NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

Northeast Site Solutions
Denise Sabo
4 Angela's Way, Burlington CT 06013
203-435-3640
denise@northeastsitesolutions.com

July 20, 2022

Members of the Siting Council
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051

RE: Tower Share Application
370 Rockland Road, Guilford, CT 06437
Latitude: 41.396850
Longitude: -72.688808
Site #: CT46139-A_BOHVN00118B_SBA_DISH

Dear Ms. Bachman:

This letter and attachments are submitted on behalf of Dish Wireless LLC. Dish Wireless LLC plans to install antennas and related equipment to the tower site located at 370 Rockland Road (a/k/a 360 Rockland Road), Guilford, Connecticut.

Dish Wireless LLC proposes to install three (3) 600/1900 MHz 5G antennas and six (6) RRUs, at the 127-foot level of the existing 159-foot monopole tower, one (1) Fiber cable will also be installed. Dish Wireless LLC equipment cabinets will be placed within a 7' x 5' lease area within the fenced compound. Included are plans by B+T, dated June 14, 2022, Exhibit C. Also included is a structural analysis prepared by TES, dated May 20, 2022, confirming that the existing tower is structurally capable of supporting the proposed equipment. Attached as Exhibit D. The facility was originally approved by the Connecticut Siting Council, Docket No. 271, on April 15, 2004 and a tower extension was approved in Petition No. 899 on June 4, 2009. Please see attached Exhibit A.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies 16-50aa, of Dish Wireless LLC intent to share a telecommunications facility pursuant to R.C.S.A. 16-50j-88. In accordance with R.C.S.A., a copy of this letter is being sent to Matthew T. Hoey III, First Selectman and Jaime Stein, Town Planner for the Town of Guilford, as well as the tower owner (SBA) and property owner (Woodbridge Sportsmens Club Inc.).

The planned modifications of the facility fall squarely within those activities explicitly provided for in R.C.S.A. 16-50j-89.

1. The proposed modification will not result in an increase in the height of the existing structure. The top of the existing tower is 159-feet and the Dish Wireless LLC antennas will be located at a center line height of 127-feet.

2. The proposed modifications will not result in an increase of the site boundary as depicted on the attached site plan.

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3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed local and state criteria. The incremental effect of the proposed changes will be negligent.

4. The operation of 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 combined site operations will result in a total power density of 20.92% as evidenced by Exhibit F.

Connecticut General Statutes 16-50aa indicates that the Council must approve the shared use of a telecommunications facility provided it finds the shared use is technically, legally, environmentally, and economically feasible and meets public safety concerns. As demonstrated in this letter, Dish Wireless LLC respectfully submits that the shared use of this facility satisfies these criteria.

A. Technical Feasibility. The existing monopole has been deemed structurally capable of supporting Dish Wireless LLC proposed loading. The structural analysis is included as Exhibit D.

B. Legal Feasibility. As referenced above, C.G.S. 16-50aa has been authorized to issue orders approving the shared use of an existing tower such as this monopole tower in Guilford. Under the authority granted to the Council, an order of the Council approving the requested shared use would permit Dish Wireless LLC to obtain a building permit for the proposed installation. Further, a Letter of Authorization is included as Exhibit G, authorizing Dish Wireless LLC to file this application for shared use.

C. Environmental Feasibility. The proposed shared use of this facility would have a minimal environmental impact. The installation of Dish Wireless LLC equipment at the 127-foot level of the existing 159-foot tower would have an insignificant visual impact on the area around the tower. Dish Wireless LLC ground equipment would be installed within the existing facility compound. Dish Wireless LLC shared use would therefore not cause any significant alteration in the physical or environmental characteristics of the existing site. Additionally, as evidenced by Exhibit F, the proposed antennas would not increase radio frequency emissions to a level at or above the Federal Communications Commission safety standard.

D. Economic Feasibility. Dish Wireless LLC will be entering into an agreement with the owner of this facility to mutually agreeable terms. As previously mentioned, the Letter of Authorization has been provided by the owner to assist Dish Wireless LLC with this tower sharing application.

E. Public Safety Concerns. As discussed above, the tower is structurally capable of supporting Dish Wireless LLC proposed loading. Dish Wireless LLC is not aware of any public safety concerns relative to the proposed sharing of the existing tower. Dish Wireless LLC intentions of providing new and improved wireless service through the shared use of this facility is expected to enhance the safety and welfare of local residents and individuals traveling through Guilford.

Sincerely,

Denise Sabo

Denise Sabo
Mobile: 203-435-3640
Fax: 413-521-0558
Office: 4 Angela's Way, Burlington CT 06013
Email: denise@northeastsitesolutions.com

NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

Attachments

Cc: Matthew T. Hoey III, First Selectman
Town of Guilford
31 Park Street
Guilford, CT 06437

Jaime Stein, Town Planner
Town of Guilford
50 Boston Street
Guilford, CT 06437

Woodbridge Sportsmens Club Inc. – Property Owner
15 Farm River Drive
Northford, CT 06472

SBA - Tower Owner

Exhibit A

Original Facility Approval

Connecticut Siting Council (/CSC)

DOCKET NO. 271 - Sprint Spectrum, L.P., d/b/a Sprint PCS application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance and operation of a wireless telecommunications facility at 370 Rockland Road or 4158 Durham Road, Guilford, Connecticut.	}	Connecticut
	}	Siting
	}	Council
		April 15, 2004

Decision and Order

Pursuant to the foregoing Findings of Fact and Opinion, the Connecticut Siting Council (Council) finds that the effects associated with the construction, operation, and maintenance 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 Sprint Spectrum, L.P. d/b/a Sprint PCS for the construction, maintenance and operation of a wireless telecommunications facility at Site A, located at 370 Rockland Road, Guilford, Connecticut. The Council denies certification of Site B located at 4158 Durham Road, Guilford, Connecticut.

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 Sprint and other entities, both public and private, but such tower shall not exceed a height of 150 feet above ground level. Antennas shall be mounted on t-bar platforms.

2. The Certificate Holder shall prepare a Development and Management (D&M) Plan for this site in compliance with Sections 16-50j-75 through 16-50j-77 of the Regulations of Connecticut State Agencies. The D&M Plan shall be submitted to and approved by the Council prior to the commencement of facility construction and shall include:

a) a final site plan(s) of site development to include specifications for the tower, tower foundation, antennas, equipment building, access road, utility line, and landscaping; and

b) construction plans for site clearing, water drainage, and erosion and sedimentation control consistent with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control, as amended.

3. The Certificate Holder shall, prior to the commencement of operation, provide the Council worst-case

modeling of 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 electromagnetic radio frequency power density is 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. The Certificate Holder shall provide space on the tower for no compensation for any municipal antennas, provided such antennas are compatible with the structural integrity of the tower.

6. If the facility does not initially provide wireless services within one year of completion of construction or 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 before any such use is made.

7. Any antenna that becomes obsolete and ceases to function shall be removed within 60 days after such antennas become obsolete and cease to function.

8. Unless otherwise approved by the Council, this Decision and Order shall be void if the facility authorized herein is not operational within one year of the effective date of this Decision and Order or within one year after all appeals to this Decision and Order have been resolved.

Pursuant to General Statutes **§** 16-50p, we hereby direct that a copy of the Findings of Fact, Opinion, and Decision and Order be served on each person listed below, and notice of issuance shall be published in the New Haven Register and The Shoreline Times.

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.

The parties and intervenors to this proceeding are:

Applicant	**Its Representative**
Sprint Spectrum L.P. d/b/a Sprint PCS	Thomas J. Regan, Esquire Brown Rudnick Berlack Israels LLP City Place I. 38th Floor 185 Asylum Street Hartford, CT 06103-3402
Intervenor	**Its Representative**
AT&T Wireless PCS, LLC d/b/a AT&T Wireless	Christopher B. Fisher, Esq. Cuddy & Feder & Worby LLP 90 Maple Avenue White Plains, NY 10601-5196
Party	**Its Representative**
Guilford Land Conservation Trust, Inc.	William M. Bloss Jacobs, Grundberg, Belt & Dow, P.C. P.O. Box 606 New Haven, CT 06503-0606

Petition No. 899
Cellco Partnership d/b/a Verizon Wireless
Guilford, Connecticut
Staff Report
May 19, 2009

On May 6, 2009, Verizon filed a petition for a declaratory ruling that no Certificate of Environmental Compatibility and Public Need is required for the extension of an existing telecommunications tower in Guilford, Connecticut. Connecticut Siting Council member Phil Ashton and Council staff member David Martin conducted a field review of the proposed modifications on May 19, 2009. Rachel Mayo represented Verizon at the field review.

Verizon proposes to add a ten-foot extension to an existing 150-foot monopole tower located at 370 Rockland Road in Guilford. The existing tower is owned by TowerCo and was certificated by the Council in Docket 271, which was approved on April 15, 2004. The application for this certificate was submitted by Sprint. Verizon would use T-arm mounts to attach its antennas to the tower in accordance with the Decision and Order for this docket.

From this location, Verizon is seeking to cover an area that encompasses portions of Route 77 in the northern section of Guilford along with local streets in the surrounding vicinity. There are currently antenna arrays installed at centerline heights of 147 and 137 feet above ground level. Verizon asserts that it cannot achieve its coverage objectives at the next available height of 127 feet above ground level. For this reason, Verizon seeks to add ten feet onto the tower's height in order to install its antennas at a centerline height of 157 feet.

The tower is located on an 87-acre parcel owned by the Woodbridge Sportsmen Club and used primarily for hunting and fishing. The property is heavily wooded with little development nearby. There is a small agricultural operation and one large single-family home to the south of the tower. Although the top of the tower is barely visible from a short stretch of the road that passes the agricultural operation, the tower is not visible from the operation itself or the residence. The top of the tower is visible from the southern end of Quonnipaug Lake, but the view is so far that the tower is barely noticeable, even to those who are actively looking for it. An additional ten feet should not result in any significant difference in visibility.

Verizon notified the Town of Guilford, the owner of the host property, and abutting property owners of its proposal to extend the height of this tower.

The addition of Verizon's antennas would bring the cumulative power density of the antenna systems on the tower to 25.33% of the FCC limit.

View of Tower and Compound

View of Tower from Quonnipaug Lake

Exhibit B

Property Card

Town of Guilford, CT

Property Listing Report

Map Block Lot	123004	Building #	1	Unique Identifier	7896

Property Information

Property Location	360 ROCKLAND RD
Mailing Address	15 FARM RIVER DR NORTHFORD CT 06472
Land Use	SINGLE FAMILY
Zoning Code	R-8
Neighborhood	N050

Owner	WOODBRIDGE SPORTSMENS CLUB INC
Co-Owner	C/O ANTHONY BALZANO TREASURER
Book / Page	0141/0511
Land Class	Residential
Census Tract	1903
Acreage	87

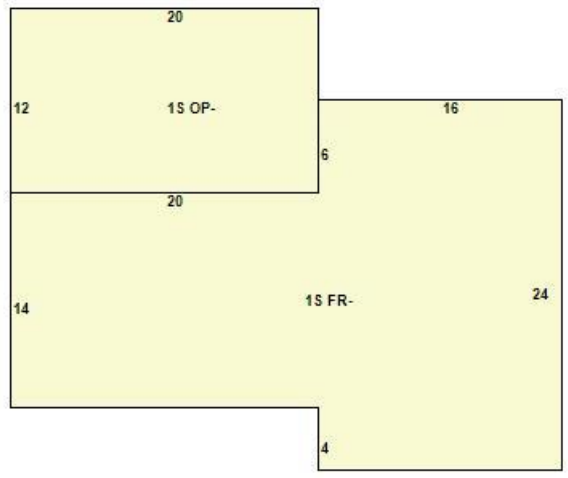
Valuation Summary

(Assessed value = 70% of Appraised Value)

Item	Appraised	Assessed
Buildings	20261	14180
Outbuildings	0	0
Land	795414	270100
Total	815675	284280

Utility Information

Electric	
Gas	
Sewer	
Public Water	
Well	



Primary Construction Details

Year Built	1930
Building Desc.	RESIDENTIAL
Building Style	1.0 RANCH
Stories	1
Exterior Walls	LOG
Exterior Walls 2	
Interior Walls	PANEL
Interior Walls 2	
Interior Floors 1	CARPET
Interior Floors 2	

Heating Fuel	PROPANE
Heating Type	OTHER
AC Type	
Bedrooms	1
Full Bathrooms	0
Half Bathrooms	0
Extra Fixtures	
Total Rooms	2
Bath Style	
Kitchen Style	
Occupancy	

Building Use	SINGLE FAMILY
Building Condition	AVERAGE
Frame Type	
Fireplaces	
Bsmt Gar	
Fin Bsmt Area	
Fin Bsmt Quality	
Building Grade	
Roof Style	GABLE
Roof Cover	ASPHALT

Report Created On 7/20/2022

Town of Guilford, CT

Property Listing Report | Map Block Lot 123004 | Building # 1 | Unique Identifier 7896

Detached Outbuildings

Type	Description	Area (sq ft)	Condition	Year Built
PORCH	PORCH	240	AVERAGE	1965

Attached Extra Features

Type	Description	Area (sq ft)	Condition	Year Built

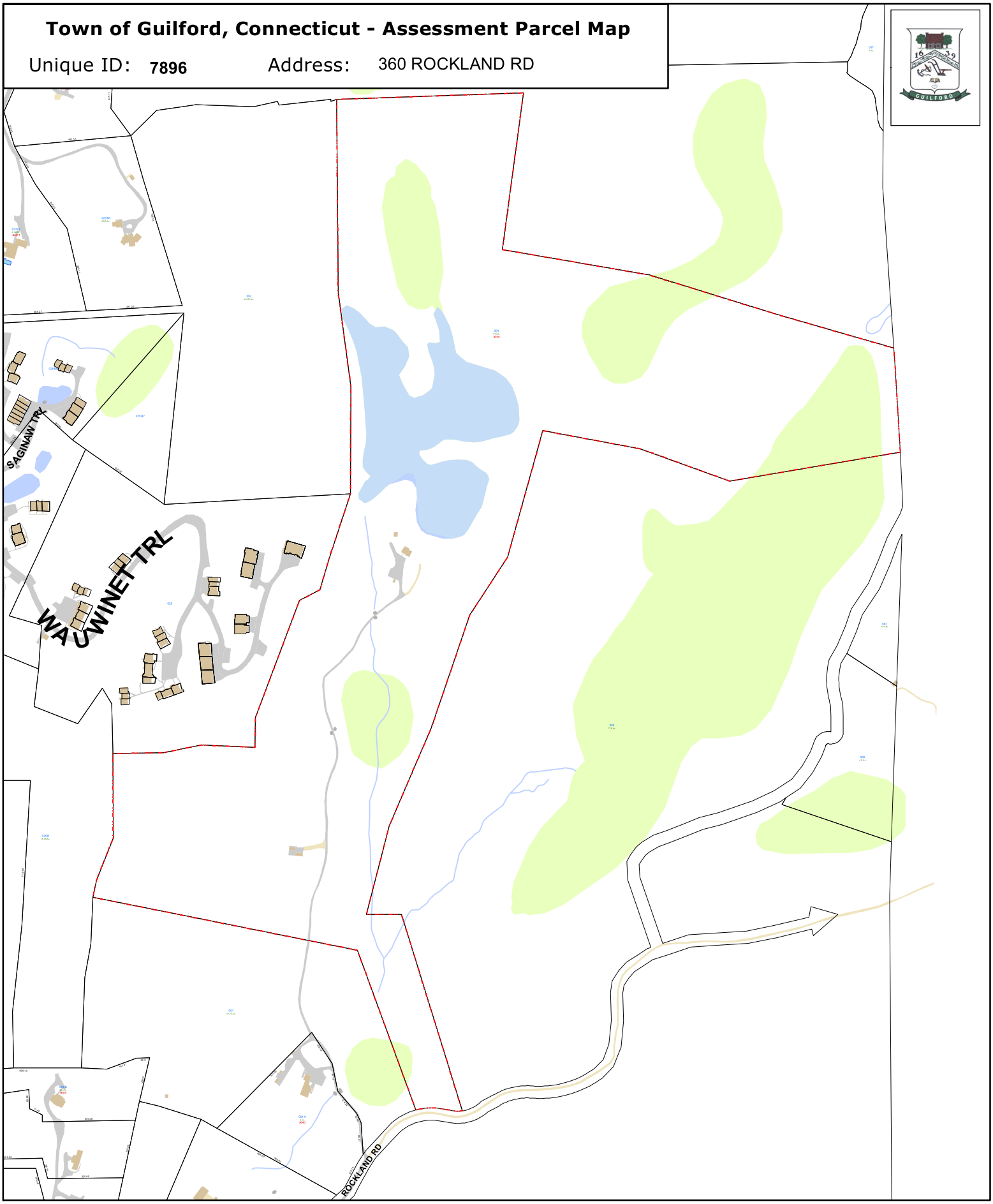
Sales History

Owner of Record	Book/ Page	Sale Date	Sale Price
WOODBRIDGE SPORTSMENS CLUB INC	0141/0511	5/17/1961	0

Report Created On 7/20/2022

Town of Guilford, Connecticut - Assessment Parcel Map

Unique ID: **7896** Address: 360 ROCKLAND RD



N

Approximate Scale: **1 inch = 500 feet**

0 350 700 Feet

Map Produced:
July 2022

Disclaimer:
This map is for informational purposes only.
All information is subject to verification by any user.
The Town of Guilford and its mapping contractors assume no legal responsibility for the information contained herein.

Exhibit C

Construction Drawings

DISH Wireless L.L.C. SITE ID:

BOHVN00118B

DISH Wireless L.L.C. SITE ADDRESS:

370 ROCKLAND ROAD
GUILFORD, CT 06437

CONNECTICUT CODE OF COMPLIANCE

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

CODE TYPE	CODE
BUILDING	2018 CT STATE BUILDING CODE/2015 IBC W/ CT AMENDMENTS
MECHANICAL	2018 CT STATE BUILDING CODE/2015 IMC W/ CT AMENDMENTS
ELECTRICAL	2018 CT STATE BUILDING CODE/2017 NEC W/ CT AMENDMENTS

SHEET INDEX

SCOPE OF WORK

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

TOWER SCOPE OF WORK:
- INSTALL (3) PROPOSED PANEL ANTENNAS (1 PER SECTOR)
- INSTALL (1) PROPOSED ANTENNA PLATFORM MOUNT
- 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 ICE BRIDGE
- INSTALL (1) PROPOSED PPC CABINET
- INSTALL (1) PROPOSED EQUIPMENT CABINET
- INSTALL (1) PROPOSED POWER CONDUIT
- INSTALL (1) PROPOSED TELCO CONDUIT
- INSTALL (1) PROPOSED TELCO-FIBER BOX
- INSTALL (1) PROPOSED GPS UNIT
- INSTALL (1) PROPOSED FIBER NID (IF REQUIRED)

SITE PHOTO

UNDERGROUND SERVICE ALERT CBYD 811
UTILITY NOTIFICATION CENTER OF CONNECTICUT
(800) 922-4455
WWW.CBYD.COM

CALL 2 WORKING DAYS UTILITY NOTIFICATION PRIOR TO CONSTRUCTION

811

GENERAL NOTES

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

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

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

SITE INFORMATION

PROPERTY OWNER:	WOODBRIDGE SPORTSMENS CLUB INC
ADDRESS:	15 FARM RIVER DR NORTHFORD, CT 06472
TOWER TYPE:	MONOPOLE
TOWER CO SITE ID:	CT46139-A
TOWER APP NUMBER:	167077
COUNTY:	NEW HAVEN
LATITUDE (NAD 83):	41° 23' 48.6" N 41.39683300
LONGITUDE (NAD 83):	72° 41' 19.7" W -72.68880522
ZONING JURISDICTION:	NEW HAVEN COUNTY
ZONING DISTRICT:	R-8
PARCEL NUMBER:	123004
OCCUPANCY GROUP:	U
CONSTRUCTION TYPE:	II-B
POWER COMPANY:	EVERSOURCE
TELEPHONE COMPANY:	VERIZON

PROJECT DIRECTORY

APPLICANT:	DISH Wireless L.L.C. 5701 SOUTH SANTA FE DRIVE LITTLETON, CO 80120
TOWER OWNER:	SBA COMMUNICATAIONS CORP. 8051 CONGRESS AVENUE BOCA RATON, FL 33487 (800) 487-7483
SITE DESIGNER:	B+T GROUP 1717 S. BOULDER AVE, SUITE 300 TULSA, OK 74119 (918) 587-4630
SITE ACQUISITION:	JEAN COTTRELL JEAN.COTTRELL@DISH.COM
CONST. MANAGER:	CHAD WILCOX CHAD.WILCOX@DISH.COM
RF ENGINEER:	DIPESH PARIKH DIPESH.PARIKH@DISH.COM

DIRECTIONS

DIRECTIONS FROM BRADLEY INTERNATIONAL AIRPORT:

GET ON BRADLEY INTERNATIONAL AIRPORT CON FROM BRADLEY INTERNATIONAL AIRPORT, HEAD NORTH TOWARD BRADLEY INTERNATIONAL AIRPORT, SLIGHT LEFT ONTO BRADLEY INTERNATIONAL AIRPORT, CONTINUE STRAIGHT, KEEP RIGHT TO CONTINUE TOWARD BRADLEY INTERNATIONAL AIRPORT CON, TAKE I-91 S AND CT-9 S TO CT-17 S IN MIDDLETOWN. TAKE EXIT 13 FROM CT-9 S, CONTINUE ONTO BRADLEY INTERNATIONAL AIRPORT CON, CONTINUE ONTO CT-20 E/BRADLEY INTERNATIONAL AIRPORT CON, USE THE RIGHT 2 LANES TO MERGE ONTO I-91 S TOWARD HARTFORD, KEEP LEFT TO STAY ON I-91 S, USE THE LEFT 2 LANES TO TAKE EXIT 22S TO MERGE ONTO CT-9 S TOWARD MIDDLETOWN/OLD SAYBROOK, TAKE EXIT 13 FOR CT-17 S TOWARD NEW HAVEN, CONTINUE ON CT-17 S. TAKE CT-77 S TO ROCKLAND RD IN GUILFORD, CONTINUE ONTO CT-17 S, KEEP LEFT TO CONTINUE ON CT-77 S/GUILFORD RD, SLIGHT LEFT ONTO LAKE DR, TURN LEFT ONTO ROCKLAND RD, TURN LEFT ON TO ACCESS ROAD, ARRIVE AT BOHVN00118B.

VICINITY MAP

NO SCALE

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

SBA

8051 CONGRESS AVENUE
BOCA RATON, FL 33487

B+T GRP
1717 S. BOULDER
SUITE 300
TULSA, OK 74119
PH: (918) 587-4630
www.btgrp.com

STATE OF CONNECTICUT
CHAD WILCOX
No. 23924
LICENSED
PROFESSIONAL ENGINEER

6/14/22

MTS ENGINEERING P.L.L.C.
BER:2386985
Expires 3/31/23

DRAWN BY:	CHECKED BY:	APPROVED BY:
RY	SA	BLJ

RFDS REV #: 2

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	5/25/22	ISSUED FOR REVIEW
0	6/14/22	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

149547.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

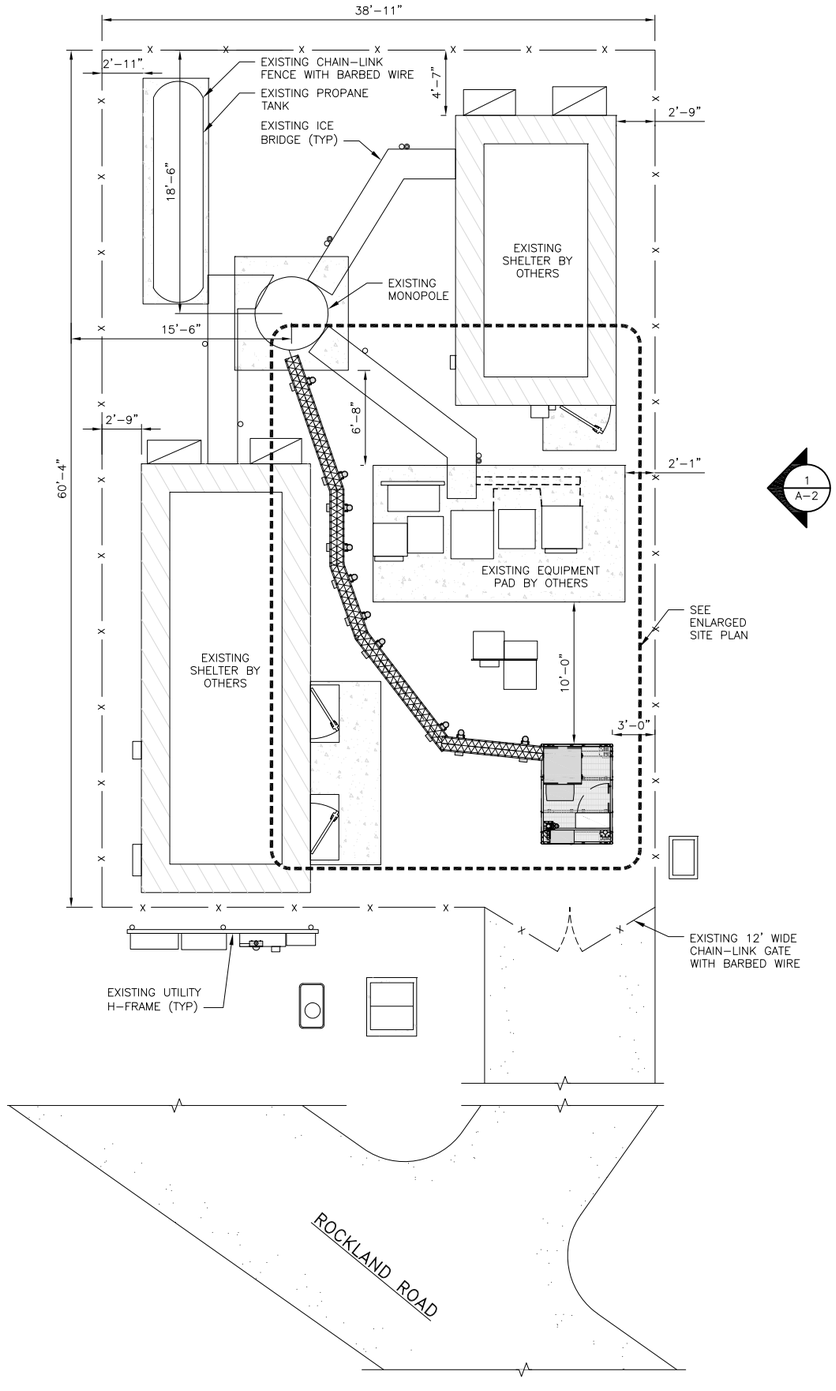
BOHVN00118B
370 ROCKLAND ROAD
GUILFORD, CT 06437

SHEET TITLE

TITLE SHEET

SHEET NUMBER

T-1



NOTES

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

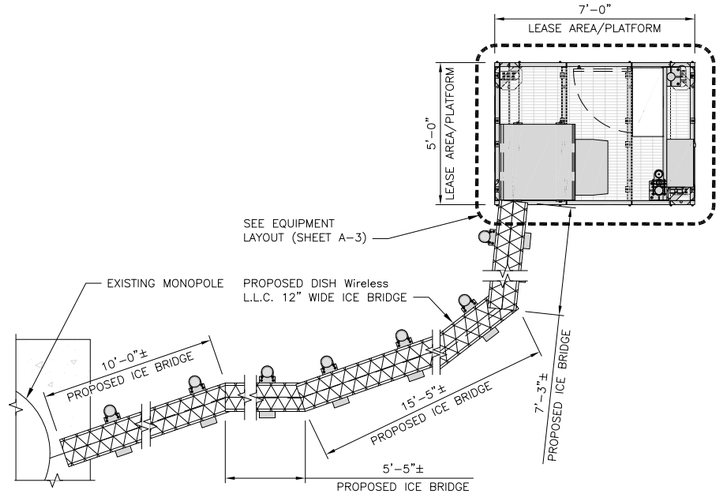
OVERALL SITE PLAN

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

1

NOTES

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



ENLARGED SITE PLAN

12" 6" 0 1' 2' 3' 4' 5' 6' 7'
3/8"=1'-0"

2

NOT USED

NO SCALE

3

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

SBA
8051 CONGRESS AVENUE
BOCA RATON, FL 33487

B+T GRP
1717 S. BOULDER
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www.btgrp.com

STATE OF CONNECTICUT
CHAD M. TYLER
No. 23924
LICENSED
PROFESSIONAL ENGINEER
6/14/22

MTS ENGINEERING P.L.L.C.
BER:2386985
Expires 3/31/23

DRAWN BY:	CHECKED BY:	APPROVED BY:
RY	SA	BLJ

RFDS REV #: 2

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	5/25/22	ISSUED FOR REVIEW
0	6/14/22	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

149547.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOHVN00118B
370 ROCKLAND ROAD
GUILFORD, CT 06437

SHEET TITLE

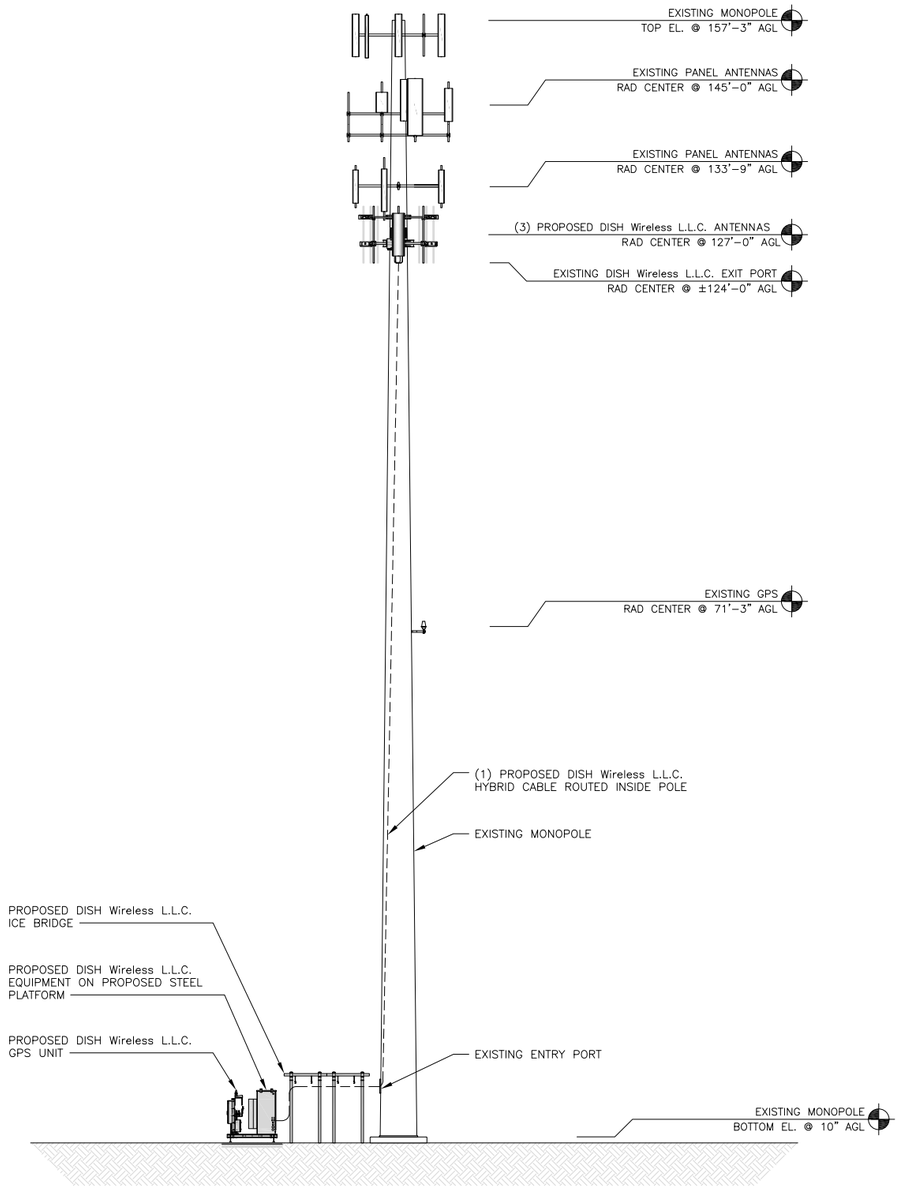
OVERALL AND ENLARGED SITE PLAN

SHEET NUMBER

A-1

NOTES

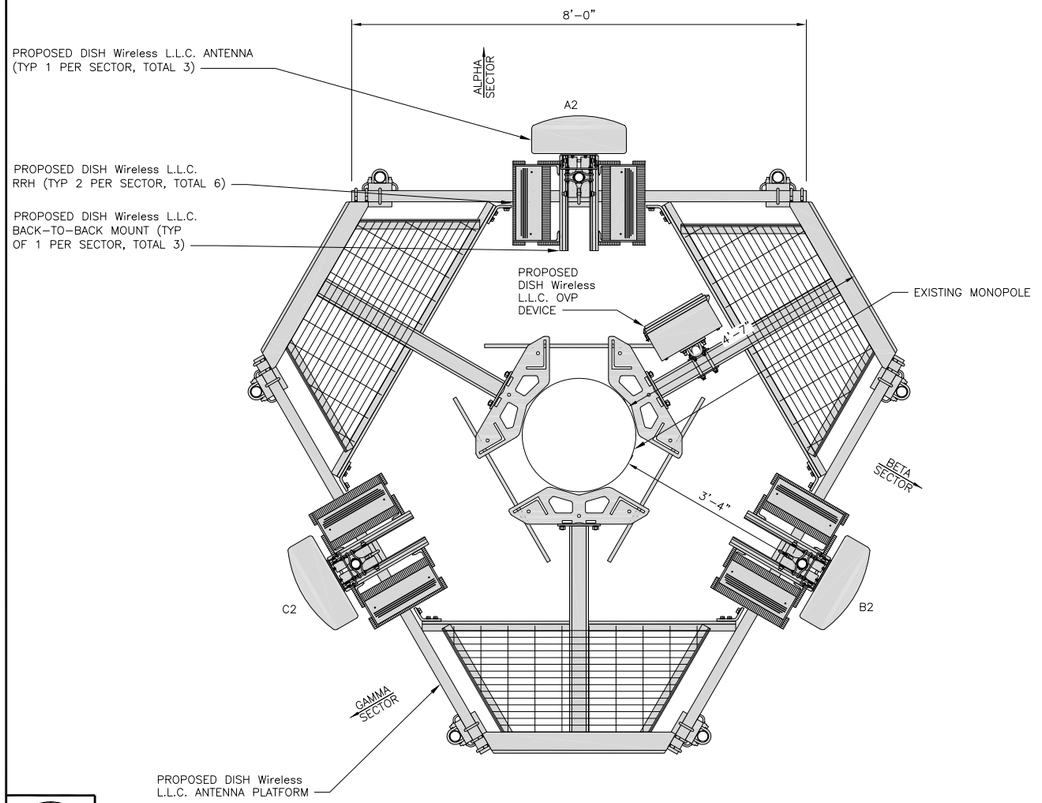
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNA AND MW DISH SPECIFICATIONS REFER TO ANTENNA SCHEDULE AND TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS
3. EXISTING EQUIPMENT AND FENCE OMITTED FOR CLARITY.



PROPOSED NORTH ELEVATION

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

1



ANTENNA LAYOUT

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

2

SECTOR POS.	ANTENNA					TRANSMISSION CABLE	RRH			OVP
	EXISTING OR PROPOSED	MANUFACTURER – MODEL NUMBER	TECH	AZIMUTH	RAD CENTER	FEED LINE TYPE AND LENGTH	MANUFACTURER – MODEL NUMBER	TECH	POS.	MANUFACTURER MODEL
A1	--	--	--	--	--	(1) HIGH-CAPACITY HYBRID CABLE (155' LONG)	FUJITSU – TA08025-B604	5G	A2	RAYCAP RDIDC-9181-PF-48
A2	PROPOSED	JMA – MX08FRO665-21	5G	0°	127'-0"		FUJITSU – TA08025-B605	5G	A2	
A3	--	--	--	--	--		--	--	--	
B1	--	--	--	--	--	SHARED W/ALPHA	FUJITSU – TA08025-B604	5G	B2	SHARED W/ALPHA
B2	PROPOSED	JMA – MX08FRO665-21	5G	120°	127'-0"		FUJITSU – TA08025-B605	5G	B2	
B3	--	--	--	--	--		--	--	--	
C1	--	--	--	--	--	SHARED W/ALPHA	FUJITSU – TA08025-B604	5G	C2	SHARED W/ALPHA
C2	PROPOSED	JMA – MX08FRO665-21	5G	240°	127'-0"		FUJITSU – TA08025-B605	5G	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 ANALYSES.

ANTENNA SCHEDULE

NO SCALE

3

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TULSA, OK 74119
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STATE OF CONNECTICUT
CHAD M. TUTTLE
No. 23924
LICENSED
PROFESSIONAL ENGINEER
6/14/22

MTS ENGINEERING P.L.L.C.
BER:2386985
Expires 3/31/23

DRAWN BY:	CHECKED BY:	APPROVED BY:
RY	SA	BLJ

RFDS REV #: 2

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	5/25/22	ISSUED FOR REVIEW
0	6/14/22	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

149547.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

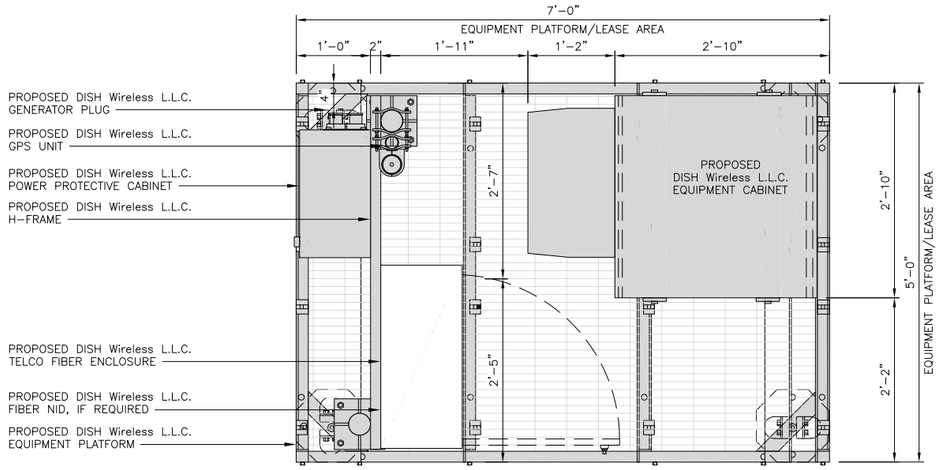
BOHVN00118B
370 ROCKLAND ROAD
GUILFORD, CT 06437

SHEET TITLE

ELEVATION, ANTENNA LAYOUT AND SCHEDULE

SHEET NUMBER

A-2



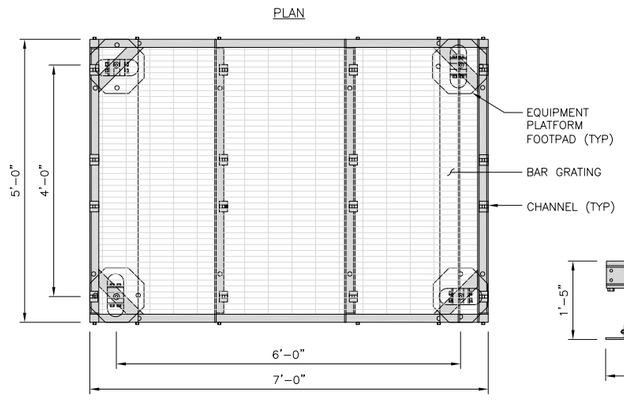
PLATFORM EQUIPMENT PLAN

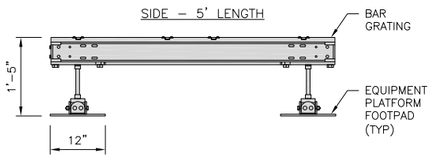
12" 9" 6" 3" 0 1' 2'
1"=1'-0"

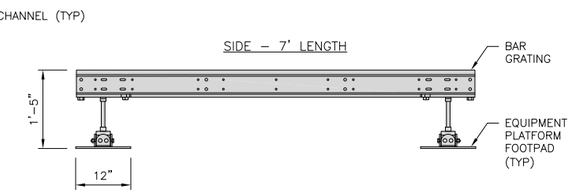
1

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

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

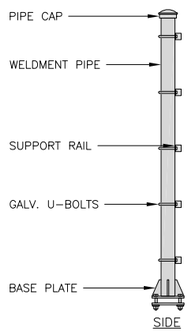




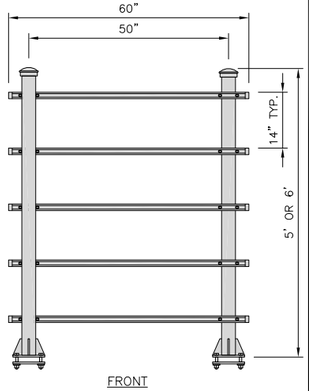


PLATFORM DETAIL | NO SCALE | 2

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



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

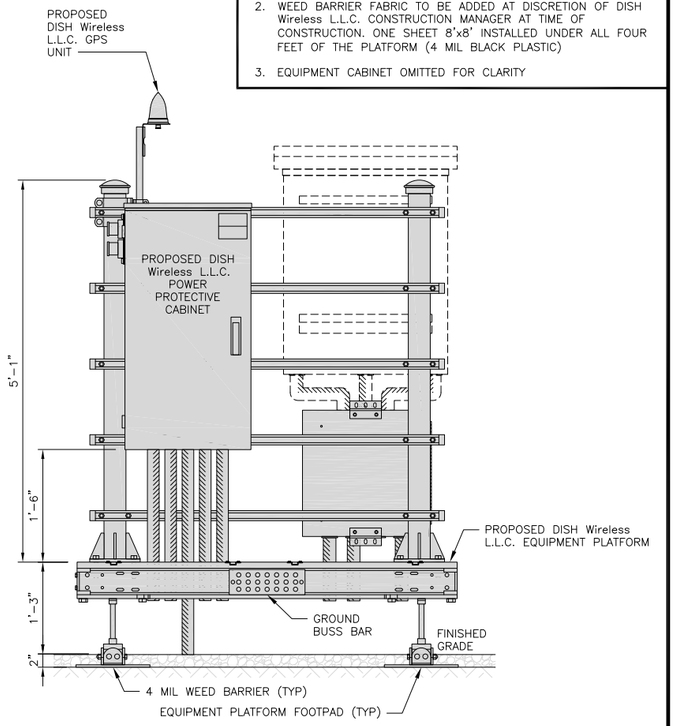


H-FRAME DETAIL | NO SCALE | 3

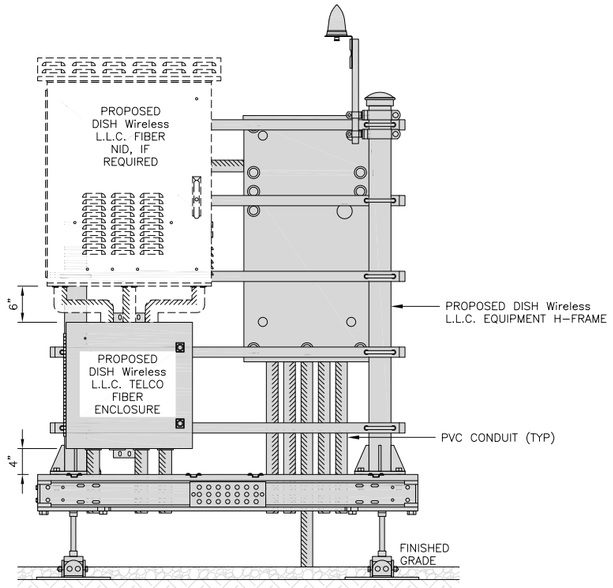
NOT USED | NO SCALE | 4

NOTES

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



FRONT ELEVATION



BACK ELEVATION

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

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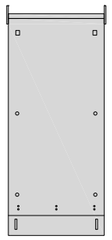
DISH Wireless L.L.C.
PROJECT INFORMATION
BOHVN00118B
370 ROCKLAND ROAD
GUILFORD, CT 06437

SHEET TITLE
EQUIPMENT PLATFORM AND H-FRAME DETAILS

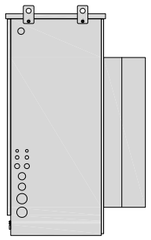
SHEET NUMBER
A-3

CHARLES INDUSTRY HEX CUBE–PM639155N4	
DIMENSIONS (HxWxD)	74"x32"x32"
POWER PLANT	–48VDC ABB/600W
TOTAL WEIGHT (EMPTY)	408 lbs

PLAN



BACK



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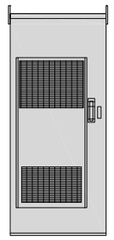
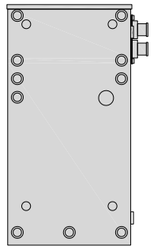


FRONT

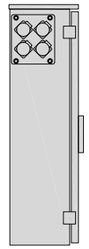
CABINET DETAIL | NO SCALE | 1

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

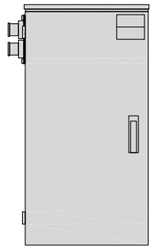
TOP



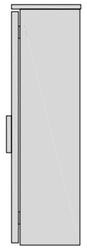
BACK



SIDE



FRONT



SIDE

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

NOT USED | NO SCALE | 3

NOT USED | NO SCALE | 4

CIENA 3931 FIBER NID ENCLOSURE	
DIMENSIONS (HxWxD)	17"x16.8"x7"
WEIGHT	28.6 lbs

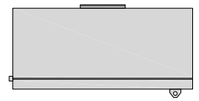
TOP

SIDE

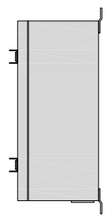
FRONT

FIBER NID ENCLOSURE DETAIL | NO SCALE | 5

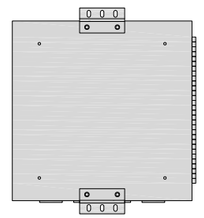
CHARLES CFIT–PF2020DSH1 FIBER TELCO ENCLOSURE	
ENCLOSURE DIMS (HxWxD)	20"x20"x9"
ENCLOSURE WEIGHT	20 lbs
MOUNTING	WALL
COMPLIANCE	TYPE 4



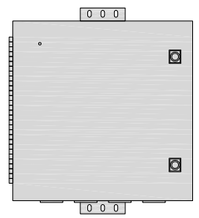
FRONT



SIDE



BACK

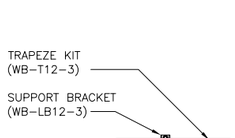


FRONT

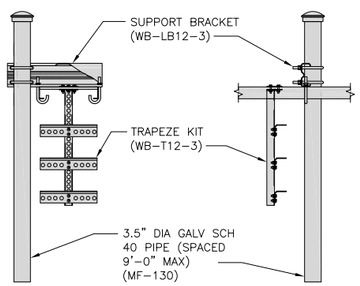
FIBER TELCO ENCLOSURE DETAIL | NO SCALE | 6

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

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

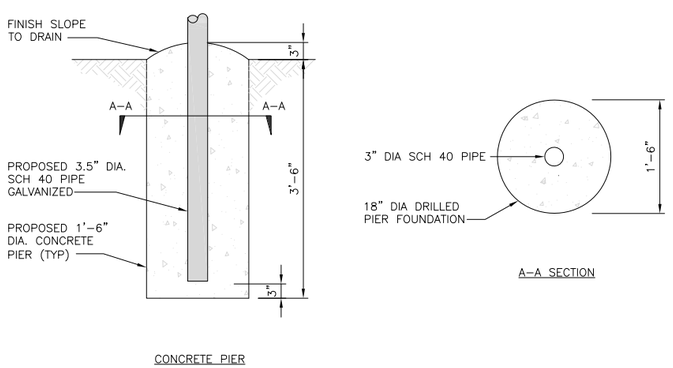


PLAN



FRONT SIDE

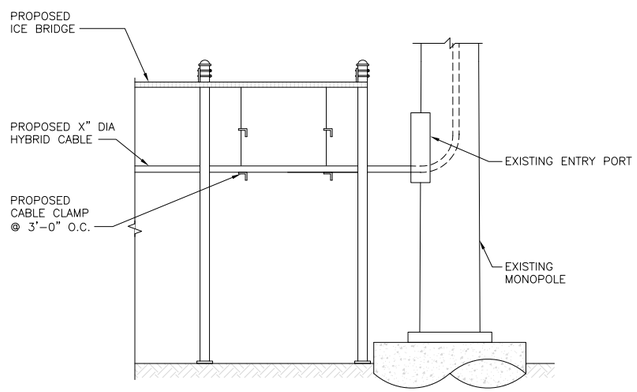
ICE BRIDGE DETAIL | NO SCALE | 7



CONCRETE PIER

A–A SECTION

TYPICAL ICE BRIDGE CONCRETE PIER DETAIL | NO SCALE | 8



HYBRID CABLE RUN | NO SCALE | 9

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370 ROCKLAND ROAD
GUILFORD, CT 06437

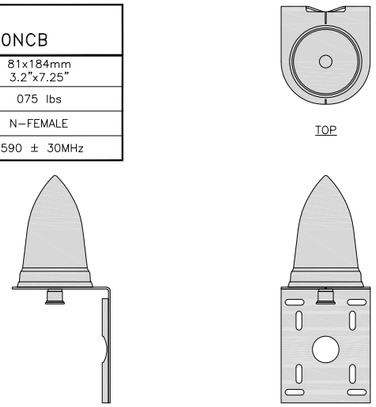
SHEET TITLE

EQUIPMENT DETAILS

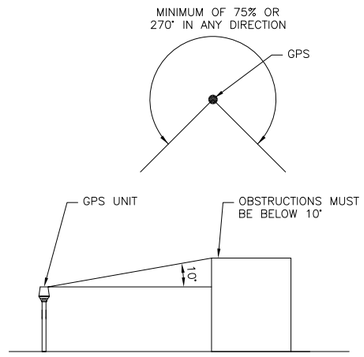
SHEET NUMBER

A-4

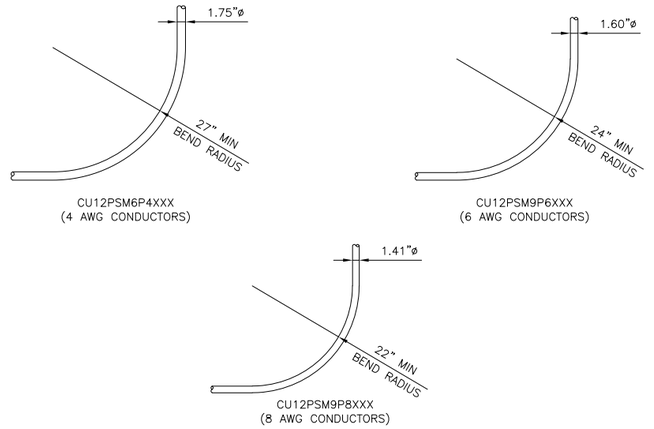
PCTEL GPSGL-TMG-SPI-40NCB	
DIMENSIONS (DIAxH) MM/INCH	81x184mm 3.2"x7.25"
WEIGHT W/ACCESSORIES	075 lbs
CONNECTOR	N-FEMALE
FREQUENCY RANGE	1590 ± 30MHz



GPS DETAIL | NO SCALE | 1



GPS MINIMUM SKY VIEW REQUIREMENTS | NO SCALE | 2



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

NOT USED | 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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SHEET TITLE

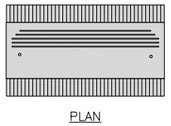
EQUIPMENT DETAILS

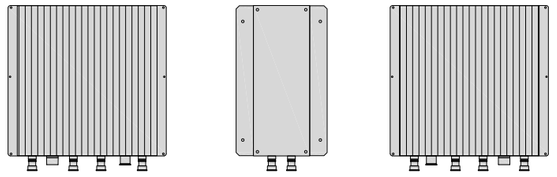
SHEET NUMBER

A-5

FUJITSU TRIPLE BAND TA08025-B605

DIMENSIONS (HxWxD)	14.9"x15.7"x9"
WEIGHT	74.95 lbs
CONNECTOR TYPE	4.3-10 RF CONNECTOR
POWER SUPPLY	DC -58~-36V

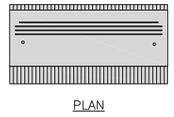

PLAN

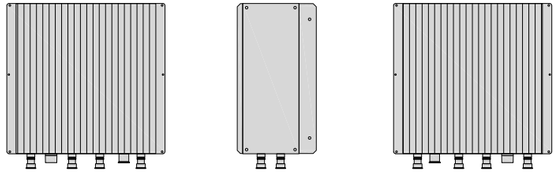

BACK SIDE FRONT

RRH DETAIL | NO SCALE | 1

FUJITSU DUAL BAND TA08025-B604

DIMENSIONS (HxWxD)	14.9"x15.7"x7.8"
WEIGHT	63.9 lbs
CONNECTOR TYPE	4.3-10 RF CONNECTOR
POWER SUPPLY	DC -58~-36V


PLAN

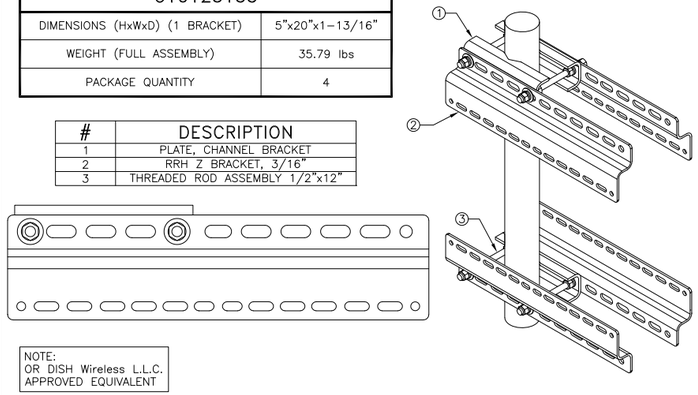

BACK SIDE FRONT

RRH DETAIL | NO SCALE | 2

SABRE DOUBLE Z-BRACKET C10123155

DIMENSIONS (HxWxD) (1 BRACKET)	5"x20"x1-13/16"
WEIGHT (FULL ASSEMBLY)	35.79 lbs
PACKAGE QUANTITY	4

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

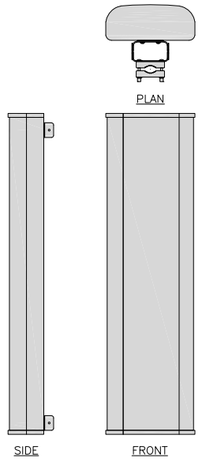


NOTE:
OR DISH Wireless L.L.C.
APPROVED EQUIVALENT

RRH MOUNT DETAIL | NO SCALE | 3

JMA MX08FRO665-21

DIMENSIONS (HxWxD)	72"x20.0"x8.0"
RF PORTS, CONNECTOR TYPE	8 x 4.3-10 FEMALE
WEIGHT	64.5 lbs
WEIGHT WITH BRACKETS	82.5 lbs


PLAN SIDE FRONT

ANTENNA DETAIL | NO SCALE | 4

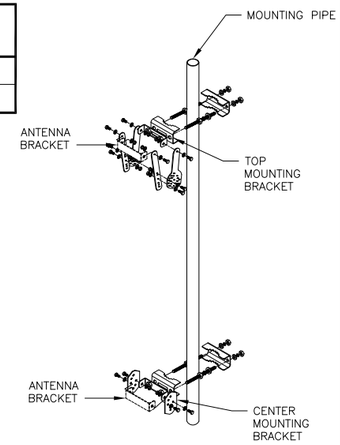
NOT USED | NO SCALE | 5

JMA ANTENNA MOUNT BRACKET #91900318

TOTAL WEIGHT (WITH BRACKETS)	18 lbs (8.18 Kg)
POLE DIAMETER RANGE	2.5" TO 4.5"

NOTE:
KIT #91900318: TOP AND BOTTOM BRACKETS FOR 4-,6-, AND 8-FOOT ANTENNAS

ANTENNA BRACKET NOT PART OF KIT



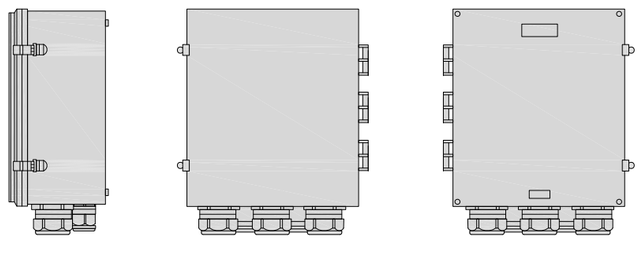
NOTE:
OR DISH Wireless L.L.C.
APPROVED EQUIVALENT

ANTENNA BRACKET DETAIL | NO SCALE | 6

RAYCAP RDIDC-9181-PF-48 DC SURGE PROTECTION (OVP)

DIMENSIONS (HxWxD)	18.98"x14.39"x8.15"
WEIGHT	21.82 LBS


PLAN

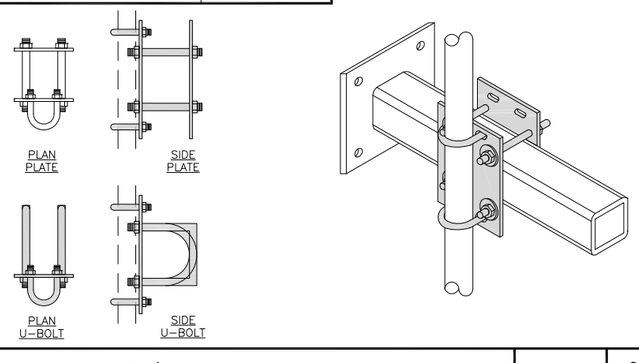

SIDE BACK FRONT

SURGE SUPPRESSION DETAIL (OVP) | NO SCALE | 7

COMMSCOPE XP-2040 CROSSOVER PLATE

DIMENSIONS (HxW)	10"x12"
WEIGHT	11 lbs

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

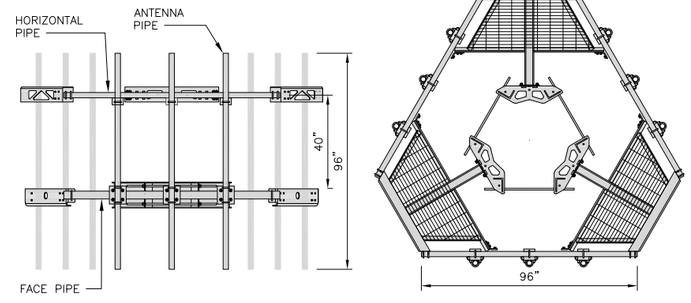


RRH/OVP MOUNT DETAIL | NO SCALE | 8

COMMSCOPE MC-PK8-DSH

FACE WIDTH	96"
WEIGHT	1373.08 lbs
NOTE: 15" TO 38" O.D.	

