CENTERLINE COMMUNICATIONS

33 Bolivia Street
Willimantic CT 06226
rburgdorfer@clinellc.com
508.665.8005

September 14, 2023

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

Re: Notice of Exempt Modification – Dish Wireless Site BOBOS00032A
Dish Wireless Telecommunications Facility @ 156 Lebanon Hill Road, Woodstock, CT

Dear Ms. Bachman,

Dish Wireless LLC ("Dish") currently maintains a wireless telecommunications facility on an existing +/- 280' guyed tower at the above referenced address, latitude 40.02530933, longitude -72.03702007. Said guyed tower is owned and managed by American Tower Corporation.

Dish desires to modify its existing telecommunications facility by adding (1) microwave dish, (1) ODU, and (2) cables, as more particularly detailed and described on the enclosed Construction Drawings prepared by American Tower, last revised on August 9, 2023. The centerline height of the existing antennas is and will remain at 206 feet.

Please accept this letter as notification pursuant to R.C.S.A §16-50j-73 for construction that constitutes an exempt modification pursuant to R.C.S.A §16-50j-72(b)(2). In accordance with R.C.S.A §16-50j-73, a copy of this letter is being sent to the following individuals: The Honorable Jay Swan, First Selectman of the Town of Woodstock; Mike D'Amato, Zoning Enforcement Officer of the Town of Woodstock; American Tower Systems, Inc., as property owner; and American Tower Corporation as tower owner.

The planned modifications to the facility fall squarely within those activities explicitly provided for in R.C.S.A. §16-50j-72(b)(2). Specifically:

1. The proposed modifications will not result in an increase in the height of the existing structure.
2. The proposed modifications will not require an extension of the site boundary.
3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.
4. The operation of the modified facility will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission's safety standard. *Please see the RF emissions calculation for Dish's modified facility enclosed herewith.*
5. The proposed modifications will not cause an ineligible change or alternation in the physical or environmental characteristics of the site.
6. The existing structure and its foundation can support the proposed loading. Please see the structural analysis dated May 18, 2023 prepared by American Tower enclosed herewith.

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For the foregoing reasons, Dish respectfully submits that the proposed modifications to the above referenced telecommunications facility constitute an exempt modification under R.C.S.A §16-50j-72(b)(2).

Best Regards,

Ryan Burgdorfer
Site Acquisition Project Manager – Agent for Dish
Centerline Communications LLC
750 West Center St. Ste 301
West Bridgewater, MA 02379
508-665-8005
rburgdorfer@clinellc.com

Enclosures:
Exhibit 1 – Property Card and GIS
Exhibit 2 – Construction Drawings
Exhibit 3 – Structural Analysis
Exhibit 4 – Mount Analysis
Exhibit 5 – RF Emissions Analysis Report Evaluation
Exhibit 6 – Available Town of Woodstock Original Tower Approval Records
Exhibit 7 – Notice Package Delivery Confirmations

Cc:
Jay Swan, Town of Woodstock elected official
Mike D'Amato, Town of Woodstock zoning official
American Tower Corporation, Property Owner
American Tower Corporation, Tower Owner

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EXHIBIT 1

Property Card and GIS

156 LEBANON HILL RD

Location	156 LEBANON HILL RD	**Mblu**	5284/ 03/ 06A/ /
Acct#	N0288600	**Owner**	AMERICAN TOWER SYSTEMS INC
Assessment	$220,500	**Appraisal**	$314,900
PID	3012	**Building Count**	1

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2021	$10,800	$304,100	$314,900
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2021	$7,600	$212,900	$220,500

Owner of Record

Owner	AMERICAN TOWER SYSTEMS INC	**Sale Price**	$56,000
Co-Owner	AMERICAN TOWER CORP	**Certificate**	1
Address	PO BOX 723597 ATLANTA, GA 31139	**Book & Page**	277/ 393
		Sale Date	08/05/1997

Ownership History

Ownership History				
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Sale Date**
AMERICAN TOWER SYSTEMS INC	$56,000	1	277/ 393	08/05/1997

Building Information

Building 1 : Section 1

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

Building Attributes

Field	Description
Style	Vacant Land
Model	
Grade:	
Stories:	
Living Units	
Exterior Wall 1	
Exterior Wall 2	
Roof Structure:	
Roof Cover	
Interior Wall 1	
Interior Wall 2	
Interior Flr 1	
Interior Flr 2	
Heat Fuel	
Heat Type:	
AC Type:	
Total Bedrooms:	
Total Bthrms:	
Total Half Baths:	
Total Xtra Fixtrs:	
Total Rooms:	
Bath Style:	
Kitchen Style:	
Whirlpool Tubs	
Bsmt. Garages	

Building Photo

(https://images.vgsi.com/photos/WoodstockCTPhotos//default.jpg)

Building Layout

(https://images.vgsi.com/photos/WoodstockCTPhotos//Sketches/3012_301

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

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code	201
Description	Commercial Vacant
Zone	
Neighborhood	
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	4.95
Frontage	
Depth	
Assessed Value	$212,900
Appraised Value	$304,100

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
SHD1	Shed	FR	Frame	240 S.F.	$2,300	1
FN4	Fence 8'			600 L.F.	$8,500	1

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2022	$10,800	$304,100	$314,900
2020	$37,600	$254,100	$291,700
2019	$37,600	$254,100	$291,700

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2022	$7,600	$212,900	$220,500
2020	$26,300	$177,900	$204,200
2019	$26,300	$177,900	$204,200

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EXHIBIT 2

Construction Drawings

DISH Wireless L.L.C. SITE ID:

BOBOS00032A

DISH Wireless L.L.C. SITE ADDRESS:

156 LEBANON HILL RD.
WOODSTOCK, CT 06281

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 (1) PROPOSED DISH
- INSTALL (1) PROPOSED ODU
- INSTALL (1) PROPOSED 1.6" HYBRID CABLE
- INSTALL (1) PROPOSED 0.5" FIBER CABLE

GROUND SCOPE OF WORK:
- INSTALL PROPOSED EQUIPMENT IN EXISTING CABINET

NOTE: THE SCOPE OF THIS PROJECT DOES NOT INCLUDE MODIFICATIONS TO THE TOWER STRUCTURE OR FOUNDATION. A SEPARATE BUILDING PERMIT APPLICATION WILL BE SUBMITTED FOR ANY TOWER MODIFICATIONS.

SITE INFORMATION

PROPERTY OWNER:	AMERICAN TOWER
ADDRESS:	116 HUNTINGTON AVE BOSTON, MA 02116
COUNTY:	WINDHAM
TOWER TYPE:	GUYED
TOWER CO SITE ID:	6300
TOWER APP NUMBER:	14485734_D1
LATITUDE (NAD 83):	42.02530933
LONGITUDE (NAD 83):	-72.03702007
GROUND ELEVATION:	787
ZONING JURISDICTION:	CONNECTICUT SITING COUNCIL
ZONING DISTRICT:	RESIDENTIAL
PARCEL NUMBER:	CT-169-5284-03-06A
OCCUPANCY GROUP:	U
CONSTRUCTION TYPE:	II-B
POWER COMPANY:	CONNECTICUT LIGHT & POWER (800) 286-2000
TELEPHONE COMPANY:	AT&T (800) 288-2020

PROJECT DIRECTORY

APPLICANT:	DISH Wireless L.L.C. 5701 SOUTH SANTA FE DRIVE LITTLETON, CO 80120
TOWER OWNER:	AMERICAN TOWER 10 PRESIDENTIAL WAY WOBURN, MA 01801
ENGINEER:	ATC TOWER SERVICES, LLC 3500 REGENCY PARKWAY SUITE 100 CARY, NC 27518
SITE ACQUISITION:	DAVID GOODFELLOW DAVID.GOODFELLOW@DISH.COM
CONSTRUCTION MANAGER:	CHAD WILCOX CHAD.WILCOX@DISH.COM
RF ENGINEER:	DIPESH PARIKH DIPESH.PARIKH@DISH.COM

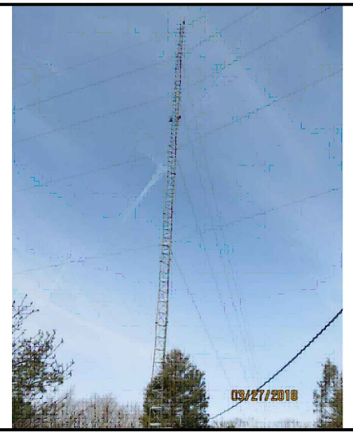
CONNECTICUT CODE COMPLIANCE

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

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

SHEET INDEX

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.

THE PROJECT DEPICTED IN THESE PLANS QUALIFIES AS AN ELIGIBLE FACILITIES REQUEST ENTITLED TO EXPEDITED REVIEW UNDER 47 U.S.C. § 1455(A) AS A MODIFICATION OF AN EXISTING WIRELESS TOWER THAT INVOLVES THE COLLOCATION, REMOVAL, AND/OR REPLACEMENT OF TRANSMISSION EQUIPMENT THAT IS NOT A SUBSTANTIAL CHANGE UNDER CFR § 1.61000 (B)(7).

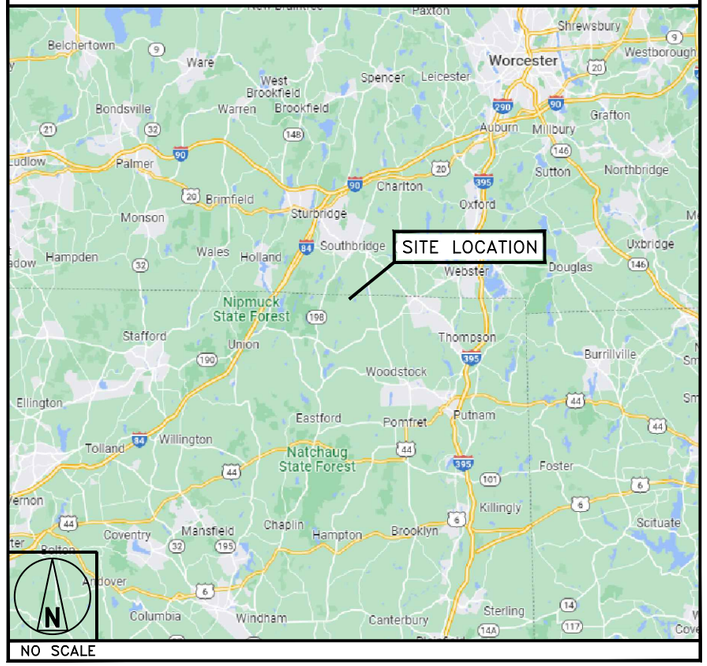
11"x17" PLOT WILL BE HALF SCALE

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

DIRECTIONS

FROM NORWICH, TAKE 395 NORTH TO STATE ROUTE 44 WEST TO ROUTE 169 NORTH TO ROUTE 197 WEST TO BRICKYARD ROAD AND TURN RIGHT. TAKE BRICKYARD ROAD TO ENGLISH NEIGHBORHOOD AND TAKE RIGHT TO NEW LEBANON HILL ROAD AND SITE IS ON LEFT.

VICINITY MAP



NO SCALE

dish wireless

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

AMERICAN TOWER®
A.T. ENGINEERING SERVICES LLC
3500 REGENCY PARKWAY
SUITE 100
CARY, NC 27518
PHONE: (919) 468-0112
PEC.0001553

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DESCRIPTION	BY	DATE
0	FOR CONSTRUCTION	JRD	7/19/2023
1	CODE COMPLIANCE	JRD	8/09/2023

STATE OF CONNECTICUT
SCOTT A. WIRGAU
30575
LICENSED PROFESSIONAL ENGINEER

A&E PROJECT NUMBER

6300-14485734_D1

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBOS00032A
156 LEBANON HILL RD.
WOODSTOCK, CT 06281

SHEET TITLE

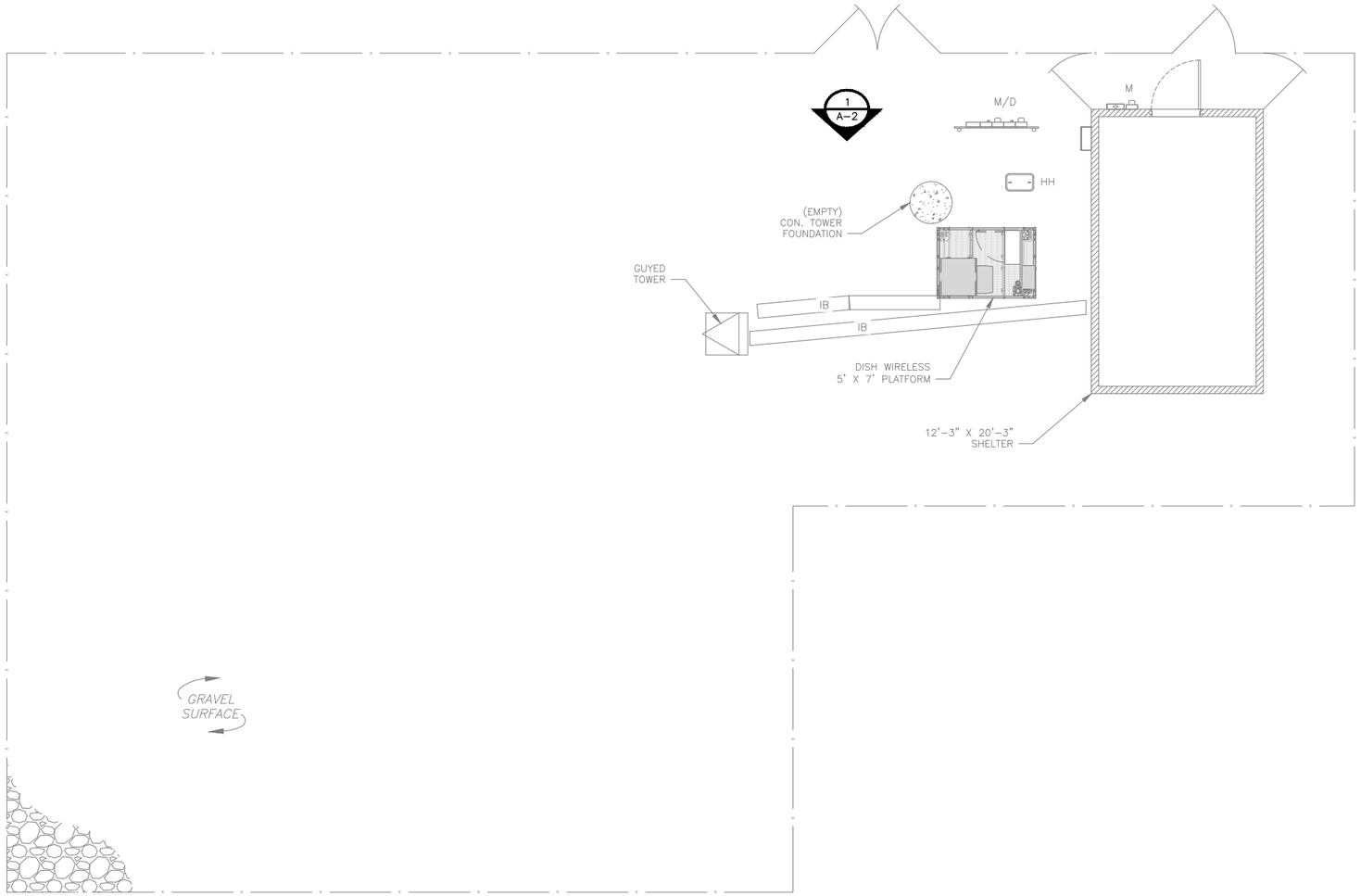
TITLE SHEET

SHEET NUMBER

T-1

NOTES

1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.



OVERALL SITE PLAN

10' 0 10' 20'
1"=10'

1

NOT USED

NO SCALE

2

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

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PHONE: (919) 468-0112
PEC.0001553

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DESCRIPTION	BY	DATE
0	FOR CONSTRUCTION	JRD	7/19/2023

STATE OF CONNECTICUT
SCOTT A. WIRGAU
30575
LICENSED
PROFESSIONAL ENGINEER

Digitally Signed 2023-08-11

A&E PROJECT NUMBER
6300-14485734_D1

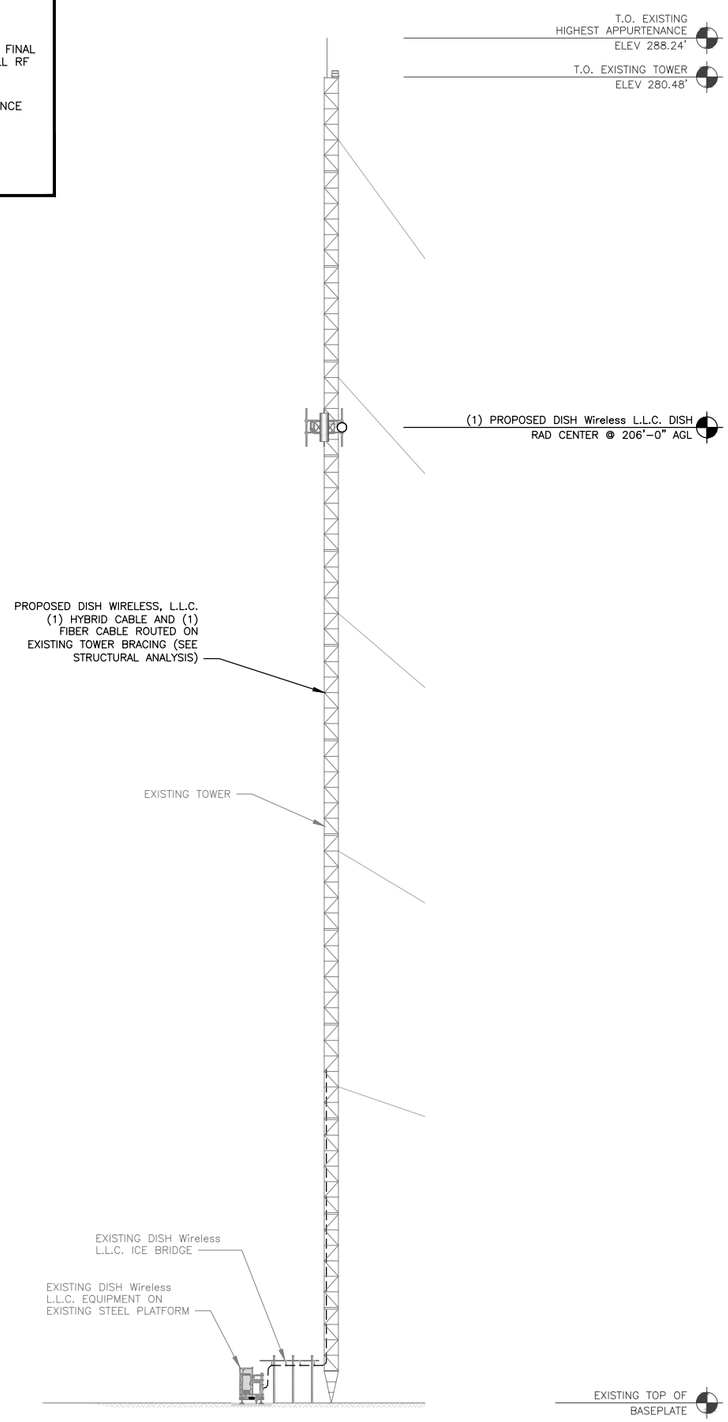
DISH Wireless L.L.C.
PROJECT INFORMATION
BOBOS00032A
156 LEBANON HILL RD.
WOODSTOCK, CT 06281

SHEET TITLE
OVERALL AND ENLARGED SITE PLAN

SHEET NUMBER
A-1

NOTES

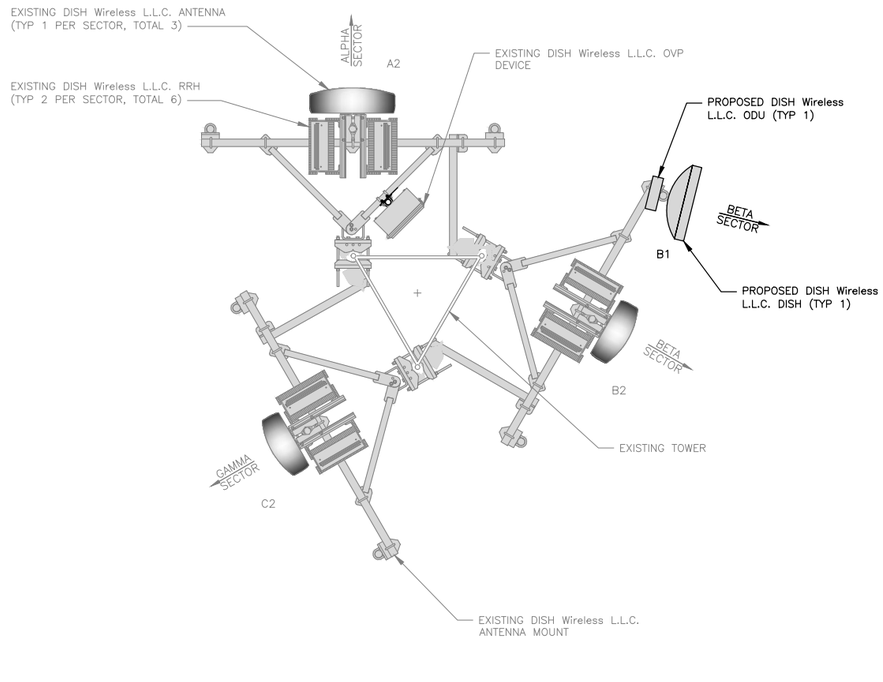
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNA AND MW DISH SPECIFICATIONS REFER TO ANTENNA SCHEDULE AND TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS.
3. EXISTING EQUIPMENT AND FENCE OMITTED FOR CLARITY.



PROPOSED NORTH ELEVATION

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

1



ANTENNA LAYOUT

12" 6" 0 1' 2' 3' 4' 5'
1/2"=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 (245' LONG)	TA08025-B604	5G	A2	(1) RAYCAP RDIDC-9181-PF-48
A2	EXISTING	FFVV-65B-R2	5G	0°	206'		TA08025-B605	5G	A2	
A3	--	--	--	--	--		--	--	--	
B1	PROPOSED	VHLP2-11W/A	MW	103.917°	206'	(1) 1.6" HYBRID (1) 0.5" FIBER	IP-50C	MW	B1	SHARED W/ALPHA
B2	EXISTING	FFVV-65B-R2	5G	120°	206'		TA08025-B604	5G	B2	
B3	--	--	--	--	--		TA08025-B605	5G	B2	
C1	--	--	--	--	--		TA08025-B604	5G	C2	SHARED W/ALPHA
C2	EXISTING	FFVV-65B-R2	5G	240°	206'		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

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

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RFDS REV #: ---

CONSTRUCTION DOCUMENTS

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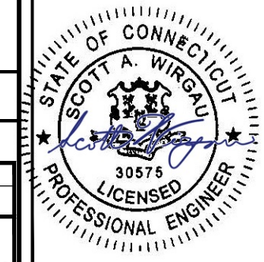


A&E PROJECT NUMBER
6300-14485734_D1

DISH Wireless L.L.C.
PROJECT INFORMATION
BOBOS00032A
156 LEBANON HILL RD.
WOODSTOCK, CT 06281

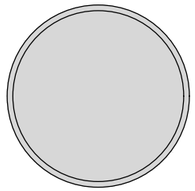
SHEET TITLE
ELEVATION, ANTENNA LAYOUT AND SCHEDULE

SHEET NUMBER
A-2

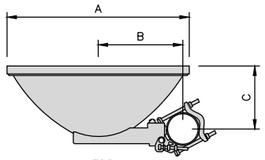
COMMSCOPE MICROWAVE DISHES

SIZE	MODEL	WEIGTH (LBS)	A	B	C	D
1'	VHLP1-**	12.0	13"	6.1"	6.0"	1.8"
2'	VHLP2-**	12.9	26"	12.2"	9.9"	1.8"
3'	VHLP3-**	37.0	39"	16.0"	15.2"	2.4"
4'	VHLP4-**	71.0	50.8"	16.0"	30.2"	7.2"
6'	VHLP6-**	190.0	74.8"	37.4"	47.5"	22.4"

"D" = VERTICAL WIDTH OF MOUNTING CLAMP



FRONT



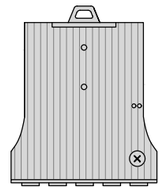
TOP

** = REFER TO ANTENNA SCHEDULE FOR SITE SPECIFIC DISH SELECTION, FREQUENCIES, & REMAINDER OF MODEL NUMBER

MICROWAVE DETAIL | NO SCALE | 1

CERAGON IP-50C

DIMENSIONS (HxWxD)	12.7"x8.93"x3.38"
WEIGHT	13.2 lbs



FRONT

IP-50 UNIVERSAL RADIO DETAIL | NO SCALE | 2

NO SCALE | 3

NO SCALE | 4

NO SCALE | 5

NO SCALE | 6

NO SCALE | 7

NO SCALE | 8

NO SCALE | 9

dish wireless.

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SCOTT A. WIRGAU
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Digitally Signed 2023-08-11

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DISH Wireless L.L.C.
PROJECT INFORMATION
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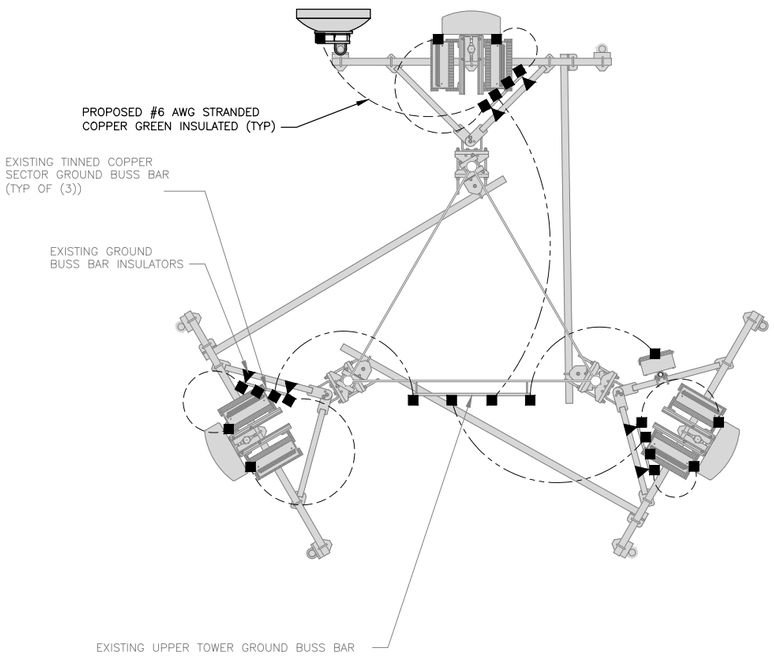
156 LEBANON HILL RD.
WOODSTOCK, CT 06281

SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-6

NOT USED

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 ONLY

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

GROUNDING LEGEND

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

GROUNDING KEY NOTES

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

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

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

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

(E) GROUND ROD: UL LISTED COPPER CLAD STEEL. MINIMUM 5/8" DIAMETER BY EIGHT FEET LONG. GROUND RODS SHALL BE INSTALLED WITH INSPECTION SLEEVES. GROUND RODS SHALL BE DRIVEN TO THE DEPTH OF GROUND RING CONDUCTOR.

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

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

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

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

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

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

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

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

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

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

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

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

GROUNDING KEY NOTES

NO SCALE | 3

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

AMERICAN TOWER®
A.T. ENGINEERING SERVICES LLC
3500 REGENCY PARKWAY
SUITE 100
CARY, NC 27518
PHONE: (919) 468-0112
PEC.0001553

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DESCRIPTION	BY	DATE
0	FOR CONSTRUCTION	JRD	7/19/2023

STATE OF CONNECTICUT
SCOTT A. WIRGAU
30575
LICENSED PROFESSIONAL ENGINEER

Digitally Signed 2023-08-11

A&E PROJECT NUMBER
6300-14485734_D1

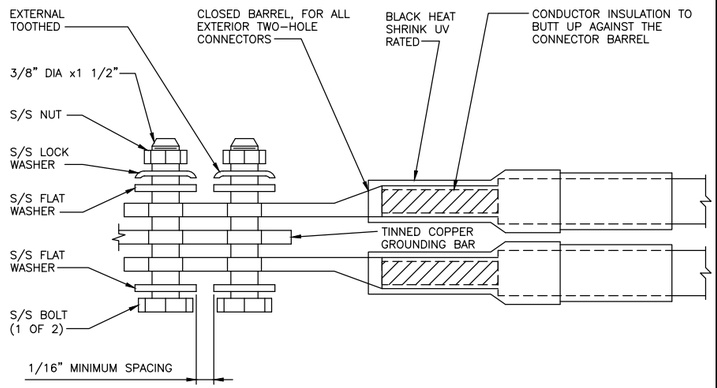
DISH Wireless L.L.C.
PROJECT INFORMATION
BOBOS00032A
156 LEBANON HILL RD.
WOODSTOCK, CT 06281

SHEET TITLE
GROUNDING PLAN AND NOTES

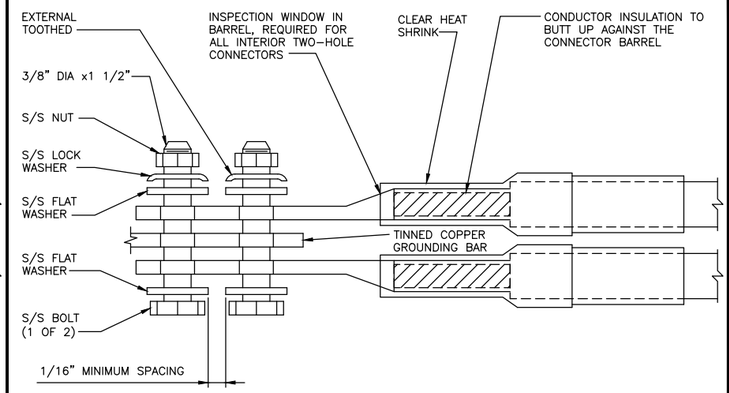
SHEET NUMBER
G-1

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).

