June 26, 2024

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

RE: Request of DISH Wireless LLC for an Order to Approve the Shared Use of an Existing Tower
5 Perryridge Road, Greenwich, CT 06830
Latitude: 41. 034206° N / Longitude: 73.630848° W

Dear Ms. Bachman:

Pursuant to Connecticut General Statutes ("C.G.S.") §16-50aa, as amended, DISH Wireless LLC ("DISH") hereby requests an order from the Connecticut Siting Council ("Council") to approve the shared use by DISH of an existing telecommunication tower at 5 Perryridge Road in Greenwich (the "Property"). The existing 164'-0" Monopole tower is owned by Greenwich Hospital. The underlying property is owned by Greenwich Hospital. DISH requests that the Council find that the proposed shared use of the Greenwich Hospital tower satisfies the criteria of C.G.S. §16-50aa and issue an order approving the proposed shared use. This modification/proposal includes hardware that is 5G capable through remote software configuration and either or both services may be turned on or off at various times. A copy of this filing is being sent to Patrick LaRow, Planning & Zoning Director – City of Greenwich, John Vallerie, Chief Building Official – City of Greenwich, Michael Perkins – HSC Real Estate, Greenwich Hospital, and Fred Camillo, First Selectman – City of Greenwich.

Background

The existing Greenwich Hospital facility consists of a 164'-0" monopole tower. DISH is licensed by the Federal Communications Commission ("FCC") to provide wireless services throughout the State of Connecticut. DISH and Greenwich Hospital have agreed to the proposed shared use of the 5 Perryridge Road tower pursuant to mutually acceptable terms and conditions. Likewise, DISH and Greenwich Hospital have agreed to the proposed installation of equipment cabinets on the ground on the East side of the tower within the existing compound. Greenwich Hospital has authorized DISH to apply for all necessary permits and approvals that may be required to share the existing tower.

DISH proposes to install 3 antennas and 1 cable at the 99'-0"-foot level. In addition, DISH will install a ground equipment cabinet on a 5'x7' equipment platform. Included in the Construction Drawings are DISH's project specifications for locations of all proposed site improvements. The Construction Drawings also contain specifications for DISH's proposed antennas and groundwork.

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

1. The proposed modification will not result in an increase in the height of the existing structure. The top of the tower is 164'-0"; Dish Wireless LLC proposed antennas will be located at a center line height of 99'-0".

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

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

4. The operation of the proposed antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard. As indicated in the attached power density calculations, the combined site operations will result in a total power density of 10.9976% as evidenced by Exhibit F.

C.G.S. § 16-50aa(c)(1) provides that, upon written request for approval of a proposed shared use, "if the Council finds that the proposed shared use of the facility is technically, legally, environmentally, and economically feasible and meets public safety concerns, the council shall issue an order approving such a shared use." DISH respectfully submits that the shared use of the tower satisfies these criteria.

A. **Technical Feasibility**. The existing Greenwich Hospital tower is structurally capable of supporting DISH's proposed improvements. The proposed shared use of this tower is, therefore, technically feasible. A Feasibility Structural Analysis Report ("Structural Report") prepared for this project confirms that this tower can support DISH's proposed loading. A copy of the Structural Report has been included in this application.

B. **Legal Feasibility.** Under C.G.S. § 16-50aa, the Council has been authorized to issue order approving the shared use of an existing tower such as the Greenwich Hospital tower. This authority complements the Council's prior-existing authority under C.G.S. § 16-50p to issue orders approving the construction of new towers that are subject to the Council's jurisdiction. In addition, § 16-50x(a) directs the Council to "give such consideration to the other state laws and municipal regulations as it shall deem appropriate" in ruling on requests for the shared use of existing tower facilities. Under the statutory authority vested in the Council, an order by the Council approving the requested shared use would permit the Applicant to obtain a building permit for the proposed installations.

C. **Environmental Feasibility.** The proposed shared use of the Greenwich Hospital tower would have a minimal environmental effect for the following reasons:

1. The proposed installation will have no visual impact on the area of the tower. DISH's equipment cabinet would be installed within the existing facility compound. DISH's shared use of this tower therefore will not cause any significant change or alteration in the physical or environmental characteristics of the existing site.

2. Operation of DISH's antennas at this site would not exceed the RF emissions standard adopted by the Federal Communications Commission ("FCC"). Included in the EME report of this filing are the approximation tables that demonstrate that DISH's proposed facility will operate well within the FCC RF emissions safety standards.

3. Under ordinary operating conditions, the proposed installation would not require the use of any water or sanitary facilities and would not generate air emissions or discharges to water bodies or sanitary facilities. After construction is complete the proposed installations would not generate any increased traffic to the Tarpon Towers II facility other than periodic maintenance. The proposed shared use of the Greenwich Hospital tower would, therefore, have a minimal environmental effect, and is environmentally feasible.

D. **Economic Feasibility.** As previously mentioned, DISH has entered into an agreement with Greenwich Hospital for the shared use of the existing facility subject to mutually agreeable terms. The proposed tower sharing is, therefore, economically feasible.

E. **Public Safety Concerns.** As discussed above, the tower is structurally capable of supporting DISH's full array of 3 antennas, 6 RRU radios, 1 OVP and 1 cable and all related equipment. DISH is not aware of any public safety concerns relative to the proposed sharing of the existing Greenwich Hospital tower.

Conclusion

For the reasons discussed above, the proposed shared use of the existing Greenwich Hospital tower at 5 Perryridge Road satisfies the criteria stated in C.G.S. §16-50aa and advances the General Assembly's and the Council's goal of preventing the unnecessary proliferation of towers in Connecticut. The Applicant, therefore, respectfully requests that the Council issue an order approving the proposed shared use.

Sincerely,

Michael Jones
President, M+K Development
140 Beach 137th St
Rockaway Beach, NY 11694
732-677-8881

CC:
Patrick LaRow, Planning & Zoning Director – City of Greenwich
John Vallerie, Chief Building Official – City of Greenwich
Fred Camillo, First Selectman – City of Greenwich.
Michael Perkins – HSC Real Estate, Greenwich Hospital

MK DEVELOPMENT

EXHIBIT A

Letter of Authorization

Letter of Authorization

April 15, 2024

Dish Wireless, LLC
5701 South Santa Fe Drive
Littleton, CO 80120

Re: Development Application Letter of Authorization – 5 Perryridge Road, Greenwich, CT 06830 – NJJER02021B

Dear Sir/Madam

Greenwich Hospital owns the facility at 5 Perryridge Road, Greenwich, CT 06830 and identified as Parcel # 565736-688421 (the "Property"). Greenwich Hospital hereby authorizes DISH Wireless LLC ("DISH") and its agent, O4 Innovations and M&K Development LLC, to file applications for the sole purpose of gaining any zoning approval and building permit(s) to install new telecommunications equipment ("Equipment") on an existing monopole of the Property. DISH and its aforementioned agents shall not have authority to agree to any stipulations associated with their business before the Building Department that results in a duty on the part of Greenwich Hospital that Greenwich Hospital has not expressly permitted in writing.

DISH shall not be permitted to install the Equipment on the property until DISH provides a copy of its building permit from the Town and until DISH complies with any and all requirements set forth in DISH's lease with Greenwich Hospital.

Please contact me at (c) 203-415-5325, (w) 203-863-2977 or michael.perkins@ynhh.org should you have any questions or concerns.

Sincerely,

Michael Perkins
New Yale Haven Health System
HSC Real Estate, Greenwich Hospital

MK DEVELOPMENT

EXHIBIT B

Property Card

ADMINISTRATIVE INFORMATION

PARCEL NUMBER
07-4009/S

Parent Parcel Number

Property Address
PERRYRIDGE ROAD 0005

Neighborhood
2200 WEST PUTNAM

Property Class
299 Exempt Commercial

TAXING DISTRICT INFORMATION

Jurisdiction	57	Greenwich, CT
Area	001	
Corporation	057	
District	07	
Section & Plat	167	
Routing Number	6578W0001	

Site Description

Topography:

Public Utilities:
Sewer, Electric

Street or Road:

Neighborhood:

Zoning:
H-1 Hospital Zone

Legal Acres:
7.3274

OWNERSHIP

GREENWICH HOSPITAL
C/O NANCYE FRITZ FACILITIES MGMT
5 PERRYRIDGE ROAD
GREENWICH, CT 06830

LOT NO 1 2 3 4 PERRYRIDE RD & LAKE AVE W1 1A

Tax ID 247/113 Printed 06/24/2024 Card No. 1 of 2

TRANSFER OF OWNERSHIP

Date		
01/06/2012	GREENWICH HOSPITAL ASSOCIATION THE Bk/Pg: 6265, 4	$0
07/03/1990	NA Bk/Pg: 2051, 54	$0

EXEMPT

VALUATION RECORD

Assessment Year		10/01/2018	10/01/2019	10/01/2020	10/01/2021	10/01/2021	10/01/2022	10/01/2023
Reason for Change		2018 List	2019 List	2020 List	2021 Prelim	2021 Final	2022 List	2023 List
VALUATION	L	13938000	13938000	13938000	13938000	13938000	13938000	13938000
Market	B	357825800	359693100	359693100	378983600	378983600	378983600	378983600
	T	371763800	373631100	373631100	392921600	392921600	392921600	392921600
VALUATION	L	9756600	9756600	9756600	9756600	9756600	9756600	9756600
70% Assessed	B	250478060	251785170	251785170	265288520	265288520	265288520	265288520
	T	260234660	261541770	261541770	275045120	275045120	275045120	275045120

LAND DATA AND CALCULATIONS

Land Type	Rating Soil ID -or- Actual Frontage	Measured Acreage -or- Effective Frontage	Table Effective Depth	Prod. Factor -or- Depth Factor -or- Square Feet	Base Rate	Adjusted Rate	Extended Value	Influence Factor	Value
1 Primary Commercial				319181.38	58.22	58.22	18584000 0	-25%	13938000

BP14: 14-2040,HVAC $0
BP17: BP 15-2229: Emergency Rm Ren.
BP18: 18-0686: New Infusion Room $76,300, 17-1699: IVF Lab. $555,000,
18-0029: Reno. Phamacy $1,600,000: All Permits 100% Complete
BP19: 19-0413: $1,300,000 Temporary Vestibule/ Renovate Cath Lab #2
19-0430: $1,400,000 Renovate Medical Suites 1st & 3rd. Floor
19-0940: $679,000 Cafeteria Renovation
19-1832: $1,050,000 Convert Outpatient to Medical Office Suite
19-1745: $2,183,000 Convert Physical Therapy Suite to Med. Offi.
BP20: 20-5116: $8,640,000 Convert part of 2nd. & 3rd. Fl. Watson Pav.
BP21: 20-5116: $8,640,000 Convert part of 2nd. & 3rd. Fl. Watson Pav.
20-7246: $95,6978 Modify Surgery for Covid
BP22: 20-5116: $8,640,000 Convert part of 2nd/3rd. Fl. Watson (On Hold)
22-1302: $872,500 CT Replacement
22-1487: $580,400 Pediatric Surgery Renovation
DBA: Greenwich Hospital
GEN: G02: Halmsley Wing; G03: Voided w/ demo cmplt 4/06

Permit Number Type	FilingDate	Est. Cost Field Visit Est. SqFt

Supplemental Cards

TRUE TAX VALUE 13938000

Supplemental Cards
TOTAL LAND VALUE 13938000

IMPROVEMENT DATA

PHYSICAL CHARACTERISTICS

ROOFING

Built-up

WALLS

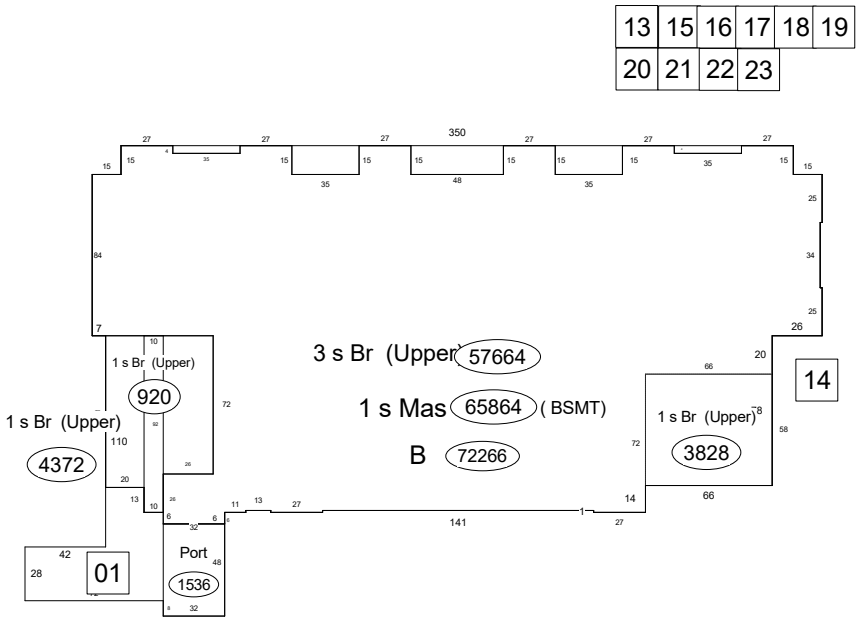
	B	1	2	U
Frame				
Brick	Yes	Yes	Yes	Yes
Metal				
Guard				

FRAMING

	B	1	2	U
R Conc	72266	65864	0	0
F Prf	0	0	65864	116248

HEATING AND AIR CONDITIONING

	B	1	2	U
Heat	72266	34518	65864	116248
Sprink	72266	31346	65864	116248



Helmsley Wing

Item Description	Units	Cost	Total	Pct
M & S Cost Database Date: 07/2020				
Base Cost	247976	420.68	104317593	
Exterior Walls	247976	57.35	14220646	
Heating & Cooling	216630	23.12	5008916	
Sprinklers	213458	6.54	1396130	
Basic Structure Cost	247976	503.85	124943285	
Parking Basement	72266	66.73	4822310	
Heating & Cooling	72266	14.10	1018950	
Sprinklers	72266	6.45	466116	
Building Cost New	247976	529.29	131250661	
Physical	0	0.00	8413722	6.41
Depreciated Cost	247976	495.36	122836939	
Rounded Total	0	0.00	122836900	
PORT	1536	30.80	47310	
Total Exterior Features			47310	
Depreciated Ext Features			44280	
Total Before Adjustments			122881180	
Neighborhood Adjustment			61440620	50.00
TOTAL VALUE			184321800	

(LCM: 150.00)

SPECIAL FEATURES

Description	Value
C : Remod 2013	

SUMMARY OF IMPROVEMENTS

ID	Use	Stry Hgt	Const Type	Grade	Year Const	Eff Year	Cond	Base Rate	Feat-ures	Adj Rate	Size or Area	Computed Value	Phys Depr	Obsol Depr	Market Adj	% Comp	Value
C	HOSPITAL	0.00		Exe	1999	1999	EX	0.00	N	0.00	132648	0	0	0	150	100	184321800
01	PAVING	0.00	6	Gd+	1996	1996	AV	5.20	N	12.90	2816	36330	30	0	100	100	25400
13	RTWCONC	12.00	6D	Exe	1999	2000	VG	26.00	N	97.50	12x280	27300	10	0	100	100	24600
14	BusShelt	0.00		Good	2001	2001	GD	0.00	N	0.00	0	16000	10	SV	100	100	14400
15	MEZZFO	1.00		Exe	2004	2005	EX	50.65	N	189.94	12x 22	49000	5	0	100	100	46600
16	ELEVCOM	3.00	2H	Exe	1999	2005	EX	178685	N	670069	2@ 0	1340140	5	0	100	100	1273100
17	ELEVCOM	2.00	2H	Exe	1999	2005	EX	178685	N	670069	2@ 0	1340140	5	0	100	100	1273100
18	ELEVCOM	5.00	2E	Exe	1999	2005	EX	178685	N	670069	2@ 0	1340140	5	0	100	100	1273100
19	ELEVCOM	4.00	2E	Exe	1999	2005	EX	178685	N	670069	5@ 0	3350340	5	0	100	100	3182800
20	LOADDOCK	3.00	6	Good	2006	2006	GD	25.80	N	50.31	6x 42	12830	5	0	100	100	12200
21	LOADDOCK	3.00	6	Good	2006	2006	GD	25.80	N	50.31	6x 28	8600	5	0	100	100	8200
22	COMCNPYG	0.00		Good	2006	2006	GD	76.30	N	171.68	14x 46	114510	5	0	100	100	108800
23	COMCNPYG	0.00		Good	2006	2006	GD	76.30	N	171.68	14x 32	79660	5	0	100	100	75700

Data Collector/Date
TD 09/30/2019

Appraiser/Date
TOG 10/01/2021

Neighborhood
Neigh 2200 AV

Supplemental Cards

TOTAL IMPROVEMENT VALUE 191639800

ADMINISTRATIVE INFORMATION **OWNERSHIP** Tax ID 247/113 Printed 06/24/2024 Card No. 2 of 2

TRANSFER OF OWNERSHIP

Date

VALUATION RECORD

Assessment Year

Reason for Change

VALUATION

Site Description

LAND DATA AND CALCULATIONS

Land Type	Rating Soil ID -or- Actual Frontage	Measured Acreage -or- Effective Frontage	Table Effective Depth	Prod. Factor -or- Depth Factor -or- Square Feet	Base Rate	Adjusted Rate	Extended Value	Influence Factor	Value

GEN: C02: Helmsley Wing; C03: Voided w/ demo cmplt 4/06
(Original South Wing); C04: Watson Wing; CO3 had 2 bsmt lvls,
one sktchd as 1st flr area to allow for hosp use; similarly for
C02.
LAND: Rev 03 based on Survey for Watson Pavillion. Total acreage for
07-4009/s and 07-4036/s = 9.3669 acres. This parcel adj to =
total together w/ 07-4036/s.
0=OTHER
UCIC: 20-5116 No Start, Recheck 2023
VC: COST

Supplemental Cards
TOTAL LAND VALUE

IMPROVEMENT DATA

PHYSICAL CHARACTERISTICS

ROOFING

Built-up

WALLS

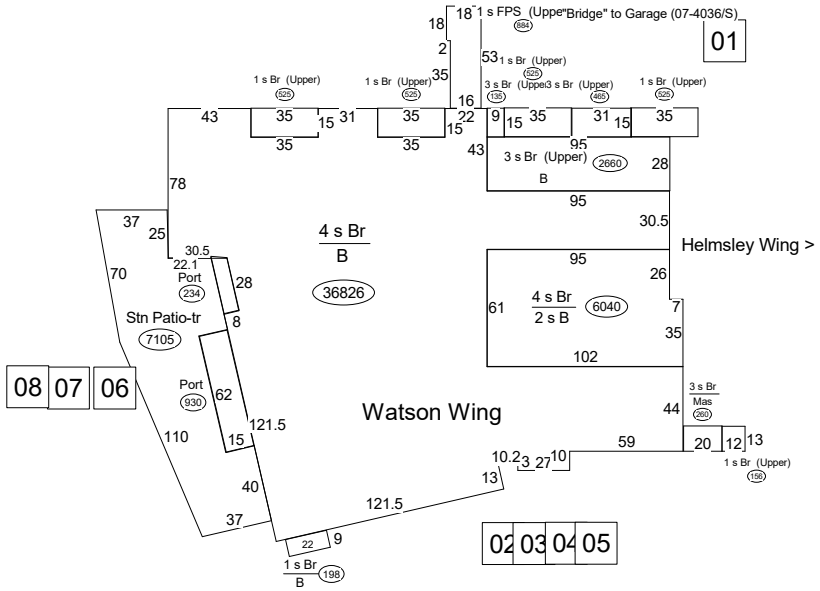
	B	1	2	U
Frame		Yes		
Brick	Yes		Yes	Yes
Metal				
Guard				

FRAMING

	B	1	2	U
R Conc	51764	0	0	0
F Prf	0	44208	48486	92928

HEATING AND AIR CONDITIONING

	B	1	2	U
Heat	11486	44208	48486	92928
Sprink	51764	44208	48486	92928



Item Description	Units	Cost	Total	Pct
M & S Cost Database Date: 07/2020				
Base Cost	185622	544.02	100982100	
Exterior Walls	185622	72.83	13519260	
Heating & Cooling	185622	26.73	4961388	
Sprinklers	185622	6.56	1216957	
Basic Structure Cost	185622	650.14	120679705	
Office Basement	51764	82.99	4295894	
Heating & Cooling	11486	15.46	177574	
Sprinklers	51764	7.25	375228	
Building Cost New	185622	676.26	125528401	
Physical	0	0.00	3937688	3.14
Depreciated Cost	185622	655.04	121590713	
Rounded Total	0	0.00	121590700	
PORT	234	32.86	7690	
PORT	930	30.80	28640	
FSP-TR	7105	26.69	189630	
Total Exterior Features			225960	
Depreciated Ext Features			218860	
Total Before Adjustments			121809560	
Neighborhood Adjustment			60904740	50.00
TOTAL VALUE			182714300	

(LCM: 150.00)

SPECIAL FEATURES

Description	Value
C : Remod 2012	

SUMMARY OF IMPROVEMENTS

ID	Use	Stry Hgt	Const Type	Grade	Year Const	Eff Year	Cond	Base Rate	Feat-ures	Adj Rate	Size or Area	Computed Value	Phys Depr	Obsol Depr	Market Adj	% Comp	Value
C	HOSPITAL	0.00		Exe	2005	2005	EX	0.00	N	0.00	49724	0	0	0	150	100	182714300
01	TOWER	164.00	5PF	Exe	2003	2003	VG	0.00	N	0.00	164	450000	10	SV	100	100	405000
02	ELEVCOM	6.00	2E	Exe	2005	2005	EX	178685	N	670069	3@ 0	2010210	5	0	100	100	1909700
03	ELEVCOM	5.00	2E	Exe	2005	2005	EX	178685	N	670069	2@ 0	1340140	5	0	100	100	1273100
04	ELEVFRT	5.00	2E	Exe	2005	2005	EX	102075	N	382781	1@ 0	382780	5	0	100	100	363600
05	ELEVFRT	6.00	2E	Exe	2005	2005	EX	102075	N	382781	1@ 0	382780	5	0	100	100	363600
06	Pat.Rail	0.00		Exe	2006	2006	EX	0.00	N	0.00	0	3500	3	SV	100	100	3400
07	RTWCONC	10.00	6D	Exe	2006	2006	EX	26.00	N	97.50	10x510	49730	3	0	100	100	48200
08	WALKPAT	0.00	7	Good	2006	2006	GD	15.00	N	33.75	8200	276750	5	0	100	100	262900

Data Collector/Date

TD 09/30/2019

Appraiser/Date

TOG 10/01/2021

Neighborhood

Neigh 2200 AV

Supplemental Cards

TOTAL IMPROVEMENT VALUE 187343800

MK DEVELOPMENT

EXHIBIT C

Construction Drawings

DISH Wireless L.L.C. SITE ID:

NJJER02021B

DISH Wireless L.L.C. SITE ADDRESS:

5 PERRYRIDGE ROAD
GREENWICH, CT 06830

CONNECTICUT CODE OF COMPLIANCE

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

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

SHEET INDEX

SCOPE OF WORK

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

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

GROUND SCOPE OF WORK:
- INSTALL (1) PROPOSED 5'-0" X 7'-0" PLATFORM
- INSTALL (1) PROPOSED STAIR
- INSTALL (1) PROPOSED EQUIPMENT CABINET
- INSTALL (1) PROPOSED PPC CABINET
- INSTALL (1) PROPOSED POWER CONDUIT
- INSTALL (1) PROPOSED TELCO CONDUIT
- INSTALL (1) PROPOSED TELCO-FIBER BOX
- INSTALL (1) PROPOSED GPS UNIT
- INSTALL (1) PROPOSED FIBER NID (IF REQUIRED)
- INSTALL (1) PROPOSED METER SOCKET
- INSTALL (1) PROPOSED WORK LIGHT
- INSTALL STAKED WOLMANIZED WOOD EDGING

SITE PHOTO

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

CALL 2 WORKING DAYS UTILITY NOTIFICATION PRIOR TO CONSTRUCTION

811

GENERAL NOTES

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

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

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

SITE INFORMATION

PROPERTY OWNER:	GREENWICH HOSPITAL
ADDRESS:	5 PERRYRIDGE ROAD GREENWICH, CT 06830
TOWER TYPE:	MONOPOLE
TOWER CO SITE ID:	NA
TOWER APP NUMBER:	NA
COUNTY:	FAIRFIELD COUNTY
LATITUDE (NAD 83):	41° 02' 03.1" N 41.034206
LONGITUDE (NAD 83):	73° 37' 51.1" W -73.630848
ZONING JURISDICTION:	TBD
ZONING DISTRICT:	H-1
PARCEL NUMBER:	565736-688421
OCCUPANCY GROUP:	U
CONSTRUCTION TYPE:	II-B
POWER COMPANY:	EVERSOURCE
TELEPHONE COMPANY:	TBD

PROJECT DIRECTORY

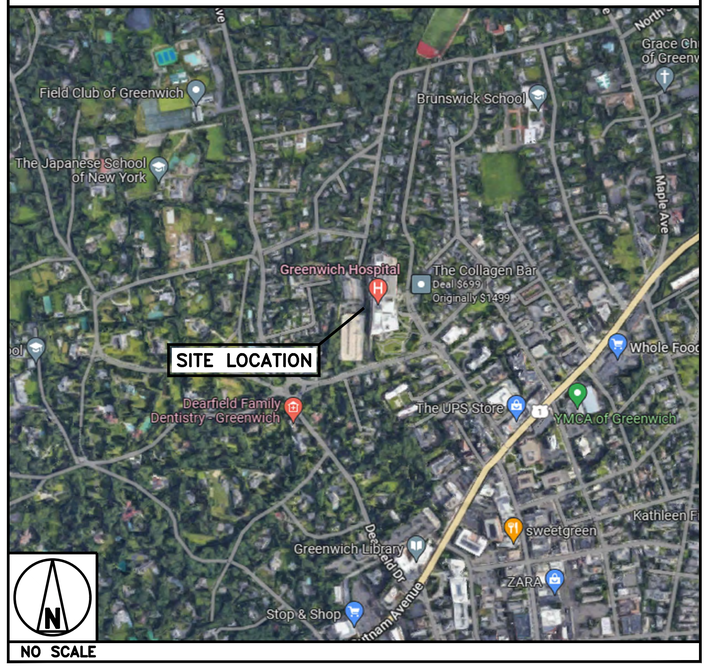
APPLICANT:	DISH Wireless L.L.C. 5701 SOUTH SANTA FE DRIVE LITTLETON, CO 80120 (303) 706-5008
TOWER OWNER:	GREENWICH HOSPITAL 5 PERRYRIDGE ROAD GREENWICH, CT 06830 877-589-6411
SITE DESIGNER:	M+K DEVELOPMENT 140 BEACH 137TH STREET ROCKAWAY BEACH, NY 11694
SITE ACQUISITION:	ALEXIS ELAGMI ALEXIS.ELAGMI@DISH.COM
CONSTRUCTION MANAGER:	CALVIN GRAY CALVIN.GRAY@DISH.COM
RF ENGINEER:	PAWAN MADAHAR PAWAN.MADAHAR@DISH.COM

DIRECTIONS

DIRECTIONS FROM 3 ADP BLVD. ROSELAND, NJ 07068:

HEAD NORTHEAST TOWARD ADP BLVD, TURN LEFT, TURN LEFT TOWARD ADP BLVD, TURN LEFT TOWARD ADP BLVD, TURN LEFT ONTO ADP BLVD, TURN RIGHT TOWARD CHOCTAW WAY, SLIGHT RIGHT ONTO CHOCTAW WAY USE THE LEFT LANE TO TURN RIGHT ONTO LIVINGSTON AVE, USE THE RIGHT LANE TO TAKE THE RAMP ONTO I-280 E, CONTINUE ON I-280 E. DRIVE FROM I-95 N, I-95 LOWER LEVEL N/U.S. 1 LOWER LEVEL N, I-87 N, CROSS COUNTY PKWY AND HUTCHINSON RIVER PKWY N TO GREENWICH. TAKE EXIT 19B FROM HUTCHINSON RIVER PKWY N, FOLLOW GLEN RIDGE RD AND GLENVILLE ST TO YOUR DESTINATION, TURN LEFT TOWARD GLEN RIDGE RD, TURN LEFT ONTO GLEN RIDGE RD, GLEN RIDGE RD TURNS LEFT AND BECOMES GLENVILLE ST, TURN RIGHT TOWARD LAKE AVE, AT THE TRAFFIC CIRCLE, TAKE THE 2ND EXIT ONTO LAKE AVE, TURN LEFT, KEEP LEFT DESTINATION WILL BE ON THE LEFT

VICINITY MAP



NO SCALE

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

M+K DEVELOPMENT
140 BEACH 137TH STREET
ROCKAWAY, NY 11694

STATE OF CONNECTICUT
BRETT A. MALLGRAVE
33678
REGISTERED PROFESSIONAL ENGINEER
6/20/2024

DRAWN BY:	CHECKED BY:	APPROVED BY:
CHE	---	---

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	06/05/2024	ISSUED FOR REVIEW
0	06/20/2024	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

NJJER02021B

DISH Wireless L.L.C.
PROJECT INFORMATION

NJJER02021B
5 PERRYRIDGE ROAD
GREENWICH, CT 06830

SHEET TITLE

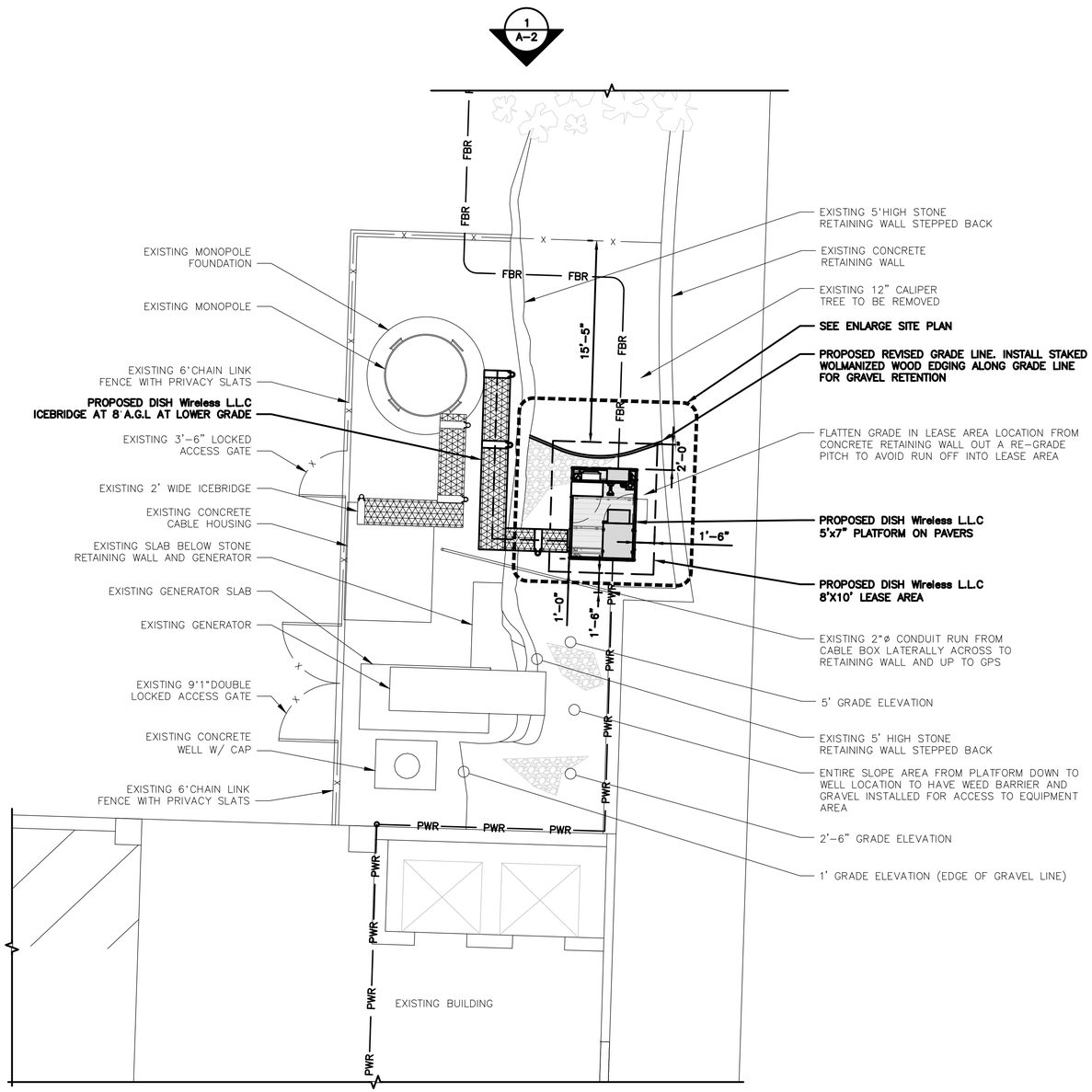
TITLE SHEET

SHEET NUMBER

T-1

NOTES

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



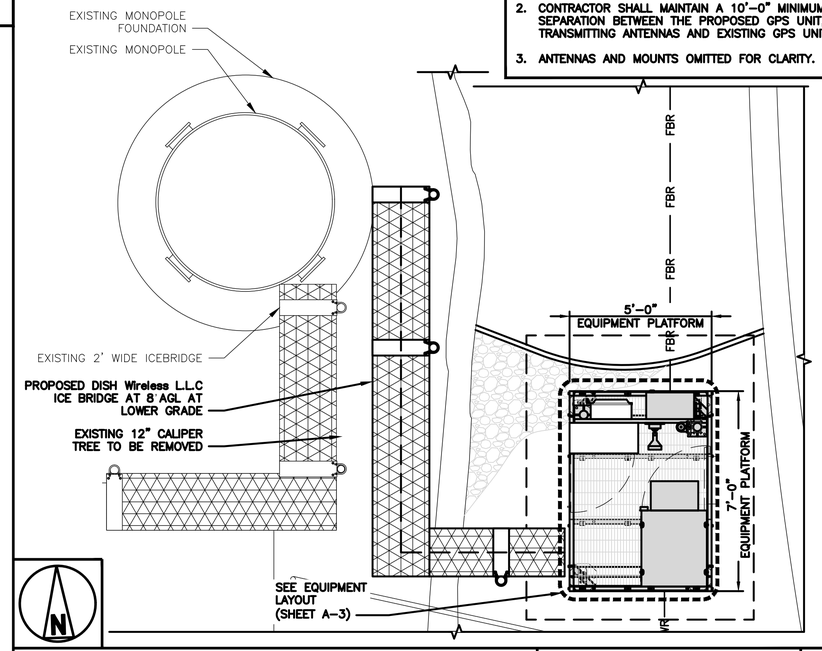
OVERALL SITE PLAN

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

1

NOTES

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



ENLARGED SITE PLAN

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

2

AERIAL PHOTO

NO SCALE

3

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BRETT A. MAGNUSSEN
33678
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PROJECT INFORMATION

NJJER02021B
5 PERRYRIDGE ROAD
GREENWICH, CT 06830

SHEET TITLE

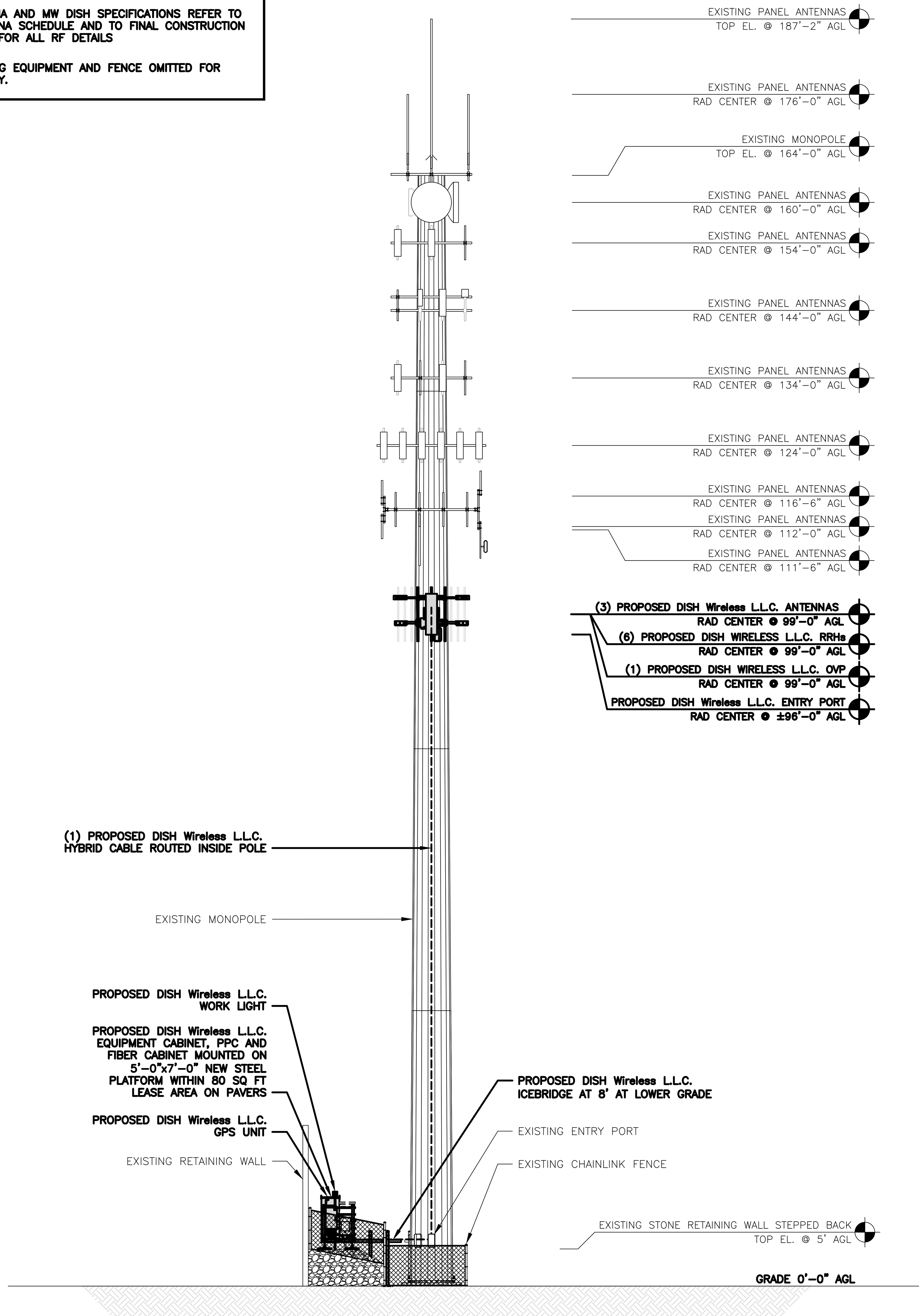
OVERALL AND ENLARGED SITE PLAN

SHEET NUMBER

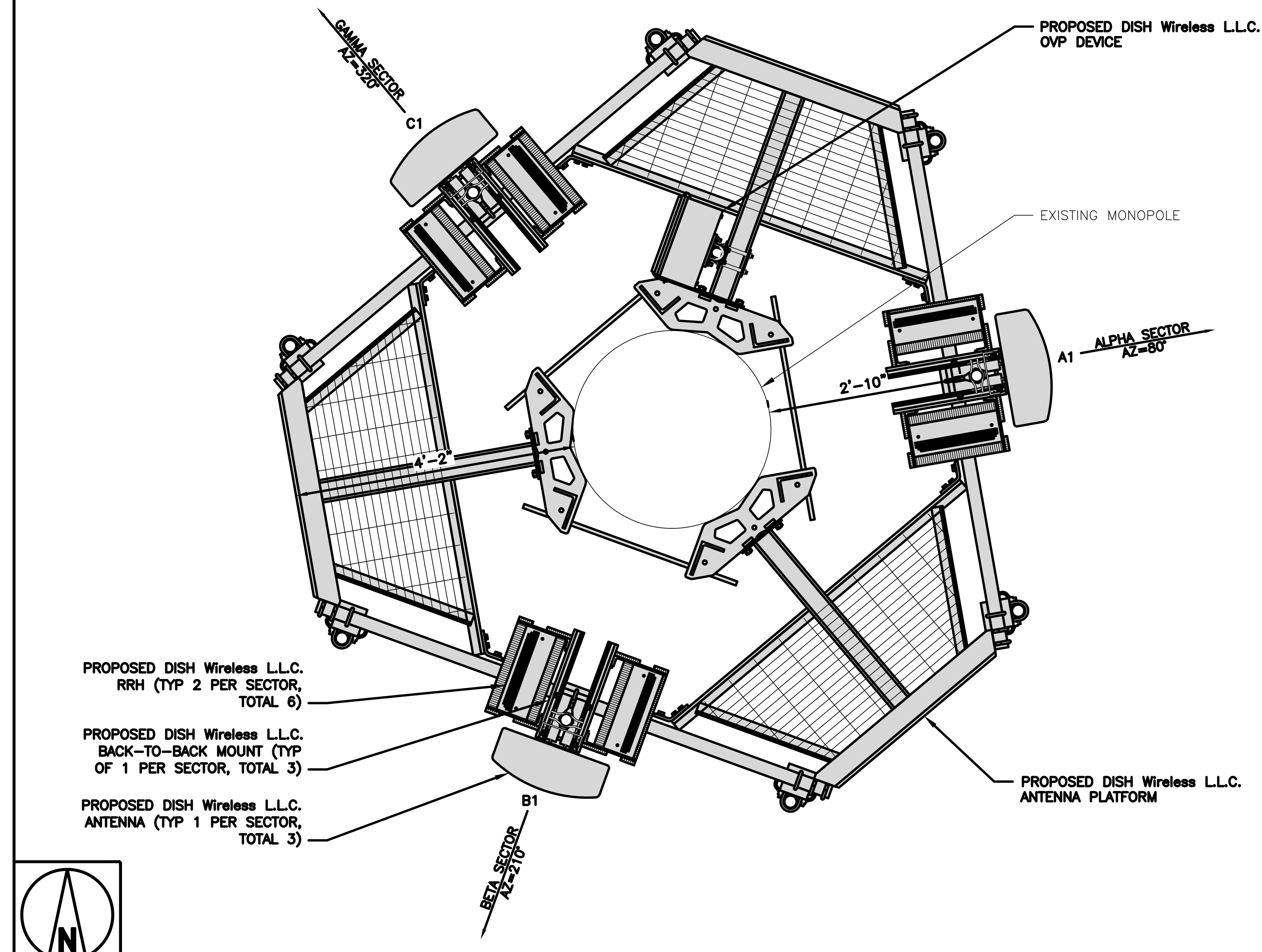
A-1

NOTES

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



PROPOSED NORTH ELEVATION — 12' 8' 4' 0 10' 20' — 3/32"=1'-0" — 1



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

SECTOR POS.	ANTENNA					TRANSMISSION CABLE	RRH			OVP
	EXISTING OR PROPOSED	MANUFACTURER – MODEL NUMBER	TECH	AZIMUTH	RAD CENTER	FEED LINE TYPE AND LENGTH	MANUFACTURER – MODEL NUMBER	TECH	POS.	MANUFACTURER MODEL
A1	PROPOSED	COMMSCOPE FFVV-65B-R2	5G	80°	99'-0"	(1) HIGH-CAPACITY HYBRID CABLE (132' LONG)	SAMSUNG – MID BAND SFG-ARR3KM01DI_RF4451D-70A SAMSUNG – LOW BAND SFG-ARR3J601DI_RF4450T-71A	5G	A1	RAYCAP RDIDC-9181-PF-48
B1	PROPOSED	COMMSCOPE FFVV-65B-R2	5G	200°	99'-0"	SHARED	SAMSUNG – MID BAND SFG-ARR3KM01DI_RF4451D-70A SAMSUNG – LOW BAND SFG-ARR3J601DI_RF4450T-71A	5G	B1	–
C1	PROPOSED	COMMSCOPE FFVV-65B-R2	5G	320°	99'-0"	SHARED	SAMSUNG – MID BAND SFG-ARR3KM01DI_RF4451D-70A SAMSUNG – LOW BAND SFG-ARR3J601DI_RF4450T-71A	5G	C1	–

NOTES

1. CONTRACTOR TO REFER TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS.
2. ANTENNA AND RRH MODELS MAY CHANGE DUE TO EQUIPMENT AVAILABILITY. ALL EQUIPMENT CHANGES MUST BE APPROVED AND REMAIN IN COMPLIANCE WITH THE PROPOSED DESIGN AND STRUCTURAL ANALYSES.