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



ANTENNA PLATFORM DETAIL | NO SCALE | 9

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STATE OF CONNECTICUT
CHAD M. TILLE
No. 23924
LICENSED PROFESSIONAL ENGINEER
6/14/22

MTS ENGINEERING P.L.L.C.
BER:2386985
Expires 3/31/23

DRAWN BY:	CHECKED BY:	APPROVED BY:
RY	SA	BLJ

RFDS REV #: 2

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	5/25/22	ISSUED FOR REVIEW
0	6/14/22	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
149547.001.01

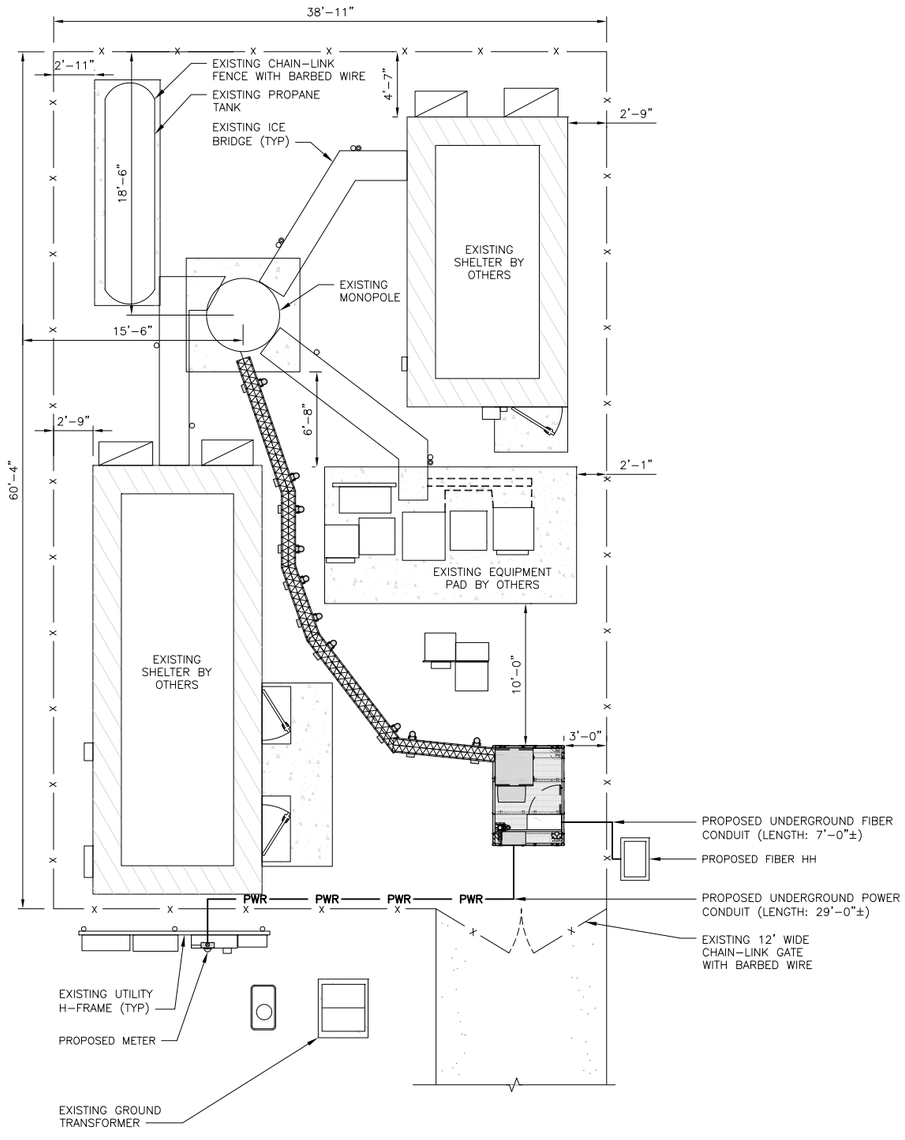
DISH Wireless L.L.C.
PROJECT INFORMATION
BOHVN00118B
370 ROCKLAND ROAD
GUILFORD, CT 06437

SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-6

NOTES

1. CONTRACTOR SHALL FIELD VERIFY ALL PROPOSED UNDERGROUND UTILITY CONDUIT ROUTE.
2. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.
3. THE GROUND LEASE PROVIDES BROAD/BLANKET UTILITY RIGHTS. "PWR" AND "FBR" PATH DEPICTED ON A-1 AND E-1 ARE BASED ON BEST AVAILABLE INFORMATION INCLUDING BUT NOT LIMITED TO 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 NOT AN OPTION, PLEASE NOTIFY TOWER OWNER AS FURTHER COORDINATION MAY BE NEEDED.



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

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PROJECT INFORMATION

BOHVN00118B
370 ROCKLAND ROAD
GUILFORD, CT 06437

SHEET TITLE

ELECTRICAL/FIBER ROUTE PLAN AND NOTES

SHEET NUMBER

E-1

N

UTILITY ROUTE PLAN

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

1

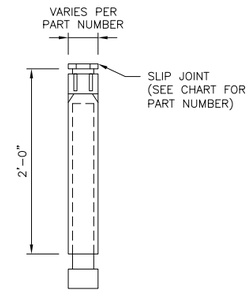
ELECTRICAL NOTES

NO SCALE

2

CARLON EXPANSION FITTINGS

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

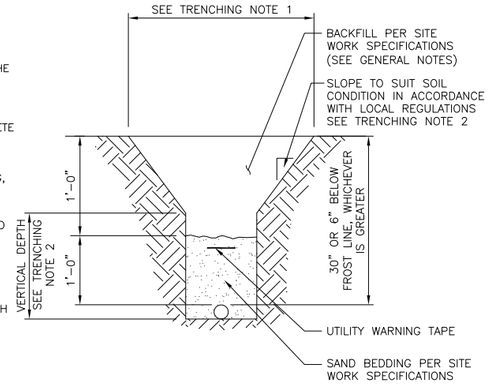


NOTE:
CONTRACTOR TO INSTALL EXPANSION FITTING SLIP JOINT AT METER CENTER CONDUIT TERMINATION, AS PER LOCAL UTILITY POLICY, ORDINANCE AND/OR SPECIFIED REQUIREMENT.

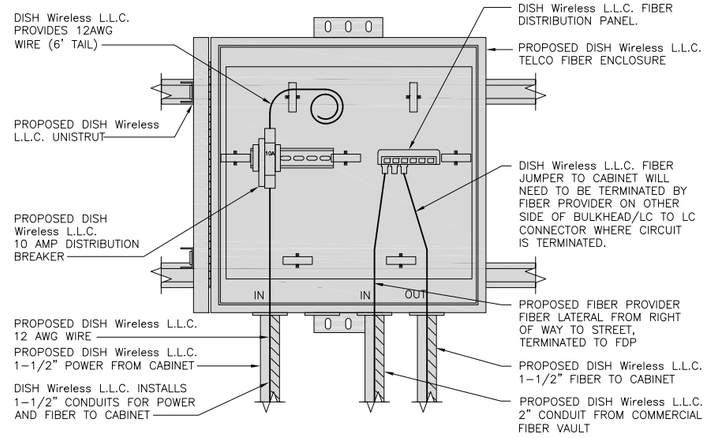
EXPANSION JOINT DETAIL | NO SCALE | 1

TRENCHING NOTES

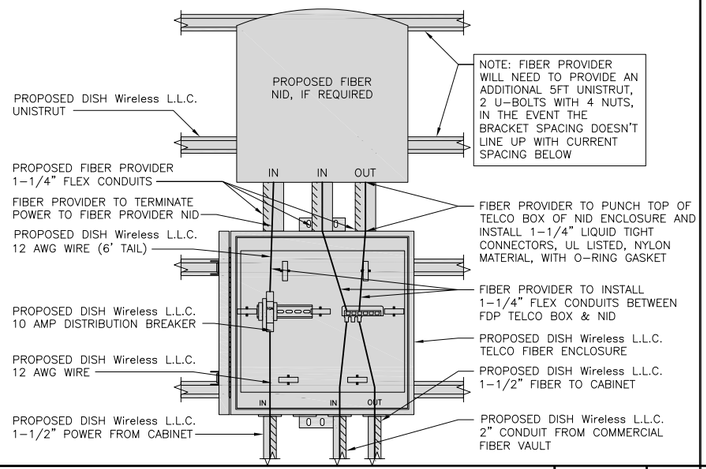
1. CONTRACTOR SHALL RESTORE THE TRENCH TO ITS ORIGINAL CONDITIONS BY EITHER SEEDING OR SODDING GRASS AREAS, OR REPLACING ASPHALT OR CONCRETE AREAS TO ITS ORIGINAL CROSS SECTION.
2. TRENCHING SAFETY; INCLUDING, BUT NOT LIMITED TO SOIL CLASSIFICATION, SLOPING, AND SHORING, SHALL BE GOVERNED BY THE CURRENT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



TYPICAL UNDERGROUND TRENCH DETAIL | NO SCALE | 2



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



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

NOT USED | NO SCALE | 5

NOT USED | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

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DISH Wireless L.L.C.
PROJECT INFORMATION

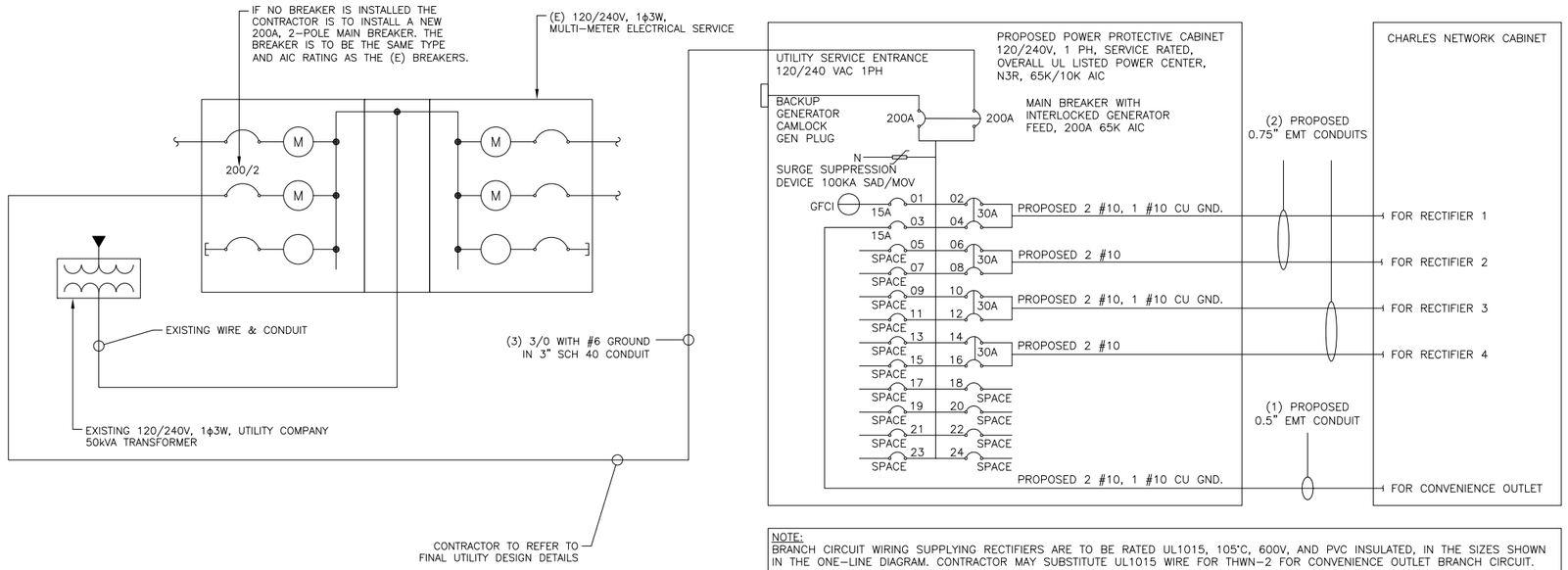
BOHVN00118B
370 ROCKLAND ROAD
GUILFORD, CT 06437

SHEET TITLE

ELECTRICAL DETAILS

SHEET NUMBER

E-2



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

BREAKERS REQUIRED:
(4) 30A, 2P BREAKER – SQUARE D P/N:QO230
(1) 15A, 1P BREAKER – SQUARE D P/N:QO115

NOTES

THE ENGINEER OF RECORD HAS PERFORMED ALL REQUIRED SHORT CIRCUIT CALCULATIONS AND THE AIC RATINGS FOR EACH DEVICE IS ADEQUATE TO PROTECT THE EQUIPMENT AND THE ELECTRICAL SYSTEM.

THE ENGINEER OF RECORD HAS PERFORMED ALL REQUIRED VOLTAGE DROP CALCULATIONS AND ALL BRANCH CIRCUIT AND FEEDERS COMPLY WITH THE NEC (LISTED ON T–1) ARTICLE 210.19(A)(1) FPN NO. 4.

THE (2) CONDUITS WITH (4) CURRENT CARRYING CONDUCTORS EACH, SHALL APPLY THE ADJUSTMENT FACTOR OF 80% PER 2014/17 NEC TABLE 310.15(B)(3)(a) OR 2020 NEC TABLE 310.15(C)(1) FOR UL1015 WIRE.

#12 FOR 15A–20A/1P BREAKER: 0.8 x 30A = 24.0A
#10 FOR 25A–30A/2P BREAKER: 0.8 x 40A = 32.0A
#8 FOR 35A–40A/2P BREAKER: 0.8 x 55A = 44.0A
#6 FOR 45A–60A/2P BREAKER: 0.8 x 75A = 60.0A

CONDUIT SIZING: AT 40% FILL PER NEC CHAPTER 9, TABLE 4, ARTICLE 358.
0.5" CONDUIT – 0.122 SQ. IN AREA
0.75" CONDUIT – 0.213 SQ. IN AREA
2.0" CONDUIT – 1.316 SQ. IN AREA
3.0" CONDUIT – 2.907 SQ. IN AREA

CABINET CONVENIENCE OUTLET CONDUCTORS (1 CONDUIT): USING THWN–2, CU.

#10 – 0.0211 SQ. IN X 2 = 0.0422 SQ. IN
#10 – 0.0211 SQ. IN X 1 = 0.0211 SQ. IN <GROUND
TOTAL = 0.0633 SQ. IN

0.5" EMT CONDUIT IS ADEQUATE TO HANDLE THE TOTAL OF (3) WIRES, INCLUDING GROUND WIRE, AS INDICATED ABOVE.

RECTIFIER CONDUCTORS (2 CONDUITS): USING UL1015, CU.

#10 – 0.0266 SQ. IN X 4 = 0.1064 SQ. IN
#10 – 0.0082 SQ. IN X 1 = 0.0082 SQ. IN <BARE GROUND
TOTAL = 0.1146 SQ. IN

0.75" 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.

PPC ONE–LINE DIAGRAM

NO SCALE | 1

PROPOSED CHARLES PANEL SCHEDULE

LOAD SERVED	VOLT AMPS (WATTS) L1	VOLT AMPS (WATTS) L2	TRIP	CKT #	PHASE	CKT #	TRIP	VOLT AMPS (WATTS) L1	VOLT AMPS (WATTS) L2	LOAD SERVED
PPC GFCI OUTLET	180		15A	1	A	2	30A	2880		ABB/GE INFINITY RECTIFIER 1
CHARLES GFCI OUTLET		180	15A	3	B	4			2880	
–SPACE–				5	A	6	30A	2880		ABB/GE INFINITY RECTIFIER 2
–SPACE–				7	B	8			2880	
–SPACE–				9	A	10	30A	2880		ABB/GE INFINITY RECTIFIER 3
–SPACE–				11	B	12			2880	
–SPACE–				13	A	14	30A	2880		ABB/GE INFINITY RECTIFIER 4
–SPACE–				15	B	16			2880	
–SPACE–				17	A	18				–SPACE–
–SPACE–				19	B	20				–SPACE–
–SPACE–				21	A	22				–SPACE–
–SPACE–				23	B	24				–SPACE–
VOLTAGE AMPS	180	180						11520	11520	
200A MCB, 1ϕ, 24 SPACE, 120/240V			L1 11700		L2 11700		VOLTAGE AMPS			
MB RATING: 65,000 AIC			98		98		AMPS			
			98				MAX AMPS			
			123				MAX 125%			

PANEL SCHEDULE | NO SCALE | 2

NOT USED | NO SCALE | 3

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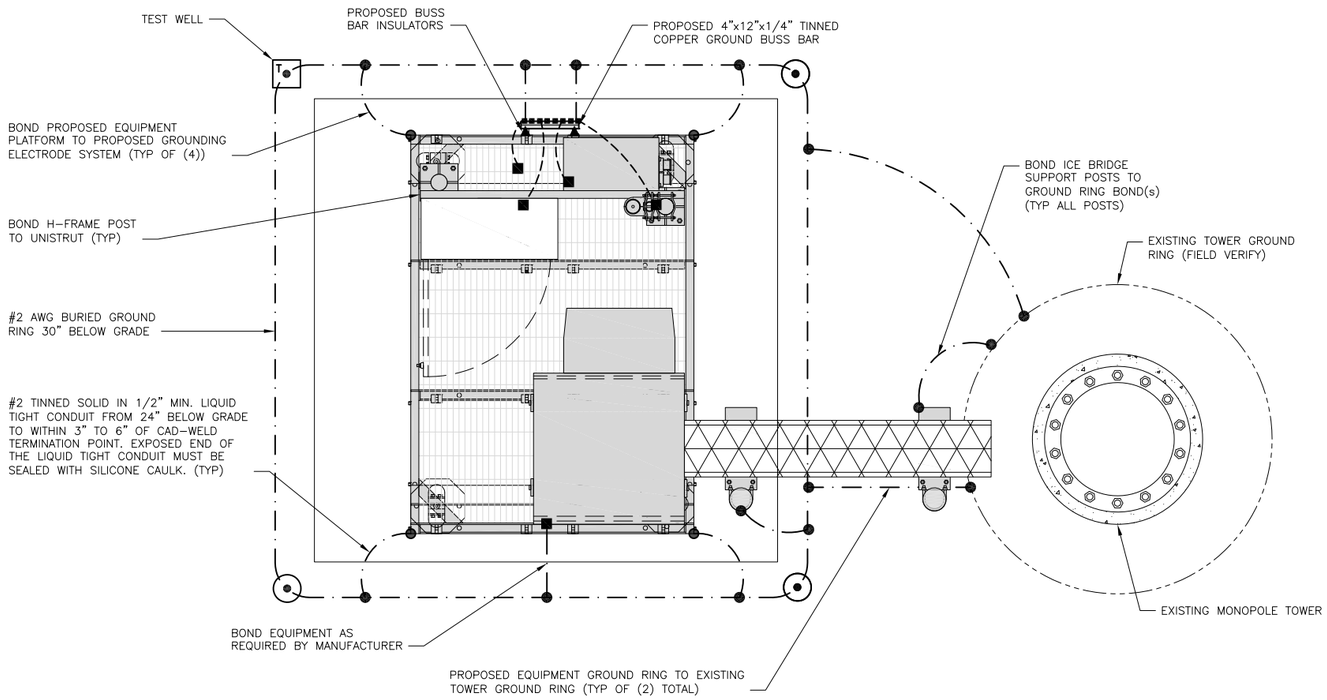
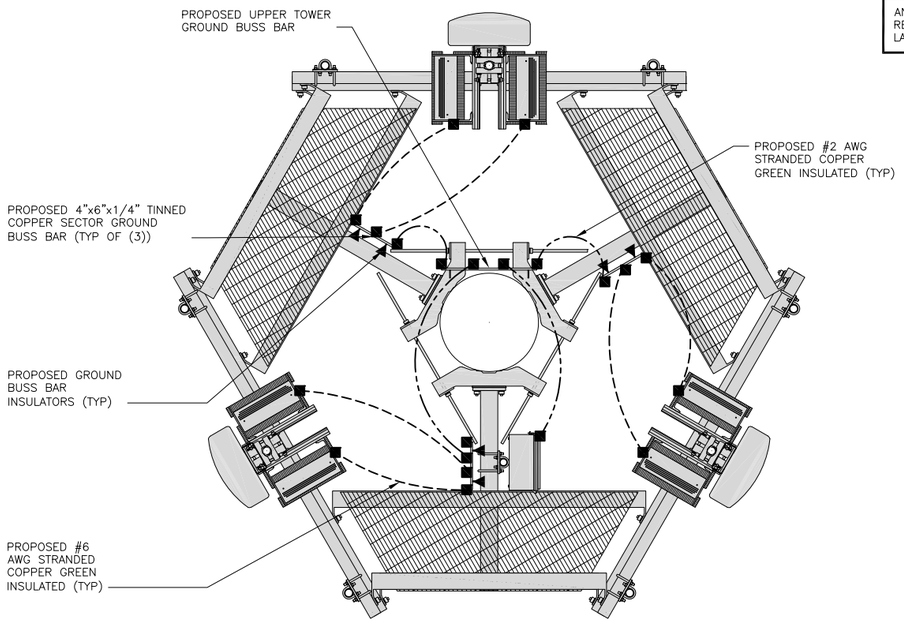
370 ROCKLAND ROAD
GUILFORD, CT 06437

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

SHEET NUMBER
E-3



TYPICAL EQUIPMENT GROUNDING PLAN | NO SCALE | 1



TYPICAL ANTENNA GROUNDING PLAN | NO SCALE | 2

NOTES

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

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

GROUNDING LEGEND

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

GROUNDING KEY NOTES

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

GROUNDING KEY NOTES | NO SCALE | 3

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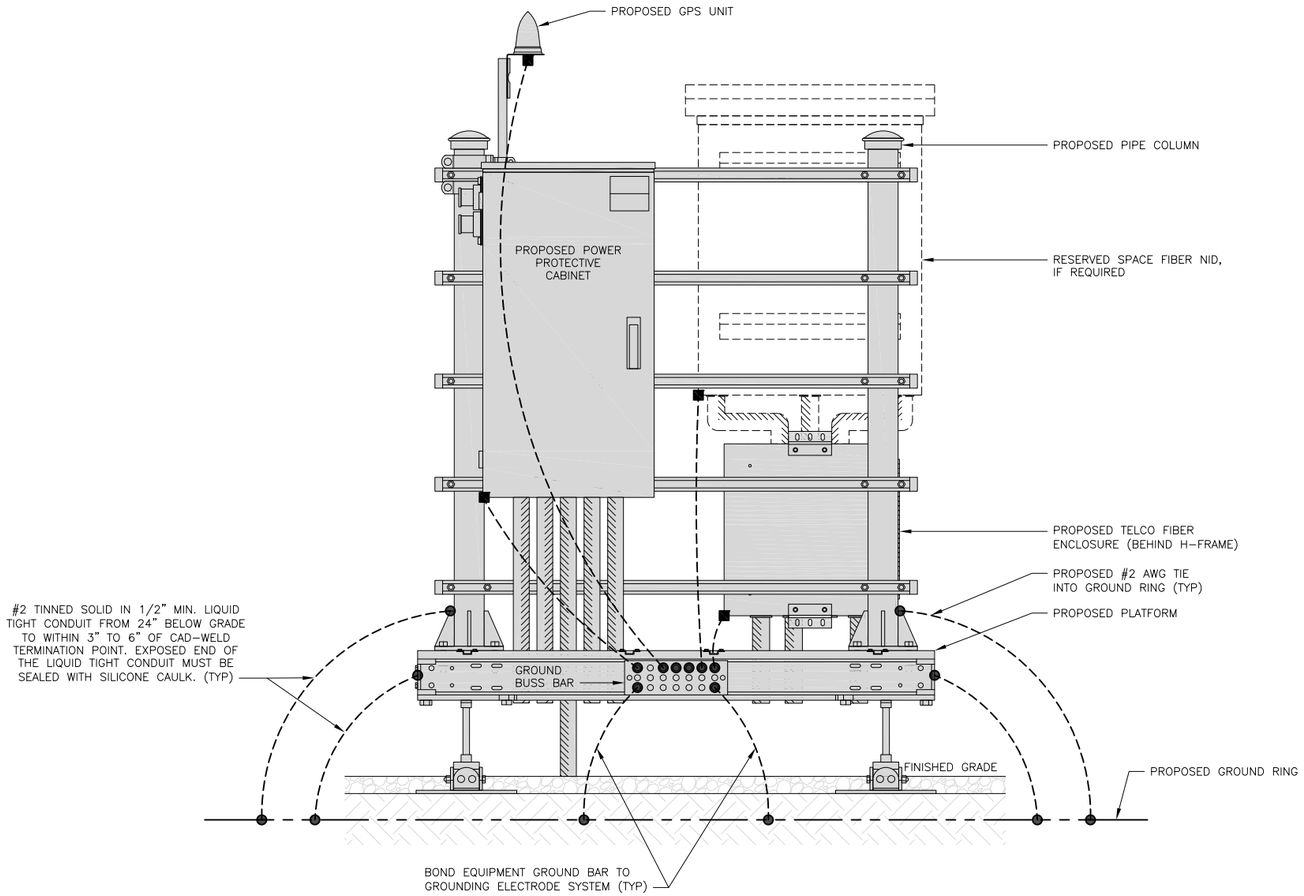
SHEET TITLE
GROUNDING PLANS AND NOTES

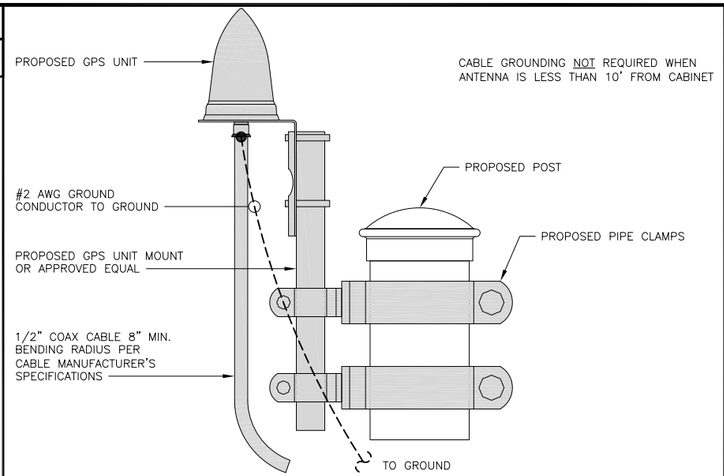
SHEET NUMBER
G-1

NOTES

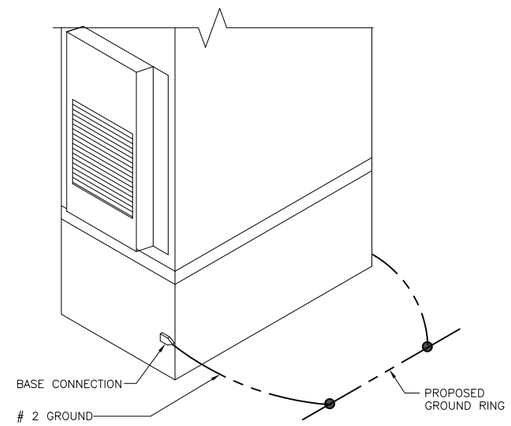
EQUIPMENT CABINET OMITTED FOR CLARITY



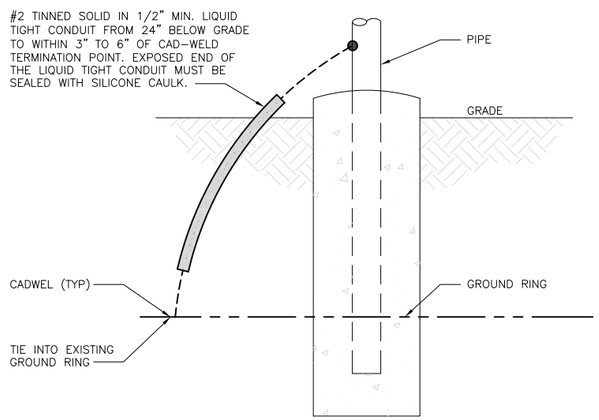
H-FRAME GROUNDING DETAIL | NO SCALE | 1



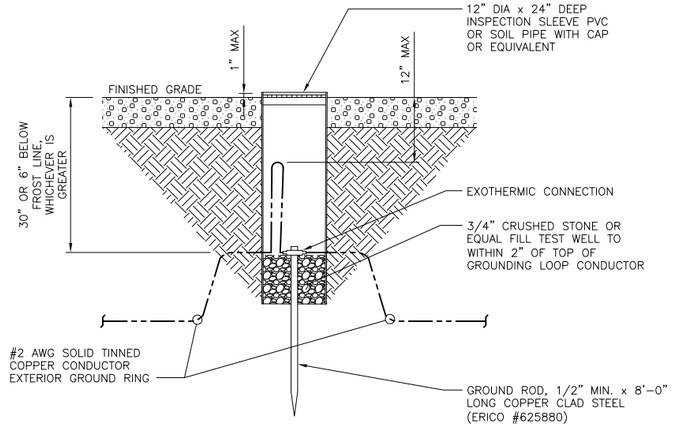
TYPICAL GPS UNIT GROUNDING | NO SCALE | 2



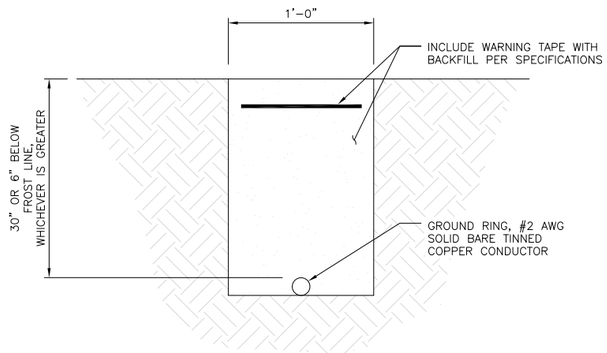
OUTDOOR CABINET GROUNDING | NO SCALE | 3



TRANSITIONING GROUND DETAIL | NO SCALE | 4



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



TYPICAL GROUND RING TRENCH | NO SCALE | 6

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STATE OF CONNECTICUT
CHAD M. TILLE
No. 23924
LICENSED PROFESSIONAL ENGINEER
6/14/22

MTS ENGINEERING P.L.L.C.
BER:2386985
Expires 3/31/23

DRAWN BY:	CHECKED BY:	APPROVED BY:
RY	SA	BLJ

RFDS REV #: 2

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	5/25/22	ISSUED FOR REVIEW
0	6/14/22	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

149547.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOHVN00118B
370 ROCKLAND ROAD
GUILFORD, CT 06437

SHEET TITLE

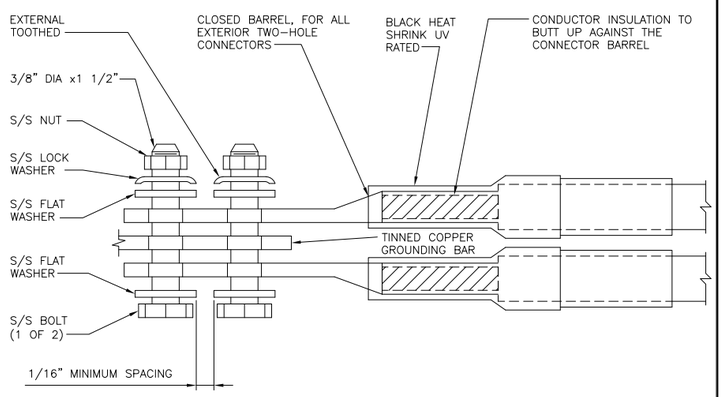
GROUNDING DETAILS

SHEET NUMBER

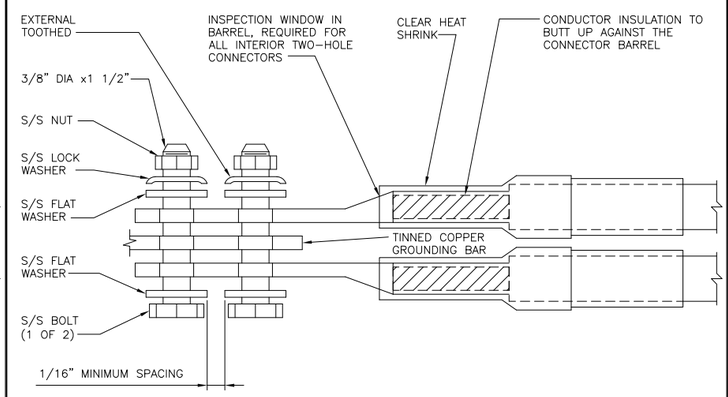
G-2

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

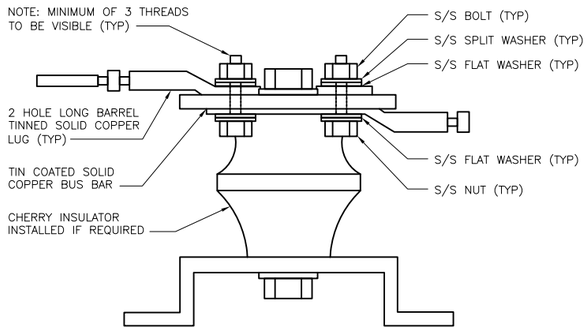
TYPICAL GROUNDING NOTES | NO SCALE | 1



TYPICAL EXTERIOR TWO HOLE LUG | NO SCALE | 2



TYPICAL INTERIOR TWO HOLE LUG | NO SCALE | 3



LUG DETAIL | NO SCALE | 4

NOT USED | NO SCALE | 5

NOT USED | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

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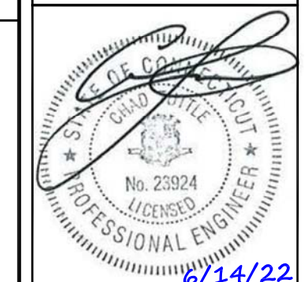

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370 ROCKLAND ROAD
GUILFORD, CT 06437

SHEET TITLE

GROUNDING DETAILS

SHEET NUMBER

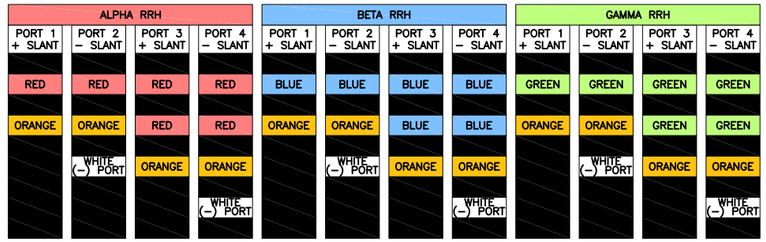
G-3

HYBRID/DISCREET CABLES

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

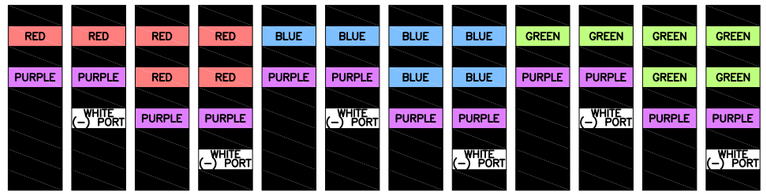
LOW–BAND RRH
(600 MHz N71 BASEBAND) +
(850 MHz N26 BAND) +
(700 MHz N29 BAND) – OPTIONAL PER MARKET

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



MID–BAND RRH
(AWS BANDS N66+N70)

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



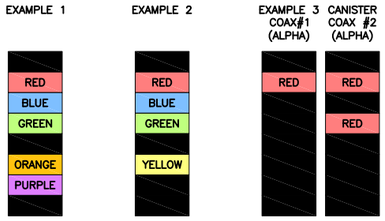
HYBRID/DISCREET CABLES

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.

EXAMPLE 3 – MAIN COAX WITH GROUND MOUNTED RRHs.



CONTRACTOR TO REFER TO FINAL CONSTRUCTION RFDS FOR ALL RD DETAILS. FINAL RFDS IS IN NEXSYSONE.

FIBER JUMPERS TO RRHs

LOW–BAND HHR FIBER CABLES HAVE SECTOR STRIPE ONLY.

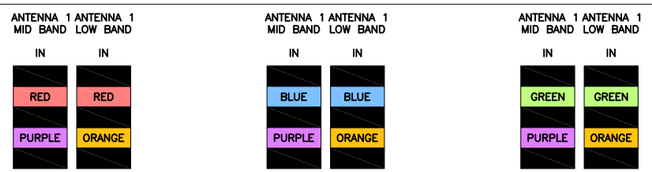
POWER CABLES TO RRHs

LOW–BAND RRH POWER CABLES HAVE SECTOR STRIPE ONLY

RET MOTORS AT ANTENNAS

RET CONTROL IS HANDLED BY THE MID–BAND RRH WHEN ONE SET OF RET PORTS EXIST ON ANTENNA.

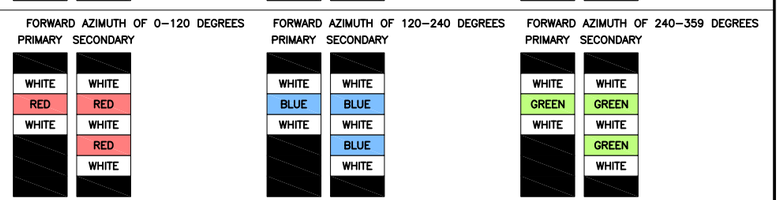
SEPARATE RET CABLES ARE USED WHEN ANTENNA PORTS PROVIDE INPUTS FOR BOTH LOW AND MID BANDS.



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

LOW BANDS (N71+N26) OPTIONAL – (N29): ORANGE

AWS (N66+N70+H–BLOCK): PURPLE

CBRS TECH (3 GHz): YELLOW

NEGATIVE SLANT PORT ON ANT/RRH: WHITE

ALPHA SECTOR: RED

BETA SECTOR: BLUE

GAMMA SECTOR: GREEN

COLOR IDENTIFIER | NO SCALE | 2

NOT USED | NO SCALE | 3

NOT USED | NO SCALE | 4

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DISH Wireless L.L.C.
PROJECT INFORMATION

BOHVN00118B
370 ROCKLAND ROAD
GUILFORD, CT 06437

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	T
EXOTHERMIC WITH INSPECTION SLEEVE	
GROUNDING BAR	
GROUND ROD	
TEST GROUND ROD WITH INSPECTION SLEEVE	T
SINGLE POLE SWITCH	
DUPLEX RECEPTACLE	
DUPLEX GFCI RECEPTACLE	GFCI
FLUORESCENT LIGHTING FIXTURE (2) TWO LAMPS 48–T8	F
SMOKE DETECTION (DC)	SD
EMERGENCY LIGHTING (DC)	
SECURITY LIGHT W/PHOTOCELL LITHONIA ALXW LED–1–25A400/51K–SR4–120–PE–DDBTXD	
CHAIN LINK FENCE	X X X X
WOOD/WROUGHT IRON FENCE	
WALL STRUCTURE	
LEASE AREA	
PROPERTY LINE (PL)	
SETBACKS	
ICE BRIDGE	
CABLE TRAY	
WATER LINE	W W W W W
UNDERGROUND POWER	UGP UGP UGP UGP UGP
UNDERGROUND TELCO	UGT UGT UGT UGT UGT
OVERHEAD POWER	OHP OHP OHP OHP
OVERHEAD TELCO	OHT OHT OHT OHT
UNDERGROUND TELCO/POWER	UGT/P UGT/P UGT/P UGT/P
ABOVE GROUND POWER	AGP AGP AGP AGP AGP
ABOVE GROUND TELCO	AGT AGT AGT AGT AGT
ABOVE GROUND TELCO/POWER	AGT/P AGT/P AGT/P AGT/P
WORKPOINT	W.P.
SECTION REFERENCE	XX / X–X
DETAIL REFERENCE	XX / X–X

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	UNITERRUPTIBLE 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

BOHVN00118B
370 ROCKLAND ROAD
GUILFORD, CT 06437

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 SIGH IS A METAL SIGN IT SHALL BE PLACED ON EXISTING DISH Wireless L.L.C H-FRAME WITH A SECURE ATTACH METHOD.
- IF EME REPORT IS NOT AVAILABLE AT THE TIME OF CREATION OF CONSTRUCTION DOCUMENTS; PLEASE CONTACT DISH Wireless L.L.C. CONSTRUCTION MANAGER FOR FURTHER INSTRUCTION ON HOW TO PROCEED.

NOTES:

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

INFORMATION

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

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

Site ID: _____

THIS SIGN IS FOR REFERENCE PURPOSES ONLY

NOTICE

Transmitting Antenna(s)

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

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

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

Site ID: _____

dish

THIS SIGN IS FOR REFERENCE PURPOSES ONLY

⚠ CAUTION

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dish

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⚠ WARNING

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dish

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RF SIGNAGE

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370 ROCKLAND ROAD
GUILFORD, CT 06437

SHEET TITLE
RF SIGNAGE

SHEET NUMBER
GN-2

SITE ACTIVITY REQUIREMENTS:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

GENERAL NOTES:

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

CONTRACTOR:GENERAL CONTRACTOR RESPONSIBLE FOR CONSTRUCTION

CARRIER:DISH Wireless L.L.C.

TOWER OWNER:TOWER OWNER

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

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

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

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

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

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

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

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

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

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

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

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

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

dish wireless.

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PROFESSIONAL ENGINEER

6/14/22

MTS ENGINEERING P.L.L.C.
BER:2386985
Expires 3/31/23

DRAWN BY:	CHECKED BY:	APPROVED BY:
RY	SA	BLJ

RFDS REV #: 2

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	5/25/22	ISSUED FOR REVIEW
0	6/14/22	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

149547.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOHVN00118B
370 ROCKLAND ROAD
GUILFORD, CT 06437

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-2

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.

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6/14/22

MTS ENGINEERING P.L.L.C.
BER:2386985
Expires 3/31/23

DRAWN BY:	CHECKED BY:	APPROVED BY:
RY	SA	BLJ

RFDS REV #: 2

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	5/25/22	ISSUED FOR REVIEW
0	6/14/22	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

149547.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOHVN00118B
370 ROCKLAND ROAD
GUILFORD, CT 06437

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-3

GROUNDING NOTES:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

SBA

8051 CONGRESS AVENUE
BOCA RATON, FL 33487

B+T GRP

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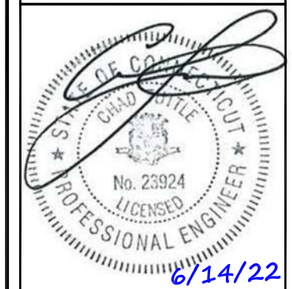


6/14/22

MTS ENGINEERING P.L.L.C.
BER:2386985
Expires 3/31/23

DRAWN BY:	CHECKED BY:	APPROVED BY:
RY	SA	BLJ

RFDS REV #: 2

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	5/25/22	ISSUED FOR REVIEW
0	6/14/22	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

149547.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOHVN00118B
370 ROCKLAND ROAD
GUILFORD, CT 06437

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-4

Exhibit D

Structural Analysis Report

Tower Engineering Solutions
Phone (972) 483-0607, Fax (972) 975-9615
1320 Greenway Drive, Suite 600, Irving, Texas 75038

Structural Analysis Report

Existing 159 ft EEI Monopole

Customer Name: SBA Communications Corp

Customer Site Number: CT46139-A

Customer Site Name: West Haven-rt15 /Woodbridge

Carrier Name: Dish Wireless (App#: 196482-1)

Carrier Site ID / Name: BOHVN00118B / 0

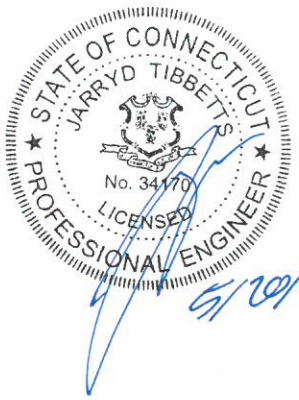
Site Location: 370 Rockland Road

Guilford, Connecticut

New Heaven County

Latitude: 41.396833

Longitude: -72.688805



Analysis Result:

Max Structural Usage: 96.4% [Pass]

Max Foundation Usage: 71.0% [Pass]

Additional Usage Caused by New Mount/Mount Modification: N/A

Report Prepared By : Changzhi Zang

Tower Engineering Solutions
Phone (972) 483-0607, Fax (972) 975-9615
1320 Greenway Drive, Suite 600, Irving, Texas 75038

Structural Analysis Report

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Analysis Result:

Max Structural Usage: 96.4% [Pass]

Max Foundation Usage: 71.0% [Pass]

Additional Usage Caused by New Mount/Mount Modification: N/A

Report Prepared By : Changzhi Zang

Introduction

The purpose of this report is to summarize the analysis results on the 159 ft EEI Monopole to support the proposed antennas and transmission lines in addition to those currently installed. Any modification listed under Sources of Information was assumed completed and was included in this analysis.

Sources of Information

Tower Drawings	Tower Drawing by Engineered Endeavors, Job#12806-E01 dated 7/30/04
Foundation Drawing	Foundation Design by Vertical Solutions, Job# 121192.02 dated 7/16/12
Geotechnical Report	Geotechnical Report by Jaworski, Job# 04197G, dated 3/24/04
Modification Drawings	VS#: 090845.01 dated 7/13/09, VS#: 122449 dated 01/30/2013; PCI VS#: 131360.01 dated 2/10/14
Mount Analysis	TMO MA by TES Project# 101022 R1, dated 03/15/2021

Analysis Criteria

The rigorous analysis was performed in accordance with the requirements and stipulations of the TIA-222-G-2**.** In accordance with this standard, the structure was analyzed using **TESPoles,** a proprietary analysis software. The program considers the structure as an elastic 3-D model with second-order effects and temperature effects incorporated in the analysis. The analysis was performed using multiple wind directions.

Wind Speed Used in the Analysis:	Ultimate Design Wind Speed V_{ult} = 130.0 mph (3-Sec. Gust)/ Nominal Design Wind Speed V_{asd} = 101.0 mph (3-Sec. Gust)
Wind Speed with Ice:	50 mph (3-Sec. Gust) with 3/4" radial ice concurrent
Operational Wind Speed:	60 mph + 0" Radial ice
Standard/Codes:	TIA-222-G-2 /
Exposure Category:	C
Structure Class:	II
Topographic Category:	1
Crest Height:	0 ft
Seismic Parameters:	S_S = 0.176, S_1 = 0.061

This structural analysis is based upon the tower being classified as a Structure Class II; however, if a different classification is required subsequent to the date hereof, the tower classification will be changed to meet such requirement and a new structural analysis will be run.

Existing Antennas, Mounts and Transmission Lines

The table below summarizes the antennas, mounts and transmission lines that were considered in the analysis as existing on the tower.

Items	Elevation (ft)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
1	157.0	3	Samsung VZS01- Panel	(3) T-Arms	(12) 1 5/8" Coax (2) 1 5/8" Hybrid	Verizon
2		6	Andrew JAHH-65B-R3B- Panel			
3		3	Commscope CBC78T-DS-43/E14F05P19			
4		3	Samsung B2/B66A RRH-BR049- RRH			
5		3	Samsung B5/B13 RRH-BR04C- RRH			
6		1	Raycap FE-16148-OVP-B12			
7	147.0	3	Ericsson – AIR32 KRD901146-1_B66A_B2A (Octo) - Panel	(3) T-Arms (4) MS-HRCP-35 (1) MS-H1436 (1) MS-TAW-350RO (3) PST350-15 (1) Collar Mount	(3) 2" Hybrid	T-Mobile Sprint
8		3	RFS - APXVAALL24_43-U-NA20 - Panel			
9		3	Ericsson - AIR6449 B41 - Panel			
10		4	RFS - ACU-A20-N RET - RET			
11		3	Ericsson - 4415 B25 – RRU			
12		3	ALU - 800 MHz RRH – RRU			
13		3	Ericsson - 4449 B71 + B85 - RRU			
14		3	ALU – 800 MHz Filter – Filter			
15	137.0	6	Powerwave - RA21.7770.00 - Panel	(3) T-Arms	(12) 1 5/8" (1) 1/2" Fiber (2) 3/4" DC Power	AT&T
16		3	KMW - AM-X-CD-16-65-00T - Panel			
17		6	Ericsson - RRUS11 – RRU			
18		12	Powerwave - LGP21401-TMA			
19		1	Raycap - DC6-48-60-18-8F- OVP			

Proposed Carrier's Final Configuration of Antennas, Mounts and Transmission Lines

Information pertaining to the proposed carrier's final configuration of antennas and transmission lines was provided by SBA Communications Corp. The proposed antennas and lines are listed below.

Items	Elevation (ft)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
20	127.0	3	JMA Wireless MX08FRO665-21 - Panel	Platform w/HRK [(1) Commscope MC-PK8-C]	(1) 1.6" Hybrid	Dish Wireless
21		3	Fujitsu TA08025-B605 - RRU			
22		3	Fujitsu TA08025-B604 - RRU			
23		1	Raycap RDIDC-9181-PF-48 - OVP			

The proposed transmission lines can be installed inside or outside of the pole shafts. If installed outside, the lines shall be strapped tightly to the face of the pole shafts. Stacking lines is not allowed.

Analysis Results

The results of the structural analysis, performed for the wind and ice loading and antenna equipment as defined above, are summarized as the following:

	Pole shafts	Anchor Bolts	Base Plate
Max. Usage:	**91.4%**	**71.1%**	**96.4%**
Pass/Fail	**Pass**	**Pass**	**Pass**

Foundations

	Moment (Kip-Ft)	Shear (Kips)	Axial (Kips)
Analysis Reactions	3881.5	34.1	42.2

The foundation has been investigated using the supplied documents and soils report and was found adequate. Therefore, no modification to the foundation will be required.

Operational Condition (Rigidity):

Operational characteristics of the tower are found to be within the limits prescribed by TIA-222 for the installed antennas. The maximum twist/sway at the elevation of the proposed equipment is 1.2279 degrees under the operational wind speed as specified in the Analysis Criteria.

Conclusions

Based on the analysis results, the existing structure and its foundation were found to be adequate to safely support the existing and proposed equipment and meet the minimum requirements per the TIA-222 Standard under the design basic wind speed as specified in the Analysis Criteria.

Standard Conditions

1. This analysis was performed based on the information supplied to **(TES) Tower Engineering Solutions, LLC.** Verification of the information provided was not included in the Scope of Work for **TES**. The accuracy of the analysis is dependent on the accuracy of the information provided.

2. The structural analysis was performance based upon the evidence available at the time of this report. All information provided by the client is considered to be accurate.

3. The analyses will be performed based on the codes as specified by the client or based on the best knowledge of the engineering staff of **TES**. In the absence of information to the contrary, all work will be performed in accordance with the latest relevant revision of ANSI/TIA-222. If wind speed and/or ice loads are different from the minimum values recommended by the ANSI/TIA-222 standard or other codes, **TES** should be notified in writing and the applicable minimum values provided by the client.

4. The configuration of the existing mounts, antennas, coax and other appurtenances were supplied by the customer for the current structural analysis. **TES** has not visited the tower site to verify the adequacy of the information provided. If there is any discrepancy found in the report regarding the existing conditions, **TES** should be notified immediately to evaluate the effect of the discrepancy on the analysis results.

5. The client will assume responsibility for rework associated with the differences in initially provided information, including tower and foundation information, existing and/or proposed equipment and transmission lines.

6. If a feasibility analysis was performed, final acceptance of changed conditions shall be based upon a rigorous structural analysis.

