STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL
Ten Franklin Square, New Britain, CT 06051
Phone: (860) 827-2935 Fax: (860) 827-2950
E-Mail: siting.council@ct.gov
Web Site: portal.ct.gov/csc

VIA ELECTRONIC MAIL

February 6, 2023

Ray Lemley
Construction Services of Branford
63-3 North Branford Road
Branford, CT 06405
rlemley@csofb.com

RE: **TS-DISH-144-230104 -** Dish Wireless, LLC request for an order to approve tower sharing at an existing telecommunications facility located at 60 (f/k/a 56) Commerce Drive, Trumbull, Connecticut.

Dear Ray Lemley:

The Connecticut Siting Council (Council) is in receipt of your correspondence of February 6, 2023 submitted in response to the Council's January 25, 2023 notification of an incomplete request for tower sharing with regard to the above-referenced matter.

The submission renders the request for tower sharing complete and the Council will process the request in accordance with the Federal Communications Commission 60-day timeframe.

Thank you for your attention and cooperation.

Sincerely,

Melanie Bachman
Executive Director

MAB/IN/laf

c: Theresa Ranciato-Viele, Tectonic Engineering (tranciato@tectonicengineering.com)

From: Ray Lemley <rlemley@csofb.com>
Sent: Monday, February 6, 2023 8:01 AM
To: CSC-DL Siting Council <Siting.Council@ct.gov>
Cc: Ranciato, Theresa <TRanciato@tectonicengineering.com>
Subject: TS-Dish-144-230104- Revised Information

Good morning:

Attached please find a copy of the Incomplete Letter along with the Revised Application Letter. The revision includes the Mount Analysis as well as the corrected owner information and proof of mailing. If you require any additional information, please advise. A hard copy is also being mailed to you.

Thank you,
Ray Lemley

RAY LEMLEY

Construction Services of Branford

63-3 N. Branford Road, Branford CT 06405

Main: (203) 488-0712 **Direct:** (203) 433-7533

Fax: (203) 481-1135 **Mobile:** (203) 499-8631

Tectonic
PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.

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

January 31, 2023

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

RE: **Notice of Exempt Modification to an existing 81' monopole located at 60 Commerce Drive, Trumbull, Connecticut**

Latitude: 41.2456 / Longitude: 73.1456

Dear Director 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 143'monopole tower facility located at 60 Commerce Drive, Trumbull, Connecticut (See Original Facility Approval attached as Exhibit A) ("Facility"). The property is owned by City Park Commerce Drive LLC and CCH Commerce Drive Associates LLC and the tower is owned by Cellco Partnership, dba Verizon Wireless (See Trumbull 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 nine foot (99') centerline AGL. Dish further proposes to install one (1) 1.5" Hybrid Cable. Dish will also install its equipment cabinets on a 5' X 7' platform within its 10' X 15' lease area. The installation is shown on plans completed by Tectonic Engineering, dated December 15, 2022 and attached hereto as Exhibit C.

Dish requests that the Connecticut Siting Council ("Council") find that the proposed shared use of this Facility satisfies the criteria of C.G.S. sec. 16-50aa and accordingly issue an order approving the proposed shared use. This proposed installation constitutes an exempt modification pursuant to R.C.S.A. 16-50j-89. Pursuant to R.C.S.A. 16-50j-73, Dish is providing notice to Vicki A. Tesoro, First Selectperson of the Town of Trumbull, Rob Librandi, Land Use Planner, the property owner, City Park Commerce Drive LLC and CCH Commerce Drive Associates LLC, and the tower owner, Cellco Partnership d/b/a Verizon Wireless.

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 81' height of the Tower as the Dish antennas will be installed at a height of 61'.

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 3.9721%.

Tower

The Facility consists of an Eighty One (81') foot monopole tower located at 60 Commerce Drive, Trumbull, Connecticut. As indicated above, property is owned by City Park Commerce Drive LLC and CCH Commerce Drive Associates LLC, and the tower is owned by Cellco Partnership. The tower currently supports Verizon at the eighty foot (80') centerline AGL. The antenna locations are set forth on Sheet A-2 of the attached drawings in Exhibit C.

A. TECHNICAL FEASIBILTY

The existing monopole has been deemed structurally capable of supporting the proposed Dish loading. The structural and mount analysis is attached hereto as Exhibit D.

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 Trumbull to proceed with the proposed installation. Additionally, a Lease Supplement to The Master Lease Agreement is attached as Exhibit E, 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 61' level of the existing

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

D. ECONOMIC FEASIBILTY

Dish has entered into a Lease Agreement (Exhibit E) 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 60 Commerce Drive, Trumbull, satisfies the criteria stated in C.G.S. sec. 16-50aa, and supports the general goal of preventing the unnecessary proliferation of tower sites in Connecticut. Dish respectfully requests the Council issue an order approving the proposed shared use.

Respectfully submitted,
Dish Wireless, LLC

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

cc: Trumbull First Selectperson, Honorable Vicki A. Tesoro
5866 Main St.
Second Floor
Trumbull, CT 06611

Trumbull Land Use Planner, Rob Librandi
5866 Main St.
Second Floor
Trumbull, CT 06611

Tower Owner: Cellco Partnership
One Verizon Way

Tectonic

PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.

Mail Stop 4AW100
Basking Ridge, NJ 07920

Property Owner: City Park Commerce Drive LLC
and CCH Commerce Drive Associates LLC
23 Vitti Street, Suite 201
New Canaan, CT 06840

Exhibit A

Original Facility Approval

DOCKET NO. 446 - Cellco Partnership d/b/a Verizon Wireless application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance, and operation of a telecommunications facility located at the Pilot Corporation of America property, Trumbull Tax Assessor Map K/09 Lot 20, 60 Commerce Drive, Trumbull, Connecticut.	}	Connecticut Siting Council June 26, 2014

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 integrity and balance; public health and safety; scenic, historic, and recreational values; forests and parks; air and water purity; and fish 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 Cellco Partnership d/b/a Verizon Wireless, hereinafter referred to as the Certificate Holder, for a telecommunications facility at the Pilot Corporation of America property, Trumbull Tax Assessor Map K/09 Lot 20, 60 Commerce Drive, Trumbull, 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, no taller than necessary to provide the proposed telecommunications services, sufficient to accommodate the antennas of the Certificate Holder and other entities, both public and private, but such tower shall not exceed a height of 80 feet above ground level.

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 served on the Towns of Trumbull and Stratford for comment, and all parties and intervenors as listed in the service list, and submitted to and approved by the Council prior to the commencement of facility construction and shall include:
   a) a final site plan(s) of site development to include specifications for the tower, tower foundation, antennas, equipment compound, radio equipment, access road, utility line, emergency backup generator and landscaping;
   b) construction plans for site clearing, grading, landscaping, water drainage, and erosion and sedimentation controls consistent with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control, as amended; and,
   c) details of the box turtle protection program, as per the Department of Energy and Environmental Protection's recommendation.

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 State or 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 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.

6. 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.

7. Any request for extension of the time period referred to in Condition 6 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 Towns of Trumbull and Stratford. Any proposed modifications to this Decision and Order shall likewise be so served.

8. 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.

9. 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.

10. 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.

11. 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.

12. 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.

13. 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.

14. 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.

15. This Certificate may be surrendered by the Certificate Holder upon written notification and approval 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 February 26, 2014, and notice of issuance published in the Connecticut Post.

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

60 COMMERCE DRIVE

Location	60 COMMERCE DRIVE	**Mblu**	K/09 / 00045/ 000/
Acct#	K0900045	**Owner**	CITY PARK COMMERCE DRIVE LLC &
Assessment	$3,917,830	**Appraisal**	$5,596,900
PID	101754	**Building Count**	1
Fire District		**Assessing District**	

Current Value

Appraisal	
Valuation Year	**Total**
2021	$5,596,900
Assessment	
Valuation Year	**Total**
2021	$3,917,830

Owner of Record

Owner	CITY PARK COMMERCE DRIVE LLC &
Co-Owner	CH COMMERCE DRIVE ASSOCIATES LLC
Address	23 VITTI STREET SUITE 201 NEW CANAAN, CT 06840

Sale Price	$4,450,000
Book & Page	1666/0601
Sale Date	06/25/2014
Instrument	00

Ownership History

Ownership History				
Owner	**Sale Price**	**Book & Page**	**Instrument**	**Sale Date**
CITY PARK COMMERCE DRIVE LLC &	$4,450,000	1666/0601	00	06/25/2014

Building Information

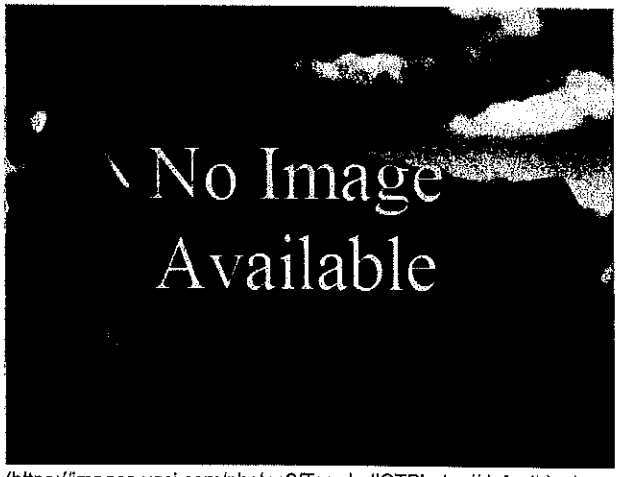
Building 1 : Section 1

Year Built:	1987
Living Area:	65,591
Replacement Cost:	$4,856,293
Building Percent Good:	70

Replacement Cost
Less Depreciation: $3,399,400

Building Attributes	
Field	**Description**
STYLE	Office/Warehs
Grade	C
Stories:	1 Story
Occupancy	1
Exterior Wall 1	Concrete
Exterior Wall 2	
Roof Structure	Flat
Roof Cover	Tar & Gravel
Interior Wall 1	Drywall
Interior Wall 2	
Interior Floor 1	Carpet
Interior Floor 2	Vinyl
Heating Fuel	Gas
Heating Type	Forced Air
AC Type	Central
Bldg Use	Off/Whse
1st Floor Use:	
Heat/AC	Heat/AC Pkgs
Frame Type	Fireprf Steel
Baths/Plumbing	Average
Ceiling/Walls	Sus-Ceil & WL
Rooms/Prtns	Average
Wall Height	30
% Comn Wall	

Building Photo



(https://images.vgsi.com/photos2/TrumbullCTPhotos//default.jpg)

Building Layout

(https://images.vgsi.com/photos2/TrumbullCTPhotos//Sketches/101754_13

Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
BAS	First Floor	50,955	50,955
FUS	Finished Upper Story	14,636	14,636
FGR	Attached Garage	1,360	0
SLB	Slab	50,379	0
		117,330	65,591

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code	407
Description	Off/Whse
Zone	IL3
Neighborhood	545
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	7.51
Frontage	
Depth	

Outbuildings

Outbuildings	Legend
No Data for Outbuildings	

Valuation History

Appraisal	
Valuation Year	**Total**
2020	$4,077,000
2019	$4,077,000

Assessment	
Valuation Year	**Total**
2020	$2,853,900
2019	$2,853,900

Exhibit C

Project Plans

dish wireless.

DISH Wireless L.L.C. SITE ID:

NJJER01153A

DISH Wireless L.L.C. SITE ADDRESS:

60 COMMERCE DRIVE
TRUMBULL, CT 06611

SCOPE OF WORK

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

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

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

SITE INFORMATION

PROPERTY OWNER:	MAKE-A-WISH FOUNDATION OF CT INC.
ADDRESS:	60 COMMERCE DRIVE TRUMBULL, CT 06611
TOWER TYPE:	MONOPOLE
TOWER CO SITE ID:	38463
TOWER APP NUMBER:	N/A
COUNTY:	FAIRFIELD COUNTY
LATITUDE (NAD 83):	41° 14' 44.14" N 41.245861 N
LONGITUDE (NAD 83):	73° 06' 44.68" W 73.146078 W
ZONING JURISDICTION:	TOWN OF TRUMBULL
ZONING DISTRICT:	R-3
PARCEL NUMBER:	M09-20
OCCUPANCY GROUP:	U
CONSTRUCTION TYPE:	II-B
POWER COMPANY:	UNITED ILLUMINATING CO.
TELEPHONE COMPANY:	LIGHTPATH

PROJECT DIRECTORY

APPLICANT:	DISH Wireless L.L.C. 5701 SOUTH SANTA FE DRIVE LITTLETON, CO80120
TOWER OWNER:	DISH WIRELESS 9601 LAS CIMAS PARKWAY BUILDING #1, SUITE 370 AUSTIN, TX 78746
SITE DESIGNER:	TECTONIC ENGINEERING CONSULTANTS, GEOLOGISTS & LAND SURVEYORS, D.P.C., INC. 1279 ROUTE 300 NEWBURGH, NY 12550
SITE ACQUISITION:	TECTONIC ENGINEERING CONSULTANTS, GEOLOGISTS & LAND SURVEYORS, D.P.C., INC. 1279 ROUTE 300 NEWBURGH, NY 12550 (845) 567-9666
CONSTRUCTION MANAGER:	RAFAL ROBOLOWSKI RAFAL.ROBOLOWSKI@DISH.COM
RF ENGINEER:	FAWAN MADHAR FAWAN.MADHAR@DISH.COM

CONNECTICUT CODE COMPLIANCE

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

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

SHEET INDEX

SHEET NO.	SHEET TITLE
T-1	TITLE SHEET
A-1	OVERALL SITE PLAN AND ENLARGED SITE PLAN
A-2	ELEVATION, ANTENNA LAYOUT AND SCHEDULE
A-3	EQUIPMENT PLATFORM LAYOUT
A-4	EQUIPMENT DETAILS
A-5	EQUIPMENT DETAILS
A-6	EQUIPMENT DETAILS
E-1	ELECTRICAL/FIBER ROUTE PLAN AND NOTES
E-1A	FIBER ROUTING PATH
E-2	ELECTRICAL DETAILS
E-3	ELECTRICAL ONE-LINE, FAULT CALCS & PANEL SCHEDULE
E-4	PPC NEUTRAL-TO-GROUND SCHEMATIC
G-1	GROUNDING PLANS AND NOTES
G-2	GROUNDING DETAILS
G-3	GROUNDING DETAILS
RF-1	RF CABLE COLOR CODE
GN-1	LICENSE AND ABBREVIATIONS
GN-2	GENERAL NOTES
GN-3	GENERAL NOTES
GN-4	GENERAL NOTES

SITE PHOTO

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

GENERAL NOTES

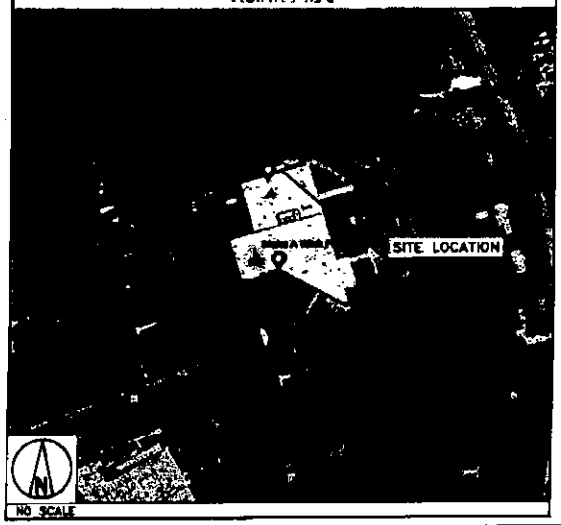
THE FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION. A TECHNICIAN WILL VISIT THE SITE AS REQUIRED FOR ROUTINE MAINTENANCE. THE PROJECT WILL NOT RESULT IN ANY SIGNIFICANT DISTURBANCE OR EFFECT ON DRAINAGE. NO SANITARY SEWER SERVICE, POTABLE WATER, OR TRASH DISPOSAL IS REQUIRED AND NO COMMERCIAL SIGNAGE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

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.

DIRECTIONS

DIRECTIONS FROM 3 ADP BOULEVARD ROSELAND, NJ:



dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

Tectonic

Tectonic Engineering Consultants, Geologists & Land Surveyors, D.P.C., Inc.
1279 Route 300
Newburgh, NY 12550
Phone: (845) 567-9666
www.tectonicengineering.com

STATE OF CONNECTICUT
ANTONIO A. GOUVEIA
PEN.0025406
LICENSED PROFESSIONAL ENGINEER
12/15/2022

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
TJ	JG	—

RFDS REV #: —

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	12/15/22	ISSUED FOR PLANS

ASE PROJECT NUMBER
10710.NJJER01153A

DISH Wireless L.L.C.
PROJECT INFORMATION
NJJER01153A

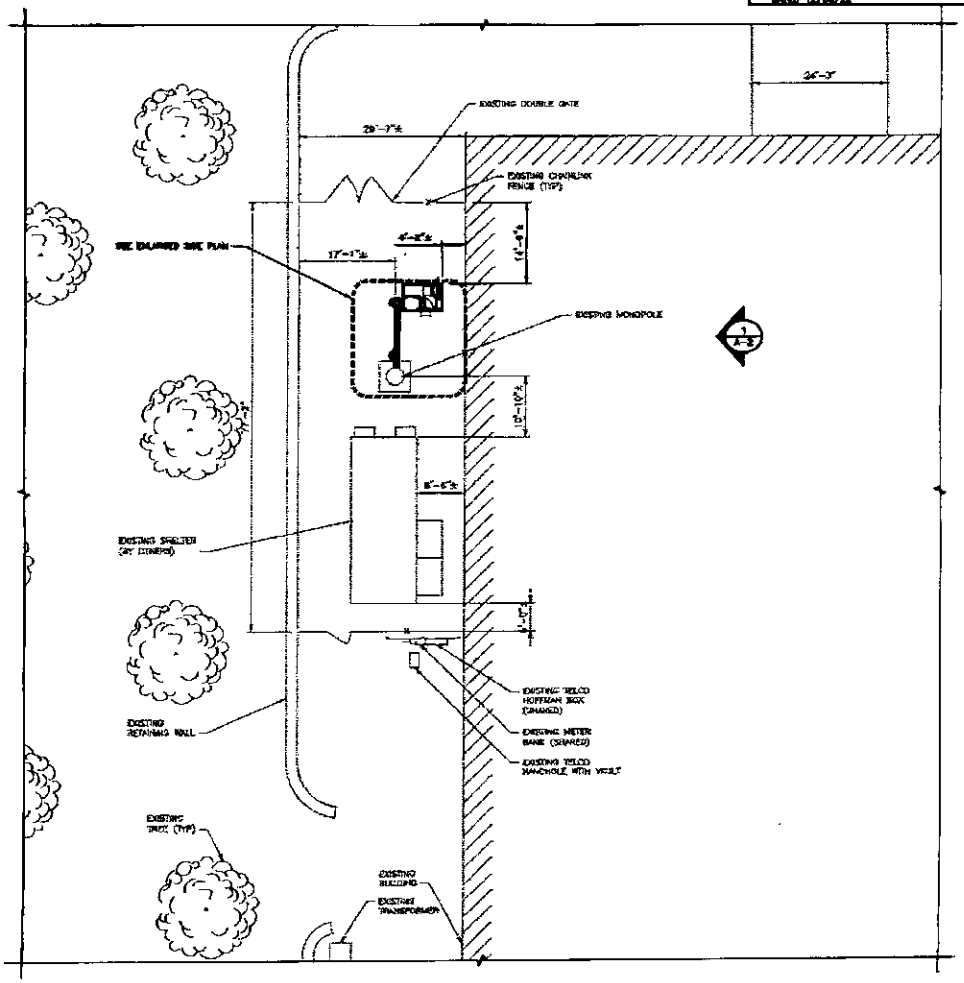
60 COMMERCE DRIVE
TRUMBULL, CT 06611

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1

NOTES

1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.
3. REFER TO STRUCTURAL ANALYSIS REPORT BY SIDMAN ENGINEERING SOLUTIONS DATED 12/13/22
4. REFER TO MOUNT ANALYSIS REPORT BY TECTONIC DATED 12/09/22



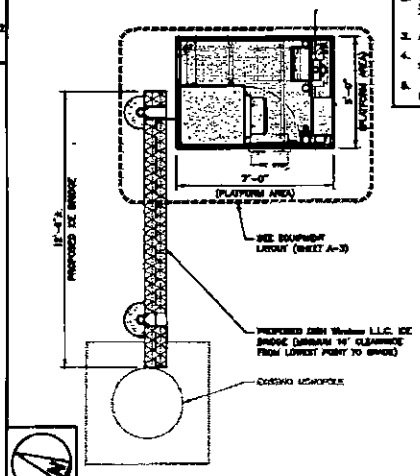
OVERALL SITE PLAN

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

1

NOTES

1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. CONTRACTOR SHALL MAINTAIN A 18'-0" MINIMUM SEPARATION BETWEEN THE PROPOSED DISH WIRELESS TRANSMITTING ANTENNAS AND EXISTING GPS UNITS.
3. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.
4. REFER TO STRUCTURAL ANALYSIS REPORT BY SIDMAN ENGINEERING SOLUTIONS DATED 12/13/22
5. REFER TO MOUNT ANALYSIS REPORT BY TECTONIC DATED 12/09/22



ENLARGED SITE PLAN

1'3" 6" 0 1" 2" 3" 4" 5" 6" 7"
3/8"=1'-0"

2

NOT USED

NO SCALE

3

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

Tectonic

STATE OF CONNECTICUT
ANTONIO A. GIUGLIANO
PEN.0025406
LICENSED PROFESSIONAL ENGINEER
12/16/2022

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
TJ	JG	—

RFDS REV #: —

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	12/14/22	ISSUED FOR PLANS

ARE PROJECT NUMBER
10710.NJJER01153A

DISH Wireless L.L.C.
PROJECT INFORMATION
NJJER01153A

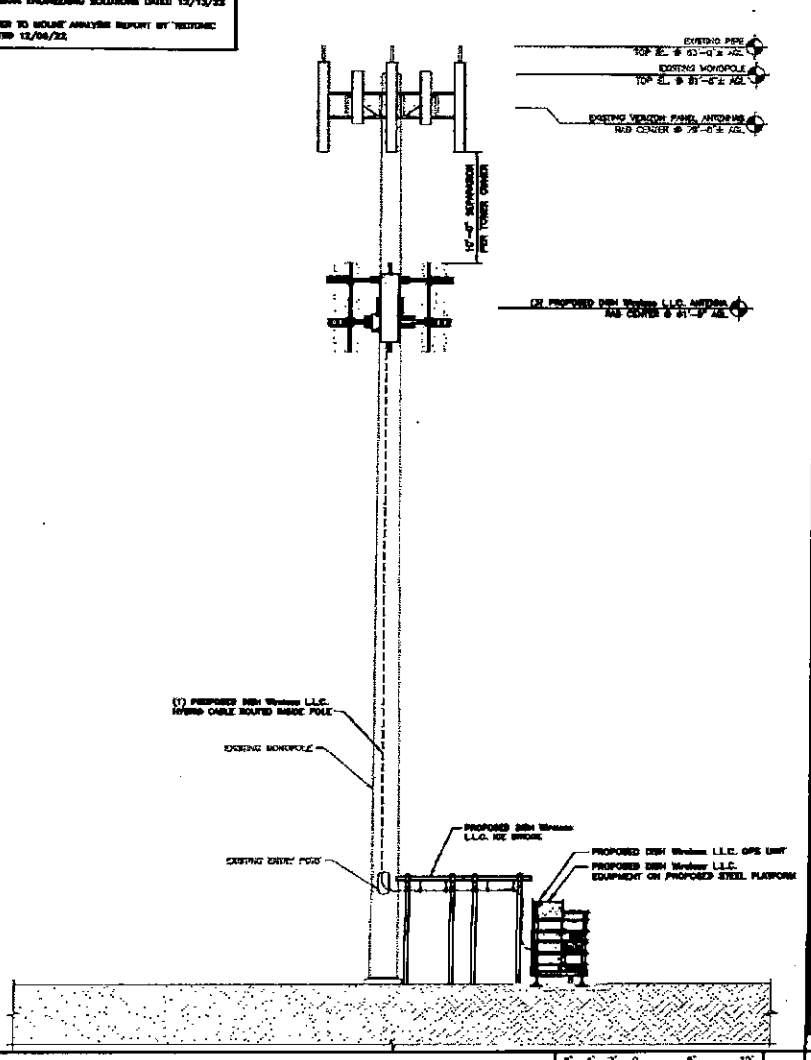
60 COMMERCE DRIVE
TRUMBULL, CT 06611

SHEET TITLE
OVERALL AND ENLARGED SITE PLAN

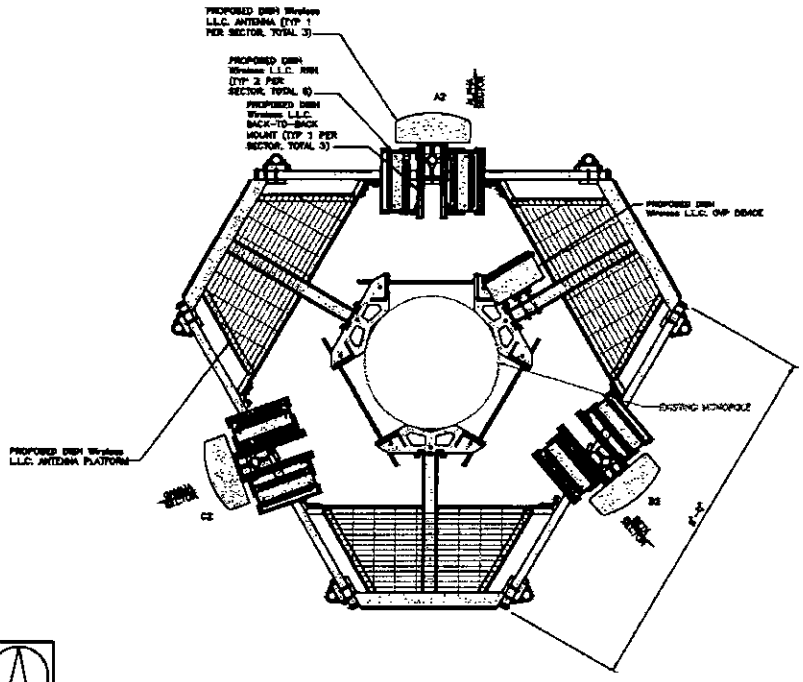
SHEET NUMBER
A-1

NOTES

1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNA AND MW DISH SPECIFICATIONS REFER TO ANTENNA SCHEDULE AND TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS
4. REFER TO STRUCTURAL ANALYSIS REPORT BY SIDMAN ENGINEERING SOLUTIONS DATED 12/13/22
5. REFER TO MOUNT ANALYSIS REPORT BY TECTONIC DATED 12/06/22;



PROPOSED NORTH ELEVATION — 3/16"=1'-0" — 1



ANTENNA LAYOUT — 3/4"=1'-0" — 2

SECTOR POS.	ANTENNA: EXISTING OR PROPOSED	ANTENNA: MANUFACTURER — MODEL NUMBER	ANTENNA: TECH	ANTENNA: AZIMUTH	ANTENNA: RAD CENTER	TRANSMISSION CABLE: FEED LINE TYPE AND LENGTH	RRH: MANUFACTURER — MODEL NUMBER	RRH: TECH	RRH: POS.	DVP: MANUFACTURER MODEL
A1	—	—	—	—	—	(1) HIGH-CAPACITY HYBRID CABLE (85' LONG)	FUJITSU — TA08025-B604	B2	A2	RADC-9181-PF-48
A2	PROPOSED	JMA — MX08FRO665-21	B2	0°	91'-0"		FUJITSU — TA08025-B605	B66	A2	
A3	—	—	—	—	—		—		—	
B1	—	—	—	—	—	SHARED W/ALPHA	FUJITSU — TA08025-B604	B2	B2	SHARED W/ALPHA
B2	PROPOSED	JMA — MX08FRO665-21	B2	140°	91'-0"		FUJITSU — TA08025-B605	B66	B2	
B3	—	—	—	—	—		—		—	
C1	—	—	—	—	—	SHARED W/ALPHA	FUJITSU — TA08025-B604	B2	C2	SHARED W/ALPHA
C2	PROPOSED	JMA — MX08FRO665-21	B2	260°	91'-0"		FUJITSU — TA08025-B605	B66	C2	
C3	—	—	—	—	—		—		—	

NOTES:

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

ANTENNA SCHEDULE — NO SCALE — 3

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LITTLETON, CO 80120

Tectonic

STATE OF CONNECTICUT
ANTONIO A. GUALTIERI
PEN.0025406
LICENSED PROFESSIONAL ENGINEER
12/15/2022

DRAWN BY:	CHECKED BY:	APPROVED BY:
TJ	JO	—

RFDS REV #: —

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	12/15/22	ISSUED FOR PCSD

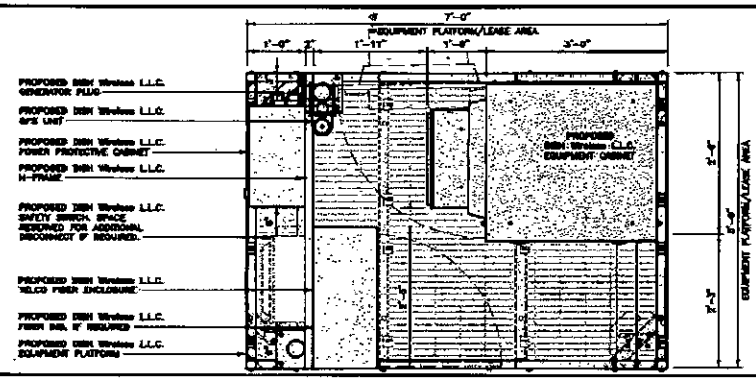
A&E PROJECT NUMBER
10710.NJJER01153A

DISH Wireless L.L.C.
PROJECT INFORMATION
NJJER01153A

50 COMMERCE DRIVE
TRUMBULL, CT 06611

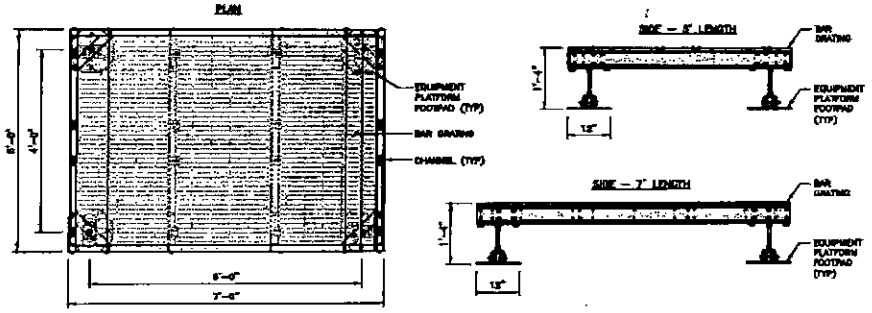
SHEET TITLE
ELEVATION, ANTENNA LAYOUT AND SCHEDULE

SHEET NUMBER
A-2



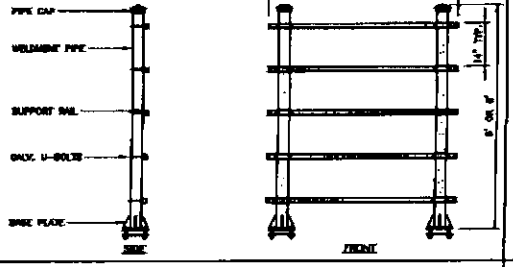
PLATFORM EQUIPMENT PLAN — 1

COMMSCOPE MTC4045LP 5X7 PLATFORM	
DIMENSIONS (nominal)	16'-0"x5'-0"
TOTAL WEIGHT	423 LBS



PLATFORM DETAIL — NO SCALE — 2

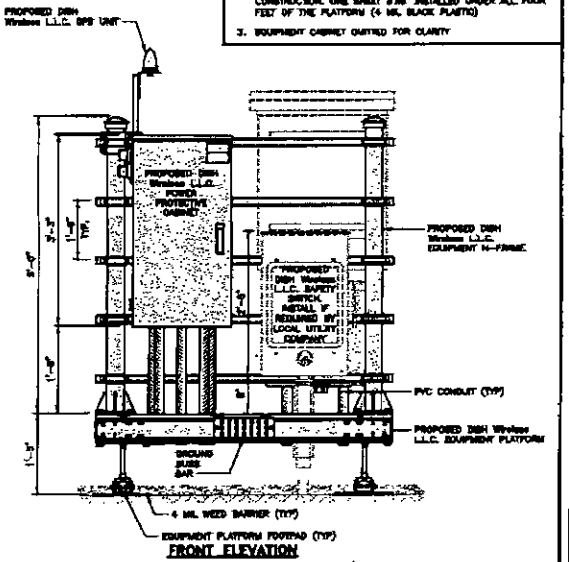
COMMSCOPE MTC4045HFLD H-FRAME	
LINEWALK/SUPPORT RAILS QTY	3
WEIGHT	2874 lbs



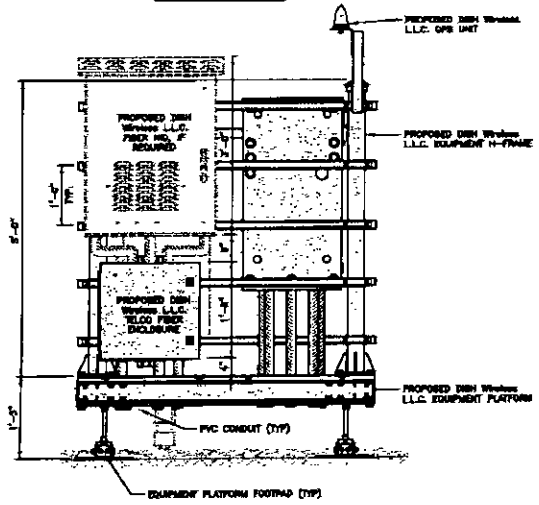
H-FRAME DETAIL — NO SCALE — 3

NOT USED — NO SCALE — 4

1. CONTRACTOR TO BURY PLATFORM FEET WITH A MINIMUM OF 6" OF FILL PER EXISTING SITE SURFACE.
2. WEED BARRIER FABRIC TO BE ADDED AT DISCRETION OF DISH Wireless L.L.C. CONSTRUCTION MANAGER AT TIME OF CONSTRUCTION. ONE SHEET (5'x8' INSTALLED UNDER ALL FOUR FEET OF THE PLATFORM (4 MIL BLACK PLASTIC))
3. EQUIPMENT CABINET OMITTED FOR CLARITY



FRONT ELEVATION



BACK ELEVATION

H-FRAME EQUIPMENT ELEVATION — 5

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12/15/2022

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DRAWN BY:	CHECKED BY:	APPROVED BY:
TJ	JC	—

RFDS REV #: —

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	12/14/22	ISSUED FOR PLANS

A&E PROJECT NUMBER
10710.NJJER01153A

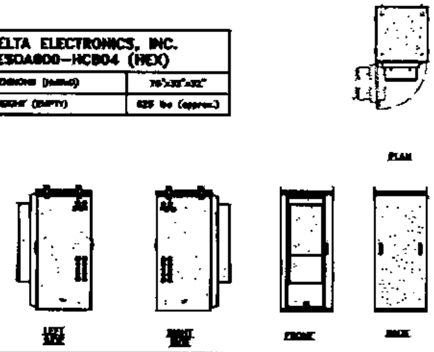
DISH Wireless L.L.C.
PROJECT INFORMATION
NJJER01153A

60 COMMERCE DRIVE
TRUMBULL, CT 06611

SHEET TITLE
ELEVATION, ANTENNA LAYOUT AND SCHEDULE

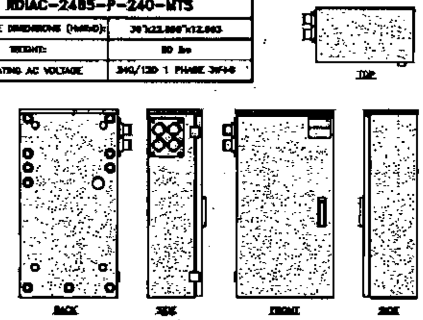
SHEET NUMBER
A-3

DELTA ELECTRONICS, INC. ESOA800-HCB04 (HEX)	
DIMENSIONS (HxWxD)	78"x33"x32"
WEIGHT (EMPTY)	625 lbs (approx.)



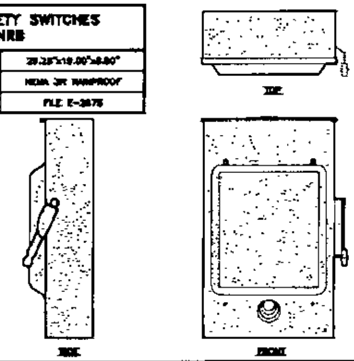
CABINET DETAIL — NO SCALE — 1

RAYCAP PPC RDIAC-2485-P-240-MTS	
ENCLOSURE DIMENSIONS (HxWxD):	30"x22.890"x12.663
WEIGHT:	80 lbs
OPERATING AC VOLTAGE	240/120 1 PHASE 3W+G



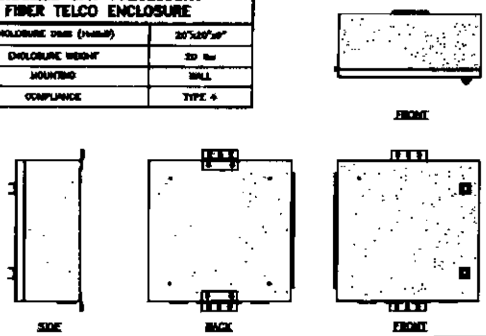
POWER PROTECTION CABINET (PPC) DETAIL — NO SCALE — 2

SQUARE D SAFETY SWITCHES D224NRB	
ENCLOSURE DIM (HxWxD)	29.25"x15.00"x8.80"
ENCLOSURE TYPE	NEMA 3R RAINPROOF
UL LISTED	FILE E-2875



SAFETY SWITCH DETAIL — NO SCALE — 3

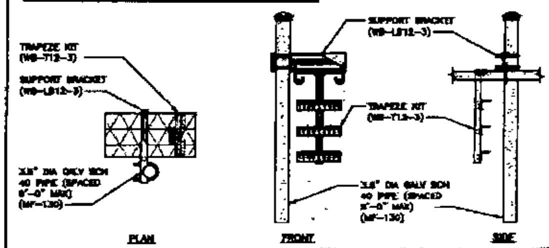
CHARLES CFIT-PF2020DSH1 FIBER TELCO ENCLOSURE	
ENCLOSURE DIMS (HxWxD)	20"x20"x8"
ENCLOSURE WEIGHT	20 lbs
MOUNTING	WALL
COMPLIANCE	TYPE 4



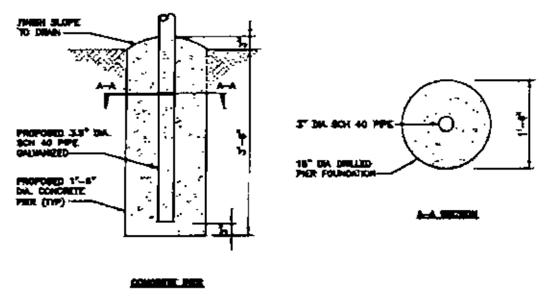
FIBER TELCO ENCLOSURE DETAIL — NO SCALE — 4

COMMSCOPE WB-K110-B WAVEGUIDE BRIDGE KIT	
DIMENSIONS (ins.)	180"x10"
WEIGHT/ VOLUME	300.0 LBS
CABLE RUN (QTY)	12

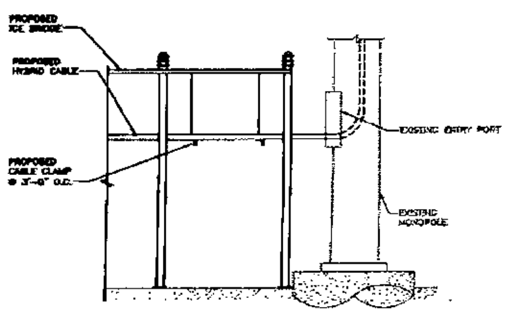
INCLUDED PRODUCTS:	
	WB-T12-3 TRAPEZE KIT, 3 RUNGS
	WB-LB12-3 SUPPORT BRACKET
	MF-130 DIRECT BURIAL PIPE COLUMN, 13'-4"



ICE BRIDGE DETAIL — NO SCALE — 5



TYPICAL ICE BRIDGE CONCRETE PIER DETAIL — NO SCALE — 6



HYBRID CABLE RUN — NO SCALE — 7

NO SCALE — 8

NO SCALE — 9

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LITTLETON, CO 80120

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STATE OF CONNECTICUT
ANTONIO A. GUALTIERI
PEN.0025406
LICENSED
PROFESSIONAL ENGINEER
12/15/2022

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DRAWN BY:	CHECKED BY:	APPROVED BY:
TJ	JQ	----

RFDS REV #:

CONSTRUCTION DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
0	12/15/22	ISSUED FOR FILING

A&E PROJECT NUMBER
10710.NJJER01153A

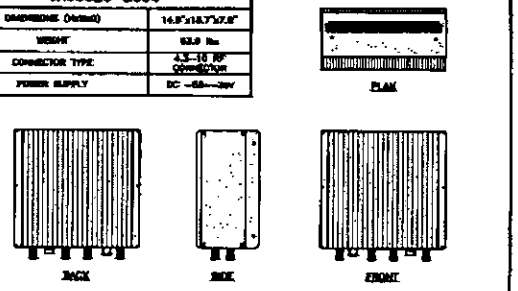
DISH Wireless L.L.C.
PROJECT INFORMATION
NJJER01153A

60 COMMERCE DRIVE
TRUMBULL, CT 06611

SHEET TITLE
EQUIPMENT DETAILS

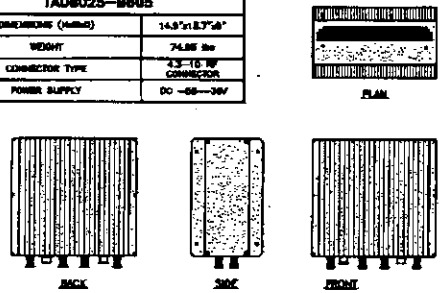
SHEET NUMBER
A-4

FUJITSU DUAL BAND TA08025-B604	
DIMENSIONS (HxWxD)	14.8"x18.7"x7.8"
WEIGHT	53.0 lbs
CONNECTOR TYPE	4.3-10 RF CONNECTOR
POWER SUPPLY	DC -48---36V



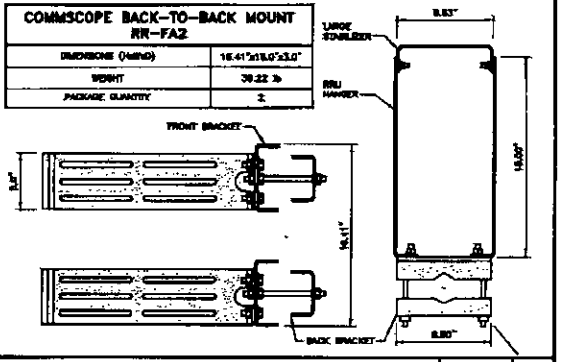
RRH DETAIL | NO SCALE | 1

FUJITSU TRIPLE BAND TA08025-B605	
DIMENSIONS (HxWxD)	14.8"x18.7"x8"
WEIGHT	74.96 lbs
CONNECTOR TYPE	4.3-10 RF CONNECTOR
POWER SUPPLY	DC -48---36V



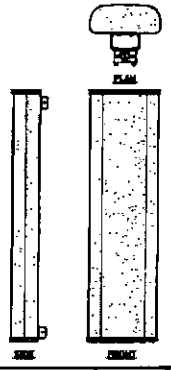
RRH DETAIL | NO SCALE | 2

COMMSCOPE BACK-TO-BACK MOUNT RR-FA2	
DIMENSIONS (HxWxD)	16.41"x16.0"x3.0"
WEIGHT	30.22 lb
PACKAGE QUANTITY	1



REMOTE RADIO MOUNT DETAIL | NO SCALE | 3

JMA MX08FRO665-21	
DIMENSIONS (HxWxD)	72"x20.0"x8.6"
RF PORTS, CONNECTOR TYPE	8 x 4.3-10 FEMALE
WEIGHT	84.5 lbs
WEIGHT WITH BRACKETS	92.6 lbs



ANTENNA DETAIL | NO SCALE | 4

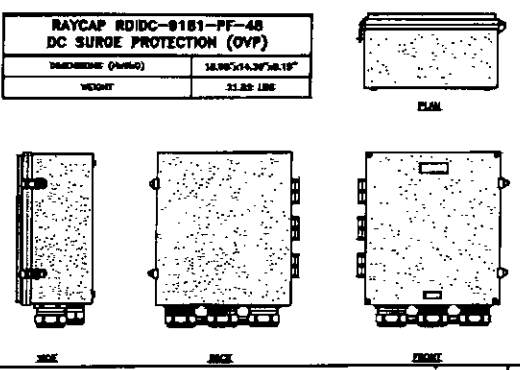
JMA ANTENNA MOUNT BRACKET #91900318	
TOTAL WEIGHT (WITH BRACKETS)	19 lbs (8.16 Kg)
POLE DIAMETER RANGE	2.5" TO 4.5"

NOTE:
KIT #91900318, TOP AND BOTTOM BRACKETS FOR 4-, 5-, AND 6-FOOT ANTENNAS
ANTENNA BRACKET NOT PART OF KIT

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

ANTENNA BRACKET DETAIL | NO SCALE | 5

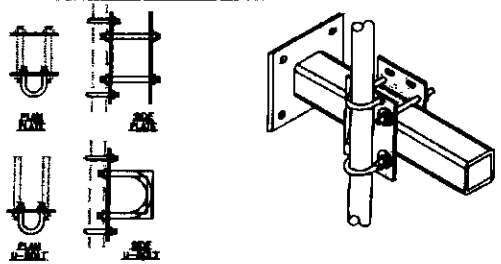
RAYCAP RDIDC-9181-PF-48 DC SURGE PROTECTION (OVP)	
DIMENSIONS (HxWxD)	16.85"x14.36"x8.19"
WEIGHT	31.85 LBS



SURGE SUPPRESSION DETAIL (OVP) | NO SCALE | 6

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

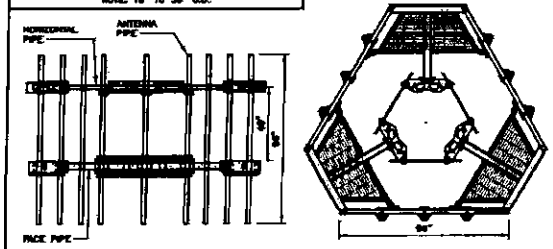
NOTE:
OR DISH Wireless L.L.C. APPROVED EQUIVALENT



RRH/OVP MOUNT DETAIL | NO SCALE | 7

COMMSCOPE MC-PK8-DSH	
PAGE WIDTH	96"
WEIGHT	1373.06 lbs
NOTE: 10" TO 30" O.D.	

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



ANTENNA PLATFORM DETAIL | NO SCALE | 8

NO SCALE | 9

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STATE OF CONNECTICUT
ANTONIO A. GUALTIERI
PEN.0025406
LICENSED PROFESSIONAL ENGINEER
12/15/2022

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DRAWN BY:	CHECKED BY:	APPROVED BY:
TJ	JQ	

RFDS REV #:

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	12/15/22	ISSUED FOR FINAL

ASE PROJECT NUMBER
10710.NJJER01153A

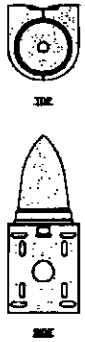
DISH Wireless L.L.C.
PROJECT INFORMATION
NJJER01153A

60 COMMERCE DRIVE
TRUMBULL, CT 06611

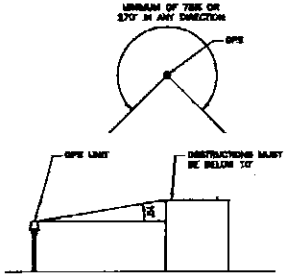
SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-5

PCTEL GPSGL-TMG-SPI-40NCB	
DIMENSIONS (WxHxD) MM/INCH	81x134mm 3.2"x7.28"
WEIGHT W/ACCESSORIES	0.73 lbs
CONNECTOR	N-FEMALE
FREQUENCY RANGE	1565 ± 30MHz

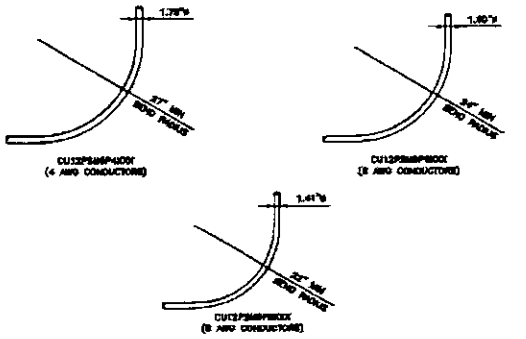


GPS DETAIL — NO SCALE — 1



GPS MINIMUM SKY VIEW REQUIREMENTS — NO SCALE — 2

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



NO SCALE — 4

NO SCALE — 5

NO SCALE — 6

NO SCALE — 7

NO SCALE — 8

NO SCALE — 9

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STATE OF CONNECTICUT
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12/16/2022

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RFDS REV #: —

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DISH Wireless L.L.C.
PROJECT INFORMATION
NJJER01153A

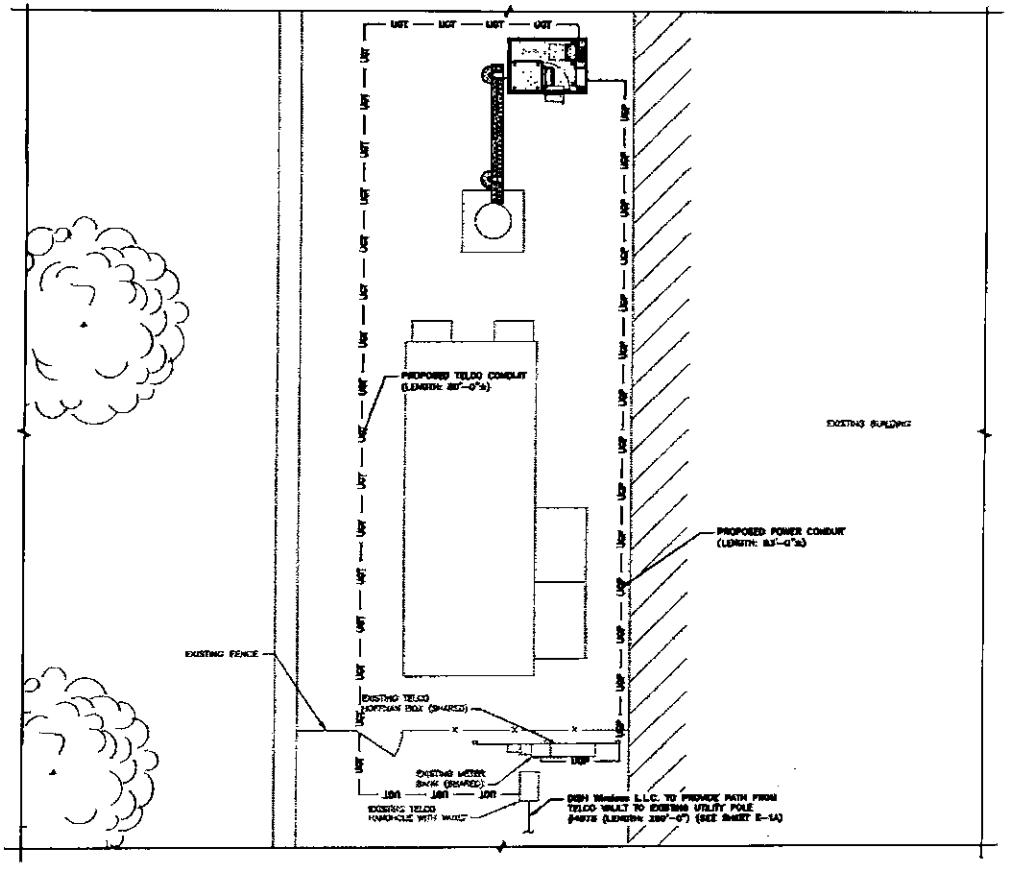
60 COMMERCE DRIVE
TRUMBULL, CT 06611

SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-6

NOTES

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



UTILITY ROUTE PLAN

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

1

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

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

ELECTRICAL NOTES

NO SCALE

2

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

Tectonic

STATE OF CONNECTICUT
ANTONIO A. GIULIETTI
PEN.0025406
LICENSED PROFESSIONAL ENGINEER
12/15/2022

DRAWN BY:	CHECKED BY:	APPROVED BY:
TJ	JQ	---

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	12/14/22	ISSUED FOR REVIEW

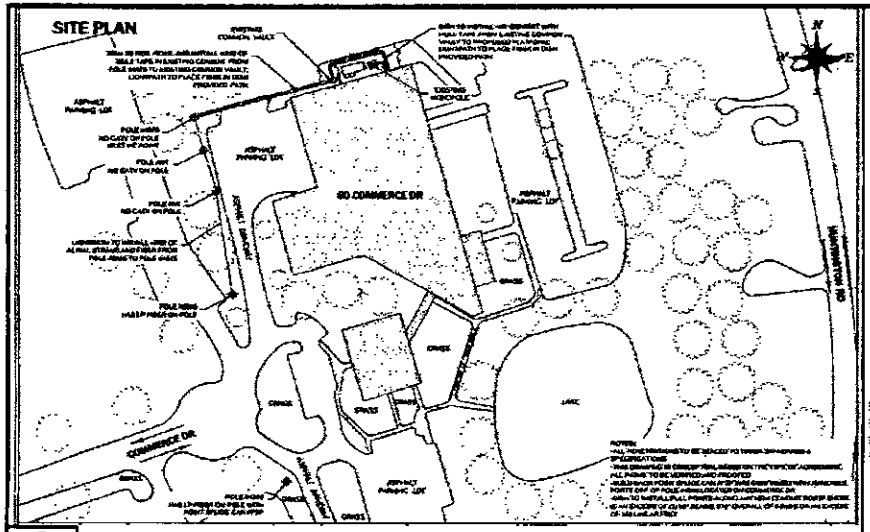
A&E PROJECT NUMBER
10710.NJJER01153A

DISH Wireless L.L.C.
PROJECT INFORMATION
NJJER01153A

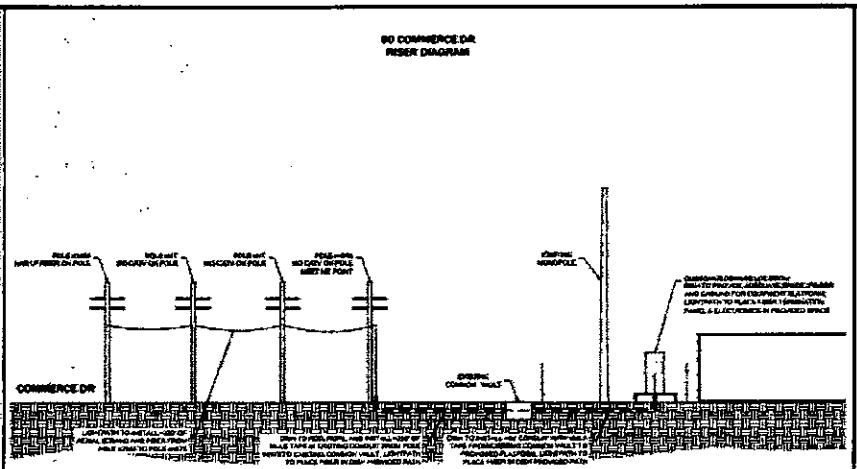
60 COMMERCE DRIVE
TRUMBULL, CT 06611

SHEET TITLE
ELECTRICAL/FIBER ROUTE PLAN AND NOTES

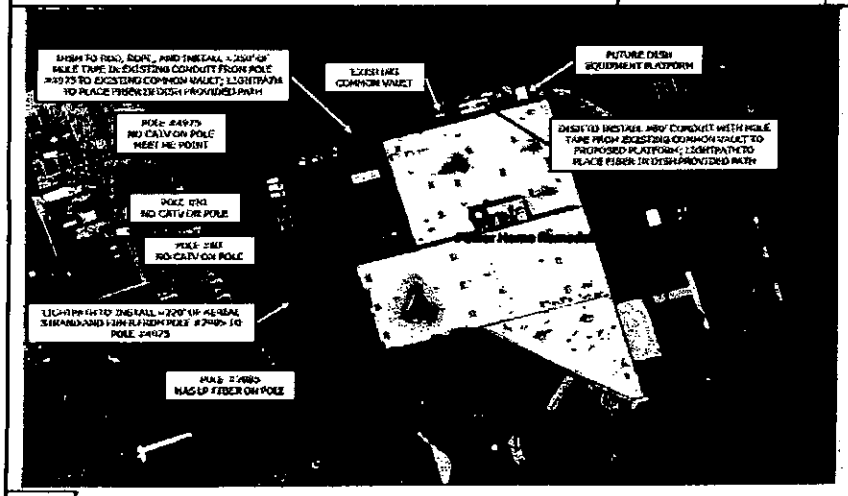
SHEET NUMBER
E-1



FIBER ROUTE DESIGN SKETCH | NO SCALE | 1



FIBER RISER DIAGRAM | NO SCALE | 3



FIBER ROUTE AERIAL PATH | NO SCALE | 2

NOT USED | NO SCALE | 4

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60 COMMERCE DRIVE
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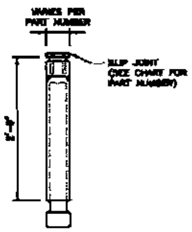
SHEET TITLE
FIBER ROUTING PATH

SHEET NUMBER
E-1A

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

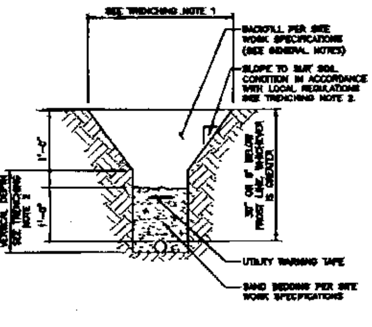


NOTE:
CONTRACTOR TO INSTALL EXPANSION FITTING SLIP JOINT AT METER CENTER CONDUIT TERMINATION, AS PER LOCAL UTILITY POLICY, ORDINANCE AND/OR SPECIFIED REQUIREMENT.