ANTENNA SCHEDULE — NO SCALE — 3

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MK DEVELOPMENT
140 BEACH 137TH STREET
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STATE OF CONNECTICUT — BRETT J. MAGNAM — 33678 — PROFESSIONAL ENGINEER — 6/20/2024

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RFDS REV #: ---

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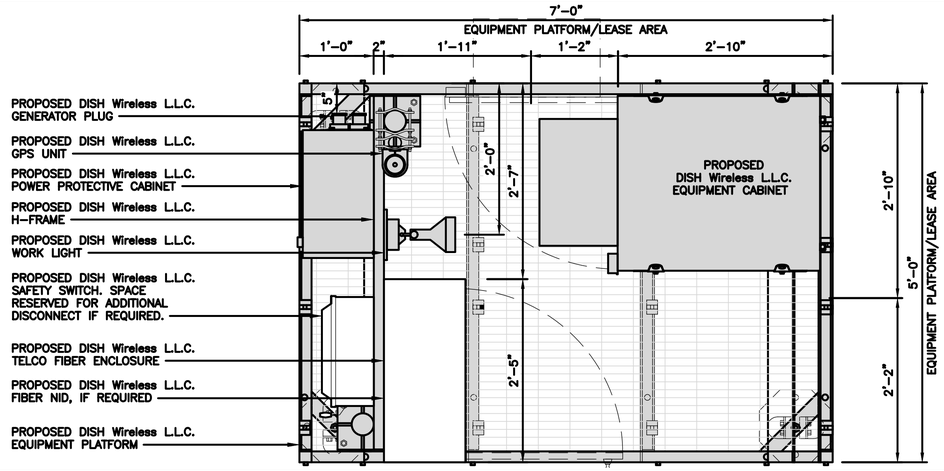
DISH Wireless L.L.C. PROJECT INFORMATION
NJJER02021B
5 PERRYRIDGE ROAD
GREENWICH, CT 06830

SHEET TITLE
ELEVATION, ANTENNA LAYOUT AND SCHEDULE

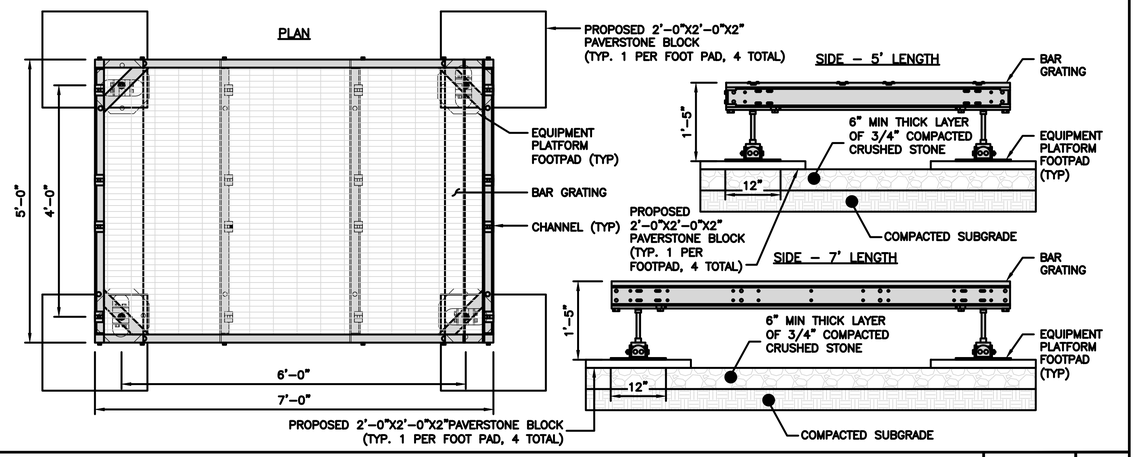
SHEET NUMBER
A-2



PLATFORM EQUIPMENT PLAN | NO SCALE | 1

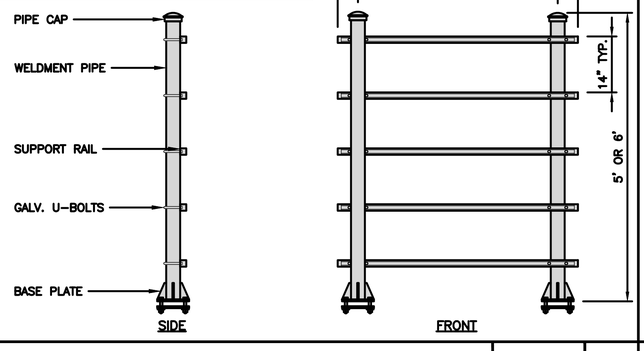
COMMSCOPE MTC4045LP 5X7 PLATFORM	
DIMENSIONS (HxWxD)	16"x84"x60"
TOTAL WEIGHT	423 LBS

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



PLATFORM DETAIL | NO SCALE | 2

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

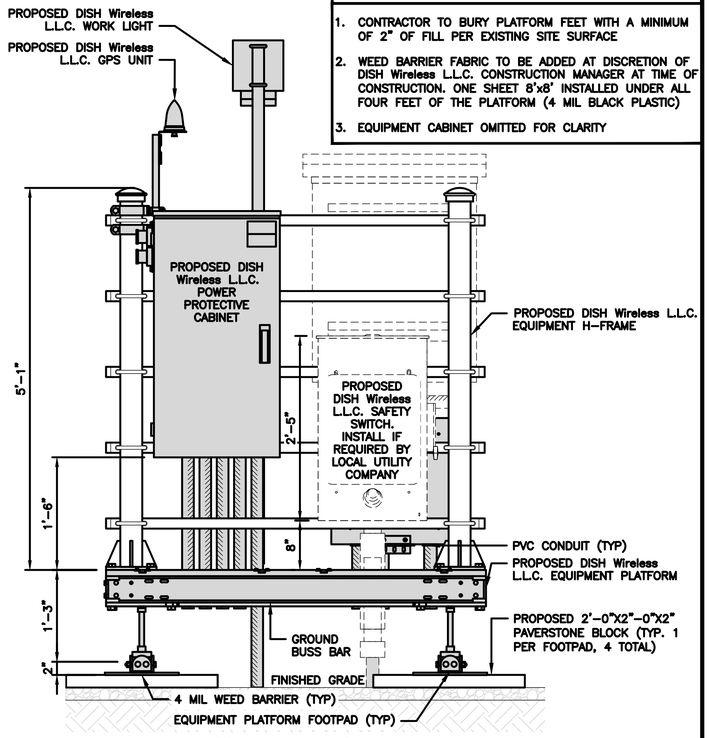


H-FRAME DETAIL | NO SCALE | 3

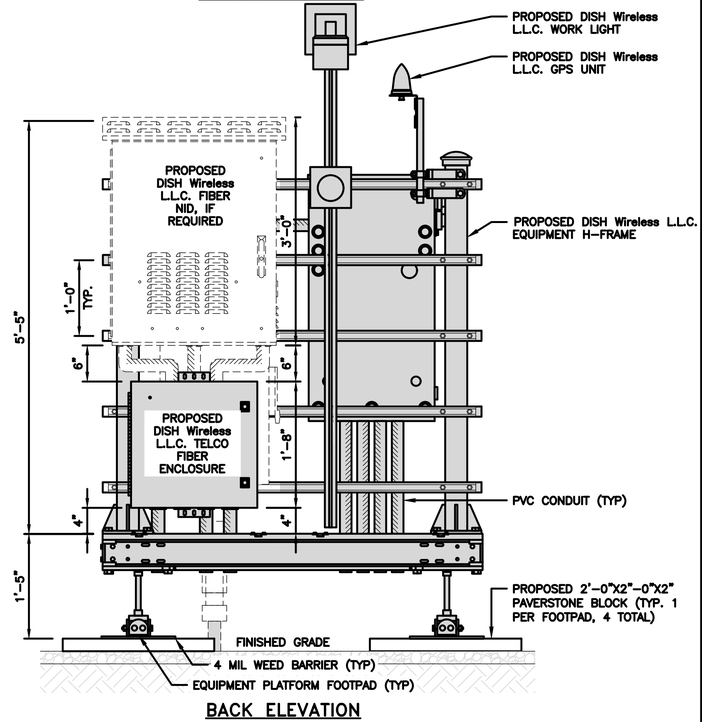
NOT USED | NO SCALE | 4

NOTES

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



FRONT ELEVATION



BACK ELEVATION

H-FRAME EQUIPMENT ELEVATION | NO SCALE | 5

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140 BEACH 137TH STREET
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BRETT MALLGRAVE
33678
PROFESSIONAL ENGINEER
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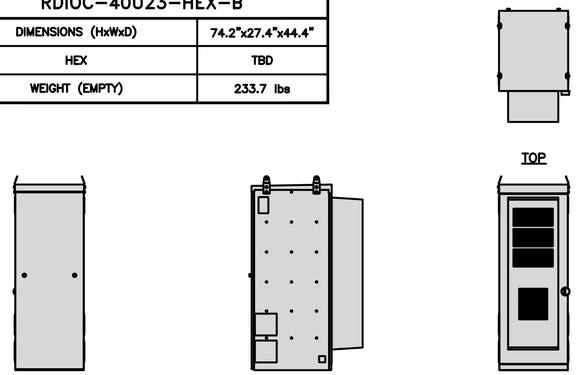
DISH Wireless L.L.C.
PROJECT INFORMATION
NJJER02021B
5 PERRYRIDGE ROAD
GREENWICH, CT 06830

SHEET TITLE
EQUIPMENT PLATFORM AND H-FRAME DETAILS

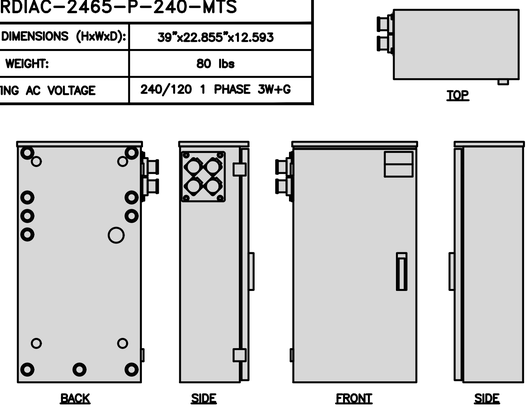
SHEET NUMBER
A-3

RAYCAP RDIOC-40U23-HEX-B	
DIMENSIONS (HxWxD)	74.2"x27.4"x44.4"
HEX	TBD
WEIGHT (EMPTY)	233.7 lbs



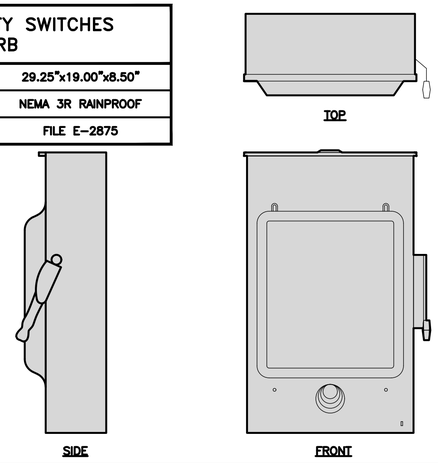
CABINET DETAIL | NO SCALE | 1

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



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

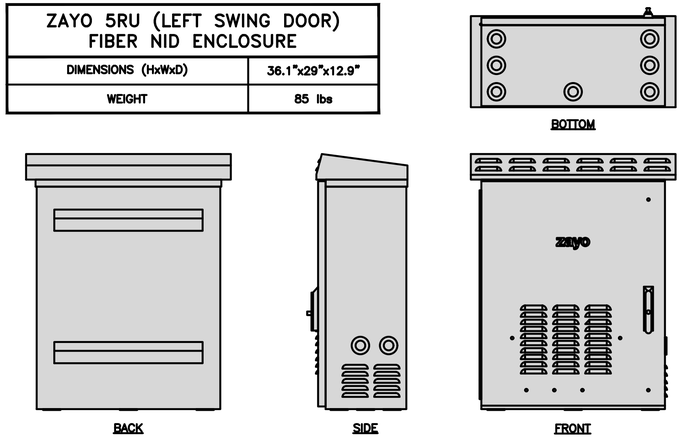
SQUARE D SAFETY SWITCHES D224NRB	
ENCLOSURE DIM (HxWxD)	29.25"x19.00"x8.50"
ENCLOSURE TYPE	NEMA 3R RAINPROOF
UL LISTED	FILE E-2875



SAFETY SWITCH DETAIL | NO SCALE | 3

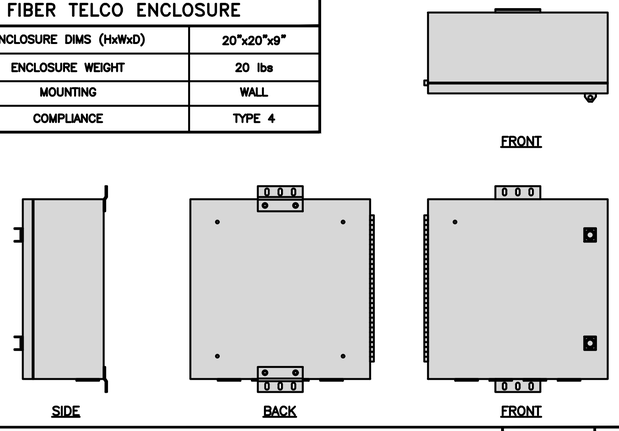
NOT USED | NO SCALE | 4

ZAYO 5RU (LEFT SWING DOOR) FIBER NID ENCLOSURE	
DIMENSIONS (HxWxD)	36.1"x29"x12.9"
WEIGHT	85 lbs



FIBER NID ENCLOSURE DETAIL | NO SCALE | 5

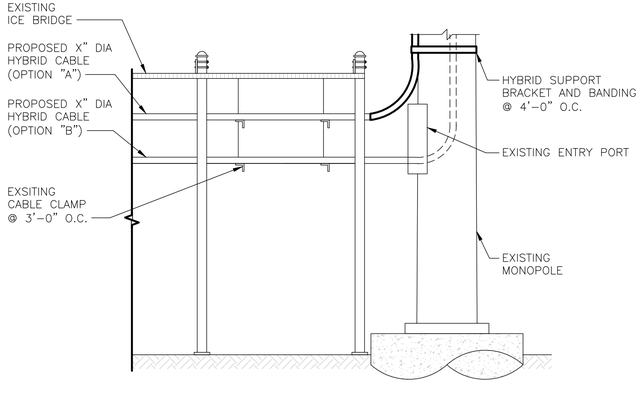
CHARLES CFIT-PF2020DSH1 FIBER TELCO ENCLOSURE	
ENCLOSURE DIMS (HxWxD)	20"x20"x9"
ENCLOSURE WEIGHT	20 lbs
MOUNTING	WALL
COMPLIANCE	TYPE 4



FIBER TELCO ENCLOSURE DETAIL | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8



HYBRID CABLE RUN | NO SCALE | 9

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LITTLETON, CO 80120

MK DEVELOPMENT
140 BEACH 137TH STREET
ROCKAWAY, NY 11694

STATE OF CONNECTICUT
BRENDAN MALLOY
33678
REGISTERED PROFESSIONAL ENGINEER
6/20/2024

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CHE	---	---

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DISH Wireless L.L.C.
PROJECT INFORMATION

NJJER02021B
5 PERRYRIDGE ROAD
GREENWICH, CT 06830

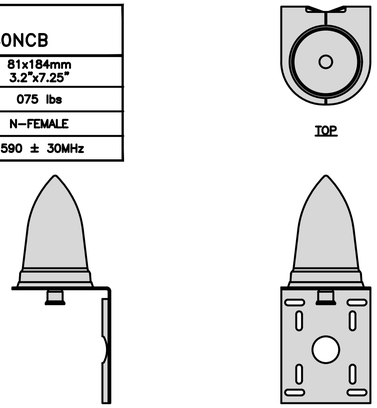
SHEET TITLE

EQUIPMENT DETAILS

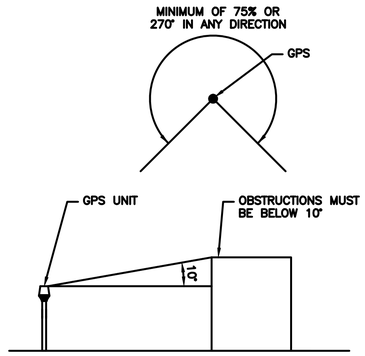
SHEET NUMBER

A-4

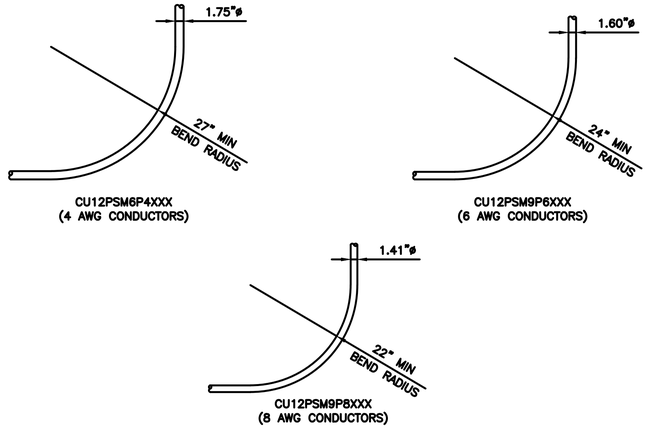
PCTEL GPSGL-TMG-SPI-40NCB	
DIMENSIONS (DIAxH) MM/INCH	81x184mm 3.2"x7.25"
WEIGHT W/ACCESSORIES	075 lbs
CONNECTOR	N-FEMALE
FREQUENCY RANGE	1590 ± 30MHz



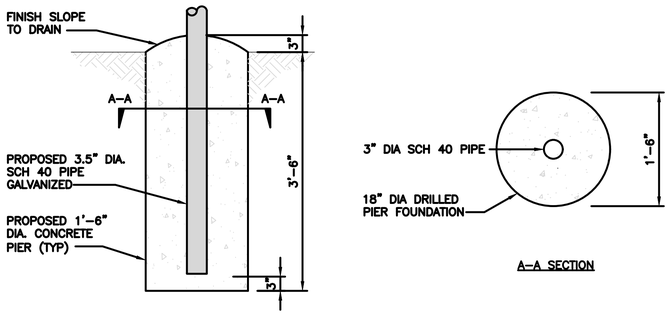
GPS DETAIL | NO SCALE | 1



GPS MINIMUM SKY VIEW REQUIREMENTS | NO SCALE | 2



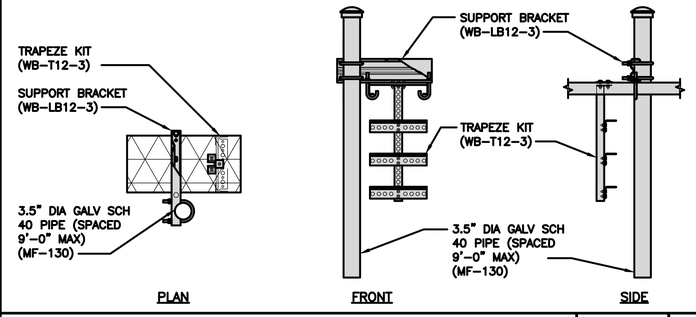
CABLES UNLIMITED HYBRID CABLE
MINIMUM BEND RADIUSES | NO SCALE | 3



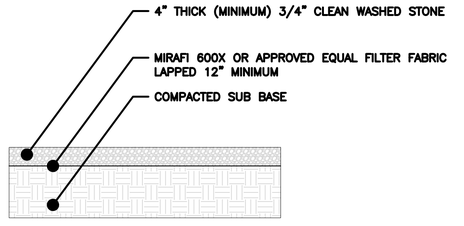
TYPICAL ICE BRIDGE CONCRETE PIER DETAIL | NO SCALE | 4

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

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



ICE BRIDGE DETAIL | NO SCALE | 5



COMPOUND GRAVEL DETAIL | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

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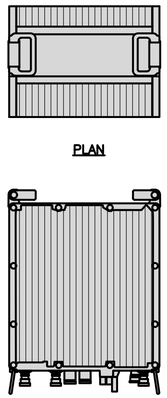
SHEET TITLE

EQUIPMENT DETAILS

SHEET NUMBER

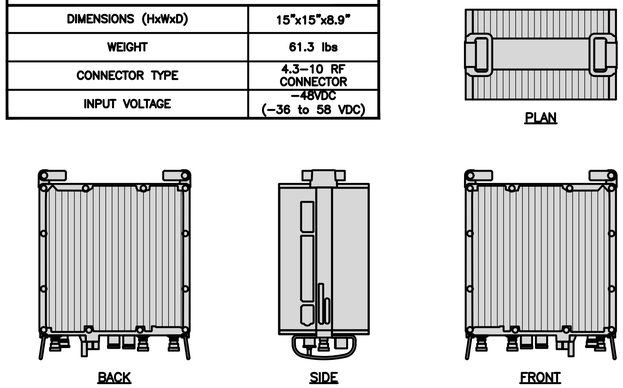
A-5

SAMSUNG – LOW BAND SFG–ARR3J601DI_RF4450T–71A	
DIMENSIONS (HxWxD)	15"x16.5"x11"
WEIGHT	94.6 lbs
CONNECTOR TYPE	4.3–10 RF CONNECTOR
INPUT VOLTAGE	–48VDC (–36 to 58 VDC)



RRH DETAIL | NO SCALE | 1

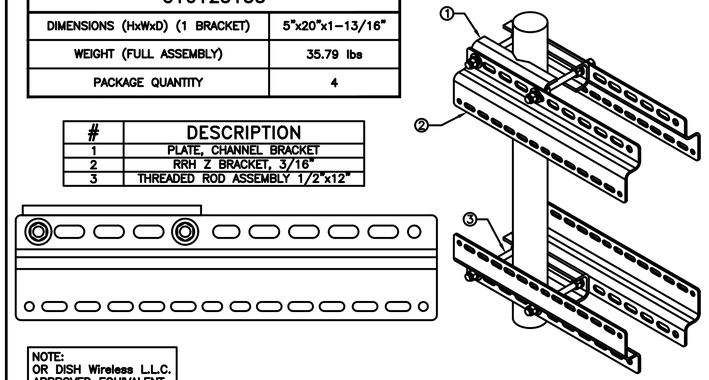
SAMSUNG – MID BAND SFG–ARR3KM01DI_RF4451D–70A	
DIMENSIONS (HxWxD)	15"x15"x8.9"
WEIGHT	61.3 lbs
CONNECTOR TYPE	4.3–10 RF CONNECTOR
INPUT VOLTAGE	–48VDC (–36 to 58 VDC)



RRH DETAIL | NO SCALE | 2

SABRE DOUBLE Z–BRACKET C10123155	
DIMENSIONS (HxWxD) (1 BRACKET)	5"x20"x1–13/16"
WEIGHT (FULL ASSEMBLY)	35.79 lbs
PACKAGE QUANTITY	4

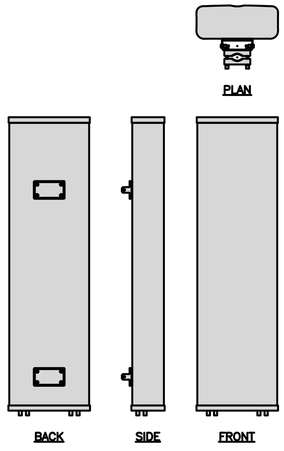
#	DESCRIPTION
1	PLATE, CHANNEL BRACKET
2	RRH Z BRACKET, 3/16"
3	THREADED ROD ASSEMBLY 1/2"x12"



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

RRH MOUNT DETAIL | NO SCALE | 3

COMMSCOPE FFVV–65B–R2	
DIMENSIONS (HxWxD)	72"x19.6"x7.8"
ANTENNA WEIGHT	70.5 lbs
WEIGHT WITH BRACKETS	84.169 lbs

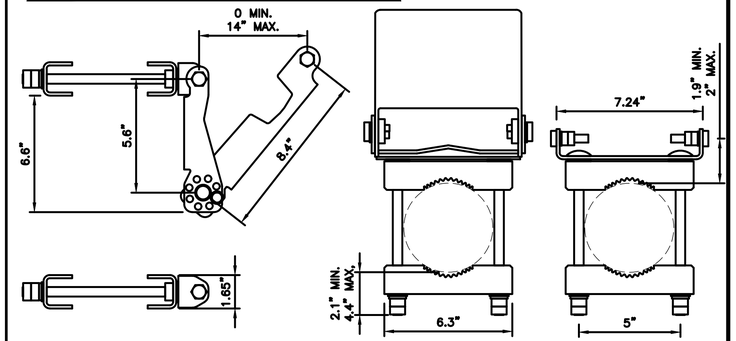


ANTENNA DETAIL | NO SCALE | 4

NOT USED | NO SCALE | 5

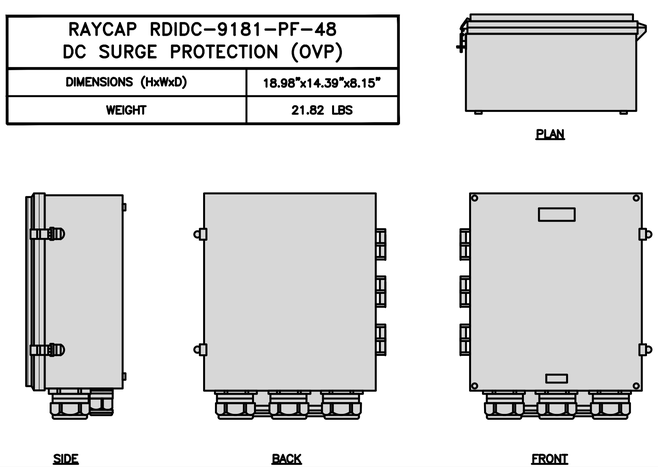
COMMSCOPE ANTENNA BRACKET BSAMNT–3	
DIAMETER COMPATIBILITY	2.362" – 4.528"
NET WEIGHT	13.669 lbs

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



ANTENNA BRACKET DETAIL | NO SCALE | 6

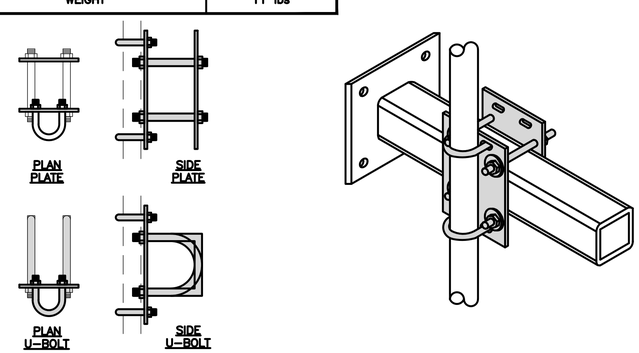
RAYCAP RDIDC–9181–PF–48 DC SURGE PROTECTION (OVP)	
DIMENSIONS (HxWxD)	18.98"x14.39"x8.15"
WEIGHT	21.82 LBS



SURGE SUPPRESSION DETAIL (OVP) | NO SCALE | 7

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

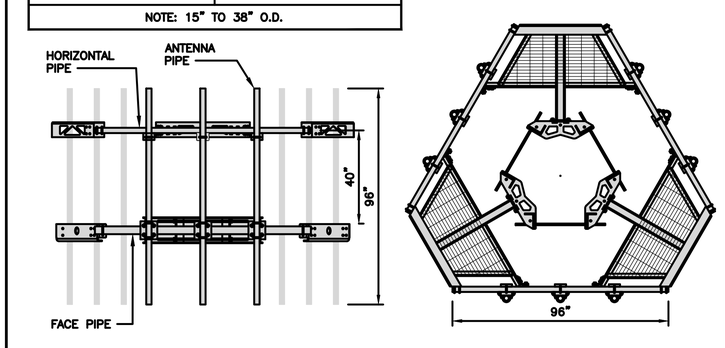
NOTE:
OR DISH Wireless L.L.C.
APPROVED EQUIVALENT



RRH/OVP MOUNT DETAIL | NO SCALE | 8

COMMSCOPE MC–PK8–DSH	
FACE WIDTH	96"
WEIGHT	1373.08 lbs
NOTE: 15" TO 38" O.D.	

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



ANTENNA PLATFORM DETAIL | NO SCALE | 9

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5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

MK DEVELOPMENT
140 BEACH 137TH STREET
ROCKAWAY, NY 11694

STATE OF CONNECTICUT
BRETT A. MAGLIOCCHETTI
33678
LICENSED PROFESSIONAL ENGINEER
6/20/2024

DRAWN BY:	CHECKED BY:	APPROVED BY:
CHE	---	---

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	06/05/2024	ISSUED FOR REVIEW
0	06/20/2024	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
NJJER02021B

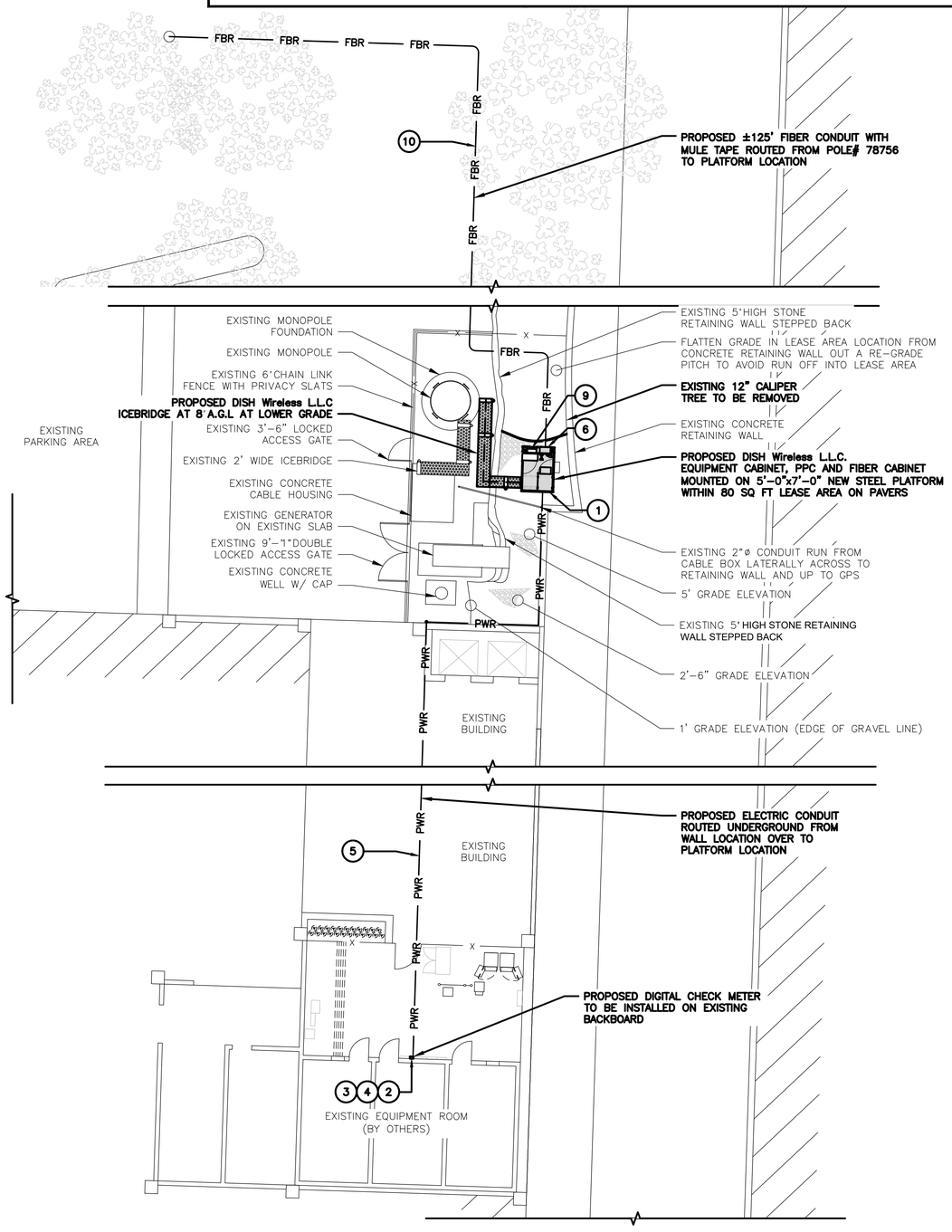
DISH Wireless L.L.C.
PROJECT INFORMATION
NJJER02021B
5 PERRYRIDGE ROAD
GREENWICH, CT 06830

SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-6

NOTES

1. CONTRACTOR SHALL FIELD VERIFY ALL PROPOSED UNDERGROUND UTILITY CONDUIT ROUTE.
2. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.
3. THE GROUND LEASE DOES NOT SPECIFY OUR UTILITY RIGHTS. "PWR" AND "FBR" PATH DEPICTED ON A–1 AND E–1 ARE BASED ON BEST AVAILABLE INFORMATION INCLUDING BUT NOT LIMITED TO FIELD VERIFICATION, PRIOR PROJECT DOCUMENTATION AND OTHER REAL PROPERTY RIGHTS DOCUMENTS. WHEN INSTALLING THE UTILITIES PLAEASE LOCATE AND FOLLOW EXSITING PATH. IF EXISTING PATH IS NOT AN OPTION PLEASE NOTIFY TOWER OWNER AS FURTHER COORINATION MAY BE NEEDED.



UTILITY ROUTE PLAN

12' 8' 4' 0 10' 20'
3/32"=1'–0"

1

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

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

SERVICE PLAN KEY NOTES:

1. EQUIPMENT CABINET.
2. DISH Wireless L.L.C. TO TAP THE CUSTOMER SIDE OF THE EXISTING SERVICE END BOX. DESIGN TO BE APPROVED BY EVERSOURCE.
3. PROVIDE AND INSTALL NEW 200A, 1Ø, UTILITY APPROVED BY–PASS SUB–METER.
4. PROVIDE AND INSTALL A NEW 200A, 1Ø, 250V, NEMA 1, FUSED DISCONNECT WITH (2) 200A, 250V FUSES. PROVIDE GROUNDING PER NEC.
5. PROVIDE NEW 2" CONDUIT WITH (3) #4/0 AWG & (1) #4 AWG EQUIP–GRD. INSTALL CONDUIT BETWEEN THE DISCONNECT AND RAYCAP PPC. CONDUIT DISTANCE IS APPROX.: 125' TOTAL
6. RAYCAP PPC. MODEL #RDIAC–6512–240–MTS. PROVIDED BY DISH Wireless L.L.C.. PROVIDE CIRCUIT BREAKERS PER PANEL SCHEDULE.
7. CONTRACTOR TO INSTALL A NEW 48"X48"X3/4" PLYWOOD BACKBOARD. BACKBOARD SHALL BE PRIMED WITH FIRE RESISTANT, INTUMESCENT PRIMER AND PAINTED FLAT BLACK.
8. CONTRACTOR TO INSTALL RAYCAP FIBER CABINET MODEL # MP1818WB–A.
9. PROVIDE AND INSTALL 120V, 20A GFI RECEPTACLE INSIDE THE TELCO SECTION OF THE PPC.
10. PROVIDE NEW 2" CONDUIT WITH PULL LINE BETWEEN POLE# 78756 AND RAYCAP CABINET. CONDUIT DISTANCE IS APPROX. : ±125' TOTAL
11. INSTALL CONDUIT UP AND OVER UNDERGROUND IN TRENCH.
12. INSTALL MOUNTED MOTION ACTIVATED WORK LIGHT.