Usage Diagram - Max Ratio 83.34% at 52.9ft

Structure:	CT46139-A-SBA	**Code:**	EIA/TIA-222-G	5/20/2022
Site Name:	West Haven-rt15 /Woodbridge	**Exposure:**	C	
Height:	158.50 (ft)	**Gh:**	1.1	
Base Elev:	0.000 (ft)			Page: 1

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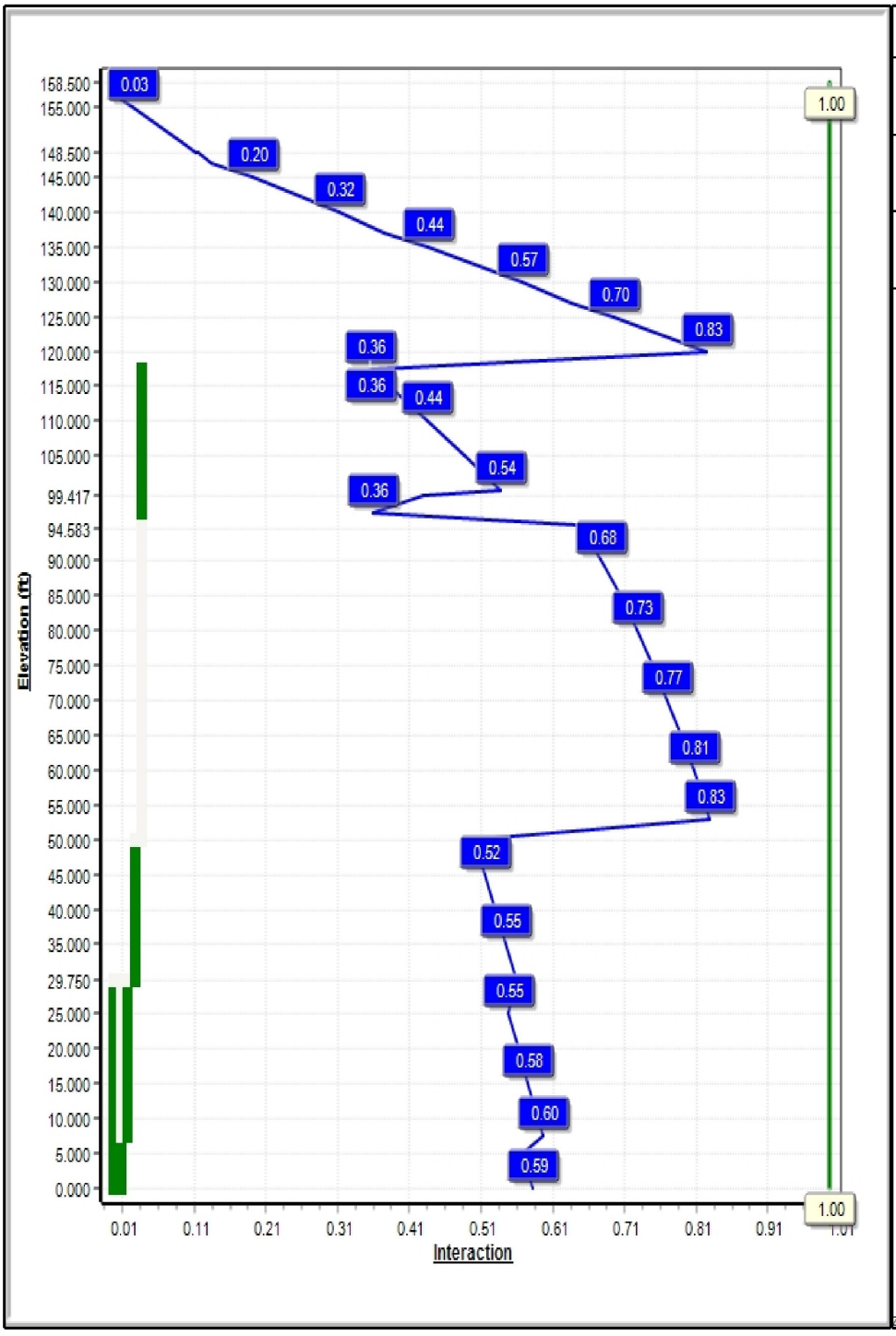
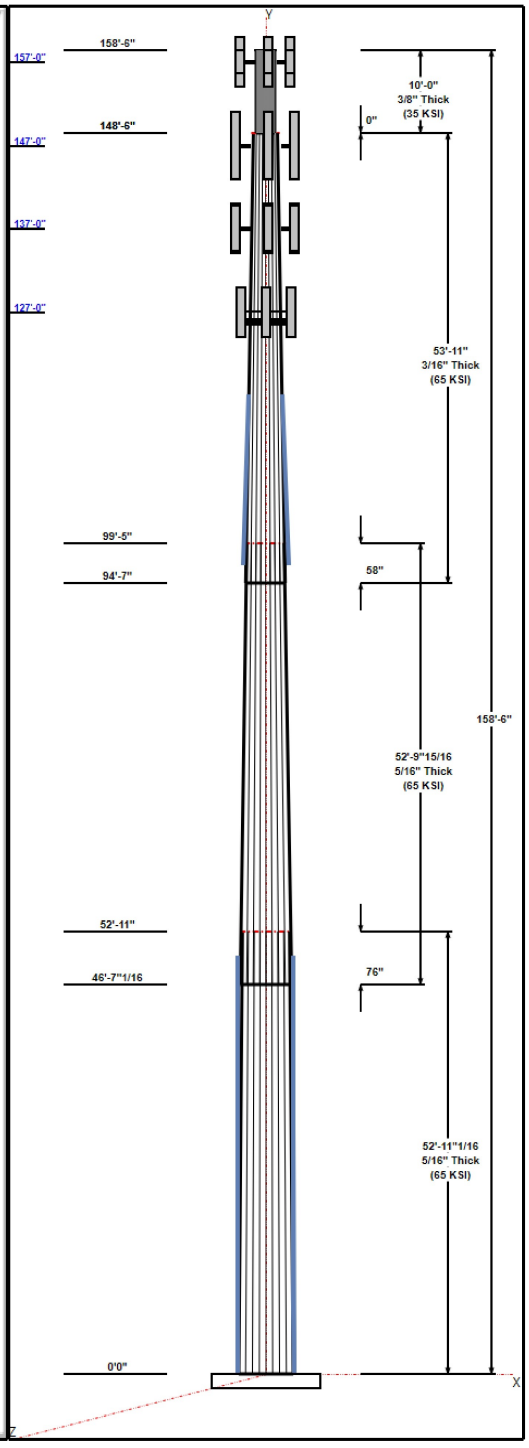
Dead Load Factor:	1.20	**Iterations:**	25
Wind Load Factor:	1.60		

Load Case : 1.2D + 1.6W 101 mph Wind





Structure: CT46139-A-SBA

Type: Custom
Site Name: West Haven-rt15 /Woodbridge
Height: 158.50 (ft)
Base Elev: 0.00 (ft)

Base Shape: 18 Sided
Taper: 0.25926

5/20/2022

Tower Engineering Solutions

Shaft Properties

Seq	Length (ft)	Top (in)	Bottom (in)	Thick (in)	Joint Type	Taper	Grade (ksi)
1	52.92	44.28	58.00	0.313		0.25926	65
2	52.83	32.85	46.55	0.313	Slip	0.25926	65
3	53.92	20.50	34.48	0.188	Slip	0.25926	65
4	10.00	20.00	20.00	0.375	Butt	0.00000	35

Discrete Appurtenances

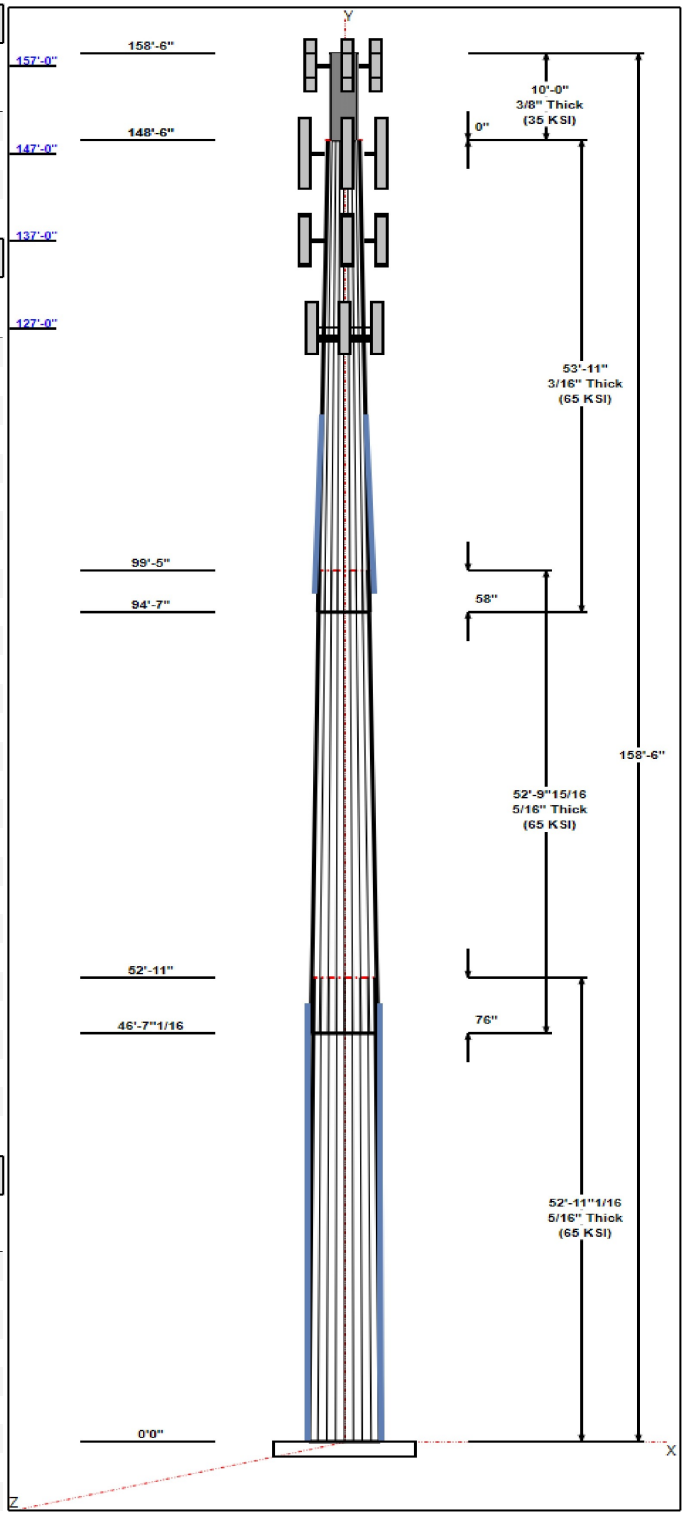
Attach Elev (ft)	Force Elev (ft)	Qty	Description	Carrier
157.00	157.00	3	VZS01	Verizon
157.00	157.00	6	JAHH-65B-R3B	Verizon
157.00	157.00	3	CBC78T-DS-43/E14F05P1	Verizon
157.00	157.00	3	B2/B66A RRH-BR049	Verizon
157.00	157.00	3	B5/B13 RRH-BR04C	Verizon
157.00	157.00	3	T-Arm	Verizon
157.00	157.00	1	FE-16148-OVP-B12	Verizon
147.00	147.00	3	800 MHz RRH	T-Mobile Sprint
147.00	147.00	3	ALU 800MHz External	T-Mobile Sprint
147.00	147.00	1	(3) T-Arm Kit	T-Mobile Sprint
147.00	147.00	3	T-Arm	T-Mobile Sprint
147.00	147.00	3	KRD 9011461-B66A-B2A	T-Mobile Sprint
147.00	147.00	3	RFS	T-Mobile Sprint
147.00	147.00	3	AIR6449 B41	T-Mobile Sprint
147.00	147.00	4	ACU-A20-N	T-Mobile Sprint
147.00	147.00	3	RRUS 4415 B25	T-Mobile Sprint
147.00	147.00	3	4449 B71 + B85	T-Mobile Sprint
137.00	137.00	3	T-Arm	AT&T
137.00	137.00	1	DC6-48-60-18-8F	AT&T
137.00	137.00	6	RA21.7770.00	AT&T
137.00	137.00	6	RRUS 11	AT&T
137.00	137.00	3	AM-X-CD-16-65-00T-RET	AT&T
137.00	137.00	12	LGP21401	AT&T
127.00	127.00	3	JMA Wireless	Dish Wireless
127.00	127.00	3	Fujitsu TA08025-B605	Dish Wireless
127.00	127.00	3	Fujitsu TA08025-B604	Dish Wireless
127.00	127.00	1	Raycap	Dish Wireless
127.00	127.00	1	MC-PK8-C	Dish Wireless

Linear Appurtenances

Elev From (ft)	Elev To (ft)	Placement	Description	Carrier
0.00	157.00	Inside	1 5/8" Coax	Verizon
0.00	157.00	Inside	1 5/8" Hybrid	Verizon
0.00	147.00	Inside	2" Hybrid	T-Mobile Sprint
0.00	137.00	Inside	1 5/8" Coax	AT&T
0.00	137.00	Inside	1/2" Coax	AT&T
0.00	137.00	Inside	3/4" DC	AT&T
0.00	127.00	Outside	1.6" Hybrid	Dish Wireless
94.50	104.50	Outside	1.25" Reinforcing plate	
8.92	53.00	Outside	1.25" Reinforcing plate	
0.00	8.92	Outside	1.25" Reinforcing plate	

Anchor Bolts

Qty	Specifications	Grade (ksi)	Arrangement



16	2.25" 18J	75.0	Radial

Base Plate

Thickness (in)	Specifications (in)	Grade (ksi)	Geometry
1.7500	72.0	60.0	Round

Reactions

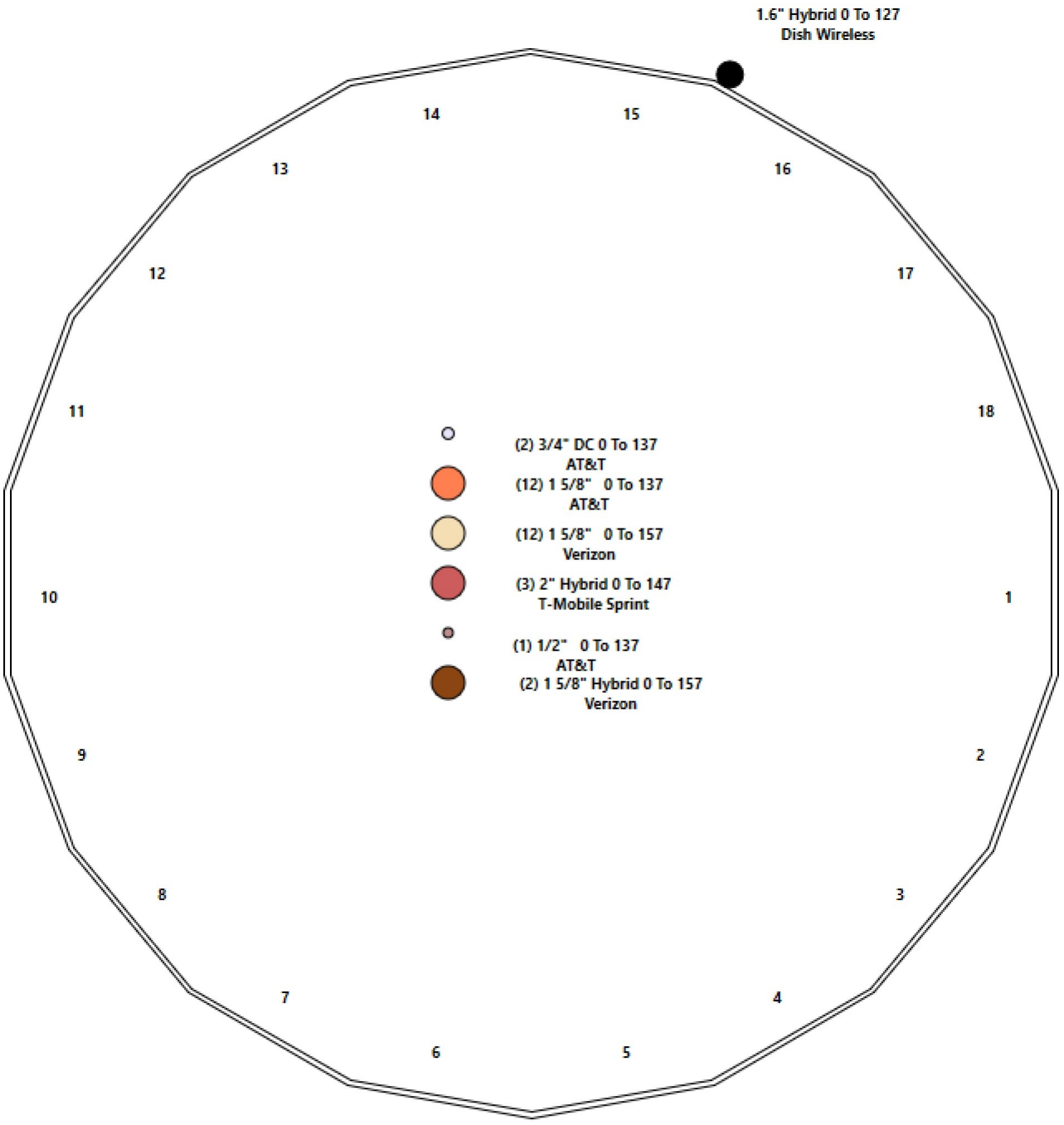
Load Case	Moment (FT-Kips)	Shear (Kips)	Axial (Kips)
1.2D + 1.6W 101 mph Wind	3881.5	34.1	42.2
0.9D + 1.6W 101 mph Wind	3844.5	34.1	31.6
1.2D + 1.0Di + 1.0Wi 50 mph Wind	1009.0	9.0	66.2
1.2D + 1.0E	231.0	1.8	42.2
0.9D + 1.0E	228.6	1.8	31.7
1.0D + 1.0W 60 mph Wind	851.8	7.5	35.2

Structure: CT46139-A-SBA - Coax Line Placement

Type: Monopole
Site Name: West Haven-rt15 /Woodbridge
Height: 158.50 (ft)

5/20/2022

Tower Engineering Solutions



Shaft Properties

Structure:	CT46139-A-SBA	**Code:**	TIA-222-G	5/20/2022	
Site Name:	West Haven-rt15 /Woodbridge	**Exposure:**	C		
Height:	158.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 5	

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Sec. No.	Shape	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Overlap (in)	Weight (lb)
1	18	52.920	0.3125	65		0.00	9,078
2	18	52.830	0.3125	65	Slip	76.00	7,023
3	18	53.917	0.1875	65	Slip	58.00	2,981
4	R	10.000	0.3750	35	Flange	0.00	787
					Total Shaft Weight:		**19,868**

	Bottom						Top						
Sec. No.	Dia (in)	Elev (ft)	Area (sqin)	Ix (in^4)	W/t Ratio	D/t Ratio	Dia (in)	Elev (ft)	Area (sqin)	Ix (in^4)	W/t Ratio	D/t Ratio	Taper
1	58.00	0.00	57.22	24056.89	31.32	185.60	44.28	52.92	43.61	10650.9	23.57	141.7	0.259259
2	46.55	46.59	45.86	12384.89	24.85	148.95	32.85	99.42	32.27	4316.77	17.13	105.1	0.259259
3	34.48	94.58	20.41	3031.67	31.01	183.88	20.50	148.50	12.09	630.14	17.87	109.3	0.259259
4	20.00	148.5	23.12	1113.92	0.00	53.33	20.00	158.50	23.12	1113.92	0.00	53.33	0.000000

Additional Steel

Elev From (ft)	Elev To (ft)	Qty	Description	Fy (ksi)	Fu (ksi)	Offset (in)	Intermediate Connectors: Description	Intermediate Connectors: Spacing (in)	Termination Connectors: Description	Termination Connectors: Spacing (in)	Termination Connectors: Lower Qty	Termination Connectors: Upper Qty
0.00	29.75	2	PLT 7.25x1.5(31mm Hole)	50	65	0.00	AJM20&sleeve	15.00	AJM20&sleeve	3.00	13	9
0.00	7.42	2	PLT 7.25x1.5(31mm Hole)	50	65	0.00	AJM20&sleeve	15.00	AJM20&sleeve	3.00	9	9
7.42	29.75	1	PLT 7.25x1.5(31mm Hole)	50	65	0.00	AJM20&sleeve	15.00	AJM20&sleeve	3.00	13	9
29.75	50.00	3	PLT 6.5x1.5(31mm Hole)	50	65	0.00	AJM20&sleeve	18.00	AJM20&sleeve	3.00	13	12
96.75	117.2	3	PLT 5"x1.5" (1.25" Hole)	50	65	0.00	AJM20&sleeve	21.00	AJM20&sleeve	3.00	9	7

Load Summary

Structure:	CT46139-A-SBA	**Code:**	TIA-222-G	5/20/2022	
Site Name:	West Haven-rt15 /Woodbridge	**Exposure:**	C		
Height:	158.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 6	

Tower Engineering Solutions

Discrete Appurtenances

				No Ice			Ice				
No.	Elev (ft)	Description	Qty	Weight (lb)	CaAa (sf)	CaAa Factor	Weight (lb)	CaAa (sf)	CaAa Factor	Hor. Ecc. (ft)	Vert Ecc (ft)
1	157.00	VZS01	3	87.10	4.30	0.69	198.74	5.188	0.69	0.00	0.00
2	157.00	JAHH-65B-R3B	6	68.56	9.11	0.83	300.26	10.463	0.83	0.00	0.00
3	157.00	CBC78T-DS-43/E14F05P19	3	10.40	0.37	0.67	31.28	0.654	0.67	0.00	0.00
4	157.00	B2/B66A RRH-BR049	3	70.30	1.87	0.67	147.29	2.446	0.67	0.00	0.00
5	157.00	B5/B13 RRH-BR04C (RFV01U-D2A)	3	84.40	1.87	0.67	154.16	2.446	0.67	0.00	0.00
6	157.00	T-Arm	3	400.00	10.00	0.75	680.51	18.766	0.75	0.00	0.00
7	157.00	FE-16148-OVP-B12	1	15.21	2.01	0.67	52.36	2.581	0.67	0.00	0.00
8	147.00	800 MHz RRH	3	53.00	2.49	0.67	126.81	3.631	0.67	0.00	0.00
9	147.00	ALU 800MHz External Notch Filt	3	8.80	0.78	0.67	26.41	1.426	0.67	0.00	0.00
10	147.00	(3) T-Arm Kit	1	500.00	16.50	1.00	1092.18	32.593	1.00	0.00	0.00
11	147.00	T-Arm	3	400.00	10.00	0.75	678.67	18.709	0.75	0.00	0.00
12	147.00	KRD 9011461-B66A-B2A	3	132.20	6.51	0.87	315.00	7.629	0.87	0.00	0.00
13	147.00	RFS APXVAALL24_43-U-NA20	3	128.00	20.24	0.70	544.98	22.136	0.70	0.00	0.00
14	147.00	AIR6449 B41	3	103.00	5.65	0.71	239.84	6.599	0.71	0.00	0.00
15	147.00	ACU-A20-N	4	1.00	0.14	0.67	5.29	0.436	0.67	0.00	0.00
16	147.00	RRUS 4415 B25	3	46.00	1.64	0.67	87.02	2.154	0.67	0.00	0.00
17	147.00	4449 B71 + B85	3	73.20	1.97	0.67	130.83	2.538	0.67	0.00	0.00
18	137.00	T-Arm	3	400.00	10.00	0.75	676.71	18.647	0.75	0.00	0.00
19	137.00	DC6-48-60-18-8F	1	31.80	0.92	1.00	93.07	1.354	1.00	0.00	0.00
20	137.00	RA21.7770.00	6	37.20	6.55	0.73	166.31	8.997	0.73	0.00	0.00
21	137.00	RRUS 11	6	50.70	2.52	0.67	138.91	3.165	0.67	0.00	0.00
22	137.00	AM-X-CD-16-65-00T-RET	3	48.50	8.02	0.75	209.31	10.789	0.75	0.00	0.00
23	137.00	LGP21401	12	14.10	1.29	0.67	38.88	2.118	0.67	0.00	0.00
24	127.00	JMA Wireless MX08FRO665-21	3	64.50	12.49	0.74	350.57	13.931	0.74	0.00	0.00
25	127.00	Fujitsu TA08025-B605	3	75.00	1.96	0.67	126.44	2.512	0.67	0.00	0.00
26	127.00	Fujitsu TA08025-B604	3	63.90	1.96	0.67	113.69	2.512	0.67	0.00	0.00
27	127.00	Raycap RDIDC-9181-PF-48	1	21.90	2.01	1.00	74.27	2.569	1.00	0.00	0.00
28	127.00	MC-PK8-C	1	1411.00	33.60	1.00	3348.48	68.203	1.00	0.00	0.00
		Totals:	**93**	**9,836.77**			**23,295.75**				

Linear Appurtenances

Bottom Elev. (ft)	Top Elev. (ft)	Description	Exposed Width	Exposed
0.00	157.00	(12) 1 5/8" Coax	0.00	Inside
0.00	157.00	(2) 1 5/8" Hybrid	0.00	Inside
0.00	147.00	(3) 2" Hybrid	0.00	Inside
0.00	137.00	(12) 1 5/8" Coax	0.00	Inside
0.00	137.00	(1) 1/2" Coax	0.00	Inside
0.00	137.00	(2) 3/4" DC	0.00	Inside
0.00	127.00	(1) 1.6" Hybrid	1.60	Outside
94.50	104.50	(1) 1.25" Reinforcing plate	1.50	Outside
8.92	53.00	(1) 1.25" Reinforcing plate	1.50	Outside
0.00	8.92	(1) 1.25" Reinforcing plate	3.00	Outside

Shaft Section Properties

Structure:	CT46139-A-SBA	**Code:**	TIA-222-G	5/20/2022	
Site Name:	West Haven-rt15 /Woodbridge	**Exposure:**	C		
Height:	158.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 7	

Tower Engineering Solutions

Increment Length: **5 (ft)**

											Additional Reinforcing			
Elev (ft)	Description	Thick (in)	Flat Dia (in)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	Fy (ksi)	Fb (ksi)	Weight (lb)	Area (in^2)	Ixp (in^4)	Iyp (in^4)	Weight (lb)
0.00	RB1 RB2	0.3125	58.000	57.217	24056.9	31.32	185.60	65	65	0.0	43.50	20646.9	16791.8	
5.00		0.3125	56.704	55.931	22471.3	30.58	181.45	65	65	962.5	43.50	19749.9	16072.5	700.2
7.42	RT2 RB3	0.3125	56.076	55.309	21729.6	30.23	179.44	65	66	458.0	32.63	13593.6	13593.6	254.2
10.00		0.3125	55.407	54.645	20957.0	29.85	177.30	65	66	482.7	32.63	13281.3	13281.3	271.0
15.00		0.3125	54.111	53.360	19512.3	29.12	173.16	65	67	918.8	32.63	12686.5	12686.5	525.1
20.00		0.3125	52.815	52.074	18135.5	28.39	169.01	65	68	896.9	32.63	12105.4	12105.4	525.1
25.00		0.3125	51.519	50.788	16825.1	27.66	164.86	65	69	875.0	32.63	11538.0	11538.0	525.1
29.75	RT1 RT3 RB4	0.3125	50.287	49.567	15640.1	26.96	160.92	65	70	811.0	29.25	9859.9	9859.9	472.8
30.00		0.3125	50.222	49.502	15579.4	26.93	160.71	65	70	42.1	29.25	9835.4	9835.4	24.9
35.00		0.3125	48.926	48.217	14396.7	26.20	156.56	65	71	831.3	29.25	9351.3	9351.3	497.7
40.00		0.3125	47.630	46.931	13275.5	25.46	152.41	65	71	809.4	29.25	8879.4	8879.4	497.7
45.00		0.3125	46.333	45.645	12214.0	24.73	148.27	65	72	787.5	29.25	8419.8	8419.8	497.7
46.59	Bot - Section 2	0.3125	45.922	45.237	11889.4	24.50	146.95	65	73	245.3	29.25	8276.6	8276.6	157.9
50.00	RT4	0.3125	45.037	44.360	11210.7	24.00	144.12	65	73	1047.9	29.25	8186.7	8186.7	339.8
52.92	Top - Section 1	0.3125	44.905	44.229	11111.7	23.93	143.70	65	73	880.2				
55.00		0.3125	44.366	43.694	10713.4	23.62	141.97	65	74	311.1				
60.00		0.3125	43.069	42.408	9795.2	22.89	137.82	65	74	732.5				
65.00		0.3125	41.773	41.122	8931.1	22.16	133.67	65	75	710.6				
70.00		0.3125	40.477	39.837	8119.3	21.43	129.53	65	76	688.7				
75.00		0.3125	39.181	38.551	7358.2	20.70	125.38	65	77	666.8				
80.00		0.3125	37.884	37.265	6646.3	19.97	121.23	65	78	645.0				
85.00		0.3125	36.588	35.979	5981.8	19.23	117.08	65	79	623.1				
90.00		0.3125	35.292	34.694	5363.2	18.50	112.93	65	80	601.2				
94.58	Bot - Section 3	0.3125	34.103	33.515	4835.0	17.83	109.13	65	80	531.9				
95.00		0.3125	33.995	33.408	4788.7	17.77	108.79	65	80	76.3				
96.75	RB5	0.3125	33.542	32.958	4597.8	17.52	107.33	65	81	317.9	22.50	3553.4	3553.4	134.0
99.42	Top - Section 2	0.1875	33.225	19.661	2711.3	29.83	177.20	65	66	476.2	22.50	3417.0	3417.0	204.2
100.00		0.1875	33.074	19.571	2674.2	29.69	176.40	65	66	38.9	22.50	3387.5	3387.5	44.7
105.00		0.1875	31.778	18.799	2370.3	28.47	169.48	65	68	326.4	22.50	3140.1	3140.1	382.8
110.00		0.1875	30.481	18.028	2090.3	27.25	162.57	65	69	313.3	22.50	2902.2	2902.2	382.8
115.00		0.1875	29.185	17.257	1833.3	26.04	155.65	65	71	300.2	22.50	2673.7	2673.7	382.8
117.25	RT5	0.1875	28.602	16.909	1724.9	25.49	152.54	65	71	130.8	22.50	2574.0	2574.0	172.3
120.00		0.1875	27.889	16.485	1598.3	24.82	148.74	65	72	156.2				
125.00		0.1875	26.593	15.714	1384.2	23.60	141.83	65	74	273.9				
127.00		0.1875	26.074	15.405	1304.3	23.11	139.06	65	74	105.9				
130.00		0.1875	25.296	14.942	1190.2	22.38	134.91	65	75	154.9				
135.00		0.1875	24.000	14.171	1015.2	21.16	128.00	65	77	247.7				
137.00		0.1875	23.481	13.862	950.3	20.67	125.23	65	77	95.4				
140.00		0.1875	22.704	13.399	858.3	19.94	121.09	65	78	139.1				
145.00		0.1875	21.407	12.628	718.4	18.72	114.17	65	79	221.4				
147.00		0.1875	20.889	12.319	667.0	18.23	111.41	65	80	84.9				
148.50	Top - Section 3	0.1875	20.500	12.088	630.1	17.87	109.33	65	80	62.3				
148.50	Bot - Section 4	0.3750	20.000	23.120	1113.9	8.93	54.67	35	35					
150.00		0.3750	20.000	23.120	1113.9	0.00	53.33	35	35	118.0				
155.00		0.3750	20.000	23.120	1113.9	0.00	53.33	35	35	393.4				
157.00		0.3750	20.000	23.120	1113.9	0.00	53.33	35	35	157.3				
158.50		0.3750	20.000	23.120	1113.9	0.00	53.33	35	35	118.0				
									Total Weight	**19868.3**				**6992.8**

Wind Loading - Shaft

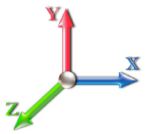
Structure:	CT46139-A-SBA	**Code:**	TIA-222-G	5/20/2022	
Site Name:	West Haven-rt15 /Woodbridge	**Exposure:**	C		
Height:	158.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 8	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 101 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 25

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00	RB1 RB2	1.00	0.85	21.088	23.20	457.01	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	21.088	23.20	446.80	0.650	0.000	5.00	24.265	15.77	585.4	0.0	1155.0
7.42	RT2 RB3	1.00	0.85	21.088	23.20	441.85	0.650	0.000	2.42	11.547	7.51	278.6	0.0	549.6
10.00		1.00	0.85	21.088	23.20	436.58	0.650	0.000	2.58	12.169	7.91	293.6	0.0	579.2
15.00		1.00	0.85	21.088	23.20	426.37	0.650	0.000	5.00	23.168	15.06	558.9	0.0	1102.5
20.00		1.00	0.90	22.375	24.61	428.67	0.650	0.000	5.00	22.620	14.70	579.0	0.0	1076.3
25.00		1.00	0.95	23.451	25.80	428.08	0.650	0.000	5.00	22.071	14.35	592.1	0.0	1050.0
29.75	RT1 RT3 RB4	1.00	0.98	24.326	26.76	425.57	0.650	0.000	4.75	20.460	13.30	569.4	0.0	973.2
30.00		1.00	0.98	24.369	26.81	425.40	0.650	0.000	0.25	1.063	0.69	29.6	0.0	50.6
35.00		1.00	1.01	25.172	27.69	421.20	0.650	0.000	5.00	20.975	13.63	604.0	0.0	997.5
40.00		1.00	1.04	25.890	28.48	415.84	0.650	0.000	5.00	20.426	13.28	605.0	0.0	971.3
45.00		1.00	1.07	26.540	29.19	409.57	0.650	0.000	5.00	19.878	12.92	603.5	0.0	945.0
46.59	Bot - Section 2	1.00	1.08	26.734	29.41	407.42	0.650	0.000	1.59	6.193	4.03	189.4	0.0	294.4
50.00	RT4	1.00	1.09	27.135	29.85	402.55	0.650	0.000	3.41	13.316	8.66	413.4	0.0	1257.4
52.92	Top - Section 1	1.00	1.11	27.461	30.21	398.16	0.650	0.000	2.92	11.189	7.27	351.5	0.0	1056.3
55.00		1.00	1.12	27.685	30.45	400.55	0.650	0.000	2.08	7.856	5.11	248.8	0.0	373.4
60.00		1.00	1.14	28.197	31.02	392.43	0.650	0.000	5.00	18.497	12.02	596.7	0.0	879.0
65.00		1.00	1.16	28.676	31.54	383.83	0.650	0.000	5.00	17.948	11.67	588.8	0.0	852.7
70.00		1.00	1.17	29.127	32.04	374.84	0.650	0.000	5.00	17.400	11.31	579.8	0.0	826.5
75.00		1.00	1.19	29.553	32.51	365.48	0.650	0.000	5.00	16.851	10.95	569.7	0.0	800.2
80.00		1.00	1.21	29.958	32.95	355.79	0.650	0.000	5.00	16.303	10.60	558.7	0.0	774.0
85.00		1.00	1.22	30.342	33.38	345.82	0.650	0.000	5.00	15.754	10.24	546.9	0.0	747.7
90.00		1.00	1.24	30.710	33.78	335.58	0.650	0.000	5.00	15.206	9.88	534.2	0.0	721.5
94.58	Bot - Section 3	1.00	1.25	31.033	34.14	325.98	0.650	0.000	4.58	13.457	8.75	477.7	0.0	638.3
95.00		1.00	1.25	31.061	34.17	325.10	0.650	0.000	0.42	1.214	0.79	43.1	0.0	91.6
96.75	RB5	1.00	1.26	31.181	34.30	321.38	0.650	0.000	1.75	5.056	3.29	180.4	0.0	381.5
99.42	Top - Section 2	1.00	1.26	31.360	34.50	315.65	0.650	0.000	2.67	7.575	4.92	271.8	0.0	571.5
100.00		1.00	1.27	31.399	34.54	318.00	0.650	0.000	0.58	1.636	1.06	58.8	0.0	46.7
105.00		1.00	1.28	31.723	34.89	307.11	0.650	0.000	5.00	13.719	8.92	497.9	0.0	391.7
110.00		1.00	1.29	32.035	35.24	296.03	0.650	0.000	5.00	13.171	8.56	482.7	0.0	375.9
115.00		1.00	1.30	32.336	35.57	284.77	0.650	0.000	5.00	12.622	8.20	466.9	0.0	360.2
117.25	RT5	1.00	1.31	32.468	35.72	279.65	0.650	0.000	2.25	5.501	3.58	204.3	0.0	157.0
120.00		1.00	1.32	32.627	35.89	273.34	0.650	0.000	2.75	6.573	4.27	245.3	0.0	187.5
125.00		1.00	1.33	32.909	36.20	261.76	0.650	0.000	5.00	11.525	7.49	433.9	0.0	328.7
127.00	Appurtenance(s)	1.00	1.33	33.019	36.32	257.08	0.650	0.000	2.00	4.457	2.90	168.3	0.0	127.1
130.00		1.00	1.34	33.182	36.50	250.03	0.650	0.000	3.00	6.520	4.24	247.5	0.0	185.9
135.00		1.00	1.35	33.446	36.79	238.16	0.650	0.000	5.00	10.428	6.78	399.0	0.0	297.2
137.00	Appurtenance(s)	1.00	1.35	33.550	36.90	233.38	0.650	0.000	2.00	4.018	2.61	154.2	0.0	114.5
140.00		1.00	1.36	33.703	37.07	226.16	0.650	0.000	3.00	5.862	3.81	226.0	0.0	167.0
145.00		1.00	1.37	33.953	37.35	214.04	0.650	0.000	5.00	9.332	6.07	362.5	0.0	265.7
147.00	Appurtenance(s)	1.00	1.37	34.051	37.46	209.15	0.650	0.000	2.00	3.579	2.33	139.4	0.0	101.9
148.50	Top - Section 3	1.00	1.38	34.124	37.54	205.48	0.650	0.000	1.50	2.627	1.71	102.5	0.0	74.7
150.00		1.00	1.38	34.196	37.62	197.63	0.600	0.000	1.50	2.500	1.50	90.3	0.0	141.6
155.00		1.00	1.39	34.433	37.88	198.32	0.600	0.000	5.00	8.333	5.00	303.0	0.0	472.0
157.00	Appurtenance(s)	1.00	1.39	34.526	37.98	198.58	0.600	0.000	2.00	3.333	2.00	121.5	0.0	188.8
158.50		1.00	1.39	34.596	38.06	198.78	0.600	0.000	1.50	2.500	1.50	91.3	0.0	141.6

Wind Loading - Shaft

Structure:	CT46139-A-SBA	**Code:**	TIA-222-G	5/20/2022	
Site Name:	West Haven-rt15 /Woodbridge	**Exposure:**	C		
Height:	158.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 9	

Totals:	**158.50**	**16,245.5**	**23,841.9**

Discrete Appurtenance Forces

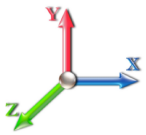
Structure:	CT46139-A-SBA	**Code:**	TIA-222-G	5/20/2022	
Site Name:	West Haven-rt15 /Woodbridge	**Exposure:**	C		
Height:	158.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 10	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 101 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 25

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	Orient Factor x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	157.00	CBC78T-DS-43/E14F05P	3	34.526	37.979	0.54	0.80	0.59	37.44	0.000	0.000	36.15	0.00	0.00
2	157.00	VZS01	3	34.526	37.979	0.55	0.80	7.12	313.56	0.000	0.000	432.71	0.00	0.00
3	157.00	JAHH-65B-R3B	6	34.526	37.979	0.66	0.80	36.29	493.63	0.000	0.000	2205.47	0.00	0.00
4	157.00	T-Arm	3	34.526	37.979	0.56	0.75	16.88	1440.00	0.000	0.000	1025.43	0.00	0.00
5	157.00	B2/B66A RRH-BR049	3	34.526	37.979	0.54	0.80	3.01	253.08	0.000	0.000	182.72	0.00	0.00
6	157.00	B5/B13 RRH-BR04C	3	34.526	37.979	0.54	0.80	3.01	303.84	0.000	0.000	182.72	0.00	0.00
7	157.00	FE-16148-OVP-B12	1	34.526	37.979	0.54	0.80	1.08	18.25	0.000	0.000	65.47	0.00	0.00
8	147.00	4449 B71 + B85	3	34.051	37.456	0.54	0.80	3.17	263.52	0.000	0.000	189.84	0.00	0.00
9	147.00	RRUS 4415 B25	3	34.051	37.456	0.54	0.80	2.64	165.60	0.000	0.000	158.04	0.00	0.00
10	147.00	ACU-A20-N	4	34.051	37.456	0.54	0.80	0.30	4.80	0.000	0.000	17.99	0.00	0.00
11	147.00	(3) T-Arm Kit	1	34.051	37.456	0.75	0.75	12.38	600.00	0.000	0.000	741.64	0.00	0.00
12	147.00	AIR6449 B41	3	34.051	37.456	0.57	0.80	9.63	370.80	0.000	0.000	576.99	0.00	0.00
13	147.00	RFS	3	34.051	37.456	0.56	0.80	34.00	460.80	0.000	0.000	2037.82	0.00	0.00
14	147.00	KRD 9011461-B66A-B2A	3	34.051	37.456	0.70	0.80	13.59	475.92	0.000	0.000	814.63	0.00	0.00
15	147.00	T-Arm	3	34.051	37.456	0.56	0.75	16.88	1440.00	0.000	0.000	1011.32	0.00	0.00
16	147.00	800 MHz RRH	3	34.051	37.456	0.54	0.80	4.00	190.80	0.000	0.000	239.96	0.00	0.00
17	147.00	ALU 800MHz External	3	34.051	37.456	0.54	0.80	1.25	31.68	0.000	0.000	75.17	0.00	0.00
18	137.00	RA21.7770.00	6	33.550	36.905	0.58	0.80	22.95	267.84	0.000	0.000	1355.22	0.00	0.00
19	137.00	DC6-48-60-18-8F	1	33.550	36.905	0.80	0.80	0.74	38.16	0.000	0.000	43.46	0.00	0.00
20	137.00	T-Arm	3	33.550	36.905	0.56	0.75	16.88	1440.00	0.000	0.000	996.43	0.00	0.00
21	137.00	RRUS 11	6	33.550	36.905	0.54	0.80	8.10	365.04	0.000	0.000	478.54	0.00	0.00
22	137.00	AM-X-CD-16-65-00T-RET	3	33.550	36.905	0.60	0.80	14.44	174.60	0.000	0.000	852.42	0.00	0.00
23	137.00	LGP21401	12	33.550	36.905	0.54	0.80	8.30	203.04	0.000	0.000	489.94	0.00	0.00
24	127.00	MC-PK8-C	1	33.019	36.321	1.00	1.00	33.60	1693.20	0.000	0.000	1952.61	0.00	0.00
25	127.00	Raycap	1	33.019	36.321	0.75	0.75	1.51	26.28	0.000	0.000	87.61	0.00	0.00
26	127.00	Fujitsu TA08025-B604	3	33.019	36.321	0.50	0.75	2.95	230.04	0.000	0.000	171.71	0.00	0.00
27	127.00	Fujitsu TA08025-B605	3	33.019	36.321	0.50	0.75	2.95	270.00	0.000	0.000	171.71	0.00	0.00
28	127.00	JMA Wireless	3	33.019	36.321	0.55	0.75	20.80	232.20	0.000	0.000	1208.51	0.00	0.00
							Totals:		**11,804.12**			**17,802.23**		

Total Applied Force Summary

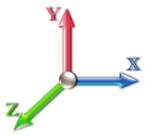
Structure:	CT46139-A-SBA	**Code:**	TIA-222-G	5/20/2022	
Site Name:	West Haven-rt15 /Woodbridge	**Exposure:**	C		
Height:	158.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 11	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 101 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 25

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		585.38	1379.33	0.00	0.00
7.42		278.57	658.17	0.00	0.00
10.00		293.58	694.91	0.00	0.00
15.00		558.92	1326.83	0.00	0.00
20.00		578.99	1300.58	0.00	0.00
25.00		592.13	1274.33	0.00	0.00
29.75		569.37	1186.30	0.00	0.00
30.00		29.64	61.78	0.00	0.00
35.00		604.01	1221.83	0.00	0.00
40.00		604.98	1195.58	0.00	0.00
45.00		603.52	1169.33	0.00	0.00
46.59		189.41	365.58	0.00	0.00
50.00		413.38	1410.53	0.00	0.00
52.92		351.51	1187.25	0.00	0.00
55.00		248.82	466.68	0.00	0.00
60.00		596.66	1103.24	0.00	0.00
65.00		588.80	1076.99	0.00	0.00
70.00		579.79	1050.74	0.00	0.00
75.00		569.73	1024.49	0.00	0.00
80.00		558.72	998.24	0.00	0.00
85.00		546.86	971.99	0.00	0.00
90.00		534.21	945.73	0.00	0.00
94.58		477.74	843.86	0.00	0.00
95.00		43.13	110.29	0.00	0.00
96.75		180.35	460.02	0.00	0.00
99.42		271.77	691.08	0.00	0.00
100.00		58.78	72.89	0.00	0.00
105.00		497.88	615.98	0.00	0.00
110.00		482.68	600.23	0.00	0.00
115.00		466.93	584.48	0.00	0.00
117.25		204.33	257.88	0.00	0.00
120.00		245.33	310.85	0.00	0.00
125.00		433.90	552.98	0.00	0.00
127.00	(11) attachments	3760.48	2668.50	0.00	0.00
130.00		247.51	313.89	0.00	0.00
135.00		399.02	510.56	0.00	0.00
137.00	(31) attachments	4370.22	2688.49	0.00	0.00
140.00		226.03	246.61	0.00	0.00
145.00		362.46	398.42	0.00	0.00
147.00	(29) attachments	6002.82	4158.88	0.00	0.00
148.50		102.54	101.17	0.00	0.00
150.00		90.28	168.03	0.00	0.00
155.00		303.01	560.12	0.00	0.00
157.00	(22) attachments	4252.21	3083.85	0.00	0.00
158.50		91.33	141.61	0.00	0.00

Total Applied Force Summary

Structure:	CT46139-A-SBA	**Code:**	TIA-222-G	5/20/2022	
Site Name:	West Haven-rt15 /Woodbridge	**Exposure:**	C		
Height:	158.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 12	

Tower Engineering Solutions

Totals:	**34,047.72**	**42,211.06**	**0.00**	**0.00**

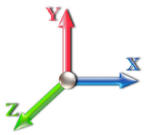
Linear Appurtenance Segment Forces (Factored)

Structure:	CT46139-A-SBA	**Code:**	TIA-222-G	5/20/2022	
Site Name:	West Haven-rt15 /Woodbridge	**Exposure:**	C		
Height:	158.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 13	

Load Case: 1.2D + 1.6W 101 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 25

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
5.00	1.6" Hybrid	Yes	5.00	0.000	1.60	0.67	0.00	0.079	0.000	21.088	0.00	10.92
5.00	1.25" Reinforcing	Yes	5.00	0.000	3.00	1.25	0.00	0.079	0.000	21.088	0.00	0.00
7.42	1.6" Hybrid	Yes	2.42	0.000	1.60	0.32	0.00	0.080	0.000	21.088	0.00	5.29
7.42	1.25" Reinforcing	Yes	2.42	0.000	3.00	0.60	0.00	0.080	0.000	21.088	0.00	0.00
10.00	1.6" Hybrid	Yes	2.58	0.000	1.60	0.34	0.00	0.070	0.000	21.088	0.00	5.63
10.00	1.25" Reinforcing	Yes	1.08	0.000	1.50	0.14	0.00	0.070	0.000	21.088	0.00	0.00
10.00	1.25" Reinforcing	Yes	1.50	0.000	3.00	0.38	0.00	0.070	0.000	21.088	0.00	0.00
15.00	1.6" Hybrid	Yes	5.00	0.000	1.60	0.67	0.00	0.056	0.000	21.088	0.00	10.92
15.00	1.25" Reinforcing	Yes	5.00	0.000	1.50	0.63	0.00	0.056	0.000	21.088	0.00	0.00
20.00	1.6" Hybrid	Yes	5.00	0.000	1.60	0.67	0.00	0.057	0.000	22.375	0.00	10.92
20.00	1.25" Reinforcing	Yes	5.00	0.000	1.50	0.63	0.00	0.057	0.000	22.375	0.00	0.00
25.00	1.6" Hybrid	Yes	5.00	0.000	1.60	0.67	0.00	0.059	0.000	23.451	0.00	10.92
25.00	1.25" Reinforcing	Yes	5.00	0.000	1.50	0.63	0.00	0.059	0.000	23.451	0.00	0.00
29.75	1.6" Hybrid	Yes	4.75	0.000	1.60	0.63	0.00	0.060	0.000	24.326	0.00	10.37
29.75	1.25" Reinforcing	Yes	4.75	0.000	1.50	0.59	0.00	0.060	0.000	24.326	0.00	0.00
30.00	1.6" Hybrid	Yes	0.25	0.000	1.60	0.03	0.00	0.061	0.000	24.369	0.00	0.55
30.00	1.25" Reinforcing	Yes	0.25	0.000	1.50	0.03	0.00	0.061	0.000	24.369	0.00	0.00
35.00	1.6" Hybrid	Yes	5.00	0.000	1.60	0.67	0.00	0.062	0.000	25.172	0.00	10.92
35.00	1.25" Reinforcing	Yes	5.00	0.000	1.50	0.63	0.00	0.062	0.000	25.172	0.00	0.00
40.00	1.6" Hybrid	Yes	5.00	0.000	1.60	0.67	0.00	0.063	0.000	25.890	0.00	10.92
40.00	1.25" Reinforcing	Yes	5.00	0.000	1.50	0.63	0.00	0.063	0.000	25.890	0.00	0.00
45.00	1.6" Hybrid	Yes	5.00	0.000	1.60	0.67	0.00	0.065	0.000	26.540	0.00	10.92
45.00	1.25" Reinforcing	Yes	5.00	0.000	1.50	0.63	0.00	0.065	0.000	26.540	0.00	0.00
46.59	1.6" Hybrid	Yes	1.59	0.000	1.60	0.21	0.00	0.066	0.000	26.734	0.00	3.47
46.59	1.25" Reinforcing	Yes	1.59	0.000	1.50	0.20	0.00	0.066	0.000	26.734	0.00	0.00
50.00	1.6" Hybrid	Yes	3.41	0.000	1.60	0.46	0.00	0.067	0.000	27.135	0.00	7.45
50.00	1.25" Reinforcing	Yes	3.41	0.000	1.50	0.43	0.00	0.067	0.000	27.135	0.00	0.00
52.92	1.6" Hybrid	Yes	2.92	0.000	1.60	0.39	0.00	0.068	0.000	27.461	0.00	6.38
52.92	1.25" Reinforcing	Yes	2.92	0.000	1.50	0.37	0.00	0.068	0.000	27.461	0.00	0.00
55.00	1.6" Hybrid	Yes	2.08	0.000	1.60	0.28	0.00	0.037	0.000	27.685	0.00	4.54
55.00	1.25" Reinforcing	Yes	0.08	0.000	1.50	0.01	0.00	0.037	0.000	27.685	0.00	0.00
60.00	1.6" Hybrid	Yes	5.00	0.000	1.60	0.67	0.00	0.036	0.000	28.197	0.00	10.92
65.00	1.6" Hybrid	Yes	5.00	0.000	1.60	0.67	0.00	0.037	0.000	28.676	0.00	10.92
70.00	1.6" Hybrid	Yes	5.00	0.000	1.60	0.67	0.00	0.038	0.000	29.127	0.00	10.92
75.00	1.6" Hybrid	Yes	5.00	0.000	1.60	0.67	0.00	0.040	0.000	29.553	0.00	10.92
80.00	1.6" Hybrid	Yes	5.00	0.000	1.60	0.67	0.00	0.041	0.000	29.958	0.00	10.92
85.00	1.6" Hybrid	Yes	5.00	0.000	1.60	0.67	0.00	0.042	0.000	30.342	0.00	10.92
90.00	1.6" Hybrid	Yes	5.00	0.000	1.60	0.67	0.00	0.044	0.000	30.710	0.00	10.92
94.58	1.6" Hybrid	Yes	4.58	0.000	1.60	0.61	0.00	0.046	0.000	31.033	0.00	10.01
94.58	1.25" Reinforcing	Yes	0.08	0.000	1.50	0.01	0.00	0.046	0.000	31.033	0.00	0.00
95.00	1.6" Hybrid	Yes	0.42	0.000	1.60	0.06	0.00	0.090	0.000	31.061	0.00	0.91
95.00	1.25" Reinforcing	Yes	0.42	0.000	1.50	0.05	0.00	0.090	0.000	31.061	0.00	0.00
96.75	1.6" Hybrid	Yes	1.75	0.000	1.60	0.23	0.00	0.090	0.000	31.181	0.00	3.82
96.75	1.25" Reinforcing	Yes	1.75	0.000	1.50	0.22	0.00	0.090	0.000	31.181	0.00	0.00
99.42	1.6" Hybrid	Yes	2.67	0.000	1.60	0.36	0.00	0.092	0.000	31.360	0.00	5.82
99.42	1.25" Reinforcing	Yes	2.67	0.000	1.50	0.33	0.00	0.092	0.000	31.360	0.00	0.00
100.00	1.6" Hybrid	Yes	0.58	0.000	1.60	0.08	0.00	0.092	0.000	31.399	0.00	1.27

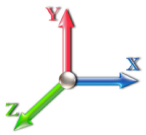
Linear Appurtenance Segment Forces (Factored)

Structure:	CT46139-A-SBA	**Code:**	TIA-222-G	5/20/2022	
Site Name:	West Haven-rt15 /Woodbridge	**Exposure:**	C		
Height:	158.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 14	

Load Case: 1.2D + 1.6W 101 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 25

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
100.00	1.25" Reinforcing	Yes	0.58	0.000	1.50	0.07	0.00	0.092	0.000	31.399	0.00	0.00
105.00	1.6" Hybrid	Yes	5.00	0.000	1.60	0.67	0.00	0.090	0.000	31.723	0.00	10.92
105.00	1.25" Reinforcing	Yes	4.50	0.000	1.50	0.56	0.00	0.090	0.000	31.723	0.00	0.00
110.00	1.6" Hybrid	Yes	5.00	0.000	1.60	0.67	0.00	0.051	0.000	32.035	0.00	10.92
115.00	1.6" Hybrid	Yes	5.00	0.000	1.60	0.67	0.00	0.053	0.000	32.336	0.00	10.92
117.25	1.6" Hybrid	Yes	2.25	0.000	1.60	0.30	0.00	0.055	0.000	32.468	0.00	4.91
120.00	1.6" Hybrid	Yes	2.75	0.000	1.60	0.37	0.00	0.056	0.000	32.627	0.00	6.01
125.00	1.6" Hybrid	Yes	5.00	0.000	1.60	0.67	0.00	0.058	0.000	32.909	0.00	10.92
127.00	1.6" Hybrid	Yes	2.00	0.000	1.60	0.27	0.00	0.060	0.000	33.019	0.00	4.37
										Totals:	**0.0**	**277.4**

Calculated Forces

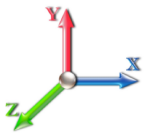
Structure:	CT46139-A-SBA	**Code:**	TIA-222-G	5/20/2022	
Site Name:	West Haven-rt15 /Woodbridge	**Exposure:**	C		
Height:	158.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 15	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 101 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 25

