CENTERLINE COMMUNICATIONS

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

September 8, 2023

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

Re: Notice of Exempt Modification – Dish Wireless Site BOBOS00028A
Dish Wireless Telecommunications Facility @ 445 Prospect Street, Woodstock, CT

Dear Ms. Bachman,

Dish Wireless LLC ("Dish") currently maintains a wireless telecommunications facility on an existing +/- 159' monopole at the above referenced address, latitude 42.014831, longitude -71.9806872. Said monopole is owned and managed by American Tower Corporation.

Dish desires to modify its existing telecommunications facility by adding (1) microwave dish, (1) ODU, (1) surge protector, and (2) cables, as more particularly detailed and described on the enclosed Construction Drawings prepared by B+T Group, last revised on August 3, 2023. The centerline height of the existing antennas is and will remain at 150 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; Barbara & Frederick Rich, as Property Owners; 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 22, 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
Barbara & Frederick Rich, Property Owners
American Tower Corporation, Tower Owner

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EXHIBIT 1

Property Card and GIS

445 PROSPECT ST

Location	445 PROSPECT ST	**Mblu**	5703/ 05/ 06/ /
Acct#	R0327400	**Owner**	RICH FREDERICK C + BARBARA P + RICH
Assessment	$419,580	**Appraisal**	$717,900
PID	3445	**Building Count**	1

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2021	$319,600	$398,300	$717,900
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2021	$223,900	$195,680	$419,580

Owner of Record

Owner	RICH FREDERICK C + BARBARA P + RICH	**Sale Price**	$0
Co-Owner	FREDERICK C JR + KIMBERLY	**Certificate**	1
Address	445 PROSPECT ST WOODSTOCK , CT 06281	**Book & Page**	249/ 220
		Sale Date	

Ownership History

Ownership History				
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Sale Date**
RICH FREDERICK C + BARBARA P + RICH	$0	1	249/ 220	

Building Information

Building 1 : Section 1

Year Built:	1960
Living Area:	1,617
Replacement Cost:	$254,123
Building Percent Good:	80
Replacement Cost Less Depreciation:	$203,300

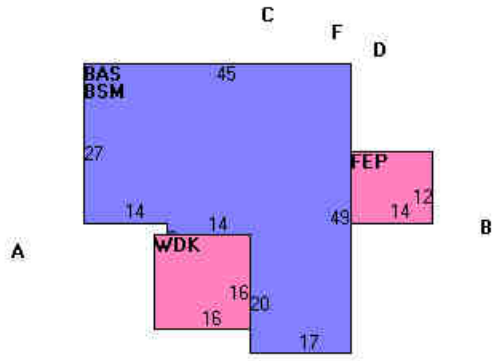
Building Attributes

Field	Description
Style	Ranch
Model	Residential
Grade:	C
Stories:	1.0
Living Units	1
Exterior Wall 1	Vinyl Siding
Exterior Wall 2	
Roof Structure:	Gable
Roof Cover	Arch. Shingles
Interior Wall 1	Plastered
Interior Wall 2	Drywall
Interior Flr 1	Carpet
Interior Flr 2	Hardwood
Heat Fuel	Oil
Heat Type:	Hot Water
AC Type:	None
Total Bedrooms:	2 Bedrooms
Total Bthrms:	1
Total Half Baths:	0
Total Xtra Fixtrs:	1
Total Rooms:	6
Bath Style:	Average
Kitchen Style:	Above Average
Whirlpool Tubs	
Bsmt. Garages	0

Building Photo

(https://images.vgsi.com/photos/WoodstockCTPhotos//\00\00\22/34.JPG)

Building Layout



(https://images.vgsi.com/photos/WoodstockCTPhotos//Sketches/3445_344

Building Sub-Areas (sq ft)			Legend
Code	Description	Gross Area	Living Area
BAS	First Floor	1,617	1,617
BSM	Basement Area	1,617	0
FEP	Enclosed Porch	168	0
WDK	Wood Deck	256	0
		3,658	1,617

Extra Features

Extra Features				Legend
Code	Description	Size	Value	Bldg #
FPL1	Fireplace, 1 Sty	1 UNITS	$2,800	1

Land

Land Use

Use Code	101
Description	Single Family
Zone	
Neighborhood	
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	44.2
Frontage	
Depth	
Assessed Value	$195,680
Appraised Value	$398,300

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
BRN2	Barn w Bsmt	FR	Frame	1680 S.F.	$26,300	1
BRN2	Barn w Bsmt	CB	CindBk/Frame	1800 S.F.	$33,100	1
BRN1	Barn 1 Story	FR	Frame	3360 S.F.	$39,100	1
BRN1	Barn 1 Story	CB	CindBk/Frame	350 S.F.	$5,000	1
SHD1	Shed	FR	Frame	720 S.F.	$4,500	1
SHD1	Shed	FR	Frame	336 S.F.	$2,100	1
BRN8	Pole Barn	FR	Frame	640 S.F.	$2,400	1
SHD1	Shed	FR	Frame	96 S.F.	$600	1
LNT	Lean-To	FR	Frame	200 S.F.	$400	1

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2022	$319,600	$398,300	$717,900
2020	$247,400	$348,500	$595,900
2019	$247,400	$348,500	$595,900

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2022	$223,900	$195,680	$419,580
2020	$173,400	$154,820	$328,220
2019	$173,400	$154,820	$328,220

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EXHIBIT 2

Construction Drawings

DISH Wireless L.L.C. SITE ID:

BOBOS00028A

DISH Wireless L.L.C. SITE ADDRESS:

445 PROSPECT ST
WOODSTOCK, CT 06281

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
MECHANICAL	2022 CT STATE BUILDING CODE/2020 IMC
ELECTRICAL	2022 CT STATE BUILDING CODE/2020 NEC

SHEET INDEX

SHEET NO.	SHEET TITLE
T-1	TITLE SHEET
A-1	ELEVATION, ANTENNA LAYOUT AND SCHEDULE
A-2	EQUIPMENT DETAILS
G-1	GROUNDING PLANS AND NOTES
G-2	GROUNDING DETAILS
RF-1	RF CABLE COLOR CODE
GN-1	LEGEND AND ABBREVIATIONS
GN-2	RF SIGNAGE
GN-3	GENERAL NOTES
GN-4	GENERAL NOTES
GN-5	GENERAL NOTES

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:

- REMOVE (1) EXISTING RAYCAP – RDIDC-9181-PF-48 (19") OVP DEVICE
- INSTALL (1) PROPOSED COMMSCOPE – VHLP2-11W/A MICROWAVE DISH
- INSTALL (1) PROPOSED CERAGON – IP-50C ODU
- INSTALL (1) PROPOSED RAYCAP – RDIDC-9181-PF-48 OVP DEVICE
- INSTALL (1) PROPOSED FIBER CABLE (0.50")
- INSTALL (1) PROPOSED HYBRID CABLE (1.60")

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

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 UNLESS OTHERWISE NOTED

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

SITE INFORMATION

PROPERTY OWNER:	RICH FREDERICK C + BARBARA P + RICH
ADDRESS:	445 PROSPECT ST WOODSTOCK, CT 06281
TOWER TYPE:	MONOPOLE
TOWER CO SITE ID:	415484
TOWER APP NUMBER:	14485736
COUNTY:	WINDHAM
LATITUDE (NAD 83):	42° 0' 53.39" N 42.014831
LONGITUDE (NAD 83):	71° 58' 50.49" W -71.9806872
ZONING JURISDICTION:	CONNECTICUT SITING COUNCIL
ZONING DISTRICT:	RESIDENTIAL
PARCEL NUMBER:	5703-05-06
OCCUPANCY GROUP:	U
CONSTRUCTION TYPE:	II-B
POWER COMPANY:	EVERSOURCE CT ELECTRIC
TELEPHONE COMPANY:	T.B.D.

PROJECT DIRECTORY

APPLICANT:	DISH Wireless L.L.C. 5701 SOUTH SANTA FE DRIVE LITTLETON, CO 80120
TOWER OWNER:	AMERICAN TOWER CORPORATION 10 PRESIDENTIAL WAY WOBURN, MA 01801 (781) 926-4500
ENGINEER:	B+T GROUP 1717 S. BOULDER AVE, SUITE 300 TULSA, OK 74119 (918) 587-4630
SITE ACQUISITION:	JULIE CHAREST JULIE.CHAREST@DISH.COM
CONSTRUCTION MANAGER:	CHAD WILCOX CHAD.WILCOX@DISH.COM
RF ENGINEER:	DIPESH PARIKH DIPESH.PARIKH@DISH.COM

DIRECTIONS

DIRECTIONS FROM BRADLEY INTERNATIONAL AIRPORT:

HEAD NORTH TOWARD BRADLEY INTERNATIONAL AIRPORT. SLIGHT LEFT ONTO BRADLEY INTERNATIONAL AIRPORT. CONTINUE STRAIGHT. KEEP RIGHT TO CONTINUE TOWARD BRADLEY INTERNATIONAL AIRPORT CON. CONTINUE ONTO BRADLEY INTERNATIONAL AIRPORT CON. CONTINUE ONTO CT-20 E/BRADLEY INTERNATIONAL AIRPORT CON. USE THE RIGHT 2 LANES TO MERGE WITH I-91 S TOWARD HARTFORD. TAKE EXIT 35A FOR I-291 TOWARD MANCHESTER. CONTINUE ONTO I-291 E. USE THE LEFT LANE TO MERGE WITH I-84 E TOWARD BOSTON. TAKE EXIT 73 FOR CT-190 TOWARD UNION. TURN RIGHT ONTO CT-190 E. TURN RIGHT ONTO CT-171 E. TURN LEFT ONTO CT-197 E. TURN LEFT ONTO KUPER RD/PROSPECT ST. TURN RIGHT. ARRIVE AT BOBOS00028A.

VICINITY MAP

NO SCALE

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

AMERICAN TOWER®
10 PRESIDENTIAL WAY
WOBURN, MA 01801

B+T GRP
MTS ENGINEERING, P.L.L.C.
1717 S. BOULDER,
SUITE 300
TULSA, OK 74119
PH: (918) 587-4630
bbwg@btgrp.com

STATE OF CONNECTICUT
CHAD WILCOX
No. 23924
LICENSED
PROFESSIONAL ENGINEER
8/3/23

MTS ENGINEERING P.L.L.C.
BER:2386985
Expires 3/31/24

DRAWN BY:	CHECKED BY:	APPROVED BY:
GLS	MTJ	CT

RFDS REV #:

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	8/3/23	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

157527.002.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBOS00028A
445 PROSPECT ST
WOODSTOCK, CT 06281

SHEET TITLE

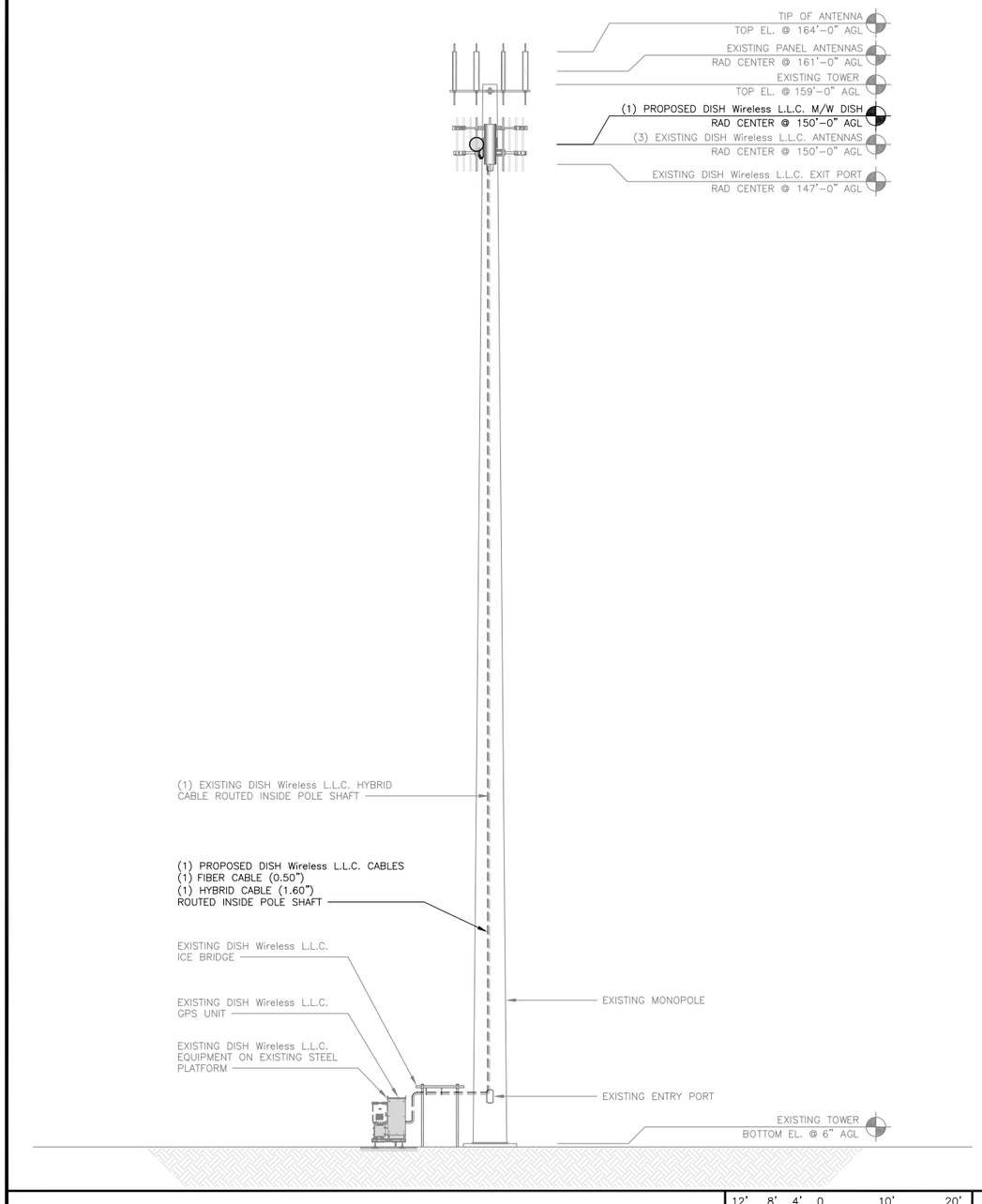
TITLE SHEET

SHEET NUMBER

T-1

NOTES

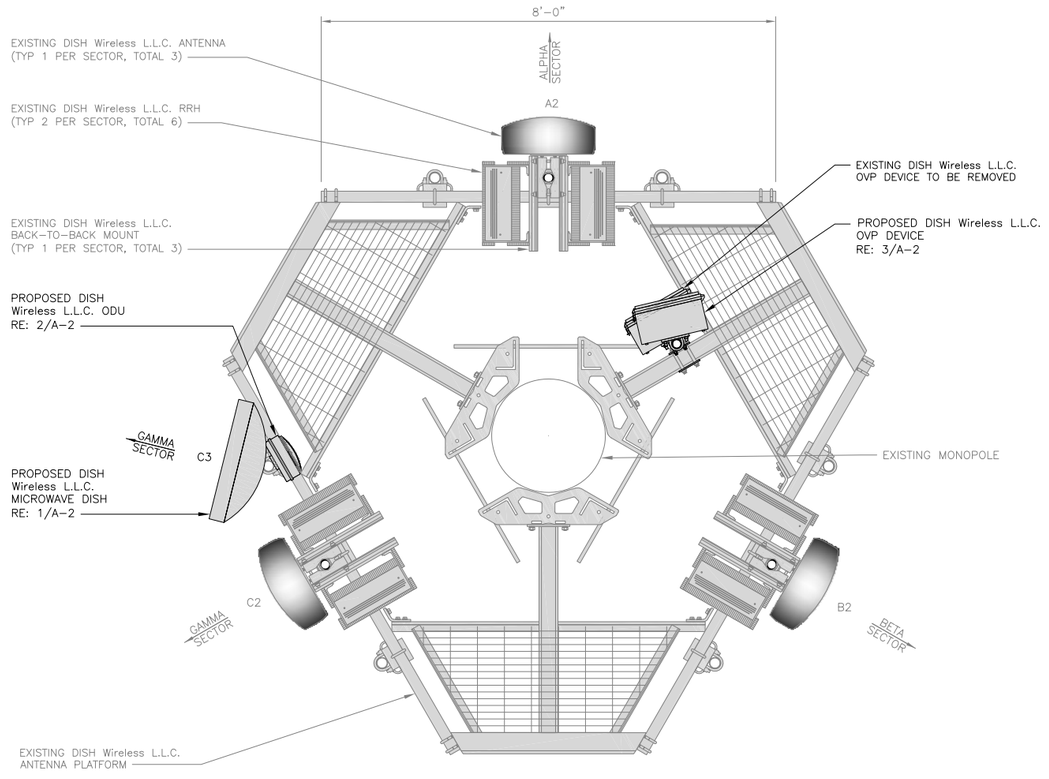
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNA AND MW DISH SPECIFICATIONS REFER TO ANTENNA SCHEDULE AND TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS
3. EXISTING EQUIPMENT AND FENCE OMITTED FOR CLARITY.



PROPOSED EAST ELEVATION

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

1



N

WIDTH OF TOWER FACE IS NOT TO BE CONSIDERED TO SCALE

ANTENNA LAYOUT

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

2

SECTOR POS.	ANTENNA					TRANSMISSION CABLE	RRH			OVP
	EXISTING OR PROPOSED	MANUFACTURER – MODEL NUMBER	TECH	AZIMUTH	RAD CENTER	FEED LINE TYPE AND LENGTH	MANUFACTURER – MODEL NUMBER	TECH	POS.	MANUFACTURER MODEL
–	--	--	--	--	--	(1) HIGH-CAPACITY HYBRID CABLE (185'-0" LONG)	FUJITSU – TA08025-B604	5G	A2	(1) RAYCAP RDIDC-9181-PF-48
A2	EXISTING	COMMSCOPE – FFVV-65B-R2	5G	0°	150'-0"		FUJITSU – TA08025-B605	5G	A2	
–	--	--	--	--	--		--	--	--	
–	--	--	--	--	--	SHARED W/ALPHA	FUJITSU – TA08025-B604	5G	B2	SHARED W/ALPHA
B2	EXISTING	COMMSCOPE – FFVV-65B-R2	5G	120°	150'-0"		FUJITSU – TA08025-B605	5G	B2	
–	--	--	--	--	--		--	--	--	
–	--	--	--	--	--	SHARED W/ALPHA	FUJITSU – TA08025-B604	5G	C2	SHARED W/ALPHA
C2	EXISTING	COMMSCOPE – FFVV-65B-R2	5G	240°	150'-0"		FUJITSU – TA08025-B605	5G	C2	
–	--	--	--	--	--		--	--	--	

SECTOR	POSITION	MICROWAVE DISH						TRANSMISSION CABLE
		EXISTING OR PROPOSED	MANUFACTURER – MODEL NUMBER	TECHNOLOGY	DIAMETER	AZMUITH	RAD CENTER	FEED LINE TYPE AND LENGTH
GAMMA	C3	PROPOSED	COMMSCOPE – VHLP2-11W/A	--	2'-2"	283.955°	150'-0"	(1) FIBER CABLE (1) HYBRID CABLE (185'-0" LONG)

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

AMERICAN TOWER®
10 PRESIDENTIAL WAY
WOBURN, MA 01801

B+T GRP
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GLS	MTJ	CT

RFDS REV #:

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	8/3/23	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

157527.002.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBOS00028A
445 PROSPECT ST
WOODSTOCK, CT 06281

SHEET TITLE

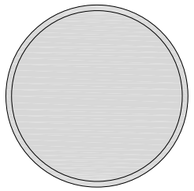
ELEVATION, ANTENNA LAYOUT AND SCHEDULE

SHEET NUMBER

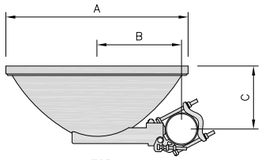
A-1

VHLP2-11W/A MICROWAVE DISH				
SIZE	A	B	C	D
	26"	11.9"	9.9"	1.8"

"D" IS WIDTH OF MOUNTING CLAMP



FRONT

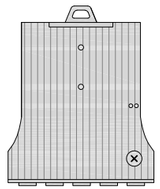


TOP

TOTAL WEIGHT: 17.0 LBS

MICROWAVE DETAIL | NO SCALE | 1

CERAGON IP-50C	
DIMENSIONS (HxWxD)	12.7"x10.6"x3.4"
WEIGHT	13.2 lbs

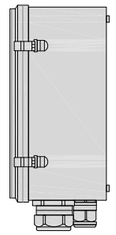


FRONT

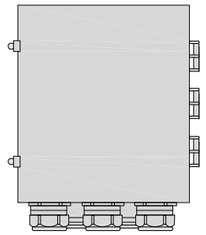
IP-50 UNIVERSAL RADIO DETAIL | NO SCALE | 2

RAYCAP RDIDC-9181-PF-48 DC SURGE PROTECTION (OVP)	
DIMENSIONS (HxWxD)	16.6"x14.6"x8.4"
WEIGHT	21.82 LBS

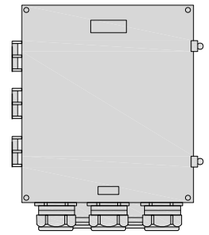
PLAN



SIDE

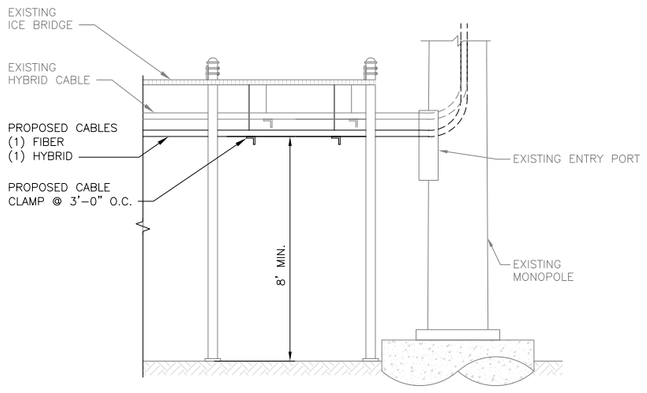


BACK



FRONT

SURGE SUPPRESSION DETAIL (OVP) | NO SCALE | 3



HYBRID CABLE RUN | 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

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

AMERICAN TOWER®
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WOBURN, MA 01801

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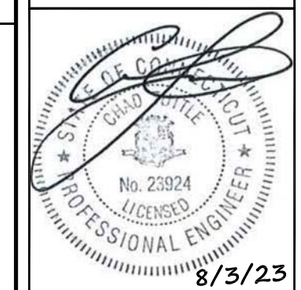

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445 PROSPECT ST
WOODSTOCK, CT 06281

SHEET TITLE

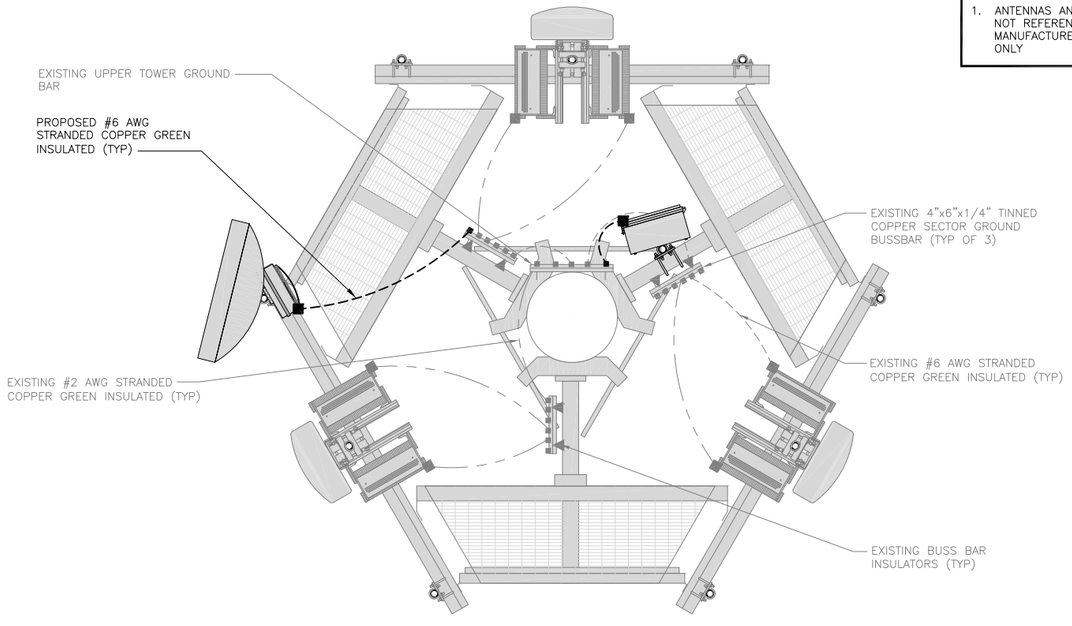
EQUIPMENT DETAILS

SHEET NUMBER

A-2

NOT USED

NO SCALE | 1



TYPICAL ANTENNA GROUNDING PLAN | NO SCALE | 2

NOTES

1. 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.

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STATE OF CONNECTICUT
CHAD T. LITTLE
No. 23924
LICENSED
PROFESSIONAL ENGINEER
8/3/23

MTS ENGINEERING P.L.L.C.
BER:2386985
Expires 3/31/24

DRAWN BY:	CHECKED BY:	APPROVED BY:
GLS	MTJ	CT

RFDS REV #:

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
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A&E PROJECT NUMBER

157527.002.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBOS00028A
445 PROSPECT ST
WOODSTOCK, CT 06281

SHEET TITLE

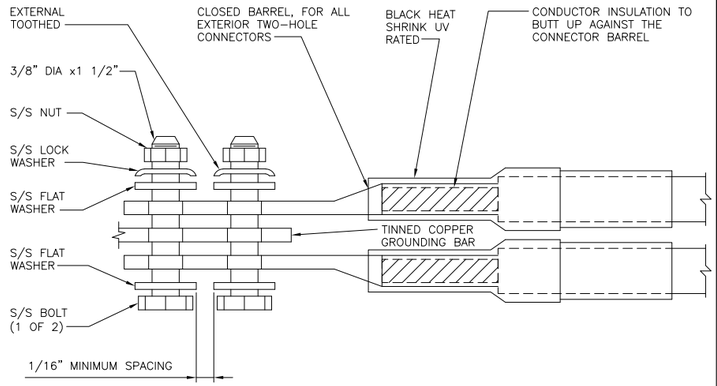
GROUNDING PLANS AND NOTES

SHEET NUMBER

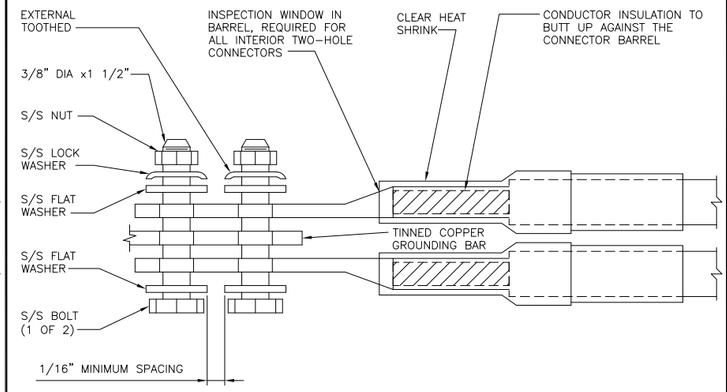
G-1

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).