ELECTRICAL NOTES

NO SCALE

2

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PROJECT INFORMATION

NJJER02021B
5 PERRYRIDGE ROAD
GREENWICH, CT 06830

SHEET TITLE

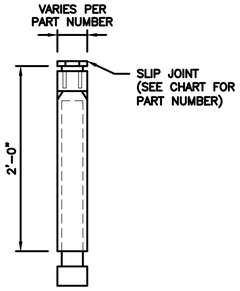
ELECTRICAL/FIBER ROUTE PLAN AND NOTES

SHEET NUMBER

E-1

CARLON EXPANSION FITTINGS

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

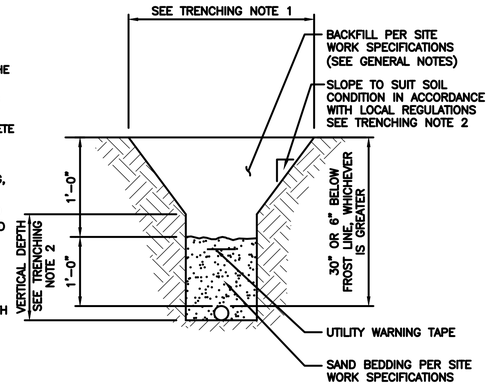


NOTE:
CONTRACTOR TO INSTALL EXPANSION FITTING SLIP JOINT AT METER CENTER CONDUIT TERMINATION, AS PER LOCAL UTILITY POLICY, ORDINANCE AND/OR SPECIFIED REQUIREMENT.

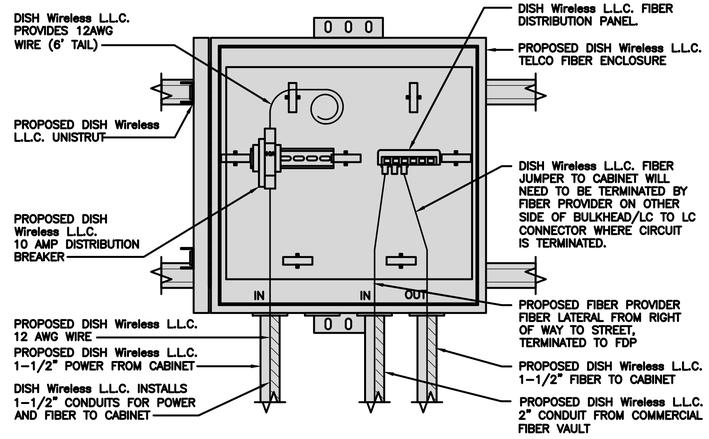
EXPANSION JOINT DETAIL | NO SCALE | 1

TRENCHING NOTES

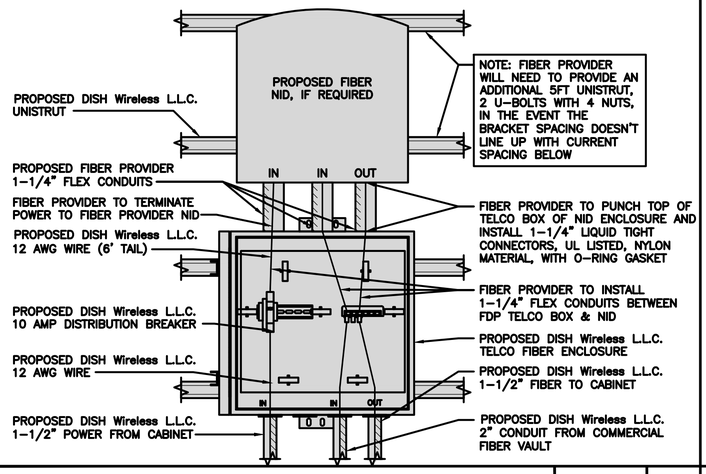
1. CONTRACTOR SHALL RESTORE THE TRENCH TO ITS ORIGINAL CONDITIONS BY EITHER SEEDING OR SODDING GRASS AREAS, OR REPLACING ASPHALT OR CONCRETE AREAS TO ITS ORIGINAL CROSS SECTION.
2. TRENCHING SAFETY; INCLUDING, BUT NOT LIMITED TO SOIL CLASSIFICATION, SLOPING, AND SHORING, SHALL BE GOVERNED BY THE CURRENT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



TYPICAL UNDERGROUND TRENCH DETAIL | NO SCALE | 2



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



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

NOT USED | NO SCALE | 5

NOT USED | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

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MK DEVELOPMENT
140 BEACH 137TH STREET
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STATE OF CONNECTICUT
BRENDAN MALLOY
33678
REGISTERED PROFESSIONAL ENGINEER
6/20/2024

DRAWN BY:	CHECKED BY:	APPROVED BY:
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DISH Wireless L.L.C.
PROJECT INFORMATION

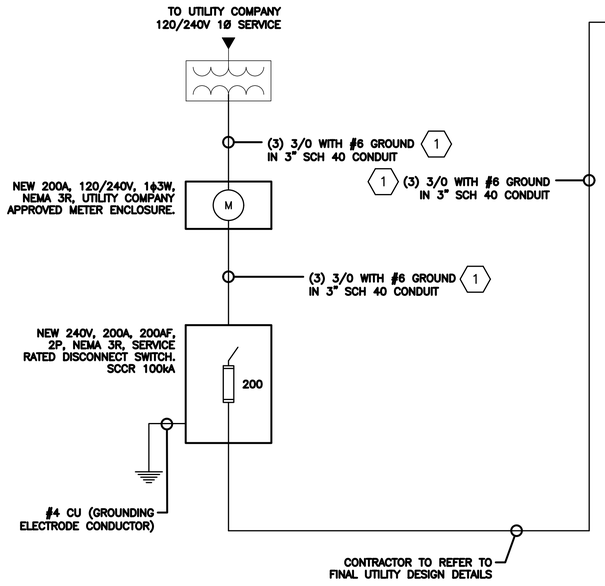
NJJER02021B
5 PERRYRIDGE ROAD
GREENWICH, CT 06830

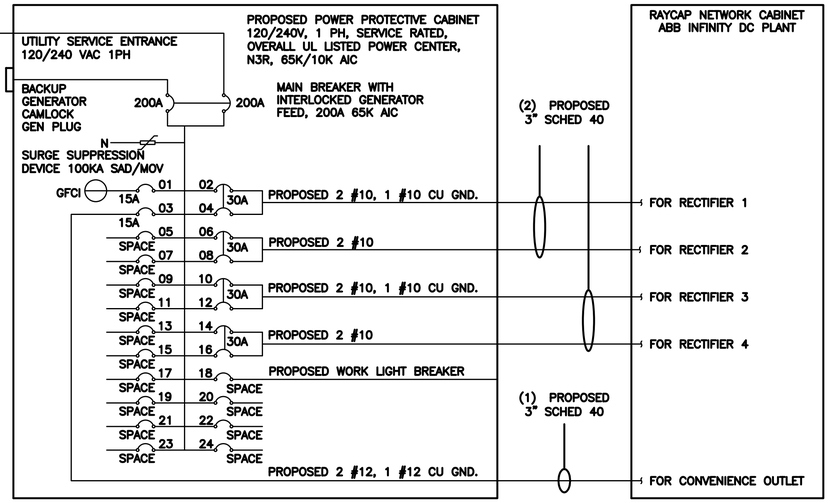
SHEET TITLE

ELECTRICAL DETAILS

SHEET NUMBER

E-2





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

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

SERVICE/FEEDER CONDUCTOR LENGTH TABLE
(BASED ON INDUSTRY STANDARD 3% VOLTAGE DROP AND 5% NEC ALLOWABLE LIMIT)

	CONDUCTOR SIZES					
DESIGN LOADS	250 kcmil AL	300 kcmil AL	3/0 CU	4/0 CU	250 kcmil CU	300 kcmil CU
DISH Wireless L.L.C. MAXIMUM CONTINUOUS LOAD (160A) (NEC ARTICLE 220 & 230 3% VOLTAGE DROP)	130'	155'	145'	180'	215'	255'
DISH Wireless L.L.C. MAXIMUM CONTINUOUS LOAD (160A) (NEC ARTICLE 220 & 230 5% VOLTAGE DROP)	220'	260'	240'	300'	360'	425'

NOTES:
1. 250 MCM/KCMIL AL + #2 AL GRD MAY BE USED AS A REPLACEMENT FOR 3/0 CU + #6 CU GRD SERVICE CONDUCTOR FROM THE DISH Wireless L.L.C. FIRST MEANS OF DISCONNECT/UTILITY COMPANY MEET-ME POINT. REFER TO VALUES ABOVE TO LIMIT VOLTAGE DROP TO 3%.
2. ALUMINUM/COPPER CONDUCTORS MUST BE RATED 75°C.
3. ALUMINUM TO COPPER BUSS CONNECTIONS MUST MEET AND CONFORM TO ANSI AND BE UL LISTED. USE ANTI CORROSION CONDUCTIVE LUBRICANT ON CONNECTIONS
4. PPC MAIN DISCONNECT CIRCUIT BREAKERS ACCEPT #4 – 300KCMIL AL OR CU CONDUCTORS.
5. VOLTAGE DROP FOR SINGLE METER ENCLOSURE FED FROM TRANSFORMER WITH MULTIPLE CUSTOMERS IS CALCULATED FROM THE TRANSFORMER TO PPC. (SERVICE AND FEEDER CONDUCTOR LENGTH)
6. VOLTAGE DROP FOR MULTI-METER ENCLOSURE IS CALCULATED FROM THE METER TO PPC. (FEEDER CONDUCTOR LENGTH)
7. VOLTAGE DROP CALCULATIONS ARE BASED ON A POWER FACTOR OF 1, A LINE TO GROUND VOLTAGE PER CONDUCTOR OF 120V, NO CORRECTION FACTOR FOR AMBIENT TEMPERATURE OR ADJUSTMENT FACTOR FOR MORE THAN THREE CURRENT-CARRYING CONDUCTORS IN A SINGLE CONDUCT OR RACEWAY. A POWER FACTOR LESS THAN 1 OR VOLTAGE LESS THAN 120 WILL RESULT IN SHORTER DISTANCES THAN SHOWN IN TABLE.

NOTES

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

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

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

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

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

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

#12 – 0.0050 SQ. IN X 2 = 0.0100 SQ. IN
#12 – 0.0050 SQ. IN X 1 = 0.0050 SQ. IN <GROUND
TOTAL = 0.0150 SQ. IN

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

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

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

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

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

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

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

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

250kcmil AL – 0.3970 SQ. IN X 3 = 1.191 SQ. IN
#4 AL – 0.0824 SQ. IN X 1 = 0.0824 SQ.IN <GROUND
TOTAL = 1.2734 SQ. IN

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

PPC ONE-LINE DIAGRAM

NO SCALE | 1

PROPOSED RAYCAP PANEL SCHEDULE

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

PANEL SCHEDULE

NO SCALE | 2

NOT USED

NO SCALE | 3

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5701 SOUTH SANTA FE DRIVE
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MK DEVELOPMENT
140 BEACH 137TH STREET
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PROJECT INFORMATION
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5 PERRYRIDGE ROAD
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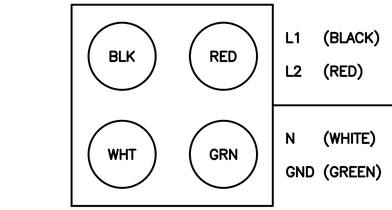
SHEET TITLE
ELECTRICAL ONE-LINE, FAULT CALCS & PANEL SCHEDULE

SHEET NUMBER
E-3

NOTES:

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



CAM–LOCK GENERATOR RECEPTACLE

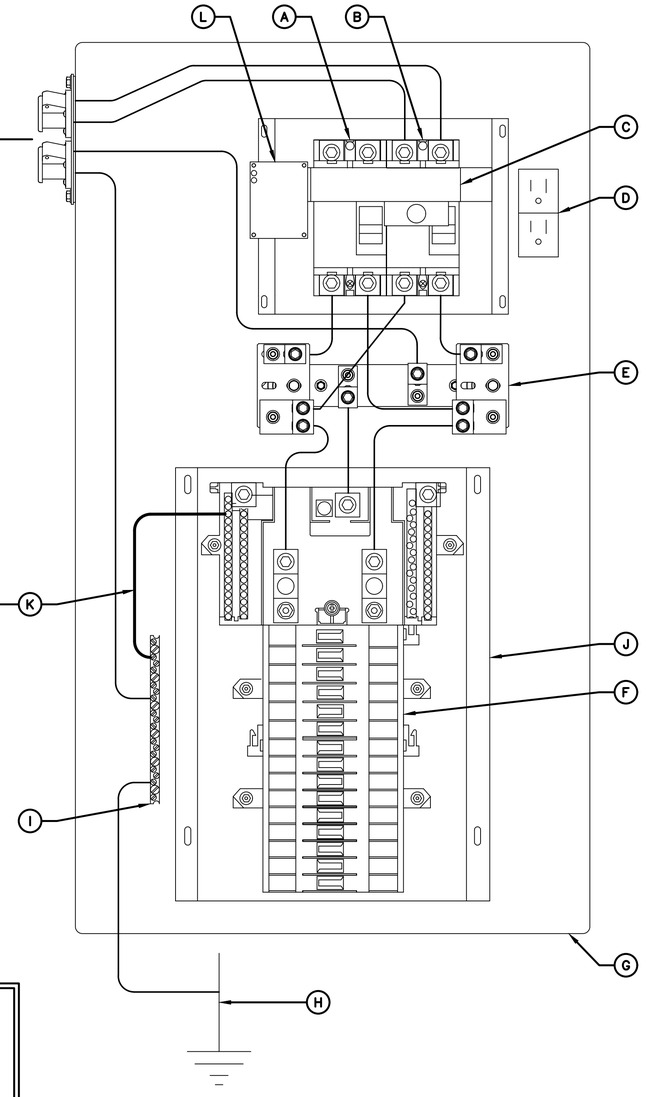
(AS VIEWED FROM OUTSIDE OF ENCLOSURE)
USE LINE UP PIN AS REFERENCE

REFER TO RECEPTACLE FOR MODEL NUMBER

DANGER:

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

RAYCAP CUSTOMER SERVICE
(800) 890–2569



SUITABLE FOR USE AS SERVICE EQUIPMENT

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

CAUTION:

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

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

200A UTILITY FEED

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

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

200A GENERATOR FEED

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

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

NEUTRAL–TO–GROUND NOTES:

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

NEUTRAL–TO–GROUND CONDING JUMPER

INSTALLTION INSTRUCTIONS:

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

LEGEND:

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

RAYCAP POWER PROTECTION CABINET – RDIAC–2465–P–240–MTS (NEUTRAL–TO–GROUND)

NO SCALE

1

DISH Wireless L.L.C. TEMPLATE VERSION 48 – 2/21/2022

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PROFESSIONAL ENGINEER
6/20/2024

DRAWN BY:	CHECKED BY:	APPROVED BY:
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CONSTRUCTION DOCUMENTS

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A&E PROJECT NUMBER

NJJER02021B

DISH Wireless L.L.C.
PROJECT INFORMATION

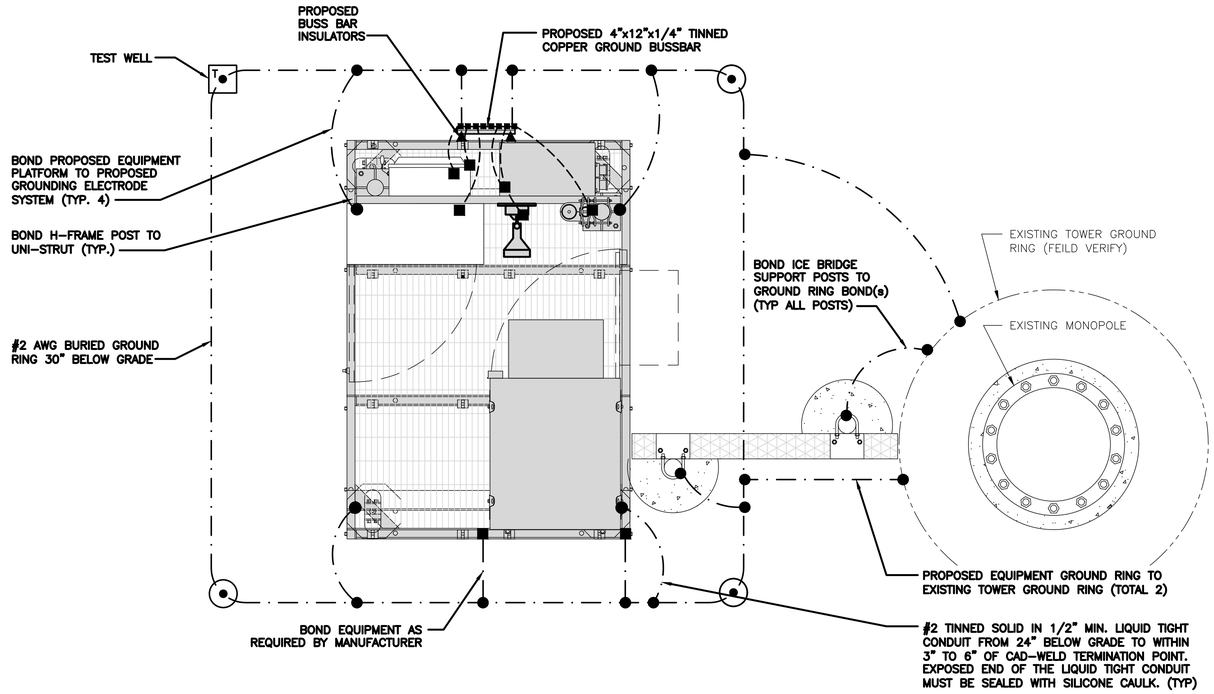
NJJER02021B
5 PERRYRIDGE ROAD
GREENWICH, CT 06830

SHEET TITLE

PPC NEUTRAL–TO–GROUND SCHEMATIC

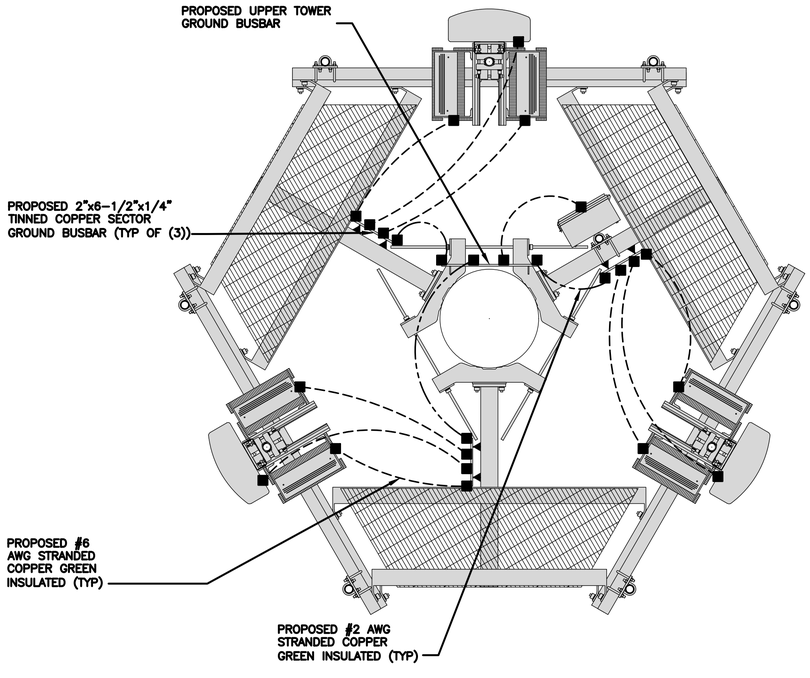
SHEET NUMBER

E-4



TYPICAL EQUIPMENT GROUNDING PLAN

NO SCALE | 1



TYPICAL ANTENNA GROUNDING PLAN

NO SCALE | 2

NOTES

- ANTENNAS AND OVP SHOWN ARE GENERIC AND NOT REFERENCING TO A SPECIFIC MANUFACTURER. THIS LAYOUT IS FOR REFERENCE PURPOSES ONLY
- UPPER TOWER BUSSBAR SHALL BE INSTALLED WITHOUT INSULATORS

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

GROUNDING LEGEND

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

GROUNDING KEY NOTES

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

GROUNDING KEY NOTES

NO SCALE | 3

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6/20/2024

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RFDS REV #: ---

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DISH Wireless L.L.C.
PROJECT INFORMATION

NJJER02021B
5 PERRYRIDGE ROAD
GREENWICH, CT 06830

SHEET TITLE

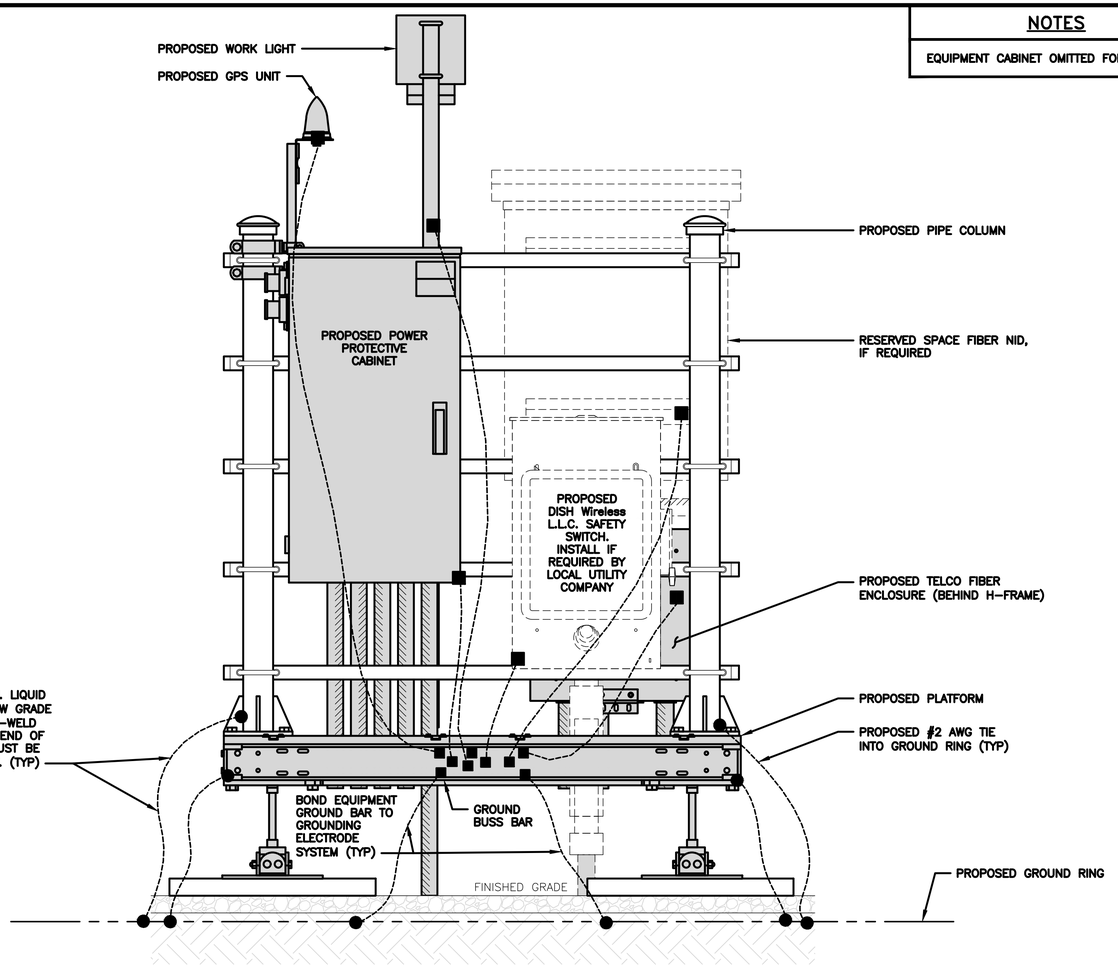
GROUNDING PLANS AND NOTES

SHEET NUMBER

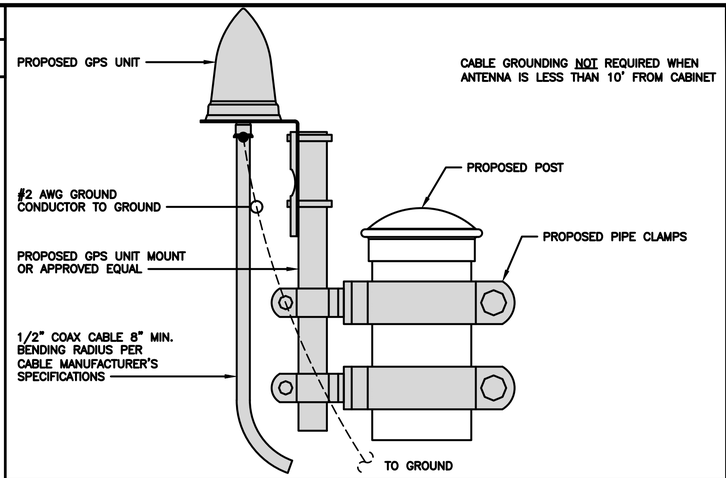
G-1

NOTES

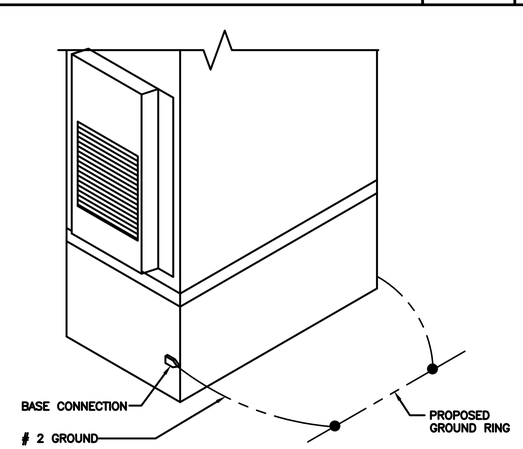
EQUIPMENT CABINET OMITTED FOR CLARITY



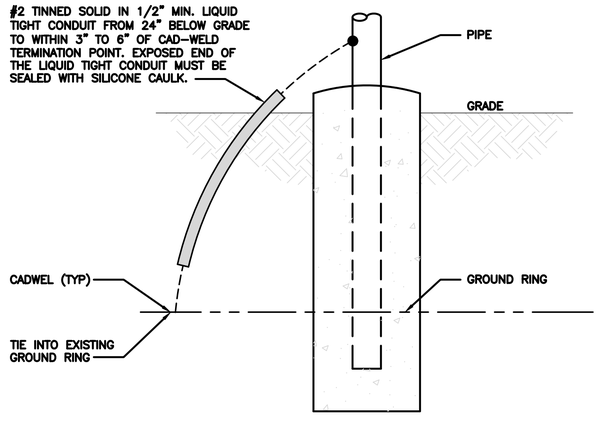
H-FRAME GROUNDING DETAIL | NO SCALE | 1



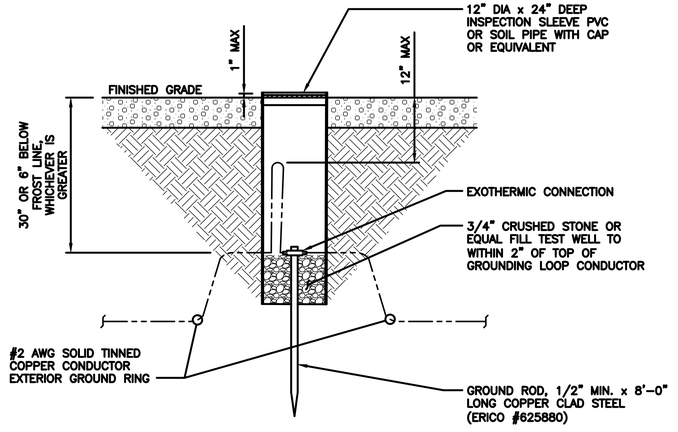
TYPICAL GPS UNIT GROUNDING | NO SCALE | 2



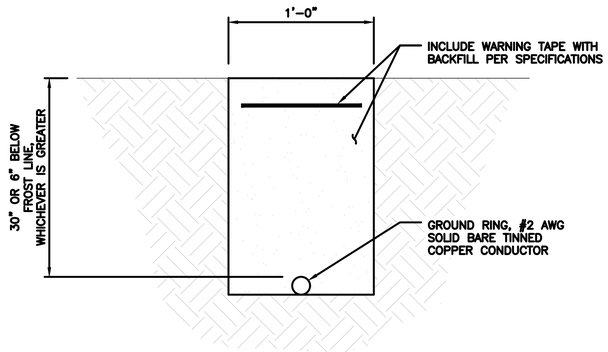
OUTDOOR CABINET GROUNDING | NO SCALE | 3



TRANSITIONING GROUND DETAIL | NO SCALE | 4



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



TYPICAL GROUND RING TRENCH | NO SCALE | 6

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PROJECT INFORMATION

NJJER02021B
5 PERRYRIDGE ROAD
GREENWICH, CT 06830

SHEET TITLE

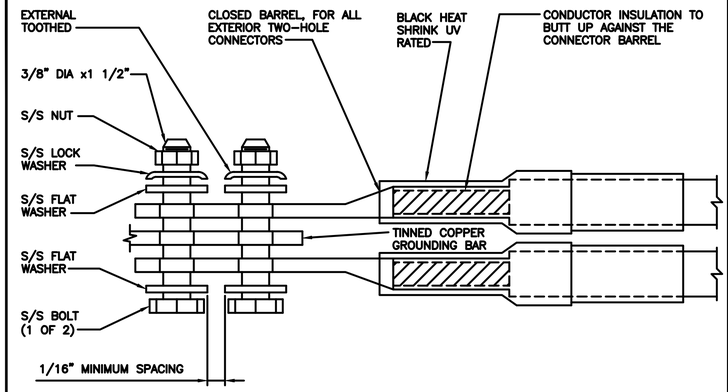
GROUNDING DETAILS

SHEET NUMBER

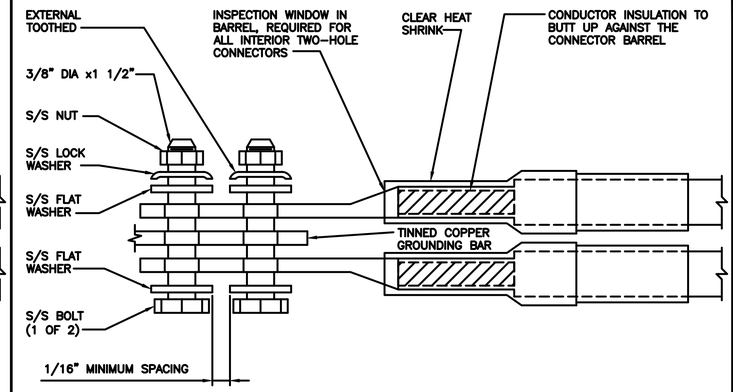
G-2

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

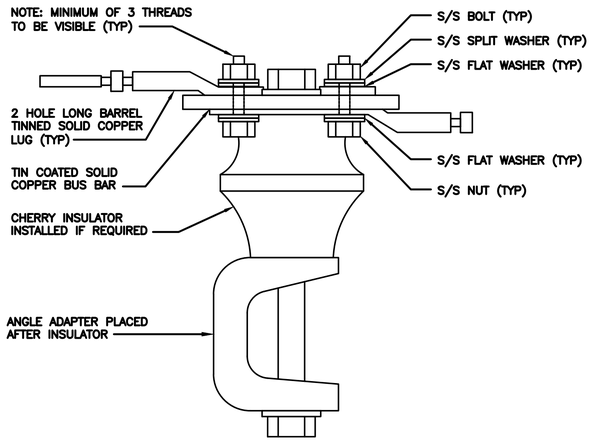
TYPICAL GROUNDING NOTES | NO SCALE | 1



TYPICAL EXTERIOR TWO HOLE LUG | NO SCALE | 2



TYPICAL INTERIOR TWO HOLE LUG | NO SCALE | 3



LUG DETAIL | NO SCALE | 4

NOT USED | NO SCALE | 5

NOT USED | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

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SHEET TITLE

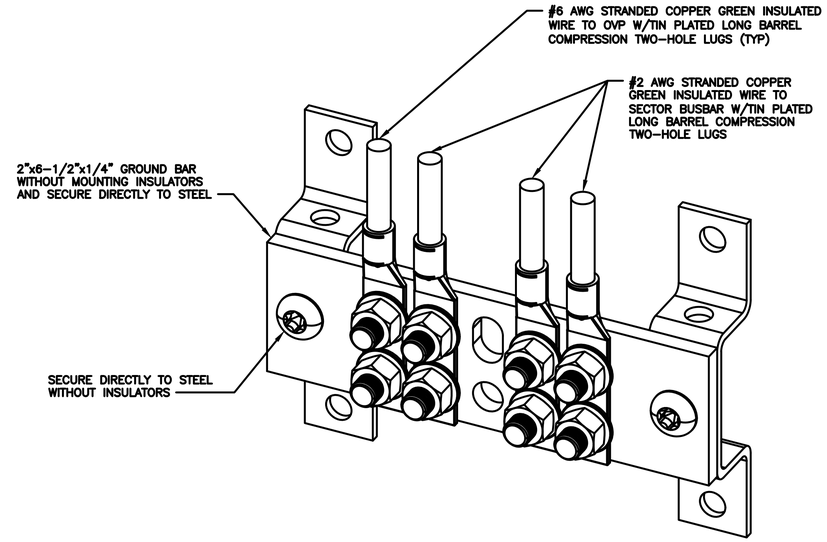
GROUNDING DETAILS

SHEET NUMBER

G-3

NOT USED

NO SCALE | 1

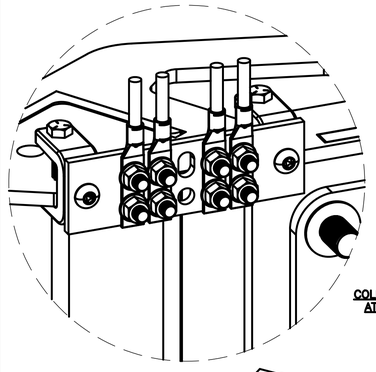


UPPER TOWER GROUND BUSBAR DETAIL

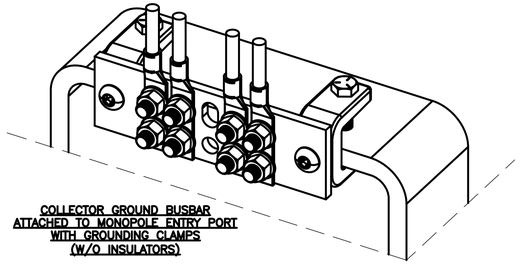
NO SCALE | 2

NOT USED

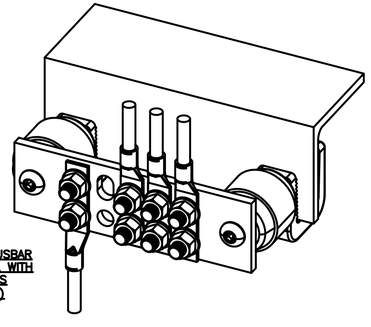
NO SCALE | 3



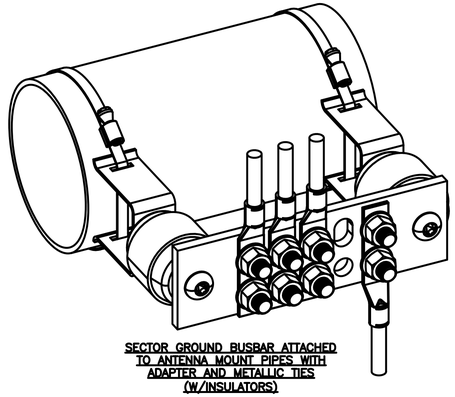
COLLECTOR GROUND BUSBAR ATTACHED TO COLLAR OR SECTOR MOUNT (W/O INSULATORS)



COLLECTOR GROUND BUSBAR ATTACHED TO MONOPOLE ENTRY PORT WITH GROUNDING CLAMPS (W/O INSULATORS)



SECTOR GROUND BUSBAR ATTACHED TO METAL WITH ANGLE ADAPTERS (W/INSULATORS)



SECTOR GROUND BUSBAR ATTACHED TO ANTENNA MOUNT PIPES WITH ADAPTER AND METALLIC TIES (W/INSULATORS)

GROUND BUSBAR ATTACHMENT OPTIONS

NO SCALE | 4

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SHEET TITLE

GROUNDING DETAILS

SHEET NUMBER

G-4

HYBRID/DISCREET CABLES

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

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

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

ALPHA RRH				BETA RRH				GAMMA RRH			
PORT 1 + SLANT	PORT 2 – SLANT	PORT 3 + SLANT	PORT 4 – SLANT	PORT 1 + SLANT	PORT 2 – SLANT	PORT 3 + SLANT	PORT 4 – SLANT	PORT 1 + SLANT	PORT 2 – SLANT	PORT 3 + SLANT	PORT 4 – SLANT
RED	RED	RED	RED	BLUE	BLUE	BLUE	BLUE	GREEN	GREEN	GREEN	GREEN
ORANGE	ORANGE	RED	RED	ORANGE	ORANGE	BLUE	BLUE	ORANGE	ORANGE	GREEN	GREEN
	WHITE (–) PORT	ORANGE	ORANGE		WHITE (–) PORT	ORANGE	ORANGE		WHITE (–) PORT	ORANGE	ORANGE
			WHITE (–) PORT				WHITE (–) PORT				WHITE (–) PORT

MID-BAND RRH
(AWS BANDS N66+N70)

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

RED	RED	RED	RED	BLUE	BLUE	BLUE	BLUE	GREEN	GREEN	GREEN	GREEN
PURPLE	PURPLE	RED	RED	PURPLE	PURPLE	BLUE	BLUE	PURPLE	PURPLE	GREEN	GREEN
	WHITE (–) PORT	PURPLE	PURPLE		WHITE (–) PORT	PURPLE	PURPLE		WHITE (–) PORT	PURPLE	PURPLE
			WHITE (–) PORT				WHITE (–) PORT				WHITE (–) PORT

HYBRID/DISCREET CABLES

INCLUDE SECTOR BANDS BEING SUPPORTED ALONG WITH FREQUENCY BANDS.

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

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

EXAMPLE 3 – MAIN COAX WITH GROUND MOUNTED RRHs.

EXAMPLE 1	EXAMPLE 2	EXAMPLE 3 COAX#1 (ALPHA)	CANISTER COAX #2 (ALPHA)
RED	RED	RED	RED
BLUE	BLUE		RED
GREEN	GREEN		
ORANGE	YELLOW		
PURPLE			

FIBER JUMPERS TO RRHs

LOW-BAND HHR FIBER CABLES HAVE SECTOR STRIPE ONLY.

LOW BAND RRH	MID BAND RRH	LOW BAND RRH	MID BAND RRH	LOW BAND RRH	MID BAND RRH
RED	RED	BLUE	BLUE	GREEN	GREEN
ORANGE	PURPLE	ORANGE	PURPLE	ORANGE	PURPLE

POWER CABLES TO RRHs

LOW-BAND RRH POWER CABLES HAVE SECTOR STRIPE ONLY

LOW BAND RRH	MID BAND RRH	LOW BAND RRH	MID BAND RRH	LOW BAND RRH	MID BAND RRH
RED	RED	BLUE	BLUE	GREEN	GREEN
ORANGE	PURPLE	ORANGE	PURPLE	ORANGE	PURPLE

RET MOTORS AT ANTENNAS

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

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

ANTENNA 1 MID BAND IN	ANTENNA 1 LOW BAND IN	ANTENNA 1 MID BAND IN	ANTENNA 1 LOW BAND IN	ANTENNA 1 MID BAND IN	ANTENNA 1 LOW BAND IN
RED	RED	BLUE	BLUE	GREEN	GREEN
PURPLE	ORANGE	PURPLE	ORANGE	PURPLE	ORANGE

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.