EXPANSION JOINT DETAIL | NO SCALE | 1

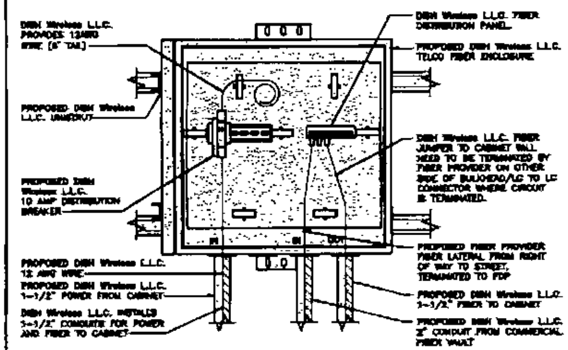
TRENCHING NOTES

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



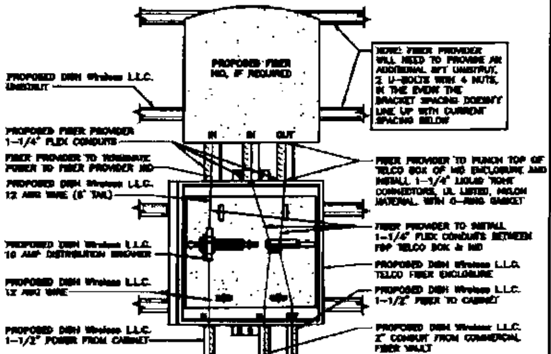
SEE TRENCHING NOTE 1
BACKFILL PER SITE WORK SPECIFICATIONS (SEE GENERAL NOTES)
SLOPE TO SUIT SOIL CONDITION IN ACCORDANCE WITH LOCAL REGULATIONS SEE TRENCHING NOTE 2.
UTILITY WARNING TAPE
SAND BEDDING PER SITE WORK SPECIFICATIONS
VERTICAL DEPTH SEE TRENCHING NOTE 2

TYPICAL UNDERGROUND TRENCH DETAIL | NO SCALE | 2



DISH Wireless L.L.C. PROVIDES 12AWG WIRE (6" TAIL)
PROPOSED DISH Wireless L.L.C. UNISTRUT
PROPOSED DISH Wireless L.L.C. 10 AMP DISTRIBUTION BREAKER
PROPOSED DISH Wireless L.L.C. 12 AWG WIRE
PROPOSED DISH Wireless L.L.C. 1-1/2" POWER FROM CABINET
DISH Wireless L.L.C. INSTALLS 1-1/2" CONDUITS FOR POWER AND FIBER TO CABINET
DISH Wireless L.L.C. FIBER DISTRIBUTION PANEL
PROPOSED DISH Wireless L.L.C. TELCO FIBER ENCLOSURE
DISH Wireless L.L.C. FIBER JUMPER TO CABINET WILL NEED TO BE TERMINATED BY FIBER PROVIDER ON OTHER SIDE OF BULKHEAD/LC TO LC CONNECTOR WHERE CIRCUIT IS TERMINATED.
PROPOSED FIBER PROVIDER FIBER LATERAL FROM RIGHT OF WAY TO STREET, TERMINATED TO FDP
PROPOSED DISH Wireless L.L.C. 1-1/2" FIBER TO CABINET
PROPOSED DISH Wireless L.L.C. 2" CONDUIT FROM COMMERCIAL FIBER VAULT

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



PROPOSED FIBER NID, IF REQUIRED
NOTE: FIBER PROVIDER WILL NEED TO PROVIDE AN ADDITIONAL 8FT UNISTRUT, 2 U-BOLTS WITH 4 NUTS, IN THE EVENT THE BRACKET SPACING DOESN'T LINE UP WITH CURRENT SPACING BELOW
PROPOSED DISH Wireless L.L.C. UNISTRUT
PROPOSED FIBER PROVIDER 1-1/4" FLEX CONDUITS
FIBER PROVIDER TO TERMINATE POWER TO FIBER PROVIDER NID
PROPOSED DISH Wireless L.L.C. 12 AWG WIRE (6" TAIL)
PROPOSED DISH Wireless L.L.C. 10 AMP DISTRIBUTION BREAKER
PROPOSED DISH Wireless L.L.C. 12 AWG WIRE
PROPOSED DISH Wireless L.L.C. 1-1/2" POWER FROM CABINET
FIBER PROVIDER TO PUNCH TOP OF TELCO BOX OF NID ENCLOSURE AND INSTALL 1-1/4" LIQUID TIGHT CONNECTORS, UL LISTED, NYLON MATERIAL WITH O-RING GASKET
FIBER PROVIDER TO INSTALL 1-1/4" FLEX CONDUITS BETWEEN FDP TELCO BOX & NID
PROPOSED DISH Wireless L.L.C. TELCO FIBER ENCLOSURE
PROPOSED DISH Wireless L.L.C. 1-1/2" FIBER TO CABINET
PROPOSED DISH Wireless L.L.C. 2" CONDUIT FROM COMMERCIAL FIBER VAULT
IN
IN
OUT

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

NOT USED | NO SCALE | 5

NOT USED | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

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STATE OF CONNECTICUT ANTONIO A. GUALTIERI PEN.0025406 LICENSED PROFESSIONAL ENGINEER
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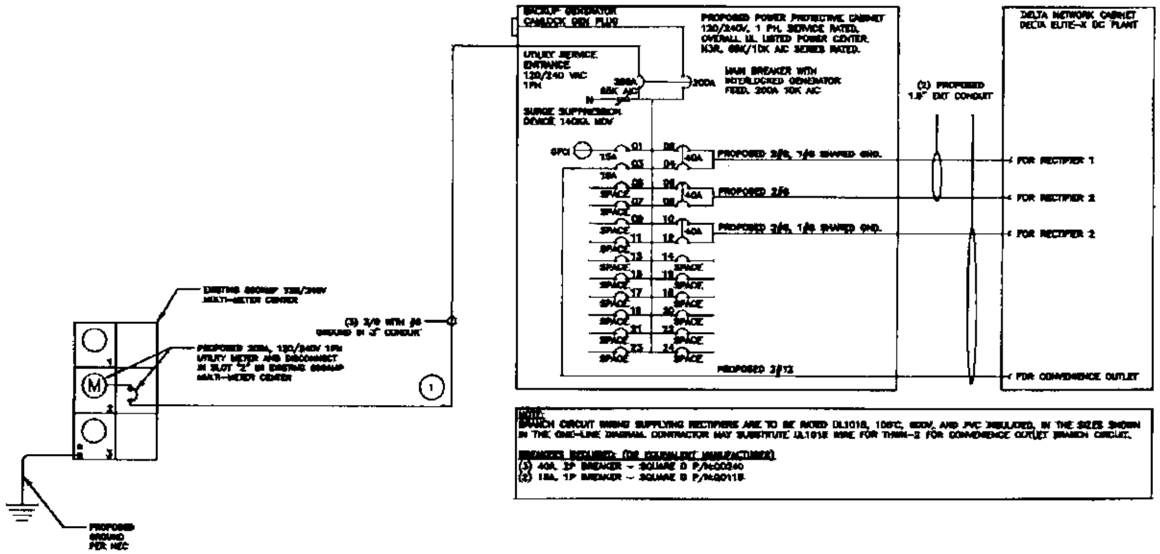
DISH Wireless L.L.C. PROJECT INFORMATION
NJJER01153A

60 COMMERCE DRIVE
TRUMBULL, CT 06611

SHEET TITLE
ELECTRICAL DETAILS

SHEET NUMBER
E-2



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

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

NOTES

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

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

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

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

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

#6 – 0.0366 SQ. IN X 4 = 0.1464 SQ. IN
#6 – 0.0366 SQ. IN X 1 = 0.0366 SQ. IN <GROUND
TOTAL = 0.1830 SQ. IN

RECTIFIER & GFCI CONDUCTORS

#12 – 0.0133 SQ. IN X 2 = 0.0266 SQ. IN
#6 – 0.0366 SQ. IN X 2 = 0.0732 SQ. IN
#6 – 0.0366 SQ. IN X 1 = 0.0366 SQ. IN <GROUND
TOTAL = 0.1364 SQ. IN

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

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

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

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

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

PPC ONE-LINE DIAGRAM — NO SCALE — 1

PANEL NAME	LOCATION										MOUNTING/ENCLOSURE		
DELTA	EQUIPMENT PLATFORM		VOLTAGE: 240/120 1Φ; MAIN C/B: 200 AMPS; BUS RATING: 200 AMPS								MOUNTING/ENCLOSURE: SURFACE/NEMA 3R; AVAIL. FAULT CURRENT:; SHORT CIRCUIT RATING: [illegible] / [illegible] SERIES RATED		
AMPS POLES	WIRE & CONDUIT	TYPE	DESCRIPTION	KVA	CKT	A	B	CKT	KVA	DESCRIPTION	TYPE	WIRE & CONDUIT	AMPS POLES
15/1	[illegible]	R	[illegible] GFCI	[illegible]	1	[illegible]		2	[illegible]	RECTIFIER	EQ	SEE ONE LINE	40/2
15/1	SEE ONE LINE	R	CONVENIENCE OUTLET	[illegible]	3		[illegible]	4	[illegible]		EQ		
			SPACE		5	[illegible]		6	[illegible]	RECTIFIER	EQ	SEE ONE LINE	40/2
			SPACE		7		[illegible]	8	[illegible]		EQ		
			SPACE		9	[illegible]		10	[illegible]	RECTIFIER	EQ	SEE ONE LINE	40/2
			SPACE		11		[illegible]	12	[illegible]		EQ		
			SPACE		13			14		SPACE			
			SPACE		15			16		SPACE			
			SPACE		17			18		SPACE			
			SPACE		19			20		SPACE			
			SPACE		21			22		SPACE			
			SPACE		23			24		SPACE			
				PHASE LOAD		4.7	4.7	KVA					

TOTAL CONNECTED LOAD	[illegible] KVA	[illegible] A
TOTAL DEMAND LOAD	[illegible] KVA	[illegible] A

LOAD TYPE	DESCRIPTION	CONN. LOAD KVA	CONN. LOAD AMPS	DEMAND FACTOR	DESIGN LOAD KVA	DESIGN LOAD AMPS
L	LIGHTING	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
R	RECEPTACLE	[illegible]	[illegible]	NEC	[illegible]	[illegible]
M	MOTOR	[illegible]	[illegible]	NEC	[illegible]	[illegible]
H	HEATING	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
AC	HVAC	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
EQ	EQUIPMENT	[illegible]	37.5	[illegible]	[illegible]	37.5
E	EXISTING	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

*ALL EQUIPMENT LOADS CONSIDERED CONTINUOUS LOADS

PANEL SCHEDULE — NO SCALE — 2

NOT USED — NO SCALE — 3

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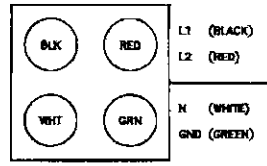
60 COMMERCE DRIVE
TRUMBULL, CT 06611

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

SHEET NUMBER
E-3

NOTES:

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



CAM-LOCK GENERATOR RECEPTACLE

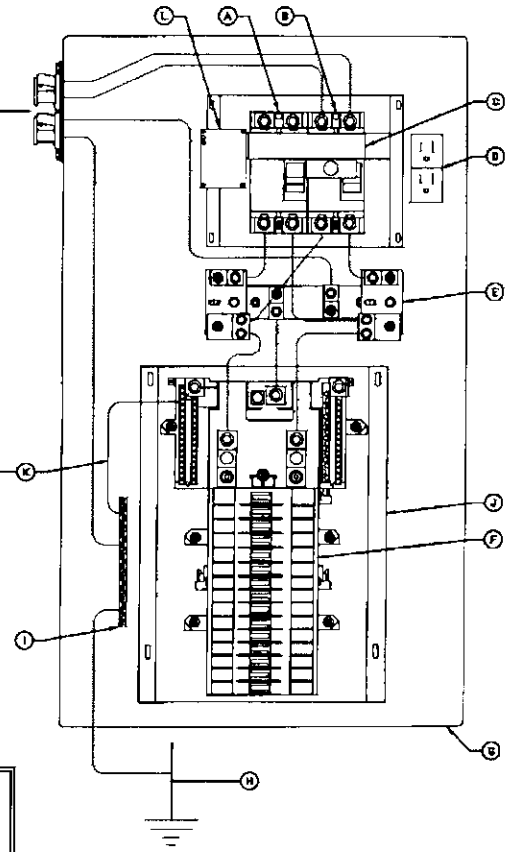
(AS VIEWED FROM OUTSIDE OF ENCLOSURE)
USE LINE UP PIN AS REFERENCE

REFER TO RECEPTACLE FOR MODEL NUMBER

DANGER:

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

RAYCAP CUSTOMER SERVICE
(800) 890-2588



SUITABLE FOR USE AS SERVICE EQUIPMENT

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

CAUTION:

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

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

200A UTILITY FEED

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

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

200A GENERATOR FEED

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

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

NEUTRAL-TO-GROUND NOTES:

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

NEUTRAL-TO-GROUND CONDUIT JUMPER

INSTALLATION INSTRUCTIONS:

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

LEGEND:

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

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

NO SCALE | 1

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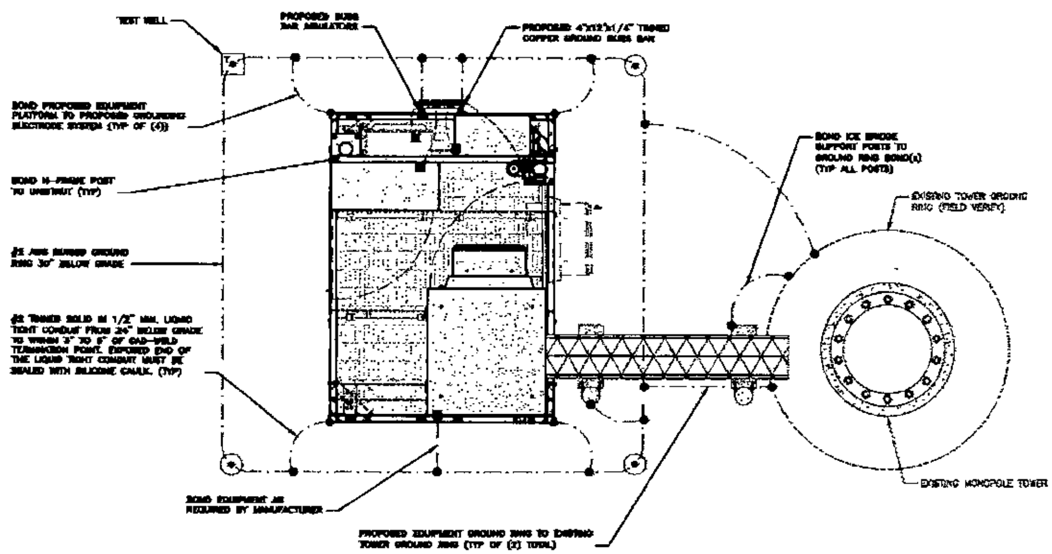
60 COMMERCE DRIVE
TRUMBULL, CT 06611

SHEET TITLE
PPC NEUTRAL-TO-GROUND SCHEMATIC

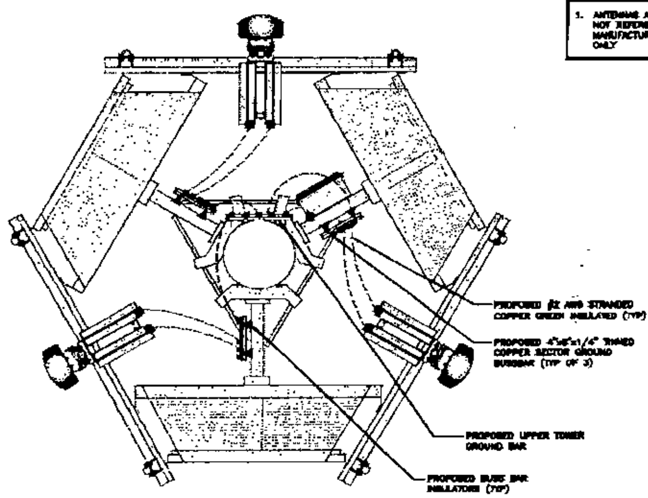
SHEET NUMBER
E-4



TYPICAL EQUIPMENT GROUNDING PLAN | NO SCALE | 1

NOTES

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



TYPICAL ANTENNA GROUNDING PLAN | NO SCALE | 2

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

GROUNDING LEGEND

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

GROUNDING KEY NOTES

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

GROUNDING KEY NOTES | NO SCALE | 3

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LITTLETON, CO 80120

Tectonic

STATE OF CONNECTICUT — ANTONIO A. GUALTIERI — PEN.0025406 — LICENSED PROFESSIONAL ENGINEER — 12/16/2022

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TJ	JG	------

RFDS REV #:

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	12/16/22	ISSUED FOR FILING

A&E PROJECT NUMBER
10710.NJJER01153A

DISH Wireless L.L.C.
PROJECT INFORMATION
NJJER01153A

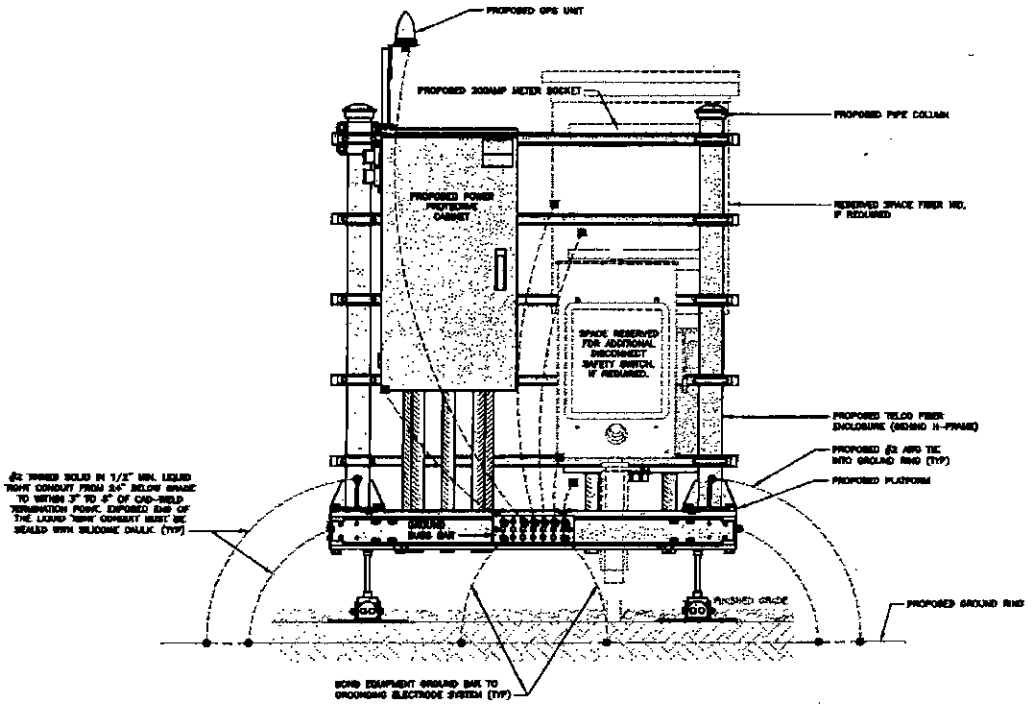
60 COMMERCE DRIVE
TRUMBULL, CT 06611

SHEET TITLE
GROUNDING PLANS AND NOTES

SHEET NUMBER
G-1

NOTES

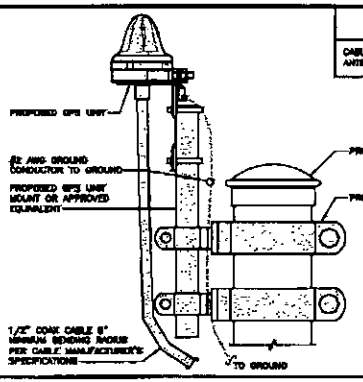
EQUIPMENT CABINET SHOWN FOR CLARITY



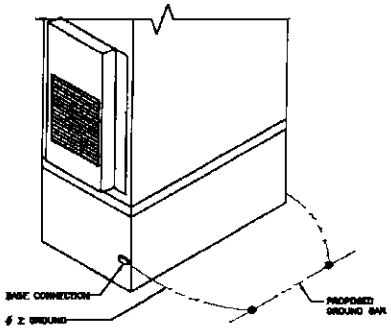
DETAIL NOT USED — NO SCALE — 1

NOTES

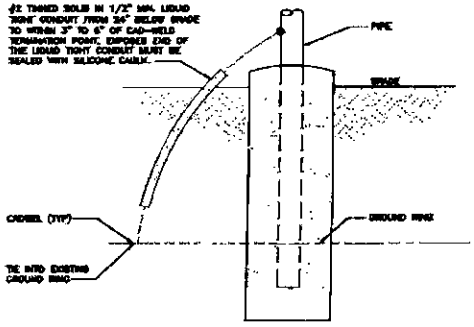
CABLE GROUNDING ARE REQUIRED WHEN ANTENNA IS LESS THAN 10' FROM CABINET



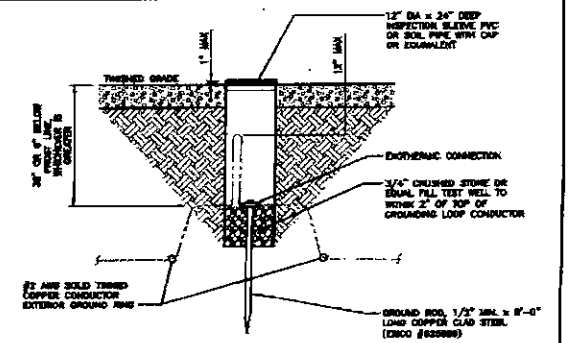
TYPICAL GPS UNIT GROUNDING — NO SCALE — 2



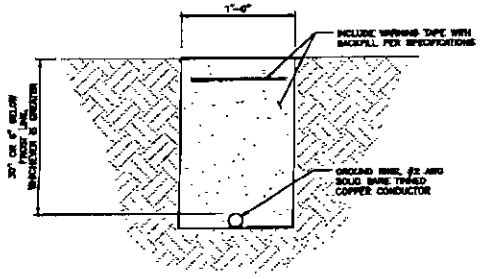
OUTDOOR CABINET GROUNDING — NO SCALE — 3



TRANSITIONING GROUND DETAIL — NO SCALE — 4



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



TYPICAL GROUND RING TRENCH — NO SCALE — 6

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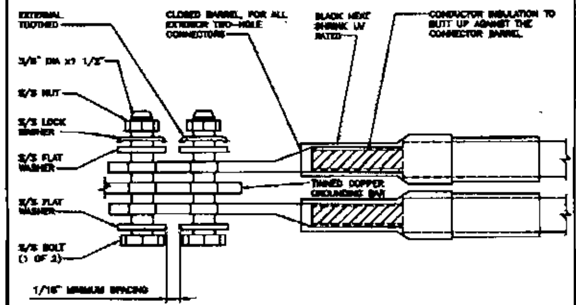
60 COMMERCE DRIVE
TRUMBULL, CT 06611

SHEET TITLE
GROUNDING DETAILS

SHEET NUMBER
G-2

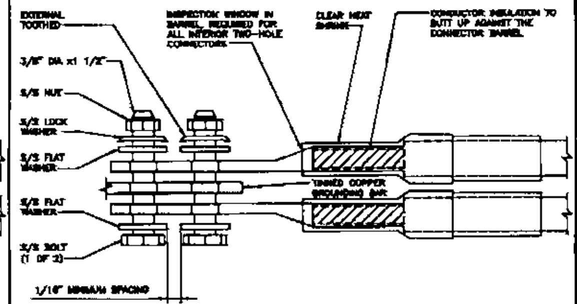
1. EXOTHERMIC WELD (2) TWO, #2 AWG BARE TINNED SOLID COPPER CONDUCTORS TO GROUND BAR. ROUTE CONDUCTORS TO BURIED GROUND RING AND PROVIDE PARALLEL EXOTHERMIC WELD.
2. ALL EXTERIOR GROUNDING HARDWARE SHALL BE STAINLESS STEEL 3/8" DIAMETER OR LARGER. ALL HARDWARE 18-8 STAINLESS STEEL INCLUDING LOCK WASHERS.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

TYPICAL GROUNDING NOTES — NO SCALE — 1



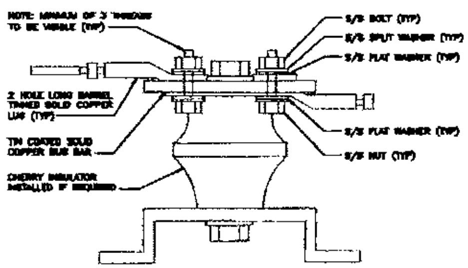
EXTERNAL TOOTHED
3/8" DIA x1 1/2"
S/S NUT
S/S LOCK WASHER
S/S FLAT WASHER
S/S FLAT WASHER
S/S BOLT (1 OF 2)
1/16" MINIMUM SPACING
CLOSED BARREL, FOR ALL EXTERIOR TWO-HOLE CONNECTORS
BLACK HEAT SHRINK UV RATED
CONDUCTOR INSULATION TO BUTT UP AGAINST THE CONNECTOR BARREL
TINNED COPPER GROUNDING BAR

TYPICAL EXTERIOR TWO HOLE LUG — NO SCALE — 2



EXTERNAL TOOTHED
3/8" DIA x1 1/2"
S/S NUT
S/S LOCK WASHER
S/S FLAT WASHER
S/S FLAT WASHER
S/S BOLT (1 OF 2)
1/16" MINIMUM SPACING
INSPECTION WINDOW IN BARREL, REQUIRED FOR ALL INTERIOR TWO-HOLE CONNECTORS
CLEAR HEAT SHRINK
CONDUCTOR INSULATION TO BUTT UP AGAINST THE CONNECTOR BARREL
TINNED COPPER GROUNDING BAR

TYPICAL INTERIOR TWO HOLE LUG — NO SCALE — 3



LUG DETAIL — NO SCALE — 4

NOT USED — NO SCALE — 5

NOT USED — NO SCALE — 6

NOT USED — NO SCALE — 7

NOT USED — NO SCALE — 8

NOT USED — NO SCALE — 9

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DISH Wireless L.L.C. PROJECT INFORMATION
NJJER01153A

60 COMMERCE DRIVE
TRUMBULL, CT 06611

SHEET TITLE
GROUNDING DETAILS

SHEET NUMBER
G-3

RF JUMPER COLOR CODING

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

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

MID-BAND RRH –
(AWS BANDS N66+N70)

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

HYBRID/DISCREET CABLES

INCLUDE SECTOR BANDS BEING SUPPORTED ALONG WITH FREQUENCY BANDS

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

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

FIBER JUMPERS TO RRHs

LOW-BAND RRH FIBER CABLES HAVE SECTOR STRIPE ONLY

POWER CABLES TO RRHs

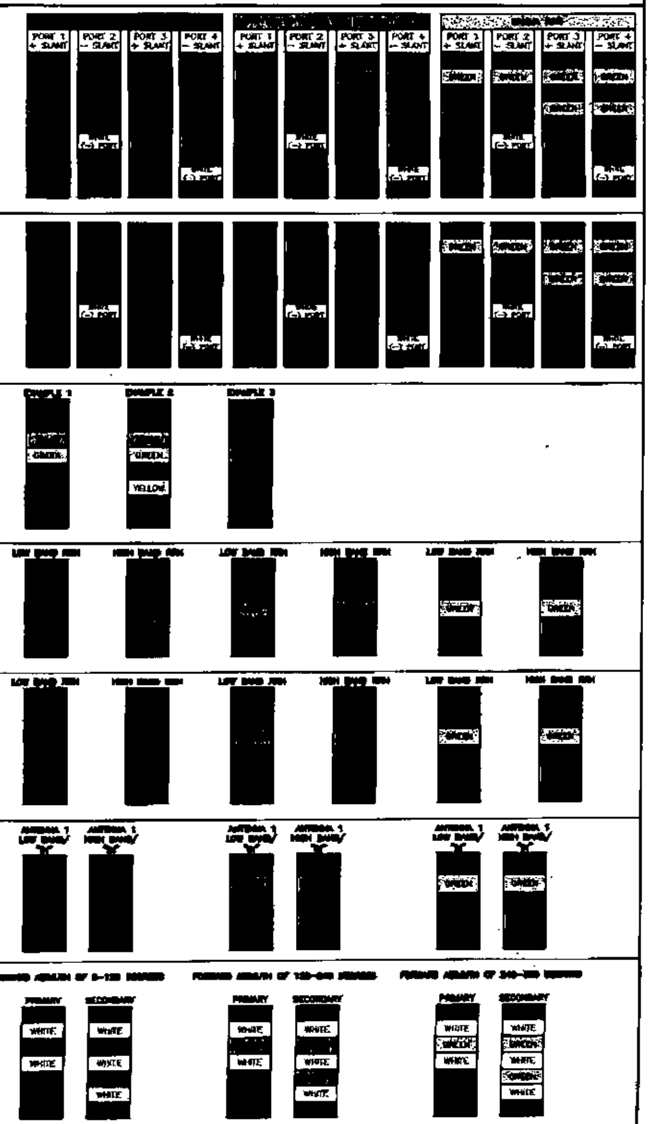
LOW-BAND RRH POWER CABLES HAVE SECTOR STRIPE ONLY

RET MOTORS AT ANTENNAS

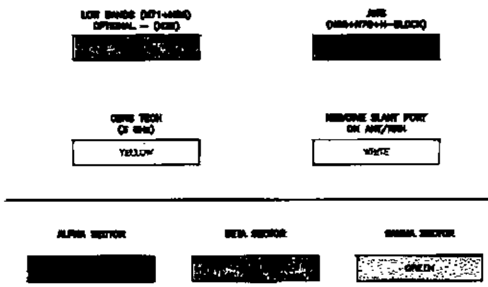
MICROWAVE RADIO LINKS

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

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



RF CABLE COLOR CODES | NO SCALE | 1



COLOR IDENTIFIER | NO SCALE | 2

NOT USED | NO SCALE | 3

NOT USED | NO SCALE | 4

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STATE OF CONNECTICUT
ANTONIO A. GUALTIERI
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PROJECT INFORMATION
NJJER01153A

60 COMMERCE DRIVE
TRUMBULL, CT 06611

SHEET TITLE
RF
CABLE COLOR CODES

SHEET NUMBER
RF-1

LEGEND

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

ABBREVIATIONS

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

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DISH Wireless L.L.C.
PROJECT INFORMATION
NJJER01153A

60 COMMERCE DRIVE
TRUMBULL, CT 06611

SHEET TITLE
LEGEND AND ABBREVIATIONS

SHEET NUMBER
GN-1

SIGN TYPES

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

SIGN PLACEMENT:

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

NOTES:

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

INFORMATION

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

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

Site ID: _____

THIS SIGN IS FOR REFERENCE PURPOSES ONLY

NOTICE

Transmitting Antenna(s)

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

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

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

Site ID: _____

dish

THIS SIGN IS FOR REFERENCE PURPOSES ONLY

CAUTION

Transmitting Antenna(s)

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

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

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

Site ID: _____

dish

THIS SIGN IS FOR REFERENCE PURPOSES ONLY

Transmitting Antenna(s)

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

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

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

Site ID: _____

dish

THIS SIGN IS FOR REFERENCE PURPOSES ONLY

RF SIGNAGE

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

Tectonic

STATE OF CONNECTICUT
ANTONIO A. GUASTELLA
PEN.0025406
LICENSED PROFESSIONAL ENGINEER
12/15/2022

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
JG	JG	—

RFDS REV #: —

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	12/15/22	ISSUED FOR BID

A&E PROJECT NUMBER
10710.NJJER01153A

DISH Wireless L.L.C.
PROJECT INFORMATION
NJJER01153A

60 COMMERCE DRIVE
TRUMBULL, CT 06611

SHEET TITLE
RF SIGNAGE

SHEET NUMBER
GN-2

SITE ACTIVITY REQUIREMENTS:

1. NOTICE TO PROCEED – NO WORK SHALL COMMENCE PRIOR TO CONTRACTOR RECEIVING A WRITTEN NOTICE TO PROCEED (NTP) AND THE ISSUANCE OF A PURCHASE ORDER. PRIOR TO ACCESSING/ENTERING THE SITE YOU MUST CONTACT THE DISH Wireless L.L.C. AND TOWER OWNER NOC & THE DISH Wireless L.L.C. AND TOWER OWNER CONSTRUCTION MANAGER.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

GENERAL NOTES:

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

CONTRACTOR: GENERAL CONTRACTOR RESPONSIBLE FOR CONSTRUCTION

CARRIER: DISH Wireless L.L.C.

TOWER OWNER: TOWER OWNER

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

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

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

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

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

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

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

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

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

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

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

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

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

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

Tectonic

STATE OF CONNECTICUT
ANTONIO A. GUALTIERI
PEN.0025406
LICENSED PROFESSIONAL ENGINEER
12/15/2022

DRAWN BY:	CHECKED BY:	APPROVED BY:
TJ	JQ	---

INFOS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	12/15/22	ISSUED FOR PLANS

ASE PROJECT NUMBER
10710.NJJER01135A

DISH Wireless L.L.C.
PROJECT INFORMATION:
NJJER01135A

60 COMMERCE DRIVE
TRUMBULL, CT 06611

SHEET TITLE
GENERAL NOTES

SHEET NUMBER
GN-3

CONCRETE, FOUNDATIONS, AND REINFORCING STEEL:

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

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

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

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

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

#4 BARS AND SMALLER 40 ksi

#5 BARS AND LARGER 60 ksi

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

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

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

ELECTRICAL INSTALLATION NOTES:

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

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

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

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

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

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

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

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

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

8. TIE WRAPS ARE NOT ALLOWED.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

dish wireless.

8701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

Tectonic

STATE OF CONNECTICUT
ANTONIO A. GUATIERI
PEN.0025406
LICENSED PROFESSIONAL ENGINEER
12/15/2022

DRAWN BY:	CHECKED BY:	APPROVED BY:
TJ	JO	—

RFDS REV #: —

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	12/15/22	ISSUED FOR PERMIT

A&E PROJECT NUMBER

10710.NJJER01153A

DISH Wireless L.L.C.
PROJECT INFORMATION
NJJER01153A

60 COMMERCE DRIVE
TRUMBULL, CT 06611

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-4

GROUNDING NOTES:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

20. ALL GROUNDS THAT TRANSITION FROM BELOW GRADE TO ABOVE GRADE MUST BE #2 BARE SOLID TINNED COPPER IN 3/4" NON-METALLIC, FLEXIBLE CONDUIT FROM 24" BELOW GRADE TO WITHIN 3" TO 8" OF CAD-WELD TERMINATION POINT. THE EXPOSED END OF THE CONDUIT MUST BE SEALED WITH SILICONE CAULK. (ADD TRANSITIONING GROUND STANDARD DETAIL AS WELL).

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

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

Tectonic

STATE OF CONNECTICUT
ANTONIO A. GUALTIERI
PEN.0025406
LICENSED PROFESSIONAL ENGINEER
12/15/2022

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
TJ	JG	—

RFDS REV #: —

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	12/15/22	ISSUED FOR RUNS

A&E PROJECT NUMBER
10710.NJJER01153A

DISH Wireless L.L.C.
PROJECT INFORMATION
NJJER01153A

60 COMMERCE DRIVE
TRUMBULL, CT 06611

SHEET TITLE
GENERAL NOTES

SHEET NUMBER
GN-5

Exhibit D

Structural Analysis

MOUNT ANALYSIS

Structural Analysis Report

Prepared for:

KGI
805 Las Cimas Parkway, Building Three, Suite 370
Austin, TX 78746

ATTN: Ms. Jacquie Cossey

Structure	:	**81 ft Monopole**
Site ID	:	**23393**
Proposed Carrier	:	**Dish Wireless**
Site Name	:	**Trumbull SE 4**
Site Location	:	**60 Commerce Drive**
		Trumbull, CT
		41.2456, -73.1456
County	:	**Fairfield**
Date	:	**December 13, 2022**
Max Structure Usage	:	**44%**
Max Foundation Usage	:	**52%**
Result	:	**Pass**

Prepared By:
Trevor Kuper, E.I.T.
Structural Engineer

STATE OF CONNECTICUT
THOMAS L TAYLOR
No. 28130
LICENSED
PROFESSIONAL ENGINEER

12.13.22

EXP. 01/31/2023
COA: PEC.0001536
EXP. 08/04/2023

Thomas L. Taylor
Digitally signed by Thomas L. Taylor
Date: 2022.12.13 12:29:42 -06'00'

Table of Contents

Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 81 ft Monopole to reflect the change in loading by Dish Wireless.

Supporting Documents

Tower Drawing	Engineered Endeavors Drawing # 17314-E01-S1, dated October 22, 2014
Foundation Drawing	Centek Job # 14006.163, dated March 31, 2015
Geotechnical Report	Associated Borings Project Name Cell Tower 60 Comerce Dr., dated July 29, 2014
Proposed Loading	KGI/Dish Wireless TLF, dated December 30, 2021

Analysis

The tower was analyzed using TNX tower analysis software. This program considers an elastic three-dimensional model and second-order effects per ANSI/TIA-222.

Basic Wind Speed	120 mph (3-Second Gust) Vult
Basic Wind Speed w/Ice	47 mph (3-Second Gust) w/ 1.02" radial ice concurrent
Code	ANSI/TIA-222-H / 2021 IBC / 2022 Connecticut State Building Code
Risk Category	II
Exposure Category	C
Topographic Category	1
Crest Height	0 ft
Spectral Response	Ss = 0.12 , S1 = 0.17
Site Class	B - Competent Rock
Ground Elevation	168.03 ft

Conclusion

Based on the analysis results, the structure meets the requirements per the applicable codes listed above. The tower and foundation can support the equipment as described in this report.

If you have any questions or require additional information, please contact Semaan Engineering Solutions at 402-289-1888.

Existing and Reserved Equipment

This loading **is** included in the analysis.

Centerline Elevation (ft)		Qty.	Antenna	Mount Type	Coax (in)	Carrier
Mount	Equip.					
80.0	80.0	12	BXA-70080/8CF	(1) 14' Modified Platform w/ Rails	(12) 1 5/8" (4) 1 5/8" Hybrid Cable	Verizon
		12	RRUS A2 Modules			
		12	TMA 10"x7"x2"			
		6	RRH 3JR52709AA 2X60 (AWS 60W)			
		4	OVP Box			
		3	RRH 4X30-4T4R-B13			
		3	RRH 4x30-4T4R-B25			

Equipment to be Removed

This loading **is not** included in the analysis.

Centerline Elevation (ft)		Qty.	Antenna	Mount Type	Coax (in)	Carrier
Mount	Equip.					
No loading considered as to be removed						

Proposed Equipment

This loading **is** included in the analysis.

Centerline Elevation (ft)		Qty.	Antenna	Mount Type	Coax (in)	Carrier
Mount	Equip.					
61.0	61.0	3	MX08FRO665-21	(1) Commscope MC-PK8-DSH Snub Nose Platform w/Rail	(1) Hybrid	Dish Wireless
		3	TA08025-B604			
		3	TA08025-B605			
		1	RDIDC-9181-PF-48			

Install proposed coax inside the pole shaft.

Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Shaft	44%	Pass
Anchor Bolts	38%	Pass
Baseplate	32%	Pass

Foundations

Reaction Component	Analysis Reactions	% of Usage
Moment (Kips-Ft)	1,062.3	48%
Axial (Kips)	20.2	N/A
Shear (Kips)	16.4	N/A
Reinf. Conc. Fnd. Capacity	N/A	52%

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

SEMAAN
ENGINEERING SOLUTIONS

Standard Conditions

All engineering services are performed on the basis that the information used is current and correct. This information may consist of, but is not necessary limited, to:

-- Information supplied by the client regarding the structure itself, antenna, mounts and feed line loading on the structure and its components, or other relevant information.

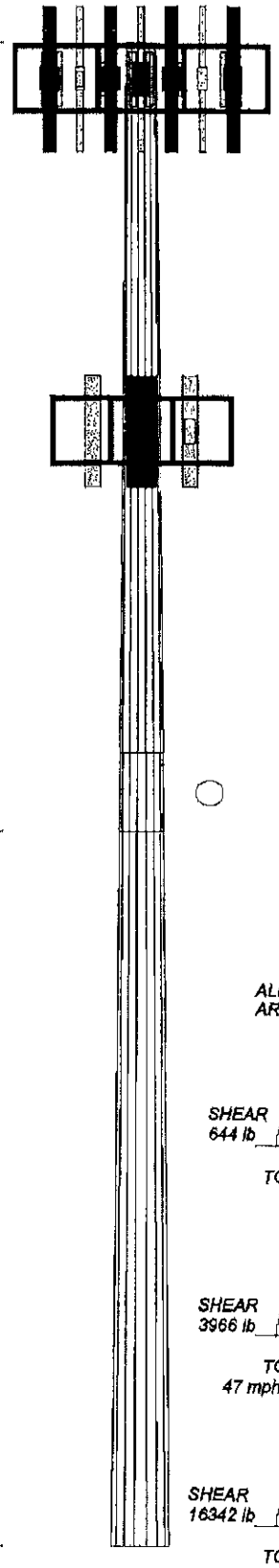
-- Information from drawings in the possession of Semaan Engineering Solutions, or generated by field inspections or measurements of the structure.

It is the responsibility of the client to ensure that the information provided to Semaan Engineering Solutions Holdings and used in the performance of our engineering services is correct and complete. In the absence of information to the contrary, we assume that all structures were constructed in accordance with the drawings and specifications and that their capacity has not significantly changed from the "as new" condition.

Unless explicitly agreed by both the client and Semaan Engineering Solutions, all services will be performed in accordance with the current revision of ANSI/TIA -222. The design basic wind speed will be determined based on the minimum basic wind speed as prescribed in ANSI/TIA-222. Although every effort is taken to ensure that the loading considered is adequate to meet the requirements of all applicable regulatory entities, we can provide no assurance to meet any other local and state codes or requirements. If wind and ice loads or other relevant parameters are to be different from the minimum values recommended by the codes, the client shall specify the exact requirement.

All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. Semaan Engineering Solutions Holdings is not responsible for the conclusions, opinions and recommendations made by others based on the information we supply.

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (lb)
4	42.63	18	0.38		28.44	37.50	A572-65	5627.5
3	42.63	18	0.31	4.25	20.72	29.39	A572-65	3603.0
2								9230.4



MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in Fairfield County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-H Standard.
3. Tower designed for a 120 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 47 mph basic wind with 1.02 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. CCISeismic Note: Seismic loads generated by CCISeismic 3.3.6
9. CCISeismic Note: Seismic calculations are in accordance with TIA-222-H-1
10. TOWER RATING: 43.7%

ALL REACTIONS ARE FACTORED

AXIAL 20473 lb
SHEAR 644 lb
MOMENT 43 kip-ft
TORQUE 0 kip-ft
SEISMIC

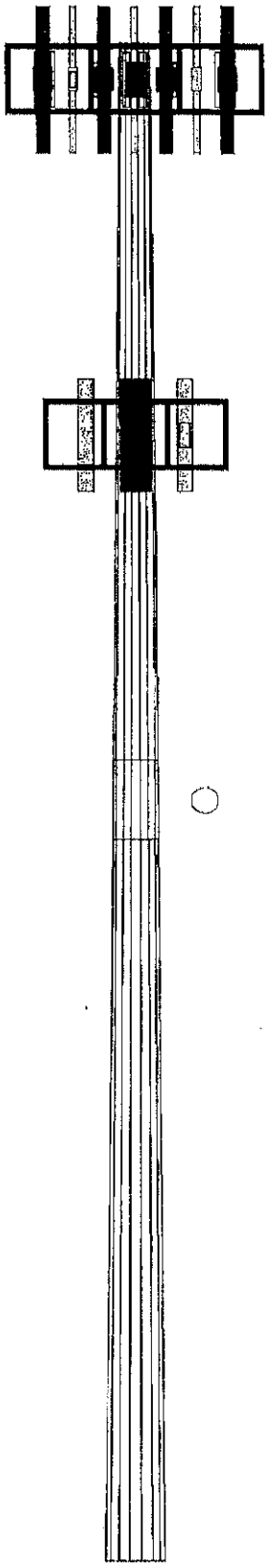
AXIAL 30278 lb
SHEAR 3966 lb
MOMENT 250 kip-ft
TORQUE 0 kip-ft
47 mph WIND - 1.02 in ICE

AXIAL 20169 lb
SHEAR 16342 lb
MOMENT 1062 kip-ft
TORQUE 0 kip-ft
REACTIONS - 120 mph WIND

Semaan Engineering Solutions, LLC
1047 S. 205th St.
Elkhorn, NE, 68022
Phone: (402)-289-1888
FAX: (402)-289-1861

Job: 23393_Trumbull			
Project: REV01B			
Client: KGI	Drawn by: TrevorK	App'd:	
Code: TIA-222-H	Date: 12/13/22	Scale: N	
Path: \\OMZSESSERVER01\Common\TNX files\23393\REV01B\23393_REV01B.eri		Dwg No:	

Section	1	2	3	4
Length (ft)	42.63	42.63	42.63	
Number of Sides	18	18	18	
Thickness (in)	0.31	0.38	0.38	
Socket Length (ft)	4.25			
Top Dia (in)	20.72	28.44		
Bot Dia (in)	29.99	37.50		
Grade	A572-65			
Weight (lb)	3603.0	5627.5		9230.4



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
14' Modified Platform w/ Rail w/o Mount Pipes (Verizon)	80	(4) TMA 10"x7"x2" (Verizon)	80
(4) BXA-70080/8CF w/8' Mount Pipe (Verizon)	80	(4) RRUS A2 Modules (Verizon)	80
(4) BXA-70080/8CF w/8' Mount Pipe (Verizon)	80	(4) RRUS A2 Modules (Verizon)	80
(4) BXA-70080/8CF w/8' Mount Pipe (Verizon)	80	(4) RRUS A2 Modules (Verizon)	80
OVP Box (Verizon)	80	PLK5 Kicker (Verizon)	78
OVP Box (Verizon)	80	PLK7 Collar Mount (Verizon)	78
(2) OVP Box (Verizon)	80	Commscope MO-PK8-DSH Snub Nose Platform w/Rail w/o Mount Pipe (SES) (Dish Wireless)	61
(2) RRH 3JR52709AA 2X60 (AWS 60W) (Verizon)	80	MX08FRO665-21 w/8' Mount Pipe (Dish Wireless)	61
(2) RRH 3JR52709AA 2X60 (AWS 60W) (Verizon)	80	MX08FRO665-21 w/8' Mount Pipe (Dish Wireless)	61
(2) RRH 3JR52709AA 2X60 (AWS 60W) (Verizon)	80	MX08FRO665-21 w/8' Mount Pipe (Dish Wireless)	61
RRH 4X30-4T4R-B13 (Verizon)	80	TA08025-B604 (Dish Wireless)	61
RRH 4X30-4T4R-B13 (Verizon)	80	TA08025-B604 (Dish Wireless)	61
RRH 4X30-4T4R-B13 (Verizon)	80	TA08025-B604 (Dish Wireless)	61
RRH 4x30-4T4R-B25 (Verizon)	80	TA08025-B605 (Dish Wireless)	61
RRH 4x30-4T4R-B25 (Verizon)	80	TA08025-B605 (Dish Wireless)	61
RRH 4x30-4T4R-B25 (Verizon)	80	RDIDC-9181-PF-48 (Dish Wireless)	61
(4) TMA 10"x7"x2" (Verizon)	80	(2) 8'x2" Pipe (Dish Wireless)	61
(4) TMA 10"x7"x2" (Verizon)	80	(2) 8'x2" Pipe (Dish Wireless)	61
		(2) 8'x2" Pipe (Dish Wireless)	61

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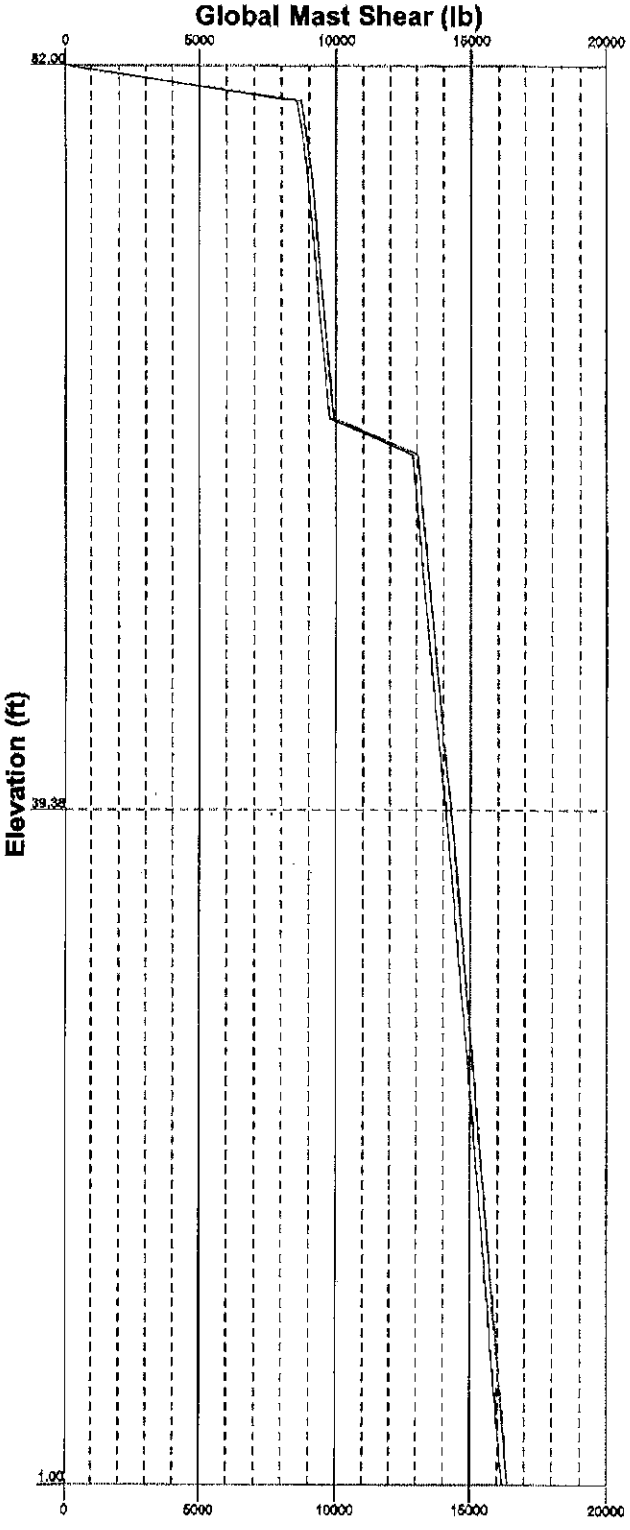
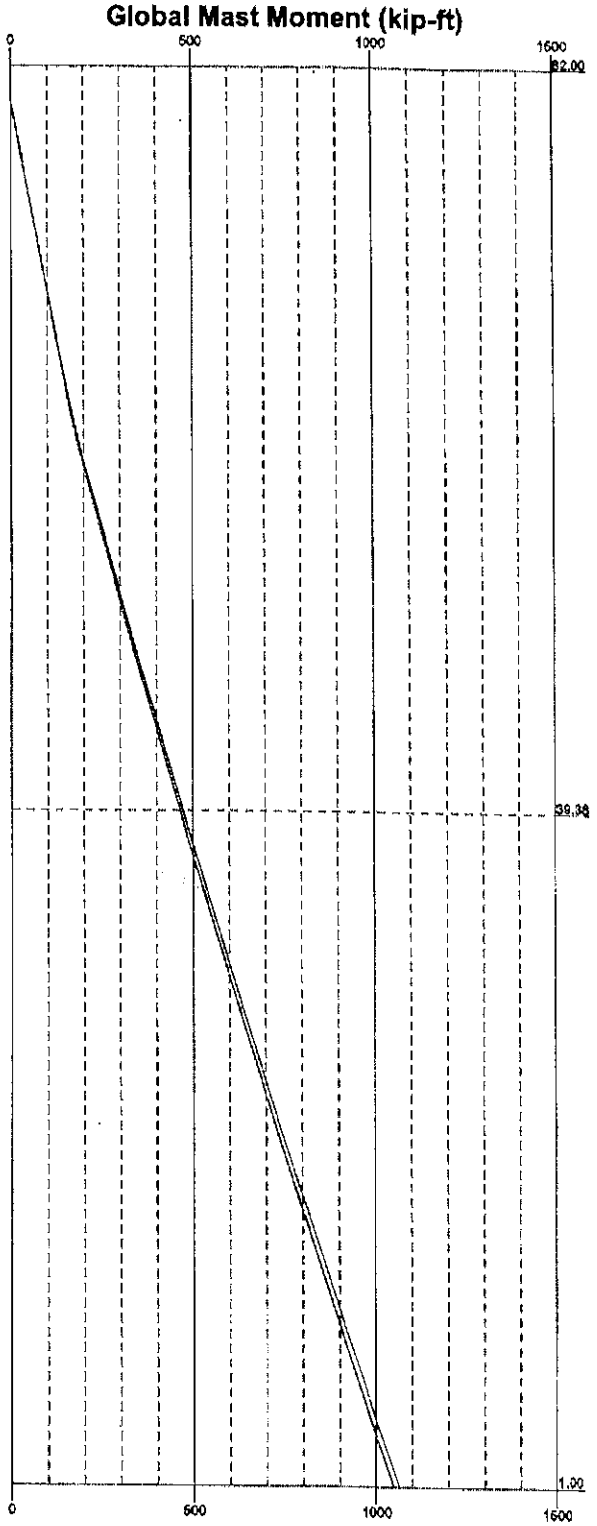
Project: REV01B			
Client: KGI	Drawn by: TrevorK	App'd:	
Code: TIA-222-H	Date: 12/13/22	Scale: N	
Path: \\DM7SFSSERVER01\Common\TNX files\23393\REV0\(EV23393_REV01B.eri		Dwg No.	

Vx Vz



Mx Mz



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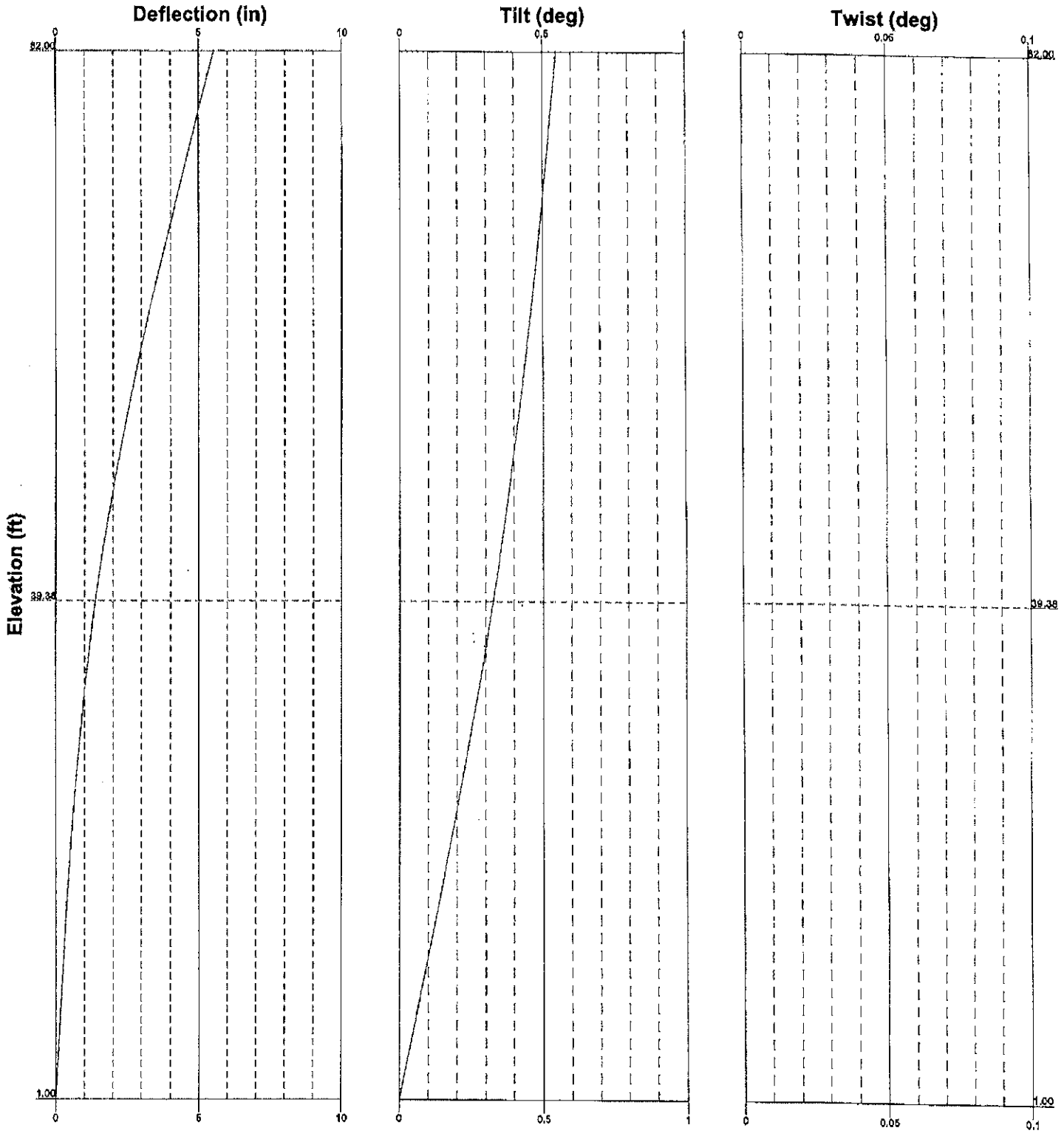
Code: TIA-222-H	Date: 12/13/22		Scale: N
Path: \\DMZSESSERVER01\Common\TNX files\23393\REV01B\23393_REV01B.eri			Dwg No.

TIA-222-H - Service - 60 mph

Maximum Values



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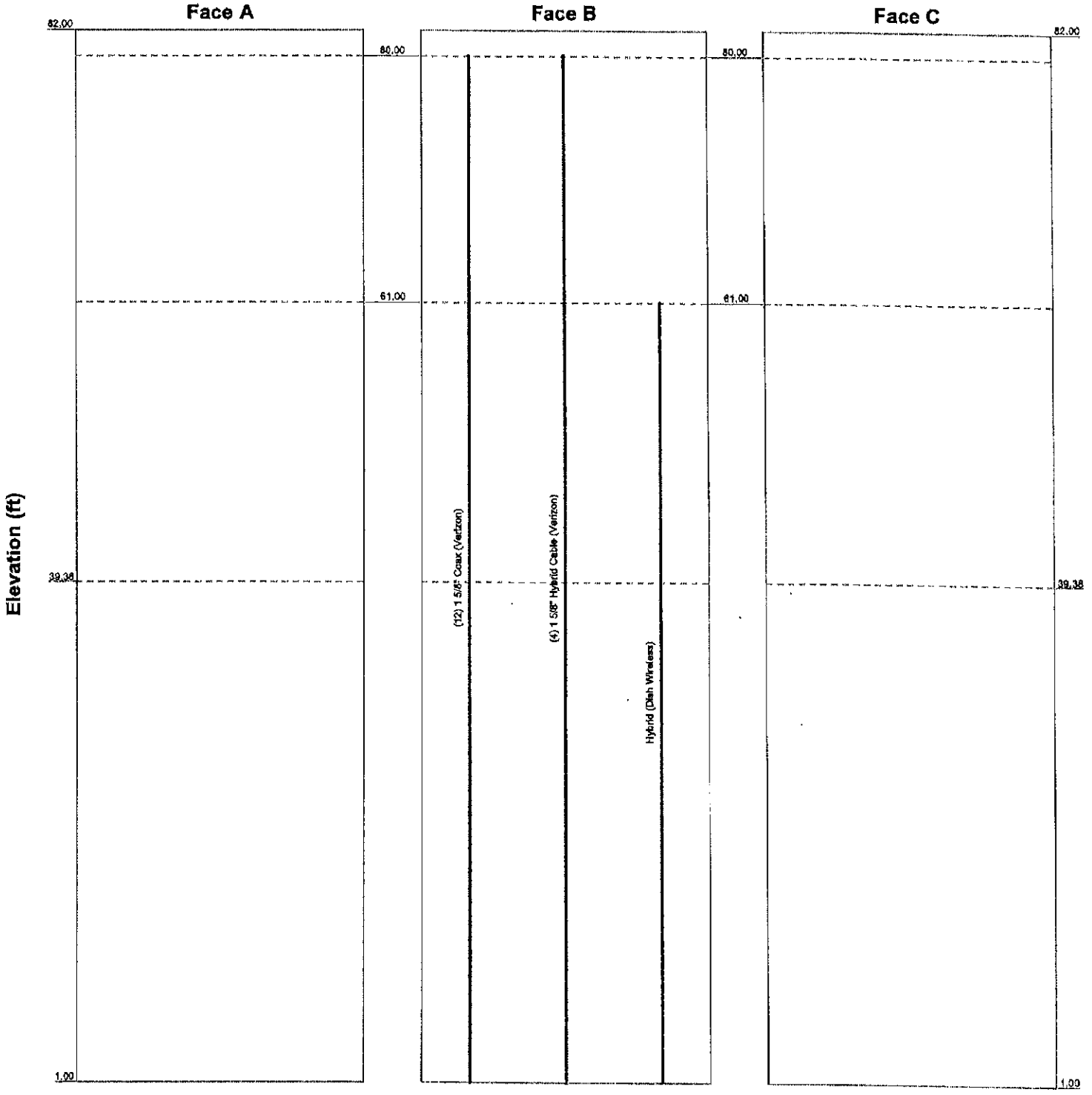
FAX: (402)-289-1861

Job: 23393_Trumbull		
Project: REV01B		
Client: KGI	Drawn by: TrevorK	App'd:
Code: TIA-222-H	Date: 12/13/22	Scale: N
Path: \\DM2SESSERVER01\Common\TNX files\23393\REV01B\23393_REV01B.eri		Dwg No.

