.00	0.0000	0.00	0.00	0.00	0.00
Raycap DC6-48-60-0-8C-EV	126.00	0.00	0.0000	0.00	0.00	0.00	0.00
Raycap DC6-48-60-0-8C-EV	126.00	0.00	0.0000	0.00	0.00	0.00	0.00
(5) 8'x2 7/8" Pipe Mount	126.00	0.00	0.0000	0.01	0.00	0.00	0.02
(5) 8'x2 7/8" Pipe Mount	126.00	0.00	0.0000	0.01	0.00	0.00	0.02

Description	Elevation	Offset From Centroid	Azimuth Angle	$E_v$	$E_{hx}$	$E_{hz}$	$E_h$
	ft	ft	°	K	K	K	K
(5) 8'x2 7/8" Pipe Mount	126.00	0.00	0.0000	0.01	0.00	0.00	0.02
SitePro1 6' Double T-Arm	126.00	0.00	0.0000	0.09	0.00	0.00	0.12
(2) JMA MX06FRO660-03	116.00	0.00	0.0000	0.01	0.00	0.00	0.01
(2) JMA MX06FRO660-03	116.00	0.00	0.0000	0.01	0.00	0.00	0.01
(2) JMA MX06FRO660-03	116.00	0.00	0.0000	0.01	0.00	0.00	0.01
Samsung MT6407-77A	116.00	0.00	0.0000	0.00	0.00	0.00	0.00
Samsung MT6407-77A	116.00	0.00	0.0000	0.00	0.00	0.00	0.00
Samsung MT6407-77A	116.00	0.00	0.0000	0.00	0.00	0.00	0.00
Samsung CBRS RRH-RT 4401-48A w/ XXDWMM-12.5-65-8T	116.00	0.00	0.0000	0.00	0.00	0.00	0.00
Samsung CBRS RRH-RT 4401-48A w/ XXDWMM-12.5-65-8T	116.00	0.00	0.0000	0.00	0.00	0.00	0.00
Samsung CBRS RRH-RT 4401-48A w/ XXDWMM-12.5-65-8T	116.00	0.00	0.0000	0.00	0.00	0.00	0.00
Samsung B2/B66A RRH (RF4439d-25A)	116.00	0.00	0.0000	0.01	0.00	0.00	0.01
Samsung B2/B66A RRH (RF4439d-25A)	116.00	0.00	0.0000	0.01	0.00	0.00	0.01
Samsung B2/B66A RRH (RF4439d-25A)	116.00	0.00	0.0000	0.01	0.00	0.00	0.01
Samsung B5/B13 RRH (RF4440d-13A)	116.00	0.00	0.0000	0.00	0.00	0.00	0.01
Samsung B5/B13 RRH (RF4440d-13A)	116.00	0.00	0.0000	0.00	0.00	0.00	0.01
Samsung B5/B13 RRH (RF4440d-13A)	116.00	0.00	0.0000	0.00	0.00	0.00	0.01
Raycap RDC-6627-PF-48	116.00	0.00	0.0000	0.00	0.00	0.00	0.00
(5) 8'x2 7/8" Pipe Mount	116.00	0.00	0.0000	0.01	0.00	0.00	0.01
(5) 8'x2 7/8" Pipe Mount	116.00	0.00	0.0000	0.01	0.00	0.00	0.01
(5) 8'x2 7/8" Pipe Mount	116.00	0.00	0.0000	0.01	0.00	0.00	0.01
SitePro1 6' Double T-Arm	116.00	0.00	0.0000	0.09	0.00	0.00	0.10
Commscope VV-65A-R1B	106.00	0.00	0.0000	0.00	0.00	0.00	0.00
Commscope VV-65A-R1B	106.00	0.00	0.0000	0.00	0.00	0.00	0.00
Commscope VV-65A-R1B	106.00	0.00	0.0000	0.00	0.00	0.00	0.00
RFS APXVAALL24_43-U-NA20	106.00	0.00	0.0000	0.00	0.00	0.00	0.00
RFS APXVAALL24_43-U-NA20	106.00	0.00	0.0000	0.00	0.00	0.00	0.00
RFS APXVAALL24_43-U-NA20	106.00	0.00	0.0000	0.00	0.00	0.00	0.00
Ericsson AIR6419 B41	106.00	0.00	0.0000	0.00	0.00	0.00	0.00
Ericsson AIR6419 B41	106.00	0.00	0.0000	0.00	0.00	0.00	0.00
Ericsson AIR6419 B41	106.00	0.00	0.0000	0.00	0.00	0.00	0.00
Ericsson Radio 4460 B2/B66	106.00	0.00	0.0000	0.01	0.00	0.00	0.01
Ericsson Radio 4460 B2/B66	106.00	0.00	0.0000	0.01	0.00	0.00	0.01
Ericsson Radio 4460 B2/B66	106.00	0.00	0.0000	0.01	0.00	0.00	0.01
Ericsson Radio 4480 B71/B85	106.00	0.00	0.0000	0.00	0.00	0.00	0.00
Ericsson Radio 4480 B71/B85	106.00	0.00	0.0000	0.00	0.00	0.00	0.00
Ericsson Radio 4480 B71/B85	106.00	0.00	0.0000	0.00	0.00	0.00	0.00
(5) 8'x2 7/8" Pipe Mount	106.00	0.00	0.0000	0.01	0.00	0.00	0.01
(5) 8'x2 7/8" Pipe Mount	106.00	0.00	0.0000	0.01	0.00	0.00	0.01
(5) 8'x2 7/8" Pipe Mount	106.00	0.00	0.0000	0.01	0.00	0.00	0.01
SitePro1 6' Double T-Arm	106.00	0.00	0.0000	0.09	0.00	0.00	0.09
commscope FFVV-65B-R2 w/ Mount Pipe	96.00	0.00	0.0000	0.01	0.00	0.00	0.00
commscope FFVV-65B-R2 w/ Mount Pipe	96.00	0.00	0.0000	0.01	0.00	0.00	0.00
commscope FFVV-65B-R2 w/ Mount Pipe	96.00	0.00	0.0000	0.01	0.00	0.00	0.00

Description	Elevation	Offset From Centroid	Azimuth Angle	$E_y$	$E_{rx}$	$E_{rz}$	$E_r$
	ft	ft	°	K	K	K	K
fujitsu TA08025-B605	96.00	0.00	0.0000	0.00	0.00	0.00	0.00
fujitsu TA08025-B605	96.00	0.00	0.0000	0.00	0.00	0.00	0.00
fujitsu TA08025-B605	96.00	0.00	0.0000	0.00	0.00	0.00	0.00
fujitsu TA08025-B604	96.00	0.00	0.0000	0.00	0.00	0.00	0.00
fujitsu TA08025-B604	96.00	0.00	0.0000	0.00	0.00	0.00	0.00
fujitsu TA08025-B604	96.00	0.00	0.0000	0.00	0.00	0.00	0.00
raycap RDIDC-9181-PF-48	96.00	0.00	0.0000	0.00	0.00	0.00	0.00
(2) mount pipes 8' x 2" STD Pipe	96.00	0.00	0.0000	0.00	0.00	0.00	0.00
(2) mount pipes 8' x 2" STD Pipe	96.00	0.00	0.0000	0.00	0.00	0.00	0.00
(2) mount pipes 8' x 2" STD Pipe	96.00	0.00	0.0000	0.00	0.00	0.00	0.00
8' Platform Mount (MC-PK8-DSH)	96.00	0.00	0.0000	0.06	0.00	0.00	0.05
Top Rail	96.00	0.00	0.0000	0.01	0.00	0.00	0.01
misc Step Bolts From 8 to 129 (119ft to 129ft)	125.00	0.00	0.0000	0.00	0.00	0.00	0.00
misc Step Bolts From 8 to 129 (109ft to 119ft)	115.00	0.00	0.0000	0.00	0.00	0.00	0.00
misc Step Bolts From 8 to 129 (99ft to 109ft)	105.00	0.00	0.0000	0.00	0.00	0.00	0.00
misc Step Bolts From 8 to 129 (89ft to 99ft)	95.00	0.00	0.0000	0.00	0.00	0.00	0.00
misc Step Bolts From 8 to 129 (79ft to 89ft)	85.00	0.00	0.0000	0.00	0.00	0.00	0.00
misc Step Bolts From 8 to 129 (69ft to 79ft)	75.00	0.00	0.0000	0.00	0.00	0.00	0.00
misc Step Bolts From 8 to 129 (59ft to 69ft)	65.00	0.00	0.0000	0.00	0.00	0.00	0.00
misc Step Bolts From 8 to 129 (49ft to 59ft)	55.00	0.00	0.0000	0.00	0.00	0.00	0.00
misc Step Bolts From 8 to 129 (39ft to 49ft)	45.00	0.00	0.0000	0.00	0.00	0.00	0.00
misc Step Bolts From 8 to 129 (29ft to 39ft)	35.00	0.00	0.0000	0.00	0.00	0.00	0.00
misc Step Bolts From 8 to 129 (19ft to 29ft)	25.00	0.00	0.0000	0.00	0.00	0.00	0.00
misc Step Bolts From 8 to 129 (9ft to 19ft)	15.00	0.00	0.0000	0.00	0.00	0.00	0.00
misc Step Bolts From 8 to 129 (8ft to 9ft)	9.50	0.00	0.0000	0.00	0.00	0.00	0.00
misc Safety Line 3/8 From 8 to 129 (119ft to 129ft)	125.00	0.00	0.0000	0.00	0.00	0.00	0.00
misc Safety Line 3/8 From 8 to 129 (109ft to 119ft)	115.00	0.00	0.0000	0.00	0.00	0.00	0.00
misc Safety Line 3/8 From 8 to 129 (99ft to 109ft)	105.00	0.00	0.0000	0.00	0.00	0.00	0.00
misc Safety Line 3/8 From 8 to 129 (89ft to 99ft)	95.00	0.00	0.0000	0.00	0.00	0.00	0.00
misc Safety Line 3/8 From 8 to 129 (79ft to 89ft)	85.00	0.00	0.0000	0.00	0.00	0.00	0.00
misc Safety Line 3/8 From 8 to 129 (69ft to 79ft)	75.00	0.00	0.0000	0.00	0.00	0.00	0.00
misc Safety Line 3/8 From 8 to 129 (59ft to 69ft)	65.00	0.00	0.0000	0.00	0.00	0.00	0.00
misc Safety Line 3/8 From 8 to 129 (49ft to 59ft)	55.00	0.00	0.0000	0.00	0.00	0.00	0.00
misc Safety Line 3/8 From 8 to 129 (39ft to 49ft)	45.00	0.00	0.0000	0.00	0.00	0.00	0.00
misc Safety Line 3/8 From 8 to 129 (29ft to 39ft)	35.00	0.00	0.0000	0.00	0.00	0.00	0.00
misc Safety Line 3/8 From 8 to 129 (19ft to 29ft)	25.00	0.00	0.0000	0.00	0.00	0.00	0.00
misc Safety Line 3/8 From 8 to 129 (9ft to 19ft)	15.00	0.00	0.0000	0.00	0.00	0.00	0.00
(6) 3/4" power 6AWG6 From 3 to 125 (119ft to 125ft)	123.00	0.00	0.0000	0.00	0.00	0.00	0.00

Description	Elevation	Offset From Centroid	Azimuth Angle	$E_v$	$E_{hx}$	$E_{hz}$	$E_h$
	ft	ft	°	K	K	K	K
(6) 3/4" power 6AWG6 From 3 to 125 (109ft to119ft)	115.00	0.00	0.0000	0.00	0.00	0.00	0.00
(6) 3/4" power 6AWG6 From 3 to 125 (99ft to109ft)	105.00	0.00	0.0000	0.00	0.00	0.00	0.00
(6) 3/4" power 6AWG6 From 3 to 125 (89ft to99ft)	95.00	0.00	0.0000	0.00	0.00	0.00	0.00
(6) 3/4" power 6AWG6 From 3 to 125 (79ft to89ft)	85.00	0.00	0.0000	0.00	0.00	0.00	0.00
(6) 3/4" power 6AWG6 From 3 to 125 (69ft to79ft)	75.00	0.00	0.0000	0.00	0.00	0.00	0.00
(6) 3/4" power 6AWG6 From 3 to 125 (59ft to69ft)	65.00	0.00	0.0000	0.00	0.00	0.00	0.00
(6) 3/4" power 6AWG6 From 3 to 125 (49ft to59ft)	55.00	0.00	0.0000	0.00	0.00	0.00	0.00
(6) 3/4" power 6AWG6 From 3 to 125 (39ft to49ft)	45.00	0.00	0.0000	0.00	0.00	0.00	0.00
(6) 3/4" power 6AWG6 From 3 to 125 (29ft to39ft)	35.00	0.00	0.0000	0.00	0.00	0.00	0.00
(6) 3/4" power 6AWG6 From 3 to 125 (19ft to29ft)	25.00	0.00	0.0000	0.00	0.00	0.00	0.00
(6) 3/4" power 6AWG6 From 3 to 125 (9ft to19ft)	15.00	0.00	0.0000	0.00	0.00	0.00	0.00
(6) 3/4" power 6AWG6 From 3 to 125 (3ft to9ft)	7.00	0.00	0.0000	0.00	0.00	0.00	0.00
(2) 5/16" Fiber From 3 to 125 (119ft to125ft)	123.00	0.00	0.0000	0.00	0.00	0.00	0.00
(2) 5/16" Fiber From 3 to 125 (109ft to119ft)	115.00	0.00	0.0000	0.00	0.00	0.00	0.00
(2) 5/16" Fiber From 3 to 125 (99ft to109ft)	105.00	0.00	0.0000	0.00	0.00	0.00	0.00
(2) 5/16" Fiber From 3 to 125 (89ft to99ft)	95.00	0.00	0.0000	0.00	0.00	0.00	0.00
(2) 5/16" Fiber From 3 to 125 (79ft to89ft)	85.00	0.00	0.0000	0.00	0.00	0.00	0.00
(2) 5/16" Fiber From 3 to 125 (69ft to79ft)	75.00	0.00	0.0000	0.00	0.00	0.00	0.00
(2) 5/16" Fiber From 3 to 125 (59ft to69ft)	65.00	0.00	0.0000	0.00	0.00	0.00	0.00
(2) 5/16" Fiber From 3 to 125 (49ft to59ft)	55.00	0.00	0.0000	0.00	0.00	0.00	0.00
(2) 5/16" Fiber From 3 to 125 (39ft to49ft)	45.00	0.00	0.0000	0.00	0.00	0.00	0.00
(2) 5/16" Fiber From 3 to 125 (29ft to39ft)	35.00	0.00	0.0000	0.00	0.00	0.00	0.00
(2) 5/16" Fiber From 3 to 125 (19ft to29ft)	25.00	0.00	0.0000	0.00	0.00	0.00	0.00
(2) 5/16" Fiber From 3 to 125 (9ft to19ft)	15.00	0.00	0.0000	0.00	0.00	0.00	0.00
(2) 5/16" Fiber From 3 to 125 (3ft to9ft)	7.00	0.00	0.0000	0.00	0.00	0.00	0.00
12x24 Hybrid From 3 to 115 (109ft to115ft)	113.00	0.00	0.0000	0.00	0.00	0.00	0.00
12x24 Hybrid From 3 to 115 (99ft to109ft)	105.00	0.00	0.0000	0.00	0.00	0.00	0.00
12x24 Hybrid From 3 to 115 (89ft to99ft)	95.00	0.00	0.0000	0.00	0.00	0.00	0.00
12x24 Hybrid From 3 to 115 (79ft to89ft)	85.00	0.00	0.0000	0.00	0.00	0.00	0.00
12x24 Hybrid From 3 to 115 (69ft to79ft)	75.00	0.00	0.0000	0.00	0.00	0.00	0.00
12x24 Hybrid From 3 to 115 (59ft to69ft)	65.00	0.00	0.0000	0.00	0.00	0.00	0.00
12x24 Hybrid From 3 to 115 (49ft to59ft)	55.00	0.00	0.0000	0.00	0.00	0.00	0.00
12x24 Hybrid From 3 to 115 (39ft to49ft)	45.00	0.00	0.0000	0.00	0.00	0.00	0.00
12x24 Hybrid From 3 to 115 (29ft to39ft)	35.00	0.00	0.0000	0.00	0.00	0.00	0.00

Description	Elevation	Offset From Centroid	Azimuth Angle	$E_v$	$E_{hx}$	$E_{hz}$	$E_h$
	ft	ft	°	K	K	K	K
12x24 Hybrid From 3 to 115 (19ft to29ft)	25.00	0.00	0.0000	0.00	0.00	0.00	0.00
12x24 Hybrid From 3 to 115 (9ft to19ft)	15.00	0.00	0.0000	0.00	0.00	0.00	0.00
12x24 Hybrid From 3 to 115 (3ft to9ft)	7.00	0.00	0.0000	0.00	0.00	0.00	0.00
(3) 6x24 Hybrid From 3 to 105 (99ft to105ft)	103.00	0.00	0.0000	0.00	0.00	0.00	0.00
(3) 6x24 Hybrid From 3 to 105 (89ft to99ft)	95.00	0.00	0.0000	0.00	0.00	0.00	0.00
(3) 6x24 Hybrid From 3 to 105 (79ft to89ft)	85.00	0.00	0.0000	0.00	0.00	0.00	0.00
(3) 6x24 Hybrid From 3 to 105 (69ft to79ft)	75.00	0.00	0.0000	0.00	0.00	0.00	0.00
(3) 6x24 Hybrid From 3 to 105 (59ft to69ft)	65.00	0.00	0.0000	0.00	0.00	0.00	0.00
(3) 6x24 Hybrid From 3 to 105 (49ft to59ft)	55.00	0.00	0.0000	0.00	0.00	0.00	0.00
(3) 6x24 Hybrid From 3 to 105 (39ft to49ft)	45.00	0.00	0.0000	0.00	0.00	0.00	0.00
(3) 6x24 Hybrid From 3 to 105 (29ft to39ft)	35.00	0.00	0.0000	0.00	0.00	0.00	0.00
(3) 6x24 Hybrid From 3 to 105 (19ft to29ft)	25.00	0.00	0.0000	0.00	0.00	0.00	0.00
(3) 6x24 Hybrid From 3 to 105 (9ft to19ft)	15.00	0.00	0.0000	0.00	0.00	0.00	0.00
(3) 6x24 Hybrid From 3 to 105 (3ft to9ft)	7.00	0.00	0.0000	0.00	0.00	0.00	0.00
CU12PSM9P6XXX_6AWG From 3 to 95 (89ft to95ft)	93.00	0.00	0.0000	0.00	0.00	0.00	0.00
CU12PSM9P6XXX_6AWG From 3 to 95 (79ft to89ft)	85.00	0.00	0.0000	0.00	0.00	0.00	0.00
CU12PSM9P6XXX_6AWG From 3 to 95 (69ft to79ft)	75.00	0.00	0.0000	0.00	0.00	0.00	0.00
CU12PSM9P6XXX_6AWG From 3 to 95 (59ft to69ft)	65.00	0.00	0.0000	0.00	0.00	0.00	0.00
CU12PSM9P6XXX_6AWG From 3 to 95 (49ft to59ft)	55.00	0.00	0.0000	0.00	0.00	0.00	0.00
CU12PSM9P6XXX_6AWG From 3 to 95 (39ft to49ft)	45.00	0.00	0.0000	0.00	0.00	0.00	0.00
CU12PSM9P6XXX_6AWG From 3 to 95 (29ft to39ft)	35.00	0.00	0.0000	0.00	0.00	0.00	0.00
CU12PSM9P6XXX_6AWG From 3 to 95 (19ft to29ft)	25.00	0.00	0.0000	0.00	0.00	0.00	0.00
CU12PSM9P6XXX_6AWG From 3 to 95 (9ft to19ft)	15.00	0.00	0.0000	0.00	0.00	0.00	0.00
CU12PSM9P6XXX_6AWG From 3 to 95 (3ft to9ft)	7.00	0.00	0.0000	0.00	0.00	0.00	0.00

### Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	$C_{AA}$ Front	$C_{AA}$ Side	Weight
			Horz Lateral	Vert					
***									
CCI DMP65R-BU6DA	A	From Leg	4.00	0.00	0.0000	126.00	No Ice	12.71	0.09
			0.00	0.00			1/2" ice	13.21	0.18
			0.00	0.00			1" ice	13.71	0.23
CCI DMP65R-BU6DA	B	From Leg	4.00	0.00	0.0000	126.00	No Ice	12.71	0.09

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustmen t	Placement  ft	C <sub>AA</sub> Front  ft <sup>2</sup>	C <sub>AA</sub> Side  ft <sup>2</sup>	Weight  K	
			Horz Lateral ft ft ft	Vert ft						
				0.00			1/2"	13.21		0.16
				0.00			Ice	13.71	6.07	0.23
CCI DMP65R-BU6DA	C	From Leg		4.00	0.0000	126.00	1"			
				0.00			No Ice	12.71	5.62	0.09
				0.00			1/2"	13.21	6.07	0.16
				0.00			Ice	13.71	6.52	0.23
CCI TPA65R-BU6DA-K	A	From Leg		4.00	0.0000	126.00	1"			
				0.00			No Ice	12.87	5.67	0.07
				0.00			1/2"	13.37	6.13	0.15
				0.00			Ice	13.87	6.59	0.23
CCI TPA65R-BU6DA-K	B	From Leg		4.00	0.0000	126.00	1"			
				0.00			No Ice	12.87	5.67	0.07
				0.00			1/2"	13.37	6.13	0.15
				0.00			Ice	13.87	6.59	0.23
CCI TPA65R-BU6DA-K	C	From Leg		4.00	0.0000	126.00	1"			
				0.00			No Ice	12.87	5.67	0.07
				0.00			1/2"	13.37	6.13	0.15
				0.00			Ice	13.87	6.59	0.23
Ericsson Radio 4478 B14	A	From Leg		4.00	0.0000	126.00	1"			
				0.00			No Ice	2.02	1.25	0.07
				0.00			1/2"	2.20	1.40	0.08
				0.00			Ice	2.38	1.55	0.10
Ericsson Radio 4478 B14	B	From Leg		4.00	0.0000	126.00	1"			
				0.00			No Ice	2.02	1.25	0.07
				0.00			1/2"	2.20	1.40	0.08
				0.00			Ice	2.38	1.55	0.10
Ericsson Radio 4478 B14	C	From Leg		4.00	0.0000	126.00	1"			
				0.00			No Ice	2.02	1.25	0.07
				0.00			1/2"	2.20	1.40	0.08
				0.00			Ice	2.38	1.55	0.10
Ericsson B2/B66A 8843 RRH	A	From Leg		4.00	0.0000	126.00	1"			
				0.00			No Ice	1.98	1.70	0.01
				0.00			1/2"	2.16	1.86	0.10
				0.00			Ice	2.34	2.02	0.18
Ericsson B2/B66A 8843 RRH	B	From Leg		4.00	0.0000	126.00	1"			
				0.00			No Ice	1.98	1.70	0.01
				0.00			1/2"	2.16	1.86	0.10
				0.00			Ice	2.34	2.02	0.18
Ericsson B2/B66A 8843 RRH	C	From Leg		4.00	0.0000	126.00	1"			
				0.00			No Ice	1.98	1.70	0.01
				0.00			1/2"	2.16	1.86	0.10
				0.00			Ice	2.34	2.02	0.18
Ericsson RRUS 4415 4T4R	A	From Leg		4.00	0.0000	126.00	1"			
				0.00			No Ice	1.84	0.82	0.06
				0.00			1/2"	2.01	0.94	0.07
				0.00			Ice	2.18	1.06	0.08
Ericsson RRUS 4415 4T4R	B	From Leg		4.00	0.0000	126.00	1"			
				0.00			No Ice	1.84	0.82	0.06
				0.00			1/2"	2.01	0.94	0.07
				0.00			Ice	2.18	1.06	0.08
Ericsson RRUS 4415 4T4R	C	From Leg		4.00	0.0000	126.00	1"			
				0.00			No Ice	1.84	0.82	0.06
				0.00			1/2"	2.01	0.94	0.07
				0.00			Ice	2.18	1.06	0.08
Ericsson B5/B12 4449 RRH	A	From Leg		4.00	0.0000	126.00	1"			
				0.00			No Ice	1.98	1.41	0.08
				0.00			1/2"	2.16	1.57	0.10
				0.00			Ice	2.34	1.73	0.12
Ericsson B5/B12 4449 RRH	B	From Leg		4.00	0.0000	126.00	1"			
				0.00			No Ice	1.98	1.41	0.08
				0.00			1/2"	2.16	1.57	0.10
				0.00			Ice	2.34	1.73	0.12
Ericsson B5/B12 4449 RRH	C	From Leg		4.00	0.0000	126.00	1"			
				0.00			No Ice	1.98	1.41	0.08
				0.00			1/2"	2.16	1.57	0.10

Description	Face or Leg	Offset Type	Offsets:			Azimuth Adjustment	Placement	C <sub>AA</sub> Front	C <sub>AA</sub> Side	Weight
			Horz	Lateral	Vert					
			0.00				Ice	2.34	1.73	0.12
Raycap DC6-48-60-0-8C-EV	A	From Leg	4.00	0.0000	126.00	1" Ice	1.09	1.09	0.03	
			0.00			No Ice	1.70	1.70	0.05	
			0.00			1/2"	2.31	2.31	0.07	
			0.00			Ice				
Raycap DC6-48-60-0-8C-EV	B	From Leg	4.00	0.0000	126.00	1" Ice	1.09	1.09	0.03	
			0.00			No Ice	1.70	1.70	0.05	
			0.00			1/2"	2.31	2.31	0.07	
			0.00			Ice				
Raycap DC6-48-60-0-8C-EV	C	From Leg	4.00	0.0000	126.00	1" Ice	1.09	1.09	0.03	
			0.00			No Ice	1.70	1.70	0.05	
			0.00			1/2"	2.31	2.31	0.07	
			0.00			Ice				
(5) 8'x2 7/8" Pipe Mount	A	From Leg	4.00	0.0000	126.00	1" Ice	2.30	2.30	0.05	
			0.00			No Ice	3.13	3.13	0.06	
			0.00			1/2"	3.96	3.96	0.08	
			0.00			Ice				
(5) 8'x2 7/8" Pipe Mount	B	From Leg	4.00	0.0000	126.00	1" Ice	2.30	2.30	0.05	
			0.00			No Ice	3.13	3.13	0.06	
			0.00			1/2"	3.96	3.96	0.08	
			0.00			Ice				
(5) 8'x2 7/8" Pipe Mount	C	From Leg	4.00	0.0000	126.00	1" Ice	2.30	2.30	0.05	
			0.00			No Ice	3.13	3.13	0.06	
			0.00			1/2"	3.96	3.96	0.08	
			0.00			Ice				
SitePro1 6' Double T-Arm	C	None		0.0000	126.00	1" Ice	12.87	12.87	1.73	
						No Ice	15.75	15.75	1.93	
						1/2"	18.63	18.63	2.13	
						Ice				
***										
(2) JMA MX06FRO660-03	A	From Leg	4.00	0.0000	116.00	1" Ice	9.87	7.34	0.07	
			0.00			No Ice	10.34	7.78	0.13	
			0.00			Ice	10.81	8.22	0.20	
			0.00			1" Ice				
(2) JMA MX06FRO660-03	B	From Leg	4.00	0.0000	116.00	1" Ice	9.87	7.34	0.07	
			0.00			No Ice	10.34	7.78	0.13	
			0.00			Ice	10.81	8.22	0.20	
			0.00			1" Ice				
(2) JMA MX06FRO660-03	C	From Leg	4.00	0.0000	116.00	1" Ice	9.87	7.34	0.07	
			0.00			No Ice	10.34	7.78	0.13	
			0.00			Ice	10.81	8.22	0.20	
			0.00			1" Ice				
Samsung MT6407-77A	A	From Leg	4.00	0.0000	116.00	1" Ice	4.69	1.84	0.08	
			0.00			No Ice	4.98	2.06	0.11	
			0.00			Ice	5.27	2.28	0.14	
			0.00			1" Ice				
Samsung MT6407-77A	B	From Leg	4.00	0.0000	116.00	1" Ice	4.69	1.84	0.08	
			0.00			No Ice	4.98	2.06	0.11	
			0.00			Ice	5.27	2.28	0.14	
			0.00			1" Ice				
Samsung MT6407-77A	C	From Leg	4.00	0.0000	116.00	1" Ice	4.69	1.84	0.08	
			0.00			No Ice	4.98	2.06	0.11	
			0.00			Ice	5.27	2.28	0.14	
			0.00			1" Ice				
Samsung CBRS RRH-RT 4401-48A w/ XXDWMM-12.5-65-8T	A	From Leg	4.00	0.0000	116.00	1" Ice	1.00	0.65	0.02	
			0.00			No Ice	1.20	0.87	0.05	
			0.00			Ice	1.40	1.09	0.08	
			0.00			1" Ice				
Samsung CBRS RRH-RT 4401-48A w/ XXDWMM-12.5-65-8T	A	From Leg	4.00	0.0000	116.00	1" Ice	1.00	0.65	0.02	
			0.00			No Ice	1.20	0.87	0.05	
			0.00			Ice	1.40	1.09	0.08	
			0.00			1" Ice				
Samsung CBRS RRH-RT 4401-48A w/ XXDWMM-	A	From Leg	4.00	0.0000	116.00	No Ice	1.00	0.65	0.02	
			0.00			1/2"	1.20	0.87	0.05	

Description	Face or Leg	Offset Type	Offsets:			Azimuth Adjustment	Placement	C <sub>AA</sub> Front	C <sub>AA</sub> Side	Weight
			Horz	Lateral	Vert					
			ft	ft	ft					
12.5-65-8T			0.00							
Samsung B2/B66A RRH (RF4439d-25A)	A	From Leg	4.00	0.00	0.0000	116.00	Ice	1.40	1.09	0.08
							1" Ice			
							No Ice	1.87	1.25	0.10
							1/2"	2.03	1.39	0.12
Samsung B2/B66A RRH (RF4439d-25A)	B	From Leg	4.00	0.00	0.0000	116.00	Ice	2.19	1.53	0.14
							1" Ice			
							No Ice	1.87	1.25	0.10
							1/2"	2.03	1.39	0.12
Samsung B2/B66A RRH (RF4439d-25A)	C	From Leg	4.00	0.00	0.0000	116.00	Ice	2.19	1.53	0.14
							1" Ice			
							No Ice	1.87	1.25	0.10
							1/2"	2.03	1.39	0.12
Samsung B5/B13 RRH (RF4440d-13A)	A	From Leg	4.00	0.00	0.0000	116.00	Ice	2.19	1.53	0.14
							1" Ice			
							No Ice	1.87	1.25	0.10
							1/2"	2.03	1.39	0.12
Samsung B5/B13 RRH (RF4440d-13A)	B	From Leg	4.00	0.00	0.0000	116.00	Ice	2.19	1.53	0.14
							1" Ice			
							No Ice	1.87	1.25	0.10
							1/2"	2.03	1.39	0.12
Samsung B5/B13 RRH (RF4440d-13A)	C	From Leg	4.00	0.00	0.0000	116.00	Ice	2.19	1.53	0.14
							1" Ice			
							No Ice	1.87	1.25	0.10
							1/2"	2.03	1.39	0.12
Raycap RDC-6627-PF-48	C	None			0.0000	116.00	Ice	2.19	1.53	0.14
							1" Ice			
							No Ice	4.06	3.10	0.03
							1/2"	4.32	3.34	0.07
(5) 8'x2 7/8" Pipe Mount	A	From Leg	4.00	0.00	0.0000	116.00	Ice	4.58	3.58	0.10
							1" Ice			
							No Ice	2.30	2.30	0.05
							1/2"	3.13	3.13	0.06
(5) 8'x2 7/8" Pipe Mount	B	From Leg	4.00	0.00	0.0000	116.00	Ice	3.96	3.96	0.08
							1" Ice			
							No Ice	2.30	2.30	0.05
							1/2"	3.13	3.13	0.06
(5) 8'x2 7/8" Pipe Mount	C	From Leg	4.00	0.00	0.0000	116.00	Ice	3.96	3.96	0.08
							1" Ice			
							No Ice	2.30	2.30	0.05
							1/2"	3.13	3.13	0.06
SitePro1 6' Double T-Arm	C	None			0.0000	116.00	Ice	3.96	3.96	0.08
							1" Ice			
							No Ice	12.87	12.87	1.73
							1/2"	15.75	15.75	1.93
***							Ice	18.63	18.63	2.13
							1" Ice			
							No Ice	5.89	2.78	0.02
							1/2"	6.25	3.12	0.06
Commscope VV-65A-R1B	A	From Leg	4.00	0.00	0.0000	106.00	Ice	6.61	3.46	0.09
							1" Ice			
							No Ice	5.89	2.78	0.02
							1/2"	6.25	3.12	0.06
Commscope VV-65A-R1B	B	From Leg	4.00	0.00	0.0000	106.00	Ice	6.61	3.46	0.09
							1" Ice			
							No Ice	5.89	2.78	0.02
							1/2"	6.25	3.12	0.06
Commscope VV-65A-R1B	C	From Leg	4.00	0.00	0.0000	106.00	Ice	6.61	3.46	0.09
							1" Ice			
							No Ice	5.89	2.78	0.02
							1/2"	6.25	3.12	0.06
RFS APXVAALL24_43-U-NA20	A	From Leg	4.00	0.00	0.0000	106.00	Ice	6.61	3.46	0.09
							1" Ice			
							No Ice	20.24	8.73	0.07
							1/2"	20.89	9.33	0.18
RFS APXVAALL24_43-U-NA20	B	From Leg	4.00	0.00	0.0000	106.00	Ice	21.54	9.93	0.29
							1" Ice			
							No Ice	20.24	8.73	0.07
							1/2"	20.89	9.33	0.18





Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C <sub>A</sub> A <sub>A</sub> Front ft <sup>2</sup>	C <sub>A</sub> A <sub>A</sub> Side ft <sup>2</sup>	Weight K	
			0.00			Ice 14.12	10.04	0.29	
FFVV-65B-R2 w/ Mount Pipe	C	From Leg	4.00	0.0000	96.00	1" Ice			
			0.00			No Ice	12.74	7.62	0.10
			0.00			1/2"	13.45	8.91	0.19
			0.00			Ice	14.12	10.04	0.29
TA08025-B605	A	From Leg	4.00	0.0000	96.00	1" Ice			
			0.00			No Ice	1.96	1.19	0.07
			0.00			1/2"	2.14	1.33	0.09
			0.00			Ice	2.32	1.48	0.11
TA08025-B605	B	From Leg	4.00	0.0000	96.00	1" Ice			
			0.00			No Ice	1.96	1.19	0.07
			0.00			1/2"	2.14	1.33	0.09
			0.00			Ice	2.32	1.48	0.11
TA08025-B605	C	From Leg	4.00	0.0000	96.00	1" Ice			
			0.00			No Ice	1.96	1.19	0.07
			0.00			1/2"	2.14	1.33	0.09
			0.00			Ice	2.32	1.48	0.11
TA08025-B604	A	From Leg	4.00	0.0000	96.00	1" Ice			
			0.00			No Ice	1.96	1.03	0.06
			0.00			1/2"	2.14	1.17	0.08
			0.00			Ice	2.32	1.31	0.10
TA08025-B604	B	From Leg	4.00	0.0000	96.00	1" Ice			
			0.00			No Ice	1.96	1.03	0.06
			0.00			1/2"	2.14	1.17	0.08
			0.00			Ice	2.32	1.31	0.10
TA08025-B604	C	From Leg	4.00	0.0000	96.00	1" Ice			
			0.00			No Ice	1.96	1.03	0.06
			0.00			1/2"	2.14	1.17	0.08
			0.00			Ice	2.32	1.31	0.10
RDIDC-9181-PF-48	C	From Leg	4.00	0.0000	96.00	1" Ice			
			0.00			No Ice	1.87	1.07	0.02
			0.00			1/2"	2.04	1.20	0.04
			0.00			Ice	2.21	1.35	0.06
(2) 8' x 2" STD Pipe	A	From Leg	4.00	0.0000	96.00	1" Ice			
			0.00			No Ice	1.90	1.90	0.03
			0.00			1/2"	2.73	2.73	0.04
			0.00			Ice	3.40	3.40	0.06
(2) 8' x 2" STD Pipe	B	From Leg	4.00	0.0000	96.00	1" Ice			
			0.00			No Ice	1.90	1.90	0.03
			0.00			1/2"	2.73	2.73	0.04
			0.00			Ice	3.40	3.40	0.06
(2) 8' x 2" STD Pipe	C	From Leg	4.00	0.0000	96.00	1" Ice			
			0.00			No Ice	1.90	1.90	0.03
			0.00			1/2"	2.73	2.73	0.04
			0.00			Ice	3.40	3.40	0.06
8' Platform Mount (MC-PK8-DSH)	C	None		0.0000	96.00	1" Ice			
						No Ice	19.42	18.40	1.24
						1/2"	22.01	20.72	1.62
						Ice	24.63	23.22	2.06
Top Rail	C	None		0.0000	96.00	1" Ice			
						No Ice	4.56	4.56	0.25
						1/2"	6.39	6.39	0.31
						Ice	8.18	8.18	0.40
						1" Ice			