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-42.17	-34.10	0.00	-3881.4	0.00	3881.49	3324.94	1662.47	7900.55	3956.15	0.00	0.000	0.000	0.585
5.00	-40.73	-33.58	0.00	-3711.0	0.00	3711.01	3293.53	1646.77	7649.11	3830.24	0.07	-0.132	0.000	0.572
7.42	-40.04	-33.35	0.00	-3629.7	0.00	3629.75	3277.61	1638.81	7526.99	3769.09	0.16	-0.198	0.000	0.601
10.00	-39.28	-33.13	0.00	-3543.7	0.00	3543.71	3260.13	1630.06	7396.53	3703.76	0.28	-0.272	0.000	0.594
15.00	-37.87	-32.66	0.00	-3378.0	0.00	3378.07	3224.74	1612.37	7143.12	3576.87	0.65	-0.416	0.000	0.580
20.00	-36.50	-32.16	0.00	-3214.7	0.00	3214.79	3187.35	1593.68	6889.21	3449.73	1.16	-0.562	0.000	0.566
25.00	-35.15	-31.64	0.00	-3054.0	0.00	3054.00	3147.98	1573.99	6635.12	3322.49	1.83	-0.709	0.000	0.552
29.75	-33.93	-31.10	0.00	-2903.7	0.00	2903.70	3108.73	1554.36	6393.85	3201.68	2.61	-0.851	0.000	0.564
30.00	-33.82	-31.12	0.00	-2895.9	0.00	2895.92	3106.61	1553.31	6381.16	3195.32	2.65	-0.859	0.000	0.563
35.00	-32.53	-30.59	0.00	-2740.3	0.00	2740.32	3063.26	1531.63	6127.67	3068.39	3.64	-1.017	0.000	0.548
40.00	-31.26	-30.05	0.00	-2587.4	0.00	2587.40	3017.91	1508.96	5874.95	2941.84	4.79	-1.176	0.000	0.534
45.00	-30.05	-29.47	0.00	-2437.1	0.00	2437.17	2970.57	1485.29	5623.33	2815.85	6.11	-1.338	0.000	0.519
46.59	-29.64	-29.32	0.00	-2390.4	0.00	2390.41	2955.13	1477.57	5543.77	2776.00	6.56	-1.391	0.000	0.514
50.00	-28.19	-28.92	0.00	-2290.3	0.00	2290.34	2921.24	1460.62	5373.14	2690.56	7.59	-1.503	0.000	0.498
52.92	-26.96	-28.59	0.00	-2205.8	0.00	2205.89	2916.11	1458.05	5347.75	2677.85	8.54	-1.600	0.000	0.833
55.00	-26.40	-28.42	0.00	-2146.4	0.00	2146.43	2894.92	1447.46	5244.24	2626.02	9.27	-1.720	0.000	0.827
60.00	-25.18	-27.91	0.00	-2004.3	0.00	2004.34	2842.57	1421.28	4996.81	2502.12	11.22	-1.996	0.000	0.810
65.00	-23.99	-27.40	0.00	-1864.8	0.00	1864.80	2788.22	1394.11	4751.61	2379.34	13.46	-2.277	0.000	0.793
70.00	-22.83	-26.89	0.00	-1727.8	0.00	1727.81	2731.89	1365.95	4508.96	2257.83	16.00	-2.563	0.000	0.774
75.00	-21.70	-26.38	0.00	-1593.3	0.00	1593.36	2673.57	1336.78	4269.18	2137.76	18.84	-2.854	0.000	0.754
80.00	-20.60	-25.88	0.00	-1461.4	0.00	1461.44	2613.25	1306.63	4032.59	2019.29	21.99	-3.149	0.000	0.732
85.00	-19.53	-25.38	0.00	-1332.0	0.00	1332.03	2550.95	1275.47	3799.51	1902.58	25.44	-3.448	0.000	0.708
90.00	-18.49	-24.88	0.00	-1205.1	0.00	1205.13	2486.65	1243.33	3570.26	1787.78	29.21	-3.750	0.000	0.682
94.58	-17.62	-24.40	0.00	-1091.0	0.00	1091.08	2425.96	1212.98	3363.76	1684.38	32.95	-4.029	0.000	0.655
95.00	-17.48	-24.37	0.00	-1080.9	0.00	1080.91	2420.36	1210.18	3345.16	1675.07	33.30	-4.056	0.000	0.653
96.75	-17.00	-24.18	0.00	-1038.2	0.00	1038.27	2396.69	1198.35	3267.42	1636.14	34.81	-4.166	0.000	0.363
99.42	-16.30	-23.88	0.00	-973.78	0.00	973.78	1173.34	586.67	1596.31	799.34	37.16	-4.260	0.000	0.434
100.00	-16.18	-23.85	0.00	-959.85	0.00	959.85	1170.92	585.46	1585.67	794.02	37.68	-4.280	0.000	0.541
105.00	-15.52	-23.36	0.00	-840.62	0.00	840.62	1149.02	574.51	1494.34	748.28	42.28	-4.492	0.000	0.491
110.00	-14.89	-22.88	0.00	-723.82	0.00	723.82	1125.14	562.57	1402.88	702.48	47.09	-4.693	0.000	0.439
115.00	-14.29	-22.40	0.00	-609.41	0.00	609.41	1099.26	549.63	1311.60	656.78	52.10	-4.883	0.000	0.385
117.25	-14.02	-22.20	0.00	-559.01	0.00	559.01	1086.96	543.48	1270.68	636.28	54.42	-4.966	0.000	0.360
117.25	-14.02	-22.20	0.00	-559.01	0.00	559.01	1086.96	543.48	1270.68	636.28	54.42	-4.966	0.000	0.360
120.00	-13.63	-21.99	0.00	-497.97	0.00	497.97	1071.39	535.70	1220.84	611.33	57.30	-5.063	0.000	0.829
125.00	-13.02	-21.56	0.00	-388.03	0.00	388.03	1041.53	520.77	1130.90	566.29	62.82	-5.457	0.000	0.699
127.00	-10.67	-17.60	0.00	-344.91	0.00	344.91	1029.03	514.52	1095.23	548.43	65.14	-5.607	0.000	0.640
130.00	-10.31	-17.37	0.00	-292.11	0.00	292.11	1009.68	504.84	1042.12	521.83	68.72	-5.816	0.000	0.571
135.00	-9.78	-16.95	0.00	-205.28	0.00	205.28	975.84	487.92	954.81	478.11	74.97	-6.113	0.000	0.441
137.00	-7.55	-12.33	0.00	-171.38	0.00	171.38	961.75	480.87	920.37	460.87	77.55	-6.219	0.000	0.380
140.00	-7.30	-12.10	0.00	-134.38	0.00	134.38	940.01	470.00	869.29	435.29	81.50	-6.356	0.000	0.317
145.00	-6.92	-11.71	0.00	-73.87	0.00	73.87	902.19	451.09	785.88	393.52	88.24	-6.529	0.000	0.196
147.00	-3.47	-5.27	0.00	-50.46	0.00	50.46	886.50	443.25	753.18	377.15	90.98	-6.578	0.000	0.138
148.50	-3.38	-5.16	0.00	-42.55	0.00	42.55	874.53	437.26	728.93	365.00	93.05	-6.608	0.000	0.121
148.50	-3.38	-5.16	0.00	-42.55	0.00	42.55	728.28	364.14	584.01	379.17	93.05	-6.608	0.000	0.117
150.00	-3.22	-5.05	0.00	-34.81	0.00	34.81	728.28	364.14	584.01	379.17	95.13	-6.634	0.000	0.096
155.00	-2.70	-4.69	0.00	-9.54	0.00	9.54	728.28	364.14	584.01	379.17	102.08	-6.662	0.000	0.029
157.00	-0.13	-0.11	0.00	-0.16	0.00	0.16	728.28	364.14	584.01	379.17	104.86	-6.665	0.000	0.001
158.50	0.00	-0.09	0.00	0.00	0.00	0.00	728.28	364.14	584.01	379.17	106.95	-6.665	0.000	0.000

Calculated Forces

Structure:	CT46139-A-SBA	**Code:**	TIA-222-G	5/20/2022	
Site Name:	West Haven-rt15 /Woodbridge	**Exposure:**	C		
Height:	158.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 16	

Wind Loading - Shaft

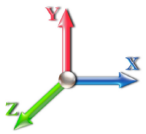
Structure:	CT46139-A-SBA	**Code:**	TIA-222-G	5/20/2022	
Site Name:	West Haven-rt15 /Woodbridge	**Exposure:**	C		
Height:	158.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 17	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 101 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 25

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00	RB1 RB2	1.00	0.85	21.088	23.20	457.01	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	21.088	23.20	446.80	0.650	0.000	5.00	24.265	15.77	585.4	0.0	866.3
7.42	RT2 RB3	1.00	0.85	21.088	23.20	441.85	0.650	0.000	2.42	11.547	7.51	278.6	0.0	412.2
10.00		1.00	0.85	21.088	23.20	436.58	0.650	0.000	2.58	12.169	7.91	293.6	0.0	434.4
15.00		1.00	0.85	21.088	23.20	426.37	0.650	0.000	5.00	23.168	15.06	558.9	0.0	826.9
20.00		1.00	0.90	22.375	24.61	428.67	0.650	0.000	5.00	22.620	14.70	579.0	0.0	807.2
25.00		1.00	0.95	23.451	25.80	428.08	0.650	0.000	5.00	22.071	14.35	592.1	0.0	787.5
29.75	RT1 RT3 RB4	1.00	0.98	24.326	26.76	425.57	0.650	0.000	4.75	20.460	13.30	569.4	0.0	729.9
30.00		1.00	0.98	24.369	26.81	425.40	0.650	0.000	0.25	1.063	0.69	29.6	0.0	37.9
35.00		1.00	1.01	25.172	27.69	421.20	0.650	0.000	5.00	20.975	13.63	604.0	0.0	748.2
40.00		1.00	1.04	25.890	28.48	415.84	0.650	0.000	5.00	20.426	13.28	605.0	0.0	728.5
45.00		1.00	1.07	26.540	29.19	409.57	0.650	0.000	5.00	19.878	12.92	603.5	0.0	708.8
46.59	Bot - Section 2	1.00	1.08	26.734	29.41	407.42	0.650	0.000	1.59	6.193	4.03	189.4	0.0	220.8
50.00	RT4	1.00	1.09	27.135	29.85	402.55	0.650	0.000	3.41	13.316	8.66	413.4	0.0	943.1
52.92	Top - Section 1	1.00	1.11	27.461	30.21	398.16	0.650	0.000	2.92	11.189	7.27	351.5	0.0	792.2
55.00		1.00	1.12	27.685	30.45	400.55	0.650	0.000	2.08	7.856	5.11	248.8	0.0	280.0
60.00		1.00	1.14	28.197	31.02	392.43	0.650	0.000	5.00	18.497	12.02	596.7	0.0	659.2
65.00		1.00	1.16	28.676	31.54	383.83	0.650	0.000	5.00	17.948	11.67	588.8	0.0	639.5
70.00		1.00	1.17	29.127	32.04	374.84	0.650	0.000	5.00	17.400	11.31	579.8	0.0	619.8
75.00		1.00	1.19	29.553	32.51	365.48	0.650	0.000	5.00	16.851	10.95	569.7	0.0	600.2
80.00		1.00	1.21	29.958	32.95	355.79	0.650	0.000	5.00	16.303	10.60	558.7	0.0	580.5
85.00		1.00	1.22	30.342	33.38	345.82	0.650	0.000	5.00	15.754	10.24	546.9	0.0	560.8
90.00		1.00	1.24	30.710	33.78	335.58	0.650	0.000	5.00	15.206	9.88	534.2	0.0	541.1
94.58	Bot - Section 3	1.00	1.25	31.033	34.14	325.98	0.650	0.000	4.58	13.457	8.75	477.7	0.0	478.7
95.00		1.00	1.25	31.061	34.17	325.10	0.650	0.000	0.42	1.214	0.79	43.1	0.0	68.7
96.75	RB5	1.00	1.26	31.181	34.30	321.38	0.650	0.000	1.75	5.056	3.29	180.4	0.0	286.1
99.42	Top - Section 2	1.00	1.26	31.360	34.50	315.65	0.650	0.000	2.67	7.575	4.92	271.8	0.0	428.6
100.00		1.00	1.27	31.399	34.54	318.00	0.650	0.000	0.58	1.636	1.06	58.8	0.0	35.0
105.00		1.00	1.28	31.723	34.89	307.11	0.650	0.000	5.00	13.719	8.92	497.9	0.0	293.8
110.00		1.00	1.29	32.035	35.24	296.03	0.650	0.000	5.00	13.171	8.56	482.7	0.0	282.0
115.00		1.00	1.30	32.336	35.57	284.77	0.650	0.000	5.00	12.622	8.20	466.9	0.0	270.1
117.25	RT5	1.00	1.31	32.468	35.72	279.65	0.650	0.000	2.25	5.501	3.58	204.3	0.0	117.7
120.00		1.00	1.32	32.627	35.89	273.34	0.650	0.000	2.75	6.573	4.27	245.3	0.0	140.6
125.00		1.00	1.33	32.909	36.20	261.76	0.650	0.000	5.00	11.525	7.49	433.9	0.0	246.5
127.00	Appurtenance(s)	1.00	1.33	33.019	36.32	257.08	0.650	0.000	2.00	4.457	2.90	168.3	0.0	95.3
130.00		1.00	1.34	33.182	36.50	250.03	0.650	0.000	3.00	6.520	4.24	247.5	0.0	139.4
135.00		1.00	1.35	33.446	36.79	238.16	0.650	0.000	5.00	10.428	6.78	399.0	0.0	222.9
137.00	Appurtenance(s)	1.00	1.35	33.550	36.90	233.38	0.650	0.000	2.00	4.018	2.61	154.2	0.0	85.9
140.00		1.00	1.36	33.703	37.07	226.16	0.650	0.000	3.00	5.862	3.81	226.0	0.0	125.2
145.00		1.00	1.37	33.953	37.35	214.04	0.650	0.000	5.00	9.332	6.07	362.5	0.0	199.3
147.00	Appurtenance(s)	1.00	1.37	34.051	37.46	209.15	0.650	0.000	2.00	3.579	2.33	139.4	0.0	76.4
148.50	Top - Section 3	1.00	1.38	34.124	37.54	205.48	0.650	0.000	1.50	2.627	1.71	102.5	0.0	56.1
150.00		1.00	1.38	34.196	37.62	197.63	0.600	0.000	1.50	2.500	1.50	90.3	0.0	106.2
155.00		1.00	1.39	34.433	37.88	198.32	0.600	0.000	5.00	8.333	5.00	303.0	0.0	354.0
157.00	Appurtenance(s)	1.00	1.39	34.526	37.98	198.58	0.600	0.000	2.00	3.333	2.00	121.5	0.0	141.6
158.50		1.00	1.39	34.596	38.06	198.78	0.600	0.000	1.50	2.500	1.50	91.3	0.0	106.2

Wind Loading - Shaft

Structure:	CT46139-A-SBA	**Code:**	TIA-222-G	5/20/2022	
Site Name:	West Haven-rt15 /Woodbridge	**Exposure:**	C		
Height:	158.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 18	

Totals:	**158.50**	**16,245.5**	**17,881.4**

Discrete Appurtenance Forces

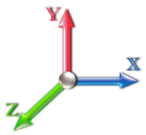
Structure:	CT46139-A-SBA	**Code:**	TIA-222-G	5/20/2022	
Site Name:	West Haven-rt15 /Woodbridge	**Exposure:**	C		
Height:	158.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 19	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 101 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 25

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	Orient Factor x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	157.00	CBC78T-DS-43/E14F05P	3	34.526	37.979	0.54	0.80	0.59	28.08	0.000	0.000	36.15	0.00	0.00
2	157.00	VZS01	3	34.526	37.979	0.55	0.80	7.12	235.17	0.000	0.000	432.71	0.00	0.00
3	157.00	JAHH-65B-R3B	6	34.526	37.979	0.66	0.80	36.29	370.22	0.000	0.000	2205.47	0.00	0.00
4	157.00	T-Arm	3	34.526	37.979	0.56	0.75	16.88	1080.00	0.000	0.000	1025.43	0.00	0.00
5	157.00	B2/B66A RRH-BR049	3	34.526	37.979	0.54	0.80	3.01	189.81	0.000	0.000	182.72	0.00	0.00
6	157.00	B5/B13 RRH-BR04C	3	34.526	37.979	0.54	0.80	3.01	227.88	0.000	0.000	182.72	0.00	0.00
7	157.00	FE-16148-OVP-B12	1	34.526	37.979	0.54	0.80	1.08	13.69	0.000	0.000	65.47	0.00	0.00
8	147.00	4449 B71 + B85	3	34.051	37.456	0.54	0.80	3.17	197.64	0.000	0.000	189.84	0.00	0.00
9	147.00	RRUS 4415 B25	3	34.051	37.456	0.54	0.80	2.64	124.20	0.000	0.000	158.04	0.00	0.00
10	147.00	ACU-A20-N	4	34.051	37.456	0.54	0.80	0.30	3.60	0.000	0.000	17.99	0.00	0.00
11	147.00	(3) T-Arm Kit	1	34.051	37.456	0.75	0.75	12.38	450.00	0.000	0.000	741.64	0.00	0.00
12	147.00	AIR6449 B41	3	34.051	37.456	0.57	0.80	9.63	278.10	0.000	0.000	576.99	0.00	0.00
13	147.00	RFS	3	34.051	37.456	0.56	0.80	34.00	345.60	0.000	0.000	2037.82	0.00	0.00
14	147.00	KRD 9011461-B66A-B2A	3	34.051	37.456	0.70	0.80	13.59	356.94	0.000	0.000	814.63	0.00	0.00
15	147.00	T-Arm	3	34.051	37.456	0.56	0.75	16.88	1080.00	0.000	0.000	1011.32	0.00	0.00
16	147.00	800 MHz RRH	3	34.051	37.456	0.54	0.80	4.00	143.10	0.000	0.000	239.96	0.00	0.00
17	147.00	ALU 800MHz External	3	34.051	37.456	0.54	0.80	1.25	23.76	0.000	0.000	75.17	0.00	0.00
18	137.00	RA21.7770.00	6	33.550	36.905	0.58	0.80	22.95	200.88	0.000	0.000	1355.22	0.00	0.00
19	137.00	DC6-48-60-18-8F	1	33.550	36.905	0.80	0.80	0.74	28.62	0.000	0.000	43.46	0.00	0.00
20	137.00	T-Arm	3	33.550	36.905	0.56	0.75	16.88	1080.00	0.000	0.000	996.43	0.00	0.00
21	137.00	RRUS 11	6	33.550	36.905	0.54	0.80	8.10	273.78	0.000	0.000	478.54	0.00	0.00
22	137.00	AM-X-CD-16-65-00T-RET	3	33.550	36.905	0.60	0.80	14.44	130.95	0.000	0.000	852.42	0.00	0.00
23	137.00	LGP21401	12	33.550	36.905	0.54	0.80	8.30	152.28	0.000	0.000	489.94	0.00	0.00
24	127.00	MC-PK8-C	1	33.019	36.321	1.00	1.00	33.60	1269.90	0.000	0.000	1952.61	0.00	0.00
25	127.00	Raycap	1	33.019	36.321	0.75	0.75	1.51	19.71	0.000	0.000	87.61	0.00	0.00
26	127.00	Fujitsu TA08025-B604	3	33.019	36.321	0.50	0.75	2.95	172.53	0.000	0.000	171.71	0.00	0.00
27	127.00	Fujitsu TA08025-B605	3	33.019	36.321	0.50	0.75	2.95	202.50	0.000	0.000	171.71	0.00	0.00
28	127.00	JMA Wireless	3	33.019	36.321	0.55	0.75	20.80	174.15	0.000	0.000	1208.51	0.00	0.00
							Totals:		**8,853.09**			**17,802.23**		

Total Applied Force Summary

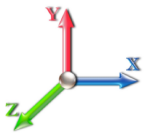
Structure:	CT46139-A-SBA	**Code:**	TIA-222-G	5/20/2022	
Site Name:	West Haven-rt15 /Woodbridge	**Exposure:**	C		
Height:	158.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 20	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 101 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 25

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		585.38	1034.50	0.00	0.00
7.42		278.57	493.63	0.00	0.00
10.00		293.58	521.18	0.00	0.00
15.00		558.92	995.12	0.00	0.00
20.00		578.99	975.43	0.00	0.00
25.00		592.13	955.75	0.00	0.00
29.75		569.37	889.72	0.00	0.00
30.00		29.64	46.34	0.00	0.00
35.00		604.01	916.37	0.00	0.00
40.00		604.98	896.68	0.00	0.00
45.00		603.52	877.00	0.00	0.00
46.59		189.41	274.19	0.00	0.00
50.00		413.38	1057.90	0.00	0.00
52.92		351.51	890.43	0.00	0.00
55.00		248.82	350.01	0.00	0.00
60.00		596.66	827.43	0.00	0.00
65.00		588.80	807.74	0.00	0.00
70.00		579.79	788.05	0.00	0.00
75.00		569.73	768.36	0.00	0.00
80.00		558.72	748.68	0.00	0.00
85.00		546.86	728.99	0.00	0.00
90.00		534.21	709.30	0.00	0.00
94.58		477.74	632.90	0.00	0.00
95.00		43.13	82.71	0.00	0.00
96.75		180.35	345.01	0.00	0.00
99.42		271.77	518.31	0.00	0.00
100.00		58.78	54.67	0.00	0.00
105.00		497.88	461.98	0.00	0.00
110.00		482.68	450.17	0.00	0.00
115.00		466.93	438.36	0.00	0.00
117.25		204.33	193.41	0.00	0.00
120.00		245.33	233.14	0.00	0.00
125.00		433.90	414.73	0.00	0.00
127.00	(11) attachments	3760.48	2001.38	0.00	0.00
130.00		247.51	235.42	0.00	0.00
135.00		399.02	382.92	0.00	0.00
137.00	(31) attachments	4370.22	2016.37	0.00	0.00
140.00		226.03	184.96	0.00	0.00
145.00		362.46	298.81	0.00	0.00
147.00	(29) attachments	6002.82	3119.16	0.00	0.00
148.50		102.54	75.88	0.00	0.00
150.00		90.28	126.03	0.00	0.00
155.00		303.01	420.09	0.00	0.00
157.00	(22) attachments	4252.21	2312.89	0.00	0.00
158.50		91.33	106.21	0.00	0.00

Total Applied Force Summary

Structure:	CT46139-A-SBA		**Code:**	TIA-222-G	5/20/2022
Site Name:	West Haven-rt15 /Woodbridge		**Exposure:**	C	
Height:	158.50 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 21

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Totals:	**34,047.72**	**31,658.30**	**0.00**	**0.00**

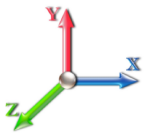
Linear Appurtenance Segment Forces (Factored)

Structure:	CT46139-A-SBA	**Code:**	TIA-222-G	5/20/2022	
Site Name:	West Haven-rt15 /Woodbridge	**Exposure:**	C		
Height:	158.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 22	

Load Case: 0.9D + 1.6W 101 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 25

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
5.00	1.6" Hybrid	Yes	5.00	0.000	1.60	0.67	0.00	0.079	0.000	21.088	0.00	8.19
5.00	1.25" Reinforcing	Yes	5.00	0.000	3.00	1.25	0.00	0.079	0.000	21.088	0.00	0.00
7.42	1.6" Hybrid	Yes	2.42	0.000	1.60	0.32	0.00	0.080	0.000	21.088	0.00	3.96
7.42	1.25" Reinforcing	Yes	2.42	0.000	3.00	0.60	0.00	0.080	0.000	21.088	0.00	0.00
10.00	1.6" Hybrid	Yes	2.58	0.000	1.60	0.34	0.00	0.070	0.000	21.088	0.00	4.23
10.00	1.25" Reinforcing	Yes	1.08	0.000	1.50	0.14	0.00	0.070	0.000	21.088	0.00	0.00
10.00	1.25" Reinforcing	Yes	1.50	0.000	3.00	0.38	0.00	0.070	0.000	21.088	0.00	0.00
15.00	1.6" Hybrid	Yes	5.00	0.000	1.60	0.67	0.00	0.056	0.000	21.088	0.00	8.19
15.00	1.25" Reinforcing	Yes	5.00	0.000	1.50	0.63	0.00	0.056	0.000	21.088	0.00	0.00
20.00	1.6" Hybrid	Yes	5.00	0.000	1.60	0.67	0.00	0.057	0.000	22.375	0.00	8.19
20.00	1.25" Reinforcing	Yes	5.00	0.000	1.50	0.63	0.00	0.057	0.000	22.375	0.00	0.00
25.00	1.6" Hybrid	Yes	5.00	0.000	1.60	0.67	0.00	0.059	0.000	23.451	0.00	8.19
25.00	1.25" Reinforcing	Yes	5.00	0.000	1.50	0.63	0.00	0.059	0.000	23.451	0.00	0.00
29.75	1.6" Hybrid	Yes	4.75	0.000	1.60	0.63	0.00	0.060	0.000	24.326	0.00	7.78
29.75	1.25" Reinforcing	Yes	4.75	0.000	1.50	0.59	0.00	0.060	0.000	24.326	0.00	0.00
30.00	1.6" Hybrid	Yes	0.25	0.000	1.60	0.03	0.00	0.061	0.000	24.369	0.00	0.41
30.00	1.25" Reinforcing	Yes	0.25	0.000	1.50	0.03	0.00	0.061	0.000	24.369	0.00	0.00
35.00	1.6" Hybrid	Yes	5.00	0.000	1.60	0.67	0.00	0.062	0.000	25.172	0.00	8.19
35.00	1.25" Reinforcing	Yes	5.00	0.000	1.50	0.63	0.00	0.062	0.000	25.172	0.00	0.00
40.00	1.6" Hybrid	Yes	5.00	0.000	1.60	0.67	0.00	0.063	0.000	25.890	0.00	8.19
40.00	1.25" Reinforcing	Yes	5.00	0.000	1.50	0.63	0.00	0.063	0.000	25.890	0.00	0.00
45.00	1.6" Hybrid	Yes	5.00	0.000	1.60	0.67	0.00	0.065	0.000	26.540	0.00	8.19
45.00	1.25" Reinforcing	Yes	5.00	0.000	1.50	0.63	0.00	0.065	0.000	26.540	0.00	0.00
46.59	1.6" Hybrid	Yes	1.59	0.000	1.60	0.21	0.00	0.066	0.000	26.734	0.00	2.60
46.59	1.25" Reinforcing	Yes	1.59	0.000	1.50	0.20	0.00	0.066	0.000	26.734	0.00	0.00
50.00	1.6" Hybrid	Yes	3.41	0.000	1.60	0.46	0.00	0.067	0.000	27.135	0.00	5.59
50.00	1.25" Reinforcing	Yes	3.41	0.000	1.50	0.43	0.00	0.067	0.000	27.135	0.00	0.00
52.92	1.6" Hybrid	Yes	2.92	0.000	1.60	0.39	0.00	0.068	0.000	27.461	0.00	4.78
52.92	1.25" Reinforcing	Yes	2.92	0.000	1.50	0.37	0.00	0.068	0.000	27.461	0.00	0.00
55.00	1.6" Hybrid	Yes	2.08	0.000	1.60	0.28	0.00	0.037	0.000	27.685	0.00	3.41
55.00	1.25" Reinforcing	Yes	0.08	0.000	1.50	0.01	0.00	0.037	0.000	27.685	0.00	0.00
60.00	1.6" Hybrid	Yes	5.00	0.000	1.60	0.67	0.00	0.036	0.000	28.197	0.00	8.19
65.00	1.6" Hybrid	Yes	5.00	0.000	1.60	0.67	0.00	0.037	0.000	28.676	0.00	8.19
70.00	1.6" Hybrid	Yes	5.00	0.000	1.60	0.67	0.00	0.038	0.000	29.127	0.00	8.19
75.00	1.6" Hybrid	Yes	5.00	0.000	1.60	0.67	0.00	0.040	0.000	29.553	0.00	8.19
80.00	1.6" Hybrid	Yes	5.00	0.000	1.60	0.67	0.00	0.041	0.000	29.958	0.00	8.19
85.00	1.6" Hybrid	Yes	5.00	0.000	1.60	0.67	0.00	0.042	0.000	30.342	0.00	8.19
90.00	1.6" Hybrid	Yes	5.00	0.000	1.60	0.67	0.00	0.044	0.000	30.710	0.00	8.19
94.58	1.6" Hybrid	Yes	4.58	0.000	1.60	0.61	0.00	0.046	0.000	31.033	0.00	7.51
94.58	1.25" Reinforcing	Yes	0.08	0.000	1.50	0.01	0.00	0.046	0.000	31.033	0.00	0.00
95.00	1.6" Hybrid	Yes	0.42	0.000	1.60	0.06	0.00	0.090	0.000	31.061	0.00	0.68
95.00	1.25" Reinforcing	Yes	0.42	0.000	1.50	0.05	0.00	0.090	0.000	31.061	0.00	0.00
96.75	1.6" Hybrid	Yes	1.75	0.000	1.60	0.23	0.00	0.090	0.000	31.181	0.00	2.87
96.75	1.25" Reinforcing	Yes	1.75	0.000	1.50	0.22	0.00	0.090	0.000	31.181	0.00	0.00
99.42	1.6" Hybrid	Yes	2.67	0.000	1.60	0.36	0.00	0.092	0.000	31.360	0.00	4.37
99.42	1.25" Reinforcing	Yes	2.67	0.000	1.50	0.33	0.00	0.092	0.000	31.360	0.00	0.00
100.00	1.6" Hybrid	Yes	0.58	0.000	1.60	0.08	0.00	0.092	0.000	31.399	0.00	0.96

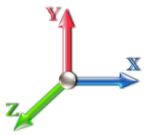
Linear Appurtenance Segment Forces (Factored)

Structure:	CT46139-A-SBA	**Code:**	TIA-222-G	5/20/2022	
Site Name:	West Haven-rt15 /Woodbridge	**Exposure:**	C		
Height:	158.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 23	

Load Case: 0.9D + 1.6W 101 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 25

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
100.00	1.25" Reinforcing	Yes	0.58	0.000	1.50	0.07	0.00	0.092	0.000	31.399	0.00	0.00
105.00	1.6" Hybrid	Yes	5.00	0.000	1.60	0.67	0.00	0.090	0.000	31.723	0.00	8.19
105.00	1.25" Reinforcing	Yes	4.50	0.000	1.50	0.56	0.00	0.090	0.000	31.723	0.00	0.00
110.00	1.6" Hybrid	Yes	5.00	0.000	1.60	0.67	0.00	0.051	0.000	32.035	0.00	8.19
115.00	1.6" Hybrid	Yes	5.00	0.000	1.60	0.67	0.00	0.053	0.000	32.336	0.00	8.19
117.25	1.6" Hybrid	Yes	2.25	0.000	1.60	0.30	0.00	0.055	0.000	32.468	0.00	3.69
120.00	1.6" Hybrid	Yes	2.75	0.000	1.60	0.37	0.00	0.056	0.000	32.627	0.00	4.50
125.00	1.6" Hybrid	Yes	5.00	0.000	1.60	0.67	0.00	0.058	0.000	32.909	0.00	8.19
127.00	1.6" Hybrid	Yes	2.00	0.000	1.60	0.27	0.00	0.060	0.000	33.019	0.00	3.28
										Totals:	**0.0**	**208.0**

Calculated Forces

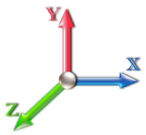
Structure:	CT46139-A-SBA	**Code:**	TIA-222-G	5/20/2022	
Site Name:	West Haven-rt15 /Woodbridge	**Exposure:**	C		
Height:	158.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 24	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 101 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 25

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-31.62	-34.08	0.00	-3844.4	0.00	3844.49	3324.94	1662.47	7900.55	3956.15	0.00	0.000	0.000	0.578
5.00	-30.53	-33.55	0.00	-3674.0	0.00	3674.07	3293.53	1646.77	7649.11	3830.24	0.07	-0.131	0.000	0.565
7.42	-29.99	-33.31	0.00	-3592.8	0.00	3592.88	3277.61	1638.81	7526.99	3769.09	0.15	-0.196	0.000	0.593
10.00	-29.41	-33.07	0.00	-3506.9	0.00	3506.95	3260.13	1630.06	7396.53	3703.76	0.28	-0.270	0.000	0.586
15.00	-28.34	-32.57	0.00	-3341.6	0.00	3341.62	3224.74	1612.37	7143.12	3576.87	0.64	-0.412	0.000	0.572
20.00	-27.29	-32.05	0.00	-3178.7	0.00	3178.76	3187.35	1593.68	6889.21	3449.73	1.15	-0.556	0.000	0.558
25.00	-26.26	-31.52	0.00	-3018.4	0.00	3018.49	3147.98	1573.99	6635.12	3322.49	1.81	-0.702	0.000	0.544
29.75	-25.34	-30.97	0.00	-2868.7	0.00	2868.79	3108.73	1554.36	6393.85	3201.68	2.58	-0.842	0.000	0.555
30.00	-25.25	-30.97	0.00	-2861.0	0.00	2861.05	3106.61	1553.31	6381.16	3195.32	2.62	-0.850	0.000	0.554
35.00	-24.26	-30.42	0.00	-2706.1	0.00	2706.18	3063.26	1531.63	6127.67	3068.39	3.60	-1.006	0.000	0.540
40.00	-23.29	-29.86	0.00	-2554.0	0.00	2554.07	3017.91	1508.96	5874.95	2941.84	4.74	-1.163	0.000	0.525
45.00	-22.37	-29.28	0.00	-2404.7	0.00	2404.74	2970.57	1485.29	5623.33	2815.85	6.04	-1.322	0.000	0.510
46.59	-22.06	-29.12	0.00	-2358.2	0.00	2358.28	2955.13	1477.57	5543.77	2776.00	6.49	-1.375	0.000	0.506
50.00	-20.96	-28.72	0.00	-2258.8	0.00	2258.89	2921.24	1460.62	5373.14	2690.56	7.51	-1.486	0.000	0.490
52.92	-20.03	-28.38	0.00	-2175.0	0.00	2175.04	2916.11	1458.05	5347.75	2677.85	8.45	-1.581	0.000	0.819
55.00	-19.59	-28.19	0.00	-2116.0	0.00	2116.01	2894.92	1447.46	5244.24	2626.02	9.17	-1.700	0.000	0.813
60.00	-18.65	-27.66	0.00	-1975.0	0.00	1975.07	2842.57	1421.28	4996.81	2502.12	11.09	-1.971	0.000	0.796
65.00	-17.73	-27.12	0.00	-1836.7	0.00	1836.79	2788.22	1394.11	4751.61	2379.34	13.31	-2.248	0.000	0.779
70.00	-16.84	-26.60	0.00	-1701.1	0.00	1701.18	2731.89	1365.95	4508.96	2257.83	15.81	-2.530	0.000	0.760
75.00	-15.96	-26.07	0.00	-1568.2	0.00	1568.20	2673.57	1336.78	4269.18	2137.76	18.61	-2.816	0.000	0.740
80.00	-15.12	-25.55	0.00	-1437.8	0.00	1437.85	2613.25	1306.63	4032.59	2019.29	21.72	-3.107	0.000	0.718
85.00	-14.29	-25.04	0.00	-1310.0	0.00	1310.09	2550.95	1275.47	3799.51	1902.58	25.13	-3.401	0.000	0.695
90.00	-13.49	-24.53	0.00	-1184.9	0.00	1184.90	2486.65	1243.33	3570.26	1787.78	28.85	-3.698	0.000	0.669
94.58	-12.83	-24.04	0.00	-1072.4	0.00	1072.48	2425.96	1212.98	3363.76	1684.38	32.53	-3.972	0.000	0.642
95.00	-12.72	-24.01	0.00	-1062.4	0.00	1062.46	2420.36	1210.18	3345.16	1675.07	32.88	-3.998	0.000	0.640
96.75	-12.35	-23.83	0.00	-1020.4	0.00	1020.44	2396.69	1198.35	3267.42	1636.14	34.37	-4.107	0.000	0.355
99.42	-11.83	-23.53	0.00	-956.91	0.00	956.91	1173.34	586.67	1596.31	799.34	36.68	-4.199	0.000	0.425
100.00	-11.73	-23.49	0.00	-943.18	0.00	943.18	1170.92	585.46	1585.67	794.02	37.20	-4.219	0.000	0.530
105.00	-11.23	-23.00	0.00	-825.73	0.00	825.73	1149.02	574.51	1494.34	748.28	41.73	-4.427	0.000	0.481
110.00	-10.74	-22.52	0.00	-710.73	0.00	710.73	1125.14	562.57	1402.88	702.48	46.47	-4.625	0.000	0.429
115.00	-10.29	-22.04	0.00	-598.14	0.00	598.14	1099.26	549.63	1311.60	656.78	51.41	-4.811	0.000	0.376
117.25	-10.08	-21.84	0.00	-548.55	0.00	548.55	1086.96	543.48	1270.68	636.28	53.69	-4.893	0.000	0.352
117.25	-10.08	-21.84	0.00	-548.55	0.00	548.55	1086.96	543.48	1270.68	636.28	53.69	-4.893	0.000	0.352
120.00	-9.78	-21.62	0.00	-488.49	0.00	488.49	1071.39	535.70	1220.84	611.33	56.53	-4.987	0.000	0.810
125.00	-9.31	-21.19	0.00	-380.42	0.00	380.42	1041.53	520.77	1130.90	566.29	61.97	-5.374	0.000	0.682
127.00	-7.62	-17.28	0.00	-338.04	0.00	338.04	1029.03	514.52	1095.23	548.43	64.25	-5.521	0.000	0.625
130.00	-7.33	-17.04	0.00	-286.21	0.00	286.21	1009.68	504.84	1042.12	521.83	67.78	-5.726	0.000	0.557
135.00	-6.94	-16.63	0.00	-201.01	0.00	201.01	975.84	487.92	954.81	478.11	73.93	-6.017	0.000	0.429
137.00	-5.37	-12.08	0.00	-167.75	0.00	167.75	961.75	480.87	920.37	460.87	76.47	-6.120	0.000	0.370
140.00	-5.18	-11.85	0.00	-131.51	0.00	131.51	940.01	470.00	869.29	435.29	80.35	-6.255	0.000	0.308
145.00	-4.90	-11.47	0.00	-72.26	0.00	72.26	902.19	451.09	785.88	393.52	86.99	-6.423	0.000	0.190
147.00	-2.47	-5.15	0.00	-49.33	0.00	49.33	886.50	443.25	753.18	377.15	89.69	-6.472	0.000	0.134
148.50	-2.41	-5.04	0.00	-41.60	0.00	41.60	874.53	437.26	728.93	365.00	91.72	-6.501	0.000	0.117
148.50	-2.41	-5.04	0.00	-41.60	0.00	41.60	728.28	364.14	584.01	379.17	91.72	-6.501	0.000	0.113
150.00	-2.29	-4.94	0.00	-34.04	0.00	34.04	728.28	364.14	584.01	379.17	93.76	-6.526	0.000	0.093
155.00	-1.91	-4.59	0.00	-9.34	0.00	9.34	728.28	364.14	584.01	379.17	100.60	-6.554	0.000	0.027
157.00	-0.10	-0.10	0.00	-0.15	0.00	0.15	728.28	364.14	584.01	379.17	103.34	-6.556	0.000	0.001
158.50	0.00	-0.09	0.00	0.00	0.00	0.00	728.28	364.14	584.01	379.17	105.40	-6.556	0.000	0.000

Calculated Forces

Structure:	CT46139-A-SBA	**Code:**	TIA-222-G	5/20/2022	
Site Name:	West Haven-rt15 /Woodbridge	**Exposure:**	C		
Height:	158.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 25	

Wind Loading - Shaft

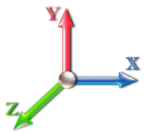
Structure:	CT46139-A-SBA	**Code:**	TIA-222-G	5/20/2022	
Site Name:	West Haven-rt15 /Woodbridge	**Exposure:**	C		
Height:	158.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 26	

Tower Engineering Solutions

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 24

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00	RB1 RB2	1.00	0.85	5.168	5.68	0.00	1.200	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	5.168	5.68	0.00	1.200	1.242	5.00	25.300	30.36	172.6	446.3	1601.3
7.42	RT2 RB3	1.00	0.85	5.168	5.68	0.00	1.200	1.292	2.42	12.069	14.48	82.3	222.5	772.1
10.00		1.00	0.85	5.168	5.68	0.00	1.200	1.331	2.58	12.742	15.29	86.9	241.7	820.8
15.00		1.00	0.85	5.168	5.68	0.00	1.200	1.386	5.00	24.324	29.19	165.9	477.0	1579.6
20.00		1.00	0.90	5.483	6.03	0.00	1.200	1.427	5.00	23.809	28.57	172.3	479.8	1556.1
25.00		1.00	0.95	5.747	6.32	0.00	1.200	1.459	5.00	23.287	27.94	176.7	479.2	1529.3
29.75	RT1 RT3 RB4	1.00	0.98	5.962	6.56	0.00	1.200	1.485	4.75	21.635	25.96	170.3	452.7	1425.9
30.00		1.00	0.98	5.972	6.57	0.00	1.200	1.486	0.25	1.125	1.35	8.9	23.8	74.4
35.00		1.00	1.01	6.169	6.79	0.00	1.200	1.509	5.00	22.232	26.68	181.0	471.8	1469.4
40.00		1.00	1.04	6.345	6.98	0.00	1.200	1.529	5.00	21.700	26.04	181.7	466.1	1437.4
45.00		1.00	1.07	6.504	7.15	0.00	1.200	1.547	5.00	21.167	25.40	181.7	459.3	1404.4
46.59	Bot - Section 2	1.00	1.08	6.552	7.21	0.00	1.200	1.553	1.59	6.604	7.92	57.1	145.0	439.4
50.00	RT4	1.00	1.09	6.650	7.32	0.00	1.200	1.564	3.41	14.206	17.05	124.7	312.5	1570.0
52.92	Top - Section 1	1.00	1.11	6.730	7.40	0.00	1.200	1.573	2.92	11.954	14.35	106.2	264.6	1320.9
55.00		1.00	1.12	6.785	7.46	0.00	1.200	1.579	2.08	8.403	10.08	75.3	187.1	560.4
60.00		1.00	1.14	6.910	7.60	0.00	1.200	1.592	5.00	19.824	23.79	180.8	440.9	1319.9
65.00		1.00	1.16	7.028	7.73	0.00	1.200	1.605	5.00	19.286	23.14	178.9	431.7	1284.4
70.00		1.00	1.17	7.138	7.85	0.00	1.200	1.617	5.00	18.747	22.50	176.6	422.0	1248.5
75.00		1.00	1.19	7.243	7.97	0.00	1.200	1.628	5.00	18.208	21.85	174.1	411.9	1212.1
80.00		1.00	1.21	7.342	8.08	0.00	1.200	1.639	5.00	17.669	21.20	171.2	401.5	1175.5
85.00		1.00	1.22	7.436	8.18	0.00	1.200	1.649	5.00	17.128	20.55	168.1	390.8	1138.5
90.00		1.00	1.24	7.526	8.28	0.00	1.200	1.658	5.00	16.588	19.91	164.8	379.8	1101.3
94.58	Bot - Section 3	1.00	1.25	7.605	8.37	0.00	1.200	1.667	4.58	14.730	17.68	147.9	338.7	977.0
95.00		1.00	1.25	7.612	8.37	0.00	1.200	1.667	0.42	1.330	1.60	13.4	31.0	122.6
96.75	RB5	1.00	1.26	7.642	8.41	0.00	1.200	1.670	1.75	5.543	6.65	55.9	129.0	510.5
99.42	Top - Section 2	1.00	1.26	7.685	8.45	0.00	1.200	1.675	2.67	8.320	9.98	84.4	193.2	764.7
100.00		1.00	1.27	7.695	8.46	0.00	1.200	1.676	0.58	1.799	2.16	18.3	42.1	88.8
105.00		1.00	1.28	7.774	8.55	0.00	1.200	1.684	5.00	15.123	18.15	155.2	349.3	741.0
110.00		1.00	1.29	7.851	8.64	0.00	1.200	1.692	5.00	14.581	17.50	151.1	337.4	713.3
115.00		1.00	1.30	7.925	8.72	0.00	1.200	1.699	5.00	14.039	16.85	146.9	325.3	685.5
117.25	RT5	1.00	1.31	7.957	8.75	0.00	1.200	1.703	2.25	6.140	7.37	64.5	143.9	300.9
120.00		1.00	1.32	7.996	8.80	0.00	1.200	1.707	2.75	7.355	8.83	77.6	172.2	359.7
125.00		1.00	1.33	8.065	8.87	0.00	1.200	1.714	5.00	12.953	15.54	137.9	300.6	629.3
127.00	Appurtenance(s)	1.00	1.33	8.092	8.90	0.00	1.200	1.716	2.00	5.029	6.03	53.7	118.2	245.3
130.00		1.00	1.34	8.132	8.95	0.00	1.200	1.720	3.00	7.381	8.86	79.2	172.8	358.7
135.00		1.00	1.35	8.197	9.02	0.00	1.200	1.727	5.00	11.868	14.24	128.4	275.3	572.5
137.00	Appurtenance(s)	1.00	1.35	8.222	9.04	0.00	1.200	1.729	2.00	4.594	5.51	49.9	108.1	222.5
140.00		1.00	1.36	8.260	9.09	0.00	1.200	1.733	3.00	6.729	8.07	73.4	157.5	324.4
145.00		1.00	1.37	8.321	9.15	0.00	1.200	1.739	5.00	10.781	12.94	118.4	249.4	515.1
147.00	Appurtenance(s)	1.00	1.37	8.345	9.18	0.00	1.200	1.742	2.00	4.160	4.99	45.8	97.7	199.6
148.50	Top - Section 3	1.00	1.38	8.363	9.20	0.00	1.200	1.743	1.50	3.063	3.68	33.8	72.1	146.8
150.00		1.00	1.38	8.381	9.22	0.00	1.200	1.745	1.50	2.936	3.52	32.5	69.5	211.2
155.00		1.00	1.39	8.439	9.28	0.00	1.200	1.751	5.00	9.792	11.75	109.1	232.6	704.7
157.00	Appurtenance(s)	1.00	1.39	8.462	9.31	0.00	1.200	1.753	2.00	3.918	4.70	43.8	93.2	282.0
158.50		1.00	1.39	8.478	9.33	0.00	1.200	1.755	1.50	2.939	3.53	32.9	70.0	211.6

Wind Loading - Shaft

Structure:	CT46139-A-SBA	**Code:**	TIA-222-G	5/20/2022	
Site Name:	West Haven-rt15 /Woodbridge	**Exposure:**	C		
Height:	158.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 27	

Totals:	**158.50**	**5,012.1**	**35,929.2**

Discrete Appurtenance Forces

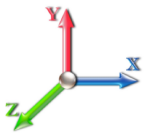
Structure:	CT46139-A-SBA	**Code:**	TIA-222-G	5/20/2022	
Site Name:	West Haven-rt15 /Woodbridge	**Exposure:**	C		
Height:	158.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 28	

Tower Engineering Solutions

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 24

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	Orient Factor x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	157.00	CBC78T-DS-43/E14F05P	3	8.462	9.308	0.54	0.80	1.05	100.08	0.000	0.000	9.80	0.00	0.00
2	157.00	VZS01	3	8.462	9.308	0.55	0.80	8.59	648.49	0.000	0.000	79.97	0.00	0.00
3	157.00	JAHH-65B-R3B	6	8.462	9.308	0.66	0.80	41.69	1883.85	0.000	0.000	388.01	0.00	0.00
4	157.00	T-Arm	3	8.462	9.308	0.56	0.75	31.67	2041.53	0.000	0.000	294.75	0.00	0.00
5	157.00	B2/B66A RRH-BR049	3	8.462	9.308	0.54	0.80	3.93	484.06	0.000	0.000	36.61	0.00	0.00
6	157.00	B5/B13 RRH-BR04C	3	8.462	9.308	0.54	0.80	3.93	513.11	0.000	0.000	36.61	0.00	0.00
7	157.00	FE-16148-OVP-B12	1	8.462	9.308	0.54	0.80	1.38	36.01	0.000	0.000	12.88	0.00	0.00
8	147.00	4449 B71 + B85	3	8.345	9.180	0.54	0.80	4.08	261.20	0.000	0.000	37.47	0.00	0.00
9	147.00	RRUS 4415 B25	3	8.345	9.180	0.54	0.80	3.46	260.46	0.000	0.000	31.80	0.00	0.00
10	147.00	ACU-A20-N	4	8.345	9.180	0.54	0.80	0.94	16.75	0.000	0.000	8.58	0.00	0.00
11	147.00	(3) T-Arm Kit	1	8.345	9.180	0.75	0.75	24.44	1042.18	0.000	0.000	224.39	0.00	0.00
12	147.00	AIR6449 B41	3	8.345	9.180	0.57	0.80	11.24	686.23	0.000	0.000	103.22	0.00	0.00
13	147.00	RFS	3	8.345	9.180	0.56	0.80	37.19	1711.75	0.000	0.000	341.38	0.00	0.00
14	147.00	KRD 9011461-B66A-B2A	3	8.345	9.180	0.70	0.80	15.93	1024.32	0.000	0.000	146.23	0.00	0.00
15	147.00	T-Arm	3	8.345	9.180	0.56	0.75	31.57	2036.01	0.000	0.000	289.80	0.00	0.00
16	147.00	800 MHz RRH	3	8.345	9.180	0.54	0.80	5.84	348.93	0.000	0.000	53.60	0.00	0.00
17	147.00	ALU 800MHz External	3	8.345	9.180	0.54	0.80	2.29	69.50	0.000	0.000	21.04	0.00	0.00
18	137.00	RA21.7770.00	6	8.222	9.044	0.58	0.80	31.52	818.70	0.000	0.000	285.13	0.00	0.00
19	137.00	DC6-48-60-18-8F	1	8.222	9.044	0.80	0.80	1.08	81.73	0.000	0.000	9.80	0.00	0.00
20	137.00	T-Arm	3	8.222	9.044	0.56	0.75	31.47	2030.14	0.000	0.000	284.61	0.00	0.00
21	137.00	RRUS 11	6	8.222	9.044	0.54	0.80	10.18	894.30	0.000	0.000	92.06	0.00	0.00
22	137.00	AM-X-CD-16-65-00T-RET	3	8.222	9.044	0.60	0.80	19.42	517.54	0.000	0.000	175.64	0.00	0.00
23	137.00	LGP21401	12	8.222	9.044	0.54	0.80	13.62	415.15	0.000	0.000	123.22	0.00	0.00
24	127.00	MC-PK8-C	1	8.092	8.901	1.00	1.00	68.20	3009.68	0.000	0.000	607.09	0.00	0.00
25	127.00	Raycap	1	8.092	8.901	0.75	0.75	1.93	65.95	0.000	0.000	17.15	0.00	0.00
26	127.00	Fujitsu TA08025-B604	3	8.092	8.901	0.50	0.75	3.79	343.12	0.000	0.000	33.70	0.00	0.00
27	127.00	Fujitsu TA08025-B605	3	8.092	8.901	0.50	0.75	3.79	386.52	0.000	0.000	33.70	0.00	0.00
28	127.00	JMA Wireless	3	8.092	8.901	0.55	0.75	23.19	888.81	0.000	0.000	206.46	0.00	0.00
							Totals:		**22,616.11**			**3,984.69**		

Total Applied Force Summary

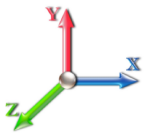
Structure:	CT46139-A-SBA	**Code:**	TIA-222-G	5/20/2022	
Site Name:	West Haven-rt15 /Woodbridge	**Exposure:**	C		
Height:	158.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 29	

Tower Engineering Solutions

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 24

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		172.59	1871.50	0.00	0.00
7.42		82.33	904.02	0.00	0.00
10.00		86.92	962.52	0.00	0.00
15.00		165.93	1856.97	0.00	0.00
20.00		172.33	1835.63	0.00	0.00
25.00		176.66	1810.48	0.00	0.00
29.75		170.25	1694.39	0.00	0.00
30.00		8.87	88.52	0.00	0.00
35.00		181.04	1753.28	0.00	0.00
40.00		181.75	1722.38	0.00	0.00
45.00		181.73	1690.38	0.00	0.00
46.59		57.11	530.29	0.00	0.00
50.00		124.70	1765.84	0.00	0.00
52.92		106.20	1488.76	0.00	0.00
55.00		75.26	665.19	0.00	0.00
60.00		180.83	1570.61	0.00	0.00
65.00		178.91	1535.45	0.00	0.00
70.00		176.65	1499.84	0.00	0.00
75.00		174.08	1463.82	0.00	0.00
80.00		171.23	1427.44	0.00	0.00
85.00		168.13	1390.74	0.00	0.00
90.00		164.79	1353.74	0.00	0.00
94.58		147.87	1209.29	0.00	0.00
95.00		13.36	147.04	0.00	0.00
96.75		55.91	613.05	0.00	0.00
99.42		84.40	921.15	0.00	0.00
100.00		18.28	123.07	0.00	0.00
105.00		155.19	1030.78	0.00	0.00
110.00		151.10	966.69	0.00	0.00
115.00		146.85	939.06	0.00	0.00
117.25		64.49	415.01	0.00	0.00
120.00		77.63	499.24	0.00	0.00
125.00		137.90	883.26	0.00	0.00
127.00	(11) attachments	951.83	5041.00	0.00	0.00
130.00		79.22	486.71	0.00	0.00
135.00		128.40	785.86	0.00	0.00
137.00	(31) attachments	1020.31	5065.43	0.00	0.00
140.00		73.36	404.07	0.00	0.00
145.00		118.42	647.86	0.00	0.00
147.00	(29) attachments	1303.33	7709.97	0.00	0.00
148.50		33.81	173.25	0.00	0.00
150.00		32.48	237.58	0.00	0.00
155.00		109.08	792.76	0.00	0.00
157.00	(22) attachments	902.37	6024.38	0.00	0.00
158.50		32.89	211.57	0.00	0.00

Total Applied Force Summary

Structure:	CT46139-A-SBA		**Code:**	TIA-222-G	5/20/2022
Site Name:	West Haven-rt15 /Woodbridge		**Exposure:**	C	
Height:	158.50 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 30

Tower Engineering Solutions

Totals:	**8,996.80**	**66,209.89**	**0.00**	**0.00**

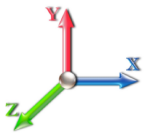
Linear Appurtenance Segment Forces (Factored)

Structure:	CT46139-A-SBA	**Code:**	TIA-222-G	5/20/2022	
Site Name:	West Haven-rt15 /Woodbridge	**Exposure:**	C		
Height:	158.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 31	

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 24

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
5.00	1.6" Hybrid	Yes	5.00	0.000	1.60	1.70	0.00	0.079	0.000	5.168	0.00	29.14
5.00	1.25" Reinforcing	Yes	5.00	0.000	3.00	2.29	0.00	0.079	0.000	5.168	0.00	27.67
7.42	1.6" Hybrid	Yes	2.42	0.000	1.60	0.84	0.00	0.080	0.000	5.168	0.00	14.63
7.42	1.25" Reinforcing	Yes	2.42	0.000	3.00	1.13	0.00	0.080	0.000	5.168	0.00	14.05
10.00	1.6" Hybrid	Yes	2.58	0.000	1.60	0.92	0.00	0.070	0.000	5.168	0.00	16.05
10.00	1.25" Reinforcing	Yes	1.08	0.000	1.50	0.37	0.00	0.070	0.000	5.168	0.00	6.50
10.00	1.25" Reinforcing	Yes	1.50	0.000	3.00	0.71	0.00	0.070	0.000	5.168	0.00	9.03
15.00	1.6" Hybrid	Yes	5.00	0.000	1.60	1.82	0.00	0.056	0.000	5.168	0.00	32.35
15.00	1.25" Reinforcing	Yes	5.00	0.000	1.50	1.78	0.00	0.056	0.000	5.168	0.00	31.67
20.00	1.6" Hybrid	Yes	5.00	0.000	1.60	1.86	0.00	0.057	0.000	5.483	0.00	33.30
20.00	1.25" Reinforcing	Yes	5.00	0.000	1.50	1.81	0.00	0.057	0.000	5.483	0.00	32.84
25.00	1.6" Hybrid	Yes	5.00	0.000	1.60	1.88	0.00	0.059	0.000	5.747	0.00	34.07
25.00	1.25" Reinforcing	Yes	5.00	0.000	1.50	1.84	0.00	0.059	0.000	5.747	0.00	33.78
29.75	1.6" Hybrid	Yes	4.75	0.000	1.60	1.81	0.00	0.060	0.000	5.962	0.00	32.95
29.75	1.25" Reinforcing	Yes	4.75	0.000	1.50	1.77	0.00	0.060	0.000	5.962	0.00	32.81
30.00	1.6" Hybrid	Yes	0.25	0.000	1.60	0.10	0.00	0.061	0.000	5.972	0.00	1.74
30.00	1.25" Reinforcing	Yes	0.25	0.000	1.50	0.09	0.00	0.061	0.000	5.972	0.00	1.73
35.00	1.6" Hybrid	Yes	5.00	0.000	1.60	1.92	0.00	0.062	0.000	6.169	0.00	35.28
35.00	1.25" Reinforcing	Yes	5.00	0.000	1.50	1.88	0.00	0.062	0.000	6.169	0.00	35.27
40.00	1.6" Hybrid	Yes	5.00	0.000	1.60	1.94	0.00	0.063	0.000	6.345	0.00	35.79
40.00	1.25" Reinforcing	Yes	5.00	0.000	1.50	1.90	0.00	0.063	0.000	6.345	0.00	35.88
45.00	1.6" Hybrid	Yes	5.00	0.000	1.60	1.96	0.00	0.065	0.000	6.504	0.00	36.24
45.00	1.25" Reinforcing	Yes	5.00	0.000	1.50	1.91	0.00	0.065	0.000	6.504	0.00	36.43
46.59	1.6" Hybrid	Yes	1.59	0.000	1.60	0.62	0.00	0.066	0.000	6.552	0.00	11.54
46.59	1.25" Reinforcing	Yes	1.59	0.000	1.50	0.61	0.00	0.066	0.000	6.552	0.00	11.61
50.00	1.6" Hybrid	Yes	3.41	0.000	1.60	1.34	0.00	0.067	0.000	6.650	0.00	25.02
50.00	1.25" Reinforcing	Yes	3.41	0.000	1.50	1.32	0.00	0.067	0.000	6.650	0.00	25.21
52.92	1.6" Hybrid	Yes	2.92	0.000	1.60	1.15	0.00	0.068	0.000	6.730	0.00	21.54
52.92	1.25" Reinforcing	Yes	2.92	0.000	1.50	1.13	0.00	0.068	0.000	6.730	0.00	21.73
55.00	1.6" Hybrid	Yes	2.08	0.000	1.60	0.82	0.00	0.037	0.000	6.785	0.00	15.41
55.00	1.25" Reinforcing	Yes	0.08	0.000	1.50	0.03	0.00	0.037	0.000	6.785	0.00	0.60
60.00	1.6" Hybrid	Yes	5.00	0.000	1.60	1.99	0.00	0.036	0.000	6.910	0.00	37.39
65.00	1.6" Hybrid	Yes	5.00	0.000	1.60	2.00	0.00	0.037	0.000	7.028	0.00	37.72
70.00	1.6" Hybrid	Yes	5.00	0.000	1.60	2.01	0.00	0.038	0.000	7.138	0.00	38.03
75.00	1.6" Hybrid	Yes	5.00	0.000	1.60	2.02	0.00	0.040	0.000	7.243	0.00	38.32
80.00	1.6" Hybrid	Yes	5.00	0.000	1.60	2.03	0.00	0.041	0.000	7.342	0.00	38.59
85.00	1.6" Hybrid	Yes	5.00	0.000	1.60	2.04	0.00	0.042	0.000	7.436	0.00	38.86
90.00	1.6" Hybrid	Yes	5.00	0.000	1.60	2.05	0.00	0.044	0.000	7.526	0.00	39.11
94.58	1.6" Hybrid	Yes	4.58	0.000	1.60	1.88	0.00	0.046	0.000	7.605	0.00	36.05
94.58	1.25" Reinforcing	Yes	0.08	0.000	1.50	0.03	0.00	0.046	0.000	7.605	0.00	0.67
95.00	1.6" Hybrid	Yes	0.42	0.000	1.60	0.17	0.00	0.090	0.000	7.612	0.00	3.28
95.00	1.25" Reinforcing	Yes	0.42	0.000	1.50	0.17	0.00	0.090	0.000	7.612	0.00	3.35
96.75	1.6" Hybrid	Yes	1.75	0.000	1.60	0.72	0.00	0.090	0.000	7.642	0.00	13.80
96.75	1.25" Reinforcing	Yes	1.75	0.000	1.50	0.71	0.00	0.090	0.000	7.642	0.00	14.10
99.42	1.6" Hybrid	Yes	2.67	0.000	1.60	1.10	0.00	0.092	0.000	7.685	0.00	21.09
99.42	1.25" Reinforcing	Yes	2.67	0.000	1.50	1.08	0.00	0.092	0.000	7.685	0.00	21.56
100.00	1.6" Hybrid	Yes	0.58	0.000	1.60	0.24	0.00	0.092	0.000	7.695	0.00	4.62