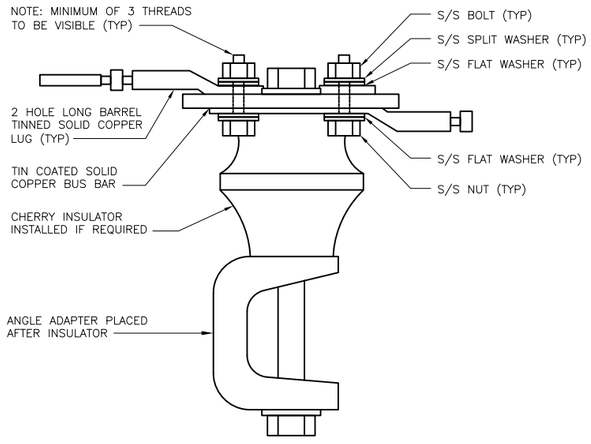
TYPICAL GROUNDING NOTES | NO SCALE | 1



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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SHEET TITLE

GROUNDING DETAILS

SHEET NUMBER

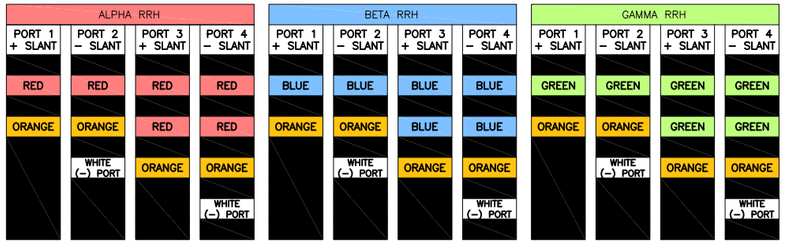
G-2

RF JUMPER COLOR CODING

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

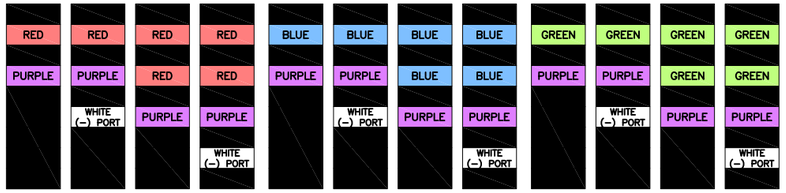
LOW-BAND RRH –
(600MHz N71 BASEBAND) +
(850MHz N26 BAND) +
(700MHz N29 BAND) – OPTIONAL PER MARKET

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



MID-BAND RRH –
(AWS BANDS N66+N70)

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

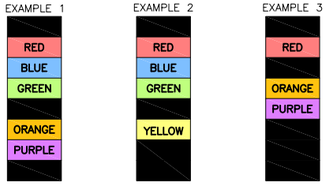


HYBRID/DISCREET CABLES

INCLUDE SECTOR BANDS BEING SUPPORTED
ALONG WITH FREQUENCY BANDS

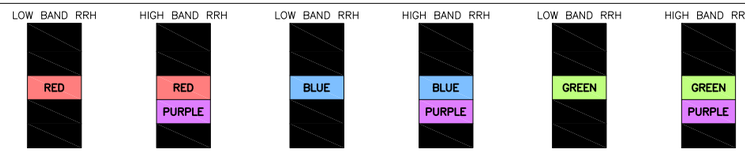
EXAMPLE 1 – HYBRID, OR DISCREET, SUPPORTS
ALL SECTORS, BOTH LOW-BANDS AND MID-BANDS

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



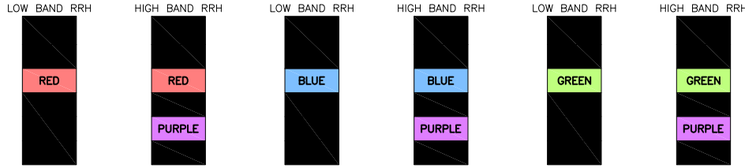
FIBER JUMPERS TO RRHs

LOW-BAND RRH FIBER CABLES HAVE SECTOR
STRIPE ONLY

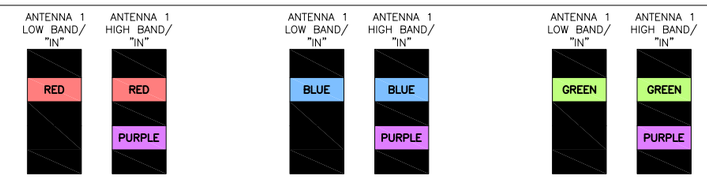


POWER CABLES TO RRHs

LOW-BAND RRH POWER CABLES HAVE SECTOR
STRIPE ONLY



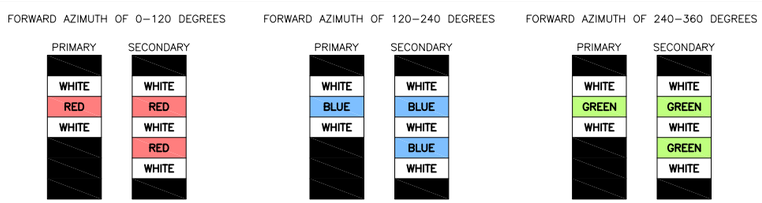
RET MOTORS AT ANTENNAS



MICROWAVE RADIO LINKS

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

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



RF CABLE COLOR CODES | NO SCALE | 1

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

AWS
(N66+N70+H-BLOCK)
PURPLE

CBRS TECH
(3 GHz)
YELLOW

NEGATIVE SLANT PORT
ON ANT/RRH
WHITE

ALPHA SECTOR
RED

BETA SECTOR
BLUE

GAMMA SECTOR
GREEN

COLOR IDENTIFIER | NO SCALE | 2

NOT USED | NO SCALE | 3

NOT USED | NO SCALE | 4

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DISH Wireless L.L.C.
PROJECT INFORMATION

BOBOS00028A
445 PROSPECT ST
WOODSTOCK, CT 06281

SHEET TITLE

RF
CABLE COLOR CODES

SHEET NUMBER

RF-1

LEGEND

EXOTHERMIC CONNECTION

MECHANICAL CONNECTION

BUSS BAR INSULATOR

CHEMICAL ELECTROLYTIC GROUNDING SYSTEM

TEST CHEMICAL ELECTROLYTIC GROUNDING SYSTEM — T

EXOTHERMIC WITH INSPECTION SLEEVE

GROUNDING BAR

GROUND ROD

TEST GROUND ROD WITH INSPECTION SLEEVE — T

SINGLE POLE SWITCH

DUPLEX RECEPTACLE

DUPLEX GFCI RECEPTACLE — GFCI

FLUORESCENT LIGHTING FIXTURE
(2) TWO LAMPS 48–T8 — F

SMOKE DETECTION (DC) — SD

EMERGENCY LIGHTING (DC)

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

CHAIN LINK FENCE — x — x — x — x

WOOD/WROUGHT IRON FENCE

WALL STRUCTURE

LEASE AREA

PROPERTY LINE (PL)

SETBACKS

ICE BRIDGE

CABLE TRAY

WATER LINE — W — W — W — W — W

UNDERGROUND POWER — UGP — UGP — UGP — UGP — UGP

UNDERGROUND TELCO — UGT — UGT — UGT — UGT — UGT

OVERHEAD POWER — OHP — OHP — OHP — OHP

OVERHEAD TELCO — OHT — OHT — OHT — OHT

UNDERGROUND TELCO/POWER — UGT/P — UGT/P — UGT/P — UGT/P

ABOVE GROUND POWER — AGP — AGP — AGP — AGP — AGP

ABOVE GROUND TELCO — AGT — AGT — AGT — AGT — AGT

ABOVE GROUND TELCO/POWER — AGT/P — AGT/P — AGT/P — AGT/P

WORKPOINT — W.P.

SECTION REFERENCE — XX / X–X

DETAIL REFERENCE — XX / X–X

ABBREVIATIONS

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

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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

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⚠ CAUTION

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Site ID: _____

dish

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⚠ WARNING

Transmitting Antenna(s)

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Site ID: _____

dish

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RF SIGNAGE

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

AMERICAN TOWER®
10 PRESIDENTIAL WAY
WOBURN, MA 01801

B+T GRP
MTS ENGINEERING, P.L.L.C.
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STATE OF CONNECTICUT
CHAD TYLER
No. 23924
LICENSED
PROFESSIONAL ENGINEER

8/3/23

MTS ENGINEERING P.L.L.C.
BER:2386985
Expires 3/31/24

DRAWN BY:	CHECKED BY:	APPROVED BY:
GLS	MTJ	CT

RFDS REV #:

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	8/3/23	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

157527.002.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBOS00028A
445 PROSPECT ST
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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STATE OF CONNECTICUT
CHAD M. BEATTIE
No. 23924
LICENSED
PROFESSIONAL ENGINEER

8/3/23

MTS ENGINEERING P.L.L.C.
BER:2386985
Expires 3/31/24

DRAWN BY:	CHECKED BY:	APPROVED BY:
GLS	MTJ	CT

RFDS REV #:

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	8/3/23	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

157527.002.01

DISH Wireless L.L.C.
PROJECT INFORMATION

B0BOS00028A
445 PROSPECT ST
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.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

AMERICAN TOWER®
10 PRESIDENTIAL WAY
WOBURN, MA 01801

B+T GRP
MTS ENGINEERING, P.L.L.C.
1717 S. BOULDER,
SUITE 300
TULSA, OK 74119
PH: (918) 587-4630
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STATE OF CONNECTICUT
CHAD M. LITTLE
No. 23924
LICENSED
PROFESSIONAL ENGINEER

8/3/23

MTS ENGINEERING P.L.L.C.
BER:2386985
Expires 3/31/24

DRAWN BY:	CHECKED BY:	APPROVED BY:
GLS	MTJ	CT

RFDS REV #:

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	8/3/23	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

157527.002.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBOS00028A
445 PROSPECT ST
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 WIRELESS L.L.C. PROJECT MANAGER IN WRITING

dish wireless.
5701 SOUTH SANTA FE DRIVE
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PROJECT INFORMATION

BOBOS00028A
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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	:	159 ft Monopole
ATC Asset Name	:	East Woodstock, CT CT
ATC Asset Number	:	415484
Engineering Number	:	14485736_C3_03
Proposed Carrier	:	DISH WIRELESS L.L.C.
Carrier Site Name	:	BOBOS00028A
Carrier Site Number	:	BOBOS00028A
Site Location	:	445 Prospect St Woodstock, CT 06281-1431 42.0148° N, 71.9807° W
County	:	Windham
Date	:	May 22, 2023
Max Usage	:	43%
Analysis Result	:	Pass

Created By:

Sammie Brown
Structural Engineer I

STATE OF CONNECTICUT
SCOTT A. WIRGAU
30575
LICENSED
PROFESSIONAL ENGINEER

COA: PEC.0001553

Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 159 ft Monopole tower to reflect the change in loading by DISH WIRELESS L.L.C..

Supporting Documents

Tower:	EEI Project #16522, dated November 19, 2010
Foundation:	EEI Project #16522, dated November 22, 2010
Geotechnical:	DET Job #2010.16, dated October 18, 2010

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:	B
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	Result
Pole Shaft	35.2%	1.2D + 1.0W	Pass
Base Plate @ 0.0 ft	37.7%	Rods	Pass
Mat & Pier	43.4%	Flexure [Steel (Mat)]	Pass

Maximum Reactions

Foundation	Moment (k-ft)	Axial (k)	Shear (k)
Monopole Base	2,836.2	54.6	24.2

Reactions shown reflect the results from the Load Case with maximum Moment

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

DISH WIRELESS L.L.C. Final Loading

Elev (ft)	Qty	Equipment	Lines
150.0	1	Ceragon IP-50C	(1) 0.50" (12.7mm) Fiber (2) 1.60" (40.6mm) Hybrid
	1	Commscope VHLP2-11W/A	
	1	Platform with Handrails	
	1	Raycap RDIDC-9181-PF-48	
	3	Commscope FFVV-65B-R2	
	3	Fujitsu TA08025-B604	
	3	Fujitsu TA08025-B605	

Install proposed lines inside the pole shaft.

Other Existing/Reserved Loading

Elev (ft)	Qty	Equipment	Lines	Carrier
161.0	1	Square Platform with Handrails	(2) 1 5/8" Hybriflex	VERIZON WIRELESS
	1	Raycap RCMDC-6627-PF-48		
	1	VZW Unused Reserve (17494.20 sqin)		
	3	Antel BXA-70063/6CF_		
	3	Samsung B2/B66A RRH-BR049		
	3	Samsung B5/B13 RRH-BR04C		
	3	Samsung MT6407-77A		
	6	JMA Wireless MX06FRO660-03		
160.0	2	Mount Reinforcement	-	-

(If table breaks across pages, please see previous page for data in merged cells)

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.

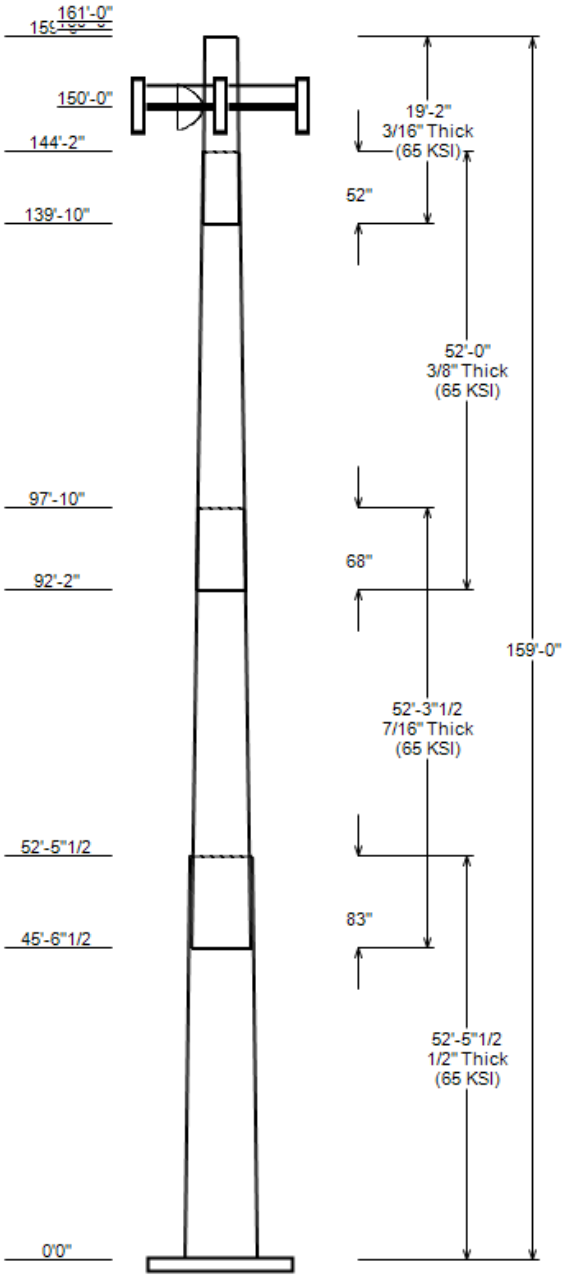
All assets of American Tower Corporation, its affiliates, and subsidiaries (collectively "American Tower") are inspected at regular intervals. Based upon these inspections and in the absence of information to the contrary, American Tower assumes that all structures were constructed in accordance with 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:**	B	**S_s:** 0.182	**S_1:** 0.056
Topo Category:	1	**Topo Factor:**	Method 1	**Topo Feature:**	
Structure Height:	159 ft	**Base Elevation:**	0.00 ft	**Structure Type:**	Taper
Base Diameter:	60.5 in	**Base Rotation:**	0°	**Taper:**	0.2320 (in/ft)



POLE SECTION PROPERTIES

Section	Length (ft)	Flat Diameter (in) Top	Flat Diameter (in) Bottom	Thick (in)	Joint Type	Joint Length (in)	Pole Shape	Yield Strength (ksi)
1	52.460	48.35	60.50	0.500		0.000	18 Sides	65
2	52.290	38.72	50.83	0.438	Slip Joint	83.000	18 Sides	65
3	52.000	28.74	40.78	0.375	Slip Joint	68.000	18 Sides	65
4	19.167	25.68	30.12	0.188	Slip Joint	52.000	18 Sides	65

DISCRETE APPURTENANCE

Elev (ft)	Description
161.0	(3) Samsung B2/B66A RRH-BR049
161.0	(3) Samsung B5/B13 RRH-BR04C
161.0	(1) Raycap RCMDC-6627-PF-48
161.0	(3) Samsung MT6407-77A
161.0	(3) Antel BXA-70063/6CF_
161.0	(6) JMA Wireless MX06FRO660-03
161.0	(1) Generic Square Platform with H
161.0	(1) VZW Unused Reserve (17494.20 s
160.0	(2) Generic Mount Reinforcement
150.0	(1) Ceragon IP-50C
150.0	(3) Fujitsu TA08025-B605
150.0	(3) Fujitsu TA08025-B604
150.0	(1) Raycap RDIDC-9181-PF-48
150.0	(1) Commscope VHLP2-11W/A
150.0	(3) Commscope FFVV-65B-R2
150.0	(1) Generic Flat Platform with Han

LINEAR APPURTENANCE

Elev To (ft)	Description
161.0	(2) 1 5/8" Hybriflex
150.0	(1) 1.60" (40.6mm) Hybrid
150.0	(1) 1.60" (40.6mm) Hybrid
150.0	(1) 0.50" (12.7mm) Fiber

DISH SERVICEABILITY

Load Case	Elevation (ft)	Deflection (in)	Rotation (°)
1.0D + 1.0W	150.00	11.122	0.717

GLOBAL BASE REACTIONS

Load Case	Moment (kip-ft)	Axial (kip)	Shear (kip)
1.2D + 1.0W	2836.23	54.64	24.21
0.9D + 1.0W	2810.82	40.98	24.20
1.2D + 1.0Di + 1.0Wi	915.62	78.35	7.58
1.2D + 1.0Ev + 1.0Eh	184.45	54.40	1.37
0.9D - 1.0Ev + 1.0Eh	182.44	37.82	1.37
1.0D + 1.0W	641.42	45.55	5.50

ANALYSIS PARAMETERS

Location:	Windham County,CT	**Height:**	159 ft
Type and Shape:	Taper, 18 Sides	**Base Diameter:**	60.50 in
Manufacturer:	EEI	**Top Diameter:**	25.68 in
K_d (non-service):	0.95	**Taper:**	0.2320 in/ft
K_e:	0.98	**Rotation:**	0.000º

ICE & WIND PARAMETERS

Risk Category:	II	**Design Wind Speed:**	119 mph
Exposure Category:	B	**Design Wind Speed w/ Ice:**	50 mph
Topo Factor Procedure:	Method 1	**Design Ice Thickness:**	1.50 in
Topographic Category:	1	**Service Wind Speed:**	60 mph
Crest Height:	0 ft	**HMSL:**	520.00 ft

SEISMIC PARAMETERS

Analysis Method:	Equivalent Lateral Force Method				
Site Class:	D - Stiff Soil		**Period Based on Rayleigh Method (sec):**		2.19
T_L (sec):	6	**P:**	1	**C_s:**	0.030
S_s:	0.182	**S_1:**	0.056	**C_s Max:**	0.030
F_a:	1.600	**F_v:**	2.400	**C_s Min:**	0.030
S_{ds}:	0.194	**S_{d1}:**	0.090		

LOAD CASES

1.2D + 1.0W	119 mph Wind with No Ice
0.9D + 1.0W	119 mph Wind with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph Wind with 1.5" Radial Ice
1.2D + 1.0Ev + 1.0Eh	Seismic
0.9D - 1.0Ev + 1.0Eh	Seismic (Reduced DL)
1.0D + 1.0W	60 mph Wind with No Ice

SHAFT SECTION PROPERTIES

Section	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Joint Len (in)	Weight (lb)	Bottom Dia (in)	Bottom Elev (ft)	Bottom Area (in²)	Bottom Ix (in⁴)	Bottom W/t Ratio	Bottom D/t Ratio	Top Dia (in)	Top Elev (ft)	Top Area (in²)	Top Ix (in⁴)	Top W/t Ratio	Top D/t Ratio	Taper (in/ft)
1-18	52.46	0.5000	65		0.00	15,276	60.50	0.000	95.22	43,308.0	19.92	121.00	48.35	52.46	75.94	21,968.	15.64	96.70	0.2316
2-18	52.29	0.4375	65	Slip	83.00	10,954	50.83	45.540	69.97	22,448.1	19.07	116.18	38.72	97.83	53.16	9,842.5	14.19	88.50	0.2316
3-18	52.00	0.3750	65	Slip	68.00	7,242	40.78	92.170	48.09	9,920.6	17.77	108.75	28.74	144.17	33.76	3,431.8	12.10	76.64	0.2316
4-18	19.17	0.1875	65	Slip	52.00	1,076	30.12	139.833	17.81	2,016.1	26.91	160.63	25.68	159.00	15.17	1,245.6	22.74	136.96	0.2316
			Total Shaft Weight			**34,548**													

DISCRETE APPURTENANCE PROPERTIES

Attach Elev (ft)	Description	Qty	Ka	Vert Ecc (ft)	No Ice Weight (lb)	No Ice EPAa (sf)	No Ice Orientation Factor	Ice Weight (lb)	Ice EPAa (sf)	Ice Orientation Factor
161.00	Generic Square Platform with H	1	1.00	0.000	3790.00	49.300	1.00	8255.17	135.041	1.00
161.00	JMA Wireless MX06FRO660-03	6	0.75	0.000	60.00	9.872	0.71	301.35	12.634	0.71
161.00	Antel BXA-70063/6CF_	3	0.75	0.000	17.00	7.569	0.65	159.36	10.345	0.65
161.00	Samsung MT6407-77A	3	0.75	0.000	81.60	4.709	0.61	184.20	6.238	0.61
161.00	Raycap RCMDC-6627-PF-48	1	0.75	0.000	32.00	4.056	1.00	159.94	5.430	1.00
161.00	Samsung B5/B13 RRH-BR04C	3	0.75	0.000	70.30	1.875	0.50	127.88	2.784	0.50
161.00	Samsung B2/B66A RRH-BR049	3	0.75	0.000	84.40	1.875	0.50	148.62	2.784	0.50
161.00	VZW Unused Reserve (17494.20 s	1	0.75	0.000	1348.10	121.488	0.90	2293.49	206.685	0.90
160.00	Generic Mount Reinforcement	2	1.00	0.000	200.00	7.500	1.00	394.81	15.037	1.00
150.00	Commscope FFVV-65B-R2	3	0.75	0.000	70.80	12.271	0.64	322.19	15.076	0.64
150.00	Commscope VHLP2-11W/A	1	0.75	0.000	17.00	4.650	1.00	106.93	5.920	1.00
150.00	Raycap RDIDC-9181-PF-48	1	0.75	0.000	21.90	2.020	1.00	83.45	2.955	1.00
150.00	Fujitsu TA08025-B604	3	0.75	0.000	63.90	1.962	0.50	122.24	2.882	0.50
150.00	Fujitsu TA08025-B605	3	0.75	0.000	75.00	1.962	0.50	137.67	2.882	0.50
150.00	Ceragon IP-50C	1	0.75	0.000	13.20	1.122	1.00	40.37	1.829	1.00
150.00	Generic Flat Platform with Han	1	0.75	0.000	2500.00	42.400	0.75	4277.13	63.380	0.75
Totals	**Row Count: 16**	**36**			**9,871.20**			**21,420.68**		

LINEAR APPURTENANCE PROPERTIES

Load Case Azimuth (deg): 0.00

Elev From (ft)	Elev To (ft)	Qty	Description	Diameter (in)	Weight (lb/ft)	Flat	Max/ Row	Distance Between Rows(in)	Distance Between Cols(in)	Azimuth (deg)	Distance From Face (in)	Exposed To Wind	Carrier
0.00	161.00	2	1 5/8" Hybriflex	1.98	1.3	N	0	0	0	0	0	N	VERIZON WIRELESS
0.00	150.00	1	0.50" (12.7mm) Fiber	0.5	0.13	N	0	0	0	0	0	N	DISH WIRELESS L.L.C.
0.00	150.00	1	1.60" (40.6mm) Hybrid	1.6	2.34	N	0	0	0	0	0	N	DISH WIRELESS L.L.C.
0.00	150.00	1	1.60" (40.6mm) Hybrid	1.6	2.34	N	0	0	0	0	0	N	DISH WIRELESS L.L.C.