\*\*\*

**Load Combinations**

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice
3	0.9 Dead+1.0 Wind 0 deg - No Ice
4	1.2 Dead+1.0 Wind 30 deg - No Ice
5	0.9 Dead+1.0 Wind 30 deg - No Ice
6	1.2 Dead+1.0 Wind 60 deg - No Ice
7	0.9 Dead+1.0 Wind 60 deg - No Ice
8	1.2 Dead+1.0 Wind 90 deg - No Ice
9	0.9 Dead+1.0 Wind 90 deg - No Ice
10	1.2 Dead+1.0 Wind 120 deg - No Ice
11	0.9 Dead+1.0 Wind 120 deg - No Ice
12	1.2 Dead+1.0 Wind 150 deg - No Ice
13	0.9 Dead+1.0 Wind 150 deg - No Ice
14	1.2 Dead+1.0 Wind 180 deg - No Ice
15	0.9 Dead+1.0 Wind 180 deg - No Ice
16	1.2 Dead+1.0 Wind 210 deg - No Ice
17	0.9 Dead+1.0 Wind 210 deg - No Ice
18	1.2 Dead+1.0 Wind 240 deg - No Ice
19	0.9 Dead+1.0 Wind 240 deg - No Ice
20	1.2 Dead+1.0 Wind 270 deg - No Ice
21	0.9 Dead+1.0 Wind 270 deg - No Ice
22	1.2 Dead+1.0 Wind 300 deg - No Ice
23	0.9 Dead+1.0 Wind 300 deg - No Ice
24	1.2 Dead+1.0 Wind 330 deg - No Ice
25	0.9 Dead+1.0 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service
51	1.2 Dead+1.0 Ev+1.0 Eh 0 deg
52	0.9 Dead-1.0 Ev+1.0 Eh 0 deg
53	1.2 Dead+1.0 Ev+1.0 Eh 30 deg
54	0.9 Dead-1.0 Ev+1.0 Eh 30 deg
55	1.2 Dead+1.0 Ev+1.0 Eh 60 deg
56	0.9 Dead-1.0 Ev+1.0 Eh 60 deg
57	1.2 Dead+1.0 Ev+1.0 Eh 90 deg
58	0.9 Dead-1.0 Ev+1.0 Eh 90 deg
59	1.2 Dead+1.0 Ev+1.0 Eh 120 deg
60	0.9 Dead-1.0 Ev+1.0 Eh 120 deg
61	1.2 Dead+1.0 Ev+1.0 Eh 150 deg
62	0.9 Dead-1.0 Ev+1.0 Eh 150 deg
63	1.2 Dead+1.0 Ev+1.0 Eh 180 deg
64	0.9 Dead-1.0 Ev+1.0 Eh 180 deg
65	1.2 Dead+1.0 Ev+1.0 Eh 210 deg
66	0.9 Dead-1.0 Ev+1.0 Eh 210 deg
67	1.2 Dead+1.0 Ev+1.0 Eh 240 deg
68	0.9 Dead-1.0 Ev+1.0 Eh 240 deg
69	1.2 Dead+1.0 Ev+1.0 Eh 270 deg
70	0.9 Dead-1.0 Ev+1.0 Eh 270 deg

Comb. No.	Description
71	1.2 Dead+1.0 Ev+1.0 Eh 300 deg
72	0.9 Dead-1.0 Ev+1.0 Eh 300 deg
73	1.2 Dead+1.0 Ev+1.0 Eh 330 deg
74	0.9 Dead-1.0 Ev+1.0 Eh 330 deg

### Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	130 - 120	Pole	Max Tension	20	0.00	-0.00	-0.00
			Max. Compression	26	-8.88	-0.07	0.04
			Max. Mx	8	-5.12	-29.42	0.02
			Max. My	2	-5.12	-0.03	29.41
			Max. Vy	8	5.03	-29.42	0.02
			Max. Vx	2	-5.03	-0.03	29.41
			Max. Torque	18		0.00	
L2	120 - 110	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-17.59	-0.15	1.62
			Max. Mx	8	-10.48	-108.46	0.46
			Max. My	2	-10.48	-0.06	109.08
			Max. Vy	8	9.95	-108.46	0.46
			Max. Vx	2	-9.98	-0.06	109.08
			Max. Torque	8		0.34	
L3	110 - 100	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-26.66	-0.23	1.67
			Max. Mx	8	-16.32	-237.03	0.49
			Max. My	2	-16.31	-0.09	237.98
			Max. Vy	8	14.93	-237.03	0.49
			Max. Vx	2	-14.96	-0.09	237.98
			Max. Torque	8		0.34	
L4	100 - 90	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-34.29	0.00	1.54
			Max. Mx	8	-20.99	-405.65	0.52
			Max. My	2	-20.99	-0.08	406.90
			Max. Vy	8	18.31	-405.65	0.52
			Max. Vx	2	-18.33	-0.08	406.90
			Max. Torque	8		0.34	
L5	90 - 79.33	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-35.56	-0.04	1.57
			Max. Mx	8	-22.00	-498.18	0.58
			Max. My	2	-22.00	-0.15	499.54
			Max. Vy	8	18.71	-498.18	0.58
			Max. Vx	2	-18.73	-0.15	499.54
			Max. Torque	6		0.29	
L6	79.33 - 75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-39.80	-0.14	1.62
			Max. Mx	8	-25.40	-689.77	0.71
			Max. My	2	-25.39	-0.30	691.33
			Max. Vy	8	19.58	-689.77	0.71
			Max. Vx	2	-19.61	-0.30	691.33
			Max. Torque	6		0.29	
L7	75 - 65	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-42.86	-0.23	1.67
			Max. Mx	8	-27.92	-889.61	0.84
			Max. My	2	-27.92	-0.44	891.37
			Max. Vy	8	20.39	-889.61	0.84
			Max. Vx	2	-20.41	-0.44	891.37
			Max. Torque	6		0.29	
L8	65 - 55	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-46.07	-0.33	1.73
			Max. Mx	8	-30.58	-1097.48	0.98
			Max. My	2	-30.58	-0.59	1099.45
			Max. Vy	8	21.19	-1097.48	0.98
			Max. Vx	2	-21.21	-0.59	1099.45
			Max. Torque	3		0.29	
L9	55 - 41.92	Pole	Max Tension	1	0.00	0.00	0.00

Sectio n No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L10	41.92 - 38.5	Pole	Max. Compression	26	-48.24	-0.40	1.77
			Max. Mx	8	-32.39	-1236.81	1.06
			Max. My	2	-32.39	-0.69	1238.91
			Max. Vy	8	21.69	-1236.81	1.06
			Max. Vx	2	-21.71	-0.69	1238.91
			Max. Torque	6			0.29
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-54.10	-0.50	1.83
			Max. Mx	8	-37.27	-1458.04	1.20
			Max. My	2	-37.27	-0.84	1460.34
L11	38.5 - 28.5	Pole	Max. Vy	8	22.53	-1458.04	1.20
			Max. Vx	2	-22.55	-0.84	1460.34
			Max. Torque	6			0.29
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-58.02	-0.60	1.89
			Max. Mx	8	-40.63	-1686.84	1.33
			Max. My	2	-40.63	-0.99	1689.34
			Max. Vy	8	23.24	-1686.84	1.33
			Max. Vx	2	-23.26	-0.99	1689.34
			Max. Torque	6			0.29
L12	28.5 - 18.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-62.11	-0.71	1.95
			Max. Mx	8	-44.15	-1922.71	1.46
			Max. My	2	-44.15	-1.14	1925.40
			Max. Vy	8	23.94	-1922.71	1.46
			Max. Vx	2	-23.96	-1.14	1925.40
			Max. Torque	6			0.29
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-66.33	-0.81	2.01
			Max. Mx	8	-47.82	-2165.67	1.60
L13	18.5 - 8.5	Pole	Max. My	2	-47.82	-1.30	2168.56
			Max. Vy	8	24.66	-2165.67	1.60
			Max. Vx	2	-24.68	-1.30	2168.56
			Max. Torque	6			0.29
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-69.47	-0.81	2.01
			Max. Mx	8	-50.60	-2352.62	1.68
			Max. My	2	-50.60	-1.37	2355.66
			Max. Vy	8	25.21	-2352.62	1.68
			Max. Vx	2	-25.23	-1.37	2355.66
L14	8.5 - 1	Pole	Max. Torque	6			0.29
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-69.47	-0.81	2.01
			Max. Mx	8	-50.60	-2352.62	1.68
			Max. My	2	-50.60	-1.37	2355.66
			Max. Vy	8	25.21	-2352.62	1.68
Max. Vx	2	-25.23	-1.37	2355.66			
Max. Torque	6			0.29			

### Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	26	69.47	0.00	0.00
	Max. H <sub>x</sub>	20	50.61	25.20	-0.01
	Max. H <sub>z</sub>	2	50.61	-0.01	25.22
	Max. M <sub>x</sub>	2	2355.66	-0.01	25.22
	Max. M <sub>z</sub>	8	2352.62	-25.20	0.01
	Max. Torsion	6	0.29	-21.83	12.62
	Min. Vert	54	35.79	-0.63	1.10
	Min. H <sub>x</sub>	8	50.61	-25.20	0.01
	Min. H <sub>z</sub>	14	50.61	0.01	-25.22
	Min. M <sub>x</sub>	14	-2354.32	0.01	-25.22
	Min. M <sub>z</sub>	20	-2351.88	25.20	-0.01
	Min. Torsion	18	-0.29	21.83	-12.62

### Tower Mast Reaction Summary

Load Combination	Vertical K	Shear <sub>x</sub> K	Shear <sub>z</sub> K	Overturing Moment, M <sub>x</sub> kip-ft	Overturing Moment, M <sub>z</sub> kip-ft	Torque kip-ft
Dead Only	42.17	0.00	0.00	-0.54	-0.30	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	50.61	0.01	-25.22	-2355.66	-1.37	-0.15
0.9 Dead+1.0 Wind 0 deg - No Ice	37.96	0.01	-25.22	-2341.00	-1.27	-0.15
1.2 Dead+1.0 Wind 30 deg - No Ice	50.61	12.61	-21.85	-2040.66	-1177.36	-0.26
0.9 Dead+1.0 Wind 30 deg - No Ice	37.96	12.61	-21.85	-2027.93	-1170.03	-0.25
1.2 Dead+1.0 Wind 60 deg - No Ice	50.61	21.83	-12.62	-1179.04	-2037.98	-0.29
0.9 Dead+1.0 Wind 60 deg - No Ice	37.96	21.83	-12.62	-1171.61	-2025.35	-0.29
1.2 Dead+1.0 Wind 90 deg - No Ice	50.61	25.20	-0.01	-1.68	-2352.62	-0.25
0.9 Dead+1.0 Wind 90 deg - No Ice	37.96	25.20	-0.01	-1.50	-2338.05	-0.25
1.2 Dead+1.0 Wind 120 deg - No Ice	50.61	21.82	12.60	1175.96	-2036.97	-0.14
0.9 Dead+1.0 Wind 120 deg - No Ice	37.96	21.82	12.60	1168.89	-2024.35	-0.14
1.2 Dead+1.0 Wind 150 deg - No Ice	50.61	12.59	21.84	2038.31	-1175.62	0.01
0.9 Dead+1.0 Wind 150 deg - No Ice	37.96	12.59	21.84	2025.94	-1168.30	0.01
1.2 Dead+1.0 Wind 180 deg - No Ice	50.61	-0.01	25.22	2354.32	0.64	0.15
0.9 Dead+1.0 Wind 180 deg - No Ice	37.96	-0.01	25.22	2340.00	0.72	0.15
1.2 Dead+1.0 Wind 210 deg - No Ice	50.61	-12.61	21.85	2039.32	1176.63	0.26
0.9 Dead+1.0 Wind 210 deg - No Ice	37.96	-12.61	21.85	2026.94	1169.48	0.25
1.2 Dead+1.0 Wind 240 deg - No Ice	50.61	-21.83	12.62	1177.70	2037.24	0.29
0.9 Dead+1.0 Wind 240 deg - No Ice	37.96	-21.83	12.62	1170.62	2024.80	0.29
1.2 Dead+1.0 Wind 270 deg - No Ice	50.61	-25.20	0.01	0.34	2351.88	0.25
0.9 Dead+1.0 Wind 270 deg - No Ice	37.96	-25.20	0.01	0.50	2337.50	0.25
1.2 Dead+1.0 Wind 300 deg - No Ice	50.61	-21.82	-12.60	-1177.30	2036.24	0.14
0.9 Dead+1.0 Wind 300 deg - No Ice	37.96	-21.82	-12.60	-1169.88	2023.80	0.14
1.2 Dead+1.0 Wind 330 deg - No Ice	50.61	-12.59	-21.84	-2039.65	1174.89	-0.01
0.9 Dead+1.0 Wind 330 deg - No Ice	37.96	-12.59	-21.84	-2026.93	1167.75	-0.01
1.2 Dead+1.0 Ice+1.0 Temp	69.47	0.00	0.00	-2.01	-0.81	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	69.47	0.00	-6.68	-616.48	-1.03	-0.04
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	69.47	3.34	-5.78	-534.27	-307.99	-0.08
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	69.47	5.78	-3.34	-309.48	-532.65	-0.10
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	69.47	6.67	-0.00	-2.33	-614.81	-0.09
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	69.47	5.78	3.34	304.87	-532.46	-0.06
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	69.47	3.34	5.78	529.80	-307.66	-0.01
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	69.47	-0.00	6.68	612.21	-0.65	0.04
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	69.47	-3.34	5.78	530.00	306.31	0.08
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	69.47	-5.78	3.34	305.20	530.97	0.10
1.2 Dead+1.0 Wind 270	69.47	-6.67	0.00	-1.94	613.13	0.09

Load Combination	Vertical K	Shear <sub>x</sub> K	Shear <sub>z</sub> K	Overturning Moment, M <sub>x</sub> kip-ft	Overturning Moment, M <sub>z</sub> kip-ft	Torque kip-ft
deg+1.0 Ice+1.0 Temp						
1,2 Dead+1.0 Wind 300	69.47	-5.78	-3.34	-309.14	530.77	0.06
deg+1.0 Ice+1.0 Temp						
1,2 Dead+1.0 Wind 330	69.47	-3.34	-5.78	-534.08	305.98	0.01
deg+1.0 Ice+1.0 Temp						
Dead+Wind 0 deg - Service	42.17	0.00	-5.64	-525.27	-0.53	-0.03
Dead+Wind 30 deg - Service	42.17	2.82	-4.89	-455.08	-262.55	-0.06
Dead+Wind 60 deg - Service	42.17	4.88	-2.82	-263.11	-454.30	-0.06
Dead+Wind 90 deg - Service	42.17	5.64	-0.00	-0.78	-524.41	-0.06
Dead+Wind 120 deg - Service	42.17	4.88	2.82	261.61	-454.08	-0.03
Dead+Wind 150 deg - Service	42.17	2.82	4.88	453.75	-262.16	0.00
Dead+Wind 180 deg - Service	42.17	-0.00	5.64	524.16	-0.08	0.03
Dead+Wind 210 deg - Service	42.17	-2.82	4.89	453.97	261.94	0.06
Dead+Wind 240 deg - Service	42.17	-4.88	2.82	262.00	453.69	0.06
Dead+Wind 270 deg - Service	42.17	-5.64	0.00	-0.33	523.80	0.06
Dead+Wind 300 deg - Service	42.17	-4.88	-2.82	-262.72	453.47	0.03
Dead+Wind 330 deg - Service	42.17	-2.82	-4.88	-454.86	261.55	-0.00
1,2 Dead+1.0 Ev+1.0 Eh 0 deg	52.77	0.00	-1.26	-133.46	-0.37	-0.00
0,9 Dead-1.0 Ev+1.0 Eh 0 deg	35.79	0.00	-1.26	-132.17	-0.27	-0.00
1,2 Dead+1.0 Ev+1.0 Eh 30 deg	52.77	0.63	-1.10	-115.67	-66.76	-0.00
0,9 Dead-1.0 Ev+1.0 Eh 30 deg	35.79	0.63	-1.10	-114.53	-66.11	-0.00
1,2 Dead+1.0 Ev+1.0 Eh 60 deg	52.77	1.10	-0.63	-67.07	-115.37	-0.00
0,9 Dead-1.0 Ev+1.0 Eh 60 deg	35.79	1.10	-0.63	-66.33	-114.30	-0.00
1,2 Dead+1.0 Ev+1.0 Eh 90 deg	52.77	1.26	0.00	-0.67	-133.16	-0.00
0,9 Dead-1.0 Ev+1.0 Eh 90 deg	35.79	1.26	0.00	-0.50	-131.94	-0.00
1,2 Dead+1.0 Ev+1.0 Eh 120 deg	52.77	1.10	0.63	65.72	-115.37	-0.00
0,9 Dead-1.0 Ev+1.0 Eh 120 deg	35.79	1.10	0.63	65.34	-114.30	-0.00
1,2 Dead+1.0 Ev+1.0 Eh 150 deg	52.77	0.63	1.10	114.33	-66.76	-0.00
0,9 Dead-1.0 Ev+1.0 Eh 150 deg	35.79	0.63	1.10	113.53	-66.11	-0.00
1,2 Dead+1.0 Ev+1.0 Eh 180 deg	52.77	0.00	1.26	132.12	-0.37	0.00
0,9 Dead-1.0 Ev+1.0 Eh 180 deg	35.79	0.00	1.26	131.17	-0.27	0.00
1,2 Dead+1.0 Ev+1.0 Eh 210 deg	52.77	-0.63	1.10	114.33	66.03	0.00
0,9 Dead-1.0 Ev+1.0 Eh 210 deg	35.79	-0.63	1.10	113.53	65.56	0.00
1,2 Dead+1.0 Ev+1.0 Eh 240 deg	52.77	-1.10	0.63	65.72	114.63	0.00
0,9 Dead-1.0 Ev+1.0 Eh 240 deg	35.79	-1.10	0.63	65.34	113.75	0.00
1,2 Dead+1.0 Ev+1.0 Eh 270 deg	52.77	-1.26	0.00	-0.67	132.42	0.00
0,9 Dead-1.0 Ev+1.0 Eh 270 deg	35.79	-1.26	0.00	-0.50	131.40	0.00
1,2 Dead+1.0 Ev+1.0 Eh 300 deg	52.77	-1.10	-0.63	-67.07	114.63	0.00
0,9 Dead-1.0 Ev+1.0 Eh 300 deg	35.79	-1.10	-0.63	-66.33	113.75	0.00

Load Combination	Vertical	Shear <sub>x</sub>	Shear <sub>z</sub>	Overtuning Moment, M <sub>x</sub>	Overtuning Moment, M <sub>z</sub>	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
1.2 Dead+1.0 Ev+1.0 Eh 330 deg	52.77	-0.63	-1.10	-115.67	66.03	0.00
0.9 Dead-1.0 Ev+1.0 Eh 330 deg	35.79	-0.63	-1.10	-114.53	65.56	0.00

### Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.00	-42.17	0.00	0.00	42.17	0.00	0.000%
2	0.01	-50.61	-25.22	-0.01	50.61	25.22	0.000%
3	0.01	-37.96	-25.22	-0.01	37.96	25.22	0.000%
4	12.61	-50.61	-21.85	-12.61	50.61	21.85	0.000%
5	12.61	-37.96	-21.85	-12.61	37.96	21.85	0.000%
6	21.83	-50.61	-12.62	-21.83	50.61	12.62	0.000%
7	21.83	-37.96	-12.62	-21.83	37.96	12.62	0.000%
8	25.20	-50.61	-0.01	-25.20	50.61	0.01	0.000%
9	25.20	-37.96	-0.01	-25.20	37.96	0.01	0.000%
10	21.82	-50.61	12.60	-21.82	50.61	-12.60	0.000%
11	21.82	-37.96	12.60	-21.82	37.96	-12.60	0.000%
12	12.59	-50.61	21.84	-12.59	50.61	-21.84	0.000%
13	12.59	-37.96	21.84	-12.59	37.96	-21.84	0.000%
14	-0.01	-50.61	25.22	0.01	50.61	-25.22	0.000%
15	-0.01	-37.96	25.22	0.01	37.96	-25.22	0.000%
16	-12.61	-50.61	21.85	12.61	50.61	-21.85	0.000%
17	-12.61	-37.96	21.85	12.61	37.96	-21.85	0.000%
18	-21.83	-50.61	12.62	21.83	50.61	-12.62	0.000%
19	-21.83	-37.96	12.62	21.83	37.96	-12.62	0.000%
20	-25.20	-50.61	0.01	25.20	50.61	-0.01	0.000%
21	-25.20	-37.96	0.01	25.20	37.96	-0.01	0.000%
22	-21.82	-50.61	-12.60	21.82	50.61	12.60	0.000%
23	-21.82	-37.96	-12.60	21.82	37.96	12.60	0.000%
24	-12.59	-50.61	-21.84	12.59	50.61	21.84	0.000%
25	-12.59	-37.96	-21.84	12.59	37.96	21.84	0.000%
26	0.00	-69.47	0.00	0.00	69.47	0.00	0.000%
27	0.00	-69.47	-6.68	-0.00	69.47	6.68	0.000%
28	3.34	-69.47	-5.78	-3.34	69.47	5.78	0.000%
29	5.78	-69.47	-3.34	-5.78	69.47	3.34	0.000%
30	6.67	-69.47	-0.00	-6.67	69.47	0.00	0.000%
31	5.78	-69.47	3.34	-5.78	69.47	-3.34	0.000%
32	3.34	-69.47	5.78	-3.34	69.47	-5.78	0.000%
33	-0.00	-69.47	6.68	0.00	69.47	-6.68	0.000%
34	-3.34	-69.47	5.78	3.34	69.47	-5.78	0.000%
35	-5.78	-69.47	3.34	5.78	69.47	-3.34	0.000%
36	-6.67	-69.47	0.00	6.67	69.47	-0.00	0.000%
37	-5.78	-69.47	-3.34	5.78	69.47	3.34	0.000%
38	-3.34	-69.47	-5.78	3.34	69.47	5.78	0.000%
39	0.00	-42.17	-5.64	-0.00	42.17	5.64	0.000%
40	2.82	-42.17	-4.88	-2.82	42.17	4.88	0.000%
41	4.88	-42.17	-2.82	-4.88	42.17	2.82	0.000%
42	5.64	-42.17	-0.00	-5.64	42.17	0.00	0.000%
43	4.88	-42.17	2.82	-4.88	42.17	-2.82	0.000%
44	2.82	-42.17	4.88	-2.82	42.17	-4.88	0.000%
45	-0.00	-42.17	5.64	0.00	42.17	-5.64	0.000%
46	-2.82	-42.17	4.88	2.82	42.17	-4.88	0.000%
47	-4.88	-42.17	2.82	4.88	42.17	-2.82	0.000%
48	-5.64	-42.17	0.00	5.64	42.17	-0.00	0.000%
49	-4.88	-42.17	-2.82	4.88	42.17	2.82	0.000%
50	-2.82	-42.17	-4.88	2.82	42.17	4.88	0.000%
51	0.00	-52.77	-1.26	0.00	52.77	1.26	0.000%
52	0.00	-35.79	-1.26	0.00	35.79	1.26	0.000%
53	0.63	-52.77	-1.10	-0.63	52.77	1.10	0.000%
54	0.63	-35.79	-1.10	-0.63	35.79	1.10	0.000%
55	1.10	-52.77	-0.63	-1.10	52.77	0.63	0.000%
56	1.10	-35.79	-0.63	-1.10	35.79	0.63	0.000%



Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
57	1.26	-52.77	0.00	-1.26	52.77	0.00	0.000%
58	1.26	-35.79	0.00	-1.26	35.79	0.00	0.000%
59	1.10	-52.77	0.63	-1.10	52.77	-0.63	0.000%
60	1.10	-35.79	0.63	-1.10	35.79	-0.63	0.000%
61	0.63	-52.77	1.10	-0.63	52.77	-1.10	0.000%
62	0.63	-35.79	1.10	-0.63	35.79	-1.10	0.000%
63	0.00	-52.77	1.26	0.00	52.77	-1.26	0.000%
64	0.00	-35.79	1.26	0.00	35.79	-1.26	0.000%
65	-0.63	-52.77	1.10	0.63	52.77	-1.10	0.000%
66	-0.63	-35.79	1.10	0.63	35.79	-1.10	0.000%
67	-1.10	-52.77	0.63	1.10	52.77	-0.63	0.000%
68	-1.10	-35.79	0.63	1.10	35.79	-0.63	0.000%
69	-1.26	-52.77	0.00	1.26	52.77	0.00	0.000%
70	-1.26	-35.79	0.00	1.26	35.79	0.00	0.000%
71	-1.10	-52.77	-0.63	1.10	52.77	0.63	0.000%
72	-1.10	-35.79	-0.63	1.10	35.79	0.63	0.000%
73	-0.63	-52.77	-1.10	0.63	52.77	1.10	0.000%
74	-0.63	-35.79	-1.10	0.63	35.79	1.10	0.000%

### Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	4	0.00000001	0.00017251
3	Yes	4	0.00000001	0.00008953
4	Yes	5	0.00000001	0.00009238
5	Yes	5	0.00000001	0.00004535
6	Yes	5	0.00000001	0.00009479
7	Yes	5	0.00000001	0.00004659
8	Yes	4	0.00000001	0.00018943
9	Yes	4	0.00000001	0.00010359
10	Yes	5	0.00000001	0.00009231
11	Yes	5	0.00000001	0.00004537
12	Yes	5	0.00000001	0.00009315
13	Yes	5	0.00000001	0.00004579
14	Yes	4	0.00000001	0.00017369
15	Yes	4	0.00000001	0.00009064
16	Yes	5	0.00000001	0.00009437
17	Yes	5	0.00000001	0.00004641
18	Yes	5	0.00000001	0.00009187
19	Yes	5	0.00000001	0.00004514
20	Yes	4	0.00000001	0.00018737
21	Yes	4	0.00000001	0.00010149
22	Yes	5	0.00000001	0.00009391
23	Yes	5	0.00000001	0.00004616
24	Yes	5	0.00000001	0.00009315
25	Yes	5	0.00000001	0.00004577
26	Yes	4	0.00000001	0.00000001
27	Yes	5	0.00000001	0.00008813
28	Yes	5	0.00000001	0.00009166
29	Yes	5	0.00000001	0.00009153
30	Yes	5	0.00000001	0.00008762
31	Yes	5	0.00000001	0.00009073
32	Yes	5	0.00000001	0.00009058
33	Yes	5	0.00000001	0.00008700
34	Yes	5	0.00000001	0.00009049
35	Yes	5	0.00000001	0.00009056
36	Yes	5	0.00000001	0.00008739
37	Yes	5	0.00000001	0.00009126
38	Yes	5	0.00000001	0.00009147
39	Yes	4	0.00000001	0.00003158
40	Yes	4	0.00000001	0.00005832
41	Yes	4	0.00000001	0.00006065
42	Yes	4	0.00000001	0.00003172

43	Yes	4	0.00000001	0.00005817
44	Yes	4	0.00000001	0.00005892
45	Yes	4	0.00000001	0.00003147
46	Yes	4	0.00000001	0.00006000
47	Yes	4	0.00000001	0.00005772
48	Yes	4	0.00000001	0.00003167
49	Yes	4	0.00000001	0.00005979
50	Yes	4	0.00000001	0.00005900
51	Yes	4	0.00000001	0.00001295
52	Yes	4	0.00000001	0.00000601
53	Yes	4	0.00000001	0.00001346
54	Yes	4	0.00000001	0.00000636
55	Yes	4	0.00000001	0.00001344
56	Yes	4	0.00000001	0.00000635
57	Yes	4	0.00000001	0.00001287
58	Yes	4	0.00000001	0.00000598
59	Yes	4	0.00000001	0.00001330
60	Yes	4	0.00000001	0.00000630
61	Yes	4	0.00000001	0.00001326
62	Yes	4	0.00000001	0.00000628
63	Yes	4	0.00000001	0.00001273
64	Yes	4	0.00000001	0.00000593
65	Yes	4	0.00000001	0.00001322
66	Yes	4	0.00000001	0.00000627
67	Yes	4	0.00000001	0.00001324
68	Yes	4	0.00000001	0.00000627
69	Yes	4	0.00000001	0.00001281
70	Yes	4	0.00000001	0.00000596
71	Yes	4	0.00000001	0.00001338
72	Yes	4	0.00000001	0.00000633
73	Yes	4	0.00000001	0.00001342
74	Yes	4	0.00000001	0.00000634

### Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	130 - 120	7.292	39	0.4520	0.0003
L2	120 - 110	6.347	40	0.4495	0.0003
L3	110 - 100	5.418	40	0.4348	0.0002
L4	100 - 90	4.528	40	0.4138	0.0002
L5	90 - 79.33	3.693	40	0.3815	0.0001
L6	85 - 75	3.304	40	0.3616	0.0001
L7	75 - 65	2.572	40	0.3313	0.0001
L8	65 - 55	1.926	40	0.2857	0.0001
L9	55 - 41.92	1.378	40	0.2374	0.0001
L10	48.5 - 38.5	1.076	40	0.2051	0.0000
L11	38.5 - 28.5	0.675	40	0.1732	0.0000
L12	28.5 - 18.5	0.361	40	0.1263	0.0000
L13	18.5 - 8.5	0.145	40	0.0797	0.0000
L14	8.5 - 1	0.027	40	0.0339	0.0000

### Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
126.00	CCI DMP65R-BU6DA	40	6.913	0.4520	0.0003	159615
125.00	Tower Section 1 - 1	40	6.819	0.4519	0.0003	159615
123.00	(6) 3/4" power 6AWG6 From 3 to 125 (119ft to 125ft)	40	6.630	0.4513	0.0003	113439
116.00	(2) JMA MX06FRO660-03	40	5.972	0.4449	0.0002	47682
115.00	Tower Section 2 - 1	40	5.879	0.4434	0.0002	43325

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
113.00	12x24 Hybrld From 3 to 115 (109ft to 115ft)	40	5.694	0.4401	0.0002	36696
106.00	Commscope VV-65A-R1B	40	5.056	0.4272	0.0002	26579
105.00	Tower Section 3 - 1	40	4.967	0.4252	0.0002	25890
103.00	(3) 6x24 Hybrld From 3 to 105 (99ft to 105ft)	40	4.790	0.4209	0.0002	24563
96.00	FFVV-65B-R2 w/ Mount Pipe	40	4.186	0.4025	0.0002	18176
95.00	Tower Section 4 - 1	40	4.102	0.3994	0.0001	17284
93.00	CU12PSM9P6XXX_6AWG From 3 to 95 (89ft to 95ft)	40	3.936	0.3927	0.0001	15852
89.67	Tower Section 5 - 1	40	3.866	0.3801	0.0001	15638
85.00	miscl Step Bolts From 8 to 129 (79ft to 89ft)	40	3.304	0.3616	0.0001	20307
84.33	Tower Section 5 - 2	40	3.253	0.3593	0.0001	20519
80.00	Tower Section 6 - 1	40	2.929	0.3465	0.0001	17129
75.00	miscl Step Bolts From 8 to 129 (69ft to 79ft)	40	2.572	0.3313	0.0001	13676
70.00	Tower Section 7 - 1	40	2.237	0.3100	0.0001	12777
65.00	miscl Step Bolts From 8 to 129 (59ft to 69ft)	40	1.926	0.2857	0.0001	12259
60.00	Tower Section 8 - 1	40	1.639	0.2619	0.0001	11473
55.00	miscl Step Bolts From 8 to 129 (49ft to 59ft)	40	1.378	0.2374	0.0001	11493
53.46	Tower Section 9 - 1	40	1.303	0.2293	0.0001	12275
46.92	Tower Section 9 - 2	40	1.008	0.1992	0.0000	17170
45.00	miscl Step Bolts From 8 to 129 (39ft to 49ft)	40	0.927	0.1930	0.0000	16474
43.50	Tower Section 10 - 1	40	0.866	0.1886	0.0000	15603
35.00	miscl Step Bolts From 8 to 129 (29ft to 39ft)	40	0.554	0.1585	0.0000	12664
33.50	Tower Section 11 - 1	40	0.506	0.1514	0.0000	12458
25.00	miscl Step Bolts From 8 to 129 (19ft to 29ft)	40	0.275	0.1095	0.0000	12300
23.50	Tower Section 12 - 1	40	0.241	0.1025	0.0000	12501
15.00	miscl Step Bolts From 8 to 129 (9ft to 19ft)	40	0.092	0.0637	0.0000	12002
13.50	Tower Section 13 - 1	40	0.073	0.0568	0.0000	11550
9.50	miscl Step Bolts From 8 to 129 (8ft to 9ft)	40	0.034	0.0384	0.0000	11242
7.00	(6) 3/4" power 6AWG6 From 3 to 125 (3ft to 9ft)	40	0.018	0.0270	0.0000	13554
4.75	Tower Section 14 - 1	40	0.009	0.0169	0.0000	15742

### Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	130 - 120	32.712	2	2.0268	0.0012
L2	120 - 110	28.473	2	2.0156	0.0012
L3	110 - 100	24.308	2	1.9502	0.0010
L4	100 - 90	20.313	2	1.8565	0.0008
L5	90 - 79.33	16.569	2	1.7118	0.0006
L6	85 - 75	14.822	4	1.6227	0.0005
L7	75 - 65	11.541	4	1.4865	0.0004
L8	65 - 55	8.639	4	1.2818	0.0003
L9	55 - 41.92	6.180	4	1.0651	0.0002
L10	48.5 - 38.5	4.829	4	0.9205	0.0002
L11	38.5 - 28.5	3.026	4	0.7770	0.0002
L12	28.5 - 18.5	1.620	4	0.5665	0.0001
L13	18.5 - 8.5	0.652	4	0.3577	0.0001
L14	8.5 - 1	0.119	4	0.1519	0.0000

### Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
126.00	CCI DMP65R-BU6DA	2	31.012	2.0268	0.0012	35744
125.00	Tower Section 1 - 1	2	30.588	2.0262	0.0012	35744
123.00	(6) 3/4" power 6AWG6 From 3 to 125 (119ft to125ft)	2	29.740	2.0237	0.0012	25407
116.00	(2) JMA MX06FRO660-03	2	26.792	1.9950	0.0011	10738
115.00	Tower Section 2 - 1	2	26.375	1.9884	0.0011	9766
113.00	12x24 Hybrid From 3 to 115 (109ft to115ft)	2	25.544	1.9740	0.0010	8283
106.00	Commscope VV-65A-R1B	2	22.686	1.9164	0.0009	5983
105.00	Tower Section 3 - 1	2	22.285	1.9074	0.0008	5822
103.00	(3) 6x24 Hyrbid From 3 to 105 (99ft to105ft)	2	21.490	1.8883	0.0008	5514
96.00	FFVV-65B-R2 w/ Mount Pipe	2	18.779	1.8063	0.0007	4066
95.00	Tower Section 4 - 1	2	18.402	1.7922	0.0007	3866
93.00	CU12PSM9P6XXX_6AWG From 3 to 95 (89ft to95ft)	2	17.658	1.7621	0.0006	3544
89.67	Tower Section 5 - 1	2	16.449	1.7058	0.0006	3495
85.00	miscl Step Bolts From 8 to 129 (79ft to89ft)	4	14.822	1.6227	0.0005	4536
84.33	Tower Section 5 - 2	4	14.594	1.6123	0.0005	4582
80.00	Tower Section 6 - 1	4	13.142	1.5548	0.0005	3823
75.00	miscl Step Bolts From 8 to 129 (69ft to79ft)	4	11.541	1.4865	0.0004	3051
70.00	Tower Section 7 - 1	4	10.037	1.3913	0.0004	2850
65.00	miscl Step Bolts From 8 to 129 (59ft to69ft)	4	8.639	1.2818	0.0003	2734
60.00	Tower Section 8 - 1	4	7.351	1.1752	0.0003	2558
55.00	miscl Step Bolts From 8 to 129 (49ft to59ft)	4	6.180	1.0651	0.0002	2562
53.46	Tower Section 9 - 1	4	5.844	1.0290	0.0002	2736
46.92	Tower Section 9 - 2	4	4.522	0.8936	0.0002	3827
45.00	miscl Step Bolts From 8 to 129 (39ft to49ft)	4	4.159	0.8657	0.0002	3672
43.50	Tower Section 10 - 1	4	3.884	0.8461	0.0002	3478
35.00	miscl Step Bolts From 8 to 129 (29ft to39ft)	4	2.485	0.7112	0.0001	2823
33.50	Tower Section 11 - 1	4	2.269	0.6791	0.0001	2777
25.00	miscl Step Bolts From 8 to 129 (19ft to29ft)	4	1.232	0.4911	0.0001	2741
23.50	Tower Section 12 - 1	4	1.082	0.4598	0.0001	2786
15.00	miscl Step Bolts From 8 to 129 (9ft to19ft)	4	0.413	0.2858	0.0000	2675
13.50	Tower Section 13 - 1	4	0.327	0.2548	0.0000	2575
9.50	miscl Step Bolts From 8 to 129 (8ft to9ft)	4	0.151	0.1724	0.0000	2507
7.00	(6) 3/4" power 6AWG6 From 3 to 125 (3ft to9ft)	4	0.081	0.1213	0.0000	3022
4.75	Tower Section 14 - 1	4	0.041	0.0756	0.0000	3510

### Compression Checks

### Pole Design Data

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> K	φP <sub>n</sub> K	Ratio $\frac{P_u}{\phi P_n}$
L1	130 - 120 (1)	TP29.07x26.71x0.25	10.00	0.00	0.0	22,868	-5.12	1337.82	0.004

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	KI/r	A in <sup>2</sup>	P <sub>u</sub> K	φP <sub>n</sub> K	Ratio $\frac{P_u}{\phi P_n}$
L2	120 - 110 (2)	TP31.43x29.07x0.25	10.00	0.00	0.0	24.741 3	-10.48	1447.37	0.007
L3	110 - 100 (3)	TP33.7874x31.43x0.375	10.00	0.00	0.0	39.769 1	-16.31	2326.49	0.007
L4	100 - 90 (4)	TP36.1447x33.7874x0.37 5	10.00	0.00	0.0	42.574 9	-20.99	2490.63	0.008
L5	90 - 79.33 (5)	TP38.66x36.1447x0.375	10.67	0.00	0.0	43.977 8	-22.00	2572.70	0.009
L6	79.33 - 75 (6)	TP38.931x36.5734x0.438	10.00	0.00	0.0	53.513 4	-25.39	3130.54	0.008
L7	75 - 65 (7)	TP41.2886x38.931x0.438	10.00	0.00	0.0	56.791 0	-27.92	3322.27	0.008
L8	65 - 55 (8)	TP43.6462x41.2886x0.43 8	10.00	0.00	0.0	60.068 6	-30.58	3514.01	0.009
L9	55 - 41.92 (9)	TP46.73x43.6462x0.438	13.08	0.00	0.0	62.199 0	-32.39	3638.64	0.009
L10	41.92 - 38.5 (10)	TP46.66x44.3027x0.5	10.00	0.00	0.0	73.255 9	-37.27	4285.47	0.009
L11	38.5 - 28.5 (11)	TP49.0173x46.66x0.5	10.00	0.00	0.0	76.997 0	-40.63	4504.33	0.009
L12	28.5 - 18.5 (12)	TP51.3747x49.0173x0.5	10.00	0.00	0.0	80.738 1	-44.15	4723.18	0.009
L13	18.5 - 8.5 (13)	TP53.732x51.3747x0.5	10.00	0.00	0.0	84.479 2	-47.82	4942.03	0.010
L14	8.5 - 1 (14)	TP55.5x53.732x0.5	7.50	0.00	0.0	87.285 0	-50.60	5106.17	0.010

### Pole Bending Design Data

Section No.	Elevation ft	Size	M <sub>ux</sub> kip-ft	φM <sub>ux</sub> kip-ft	Ratio $\frac{M_{ux}}{\phi M_{ux}}$	M <sub>uy</sub> kip-ft	φM <sub>uy</sub> kip-ft	Ratio $\frac{M_{uy}}{\phi M_{uy}}$
L1	130 - 120 (1)	TP29.07x26.71x0.25	29.43	955.08	0.031	0.00	955.08	0.000
L2	120 - 110 (2)	TP31.43x29.07x0.25	109.08	1090.73	0.100	0.00	1090.73	0.000
L3	110 - 100 (3)	TP33.7874x31.43x0.375	237.98	2023.28	0.118	0.00	2023.28	0.000
L4	100 - 90 (4)	TP36.1447x33.7874x0.37 5	406.90	2318.67	0.175	0.00	2318.67	0.000
L5	90 - 79.33 (5)	TP38.66x36.1447x0.375	499.54	2455.29	0.203	0.00	2455.29	0.000
L6	79.33 - 75 (6)	TP38.931x36.5734x0.438	691.33	3136.05	0.220	0.00	3136.05	0.000
L7	75 - 65 (7)	TP41.2886x38.931x0.438	891.38	3534.26	0.252	0.00	3534.26	0.000
L8	65 - 55 (8)	TP43.6462x41.2886x0.43 8	1099.45	3920.68	0.280	0.00	3920.68	0.000
L9	55 - 41.92 (9)	TP46.73x43.6462x0.438	1238.93	4167.94	0.297	0.00	4167.94	0.000
L10	41.92 - 38.5 (10)	TP46.66x44.3027x0.5	1460.42	5150.88	0.284	0.00	5150.88	0.000
L11	38.5 - 28.5 (11)	TP49.0173x46.66x0.5	1689.47	5665.22	0.298	0.00	5665.22	0.000
L12	28.5 - 18.5 (12)	TP51.3747x49.0173x0.5	1925.60	6158.01	0.313	0.00	6158.01	0.000
L13	18.5 - 8.5 (13)	TP53.732x51.3747x0.5	2168.82	6663.71	0.325	0.00	6663.71	0.000
L14	8.5 - 1 (14)	TP55.5x53.732x0.5	2355.94	7050.88	0.334	0.00	7050.88	0.000

### Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V <sub>u</sub> K	φV <sub>n</sub> K	Ratio $\frac{V_u}{\phi V_n}$	Actual T <sub>u</sub> kip-ft	φT <sub>n</sub> kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	130 - 120 (1)	TP29.07x26.71x0.25	5.03	401.35	0.013	0.00	1012.96	0.000
L2	120 - 110 (2)	TP31.43x29.07x0.25	9.98	434.21	0.023	0.00	1185.65	0.000
L3	110 - 100 (3)	TP33.7874x31.43x0.375	14.96	697.95	0.021	0.00	2042.25	0.000
L4	100 - 90 (4)	TP36.1447x33.7874x0.37	18.33	747.19	0.025	0.15	2340.59	0.000

Section No.	Elevation ft	Size	Actual $V_u$ K	$\phi V_n$ K	Ratio $\frac{V_u}{\phi V_n}$	Actual $T_u$ kip-ft	$\phi T_n$ kip-ft	Ratio $\frac{T_u}{\phi T_n}$
5								
L5	90 - 79.33 (5)	TP38.66x36.1447x0.375	18.73	771.81	0.024	0.15	2497.39	0.000
L6	79.33 - 75 (6)	TP38.931x36.5734x0.438	19.61	939.16	0.021	0.15	3165.93	0.000
L7	75 - 65 (7)	TP41.2886x38.931x0.438	20.41	996.68	0.020	0.15	3565.63	0.000
L8	65 - 55 (8)	TP43.6462x41.2886x0.43	21.21	1054.20	0.020	0.15	3989.07	0.000
8								
L9	55 - 41.92 (9)	TP46.73x43.6462x0.438	21.71	1091.59	0.020	0.26	4277.04	0.000
L10	41.92 - 38.5 (10)	TP46.66x44.3027x0.5	22.56	1285.64	0.018	0.26	5197.16	0.000
L11	38.5 - 28.5 (11)	TP49.0173x46.66x0.5	23.27	1351.30	0.017	0.26	5741.53	0.000
L12	28.5 - 18.5 (12)	TP51.3747x49.0173x0.5	23.97	1416.95	0.017	0.26	6313.02	0.000
L13	18.5 - 8.5 (13)	TP53.732x51.3747x0.5	24.69	1482.61	0.017	0.26	6911.62	0.000
L14	8.5 - 1 (14)	TP55.5x53.732x0.5	25.24	1531.85	0.016	0.26	7378.35	0.000

### Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	130 - 120 (1)	0.004	0.031	0.000	0.013	0.000	0.035	1.050	4.8.2
L2	120 - 110 (2)	0.007	0.100	0.000	0.023	0.000	0.108	1.050	4.8.2
L3	110 - 100 (3)	0.007	0.118	0.000	0.021	0.000	0.125	1.050	4.8.2
L4	100 - 90 (4)	0.008	0.175	0.000	0.025	0.000	0.185	1.050	4.8.2
L5	90 - 79.33 (5)	0.009	0.203	0.000	0.024	0.000	0.213	1.050	4.8.2
L6	79.33 - 75 (6)	0.008	0.220	0.000	0.021	0.000	0.229	1.050	4.8.2
L7	75 - 65 (7)	0.008	0.252	0.000	0.020	0.000	0.261	1.050	4.8.2
L8	65 - 55 (8)	0.009	0.280	0.000	0.020	0.000	0.290	1.050	4.8.2
L9	55 - 41.92 (9)	0.009	0.297	0.000	0.020	0.000	0.307	1.050	4.8.2
L10	41.92 - 38.5 (10)	0.009	0.284	0.000	0.018	0.000	0.293	1.050	4.8.2
L11	38.5 - 28.5 (11)	0.009	0.298	0.000	0.017	0.000	0.308	1.050	4.8.2
L12	28.5 - 18.5 (12)	0.009	0.313	0.000	0.017	0.000	0.322	1.050	4.8.2
L13	18.5 - 8.5 (13)	0.010	0.325	0.000	0.017	0.000	0.335	1.050	4.8.2
L14	8.5 - 1 (14)	0.010	0.334	0.000	0.016	0.000	0.344	1.050	4.8.2

### Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$\phi P_{allow}$ K	% Capacity	Pass/Fail
L1	130 - 120	Pole	TP29.07x26.71x0.25	1	-5.12	1404.71	3.3	Pass
L2	120 - 110	Pole	TP31.43x29.07x0.25	2	-10.48	1519.74	10.3	Pass
L3	110 - 100	Pole	TP33.7874x31.43x0.375	3	-16.31	2442.81	11.9	Pass
L4	100 - 90	Pole	TP36.1447x33.7874x0.375	4	-20.99	2615.16	17.6	Pass
L5	90 - 79.33	Pole	TP38.66x36.1447x0.375	5	-22.00	2701.33	20.2	Pass
L6	79.33 - 75	Pole	TP38.931x36.5734x0.438	6	-25.39	3287.07	21.8	Pass
L7	75 - 65	Pole	TP41.2886x38.931x0.438	7	-27.92	3488.38	24.9	Pass
L8	65 - 55	Pole	TP43.6462x41.2886x0.438	8	-30.58	3689.71	27.6	Pass
L9	55 - 41.92	Pole	TP46.73x43.6462x0.438	9	-32.39	3820.57	29.2	Pass
L10	41.92 - 38.5	Pole	TP46.66x44.3027x0.5	10	-37.27	4499.74	27.9	Pass
L11	38.5 - 28.5	Pole	TP49.0173x46.66x0.5	11	-40.63	4729.55	29.3	Pass
L12	28.5 - 18.5	Pole	TP51.3747x49.0173x0.5	12	-44.15	4959.34	30.7	Pass
L13	18.5 - 8.5	Pole	TP53.732x51.3747x0.5	13	-47.82	5189.13	31.9	Pass
L14	8.5 - 1	Pole	TP55.5x53.732x0.5	14	-50.60	5361.48	32.8	Pass
Summary								
Pole (L14)							32.8	Pass
<b>RATING =</b>							<b>32.8</b>	<b>Pass</b>

**APPENDIX B**  
**ADDITIONAL CALCULATIONS**

## FOUNDATION REACTION COMPARISON

TIA/EIA Design Revision: H  
TIA/EIA Analysis Revision: H

### Design Reactions

Compression 62.6 kips  
Base Shear 55.9 kips  
Overturning 6363 kip-ft

### Current Analysis Reactions

Compression 51 kips  
Base Shear 25 kips  
Overturning 2356 kip-ft

### Percentage of Original Reactions

Compression 81.5 %  
Base Shear 44.7 %  
Overturning 37.0 %



## SEISMIC CALCULATIONS

Location				
	Decimal Degrees	Deg	Min	Sec
Lat:	41.143783	41	38	37.62
Long:	-73.418547	73	25	6.77

Code and Site Parameters	
Seismic Design Code:	TIA 222-H-1
Site Soil:	D (Default) <span style="float: right;">Default</span>
Risk Category:	II
<u>USGS Seismic Reference</u>	
$S_s$ :	0.2400 g
$S_1$ :	0.0570 g
$T_L$ :	6 s

Seismic Design Category Determination	
Importance Factor, $I_a$ :	1
Acceleration-based site coefficient, $F_a$ :	1.6000
Velocity-based site coefficient, $F_v$ :	2.4000
Design spectral response acceleration short period, $S_{DS}$ :	0.2560 g
Design spectral response acceleration 1 s period, $S_{D1}$ :	0.0912 g
$T_s$ :	0.3563
Seismic Design Category Based on $S_{DS}$ :	B
Seismic Design Category Based on $S_{D1}$ :	B
Seismic Design Category Based on $S_1$ :	N/A
Controlling Seismic Design Category:	B

**Tower Details**

Tower Type:	Tapered Monopole	
Height, h:	129	ft
Effective Seismic Weight, W:	42.17	kips
Amplification Factor, A <sub>s</sub> :	1.0	

2.7.8.1

**Seismic Base Shear**

Response Modification Factor, R:	1.5	
Discrete Appurtenance Weight in Top 1/3 of Structure, W <sub>u</sub> :	13.24838	kips
W <sub>L</sub> :	28.92284533	kips
E:	29000.0	ksi
g:	386.088	in/s <sup>2</sup>
Average Moment of Inertia, I <sub>avg</sub> :	13772.54976	in <sup>4</sup>
F <sub>a</sub> :	0.396693272	hz
Approximate Fundamental Period Monopole, T <sub>a</sub> :	2.5208	s

2.7.7.1.3.3

Seismic Response Coefficient, C <sub>s</sub> :	0.1707	
Seismic Response Coefficient Max 1, C <sub>smax</sub> :	0.0241	
Seismic Response Coefficient Max 2, C <sub>smax</sub> :	N/A	
Seismic Response Coefficient Min 1, C <sub>smin</sub> :	0.0300	
Seismic Response Coefficient Min 2, C <sub>smin</sub> :	N/A	
Controlling Seismic Response Coefficient, C <sub>sc</sub> :	0.0300	

2.7.7.1.1

2.7.7.1.1

2.7.7.1.1

2.7.7.1.1

2.7.7.1.1

Seismic Base Shear, V:		kips
------------------------	--	------

2.7.7.1.1

**Vertical Distribution Factors**

Period Related Exponent, k:	2.000
Sum of w <sub>i</sub> h <sub>i</sub> <sup>k</sup> :	276791.19

Tower Section Loads								
Section Number	Length	Top Height	Mid Height, h <sub>m</sub>	Section Weight, w <sub>s</sub>	w <sub>s</sub> h <sub>m</sub> <sup>2</sup>	C <sub>xx</sub>	F <sub>xx</sub>	F <sub>yy</sub>
2-1	10.00	119.00	114.00	0.8100	10526.79	0.0380	0.0481	0.0415
3-1	10.00	109.00	104.00	2.2054	24419.37	0.0510	0.0645	0.0663
4-1	10.00	99.00	94.00	1.4009	12378.71	0.0447	0.0566	0.0717
5-2	10.00	88.33	83.33	1.5028	10435.35	0.0377	0.0477	0.0769
6-1	10.00	78.00	73.00	3.7051	41016.08	0.0392	0.0504	0.0904
7-1	10.00	74.00	69.00	1.8766	8934.68	0.0323	0.0408	0.0961
8-1	10.00	64.00	59.00	1.4882	6528.81	0.0250	0.0315	0.1014
9-1	3.08	54.00	52.46	0.6348	1747.06	0.0061	0.0080	0.0325
10-2	10.00	50.00	45.00	2.1240	4499.34	0.0163	0.0206	0.1023
10-1	10.00	47.50	42.50	2.4290	4387.38	0.0159	0.0201	0.1244
11-1	10.00	37.50	32.50	2.3563	2709.09	0.0099	0.0123	0.1309
12-1	10.00	27.50	22.50	2.6836	1358.57	0.0049	0.0062	0.1374
13-1	10.00	17.50	12.50	2.8109	439.20	0.0016	0.0020	0.1439
14-1	7.50	7.50	3.75	2.1917	30.82	0.0001	0.0001	0.1122
Sum								

Discrete Loads

Name	h <sub>c</sub>	w <sub>c</sub>	w <sub>c</sub> h <sub>c</sub> <sup>2</sup>	C <sub>u</sub>	F <sub>u</sub>	F <sub>u</sub> h <sub>c</sub>
CCI DMP65R-BU6DA	125.00	0.0850	1328.13	0.0048	0.0045	0.0044
CCI DMP65R-BU6DA	125.00	0.0850	1328.13	0.0048	0.0065	0.0044
CCI TPA65R-BU6DA-K	125.00	0.0750	1171.88	0.0042	0.0034	0.0038
CCI TPA65R-BU6DA-K	125.00	0.0750	1171.88	0.0042	0.0054	0.0038
Ericsson Radio 4478 B14	125.00	0.0550	859.38	0.0031	0.0046	0.0031
Ericsson B2/B66A 8843 RRH	125.00	0.0075	117.19	0.0004	0.0005	0.0004
Ericsson B2/B66A 8843 RRH	125.00	0.0075	117.19	0.0004	0.0005	0.0004
Ericsson RRUS 4415 4T4R	125.00	0.0550	859.38	0.0031	0.0039	0.0028
Ericsson RRUS 4415 4T4R	125.00	0.0550	859.38	0.0031	0.0039	0.0028
Ericsson B5/B12 4449 RRH	125.00	0.0800	1250.00	0.0045	0.0057	0.0041
Ericsson B5/B12 4449 RRH	125.00	0.0800	1250.00	0.0045	0.0057	0.0041
Ericsson B5/B12 4449 RRH	125.00	0.0800	1250.00	0.0045	0.0057	0.0041
Raycap DC6-48-60-0-8C-EV	125.00	0.0300	468.75	0.0017	0.0021	0.0015
Raycap DC6-48-60-0-8C-EV	125.00	0.0300	468.75	0.0017	0.0021	0.0015
(5) 8"x2 7/8" Pipe Mount	125.00	0.2316	3618.75	0.0131	0.0165	0.0119
(5) 8"x2 7/8" Pipe Mount	125.00	0.2316	3618.75	0.0131	0.0165	0.0119
(5) 8"x2 7/8" Pipe Mount	125.00	0.2316	3618.75	0.0131	0.0165	0.0119
(2) JMA MX06FRO660-03	115.00	0.1300	1719.25	0.0062	0.0079	0.0067
(2) JMA MX06FRO660-03	115.00	0.1300	1719.25	0.0062	0.0079	0.0067
(2) JMA MX06FRO660-03	115.00	0.1300	1719.25	0.0062	0.0079	0.0067
Samsung MT6407-77A	115.00	0.0812	1073.87	0.0039	0.0049	0.0042
Samsung MT6407-77A	115.00	0.0812	1073.87	0.0039	0.0049	0.0042
Samsung CBRS RRH-RT 4401-48A w/ XDWMM-12.5-65-8T	115.00	0.0231	306.03	0.0011	0.0014	0.0012
Samsung CBRS RRH-RT 4401-48A w/ XDWMM-12.5-65-8T	115.00	0.0231	306.03	0.0011	0.0014	0.0012
Samsung CBRS RRH-RT 4401-48A w/ XDWMM-12.5-65-8T	115.00	0.0231	306.03	0.0011	0.0014	0.0012
Samsung B2/B66A RRH (RF4439d-25A)	115.00	0.1000	1322.50	0.0048	0.0060	0.0051
Samsung B2/B66A RRH (RF4439d-25A)	115.00	0.1000	1322.50	0.0048	0.0060	0.0051
Samsung B5/B13 RRH (RF4440d-13A)	115.00	0.0850	1124.13	0.0041	0.0051	0.0044
Samsung B5/B13 RRH (RF4440d-13A)	115.00	0.0850	1124.13	0.0041	0.0051	0.0044
Samsung B5/B13 RRH (RF4440d-13A)	115.00	0.0850	1124.13	0.0041	0.0051	0.0044
Commscope VV-65A-R18	105.00	0.0247	272.32	0.0010	0.0012	0.0013
Commscope VV-65A-R18	105.00	0.0247	272.32	0.0010	0.0012	0.0013
Commscope VV-65A-R18	105.00	0.0247	272.32	0.0010	0.0012	0.0013
RFS APXVAU124_43-U-NA20	105.00	0.0630	716.63	0.0026	0.0033	0.0027
RFS APXVAU124_43-U-NA20	105.00	0.0630	716.63	0.0026	0.0033	0.0027
RFS APXVAU124_43-U-NA20	105.00	0.0630	716.63	0.0026	0.0033	0.0027
Ericsson AIR6419 B41	105.00	0.0833	918.38	0.0033	0.0042	0.0043
Ericsson AIR6419 B41	105.00	0.0833	918.38	0.0033	0.0042	0.0043
Ericsson AIR6419 B41	105.00	0.0833	918.38	0.0033	0.0042	0.0043
Ericsson Radio 4480 B2/B66	105.00	0.1080	1190.70	0.0043	0.0054	0.0055
Ericsson Radio 4480 B2/B66	105.00	0.1080	1190.70	0.0043	0.0054	0.0055
Ericsson Radio 4480 B2/B66	105.00	0.1080	1190.70	0.0043	0.0054	0.0055
Ericsson Radio 4480 B71/B85	105.00	0.0930	1025.33	0.0037	0.0047	0.0048
Ericsson Radio 4480 B71/B85	105.00	0.0930	1025.33	0.0037	0.0047	0.0048
Ericsson Radio 4480 B71/B85	105.00	0.0930	1025.33	0.0037	0.0047	0.0048
(5) 3"x2 7/8" Pipe Mount	105.00	0.2316	2553.39	0.0092	0.0117	0.0119
(5) 3"x2 7/8" Pipe Mount	105.00	0.2316	2553.39	0.0092	0.0117	0.0119
(5) 3"x2 7/8" Pipe Mount	105.00	0.2316	2553.39	0.0092	0.0117	0.0119
SitePro16 Double T-Arm	105.00	1.7280	19051.20	0.0638	0.0871	0.0835
Commscope FFVV-638-R2 w/ Mount Pipe	95.00	0.1000	902.50	0.0033	0.0041	0.0051
Commscope FFVV-638-R2 w/ Mount Pipe	95.00	0.1000	902.50	0.0033	0.0041	0.0051
Fujitsu TA08025-B605	95.00	0.0700	631.75	0.0023	0.0029	0.0035
Fujitsu TA08025-B605	95.00	0.0700	631.75	0.0023	0.0029	0.0035
Fujitsu TA08025-B605	95.00	0.0700	631.75	0.0023	0.0029	0.0035
Fujitsu TA08025-B604	95.00	0.0600	541.50	0.0020	0.0025	0.0031
Fujitsu TA08025-B604	95.00	0.0600	541.50	0.0020	0.0025	0.0031
Fujitsu TA08025-B604	95.00	0.0600	541.50	0.0020	0.0025	0.0031
Raycap RD1DC-9131-PF-43	95.00	0.9200	130.50	0.0007	0.0008	0.0010
(2) mount pipes 8" x 2" STD Pipe	95.00	0.0600	541.50	0.0020	0.0025	0.0031
(2) mount pipes 8" x 2" STD Pipe	95.00	0.0600	541.50	0.0020	0.0025	0.0031
(2) mount pipes 8" x 2" STD Pipe	95.00	0.0600	541.50	0.0020	0.0025	0.0031
3' Platform Mount (MC-248-254)	85.00	1.2125	11135.15	0.0404	0.0512	0.0502
Top Rail	85.00	0.2480	3213.33	0.0080	0.0101	0.0104

Linear Loads

Name	Start Height	End Height	$h_c$	$w_c$	$w_c h_c$	$C_p$	$F_{p1}$	$F_{p2}$
misc Step Bolts From 8 to 129	109.00	119.00	114.00	0.0200	259.92	0.0009	0.0012	0.0010
misc Step Bolts From 8 to 129	99.00	109.00	104.00	0.0200	216.80	0.0008	0.0010	0.0010
misc Step Bolts From 8 to 129	89.00	99.00	94.00	0.0200	176.72	0.0006	0.0008	0.0010
misc Step Bolts From 8 to 129	79.00	89.00	84.00	0.0200	141.12	0.0005	0.0006	0.0010
misc Step Bolts From 8 to 129	69.00	79.00	74.00	0.0200	109.52	0.0004	0.0005	0.0010
misc Step Bolts From 8 to 129	59.00	69.00	64.00	0.0200	83.72	0.0003	0.0004	0.0010
misc Step Bolts From 8 to 129	49.00	59.00	54.00	0.0200	58.32	0.0002	0.0003	0.0010
misc Step Bolts From 8 to 129	39.00	49.00	44.00	0.0200	37.72	0.0001	0.0001	0.0010
misc Step Bolts From 8 to 129	29.00	39.00	34.00	0.0200	23.12	0.0001	0.0001	0.0010
misc Step Bolts From 8 to 129	19.00	29.00	24.00	0.0200	13.52	0.0000	0.0000	0.0010
misc Step Bolts From 8 to 129	9.00	19.00	14.00	0.0200	3.92	0.0000	0.0000	0.0010
misc Safety Line 3/8 From 8 to 129	119.00	129.00	124.00	0.0022	33.88	0.0001	0.0002	0.0001
misc Safety Line 3/8 From 8 to 129	109.00	119.00	114.00	0.0022	28.59	0.0001	0.0001	0.0001
misc Safety Line 3/8 From 8 to 129	99.00	109.00	104.00	0.0022	23.80	0.0001	0.0001	0.0001
misc Safety Line 3/8 From 8 to 129	89.00	99.00	94.00	0.0022	19.44	0.0000	0.0001	0.0001
misc Safety Line 3/8 From 8 to 129	79.00	89.00	84.00	0.0022	15.52	0.0000	0.0001	0.0001
misc Safety Line 3/8 From 8 to 129	69.00	79.00	74.00	0.0022	12.05	0.0000	0.0000	0.0000
misc Safety Line 3/8 From 8 to 129	59.00	69.00	64.00	0.0022	9.01	0.0000	0.0000	0.0001
misc Safety Line 3/8 From 8 to 129	49.00	59.00	54.00	0.0022	6.42	0.0000	0.0000	0.0001
misc Safety Line 3/8 From 8 to 129	39.00	49.00	44.00	0.0022	4.26	0.0000	0.0000	0.0001
misc Safety Line 3/8 From 8 to 129	29.00	39.00	34.00	0.0022	2.54	0.0000	0.0000	0.0001
misc Safety Line 3/8 From 8 to 129	19.00	29.00	24.00	0.0022	1.27	0.0000	0.0000	0.0001
misc Safety Line 3/8 From 8 to 129	9.00	19.00	14.00	0.0022	0.64	0.0000	0.0000	0.0001
misc Safety Line 3/8 From 8 to 129	3.00	9.00	6.00	0.0022	0.33	0.0000	0.0000	0.0001
(6) 3/4" power 6AWG6 From 3 to 125	109.00	119.00	114.00	0.0348	452.25	0.0016	0.0021	0.0018
(6) 3/4" power 6AWG6 From 3 to 125	99.00	109.00	104.00	0.0348	376.40	0.0014	0.0017	0.0018
(6) 3/4" power 6AWG6 From 3 to 125	89.00	99.00	94.00	0.0348	307.49	0.0011	0.0014	0.0018
(6) 3/4" power 6AWG6 From 3 to 125	79.00	89.00	84.00	0.0348	245.88	0.0009	0.0011	0.0018
(6) 3/4" power 6AWG6 From 3 to 125	69.00	79.00	74.00	0.0348	190.56	0.0007	0.0009	0.0018
(6) 3/4" power 6AWG6 From 3 to 125	59.00	69.00	64.00	0.0348	142.88	0.0005	0.0007	0.0018
(6) 3/4" power 6AWG6 From 3 to 125	49.00	59.00	54.00	0.0348	101.48	0.0004	0.0005	0.0018
(6) 3/4" power 6AWG6 From 3 to 125	39.00	49.00	44.00	0.0348	67.37	0.0003	0.0004	0.0018
(6) 3/4" power 6AWG6 From 3 to 125	29.00	39.00	34.00	0.0348	40.23	0.0001	0.0002	0.0018
(6) 3/4" power 6AWG6 From 3 to 125	19.00	29.00	24.00	0.0348	20.04	0.0000	0.0001	0.0018
(6) 3/4" power 6AWG6 From 3 to 125	9.00	19.00	14.00	0.0348	6.82	0.0000	0.0000	0.0018
(2) 5/16" Fiber From 3 to 125	119.00	125.00	122.00	0.0050	44.65	0.0002	0.0002	0.0002
(2) 5/16" Fiber From 3 to 125	109.00	119.00	104.00	0.0050	37.58	0.0002	0.0002	0.0002
(2) 5/16" Fiber From 3 to 125	99.00	109.00	104.00	0.0050	34.08	0.0002	0.0002	0.0003
(2) 5/16" Fiber From 3 to 125	89.00	99.00	94.00	0.0050	28.18	0.0002	0.0002	0.0003
(2) 5/16" Fiber From 3 to 125	79.00	89.00	84.00	0.0050	23.28	0.0001	0.0002	0.0003
(2) 5/16" Fiber From 3 to 125	69.00	79.00	74.00	0.0050	18.38	0.0001	0.0001	0.0003
(2) 5/16" Fiber From 3 to 125	59.00	69.00	64.00	0.0050	14.48	0.0001	0.0001	0.0003
(2) 5/16" Fiber From 3 to 125	49.00	59.00	54.00	0.0050	10.58	0.0000	0.0000	0.0003
(2) 5/16" Fiber From 3 to 125	39.00	49.00	44.00	0.0050	6.68	0.0000	0.0000	0.0003
(2) 5/16" Fiber From 3 to 125	29.00	39.00	34.00	0.0050	2.78	0.0000	0.0000	0.0003
(2) 5/16" Fiber From 3 to 125	19.00	29.00	24.00	0.0050	0.88	0.0000	0.0000	0.0003
(2) 5/16" Fiber From 3 to 125	9.00	19.00	14.00	0.0050	0.11	0.0000	0.0000	0.0003
12x24 Hybrid From 3 to 115	109.00	119.00	114.00	0.0182	239.80	0.0008	0.0010	0.0009
12x24 Hybrid From 3 to 115	99.00	109.00	104.00	0.0182	198.99	0.0007	0.0009	0.0009
12x24 Hybrid From 3 to 115	89.00	99.00	94.00	0.0182	168.57	0.0006	0.0008	0.0009
12x24 Hybrid From 3 to 115	79.00	89.00	84.00	0.0182	141.50	0.0005	0.0008	0.0009
12x24 Hybrid From 3 to 115	69.00	79.00	74.00	0.0182	116.82	0.0004	0.0006	0.0009
12x24 Hybrid From 3 to 115	59.00	69.00	64.00	0.0182	93.92	0.0004	0.0006	0.0009
12x24 Hybrid From 3 to 115	49.00	59.00	54.00	0.0182	72.99	0.0003	0.0005	0.0009
12x24 Hybrid From 3 to 115	39.00	49.00	44.00	0.0182	53.81	0.0002	0.0004	0.0009
12x24 Hybrid From 3 to 115	29.00	39.00	34.00	0.0182	36.40	0.0001	0.0003	0.0009
12x24 Hybrid From 3 to 115	19.00	29.00	24.00	0.0182	20.75	0.0000	0.0002	0.0009
12x24 Hybrid From 3 to 115	9.00	19.00	14.00	0.0182	6.86	0.0000	0.0001	0.0009
(3) 6x24 Hybrid From 3 to 105	109.00	119.00	114.00	0.0666	529.43	0.0021	0.0027	0.0034
(3) 6x24 Hybrid From 3 to 105	99.00	109.00	104.00	0.0666	439.93	0.0017	0.0022	0.0034
(3) 6x24 Hybrid From 3 to 105	89.00	99.00	94.00	0.0666	364.76	0.0013	0.0017	0.0034
(3) 6x24 Hybrid From 3 to 105	79.00	89.00	84.00	0.0666	302.75	0.0010	0.0016	0.0034
(3) 6x24 Hybrid From 3 to 105	69.00	79.00	74.00	0.0666	249.99	0.0007	0.0009	0.0034
(3) 6x24 Hybrid From 3 to 105	59.00	69.00	64.00	0.0666	204.66	0.0005	0.0006	0.0034
(3) 6x24 Hybrid From 3 to 105	49.00	59.00	54.00	0.0666	165.77	0.0004	0.0005	0.0034
(3) 6x24 Hybrid From 3 to 105	39.00	49.00	44.00	0.0666	133.30	0.0003	0.0004	0.0034
(3) 6x24 Hybrid From 3 to 105	29.00	39.00	34.00	0.0666	95.29	0.0002	0.0003	0.0034
(3) 6x24 Hybrid From 3 to 105	19.00	29.00	24.00	0.0666	60.75	0.0001	0.0002	0.0034
(3) 6x24 Hybrid From 3 to 105	9.00	19.00	14.00	0.0666	31.66	0.0000	0.0001	0.0034
CU12PM9P35X 6AWG From 3 to 95	89.00	95.00	92.00	0.0111	113.13	0.0001	0.0005	0.0007
CU12PM9P35X 6AWG From 3 to 95	79.00	85.00	82.00	0.0111	92.93	0.0000	0.0004	0.0007
CU12PM9P35X 6AWG From 3 to 95	69.00	75.00	72.00	0.0111	75.53	0.0000	0.0003	0.0007
CU12PM9P35X 6AWG From 3 to 95	59.00	65.00	62.00	0.0111	60.93	0.0000	0.0002	0.0007
CU12PM9P35X 6AWG From 3 to 95	49.00	55.00	52.00	0.0111	49.13	0.0000	0.0001	0.0007
CU12PM9P35X 6AWG From 3 to 95	39.00	45.00	42.00	0.0111	39.13	0.0000	0.0000	0.0007
CU12PM9P35X 6AWG From 3 to 95	29.00	35.00	32.00	0.0111	30.13	0.0000	0.0000	0.0007
CU12PM9P35X 6AWG From 3 to 95	19.00	25.00	22.00	0.0111	22.13	0.0000	0.0000	0.0007
CU12PM9P35X 6AWG From 3 to 95	9.00	15.00	12.00	0.0111	15.13	0.0000	0.0000	0.0007