1" = 82'

Round Flat App In Face App Out Face Truss Leg



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Elkhorn, NE, 68022
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Project: REV01B		
Client: KGI	Drawn by: TrevorK	App'd:
Code: TIA-222-H	Date: 12/13/22	Scale: N
Path: \\DMZSESSERVER01\Common\TNX files\23393\REV01B\23393_REV01B.eri		Dwg No.

tnxTower	Job	Page
	23393_Trumbull	1 of 24
Semaan Engineering Solutions, LLC 1047 S. 205th St. Elkhorn, NE, 68022 Phone: (402)-289-1888 FAX: (402)-289-1861	Project REV01B	Date 09:38:22 12/13/22
	Client KGI	Designed by TrevorK

Tower Input Data

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

Tower is located in Fairfield County, Connecticut.
Tower base elevation above sea level: 169.03 ft.
Basic wind speed of 120 mph.
Risk Category II.
Exposure Category C.
Simplified Topographic Factor Procedure for wind speed-up calculations is used.
Topographic Category: 1.
Crest Height: 0.00 ft.
Nominal ice thickness of 1.02 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 47 mph is used in combination with ice.
Deflections calculated using a wind speed of 60 mph.
CCISeismic Note: Seismic loads generated by CCISeismic 3.3.6.
CCISeismic Note: 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.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	82.00-39.38	42.63	4.25	18	20.72	29.99	0.31	1.25	A572-65 (65 ksi)
L2	39.38-1.00	42.63		18	28.44	37.50	0.38	1.50	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in²	I in⁴	r in	C in	I/C in³	J in⁴	It/Q in²	w in	w/t
L1	30.99	29.24	1065.03	7.24	10.53	101.18	2131.47	10.12	3.10	9.91
	30.41	29.44	3276.48	10.54	15.24	215.04	6557.28	14.72	4.73	15.132
L2	29.74	33.41	3325.29	9.96	14.45	230.14	6654.95	16.71	4.35	11.589
	38.02	44.19	7694.40	13.18	19.05	403.91	15398.93	22.10	5.94	15.84

Tower Elevation ft	Gusset Area (per face) ft²	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 82.00-39.38				1	1	1			
L2 39.38-1.00				1	1	1			

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft²/ft	Weight plf
1 5/8" Coax (Verizon)	B	No	No	Inside Pole	80.00 - 1.00	12	No Ice	0.00	1.040
							1/2" Ice	0.00	1.040
							1" Ice	0.00	1.040
							2" Ice	0.00	1.040
1 5/8" Hybrid Cable (Verizon)	B	No	No	Inside Pole	80.00 - 1.00	4	No Ice	0.00	1.780
							1/2" Ice	0.00	1.780
							1" Ice	0.00	1.780
							2" Ice	0.00	1.780
Hybrid (Dish Wireless)	B	No	No	Inside Pole	61.00 - 1.00	1	No Ice	0.00	1.780
							1/2" Ice	0.00	1.780
							1" Ice	0.00	1.780
							2" Ice	0.00	1.780

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft²	A_F ft²	C_AA_A In Face ft²	C_AA_A Out Face ft²	Weight lb

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
L1	82.00-39.38	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	834.74
		C	0.000	0.000	0.000	0.000	0.00
L2	39.38-1.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	820.46
		C	0.000	0.000	0.000	0.000	0.00

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
L1	82.00-39.38	A	1.082	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	834.74
		C		0.000	0.000	0.000	0.000	0.00
L2	39.38-1.00	A	0.971	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	820.46
		C		0.000	0.000	0.000	0.000	0.00

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	82.00-39.38	0.00	0.00	0.00	0.00
L2	39.38-1.00	0.00	0.00	0.00	0.00

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

User Defined Loads - Seismic

Description	Elevation ft	Offset From Centroid ft	Azimuth Angle °	E_v lb	E_{hx} lb	E_{hz} lb	E_h lb
CCISeismic Tower Section 1 - 1	80.69	0.000	0.000	3.32	0.00	0.00	13.32
CCISeismic Tower Section 1 - 2	74.38	0.000	0.000	13.50	0.00	0.00	47.64
CCISeismic Tower Section 1 - 3	64.38	0.000	0.000	14.84	0.00	0.00	41.78
CCISeismic Tower Section 1 - 4	54.38	0.000	0.000	16.17	0.00	0.00	34.95
CCISeismic Tower Section 1 - 5	44.38	0.000	0.000	17.50	0.00	0.00	27.49
CCISeismic Tower Section 2 - 1	42.31	0.000	0.000	5.46	0.00	0.00	7.96
CCISeismic Tower Section 2 - 2	36.00	0.000	0.000	21.80	0.00	0.00	24.62
CCISeismic Tower Section 2 - 3	26.00	0.000	0.000	23.36	0.00	0.00	15.72
CCISeismic Tower Section 2 - 4	16.00	0.000	0.000	24.92	0.00	0.00	7.64
CCISeismic Tower Section 2 - 5	6.00	0.000	0.000	26.48	0.00	0.00	1.50
CCISeismic 14' Modified Platform w/ Rail w/o Mount Pipes	80.00	0.000	0.000	34.05	0.00	0.00	134.58

Description	Elevation	Offset From Centroid	Azimuth Angle	E_v	E_{hx}	E_{hz}	E_h
	ft	ft	°	lb	lb	lb	lb
CCISeismic verizon PLK5 Kicker	78.00	0.000	0.000	1.76	0.00	0.00	6.68
CCISeismic verizon PLK7 Collar Mount	76.00	0.000	0.000	2.72	0.00	0.00	9.93
CCISeismic (4) amphenol BXA-70080/8CF w/8' Mount Pipe	80.00	0.000	0.000	5.03	0.00	0.00	19.87
CCISeismic (4) amphenol BXA-70080/8CF w/8' Mount Pipe	80.00	0.000	0.000	5.03	0.00	0.00	19.87
CCISeismic (4) amphenol BXA-70080/8CF w/8' Mount Pipe	80.00	0.000	0.000	5.03	0.00	0.00	19.87
CCISeismic semaan OVP Box	80.00	0.000	0.000	0.36	0.00	0.00	1.43
CCISeismic semaan OVP Box	80.00	0.000	0.000	0.36	0.00	0.00	1.43
CCISeismic (2) semaan OVP Box	80.00	0.000	0.000	0.73	0.00	0.00	2.87
CCISeismic (2) semaan RRH 3JR52709AA 2X60 (AWS 60W)	80.00	0.000	0.000	1.99	0.00	0.00	7.88
CCISeismic (2) semaan RRH 3JR52709AA 2X60 (AWS 60W)	80.00	0.000	0.000	1.99	0.00	0.00	7.88
CCISeismic (2) semaan RRH 3JR52709AA 2X60 (AWS 60W)	80.00	0.000	0.000	1.99	0.00	0.00	7.88
CCISeismic semaan RRH 4X30-4T4R-B13	80.00	0.000	0.000	0.59	0.00	0.00	2.34
CCISeismic semaan RRH 4X30-4T4R-B13	80.00	0.000	0.000	0.59	0.00	0.00	2.34
CCISeismic semaan RRH 4X30-4T4R-B13	80.00	0.000	0.000	0.59	0.00	0.00	2.34
CCISeismic semaan RRH 4x30-4T4R-B25	80.00	0.000	0.000	0.92	0.00	0.00	3.66
CCISeismic semaan RRH 4x30-4T4R-B25	80.00	0.000	0.000	0.92	0.00	0.00	3.66
CCISeismic semaan RRH 4x30-4T4R-B25	80.00	0.000	0.000	0.92	0.00	0.00	3.66
CCISeismic (4) semaan TMA 10"x7"x2"	80.00	0.000	0.000	0.73	0.00	0.00	2.87
CCISeismic (4) semaan TMA 10"x7"x2"	80.00	0.000	0.000	0.73	0.00	0.00	2.87
CCISeismic (4) semaan TMA 10"x7"x2"	80.00	0.000	0.000	0.73	0.00	0.00	2.87
CCISeismic (4) semaan RRUS A2 Modules	80.00	0.000	0.000	1.53	0.00	0.00	6.07
CCISeismic (4) semaan RRUS A2 Modules	80.00	0.000	0.000	1.53	0.00	0.00	6.07
CCISeismic (4) semaan RRUS A2 Modules	80.00	0.000	0.000	1.53	0.00	0.00	6.07
CCISeismic pole mounts Commscope MC-PK8-DSH Snub Nose Platform w/Rail w/o Mount Pipe (SES)	61.00	0.000	0.000	17.84	0.00	0.00	46.18
CCISeismic jma MX08FRO665-21 w/8' Mount Pipe	61.00	0.000	0.000	2.01	0.00	0.00	5.20
CCISeismic jma MX08FRO665-21 w/8' Mount Pipe	61.00	0.000	0.000	2.01	0.00	0.00	5.20
CCISeismic jma MX08FRO665-21 w/8' Mount Pipe	61.00	0.000	0.000	2.01	0.00	0.00	5.20

Description	Elevation	Offset From Centroid	Azimuth Angle	E_v	E_{kx}	E_{kz}	E_k
	ft	ft	°	lb	lb	lb	lb
CCISeismic fujitsu TA08025-B604	61.00	0.000	0.000	1.16	0.00	0.00	3.00
CCISeismic fujitsu TA08025-B604	61.00	0.000	0.000	1.16	0.00	0.00	3.00
CCISeismic fujitsu TA08025-B604	61.00	0.000	0.000	1.16	0.00	0.00	3.00
CCISeismic fujitsu TA08025-B605	61.00	0.000	0.000	1.36	0.00	0.00	3.52
CCISeismic fujitsu TA08025-B605	61.00	0.000	0.000	1.36	0.00	0.00	3.52
CCISeismic fujitsu TA08025-B605	61.00	0.000	0.000	1.36	0.00	0.00	3.52
CCISeismic raycap RDIDC-9181-PF-48	61.00	0.000	0.000	0.40	0.00	0.00	1.03
CCISeismic (2) tower mounts 8'x2" Pipe	61.00	0.000	0.000	1.06	0.00	0.00	2.74
CCISeismic (2) tower mounts 8'x2" Pipe	61.00	0.000	0.000	1.06	0.00	0.00	2.74
CCISeismic (2) tower mounts 8'x2" Pipe	61.00	0.000	0.000	1.06	0.00	0.00	2.74
CCISeismic (12) general cable 1 5/8" Coax From 0 to 79 (71ft to79ft)	76.00	0.000	0.000	1.81	0.00	0.00	6.61
CCISeismic (12) general cable 1 5/8" Coax From 0 to 79 (61ft to71ft)	67.00	0.000	0.000	2.26	0.00	0.00	6.78
CCISeismic (12) general cable 1 5/8" Coax From 0 to 79 (51ft to61ft)	57.00	0.000	0.000	2.26	0.00	0.00	5.27
CCISeismic (12) general cable 1 5/8" Coax From 0 to 79 (41ft to51ft)	47.00	0.000	0.000	2.26	0.00	0.00	3.89
CCISeismic (12) general cable 1 5/8" Coax From 0 to 79 (31ft to41ft)	37.00	0.000	0.000	2.26	0.00	0.00	2.67
CCISeismic (12) general cable 1 5/8" Coax From 0 to 79 (21ft to31ft)	27.00	0.000	0.000	2.26	0.00	0.00	1.62
CCISeismic (12) general cable 1 5/8" Coax From 0 to 79 (11ft to21ft)	17.00	0.000	0.000	2.26	0.00	0.00	0.77
CCISeismic (12) general cable 1 5/8" Coax From 0 to 79 (1ft to11ft)	7.00	0.000	0.000	2.26	0.00	0.00	0.17
CCISeismic (12) general cable 1 5/8" Coax From 0 to 79 (0ft to1ft)	1.50	0.000	0.000	0.23	0.00	0.00	0.00
CCISeismic (4) general cable 1 5/8" Hybrid Cable From 0 to 79 (71ft to79ft)	76.00	0.000	0.000	1.03	0.00	0.00	3.77
CCISeismic (4) general cable 1 5/8" Hybrid Cable From 0 to 79 (61ft to71ft)	67.00	0.000	0.000	1.29	0.00	0.00	3.87
CCISeismic (4) general cable 1 5/8" Hybrid Cable From 0 to 79 (51ft to61ft)	57.00	0.000	0.000	1.29	0.00	0.00	3.01
CCISeismic (4) general cable 1 5/8" Hybrid Cable From 0 to 79 (41ft to51ft)	47.00	0.000	0.000	1.29	0.00	0.00	2.22
CCISeismic (4) general cable 1	37.00	0.000	0.000	1.29	0.00	0.00	1.52

Description	Elevation	Offset From Centroid	Azimuth Angle	E_v	E_{hx}	E_{hz}	E_h
	ft	ft	°	lb	lb	lb	lb
5/8" Hybrid Cable From 0 to 79 (31ft to41ft)							
CCISeismic (4) general cable 1 5/8" Hybrid Cable From 0 to 79 (21ft to31ft)	27.00	0.000	0.000	1.29	0.00	0.00	0.92
CCISeismic (4) general cable 1 5/8" Hybrid Cable From 0 to 79 (11ft to21ft)	17.00	0.000	0.000	1.29	0.00	0.00	0.44
CCISeismic (4) general cable 1 5/8" Hybrid Cable From 0 to 79 (1ft to11ft)	7.00	0.000	0.000	1.29	0.00	0.00	0.10
CCISeismic (4) general cable 1 5/8" Hybrid Cable From 0 to 79 (0ft to1ft)	1.50	0.000	0.000	0.13	0.00	0.00	0.00
CCISeismic Hybrid From 0 to 60 (51ft to60ft)	56.50	0.000	0.000	0.29	0.00	0.00	0.67
CCISeismic Hybrid From 0 to 60 (41ft to51ft)	47.00	0.000	0.000	0.32	0.00	0.00	0.56
CCISeismic Hybrid From 0 to 60 (31ft to41ft)	37.00	0.000	0.000	0.32	0.00	0.00	0.38
CCISeismic Hybrid From 0 to 60 (21ft to31ft)	27.00	0.000	0.000	0.32	0.00	0.00	0.23
CCISeismic Hybrid From 0 to 60 (11ft to21ft)	17.00	0.000	0.000	0.32	0.00	0.00	0.11
CCISeismic Hybrid From 0 to 60 (1ft to11ft)	7.00	0.000	0.000	0.32	0.00	0.00	0.02
CCISeismic Hybrid From 0 to 60 (0ft to1ft)	1.50	0.000	0.000	0.03	0.00	0.00	0.00

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
14' Modified Platform w/ Rail w/o Mount Pipes (Verizon)	C	From Centroid-Face	0.00 0.000 0.000	0.000	80.00	No Ice 1/2" Ice 1" Ice 2" Ice	43.30 50.88 58.45 73.61	43.30 50.88 58.45 73.61	1877.55 2400.80 2924.05 3970.56
PLK5 Kicker (Verizon)	C	None		0.000	78.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.03 2.21 2.38 2.72	1.18 1.34 1.51 1.85	97.00 102.91 108.82 120.64
PLK7 Collar Mount (Verizon)	C	None		0.000	76.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.45 2.19 2.93 4.41	1.45 2.19 2.93 4.41	150.00 275.00 400.00 650.00
(4) BXA-70080/8CF w/8' Mount Pipe (Verizon)	A	From Face	2.00 0.000 0.000	0.000	80.00	No Ice 1/2" Ice 1" Ice 2" Ice	8.32 8.92 9.52 10.75	8.75 10.16 11.23 13.41	69.32 141.59 224.19 418.05
(4) BXA-70080/8CF w/8'	B	From Face	2.00	0.000	80.00	No Ice	8.32	8.75	69.32

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
Mount Pipe			0.000				1/2" Ice	8.92	10.16	141.59
(Verizon)			0.000				1" Ice	9.52	11.23	224.19
							2" Ice	10.75	13.41	418.05
(4) BXA-70080/8CF w/8'	C	From Face	2.00		0.000	80.00	No Ice	8.32	8.75	69.32
Mount Pipe			0.000				1/2" Ice	8.92	10.16	141.59
(Verizon)			0.000				1" Ice	9.52	11.23	224.19
							2" Ice	10.75	13.41	418.05
OVP Box	A	From Face	1.50		0.000	80.00	No Ice	6.72	2.63	20.00
(Verizon)			0.000				1/2" Ice	7.07	2.87	61.51
			0.000				1" Ice	7.42	3.12	107.27
							2" Ice	8.15	3.65	212.32
OVP Box	B	From Face	1.50		0.000	80.00	No Ice	6.72	2.63	20.00
(Verizon)			0.000				1/2" Ice	7.07	2.87	61.51
			0.000				1" Ice	7.42	3.12	107.27
							2" Ice	8.15	3.65	212.32
(2) OVP Box	C	From Face	1.50		0.000	80.00	No Ice	6.72	2.63	20.00
(Verizon)			0.000				1/2" Ice	7.07	2.87	61.51
			0.000				1" Ice	7.42	3.12	107.27
							2" Ice	8.15	3.65	212.32
(2) RRH 3JR52709AA 2X60	A	From Face	1.50		0.000	80.00	No Ice	3.36	2.00	55.00
(AWS 60W)			0.000				1/2" Ice	3.61	2.24	78.16
(Verizon)			0.000				1" Ice	3.88	2.48	104.95
							2" Ice	4.42	2.97	170.18
(2) RRH 3JR52709AA 2X60	B	From Face	1.50		0.000	80.00	No Ice	3.36	2.00	55.00
(AWS 60W)			0.000				1/2" Ice	3.61	2.24	78.16
(Verizon)			0.000				1" Ice	3.88	2.48	104.95
							2" Ice	4.42	2.97	170.18
(2) RRH 3JR52709AA 2X60	C	From Face	1.50		0.000	80.00	No Ice	3.36	2.00	55.00
(AWS 60W)			0.000				1/2" Ice	3.61	2.24	78.16
(Verizon)			0.000				1" Ice	3.88	2.48	104.95
							2" Ice	4.42	2.97	170.18
RRH 4X30-4T4R-B13	A	From Face	1.50		0.000	80.00	No Ice	1.54	0.63	32.60
(Verizon)			0.000				1/2" Ice	1.70	0.75	43.87
			0.000				1" Ice	1.86	0.87	57.42
							2" Ice	2.21	1.13	92.14
RRH 4X30-4T4R-B13	B	From Face	1.50		0.000	80.00	No Ice	1.54	0.63	32.60
(Verizon)			0.000				1/2" Ice	1.70	0.75	43.87
			0.000				1" Ice	1.86	0.87	57.42
							2" Ice	2.21	1.13	92.14
RRH 4X30-4T4R-B13	C	From Face	1.50		0.000	80.00	No Ice	1.54	0.63	32.60
(Verizon)			0.000				1/2" Ice	1.70	0.75	43.87
			0.000				1" Ice	1.86	0.87	57.42
							2" Ice	2.21	1.13	92.14
RRH 4x30-4T4R-B25	A	From Face	1.50		0.000	80.00	No Ice	2.14	1.30	51.00
(Verizon)			0.000				1/2" Ice	2.33	1.46	68.44
			0.000				1" Ice	2.52	1.62	88.70
							2" Ice	2.94	1.98	138.47
RRH 4x30-4T4R-B25	B	From Face	1.50		0.000	80.00	No Ice	2.14	1.30	51.00
(Verizon)			0.000				1/2" Ice	2.33	1.46	68.44
			0.000				1" Ice	2.52	1.62	88.70
							2" Ice	2.94	1.98	138.47
RRH 4x30-4T4R-B25	C	From Face	1.50		0.000	80.00	No Ice	2.14	1.30	51.00
(Verizon)			0.000				1/2" Ice	2.33	1.46	68.44
			0.000				1" Ice	2.52	1.62	88.70
							2" Ice	2.94	1.98	138.47
(4) TMA 10"x7"x2"	A	From Face	2.00		0.000	80.00	No Ice	0.58	0.18	10.00
(Verizon)			0.000				1/2" Ice	0.68	0.25	14.02

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
				0.000			1" Ice	0.79	0.33	19.46
							2" Ice	1.02	0.50	35.41
(4) TMA 10"x7"x2" (Verizon)	B	From Face	2.00	0.000	0.000	80.00	No Ice	0.58	0.18	10.00
			0.000				1/2" Ice	0.68	0.25	14.02
			0.000				1" Ice	0.79	0.33	19.46
							2" Ice	1.02	0.50	35.41
(4) TMA 10"x7"x2" (Verizon)	C	From Face	2.00	0.000	0.000	80.00	No Ice	0.58	0.18	10.00
			0.000				1/2" Ice	0.68	0.25	14.02
			0.000				1" Ice	0.79	0.33	19.46
							2" Ice	1.02	0.50	35.41
(4) RRUS A2 Modules (Verizon)	A	From Face	2.00	0.000	0.000	80.00	No Ice	1.60	0.46	21.16
			0.000				1/2" Ice	1.76	0.56	31.49
			0.000				1" Ice	1.92	0.67	44.03
							2" Ice	2.28	0.91	76.55
(4) RRUS A2 Modules (Verizon)	B	From Face	2.00	0.000	0.000	80.00	No Ice	1.60	0.46	21.16
			0.000				1/2" Ice	1.76	0.56	31.49
			0.000				1" Ice	1.92	0.67	44.03
							2" Ice	2.28	0.91	76.55
(4) RRUS A2 Modules (Verizon)	C	From Face	2.00	0.000	0.000	80.00	No Ice	1.60	0.46	21.16
			0.000				1/2" Ice	1.76	0.56	31.49
			0.000				1" Ice	1.92	0.67	44.03
							2" Ice	2.28	0.91	76.55
*										
Commscope MC-PK8-DSH Snub Nose Platform w/Rail w/o Mount Pipe (SES) (Dish Wireless)	C	None			0.000	61.00	No Ice	26.05	26.05	983.89
							1/2" Ice	50.70	50.70	1279.06
							1" Ice	75.35	75.35	1574.22
							2" Ice	124.65	124.65	2164.56
MX08FRO665-21 w/8' Mount Pipe (Dish Wireless)	A	From Face	2.00	0.000	0.000	61.00	No Ice	13.06	8.17	110.82
			0.000				1/2" Ice	13.77	9.46	209.48
			0.000				1" Ice	14.39	10.41	317.93
							2" Ice	15.67	12.36	561.82
MX08FRO665-21 w/8' Mount Pipe (Dish Wireless)	B	From Face	2.00	0.000	0.000	61.00	No Ice	13.06	8.17	110.82
			0.000				1/2" Ice	13.77	9.46	209.48
			0.000				1" Ice	14.39	10.41	317.93
							2" Ice	15.67	12.36	561.82
MX08FRO665-21 w/8' Mount Pipe (Dish Wireless)	C	From Face	2.00	0.000	0.000	61.00	No Ice	13.06	8.17	110.82
			0.000				1/2" Ice	13.77	9.46	209.48
			0.000				1" Ice	14.39	10.41	317.93
							2" Ice	15.67	12.36	561.82
TA08025-B604 (Dish Wireless)	A	From Face	2.00	0.000	0.000	61.00	No Ice	1.98	1.04	64.00
			0.000				1/2" Ice	2.15	1.18	80.85
			0.000				1" Ice	2.33	1.32	100.41
							2" Ice	2.72	1.63	148.40
TA08025-B604 (Dish Wireless)	B	From Face	2.00	0.000	0.000	61.00	No Ice	1.98	1.04	64.00
			0.000				1/2" Ice	2.15	1.18	80.85
			0.000				1" Ice	2.33	1.32	100.41
							2" Ice	2.72	1.63	148.40
TA08025-B604 (Dish Wireless)	C	From Face	2.00	0.000	0.000	61.00	No Ice	1.98	1.04	64.00
			0.000				1/2" Ice	2.15	1.18	80.85
			0.000				1" Ice	2.33	1.32	100.41
							2" Ice	2.72	1.63	148.40
TA08025-B605 (Dish Wireless)	A	From Face	2.00	0.000	0.000	61.00	No Ice	1.98	1.20	75.00
			0.000				1/2" Ice	2.15	1.34	93.09
			0.000				1" Ice	2.33	1.49	113.96
							2" Ice	2.72	1.81	164.82
TA08025-B605 (Dish Wireless)	B	From Face	2.00	0.000	0.000	61.00	No Ice	1.98	1.20	75.00
			0.000				1/2" Ice	2.15	1.34	93.09

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
			0.000			1" Ice	2.33	1.49	113.96
						2" Ice	2.72	1.81	164.82
TA08025-B605 (Dish Wireless)	C	From Face	2.00 0.000 0.000	0.000	61.00	No Ice 1/2" Ice 1" Ice	1.98 2.15 2.33	1.20 1.34 1.49	75.00 93.09 113.96
						2" Ice	2.72	1.81	164.82
RDIDC-9181-PF-48 (Dish Wireless)	C	From Face	2.00 0.000 0.000	0.000	61.00	No Ice 1/2" Ice 1" Ice	2.30 2.49 2.68	1.33 1.49 1.65	21.85 41.36 63.78
						2" Ice	3.10	2.00	118.14
(2) 8'x2" Pipe (Dish Wireless)	A	From Face	2.00 0.000 0.000	0.000	61.00	No Ice 1/2" Ice 1" Ice	1.90 2.73 3.40	1.90 2.73 3.40	29.22 43.56 63.19
						2" Ice	4.40	4.40	118.88
(2) 8'x2" Pipe (Dish Wireless)	B	From Face	2.00 0.000 0.000	0.000	61.00	No Ice 1/2" Ice 1" Ice	1.90 2.73 3.40	1.90 2.73 3.40	29.22 43.56 63.19
						2" Ice	4.40	4.40	118.88
(2) 8'x2" Pipe (Dish Wireless)	C	From Face	2.00 0.000 0.000	0.000	61.00	No Ice 1/2" Ice 1" Ice	1.90 2.73 3.40	1.90 2.73 3.40	29.22 43.56 63.19
						2" Ice	4.40	4.40	118.88

Tower Pressures - No Ice

$G_H = 1.100$

Section Elevation ft	z ft	K_z	q_z ksf	A_G ft^2	Face	A_F ft^2	A_R ft^2	A_{leg} ft^2	Leg %	C_AA_A In Face ft^2	C_AA_A Out Face ft^2
L1 82.00-39.38	59.78	1.136	0.039	91.287	A	0.000	91.287	91.287	100.00	0.000	0.000
					B	0.000	91.287		100.00	0.000	0.000
					C	0.000	91.287		100.00	0.000	0.000
L2 39.38-1.00	20.08	0.903	0.032	108.349	A	0.000	108.349	108.349	100.00	0.000	0.000
					B	0.000	108.349		100.00	0.000	0.000
					C	0.000	108.349		100.00	0.000	0.000

Tower Pressure - With Ice

$G_H = 1.100$

Section Elevation ft	z ft	K_z	q_z ksf	t_z in	A_G ft^2	Face	A_F ft^2	A_R ft^2	A_{leg} ft^2	Leg %	C_AA_A In Face ft^2	C_AA_A Out Face ft^2
L1 82.00-39.38	59.78	1.136	0.006	1.08	98.976	A	0.000	98.976	98.976	100.00	0.000	0.000

Section Elevation	z	K_z	q_z	t_z	A_G	Face	A_F	A_R	A_{leg}	Leg %	C_AA_A In Face	C_AA_A Out Face
	ft		ksf	in	ft^2		ft^2	ft^2	ft^2		ft^2	ft^2
						B	0.000	98.976		100.00	0.000	0.000
						C	0.000	98.976		100.00	0.000	0.000
L2 39.38-1.00	20.08	0.903	0.005	0.97	115.272	A	0.000	115.272	115.272	100.00	0.000	0.000
						B	0.000	115.272		100.00	0.000	0.000
						C	0.000	115.272		100.00	0.000	0.000

Tower Pressure - Service

$G_H = 1.100$

Section Elevation	z	K_z	q_z	A_G	Face	A_F	A_R	A_{leg}	Leg %	C_AA_A In Face	C_AA_A Out Face
ft	ft		ksf	ft^2		ft^2	ft^2	ft^2		ft^2	ft^2
L1 82.00-39.38	59.78	1.136	0.009	91.287	A	0.000	91.287	91.287	100.00	0.000	0.000
					B	0.000	91.287		100.00	0.000	0.000
					C	0.000	91.287		100.00	0.000	0.000
L2 39.38-1.00	20.08	0.903	0.007	108.349	A	0.000	108.349	108.349	100.00	0.000	0.000
					B	0.000	108.349		100.00	0.000	0.000
					C	0.000	108.349		100.00	0.000	0.000

Tower Forces - No Ice - Wind Normal To Face

Section Elevation	Add Weight	Self Weight	Face	e	C_F	q_z	D_F	D_R	A_E	F	w	Ctrl. Face
ft	lb	lb				ksf			ft^2	lb	plf	
L1	834.74	3602.97	A	1	0.63	0.039	1	1	91.287	2490.82	58.436	C
82.00-39.38			B	1	0.63		1	1	91.287			
			C	1	0.63		1	1	91.287			
L2 39.38-1.00	820.46	5627.45	A	1	0.63	0.032	1	1	108.349	2380.21	62.025	C
			B	1	0.63		1	1	108.349			
			C	1	0.63		1	1	108.349			
Sum Weight:	1655.20	9230.42						OTM	191.84 kip-ft	4871.03		

Tower Forces - No Ice - Wind 60 To Face

Section Elevation	Add Weight	Self Weight	Face	e	C_F	q_z	D_F	D_R	A_E	F	w	Ctrl. Face
ft	lb	lb				ksf			ft^2	lb	plf	
L1	834.74	3602.97	A	1	0.63	0.039	1	1	91.287	2490.82	58.436	C
82.00-39.38			B	1	0.63		1	1	91.287			
			C	1	0.63		1	1	91.287			
L2 39.38-1.00	820.46	5627.45	A	1	0.63	0.032	1	1	108.349	2380.21	62.025	C
			B	1	0.63		1	1	108.349			

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
Sum Weight:	1655.20	9230.42	C	1	0.63		1	1 OTM	108.349 191.84 kip-ft	4871.03		

Tower Forces - No Ice - Wind 90 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1 82.00-39.38	834.74	3602.97	A	1	0.63	0.039	1	1	91.287	2490.82	58.436	C
			B	1	0.63		1	1	91.287			
			C	1	0.63		1	1	91.287			
L2 39.38-1.00	820.46	5627.45	A	1	0.63	0.032	1	1	108.349	2380.21	62.025	C
			B	1	0.63		1	1	108.349			
			C	1	0.63		1	1	108.349			
Sum Weight:	1655.20	9230.42						OTM	191.84 kip-ft	4871.03		

Tower Forces - With Ice - Wind Normal To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1 82.00-39.38	834.74	5108.70	A	1	1.1	0.006	1	1	98.976	723.36	16.970	C
			B	1	1.1		1	1	98.976			
			C	1	1.1		1	1	98.976			
L2 39.38-1.00	820.46	7208.68	A	1	1.1	0.005	1	1	114.556	674.06	17.565	C
			B	1	1.1		1	1	114.556			
			C	1	1.1		1	1	114.556			
Sum Weight:	1655.20	12317.37						OTM	55.38 kip-ft	1397.41		

Tower Forces - With Ice - Wind 60 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1 82.00-39.38	834.74	5108.70	A	1	1.1	0.006	1	1	98.976	723.36	16.970	C
			B	1	1.1		1	1	98.976			
			C	1	1.1		1	1	98.976			
L2 39.38-1.00	820.46	7208.68	A	1	1.1	0.005	1	1	114.556	674.06	17.565	C

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
			B	1	1.1		1	1	114.556			
			C	1	1.1		1	1	114.556			
Sum Weight:	1655.20	12317.37						OTM	55.38 kip-ft	1397.41		

Tower Forces - With Ice - Wind 90 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	834.74	5108.70	A	1	1.1	0.006	1	1	98.976	723.36	16.970	C
82.00-39.38			B	1	1.1		1	1	98.976			
			C	1	1.1		1	1	98.976			
L2 39.38-1.00	820.46	7208.68	A	1	1.1	0.005	1	1	114.556	674.06	17.565	C
			B	1	1.1		1	1	114.556			
			C	1	1.1		1	1	114.556			
Sum Weight:	1655.20	12317.37						OTM	55.38 kip-ft	1397.41		

Tower Forces - Service - Wind Normal To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	834.74	3602.97	A	1	0.63	0.009	1	1	91.287	557.16	13.071	C
82.00-39.38			B	1	0.63		1	1	91.287			
			C	1	0.63		1	1	91.287			
L2 39.38-1.00	820.46	5627.45	A	1	0.63	0.007	1	1	108.349	532.41	13.874	C
			B	1	0.63		1	1	108.349			
			C	1	0.63		1	1	108.349			
Sum Weight:	1655.20	9230.42						OTM	42.91 kip-ft	1089.57		

Tower Forces - Service - Wind 60 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	834.74	3602.97	A	1	0.63	0.009	1	1	91.287	557.16	13.071	C
82.00-39.38			B	1	0.63		1	1	91.287			
			C	1	0.63		1	1	91.287			

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L2 39.38-1.00	820.46	5627.45	A	1	0.63	0.007	1	1	108.349	532.41	13.874	C
			B	1	0.63		1	1	108.349			
			C	1	0.63		1	1	108.349			
Sum Weight:	1655.20	9230.42						OTM	42.91 kip-ft	1089.57		

Tower Forces - Service - Wind 90 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	834.74	3602.97	A	1	0.63	0.009	1	1	91.287	557.16	13.071	C
82.00-39.38			B	1	0.63		1	1	91.287			
			C	1	0.63		1	1	91.287			
L2 39.38-1.00	820.46	5627.45	A	1	0.63	0.007	1	1	108.349	532.41	13.874	C
			B	1	0.63		1	1	108.349			
			C	1	0.63		1	1	108.349			
Sum Weight:	1655.20	9230.42						OTM	42.91 kip-ft	1089.57		

Force Totals

Load Case	Vertical Forces lb	Sum of Forces X lb	Sum of Forces Z lb	Sum of Overturning Moments, M_x kip-ft	Sum of Overturning Moments, M_z kip-ft	Sum of Torques kip-ft
Leg Weight	9230.42					
Bracing Weight	0.00					
Total Member Self-Weight	9230.42			0.11	0.00	
Total Weight	16807.25			0.11	0.00	
Wind 0 deg - No Ice		0.00	-16342.20	-1042.38	0.00	0.00
Wind 30 deg - No Ice		8070.13	-14152.76	-902.71	-513.57	0.20
Wind 60 deg - No Ice		13977.87	-8171.10	-521.13	-889.53	0.34
Wind 90 deg - No Ice		16140.25	0.00	0.11	-1027.14	0.39
Wind 120 deg - No Ice		13977.87	8171.10	521.36	-889.53	0.34
Wind 150 deg - No Ice		8070.13	14152.76	902.94	-513.57	0.20
Wind 180 deg - No Ice		0.00	16342.20	1042.61	0.00	0.00
Wind 210 deg - No Ice		-8070.13	14152.76	902.94	513.57	-0.20
Wind 240 deg - No Ice		-13977.87	8171.10	521.36	889.53	-0.34
Wind 270 deg - No Ice		-16140.25	0.00	0.11	1027.14	-0.39
Wind 300 deg - No Ice		-13977.87	-8171.10	-521.13	889.53	-0.34
Wind 330 deg - No Ice		-8070.13	-14152.76	-902.71	513.57	-0.20
Member Ice	3086.95					
Total Weight Ice	26741.63			0.49	0.00	
Wind 0 deg - Ice		0.00	-3965.78	-240.73	0.00	0.00
Wind 30 deg - Ice		1966.49	-3434.46	-208.41	-119.37	0.04
Wind 60 deg - Ice		3406.07	-1982.89	-120.12	-206.75	0.06
Wind 90 deg - Ice		3932.99	0.00	0.49	-238.73	0.07

Load Case	Vertical Forces lb	Sum of Forces X lb	Sum of Forces Z lb	Sum of Overturning Moments, M_x kip-ft	Sum of Overturning Moments, M_z kip-ft	Sum of Torques kip-ft
Wind 120 deg - Ice		3406.07	1982.89	121.10	-206.75	0.06
Wind 150 deg - Ice		1966.49	3434.46	209.40	-119.37	0.04
Wind 180 deg - Ice		0.00	3965.78	241.72	0.00	0.00
Wind 210 deg - Ice		-1966.49	3434.46	209.40	119.37	-0.04
Wind 240 deg - Ice		-3406.07	1982.89	121.10	206.75	-0.06
Wind 270 deg - Ice		-3932.99	0.00	0.49	238.73	-0.07
Wind 300 deg - Ice		-3406.07	-1982.89	-120.12	206.75	-0.06
Wind 330 deg - Ice		-1966.49	-3434.46	-208.41	119.37	-0.04
Total Weight	16807.25			0.11	0.00	
Wind 0 deg - Service		0.00	-3655.49	-233.07	0.00	0.00
Wind 30 deg - Service		1805.16	-3165.75	-201.83	-114.88	0.04
Wind 60 deg - Service		3126.63	-1827.75	-116.48	-198.97	0.08
Wind 90 deg - Service		3610.32	0.00	0.11	-229.75	0.09
Wind 120 deg - Service		3126.63	1827.75	116.71	-198.97	0.08
Wind 150 deg - Service		1805.16	3165.75	202.06	-114.88	0.04
Wind 180 deg - Service		0.00	3655.49	233.30	0.00	0.00
Wind 210 deg - Service		-1805.16	3165.75	202.06	114.88	-0.04
Wind 240 deg - Service		-3126.63	1827.75	116.71	198.97	-0.08
Wind 270 deg - Service		-3610.32	0.00	0.11	229.75	-0.09
Wind 300 deg - Service		-3126.63	-1827.75	-116.48	198.97	-0.08
Wind 330 deg - Service		-1805.16	-3165.75	-201.83	114.88	-0.04
Seismic Vertical	304.76					
Seismic Horizontal 0 deg		0.00	-643.78	-42.41	0.00	0.00
Seismic Horizontal 30 deg		321.89	-557.53	-36.73	-21.21	0.00
Seismic Horizontal 60 deg		557.53	-321.89	-21.21	-36.73	0.00
Seismic Horizontal 90 deg		643.78	0.00	0.00	-42.41	0.00
Seismic Horizontal 120 deg		557.53	321.89	21.21	-36.73	0.00
Seismic Horizontal 150 deg		321.89	557.53	36.73	-21.21	0.00
Seismic Horizontal 180 deg		0.00	643.78	42.41	0.00	0.00
Seismic Horizontal 210 deg		-321.89	557.53	36.73	21.21	0.00
Seismic Horizontal 240 deg		-557.53	321.89	21.21	36.73	0.00
Seismic Horizontal 270 deg		-643.78	0.00	0.00	42.41	0.00
Seismic Horizontal 300 deg		-557.53	-321.89	-21.21	36.73	0.00
Seismic Horizontal 330 deg		-321.89	-557.53	-36.73	21.21	0.00

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

Comb. No.	Description
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
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice
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
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 lb	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	82 - 39.375	Pole	Max Tension	27	0.00	0.00	-0.00
			Max. Compression	26	-20031.42	0.00	-0.52
			Max. Mx	8	-11447.61	-406.15	-0.14
			Max. My	14	-11435.69	0.00	-413.20
			Max. Vy	8	13807.96	-406.15	-0.14
			Max. Vx	14	14014.96	0.00	-413.20
			Max. Torque	8			-0.39
L2	39.375 - 1	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-30278.20	0.00	-0.52
			Max. Mx	8	-20157.61	-1046.47	-0.14
			Max. My	14	-20157.30	0.00	-1062.26
			Max. Vy	8	16154.10	-1046.47	-0.14
			Max. Vx	14	16356.26	0.00	-1062.26
			Max. Torque	8			-0.39

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Pole	Max. Vert	33	30278.20	0.00	-3965.78
	Max. H_x	20	20168.70	16140.25	-0.00
	Max. H_z	2	20168.70	0.00	16342.21
	Max. M_x	2	1061.98	0.00	16342.21
	Max. M_z	8	1046.47	-16140.25	-0.00
	Max. Torsion	20	0.39	16140.25	-0.00
	Min. Vert	64	14821.76	0.00	-643.78
	Min. H_x	8	20168.70	-16140.25	-0.00
	Min. H_z	14	20168.70	0.00	-16342.21
	Min. M_x	14	-1062.26	0.00	-16342.21
	Min. M_z	20	-1046.47	16140.25	-0.00
	Min. Torsion	8	-0.39	-16140.25	-0.00

Tower Mast Reaction Summary

Load Combination	Vertical lb	$Shear_x$ lb	$Shear_z$ lb	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	16807.25	0.00	0.00	0.11	0.00	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	20168.70	0.00	-16342.21	-1061.98	0.00	0.00
0.9 Dead+1.0 Wind 0 deg - No Ice	15126.52	0.00	-16342.20	-1056.94	0.00	0.00
1.2 Dead+1.0 Wind 30 deg - No Ice	20168.70	8070.13	-14152.76	-919.69	-523.23	0.20
0.9 Dead+1.0 Wind 30 deg - No Ice	15126.52	8070.13	-14152.76	-915.32	-520.73	0.20
1.2 Dead+1.0 Wind 60 deg - No Ice	20168.70	13977.87	-8171.10	-530.92	-906.27	0.34
0.9 Dead+1.0 Wind 60 deg - No Ice	15126.52	13977.87	-8171.10	-528.42	-901.94	0.34
1.2 Dead+1.0 Wind 90 deg - No	20168.70	16140.25	0.00	0.14	-1046.47	0.39

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	lb	lb	lb	kip-ft	kip-ft	kip-ft
Ice						
0.9 Dead+1.0 Wind 90 deg - No Ice	15126.52	16140.25	0.00	0.10	-1041.47	0.39
1.2 Dead+1.0 Wind 120 deg - No Ice	20168.70	13977.87	8171.10	531.21	-906.27	0.34
0.9 Dead+1.0 Wind 120 deg - No Ice	15126.52	13977.87	8171.10	528.63	-901.94	0.34
1.2 Dead+1.0 Wind 150 deg - No Ice	20168.70	8070.13	14152.76	919.97	-523.23	0.20
0.9 Dead+1.0 Wind 150 deg - No Ice	15126.52	8070.13	14152.76	915.53	-520.73	0.20
1.2 Dead+1.0 Wind 180 deg - No Ice	20168.70	0.00	16342.21	1062.26	0.00	0.00
0.9 Dead+1.0 Wind 180 deg - No Ice	15126.52	0.00	16342.20	1057.15	0.00	0.00
1.2 Dead+1.0 Wind 210 deg - No Ice	20168.70	-8070.13	14152.76	919.97	523.23	-0.20
0.9 Dead+1.0 Wind 210 deg - No Ice	15126.52	-8070.13	14152.76	915.53	520.73	-0.20
1.2 Dead+1.0 Wind 240 deg - No Ice	20168.70	-13977.87	8171.10	531.21	906.27	-0.34
0.9 Dead+1.0 Wind 240 deg - No Ice	15126.52	-13977.87	8171.10	528.63	901.94	-0.34
1.2 Dead+1.0 Wind 270 deg - No Ice	20168.70	-16140.25	0.00	0.14	1046.47	-0.39
0.9 Dead+1.0 Wind 270 deg - No Ice	15126.52	-16140.25	0.00	0.10	1041.47	-0.39
1.2 Dead+1.0 Wind 300 deg - No Ice	20168.70	-13977.87	-8171.10	-530.92	906.27	-0.34
0.9 Dead+1.0 Wind 300 deg - No Ice	15126.52	-13977.87	-8171.10	-528.42	901.94	-0.34
1.2 Dead+1.0 Wind 330 deg - No Ice	20168.70	-8070.13	-14152.76	-919.69	523.23	-0.20
0.9 Dead+1.0 Wind 330 deg - No Ice	15126.52	-8070.13	-14152.76	-915.32	520.73	-0.20
1.2 Dead+1.0 Ice	30278.20	0.00	0.00	0.52	0.00	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice	30278.20	0.00	-3965.78	-248.54	0.00	0.00
1.2 Dead+1.0 Wind 30 deg+1.0 Ice	30278.20	1966.49	-3434.46	-215.17	-123.25	0.04
1.2 Dead+1.0 Wind 60 deg+1.0 Ice	30278.20	3406.07	-1982.89	-124.00	-213.48	0.07
1.2 Dead+1.0 Wind 90 deg+1.0 Ice	30278.20	3932.99	0.00	0.55	-246.51	0.08
1.2 Dead+1.0 Wind 120 deg+1.0 Ice	30278.20	3406.07	1982.89	125.09	-213.48	0.07
1.2 Dead+1.0 Wind 150 deg+1.0 Ice	30278.20	1966.49	3434.46	216.26	-123.25	0.04
1.2 Dead+1.0 Wind 180 deg+1.0 Ice	30278.20	0.00	3965.78	249.63	0.00	0.00
1.2 Dead+1.0 Wind 210 deg+1.0 Ice	30278.20	-1966.49	3434.46	216.26	123.25	-0.04
1.2 Dead+1.0 Wind 240 deg+1.0 Ice	30278.20	-3406.07	1982.89	125.09	213.48	-0.07
1.2 Dead+1.0 Wind 270 deg+1.0 Ice	30278.20	-3932.99	0.00	0.55	246.51	-0.08
1.2 Dead+1.0 Wind 300 deg+1.0 Ice	30278.20	-3406.07	-1982.89	-124.00	213.48	-0.07
1.2 Dead+1.0 Wind 330 deg+1.0 Ice	30278.20	-1966.49	-3434.46	-215.17	123.25	-0.04
Dead+Wind 0 deg - Service	16807.25	0.00	-3655.49	-236.78	0.00	0.00

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	lb	lb	lb	kip-ft	kip-ft	kip-ft
Dead+Wind 30 deg - Service	16807.25	1805.16	-3165.75	-205.04	-116.70	0.04
Dead+Wind 60 deg - Service	16807.25	3126.63	-1827.75	-118.33	-202.14	0.08
Dead+Wind 90 deg - Service	16807.25	3610.32	0.00	0.12	-233.41	0.09
Dead+Wind 120 deg - Service	16807.25	3126.63	1827.75	118.57	-202.14	0.08
Dead+Wind 150 deg - Service	16807.25	1805.16	3165.75	205.28	-116.70	0.04
Dead+Wind 180 deg - Service	16807.25	0.00	3655.49	237.02	0.00	0.00
Dead+Wind 210 deg - Service	16807.25	-1805.16	3165.75	205.28	116.70	-0.04
Dead+Wind 240 deg - Service	16807.25	-3126.63	1827.75	118.57	202.14	-0.08
Dead+Wind 270 deg - Service	16807.25	-3610.32	0.00	0.12	233.41	-0.09
Dead+Wind 300 deg - Service	16807.25	-3126.63	-1827.75	-118.33	202.14	-0.08
Dead+Wind 330 deg - Service	16807.25	-1805.16	-3165.75	-205.04	116.70	-0.04
1.2 Dead+1.0 Ev+1.0 Eh 0 deg	20473.46	0.00	-643.78	-43.08	0.00	0.00
0.9 Dead-1.0 Ev+1.0 Eh 0 deg	14821.76	0.00	-643.78	-42.89	0.00	0.00
1.2 Dead+1.0 Ev+1.0 Eh 30 deg	20473.46	321.89	-557.53	-37.29	-21.61	0.00
0.9 Dead-1.0 Ev+1.0 Eh 30 deg	14821.76	321.89	-557.53	-37.13	-21.50	0.00
1.2 Dead+1.0 Ev+1.0 Eh 60 deg	20473.46	557.53	-321.89	-21.47	-37.43	0.00
0.9 Dead-1.0 Ev+1.0 Eh 60 deg	14821.76	557.53	-321.89	-21.39	-37.24	0.00
1.2 Dead+1.0 Ev+1.0 Eh 90 deg	20473.46	643.78	0.00	0.14	-43.23	0.00
0.9 Dead-1.0 Ev+1.0 Eh 90 deg	14821.76	643.78	0.00	0.11	-43.00	0.00
1.2 Dead+1.0 Ev+1.0 Eh 120 deg	20473.46	557.53	321.89	21.75	-37.43	0.00
0.9 Dead-1.0 Ev+1.0 Eh 120 deg	14821.76	557.53	321.89	21.60	-37.24	0.00
1.2 Dead+1.0 Ev+1.0 Eh 150 deg	20473.46	321.89	557.53	37.58	-21.61	0.00
0.9 Dead-1.0 Ev+1.0 Eh 150 deg	14821.76	321.89	557.53	37.34	-21.50	0.00
1.2 Dead+1.0 Ev+1.0 Eh 180 deg	20473.46	0.00	643.78	43.37	0.00	0.00
0.9 Dead-1.0 Ev+1.0 Eh 180 deg	14821.76	0.00	643.78	43.10	0.00	0.00
1.2 Dead+1.0 Ev+1.0 Eh 210 deg	20473.46	-321.89	557.53	37.58	21.61	-0.00
0.9 Dead-1.0 Ev+1.0 Eh 210 deg	14821.76	-321.89	557.53	37.34	21.50	-0.00
1.2 Dead+1.0 Ev+1.0 Eh 240 deg	20473.46	-557.53	321.89	21.75	37.43	-0.00
0.9 Dead-1.0 Ev+1.0 Eh 240 deg	14821.76	-557.53	321.89	21.60	37.24	-0.00
1.2 Dead+1.0 Ev+1.0 Eh 270 deg	20473.46	-643.78	0.00	0.14	43.23	-0.00
0.9 Dead-1.0 Ev+1.0 Eh 270 deg	14821.76	-643.78	0.00	0.11	43.00	-0.00
1.2 Dead+1.0 Ev+1.0 Eh 300 deg	20473.46	-557.53	-321.89	-21.47	37.43	-0.00
0.9 Dead-1.0 Ev+1.0 Eh 300 deg	14821.76	-557.53	-321.89	-21.39	37.24	-0.00
1.2 Dead+1.0 Ev+1.0 Eh 330 deg	20473.46	-321.89	-557.53	-37.29	21.61	-0.00
0.9 Dead-1.0 Ev+1.0 Eh 330 deg	14821.76	-321.89	-557.53	-37.13	21.50	-0.00

Solution Summary

Load Comb.	Sum of Applied Forces PX lb	PY lb	PZ lb	Sum of Reactions PX lb	PY lb	PZ lb	% Error
1	0.00	-16807.25	0.00	0.00	16807.25	0.00	0.000%

Load Comb.	Sum of Applied Forces PX lb	PY lb	PZ lb	Sum of Reactions PX lb	PY lb	PZ lb	% Error
2	0.00	-20168.70	-16342.20	0.00	20168.70	16342.21	0.000%
3	0.00	-15126.52	-16342.20	0.00	15126.52	16342.20	0.000%
4	8070.13	-20168.70	-14152.76	-8070.13	20168.70	14152.76	0.000%
5	8070.13	-15126.52	-14152.76	-8070.13	15126.52	14152.76	0.000%
6	13977.87	-20168.70	-8171.10	-13977.87	20168.70	8171.10	0.000%
7	13977.87	-15126.52	-8171.10	-13977.87	15126.52	8171.10	0.000%
8	16140.25	-20168.70	0.00	-16140.25	20168.70	-0.00	0.000%
9	16140.25	-15126.52	0.00	-16140.25	15126.52	-0.00	0.000%
10	13977.87	-20168.70	8171.10	-13977.87	20168.70	-8171.10	0.000%
11	13977.87	-15126.52	8171.10	-13977.87	15126.52	-8171.10	0.000%
12	8070.13	-20168.70	14152.76	-8070.13	20168.70	-14152.76	0.000%
13	8070.13	-15126.52	14152.76	-8070.13	15126.52	-14152.76	0.000%
14	0.00	-20168.70	16342.20	0.00	20168.70	-16342.21	0.000%
15	0.00	-15126.52	16342.20	0.00	15126.52	-16342.20	0.000%
16	-8070.13	-20168.70	14152.76	8070.13	20168.70	-14152.76	0.000%
17	-8070.13	-15126.52	14152.76	8070.13	15126.52	-14152.76	0.000%
18	-13977.87	-20168.70	8171.10	13977.87	20168.70	-8171.10	0.000%
19	-13977.87	-15126.52	8171.10	13977.87	15126.52	-8171.10	0.000%
20	-16140.25	-20168.70	0.00	16140.25	20168.70	-0.00	0.000%
21	-16140.25	-15126.52	0.00	16140.25	15126.52	-0.00	0.000%
22	-13977.87	-20168.70	-8171.10	13977.87	20168.70	8171.10	0.000%
23	-13977.87	-15126.52	-8171.10	13977.87	15126.52	8171.10	0.000%
24	-8070.13	-20168.70	-14152.76	8070.13	20168.70	14152.76	0.000%
25	-8070.13	-15126.52	-14152.76	8070.13	15126.52	14152.76	0.000%
26	0.00	-30278.20	0.00	0.00	30278.20	0.00	0.000%
27	0.00	-30278.20	-3965.78	0.00	30278.20	3965.78	0.000%
28	1966.49	-30278.20	-3434.46	-1966.49	30278.20	3434.46	0.000%
29	3406.07	-30278.20	-1982.89	-3406.07	30278.20	1982.89	0.000%
30	3932.99	-30278.20	0.00	-3932.99	30278.20	-0.00	0.000%
31	3406.07	-30278.20	1982.89	-3406.07	30278.20	-1982.89	0.000%
32	1966.49	-30278.20	3434.46	-1966.49	30278.20	-3434.46	0.000%
33	0.00	-30278.20	3965.78	0.00	30278.20	-3965.78	0.000%
34	-1966.49	-30278.20	3434.46	1966.49	30278.20	-3434.46	0.000%
35	-3406.07	-30278.20	1982.89	3406.07	30278.20	-1982.89	0.000%
36	-3932.99	-30278.20	0.00	3932.99	30278.20	-0.00	0.000%
37	-3406.07	-30278.20	-1982.89	3406.07	30278.20	1982.89	0.000%
38	-1966.49	-30278.20	-3434.46	1966.49	30278.20	3434.46	0.000%
39	0.00	-16807.25	-3655.49	0.00	16807.25	3655.49	0.000%
40	1805.16	-16807.25	-3165.75	-1805.16	16807.25	3165.75	0.000%
41	3126.63	-16807.25	-1827.75	-3126.63	16807.25	1827.75	0.000%
42	3610.32	-16807.25	0.00	-3610.32	16807.25	-0.00	0.000%
43	3126.63	-16807.25	1827.75	-3126.63	16807.25	-1827.75	0.000%
44	1805.16	-16807.25	3165.75	-1805.16	16807.25	-3165.75	0.000%
45	0.00	-16807.25	3655.49	0.00	16807.25	-3655.49	0.000%
46	-1805.16	-16807.25	3165.75	1805.16	16807.25	-3165.75	0.000%
47	-3126.63	-16807.25	1827.75	3126.63	16807.25	-1827.75	0.000%
48	-3610.32	-16807.25	0.00	3610.32	16807.25	-0.00	0.000%
49	-3126.63	-16807.25	-1827.75	3126.63	16807.25	1827.75	0.000%
50	-1805.16	-16807.25	-3165.75	1805.16	16807.25	3165.75	0.000%
51	0.00	-20473.46	-643.78	0.00	20473.46	643.78	0.000%
52	0.00	-14821.76	-643.78	0.00	14821.76	643.78	0.000%
53	321.89	-20473.46	-557.53	-321.89	20473.46	557.53	0.000%
54	321.89	-14821.76	-557.53	-321.89	14821.76	557.53	0.000%
55	557.53	-20473.46	-321.89	-557.53	20473.46	321.89	0.000%
56	557.53	-14821.76	-321.89	-557.53	14821.76	321.89	0.000%
57	643.78	-20473.46	0.00	-643.78	20473.46	-0.00	0.000%
58	643.78	-14821.76	0.00	-643.78	14821.76	-0.00	0.000%
59	557.53	-20473.46	321.89	-557.53	20473.46	-321.89	0.000%
60	557.53	-14821.76	321.89	-557.53	14821.76	-321.89	0.000%
61	321.89	-20473.46	557.53	-321.89	20473.46	-557.53	0.000%
62	321.89	-14821.76	557.53	-321.89	14821.76	-557.53	0.000%

Load Comb.	Sum of Applied Forces PX lb	PY lb	PZ lb	Sum of Reactions PX lb	PY lb	PZ lb	% Error
63	0.00	-20473.46	643.78	0.00	20473.46	-643.78	0.000%
64	0.00	-14821.76	643.78	0.00	14821.76	-643.78	0.000%
65	-321.89	-20473.46	557.53	321.89	20473.46	-557.53	0.000%
66	-321.89	-14821.76	557.53	321.89	14821.76	-557.53	0.000%
67	-557.53	-20473.46	321.89	557.53	20473.46	-321.89	0.000%
68	-557.53	-14821.76	321.89	557.53	14821.76	-321.89	0.000%
69	-643.78	-20473.46	0.00	643.78	20473.46	-0.00	0.000%
70	-643.78	-14821.76	0.00	643.78	14821.76	-0.00	0.000%
71	-557.53	-20473.46	-321.89	557.53	20473.46	321.89	0.000%
72	-557.53	-14821.76	-321.89	557.53	14821.76	321.89	0.000%
73	-321.89	-20473.46	-557.53	321.89	20473.46	557.53	0.000%
74	-321.89	-14821.76	-557.53	321.89	14821.76	557.53	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	0.00000833
3	Yes	4	0.00000001	0.00000001
4	Yes	4	0.00000001	0.00048853
5	Yes	4	0.00000001	0.00030024
6	Yes	4	0.00000001	0.00046494
7	Yes	4	0.00000001	0.00028562
8	Yes	4	0.00000001	0.00003298
9	Yes	4	0.00000001	0.00002069
10	Yes	4	0.00000001	0.00049273
11	Yes	4	0.00000001	0.00030321
12	Yes	4	0.00000001	0.00047243
13	Yes	4	0.00000001	0.00028991
14	Yes	4	0.00000001	0.00000833
15	Yes	4	0.00000001	0.00000001
16	Yes	4	0.00000001	0.00047243
17	Yes	4	0.00000001	0.00028991
18	Yes	4	0.00000001	0.00049273
19	Yes	4	0.00000001	0.00030321
20	Yes	4	0.00000001	0.00003298
21	Yes	4	0.00000001	0.00002069
22	Yes	4	0.00000001	0.00046494
23	Yes	4	0.00000001	0.00028562
24	Yes	4	0.00000001	0.00048853
25	Yes	4	0.00000001	0.00030024
26	Yes	4	0.00000001	0.00000001
27	Yes	4	0.00000001	0.00000737
28	Yes	4	0.00000001	0.00002163
29	Yes	4	0.00000001	0.00001967
30	Yes	4	0.00000001	0.00000834
31	Yes	4	0.00000001	0.00002252
32	Yes	4	0.00000001	0.00002044
33	Yes	4	0.00000001	0.00000743
34	Yes	4	0.00000001	0.00002044
35	Yes	4	0.00000001	0.00002252
36	Yes	4	0.00000001	0.00000834
37	Yes	4	0.00000001	0.00001967
38	Yes	4	0.00000001	0.00002163
39	Yes	4	0.00000001	0.00000001

40	Yes	4	0.00000001	0.00000001
41	Yes	4	0.00000001	0.00000001
42	Yes	4	0.00000001	0.00000001
43	Yes	4	0.00000001	0.00000001
44	Yes	4	0.00000001	0.00000001
45	Yes	4	0.00000001	0.00000001
46	Yes	4	0.00000001	0.00000001
47	Yes	4	0.00000001	0.00000001
48	Yes	4	0.00000001	0.00000001
49	Yes	4	0.00000001	0.00000001
50	Yes	4	0.00000001	0.00000001
51	Yes	4	0.00000001	0.00000001
52	Yes	4	0.00000001	0.00000001
53	Yes	4	0.00000001	0.00000001
54	Yes	4	0.00000001	0.00000001
55	Yes	4	0.00000001	0.00000001
56	Yes	4	0.00000001	0.00000001
57	Yes	4	0.00000001	0.00000001
58	Yes	4	0.00000001	0.00000001
59	Yes	4	0.00000001	0.00000001
60	Yes	4	0.00000001	0.00000001
61	Yes	4	0.00000001	0.00000001
62	Yes	4	0.00000001	0.00000001
63	Yes	4	0.00000001	0.00000001
64	Yes	4	0.00000001	0.00000001
65	Yes	4	0.00000001	0.00000001
66	Yes	4	0.00000001	0.00000001
67	Yes	4	0.00000001	0.00000001
68	Yes	4	0.00000001	0.00000001
69	Yes	4	0.00000001	0.00000001
70	Yes	4	0.00000001	0.00000001
71	Yes	4	0.00000001	0.00000001
72	Yes	4	0.00000001	0.00000001
73	Yes	4	0.00000001	0.00000001
74	Yes	4	0.00000001	0.00000001

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	82 - 39.375	5.531	45	0.549	0.001
L2	43.625 - 1	1.667	45	0.353	0.000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
80.69	CCISeismic Tower Section 1 - 1	45	5.380	0.544	0.001	40378
80.00	14' Modified Platform w/ Rail w/o Mount Pipes	45	5.300	0.541	0.001	40378
78.00	PLK5 Kicker	45	5.070	0.532	0.001	40378
76.00	PLK7 Collar Mount	45	4.841	0.523	0.001	33648
74.38	CCISeismic Tower Section 1 - 2	45	4.656	0.516	0.001	26477
67.00	CCISeismic (12) general cable 1	45	3.835	0.482	0.001	13459

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
	5/8" Coax From 0 to 79 (61ft to71ft)					
64.38	CCISeismic Tower Section 1 - 3	45	3.553	0.470	0.001	11454
61.00	Commscope MC-PK8-DSH Snub Nose Platform w/Rail w/o Mount Pipe (SES)	45	3.202	0.453	0.000	9614
57.00	CCISeismic (12) general cable 1 5/8" Coax From 0 to 79 (51ft to61ft)	45	2.804	0.433	0.000	8075
56.50	CCISeismic Hybrid From 0 to 60 (51ft to60ft)	45	2.755	0.430	0.000	7917
54.38	CCISeismic Tower Section 1 - 4	45	2.555	0.418	0.000	7308
47.00	CCISeismic (12) general cable 1 5/8" Coax From 0 to 79 (41ft to51ft)	45	1.921	0.375	0.000	5777
44.38	CCISeismic Tower Section 1 - 5	45	1.721	0.358	0.000	5508
42.31	CCISeismic Tower Section 2 - 1	45	1.575	0.345	0.000	5522
37.00	CCISeismic (12) general cable 1 5/8" Coax From 0 to 79 (31ft to41ft)	45	1.240	0.307	0.000	6228
36.00	CCISeismic Tower Section 2 - 2	45	1.184	0.300	0.000	6406
27.00	CCISeismic (12) general cable 1 5/8" Coax From 0 to 79 (21ft to31ft)	45	0.752	0.229	0.000	8624
26.00	CCISeismic Tower Section 2 - 3	45	0.712	0.221	0.000	8969
17.00	CCISeismic (12) general cable 1 5/8" Coax From 0 to 79 (11ft to21ft)	45	0.403	0.144	0.000	14014
16.00	CCISeismic Tower Section 2 - 4	45	0.374	0.135	0.000	14948
7.00	CCISeismic (12) general cable 1 5/8" Coax From 0 to 79 (1ft to11ft)	45	0.139	0.055	0.000	37370
6.00	CCISeismic Tower Section 2 - 5	45	0.116	0.046	0.000	44844
1.50	CCISeismic (12) general cable 1 5/8" Coax From 0 to 79 (0ft to1ft)	45	0.011	0.005	0.000	44844

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	82 - 39.375	24.792	14	2.463	0.003
L2	43.625 - 1	7.472	14	1.585	0.001

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
80.69	CCISeismic Tower Section 1 - 1	14	24.114	2.437	0.003	9033
80.00	14' Modified Platform w/ Rail w/o Mount Pipes	14	23.759	2.424	0.003	9033
78.00	PLK5 Kicker	14	22.728	2.385	0.003	9033
76.00	PLK7 Collar Mount	14	21.701	2.345	0.003	7528
74.38	CCISeismic Tower Section 1 - 2	14	20.872	2.313	0.003	5923
67.00	CCISeismic (12) general cable 1 5/8" Coax From 0 to 79 (61ft to71ft)	14	17.191	2.163	0.002	3010
64.38	CCISeismic Tower Section 1 - 3	14	15.928	2.107	0.002	2562
61.00	Commscope MC-PK8-DSH Snub	14	14.352	2.032	0.002	2150