SEGMENT PROPERTIES

Seg Top Elev (ft)	Description *(Max Length: 5 ft)*	Thick (in)	Flat Dia (in)	Area (in²)	Ix (in⁴)	W/t Ratio	D/t Ratio	F'y (ksi)	S (in³)	Z (in³)	Weight (lb)
0.00		0.5000	60.500	95.217	43,308.00	19.92	121.00	78	1409.9	0.0	0.0
5.00		0.5000	59.342	93.379	40,848.80	19.52	118.68	78.4	1355.8	0.0	1,604.4
10.00		0.5000	58.184	91.542	38,484.60	19.11	116.37	78.9	1302.8	0.0	1,573.1
15.00		0.5000	57.026	89.704	36,213.40	18.70	114.05	79.4	1250.8	0.0	1,541.8
20.00		0.5000	55.869	87.867	34,033.30	18.29	111.74	79.9	1199.8	0.0	1,510.6
25.00		0.5000	54.711	86.029	31,942.50	17.88	109.42	80.4	1149.9	0.0	1,479.3
30.00		0.5000	53.553	84.192	29,939.20	17.48	107.11	80.8	1101.1	0.0	1,448.1
35.00		0.5000	52.395	82.354	28,021.40	17.07	104.79	81.3	1053.4	0.0	1,416.8
40.00		0.5000	51.237	80.517	26,187.30	16.66	102.47	81.8	1006.7	0.0	1,385.5
45.00		0.5000	50.079	78.679	24,435.10	16.25	100.16	82.3	961.0	0.0	1,354.3
45.54	Bot - Section 2	0.5000	49.953	78.480	24,249.50	16.21	99.91	82.3	956.1	0.0	145.3
50.00		0.5000	48.921	76.842	22,762.80	15.84	97.84	82.6	916.4	0.0	2,228.0
52.46	Top - Section 1	0.4375	49.227	67.747	20,374.80	18.43	112.52	79.7	815.2	0.0	1,209.9
55.00		0.4375	48.639	66.931	19,646.80	18.19	111.17	80	795.6	0.0	582.0
60.00		0.4375	47.481	65.323	18,264.70	17.73	108.53	80.6	757.7	0.0	1,125.1
65.00		0.4375	46.323	63.715	16,949.00	17.26	105.88	81.1	720.7	0.0	1,097.7

SEGMENT PROPERTIES

Seg Top Elev (ft)	Description	(Max Length: 5 ft)	Thick (in)	Flat Dia (in)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	F'y (ksi)	S (in^3)	Z (in^3)	Weight (lb)
70.00			0.4375	45.165	62.107	15,698.00	16.79	103.23	81.6	684.6	0.0	1,070.4
75.00			0.4375	44.007	60.500	14,510.20	16.33	100.59	82.2	649.4	0.0	1,043.0
80.00			0.4375	42.849	58.892	13,383.80	15.86	97.94	82.6	615.2	0.0	1,015.7
85.00			0.4375	41.691	57.284	12,317.30	15.39	95.29	82.6	581.9	0.0	988.3
90.00			0.4375	40.533	55.676	11,309.00	14.93	92.65	82.6	549.5	0.0	960.9
92.17	Bot - Section 3		0.4375	40.032	54.980	10,889.80	14.72	91.50	82.6	535.8	0.0	407.9
95.00			0.4375	39.376	54.069	10,357.30	14.46	90.00	82.6	518.1	0.0	985.6
97.83	Top - Section 2		0.3750	39.470	46.531	8,985.10	17.15	105.25	81.2	448.4	0.0	969.3
100.00			0.3750	38.968	45.933	8,643.60	16.91	103.91	81.5	436.9	0.0	340.9
105.00			0.3750	37.810	44.555	7,888.70	16.37	100.83	82.1	410.9	0.0	769.8
110.00			0.3750	36.652	43.177	7,179.10	15.82	97.74	82.6	385.8	0.0	746.3
115.00			0.3750	35.494	41.799	6,513.40	15.28	94.65	82.6	361.4	0.0	722.9
120.00			0.3750	34.336	40.421	5,890.20	14.73	91.56	82.6	337.9	0.0	699.4
125.00			0.3750	33.178	39.043	5,308.00	14.19	88.48	82.6	315.1	0.0	676.0
130.00			0.3750	32.021	37.665	4,765.60	13.65	85.39	82.6	293.1	0.0	652.5
135.00			0.3750	30.863	36.287	4,261.40	13.10	82.30	82.6	272.0	0.0	629.1
139.83	Bot - Section 4		0.3750	29.743	34.955	3,809.10	12.57	79.32	82.6	252.2	0.0	585.8
140.00			0.3750	29.705	34.909	3,794.10	12.56	79.21	82.6	251.6	0.0	29.9
144.17	Top - Section 3		0.1875	29.115	17.215	1,820.00	25.97	155.28	70.9	123.1	0.0	734.9
145.00			0.1875	28.922	17.100	1,783.80	25.79	154.25	71.1	121.5	0.0	48.7
150.00			0.1875	27.764	16.411	1,576.80	24.70	148.08	72.4	111.9	0.0	285.1
155.00			0.1875	26.606	15.722	1,386.40	23.61	141.90	73.6	102.6	0.0	273.4
159.00			0.1875	25.680	15.171	1,245.60	22.74	136.96	74.7	95.5	0.0	210.2
											Total:	**34,547.9**

CALCULATED FORCES

Load Case: 1.2D + 1.0W — 119 mph Wind with No Ice — 22 Iterations

Gust Response Factor: 1.10
Dead load Factor: 1.20
Wind Load Factor: 1.00

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (ft-kips)	Phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-54.64	-24.21	0.00	-2,836.2	0.00	2,836.23	6,681.23	1,671.05	9,056.15	8,244.36	0	0	0.352
5.00	-52.64	-23.81	0.00	-2,715.2	0.00	2,715.19	6,592.66	1,638.80	8,710.04	7,976.78	0.05	-0.09	0.349
10.00	-50.67	-23.42	0.00	-2,596.1	0.00	2,596.13	6,502.50	1,606.56	8,370.67	7,711.57	0.19	-0.18	0.345
15.00	-48.74	-23.04	0.00	-2,479.0	0.00	2,479.01	6,410.75	1,574.31	8,038.05	7,448.85	0.44	-0.28	0.341
20.00	-46.85	-22.66	0.00	-2,363.8	0.00	2,363.82	6,317.41	1,542.06	7,712.17	7,188.72	0.78	-0.37	0.336
25.00	-44.99	-22.28	0.00	-2,250.5	0.00	2,250.54	6,222.49	1,509.81	7,393.03	6,931.31	1.22	-0.47	0.332
30.00	-43.18	-21.90	0.00	-2,139.2	0.00	2,139.15	6,125.98	1,477.57	7,080.64	6,676.72	1.77	-0.57	0.328
35.00	-41.40	-21.52	0.00	-2,029.6	0.00	2,029.64	6,027.87	1,445.32	6,774.99	6,425.08	2.41	-0.67	0.323
40.00	-39.66	-21.12	0.00	-1,922.1	0.00	1,922.06	5,928.18	1,413.07	6,476.09	6,176.49	3.16	-0.77	0.318
45.00	-37.97	-20.88	0.00	-1,816.5	0.00	1,816.48	5,826.91	1,380.82	6,183.92	5,931.07	4.02	-0.87	0.313
45.54	-37.78	-20.68	0.00	-1,805.1	0.00	1,805.13	5,815.80	1,377.32	6,152.58	5,904.60	4.12	-0.88	0.312
50.00	-35.05	-20.36	0.00	-1,713.0	0.00	1,712.96	5,708.97	1,348.58	5,898.50	5,673.97	4.98	-0.97	0.308
52.46	-33.56	-20.13	0.00	-1,662.9	0.00	1,662.88	4,861.01	1,188.97	5,239.69	4,874.46	5.5	-1.02	0.348
55.00	-32.81	-19.82	0.00	-1,611.7	0.00	1,611.74	4,819.20	1,174.63	5,114.13	4,773.76	6.06	-1.08	0.345
60.00	-31.39	-19.39	0.00	-1,512.6	0.00	1,512.64	4,735.71	1,146.42	4,871.41	4,577.35	7.25	-1.19	0.337
65.00	-30.00	-18.95	0.00	-1,415.7	0.00	1,415.71	4,650.62	1,118.20	4,634.60	4,383.46	8.55	-1.3	0.330
70.00	-28.65	-18.52	0.00	-1,320.9	0.00	1,320.94	4,563.95	1,089.98	4,403.69	4,192.19	9.98	-1.42	0.322
75.00	-27.33	-18.08	0.00	-1,228.4	0.00	1,228.36	4,475.68	1,061.77	4,178.67	4,003.66	11.53	-1.53	0.313
80.00	-26.04	-17.64	0.00	-1,138.0	0.00	1,137.96	4,375.37	1,033.55	3,959.56	3,808.88	13.2	-1.65	0.305
85.00	-24.79	-17.20	0.00	-1,049.8	0.00	1,049.76	4,255.92	1,005.34	3,746.35	3,602.71	14.99	-1.77	0.297
90.00	-23.58	-16.88	0.00	-963.7	0.00	963.74	4,136.47	977.12	3,539.04	3,402.29	16.9	-1.88	0.289
92.17	-23.06	-16.66	0.00	-927.2	0.00	927.17	4,084.71	964.89	3,451.03	3,317.22	17.77	-1.93	0.285
95.00	-21.84	-16.39	0.00	-880.0	0.00	879.97	4,017.02	948.90	3,337.63	3,207.60	18.94	-2	0.280
97.83	-20.65	-16.15	0.00	-833.5	0.00	833.52	3,401.76	816.61	2,883.70	2,731.66	20.14	-2.07	0.312
100.00	-20.21	-15.85	0.00	-798.5	0.00	798.54	3,369.57	806.13	2,810.17	2,670.76	21.1	-2.12	0.305
105.00	-19.22	-15.42	0.00	-719.3	0.00	719.30	3,294.16	781.95	2,644.10	2,531.89	23.38	-2.24	0.290
110.00	-18.27	-14.99	0.00	-642.2	0.00	642.21	3,207.85	757.76	2,483.09	2,388.54	25.8	-2.37	0.275
115.00	-17.34	-14.57	0.00	-567.2	0.00	567.25	3,105.46	733.57	2,327.14	2,237.75	28.34	-2.49	0.259
120.00	-16.45	-14.15	0.00	-494.4	0.00	494.39	3,003.08	709.39	2,176.24	2,091.87	31.01	-2.6	0.242

CALCULATED FORCES

125.00	-15.59	-13.74	0.00	-423.6	0.00	423.62	2,900.69	685.20	2,030.40	1,950.91	33.79	-2.71	0.223
130.00	-14.76	-13.34	0.00	-354.9	0.00	354.91	2,798.31	661.02	1,889.62	1,814.87	36.69	-2.82	0.201
135.00	-13.96	-12.94	0.00	-288.2	0.00	288.22	2,695.92	636.83	1,753.90	1,683.75	39.69	-2.91	0.177
139.83	-13.21	-12.73	0.00	-225.7	0.00	225.66	2,596.95	613.45	1,627.51	1,561.66	42.69	-3	0.150
140.00	-13.18	-12.57	0.00	-223.5	0.00	223.54	2,593.54	612.65	1,623.24	1,557.54	42.79	-3	0.149
144.17	-12.26	-12.35	0.00	-171.2	0.00	171.15	1,097.80	302.12	789.35	654.31	45.44	-3.06	0.274
145.00	-12.20	-12.15	0.00	-160.9	0.00	160.86	1,093.76	300.11	778.85	647.52	45.97	-3.07	0.261
150.00	-8.12	-9.44	0.00	-100.1	0.00	100.13	1,068.60	288.01	717.36	606.97	49.25	-3.18	0.174
155.00	-7.79	-9.12	0.00	-52.9	0.00	52.91	1,041.86	275.92	658.39	566.76	52.62	-3.25	0.102
159.00	0.00	-8.66	0.00	-16.4	0.00	16.43	1,019.32	266.25	613.03	534.92	55.35	-3.27	0.032

CALCULATED FORCES

Load Case: 0.9D + 1.0W — 119 mph Wind with No Ice (Reduced DL) — 21 Iterations

Gust Response Factor: 1.10
Dead load Factor: 0.90
Wind Load Factor: 1.00

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (ft-kips)	Phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-40.98	-24.20	0.00	-2,810.8	0.00	2,810.82	6,681.23	1,671.05	9,056.15	8,244.36	0	0	0.347
5.00	-39.46	-23.78	0.00	-2,689.8	0.00	2,689.85	6,592.66	1,638.80	8,710.04	7,976.78	0.05	-0.09	0.343
10.00	-37.98	-23.37	0.00	-2,571.0	0.00	2,570.95	6,502.50	1,606.56	8,370.67	7,711.57	0.19	-0.18	0.339
15.00	-36.52	-22.97	0.00	-2,454.1	0.00	2,454.10	6,410.75	1,574.31	8,038.05	7,448.85	0.43	-0.27	0.335
20.00	-35.09	-22.57	0.00	-2,339.3	0.00	2,339.28	6,317.41	1,542.06	7,712.17	7,188.72	0.77	-0.37	0.331
25.00	-33.70	-22.17	0.00	-2,226.4	0.00	2,226.45	6,222.49	1,509.81	7,393.03	6,931.31	1.21	-0.46	0.327
30.00	-32.33	-21.78	0.00	-2,115.6	0.00	2,115.58	6,125.98	1,477.57	7,080.64	6,676.72	1.75	-0.56	0.322
35.00	-30.99	-21.38	0.00	-2,006.7	0.00	2,006.68	6,027.87	1,445.32	6,774.99	6,425.08	2.39	-0.66	0.318
40.00	-29.67	-20.97	0.00	-1,899.8	0.00	1,899.78	5,928.18	1,413.07	6,476.09	6,176.49	3.13	-0.76	0.313
45.00	-28.41	-20.73	0.00	-1,794.9	0.00	1,794.94	5,826.91	1,380.82	6,183.92	5,931.07	3.98	-0.86	0.308
45.54	-28.26	-20.52	0.00	-1,783.7	0.00	1,783.67	5,815.80	1,377.32	6,152.58	5,904.60	4.08	-0.87	0.307
50.00	-26.20	-20.20	0.00	-1,692.2	0.00	1,692.22	5,708.97	1,348.58	5,898.50	5,673.97	4.93	-0.96	0.303
52.46	-25.08	-19.97	0.00	-1,642.5	0.00	1,642.52	4,861.01	1,188.97	5,239.69	4,874.46	5.44	-1.01	0.342
55.00	-24.52	-19.65	0.00	-1,591.8	0.00	1,591.79	4,819.20	1,174.63	5,114.13	4,773.76	6	-1.07	0.339
60.00	-23.45	-19.21	0.00	-1,493.6	0.00	1,493.55	4,735.71	1,146.42	4,871.41	4,577.35	7.17	-1.18	0.332
65.00	-22.40	-18.77	0.00	-1,397.5	0.00	1,397.52	4,650.62	1,118.20	4,634.60	4,383.46	8.46	-1.29	0.324
70.00	-21.38	-18.32	0.00	-1,303.7	0.00	1,303.69	4,563.95	1,089.98	4,403.69	4,192.19	9.88	-1.4	0.316
75.00	-20.38	-17.88	0.00	-1,212.1	0.00	1,212.08	4,475.68	1,061.77	4,178.67	4,003.66	11.41	-1.52	0.308
80.00	-19.41	-17.44	0.00	-1,122.7	0.00	1,122.69	4,375.37	1,033.55	3,959.56	3,808.88	13.06	-1.63	0.299
85.00	-18.47	-16.99	0.00	-1,035.5	0.00	1,035.51	4,255.92	1,005.34	3,746.35	3,602.71	14.83	-1.75	0.292
90.00	-17.56	-16.67	0.00	-950.6	0.00	950.55	4,136.47	977.12	3,539.04	3,402.29	16.72	-1.86	0.284
92.17	-17.17	-16.45	0.00	-914.4	0.00	914.43	4,084.71	964.89	3,451.03	3,317.22	17.57	-1.91	0.280
95.00	-16.25	-16.18	0.00	-867.8	0.00	867.82	4,017.02	948.90	3,337.63	3,207.60	18.73	-1.98	0.275
97.83	-15.35	-15.95	0.00	-822.0	0.00	821.96	3,401.76	816.61	2,883.70	2,731.66	19.92	-2.04	0.306
100.00	-15.02	-15.64	0.00	-787.4	0.00	787.41	3,369.57	806.13	2,810.17	2,670.76	20.86	-2.09	0.300
105.00	-14.28	-15.21	0.00	-709.2	0.00	709.20	3,294.16	781.95	2,644.10	2,531.89	23.12	-2.22	0.285
110.00	-13.56	-14.78	0.00	-633.1	0.00	633.14	3,207.85	757.76	2,483.09	2,388.54	25.51	-2.34	0.270
115.00	-12.86	-14.36	0.00	-559.2	0.00	559.22	3,105.46	733.57	2,327.14	2,237.75	28.02	-2.46	0.254
120.00	-12.19	-13.95	0.00	-487.4	0.00	487.41	3,003.08	709.39	2,176.24	2,091.87	30.65	-2.57	0.237
125.00	-11.54	-13.54	0.00	-417.7	0.00	417.67	2,900.69	685.20	2,030.40	1,950.91	33.4	-2.68	0.218
130.00	-10.92	-13.14	0.00	-350.0	0.00	349.97	2,798.31	661.02	1,889.62	1,814.87	36.26	-2.78	0.197
135.00	-10.32	-12.75	0.00	-284.3	0.00	284.28	2,695.92	636.83	1,753.90	1,683.75	39.23	-2.88	0.173
139.83	-9.76	-12.54	0.00	-222.7	0.00	222.66	2,596.95	613.45	1,627.51	1,561.66	42.18	-2.96	0.147
140.00	-9.74	-12.38	0.00	-220.6	0.00	220.57	2,593.54	612.65	1,623.24	1,557.54	42.29	-2.96	0.146
144.17	-9.05	-12.17	0.00	-169.0	0.00	168.98	1,097.80	302.12	789.35	654.31	44.9	-3.02	0.268
145.00	-9.00	-11.97	0.00	-158.8	0.00	158.84	1,093.76	300.11	778.85	647.52	45.43	-3.03	0.255
150.00	-5.97	-9.32	0.00	-99.0	0.00	99.01	1,068.60	288.01	717.36	606.97	48.66	-3.14	0.170
155.00	-5.72	-9.00	0.00	-52.4	0.00	52.43	1,041.86	275.92	658.39	566.76	51.99	-3.2	0.099
159.00	0.00	-8.66	0.00	-16.4	0.00	16.43	1,019.32	266.25	613.03	534.92	54.69	-3.23	0.032

CALCULATED FORCES

Load Case: 1.2D + 1.0Di + 1.0Wi — 50 mph Wind with 1.5" Radial Ice — 21 Iterations

Gust Response Factor: 1.10
Dead load Factor: 1.20
Wind Load Factor: 1.00

Ice Dead Load Factor: 1.00

Ice Importance Factor: 1.00

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (ft-kips)	Phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-78.35	-7.58	0.00	-915.6	0.00	915.62	6,681.23	1,671.05	9,056.15	8,244.36	0	0	0.123
5.00	-75.93	-7.48	0.00	-877.7	0.00	877.72	6,592.66	1,638.80	8,710.04	7,976.78	0.02	-0.03	0.122
10.00	-73.52	-7.37	0.00	-840.3	0.00	840.34	6,502.50	1,606.56	8,370.67	7,711.57	0.06	-0.06	0.120
15.00	-71.12	-7.27	0.00	-803.5	0.00	803.49	6,410.75	1,574.31	8,038.05	7,448.85	0.14	-0.09	0.119
20.00	-68.75	-7.16	0.00	-767.2	0.00	767.17	6,317.41	1,542.06	7,712.17	7,188.72	0.25	-0.12	0.118
25.00	-66.42	-7.06	0.00	-731.4	0.00	731.36	6,222.49	1,509.81	7,393.03	6,931.31	0.4	-0.15	0.116
30.00	-64.13	-6.95	0.00	-696.1	0.00	696.07	6,125.98	1,477.57	7,080.64	6,676.72	0.57	-0.18	0.115
35.00	-61.88	-6.85	0.00	-661.3	0.00	661.29	6,027.87	1,445.32	6,774.99	6,425.08	0.78	-0.22	0.113
40.00	-59.66	-6.73	0.00	-627.1	0.00	627.06	5,928.18	1,413.07	6,476.09	6,176.49	1.02	-0.25	0.112
45.00	-57.49	-6.67	0.00	-593.4	0.00	593.39	5,826.91	1,380.82	6,183.92	5,931.07	1.3	-0.28	0.110
45.54	-57.26	-6.61	0.00	-589.8	0.00	589.77	5,815.80	1,377.32	6,152.58	5,904.60	1.34	-0.29	0.110
50.00	-54.10	-6.52	0.00	-560.3	0.00	560.31	5,708.97	1,348.58	5,898.50	5,673.97	1.62	-0.32	0.108
52.46	-52.38	-6.45	0.00	-544.3	0.00	544.27	4,861.01	1,188.97	5,239.69	4,874.46	1.78	-0.33	0.122
55.00	-51.40	-6.36	0.00	-527.9	0.00	527.88	4,819.20	1,174.63	5,114.13	4,773.76	1.97	-0.35	0.121
60.00	-49.52	-6.24	0.00	-496.1	0.00	496.07	4,735.71	1,146.42	4,871.41	4,577.35	2.35	-0.39	0.119
65.00	-47.67	-6.11	0.00	-464.9	0.00	464.88	4,650.62	1,118.20	4,634.60	4,383.46	2.78	-0.42	0.116
70.00	-45.87	-5.99	0.00	-434.3	0.00	434.31	4,563.95	1,089.98	4,403.69	4,192.19	3.24	-0.46	0.114
75.00	-44.11	-5.86	0.00	-404.4	0.00	404.39	4,475.68	1,061.77	4,178.67	4,003.66	3.75	-0.5	0.111
80.00	-42.39	-5.73	0.00	-375.1	0.00	375.10	4,375.37	1,033.55	3,959.56	3,808.88	4.29	-0.54	0.108
85.00	-40.71	-5.60	0.00	-346.5	0.00	346.46	4,255.92	1,005.34	3,746.35	3,602.71	4.88	-0.58	0.106
90.00	-39.07	-5.50	0.00	-318.5	0.00	318.48	4,136.47	977.12	3,539.04	3,402.29	5.5	-0.62	0.103
92.17	-38.37	-5.43	0.00	-306.6	0.00	306.57	4,084.71	964.89	3,451.03	3,317.22	5.79	-0.63	0.102
95.00	-36.92	-5.35	0.00	-291.2	0.00	291.17	4,017.02	948.90	3,337.63	3,207.60	6.17	-0.65	0.100
97.83	-35.48	-5.28	0.00	-276.0	0.00	276.01	3,401.76	816.61	2,883.70	2,731.66	6.56	-0.68	0.112
100.00	-34.87	-5.19	0.00	-264.6	0.00	264.58	3,369.57	806.13	2,810.17	2,670.76	6.87	-0.69	0.109
105.00	-33.48	-5.06	0.00	-238.6	0.00	238.63	3,294.16	781.95	2,644.10	2,531.89	7.62	-0.73	0.104
110.00	-32.14	-4.93	0.00	-213.4	0.00	213.35	3,207.85	757.76	2,483.09	2,388.54	8.41	-0.78	0.099
115.00	-30.83	-4.80	0.00	-188.7	0.00	188.71	3,105.46	733.57	2,327.14	2,237.75	9.25	-0.82	0.094
120.00	-29.56	-4.67	0.00	-164.7	0.00	164.72	3,003.08	709.39	2,176.24	2,091.87	10.12	-0.85	0.089
125.00	-28.33	-4.54	0.00	-141.4	0.00	141.39	2,900.69	685.20	2,030.40	1,950.91	11.04	-0.89	0.082
130.00	-27.14	-4.41	0.00	-118.7	0.00	118.69	2,798.31	661.02	1,889.62	1,814.87	11.99	-0.93	0.075
135.00	-25.99	-4.28	0.00	-96.6	0.00	96.65	2,695.92	636.83	1,753.90	1,683.75	12.98	-0.96	0.067
139.83	-24.91	-4.21	0.00	-75.9	0.00	75.94	2,596.95	613.45	1,627.51	1,561.66	13.96	-0.99	0.058
140.00	-24.86	-4.16	0.00	-75.2	0.00	75.24	2,593.54	612.65	1,623.24	1,557.54	14	-0.99	0.058
144.17	-23.67	-4.09	0.00	-57.9	0.00	57.90	1,097.80	302.12	789.35	654.31	14.87	-1.01	0.110
145.00	-23.54	-4.03	0.00	-54.5	0.00	54.49	1,093.76	300.11	778.85	647.52	15.04	-1.01	0.106
150.00	-16.40	-3.27	0.00	-34.4	0.00	34.37	1,068.60	288.01	717.36	606.97	16.13	-1.05	0.072
155.00	-15.74	-3.16	0.00	-18.0	0.00	18.04	1,041.86	275.92	658.39	566.76	17.24	-1.07	0.047
159.00	0.00	-2.86	0.00	-5.4	0.00	5.41	1,019.32	266.25	613.03	534.92	18.14	-1.08	0.010