CU12PSM9P6XXX 6AWG From 3 to 95	29.00	39.00	34.00	0.0235	27.12	0.0001	0.0001	0.0012
CU12PSM9P6XXX 6AWG From 3 to 95	9.00	19.00	14.00	0.0235	4.60	0.0000	0.0000	0.0012
CU12PSM9P6XXX 6AWG From 3 to 95	9.00	19.00	14.00	0.0235	4.60	0.0000	0.0000	0.0012
				Sum				

**APPENDIX C**  
**REFERENCES**

Municipality	Basic Design Wind Speeds, $V$ (mph)				Allowable Stress Design Wind Speeds, $V_{asd}$ (mph)				Ground Snow Load $P_g$ (psf)	MCE Ground Accelerations		Wind-Borne Debris Region <sup>1</sup>		Hurricane- Prone Region
	Risk Cat. I	Risk Cat. II	Risk Cat. III	Risk Cat. IV	Risk Cat. I	Risk Cat. II	Risk Cat. III	Risk Cat. IV		$S_S$ (g)	$S_I$ (g)	Risk Cat. Occup. I-2	Risk Cat. IV	
New Milford	110	115	125	130	85	89	97	101	35	0.198	0.055			
Newington	110	120	130	135	85	93	101	105	30	0.195	0.055			Yes
Newtown	110	120	130	130	85	93	101	101	30	0.209	0.055			Yes
Norfolk	105	115	125	130	81	89	97	101	40	0.165	0.054			
North Branford	115	125	135	135	89	97	105	105	30	0.204	0.054			Yes
North Canaan	105	115	125	130	81	89	97	101	40	0.164	0.054			Yes
North Haven	110	120	130	135	85	93	101	105	30	0.204	0.054			Yes
North Stonington	120	130	140	140	93	101	108	108	30	0.186	0.052			Yes
Norwalk	110	120	130	135	85	93	101	105	30	0.240	0.056	Type B		Yes
Norwich	115	125	135	140	89	97	105	108	30	0.194	0.054			Yes
Old Lyme	120	130	135	140	93	101	105	108	30	0.201	0.053	Type B		Yes
Old Saybrook	120	130	135	140	93	101	105	108	30	0.202	0.053	Type B		Yes
Orange	110	120	130	135	85	93	101	105	30	0.201	0.054			Yes
Oxford	110	120	130	135	85	93	101	105	30	0.199	0.054			Yes
Painfield	115	125	135	140	89	97	105	108	30	0.187	0.054			Yes
Painville	110	120	130	135	85	93	101	105	35	0.191	0.055			Yes
Plymouth	110	120	125	130	85	93	97	101	35	0.185	0.054			Yes
Pomfret	115	125	130	135	89	97	101	105	40	0.182	0.055			Yes
Portland	110	120	130	135	85	93	101	105	30	0.208	0.056			Yes
Reston	120	125	135	140	93	97	105	108	30	0.191	0.053			Yes
Respect	110	120	130	135	85	93	101	105	30	0.197	0.054			Yes
Rufnam	115	125	130	135	89	97	101	105	40	0.184	0.055			Yes
Sedding	110	120	125	130	85	93	97	101	30	0.228	0.056			Yes
Shedfield	110	120	125	130	85	93	97	101	30	0.243	0.057			Yes
Shelton Hill	110	120	130	135	85	93	101	105	30	0.200	0.055			Yes
Shelton	110	120	125	130	85	93	97	101	35	0.196	0.054			Yes
Shelton	115	125	135	140	89	97	105	108	30	0.205	0.055			Yes
Shelton	105	115	125	130	81	89	97	101	40	0.116	0.054			Yes
Shelton	115	125	135	135	89	97	105	105	30	0.188	0.054			Yes
Shelton	110	120	130	135	85	93	101	105	30	0.200	0.054			Yes
Shelton	105	115	125	130	81	89	97	101	40	0.171	0.054			Yes
Shelton	110	120	130	135	85	93	101	105	30	0.203	0.054			Yes



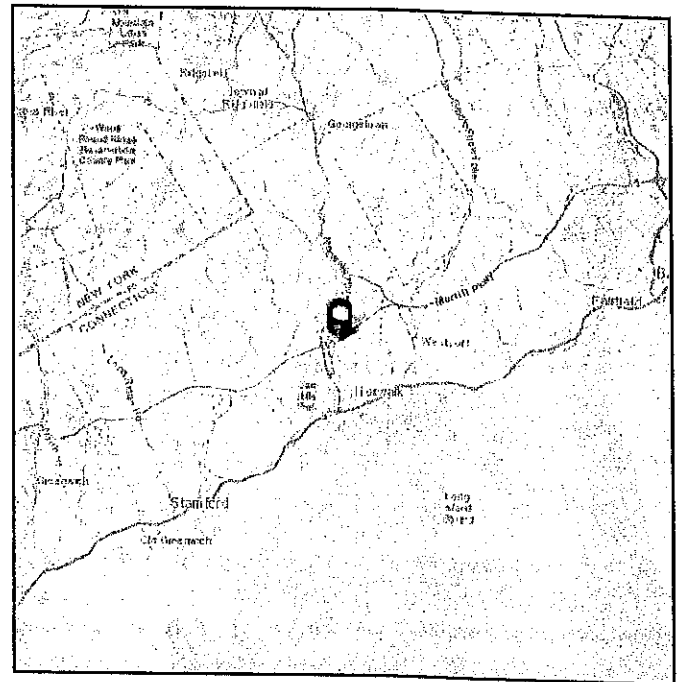
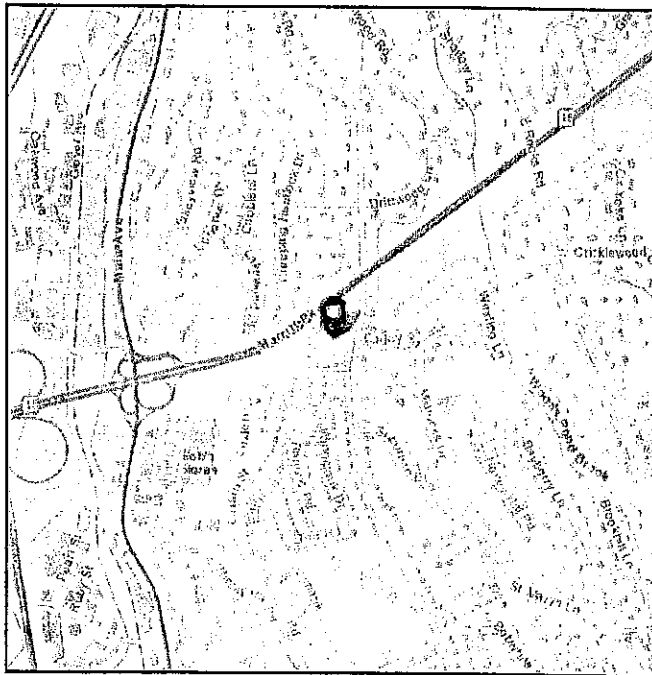


# ASCE 7 Hazards Report

**Address:**  
No Address at This Location

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

**Latitude:** 41.143782  
**Longitude:** -73.418548  
**Elevation:** 221.49 ft (NAVD 88)



## Wind

### Results:

Wind Speed	117 Vmph	120 mph per 2022 Connecticut State Building Code
10-year MRI	75 Vmph	
25-year MRI	85 Vmph	
50-year MRI	90 Vmph	
100-year MRI	97 Vmph	

Data Source: ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2  
Date Accessed: Mon Feb 06 2023

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

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

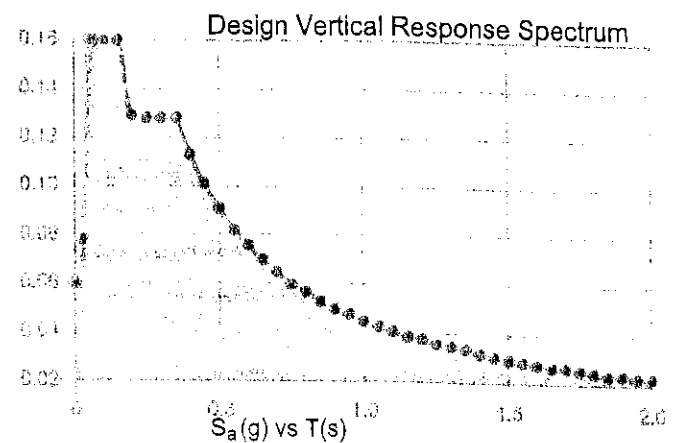
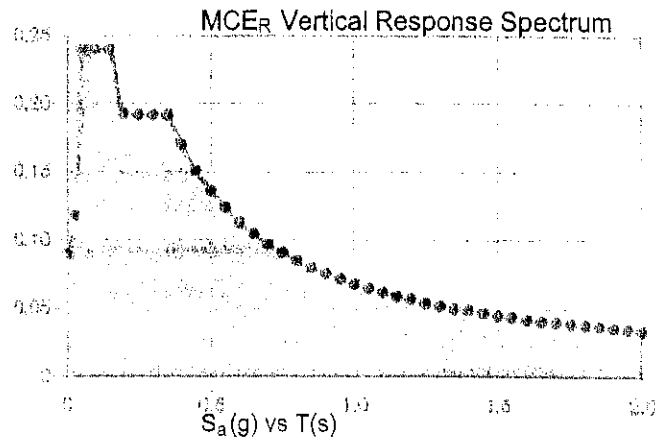
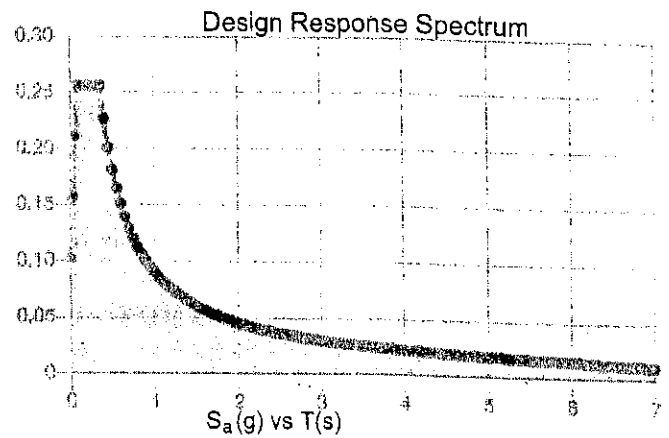
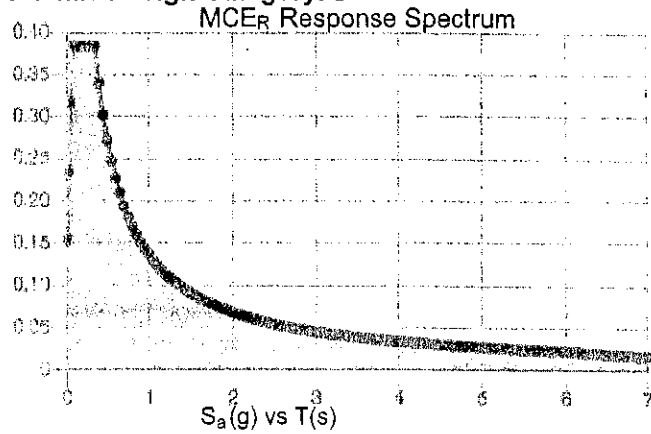
Site Soil Class:

Higher S1 used per ASCE 7-16

Results:

$S_s$ :	0.24	$S_{D1}$ :	0.091
$S_1$ :	0.057	$T_L$ :	6
$F_a$ :	1.6	PGA :	0.142
$F_v$ :	2.4	PGA <sub>M</sub> :	0.215
$S_{MS}$ :	0.384	$F_{PGA}$ :	1.517
$S_{M1}$ :	0.136	$I_e$ :	1
$S_{DS}$ :	0.256	$C_v$ :	0.781

Seismic Design Category: B



Data Accessed: Mon Feb 06 2023

Date Source:

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



## Ice

---

### Results:

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

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

**Date Accessed:** Mon Feb 06 2023

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

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

---

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

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

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

Exhibit E  
Mount Analysis

Date: February 15, 2023

## Mount Analysis Report

### Project Information:

Carrier: Dish Wireless  
Site Number: NJJER01148C  
Site Address: 173 West Rocks Road, Norwalk, Fairfield County, CT 06851  
Site Type: Platform w/ Railing Mount on Monopole

Tectonic Project Number: 10710.NJJER01148C

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 – 49.3%

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 120 mph per Appendix P as required for use in the ANSI/TIA-222-H Standard. Exposure Category B with a maximum topographic factor, Kzt, of 1.0 and Risk Category II was used in this analysis.

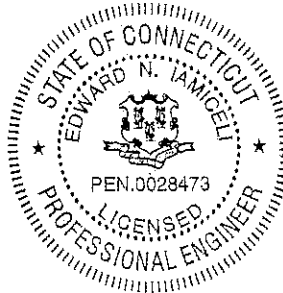
We at Tectonic appreciate the opportunity of providing our continuing professional services to you and Dish Wireless. If you have any questions or need further assistance on this or any other projects, please give us a call.

Structural analysis prepared by: Graham Evans / Veronica Elson

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



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



### Project Contact Info

1270 Route 300 E Norwalk, CT 06851  
413.397.9652 Tel | 245.907.5133 Fax

## TABLE OF CONTENTS

- 1) INTRODUCTION
- 2) ANALYSIS CRITERIA
  - Table 1 - Proposed Equipment Loading Information
- 3) ANALYSIS PROCEDURE
  - Table 2 - Documents Provided
  - 3.1) Analysis Method
  - 3.2) Assumptions
- 4) ANALYSIS RESULTS
  - Table 3 - Mount Component Stresses vs. Capacity
  - 4.1) Result / Conclusions
- 5) APPENDIX A
  - Software Input Calculations
- 6) APPENDIX B
  - Wire Frame and Rendered Models
- 7) APPENDIX C
  - Software Analysis Output
- 8) APPENDIX D – All Sectors
  - Additional Calculations
- 9) APPENDIX E
  - Reference Documents

### 1) INTRODUCTION

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

### 2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	120 mph
Exposure Category:	B
Topographic Factor:	1.0
Ice Thickness:	1.0 in
Wind Speed with Ice:	50 mph
Maintenance Load:	30 mph
Seismic S <sub>s</sub> / S <sub>i</sub> :	0.240 / 0.057

Table 1 - Proposed Equipment Loading Information

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

Note:

- Proposed equipment to be installed on the proposed mounts.

### 3) ANALYSIS PROCEDURE

Table 2 - Documents Provided

Document	Remarks	Dated
Mount Assembly Drawings	CommScope, P/N: MC-PK8- DSH	3/17/2021
Field Notes & Photos	Tectonic	7/13/2022
RFDS	Dish Wireless	6/30/2022
Lease Exhibit Drawings	Tectonic	8/15/2022

#### 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

- 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.
- The configuration of antennas, mounts, and other appurtenances are as specified in Tables 1 and 2.
- All member connections are assumed to have been designed to meet or exceed the load carrying capacity of the connected member unless otherwise specified in this report.

- 4) Member length and sizes are based solely on the assembly drawing by CommScope, referenced above.
- 5) Steel grades have been assumed as follows, unless noted otherwise:
  - Channel, Solid Round, Angle, Plate      ASTM A36 (GR 36)
  - HSS (Rectangular)                              ASTM 500 (GR B-46)
  - Pipe    ASTM A53 (GR 35)
  - Connection Bolts                                  ASTM A325

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

#### 4) ANALYSIS RESULTS

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

Notes	Component	Mount Centerline (ft)	% Capacity	Pass / Fail
1	Standoff End Plate	96.0	21	Pass
	Grating Support Angle		9	Pass
	Face Horizontal		15	Pass
	Mount Pipe		19	Pass
	Standoff Channel		25	Pass
	Standoff		22	Pass
	Rail Connector		15	Pass
	Railing		15	Pass
2	Collar Connection		49.3	Pass
<b>Structure Rating (max from all components) =</b>				<b>49.3 %</b>

Notes:

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

#### 4.1) Result / Conclusions

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

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

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



APPENDIX A  
SOFTWARE INPUT CALCULATIONS



Job No.: 10710.NJJER01148C

Sheet No.: 1 of 4  
 Calculated By: GLE Date: 02/09/23  
 Checked By: VE Date: 02/09/23

**WIND AND ICE LOADS PER TIA-222-H**

Work Order #:	10710.NJJER01148C
Site Name:	NJJER01148C
Location:	173 West Rocks Road, Norwalk, CT, 06851
County:	Fairfield

Tower Type	MP	Monopole
Structure Height	130	ft
Supporting Str Height	GM	Ground Mounted
Risk Category	II	Moderate risk
Exposure Category	B	Suburban/wooded/obstructed
Topo Category	1	Flat or rolling terrain
Height of crest	0	ft
Mean elevation (zs)	221.49	ft

Basic Wind Speed (3-sec gust):		
Without ice	120	mph
With ice	50	mph
Maintenance Wind	30	mph
Ice thickness	1.00	in

Importance Factor	
Ice thickness	1.00
Earthquake	1.00
Supporting Data:	
K <sub>s</sub>	1.00
K <sub>e</sub>	0.99
K <sub>c</sub>	0.90
K <sub>t</sub>	N/A
f	N/A
Z <sub>g</sub>	1200
α	7
K <sub>z,min</sub>	0.7
K <sub>d</sub>	0.95
G <sub>h</sub>	1.00

Height	z (ft)*	96
	Kh	N/A
	Kzt	1.00
	Kz	0.98
	Klz	1.11
Wind Pressure, qz (psf)	No Ice	33.93
	With Ice	5.89
	Maintenance	2.12
(tiz)	Ice Thk	1.11
Appurtenances (qzGh)	No Ice	33.93
	With Ice	5.89
	Maintenance	2.12

Note : \*Ultimate 3-second gust wind speed of 120 mph per Appendix P.

**Equipment Information**

Shielding factor, Ka = 0.9													Section 16.6				
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 (Aa)N (ft*2)	Windward Face Normal (CaAa)N (ft*2)	Side Face (Aa)T (ft*2)	Windward Side Face (CaAa)T (ft*2)	Normal Antenna Wind Load Each (lb)	Transverse Antenna Wind Load Each (lb)	Antenna Weight (lb)	Total Weight (lb)
FFVW-65B-R2	P	3	96	6.00	19.60	7.80	Flat	1.25	1.47	9.80	33.13	3.90	15.53	375	176	84.2	252.6
TA08025-B604-RRH	P	3	96	1.24	15.70	7.80	Flat	1.20	1.20	1.62	5.26	0.81	2.61	60	30	63.9	191.7
TA08025-B605-RRH	P	3	96	1.24	15.70	9.00	Flat	1.20	1.20	1.62	5.26	0.93	3.02	60	34	74.9	224.7
RDIDC-9181-PF-48	P	1	96	1.58	14.39	8.15	Flat	1.20	1.20	1.90	2.05	1.07	1.16	70	39	21.3	21.3
								$\Sigma(CaAa)N$ : 45.71				$\Sigma(CaAa)T$ : 22.32					690

**WIND WITH ICE**

Ice Thk = 1.11 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 (Aa)N (ft*2)	Windward Face Normal (CaAa)N (ft*2)	Side Face (Aa)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)
FFVW-65B-R2	P	3	96	6.19	21.83	10.03	Cylindrical	0.72	0.72	11.25	21.87	5.17	10.05	43	20	27.4	142.3
TA08025-B604-RRH	P	3	96	1.43	17.93	10.03	Cylindrical	0.7	0.7	2.13	4.03	1.19	2.25	8	4	4.9	25.3
TA08025-B605-RRH	P	3	96	1.43	17.93	11.23	Cylindrical	0.7	0.7	2.13	4.03	1.33	2.52	8	5	5.1	26.5
RDIDC-9181-PF-48	P	1	96	1.77	16.62	10.38	Cylindrical	0.7	0.7	2.45	1.54	1.53	0.96	9	6	5.9	30.9
								$\Sigma(CaAa)N$ : 31.47				$\Sigma(CaAa)T$ : 15.79					225

**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 (Aa)N (ft*2)	Windward Face Normal (CaAa)N (ft*2)	Side Face (Aa)T (ft*2)	Windward Side Face (CaAa)T (ft*2)	Normal Antenna Wind Load Each (lb)	Transverse Antenna Wind Load Each (lb)
FFVW-65B-R2	P	3	96	6.00	19.60	7.80	Flat	1.25	1.47	9.80	33.13	3.90	15.53	23	11
TA08025-B604-RRH	P	3	96	1.24	15.70	7.80	Flat	1.20	1.20	1.62	5.26	0.81	2.61	4	2
TA08025-B605-RRH	P	3	96	1.24	15.70	9.00	Flat	1.20	1.20	1.62	5.26	0.93	3.02	4	2
RDIDC-9181-PF-48	P	1	96	1.58	14.39	8.15	Flat	1.20	1.20	1.90	2.05	1.07	1.16	4	2
								$\Sigma(CaAa)N$ : 45.71				$\Sigma(CaAa)T$ : 22.32			



Job No. 10710.NJJER01148C  
 Sheet No. 3 of 4  
 Calculated By GLE Date: 02/09/23  
 Checked By VE Date: 02/09/23

**Mounting System Information**

Mount Center Line: 96 ft

Mount Part	Quantity	Length (ft)	Projected Width (in)	Depth (in)	Flat or Cylindrical?	Force Coefficient	Projected Area (ft <sup>2</sup> )	Wind Force (lbs/ft)	Reduction Factor = 0.9			Section 16.6	
									Ice Weight Area (ft <sup>2</sup> )	Ice Weight (lbs/ft)	Projected Area with Ice (ft <sup>2</sup> )	Wind Force Ice (lbs/ft)	Maintenance Wind Force (lbs/ft)
Standoff End Plate 6.5"	3	3.00	6.50	0.38	Flat	2	8.78	33.1	10.31	5.9	11.78	7.7	2.1
Standoff End Plate 6"	6	0.50	6.00	0.38	Flat	2	2.70	30.5	3.19	5.5	3.70	7.3	1.9
Grating Support Angle L2x2x1/4	6	2.50	2.00	2.00	Flat	2	4.50	10.2	10.00	3.5	9.51	3.7	0.6
Face Horizontal Pipe 3.0 STD	3	8.00	3.50	3.50	Cylindrical	1.2	7.56	10.7	21.98	4.8	12.37	3.0	0.7
Mount Pipe - Pipe 2.5 STD	9	8.00	2.88	2.88	Cylindrical	1.2	18.63	8.8	54.17	3.9	33.05	2.7	0.5
Standoff Channel - C3 36x2.06	6	2.75	3.38	2.06	Flat	2	8.37	17.2	14.96	4.7	13.87	5.0	1.1
Standoff - HSS 4x4x3/8	3	3.42	4.00	4.00	Flat	2	6.16	20.4	13.68	6.9	9.58	5.5	1.3
Rail Connector - L6.6x4.45x1/4	3	3.00	6.60	4.45	Flat	2	8.91	33.6	16.58	9.6	11.91	7.8	2.1
Railing - Pipe 2.5 STD	3	10.00	2.88	2.88	Cylindrical	1.2	7.76	8.8	22.57	3.9	13.77	2.7	0.5

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



Job No. 10710.NJJER01148C  
 Sheet No. 4 of 4  
 Calculated By GLE Date: 02/09/23  
 Checked By VE Date: 02/09/23

**Seismic Check**

Tower Information

Tower Type:	MP	
Structure Height	130	ft
Supporting Structure Height	GM	ft
Mount Height	96	ft

Geographic Information

City:	Norwalk	
State:	Connecticut	
County:	Fairfield	
Latitude:	41.143782	Longitude: 73.418548

Seismic Information

Risk Category	II
Importance Factor	1.00
Site Soil Classification	D
S <sub>s</sub>	0.24
S <sub>f</sub>	0.57
F <sub>a</sub>	1.6
F <sub>v</sub>	2.4
S <sub>Ds</sub>	0.256
S <sub>D1</sub>	0.912
R	2.00
A <sub>s</sub>	1.00
C <sub>s</sub>	0.13

Table 2-10  
<https://asce7hazardtool.online/>

(Table 2-11, Interpolation allowed)  
 (Table 2-12, Interpolation allowed)  
 Section 2.7.5

Section 16.7  
 Section 16.7 & 2.7.8  
 > 0.03

**Equivalent Lateral Force Procedure**

Equipment (Discrete Appurtenances)

Antenna Configuration	(E) or (P)	Qty	z (ft)	Antenna Weight (lb)	Shear Vs= Cs*W (lbs)	Vert. Seismic load (Ev, lbs)	Seismic load (Eh, lbs)
FFVV-65B-R2	P	3	96	84	11	4	11
TA08025-B604-RRH	P	3	96	64	8	3	8
TA08025-B605-RRH	P	3	96	75	10	4	9.7
RDIDC-9181-PF-48	P	1	96	21	3	1	3

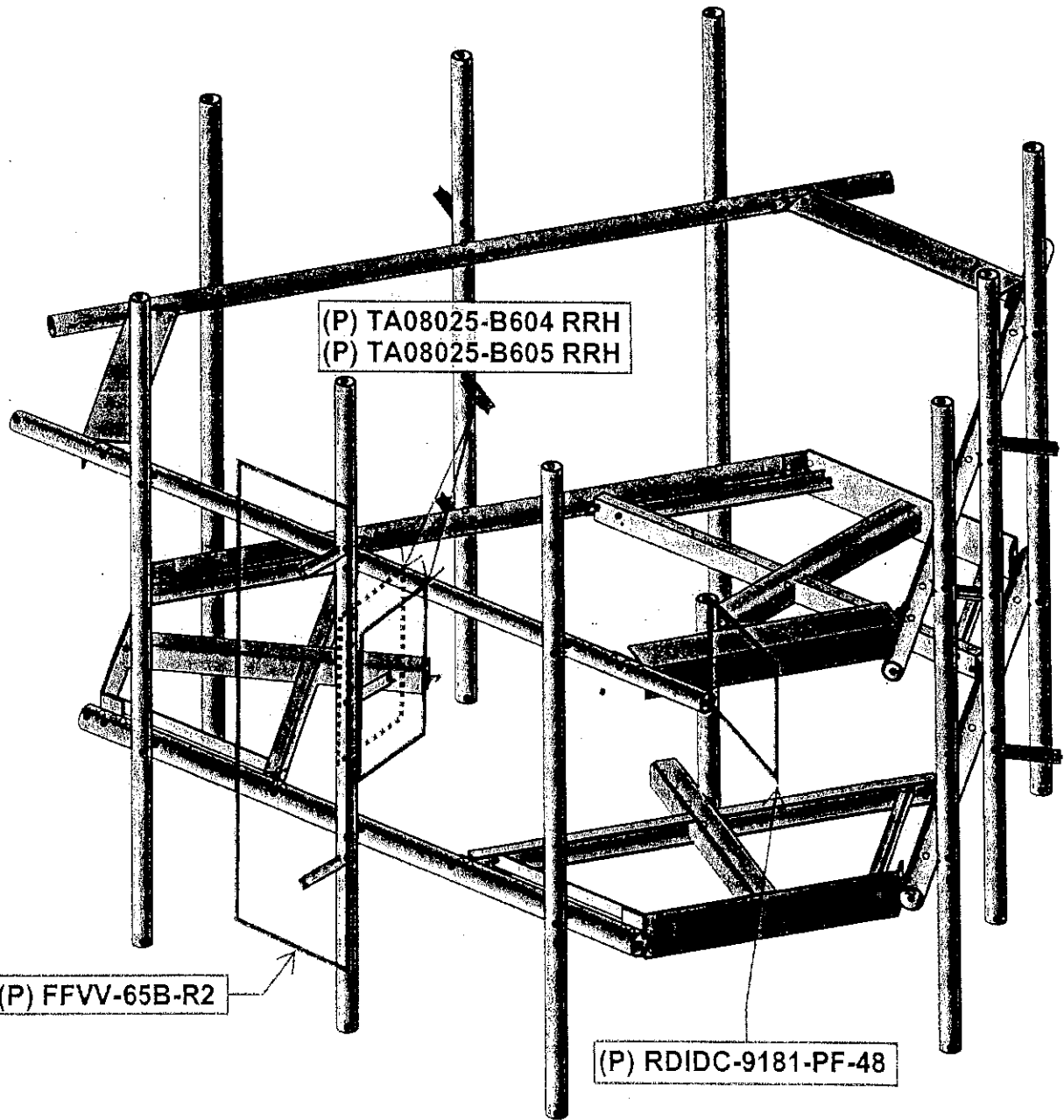
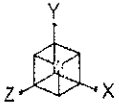
Mounting System (Discrete Appurtenances)

Ev = 0.2S <sub>Ds</sub> * D	0.0512 x D	"D" is the dead weight of the mount members.
Eh = rho * Q <sub>E</sub>	0.13 x W	"W" total weight of structure above ground

Notes:

1. Wind loads govern over Seismic loads

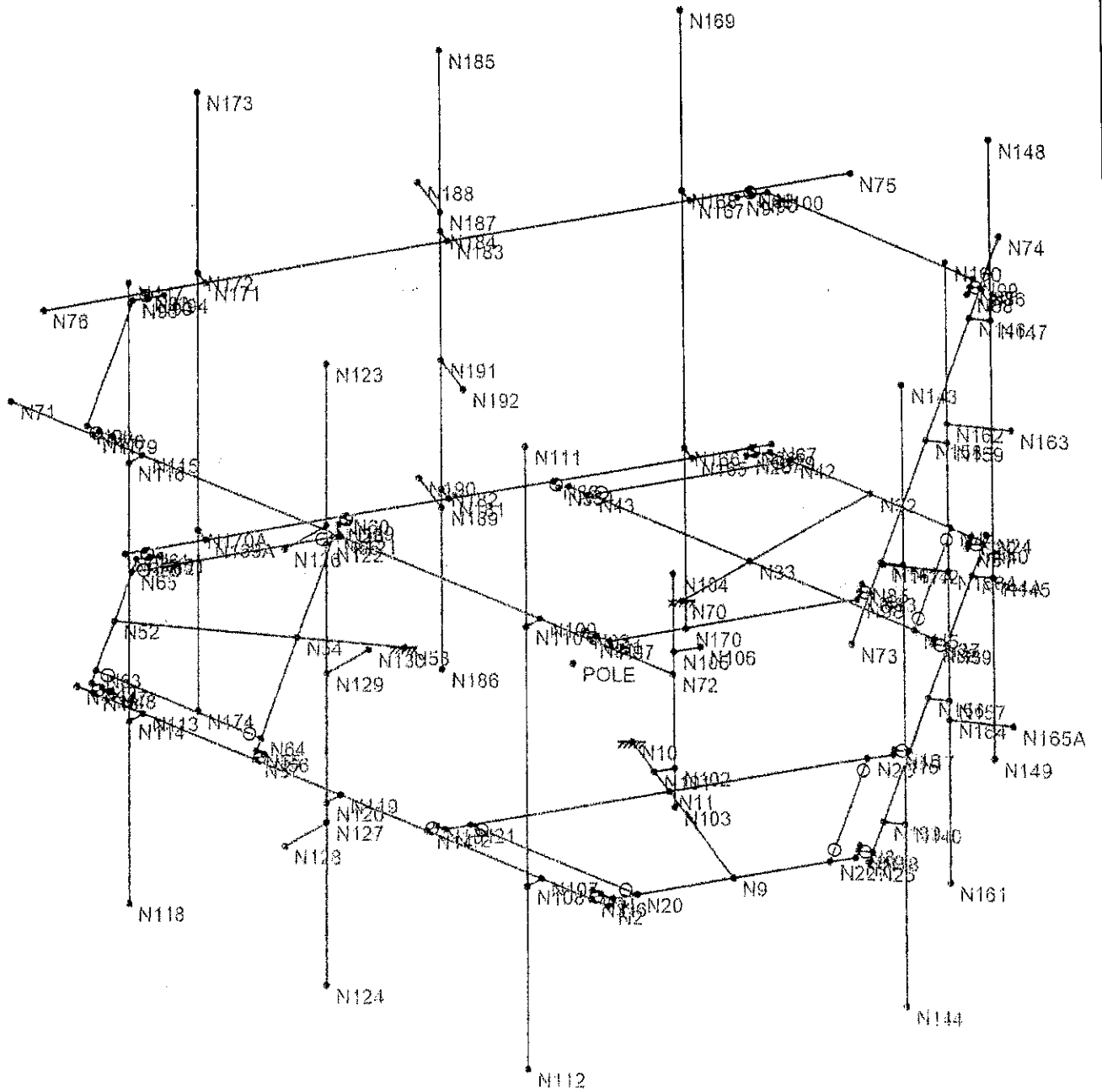
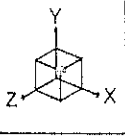
**APPENDIX B**  
**WIRE FRAME AND RENDERED MODELS**