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
	Nose Platform w/Rail w/o Mount Pipe (SES)					
57.00	CCISeismic (12) general cable 1 5/8" Coax From 0 to 79 (51ft to61ft)	14	12.568	1.939	0.002	1805
56.50	CCISeismic Hybrid From 0 to 60 (51ft to60ft)	14	12.352	1.927	0.002	1770
54.38	CCISeismic Tower Section 1 - 4	14	11.454	1.876	0.002	1633
47.00	CCISeismic (12) general cable 1 5/8" Coax From 0 to 79 (41ft to51ft)	14	8.611	1.682	0.001	1291
44.38	CCISeismic Tower Section 1 - 5	14	7.715	1.607	0.001	1230
42.31	CCISeismic Tower Section 2 - 1	14	7.060	1.545	0.001	1233
37.00	CCISeismic (12) general cable 1 5/8" Coax From 0 to 79 (31ft to41ft)	14	5.561	1.377	0.001	1391
36.00	CCISeismic Tower Section 2 - 2	14	5.307	1.344	0.001	1430
27.00	CCISeismic (12) general cable 1 5/8" Coax From 0 to 79 (21ft to31ft)	14	3.372	1.028	0.001	1925
26.00	CCISeismic Tower Section 2 - 3	14	3.191	0.991	0.001	2002
17.00	CCISeismic (12) general cable 1 5/8" Coax From 0 to 79 (11ft to21ft)	14	1.807	0.646	0.000	3128
16.00	CCISeismic Tower Section 2 - 4	14	1.675	0.607	0.000	3336
7.00	CCISeismic (12) general cable 1 5/8" Coax From 0 to 79 (1ft to11ft)	14	0.625	0.245	0.000	8340
6.00	CCISeismic Tower Section 2 - 5	14	0.518	0.204	0.000	10008
1.50	CCISeismic (12) general cable 1 5/8" Coax From 0 to 79 (0ft to1ft)	14	0.051	0.020	0.000	10008

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
L1	82 - 39.375 (1)	TP29.99x20.72x0.31	42.63	0.00	0.0	28.52	-11435.70	1668550.00	0.007
L2	39.375 - 1 (2)	TP37.5x28.44x0.38	42.63	0.00	0.0	44.19	-20157.30	2585000.00	0.008

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	82 - 39.375 (1)	TP29.99x20.72x0.31	413.20	1249.31	0.331	0.00	1249.31	0.000
L2	39.375 - 1 (2)	TP37.5x28.44x0.38	1062.27	2475.98	0.429	0.00	2475.98	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u lb	ϕV_n lb	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	82 - 39.375 (1)	TP29.99x20.72x0.31	14015.00	500566.00	0.028	0.00	1260.58	0.000
L2	39.375 - 1 (2)	TP37.5x28.44x0.38	16356.30	775500.00	0.021	0.00	2521.32	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	82 - 39.375 (1)	0.007	0.331	0.000	0.028	0.000	0.338 ✔	1.000	4.8.2 ✔
L2	39.375 - 1 (2)	0.008	0.429	0.000	0.021	0.000	0.437 ✔	1.000	4.8.2 ✔

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
L1	82 - 39.375	Pole	TP29.99x20.72x0.31	1	-11435.70	1668550.00	33.8	Pass
L2	39.375 - 1	Pole	TP37.5x28.44x0.38	2	-20157.30	2585000.00	43.7	Pass
							Summary	
						Pole (L2)	43.7	Pass
						RATING =	**43.7**	**Pass**

CROWN CASTLE

BU: 23393
WO: Trumbull
Order: REV01B

Structure:
Rev: H

Location

	Decimal Degrees	Deg	Min	Sec
Lat:	41.245600	41	14	44.16
Long:	-73.145600	73	8	44.16

Code and Site Parameters

Seismic Design Code: [illegible]
Site Soil: [illegible] Rock
Risk Category: [illegible]

USGS Seismic Reference

S_S: [illegible] g
S_1: [illegible] g
T_L: [illegible] s

Seismic Design Category Determination

Importance Factor, I_e:	1
Acceleration-based site coefficient, F_a:	0.9000
Velocity-based site coefficient, F_v:	0.8000
Design spectral response acceleration short period, S_{DS}:	0.0907 g
Design spectral response acceleration 1 s period, S_{D1}:	0.0907 g
T_s:	1.0000
Seismic Design Category Based on S_{DS}:	A
Seismic Design Category Based on S_{D1}:	B
Seismic Design Category Based on S_1:	N/A
Controlling Seismic Design Category:	

CROWN CASTLE

BU:	23393	Structure:	
WO:	Trumbull		
Order:	REV01B	Rev:	H

Tower Details

Tower Type:	Tapered Monopole		
Height, h:	81	ft	
Effective Seismic Weight, W:	16.81	kips	
Amplification Factor, A_s:	1.0		2.7.8.1

Seismic Base Shear

Response Modification Factor, R:	1.5		
Discrete Appurtenance Weight in Top 1/3 of Structure, W_u:	5.9216273	kips	
W_L:	10.88524846	kips	
E:	29000.0	ksi	
g:	386.088	in/s^2	
Average Moment of Inertia, I_{avg}:	3680.21637	in^4	
F_a:	0.633712656	hz	
Approximate Fundamental Period Monopole, T_a:	1.5780	s	2.7.7.1.3.3
Seismic Response Coefficient, C_s	0.0604		2.7.7.1.1
Seismic Response Coefficient Max 1, C_{smax}	0.0383		2.7.7.1.1
Seismic Response Coefficient Max 2, C_{smax}	N/A		2.7.7.1.1
Seismic Response Coefficient Min 1, C_{smin}	0.0300		2.7.7.1.1
Seismic Response Coefficient Min 2, C_{smin}	N/A		2.7.7.1.1
Controlling Seismic Response Coefficient, C_{sc}	0.0383		
Seismic Base Shear, V	[redacted]	kips	2.7.7.1.1

Vertical Distribution Factors

Period Related Exponent, k:	1.539
Sum of $w_i h_i^k$	7478.46

Section Number	Length	Top Height	[illegible]	Section [illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1 - 2	10.00	78.38	73.38	0.7447	559.46	0.0740	0.0476	0.0135
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1 - 4	10.00	58.38	53.38	0.8916	406.01	0.0543	0.0350	0.0162
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
2 - 1	2.63	42.63	41.31	0.3014	92.52	0.0124	0.0080	0.0055
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
2 - 3	10.00	30.00	25.00	1.2884	182.60	0.0244	0.0157	0.0234
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
2 - 5	10.00	10.00	5.00	1.4605	17.39	0.0023	0.0015	0.0265
			Sum	[illegible]	[illegible]			

verizon PLK5 Kicker	77.00	0.0970	77.64	0.0104	0.0067	0.0018
(4) amphenol BXA-70080/8CF w/8' Mount Pipe	79.00	0.2773	230.87	0.0309	0.0199	0.0050
(4) amphenol BXA-70080/8CF w/8' Mount Pipe	79.00	0.2773	230.87	0.0309	0.0199	0.0050
semaan OVP Box	79.00	0.0200	16.65	0.0022	0.0014	0.0004
(2) semaan RRH 3JR52709AA 2X60 (AWS 50W)	79.00	0.1100	91.59	0.0122	0.0079	0.0020
(2) semaan RRH 3JR52709AA 2X60 (AWS 50W)	79.00	0.1100	91.59	0.0122	0.0079	0.0020
semaan RRH 4X30-4T4R-B13	79.00	0.0326	27.14	0.0036	0.0023	0.0006
semaan RRH 4x30-4T4R-B25	79.00	0.0510	42.46	0.0057	0.0037	0.0009
semaan RRH 4x30-4T4R-B25	79.00	0.0510	42.46	0.0057	0.0037	0.0009
(4) semaan TMA 10"x7"x2"	79.00	0.0400	33.31	0.0045	0.0029	0.0007
(4) semaan RRUS A2 Modules	79.00	0.0846	70.47	0.0094	0.0061	0.0015
(4) semaan RRUS A2 Modules	79.00	0.0846	70.47	0.0094	0.0061	0.0015
jma MX08FRO665-21 w/8' Mount Pipe	60.00	0.1108	60.42	0.0081	0.0052	0.0020
jma MX08FRO665-21 w/8' Mount Pipe	60.00	0.1108	60.42	0.0081	0.0052	0.0020
fujitsu TA08025-B604	60.00	0.0640	34.89	0.0047	0.0030	0.0012
fujitsu TA08025-B605	60.00	0.0750	40.89	0.0055	0.0035	0.0014
fujitsu TA08025-B605	60.00	0.0750	40.89	0.0055	0.0035	0.0014
(2) tower mounts 8'x2" Pipe	60.00	0.0584	31.86	0.0043	0.0027	0.0011
(2) tower mounts 8'x2" Pipe	60.00	0.0584	31.86	0.0043	0.0027	0.0011
		Sum				

Name	Start Height	End Height	z	w	wz	Cf	A	F
(12) general cable 1 5/8" Coax From 0 to 79	61.00	71.00	66.00	0.1248	78.79	0.0105	0.0068	0.0023
(12) general cable 1 5/8" Coax From 0 to 79	41.00	51.00	46.00	0.1248	45.21	0.0060	0.0039	0.0023
(12) general cable 1 5/8" Coax From 0 to 79	21.00	31.00	26.00	0.1248	18.79	0.0025	0.0016	0.0023
(12) general cable 1 5/8" Coax From 0 to 79	1.00	11.00	6.00	0.1248	1.97	0.0003	0.0002	0.0023
(4) general cable 1 5/8" Hybrid Cable From 0 to 79	71.00	79.00	75.00	0.0570	43.78	0.0059	0.0038	0.0010
(4) general cable 1 5/8" Hybrid Cable From 0 to 79	51.00	61.00	56.00	0.0712	34.91	0.0047	0.0030	0.0013
(4) general cable 1 5/8" Hybrid Cable From 0 to 79	31.00	41.00	36.00	0.0712	17.59	0.0024	0.0015	0.0013
(4) general cable 1 5/8" Hybrid Cable From 0 to 79	11.00	21.00	16.00	0.0712	5.08	0.0007	0.0004	0.0013
(4) general cable 1 5/8" Hybrid Cable From 0 to 79	0.00	1.00	0.50	0.0071	0.00	0.0000	0.0000	0.0001
Hybrid From 0 to 60	41.00	51.00	46.00	0.0178	6.45	0.0009	0.0006	0.0003
Hybrid From 0 to 60	21.00	31.00	26.00	0.0178	2.68	0.0004	0.0002	0.0003
Hybrid From 0 to 60	1.00	11.00	6.00	0.0178	0.28	0.0000	0.0000	0.0003
				Sum				

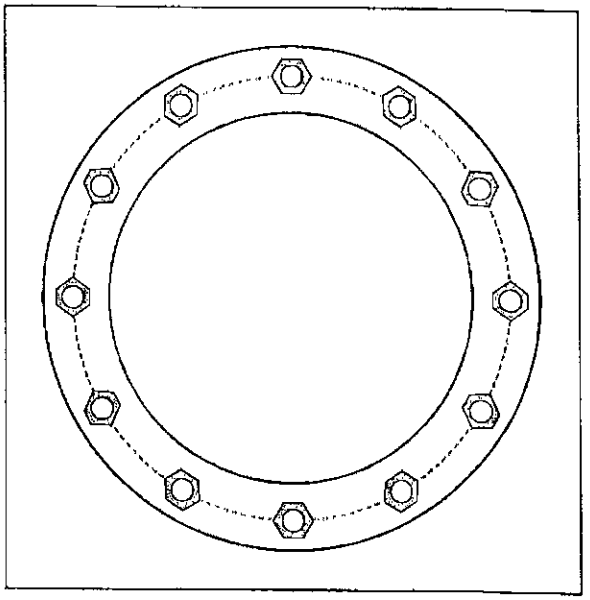
Monopole Base Plate Connection

CROWN CASTLE

Site Info	
BU #	23393
Site Name	Trumbull
Order #	

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

Applied Loads	
Moment (kip-ft)	1062.26
Axial Force (kips)	20.16
Shear Force (kips)	16.36



Connection Properties

Anchor Rod Data

(12) 2-1/4" ø bolts (A615-75 N; Fy=75 ksi, Fu=100 ksi) on 45" BC

Base Plate Data

51" OD x 2.5" Plate (A572-50; Fy=50 ksi, Fu=65 ksi)

Stiffener Data

N/A

Pole Data

37.5" x 0.375" 18-sided pole (A572-65; Fy=65 ksi, Fu=80 ksi)

Analysis Results

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

Pu_t = 92.65	ϕPn_t = 243.75	**Stress Rating**
Vu = 1.36	ϕVn = 149.1	**38.0%**
Mu = n/a	ϕMn = n/a	**Pass**

Base Plate Summary

Max Stress (ksi):	14.25	(Flexural)
Allowable Stress (ksi):	45	
Stress Rating:	**31.7%**	**Pass**

Monopole Base Plate Connection - Seismic

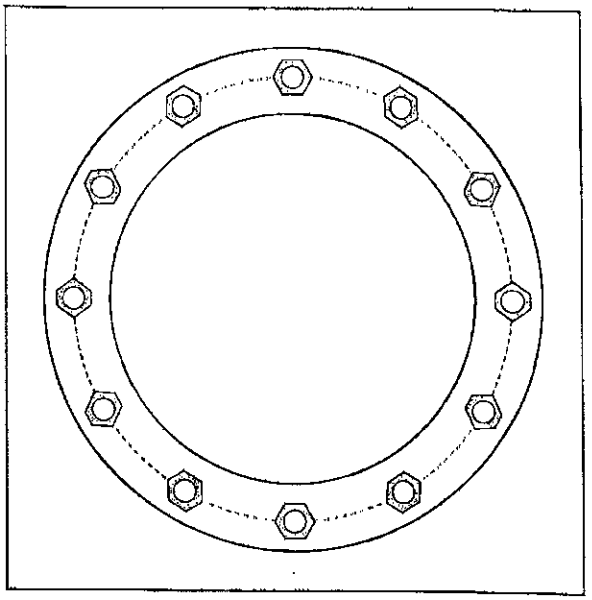
CROWN CASTLE

Site Info	
BU #	23393
Site Name	Trumbull
Order #	

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

Applied Loads	
Moment (kip-ft)	43.37
Axial Force (kips)	20.47
Shear Force (kips)	0.64

**1.5 Overstrength Factor Applied*



Connection Properties

Anchor Rod Data

(12) 2-1/4" ø bolts (A615-75 N; Fy=75 ksi, Fu=100 ksi) on 45" BC

Base Plate Data

51" OD x 2.5" Plate (A572-50; Fy=50 ksi, Fu=65 ksi)

Stiffener Data

N/A

Pole Data

37.5" x 0.375" 18-sided pole (A572-65; Fy=65 ksi, Fu=80 ksi)

Analysis Results

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

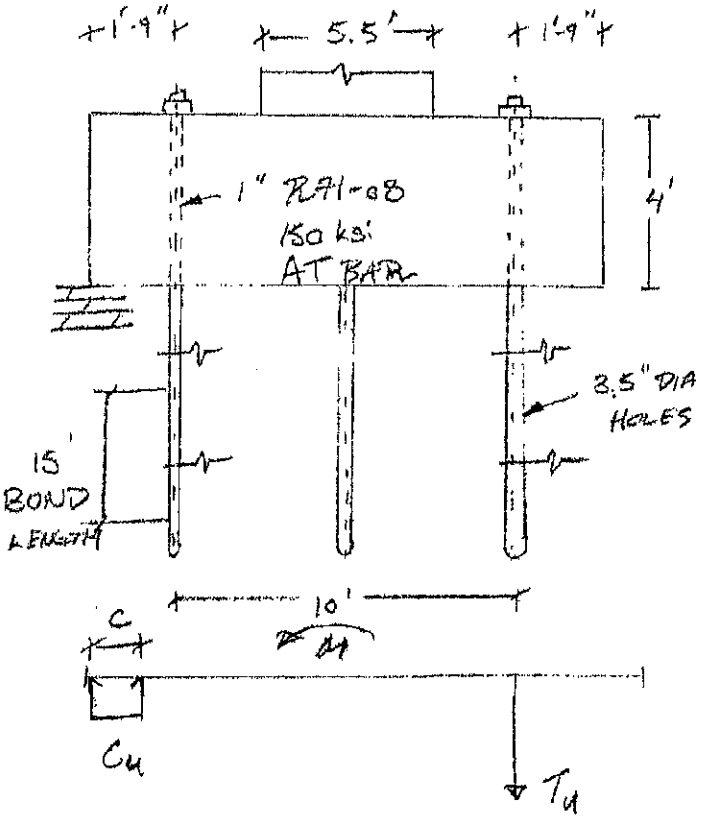
Pu_c = 7.48	ϕPn_c = 268.39	**Stress Rating**
Vu = 0.08	ϕVn = 120.77	**2.8%**
Mu = n/a	ϕMn = n/a	**Pass**

Base Plate Summary

Max Stress (ksi):	0.83	(Flexural)
Allowable Stress (ksi):	45	
Stress Rating:	**1.8%**	**Pass**

DATE 2/15/2022
BY TMK
PROJECT 23593 REV01B
CUSTOMER

SEMAAN ENGINEERING SOLUTIONS, LLC



$M_u = 1062.3$ k-ft $P_u = 20.2$ k

$T_u = 1062.3 \text{ k-ft} / (11.75' - \frac{4.33''}{12}) = 93.27^{k} < (3)(65^{k}) = 195^{k}$ *

* CONSIDER LOCKOFF LOAD OF 65 k FOR ANCHORS AS MAX TENSION

FOUNDATION CAPACITY

$A_s = (0.853\ in^2)(3) = 2.559\ in^2$

$a = \frac{3.65^{k}}{40^{k/in^2} \cdot b} = \frac{195^{k}}{40^{k/in^2} \cdot \frac{13.5'}{12}} = 4.33''$

$c = \frac{a}{0.85} = 5.094''$

$\varepsilon_s = \left(\frac{141'' - 5.094''}{5.094''}\right) \cdot 0.003 = 0.08$

CONSIDER (3) ANCHORS

$\phi M_n = 0.9 \cdot (3.65^{k})(141'' - 4.33'' \cdot \frac{1}{2}) = 24365^{k\text{-in}}$ > 0.0021 STEEL YIELDS

$= 2030.46^{k\text{-ft}} > 1062.3$ k-ft

CONSIDER (5) ANCHORS

$\phi M_n = 0.9\left[(3.65^{k})(141'' - \frac{8.29''}{2}) + (2.65^{k})(81'' - \frac{8.29''}{2})\right]/12$

$= 2750.84^{k\text{-ft}} > 1062.3$ k-ft

1079 N 204TH AVENUE, ELKHORN, NE 68022
PH: 402-289-1888 FAX: 402-289-1861

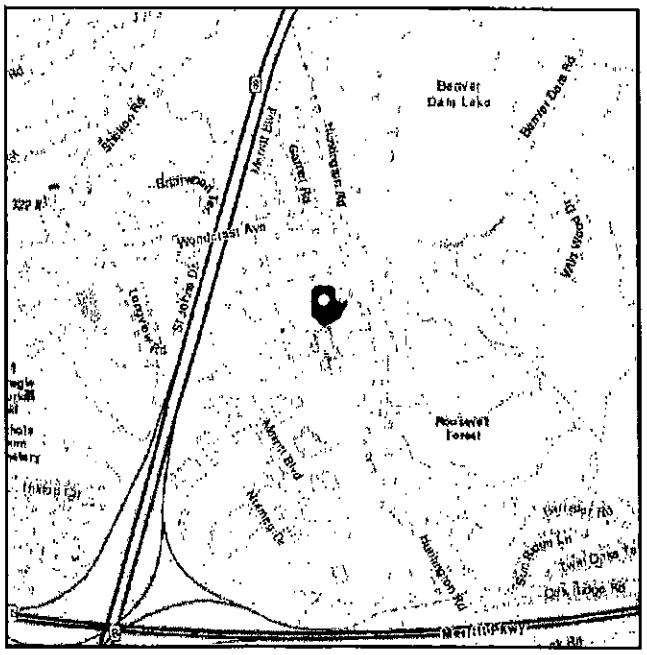
Municipality	Basic Design Wind Speeds, V (mph)				Allowable Stress Design Wind Speeds, V_{asd} (mph)				Ground Snow Load p_g (psf)	MCE Ground Accelerations		Wind-Borne Debris Region[1]		Hurricane-Prone Region
	Risk Cat. I	Risk Cat. II	Risk Cat. III	Risk Cat. IV	Risk Cat. I	Risk Cat. II	Risk Cat. III	Risk Cat. IV		S_S (g)	S_1 (g)	Risk Cat. III Occup. I-2	Risk Cat. IV	
Sherman	110	115	125	130	85	89	97	101	35	0.203	0.055			
Simsbury	110	120	125	130	85	93	97	101	35	0.177	0.054			Yes
Somers	110	120	130	135	85	93	101	105	35	0.174	0.055			Yes
South Windsor	110	120	130	135	85	93	101	105	30	0.183	0.055			Yes
Southbury	110	120	130	130	85	93	101	101	35	0.199	0.054			Yes
Southington	110	120	130	135	85	93	101	105	30	0.196	0.055			Yes
Sprague	115	125	135	140	89	97	105	108	30	0.191	0.054			Yes
Stafford	110	120	130	135	85	93	101	105	35	0.176	0.055			Yes
Stamford	110	120	130	135	85	93	101	105	30	0.261	0.058		Type B	Yes
Sterling	115	125	135	140	89	97	105	108	35	0.187	0.054			Yes
Stonington	120	130	140	145	93	101	108	112	30	0.182	0.051	Type B	Type A	Yes
Stratford	110	120	130	135	85	93	101	105	30	0.206	0.054		Type B	Yes
Suffield	110	120	125	130	85	93	97	101	35	0.170	0.054			Yes
Thomaston	110	120	125	130	85	93	97	101	35	0.184	0.054			Yes
Thompson	110	120	130	135	85	93	101	105	40	0.185	0.056			Yes
Tolland	110	120	130	135	85	93	101	105	35	0.182	0.055			Yes
Torrington	110	115	125	130	85	89	97	101	40	0.175	0.054			
Trumbull	110	120	130	135	85	93	101	105	30	0.210	0.054			Yes
Union	110	120	130	135	85	93	101	105	40	0.178	0.055			Yes
Vernon	110	120	130	135	85	93	101	105	30	0.186	0.055			Yes
Voluntown	120	130	135	140	93	101	105	108	30	0.188	0.053			Yes
Wallingford	110	120	130	135	85	93	101	105	30	0.205	0.055			Yes
Warren	110	115	125	130	85	89	97	101	40	0.179	0.054			
Washington	110	115	125	130	85	89	97	101	35	0.189	0.054			
Waterbury	110	120	130	135	85	93	101	105	35	0.193	0.054			Yes
Waterford	120	130	140	140	93	101	108	108	30	0.194	0.053	Type B	Type B	Yes
Watertown	110	120	130	130	85	93	101	101	35	0.189	0.054			Yes
West Hartford	110	120	130	135	85	93	101	105	30	0.187	0.055			Yes
West Haven	110	125	130	135	85	97	101	105	30	0.200	0.053	Type B	Type B	Yes
Westbrook	115	125	135	140	89	97	105	108	30	0.204	0.054	Type B	Type B	Yes
Weston	110	120	130	135	85	93	101	105	30	0.233	0.056			Yes
Westport	110	120	130	135	85	93	101	105	30	0.232	0.056		Type B	Yes

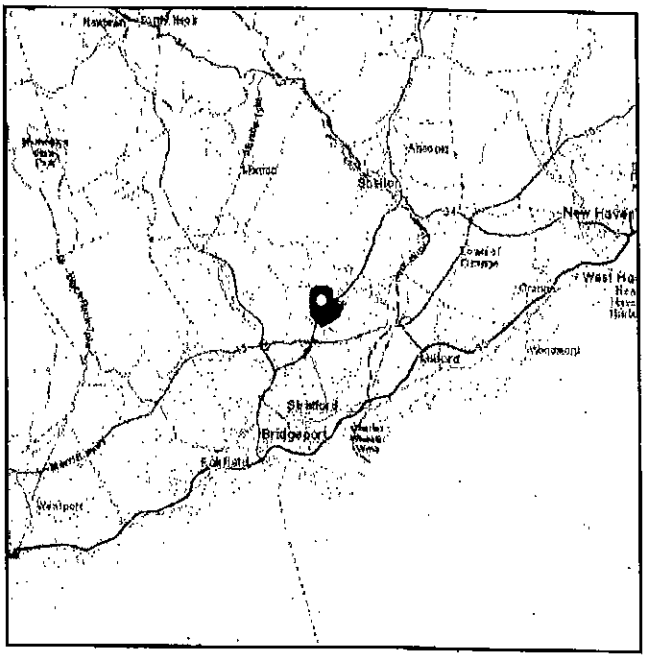
ASCE 7 Hazards Report

Address:
No Address at This Location

Standard: ASCE/SEI 7-22
Risk Category: II
Soil Class: B - Rock

Latitude: 41.2456
Longitude: -73.1456
Elevation: 168.03 ft (NAVD 88)





Wind

Results:

Wind Speed	120 Vmph - Per 2022 Connecticut Building Code

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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 7-22 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years). Values for 10-year MRI, 25-year MRI, 50-year MRI and 100-year MRI are Service Level wind speeds, all other wind speeds are Ultimate wind speeds.

Site is in a hurricane-prone region as defined in ASCE/SEI 7-22 Section 26.2. Glazed openings need not be protected against wind-borne debris.

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Seismic

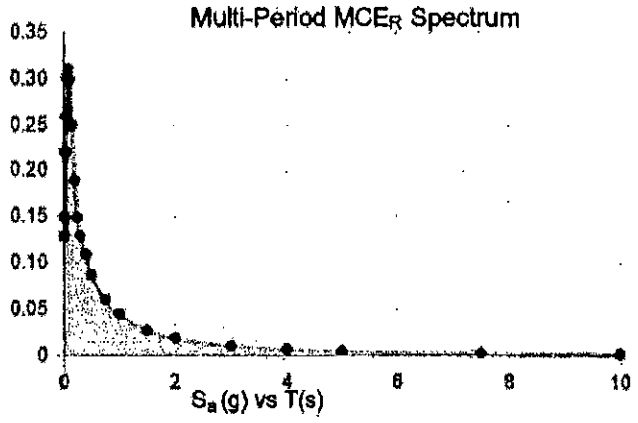
B - Rock

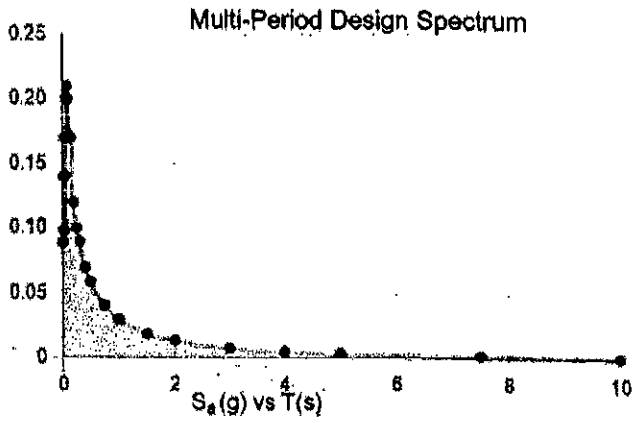
Site Soil Class:

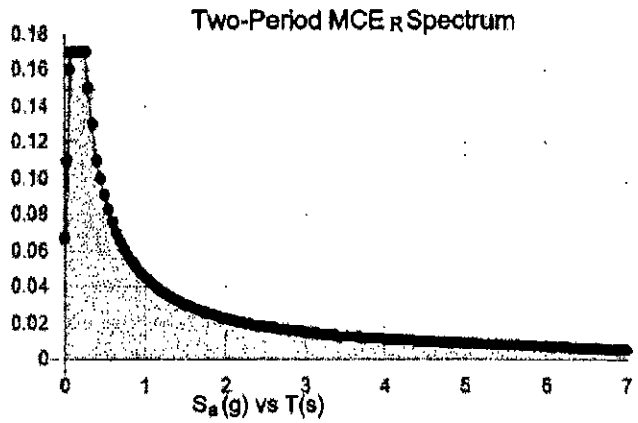
Results:

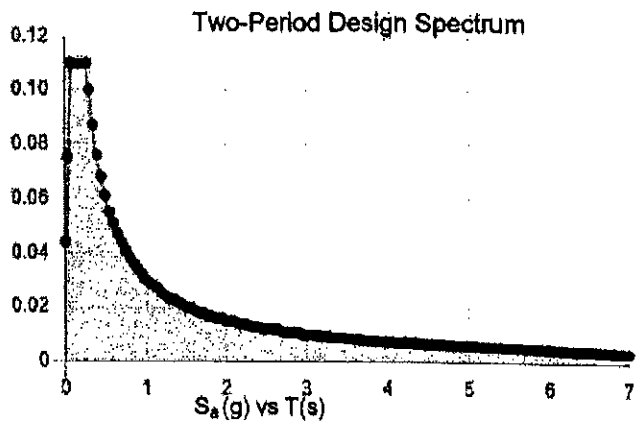
PGA_M :	0.12	T_L :	6
S_{MS} :	0.17	S_S :	0.21
S_{M1} :	0.046	S_1 :	0.047
S_{DS} :	0.11	V_{S30} :	1080
S_{D1} :	0.03		

Seismic Design Category: A









MCER Vertical Response Spectrum

Vertical ground motion data has not yet been made available by USGS.

Design Vertical Response Spectrum

Vertical ground motion data has not yet been made available by USGS.

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Ice

Results:

Ice Thickness:	1.02 in.
Concurrent Temperature:	15 F
3-s Gust Speed	47 mph
Data Source:	Standard ASCE/SEI 7-22, Figs. 10-2 through 10-8
Date Accessed:	Thu Dec 08 2022

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

Values provided are equivalent radial ice thicknesses due to freezing rain for 250, 500, 1,000, and 1,400-year mean recurrence intervals along with concurrent 3-s gust speeds and concurrent air temperatures. The shading indicates special icing regions, with elevations above 2,100 ft (640 m) in the east, 6,000 ft (1829 m) in the west, and 1,600 ft (488 m) in Alaska, with sparse weather station data for determining design ice loads. In these regions, as well as in regions with complex terrain causing unusual icing conditions and regions where snow or in-cloud icing results in larger loads, the mapped values should be adjusted based on a combination of local historical records and experience, reanalysis data, and numerical weather prediction systems.

Tectonic

PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.

Date: **December 6, 2022**

Mount Analysis Report

Project Information:

Carrier:	Dish Wireless
Site Number:	NJJER01153A
Site Address:	60 Commerce Drive, Trumbull, Fairfield County, CT 06611
Site Type:	Platform w/ Railing Mount on Monopole

Tectonic Project Number: 10710.NJJER01153A

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

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

Mount: **Sufficient – 25%**

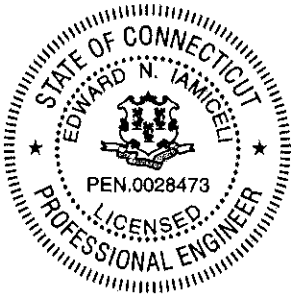
This analysis has been performed in accordance with the 2022 Connecticut State Building Code and the 2021 International Building Code based upon an ultimate 3-second gust wind speed of 120 mph per Appendix P as required for use in the ANSI/TIA-222-H Standard. Exposure Category B with a maximum topographic 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 / Ian Marinaccio

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

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



Project Contact Info

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

tectonicengineering.com
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TABLE OF CONTENTS

1) INTRODUCTION

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

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_s / S_1:	0.206 / 0.054

Table 1 - Proposed Equipment Loading Information

Mounting Level (ft)	Carrier Designation	Number of Antennas	Antenna Manufacturer	Antenna Model	Proposed Mount Type	Note
61.0	Dish Wireless	3	JMA	MX08FRO665-21	CommScope MC-PK8-DSH w/HR	1
		3	Fujitsu	TA08025-B604 RRH		
		3	Fujitsu	TA08025-B605 RRH		
		1	Raycap	RDIDC-9181-PF-48		

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

3) ANALYSIS PROCEDURE

Table 2 - Documents Provided

Document	Remarks	Dated
Mount Assembly Drawings	CommScope, P/N: MC-PK8- DSH	3/17/2021
Field Notes & Photos	Tectonic	3/31/2021
RFDS	Dish Wireless	8/6/2021
Zoning Drawings	Tectonic	6/17/2022

3.1) Analysis Method

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

3.2) Assumptions

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

4) Member length and sizes are based solely on the assembly drawing by CommScope, referenced above.
5) Steel grades have been assumed as follows, unless noted otherwise:

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

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

4) ANALYSIS RESULTS

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

Notes	Component	Mount Centerline (ft)	% Capacity	Pass / Fail
1	Standoff End Plate	61.0	20	Pass
	Grating Support Angle		9	Pass
	Face Horizontal		14	Pass
	Mount Pipe		18	Pass
	Standoff Channel		25	Pass
	Standoff		25	Pass
	Rail Connector		21	Pass
	Railing		14	Pass
2	Collar Connection		23	Pass
Structure Rating (max from all components) =				**25 %**

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 others.

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

APPENDIX A

SOFTWARE INPUT CALCULATIONS

Tectonic
PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.

Job No.:	10710.NJJER01153A		
Sheet No.:	1	of	4
Calculated By:	GLE	Date :	12/06/22
Checked By:	IM	Date :	12/06/22

WIND AND ICE LOADS PER TIA-222-H

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

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

Basic Wind Speed (3-sec gust):		
Without ice	[illegible]	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_s	1.00
K_e	0.99
K_c	0.90
K_t	N/A
f	N/A
z_g	1200
α	7
$K_{z,min}$	0.7
K_d	0.95
G_h	1.00

Height	z (ft)*	[illegible]
	Kh	N/A
	Kzt	1.00
	Kz	0.86
	Kiz	1.06
Wind Pressure, qz (psf)	No Ice	29.87
	With Ice	5.19
	Maintenance	1.87
(tiz)	Ice Thk	1.06
Appurtenances (qzGh)	No Ice	29.87
	With Ice	5.19
	Maintenance	1.87

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

Tectonic

PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.

Job No.	10710.NJJER01153A		
Sheet No.	2	of	4
Calculated By	GLE	Date :	12/06/22
Checked By	IM	Date :	12/06/22

Equipment Information

Shielding factor, Ka [redacted] Section 16.6

WIND WITHOUT ICE

Antenna Configuration	(E) or (P)	Qty	z (ft)	Length or Diameter (ft)	Width (in)	Depth (in)	Flat or Cylindrical?	Antenna $(Ca)_N$	Antenna $(Ca)_T$	Face Normal $(A_a)_N$ (ft^2)	Windward Face Normal $(C_aA_a)_N$ (ft^2)	Side Face $(A_a)_T$ (ft^2)	Wind ward Side Face (CaAa)T (ft^2)	Normal Antenna Wind Load Each (lb)	Transverse Antenna Wind Load Each (lb)	Antenna Weight (lb)	Total Weight (lb)
[redacted]	P	3	61	6.00	20.00	8.00	[redacted]	1.25	1.47	10.00	33.72	4.00	15.84	336	158	82.5	247.5
[redacted]	P	3	61	1.24	15.70	7.80	[redacted]	1.20	1.20	1.62	5.26	0.81	2.61	52	26	63.9	191.7
[redacted]	P	3	61	1.24	15.70	9.00	[redacted]	1.20	1.20	1.62	5.26	0.93	3.02	52	30	74.9	224.7
[redacted]	P	1	61	1.58	14.39	8.15	[redacted]	1.20	1.20	1.90	2.05	1.07	1.16	61	35	21.3	21.3
										$\sum(CaA_a)_N$	46.30	$\sum(CaA_a)_T$	22.63				685

WIND WITH ICE Ice Thk = 1.06 in

Antenna Configuration	(E) or (P)	Qty	z (ft)	Length or Diameter (ft)	Width (in)	Depth (in)	Flat or Cylindrical?	Antenna $(Ca)_N$	Antenna $(Ca)_T$	Face Normal $(A_a)_N$ (ft^2)	Windward Face Normal $(C_aA_a)_N$ (ft^2)	Side Face $(A_a)_T$ (ft^2)	Windward Side Face (CaAa)T (ft^2)	Normal Antenna Wind Load Each (lb)	Transverse Antenna Wind Load Each (lb)	Ice Area for Weight (ft^2)	Ice Weight Alone (lbs)
MX08FRO665-21	P	3	61	6.18	22.13	10.13	Cylindrical	0.72	0.72	11.39	22.11	5.21	10.12	38	17	28.0	138.9
TA08025-B604-RRH	P	3	61	1.42	17.83	9.93	Cylindrical	0.7	0.7	2.11	3.98	1.17	2.22	7	4	4.9	24.1
TA08025-B605-RRH	P	3	61	1.42	17.83	11.13	Cylindrical	0.7	0.7	2.11	3.98	1.32	2.49	7	4	5.1	25.4
RDIDC-9181-PF-48	P	1	61	1.76	16.52	10.28	Cylindrical	0.7	0.7	2.42	1.53	1.51	0.95	8	5	5.9	29.5
										$\sum(CaA_a)_N$	31.60	$\sum(CaA_a)_T$	15.77				218

MAINTENANCE WIND

Antenna Configuration	(E) or (P)	Qty	z (ft)	Length or Diameter (ft)	Width (in)	Depth (in)	Flat or Cylindrical?	Antenna $(Ca)_N$	Antenna $(Ca)_T$	Face Normal $(A_a)_N$ (ft^2)	Windward Face Normal $(C_aA_a)_N$ (ft^2)	Side Face $(A_a)_T$ (ft^2)	Windward Side Face (CaAa)T (ft^2)	Normal Antenna Wind Load Each (lb)	Transverse Antenna Wind Load Each (lb)
MX08FRO665-21	P	3	61	6.00	20.00	8.00	Flat	1.25	1.47	10.00	33.72	4.00	15.84	21	10
TA08025-B604-RRH	P	3	61	1.24	15.70	7.80	Flat	1.20	1.20	1.62	5.26	0.81	2.61	3	2
TA08025-B605-RRH	P	3	61	1.24	15.70	9.00	Flat	1.20	1.20	1.62	5.26	0.93	3.02	3	2
RDIDC-9181-PF-48	P	1	61	1.58	14.39	8.15	Flat	1.20	1.20	1.90	2.05	1.07	1.16	4	2
										$\sum(CaA_a)_N$	46.30	$\sum(CaA_a)_T$	22.63		

Tectonic
PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.

Job No.	10710.NJJER01153A		
Sheet No.	3	of	4
Calculated By	GLE	Date :	12/06/22
Checked By	IM	Date :	12/06/22

Mounting System Information

Mount Center Line:	61 ft

Reduction Factor = [redacted] Section 16.6

Mount Part	Quantity	Length (ft)	Projected Width (in)	Depth (in)	Flat or Cylindrical?	Force Coefficient	Projected Area (ft^2)	Wind Force (lbs/ft)	Ice Weight Area (ft^2)	Ice Weight (lbs/ft)	Projected Area with Ice (ft^2)	Wind Force Ice (lbs/ft)	Maintenance Wind Force (lbs/ft)
Standoff End Plate 6.5"	[redacted]					2	9.75	32.4	10.31	5.7	12.94	7.5	2.0
Standoff End Plate 6"	[redacted]					2	3.00	29.9	3.19	5.3	4.06	7.0	1.9
Grating Support Angle - L2x2x1/4	[redacted]					2	5.00	10.0	10.00	3.3	10.32	3.6	0.6
Face Horizontal - Pipe 3.0 STD	[redacted]					1.2	8.40	10.5	21.98	4.5	13.50	2.9	0.7
Mount Pipe - Pipe 2.5 STD	[redacted]					1.2	20.70	8.6	54.17	3.7	36.01	2.6	0.5
Standoff Channel - C3.38x2.06	[redacted]					2	9.30	16.8	14.96	4.5	15.14	4.8	1.1
Standoff - PSS 4x6x3/8	[redacted]					2	6.84	19.9	13.68	6.6	10.48	5.3	1.2
Rail Connector - 2.88x4.45x1/4	[redacted]					2	9.90	32.9	16.58	9.1	13.09	7.5	2.1
Railing - Pipe 2.5 STD	[redacted]					1.2	8.63	8.6	22.57	3.7	15.01	2.6	0.5

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

Tectonic				
PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.	Job No.	10710.NJJER01153A		
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	Calculated By	GLE	Date :	12/06/22
	Checked By	IM	Date :	12/06/22

Seismic Check

Tower Information

Tower Type:	MP	
Structure Height	81.67	ft
Supporting Structure Height	GM	ft
Mount Height	61	ft

Geographic Information

City:	Trumbull		
State:	Connecticut		
County:	Fairfield		
Latitude:	41.21659	Longitude:	-73.11568

Seismic Information

Risk Category	II		
Importance Factor	1.00		
Site Soil Classification	D		Table 2-10
S_s	0.105		https://asce7hazardtool.online/
S_1	0.053		
F_a	1.6		(Table 2-11, interpolation allowed)
F_V	2.4		(Table 2-12, interpolation allowed)
S_{DS}	0.220		Section 2.7.5
S_{D1}	0.087		
R	1.50		Section 16.7
As	1.00		Section 16.7 & 2.7.8
Cs	0.15	>	0.03

Equivalent Lateral Force Procedure

Equipment (Discrete Appurtenances)

Antenna Configuration	(E) or (P)	Qty	z (ft)	Antenna Weight (lb)	Shear Vs= Cs*W (lbs)	Vert. Seismic load (Ev, lbs)	Seismic load (Eh, lbs)
MX08FRO665-21	P	3	61	83	12	4	12
TA08025-B604-RRH	P	3	61	64	10	3	10
TA08025-B605-RRH	P	3	61	75	11	3	11.2
RDIDC-9181-PF-48	P	1	61	21	3	1	3

Mounting System (Discrete Appurtenances)

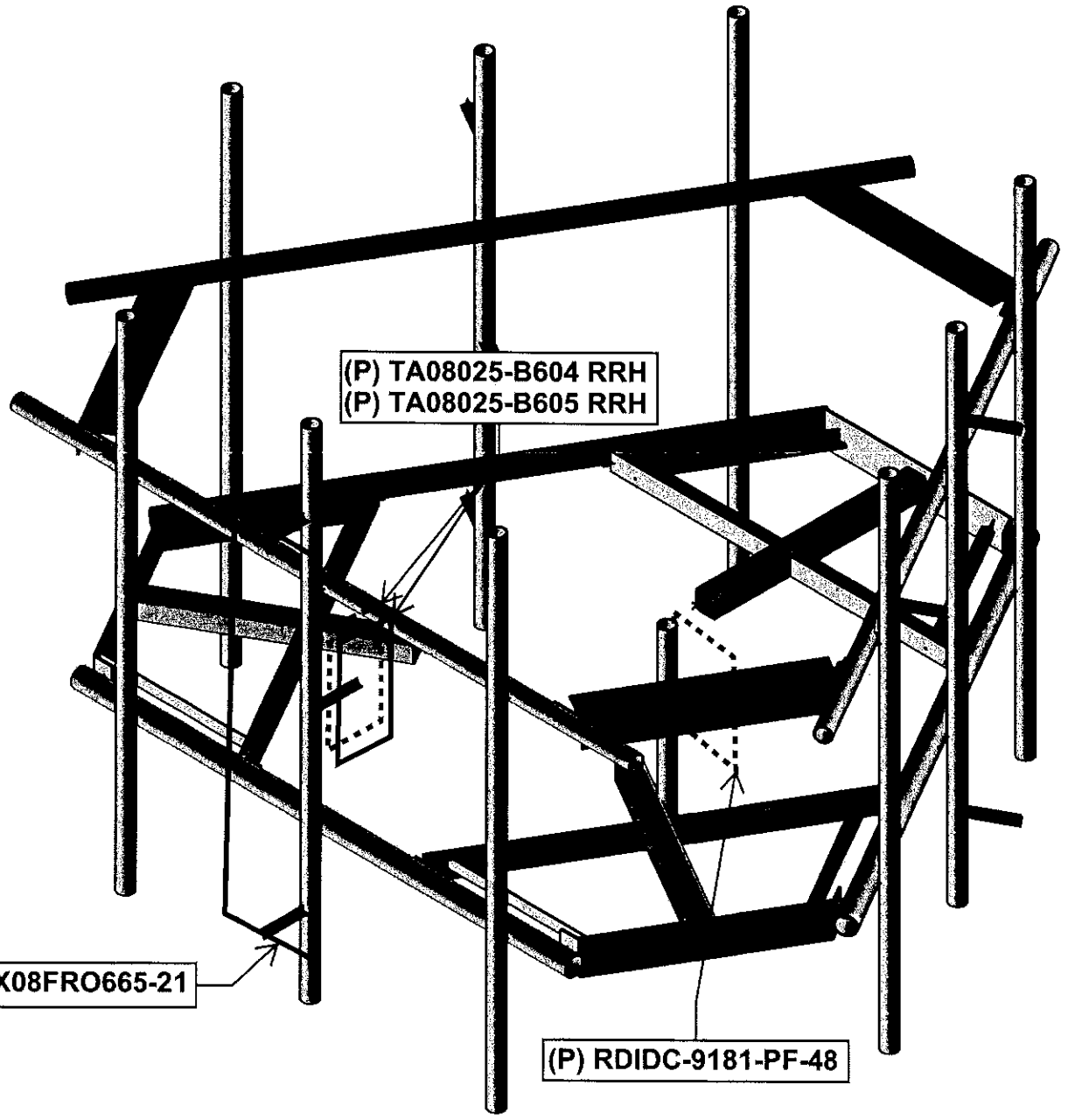
$Ev = 0.2S_{DS} * D$	0.044 x D	"D" is the dead weight of the mount members.
$Eh = rho * Q_E$	0.15 x W	"W" total weight of structure above ground

Notes:

1. Wind loads govern over Seismic loads

APPENDIX B

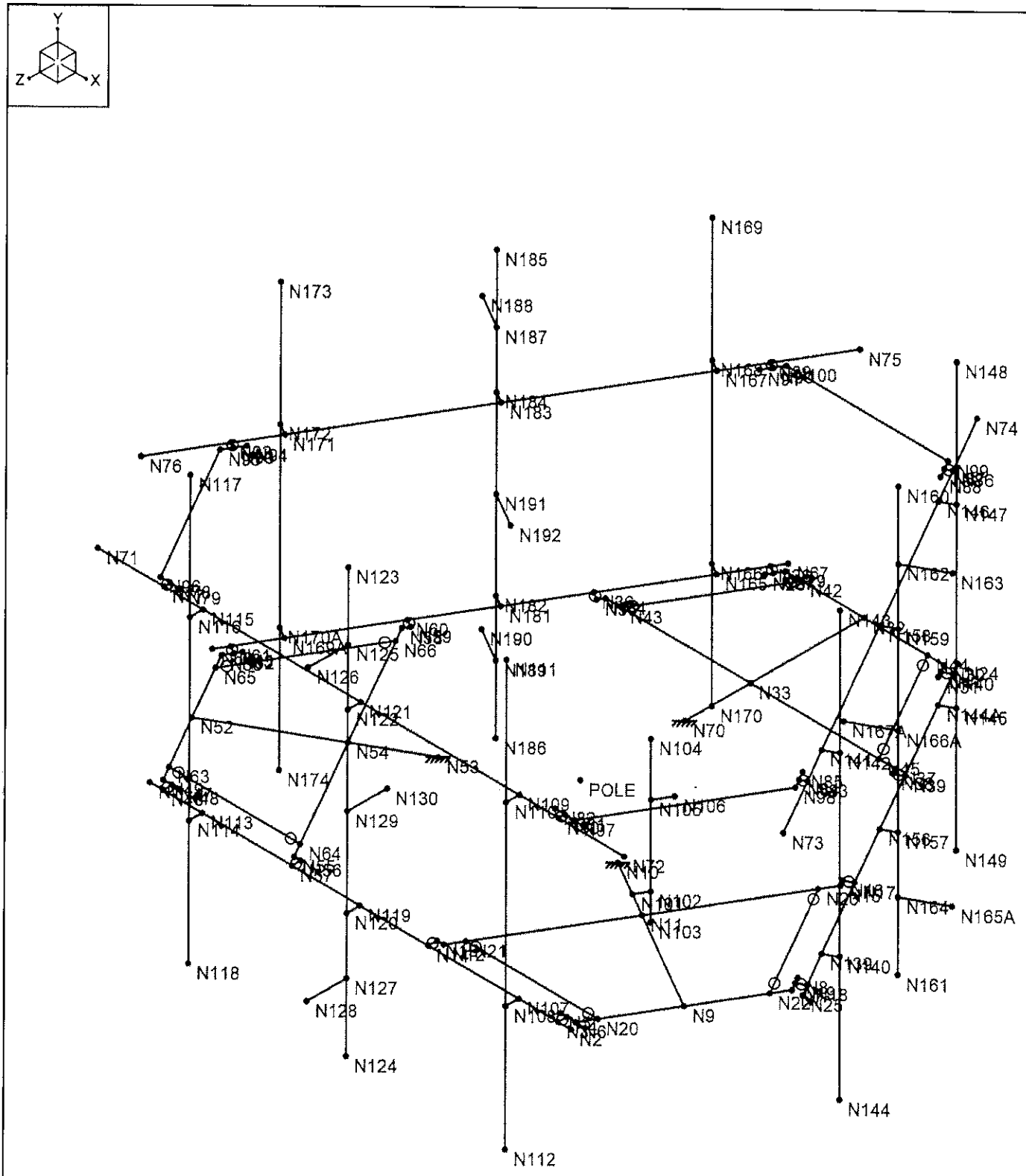
WIRE FRAME AND RENDERED MODELS



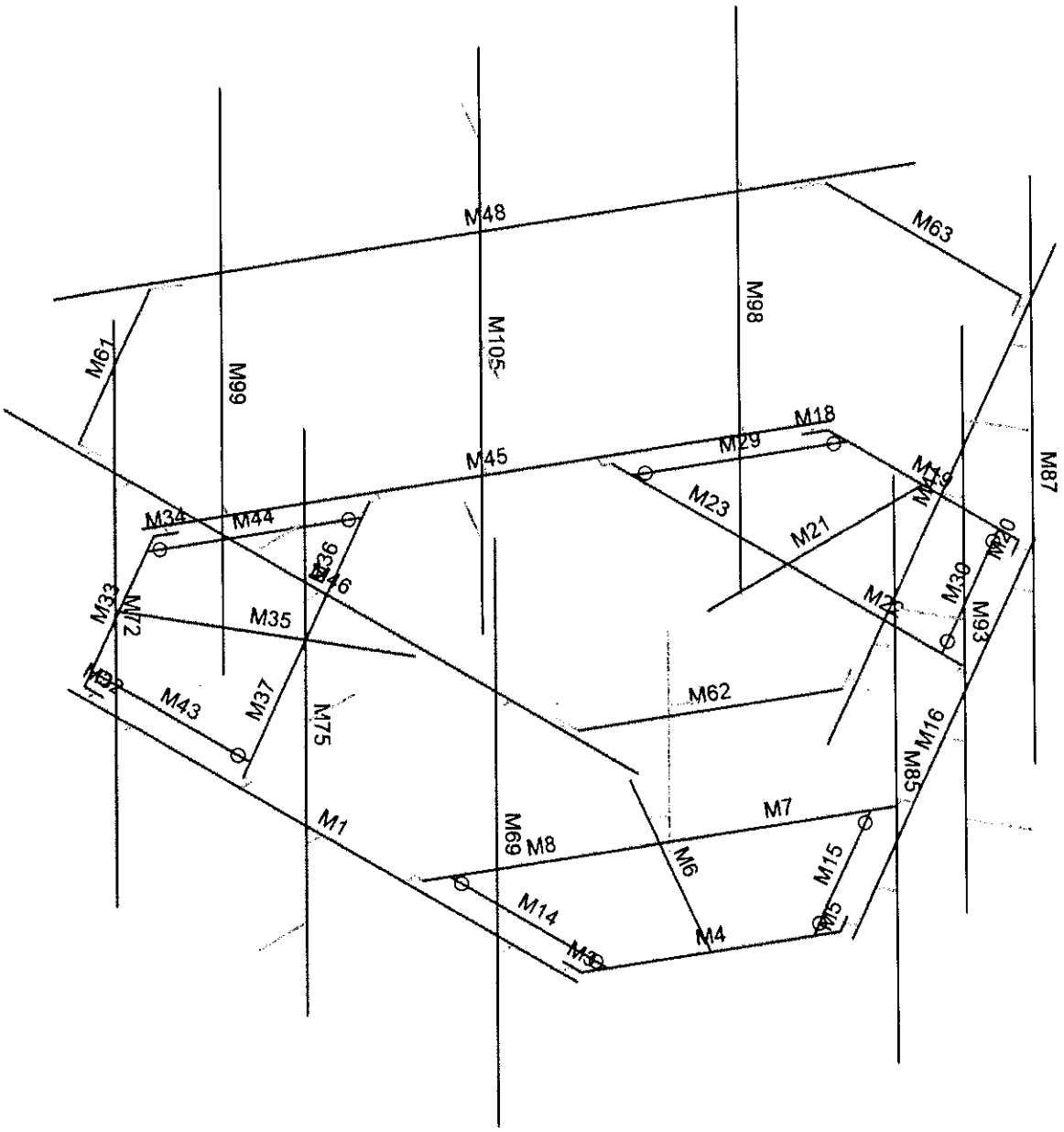
(P) PROPOSED

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

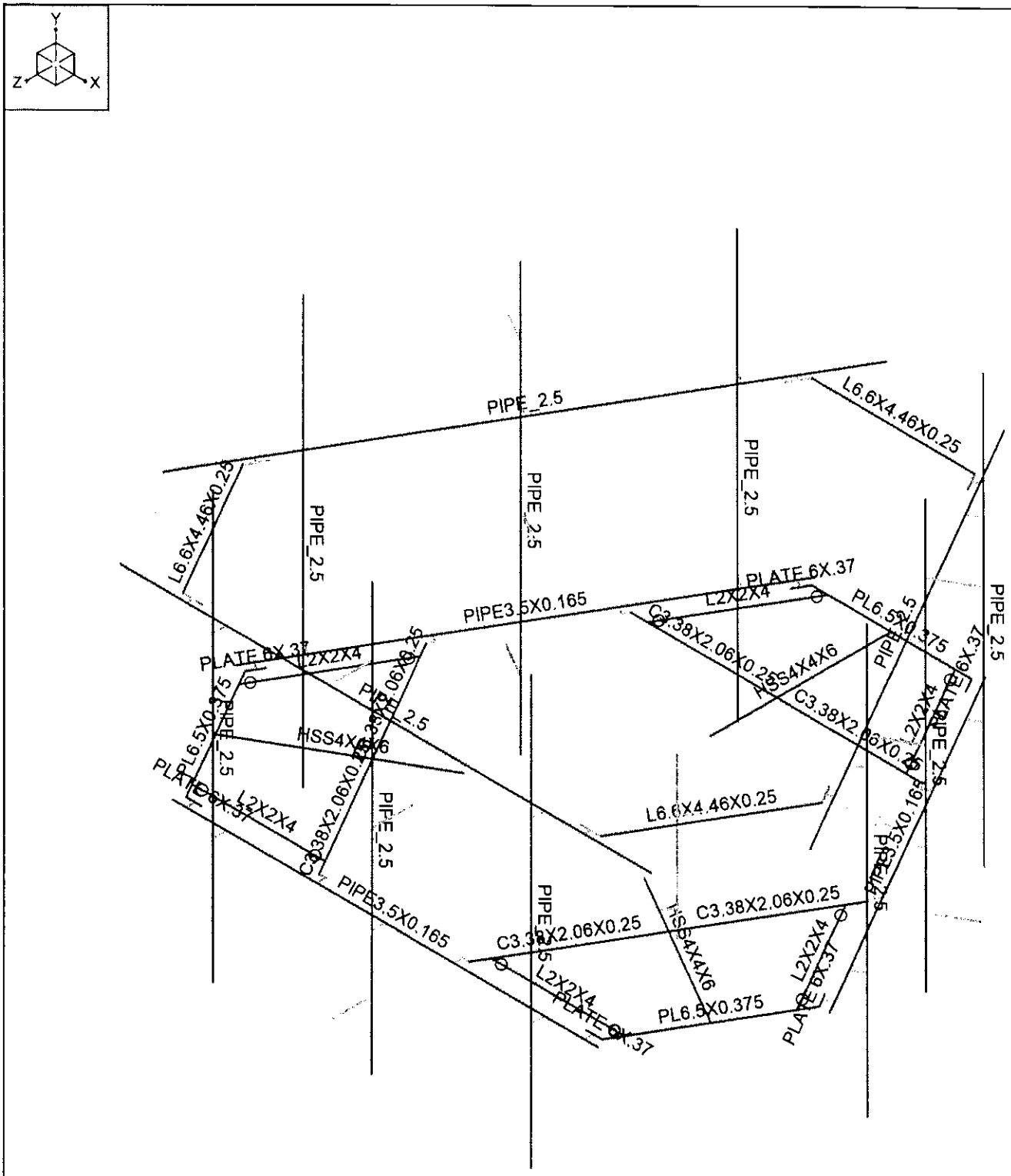
Tectonic Engineering	PROPOSED ANTENNA MOUNT	
GLE		Dec 02, 2022
10710.NJJER01153A		10710.NJJER01153A - MountAnal...



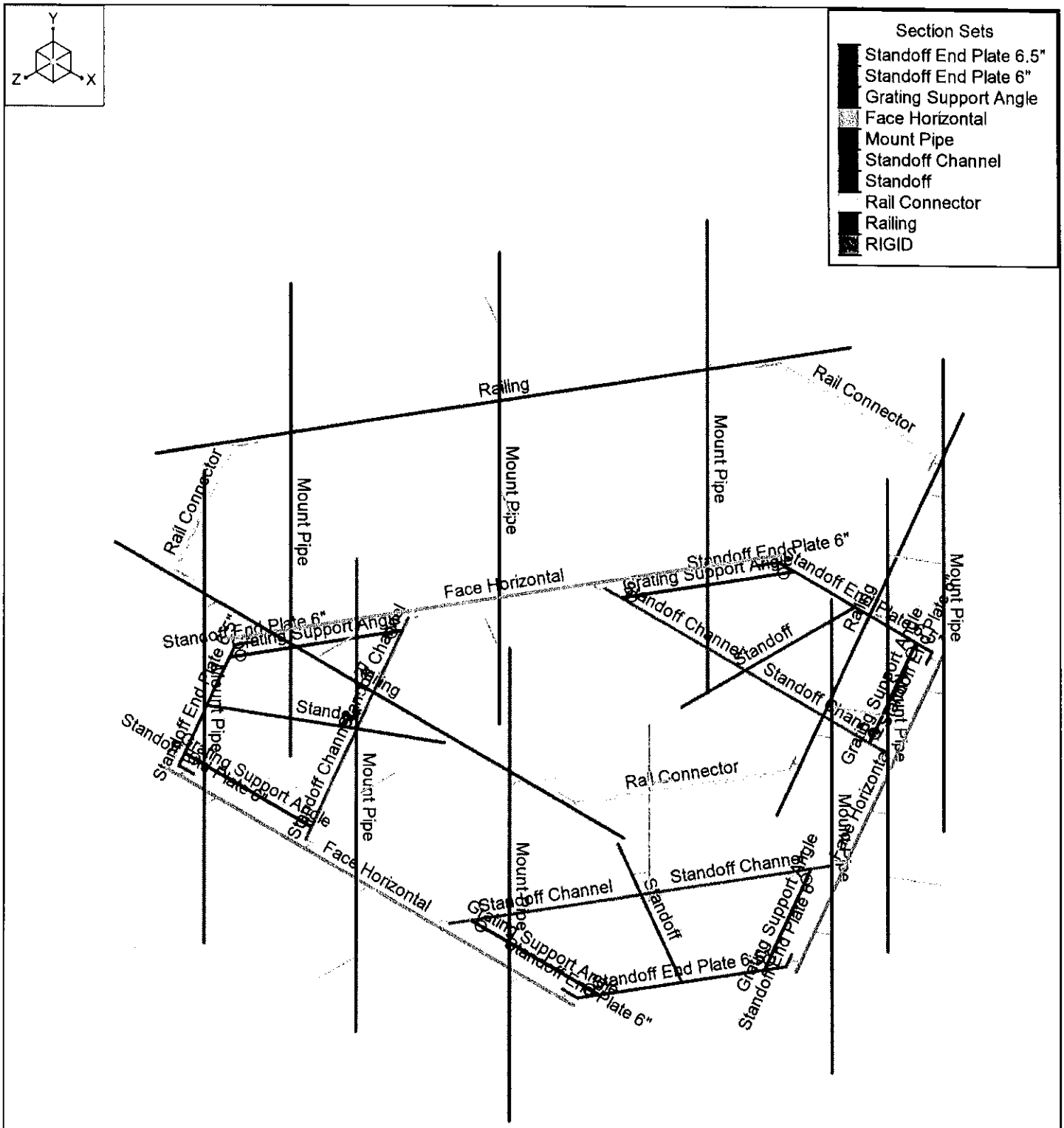
Tectonic Engineering	PROPOSED ANTENNA MOUNT	SK-1
GLE		Dec 02, 2022
10710.NJJER01163A		10710.NJJER01153A - MountAnal...