CALCULATED FORCES

Load Case: 1.0D + 1.0W — 60 mph Wind with No Ice — 20 Iterations

Gust Response Factor: 1.10
Dead load Factor: 1.00
Wind Load Factor: 1.00

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (ft-kips)	Phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-45.55	-5.50	0.00	-641.4	0.00	641.42	6,681.23	1,671.05	9,056.15	8,244.36	0	0	0.085
5.00	-43.91	-5.41	0.00	-613.9	0.00	613.90	6,592.66	1,638.80	8,710.04	7,976.78	0.01	-0.02	0.084
10.00	-42.30	-5.32	0.00	-586.8	0.00	586.85	6,502.50	1,606.56	8,370.67	7,711.57	0.04	-0.04	0.083
15.00	-40.72	-5.23	0.00	-560.2	0.00	560.25	6,410.75	1,574.31	8,038.05	7,448.85	0.1	-0.06	0.082
20.00	-39.17	-5.14	0.00	-534.1	0.00	534.11	6,317.41	1,542.06	7,712.17	7,188.72	0.18	-0.08	0.081
25.00	-37.65	-5.05	0.00	-508.4	0.00	508.42	6,222.49	1,509.81	7,393.03	6,931.31	0.28	-0.11	0.079
30.00	-36.16	-4.96	0.00	-483.2	0.00	483.16	6,125.98	1,477.57	7,080.64	6,676.72	0.4	-0.13	0.078
35.00	-34.71	-4.87	0.00	-458.4	0.00	458.35	6,027.87	1,445.32	6,774.99	6,425.08	0.55	-0.15	0.077
40.00	-33.28	-4.78	0.00	-434.0	0.00	433.99	5,928.18	1,413.07	6,476.09	6,176.49	0.71	-0.17	0.076
45.00	-31.89	-4.73	0.00	-410.1	0.00	410.09	5,826.91	1,380.82	6,183.92	5,931.07	0.91	-0.2	0.075
45.54	-31.74	-4.68	0.00	-407.5	0.00	407.52	5,815.80	1,377.32	6,152.58	5,904.60	0.93	-0.2	0.074
50.00	-29.48	-4.61	0.00	-386.7	0.00	386.66	5,708.97	1,348.58	5,898.50	5,673.97	1.13	-0.22	0.073
52.46	-28.25	-4.56	0.00	-375.3	0.00	375.33	4,861.01	1,188.97	5,239.69	4,874.46	1.24	-0.23	0.083
55.00	-27.65	-4.48	0.00	-363.8	0.00	363.76	4,819.20	1,174.63	5,114.13	4,773.76	1.37	-0.24	0.082
60.00	-26.48	-4.38	0.00	-341.4	0.00	341.35	4,735.71	1,146.42	4,871.41	4,577.35	1.64	-0.27	0.080
65.00	-25.35	-4.28	0.00	-319.4	0.00	319.44	4,650.62	1,118.20	4,634.60	4,383.46	1.93	-0.29	0.078
70.00	-24.24	-4.18	0.00	-298.0	0.00	298.03	4,563.95	1,089.98	4,403.69	4,192.19	2.26	-0.32	0.076
75.00	-23.16	-4.08	0.00	-277.1	0.00	277.11	4,475.68	1,061.77	4,178.67	4,003.66	2.6	-0.35	0.074
80.00	-22.10	-3.98	0.00	-256.7	0.00	256.70	4,375.37	1,033.55	3,959.56	3,808.88	2.98	-0.37	0.072
85.00	-21.08	-3.88	0.00	-236.8	0.00	236.79	4,255.92	1,005.34	3,746.35	3,602.71	3.39	-0.4	0.071
90.00	-20.08	-3.81	0.00	-217.4	0.00	217.38	4,136.47	977.12	3,539.04	3,402.29	3.82	-0.43	0.069
92.17	-19.65	-3.76	0.00	-209.1	0.00	209.13	4,084.71	964.89	3,451.03	3,317.22	4.01	-0.44	0.068
95.00	-18.65	-3.70	0.00	-198.5	0.00	198.48	4,017.02	948.90	3,337.63	3,207.60	4.28	-0.45	0.067
97.83	-17.66	-3.64	0.00	-188.0	0.00	188.00	3,401.76	816.61	2,883.70	2,731.66	4.55	-0.47	0.074
100.00	-17.30	-3.58	0.00	-180.1	0.00	180.10	3,369.57	806.13	2,810.17	2,670.76	4.76	-0.48	0.073
105.00	-16.49	-3.48	0.00	-162.2	0.00	162.23	3,294.16	781.95	2,644.10	2,531.89	5.28	-0.51	0.069
110.00	-15.71	-3.38	0.00	-144.8	0.00	144.84	3,207.85	757.76	2,483.09	2,388.54	5.83	-0.53	0.066
115.00	-14.95	-3.29	0.00	-127.9	0.00	127.94	3,105.46	733.57	2,327.14	2,237.75	6.4	-0.56	0.062
120.00	-14.21	-3.19	0.00	-111.5	0.00	111.51	3,003.08	709.39	2,176.24	2,091.87	7	-0.59	0.058
125.00	-13.50	-3.10	0.00	-95.6	0.00	95.56	2,900.69	685.20	2,030.40	1,950.91	7.63	-0.61	0.054
130.00	-12.81	-3.01	0.00	-80.1	0.00	80.07	2,798.31	661.02	1,889.62	1,814.87	8.29	-0.64	0.049
135.00	-12.14	-2.92	0.00	-65.0	0.00	65.04	2,695.92	636.83	1,753.90	1,683.75	8.96	-0.66	0.043
139.83	-11.52	-2.87	0.00	-50.9	0.00	50.93	2,596.95	613.45	1,627.51	1,561.66	9.64	-0.68	0.037
140.00	-11.49	-2.83	0.00	-50.5	0.00	50.46	2,593.54	612.65	1,623.24	1,557.54	9.66	-0.68	0.037
144.17	-10.72	-2.78	0.00	-38.6	0.00	38.65	1,097.80	302.12	789.35	654.31	10.26	-0.69	0.069
145.00	-10.67	-2.74	0.00	-36.3	0.00	36.33	1,093.76	300.11	778.85	647.52	10.38	-0.69	0.066
150.00	-7.17	-2.13	0.00	-22.6	0.00	22.63	1,068.60	288.01	717.36	606.97	11.12	-0.72	0.044
155.00	-6.88	-2.06	0.00	-12.0	0.00	11.97	1,041.86	275.92	658.39	566.76	11.88	-0.73	0.028
159.00	0.00	-1.97	0.00	-3.7	0.00	3.74	1,019.32	266.25	613.03	534.92	12.5	-0.74	0.007

EQUIVALENT LATERAL FORCES METHOD ANALYSIS

(Based on ASCE7-16 Chapters 11, 12 and 15)

Spectral Response Acceleration for Short Period (S_S):	0.182
Spectral Response Acceleration at 1.0 Second Period (S_1):	0.056
Long-Period Transition Period (T_L – Seconds):	6
Importance Factor (I_e):	1.000
Site Coefficient F_a:	1.600
Site Coefficient F_v:	2.400
Response Modification Coefficient (R):	1.500
Design Spectral Response Acceleration at Short Period (S_{ds}):	0.194
Design Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.090
Seismic Response Coefficient (C_s):	0.030
Upper Limit C_S:	0.030
Lower Limit C_S:	0.030
Period based on Rayleigh Method (sec):	2.190
Redundancy Factor (p):	1.000
Seismic Force Distribution Exponent (k):	1.840
Total Unfactored Dead Load:	45.550 k
Seismic Base Shear (E):	1.370 k

SEISMIC FORCES

1.2D + 1.0Ev + 1.0Eh **Seismic**

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
38	157	221	2,463	0.012	16	273
37	152.5	286	3,029	0.015	20	355
36	147.5	322	3,205	0.015	21	399
35	144.5833	55	526	0.002	3	68
34	142.0833	766	7,111	0.034	47	949
33	139.9167	31	281	0.001	2	39
32	137.4167	622	5,428	0.026	36	770
31	132.5	666	5,439	0.026	36	825
30	127.5	690	5,245	0.025	34	854
29	122.5	713	5,038	0.024	33	883
28	117.5	736	4,818	0.023	32	912
27	112.5	760	4,589	0.022	30	941
26	107.5	783	4,350	0.021	29	970
25	102.5	807	4,104	0.020	27	1,000
24	98.9167	357	1,700	0.008	11	442
23	96.4167	990	4,500	0.022	30	1,227
22	93.5833	1,007	4,329	0.021	28	1,247
21	91.0833	424	1,735	0.008	11	525
20	87.5	998	3,792	0.018	25	1,236
19	82.5	1,025	3,495	0.017	23	1,270
18	77.5	1,053	3,198	0.015	21	1,304
17	72.5	1,080	2,902	0.014	19	1,338
16	67.5	1,107	2,608	0.012	17	1,372
15	62.5	1,135	2,319	0.011	15	1,406
14	57.5	1,162	2,036	0.010	13	1,440
13	53.73	601	929	0.004	6	744
12	51.23	1,228	1,740	0.008	11	1,521
11	47.7717	2,261	2,815	0.014	18	2,801
10	45.2717	149	168	0.001	1	185
9	42.5	1,391	1,397	0.007	9	1,724
8	37.5	1,423	1,134	0.005	7	1,762
7	32.5	1,454	890	0.004	6	1,801
6	27.5	1,485	668	0.003	4	1,840
5	22.5	1,516	471	0.002	3	1,879
4	17.5	1,548	303	0.002	2	1,917
3	12.5	1,579	166	0.001	1	1,956
2	7.5	1,610	66	0.000	0	1,995
1	2.5	1,641	9	0.000	0	2,033

SEISMIC FORCES

1.2D + 1.0Ev + 1.0Eh **Seismic**

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
Samsung B2/B66A RRH-BR049	159	253	2,893	0.014	19	314
Samsung B5/B13 RRH-BR04C	159	211	2,410	0.012	16	261
Raycap RCMDC-6627-PF-48	159	32	366	0.002	2	40
Samsung MT6407-77A	159	245	2,797	0.013	18	303
Antel BXA-70063/6CF_	159	51	583	0.003	4	63
JMA Wireless MX06FRO660-03	159	360	4,113	0.020	27	446
Generic Square Platform with Handrails	159	3,790	43,303	0.208	284	4,695
VZW Unused Reserve (17494.20 sqin)	159	1,348	15,403	0.074	101	1,670
Generic Mount Reinforcement	159	400	4,570	0.022	30	496
Ceragon IP-50C	150	13	135	0.001	1	16
Fujitsu TA08025-B605	150	225	2,309	0.011	15	279
Fujitsu TA08025-B604	150	192	1,967	0.010	13	237
Raycap RDIDC-9181-PF-48	150	22	225	0.001	1	27
Commscope VHLP2-11W/A	150	17	174	0.001	1	21
Commscope FFVV-65B-R2	150	212	2,180	0.010	14	263
Generic Flat Platform with Handrails	150	2,500	25,655	0.123	168	3,097
	Totals:	**45,554**	**208,077**	**1.000**	**1,367**	**56,433**

SEISMIC FORCES

0.9D - 1.0Ev + 1.0Eh **Seismic (Reduced DL)**

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
38	157	221	2,463	0.012	16	190
37	152.5	286	3,029	0.015	20	247
36	147.5	322	3,205	0.015	21	277
35	144.5833	55	526	0.002	3	47
34	142.0833	766	7,111	0.034	47	660
33	139.9167	31	281	0.001	2	27
32	137.4167	622	5,428	0.026	36	535
31	132.5	666	5,439	0.026	36	574
30	127.5	690	5,245	0.025	34	594
29	122.5	713	5,038	0.024	33	614
28	117.5	736	4,818	0.023	32	634
27	112.5	760	4,589	0.022	30	654
26	107.5	783	4,350	0.021	29	675
25	102.5	807	4,104	0.020	27	695
24	98.9167	357	1,700	0.008	11	307
23	96.4167	990	4,500	0.022	30	853
22	93.5833	1,007	4,329	0.021	28	867
21	91.0833	424	1,735	0.008	11	365
20	87.5	998	3,792	0.018	25	859
19	82.5	1,025	3,495	0.017	23	883
18	77.5	1,053	3,198	0.015	21	907
17	72.5	1,080	2,902	0.014	19	930
16	67.5	1,107	2,608	0.012	17	954
15	62.5	1,135	2,319	0.011	15	977
14	57.5	1,162	2,036	0.010	13	1,001
13	53.73	601	929	0.004	6	517
12	51.23	1,228	1,740	0.008	11	1,058
11	47.7717	2,261	2,815	0.014	18	1,947
10	45.2717	149	168	0.001	1	129
9	42.5	1,391	1,397	0.007	9	1,198
8	37.5	1,423	1,134	0.005	7	1,225
7	32.5	1,454	890	0.004	6	1,252
6	27.5	1,485	668	0.003	4	1,279
5	22.5	1,516	471	0.002	3	1,306
4	17.5	1,548	303	0.002	2	1,333
3	12.5	1,579	166	0.001	1	1,360
2	7.5	1,610	66	0.000	0	1,387
1	2.5	1,641	9	0.000	0	1,414
Samsung B2/B66A RRH-BR049	159	253	2,893	0.014	19	218

SEISMIC FORCES

0.9D - 1.0Ev + 1.0Eh **Seismic (Reduced DL)**

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
Samsung B5/B13 RRH-BR04C	159	211	2,410	0.012	16	182
Raycap RCMDC-6627-PF-48	159	32	366	0.002	2	28
Samsung MT6407-77A	159	245	2,797	0.013	18	211
Antel BXA-70063/6CF_	159	51	583	0.003	4	44
JMA Wireless MX06FRO660-03	159	360	4,113	0.020	27	310
Generic Square Platform with Handrails	159	3,790	43,303	0.208	284	3,264
VZW Unused Reserve (17494.20 sqin)	159	1,348	15,403	0.074	101	1,161
Generic Mount Reinforcement	159	400	4,570	0.022	30	344
Ceragon IP-50C	150	13	135	0.001	1	11
Fujitsu TA08025-B605	150	225	2,309	0.011	15	194
Fujitsu TA08025-B604	150	192	1,967	0.010	13	165
Raycap RDIDC-9181-PF-48	150	22	225	0.001	1	19
Commscope VHLP2-11W/A	150	17	174	0.001	1	15
Commscope FFVV-65B-R2	150	212	2,180	0.010	14	183
Generic Flat Platform with Handrails	150	2,500	25,655	0.123	168	2,153
	Totals:	**45,554**	**208,077**	**1.000**	**1,367**	**39,230**

1.2D + 1.0Ev + 1.0Eh **Seismic**

CALCULATED FORCES

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (fr-kips)	Mu Mx (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (kips)	Phi Mn (kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-54.40	-1.37	0.00	-184.45	0.00	184.45	6,681.23	1,671.05	9,056	8,244.36	0.00	0.00	0.03
5.00	-52.41	-1.37	0.00	-177.60	0.00	177.60	6,592.66	1,638.80	8,710	7,976.78	0.00	-0.01	0.03
10.00	-50.45	-1.38	0.00	-170.74	0.00	170.74	6,502.50	1,606.56	8,371	7,711.57	0.01	-0.01	0.03
15.00	-48.53	-1.38	0.00	-163.85	0.00	163.85	6,410.75	1,574.31	8,038	7,448.85	0.03	-0.02	0.03
20.00	-46.65	-1.38	0.00	-156.95	0.00	156.95	6,317.41	1,542.06	7,712	7,188.72	0.05	-0.02	0.03
25.00	-44.81	-1.38	0.00	-150.05	0.00	150.05	6,222.49	1,509.81	7,393	6,931.31	0.08	-0.03	0.03
30.00	-43.01	-1.38	0.00	-143.14	0.00	143.14	6,125.98	1,477.57	7,081	6,676.72	0.12	-0.04	0.03
35.00	-41.25	-1.38	0.00	-136.24	0.00	136.24	6,027.87	1,445.32	6,775	6,425.08	0.16	-0.04	0.03
40.00	-39.53	-1.37	0.00	-129.37	0.00	129.37	5,928.18	1,413.07	6,476	6,176.49	0.21	-0.05	0.03
45.00	-39.34	-1.37	0.00	-122.52	0.00	122.52	5,826.91	1,380.82	6,184	5,931.07	0.27	-0.06	0.03
45.54	-36.54	-1.35	0.00	-121.78	0.00	121.78	5,815.80	1,377.32	6,153	5,904.60	0.27	-0.06	0.03
50.00	-35.02	-1.34	0.00	-115.75	0.00	115.75	5,708.97	1,348.58	5,898	5,673.97	0.33	-0.06	0.03
52.46	-34.27	-1.34	0.00	-112.45	0.00	112.45	4,861.01	1,188.97	5,240	4,874.46	0.36	-0.07	0.03
55.00	-32.83	-1.32	0.00	-109.06	0.00	109.06	4,819.20	1,174.63	5,114	4,773.76	0.40	-0.07	0.03
60.00	-31.43	-1.31	0.00	-102.43	0.00	102.43	4,735.71	1,146.42	4,871	4,577.35	0.48	-0.08	0.03
65.00	-30.06	-1.30	0.00	-95.87	0.00	95.87	4,650.62	1,118.20	4,635	4,383.46	0.57	-0.09	0.03
70.00	-28.72	-1.28	0.00	-89.39	0.00	89.39	4,563.95	1,089.98	4,404	4,192.19	0.66	-0.09	0.03
75.00	-27.41	-1.26	0.00	-82.99	0.00	82.99	4,475.68	1,061.77	4,179	4,003.66	0.77	-0.10	0.03
80.00	-26.14	-1.24	0.00	-76.69	0.00	76.69	4,375.37	1,033.55	3,960	3,808.88	0.88	-0.11	0.03
85.00	-24.91	-1.21	0.00	-70.50	0.00	70.50	4,255.92	1,005.34	3,746	3,602.71	1.00	-0.12	0.03
90.00	-24.38	-1.20	0.00	-64.43	0.00	64.43	4,136.47	977.12	3,539	3,402.29	1.13	-0.13	0.03
92.17	-23.13	-1.17	0.00	-61.82	0.00	61.82	4,084.71	964.89	3,451	3,317.22	1.19	-0.13	0.02
95.00	-21.91	-1.14	0.00	-58.49	0.00	58.49	4,017.02	948.90	3,338	3,207.60	1.26	-0.13	0.02
97.83	-21.47	-1.13	0.00	-55.25	0.00	55.25	3,401.76	816.61	2,884	2,731.66	1.34	-0.14	0.03
100.00	-20.47	-1.11	0.00	-52.79	0.00	52.79	3,369.57	806.13	2,810	2,670.76	1.41	-0.14	0.03
105.00	-19.50	-1.08	0.00	-47.26	0.00	47.26	3,294.16	781.95	2,644	2,531.89	1.56	-0.15	0.03
110.00	-18.55	-1.05	0.00	-41.87	0.00	41.87	3,207.85	757.76	2,483	2,388.54	1.72	-0.16	0.02
115.00	-17.64	-1.02	0.00	-36.63	0.00	36.63	3,105.46	733.57	2,327	2,237.75	1.89	-0.17	0.02
120.00	-16.76	-0.98	0.00	-31.55	0.00	31.55	3,003.08	709.39	2,176	2,091.87	2.07	-0.17	0.02
125.00	-15.90	-0.95	0.00	-26.64	0.00	26.64	2,900.69	685.20	2,030	1,950.91	2.26	-0.18	0.02
130.00	-15.08	-0.91	0.00	-21.90	0.00	21.90	2,798.31	661.02	1,890	1,814.87	2.45	-0.19	0.02
135.00	-14.31	-0.87	0.00	-17.35	0.00	17.35	2,695.92	636.83	1,754	1,683.75	2.65	-0.19	0.02
139.83	-14.27	-0.87	0.00	-13.13	0.00	13.13	2,596.95	613.45	1,628	1,561.66	2.85	-0.20	0.01
140.00	-13.32	-0.82	0.00	-12.98	0.00	12.98	2,593.54	612.65	1,623	1,557.54	2.85	-0.20	0.01
144.17	-13.25	-0.82	0.00	-9.55	0.00	9.55	1,097.80	302.12	789	654.31	3.03	-0.20	0.03
145.00	-12.85	-0.80	0.00	-8.87	0.00	8.87	1,093.76	300.11	779	647.52	3.06	-0.20	0.03
150.00	-8.56	-0.55	0.00	-4.88	0.00	4.88	1,068.60	288.01	717	606.97	3.28	-0.21	0.02
155.00	-8.29	-0.53	0.00	-2.13	0.00	2.13	1,041.86	275.92	658	566.76	3.50	-0.21	0.01

CALCULATED FORCES

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (fr-kips)	Mu Mx (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (kips)	Phi Mn (kips)	Total Deflect (in)	Rotation (deg)	Ratio
159.00	0.00	-0.50	0.00	0.00	0.00	0.00	1,019.32	266.25	613	534.92	3.67	-0.21	0.00

0.9D - 1.0Ev + 1.0Eh **Seismic (Reduced DL)**

CALCULATED FORCES

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (fr-kips)	Mu Mx (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (kips)	Phi Mn (kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-37.82	-1.37	0.00	-182.44	0.00	182.44	6,681.23	1,671.05	9,056	8,244.36	0.00	0.00	0.03
5.00	-36.43	-1.37	0.00	-175.60	0.00	175.60	6,592.66	1,638.80	8,710	7,976.78	0.00	-0.01	0.03
10.00	-35.07	-1.37	0.00	-168.75	0.00	168.75	6,502.50	1,606.56	8,371	7,711.57	0.01	-0.01	0.03
15.00	-33.74	-1.37	0.00	-161.88	0.00	161.88	6,410.75	1,574.31	8,038	7,448.85	0.03	-0.02	0.03
20.00	-32.43	-1.37	0.00	-155.01	0.00	155.01	6,317.41	1,542.06	7,712	7,188.72	0.05	-0.02	0.03
25.00	-31.15	-1.37	0.00	-148.14	0.00	148.14	6,222.49	1,509.81	7,393	6,931.31	0.08	-0.03	0.03
30.00	-29.90	-1.37	0.00	-141.27	0.00	141.27	6,125.98	1,477.57	7,081	6,676.72	0.11	-0.04	0.03
35.00	-28.67	-1.36	0.00	-134.43	0.00	134.43	6,027.87	1,445.32	6,775	6,425.08	0.16	-0.04	0.03
40.00	-27.48	-1.36	0.00	-127.60	0.00	127.60	5,928.18	1,413.07	6,476	6,176.49	0.21	-0.05	0.03
45.00	-27.35	-1.36	0.00	-120.81	0.00	120.81	5,826.91	1,380.82	6,184	5,931.07	0.26	-0.06	0.03
45.54	-25.40	-1.34	0.00	-120.08	0.00	120.08	5,815.80	1,377.32	6,153	5,904.60	0.27	-0.06	0.03
50.00	-24.34	-1.33	0.00	-114.11	0.00	114.11	5,708.97	1,348.58	5,898	5,673.97	0.33	-0.06	0.02
52.46	-23.82	-1.32	0.00	-110.84	0.00	110.84	4,861.01	1,188.97	5,240	4,874.46	0.36	-0.07	0.03
55.00	-22.82	-1.31	0.00	-107.48	0.00	107.48	4,819.20	1,174.63	5,114	4,773.76	0.40	-0.07	0.03
60.00	-21.85	-1.30	0.00	-100.92	0.00	100.92	4,735.71	1,146.42	4,871	4,577.35	0.47	-0.08	0.03
65.00	-20.89	-1.28	0.00	-94.43	0.00	94.43	4,650.62	1,118.20	4,635	4,383.46	0.56	-0.09	0.03
70.00	-19.96	-1.26	0.00	-88.02	0.00	88.02	4,563.95	1,089.98	4,404	4,192.19	0.65	-0.09	0.03
75.00	-19.06	-1.24	0.00	-81.70	0.00	81.70	4,475.68	1,061.77	4,179	4,003.66	0.76	-0.10	0.03
80.00	-18.17	-1.22	0.00	-75.48	0.00	75.48	4,375.37	1,033.55	3,960	3,808.88	0.87	-0.11	0.02
85.00	-17.31	-1.20	0.00	-69.37	0.00	69.37	4,255.92	1,005.34	3,746	3,602.71	0.99	-0.12	0.02
90.00	-16.95	-1.19	0.00	-63.38	0.00	63.38	4,136.47	977.12	3,539	3,402.29	1.11	-0.12	0.02
92.17	-16.08	-1.16	0.00	-60.81	0.00	60.81	4,084.71	964.89	3,451	3,317.22	1.17	-0.13	0.02
95.00	-15.23	-1.13	0.00	-57.53	0.00	57.53	4,017.02	948.90	3,338	3,207.60	1.25	-0.13	0.02
97.83	-14.92	-1.12	0.00	-54.33	0.00	54.33	3,401.76	816.61	2,884	2,731.66	1.33	-0.14	0.02
100.00	-14.23	-1.09	0.00	-51.91	0.00	51.91	3,369.57	806.13	2,810	2,670.76	1.39	-0.14	0.02
105.00	-13.55	-1.06	0.00	-46.46	0.00	46.46	3,294.16	781.95	2,644	2,531.89	1.54	-0.15	0.02
110.00	-12.90	-1.03	0.00	-41.16	0.00	41.16	3,207.85	757.76	2,483	2,388.54	1.70	-0.16	0.02
115.00	-12.26	-1.00	0.00	-36.00	0.00	36.00	3,105.46	733.57	2,327	2,237.75	1.87	-0.16	0.02
120.00	-11.65	-0.97	0.00	-31.00	0.00	31.00	3,003.08	709.39	2,176	2,091.87	2.04	-0.17	0.02
125.00	-11.05	-0.93	0.00	-26.17	0.00	26.17	2,900.69	685.20	2,030	1,950.91	2.22	-0.18	0.02
130.00	-10.48	-0.89	0.00	-21.51	0.00	21.51	2,798.31	661.02	1,890	1,814.87	2.41	-0.18	0.02
135.00	-9.95	-0.86	0.00	-17.04	0.00	17.04	2,695.92	636.83	1,754	1,683.75	2.61	-0.19	0.01
139.83	-9.92	-0.86	0.00	-12.89	0.00	12.89	2,596.95	613.45	1,628	1,561.66	2.81	-0.19	0.01
140.00	-9.26	-0.81	0.00	-12.75	0.00	12.75	2,593.54	612.65	1,623	1,557.54	2.81	-0.19	0.01
144.17	-9.21	-0.81	0.00	-9.38	0.00	9.38	1,097.80	302.12	789	654.31	2.98	-0.20	0.02
145.00	-8.93	-0.78	0.00	-8.71	0.00	8.71	1,093.76	300.11	779	647.52	3.02	-0.20	0.02
150.00	-5.95	-0.54	0.00	-4.79	0.00	4.79	1,068.60	288.01	717	606.97	3.23	-0.20	0.01
155.00	-5.76	-0.52	0.00	-2.09	0.00	2.09	1,041.86	275.92	658	566.76	3.45	-0.21	0.01
159.00	0.00	-0.50	0.00	0.00	0.00	0.00	1,019.32	266.25	613	534.92	3.62	-0.21	0.00

ANALYSIS SUMMARY

Load Case	Base Reactions						Max Usage	
	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)	Elev (ft)	Interaction Ratio
1.2D + 1.0W	24.21	0.00	54.64	0.00	0.00	2836.23	0.00	0.35
0.9D + 1.0W	24.20	0.00	40.98	0.00	0.00	2810.82	0.00	0.35
1.2D + 1.0Di + 1.0Wi	7.58	0.00	78.35	0.00	0.00	915.62	0.00	0.12
1.2D + 1.0Ev + 1.0Eh	1.38	0.00	54.40	0.00	0.00	184.45	0.00	0.03
0.9D - 1.0Ev + 1.0Eh	1.37	0.00	37.82	0.00	0.00	182.44	0.00	0.03
1.0D + 1.0W	5.50	0.00	45.55	0.00	0.00	641.42	0.00	0.08

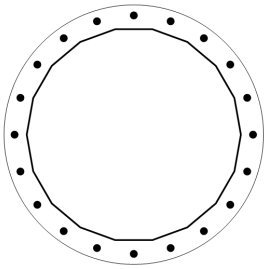
BASE PLATE ANALYSIS @ 0 FT

APPLIED REACTIONS

Moment (k-ft)	Axial (k)	Shear (k)
2836.23	54.64	24.21

PLATE PARAMETERS (ID# 25579)