(P) PROPOSED

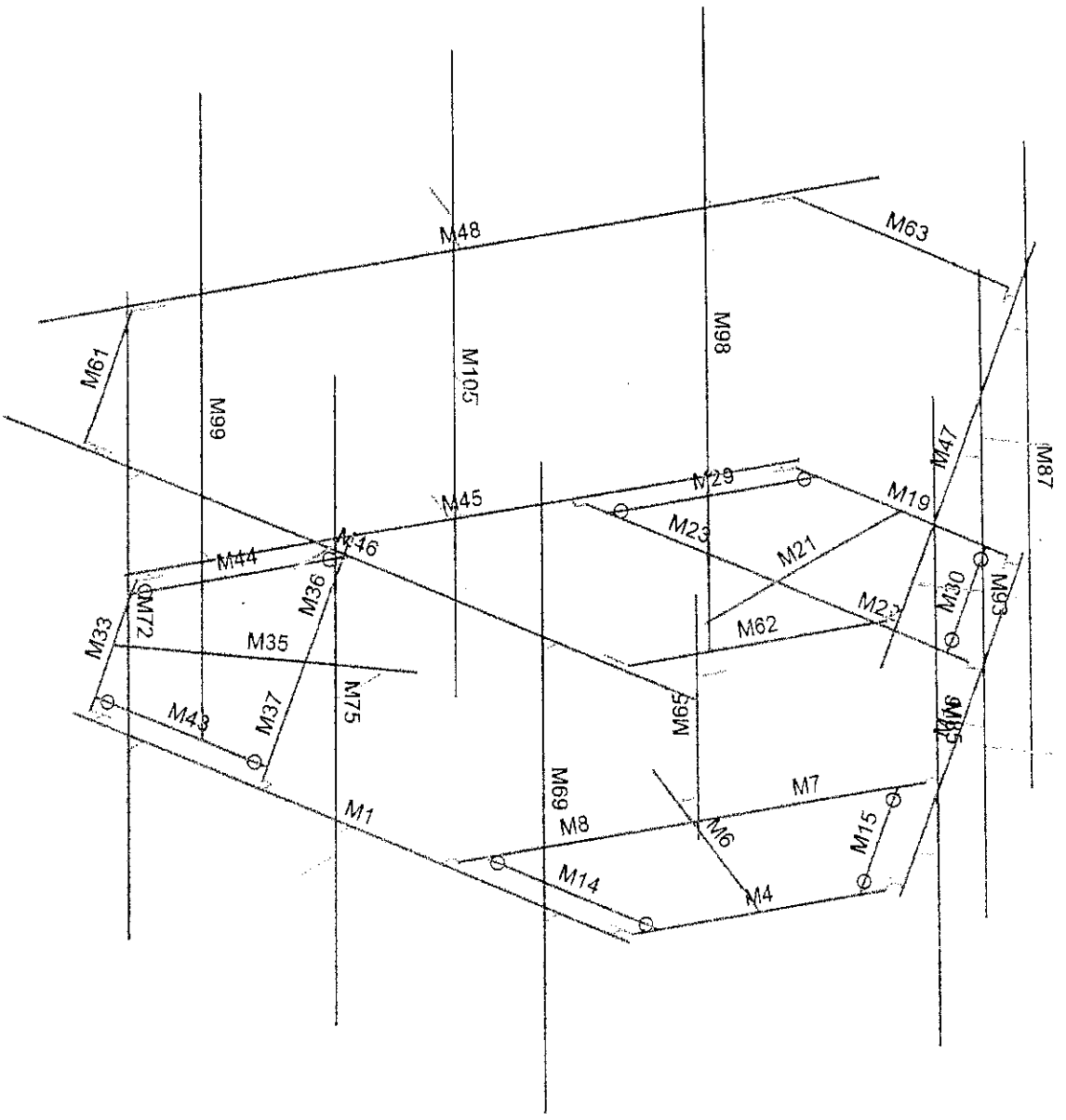
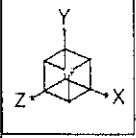
NOTES:  
1) PROPOSED ANTENNAS AND MOUNTING PIPES HAVE BEEN VERTICALLY CENTERED BETWEEN THE PLATFORM AND RAILING (NO OFFSET)  
2) LISTED PROPOSED APPURTENANCES ABOVE ARE TYPICAL FOR ALL SECTORS (EXCEPT FOR THE RDIDC-9181-PF-48)

Envelope Only Solution

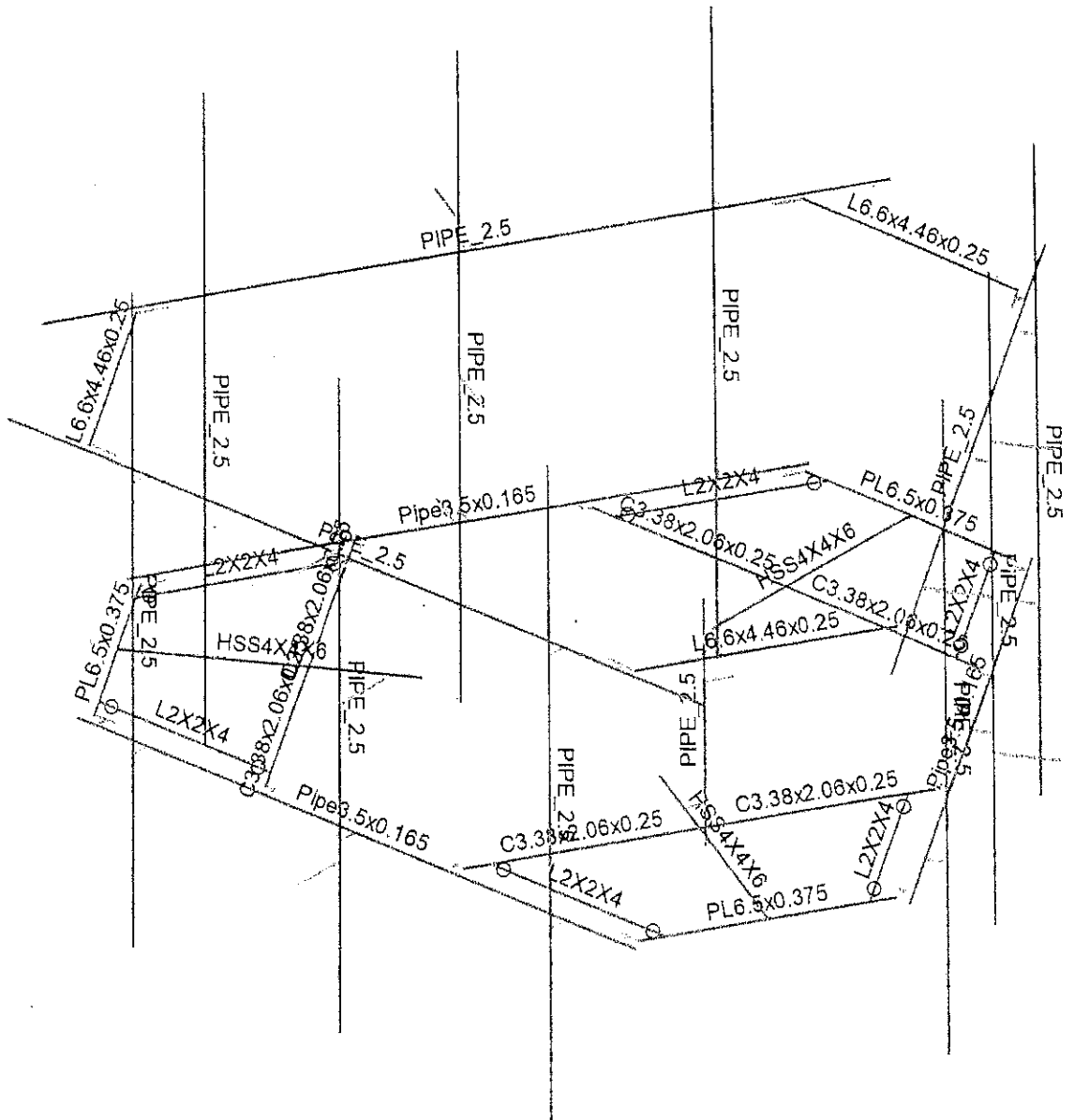
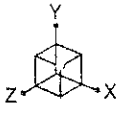


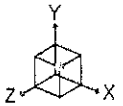
Envelope Only Solution





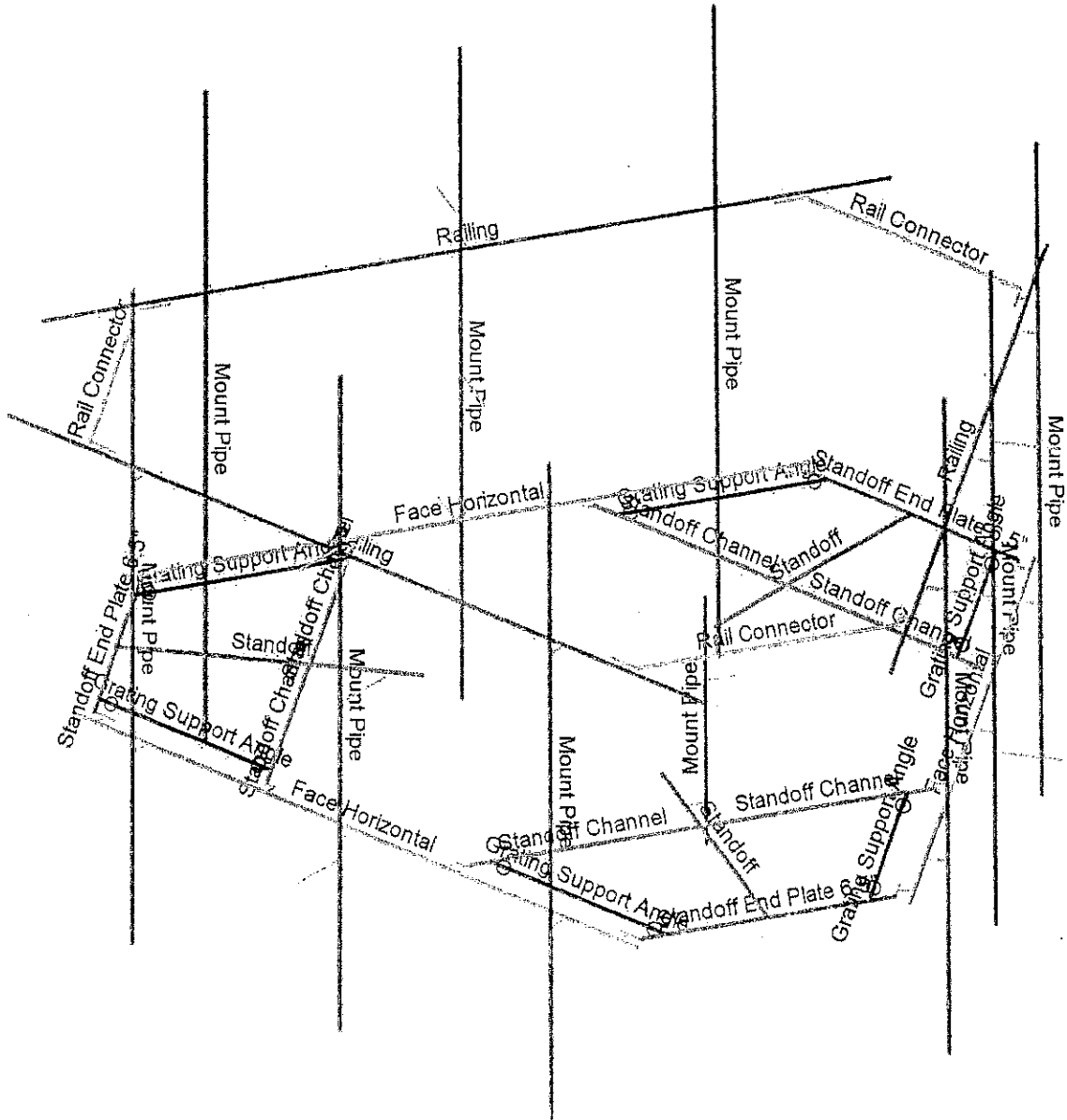
Envelope Only Solution



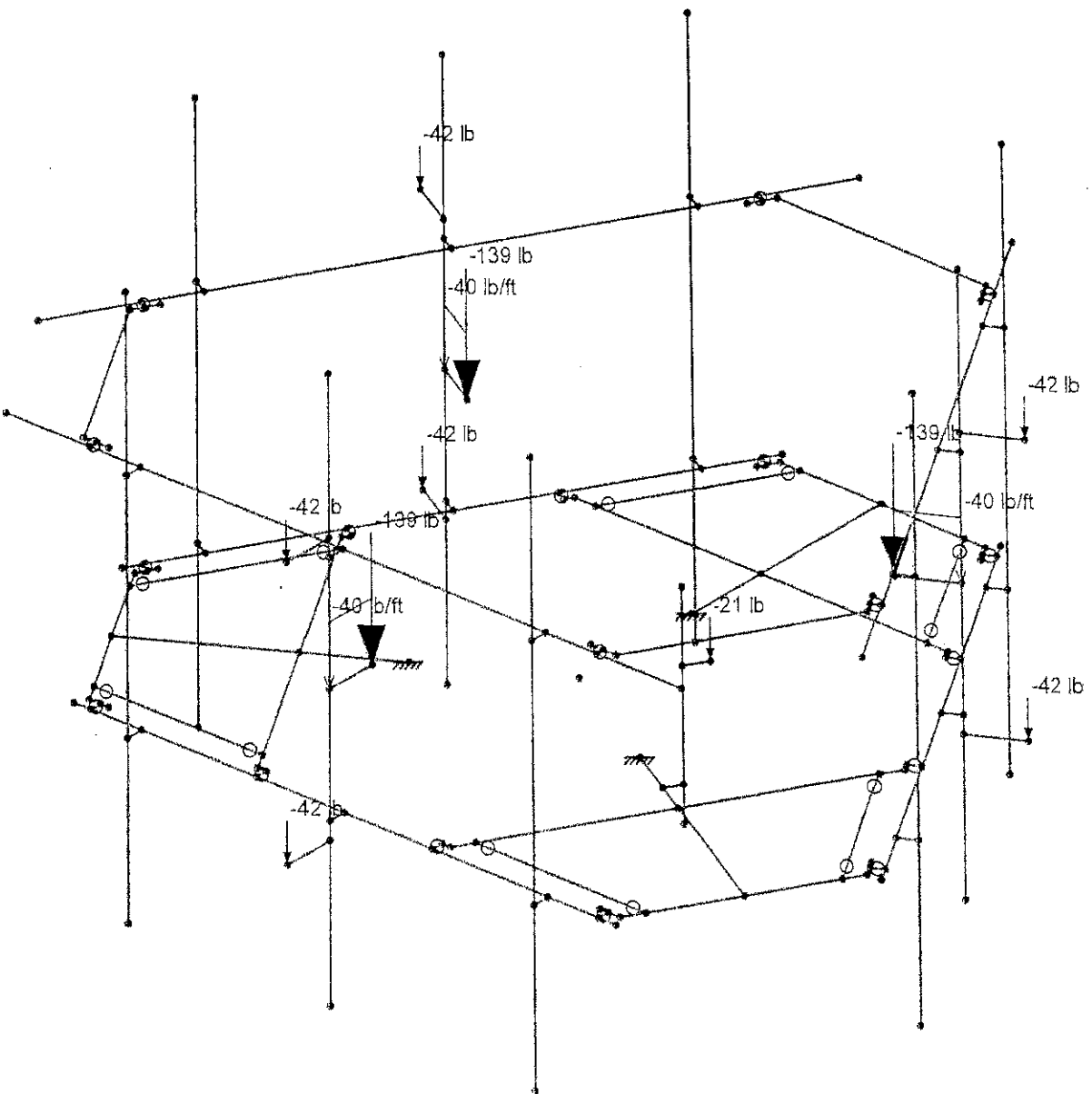
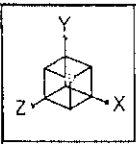


Section Sets

[Pattern]	Standoff End Plate 6.5"
[Pattern]	Standoff End Plate 6"
[Pattern]	Grating Support Angle
[Pattern]	Face Horizontal
[Pattern]	Mount Pipe
[Pattern]	Standoff Channel
[Pattern]	Standoff
[Pattern]	Rail Connector
[Pattern]	Railing
[Pattern]	RIGID



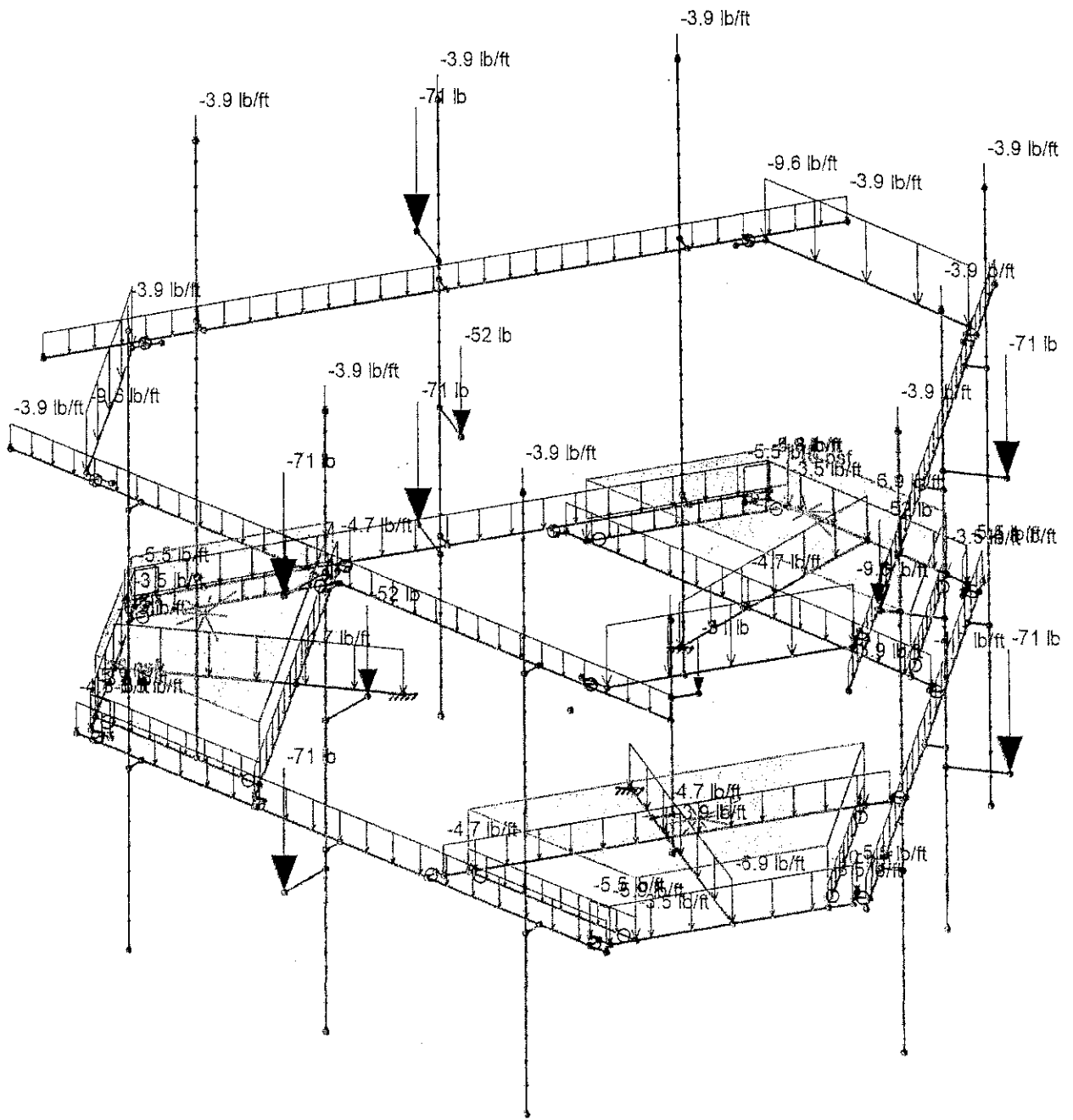
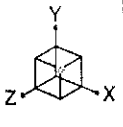
Envelope Only Solution



Loads: BLC 1, DL  
Envelope Only Solution



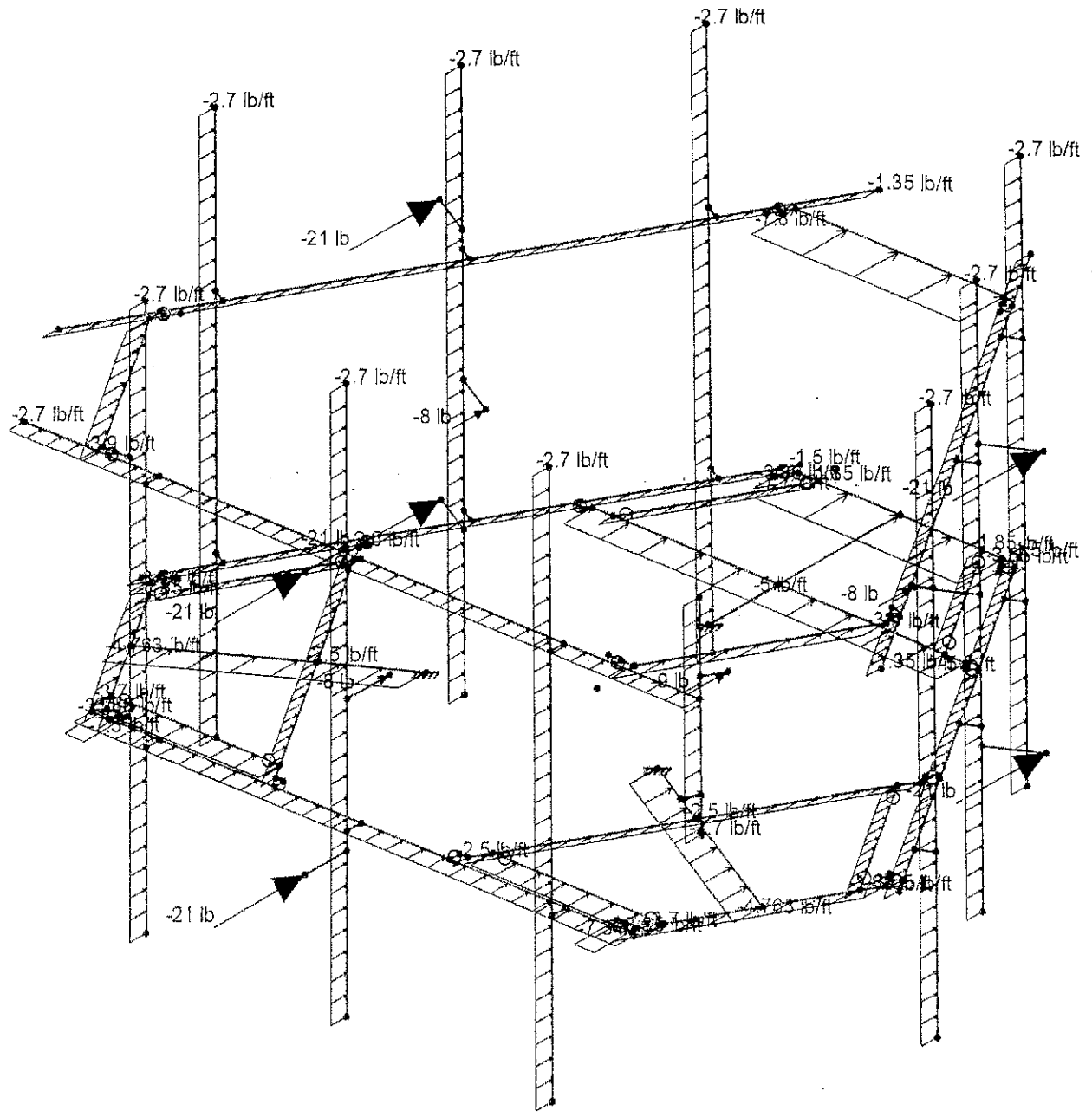
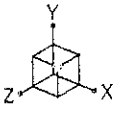




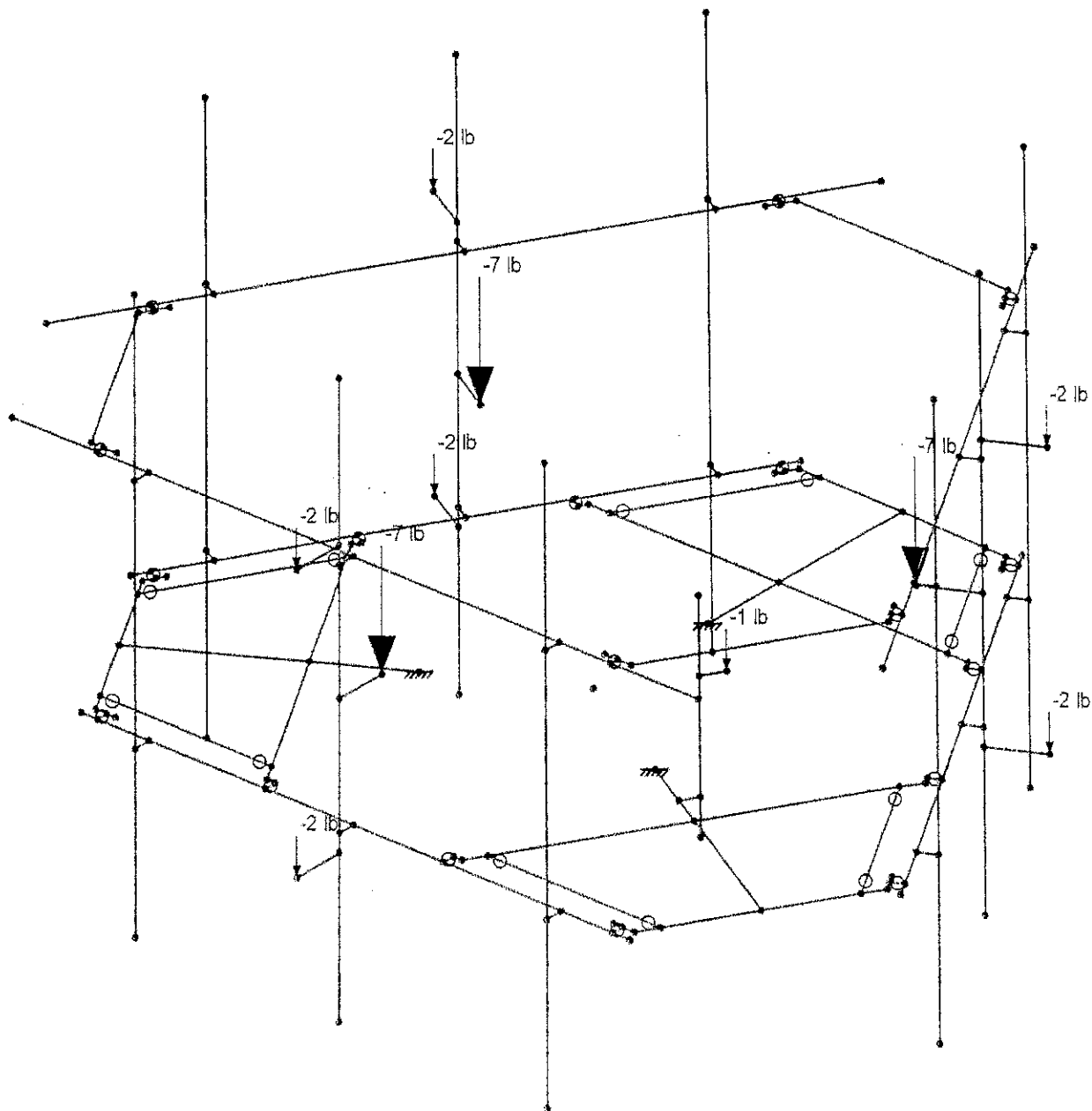
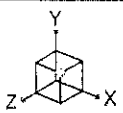
Loads: BLC 4, DLi  
Envelope Only Solution



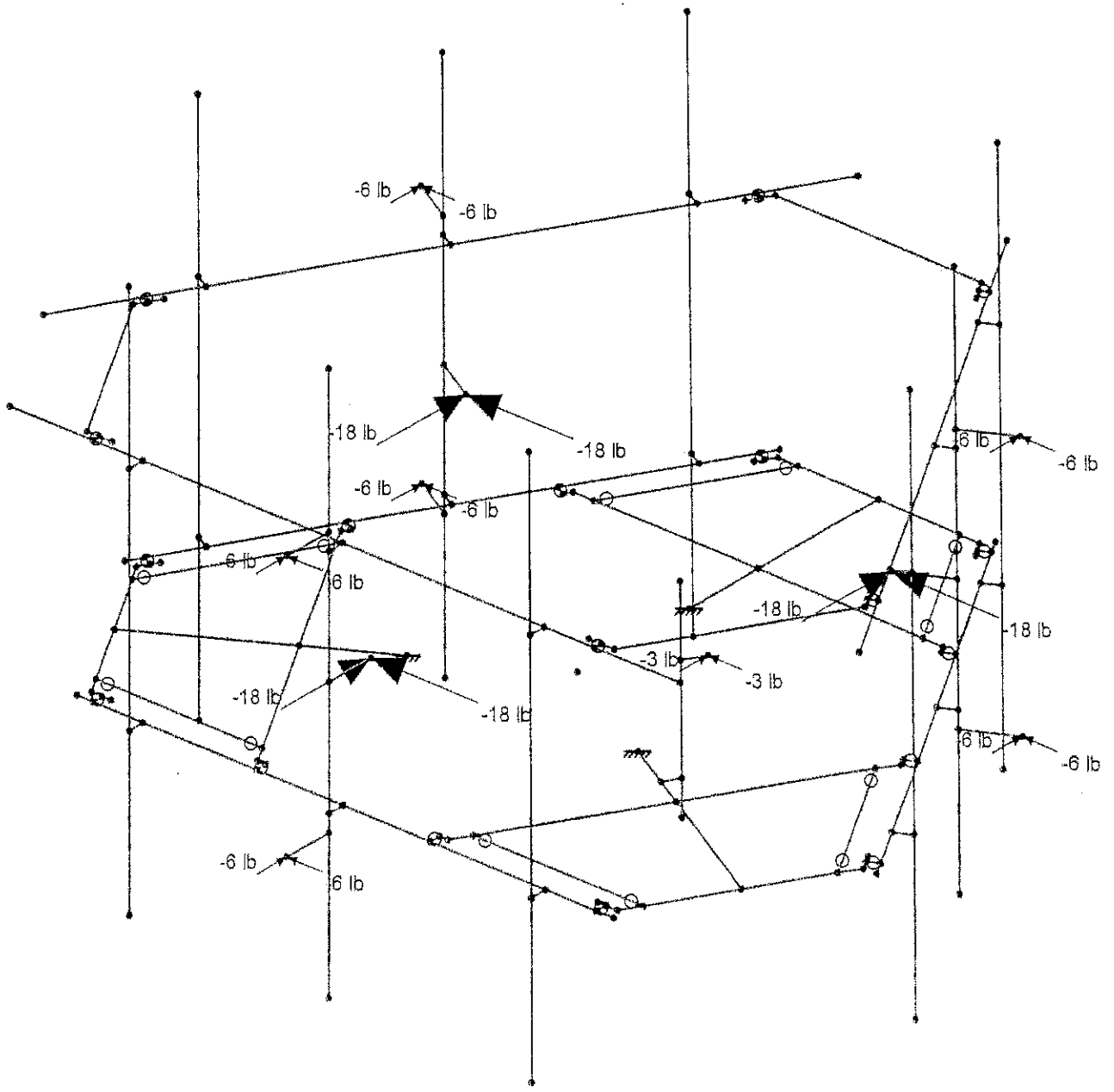
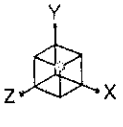




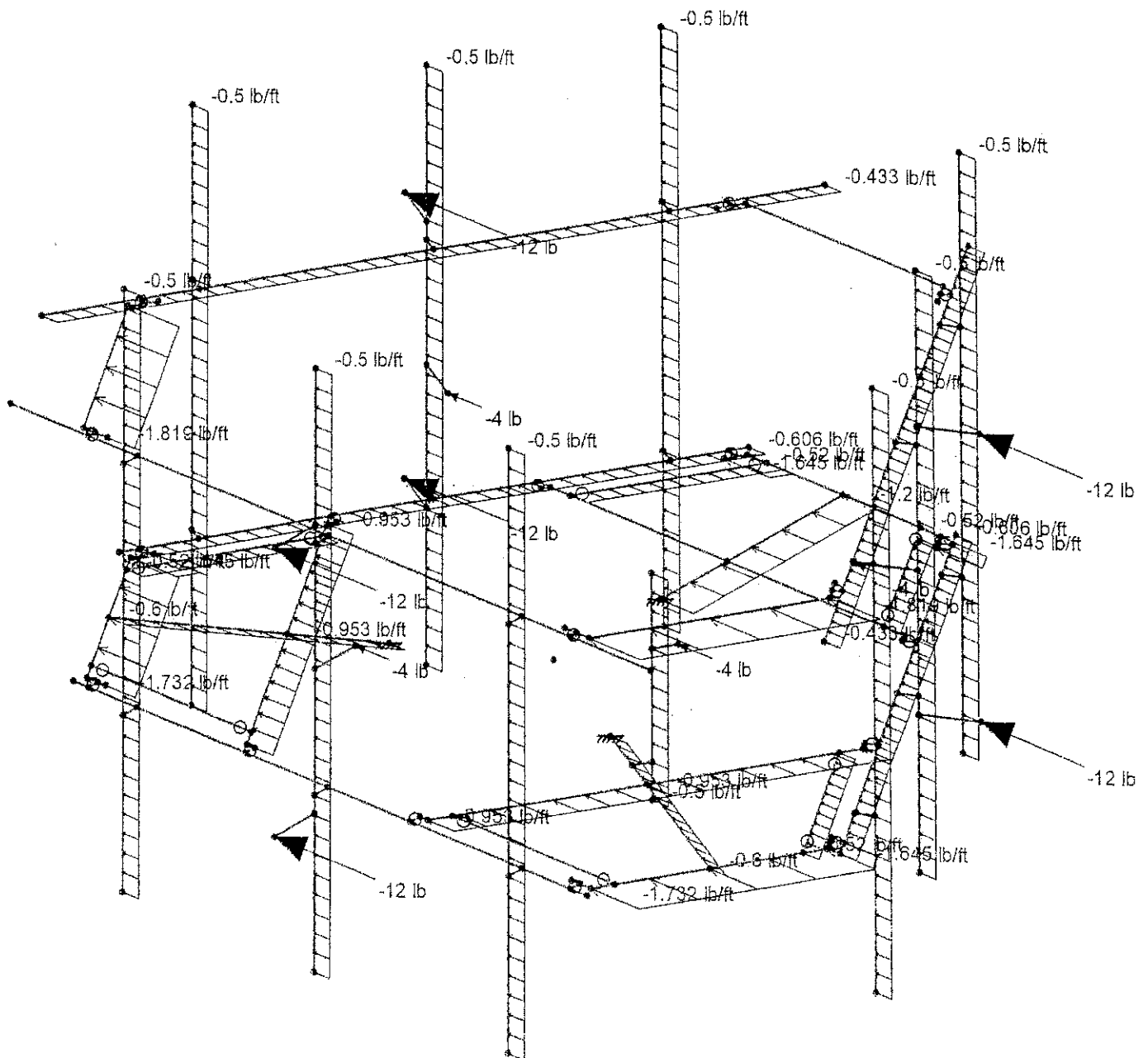
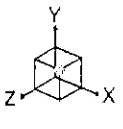
Loads: BLC 6, WLZI  
Envelope Only Solution