FORWARD AZIMUTH OF 0–120 DEGREES		FORWARD AZIMUTH OF 120–240 DEGREES		FORWARD AZIMUTH OF 240–359 DEGREES	
PRIMARY	SECONDARY	PRIMARY	SECONDARY	PRIMARY	SECONDARY
WHITE	WHITE	WHITE	WHITE	WHITE	WHITE
RED	RED	BLUE	BLUE	GREEN	GREEN
WHITE	WHITE	WHITE	WHITE	WHITE	WHITE
	RED		BLUE		GREEN
	WHITE		WHITE		WHITE

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	BETA SECTOR	GAMMA SECTOR
RED	BLUE	GREEN

COLOR IDENTIFIER | NO SCALE | 2

NOT USED | NO SCALE | 3

NOT USED | NO SCALE | 4

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

MK DEVELOPMENT
140 BEACH 137TH STREET
ROCKAWAY, NY 11694

STATE OF CONNECTICUT · BRENDAN MALLOY · 33678 · PROFESSIONAL ENGINEER
6/20/2024

DRAWN BY:	CHECKED BY:	APPROVED BY:
CHE	---	---

RFDS REV #: ---

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DISH Wireless L.L.C.
PROJECT INFORMATION

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5 PERRYRIDGE ROAD
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SHEET TITLE
RF
CABLE COLOR CODES

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RF-1

LEGEND

EXOTHERMIC CONNECTION

MECHANICAL CONNECTION

BUSS BAR INSULATOR

CHEMICAL ELECTROLYTIC GROUNDING SYSTEM

TEST CHEMICAL ELECTROLYTIC GROUNDING SYSTEM

EXOTHERMIC WITH INSPECTION SLEEVE

GROUNDING BAR

GROUND ROD

TEST GROUND ROD WITH INSPECTION SLEEVE

SINGLE POLE SWITCH

DUPLEX RECEPTACLE

DUPLEX GFCI RECEPTACLE

FLUORESCENT LIGHTING FIXTURE (2) TWO LAMPS 48–T8

SMOKE DETECTION (DC)

EMERGENCY LIGHTING (DC)

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

CHAIN LINK FENCE — 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

dish wireless.

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GREENWICH, CT 06830

SHEET TITLE

LEGEND AND ABBREVIATIONS

SHEET NUMBER

GN-1

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

SIGN PLACEMENT:

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

NOTES:

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

INFORMATION

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

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

Site ID: _____

THIS SIGN IS FOR REFERENCE PURPOSES ONLY

NOTICE

Transmitting Antenna(s)

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

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

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

Site ID: _____

dish

THIS SIGN IS FOR REFERENCE PURPOSES ONLY

CAUTION

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dish

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Site ID: _____

dish

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RF SIGNAGE

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

MK DEVELOPMENT
140 BEACH 137TH STREET
ROCKAWAY, NY 11694

STATE OF CONNECTICUT
BRETT A. MAGNAN
33678
PROFESSIONAL ENGINEER
6/20/2024

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GREENWICH, CT 06830

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.

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STATE OF CONNECTICUT
MATTHEW BRETT CHAPMAN
33678
LICENSED PROFESSIONAL ENGINEER
6/20/2024

DRAWN BY:	CHECKED BY:	APPROVED BY:
CHE	---	---

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
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A&E PROJECT NUMBER

NJJER02021B

DISH Wireless L.L.C.
PROJECT INFORMATION

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GREENWICH, CT 06830

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.

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STATE OF CONNECTICUT
BRETT A. MALLGRAVE
33678
REGISTERED
PROFESSIONAL ENGINEER
6/20/2024

DRAWN BY:	CHECKED BY:	APPROVED BY:
CHE	---	---

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DISH Wireless L.L.C.
PROJECT INFORMATION

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5 PERRYRIDGE ROAD
GREENWICH, CT 06830

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.

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SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-5

MK DEVELOPMENT

EXHIBIT D

Structural Analysis

DEVELOPMENT

June 27, 2024

PASS

RE: **Structural Analysis for Tower**

Location: **5 Perryridge Rd Greenwich, CT 06830**

Site ID: **NJJER02021B**

Dish Wireless LLC,

Per your request, we have performed a structural analysis of the existing tower. This site consists of an existing monopole that has multiple carriers co-located on the tower. This review determines if the tower can support the existing and proposed loads.

1.0 Assumptions:

CATEGORY	DATA	CODE
Structure Type	Monopole	
Top of Tower	164'-0"	
Dish Wireless LLC Rad Center	99'-0"	
Structure Class	III	ASCE 7-16
Exposure Class	C	ASCE 7-16
Kzt Factor	1.0	ASCE 7-16
Basic Wind Speed	130	ASCE 7-16
Ice Thickness	1"	ASCE 7-16
Ice Windspeed	50 MPH	ASCE 7-16
Seismic Design Category	B	ASCE 7-16
S_{DS}	.289	ASCE 7-16

2.0 Existing Documents:

DOCUMENT	COMPANY	DATE
Proposed Drawings	M&K Development	4/5/2022
Site Visit Photos	M&K Development	8/11/2021
Foundation Design	Engineered Endeavors Incorporated	8/21/2002
Structural Analysis	Centek Engineering	2/24/2021

3.0 Proposed Equipment:

MANUFACTURER	EQUIPMENT	WEIGHTS
CommScope	**(1) MC-PK8-DSH**	**1802 lbs**
CommScope	**(3) FFVV-65B-R2**	**70.54 lbs**
Samsung	**(3) SFG-ARR3KM01DI_RF4451D-70A**	**61.3 lbs**
Samsung	**(3) SFG-ARR3J601DI_RF4450D-71A**	**94.6 lbs**
RayCap	**(1) OVP RDIDC-9181-PF-48**	**32 lbs**
CommScope	**(1) HYBRID CABLE**	**N.A.**

Bold represents equipment to be added

It is assumed that all information from the previous analysis performed by Centek Engineering on February 24, 2021 is still accurate and correct. If this assumption is not true, please contact our office for an amended report.

We are installing (1) proposed MC-PK8-DSH mount on the existing monopole that will support all the proposed equipment. After performing an analysis on the tower in TNxTower, it has been determined that the tower is **ADEQUATE** for the existing and proposed loads on the structure which passes at 83.1% of its capacity. We checked the foundation based on the Engineered Endeavors' drawings and Centek's structural analysis and determined that the foundation is **ADEQUATE** for the proposed loads.

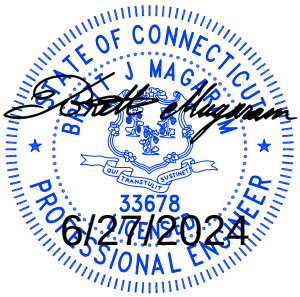
This report does not address the structural stability of any other mounts, or portion of the structure, nor does it provide any warranty either express or implied, for any portion of the proposed mount or structure.

Please note that we have not had a professional engineer perform an independent visit to confirm existing structural conditions and the outcome of this analysis is based solely on the information provided in the previous structural analysis, photos and drawing details. If the existing conditions are modified, in disrepair or not properly represented, contact our office immediately for an amended report since this analysis may be inaccurate.

If you have any questions, feel free to contact us at any time.

Sincerely,

Magaram Engineering



Brett Magaram
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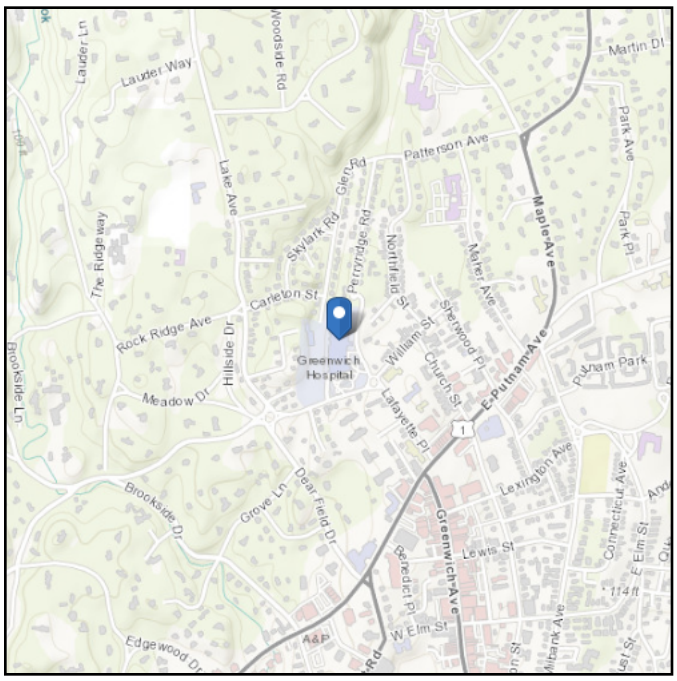
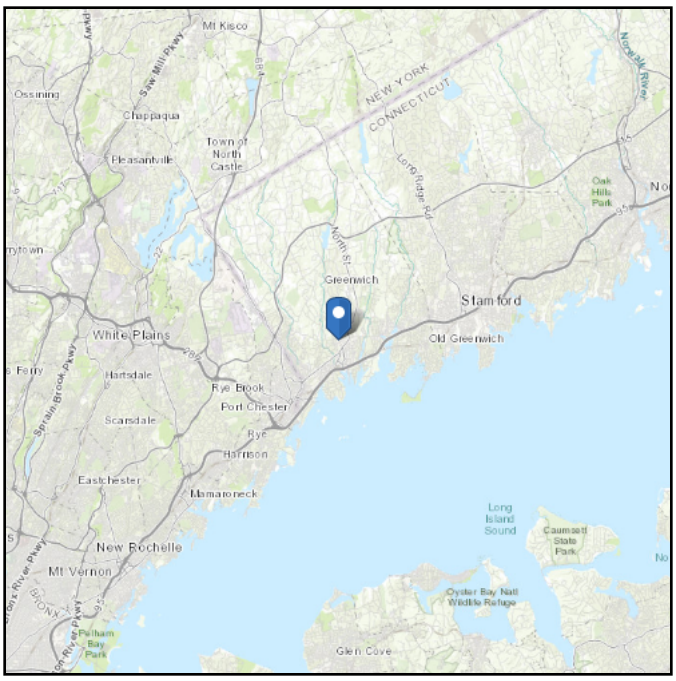
Municipality	Basic Design Wind Speeds, V (mph)				Allowable Stress Design Wind Speeds, V_{asd} (mph)				Ground Snow Load p_g (psf)	MCE Ground Accelerations		Wind-Borne Debris Region[1]		Hurricane-Prone Region
	Risk Cat. I	Risk Cat. II	Risk Cat. III	Risk Cat. IV	Risk Cat. I	Risk Cat. II	Risk Cat. III	Risk Cat. IV		S_S (g)	S_1 (g)	Risk Cat. III Occup. I-2	Risk Cat. IV	
Cornwall	105	115	125	130	81	89	97	101	40	0.172	0.054			
Coventry	110	120	130	135	85	93	101	105	30	0.188	0.055			Yes
Cromwell	110	120	130	135	85	93	101	105	30	0.207	0.056			Yes
Danbury	110	120	125	130	85	93	97	101	30	0.225	0.056			Yes
Darien	110	120	130	135	85	93	101	105	30	0.250	0.057		Type B	Yes
Deep River	115	125	135	140	89	97	105	108	30	0.210	0.054			Yes
Derby	110	120	130	135	85	93	101	105	30	0.202	0.054			Yes
Durham	110	120	130	135	85	93	101	105	30	0.211	0.055			Yes
East Granby	110	120	125	130	85	93	97	101	35	0.173	0.054			Yes
East Haddam	115	125	135	135	89	97	105	105	30	0.214	0.056			Yes
East Hampton	110	125	130	135	85	97	101	105	30	0.210	0.056			Yes
East Hartford	110	120	130	135	85	93	101	105	30	0.191	0.055			Yes
East Haven	110	125	135	135	85	97	105	105	30	0.200	0.053	Type B	Type B	Yes
East Lyme	120	130	135	140	93	101	105	108	30	0.198	0.053	Type B	Type B	Yes
East Windsor	110	120	130	135	85	93	101	105	30	0.177	0.055			Yes
Eastford	110	120	130	135	85	93	101	105	40	0.180	0.055			Yes
Easton	110	120	130	135	85	93	101	105	30	0.218	0.055			Yes
Ellington	110	120	130	135	85	93	101	105	35	0.178	0.055			Yes
Enfield	110	120	125	130	85	93	97	101	35	0.172	0.055			Yes
Essex	115	125	135	140	89	97	105	108	30	0.207	0.054			Yes
Fairfield	110	120	130	135	85	93	101	105	30	0.219	0.055		Type B	Yes
Farmington	110	120	130	135	85	93	101	105	35	0.188	0.055			Yes
Franklin	115	125	135	140	89	97	105	108	30	0.195	0.054			Yes
Glastonbury	110	120	130	135	85	93	101	105	30	0.200	0.055			Yes
Goshen	110	115	125	130	85	89	97	101	40	0.172	0.054			
Granby	110	120	125	130	85	93	97	101	35	0.171	0.054			Yes
Greenwich	110	120	130	135	85	93	101	105	30	0.274	0.059		Type B	Yes
Griswold	120	125	135	140	93	97	105	108	30	0.189	0.054			Yes
Groton	120	130	140	140	93	101	108	108	30	0.190	0.052	Type B	Type A	Yes
Guilford	115	125	135	140	89	97	105	108	30	0.204	0.054	Type B	Type B	Yes
Haddam	115	125	135	135	89	97	105	105	30	0.214	0.055			Yes
Hamden	110	120	130	135	85	93	101	105	30	0.202	0.054			Yes

ASCE 7 Hazards Report

Address:
5 Perryridge Rd
Greenwich, Connecticut
06830

Standard:	ASCE/SEI 7-16	**Elevation:**	156.11 ft (NAVD 88)
Risk Category:	III	**Latitude:**	41.034548
Soil Class:	D - Default (see Section 11.4.3)	**Longitude:**	-73.630279





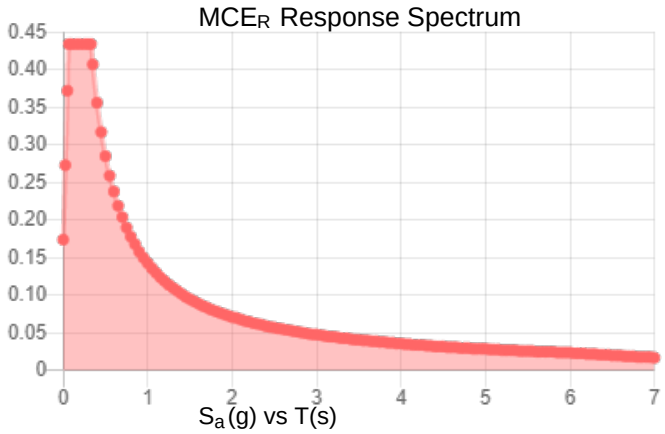
Seismic

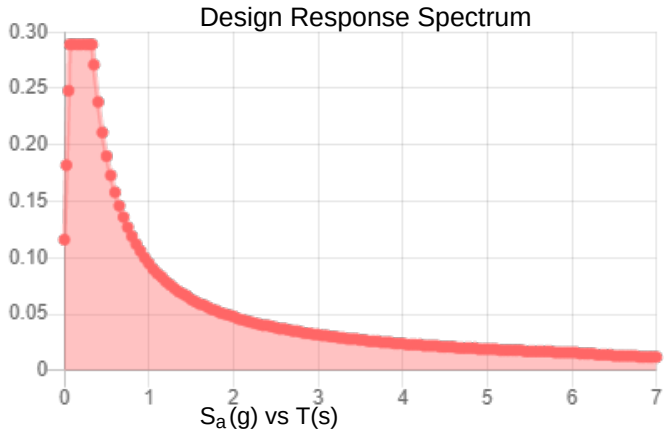
Site Soil Class: D - Default (see Section 11.4.3)

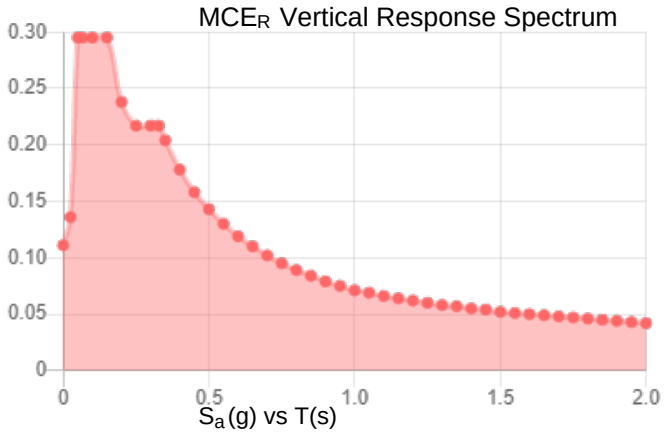
Results:

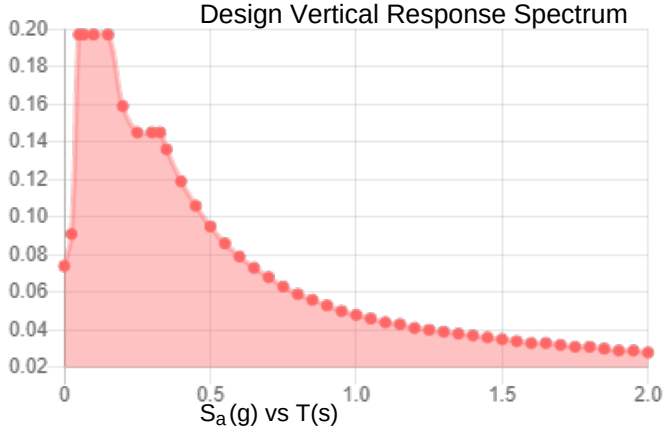
S_S :	0.275	S_{D1} :	0.095
S_1 :	0.059	T_L :	6
F_a :	1.58	PGA :	0.167
F_v :	2.4	PGA_M :	0.245
S_{MS} :	0.434	F_{PGA} :	1.466
S_{M1} :	0.143	I_e :	1.25
S_{DS} :	0.289	C_v :	0.85

Seismic Design Category B









Data Accessed: **Wed Aug 03 2022**

Date Source:

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

Ice

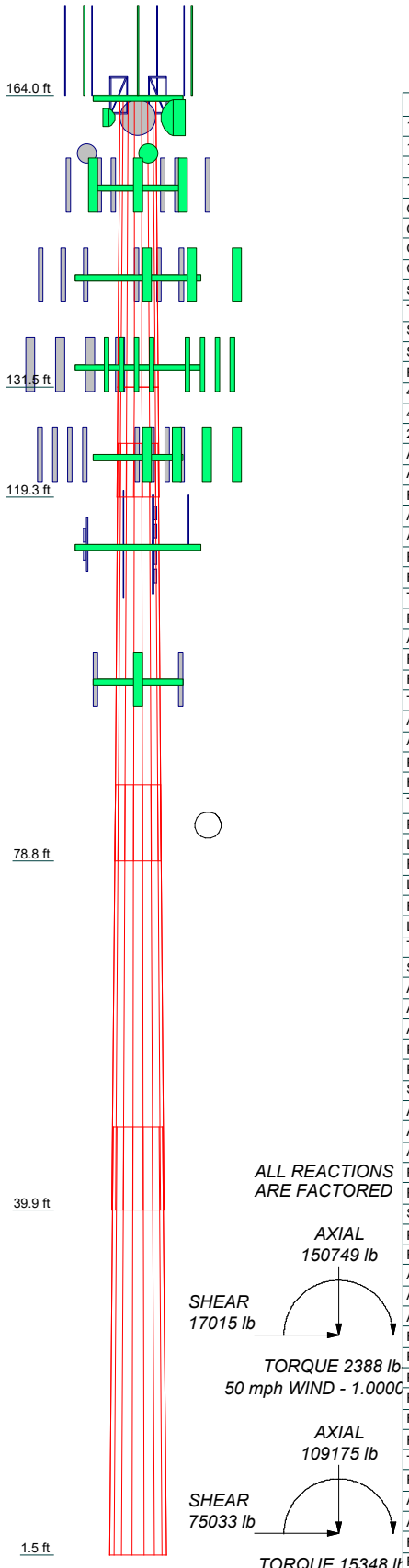
Results:

Ice Thickness:	1.00 in.
Concurrent Temperature:	15 F
Gust Speed	50 mph
Data Source:	Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8
Date Accessed:	Wed Aug 03 2022

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

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

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (lb)
1	32.50	18	0.3125		47.0000	53.4200		5473.4
2	12.21	18	0.3750	6.00	53.4200	56.1500		2690.7
3	46.50	18	0.4375	8.42	54.0585	62.9700		12760.7
4	47.33	18	0.5625	9.25	60.4813	69.6600		18548.8
5	47.63	18	0.5625		66.7412	76.0000		20489.4
							A572-65	59963.0



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
12' x 3" Omni (Town)	164	RRUS32 (ATI)	134
12' x 3" Omni (Town)	164	Radio 4478 (ATI)	134
12' x 3" Omni (Town)	164	DC6-48-60-18-8F (ATI)	134
12' x 3" Omni (Town)	164	DMP65R-BU6D (ATI)	134
Omni Mount (Town)	164	QD6616-7 (ATI)	134
Omni Mount (Town)	164	AIR6419 (ATI)	134
Omni Mount (Town)	164	AIR6449 (ATI)	134
Camera (Town)	164	Radio 4478 (ATI)	134
SC479-HFLDF (Town)	164	DC9-48-60-24-8C-EV (ATI)	134
TX/RX 432E-83I-01T (Town)	164	RRUS32 (ATI)	134
SC229-SFXLDF (Town)	164	RRUS32 (ATI)	134
SC479-HFLDF (Town)	164	Radio 4478 (ATI)	134
Platform (Town)	164	DC6-48-60-18-8F (ATI)	134
4FT DISH (Town)	161.5	DMP65R-BU6D (ATI)	134
4FT DISH (Town)	161.5	Platform (ATI)	134
2FT DISH (Town)	161.5	DMP65R-BU6D (ATI)	134
A-Ant-23G-2-C (Clearwire)	155.5	QD6616-7 (ATI)	134
A-Ant-23G-2-C (Clearwire)	155.5	AIR6419 (ATI)	134
FDD-R6-RRH (Clearwire)	154	AIR6449 (ATI)	134
APXVSPP18-C-A20 (Sprint)	154	QD6616-7 (ATI)	134
APXVTM14 (Sprint)	154	B5/15 RRH -BRO4C (Verizon)	124
FD-RRH 4x45 1900 (Sprint)	154	CBRS RRU (Verizon)	124
FD-RRH 2x50 800 (Sprint)	154	RC2DC-3315-PF-48 (Verizon)	124
TD-RRH8x20-25 (Sprint)	154	DB844G65ZAXY w/Mount Pipe (Verizon)	124
P40-16-XLPP-RR-A (Sprint)	154	(2) QS66512 (Verizon)	124
APXVTM14 (Sprint)	154	CBRS Antenna (Verizon)	124
FD-RRH 4x45 1900 (Sprint)	154	DB844G65ZAXY w/Mount Pipe (Verizon)	124
FD-RRH 2x50 800 (Sprint)	154	B2/66 RRH (Verizon)	124
TD-RRH8x20-25 (Sprint)	154	B5/15 RRH -BRO4C (Verizon)	124
APXVSPP18-C-A20 (Sprint)	154	CBRS RRU (Verizon)	124
APXVTM14 (Sprint)	154	RC2DC-3315-PF-48 (Verizon)	124
FD-RRH 4x45 1900 (Sprint)	154	DB844G65ZAXY w/Mount Pipe (Verizon)	124
FD-RRH 2x50 800 (Sprint)	154	(2) QS66512 (Verizon)	124
TD-RRH8x20-25 (Sprint)	154	CBRS Antenna (Verizon)	124
Platform (Sprint)	154	DB844G65ZAXY w/Mount Pipe (Verizon)	124
LLPX310R (Clearwire)	154	B2/66 RRH (Verizon)	124
FDD-R6-RRH (Clearwire)	154	B5/15 RRH -BRO4C (Verizon)	124
LLPX310R (Clearwire)	154	CBRS RRU (Verizon)	124
FDD-R6-RRH (Clearwire)	154	Platform (Verizon)	124
LLPX310R (Clearwire)	154	DB844G65ZAXY w/Mount Pipe (Verizon)	124
Tri-Bracket (Sprint)	151.5	B2/66 RRH (Verizon)	124
SDX1926Q-43 Diplexer (T-Mobile)	144	ANT150F2 (Eversource)	114
AIR6449 (T-Mobile)	144	Tower Top Amplifier (Eversource)	114
APXVAARR24_43-U-NA20 (T-Mobile)	144	14' Platform (Eversource)	114
AIR 32 (T-Mobile)	144	531-70HD (Eversource)	114
Radio 4449 (T-Mobile)	144	ANT220F2 (Eversource)	114
Radio 4415 (T-Mobile)	144	871F-70 (Eversource)	114
SDX1926Q-43 Diplexer (T-Mobile)	144	DB586-Y (Eversource)	114
AIR6449 (T-Mobile)	144	DB586-Y (Eversource)	114
APXVAARR24_43-U-NA20 (T-Mobile)	144	SFG-RF4450T-71A (DISH)	99
AIR 32 (T-Mobile)	144	SFG-RF4451D-70A (DISH)	99
Radio 4449 (T-Mobile)	144	RDIDC-9181-PF-48 (DISH)	99
RRUS32 (ATI)	138	FFVV-65B-R2 (DISH)	99
Radio 4449 (ATI)	138	SFG-RF4450T-71A (DISH)	99
RRUS32 (ATI)	138	SFG-RF4451D-70A (DISH)	99
Radio 4449 (ATI)	138	RDIDC-9181-PF-48 (DISH)	99
RRUS32 (ATI)	138	MC-PK8-DSH (DISH)	99
Tri-Bracket (ATI)	138	FFVV-65B-R2 (DISH)	99
Radio 4449 (ATI)	138	SFG-RF4450T-71A (DISH)	99
AIR6419 (ATI)	134	SFG-RF4451D-70A (DISH)	99
AIR6449 (ATI)	134	RDIDC-9181-PF-48 (DISH)	99
RRUS32 (ATI)	134	FFVV-65B-R2 (DISH)	99
RRUS32 (ATI)	134		
RRUS32 (ATI)	134		

MATERIAL STRENGTH

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

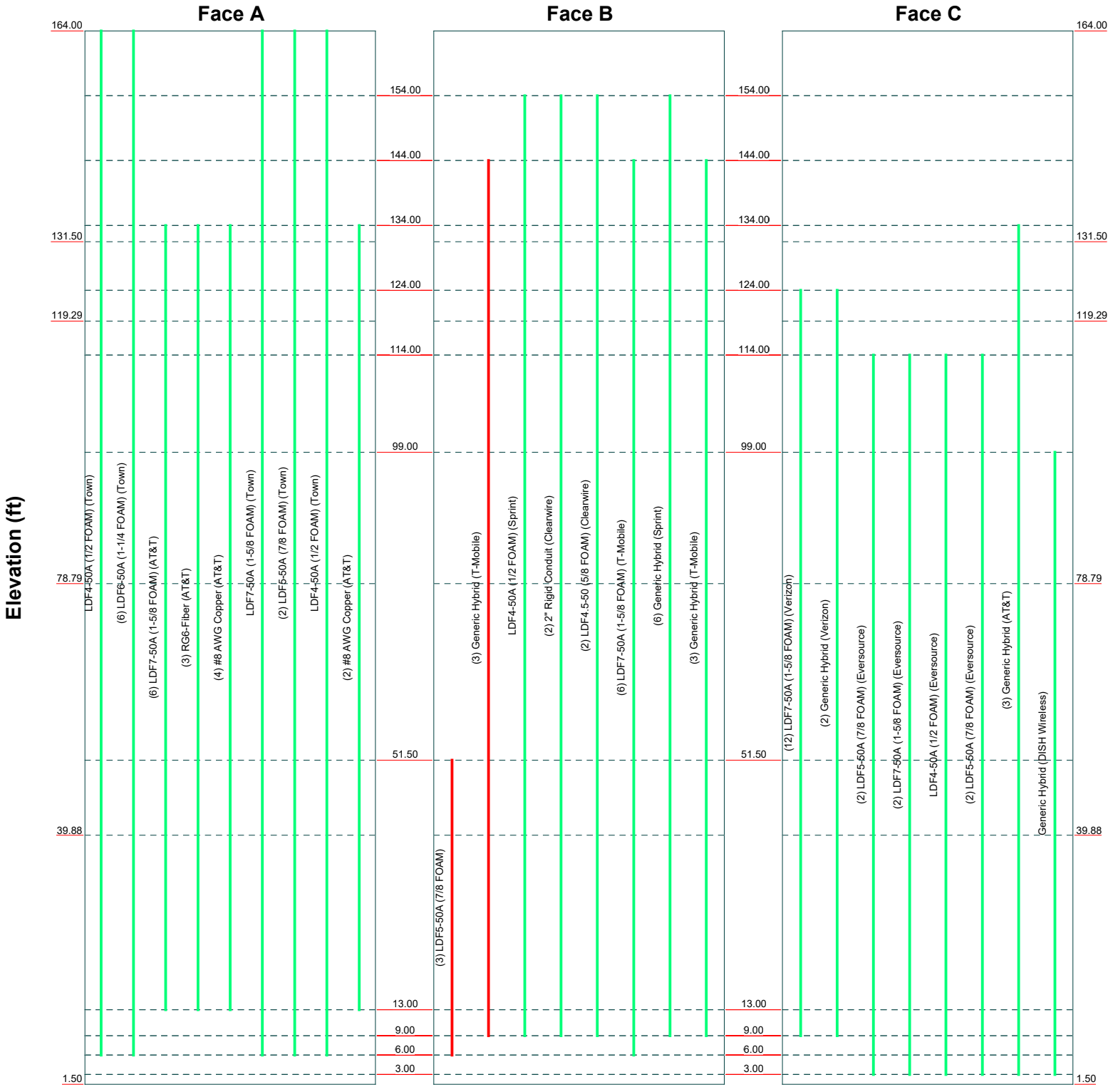
TOWER DESIGN NOTES

Magaram Engineering
13705 Stone Shadow
Clifton VA
Phone: 914-450-8416
FAX:

Job: NJJER02021B		
Project: DISH Wireless		
Client:	Drawn by:	App'd:
Code: TIA-222-H	Date: 06/27/24	Scale: NTS
Path:		Dwg No. E-1

Feed Line Distribution Chart
1'6" - 164'

Round | Flat | App In Face | App Out Face | Truss Leg



Magaram Engineering
13705 Stone Shadow
Clifton VA
Phone: 914-450-8416
FAX:

Job: **NJJER02021B**		
Project: **DISH Wireless**		
Client:	Drawn by:	App'd:
Code: TIA-222-H	Date: 11/09/22	Scale: NTS
Path:		Dwg No. E-7

Tower Input Data

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

Tower base elevation above sea level: 1.50 ft.
Basic wind speed of 130 mph.
Risk Category III.
Exposure Category C.
Simplified Topographic Factor Procedure for wind speed-up calculations is used.
Topographic Category: 1.
Crest Height: 0.00 ft.
Nominal ice thickness of 1.0000 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
Weld together tower sections have flange connections..
Connections use galvanized A325 bolts, nuts and locking devices. Installation per TIA/EIA-222 and AISC Specifications..
Tower members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards..
Welds are fabricated with ER-70S-6 electrodes..
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	164.00-131.50	32.50	0.00	18	47.0000	53.4200	0.3125	1.2500	A572-65 (65 ksi)
L2	131.50-119.29	12.21	6.00	18	53.4200	56.1500	0.3750	1.5000	A572-65 (65 ksi)
L3	119.29-78.79	46.50	8.42	18	54.0585	62.9700	0.4375	1.7500	A572-65 (65 ksi)
L4	78.79-39.88	47.33	9.25	18	60.4813	69.6600	0.5625	2.2500	A572-65 (65 ksi)
L5	39.88-1.50	47.63		18	66.7412	76.0000	0.5625	2.2500	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	47.6768	46.3082	12752.5270	16.5741	23.8760	534.1149	25521.8341	23.1585	7.7220	24.71
	54.1959	52.6760	18769.9004	18.8532	27.1374	691.6627	37564.4987	26.3430	8.8519	28.326
L2	54.1862	63.1368	22444.4518	18.8310	27.1374	827.0684	44918.4365	31.5744	8.7419	23.312
	56.9584	66.3862	26091.2194	19.8001	28.5242	914.7047	52216.7704	33.1994	9.2224	24.593
L3	55.9925	74.4594	27047.4669	19.0354	27.4617	984.9157	54130.5236	37.2368	8.7443	19.987
	63.8739	86.8342	42898.2727	22.1990	31.9888	1341.0421	85852.9920	43.4253	10.3127	23.572
L4	62.9857	106.9776	48524.0652	21.2712	30.7245	1579.3269	97111.9796	53.4990	9.6547	17.164
	70.6478	123.3649	74413.8720	24.5296	35.3873	2102.8424	148925.659 7	61.6942	11.2702	20.036
L5	69.5098	118.1537	65376.3617	23.4934	33.9045	1928.2498	130838.747 4	59.0881	10.7564	19.123
	77.0856	134.6842	96834.1984	26.7803	38.6080	2508.1382	193795.813 7	67.3549	12.3860	22.02

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 164.00-131.50				1	1	1			
L2 131.50-119.29				1	1	1			
L3 119.29-78.79				1	1	1			
L4 78.79-39.88				1	1	1			
L5 39.88-1.50				1	1	1			

Monopole Base Plate Data

Base Plate Data	
Base plate is square	
Base plate is grouted	
Anchor bolt grade	A615-75
Anchor bolt size	2.2500 in
Number of bolts	30
Embedment length	84.0000 in

Base Plate Data	
f'_c	4 ksi
Grout space	2.0000 in
Base plate grade	A572-60
Base plate thickness	3.0000 in
Bolt circle diameter	86.0000 in
Outer diameter	92.0000 in
Inner diameter	66.0000 in
Base plate type	Plain Plate

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
LDF5-50A (7/8 FOAM) (CaAa)	B	No	Surface Ar	51.50 - 6.00	3	3	0.000 0.000	1.0900		0.33
Generic Hybrid (T-Mobile) (CaAa)	B	No	Surface Ar	144.00 - 9.00	3	3	0.000 0.000	1.9800		1.90

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
*									
LDF4-50A (1/2 FOAM) (Town)	A	No	No	Inside Pole	164.00 - 6.00	1	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.15 0.15 0.15
LDF6-50A (1-1/4 FOAM) (Town)	A	No	No	Inside Pole	164.00 - 6.00	6	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.66 0.66 0.66
LDF4-50A (1/2 FOAM) (Sprint)	B	No	No	Inside Pole	154.00 - 9.00	1	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.15 0.15 0.15
2" Rigid Conduit (Clearwire)	B	No	No	Inside Pole	154.00 - 9.00	2	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	2.80 2.80 2.80
LDF4.5-50 (5/8 FOAM) (Clearwire)	B	No	No	Inside Pole	154.00 - 9.00	2	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.15 0.15 0.15
LDF7-50A (1-5/8 FOAM) (T-Mobile)	B	No	No	Inside Pole	144.00 - 6.00	6	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.82 0.82 0.82
LDF7-50A (1-5/8 FOAM) (AT&T)	A	No	No	Inside Pole	134.00 - 13.00	6	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.82 0.82 0.82
LDF7-50A (1-5/8 FOAM) (Verizon)	C	No	No	Inside Pole	124.00 - 9.00	12	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.82 0.82 0.82
RG6-Fiber (AT&T)	A	No	No	Inside Pole	134.00 - 13.00	3	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00
#8 AWG Copper (AT&T)	A	No	No	Inside Pole	134.00 - 13.00	4	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
Generic Hybrid (Sprint)	B	No	No	Inside Pole	154.00 - 9.00	6	No Ice	0.00	1.90
							1/2" Ice	0.00	1.90
							1" Ice	0.00	1.90
Generic Hybrid (Verizon)	C	No	No	Inside Pole	124.00 - 9.00	2	No Ice	0.00	1.90
							1/2" Ice	0.00	1.90
							1" Ice	0.00	1.90
LDF5-50A (7/8 FOAM) (Eversource)	C	No	No	Inside Pole	114.00 - 3.00	2	No Ice	0.00	0.33
							1/2" Ice	0.00	0.33
							1" Ice	0.00	0.33
LDF7-50A (1-5/8 FOAM) (Eversource)	C	No	No	Inside Pole	114.00 - 3.00	2	No Ice	0.00	0.82
							1/2" Ice	0.00	0.82
							1" Ice	0.00	0.82
LDF4-50A (1/2 FOAM) (Eversource)	C	No	No	Inside Pole	114.00 - 3.00	1	No Ice	0.00	0.15
							1/2" Ice	0.00	0.15
							1" Ice	0.00	0.15
Generic Hybrid (T-Mobile)	B	No	No	Inside Pole	144.00 - 9.00	3	No Ice	0.00	1.90
							1/2" Ice	0.00	1.90
							1" Ice	0.00	1.90
LDF7-50A (1-5/8 FOAM) (Town)	A	No	No	Inside Pole	164.00 - 6.00	1	No Ice	0.00	0.82
							1/2" Ice	0.00	0.82
							1" Ice	0.00	0.82
LDF5-50A (7/8 FOAM) (Town)	A	No	No	Inside Pole	164.00 - 6.00	2	No Ice	0.00	0.33
							1/2" Ice	0.00	0.33
							1" Ice	0.00	0.33
LDF4-50A (1/2 FOAM) (Town)	A	No	No	Inside Pole	164.00 - 6.00	1	No Ice	0.00	0.15
							1/2" Ice	0.00	0.15
							1" Ice	0.00	0.15
#8 AWG Copper (AT&T)	A	No	No	Inside Pole	134.00 - 13.00	2	No Ice	0.00	0.00
							1/2" Ice	0.00	0.00
							1" Ice	0.00	0.00
LDF5-50A (7/8 FOAM) (Eversource)	C	No	No	Inside Pole	114.00 - 3.00	2	No Ice	0.00	0.33
							1/2" Ice	0.00	0.33
							1" Ice	0.00	0.33
Generic Hybrid (AT&T)	C	No	No	Inside Pole	134.00 - 3.00	3	No Ice	0.00	1.90
							1/2" Ice	0.00	1.90
							1" Ice	0.00	1.90
*									
Generic Hybrid (DISH Wireless)	C	No	No	Inside Pole	99.00 - 3.00	1	No Ice	0.00	1.90
							1/2" Ice	0.00	1.90
							1" Ice	0.00	1.90

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
L1	164.00-131.50	A	0.000	0.000	0.000	0.000	198.85
		B	0.000	0.000	7.425	0.000	596.62
		C	0.000	0.000	0.000	0.000	14.25
L2	131.50-119.29	A	0.000	0.000	0.000	0.000	130.16
		B	0.000	0.000	7.253	0.000	412.33
		C	0.000	0.000	0.000	0.000	133.84
L3	119.29-78.79	A	0.000	0.000	0.000	0.000	431.73
		B	0.000	0.000	24.057	0.000	1367.68

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
		C	0.000	0.000	0.000	0.000	931.17
L4	78.79-39.88	A	0.000	0.000	0.000	0.000	414.78
		B	0.000	0.000	26.912	0.000	1325.49
		C	0.000	0.000	0.000	0.000	947.46
L5	39.88-1.50	A	0.000	0.000	0.000	0.000	326.72
		B	0.000	0.000	29.421	0.000	1091.12
		C	0.000	0.000	0.000	0.000	816.19

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
L1	164.00-131.50	A	1.336	0.000	0.000	0.000	0.000	198.85
		B		0.000	0.000	13.455	0.000	723.87
		C		0.000	0.000	0.000	0.000	14.25
L2	131.50-119.29	A	1.314	0.000	0.000	0.000	0.000	130.16
		B		0.000	0.000	13.077	0.000	534.32
		C		0.000	0.000	0.000	0.000	133.84
L3	119.29-78.79	A	1.283	0.000	0.000	0.000	0.000	431.73
		B		0.000	0.000	43.377	0.000	1772.33
		C		0.000	0.000	0.000	0.000	931.17
L4	78.79-39.88	A	1.219	0.000	0.000	0.000	0.000	414.78
		B		0.000	0.000	49.852	0.000	1774.65
		C		0.000	0.000	0.000	0.000	947.46
L5	39.88-1.50	A	1.099	0.000	0.000	0.000	0.000	326.72
		B		0.000	0.000	56.519	0.000	1567.83
		C		0.000	0.000	0.000	0.000	816.19