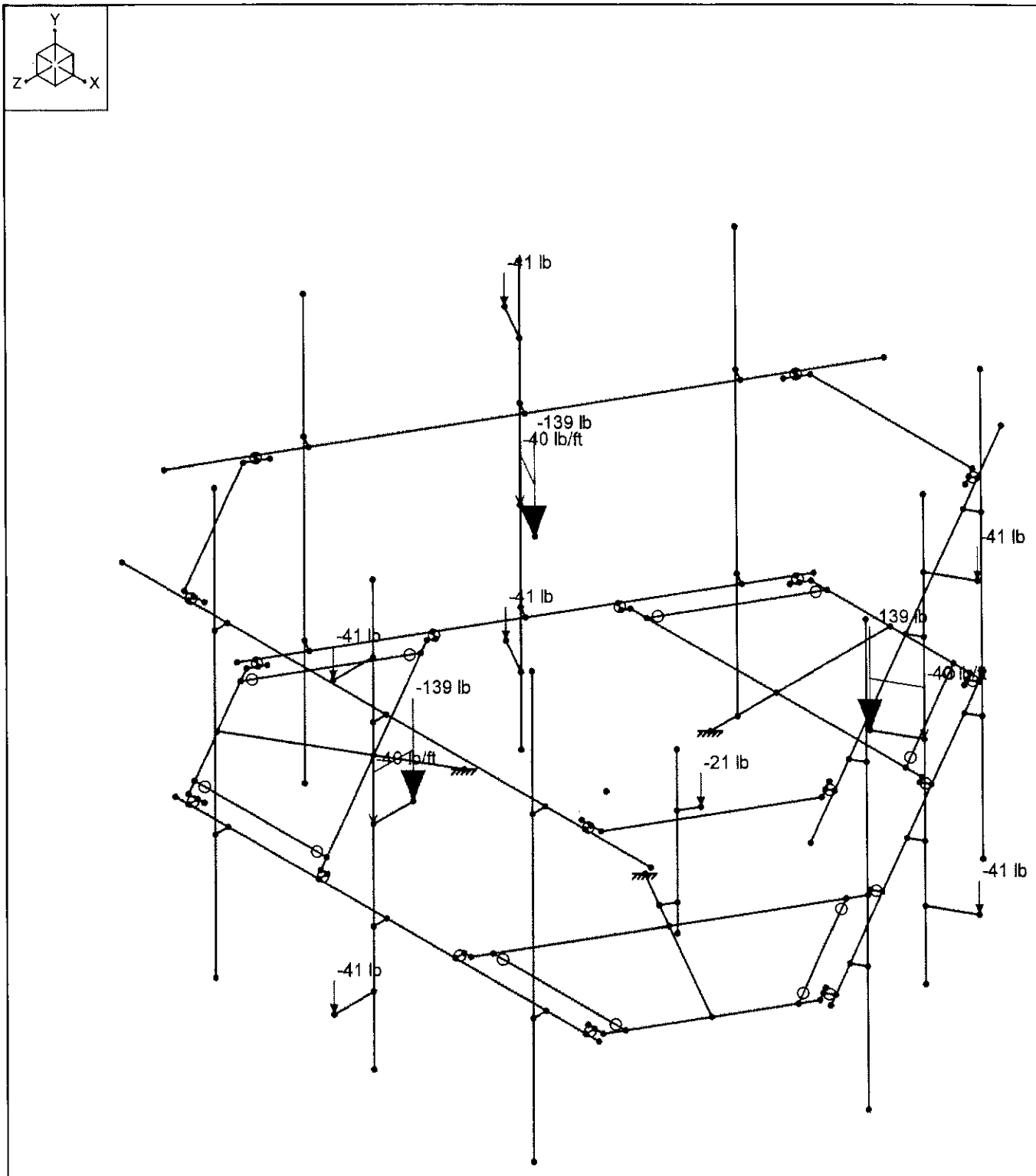
Tectonic Engineering	PROPOSED ANTENNA MOUNT	SK-2
GLE		Dec 02, 2022
10710.NJJER01163A		10710.NJJER01153A - MountAnal...



Tectonic Engineering	PROPOSED ANTENNA MOUNT	SK-3
GLE		Dec 02, 2022
10710.NJJER01163A		10710.NJJER01153A - MountAnal...

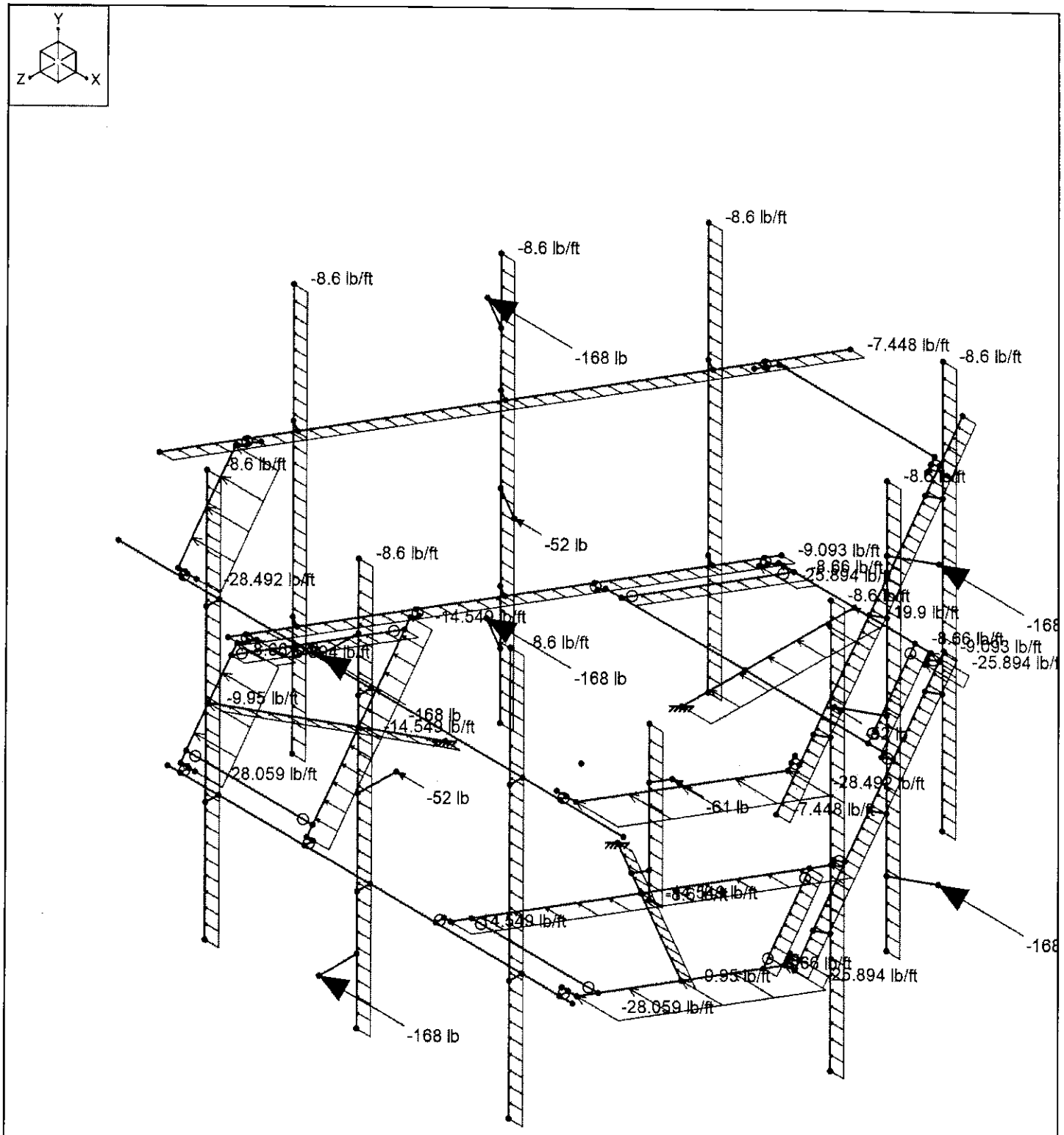


Tectonic Engineering	PROPOSED ANTENNA MOUNT	SK-4
GLE		Dec 02, 2022
10710.NJJER01163A		10710.NJJER01153A - MountAnal...



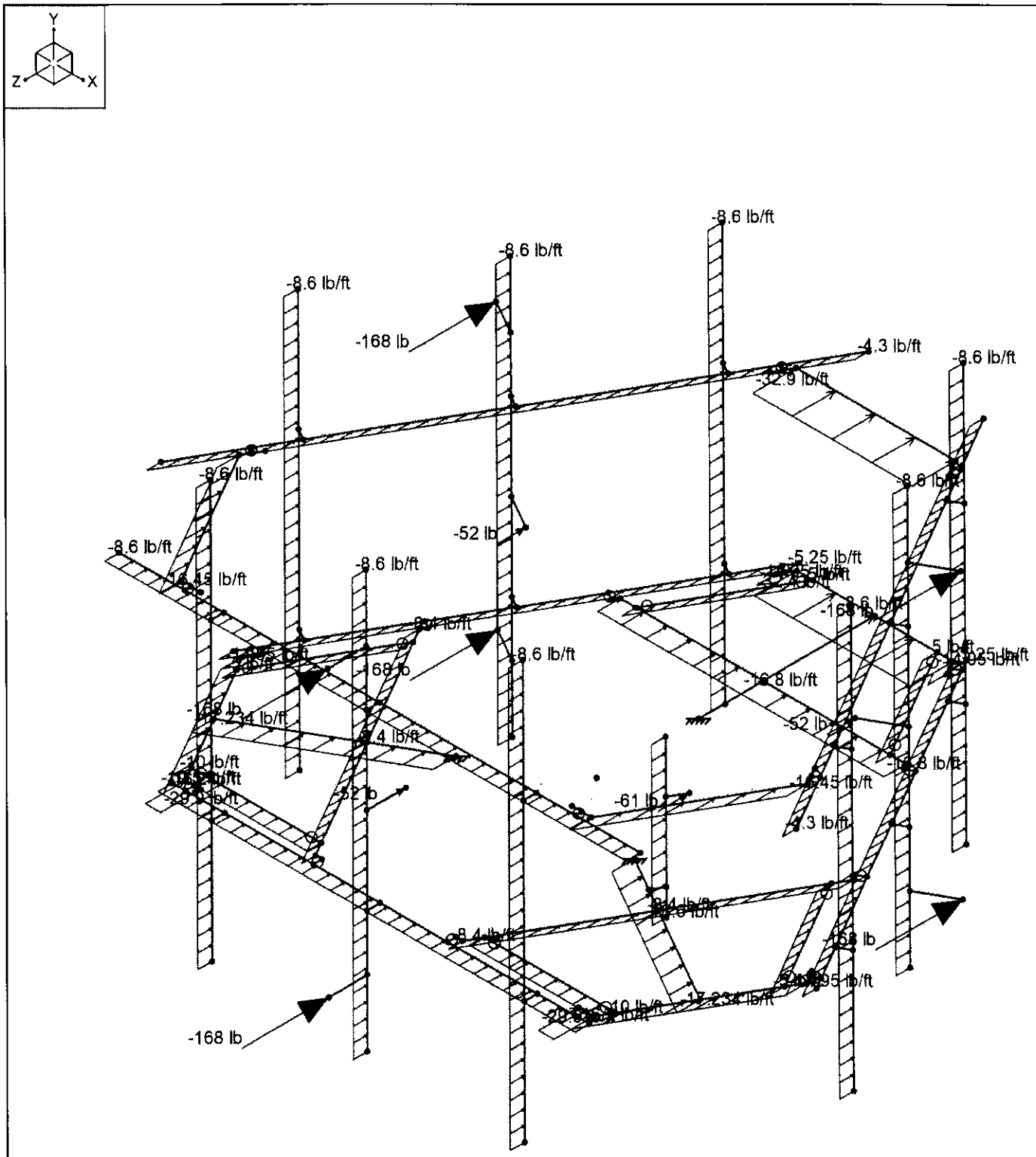
Loads: BLC 1, DL

Tectonic Engineering	PROPOSED ANTENNA MOUNT	SK-5
GLE		Dec 02, 2022
10710.NJJER01163A		10710.NJJER01153A - MountAnal...



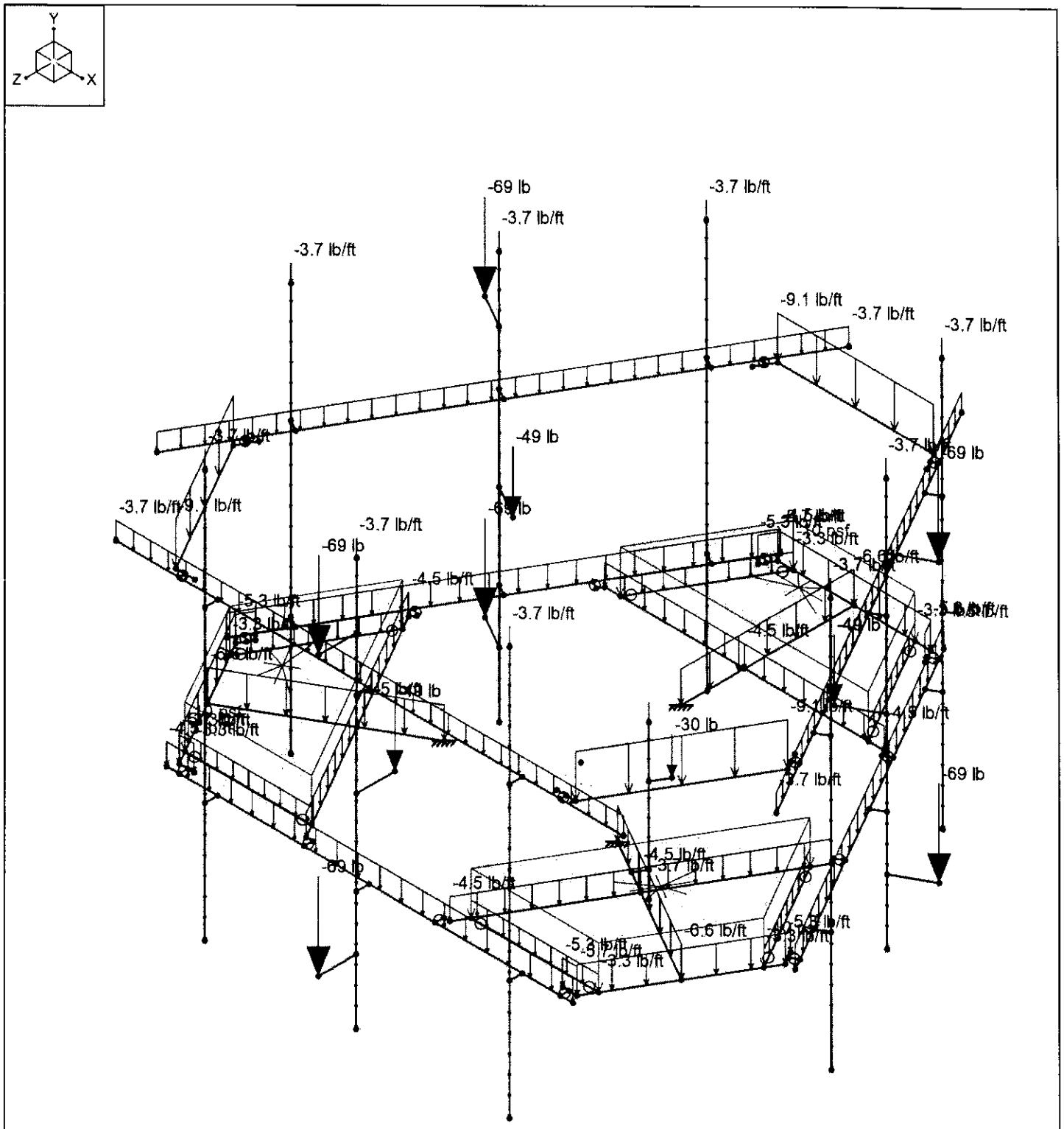
Loads: BLC 2, WLX

Tectonic Engineering	PROPOSED ANTENNA MOUNT	SK-6
GLE		Dec 02, 2022
10710.NJJER01163A		10710.NJJER01153A - MountAnal...



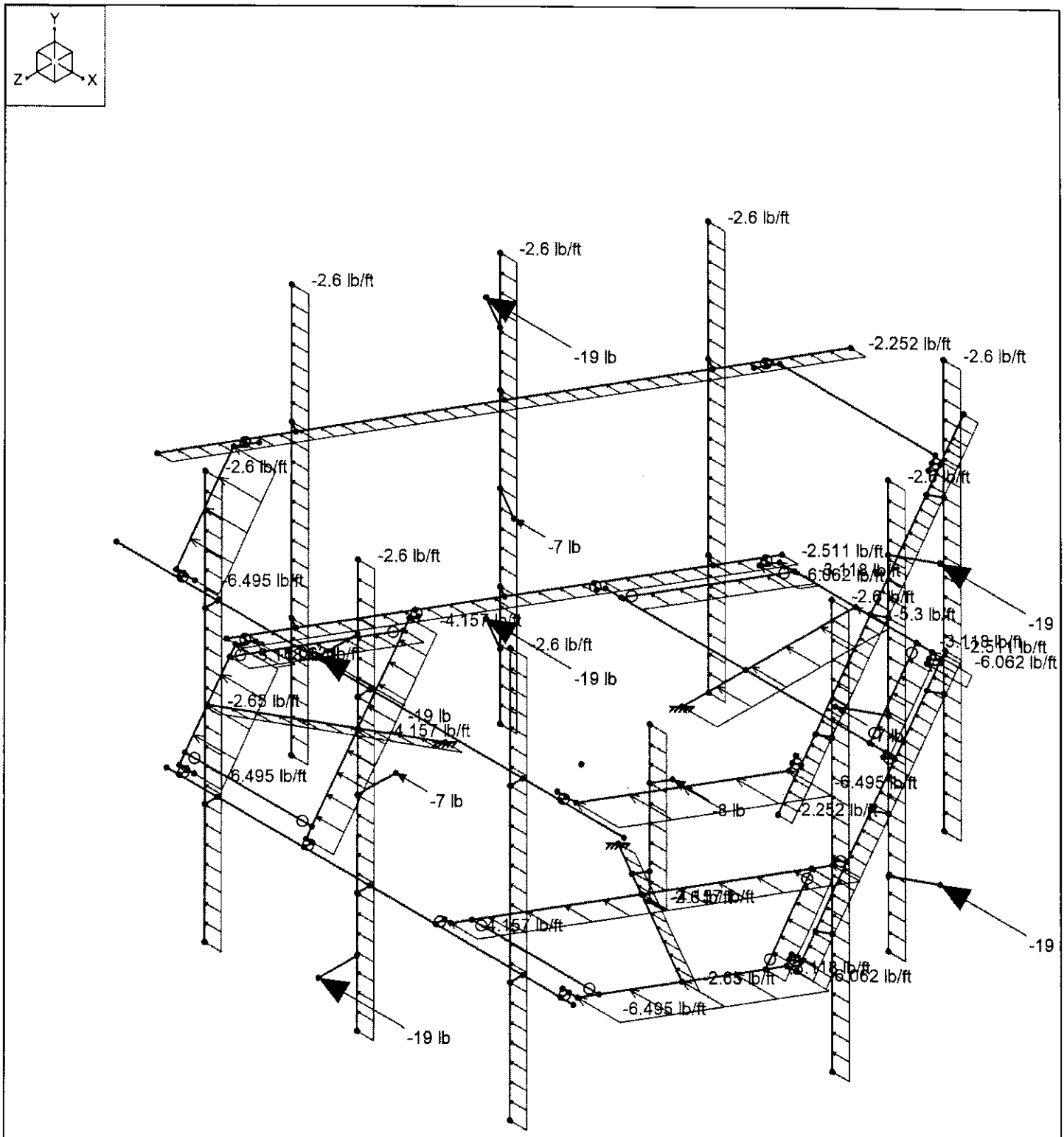
Loads: BLC 3, WLZ

Tectonic Engineering	PROPOSED ANTENNA MOUNT	SK-7
GLE		Dec 02, 2022
10710.NJJER01163A		10710.NJJER01153A - MountAnal...



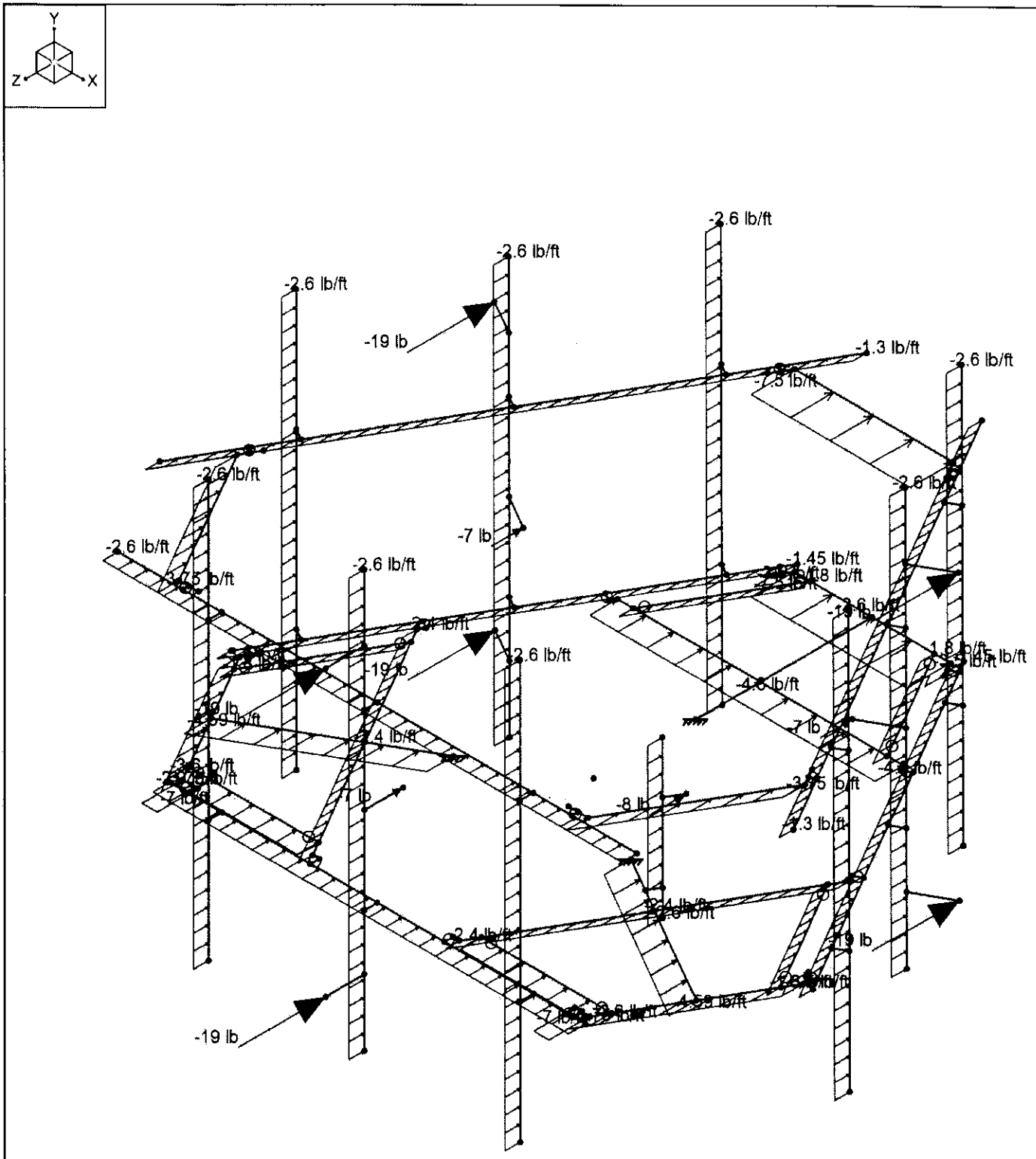
Loads: BLC 4, DLi

Tectonic Engineering	PROPOSED ANTENNA MOUNT	SK-8
GLE		Dec 02, 2022
10710.NJJER01163A		10710.NJJER01153A - MountAnal...



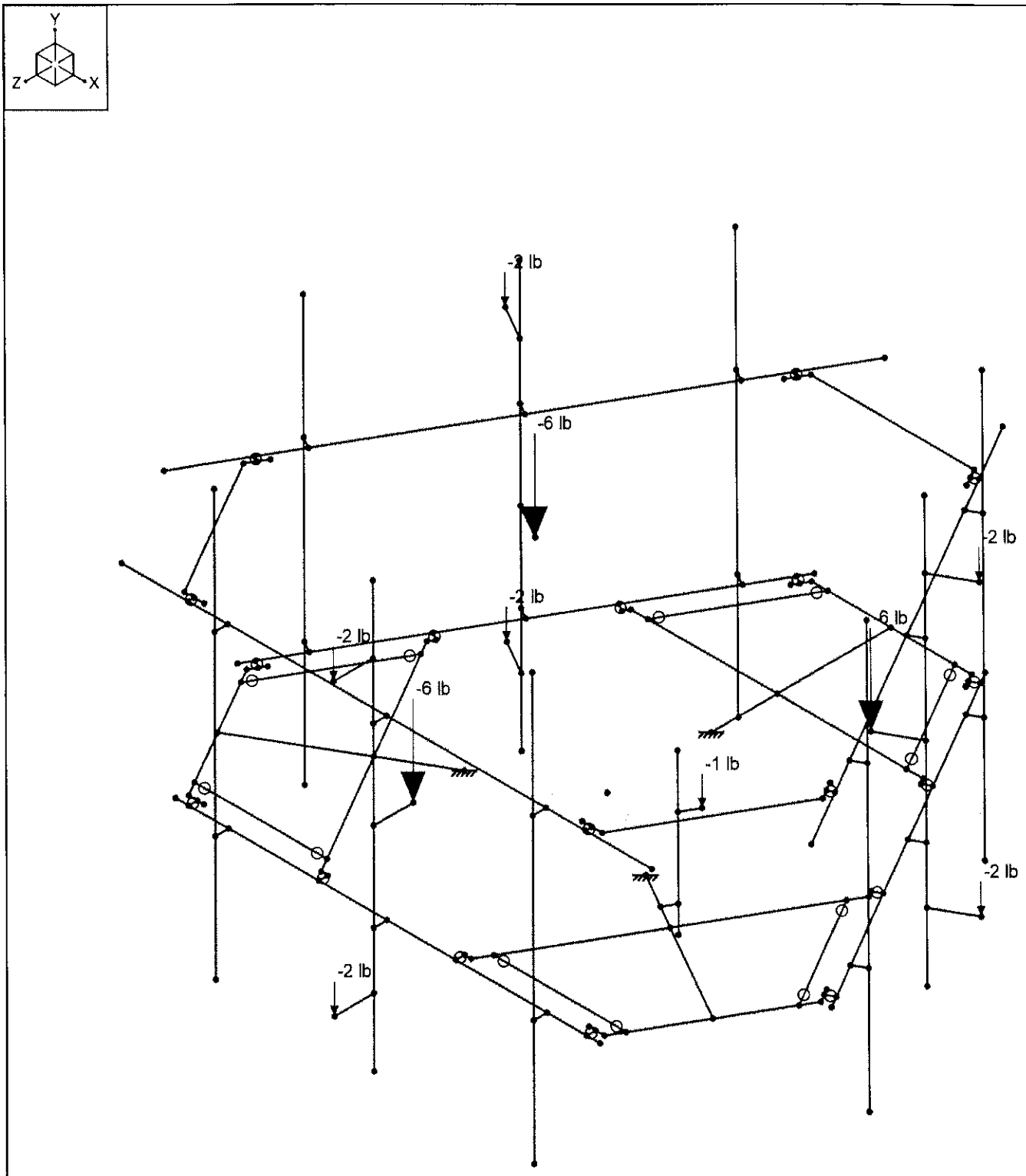
Loads: BLC 5, WLXi

Tectonic Engineering	PROPOSED ANTENNA MOUNT	SK-9
GLE		Dec 02, 2022
10710.NJJER01163A		10710.NJJER01153A - MountAnal...



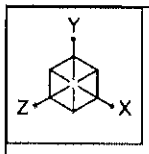
Loads: BLC 6, WLZi

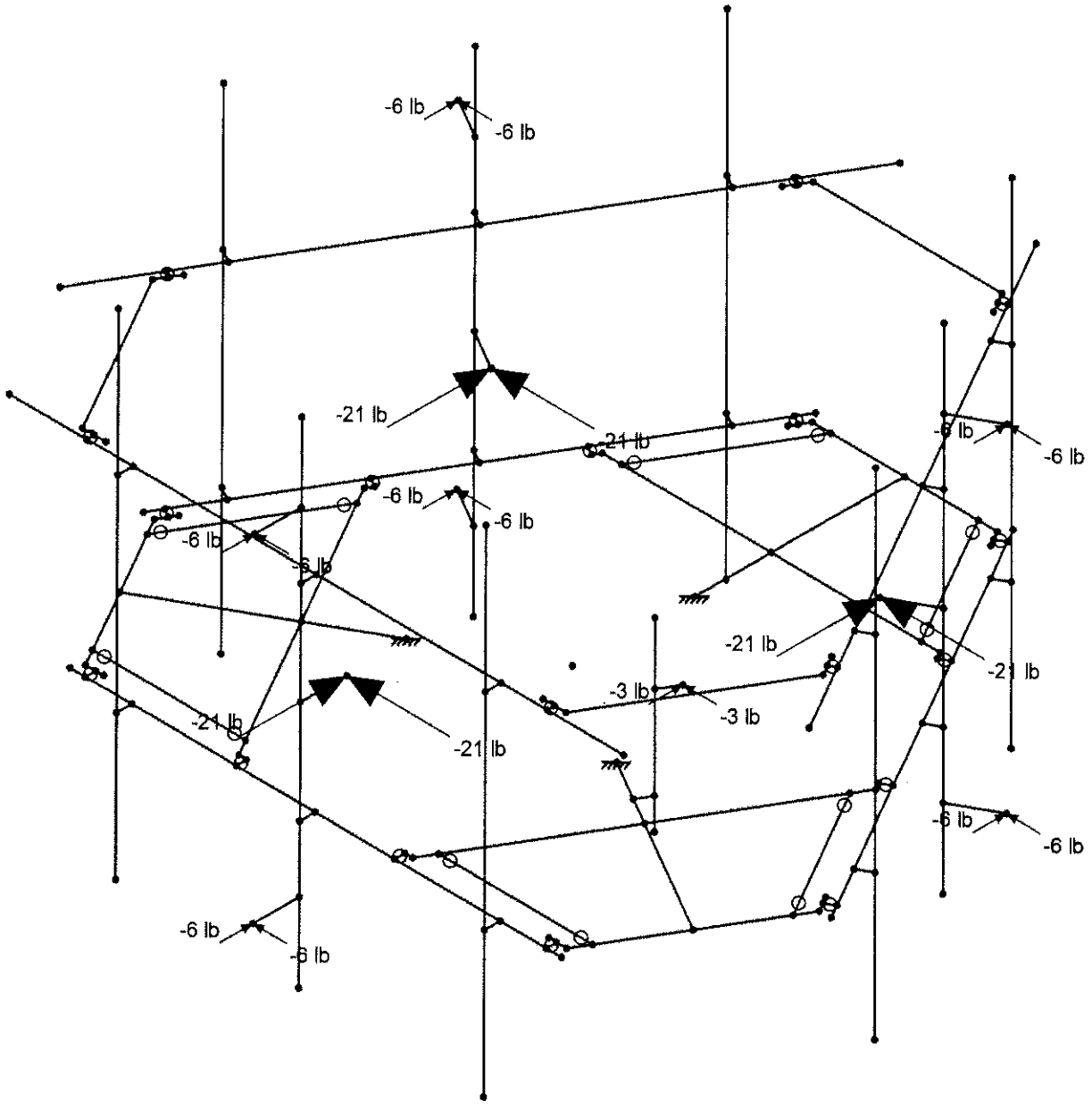
Tectonic Engineering	PROPOSED ANTENNA MOUNT	SK-10
GLE		Dec 02, 2022
10710.NJJER01163A		10710.NJJER01153A - MountAnal...



Loads: BLC 7, ELv

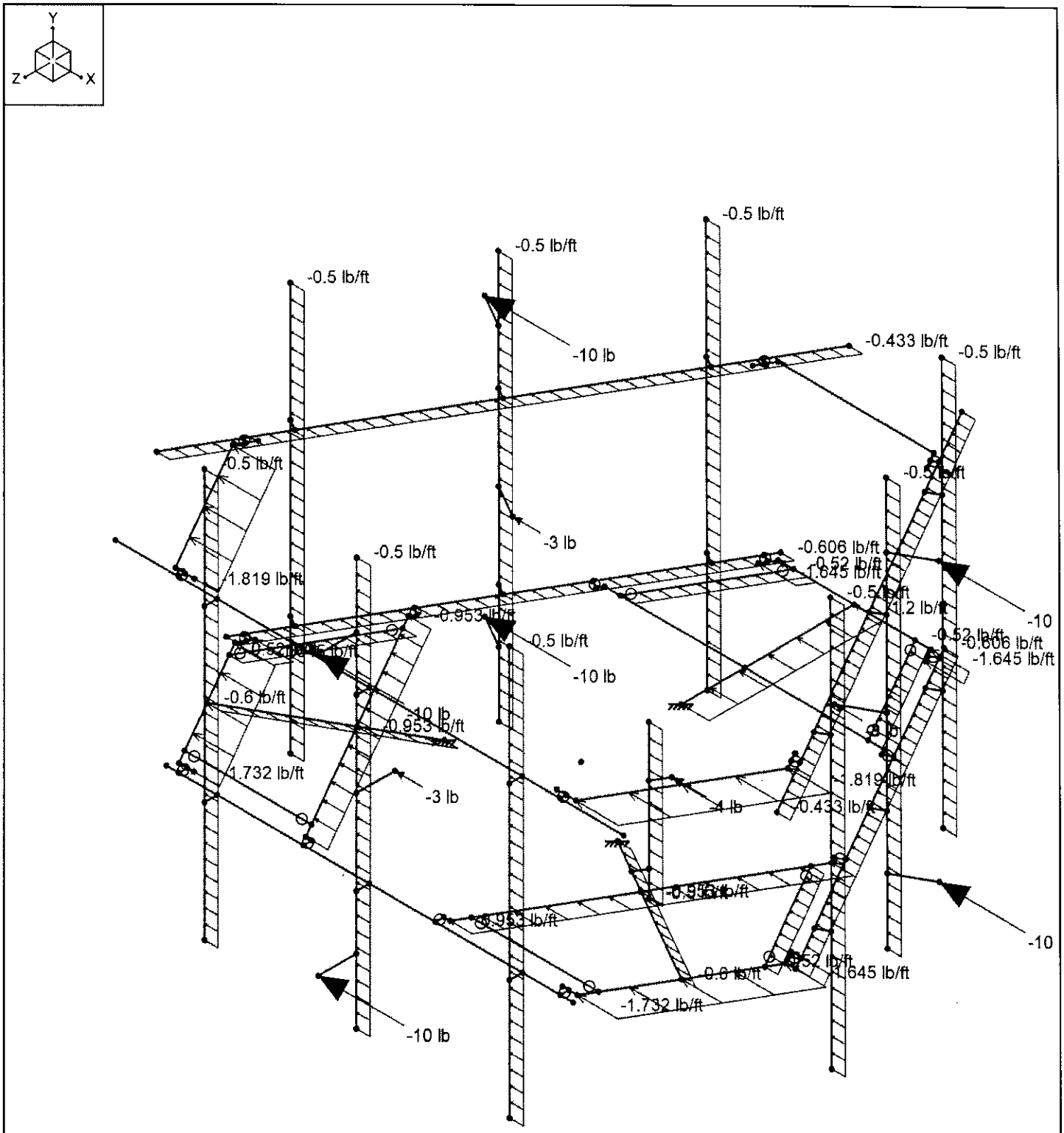
Tectonic Engineering	PROPOSED ANTENNA MOUNT	SK-11
GLE		Dec 02, 2022
10710.NJJER01163A		10710.NJJER01153A - MountAnal...





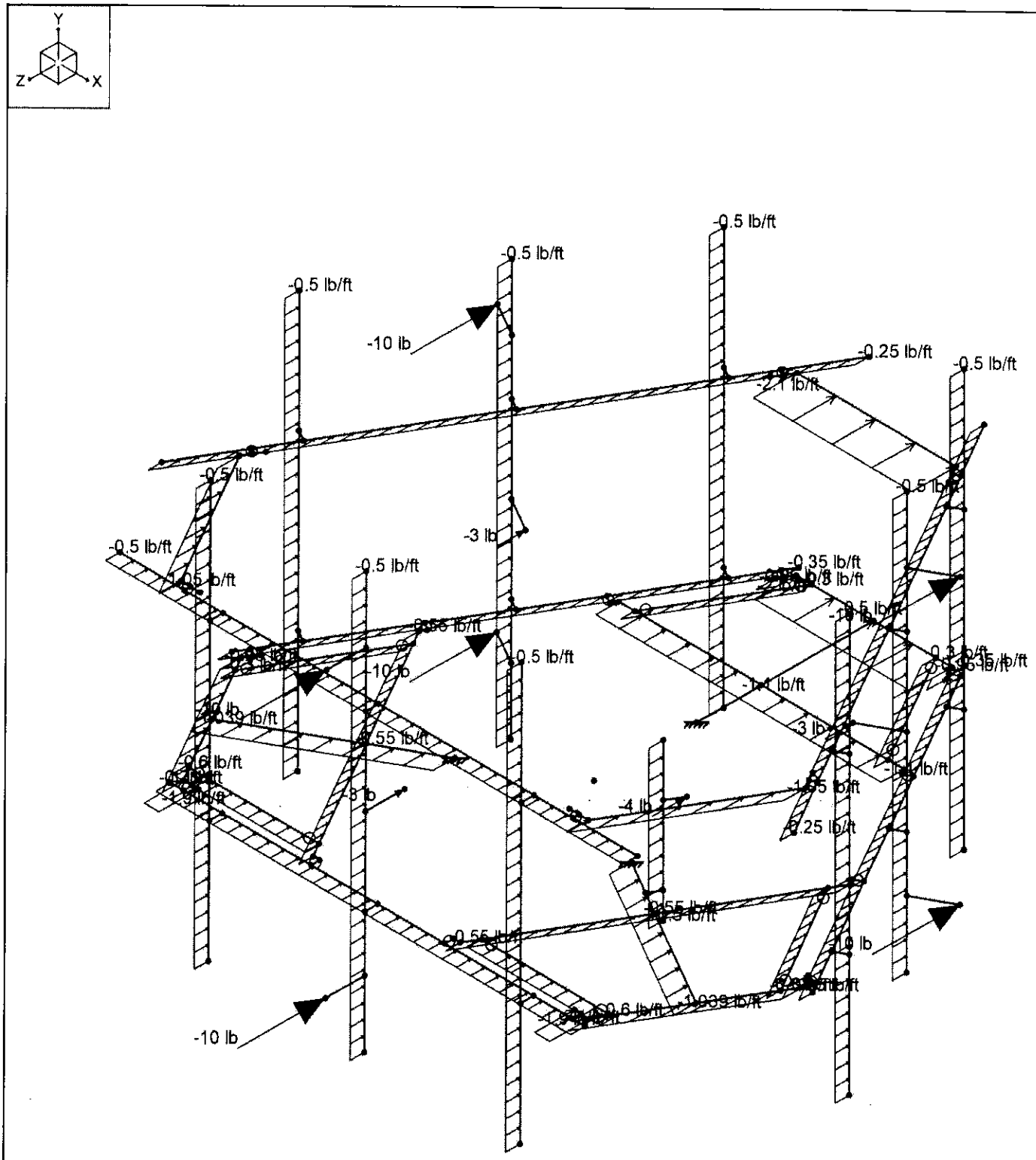
Loads: BLC 8, ELh

Tectonic Engineering	PROPOSED ANTENNA MOUNT	SK-12
GLE		Dec 02, 2022
10710.NJJER01163A		10710.NJJER01153A - MountAnal...



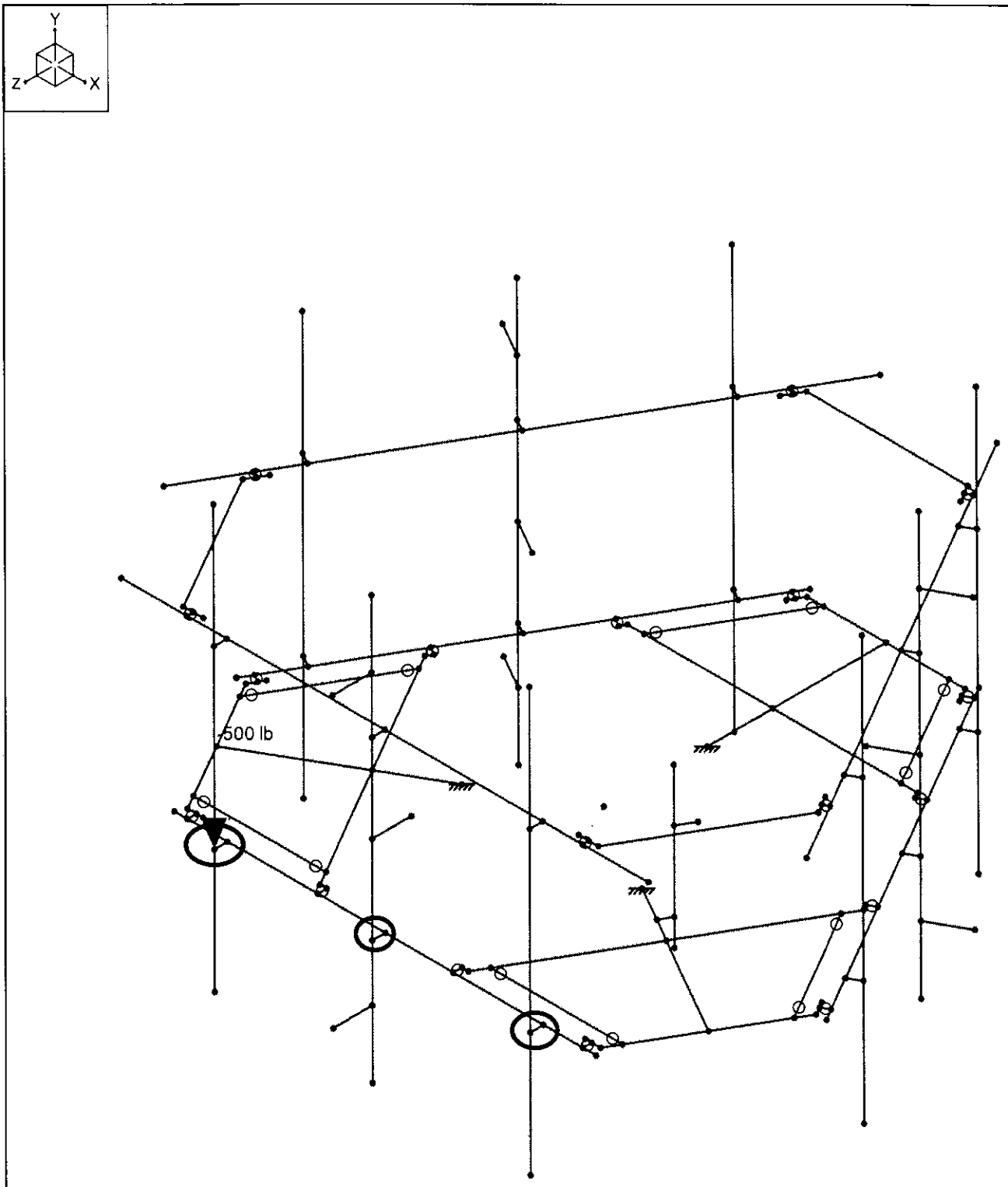
Loads: BLC 9, WLX (MAINT)

Tectonic Engineering	PROPOSED ANTENNA MOUNT	SK-13
GLE		Dec 02, 2022
10710.NJJER01163A		10710.NJJER01153A - MountAnal...



Loads: BLC 10, WLZ (MAINT)

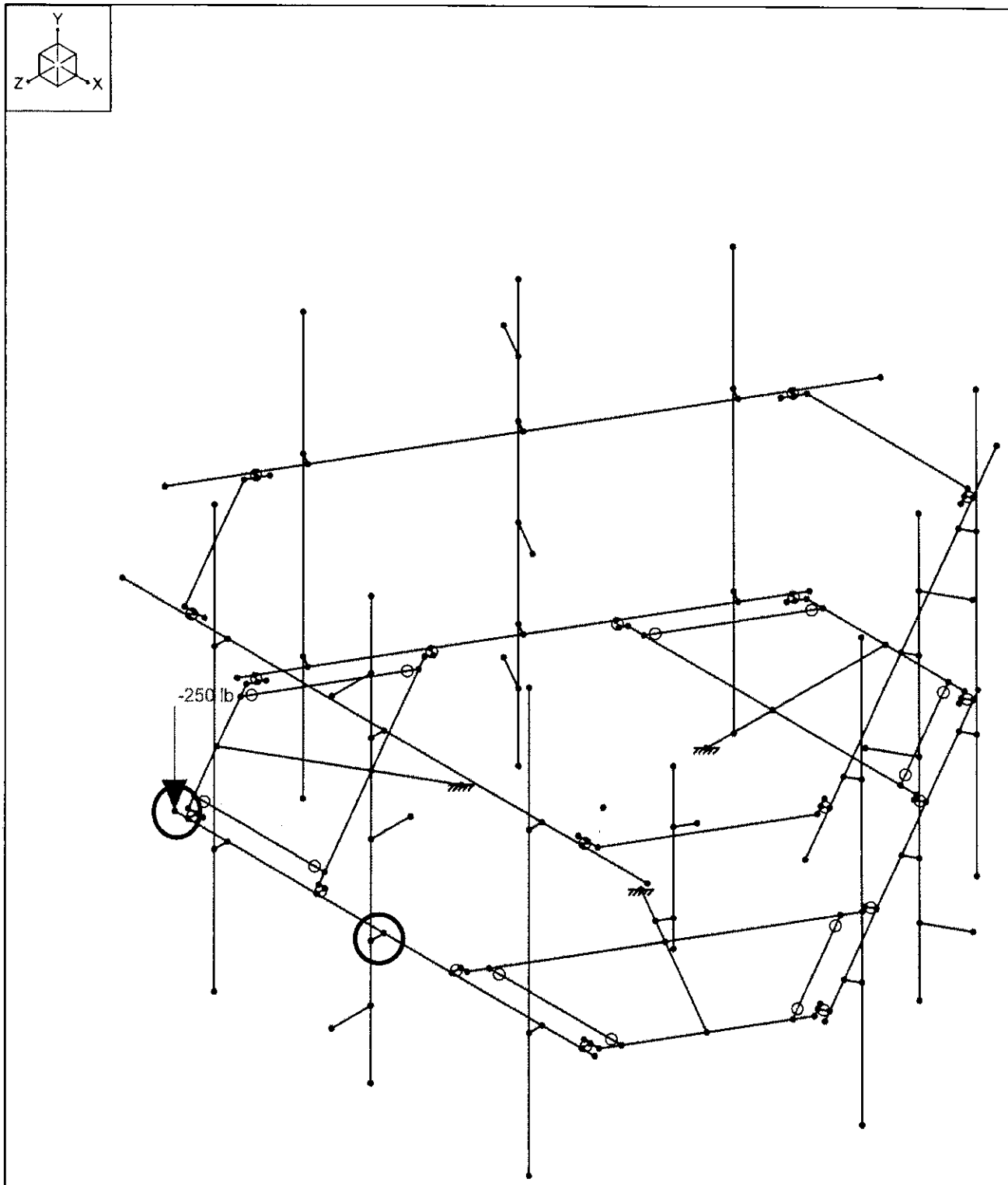
Tectonic Engineering	PROPOSED ANTENNA MOUNT	SK-14
GLE		Dec 02, 2022
10710.NJJER01163A		10710.NJJER01153A - MountAnal...



500 lbs man load considered, typ of 3

Loads: BLC 11, Lm1

Tectonic Engineering	PROPOSED ANTENNA MOUNT	
GLE		Dec 02, 2022
10710.NJJER01153A		10710.NJJER01153A - MountAnal...



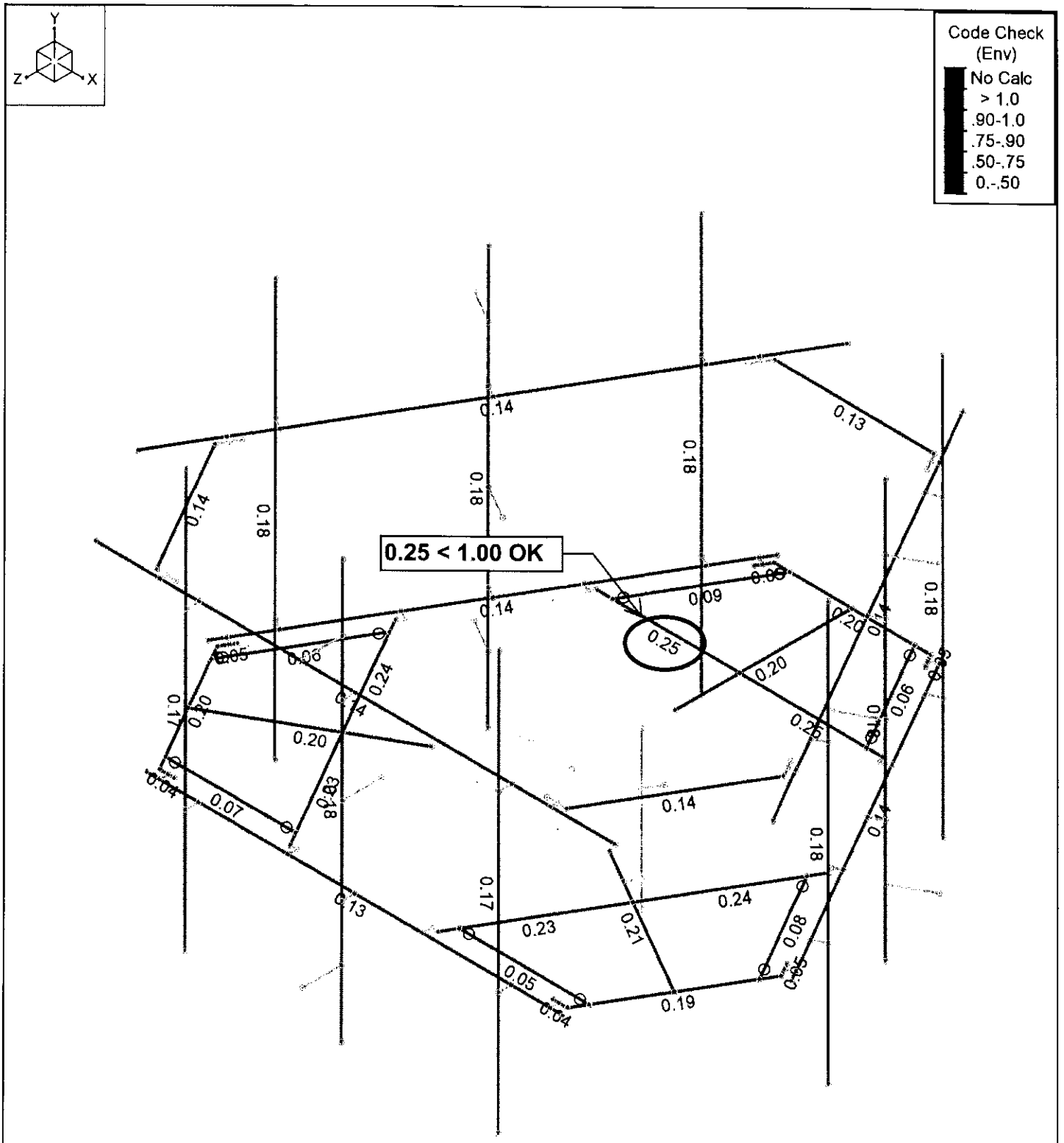
250 lbs vertical load considered, typ of 2

Loads: BLC 14, Lv1

Tectonic Engineering	PROPOSED ANTENNA MOUNT	
GLE		Dec 02, 2022
10710.NJJER01153A		10710.NJJER01153A - MountAnal...

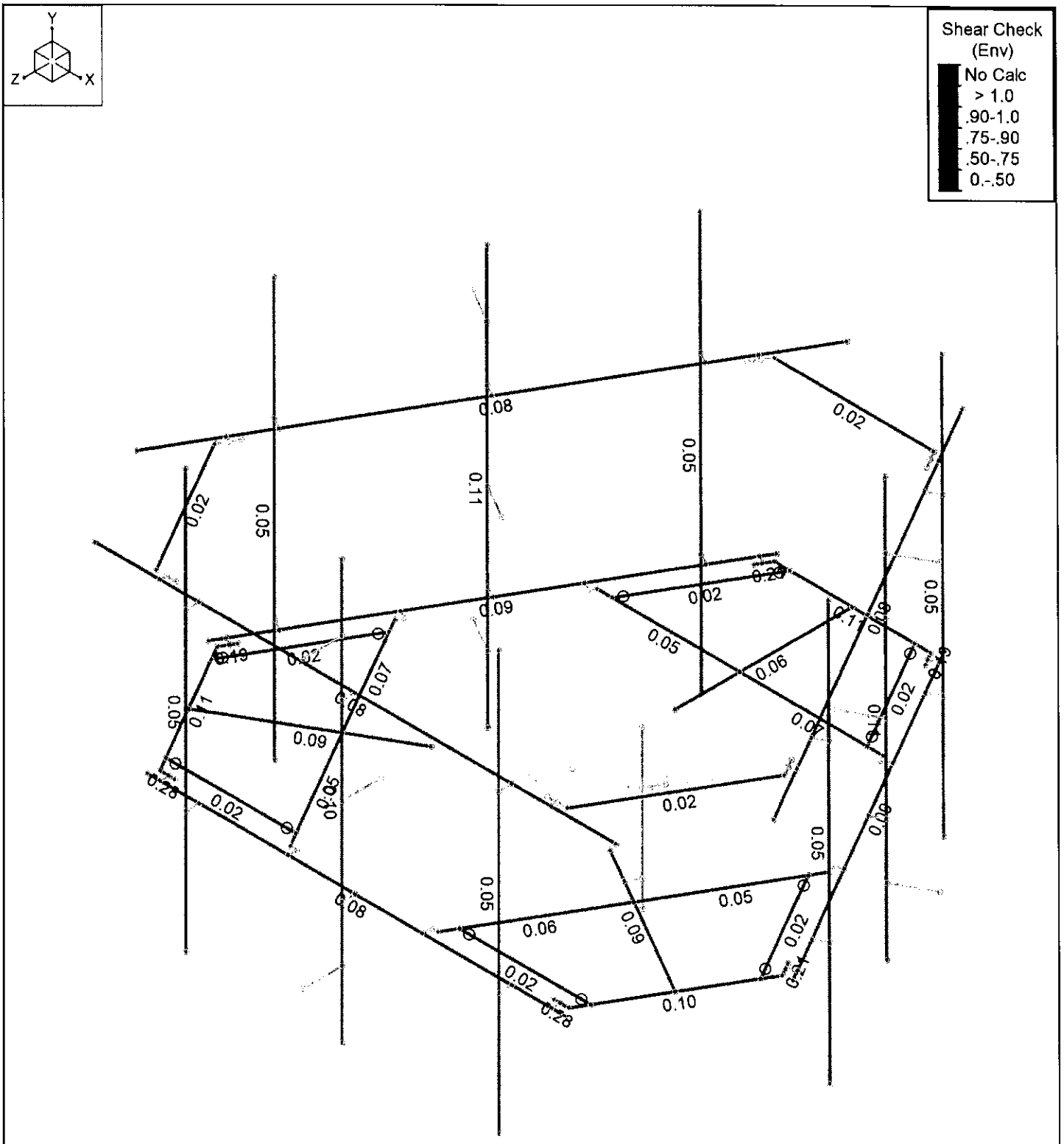
APPENDIX C

SOFTWARE ANALYSIS OUTPUT



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

Tectonic Engineering	PROPOSED ANTENNA MOUNT	SK-15
GLE		Dec 02, 2022
10710.NJJER01163A		10710.NJJER01153A - MountAnal...



Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

Tectonic Engineering	PROPOSED ANTENNA MOUNT	SK-16
GLE		Dec 02, 2022
10710.NJJER01163A		10710.NJJER01153A - MountAnal...