Width:	74	in
Shape:	Round	
Thickness:	2.75	in
Grade:	A572-50	
Yield Strength:	50	ksi
Tensile Strength:	65	ksi
Rod Detail Type:	d	
Clear Distance	2.75	in
Base Weld Size:	0.125	in
Orientation Offset:	-	°
Analysis Type:	Plastic	
Neutral Axis:	18	°



ANCHOR ROD PARAMETERS

Class	Arrangement	Quantity	Diameter (in)	Circle (in)	Grade	F_y (ksi)	F_u (ksi)	Spacing (in)	Offset (°)
Original [ID#26259]	Radial	20	2.25	68	A615-75	75	100	-	-

COMPONENT PROPERTIES

Component	ID	Gross Area (in^2)	Net Area (in^2)	Individual Inertia (in^4)	Moment of Inertia (in^4)	Threads/in
Pole	60.5"ø x 0.5" (18 Sides)	93.7700	-	-	42204.35	-
Bolt Group	Original (20) 2.25"ø	3.9761	3.2477	0.8393	34717.46	4.5

REACTION DISTRIBUTION

Component	ID	Moment M_u (k-ft)	Axial Load P_u (k)	Shear V_u (k)	Moment Factor
Pole	60.5"ø x 0.5" (18 Sides)	2836.2	54.64	24.21	1.000
Bolt Group	Original (20) 2.25"ø	2836.2	-	24.21	1.000

BASE PLATE BEND LINE ANALYSIS @ 0 FT

POLE PROPERTIES

Flat-to-Flat Diameter:	60.62	in	Flat Width:	10.690	in	Neutral Axis:	18	°
Point-to-Point Diameter:	61.56	in	Flat Radians:	0.349	rad	Bend Line Limits:	1.381 to 2.389	rad
Orientation Offset:	-	°						

PLATE PROPERTIES

Bend Line	Chord Length (in)	Additional Length (in)	Section Modulus (in^3)	Applied Moment M_u (k-in)	Moment Capacity ΦM_n (k-in)	Flexure Result $M_u/\Phi M_n$
Flats	37.698	0.00	71.273	411.3	3207.3	12.8%
Corners	36.151	0.00	68.347	266.3	3075.6	8.7%
Circumferential	46.252	0.00	87.446	591.7	3935.1	15.0%

PLASTIC ANCHOR ROD ANALYSIS

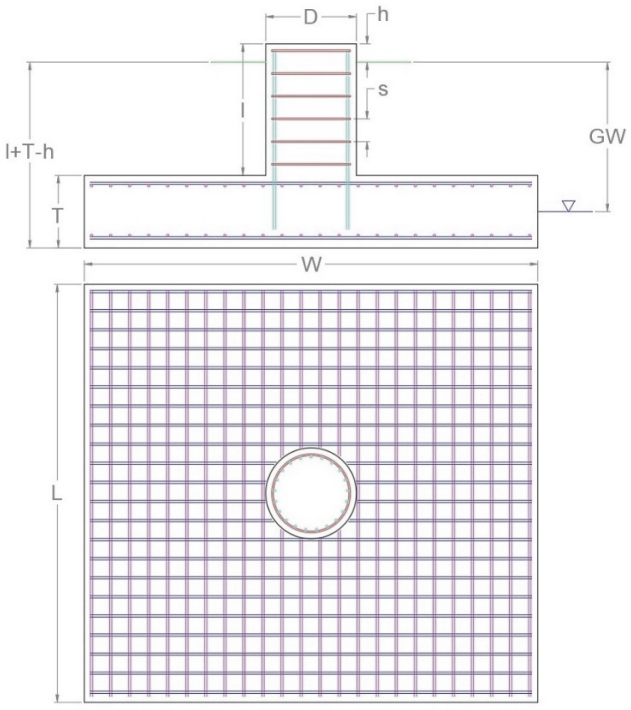
Class	Group Quantity	Rod Diameter (in)	Applied Axial Load P_u (k)	Applied Shear Load V_u (k)	Compressive Capacity ΦP_n (k)	Interaction Result
Original	20	2.25	87.9	1.9	243.6	37.7%

APPLIED GLOBAL REACTIONS

Moment (k-ft)	Axial (k)	Shear (k)
2,836.23	54.64	24.21

FOUNDATION PARAMETERS

Mat Length:	L	31	ft
Mat Width:	W	31	ft
Mat Thickness:	T	3	ft
Base Depth:	L+T-h	5.25	ft
Pier Shape:		Round	
Pier Diameter:	D	7.5	ft
Pier Height above Grade:	h	0.75	ft
Concrete Compressive Strength:		4,000	psi
Mat Top Rebar:		(31) #8 bars [60 ksi]	
Mat Bottom Rebar:		(53) #8 bars [60 ksi]	
Pier Vertical Rebar:		(50) #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	1	ft
Tower Leg Count		1	



SOIL PARAMETERS

Water Table Depth [BGL]:	GW		ft
Soil Unit Weight:		125	pcf
Ultimate Skin Friction:		0	psf
Ultimate Bearing Pressure:		12,000	psf
Bearing Pressure Type:		Net	
Coefficient of Shear Friction:		0.5	

SOIL STRENGTH ANALYSIS

Soil Strength Reduction Factor, Φ_s	Uplift Strength Reduction Factor, Φ_s	Asset Dead Load Factor	Dead Load Factor
0.75	0.75	0.9	1.2

SOIL OVERTURNING ANALYSIS

Design Moment, $M_{u,Design}$ (k-ft)	Nominal Overturning Capacity, $\Phi_m M_n$ (k-ft)	Soil Overturning Usage, $M_{u,Design} / \Phi_m M_n$	
2,981.49	10,888.07	**27.4%**	✓

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, $P_{u,net} / \Phi_b P_n$	
975.00	9,492.00	Diagonal to Pad Edge	**10.3%**	✓

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, $V_u / \Phi_s V_n$	
24.21	0.00	468.8	43.59	316.09	**8.0%**	✓

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, $V_u / \Phi_c V_n$	
76.59	1,129.58	Diagonal to Pad Edge	**6.8%**	✓

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, $v_u / \Phi_c v_n$	
31.6	189.7	**16.7%**	✓

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, $0.6\ M_{ut} / \Phi M_{sc,f}$	
16.50	2.05	0.00	38,733.9	**0.0%**	✓

MAT REINFORCING FLEXURE ANALYSIS – UPPER STEEL

Factored Moment, M_u (k-ft)	Nominal Flexural Capacity, ΦM_n (k-ft)	Flexural Steel Controlling Load Direction	Mat Upper Rebar Flexure Usage, $M_u / \Phi M_n$	
1,505.76	3,472.15	Parallel to Pad Edge	**43.4%**	✓

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, $M_u / \Phi M_n$	
1,433.80	5,870.23	Parallel to Pad Edge	**24.4%**	✓

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
82.00	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, $M_u/\Phi_b M_n$	
2,908.86	7,126.25	0.006	**40.8%**	✓

PIER REINFORCING COMPRESSION ANALYSIS

Design Compression, P_u (k)	Nominal Compressive Capacity, $\Phi_p P_n$ (k)	Pier Rebar Compressive Usage, $P_u / \Phi_p P_n$	
54.64	11,202.34	**0.5%**	✓

PIER REINFORCING SHEAR ANALYSIS

Design Shear, V_u (k)	Nominal Shear Capacity, $\Phi_v V_n$ (k)	Pier Rebar Shear Usage, $V_u / \Phi_v V_n$	
24.21	822.12	**2.9%**	✓

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	:	East Woodstock, CT CT
ATC Asset Number	:	415484
Engineering Number	:	14485736_C8_05
Mount Elevation	:	150 ft
Proposed Carrier	:	Dish Wireless L.L.C.
Carrier Site Name	:	BOBOS00028A
Carrier Site Number	:	BOBOS00028A
Site Location	:	445 Prospect St Woodstock, CT 06281-1431 42.014808, -71.980692
County	:	Windham
Date	:	August 23, 2023
Max Usage	:	66%
Analysis Result	:	Pass - Pending Mod

Prepared By:
Michael Ellis
Structural Engineer II

COA: PEC.0001553

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Supporting Documents 3

Analysis 3

Conclusion 3

Application Loading 4

Structure Usages 4

Mount Layout 5

Equipment Layout 7

Standard Conditions ..... Attached

Calculations ..... Attached

Introduction

The purpose of this report is to summarize results of the mount analysis performed for Dish Wireless L.L.C. at 150 ft.

Supporting Documents

Specifications Sheet:	Commscope MC-PK8-DSH, dated December 7, 2021
Construction Drawings:	ATC Project #13733431, dated June 22, 2023
Radio Frequency Data Sheet:	RFDS ID #BOBOS00028A, dated April 7, 2023
Reference Photos:	Site photos from 2022

**** The modifications by ATC Job #13733431 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:	B
Risk Category:	II
Topographic Factor Procedure:	Method 2
Feature:	Flat
Crest Height (H):	0 ft
Crest Length (L):	0 ft
Spectral Response:	Ss = 0.182, S1 = 0.056
Site Class:	D - Stiff Soil - Default
Live Loads:	Lm = 500 lbs

***Live Load(s) reduction is confirmed to either not govern or not be applicable**
*** Based on experience, it has been determined that the Lv load cases will not control over Lm load cases in platform mount analyses. Therefore, these load cases have been excluded from this analysis.**

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.

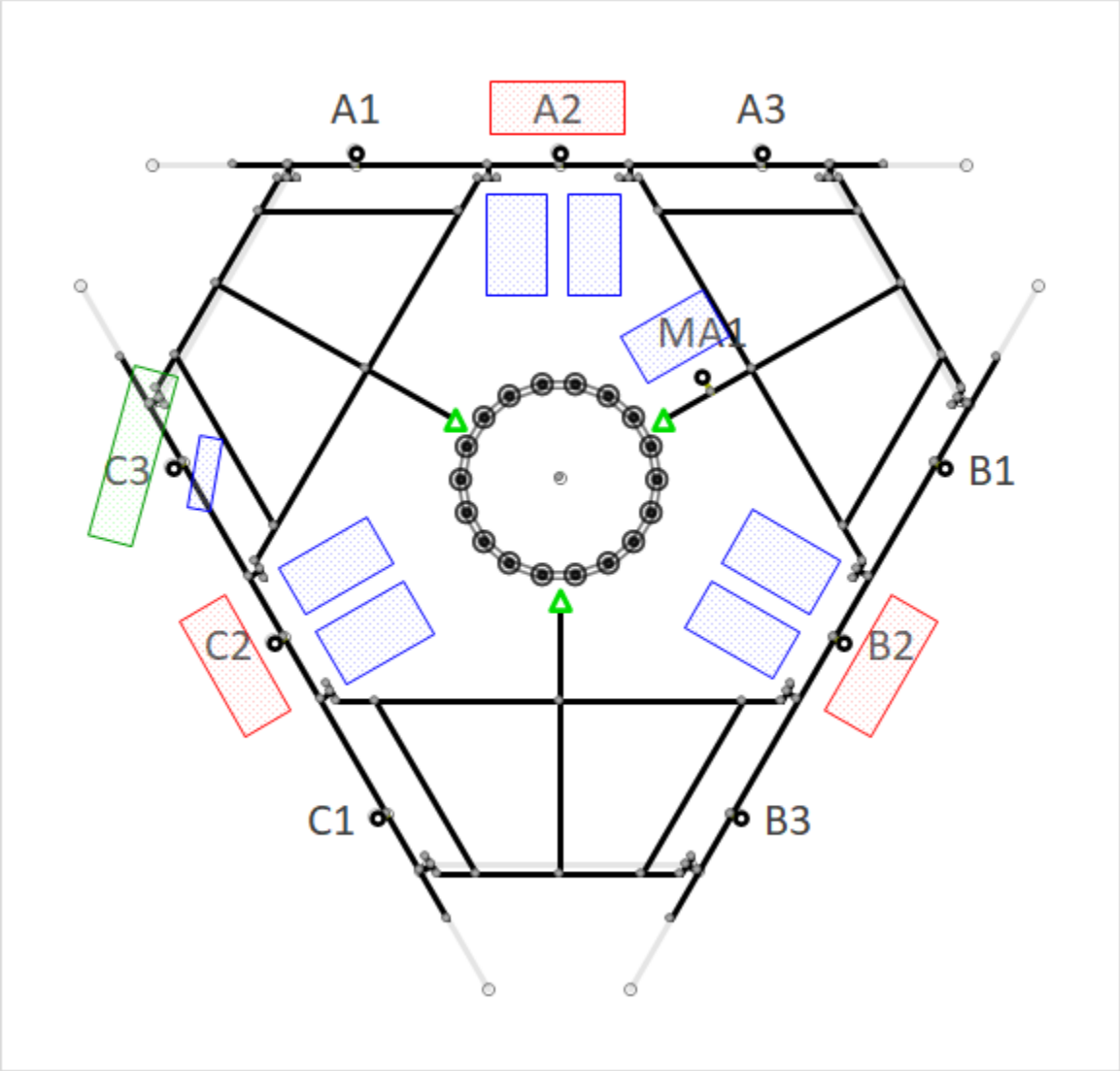
Application Loading

Mount Centerline (ft)	Equipment Centerline (ft)	Qty	Equipment Manufacturer & Model
150.0	150.0	3	Commscope FFVV-65B-R2
		1	Raycap RDIDC-9181-PF-48
		3	Fujitsu TA08025-B605
		3	Fujitsu TA08025-B604
		1	Commscope VHLP2-11W/A
		1	Ceragon IP-50C

Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Horizontals	43%	Pass
Mount Pipes	10%	Pass
Plate Conn Check	66%	Pass

Mount Layout



Equipment Position Table

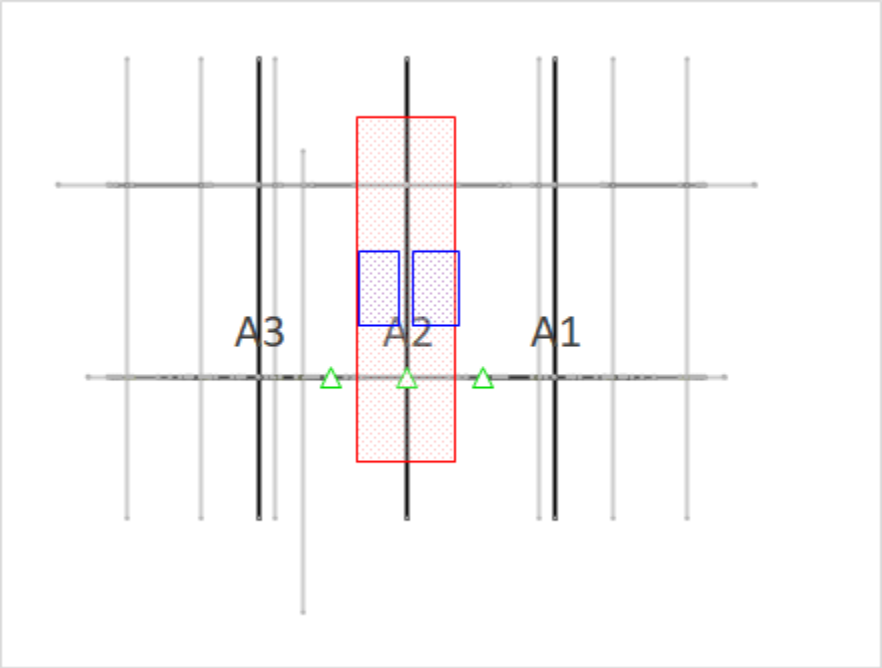
MP	RAD Center (ft)	Qty.	Antenna Model
A1	-	-	Empty
A2	150.0	1	Commscope FFVV-65B-R2
	150.0	1	Fujitsu TA08025-B605
	150.0	1	Fujitsu TA08025-B604
A3	-	-	Empty
B1	-	-	Empty
B2	150.0	1	Commscope FFVV-65B-R2
	150.0	1	Fujitsu TA08025-B605
	150.0	1	Fujitsu TA08025-B604

Equipment Position Table Cont.

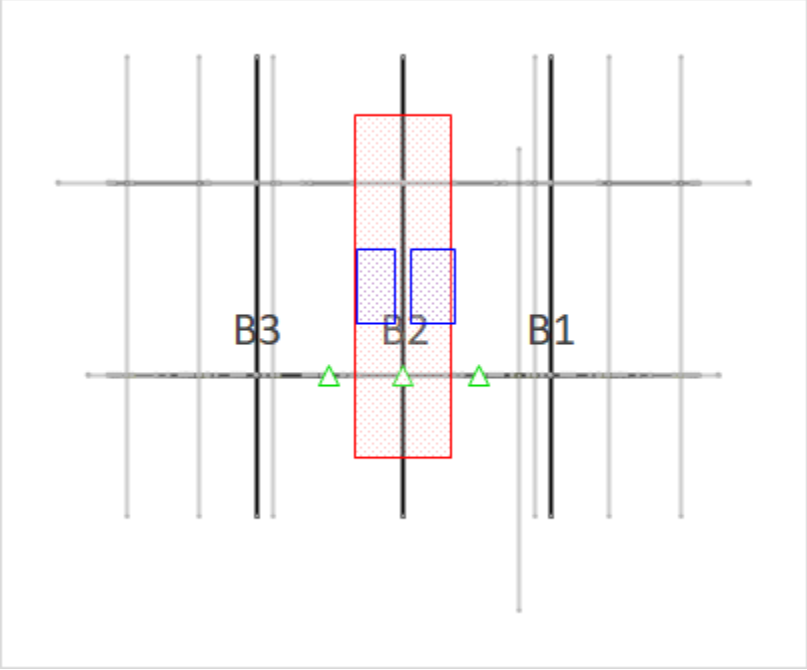
MP	RAD Center (ft)	Qty.	Antenna Model
B3	-	-	Empty
C1	-	-	Empty
C2	150.0	1	Commscope FFVV-65B-R2
	150.0	1	Fujitsu TA08025-B605
	150.0	1	Fujitsu TA08025-B604
C3	150.0	1	Commscope VHLP2-11W/A
	150.0	1	Ceragon IP-50C
MA1	150.0	1	Raycap RDIDC-9181-PF-48

Equipment Layout

Front View - Alpha

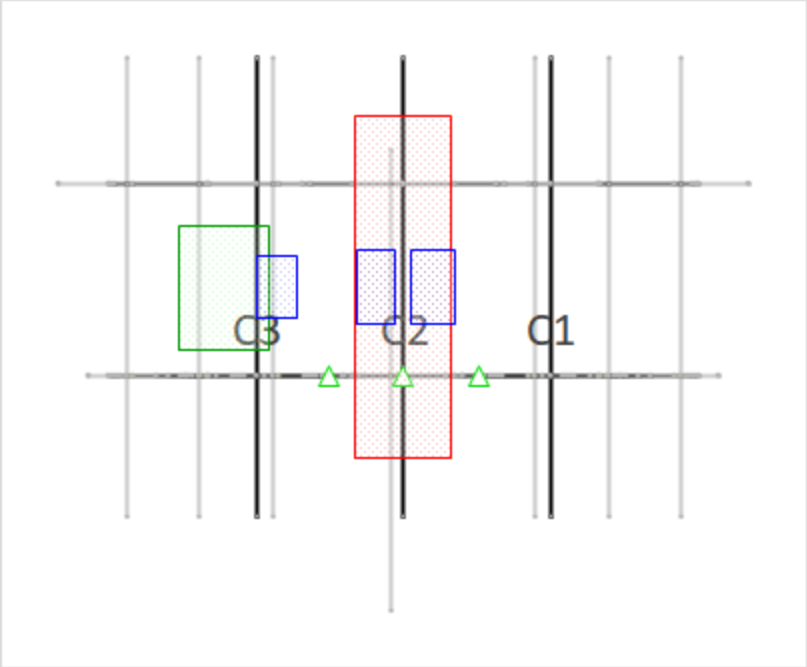


Front View - Beta



Equipment Layout Cont.

Front View - Gamma



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:	*415484*
Project Number:	*14485736_C8_05*
Carrier:	*Dish Wireless L.L.C.*
Mount Elevation:	*150 ft*
Date:	8/23/2023

Mount Analysis Force Calculations

Wind & Ice Load Calculations			
Velocity Pressure Coefficient	K_z	1.11	
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	0.98	
Wind Direction Probability Factor	K_d	0.95	
Basic Wind Speed	V	119	mph
Velocity Pressure	q_z	37.5	psf
Height Escalation Factor	K_{iz}	1.16	
Thickness of Radial Glaze Ice	T_{iz}	1.75	in

Seismic Load Calculations			
Short Period DSRAP	S_{DS}	0.146	
1 Second DSRAP	S_{D1}	0.090	
Importance Factor	I	1.0	
Response Modification Coefficient	R	2.0	
Seismic Response Coefficient	C_S	0.073	
Amplification Factor	A	1.0	
Total Weight	W	2087.8	lbs
Total Shear Force	V_S	152.0	lbs
Horizontal Seismic Load	Eh	152.0	lbs
Vertical Seismic Load	Ev	60.8	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	15.16	3.55
Raycap RDIDC-9181-PF-48	16.0	14.0	8.0	21.9	1.87	1.07	2.84	1.87
Fujitsu TA08025-B605	15.7	15.0	9.1	75.0	1.96	1.19	2.96	2.01
Fujitsu TA08025-B604	15.7	15.0	7.9	63.9	1.96	1.03	2.96	1.82
Commscope VHLP2-11W/A	26.0	26.0	6.5	17.0	2.35	0.67	3.03	1.17
Ceragon IP-50C	12.7	10.6	3.4	13.2	1.12	0.38	1.90	0.97

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

AMERICAN TOWER®
CORPORATION

Site Number:	*415484*
Project Number:	*14485736_C8_05*
Carrier:	*Dish Wireless L.L.C.*
Mount Elevation:	*150 ft*
Date:	8/23/2023

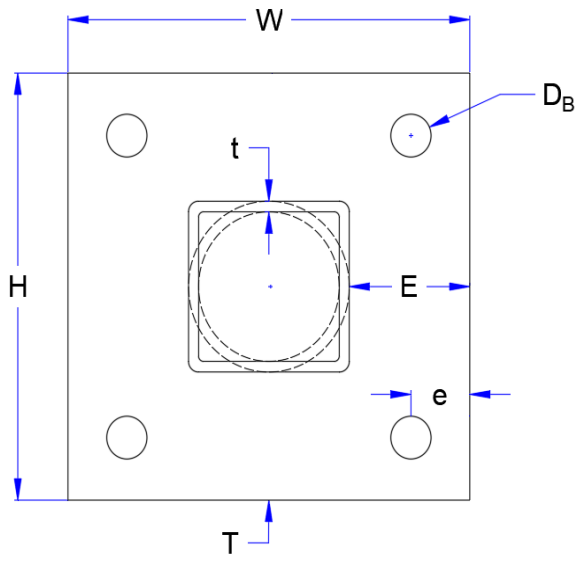
Mount-to-Tower Connection Analysis

Applied Loads from RISA 3D			
Controlling Load Combination		32	
Node Label/ Orientation (Degrees)		N008	240
Force in X	Fx	226.2	lbs
Force in Y	Fy	2294.1	lbs
Force in Z	Fz	-323.4	lbs
Moment about X	Mx	-2714.2	lb-ft
Moment about Y	My	432.1	lb-ft
Moment about Z	Mz	4906.9	lb-ft

Bolt Shear and Tensile Capacity			
Bolt Quantity	n	4	
Bolt Diameter	D_B	5/8	in
Bolt Horiz. Edge Distance	e_h	1	in
Bolt Vert. Edge Distance	e_v	1	in
Bolt Grade		A325	
Bolt Fy	Fy_B	92	ksi
Bolt Fu	Fu_B	120	ksi
Applied Shear	Vu	0.56	k
Applied Tension	Tu	5.05	k
Tensile Strength	ϕTn	20.3	k
Shear Strength	ϕVn	13.8	k
Interaction Capacity	(Vu/ϕVn)2+(Tu/ϕTn)2	6%	Pass

Plate Flexural Capacity			
Plate Height	H	9	in
Plate Width	W	9	in
Plate Thickness	T	5/8	in
Plate Grade		A36	
Plate Fy	Fy_P	36	ksi
Plate Fu	Fu_P	58	ksi
Shear Capacity	ϕVn	54.6	k
Applied Moment	Mu	8.4	k-in
Flexural Strength	ϕMn	12.8	k-in
Flexural Capacity	Mu/ϕMn	66%	Pass

Base Metal Checks		
Minimum Base Metal Thickness	0.206	in
Controlling Base Metal Thickness	0.375	in



Weld Capacity			
Standoff Type		Tube	
Standoff Member		HSS4x4x6	
Member Edge Distance	E	2.5	in
Member Height	h	4	in
Member Width	w	4	in
Member Thickness	t	0.375	in
Member Grade		A53 Gr. B	
Member Fy	Fy_M	35	ksi
Member Fu	Fu_M	60	ksi
Weld Size	a	1/4	in
Weld Section Modulus	S	3.7	in^3
Applied Weld Stress	σu	18.3	ksi
Capacity Weld Stress	ϕσn	31.5	ksi
Weld Utilization	σu/ϕσn	58%	Pass

Prying Action Considerations			
Moment Arm	b	1.66	in
Effective Moment Arm	b'	1.35	in
Tributary Length	p	4.04	in
Effective Edge Distance	a'	1.31	in
Minimum Thickness	t_{min}	0.27	in
No Prying Thickness	t_{np}	0.36	in
Min Bolt Strength Thickness	t_c	0.72	k-in

AMERICAN TOWER®
CORPORATION

Site Number:	*415484*
Project Number:	*14485736_C8_05*
Carrier:	*Dish Wireless L.L.C.*
Mount Elevation:	*150 ft*
Date:	8/23/2023