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	164.00-131.50	1.6105	-0.9298	1.6188	-0.9346
L2	131.50-119.29	3.6734	-2.1208	3.5256	-2.0355
L3	119.29-78.79	3.7047	-2.1389	3.5864	-2.0706
L4	78.79-39.88	4.2890	-2.4763	4.2436	-2.4500
L5	39.88-1.50	4.6559	-2.6881	4.7400	-2.7367

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

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L1	2	Generic Hybrid	131.50 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
			144.00		
L2	2	Generic Hybrid	119.29 - 131.50	1.0000	1.0000
L3	2	Generic Hybrid	78.79 - 119.29	1.0000	1.0000
L4	1	LDF5-50A (7/8 FOAM)	39.88 - 51.50	1.0000	1.0000
L4	2	Generic Hybrid	39.88 - 78.79	1.0000	1.0000
L5	1	LDF5-50A (7/8 FOAM)	6.00 - 39.88	1.0000	1.0000
L5	2	Generic Hybrid	9.00 - 39.88	1.0000	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
12' x 3" Omni	A	From Face	4.00	0.0000	164.00	No Ice	3.60	3.60	40.00
(Town)			0.00			1/2" Ice	4.83	4.83	66.06
			5.00			1" Ice	6.08	6.08	99.92
12' x 3" Omni	B	From Face	4.00	0.0000	164.00	No Ice	3.60	3.60	40.00
(Town)			-6.00			1/2" Ice	4.83	4.83	66.06
			5.00			1" Ice	6.08	6.08	99.92
12' x 3" Omni	C	From Face	4.00	0.0000	164.00	No Ice	3.60	3.60	40.00
(Town)			6.00			1/2" Ice	4.83	4.83	66.06
			5.00			1" Ice	6.08	6.08	99.92
12' x 3" Omni	C	From Face	4.00	0.0000	164.00	No Ice	3.60	3.60	40.00
(Town)			0.00			1/2" Ice	4.83	4.83	66.06
			5.00			1" Ice	6.08	6.08	99.92
Omni Mount	A	From Face	0.50	0.0000	164.00	No Ice	1.06	1.06	40.00
(Town)			0.00			1/2" Ice	1.58	1.58	60.00
			0.00			1" Ice	1.84	1.84	70.00
Omni Mount	B	From Face	0.50	0.0000	164.00	No Ice	1.06	1.06	40.00
(Town)			0.00			1/2" Ice	1.58	1.58	60.00
			0.00			1" Ice	1.84	1.84	70.00
Omni Mount	C	From Face	0.50	0.0000	164.00	No Ice	1.06	1.06	40.00
(Town)			0.00			1/2" Ice	1.58	1.58	60.00
			0.00			1" Ice	1.84	1.84	70.00
Camera	B	From Face	4.00	0.0000	164.00	No Ice	3.00	3.00	10.00
(Town)			-6.00			1/2" Ice	4.00	4.00	150.00
			2.00			1" Ice	5.00	5.00	200.00
SC479-HFLDF	A	From Face	4.00	0.0000	164.00	No Ice	4.39	4.39	30.00
(Town)			-6.00			1/2" Ice	6.54	6.54	70.00
			5.00			1" Ice	8.04	8.04	110.00
TX/RX 432E-83I-01T	A	From Face	4.00	0.0000	164.00	No Ice	1.20	0.75	30.00
(Town)			-6.00			1/2" Ice	1.34	0.86	40.00
			5.00			1" Ice	1.48	0.98	50.00
SC229-SFXLDF	B	From Face	4.00	0.0000	164.00	No Ice	6.67	6.67	30.00
(Town)			0.00			1/2" Ice	9.02	9.02	80.00
			5.00			1" Ice	11.39	11.39	140.00
SC479-HFLDF	C	From Face	4.00	0.0000	164.00	No Ice	4.39	4.39	30.00
(Town)			-6.00			1/2" Ice	6.54	6.54	70.00
			5.00			1" Ice	8.04	8.04	110.00
Platform	C	None		0.0000	164.00	No Ice	15.70	15.70	1300.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
(Town)						1/2" Ice	20.10	20.10	1790.00
						1" Ice	24.50	24.50	2230.00
*									
LLPX310R	A	From Face	3.00	0.0000	154.00	No Ice	4.30	1.95	30.00
(Clearwire)			0.00			1/2" Ice	4.60	2.21	50.00
			0.00			1" Ice	4.90	2.49	80.00
FDD-R6-RRH	A	From Face	3.00	0.0000	154.00	No Ice	1.80	0.78	30.00
(Clearwire)			0.00			1/2" Ice	1.99	0.92	40.00
			0.00			1" Ice	2.18	1.07	60.00
*									
LLPX310R	B	From Face	3.00	0.0000	154.00	No Ice	4.30	1.95	30.00
(Clearwire)			0.00			1/2" Ice	4.60	2.21	50.00
			0.00			1" Ice	4.90	2.49	80.00
FDD-R6-RRH	B	From Face	3.00	0.0000	154.00	No Ice	1.80	0.78	30.00
(Clearwire)			0.00			1/2" Ice	1.99	0.92	40.00
			0.00			1" Ice	2.18	1.07	60.00
*									
LLPX310R	C	From Face	3.00	0.0000	154.00	No Ice	4.30	1.95	30.00
(Clearwire)			0.00			1/2" Ice	4.60	2.21	50.00
			0.00			1" Ice	4.90	2.49	80.00
FDD-R6-RRH	C	From Face	3.00	0.0000	154.00	No Ice	1.80	0.78	30.00
(Clearwire)			0.00			1/2" Ice	1.99	0.92	40.00
			0.00			1" Ice	2.18	1.07	60.00
*									
APXVSPP18-C-A20	A	From Face	4.00	0.0000	154.00	No Ice	8.02	5.28	60.00
(Sprint)			0.00			1/2" Ice	8.48	5.74	110.00
			0.00			1" Ice	8.94	6.20	160.00
APXVTM14	A	From Face	4.00	0.0000	154.00	No Ice	6.34	3.61	60.00
(Sprint)			2.00			1/2" Ice	6.72	3.97	100.00
			0.00			1" Ice	7.10	4.33	140.00
FD-RRH 4x45 1900	A	From Face	4.00	0.0000	154.00	No Ice	2.32	2.38	60.00
(Sprint)			2.00			1/2" Ice	2.52	2.59	80.00
			0.00			1" Ice	2.74	2.80	110.00
FD-RRH 2x50 800	A	From Face	4.00	0.0000	154.00	No Ice	2.06	1.93	60.00
(Sprint)			-2.00			1/2" Ice	2.24	2.11	90.00
			0.00			1" Ice	2.43	2.29	110.00
TD-RRH8x20-25	A	From Face	4.00	0.0000	154.00	No Ice	4.05	1.53	70.00
(Sprint)			2.00			1/2" Ice	4.30	1.71	100.00
			0.00			1" Ice	4.56	1.90	130.00
*									
P40-16-XLPP-RR-A	B	From Face	4.00	0.0000	154.00	No Ice	9.07	3.52	50.00
(Sprint)			0.00			1/2" Ice	9.47	3.87	110.00
			0.00			1" Ice	9.87	4.22	160.00
APXVTM14	B	From Face	4.00	0.0000	154.00	No Ice	6.34	3.61	60.00
(Sprint)			2.00			1/2" Ice	6.72	3.97	100.00
			0.00			1" Ice	7.10	4.33	140.00
FD-RRH 4x45 1900	B	From Face	4.00	0.0000	154.00	No Ice	2.32	2.38	60.00
(Sprint)			2.00			1/2" Ice	2.52	2.59	80.00
			0.00			1" Ice	2.74	2.80	110.00
FD-RRH 2x50 800	B	From Face	4.00	0.0000	154.00	No Ice	2.06	1.93	60.00
(Sprint)			-2.00			1/2" Ice	2.24	2.11	90.00
			0.00			1" Ice	2.43	2.29	110.00
TD-RRH8x20-25	B	From Face	4.00	0.0000	154.00	No Ice	4.05	1.53	70.00
(Sprint)			2.00			1/2" Ice	4.30	1.71	100.00
			0.00			1" Ice	4.56	1.90	130.00
*									
APXVSPP18-C-A20	C	From Face	4.00	0.0000	154.00	No Ice	8.02	5.28	60.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
(Sprint)			0.00			1/2" Ice	8.48	5.74	110.00
			0.00			1" Ice	8.94	6.20	160.00
APXVTM14	C	From Face	4.00	0.0000	154.00	No Ice	6.34	3.61	60.00
(Sprint)			2.00			1/2" Ice	6.72	3.97	100.00
			0.00			1" Ice	7.10	4.33	140.00
FD-RRH 4x45 1900	C	From Face	4.00	0.0000	154.00	No Ice	2.32	2.38	60.00
(Sprint)			2.00			1/2" Ice	2.52	2.59	80.00
			0.00			1" Ice	2.74	2.80	110.00
FD-RRH 2x50 800	C	From Face	4.00	0.0000	154.00	No Ice	2.06	1.93	60.00
(Sprint)			-2.00			1/2" Ice	2.24	2.11	90.00
			0.00			1" Ice	2.43	2.29	110.00
TD-RRH8x20-25	C	From Face	4.00	0.0000	154.00	No Ice	4.05	1.53	70.00
(Sprint)			2.00			1/2" Ice	4.30	1.71	100.00
			0.00			1" Ice	4.56	1.90	130.00
*									
Tri-Bracket	C	None		0.0000	151.50	No Ice	1.75	1.75	290.00
(Sprint)						1/2" Ice	1.94	1.94	310.00
						1" Ice	2.13	2.13	320.00
Platform	C	None		0.0000	154.00	No Ice	15.70	15.70	1300.00
(Sprint)						1/2" Ice	20.10	20.10	1760.00
						1" Ice	24.50	24.50	2230.00
***									
AIR6449	A	From Face	4.00	0.0000	144.00	No Ice	5.65	2.42	100.00
(T-Mobile)			-6.00			1/2" Ice	5.96	2.64	140.00
			0.00			1" Ice	6.26	2.87	180.00
APXVAARR24_43-U-NA20	A	From Face	4.00	0.0000	144.00	No Ice	20.18	10.91	182.50
(T-Mobile)			-2.00			1/2" Ice	20.83	12.33	316.65
			0.00			1" Ice	21.48	13.61	461.40
AIR 32	A	From Face	4.00	0.0000	144.00	No Ice	6.51	4.71	132.20
(T-Mobile)			2.00			1/2" Ice	6.89	5.07	180.00
			0.00			1" Ice	7.27	5.43	230.00
Radio 4449	A	From Face	4.00	0.0000	144.00	No Ice	1.64	1.29	70.00
(T-Mobile)			-2.00			1/2" Ice	1.80	1.44	90.00
			0.00			1" Ice	1.97	1.59	110.00
Radio 4415	A	From Face	4.00	0.0000	144.00	No Ice	1.84	0.82	50.00
(T-Mobile)			-2.00			1/2" Ice	2.01	0.94	60.00
			0.00			1" Ice	2.19	1.07	80.00
SDX1926Q-43 Diplexer	A	From Leg	4.00	0.0000	144.00	No Ice	0.24	0.10	6.61
(T-Mobile)			0.00			1/2" Ice	0.31	0.14	9.08
			0.00			1" Ice	0.38	0.19	12.66
*									
AIR6449	B	From Face	4.00	0.0000	144.00	No Ice	5.65	2.42	100.00
(T-Mobile)			-6.00			1/2" Ice	5.96	2.64	140.00
			0.00			1" Ice	6.26	2.87	180.00
APXVAARR24_43-U-NA20	B	From Face	4.00	0.0000	144.00	No Ice	20.18	10.91	182.50
(T-Mobile)			-2.00			1/2" Ice	20.83	12.33	316.65
			0.00			1" Ice	21.48	13.61	461.40
AIR 32	B	From Face	4.00	0.0000	144.00	No Ice	6.51	4.71	132.20
(T-Mobile)			2.00			1/2" Ice	6.89	5.07	180.00
			0.00			1" Ice	7.27	5.43	230.00
Radio 4449	B	From Face	4.00	0.0000	144.00	No Ice	1.64	1.29	70.00
(T-Mobile)			-2.00			1/2" Ice	1.80	1.44	90.00
			0.00			1" Ice	1.97	1.59	110.00
Radio 4415	B	From Face	4.00	0.0000	144.00	No Ice	1.84	0.82	50.00
(T-Mobile)			-2.00			1/2" Ice	2.01	0.94	60.00
			0.00			1" Ice	2.19	1.07	80.00
SDX1926Q-43 Diplexer	B	From Leg	4.00	0.0000	144.00	No Ice	0.24	0.10	6.61

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
(T-Mobile)			0.00			1/2" Ice	0.31	0.14	9.08
			0.00			1" Ice	0.38	0.19	12.66
*									
AIR6449	C	From Face	4.00	0.0000	144.00	No Ice	5.65	2.42	100.00
(T-Mobile)			-6.00			1/2" Ice	5.96	2.64	140.00
			0.00			1" Ice	6.26	2.87	180.00
APXVAARR24_43-U-NA20	C	From Face	4.00	0.0000	144.00	No Ice	20.18	10.91	182.50
(T-Mobile)			-2.00			1/2" Ice	20.83	12.33	316.65
			0.00			1" Ice	21.48	13.61	461.40
AIR 32	C	From Face	4.00	0.0000	144.00	No Ice	6.51	4.71	132.20
(T-Mobile)			2.00			1/2" Ice	6.89	5.07	180.00
			0.00			1" Ice	7.27	5.43	230.00
Radio 4449	C	From Face	4.00	0.0000	144.00	No Ice	1.64	1.29	70.00
(T-Mobile)			-2.00			1/2" Ice	1.80	1.44	90.00
			0.00			1" Ice	1.97	1.59	110.00
Radio 4415	C	From Face	4.00	0.0000	144.00	No Ice	1.84	0.82	50.00
(T-Mobile)			-2.00			1/2" Ice	2.01	0.94	60.00
			0.00			1" Ice	2.19	1.07	80.00
SDX1926Q-43 Diplexer	C	From Leg	4.00	0.0000	144.00	No Ice	0.24	0.10	6.61
(T-Mobile)			0.00			1/2" Ice	0.31	0.14	9.08
			0.00			1" Ice	0.38	0.19	12.66
*									
Platform	C	None		0.0000	144.00	No Ice	26.00	26.00	2300.00
(T-Mobile)						1/2" Ice	32.00	32.00	2750.00
						1" Ice	38.00	38.00	3200.00
***									
DMP65R-BU6D	A	From Leg	3.00	0.0000	134.00	No Ice	13.20	7.52	125.20
(AT&T)			-7.00			1/2" Ice	13.91	8.80	220.25
			0.00			1" Ice	14.59	9.93	324.04
QD6616-7	A	From Face	3.00	0.0000	134.00	No Ice	14.05	8.70	88.20
(AT&T)			-3.50			1/2" Ice	14.77	9.99	193.27
			0.00			1" Ice	15.45	11.12	307.32
AIR6419	A	From Leg	3.00	0.0000	134.00	No Ice	3.80	1.94	77.00
(AT&T)			3.50			1/2" Ice	4.05	2.14	104.86
			0.00			1" Ice	4.31	2.34	136.30
AIR6449	A	From Leg	3.00	0.0000	134.00	No Ice	5.65	2.42	100.00
(AT&T)			7.00			1/2" Ice	5.96	2.64	140.00
			0.00			1" Ice	6.26	2.87	180.00
Radio 4449	A	From Leg	0.50	0.0000	138.00	No Ice	1.64	1.29	70.00
(AT&T)			0.00			1/2" Ice	1.80	1.44	90.00
			0.00			1" Ice	1.97	1.59	110.00
RRUS32	B	From Face	0.50	0.0000	138.00	No Ice	3.31	2.42	80.00
(AT&T)			-3.00			1/2" Ice	3.56	2.64	100.00
			0.00			1" Ice	3.81	2.86	140.00
RRUS32	A	From Face	0.50	0.0000	134.00	No Ice	3.31	2.42	80.00
(AT&T)			3.00			1/2" Ice	3.56	2.64	100.00
			0.00			1" Ice	3.81	2.86	140.00
RRUS32	A	From Face	0.50	0.0000	134.00	No Ice	3.31	2.42	80.00
(AT&T)			-4.00			1/2" Ice	3.56	2.64	100.00
			0.00			1" Ice	3.81	2.86	140.00
Radio 4478	A	From Face	0.50	0.0000	134.00	No Ice	1.84	1.06	60.00
(AT&T)			-6.00			1/2" Ice	2.01	1.20	80.00
			0.00			1" Ice	2.19	1.34	90.00
DC9-48-60-24-8C-EV	A	From Face	0.50	0.0000	134.00	No Ice	1.20	1.20	27.00
(AT&T)			0.00			1/2" Ice	1.87	1.87	48.28
			0.00			1" Ice	2.08	2.08	72.42
*									

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
DMP65R-BU6D	B	From Leg	3.00	0.0000	134.00	No Ice	13.20	7.52	125.20
(AT&T)			-7.00			1/2" Ice	13.91	8.80	220.25
			0.00			1" Ice	14.59	9.93	324.04
QD6616-7	B	From Face	3.00	0.0000	134.00	No Ice	14.05	8.70	88.20
(AT&T)			-3.50			1/2" Ice	14.77	9.99	193.27
			0.00			1" Ice	15.45	11.12	307.32
AIR6419	B	From Leg	3.00	0.0000	134.00	No Ice	3.80	1.94	77.00
(AT&T)			3.50			1/2" Ice	4.05	2.14	104.86
			0.00			1" Ice	4.31	2.34	136.30
AIR6449	B	From Leg	3.00	0.0000	134.00	No Ice	5.65	2.42	100.00
(AT&T)			7.00			1/2" Ice	5.96	2.64	140.00
			0.00			1" Ice	6.26	2.87	180.00
Radio 4449	B	From Leg	0.50	0.0000	138.00	No Ice	1.64	1.29	70.00
(AT&T)			0.00			1/2" Ice	1.80	1.44	90.00
			0.00			1" Ice	1.97	1.59	110.00
RRUS32	B	From Face	0.50	0.0000	138.00	No Ice	3.31	2.42	80.00
(AT&T)			-3.00			1/2" Ice	3.56	2.64	100.00
			0.00			1" Ice	3.81	2.86	140.00
RRUS32	B	From Face	0.50	0.0000	134.00	No Ice	3.31	2.42	80.00
(AT&T)			3.00			1/2" Ice	3.56	2.64	100.00
			0.00			1" Ice	3.81	2.86	140.00
RRUS32	B	From Face	0.50	0.0000	134.00	No Ice	3.31	2.42	80.00
(AT&T)			-4.00			1/2" Ice	3.56	2.64	100.00
			0.00			1" Ice	3.81	2.86	140.00
Radio 4478	B	From Face	0.50	0.0000	134.00	No Ice	1.84	1.06	60.00
(AT&T)			-6.00			1/2" Ice	2.01	1.20	80.00
			0.00			1" Ice	2.19	1.34	90.00
DC6-48-60-18-8F	B	From Face	0.50	0.0000	134.00	No Ice	1.91	1.91	20.00
(AT&T)			0.00			1/2" Ice	2.10	2.10	40.00
			0.00			1" Ice	2.29	2.29	60.00
*									
DMP65R-BU6D	C	From Leg	3.00	0.0000	134.00	No Ice	13.20	7.52	125.20
(AT&T)			-7.00			1/2" Ice	13.91	8.80	220.25
			0.00			1" Ice	14.59	9.93	324.04
QD6616-7	C	From Face	3.00	0.0000	134.00	No Ice	14.05	8.70	88.20
(AT&T)			-3.50			1/2" Ice	14.77	9.99	193.27
			0.00			1" Ice	15.45	11.12	307.32
AIR6419	C	From Leg	3.00	0.0000	134.00	No Ice	3.80	1.94	77.00
(AT&T)			3.50			1/2" Ice	4.05	2.14	104.86
			0.00			1" Ice	4.31	2.34	136.30
AIR6449	C	From Leg	3.00	0.0000	134.00	No Ice	5.65	2.42	100.00
(AT&T)			7.00			1/2" Ice	5.96	2.64	140.00
			0.00			1" Ice	6.26	2.87	180.00
Radio 4449	C	From Leg	0.50	0.0000	138.00	No Ice	1.64	1.29	70.00
(AT&T)			0.00			1/2" Ice	1.80	1.44	90.00
			0.00			1" Ice	1.97	1.59	110.00
RRUS32	C	From Face	0.50	0.0000	138.00	No Ice	3.31	2.42	80.00
(AT&T)			-3.00			1/2" Ice	3.56	2.64	100.00
			0.00			1" Ice	3.81	2.86	140.00
RRUS32	C	From Face	0.50	0.0000	134.00	No Ice	3.31	2.42	80.00
(AT&T)			3.00			1/2" Ice	3.56	2.64	100.00
			0.00			1" Ice	3.81	2.86	140.00
RRUS32	C	From Face	0.50	0.0000	134.00	No Ice	3.31	2.42	80.00
(AT&T)			-4.00			1/2" Ice	3.56	2.64	100.00
			0.00			1" Ice	3.81	2.86	140.00
Radio 4478	C	From Face	0.50	0.0000	134.00	No Ice	1.84	1.06	60.00
(AT&T)			-6.00			1/2" Ice	2.01	1.20	80.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
			0.00			1" Ice	2.19	1.34	90.00
DC6-48-60-18-8F	C	From Face	0.50	0.0000	134.00	No Ice	1.91	1.91	20.00
(AT&T)			0.00			1/2" Ice	2.10	2.10	40.00
			0.00			1" Ice	2.29	2.29	60.00
*									
Tri-Bracket	C	None		0.0000	138.00	No Ice	1.75	1.75	290.00
(AT&T)						1/2" Ice	1.94	1.94	310.00
						1" Ice	2.13	2.13	320.00
Platform	C	None		0.0000	134.00	No Ice	21.00	21.00	2000.00
(AT&T)						1/2" Ice	26.00	26.00	2400.00
						1" Ice	31.00	31.00	2800.00
***									
DB844G65ZAXY w/Mount	A	From Face	4.00	0.0000	124.00	No Ice	5.05	5.28	41.55
Pipe			-6.00			1/2" Ice	5.68	6.31	92.81
(Verizon)			0.00			1" Ice	6.19	7.06	150.42
(2) QS66512	A	From Face	4.00	0.0000	124.00	No Ice	8.85	8.94	137.85
(Verizon)			0.00			1/2" Ice	9.61	10.33	218.75
			0.00			1" Ice	10.39	11.73	308.20
CBRS Antenna	A	From Face	4.00	0.0000	124.00	No Ice	1.80	0.78	30.00
(Verizon)			0.00			1/2" Ice	2.00	0.92	40.00
			0.00			1" Ice	2.20	1.06	60.00
DB844G65ZAXY w/Mount	A	From Face	4.00	0.0000	124.00	No Ice	5.05	5.28	41.55
Pipe			4.00			1/2" Ice	5.68	6.31	92.81
(Verizon)			0.00			1" Ice	6.19	7.06	150.42
B2/66 RRH	A	From Face	4.00	0.0000	124.00	No Ice	2.54	1.61	60.00
(Verizon)			4.00			1/2" Ice	2.75	1.79	80.00
			0.00			1" Ice	2.97	1.98	100.00
B5/15 RRH -BRO4C	A	From Face	4.00	0.0000	124.00	No Ice	1.87	1.02	70.00
(Verizon)			4.00			1/2" Ice	2.03	1.15	90.00
			0.00			1" Ice	2.21	1.29	110.00
CBRS RRU	A	From Face	4.00	0.0000	124.00	No Ice	1.72	1.17	30.00
(Verizon)			4.00			1/2" Ice	1.93	1.44	50.00
			0.00			1" Ice	2.14	1.71	70.00
RC2DC-3315-PF-48	A	From Face	1.00	0.0000	124.00	No Ice	3.01	1.96	30.00
(Verizon)			1.00			1/2" Ice	3.23	2.15	50.00
			0.00			1" Ice	3.46	2.35	80.00
*									
DB844G65ZAXY w/Mount	B	From Face	4.00	0.0000	124.00	No Ice	5.05	5.28	41.55
Pipe			-6.00			1/2" Ice	5.68	6.31	92.81
(Verizon)			0.00			1" Ice	6.19	7.06	150.42
(2) QS66512	B	From Face	4.00	0.0000	124.00	No Ice	8.85	8.94	137.85
(Verizon)			0.00			1/2" Ice	9.61	10.33	218.75
			0.00			1" Ice	10.39	11.73	308.20
CBRS Antenna	B	From Face	4.00	0.0000	124.00	No Ice	1.80	0.78	30.00
(Verizon)			0.00			1/2" Ice	2.00	0.92	40.00
			0.00			1" Ice	2.20	1.06	60.00
DB844G65ZAXY w/Mount	B	From Face	4.00	0.0000	124.00	No Ice	5.05	5.28	41.55
Pipe			4.00			1/2" Ice	5.68	6.31	92.81
(Verizon)			0.00			1" Ice	6.19	7.06	150.42
B2/66 RRH	B	From Face	4.00	0.0000	124.00	No Ice	2.54	1.61	60.00
(Verizon)			4.00			1/2" Ice	2.75	1.79	80.00
			0.00			1" Ice	2.97	1.98	100.00
B5/15 RRH -BRO4C	B	From Face	4.00	0.0000	124.00	No Ice	1.87	1.02	70.00
(Verizon)			4.00			1/2" Ice	2.03	1.15	90.00
			0.00			1" Ice	2.21	1.29	110.00
CBRS RRU	B	From Face	4.00	0.0000	124.00	No Ice	1.72	1.17	30.00
(Verizon)			4.00			1/2" Ice	1.93	1.44	50.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
			0.00			1" Ice	2.14	1.71	70.00
RC2DC-3315-PF-48	B	From Face	1.00	0.0000	124.00	No Ice	3.01	1.96	30.00
(Verizon)			1.00			1/2" Ice	3.23	2.15	50.00
			0.00			1" Ice	3.46	2.35	80.00
*									
DB844G65ZAXY w/Mount	C	From Face	4.00	0.0000	124.00	No Ice	5.05	5.28	41.55
Pipe			-6.00			1/2" Ice	5.68	6.31	92.81
(Verizon)			0.00			1" Ice	6.19	7.06	150.42
(2) QS66512	C	From Face	4.00	0.0000	124.00	No Ice	8.85	8.94	137.85
(Verizon)			0.00			1/2" Ice	9.61	10.33	218.75
			0.00			1" Ice	10.39	11.73	308.20
CBRS Antenna	C	From Face	4.00	0.0000	124.00	No Ice	1.80	0.78	30.00
(Verizon)			0.00			1/2" Ice	2.00	0.92	40.00
			0.00			1" Ice	2.20	1.06	60.00
DB844G65ZAXY w/Mount	C	From Face	4.00	0.0000	124.00	No Ice	5.05	5.28	41.55
Pipe			4.00			1/2" Ice	5.68	6.31	92.81
(Verizon)			0.00			1" Ice	6.19	7.06	150.42
B2/66 RRH	C	From Face	4.00	0.0000	124.00	No Ice	2.54	1.61	60.00
(Verizon)			4.00			1/2" Ice	2.75	1.79	80.00
			0.00			1" Ice	2.97	1.98	100.00
B5/15 RRH -BRO4C	C	From Face	4.00	0.0000	124.00	No Ice	1.87	1.02	70.00
(Verizon)			4.00			1/2" Ice	2.03	1.15	90.00
			0.00			1" Ice	2.21	1.29	110.00
CBRS RRU	C	From Face	4.00	0.0000	124.00	No Ice	1.72	1.17	30.00
(Verizon)			4.00			1/2" Ice	1.93	1.44	50.00
			0.00			1" Ice	2.14	1.71	70.00
*									
Platform	C	None		0.0000	124.00	No Ice	15.70	15.70	1300.00
(Verizon)						1/2" Ice	20.10	20.10	1760.00
						1" Ice	24.50	24.50	2230.00
***									
531-70HD	A	From Face	3.00	0.0000	114.00	No Ice	6.00	6.00	40.00
(Eversource)			-2.00			1/2" Ice	6.90	6.90	50.00
			0.00			1" Ice	7.80	7.80	60.00
ANT220F2	A	From Face	3.00	0.0000	114.00	No Ice	1.03	1.03	20.00
(Eversource)			6.00			1/2" Ice	1.29	1.29	25.00
			3.00			1" Ice	1.56	1.56	40.00
871F-70	A	From Face	3.00	0.0000	114.00	No Ice	2.40	2.40	10.00
(Eversource)			6.00			1/2" Ice	3.20	3.20	30.00
			-3.00			1" Ice	4.00	4.00	40.00
*									
DB586-Y	B	From Face	3.00	0.0000	114.00	No Ice	1.01	1.01	8.25
(Eversource)			-6.00			1/2" Ice	1.28	1.28	16.59
			2.50			1" Ice	1.56	1.56	28.01
DB586-Y	B	From Face	3.00	0.0000	114.00	No Ice	1.01	1.01	8.25
(Eversource)			-6.00			1/2" Ice	1.28	1.28	16.59
			-2.50			1" Ice	1.56	1.56	28.01
ANT150F2	B	From Face	3.00	0.0000	114.00	No Ice	1.30	1.30	20.00
(Eversource)			2.00			1/2" Ice	1.60	1.60	25.00
			2.50			1" Ice	1.90	1.90	30.00
Tower Top Amplifier	B	From Face	3.00	0.0000	114.00	No Ice	2.67	1.03	40.00
(Eversource)			-6.00			1/2" Ice	2.87	1.17	60.00
			0.00			1" Ice	3.08	1.32	80.00
*									
14' Platform	C	None		0.0000	114.00	No Ice	41.00	41.00	2500.00
(Eversource)						1/2" Ice	56.00	56.00	3000.00
						1" Ice	71.00	71.00	3500.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
***									
FFVV-65B-R2	A	From Face	3.00	0.0000	99.00	No Ice	12.75	7.65	100.00
(DISH)			0.00			1/2" Ice	13.45	8.94	193.24
			0.00			1" Ice	14.12	10.07	295.20
SFG-RF4450T-71A	A	From Face	3.00	0.0000	99.00	No Ice	4.00	3.67	140.92
(DISH)			0.00			1/2" Ice	4.88	4.66	186.45
			0.00			1" Ice	5.48	5.30	238.04
SFG-RF4451D-70A	A	From Face	3.00	0.0000	99.00	No Ice	3.82	3.41	107.62
(DISH)			0.00			1/2" Ice	4.69	4.38	149.73
			0.00			1" Ice	5.28	5.01	197.66
RDIDC-9181-PF-48	A	From Face	3.00	0.0000	99.00	No Ice	2.01	1.17	20.00
(DISH)			0.00			1/2" Ice	2.19	1.31	40.00
			0.00			1" Ice	2.38	1.46	60.00
*									
FFVV-65B-R2	B	From Face	3.00	0.0000	99.00	No Ice	12.75	7.65	100.00
(DISH)			0.00			1/2" Ice	13.45	8.94	193.24
			0.00			1" Ice	14.12	10.07	295.20
SFG-RF4450T-71A	B	From Face	3.00	0.0000	99.00	No Ice	4.00	3.67	140.92
(DISH)			0.00			1/2" Ice	4.88	4.66	186.45
			0.00			1" Ice	5.48	5.30	238.04
SFG-RF4451D-70A	B	From Face	3.00	0.0000	99.00	No Ice	3.82	3.41	107.62
(DISH)			0.00			1/2" Ice	4.69	4.38	149.73
			0.00			1" Ice	5.28	5.01	197.66
RDIDC-9181-PF-48	B	From Face	3.00	0.0000	99.00	No Ice	2.01	1.17	20.00
(DISH)			0.00			1/2" Ice	2.19	1.31	40.00
			0.00			1" Ice	2.38	1.46	60.00
*									
FFVV-65B-R2	C	From Face	3.00	0.0000	99.00	No Ice	12.75	7.65	100.00
(DISH)			0.00			1/2" Ice	13.45	8.94	193.24
			0.00			1" Ice	14.12	10.07	295.20
SFG-RF4450T-71A	C	From Face	3.00	0.0000	99.00	No Ice	4.00	3.67	140.92
(DISH)			0.00			1/2" Ice	4.88	4.66	186.45
			0.00			1" Ice	5.48	5.30	238.04
SFG-RF4451D-70A	C	From Face	3.00	0.0000	99.00	No Ice	3.82	3.41	107.62
(DISH)			0.00			1/2" Ice	4.69	4.38	149.73
			0.00			1" Ice	5.28	5.01	197.66
RDIDC-9181-PF-48	C	From Face	3.00	0.0000	99.00	No Ice	2.01	1.17	20.00
(DISH)			0.00			1/2" Ice	2.19	1.31	40.00
			0.00			1" Ice	2.38	1.46	60.00
*									
MC-PK8-DSH	C	None		0.0000	99.00	No Ice	37.59	37.59	1727.00
(DISH)						1/2" Ice	41.46	41.46	2245.10
						1" Ice	53.08	53.08	2763.20

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft	Aperture Area ft^2	Weight lb

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight lb
4FT DISH (Town)	A	Paraboloid w/Shroud (HP)	From Leg	1.00 0.00 0.00	0.0000		161.50	4.00	No Ice 1/2" Ice 1" Ice	12.56 13.09 13.62	170.00 240.00 300.00
4FT DISH (Town)	B	Paraboloid w/Shroud (HP)	From Leg	1.00 0.00 0.00	0.0000		161.50	4.00	No Ice 1/2" Ice 1" Ice	12.56 13.09 13.62	170.00 240.00 300.00
2FT DISH (Town)	C	Paraboloid w/Shroud (HP)	From Leg	1.00 0.00 0.00	0.0000		161.50	2.00	No Ice 1/2" Ice 1" Ice	3.14 3.41 3.67	30.00 40.00 60.00
A-Ant-23G-2-C (Clearwire)	A	Paraboloid w/Radome	From Face	3.10 -2.52 2.00	0.0000		155.50	2.17	No Ice 1/2" Ice 1" Ice	3.72 4.01 4.30	30.00 50.00 70.00
A-Ant-23G-2-C (Clearwire)	C	Paraboloid w/Radome	From Face	3.80 -1.24 2.00	0.0000		155.50	2.17	No Ice 1/2" Ice 1" Ice	3.72 4.01 4.30	30.00 50.00 70.00

Tower Pressures - No Ice

$G_H = 1.100$

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft^2	Face	A_F ft^2	A_R ft^2	A_{leg} ft^2	Leg % 	C_AA_A In Face ft^2	C_AA_A Out Face ft^2
L1 164.00-131.50	147.50	1.374	56	137.953	A B C	0.000 0.000 0.000	137.953 137.953 137.953	137.953	100.00 100.00 100.00	0.000 7.425 0.000	0.000 0.000 0.000
L2 131.50-119.29	125.34	1.327	55	56.545	A B C	0.000 0.000 0.000	56.545 56.545 56.545	56.545	100.00 100.00 100.00	0.000 7.253 0.000	0.000 0.000 0.000
L3 119.29-78.79	98.81	1.262	52	202.275	A B C	0.000 0.000 0.000	202.275 202.275 202.275	202.275	100.00 100.00 100.00	0.000 24.057 0.000	0.000 0.000 0.000
L4 78.79-39.88	59.30	1.134	46	216.653	A B C	0.000 0.000 0.000	216.653 216.653 216.653	216.653	100.00 100.00 100.00	0.000 26.912 0.000	0.000 0.000 0.000
L5 39.88-1.50	21.06	0.912	38	234.431	A B C	0.000 0.000 0.000	234.431 234.431 234.431	234.431	100.00 100.00 100.00	0.000 29.421 0.000	0.000 0.000 0.000

Tower Pressure - With Ice

$G_H = 1.100$

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft^2	Face	A_F ft^2	A_R ft^2	A_{leg} ft^2	Leg % 	C_AA_A In Face ft^2	C_AA_A Out Face ft^2
L1 164.00-131.50	147.50	1.374	8	1.3357	145.188	A B C	0.000 0.000 0.000	145.188 145.188 145.188	145.188	100.00 100.00 100.00	0.000 13.455 0.000	0.000 0.000 0.000
L2	125.34	1.327	8	1.3142	59.219	A	0.000	59.219	59.219	100.00	0.000	0.000

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
131.50-119.29						B	0.000	59.219		100.00	13.077	0.000
						C	0.000	59.219		100.00	0.000	0.000
L3 119.29-78.79	98.81	1.262	8	1.2833	211.145	A	0.000	211.145	211.145	100.00	0.000	0.000
						B	0.000	211.145		100.00	43.377	0.000
						C	0.000	211.145		100.00	0.000	0.000
L4 78.79-39.88	59.30	1.134	7	1.2194	224.976	A	0.000	224.976	224.976	100.00	0.000	0.000
						B	0.000	224.976		100.00	49.852	0.000
						C	0.000	224.976		100.00	0.000	0.000
L5 39.88-1.50	21.06	0.912	6	1.0995	242.231	A	0.000	242.231	242.231	100.00	0.000	0.000
						B	0.000	242.231		100.00	56.519	0.000
						C	0.000	242.231		100.00	0.000	0.000

Tower Pressure - Service

$G_H = 1.100$

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1	147.50	1.374	11	137.953	A	0.000	137.953	137.953	100.00	0.000	0.000
164.00-131.50					B	0.000	137.953		100.00	7.425	0.000
					C	0.000	137.953		100.00	0.000	0.000
L2	125.34	1.327	10	56.545	A	0.000	56.545	56.545	100.00	0.000	0.000
131.50-119.29					B	0.000	56.545		100.00	7.253	0.000
					C	0.000	56.545		100.00	0.000	0.000
L3	98.81	1.262	10	202.275	A	0.000	202.275	202.275	100.00	0.000	0.000
119.29-78.79					B	0.000	202.275		100.00	24.057	0.000
					C	0.000	202.275		100.00	0.000	0.000
L4 78.79-39.88	59.30	1.134	9	216.653	A	0.000	216.653	216.653	100.00	0.000	0.000
					B	0.000	216.653		100.00	26.912	0.000
					C	0.000	216.653		100.00	0.000	0.000
L5 39.88-1.50	21.06	0.912	7	234.431	A	0.000	234.431	234.431	100.00	0.000	0.000
					B	0.000	234.431		100.00	29.421	0.000
					C	0.000	234.431		100.00	0.000	0.000

Tower Forces - No Ice - Wind Normal To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	809.73	5473.37	A	1	0.73	56	1	1	137.953	6251.22	192.35	C
164.00-131.50			B	1	0.73		1	1	137.953			
			C	1	0.73		1	1	137.953			
L2	676.33	2690.72	A	1	0.73	55	1	1	56.545	2476.94	202.86	C
131.50-119.29			B	1	0.73		1	1	56.545			
			C	1	0.73		1	1	56.545			
L3	2730.59	12760.73	A	1	0.73	52	1	1	202.275	8416.61	207.82	C
119.29-78.79			B	1	0.73		1	1	202.275			
			C	1	0.73		1	1	202.275			
L4	2687.73	18548.81	A	1	0.73	46	1	1	216.653	8078.81	207.63	C

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
78.79-39.88			B	1	0.73		1	1	216.653			
			C	1	0.73		1	1	216.653			
L5 39.88-1.50	2234.03	20489.35	A	1	0.73	38	1	1	234.431	7080.16	184.48	C
			B	1	0.73		1	1	234.431			
			C	1	0.73		1	1	234.431			
Sum Weight:	9138.41	59962.98						OTM	2643934.7 5 lb-ft	32303.74		