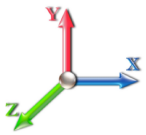
Linear Appurtenance Segment Forces (Factored)

Structure:	CT46139-A-SBA	**Code:**	TIA-222-G	5/20/2022	
Site Name:	West Haven-rt15 /Woodbridge	**Exposure:**	C		
Height:	158.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 32	

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 24

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
100.00	1.25" Reinforcing	Yes	0.58	0.000	1.50	0.24	0.00	0.092	0.000	7.695	0.00	4.72
105.00	1.6" Hybrid	Yes	5.00	0.000	1.60	2.07	0.00	0.090	0.000	7.774	0.00	39.79
105.00	1.25" Reinforcing	Yes	4.50	0.000	1.50	1.83	0.00	0.090	0.000	7.774	0.00	36.65
110.00	1.6" Hybrid	Yes	5.00	0.000	1.60	2.08	0.00	0.051	0.000	7.851	0.00	40.00
115.00	1.6" Hybrid	Yes	5.00	0.000	1.60	2.08	0.00	0.053	0.000	7.925	0.00	40.21
117.25	1.6" Hybrid	Yes	2.25	0.000	1.60	0.94	0.00	0.055	0.000	7.957	0.00	18.13
120.00	1.6" Hybrid	Yes	2.75	0.000	1.60	1.15	0.00	0.056	0.000	7.996	0.00	22.22
125.00	1.6" Hybrid	Yes	5.00	0.000	1.60	2.09	0.00	0.058	0.000	8.065	0.00	40.59
127.00	1.6" Hybrid	Yes	2.00	0.000	1.60	0.84	0.00	0.060	0.000	8.092	0.00	16.27
										Totals:	**0.0**	**1,376.9**

Calculated Forces

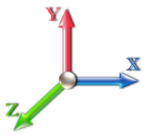
Structure:	CT46139-A-SBA	**Code:**	TIA-222-G	5/20/2022	
Site Name:	West Haven-rt15 /Woodbridge	**Exposure:**	C		
Height:	158.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 33	

Tower Engineering Solutions

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 24

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-66.21	-9.02	0.00	-1009.0	0.00	1009.00	3324.94	1662.47	7900.55	3956.15	0.00	0.000	0.000	0.162
5.00	-64.33	-8.87	0.00	-963.92	0.00	963.92	3293.53	1646.77	7649.11	3830.24	0.02	-0.034	0.000	0.158
7.42	-63.42	-8.81	0.00	-942.45	0.00	942.45	3277.61	1638.81	7526.99	3769.09	0.04	-0.051	0.000	0.166
10.00	-62.46	-8.75	0.00	-919.72	0.00	919.72	3260.13	1630.06	7396.53	3703.76	0.07	-0.071	0.000	0.164
15.00	-60.60	-8.62	0.00	-875.96	0.00	875.96	3224.74	1612.37	7143.12	3576.87	0.17	-0.108	0.000	0.160
20.00	-58.75	-8.49	0.00	-832.84	0.00	832.84	3187.35	1593.68	6889.21	3449.73	0.30	-0.146	0.000	0.156
25.00	-56.94	-8.34	0.00	-790.42	0.00	790.42	3147.98	1573.99	6635.12	3322.49	0.47	-0.184	0.000	0.152
29.75	-55.24	-8.18	0.00	-750.80	0.00	750.80	3108.73	1554.36	6393.85	3201.68	0.68	-0.221	0.000	0.155
30.00	-55.15	-8.19	0.00	-748.75	0.00	748.75	3106.61	1553.31	6381.16	3195.32	0.69	-0.223	0.000	0.155
35.00	-53.39	-8.04	0.00	-707.78	0.00	707.78	3063.26	1531.63	6127.67	3068.39	0.94	-0.264	0.000	0.151
40.00	-51.67	-7.89	0.00	-667.56	0.00	667.56	3017.91	1508.96	5874.95	2941.84	1.24	-0.305	0.000	0.147
45.00	-49.97	-7.72	0.00	-628.10	0.00	628.10	2970.57	1485.29	5623.33	2815.85	1.58	-0.346	0.000	0.142
46.59	-49.44	-7.68	0.00	-615.84	0.00	615.84	2955.13	1477.57	5543.77	2776.00	1.70	-0.360	0.000	0.141
50.00	-47.67	-7.57	0.00	-589.62	0.00	589.62	2921.24	1460.62	5373.14	2690.56	1.97	-0.389	0.000	0.137
52.92	-46.18	-7.47	0.00	-567.52	0.00	567.52	2916.11	1458.05	5347.75	2677.85	2.21	-0.414	0.000	0.228
55.00	-45.51	-7.44	0.00	-551.97	0.00	551.97	2894.92	1447.46	5244.24	2626.02	2.40	-0.445	0.000	0.226
60.00	-43.93	-7.30	0.00	-514.80	0.00	514.80	2842.57	1421.28	4996.81	2502.12	2.91	-0.516	0.000	0.221
65.00	-42.39	-7.16	0.00	-478.32	0.00	478.32	2788.22	1394.11	4751.61	2379.34	3.48	-0.588	0.000	0.216
70.00	-40.88	-7.02	0.00	-442.54	0.00	442.54	2731.89	1365.95	4508.96	2257.83	4.14	-0.661	0.000	0.211
75.00	-39.41	-6.88	0.00	-407.47	0.00	407.47	2673.57	1336.78	4269.18	2137.76	4.87	-0.736	0.000	0.205
80.00	-37.98	-6.74	0.00	-373.09	0.00	373.09	2613.25	1306.63	4032.59	2019.29	5.68	-0.811	0.000	0.199
85.00	-36.58	-6.60	0.00	-339.42	0.00	339.42	2550.95	1275.47	3799.51	1902.58	6.57	-0.887	0.000	0.193
90.00	-35.22	-6.45	0.00	-306.44	0.00	306.44	2486.65	1243.33	3570.26	1787.78	7.54	-0.964	0.000	0.186
94.58	-34.01	-6.31	0.00	-276.86	0.00	276.86	2425.96	1212.98	3363.76	1684.38	8.50	-1.035	0.000	0.178
95.00	-33.86	-6.30	0.00	-274.23	0.00	274.23	2420.36	1210.18	3345.16	1675.07	8.60	-1.042	0.000	0.178
96.75	-33.25	-6.25	0.00	-263.20	0.00	263.20	2396.69	1198.35	3267.42	1636.14	8.98	-1.070	0.000	0.099
99.42	-32.33	-6.16	0.00	-246.54	0.00	246.54	1173.34	586.67	1596.31	799.34	9.59	-1.093	0.000	0.118
100.00	-32.20	-6.15	0.00	-242.95	0.00	242.95	1170.92	585.46	1585.67	794.02	9.72	-1.099	0.000	0.148
105.00	-31.17	-6.01	0.00	-212.19	0.00	212.19	1149.02	574.51	1494.34	748.28	10.90	-1.152	0.000	0.134
110.00	-30.20	-5.86	0.00	-182.16	0.00	182.16	1125.14	562.57	1402.88	702.48	12.13	-1.203	0.000	0.121
115.00	-29.26	-5.71	0.00	-152.86	0.00	152.86	1099.26	549.63	1311.60	656.78	13.42	-1.251	0.000	0.106
117.25	-28.84	-5.65	0.00	-140.01	0.00	140.01	1086.96	543.48	1270.68	636.28	14.02	-1.271	0.000	0.100
117.25	-28.84	-5.65	0.00	-140.01	0.00	140.01	1086.96	543.48	1270.68	636.28	14.02	-1.271	0.000	0.100
120.00	-28.34	-5.59	0.00	-124.48	0.00	124.48	1071.39	535.70	1220.84	611.33	14.75	-1.296	0.000	0.230
125.00	-27.45	-5.46	0.00	-96.52	0.00	96.52	1041.53	520.77	1130.90	566.29	16.17	-1.394	0.000	0.197
127.00	-22.43	-4.41	0.00	-85.60	0.00	85.60	1029.03	514.52	1095.23	548.43	16.76	-1.431	0.000	0.178
130.00	-21.95	-4.34	0.00	-72.38	0.00	72.38	1009.68	504.84	1042.12	521.83	17.68	-1.483	0.000	0.161
135.00	-21.16	-4.21	0.00	-50.68	0.00	50.68	975.84	487.92	954.81	478.11	19.27	-1.557	0.000	0.128
137.00	-16.12	-3.06	0.00	-42.27	0.00	42.27	961.75	480.87	920.37	460.87	19.93	-1.583	0.000	0.109
140.00	-15.72	-2.98	0.00	-33.10	0.00	33.10	940.01	470.00	869.29	435.29	20.93	-1.616	0.000	0.093
145.00	-15.07	-2.85	0.00	-18.18	0.00	18.18	902.19	451.09	785.88	393.52	22.65	-1.659	0.000	0.063
147.00	-7.40	-1.33	0.00	-12.48	0.00	12.48	886.50	443.25	753.18	377.15	23.35	-1.671	0.000	0.041
148.50	-7.23	-1.29	0.00	-10.49	0.00	10.49	874.53	437.26	728.93	365.00	23.88	-1.678	0.000	0.037
148.50	-7.23	-1.29	0.00	-10.49	0.00	10.49	728.28	364.14	584.01	379.17	23.88	-1.678	0.000	0.038
150.00	-6.99	-1.25	0.00	-8.55	0.00	8.55	728.28	364.14	584.01	379.17	24.40	-1.685	0.000	0.032
155.00	-6.21	-1.12	0.00	-2.30	0.00	2.30	728.28	364.14	584.01	379.17	26.17	-1.692	0.000	0.015
157.00	-0.21	-0.04	0.00	-0.06	0.00	0.06	728.28	364.14	584.01	379.17	26.88	-1.692	0.000	0.000
158.50	0.00	-0.03	0.00	0.00	0.00	0.00	728.28	364.14	584.01	379.17	27.41	-1.692	0.000	0.000

Calculated Forces

Structure:	CT46139-A-SBA	**Code:**	TIA-222-G	5/20/2022	
Site Name:	West Haven-rt15 /Woodbridge	**Exposure:**	C		
Height:	158.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 34	

Seismic Segment Forces (Factored)

Structure:	CT46139-A-SBA	**Code:**	TIA-222-G	5/20/2022	
Site Name:	West Haven-rt15 /Woodbridge	**Exposure:**	C		
Height:	158.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 35	

Tower Engineering Solutions

Load Case:	1.2D + 1.0E					**Iterations**	22
Gust Response Factor	1.10			**Sds**	0.19	**Ss**	0.18
Dead Load Factor	1.20	**Seismic Load Factor**	1.00	**Sd1**	0.10	**S1**	0.06
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.33	**SA**	0.03	**Seismic Importance Factor**	1.00

Top Elev (ft)	Description	Wz (lb)	a	b	c	Lateral Fs (lb)	R: 1.50
0.00	RB1 RB2	0.00	0.00	0.00	0.00	0.00	
5.00		962.54	0.00	0.03	0.02	17.55	
7.42	RT2 RB3	458.01	0.00	0.04	0.02	10.52	
10.00		482.65	0.01	0.05	0.03	12.78	
15.00		918.79	0.02	0.06	0.04	28.14	
20.00		896.92	0.03	0.07	0.04	29.42	
25.00		875.04	0.05	0.07	0.04	29.79	
29.75	RT1 RT3 RB4	811.03	0.07	0.07	0.04	28.30	
30.00		42.14	0.07	0.07	0.04	1.47	
35.00		831.29	0.09	0.07	0.04	29.71	
40.00		809.42	0.12	0.07	0.03	29.59	
45.00		787.54	0.15	0.07	0.03	29.36	
46.59	Bot - Section 2	245.34	0.16	0.07	0.03	9.19	
50.00	RT4	1047.8	0.19	0.06	0.02	39.44	
52.92	Top - Section 1	880.22	0.21	0.06	0.02	33.03	
55.00		311.15	0.23	0.06	0.02	11.58	
60.00		732.46	0.27	0.05	0.01	25.97	
65.00		710.59	0.32	0.04	0.01	22.46	
70.00		688.71	0.37	0.03	0.01	17.22	
75.00		666.84	0.42	0.01	0.01	10.21	
80.00		644.96	0.48	-0.01	0.01	1.90	
85.00		623.09	0.54	-0.03	0.01	-6.58	
90.00		601.21	0.61	-0.06	0.02	-13.85	
94.58	Bot - Section 3	531.89	0.67	-0.08	0.02	-16.94	
95.00		76.33	0.68	-0.08	0.03	-2.48	
96.75	RB5	317.93	0.70	-0.09	0.03	-11.08	
99.42	Top - Section 2	476.22	0.74	-0.10	0.04	-17.79	
100.00		38.94	0.75	-0.10	0.04	-1.47	
105.00		326.41	0.83	-0.12	0.06	-12.54	
110.00		313.29	0.91	-0.12	0.09	-10.79	
115.00		300.16	0.99	-0.11	0.13	-7.80	
117.25	RT5	130.79	1.03	-0.10	0.15	-2.71	
120.00		156.25	1.08	-0.08	0.18	-2.05	
125.00		273.91	1.18	-0.02	0.24	1.11	
127.00	Appurtenance(s)	2148.9	1.21	0.02	0.26	26.14	
130.00		154.90	1.27	0.08	0.31	3.97	
135.00		247.66	1.37	0.23	0.40	12.78	
137.00	Appurtenance(s)	2169.2	1.41	0.31	0.44	137.24	
140.00		139.15	1.47	0.44	0.51	11.42	
145.00		221.41	1.58	0.72	0.65	25.94	
147.00	Appurtenance(s)	3421.4	1.63	0.86	0.71	453.27	
148.50	Top - Section 3	62.29	1.66	0.97	0.75	9.00	
150.00		118.01	1.69	1.09	0.80	18.51	
155.00		393.36	1.81	1.57	0.99	79.24	
157.00	Appurtenance(s)	2540.5	1.85	1.80	1.07	560.47	
158.50		118.01	1.89	1.98	1.14	27.79	

Seismic Segment Forces (Factored)

Structure:	CT46139-A-SBA	**Code:**	TIA-222-G	5/20/2022	
Site Name:	West Haven-rt15 /Woodbridge	**Exposure:**	C		
Height:	158.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 36	

Totals:	**29,705.0**		**1,678.5**	**Total Wind:**	**34,047.7**

Calculated Forces

Structure:	CT46139-A-SBA	**Code:**	TIA-222-G	5/20/2022	
Site Name:	West Haven-rt15 /Woodbridge	**Exposure:**	C		
Height:	158.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 37	

Tower Engineering Solutions

Load Case:	1.2D + 1.0E							**Iterations**	22
Gust Response Factor	1.10			**Sds**	0.19			**Ss**	0.18
Dead Load Factor	1.20	**Seismic Load Factor**	1.00	**Sd1**	0.10			**S1**	0.06
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.33	**SA**	0.03	**Seismic Importance Factor**			1.00

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-42.21	-1.79	0.00	-231.03	0.00	231.03	3324.94	1662.47	7900.55	3956.15		0.00	0.00	0.042
5.00	-40.83	-1.77	0.00	-222.10	0.00	222.10	3293.53	1646.77	7649.11	3830.24		0.00	-0.01	0.041
7.42	-40.17	-1.76	0.00	-217.81	0.00	217.81	3277.61	1638.81	7526.99	3769.09		0.01	-0.01	0.043
10.00	-39.48	-1.76	0.00	-213.26	0.00	213.26	3260.13	1630.06	7396.53	3703.76		0.02	-0.02	0.043
15.00	-38.15	-1.73	0.00	-204.48	0.00	204.48	3224.74	1612.37	7143.12	3576.87		0.04	-0.02	0.042
20.00	-36.85	-1.71	0.00	-195.81	0.00	195.81	3187.35	1593.68	6889.21	3449.73		0.07	-0.03	0.041
25.00	-35.58	-1.68	0.00	-187.26	0.00	187.26	3147.98	1573.99	6635.12	3322.49		0.11	-0.04	0.040
29.75	-34.39	-1.66	0.00	-179.26	0.00	179.26	3108.73	1554.36	6393.85	3201.68		0.16	-0.05	0.041
30.00	-34.33	-1.66	0.00	-178.85	0.00	178.85	3106.61	1553.31	6381.16	3195.32		0.16	-0.05	0.041
35.00	-33.11	-1.63	0.00	-170.55	0.00	170.55	3063.26	1531.63	6127.67	3068.39		0.22	-0.06	0.040
40.00	-31.91	-1.61	0.00	-162.38	0.00	162.38	3017.91	1508.96	5874.95	2941.84		0.29	-0.07	0.040
45.00	-30.74	-1.58	0.00	-154.33	0.00	154.33	2970.57	1485.29	5623.33	2815.85		0.37	-0.08	0.039
46.59	-30.37	-1.57	0.00	-151.82	0.00	151.82	2955.13	1477.57	5543.77	2776.00		0.40	-0.09	0.038
50.00	-28.96	-1.54	0.00	-146.45	0.00	146.45	2921.24	1460.62	5373.14	2690.56		0.46	-0.09	0.037
52.92	-27.78	-1.50	0.00	-141.96	0.00	141.96	2916.11	1458.05	5347.75	2677.85		0.52	-0.10	0.063
55.00	-27.31	-1.50	0.00	-138.84	0.00	138.84	2894.92	1447.46	5244.24	2626.02		0.56	-0.11	0.062
60.00	-26.21	-1.48	0.00	-131.34	0.00	131.34	2842.57	1421.28	4996.81	2502.12		0.69	-0.12	0.062
65.00	-25.13	-1.46	0.00	-123.95	0.00	123.95	2788.22	1394.11	4751.61	2379.34		0.83	-0.14	0.061
70.00	-24.08	-1.45	0.00	-116.64	0.00	116.64	2731.89	1365.95	4508.96	2257.83		0.99	-0.16	0.060
75.00	-23.05	-1.44	0.00	-109.39	0.00	109.39	2673.57	1336.78	4269.18	2137.76		1.17	-0.18	0.060
80.00	-22.05	-1.45	0.00	-102.17	0.00	102.17	2613.25	1306.63	4032.59	2019.29		1.37	-0.20	0.059
85.00	-21.08	-1.45	0.00	-94.93	0.00	94.93	2550.95	1275.47	3799.51	1902.58		1.59	-0.22	0.058
90.00	-20.13	-1.46	0.00	-87.67	0.00	87.67	2486.65	1243.33	3570.26	1787.78		1.84	-0.25	0.057
94.58	-19.29	-1.46	0.00	-81.00	0.00	81.00	2425.96	1212.98	3363.76	1684.38		2.08	-0.27	0.056
95.00	-19.18	-1.46	0.00	-80.39	0.00	80.39	2420.36	1210.18	3345.16	1675.07		2.11	-0.27	0.056
96.75	-18.72	-1.46	0.00	-77.84	0.00	77.84	2396.69	1198.35	3267.42	1636.14		2.21	-0.28	0.031
99.42	-18.03	-1.46	0.00	-73.96	0.00	73.96	1173.34	586.67	1596.31	799.34		2.36	-0.28	0.038
100.00	-17.96	-1.46	0.00	-73.11	0.00	73.11	1170.92	585.46	1585.67	794.02		2.40	-0.28	0.048
105.00	-17.34	-1.46	0.00	-65.82	0.00	65.82	1149.02	574.51	1494.34	748.28		2.70	-0.30	0.045
110.00	-16.74	-1.46	0.00	-58.52	0.00	58.52	1125.14	562.57	1402.88	702.48		3.03	-0.32	0.042
115.00	-16.15	-1.46	0.00	-51.22	0.00	51.22	1099.26	549.63	1311.60	656.78		3.37	-0.33	0.038
117.25	-15.90	-1.46	0.00	-47.93	0.00	47.93	1086.96	543.48	1270.68	636.28		3.53	-0.34	0.037
117.25	-15.90	-1.46	0.00	-47.93	0.00	47.93	1086.96	543.48	1270.68	636.28		3.53	-0.34	0.037
120.00	-15.58	-1.47	0.00	-43.91	0.00	43.91	1071.39	535.70	1220.84	611.33		3.72	-0.35	0.086
125.00	-15.03	-1.47	0.00	-36.58	0.00	36.58	1041.53	520.77	1130.90	566.29		4.11	-0.38	0.079
127.00	-12.36	-1.43	0.00	-33.65	0.00	33.65	1029.03	514.52	1095.23	548.43		4.27	-0.40	0.073
130.00	-12.05	-1.43	0.00	-29.37	0.00	29.37	1009.68	504.84	1042.12	521.83		4.53	-0.42	0.068
135.00	-11.54	-1.41	0.00	-22.24	0.00	22.24	975.84	487.92	954.81	478.11		4.98	-0.45	0.058
137.00	-8.85	-1.26	0.00	-19.41	0.00	19.41	961.75	480.87	920.37	460.87		5.18	-0.46	0.051
140.00	-8.60	-1.25	0.00	-15.64	0.00	15.64	940.01	470.00	869.29	435.29		5.47	-0.48	0.045
145.00	-8.20	-1.22	0.00	-9.40	0.00	9.40	902.19	451.09	785.88	393.52		5.98	-0.50	0.033
147.00	-4.05	-0.73	0.00	-6.96	0.00	6.96	886.50	443.25	753.18	377.15		6.19	-0.50	0.023
148.50	-3.95	-0.72	0.00	-5.86	0.00	5.86	874.53	437.26	728.93	365.00		6.35	-0.51	0.021
148.50	-3.95	-0.72	0.00	-5.86	0.00	5.86	728.28	364.14	584.01	379.17		6.35	-0.51	0.021
150.00	-3.78	-0.70	0.00	-4.78	0.00	4.78	728.28	364.14	584.01	379.17		6.51	-0.51	0.018
155.00	-3.22	-0.62	0.00	-1.28	0.00	1.28	728.28	364.14	584.01	379.17		7.05	-0.52	0.008
157.00	-0.14	-0.03	0.00	-0.04	0.00	0.04	728.28	364.14	584.01	379.17		7.27	-0.52	0.000

Calculated Forces

Structure:	CT46139-A-SBA	**Code:**	TIA-222-G	5/20/2022	
Site Name:	West Haven-rt15 /Woodbridge	**Exposure:**	C		
Height:	158.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 38	

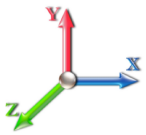
158.50	0.00	-0.03	0.00	0.00	0.00	0.00	728.28	364.14	584.01	379.17	7.43	-0.52	0.000

Seismic Segment Forces (Factored)

Structure:	CT46139-A-SBA	**Code:**	TIA-222-G	5/20/2022	
Site Name:	West Haven-rt15 /Woodbridge	**Exposure:**	C		
Height:	158.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 39	

Tower Engineering Solutions

Load Case:	0.9D + 1.0E					**Iterations**	22
Gust Response Factor	1.10			**Sds**	0.19	**Ss**	0.18
Dead Load Factor	0.90	**Seismic Load Factor**	1.00	**Sd1**	0.10	**S1**	0.06
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.33	**SA**	0.03	**Seismic Importance Factor**	1.00



Top Elev (ft)	Description	Wz (lb)	a	b	c	Lateral Fs (lb)	R: 1.50
0.00	RB1 RB2	0.00	0.00	0.00	0.00	0.00	
5.00		962.54	0.00	0.03	0.02	17.55	
7.42	RT2 RB3	458.01	0.00	0.04	0.02	10.52	
10.00		482.65	0.01	0.05	0.03	12.78	
15.00		918.79	0.02	0.06	0.04	28.14	
20.00		896.92	0.03	0.07	0.04	29.42	
25.00		875.04	0.05	0.07	0.04	29.79	
29.75	RT1 RT3 RB4	811.03	0.07	0.07	0.04	28.30	
30.00		42.14	0.07	0.07	0.04	1.47	
35.00		831.29	0.09	0.07	0.04	29.71	
40.00		809.42	0.12	0.07	0.03	29.59	
45.00		787.54	0.15	0.07	0.03	29.36	
46.59	Bot - Section 2	245.34	0.16	0.07	0.03	9.19	
50.00	RT4	1047.8	0.19	0.06	0.02	39.44	
52.92	Top - Section 1	880.22	0.21	0.06	0.02	33.03	
55.00		311.15	0.23	0.06	0.02	11.58	
60.00		732.46	0.27	0.05	0.01	25.97	
65.00		710.59	0.32	0.04	0.01	22.46	
70.00		688.71	0.37	0.03	0.01	17.22	
75.00		666.84	0.42	0.01	0.01	10.21	
80.00		644.96	0.48	-0.01	0.01	1.90	
85.00		623.09	0.54	-0.03	0.01	-6.58	
90.00		601.21	0.61	-0.06	0.02	-13.85	
94.58	Bot - Section 3	531.89	0.67	-0.08	0.02	-16.94	
95.00		76.33	0.68	-0.08	0.03	-2.48	
96.75	RB5	317.93	0.70	-0.09	0.03	-11.08	
99.42	Top - Section 2	476.22	0.74	-0.10	0.04	-17.79	
100.00		38.94	0.75	-0.10	0.04	-1.47	
105.00		326.41	0.83	-0.12	0.06	-12.54	
110.00		313.29	0.91	-0.12	0.09	-10.79	
115.00		300.16	0.99	-0.11	0.13	-7.80	
117.25	RT5	130.79	1.03	-0.10	0.15	-2.71	
120.00		156.25	1.08	-0.08	0.18	-2.05	
125.00		273.91	1.18	-0.02	0.24	1.11	
127.00	Appurtenance(s)	2148.9	1.21	0.02	0.26	26.14	
130.00		154.90	1.27	0.08	0.31	3.97	
135.00		247.66	1.37	0.23	0.40	12.78	
137.00	Appurtenance(s)	2169.2	1.41	0.31	0.44	137.24	
140.00		139.15	1.47	0.44	0.51	11.42	
145.00		221.41	1.58	0.72	0.65	25.94	
147.00	Appurtenance(s)	3421.4	1.63	0.86	0.71	453.27	
148.50	Top - Section 3	62.29	1.66	0.97	0.75	9.00	
150.00		118.01	1.69	1.09	0.80	18.51	
155.00		393.36	1.81	1.57	0.99	79.24	
157.00	Appurtenance(s)	2540.5	1.85	1.80	1.07	560.47	
158.50		118.01	1.89	1.98	1.14	27.79	

Seismic Segment Forces (Factored)

Structure:	CT46139-A-SBA	**Code:**	TIA-222-G	5/20/2022	
Site Name:	West Haven-rt15 /Woodbridge	**Exposure:**	C		
Height:	158.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 40	

Totals:	**29,705.0**	**1,678.5**	**Total Wind:** **34,047.7**

Calculated Forces

Structure:	CT46139-A-SBA	**Code:**	TIA-222-G	5/20/2022	
Site Name:	West Haven-rt15 /Woodbridge	**Exposure:**	C		
Height:	158.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 41	

IES Tower Engineering Solutions

Load Case:	0.9D + 1.0E							**Iterations**	22
Gust Response Factor	1.10			**Sds**	0.19			**Ss**	0.18
Dead Load Factor	0.90	**Seismic Load Factor**	1.00	**Sd1**	0.10			**S1**	0.06
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.33	**SA**	0.03	**Seismic Importance Factor**			1.00

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-31.66	-1.79	0.00	-228.56	0.00	228.56	3324.94	1662.47	7900.55	3956.15		0.00	0.00	0.039
5.00	-30.62	-1.77	0.00	-219.64	0.00	219.64	3293.53	1646.77	7649.11	3830.24		0.00	-0.01	0.039
7.42	-30.13	-1.76	0.00	-215.35	0.00	215.35	3277.61	1638.81	7526.99	3769.09		0.01	-0.01	0.041
10.00	-29.61	-1.75	0.00	-210.80	0.00	210.80	3260.13	1630.06	7396.53	3703.76		0.02	-0.02	0.041
15.00	-28.61	-1.73	0.00	-202.04	0.00	202.04	3224.74	1612.37	7143.12	3576.87		0.04	-0.02	0.040
20.00	-27.64	-1.70	0.00	-193.40	0.00	193.40	3187.35	1593.68	6889.21	3449.73		0.07	-0.03	0.039
25.00	-26.68	-1.68	0.00	-184.88	0.00	184.88	3147.98	1573.99	6635.12	3322.49		0.11	-0.04	0.038
29.75	-25.79	-1.65	0.00	-176.91	0.00	176.91	3108.73	1554.36	6393.85	3201.68		0.16	-0.05	0.039
30.00	-25.75	-1.65	0.00	-176.50	0.00	176.50	3106.61	1553.31	6381.16	3195.32		0.16	-0.05	0.039
35.00	-24.83	-1.62	0.00	-168.25	0.00	168.25	3063.26	1531.63	6127.67	3068.39		0.22	-0.06	0.038
40.00	-23.93	-1.60	0.00	-160.13	0.00	160.13	3017.91	1508.96	5874.95	2941.84		0.29	-0.07	0.038
45.00	-23.05	-1.57	0.00	-152.14	0.00	152.14	2970.57	1485.29	5623.33	2815.85		0.37	-0.08	0.037
46.59	-22.78	-1.56	0.00	-149.65	0.00	149.65	2955.13	1477.57	5543.77	2776.00		0.39	-0.08	0.036
50.00	-21.72	-1.52	0.00	-144.32	0.00	144.32	2921.24	1460.62	5373.14	2690.56		0.46	-0.09	0.035
52.92	-20.83	-1.49	0.00	-139.87	0.00	139.87	2916.11	1458.05	5347.75	2677.85		0.51	-0.10	0.059
55.00	-20.48	-1.48	0.00	-136.76	0.00	136.76	2894.92	1447.46	5244.24	2626.02		0.56	-0.11	0.059
60.00	-19.65	-1.46	0.00	-129.34	0.00	129.34	2842.57	1421.28	4996.81	2502.12		0.68	-0.12	0.059
65.00	-18.85	-1.44	0.00	-122.03	0.00	122.03	2788.22	1394.11	4751.61	2379.34		0.82	-0.14	0.058
70.00	-18.06	-1.43	0.00	-114.81	0.00	114.81	2731.89	1365.95	4508.96	2257.83		0.97	-0.16	0.057
75.00	-17.29	-1.42	0.00	-107.65	0.00	107.65	2673.57	1336.78	4269.18	2137.76		1.15	-0.18	0.057
80.00	-16.54	-1.43	0.00	-100.53	0.00	100.53	2613.25	1306.63	4032.59	2019.29		1.35	-0.20	0.056
85.00	-15.81	-1.43	0.00	-93.39	0.00	93.39	2550.95	1275.47	3799.51	1902.58		1.57	-0.22	0.055
90.00	-15.10	-1.43	0.00	-86.25	0.00	86.25	2486.65	1243.33	3570.26	1787.78		1.81	-0.24	0.054
94.58	-14.47	-1.43	0.00	-79.68	0.00	79.68	2425.96	1212.98	3363.76	1684.38		2.05	-0.26	0.053
95.00	-14.38	-1.43	0.00	-79.09	0.00	79.09	2420.36	1210.18	3345.16	1675.07		2.08	-0.26	0.053
96.75	-14.04	-1.43	0.00	-76.58	0.00	76.58	2396.69	1198.35	3267.42	1636.14		2.18	-0.27	0.030
99.42	-13.52	-1.43	0.00	-72.76	0.00	72.76	1173.34	586.67	1596.31	799.34		2.33	-0.28	0.036
100.00	-13.46	-1.43	0.00	-71.92	0.00	71.92	1170.92	585.46	1585.67	794.02		2.36	-0.28	0.045
105.00	-13.00	-1.44	0.00	-64.75	0.00	64.75	1149.02	574.51	1494.34	748.28		2.67	-0.30	0.042
110.00	-12.55	-1.44	0.00	-57.58	0.00	57.58	1125.14	562.57	1402.88	702.48		2.98	-0.31	0.039
115.00	-12.11	-1.44	0.00	-50.40	0.00	50.40	1099.26	549.63	1311.60	656.78		3.32	-0.33	0.036
117.25	-11.92	-1.44	0.00	-47.17	0.00	47.17	1086.96	543.48	1270.68	636.28		3.48	-0.33	0.034
117.25	-11.92	-1.44	0.00	-47.17	0.00	47.17	1086.96	543.48	1270.68	636.28		3.48	-0.33	0.034
120.00	-11.69	-1.44	0.00	-43.22	0.00	43.22	1071.39	535.70	1220.84	611.33		3.67	-0.34	0.082
125.00	-11.27	-1.44	0.00	-36.02	0.00	36.02	1041.53	520.77	1130.90	566.29		4.05	-0.38	0.074
127.00	-9.27	-1.40	0.00	-33.14	0.00	33.14	1029.03	514.52	1095.23	548.43		4.21	-0.39	0.069
130.00	-9.03	-1.40	0.00	-28.92	0.00	28.92	1009.68	504.84	1042.12	521.83		4.46	-0.41	0.064
135.00	-8.65	-1.39	0.00	-21.91	0.00	21.91	975.84	487.92	954.81	478.11		4.91	-0.44	0.055
137.00	-6.63	-1.24	0.00	-19.13	0.00	19.13	961.75	480.87	920.37	460.87		5.10	-0.45	0.048
140.00	-6.45	-1.23	0.00	-15.41	0.00	15.41	940.01	470.00	869.29	435.29		5.39	-0.47	0.042
145.00	-6.15	-1.20	0.00	-9.27	0.00	9.27	902.19	451.09	785.88	393.52		5.90	-0.49	0.030
147.00	-3.03	-0.72	0.00	-6.87	0.00	6.87	886.50	443.25	753.18	377.15		6.10	-0.50	0.022
148.50	-2.96	-0.71	0.00	-5.79	0.00	5.79	874.53	437.26	728.93	365.00		6.26	-0.50	0.019
148.50	-2.96	-0.71	0.00	-5.79	0.00	5.79	728.28	364.14	584.01	379.17		6.26	-0.50	0.019
150.00	-2.83	-0.69	0.00	-4.72	0.00	4.72	728.28	364.14	584.01	379.17		6.42	-0.50	0.016
155.00	-2.41	-0.61	0.00	-1.26	0.00	1.26	728.28	364.14	584.01	379.17		6.95	-0.51	0.007
157.00	-0.11	-0.03	0.00	-0.04	0.00	0.04	728.28	364.14	584.01	379.17		7.16	-0.51	0.000

Calculated Forces

Structure:	CT46139-A-SBA	**Code:**	TIA-222-G	5/20/2022	
Site Name:	West Haven-rt15 /Woodbridge	**Exposure:**	C		
Height:	158.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 42	

158.50	0.00	-0.03	0.00	0.00	0.00	0.00	728.28	364.14	584.01	379.17	7.32	-0.51	0.000

Wind Loading - Shaft

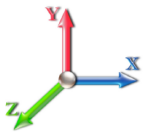
Structure:	CT46139-A-SBA	**Code:**	TIA-222-G	5/20/2022	
Site Name:	West Haven-rt15 /Woodbridge	**Exposure:**	C		
Height:	158.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 43	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 23

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00	RB1 RB2	1.00	0.85	7.442	8.19	271.49	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	7.442	8.19	265.42	0.650	0.000	5.00	24.265	15.77	129.1	0.0	962.5
7.42	RT2 RB3	1.00	0.85	7.442	8.19	262.49	0.650	0.000	2.42	11.547	7.51	61.4	0.0	458.0
10.00		1.00	0.85	7.442	8.19	259.36	0.650	0.000	2.58	12.169	7.91	64.8	0.0	482.7
15.00		1.00	0.85	7.442	8.19	253.29	0.650	0.000	5.00	23.168	15.06	123.3	0.0	918.8
20.00		1.00	0.90	7.896	8.69	254.65	0.650	0.000	5.00	22.620	14.70	127.7	0.0	896.9
25.00		1.00	0.95	8.276	9.10	254.31	0.650	0.000	5.00	22.071	14.35	130.6	0.0	875.0
29.75	RT1 RT3 RB4	1.00	0.98	8.585	9.44	252.82	0.650	0.000	4.75	20.460	13.30	125.6	0.0	811.0
30.00		1.00	0.98	8.600	9.46	252.71	0.650	0.000	0.25	1.063	0.69	6.5	0.0	42.1
35.00		1.00	1.01	8.883	9.77	250.22	0.650	0.000	5.00	20.975	13.63	133.2	0.0	831.3
40.00		1.00	1.04	9.137	10.05	247.04	0.650	0.000	5.00	20.426	13.28	133.4	0.0	809.4
45.00		1.00	1.07	9.366	10.30	243.31	0.650	0.000	5.00	19.878	12.92	133.1	0.0	787.5
46.59	Bot - Section 2	1.00	1.08	9.435	10.38	242.03	0.650	0.000	1.59	6.193	4.03	41.8	0.0	245.3
50.00	RT4	1.00	1.09	9.576	10.53	239.14	0.650	0.000	3.41	13.316	8.66	91.2	0.0	1047.9
52.92	Top - Section 1	1.00	1.11	9.691	10.66	236.53	0.650	0.000	2.92	11.189	7.27	77.5	0.0	880.2
55.00		1.00	1.12	9.770	10.75	237.95	0.650	0.000	2.08	7.856	5.11	54.9	0.0	311.1
60.00		1.00	1.14	9.951	10.95	233.12	0.650	0.000	5.00	18.497	12.02	131.6	0.0	732.5
65.00		1.00	1.16	10.120	11.13	228.02	0.650	0.000	5.00	17.948	11.67	129.9	0.0	710.6
70.00		1.00	1.17	10.279	11.31	222.67	0.650	0.000	5.00	17.400	11.31	127.9	0.0	688.7
75.00		1.00	1.19	10.430	11.47	217.11	0.650	0.000	5.00	16.851	10.95	125.7	0.0	666.8
80.00		1.00	1.21	10.572	11.63	211.36	0.650	0.000	5.00	16.303	10.60	123.2	0.0	645.0
85.00		1.00	1.22	10.708	11.78	205.44	0.650	0.000	5.00	15.754	10.24	120.6	0.0	623.1
90.00		1.00	1.24	10.838	11.92	199.35	0.650	0.000	5.00	15.206	9.88	117.8	0.0	601.2
94.58	Bot - Section 3	1.00	1.25	10.952	12.05	193.65	0.650	0.000	4.58	13.457	8.75	105.4	0.0	531.9
95.00		1.00	1.25	10.962	12.06	193.13	0.650	0.000	0.42	1.214	0.79	9.5	0.0	76.3
96.75	RB5	1.00	1.26	11.004	12.10	190.92	0.650	0.000	1.75	5.056	3.29	39.8	0.0	317.9
99.42	Top - Section 2	1.00	1.26	11.067	12.17	187.52	0.650	0.000	2.67	7.575	4.92	59.9	0.0	476.2
100.00		1.00	1.27	11.081	12.19	188.91	0.650	0.000	0.58	1.636	1.06	13.0	0.0	38.9
105.00		1.00	1.28	11.195	12.31	182.44	0.650	0.000	5.00	13.719	8.92	109.8	0.0	326.4
110.00		1.00	1.29	11.305	12.44	175.86	0.650	0.000	5.00	13.171	8.56	106.5	0.0	313.3
115.00		1.00	1.30	11.412	12.55	169.17	0.650	0.000	5.00	12.622	8.20	103.0	0.0	300.2
117.25	RT5	1.00	1.31	11.458	12.60	166.13	0.650	0.000	2.25	5.501	3.58	45.1	0.0	130.8
120.00		1.00	1.32	11.514	12.67	162.38	0.650	0.000	2.75	6.573	4.27	54.1	0.0	156.2
125.00		1.00	1.33	11.614	12.78	155.50	0.650	0.000	5.00	11.525	7.49	95.7	0.0	273.9
127.00	Appurtenance(s)	1.00	1.33	11.653	12.82	152.72	0.650	0.000	2.00	4.457	2.90	37.1	0.0	105.9
130.00		1.00	1.34	11.710	12.88	148.53	0.650	0.000	3.00	6.520	4.24	54.6	0.0	154.9
135.00		1.00	1.35	11.803	12.98	141.48	0.650	0.000	5.00	10.428	6.78	88.0	0.0	247.7
137.00	Appurtenance(s)	1.00	1.35	11.840	13.02	138.64	0.650	0.000	2.00	4.018	2.61	34.0	0.0	95.4
140.00		1.00	1.36	11.894	13.08	134.35	0.650	0.000	3.00	5.862	3.81	49.9	0.0	139.1
145.00		1.00	1.37	11.982	13.18	127.15	0.650	0.000	5.00	9.332	6.07	79.9	0.0	221.4
147.00	Appurtenance(s)	1.00	1.37	12.017	13.22	124.25	0.650	0.000	2.00	3.579	2.33	30.8	0.0	84.9
148.50	Top - Section 3	1.00	1.38	12.043	13.25	122.07	0.650	0.000	1.50	2.627	1.71	22.6	0.0	62.3
150.00		1.00	1.38	12.068	13.27	117.41	0.600	0.000	1.50	2.500	1.50	19.9	0.0	118.0
155.00		1.00	1.39	12.152	13.37	117.81	0.600	0.000	5.00	8.333	5.00	66.8	0.0	393.4
157.00	Appurtenance(s)	1.00	1.39	12.185	13.40	117.97	0.600	0.000	2.00	3.333	2.00	26.8	0.0	157.3
158.50		1.00	1.39	12.209	13.43	118.09	0.600	0.000	1.50	2.500	1.50	20.1	0.0	118.0

Wind Loading - Shaft

Structure:	CT46139-A-SBA	**Code:**	TIA-222-G	5/20/2022	
Site Name:	West Haven-rt15 /Woodbridge	**Exposure:**	C		
Height:	158.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 44	

Totals:	**158.50**	**3,583.2**	**19,868.3**

Discrete Appurtenance Forces

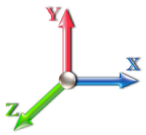
Structure:	CT46139-A-SBA	**Code:**	TIA-222-G	5/20/2022	
Site Name:	West Haven-rt15 /Woodbridge	**Exposure:**	C		
Height:	158.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 45	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 23

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	Orient Factor x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	157.00	CBC78T-DS-43/E14F05P	3	12.185	13.403	0.54	0.80	0.59	31.20	0.000	0.000	7.97	0.00	0.00
2	157.00	VZS01	3	12.185	13.403	0.55	0.80	7.12	261.30	0.000	0.000	95.44	0.00	0.00
3	157.00	JAHH-65B-R3B	6	12.185	13.403	0.66	0.80	36.29	411.36	0.000	0.000	486.45	0.00	0.00
4	157.00	T-Arm	3	12.185	13.403	0.56	0.75	16.88	1200.00	0.000	0.000	226.18	0.00	0.00
5	157.00	B2/B66A RRH-BR049	3	12.185	13.403	0.54	0.80	3.01	210.90	0.000	0.000	40.30	0.00	0.00
6	157.00	B5/B13 RRH-BR04C	3	12.185	13.403	0.54	0.80	3.01	253.20	0.000	0.000	40.30	0.00	0.00
7	157.00	FE-16148-OVP-B12	1	12.185	13.403	0.54	0.80	1.08	15.21	0.000	0.000	14.44	0.00	0.00
8	147.00	4449 B71 + B85	3	12.017	13.219	0.54	0.80	3.17	219.60	0.000	0.000	41.87	0.00	0.00
9	147.00	RRUS 4415 B25	3	12.017	13.219	0.54	0.80	2.64	138.00	0.000	0.000	34.86	0.00	0.00
10	147.00	ACU-A20-N	4	12.017	13.219	0.54	0.80	0.30	4.00	0.000	0.000	3.97	0.00	0.00
11	147.00	(3) T-Arm Kit	1	12.017	13.219	0.75	0.75	12.38	500.00	0.000	0.000	163.58	0.00	0.00
12	147.00	AIR6449 B41	3	12.017	13.219	0.57	0.80	9.63	309.00	0.000	0.000	127.26	0.00	0.00
13	147.00	RFS	3	12.017	13.219	0.56	0.80	34.00	384.00	0.000	0.000	449.48	0.00	0.00
14	147.00	KRD 9011461-B66A-B2A	3	12.017	13.219	0.70	0.80	13.59	396.60	0.000	0.000	179.68	0.00	0.00
15	147.00	T-Arm	3	12.017	13.219	0.56	0.75	16.88	1200.00	0.000	0.000	223.06	0.00	0.00
16	147.00	800 MHz RRH	3	12.017	13.219	0.54	0.80	4.00	159.00	0.000	0.000	52.93	0.00	0.00
17	147.00	ALU 800MHz External	3	12.017	13.219	0.54	0.80	1.25	26.40	0.000	0.000	16.58	0.00	0.00
18	137.00	RA21.7770.00	6	11.840	13.024	0.58	0.80	22.95	223.20	0.000	0.000	298.92	0.00	0.00
19	137.00	DC6-48-60-18-8F	1	11.840	13.024	0.80	0.80	0.74	31.80	0.000	0.000	9.59	0.00	0.00
20	137.00	T-Arm	3	11.840	13.024	0.56	0.75	16.88	1200.00	0.000	0.000	219.78	0.00	0.00
21	137.00	RRUS 11	6	11.840	13.024	0.54	0.80	8.10	304.20	0.000	0.000	105.55	0.00	0.00
22	137.00	AM-X-CD-16-65-00T-RET	3	11.840	13.024	0.60	0.80	14.44	145.50	0.000	0.000	188.01	0.00	0.00
23	137.00	LGP21401	12	11.840	13.024	0.54	0.80	8.30	169.20	0.000	0.000	108.06	0.00	0.00
24	127.00	MC-PK8-C	1	11.653	12.818	1.00	1.00	33.60	1411.00	0.000	0.000	430.68	0.00	0.00
25	127.00	Raycap	1	11.653	12.818	0.75	0.75	1.51	21.90	0.000	0.000	19.32	0.00	0.00
26	127.00	Fujitsu TA08025-B604	3	11.653	12.818	0.50	0.75	2.95	191.70	0.000	0.000	37.87	0.00	0.00
27	127.00	Fujitsu TA08025-B605	3	11.653	12.818	0.50	0.75	2.95	225.00	0.000	0.000	37.87	0.00	0.00
28	127.00	JMA Wireless	3	11.653	12.818	0.55	0.75	20.80	193.50	0.000	0.000	266.56	0.00	0.00
							Totals:		**9,836.77**			**3,926.58**		

Total Applied Force Summary

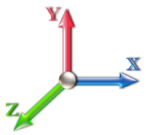
Structure:	CT46139-A-SBA	**Code:**	TIA-222-G	5/20/2022	
Site Name:	West Haven-rt15 /Woodbridge	**Exposure:**	C		
Height:	158.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 46	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 23

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		129.11	1149.44	0.00	0.00
7.42		61.44	548.47	0.00	0.00
10.00		64.75	579.09	0.00	0.00
15.00		123.28	1105.69	0.00	0.00
20.00		127.71	1083.82	0.00	0.00
25.00		130.60	1061.94	0.00	0.00
29.75		125.58	988.58	0.00	0.00
30.00		6.54	51.48	0.00	0.00
35.00		133.22	1018.19	0.00	0.00
40.00		133.44	996.32	0.00	0.00
45.00		133.12	974.44	0.00	0.00
46.59		41.78	304.65	0.00	0.00
50.00		91.18	1175.44	0.00	0.00
52.92		77.53	989.37	0.00	0.00
55.00		54.88	388.90	0.00	0.00
60.00		131.60	919.36	0.00	0.00
65.00		129.87	897.49	0.00	0.00
70.00		127.88	875.61	0.00	0.00
75.00		125.66	853.74	0.00	0.00
80.00		123.24	831.86	0.00	0.00
85.00		120.62	809.99	0.00	0.00
90.00		117.83	788.11	0.00	0.00
94.58		105.37	703.22	0.00	0.00
95.00		9.51	91.91	0.00	0.00
96.75		39.78	383.35	0.00	0.00
99.42		59.94	575.90	0.00	0.00
100.00		12.96	60.74	0.00	0.00
105.00		109.82	513.31	0.00	0.00
110.00		106.46	500.19	0.00	0.00
115.00		102.99	487.06	0.00	0.00
117.25		45.07	214.90	0.00	0.00
120.00		54.11	259.04	0.00	0.00
125.00		95.70	460.81	0.00	0.00
127.00	(11) attachments	829.44	2223.75	0.00	0.00
130.00		54.59	261.58	0.00	0.00
135.00		88.01	425.46	0.00	0.00
137.00	(31) attachments	963.93	2240.41	0.00	0.00
140.00		49.85	205.51	0.00	0.00
145.00		79.95	332.01	0.00	0.00
147.00	(29) attachments	1324.02	3465.73	0.00	0.00
148.50		22.62	84.31	0.00	0.00
150.00		19.91	140.03	0.00	0.00
155.00		66.83	466.76	0.00	0.00
157.00	(22) attachments	937.90	2569.88	0.00	0.00
158.50		20.14	118.01	0.00	0.00

Total Applied Force Summary

Structure:	CT46139-A-SBA	**Code:**	TIA-222-G	5/20/2022	
Site Name:	West Haven-rt15 /Woodbridge	**Exposure:**	C		
Height:	158.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 47	

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Totals:	**7,509.79**	**35,175.88**	**0.00**	**0.00**

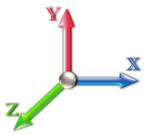
Linear Appurtenance Segment Forces (Factored)

Structure:	CT46139-A-SBA	**Code:**	TIA-222-G	5/20/2022	
Site Name:	West Haven-rt15 /Woodbridge	**Exposure:**	C		
Height:	158.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 48	

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 23

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
5.00	1.6" Hybrid	Yes	5.00	0.000	1.60	0.67	0.00	0.079	0.000	7.442	0.00	9.10
5.00	1.25" Reinforcing	Yes	5.00	0.000	3.00	1.25	0.00	0.079	0.000	7.442	0.00	0.00
7.42	1.6" Hybrid	Yes	2.42	0.000	1.60	0.32	0.00	0.080	0.000	7.442	0.00	4.40
7.42	1.25" Reinforcing	Yes	2.42	0.000	3.00	0.60	0.00	0.080	0.000	7.442	0.00	0.00
10.00	1.6" Hybrid	Yes	2.58	0.000	1.60	0.34	0.00	0.070	0.000	7.442	0.00	4.70
10.00	1.25" Reinforcing	Yes	1.08	0.000	1.50	0.14	0.00	0.070	0.000	7.442	0.00	0.00
10.00	1.25" Reinforcing	Yes	1.50	0.000	3.00	0.38	0.00	0.070	0.000	7.442	0.00	0.00
15.00	1.6" Hybrid	Yes	5.00	0.000	1.60	0.67	0.00	0.056	0.000	7.442	0.00	9.10
15.00	1.25" Reinforcing	Yes	5.00	0.000	1.50	0.63	0.00	0.056	0.000	7.442	0.00	0.00
20.00	1.6" Hybrid	Yes	5.00	0.000	1.60	0.67	0.00	0.057	0.000	7.896	0.00	9.10
20.00	1.25" Reinforcing	Yes	5.00	0.000	1.50	0.63	0.00	0.057	0.000	7.896	0.00	0.00
25.00	1.6" Hybrid	Yes	5.00	0.000	1.60	0.67	0.00	0.059	0.000	8.276	0.00	9.10
25.00	1.25" Reinforcing	Yes	5.00	0.000	1.50	0.63	0.00	0.059	0.000	8.276	0.00	0.00
29.75	1.6" Hybrid	Yes	4.75	0.000	1.60	0.63	0.00	0.060	0.000	8.585	0.00	8.64
29.75	1.25" Reinforcing	Yes	4.75	0.000	1.50	0.59	0.00	0.060	0.000	8.585	0.00	0.00
30.00	1.6" Hybrid	Yes	0.25	0.000	1.60	0.03	0.00	0.061	0.000	8.600	0.00	0.46
30.00	1.25" Reinforcing	Yes	0.25	0.000	1.50	0.03	0.00	0.061	0.000	8.600	0.00	0.00
35.00	1.6" Hybrid	Yes	5.00	0.000	1.60	0.67	0.00	0.062	0.000	8.883	0.00	9.10
35.00	1.25" Reinforcing	Yes	5.00	0.000	1.50	0.63	0.00	0.062	0.000	8.883	0.00	0.00
40.00	1.6" Hybrid	Yes	5.00	0.000	1.60	0.67	0.00	0.063	0.000	9.137	0.00	9.10
40.00	1.25" Reinforcing	Yes	5.00	0.000	1.50	0.63	0.00	0.063	0.000	9.137	0.00	0.00
45.00	1.6" Hybrid	Yes	5.00	0.000	1.60	0.67	0.00	0.065	0.000	9.366	0.00	9.10
45.00	1.25" Reinforcing	Yes	5.00	0.000	1.50	0.63	0.00	0.065	0.000	9.366	0.00	0.00
46.59	1.6" Hybrid	Yes	1.59	0.000	1.60	0.21	0.00	0.066	0.000	9.435	0.00	2.89
46.59	1.25" Reinforcing	Yes	1.59	0.000	1.50	0.20	0.00	0.066	0.000	9.435	0.00	0.00
50.00	1.6" Hybrid	Yes	3.41	0.000	1.60	0.46	0.00	0.067	0.000	9.576	0.00	6.21
50.00	1.25" Reinforcing	Yes	3.41	0.000	1.50	0.43	0.00	0.067	0.000	9.576	0.00	0.00
52.92	1.6" Hybrid	Yes	2.92	0.000	1.60	0.39	0.00	0.068	0.000	9.691	0.00	5.31
52.92	1.25" Reinforcing	Yes	2.92	0.000	1.50	0.37	0.00	0.068	0.000	9.691	0.00	0.00
55.00	1.6" Hybrid	Yes	2.08	0.000	1.60	0.28	0.00	0.037	0.000	9.770	0.00	3.79
55.00	1.25" Reinforcing	Yes	0.08	0.000	1.50	0.01	0.00	0.037	0.000	9.770	0.00	0.00
60.00	1.6" Hybrid	Yes	5.00	0.000	1.60	0.67	0.00	0.036	0.000	9.951	0.00	9.10
65.00	1.6" Hybrid	Yes	5.00	0.000	1.60	0.67	0.00	0.037	0.000	10.120	0.00	9.10
70.00	1.6" Hybrid	Yes	5.00	0.000	1.60	0.67	0.00	0.038	0.000	10.279	0.00	9.10
75.00	1.6" Hybrid	Yes	5.00	0.000	1.60	0.67	0.00	0.040	0.000	10.430	0.00	9.10
80.00	1.6" Hybrid	Yes	5.00	0.000	1.60	0.67	0.00	0.041	0.000	10.572	0.00	9.10
85.00	1.6" Hybrid	Yes	5.00	0.000	1.60	0.67	0.00	0.042	0.000	10.708	0.00	9.10
90.00	1.6" Hybrid	Yes	5.00	0.000	1.60	0.67	0.00	0.044	0.000	10.838	0.00	9.10
94.58	1.6" Hybrid	Yes	4.58	0.000	1.60	0.61	0.00	0.046	0.000	10.952	0.00	8.34
94.58	1.25" Reinforcing	Yes	0.08	0.000	1.50	0.01	0.00	0.046	0.000	10.952	0.00	0.00
95.00	1.6" Hybrid	Yes	0.42	0.000	1.60	0.06	0.00	0.090	0.000	10.962	0.00	0.76
95.00	1.25" Reinforcing	Yes	0.42	0.000	1.50	0.05	0.00	0.090	0.000	10.962	0.00	0.00
96.75	1.6" Hybrid	Yes	1.75	0.000	1.60	0.23	0.00	0.090	0.000	11.004	0.00	3.19
96.75	1.25" Reinforcing	Yes	1.75	0.000	1.50	0.22	0.00	0.090	0.000	11.004	0.00	0.00
99.42	1.6" Hybrid	Yes	2.67	0.000	1.60	0.36	0.00	0.092	0.000	11.067	0.00	4.85
99.42	1.25" Reinforcing	Yes	2.67	0.000	1.50	0.33	0.00	0.092	0.000	11.067	0.00	0.00
100.00	1.6" Hybrid	Yes	0.58	0.000	1.60	0.08	0.00	0.092	0.000	11.081	0.00	1.06