Mount-to-Tower Connection Analysis

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Moment about X	Mx	-2714.2	lb-ft
Moment about Y	My	432.1	lb-ft
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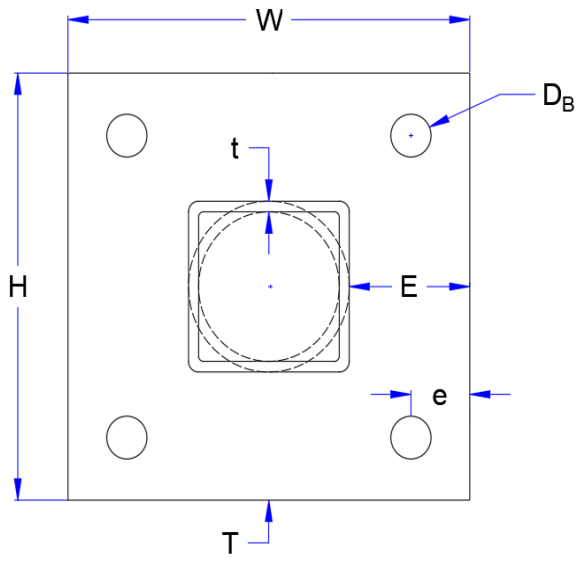
Bolt Shear and Tensile Capacity			
Bolt Quantity	n	4	
Bolt Diameter	D_B	5/8	in
Bolt Horiz. Edge Distance	e_h	1	in
Bolt Vert. Edge Distance	e_v	1	in
Bolt Grade		A325	
Bolt Fy	Fy_B	92	ksi
Bolt Fu	Fu_B	120	ksi
Applied Shear	Vu	0.56	k
Applied Tension	Tu	5.05	k
Tensile Strength	ϕTn	20.3	k
Shear Strength	ϕVn	13.8	k
Interaction Capacity	(Vu/ϕVn)2+(Tu/ϕTn)2	6%	Pass

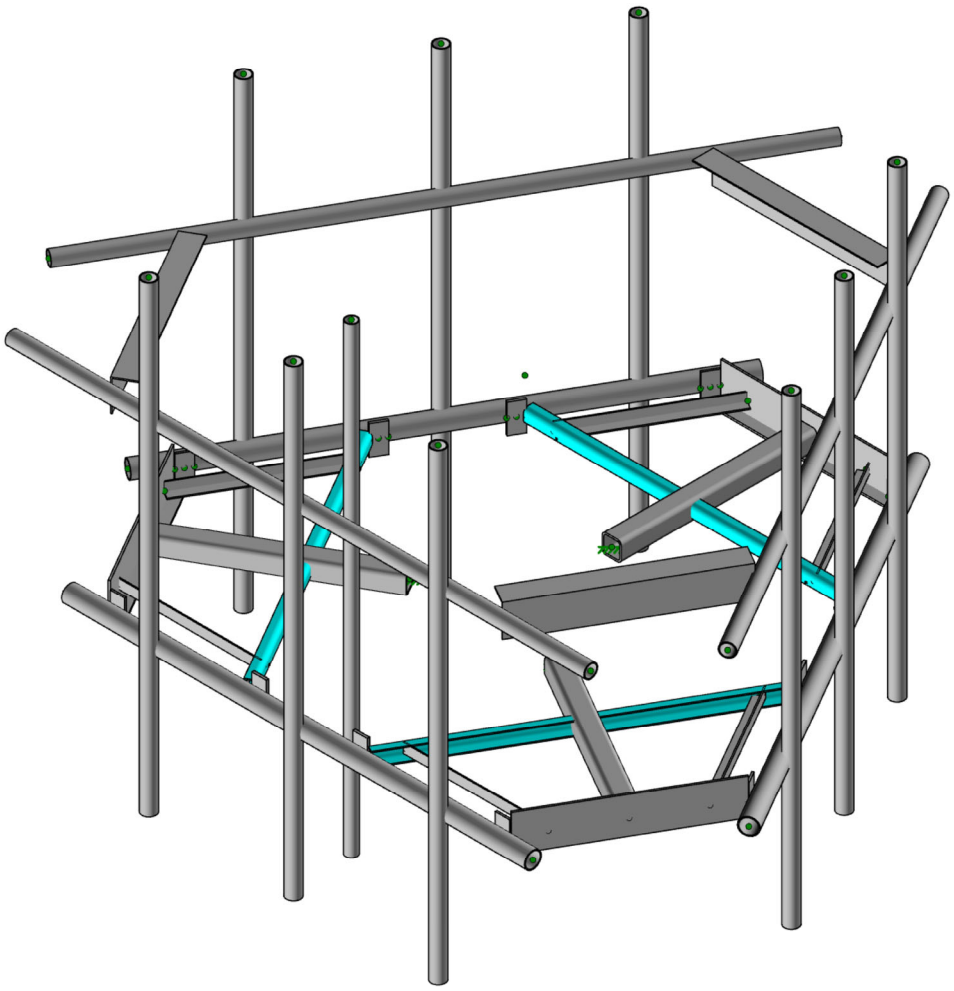
Plate Flexural Capacity			
Plate Height	H	9	in
Plate Width	W	9	in
Plate Thickness	T	5/8	in
Plate Grade		A36	
Plate Fy	Fy_P	36	ksi
Plate Fu	Fu_P	58	ksi
Shear Capacity	ϕVn	54.6	k
Applied Moment	Mu	8.4	k-in
Flexural Strength	ϕMn	12.8	k-in
Flexural Capacity	Mu/ϕMn	66%	Pass

Base Metal Checks		
Minimum Base Metal Thickness	0.206	in
Controlling Base Metal Thickness	0.375	in



Weld Capacity			
Standoff Type		Tube	
Standoff Member		HSS4x4x6	
Member Edge Distance	E	2.5	in
Member Height	h	4	in
Member Width	w	4	in
Member Thickness	t	0.375	in
Member Grade		A53 Gr. B	
Member Fy	Fy_M	35	ksi
Member Fu	Fu_M	60	ksi
Weld Size	a	1/4	in
Weld Section Modulus	S	3.7	in^3
Applied Weld Stress	σu	18.3	ksi
Capacity Weld Stress	ϕσn	31.5	ksi
Weld Utilization	σu/ϕσn	58%	Pass

Prying Action Considerations			
Moment Arm	b	1.66	in
Effective Moment Arm	b'	1.35	in
Tributary Length	p	4.04	in
Effective Edge Distance	a'	1.31	in
Minimum Thickness	t_{min}	0.27	in
No Prying Thickness	t_{np}	0.36	in
Min Bolt Strength Thickness	t_c	0.72	k-in



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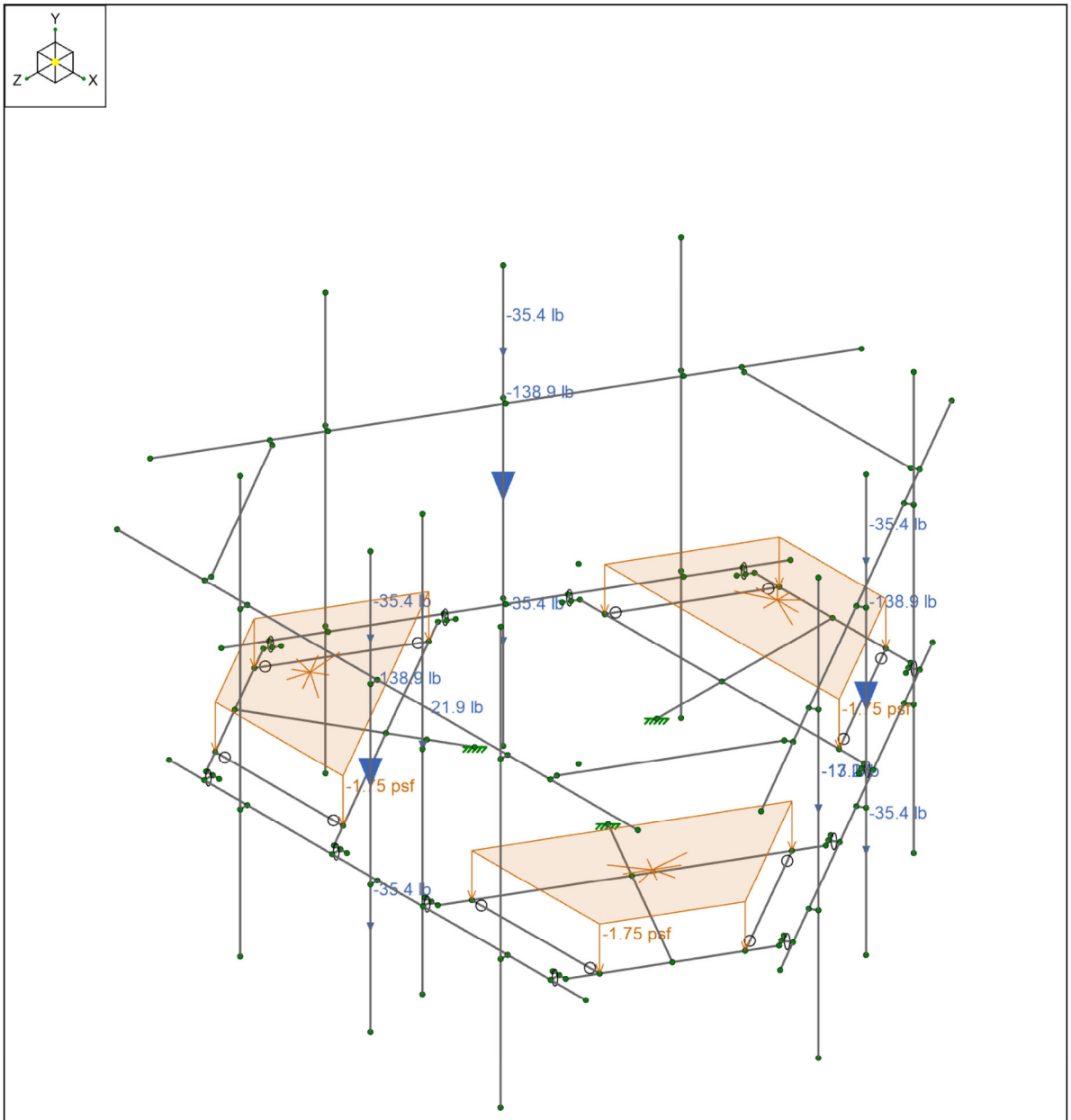
Michael.Ellis		Aug 23, 2023
14485736_C8_05		R3D. DISH WIRELESS L.L.C. @ …



Loads: BLC 1, D

American Tower Corp.	415484, East Woodstock, CT CT	SK-2
Michael.Ellis		Aug 23, 2023
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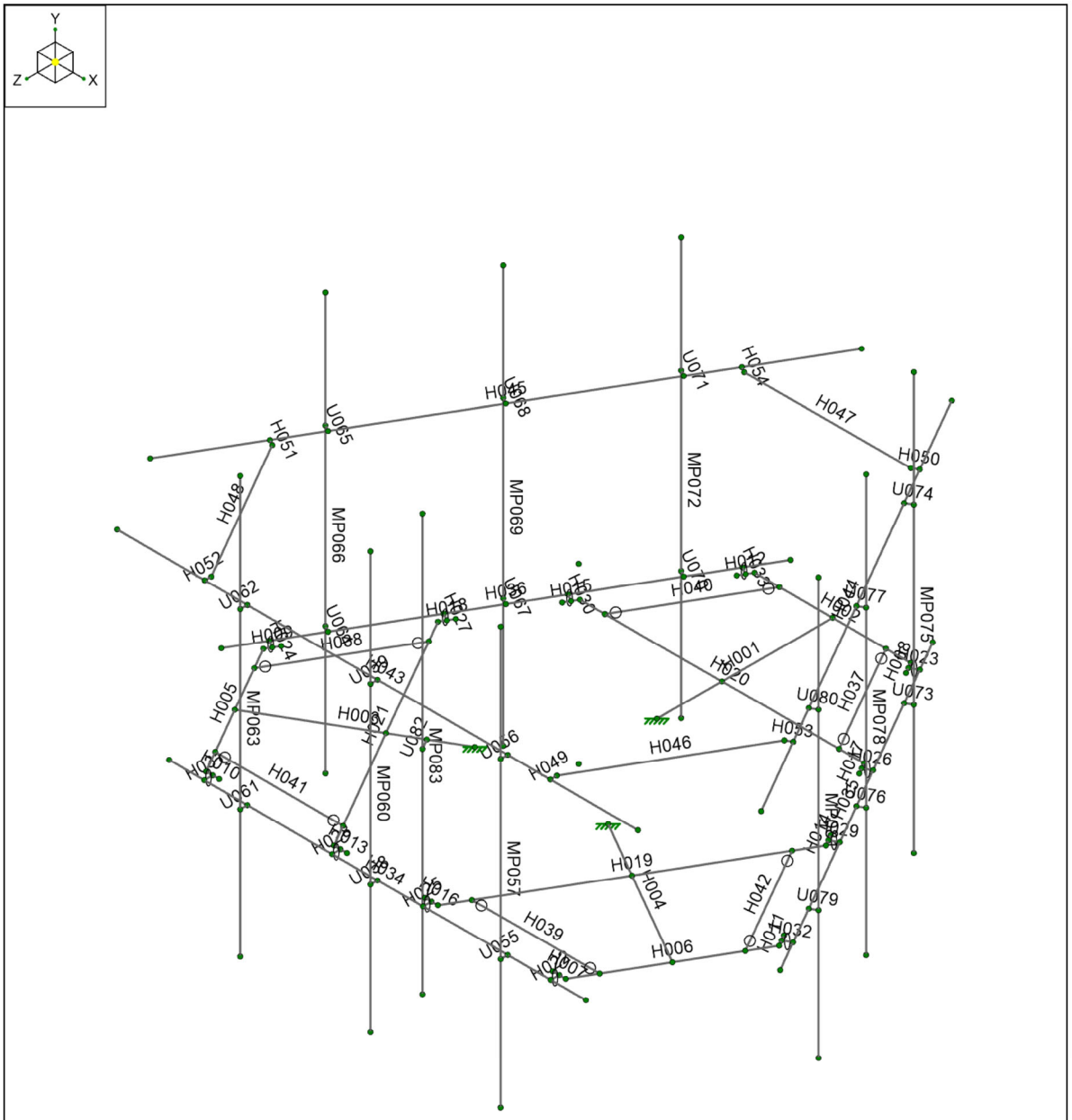

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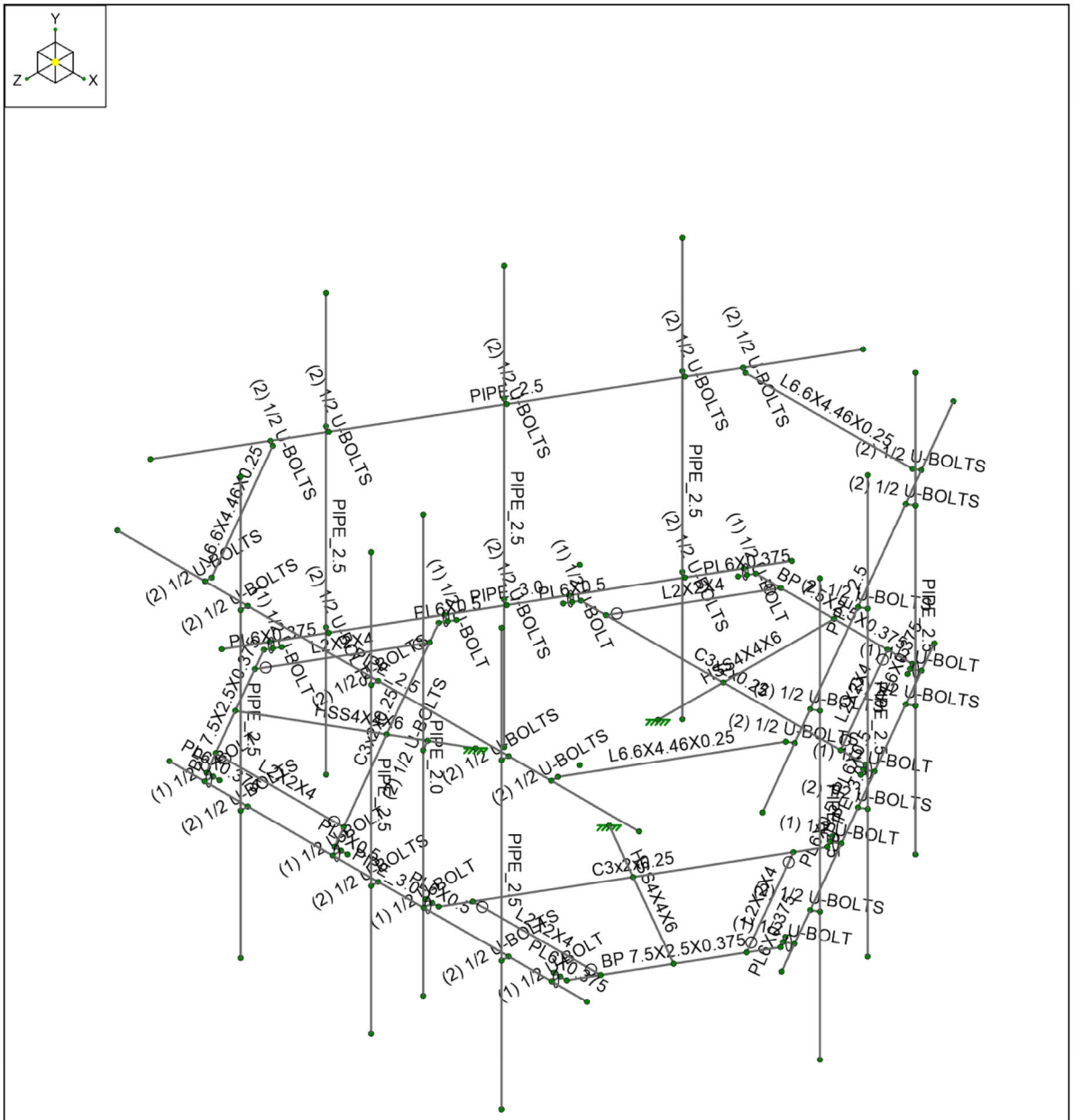

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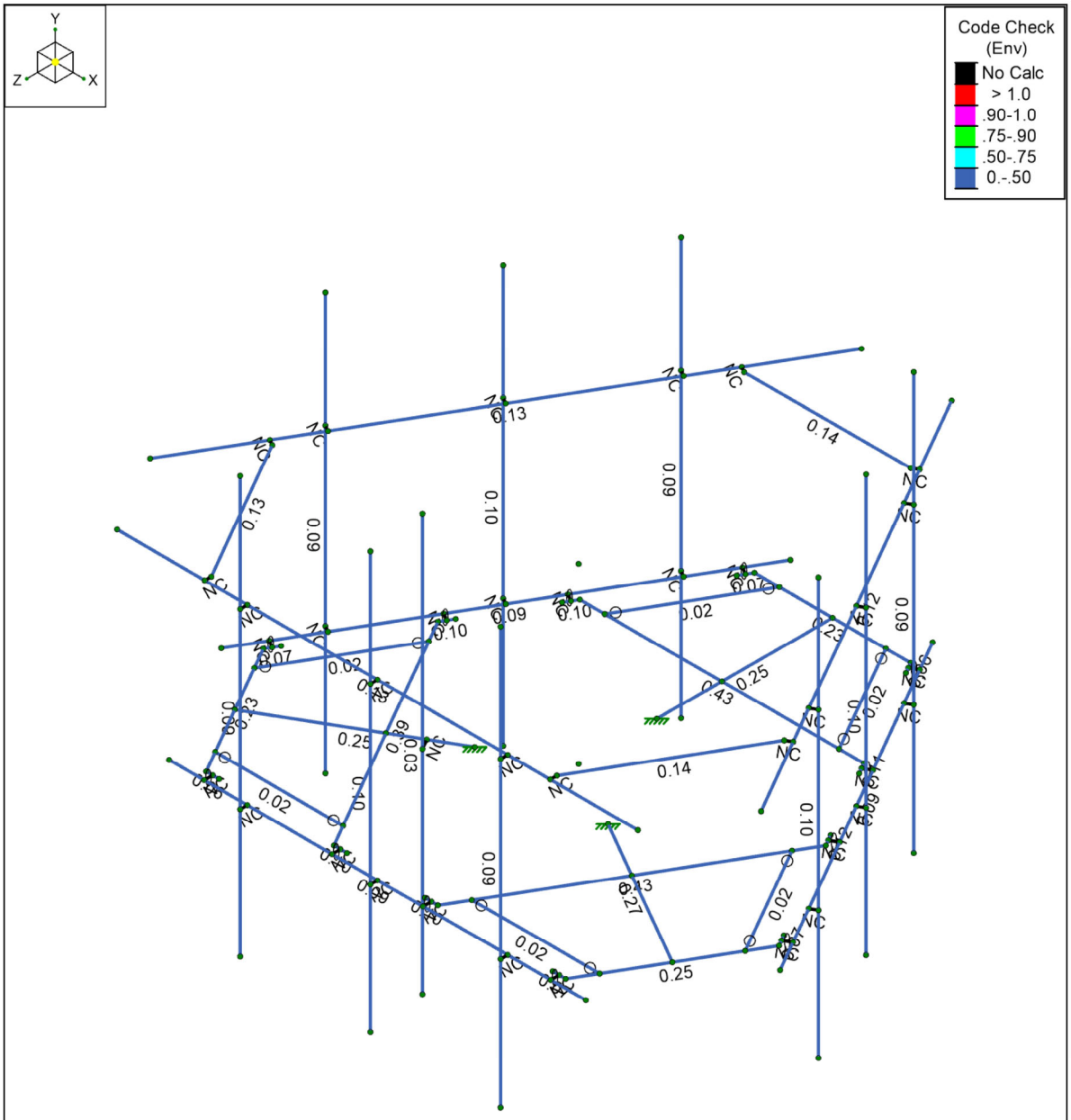

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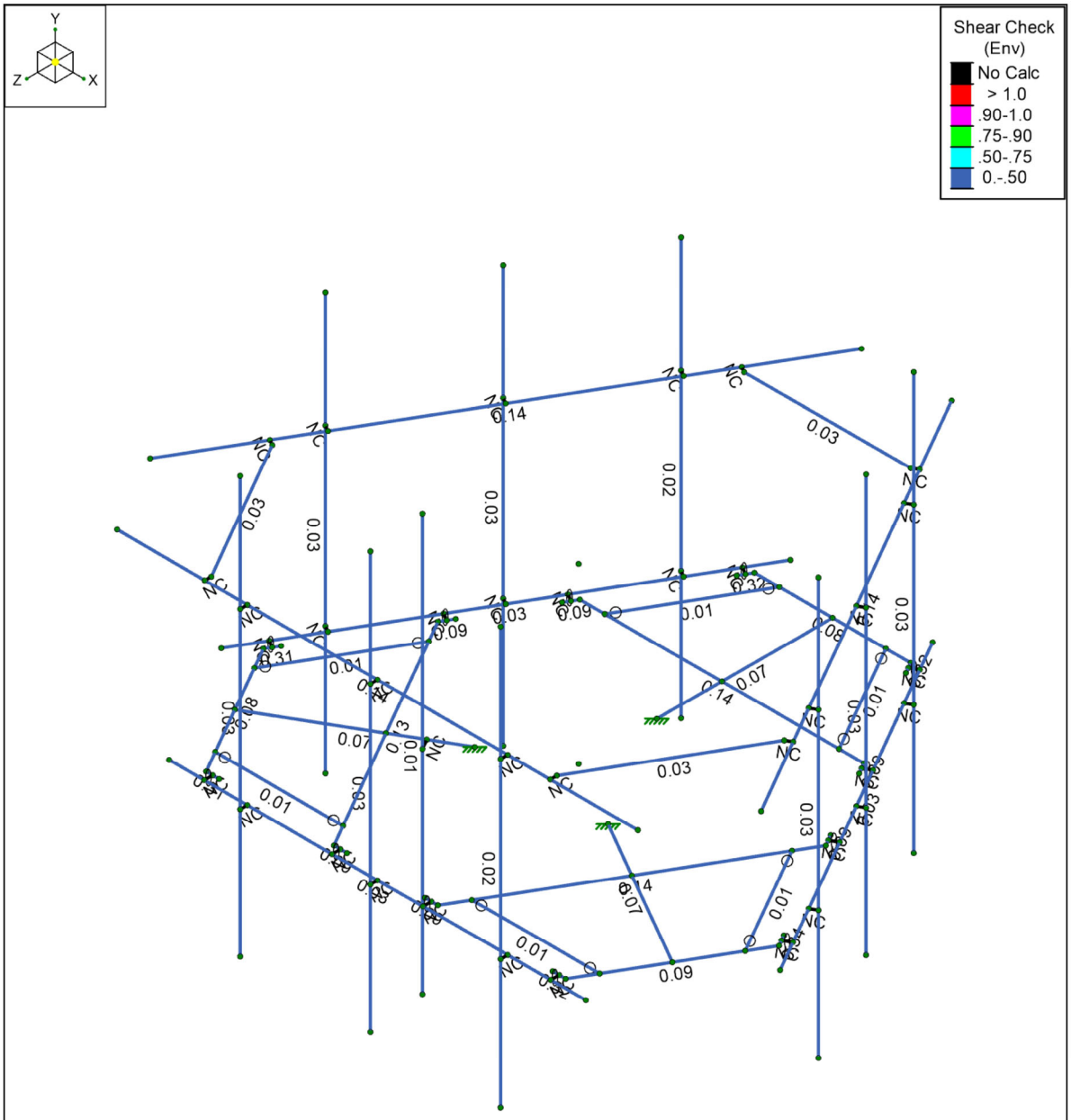

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Michael.Ellis		Aug 23, 2023
14485736_C8_05		R3D. DISH WIRELESS L.L.C. @ …

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Nodal	Point	Distributed	Area(Member)
1	D	DL		-1			15		3
2	Di	IL					15	46	3
3	W 0	WL					17	83	
4	W 30	WL					31	166	
5	W 60	WL					31	166	
6	W 90	WL					17	88	
7	W 120	WL					31	166	
8	W 150	WL					31	166	
9	W 180	WL					17	83	
10	W 210	WL					31	166	
11	W 240	WL					31	166	
12	W 270	WL					17	88	
13	W 300	WL					31	166	
14	W 330	WL					31	166	
15	Wi 0	WL					17	83	
16	Wi 30	WL					31	166	
17	Wi 60	WL					31	166	
18	Wi 90	WL					17	88	
19	Wi 120	WL					31	166	
20	Wi 150	WL					31	166	
21	Wi 180	WL					17	83	
22	Wi 210	WL					31	166	
23	Wi 240	WL					31	166	
24	Wi 270	WL					17	88	
25	Wi 300	WL					31	166	
26	Wi 330	WL					31	166	
27	Ws 0	WL					17	83	
28	Ws 30	WL					31	166	
29	Ws 60	WL					31	166	
30	Ws 90	WL					17	88	
31	Ws 120	WL					31	166	
32	Ws 150	WL					31	166	
33	Ws 180	WL					17	83	
34	Ws 210	WL					31	166	
35	Ws 240	WL					31	166	
36	Ws 270	WL					17	88	
37	Ws 300	WL					31	166	
38	Ws 330	WL					31	166	
39	Ev -Y	ELY		-0.029			15		3
40	Eh -Z	ELZ			-0.073		15		3
41	Eh -X	ELX	-0.073				15		3
42	Lm (1)	LL				1			
43	Lm (2)	LL				1			
44	Lm (3)	LL				1			
45	Lm (4)	LL				1			
46	Lm (5)	LL				1			
47	Lm (6)	LL				1			
48	Lm (7)	LL				1			
49	Lm (8)	LL				1			
50	Lm (9)	LL				1			
51	Lm (10)	LL				1			
52	BLC 1 Transient Area Loads	None						87	
53	BLC 2 Transient Area Loads	None						87	
54	BLC 39 Transient Area Loads	None						87	
55	BLC 40 Transient Area Loads	None						87	