Tower Forces - No Ice - Wind 60 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	809.73	5473.37	A	1	0.73	56	1	1	137.953	6251.22	192.35	C
164.00-131.50			B	1	0.73		1	1	137.953			
			C	1	0.73		1	1	137.953			
L2	676.33	2690.72	A	1	0.73	55	1	1	56.545	2476.94	202.86	C
131.50-119.29			B	1	0.73		1	1	56.545			
			C	1	0.73		1	1	56.545			
L3	2730.59	12760.73	A	1	0.73	52	1	1	202.275	8416.61	207.82	C
119.29-78.79			B	1	0.73		1	1	202.275			
			C	1	0.73		1	1	202.275			
L4	2687.73	18548.81	A	1	0.73	46	1	1	216.653	8078.81	207.63	C
78.79-39.88			B	1	0.73		1	1	216.653			
			C	1	0.73		1	1	216.653			
L5 39.88-1.50	2234.03	20489.35	A	1	0.73	38	1	1	234.431	7080.16	184.48	C
			B	1	0.73		1	1	234.431			
			C	1	0.73		1	1	234.431			
Sum Weight:	9138.41	59962.98						OTM	2643934.7 5 lb-ft	32303.74		

Tower Forces - No Ice - Wind 90 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	809.73	5473.37	A	1	0.73	56	1	1	137.953	6251.22	192.35	C
164.00-131.50			B	1	0.73		1	1	137.953			
			C	1	0.73		1	1	137.953			
L2	676.33	2690.72	A	1	0.73	55	1	1	56.545	2476.94	202.86	C
131.50-119.29			B	1	0.73		1	1	56.545			
			C	1	0.73		1	1	56.545			
L3	2730.59	12760.73	A	1	0.73	52	1	1	202.275	8416.61	207.82	C
119.29-78.79			B	1	0.73		1	1	202.275			
			C	1	0.73		1	1	202.275			
L4	2687.73	18548.81	A	1	0.73	46	1	1	216.653	8078.81	207.63	C
78.79-39.88			B	1	0.73		1	1	216.653			

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
			C	1	0.73		1	1	216.653			
L5 39.88-1.50	2234.03	20489.35	A	1	0.73	38	1	1	234.431	7080.16	184.48	C
			B	1	0.73		1	1	234.431			
			C	1	0.73		1	1	234.431			
Sum Weight:	9138.41	59962.98						OTM	2643934.7 5 lb-ft	32303.74		

Tower Forces - With Ice - Wind Normal To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	936.97	8235.43	A	1	1.2	8	1	1	145.188	1599.84	49.23	C
164.00-131.50			B	1	1.2		1	1	145.188			
			C	1	1.2		1	1	145.188			
L2	798.32	3801.84	A	1	1.2	8	1	1	59.219	630.81	51.66	C
131.50-119.29			B	1	1.2		1	1	59.219			
			C	1	1.2		1	1	59.219			
L3	3135.23	16633.80	A	1	1.2	8	1	1	210.937	2134.32	52.70	C
119.29-78.79			B	1	1.2		1	1	210.937			
			C	1	1.2		1	1	210.937			
L4	3136.89	22478.99	A	1	1.2	7	1	1	224.561	2036.24	52.33	C
78.79-39.88			B	1	1.2		1	1	224.561			
			C	1	1.2		1	1	224.561			
L5 39.88-1.50	2710.74	24310.92	A	1	1.2	6	1	1	241.464	1773.34	46.20	C
			B	1	1.2		1	1	241.464			
			C	1	1.2		1	1	241.464			
Sum Weight:	10718.15	75460.98						OTM	671780.50 lb-ft	8174.55		

Tower Forces - With Ice - Wind 60 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	936.97	8235.43	A	1	1.2	8	1	1	145.188	1599.84	49.23	C
164.00-131.50			B	1	1.2		1	1	145.188			
			C	1	1.2		1	1	145.188			
L2	798.32	3801.84	A	1	1.2	8	1	1	59.219	630.81	51.66	C
131.50-119.29			B	1	1.2		1	1	59.219			
			C	1	1.2		1	1	59.219			
L3	3135.23	16633.80	A	1	1.2	8	1	1	210.937	2134.32	52.70	C
119.29-78.79			B	1	1.2		1	1	210.937			
			C	1	1.2		1	1	210.937			
L4	3136.89	22478.99	A	1	1.2	7	1	1	224.561	2036.24	52.33	C
78.79-39.88			B	1	1.2		1	1	224.561			
			C	1	1.2		1	1	224.561			

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L5 39.88-1.50	2710.74	24310.92	A	1	1.2	6	1	1	241.464	1773.34	46.20	C
			B	1	1.2		1	1	241.464			
			C	1	1.2		1	1	241.464			
Sum Weight:	10718.15	75460.98						OTM	671780.50 lb-ft	8174.55		

Tower Forces - With Ice - Wind 90 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	936.97	8235.43	A	1	1.2	8	1	1	145.188	1599.84	49.23	C
164.00-131.50			B	1	1.2		1	1	145.188			
			C	1	1.2		1	1	145.188			
L2	798.32	3801.84	A	1	1.2	8	1	1	59.219	630.81	51.66	C
131.50-119.29			B	1	1.2		1	1	59.219			
			C	1	1.2		1	1	59.219			
L3	3135.23	16633.80	A	1	1.2	8	1	1	210.937	2134.32	52.70	C
119.29-78.79			B	1	1.2		1	1	210.937			
			C	1	1.2		1	1	210.937			
L4	3136.89	22478.99	A	1	1.2	7	1	1	224.561	2036.24	52.33	C
78.79-39.88			B	1	1.2		1	1	224.561			
			C	1	1.2		1	1	224.561			
L5 39.88-1.50	2710.74	24310.92	A	1	1.2	6	1	1	241.464	1773.34	46.20	C
			B	1	1.2		1	1	241.464			
			C	1	1.2		1	1	241.464			
Sum Weight:	10718.15	75460.98						OTM	671780.50 lb-ft	8174.55		

Tower Forces - Service - Wind Normal To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	809.73	5473.37	A	1	0.73	11	1	1	137.953	1191.45	36.66	C
164.00-131.50			B	1	0.73		1	1	137.953			
			C	1	0.73		1	1	137.953			
L2	676.33	2690.72	A	1	0.73	10	1	1	56.545	472.09	38.66	C
131.50-119.29			B	1	0.73		1	1	56.545			
			C	1	0.73		1	1	56.545			
L3	2730.59	12760.73	A	1	0.73	10	1	1	202.275	1604.16	39.61	C
119.29-78.79			B	1	0.73		1	1	202.275			
			C	1	0.73		1	1	202.275			
L4	2687.73	18548.81	A	1	0.73	9	1	1	216.653	1539.78	39.57	C
78.79-39.88			B	1	0.73		1	1	216.653			
			C	1	0.73		1	1	216.653			
L5 39.88-1.50	2234.03	20489.35	A	1	0.73	7	1	1	234.431	1349.44	35.16	C

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
			B	1	0.73		1	1	234.431			
			C	1	0.73		1	1	234.431			
Sum Weight:	9138.41	59962.98						OTM	503920.30 lb-ft	6156.93		

Tower Forces - Service - Wind 60 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	809.73	5473.37	A	1	0.73	11	1	1	137.953	1191.45	36.66	C
164.00-131.50			B	1	0.73		1	1	137.953			
			C	1	0.73		1	1	137.953			
L2	676.33	2690.72	A	1	0.73	10	1	1	56.545	472.09	38.66	C
131.50-119.29			B	1	0.73		1	1	56.545			
			C	1	0.73		1	1	56.545			
L3	2730.59	12760.73	A	1	0.73	10	1	1	202.275	1604.16	39.61	C
119.29-78.79			B	1	0.73		1	1	202.275			
			C	1	0.73		1	1	202.275			
L4	2687.73	18548.81	A	1	0.73	9	1	1	216.653	1539.78	39.57	C
78.79-39.88			B	1	0.73		1	1	216.653			
			C	1	0.73		1	1	216.653			
L5 39.88-1.50	2234.03	20489.35	A	1	0.73	7	1	1	234.431	1349.44	35.16	C
			B	1	0.73		1	1	234.431			
			C	1	0.73		1	1	234.431			
Sum Weight:	9138.41	59962.98						OTM	503920.30 lb-ft	6156.93		

Tower Forces - Service - Wind 90 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	809.73	5473.37	A	1	0.73	11	1	1	137.953	1191.45	36.66	C
164.00-131.50			B	1	0.73		1	1	137.953			
			C	1	0.73		1	1	137.953			
L2	676.33	2690.72	A	1	0.73	10	1	1	56.545	472.09	38.66	C
131.50-119.29			B	1	0.73		1	1	56.545			
			C	1	0.73		1	1	56.545			
L3	2730.59	12760.73	A	1	0.73	10	1	1	202.275	1604.16	39.61	C
119.29-78.79			B	1	0.73		1	1	202.275			
			C	1	0.73		1	1	202.275			
L4	2687.73	18548.81	A	1	0.73	9	1	1	216.653	1539.78	39.57	C
78.79-39.88			B	1	0.73		1	1	216.653			
			C	1	0.73		1	1	216.653			
L5 39.88-1.50	2234.03	20489.35	A	1	0.73	7	1	1	234.431	1349.44	35.16	C
			B	1	0.73		1	1	234.431			

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
Sum Weight:	9138.41	59962.98	C	1	0.73		1	1 OTM	234.431 503920.30 lb-ft	6156.93		

Force Totals

Load Case	Vertical Forces lb	Sum of Forces X lb	Sum of Forces Z lb	Sum of Overturning Moments, M_x lb-ft	Sum of Overturning Moments, M_z lb-ft	Sum of Torques lb-ft
Leg Weight	59962.98					
Bracing Weight	0.00					
Total Member Self-Weight	59962.98			-2212.20	-1914.51	
Total Weight	90979.03			-2212.20	-1914.51	
Wind 0 deg - No Ice		-371.22	-74844.26	-8294205.12	57510.51	406.88
Wind 30 deg - No Ice		37391.65	-64898.93	-7192478.08	-4140657.91	6802.17
Wind 60 deg - No Ice		64926.59	-37485.39	-4154733.78	-7194292.85	-6522.68
Wind 90 deg - No Ice		74927.79	67.35	8663.81	-8302048.01	-15006.81
Wind 120 deg - No Ice		64655.53	37757.54	4197152.27	-7156577.11	-1595.80
Wind 150 deg - No Ice		37429.31	64992.85	7208522.09	-4149937.99	8782.60
Wind 180 deg - No Ice		262.90	75004.34	8315311.86	-43873.30	-543.22
Wind 210 deg - No Ice		-37163.85	65126.80	7224615.39	4100723.73	-6682.36
Wind 240 deg - No Ice		-64856.73	37445.05	4144097.94	7179705.33	6771.26
Wind 270 deg - No Ice		-75011.23	-378.57	-62637.06	8311829.78	15356.63
Wind 300 deg - No Ice		-64848.33	-37743.77	-4199216.06	7183591.83	2082.13
Wind 330 deg - No Ice		-37570.80	-64911.15	-7199873.06	4168752.83	-8591.73
Member Ice	15498.00					
Total Weight Ice	130207.42			-7616.89	-6191.59	
Wind 0 deg - Ice		-58.42	-16984.36	-1849149.18	3160.48	-32.10
Wind 30 deg - Ice		8488.65	-14721.73	-1603857.21	-926010.65	445.21
Wind 60 deg - Ice		14726.87	-8502.57	-929468.67	-1602885.72	-1359.99
Wind 90 deg - Ice		16998.27	9.47	-6083.41	-1849115.69	-2303.72
Wind 120 deg - Ice		14683.62	8545.05	921563.34	-1596874.81	-471.05
Wind 150 deg - Ice		8493.35	14738.10	1592116.03	-927286.76	935.82
Wind 180 deg - Ice		41.91	17010.47	1838078.95	-12879.28	14.91
Wind 210 deg - Ice		-8450.01	14757.94	1594435.46	907504.67	-421.49
Wind 240 deg - Ice		-14713.61	8494.90	913051.55	1588452.92	1403.46
Wind 270 deg - Ice		-17010.31	-61.05	-17358.89	1838704.47	2362.13
Wind 300 deg - Ice		-14714.49	-8543.81	-936571.47	1589429.56	549.45
Wind 330 deg - Ice		-8516.89	-14724.51	-1605175.17	918670.17	-902.44
Total Weight	90979.03			-2212.20	-1914.51	
Wind 0 deg - Service		-70.75	-14266.68	-1581747.66	11329.39	73.45
Wind 30 deg - Service		7127.53	-12370.92	-1371733.14	-788935.67	1291.73
Wind 60 deg - Service		12376.19	-7145.40	-792669.96	-1371027.51	-1247.29
Wind 90 deg - Service		14282.60	12.84	967.95	-1582190.96	-2862.59
Wind 120 deg - Service		12324.53	7197.27	799388.05	-1363839.09	-304.15
Wind 150 deg - Service		7134.71	12388.81	1373424.38	-790704.40	1676.28
Wind 180 deg - Service		50.11	14297.19	1584403.84	-7993.84	-99.44
Wind 210 deg - Service		-7084.11	12414.35	1376491.68	782060.78	-1268.89
Wind 240 deg - Service		-12362.87	7137.71	789276.17	1368983.57	1294.66
Wind 270 deg - Service		-14298.50	-72.15	-12621.63	1584791.68	2929.26
Wind 300 deg - Service		-12361.27	-7194.64	-801148.06	1369724.32	396.84
Wind 330 deg - Service		-7161.68	-12373.24	-1373142.58	795026.78	-1639.90

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice
3	0.9 Dead+1.0 Wind 0 deg - No Ice
4	1.2 Dead+1.0 Wind 30 deg - No Ice
5	0.9 Dead+1.0 Wind 30 deg - No Ice
6	1.2 Dead+1.0 Wind 60 deg - No Ice
7	0.9 Dead+1.0 Wind 60 deg - No Ice
8	1.2 Dead+1.0 Wind 90 deg - No Ice
9	0.9 Dead+1.0 Wind 90 deg - No Ice
10	1.2 Dead+1.0 Wind 120 deg - No Ice
11	0.9 Dead+1.0 Wind 120 deg - No Ice
12	1.2 Dead+1.0 Wind 150 deg - No Ice
13	0.9 Dead+1.0 Wind 150 deg - No Ice
14	1.2 Dead+1.0 Wind 180 deg - No Ice
15	0.9 Dead+1.0 Wind 180 deg - No Ice
16	1.2 Dead+1.0 Wind 210 deg - No Ice
17	0.9 Dead+1.0 Wind 210 deg - No Ice
18	1.2 Dead+1.0 Wind 240 deg - No Ice
19	0.9 Dead+1.0 Wind 240 deg - No Ice
20	1.2 Dead+1.0 Wind 270 deg - No Ice
21	0.9 Dead+1.0 Wind 270 deg - No Ice
22	1.2 Dead+1.0 Wind 300 deg - No Ice
23	0.9 Dead+1.0 Wind 300 deg - No Ice
24	1.2 Dead+1.0 Wind 330 deg - No Ice
25	0.9 Dead+1.0 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
L1	164 - 131.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-39970.64	-919.58	2179.13
			Max. Mx	20	-22321.51	521517.99	11553.03
			Max. My	14	-22316.17	-8005.80	-524672.10
			Max. Vy	20	-33669.00	521517.99	11553.03
			Max. Vx	14	33774.22	-8005.80	-524672.10
			Max. Torque	21			-9531.63
L2	131.5 - 119.29	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-42632.53	-1133.68	2302.74
			Max. Mx	20	-24336.53	734529.04	14053.50
			Max. My	14	-24331.40	-9767.28	-738369.17
			Max. Vy	20	-34970.66	734529.04	14053.50
			Max. Vx	14	35076.82	-9767.28	-738369.17
			Max. Torque	21			-8500.46
L3	119.29 - 78.79	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-83029.92	-2544.63	5732.81
			Max. Mx	20	-51059.30	2656621.20	30297.21
			Max. My	14	-51058.51	-20712.90	-2660021.42
			Max. Vy	20	-59588.15	2656621.20	30297.21
			Max. Vx	14	59582.45	-20712.90	-2660021.42
			Max. Torque	20			-15363.63
L4	78.79 - 39.88	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-111854.19	-4222.20	6701.47
			Max. Mx	20	-75325.82	5077806.39	45731.30
			Max. My	14	-75325.43	-31729.03	-5081213.05
			Max. Vy	20	-67386.60	5077806.39	45731.30
			Max. Vx	14	67380.81	-31729.03	-5081213.05
			Max. Torque	20			-15359.91
L5	39.88 - 1.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-150748.54	-6574.90	8059.99
			Max. Mx	20	-109141.80	8484208.83	64584.63
			Max. My	14	-109141.77	-45315.00	-8487604.20
			Max. Vy	20	-75059.05	8484208.83	64584.63
			Max. Vx	14	75051.18	-45315.00	-8487604.20
			Max. Torque	20			-15352.15

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Pole	Max. Vert	26	150748.54	-0.00	0.00
	Max. H_x	21	81881.13	75011.07	378.57
	Max. H_z	3	81881.02	371.18	74839.98
	Max. M_x	2	8466274.02	371.17	74838.33
	Max. M_z	8	8474968.69	-74927.56	-67.35
	Max. Torsion	8	15000.45	-74927.56	-67.35
	Min. Vert	3	81881.02	371.18	74839.98
	Min. H_x	9	81881.13	-74927.63	-67.35
	Min. H_z	15	81881.11	-262.89	-75003.47
	Min. M_x	14	-8487604.20	-262.89	-75003.11

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
	Min. M_z	20	-8484208.85	75011.00	378.57
	Min. Torsion	20	-15347.73	75011.00	378.57

Tower Mast Reaction Summary

Load Combination	Vertical lb	$Shear_x$ lb	$Shear_z$ lb	Overturning Moment, M_x lb-ft	Overturning Moment, M_z lb-ft	Torque lb-ft
Dead Only	90979.03	0.00	-0.00	-2212.21	-1914.51	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	109174.69	-371.17	-74838.33	-8466274.02	58505.99	383.04
0.9 Dead+1.0 Wind 0 deg - No Ice	81881.02	-371.18	-74839.98	-8421313.17	58733.04	389.14
1.2 Dead+1.0 Wind 30 deg - No Ice	109174.84	37391.63	-64898.90	-7342463.05	-4227067.56	6754.88
0.9 Dead+1.0 Wind 30 deg - No Ice	81881.13	37391.64	-64898.91	-7303170.59	-4204270.16	6763.45
1.2 Dead+1.0 Wind 60 deg - No Ice	109174.84	64926.56	-37485.37	-4241544.84	-7344214.68	-6542.53
0.9 Dead+1.0 Wind 60 deg - No Ice	81881.13	64926.57	-37485.37	-4218564.68	-7305015.82	-6534.33
1.2 Dead+1.0 Wind 90 deg - No Ice	109174.83	74927.56	67.35	8437.08	-8474968.69	-15000.45
0.9 Dead+1.0 Wind 90 deg - No Ice	81881.13	74927.63	67.35	9058.51	-8429833.51	-14994.74
1.2 Dead+1.0 Wind 120 deg - No Ice	109174.84	64655.50	37757.52	4284112.05	-7305649.83	-1602.68
0.9 Dead+1.0 Wind 120 deg - No Ice	81881.13	64655.51	37757.53	4262219.21	-7266671.27	-1600.57
1.2 Dead+1.0 Wind 150 deg - No Ice	109174.84	37429.29	64992.81	7357999.63	-4236623.92	8772.83
0.9 Dead+1.0 Wind 150 deg - No Ice	81881.13	37429.29	64992.82	7319959.63	-4213752.36	8770.78
1.2 Dead+1.0 Wind 180 deg - No Ice	109174.81	262.89	75003.11	8487604.20	-45314.93	-516.84
0.9 Dead+1.0 Wind 180 deg - No Ice	81881.11	262.89	75003.47	8443682.41	-44457.24	-522.98
1.2 Dead+1.0 Wind 210 deg - No Ice	109174.84	-37163.83	65126.77	7374433.96	4185419.70	-6633.85
0.9 Dead+1.0 Wind 210 deg - No Ice	81881.13	-37163.83	65126.78	7336307.88	4164033.67	-6642.41
1.2 Dead+1.0 Wind 240 deg - No Ice	109174.84	-64856.69	37445.03	4229756.11	7328507.97	6790.55
0.9 Dead+1.0 Wind 240 deg - No Ice	81881.13	-64856.70	37445.03	4208201.03	7290569.78	6782.38
1.2 Dead+1.0 Wind 270 deg - No Ice	109174.83	-75011.00	-378.57	-64582.59	8484208.85	15347.73
0.9 Dead+1.0 Wind 270 deg - No Ice	81881.13	-75011.07	-378.57	-63516.19	8440180.32	15342.09
1.2 Dead+1.0 Wind 300 deg - No Ice	109174.84	-64848.29	-37743.75	-4287135.16	7332529.38	2085.86
0.9 Dead+1.0 Wind 300 deg - No Ice	81881.13	-64848.30	-37743.75	-4263866.04	7294550.84	2083.76
1.2 Dead+1.0 Wind 330 deg - No Ice	109174.84	-37570.78	-64911.12	-7350081.54	4255091.18	-8582.28
0.9 Dead+1.0 Wind 330 deg - No Ice	81881.13	-37570.79	-64911.13	-7310726.73	4233278.70	-8580.24

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	lb	lb	lb	lb-ft	lb-ft	lb-ft
1.2 Dead+1.0 Ice+1.0 Temp	150748.54	0.00	-0.00	-8059.99	-6574.90	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	150748.53	-58.42	-16984.32	-1910354.89	2904.15	-37.71
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	150748.53	8488.63	-14721.69	-1657015.54	-956780.06	426.97
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	150748.53	14726.84	-8502.54	-960509.33	-1655858.29	-1385.59
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	150748.53	16998.23	9.47	-6837.05	-1910163.13	-2329.87
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	150748.53	14683.59	8545.03	951269.07	-1649631.88	-490.98
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	150748.53	8493.33	14738.06	1643796.26	-958116.47	927.41
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	150748.53	41.91	17010.43	1897816.46	-13755.63	20.45
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	150748.53	-8449.99	14757.90	1646189.77	936803.26	-403.54
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	150748.53	-14713.57	8494.88	942419.69	1640111.40	1428.69
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	150748.53	-17010.27	-61.05	-18548.40	1898593.29	2387.82
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	150748.53	-14714.45	-8543.79	-967896.88	1641141.58	568.95
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	150748.53	-8516.87	-14724.48	-1658401.07	948408.08	-894.28
Dead+Wind 0 deg - Service	90979.02	-70.75	-14265.75	-1610430.67	9605.88	69.70
Dead+Wind 30 deg - Service	90979.02	7127.06	-12370.11	-1396757.24	-804618.20	1286.42
Dead+Wind 60 deg - Service	90979.02	12375.38	-7144.93	-807609.43	-1396849.72	-1252.41
Dead+Wind 90 deg - Service	90979.02	14281.67	12.84	-148.08	-1611690.23	-2866.19
Dead+Wind 120 deg - Service	90979.02	12323.72	7196.80	812196.89	-1389525.78	-305.52
Dead+Wind 150 deg - Service	90979.02	7134.24	12388.01	1396219.19	-806429.17	1677.56
Dead+Wind 180 deg - Service	90979.02	50.10	14296.26	1610867.57	-10108.48	-95.59
Dead+Wind 210 deg - Service	90979.02	-7083.65	12413.54	1399339.20	793699.33	-1263.55
Dead+Wind 240 deg - Service	90979.02	-12362.07	7137.24	801875.06	1390859.09	1299.75
Dead+Wind 270 deg - Service	90979.02	-14297.57	-72.14	-14012.73	1610438.13	2932.74
Dead+Wind 300 deg - Service	90979.02	-12360.47	-7194.17	-816264.97	1391624.15	398.10
Dead+Wind 330 deg - Service	90979.02	-7161.21	-12372.43	-1398204.90	806932.39	-1641.19

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	lb	lb	lb	lb	lb	lb	
1	0.00	-90979.03	0.00	-0.00	90979.03	0.00	0.000%
2	-371.22	-109174.84	-74844.26	371.17	109174.69	74838.33	0.004%
3	-371.22	-81881.13	-74844.26	371.18	81881.02	74839.98	0.004%
4	37391.65	-109174.84	-64898.93	-37391.63	109174.84	64898.90	0.000%
5	37391.65	-81881.13	-64898.93	-37391.64	81881.13	64898.91	0.000%
6	64926.59	-109174.84	-37485.39	-64926.56	109174.84	37485.37	0.000%
7	64926.59	-81881.13	-37485.39	-64926.57	81881.13	37485.37	0.000%
8	74927.79	-109174.84	67.35	-74927.56	109174.83	-67.35	0.000%
9	74927.79	-81881.13	67.35	-74927.63	81881.13	-67.35	0.000%
10	64655.53	-109174.84	37757.54	-64655.50	109174.84	-37757.52	0.000%
11	64655.53	-81881.13	37757.54	-64655.51	81881.13	-37757.53	0.000%
12	37429.31	-109174.84	64992.85	-37429.29	109174.84	-64992.81	0.000%
13	37429.31	-81881.13	64992.85	-37429.29	81881.13	-64992.82	0.000%
14	262.90	-109174.84	75004.34	-262.89	109174.81	-75003.11	0.001%
15	262.90	-81881.13	75004.34	-262.89	81881.11	-75003.47	0.001%

Load Comb.	Sum of Applied Forces PX lb	PY lb	PZ lb	Sum of Reactions PX lb	PY lb	PZ lb	% Error
16	-37163.85	-109174.84	65126.80	37163.83	109174.84	-65126.77	0.000%
17	-37163.85	-81881.13	65126.80	37163.83	81881.13	-65126.78	0.000%
18	-64856.73	-109174.84	37445.05	64856.69	109174.84	-37445.03	0.000%
19	-64856.73	-81881.13	37445.05	64856.70	81881.13	-37445.03	0.000%
20	-75011.23	-109174.84	-378.57	75011.00	109174.83	378.57	0.000%
21	-75011.23	-81881.13	-378.57	75011.07	81881.13	378.57	0.000%
22	-64848.33	-109174.84	-37743.77	64848.29	109174.84	37743.75	0.000%
23	-64848.33	-81881.13	-37743.77	64848.30	81881.13	37743.75	0.000%
24	-37570.80	-109174.84	-64911.15	37570.78	109174.84	64911.12	0.000%
25	-37570.80	-81881.13	-64911.15	37570.79	81881.13	64911.13	0.000%
26	0.00	-150748.54	0.00	-0.00	150748.54	0.00	0.000%
27	-58.42	-150748.54	-16984.36	58.42	150748.53	16984.32	0.000%
28	8488.65	-150748.54	-14721.73	-8488.63	150748.53	14721.69	0.000%
29	14726.87	-150748.54	-8502.57	-14726.84	150748.53	8502.54	0.000%
30	16998.27	-150748.54	9.47	-16998.23	150748.53	-9.47	0.000%
31	14683.62	-150748.54	8545.05	-14683.59	150748.53	-8545.03	0.000%
32	8493.35	-150748.54	14738.10	-8493.33	150748.53	-14738.06	0.000%
33	41.91	-150748.54	17010.47	-41.91	150748.53	-17010.43	0.000%
34	-8450.01	-150748.54	14757.94	8449.99	150748.53	-14757.90	0.000%
35	-14713.61	-150748.54	8494.90	14713.57	150748.53	-8494.88	0.000%
36	-17010.31	-150748.54	-61.05	17010.27	150748.53	61.05	0.000%
37	-14714.49	-150748.54	-8543.81	14714.45	150748.53	8543.79	0.000%
38	-8516.89	-150748.54	-14724.51	8516.87	150748.53	14724.48	0.000%
39	-70.75	-90979.03	-14266.68	70.75	90979.02	14265.75	0.001%
40	7127.53	-90979.03	-12370.92	-7127.06	90979.02	12370.11	0.001%
41	12376.19	-90979.03	-7145.40	-12375.38	90979.02	7144.93	0.001%
42	14282.60	-90979.03	12.84	-14281.67	90979.02	-12.84	0.001%
43	12324.53	-90979.03	7197.27	-12323.72	90979.02	-7196.80	0.001%
44	7134.71	-90979.03	12388.81	-7134.24	90979.02	-12388.01	0.001%
45	50.11	-90979.03	14297.19	-50.10	90979.02	-14296.26	0.001%
46	-7084.11	-90979.03	12414.35	7083.65	90979.02	-12413.54	0.001%
47	-12362.87	-90979.03	7137.71	12362.07	90979.02	-7137.24	0.001%
48	-14298.50	-90979.03	-72.15	14297.57	90979.02	72.14	0.001%
49	-12361.27	-90979.03	-7194.64	12360.47	90979.02	7194.17	0.001%
50	-7161.68	-90979.03	-12373.24	7161.21	90979.02	12372.43	0.001%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	6	0.00000001	0.00000001
2	Yes	9	0.00008083	0.00009949
3	Yes	9	0.00005712	0.00009708
4	Yes	12	0.00000001	0.00008872
5	Yes	12	0.00000001	0.00006946
6	Yes	12	0.00000001	0.00008774
7	Yes	12	0.00000001	0.00006865
8	Yes	11	0.00000001	0.00011717
9	Yes	11	0.00000001	0.00009552
10	Yes	12	0.00000001	0.00008117
11	Yes	12	0.00000001	0.00006341
12	Yes	12	0.00000001	0.00007539
13	Yes	12	0.00000001	0.00005877
14	Yes	10	0.00000001	0.00005137
15	Yes	10	0.00000001	0.00004300
16	Yes	12	0.00000001	0.00007514

17	Yes	12	0.00000001	0.00005861
18	Yes	12	0.00000001	0.00007598
19	Yes	12	0.00000001	0.00005930
20	Yes	11	0.00000001	0.00012858
21	Yes	11	0.00000001	0.00010474
22	Yes	12	0.00000001	0.00008437
23	Yes	12	0.00000001	0.00006591
24	Yes	12	0.00000001	0.00009138
25	Yes	12	0.00000001	0.00007157
26	Yes	6	0.00000001	0.00000001
27	Yes	11	0.00000001	0.00009065
28	Yes	11	0.00000001	0.00009617
29	Yes	11	0.00000001	0.00009634
30	Yes	11	0.00000001	0.00009071
31	Yes	11	0.00000001	0.00009528
32	Yes	11	0.00000001	0.00009521
33	Yes	11	0.00000001	0.00008972
34	Yes	11	0.00000001	0.00009451
35	Yes	11	0.00000001	0.00009441
36	Yes	11	0.00000001	0.00009015
37	Yes	11	0.00000001	0.00009580
38	Yes	11	0.00000001	0.00009607
39	Yes	9	0.00000001	0.00002588
40	Yes	9	0.00000001	0.00006551
41	Yes	9	0.00000001	0.00006132
42	Yes	9	0.00000001	0.00007161
43	Yes	9	0.00000001	0.00004114
44	Yes	9	0.00000001	0.00004433
45	Yes	9	0.00000001	0.00002612
46	Yes	9	0.00000001	0.00004009
47	Yes	9	0.00000001	0.00003921
48	Yes	9	0.00000001	0.00007402
49	Yes	9	0.00000001	0.00004752
50	Yes	9	0.00000001	0.00007139

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	164 - 131.5	9.688	50	0.4420	0.0030
L2	131.5 - 119.29	6.720	50	0.4222	0.0023
L3	125.29 - 78.79	6.176	50	0.4131	0.0022
L4	87.21 - 39.88	3.188	50	0.3185	0.0012
L5	49.13 - 1.5	1.077	50	0.1953	0.0006

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
164.00	12' x 3" Omni	50	9.688	0.4420	0.0030	290764
161.50	4FT DISH	50	9.456	0.4413	0.0030	290764
157.50	A-Ant-23G-2-C	50	9.085	0.4401	0.0029	223665
154.00	LLPX310R	50	8.762	0.4389	0.0028	145382
151.50	Tri-Bracket	50	8.531	0.4379	0.0028	116305

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
144.00	AIR6449	50	7.843	0.4339	0.0026	72691
138.00	Radio 4449	50	7.300	0.4293	0.0025	55916
134.00	DMP65R-BU6D	50	6.942	0.4252	0.0024	48352
124.00	DB844G65ZAXY w/Mount Pipe	50	6.065	0.4109	0.0021	33628
114.00	531-70HD	50	5.223	0.3908	0.0019	28937
99.00	FFVV-65B-R2	50	4.041	0.3526	0.0015	24128

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	164 - 131.5	50.958	24	2.3254	0.0156
L2	131.5 - 119.29	35.348	24	2.2212	0.0122
L3	125.29 - 78.79	32.491	24	2.1733	0.0113
L4	87.21 - 39.88	16.777	22	1.6759	0.0063
L5	49.13 - 1.5	5.668	22	1.0278	0.0030

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
164.00	12' x 3" Omni	24	50.958	2.3254	0.0156	55496
161.50	4FT DISH	24	49.738	2.3217	0.0154	55496
157.50	A-Ant-23G-2-C	24	47.789	2.3155	0.0150	42689
154.00	LLPX310R	24	46.086	2.3091	0.0147	27748
151.50	Tri-Bracket	24	44.873	2.3039	0.0144	22198
144.00	AIR6449	24	41.257	2.2829	0.0136	13873
138.00	Radio 4449	24	38.399	2.2583	0.0129	10671
134.00	DMP65R-BU6D	24	36.515	2.2369	0.0125	9227
124.00	DB844G65ZAXY w/Mount Pipe	24	31.905	2.1618	0.0112	6418
114.00	531-70HD	24	27.480	2.0561	0.0098	5521
99.00	FFVV-65B-R2	22	21.259	1.8551	0.0077	4601

Base Plate Design Data

Plate Thickness in	Number of Anchor Bolts	Anchor Bolt Size in	Actual Allowable Ratio Bolt Tension lb	Actual Allowable Ratio Bolt Compression lb	Actual Allowable Ratio Plate Stress ksi	Actual Allowable Ratio Stiffener Stress ksi	Controlling Condition	Ratio
3.0000	30	2.2500	153607.26 243576.14 0.63	160797.53 404336.40 0.40	44.898 54.000 0.83		Plate	0.83 ✔

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
L1	164 - 131.5 (1)	TP53.42x47x0.3125	32.50	162.50	103.4	52.6760	-22314.20	1112380.00	0.020
L2	131.5 - 119.29 (2)	TP56.15x53.42x0.375	12.21	162.50	100.9	64.7894	-24329.50	1437350.00	0.017
L3	119.29 - 78.79 (3)	TP62.97x54.0585x0.4375	46.50	162.50	90.2	84.5934	-51056.90	2284890.00	0.022
L4	78.79 - 39.88 (4)	TP69.66x60.4813x0.5625	47.33	162.50	81.6	120.1620	-75324.50	3732120.00	0.020
L5	39.88 - 1.5 (5)	TP76x66.7412x0.5625	47.63	162.50	72.8	134.6840	-109142.00	4759960.00	0.023

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} lb-ft	ϕM_{nx} lb-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} lb-ft	ϕM_{ny} lb-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	164 - 131.5 (1)	TP53.42x47x0.3125	526795.00	3478158.33	0.151	0.00	3478158.33	0.000
L2	131.5 - 119.29 (2)	TP56.15x53.42x0.375	740581.67	4715666.67	0.157	0.00	4715666.67	0.000
L3	119.29 - 78.79 (3)	TP62.97x54.0585x0.4375	2664641.67	7005474.67	0.380	0.00	7005474.67	0.000
L4	78.79 - 39.88 (4)	TP69.66x60.4813x0.5625	5086150.00	11587917.33	0.439	0.00	11587917.33	0.000
L5	39.88 - 1.5 (5)	TP76x66.7412x0.5625	8493833.33	14008000.00	0.606	0.00	14008000.00	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u lb	ϕV_n lb	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u lb-ft	ϕT_n lb-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	164 - 131.5 (1)	TP53.42x47x0.3125	33780.90	924464.00	0.037	6859.11	4299575.00	0.002
L2	131.5 - 119.29 (2)	TP56.15x53.42x0.375	35084.90	1137050.00	0.031	6858.87	5420350.00	0.001
L3	119.29 - 78.79 (3)	TP62.97x54.0585x0.4375	59580.50	1484610.00	0.040	8589.92	7920366.67	0.001
L4	78.79 - 39.88 (4)	TP69.66x60.4813x0.5625	67377.60	2108850.00	0.032	8585.58	12429833.33	0.001
L5	39.88 - 1.5 (5)	TP76x66.7412x0.5625	75080.70	2363710.00	0.032	2085.83	15615666.67	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio P_u / ϕP_n	Ratio M_{ux} / ϕM_{nx}	Ratio M_{uy} / ϕM_{ny}	Ratio V_u / ϕV_n	Ratio T_u / ϕT_n	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	164 - 131.5 (1)	0.020	0.151	0.000	0.037	0.002	0.173 ✔	1.000	✔
L2	131.5 - 119.29 (2)	0.017	0.157	0.000	0.031	0.001	0.175 ✔	1.000	✔
L3	119.29 - 78.79 (3)	0.022	0.380	0.000	0.040	0.001	0.404 ✔	1.000	✔
L4	78.79 - 39.88 (4)	0.020	0.439	0.000	0.032	0.001	0.460 ✔	1.000	✔
L5	39.88 - 1.5 (5)	0.023	0.606	0.000	0.032	0.000	0.630 ✔	1.000	✔

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
L1	164 - 131.5	Pole	TP53.42x47x0.3125	1	-22314.20	1112380.00	17.3	Pass
L2	131.5 - 119.29	Pole	TP56.15x53.42x0.375	2	-24329.50	1437350.00	17.5	Pass
L3	119.29 - 78.79	Pole	TP62.97x54.0585x0.4375	3	-51056.90	2284890.00	40.4	Pass
L4	78.79 - 39.88	Pole	TP69.66x60.4813x0.5625	4	-75324.50	3732120.00	46.0	Pass
L5	39.88 - 1.5	Pole	TP76x66.7412x0.5625	5	-109142.00	4759960.00	63.0	Pass
							Summary	
						Pole (L5)	63.0	Pass
						Base Plate	83.1	Pass
						RATING =	**83.1**	**Pass**

Check Foundation

Pole Reactions

$V := 74.2\ kip$ Shear

$M := 8416.7\ kip\ ft$ Moment

$P := 108.8\ kip$ Axial

Check Foundation-Soil Interaction

Caisson Properties

$D_c := 9\ ft$ Caisson diameter

$h_c := 28\ ft$ Caisson depth

$h_{ts} := 3\ ft$ Depth of neglected topsoil

$h_{ag} := 1\ ft$ Height of caisson above ground

$V_c := \frac{\pi}{4} \cdot D_c^{\,2} \cdot h_c = 1781.3\ ft^3$ Caisson volume

$A_c := \frac{\pi}{4} \cdot D_c^{\,2} = 63.6\ ft^2$ Caisson end area

$\gamma_{conc} := 150\ \frac{lbf}{ft^3}$ Unit weight of concrete

$W_c := V_c \cdot \gamma_{conc} = 267.2\ kip$ Weight of caisson

$\Sigma P := \frac{P}{1.2} + W_c = 357.9\ kip$ Coimbined axial load (converted to ASD for foundation design)

Soil Properties

$q_{all} := 4000\ psf$ Table 1806.2, IBC (Weathered Bedrock)

$F_{lat} := 20\ \frac{lbf}{in^3}$ Original EEI Design

Check End Bearing

$q_{act} := \frac{P}{A_c} = 1710.2\ psf$

```
if  q_act ≤ q_all        = "OK for bearing"
  "OK for bearing"
else
  "NG for bearing"
```

$\frac{q_{act}}{q_{all}} = 42.8\ \%$

Check Lateral Rotation

$h_{ag} := h_{ag} + \frac{M}{V} = 114.4\ ft$

$S_{1\_act} := \frac{2.34 \cdot (0.6 \cdot V) \cdot \left(4 \cdot \left(h_c - h_{ts}\right) + 4.36 \cdot \left(h_{ag} + h_{ts}\right)\right)}{4 \cdot D_c \cdot \left(h_c - h_{ts}\right)^2} = 2833.6\ psf$

$S_{1\_all} := F_{lat} \cdot \text{Min}\left(\frac{h_c - h_{ts}}{3}, \frac{12\ ft}{3}\right) = 138.2\ ksf$

```
if  S_1_act ≤ S_1_all            = "OK for lateral rotation"
  "OK for lateral rotation"
else
  "NG for lateral rotation"
```

$\frac{S_{1\_act}}{S_{1\_all}} = 2\ \%$

MK DEVELOPMENT

EXHIBIT E

Antenna Mount Analysis

June 27, 2024

PASS

RE: **Mount Analysis**

Location: **5 Perryridge Rd Greenwich, CT 06830**

Site ID: **NJJER02021B**

Dish Wireless LLC,

Per your request, we have performed a mount analysis on the proposed mount for the tower. This site consists of one (1) proposed mount that will be installed on the existing monopole. This review determines if the proposed mount can support the proposed loads.