Hot Rolled Steel Properties

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

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rule	Area [in^{2}]	Iyy [in^{4}]	Izz [in^{4}]	J [in^{4}]
1	Standoff End Plate 6.5"	PL6.5x0.375	Beam	RECT	A36 Gr.36	Typical	2.438	0.029	8.582	0.11
2	Standoff End Plate 6"	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	SquareTube	A500 Gr.B Rect	Typical	4.78	10.3	10.3	17.5
8	Rail Connector	L6.6x4.46x0.25	Beam	Single Angle	A36 Gr.36	Typical	2.703	4.759	12.473	0.055
9	Railing	PIPE 2.5	Beam	Pipe	A53 Gr.B	Typical	1.61	1.45	1.45	2.89
10	OVP Pipe	PIPE 2.5	Beam	Pipe	A53 Gr.B	Typical	1.61	1.45	1.45	2.89

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Nodal	Point	Distributed	Area(Member)
1	DL	DL				10		3	
2	WLX	WLX				10		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		-0.045		10			
8	ELh	ELZ	-0.16		-0.16	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
1	**LRFD**												
2	1.4D	Yes	Y	1	1.4	16	1.4						
3	1.2D+(WLX+WLZ) - 0 Deg	Yes	Y	1	1.2	2	1	16	1.2				
4	1.2D+(WLX+WLZ) - 30 Deg	Yes	Y	1	1.2	2	0.866	3	0.5	16	1.2		
5	1.2D+(WLX+WLZ) - 60 Deg	Yes	Y	1	1.2	2	0.5	3	0.866	16	1.2		
6	1.2D+(WLX+WLZ) - 90 Deg	Yes	Y	1	1.2	2		3	1	16	1.2		
7	1.2D+(WLX+WLZ) - 120 Deg	Yes	Y	1	1.2	2	-0.5	3	0.866	16	1.2		

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
8	1.2D+(WLX+WLZ) - 150 Deg	Yes	Y	1	1.2	2	-0.866	3	0.5	16	1.2		
9	1.2D+(WLX+WLZ) - 180 Deg	Yes	Y	1	1.2	2	-1	3		16	1.2		
10	1.2D+(WLX+WLZ) - 210 Deg	Yes	Y	1	1.2	2	-0.866	3	-0.5	16	1.2		
11	1.2D+(WLX+WLZ) - 240 Deg	Yes	Y	1	1.2	2	-0.5	3	-0.866	16	1.2		
12	1.2D+(WLX+WLZ) - 270 Deg	Yes	Y	1	1.2	2		3	-1	16	1.2		
13	1.2D+(WLX+WLZ) - 300 Deg	Yes	Y	1	1.2	2	0.5	3	-0.866	16	1.2		
14	1.2D+(WLX+WLZ) - 330 Deg	Yes	Y	1	1.2	2	0.866	3	-0.5	16	1.2		
15	**Wind Load with Ice**												
16	1.2D+1.0Di+1.0(WLXi+WLZi) - 0 Deg	Yes	Y	1	1.2	4	1	5	1	6		16	1.2
17	1.2D+1.0Di+1.0(WLXi+WLZi) - 30 Deg	Yes	Y	1	1.2	4	1	5	0.866	6	0.5	16	1.2
18	1.2D+1.0Di+1.0(WLXi+WLZi) - 60 Deg	Yes	Y	1	1.2	4	1	5	0.5	6	0.866	16	1.2
19	1.2D+1.0Di+1.0(WLXi+WLZi) - 90 Deg	Yes	Y	1	1.2	4	1	5		6	1	16	1.2
20	1.2D+1.0Di+1.0(WLXi+WLZi) - 120 Deg	Yes	Y	1	1.2	4	1	5	-0.5	6	0.866	16	1.2
21	1.2D+1.0Di+1.0(WLXi+WLZi) - 150 Deg	Yes	Y	1	1.2	4	1	5	-0.866	6	0.5	16	1.2
22	1.2D+1.0Di+1.0(WLXi+WLZi) - 180 Deg	Yes	Y	1	1.2	4	1	5	-1	6		16	1.2
23	1.2D+1.0Di+1.0(WLXi+WLZi) - 210 Deg	Yes	Y	1	1.2	4	1	5	-0.866	6	-0.5	16	1.2
24	1.2D+1.0Di+1.0(WLXi+WLZi) - 240 Deg	Yes	Y	1	1.2	4	1	5	-0.5	6	-0.866	16	1.2
25	1.2D+1.0Di+1.0(WLXi+WLZi) - 270 Deg	Yes	Y	1	1.2	4	1	5		6	-1	16	1.2
26	1.2D+1.0Di+1.0(WLXi+WLZi) - 300 Deg	Yes	Y	1	1.2	4	1	5	0.5	6	-0.866	16	1.2
27	1.2D+1.0Di+1.0(WLXi+WLZi) - 330 Deg	Yes	Y	1	1.2	4	1	5	0.866	6	-0.5	16	1.2
28	**Seismic Load**												
29	1.2D+ELv+ELh	Yes	Y	1	1.2	7	1	8	1	16	1.2		
30	**Maintenance Load (With Service Load)** Location 1												
31	1.2D+1.5Lm1+1.0WLX (service)	Yes	Y	1	1.2	11	1.5	9	1	10		16	1.2
32	1.2D+1.5Lm1+1.0WLZ (service)	Yes	Y	1	1.2	11	1.5	9		10	1	16	1.2
33	1.2D+1.5Lm1+1.0(WLX+WLZ, Service) - 0 Deg	Yes	Y	1	1.2	11	1.5	9	1	10		16	1.2
34	1.2D+1.5Lm1+1.0(WLX+WLZ, Service) - 30 Deg	Yes	Y	1	1.2	11	1.5	9	0.87	10	0.5	16	1.2
35	1.2D+1.5Lm1+1.0(WLX+WLZ, Service) - 60 Deg	Yes	Y	1	1.2	11	1.5	9	0.5	10	0.87	16	1.2
36	1.2D+1.5Lm1+1.0(WLX+WLZ, Service) - 90 Deg	Yes	Y	1	1.2	11	1.5	9		10	1	16	1.2
37	1.2D+1.5Lm1+1.0(WLX+WLZ, Service) - 120 Deg	Yes	Y	1	1.2	11	1.5	9	-0.5	10	0.87	16	1.2
38	1.2D+1.5Lm1+1.0(WLX+WLZ, Service) - 150 Deg	Yes	Y	1	1.2	11	1.5	9	-0.87	10	0.5	16	1.2
39	1.2D+1.5Lm1+1.0(WLX+WLZ, Service) - 180 Deg	Yes	Y	1	1.2	11	1.5	9	-1	10		16	1.2
40	1.2D+1.5Lm1+1.0(WLX+WLZ, Service) - 210 Deg	Yes	Y	1	1.2	11	1.5	9	-0.87	10	-0.5	16	1.2
41	1.2D+1.5Lm1+1.0(WLX+WLZ, Service) - 240 Deg	Yes	Y	1	1.2	11	1.5	9	-0.5	10	-0.87	16	1.2
42	1.2D+1.5Lm1+1.0(WLX+WLZ, Service) - 270 Deg	Yes	Y	1	1.2	11	1.5	9		10	-1	16	1.2
43	1.2D+1.5Lm1+1.0(WLX+WLZ, Service) - 300 Deg	Yes	Y	1	1.2	11	1.5	9	0.5	10	-0.87	16	1.2
44	1.2D+1.5Lm1+1.0(WLX+WLZ, Service) - 330 Deg	Yes	Y	1	1.2	11	1.5	9	0.87	10	-0.5	16	1.2
45	**Maintenance Load (With Service Load)** Location 2												
46	1.2D+1.5Lm2+1.0WLX (service)	Yes	Y	1	1.2	12	1.5	9	1	10		16	1.2
47	1.2D+1.5Lm2+1.0WLZ (service)	Yes	Y	1	1.2	12	1.5	9		10	1	16	1.2
48	1.2D+1.5Lm2+1.0(WLX+WLZ, Service) - 0 Deg	Yes	Y	1	1.2	12	1.5	9	1	10		16	1.2
49	1.2D+1.5Lm2+1.0(WLX+WLZ, Service) - 30 Deg	Yes	Y	1	1.2	12	1.5	9	0.87	10	0.5	16	1.2
50	1.2D+1.5Lm2+1.0(WLX+WLZ, Service) - 60 Deg	Yes	Y	1	1.2	12	1.5	9	0.5	10	0.87	16	1.2
51	1.2D+1.5Lm2+1.0(WLX+WLZ, Service) - 90 Deg	Yes	Y	1	1.2	12	1.5	9		10	1	16	1.2
52	1.2D+1.5Lm2+1.0(WLX+WLZ, Service) - 120 Deg	Yes	Y	1	1.2	12	1.5	9	-0.5	10	0.87	16	1.2
53	1.2D+1.5Lm2+1.0(WLX+WLZ, Service) - 150 Deg	Yes	Y	1	1.2	12	1.5	9	-0.87	10	0.5	16	1.2
54	1.2D+1.5Lm2+1.0(WLX+WLZ, Service) - 180 Deg	Yes	Y	1	1.2	12	1.5	9	-1	10		16	1.2
55	1.2D+1.5Lm2+1.0(WLX+WLZ, Service) - 210 Deg	Yes	Y	1	1.2	12	1.5	9	-0.87	10	-0.5	16	1.2
56	1.2D+1.5Lm2+1.0(WLX+WLZ, Service) - 240 Deg	Yes	Y	1	1.2	12	1.5	9	-0.5	10	-0.87	16	1.2
57	1.2D+1.5Lm2+1.0(WLX+WLZ, Service) - 270 Deg	Yes	Y	1	1.2	12	1.5	9		10	-1	16	1.2
58	1.2D+1.5Lm2+1.0(WLX+WLZ, Service) - 300 Deg	Yes	Y	1	1.2	12	1.5	9	0.5	10	-0.87	16	1.2
59	1.2D+1.5Lm2+1.0(WLX+WLZ, Service) - 330 Deg	Yes	Y	1	1.2	12	1.5	9	0.87	10	-0.5	16	1.2
60	**Maintenance Load (With Service Load)** Location3												
61	1.2D+1.5Lm3+1.0WLX (service)	Yes	Y	1	1.2	13	1.5	9	1	10		16	1.2
62	1.2D+1.5Lm3+1.0WLZ (service)	Yes	Y	1	1.2	13	1.5	9		10	1	16	1.2

Load Combinations (Continued)

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

Envelope Node Reactions

	Node Label		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N10	max	925.19	14	1718.403	70	1398.968	7	0.21	3	1.626	13	3.521	10
2		min	-924.336	8	292.545	4	-1395.608	13	-2.928	69	-1.62	7	-0.213	4
3	N53	max	831.492	4	1672.19	44	1327.83	5	0.218	9	1.568	5	0.152	8
4		min	-835.478	10	244.587	8	-1329.939	11	-2.929	31	-1.561	11	-3.382	14
5	N70	max	1447.27	3	1577.654	19	425.188	6	3.975	6	1.43	9	0.571	3
6		min	-1444.166	9	225.289	12	-430.596	12	-0.243	12	-1.424	3	-0.571	9
7	Totals:	max	2920.193	3	4401.859	25	3043.391	6						
8		min	-2920.193	9	2742.563	6	-3043.391	12						

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

	Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc[ft]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [k-ft]	phi*Mn z-z [k-ft]	Cb	Eqn
1	M1	Pipe3.5x0.165	0.127	5.333	3	0.083	5.25		9	38821.879	54463.5	4.822	4.822	1	H1-1b
2	M3	Plate 6x.37	0.043	0.128	14	0.28	0.292	y	69	67974.739	71928	0.554	8.991	1.465	H1-1b
3	M4	PL6.5x0.375	0.194	1.5	11	0.102	0	y	3	4979.135	78975	0.617	8.948	1.364	H1-1b
4	M5	Plate 6x.37	0.049	0.164	6	0.21	0	y	11	67974.739	71928	0.554	8.991	2.809	H1-1b
5	M6	HSS4X4X6	0.21	3.417	11	0.091	2.634	y	68	187775.062	197892	22.046	22.046	1.937	H1-1b
6	M7	C3.38x2.06x0.25	0.243	0	10	0.051	2.464	z	11	47760.074	56700	2.203	5.752	1.668	H1-1b
7	M8	C3.38x2.06x0.25	0.233	2.75	10	0.061	0.286	z	3	47760.074	56700	2.203	5.752	1.624	H1-1b
8	M14	L2X2X4	0.049	0	9	0.018	2.502	y	14	22280.388	30585.6	0.691	1.577	1.5	H2-1
9	M15	L2X2X4	0.083	0	5	0.019	2.502	z	69	22280.388	30585.6	0.691	1.577	1.159	H2-1
10	M16	Pipe3.5x0.165	0.136	5.333	5	0.086	2.75		5	38821.879	54463.5	4.822	4.822	1	H1-1b
11	M18	Plate 6x.37	0.047	0.128	14	0.211	0.292	y	7	67974.739	71928	0.554	8.991	2.946	H1-1b
12	M19	PL6.5x0.375	0.203	1.5	5	0.112	3	y	11	4979.135	78975	0.617	8.936	1.363	H1-1b
13	M20	Plate 6x.37	0.046	0.164	10	0.19	0	y	5	67974.739	71928	0.554	8.991	1.446	H1-1b
14	M21	HSS4X4X6	0.202	3.417	5	0.058	3.417	z	3	187775.062	197892	22.046	22.046	1.889	H1-1b
15	M22	C3.38x2.06x0.25	0.245	2.75	6	0.068	0.286	z	11	47760.074	56700	2.203	5.752	1.622	H1-1b
16	M23	C3.38x2.06x0.25	0.245	0	6	0.051	2.464	z	7	47760.074	56700	2.203	5.752	1.667	H1-1b
17	M29	L2X2X4	0.085	0	13	0.016	0	z	16	22280.388	30585.6	0.691	1.577	1.168	H2-1
18	M30	L2X2X4	0.057	0	5	0.018	2.502	y	10	22280.388	30585.6	0.691	1.577	1.5	H2-1
19	M32	Plate 6x.37	0.044	0.128	10	0.279	0.292	y	33	67974.739	71928	0.554	8.991	2.541	H1-1b
20	M33	PL6.5x0.375	0.199	1.5	13	0.112	3	y	7	4979.135	78975	0.617	8.969	1.368	H1-1b
21	M34	Plate 6x.37	0.047	0.164	6	0.19	0	y	13	67974.739	71928	0.554	8.991	1.457	H1-1b
22	M35	HSS4X4X6	0.204	3.417	13	0.091	3.417	y	34	187775.062	197892	22.046	22.046	1.892	H1-1b
23	M36	C3.38x2.06x0.25	0.242	2.75	14	0.067	0.286	z	7	47760.074	56700	2.203	5.752	1.622	H1-1b
24	M37	C3.38x2.06x0.25	0.233	0	14	0.046	2.464	z	14	47760.074	56700	2.203	5.752	1.666	H1-1b

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

	Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc[ft]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [k-ft]	phi*Mn z-z [k-ft]	Cb	Eqn
25	M43	L2X2X4	0.074	0	9	0.016	0	z	24	22280.388	30585.6	0.691	1.577	1.163	H2-1
26	M44	L2X2X4	0.056	0	13	0.019	0	y	34	22280.388	30585.6	0.691	1.577	1.5	H2-1
27	M45	Pipe3.5x0.165	0.137	5.333	7	0.086	2.75		7	38821.879	54463.5	4.822	4.822	1	H1-1b
28	M46	PIPE 2.5	0.143	2.083	3	0.081	2.083		14	22373.407	50715	3.596	3.596	1	H1-1b
29	M47	PIPE 2.5	0.141	2.083	11	0.082	7.917		6	22373.407	50715	3.596	3.596	1	H1-1b
30	M48	PIPE 2.5	0.14	7.917	13	0.082	2.083		6	22373.407	50715	3.596	3.596	1	H1-1b
31	M61	L6.6x4.46x0.25	0.14	0	9	0.022	0	y	5	51620.642	87561	2.465	7.125	1.324	H2-1
32	M62	L6.6x4.46x0.25	0.141	3.06	3	0.021	3.06	y	13	51620.642	87561	2.465	7.125	1.329	H2-1
33	M63	L6.6x4.46x0.25	0.132	3.06	11	0.019	3.06	y	9	51620.642	87561	2.465	7.125	1.274	H2-1
34	M65	PIPE 2.5	0.036	0.5	7	0.012	0.5		10	47114.007	50715	3.596	3.596	1	H1-1b
35	M69	PIPE 2.5	0.174	5.667	9	0.054	5.667		7	30038.461	50715	3.596	3.596	1	H1-1b
36	M72	PIPE 2.5	0.175	5.667	3	0.054	5.667		5	30038.461	50715	3.596	3.596	1	H1-1b
37	M75	PIPE 2.5	0.176	5.667	9	0.105	4		9	30038.461	50715	3.596	3.596	1	H1-1b
38	M85	PIPE 2.5	0.175	5.667	11	0.054	5.667		13	30038.461	50715	3.596	3.596	1	H1-1b
39	M98	PIPE 2.5	0.175	5.667	7	0.051	5.667		9	30038.461	50715	3.596	3.596	1	H1-1b
40	M87	PIPE 2.5	0.176	5.667	5	0.051	5.667		3	30038.461	50715	3.596	3.596	1	H1-1b
41	M93	PIPE 2.5	0.177	5.667	11	0.107	4		5	30038.461	50715	3.596	3.596	1	H1-1b
42	M99	PIPE 2.5	0.176	5.667	13	0.053	5.667		11	30038.461	50715	3.596	3.596	1	H1-1b
43	M105	PIPE 2.5	0.177	5.667	7	0.107	4		13	30038.461	50715	3.596	3.596	1	H1-1b

The maximum member stress is at 25% of its capacity; therefore, the proposed mount will have sufficient capacity to support the proposed load configuration upon installation.

APPENDIX D

ADDITIONAL CALCULATIONS

Tectonic

PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.

Job No. 10710.NJJER01133A
Calculated By: GLE Date : 12/6/22
Checked By: IM Date : 12/6/22

Connection Details		
Bolt Details		
Bolt Quantity =	4	
Bolt Diameter =	0.625	in
Vertical Spacing =	7	in
Horizontal Spacing =	3.75	in
Bolt Grade =	A325	
Bolt F_u, if "Other" =	N/A	ksi

Loading Details		
Member M21, Envelope		
Shear, X =	0.147	k
Shear, Y =	-1.578	k
Tension, Z =	0.431	k
Mx =	3.91	k-ft
My =	-1.15	k-ft
Torsion, Mz =	0.571	k-ft

1 - Tensile Capacity

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

Φ =	0.75	
F_{nt} =	90	ksi
A_b =	0.307	in^2
ΦR_{nt} =	20.72	k
T_{max} =	4.74	k

AISC [Table J3.2]

ΦRnt > Tmax

22.9%

OK

2 - Shear Capacity

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

Φ =	0.75	
F_{nv} =	54	ksi
A_b =	0.307	in^2
ΦR_{nv} =	12.43	k
V_{max} =	0.88	k

AISC [Table J3.2]

ΦRnv > Vmax

7.1%

OK

3 - Combined Tension and Shear Capacity

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

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

Φ =	0.75	
F'_{nt} =	90	ksi
A_b =	0.307	in^2
$\Phi R'_{nt}$ =	20.72	k
T_{max} =	4.74	k

ΦR'nt > Tmax

22.9%

OK

Tectonic

PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.

Job No. 10710.NJJER01133A
Calculated By: GLE Date : 12/6/22
Checked By: IM Date : 12/6/22

Connection Details		
Weld Details		
Weld Type	Fillet	
# of Sides	2	
Electrodes	70	XX
Size of Weld =	0.25	in
HSS Height =	4.00	in
HSS Width =	4.00	in
HSS Thickness =	0.233	in
Plate Details		
Height/Width =	7.00	in
Thickness =	0.625	in
F_y =	50	ksi

4 - Weld Capacity

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

AISC [Table J2.5]

Φ =	0.75	
ΦF_{nw} =	63.00	ksi
$f_{v,max}$ =	1.566	ksi
$f_{b,max}$ =	14.16	ksi

Min(ΦFnw,ΦFnbm) > √(fv,max+fm,max)

22.6% **OK**

5 - Plate Capacity

Φ =	0.9	
ΦF_{byy} =	45.00	ksi
f_b =	13.76	ksi

ΦFbyy > Fb

30.6% **OK**

Municipality	Basic Design Wind Speeds, V (mph)				Allowable Stress Design Wind Speeds, V_{asd} (mph)				Ground Snow Load p_g (psf)	MCE Ground Accelerations		Wind-Borne Debris Region[1]		Hurricane-Prone Region
	Risk Cat. I	Risk Cat. II	Risk Cat. III	Risk Cat. IV	Risk Cat. I	Risk Cat. II	Risk Cat. III	Risk Cat. IV		S_S (g)	S_1 (g)	Risk Cat. III Occup. I-2	Risk Cat. IV	
Sherman	110	115	125	130	85	89	97	101	35	0.203	0.055			
Simsbury	110	120	125	130	85	93	97	101	35	0.177	0.054			Yes
Somers	110	120	130	135	85	93	101	105	35	0.174	0.055			Yes
South Windsor	110	120	130	135	85	93	101	105	30	0.183	0.055			Yes
Southbury	110	120	130	130	85	93	101	101	35	0.199	0.054			Yes
Southington	110	120	130	135	85	93	101	105	30	0.196	0.055			Yes
Sprague	115	125	135	140	89	97	105	108	30	0.191	0.054			Yes
Stafford	110	120	130	135	85	93	101	105	35	0.176	0.055			Yes
Stamford	110	120	130	135	85	93	101	105	30	0.261	0.058		Type B	Yes
Sterling	115	125	135	140	89	97	105	108	35	0.187	0.054			Yes
Stonington	120	130	140	145	93	101	108	112	30	0.182	0.051	Type B	Type A	Yes
Stratford	110	120	130	135	85	93	101	105	30	0.206	0.054		Type B	Yes
Suffield	110	120	125	130	85	93	97	101	35	0.170	0.054			Yes
Thomaston	110	120	125	130	85	93	97	101	35	0.184	0.054			Yes
Thompson	110	120	130	135	85	93	101	105	40	0.185	0.056			Yes
Tolland	110	120	130	135	85	93	101	105	35	0.182	0.055			Yes
Torrington	110	115	125	130	85	89	97	101	40	0.175	0.054			
Trumbull	110	120	130	135	85	93	101	105	30	0.210	0.054			Yes
Union	110	120	130	135	85	93	101	105	40	0.178	0.055			Yes
Vernon	110	120	130	135	85	93	101	105	30	0.186	0.055			Yes
Voluntown	120	130	135	140	93	101	105	108	30	0.188	0.053			Yes
Wallingford	110	120	130	135	85	93	101	105	30	0.205	0.055			Yes
Warren	110	115	125	130	85	89	97	101	40	0.179	0.054			
Washington	110	115	125	130	85	89	97	101	35	0.189	0.054			
Waterbury	110	120	130	135	85	93	101	105	35	0.193	0.054			Yes
Waterford	120	130	140	140	93	101	108	108	30	0.194	0.053	Type B	Type B	Yes
Watertown	110	120	130	130	85	93	101	101	35	0.189	0.054			Yes
West Hartford	110	120	130	135	85	93	101	105	30	0.187	0.055			Yes
West Haven	110	125	130	135	85	97	101	105	30	0.200	0.053	Type B	Type B	Yes
Westbrook	115	125	135	140	89	97	105	108	30	0.204	0.054	Type B	Type B	Yes
Weston	110	120	130	135	85	93	101	105	30	0.233	0.056			Yes
Westport	110	120	130	135	85	93	101	105	30	0.232	0.056		Type B	Yes

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Seismic

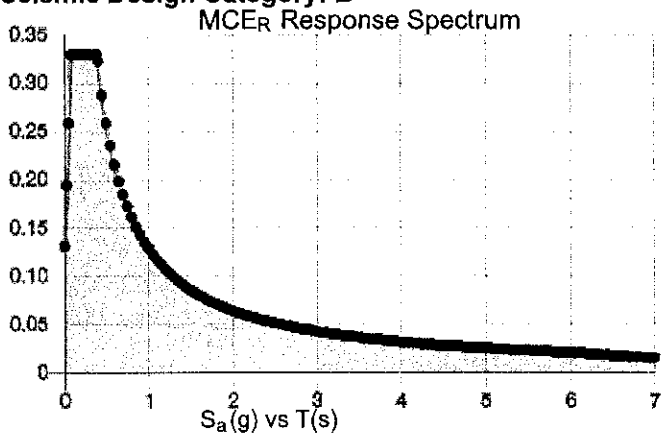
D - Default (see Section 11.4.3)

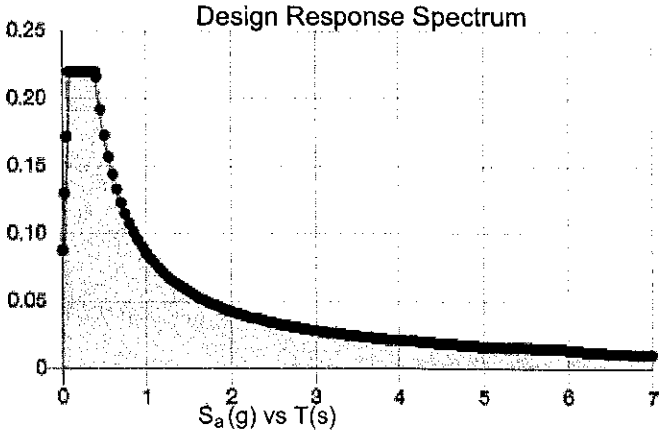
Site Soil Class:

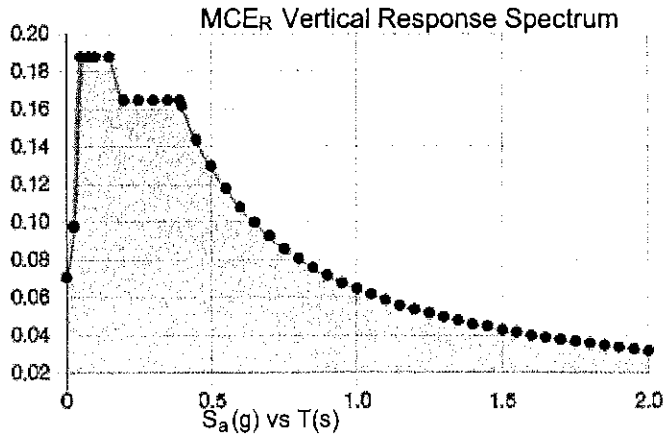
Results:

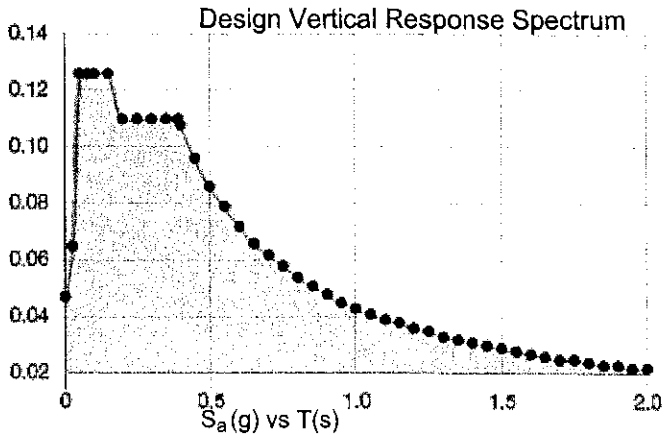
S_S :	0.206	S_{D1} :	0.086
S_1 :	0.054	T_L :	6
F_a :	1.6	PGA :	0.117
F_v :	2.4	PGA_M :	0.183
S_{MS} :	0.33	F_{PGA} :	1.566
S_{M1} :	0.13	I_e :	1
S_{DS} :	0.22	C_v :	0.713

Seismic Design Category: B









Data Accessed: **Fri Dec 02 2022**

Date Source:

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

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Ice

Results:

Ice Thickness:	1.00 in.
Concurrent Temperature:	15 F
Gust Speed	50 mph
Data Source:	Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8
Date Accessed:	Fri Dec 02 2022

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

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

Exhibit E

Lease Agreement

Lessor Site ID & No.: Trumbull SE 4 CT / 469122
Lessee Site ID & No.: NJJER01153A

CONTRACT # _____

LEASE SUPPLEMENT

This Supplement ("Supplement"), is made this 23rd day of November, 2022 (the "Supplement Effective Date"), between Cellco Partnership, a Delaware general partnership, d/b/a Verizon Wireless, with its principal offices at One Verizon Way, Mail Stop 4AW100, Basking Ridge, New Jersey 07920, hereinafter designated LESSOR and DISH Wireless L.L.C., a Colorado limited liability company, with its principal offices at 9601 S. Meridian Blvd., Englewood, Colorado 80112, hereinafter designated LESSEE.

1. This Supplement is made pursuant to that certain Master Tower Lease Agreement between Cellco Partnership d/b/a Verizon Wireless and DISH Wireless L.L.C. dated August 6, 2021 (the "Agreement"). All of the terms and conditions of the Agreement are incorporated hereby by reference and made a part hereof without the necessity of repeating or attaching the Agreement. In the event of a contradiction, modification or inconsistency between the terms of the Agreement and this Supplement, the terms of the Agreement shall govern, except as it pertains to Exhibits, Rent that is negotiated in accordance with the terms of the Agreement, and any other site specific terms that are expressly included in a Supplement. Capitalized terms used in this Supplement shall have the same meaning described for them in the Agreement unless otherwise indicated herein.

2. The Premises leased by the LESSOR to the LESSEE hereunder is described as follows:

200 square feet of Ground Space located at 60 Commerce Drive, Trumbull, Fairfield County, Connecticut 06611 for the placement of LESSEE's equipment shelter or cabinets and ancillary equipment, and certain Tower Space for the installation of LESSEE's antennas and related equipment, together with certain easements, as more particularly described on **Exhibit 1** attached hereto and made a part hereof.

3. In the event an **Exhibit 1** is attached hereto describing the Premises, the LESSEE may have the right to survey the Premises and said survey may then become **Exhibit 2** which shall be attached hereto and made a part hereof and shall control in the event of any discrepancies between it and **Exhibit 1**. The cost for such work shall be borne by the LESSEE.

4. LESSOR hereby grants permission to LESSEE to install, maintain and operate the communications equipment, antennas, technology, frequencies and appurtenances described in **Exhibit 3** attached hereto (the "LESSEE Equipment"). LESSEE reserves the right to replace, repair, augment, add or otherwise modify the LESSEE Equipment as provided in **Paragraph 4** of the Agreement.

5. If the Premises are subject to a prime lease, license or other such agreement, a copy of such agreement is attached hereto as **Exhibit 4** (the "Prime Lease"). This Supplement shall not be effective until LESSEE has approved the Prime Lease, and Lessee shall be under no obligation to proceed under this Supplement unless and until the form and substance of the Prime Lease is acceptable to LESSEE. LESSEE'S execution of this Supplement shall convey its approval of the Prime Lease.

HSG DS HSG

6. The Supplement Term shall be as set forth in **Paragraph 6** of the Agreement and shall commence as set forth in **Paragraph 6** of the Agreement and if known at the time execution of this Supplement, is set forth below. LESSOR and LESSEE agree that they shall acknowledge in writing the Commencement Date using the form attached as "**Exhibit 5**" to this Supplement.

7. The Rent due for the Term of this Supplement shall be in accordance with the Agreement and shall be an annual amount of Sixteen Thousand Five Hundred Dollars ($16,500.00) to be paid in equal monthly installments on the first day of each month, in advance, to LESSOR at Verizon Wireless, P.O. Box 64498, Baltimore, Maryland 21264-4498 or to such other person, firm or place as the LESSOR may, from time to time, designate in writing at least sixty (60) calendar days in advance of any Rent payment date. All Rent checks shall have LESSOR'S site number clearly written on the face of the check. The foregoing Rent reflects the Site Rent, any Microwave Rent, any Additional Wind Load Surface Area Rent, any Additional Ground Space Rent, and any Prime Lease Payment and shall commence on a date to be determined in accordance with **Paragraph 6** of the Agreement.

[SIGNATURE PAGE TO FOLLOW]

HSG DS HSG

Lessor Site ID & No.: Trumbull SE 4 CT / 469122
Lessee Site ID & No.: NJJER01153A

CONTRACT # _____

IN WITNESS WHEREOF, the Parties hereto have set their hands and affixed their respective seals as of the Supplement Effective Date.

LESSOR:	LESSEE:
Cellco Partnership d/b/a Verizon Wireless	DISH Wireless L.L.C.
By: DocuSigned by: Chad Schmelzer C89AB65CACBF4F2...	By: DocuSigned by: Dave Mayo F9BA1A105A064B7...
Name: Chad Schmelzer	Name: Dave Mayo
Title: Senior Manager - Network Engineering & Operations	Title: EVP
Date: 23-Nov-2022	Date: 11/9/2022

DS MF
11/8/2022

HSG DS HSG DS

EXHIBIT 1 TO SUPPLEMENT
PREMISES
PAGE 1 OF 6

LEGAL DESCRIPTION

Situated in the County of Fairfield, State of Connecticut:

Parent Parcel:

All that certain piece or parcel of land with all of the improvements thereon situated in the Town of Trumbull, County of Fairfield and State of Connecticut, containing 14.02 acres and shown on a certain map entitled "Resubdivision Plan, Lot No. 4, Commerce Drive & Huntington Road, Trumbull, Connecticut, prepared for David Mack" Prepared by J. & D. Kasper & Associates, Engineers, Surveyors, Planners, Bridgeport, Connecticut, Scale 1" = 50' dated Feb. 20, 1979, Sheet 2 of 3, on file in the Trumbull Town Clerk's Office and further shown on a revision of said map dated Dec. 4, 1981 and bounded and described as follows:

WESTERLY:	In part, by land now or formerly of Dow Corning Corp., in part, by the terminus of Commerce Drive, as shown on said map, and in part, by land now or formerly of Optique Dumonde, Ltd., in all, 793.21 feet, said boundary having a bearing of N 19°37'25"W, the termini of said boundary being marked by iron pipes;
NORTHWESTERLY:	By land now or formerly of Optique Dumonde, Ltd., 264.90 feet, said boundary having a bearing of N 25°32'15"E, the termini of said boundary being marked by iron pipes;
NORTHERLY:	By land now or formerly of Christine Lundgren, 47.14 feet, said boundary having a bearing of S 79°31'53"E;
NORTHERLY:	AGAIN, by land now or formerly of Christine Lundgren, 60.33 feet, said boundary having a bearing of N 83°40 15"E;
NORTHERLY:	AGAIN, by land now or formerly of Christine Lundgren, 26.91 feet, said boundary having a bearing of N 77°19'39"E;
NORTHERLY:	AGAIN, by land now or formerly of Christine Lundgren, 58.83 feet, said boundary having a bearing or N 75°33'27"E;
NORTHERLY:	AGAIN, by land now or formerly of Christine Lundgren, 66.26 feet, said boundary having a bearing of N 77°36'19"E;
NORTHERLY:	AGAIN, in part by land now or formerly of Christine Lundgren and in part by land now or formerly of E.V. & N.B. Bowen, in all, 51.36 feet, said boundary having a bearing of N 75°24'40"E;

HSG DS HSG

EXHIBIT 1 TO SUPPLEMENT
PREMISES
PAGE 2 OF 6

LEGAL DESCRIPTION

NORTHERLY:	AGAIN, by land now or formerly of E.V. & N.B. Bowen, 38.96 feet, said boundary having a bearing of N 80°42'12"E;
NORTHERLY:	AGAIN, by land now or formerly of E.V. & N.B. Bowen, 76.08 feet, said boundary having a bearing of N 76°46'19"E, all of said northerly boundaries being the center line of a stone wall;
EASTERLY:	In part by land now or formerly of E.J. & A.M. Overwise and in part by land now or formerly of Thomas & Carol Donegan, in all, 222.47 feet, said boundary having a bearing of S 25°36'55"E;
EASTERLY:	AGAIN, in part by land now or formerly of Thomas & Carol Donegan, in part by land now or formerly of R.D. & L.S. Sutton, and in part by land now or formerly of M.H. & V.M. Shaw, in all, 167.89 feet, said boundary having a bearing of S 17°42'45"E;
EASTERLY:	AGAIN, in part by land now or formerly of M.H. & V.M. Shaw and in part by land now or formerly of Doris Cheney and Linda Beeman, in all, 205.70 feet, said boundary having a bearing of S 14°15'35"E;
EASTERLY:	AGAIN, in part by land now or formerly of Doris Cheney and Linda Beeman and in part by land now or formerly of Peter Everetts, in all, 211.25 feet, said boundary having a bearing of S 07°16'25"E;
SOUTHEASTERLY:	By land now or formerly of Timothy & Carol Ryan, 24.59 feet, said boundary having a bearing of S 60°35'50"W, said boundary being the center line of a stone wall;
SOUTHEASTERLY:	AGAIN, by land now or formerly of Timothy & Carol Ryan, 88.04 feet, said boundary having a bearing of S 61°24'49"W, said boundary being the center line of a stone wall;
SOUTHEASTERLY:	AGAIN, by land now or formerly of Timothy & Carol Ryan, 12.65 feet, said boundary having a bearing of S 67°09'05"W, said boundary being the center line of a stone wall;
EASTERLY:	AGAIN, in part by land now or formerly of Timothy and Carol Ryan and in part by land now or formerly of Robert & Carol Brumper, in all, 192.32 feet, said boundary having a bearing of S 07°52'21"W;
NORTHERLY:	AGAIN, by land now or formerly of Robert & Carol Brumper, 4.00 feet, said boundary having a bearing of S 80°30'31"E;

HSG D6 456

EXHIBIT 1 TO SUPPLEMENT
PREMISES
PAGE 3 OF 6

LEGAL DESCRIPTION

EASTERLY:	AGAIN, by land now or formerly of C.B. & J.R. Kelly, 120.00 feet, said boundary having a bearing of S 01°51'40"W;
EASTERLY:	AGAIN, by land now or formerly of Walter & Brian Holinko, 251.93 feet, said boundary having a bearing of S 17°00'58"E;
SOUTHERLY:	By land now or formerly of Pauline Nemergut, 8.594 feet, said boundary having a bearing of S 77°10'51"W;
SOUTHERLY:	AGAIN, by land now or formerly of Pauline Nemergut, 96.60 feet, said boundary having a bearing of S 87°06'11"W;
SOUTHWESTERLY:	By land now or formerly of Belmar Corporation, 48.31 feet, said boundary having a bearing of N 13°55'47"W;
SOUTHWESTERLY:	AGAIN, by land now or formerly of Belmar Corporation, 66.23 feet, said boundary having a bearing of N 25°50'46"W;
SOUTHWESTERLY:	AGAIN, by land now or formerly of Belmar Corporation, 46.73 feet, said boundary having a bearing of N 33°26'08"W;
SOUTHWESTERLY:	AGAIN, by land now or formerly of Belmar Corporation, 72.44 feet, said boundary having a bearing of N 38°14'47"W;
SOUTHWESTERLY:	AGAIN, by land now or formerly of Belmar Corporation, 46.47 feet, said boundary having a bearing of N 40°31'50"W;
SOUTHWESTERLY:	AGAIN, by land now or formerly of Belmar Corporation, 75.01 feet, said boundary having a bearing of N 47°54'59"W;
SOUTHWESTERLY:	AGAIN, by land now or formerly of Belmar Corporation, 103.51 feet, said boundary having a bearing of N 45°27'05"W, all of said southwesterly boundaries being the center line of a stone wall;
SOUTHERLY:	by land now or formerly of Belmar Corporation, 58.12 feet, said boundary having a bearing of S 60°09'57"W.

Tax I.D. Number: 00432800

Being the same property conveyed to City Park Commerce Drive, LLC, a Connecticut limited liability company and CH Commerce Drive Associates, LLC, a limited liability company, as their interests may appear, Grantee, from Pilot Corporation of America, Grantor, by deed recorded 06/25/2014, as Book 1666, Page 608 of the Trumbull Town Clerk Records.

Being the same property conveyed to City Park Commerce Drive, LLC, a Connecticut limited liability company and CH Commerce Drive Associates, LLC, a Connecticut limited liability company, as their interests may appear, Grantee, from Pilot Corporation of America, Grantor, by deed recorded 06/25/2014, as Book 1666, Page 601 of the Trumbull Town Clerk Records.

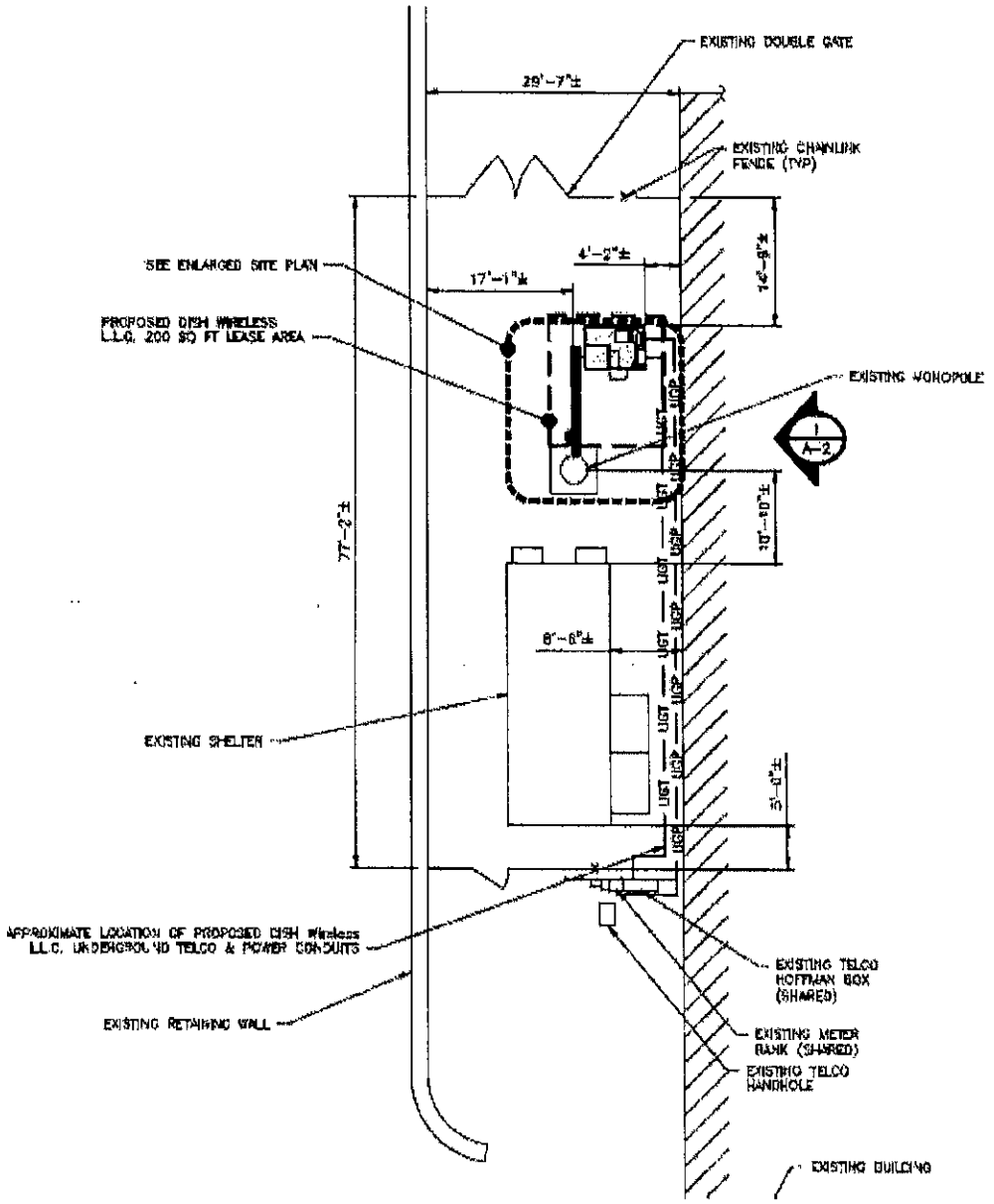
HSG DS HSG

Lessor Site ID & No.: Trumbull SE 4 CT / 469122
Lessee Site ID & No.: NJJER01153A

CONTRACT # _____

EXHIBIT 1 TO SUPPLEMENT
PREMISES
PAGE 4 OF 6

SITE PLAN



HSG HSG

Lessor Site ID & No.: Trumbull SE 4 CT / 469122
Lessee Site ID & No.: NJJER01153A

CONTRACT # _____

EXHIBIT 1 TO SUPPLEMENT
PREMISES
PAGE 5 OF 6

ENLARGED SITE PLAN

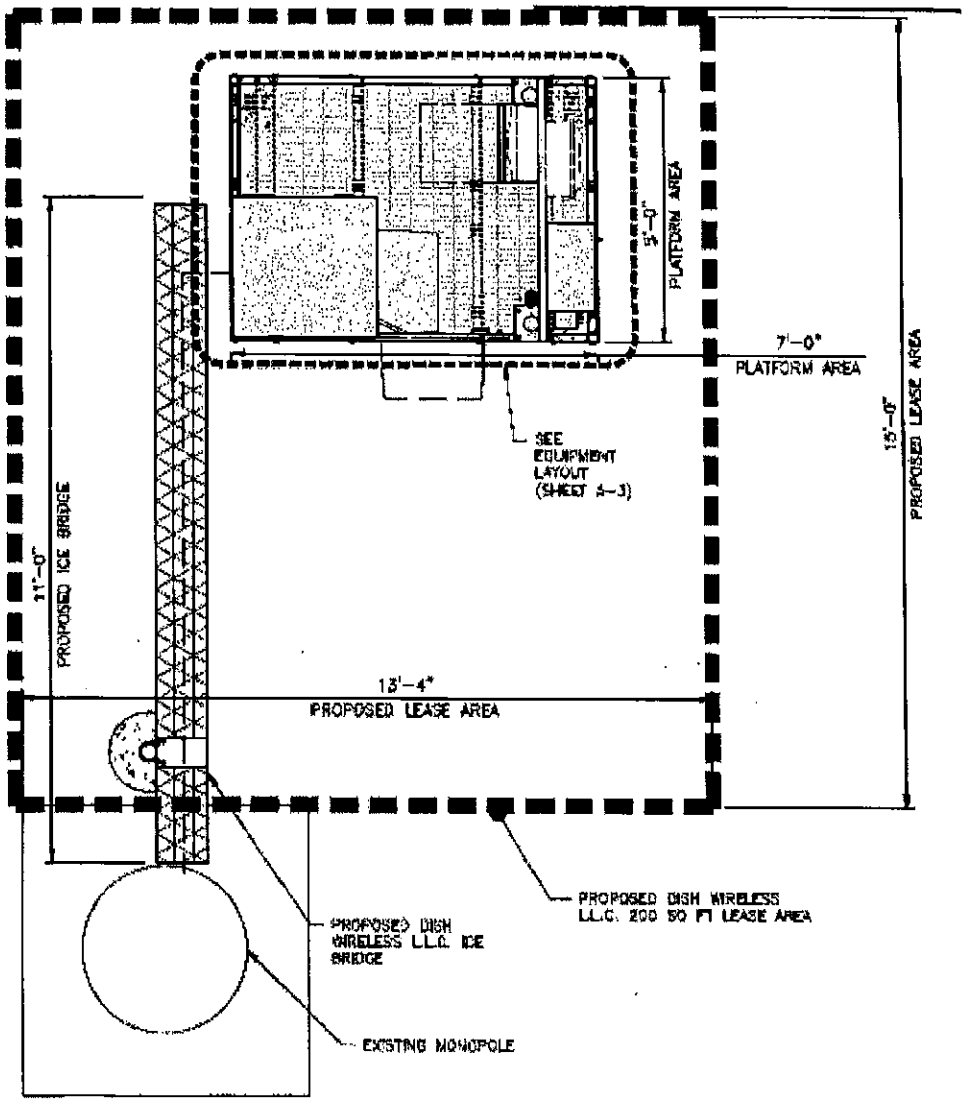


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EXHIBIT 1 TO SUPPLEMENT
PREMISES
PAGE 6 OF 6

TOWER ELEVATION

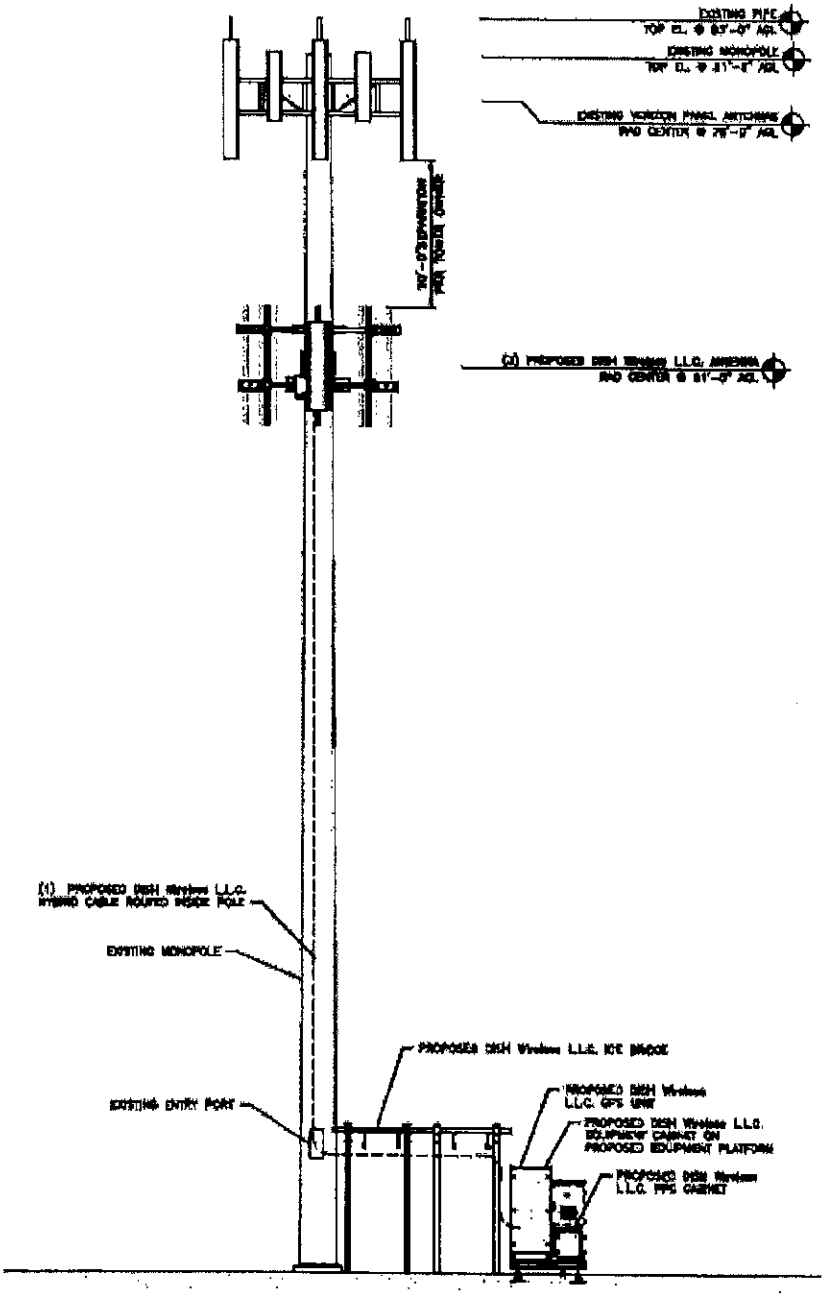

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EXHIBIT 2 TO SUPPLEMENT
SURVEY

N/A

HSG DS 456

EXHIBIT 3 TO SUPPLEMENT
LESSEE'S COMMUNICATIONS EQUIPMENT

Number of Antennas:	Three (3)
Antenna Manufacturer, Model and Type:	JMA (MX08FRO665-21) Panel Antennas
Dimension and Weight of Antenna:	72.0 x 20.0 x 8.0 inches & 64.5 lbs
Number of Transmission Lines (Coax and/or Hybrid):	One (1)
Diameter of Transmission Lines (Coax and/or Hybrid):	Hybrid Cable
Location of Antenna(s) (Approved RAD Center):	61'
Direction of Radiation (Azimuth):	0 / 140 / 250
MW Dish diameter:	N/A
Approved RAD Center for MW Dish:	N/A
Additional Equipment to be placed on Tower:	Three (3) Fujitsu (TA08025-B605) RRUs 15.8 x 15.0 x 9.1 inches & 75.0 lbs Three (3) Fujitsu (TA08025-B604) RRUs 15.8 x 15.0 x 7.9 inches & 63.9 lbs One (1) Raycap (RDIDC-9181-PF-48) OVP 19.0 x 14.5 x 8.0 inches & 21.9 lbs
Dimensions of Lessee's Shelter (for additional equipment not scheduled hereon):	200 SF (13'4" x 15')
Generator Specifications:	No generator proposed
Additional Ground Space for Generator	N/A

HSG DS HSG

Lessor Site ID & No.: Trumbull SE 4 CT / 469122
Lessee Site ID & No.: NJJER01153A

CONTRACT # _____

EXHIBIT 4 TO SUPPLEMENT
PRIME LEASE

VOL 1 6 6 6 PAGE 0 6 0 1

James P. White, Jr., Esq.
Pullman & Comley LLC
850 Main Street, 8th Floor
Bridgeport, CT 06604

Doc ID: 003561960007 Type: LAN
Book 1666 Page 601 - 607
Filed 11103

WARRANTY DEED
60 COMMERCE DRIVE

11103

PILOT CORPORATION OF AMERICA, a Delaware corporation with an office at 3855 Regent Boulevard, Jacksonville, Florida 32224 (hereinafter referred as to the "Grantor") for the consideration of [redacted] paid, grants to

CITY PARK COMMERCE DRIVE, LLC, a Connecticut Limited Liability Company an undivided 28.8% interest and to **CH COMMERCE DRIVE ASSOCIATES, LLC** a Connecticut Limited Liability Company an undivided 71.2% interest, both having an address of C/O Cambridge Hanover, Inc., 65 Locust Avenue, Suite 200, New Canaan, Connecticut 06840 (collectively hereinafter referred to as the "Grantee"), in and to

> ALL THAT CERTAIN piece and parcel of land more particularly described on Schedule A attached hereto and made a part hereof, together with any and all buildings and other improvements now situated thereon (the "Premises") and subject to those exceptions to title ("Permitted Exceptions") set forth on Schedule B attached hereto and made a part hereof.

TO HAVE AND TO HOLD the Premises hereby conveyed, with the appurtenances thereof, to the Grantee and unto the Grantee's successors and assigns forever, to its and their own proper use and behoof.

AND FURTHERMORE, the Grantor will warrant and forever defend the Premises hereby conveyed, with the appurtenances thereof conveyed to the Grantee, its successors and assigns against the claims of all persons owning, holding, or claiming by, through or under the Grantor, but not otherwise.

Signed this 6th day of June, 2014.

Witnessed by:

Witness James P. White, Jr.

Witness Anne Marie Burke

PILOT CORPORATION OF AMERICA

By: _____
Nicholas Niejelow
its: Vice President N.B.D.

Conveyance Tax Received
Suzanne Burr Monaco
State Town Clerk of Trumbull Town

55625.00 11125.00

HSG HSG

Lessor Site ID & No.: Trumbull SE 4 CT / 469122
Lessee Site ID & No.: NJJER01153A

CONTRACT # _____

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STATE OF CONNECTICUT)
) ss: Bridgeport
COUNTY OF FAIRFIELD)

On this the 13th day of June, 2014, before me, the undersigned officer, personally appeared Nicholas Niejelow, who acknowledged himself to be the Vice President N.B.D. of **PILOT CORPORATION OF AMERICA** a Delaware corporation authorized to do business in the State of Connecticut and that he as such Vice President N.B.D., being duly authorized so to do, executed the foregoing instrument for the purposes therein contained by signing the name of the corporation by himself as such Vice President N.B.D.

IN WITNESS WHEREOF, I hereunto set my hand,

James P. White, Jr.
Commissioner of the Superior Court

Grantee Mailing Address:
C/O Cambridge Hanover, Inc.
65 Locust Avenue, Suite 200
New Canaan, CT 06840

HSG DS HSG

SCHEDULE A

PROPERTY DESCRIPTION

All that certain piece or parcel of land with all of the improvements thereon situated in the Town of Trumbull, County of Fairfield and State of Connecticut, containing 14.02 acres and shown on a certain map entitled "Resubdivision Plan, Lot No. 4, Commerce Drive & Huntington Road, Trumbull, Connecticut, Prepared for David Mack" Prepared by J. & D. Kasper & Associates, Engineers, Surveyors, Planners, Bridgeport, Connecticut, Scale 1" = 50' dated Feb. 20, 1979, Sheet 2 of 3, on file in the Trumbull Town Clerk's Office and further shown on a revision of said map dated Dec. 4, 1981 and bounded and described as follows:

WESTERLY: In part, by land now or formerly of Dow Corning Corp., in part, by the terminus of Commerce Drive, as shown on said map, and in part, by land now or formerly of Optique DuMonde, Ltd., in all, 793.21 feet, said boundary having a bearing of N 19°37'25"W, the termini of said boundary being marked by iron pipes;

NORTHWESTERLY By land now or formerly of Optique DuMonde, Ltd., 264.90 feet, said boundary having a bearing of N 25°32'15"E, the termini of said boundary being marked by iron pipes;

NORTHERLY: By land now or formerly of Christine Lundgren, 47.14 feet, said boundary having a bearing of S 79°31'53"E;

NORTHERLY: AGAIN, by land now or formerly of Christine Lundgren, 60.33 feet, said boundary having a bearing of N 83°40'15"E;

NORTHERLY: AGAIN, by land now or formerly of Christine Lundgren, 26.91 feet, said boundary having a bearing of N 77°19'39"E;

NORTHERLY: AGAIN, by land now or formerly of Christine Lundgren, 58.83 feet, said boundary having a bearing of N 75°33'27"E;

NORTHERLY: AGAIN, by land now or formerly of Christine Lundgren, 66.26 feet, said boundary having a bearing of N 77°36'19"E;

NORTHERLY: AGAIN, in part by land now or formerly of Christine Lundgren and in part by land now or formerly of E.V. & N.B. Bowen, in all, 51.36 feet, said boundary having a bearing of N 75°24'40"E;

NORTHERLY: AGAIN, by land now or formerly of E.V. & M.B. Bowen, 38.96 feet, said boundary having a bearing of N 80°42'12"E;

NORTHERLY: AGAIN, by land now or formerly of E.V. & M.B. Bowen, 76.08 feet, said boundary having a bearing of N 76°46'19"E, all of said northerly boundaries being the center line of a stone wall;

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EASTERLY:	In part by land now or formerly of E.J. & A.M. Overwise and in part by land now or formerly of Thomas & Carol Donegan, in all, 222.47 feet, said boundary having a bearing of S 25°36'55"E;
EASTERLY:	AGAIN, in part by land now or formerly of Thomas & Carol Donegan, in part by land now or formerly of R.D. & L.S. Sutton, and in part by land now or formerly of M.H. & V.M. Shaw, in all, 167.89 feet, said boundary having a bearing of S 17°42'45"E;
EASTERLY:	AGAIN, in part by land now or formerly of M.H. & V.M. Shaw and in part by land now or formerly of Doris Cheney and Linda Beeman, in all, 205.70 feet, said boundary having a bearing of S 14°15'35"E;
EASTERLY:	AGAIN, in part by land now or formerly of Doris Cheney and Linda Beeman and in part by land now or formerly of Peter Everetts, in all, 211.25 feet, said boundary having a bearing of S 07°16'25"E;
SOUTHEASTERLY:	By land now or formerly of Timothy & Carol Ryan, 24.59 feet, said boundary having a bearing of S 60°35'50"W, said boundary being the center line of a stone wall;
SOUTHEASTERLY:	AGAIN, by land now or formerly of Timothy & Carol Ryan, 88.04 feet, said boundary having a bearing of S 61°24'49"W, said boundary being the center line of a stone wall;
SOUTHEASTERLY:	AGAIN, by land now or formerly of Timothy & Carol Ryan, 12.65 feet, said boundary having a bearing of S 67°09'05"W, said boundary being the center line of a stone wall;
EASTERLY:	AGAIN, in part by land now or formerly of Timothy and Carol Ryan and in part by land now or formerly of Robert & Carol Brumper, in all, 192.32 feet, said boundary having a bearing of S 07°52'21"W;
NORTHERLY:	AGAIN, by land now or formerly of Robert & Carol Brumper, 4.00 feet, said boundary having a bearing of S 80°30'31"E;
EASTERLY:	AGAIN, by land now or formerly of C.B. & J.R. Kelly, 120.00 feet, said boundary having a bearing of S 01°51'40"W;
EASTERLY:	AGAIN, by land now or formerly of Walter & Brian Holinko, 251.93 feet, said boundary having a bearing of S 17°00'58"E;
SOUTHERLY:	By land now or formerly of Pauline Nemergut, 8.594 feet, said boundary having a bearing of S 77°10'51"W;
SOUTHERLY:	AGAIN, by land now or formerly of Pauline Nemergut, 96.60 feet, said boundary having a bearing of S 87°06'11"W;

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SOUTHWESTERLY: By land now or formerly of Belmar Corporation, 48.31 feet, said boundary having a bearing of N 13°55'47"W;

SOUTHWESTERLY: AGAIN, by land now or formerly of Belmar Corporation, 66.23 feet, said boundary having a bearing of N 25°50'46"W;

SOUTHWESTERLY: AGAIN, by land now or formerly of Belmar Corporation, 46.73 feet, said boundary having a bearing of N 33°26'08"W;

SOUTHWESTERLY: AGAIN, by land now or formerly of Belmar Corporation, 72.44 feet, said boundary having a bearing of N 38°14'47"W;

SOUTHWESTERLY: AGAIN, by land now or formerly of Belmar Corporation, 46.47 feet, said boundary having a bearing of N 40°31'50"W;

SOUTHWESTERLY: AGAIN, by land now or formerly of Belmar Corporation, 75.01 feet, said boundary having a bearing of N 47°54'59"W;

SOUTHWESTERLY: AGAIN, by land now or formerly of Belmar Corporation, 103.51 feet, said boundary having a bearing of N 45°27'05"W, all of said southwesterly boundaries being the center line of a stone wall;

SOUTHERLY: By land now or formerly of Belmar Corporation, 58.12 feet, said boundary having a bearing of S 60°09'57"W.

H54 H56

SCHEDULE B

PERMITTED EXCEPTIONS

1. Any and all provisions of any ordinance, municipal regulation or public or private law which regulate the use of the Premises, including but not limited to zoning, planning and building laws, rules and regulations established in and for the Town of Trumbull.

2. Real property taxes of the Town of Trumbull becoming due and payable after the date of the Deed to which this Schedule is attached.

3. Fire district taxes to the Nichols Fire District becoming due and payable after the date of the Deed to which this Schedule is attached.

4. Assessment or use fees of governmental authority from municipal or public works, becoming due and payable after the date of the Deed to which this Schedule is attached.

5. Such state of facts as would be disclosed by a current accurate survey and by a personal inspection of the Premises provided the same do not render title unmarketable.

6. An easement in favor of The United Illuminating Company dated September 21, 1964 and recorded in the Trumbull Land Records in Volume 167 at Page 364 and the document intending to correct such easement dated September 30, 1964 and recorded in said Land Records in Volume 168 at Page 19.

7. A right of way in favor of Bridgeport Hydraulic Company dated September --, 1964 and recorded in said Trumbull Land Records in Volume 167 at Page 578.

8. An easement for the installation of and maintenance of utility lines as referred to in a deed recorded in the Trumbull Land records in Volume 187 at Page 402.

9. An easement to Optique DuMonde, Limited, recorded on April 13, 1978 in Volume 392 at Page 105 of the Trumbull Land Records.

10. A Buffer Strip as shown on the above described map.

11. An encroachment, as shown on the map described in Schedule A attached hereto.

12. Rights of others in and to the brook crossing property.

13. Inland Wetlands and Water Courses Commission Notice recorded in Volume 462 at Page 449 of the Trumbull Land Records.

14. Inland Wetlands and Water Courses Commission Notice recorded in Volume 464 at Page 197 of the Trumbull Land Records.

15. Inland Wetlands and Water Courses Commission Notice recorded in Volume 488 at Page 189 of the Trumbull Land Records.

HSG HSG

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16. Special Permit recorded in Volume 503 at Page 10 of the Trumbull Land Records.

17. Special Permit recorded in Volume 544 at Page 49 of the Trumbull Land Records.

18. Special Permit recorded in Volume 629 at Page 402 of the Trumbull Land Records.

19. Access Agreement by and between Pilot Corporation of America and The Southern New England Telephone Company recorded in Volume 662 at Page 229 of the Trumbull Land Records.

20. Utility Easement in favor of The United Illuminating Company recorded in Volume 1579 at Page 477 of the Trumbull Land Records.

21. Note, Easements and Conditions as shown on Map Nos. 2063 and 2213.

22. Trumbull Inland Wetlands and Watercourses Commission Permit Approval dated April 10, 2012, effective April 25, 2012 and filed in the office of the Trumbull Town Clerk.

23. Trumbull Planning and Zoning Commission Approval dated April 26, 2012 and effective May 10, 2012 and recorded in Volume 1589 at Page 12 of the Trumbull Land Records.

24. Land Lease Agreement dated October 18, 2013 by and between Pilot Corporation of America ("Lessor") and Cellco Partnership, d/b/a Verizon Wireless ("Lessee") as referred to in Memorandum of Land Lease Agreement dated October 18, 2013 and recorded in Volume 1651, at Page 901 of the Trumbull Land Records.

TOWN CLERK OFFICE, TRUMBULL, CT JUN 2 5 2014
RECEIVED FOR RECORD
AT 2:24 P M. ATTEST Eleanor A Murphy
TOWN CLERK

HSG

HSG

James P. White, Jr., Esq.
Pullman & Comley LLC
850 Main Street, 8th Floor
Bridgeport, CT 06604

ASSIGNMENT AND ASSUMPTION OF LEASE

THIS ASSIGNMENT AND ASSUMPTION OF THE LEASE AND SECURITY DEPOSIT (the "Assignment") is made and entered into as of the 19th day of June, 2014 by and between **PILOT CORPORATION OF AMERICA**, a Delaware corporation ("**Assignor**"), and **CITY PARK COMMERCE DRIVE, LLC** and **CH COMMERCE DRIVE ASSOCIATES, LLC**, Connecticut limited liability companies ("collectively, **Assignee**").

RECITALS:

WHEREAS, Assignor and Assignee entered into that certain Purchase and Sale Agreement, dated as of April 15, 2014, and as amended from time to time (as amended, the "**Agreement**"), for the purchase and sale of the building commonly known by the street address of 60 Commerce Drive, Trumbull, Connecticut (the "**Premises**"); and.

WHEREAS, in connection with the consummation of the transaction contemplated under the Agreement, Assignor and Assignee desire to execute this Assignment.

NOW, THEREFORE, in consideration of good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties agree as follows:

1. **Recitals.** The foregoing recitals are hereby incorporated in the body of this Assignment as if fully rewritten and restated herein.

2. **Assignment of Lease.** Assignor hereby sells, transfers and assigns to Assignee all of its right, title and interest in and to the certain lease between Assignor, as Landlord, and Cellco Partnership d/b/a Verizon Wireless, as Tenant, dated October 18, 2013 (collectively, the "**Lease**"), subject, however, to the terms, covenants and conditions of the Lease and this Assignment. Notwithstanding the foregoing, however, Assignor nevertheless retains, on a nonexclusive basis, the benefit and protection of any indemnity(ies) provided by the tenant under the Lease for the benefit of the landlord.

3. **Assumption of Obligations.** Assignee hereby accepts the assignment of the Lease, the rents due thereunder subject to the terms and conditions hereof, and from and after the date hereof, Assignee hereby assumes and shall be responsible for and shall perform all of those obligations imposed on the lessor or landlord under the Lease, which obligations first arise or accrue on or after the date hereof (the "**Closing**").