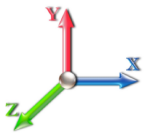
Linear Appurtenance Segment Forces (Factored)

Structure:	CT46139-A-SBA	**Code:**	TIA-222-G	5/20/2022	
Site Name:	West Haven-rt15 /Woodbridge	**Exposure:**	C		
Height:	158.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 49	

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 23

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
100.00	1.25" Reinforcing	Yes	0.58	0.000	1.50	0.07	0.00	0.092	0.000	11.081	0.00	0.00
105.00	1.6" Hybrid	Yes	5.00	0.000	1.60	0.67	0.00	0.090	0.000	11.195	0.00	9.10
105.00	1.25" Reinforcing	Yes	4.50	0.000	1.50	0.56	0.00	0.090	0.000	11.195	0.00	0.00
110.00	1.6" Hybrid	Yes	5.00	0.000	1.60	0.67	0.00	0.051	0.000	11.305	0.00	9.10
115.00	1.6" Hybrid	Yes	5.00	0.000	1.60	0.67	0.00	0.053	0.000	11.412	0.00	9.10
117.25	1.6" Hybrid	Yes	2.25	0.000	1.60	0.30	0.00	0.055	0.000	11.458	0.00	4.09
120.00	1.6" Hybrid	Yes	2.75	0.000	1.60	0.37	0.00	0.056	0.000	11.514	0.00	5.00
125.00	1.6" Hybrid	Yes	5.00	0.000	1.60	0.67	0.00	0.058	0.000	11.614	0.00	9.10
127.00	1.6" Hybrid	Yes	2.00	0.000	1.60	0.27	0.00	0.060	0.000	11.653	0.00	3.64
										Totals:	**0.0**	**231.1**

Calculated Forces

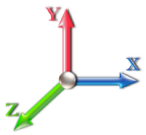
Structure:	CT46139-A-SBA	**Code:**	TIA-222-G	5/20/2022	
Site Name:	West Haven-rt15 /Woodbridge	**Exposure:**	C		
Height:	158.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 50	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 23

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-35.17	-7.52	0.00	-851.78	0.00	851.78	3324.94	1662.47	7900.55	3956.15	0.00	0.000	0.000	0.133
5.00	-34.02	-7.40	0.00	-814.19	0.00	814.19	3293.53	1646.77	7649.11	3830.24	0.02	-0.029	0.000	0.130
7.42	-33.47	-7.35	0.00	-796.28	0.00	796.28	3277.61	1638.81	7526.99	3769.09	0.03	-0.043	0.000	0.136
10.00	-32.89	-7.30	0.00	-777.32	0.00	777.32	3260.13	1630.06	7396.53	3703.76	0.06	-0.060	0.000	0.135
15.00	-31.78	-7.19	0.00	-740.84	0.00	740.84	3224.74	1612.37	7143.12	3576.87	0.14	-0.091	0.000	0.132
20.00	-30.69	-7.08	0.00	-704.89	0.00	704.89	3187.35	1593.68	6889.21	3449.73	0.25	-0.123	0.000	0.128
25.00	-29.63	-6.96	0.00	-669.51	0.00	669.51	3147.98	1573.99	6635.12	3322.49	0.40	-0.156	0.000	0.125
29.75	-28.64	-6.84	0.00	-636.45	0.00	636.45	3108.73	1554.36	6393.85	3201.68	0.57	-0.187	0.000	0.128
30.00	-28.58	-6.84	0.00	-634.74	0.00	634.74	3106.61	1553.31	6381.16	3195.32	0.58	-0.188	0.000	0.128
35.00	-27.56	-6.72	0.00	-600.53	0.00	600.53	3063.26	1531.63	6127.67	3068.39	0.80	-0.223	0.000	0.124
40.00	-26.56	-6.60	0.00	-566.92	0.00	566.92	3017.91	1508.96	5874.95	2941.84	1.05	-0.258	0.000	0.121
45.00	-25.58	-6.47	0.00	-533.91	0.00	533.91	2970.57	1485.29	5623.33	2815.85	1.34	-0.293	0.000	0.118
46.59	-25.28	-6.44	0.00	-523.64	0.00	523.64	2955.13	1477.57	5543.77	2776.00	1.44	-0.305	0.000	0.116
50.00	-24.10	-6.35	0.00	-501.67	0.00	501.67	2921.24	1460.62	5373.14	2690.56	1.67	-0.330	0.000	0.113
52.92	-23.11	-6.28	0.00	-483.12	0.00	483.12	2916.11	1458.05	5347.75	2677.85	1.87	-0.351	0.000	0.188
55.00	-22.72	-6.24	0.00	-470.07	0.00	470.07	2894.92	1447.46	5244.24	2626.02	2.03	-0.377	0.000	0.187
60.00	-21.79	-6.12	0.00	-438.89	0.00	438.89	2842.57	1421.28	4996.81	2502.12	2.46	-0.437	0.000	0.183
65.00	-20.89	-6.01	0.00	-408.28	0.00	408.28	2788.22	1394.11	4751.61	2379.34	2.95	-0.499	0.000	0.179
70.00	-20.01	-5.89	0.00	-378.25	0.00	378.25	2731.89	1365.95	4508.96	2257.83	3.51	-0.562	0.000	0.175
75.00	-19.15	-5.78	0.00	-348.79	0.00	348.79	2673.57	1336.78	4269.18	2137.76	4.13	-0.625	0.000	0.170
80.00	-18.31	-5.67	0.00	-319.89	0.00	319.89	2613.25	1306.63	4032.59	2019.29	4.82	-0.690	0.000	0.165
85.00	-17.50	-5.56	0.00	-291.55	0.00	291.55	2550.95	1275.47	3799.51	1902.58	5.58	-0.755	0.000	0.160
90.00	-16.70	-5.45	0.00	-263.76	0.00	263.76	2486.65	1243.33	3570.26	1787.78	6.40	-0.821	0.000	0.154
94.58	-16.00	-5.34	0.00	-238.80	0.00	238.80	2425.96	1212.98	3363.76	1684.38	7.22	-0.883	0.000	0.148
95.00	-15.91	-5.33	0.00	-236.57	0.00	236.57	2420.36	1210.18	3345.16	1675.07	7.30	-0.888	0.000	0.148
96.75	-15.52	-5.29	0.00	-227.24	0.00	227.24	2396.69	1198.35	3267.42	1636.14	7.63	-0.912	0.000	0.082
99.42	-14.95	-5.23	0.00	-213.12	0.00	213.12	1173.34	586.67	1596.31	799.34	8.15	-0.933	0.000	0.098
100.00	-14.88	-5.22	0.00	-210.07	0.00	210.07	1170.92	585.46	1585.67	794.02	8.26	-0.937	0.000	0.123
105.00	-14.37	-5.11	0.00	-183.97	0.00	183.97	1149.02	574.51	1494.34	748.28	9.27	-0.984	0.000	0.112
110.00	-13.87	-5.01	0.00	-158.40	0.00	158.40	1125.14	562.57	1402.88	702.48	10.32	-1.028	0.000	0.100
115.00	-13.38	-4.90	0.00	-133.36	0.00	133.36	1099.26	549.63	1311.60	656.78	11.42	-1.069	0.000	0.088
117.25	-13.16	-4.86	0.00	-122.33	0.00	122.33	1086.96	543.48	1270.68	636.28	11.93	-1.088	0.000	0.082
117.25	-13.16	-4.86	0.00	-122.33	0.00	122.33	1086.96	543.48	1270.68	636.28	11.93	-1.088	0.000	0.082
120.00	-12.90	-4.81	0.00	-108.96	0.00	108.96	1071.39	535.70	1220.84	611.33	12.56	-1.109	0.000	0.190
125.00	-12.44	-4.72	0.00	-84.90	0.00	84.90	1041.53	520.77	1130.90	566.29	13.77	-1.195	0.000	0.162
127.00	-10.23	-3.85	0.00	-75.46	0.00	75.46	1029.03	514.52	1095.23	548.43	14.28	-1.228	0.000	0.148
130.00	-9.96	-3.80	0.00	-63.90	0.00	63.90	1009.68	504.84	1042.12	521.83	15.07	-1.274	0.000	0.132
135.00	-9.54	-3.71	0.00	-44.90	0.00	44.90	975.84	487.92	954.81	478.11	16.44	-1.339	0.000	0.104
137.00	-7.32	-2.70	0.00	-37.48	0.00	37.48	961.75	480.87	920.37	460.87	17.00	-1.362	0.000	0.089
140.00	-7.11	-2.65	0.00	-29.39	0.00	29.39	940.01	470.00	869.29	435.29	17.87	-1.392	0.000	0.075
145.00	-6.78	-2.56	0.00	-16.15	0.00	16.15	902.19	451.09	785.88	393.52	19.35	-1.429	0.000	0.049
147.00	-3.35	-1.15	0.00	-11.03	0.00	11.03	886.50	443.25	753.18	377.15	19.95	-1.440	0.000	0.033
148.50	-3.27	-1.13	0.00	-9.30	0.00	9.30	874.53	437.26	728.93	365.00	20.40	-1.447	0.000	0.029
148.50	-3.27	-1.13	0.00	-9.30	0.00	9.30	728.28	364.14	584.01	379.17	20.40	-1.447	0.000	0.029
150.00	-3.13	-1.10	0.00	-7.61	0.00	7.61	728.28	364.14	584.01	379.17	20.86	-1.452	0.000	0.024
155.00	-2.66	-1.03	0.00	-2.09	0.00	2.09	728.28	364.14	584.01	379.17	22.38	-1.459	0.000	0.009
157.00	-0.12	-0.02	0.00	-0.03	0.00	0.03	728.28	364.14	584.01	379.17	22.99	-1.459	0.000	0.000
158.50	0.00	-0.02	0.00	0.00	0.00	0.00	728.28	364.14	584.01	379.17	23.45	-1.459	0.000	0.000

Calculated Forces

Structure:	CT46139-A-SBA	**Code:**	TIA-222-G	5/20/2022	
Site Name:	West Haven-rt15 /Woodbridge	**Exposure:**	C		
Height:	158.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 51	

Final Analysis Summary

Structure:	CT46139-A-SBA	**Code:**	TIA-222-G	5/20/2022	
Site Name:	West Haven-rt15 /Woodbridge	**Exposure:**	C		
Height:	158.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 52	

Tower Engineering Solutions

Reactions

Load Case	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)
1.2D + 1.6W 101 mph Wind	34.1	0.00	42.17	0.00	0.00	3881.49
0.9D + 1.6W 101 mph Wind	34.1	0.00	31.62	0.00	0.00	3844.49
1.2D + 1.0Di + 1.0Wi 50 mph Wind	9.0	0.00	66.21	0.00	0.00	1009.00
1.2D + 1.0E	1.8	0.00	42.21	0.00	0.00	231.03
0.9D + 1.0E	1.8	0.00	31.66	0.00	0.00	228.56
1.0D + 1.0W 60 mph Wind	7.5	0.00	35.17	0.00	0.00	851.78

Max Stresses

Load Case	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Elev (ft)	Stress Ratio
1.2D + 1.6W 101 mph Wind	-26.96	-28.59	0.00	-2205.8	0.00	-2205.8	2916.11	1458.0	5347.75	2677.85	52.92	0.833
0.9D + 1.6W 101 mph Wind	-20.03	-28.38	0.00	-2175.0	0.00	-2175.0	2916.11	1458.0	5347.75	2677.85	52.92	0.819
1.2D + 1.0Di + 1.0Wi 50 mph Wind	-28.34	-5.59	0.00	-124.48	0.00	-124.48	1071.39	535.70	1220.84	611.33	120.00	0.230
1.2D + 1.0E	-15.58	-1.47	0.00	-43.91	0.00	-43.91	1071.39	535.70	1220.84	611.33	120.00	0.086
0.9D + 1.0E	-11.69	-1.44	0.00	-43.22	0.00	-43.22	1071.39	535.70	1220.84	611.33	120.00	0.082
1.0D + 1.0W 60 mph Wind	-12.90	-4.81	0.00	-108.96	0.00	-108.96	1071.39	535.70	1220.84	611.33	120.00	0.190

Additional Steel Summary

			Intermediate Connectors			Lower Termination				Upper Termination				Max Member			
Elev From (ft)	Elev To (ft)	Member	VQ/I (lb/in)	Vu (kips)	phi Vn (kips)	MQ/I (kips)	phi Vn (kips)	Num Reqd	Num Actual	MQ/I (kips)	phi Vn (kips)	Num Reqd	Num Actual	Pu (kips)	phi Pn (kips)	phi Tn (kips)	Ratio
0.0	29.8	(2) PLT-7.25x1.5(31mm Hole)	328.6	4.93	37.1	376.2	37.1	11	13	368.2	37.1	10		386.05	478.8	436.34	0.885
0.0	7.4	(2) PLT-7.25x1.5(31mm Hole)	232.6	3.49	37.1	308.9	37.1	9	9	303.8	37.1	9	9	308.86	478.8	436.34	0.708
7.4	29.8	(1) PLT-7.25x1.5(31mm Hole)	328.6	4.93	37.1	386.0	37.1	11	13	368.2	37.1	10		386.05	478.8	436.34	0.885
29.8	50.0	(3) PLT-6.5x1.5(31mm Hole)	342.8	6.17	37.1	345.0	37.1	10	13	325.8	37.1	9	12	344.97	425.1	381.49	0.904
96.8	117.3	(3) PLT-5"x1.5" (1.25" Hole)	-582.9	-12.24	37.1	203.0	37.1	6	9	176.1	37.1	5	7	246.36	323.3	269.65	0.914

Base Plate Summary

Structure:	CT46139-A-SB		**Code:**	TIA-222-G	5/20/2022
Site Name:	West Haven-rt15 /Woodbridge		**Exposure:**	C	
Height:	158.50 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 53

Tower Engineering Solutions

Reactions	
Original Design	
Moment (kip-ft):	2913.30
Axial (kip):	22.90
Shear (kip):	28.25
Analysis (1.2D + 1.6W)	
Moment (kip-ft):	3881.49
Axial (kip):	42.17
Shear (kip):	34.10

Base Plate	
Yield (ksi):	60.00
Width (in):	72.00
Style:	Round
Polygon Sides:	0.00
Clip Length (in):	0.00
Effective Len (in):	15.04
Moment (kip-in):	599.49
Allow Stress (ksi):	81.00
Applied Stress (ksi):	77.76
Stress Ratio:	0.96

Anchor Bolts	
Bolt Circle:	66.00
Number Bolts:	16.00
Bolt Type:	2.25" 18J
Bolt Diameter (in):	2.25
Yield (ksi):	75.00
Ultimate (ksi):	100.00
Arrangement:	Radial
Cluster Dist (in):	0.00
Start Angle (deg):	0.00
Compression	
Force (kip):	180.57
Allowable (kip):	260.00
Ratio:	0.71
Tension	
Force (kip):	172.29
Allowable (kip):	260.00
Ratio:	0.68

Monopole Mat Foundation Design

				Date
				5/20/2022
	Customer Name:	Dish Wireless	**EIA/TIA Standard:**	TIA-222-G
	Site Name:		**Structure Height (Ft.):**	158.5
	Site Number:	CT46139-A-SBA	**Engineer Name:**	J. Tibbetts
	Engr. Number:	129356	**Engineer Login ID:**	

Foundation Info Obtained from: Drawings/Calculations

Structure Type: Monopole

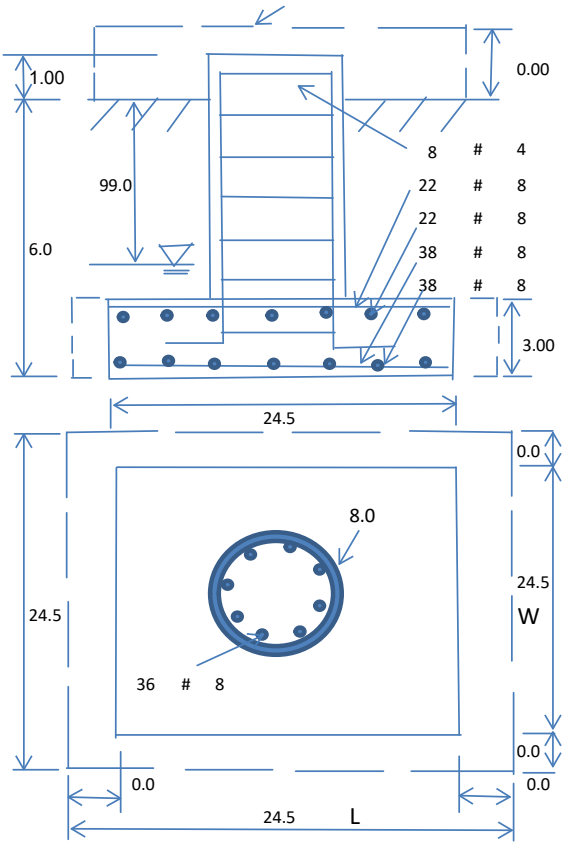
Analysis or Design? Analysis

Base Reactions (Factored):

Axial Load (Kips):	42.2	Shear Force (Kips):	34.1
Uplift Force (Kips):	0.0	Moment (Kips-ft):	3881.5
Allowable overstress %:	5.0%		

Foundation Geometries:

		Mods required -Yes/No ?:	No
Diameter of Pier (ft.):	8.0	Depth of Base BG (ft.):	6.0
Pier Height A. G. (ft.):	1.00	Thickness of Pad (ft):	3.00
Length of Pad (ft.):	24.5	Width of Pad (ft.):	24.5
Final Length of pad (ft)	24.5	Final width of pad (ft):	24.5



Material Properties and Reabr Info:

Concrete Strength (psi):	4000	Steel Elastic Modulus:	29000	ksi
Vertical bar yield (ksi)	60	Tie steel yield (ksi):	60	
Vertical Rebar Size #:	8	Tie / Stirrup Size #:	4	
Qty. of Vertical Rebars:	36	Tie Spacing (in):	12.0	
Pad Rebar Yield (Ksi):	60	Pad Steel Rebar Size (#):	8	
Concrete Cover (in.):	3	Unit Weight of Concrete:	150.0	pcf

Rebar at the bottom of the concrete pad:

Qty. of Rebar in Pad (L):	38	Qty. of Rebar in Pad (W):	38

Rebar at the top of the concrete pad:

Qty. of Rebar in Pad (L):	22	Qty. of Rebar in Pad (W):	22
Apply 1.35 factor for e/w Per G:	1.35		

Soil Design Parameters:

Soil Unit Weight (pcf):	120.0	Soil Buoyant Weight:	57.6	Pcf		
Water Table B.G.S. (ft):	99.0	Unit Weight of Water:	62.4	pcf	Angle from Top of Pad:	30
Ultimate Bearing Pressure (psf):	16000	Ultimate Skin Friction:	0	Psf	Angle from Bottm of Pad:	25
Consider Friction for O.T.M. (Y/N):	No	Consider Friction for bearing (Y/N):	No		Angle from Bottm of Pad:	25
Consider soil hor. resist. for OTM.:	Yes	Reduction factor on the maximum soil bearing pressure:			1.00	

Foundation Analysis and Design: Uplift Strength Reduction Factor: 0.75 — Compression Strength Reduction Factor: 0.75

Total Dry Soil Volume (cu. Ft.):	1649.95	Total Dry Soil Weight (Kips):	197.99
Total Buoyant Soil Volume (cu. Ft.):	0.00	Total Buoyant Soil Weight (Kips):	0.00
Total Effective Soil Weight (Kips):	197.99	Weight from the Concrete Block at Top (K):	0.00
Total Dry Concrete Volume (cu. Ft.):	2001.81	Total Dry Concrete Weight (Kips):	300.27
Total Buoyant Concrete Volume (cu. Ft.):	0.00	Total Buoyant Concrete Weight (Kips):	0.00
Total Effective Concrete Weight (Kips):	300.27	Total Vertical Load on Base (Kips):	540.47

Check Soil Capacities:

					Load/ Capacity Ratio	
Calculated Maxium Net Soil Pressure under the base (psf):	3006	<	Allowable Factored Soil Bearing (psf):	12000	0.25	OK!
Allowable Foundation Overturning Resistance (kips-ft.):	6010.3	>	Design Factored Momont (kips-ft):	3968	0.66	OK!
Factor of Safety Against Overturning (O. R. Moment/Design Moment):	1.51	OK!				

Check the capacities of Reinforceing Concrete:

Strength reduction factor (Flexure and axial tension):	0.90		Strength reduction factor (Shear):	0.75		
Strength reduction factor (Axial compresion):	0.65		Wind Load Factor on Concrete Design:	1.00		
					Load/ Capacity Ratio	
(1) Concrete Pier:						
Vertical Steel Rebar Area (sq. in./each):	0.79		Tie / Stirrup Area (sq. in./each):	0.20		
Calculated Moment Capacity (Mn,Kips-Ft):	5646.8	>	Design Factored Moment (Mu, Kips-F	4017.9	0.71	OK!
Calculated Shear Capacity (Kips):	840.3	>	Design Factored Shear (Kips):	34.1	0.04	OK!
Calculated Tension Capacity (Tn, Kips):	1535.8	>	Design Factored Tension (Tu Kips):	0.0	0.00	OK!
Calculated Compression Capacity (Pn, Kips):	12746.9	>	Design Factored Axial Load (Pu Kips):	42.2	0.00	OK!
Moment & Axial Strength Combination:	0.71	OK!	Check Tie Spacing (Design/Required):		1	OK!
Pier Reinforcement Ratio:	0.004		Reinforcement Ratio is too small			
(2).Concrete Pad:						
One-Way Design Shear Capacity (L-Direction, Kips):	906.5	>	One-Way Factored Shear (L-D. Kips):	224.0	0.25	OK!
One-Way Design Shear Capacity (W-Direction, Kips):	906.5	>	One-Way Factored Shear (W-D., Kips)	224.0	0.25	OK!
One-Way Design Shear Capacity (Corner-Corner. Kips):	785.5	>	One-Way Factored Shear (C-C, Kips):	219.9	0.28	OK!
Lower Steel Pad Reinforcement Ratio (L-Direct.):	0.0031	OK!	Lower Steel Pad Reinf. Ratio (W-Direc	0.0031		
Lower Steel Pad Moment Capacity (L-Direction. Kips-ft):	4268.7	>	Moment at Bottom (L-Dir. K-Ft):	1161.0	0.27	OK!
Lower Steel Pad Moment Capacity (W-Direction. Kips-ft):	4268.7	>	Moment at Bottom (W-Dir. K-Ft):	1161.0	0.27	OK!
Lower Steel Pad Moment Capacity (Corner-Corner,K-ft):	5985.2	>	Moment at Bottom (C-C Dir. K-Ft):	1641.9	0.27	OK!
Upper Steel Pad Reinforcement Ratio (L-Direct.):	0.0018	OK!	Upper Steel Reinf. Ratio (W-Dir.):	0.0018		
Upper Steel Pad Moment Capacity (L-Direc. Kips-ft):	2501.0	>	Moment at the top (L-Dir K-Ft):	535.0	0.21	OK!
Upper Steel Pad Moment Capacity (W-Direc. Kips-ft):	2501.0	>	Moment at the top (W-Dir K-Ft):	535.0	0.21	OK!
Upper Steel Pad Moment Capacity (Corner-Corner. K-ft):	3519.7	>	Moment at the top (C-C Dir. K-Ft):	505.9	0.14	OK!
(3).Check Punching Shear Capacity due to Moment in the Pier:						
Moment transferred by punching shear:	1552.6	k-ft.	Max. factored shear stress v_{u_CD}:		3.0	Psi
Max. factored shear stress v_{u_AB}:	8.2	Psi	Factored shear Strength ϕv_n:		189.7	Psi
Max. factored shear stress v_u:	8.2	Psi	Check Usage of Punching Shear Capacity:		0.04	OK!

Exhibit E

Mount Analysis

May 25, 2022

Sherri Knapik
SBA Network Services, LLC.
134 Flanders Road, Suite 125
Westborough, MA 01581
(508) 251-0720 x 3805

MTS Engineering, P.L.L.C.
1717 S. Boulder, Suite 300
Tulsa, OK 74119
(918) 587-4630
towersupport@btgrp.com

Subject:	**Appurtenance Mount Analysis Report**	
Carrier Designation:	***Dish Wireless* Co-Locate**	
	Site Number:	BOHVN00118B
	Site Name:	N/A
***SBA Network Services Designation*:**	**Site Number:**	CT46139-A
	Site Name:	West Haven-rt15 /Woodbridge
	Application Number:	196482, v1
Engineering Firm Designation:	**Project Number:**	149547.003.01
Site Data:	**370 Rockland Road, Guilford, CT, 06437, New Heaven County**	
	Latitude *41.39683*°, Longitude *-72.68880*°	
	Monopole	
	8' Platform Mount	

Dear Ms. Knapik,

We are pleased to submit this **"Appurtenance Mount Analysis Report"** to determine the structural integrity of the antenna mount on the above-mentioned structure.

The purpose of the analysis is to determine acceptability of the mount's stress level. Based on our analysis we have determined the stress level for the mount under the following load case to be:

Proposed Equipment Note: See Table 1 for the final loading configuration	**Sufficient Capacity** **(Passing at 54.2%)**

This analysis utilizes an ultimate 3-second gust wind speed of 121 mph as required by the 2018 Connecticut State Building Code. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

We appreciate the opportunity of providing our continuing professional services to you and *SBA Network Services, LLC.* If you have any questions or need further assistance on this or any other projects, please give us a call.

Mount structural analysis prepared by: Erika Ruiz

Respectfully submitted by: MTS Engineering, P.L.L.C.
COA: BER: 2386985 Expires: 02/01/2023

Chad E. Tuttle, P.E.

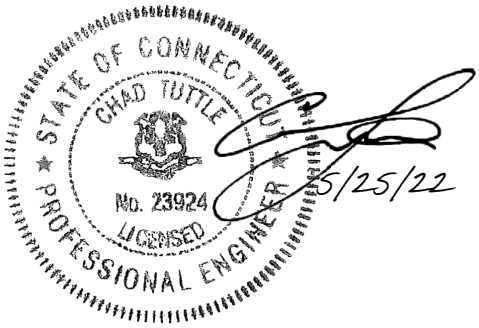


TABLE OF CONTENTS

1) INTRODUCTION

The appurtenance mount consists of Commscope platform mount (Part# MC-PK8-C) at 127 ft., attached to monopole at 370 Rockland Road, Guilford, CT, 06437, New Heaven County. The proposed antenna loading information was obtained from SBA Network Services, LLC. All information provided to us was assumed accurate and complete.

2) ANALYSIS CRITERIA

The structural analysis was performed for this mount in accordance with the ANSI/TIA-222-H-2017 Structural Standard for Antenna Supporting Structures and Antennas and Small Wind Turbine Support Structures using a 3-second gust wind speed of 121 mph with no ice and 50 mph with 1 inch escalated ice thickness. Exposure Category C, Topographic Category 1 and Risk Category II were used in this analysis. In addition, the platform mount has been analyzed for various live loading conditions consisting of a 250-lb man live load applied individually at the midpoint and cantilevered ends of horizontal members as well as a 500-pound man live load applied individually at mount pipe locations using a 3-second gust of 30 mph. The mount was analyzed under 30º increments in the wind direction. The analyzed loading is detailed in Table 1.

Table 1 – Proposed Equipment Information

Loading	RAD Center Elev. (ft.)	Position	Qty.	Description	Note
Proposed	127	1	3	JMA Wireless MX08FRO665-21	1
			3	Fujitsu TA08025-B605	2
			3	Fujitsu TA08025-B604	
		--	1	Raycap RDIDC-9181-PF-48	3

Note:
(1) Proposed Antenna to be installed on the proposed Mount Pipe.
(2) Proposed Equipment to be installed directly behind the Antenna.
(3) Proposed Equipment to be installed on the Mount.

Table 2 - Documents Provided

Documents	Remarks	Reference	Source
Collo App	Proposed Loading	Date: 05/24/2022	SBA Network Services, LLC

3) ANALYSIS PROCEDURE

3.1) Analysis Method

RISA-3D (Version 20.0.1), a commercially available analysis software package, was used to create a three-dimensional model of the mount and calculate member stresses and deflections for various loading cases. Selected output from the analysis is included in Appendix A.

Manufacturers drawing were used to create the model.

3.2) Assumptions

1. The mount was built in accordance with the manufacturer's specifications.
2. The mount has been maintained in accordance with the manufacturer's specifications and is free of damage.
3. The configuration of antennas and other appurtenances are as specified in Table 1.
4. All mount components have been assumed to be in sufficient condition to carry their full design capacity for the analysis.
5. Mount areas and weights are determined from field measurements, standard material properties, and/or manufacturer product data.

6. Serviceability with respect to antenna twist, tilt, roll or lateral translation is not checked and is left to the carrier or tower owner to ensure conformance.
7. All prior structural modifications, if any are assumed to be correctly installed and fully effective.
8. 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.
9. The following material grades were assumed (Unless Noted Otherwise):
   a) Connection Bolts : ASTM A325
   b) Steel Pipe : ASTM A53 (GR. 35)
   c) HSS (Round) : ASTM 500 (GR. B-42)
   d) HSS (Rectangular) : ASTM 500 (GR. B-46)
   e) Channel : ASTM A36 (GR. 36)
   f) Steel Solid Rod : ASTM A36 (GR. 36)
   g) Steel Plate : ASTM A36 (GR. 36)
   h) Steel Angle : ASTM A36 (GR. 36)
   i) UNISTRUT : ASTM A570 (GR. 33)

This analysis may be affected if any assumptions are not valid or have been made in error. MTS Engineering, P.L.L.C. should be notified to determine the effect on the structural integrity of the antenna mounting system.

4) ANALYSIS RESULTS

Table 3 – Mount Component Stresses vs. Capacity

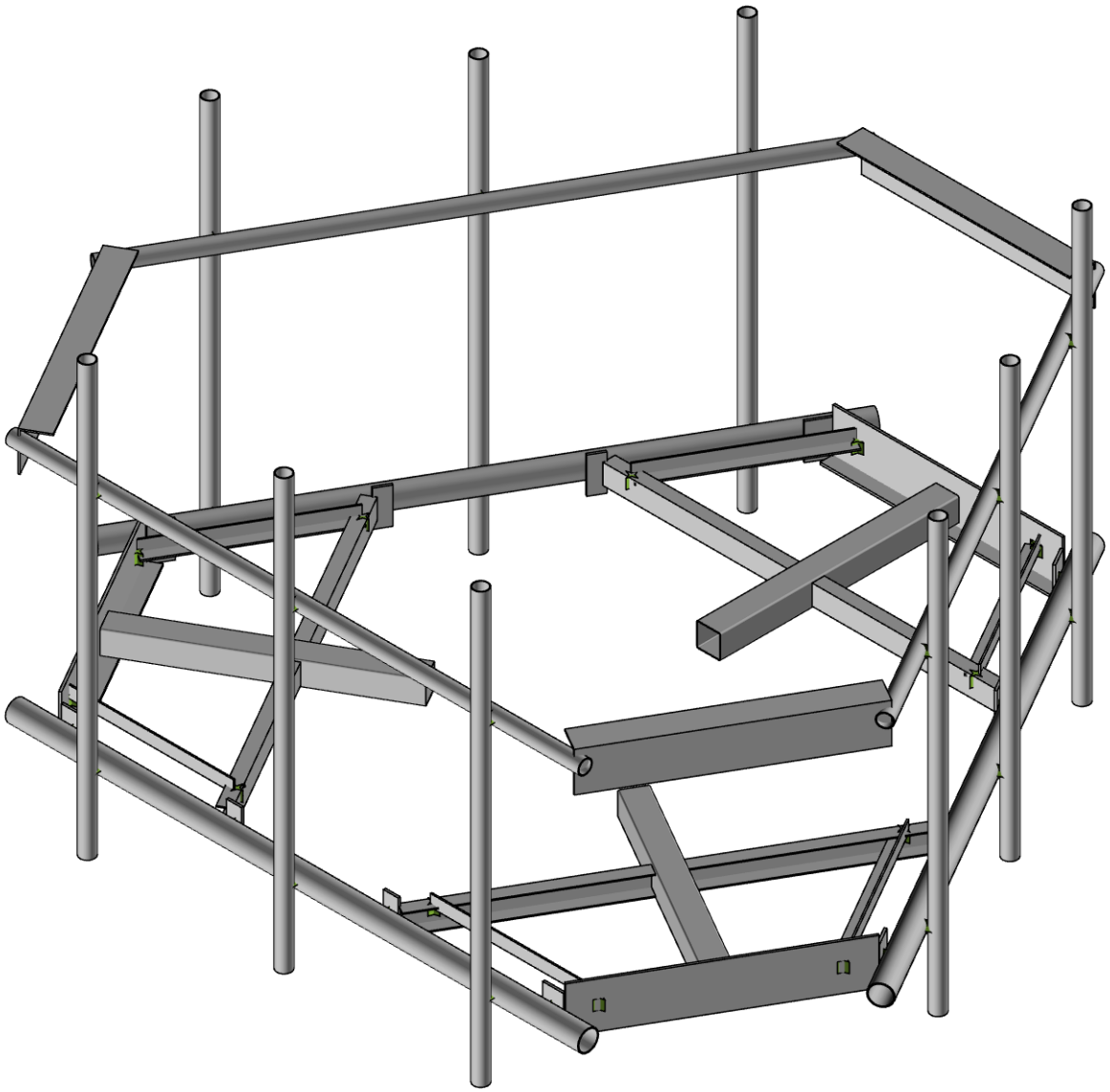
Notes	Component	Elevation (ft.)	% Capacity	Pass / Fail
-	Main Horizontals	127	9.1	Pass
-	Support Rails	127	35.4	Pass
-	Support Tubes	127	54.2	Pass
-	Support Channels	127	31.9	Pass
-	Support Angles	127	40.0	Pass
-	Mount Pipes	127	35.5	Pass
-	Connection Plates	127	19.6	Pass
-	Connection Angles	127	25.6	Pass
-	Connection Bolts	127	28.7	Pass

5) RECOMMENDATIONS

The Commscope platform mount, Part #MC-PK8-C has sufficient capacity to carry the proposed loads and is in compliance with the ANSI/TIA-222-H standard for the proposed loading. (Refer to the RISA output for the specific members).

APPENDIX A

(RISA-3D Output)



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MSP		May 25, 2022
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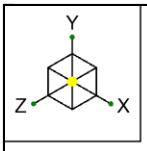

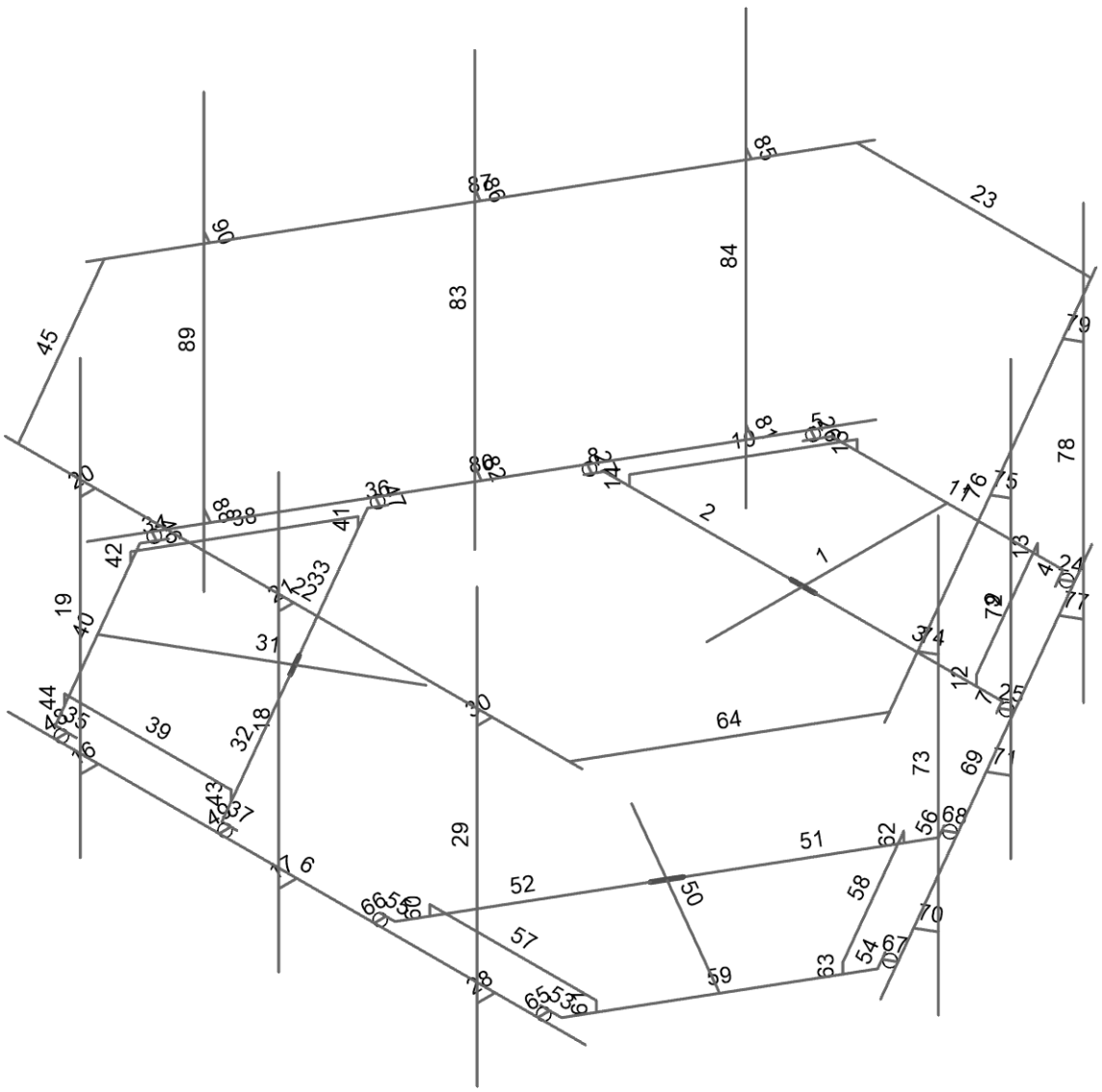

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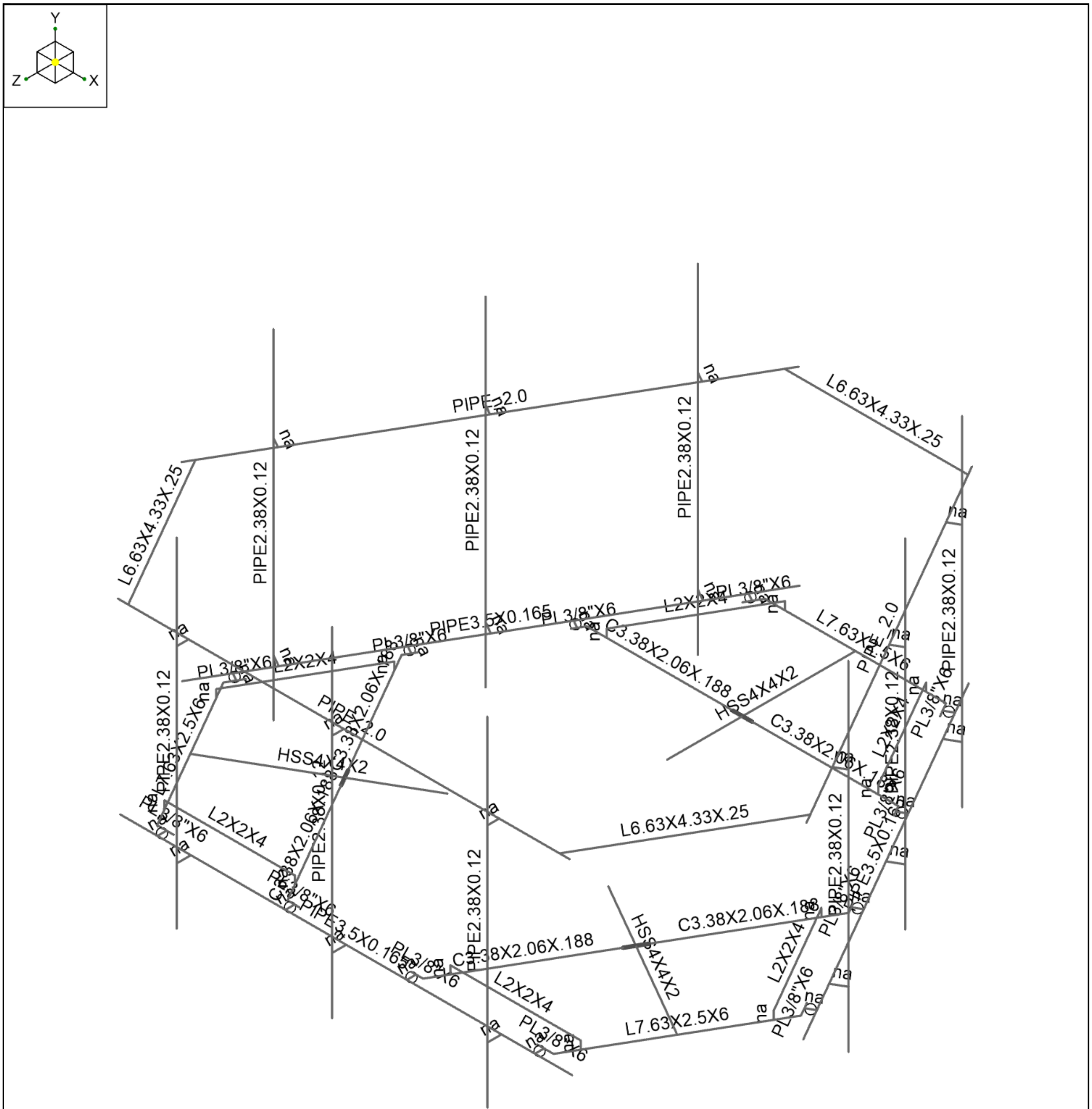

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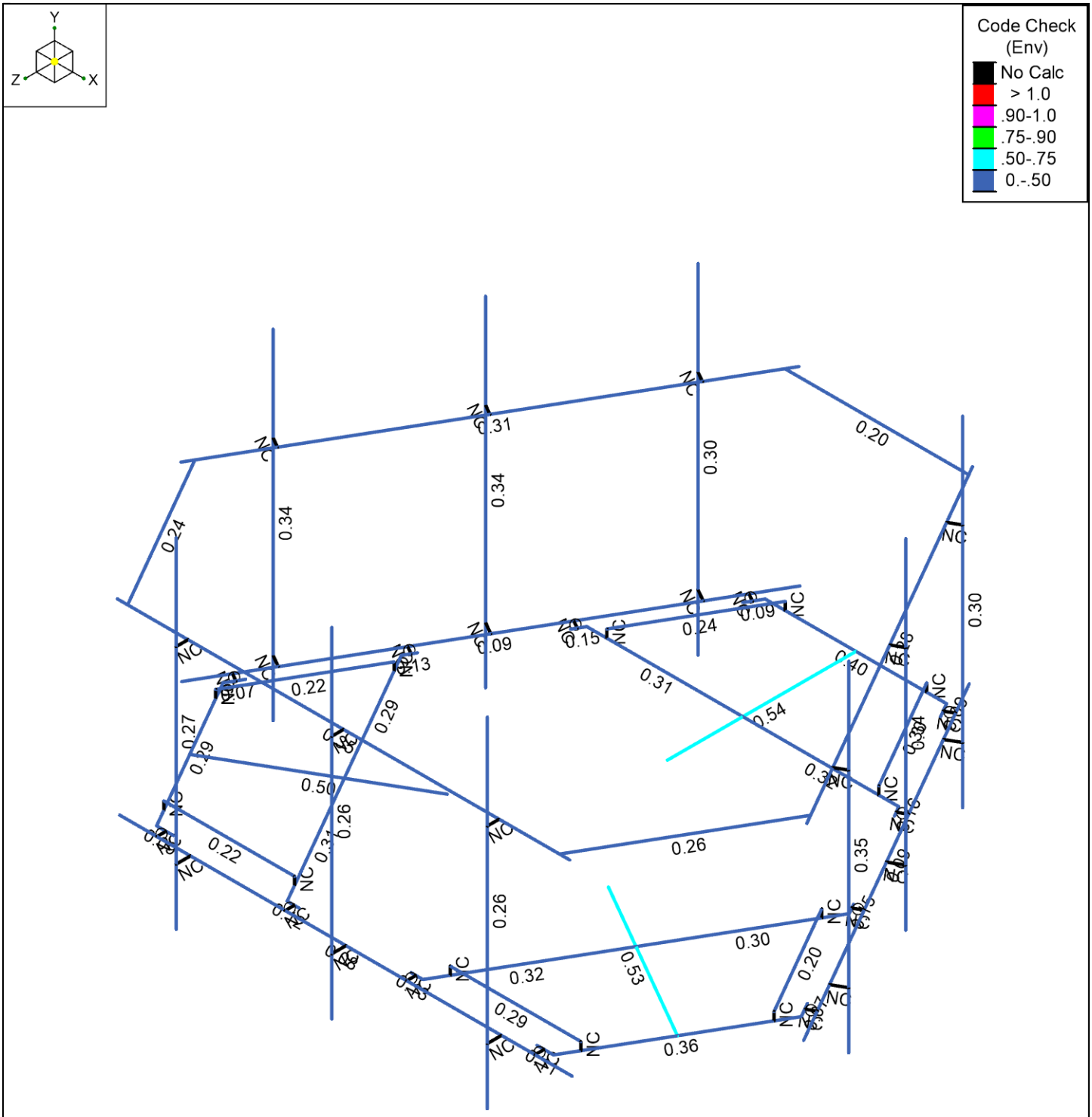

Member Code Checks Displayed (Enveloped)
Envelope Only Solution

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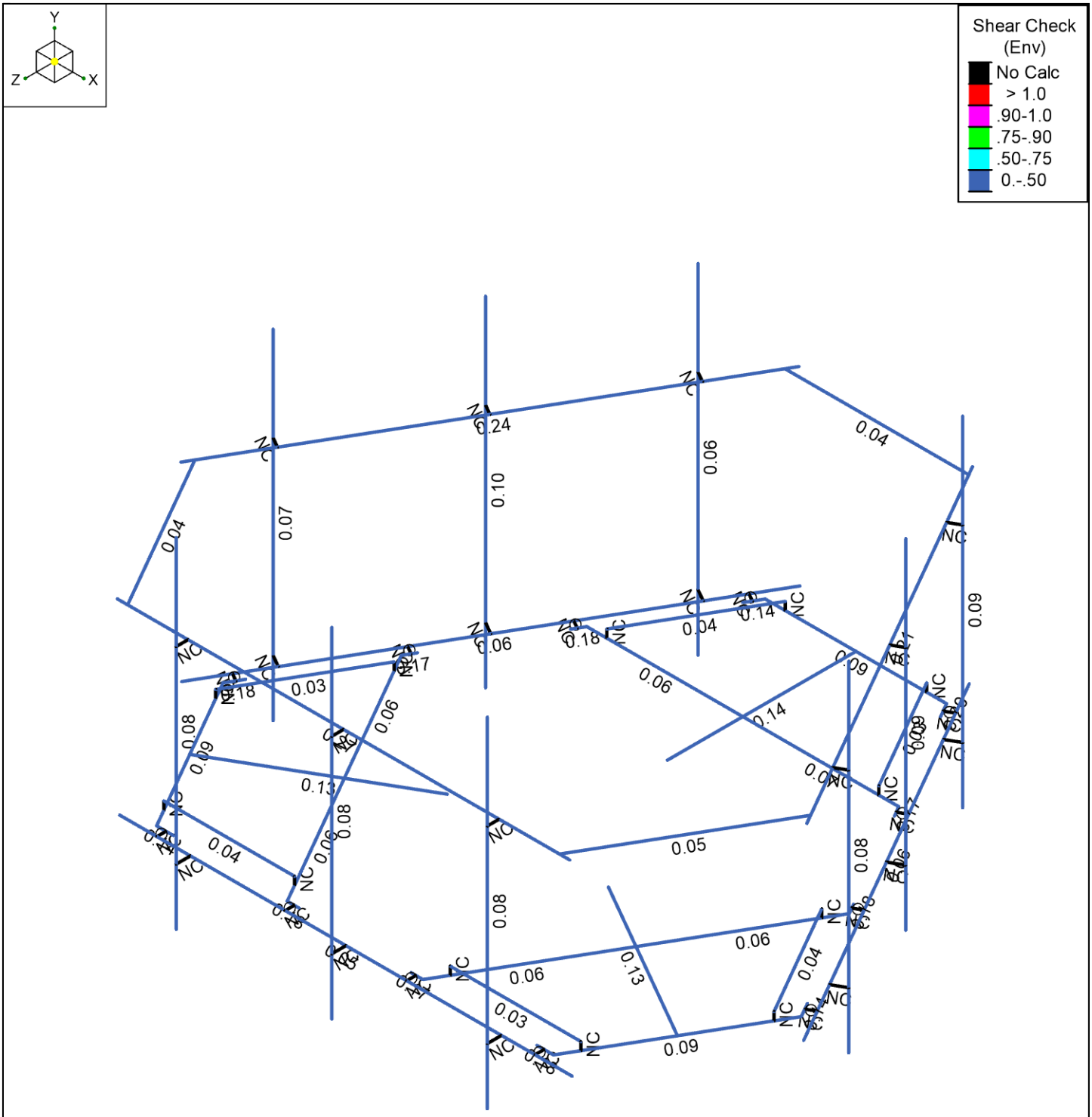

Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

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MSP		May 25, 2022
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ASCE 7 Hazards Report

Address:
No Address at This Location

Standard:	ASCE/SEI 7-16	**Elevation:**	381.06 ft (NAVD 88)
Risk Category:	II	**Latitude:**	41.396833
Soil Class:	D - Default (see Section 11.4.3)	**Longitude:**	-72.688805

Wind

Results:

Wind Speed	121 Vmph
10-year MRI	75 Vmph
25-year MRI	85 Vmph
50-year MRI	92 Vmph
100-year MRI	99 Vmph

Data Source:	ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2
Date Accessed:	Sat May 21 2022

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

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

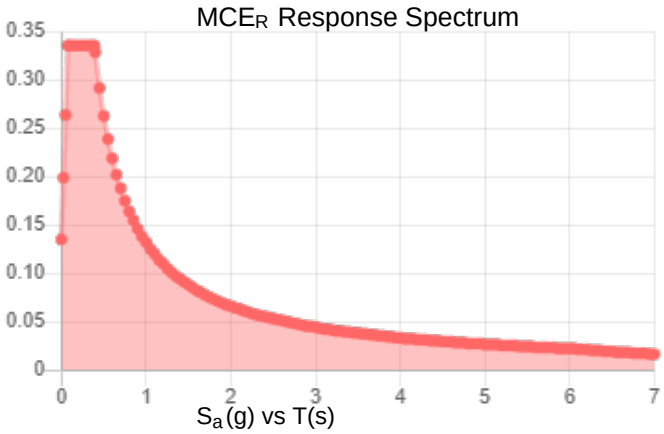
Seismic

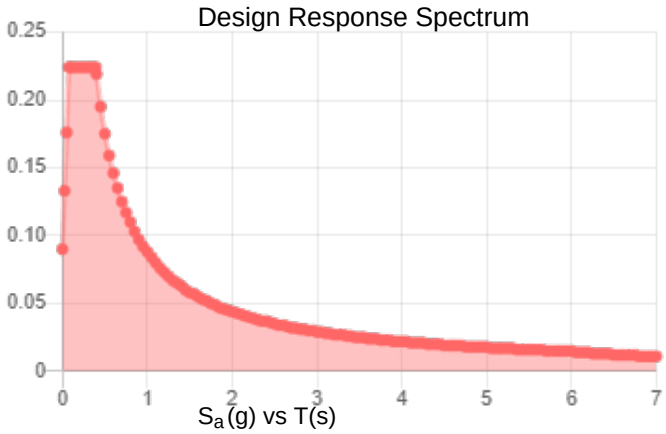
Site Soil Class: D - Default (see Section 11.4.3)

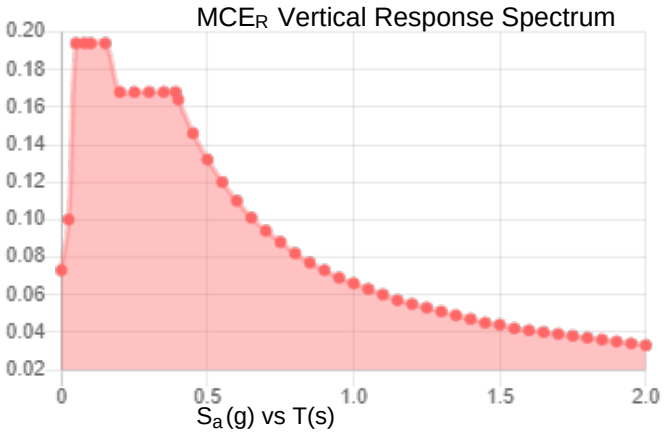
Results:

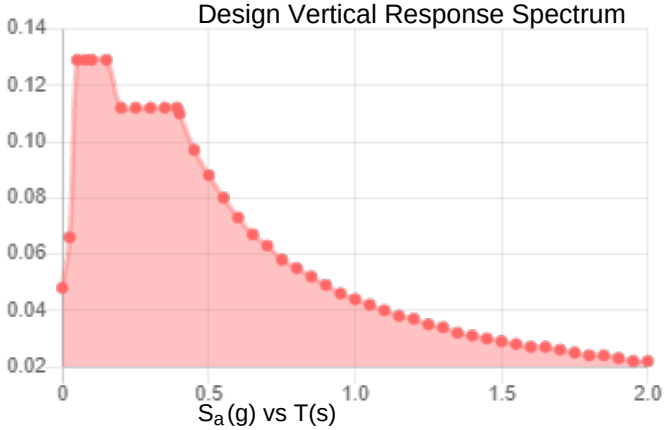
S_S :	0.21	S_{D1} :	0.088
S_1 :	0.055	T_L :	6
F_a :	1.6	PGA :	0.118
F_v :	2.4	PGA_M :	0.184
S_{MS} :	0.336	F_{PGA} :	1.564
S_{M1} :	0.132	I_e :	1
S_{DS} :	0.224	C_v :	0.72

Seismic Design Category B









Data Accessed: **Sat May 21 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.

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:	Sat May 21 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.