1.0 Assumptions:

CATEGORY	DATA	CODE
Structure Type	Monopole	
RAD Center	99'-0"	
Structure Class	III	ASCE 7-16
Exposure Class	C	ASCE 7-16
Kzt Factor	1.0	ASCE 7-16
Basic Wind Speed	130	ASCE 7-16
Ice Thickness	1"	ASCE 7-16
Ice Windspeed	50 MPH	ASCE 7-16
Seismic Design Category	B	ASCE 7-16
S_{DS}	.289	ASCE 7-16

2.0 Existing Documents:

DOCUMENT	COMPANY	DATE
Proposed Drawings	M&K Development	4/5/2022
Site Visit Photos	M&K Development	8/11/2021

3.0 Proposed Equipment:

MANUFACTURER	EQUIPMENT	WEIGHTS
CommScope	**(1) MC-PK8-DSH**	**1802 lbs**
CommScope	**(3) FFVV-65B-R2**	**70.54 lbs**
Samsung	**(3) SFG-ARR3KM01DI_RF4451D-70A**	**61.3 lbs**
Samsung	**(3) SFG-ARR3J601DI_RF4450D-71A**	**94.6 lbs**
RayCap	**(1) OVP RDIDC-9181-PF-48**	**32 lbs**

Bold represents equipment to be added

We are installing (1) proposed MC-PK8-DSH mount on the existing monopole. After performing an analysis on the proposed mount, it has been determined that it is **ADEQUATE** for the proposed loads.

This report does not address the structural stability of any mounts, nor does it provide any warranty either express or implied, for any portion of the existing structure.

Please note that we have not had a professional engineer perform an independent visit to confirm existing structural conditions and the outcome of this analysis is based solely on the information provided in the photos and drawing details. If the existing conditions are modified, in disrepair or not properly represented, contact our office immediately for an amended report since this analysis may be inaccurate.

If you have any questions, feel free to contact us at any time.

Sincerely,

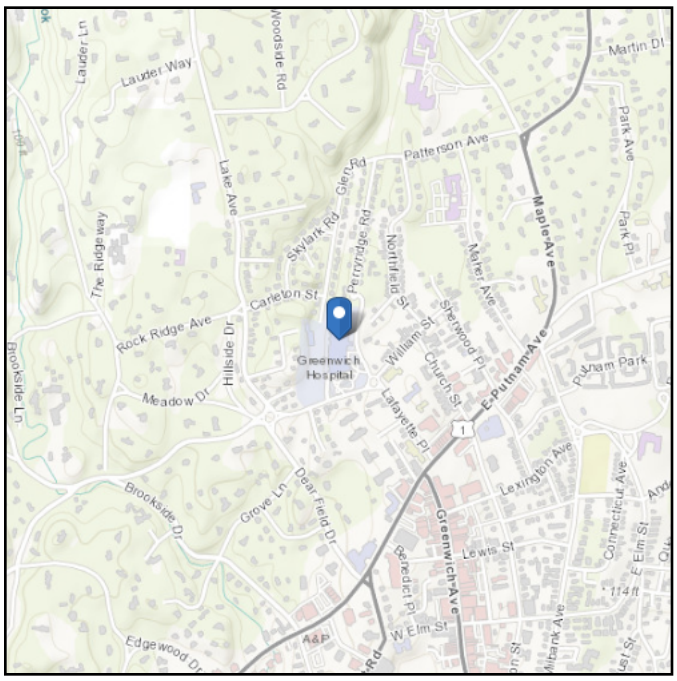
Magaram Engineering

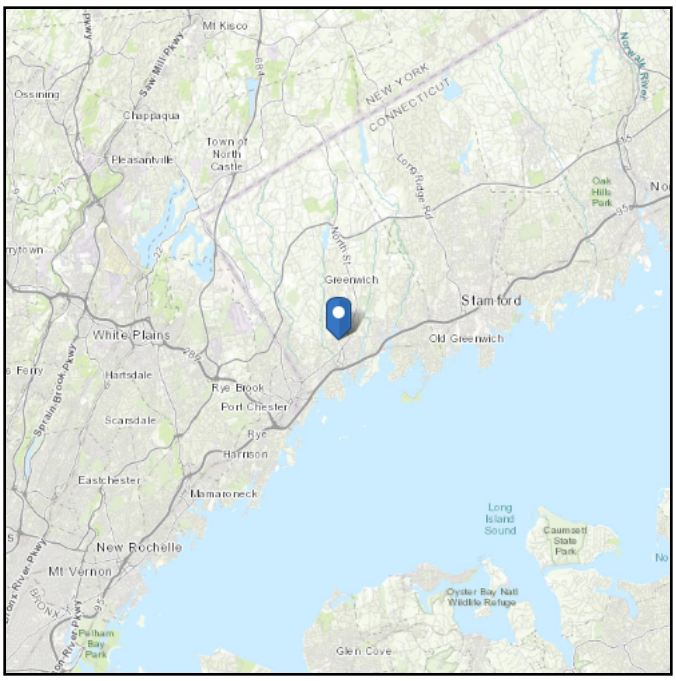
Brett Magaram
Connecticut License # 33678
Brett@MagaramEngineering.com
Phone: 914-450-8416

ASCE 7 Hazards Report

Address:
5 Perryridge Rd
Greenwich, Connecticut
06830

Standard:	ASCE/SEI 7-16	**Elevation:**	156.11 ft (NAVD 88)
Risk Category:	III	**Latitude:**	41.034548
Soil Class:	D - Default (see Section 11.4.3)	**Longitude:**	-73.630279





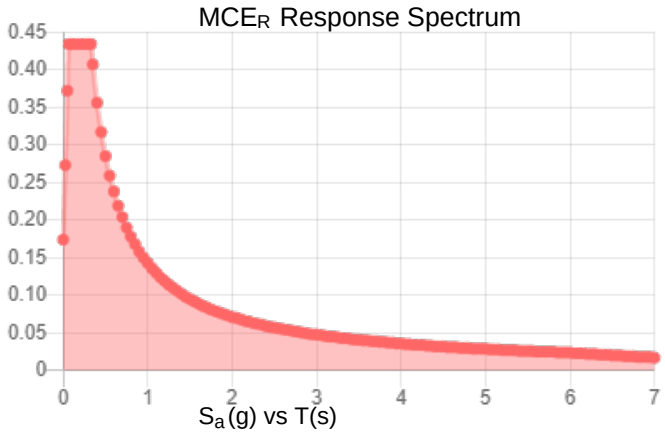
Seismic

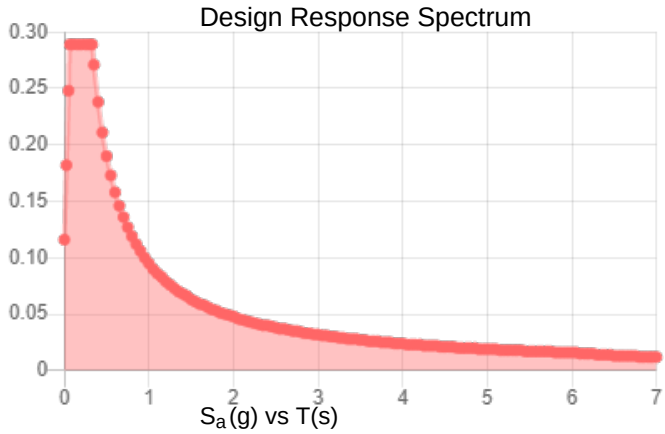
Site Soil Class: D - Default (see Section 11.4.3)

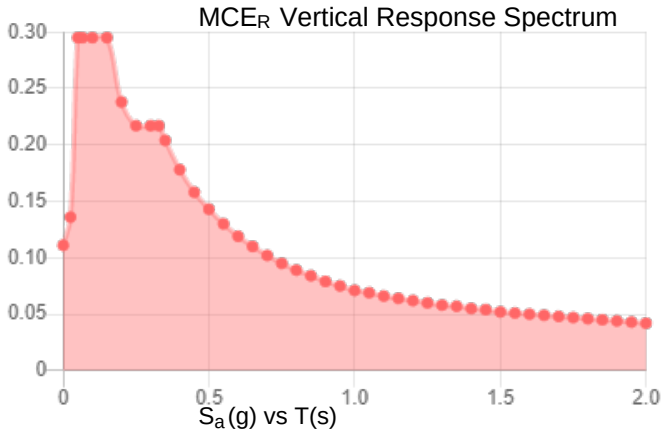
Results:

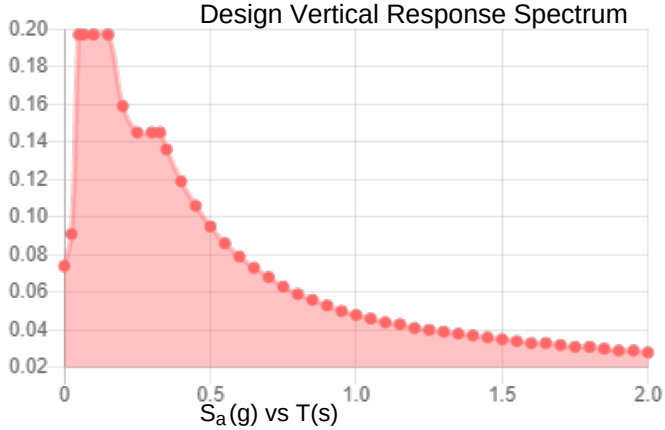
S_S :	0.275	S_{D1} :	0.095
S_1 :	0.059	T_L :	6
F_a :	1.58	PGA :	0.167
F_v :	2.4	PGA_M :	0.245
S_{MS} :	0.434	F_{PGA} :	1.466
S_{M1} :	0.143	I_e :	1.25
S_{DS} :	0.289	C_v :	0.85

Seismic Design Category B









Data Accessed: **Wed Aug 03 2022**

Date Source:

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

Ice

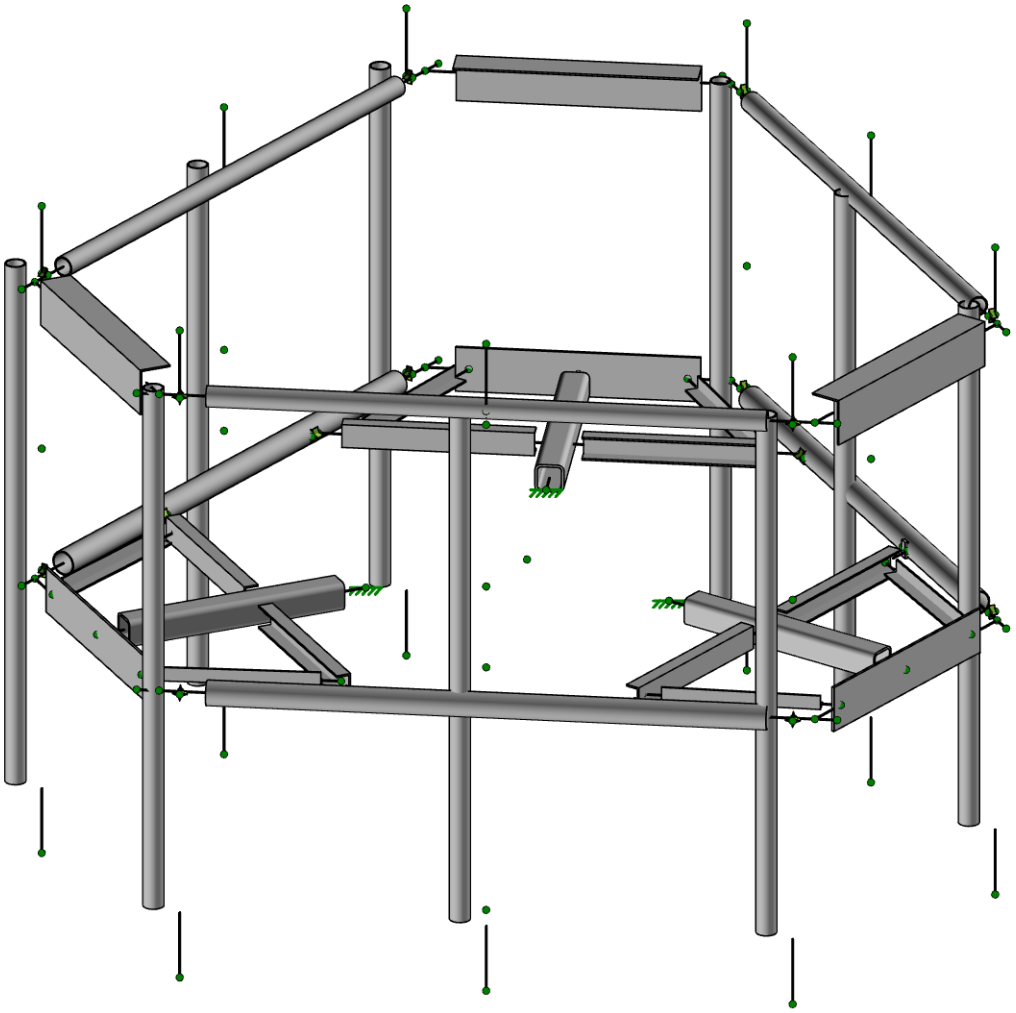
Results:

Ice Thickness:	1.00 in.
Concurrent Temperature:	15 F
Gust Speed	50 mph
Data Source:	Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8
Date Accessed:	Wed Aug 03 2022

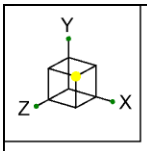
Ice thicknesses on structures in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

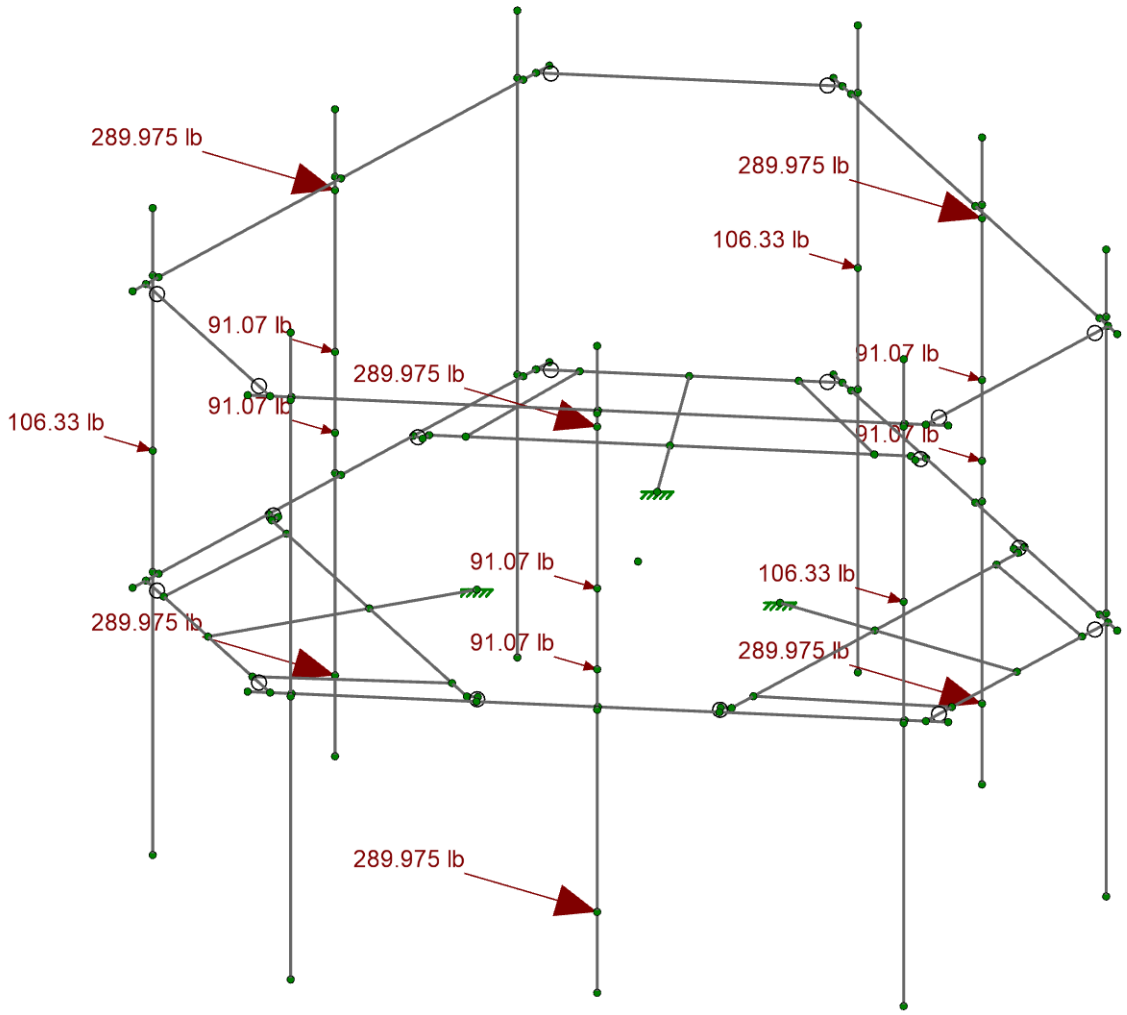
Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 500-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from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

(APPENDIX N) MUNICIPALITY - SPECIFIC STRUCTURAL DESIGN PARAMETERS												
				Wind Design Parameters								
Municipality	**Ground Snow Load** (psf)	**MCE Spectral Accelerations** (%g)		**Ultimate Design Wind Speeds,** V_{ult} (mph)			**Nominal Design Wind Speeds,** V_{asd} (mph)			**Wind-Borne Debris Regions[1]**		**Hurricane-Prone Regions**
		S_s	S_1	Risk Cat.I	Risk Cat.II	Risk Cat III-IV	Risk Cat. I	Risk Cat. II	Risk Cat. III-IV	Risk Cat. II & III except Occup I-2	Risk Cat III Occup I-2 & Risk Cat. IV	
East Granby	35	0.177	0.065	110	120	130	85	93	101			Yes
East Haddam	30	0.172	0.061	120	130	140	93	101	108			Yes
East Hampton	30	0.177	0.062	120	130	140	93	101	108			Yes
East Hartford	30	0.180	0.064	115	125	135	89	97	105			Yes
East Haven	30	0.182	0.062	120	130	140	93	101	108		Type B	Yes
East Lyme	30	0.164	0.059	125	135	145	97	105	112	Type B	Type A	Yes
Easton	30	0.215	0.066	120	130	140	93	101	108			Yes
East Windsor	35	0.177	0.064	115	125	135	89	97	105			Yes
Ellington	35	0.176	0.064	115	125	135	89	97	105			Yes
Enfield	35	0.176	0.065	110	125	130	85	97	101			Yes
Essex	30	0.168	0.059	120	135	145	93	105	112		Type A	Yes
Fairfield	30	0.215	0.065	115	125	135	89	97	105		Type B	Yes
Farmington	35	0.183	0.064	115	125	135	89	97	105			Yes
Franklin	30	0.171	0.061	120	130	140	93	101	108		Type A	Yes
Glastonbury	30	0.180	0.063	115	125	135	89	97	105			Yes
Goshen	40	0.181	0.065	105	115	125	81	89	97			
Granby	35	0.176	0.065	110	120	130	85	93	101			Yes
Greenwich	30	0.259	0.070	110	120	130	85	93	101			Yes
Griswold	30	0.168	0.060	125	135	145	97	105	112		Type A	Yes
Groton	30	0.160	0.058	125	135	145	97	105	112	Type B	Type A	Yes
Guilford	30	0.176	0.061	120	130	140	93	101	108		Type B	Yes
Haddam	30	0.175	0.061	120	130	140	93	101	108			Yes
Hamden	30	0.185	0.063	115	125	135	89	97	105			Yes
Hampton	35	0.172	0.062	120	130	140	93	101	108			Yes
Hartford	30	0.181	0.064	115	125	135	89	97	105			Yes
Hartland	40	0.175	0.065	110	120	125	85	93	97			Yes
Harwinton	35	0.183	0.065	110	120	130	85	93	101			Yes
Hebron	30	0.177	0.063	120	130	140	93	101	108			Yes
Kent	40	0.188	0.065	105	115	120	81	89	93			
Killingly	40	0.171	0.062	120	130	140	93	101	108			Yes
Killingworth	30	0.173	0.061	120	130	140	93	101	108			Yes
Lebanon	30	0.173	0.062	120	130	140	93	101	108			Yes
Ledyard	30	0.163	0.059	125	135	145	97	105	112		Type A	Yes
Lisbon	30	0.169	0.061	125	135	145	97	105	112		Type A	Yes
Litchfield	40	0.184	0.065	110	120	125	85	93	97			Yes
Lyme	30	0.164	0.059	125	135	145	97	105	112		Type A	Yes
Madison	30	0.173	0.060	120	130	140	93	101	108		Type B	Yes
Manchester	30	0.178	0.064	115	125	135	89	97	105			Yes
Mansfield	35	0.173	0.062	120	130	140	93	101	108			Yes
Marlborough	30	0.177	0.062	120	130	140	93	101	108			Yes
Meriden	30	0.183	0.063	115	125	135	89	97	105			Yes



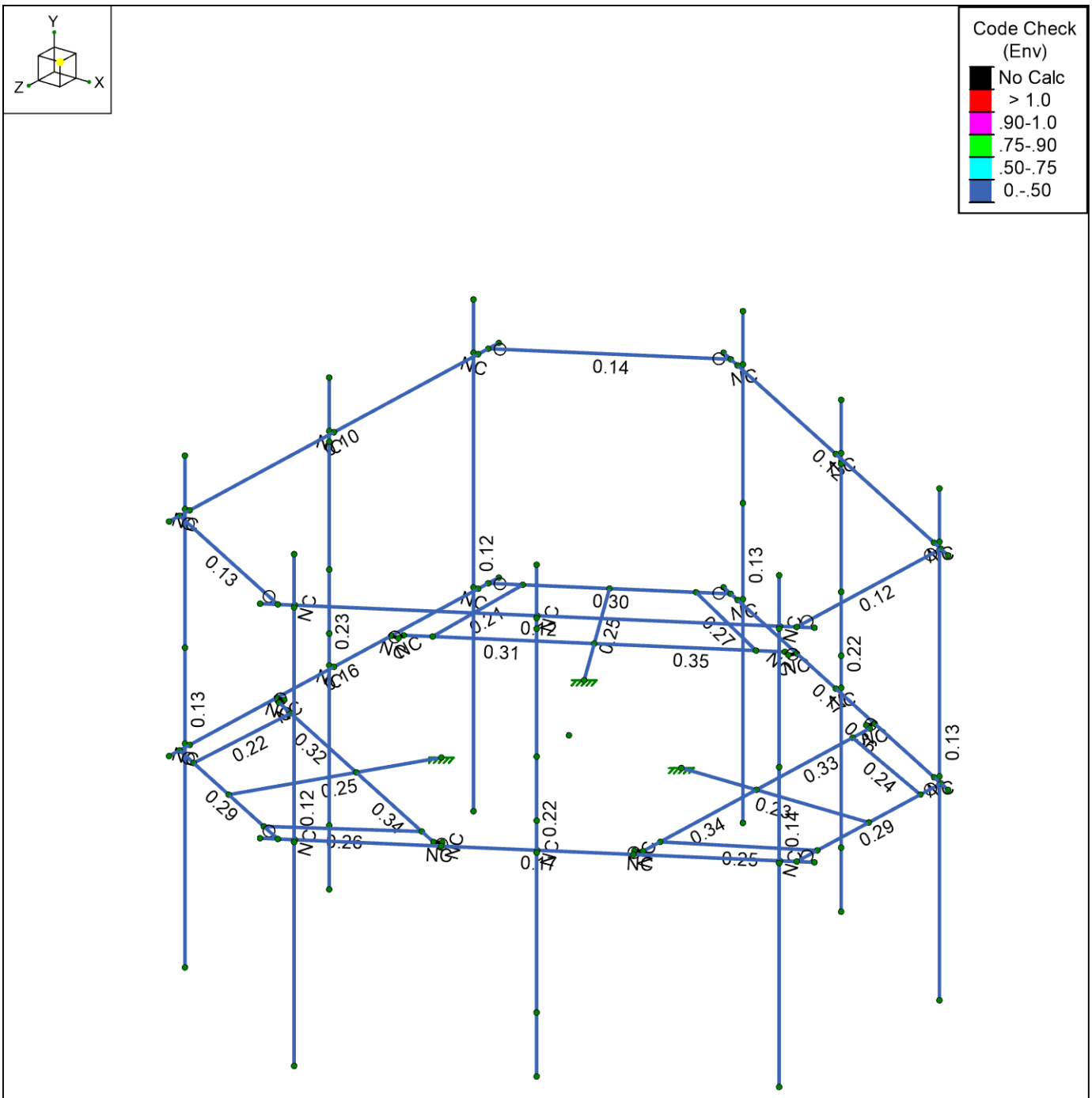
Magaram Engineering	NJJER02021B	SK-4
BJM		Aug 04, 2022
		NJJER02021B - MA Model.r3d





Loads: BLC 3, Telco Wx

Magaram Engineering	NJJER02021B	SK-5
BJM		Aug 04, 2022
		NJJER02021B - MA Model.r3d



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

Magaram Engineering	NJJER02021B	SK-6
BJM		Aug 04, 2022
		NJJER02021B - MA Model.r3d

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [1e⁵°F⁻¹]	Density [k/ft³]	Yield [ksi]	Ry	Fu [ksi]	Rt
1	A992	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	0.3	0.65	0.49	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	0.3	0.65	0.527	42	1.4	58	1.3
5	A500 Gr.B Rect	29000	11154	0.3	0.65	0.527	46	1.4	58	1.3
6	A53 Gr.B	29000	11154	0.3	0.65	0.49	35	1.6	60	1.2
7	A1085	29000	11154	0.3	0.65	0.49	50	1.4	65	1.3
8	A913 Gr.65	29000	11154	0.3	0.65	0.49	65	1.1	80	1.1
9	A500 GR.C	29000	11154	0.3	0.65	0.49	46	1.6	60	1.2
10	A529 Gr. 50	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
11	A1011-33Ksi	29000	11154	0.3	0.65	0.49	33	1.5	58	1.2
12	A1011 36 Ksi	29000	11154	0.3	0.65	0.49	36	1.5	58	1.2
13	A1018 50 Ksi	29000	11154	0.3	0.65	0.49	50	1.5	65	1.2

General Materials Properties

	Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [1e⁵°F⁻¹]	Density [k/ft³]	Plate Methodology
1	gen_Conc3NW	3155	1372	0.15	0.6	0.145	Isotropic
2	gen_Conc4NW	3644	1584	0.15	0.6	0.145	Isotropic
3	gen_Conc3LW	2085	906	0.15	0.6	0.11	Isotropic
4	gen_Conc4LW	2408	1047	0.15	0.6	0.11	Isotropic
5	gen_Alum	10100	4077	0.3	1.29	0.173	Isotropic
6	gen_Steel	29000	11154	0.3	0.65	0.49	Isotropic
7	gen_Plywood	1800	38	0	0.3	0.035	Isotropic
8	RIGID	1e+6		0.3	0	0	Isotropic

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rule	Area [in²]	Iyy [in⁴]	Izz [in⁴]	J [in⁴]
1	6.5"x0.37" Plate	PL6.5x0.375	Beam	None	A1011 36 Ksi	Typical	2.438	0.029	8.582	0.11
2	L 2"x2"x1/4"	L2x2x4	Beam	None	A529 Gr. 50	Typical	0.944	0.346	0.346	0.021
3	Face Pipes(3.5x.16)	Pipe3.5x0.165	Beam	None	A500 GR.C	Typical	1.729	2.409	2.409	4.819
4	Antenna Pipes	PIPE_2.5	Beam	None	A500 GR.C	Typical	1.61	1.45	1.45	2.89
5	Channel(3.38x2.06)	C3.38x2.06x0.25	Beam	None	A1011 36 Ksi	Typical	1.75	0.715	3.026	0.034
6	Square Tubing	HSS4X4X6	Beam	None	A500 GR.C	Typical	4.78	10.3	10.3	17.5
7	Handrail Connector	L6.6x4.46x0.25	Beam	None	A1011 36 Ksi	Typical	2.703	4.759	12.473	0.055
8	Handrail	PIPE_2.5	Beam	None	A500 GR.C	Typical	1.61	1.45	1.45	2.89

General Section Sets

	Label	Shape	Type	Material	Area [in²]	Iyy [in⁴]	Izz [in⁴]	J [in⁴]
1	GEN1	RE4X4	Beam	gen_Conc3NW	16	21.333	21.333	31.573
2	RIGID		None	RIGID	1e+06	1e+06	1e+06	1e+06

Member Primary Data

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
1	M2	P3	P1		Square Tubing	Beam	None	A500 GR.C	Typical
2	M3	P9	P12	270	L 2"x2"x1/4"	Beam	None	A529 Gr. 50	Typical
3	M4	P10	P11		L 2"x2"x1/4"	Beam	None	A529 Gr. 50	Typical
4	M5	P7	P8		6.5"x0.37" Plate	Beam	None	A1011 36 Ksi	Typical
5	M7	P14	P13		Square Tubing	Beam	None	A500 GR.C	Typical
6	M8	P20	P23	270	L 2"x2"x1/4"	Beam	None	A529 Gr. 50	Typical

Member Primary Data (Continued)

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
7	M9	P21	P22		L 2"x2"x1/4"	Beam	None	A529 Gr. 50	Typical
8	M10	P18	P19		6.5"x0.37" Plate	Beam	None	A1011 36 Ksi	Typical
9	M12	P25	P24		Square Tubing	Beam	None	A500 GR.C	Typical
10	M13	P31	P34	270	L 2"x2"x1/4"	Beam	None	A529 Gr. 50	Typical
11	M14	P32	P33		L 2"x2"x1/4"	Beam	None	A529 Gr. 50	Typical
12	M15	P29	P30		6.5"x0.37" Plate	Beam	None	A1011 36 Ksi	Typical
13	M18	N43	N44		Face Pipes(3.5x.16)	Beam	None	A500 GR.C	Typical
14	MP9	N60	N66		Antenna Pipes	Beam	None	A500 GR.C	Typical
15	MP7	N57	N63		Antenna Pipes	Beam	None	A500 GR.C	Typical
16	M25	N67	N68		Handrail	Beam	None	A500 GR.C	Typical
17	M28	N114A	N113A	180	Handrail Connector	Beam	None	A1011 36 Ksi	Typical
18	M29	N112A	N111A	180	Handrail Connector	Beam	None	A1011 36 Ksi	Typical
19	M30	N116A	N115A	180	Handrail Connector	Beam	None	A1011 36 Ksi	Typical
20	M32	N48A	N70A		RIGID	None	None	RIGID	Typical
21	M35	N45	N69A		RIGID	None	None	RIGID	Typical
22	M36	N51	N71A		RIGID	None	None	RIGID	Typical
23	M39A	N54	N72A		RIGID	None	None	RIGID	Typical
24	M61A	P4	N122A		Channel(3.38x2.06)	Beam	None	A1011 36 Ksi	Typical
25	M63A	P4	N124B		Channel(3.38x2.06)	Beam	None	A1011 36 Ksi	Typical
26	M60A	P15	N122B		Channel(3.38x2.06)	Beam	None	A1011 36 Ksi	Typical
27	M61B	P15	N123A		Channel(3.38x2.06)	Beam	None	A1011 36 Ksi	Typical
28	M62A	P26	N125		Channel(3.38x2.06)	Beam	None	A1011 36 Ksi	Typical
29	M63B	P26	N126		Channel(3.38x2.06)	Beam	None	A1011 36 Ksi	Typical
30	M64	N126A	N125A		RIGID	None	None	RIGID	Typical
31	M65	N126	N125A		RIGID	None	None	RIGID	Typical
32	M66	N129	N128		RIGID	None	None	RIGID	Typical
33	M67	N124B	N128		RIGID	None	None	RIGID	Typical
34	M68	N132	N131		RIGID	None	None	RIGID	Typical
35	M69	N123A	N131		RIGID	None	None	RIGID	Typical
36	M70	N133	N132A		RIGID	None	None	RIGID	Typical
37	M71	N122B	N132A		RIGID	None	None	RIGID	Typical
38	M72	N135	N134		RIGID	None	None	RIGID	Typical
39	M73	N125	N134		RIGID	None	None	RIGID	Typical
40	M74	N138	N137		RIGID	None	None	RIGID	Typical
41	M75	N122A	N137		PL 2.375x0.5	None	None	A36 Gr.36	Typical
42	MP8	N74	N75		Antenna Pipes	Beam	None	A500 GR.C	Typical
43	M43	N72B	N76		RIGID	None	None	RIGID	Typical
44	M44	N73	N77		RIGID	None	None	RIGID	Typical
45	M48	N81A	N82A		Face Pipes(3.5x.16)	Beam	None	A500 GR.C	Typical
46	MP3	N88	N90		Antenna Pipes	Beam	None	A500 GR.C	Typical
47	MP1	N87	N89		Antenna Pipes	Beam	None	A500 GR.C	Typical
48	M51	N91	N92		Handrail	Beam	None	A500 GR.C	Typical
49	M52	N84	N94		RIGID	None	None	RIGID	Typical
50	M53	N83A	N93		RIGID	None	None	RIGID	Typical
51	M54	N85	N95		RIGID	None	None	RIGID	Typical
52	M55	N86	N96		RIGID	None	None	RIGID	Typical
53	M62	N109	N110		Face Pipes(3.5x.16)	Beam	None	A500 GR.C	Typical
54	MP6	N116	N118		Antenna Pipes	Beam	None	A500 GR.C	Typical
55	MP4	N115	N117		Antenna Pipes	Beam	None	A500 GR.C	Typical
56	M65A	N119	N120		Handrail	Beam	None	A500 GR.C	Typical
57	M66A	N112	N122		RIGID	None	None	RIGID	Typical
58	M67A	N111	N121		RIGID	None	None	RIGID	Typical
59	M68A	N113	N123		RIGID	None	None	RIGID	Typical
60	M69A	N114	N124		RIGID	None	None	RIGID	Typical
61	MP2	N131A	N132B		Antenna Pipes	Beam	None	A500 GR.C	Typical

Member Primary Data (Continued)

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
62	M68B	N129B	N133B		RIGID	None	None	RIGID	Typical
63	M69B	N130A	N134A		RIGID	None	None	RIGID	Typical
64	MP5	N137A	N138A		Antenna Pipes	Beam	None	A500 GR.C	Typical
65	M71B	N135A	N139		RIGID	None	None	RIGID	Typical
66	M72B	N136	N140		RIGID	None	None	RIGID	Typical

Member Advanced Data

	Label	I Release	J Release	Physical	Deflection Ratio Options	Analysis Offset [in]	Seismic DR
1	M2			Yes	N/A		None
2	M3			Yes	N/A		None
3	M4			Yes	N/A		None
4	M5	BenPIN	BenPIN	Yes	Default		None
5	M7			Yes	N/A		None
6	M8			Yes	N/A		None
7	M9			Yes	N/A		None
8	M10	BenPIN	BenPIN	Yes	Default		None
9	M12			Yes	Default		None
10	M13			Yes	N/A		None
11	M14			Yes	N/A		None
12	M15	BenPIN	BenPIN	Yes	Default		None
13	M18			Yes	N/A		None
14	MP9			Yes	N/A	+y+3	None
15	MP7			Yes	N/A	+y+3	None
16	M25			Yes	N/A		None
17	M28	OOOOOX	OOOOOX	Yes	N/A		None
18	M29	OOOOOX	OOOOOX	Yes	N/A		None
19	M30	OOOOOX	OOOOOX	Yes	Default		None
20	M32			Yes	** NA **		None
21	M35			Yes	** NA **		None
22	M36			Yes	** NA **		None
23	M39A			Yes	** NA **		None
24	M61A			Yes	Default		None
25	M63A			Yes	Default		None
26	M60A			Yes	Default		None
27	M61B			Yes	Default		None
28	M62A			Yes	Default		None
29	M63B			Yes	Default		None
30	M64	BenPIN		Yes	** NA **		None
31	M65			Yes	** NA **		None
32	M66	BenPIN		Yes	** NA **		None
33	M67			Yes	** NA **		None
34	M68	BenPIN		Yes	** NA **		None
35	M69			Yes	** NA **		None
36	M70	BenPIN		Yes	** NA **		None
37	M71			Yes	** NA **		None
38	M72	BenPIN		Yes	** NA **		None
39	M73			Yes	** NA **		None
40	M74	BenPIN		Yes	** NA **		None
41	M75			Yes	** NA **		None
42	MP8			Yes	N/A	+y+3	None
43	M43			Yes	** NA **		None
44	M44			Yes	** NA **		None
45	M48			Yes	N/A		None
46	MP3			Yes	N/A	+y+3	None
47	MP1			Yes	N/A	+y+3	None

Member Advanced Data (Continued)

	Label	I Release	J Release	Physical	Deflection Ratio Options	Analysis Offset [in]	Seismic DR
48	M51			Yes	N/A		None
49	M52			Yes	** NA **		None
50	M53			Yes	** NA **		None
51	M54			Yes	** NA **		None
52	M55			Yes	** NA **		None
53	M62			Yes	N/A		None
54	MP6			Yes	N/A	+y+3	None
55	MP4			Yes	N/A	+y+3	None
56	M65A			Yes	N/A		None
57	M66A			Yes	** NA **		None
58	M67A			Yes	** NA **		None
59	M68A			Yes	** NA **		None
60	M69A			Yes	** NA **		None
61	MP2			Yes	N/A	+y+3	None
62	M68B			Yes	** NA **		None
63	M69B			Yes	** NA **		None
64	MP5			Yes	N/A	+y+3	None
65	M71B			Yes	** NA **		None
66	M72B			Yes	** NA **		None

Hot Rolled Steel Design Parameters

	Label	Shape	Length [in]	Lcomp top [in]	Function
1	M2	Square Tubing	40	Lbyy	Lateral
2	M3	L 2"x2"x1/4"	27.295	Lbyy	Lateral
3	M4	L 2"x2"x1/4"	27.295	Lbyy	Lateral
4	M5	6.5"x0.37" Plate	42	Lbyy	Lateral
5	M7	Square Tubing	40	Lbyy	Lateral
6	M8	L 2"x2"x1/4"	27.295	Lbyy	Lateral
7	M9	L 2"x2"x1/4"	27.295	Lbyy	Lateral
8	M10	6.5"x0.37" Plate	42	Lbyy	Lateral
9	M12	Square Tubing	40	Lbyy	Lateral
10	M13	L 2"x2"x1/4"	27.295	Lbyy	Lateral
11	M14	L 2"x2"x1/4"	27.295	Lbyy	Lateral
12	M15	6.5"x0.37" Plate	42	Lbyy	Lateral
13	M18	Face Pipes(3.5x.16)	96	Lbyy	Lateral
14	MP9	Antenna Pipes	96	Lbyy	Lateral
15	MP7	Antenna Pipes	96	Lbyy	Lateral
16	M25	Handrail	96	Lbyy	Lateral
17	M28	Handrail Connector	42	Lbyy	Lateral
18	M29	Handrail Connector	42	Lbyy	Lateral
19	M30	Handrail Connector	42	Lbyy	Lateral
20	M61A	Channel(3.38x2.06)	33	Lbyy	Lateral
21	M63A	Channel(3.38x2.06)	33	Lbyy	Lateral
22	M60A	Channel(3.38x2.06)	33	Lbyy	Lateral
23	M61B	Channel(3.38x2.06)	33	Lbyy	Lateral
24	M62A	Channel(3.38x2.06)	33	Lbyy	Lateral
25	M63B	Channel(3.38x2.06)	33	Lbyy	Lateral
26	M75	PL 2.375x0.5	1.5		Lateral
27	MP8	Antenna Pipes	96	Lbyy	Lateral
28	M48	Face Pipes(3.5x.16)	96	Lbyy	Lateral
29	MP3	Antenna Pipes	96	Lbyy	Lateral
30	MP1	Antenna Pipes	96	Lbyy	Lateral
31	M51	Handrail	96	Lbyy	Lateral
32	M62	Face Pipes(3.5x.16)	96	Lbyy	Lateral
33	MP6	Antenna Pipes	96	Lbyy	Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length [in]	Lcomp top [in]	Function
34	MP4	Antenna Pipes	96	Lbyy	Lateral
35	M65A	Handrail	96	Lbyy	Lateral
36	MP2	Antenna Pipes	96	Lbyy	Lateral
37	MP5	Antenna Pipes	96	Lbyy	Lateral