4. **Assignee's Indemnification.** Assignee hereby indemnifies, protects, defends and holds Assignor and Assignor's members and managers and their respective successors, and assigns, harmless from any and all claims, damages, losses, suits, proceedings, costs and expenses, including, without limitation, reasonable attorneys' fees (collectively, "**Losses**"), both known or unknown, present and future, at law or in equity, arising out of, by virtue of or in any

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way related to the breach by Assignee of (or Assignee's failure to timely perform) any or all of the obligations imposed on the lessor or the landlord under the Lease, which obligations accrue from and after the date of the Closing.

5. **Assignor's Indemnification.** Assignor hereby indemnifies, protects, defends and holds Assignee, and Assignee's members and managers, and all of their respective successors and assigns harmless from any and all Losses, both known and unknown, present and future, at law or in equity and arising out of, by virtue of, or related in any way to, the breach by Assignor of (or Assignor's failure to timely perform) any or all of the obligations imposed on the lessor or the landlord under the Lease, which obligations accrue prior to the date of the Closing.

6. **Counterparts.** This Assignment may be executed in one or more identical counterparts, all of which, when taken together shall constitute one and the same instrument.

7. **Governing Law.** This Assignment shall be governed by and construed in accordance with the laws of the State of Connecticut.

8. **Partial Invalidity.** The provisions hereof shall be deemed independent and severable, and the invalidity or enforceability of any one provision shall not affect the validity or enforceability of any other provision hereof.

IN WITNESS WHEREOF, Assignor and Assignee have executed this Assignment as of the date first above written.

Witnessed by:

James P. White, Jr.

Anne Marie Burke

_____

_____

ASSIGNOR:
PILOT CORPORATION OF AMERICA

By: _____
Name: Nicholas Niejelow
Title: Vice President N.B.D.

ASSIGNEE:
CITY PARK COMMERCE DRIVE, LLC a Connecticut limited liability company

By: CH Commerce Drive Management, LLC a Connecticut limited liability company, its Manager

By: _____
Jonathan P. Garrity, President

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ASSIGNEE:
CH COMMERCE DRIVE ASSOCIATES, LLC
a Connecticut limited liability company

_____

By: CH Commerce Drive Management, LLC a Connecticut limited liability company, its Manager

_____

By: _____
Jonathan P. Garrity, President

STATE OF CONNECTICUT)
) ss: Bridgeport
COUNTY OF FAIRFIELD)

On this the 18th day of June, 2014, before me, the undersigned officer, personally appeared Nicholas Niejelow, who acknowledged himself to be the Vice President N.B.D. of **PILOT CORPORATION OF AMERICA** a Delaware corporation authorized to do business in the State of Connecticut and that he as such Vice President N.B.D., being duly authorized so to do, executed the foregoing instrument for the purposes therein contained by signing the name of the corporation by himself as such Vice President N.B.D.

IN WITNESS WHEREOF, I hereunto set my hand.

_____
James P. White, Jr.
Commissioner of the Superior Court

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way related to the breach by Assignee of (or Assignee's failure to timely perform) any or all of the obligations imposed on the lessor or the landlord under the Lease, which obligations accrue from and after the date of the Closing.

5. **Assignor's Indemnification.** Assignor hereby indemnifies, protects, defends and holds Assignee, and Assignee's members and managers, and all of their respective successors and assigns harmless from any and all Losses, both known and unknown, present and future, at law or in equity and arising out of, by virtue of, or related in any way to, the breach by Assignor of (or Assignor's failure to timely perform) any or all of the obligations imposed on the lessor or the landlord under the Lease, which obligations accrue prior to the date of the Closing.

6. **Counterparts.** This Assignment may be executed in one or more identical counterparts, all of which, when taken together shall constitute one and the same instrument.

7. **Governing Law.** This Assignment shall be governed by and construed in accordance with the laws of the State of Connecticut.

8. **Partial Invalidity.** The provisions hereof shall be deemed independent and severable, and the invalidity or enforceability of any one provision shall not affect the validity or enforceability of any other provision hereof.

IN WITNESS WHEREOF, Assignor and Assignee have executed this Assignment as of the date first above written.

Witnessed by:

_____

_____

Michael P. Murray

Nancy A. Laskowski

ASSIGNOR:
PILOT CORPORATION OF AMERICA

By:_____
Name: Nicholas Niejelow
Title: Vice President N.B.D.

ASSIGNEE:
CITY PARK COMMERCE DRIVE, LLC a Connecticut limited liability company

By: CH Commerce Drive Management, LLC a Connecticut limited liability company, its Manager

By:_____
Jonathan P. Garrity, President

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Michael P. Murray

Nancy A. Laskowski

Nancy A. Laskowski

ASSIGNEE:
CH COMMERCE DRIVE ASSOCIATES, LLC
a Connecticut limited liability company

By: CH Commerce Drive Management, LLC a Connecticut limited liability company, its Manager

By: _____
Jonathan P. Garrity, President

STATE OF CONNECTICUT)
) ss: Bridgeport
COUNTY OF FAIRFIELD)

On this the 18th day of June, 2014, before me, the undersigned officer, personally appeared Nicholas Niejelow, who acknowledged himself to be the Vice President N.B.D. of **PILOT CORPORATION OF AMERICA** a Delaware corporation authorized to do business in the State of Connecticut and that he as such Vice President N.B.D., being duly authorized so to do, executed the foregoing instrument for the purposes therein contained by signing the name of the corporation by himself as such Vice President N.B.D.

IN WITNESS WHEREOF, I hereunto set my hand.

_____
James P. White, Jr.
Commissioner of the Superior Court

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STATE OF CONNECTICUT)
) ss:
COUNTY OF FAIRFIELD)

On this the 18th day of June, 2014, before me, the undersigned officer, personally appeared Jonathan P. Garrity, who acknowledged himself to be the President of CH Commerce Drive Management, LLC a Connecticut limited liability company, Manager of CH Commerce Drive Associates, LLC, a Connecticut limited liability company and that he as such President, being duly authorized so to do, executed the foregoing instrument for the purposes therein contained by signing the name of CH Commerce Drive Management, LLC in its capacity as Manager of CH Commerce Drive Associates, LLC, by himself as such President.

IN WITNESS WHEREOF, I hereunto set my hand.

Michael P. Murphy
Commissioner of the Superior Court
Notary Public
My commission expires:

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Lessor Site ID & No.: Trumbull SE 4 CT / 469122
Lessee Site ID & No.: NJJER01153A

CONTRACT # _____

STATE OF CONNECTICUT)
) ss:
COUNTY OF FAIRFIELD)

On this the 18th day of June, 2014, before me, the undersigned officer, personally appeared Jonathan P. Garrity, who acknowledged himself to be the President of CH Commerce Drive Management, LLC a Connecticut limited liability company, Manager of City Park Commerce Drive, LLC a Connecticut limited liability company and that he as such President, being duly authorized so to do, executed the foregoing instrument for the purposes therein contained by signing the name of CH Commerce Drive Management, LLC in its capacity as Manager of City Park Commerce Drive, LLC, by himself as such President.

IN WITNESS WHEREOF, I hereunto set my hand.

Michael P. Murray
Commissioner of the Superior Court
~~Notary~~ Public
My ~~commission~~ expires:

Seal

Grantees' Mailing Address:
C/O Cambridge Hanover, Inc.
65 Locust Avenue, Suite 200
New Canaan, CT 06840

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After recording please return to:
Blue Sky Towers II, LLC
86 West Street
Chagrin Falls, Ohio 44022

COMMUNICATIONS FACILITY EASEMENT AGREEMENT
AND ASSIGNMENT OF TOWER-RELATED LICENSE
(CT-5046 Trumbull II)

THIS COMMUNICATIONS FACILITY EASEMENT AGREEMENT AND ASSIGNMENT OF TOWER-RELATED LICENSE (this "Agreement") is made as of December 19, 2018 (the "Effective Date") by and between **CH COMMERCE DRIVE ASSOCIATES, LLC** and **CITY PARK COMMERCE DRIVE, LLC** (together, "Grantor"), having an address at 65 Locust Avenue, Suite 200, New Canaan, CT 06840, and **BLUE SKY TOWERS II, LLC**, a Delaware limited liability company, as grantee ("Grantee"), having an address at 352 Park Street, Suite 106, North Reading, MA 01864 Attention: Jim Rech.

A. Grantor is the owner of certain real property located at 60 Commerce Drive in the Town of Trumbull, County of Fairfield, State of Connecticut as more particularly described on **Exhibit A** attached hereto and incorporated herein by reference ("Grantor's Property"), a portion of which (the "Easement Premises") is used by a tenant pursuant to the occupancy agreement identified on **Exhibit B** attached hereto and incorporated herein by reference (the "Existing Tower-Related License" and together with the additional occupancy agreements entered into by Grantee in the future pursuant to this Agreement [the "Additional Tower-Related Licenses"], the "Tower-Related Licenses") for the placement of the Communications Equipment (defined below) of such tenant (the "Existing Tenant Equipment").

B. Pursuant to a Purchase and Sale Agreement dated October 15, 2018, between Grantor, as seller, and Grantee, as buyer (the "Purchase Agreement"), Grantor has agreed to sell to Grantee, among other things, (i) the exclusive right to all space in, on, over, under and around Grantor's Property necessary for the maintenance of the Existing Tenant Equipment on the Easement Premises and the placement and maintenance from time to time of additional Communications Equipment in, on or around the Easement Premises and (ii) all assets, rights and improvements owned by Grantor relating to placement of the Existing Tenant Equipment on the Easement Premises, including the existing Tower-Related License, antenna support structures, equipment structures or closets, utility lines and connections.

C. In order to effectuate the transfer of the rights described in Recital A, Grantor has agreed, (i) to grant to Grantee an exclusive easement in, on, over, under and around the Easement Premises and a

non-exclusive easement in, on, over, under and around such portions of Grantor's Property necessary to support Existing Tenant Equipment and future Communications Equipment installed within the Easement Premises and (ii) to grant to Grantee any non-exclusive easements needed to provide for access and utilities to the Communications Equipment installed within the Easement Premises.

NOW, THEREFORE, on the terms and subject to the conditions set forth in this Easement, the Easement Payment described in Section 5 and other good and valuable consideration, the parties agree as follows:

1. Grant of Easement. Upon the terms and conditions set forth herein, Grantor hereby grants, bargains and conveys to Grantee an exclusive easement in, to, under, over and around (i) the Easement Premises (including, without limitation, all airspace above and around the ground space upon which is located the Existing Tenant Equipment and all ground space appurtenances) upon which is currently located the Existing Tenant Equipment, as such space may be further described in the Existing Tower-Related License and as described on **Exhibit C** attached hereto and incorporated herein by reference, and a non-exclusive easement in, to, under, over and around those portions of Grantor's Property necessary for the construction, installation, maintenance, repair, replacement, improvement, operation and removal of the Existing Tenant Equipment so long as Grantee's use of Grantor's Property does not materially interfere with Grantor's normal use of Grantor's Property.

2. Access and Utility Easements.

2.1 Access Easements. Grantor hereby grants, bargains and conveys to Grantee, its tenants and licensees, and their successors and assigns, irrevocable, non-exclusive and unconditional easements, which Grantor shall maintain in a manner to allow twenty-four (24) hours a day for ingress and egress (vehicular and pedestrian) at all times, from a publicly dedicated roadway to the Easement Premises over, upon, across and through Grantor's Property, and adjoining lands and rights-of-way owned by Grantor as may be required by Grantee and its tenants and licensees for the purpose of construction, installation, maintenance, repair, replacement, improvement, operation and removal of the Communications Equipment within the Easement Premises including any antenna support structures, conduits, risers, and other necessary appurtenances and for telephone lines and power lines used in connection with the Communications Equipment, including the access easement more particularly described on **Exhibit D** attached hereto and incorporated herein by reference (the "Access Easements"). Grantee will notify Grantor in advance of its need to install, maintain or repair its cables, wires, related fixtures and Communications Equipment within the Easement Premises located in the Easement Premises; EXCEPT HOWEVER, in the case of an emergency whereupon notification shall follow.

2.2 Utility Easements. Grantor hereby grants, bargains and conveys to Grantee, its tenants and licensees, and their successors and assigns, or to such utility company which Grantee shall designate, and Grantee, its tenants and licensees or such utility company is hereby given and granted irrevocable, non-exclusive and unconditional easements twenty-four (24) hours a day for providing utilities to the Easement Premises, including the utility easement more particularly described on **Exhibit E** attached hereto and incorporated herein by reference (hereinafter, the "Utility Easement"). The Utility Easement shall be for the installation, maintenance and operation (whether by Grantee or by Grantee's designated utility company) of necessary utilities from the point of connection with the utility company's distribution

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network to Grantee's or its tenants' or licensees' Communications Equipment located on the Easement Premises. The Utility Easement shall be sufficient for providing the applicable utility services to the Easement Premises. It is understood that Grantee and the utility company providing utility services shall have access to all areas of the Easement Premises, Grantor's Property and rights-of-way owned by Grantor as necessary for the installation, maintenance and/or repair of such utility services provided that such access does not materially interfere with Grantor's normal use of Grantor's Property or rights of way owned by Grantor. Grantee will notify Grantor in advance of its need to install, maintain or repair its cables, wires, related fixtures and Communications Equipment located in the Easement Premises; EXCEPT HOWEVER, in the case of an emergency whereupon notification shall follow.

2.3 Utility Lines. Grantee and its tenants and licensees may have electrical current meters installed on the Easement Premises. Grantee shall have the right to run the utility lines directly or in such a manner as may be reasonably necessary from the utility source to the Communications Equipment including the right to install cables and wires in and Grantor's Property and the Easement Premises; provided, however, Grantor shall have the right to approve the location and manner of installation of such cables and wires but such approval shall not be unreasonably withheld or delayed. The cost of such meter and the installation, maintenance and repairs thereof shall be paid by Grantee or its tenants and licensees. Grantee and any utility company providing services to Grantee shall have access to all portions of the Easement Premises, Grantor's Property or other adjacent or adjoining land of Grantor as is reasonably necessary for the installation, maintenance and/or repair of such utility services provided that such access does not materially interfere with Grantor's normal use of Grantor's Property or such adjoining or adjacent land. Grantee will notify Grantor in advance of its need to install, maintain or repair its cables, wires, related fixtures and Communications Equipment located in the Easement Premises; EXCEPT HOWEVER, in the case of an emergency whereupon notification shall follow.

3. Tower-Related Licenses.

3.1 Assignment of Existing Tower-Related License. Grantor hereby transfers and assigns to Grantee as of the Effective Date all of its right, title and interest in, to and under the Existing Tower-Related License identified on **Exhibit B** and any amendments thereto, including without limitation, all rents, and other monies due to Grantor. Grantor and Grantee intend that this Easement serve as an absolute assignment and transfer to Grantee of the Existing Tower-Related License and all rents and other monies due Grantor pursuant to the Existing Tower-Related License. Grantor designates Grantee as the lessor under the Existing Tower-Related License and Grantee assumes the obligations and liabilities of Grantor under the Existing Tower-Related Licenses only to the extent that such obligations and liabilities (i) are not the responsibility of the Grantor pursuant to the terms of this Easement and (ii) accrue on or after the Effective Date. It is specifically agreed that Grantor will retain and continue to be responsible for the provisions of the Existing Tower-Related Licenses that can only be satisfied by Grantor as owner of Grantor's Property including without limitation (a) obligations relating to the ownership and use of Grantor's Property, (b) all maintenance and repair obligations relating to Grantor's Property, (c) the payment of real property taxes and (d) any covenant or obligation of Grantor relating to the environmental condition of Grantor's Property.

3.2 Additional Tower-Related Licenses. To facilitate Grantee's right to place and maintain from time to time additional Communications Equipment on the Easement Premises, Grantor hereby grants to

Grantee the authority to negotiate and consummate Additional Tower-Related License for the Easement Premises (which Additional Tower-Related Licenses shall be in form consistent with industry standards for placement of Communications Equipment in, on or around property similar to Grantor's Property). Grantor ratifies and acknowledges the right of Grantee to enter into such agreements, and Grantor shall be bound by such agreements throughout the term of this Agreement.

4. Term. Commencing upon the Effective Date, the Term of this Easement shall be for the period of thirty-five (35) years ending on the day prior to the thirty-fifth (35th) anniversary of the Effective Date. Notwithstanding the foregoing, in the event Grantee and its tenants and licensees voluntarily cease to use the Easements Premises for a period of more than five (5) year (for reasons other than casualty, condemnation or Act of God), the Easements granted hereunder shall be deemed surrendered. Grantee may surrender the Easements for any reason or at any time by giving thirty (30) days' notice to Grantor. Upon surrender, this Easement, shall be terminated, and Grantor and Grantee shall execute and record such documents reasonably required to terminate this Easement. This Easement may not be terminated by Grantor.

5.

(a) Easement Payment. On or about the Effective Date, Grantee shall pay to Grantor one, and only one, lump-sum payment in an amount equal to the purchase price set forth in the Purchase Agreement (the "Purchase Price") as payment in full for the Term. Grantor hereby acknowledges and agrees that the Purchase Price constitutes all payments and other amounts due and payable by Grantee for the Term and that Grantor shall not be entitled to any other compensation, fees, commissions, reimbursements, contributions, purchase monies or other payments under this Easement or otherwise in connection with the Purchase Agreement, this Agreement, the non-exclusive easements granted hereunder, the assignment of the Existing Tenant-Related License or the performance of Grantor's other obligations under this Agreement.

Intentionally omitted for recording purposes

6. Use. Grantee shall use the Easement Premises only for the purpose of constructing, installing, maintaining, repairing, replacing, improving, operating and removing such Communications Equipment reasonably required by Grantee and its tenants and licensees for use as a telecommunications facility and any other incidental activities or activities relating thereto as may be required or permitted by applicable laws, rules, regulations or guidelines. As used in this Easement, "Communications Equipment" shall include but is not limited to the following equipment, whether owned by Grantee or any of its tenants or licensees: (a) antenna support structures (including towers) and building(s) and cabinets to house equipment, including generators, necessary to operate the equipment; (b) flexible coaxial transmission

lines between antennae and telecommunications equipment; (c) radio communication antennas and equipment consisting of transmitters, receivers, microwave dishes and accessories; (d) a fence to enclose all improvements, including the antenna support structures (including towers), buildings, cabinets and all equipment; and (e) any and all equipment, supplies or materials related to the foregoing. All improvements constructed or installed by Grantee upon the Easement Premises shall be at Grantee's expense. Grantee, or any assignee or tenant of Grantee, may construct or erect such additional storage structures or otherwise add or modify its Communications Equipment or telecommunications equipment, as the case may be, on the Easement Premises as reasonably required for the maintenance or operation of the Communications Equipment, or any telecommunications equipment of an assignee or tenant or licensee. Grantee will not use the Easement Premises, the Access Easement or the Utility Easement in a manner that interferes with Grantor's use of Grantor's Property.

7. Insurance. Grantee shall, at its expense, maintain during the Term, comprehensive general liability and property liability insurance with liability limits of not less than Two Million Dollars ($2,000,000.00) for injury to or death of one or more persons or damage to or destruction of property in any one occurrence. Grantor shall be named as an additional insured, as its interest may appear, and the policies shall contain cross liability endorsements. Grantee may carry said insurance under a blanket policy. Grantee shall deliver to Grantor, upon request, certificates evidencing the existence and amounts of such insurance. No policy shall be cancelable or subject to reduction of coverage except after ten (10) days prior written notice to Grantor.

8. Defaults and Remedies:

(a) Notwithstanding anything in this Easement to the contrary, neither Grantor or Grantee shall be in default under this Easement for failure to perform any obligation under this Easement until thirty (30) days after receipt of written notice of the act or omission constituting the default; provided, however, if any such default cannot reasonably be cured within thirty (30) days, neither party shall be deemed to be in default under this Easement if such defaulting party commences to cure such default within said thirty (30) day period and thereafter diligently pursues such cure to completion.

(b) Should Grantee fail to perform any obligations under this Easement and such breach shall continue uncured thirty (30) days following the receipt of written notice, as provided in paragraph 8(a) above, Grantor may seek specific performance or actual damages or invoke any other remedies available in law or in equity except for termination of this Easement.

(c) Should Grantor breach any material term or covenant in this Easement or fail to perform any obligation under this Easement, and such breach shall continue uncured thirty (30) days following the receipt of written notice, as provided in paragraph 8(a) above, Grantor may seek specific performance or actual damages or invoke any other remedies available in law or in equity or, at its option, cure such default including but not limited to payment of mortgage, tax obligations or other encumbrances. All costs and expenses of any such Grantee performance shall be reimbursed upon invoice therefore and, or abated from any Rent due to Grantor until Grantee is reimbursed in full.

9. Taxes. Grantor acknowledges that a portion of the Purchase Price delivered by Grantee to Grantor pursuant to the Purchase Agreement is for and in consideration of the continuing obligation of

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Grantor to pay, on or before the due date, all present and future real property taxes, transfer taxes, penalties, interest, roll-back or additional taxes, sales and use taxes and all other fees and assessments regardless of the taxing method (the "Taxes") attributable to Grantor's Property and this Agreement. Without limiting the foregoing, except to the extent Taxes are the obligation of tenants under the Tower-Related Licenses, Grantor shall be solely responsible for the payment of such Taxes. Within ten (10) days of receiving a request from Grantee, Grantor shall furnish to Grantee a copy of each bill for any such Taxes and evidence of Grantor's payment of such bill. In the event that Grantor fails to pay any Taxes when due, Grantee shall have the right, but not the obligation, to pay such Taxes on behalf of Grantor after Grantee gives Grantor thirty (30) day notice. Grantor shall reimburse Grantee for the full amount of such Taxes paid by Grantee on Grantor's behalf within ten (10) business days of Grantor's receipt of an invoice from Grantee.

10. Tests. Throughout the Term, Grantee and its tenants and licensees shall have the right to conduct survey, soil, radio coverage, and environmental tests and conduct any other investigations needed to determine if the Easement Premises, Access Easements and Utility Easement is suitable for the construction, installation, maintenance, repair, replacement, improvement, operation and removal of the Communications Equipment.

11. Exclusive Rights; Non-Interference.

11.1 Exclusivity. During the Term, Grantor will not grant a lease, license, or easement or transfer or convey any other interest in Grantor's Property or any other property owned by Grantor contiguous to the property upon which the Easement Premises is located to any party for the purposes of operating Communications Equipment or to any party if such lease, transfer or conveyance would in any way adversely affect or interfere, in Grantee's reasonable judgment, with any Communications Equipment or the operation of the Easement Premises.

11.2 Grantor Interference. Grantor shall not, nor shall Grantor permit its lessees, licensees, employees, invitees or agents to, use any portion of Grantor's Property in a way which interferes with the operations of the tenants under the Tower-Related Licenses or which interferes with the Access Easements or Utility Easement. Such interference shall be deemed a material breach by Grantor. Upon written notice from Grantee or a tenant under a Tower-Related License, Grantor shall be responsible for terminating any such interference. Should Grantor fail to cease promptly any such interference, Grantee and any tenant under a Tower-Related License shall have the right to bring a court action to enjoin such interference, and Grantee shall have the right, in its sole discretion, to terminate this Agreement. It is agreed and understood by the parties that a continuing interference may cause irreparable injury to Grantee and tenant under the Tower-Related Licenses.

11.3 Grantor Interference with Construction. Provided that construction is proceeding pursuant to a building permit or other required municipal or governmental approvals, and according to drawings or exhibits as provided to Grantor, Grantor shall not interfere with any aspects of construction. Such interference may include, without limitation, attempting to direct construction personnel as to the location of or method of installation of the Communications Equipment. Grantor further acknowledges that it will be responsible for any costs and damages (including, fines and penalties) that are directly attributable to Grantor's interference with construction. Grantee shall not commence construction of any kind on

15. Damage or Destruction.

(a) Grantor acknowledges and agrees that it is extremely important that Grantee and its tenants and licensees maintain continuous operation of the Communications Equipment on the Easement Premises. Therefore, in the event of any damage to or destruction of the Easement Premises, the Access Easements or the Utility Easement or any condemnation thereof, which renders the Communications Equipment inoperable or unusable, Grantee and its tenants and licensees shall have the right, at Grantee's option, to construct or install temporary facilities, including temporary or replacement antennae, if necessary, elsewhere on the Easement Premises and to establish alternative easements for access and utilities, in such locations as may be reasonably acceptable to Grantor and in a manner which will not interfere with any repair or reconstruction efforts, in order to continue operation of the Communications Equipment. Grantor shall allow Grantee and its tenants and licensees to install such additional equipment and fixtures, including but not limited to, antennae, cables, wires, and shall permit Grantee and its tenants and licensees access, repair and maintenance rights as may be necessary to allow Grantee and its tenants and licensees to operate and maintain such temporary facilities until the Easement Premises, Access Easements and/or Utility Easement have been sufficiently repaired to permit use of the Communications Equipment on its prior location on the Easement Premises, or until a substitute permanent location on the Easement Premises (with substitute access and utility easements, if necessary) that does not materially interfere with Grantor's normal use of Grantor's Property has been chosen by Grantee and a substitute permanent facility has been completed.

(b) If the Easement Premises is repaired, Grantee and it tenants and licensees shall have the right to construct and install replacement Communications Equipment, including, but not limited to, the antenna support structures, antennae, cables, conduits, poles, wires and electronic or other equipment, in and on the repaired Easement Premises together with replacement access and utility easements if necessary, in substantially the same location and manner as prior to the occurrence of the damage or at another location on the Easement Premises provided that such relocation does not materially interfere with Grantor's normal use of Grantor's Property. It is the intention of the parties that Grantee and its tenants and licensees shall be able to maintain continuous operation and use of the Existing Tenant Equipment and any future Communications Equipment throughout the Term.

(c) If Grantee elects to continue operation of the Communications Equipment pursuant to this paragraph, this Easement shall not terminate on account of such damage, destruction or condemnation, but shall continue in effect. Grantee's obligations under this Easement shall be equitably abated or adjusted to account for any damage, destruction or reduction of the Easement Premises or the conditions under which Grantee's temporary or replacement facilities are being used and operated, commencing from the date of damage, destruction or condemnation and continuing during the period of such repair or restoration.

16. Consents and Approvals. Grantee and/or its tenants and licensees shall maintain the permits necessary for the Communications Equipment. Upon execution of this Easement, Grantor agrees to cooperate with Grantee in all respects in connection with any application made by Grantee, in the name of Grantor, to any governmental authority for any license, permit or approval or renewal thereof. Procurement of licenses, permits and/or approvals necessary for the construction, maintenance and

operation of Grantee's or its tenants' or licensees' Communications Equipment shall be made at Grantee's expense, and Grantor shall have no obligations with respect thereto. Whenever the consent or approval of either party is required or a determination must be made by either party under this Easement, no such consent or approval shall be unreasonably withheld, denied or delayed, and all such determinations shall be made on a reasonable basis and in a reasonable manner.

17. Quiet Possession; Maintenance of Grantor's Property. Grantor hereby covenants that Grantee is seized and possessed of a valid easement estate in and to the Easement Premises, that Grantee shall have quiet and peaceable possession of the Easement Premises, that Grantor shall defend title to the Easement Premises for and on behalf of Grantee, and that Grantor shall provide such further assurances of title as may be necessary or appropriate. Grantor further agrees to maintain Grantor's Property in a commercially reasonable condition and repair during the Term of this Easement, normal wear and tear and casualty excepted. Without limiting the foregoing, except to the extent maintenance is the obligation of tenants under the Tower-Related Licenses, Grantor shall be solely responsible for the maintenance of Grantor's Property.

18. Debt Security. Grantor covenants and agrees that, without the prior consent of Grantor, at all times during the Term, Grantee shall have the right to mortgage or convey by deed of trust, deed to secure debt or other instrument adequate for the purpose of securing any bona fide indebtedness or evidence thereof, this Agreement or the easement holder's interest of Grantee created hereby, together with all of Grantee's right, title, and interest in and to the improvements hereinafter constructed, erected, or placed on the Easement Premises by Grantee, provided that no such mortgage, conveyance or encumbrance, nor any foreclosure thereof, nor any purchase thereunder, shall impair or abridge the rights of Grantor, as provided herein.

19. Estoppel Certificates, Grantor's Acknowledgment of Rights, and other Similar Documents. Grantor agrees that it will from time to time, within ten (10) business days after request by Grantee, execute and deliver an estoppel certificate, Grantor's acknowledgement of rights or other similar statement, in a form that is reasonably acceptable to both Grantor and Grantee certifying that (i) this Easement is unmodified and in full force and effect (or if there have been modifications, that the same is in full force and effect as so modified); (ii) confirming that the Easement Payment has been prepaid for the entire Term; (iii) stating that Grantee is not in default hereunder (or if Grantor alleges a default stating the nature of such alleged default); and (iv) acknowledging the rights of Grantee, Grantee's mortgagee or assignee, if any, and further stating such other matters as Grantee, Grantee's mortgagee or assignee shall reasonably require. Grantee agrees that it will from time to time, within ten (10) business days after request by Grantor, execute and deliver an estoppel certificate stating whether or not Grantor is default in the performance of any of its obligations hereunder and, if so, specifying the nature of the default.

20. Subordination. If the Easement Premises are subject and subordinate to a mortgage, deed of trust or deed to secure debt in favor of Grantor's lender, Grantor shall provide to Grantee a non-disturbance and attornment agreement substantially in the form attached as **Exhibit 7.4(b)** to the Purchase Agreement.

21. Environmental Matters.

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21.1 Grantor's Representations. The operation of Grantor's Property has met, in all material respects, the applicable laws and regulations of all federal, state, and local government authorities having jurisdiction, including, without limitation, all requirements pursuant to environmental protection, health, or safety laws and regulations (including the disposal of hazardous substances and solid wastes) and Grantor will continue to operate Grantor's Property so that it continues to comply such health, or safety laws and regulations. Neither Grantor nor any of its agents or affiliates have, in connection with the operation of Grantor's Property, ever generated, stored, treated, transported, handled, disposed of, or released any hazardous substance or solid, liquid, or gaseous waste ("Hazardous Substances") in a manner that would give rise to any material liability under any statute or governmental regulation. Grantor is not a "potentially responsible party," as defined in the Comprehensive Environmental Response, Compensation and Liability Act of 1980 or under any comparable state or local statute, in connection with any past or present waste disposal practices undertaken by it or on its behalf during its ownership or occupancy of Grantor's Property.

21.2 Grantee's Representations and Limitation. Grantee shall not introduce or use any Hazardous Substance on the Easement Premises or Grantor's Property violation of any applicable federal, state or local environmental laws. Grantee shall not be responsible for any Hazardous Substances arising or present on or before the Effective Date. Liability of Grantee for any claims with respect to any Hazardous Substances at Grantor's Property or the Easement Premises shall be limited to contamination that is shown by clear evidence to have been caused by a release of a Hazardous Substance by Grantee after the Effective Date, and in violation of any applicable federal, state or local environmental laws.

22. Notices. Notices will be effective if and when sent by registered or certified U.S. mail or reputable same-day or overnight courier, postage prepaid or otherwise accounted for by sender, and sent to the addresses set forth in in the Preamble above. Any party may change the address to which notices are to be addressed by giving the other party notice in the manner set forth in this Section 23.

23. Entire Agreement and Binding Effect. The Purchase Agreement, this Agreement and any attached Exhibits constitute the entire agreement between Grantor and Grantee. No prior written or prior, contemporaneous or subsequent oral promises or representations shall be binding. This Agreement shall not be amended or changed except by written instrument signed by authorized representatives of the parties hereto. The provisions of this Agreement shall be binding upon and inure to the benefit of the heirs, executors, administrators, successors and assigns of the parties.

24. Counterparts. This Agreement may be executed in any number of counterparts, each of which shall be an original, but all of which together shall constitute but one instrument.

25. Recording of Easement. Grantor and Grantee hereby agree, following the execution of this Agreement, that Grantee, at its sole expense, shall have the file this Agreement of record in the county and state where the Easement Premises is located.

26. Further Assurances. Grantor will, from time to time after the date of this Agreement, upon the reasonable request of Grantee, execute and deliver all such further documents and assurances as may be reasonably required to transfer to and to vest in Grantee all interest of Grantor in and to the Easement Premises, the Access and Utility Easements and Tower-Related Licenses and to protect the right, title, and

interest of Grantee in and to such interests. Grantor further agrees to sign such reasonable documents to evidence its agreement to be responsible under Additional Tower-Related Licenses for certain obligations that can only be satisfied by Grantor as owner of Grantor's Property including without limitation (a) obligations relating to the ownership and use of Grantor's Property, (b) all maintenance and repair obligations relating to Grantor's Property, (c) the payment of real property taxes and (d) any covenant or obligation of Grantor relating to the environmental condition of Grantor's Property.

27. Time is of the Essence. Time is of the essence of this Agreement and each and all of its provisions.

28. Governing Law. This Agreement shall be construed and governed in accordance with the laws of the state in which the Easement Premises is located.

29. Severability. If any term, covenant, condition or provision of this Agreement or application thereof shall, to any extent, be invalid or unenforceable, the remainder of this Easement shall not be affected thereby, and shall be valid and enforceable to the fullest extent permitted by law.

30. Waiver. No failure or delay of the parties hereto to exercise their rights hereunder or to insist upon the strict compliance with any obligation imposed hereunder, and no course of dealing or custom or practice of either party hereto at variance with any term hereof, shall constitute a waiver or a modification of the terms hereof or the right to demand strict compliance with the terms hereof.

31. Covenant Running with the Land. The provisions of and covenants contained in this Agreement shall run with the land and shall bind and inure to the benefit of Grantor, Grantee and their respective successors, heirs and assigns.

32. Indemnification By Grantor. After the Effective Date, Grantor agrees to indemnify Grantee against any loss, cost, liability, or expense (including, without limitation, costs and expenses of litigation and, to the extent not prohibited by law, reasonable attorney's fees) (all of which are referred to as "Losses") incurred by Grantee by reason of, resulting from, or arising out of (a) the incorrectness of any of the representations or warranties, or the breach of any of the covenants or agreements of Grantor contained in this Agreement or in any other instrument executed or delivered by Grantor in connection with this Agreement or given on or before the Effective Date; (b) Grantor's breach, on or before the Effective Date, of any agreements with third parties; (c) Grantor's operation of the Property on or before the Effective Date; or (d) the assertion against Grantee of any liability of Grantor.

33. Indemnification By Grantee. After the Effective Date, Grantee agrees to indemnify Grantor against any Losses incurred by Grantor by reason of, resulting from, or arising out of (a) the incorrectness of any of the representations or warranties, or the breach of any of the covenants of Grantee contained in this Agreement or given on the Effective Date; (b) Grantee's breach, after the Effective Date (c) the assertion against Grantor of any liability of Grantee; or (d) arising out of the construction, operation or removal of the Communications Equipment on or after the date hereof.

[Signatures are on the following page]

Executed by the parties' duly authorized representatives as of the Effective Date.

Signed, Sealed and Delivered
In The Presence Of:

GRANTOR:

CH COMMERCE DRIVE ASSOCIATES, LLC, a Connecticut limited liability company

By: CH Commerce Drive Management, LLC, Manager

By: _____
Jonathan Garrity, President

Witnesses:

Print Name: Edward N. Epstein

Print Name: Tyler Gilsenan

State of CONNECTICUT)
) ss. NEW CANAAN [City /Town]; December 17, 2018
County of FAIRFIELD)

On this 17th day of December, 2018, before me, personally appeared Jonathan Garrity, the President of CH Commerce Drive Management, LLC , the Manager of CH COMMERCE DRIVE ASSOCIATES, LLC, a Connecticut limited liability company, signer and sealer of the foregoing instrument, and acknowledged the same to be his free act and deed, and the free act and deed of said CH COMMERCE DRIVE ASSOCIATES, LLC, a Connecticut limited liability company, before me, a Notary Public in and for said County and State.

Commissioner of the Superior Court
Notary Public
Print Name: _____
My Commission Expires: _____

NANCY A. LASKOWSKI
Notary Public, State of Connecticut
My Commission Expires January 31, 2024

(Seal)

[Signatures continued on the following page]

[Signatures continued from the previous page]

GRANTOR:

CITY PARK COMMERCE DRIVE, LLC, a Connecticut limited liability company

By: CH Commerce Drive Management, LLC, Manager

By: _____
Jonathan Garrity, President

Witnesses:

Print Name: Edward N. Epstein

Print Name: Tyler Gikeran

State of: CONNECTICUT)
) ss. NEW CANAAN [City /Town]; December 17, 2018
County of FAIRFIELD)

On this 17th day of December, 2018, before me, personally appeared Jonathan Garrity, the President of CH Commerce Drive Management, LLC , the Manager of CITY PARK COMMERCE DRIVE, LLC, a Connecticut limited liability company, signer and sealer of the foregoing instrument, and acknowledged the same to be his free act and deed, and the free act and deed of said CITY PARK COMMERCE DRIVE, LLC, a Connecticut limited liability company, before me, a Notary Public in and for said County and State.

Commissioner of the Superior Court
Notary Public
Print Name: _____
My Commission Expires:

NANCY A. LASKOWSKI
Notary Public, State of Connecticut
My Commission Expires January 31, 2020

(Seal)

[Signatures continued on the following page]

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[Signatures continued from the previous page]

GRANTEE:

Blue Sky Towers II, LLC

By: _____
James Rech, Chief Executive Officer

Witnesses:

_____
Print Name: Donald D Madden

_____
Print Name: Alex Kreymer

Commonwealth of Massachusetts)
) ss. D. Reading [City or Town]; December 17, 2018
County of Middlesex)

On this 17 day of December, 2018, before me, personally appeared James Rech, Chief Executive Officer of BLUE SKY TOWERS II, LLC, a Delaware limited liability company, signer and sealer of the foregoing instrument, and acknowledged the same to be his free act and deed, and the free act and deed of said BLUE SKY TOWERS II, LLC, a Delaware limited liability company, before me, a Notary Public in and for said County and State.

_____
Notary Public
Print Name: Daniel J Guarini
My Commission Expires: 12/3/2021

(Seal)

DANIEL J. GUARINI
Notary Public
COMMONWEALTH OF MASSACHUSETTS
My Commission Expires
December 3, 2021

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EXHIBITS AND SCHEDULES

EXHIBITS

Legal Description of Grantor's Property	A
Existing Tower-Related License	B
Legal Description of Easement Premises	C
Legal Description of Access Easement	D
Legal Description of Utility Easement	E

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EXHIBIT A

LEGAL DESCRIPTION OF GRANTOR'S PROPERTY

Situated in the County of Fairfield, State of Connecticut:

Parent Parcel:

All that certain piece or parcel of land with all of the improvements thereon situated in the Town of Trumbull, County of Fairfield and State of Connecticut, containing 14.02 acres and shown on a certain map entitled "Resubdivision Plan, Lot No. 4, Commerce Drive & Huntington Road, Trumbull, Connecticut, prepared for David Mack" Prepared by J. & D. Kasper & Associates, Engineers, Surveyors, Planners, Bridgeport, Connecticut, Scale 1" = 50' dated Feb. 20, 1979, Sheet 2 of 3, on file in the Trumbull Town Clerk's Office and further shown on a revision of said map dated Dec. 4, 1981 and bounded and described as follows:

WESTERLY:	In part, by land now or formerly of Dow Corning Corp., in part, by the terminus of Commerce Drive, as shown on said map, and in part, by land now or formerly of Optique Dumonde, Ltd., in all, 793.21 feet, said boundary having a bearing of N 19°37'25"W, the termini of said boundary being marked by iron pipes;
NORTHWESTERLY:	By land now or formerly of Optique Dumonde, Ltd., 264.90 feet, said boundary having a bearing of N 25°32'15"E, the termini of said boundary being marked by iron pipes;
NORTHERLY:	By land now or formerly of Christine Lundgren, 47.14 feet, said boundary having a bearing of S 79°31'53"E;
NORTHERLY:	AGAIN, by land now or formerly of Christine Lundgren, 60.33 feet, said boundary having a bearing of N 83°40 15"E;
NORTHERLY:	AGAIN, by land now or formerly of Christine Lundgren, 26.91 feet, said boundary having a bearing of N 77°19'39"E;
NORTHERLY:	AGAIN, by land now or formerly of Christine Lundgren, 58.83 feet, said boundary having a bearing or N 75°33'27"E;
NORTHERLY:	AGAIN, by land now or formerly of Christine Lundgren, 66.26 feet, said boundary having a bearing of N 77°36'19"E;
NORTHERLY:	AGAIN, in part by land now or formerly of Christine Lundgren and in part by land now or formerly of E.V. & N.B. Bowen, in all, 51.36 feet, said boundary having a bearing of N 75°24'40"E;

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NORTHERLY:	AGAIN, by land now or formerly of E.V. & N.B. Bowen, 38.96 feet, said boundary having a bearing of N 80°42'12"E;
NORTHERLY:	AGAIN, by land now or formerly of E.V. & N.B. Bowen, 76.08 feet, said boundary having a bearing of N 76°46'19"E, all of said northerly boundaries being the center line of a stone wall;
EASTERLY:	In part by land now or formerly of E.J. & A.M. Overwise and in part by land now or formerly of Thomas & Carol Donegan, in all, 222.47 feet, said boundary having a bearing of S 25°36'55"E;
EASTERLY:	AGAIN, in part by land now or formerly of Thomas & Carol Donegan, in part by land now or formerly of R.D. & L.S. Sutton, and in part by land now or formerly of M.H. & V.M. Shaw, in all, 167.89 feet, said boundary having a bearing of S 17°42'45"E;
EASTERLY:	AGAIN, in part by land now or formerly of M.H. & V.M. Shaw and in part by land now or formerly of Doris Cheney and Linda Beeman, in all, 205.70 feet, said boundary having a bearing of S 14°15'35"E;
EASTERLY:	AGAIN, in part by land now or formerly of Doris Cheney and Linda Beeman and in part by land now or formerly of Peter Everetts, in all, 211.25 feet, said boundary having a bearing of S 07°16'25"E;
SOUTHEASTERLY:	By land now or formerly of Timothy & Carol Ryan, 24.59 feet, said boundary having a bearing of S 60°35'50"W, said boundary being the center line of a stone wall;
SOUTHEASTERLY:	AGAIN, by land now or formerly of Timothy & Carol Ryan, 88.04 feet, said boundary having a bearing of S 61°24'49"W, said boundary being the center line of a stone wall;
SOUTHEASTERLY:	AGAIN, by land now or formerly of Timothy & Carol Ryan, 12.65 feet, said boundary having a bearing of S 67°09'05"W, said boundary being the center line of a stone wall;
EASTERLY:	AGAIN, in part by land now or formerly of Timothy and Carol Ryan and in part by land now or formerly of Robert & Carol Brumper, in all, 192.32 feet, said boundary having a bearing of S 07°52'21"W;
NORTHERLY:	AGAIN, by land now or formerly of Robert & Carol Brumper, 4.00 feet, said boundary having a bearing of S 80°30'31"E;

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EASTERLY:	AGAIN, by land now or formerly of C.B. & J.R. Kelly, 120.00 feet, said boundary having a bearing of S 01°51'40"W;
EASTERLY:	AGAIN, by land now or formerly of Walter & Brian Holinko, 251.93 feet, said boundary having a bearing of S 17°00'58"E;
SOUTHERLY:	By land now or formerly of Pauline Nemergut, 8.594 feet, said boundary having a bearing of S 77°10'51"W;
SOUTHERLY:	AGAIN, by land now or formerly of Pauline Nemergut, 96.60 feet, said boundary having a bearing of S 87°06'11"W;
SOUTHWESTERLY:	By land now or formerly of Belmar Corporation, 48.31 feet, said boundary having a bearing of N 13°55'47"W;
SOUTHWESTERLY:	AGAIN, by land now or formerly of Belmar Corporation, 66.23 feet, said boundary having a bearing of N 25°50'46"W;
SOUTHWESTERLY:	AGAIN, by land now or formerly of Belmar Corporation, 46.73 feet, said boundary having a bearing of N 33°26'08"W;
SOUTHWESTERLY:	AGAIN, by land now or formerly of Belmar Corporation, 72.44 feet, said boundary having a bearing of N 38°14'47"W;
SOUTHWESTERLY:	AGAIN, by land now or formerly of Belmar Corporation, 46.47 feet, said boundary having a bearing of N 40°31'50"W;
SOUTHWESTERLY:	AGAIN, by land now or formerly of Belmar Corporation, 75.01 feet, said boundary having a bearing of N 47°54'59"W;
SOUTHWESTERLY:	AGAIN, by land now or formerly of Belmar Corporation, 103.51 feet, said boundary having a bearing of N 45°27'05"W, all of said southwesterly boundaries being the center line of a stone wall;
SOUTHERLY:	by land now or formerly of Belmar Corporation, 58.12 feet, said boundary having a bearing of S 60°09'57"W.

Tax I.D. Number: 00432800

Being the same property conveyed to City Park Commerce Drive, LLC, a Connecticut limited liability company and CH Commerce Drive Associates, LLC, a limited liability company, as their interests may appear, Grantee, from Pilot Corporation of America, Grantor, by deed recorded 06/25/2014, as Book 1666, Page 608 of the Trumbull Town Clerk Records.

and

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Being the same property conveyed to City Park Commerce Drive, LLC, a Connecticut limited liability company and CH Commerce Drive Associates, LLC, a Connecticut limited liability company, as their interests may appear, Grantee, from Pilot Corporation of America, Grantor, by deed recorded 06/25/2014, as Book 1666, Page 601 of the Trumbull Town Clerk Records.

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EXHIBIT B

EXISTING TENANTS AND TOWER-RELATED LICENSES

RENT ROLL: TOWER-RELATED LICENSES

1. That certain Land Lease Agreement dated October 18th, 2013, as may be amended, by and between CH Commerce Drive Associates, LLC and City Park Commerce Drive, LLC, as successor-in-interest to Pilot Corporation of America as Lessor thereunder, and Cellco Partnership d/b/a Verizon Wireless as Lessee thereunder, as evidenced by the Memorandum of Land Lease Agreement dated October 18, 2013 and recorded on October 29, 2013 in Volume 1651 Page 901 of the Trumbull Town Clerk Records.

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EXHIBIT C

LEGAL DESCRIPTION OF EASEMENT PREMISES

Beginning at a northwesterly corner of the Easement Area herein described, said point being located N 76°49'28" E a distance of 260.02' from an iron rod found, thence;

S 15°49'11" E a distance of 8.92' to a point, thence;

S 74°10'49" W a distance of 35.00' to a point, thence;

S 15°49'11" E a distance of 20.00' to a point, thence;

N 74°10'49" E a distance of 117.00' to a point, thence;

N 15°49'11" W a distance of 29.16' to a point, thence;

S 74°03'43" W a distance of 39.19' to a point, thence;

S 73°57'58" W a distance of 42.81' to the point of beginning.

Having an area of 3,082 square feet or 0.071 acres, more or less.

Being shown on a survey drawing prepared by ProTerra Design Group, LLC, titled "Site Number CT-5046 Address: 60 Commerce Drive, Trumbull, CT 06611" and dated December 12, 2018.

HSG DS HSG

EXHIBIT D

LEGAL DESCRIPTION OF ACCESS EASEMENT

12' WIDE NON-EXCLUSIVE ACCESS EASEMENT DESCRIPTION:

Beginning at a point in the easterly terminus of Commerce Drive, said point being located S19°25'26"E a distance of 475.19' from an iron rod found, thence;

S 58°31'38" E a distance of 41.50' to a point, thence;

along a curve to the right with an arc length of 33.63', with a radius of 56.00',

with a chord bearing of S 41°19'32" E, with a chord length of 33.12' to a point, thence;

S 24°07'26" E a distance of 113.58' to a point, thence;

along a curve to the left with an arc length of 141.23', with a radius of 84.00',

with a chord bearing of S 72°17'24" E with a chord length of 125.17 to a point, thence;

N 59°32'39" E a distance of 355.58' to a point, thence;

along a curve to the left with an arc length of 51.03', with a radius of 44.00',

with a chord bearing of N 26°18'57" E, with a chord length of 48.22' to a point, thence;

N 06°54'44" W a distance of 167.90' to a point, thence;

along a curve to the left with an arc length of 51.12', with a radius of 44.00',

with a chord bearing of N 40°11'49" W, with a chord length of 48.29' to a point, thence;

N 73°28'54" W a distance of 3.65' to a point, thence;

along a curve to the right with an arc length of 56.32', with a radius of 56.00',

with a chord bearing of N 44°40'09" W, with a chord length of 53.98' to a point, thence;

N 15°51'25" W a distance of 210.56' to a point, thence;

along a curve to the left with an arc length of 13.73', with a radius of 9.00',

with a chord bearing of N 59°34'10" W, with a chord length of 12.44' to a point, thence;

S 76°43'05" W a distance of 89.27' to a point, thence;

along a curve to the right with an arc length of 48.26', with a radius of 56.00',

with a chord bearing of N 78°35'30" W, with a chord length of 46.78' to a point, thence;

N 53°54'05" W a distance of 44.21' to a point, thence;

along a curve to the left with an arc length of 39.87', with a radius of 44.00',

with a chord bearing of N 79°51'38" W, with a chord length of 38.52' to a point, thence;

S 74°10'49" W a distance of 3.20' to a point, thence;

N 15°49'11" W a distance of 12.00' to a point, thence;

N 74°10'49" E a distance of 3.20' to a point, thence;

along a curve to the right with an arc length of 50.74', with a radius of 56.00',

with a chord bearing of S 79°51'38" E, with a chord length of 49.03' to a point, thence;

S 53°54'05" E a distance of 44.21' to a point, thence;

along a curve to the left with an arc length of 37.92', with a radius of 44.00',

with a chord bearing of S 78°35'30" E, with a chord length of 36.76' to a point, thence;

N 76°43'05" E a distance of 89.27' to a point, thence;

along a curve to the right with an arc length of 32.04', with a radius of 21.00',

with a chord bearing of S 59°34'10" E, with a chord length of 29.02' to a point, thence;

S 15°51'25" E a distance of 210.56' to a point, thence;

along a curve to the left with an arc length of 44.25', with a radius of 44.00',

with a chord bearing of S 44°40'09" E, with a chord length of 42.41' to a point, thence;

S 73°28'54" E a distance of 3.65' to a point, thence;

along a curve to the right with an arc length of 65.06', with a radius of 56.00',

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with a chord bearing of S 40°11'49" E, with a chord length of 61.47' to a point, thence;

S 06°54'44" E a distance of 167.90' to a point, thence;

along a curve to the right with an arc length of 64.95', with a radius of 56.00',

with a chord bearing of S 26°18'57" W, with a chord length of 61.37' to a point, thence;

S 59°32'39" W a distance of 355.58' to a point, thence;

along a curve to the right with an arc length of 161.41', with a radius of 96.00',

with a chord bearing of N 72°17'24" W, with a chord length of 143.06' to a point, thence;

N 24°07'26" W a distance of 113.58' to a point, thence;

along a curve to the left with an arc length of 26.42', with a radius of 44.00',

with a chord bearing of N 41°19'32" W, with a chord length of 26.02' to a point, thence;

N 58°31'38" W a distance of 26.73' to a point, thence;

N 19°25'26" W a distance of 19.03' to the point of beginning.

Having on area of 17,773 square feet, or 0.408 acres, more or less.

Being shown on a survey drawing prepared by ProTerra Design Group, LLC, titled "Site Number CT-5046 Address: 60 Commerce Drive, Trumbull, CT 06611" and dated December 12, 2018.

EXHIBIT E

LEGAL DESCRIPTION OF UTILITY EASEMENT

Beginning at a point in the easterly terminus of Commerce Drive, said point being located S19°25'26"E a distance of 364.83' from an iron rod found, thence;

N 39°17'57" E a distance of 0.28' to a point, thence;

along a curve to the left with an arc length of 54.02', with a radius of 60.00',

with a chord bearing of N 13°30'18" E, with a chord length of 52.22' to a point, thence;

N 12°17'20" W a distance of 159.01' to a point, thence;

along a curve to the right with an arc length of 26.97', with a radius of 80.00',

with a chord bearing of N 02°37'47" W, with a chord length of 26.85' to a point, thence;

N 07°01'45" E a distance of 74.58' to a point, thence;

along a curve to the right with an arc length of 93.76', with a radius of 80.00',

with a chord bearing of N 40°36'17" E, with a chord length of 88.49' to a point, thence;

N 74°10'49" E a distance of 92.40' to a point, thence;

S 15°49'11" E a distance of 5.00' to a point, thence;

S 74°10'49" W a distance of 35.00' to a point, thence;

S 15°49'11" E a distance of 15.00' to a point, thence;

S 74°10'49" W a distance of 57.40' to a point, thence;

along a curve to the left with an arc length of 70.32', with a radius of 60.00',

with a chord bearing of S 40°36'17" W, with a chord length of 66.36' to a point, thence;

S 07°01'45" W a distance of 74.58' to a point, thence;

along a curve to the left with an arc length of 20.23', with a radius of 60.00',

with a chord bearing of S 02°37'47" E, with a chord length of 20.13' to a point, thence;

S 12°17'20" E a distance of 159.01' to a point, thence;

along a curve to the right with an arc length of 72.03', with a radius of 80.00',

with a chord bearing of S 13°30'18" W, with a chord length of 69.62' to a point, thence;

S 39°17'57" W a distance of 12.43' to a point, thence;

N 19°25'26" W a distance of 23.40' to the point of beginning.

Having an area of 9,495 square feet or 0.218 acres, more or less.

Being shown on a survey drawing prepared by ProTerra Design Group, LLC, titled "Site Number CT-5046 Address: 60 Commerce Drive, Trumbull, CT 06611" and dated December 12, 2018.

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SITE NAME: Trumbull SE4, CT
SITE NUMBER: 20130931966
ATTY/DATE: Saunders/2013

LAND LEASE AGREEMENT

This Agreement, made this 18th day of October, 2013 between Pilot Corporation of America, a Delaware corporation with its principal offices located at 3855 Regent Boulevard, Jacksonville, Florida 32224, hereinafter designated LESSOR and Cellco Partnership d/b/a Verizon Wireless, a Delaware general partnership with its principal office located at One Verizon Way, Mail Stop 4AW100, Basking Ridge, New Jersey 07920 (telephone number 866-862-4404), hereinafter designated LESSEE. The LESSOR and LESSEE are at times collectively referred to hereinafter as the "Parties" or individually as the "Party".

1. PREMISES. LESSOR hereby leases to LESSEE a portion of that certain parcel of property (the entirety of LESSOR's property is referred to hereinafter as the Property), located at 60 Commerce Drive in the Town of Trumbull, County of Fairfield and State of Connecticut, and being described as a parcel containing 1,968 square feet (the "Land Space"), together with the non-exclusive right (the "Rights of Way") for ingress and egress, seven (7) days a week twenty-four (24) hours a day, on foot or motor vehicle, including trucks over or along a twenty (20') foot wide right-of-way extending from the nearest public right-of-way, Commerce Drive, to the Land Space, and for the installation and maintenance of utility wires, poles, cables, conduits, and pipes over, under, or along one or more rights of way from the Land Space, said Land Space and Rights of Way (hereinafter collectively referred to as the "Premises") being substantially as described herein in Exhibit "A" attached hereto and made a part hereof. The Property is also shown on the Tax Map K/09 of the Town of Trumbull as Block N/A, Lot 20 and is further described in Deed Book 470 at Page 50 as recorded in the Office of the Trumbull Town Clerk.

In the event any public utility is unable to use the Rights of Way, the LESSOR hereby agrees to grant an additional right-of-way either to the LESSEE or to the public utility at no cost to the LESSEE.

2. SURVEY. LESSOR also hereby grants to LESSEE the right to survey the Property and the Premises, and said survey shall then become Exhibit "B" which shall be attached hereto and made a part hereof, and shall control in the event of boundary and access discrepancies between it and Exhibit "A". Cost for such work shall be borne by the LESSEE.

3. TERM; RENTAL.

a. This Agreement shall be effective as of the date of execution by both Parties, provided, however, the initial term shall be for five (5) years and shall commence on the Commencement Date (as hereinafter defined) at which time rental payments shall commence and be due at a total annual rental of [redacted] to be paid in equal monthly installments on the first day of the month, in advance, to LESSOR or to such other person, firm or place as LESSOR may, from time to time, designate in writing at least thirty (30) days in advance of any rental payment date by notice given in accordance with Paragraph 23 below. The Agreement shall commence based upon the date LESSEE is granted a

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building permit by the governmental agency charged with issuing such permits, or the date of execution of the Agreement by the Parties, whichever is later. In the event the date at which LESSEE is granted a building permit or the date of execution of the Agreement, whichever is applicable, falls between the 1st and 15th of the month, the Agreement shall commence on the 1st of that month and if such date falls between the 16th and 31st of the month, then the Agreement shall commence on the 1st day of the following month (either the "Commencement Date"). LESSOR and LESSEE acknowledge and agree that initial rental payment(s) shall not actually be sent by LESSEE until thirty (30) days after the Commencement Date. By way of illustration of the preceding sentence, if the Commencement Date is January 1, LESSEE shall send to the LESSOR the rental payments for January 1 and February 1 by February 1.

Upon agreement of the Parties, LESSEE may pay rent by electronic funds transfer and in such event, LESSOR agrees to provide to LESSEE bank routing information for such purpose upon request of LESSEE.

b. LESSOR hereby agrees to provide to LESSEE certain documentation (the "Rental Documentation") evidencing LESSOR's interest in, and right to receive payments under, this Agreement, including without limitation: (i) documentation, acceptable to LESSEE in LESSEE's reasonable discretion, evidencing LESSOR's good and sufficient title to and/or interest in the Property and right to receive rental payments and other benefits hereunder; and (ii) a complete and fully executed Internal Revenue Service Form W-9, or equivalent, in a form acceptable to LESSEE, for any party to whom rental payments are to be made pursuant to this Agreement. From time to time during the Term of this Agreement and within thirty (30) days of a written request from LESSEE, LESSOR agrees to provide updated Rental Documentation in a form reasonably acceptable to LESSEE. The Rental Documentation shall be provided to LESSEE in accordance with the provisions of and at the address given in Paragraph 23. Delivery of Rental Documentation to LESSEE shall be a prerequisite for the payment of any rent by LESSEE and notwithstanding anything to the contrary herein, LESSEE shall have no obligation to make any rental payments until Rental Documentation has been supplied to LESSEE as provided herein.

Within fifteen (15) days of obtaining an interest in the Property or this Agreement, any assignee(s), transferee(s) or other successor(s) in interest of LESSOR shall provide to LESSEE Rental Documentation in the manner set forth in the preceding paragraph. From time to time during the Term of this Agreement and within thirty (30) days of a written request from LESSEE, any assignee(s) or transferee(s) of LESSOR agrees to provide updated Rental Documentation in a form reasonably acceptable to LESSEE. Delivery of Rental Documentation to LESSEE by any assignee(s), transferee(s) or other successor(s) in interest of LESSOR shall be a prerequisite for the payment of any rent by LESSEE to such party and notwithstanding anything to the contrary herein, LESSEE shall have no obligation to make any rental payments to any assignee(s), transferee(s) or other successor(s) in interest of LESSOR until Rental Documentation has been supplied to LESSEE as provided herein.

4. EXTENSIONS. This Agreement shall automatically be extended for four (4) additional five (5) year terms unless LESSEE terminates it at the end of the then current term by giving LESSOR written notice of the intent to terminate at least six (6) months prior to the end of the then current term.

5. EXTENSION RENTALS. The annual rental for the first (1st) five (5) year extension term shall be increased to [redacted]; the annual rental for the second (2nd) five (5) year extension term shall be increased to [redacted] the annual rental for the third (3rd) five (5) year extension term shall be increased to [redacted] and the annual rental for the fourth (4th) five (5) year extension term shall be increased to [redacted]

6. ADDITIONAL EXTENSIONS. If at the end of the fourth (4th) five (5) year extension term this Agreement has not been terminated by either Party by giving to the other written notice of an intention to terminate it at least three (3) months prior to the end of such term, this Agreement shall continue in force upon the same covenants, terms and conditions for a further term of five (5) years and for five (5) year terms thereafter until terminated by either Party by giving to the other written notice of its intention to so terminate at least three (3) months prior to the end of such term. Annual rental for each such additional five (5) year term shall be equal to 103% of the annual rental payable with respect to the immediately preceding five (5) year term. The initial term and all extensions shall be collectively referred to herein as the "Term".

7. TAXES. LESSEE shall have the responsibility to pay any personal property, real estate taxes, assessments, or charges owed on the Property which LESSOR demonstrates is the result of LESSEE's use of the Premises and/or the installation, maintenance, and operation of the LESSEE's improvements, and any sales tax imposed on the rent (except to the extent that LESSEE is or may become exempt from the payment of sales tax in the jurisdiction in which the Property is located), including any increase in real estate taxes at the Property which LESSOR demonstrates arises from the LESSEE's improvements and/or LESSEE's use of the Premises. LESSOR and LESSEE shall each be responsible for the payment of any taxes, levies, assessments and other charges imposed including franchise and similar taxes imposed upon the business conducted by LESSOR or LESSEE at the Property. Notwithstanding the foregoing, LESSEE shall not have the obligation to pay any tax, assessment, or charge that LESSEE is disputing in good faith in appropriate proceedings prior to a final determination that such tax is properly assessed provided that no lien attaches to the Property. Nothing in this Paragraph shall be construed as making LESSEE liable for any portion of LESSOR's income taxes in connection with any Property or otherwise. Except as set forth in this Paragraph, LESSOR shall have the responsibility to pay any personal property, real estate taxes, assessments, or charges owed on the Property and shall do so prior to the imposition of any lien on the Property.