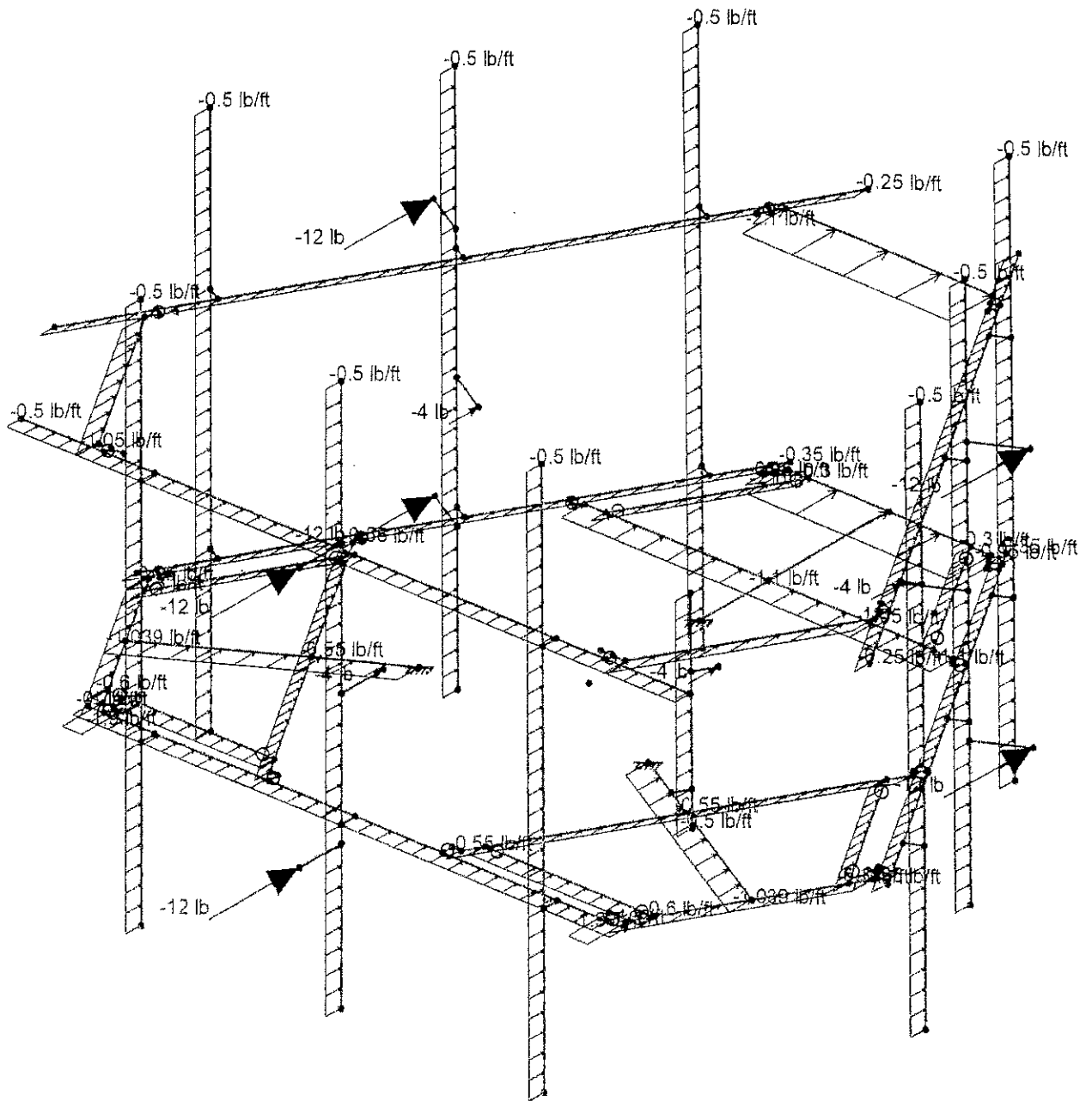
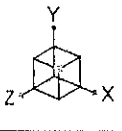
Loads: BLC 7, ELV  
Envelope Only Solution



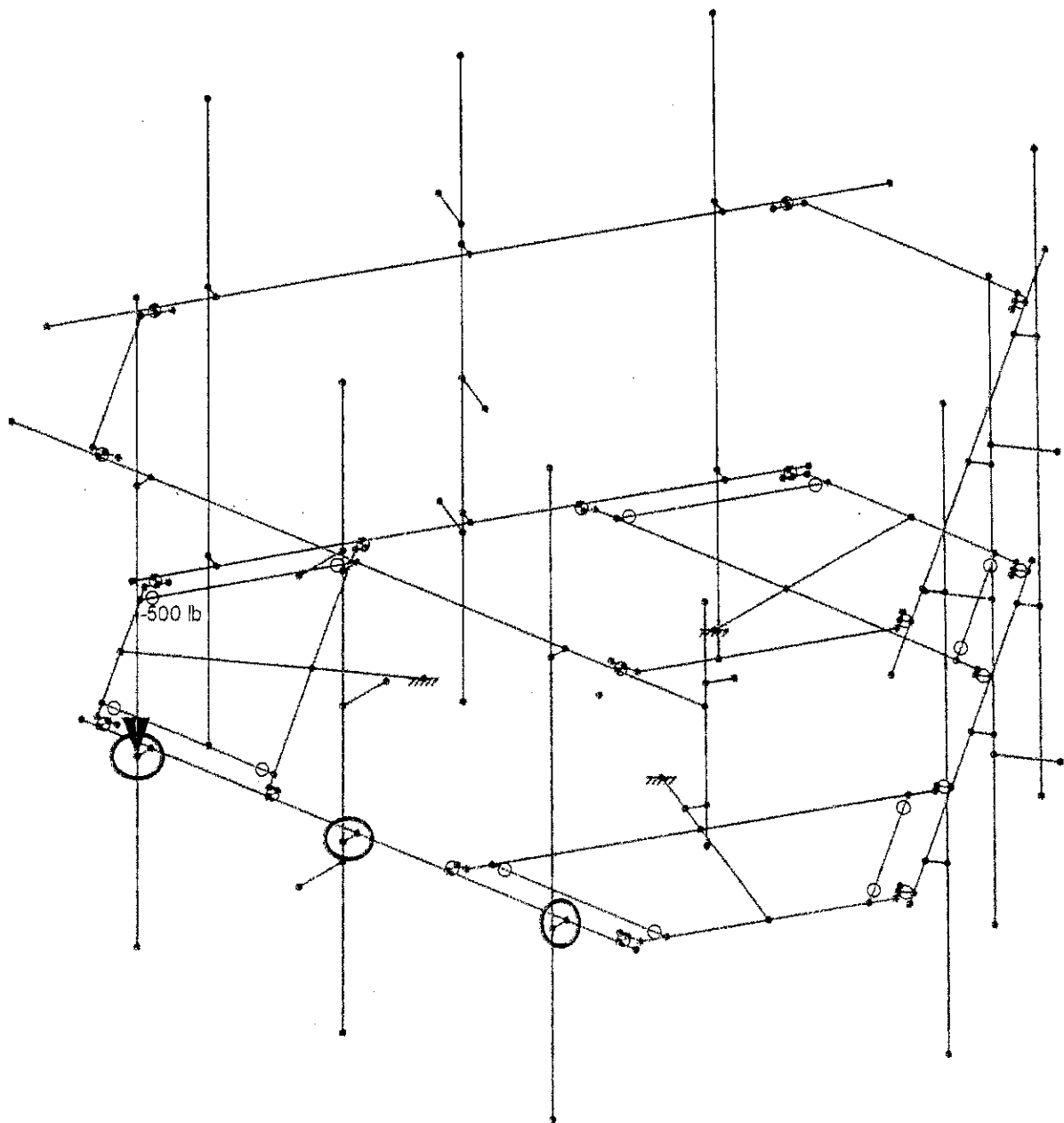
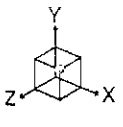
Loads: BLC 8, ELh  
Envelope Only Solution



Loads: BLC 9, WLX (MAINT)  
Envelope Only Solution

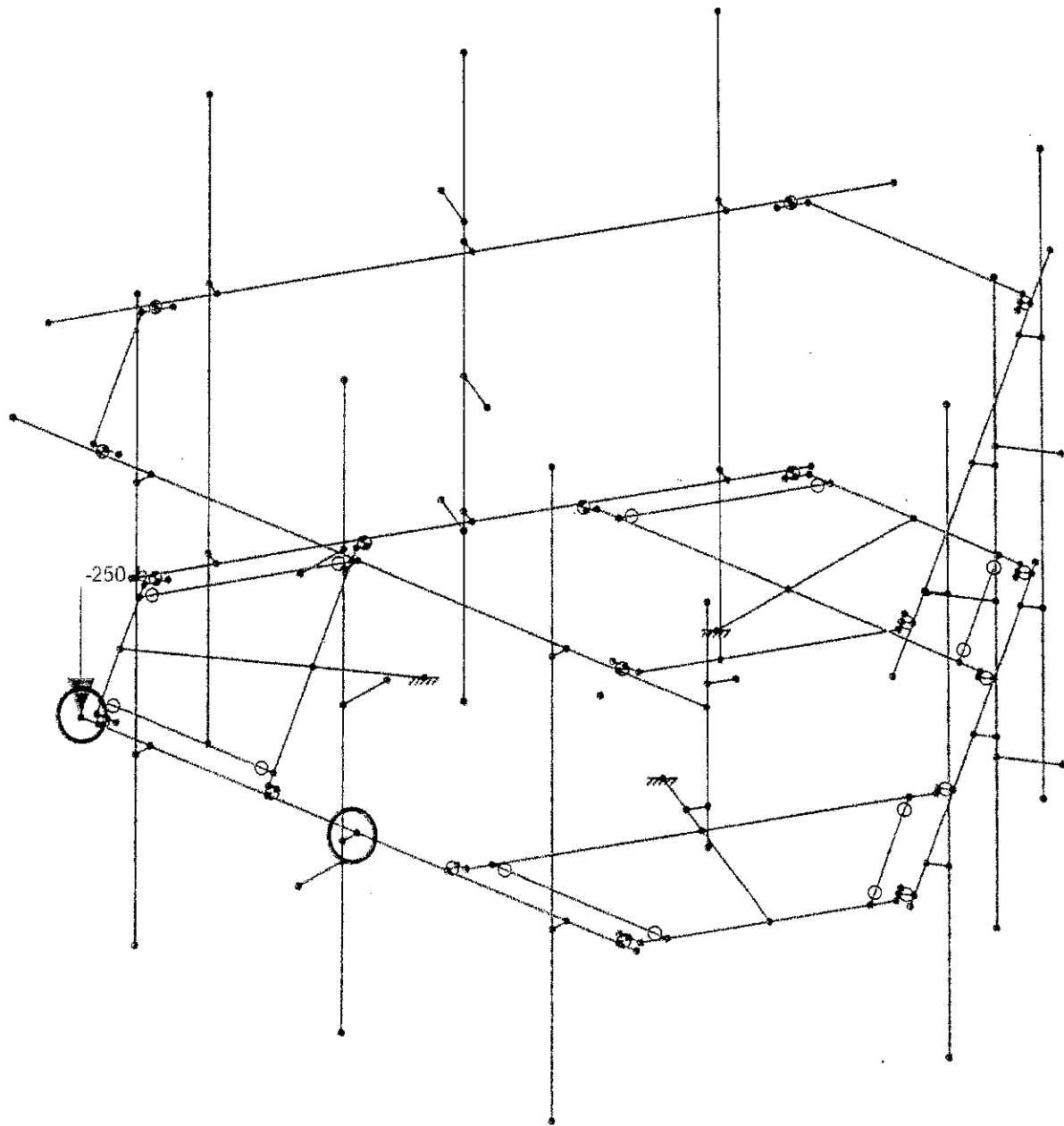
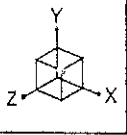


Loads: BLC 10, WLZ (MAINT)  
Envelope Only Solution



500 lbs man load considered, typ of 3

Loads: BLC 11, Lm1  
Envelope Only Solution

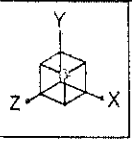


250 lbs vertical load considered, typ of 2

Loads: BLC 14, Lv1  
Envelope Only Solution

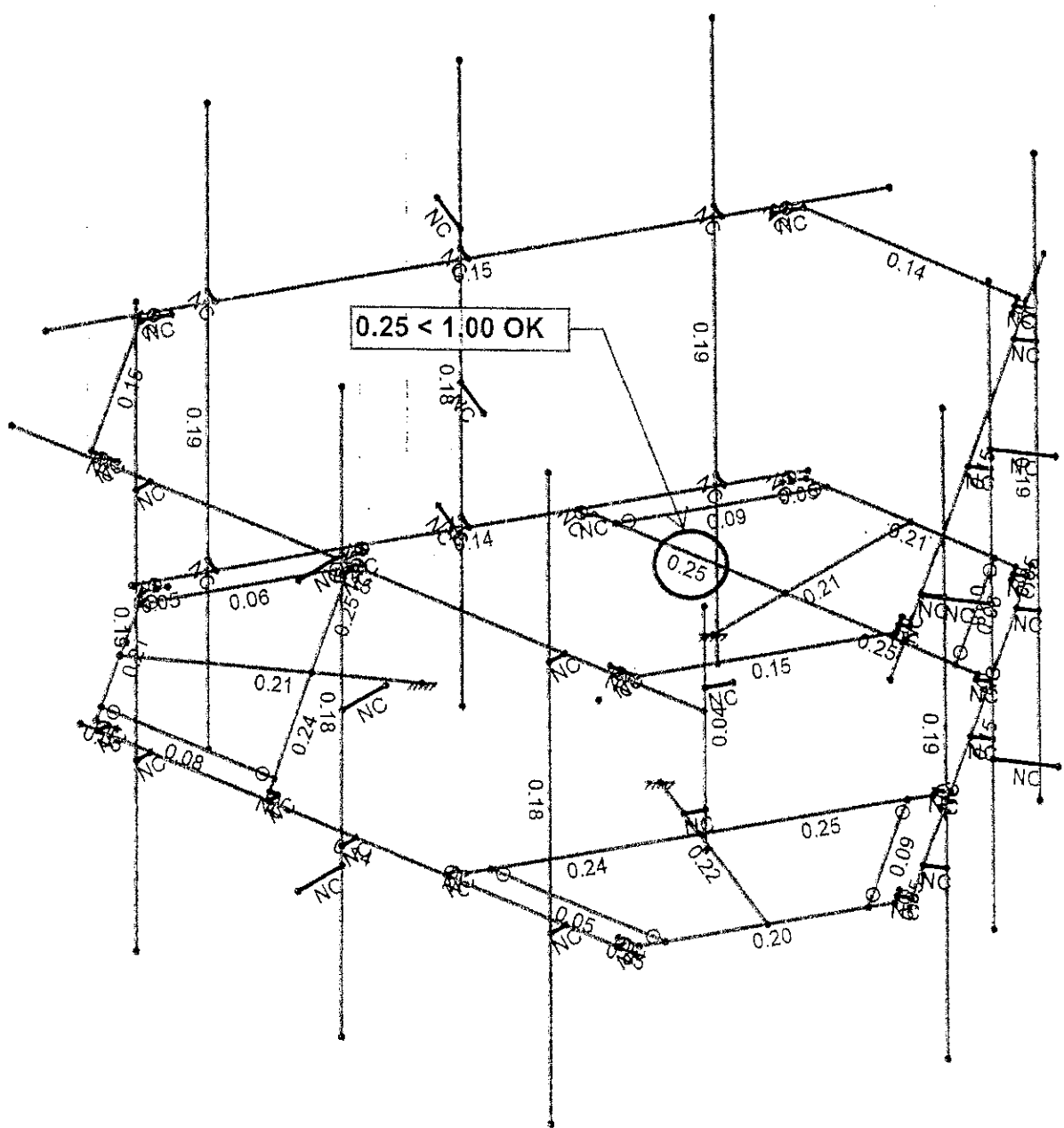
APPENDIX C  
SOFTWARE ANALYSIS OUTPUT



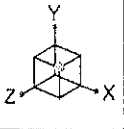


Code Check (Env)

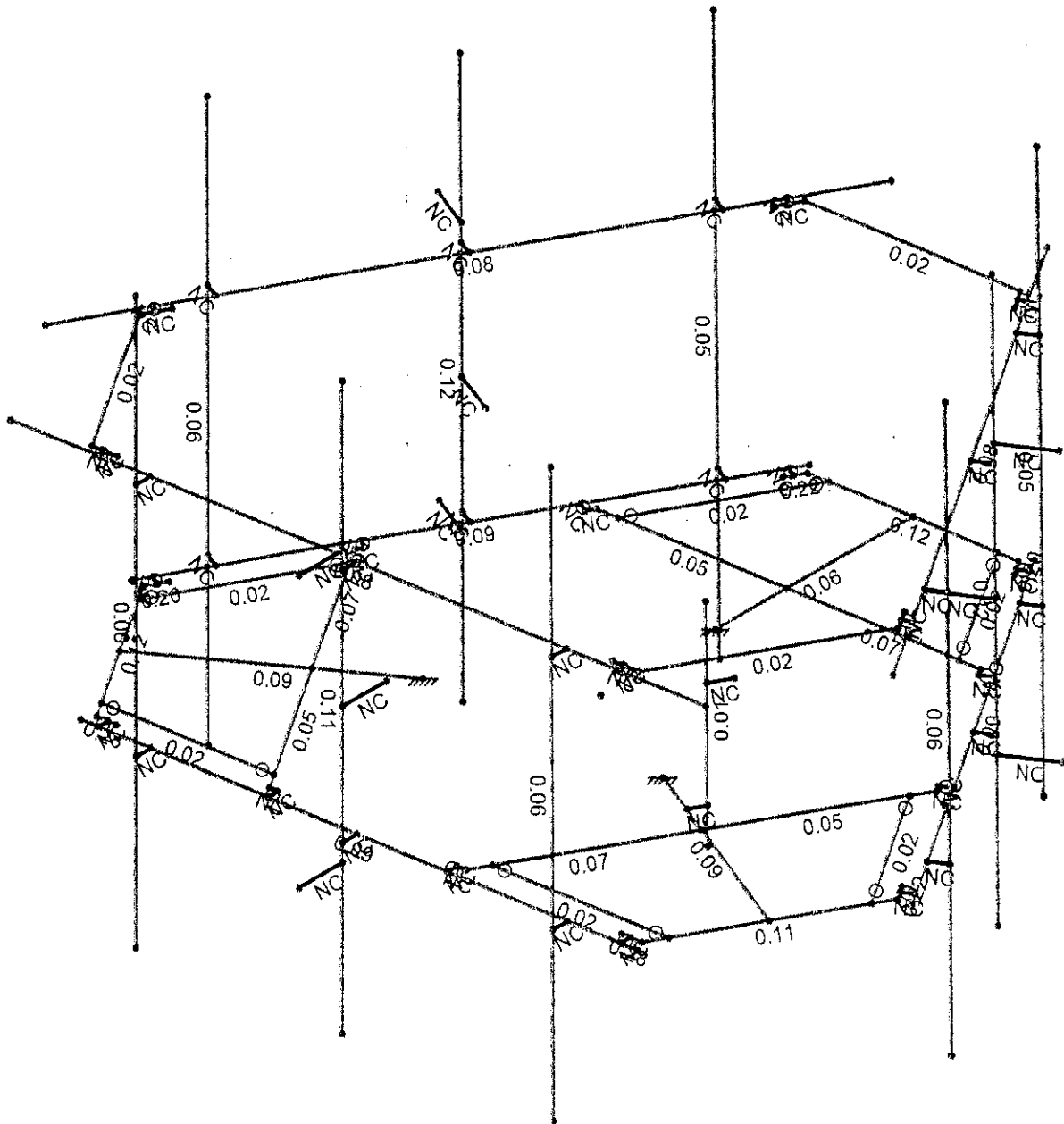
No Calc
> 1.0
.90-1.0
.75-.90
.50-.75
0-.50



Member Code Checks Displayed (Enveloped)  
Envelope Only Solution



Shear Check (Env)	
White	No Calc
Black	> 1.0
Light Gray	.90-1.0
Medium Gray	.75-.90
Dark Gray	.50-.75
Black with diagonal lines	0-.50



Member Shear Checks Displayed (Enveloped)  
Envelope Only Solution



Company : Tectonic Engineering  
 Designer : GLE  
 Job Number : 10710.NJJER01148C  
 Model Name : PROPOSED ANTENNA MOUNT

Checked By : VE

**Hot Rolled Steel Properties**

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

**Hot Rolled Steel Section Sets**

	Label	Shape	Type	Design List	Material	Design Rule Area [in <sup>2</sup> ]	Iyy [in <sup>4</sup> ]	Izz [in <sup>4</sup> ]	J [in <sup>4</sup> ]	
1	Standoff End Plate 6.5"	PL6.5x0.375	Beam	RECT	A36 Gr.36	Typical	2.438	0.029	8.582	0.11
2	Standoff End Plate 6"	Plate 6x.37	Beam	RECT	A36 Gr.36	Typical	2.22	0.025	6.66	0.097
3	Grating Support Angle	L2X2X4	Beam	Single Angle	A36 Gr.36	Typical	0.944	0.346	0.346	0.021
4	Face Horizontal	Pipe3.5x0.165	Beam	Pipe	A53 Gr.B	Typical	1.729	2.409	2.409	4.819
5	Mount Pipe	PIPE 2.5	Column	Pipe	A53 Gr.B	Typical	1.61	1.45	1.45	2.89
6	Standoff Channel	C3.38x2.06x0.25	Beam	Channel	A36 Gr.36	Typical	1.75	0.715	3.026	0.034
7	Standoff	HSS4X4X6	Beam	Square Tube	A500 Gr.B Rect	Typical	4.78	10.3	10.3	17.5
8	Rail Connector	L6.6x4.46x0.25	Beam	Single Angle	A36 Gr.36	Typical	2.703	4.759	12.473	0.055
9	Railing	PIPE 2.5	Beam	Pipe	A53 Gr.B	Typical	1.61	1.45	1.45	2.89
10	OVP Pipe	PIPE 2.5	Beam	Pipe	A53 Gr.B	Typical	1.61	1.45	1.45	2.89

**Basic Load Cases**

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Nodal	Point	Distributed	Area(Member)
1	DL	DL				10		3	
2	WLX	WLX				10		43	
3	WLZ	WLZ				10		43	
4	DLI	OL1				10		43	3
5	WLXI	WLX				10		43	
6	WLZI	WLZ				10		43	
7	ELv	ELY		-0.051		10			
8	ELh	ELZ	-0.13		-0.13	20			
9	WLX (MAINT)	WL+X				10		43	
10	WLZ (MAINT)	WL+Z				10		43	
11	Lm1	OL1				1			
12	Lm2	OL2				1			
13	Lm3	OL3				1			
14	Lv1	OL4					1		
15	Lv2	OL5					1		
16	DL (Strd)	OL6		-1.05					3
17	BLC 4 Transient Area Loads	None						18	
18	BLC 16 Transient Area Loads	None						18	

**Load Combinations**

	Description	Solve P-Delta	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor
1	**LRFD**							
2	1.4D	Yes	Y	1	1.4	16	1.4	
3	1.2D+(WLX+WLZ) - 0 Deg	Yes	Y	1	1.2	2	1	16
4	1.2D+(WLX+WLZ) - 30 Deg	Yes	Y	1	1.2	2	0.866	3
5	1.2D+(WLX+WLZ) - 60 Deg	Yes	Y	1	1.2	2	0.5	3
6	1.2D+(WLX+WLZ) - 90 Deg	Yes	Y	1	1.2	2		3
7	1.2D+(WLX+WLZ) - 120 Deg	Yes	Y	1	1.2	2	-0.5	3



Company : Tectonic Engineering  
 Designer : GLE  
 Job Number : 10710.NJJER01148C  
 Model Name : PROPOSED ANTENNA MOUNT

Checked By : VE

**Load Combinations (Continued)**

	Description	Solve	P-Delta	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor
8	1.2D+(WLX+WLZ) - 150 Deg	Yes	Y	1	1.2	2	-0.866	3	0.5	16	1.2		
9	1.2D+(WLX+WLZ) - 180 Deg	Yes	Y	1	1.2	2	-1	3		16	1.2		
10	1.2D+(WLX+WLZ) - 210 Deg	Yes	Y	1	1.2	2	-0.866	3	-0.5	16	1.2		
11	1.2D+(WLX+WLZ) - 240 Deg	Yes	Y	1	1.2	2	-0.5	3	-0.866	16	1.2		
12	1.2D+(WLX+WLZ) - 270 Deg	Yes	Y	1	1.2	2		3	-1	16	1.2		
13	1.2D+(WLX+WLZ) - 300 Deg	Yes	Y	1	1.2	2	0.5	3	-0.866	16	1.2		
14	1.2D+(WLX+WLZ) - 330 Deg	Yes	Y	1	1.2	2	0.866	3	-0.5	16	1.2		
15	**Wind Load with Ice**												
16	1.2D+1.0Di+1.0(WLXi+WLZi) - 0 Deg	Yes	Y	1	1.2	4	1	5	1	6		16	1.2
17	1.2D+1.0Di+1.0(WLXi+WLZi) - 30 Deg	Yes	Y	1	1.2	4	1	5	0.866	6	-0.5	16	1.2
18	1.2D+1.0Di+1.0(WLXi+WLZi) - 60 Deg	Yes	Y	1	1.2	4	1	5	0.5	6	0.866	16	1.2
19	1.2D+1.0Di+1.0(WLXi+WLZi) - 90 Deg	Yes	Y	1	1.2	4	1	5		6	1	16	1.2
20	1.2D+1.0Di+1.0(WLXi+WLZi) - 120 Deg	Yes	Y	1	1.2	4	1	5	-0.5	6	0.866	16	1.2
21	1.2D+1.0Di+1.0(WLXi+WLZi) - 150 Deg	Yes	Y	1	1.2	4	1	5	-0.866	6	0.5	16	1.2
22	1.2D+1.0Di+1.0(WLXi+WLZi) - 180 Deg	Yes	Y	1	1.2	4	1	5	-1	6		16	1.2
23	1.2D+1.0Di+1.0(WLXi+WLZi) - 210 Deg	Yes	Y	1	1.2	4	1	5	-0.866	6	-0.5	16	1.2
24	1.2D+1.0Di+1.0(WLXi+WLZi) - 240 Deg	Yes	Y	1	1.2	4	1	5	-0.5	6	-0.866	16	1.2
25	1.2D+1.0Di+1.0(WLXi+WLZi) - 270 Deg	Yes	Y	1	1.2	4	1	5		6	-1	16	1.2
26	1.2D+1.0Di+1.0(WLXi+WLZi) - 300 Deg	Yes	Y	1	1.2	4	1	5	0.5	6	-0.866	16	1.2
27	1.2D+1.0Di+1.0(WLXi+WLZi) - 330 Deg	Yes	Y	1	1.2	4	1	5	0.866	6	-0.5	16	1.2
28	**Seismic Load**												
29	1.2D+ELV+ELh	Yes	Y	1	1.2	7	1	8	1	16	1.2		
30	**Maintenance Load (With Service Load)** Location 1												
31	1.2D+1.5Lm1+1.0WLX (service)	Yes	Y	1	1.2	11	1.5	9	1	10		16	1.2
32	1.2D+1.5Lm1+1.0WLZ (service)	Yes	Y	1	1.2	11	1.5	9		10	1	16	1.2
33	1.2D+1.5Lm1+1.0(WLX+WLZ, Service) - 0 Deg	Yes	Y	1	1.2	11	1.5	9	1	10		16	1.2
34	1.2D+1.5Lm1+1.0(WLX+WLZ, Service) - 30 Deg	Yes	Y	1	1.2	11	1.5	9	0.87	10	0.5	16	1.2
35	1.2D+1.5Lm1+1.0(WLX+WLZ, Service) - 60 Deg	Yes	Y	1	1.2	11	1.5	9	0.5	10	0.87	16	1.2
36	1.2D+1.5Lm1+1.0(WLX+WLZ, Service) - 90 Deg	Yes	Y	1	1.2	11	1.5	9		10	1	16	1.2
37	1.2D+1.5Lm1+1.0(WLX+WLZ, Service) - 120 Deg	Yes	Y	1	1.2	11	1.5	9	-0.5	10	0.87	16	1.2
38	1.2D+1.5Lm1+1.0(WLX+WLZ, Service) - 150 Deg	Yes	Y	1	1.2	11	1.5	9	-0.87	10	0.5	16	1.2
39	1.2D+1.5Lm1+1.0(WLX+WLZ, Service) - 180 Deg	Yes	Y	1	1.2	11	1.5	9	-1	10		16	1.2
40	1.2D+1.5Lm1+1.0(WLX+WLZ, Service) - 210 Deg	Yes	Y	1	1.2	11	1.5	9	-0.87	10	-0.5	16	1.2
41	1.2D+1.5Lm1+1.0(WLX+WLZ, Service) - 240 Deg	Yes	Y	1	1.2	11	1.5	9	-0.5	10	-0.87	16	1.2
42	1.2D+1.5Lm1+1.0(WLX+WLZ, Service) - 270 Deg	Yes	Y	1	1.2	11	1.5	9		10	-1	16	1.2
43	1.2D+1.5Lm1+1.0(WLX+WLZ, Service) - 300 Deg	Yes	Y	1	1.2	11	1.5	9	0.5	10	-0.87	16	1.2
44	1.2D+1.5Lm1+1.0(WLX+WLZ, Service) - 330 Deg	Yes	Y	1	1.2	11	1.5	9	0.87	10	-0.5	16	1.2
45	**Maintenance Load (With Service Load)** Location 2												
46	1.2D+1.5Lm2+1.0WLX (service)	Yes	Y	1	1.2	12	1.5	9	1	10		16	1.2
47	1.2D+1.5Lm2+1.0WLZ (service)	Yes	Y	1	1.2	12	1.5	9		10	1	16	1.2
48	1.2D+1.5Lm2+1.0(WLX+WLZ, Service) - 0 Deg	Yes	Y	1	1.2	12	1.5	9	1	10		16	1.2
49	1.2D+1.5Lm2+1.0(WLX+WLZ, Service) - 30 Deg	Yes	Y	1	1.2	12	1.5	9	0.87	10	0.5	16	1.2
50	1.2D+1.5Lm2+1.0(WLX+WLZ, Service) - 60 Deg	Yes	Y	1	1.2	12	1.5	9	0.5	10	0.87	16	1.2
51	1.2D+1.5Lm2+1.0(WLX+WLZ, Service) - 90 Deg	Yes	Y	1	1.2	12	1.5	9		10	1	16	1.2
52	1.2D+1.5Lm2+1.0(WLX+WLZ, Service) - 120 Deg	Yes	Y	1	1.2	12	1.5	9	-0.5	10	0.87	16	1.2
53	1.2D+1.5Lm2+1.0(WLX+WLZ, Service) - 150 Deg	Yes	Y	1	1.2	12	1.5	9	-0.87	10	0.5	16	1.2
54	1.2D+1.5Lm2+1.0(WLX+WLZ, Service) - 180 Deg	Yes	Y	1	1.2	12	1.5	9	-1	10		16	1.2
55	1.2D+1.5Lm2+1.0(WLX+WLZ, Service) - 210 Deg	Yes	Y	1	1.2	12	1.5	9	-0.87	10	-0.5	16	1.2
56	1.2D+1.5Lm2+1.0(WLX+WLZ, Service) - 240 Deg	Yes	Y	1	1.2	12	1.5	9	-0.5	10	-0.87	16	1.2
57	1.2D+1.5Lm2+1.0(WLX+WLZ, Service) - 270 Deg	Yes	Y	1	1.2	12	1.5	9		10	-1	16	1.2
58	1.2D+1.5Lm2+1.0(WLX+WLZ, Service) - 300 Deg	Yes	Y	1	1.2	12	1.5	9	0.5	10	-0.87	16	1.2
59	1.2D+1.5Lm2+1.0(WLX+WLZ, Service) - 330 Deg	Yes	Y	1	1.2	12	1.5	9	0.87	10	-0.5	16	1.2
60	**Maintenance Load (With Service Load)** Location 3												
61	1.2D+1.5Lm3+1.0WLX (service)	Yes	Y	1	1.2	13	1.5	9	1	10		16	1.2
62	1.2D+1.5Lm3+1.0WLZ (service)	Yes	Y	1	1.2	13	1.5	9		10	1	16	1.2



Company : Tectonic Engineering  
 Designer : GLE  
 Job Number : 10710.NJJER01148C  
 Model Name : PROPOSED ANTENNA MOUNT

Checked By : VE

**Load Combinations (Continued)**

Description	Solve	P-Delta	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor	BLC Factor		
63 1.2D+1.5Lm3+1.0(WLX+WLZ, Service) - 0 Deg	Yes	Y	1	1.2	13	1.5	9	1	10	16	1.2	
64 1.2D+1.5Lm3+1.0(WLX+WLZ, Service) - 30 Deg	Yes	Y	1	1.2	13	1.5	9	0.87	10	0.5	16	1.2
65 1.2D+1.5Lm3+1.0(WLX+WLZ, Service) - 60 Deg	Yes	Y	1	1.2	13	1.5	9	0.5	10	0.87	16	1.2
66 1.2D+1.5Lm3+1.0(WLX+WLZ, Service) - 90 Deg	Yes	Y	1	1.2	13	1.5	9		10	1	16	1.2
67 1.2D+1.5Lm3+1.0(WLX+WLZ, Service) - 120 Deg	Yes	Y	1	1.2	13	1.5	9	-0.5	10	0.87	16	1.2
68 1.2D+1.5Lm3+1.0(WLX+WLZ, Service) - 150 Deg	Yes	Y	1	1.2	13	1.5	9	-0.87	10	0.5	16	1.2
69 1.2D+1.5Lm3+1.0(WLX+WLZ, Service) - 180 Deg	Yes	Y	1	1.2	13	1.5	9	1	10		16	1.2
70 1.2D+1.5Lm3+1.0(WLX+WLZ, Service) - 210 Deg	Yes	Y	1	1.2	13	1.5	9	-0.87	10	-0.5	16	1.2
71 1.2D+1.5Lm3+1.0(WLX+WLZ, Service) - 240 Deg	Yes	Y	1	1.2	13	1.5	9	-0.5	10	-0.87	16	1.2
72 1.2D+1.5Lm3+1.0(WLX+WLZ, Service) - 270 Deg	Yes	Y	1	1.2	13	1.5	9		10	-1	16	1.2
73 1.2D+1.5Lm3+1.0(WLX+WLZ, Service) - 300 Deg	Yes	Y	1	1.2	13	1.5	9	0.5	10	-0.87	16	1.2
74 1.2D+1.5Lm3+1.0(WLX+WLZ, Service) - 330 Deg	Yes	Y	1	1.2	13	1.5	9	0.87	10	-0.5	16	1.2
75 ***Max Vertical Load***		Y										
76 1.2D+1.5Lv1	Yes	Y	1	1.2	14	1.5	16	1.2				
77 1.2D+1.5Lv2	Yes	Y	1	1.2	15	1.5	16	1.2				

**Envelope Node Reactions**

Node Label	X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1 N10 max	985.712	14	1725.107	70	1490.991	7	0.294	3	1.718	13	3.661	10
2 min	-984.506	8	245.546	4	-1487.506	13	-2.938	69	-1.712	7	-0.344	4
3 N53 max	881.621	4	1678.895	44	1412.172	5	0.301	9	1.653	5	0.272	8
4 min	-885.973	10	197.394	8	-1414.185	11	-2.939	31	-1.646	11	-3.511	14
5 N70 max	1542.366	3	1626.081	6	446.362	6	4.125	6	1.512	9	0.625	3
6 min	-1539.247	9	177.655	12	-452.469	12	-0.383	12	-1.506	3	-0.624	9
7 Totals max	3105.34	3	4475.366	25	3231.143	6						
8 min	-3105.34	9	2749.756	6	-3231.143	12						