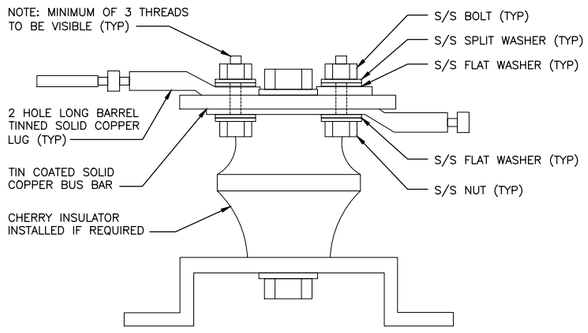
TYPICAL GROUNDING NOTES | NO SCALE | 1



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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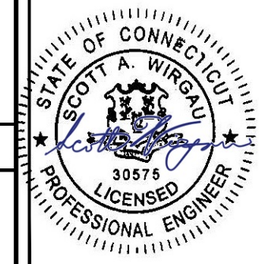

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DISH Wireless L.L.C.
PROJECT INFORMATION
BOBOS00032A
156 LEBANON HILL RD.
WOODSTOCK, CT 06281

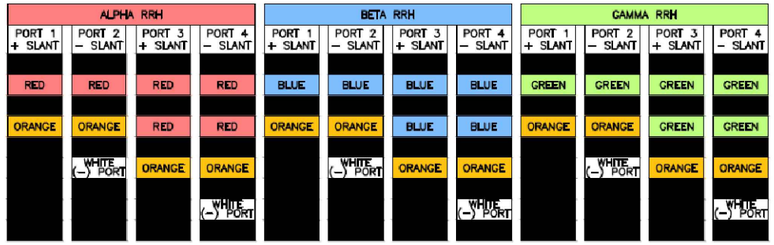
SHEET TITLE
GROUNDING DETAILS

SHEET NUMBER
G-3

HYBRID/DISCREET CABLES — 3/4" TAPE WIDTHS WITH 3/4" SPACING

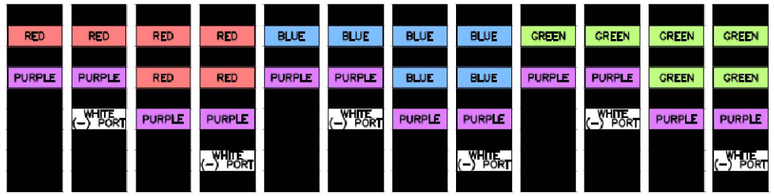
LOW-BAND RRH
(600 MHz N71 BASEBAND) +
(850 MHz N26 BAND) +
(700 MHz N29 BAND) – OPTIONAL PER MARKET

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)



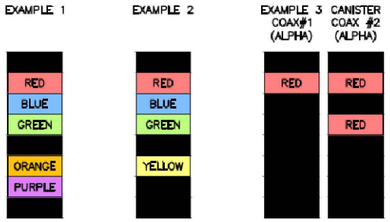
HYBRID/DISCREET CABLES

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.

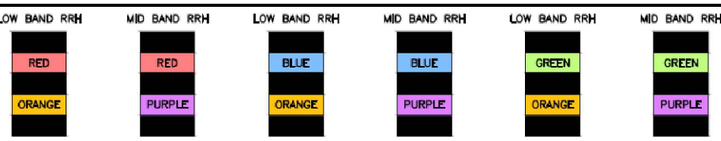
EXAMPLE 3 – MAIN COAX WITH GROUND MOUNTED RRHs.



LOW-BAND RRH FIBER CABLES HAVE SECTOR STRIPE ONLY.

POWER CABLES TO RRHs

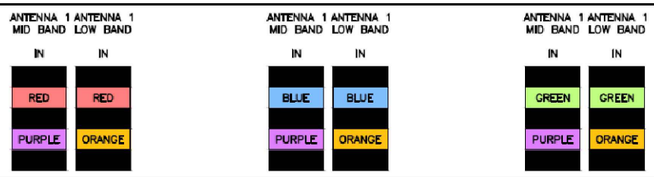
LOW-BAND RRH POWER CABLES HAVE SECTOR STRIPE ONLY



RET MOTORS AT ANTENNAS

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

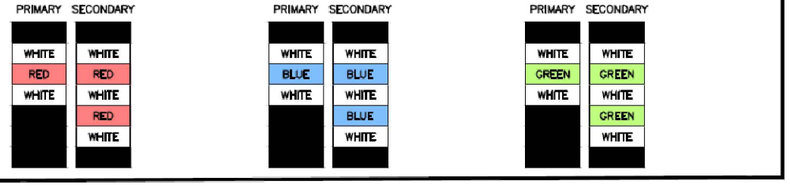
SEPARATE RET CABLES ARE USED WHEN ANTENNA PORTS PROVIDE INPUTS FOR BOTH LOW AND MID BANDS.



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.



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		2
NOT USED		3
RF CABLE COLOR CODES		1
NOT USED		4

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STATE OF CONNECTICUT
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LICENSED PROFESSIONAL ENGINEER

Digitally Signed 2023-08-11

A&E PROJECT NUMBER
6300-14485734_D1

DISH Wireless L.L.C.
PROJECT INFORMATION
BOBOS00032A
156 LEBANON HILL RD.
WOODSTOCK, CT 06281

SHEET TITLE
RF CABLE COLOR CODES

SHEET NUMBER
RF-1

EXOTHERMIC CONNECTION

MECHANICAL CONNECTION

BUSS BAR INSULATOR

CHEMICAL ELECTROLYTIC GROUNDING SYSTEM

TEST CHEMICAL ELECTROLYTIC GROUNDING SYSTEM

EXOTHERMIC WITH INSPECTION SLEEVE

GROUNDING BAR

GROUND ROD

TEST GROUND ROD WITH INSPECTION SLEEVE

SINGLE POLE SWITCH

DUPLEX RECEPTACLE

DUPLEX GFCI RECEPTACLE

FLUORESCENT LIGHTING FIXTURE
(2) TWO LAMPS 48–T8

SMOKE DETECTION (DC)

EMERGENCY LIGHTING (DC)

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

CHAIN LINK FENCE

WOOD/WROUGHT IRON FENCE

WALL STRUCTURE

LEASE AREA

PROPERTY LINE (PL)

SETBACKS

ICE BRIDGE

CABLE TRAY

WATER LINE

UNDERGROUND POWER

UNDERGROUND TELCO

OVERHEAD POWER

OVERHEAD TELCO

UNDERGROUND TELCO/POWER

ABOVE GROUND POWER

ABOVE GROUND TELCO

ABOVE GROUND TELCO/POWER

WORKPOINT

W.P.

SECTION REFERENCE

DETAIL REFERENCE

LEGEND

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

ABBREVIATIONS

dish wireless.

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SUBMITTALS

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STATE OF CONNECTICUT
SCOTT A. WIRGAU
30575
LICENSED
PROFESSIONAL ENGINEER

A&E PROJECT NUMBER

6300–14485734_D1

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBOS00032A

156 LEBANON HILL RD.
WOODSTOCK, CT 06281

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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Site ID: _____

dish

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RF SIGNAGE

dish wireless.

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STATE OF CONNECTICUT
SCOTT A. WIRGAU
30575
LICENSED PROFESSIONAL ENGINEER

Digitally Signed 2023-06-14

A&E PROJECT NUMBER
6300–14485734_D1

DISH Wireless L.L.C.
PROJECT INFORMATION
BOBOS00032A
156 LEBANON HILL RD.
WOODSTOCK, CT 06281

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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RFDS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DESCRIPTION	BY	DATE
0	FOR CONSTRUCTION	JRD	7/19/2023

STATE OF CONNECTICUT
SCOTT A. WIRGAU
30575
LICENSED
PROFESSIONAL ENGINEER

Digitally Signed 2023-08-11

A&E PROJECT NUMBER
6300–14485734_D1

DISH Wireless L.L.C.
PROJECT INFORMATION
BOBOS00032A
156 LEBANON HILL RD.
WOODSTOCK, CT 06281

SHEET TITLE
GENERAL NOTES

SHEET NUMBER
GN-3

CONCRETE, FOUNDATIONS, AND REINFORCING STEEL:

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

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

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

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

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

#4 BARS AND SMALLER 40 ksi

#5 BARS AND LARGER 60 ksi

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

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

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

ELECTRICAL INSTALLATION NOTES:

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

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

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

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

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

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

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

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

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

8. TIE WRAPS ARE NOT ALLOWED.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

dish wireless.
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RFDS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DESCRIPTION	BY	DATE
0	FOR CONSTRUCTION	JRD	7/19/2023

STATE OF CONNECTICUT
SCOTT A. WIRGAU
30575
LICENSED
PROFESSIONAL ENGINEER

Digitally Signed 2023-08-11

A&E PROJECT NUMBER
6300-14485734_D1

DISH Wireless L.L.C.
PROJECT INFORMATION
BOBOS00032A
156 LEBANON HILL RD.
WOODSTOCK, CT 06281

SHEET TITLE
GENERAL NOTES

SHEET NUMBER
GN-4

GROUNDING NOTES:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

20. ALL GROUNDS THAT TRANSITION FROM BELOW GRADE TO ABOVE GRADE MUST BE #2 BARE SOLID TINNED COPPER IN 3/4" NON-METALLIC, FLEXIBLE CONDUIT FROM 24" BELOW GRADE TO WITHIN 3" TO 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.

STRUCTURAL STEEL NOTES:

1. STRUCTURAL STEEL SHALL CONFORM TO THE LATEST EDITION OF THE AISC "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS."

2. STRUCTURAL STEEL ROLLED SHAPES, PLATES AND BARS SHALL CONFORM TO THE FOLLOWING ASTM DESIGNATIONS:

A. ASTM A-572, GRADE 50 – ALL W SHAPES, UNLESS NOTED OR A992 OTHERWISE

B. ASTM A-36 – ALL OTHER ROLLED SHAPES, PLATES AND BARS UNLESS NOTED OTHERWISE.

C. ASTM A-500, GRADE B – HSS SECTION (SQUARE, RECTANGULAR, AND ROUND)

D. ASTM A-325, TYPE SC OR N – ALL BOLTS FOR CONNECTING STRUCTURAL MEMBERS

E. ASTM F-1554 07 – ALL ANCHOR BOLTS, UNLESS NOTED OTHERWISE

3. ALL EXPOSED STRUCTURAL STEEL MEMBERS SHALL BE HOT-DIPPED GALVANIZED AFTER FABRICATION PER ASTM A123. EXPOSED STEEL HARDWARE AND ANCHOR BOLTS SHALL BE GALVANIZED PER ASTM A153 OR B695.

4. ALL FIELD CUT SURFACES, FIELD DRILLED HOLES AND GROUND SURFACES WHERE EXISTING PAINT OR GALVANIZATION REMOVAL WAS REQUIRED SHALL BE REPAIRED WITH (2) BRUSHED COATS OF ZRC GALVILITE COLD GALVANIZING COMPOUND PER ASTM A780 AND MANUFACTURER'S RECOMMENDATIONS.

5. DO NOT DRILL HOLES THROUGH STRUCTURAL STEEL MEMBERS EXCEPT AS SHOWN AND DETAILED ON STRUCTURAL DRAWINGS.

6. CONNECTIONS:

A. ALL WELDING TO BE PERFORMED BY AWS CERTIFIED WELDERS AND CONDUCTED IN ACCORDANCE WITH THE LATEST EDITION OF THE AWS WELDING CODE D1.1.

B. ALL WELDS SHALL BE INSPECTED VISUALLY. 25% OF WELDS SHALL BE INSPECTED WITH DYE PENETRANT OR MAGNETIC PARTICLE TO MEET THE ACCEPTANCE CRITERIA OF AWS D1.1. REPAIR ALL WELDS AS NECESSARY.

C. INSPECTION SHALL BE PERFORMED BY AN AWS CERTIFIED WELD INSPECTOR.

D. IT IS THE CONTRACTORS RESPONSIBILITY TO PROVIDE BURNING/WELDING PERMITS AS REQUIRED BY LOCAL GOVERNING AUTHORITY AND IF REQUIRED SHALL HAVE FIRE DEPARTMENT DETAIL FOR ANY WELDING ACTIVITY.

E. ALL ELECTRODES TO BE LOW HYDROGEN, MATCHING FILLER METAL, PER AWS D1.1, UNLESS NOTED OTHERWISE.

F. MINIMUM WELD SIZE TO BE 0.1875 INCH FILLET WELDS, UNLESS NOTED OTHERWISE.

G. PRIOR TO FIELD WELDING GALVANIZING MATERIAL, CONTRACTOR SHALL GRIND OFF GALVANIZING ½" BEYOND ALL FIELD WELD SURFACES. AFTER WELD AND WELD INSPECTION IS COMPLETE, REPAIR ALL GROUND AND WELDED SURFACES WITH ZRC GALVILITE COLD GALVANIZING COMPOUND PER ASTM A780 AND MANUFACTURERS RECOMMENDATIONS.

H. THE CONTRACTOR SHALL PROVIDE ADEQUATE SHORING AND/OR BRACING WHERE REQUIRED DURING CONSTRUCTION UNTIL ALL CONNECTIONS ARE COMPLETE.

I. ANY FIELD CHANGES OR SUBSTITUTIONS SHALL HAVE PRIOR APPROVAL FROM THE ENGINEER, AND DISH NETWORK PROJECT MANAGER IN WRITING

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

AMERICAN TOWER®
A.T. ENGINEERING SERVICES LLC
3500 REGENCY PARKWAY
SUITE 100
CARY, NC 27518
PHONE: (919) 468-0112
PEC.0001553

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DESCRIPTION	BY	DATE
0	FOR CONSTRUCTION	JRD	7/19/2023

STATE OF CONNECTICUT
SCOTT A. WIRGAU
30575
LICENSED
PROFESSIONAL ENGINEER

Digitally Signed 2023-08-11

A&E PROJECT NUMBER
6300-14485734_D1

DISH Wireless L.L.C.
PROJECT INFORMATION
BOBOS00032A
156 LEBANON HILL RD.
WOODSTOCK, CT 06281

SHEET TITLE
GENERAL NOTES

SHEET NUMBER
GN-5

CENTERLINE COMMUNICATIONS

33 Bolivia Street
Willimantic CT 06226
rburgdorfer@clinellc.com
508.665.8005

EXHIBIT 3

Structural Analysis

AMERICAN TOWER®
CORPORATION

Structural Analysis Report

Structure	:	280 ft Guyed Tower
ATC Asset Name	:	WOODSTOCK CT
ATC Asset Number	:	6300
Engineering Number	:	14485734_C3_02
Proposed Carrier	:	DISH WIRELESS L.L.C.
Carrier Site Name	:	BOBOS00032A
Carrier Site Number	:	BOBOS00032A
Site Location	:	156 Lebanon Hill Rd. Woodstock, CT 06281-1734 42.0253° N, 72.037° W
County	:	Windham
Date	:	May 18, 2023
Max Usage	:	56%
Analysis Result	:	Pass

Created By:

Nathan Lyle
Structural Engineer I

Nathan Lyle

STATE OF CONNECTICUT
ESHA KAUSHAL MODI
32593
LICENSED
PROFESSIONAL ENGINEER

COA: PEC.0001553

Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 280 ft Guyed tower to reflect the change in loading by DISH WIRELESS L.L.C..

Supporting Documents

Tower:	Sabre Job #00-08094, dated August 20, 1999
Foundation:	Semaan Engineering Job #AMT-WOOD, dated August 20, 1999
Geotechnical:	JGI Project #99398G, dated July 19, 1999

Analysis

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

Basic Wind Speed:	119 mph (3-second gust)
Basic Wind Speed w/ Ice:	50 mph (3-second gust) w/ 1.50" radial ice concurrent
Code(s):	ANSI/TIA-222-H / 2021 IBC / 2022 Connecticut State Building Code
Exposure Category:	C
Risk Category:	II
Topographic Factor Procedure:	Method 1
Topographic Category:	1
Spectral Response:	Ss = 0.18, S_1 = 0.06
Site Class:	D - Stiff Soil - Default

Conclusion

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

If you have any questions or require additional information, please contact American Tower Engineering via email at **Engineering@americantower.com.** Please include the American Tower asset name, asset number, and engineering number in the subject line for any questions.

Structure Usages

Structural Component	Usage	Control	Location	Result
Leg	48.0%	Member X	Section 3	Pass
Diagonal	12.0%	Member X	Section 11	Pass
Horizontal	6.0%	Member X	Section 12	Pass
Bolt	1.6%	-	Section 13	Pass
Torque Arm	13.0%	Compression	Elevation 217 ft	Pass
Cable	56.0%	Tension	Elevation 267 ft	Pass
Mat & Pier	46.7%	Bearing [Soil]	Node 1	Pass
Guy Anchor	24.3%	Shear [Soil]	Node A1	Pass
Guy Anchor	29.5%	Shear [Soil]	Node A1a	Pass
Guy Anchor	27.0%	Shear [Soil]	Node A1b	Pass

Maximum Reactions

Foundation	Moment (k-ft)	Axial (k)	Uplift (k)	Shear (k)
Guyed – Pivot Base	-	123.0	-	0.8
Guyed Anchor - A1	-	-	24.2	32.4

Reactions shown are maximum overall and not limited by Load Case

Structure base reactions were analyzed using available geotechnical and foundation information.

DISH WIRELESS L.L.C. Final Loading

Elev (ft)	Qty	Equipment	Lines
206.0	1	Ceragon IP-50C	(1) 0.50" (12.7mm) Fiber (2) 1.60" (40.6mm) Hybrid
	1	Commscope VHLP2-11W/A	
	1	Raycap RDIDC-9181-PF-48	
	3	Commscope FFVV-65B-R2	
	3	Fujitsu TA08025-B604	
	3	Fujitsu TA08025-B605	
	3	Sector Frame	

Install proposed lines alongside existing DISH WIRELESS L.L.C. lines.

Other Existing/Reserved Loading

No loading was considered in addition to the DISH WIRELESS L.L.C. Final Loading.

Standard Conditions

All engineering services performed by A.T. Engineering Services LLC are prepared on the basis that the information used is current and correct. This information may consist of, but is not limited to the following:

- Information supplied by the client regarding antenna, mounts, and feed line loading
- Information from drawings, design and analysis documents, and field notes in the possession of A.T. Engineering Services LLC

It is the responsibility of the client to ensure that the information provided to A.T. Engineering Services LLC and used in the performance of our engineering services is correct and complete.

All assets of American Tower Corporation, its affiliates, and subsidiaries (collectively "American Tower") are inspected at regular intervals. Based upon these inspections and in the absence of information to the contrary, American Tower assumes that all structures were constructed in accordance with the drawings and specifications.

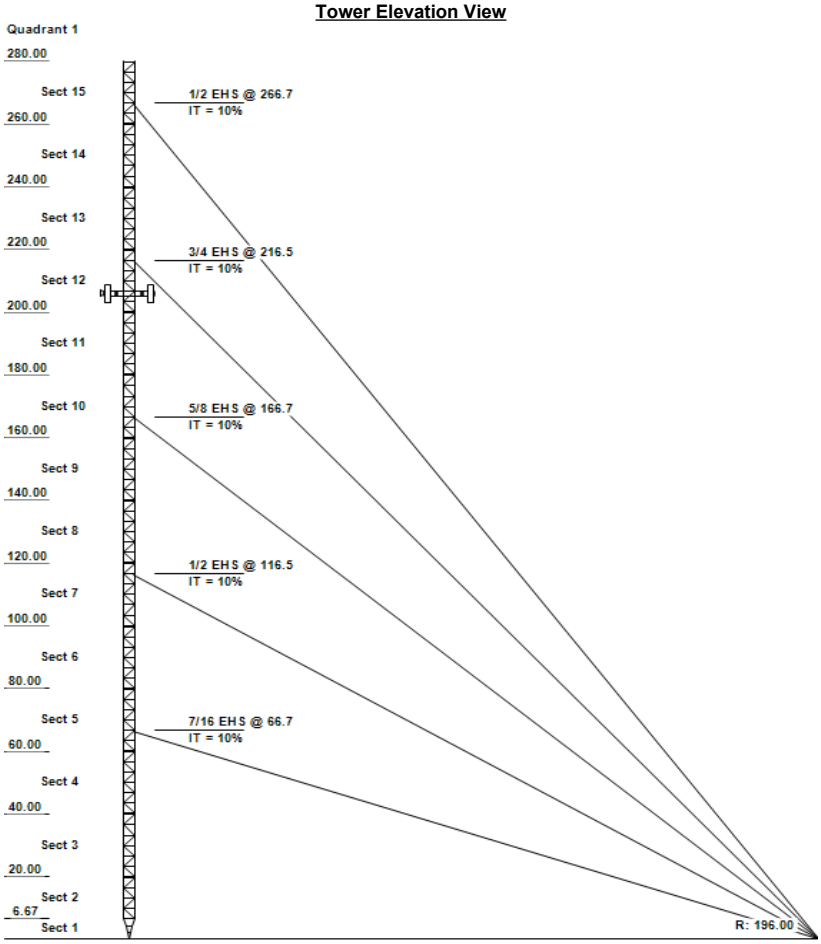
Unless explicitly agreed by both the client and A.T. Engineering Services LLC, all services will be performed in accordance with the current revision of ANSI/TIA-222.

All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. A.T. Engineering Services LLC is not responsible for the conclusions, opinions and recommendations made by others based on the information supplied herein.

ANALYSIS PARAMETERS

Nominal Wind:	119 mph	**Ice Wind:**	50 mph w/ 1.5" ice	**Service Wind:**	60 mph
Risk Category:	II	**Exposure:**	C	**S_s:** 0.181	**S_1:** 0.056
Topo Category:	1	**Topo Factor:**	Method 1	**Topo Feature:**	
Structure Height:	280 ft	**Base Elevation:**	0 ft	**Shape:**	Triangle
Base Width:	3 ft	**Top Width:**	3 ft	**Base Type:**	Pivot

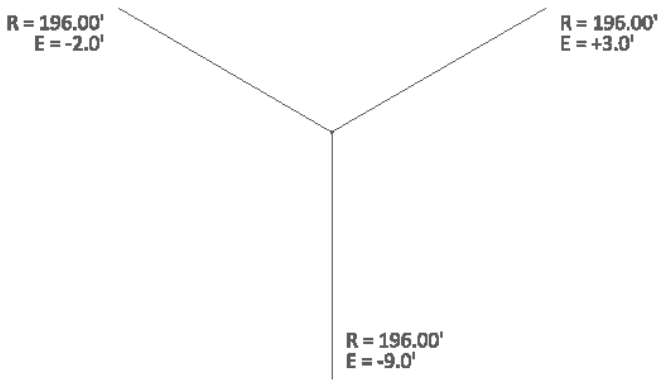
Tower Elevation View



BASE REACTIONS

Axial (k):	123.02
Shear (k):	0.83

Tower Plan View



TOWER SECTION PROPERTIES

Section	Leg Members	Diagonal Members	Horizontal Members
1	SOL 50 ksi 2 1/4" SOL		PL 36 ksi PL 9 x 0.375"
2	SOL 50 ksi 2 1/4" SOL	SOL 36 ksi 1 1/4" SOLID	SOL 36 ksi 7/8" SOLID
3-4	SOL 50 ksi 2" SOLID	SOL 36 ksi 1" SOLID	SOL 36 ksi 7/8" SOLID
5	SOL 50 ksi 2" SOLID	SOL 36 ksi 1 1/4" SOLID	SOL 36 ksi 7/8" SOLID
6	SOL 50 ksi 2" SOLID	SOL 36 ksi 1" SOLID	SOL 36 ksi 7/8" SOLID
7	SOL 50 ksi 2" SOLID	SOL 36 ksi 1 1/4" SOLID	SOL 36 ksi 7/8" SOLID
8-9	SOL 50 ksi 2" SOLID	SOL 36 ksi 1" SOLID	SOL 36 ksi 7/8" SOLID
10	SOL 50 ksi 2" SOLID	SOL 36 ksi 1 1/4" SOLID	SOL 36 ksi 7/8" SOLID
11	SOL 50 ksi 1 3/4" SOL	SOL 36 ksi 1" SOLID	SOL 36 ksi 7/8" SOLID
12	SOL 50 ksi 1 3/4" SOL	SOL 36 ksi 1 1/4" SOLID	SOL 36 ksi 7/8" SOLID
13	SOL 50 ksi 1 1/2" SOL	SOL 36 ksi 1 1/4" SOLID	SOL 36 ksi 7/8" SOLID
14	SOL 50 ksi 1 1/2" SOL	SOL 36 ksi 1" SOLID	SOL 36 ksi 7/8" SOLID
15	SOL 50 ksi 1 3/4" SOL	SOL 36 ksi 1 1/4" SOLID	SOL 36 ksi 7/8" SOLID

SECONDARY BRACING MEMBERS

Section	Sub Diagonal 1	Sub Diagonal 2	Sub Diagonal 3
1 - 15	-	-	-

Section	Sub Horizontal 1	Sub Horizontal 2	Sub Horizontal 3
1 - 15	-	-	-

DISCRETE APPURTENANCE

Elev (ft)	Description
206.0	(3) Fujitsu TA08025-B605
206.0	(3) Fujitsu TA08025-B604
206.0	(3) Generic Round Sector Frame
206.0	(3) Commscope FFVV-65B-R2
206.0	(1) Ceragon IP-50C
206.0	(1) Commscope VHLP2-11W/A
206.0	(1) Raycap RDIDC-9181-PF-48

LINEAR APPURTENANCE

Elev To (ft)	Description
206.0	(2) 1.60" (40.6mm) Hybrid
206.0	(1) 0.50" (12.7mm) Fiber

GUY ANCHOR REACTIONS

Radius (ft)	Drop (ft)	Azimuth (°)	Uplift (k)	Shear (k)
196.0	-9.00	0	20.72	26.83
196.0	3.00	120	21.32	29.94
196.0	-2.00	240	24.17	32.45

ANALYSIS PARAMETERS

Location:	Windham County, CT	**Height:**	280 ft
Type and Shape:	Guyed, Triangle	**Base Elevation:**	0.00 ft
Manufacturer:	Sabre	**Bottom Face Width:**	3.00 ft
Kd	0.85	**Top Face Width:**	3.00 ft
Ke:	0.97		

ICE & WIND PARAMETERS

Exposure Category:	C	**Design Wind Speed Without Ice:**	119 mph
Risk Category:	II	**Design Wind Speed with Ice:**	50 mph
Topographic Factor Procedure:	Method 1	**Operational Windspeed:**	60 mph
Topographic Category:	Flat	**Design Ice Thickness:**	1.50 in
Crest Height:	0 ft	**HMSL:**	787 ft

SEISMIC PARAMETERS

Analysis Method:	Equivalent Lateral Force Method				
Site Class:	D - Stiff Soil			**Period Based on Rayleigh Method (sec):**	0.58
T_L (sec):	6	**P:**	1.3	**C_s:**	0.051
S_s:	0.181	**S_1:**	0.056	**C_s Max:**	0.051
F_a:	1.600	**F_v:**	2.400	**C_s Min:**	0.030
S_{ds}:	0.193	**S_{d1}:**	0.090		

LOAD CASES

1.2D + 1.0W Normal	1.2D + 1.0W Normal - 119 mph Wind with No Ice
1.2D + 1.0W 60°	1.2D + 1.0W 60° - 119 mph Wind with No Ice
1.2D + 1.0W 90°	1.2D + 1.0W 90° - 119 mph Wind with No Ice
1.2D + 1.0Di + 1.0Wi Normal	1.2D + 1.0Di + 1.0Wi Normal - 50 mph Wind with 1.5" Radial Ice
1.2D + 1.0Di + 1.0Wi 60°	1.2D + 1.0Di + 1.0Wi 60° - 50 mph Wind with 1.5" Radial Ice
1.2D + 1.0Di + 1.0Wi 90°	1.2D + 1.0Di + 1.0Wi 90° - 50 mph Wind with 1.5" Radial Ice
1.2D + 1.0Ev + 1.0Eh Normal	1.2D + 1.0Ev + 1.0Eh Normal - Seismic
1.2D + 1.0Ev + 1.0Eh 60°	1.2D + 1.0Ev + 1.0Eh 60° - Seismic
1.2D + 1.0Ev + 1.0Eh 90°	1.2D + 1.0Ev + 1.0Eh 90° - Seismic
1.0D + 1.0W Service Normal	1.0D + 1.0W Service Normal - 60 mph Wind with No Ice
1.0D + 1.0W Service 60°	1.0D + 1.0W Service 60° - 60 mph Wind with No Ice
1.0D + 1.0W Service 90°	1.0D + 1.0W Service 90° - 60 mph Wind with No Ice

TOWER LOADING – DISCRETE APPURTENANCE

Discrete Appurtenance Properties for LC: **1.2D + 1.0W**

Elev (ft)	Description	Qty	Wt. (lb)	EPA (sf)	Length (ft)	Width (in)	Depth (in)	K_a	Orient. Factor	Vert. Ecc. (ft)	M_u (lb-ft)	Q_z (psf)	F_a (WL) (lb)	P_a (DL) (lb)
206.0	Ceragon IP-50C	1	13	1.1	1.1	10.6	3.4	0.80	1.00	0.0	0.00	44.13	34	16
206.0	Fujitsu TA08025-B605	3	75	2.0	1.3	15.0	9.1	0.80	0.50	0.0	0.00	44.13	88	270
206.0	Fujitsu TA08025-B604	3	64	2.0	1.3	15.0	7.9	0.80	0.50	0.0	0.00	44.13	88	230
206.0	Raycap RDIDC-9181-PF-48	1	22	2.0	1.4	14.6	8.4	0.80	1.00	0.0	0.00	44.13	61	26
206.0	Commscope VHLP2-11W/A	1	17	4.6	2.2	26.0	9.9	0.80	1.00	0.0	0.00	44.13	140	20
206.0	Commscope FFVV-65B-R2	3	71	12.3	6.0	19.6	7.8	0.80	0.64	0.0	0.00	44.13	707	255
206.0	Generic Round Sector Frame	3	300	14.4	0.0	0.0	0.0	0.75	0.75	0.0	0.00	44.13	912	1080
	Totals	**15**	**1,581**	**99.6**									2,029	1,897