PROJECT	**149547.003.01 - West Haven-rt15 /W KSC**
SUBJECT	**Platform Mount Analysis**
DATE	**05/25/22**

B+T Group
1717 S. Boulder, Suite 300
Tulsa, OK 74119
(918) 587-4630

Tower Type		:	Monopole		
Ground Elevation	z_s	:	381	ft	[ASCE7 Hazard Tool]
Tower Height		:	159.00	ft	
Mount Elevation		:	127.00	ft	
Antenna Elevation		:	127.00	ft	
Crest Height		:	0	ft	
Risk Category		:	II		[Table 2-1]
Exposure Category		:	C		[Sec. 2.6.5.1.2]
Topography Category		:	1.00		[Sec. 2.6.6.2]
Wind Velocity	V	:	121	mph	[ASCE7 Hazard Tool]
Ice wind Velocity	V_i	:	50	mph	[ASCE7 Hazard Tool]
Service Velocity	V_s	:	30	mph	[ASCE7 Hazard Tool]
Base Ice thickness	t_i	:	1.00	in	[ASCE7 Hazard Tool]
Seismic Design Cat.		:	B		[ASCE7 Hazard Tool]
	S_S	:	0.21		
	S_1	:	0.06		
	S_{DS}	:	0.22		
	S_{D1}	:	0.09		
Gust Factor	G_h	:	1.00		[Sec. 16.6]
Pressure Coefficient	K_z	:	1.33		[Sec. 2.6.5.2]
Topography Facto	K_{zt}	:	1.00		[Sec. 2.6.6]
Elevation Factor	K_e	:	0.99		[Sec. 2.6.8]
Directionality Factor	K_d	:	0.95		[Sec. 16.6]
Shielding Factor	K_a	:	0.90		[Sec. 16.6]
Design Ice Thickness	t_{iz}	:	1.14	in	[Sec. 2.6.10]
Importance Factor	I_e	:	1		[Table 2-3]
Response Coefficient	C_s	:	0.112		[Sec. 2.7.7.1]
Amplification	A_s	:	2.194969		[Sec. 16.7]
	q_z	:	46.74	psf	

PROJECT	149547.003.01 - West Haven-rt15 /W KSC
SUBJECT	**Platform Mount Analysis**
DATE	**05/25/22**

B+T Group
1717 S. Boulder, Suite 300
Tulsa, OK 74119
(918) 587-4630

Manufacturer	Model	Qty	Height (in^2)	Width (in^2)	Depth (in^2)	Weight (lbs)	C_aA_a (N) (ft^2)	C_aA_a (T) (ft^2)	C_aA_a (N) Ice (ft^2)	C_aA_a (T) Ice (ft^2)	$F_{A (N)}$ (k)	$F_{A (T)}$ (k)	$F_{A (N)}$ Ice (k)	$F_{A (T)}$ Ice (k)
JMA WIRELESS	MX08FRO665-21	0.5	72.0	20.0	8.0	64.5	6.24	2.93	7.18	3.89	0.26	0.11	0.04	0.02
JMA WIRELESS	MX08FRO665-21	0.5					6.24	2.93	7.18	3.89	0.26	0.11	0.04	0.02
Fujitsu	TA08025-B605	1	15.8	15.0	9.1	75.0	1.96	1.19	2.59	1.70	0.08	0.05	0.01	0.01
Fujitsu	TA08025-B604	1	15.8	15.0	7.9	63.9	1.96	1.03	2.59	1.53	0.08	0.04	0.01	0.01
JMA WIRELESS	MX08FRO665-21	0.5	72.0	20.0	8.0	64.5	6.24	2.93	7.18	3.89	0.26	0.11	0.04	0.02
JMA WIRELESS	MX08FRO665-21	0.5					6.24	2.93	7.18	3.89	0.26	0.11	0.04	0.02
Fujitsu	TA08025-B605	1	15.8	15.0	9.1	75.0	1.96	1.19	2.59	1.70	0.08	0.05	0.01	0.01
Fujitsu	TA08025-B604	1	15.8	15.0	7.9	63.9	1.96	1.03	2.59	1.53	0.08	0.04	0.01	0.01
JMA WIRELESS	MX08FRO665-21	0.5	72.0	20.0	8.0	64.5	6.24	2.93	7.18	3.89	0.26	0.11	0.04	0.02
JMA WIRELESS	MX08FRO665-21	0.5					6.24	2.93	7.18	3.89	0.26	0.11	0.04	0.02
Fujitsu	TA08025-B605	1	15.8	15.0	9.1	75.0	1.96	1.19	2.59	1.70	0.08	0.05	0.01	0.01
Fujitsu	TA08025-B604	1	15.8	15.0	7.9	63.9	1.96	1.03	2.59	1.53	0.08	0.04	0.01	0.01
RAYCAP	RDIDC-9181-PF-48	1	16.6	14.6	8.2	21.9	2.01	1.13	2.65	1.64	0.08	0.05	0.01	0.01

Node Coordinates

	Label	X [ft]	Y [ft]	Z [ft]	Detach From Diaphragm
1	1	0	0	-1.64478	
2	2	0	0	-4.978113	
3	3	0	0	-2.978113	
4	4	2.758333	0	-2.978113	
5	5	-2.758333	0	-2.978113	
6	6	-1.603633	0	-4.978113	
7	7	1.603633	0	-4.978113	
8	8	1.749466	0	-4.725523	
9	9	-1.749466	0	-4.725523	
10	10	1.686966	0	-4.833776	
11	11	1.826793	0	-4.914505	
12	12	-1.686966	0	-4.833776	
13	13	-1.826793	0	-4.914505	
14	14	-3.999998	0	4.039302	
15	15	3.999998	0	4.039302	
16	16	2.8625	0	-2.797691	
17	17	2.820833	0	-2.869861	
18	18	2.96066	0	-2.95059	
19	19	-2.8625	0	-2.797691	
20	20	-2.820833	0	-2.869861	
21	21	-2.96066	0	-2.95059	
22	22	-1.25	0.140833	-4.978113	
23	23	-2.404701	0.140833	-2.978113	
24	24	2.404701	0.140833	-2.978113	
25	25	1.25	0.140833	-4.978113	
26	26	-1.25	0	-4.978113	
27	27	-2.404701	0	-2.978113	
28	28	2.404701	0	-2.978113	
29	29	1.25	0	-4.978113	
30	30	-2.749998	0	4.039302	
31	31	0.000002	0	4.039302	
32	32	-2.749998	0	4.289302	
33	33	0.000002	0	4.289302	
34	34	-2.749998	-1	4.289302	
35	35	0.000002	-1	4.289302	
36	36	-2.749998	5	4.289302	
37	37	0.000002	5	4.289302	
38	38	-2.749998	3.333337	4.289302	
39	39	0.000002	3.333337	4.289302	
40	40	-2.749998	3.333337	4.080968	
41	41	0.000002	3.333337	4.080968	
42	42	-4	3.333337	4.080968	
43	43	4	3.333337	4.080968	
44	44	1.625002	3.333337	-5.347352	
45	45	-1.625002	3.333337	-5.347352	
46	46	2.749998	0	4.039302	
47	47	2.749998	0	4.289302	
48	48	2.749998	-1	4.289302	
49	49	2.749998	5	4.289302	
50	50	2.749998	3.333337	4.289302	
51	51	2.749998	3.333337	4.080968	
52	52	0	0	0	
53	53	-1.424421	0	0.82239	
54	54	-4.311173	0	2.489057	
55	55	-2.579122	0	1.489057	

Node Coordinates (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Detach From Diaphragm
56	56	-3.958288	0	-0.89973	
57	57	-1.199955	0	3.877843	
58	58	-3.509356	0	3.877843	
59	59	-5.112989	0	1.10027	
60	60	-4.967156	0	0.847679	
61	61	-3.21769	0	3.877843	
62	62	-5.029656	0	0.955932	
63	63	-5.169483	0	0.875203	
64	64	-3.34269	0	3.877843	
65	65	-3.34269	0	4.039302	
66	66	-3.854122	0	-1.080152	
67	67	-3.895789	0	-1.007982	
68	68	-4.035616	0	-1.088711	
69	69	-0.991622	0	3.877843	
70	70	-1.074956	0	3.877843	
71	71	-1.074956	0	4.039302	
72	72	-3.686173	0.140833	3.571588	
73	73	-1.376772	0.140833	3.571588	
74	74	-3.781472	0.140833	-0.593475	
75	75	-4.936173	0.140833	1.406525	
76	76	-3.686173	0	3.571588	
77	77	-1.376772	0	3.571588	
78	78	-3.781472	0	-0.593475	
79	79	-4.936173	0	1.406525	
80	80	-5.443443	3.333337	1.266383	
81	81	-3.818441	3.333337	4.080968	
82	82	1.424421	0	0.82239	
83	83	4.311173	0	2.489057	
84	84	2.579122	0	1.489057	
85	85	1.199955	0	3.877843	
86	86	3.958288	0	-0.89973	
87	87	5.112989	0	1.10027	
88	88	3.509356	0	3.877843	
89	89	3.21769	0	3.877843	
90	90	4.967156	0	0.847679	
91	91	3.34269	0	3.877843	
92	92	3.34269	0	4.039302	
93	93	5.029656	0	0.955932	
94	94	5.169483	0	0.875203	
95	95	0.991622	0	3.877843	
96	96	1.074956	0	3.877843	
97	97	1.074956	0	4.039302	
98	98	3.854122	0	-1.080152	
99	99	3.895789	0	-1.007982	
100	100	4.035616	0	-1.088711	
101	101	4.936173	0.140833	1.406525	
102	102	3.781472	0.140833	-0.593475	
103	103	1.376772	0.140833	3.571588	
104	104	3.686173	0.140833	3.571588	
105	105	4.936173	0	1.406525	
106	106	3.781472	0	-0.593475	
107	107	1.376772	0	3.571588	
108	108	3.686173	0	3.571588	
109	109	3.818441	3.333337	4.080968	
110	110	5.443443	3.333337	1.266383	

Node Coordinates (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Detach From Diaphragm
111	111	5.498137	0	1.444449	
112	112	1.498139	0	-5.483751	
113	113	4.873137	0	0.361917	
114	114	3.498137	0	-2.019653	
115	115	5.089643	0	0.236917	
116	116	3.714643	0	-2.144653	
117	117	5.089643	-1	0.236917	
118	118	3.714643	-1	-2.144653	
119	119	5.089643	5	0.236917	
120	120	3.714643	5	-2.144653	
121	121	5.089643	3.333337	0.236917	
122	122	3.714643	3.333337	-2.144653	
123	123	4.909221	3.333337	0.341084	
124	124	3.534221	3.333337	-2.040486	
125	125	5.534222	3.333337	1.423617	
126	126	1.534222	3.333337	-5.504586	
127	127	2.123139	0	-4.401219	
128	128	2.339645	0	-4.526219	
129	129	2.339645	-1	-4.526219	
130	130	2.339645	5	-4.526219	
131	131	2.339645	3.333337	-4.526219	
132	132	2.159223	3.333337	-4.422052	
133	133	-1.498139	0	-5.483751	
134	134	-5.498137	0	1.444449	
135	135	-2.123139	0	-4.401219	
136	136	-3.498139	0	-2.019649	
137	137	-2.339645	0	-4.526219	
138	138	-3.714645	0	-2.144649	
139	139	-2.339645	-1	-4.526219	
140	140	-3.714645	-1	-2.144649	
141	141	-2.339645	5	-4.526219	
142	142	-3.714645	5	-2.144649	
143	143	-2.339645	3.333337	-4.526219	
144	144	-3.714645	3.333337	-2.144649	
145	145	-2.159223	3.333337	-4.422052	
146	146	-3.534223	3.333337	-2.040483	
147	147	-1.534222	3.333337	-5.504586	
148	148	-5.534222	3.333337	1.423617	
149	149	-4.873137	0	0.361917	
150	150	-5.089643	0	0.236917	
151	151	-5.089643	-1	0.236917	
152	152	-5.089643	5	0.236917	
153	153	-5.089643	3.333337	0.236917	
154	154	-4.909221	3.333337	0.341084	

Node Boundary Conditions

	Node Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot [k-ft/rad]	Y Rot [k-ft/rad]	Z Rot [k-ft/rad]
1	1	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
2	2						
3	3						
4	4						
5	5						
6	16						
7	17						
8	19						

Node Boundary Conditions (Continued)

	Node Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot [k-ft/rad]	Y Rot [k-ft/rad]	Z Rot [k-ft/rad]
9	20						
10	22						
11	25						
12	26						
13	29						
14	53	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
15	54						
16	55						
17	56						
18	57						
19	66						
20	67						
21	69						
22	70						
23	72						
24	75						
25	76						
26	79						
27	82	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
28	83						
29	84						
30	85						
31	86						
32	95						
33	96						
34	98						
35	99						
36	101						
37	104						
38	105						
39	108						

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [1e⁵°F⁻¹]	Density [k/ft³]	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
8	A500 Gr.C	29000	11154	0.3	0.65	0.49	46	1.4	62	1.3

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rule	Area [in²]	Iyy [in⁴]	Izz [in⁴]	J [in⁴]
1	MF-H1	PIPE3.5X0.165	Beam	Pipe	A500 Gr.C	Typical	1.729	2.409	2.409	4.819
2	MF-H2	PIPE 2.0	Beam	Pipe	A500 Gr.C	Typical	1.02	0.627	0.627	1.25
3	SF-H1	HSS4X4X2	Beam	Tube	A500 Gr.B Rect	Typical	1.77	4.4	4.4	6.91
4	SF-H2	C3.38X2.06X.188	Beam	Channel	A36 Gr.36	Typical	1.339	0.562	2.4	0.015
5	SF-H3	L2X2X4	Beam	Single Angle	A36 Gr.36	Typical	0.944	0.346	0.346	0.021
6	SF-H4	L7.63X2.5X6	Beam	Single Angle	A36 Gr.36	Typical	3.658	1.307	22.092	0.163
7	MF-P1	PIPE2.38X0.12	Column	Pipe	A500 Gr.C	Typical	0.852	0.545	0.545	1.091
8	MF-CP1	PL3/8"X6	Beam	RECT	A36 Gr.36	Typical	2.25	0.026	6.75	0.101

Hot Rolled Steel Section Sets (Continued)

	Label	Shape	Type	Design List	Material	Design Rule	Area [in²]	Iyy [in⁴]	Izz [in⁴]	J [in⁴]
9	MF-H3	L6.63X4.33X.25	Beam	Single Angle	A36 Gr.36	Typical	2.678	4.383	12.502	0.054

Member Primary Data

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
1	1	1	2		SF-H1	Beam	Tube	A500 Gr.B Rect	Typical
2	2	5	3	180	SF-H2	Beam	Channel	A36 Gr.36	Typical
3	3	3	4	180	SF-H2	Beam	Channel	A36 Gr.36	Typical
4	4	7	8		MF-CP1	Beam	RECT	A36 Gr.36	Typical
5	5	6	9		MF-CP1	Beam	RECT	A36 Gr.36	Typical
6	6	14	15		MF-H1	Beam	Pipe	A500 Gr.C	Typical
7	7	16	4		MF-CP1	Beam	RECT	A36 Gr.36	Typical
8	8	5	19		MF-CP1	Beam	RECT	A36 Gr.36	Typical
9	9	25	24		SF-H3	Beam	Single Angle	A36 Gr.36	Typical
10	10	23	22		SF-H3	Beam	Single Angle	A36 Gr.36	Typical
11	11	6	7		SF-H4	Beam	Single Angle	A36 Gr.36	Typical
12	12	28	24		RIGID	None	None	RIGID	Typical
13	13	29	25		RIGID	None	None	RIGID	Typical
14	14	27	23		RIGID	None	None	RIGID	Typical
15	15	26	22		RIGID	None	None	RIGID	Typical
16	16	32	30		RIGID	None	None	RIGID	Typical
17	17	33	31		RIGID	None	None	RIGID	Typical
18	18	35	37		MF-P1	Column	Pipe	A500 Gr.C	Typical
19	19	34	36		MF-P1	Column	Pipe	A500 Gr.C	Typical
20	20	38	40		RIGID	None	None	RIGID	Typical
21	21	39	41		RIGID	None	None	RIGID	Typical
22	22	42	43		MF-H2	Beam	Pipe	A500 Gr.C	Typical
23	23	44	45	180	MF-H3	Beam	Single Angle	A36 Gr.36	Typical
24	24	11	10		RIGID	None	None	RIGID	Typical
25	25	18	17		RIGID	None	None	RIGID	Typical
26	26	13	12		RIGID	None	None	RIGID	Typical
27	27	21	20		RIGID	None	None	RIGID	Typical
28	28	47	46		RIGID	None	None	RIGID	Typical
29	29	48	49		MF-P1	Column	Pipe	A500 Gr.C	Typical
30	30	50	51		RIGID	None	None	RIGID	Typical
31	31	53	54		SF-H1	Beam	Tube	A500 Gr.B Rect	Typical
32	32	57	55	180	SF-H2	Beam	Channel	A36 Gr.36	Typical
33	33	55	56	180	SF-H2	Beam	Channel	A36 Gr.36	Typical
34	34	59	60		MF-CP1	Beam	RECT	A36 Gr.36	Typical
35	35	58	61		MF-CP1	Beam	RECT	A36 Gr.36	Typical
36	36	66	56		MF-CP1	Beam	RECT	A36 Gr.36	Typical
37	37	57	69		MF-CP1	Beam	RECT	A36 Gr.36	Typical
38	38	75	74		SF-H3	Beam	Single Angle	A36 Gr.36	Typical
39	39	73	72		SF-H3	Beam	Single Angle	A36 Gr.36	Typical
40	40	58	59		SF-H4	Beam	Single Angle	A36 Gr.36	Typical
41	41	78	74		RIGID	None	None	RIGID	Typical
42	42	79	75		RIGID	None	None	RIGID	Typical
43	43	77	73		RIGID	None	None	RIGID	Typical
44	44	76	72		RIGID	None	None	RIGID	Typical
45	45	80	81	180	MF-H3	Beam	Single Angle	A36 Gr.36	Typical
46	46	63	62		RIGID	None	None	RIGID	Typical
47	47	68	67		RIGID	None	None	RIGID	Typical
48	48	65	64		RIGID	None	None	RIGID	Typical
49	49	71	70		RIGID	None	None	RIGID	Typical
50	50	82	83		SF-H1	Beam	Tube	A500 Gr.B Rect	Typical
51	51	86	84	180	SF-H2	Beam	Channel	A36 Gr.36	Typical

Member Primary Data (Continued)

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
52	52	84	85	180	SF-H2	Beam	Channel	A36 Gr.36	Typical
53	53	88	89		MF-CP1	Beam	RECT	A36 Gr.36	Typical
54	54	87	90		MF-CP1	Beam	RECT	A36 Gr.36	Typical
55	55	95	85		MF-CP1	Beam	RECT	A36 Gr.36	Typical
56	56	86	98		MF-CP1	Beam	RECT	A36 Gr.36	Typical
57	57	104	103		SF-H3	Beam	Single Angle	A36 Gr.36	Typical
58	58	102	101		SF-H3	Beam	Single Angle	A36 Gr.36	Typical
59	59	87	88		SF-H4	Beam	Single Angle	A36 Gr.36	Typical
60	60	107	103		RIGID	None	None	RIGID	Typical
61	61	108	104		RIGID	None	None	RIGID	Typical
62	62	106	102		RIGID	None	None	RIGID	Typical
63	63	105	101		RIGID	None	None	RIGID	Typical
64	64	109	110	180	MF-H3	Beam	Single Angle	A36 Gr.36	Typical
65	65	92	91		RIGID	None	None	RIGID	Typical
66	66	97	96		RIGID	None	None	RIGID	Typical
67	67	94	93		RIGID	None	None	RIGID	Typical
68	68	100	99		RIGID	None	None	RIGID	Typical
69	69	111	112		MF-H1	Beam	Pipe	A500 Gr.C	Typical
70	70	115	113		RIGID	None	None	RIGID	Typical
71	71	116	114		RIGID	None	None	RIGID	Typical
72	72	118	120		MF-P1	Column	Pipe	A500 Gr.C	Typical
73	73	117	119		MF-P1	Column	Pipe	A500 Gr.C	Typical
74	74	121	123		RIGID	None	None	RIGID	Typical
75	75	122	124		RIGID	None	None	RIGID	Typical
76	76	125	126		MF-H2	Beam	Pipe	A500 Gr.C	Typical
77	77	128	127		RIGID	None	None	RIGID	Typical
78	78	129	130		MF-P1	Column	Pipe	A500 Gr.C	Typical
79	79	131	132		RIGID	None	None	RIGID	Typical
80	80	133	134		MF-H1	Beam	Pipe	A500 Gr.C	Typical
81	81	137	135		RIGID	None	None	RIGID	Typical
82	82	138	136		RIGID	None	None	RIGID	Typical
83	83	140	142		MF-P1	Column	Pipe	A500 Gr.C	Typical
84	84	139	141		MF-P1	Column	Pipe	A500 Gr.C	Typical
85	85	143	145		RIGID	None	None	RIGID	Typical
86	86	144	146		RIGID	None	None	RIGID	Typical
87	87	147	148		MF-H2	Beam	Pipe	A500 Gr.C	Typical
88	88	150	149		RIGID	None	None	RIGID	Typical
89	89	151	152		MF-P1	Column	Pipe	A500 Gr.C	Typical
90	90	153	154		RIGID	None	None	RIGID	Typical

Member Advanced Data

	Label	I Release	I Offset [in]	J Offset [in]	Physical	Deflection Ratio Options	Seismic DR
1	1				Yes	N/A	None
2	2			2	Yes	N/A	None
3	3		2		Yes	N/A	None
4	4				Yes	N/A	None
5	5				Yes	N/A	None
6	6				Yes	N/A	None
7	7				Yes	N/A	None
8	8				Yes	N/A	None
9	9				Yes	N/A	None
10	10				Yes	N/A	None
11	11				Yes	N/A	None
12	12				Yes	** NA **	None
13	13				Yes	** NA **	None

Member Advanced Data (Continued)

	Label	I Release	I Offset [in]	J Offset [in]	Physical	Deflection Ratio Options	Seismic DR
14	14				Yes	** NA **	None
15	15				Yes	** NA **	None
16	16				Yes	** NA **	None
17	17				Yes	** NA **	None
18	18				Yes	** NA **	None
19	19				Yes	** NA **	None
20	20				Yes	** NA **	None
21	21				Yes	** NA **	None
22	22				Yes	N/A	None
23	23				Yes	N/A	None
24	24	OOOOOX			Yes	** NA **	None
25	25	OOOOOX			Yes	** NA **	None
26	26	OOOOOX			Yes	** NA **	None
27	27	OOOOOX			Yes	** NA **	None
28	28				Yes	** NA **	None
29	29				Yes	** NA **	None
30	30				Yes	** NA **	None
31	31				Yes	N/A	None
32	32			2	Yes	N/A	None
33	33		2		Yes	N/A	None
34	34				Yes	N/A	None
35	35				Yes	N/A	None
36	36				Yes	N/A	None
37	37				Yes	N/A	None
38	38				Yes	N/A	None
39	39				Yes	N/A	None
40	40				Yes	N/A	None
41	41				Yes	** NA **	None
42	42				Yes	** NA **	None
43	43				Yes	** NA **	None
44	44				Yes	** NA **	None
45	45				Yes	N/A	None
46	46	OOOOOX			Yes	** NA **	None
47	47	OOOOOX			Yes	** NA **	None
48	48	OOOOOX			Yes	** NA **	None
49	49	OOOOOX			Yes	** NA **	None
50	50				Yes	N/A	None
51	51			2	Yes	N/A	None
52	52		2		Yes	N/A	None
53	53				Yes	N/A	None
54	54				Yes	N/A	None
55	55				Yes	N/A	None
56	56				Yes	N/A	None
57	57				Yes	N/A	None
58	58				Yes	N/A	None
59	59				Yes	N/A	None
60	60				Yes	** NA **	None
61	61				Yes	** NA **	None
62	62				Yes	** NA **	None
63	63				Yes	** NA **	None
64	64				Yes	N/A	None
65	65	OOOOOX			Yes	** NA **	None
66	66	OOOOOX			Yes	** NA **	None
67	67	OOOOOX			Yes	** NA **	None
68	68	OOOOOX			Yes	** NA **	None

Member Advanced Data (Continued)

	Label	I Release	I Offset [in]	J Offset [in]	Physical	Deflection Ratio Options	Seismic DR
69	69				Yes	N/A	None
70	70				Yes	** NA **	None
71	71				Yes	** NA **	None
72	72				Yes	** NA **	None
73	73				Yes	** NA **	None
74	74				Yes	** NA **	None
75	75				Yes	** NA **	None
76	76				Yes	N/A	None
77	77				Yes	** NA **	None
78	78				Yes	** NA **	None
79	79				Yes	** NA **	None
80	80				Yes	N/A	None
81	81				Yes	** NA **	None
82	82				Yes	** NA **	None
83	83				Yes	** NA **	None
84	84				Yes	** NA **	None
85	85				Yes	** NA **	None
86	86				Yes	** NA **	None
87	87				Yes	N/A	None
88	88				Yes	** NA **	None
89	89				Yes	** NA **	None
90	90				Yes	** NA **	None

Hot Rolled Steel Design Parameters

	Label	Shape	Length [ft]	Lcomp top [ft]	Channel Conn.	a [ft]	Function
1	1	SF-H1	3.333	Lbyy	N/A	N/A	Lateral
2	2	SF-H2	2.758	Lbyy	N/A	N/A	Lateral
3	3	SF-H2	2.758	Lbyy	N/A	N/A	Lateral
4	4	MF-CP1	0.292	Lbyy	N/A	N/A	Lateral
5	5	MF-CP1	0.292	Lbyy	N/A	N/A	Lateral
6	6	MF-H1	8	Lbyy	N/A	N/A	Lateral
7	7	MF-CP1	0.208	Lbyy	N/A	N/A	Lateral
8	8	MF-CP1	0.208	Lbyy	N/A	N/A	Lateral
9	9	SF-H3	2.309	Lbyy	N/A	N/A	Lateral
10	10	SF-H3	2.309	Lbyy	N/A	N/A	Lateral
11	11	SF-H4	3.207	Lbyy	N/A	N/A	Lateral
12	18	MF-P1	6	Lbyy	N/A	N/A	Lateral
13	19	MF-P1	6	Lbyy	N/A	N/A	Lateral
14	22	MF-H2	8	Lbyy	N/A	N/A	Lateral
15	23	MF-H3	3.25	Lbyy	N/A	N/A	Lateral
16	29	MF-P1	6	Lbyy	N/A	N/A	Lateral
17	31	SF-H1	3.333	Lbyy	N/A	N/A	Lateral
18	32	SF-H2	2.758	Lbyy	N/A	N/A	Lateral
19	33	SF-H2	2.758	Lbyy	N/A	N/A	Lateral
20	34	MF-CP1	0.292	Lbyy	N/A	N/A	Lateral
21	35	MF-CP1	0.292	Lbyy	N/A	N/A	Lateral
22	36	MF-CP1	0.208	Lbyy	N/A	N/A	Lateral
23	37	MF-CP1	0.208	Lbyy	N/A	N/A	Lateral
24	38	SF-H3	2.309	Lbyy	N/A	N/A	Lateral
25	39	SF-H3	2.309	Lbyy	N/A	N/A	Lateral
26	40	SF-H4	3.207	Lbyy	N/A	N/A	Lateral
27	45	MF-H3	3.25	Lbyy	N/A	N/A	Lateral
28	50	SF-H1	3.333	Lbyy	N/A	N/A	Lateral
29	51	SF-H2	2.758	Lbyy	N/A	N/A	Lateral
30	52	SF-H2	2.758	Lbyy	N/A	N/A	Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length [ft]	Lcomp top [ft]	Channel Conn.	a [ft]	Function
31	53	MF-CP1	0.292	Lbyy	N/A	N/A	Lateral
32	54	MF-CP1	0.292	Lbyy	N/A	N/A	Lateral
33	55	MF-CP1	0.208	Lbyy	N/A	N/A	Lateral
34	56	MF-CP1	0.208	Lbyy	N/A	N/A	Lateral
35	57	SF-H3	2.309	Lbyy	N/A	N/A	Lateral
36	58	SF-H3	2.309	Lbyy	N/A	N/A	Lateral
37	59	SF-H4	3.207	Lbyy	N/A	N/A	Lateral
38	64	MF-H3	3.25	Lbyy	N/A	N/A	Lateral
39	69	MF-H1	8	Lbyy	N/A	N/A	Lateral
40	72	MF-P1	6	Lbyy	N/A	N/A	Lateral
41	73	MF-P1	6	Lbyy	N/A	N/A	Lateral
42	76	MF-H2	8	Lbyy	N/A	N/A	Lateral
43	78	MF-P1	6	Lbyy	N/A	N/A	Lateral
44	80	MF-H1	8	Lbyy	N/A	N/A	Lateral
45	83	MF-P1	6	Lbyy	N/A	N/A	Lateral
46	84	MF-P1	6	Lbyy	N/A	N/A	Lateral
47	87	MF-H2	8	Lbyy	N/A	N/A	Lateral
48	89	MF-P1	6	Lbyy	N/A	N/A	Lateral

Member Point Loads (BLC 1 : Dead)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	29	Y	-0.032	%5
2	29	Y	-0.032	%95
3	29	Y	-0.075	%60
4	29	Y	-0.064	%35
5	29	Y	0	0
6	89	Y	-0.032	%5
7	89	Y	-0.032	%95
8	89	Y	-0.075	%60
9	89	Y	-0.064	%35
10	89	Y	0	0
11	78	Y	-0.032	%5
12	78	Y	-0.032	%95
13	78	Y	-0.075	%60
14	78	Y	-0.064	%35
15	78	Y	0	0
16	1	Y	-0.022	%10
17	1	Y	0	0
18	1	Y	0	0
19	1	Y	0	0
20	1	Y	0	0

Member Point Loads (BLC 2 : 0 Wind - No Ice)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	29	Z	-0.263	%5
2	29	Z	-0.263	%95
3	29	Z	-0.083	%60
4	29	Z	-0.083	%35
5	29	Z	0	0
6	89	Z	-0.263	%5
7	89	Z	-0.263	%95
8	89	Z	-0.083	%60
9	89	Z	-0.083	%35

Member Point Loads (BLC 2 : 0 Wind - No Ice) (Continued)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
10	89	Z	0	0
11	78	Z	-0.263	%5
12	78	Z	-0.263	%95
13	78	Z	-0.083	%60
14	78	Z	-0.083	%35
15	78	Z	0	0
16	1	Z	-0.085	%10
17	1	Z	0	0
18	1	Z	0	0
19	1	Z	0	0
20	1	Z	0	0

Member Point Loads (BLC 3 : 90 Wind - No Ice)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	29	X	-0.105	%5
2	29	X	-0.105	%95
3	29	X	-0.05	%60
4	29	X	-0.044	%35
5	29	X	0	0
6	89	X	-0.105	%5
7	89	X	-0.105	%95
8	89	X	-0.05	%60
9	89	X	-0.044	%35
10	89	X	0	0
11	78	X	-0.105	%5
12	78	X	-0.105	%95
13	78	X	-0.05	%60
14	78	X	-0.044	%35
15	78	X	0	0
16	1	X	-0.047	%10
17	1	X	0	0
18	1	X	0	0
19	1	X	0	0
20	1	X	0	0

Member Point Loads (BLC 4 : 0 Wind - Ice)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	29	Z	-0.045	%5
2	29	Z	-0.045	%95
3	29	Z	-0.014	%60
4	29	Z	-0.014	%35
5	29	Z	0	0
6	89	Z	-0.045	%5
7	89	Z	-0.045	%95
8	89	Z	-0.014	%60
9	89	Z	-0.014	%35
10	89	Z	0	0
11	78	Z	-0.045	%5
12	78	Z	-0.045	%95
13	78	Z	-0.014	%60
14	78	Z	-0.014	%35
15	78	Z	0	0
16	1	Z	-0.015	%10

Member Point Loads (BLC 4 : 0 Wind - Ice) (Continued)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
17	1	Z	0	0
18	1	Z	0	0
19	1	Z	0	0
20	1	Z	0	0

Member Point Loads (BLC 5 : 90 Wind - Ice)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	29	X	-0.018	%5
2	29	X	-0.018	%95
3	29	X	-0.009	%60
4	29	X	-0.007	%35
5	29	X	0	0
6	89	X	-0.018	%5
7	89	X	-0.018	%95
8	89	X	-0.009	%60
9	89	X	-0.007	%35
10	89	X	0	0
11	78	X	-0.018	%5
12	78	X	-0.018	%95
13	78	X	-0.009	%60
14	78	X	-0.007	%35
15	78	X	0	0
16	1	X	-0.008	%10
17	1	X	0	0
18	1	X	0	0
19	1	X	0	0
20	1	X	0	0

Member Point Loads (BLC 6 : 0 Wind - Service)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	29	Z	-0.016	%5
2	29	Z	-0.016	%95
3	29	Z	-0.005	%60
4	29	Z	-0.005	%35
5	29	Z	0	0
6	89	Z	-0.016	%5
7	89	Z	-0.016	%95
8	89	Z	-0.005	%60
9	89	Z	-0.005	%35
10	89	Z	0	0
11	78	Z	-0.016	%5
12	78	Z	-0.016	%95
13	78	Z	-0.005	%60
14	78	Z	-0.005	%35
15	78	Z	0	0
16	1	Z	-0.005	%10
17	1	Z	0	0
18	1	Z	0	0
19	1	Z	0	0
20	1	Z	0	0

Member Point Loads (BLC 7 : 90 Wind - Service)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	29	X	-0.007	%5
2	29	X	-0.007	%95
3	29	X	-0.003	%60
4	29	X	-0.003	%35
5	29	X	0	0
6	89	X	-0.007	%5
7	89	X	-0.007	%95
8	89	X	-0.003	%60
9	89	X	-0.003	%35
10	89	X	0	0
11	78	X	-0.007	%5
12	78	X	-0.007	%95
13	78	X	-0.003	%60
14	78	X	-0.003	%35
15	78	X	0	0
16	1	X	-0.003	%10
17	1	X	0	0
18	1	X	0	0
19	1	X	0	0
20	1	X	0	0

Member Point Loads (BLC 8 : Ice)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	29	Y	-0.095	%5
2	29	Y	-0.095	%95
3	29	Y	-0.034	%60
4	29	Y	-0.033	%35
5	29	Y	0	0
6	89	Y	-0.095	%5
7	89	Y	-0.095	%95
8	89	Y	-0.034	%60
9	89	Y	-0.033	%35
10	89	Y	0	0
11	78	Y	-0.095	%5
12	78	Y	-0.095	%95
13	78	Y	-0.034	%60
14	78	Y	-0.033	%35
15	78	Y	0	0
16	1	Y	-0.034	%10
17	1	Y	0	0
18	1	Y	0	0
19	1	Y	0	0
20	1	Y	0	0

Member Point Loads (BLC 9 : 0 Seismic)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	29	Z	-0.016	%5
2	29	Z	-0.016	%95
3	29	Z	-0.018	%60
4	29	Z	-0.016	%35
5	29	Z	0	0
6	89	Z	-0.016	%5

Member Point Loads (BLC 9 : 0 Seismic) (Continued)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
7	89	Z	-0.016	%95
8	89	Z	-0.018	%60
9	89	Z	-0.016	%35
10	89	Z	0	0
11	78	Z	-0.016	%5
12	78	Z	-0.016	%95
13	78	Z	-0.018	%60
14	78	Z	-0.016	%35
15	78	Z	0	0
16	1	Z	-0.005	%10
17	1	Z	0	0
18	1	Z	0	0
19	1	Z	0	0
20	1	Z	0	0

Member Point Loads (BLC 10 : 90 Seismic)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	29	X	-0.016	%5
2	29	X	-0.016	%95
3	29	X	-0.018	%60
4	29	X	-0.016	%35
5	29	X	0	0
6	89	X	-0.016	%5
7	89	X	-0.016	%95
8	89	X	-0.018	%60
9	89	X	-0.016	%35
10	89	X	0	0
11	78	X	-0.016	%5
12	78	X	-0.016	%95
13	78	X	-0.018	%60
14	78	X	-0.016	%35
15	78	X	0	0
16	1	X	-0.005	%10
17	1	X	0	0
18	1	X	0	0
19	1	X	0	0
20	1	X	0	0

Member Point Loads (BLC 15 : Maint LL 1)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	22	Y	-0.25	%5

Member Point Loads (BLC 16 : Maint LL 2)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	6	Y	-0.25	%5

Member Point Loads (BLC 17 : Maint LL 3)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	87	Y	-0.25	%5

Member Point Loads (BLC 18 : Maint LL 4)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	80	Y	-0.25	%5

Member Point Loads (BLC 19 : Maint LL 5)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	76	Y	-0.25	%5

Member Point Loads (BLC 20 : Maint LL 6)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	69	Y	-0.25	%5

Member Point Loads (BLC 21 : Maint LL 7)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	22	Y	-0.25	%95

Member Point Loads (BLC 22 : Maint LL 8)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	6	Y	-0.25	%95

Member Point Loads (BLC 23 : Maint LL 9)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	87	Y	-0.25	%95

Member Point Loads (BLC 24 : Maint LL 10)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	80	Y	-0.25	%95

Member Point Loads (BLC 25 : Maint LL 11)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	76	Y	-0.25	%95

Member Point Loads (BLC 26 : Maint LL 12)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	69	Y	-0.25	%95

Member Point Loads (BLC 27 : Maint LL 13)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	31	Y	-0.25	%95

Member Point Loads (BLC 28 : Maint LL 14)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	1	Y	-0.25	%95

Member Point Loads (BLC 29 : Maint LL 15)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	50	Y	-0.25	%95

Member Distributed Loads (BLC 2 : 0 Wind - No Ice)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	Z	-0.021	-0.021	0	%100
2	2	Z	-0.017	-0.017	0	%100
3	3	Z	-0.017	-0.017	0	%100
4	4	Z	-0.025	-0.025	0	%100
5	5	Z	-0.025	-0.025	0	%100
6	6	Z	-0.014	-0.014	0	%100
7	7	Z	-0.025	-0.025	0	%100
8	8	Z	-0.025	-0.025	0	%100
9	9	Z	-0.011	-0.011	0	%100
10	10	Z	-0.011	-0.011	0	%100
11	11	Z	-0.035	-0.035	0	%100
12	18	Z	-0.01	-0.01	0	%100
13	19	Z	-0.01	-0.01	0	%100
14	22	Z	-0.01	-0.01	0	%100
15	23	Z	-0.031	-0.031	0	%100
16	29	Z	-0.01	-0.01	0	%100
17	31	Z	-0.021	-0.021	0	%100
18	32	Z	-0.017	-0.017	0	%100
19	33	Z	-0.017	-0.017	0	%100
20	34	Z	-0.025	-0.025	0	%100
21	35	Z	-0.025	-0.025	0	%100
22	36	Z	-0.025	-0.025	0	%100
23	37	Z	-0.025	-0.025	0	%100
24	38	Z	-0.011	-0.011	0	%100
25	39	Z	-0.011	-0.011	0	%100
26	40	Z	-0.035	-0.035	0	%100
27	45	Z	-0.031	-0.031	0	%100
28	50	Z	-0.021	-0.021	0	%100
29	51	Z	-0.017	-0.017	0	%100
30	52	Z	-0.017	-0.017	0	%100
31	53	Z	-0.025	-0.025	0	%100
32	54	Z	-0.025	-0.025	0	%100
33	55	Z	-0.025	-0.025	0	%100
34	56	Z	-0.025	-0.025	0	%100
35	57	Z	-0.011	-0.011	0	%100
36	58	Z	-0.011	-0.011	0	%100
37	59	Z	-0.035	-0.035	0	%100
38	64	Z	-0.031	-0.031	0	%100
39	69	Z	-0.014	-0.014	0	%100
40	72	Z	-0.01	-0.01	0	%100
41	73	Z	-0.01	-0.01	0	%100
42	76	Z	-0.01	-0.01	0	%100
43	78	Z	-0.01	-0.01	0	%100
44	80	Z	-0.014	-0.014	0	%100

Member Distributed Loads (BLC 2 : 0 Wind - No Ice) (Continued)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
45	83	Z	-0.01	-0.01	0	%100
46	84	Z	-0.01	-0.01	0	%100
47	87	Z	-0.01	-0.01	0	%100
48	89	Z	-0.01	-0.01	0	%100

Member Distributed Loads (BLC 3 : 90 Wind - No Ice)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	X	-0.021	-0.021	0	%100
2	2	X	-0.017	-0.017	0	%100
3	3	X	-0.017	-0.017	0	%100
4	4	X	-0.025	-0.025	0	%100
5	5	X	-0.025	-0.025	0	%100
6	6	X	-0.014	-0.014	0	%100
7	7	X	-0.025	-0.025	0	%100
8	8	X	-0.025	-0.025	0	%100
9	9	X	-0.011	-0.011	0	%100
10	10	X	-0.011	-0.011	0	%100
11	11	X	-0.035	-0.035	0	%100
12	18	X	-0.01	-0.01	0	%100
13	19	X	-0.01	-0.01	0	%100
14	22	X	-0.01	-0.01	0	%100
15	23	X	-0.031	-0.031	0	%100
16	29	X	-0.01	-0.01	0	%100
17	31	X	-0.021	-0.021	0	%100
18	32	X	-0.017	-0.017	0	%100
19	33	X	-0.017	-0.017	0	%100
20	34	X	-0.025	-0.025	0	%100
21	35	X	-0.025	-0.025	0	%100
22	36	X	-0.025	-0.025	0	%100
23	37	X	-0.025	-0.025	0	%100
24	38	X	-0.011	-0.011	0	%100
25	39	X	-0.011	-0.011	0	%100
26	40	X	-0.035	-0.035	0	%100
27	45	X	-0.031	-0.031	0	%100
28	50	X	-0.021	-0.021	0	%100
29	51	X	-0.017	-0.017	0	%100
30	52	X	-0.017	-0.017	0	%100
31	53	X	-0.025	-0.025	0	%100
32	54	X	-0.025	-0.025	0	%100
33	55	X	-0.025	-0.025	0	%100
34	56	X	-0.025	-0.025	0	%100
35	57	X	-0.011	-0.011	0	%100
36	58	X	-0.011	-0.011	0	%100
37	59	X	-0.035	-0.035	0	%100
38	64	X	-0.031	-0.031	0	%100
39	69	X	-0.014	-0.014	0	%100
40	72	X	-0.01	-0.01	0	%100
41	73	X	-0.01	-0.01	0	%100
42	76	X	-0.01	-0.01	0	%100
43	78	X	-0.01	-0.01	0	%100
44	80	X	-0.014	-0.014	0	%100
45	83	X	-0.01	-0.01	0	%100
46	84	X	-0.01	-0.01	0	%100
47	87	X	-0.01	-0.01	0	%100
48	89	X	-0.01	-0.01	0	%100

Member Distributed Loads (BLC 4 : 0 Wind - Ice)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	Z	-0.006	-0.006	0	%100
2	2	Z	-0.005	-0.005	0	%100
3	3	Z	-0.005	-0.005	0	%100
4	4	Z	-0.01	-0.01	0	%100
5	5	Z	-0.01	-0.01	0	%100
6	6	Z	-0.002	-0.002	0	%100
7	7	Z	-0.011	-0.011	0	%100
8	8	Z	-0.011	-0.011	0	%100
9	9	Z	-0.005	-0.005	0	%100
10	10	Z	-0.005	-0.005	0	%100
11	11	Z	-0.008	-0.008	0	%100
12	18	Z	-0.002	-0.002	0	%100
13	19	Z	-0.002	-0.002	0	%100
14	22	Z	-0.002	-0.002	0	%100
15	23	Z	-0.008	-0.008	0	%100
16	29	Z	-0.002	-0.002	0	%100
17	31	Z	-0.006	-0.006	0	%100
18	32	Z	-0.005	-0.005	0	%100
19	33	Z	-0.005	-0.005	0	%100
20	34	Z	-0.01	-0.01	0	%100
21	35	Z	-0.01	-0.01	0	%100
22	36	Z	-0.011	-0.011	0	%100
23	37	Z	-0.011	-0.011	0	%100
24	38	Z	-0.005	-0.005	0	%100
25	39	Z	-0.005	-0.005	0	%100
26	40	Z	-0.008	-0.008	0	%100
27	45	Z	-0.008	-0.008	0	%100
28	50	Z	-0.006	-0.006	0	%100
29	51	Z	-0.005	-0.005	0	%100
30	52	Z	-0.005	-0.005	0	%100
31	53	Z	-0.01	-0.01	0	%100
32	54	Z	-0.01	-0.01	0	%100
33	55	Z	-0.011	-0.011	0	%100
34	56	Z	-0.011	-0.011	0	%100
35	57	Z	-0.005	-0.005	0	%100
36	58	Z	-0.005	-0.005	0	%100
37	59	Z	-0.008	-0.008	0	%100
38	64	Z	-0.008	-0.008	0	%100
39	69	Z	-0.002	-0.002	0	%100
40	72	Z	-0.002	-0.002	0	%100
41	73	Z	-0.002	-0.002	0	%100
42	76	Z	-0.002	-0.002	0	%100
43	78	Z	-0.002	-0.002	0	%100
44	80	Z	-0.002	-0.002	0	%100
45	83	Z	-0.002	-0.002	0	%100
46	84	Z	-0.002	-0.002	0	%100
47	87	Z	-0.002	-0.002	0	%100
48	89	Z	-0.002	-0.002	0	%100

Member Distributed Loads (BLC 5 : 90 Wind - Ice)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	X	-0.006	-0.006	0	%100
2	2	X	-0.005	-0.005	0	%100
3	3	X	-0.005	-0.005	0	%100

Member Distributed Loads (BLC 5 : 90 Wind - Ice) (Continued)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
4	4	X	-0.01	-0.01	0	%100
5	5	X	-0.01	-0.01	0	%100
6	6	X	-0.002	-0.002	0	%100
7	7	X	-0.011	-0.011	0	%100
8	8	X	-0.011	-0.011	0	%100
9	9	X	-0.005	-0.005	0	%100
10	10	X	-0.005	-0.005	0	%100
11	11	X	-0.008	-0.008	0	%100
12	18	X	-0.002	-0.002	0	%100
13	19	X	-0.002	-0.002	0	%100
14	22	X	-0.002	-0.002	0	%100
15	23	X	-0.008	-0.008	0	%100
16	29	X	-0.002	-0.002	0	%100
17	31	X	-0.006	-0.006	0	%100
18	32	X	-0.005	-0.005	0	%100
19	33	X	-0.005	-0.005	0	%100
20	34	X	-0.01	-0.01	0	%100
21	35	X	-0.01	-0.01	0	%100
22	36	X	-0.011	-0.011	0	%100
23	37	X	-0.011	-0.011	0	%100
24	38	X	-0.005	-0.005	0	%100
25	39	X	-0.005	-0.005	0	%100
26	40	X	-0.008	-0.008	0	%100
27	45	X	-0.008	-0.008	0	%100
28	50	X	-0.006	-0.006	0	%100
29	51	X	-0.005	-0.005	0	%100
30	52	X	-0.005	-0.005	0	%100
31	53	X	-0.01	-0.01	0	%100
32	54	X	-0.01	-0.01	0	%100
33	55	X	-0.011	-0.011	0	%100
34	56	X	-0.011	-0.011	0	%100
35	57	X	-0.005	-0.005	0	%100
36	58	X	-0.005	-0.005	0	%100
37	59	X	-0.008	-0.008	0	%100
38	64	X	-0.008	-0.008	0	%100
39	69	X	-0.002	-0.002	0	%100
40	72	X	-0.002	-0.002	0	%100
41	73	X	-0.002	-0.002	0	%100
42	76	X	-0.002	-0.002	0	%100
43	78	X	-0.002	-0.002	0	%100
44	80	X	-0.002	-0.002	0	%100
45	83	X	-0.002	-0.002	0	%100
46	84	X	-0.002	-0.002	0	%100
47	87	X	-0.002	-0.002	0	%100
48	89	X	-0.002	-0.002	0	%100

Member Distributed Loads (BLC 6 : 0 Wind - Service)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	Z	-0.001	-0.001	0	%100
2	2	Z	-0.001	-0.001	0	%100
3	3	Z	-0.001	-0.001	0	%100
4	4	Z	-0.002	-0.002	0	%100
5	5	Z	-0.002	-0.002	0	%100
6	6	Z	-0.0005	-0.0005	0	%100
7	7	Z	-0.002	-0.002	0	%100

Member Distributed Loads (BLC 6 : 0 Wind - Service) (Continued)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
8	8	Z	-0.002	-0.002	0	%100
9	9	Z	-0.0007	-0.0007	0	%100
10	10	Z	-0.0007	-0.0007	0	%100
11	11	Z	-0.002	-0.002	0	%100
12	18	Z	-0.0003	-0.0003	0	%100
13	19	Z	-0.0003	-0.0003	0	%100
14	22	Z	-0.0003	-0.0003	0	%100
15	23	Z	-0.002	-0.002	0	%100
16	29	Z	-0.0003	-0.0003	0	%100
17	31	Z	-0.001	-0.001	0	%100
18	32	Z	-0.001	-0.001	0	%100
19	33	Z	-0.001	-0.001	0	%100
20	34	Z	-0.002	-0.002	0	%100
21	35	Z	-0.002	-0.002	0	%100
22	36	Z	-0.002	-0.002	0	%100
23	37	Z	-0.002	-0.002	0	%100
24	38	Z	-0.0007	-0.0007	0	%100
25	39	Z	-0.0007	-0.0007	0	%100
26	40	Z	-0.002	-0.002	0	%100
27	45	Z	-0.002	-0.002	0	%100
28	50	Z	-0.001	-0.001	0	%100
29	51	Z	-0.001	-0.001	0	%100
30	52	Z	-0.001	-0.001	0	%100
31	53	Z	-0.002	-0.002	0	%100
32	54	Z	-0.002	-0.002	0	%100
33	55	Z	-0.002	-0.002	0	%100
34	56	Z	-0.002	-0.002	0	%100
35	57	Z	-0.0007	-0.0007	0	%100
36	58	Z	-0.0007	-0.0007	0	%100
37	59	Z	-0.002	-0.002	0	%100
38	64	Z	-0.002	-0.002	0	%100
39	69	Z	-0.0005	-0.0005	0	%100
40	72	Z	-0.0003	-0.0003	0	%100
41	73	Z	-0.0003	-0.0003	0	%100
42	76	Z	-0.0003	-0.0003	0	%100
43	78	Z	-0.0003	-0.0003	0	%100
44	80	Z	-0.0005	-0.0005	0	%100
45	83	Z	-0.0003	-0.0003	0	%100
46	84	Z	-0.0003	-0.0003	0	%100
47	87	Z	-0.0003	-0.0003	0	%100
48	89	Z	-0.0003	-0.0003	0	%100

Member Distributed Loads (BLC 7 : 90 Wind - Service)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	X	-0.001	-0.001	0	%100
2	2	X	-0.001	-0.001	0	%100
3	3	X	-0.001	-0.001	0	%100
4	4	X	-0.002	-0.002	0	%100
5	5	X	-0.002	-0.002	0	%100
6	6	X	-0.0005	-0.0005	0	%100
7	7	X	-0.002	-0.002	0	%100
8	8	X	-0.002	-0.002	0	%100
9	9	X	-0.0007	-0.0007	0	%100
10	10	X	-0.0007	-0.0007	0	%100
11	11	X	-0.002	-0.002	0	%100

Member Distributed Loads (BLC 7 : 90 Wind - Service) (Continued)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
12	18	X	-0.0003	-0.0003	0	%100
13	19	X	-0.0003	-0.0003	0	%100
14	22	X	-0.0003	-0.0003	0	%100
15	23	X	-0.002	-0.002	0	%100
16	29	X	-0.0003	-0.0003	0	%100
17	31	X	-0.001	-0.001	0	%100
18	32	X	-0.001	-0.001	0	%100
19	33	X	-0.001	-0.001	0	%100
20	34	X	-0.002	-0.002	0	%100
21	35	X	-0.002	-0.002	0	%100
22	36	X	-0.002	-0.002	0	%100
23	37	X	-0.002	-0.002	0	%100
24	38	X	-0.0007	-0.0007	0	%100
25	39	X	-0.0007	-0.0007	0	%100
26	40	X	-0.002	-0.002	0	%100
27	45	X	-0.002	-0.002	0	%100
28	50	X	-0.001	-0.001	0	%100
29	51	X	-0.001	-0.001	0	%100
30	52	X	-0.001	-0.001	0	%100
31	53	X	-0.002	-0.002	0	%100
32	54	X	-0.002	-0.002	0	%100
33	55	X	-0.002	-0.002	0	%100
34	56	X	-0.002	-0.002	0	%100
35	57	X	-0.0007	-0.0007	0	%100
36	58	X	-0.0007	-0.0007	0	%100
37	59	X	-0.002	-0.002	0	%100
38	64	X	-0.002	-0.002	0	%100
39	69	X	-0.0005	-0.0005	0	%100
40	72	X	-0.0003	-0.0003	0	%100
41	73	X	-0.0003	-0.0003	0	%100
42	76	X	-0.0003	-0.0003	0	%100
43	78	X	-0.0003	-0.0003	0	%100
44	80	X	-0.0005	-0.0005	0	%100
45	83	X	-0.0003	-0.0003	0	%100
46	84	X	-0.0003	-0.0003	0	%100
47	87	X	-0.0003	-0.0003	0	%100
48	89	X	-0.0003	-0.0003	0	%100

Member Distributed Loads (BLC 8 : Ice)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	Y	-0.01	-0.01	0	%100
2	2	Y	-0.007	-0.007	0	%100
3	3	Y	-0.007	-0.007	0	%100
4	4	Y	-0.01	-0.01	0	%100
5	5	Y	-0.01	-0.01	0	%100
6	6	Y	-0.006	-0.006	0	%100
7	7	Y	-0.01	-0.01	0	%100
8	8	Y	-0.01	-0.01	0	%100
9	9	Y	-0.006	-0.006	0	%100
10	10	Y	-0.006	-0.006	0	%100
11	11	Y	-0.013	-0.013	0	%100
12	18	Y	-0.005	-0.005	0	%100
13	19	Y	-0.005	-0.005	0	%100
14	22	Y	-0.005	-0.005	0	%100
15	23	Y	-0.013	-0.013	0	%100

Member Distributed Loads (BLC 8 : Ice) (Continued)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
16	29	Y	-0.005	-0.005	0	%100
17	31	Y	-0.01	-0.01	0	%100
18	32	Y	-0.007	-0.007	0	%100
19	33	Y	-0.007	-0.007	0	%100
20	34	Y	-0.01	-0.01	0	%100
21	35	Y	-0.01	-0.01	0	%100
22	36	Y	-0.01	-0.01	0	%100
23	37	Y	-0.01	-0.01	0	%100
24	38	Y	-0.006	-0.006	0	%100
25	39	Y	-0.006	-0.006	0	%100
26	40	Y	-0.013	-0.013	0	%100
27	45	Y	-0.013	-0.013	0	%100
28	50	Y	-0.01	-0.01	0	%100
29	51	Y	-0.007	-0.007	0	%100
30	52	Y	-0.007	-0.007	0	%100
31	53	Y	-0.01	-0.01	0	%100
32	54	Y	-0.01	-0.01	0	%100
33	55	Y	-0.01	-0.01	0	%100
34	56	Y	-0.01	-0.01	0	%100
35	57	Y	-0.006	-0.006	0	%100
36	58	Y	-0.006	-0.006	0	%100
37	59	Y	-0.013	-0.013	0	%100
38	64	Y	-0.013	-0.013	0	%100
39	69	Y	-0.006	-0.006	0	%100
40	72	Y	-0.005	-0.005	0	%100
41	73	Y	-0.005	-0.005	0	%100
42	76	Y	-0.005	-0.005	0	%100
43	78	Y	-0.005	-0.005	0	%100
44	80	Y	-0.006	-0.006	0	%100
45	83	Y	-0.005	-0.005	0	%100
46	84	Y	-0.005	-0.005	0	%100
47	87	Y	-0.005	-0.005	0	%100
48	89	Y	-0.005	-0.005	0	%100