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

Member	Shape	Code Check	Loc [ft]	LC	Shear	Check	Loc [ft]	Dir	Lo	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [k-ft]	phi*Mn z-z [k-ft]	Cb	Eqn
1 M22	C3.38x2.06x0.25	0.255	2.75	6	0.072	0.286	z	11	47760.074	56700	2.203	5.752	1.62	H1-1b	
2 M23	C3.38x2.06x0.25	0.255	0	6	0.054	2.464	z	7	47760.074	56700	2.203	5.752	1.666	H1-1b	
3 M7	C3.38x2.06x0.25	0.252	0	10	0.053	2.464	z	11	47760.074	56700	2.203	5.752	1.667	H1-1b	
4 M36	C3.38x2.06x0.25	0.252	2.75	14	0.072	0.286	z	7	47760.074	56700	2.203	5.752	1.619	H1-1b	
5 M8	C3.38x2.06x0.25	0.243	2.75	10	0.065	0.286	z	3	47760.074	56700	2.203	5.752	1.622	H1-1b	
6 M37	C3.38x2.06x0.25	0.242	0	14	0.048	2.464	z	14	47760.074	56700	2.203	5.752	1.665	H1-1b	
7 M6	HSS4X4X6	0.218	3.417	11	0.091	2.634	y	68	187775.062	197892	22.046	22.046	1.935	H1-1b	
8 M19	PL6.5x0.375	0.214	1.5	5	0.118	3	y	11	4979.135	78975	0.617	8.942	1.364	H1-1b	
9 M35	HSS4X4X6	0.212	3.417	13	0.091	3.417	y	34	187775.062	197892	22.046	22.046	1.888	H1-1b	
10 M21	HSS4X4X6	0.21	3.417	5	0.063	3.417	z	3	187775.062	197892	22.046	22.046	1.885	H1-1b	
11 M33	PL6.5x0.375	0.21	1.5	13	0.118	3	y	7	4979.135	78975	0.617	8.975	1.369	H1-1b	
12 M4	PL6.5x0.375	0.204	1.5	11	0.108	0	y	3	4979.135	78975	0.617	8.953	1.365	H1-1b	
13 M87	PIPE 2.5	0.186	5.667	5	0.054	5.667	3	30038.461	50715	3.596	3.596	1	H1-1b		
14 M99	PIPE 2.5	0.186	5.667	13	0.056	5.667	11	30038.461	50715	3.596	3.596	1	H1-1b		
15 M98	PIPE 2.5	0.186	5.667	7	0.054	5.667	9	30038.461	50715	3.596	3.596	1	H1-1b		
16 M85	PIPE 2.5	0.186	5.667	11	0.057	5.667	13	30038.461	50715	3.596	3.596	1	H1-1b		
17 M72	PIPE 2.5	0.185	5.667	3	0.057	5.667	5	30038.461	50715	3.596	3.596	1	H1-1b		
18 M93	PIPE 2.5	0.185	5.667	11	0.115	4	5	30038.461	50715	3.596	3.596	1	H1-1b		
19 M105	PIPE 2.5	0.184	5.667	7	0.115	4	13	30038.461	50715	3.596	3.596	1	H1-1b		
20 M69	PIPE 2.5	0.184	5.667	9	0.057	5.667	7	30038.461	50715	3.596	3.596	1	H1-1b		
21 M75	PIPE 2.5	0.183	5.667	9	0.113	4	9	30038.461	50715	3.596	3.596	1	H1-1b		
22 M62	L6.6x4.46x0.25	0.15	3.06	3	0.023	3.06	y	13	51620.642	87561	2.465	7.125	1.324	H2-1	
23 M61	L6.6x4.46x0.25	0.149	0	9	0.023	0	y	5	51620.642	87561	2.465	7.125	1.319	H2-1	
24 M46	PIPE 2.5	0.149	2.083	3	0.081	2.083	14	22373.407	50715	3.596	3.596	1	H1-1b		



Company : Tectonic Engineering  
 Designer : GLE  
 Job Number : 10710.NJJER01148C  
 Model Name : PROPOSED ANTENNA MOUNT

Checked By : VE

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

Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc[ft]	DirL	cphi*	Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [k-ft]	phi*Mn z-z [k-ft]	Cb	Eqn
25	M47	PIPE 2.5	0.147	2,083	11	0.082	7.917	6	22373.407	50715	3.596	3.596	1	H1-1b
26	M48	PIPE 2.5	0.147	7,917	13	0.082	2,083	6	22373.407	50715	3.596	3.596	1	H1-1b
27	M16	Pipe 3.5x0.165	0.145	5,333	5	0.093	2.75	5	38821.879	54463.5	4.822	4.822	1	H1-1b
28	M45	Pipe 3.5x0.165	0.145	5,333	7	0.093	2.75	7	38821.879	54463.5	4.822	4.822	1	H1-1b
29	M63	L6.6x4.46x0.25	0.141	3,06	11	0.021	3.06	y	51620.642	87561	2.465	7.125	1.271	H2-1
30	M1	Pipe 3.5x0.165	0.135	2,667	9	0.09	5.25	9	38821.879	54463.5	4.822	4.822	1	H1-1b
31	M29	L2X2X4	0.091	0	13	0.017	0	z	22280.388	30585.6	0.691	1.577	1.168	H2-1
32	M15	L2X2X4	0.088	0	5	0.019	2.502	z	22280.388	30585.6	0.691	1.577	1.159	H2-1
33	M43	L2X2X4	0.079	0	9	0.017	0	z	22280.388	30585.6	0.691	1.577	1.163	H2-1
34	M30	L2X2X4	0.061	0	5	0.019	2.502	y	22280.388	30585.6	0.691	1.577	1.5	H2-1
35	M44	L2X2X4	0.059	0	13	0.019	0	y	22280.388	30585.6	0.691	1.577	1.5	H2-1
36	M14	L2X2X4	0.053	0	9	0.018	2.502	y	22280.388	30585.6	0.691	1.577	1.5	H2-1
37	M5	Plate 6x.37	0.052	0.164	6	0.22	0	y	1167974.739	71928	0.554	8.991	2.866	H1-1b
38	M34	Plate 6x.37	0.05	0.164	6	0.199	0	y	1367974.739	71928	0.554	8.991	1.463	H1-1b
39	M18	Plate 6x.37	0.049	0.128	14	0.221	0.292	y	7167974.739	71928	0.554	8.991	2.991	H1-1b
40	M20	Plate 6x.37	0.048	0.164	10	0.199	0	y	5167974.739	71928	0.554	8.991	1.452	H1-1b
41	M32	Plate 6x.37	0.047	0.128	10	0.28	0.292	y	3367974.739	71928	0.554	8.991	2.622	H1-1b
42	M3	Plate 6x.37	0.046	0.128	14	0.281	0.292	y	6967974.739	71928	0.554	8.991	1.471	H1-1b
43	M65	PIPE 2.5	0.04	0.5	7	0.013	0.5	10	47114.007	50715	3.596	3.596	1	H1-1b

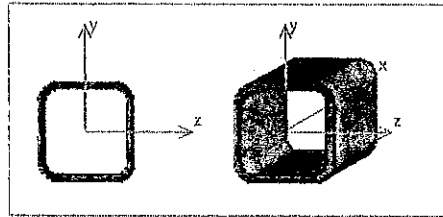
The maximum member stress is at 25.5% of its capacity; therefore, the proposed mount will have sufficient capacity to support the proposed load configuration upon installation.

APPENDIX D  
ADDITIONAL CALCULATIONS

Detail Report: M6

Unity Check: 0.218 (LC 11)

Load Combination: Envelope



**Input Data:**

Shape:	HSS4X4X6	I Node:	N9
Member Type:	Beam	J Node:	N10
Length (ft):	3.417	I Release:	Fixed
Material Type:	Hot Rolled Steel	J Release:	Fixed
Design Rule:	Typical	I Offset (in):	N/A
Number of Internal Sections:	97	J Offset (in):	N/A

**Material Properties:**

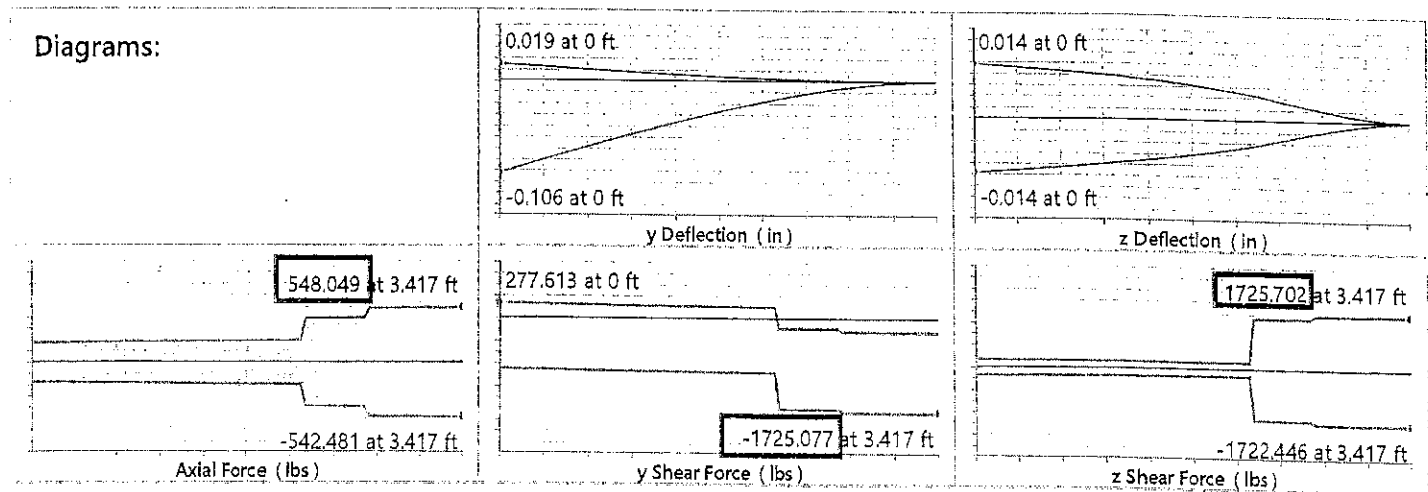
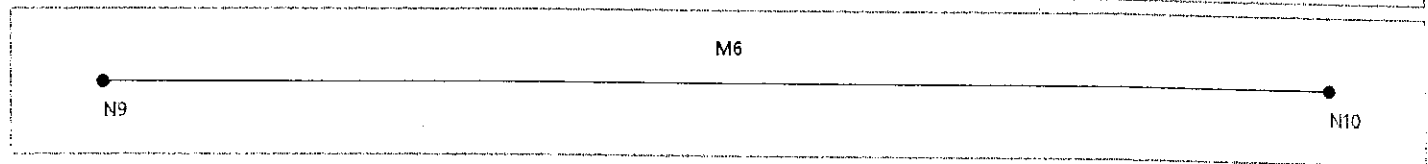
Material:	A500 Gr.B Rect	Therm. Coeff. (1e <sup>3</sup> *F <sup>-1</sup> ):	0.65	R <sub>y</sub> :	1.4
E (ksi):	29000	Density (k/ft <sup>3</sup> ):	0.527	F <sub>u</sub> (ksi):	58
G (ksi):	11154	F <sub>y</sub> (ksi):	46	R <sub>t</sub> :	1.3
Nu:	0.3				

**Shape Properties:**

d (in):	4	I <sub>yy</sub> (in <sup>4</sup> ):	10.3	Area (in <sup>2</sup> ):	4.78
b <sub>t</sub> (in):	4	I <sub>zz</sub> (in <sup>4</sup> ):	10.3	J (in <sup>4</sup> ):	17.5
t (in):	0.349				

**Design Properties:**

L <sub>b y-y</sub> (ft):	N/A	K <sub>y-y</sub> :	1	Max Defl Ratio:	L/772
L <sub>b z-z</sub> (ft):	N/A	K <sub>z-z</sub> :	1	Max Defl Location:	0
L <sub>comp top</sub> (ft):	L <sub>byy</sub>	y sway:	No	Span:	1
L <sub>comp bot</sub> (ft):	N/A	z sway:	No		
L <sub>torque</sub> (ft):	N/A	Function:	Lateral		
		Seismic DR:	None		

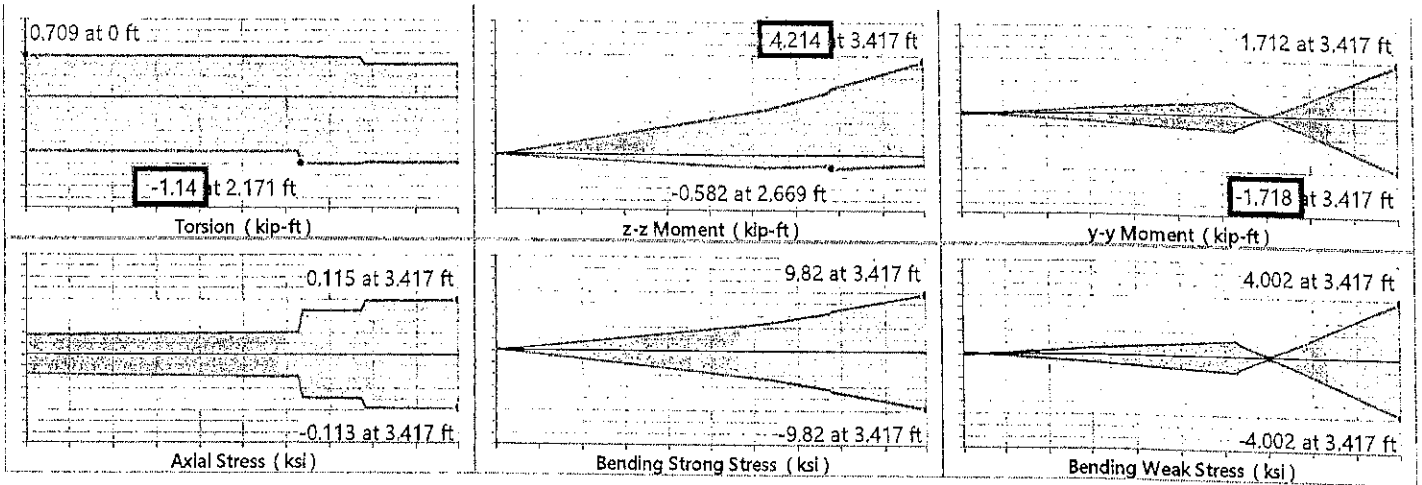






Company : Tectonic Engineering  
 Designer : GLE  
 Job Number : 10710.NJJER01148C  
 Model Name : PROPOSED ANTENNA MOUNT

Checked By : VE



**AISC 15th (360-16): LRFD Code Check**

Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	11	-	-	-	-
Applied Loading - Shear + Torsion	68	-	-	-	-
Axial Tension Analysis	11	465.016 lb	197892 lb	-	-
Axial Compression Analysis	11	0.000 lb	187775.063 lb	-	-
Flexural Analysis (Strong Axis)	11	3.921 k-ft	22.045 k-ft	-	-
Flexural Analysis (Weak Axis)		0.868 k-ft	22.045 k-ft	-	-
Shear Analysis (Major Axis y)	68	4655.797 lb	51200.059 lb	0.091	Pass
Shear Analysis (Minor Axis z)	68	3102.83 lb	51200.059 lb	0.061	Pass
Bending & Axial Interaction Check (UC Bending Max)	11	-	-	0.218	Pass
Torsional Analysis	11	0.3 k-ft	18.92 k-ft	0.016	Pass

Connection Details		
Bolt Details		
Bolt Quantity =	4	
Bolt Diameter =	0.625	in
Vertical Spacing =	7.6	in
Horizontal Spacing =	7.6	in
Bolt Grade =	A325	
Bolt $F_u$ , if "Other" =	N/A	ksi

Loading Details	
Member M6, Envelope	
Shear, z =	1725 k
Shear, y =	1725 k
Tension, x =	6548 k
Mz =	4214 k-ft
My =	1718 k-ft
Torsion, Mx =	114 k-ft

### 1 - Tensile Capacity

$$R_{nt} = F_{nt} A_b$$

AISC [Eqn. J3-1]

$\Phi =$	0.75	
$F_{nt} =$	90	ksi
$A_b =$	0.307	in <sup>2</sup>
$\Phi R_{nt} =$	20.72	k
$T_{max} =$	5.22	k

AISC [Table J3.2]

$\Phi R_{nt} > T_{max}$

25.2%

OK

### 2 - Shear Capacity

$$R_{nv} = F_{nv} A_b$$

AISC [Eqn. J3-1]

$\Phi =$	0.75	
$F_{nv} =$	54	ksi
$A_b =$	0.307	in <sup>2</sup>
$\Phi R_{nv} =$	12.43	k
$V_{max} =$	1.30	k

AISC [Table J3.2]

$\Phi R_{nv} > V_{max}$

10.5%

OK

### 3 - Combined Tension and Shear Capacity

$$R'_{nt} = F'_{nt} A_b$$

AISC [Eqn. J3-2]

$$F'_{nt} = 1.3F_{nt} - \frac{F_{nt}}{\phi F_{nv}} f_{rv} \leq F_{nt}$$

AISC [Eqn. J3-3a]

$\Phi =$	0.75	
$F'_{nt} =$	90	ksi
$A_b =$	0.307	in <sup>2</sup>
$\Phi R'_{nt} =$	20.72	k
$T_{max} =$	5.22	k

$\Phi R'_{nt} > T_{max}$

25.2%

OK



Job No. 10710.NJJER01148C  
 Calculated By: GLE Date: 2/15/23  
 Checked By: VE Date: 2/15/23

Connection Details		
Weld Details		
Weld Type	Filler	
Electrodes	70	XX
Size of Weld =	0.25	in
HSS Height =	4.00	in
HSS Width =	4.00	in
HSS Thickness =	0.38	in
Plate Details		
Height/Width =	9.00	in
Thickness =	0.625	in
F <sub>v</sub> =	50	ksi

**4 - Weld Capacity**

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

$\Phi =$	0.75	
$\Phi F_{nw} =$	31.50	ksi
$f_{v,max} =$	2.861	ksi
$f_{b,max} =$	15.25	ksi

AISC [Table J2.5]

$$\text{Min}(\Phi F_{nw}, \Phi F_{nbm}) > \sqrt{(f_{v,max} + f_{m,max})}$$

49.3%	OK
-------	----

**5 - Plate Capacity**

$\Phi =$	0.9	
$\Phi F_{byy} =$	45.00	ksi
$f_b =$	15.16	ksi

$$\Phi F_{byy} > F_b$$

33.7%	OK
-------	----

**APPENDIX E**  
**REFERENCE DOCUMENTS**

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

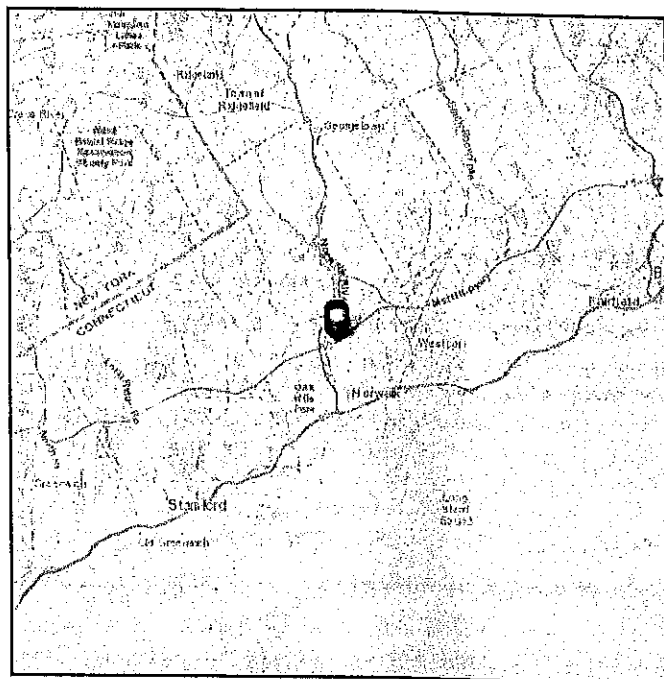
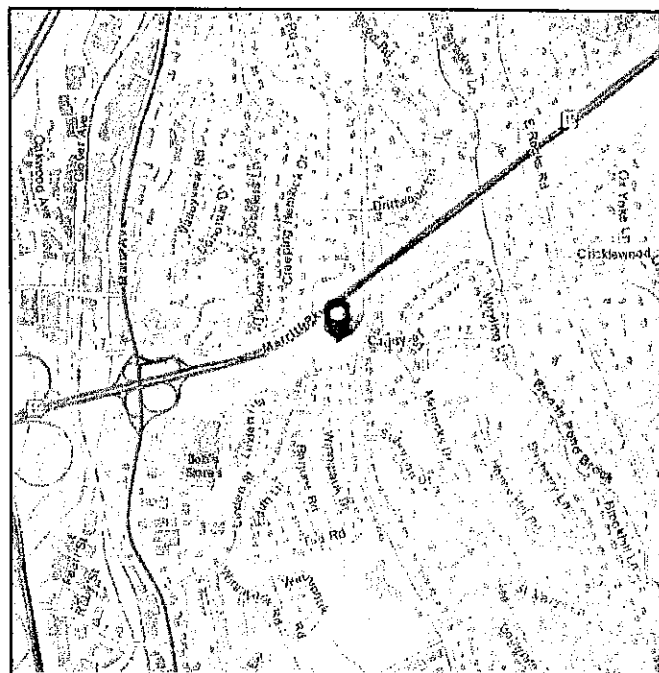


# ASCE 7 Hazards Report

**Address:**  
No Address at This Location

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

**Latitude:** 41.143782  
**Longitude:** -73.418548  
**Elevation:** 221.49 ft (NAVD 88)



## Wind

### Results:

Wind Speed	117 Vmph	120 mph per 2022 Connecticut State Building Code
10-year MRI	75 Vmph	
25-year MRI	85 Vmph	
50-year MRI	90 Vmph	
100-year MRI	97 Vmph	

**Data Source:** ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1-CC.2-4, and Section 26.5.2  
**Date Accessed:** Mon Feb 06 2023

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

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



**Seismic**

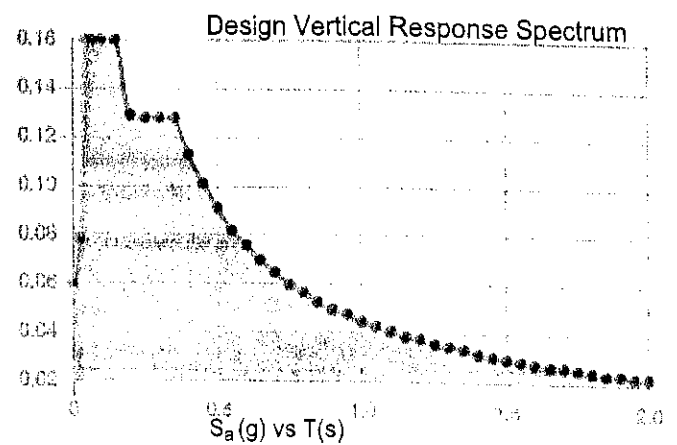
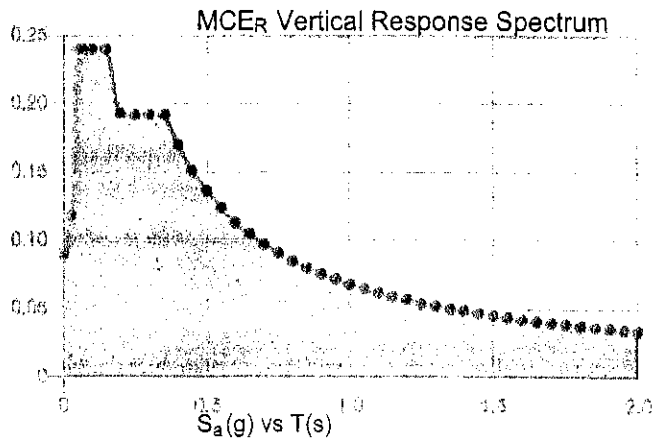
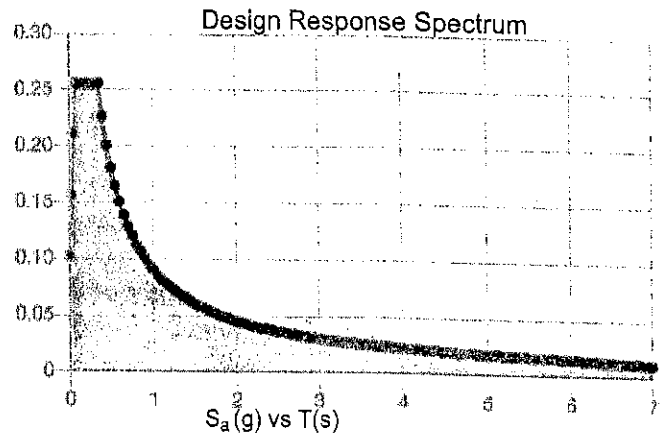
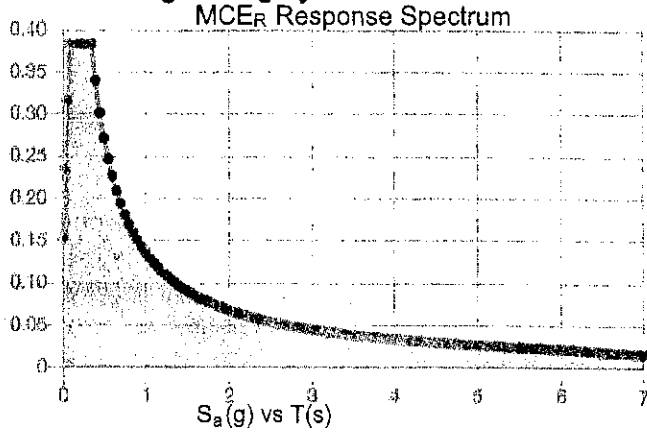
D - Default (see Section 11.4.3)

**Site Soil Class:**

**Results:**

$S_s$ :	0.24	$S_{D1}$ :	0.091
$S_1$ :	0.057	$T_L$ :	6
$F_a$ :	1.6	PGA :	0.142
$F_v$ :	2.4	PGA <sub>M</sub> :	0.215
$S_{MS}$ :	0.384	$F_{PGA}$ :	1.517
$S_{M1}$ :	0.136	$I_e$ :	1
$S_{DS}$ :	0.256	$C_v$ :	0.781

**Seismic Design Category: B**



**Data Accessed:** Mon Feb 06 2023

**Date Source:**

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



## Ice

---

### Results:

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

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

**Date Accessed:** Mon Feb 06 2023

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

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

---

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

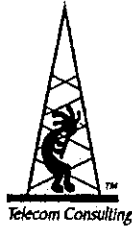
ASCE does not intend, nor should anyone interpret, the results provided by this Tool to replace the sound judgment of a competent professional, having knowledge and experience in the appropriate field(s) of practice, nor to substitute for the standard of care required of such professionals in interpreting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

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



# Exhibit F

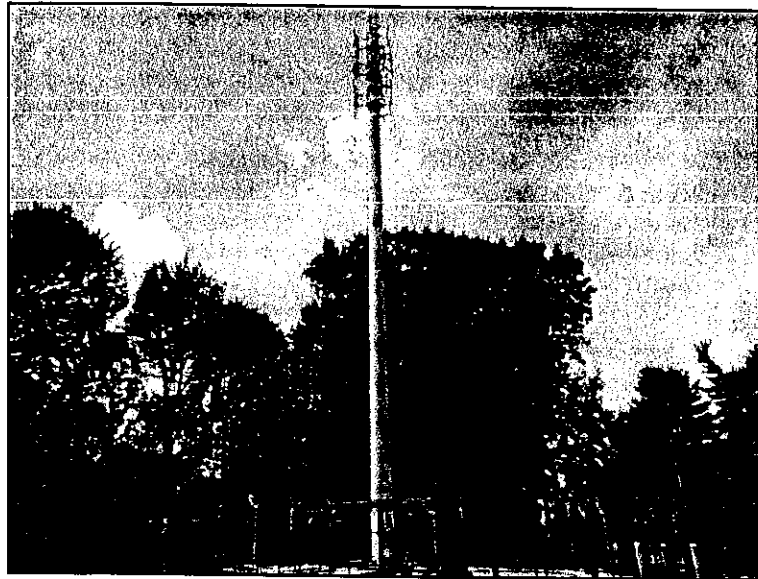
## Emissions Report



# PINNACLE TELECOM GROUP

Professional and Technical Services

## ANTENNA SITE FCC RF COMPLIANCE ASSESSMENT AND REPORT FOR MUNICIPAL SUBMISSION



**PREPARED FOR:**

DISH Wireless, LLC

**SITE ID:**

NJJER01148C

**SITE ADDRESS:**

173 WEST ROCKS ROAD  
NORWALK, CT

**LATITUDE:**

N 41.143511

**LONGITUDE:**

W 73.418967

**STRUCTURE TYPE:**

Monopole

**REPORT DATE:**

July 12, 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

<b>INTRODUCTION AND SUMMARY</b>	<b>3</b>
<b>ANTENNA AND TRANSMISSION DATA</b>	<b>5</b>
<b>COMPLIANCE ANALYSIS</b>	<b>9</b>
<b>COMPLIANCE CONCLUSION</b>	<b>15</b>

## **CERTIFICATION**

**APPENDIX A. DOCUMENTS USED TO PREPARE THE ANALYSIS**

**APPENDIX B. BACKGROUND ON THE FCC MPE LIMIT**

**APPENDIX C. PROPOSED SIGNAGE**

**APPENDIX D. SUMMARY OF EXPERT QUALIFICATIONS**

## **INTRODUCTION AND SUMMARY**

At the request of DISH Wireless, LLC ("DISH"), Pinnacle Telecom Group has performed an independent expert assessment of radiofrequency (RF) levels and related FCC compliance for proposed wireless base station antenna operations on an existing monopole located at 173 West Rocks Road in Norwalk, CT. DISH refers to the antenna site by the code "NJJER01148C", 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, there are no other existing antenna operations at the site to include in the compliance assessment. Note that FCC regulations require any future antenna collocators to assess and assure continuing compliance based on the cumulative effects of all then-proposed and then-existing antennas at the site.

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

The results of a compliance assessment can be described in layman's terms by expressing the calculated RF levels as simple percentages of the FCC MPE limit. If the normalized reference for that limit is 100 percent, then calculated RF levels higher than 100 percent indicate the MPE limit is exceeded and there is a need to mitigate the potential exposure. On the other hand, calculated RF levels consistently below 100 percent serve as a clear and sufficient demonstration of compliance with the MPE limit. We can (and will) also describe the overall worst-case result via the "plain-English" equivalent "times-below-the-limit" factor.

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

- At street level, the conservatively calculated maximum RF level from the proposed antenna operations at the site is 1.2560 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 79 times below the FCC limit for safe, continuous exposure of the general public. Per DISH guidelines, and consistent with FCC guidance on compliance, it is recommended that three Caution signs and a NOC Information sign be installed at the base of the monopole.
- The results of the calculations, along with the proposed mitigation, combine to satisfy the FCC requirements and associated guidelines on RF compliance at street level around the site. Moreover, because of the significant conservatism incorporated in the analysis, RF levels actually caused by the antennas will be lower than these calculations indicate.

The remainder of this report provides the following:

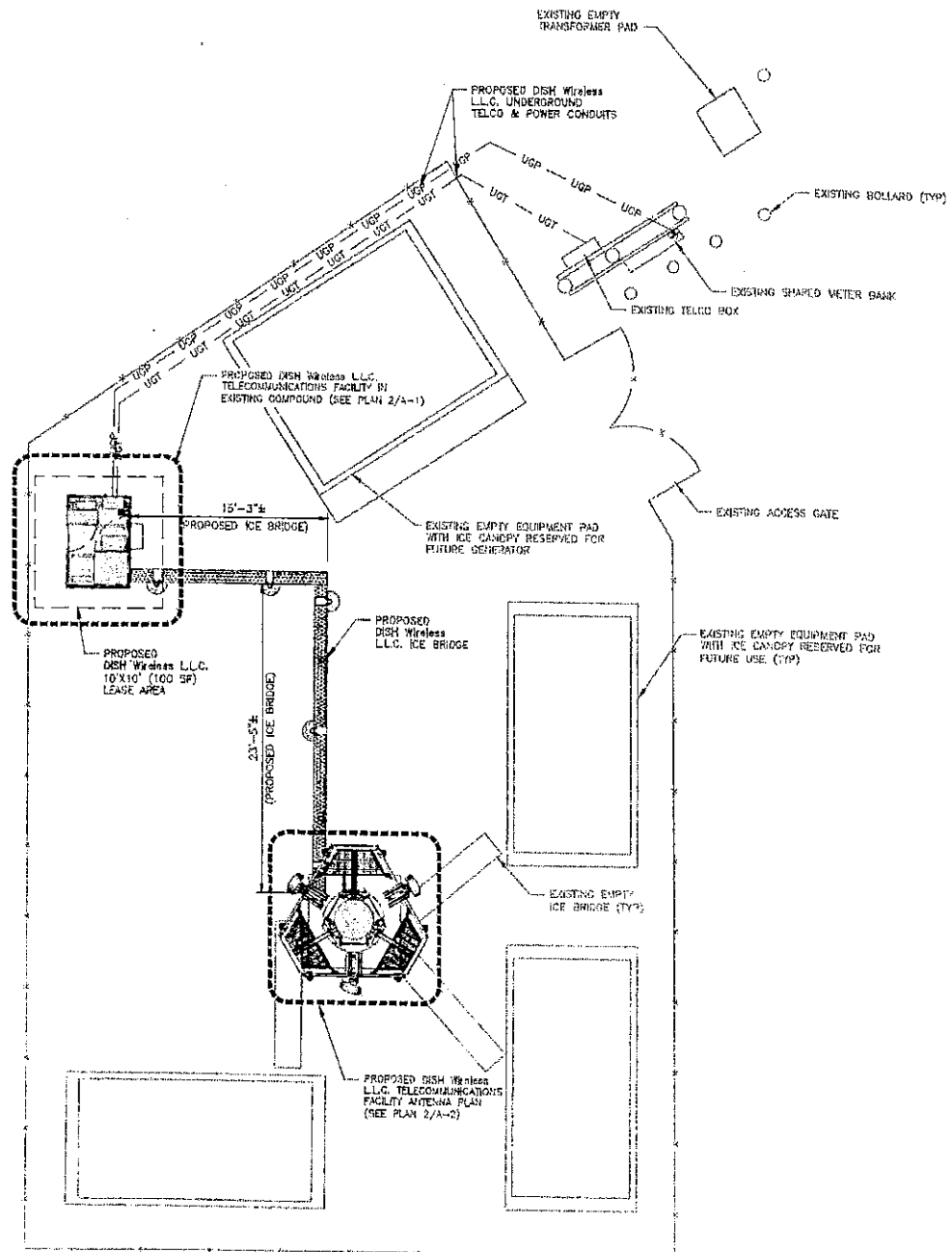
- relevant technical data on the proposed DISH antenna operations at the site;
- a description of the applicable FCC mathematical model for calculating RF levels, and application of the relevant technical data to that model;
- analysis of the results of the calculations against the FCC MPE limit, and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