Discrete Appurtenance Properties for LC: **1.2D + 1.0Di + 1.0Wi**

Elev (ft)	Description	Qty	Ice Wt (lb)	Ice EPA (sf)	Length (ft)	Width (in)	Depth (in)	K_a	Orient. Factor	Vert. Ecc. (ft)	M_u (lb-ft)	Q_z (psf)	F_a (WL) (lb)	P_a (DL) (lb)
206.0	Ceragon IP-50C	1	41	1.9	1.1	10.6	3.4	0.80	1.00	0.0	0.00	7.79	10	44
206.0	Fujitsu TA08025-B605	3	140	2.9	1.3	15.0	9.1	0.80	0.50	0.0	0.00	7.79	23	465
206.0	Fujitsu TA08025-B604	3	124	2.9	1.3	15.0	7.9	0.80	0.50	0.0	0.00	7.79	23	411
206.0	Raycap RDIDC-9181-PF-48	1	86	3.0	1.4	14.6	8.4	0.80	1.00	0.0	0.00	7.79	16	90
206.0	Commscope VHLP2-11W/A	1	110	6.0	2.2	26.0	9.9	0.80	1.00	0.0	0.00	7.79	32	114
206.0	Commscope FFVV-65B-R2	3	331	15.2	6.0	19.6	7.8	0.80	0.64	0.0	0.00	7.79	154	1036
206.0	Generic Round Sector Frame	3	681	31.6	0.0	0.0	0.0	0.75	0.75	0.0	0.00	7.79	353	2224
	Totals	**15**	**4,067**	**168.5**									611	4,384

Discrete Appurtenance Properties for LC: **1.0D + 1.0W Service**

Elev (ft)	Description	Qty	Wt. (lb)	EPA (sf)	Length (ft)	Width (in)	Depth (in)	K_a	Orient. Factor	Vert. Ecc. (ft)	M_u (lb-ft)	Q_z (psf)	F_a (WL) (lb)	P_a (DL) (lb)
206.0	Ceragon IP-50C	1	13	1.1	1.1	10.6	3.4	0.80	1.00	0.0	0.00	11.22	9	13
206.0	Fujitsu TA08025-B605	3	75	2.0	1.3	15.0	9.1	0.80	0.50	0.0	0.00	11.22	22	225
206.0	Fujitsu TA08025-B604	3	64	2.0	1.3	15.0	7.9	0.80	0.50	0.0	0.00	11.22	22	192
206.0	Raycap RDIDC-9181-PF-48	1	22	2.0	1.4	14.6	8.4	0.80	1.00	0.0	0.00	11.22	15	22
206.0	Commscope VHLP2-11W/A	1	17	4.6	2.2	26.0	9.9	0.80	1.00	0.0	0.00	11.22	35	17
206.0	Commscope FFVV-65B-R2	3	71	12.3	6.0	19.6	7.8	0.80	0.64	0.0	0.00	11.22	180	212
206.0	Generic Round Sector Frame	3	300	14.4	0.0	0.0	0.0	0.75	0.75	0.0	0.00	11.22	232	900
	Totals	**15**	**1,581**	**99.6**									516	1,581

TOWER LOADING – LINEAR APPURTENANCE

Linear Appurtenance Properties

Elev From (ft)	Elev To (ft)	Description	Qty	Width (in)	Weight (lb/ft)	% In Wind	Spread On Faces	Bundling	Cluster Dia (in)	Out of Zone	Spacing (in)	Orient. Factor	K_a Override
0.0	206.0	1.60" (40.6mm) Hybrid	1	1.60	2.34	100	1	Individual	0.00	N	1.00	1.00	0.00
0.0	206.0	1.60" (40.6mm) Hybrid	1	1.60	2.34	100	1	Individual	0.00	N	1.00	1.00	0.00
0.0	206.0	0.50" (12.7mm) Fiber	1	0.50	0.13	100	1	Individual	0.00	N	1.00	1.00	0.00

SECTION FORCES

1.2D + 1.0W Normal — Gust Response Factor (Gh): 0.85
119 mph Wind with No Ice — Wind Importance Factor (Iw): 1.00

Section #	Elev (ft)	Q_Z (psf)	A_f (sf)	A_r (sf)	Ice A_r (sf)	e	C_f	D_f	D_r	T_{iz} (in)	A_e (sf)	EPA_a (sf)	EPA_{ai} (sf)	Wt (lb)	Ice Wt (lb)	F_{st} (lb)	F_a (lb)	Force (lb)
15	270	46.72	0.750	9.765	0.00	0.167	2.71	1.00	1.00	0.0	6.40	17.34	0.00	1164	0	689	0	689
14	250	45.97	0.000	8.624	0.00	0.138	2.82	1.00	1.00	0.0	4.96	13.96	0.00	844	0	545	0	545
13	230	45.17	0.000	9.163	0.00	0.147	2.78	1.00	1.00	0.0	5.28	14.69	0.00	988	0	564	0	564
12	210	44.31	0.750	9.765	0.00	0.167	2.71	1.00	1.00	0.0	6.40	17.34	0.00	1198	0	653	50	703
11	190	43.39	0.000	9.436	0.00	0.150	2.77	1.00	1.00	0.0	5.44	15.07	0.00	1116	0	556	164	720
10	170	42.38	0.750	10.576	0.00	0.179	2.67	1.00	1.00	0.0	6.89	18.39	0.00	1459	0	662	160	822
9	150	41.28	0.000	10.248	0.00	0.162	2.73	1.00	1.00	0.0	5.93	16.17	0.00	1296	0	567	156	723
8	130	40.06	0.000	10.248	0.00	0.162	2.73	1.00	1.00	0.0	5.93	16.17	0.00	1296	0	550	151	702
7	110	38.67	0.750	10.576	0.00	0.179	2.67	1.00	1.00	0.0	6.89	18.39	0.00	1459	0	604	146	750
6	90	37.07	0.000	10.248	0.00	0.162	2.73	1.00	1.00	0.0	5.93	16.17	0.00	1296	0	509	140	649
5	70	35.16	0.750	10.576	0.00	0.179	2.67	1.00	1.00	0.0	6.89	18.39	0.00	1459	0	550	133	682
4	50	32.76	0.000	10.248	0.00	0.162	2.73	1.00	1.00	0.0	5.93	16.17	0.00	1296	0	450	124	574
3	30	29.42	0.000	10.248	0.00	0.162	2.73	1.00	1.00	0.0	5.93	16.17	0.00	1296	0	404	111	515
2	13	25.46	0.000	7.787	0.00	0.183	2.65	1.00	1.00	0.0	4.54	12.03	0.00	1102	0	260	64	324
1	3	25.46	4.078	2.584	0.00	0.592	1.81	1.00	1.00	0.0	5.99	10.83	0.00	622	0	234	22	256
													Totals	**17,892**	**0**			**9,220**

1.2D + 1.0W 60° — Gust Response Factor (Gh): 0.85
119 mph Wind with No Ice — Wind Importance Factor (Iw): 1.00

Section #	Elev (ft)	Q_Z (psf)	A_f (sf)	A_r (sf)	Ice A_r (sf)	e	C_f	D_f	D_r	T_{iz} (in)	A_e (sf)	EPA_a (sf)	EPA_{ai} (sf)	Wt (lb)	Ice Wt (lb)	F_{st} (lb)	F_a (lb)	Force (lb)
15	270	46.72	0.750	9.765	0.00	0.167	2.71	0.80	1.00	0.0	6.25	16.93	0.00	1164	0	672	0	672
14	250	45.97	0.000	8.624	0.00	0.138	2.82	0.80	1.00	0.0	4.96	13.96	0.00	844	0	545	0	545
13	230	45.17	0.000	9.163	0.00	0.147	2.78	0.80	1.00	0.0	5.28	14.69	0.00	988	0	564	0	564
12	210	44.31	0.750	9.765	0.00	0.167	2.71	0.80	1.00	0.0	6.25	16.93	0.00	1198	0	638	50	688
11	190	43.39	0.000	9.436	0.00	0.150	2.77	0.80	1.00	0.0	5.44	15.07	0.00	1116	0	556	164	720
10	170	42.38	0.750	10.576	0.00	0.179	2.67	0.80	1.00	0.0	6.74	17.99	0.00	1459	0	648	160	808
9	150	41.28	0.000	10.248	0.00	0.162	2.73	0.80	1.00	0.0	5.93	16.17	0.00	1296	0	567	156	723
8	130	40.06	0.000	10.248	0.00	0.162	2.73	0.80	1.00	0.0	5.93	16.17	0.00	1296	0	550	151	702
7	110	38.67	0.750	10.576	0.00	0.179	2.67	0.80	1.00	0.0	6.74	17.99	0.00	1459	0	591	146	737
6	90	37.07	0.000	10.248	0.00	0.162	2.73	0.80	1.00	0.0	5.93	16.17	0.00	1296	0	509	140	649
5	70	35.16	0.750	10.576	0.00	0.179	2.67	0.80	1.00	0.0	6.74	17.99	0.00	1459	0	538	133	670
4	50	32.76	0.000	10.248	0.00	0.162	2.73	0.80	1.00	0.0	5.93	16.17	0.00	1296	0	450	124	574
3	30	29.42	0.000	10.248	0.00	0.162	2.73	0.80	1.00	0.0	5.93	16.17	0.00	1296	0	404	111	515
2	13	25.46	0.000	7.787	0.00	0.183	2.65	0.80	1.00	0.0	4.54	12.03	0.00	1102	0	260	64	324
1	3	25.46	4.078	2.584	0.00	0.592	1.81	0.80	1.00	0.0	5.17	9.36	0.00	622	0	202	22	224
													Totals	**17,892**	**0**			**9,117**

1.2D + 1.0W 90° — Gust Response Factor (Gh): 0.85
119 mph Wind with No Ice — Wind Importance Factor (Iw): 1.00

Section #	Elev (ft)	Q_Z (psf)	A_f (sf)	A_r (sf)	Ice A_r (sf)	e	C_f	D_f	D_r	T_{iz} (in)	A_e (sf)	EPA_a (sf)	EPA_{ai} (sf)	Wt (lb)	Ice Wt (lb)	F_{st} (lb)	F_a (lb)	Force (lb)
15	270	46.72	0.750	9.765	0.00	0.167	2.71	0.85	1.00	0.0	6.29	17.03	0.00	1164	0	676	0	676
14	250	45.97	0.000	8.624	0.00	0.138	2.82	0.85	1.00	0.0	4.96	13.96	0.00	844	0	545	0	545
13	230	45.17	0.000	9.163	0.00	0.147	2.78	0.85	1.00	0.0	5.28	14.69	0.00	988	0	564	0	564
12	210	44.31	0.750	9.765	0.00	0.167	2.71	0.85	1.00	0.0	6.29	17.03	0.00	1198	0	642	50	692
11	190	43.39	0.000	9.436	0.00	0.150	2.77	0.85	1.00	0.0	5.44	15.07	0.00	1116	0	556	164	720
10	170	42.38	0.750	10.576	0.00	0.179	2.67	0.85	1.00	0.0	6.78	18.09	0.00	1459	0	652	160	812
9	150	41.28	0.000	10.248	0.00	0.162	2.73	0.85	1.00	0.0	5.93	16.17	0.00	1296	0	567	156	723
8	130	40.06	0.000	10.248	0.00	0.162	2.73	0.85	1.00	0.0	5.93	16.17	0.00	1296	0	550	151	702
7	110	38.67	0.750	10.576	0.00	0.179	2.67	0.85	1.00	0.0	6.78	18.09	0.00	1459	0	595	146	740
6	90	37.07	0.000	10.248	0.00	0.162	2.73	0.85	1.00	0.0	5.93	16.17	0.00	1296	0	509	140	649
5	70	35.16	0.750	10.576	0.00	0.179	2.67	0.85	1.00	0.0	6.78	18.09	0.00	1459	0	541	133	673
4	50	32.76	0.000	10.248	0.00	0.162	2.73	0.85	1.00	0.0	5.93	16.17	0.00	1296	0	450	124	574
3	30	29.42	0.000	10.248	0.00	0.162	2.73	0.85	1.00	0.0	5.93	16.17	0.00	1296	0	404	111	515
2	13	25.46	0.000	7.787	0.00	0.183	2.65	0.85	1.00	0.0	4.54	12.03	0.00	1102	0	260	64	324
1	3	25.46	4.078	2.584	0.00	0.592	1.81	0.85	1.00	0.0	5.38	9.72	0.00	622	0	210	22	232
													Totals	**17,892**	**0**			**9,142**

1.2D + 1.0Di + 1.0Wi Normal — Gust Response Factor (Gh): 0.85 — Ice Importance Factor: 1.00
50 mph Wind with 1.5" Radial Ice — Wind Importance Factor (Iw): 1.00 — Ice Dead Load Factor: 1.00

Section #	Elev (ft)	Q_Z (psf)	A_f (sf)	A_r (sf)	Ice A_r (sf)	e	C_f	D_f	D_r	T_{iz} (in)	A_e (sf)	EPA_a (sf)	EPA_{ai} (sf)	Wt (lb)	Ice Wt (lb)	F_{st} (lb)	F_a (lb)	Force (lb)
15	270	8.25	0.750	36.796	27.03	0.544	1.85	1.00	1.00	1.9	26.96	49.88	27.03	2545	1382	350	0	350
14	250	8.12	0.000	35.448	26.82	0.517	1.88	1.00	1.00	1.8	24.69	46.40	26.82	2185	1341	320	0	320
13	230	7.97	0.000	35.764	26.60	0.522	1.87	1.00	1.00	1.8	25.02	46.88	26.60	2355	1367	318	0	318
12	210	7.82	0.750	36.125	26.36	0.535	1.86	1.00	1.00	1.8	26.31	48.90	26.36	2646	1448	325	27	352
11	190	7.66	0.000	35.534	26.10	0.516	1.88	1.00	1.00	1.8	24.75	46.54	26.10	2827	1711	303	91	394
10	170	7.48	0.750	36.385	25.81	0.536	1.86	1.00	1.00	1.8	26.54	49.29	25.81	3165	1705	313	84	398
9	150	7.29	0.000	35.736	25.49	0.517	1.88	1.00	1.00	1.7	24.93	46.84	25.49	2976	1680	290	85	375
8	130	7.07	0.000	35.374	25.13	0.512	1.88	1.00	1.00	1.7	24.58	46.33	25.13	2938	1642	278	82	361
7	110	6.83	0.750	35.285	24.71	0.522	1.87	1.00	1.00	1.7	25.48	47.71	24.71	3052	1593	277	77	354
6	90	6.54	0.000	34.467	24.22	0.501	1.90	1.00	1.00	1.7	23.74	45.08	24.22	2846	1550	251	76	327
5	70	6.21	0.750	34.193	23.62	0.508	1.89	1.00	1.00	1.6	24.45	46.20	23.62	2944	1485	244	70	313

SECTION FORCES

1.2D + 1.0Di + 1.0Wi Normal — Gust Response Factor (Gh): 0.85 — Ice Importance Factor: 1.00
50 mph Wind with 1.5" Radial Ice — Wind Importance Factor (Iw): 1.00 — Ice Dead Load Factor: 1.00

Section #	Elev (ft)	Q_Z (psf)	A_f (sf)	A_r (sf)	Ice A_r (sf)	e	C_f	D_f	D_r	T_{iz} (in)	A_e (sf)	EPA_a (sf)	EPA_{ai} (sf)	Wt (lb)	Ice Wt (lb)	F_{st} (lb)	F_a (lb)	Force (lb)
4	50	5.78	0.000	33.084	22.84	0.483	1.92	1.00	1.00	1.6	22.47	43.23	22.84	2710	1414	212	67	279
3	30	5.19	0.000	31.947	21.70	0.468	1.95	1.00	1.00	1.5	21.46	41.74	21.70	2602	1306	184	59	244
2	13	4.49	0.000	21.335	13.55	0.469	1.94	1.00	1.00	1.4	14.36	27.92	13.55	1921	818	107	32	139
1	3	4.49	4.078	6.517	3.93	0.842	1.85	1.00	1.00	1.2	10.06	18.65	3.93	797	174	71	4	76
													Totals	**38,509**	**20,617**			**4,598**

1.2D + 1.0Di + 1.0Wi 60° — Gust Response Factor (Gh): 0.85 — Ice Importance Factor: 1.00
50 mph Wind with 1.5" Radial Ice — Wind Importance Factor (Iw): 1.00 — Ice Dead Load Factor: 1.00

Section #	Elev (ft)	Q_Z (psf)	A_f (sf)	A_r (sf)	Ice A_r (sf)	e	C_f	D_f	D_r	T_{iz} (in)	A_e (sf)	EPA_a (sf)	EPA_{ai} (sf)	Wt (lb)	Ice Wt (lb)	F_{st} (lb)	F_a (lb)	Force (lb)
15	270	8.25	0.750	36.796	27.03	0.544	1.85	0.80	1.00	1.9	26.81	49.60	27.03	2545	1382	348	0	348
14	250	8.12	0.000	35.448	26.82	0.517	1.88	0.80	1.00	1.8	24.69	46.40	26.82	2185	1341	320	0	320
13	230	7.97	0.000	35.764	26.60	0.522	1.87	0.80	1.00	1.8	25.02	46.88	26.60	2355	1367	318	0	318
12	210	7.82	0.750	36.125	26.36	0.535	1.86	0.80	1.00	1.8	26.16	48.62	26.36	2646	1448	323	27	350
11	190	7.66	0.000	35.534	26.10	0.516	1.88	0.80	1.00	1.8	24.75	46.54	26.10	2827	1711	303	91	394
10	170	7.48	0.750	36.385	25.81	0.536	1.86	0.80	1.00	1.8	26.39	49.01	25.81	3165	1705	312	84	396
9	150	7.29	0.000	35.736	25.49	0.517	1.88	0.80	1.00	1.7	24.93	46.84	25.49	2976	1680	290	85	375
8	130	7.07	0.000	35.374	25.13	0.512	1.88	0.80	1.00	1.7	24.58	46.33	25.13	2938	1642	278	82	361
7	110	6.83	0.750	35.285	24.71	0.522	1.87	0.80	1.00	1.7	25.33	47.43	24.71	3052	1593	275	77	352
6	90	6.54	0.000	34.467	24.22	0.501	1.90	0.80	1.00	1.7	23.74	45.08	24.22	2846	1550	251	76	327
5	70	6.21	0.750	34.193	23.62	0.508	1.89	0.80	1.00	1.6	24.30	45.91	23.62	2944	1485	242	70	312
4	50	5.78	0.000	33.084	22.84	0.483	1.92	0.80	1.00	1.6	22.47	43.23	22.84	2710	1414	212	67	279
3	30	5.19	0.000	31.947	21.70	0.468	1.95	0.80	1.00	1.5	21.46	41.74	21.70	2602	1306	184	59	244
2	13	4.49	0.000	21.335	13.55	0.469	1.94	0.80	1.00	1.4	14.36	27.92	13.55	1921	818	107	32	139
1	3	4.49	4.078	6.517	3.93	0.842	1.85	0.80	1.00	1.2	9.25	17.14	3.93	797	174	65	4	70
													Totals	**38,509**	**20,617**			**4,583**

1.2D + 1.0Di + 1.0Wi 90° — Gust Response Factor (Gh): 0.85 — Ice Importance Factor: 1.00
50 mph Wind with 1.5" Radial Ice — Wind Importance Factor (Iw): 1.00 — Ice Dead Load Factor: 1.00

Section #	Elev (ft)	Q_Z (psf)	A_f (sf)	A_r (sf)	Ice A_r (sf)	e	C_f	D_f	D_r	T_{iz} (in)	A_e (sf)	EPA_a (sf)	EPA_{ai} (sf)	Wt (lb)	Ice Wt (lb)	F_{st} (lb)	F_a (lb)	Force (lb)
15	270	8.25	0.750	36.796	27.03	0.544	1.85	0.85	1.00	1.9	26.85	49.67	27.03	2545	1382	348	0	348
14	250	8.12	0.000	35.448	26.82	0.517	1.88	0.85	1.00	1.8	24.69	46.40	26.82	2185	1341	320	0	320
13	230	7.97	0.000	35.764	26.60	0.522	1.87	0.85	1.00	1.8	25.02	46.88	26.60	2355	1367	318	0	318
12	210	7.82	0.750	36.125	26.36	0.535	1.86	0.85	1.00	1.8	26.20	48.69	26.36	2646	1448	324	27	351
11	190	7.66	0.000	35.534	26.10	0.516	1.88	0.85	1.00	1.8	24.75	46.54	26.10	2827	1711	303	91	394
10	170	7.48	0.750	36.385	25.81	0.536	1.86	0.85	1.00	1.8	26.43	49.08	25.81	3165	1705	312	84	396
9	150	7.29	0.000	35.736	25.49	0.517	1.88	0.85	1.00	1.7	24.93	46.84	25.49	2976	1680	290	85	375
8	130	7.07	0.000	35.374	25.13	0.512	1.88	0.85	1.00	1.7	24.58	46.33	25.13	2938	1642	278	82	361
7	110	6.83	0.750	35.285	24.71	0.522	1.87	0.85	1.00	1.7	25.37	47.50	24.71	3052	1593	276	77	352
6	90	6.54	0.000	34.467	24.22	0.501	1.90	0.85	1.00	1.7	23.74	45.08	24.22	2846	1550	251	76	327
5	70	6.21	0.750	34.193	23.62	0.508	1.89	0.85	1.00	1.6	24.34	45.98	23.62	2944	1485	243	70	312
4	50	5.78	0.000	33.084	22.84	0.483	1.92	0.85	1.00	1.6	22.47	43.23	22.84	2710	1414	212	67	279
3	30	5.19	0.000	31.947	21.70	0.468	1.95	0.85	1.00	1.5	21.46	41.74	21.70	2602	1306	184	59	244
2	13	4.49	0.000	21.335	13.55	0.469	1.94	0.85	1.00	1.4	14.36	27.92	13.55	1921	818	107	32	139
1	3	4.49	4.078	6.517	3.93	0.842	1.85	0.85	1.00	1.2	9.45	17.52	3.93	797	174	67	4	71
													Totals	**38,509**	**20,617**			**4,587**

1.0D + 1.0W Service Normal — Gust Response Factor (Gh): 0.85
60 mph Wind with No Ice — Wind Importance Factor (Iw): 1.00

Section #	Elev (ft)	Q_Z (psf)	A_f (sf)	A_r (sf)	Ice A_r (sf)	e	C_f	D_f	D_r	T_{iz} (in)	A_e (sf)	EPA_a (sf)	EPA_{ai} (sf)	Wt (lb)	Ice Wt (lb)	F_{st} (lb)	F_a (lb)	Force (lb)
15	270	11.88	0.750	9.765	0.00	0.167	2.71	1.00	1.00	0.0	6.40	17.34	0.00	970	0	175	0	175
14	250	11.69	0.000	8.624	0.00	0.138	2.82	1.00	1.00	0.0	4.96	13.96	0.00	703	0	139	0	139
13	230	11.48	0.000	9.163	0.00	0.147	2.78	1.00	1.00	0.0	5.28	14.69	0.00	823	0	143	0	143
12	210	11.26	0.750	9.765	0.00	0.167	2.71	1.00	1.00	0.0	6.40	17.34	0.00	999	0	166	13	179
11	190	11.03	0.000	9.436	0.00	0.150	2.77	1.00	1.00	0.0	5.44	15.07	0.00	930	0	141	42	183
10	170	10.77	0.750	10.576	0.00	0.179	2.67	1.00	1.00	0.0	6.89	18.39	0.00	1216	0	168	41	209
9	150	10.49	0.000	10.248	0.00	0.162	2.73	1.00	1.00	0.0	5.93	16.17	0.00	1080	0	144	40	184
8	130	10.18	0.000	10.248	0.00	0.162	2.73	1.00	1.00	0.0	5.93	16.17	0.00	1080	0	140	38	178
7	110	9.83	0.750	10.576	0.00	0.179	2.67	1.00	1.00	0.0	6.89	18.39	0.00	1216	0	154	37	191
6	90	9.42	0.000	10.248	0.00	0.162	2.73	1.00	1.00	0.0	5.93	16.17	0.00	1080	0	130	36	165
5	70	8.94	0.750	10.576	0.00	0.179	2.67	1.00	1.00	0.0	6.89	18.39	0.00	1216	0	140	34	173
4	50	8.33	0.000	10.248	0.00	0.162	2.73	1.00	1.00	0.0	5.93	16.17	0.00	1080	0	114	31	146
3	30	7.48	0.000	10.248	0.00	0.162	2.73	1.00	1.00	0.0	5.93	16.17	0.00	1080	0	103	28	131
2	13	6.47	0.000	7.787	0.00	0.183	2.65	1.00	1.00	0.0	4.54	12.03	0.00	919	0	66	16	82
1	3	6.47	4.078	2.584	0.00	0.592	1.81	1.00	1.00	0.0	5.99	10.83	0.00	519	0	60	6	65
													Totals	**14,910**	**0**			**2,344**

1.0D + 1.0W Service 60° — Gust Response Factor (Gh): 0.85
60 mph Wind with No Ice — Wind Importance Factor (Iw): 1.00

Section #	Elev (ft)	Q_Z (psf)	A_f (sf)	A_r (sf)	Ice A_r (sf)	e	C_f	D_f	D_r	T_{iz} (in)	A_e (sf)	EPA_a (sf)	EPA_{ai} (sf)	Wt (lb)	Ice Wt (lb)	F_{st} (lb)	F_a (lb)	Force (lb)

SECTION FORCES

1.0D + 1.0W Service 60° Gust Response Factor (Gh): 0.85
60 mph Wind with No Ice Wind Importance Factor (Iw): 1.00

Section #	Elev (ft)	Q_Z (psf)	A_f (sf)	A_r (sf)	Ice A_r (sf)	e	C_f	D_f	D_r	T_{iz} (in)	A_e (sf)	EPA_a (sf)	EPA_{ai} (sf)	Wt (lb)	Ice Wt (lb)	F_{st} (lb)	F_a (lb)	Force (lb)
15	270	11.88	0.750	9.765	0.00	0.167	2.71	0.80	1.00	0.0	6.25	16.93	0.00	970	0	171	0	171
14	250	11.69	0.000	8.624	0.00	0.138	2.82	0.80	1.00	0.0	4.96	13.96	0.00	703	0	139	0	139
13	230	11.48	0.000	9.163	0.00	0.147	2.78	0.80	1.00	0.0	5.28	14.69	0.00	823	0	143	0	143
12	210	11.26	0.750	9.765	0.00	0.167	2.71	0.80	1.00	0.0	6.25	16.93	0.00	999	0	162	13	175
11	190	11.03	0.000	9.436	0.00	0.150	2.77	0.80	1.00	0.0	5.44	15.07	0.00	930	0	141	42	183
10	170	10.77	0.750	10.576	0.00	0.179	2.67	0.80	1.00	0.0	6.74	17.99	0.00	1216	0	165	41	205
9	150	10.49	0.000	10.248	0.00	0.162	2.73	0.80	1.00	0.0	5.93	16.17	0.00	1080	0	144	40	184
8	130	10.18	0.000	10.248	0.00	0.162	2.73	0.80	1.00	0.0	5.93	16.17	0.00	1080	0	140	38	178
7	110	9.83	0.750	10.576	0.00	0.179	2.67	0.80	1.00	0.0	6.74	17.99	0.00	1216	0	150	37	187
6	90	9.42	0.000	10.248	0.00	0.162	2.73	0.80	1.00	0.0	5.93	16.17	0.00	1080	0	130	36	165
5	70	8.94	0.750	10.576	0.00	0.179	2.67	0.80	1.00	0.0	6.74	17.99	0.00	1216	0	137	34	170
4	50	8.33	0.000	10.248	0.00	0.162	2.73	0.80	1.00	0.0	5.93	16.17	0.00	1080	0	114	31	146
3	30	7.48	0.000	10.248	0.00	0.162	2.73	0.80	1.00	0.0	5.93	16.17	0.00	1080	0	103	28	131
2	13	6.47	0.000	7.787	0.00	0.183	2.65	0.80	1.00	0.0	4.54	12.03	0.00	919	0	66	16	82
1	3	6.47	4.078	2.584	0.00	0.592	1.81	0.80	1.00	0.0	5.17	9.36	0.00	519	0	51	6	57
													Totals	**14,910**	**0**			**2,318**

1.0D + 1.0W Service 90° Gust Response Factor (Gh): 0.85
60 mph Wind with No Ice Wind Importance Factor (Iw): 1.00