Member Distributed Loads (BLC 9 : 0 Seismic)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	Z	-0.002	-0.002	0	%100
2	2	Z	-0.001	-0.001	0	%100
3	3	Z	-0.001	-0.001	0	%100
4	4	Z	-0.002	-0.002	0	%100
5	5	Z	-0.002	-0.002	0	%100
6	6	Z	-0.001	-0.001	0	%100
7	7	Z	-0.002	-0.002	0	%100
8	8	Z	-0.002	-0.002	0	%100
9	9	Z	-0.0008	-0.0008	0	%100
10	10	Z	-0.0008	-0.0008	0	%100
11	11	Z	-0.003	-0.003	0	%100
12	18	Z	-0.0009	-0.0009	0	%100
13	19	Z	-0.0009	-0.0009	0	%100
14	22	Z	-0.0009	-0.0009	0	%100
15	23	Z	-0.002	-0.002	0	%100
16	29	Z	-0.0009	-0.0009	0	%100
17	31	Z	-0.002	-0.002	0	%100
18	32	Z	-0.001	-0.001	0	%100
19	33	Z	-0.001	-0.001	0	%100

Member Distributed Loads (BLC 9 : 0 Seismic) (Continued)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
20	34	Z	-0.002	-0.002	0	%100
21	35	Z	-0.002	-0.002	0	%100
22	36	Z	-0.002	-0.002	0	%100
23	37	Z	-0.002	-0.002	0	%100
24	38	Z	-0.0008	-0.0008	0	%100
25	39	Z	-0.0008	-0.0008	0	%100
26	40	Z	-0.003	-0.003	0	%100
27	45	Z	-0.002	-0.002	0	%100
28	50	Z	-0.002	-0.002	0	%100
29	51	Z	-0.001	-0.001	0	%100
30	52	Z	-0.001	-0.001	0	%100
31	53	Z	-0.002	-0.002	0	%100
32	54	Z	-0.002	-0.002	0	%100
33	55	Z	-0.002	-0.002	0	%100
34	56	Z	-0.002	-0.002	0	%100
35	57	Z	-0.0008	-0.0008	0	%100
36	58	Z	-0.0008	-0.0008	0	%100
37	59	Z	-0.003	-0.003	0	%100
38	64	Z	-0.002	-0.002	0	%100
39	69	Z	-0.001	-0.001	0	%100
40	72	Z	-0.0009	-0.0009	0	%100
41	73	Z	-0.0009	-0.0009	0	%100
42	76	Z	-0.0009	-0.0009	0	%100
43	78	Z	-0.0009	-0.0009	0	%100
44	80	Z	-0.001	-0.001	0	%100
45	83	Z	-0.0009	-0.0009	0	%100
46	84	Z	-0.0009	-0.0009	0	%100
47	87	Z	-0.0009	-0.0009	0	%100
48	89	Z	-0.0009	-0.0009	0	%100

Member Distributed Loads (BLC 10 : 90 Seismic)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	X	-0.002	-0.002	0	%100
2	2	X	-0.001	-0.001	0	%100
3	3	X	-0.001	-0.001	0	%100
4	4	X	-0.002	-0.002	0	%100
5	5	X	-0.002	-0.002	0	%100
6	6	X	-0.001	-0.001	0	%100
7	7	X	-0.002	-0.002	0	%100
8	8	X	-0.002	-0.002	0	%100
9	9	X	-0.0008	-0.0008	0	%100
10	10	X	-0.0008	-0.0008	0	%100
11	11	X	-0.003	-0.003	0	%100
12	18	X	-0.0009	-0.0009	0	%100
13	19	X	-0.0009	-0.0009	0	%100
14	22	X	-0.0009	-0.0009	0	%100
15	23	X	-0.002	-0.002	0	%100
16	29	X	-0.0009	-0.0009	0	%100
17	31	X	-0.002	-0.002	0	%100
18	32	X	-0.001	-0.001	0	%100
19	33	X	-0.001	-0.001	0	%100
20	34	X	-0.002	-0.002	0	%100
21	35	X	-0.002	-0.002	0	%100
22	36	X	-0.002	-0.002	0	%100
23	37	X	-0.002	-0.002	0	%100

Member Distributed Loads (BLC 10 : 90 Seismic) (Continued)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
24	38	X	-0.0008	-0.0008	0	%100
25	39	X	-0.0008	-0.0008	0	%100
26	40	X	-0.003	-0.003	0	%100
27	45	X	-0.002	-0.002	0	%100
28	50	X	-0.002	-0.002	0	%100
29	51	X	-0.001	-0.001	0	%100
30	52	X	-0.001	-0.001	0	%100
31	53	X	-0.002	-0.002	0	%100
32	54	X	-0.002	-0.002	0	%100
33	55	X	-0.002	-0.002	0	%100
34	56	X	-0.002	-0.002	0	%100
35	57	X	-0.0008	-0.0008	0	%100
36	58	X	-0.0008	-0.0008	0	%100
37	59	X	-0.003	-0.003	0	%100
38	64	X	-0.002	-0.002	0	%100
39	69	X	-0.001	-0.001	0	%100
40	72	X	-0.0009	-0.0009	0	%100
41	73	X	-0.0009	-0.0009	0	%100
42	76	X	-0.0009	-0.0009	0	%100
43	78	X	-0.0009	-0.0009	0	%100
44	80	X	-0.001	-0.001	0	%100
45	83	X	-0.0009	-0.0009	0	%100
46	84	X	-0.0009	-0.0009	0	%100
47	87	X	-0.0009	-0.0009	0	%100
48	89	X	-0.0009	-0.0009	0	%100

Member Distributed Loads (BLC 39 : BLC 1 Transient Area Loads)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	39	Y	-0.018	-0.016	0.231	2.309
2	57	Y	-0.018	-0.016	0	2.078
3	58	Y	0.0006163	-0.016	0	1.155
4	58	Y	-0.016	-0.035	1.155	2.309
5	9	Y	-0.026	-0.02	0	1.039
6	9	Y	-0.02	-0.014	1.039	2.078
7	10	Y	-0.01	-0.02	0.231	2.309
8	38	Y	-0.035	-0.016	0	1.155
9	38	Y	-0.016	0.0006163	1.155	2.309

Member Distributed Loads (BLC 40 : BLC 8 Transient Area Loads)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	38	Y	-0.019	-0.009	0	1.155
2	38	Y	-0.009	0.0003349	1.155	2.309
3	39	Y	-0.01	-0.009	0.231	2.309
4	57	Y	-0.01	-0.009	0	2.078
5	58	Y	0.0003349	-0.009	0	1.155
6	58	Y	-0.009	-0.019	1.155	2.309
7	9	Y	-0.014	-0.011	0	1.039
8	9	Y	-0.011	-0.008	1.039	2.078
9	10	Y	-0.005	-0.011	0.231	2.309

Member Area Loads (BLC 1 : Dead)

	Node A	Node B	Node C	Node D	Direction	Load Direction	Magnitude [ksf]
1	72	75	74	73	Y	Two Way	-0.01
2	104	101	102	103	Y	Two Way	-0.01
3	24	25	22	23	Y	Two Way	-0.01

Member Area Loads (BLC 8 : Ice)

	Node A	Node B	Node C	Node D	Direction	Load Direction	Magnitude [ksf]
1	72	75	74	73	Y	Two Way	-0.005
2	104	101	102	103	Y	Two Way	-0.005
3	24	25	22	23	Y	Two Way	-0.005

Node Loads and Enforced Displacements (BLC 11 : Live Load a)

	Node Label	L, D, M	Direction	Magnitude [(k, k-ft), (in, rad), (k*s²/ft, k*s²*ft)]
1	30	L	Y	-0.5
2	135	L	Y	-0.5
3	113	L	Y	-0.5

Node Loads and Enforced Displacements (BLC 12 : Live Load b)

	Node Label	L, D, M	Direction	Magnitude [(k, k-ft), (in, rad), (k*s²/ft, k*s²*ft)]
1	31	L	Y	-0.5
2	136	L	Y	-0.5
3	114	L	Y	-0.5

Node Loads and Enforced Displacements (BLC 13 : Live Load c)

	Node Label	L, D, M	Direction	Magnitude [(k, k-ft), (in, rad), (k*s²/ft, k*s²*ft)]
1	46	L	Y	-0.5
2	149	L	Y	-0.5
3	127	L	Y	-0.5

Basic Load Cases

	BLC Description	Category	Y Gravity	Nodal	Point	Distributed	Area(Member)
1	Dead	DL	-1		20		3
2	0 Wind - No Ice	WLZ			20	48	
3	90 Wind - No Ice	WLX			20	48	
4	0 Wind - Ice	WLZ			20	48	
5	90 Wind - Ice	WLX			20	48	
6	0 Wind - Service	WLZ			20	48	
7	90 Wind - Service	WLX			20	48	
8	Ice	OL1			20	48	3
9	0 Seismic	ELZ			20	48	
10	90 Seismic	ELX			20	48	
11	Live Load a	LL		3			
12	Live Load b	LL		3			
13	Live Load c	LL		3			
14	Live Load d	LL					
15	Maint LL 1	LL			1		
16	Maint LL 2	LL			1		
17	Maint LL 3	LL			1		
18	Maint LL 4	LL			1		

Basic Load Cases (Continued)

	BLC Description	Category	Y Gravity	Nodal	Point	Distributed	Area(Member)
19	Maint LL 5	LL			1		
20	Maint LL 6	LL			1		
21	Maint LL 7	LL			1		
22	Maint LL 8	LL			1		
23	Maint LL 9	LL			1		
24	Maint LL 10	LL			1		
25	Maint LL 11	LL			1		
26	Maint LL 12	LL			1		
27	Maint LL 13	LL			1		
28	Maint LL 14	LL			1		
29	Maint LL 15	LL			1		
30	Maint LL 16	LL					
31	Maint LL 17	LL					
32	Maint LL 18	LL					
33	Maint LL 19	LL					
34	Maint LL 20	LL					
35	Maint LL 21	LL					
36	Maint LL 22	LL					
37	Maint LL 23	LL					
38	Maint LL 24	LL					
39	BLC 1 Transient Area Loads	None				9	
40	BLC 8 Transient Area Loads	None				9	

Load Combinations

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	1.4 Dead	Yes	Y	1	1.4						
2	1.2 D + 1.0 - 0 W	Yes	Y	1	1.2	2	1				
3	1.2 D + 1.0 - 30 W	Yes	Y	1	1.2	2	0.866	3	0.5		
4	1.2 D + 1.0 - 60 W	Yes	Y	1	1.2	3	0.866	2	0.5		
5	1.2 D + 1.0 - 90 W	Yes	Y	1	1.2	3	1				
6	1.2 D + 1.0 - 120 W	Yes	Y	1	1.2	3	0.866	2	-0.5		
7	1.2 D + 1.0 - 150 W	Yes	Y	1	1.2	2	-0.866	3	0.5		
8	1.2 D + 1.0 - 180 W	Yes	Y	1	1.2	2	-1				
9	1.2 D + 1.0 - 210 W	Yes	Y	1	1.2	2	-0.866	3	-0.5		
10	1.2 D + 1.0 - 240 W	Yes	Y	1	1.2	3	-0.866	2	-0.5		
11	1.2 D + 1.0 - 270 W	Yes	Y	1	1.2	3	-1				
12	1.2 D + 1.0 - 300 W	Yes	Y	1	1.2	3	-0.866	2	0.5		
13	1.2 D + 1.0 - 330 W	Yes	Y	1	1.2	2	0.866	3	-0.5		
14	1.2 D + 1.0 - 0 W/Ice	Yes	Y	1	1.2	4	1			8	1
15	1.2 D + 1.0 - 30 W/Ice	Yes	Y	1	1.2	4	0.866	5	0.5	8	1
16	1.2 D + 1.0 - 60 W/Ice	Yes	Y	1	1.2	5	0.866	4	0.5	8	1
17	1.2 D + 1.0 - 90 W/Ice	Yes	Y	1	1.2	5	1			8	1
18	1.2 D + 1.0 - 120 W/Ice	Yes	Y	1	1.2	5	0.866	4	-0.5	8	1
19	1.2 D + 1.0 - 150 W/Ice	Yes	Y	1	1.2	4	-0.866	5	0.5	8	1
20	1.2 D + 1.0 - 180 W/Ice	Yes	Y	1	1.2	4	-1			8	1
21	1.2 D + 1.0 - 210 W/Ice	Yes	Y	1	1.2	4	-0.866	5	-0.5	8	1
22	1.2 D + 1.0 - 240 W/Ice	Yes	Y	1	1.2	5	-0.866	4	-0.5	8	1
23	1.2 D + 1.0 - 270 W/Ice	Yes	Y	1	1.2	5	-1			8	1
24	1.2 D + 1.0 - 300 W/Ice	Yes	Y	1	1.2	5	-0.866	4	0.5	8	1
25	1.2 D + 1.0 - 330 W/Ice	Yes	Y	1	1.2	4	0.866	5	-0.5	8	1
26	1.2 D + 1.0 E - 0	Yes	Y	1	1.2	9	1				
27	1.2 D + 1.0 E - 30	Yes	Y	1	1.2	9	0.866	10	0.5		
28	1.2 D + 1.0 E - 60	Yes	Y	1	1.2	10	0.866	9	0.5		
29	1.2 D + 1.0 E - 90	Yes	Y	1	1.2	10	1				
30	1.2 D + 1.0 E - 120	Yes	Y	1	1.2	10	0.866	9	-0.5		

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
31	1.2 D + 1.0 E - 150	Yes	Y	1	1.2	9	-0.866	10	0.5		
32	1.2 D + 1.0 E - 180	Yes	Y	1	1.2	9	-1				
33	1.2 D + 1.0 E - 210	Yes	Y	1	1.2	9	-0.866	10	-0.5		
34	1.2 D + 1.0 E - 240	Yes	Y	1	1.2	10	-0.866	9	-0.5		
35	1.2 D + 1.0 E - 270	Yes	Y	1	1.2	10	-1				
36	1.2 D + 1.0 E - 300	Yes	Y	1	1.2	10	-0.866	9	0.5		
37	1.2 D + 1.0 E - 330	Yes	Y	1	1.2	9	0.866	10	-0.5		
38	1.2 D + 1.5 LL a + Service - 0 W	Yes	Y	1	1.2	6	1			11	1.5
39	1.2 D + 1.5 LL a + Service - 30 W	Yes	Y	1	1.2	6	0.866	7	0.5	11	1.5
40	1.2 D + 1.5 LL a + Service - 60 W	Yes	Y	1	1.2	7	0.866	6	0.5	11	1.5
41	1.2 D + 1.5 LL a + Service - 90 W	Yes	Y	1	1.2	7	1			11	1.5
42	1.2 D + 1.5 LL a + Service - 120 W	Yes	Y	1	1.2	7	0.866	6	-0.5	11	1.5
43	1.2 D + 1.5 LL a + Service - 150 W	Yes	Y	1	1.2	6	-0.866	7	0.5	11	1.5
44	1.2 D + 1.5 LL a + Service - 180 W	Yes	Y	1	1.2	6	-1			11	1.5
45	1.2 D + 1.5 LL a + Service - 210 W	Yes	Y	1	1.2	6	-0.866	7	-0.5	11	1.5
46	1.2 D + 1.5 LL a + Service - 240 W	Yes	Y	1	1.2	7	-0.866	6	-0.5	11	1.5
47	1.2 D + 1.5 LL a + Service - 270 W	Yes	Y	1	1.2	7	-1			11	1.5
48	1.2 D + 1.5 LL a + Service - 300 W	Yes	Y	1	1.2	7	-0.866	6	0.5	11	1.5
49	1.2 D + 1.5 LL a + Service - 330 W	Yes	Y	1	1.2	6	0.866	7	-0.5	11	1.5
50	1.2 D + 1.5 LL b + Service - 0 W	Yes	Y	1	1.2	6	1			12	1.5
51	1.2 D + 1.5 LL b + Service - 30 W	Yes	Y	1	1.2	6	0.866	7	0.5	12	1.5
52	1.2 D + 1.5 LL b + Service - 60 W	Yes	Y	1	1.2	7	0.866	6	0.5	12	1.5
53	1.2 D + 1.5 LL b + Service - 90 W	Yes	Y	1	1.2	7	1			12	1.5
54	1.2 D + 1.5 LL b + Service - 120 W	Yes	Y	1	1.2	7	0.866	6	-0.5	12	1.5
55	1.2 D + 1.5 LL b + Service - 150 W	Yes	Y	1	1.2	6	-0.866	7	0.5	12	1.5
56	1.2 D + 1.5 LL b + Service - 180 W	Yes	Y	1	1.2	6	-1			12	1.5
57	1.2 D + 1.5 LL b + Service - 210 W	Yes	Y	1	1.2	6	-0.866	7	-0.5	12	1.5
58	1.2 D + 1.5 LL b + Service - 240 W	Yes	Y	1	1.2	7	-0.866	6	-0.5	12	1.5
59	1.2 D + 1.5 LL b + Service - 270 W	Yes	Y	1	1.2	7	-1			12	1.5
60	1.2 D + 1.5 LL b + Service - 300 W	Yes	Y	1	1.2	7	-0.866	6	0.5	12	1.5
61	1.2 D + 1.5 LL b + Service - 330 W	Yes	Y	1	1.2	6	0.866	7	-0.5	12	1.5
62	1.2 D + 1.5 LL c + Service - 0 W	Yes	Y	1	1.2	6	1			13	1.5
63	1.2 D + 1.5 LL c + Service - 30 W	Yes	Y	1	1.2	6	0.866	7	0.5	13	1.5
64	1.2 D + 1.5 LL c + Service - 60 W	Yes	Y	1	1.2	7	0.866	6	0.5	13	1.5
65	1.2 D + 1.5 LL c + Service - 90 W	Yes	Y	1	1.2	7	1			13	1.5
66	1.2 D + 1.5 LL c + Service - 120 W	Yes	Y	1	1.2	7	0.866	6	-0.5	13	1.5
67	1.2 D + 1.5 LL c + Service - 150 W	Yes	Y	1	1.2	6	-0.866	7	0.5	13	1.5
68	1.2 D + 1.5 LL c + Service - 180 W	Yes	Y	1	1.2	6	-1			13	1.5
69	1.2 D + 1.5 LL c + Service - 210 W	Yes	Y	1	1.2	6	-0.866	7	-0.5	13	1.5
70	1.2 D + 1.5 LL c + Service - 240 W	Yes	Y	1	1.2	7	-0.866	6	-0.5	13	1.5
71	1.2 D + 1.5 LL c + Service - 270 W	Yes	Y	1	1.2	7	-1			13	1.5
72	1.2 D + 1.5 LL c + Service - 300 W	Yes	Y	1	1.2	7	-0.866	6	0.5	13	1.5
73	1.2 D + 1.5 LL c + Service - 330 W	Yes	Y	1	1.2	6	0.866	7	-0.5	13	1.5
74	1.2 D + 1.5 LL d + Service - 0 W	Yes	Y	1	1.2	6	1			14	1.5
75	1.2 D + 1.5 LL d + Service - 30 W	Yes	Y	1	1.2	6	0.866	7	0.5	14	1.5
76	1.2 D + 1.5 LL d + Service - 60 W	Yes	Y	1	1.2	7	0.866	6	0.5	14	1.5
77	1.2 D + 1.5 LL d + Service - 90 W	Yes	Y	1	1.2	7	1			14	1.5
78	1.2 D + 1.5 LL d + Service - 120 W	Yes	Y	1	1.2	7	0.866	6	-0.5	14	1.5
79	1.2 D + 1.5 LL d + Service - 150 W	Yes	Y	1	1.2	6	-0.866	7	0.5	14	1.5
80	1.2 D + 1.5 LL d + Service - 180 W	Yes	Y	1	1.2	6	-1			14	1.5
81	1.2 D + 1.5 LL d + Service - 210 W	Yes	Y	1	1.2	6	-0.866	7	-0.5	14	1.5
82	1.2 D + 1.5 LL d + Service - 240 W	Yes	Y	1	1.2	7	-0.866	6	-0.5	14	1.5
83	1.2 D + 1.5 LL d + Service - 270 W	Yes	Y	1	1.2	7	-1			14	1.5
84	1.2 D + 1.5 LL d + Service - 300 W	Yes	Y	1	1.2	7	-0.866	6	0.5	14	1.5
85	1.2 D + 1.5 LL d + Service - 330 W	Yes	Y	1	1.2	6	0.866	7	-0.5	14	1.5

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
86	1.2 D + 1.5 LL Maint (1)	Yes	Y	1	1.2					15	1.5
87	1.2 D + 1.5 LL Maint (2)	Yes	Y	1	1.2					16	1.5
88	1.2 D + 1.5 LL Maint (3)	Yes	Y	1	1.2					17	1.5
89	1.2 D + 1.5 LL Maint (4)	Yes	Y	1	1.2					18	1.5
90	1.2 D + 1.5 LL Maint (5)	Yes	Y	1	1.2					19	1.5
91	1.2 D + 1.5 LL Maint (6)	Yes	Y	1	1.2					20	1.5
92	1.2 D + 1.5 LL Maint (7)	Yes	Y	1	1.2					21	1.5
93	1.2 D + 1.5 LL Maint (8)	Yes	Y	1	1.2					22	1.5
94	1.2 D + 1.5 LL Maint (9)	Yes	Y	1	1.2					23	1.5
95	1.2 D + 1.5 LL Maint (10)	Yes	Y	1	1.2					24	1.5
96	1.2 D + 1.5 LL Maint (11)	Yes	Y	1	1.2					25	1.5
97	1.2 D + 1.5 LL Maint (12)	Yes	Y	1	1.2					26	1.5
98	1.2 D + 1.5 LL Maint (13)	Yes	Y	1	1.2					27	1.5
99	1.2 D + 1.5 LL Maint (14)	Yes	Y	1	1.2					28	1.5
100	1.2 D + 1.5 LL Maint (15)	Yes	Y	1	1.2					29	1.5
101	1.2 D + 1.5 LL Maint (16)	Yes	Y	1	1.2					30	1.5
102	1.2 D + 1.5 LL Maint (17)	Yes	Y	1	1.2					31	1.5
103	1.2 D + 1.5 LL Maint (18)	Yes	Y	1	1.2					32	1.5
104	1.2 D + 1.5 LL Maint (19)	Yes	Y	1	1.2					33	1.5
105	1.2 D + 1.5 LL Maint (20)	Yes	Y	1	1.2					34	1.5
106	1.2 D + 1.5 LL Maint (21)	Yes	Y	1	1.2					35	1.5
107	1.2 D + 1.5 LL Maint (22)	Yes	Y	1	1.2					36	1.5
108	1.2 D + 1.5 LL Maint (23)	Yes	Y	1	1.2					37	1.5
109	1.2 D + 1.5 LL Maint (24)	Yes	Y	1	1.2					38	1.5

Envelope Node Reactions

	Node Label		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	1	max	1.195	5	1.692	2	1.495	2	4.049	2	1.18	11	0.482	73
2		min	-1.198	11	-0.344	8	-1.594	8	-1.445	8	-1.184	5	-0.241	43
3	53	max	1.12	5	1.455	18	1.442	2	0.481	13	1.46	3	0.621	12
4		min	-1.202	11	-0.12	12	-1.387	8	-1.704	43	-1.46	9	-2.982	6
5	82	max	1.099	5	1.463	22	1.675	2	0.46	3	1.516	7	2.854	10
6		min	-1.013	11	-0.122	4	-1.631	8	-1.955	9	-1.519	13	-0.697	4
7	Totals:	max	3.414	5	4.223	57	4.612	2						
8		min	-3.414	11	1.973	3	-4.612	8						

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 [k]	phi*Pnt [k]	phi*Mn y-y [k-ft]	phi*Mn z-z [k-ft]	Cb	Eqn
1	1	HSS4X4X2	0.542	0	13	0.136	0	y	62	70.173	73.278	8.24	8.24	1.928	H1-1b
2	2	C3.38X2.06X.188	0.312	2.592	3	0.062	0.351	y	64	35.676	43.394	1.694	4.483	1.596	H1-1b
3	3	C3.38X2.06X.188	0.319	0	13	0.071	2.241	z	8	35.676	43.394	1.694	4.483	1.592	H1-1b
4	4	PL3/8"X6	0.094	0.164	7	0.196	0	y	2	68.997	72.9	0.57	9.113	2.649	H1-1b
5	5	PL3/8"X6	0.094	0	3	0.14	0	y	38	68.997	72.9	0.57	9.113	2.002	H1-1b
6	6	PIPE3.5X0.165	0.076	4	7	0.045	4		5	45.872	71.57	6.336	6.336	1	H1-1b
7	7	PL3/8"X6	0.16	0.208	8	0.172	0.208	y	50	70.882	72.9	0.57	9.113	1.371	H1-1b
8	8	PL3/8"X6	0.151	0	13	0.182	0	y	51	70.882	72.9	0.57	9.113	2.949	H1-1b
9	9	L2X2X4	0.299	0	8	0.03	2.309	y	46	23.349	30.586	0.691	1.577	1.5	H2-1
10	10	L2X2X4	0.244	2.309	8	0.037	0	y	64	23.349	30.586	0.691	1.577	1.5	H2-1
11	11	L7.63X2.5X6	0.4	1.604	8	0.087	1.604	y	63	75.414	118.523	1.798	13.853	1.265	H2-1
12	18	PIPE2.38X0.12	0.256	1	5	0.076	1		6	20.45	35.273	2.115	2.115	1	H1-1b
13	19	PIPE2.38X0.12	0.275	4.313	10	0.08	1		9	20.45	35.273	2.115	2.115	1	H1-1b
14	22	PIPE 2.0	0.354	6.75	2	0.27	7.75		2	15.37	42.228	2.46	2.46	1	H3-6
15	23	L6.63X4.33X.25	0.203	3.25	6	0.039	3.25	z	12	51.808	86.767	2.31	6.976	1.5	H2-1

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 [k]	phi*Pnt [k]	phi*Mn y-y [k-ft]	phi*Mn z-z [k-ft]	Cb	Eqn
16	29	PIPE2.38X0.12	0.256	1	6	0.081	1		8	20.45	35.273	2.115	2.115	1	H1-1b
17	31	HSS4X4X2	0.501	0	7	0.133	0	y	65	70.173	73.278	8.24	8.24	1.951	H1-1b
18	32	C3.38X2.06X.188	0.31	2.592	7	0.062	0.351	y	68	35.676	43.394	1.694	4.483	1.601	H1-1b
19	33	C3.38X2.06X.188	0.29	0	57	0.063	2.241	y	48	35.676	43.394	1.703	4.483	1.621	H1-1b
20	34	PL3/8"X6	0.075	0.164	10	0.18	0	y	67	68.997	72.9	0.57	9.113	2.464	H1-1b
21	35	PL3/8"X6	0.094	0	7	0.139	0	y	42	68.997	72.9	0.57	9.113	1.876	H1-1b
22	36	PL3/8"X6	0.132	0.208	13	0.172	0.208	y	54	70.882	72.9	0.57	9.113	1.764	H1-1b
23	37	PL3/8"X6	0.116	0	5	0.181	0	y	55	70.882	72.9	0.57	9.113	3	H1-1b
24	38	L2X2X4	0.22	0	11	0.03	0	y	39	23.349	30.586	0.691	1.577	1.5	H2-1
25	39	L2X2X4	0.216	2.309	13	0.037	0	y	68	23.349	30.586	0.691	1.577	1.5	H2-1
26	40	L7.63X2.5X6	0.291	1.604	12	0.087	1.604	y	68	75.414	118.523	1.798	13.956	1.289	H2-1
27	45	L6.63X4.33X.25	0.24	0	2	0.041	0	y	3	51.808	86.767	2.31	6.976	1.5	H2-1
28	50	HSS4X4X2	0.535	0	9	0.134	0	y	69	70.173	73.278	8.24	8.24	1.928	H1-1b
29	51	C3.38X2.06X.188	0.299	2.592	55	0.062	0.351	y	73	35.676	43.394	1.703	4.483	1.62	H1-1b
30	52	C3.38X2.06X.188	0.316	0	9	0.063	2.241	y	39	35.676	43.394	1.694	4.483	1.592	H1-1b
31	53	PL3/8"X6	0.107	0.164	2	0.181	0	y	70	68.997	72.9	0.57	9.113	2.727	H1-1b
32	54	PL3/8"X6	0.072	0	11	0.138	0	y	45	68.997	72.9	0.57	9.113	1.865	H1-1b
33	55	PL3/8"X6	0.127	0.085	2	0.173	0.208	y	57	70.882	72.9	0.57	9.113	1.419	H1-1b
34	56	PL3/8"X6	0.154	0	9	0.182	0	y	59	70.882	72.9	0.57	9.113	2.946	H1-1b
35	57	L2X2X4	0.291	0	3	0.03	2.309	y	43	23.349	30.586	0.691	1.577	1.5	H2-1
36	58	L2X2X4	0.198	2.309	4	0.037	2.309	y	73	23.349	30.586	0.691	1.577	1.5	H2-1
37	59	L7.63X2.5X6	0.36	1.604	3	0.086	1.604	y	71	75.414	118.523	1.798	14.271	1.364	H2-1
38	64	L6.63X4.33X.25	0.256	3.25	2	0.052	3.25	z	8	51.808	86.767	2.31	6.976	1.5	H2-1
39	69	PIPE3.5X0.165	0.091	4	2	0.061	4		9	45.872	71.57	6.336	6.336	1	H1-1b
40	72	PIPE2.38X0.12	0.341	1	9	0.087	1		9	20.45	35.273	2.115	2.115	1	H1-1b
41	73	PIPE2.38X0.12	0.355	4.313	2	0.084	1		13	20.45	35.273	2.115	2.115	1	H1-1b
42	76	PIPE_2.0	0.28	6.75	8	0.208	1.25		13	15.37	42.228	2.46	2.46	1	H1-1b
43	78	PIPE2.38X0.12	0.305	1	9	0.087	1		13	20.45	35.273	2.115	2.115	1	H1-1b
44	80	PIPE3.5X0.165	0.085	4	2	0.06	4		13	45.872	71.57	6.336	6.336	1	H1-1b
45	83	PIPE2.38X0.12	0.338	1	13	0.102	1		2	20.45	35.273	2.115	2.115	1	H1-1b
46	84	PIPE2.38X0.12	0.296	1	7	0.059	1		5	20.45	35.273	2.115	2.115	1	H1-1b
47	87	PIPE_2.0	0.311	6.75	9	0.239	7.75		9	15.37	42.228	2.46	2.46	1	H3-6
48	89	PIPE2.38X0.12	0.344	1	2	0.066	1		7	20.45	35.273	2.115	2.115	1	H1-1b

APPENDIX B

(Additional Calculations)

PROJECT	**149547.003.01 - West Haven-rt15 /W KSC**				
SUBJECT	**Platform Mount Analysis**				
DATE	**05/25/22**	PAGE	1	OF	1

B+T Group
1717 S. Boulder, Suite 300
Tulsa, OK 74119
(918) 587-4630

[REF: AISC 360-05]

Reactions at Bolted Connection

Tension	:	1.594	k
Vertical Shear	:	1.692	k
Horizontal Shear	:	1.198	k
Torsion	:	0.482	k.ft
Moment from Horizontal Forces	:	1.184	k.ft
Moment from Vertical Forces	:	4.049	k.ft

Bolt Parameters

Bolt Grade	:	A325	
Bolt Diameter	:	0.625	in
Nominal Bolt Area	:	0.307	in^2
Bolt spacing, Horizontal	:	6	in
Bolt spacing, Vertical	:	6	in
Bolt edge distance, plate height	:	1.5	in
Bolt edge distance, plate width	:	1.5	in
Total Number of Bolts	:	4	bolts

Summary of Forces

Shear Resultant Force	:	2.07	k
Force from Horz. Moment	:	2.14	k
Force from Vert. Moment	:	7.33	k
Shear Load / Bolt	:	0.52	k
Tension Load / Bolt	:	0.40	k
Resultant from Moments / Bolt	:	3.82	k

Bolt Checks

Nominal Tensile Stress, F_{nt}	:	90.00	ksi	[AISC Table J3.2]
Available Tensile Stress, ΦR_{nt}	:	20.72	k/bolt	[Eq. J3-1]
Unity Check, Bolt Tension	:	**20.36%**		**OKAY**
Nominal Shear Stress, F_{nv}	:	48.00	ksi	[AISC Table J3.2]
Available Shear Stress, ΦR_{nv}	:	11.05	k/bolt	[Eq. J3-1]
Unity Check, Bolt Shear	:	**8.30%**		**OKAY**
Unity Check, Combined	:	**28.66%**		**OKAY**
Available Bearing Strength, ΦR_n	:	34.66	k/bolt	
Unity Check, Bolt Bearing	:	**1.50%**		**OKAY**

PROJECT	**149547.003.01 - West Haven-rt15 /W KSC**				
SUBJECT	**Platform Mount Analysis**				
DATE	**05/25/22**	PAGE	1	OF	1

B+T Group
1717 S. Boulder, Suite 300
Tulsa, OK 74119
(918) 587-4630

[REF: AISC 360-05]

Connecting Member Parameters

Plate Yield Strength, F_y	:	36.00	ksi	[AISC Table 2-5]
Plate Tensile Strength, F_u	:	58.00	ksi	[AISC Table 2-5]
Plate Height	:	9.00	in	
Plate Width	:	9.00	in	
Plate Thickness	:	0.50	in	
Edge Distance	:	1.06	in	
Gross Tension Area, A_{gt}	:	4.50	in^2	
Gross Shear Area, A_{gv}	:	0.75	in^2	
Net Area for tension, A_{nv}	:	4.16	in^2	
Net Area for shear, A_{nt}	:	3.00	in^2	

Plate Check

Available Tensile Yield	:	145.80	k	[Eq. J4-1]
Available Tensile Rupture	:	180.80	k	[Eq. J4-2]
Unity Check, Plate Tension	:	**2.89%**		**OKAY**
Available Shear Yield	:	16.20	k	[Eq. J4-3]
Available Shear Rupture	:	104.40	k	[Eq. J4-4]
Unity Check, Plate Shear	:	**12.80%**		**OKAY**
Available Block Shear, ΦRn	:	77.40	k	[Eq. J4-5]
Unity Check, Block Shear	:	**2.68%**		**OKAY**

Exhibit F

Power Density/RF Emissions Report

Fox Hill Telecom

Radio Frequency Emissions Analysis Report

Site ID: BOHVN00118B

SBA - Rockland Road
370 Rockland Road
Guilford, CT 06437

July 8, 2022

Fox Hill Telecom Project Number: 221181

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**20.92 %**

Fox Hill Telecom

July 8, 2022

Dish Wireless
5701 South Santa Fe Drive
Littleton, CO 80120

Emissions Analysis for Site: **BOHVN00118B – SBA - Rockland Road**

Fox Hill Telecom, Inc ("Fox Hill") was directed to analyze the proposed radio installation for Dish Wireless, LLC (Dish) facility located at **370 Rockland Road, Guilford, CT**, for the purpose of determining whether the emissions from the Proposed Dish radio and antenna installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter (μW/cm2). The number of $\mu W/cm^2$ calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

All results were compared to the FCC (Federal Communications Commission) radio frequency exposure rules, 47 CFR 1.1307(b)(1) – (b)(3), to determine compliance with the Maximum Permissible Exposure (MPE) limits for General Population/Uncontrolled environments as defined below.

General population/uncontrolled exposure limits apply to situations in which the general population may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Therefore, members of the general population would always be considered under this category when exposure is not employment related, for example, in the case of a telecommunications tower that exposes persons in a nearby residential area.

Population exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limits for the 600 MHz & 700 MHz bands are approximately 400 $\mu W/cm^2$ and 467 $\mu W/cm^2$ respectively. The general population exposure limit for the 1900 MHz (PCS) and 2100 MHz (AWS / AWS-4) bands is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

Occupational/controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully aware of the potential for exposure and can exercise control over their exposure. Occupational/controlled exposure limits also apply where exposure is of a transient nature as a result of incidental passage through a location where exposure levels may be above general population/uncontrolled limits (see below), as long as the exposed person has been made fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were performed for the proposed radio system installation for **Dish** on the subject site located at **370 Rockland Road, Guilford, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since **Dish** is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB for directional panel antennas, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. All power values expressed and analyzed are maximum power levels expected to be used on all radios.

All emissions values for additional carriers were taken from the Connecticut Siting Council (CSC) active MPE database. Values in this database are provided by the individual carriers themselves

For each sector the following channel counts, frequency bands and power levels were utilized as shown in *Table 1*:

Technology	Frequency Band	Channel Count	Transmit Power per Channel (W)
5G	n71 (600 MHz)	4	61.5
5G	n70 (AWS-4 / 1995-2020)	4	40
5G	n66 (AWS-4 / 2180-2200)	4	40

Table 1: Channel Data Table

The following antennas listed in *Table 2* were used in the modeling for transmission in the 600 MHz (n71) frequency band, and the 2100 MHz (AWS 4) frequency bands at 1995-2020 MHz (n70) and 2180-2200 MHz (n66). This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB for directional panel antennas, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

Sector	Antenna Number	Antenna Make / Model	Antenna Centerline (ft)
A	1	JMA MX08FRO665-21	127
B	1	JMA MX08FRO665-21	127
C	1	JMA MX08FRO665-21	127

Table 2: Antenna Data

All calculations were done with respect to uncontrolled / general population threshold limits.

RESULTS

Per the calculations completed for the proposed **Dish** configurations *Table 3* shows resulting emissions power levels and percentages of the FCC's allowable general population limit.

Antenna ID	Antenna Make / Model	Frequency Bands	Antenna Gain (dBd)	Channel Count	Total TX Power (W)	ERP (W)	MPE %
Antenna A1	JMA MX08FRO665-21	n71 (600 MHz) / n70 (AWS-4 / 1995-2020) / n66 (AWS-4 / 2180-2200)	11.45 / 16.15 / 16.65	12	566	17,426.72	5.55
						Sector A Composite MPE%	**5.55**
Antenna B1	JMA MX08FRO665-21	n71 (600 MHz) / n70 (AWS-4 / 1995-2020) / n66 (AWS-4 / 2180-2200)	11.45 / 16.15 / 16.65	12	566	17,426.72	5.55
						Sector B Composite MPE%	**5.55**
Antenna C1	JMA MX08FRO665-21	n71 (600 MHz) / n70 (AWS-4 / 1995-2020) / n66 (AWS-4 / 2180-2200)	11.45 / 16.15 / 16.65	12	566	17,426.72	5.55
						Sector C Composite MPE%	**5.55**

Table 3: Dish Emissions Levels

The Following table (*Table 4*) shows all additional carriers on site and their MPE% as recorded in the CSC active MPE database for this facility along with the newly calculated maximum **Dish** MPE contributions per this report. FCC OET 65 specifies that for carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. For this site, all three sectors have the same configuration yielding the same results on all three sectors. *Table 5* below shows a summary for each **Dish** Sector as well as the composite MPE value for the site.

Site Composite MPE%	
Carrier	**MPE%**
Dish – Max Per Sector Value	**5.55 %**
T-Mobile	11.83 %
AT&T	1.87 %
Verizon	1.67 %
Site Total MPE %:	**20.92 %**

Table 4: All Carrier MPE Contributions

Dish Sector A Total:	5.55 %
Dish Sector B Total:	5.55 %
Dish Sector C Total:	5.55 %
Site Total:	20.92 %

Table 5: Site MPE Summary

FCC OET 65 specifies that for carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. *Table 6* below details a breakdown by frequency band and technology for the MPE power values for the maximum calculated **Dish** sector(s). For this site, all three sectors have the same configuration yielding the same results on all three sectors.

Dish _ Frequency Band / Technology Max Power Values (Per Sector)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
Dish n71 (600 MHz) 5G	4	858.77	127	8.43	n71 (600 MHz)	400	2.11%
Dish n70 (AWS-4 / 1995-2020) 5G	4	1,648.39	127	16.19	n70 (AWS-4 / 1995-2020)	1000	1.62%
Dish n66 (AWS-4 / 2180-2200) 5G	4	1,849.52	127	18.17	n66 (AWS-4 / 2180-2200)	1000	1.82%
						Total:	**5.55%**

Table 6: Dish Maximum Sector MPE Power Values

Summary

All calculations performed for this analysis yielded results that were **within** the allowable limits for general population exposure to RF Emissions.

The anticipated maximum composite contributions from the Dish facility as well as the site composite emissions value with regards to compliance with FCC's allowable limits for general population exposure to RF Emissions are shown here:

Dish Sector	Power Density Value (%)
Sector A:	5.55 %
Sector B:	5.55 %
Sector C:	5.55 %
Dish Maximum Total (per sector):	5.55 %
Site Total:	20.92 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **20.92 %** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

FCC guidelines state that if a site is found to be out of compliance (over allowable thresholds), that carriers over a 5% contribution to the composite value will require measures to bring the site into compliance. For this facility, the composite values calculated were well within the allowable 100% threshold standard per the federal government.

Scott Heffernan
Principal RF Engineer
Fox Hill Telecom, Inc
Holden, MA 01520
(978)660-3998

Exhibit G

Letter of Authorization

SBA Letter of Authorization

CT - CONNECTICUT SITING COUNCIL
Melanie A. Bachman
Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

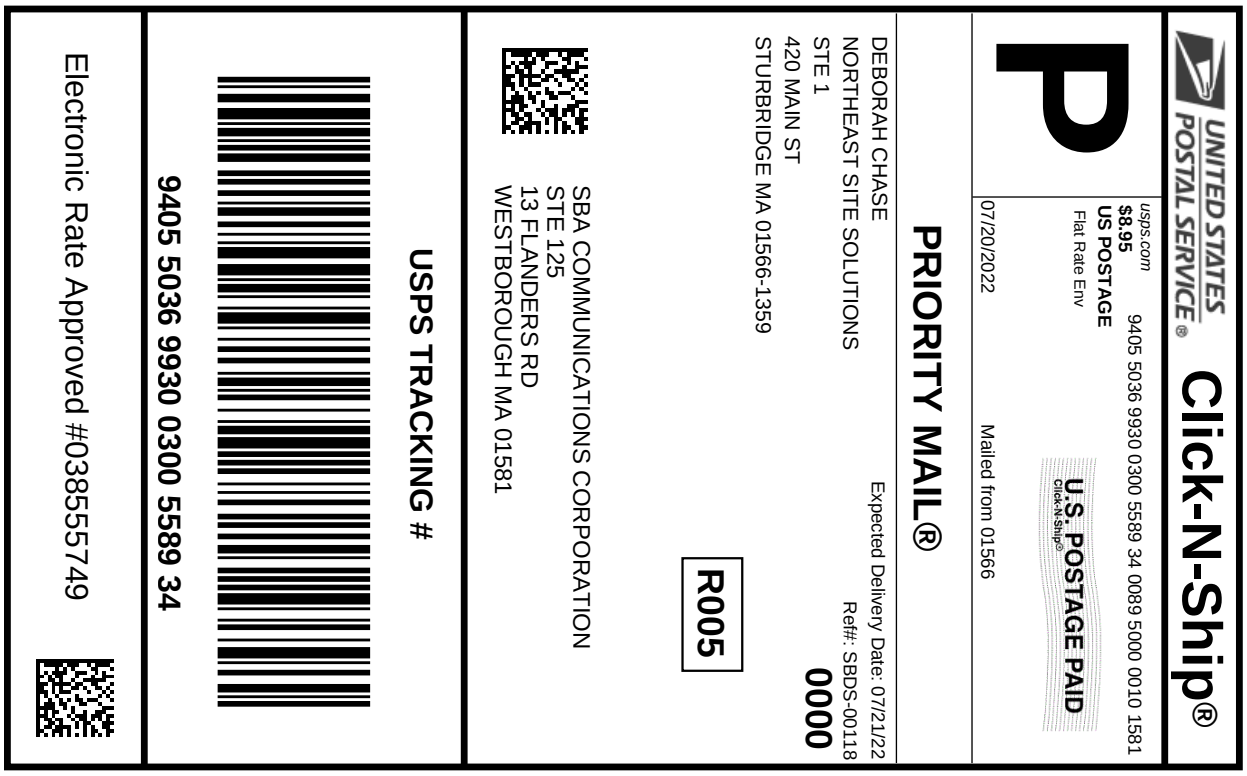
Re: Tower Share Application

SBA COMMUNICATIONS CORPORATION hereby authorizes DISH Wireless LLC, including their Agent, to act as our Agent in the processing of all zoning applications, building permits and approvals through the CONNECTICUT SITING COUNCIL for existing wireless communications towers.

Kri Pelletier
Site Development Manager
SBA COMMUNICATIONS CORPORATION
134 Flanders Road, Suite 125
Westboro, MA 01581

Exhibit H

Recipient Mailings



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Trans. #:	567951808
Print Date:	07/20/2022
Ship Date:	07/20/2022
Expected Delivery Date:	07/21/2022

Priority Mail® Postage:	**$8.95**
Total:	**$8.95**

From: DEBORAH CHASE
NORTHEAST SITE SOLUTIONS
STE 1
420 MAIN ST
STURBRIDGE MA 01566-1359

Ref#: SBDS-00118

To: SBA COMMUNICATIONS CORPORATION
STE 125
13 FLANDERS RD
WESTBOROUGH MA 01581

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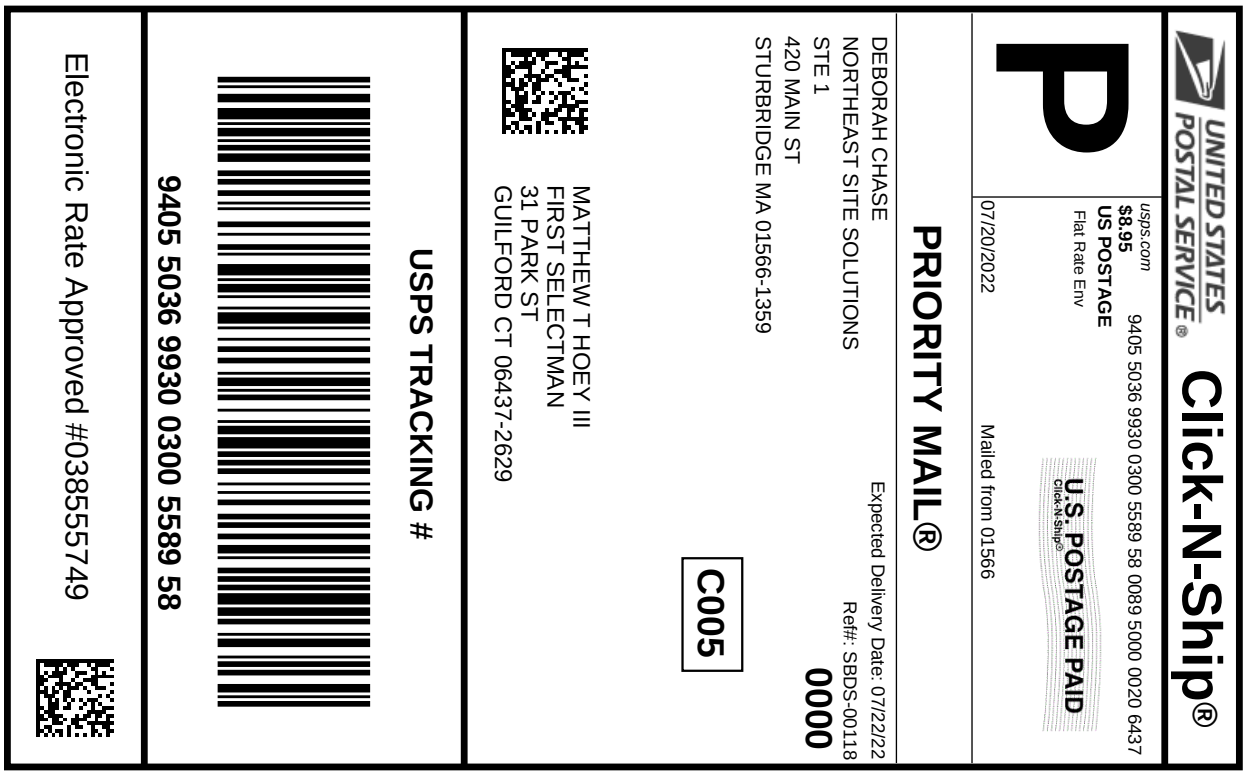

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Ship Date:	07/20/2022
Expected Delivery Date:	07/22/2022

Priority Mail® Postage:	**$8.95**
Total:	**$8.95**

From: DEBORAH CHASE
NORTHEAST SITE SOLUTIONS
STE 1
420 MAIN ST
STURBRIDGE MA 01566-1359

Ref#: SBDS-00118

To: MATTHEW T HOEY III
FIRST SELECTMAN
31 PARK ST
GUILFORD CT 06437-2629

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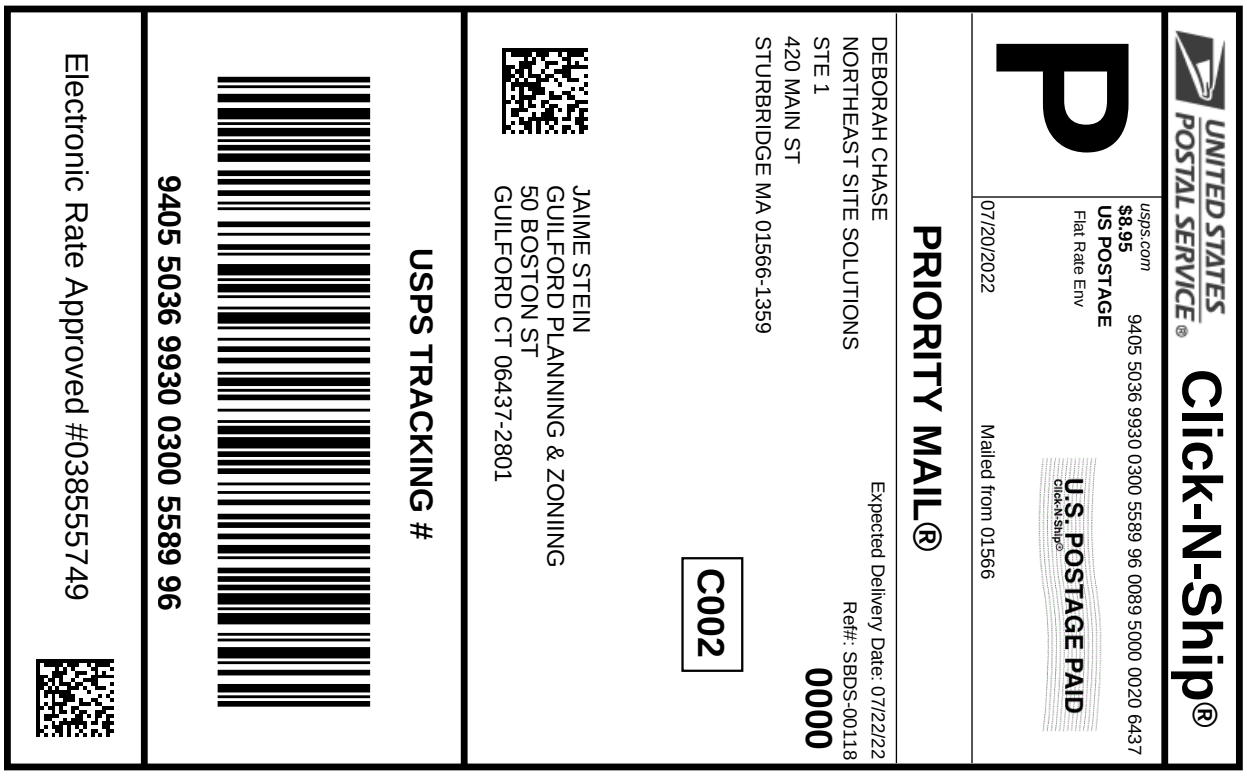

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Trans. #:	567951808
Print Date:	07/20/2022
Ship Date:	07/20/2022
Expected Delivery Date:	07/22/2022

Priority Mail® Postage:	**$8.95**
Total:	**$8.95**

From: DEBORAH CHASE
NORTHEAST SITE SOLUTIONS
STE 1
420 MAIN ST
STURBRIDGE MA 01566-1359

Ref#: SBDS-00118

To: JAIME STEIN
GUILFORD PLANNING & ZONIING
50 BOSTON ST
GUILFORD CT 06437-2801

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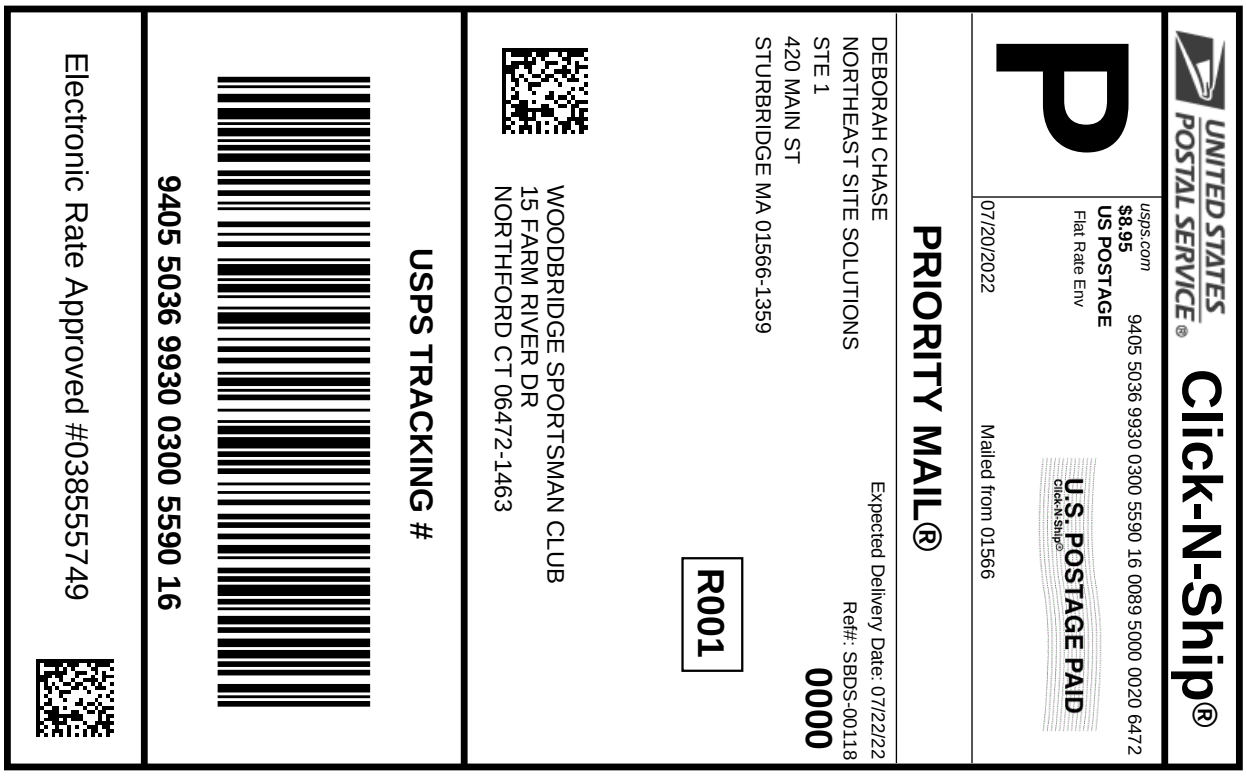

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Expected Delivery Date:	07/22/2022

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Total:	**$8.95**

From: DEBORAH CHASE
NORTHEAST SITE SOLUTIONS
STE 1
420 MAIN ST
STURBRIDGE MA 01566-1359

Ref#: SBDS-00118

To: WOODBRIDGE SPORTSMAN CLUB
15 FARM RIVER DR
NORTHFORD CT 06472-1463

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80HVN00118B - SBA DISH

UNITED STATES POSTAL SERVICE.

LINCOLN MALL
560 LINCOLN ST STE 8
WORCESTER, MA 01605-1925
(800)275-8777

07/21/2022 09:26 AM

Product	Qty	Unit Price	Price
Prepaid Mail Westborough, MA 01581 Weight: 0 lb 2.00 oz Acceptance Date: Thu 07/21/2022 Tracking #: 9405 5036 9930 0300 5589 34	1		$0.00
Prepaid Mail Guilford, CT 06437 Weight: 0 lb 15.70 oz Acceptance Date: Thu 07/21/2022 Tracking #: 9405 5036 9930 0300 5589 58	1		$0.00
Prepaid Mail Northford, CT 06472 Weight: 0 lb 15.60 oz Acceptance Date: Thu 07/21/2022 Tracking #: 9405 5036 9930 0300 5590 16	1		$0.00
Prepaid Mail Guilford, CT 06437 Weight: 0 lb 15.60 oz Acceptance Date: Thu 07/21/2022 Tracking #: 9405 5036 9930 0300 5589 96	1		$0.00