Basic Load Cases (Continued)

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Nodal	Point	Distributed	Area(Member)
56	BLC 41 Transient Area Loads	None						87	

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
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

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
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 + 1.5Lm(1) + 1.0Wm [0°]	Yes	Y	DL	1.2	42	1.5	27	1		
63	1.2D + 1.5Lm(1) + 1.0Wm [30°]	Yes	Y	DL	1.2	42	1.5	28	1		
64	1.2D + 1.5Lm(1) + 1.0Wm [60°]	Yes	Y	DL	1.2	42	1.5	29	1		
65	1.2D + 1.5Lm(1) + 1.0Wm [90°]	Yes	Y	DL	1.2	42	1.5	30	1		
66	1.2D + 1.5Lm(1) + 1.0Wm [120°]	Yes	Y	DL	1.2	42	1.5	31	1		
67	1.2D + 1.5Lm(1) + 1.0Wm [150°]	Yes	Y	DL	1.2	42	1.5	32	1		
68	1.2D + 1.5Lm(1) + 1.0Wm [180°]	Yes	Y	DL	1.2	42	1.5	33	1		
69	1.2D + 1.5Lm(1) + 1.0Wm [210°]	Yes	Y	DL	1.2	42	1.5	34	1		
70	1.2D + 1.5Lm(1) + 1.0Wm [240°]	Yes	Y	DL	1.2	42	1.5	35	1		
71	1.2D + 1.5Lm(1) + 1.0Wm [270°]	Yes	Y	DL	1.2	42	1.5	36	1		
72	1.2D + 1.5Lm(1) + 1.0Wm [300°]	Yes	Y	DL	1.2	42	1.5	37	1		
73	1.2D + 1.5Lm(1) + 1.0Wm [330°]	Yes	Y	DL	1.2	42	1.5	38	1		
74	1.2D + 1.5Lm(2) + 1.0Wm [0°]	Yes	Y	DL	1.2	43	1.5	27	1		
75	1.2D + 1.5Lm(2) + 1.0Wm [30°]	Yes	Y	DL	1.2	43	1.5	28	1		
76	1.2D + 1.5Lm(2) + 1.0Wm [60°]	Yes	Y	DL	1.2	43	1.5	29	1		
77	1.2D + 1.5Lm(2) + 1.0Wm [90°]	Yes	Y	DL	1.2	43	1.5	30	1		
78	1.2D + 1.5Lm(2) + 1.0Wm [120°]	Yes	Y	DL	1.2	43	1.5	31	1		
79	1.2D + 1.5Lm(2) + 1.0Wm [150°]	Yes	Y	DL	1.2	43	1.5	32	1		
80	1.2D + 1.5Lm(2) + 1.0Wm [180°]	Yes	Y	DL	1.2	43	1.5	33	1		
81	1.2D + 1.5Lm(2) + 1.0Wm [210°]	Yes	Y	DL	1.2	43	1.5	34	1		
82	1.2D + 1.5Lm(2) + 1.0Wm [240°]	Yes	Y	DL	1.2	43	1.5	35	1		
83	1.2D + 1.5Lm(2) + 1.0Wm [270°]	Yes	Y	DL	1.2	43	1.5	36	1		
84	1.2D + 1.5Lm(2) + 1.0Wm [300°]	Yes	Y	DL	1.2	43	1.5	37	1		
85	1.2D + 1.5Lm(2) + 1.0Wm [330°]	Yes	Y	DL	1.2	43	1.5	38	1		
86	1.2D + 1.5Lm(3) + 1.0Wm [0°]	Yes	Y	DL	1.2	44	1.5	27	1		
87	1.2D + 1.5Lm(3) + 1.0Wm [30°]	Yes	Y	DL	1.2	44	1.5	28	1		
88	1.2D + 1.5Lm(3) + 1.0Wm [60°]	Yes	Y	DL	1.2	44	1.5	29	1		
89	1.2D + 1.5Lm(3) + 1.0Wm [90°]	Yes	Y	DL	1.2	44	1.5	30	1		
90	1.2D + 1.5Lm(3) + 1.0Wm [120°]	Yes	Y	DL	1.2	44	1.5	31	1		
91	1.2D + 1.5Lm(3) + 1.0Wm [150°]	Yes	Y	DL	1.2	44	1.5	32	1		
92	1.2D + 1.5Lm(3) + 1.0Wm [180°]	Yes	Y	DL	1.2	44	1.5	33	1		
93	1.2D + 1.5Lm(3) + 1.0Wm [210°]	Yes	Y	DL	1.2	44	1.5	34	1		
94	1.2D + 1.5Lm(3) + 1.0Wm [240°]	Yes	Y	DL	1.2	44	1.5	35	1		
95	1.2D + 1.5Lm(3) + 1.0Wm [270°]	Yes	Y	DL	1.2	44	1.5	36	1		
96	1.2D + 1.5Lm(3) + 1.0Wm [300°]	Yes	Y	DL	1.2	44	1.5	37	1		
97	1.2D + 1.5Lm(3) + 1.0Wm [330°]	Yes	Y	DL	1.2	44	1.5	38	1		
98	1.2D + 1.5Lm(4) + 1.0Wm [0°]	Yes	Y	DL	1.2	45	1.5	27	1		
99	1.2D + 1.5Lm(4) + 1.0Wm [30°]	Yes	Y	DL	1.2	45	1.5	28	1		
100	1.2D + 1.5Lm(4) + 1.0Wm [60°]	Yes	Y	DL	1.2	45	1.5	29	1		
101	1.2D + 1.5Lm(4) + 1.0Wm [90°]	Yes	Y	DL	1.2	45	1.5	30	1		
102	1.2D + 1.5Lm(4) + 1.0Wm [120°]	Yes	Y	DL	1.2	45	1.5	31	1		
103	1.2D + 1.5Lm(4) + 1.0Wm [150°]	Yes	Y	DL	1.2	45	1.5	32	1		
104	1.2D + 1.5Lm(4) + 1.0Wm [180°]	Yes	Y	DL	1.2	45	1.5	33	1		
105	1.2D + 1.5Lm(4) + 1.0Wm [210°]	Yes	Y	DL	1.2	45	1.5	34	1		
106	1.2D + 1.5Lm(4) + 1.0Wm [240°]	Yes	Y	DL	1.2	45	1.5	35	1		

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
107	1.2D + 1.5Lm(4) + 1.0Wm [270°]	Yes	Y	DL	1.2	45	1.5	36	1		
108	1.2D + 1.5Lm(4) + 1.0Wm [300°]	Yes	Y	DL	1.2	45	1.5	37	1		
109	1.2D + 1.5Lm(4) + 1.0Wm [330°]	Yes	Y	DL	1.2	45	1.5	38	1		
110	1.2D + 1.5Lm(5) + 1.0Wm [0°]	Yes	Y	DL	1.2	46	1.5	27	1		
111	1.2D + 1.5Lm(5) + 1.0Wm [30°]	Yes	Y	DL	1.2	46	1.5	28	1		
112	1.2D + 1.5Lm(5) + 1.0Wm [60°]	Yes	Y	DL	1.2	46	1.5	29	1		
113	1.2D + 1.5Lm(5) + 1.0Wm [90°]	Yes	Y	DL	1.2	46	1.5	30	1		
114	1.2D + 1.5Lm(5) + 1.0Wm [120°]	Yes	Y	DL	1.2	46	1.5	31	1		
115	1.2D + 1.5Lm(5) + 1.0Wm [150°]	Yes	Y	DL	1.2	46	1.5	32	1		
116	1.2D + 1.5Lm(5) + 1.0Wm [180°]	Yes	Y	DL	1.2	46	1.5	33	1		
117	1.2D + 1.5Lm(5) + 1.0Wm [210°]	Yes	Y	DL	1.2	46	1.5	34	1		
118	1.2D + 1.5Lm(5) + 1.0Wm [240°]	Yes	Y	DL	1.2	46	1.5	35	1		
119	1.2D + 1.5Lm(5) + 1.0Wm [270°]	Yes	Y	DL	1.2	46	1.5	36	1		
120	1.2D + 1.5Lm(5) + 1.0Wm [300°]	Yes	Y	DL	1.2	46	1.5	37	1		
121	1.2D + 1.5Lm(5) + 1.0Wm [330°]	Yes	Y	DL	1.2	46	1.5	38	1		
122	1.2D + 1.5Lm(6) + 1.0Wm [0°]	Yes	Y	DL	1.2	47	1.5	27	1		
123	1.2D + 1.5Lm(6) + 1.0Wm [30°]	Yes	Y	DL	1.2	47	1.5	28	1		
124	1.2D + 1.5Lm(6) + 1.0Wm [60°]	Yes	Y	DL	1.2	47	1.5	29	1		
125	1.2D + 1.5Lm(6) + 1.0Wm [90°]	Yes	Y	DL	1.2	47	1.5	30	1		
126	1.2D + 1.5Lm(6) + 1.0Wm [120°]	Yes	Y	DL	1.2	47	1.5	31	1		
127	1.2D + 1.5Lm(6) + 1.0Wm [150°]	Yes	Y	DL	1.2	47	1.5	32	1		
128	1.2D + 1.5Lm(6) + 1.0Wm [180°]	Yes	Y	DL	1.2	47	1.5	33	1		
129	1.2D + 1.5Lm(6) + 1.0Wm [210°]	Yes	Y	DL	1.2	47	1.5	34	1		
130	1.2D + 1.5Lm(6) + 1.0Wm [240°]	Yes	Y	DL	1.2	47	1.5	35	1		
131	1.2D + 1.5Lm(6) + 1.0Wm [270°]	Yes	Y	DL	1.2	47	1.5	36	1		
132	1.2D + 1.5Lm(6) + 1.0Wm [300°]	Yes	Y	DL	1.2	47	1.5	37	1		
133	1.2D + 1.5Lm(6) + 1.0Wm [330°]	Yes	Y	DL	1.2	47	1.5	38	1		
134	1.2D + 1.5Lm(7) + 1.0Wm [0°]	Yes	Y	DL	1.2	48	1.5	27	1		
135	1.2D + 1.5Lm(7) + 1.0Wm [30°]	Yes	Y	DL	1.2	48	1.5	28	1		
136	1.2D + 1.5Lm(7) + 1.0Wm [60°]	Yes	Y	DL	1.2	48	1.5	29	1		
137	1.2D + 1.5Lm(7) + 1.0Wm [90°]	Yes	Y	DL	1.2	48	1.5	30	1		
138	1.2D + 1.5Lm(7) + 1.0Wm [120°]	Yes	Y	DL	1.2	48	1.5	31	1		
139	1.2D + 1.5Lm(7) + 1.0Wm [150°]	Yes	Y	DL	1.2	48	1.5	32	1		
140	1.2D + 1.5Lm(7) + 1.0Wm [180°]	Yes	Y	DL	1.2	48	1.5	33	1		
141	1.2D + 1.5Lm(7) + 1.0Wm [210°]	Yes	Y	DL	1.2	48	1.5	34	1		
142	1.2D + 1.5Lm(7) + 1.0Wm [240°]	Yes	Y	DL	1.2	48	1.5	35	1		
143	1.2D + 1.5Lm(7) + 1.0Wm [270°]	Yes	Y	DL	1.2	48	1.5	36	1		
144	1.2D + 1.5Lm(7) + 1.0Wm [300°]	Yes	Y	DL	1.2	48	1.5	37	1		
145	1.2D + 1.5Lm(7) + 1.0Wm [330°]	Yes	Y	DL	1.2	48	1.5	38	1		
146	1.2D + 1.5Lm(8) + 1.0Wm [0°]	Yes	Y	DL	1.2	49	1.5	27	1		
147	1.2D + 1.5Lm(8) + 1.0Wm [30°]	Yes	Y	DL	1.2	49	1.5	28	1		
148	1.2D + 1.5Lm(8) + 1.0Wm [60°]	Yes	Y	DL	1.2	49	1.5	29	1		
149	1.2D + 1.5Lm(8) + 1.0Wm [90°]	Yes	Y	DL	1.2	49	1.5	30	1		
150	1.2D + 1.5Lm(8) + 1.0Wm [120°]	Yes	Y	DL	1.2	49	1.5	31	1		
151	1.2D + 1.5Lm(8) + 1.0Wm [150°]	Yes	Y	DL	1.2	49	1.5	32	1		
152	1.2D + 1.5Lm(8) + 1.0Wm [180°]	Yes	Y	DL	1.2	49	1.5	33	1		
153	1.2D + 1.5Lm(8) + 1.0Wm [210°]	Yes	Y	DL	1.2	49	1.5	34	1		
154	1.2D + 1.5Lm(8) + 1.0Wm [240°]	Yes	Y	DL	1.2	49	1.5	35	1		
155	1.2D + 1.5Lm(8) + 1.0Wm [270°]	Yes	Y	DL	1.2	49	1.5	36	1		
156	1.2D + 1.5Lm(8) + 1.0Wm [300°]	Yes	Y	DL	1.2	49	1.5	37	1		
157	1.2D + 1.5Lm(8) + 1.0Wm [330°]	Yes	Y	DL	1.2	49	1.5	38	1		
158	1.2D + 1.5Lm(9) + 1.0Wm [0°]	Yes	Y	DL	1.2	50	1.5	27	1		
159	1.2D + 1.5Lm(9) + 1.0Wm [30°]	Yes	Y	DL	1.2	50	1.5	28	1		
160	1.2D + 1.5Lm(9) + 1.0Wm [60°]	Yes	Y	DL	1.2	50	1.5	29	1		
161	1.2D + 1.5Lm(9) + 1.0Wm [90°]	Yes	Y	DL	1.2	50	1.5	30	1		

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
162	1.2D + 1.5Lm(9) + 1.0Wm [120°]	Yes	Y	DL	1.2	50	1.5	31	1		
163	1.2D + 1.5Lm(9) + 1.0Wm [150°]	Yes	Y	DL	1.2	50	1.5	32	1		
164	1.2D + 1.5Lm(9) + 1.0Wm [180°]	Yes	Y	DL	1.2	50	1.5	33	1		
165	1.2D + 1.5Lm(9) + 1.0Wm [210°]	Yes	Y	DL	1.2	50	1.5	34	1		
166	1.2D + 1.5Lm(9) + 1.0Wm [240°]	Yes	Y	DL	1.2	50	1.5	35	1		
167	1.2D + 1.5Lm(9) + 1.0Wm [270°]	Yes	Y	DL	1.2	50	1.5	36	1		
168	1.2D + 1.5Lm(9) + 1.0Wm [300°]	Yes	Y	DL	1.2	50	1.5	37	1		
169	1.2D + 1.5Lm(9) + 1.0Wm [330°]	Yes	Y	DL	1.2	50	1.5	38	1		
170	1.2D + 1.5Lm(10) + 1.0Wm [0°]	Yes	Y	DL	1.2	51	1.5	27	1		
171	1.2D + 1.5Lm(10) + 1.0Wm [30°]	Yes	Y	DL	1.2	51	1.5	28	1		
172	1.2D + 1.5Lm(10) + 1.0Wm [60°]	Yes	Y	DL	1.2	51	1.5	29	1		
173	1.2D + 1.5Lm(10) + 1.0Wm [90°]	Yes	Y	DL	1.2	51	1.5	30	1		
174	1.2D + 1.5Lm(10) + 1.0Wm [120°]	Yes	Y	DL	1.2	51	1.5	31	1		
175	1.2D + 1.5Lm(10) + 1.0Wm [150°]	Yes	Y	DL	1.2	51	1.5	32	1		
176	1.2D + 1.5Lm(10) + 1.0Wm [180°]	Yes	Y	DL	1.2	51	1.5	33	1		
177	1.2D + 1.5Lm(10) + 1.0Wm [210°]	Yes	Y	DL	1.2	51	1.5	34	1		
178	1.2D + 1.5Lm(10) + 1.0Wm [240°]	Yes	Y	DL	1.2	51	1.5	35	1		
179	1.2D + 1.5Lm(10) + 1.0Wm [270°]	Yes	Y	DL	1.2	51	1.5	36	1		
180	1.2D + 1.5Lm(10) + 1.0Wm [300°]	Yes	Y	DL	1.2	51	1.5	37	1		
181	1.2D + 1.5Lm(10) + 1.0Wm [330°]	Yes	Y	DL	1.2	51	1.5	38	1		

Member Primary Data

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
1	H001	N002	N003		HSS4X4X6	Beam	None	A500 Gr. C	Typical
2	H002	N006	N005		BP 7.5X2.5X0.375	Beam	None	A36	Typical
3	H003	N007	N009		HSS4X4X6	Beam	None	A500 Gr. C	Typical
4	H004	N008	N010		HSS4X4X6	Beam	None	A500 Gr. C	Typical
5	H005	N015	N013		BP 7.5X2.5X0.375	Beam	None	A36	Typical
6	H006	N016	N014		BP 7.5X2.5X0.375	Beam	None	A36	Typical
7	H007	N014	N025		PL6X0.375	Beam	None	A36	Typical
8	H008	N005	N033		PL6X0.375	Beam	None	A36	Typical
9	H009	N013	N034		PL6X0.375	Beam	None	A36	Typical
10	H010	N015	N026		PL6X0.375	Beam	None	A36	Typical
11	H011	N016	N043		PL6X0.375	Beam	None	A36	Typical
12	H012	N006	N044		PL6X0.375	Beam	None	A36	Typical
13	H013	N021	N030		PL6X0.5	Beam	None	A36	Typical
14	H014	N022	N039		PL6X0.5	Beam	None	A36	Typical
15	H015	N018	N040		PL6X0.5	Beam	None	A36	Typical
16	H016	N020	N029		PL6X0.5	Beam	None	A36	Typical
17	H017	N017	N037		PL6X0.5	Beam	None	A36	Typical
18	H018	N019	N038		PL6X0.5	Beam	None	A36	Typical
19	H019	N022	N020	180	C3x2x0.25	Beam	None	A653 SS Gr33	Typical
20	H020	N018	N017	180	C3x2x0.25	Beam	None	A653 SS Gr33	Typical
21	H021	N021	N019	180	C3x2x0.25	Beam	None	A653 SS Gr33	Typical
22	H022	N023	N047		(1) 1/2 U-BOLT	Beam	None	A36	Typical
23	H023	N031	N051		(1) 1/2 U-BOLT	Beam	None	A36	Typical
24	H024	N032	N052		(1) 1/2 U-BOLT	Beam	None	A36	Typical
25	H025	N027	N049		(1) 1/2 U-BOLT	Beam	None	A36	Typical
26	H026	N035	N053		(1) 1/2 U-BOLT	Beam	None	A36	Typical
27	H027	N036	N054		(1) 1/2 U-BOLT	Beam	None	A36	Typical
28	H028	N028	N050		(1) 1/2 U-BOLT	Beam	None	A36	Typical
29	H029	N041	N055		(1) 1/2 U-BOLT	Beam	None	A36	Typical
30	H030	N042	N056		(1) 1/2 U-BOLT	Beam	None	A36	Typical
31	H031	N024	N048		(1) 1/2 U-BOLT	Beam	None	A36	Typical
32	H032	N045	N057		(1) 1/2 U-BOLT	Beam	None	A36	Typical

Member Primary Data (Continued)

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
33	H033	N046	N058		(1) 1/2 U-BOLT	Beam	None	A36	Typical
34	H034	N061	N062		PIPE_3.0	Beam	None	A500 Gr. C	Typical
35	H035	N063	N065		PIPE_3.0	Beam	None	A500 Gr. C	Typical
36	H036	N064	N066		PIPE_3.0	Beam	None	A500 Gr. C	Typical
37	H037	N073	N059		L2X2X4	Beam	None	A572-50	Typical
38	H038	N074	N067		L2X2X4	Beam	None	A572-50	Typical
39	H039	N071	N068		L2X2X4	Beam	None	A572-50	Typical
40	H040	N076	N060	270	L2X2X4	Beam	None	A572-50	Typical
41	H041	N072	N069	270	L2X2X4	Beam	None	A572-50	Typical
42	H042	N075	N070	270	L2X2X4	Beam	None	A572-50	Typical
43	H043	N077	N078		PIPE_2.5	Beam	None	A53 Gr. B	Typical
44	H044	N079	N081		PIPE_2.5	Beam	None	A53 Gr. B	Typical
45	H045	N080	N082		PIPE_2.5	Beam	None	A53 Gr. B	Typical
46	H046	N083	N087	180	L6.6X4.46X0.25	Beam	None	A36	Typical
47	H047	N084	N088	180	L6.6X4.46X0.25	Beam	None	A36	Typical
48	H048	N085	N086	180	L6.6X4.46X0.25	Beam	None	A36	Typical
49	H049	N083	N090		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
50	H050	N084	N091		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
51	H051	N085	N092		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
52	H052	N086	N093		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
53	H053	N087	N094		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
54	H054	N088	N095		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
55	U055	N096	N105		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
56	U056	N106	N107		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
57	MP057	N108	N109		PIPE_2.5	Column	None	A500 Gr. C	Typical
58	U058	N097	N110		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
59	U059	N111	N112		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
60	MP060	N113	N114		PIPE_2.5	Column	None	A500 Gr. C	Typical
61	U061	N102	N115		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
62	U062	N116	N117		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
63	MP063	N118	N119		PIPE_2.5	Column	None	A500 Gr. C	Typical
64	U064	N099	N120		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
65	U065	N121	N122		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
66	MP066	N123	N124		PIPE_2.5	Column	None	A500 Gr. C	Typical
67	U067	N101	N125		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
68	U068	N126	N127		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
69	MP069	N128	N129		PIPE_2.5	Column	None	A500 Gr. C	Typical
70	U070	N104	N130		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
71	U071	N131	N132		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
72	MP072	N133	N134		PIPE_2.5	Column	None	A500 Gr. C	Typical
73	U073	N098	N135		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
74	U074	N136	N137		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
75	MP075	N138	N139		PIPE_2.5	Column	None	A500 Gr. C	Typical
76	U076	N100	N140		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
77	U077	N141	N142		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
78	MP078	N143	N144		PIPE_2.5	Column	None	A500 Gr. C	Typical
79	U079	N103	N145		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
80	U080	N146	N147		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
81	MP081	N148	N149		PIPE_2.5	Column	None	A500 Gr. C	Typical
82	U082	N150	N151		(2) 1/2 U-BOLTS	Beam	None	A36	Typical
83	MP083	N152	N153		PIPE_2.0	Column	None	A500 Gr. C	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	H001	HSS4X4X6	40.5			Lbyy		1	1	Lateral
2	H002	BP 7.5X2.5X0.375	36			Lbyy		0.65	0.65	Lateral
3	H003	HSS4X4X6	40.5			Lbyy		1	1	Lateral
4	H004	HSS4X4X6	40.5			Lbyy		1	1	Lateral
5	H005	BP 7.5X2.5X0.375	36			Lbyy		0.65	0.65	Lateral
6	H006	BP 7.5X2.5X0.375	36			Lbyy		0.65	0.65	Lateral
7	H007	PL6X0.375	3			Lbyy		1	1	Lateral
8	H008	PL6X0.375	3			Lbyy		1	1	Lateral
9	H009	PL6X0.375	3			Lbyy		1	1	Lateral
10	H010	PL6X0.375	3			Lbyy		1	1	Lateral
11	H011	PL6X0.375	3			Lbyy		1	1	Lateral
12	H012	PL6X0.375	3			Lbyy		1	1	Lateral
13	H013	PL6X0.5	3			Lbyy		1	1	Lateral
14	H014	PL6X0.5	3			Lbyy		1	1	Lateral
15	H015	PL6X0.5	3			Lbyy		1	1	Lateral
16	H016	PL6X0.5	3			Lbyy		1	1	Lateral
17	H017	PL6X0.5	3			Lbyy		1	1	Lateral
18	H018	PL6X0.5	3			Lbyy		1	1	Lateral
19	H022	(1) 1/2 U-BOLT	1.938			Lbyy		0.65	0.65	Lateral
20	H023	(1) 1/2 U-BOLT	1.938			Lbyy		0.65	0.65	Lateral
21	H024	(1) 1/2 U-BOLT	1.938			Lbyy		0.65	0.65	Lateral
22	H025	(1) 1/2 U-BOLT	1.938			Lbyy		0.65	0.65	Lateral
23	H026	(1) 1/2 U-BOLT	1.938			Lbyy		0.65	0.65	Lateral
24	H027	(1) 1/2 U-BOLT	1.938			Lbyy		0.65	0.65	Lateral
25	H028	(1) 1/2 U-BOLT	1.938			Lbyy		0.65	0.65	Lateral
26	H029	(1) 1/2 U-BOLT	1.938			Lbyy		0.65	0.65	Lateral
27	H030	(1) 1/2 U-BOLT	1.938			Lbyy		0.65	0.65	Lateral
28	H031	(1) 1/2 U-BOLT	1.938			Lbyy		0.65	0.65	Lateral
29	H032	(1) 1/2 U-BOLT	1.938			Lbyy		0.65	0.65	Lateral
30	H033	(1) 1/2 U-BOLT	1.938			Lbyy		0.65	0.65	Lateral
31	H034	PIPE_3.0	96			Lbyy		1	1	Lateral
32	H035	PIPE_3.0	96			Lbyy		1	1	Lateral
33	H036	PIPE_3.0	96			Lbyy		1	1	Lateral
34	H037	L2X2X4	29.445			Lbyy		1	1	Lateral
35	H038	L2X2X4	29.445			Lbyy		1	1	Lateral
36	H039	L2X2X4	29.445			Lbyy		1	1	Lateral
37	H040	L2X2X4	29.445			Lbyy		1	1	Lateral
38	H041	L2X2X4	29.445			Lbyy		1	1	Lateral
39	H042	L2X2X4	29.445			Lbyy		1	1	Lateral
40	H043	PIPE_2.5	120			Lbyy		1	1	Lateral
41	H044	PIPE_2.5	120			Lbyy		1	1	Lateral
42	H045	PIPE_2.5	120			Lbyy		1	1	Lateral
43	H046	L6.6X4.46X0.25	38.376			Lbyy		0.65	0.65	Lateral
44	H047	L6.6X4.46X0.25	38.376			Lbyy		0.65	0.65	Lateral
45	H048	L6.6X4.46X0.25	38.376			Lbyy		0.65	0.65	Lateral
46	H049	(2) 1/2 U-BOLTS	1.5			Lbyy		0.65	0.65	Lateral
47	H050	(2) 1/2 U-BOLTS	1.5			Lbyy		0.65	0.65	Lateral
48	H051	(2) 1/2 U-BOLTS	1.5			Lbyy		0.65	0.65	Lateral
49	H052	(2) 1/2 U-BOLTS	1.5			Lbyy		0.65	0.65	Lateral
50	H053	(2) 1/2 U-BOLTS	1.5			Lbyy		0.65	0.65	Lateral
51	H054	(2) 1/2 U-BOLTS	1.5			Lbyy		0.65	0.65	Lateral
52	U055	(2) 1/2 U-BOLTS	1.641			Lbyy		0.5	0.5	Lateral
53	U056	(2) 1/2 U-BOLTS	1.641			Lbyy		0.5	0.5	Lateral
54	MP057	PIPE_2.5	96	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
55	U058	(2) 1/2 U-BOLTS	1.641			Lbyy		0.5	0.5	Lateral