Section #	Elev (ft)	Q_Z (psf)	A_f (sf)	A_r (sf)	Ice A_r (sf)	e	C_f	D_f	D_r	T_{iz} (in)	A_e (sf)	EPA_a (sf)	EPA_{ai} (sf)	Wt (lb)	Ice Wt (lb)	F_{st} (lb)	F_a (lb)	Force (lb)
15	270	11.88	0.750	9.765	0.00	0.167	2.71	0.85	1.00	0.0	6.29	17.03	0.00	970	0	172	0	172
14	250	11.69	0.000	8.624	0.00	0.138	2.82	0.85	1.00	0.0	4.96	13.96	0.00	703	0	139	0	139
13	230	11.48	0.000	9.163	0.00	0.147	2.78	0.85	1.00	0.0	5.28	14.69	0.00	823	0	143	0	143
12	210	11.26	0.750	9.765	0.00	0.167	2.71	0.85	1.00	0.0	6.29	17.03	0.00	999	0	163	13	176
11	190	11.03	0.000	9.436	0.00	0.150	2.77	0.85	1.00	0.0	5.44	15.07	0.00	930	0	141	42	183
10	170	10.77	0.750	10.576	0.00	0.179	2.67	0.85	1.00	0.0	6.78	18.09	0.00	1216	0	166	41	206
9	150	10.49	0.000	10.248	0.00	0.162	2.73	0.85	1.00	0.0	5.93	16.17	0.00	1080	0	144	40	184
8	130	10.18	0.000	10.248	0.00	0.162	2.73	0.85	1.00	0.0	5.93	16.17	0.00	1080	0	140	38	178
7	110	9.83	0.750	10.576	0.00	0.179	2.67	0.85	1.00	0.0	6.78	18.09	0.00	1216	0	151	37	188
6	90	9.42	0.000	10.248	0.00	0.162	2.73	0.85	1.00	0.0	5.93	16.17	0.00	1080	0	130	36	165
5	70	8.94	0.750	10.576	0.00	0.179	2.67	0.85	1.00	0.0	6.78	18.09	0.00	1216	0	137	34	171
4	50	8.33	0.000	10.248	0.00	0.162	2.73	0.85	1.00	0.0	5.93	16.17	0.00	1080	0	114	31	146
3	30	7.48	0.000	10.248	0.00	0.162	2.73	0.85	1.00	0.0	5.93	16.17	0.00	1080	0	103	28	131
2	13	6.47	0.000	7.787	0.00	0.183	2.65	0.85	1.00	0.0	4.54	12.03	0.00	919	0	66	16	82
1	3	6.47	4.078	2.584	0.00	0.592	1.81	0.85	1.00	0.0	5.38	9.72	0.00	519	0	53	6	59
													Totals	**14,910**	**0**			**2,324**

EQUIVALENT LATERAL FORCE METHOD

Spectral Response Acceleration for Short Period (S_S):	0.18
Spectral Response Acceleration at 1.0 Second Period (S_1):	0.06
Long-Period Transition Period (T_L – Seconds):	6
Importance Factor (I_e):	1.00
Site Coefficient F_a:	1.60
Site Coefficient F_v:	2.40
Response Modification Coefficient (R):	3.00
Design Spectral Response Acceleration at Short Period (S_{ds}):	0.19
Design Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.09
Seismic Response Coefficient (C_s):	0.05
Upper Limit C_S:	0.05
Lower Limit C_S:	0.03
Period based on Rayleigh Method (sec):	0.58
Redundancy Factor (p):	1.30
Seismic Force Distribution Exponent (k):	1.04
Total Unfactored Dead Load:	16.49 k
Seismic Base Shear (E):	1.10 k

SEISMIC FORCES

1.2D + 1.0Ev + 1.0Eh

Section/Appurtenance	Height Above Base (ft)	Weight (lb)	W_Z (lb-ft)	Cvx	Horizontal Force (lb)	Vertical Force (lb)
15	270.00	970	329,783	0.118	130	1,201
14	250.00	703	220,747	0.079	87	871
13	230.00	823	236,947	0.085	93	1,020
12	210.00	999	261,409	0.094	103	1,237
11	190.00	930	219,314	0.078	86	1,152
10	170.00	1,216	255,506	0.091	100	1,506
9	150.00	1,080	199,182	0.071	78	1,338
8	130.00	1,080	171,609	0.061	67	1,338
7	110.00	1,216	162,387	0.058	64	1,506
6	90.00	1,080	117,018	0.042	46	1,338
5	70.00	1,216	101,429	0.036	40	1,506
4	50.00	1,080	63,454	0.023	25	1,338
3	30.00	1,080	37,279	0.013	15	1,338
2	13.34	919	13,631	0.005	5	1,138
1	3.34	519	1,817	0.001	1	642
Ceragon IP-50C	206.00	13	3,387	0.001	1	16
Fujitsu TA08025-B605	206.00	225	57,737	0.021	23	279
Fujitsu TA08025-B604	206.00	192	49,192	0.018	19	237
Raycap RDIDC-9181-PF-48	206.00	22	5,620	0.002	2	27
Commscope VHLP2-11W/A	206.00	17	4,362	0.002	2	21
Commscope FFVV-65B-R2	206.00	212	54,504	0.020	21	263
Generic Round Sector Frame	206.00	900	230,949	0.083	91	1,115
	Totals	**16,491**	**2,797,262**	**1.000**	**1,099**	**20,426**

FORCE/STRESS SUMMARY

Section 1 – 0.0' to 6.67'

Member Compression	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'_y (ksi)	$\Phi_c P_n$ (kip)	Shear ΦR_{nv} (kip)	Bear ΦR_n (kip)	# Bolt	# Hole	Use %	Controls
L SOL - 2 1/4" SOLID	-43.55	1.2D + 1.0Di + 1.0Wi 60°	2.297	100	100	100	49.00	49.00	150.11	0.00	0.00	0	0	29	Member X
H PL - PL 9 x 0.375"	-0.00	1.2D + 1.0W N	1	100	100	100	77.77	77.77	50.90	0.00	0.00	0	0	0	Member Y

Member Tension	Pu (kip)	Load Case	F_y (ksi)	F_u (ksi)	$\Phi_c Pn$ (kip)	Shear ΦR_{nv} (kip)	Bear ΦR_n (kip)	Blk Shear $\Phi_t P_n$ (kip)	# Bolt	# Hole	Use %	Controls
H PL - PL 9 x 0.375"	5.54	1.2D + 1.0Di + 1.0Wi N	36.0	58	109.35	0.00	0.00	0.00	0	0	5	Member

Max Splice Forces	Pu (kip)	Load Case	ΦR_{nt} (kip)	Use %	Num Bolts	Bolt Type

Section 2 – 6.7' to 20.00'

Member Compression	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'_y (ksi)	$\Phi_c P_n$ (kip)	Shear ΦR_{nv} (kip)	Bear ΦR_n (kip)	# Bolt	# Hole	Use %	Controls
L SOL - 2 1/4" SOLID	-43.05	1.2D + 1.0Di + 1.0Wi 60°	3.244	100	100	100	69.20	69.20	126.07	0.00	0.00	0	0	34	Member X
H SOL - 7/8" SOLID	-0.06	1.2D + 1.0W N	3	100	100	100	106.99	106.99	10.66	0.00	0.00	0	0	0	Member X
D SOL - 1 1/4" SOLID	-0.81	1.2D + 1.0W 60°	4.418	100	100	100	118.76	118.76	18.92	0.00	0.00	0	0	4	Member X

Member Tension	Pu (kip)	Load Case	F_y (ksi)	F_u (ksi)	$\Phi_c Pn$ (kip)	Shear ΦR_{nv} (kip)	Bear ΦR_n (kip)	Blk Shear $\Phi_t P_n$ (kip)	# Bolt	# Hole	Use %	Controls
H SOL - 7/8" SOLID	0.68	1.2D + 1.0Di + 1.0Wi N	36.0	58	19.48	0.00	0.00	0.00	0	0	3	Member
D SOL - 1 1/4" SOLID	0.44	1.2D + 1.0W N	36.0	58	39.76	0.00	0.00	0.00	0	0	1	Member

Max Splice Forces	Pu (kip)	Load Case	ΦR_{nt} (kip)	Use %	Num Bolts	Bolt Type

Section 3 – 20.0' to 40.00'

Member Compression	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'_y (ksi)	$\Phi_c P_n$ (kip)	Shear ΦR_{nv} (kip)	Bear ΦR_n (kip)	# Bolt	# Hole	Use %	Controls
L SOL - 2" SOLID	-43.41	1.2D + 1.0Di + 1.0Wi 60°	3.271	100	100	100	78.50	78.50	90.10	0.00	0.00	0	0	48	Member X
H SOL - 7/8" SOLID	-0.00	1.2D + 1.0W 60°	3	100	100	100	106.99	106.99	10.66	0.00	0.00	0	0	0	Member X
D SOL - 1" SOLID	-0.57	1.2D + 1.0Di + 1.0Wi N	4.438	100	100	100	149.12	149.12	7.98	0.00	0.00	0	0	7	Member X

Member Tension	Pu (kip)	Load Case	F_y (ksi)	F_u (ksi)	$\Phi_c Pn$ (kip)	Shear ΦR_{nv} (kip)	Bear ΦR_n (kip)	Blk Shear $\Phi_t P_n$ (kip)	# Bolt	# Hole	Use %	Controls
H SOL - 7/8" SOLID	0.24	1.2D + 1.0Di + 1.0Wi N	36.0	58	19.48	0.00	0.00	0.00	0	0	1	Member
D SOL - 1" SOLID	0.09	1.2D + 1.0W N	36.0	58	25.45	0.00	0.00	0.00	0	0	0	Member

Max Splice Forces	Pu (kip)	Load Case	ΦR_{nt} (kip)	Use %	Num Bolts	Bolt Type

Section 4 – 40.0' to 60.00'

Member Compression	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'_y (ksi)	$\Phi_c P_n$ (kip)	Shear ΦR_{nv} (kip)	Bear ΦR_n (kip)	# Bolt	# Hole	Use %	Controls
L SOL - 2" SOLID	-43.46	1.2D + 1.0Di + 1.0Wi 60°	3.271	100	100	100	78.50	78.50	90.10	0.00	0.00	0	0	48	Member X
H SOL - 7/8" SOLID	-0.02	1.2D + 1.0W N	3	100	100	100	106.99	106.99	10.66	0.00	0.00	0	0	0	Member X
D SOL - 1" SOLID	-0.88	1.2D + 1.0W 90°	4.438	100	100	100	149.12	149.12	7.98	0.00	0.00	0	0	11	Member X

Member Tension	Pu (kip)	Load Case	F_y (ksi)	F_u (ksi)	$\Phi_c Pn$ (kip)	Shear ΦR_{nv} (kip)	Bear ΦR_n (kip)	Blk Shear $\Phi_t P_n$ (kip)	# Bolt	# Hole	Use %	Controls
H SOL - 7/8" SOLID	0.22	1.2D + 1.0W N	36.0	58	19.48	0.00	0.00	0.00	0	0	1	Member
D SOL - 1" SOLID	0.29	1.2D + 1.0W N	36.0	58	25.45	0.00	0.00	0.00	0	0	1	Member

Max Splice Forces	Pu (kip)	Load Case	ΦR_{nt} (kip)	Use %	Num Bolts	Bolt Type

Section 5 – 60.0' to 80.00'

FORCE/STRESS SUMMARY

Member Compression	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'_y (ksi)	$\Phi_c P_n$ (kip)	Shear ΦR_{nv} (kip)	Bear ΦR_n (kip)	# Bolt	# Hole	Use %	Controls
L SOL - 2" SOLID	-41.10	1.2D + 1.0Di + 1.0Wi 60°	3.271	100	100	100	78.50	78.50	90.10	0.00	0.00	0	0	45	Member X
H SOL - 7/8" SOLID	-0.19	1.2D + 1.0W N	3	100	100	100	106.99	106.99	10.66	0.00	0.00	0	0	1	Member X
D SOL - 1 1/4" SOLID	-1.13	1.2D + 1.0W 90°	4.438	100	100	100	119.29	119.29	18.80	0.00	0.00	0	0	6	Member X

Member Tension	Pu (kip)	Load Case	F_y (ksi)	F_u (ksi)	$\Phi_c Pn$ (kip)	Shear ΦR_{nv} (kip)	Bear ΦR_n (kip)	Blk Shear $\Phi_t P_n$ (kip)	# Bolt	# Hole	Use %	Controls
H SOL - 7/8" SOLID	0.31	1.2D + 1.0W 60°	36.0	58	19.48	0.00	0.00	0.00	0	0	1	Member
D SOL - 1 1/4" SOLID	0.63	1.2D + 1.0W N	36.0	58	39.76	0.00	0.00	0.00	0	0	1	Member

Max Splice Forces	Pu (kip)	Load Case	ΦR_{nt} (kip)	Use %	Num Bolts	Bolt Type

FORCE/STRESS SUMMARY

Section 6 – 80.0' to 100.00'

Member Compression	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'_y (ksi)	$\Phi_c P_n$ (kip)	Shear ΦR_{nv} (kip)	Bear ΦR_n (kip)	# Bolt	# Hole	Use %	Controls
L SOL - 2" SOLID	-38.02	1.2D + 1.0Di + 1.0Wi 60°	3.271	100	100	100	78.50	78.50	90.10	0.00	0.00	0	0	42	Member X
H SOL - 7/8" SOLID	-0.02	1.2D + 1.0W 60°	3	100	100	100	106.99	106.99	10.66	0.00	0.00	0	0	0	Member X
D SOL - 1" SOLID	-0.59	1.2D + 1.0W 90°	4.438	100	100	100	149.12	149.12	7.98	0.00	0.00	0	0	7	Member X

Member Tension	Pu (kip)	Load Case	F_y (ksi)	F_u (ksi)	$\Phi_c Pn$ (kip)	Shear ΦR_{nv} (kip)	Bear ΦR_n (kip)	Blk Shear $\Phi_t P_n$ (kip)	# Bolt	# Hole	Use %	Controls
H SOL - 7/8" SOLID	0.21	1.2D + 1.0Di + 1.0Wi N	36.0	58	19.48	0.00	0.00	0.00	0	0	1	Member
D SOL - 1" SOLID	0.03	1.2D + 1.0W N	36.0	58	25.45	0.00	0.00	0.00	0	0	0	Member

Max Splice Forces	Pu (kip)	Load Case	ΦR_{nt} (kip)	Use %	Num Bolts	Bolt Type

Section 7 – 100.0' to 120.00'

Member Compression	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'_y (ksi)	$\Phi_c P_n$ (kip)	Shear ΦR_{nv} (kip)	Bear ΦR_n (kip)	# Bolt	# Hole	Use %	Controls
L SOL - 2" SOLID	-35.96	1.2D + 1.0Di + 1.0Wi 60°	3.271	100	100	100	78.50	78.50	90.10	0.00	0.00	0	0	39	Member X
H SOL - 7/8" SOLID	-0.13	1.2D + 1.0W N	3	100	100	100	106.99	106.99	10.66	0.00	0.00	0	0	1	Member X
D SOL - 1 1/4" SOLID	-0.98	1.2D + 1.0W N	4.438	100	100	100	119.29	119.29	18.80	0.00	0.00	0	0	5	Member X

Member Tension	Pu (kip)	Load Case	F_y (ksi)	F_u (ksi)	$\Phi_c Pn$ (kip)	Shear ΦR_{nv} (kip)	Bear ΦR_n (kip)	Blk Shear $\Phi_t P_n$ (kip)	# Bolt	# Hole	Use %	Controls
H SOL - 7/8" SOLID	0.23	1.2D + 1.0W 60°	36.0	58	19.48	0.00	0.00	0.00	0	0	1	Member
D SOL - 1 1/4" SOLID	0.82	1.2D + 1.0W 90°	36.0	58	39.76	0.00	0.00	0.00	0	0	2	Member

Max Splice Forces	Pu (kip)	Load Case	ΦR_{nt} (kip)	Use %	Num Bolts	Bolt Type

Section 8 – 120.0' to 140.00'

Member Compression	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'_y (ksi)	$\Phi_c P_n$ (kip)	Shear ΦR_{nv} (kip)	Bear ΦR_n (kip)	# Bolt	# Hole	Use %	Controls
L SOL - 2" SOLID	-28.93	1.2D + 1.0Di + 1.0Wi N	3.271	100	100	100	78.50	78.50	90.10	0.00	0.00	0	0	32	Member X
H SOL - 7/8" SOLID	-0.03	1.2D + 1.0W N	3	100	100	100	106.99	106.99	10.66	0.00	0.00	0	0	0	Member X
D SOL - 1" SOLID	-0.64	1.2D + 1.0W N	4.438	100	100	100	149.12	149.12	7.98	0.00	0.00	0	0	8	Member X

Member Tension	Pu (kip)	Load Case	F_y (ksi)	F_u (ksi)	$\Phi_c Pn$ (kip)	Shear ΦR_{nv} (kip)	Bear ΦR_n (kip)	Blk Shear $\Phi_t P_n$ (kip)	# Bolt	# Hole	Use %	Controls
H SOL - 7/8" SOLID	0.20	1.2D + 1.0Di + 1.0Wi 60°	36.0	58	19.48	0.00	0.00	0.00	0	0	1	Member
D SOL - 1" SOLID	0.34	1.2D + 1.0W N	36.0	58	25.45	0.00	0.00	0.00	0	0	1	Member

Max Splice Forces	Pu (kip)	Load Case	ΦR_{nt} (kip)	Use %	Num Bolts	Bolt Type

Section 9 – 140.0' to 160.00'

Member Compression	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'_y (ksi)	$\Phi_c P_n$ (kip)	Shear ΦR_{nv} (kip)	Bear ΦR_n (kip)	# Bolt	# Hole	Use %	Controls
L SOL - 2" SOLID	-29.20	1.2D + 1.0Di + 1.0Wi N	3.271	100	100	100	78.50	78.50	90.10	0.00	0.00	0	0	32	Member X
H SOL - 7/8" SOLID	-0.01	1.2D + 1.0W N	3	100	100	100	106.99	106.99	10.66	0.00	0.00	0	0	0	Member X
D SOL - 1" SOLID	-0.83	1.2D + 1.0W 60°	4.438	100	100	100	149.12	149.12	7.98	0.00	0.00	0	0	10	Member X

FORCE/STRESS SUMMARY

Member Tension	Pu (kip)	Load Case	F_y (ksi)	F_u (ksi)	$\Phi_c P_n$ (kip)	Shear ΦR_{nv} (kip)	Bear ΦR_n (kip)	Blk Shear $\Phi_t P_n$ (kip)	# Bolt	# Hole	Use %	Controls
H SOL - 7/8" SOLID	0.20	1.2D + 1.0Di + 1.0Wi 60°	36.0	58	19.48	0.00	0.00	0.00	0	0	1	Member
D SOL - 1" SOLID	0.27	1.2D + 1.0W N	36.0	58	25.45	0.00	0.00	0.00	0	0	1	Member

Max Splice Forces	Pu (kip)	Load Case	ΦR_{nt} (kip)	Use %	Num Bolts	Bolt Type

Section 10 – 160.0' to 180.00'

Member Compression	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'_y (ksi)	$\Phi_c P_n$ (kip)	Shear ΦR_{nv} (kip)	Bear ΦR_n (kip)	# Bolt	# Hole	Use %	Controls
L SOL - 2" SOLID	-28.87	1.2D + 1.0Di + 1.0Wi 90°	3.271	100	100	100	78.50	78.50	90.10	0.00	0.00	0	0	32	Member X
H SOL - 7/8" SOLID	-0.36	1.2D + 1.0W N	3	100	100	100	106.99	106.99	10.66	0.00	0.00	0	0	3	Member X
D SOL - 1 1/4" SOLID	-1.51	1.2D + 1.0W 90°	4.438	100	100	100	119.29	119.29	18.80	0.00	0.00	0	0	8	Member X

Member Tension	Pu (kip)	Load Case	F_y (ksi)	F_u (ksi)	$\Phi_c P_n$ (kip)	Shear ΦR_{nv} (kip)	Bear ΦR_n (kip)	Blk Shear $\Phi_t P_n$ (kip)	# Bolt	# Hole	Use %	Controls
H SOL - 7/8" SOLID	0.43	1.2D + 1.0W 60°	36.0	58	19.48	0.00	0.00	0.00	0	0	2	Member
D SOL - 1 1/4" SOLID	1.21	1.2D + 1.0W N	36.0	58	39.76	0.00	0.00	0.00	0	0	3	Member

Max Splice Forces	Pu (kip)	Load Case	ΦR_{nt} (kip)	Use %	Num Bolts	Bolt Type

Section 11 – 180.0' to 200.00'

Member Compression	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'_y (ksi)	$\Phi_c P_n$ (kip)	Shear ΦR_{nv} (kip)	Bear ΦR_n (kip)	# Bolt	# Hole	Use %	Controls
L SOL - 1 3/4" SOLID	-22.24	1.2D + 1.0Di + 1.0Wi N	3.271	100	100	100	89.71	89.71	60.09	0.00	0.00	0	0	37	Member X
H SOL - 7/8" SOLID	-0.24	1.2D + 1.0W 60°	3	100	100	100	106.99	106.99	10.66	0.00	0.00	0	0	2	Member X
D SOL - 1" SOLID	-0.99	1.2D + 1.0W N	4.438	100	100	100	149.12	149.12	7.98	0.00	0.00	0	0	12	Member X

Member Tension	Pu (kip)	Load Case	F_y (ksi)	F_u (ksi)	$\Phi_c P_n$ (kip)	Shear ΦR_{nv} (kip)	Bear ΦR_n (kip)	Blk Shear $\Phi_t P_n$ (kip)	# Bolt	# Hole	Use %	Controls
H SOL - 7/8" SOLID	0.30	1.2D + 1.0W N	36.0	58	19.48	0.00	0.00	0.00	0	0	1	Member
D SOL - 1" SOLID	0.82	1.2D + 1.0W N	36.0	58	25.45	0.00	0.00	0.00	0	0	3	Member

Max Splice Forces	Pu (kip)	Load Case	ΦR_{nt} (kip)	Use %	Num Bolts	Bolt Type

Section 12 – 200.0' to 220.00'

Member Compression	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'_y (ksi)	$\Phi_c P_n$ (kip)	Shear ΦR_{nv} (kip)	Bear ΦR_n (kip)	# Bolt	# Hole	Use %	Controls
L SOL - 1 3/4" SOLID	-22.16	1.2D + 1.0Di + 1.0Wi N	3.271	100	100	100	89.71	89.71	60.09	0.00	0.00	0	0	36	Member X
H SOL - 7/8" SOLID	-0.66	1.2D + 1.0W N	3	100	100	100	106.99	106.99	10.66	0.00	0.00	0	0	6	Member X
D SOL - 1 1/4" SOLID	-1.92	1.2D + 1.0W 60°	4.438	100	100	100	119.29	119.29	18.80	0.00	0.00	0	0	10	Member X

Member Tension	Pu (kip)	Load Case	F_y (ksi)	F_u (ksi)	$\Phi_c P_n$ (kip)	Shear ΦR_{nv} (kip)	Bear ΦR_n (kip)	Blk Shear $\Phi_t P_n$ (kip)	# Bolt	# Hole	Use %	Controls
L SOL - 1 3/4" SOLID	2.62	1.2D + 1.0W 60°	50.0	65	108.24	0.00	0.00		0	0	2	Member
H SOL - 7/8" SOLID	1.04	1.2D + 1.0W 60°	36.0	58	19.48	0.00	0.00	0.00	0	0	5	Member
D SOL - 1 1/4" SOLID	1.66	1.2D + 1.0W N	36.0	58	39.76	0.00	0.00	0.00	0	0	4	Member

Max Splice Forces	Pu (kip)	Load Case	ΦR_{nt} (kip)	Use %	Num Bolts	Bolt Type

Section 13 – 220.0' to 240.00'

Member Compression	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'_y (ksi)	$\Phi_c P_n$ (kip)	Shear ΦR_{nv} (kip)	Bear ΦR_n (kip)	# Bolt	# Hole	Use %	Controls
L SOL - 1 1/2" SOLID	-10.97	1.2D + 1.0Di + 1.0Wi 90°	3.271	100	100	100	104.66	104.66	35.70	0.00	0.00	0	0	30	Member X

FORCE/STRESS SUMMARY

Section 13 – 220.0' to 240.00'

Member Compression	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'_y (ksi)	$\Phi_c P_n$ (kip)	Shear ΦR_{nv} (kip)	Bear ΦR_n (kip)	# Bolt	# Hole	Use %	Controls
H SOL - 7/8" SOLID	-0.29	1.2D + 1.0W 60°	3	100	100	100	106.99	106.99	10.66	0.00	0.00	0	0	2	Member X
D SOL - 1 1/4" SOLID	-0.99	1.2D + 1.0W 90°	4.438	100	100	100	119.29	119.29	18.80	0.00	0.00	0	0	5	Member X

Member Tension	Pu (kip)	Load Case	F_y (ksi)	F_u (ksi)	$\Phi_c P_n$ (kip)	Shear ΦR_{nv} (kip)	Bear ΦR_n (kip)	Blk Shear $\Phi_t P_n$ (kip)	# Bolt	# Hole	Use %	Controls
L SOL - 1 1/2" SOLID	1.94	1.2D + 1.0W 60°	50.0	65	79.52	0.00	0.00		0	0	2	Member
H SOL - 7/8" SOLID	0.28	1.2D + 1.0W N	36.0	58	19.48	0.00	0.00	0.00	0	0	1	Member
D SOL - 1 1/4" SOLID	0.81	1.2D + 1.0W 90°	36.0	58	39.76	0.00	0.00	0.00	0	0	2	Member

Max Splice Forces	Pu (kip)	Load Case	ΦR_{nt} (kip)	Use %	Num Bolts	Bolt Type
Bot Tension	1.89	1.2D + 1.0W 60°	120.41	2	4	0.75" A325

Section 14 – 240.0' to 260.00'

Member Compression	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'_y (ksi)	$\Phi_c P_n$ (kip)	Shear ΦR_{nv} (kip)	Bear ΦR_n (kip)	# Bolt	# Hole	Use %	Controls
L SOL - 1 1/2" SOLID	-9.53	1.2D + 1.0Di + 1.0Wi N	3.271	100	100	100	104.66	104.66	35.70	0.00	0.00	0	0	26	Member X
H SOL - 7/8" SOLID	-0.11	1.2D + 1.0W 60°	3	100	100	100	106.99	106.99	10.66	0.00	0.00	0	0	1	Member X
D SOL - 1" SOLID	-0.41	1.2D + 1.0W 60°	4.438	100	100	100	149.12	149.12	7.98	0.00	0.00	0	0	5	Member X

Member Tension	Pu (kip)	Load Case	F_y (ksi)	F_u (ksi)	$\Phi_c P_n$ (kip)	Shear ΦR_{nv} (kip)	Bear ΦR_n (kip)	Blk Shear $\Phi_t P_n$ (kip)	# Bolt	# Hole	Use %	Controls
H SOL - 7/8" SOLID	0.11	1.2D + 1.0W N	36.0	58	19.48	0.00	0.00	0.00	0	0	0	Member
D SOL - 1" SOLID	0.29	1.2D + 1.0W 60°	36.0	58	25.45	0.00	0.00	0.00	0	0	1	Member

Max Splice Forces	Pu (kip)	Load Case	ΦR_{nt} (kip)	Use %	Num Bolts	Bolt Type

Section 15 – 260.0' to 280.00'

Member Compression	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'_y (ksi)	$\Phi_c P_n$ (kip)	Shear ΦR_{nv} (kip)	Bear ΦR_n (kip)	# Bolt	# Hole	Use %	Controls
L SOL - 1 3/4" SOLID	-7.91	1.2D + 1.0Di + 1.0Wi N	3.271	100	100	100	89.71	89.71	60.09	0.00	0.00	0	0	13	Member X
H SOL - 7/8" SOLID	-0.14	1.2D + 1.0Di + 1.0Wi N	3	100	100	100	106.99	106.99	10.66	0.00	0.00	0	0	1	Member X
D SOL - 1 1/4" SOLID	-0.42	1.2D + 1.0W 90°	4.438	100	100	100	119.29	119.29	18.80	0.00	0.00	0	0	2	Member X

Member Tension	Pu (kip)	Load Case	F_y (ksi)	F_u (ksi)	$\Phi_c P_n$ (kip)	Shear ΦR_{nv} (kip)	Bear ΦR_n (kip)	Blk Shear $\Phi_t P_n$ (kip)	# Bolt	# Hole	Use %	Controls
L SOL - 1 3/4" SOLID	0.50	1.2D + 1.0W N	50.0	65	108.24	0.00	0.00		0	0	0	Member
H SOL - 7/8" SOLID	0.05	1.2D + 1.0W N	36.0	58	19.48	0.00	0.00	0.00	0	0	0	Member
D SOL - 1 1/4" SOLID	0.22	1.2D + 1.0W N	36.0	58	39.76	0.00	0.00	0.00	0	0	0	Member