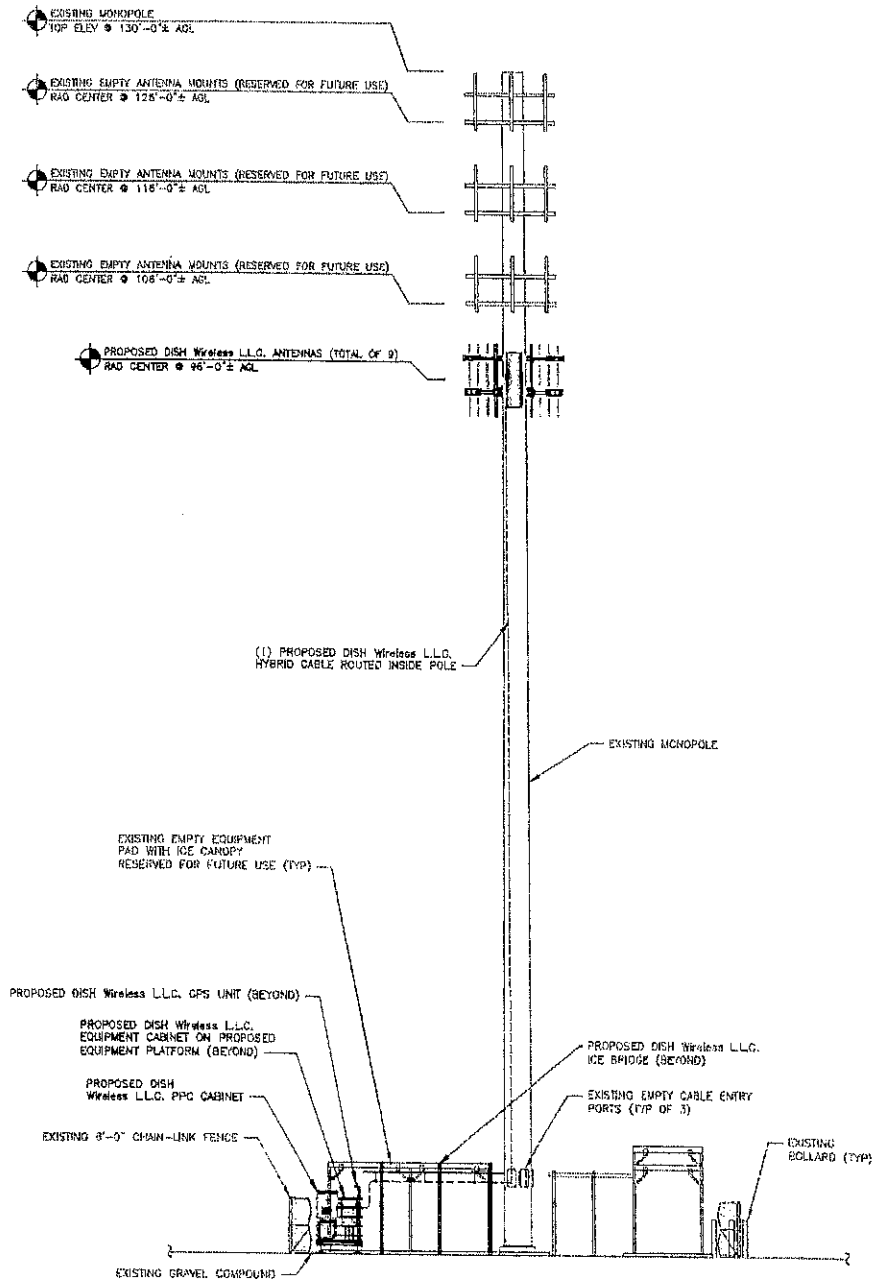
## ANTENNA AND TRANSMISSION DATA

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 (dBi)	BW	Azimuth	EDT	TMD
1	DISH	Commscope	FFW-65B-R2	Panel	600	6	120	2110	96.0	12.46	64	60	5	0
1	DISH	Commscope	FFW-65B-R2	Panel	2000	6	160	7396	96.0	16.66	67	60	2	0
1	DISH	Commscope	FFW-65B-R2	Panel	2100	6	160	7396	96.0	16.66	67	60	2	0
2	DISH	Commscope	FFW-65B-R2	Panel	600	6	120	2110	96.0	12.46	64	190	2	0
2	DISH	Commscope	FFW-65B-R2	Panel	2000	6	160	7396	96.0	16.66	67	190	4.5	0
2	DISH	Commscope	FFW-65B-R2	Panel	2100	6	160	7396	96.0	16.66	67	190	4.5	0
3	DISH	Commscope	FFW-65B-R2	Panel	600	6	120	2110	96.0	12.46	64	300	2	0
3	DISH	Commscope	FFW-65B-R2	Panel	2000	6	160	7396	96.0	16.66	67	300	2	0
3	DISH	Commscope	FFW-65B-R2	Panel	2100	6	160	7396	96.0	16.66	67	300	2	0



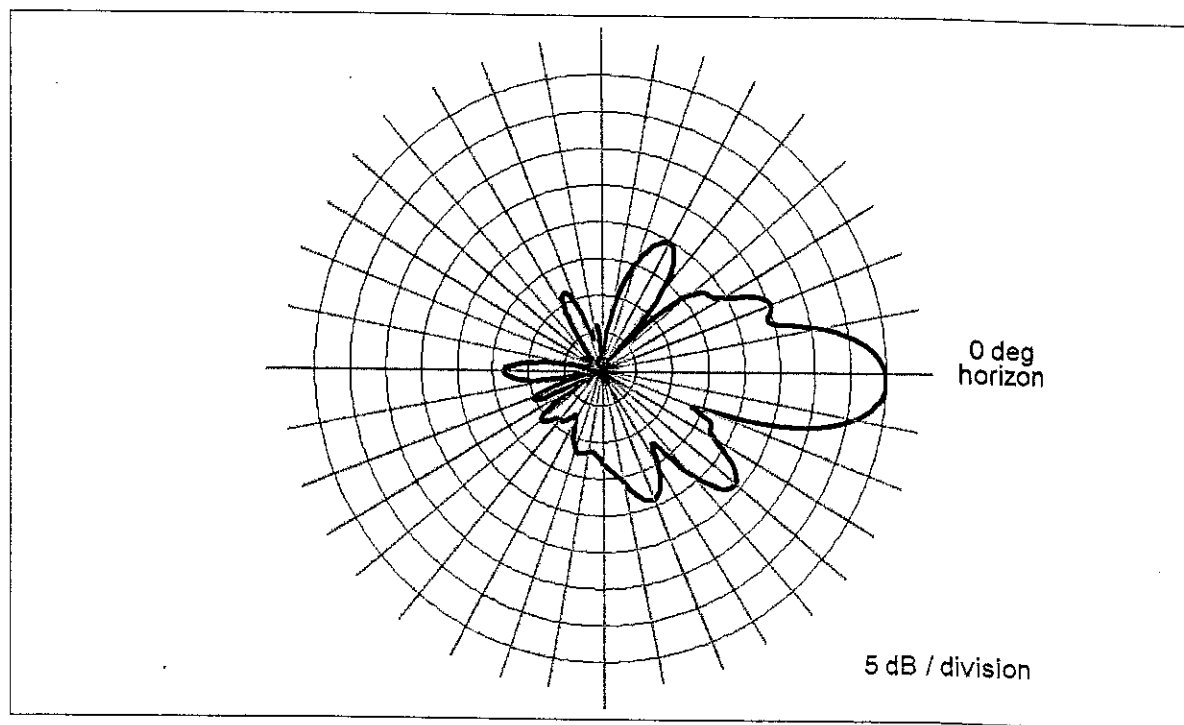
The area below the antennas, at street level, is of interest in terms of potential “uncontrolled” exposure of the general public, so the antenna’s vertical-plane emission characteristic is used in the calculations, as it is a key determinant of the relative amount of RF emissions in the “downward” direction.

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<sup>th</sup> of the maximum that occurs in the main beam (at 0 degrees); at 30 dB, the energy is only 1/1000<sup>th</sup> of the maximum.

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

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



## 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.

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.

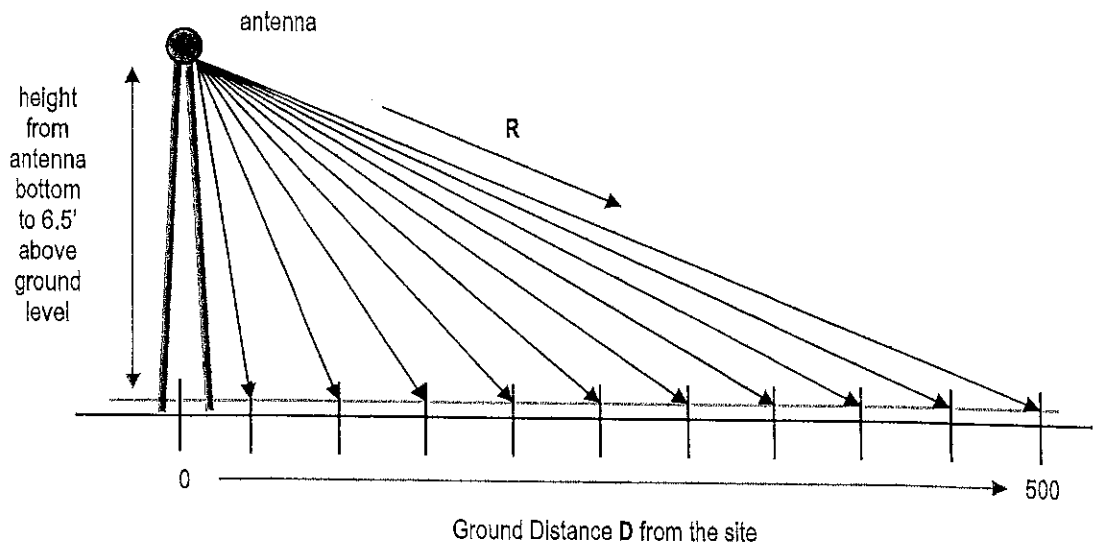
The formula for street-level compliance assessment for any given wireless antenna operation is as follows:

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

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
$10^{(\text{Gmax-Vdisc}/10)}$	=	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 on the next page.



**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.

FCC compliance for a multiple-band antenna operation is assessed in the following

manner. At each distance point along the ground, an MPE% calculation is made for the RF effect in each frequency band, and the sum of the individual MPE% contributions at each point is compared to 100 percent, which serves as the normalized reference for the FCC 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 RF levels. If, on the other hand, all results are below 100 percent, that set of results serves as a 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.

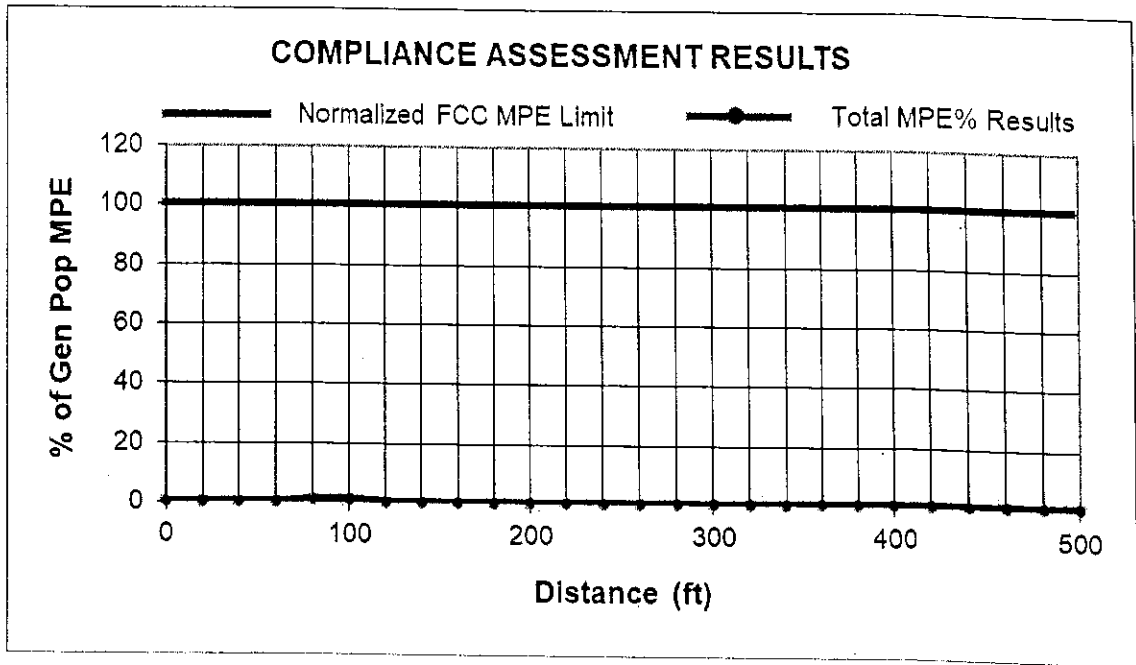
The table that follows provides the results of the MPE% calculations for each frequency band, with the overall worst-case calculated result highlighted in bold in the last column. Note that the transmission parameters for each DISH antenna

sector are identical, and the calculations reflect the worst-case result for any/all sectors.

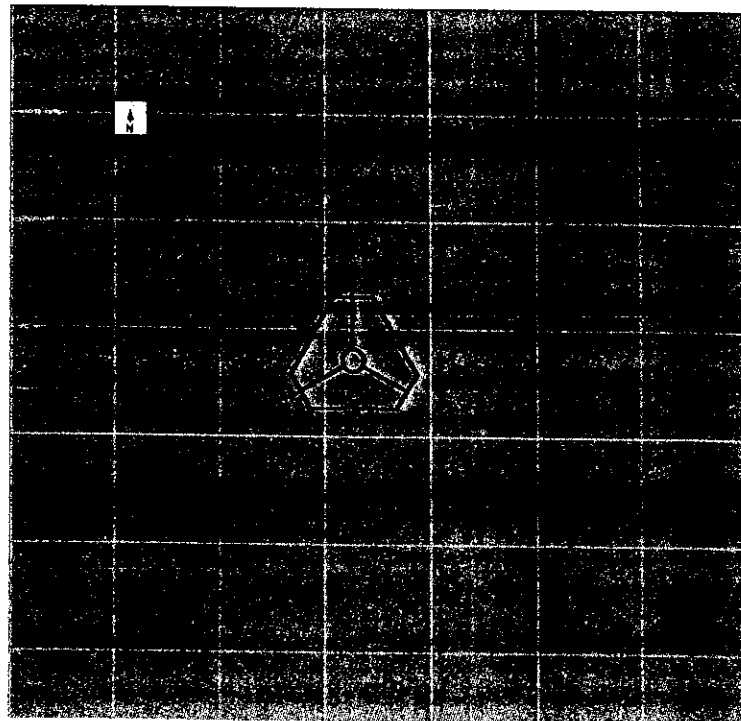
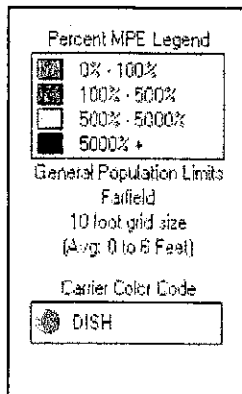
Ground Distance (ft)	DISH 600 MHz MPE%	DISH 2000 MHz MPE%	DISH 2100 MHz MPE%	Total MPE%
0	0.0651	0.0031	0.0005	0.0687
20	0.1689	0.0139	0.0248	0.2076
40	0.2281	0.0850	0.0170	0.3301
60	0.0425	0.0759	0.0383	0.1567
80	0.2517	0.2827	0.5474	1.0818
100	<b>0.4157</b>	<b>0.3777</b>	<b>0.4626</b>	<b>1.2560</b>
120	0.1942	0.0246	0.1418	0.3606
140	0.0656	0.0344	0.0834	0.1834
160	0.0430	0.0504	0.0271	0.1205
180	0.0313	0.1091	0.1858	0.3262
200	0.0167	0.0201	0.1043	0.1411
220	0.0140	0.1195	0.0332	0.1667
240	0.0501	0.1443	0.1638	0.3582
260	0.0857	0.0775	0.1586	0.3218
280	0.1347	0.0240	0.1025	0.2612
300	0.1961	0.0063	0.0442	0.2466
320	0.2694	0.0058	0.0135	0.2887
340	0.3517	0.0045	0.0044	0.3606
360	0.4400	0.0090	0.0027	0.4517
380	0.5308	0.0345	0.0133	0.5786
400	0.4813	0.0312	0.0120	0.5245
420	0.5648	0.0717	0.0420	0.6785
440	0.5164	0.0655	0.0384	0.6203
460	0.5899	0.0896	0.0718	0.7513
480	0.5433	0.0825	0.0661	0.6919
500	0.6063	0.0658	0.0718	0.7439

As indicated, the maximum calculated overall RF level is 1.2560 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 proposed antenna operations at street level around the site is 1.2560 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 a NOC Information sign be installed at the base of the monopole.

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

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



## CERTIFICATION

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

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



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

\_\_\_\_\_  
7/12/23

\_\_\_\_\_  
Date

## **Appendix A. DOCUMENTS USED TO PREPARE THE ANALYSIS**

**RFDS:** NJJER01148C\_PRFDS

**CD:** NJJER01148C\_PCDs

## 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.

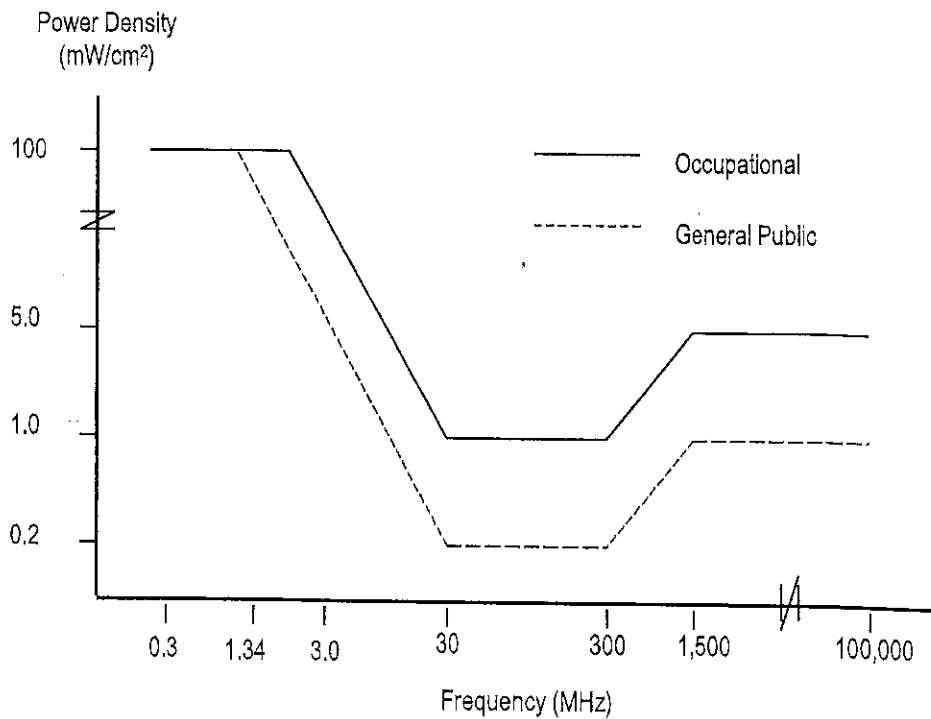
The specified continuous exposure MPE limits are based on known variation of human body susceptibility in different frequency ranges, and a Specific Absorption Rate (SAR) of 4 watts per kilogram, which is universally considered to accurately represent human capacity to dissipate incident RF energy (in 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<sup>2</sup>). The table on the next page lists the FCC limits for both occupational and general population exposures, using the mW/cm<sup>2</sup> reference, for the different radio frequency ranges.

Frequency Range (F) (MHz)	Occupational Exposure (mW/cm <sup>2</sup> )	General Public Exposure (mW/cm <sup>2</sup> )
0.3 - 1.34	100	100
1.34 - 3.0	100	180 / F <sup>2</sup>
3.0 - 30	900 / F <sup>2</sup>	180 / F <sup>2</sup>
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.


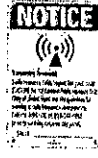
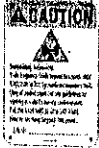
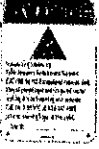


FCC Report and Order, ET Docket 93-62, *In the Matter of Guidelines for Evaluating the Environmental Effects of Radiofrequency Radiation*, released August 1, 1996.

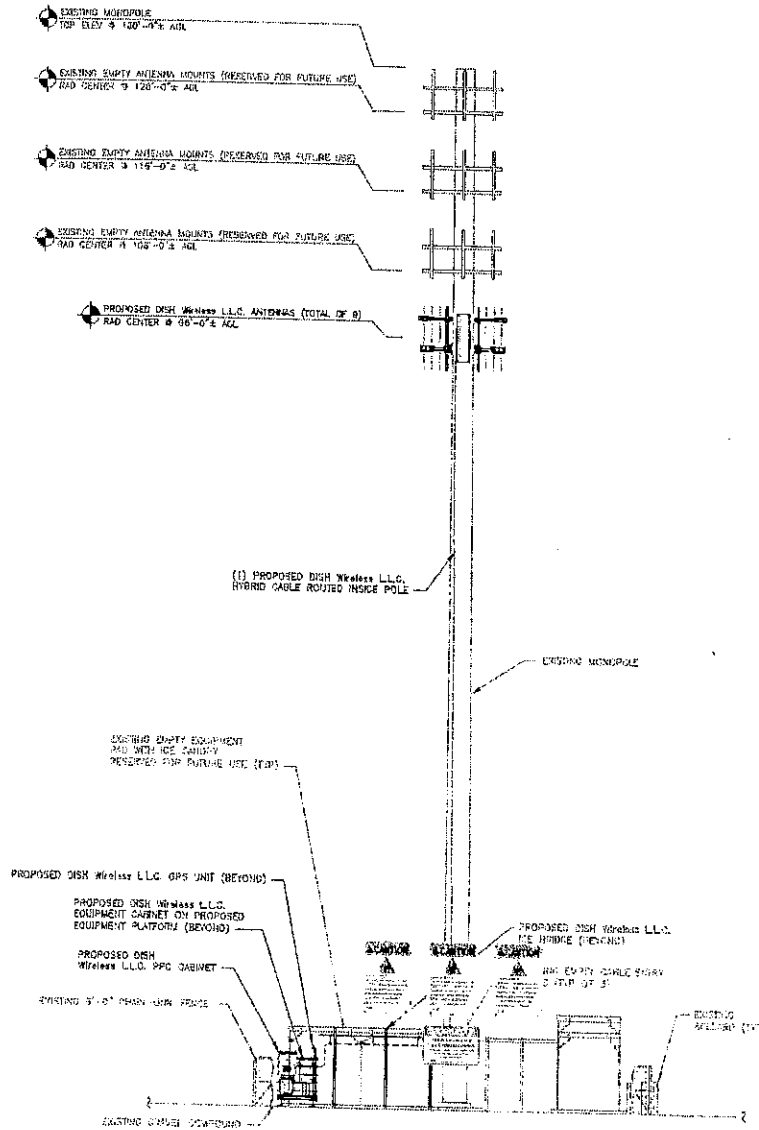
FCC Report and Order, Notice of Proposed Rulemaking, Memorandum Opinion and Order (FCC 19-126), *Proposed Changes in the Commission's Rules Regarding Human Exposure to Radiofrequency Electromagnetic Fields; Reassessment of Federal Communications Commission Radiofrequency Exposure Limits and Policies*, 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	dimensions
Alpha	0	0	1	0	0	0	dimensions
Beta	0	0	1	0	0	0	dimensions
Gamma	0	0	1	0	0	0	dimensions



## Appendix D. SUMMARY of EXPERT QUALIFICATIONS

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

<b>Synopsis:</b>	<ul style="list-style-type: none"> <li>• 40+ years of experience in all aspects of wireless system engineering, related regulation, and RF exposure</li> <li>• 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</li> <li>• Has provided testimony as an RF compliance expert more than 1,500 times since 1997</li> <li>• 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</li> </ul>
<b>Education:</b>	<ul style="list-style-type: none"> <li>• B.E.E., City College of New York (Sch. Of Eng.), 1971</li> <li>• M.B.A., 1982, Fairleigh Dickinson University, 1982</li> <li>• Bronx High School of Science, 1966</li> </ul>
<b>Current Responsibilities:</b>	<ul style="list-style-type: none"> <li>• Leads all PTG staff work involving RF safety and FCC compliance, microwave and satellite system engineering, and consulting on wireless technology and regulation</li> </ul>
<b>Prior Experience:</b>	<ul style="list-style-type: none"> <li>• Edwards &amp; Kelcey, VP – RF Engineering and Chief Information Technology Officer, 1996-99</li> <li>• Bellcore (a Bell Labs offshoot after AT&amp;T's 1984 divestiture), Executive Director – Regulation and Public Policy, 1983-96</li> <li>• AT&amp;T (Corp. HQ), Division Manager – RF Engineering, and Director – Radio Spectrum Management, 1977-83</li> <li>• AT&amp;T Long Lines, Group Supervisor – Microwave Radio System Design, 1972-77</li> </ul>
<b>Specific RF Safety / Compliance Experience:</b>	<ul style="list-style-type: none"> <li>• Involved in RF exposure matters since 1972</li> <li>• Have had lead corporate responsibility for RF safety and compliance at AT&amp;T, Bellcore, Edwards &amp; Kelcey, and PTG</li> <li>• While at AT&amp;T, helped develop the mathematical models for calculating RF exposure levels</li> <li>• 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</li> </ul>
<b>Other Background:</b>	<ul style="list-style-type: none"> <li>• Author, <i>Microwave System Engineering</i> (AT&amp;T, 1974)</li> <li>• Co-author and executive editor, <i>A Guide to New Technologies and Services</i> (Bellcore, 1993)</li> <li>• 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</li> <li>• Have published more than 35 articles in industry magazines</li> </ul>



Exhibit G  
Lease Agreement

**LEASE AGREEMENT**  
(Tower Installation)

THIS LEASE AGREEMENT ("Lease") is made this 18<sup>th</sup> day of October 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 173 ½ West Rocks 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 communications tower structure (the "Tower") and a separate water tank structure ("Water Tank"); and

**WHEREAS**, Lessee desires to lease a portion of the ground space adjacent to the Tower and license certain portions of the exterior of the Tower 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 TOWER SPACE**. District hereby leases to Lessee, and Lessee leases from District, approximately 100 square feet of ground space located within a fence-enclosed equipment compound on the District Property adjacent to the Tower (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) antennas (the "Antennas") on the exterior surface of the Tower at a centerline height of ninety-six (96) +/- above ground level with a minimum of five (5) feet in each vertical direction of separation from adjacent occupants on the Tower (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 those points of connection to public utilities at the meter bank and 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 and/or the Tower, 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 173 ½ West Rocks 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 Tower 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 (1<sup>st</sup>) 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 (270<sup>th</sup>) 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 Tower 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 (10<sup>th</sup>) 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 Tower 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 (270<sup>th</sup>) 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 Tower 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 Tower'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 Tower in good and ordinary structural condition and any relevant Tower 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 Tower 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 Tower (the "**Alternate Site**") that is reasonably similar in height to the existing Tower. 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 Tower 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 Tower 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, or 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 quantity of the District's water supply.

(c) Due to the nature and purpose of the District Property, including the Tower and 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 Tower 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 Tower 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 Tower 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 Tower.

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 Water Department  
                              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 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.

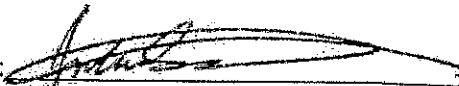
32. **INTERFERENCE.** Prior to or concurrent with the execution of this Agreement, the District has provided or will provide Lessee with a list of radio frequency user(s) and frequencies used on the District Property as of the Effective Date. Lessee warrants that its use of the Premises will not interfere 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]

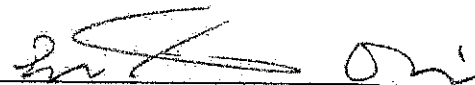
IN WITNESS WHEREOF, the parties have caused this Lease to be effective as of the Effective Date.

DISTRICT:

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: 1/26/2023

By:   
Print Name: Elsa Peterson Obuchowski  
Its: District Commissioner  
Date: 9/28/2023

LESSEE:

DISH WIRELESS L.L.C

By:   
Print Name: Satish Sharma  
Its: Executive VP  
Date: 10/18/2023  
DISH Wireless

**EXHIBIT A**

**District Property**

Site Number: NJJER01148C

LCS

certain triangular parcel of land situated in the City of Norwalk, County of Fairfield and State of Connecticut, southerly of the Merritt Parkway at the former location of West Rocks Road and containing one and eight hundred ninety-five one-thousandths (1.895) acres, more or less, bounded and described as follows: Beginning at the point of intersection of the westerly highway line of the former location of West Rocks Road and the division line between lands now or formerly of John Lane and of the Releasor herein, land herein conveyed; TRENCE - along land of said John Lane, the following courses and distances: Westerly forming an interior angle of  $90^{\circ}-14'-25''$  with the said westerly highway line of the former location of West Rocks Road, sixteen and twenty-one one-hundredths (16.21) feet to a Connecticut Highway Department monument; westerly again, forming an interior angle of  $176^{\circ}-11'-40''$  with the last described course, seventy-four and eighty-eight one-hundredths (74.88) feet to a C.H.D. monument; westerly again, forming an interior angle of  $179^{\circ}-37'-55''$  with the last described course, forty-four and forty one-hundredths (44.40) feet to a C.H.D. monument; westerly again, forming an interior angle of  $182^{\circ}-03'-30''$  with the last described course, one hundred forty-eight and thirty-six one-hundredths (148.36) feet to a C.H.D. monument; northerly forming an interior angle of  $98^{\circ}-56'-55''$  with the last described course, three and seven one-hundredths (3.07) feet to a C.H.D. monument; westerly forming an interior angle of  $263^{\circ}-40'$  with the last described course, forty-eight and ten one-hundredths

- Continued on following page -

(48.10) feet to a C.R.D. monument; westerly again, forming an interior angle of  $182^{\circ}-29'-50''$  with the last described course, twenty-four and thirty-six one-hundredths (24.36) feet to a C.R.D. monument; westerly again, forming an interior angle of  $173^{\circ}-00'-15''$  with the last described course, thirty-two and ninety-eight one-hundredths (32.98) feet to a C.R.D. monument; westerly again, forming an interior angle of  $181^{\circ}-06'-10''$  with the last described course, one hundred twenty-one and twenty-nine one-hundredths (121.29) feet to a C.R.D. monument and other land of the Releasee herein which is subject to an easement in favor of the Connecticut Light and Power Company; THENCE - along other land of the Releasee herein northeasterly following the arc of a circle having a radius of two thousand one hundred forty and ten one-hundredths (2140.10) feet and deflecting to the left, for a distance of two hundred sixteen and eighty-nine one-hundredths (216.89) feet to a C.R.D. monument; the chord of said arc forming an interior angle of  $30^{\circ}-53'-40''$  with the last described course; and northeasterly again, forming an exterior angle of  $177^{\circ}-05'-50''$  with the chord of the aforesaid arc, four hundred fourteen and eighty-nine one-hundredths (414.89) feet to a point in the westerly highway line of the former location of West Rocks Road; THENCE - along the said westerly highway line of the former location of West Rocks Road, the following courses and distances: southerly forming an interior angle of  $44^{\circ}-02'$  with the last described course, fourteen and twenty-eight one-hundredths (14.28) feet to a point southerly again, forming an interior angle of  $185^{\circ}-41'-50''$  with the last described course, sixty-four and twenty-two one-hundredths (64.22) feet to a point; southerly again, forming an interior angle of  $184^{\circ}-24'-10''$  with the last described course, thirty-six and two one-hundredths (36.02) feet to a point; southerly again, forming an interior angle of  $177^{\circ}-25'-20''$  with the last described course, forty-seven and twenty-four one-hundredths (47.24) feet to a point; southerly again, forming an interior angle of  $189^{\circ}-50'-20''$  with the last described course, nineteen and sixty-seven one-hundredths (19.67) feet to a point; southerly again, forming an interior angle of  $170^{\circ}-09'-10''$  with the last described course, thirty-one and thirty-three one-hundredths (31.33) feet to a point; southerly again, forming an interior angle of  $186^{\circ}-12'-30''$  with the last described course, twenty-five and fourteen one-hundredths (25.14) feet to a point; southerly again, forming an interior angle of  $173^{\circ}-21'-10''$  with the last described course, sixty-nine (69.00) feet to a point; and southerly again, forming an interior angle of  $187^{\circ}-45'$  with the last described course, thirty-four and twenty-seven one-hundredths (34.27) feet to the point of beginning. Being a portion of the land acquired by the Releasee herein from Alvin D. Wadsworth, by a Warranty Deed, dated June 5, 1936 and recorded in the Norwalk Land Records in Volume 262 at Page 630.

- End of Exhibit A -

**EXHIBIT B**

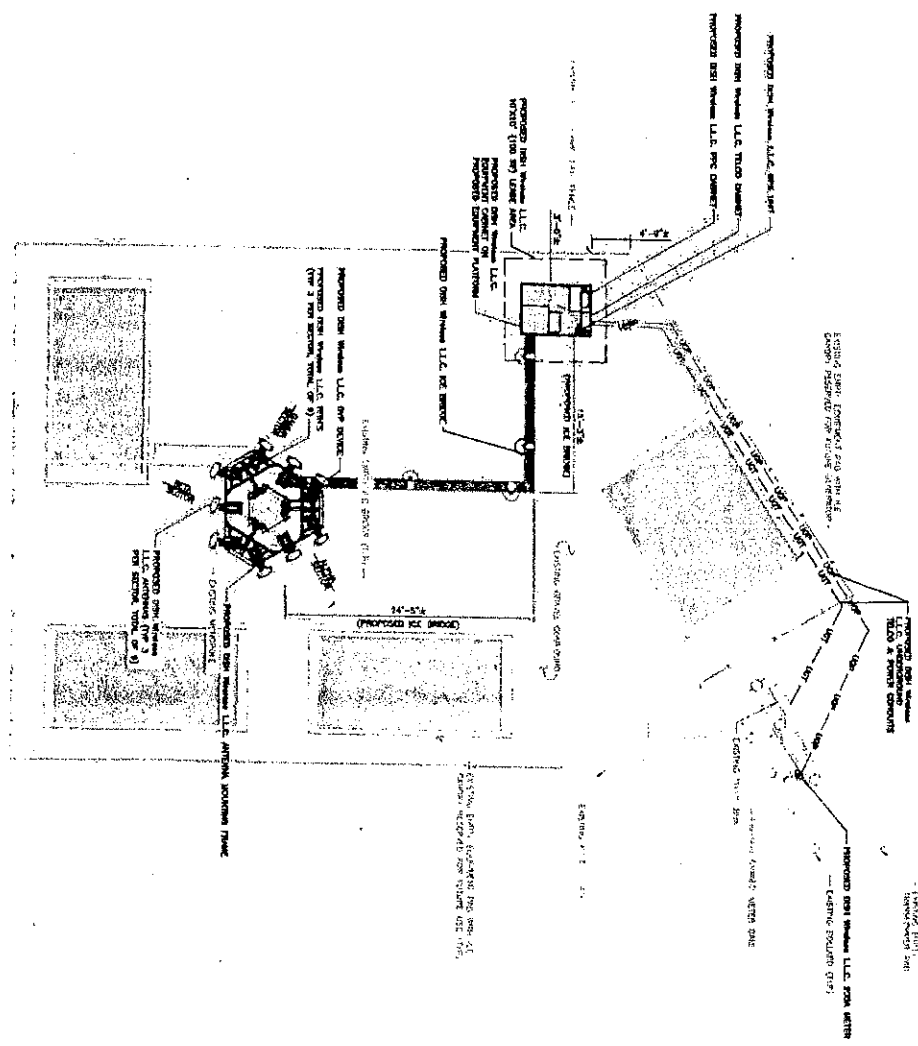
**Ground Space and License Areas**

See attached drawings.

**NOTE:** LESSEE may be referred to in the attached as "DISH Wireless LLC".



ENLARGED SITE PLAN



- NOTES**
1. CONSTRUCTION SHALL MEET EVERY ALL REQUIREMENTS.
  2. APPROVED AND BOUNDARY SHOWN ON THIS PLAN.
  3. EXISTING STRUCTURE SHALL BE MAINTAINED AT A MINIMUM LEVEL AS SHOWN IN THE STATE OF CONSTRUCTION.

ANTHONY COMPANY	ALPHA	BETA	GAMMA	DELTA
100'	100'	100'	100'	100'

**dish**  
wholesale

5700 BROADWAY, SUITE 200  
DALLAS, TEXAS 75235

**Tectonic**

**LEASE EXHIBIT**

NO.	DATE	DESCRIPTION
1	10/1/00	LEASE EXHIBIT
2	10/1/00	LEASE EXHIBIT
3	10/1/00	LEASE EXHIBIT
4	10/1/00	LEASE EXHIBIT
5	10/1/00	LEASE EXHIBIT

ALL PROJECT INQUIRY  
10710 ALLESTON BLVD  
DALLAS, TEXAS 75243  
PROJECT INFORMATION  
NLSR001148C  
173 WEST ROCKS ROAD  
NORWALK, CT 06851

SHEET TITLE  
ENLARGED  
SITE PLAN  
SHEET NUMBER  
A-1

Scale: 1" = 50'