LESSEE shall have the right, at its sole option and at its sole cost and expense, to appeal, challenge or seek modification of any tax assessment or billing for which LESSEE is wholly or partly responsible for payment. LESSOR shall reasonably cooperate with LESSEE at LESSEE's

expense in filing, prosecuting and perfecting any appeal or challenge to taxes as set forth in the preceding sentence, including but not limited to, executing any consent, appeal or other similar document. In the event that as a result of any appeal or challenge by LESSEE, there is a reduction, credit or repayment received by the LESSOR for any taxes previously paid by LESSEE, LESSOR agrees to promptly reimburse to LESSEE the amount of said reduction, credit or repayment. In the event that LESSEE does not have the standing rights to pursue a good faith and reasonable dispute of any taxes under this paragraph, LESSOR will pursue such dispute at LESSEE's sole cost and expense upon written request of LESSEE.

8. USE; GOVERNMENTAL APPROVALS. LESSEE shall use the Premises for the purpose of constructing, maintaining, repairing and operating a communications facility and uses incidental thereto. A security fence consisting of chain link construction or similar but comparable construction shall be placed around the perimeter of the Premises (not including the access easement). All improvements, equipment, antennas and conduits shall be at LESSEE's expense and their installation shall be at the discretion and option of LESSEE. LESSEE shall have the right to replace, repair, add or otherwise modify its utilities, equipment, antennas and/or conduits or any portion thereof and the frequencies over which the equipment operates, whether the equipment, antennas, conduits or frequencies are specified or not on any exhibit attached hereto, during the Term. It is understood and agreed that LESSEE's ability to use the Premises is contingent upon its obtaining after the execution date of this Agreement all of the certificates, permits and other approvals (collectively the "Governmental Approvals") that may be required by any Federal, State or Local authorities as well as satisfactory soil boring tests which will permit LESSEE use of the Premises as set forth above. LESSOR shall cooperate with LESSEE in its effort to obtain such approvals and shall take no action which would adversely affect the status of the Property with respect to the proposed use thereof by LESSEE. In the event that (i) any of 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 governmental authority; (iii) LESSEE determines that such Governmental Approvals may not be obtained in a timely manner; (iv) LESSEE determines that any soil boring tests are unsatisfactory; (v) LESSEE determines that the Premises is no longer technically compatible for its use, or (vi) LESSEE, in its sole discretion, determines that the use the Premises is obsolete or unnecessary, LESSEE shall have the right to terminate this Agreement. Notice of LESSEE's exercise of its right to terminate shall be given to LESSOR in writing by certified mail, return receipt requested, and shall be effective upon the mailing of such notice by LESSEE, or upon such later date as designated by LESSEE. All rentals paid to said termination date shall be retained by LESSOR. Upon such termination, this Agreement 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. Otherwise, the LESSEE shall have no further obligations for the payment of rent to LESSOR.

9. INDEMNIFICATION. Subject to Paragraph 10 below, each Party shall indemnify and hold the other harmless against any claim of liability or loss from personal injury or property damage resulting from or arising out of the negligence or willful misconduct of the indemnifying Party, its employees, contractors or agents, except to the extent such claims or damages may be due to or caused by the negligence or willful misconduct of the other Party, or its employees, contractors or agents.

10. INSURANCE.

a. Intentionally Omitted.

b. LESSEE agrees that, at its own cost and expense, it will maintain commercial general liability insurance with limits not less than $5,000,000.00 for injury to or death of one or more persons in any one occurrence and $5,000,000.00 for damage or destruction to property in any one occurrence. LESSEE agrees that it will include the LESSOR as an additional insured on all applicable policies.

11. LIMITATION OF LIABILITY. Except for indemnification pursuant to Paragraphs 9 and 29, neither Party shall be liable to the other, or any of their respective agents, representatives, employees for any lost revenue, lost profits, loss of technology, rights or services, incidental, punitive, indirect, special or consequential damages, loss of data, or interruption or loss of use of service, even if advised of the possibility of such damages, whether under theory of contract, tort (including negligence), strict liability or otherwise.

12. ANNUAL TERMINATION. Notwithstanding anything to the contrary contained herein, provided LESSEE is not in default hereunder beyond applicable notice and cure periods, LESSEE shall have the right to terminate this Agreement upon the annual anniversary of the Commencement Date provided that three (3) months prior notice is given to LESSOR.

13. INTERFERENCE. LESSEE agrees to install equipment of the type and frequency which will not cause harmful interference which is measurable in accordance with then existing industry standards to any equipment of LESSOR or other lessees of the Property which existed on the Property prior to the date this Agreement is executed by the Parties. In the event any after-installed LESSEE's equipment causes such interference, and after LESSOR has notified LESSEE in writing of such interference, LESSEE will take all commercially reasonable steps necessary to correct and eliminate the interference, including but not limited to, at LESSEE's option, powering down such equipment and later powering up such equipment for intermittent testing. In no event will LESSOR be entitled to terminate this Agreement or relocate the equipment as long as LESSEE is making a good faith effort to remedy the interference issue. LESSOR agrees that LESSOR and/or any other tenants of the 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. The Parties acknowledge that there will not be an adequate remedy at law for noncompliance with the provisions of this Paragraph and therefore, either Party shall have the right to equitable remedies, such as, without limitation, injunctive relief and specific performance.

14. REMOVAL AT END OF TERM. LESSEE shall, upon expiration of the Term, or within ninety (90) days after any earlier termination of the Agreement, remove its building(s), antenna structure(s) (except footings), equipment, conduits, fixtures and all personal property and restore the Premises to its original condition, reasonable wear and tear and casualty damage excepted. LESSOR agrees and acknowledges that all of the equipment, conduits, fixtures and

personal property of LESSEE shall remain the personal property of LESSEE and LESSEE shall have the right to remove the same at any time during the Term, whether or not said items are considered fixtures and attachments to real property under applicable Laws (as defined in Paragraph 33 below). If such time for removal causes LESSEE to remain on the Premises after termination of this Agreement, LESSEE shall pay rent at the then existing monthly rate or on the existing monthly pro-rata basis if based upon a longer payment term, until such time as the removal of the building, antenna structure, fixtures and all personal property are completed.

15. HOLDOVER. LESSEE has no right to retain possession of the Premises or any part thereof beyond the expiration of that removal period set forth in Paragraph 14 herein, unless the Parties are negotiating a new lease or lease extension in good faith. In the event that the Parties are not in the process of negotiating a new lease or lease extension in good faith, LESSEE holds over in violation of Paragraph 14 and this Paragraph 15, then the rent then in effect payable from and after the time of the expiration or earlier removal period set forth in Paragraph 14 shall equal to the rent applicable during the month immediately preceding such expiration or earlier termination.

16. RIGHT OF FIRST REFUSAL. If LESSOR elects, during the Term (i) to sell or otherwise transfer all or any portion of the Property, whether separately or as part of a larger parcel of which the Property is a part, or (ii) to grant to a third party by easement or other legal instrument an interest in and to that portion of the Property occupied by LESSEE, or a larger portion thereof, for the purpose of operating and maintaining communications facilities or the management thereof, with or without an assignment of this Agreement to such third party, LESSEE shall have the right of first refusal to meet any bona fide offer of sale or transfer on the same terms and conditions of such offer. If LESSEE fails to meet such bona fide offer within thirty (30) days after written notice thereof from LESSOR, LESSOR may sell or grant the easement or interest in the Property or portion thereof to such third person in accordance with the terms and conditions of such third party offer. For purposes of this Paragraph, any transfer, bequest or devise of LESSOR's interest in the Property as a result of the death of LESSOR, whether by will or intestate succession, or any conveyance to LESSOR's family members by direct conveyance or by conveyance to a trust for the benefit of family members shall not be considered a sale of the Property for which LESSEE has any right of first refusal.

17. RIGHTS UPON SALE. Should LESSOR, at any time during the Term decide (i) to sell or transfer all or any part of the Property to a purchaser other than LESSEE, or (ii) to grant to a third party by easement or other legal instrument an interest in and to that portion of the Property occupied by LESSEE, or a larger portion thereof, for the purpose of operating and maintaining communications facilities or the management thereof, such sale or grant of an easement or interest therein shall be under and subject to this Agreement and any such purchaser or transferee shall recognize LESSEE's rights hereunder under the terms of this Agreement. To the extent that LESSOR grants to a third party by easement or other legal instrument an interest in and to that portion of the Property occupied by LESSEE for the purpose of operating and maintaining communications facilities or the management thereof and in conjunction therewith, assigns this Agreement to said third party, LESSOR shall not be released from its obligations to

LESSEE under this Agreement, and LESSEE shall have the right to look to LESSOR and the third party for the full performance of this Agreement.

18. QUIET ENJOYMENT. LESSOR covenants that LESSEE, on paying the rent and performing the covenants herein, shall peaceably and quietly have, hold and enjoy the Premises.

19. TITLE. LESSOR represents and warrants to LESSEE as of the execution date of this Agreement, and covenants during the Term that LESSOR is seized of good and sufficient title and interest to the Property and has full authority to enter into and execute this Agreement. LESSOR further covenants during the Term that there are no liens, judgments or impediments of title on the Property, or affecting LESSOR's title to the same and that there are no covenants, easements or restrictions which prevent or adversely affect the use or occupancy of the Premises by LESSEE as set forth above.

20. INTEGRATION. It is agreed and understood that this Agreement contains all agreements, promises and understandings between LESSOR and LESSEE and that no verbal or oral agreements, promises or understandings shall be binding upon either LESSOR or LESSEE in any dispute, controversy or proceeding at law, and any addition, variation or modification to this Agreement shall be void and ineffective unless made in writing signed by the Parties or in a written acknowledgment in the case provided in Paragraph 3. In the event any provision of the Agreement is found to be invalid or unenforceable, such finding shall not affect the validity and enforceability of the remaining provisions of this Agreement. The failure of either Party to insist upon strict performance of any of the terms or conditions of this Agreement or to exercise any of its rights under the Agreement shall not waive such rights and such Party shall have the right to enforce such rights at any time and take such action as may be lawful and authorized under this Agreement, in law or in equity.

21. GOVERNING LAW. This Agreement and the performance thereof shall be governed, interpreted, construed and regulated by the Laws of the State in which the Property is located.

22. ASSIGNMENT. This Agreement may be sold, assigned or transferred by the LESSEE without any approval or consent of the LESSOR to the LESSEE's principal, affiliates, subsidiaries of its principal or to any entity which acquires all or substantially all of LESSEE's assets in the market defined by the Federal Communications Commission in which the Property is located by reason of a merger, acquisition or other business reorganization. As to other parties, this Agreement may not be sold, assigned or transferred without the written consent of the LESSOR, which such consent will not be unreasonably withheld, delayed or conditioned. No change of stock ownership, partnership interest or control of LESSEE or transfer upon partnership or corporate dissolution of LESSEE shall constitute an assignment hereunder. LESSEE may sublet the Premises within its sole discretion, upon notice to LESSOR. Any sublease that is entered into by LESSEE shall be subject to the provisions of this Agreement and shall be binding upon the successors, assigns, heirs and legal representatives of the respective Parties hereto.

23. NOTICES. All notices hereunder must be in writing and shall be deemed validly given if sent by certified mail, return receipt requested or by commercial courier, provided the courier's regular business is delivery service and provided further that it guarantees delivery to the addressee by the end of the next business day following the courier's receipt from the sender, addressed as follows (or any other address that the Party to be notified may have designated to the sender by like notice):

LESSOR: Pilot Corporation of America
3855 Regent Boulevard
Jacksonville, Florida 32224
Attention: Nicholas Niejelow

LESSEE: Cellco Partnership
d/b/a Verizon Wireless
180 Washington Valley Road
Bedminster, New Jersey 07921
Attention: Network Real Estate

Notice shall be effective upon actual receipt or refusal as shown on the receipt obtained pursuant to the foregoing.

24. SUCCESSORS. This Agreement shall extend to and bind the heirs, personal representative, successors and assigns of the Parties hereto.

25. SUBORDINATION AND NON-DISTURBANCE. LESSOR shall obtain not later than fifteen (15) days following the execution of this Agreement, a Non-Disturbance Agreement, as defined below, from its existing mortgagee(s), ground lessors and master lessors, if any, of the Property. At LESSOR's option, this Agreement shall be subordinate to any future master lease, ground lease, mortgage, deed of trust or other security interest (a "Mortgage") by LESSOR which from time to time may encumber all or part of the Property or right-of-way; provided, however, as a condition precedent to LESSEE being required to subordinate its interest in this Agreement to any future Mortgage covering the Property, LESSOR shall obtain for LESSEE's benefit a non-disturbance and attornment agreement for LESSEE's benefit in the form reasonably satisfactory to LESSEE, and containing the terms described below (the "Non-Disturbance Agreement"), and shall recognize LESSEE's right to remain in occupancy of and have access to the Premises as long as LESSEE is not in default of this Agreement beyond applicable notice and cure periods. The Non-Disturbance Agreement shall include the encumbering party's ("Lender's") agreement that, if Lender or its successor-in-interest or any purchaser of Lender's or its successor's interest (a "Purchaser") acquires an ownership interest in the Property, Lender or such successor-in-interest or Purchaser will (1) honor all of the terms of the Agreement, (2) fulfill LESSOR's obligations under the Agreement, and (3) promptly cure all of the then-existing LESSOR defaults under the Agreement. Such Non-Disturbance Agreement must be binding on all of Lender's participants in the subject loan (if any) and on all successors and assigns of Lender and/or its participants and on all Purchasers. In return for such Non-Disturbance Agreement, LESSEE will execute an agreement for Lender's benefit in which LESSEE (1) confirms that the

Agreement is subordinate to the Mortgage or other real property interest in favor of Lender, (2) agrees to attorn to Lender if Lender becomes the owner of the Property and (3) agrees to accept a cure by Lender of any of LESSOR's defaults, provided such cure is completed within the deadline applicable to LESSOR. In the event LESSOR defaults in the payment and/or other performance of any mortgage or other real property interest encumbering the Property, LESSEE, may, at its sole option and without obligation, cure or correct LESSOR's default and upon doing so, LESSEE shall be subrogated to any and all rights, titles, liens and equities of the holders of such mortgage or other real property interest and LESSEE shall be entitled to deduct and setoff against all rents that may otherwise become due under this Agreement the sums paid by LESSEE to cure or correct such defaults.

26. RECORDING. LESSOR agrees to execute a Memorandum of this Agreement which LESSEE may record with the appropriate recording officer. The date set forth in the Memorandum of Lease is for recording purposes only and bears no reference to commencement of either the Term or rent payments.

27. DEFAULT.

a. In the event there is a breach by LESSEE with respect to any of the provisions of this Agreement or its obligations under it, including the payment of rent, LESSOR shall give LESSEE written notice of such breach. After receipt of such written notice, LESSEE shall have fifteen (15) days in which to cure any monetary breach and thirty (30) days in which to cure any non-monetary breach, provided LESSEE shall have such extended period as may be required beyond the thirty (30) days if the nature of the cure is such that it reasonably requires more than thirty (30) days and LESSEE commences the cure within the thirty (30) day period and thereafter continuously and diligently pursues the cure to completion. LESSOR may not maintain any action or effect any remedies for default against LESSEE unless and until LESSEE has failed to cure the breach within the time periods provided in this Paragraph.

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

28. REMEDIES. Upon a default, the non-defaulting Party may at its option (but without obligation to do so), perform the defaulting Party's duty or obligation on the defaulting Party's behalf, including but not limited to the obtaining of reasonably required insurance policies. The costs and expenses of any such performance by the non-defaulting Party shall be due and payable by the defaulting Party upon invoice therefor. In the event of a default by either Party with respect to a material provision of this Agreement, without limiting the non-defaulting Party in the exercise of any right or remedy which the non-defaulting Party may have by reason of such default, the non-defaulting Party may terminate the Agreement and/or pursue any remedy now or hereafter available to the non-defaulting Party under the Laws or judicial decisions of the state in which the Premises are located; provided, however, LESSOR shall use reasonable efforts to mitigate its damages in connection with a default by LESSEE. If LESSEE so performs any of LESSOR's obligations hereunder, the full amount of the reasonable and actual cost and expense incurred by LESSEE shall immediately be owing by LESSOR to LESSEE, and LESSOR shall pay to LESSEE upon demand the full undisputed amount thereof with interest thereon from the date of payment at the greater of (i) [redacted] or (ii) the highest rate permitted by applicable Laws. Notwithstanding the foregoing, if LESSOR does not pay LESSEE the full undisputed amount within thirty (30) days of its receipt of an invoice setting forth the amount due from LESSOR, LESSEE may offset the full undisputed amount, including all accrued interest, due against all fees due and owing to LESSOR until the full undisputed amount, including all accrued interest, is fully reimbursed to LESSEE.

29. ENVIRONMENTAL.

a. LESSOR will be responsible for all obligations of compliance with any and all environmental and industrial hygiene laws, including any regulations, guidelines, standards, or policies of any governmental authorities regulating or imposing standards of liability or standards of conduct with regard to any environmental or industrial hygiene conditions or concerns as may now or at any time hereafter be in effect, that are or were in any way related to activity now conducted in, on, or in any way related to the Property, unless such conditions or concerns are caused by the specific activities of LESSEE in the Premises.

b. LESSOR shall hold LESSEE harmless and indemnify LESSEE from and assume all duties, responsibility and liability at LESSOR's sole cost and expense, for all duties, responsibilities, and liability (for payment of penalties, sanctions, forfeitures, losses, costs, or damages) and for responding to any action, notice, claim, order, summons, citation, directive, litigation, investigation or proceeding which is in any way related to: a) failure to comply with any environmental or industrial hygiene law, including without limitation any regulations, guidelines, standards, or policies of any governmental authorities regulating or imposing standards of liability or standards of conduct with regard to any environmental or industrial hygiene concerns or conditions as may now or at any time hereafter be in effect, unless such non-compliance results from conditions caused by LESSEE; and b) any environmental or industrial hygiene conditions arising out of or in any way related to the condition of the Property or activities conducted thereon, unless such environmental conditions are caused by LESSEE.

30. CASUALTY. In the event of damage by fire or other casualty to the Premises that cannot reasonably be expected to be repaired within forty-five (45) days following same or, if the Property is damaged by fire or other casualty so that such damage may reasonably be expected to disrupt LESSEE's operations at the Premises for more than forty-five (45) days, then LESSEE may, at any time following such fire or other casualty, provided LESSOR has not completed the restoration required to permit LESSEE to resume its operation at the Premises, terminate this Agreement upon fifteen (15) days prior written notice to LESSOR. Any such notice of termination shall cause this Agreement 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 Agreement and the Parties shall make an appropriate adjustment, as of such termination date, with respect to payments due to the other under this Agreement. Notwithstanding the foregoing, the rent shall abate during the period of repair following such fire or other casualty in proportion to the degree to which LESSEE's use of the Premises is impaired.

31. CONDEMNATION. In the event of any condemnation of all or any portion of the Property, this Agreement shall terminate as to the part so taken 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 or Property, LESSEE, in LESSEE's sole discretion, is unable to use the Premises for the purposes intended hereunder, or if such condemnation may reasonably be expected to disrupt LESSEE's operations at the Premises for more than forty-five (45) days, LESSEE may, at LESSEE's option, to be exercised in writing within fifteen (15) days after LESSOR shall have given LESSEE written notice of such taking (or in the absence of such notice, within fifteen (15) days after the condemning authority shall have taken possession) terminate this Agreement as of the date the condemning authority takes such possession. LESSEE may on its own behalf make a claim in any condemnation proceeding involving the Premises for losses related to the equipment, conduits, fixtures, its relocation costs and its damages and losses (but not for the loss of its leasehold interest). Any such notice of termination shall cause this Agreement 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 Agreement and the Parties shall make an appropriate adjustment as of such termination date with respect to payments due to the other under this Agreement. If LESSEE does not terminate this Agreement in accordance with the foregoing, this Agreement 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 Agreement is not terminated by reason of such condemnation, LESSOR shall promptly repair any damage to the Premises caused by such condemning authority.

32. SUBMISSION OF AGREEMENT/PARTIAL INVALIDITY/AUTHORITY. The submission of this Agreement for examination does not constitute an offer to lease the Premises and this Agreement becomes effective only upon the full execution of this Agreement by the Parties. If any provision herein is invalid, it shall be considered deleted from this Agreement and shall not invalidate the remaining provisions of this Agreement. Each of the Parties hereto warrants to the other that the person or persons executing this Agreement on behalf of such Party has the full right, power and authority to enter into and execute this Agreement on such Party's

behalf and that no consent from any other person or entity is necessary as a condition precedent to the legal effect of this Agreement.

33. APPLICABLE LAWS. During the Term, LESSOR shall maintain the Property in compliance with all applicable laws, rules, regulations, ordinances, directives, covenants, easements, zoning and land use regulations, and restrictions of record, permits, building codes, and the requirements of any applicable fire insurance underwriter or rating bureau, now in effect or which may hereafter come into effect (including, without limitation, the Americans with Disabilities Act and laws regulating hazardous substances) (collectively "Laws"). LESSEE shall, in respect to the condition of the Premises and at LESSEE's sole cost and expense, comply with (a) all Laws relating solely to LESSEE's specific and unique nature of use of the Premises (other than general office use); and (b) all building codes requiring modifications to the Premises due to the improvements being made by LESSEE in the Premises.

34. SURVIVAL. The provisions of the Agreement relating to indemnification from one Party to the other Party shall survive any termination or expiration of this Agreement. Additionally, any provisions of this Agreement which require performance subsequent to the termination or expiration of this Agreement shall also survive such termination or expiration.

35. CAPTIONS. The captions contained in this Agreement are inserted for convenience only and are not intended to be part of the Agreement. They shall not affect or be utilized in the construction or interpretation of the Agreement.

Lessor Site ID & No.: Trumbull SE 4 CT / 469122
Lessee Site ID & No.: NJJER01153A

CONTRACT # _____

IN WITNESS WHEREOF, the Parties hereto have set their hands and affixed their respective seals the day and year first above written.

LESSOR:
Pilot Corporation of America

Elena Bischof
WITNESS

Elena Bischof

By: _____

Its: Vice President NBD

Date: August 24, 2013

LESSEE:
Cellco Partnership d/b/a Verizon Wireless

_____
WITNESS

Karin Paul

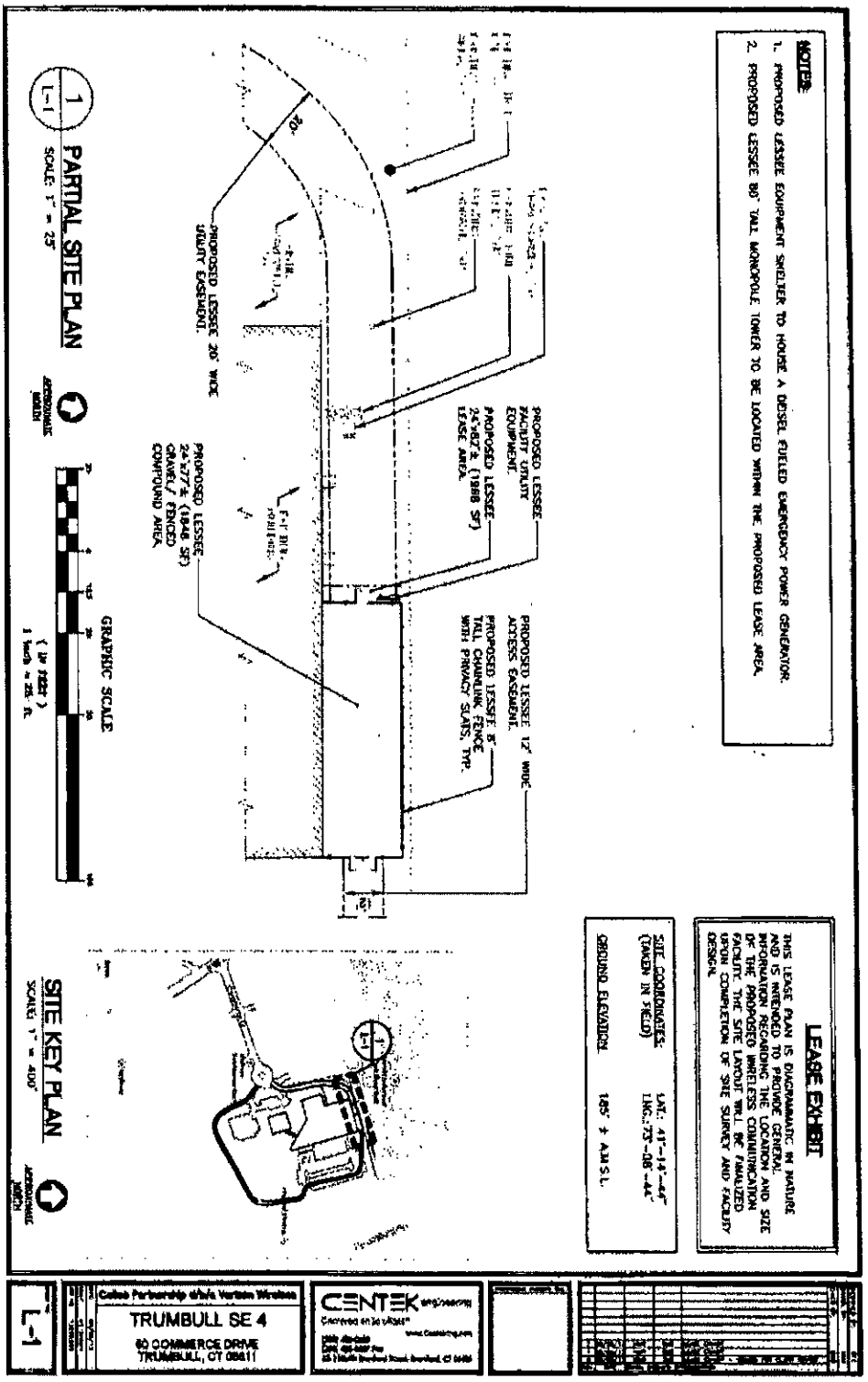
By: _____
David R. Heverling
Its: Area Vice President Network

Date: 10 10 13

(W2280479;2)

HSG HSG

Exhibit "A" (Page 2 of 2)



HSG D6 456

EXHIBIT 5 TO SUPPLEMENT

WRITTEN ACKNOWLEDGMENT OF LEASE COMMENCEMENT

[To be sent by or on behalf of LESSOR to LESSEE]

Re: COMMENCEMENT LETTER
Supplement by and between Cellco Partnership ("LESSOR") and DISH Wireless L.L.C. ("LESSEE") dated_____.
Site Reference: Trumbull SE 4 CT / 469122
LESSEE Site Reference: NJJER01153A

Dear _____:

The Master Tower Lease Agreement between LESSOR and LESSEE defines the Commencement Date of any Supplement as the earlier of three (3) months from full execution of the Supplement or the first day of the calendar month following the commencement of installation of LESSEE's communications equipment at such Site.

This letter is to notify you that three (3) months expired on _____ and the **Commencement Date is hereby established as _____. That date is also the date that rent commences under the Supplement.** LESSEE agrees to provide a copy of this signed Commencement Letter to LESSEE's accounting group to ensure proper rent credit.

Or

This letter is to notify you that installation started on _____ thereby the **Commencement Date is hereby established as _____. That date is also the date that rent commences under the Supplement.** LESSEE agrees to provide a copy of this signed Commencement Letter to LESSEE's accounting group to ensure proper rent credit.

If you have any questions, please feel free to call me at _____.

Sincerely,

HSG DS HSG

DocuSign

Certificate Of Completion

Envelope Id: 1689ADAF534B46E98859AD8C861135A9
Subject: DocuSign: 469122 DISH_Trumbull SE 4_PE_SLA
Source Envelope:
Document Pages: 67
Certificate Pages: 1
AutoNav: Enabled
EnvelopeId Stamping: Disabled
Time Zone: (UTC-05:00) Eastern Time (US & Canada)

Signatures: 1
Initials: 0

Status: Completed

Envelope Originator:
Tammy Yeadon
1095 Ave of The Americas
New York, NY 10036-6704
tammy.yeadon@verizonwireless.com
IP Address: 137.188.108.39

Record Tracking

Status: Original	Holder: Tammy Yeadon	Location: DocuSign
11/23/2022 | 10:56 AM	tammy.yeadon@verizonwireless.com	

Signer Events	Signature	Timestamp
Chad Schmelzer chad.schmelzer@verizonwireless.com Sr. Manager- Network Engineering & Operations Security Level: Email, Account Authentication (None)	DocuSigned by: Chad Schmelzer C85AB85CACBF4F2...	Sent: 11/23/2022 | 10:57 AM Viewed: 11/23/2022 | 10:58 AM Signed: 11/23/2022 | 10:58 AM
	Signature Adoption: Pre-selected Style Using IP Address: 69.78.100.101	

Electronic Record and Signature Disclosure:
Not Offered via DocuSign

In Person Signer Events	Signature	Timestamp

Editor Delivery Events	Status	Timestamp

Agent Delivery Events	Status	Timestamp

Intermediary Delivery Events	Status	Timestamp

Certified Delivery Events	Status	Timestamp

Carbon Copy Events	Status	Timestamp

Witness Events	Signature	Timestamp

Notary Events	Signature	Timestamp

Envelope Summary Events	Status	Timestamps
Envelope Sent	Hashed/Encrypted	11/23/2022 | 10:57 AM
Certified Delivered	Security Checked	11/23/2022 | 10:58 AM
Signing Complete	Security Checked	11/23/2022 | 10:58 AM
Completed	Security Checked	11/23/2022 | 10:58 AM

Payment Events	Status	Timestamps

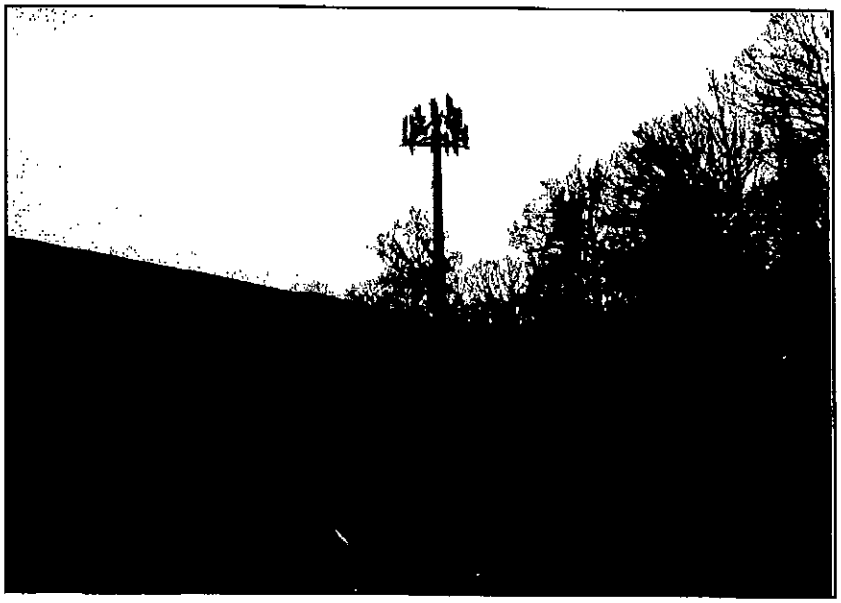
Exhibit F

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:	NJJER01153A
Site Address:	60 Commerce Drive Trumbull, CT
Latitude:	N 41.245601
Longitude:	W 73.145678
Structure type:	Monopole
Report date:	August 29, 2022
Compliance Conclusion:	DISH Wireless, LLC will be in compliance with the rules and regulations as described in OET Bulletin 65, following the implementation of the proposed mitigation as detailed in the report.

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

Contents

Introduction and Summary

At the request of DISH Wireless, LLC ("DISH"), Pinnacle Telecom Group has performed an independent expert assessment of radiofrequency (RF) levels and related FCC compliance for proposed wireless base station antenna operations on an existing monopole located at 60 Commerce Drive in Trumbull, CT. DISH refers to the antenna site by the code "NJJER01153A", and its proposed operation involves directional panel antennas and transmission in the 600 MHz, 2000 MHz and 2100 MHz frequency bands licensed to it by the FCC.

The FCC requires all wireless antenna operators to perform an assessment of potential human exposure to radiofrequency (RF) fields emanating from all the transmitting antennas at a site whenever antenna operations are added or modified, and to ensure compliance with the Maximum Permissible Exposure (MPE) limit in the FCC's regulations. In this case, the compliance assessment needs to take into account the RF effects of other existing antenna operations at the site by Verizon Wireless. Note that FCC regulations require any future antenna collocators to assess and assure continuing compliance based on the cumulative effects of all then-proposed and then-existing antennas at the site.

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

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

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

- At street level, the conservatively calculated maximum RF level from the combination of proposed and existing antenna operations at the site is 3.9721 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 25 times below the FCC limit for safe, continuous exposure of the general public.
- A supplemental analysis of the RF levels at the same height as the DISH antennas indicate that the FCC MPE limit is potentially exceeded. Therefore, it is recommended that three Caution signs and NOC Information signs be installed at the base of the monopole.
- The results of the calculations, along with the proposed mitigation, combine to satisfy the FCC requirements and associated guidelines on RF compliance. Moreover, because of the significant conservatism incorporated in the analysis, RF levels actually caused by the antennas will be lower than these calculations indicate.

The remainder of this report provides the following:

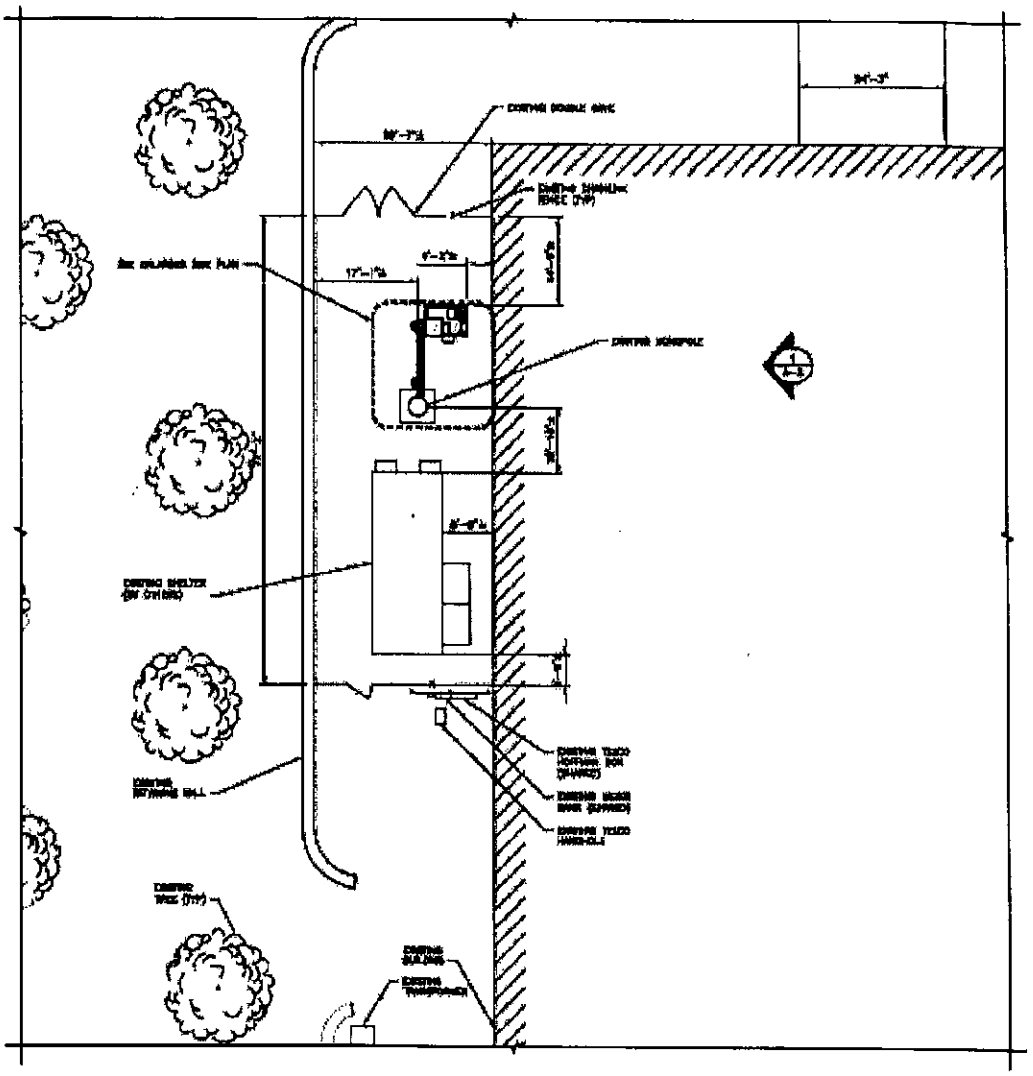
- relevant technical data on the proposed DISH antenna operations at the site, as well as on the existing Verizon Wireless antenna operations;
- a description of the applicable FCC mathematical model for calculating RF levels, and application of the relevant technical data to that model;
- analysis of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

In addition, four Appendices are included. Appendix A provides information on the documents used to prepare the analysis. Appendix B provides background on the FCC MPE limit. Appendix C details the proposed mitigation to satisfy the FCC requirements and associated guidelines on RF compliance. Appendix D provides a summary of the qualifications of the expert certifying FCC compliance for this site.

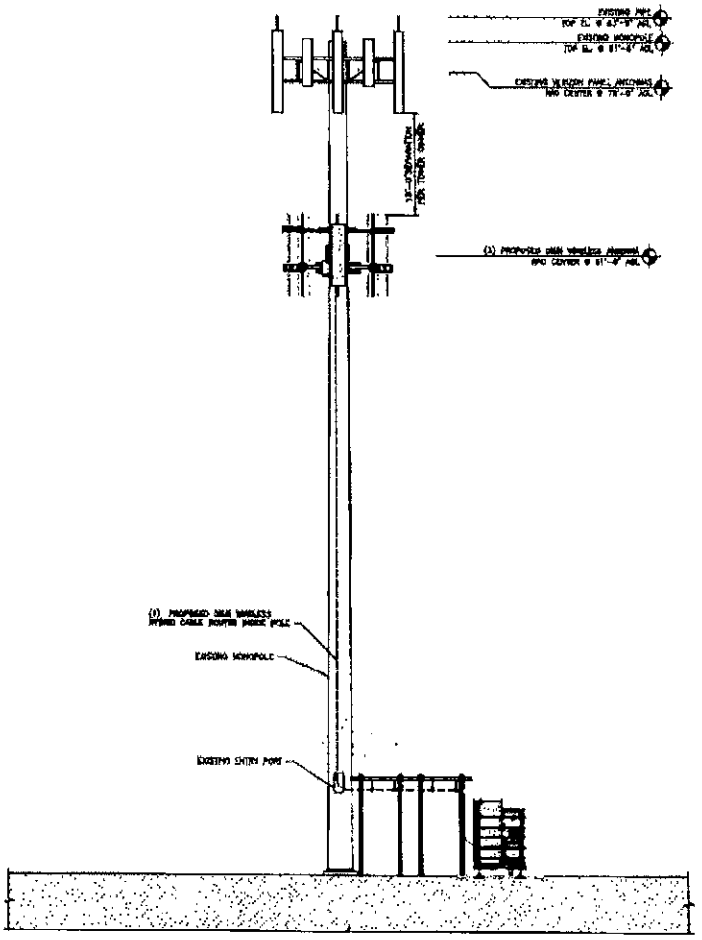
Antenna and Transmission Data

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

Plan View:



Elevation View:



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

Ant. ID	Carrier	Antenna Manufacturer	Antenna Model	Type	Freq. (MHz)	Ant. Qty. (#)	Total Input Power (Watts)	Total ERP (Watts)	AGL (m)	Ant. Gain (dBd)	EMT	Azimuth	EDT	IDT
❶	DISH	JMA Wireless	MX08FRO665-21	Panel	600	6	120	1637	61.0	11.46	68	0	2	0
❶	DISH	JMA Wireless	MX08FRO665-21	Panel	2000	6	160	6011	61.0	16.16	62	0	2	0
❶	DISH	JMA Wireless	MX08FRO665-21	Panel	2100	6	160	7567	61.0	16.66	64	0	2	0
❷	DISH	JMA Wireless	MX08FRO665-21	Panel	600	6	120	1637	61.0	11.46	68	140	2	0
❷	DISH	JMA Wireless	MX08FRO665-21	Panel	2000	6	160	6011	61.0	16.16	62	140	2	0
❷	DISH	JMA Wireless	MX08FRO665-21	Panel	2100	6	160	7567	61.0	16.66	64	140	2	0
❸	DISH	JMA Wireless	MX08FRO665-21	Panel	600	6	120	1637	61.0	11.46	68	250	2	0
❸	DISH	JMA Wireless	MX08FRO665-21	Panel	2000	6	160	6011	61.0	16.16	62	250	2	0
❸	DISH	JMA Wireless	MX08FRO665-21	Panel	2100	6	160	7567	61.0	16.66	64	250	2	0

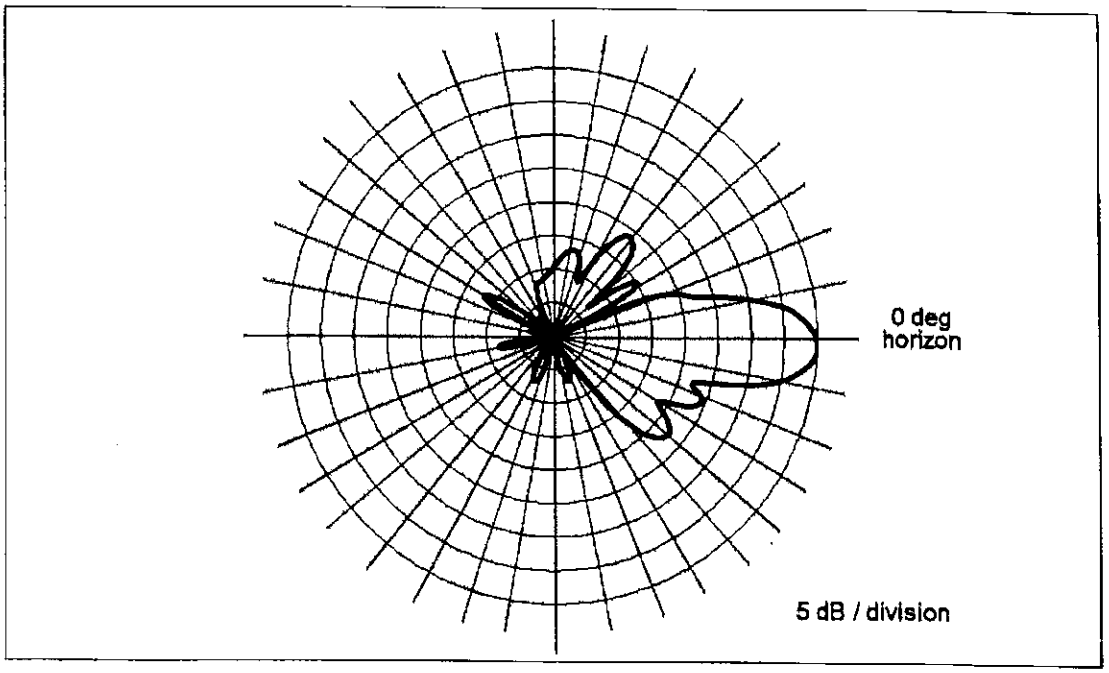
The area below the antennas, at street level, is of interest in terms of potential "uncontrolled" exposure of the general public, so the antenna's vertical-plane emission characteristic is used in the calculations, as it is a key determinant of the relative amount of RF emissions in the "downward" direction.

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

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

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

Figure 1. JMA Wireless MX08FRO665-21– 600 MHz Vertical-plane Pattern



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

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

Carrier	Antenna Manufacturer	Antenna Model	Type	Freq (MHz)	Total ERP (Watts)	Antenna Gain (dBd)	Azimuth
Verizon Wireless	Generic	Generic	Panel	746	2400	11.76	N/A
Verizon Wireless	Generic	Generic	Panel	869	5166	12.36	N/A
Verizon Wireless	Generic	Generic	Panel	1900	5372	15.26	N/A
Verizon Wireless	Generic	Generic	Panel	2100	5625	15.46	N/A

Compliance Analysis

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

Street Level Analysis

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

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

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

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

where

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

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

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

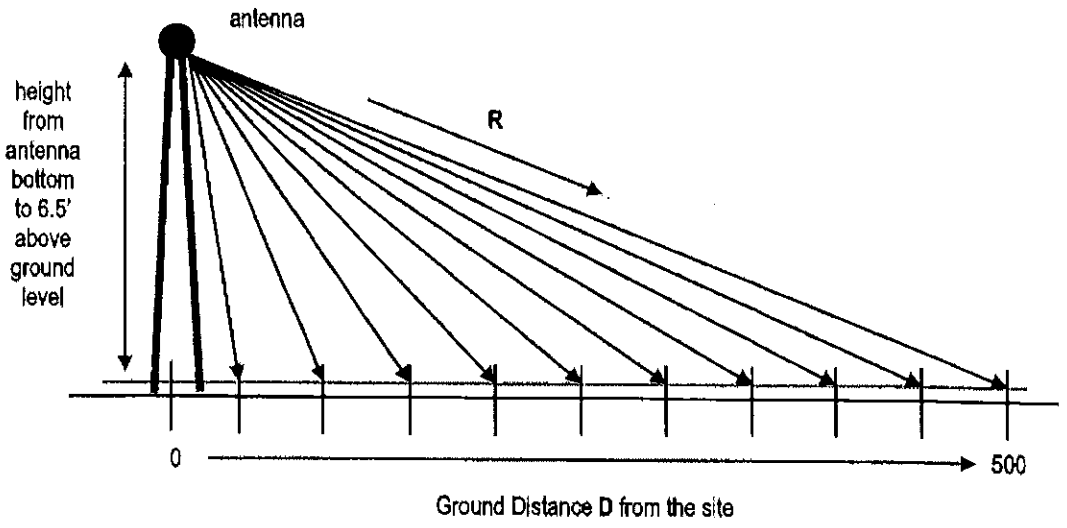


Figure 2. Street-level MPE% Calculation Geometry

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

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

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

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

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

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

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

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

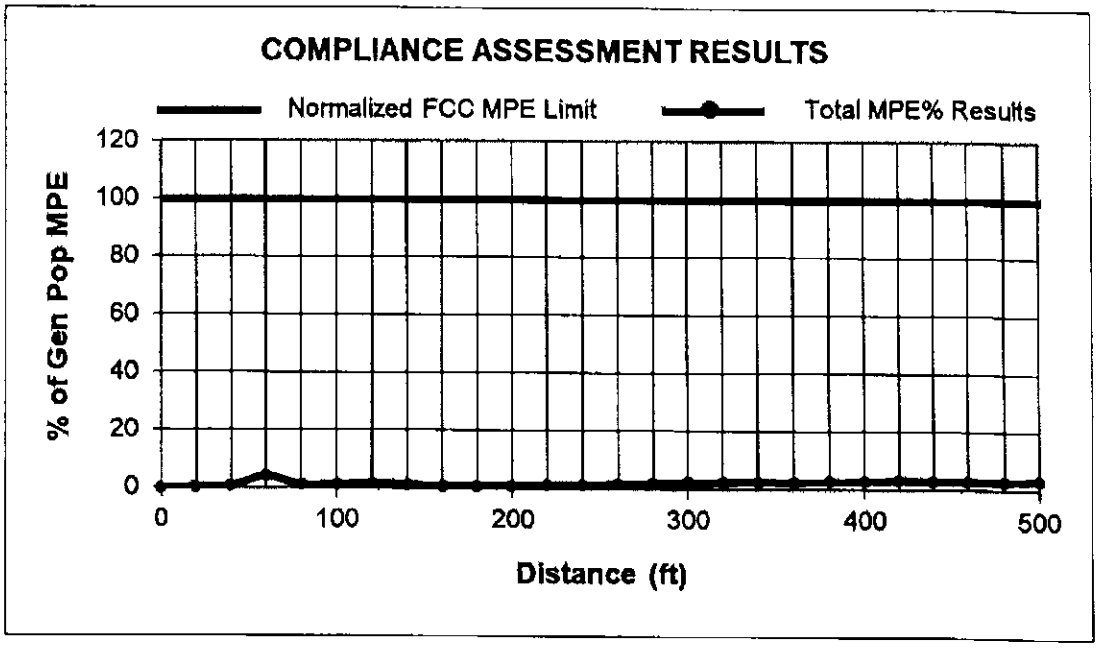
The net result of these assumptions is to intentionally and significantly overstate the calculated RF levels relative to the levels that will actually result from the antenna operations – and the purpose of this conservatism is to allow very "safe-side" conclusions about compliance.

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

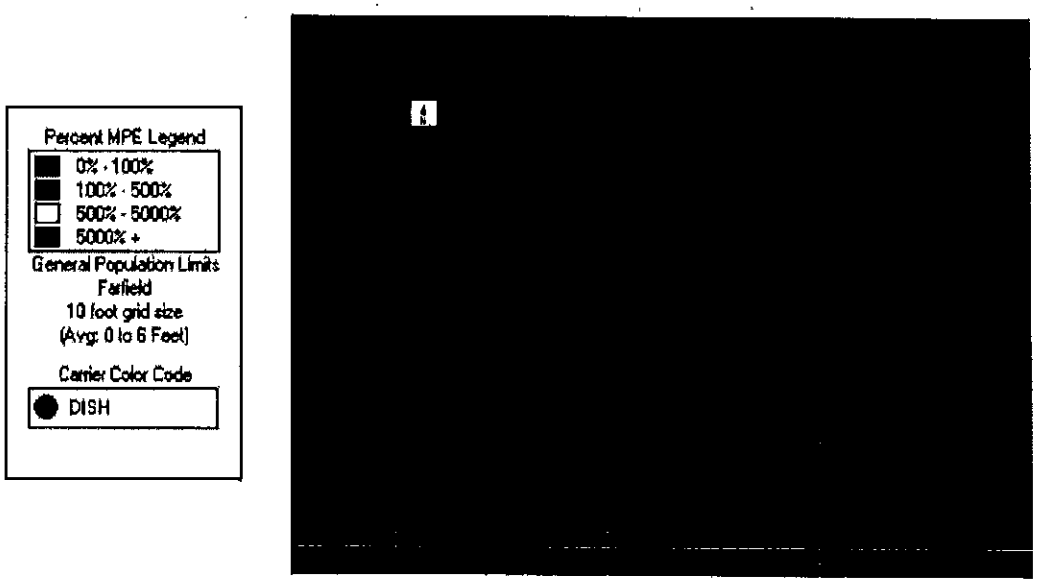
Ground Distance (ft)	DISH 600 MHz MPE%	DISH 2000 MHz MPE%	DISH 2100 MHz MPE%	Verizon Wireless MPE%	Total MPE%
0	0.0054	0.0070	0.0001	0.0552	0.0677
20	0.0354	0.0881	0.0507	0.1370	0.3112
40	0.0841	0.0270	0.0980	0.4500	0.6591
60	**0.6417**	**1.1060**	**1.9220**	**0.3024**	**3.9721**
80	0.1724	0.0553	0.0505	0.9087	1.1869
100	0.3171	0.2331	0.0370	0.7233	1.3105
120	0.3561	0.1067	0.1042	1.1344	1.7014
140	0.1932	0.1594	0.1669	0.7971	1.3166
160	0.1707	0.1044	0.0644	0.3385	0.6780
180	0.3704	0.1758	0.2114	0.0976	0.8552
200	0.4937	0.1445	0.2041	0.0667	0.9090
220	0.6388	0.0578	0.1027	0.2716	1.0709
240	0.7824	0.0030	0.0141	0.4144	1.2139
260	0.9479	0.0136	0.0070	0.5840	1.5525
280	1.0830	0.0372	0.0399	0.7641	1.9242
300	1.1927	0.0192	0.0297	0.9646	2.2062
320	1.0520	0.0169	0.0262	1.1623	2.2574
340	1.1235	0.0048	0.0002	1.3685	2.4970
360	1.0046	0.0042	0.0002	1.2261	2.2351
380	1.0615	0.1077	0.0917	1.4010	2.6619
400	0.9597	0.0974	0.0829	1.5518	2.6918
420	1.0010	0.3862	0.3952	1.4114	3.1938
440	0.9132	0.3523	0.3606	1.2892	2.9153
460	0.8365	0.3227	0.3303	1.4604	2.9499
480	0.7690	0.2967	0.3036	1.3437	2.7130
500	0.7778	0.6416	0.7035	1.2404	3.3633

As indicated, the maximum calculated overall RF level is 3.9721 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 below.

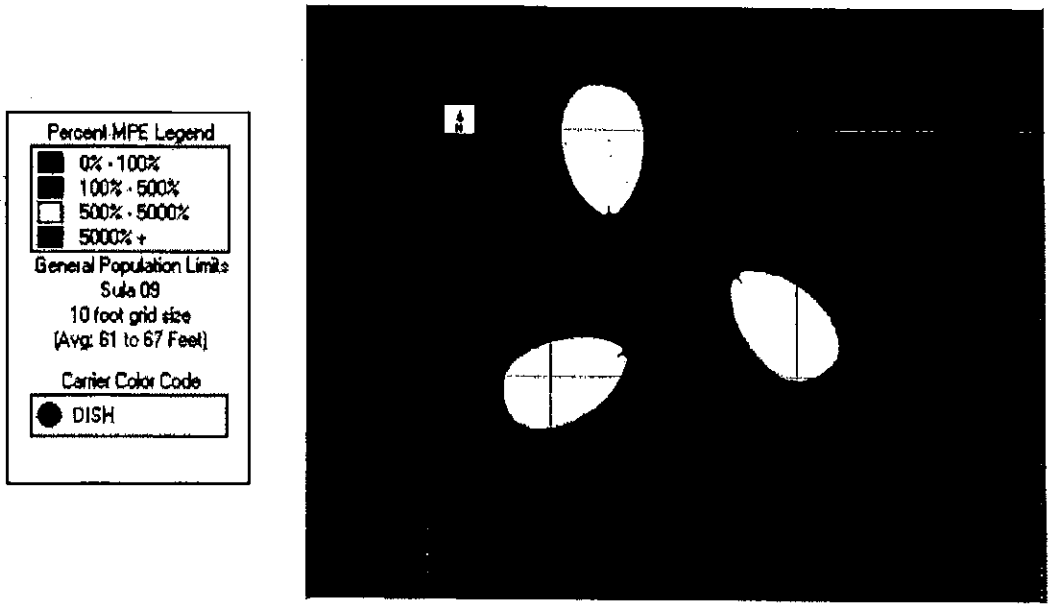


Near-field Analysis

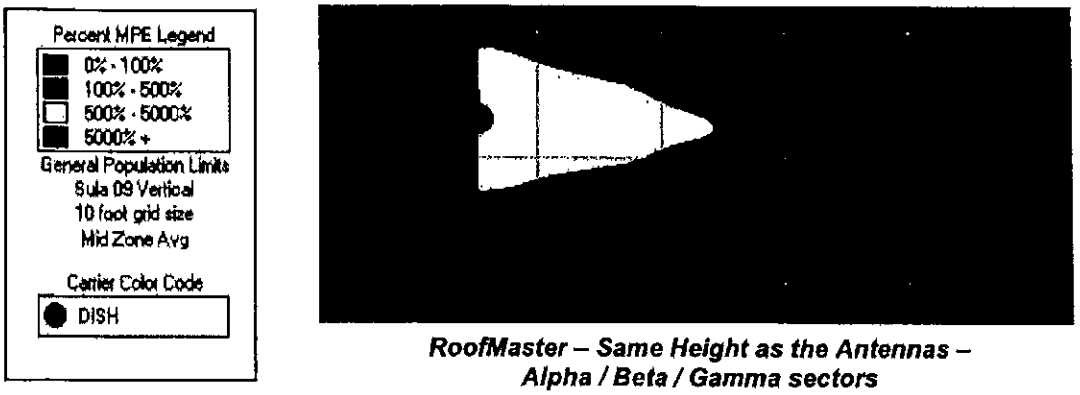
The compliance analysis for the same height as the antennas is performed using the RoofMaster program by Waterford Consultants.

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

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



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



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

Compliance Conclusion

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

The conservative analysis in this case shows that the maximum calculated RF level from the combination of proposed and existing antenna operations at street level around the site is 3.9721 percent of the FCC general population MPE limit. At the same height as the antennas, the analysis shows that the calculated RF levels potentially exceed the FCC MPE limit. Per DISH guidelines, and consistent with FCC guidance on compliance, it is recommended that three Caution signs and NOC Information signs be installed at the base of the monopole.

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

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

Certification

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

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

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

8/29/22
Date

Appendix A. Documents Used to Prepare the Analysis

RFDS: NJJER01153A_RFDS_20220825

CD: NJJER01153A_PCDs_20220825

Appendix B. Background on the FCC MPE Limit

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

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

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

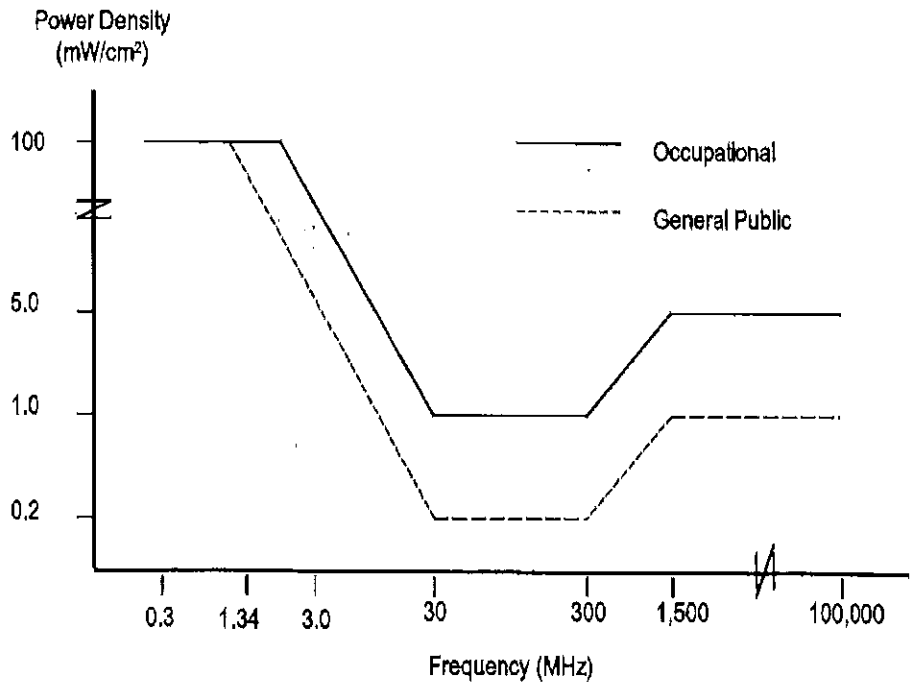
The specified continuous exposure MPE limits are based on known variation of human body susceptibility in different frequency ranges, and a Specific Absorption Rate (SAR) of 4 watts per kilogram, which is universally considered to accurately represent human capacity to dissipate incident RF energy (in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

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

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

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

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



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

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

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

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

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

FCC References on RF Compliance

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

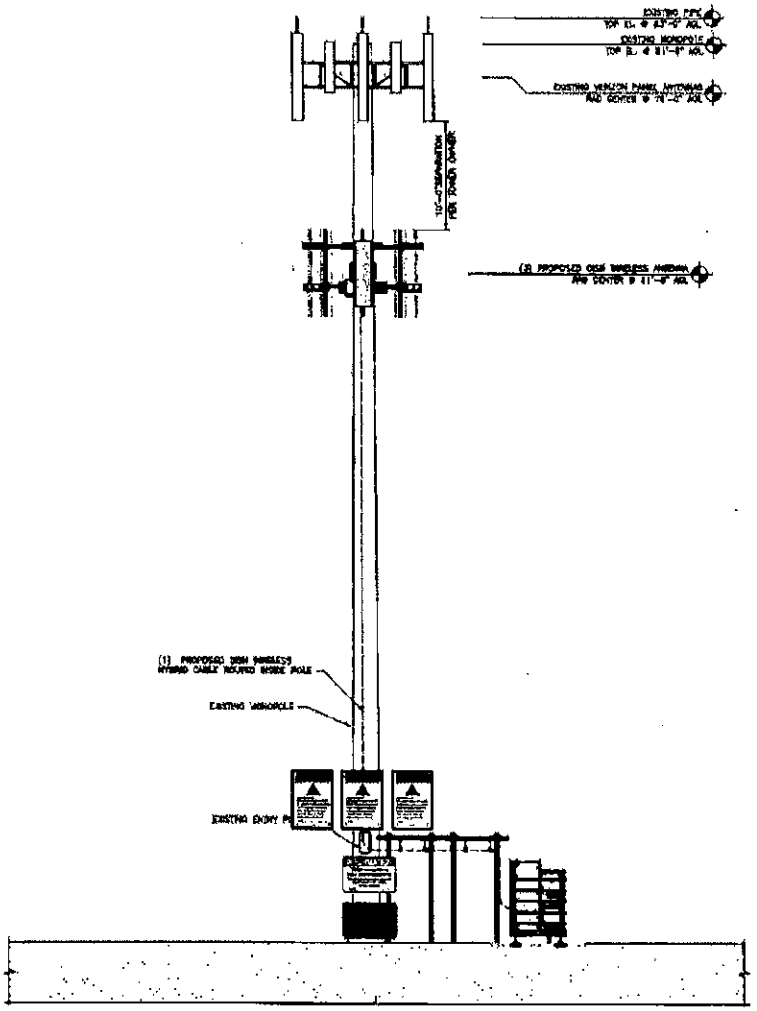
FCC Second Memorandum Opinion and Order and Notice of Proposed Rulemaking (FCC 97-303), *In the Matter of Procedures for Reviewing Requests for Relief From State and Local Regulations Pursuant to Section 332(c)(7)(B)(v) of the Communications Act of 1934 (WT Docket 97-192), Guidelines for Evaluating the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

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

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

Appendix C. Proposed Signage

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



Appendix D. Summary of Expert Qualifications

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

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

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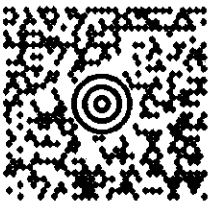

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