Max Splice Forces	Pu (kip)	Load Case	ΦR_{nt} (kip)	Use %	Num Bolts	Bolt Type

DETAILED CABLE FORCES

Load Case	Elevation (ft)	Cable	Anchor Node	Tower Node	Available Tension (kip)	Applied Tension (kip)	Use (%)
		7/16 EHS	A1	29	12.48	1.15	9
	66.73	7/16 EHS	A1b	29a	12.48	2.99	24
		7/16 EHS	A1a	29b	12.48	3.01	24
		1/2 EHS	A1	48	16.14	1.39	9
	116.54	1/2 EHS	A1b	48a	16.14	3.91	24
		1/2 EHS	A1a	48b	16.14	3.96	25
		5/8 EHS	A1	69	25.44	2.16	8
1.2D + 1.0W Normal	166.73	5/8 EHS	A1b	69a	25.44	6.26	25
		5/8 EHS	A1a	69b	25.44	6.35	25
		3/4 EHS	A1	88	34.98	3.14	9
	216.54	3/4 EHS	A1b	88a	34.98	9.22	26
		3/4 EHS	A1a	88b	34.98	9.33	27
		1/2 EHS	A1	109	16.14	2.67	17
	266.73	1/2 EHS	A1b	109a	16.14	5.28	33
		1/2 EHS	A1a	109b	16.14	5.34	33
		7/16 EHS	A1	29	12.48	2.04	16
	66.73	7/16 EHS	A1b	29a	12.48	2.01	16
		7/16 EHS	A1a	29b	12.48	3.91	31
		1/2 EHS	A1	48	16.14	2.74	17
	116.54	1/2 EHS	A1b	48a	16.14	2.66	17
		1/2 EHS	A1a	48b	16.14	5.17	32
		5/8 EHS	A1	69	25.44	4.23	17
1.2D + 1.0W 60°	166.73	5/8 EHS	A1b	69a	25.44	4.1	16
		5/8 EHS	A1a	69b	25.44	8.32	33
		3/4 EHS	A1	88	34.98	5.89	17
	216.54	3/4 EHS	A1b	88a	34.98	5.72	16
		3/4 EHS	A1a	88b	34.98	12.28	35
		1/2 EHS	A1	109	16.14	3.83	24
	266.73	1/2 EHS	A1b	109a	16.14	3.74	23
		1/2 EHS	A1a	109b	16.14	6.37	39
		7/16 EHS	A1	29	12.48	2.55	20
	66.73	7/16 EHS	A1b	29a	12.48	1.37	11
		7/16 EHS	A1a	29b	12.48	3.58	29
		1/2 EHS	A1	48	16.14	3.38	21
	116.54	1/2 EHS	A1b	48a	16.14	1.82	11
		1/2 EHS	A1a	48b	16.14	4.73	29
		5/8 EHS	A1	69	25.44	5.33	21
1.2D + 1.0W 90°	166.73	5/8 EHS	A1b	69a	25.44	2.79	11
		5/8 EHS	A1a	69b	25.44	7.64	30
		3/4 EHS	A1	88	34.98	7.61	22
	216.54	3/4 EHS	A1b	88a	34.98	3.89	11
		3/4 EHS	A1a	88b	34.98	11.29	32
		1/2 EHS	A1	109	16.14	4.63	29
	266.73	1/2 EHS	A1b	109a	16.14	2.9	18
		1/2 EHS	A1a	109b	16.14	6.02	37
		7/16 EHS	A1	29	12.48	4.66	37
	66.73	7/16 EHS	A1b	29a	12.48	5.65	45
		7/16 EHS	A1a	29b	12.48	5.71	46
		1/2 EHS	A1	48	16.14	5.43	34
	116.54	1/2 EHS	A1b	48a	16.14	6.95	43
		1/2 EHS	A1a	48b	16.14	7.04	44
		5/8 EHS	A1	69	25.44	7.14	28
1.2D + 1.0Di + 1.0Wi Normal	166.73	5/8 EHS	A1b	69a	25.44	9.38	37
		5/8 EHS	A1a	69b	25.44	9.51	37
		3/4 EHS	A1	88	34.98	9.14	26
	216.54	3/4 EHS	A1b	88a	34.98	11.66	33
		3/4 EHS	A1a	88b	34.98	11.83	34
	266.73	1/2 EHS	A1	109	16.14	5.44	34
		1/2 EHS	A1b	109a	16.14	8.18	51

DETAILED CABLE FORCES

Load Case	Elevation (ft)	Cable	Anchor Node	Tower Node	Available Tension (kip)	Applied Tension (kip)	Use (%)
		1/2 EHS	A1a	109b	16.14	8.27	51
		7/16 EHS	A1	29	12.48	4.94	40
	66.73	7/16 EHS	A1b	29a	12.48	4.82	39
		7/16 EHS	A1a	29b	12.48	5.93	48
		1/2 EHS	A1	48	16.14	5.91	37
	116.54	1/2 EHS	A1b	48a	16.14	5.73	36
		1/2 EHS	A1a	48b	16.14	7.37	46
		5/8 EHS	A1	69	25.44	7.89	31
1.2D + 1.0Di + 1.0Wi 60°	166.73	5/8 EHS	A1b	69a	25.44	7.63	30
		5/8 EHS	A1a	69b	25.44	10.16	40
		3/4 EHS	A1	88	34.98	9.79	28
	216.54	3/4 EHS	A1b	88a	34.98	9.46	27
		3/4 EHS	A1a	88b	34.98	13.13	38
		1/2 EHS	A1	109	16.14	6.68	41
	266.73	1/2 EHS	A1b	109a	16.14	6.52	40
		1/2 EHS	A1a	109b	16.14	9.08	56
		7/16 EHS	A1	29	12.48	5.38	43
	66.73	7/16 EHS	A1b	29a	12.48	4.6	37
		7/16 EHS	A1a	29b	12.48	5.9	47
		1/2 EHS	A1	48	16.14	6.56	41
	116.54	1/2 EHS	A1b	48a	16.14	5.37	33
		1/2 EHS	A1a	48b	16.14	7.31	45
		5/8 EHS	A1	69	25.44	8.8	35
1.2D + 1.0Di + 1.0Wi 90°	166.73	5/8 EHS	A1b	69a	25.44	7.08	28
		5/8 EHS	A1a	69b	25.44	10.02	39
		3/4 EHS	A1	88	34.98	10.84	31
	216.54	3/4 EHS	A1b	88a	34.98	8.94	26
		3/4 EHS	A1a	88b	34.98	12.78	37
		1/2 EHS	A1	109	16.14	7.6	47
	266.73	1/2 EHS	A1b	109a	16.14	5.7	35
		1/2 EHS	A1a	109b	16.14	8.86	55
		7/16 EHS	A1	29	12.48	2.01	16
	66.73	7/16 EHS	A1b	29a	12.48	2.06	17
		7/16 EHS	A1a	29b	12.48	2.08	17
		1/2 EHS	A1	48	16.14	2.51	16
	116.54	1/2 EHS	A1b	48a	16.14	2.61	16
		1/2 EHS	A1a	48b	16.14	2.64	16
		5/8 EHS	A1	69	25.44	3.82	15
1.2D + 1.0Ev + 1.0Eh Normal	166.73	5/8 EHS	A1b	69a	25.44	4.04	16
		5/8 EHS	A1a	69b	25.44	4.09	16
		3/4 EHS	A1	88	34.98	5.13	15
	216.54	3/4 EHS	A1b	88a	34.98	5.52	16
		3/4 EHS	A1a	88b	34.98	5.58	16
		1/2 EHS	A1	109	16.14	2.36	15
	266.73	1/2 EHS	A1b	109a	16.14	2.56	16
		1/2 EHS	A1a	109b	16.14	2.59	16
		7/16 EHS	A1	29	12.48	2.04	16
	66.73	7/16 EHS	A1b	29a	12.48	2	16
		7/16 EHS	A1a	29b	12.48	2.11	17
		1/2 EHS	A1	48	16.14	2.56	16
	116.54	1/2 EHS	A1b	48a	16.14	2.49	15
		1/2 EHS	A1a	48b	16.14	2.69	17
1.2D + 1.0Ev + 1.0Eh 60°		5/8 EHS	A1	69	25.44	3.93	15
	166.73	5/8 EHS	A1b	69a	25.44	3.81	15
		5/8 EHS	A1a	69b	25.44	4.2	17
		3/4 EHS	A1	88	34.98	5.3	15
	216.54	3/4 EHS	A1b	88a	34.98	5.15	15
		3/4 EHS	A1a	88b	34.98	5.76	16
	266.73	1/2 EHS	A1	109	16.14	2.44	15

DETAILED CABLE FORCES

Load Case	Elevation (ft)	Cable	Anchor Node	Tower Node	Available Tension (kip)	Applied Tension (kip)	Use (%)
		1/2 EHS	A1b	109a	16.14	2.39	15
		1/2 EHS	A1a	109b	16.14	2.67	17
		7/16 EHS	A1	29	12.48	2.07	17
	66.73	7/16 EHS	A1b	29a	12.48	1.97	16
		7/16 EHS	A1a	29b	12.48	2.1	17
		1/2 EHS	A1	48	16.14	2.62	16
	116.54	1/2 EHS	A1b	48a	16.14	2.45	15
		1/2 EHS	A1a	48b	16.14	2.68	17
		5/8 EHS	A1	69	25.44	4.05	16
1.2D + 1.0Ev + 1.0Eh 90°	166.73	5/8 EHS	A1b	69a	25.44	3.73	15
		5/8 EHS	A1a	69b	25.44	4.17	16
		3/4 EHS	A1	88	34.98	5.49	16
	216.54	3/4 EHS	A1b	88a	34.98	5.01	14
		3/4 EHS	A1a	88b	34.98	5.72	16
		1/2 EHS	A1	109	16.14	2.53	16
	266.73	1/2 EHS	A1b	109a	16.14	2.31	14
		1/2 EHS	A1a	109b	16.14	2.66	16
		7/16 EHS	A1	29	12.48	1.83	15
	66.73	7/16 EHS	A1b	29a	12.48	2.23	18
		7/16 EHS	A1a	29b	12.48	2.24	18
		1/2 EHS	A1	48	16.14	2.29	14
	116.54	1/2 EHS	A1b	48a	16.14	2.83	18
		1/2 EHS	A1a	48b	16.14	2.86	18
		5/8 EHS	A1	69	25.44	3.51	14
1.0D + 1.0W Service Normal	166.73	5/8 EHS	A1b	69a	25.44	4.39	17
		5/8 EHS	A1a	69b	25.44	4.44	17
		3/4 EHS	A1	88	34.98	4.72	13
	216.54	3/4 EHS	A1b	88a	34.98	6.02	17
		3/4 EHS	A1a	88b	34.98	6.09	17
		1/2 EHS	A1	109	16.14	2.28	14
	266.73	1/2 EHS	A1b	109a	16.14	2.99	19
		1/2 EHS	A1a	109b	16.14	3.02	19
		7/16 EHS	A1	29	12.48	1.94	16
	66.73	7/16 EHS	A1b	29a	12.48	1.9	15
		7/16 EHS	A1a	29b	12.48	2.4	19
		1/2 EHS	A1	48	16.14	2.47	15
	116.54	1/2 EHS	A1b	48a	16.14	2.39	15
		1/2 EHS	A1a	48b	16.14	3.06	19
		5/8 EHS	A1	69	25.44	3.8	15
1.0D + 1.0W Service 60°	166.73	5/8 EHS	A1b	69a	25.44	3.68	14
		5/8 EHS	A1a	69b	25.44	4.77	19
		3/4 EHS	A1	88	34.98	5.15	15
	216.54	3/4 EHS	A1b	88a	34.98	5	14
		3/4 EHS	A1a	88b	34.98	6.61	19
		1/2 EHS	A1	109	16.14	2.59	16
	266.73	1/2 EHS	A1b	109a	16.14	2.53	16
		1/2 EHS	A1a	109b	16.14	3.22	20
		7/16 EHS	A1	29	12.48	2.11	17
	66.73	7/16 EHS	A1b	29a	12.48	1.79	14
		7/16 EHS	A1a	29b	12.48	2.36	19
		1/2 EHS	A1	48	16.14	2.7	17
	116.54	1/2 EHS	A1b	48a	16.14	2.23	14
		1/2 EHS	A1a	48b	16.14	3.01	19
1.0D + 1.0W Service 90°		5/8 EHS	A1	69	25.44	4.16	16
	166.73	5/8 EHS	A1b	69a	25.44	3.43	13
		5/8 EHS	A1a	69b	25.44	4.69	18
		3/4 EHS	A1	88	34.98	5.65	16
	216.54	3/4 EHS	A1b	88a	34.98	4.65	13
		3/4 EHS	A1a	88b	34.98	6.49	19

DETAILED CABLE FORCES

Load Case	Elevation (ft)	Cable	Anchor Node	Tower Node	Available Tension (kip)	Applied Tension (kip)	Use (%)
		1/2 EHS	A1	109	16.14	2.83	18
	266.73	1/2 EHS	A1b	109a	16.14	2.3	14
		1/2 EHS	A1a	109b	16.14	3.18	20

MAXIMUM CABLE FORCES SUMMARY

Load Case	Elevation (ft)	Cable	Anchor Node	Tower Node	Available Tension (kip)	Applied Tension (kip)	Use (%)
1.2D + 1.0Di + 1.0Wi 60°	66.73	7/16 EHS	A1a	29b	12.48	5.93	48
1.2D + 1.0Di + 1.0Wi 60°	116.54	1/2 EHS	A1a	48b	16.14	7.37	46
1.2D + 1.0Di + 1.0Wi 60°	166.73	5/8 EHS	A1a	69b	25.44	10.16	40
1.2D + 1.0Di + 1.0Wi 60°	216.54	3/4 EHS	A1a	88b	34.98	13.13	38
1.2D + 1.0Di + 1.0Wi 60°	266.73	1/2 EHS	A1a	109b	16.14	9.08	56

MAXIMUM TORQUE ARM STRESS SUMMARY

Load Case	Elevation (ft)	Member	Type	Compression (%)	Tension (%)
1.2D + 1.0Di + 1.0Wi Normal	66.70	PL 3 x 0.375	Horiz	0	9
1.2D + 1.0Di + 1.0Wi Normal	116.70	PL 3 x 0.375	Horiz	0	10
1.2D + 1.0Di + 1.0Wi Normal	166.70	PL 3 x 0.375	Horiz	0	11
1.2D + 1.0Di + 1.0Wi 90°	216.70	PL 3 x 0.375	Horiz	0	13
1.2D + 1.0Di + 1.0Wi Normal	266.70	PL 3 x 0.375	Horiz	0	7

DEFLECTIONS AND ROTATIONS

Load Case	Elevation (ft)	Deflection (ft)	Twist (deg)	Sway (deg)	Resultant (deg)
1.0D + 1.0W Service 90° 60 mph Wind with No Ice	206.73	0.045	0.0000	0.0095	0.0095
1.0D + 1.0W Service 60° 60 mph Wind with No Ice	206.73	0.049	0.0000	0.0035	0.0035
1.0D + 1.0W Service Normal 60 mph Wind with No Ice	206.73	0.0188	0.0000	0.0122	0.0122
1.2D + 1.0Ev + 1.0Eh 90° Seismic	206.73	0.0257	0.0000	0.0091	0.0091
1.2D + 1.0Ev + 1.0Eh 60° Seismic	206.73	0.0226	0.0000	0.0083	0.0083
1.2D + 1.0Ev + 1.0Eh Normal Seismic	206.73	0.0184	0.0000	0.0082	0.0082
1.2D + 1.0Di + 1.0Wi 90° 50 mph Wind with 1.5" Radial Ice	206.73	0.0808	0.0054	0.0808	0.081
1.2D + 1.0Di + 1.0Wi 60° 50 mph Wind with 1.5" Radial Ice	206.73	0.1085	-0.0020	0.0126	0.0127
1.2D + 1.0Di + 1.0Wi Normal 50 mph Wind with 1.5" Radial Ice	206.73	0.0394	-0.0025	0.1240	0.124
1.2D + 1.0W 90° 119 mph Wind with No Ice	206.73	0.2957	0.4621	0.0995	0.4726
1.2D + 1.0W 60° 119 mph Wind with No Ice	206.73	0.3455	0.0260	0.1096	0.1127
1.2D + 1.0W Normal 119 mph Wind with No Ice	206.73	0.1868	0.0000	0.0910	0.091

DETAILED REACTIONS

*(-) Uplift and (+) Down

Load Case	Radius (ft)	Elevation (ft)	Azimuth (deg)	Node	FX* (kip)	FY* (kip)	FZ* (kip)
1.2D + 1.0W Normal	0.00	0.00		1	0.00	64.25	-0.83
	196.00	-9.00	0	A1	0.00	-6.92	6.74
	196.00	-2.00	240	A1a	-17.13	-17.55	-11.12
	196.00	3.00	120	A1b	17.13	-17.05	-11.10
1.2D + 1.0W 60°	0.00	0.00		1	-0.66	68.54	-0.38
	196.00	-9.00	0	A1	-1.07	-12.24	12.85
	196.00	-2.00	240	A1a	-22.95	-22.68	-13.25
	196.00	3.00	120	A1b	10.64	-11.46	-7.36
1.2D + 1.0W 90°	0.00	0.00		1	-0.78	66.63	0.00
	196.00	-9.00	0	A1	-1.33	-15.18	16.55
	196.00	-2.00	240	A1a	-21.40	-20.88	-11.77
	196.00	3.00	120	A1b	7.29	-8.09	-4.79
1.2D + 1.0Di + 1.0Wi Normal	0.00	0.00		1	0.00	123.02	-0.34
	196.00	-9.00	0	A1	0.00	-16.22	21.09
	196.00	-2.00	240	A1a	-25.31	-22.04	-16.02
	196.00	3.00	120	A1b	25.30	-21.32	-16.00
1.2D + 1.0Di + 1.0Wi 60°	0.00	0.00		1	-0.25	122.38	-0.15
	196.00	-9.00	0	A1	-1.24	-18.41	23.61
	196.00	-2.00	240	A1a	-28.10	-24.17	-16.22
	196.00	3.00	120	A1b	19.87	-17.03	-12.88
1.2D + 1.0Di + 1.0Wi 90°	0.00	0.00		1	-0.31	123.01	0.01
	196.00	-9.00	0	A1	-1.53	-20.72	26.78
	196.00	-2.00	240	A1a	-27.89	-23.61	-15.43
	196.00	3.00	120	A1b	18.53	-15.54	-11.37
1.2D + 1.0Ev + 1.0Eh Normal	0.00	0.00		1	0.00	53.27	-0.01
	196.00	-9.00	0	A1	0.00	-9.78	11.29
	196.00	-2.00	240	A1a	-10.66	-10.35	-6.15
	196.00	3.00	120	A1b	10.67	-10.05	-6.16
1.2D + 1.0Ev + 1.0Eh 60°	0.00	0.00		1	-0.01	53.27	0.00
	196.00	-9.00	0	A1	0.00	-10.09	11.61
	196.00	-2.00	240	A1a	-10.94	-10.66	-6.32
	196.00	3.00	120	A1b	10.07	-9.41	-5.82
1.2D + 1.0Ev + 1.0Eh 90°	0.00	0.00		1	-0.01	53.27	0.00
	196.00	-9.00	0	A1	0.00	-10.42	11.95
	196.00	-2.00	240	A1a	-10.87	-10.59	-6.28
	196.00	3.00	120	A1b	9.84	-9.16	-5.68
1.0D + 1.0W Service Normal	0.00	0.00		1	0.00	50.85	-0.21
	196.00	-9.00	0	A1	0.00	-9.12	10.29
	196.00	-2.00	240	A1a	-11.62	-11.40	-7.02
	196.00	3.00	120	A1b	11.65	-11.09	-7.03
1.0D + 1.0W Service 60°	0.00	0.00		1	-0.18	50.71	-0.10
	196.00	-9.00	0	A1	-0.27	-10.00	11.26
	196.00	-2.00	240	A1a	-12.68	-12.29	-7.32
	196.00	3.00	120	A1b	9.63	-9.32	-5.87
1.0D + 1.0W Service 90°	0.00	0.00		1	-0.21	50.81	0.00
	196.00	-9.00	0	A1	-0.33	-10.92	12.41
	196.00	-2.00	240	A1a	-12.54	-12.08	-7.09
	196.00	3.00	120	A1b	8.96	-8.63	-5.32

MAXIMUM GUY ANCHOR REACTIONS

Radius (ft)	Drop (ft)	Azimuth (deg)	Uplift (kip)	Shear (kip)
196.00	-9.00	0	20.72	26.83
196.00	3.00	120	21.32	29.94
196.00	-2.00	240	24.17	32.45

MAXIMUM REACTIONS SUMMARY

Base / Anchor Group	Vertical Load *(Compression for Base; Uplift for Anchor)*	Horizontal Shear
Base	123.02 (kip)	0.83 (kip)
A1	24.17 (kip)	32.45 (kip)

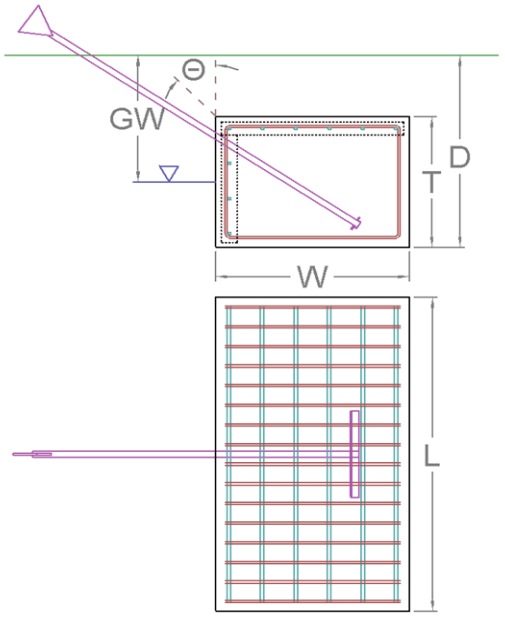
GUY ANCHOR BLOCK FOUNDATION ANALYSIS (NODE A1 @ r = 196 ft)

APPLIED REACTIONS

Uplift (k)	Shear (k)
20.72	26.83

FOUNDATION PARAMETERS

Base Depth:	D	8	ft
Block Width:	W	4	ft
Block Length:	L	14	ft
Block Thickness:	T	4	ft
Concrete Compressive Strength:		3,000	psi
Top Rebar Quantity, Size, & Yield:		(5) #7 bars [60 ksi]	
Side Rebar Quantity, Size, & Yield:		(5) #7 bars [60 ksi]	



SOIL PARAMETERS

Water Table Depth [BGL]:	GW	-	ft
Soil Unit Weight:		117	pcf
Friction Angle:		30	°
Cohesion:		0	psf
Ultimate Skin Friction		767	psf
Coefficient of Shear Friction:		0.3	
Uplift Pullout Angle:	θ	30	°
Uplift at ____ of Anchor:		Top	

SOIL STRENGTH ANALYSIS

Uplift Strength Reduction Factor, Φ_u	Shear Strength Reduction Factor, Φ_v	Dead Load Factor
0.75	0.75	0.9

SOIL UPLIFT ANALYSIS

Uplift Resistance from Skin Friction and Soil Shear (k)	Additional Uplift Resistance (k)	Uplift Capacity, ΦT_n (k)	Soil Uplift Usage, $T_u / \Phi T_n$	
57.95	0	113.84	18.2%	✓

SOIL SHEAR ANALYSIS

Skin Friction Resistance (k)	Normal Force Resistance (k)	Passive Pressure (psf)	Passive Pressure Resistance (k)	Additional Shear Resistance (k)	Shear Capacity, ΦV_n (k)	Soil Shear Usage, $V_u / \Phi V_n$	
19.43	9.93	2,106.00	117.94	0	110.47	24.3%	✓

REINFORCING STEEL STRENGTH ANALYSIS

Strength Shear Reduction Factor, Φ_V	Strength Reduction Factor for Lateral Flexure, Φ_{BV}	Strength Reduction Factor for Vertical Flexure, Φ_{BT}	Compression Zone Factor, β_1
0.75	0.9	0.9	0.65

REINFORCING ONE WAY SHEAR ANALYSIS - SHEAR

One Way Shear due to Shear, V_u (k)	One Way Shear Capacity due to Shear, $\Phi_c V_n$ (k)	Rebar One Way Shear Usage, $V_u / \Phi_c V_n$	
9.90	173.76	5.7%	✓

REINFORCING ONE WAY SHEAR ANALYSIS – UPLIFT

One Way Shear due to Uplift, V_u (k)	One Way Shear Capacity due to Uplift, $\Phi_c V_n$ (k)	Rebar One Way Shear Usage, $V_u / \Phi_c V_n$	
7.65	173.76	4.4%	✓

REINFORCING FLEXURE ANALYSIS - SHEAR

Flexure Load, M_{uv} (k-ft)	Distance to steel, d_v (in)	Whitney Block, a_v (in)	Strain in Rebar, ε_t (in/in)	Flexural Capacity, $\Phi_{bv} M_{nv}$ (k-ft)	Rebar Flexural Usage, $M_{uv} / \Phi_{bv} M_{nv}$	
46.95	44.062	1.471	0.0734	584.92	8.0%	✓

REINFORCING FLEXURE ANALYSIS – UPLIFT

Flexure Load, M_{ut} (k-ft)	Depth to steel, d_t (in)	Whitney Block, a_t (in)	Strain in Rebar, ε_t (in/in)	Flexural Capacity, $\Phi_{bt} M_{nt}$ (k-ft)	Rebar Flexural Usage, $M_{ut} / \Phi_{bt} M_{nt}$	
36.26	44.062	1.471	0.0734	584.92	6.2%	✓

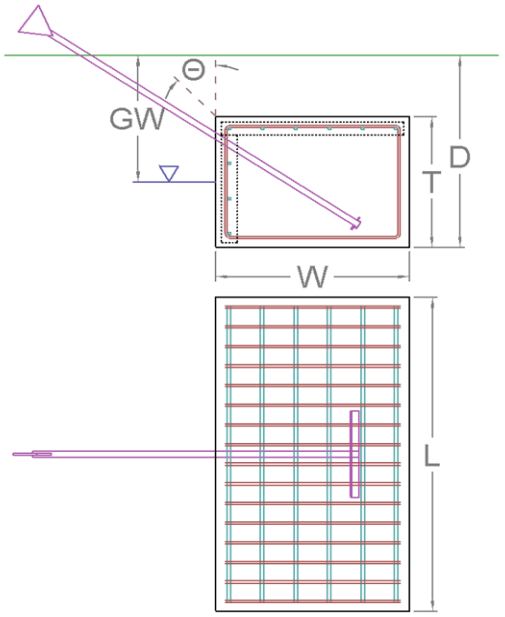
GUY ANCHOR BLOCK FOUNDATION ANALYSIS (NODE A1a @ r = 196 ft)

APPLIED REACTIONS

Uplift (k)	Shear (k)
24.17	32.45

FOUNDATION PARAMETERS

Base Depth:	D	8	ft
Block Width:	W	4	ft
Block Length:	L	14	ft
Block Thickness:	T	4	ft
Concrete Compressive Strength:		3,000	psi
Top Rebar Quantity, Size, & Yield:		(5) #7 bars [60 ksi]	
Side Rebar Quantity, Size, & Yield:		(5) #7 bars [60 ksi]	



SOIL PARAMETERS

Water Table Depth [BGL]:	GW	-	ft
Soil Unit Weight:		117	pcf
Friction Angle:		30	°
Cohesion:		0	psf
Ultimate Skin Friction		767	psf
Coefficient of Shear Friction:		0.3	
Uplift Pullout Angle:	θ	30	°
Uplift at ____ of Anchor:		Top	

SOIL STRENGTH ANALYSIS

Uplift Strength Reduction Factor, Φ_u	Shear Strength Reduction Factor, Φ_v	Dead Load Factor
0.75	0.75	0.9

SOIL UPLIFT ANALYSIS

Uplift Resistance from Skin Friction and Soil Shear (k)	Additional Uplift Resistance (k)	Uplift Capacity, ΦT_n (k)	Soil Uplift Usage, T_u / ΦT_n	
57.61	0	113.59	21.3%	✓

SOIL SHEAR ANALYSIS

Skin Friction Resistance (k)	Normal Force Resistance (k)	Passive Pressure (psf)	Passive Pressure Resistance (k)	Additional Shear Resistance (k)	Shear Capacity, ΦV_n (k)	Soil Shear Usage, V_u / ΦV_n	
19.68	8.90	2,106.00	117.94	0	109.89	29.5%	✓

REINFORCING STEEL STRENGTH ANALYSIS			
Strength Shear Reduction Factor, Φ_V	Strength Reduction Factor for Lateral Flexure, Φ_{BV}	Strength Reduction Factor for Vertical Flexure, Φ_{BT}	Compression Zone Factor, β_1
0.75	0.9	0.9	0.65

REINFORCING ONE WAY SHEAR ANALYSIS - SHEAR		
One Way Shear due to Shear, V_u (k)	One Way Shear Capacity due to Shear, $\Phi_c V_n$ (k)	Rebar One Way Shear Usage, $V_u / \Phi_c V_n$
11.98	173.76	6.9%

REINFORCING ONE WAY SHEAR ANALYSIS – UPLIFT		
One Way Shear due to Uplift, V_u (k)	One Way Shear Capacity due to Uplift, $\Phi_c V_n$ (k)	Rebar One Way Shear Usage, $V_u / \Phi_c V_n$
8.92	173.76	5.1%

REINFORCING FLEXURE ANALYSIS - SHEAR					
Flexure Load, M_{uv} (k-ft)	Distance to steel, d_v (in)	Whitney Block, a_v (in)	Strain in Rebar, ε_t (in/in)	Flexural Capacity, $\Phi_{bv} M_{nv}$ (k-ft)	Rebar Flexural Usage, $M_{uv} / \Phi_{bv} M_{nv}$
56.79	44.062	1.471	0.0734	584.92	9.7%

REINFORCING FLEXURE ANALYSIS – UPLIFT					
Flexure Load, M_{ut} (k-ft)	Depth to steel, d_t (in)	Whitney Block, a_t (in)	Strain in Rebar, ε_t (in/in)	Flexural Capacity, $\Phi_{bt} M_{nt}$ (k-ft)	Rebar Flexural Usage, $M_{ut} / \Phi_{bt} M_{nt}$
42.30	44.062	1.471	0.0734	584.92	7.2%

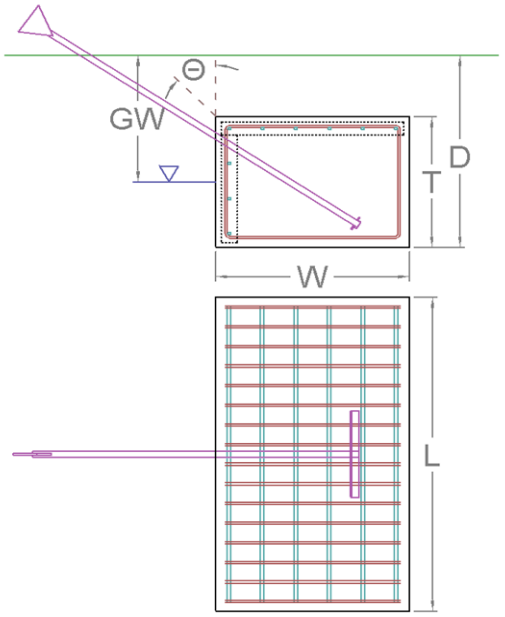
GUY ANCHOR BLOCK FOUNDATION ANALYSIS (NODE A1b @ r = 196 ft)