Hot Rolled Steel Design Parameters (Continued)

	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
56	U059	(2) 1/2 U-BOLTS	1.641			Lbyy		0.5	0.5	Lateral
57	MP060	PIPE_2.5	96	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
58	U061	(2) 1/2 U-BOLTS	1.641			Lbyy		0.5	0.5	Lateral
59	U062	(2) 1/2 U-BOLTS	1.641			Lbyy		0.5	0.5	Lateral
60	MP063	PIPE_2.5	96	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
61	U064	(2) 1/2 U-BOLTS	1.641			Lbyy		0.5	0.5	Lateral
62	U065	(2) 1/2 U-BOLTS	1.641			Lbyy		0.5	0.5	Lateral
63	MP066	PIPE_2.5	96	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
64	U067	(2) 1/2 U-BOLTS	1.641			Lbyy		0.5	0.5	Lateral
65	U068	(2) 1/2 U-BOLTS	1.641			Lbyy		0.5	0.5	Lateral
66	MP069	PIPE_2.5	96	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
67	U070	(2) 1/2 U-BOLTS	1.641			Lbyy		0.5	0.5	Lateral
68	U071	(2) 1/2 U-BOLTS	1.641			Lbyy		0.5	0.5	Lateral
69	MP072	PIPE_2.5	96	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
70	U073	(2) 1/2 U-BOLTS	1.641			Lbyy		0.5	0.5	Lateral
71	U074	(2) 1/2 U-BOLTS	1.641			Lbyy		0.5	0.5	Lateral
72	MP075	PIPE_2.5	96	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
73	U076	(2) 1/2 U-BOLTS	1.641			Lbyy		0.5	0.5	Lateral
74	U077	(2) 1/2 U-BOLTS	1.641			Lbyy		0.5	0.5	Lateral
75	MP078	PIPE_2.5	96	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
76	U079	(2) 1/2 U-BOLTS	1.641			Lbyy		0.5	0.5	Lateral
77	U080	(2) 1/2 U-BOLTS	1.641			Lbyy		0.5	0.5	Lateral
78	MP081	PIPE_2.5	96	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
79	U082	(2) 1/2 U-BOLTS	2.731			Lbyy		0.5	0.5	Lateral
80	MP083	PIPE_2.0	96	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral

Cold Formed Steel Design Parameters

	Label	Shape	Length [in]	Lcomp top [in]	K y-y	K z-z	Function
1	H019	C3x2x0.25	65.445	Lbyy	0.65	0.65	Lateral
2	H020	C3x2x0.25	65.445	Lbyy	0.65	0.65	Lateral
3	H021	C3x2x0.25	65.445	Lbyy	0.65	0.65	Lateral

Member Advanced Data

	Label	I Release	J Release	Physical	Deflection Ratio Options	Activation	Seismic DR
1	H001			Yes	N/A		None
2	H002			Yes	N/A		None
3	H003			Yes	N/A		None
4	H004			Yes	N/A		None
5	H005			Yes	N/A		None
6	H006			Yes	N/A		None
7	H007			Yes	N/A		None
8	H008			Yes	N/A		None
9	H009			Yes	N/A		None
10	H010			Yes	N/A		None
11	H011			Yes	N/A		None
12	H012			Yes	N/A		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	H017			Yes	N/A		None
18	H018			Yes	N/A		None
19	H019			Yes	Default		None

Member Advanced Data (Continued)

	Label	I Release	J Release	Physical	Deflection Ratio Options	Activation	Seismic DR
20	H020			Yes	Default		None
21	H021			Yes	Default		None
22	H022		OOOXOO	Yes	N/A	Exclude	None
23	H023		OOOXOO	Yes	N/A	Exclude	None
24	H024		OOOXOO	Yes	N/A	Exclude	None
25	H025		OOOXOO	Yes	N/A	Exclude	None
26	H026		OOOXOO	Yes	N/A	Exclude	None
27	H027		OOOXOO	Yes	N/A	Exclude	None
28	H028		OOOXOO	Yes	N/A	Exclude	None
29	H029		OOOXOO	Yes	N/A	Exclude	None
30	H030		OOOXOO	Yes	N/A	Exclude	None
31	H031		OOOXOO	Yes	N/A	Exclude	None
32	H032		OOOXOO	Yes	N/A	Exclude	None
33	H033		OOOXOO	Yes	N/A	Exclude	None
34	H034			Yes	N/A		None
35	H035			Yes	N/A		None
36	H036			Yes	N/A		None
37	H037	BenPIN	BenPIN	Yes	N/A		None
38	H038	BenPIN	BenPIN	Yes	N/A		None
39	H039	BenPIN	BenPIN	Yes	N/A		None
40	H040	BenPIN	BenPIN	Yes	N/A		None
41	H041	BenPIN	BenPIN	Yes	N/A		None
42	H042	BenPIN	BenPIN	Yes	N/A		None
43	H043			Yes	N/A		None
44	H044			Yes	N/A		None
45	H045			Yes	N/A		None
46	H046			Yes	N/A		None
47	H047			Yes	N/A		None
48	H048			Yes	N/A		None
49	H049			Yes	N/A	Exclude	None
50	H050			Yes	N/A	Exclude	None
51	H051			Yes	N/A	Exclude	None
52	H052			Yes	N/A	Exclude	None
53	H053			Yes	N/A	Exclude	None
54	H054			Yes	N/A	Exclude	None
55	U055			Yes	N/A	Exclude	None
56	U056			Yes	N/A	Exclude	None
57	MP057			Yes	** NA **		None
58	U058			Yes	N/A	Exclude	None
59	U059			Yes	N/A	Exclude	None
60	MP060			Yes	** NA **		None
61	U061			Yes	N/A	Exclude	None
62	U062			Yes	N/A	Exclude	None
63	MP063			Yes	** NA **		None
64	U064			Yes	N/A	Exclude	None
65	U065			Yes	N/A	Exclude	None
66	MP066			Yes	** NA **		None
67	U067			Yes	N/A	Exclude	None
68	U068			Yes	N/A	Exclude	None
69	MP069			Yes	** NA **		None
70	U070			Yes	N/A	Exclude	None
71	U071			Yes	N/A	Exclude	None
72	MP072			Yes	** NA **		None
73	U073			Yes	N/A	Exclude	None
74	U074			Yes	N/A	Exclude	None

Member Advanced Data (Continued)

	Label	I Release	J Release	Physical	Deflection Ratio Options	Activation	Seismic DR
75	MP075			Yes	** NA **		None
76	U076			Yes	N/A	Exclude	None
77	U077			Yes	N/A	Exclude	None
78	MP078			Yes	** NA **		None
79	U079			Yes	N/A	Exclude	None
80	U080			Yes	N/A	Exclude	None
81	MP081			Yes	** NA **		None
82	U082			Yes	N/A	Exclude	None
83	MP083			Yes	** NA **		None

Hot Rolled Steel Properties

	Label	E [psi]	G [psi]	Nu	Therm. Coeff. [1e⁵°F⁻¹]	Density [lb/ft³]	Yield [psi]	Ry	Fu [psi]	Rt
1	A500 Gr. C	2.9e+07	1.115e+07	0.3	0.65	490	46000	1.4	62000	1.3
2	A36	2.9e+07	1.115e+07	0.3	0.65	490	36000	1.5	58000	1.2
3	A572-50	2.9e+07	1.115e+07	0.3	0.65	490	50000	1.1	65000	1.1
4	A53 Gr. B	2.9e+07	1.115e+07	0.3	0.65	490	35000	1.6	60000	1.2

Cold Formed Steel Properties

	Label	E [psi]	G [psi]	Nu	Therm. Coeff. [1e⁵°F⁻¹]	Density [lb/ft³]	Yield [psi]	Fu [psi]
1	A653 SS Gr33	2.95e+07	1.135e+07	0.3	0.65	490	33000	45000

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	N002	max	1677.701	17	2232.076	26	757.293	14	5407.355	26	1773.703	11	773.499	95
2		min	-1656.158	11	-39.698	20	-845.812	8	-533.463	20	-1797.648	17	-741.839	161
3	N007	max	1084.191	16	2365.33	30	1480.584	3	263.708	24	1740.926	15	463.48	24
4		min	-1157.59	10	-8.803	24	-1436.542	21	-2731.628	31	-1738.25	9	-4649.104	30
5	N008	max	1120.806	6	2383.971	34	1483.4	13	274.383	15	1823.842	7	5198.772	34
6		min	-1030.931	24	-42.311	16	-1432.493	19	-2765.672	33	-1832.893	25	-471.073	16
7	Totals:	max	3540.507	5	6446.271	28	3662.795	2						
8		min	-3503.649	23	1804.262	22	-3666.652	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	H001	HSS4X4X6	0.253	0	28	0.069	0	y	96	188014.085	197892	22045.5	22045.5	1.918	H1-1b
2	H002	BP 7.5X2.5X0.375	0.228	18	20	0.083	18	z	10	86735.388	116943.75	1823.416	13109.779	1.133	H2-1
3	H003	HSS4X4X6	0.251	0	28	0.069	0	y	140	188014.085	197892	22045.5	22045.5	1.948	H1-1b
4	H004	HSS4X4X6	0.274	0	32	0.07	0	y	156	188014.085	197892	22045.5	22045.5	1.9	H1-1b
5	H005	BP 7.5X2.5X0.375	0.226	18	24	0.081	18	z	10	86735.388	116943.75	1823.416	13159.736	1.143	H2-1
6	H006	BP 7.5X2.5X0.375	0.251	18	16	0.091	18	z	6	86735.388	116943.75	1823.416	13070.855	1.125	H2-1
7	H007	PL6X0.375	0.067	0	9	0.315	0	y	8	70011.374	72900	569.531	9112.5	3	H1-1b
8	H008	PL6X0.375	0.065	0	13	0.32	0	y	12	70011.374	72900	569.531	9112.5	3	H1-1b
9	H009	PL6X0.375	0.067	0	5	0.314	0	y	4	70011.374	72900	569.531	9112.5	3	H1-1b
10	H010	PL6X0.375	0.065	0	7	0.308	0	y	8	70011.374	72900	569.531	9112.5	3	H1-1b
11	H011	PL6X0.375	0.074	1.5	11	0.337	0	y	12	70011.374	72900	569.531	9112.5	3	H1-1b
12	H012	PL6X0.375	0.068	0	3	0.319	0	y	4	70011.374	72900	569.531	9112.5	3	H1-1b
13	H013	PL6X0.5	0.102	0	6	0.085	0	y	32	95014.386	97200	1012.5	12150	3	H1-1b
14	H014	PL6X0.5	0.118	0	4	0.094	0	y	36	95014.386	97200	1012.5	12150	3	H1-1b
15	H015	PL6X0.5	0.1	0	2	0.087	0	y	28	95014.386	97200	1012.5	12150	3	H1-1b
16	H016	PL6X0.5	0.102	0	10	0.091	0	y	32	95014.386	97200	1012.5	12150	3	H1-1b

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

	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
17	H017	PL6X0.5	0.108	0	2	0.094	0	y	36	95014.386	97200	1012.5	12150	3	H1-1b
18	H018	PL6X0.5	0.101	0	6	0.085	0	y	28	95014.386	97200	1012.5	12150	3	H1-1b
19	H034	PIPE_3.0	0.086	48	84	0.035	48		12	54628.551	85698	7555.5	7555.5	1.483	H1-1b
20	H035	PIPE_3.0	0.086	48	112	0.034	48		8	54628.551	85698	7555.5	7555.5	1.474	H1-1b
21	H036	PIPE_3.0	0.086	48	132	0.033	48		12	54628.551	85698	7555.5	7555.5	1.485	H1-1b
22	H037	L2X2X4	0.023	14.416	26	0.007	29.445	z	12	27820.237	42480	959.63	2103.936	1.148	H2-1
23	H038	L2X2X4	0.021	14.416	30	0.007	29.445	z	4	27820.237	42480	959.63	2102.792	1.144	H2-1
24	H039	L2X2X4	0.022	14.416	34	0.007	29.445	z	8	27820.237	42480	959.63	2102.806	1.144	H2-1
25	H040	L2X2X4	0.022	14.416	26	0.007	29.445	y	4	27820.237	42480	959.63	2103.589	1.147	H2-1
26	H041	L2X2X4	0.022	14.416	30	0.007	29.445	y	8	27820.237	42480	959.63	2102.819	1.144	H2-1
27	H042	L2X2X4	0.023	14.416	11	0.007	29.445	y	12	27820.237	42480	959.63	2097.905	1.128	H2-1
28	H043	PIPE_2.5	0.127	30	10	0.137	30		8	22373.407	50715	3596.25	3596.25	1.211	H1-1b
29	H044	PIPE_2.5	0.123	30	2	0.138	30		12	22373.407	50715	3596.25	3596.25	1.203	H1-1b
30	H045	PIPE_2.5	0.125	30	6	0.138	90		4	22373.407	50715	3596.25	3596.25	1.198	H1-1b
31	H046	L6.6X4.46X0.25	0.145	0	18	0.028	0	y	7	52864.427	86751	2310.87	6975.691	1.5	H2-1
32	H047	L6.6X4.46X0.25	0.137	38.376	17	0.029	38.376	y	5	52864.427	86751	2310.87	6975.691	1.5	H2-1
33	H048	L6.6X4.46X0.25	0.126	38.376	21	0.028	0	y	3	52864.427	86751	2310.87	6975.691	1.5	H2-1
34	MP057	PIPE_2.5	0.093	66	12	0.024	66		13	39350.1	66654	4726.5	4726.5	3	H1-1b
35	MP060	PIPE_2.5	0.101	66	12	0.033	66		11	39350.1	66654	4726.5	4726.5	3	H1-1b
36	MP063	PIPE_2.5	0.092	66	5	0.026	66		7	39350.1	66654	4726.5	4726.5	2.297	H1-1b
37	MP066	PIPE_2.5	0.089	66	7	0.025	66		5	39350.1	66654	4726.5	4726.5	2.096	H1-1b
38	MP069	PIPE_2.5	0.098	66	12	0.032	66		13	39350.1	66654	4726.5	4726.5	3	H1-1b
39	MP072	PIPE_2.5	0.091	66	12	0.023	66		3	39350.1	66654	4726.5	4726.5	3	H1-1b
40	MP075	PIPE_2.5	0.094	66	4	0.027	66		13	39350.1	66654	4726.5	4726.5	2.143	H1-1b
41	MP078	PIPE_2.5	0.103	66	4	0.032	66		3	39350.1	66654	4726.5	4726.5	2.368	H1-1b
42	MP081	PIPE_2.5	0.097	66	8	0.032	66		17	39350.1	66654	4726.5	4726.5	3	H1-1b
43	MP083	PIPE_2.0	0.028	47	8	0.008	47		8	14540.29	42228	2459.85	2459.85	2.927	H1-1b

Envelope AISI S100-16: LRFD Member Cold Formed Steel Code Checks

	Member	Shape	Code Check	Loc[in]	LC	Shear Check	Loc[in]	Dir	LC	phi*Pn[lb]	phi*Tn[lb]	phi*Mnyy[lb-ft]	phi*Mnzz[lb-ft]	phi*Vny[lb]	phi*Vnz[lb]	Cb	Eqn
1	H019	C3x2x0.25	0.426	32.722	36	0.14	32.722	y	37	33371.215	44282.7	1064.192	2943.339	4702.5	9405	1.325	H2-1
2	H020	C3x2x0.25	0.425	32.722	36	0.139	32.722	y	35	33371.215	44282.7	1064.192	2943.339	4702.5	9405	1.332	H2-1
3	H021	C3x2x0.25	0.394	32.722	28	0.132	32.722	y	33	33371.215	44282.7	1064.192	2943.339	4702.5	9405	1.322	H2-1

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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: BOBOS00028A

BOBOS00028A
445 Prospect Street
Woodstock, Connecticut 06281

September 1, 2023

EBI Project Number: 6223003270

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**1.20%**

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

September 1, 2023

Dish

Emissions Analysis for Site: BOBOS00028A - BOBOS00028A

EBI Consulting was directed to analyze the proposed Dish facility located at **445 Prospect Street** 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 445 Prospect Street 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) in Sector B, 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 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 150 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):	150 feet	Height (AGL):	150 feet	Height (AGL):	150 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 %:	**2.55%**	Antenna B1 MPE %:	**2.55%**	Antenna C1 MPE %:	**2.55%**
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	N/A	Make / Model:	N/A	Make / Model:	COMMSCOPE VHLP2-11 11000
Frequency Bands:		Frequency Bands:		Frequency Bands:	11000 MHz
Gain:		Gain:		Gain:	32.35 dBd
Height (AGL):		Height (AGL):		Height (AGL):	150 feet
Channel Count:		Channel Count:		Channel Count:	1
Total TX Power (W):		Total TX Power (W):		Total TX Power (W):	0.79 Watts
ERP (W):		ERP (W):		ERP (W):	1,364.58
Antenna A2 MPE %:		Antenna B2 MPE %:		Antenna C2 MPE %:	**0.24%**

Site Composite MPE %	
Carrier	**MPE %**
Dish (Combined Sectors):	0.18%
Verizon	1.02%
Site Total MPE % :	1.20%

Dish MPE % Per Sector	
Dish Sector A Total:	0.14%
Dish Sector B Total:	0.18%
Dish Sector C Total:	0.18%
Dish Total MPE % :	0.18%

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	150	2.455685825	600 MHz n71	400.0	0.61%
Dish 2007 MHz n70	4	1377.399723	150	9.552378885	2007 MHz n70	1000.0	0.96%
Dish 2100 MHz n66	4	1409.483484	150	9.774882372	2100 MHz n66	1000.0	0.98%
						Dish Total:	**0.18%**

• 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:	0.14%
Sector B:	0.18%
Sector C:	0.18%
Dish Maximum MPE % (Sector B):	0.18%
Dish Combined Sectors MPE %:	0.18%
Site Total:	1.20%
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **1.20%** of the allowable FCC established general population limit sampled at the ground level at a distance of 164 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

DOCKET NO. 397 - Cellco Partnership d/b/a Verizon Wireless application for a Certificate of Environmental Compatibility and Public need for the construction, maintenance and operation of a telecommunications facility at 445 Prospect Street, Woodstock, Connecticut.	}	Connecticut
	}	Siting
	}	Council
		August 26, 2010

Decision and Order

Pursuant to the foregoing Findings of Fact and Opinion, the Connecticut Siting Council (Council) finds that the effects associated with the construction, maintenance, and operation of a telecommunications facility, including effects on the natural environment; ecological integrity and balance; public health and safety; scenic, historic, and recreational values; forests and parks; air and water purity; and fish and wildlife are not disproportionate, either alone or cumulatively with other effects, when compared to need, are not in conflict with the policies of the State concerning such effects, and are not sufficient reason to deny the application, and therefore directs that a Certificate of Environmental Compatibility and Public Need, as provided by General Statutes § 16-50k, be issued to Cellco Partnership d/b/a Verizon Wireless, hereinafter referred to as the Certificate Holder, for a telecommunications facility at Alternate Site B located at 445 Prospect Street, Woodstock, Connecticut. The Council denies certification of the Original Site and Alternate Site A also located at 445 Prospect Street, Woodstock, Connecticut.

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

1. The tower shall be constructed as a monopole, no taller than necessary to provide the proposed telecommunications services, sufficient to accommodate the antennas of Verizon Wireless and other entities, both public and private, but such tower shall not exceed a height of 160 feet above ground level.

2. The Certificate Holder shall prepare a Development and Management (D&M) Plan for this site in compliance with Sections 16-50j-75 through 16-50j-77 of the Regulations of Connecticut State Agencies. The D&M Plan shall be served on the Town of Woodstock for comment, and all parties and intervenors as listed in the service list, and submitted to and approved by the Council prior to the commencement of facility construction and shall include:
    a) a final site plan(s) of site development to include specifications for the tower, tower foundation, antennas, equipment compound, radio equipment, access road, utility line, and landscaping; and
    b) construction plans for site clearing, grading, landscaping, water drainage, and erosion and sedimentation controls consistent with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control, as amended.

3. Prior to the commencement of operation, the Certificate Holder shall provide the Council worst-case modeling of the electromagnetic radio frequency power density of all proposed entities' antennas at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin No. 65, August 1997. The Certificate Holder shall ensure a recalculated report of the electromagnetic radio frequency power density be submitted to the Council if and when circumstances in operation cause a change in power density above the levels calculated and provided pursuant to this Decision and Order.

4. Upon the establishment of any new State or federal radio frequency standards applicable to frequencies of this facility, the facility granted herein shall be brought into compliance with such standards.

5. The Certificate Holder shall permit public or private entities to share space on the proposed tower for fair consideration, or shall provide any requesting entity with specific legal, technical, environmental, or economic reasons precluding such tower sharing.

6. The Certificate Holder shall provide reasonable space on the tower for no compensation for any Town of Woodstock public safety services (police, fire and medical services), provided such use can be accommodated and is compatible with the structural integrity of the tower.

7. Unless otherwise approved by the Council, if the facility authorized herein is not fully constructed with at least one fully operational wireless telecommunications carrier providing wireless service within eighteen months from the date of the mailing of the Council's Findings of Fact, Opinion, and Decision and Order (collectively called "Final Decision"), this Decision and Order shall be void, this Certificate shall expire, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made. The time between the filing and resolution of any appeals of the Council's Final Decision shall not be counted in calculating this deadline. Authority to monitor and modify this schedule, as necessary, is delegated to the Executive Director. The Certificate Holder shall provide written notice to the Executive Director of any schedule changes as soon as is practicable.

8. Any request for extension of the time period referred to in Condition 7 shall be filed with the Council not later than 60 days prior to the expiration date of this Certificate and shall be served on all parties and intervenors, as listed in the service list, and the Town of Woodstock. Any proposed modifications to this Decision and Order shall likewise be so served.

10. If the facility ceases to provide wireless services for a period of one year, this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made.

11. Any nonfunctioning antenna, and associated antenna mounting equipment, on this facility shall be removed within 60 days of the date the antenna ceased to function.

12. In accordance with Section 16-50j-77 of the Regulations of Connecticut State Agencies, the Certificate Holder shall provide the Council with written notice two weeks prior to the commencement of site construction activities. In addition, the Certificate Holder shall provide the Council with written notice of the completion of site construction, and the commencement of site operation.

13. The Certificate Holder shall remit timely payments associated with annual assessments and invoices submitted by the Council for expenses attributable to the facility under Conn. Gen. Stat. §16-50v.

14. This Certificate may be transferred in accordance with Conn. Gen. Stat. §16-50k(b), provided both the Certificate Holder\transferor and the transferee are current with payments to the Council for their respective annual assessments and invoices under Conn. Gen. Stat. §16-50v. In addition, both the Certificate Holder\transferor and the transferee shall provide the Council a written agreement as to the entity responsible for any quarterly assessment charges under Conn. Gen. Stat. §16-50v(b)(2) that may be associated with this facility.

Pursuant to General Statutes § 16-50p, the Council hereby directs that a copy of the Findings of Fact, Opinion, and Decision and Order be served on each person listed below, and notice of issuance shall be published in the Norwich Bulletin and Stonebridge Press.

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

The parties and intervenors to this proceeding are:

Applicant	**Its Representative**
Cellco Partnership d/b/a Verizon Wireless	Kenneth C. Baldwin, Esq. Robinson & Cole LLP 280 Trumbull Street Hartford, CT 06103-3597

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 1Z9Y4503P220621354

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:	1Z9Y4503P220621354
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:	BOBOS00028A CSC NOTICE

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Read Compass Online

Ryan Burgdorfer

From: UPS <pkginfo@ups.com>
Sent: Monday, September 11, 2023 11:34 AM
To: Ryan Burgdorfer
Subject: UPS Delivery Notification, Tracking Number 1Z9Y4503P203663627

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:	1Z9Y4503P203663627
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:	BOBOS00028A CSC NOTICE

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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 1Z9Y4503P238939747

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:	1Z9Y4503P238939747
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:	BOBOS00028A CSC NOTICE

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Ryan Burgdorfer

From: UPS <pkginfo@ups.com>
Sent: Saturday, September 9, 2023 1:55 PM
To: Ryan Burgdorfer
Subject: UPS Delivery Notification, Tracking Number 1Z9Y4503P232451131

Hello, your package has been delivered.

Delivery Date: Saturday, 09/09/2023
Delivery Time: 1:54 PM
Left At: SIDE DOOR

Set Delivery Instructions | Manage Preferences | View My Packages

CENTERLINE SITE ACQUISITION

Tracking Number:	1Z9Y4503P232451131
Ship To:	BARBARA & FREDERICK RICH 445 PROSPECT ST WOODSTOCK, CT 062811417 US
Number of Packages:	1
UPS Service:	UPS Ground
Package Weight:	1.0 LBS
Reference Number:	BOBOS00028A CSC NOTICE