APPLIED REACTIONS

Uplift (k)	Shear (k)
21.32	29.94

FOUNDATION PARAMETERS

Base Depth:	D	8	ft
Block Width:	W	4	ft
Block Length:	L	14	ft
Block Thickness:	T	4	ft
Concrete Compressive Strength:		3,000	psi
Top Rebar Quantity, Size, & Yield:		(5) #7 bars [60 ksi]	
Side Rebar Quantity, Size, & Yield:		(5) #7 bars [60 ksi]	



SOIL PARAMETERS

Water Table Depth [BGL]:	GW	-	ft
Soil Unit Weight:		117	pcf
Friction Angle:		30	°
Cohesion:		0	psf
Ultimate Skin Friction		767	psf
Coefficient of Shear Friction:		0.3	
Uplift Pullout Angle:	θ	30	°
Uplift at ____ of Anchor:		Top	

SOIL STRENGTH ANALYSIS

Uplift Strength Reduction Factor, Φ_u	Shear Strength Reduction Factor, Φ_v	Dead Load Factor
0.75	0.75	0.9

SOIL UPLIFT ANALYSIS

Uplift Resistance from Skin Friction and Soil Shear (k)	Additional Uplift Resistance (k)	Uplift Capacity, ΦT_n (k)	Soil Uplift Usage, $T_u / \Phi T_n$	
57.19	0	113.27	18.8%	✓

SOIL SHEAR ANALYSIS

Skin Friction Resistance (k)	Normal Force Resistance (k)	Passive Pressure (psf)	Passive Pressure Resistance (k)	Additional Shear Resistance (k)	Shear Capacity, ΦV_n (k)	Soil Shear Usage, $V_u / \Phi V_n$	
19.99	9.75	2,106.00	117.94	0	110.76	27.0%	✓

REINFORCING STEEL STRENGTH ANALYSIS

Strength Shear Reduction Factor, Φ_V	Strength Reduction Factor for Lateral Flexure, Φ_{BV}	Strength Reduction Factor for Vertical Flexure, Φ_{BT}	Compression Zone Factor, β_1
0.75	0.9	0.9	0.65

REINFORCING ONE WAY SHEAR ANALYSIS - SHEAR

One Way Shear due to Shear, V_u (k)	One Way Shear Capacity due to Shear, $\Phi_c V_n$ (k)	Rebar One Way Shear Usage, $V_u / \Phi_c V_n$	
11.05	173.76	6.4%	✓

REINFORCING ONE WAY SHEAR ANALYSIS – UPLIFT

One Way Shear due to Uplift, V_u (k)	One Way Shear Capacity due to Uplift, $\Phi_c V_n$ (k)	Rebar One Way Shear Usage, $V_u / \Phi_c V_n$	
7.87	173.76	4.5%	✓

REINFORCING FLEXURE ANALYSIS - SHEAR

Flexure Load, M_{uv} (k-ft)	Distance to steel, d_v (in)	Whitney Block, a_v (in)	Strain in Rebar, ε_t (in/in)	Flexural Capacity, $\Phi_{bv}M_{nv}$ (k-ft)	Rebar Flexural Usage, $M_{uv} / \Phi_{bv}M_{nv}$	
52.40	44.062	1.471	0.0734	584.92	9.0%	✓

REINFORCING FLEXURE ANALYSIS – UPLIFT

Flexure Load, M_{ut} (k-ft)	Depth to steel, d_t (in)	Whitney Block, a_t (in)	Strain in Rebar, ε_t (in/in)	Flexural Capacity, $\Phi_{bt}M_{nt}$ (k-ft)	Rebar Flexural Usage, $M_{ut} / \Phi_{bt}M_{nt}$	
37.31	44.062	1.471	0.0734	584.92	6.4%	✓

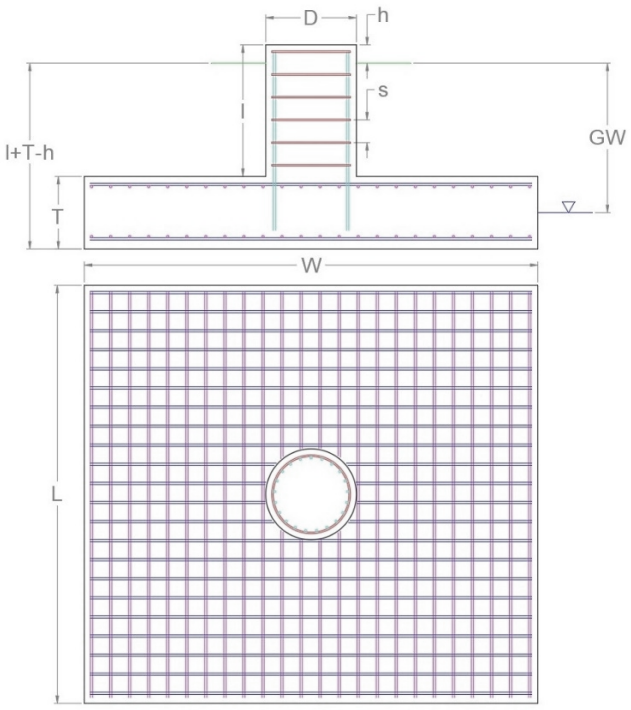
MAT & PIER FOUNDATION ANALYSIS (NODE 1)

APPLIED GLOBAL REACTIONS

Moment (k-ft)	Axial (k)	Shear (k)
0.00	123.02	0.34

FOUNDATION PARAMETERS

Mat Length:	L	7	ft
Mat Width:	W	7	ft
Mat Thickness:	T	1.75	ft
Base Depth:	L+T-h	4	ft
Pier Shape:		Round	
Pier Diameter:	D	3.39	ft
Pier Height above Grade:	h	0.5	ft
Concrete Compressive Strength:		3,000	psi
Mat Bottom Rebar:		(8) #6 bars [60 ksi]	
Pier Vertical Rebar:		(12) #8 bars [60 ksi]	
Pier Rebar Ties:	s	#4 bars @ 6.0" c/c [60 ksi]	
Rebar Clear Cover:		3.0	in
Tower Eccentricity:	ecc		ft
Tower Leg Count		1	



SOIL PARAMETERS

Water Table Depth [BGL]:	GW	-	ft
Soil Unit Weight:		139	pcf
Ultimate Skin Friction:		0	psf
Ultimate Bearing Pressure:		11,782	psf
Bearing Pressure Type:		Gross	
Coefficient of Shear Friction:		0.1	

SOIL STRENGTH ANALYSIS

Soil Strength Reduction Factor, Φ_s	Uplift Strength Reduction Factor, Φ_s	Asset Dead Load Factor	Dead Load Factor
0.6	0.75	1.2	1.2

SOIL OVERTURNING ANALYSIS

Design Moment, $M_{u,Design}$ (k-ft)	Nominal Overturning Capacity, $\Phi_m M_n$ (k-ft)	Soil Overturning Usage, $M_{u,Design} / \Phi_m M_n$	
1.53	564.74	**0.3%**	✓

SOIL BEARING ANALYSIS

Net Bearing Pressure, $P_{u,Net}$ (psf)	Nominal Bearing Capacity, $\Phi_b P_n$ (k-ft)	Bearing Pressure Controlling Load Direction	Soil Bearing Usage, $P_{u,net} / \Phi_b P_n$	
3,230.00	6,912.00	Parallel to Pad Edge	**46.7%**	✓

SOIL SLIDING SHEAR ANALYSIS

Applied Shear Force, V_u (k)	Friction Resistance (k)	Passive Pressure (psf)	Passive Pressure Resistance (k)	Nominal Shear Capacity, $\Phi_s V_n$ (k)	Soil Sliding Shear Usage, $V_u / \Phi_s V_n$	
0.34	0.00	434.4	5.32	11.09	**3.0%**	✓

MAT REINFORCING STEEL STRENGTH ANALYSIS

Steel Elastic Modulus, E (ksi)	Strength Bending/Tension Reduction Factor, Φ_b	Strength Shear Reduction Factor, Φ_v	Strength Compression Reduction Factor, Φ_c
29,000	0.9	0.75	0.65

MAT REINFORCING ONE WAY SHEAR ANALYSIS

One Way Design Shear, V_u (k)	Nominal One Way Shear Capacity, $\Phi_c V_n$ (k)	One Way Shear Controlling Load Direction	Mat One Way Shear Usage, $V_u / \Phi_c V_n$	
8.04	61.81	Diagonal to Pad Edge	**13.0%**	✓

MAT REINFORCING PUNCHING SHEAR ANALYSIS

Punching Shear Design Stress, v_u (psi)	Nominal Punching Shear Capacity, $\Phi_c v_n$ (psi)	Mat Punching Shear Usage, $v_u / \Phi_c v_n$	
34.9	164.3	**21.2%**	✓

MAT REINFORCING MOMENT TRANSFER ANALYSIS

Moment Transfer Effective Flexural Width, w_f (in)	Neutral Axis Depth (in)	Pier Moment at Joint, M_{ut} (k-in)	Nominal Moment Transfer Capacity, $\Phi M_{sc,f}$ (k-in)	Mat Moment Transfer Usage, $0.6\ M_{ut} / \Phi M_{sc,f}$	
8.64	1.03	0.00	4,133.9	**0.0%**	✓

MAT REINFORCING FLEXURE ANALYSIS – LOWER STEEL

Factored Moment, M_u (k-ft)	Nominal Flexural Capacity, ΦM_n (k-ft)	Flexural Steel Controlling Load Direction	Mat Lower Rebar Flexure Usage, $M_u / \Phi M_n$	
33.20	266.60	Parallel to Pad Edge	**12.5%**	✓

PIER REINFORCING STEEL STRENGTH ANALYSIS

Rebar Cage Diameter (in)	Steel Elastic Modulus, E (ksi)	Strength Bending/Tension Reduction Factor, Φ_b	Strength Shear Reduction Factor, Φ_v	Strength Compression Reduction Factor, Φ_c
32.68	29,000	0.9	0.75	0.65

PIER REINFORCING MOMENT ANALYSIS

Design Moment, M_u (k-ft)	Nominal Moment Capacity, $\Phi_b M_n$ (k-ft)	Bending Reinforcement Ratio	Pier Rebar Flexure Usage, $M_u/\Phi_b M_n$	
0.94	683.30	0.007	**0.1%**	✓

PIER REINFORCING COMPRESSION ANALYSIS

Design Compression, P_u (k)	Nominal Compressive Capacity, $\Phi_p P_n$ (k)	Pier Rebar Compressive Usage, $P_u / \Phi_p P_n$	
123.02	1,735.51	**7.1%**	✓

PIER REINFORCING SHEAR ANALYSIS

Design Shear, V_u (k)	Nominal Shear Capacity, $\Phi_v V_n$ (k)	Pier Rebar Shear Usage, $V_u / \Phi_v V_n$	
0.34	209.47	**0.2%**	✓

CENTERLINE COMMUNICATIONS

33 Bolivia Street
Willimantic CT 06226
rburgdorfer@clinellc.com
508.665.8005

EXHIBIT 4

Mount Analysis

AMERICAN TOWER®
CORPORATION

Mount Analysis Report

ATC Asset Name	:	WOODSTOCK CT
ATC Asset Number	:	6300
Engineering Number	:	14485734_C8_05
Mount Elevation	:	206 ft
Proposed Carrier	:	Dish Wireless L.L.C.
Carrier Site Name	:	BOBOS00032A
Carrier Site Number	:	BOBOS00032A
Site Location	:	156 Lebanon Hill Rd. Woodstock, CT 06281-1734 42.0253, -72.037
County	:	Windham
Date	:	August 28, 2023
Max Usage	:	65%
Analysis Result	:	Pass - Pending Mod

Prepared By:
Max Carter
Structural Engineer II

Max Carter

STATE OF CONNECTICUT
ESHA KAUSHAL MODI
32593
LICENSED
PROFESSIONAL ENGINEER

COA: PEC.0001553

Table of Contents

Introduction

The purpose of this report is to summarize results of the mount analysis performed for Dish Wireless L.L.C. at 206 ft.

Supporting Documents

Specifications Sheet:	Commscope MTC3975083, dated March 17, 2021
Construction Drawings:	B + T GRP Project #158913.001.01, dated January 7, 2022
Radio Frequency Data Sheet:	RFDS ID #BOBOS00032A, dated April 7, 2023
Reference Photos:	Site photos from 2022

**** The modifications by B + T GRP Job #158913.001.01 are scheduled to be installed at construction of the referenced project.***

Analysis

This mount was analyzed using American Tower Corporation's Mount Analysis Program and RISA-3D

Basic Wind Speed:	119 mph (3-Second Gust)
Basic Wind Speed w/ Ice:	50 mph (3-Second Gust) w/ 1.50'' radial ice concurrent
Codes:	ANSI/TIA-222-H / 2021 IBC / 2022 Connecticut State Building Code
Exposure Category:	C
Risk Category:	II
Topographic Factor Procedure:	Method 2
Feature:	Flat
Crest Height (H):	0 ft
Crest Length (L):	0 ft
Spectral Response:	Ss = 0.181, S1 = 0.056
Site Class:	D - Stiff Soil - Default
Live Loads:	Lm = 500 lbs, Lv = 250 lbs

***Live Load(s) reduction is confirmed to either not govern or not be applicable**

Conclusion

Based on the analysis results, the mount meets the requirements per the applicable codes listed above. The mount can support the equipment as described in this report. If the pending modifications cited in the Supporting Documents table are not completed, the results of this analysis are no longer valid, and Dish Wireless L.L.C. should contact American Tower's Site Manager for further direction on how to proceed.

If you have any questions or require additional information, please reach out to your American Tower contact. If you do not have an American Tower contact and have an Engineering question, please contact MountAnalysis@americantower.com. Please include the American Tower site name, site number, and engineering number in the subject line for any questions.

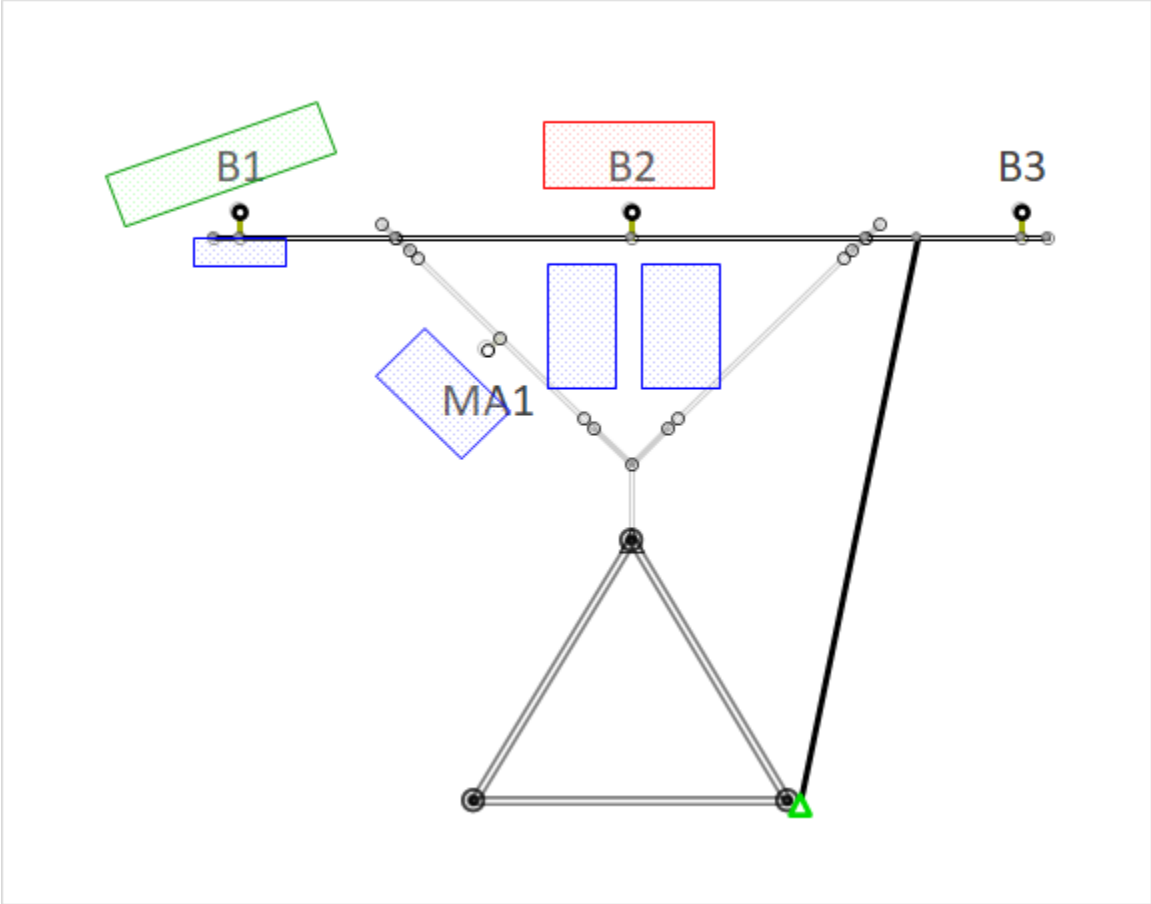
Application Loading

Mount Centerline (ft)	Equipment Centerline (ft)	Qty	Equipment Manufacturer & Model
206.0	206.0	3	Commscope FFVV-65B-R2
		1	Raycap RDIDC-9181-PF-48
		3	Fujitsu TA08025-B604
		3	Fujitsu TA08025-B605
		1	Commscope VHLP2-11W/A
		1	Ceragon IP-50C

Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Horizontals	65%	Pass
Verticals	63%	Pass
Diagonals	26%	Pass
Tie-Backs	8%	Pass
Mount Pipes	12%	Pass
Clamp Connection Check	11%	Pass

Mount Layout

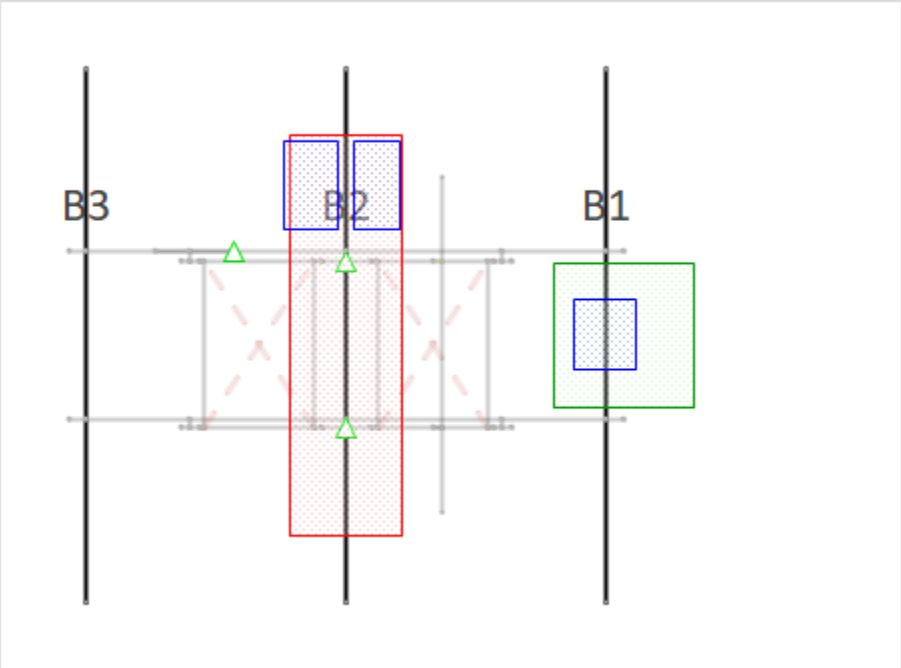


Equipment Position Table

MP	RAD Center (ft)	Qty.	Antenna Model
B1	206.0	1	Commscope VHLP2-11W/A
	206.0	1	Ceragon IP-50C
B2	206.0	1	Commscope FFVV-65B-R2
	206.0	1	Fujitsu TA08025-B604
	206.0	1	Fujitsu TA08025-B605
B3	-	-	Empty
MA1	206.0	1	Raycap RDIDC-9181-PF-48

Equipment Layout

Front View - Beta



Standard Conditions

All engineering services performed by A.T. Engineering Service, PLLC are prepared on the basis that the information used is current and correct. This information may consist of, but is not limited to the following:

- Information supplied by the client regarding equipment, mounts, and feed line loading
- Information from drawings, design and analysis documents, and field notes in the possession of A.T. Engineering Service, PLLC

It is the responsibility of the client to ensure that the information provided to A.T. Engineering Service, PLLC and used in the performance of our engineering services is correct and complete.

American Tower assumes that all structures were constructed in accordance with the drawings and specifications.

All connections are to be verified for condition and tightness by the installation contractor preceding any changes to the appurtenance mounting system and/or equipment attached to it.

Unless explicitly agreed by both the client and A.T. Engineering Service, PLLC, all services will be performed in accordance with the current revision of ANSI/TIA-222.

Installation of all equipment and steel should be confirmed not to cause tower conflicts nor impede the tower climbing pegs.

All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. A.T. Engineering Service, PLLC is not responsible for the conclusions, opinions and recommendations made by others based on the information supplied herein.

AMERICAN TOWER®
CORPORATION

Site Number:	*6300*
Project Number:	*14485734_C8_05*
Carrier:	*Dish Wireless L.L.C.*
Mount Elevation:	*206 ft*
Date:	8/28/2023

Mount Analysis Force Calculations

Wind & Ice Load Calculations			
Velocity Pressure Coefficient	K_z	1.47	
Topographic Factor	K_{zt}	1.00	
Rooftop Wind Speed-up Factor	K_s	1.00	
Shielding Factor	K_a	0.90	
Ground Elevation Factor	K_e	0.97	
Wind Direction Probability Factor	K_d	0.95	
Basic Wind Speed	V	119	mph
Velocity Pressure	q_z	49.3	psf
Height Escalation Factor	K_{iz}	1.20	
Thickness of Radial Glaze Ice	T_{iz}	1.80	in

Seismic Load Calculations			
Short Period DSRAP	S_{DS}	0.145	
1 Second DSRAP	S_{D1}	0.090	
Importance Factor	I	1.0	
Response Modification Coefficient	R	2.0	
Seismic Response Coefficient	C_S	0.072	
Amplification Factor	A	1.0	
Total Weight	W	619.6	lbs
Total Shear Force	V_S	44.9	lbs
Horizontal Seismic Load	Eh	44.9	lbs
Vertical Seismic Load	Ev	17.9	lbs

Antenna Calculations (Elevations per Application/RFDS)*

Equipment	Height	Width	Depth	Weight	EPA_N	EPA_T	EPA_{Ni}	EPA_{Ti}
Model #	in	in	in	lbs	sqft	sqft	sqft	sqft
Commscope FFVV-65B-R2	72.0	19.6	7.8	70.8	12.27	2.34	15.25	3.59
Raycap RDIDC-9181-PF-48	16.0	14.0	8.0	21.9	1.87	1.07	2.88	1.90
Fujitsu TA08025-B604	15.7	15.0	7.9	63.9	1.96	1.03	2.99	1.85
Fujitsu TA08025-B605	15.7	15.0	9.1	75.0	1.96	1.19	2.99	2.04
Commscope VHLP2-11W/A	26.0	26.0	6.5	17.0	2.35	0.63	3.05	1.12
Ceragon IP-50C	12.7	10.6	3.4	13.2	1.12	0.38	1.93	0.99

**** Equipment with EPA values N/A were not considered in the mount analysis***

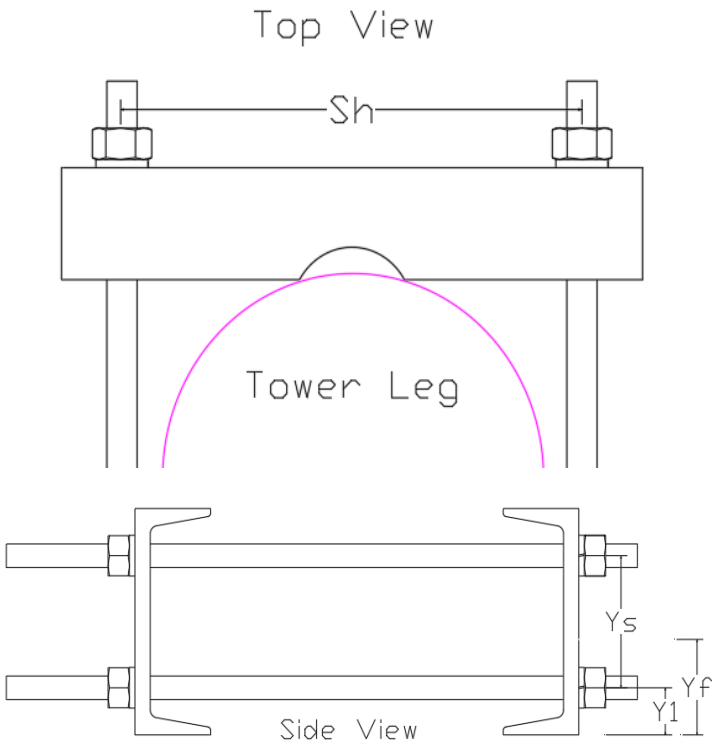
AMERICAN TOWER®
CORPORATION

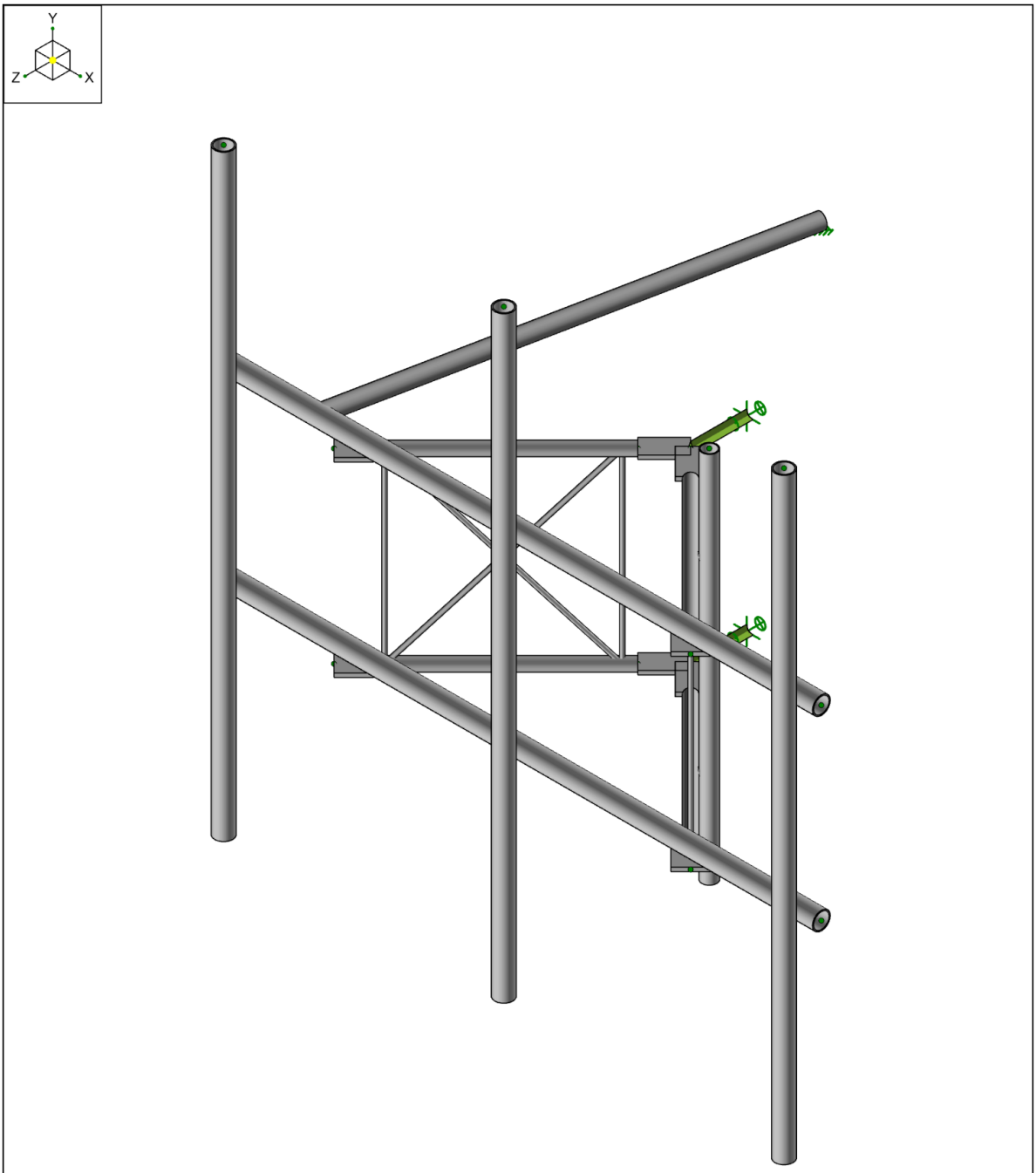
Site Number:	*6300*
Project Number:	*14485734_C8_05*
Carrier:	*Dish Wireless L.L.C.*
Mount Elevation:	*206 ft*
Date:	8/28/2023

Mount-to-Tower Connection Analysis

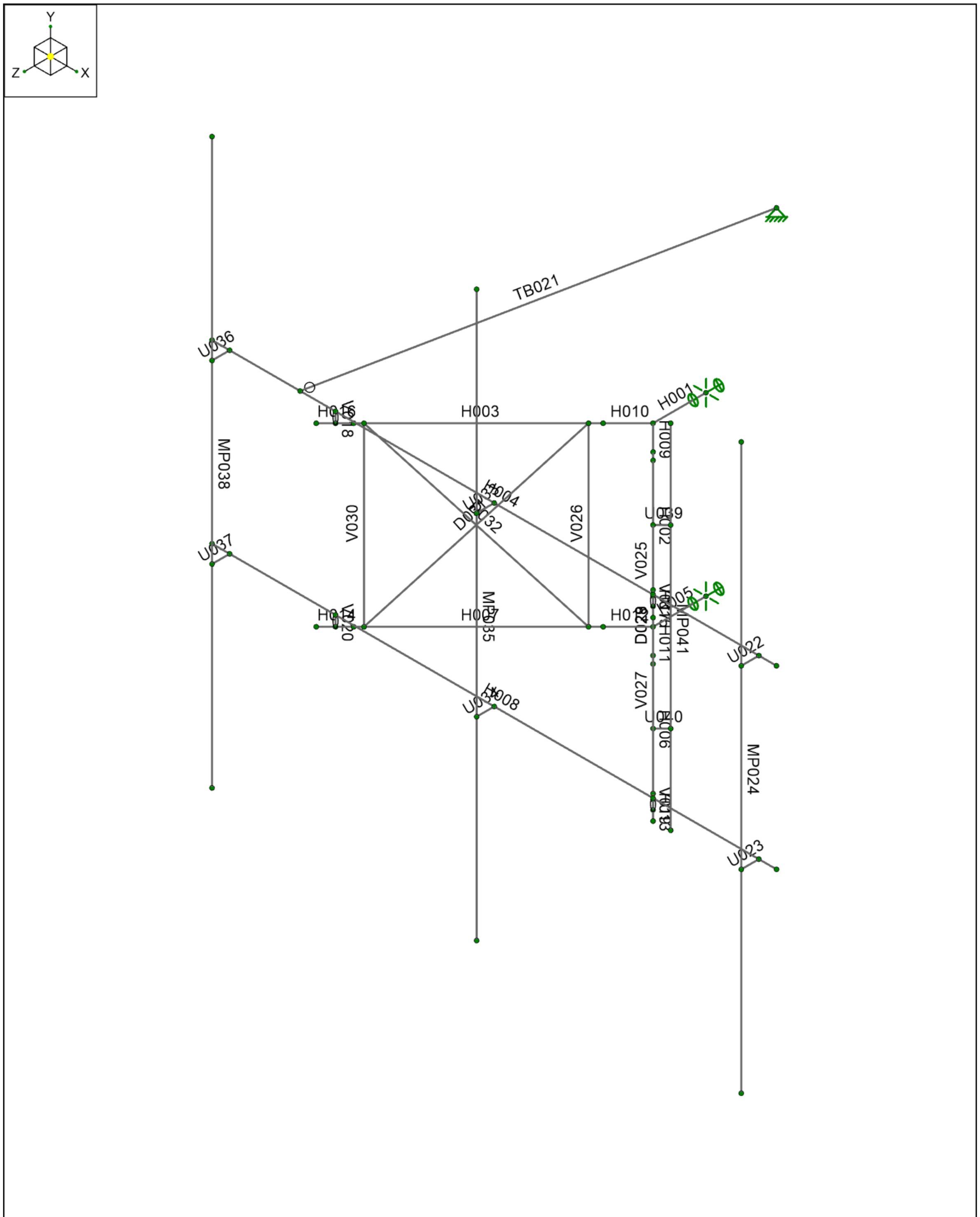
Applied Loads from RISA 3D			
Controlling Load Combination		26	
Node Label / Orientation (Degrees)		N007	
Force in X	Fx	285.668	lbs
Force in Y	Fy	696.173	lbs
Force in Z	Fz	1426.787	lbs
Moment about X	Mx	0	lb-ft
Moment about Y	My	0	lb-ft
Moment about Z	Mz	221.426	lb-ft

Bolt Capacity			
Bolt Type		Threaded Rod(s)	
Threaded Rod(s) Quantity	n	2	
Bolt Diameter	D_B	5/8	in
Vertical Bolt Spacing	Y_s		in
Lower Bolt Edge Distance	Y_1	2.75	in
Horizontal Bolt Spacing	S_h	9.5	in
Clamp Height	H	5	in
Load Eccentricity	Y_f	2.5	in
Bolt Grade		A449	
Bolt Fy	Fy_B	92	ksi
Bolt Fu	Fu_B	120	ksi
Max Applied Tension	Tu	2.22	k
Tensile Strength	ϕTn	20.3	k
Connection Capacity	Tu/ϕTn	11%	Pass





American Tower Corp.	6300, WOODSTOCK CT	SK-1
Max.Carter		Aug 28, 2023
14485734_C8_05		R3D. DISH WIRELESS L.L.C. @ …



American Tower Corp.	6300, WOODSTOCK CT	SK-2
Max.Carter		Aug 28, 2023
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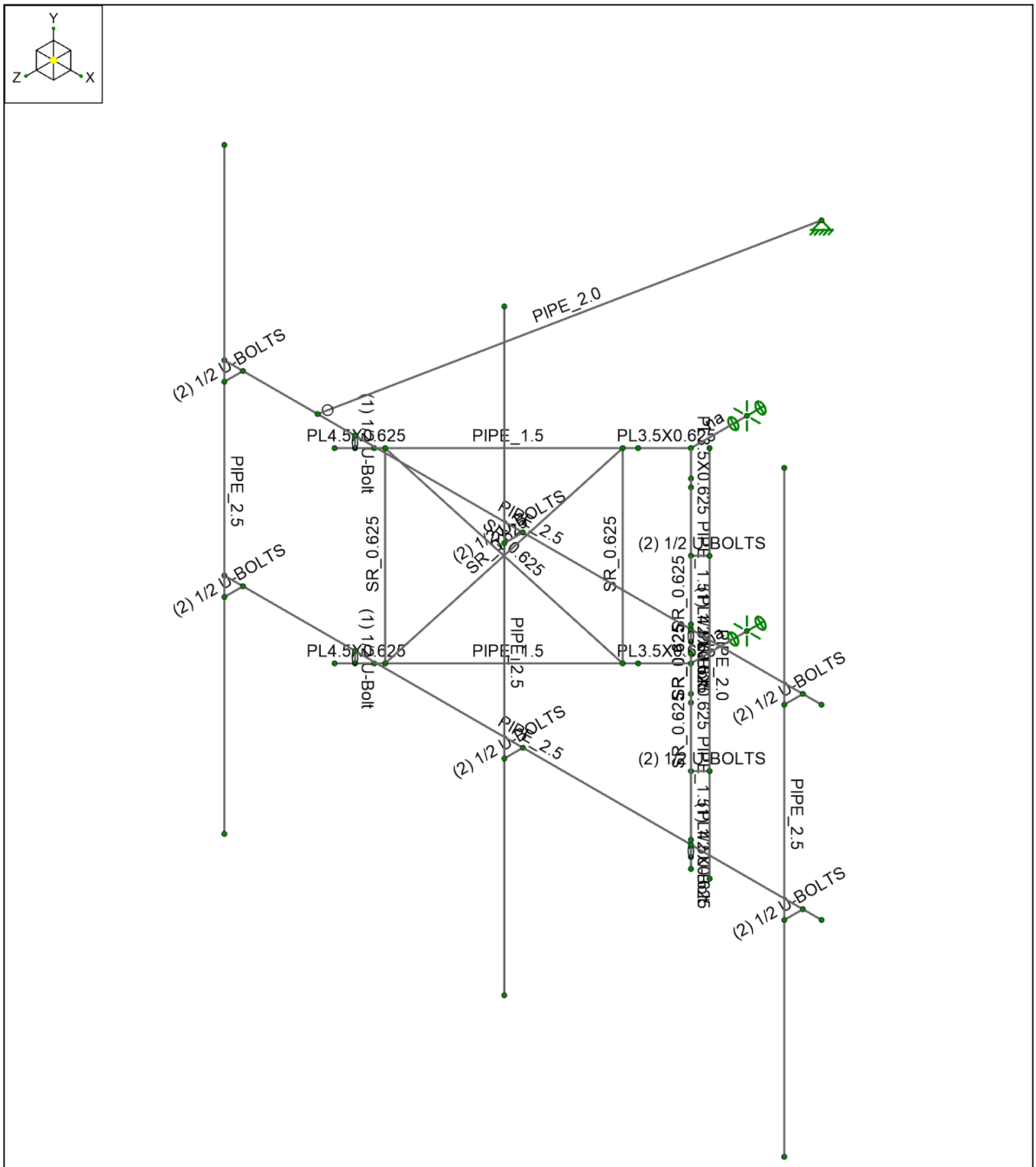

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Max.Carter		Aug 28, 2023
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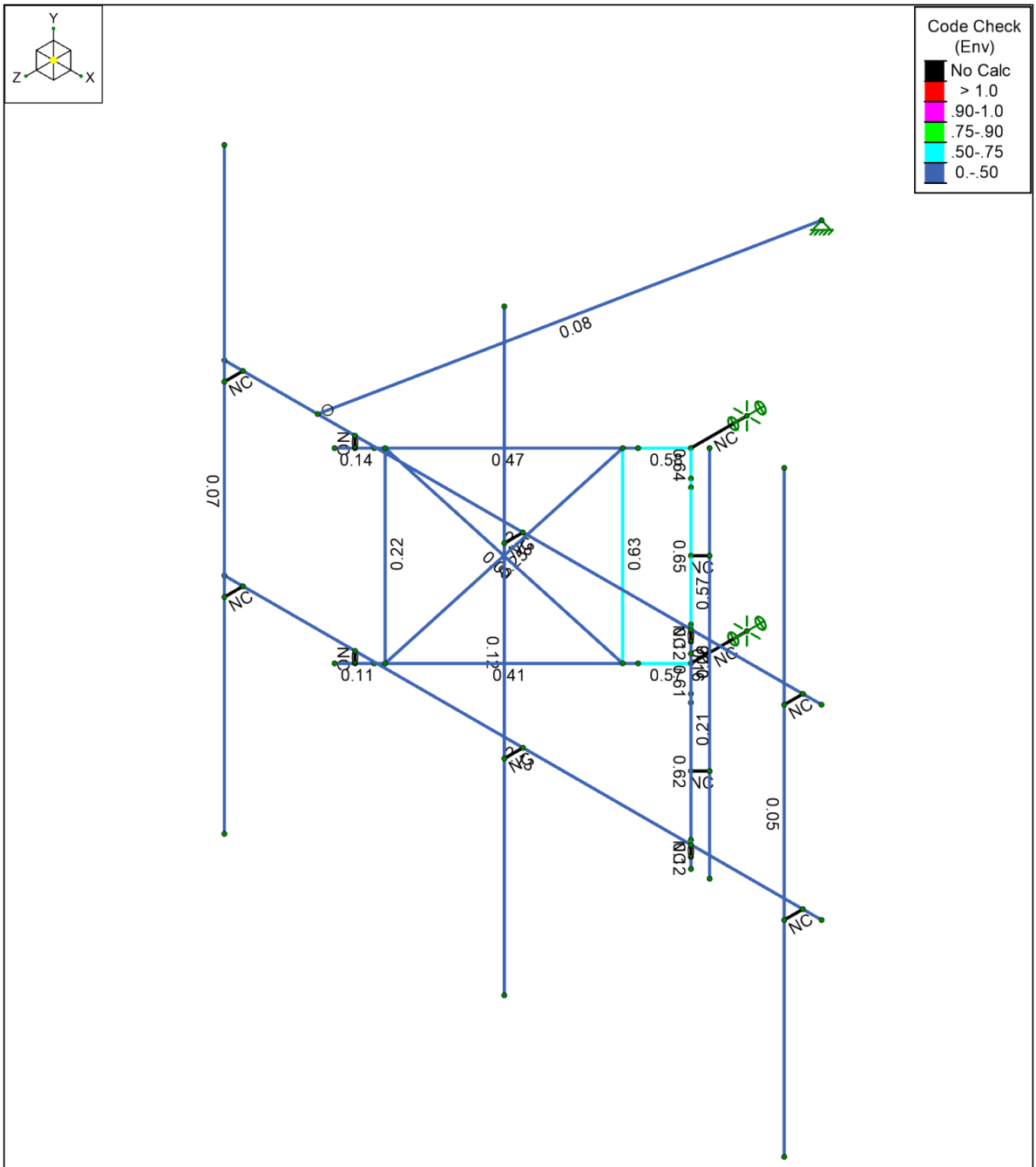

Member Code Checks Displayed (Enveloped)

American Tower Corp.	6300, WOODSTOCK CT	SK-4
Max.Carter		Aug 28, 2023
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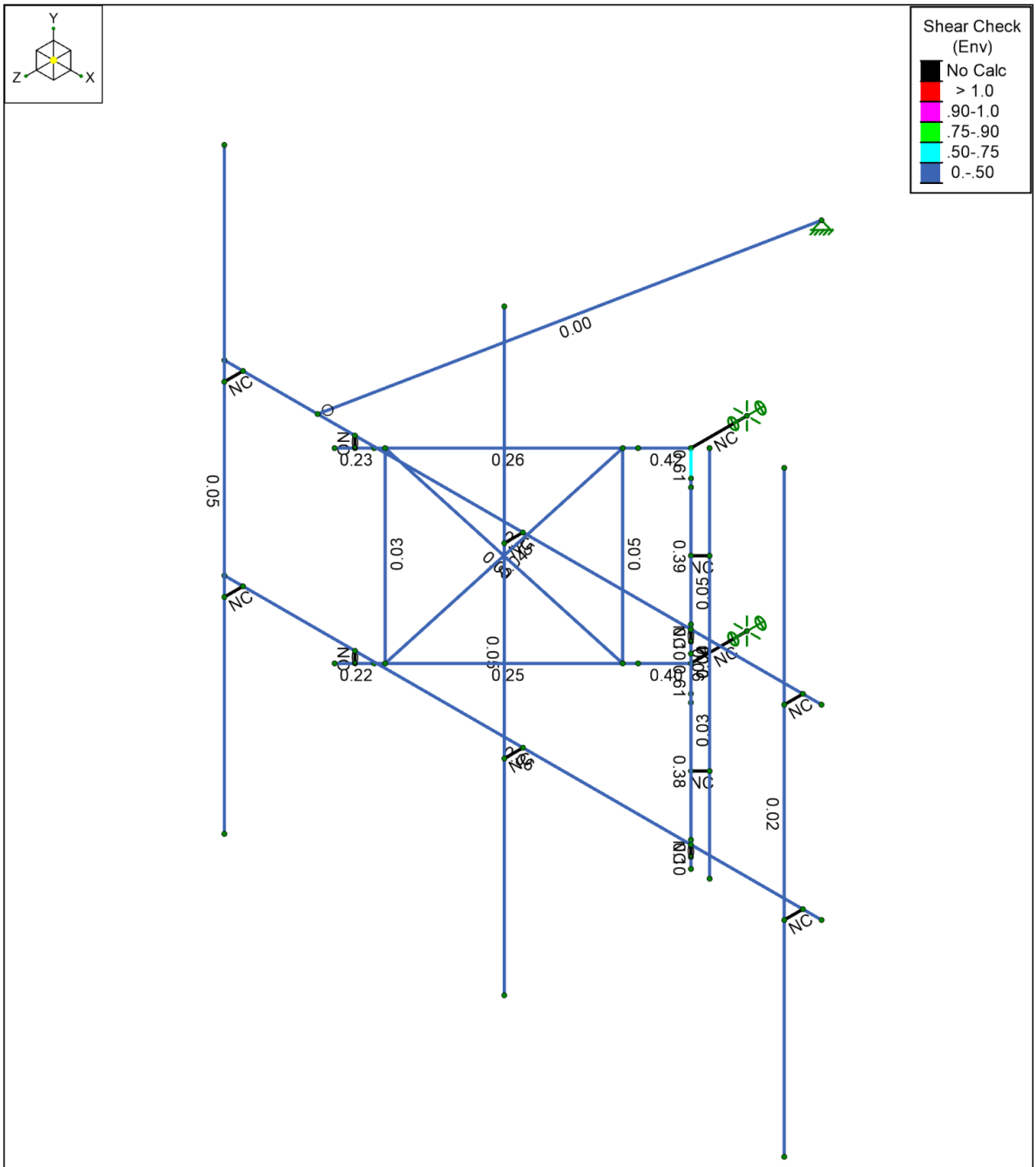

Member Shear Checks Displayed (Enveloped)

American Tower Corp.	6300, WOODSTOCK CT	SK-5
Max.Carter		Aug 28, 2023
14485734_C8_05		R3D. DISH WIRELESS L.L.C. @ …

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Nodal	Point	Distributed
1	D	DL		-1			7	
2	Di	IL					7	27
3	W 0	WL					9	40
4	W 30	WL					15	79
5	W 60	WL					15	79
6	W 90	WL					9	40
7	W 120	WL					15	79
8	W 150	WL					15	79
9	W 180	WL					9	40
10	W 210	WL					15	79
11	W 240	WL					15	79
12	W 270	WL					9	40
13	W 300	WL					15	79
14	W 330	WL					15	79
15	Wi 0	WL					9	40
16	Wi 30	WL					15	79
17	Wi 60	WL					15	79
18	Wi 90	WL					9	40
19	Wi 120	WL					15	79
20	Wi 150	WL					15	79
21	Wi 180	WL					9	40
22	Wi 210	WL					15	79
23	Wi 240	WL					15	79
24	Wi 270	WL					9	40
25	Wi 300	WL					15	79
26	Wi 330	WL					15	79
27	Ws 0	WL					9	40
28	Ws 30	WL					15	79
29	Ws 60	WL					15	79
30	Ws 90	WL					9	40
31	Ws 120	WL					15	79
32	Ws 150	WL					15	79
33	Ws 180	WL					9	40
34	Ws 210	WL					15	79
35	Ws 240	WL					15	79
36	Ws 270	WL					9	40
37	Ws 300	WL					15	79
38	Ws 330	WL					15	79
39	Ev -Y	ELY		-0.029			7	
40	Eh -Z	ELZ			-0.072		7	
41	Eh -X	ELX	-0.072				7	
42	Lv (1)	LL					1	
43	Lv (2)	LL					1	
44	Lv (3)	LL					1	
45	Lv (4)	LL					1	
46	Lv (5)	LL					1	
47	Lv (6)	LL					1	
48	Lv (7)	LL					1	
49	Lv (8)	LL					1	
50	Lv (9)	LL					1	
51	Lv (10)	LL					1	
52	Lv (11)	LL				1		
53	Lv (12)	LL				1		
54	Lv (13)	LL				1		
55	Lm (1)	LL				1		

Basic Load Cases (Continued)

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Nodal	Point	Distributed
56	Lm (2)	LL				1		
57	Lm (3)	LL				1		
58	Lm (4)	LL				1		

Load Combinations

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	1.4D	Yes	Y	DL	1.4						
2	1.2D + 1.0W [0°]	Yes	Y	DL	1.2	3	1				
3	1.2D + 1.0W [30°]	Yes	Y	DL	1.2	4	1				
4	1.2D + 1.0W [60°]	Yes	Y	DL	1.2	5	1				
5	1.2D + 1.0W [90°]	Yes	Y	DL	1.2	6	1				
6	1.2D + 1.0W [120°]	Yes	Y	DL	1.2	7	1				
7	1.2D + 1.0W [150°]	Yes	Y	DL	1.2	8	1				
8	1.2D + 1.0W [180°]	Yes	Y	DL	1.2	9	1				
9	1.2D + 1.0W [210°]	Yes	Y	DL	1.2	10	1				
10	1.2D + 1.0W [240°]	Yes	Y	DL	1.2	11	1				
11	1.2D + 1.0W [270°]	Yes	Y	DL	1.2	12	1				
12	1.2D + 1.0W [300°]	Yes	Y	DL	1.2	13	1				
13	1.2D + 1.0W [330°]	Yes	Y	DL	1.2	14	1				
14	0.9D + 1.0W [0°]	Yes	Y	DL	0.9	3	1				
15	0.9D + 1.0W [30°]	Yes	Y	DL	0.9	4	1				
16	0.9D + 1.0W [60°]	Yes	Y	DL	0.9	5	1				
17	0.9D + 1.0W [90°]	Yes	Y	DL	0.9	6	1				
18	0.9D + 1.0W [120°]	Yes	Y	DL	0.9	7	1				
19	0.9D + 1.0W [150°]	Yes	Y	DL	0.9	8	1				
20	0.9D + 1.0W [180°]	Yes	Y	DL	0.9	9	1				
21	0.9D + 1.0W [210°]	Yes	Y	DL	0.9	10	1				
22	0.9D + 1.0W [240°]	Yes	Y	DL	0.9	11	1				
23	0.9D + 1.0W [270°]	Yes	Y	DL	0.9	12	1				
24	0.9D + 1.0W [300°]	Yes	Y	DL	0.9	13	1				
25	0.9D + 1.0W [330°]	Yes	Y	DL	0.9	14	1				
26	1.2D + 1.0Di + 1.0Wi [0°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	15	1		
27	1.2D + 1.0Di + 1.0Wi [30°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	16	1		
28	1.2D + 1.0Di + 1.0Wi [60°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	17	1		
29	1.2D + 1.0Di + 1.0Wi [90°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	18	1		
30	1.2D + 1.0Di + 1.0Wi [120°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	19	1		
31	1.2D + 1.0Di + 1.0Wi [150°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	20	1		
32	1.2D + 1.0Di + 1.0Wi [180°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	21	1		
33	1.2D + 1.0Di + 1.0Wi [210°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	22	1		
34	1.2D + 1.0Di + 1.0Wi [240°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	23	1		
35	1.2D + 1.0Di + 1.0Wi [270°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	24	1		
36	1.2D + 1.0Di + 1.0Wi [300°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	25	1		
37	1.2D + 1.0Di + 1.0Wi [330°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	26	1		
38	1.2D + 1.0Ev + 1.0Eh [0°]	Yes	Y	DL	1.2	ELY	1	ELZ	1	ELX	0.001
39	1.2D + 1.0Ev + 1.0Eh [30°]	Yes	Y	DL	1.2	ELY	1	ELZ	0.866	ELX	0.5
40	1.2D + 1.0Ev + 1.0Eh [60°]	Yes	Y	DL	1.2	ELY	1	ELZ	0.5	ELX	0.866
41	1.2D + 1.0Ev + 1.0Eh [90°]	Yes	Y	DL	1.2	ELY	1	ELZ	0.001	ELX	1
42	1.2D + 1.0Ev + 1.0Eh [120°]	Yes	Y	DL	1.2	ELY	1	ELZ	-0.5	ELX	0.866
43	1.2D + 1.0Ev + 1.0Eh [150°]	Yes	Y	DL	1.2	ELY	1	ELZ	-0.866	ELX	0.5
44	1.2D + 1.0Ev + 1.0Eh [180°]	Yes	Y	DL	1.2	ELY	1	ELZ	-1	ELX	0.001
45	1.2D + 1.0Ev + 1.0Eh [210°]	Yes	Y	DL	1.2	ELY	1	ELZ	-0.866	ELX	-0.5
46	1.2D + 1.0Ev + 1.0Eh [240°]	Yes	Y	DL	1.2	ELY	1	ELZ	-0.5	ELX	-0.866
47	1.2D + 1.0Ev + 1.0Eh [270°]	Yes	Y	DL	1.2	ELY	1	ELZ	0.001	ELX	-1
48	1.2D + 1.0Ev + 1.0Eh [300°]	Yes	Y	DL	1.2	ELY	1	ELZ	0.5	ELX	-0.866
49	1.2D + 1.0Ev + 1.0Eh [330°]	Yes	Y	DL	1.2	ELY	1	ELZ	0.866	ELX	-0.5

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
50	0.9D + 1.0Ev + 1.0Eh [0°]	Yes	Y	DL	0.9	ELY	1	ELZ	1	ELX	0.001
51	0.9D + 1.0Ev + 1.0Eh [30°]	Yes	Y	DL	0.9	ELY	1	ELZ	0.866	ELX	0.5
52	0.9D + 1.0Ev + 1.0Eh [60°]	Yes	Y	DL	0.9	ELY	1	ELZ	0.5	ELX	0.866
53	0.9D + 1.0Ev + 1.0Eh [90°]	Yes	Y	DL	0.9	ELY	1	ELZ	0.001	ELX	1
54	0.9D + 1.0Ev + 1.0Eh [120°]	Yes	Y	DL	0.9	ELY	1	ELZ	-0.5	ELX	0.866
55	0.9D + 1.0Ev + 1.0Eh [150°]	Yes	Y	DL	0.9	ELY	1	ELZ	-0.866	ELX	0.5
56	0.9D + 1.0Ev + 1.0Eh [180°]	Yes	Y	DL	0.9	ELY	1	ELZ	-1	ELX	0.001
57	0.9D + 1.0Ev + 1.0Eh [210°]	Yes	Y	DL	0.9	ELY	1	ELZ	-0.866	ELX	-0.5
58	0.9D + 1.0Ev + 1.0Eh [240°]	Yes	Y	DL	0.9	ELY	1	ELZ	-0.5	ELX	-0.866
59	0.9D + 1.0Ev + 1.0Eh [270°]	Yes	Y	DL	0.9	ELY	1	ELZ	0.001	ELX	-1
60	0.9D + 1.0Ev + 1.0Eh [300°]	Yes	Y	DL	0.9	ELY	1	ELZ	0.5	ELX	-0.866
61	0.9D + 1.0Ev + 1.0Eh [330°]	Yes	Y	DL	0.9	ELY	1	ELZ	0.866	ELX	-0.5
62	1.2D + 1.5Lv(1)	Yes	Y	DL	1.2	42	1.5				
63	1.2D + 1.5Lv(2)	Yes	Y	DL	1.2	43	1.5				
64	1.2D + 1.5Lv(3)	Yes	Y	DL	1.2	44	1.5				
65	1.2D + 1.5Lv(4)	Yes	Y	DL	1.2	45	1.5				
66	1.2D + 1.5Lv(5)	Yes	Y	DL	1.2	46	1.5				
67	1.2D + 1.5Lv(6)	Yes	Y	DL	1.2	47	1.5				
68	1.2D + 1.5Lv(7)	Yes	Y	DL	1.2	48	1.5				
69	1.2D + 1.5Lv(8)	Yes	Y	DL	1.2	49	1.5				
70	1.2D + 1.5Lv(9)	Yes	Y	DL	1.2	50	1.5				
71	1.2D + 1.5Lv(10)	Yes	Y	DL	1.2	51	1.5				
72	1.2D + 1.5Lv(11)	Yes	Y	DL	1.2	52	1.5				
73	1.2D + 1.5Lv(12)	Yes	Y	DL	1.2	53	1.5				
74	1.2D + 1.5Lv(13)	Yes	Y	DL	1.2	54	1.5				
75	1.2D + 1.5Lm(1) + 1.0Wm [0°]	Yes	Y	DL	1.2	55	1.5	27	1		
76	1.2D + 1.5Lm(1) + 1.0Wm [30°]	Yes	Y	DL	1.2	55	1.5	28	1		
77	1.2D + 1.5Lm(1) + 1.0Wm [60°]	Yes	Y	DL	1.2	55	1.5	29	1		
78	1.2D + 1.5Lm(1) + 1.0Wm [90°]	Yes	Y	DL	1.2	55	1.5	30	1		
79	1.2D + 1.5Lm(1) + 1.0Wm [120°]	Yes	Y	DL	1.2	55	1.5	31	1		
80	1.2D + 1.5Lm(1) + 1.0Wm [150°]	Yes	Y	DL	1.2	55	1.5	32	1		
81	1.2D + 1.5Lm(1) + 1.0Wm [180°]	Yes	Y	DL	1.2	55	1.5	33	1		
82	1.2D + 1.5Lm(1) + 1.0Wm [210°]	Yes	Y	DL	1.2	55	1.5	34	1		
83	1.2D + 1.5Lm(1) + 1.0Wm [240°]	Yes	Y	DL	1.2	55	1.5	35	1		
84	1.2D + 1.5Lm(1) + 1.0Wm [270°]	Yes	Y	DL	1.2	55	1.5	36	1		
85	1.2D + 1.5Lm(1) + 1.0Wm [300°]	Yes	Y	DL	1.2	55	1.5	37	1		
86	1.2D + 1.5Lm(1) + 1.0Wm [330°]	Yes	Y	DL	1.2	55	1.5	38	1		
87	1.2D + 1.5Lm(2) + 1.0Wm [0°]	Yes	Y	DL	1.2	56	1.5	27	1		
88	1.2D + 1.5Lm(2) + 1.0Wm [30°]	Yes	Y	DL	1.2	56	1.5	28	1		
89	1.2D + 1.5Lm(2) + 1.0Wm [60°]	Yes	Y	DL	1.2	56	1.5	29	1		
90	1.2D + 1.5Lm(2) + 1.0Wm [90°]	Yes	Y	DL	1.2	56	1.5	30	1		
91	1.2D + 1.5Lm(2) + 1.0Wm [120°]	Yes	Y	DL	1.2	56	1.5	31	1		
92	1.2D + 1.5Lm(2) + 1.0Wm [150°]	Yes	Y	DL	1.2	56	1.5	32	1		
93	1.2D + 1.5Lm(2) + 1.0Wm [180°]	Yes	Y	DL	1.2	56	1.5	33	1		
94	1.2D + 1.5Lm(2) + 1.0Wm [210°]	Yes	Y	DL	1.2	56	1.5	34	1		
95	1.2D + 1.5Lm(2) + 1.0Wm [240°]	Yes	Y	DL	1.2	56	1.5	35	1		
96	1.2D + 1.5Lm(2) + 1.0Wm [270°]	Yes	Y	DL	1.2	56	1.5	36	1		
97	1.2D + 1.5Lm(2) + 1.0Wm [300°]	Yes	Y	DL	1.2	56	1.5	37	1		
98	1.2D + 1.5Lm(2) + 1.0Wm [330°]	Yes	Y	DL	1.2	56	1.5	38	1		
99	1.2D + 1.5Lm(3) + 1.0Wm [0°]	Yes	Y	DL	1.2	57	1.5	27	1		
100	1.2D + 1.5Lm(3) + 1.0Wm [30°]	Yes	Y	DL	1.2	57	1.5	28	1		
101	1.2D + 1.5Lm(3) + 1.0Wm [60°]	Yes	Y	DL	1.2	57	1.5	29	1		
102	1.2D + 1.5Lm(3) + 1.0Wm [90°]	Yes	Y	DL	1.2	57	1.5	30	1		
103	1.2D + 1.5Lm(3) + 1.0Wm [120°]	Yes	Y	DL	1.2	57	1.5	31	1		
104	1.2D + 1.5Lm(3) + 1.0Wm [150°]	Yes	Y	DL	1.2	57	1.5	32	1		

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
105	1.2D + 1.5Lm(3) + 1.0Wm [180°]	Yes	Y	DL	1.2	57	1.5	33	1		
106	1.2D + 1.5Lm(3) + 1.0Wm [210°]	Yes	Y	DL	1.2	57	1.5	34	1		
107	1.2D + 1.5Lm(3) + 1.0Wm [240°]	Yes	Y	DL	1.2	57	1.5	35	1		
108	1.2D + 1.5Lm(3) + 1.0Wm [270°]	Yes	Y	DL	1.2	57	1.5	36	1		
109	1.2D + 1.5Lm(3) + 1.0Wm [300°]	Yes	Y	DL	1.2	57	1.5	37	1		
110	1.2D + 1.5Lm(3) + 1.0Wm [330°]	Yes	Y	DL	1.2	57	1.5	38	1		
111	1.2D + 1.5Lm(4) + 1.0Wm [0°]	Yes	Y	DL	1.2	58	1.5	27	1		
112	1.2D + 1.5Lm(4) + 1.0Wm [30°]	Yes	Y	DL	1.2	58	1.5	28	1		
113	1.2D + 1.5Lm(4) + 1.0Wm [60°]	Yes	Y	DL	1.2	58	1.5	29	1		
114	1.2D + 1.5Lm(4) + 1.0Wm [90°]	Yes	Y	DL	1.2	58	1.5	30	1		
115	1.2D + 1.5Lm(4) + 1.0Wm [120°]	Yes	Y	DL	1.2	58	1.5	31	1		
116	1.2D + 1.5Lm(4) + 1.0Wm [150°]	Yes	Y	DL	1.2	58	1.5	32	1		
117	1.2D + 1.5Lm(4) + 1.0Wm [180°]	Yes	Y	DL	1.2	58	1.5	33	1		
118	1.2D + 1.5Lm(4) + 1.0Wm [210°]	Yes	Y	DL	1.2	58	1.5	34	1		
119	1.2D + 1.5Lm(4) + 1.0Wm [240°]	Yes	Y	DL	1.2	58	1.5	35	1		
120	1.2D + 1.5Lm(4) + 1.0Wm [270°]	Yes	Y	DL	1.2	58	1.5	36	1		
121	1.2D + 1.5Lm(4) + 1.0Wm [300°]	Yes	Y	DL	1.2	58	1.5	37	1		
122	1.2D + 1.5Lm(4) + 1.0Wm [330°]	Yes	Y	DL	1.2	58	1.5	38	1		

Member Primary Data

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
1	H001	N001	N002		RIGID	None	None	RIGID	Typical
2	H002	N019	N022		PIPE_1.5	Beam	None	A500 Gr. C	Typical
3	H003	N013	N016		PIPE_1.5	Beam	None	A500 Gr. C	Typical
4	H004	N005	N006		PIPE_2.5	Beam	None	A500 Gr. C	Typical
5	H005	N007	N008		RIGID	None	None	RIGID	Typical
6	H006	N020	N021		PIPE_1.5	Beam	None	A500 Gr. C	Typical
7	H007	N014	N015		PIPE_1.5	Beam	None	A500 Gr. C	Typical
8	H008	N011	N012		PIPE_2.5	Beam	None	A500 Gr. C	Typical
9	H009	N002	N019	90	PL3.5X0.625	Beam	None	A36	Typical
10	H010	N002	N013	90	PL3.5X0.625	Beam	None	A36	Typical
11	H011	N008	N020	90	PL3.5X0.625	Beam	None	A36	Typical
12	H012	N008	N014	90	PL3.5X0.625	Beam	None	A36	Typical
13	H013	N021	N024	90	PL4.5X0.625	Beam	None	A36	Typical
14	H014	N015	N018	90	PL4.5X0.625	Beam	None	A36	Typical
15	H015	N022	N023	90	PL4.5X0.625	Beam	None	A36	Typical
16	H016	N016	N017	90	PL4.5X0.625	Beam	None	A36	Typical
17	V017	N025	N003		(1) 1/2 U-Bolt	Column	None	A36	Typical
18	V018	N026	N004		(1) 1/2 U-Bolt	Column	None	A36	Typical
19	V019	N027	N009		(1) 1/2 U-Bolt	Column	None	A36	Typical
20	V020	N028	N010		(1) 1/2 U-Bolt	Column	None	A36	Typical
21	TB021	N030	N029		PIPE_2.0	Beam	None	A500 Gr. C	Typical
22	U022	N031	N032		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
23	U023	N033	N034		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
24	MP024	N035	N036		PIPE_2.5	Column	None	A500 Gr. C	Typical
25	V025	N038	N037		SR_0.625	Column	None	A36	Typical
26	V026	N040	N039		SR_0.625	Column	None	A36	Typical
27	V027	N041	N042		SR_0.625	Column	None	A36	Typical
28	D028	N041	N037		SR_0.625	Column	None	A36	Typical
29	D029	N038	N042		SR_0.625	Column	None	A36	Typical
30	V030	N044	N043		SR_0.625	Column	None	A36	Typical
31	D031	N044	N039		SR_0.625	Column	None	A36	Typical
32	D032	N040	N043		SR_0.625	Column	None	A36	Typical
33	U033	N045	N047		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
34	U034	N048	N049		(2) 1/2 U-BOLTS	Beam	None	A36	Typical

Member Primary Data (Continued)

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
35	MP035	N050	N051		PIPE_2.5	Column	None	A500 Gr. C	Typical
36	U036	N046	N052		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
37	U037	N053	N054		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
38	MP038	N055	N056		PIPE_2.5	Column	None	A53 Gr. B	Typical
39	U039	N057	N058		(2) 1/2 U-BOLTS	Beam	None	SAE J429 Gr. 2	Typical
40	U040	N059	N060		(2) 1/2 U-BOLTS	Beam	None	SAE J429 Gr. 2	Typical
41	MP041	N061	N062		PIPE_2.0	Column	None	A53 Gr. B	Typical

Hot Rolled Steel Design Parameters

	Label	Shape	Length [in]	Lb y-y [in]	Lb z-z [in]	Lcomp top [in]	L-Torque [in]	K y-y	K z-z	Function
1	H002	PIPE_1.5	30			Lbyy		0.8	1	Lateral
2	H003	PIPE_1.5	30			Lbyy		0.8	1	Lateral
3	H004	PIPE_2.5	96			Lbyy		1	1	Lateral
4	H006	PIPE_1.5	30			Lbyy		0.8	1	Lateral
5	H007	PIPE_1.5	30			Lbyy		0.8	1	Lateral
6	H008	PIPE_2.5	96			Lbyy		1	1	Lateral
7	H009	PL3.5X0.625	6			Lbyy		2.1	2.1	Lateral
8	H010	PL3.5X0.625	6			Lbyy		2.1	2.1	Lateral
9	H011	PL3.5X0.625	6			Lbyy		2.1	2.1	Lateral
10	H012	PL3.5X0.625	6			Lbyy		2.1	2.1	Lateral
11	H013	PL4.5X0.625	4.5			Lbyy		2.1	2.1	Lateral
12	H014	PL4.5X0.625	4.5			Lbyy		2.1	2.1	Lateral
13	H015	PL4.5X0.625	4.5			Lbyy		2.1	2.1	Lateral
14	H016	PL4.5X0.625	4.5			Lbyy		2.1	2.1	Lateral
15	V017	(1) 1/2 U-Bolt	1.75			Lbyy		0.65	0.65	Lateral
16	V018	(1) 1/2 U-Bolt	1.75			Lbyy		0.65	0.65	Lateral
17	V019	(1) 1/2 U-Bolt	1.75			Lbyy		0.65	0.65	Lateral
18	V020	(1) 1/2 U-Bolt	1.75			Lbyy		0.65	0.65	Lateral
19	TB021	PIPE_2.0	68.837			Lbyy		1	1	Lateral
20	U022	(2) 1/2 U-BOLTS	3			Lbyy		0.5	0.5	Lateral
21	U023	(2) 1/2 U-BOLTS	3			Lbyy		0.5	0.5	Lateral
22	MP024	PIPE_2.5	96	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
23	V025	SR_0.625	30			Lbyy		0.65	0.65	Lateral
24	V026	SR_0.625	30			Lbyy		0.65	0.65	Lateral
25	V027	SR_0.625	30			Lbyy		0.65	0.65	Lateral
26	D028	SR_0.625	40.361			Lbyy		0.65	0.65	Lateral
27	D029	SR_0.625	40.361			Lbyy		0.65	0.65	Lateral
28	V030	SR_0.625	30			Lbyy		0.65	0.65	Lateral
29	D031	SR_0.625	40.361			Lbyy		0.65	0.65	Lateral
30	D032	SR_0.625	40.361			Lbyy		0.65	0.65	Lateral
31	U033	(2) 1/2 U-BOLTS	3			Lbyy		0.5	0.5	Lateral
32	U034	(2) 1/2 U-BOLTS	3			Lbyy		0.5	0.5	Lateral
33	MP035	PIPE_2.5	96	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
34	U036	(2) 1/2 U-BOLTS	3			Lbyy		0.5	0.5	Lateral
35	U037	(2) 1/2 U-BOLTS	3			Lbyy		0.5	0.5	Lateral
36	MP038	PIPE_2.5	96	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
37	U039	(2) 1/2 U-BOLTS	2.121			Lbyy		0.5	0.5	Lateral
38	U040	(2) 1/2 U-BOLTS	2.121			Lbyy		0.5	0.5	Lateral
39	MP041	PIPE_2.0	60	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral

Node Boundary Conditions

	Node Label	X [lb/in]	Y [lb/in]	Z [lb/in]	Z Rot [k-in/rad]
1	N001	Reaction	Reaction	Reaction	Reaction
2	N007	Reaction	Reaction	Reaction	Reaction
3	N030	Reaction	Reaction	Reaction	

Member Advanced Data

	Label	I Release	J Release	T/C Only	Physical	Deflection Ratio Options	Activation	Seismic DR
1	H001				Yes	** NA **		None
2	H002				Yes	N/A		None
3	H003				Yes	N/A		None
4	H004				Yes	N/A		None
5	H005				Yes	** NA **		None
6	H006				Yes	N/A		None
7	H007				Yes	N/A		None
8	H008				Yes	N/A		None
9	H009				Yes	Default		None
10	H010				Yes	Default		None
11	H011				Yes	Default		None
12	H012				Yes	Default		None
13	H013				Yes	N/A		None
14	H014				Yes	N/A		None
15	H015				Yes	N/A		None
16	H016				Yes	N/A		None
17	V017	OOOXOO			Yes	** NA **	Exclude	None
18	V018	OOOXOO			Yes	** NA **	Exclude	None
19	V019	OOOXOO			Yes	** NA **	Exclude	None
20	V020	OOOXOO			Yes	** NA **	Exclude	None
21	TB021		BenPIN		Yes	N/A		None
22	U022				Yes	N/A	Exclude	None
23	U023				Yes	N/A	Exclude	None
24	MP024				Yes	** NA **		None
25	V025				Yes	** NA **		None
26	V026				Yes	** NA **		None
27	V027				Yes	** NA **		None
28	D028			Tension Only	Yes	** NA **		None
29	D029			Tension Only	Yes	** NA **		None
30	V030				Yes	** NA **		None
31	D031			Tension Only	Yes	** NA **		None
32	D032			Tension Only	Yes	** NA **		None
33	U033				Yes	N/A	Exclude	None
34	U034				Yes	N/A	Exclude	None
35	MP035				Yes	** NA **		None
36	U036				Yes	N/A	Exclude	None
37	U037				Yes	N/A	Exclude	None
38	MP038				Yes	** NA **		None
39	U039				Yes	N/A	Exclude	None
40	U040				Yes	N/A	Exclude	None
41	MP041				Yes	** NA **		None

Hot Rolled Steel Properties

	Label	E [psi]	G [psi]	Nu	Therm. Coeff. [1e^{5}°F^{-1}]	Density [lb/ft^{3}]	Yield [psi]	Ry	Fu [psi]	Rt
1	A36	2.9e+07	1.115e+07	0.3	0.65	490	36000	1.5	58000	1.2
2	A500 Gr. C	2.9e+07	1.115e+07	0.3	0.65	490	46000	1.4	62000	1.3

Hot Rolled Steel Properties (Continued)

	Label	E [psi]	G [psi]	Nu	Therm. Coeff. [1e⁵°F⁻¹]	Density [lb/ft³]	Yield [psi]	Ry	Fu [psi]	Rt
3	A53 Gr. B	2.9e+07	1.115e+07	0.3	0.65	490	35000	1.6	60000	1.2
4	SAE J429 Gr. 2	2.9e+07	1.115e+07	0.3	0.65	490	57000	1.1	74000	1.1

Envelope Node Reactions

	Node Label		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
1	N001	max	1243.76	18	1168.455	30	1947.661	25	0	122	0	122	354.615	80
2		min	-1295.094	12	262.911	24	-3367.374	6	0	1	0	1	-247.924	110
3	N007	max	946.036	77	1000.091	36	2706.293	26	0	122	0	122	324.759	80
4		min	-893.368	107	250.371	18	49.86	20	0	1	0	1	-224.445	110
5	N030	max	359.475	12	41.904	36	1918.516	18	0	122	0	122	0	122
6		min	-370.025	6	5.588	18	-1903.373	24	0	1	0	1	0	1
7	Totals:	max	1249.908	4	2183.145	30	1636.426	2						
8		min	-1227.305	22	542.787	25	-1587.181	20						

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

	Member	Shape	Code Check	Loc[in]	LC	Shear Check	Loc[in]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [lb-ft]	phi*Mn z-z [lb-ft]	Cb	Eqn
1	H002	PIPE_1.5	0.65	1.563	34	0.388	0		34	26562.555	31008.6	1452.45	1452.45	2.011	H3-6
2	H003	PIPE_1.5	0.472	1.563	34	0.264	0		110	26562.555	31008.6	1452.45	1452.45	1.915	H3-6
3	H004	PIPE_2.5	0.182	75	6	0.155	75		6	33487.322	66654	4726.5	4726.5	2.154	H1-1b
4	H006	PIPE_1.5	0.622	1.563	28	0.376	0		36	26562.555	31008.6	1452.45	1452.45	1.824	H3-6
5	H007	PIPE_1.5	0.412	1.563	36	0.251	0		37	26562.555	31008.6	1452.45	1452.45	1.902	H1-1b
6	H008	PIPE_2.5	0.126	75	109	0.058	48		6	33487.322	66654	4726.5	4726.5	2.269	H1-1b
7	H009	PL3.5X0.625	0.637	6	36	0.611	6	y	34	54826.037	70875	922.852	5167.969	1.152	H1-1b
8	H010	PL3.5X0.625	0.578	6	30	0.425	6	y	37	54826.037	70875	922.852	5167.969	1.113	H1-1b
9	H011	PL3.5X0.625	0.609	6	28	0.609	0	y	36	54826.037	70875	922.852	5167.969	1.174	H1-1b
10	H012	PL3.5X0.625	0.57	6	36	0.405	0	y	37	54826.037	70875	922.852	5167.969	1.137	H1-1b
11	H013	PL4.5X0.625	0.122	0	36	0.099	0	y	103	78870.627	91125	1186.523	8542.969	3	H1-1b
12	H014	PL4.5X0.625	0.106	0	103	0.224	2.156	y	34	78870.627	91125	1186.523	8542.969	3	H1-1b
13	H015	PL4.5X0.625	0.115	0	32	0.102	2.156	y	101	78870.627	91125	1186.523	8542.969	3	H1-1b
14	H016	PL4.5X0.625	0.141	2.156	7	0.231	0	y	37	78870.627	91125	1186.523	8542.969	3	H1-1b
15	TB021	PIPE_2.0	0.079	68.837	18	0.003	68.837		29	25142.123	42228	2459.85	2459.85	1.136	H1-1b*
16	MP024	PIPE_2.5	0.05	33	7	0.017	33		19	46563.382	66654	4726.5	4726.5	3	H1-1b
17	V025	SR_0.625	0.568	0	26	0.047	0		101	4378.243	9940.196	103.544	103.544	2.268	H1-1b
18	V026	SR_0.625	0.634	0	26	0.049	0		101	4378.243	9940.196	103.544	103.544	2.272	H1-1b
19	V027	SR_0.625	0.213	30	85	0.031	30		103	4378.243	9940.196	103.544	103.544	2.285	H1-1a
20	D028	SR_0.625	0.265	40.361	80	0.035	0		29	2458.567	9940.196	103.544	103.544	1.998	H1-1a*
21	D029	SR_0.625	0	40.361	122	0	40.361		122	2458.567	9940.196	103.544	103.544	1	H1-1a
22	V030	SR_0.625	0.225	30	35	0.029	0		103	4378.243	9940.196	103.544	103.544	2.314	H1-1b
23	D031	SR_0.625	0.249	40.361	110	0.04	0		36	2458.567	9940.196	103.544	103.544	1.989	H1-1a*
24	D032	SR_0.625	0	40.361	122	0	40.361		122	2458.567	9940.196	103.544	103.544	1	H1-1a
25	MP035	PIPE_2.5	0.125	33	7	0.046	33		13	46563.382	66654	4726.5	4726.5	3	H1-1b
26	MP038	PIPE_2.5	0.069	33	106	0.052	33		6	38601.739	50715	3596.25	3596.25	3	H1-1b
27	MP041	PIPE_2.0	0.165	15	34	0.061	45		12	29582.197	32130	1871.625	1871.625	3	H1-1b

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EXHIBIT 5

Power Density Report

EBI Consulting

environmental | engineering | due diligence

RADIO FREQUENCY EMISSIONS ANALYSIS REPORT
EVALUATION OF HUMAN EXPOSURE POTENTIAL TO NON-IONIZING EMISSIONS

Dish Existing Facility

Site ID: BOBOS00032A

BOBOS00032A
156 Lebanon Hill Road
Woodstock, Connecticut 06281

September 1, 2023

EBI Project Number: 6223003271

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**0.10%**

21 B Street, Burlington, MA 01803 · Tel: (781) 273.2500 · Fax: (781) 273.3311

September 1, 2023

Dish

Emissions Analysis for Site: BOBOS00032A - BOBOS00032A

EBI Consulting was directed to analyze the proposed Dish facility located at **156 Lebanon Hill Road** in **Woodstock, Connecticut** for the purpose of determining whether the emissions from the Proposed Dish 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 ($\mu W/cm^2$). 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.

Public 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 and 700 MHz frequency 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), 2100 MHz (AWS) and 11 GHz frequency 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 done for the proposed Dish Wireless antenna facility located at 156 Lebanon Hill Road in Woodstock, Connecticut using the equipment information listed below. Modeling of the antennas and associated equipment was completed using RoofMaster™ software, which is a widely-used predictive modeling program that has been developed to predict RF power density values for rooftop and tower telecommunications sites produced by vertical collinear antennas that are typically used in the cellular, PCS, paging and other communications services. Using the computational methods set forth in Federal Communications (FCC) Office of Engineering & Technology (OET) Bulletin 65, "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields" (OET-65), RoofMaster™ calculates predicted power density in a scalable grid based on the contributions of all RF sources characterized in the study scenario. At each grid location, the cumulative power density is expressed as a percentage of the FCC limits. Manufacturer antenna pattern data is utilized in these calculations. RoofMaster™ models consist of the Far Field model as specified in OET-65 and an implementation of the OET-65 Cylindrical Model (Sula9). The models utilize several operational specifications for different types of antennas to produce a plot of spatially-averaged power densities that can be expressed as a percentage of the applicable exposure limit.

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 manufacturer's supplied specifications 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. **All calculations were performed using Far Field Analysis.**

For all calculations, telecommunications equipment was modeled using the following assumptions:

1) 4 n71 channels (600 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

2) 4 n70 channels (PCS Band - 2007 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.

3) 4 n66 channels (AWS Band - 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.

4) 1 microwave backhaul channel (11 GHz) was considered for the proposed facility. This channel has a transmit power of 0.79 Watts.

5) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. 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. This is rarely the case, and if so, is never continuous.

6) For the following calculations, the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufacturer's supplied specifications was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

7) The antennas used in this modeling are the COMMSCOPE FFVV-65B-R2 02DT 600 for the 600 MHz / 600 MHz / 2007 MHz channel(s) in Sector A, the COMMSCOPE FFVV-65B-R2 02DT 600 for the 600 MHz / 2007 MHz / 2100 MHz channel(s), the COMMSCOPE VHLP2-11 11000 for the 11000 MHz channel(s) in Sector B, the COMMSCOPE FFVV-65B-R2 02DT 600 for the 600 MHz / 2007 MHz / 2100 MHz channel(s) in Sector C. This is based on feedback from the carrier with regard to anticipated antenna selection. All Antenna gain values and associated transmit power levels are shown in the Site Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufacturer's supplied specifications 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.

8) The antenna mounting height centerline of the proposed antennas is 206 feet above ground level (AGL).

9) Emissions values for additional carriers were calculated in Far Field utilizing the antenna models provided in the structural analysis.

10) calculations were done in Far Field mode with respect to uncontrolled / general population threshold limits.

Dish Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	COMMSCOPE FFVV-65B-R2 02DT 600	Make / Model:	COMMSCOPE FFVV-65B-R2 02DT 600	Make / Model:	COMMSCOPE FFVV-65B-R2 02DT 600
Frequency Bands:	600 MHz / 600 MHz / 2007 MHz	Frequency Bands:	600 MHz / 2007 MHz / 2100 MHz	Frequency Bands:	600 MHz / 2007 MHz / 2100 MHz
Gain:	11.22 dBd / 15.87 dBd / 15.97 dBd	Gain:	11.22 dBd / 15.87 dBd / 15.97 dBd	Gain:	11.22 dBd / 15.87 dBd / 15.97 dBd
Height (AGL):	206 feet	Height (AGL):	206 feet	Height (AGL):	206 feet
Channel Count:	12	Channel Count:	12	Channel Count:	12
Total TX Power (W):	440.00 Watts	Total TX Power (W):	440.00 Watts	Total TX Power (W):	440.00 Watts
ERP (W):	12,563.92	ERP (W):	12,563.92	ERP (W):	12,563.92
Antenna A1 MPE %:	**1.32%**	Antenna B1 MPE %:	**1.32%**	Antenna C1 MPE %:	**1.32%**
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	N/A	Make / Model:	COMMSCOPE VHLP2-11 11000	Make / Model:	N/A
Frequency Bands:		Frequency Bands:	11000 MHz	Frequency Bands:	
Gain:		Gain:	32.35 dBd	Gain:	
Height (AGL):		Height (AGL):	206 feet	Height (AGL):	
Channel Count:		Channel Count:	1	Channel Count:	
Total TX Power (W):		Total TX Power (W):	0.79 Watts	Total TX Power (W):	
ERP (W):		ERP (W):	1,216.19	ERP (W):	
Antenna A2 MPE %:		Antenna B2 MPE %:	**0.11%**	Antenna C2 MPE %:	

Site Composite MPE %	
Carrier	**MPE %**
Dish (Combined Sectors):	0.10%
no additional carriers	N/A
Site Total MPE % :	0.10%

Dish MPE % Per Sector	
Dish Sector A Total:	0.09%
Dish Sector B Total:	0.10%
Dish Sector C Total:	0.10%
Dish Total MPE % :	0.10%

Dish Maximum MPE Power Values (Sector B)

Dish Frequency Band / Technology (Sector B)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density (μW/cm²)	Frequency (MHz)	Allowable MPE (μW/cm²)	Calculated % MPE
Dish 600 MHz n71	4	354.0961907	206	1.273027532	600 MHz n71	400.0	0.32%
Dish 2007 MHz n70	4	1377.399723	206	4.951953214	2007 MHz n70	1000.0	0.50%
Dish 2100 MHz n66	4	1409.483484	206	5.067299022	2100 MHz n66	1000.0	0.51%
Dish 11000 MHz MW	1	1216.186001	206	1.093091583	11000 MHz MW	1000.0	0.11%
						Dish Total:	**0.10%**

• NOTE: Total Dish MPE values reflect all Dish antennas as reported by RoofMaster™ combined modeling.
• NOTE: Totals may vary by approximately 0.01% due to summation of remainders in calculations.

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:	0.09%
Sector B:	0.10%
Sector C:	0.10%
Dish Maximum MPE % (Sector B):	0.10%
Dish Combined Sectors MPE %:	0.10%
Site Total:	0.10%
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **0.10%** of the allowable FCC established general population limit sampled at the ground level at a distance of 241 feet away from the tower. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions or documents available on the Connecticut Siting Council website.

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.

CENTERLINE COMMUNICATIONS

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EXHIBIT 6

Original Tower Approval

APPLICATION FOR A ZONING PERMIT - TOWN OF WOODSTOCK

PURPOSE OF PERMIT: Dwelling_____ Addition_____ or
Accessory Structure_____(Size)__Tower_____ or
Expansion of existing use_____/Change of Use_____

STREET LOCATION: 156 Prehana Hill Rd MAP 5284 BLK. 3 LOT 6A
Number Street

APPLICANT'S NAME & ADDRESS: Antenna Tower Sites Inc

OWNER'S NAME & ADDRESS: Fenn Phanent 156 RT171 Woodstock ct 06281

OWNER'S SIGNATURE OF APPROVAL: [signature]

SUBMIT PROOF OF OWNERSHIP (DEED) IF NEW OWNER

~~~~~~

LOT DESCRIPTION & LOCATION OF STRUCTURE:

Lot size 5 acres Frontage on Road 50
Is road Town owned ✓ Private_____ State_____ Right of Way_____
Amount of acres free from wetlands all

If proposed development is located on an approved or conditionally approved subdivision: Copy of mylar submitted Yes_____ No____

Setbacks of proposed structure:
Front: 120 Left Side: 250 Right Side: 250 Rear: 300+

Wetlands Permit: Yes__ No__ Date Approved_____ N/A ✓
Approval from Health Department: Yes__ No__ N/A ✓ Please Attach

A scaled plot plan must accompany this application showing
1) existing property lines & structures;
2) proposed structures;
3) well and septic location;
4) location of wetlands and
5) location of erosion controls.

If lot is 1-1/4 acres or less, an A-2 survey plot plan is required.

~~~~~~

APPROVED ✓ DISAPPROVED_____ DATE: 6/27/96 FEE: 25.00

REASON:_____

[signature]
TERRY BELLMAN - ZONING ENFORCEMENT OFFICER

IF THE INFORMATION PROVIDED BY THE APPLICANT SUBSEQUENTLY PROVES TO BE FALSE, DECEPTIVE, INCOMPLETE AND/OR INACCURATE, THIS PERMIT MAY BE MODIFIED, SUSPENDED OR REVOKED.

33 Bolivia Street
Willimantic CT 06226
rburgdorfer@clinellc.com
508.665.8005

EXHIBIT 7

Proof of Delivery for Notice Packages

Ryan Burgdorfer

From: UPS <pkginfo@ups.com>
Sent: Monday, September 11, 2023 11:34 AM
To: Ryan Burgdorfer
Subject: UPS Delivery Notification, Tracking Number 1Z9Y4503P220164018

Hello, your package has been delivered.

Delivery Date: Monday, 09/11/2023
Delivery Time: 11:32 AM
Signed by: WAHLBURG

CENTERLINE SITE ACQUISITION

Tracking Number:	1Z9Y4503P220164018
Ship To:	JAY SWAN TOWN OF WOODSTOCK 415 ROUTE 169 WOODSTOCK, CT 062813039 US
Number of Packages:	1
UPS Service:	UPS Ground
Package Weight:	1.0 LBS
Reference Number:	BOBOS00032A

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Ryan Burgdorfer

From: UPS <pkginfo@ups.com>
Sent: Monday, September 11, 2023 11:34 AM
To: Ryan Burgdorfer
Subject: UPS Delivery Notification, Tracking Number 1Z9Y4503P233396628

Hello, your package has been delivered.

Delivery Date: Monday, 09/11/2023
Delivery Time: 11:32 AM
Signed by: WAHLBURG

CENTERLINE SITE ACQUISITION

Tracking Number:	1Z9Y4503P233396628
Ship To:	TOWN OF WOODSTOCK 415 ROUTE 169 WOODSTOCK, CT 062813039 US
Number of Packages:	1
UPS Service:	UPS Ground
Package Weight:	1.0 LBS
Reference Number:	BOBOS00032A

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Ryan Burgdorfer

From: UPS <pkginfo@ups.com>
Sent: Monday, September 11, 2023 10:46 AM
To: Ryan Burgdorfer
Subject: UPS Delivery Notification, Tracking Number 1Z9Y4503P228424400

Hello, your package has been delivered.

Delivery Date: Monday, 09/11/2023
Delivery Time: 10:44 AM
Signed by: ANCRI

CENTERLINE SITE ACQUISITION

Tracking Number:	1Z9Y4503P228424400
Ship To:	AMERICAN TOWER CORP 10 PRESIDENTIAL WAY WOBURN, MA 018011053 US
Number of Packages:	1
UPS Service:	UPS Ground
Package Weight:	1.0 LBS
Reference Number:	BOBOS00032A

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