Member RISAConnection Properties

	Label	Shape	Start Conn	End Conn	Start Release	End Release
1	M2	HSS4X4X6	None	None	Fixed	Fixed
2	M3	L2x2x4	None	None	Fixed	Fixed
3	M4	L2x2x4	None	None	Fixed	Fixed
4	M5	PL6.5x0.375	None	None	Pinned	Pinned
5	M7	HSS4X4X6	None	None	Fixed	Fixed
6	M8	L2x2x4	None	None	Fixed	Fixed
7	M9	L2x2x4	None	None	Fixed	Fixed
8	M10	PL6.5x0.375	None	None	Pinned	Pinned
9	M12	HSS4X4X6	None	None	Fixed	Fixed
10	M13	L2x2x4	None	None	Fixed	Fixed
11	M14	L2x2x4	None	None	Fixed	Fixed
12	M15	PL6.5x0.375	None	None	Pinned	Pinned
13	M18	Pipe3.5x0.165	None	None	Fixed	Fixed
14	MP9	PIPE_2.5	None	None	Fixed	Fixed
15	MP7	PIPE_2.5	None	None	Fixed	Fixed
16	M25	PIPE_2.5	None	None	Fixed	Fixed
17	M28	L6.6x4.46x0.25	None	None	Fixed	Fixed
18	M29	L6.6x4.46x0.25	None	None	Fixed	Fixed
19	M30	L6.6x4.46x0.25	None	None	Fixed	Fixed
20	M61A	C3.38x2.06x0.25	None	None	Fixed	Fixed
21	M63A	C3.38x2.06x0.25	None	None	Fixed	Fixed
22	M60A	C3.38x2.06x0.25	None	None	Fixed	Fixed
23	M61B	C3.38x2.06x0.25	None	None	Fixed	Fixed
24	M62A	C3.38x2.06x0.25	None	None	Fixed	Fixed
25	M63B	C3.38x2.06x0.25	None	None	Fixed	Fixed
26	M75	PL 2.375x0.5	None	None	Fixed	Fixed
27	MP8	PIPE_2.5	None	None	Fixed	Fixed
28	M48	Pipe3.5x0.165	None	None	Fixed	Fixed
29	MP3	PIPE_2.5	None	None	Fixed	Fixed
30	MP1	PIPE_2.5	None	None	Fixed	Fixed
31	M51	PIPE_2.5	None	None	Fixed	Fixed
32	M62	Pipe3.5x0.165	None	None	Fixed	Fixed
33	MP6	PIPE_2.5	None	None	Fixed	Fixed
34	MP4	PIPE_2.5	None	None	Fixed	Fixed
35	M65A	PIPE_2.5	None	None	Fixed	Fixed
36	MP2	PIPE_2.5	None	None	Fixed	Fixed
37	MP5	PIPE_2.5	None	None	Fixed	Fixed

Design Size and Code Check Parameters

	Label	Max Axial/Bending Chk	Max Shear Chk
1	Typical	1	1

Concrete Rebar Parameters

	Label	Optimize Rebar ?	Min Flex Bar	Max Flex Bar	Shear Bar	Legs per Stirrup	Top (Column) Cover [in]	Bottom Cover [in]	Side Cover [in]	Top/Bottom Bars	Add'l Side Bars	Shear Bar Spacing [in]
1	Typical	Optimize	#6	#10	#4	2	1.5	1.5	1.5	2	1	12

Deflection Design

	Label	LC	Ratio	LC	Ratio	LC	Ratio
1	Typical	None	N/A	None	N/A	None	N/A

Wall Panel U.C. Parameters

	Label	Max Bending Chk	Max Shear Chk
1	Typical	1	1

Frame / HR Column Seismic Design Rule

	Label	Frame Ductility	Overstrength Reqd
1	OCBF	Minimal	Yes
2	SCBF	High	Yes
3	OMF	Minimal	Yes
4	IMF	Moderate	Yes
5	SMF-RBS	High	Yes
6	SMF-Kaiser	High	Yes

HR Beam Seismic Design Rule

	Label	Connection	Overstrength Reqd	Z Factor	Hinge Location [in]
1	OCBF	Other/None			
2	SCBF	Other/None	Yes		
3	OMF	BUEEP			12
4	IMF	BFP			12
5	SMF-RBS	RBS		0.685	14.625
6	SMF-Kaiser	KBB-B			12

HR Brace Seismic Design Rule

	Label	Overstrength Reqd	KL/r
1	OCBF		
2	SCBF		Yes
3	OMF		
4	IMF		
5	SMF-RBS		
6	SMF-Kaiser		

Connection Design Rules

	Label	Conn Type	Type	Beam Conn	Col/Girder Conn	Eccentricity
1	Col/Bm Single Angle Shear	Shear	Column/Beam Clip Single Angle Shear	Bolted	Bolted	1.5
2	Col/Bm Double Angle Shear	Shear	Column/Beam Clip Double Angle Shear	Bolted	Bolted	0
3	Col/Bm Two Side Clip Angle Shear	Shear	Column/Beam Clip Double Angle (Both Side) Shear	Bolted	Bolted	N/A
4	Col/Bm End Plate Shear	Shear	Column/Beam End-Plate Shear	N/A	Bolted	N/A
5	Col/Bm Shear Tab Shear	Shear	Column/Beam Shear Tab Shear	Bolted	N/A	0
6	Girder/Bm Single Angle Shear	Shear	Girder/Beam Clip Single Angle Shear	Bolted	Bolted	N/A
7	Girder/Bm Double Angle Shear	Shear	Girder/Beam Clip Double Angle Shear	Bolted	Bolted	N/A

Connection Design Rules (Continued)

	Label	Conn Type	Type	Beam Conn	Col/Girder Conn	Eccentricity
8	Grd/Bm Two Side Clip Angle Shear	Shear	Girder/Beam Clip Double Angle (Both Side) Shear	Bolted	Bolted	N/A
9	Girder/Bm End Plate Shear	Shear	Girder/Beam End-Plate Shear	N/A	Bolted	N/A
10	Girder/Bm Shear Tab Shear	Shear	Girder/Beam Shear Tab Shear	Bolted	N/A	N/A
11	Beam Shear Splice	Shear	Beam Shear Tab Splice	Bolted	N/A	N/A
12	Column Shear Splice	Shear	Column Shear Tab Splice	N/A	Bolted	N/A
13	Col/Bm Ext. End Plate Moment	Moment	Column/Beam Extended End-Plate Moment	N/A	N/A	N/A
14	Col/Bm PartExt. End Plate Moment	Moment	Column/Beam Partially Extended End-Plate Moment (Tension side)	N/A	N/A	N/A
15	Col/Bm Flush End Plate Moment	Moment	Column/Beam Flush End-Plate Moment	N/A	N/A	N/A
16	Col/Bm Flange Plate Moment	Moment	Column/Beam Flange Plate Moment	Bolted	N/A	N/A
17	Col/Bm Direct Weld Moment	Moment	Column/Beam Direct Weld Moment	Bolted	N/A	N/A
18	Col/Bm Seismic Moment	Moment	Column/Beam Seismic Moment	N/A	N/A	N/A
19	Beam Moment Plate Splice	Moment	Beam Moment Plate Splice	Bolted	N/A	N/A
20	Column Moment Plate Splice	Moment	Column Moment Plate Splice	N/A	N/A	N/A
21	Beam Direct Weld Moment Splice	Moment	Beam Direct Weld Splice	Bolted	N/A	N/A
22	Col Direct Weld Moment Splice	Moment	Column Direct Weld Splice	N/A	Bolted	N/A
23	Bm Ext. End Plate Moment Splice	Moment	Beam Extended End Plate Splice	Bolted	N/A	N/A
24	Col Ext. End Plate Moment Splice	Moment	Column Extended End Plate Splice	N/A	Bolted	N/A
25	Diagonal Vertical Brace	Brace	Diagonal Vertical Brace	N/A	N/A	N/A
26	Chevron Vertical Brace	Brace	Chevron Vertical Brace	N/A	N/A	N/A
27	Seismic Diagonal Brace	Brace	Diagonal Brace Seismic	N/A	N/A	N/A
28	Seismic Chevron Brace	Brace	Chevron Brace Seismic	N/A	N/A	N/A
29	Knee Brace	Brace	Knee Brace	N/A	N/A	N/A
30	Single Column Base Plate	Baseplate	Single Column Baseplate	N/A	N/A	N/A
31	Base Plate with Vertical Brace	Baseplate	Brace to Column Base Plate	N/A	N/A	N/A
32	HSS Truss Connection	Truss	HSS T-Connection	N/A	N/A	N/A

Node Loads and Enforced Displacements (BLC 1 : Telco DL)

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s²/in, lb*s²*in)]
1	N130	L	Y	-35.275
2	N143	L	Y	-35.275
3	N147	L	Y	-35.275
4	N144	L	Y	-35.275
5	N127	L	Y	-35.275
6	N149	L	Y	-35.275
7	N151	L	Y	-74.95
8	N142	L	Y	-74.95
9	N146	L	Y	-74.95
10	N141	L	Y	-63.9
11	N145	L	Y	-63.9
12	N150	L	Y	-63.9
13	N148	L	Y	-21.82
14	N152	L	Y	-21.82
15	N153	L	Y	-21.82

Node Loads and Enforced Displacements (BLC 2 : Telco DLi)

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s²/in, lb*s²*in)]
1	N130	L	Y	-105.185
2	N143	L	Y	-105.185
3	N147	L	Y	-105.185
4	N144	L	Y	-105.185
5	N127	L	Y	-105.185
6	N149	L	Y	-105.185
7	N151	L	Y	-37.74

Node Loads and Enforced Displacements (BLC 2 : Telco DLi) (Continued)

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s²/in, lb*s²*in)]
8	N142	L	Y	-37.74
9	N146	L	Y	-37.74
10	N141	L	Y	-36.63
11	N145	L	Y	-36.63
12	N150	L	Y	-36.63
13	N148	L	Y	-44.2
14	N152	L	Y	-44.2
15	N153	L	Y	-44.2

Node Loads and Enforced Displacements (BLC 3 : Telco Wx)

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s²/in, lb*s²*in)]
1	N130	L	X	289.975
2	N143	L	X	289.975
3	N147	L	X	289.975
4	N144	L	X	289.975
5	N127	L	X	289.975
6	N149	L	X	289.975
7	N151	L	X	91.07
8	N142	L	X	91.07
9	N146	L	X	91.07
10	N141	L	X	91.07
11	N145	L	X	91.07
12	N150	L	X	91.07
13	N148	L	X	106.33
14	N152	L	X	106.33
15	N153	L	X	106.33

Node Loads and Enforced Displacements (BLC 4 : Telco Wz)

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s²/in, lb*s²*in)]
1	N130	L	Z	289.975
2	N143	L	Z	289.975
3	N147	L	Z	289.975
4	N144	L	Z	289.975
5	N127	L	Z	289.975
6	N149	L	Z	289.975
7	N151	L	Z	91.07
8	N142	L	Z	91.07
9	N146	L	Z	91.07
10	N141	L	Z	91.07
11	N145	L	Z	91.07
12	N150	L	Z	91.07
13	N148	L	Z	106.33
14	N152	L	Z	106.33
15	N153	L	Z	106.33

Node Loads and Enforced Displacements (BLC 5 : Telco Wxi)

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s²/in, lb*s²*in)]
1	N130	L	X	26.225
2	N143	L	X	26.225
3	N147	L	X	26.225
4	N144	L	X	26.225
5	N127	L	X	26.225

Node Loads and Enforced Displacements (BLC 5 : Telco Wxi) (Continued)

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s²/in, lb*s²*in)]
6	N149	L	X	26.225
7	N151	L	X	8.5
8	N142	L	X	8.5
9	N146	L	X	8.5
10	N141	L	X	8.5
11	N145	L	X	8.5
12	N150	L	X	8.5
13	N148	L	X	9.99
14	N152	L	X	9.99
15	N153	L	X	9.99

Node Loads and Enforced Displacements (BLC 6 : Telco Wzi)

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s²/in, lb*s²*in)]
1	N130	L	Z	26.225
2	N143	L	Z	26.225
3	N147	L	Z	26.225
4	N144	L	Z	26.225
5	N127	L	Z	26.225
6	N149	L	Z	26.225
7	N151	L	Z	8.5
8	N142	L	Z	8.5
9	N146	L	Z	8.5
10	N141	L	Z	8.5
11	N145	L	Z	8.5
12	N150	L	Z	8.5
13	N148	L	Z	9.99
14	N152	L	Z	9.99
15	N153	L	Z	9.99

Node Loads and Enforced Displacements (BLC 7 : Telco Wxm)

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s²/in, lb*s²*in)]
1	N130	L	X	15.44
2	N143	L	X	15.44
3	N147	L	X	15.44
4	N144	L	X	15.44
5	N127	L	X	15.44
6	N149	L	X	15.44
7	N151	L	X	4.85
8	N142	L	X	4.85
9	N146	L	X	4.85
10	N141	L	X	4.85
11	N145	L	X	4.85
12	N150	L	X	4.85
13	N148	L	X	5.66
14	N152	L	X	5.66
15	N153	L	X	5.66

Node Loads and Enforced Displacements (BLC 8 : Telco Wzm)

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s²/in, lb*s²*in)]
1	N130	L	Z	15.44
2	N143	L	Z	15.44
3	N147	L	Z	15.44

Node Loads and Enforced Displacements (BLC 8 : Telco Wzm) (Continued)

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s²/in, lb*s²*in)]
4	N144	L	Z	15.44
5	N127	L	Z	15.44
6	N149	L	Z	15.44
7	N151	L	Z	4.85
8	N142	L	Z	4.85
9	N146	L	Z	4.85
10	N141	L	Z	4.85
11	N145	L	Z	4.85
12	N150	L	Z	4.85
13	N148	L	Z	5.66
14	N152	L	Z	5.66
15	N153	L	Z	5.66

Node Loads and Enforced Displacements (BLC 19 : Lm)

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s²/in, lb*s²*in)]
1	N132B	L	Y	-500
2	N138A	L	Y	-500
3	N75	L	Y	-500

Node Loads and Enforced Displacements (BLC 20 : Lv)

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s²/in, lb*s²*in)]
1	N82A	L	Y	-250
2	N92	L	Y	-250
3	N120	L	Y	-250
4	N110	L	Y	-250
5	N68	L	Y	-250
6	N44	L	Y	-250

Member Point Loads

No Data to Print...

Basic Load Cases

	BLC Description	Category	Y Gravity	Nodal	Distributed	Area(Member)
1	Telco DL	DL		15		
2	Telco DLi	OL1		15		
3	Telco Wx	WLX		15		
4	Telco Wz	WLZ		15		
5	Telco Wxi	WLXP1		15		
6	Telco Wzi	WLZP1		15		
7	Telco Wxm	WLXP2		15		
8	Telco Wzm	WLZP2		15		
9	-	None				
10	Mount DL	DL	-1.1			3
11	Mount DLi	OL1			36	3
12	Mount Wx	WLX			36	
13	Mount Wz	WLZ			36	
14	Mount Wxi	WLXP1			36	
15	Mount Wzi	WLZP1			36	
16	Mount Wxm	WLXP2			36	
17	Mount Wzm	WLZP2			36	
18	-	None				

Basic Load Cases (Continued)

	BLC Description	Category	Y Gravity	Nodal	Distributed	Area(Member)
19	Lm	None		3		
20	Lv	None		6		
21	BLC 10 Transient Area Loads	None			9	
22	BLC 11 Transient Area Loads	None			9	

Load Combinations

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	1.4D	Yes	Y	DL	1.4						
2	Wind LCs (Case 1)										
3	1.2D +1.0W (0)	Yes	Y	DL	1.2			WLX	1	WLZ	
4	1.2D + 1.0W (30)	Yes	Y	DL	1.2			WLX	0.866	WLZ	0.5
5	1.2D + 1.0W (45)	Yes	Y	DL	1.2			WLX	0.707	WLZ	0.707
6	1.2D + 1.0W (60)	Yes	Y	DL	1.2			WLX	0.5	WLZ	0.866
7	1.2D + 1.0W (90)	Yes	Y	DL	1.2			WLX		WLZ	1
8	1.2D + 1.0W (120)	Yes	Y	DL	1.2			WLX	-0.5	WLZ	0.866
9	1.2D + 1.0W (135)	Yes	Y	DL	1.2			WLX	-0.707	WLZ	0.707
10	1.2D + 1.0W (150)	Yes	Y	DL	1.2			WLX	-0.866	WLZ	0.5
11	1.2D + 1.0W (180)	Yes	Y	DL	1.2			WLX	-1	WLZ	
12	1.2D + 1.0W (210)	Yes	Y	DL	1.2			WLX	-0.866	WLZ	-0.5
13	1.2D + 1.0W (225)	Yes	Y	DL	1.2			WLX	-0.707	WLZ	-0.707
14	1.2D + 1.0W (240)	Yes	Y	DL	1.2			WLX	-0.5	WLZ	-0.866
15	1.2D + 1.0W (270)	Yes	Y	DL	1.2			WLX		WLZ	-1
16	1.2D + 1.0W (300)	Yes	Y	DL	1.2			WLX	0.5	WLZ	-0.866
17	1.2D + 1.0W (315)	Yes	Y	DL	1.2			WLX	0.707	WLZ	-0.707
18	1.2D + 1.0W (330)	Yes	Y	DL	1.2			WLX	0.866	WLZ	-0.5
19	Uplift LCs (Case 2)										
20	1.2D +1.0W (0)	Yes	Y	DL	0.9			WLX	1	WLZ	
21	1.2D + 1.0W (30)	Yes	Y	DL	0.9			WLX	0.866	WLZ	0.5
22	1.2D + 1.0W (45)	Yes	Y	DL	0.9			WLX	0.707	WLZ	0.707
23	1.2D + 1.0W (60)	Yes	Y	DL	0.9			WLX	0.5	WLZ	0.866
24	1.2D + 1.0W (90)	Yes	Y	DL	0.9			WLX		WLZ	1
25	1.2D + 1.0W (120)	Yes	Y	DL	0.9			WLX	-0.5	WLZ	0.866
26	1.2D + 1.0W (135)	Yes	Y	DL	0.9			WLX	-0.707	WLZ	0.707
27	1.2D + 1.0W (150)	Yes	Y	DL	0.9			WLX	-0.866	WLZ	0.5
28	1.2D + 1.0W (180)	Yes	Y	DL	0.9			WLX	-1	WLZ	
29	1.2D + 1.0W (210)	Yes	Y	DL	0.9			WLX	-0.866	WLZ	-0.5
30	1.2D + 1.0W (225)	Yes	Y	DL	0.9			WLX	-0.707	WLZ	-0.707
31	1.2D + 1.0W (240)	Yes	Y	DL	0.9			WLX	-0.5	WLZ	-0.866
32	1.2D + 1.0W (270)	Yes	Y	DL	0.9			WLX		WLZ	-1
33	1.2D + 1.0W (300)	Yes	Y	DL	0.9			WLX	0.5	WLZ	-0.866
34	1.2D + 1.0W (315)	Yes	Y	DL	0.9			WLX	0.707	WLZ	-0.707
35	1.2D + 1.0W (330)	Yes	Y	DL	0.9			WLX	0.866	WLZ	-0.5
36	Ice LCs (Case 3)										
37	1.2D + 1.0Di +1.0Wi (0)	Yes	Y	DL	1.2	OL1	1	WLXP1	1	WLZP1	
38	1.2D + 1.0W (30)	Yes	Y	DL	1.2	OL1	1	WLXP1	0.866	WLZP1	0.5
39	1.2D + 1.0W (45)	Yes	Y	DL	1.2	OL1	1	WLXP1	0.707	WLZP1	0.707
40	1.2D + 1.0W (60)	Yes	Y	DL	1.2	OL1	1	WLXP1	0.5	WLZP1	0.866
41	1.2D + 1.0W (90)	Yes	Y	DL	1.2	OL1	1	WLXP1		WLZP1	1
42	1.2D + 1.0W (120)	Yes	Y	DL	1.2	OL1	1	WLXP1	-0.5	WLZP1	0.866
43	1.2D + 1.0W (135)	Yes	Y	DL	1.2	OL1	1	WLXP1	-0.707	WLZP1	0.707
44	1.2D + 1.0W (150)	Yes	Y	DL	1.2	OL1	1	WLXP1	-0.866	WLZP1	0.5
45	1.2D + 1.0W (180)	Yes	Y	DL	1.2	OL1	1	WLXP1	-1	WLZP1	
46	1.2D + 1.0W (210)	Yes	Y	DL	1.2	OL1	1	WLXP1	-0.866	WLZP1	-0.5
47	1.2D + 1.0W (225)	Yes	Y	DL	1.2	OL1	1	WLXP1	-0.707	WLZP1	-0.707
48	1.2D + 1.0W (240)	Yes	Y	DL	1.2	OL1	1	WLXP1	-0.5	WLZP1	-0.866

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
49	1.2D + 1.0W (270)	Yes	Y	DL	1.2	OL1	1	WLXP1		WLZP1	-1
50	1.2D + 1.0W (300)	Yes	Y	DL	1.2	OL1	1	WLXP1	0.5	WLZP1	-0.866
51	1.2D + 1.0W (315)	Yes	Y	DL	1.2	OL1	1	WLXP1	0.707	WLZP1	-0.707
52	1.2D + 1.0W (330)	Yes	Y	DL	1.2	OL1	1	WLXP1	0.866	WLZP1	-0.5
53	Maintenance LCs (Case 3)										
54	1.2D + 1.0Di +1.0Wi (0)	Yes	Y	DL	1.2	19	1.5	WLXP2	1	WLZP2	
55	1.2D + 1.0W (30)	Yes	Y	DL	1.2	19	1.5	WLXP2	0.866	WLZP2	0.5
56	1.2D + 1.0W (45)	Yes	Y	DL	1.2	19	1.5	WLXP2	0.707	WLZP2	0.707
57	1.2D + 1.0W (60)	Yes	Y	DL	1.2	19	1.5	WLXP2	0.5	WLZP2	0.866
58	1.2D + 1.0W (90)	Yes	Y	DL	1.2	19	1.5	WLXP2		WLZP2	1
59	1.2D + 1.0W (120)	Yes	Y	DL	1.2	19	1.5	WLXP2	-0.5	WLZP2	0.866
60	1.2D + 1.0W (135)	Yes	Y	DL	1.2	19	1.5	WLXP2	-0.707	WLZP2	0.707
61	1.2D + 1.0W (150)	Yes	Y	DL	1.2	19	1.5	WLXP2	-0.866	WLZP2	0.5
62	1.2D + 1.0W (180)	Yes	Y	DL	1.2	19	1.5	WLXP2	-1	WLZP2	
63	1.2D + 1.0W (210)	Yes	Y	DL	1.2	19	1.5	WLXP2	-0.866	WLZP2	-0.5
64	1.2D + 1.0W (225)	Yes	Y	DL	1.2	19	1.5	WLXP2	-0.707	WLZP2	-0.707
65	1.2D + 1.0W (240)	Yes	Y	DL	1.2	19	1.5	WLXP2	-0.5	WLZP2	-0.866
66	1.2D + 1.0W (270)	Yes	Y	DL	1.2	19	1.5	WLXP2		WLZP2	-1
67	1.2D + 1.0W (300)	Yes	Y	DL	1.2	19	1.5	WLXP2	0.5	WLZP2	-0.866
68	1.2D + 1.0W (315)	Yes	Y	DL	1.2	19	1.5	WLXP2	0.707	WLZP2	-0.707
69	1.2D + 1.0W (330)	Yes	Y	DL	1.2	19	1.5	WLXP2	0.866	WLZP2	-0.5
70	1.2D + 1.5Lv	Yes	Y	DL	1.2	20	1.5				

Load Combination Design

	Description	Service	Hot Rolled	Cold Formed	Wood	Concrete	Masonry	Aluminum	Stainless	Connection
1	1.4D		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	Wind LCs (Case 1)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	1.2D +1.0W (0)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	1.2D + 1.0W (30)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5	1.2D + 1.0W (45)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6	1.2D + 1.0W (60)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
7	1.2D + 1.0W (90)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
8	1.2D + 1.0W (120)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
9	1.2D + 1.0W (135)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
10	1.2D + 1.0W (150)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
11	1.2D + 1.0W (180)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
12	1.2D + 1.0W (210)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
13	1.2D + 1.0W (225)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
14	1.2D + 1.0W (240)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
15	1.2D + 1.0W (270)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
16	1.2D + 1.0W (300)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
17	1.2D + 1.0W (315)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
18	1.2D + 1.0W (330)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
19	Uplift LCs (Case 2)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
20	1.2D +1.0W (0)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
21	1.2D + 1.0W (30)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
22	1.2D + 1.0W (45)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
23	1.2D + 1.0W (60)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
24	1.2D + 1.0W (90)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
25	1.2D + 1.0W (120)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
26	1.2D + 1.0W (135)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
27	1.2D + 1.0W (150)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
28	1.2D + 1.0W (180)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
29	1.2D + 1.0W (210)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
30	1.2D + 1.0W (225)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Load Combination Design (Continued)

	Description	Service	Hot Rolled	Cold Formed	Wood	Concrete	Masonry	Aluminum	Stainless	Connection
31	1.2D + 1.0W (240)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
32	1.2D + 1.0W (270)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
33	1.2D + 1.0W (300)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
34	1.2D + 1.0W (315)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
35	1.2D + 1.0W (330)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
36	Ice LCs (Case 3)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
37	1.2D + 1.0Di +1.0Wi (0)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
38	1.2D + 1.0W (30)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
39	1.2D + 1.0W (45)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
40	1.2D + 1.0W (60)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
41	1.2D + 1.0W (90)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
42	1.2D + 1.0W (120)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
43	1.2D + 1.0W (135)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
44	1.2D + 1.0W (150)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
45	1.2D + 1.0W (180)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
46	1.2D + 1.0W (210)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
47	1.2D + 1.0W (225)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
48	1.2D + 1.0W (240)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
49	1.2D + 1.0W (270)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
50	1.2D + 1.0W (300)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
51	1.2D + 1.0W (315)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
52	1.2D + 1.0W (330)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
53	Maintenance LCs (Case 3)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
54	1.2D + 1.0Di +1.0Wi (0)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
55	1.2D + 1.0W (30)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
56	1.2D + 1.0W (45)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
57	1.2D + 1.0W (60)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
58	1.2D + 1.0W (90)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
59	1.2D + 1.0W (120)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
60	1.2D + 1.0W (135)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
61	1.2D + 1.0W (150)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
62	1.2D + 1.0W (180)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
63	1.2D + 1.0W (210)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
64	1.2D + 1.0W (225)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
65	1.2D + 1.0W (240)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
66	1.2D + 1.0W (270)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
67	1.2D + 1.0W (300)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
68	1.2D + 1.0W (315)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
69	1.2D + 1.0W (330)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
70	1.2D + 1.5Lv		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

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

No Data to Print...

Envelope Node Reactions

	Node Label		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	P24	max	2260.838	29	1874.007	42	1532.413	31	0.381	33	2.957	29	0.243	33
2		min	-2264.692	4	73.696	33	-1532.389	6	-3.586	42	-2.981	4	-2.941	70
3	P13	max	2243.267	27	1875.958	48	1572.305	16	3.981	70	2.985	18	0.253	23
4		min	-2248.652	18	74	23	-1571.919	25	-0.37	23	-2.96	27	-1.988	48
5	P1	max	989.122	11	1797.164	37	2369.071	32	0.246	24	2.63	24	3.948	37
6		min	-973.983	20	19.132	28	-2369.341	24	-1.193	70	-2.631	32	-0.61	28
7	Totals:	max	5346.355	11	5322.799	45	5162.535	15						
8		min	-5346.354	20	2000.925	20	-5162.533	24						

Envelope Node Displacements

	Node Label		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotation [rad]	LC	Z Rotation [rad]	LC
1	P1	max	0	20	0	28	0	24	0	70	0	32	0	28
2		min	0	11	0	37	0	32	0	24	0	24	0	37
3	P2	max	0	70	0	70	0	70	0	70	0	70	0	70
4		min	0	1	0	1	0	1	0	1	0	1	0	1
5	P3	max	0	20	0.022	28	0.025	24	3.261e-3	70	4.456e-4	15	8.909e-4	28
6		min	0	11	-0.095	3	-0.025	15	-8.727e-4	24	-4.432e-4	24	-3.375e-3	3
7	P4	max	0	20	0.004	28	0.012	24	1.173e-3	70	8.521e-4	32	4.96e-4	28
8		min	0	11	-0.021	37	-0.012	32	-2.417e-4	24	-8.511e-4	24	-2.283e-3	3
9	P7	max	0.103	21	0.029	29	0.025	24	4.585e-3	24	1.072e-3	13	3.13e-3	10
10		min	-0.104	12	-0.102	4	-0.025	15	-4.661e-3	15	-1.063e-3	22	-2.649e-3	35
11	P8	max	0.103	35	0.028	27	0.025	24	4.785e-3	7	1.069e-3	34	3.299e-3	12
12		min	-0.104	10	-0.17	70	-0.025	32	-4.786e-3	15	-1.073e-3	9	-2.92e-3	21
13	P9	max	0.083	35	-0.013	28	0.013	24	3.577e-3	70	3.241e-3	35	-5.582e-4	23
14		min	-0.083	10	-0.096	70	-0.013	32	9.495e-4	28	-3.27e-3	10	-4.434e-3	70
15	P10	max	0.082	21	-0.013	28	0.013	24	-9.195e-4	28	3.172e-3	12	-5.428e-4	32
16		min	-0.082	12	-0.078	54	-0.013	15	-3.343e-3	54	-3.152e-3	21	-2.161e-3	42
17	P11	max	0.078	21	0.025	29	0.025	24	3.288e-3	70	1.457e-3	30	1.351e-3	28
18		min	-0.079	12	-0.097	4	-0.025	15	-1.113e-3	7	-1.494e-3	5	-1.542e-3	3
19	P12	max	0.08	35	0.024	28	0.025	24	4.048e-3	70	1.367e-3	17	1.387e-3	28
20		min	-0.08	10	-0.145	70	-0.025	32	-9.235e-4	25	-1.311e-3	26	-3.273e-3	70
21	P13	max	0	18	0	23	0	25	0	23	0	27	0	48
22		min	0	27	0	48	0	16	0	70	0	18	0	23
23	P14	max	0.027	18	0.018	23	0.015	26	6.729e-4	22	6.553e-4	26	1.84e-3	15
24		min	-0.027	27	-0.096	48	-0.016	18	-4.496e-3	70	-6.845e-4	17	-1.25e-3	70
25	P15	max	0.012	18	0.003	23	0.007	27	3.298e-4	22	9.937e-4	27	1.147e-3	15
26		min	-0.011	27	-0.023	48	-0.007	18	-2.542e-3	70	-1.01e-3	18	-2.538e-4	24
27	P18	max	0.041	5	0.025	24	0.088	24	2.252e-3	7	1.467e-3	25	5.98e-3	11
28		min	-0.04	30	-0.102	15	-0.088	15	-1.982e-3	32	-1.516e-3	16	-4.958e-3	20
29	P19	max	0.063	4	0.023	22	0.089	22	4.396e-3	8	1.253e-3	28	3.713e-3	11
30		min	-0.063	29	-0.176	70	-0.09	13	-4.139e-3	33	-1.278e-3	3	-3.474e-3	20
31	P20	max	0.048	21	-0.015	22	0.069	22	-1.015e-3	34	3.332e-3	13	-1.732e-4	24
32		min	-0.048	12	-0.095	70	-0.07	13	-5.709e-3	70	-3.318e-3	22	-2.095e-3	66
33	P21	max	0.032	6	-0.013	23	0.07	24	4.873e-4	70	2.951e-3	7	3.921e-3	50
34		min	-0.032	31	-0.08	65	-0.07	15	-5.259e-4	3	-2.948e-3	32	1.124e-3	25
35	P22	max	0.032	4	0.021	23	0.07	24	1.104e-3	22	1.387e-3	25	1.489e-3	15
36		min	-0.031	29	-0.098	14	-0.07	15	-1.499e-3	13	-1.395e-3	16	-3.475e-3	70
37	P23	max	0.053	3	0.021	22	0.069	23	1.26e-3	21	1.438e-3	11	8.042e-4	33
38		min	-0.053	28	-0.151	70	-0.07	14	-5.24e-3	70	-1.381e-3	20	-1.775e-3	70
39	P24	max	0	4	0	33	0	6	0	42	0	4	0	70
40		min	0	29	0	42	0	31	0	33	0	29	0	33
41	P25	max	0.027	4	0.018	33	0.016	4	2.984e-3	9	6.688e-4	4	4.42e-3	70
42		min	-0.027	29	-0.096	8	-0.015	29	-7.027e-4	34	-6.368e-4	30	-6.492e-4	32
43	P26	max	0.012	4	0.003	33	0.007	4	2.013e-3	43	1.009e-3	4	2.103e-3	70
44		min	-0.011	29	-0.023	42	-0.007	29	-3.436e-4	34	-9.915e-4	29	-2.352e-4	32
45	P29	max	0.063	3	0.025	35	0.086	9	3.839e-3	23	1.318e-3	3	3.535e-3	11
46		min	-0.063	28	-0.105	10	-0.085	34	-4.163e-3	14	-1.292e-3	28	-3.464e-3	20
47	P30	max	0.044	17	0.024	32	0.088	7	2.164e-3	24	1.473e-3	6	6.318e-3	11
48		min	-0.043	26	-0.173	70	-0.088	15	-2.29e-3	15	-1.421e-3	31	-5.241e-3	20
49	P31	max	0.033	16	-0.014	33	0.07	7	2.097e-3	70	2.956e-3	24	5.253e-3	70
50		min	-0.033	25	-0.095	70	-0.07	15	-2.276e-4	28	-2.965e-3	15	1.178e-3	31
51	P32	max	0.047	35	-0.015	34	0.068	10	3.638e-3	47	3.235e-3	35	-2.596e-4	32
52		min	-0.048	10	-0.082	60	-0.067	35	9.788e-4	22	-3.264e-3	10	-2.114e-3	58
53	P33	max	0.054	3	0.022	34	0.066	9	1.747e-3	10	1.417e-3	20	2.191e-3	70
54		min	-0.054	28	-0.101	9	-0.065	34	-2.702e-3	70	-1.451e-3	11	-8.766e-4	31
55	P34	max	0.036	18	0.02	33	0.07	7	1.541e-3	9	1.37e-3	6	5.361e-3	70

Envelope Node Displacements (Continued)

	Node Label		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotation [rad]	LC	Z Rotation [rad]	LC
56		min	-0.035	27	-0.148	70	-0.07	32	-1.126e-3	34	-1.339e-3	31	-1.196e-3	32
57	N43	max	0.039	5	0.032	24	0.088	24	2.252e-3	7	1.467e-3	25	5.98e-3	11
58		min	-0.038	30	-0.108	15	-0.088	15	-1.982e-3	32	-1.516e-3	16	-4.958e-3	20
59	N44	max	0.042	17	0.031	32	0.088	7	2.164e-3	24	1.473e-3	6	6.318e-3	11
60		min	-0.041	26	-0.179	70	-0.088	15	-2.29e-3	15	-1.421e-3	31	-5.241e-3	20
61	N45	max	0.042	5	0.019	24	0.088	24	2.268e-3	7	1.439e-3	25	5.991e-3	11
62		min	-0.042	30	-0.097	15	-0.088	15	-2.012e-3	32	-1.489e-3	16	-4.971e-3	20
63	N48A	max	0.046	17	0.017	32	0.088	7	2.196e-3	24	1.45e-3	6	6.33e-3	11
64		min	-0.045	26	-0.168	70	-0.088	15	-2.306e-3	15	-1.397e-3	31	-5.255e-3	20
65	N51	max	0.277	20	0.018	24	0.253	7	2.476e-3	7	2.577e-3	20	5.914e-3	28
66		min	-0.29	11	-0.103	49	-0.249	32	-2.212e-3	32	-2.64e-3	11	-6.14e-3	3
67	N54	max	0.285	20	0.017	32	0.253	7	2.296e-3	70	2.636e-3	11	5.715e-3	28
68		min	-0.296	11	-0.182	70	-0.249	32	-2.371e-3	16	-2.547e-3	20	-5.972e-3	3
69	N57	max	0.214	10	0.019	23	0.012	26	1.857e-3	7	1.439e-3	25	5.579e-3	11
70		min	-0.171	35	-0.099	14	-0.057	70	-1.601e-3	32	-1.489e-3	16	-4.559e-3	20
71	N60	max	0.224	11	0.019	33	0.02	56	1.883e-3	70	1.45e-3	6	5.917e-3	11
72		min	-0.177	20	-0.169	70	-0.08	70	-1.895e-3	15	-1.397e-3	31	-4.843e-3	20
73	N63	max	0.338	20	0.017	24	0.277	7	2.482e-3	7	2.577e-3	20	5.919e-3	28
74		min	-0.349	11	-0.103	48	-0.271	32	-2.217e-3	32	-2.64e-3	11	-6.145e-3	3
75	N66	max	0.344	20	0.017	33	0.275	7	2.296e-3	70	2.636e-3	11	5.72e-3	28
76		min	-0.353	11	-0.181	70	-0.272	32	-2.376e-3	16	-2.547e-3	20	-5.978e-3	3
77	N67	max	0.261	20	0.032	24	0.253	7	2.429e-3	6	2.787e-3	35	5.83e-3	28
78		min	-0.273	11	-0.116	15	-0.249	32	-2.175e-3	31	-2.855e-3	10	-6.059e-3	3
79	N68	max	0.268	20	0.031	32	0.253	7	2.494e-3	70	2.86e-3	11	5.622e-3	28
80		min	-0.279	11	-0.197	70	-0.249	32	-2.352e-3	16	-2.759e-3	20	-5.883e-3	3
81	N111A	max	0.257	20	0.033	29	0.252	24	5.185e-3	24	2.558e-3	8	3.88e-3	10
82		min	-0.265	11	-0.107	4	-0.254	15	-5.334e-3	15	-2.542e-3	33	-3.703e-3	35
83	N112A	max	0.266	20	0.03	27	0.252	24	5.055e-3	7	2.553e-3	6	3.746e-3	12
84		min	-0.268	11	-0.179	70	-0.254	15	-5.01e-3	32	-2.52e-3	31	-3.716e-3	21
85	N113A	max	0.269	20	0.025	24	0.253	7	2.429e-3	6	2.787e-3	35	5.83e-3	28
86		min	-0.282	11	-0.109	15	-0.249	32	-2.175e-3	31	-2.855e-3	10	-6.059e-3	3
87	N114A	max	0.265	20	0.024	22	0.263	7	4.638e-3	8	2.547e-3	17	3.371e-3	27
88		min	-0.276	11	-0.178	70	-0.259	32	-4.504e-3	33	-2.548e-3	9	-3.427e-3	18
89	N115A	max	0.27	20	0.025	34	0.247	24	4.599e-3	23	2.606e-3	13	3.437e-3	29
90		min	-0.275	11	-0.106	9	-0.254	15	-4.803e-3	14	-2.578e-3	22	-3.668e-3	4
91	N116A	max	0.277	20	0.024	32	0.253	7	2.441e-3	70	2.86e-3	11	5.622e-3	28
92		min	-0.288	11	-0.19	70	-0.249	32	-2.353e-3	16	-2.759e-3	20	-5.883e-3	3
93	N69A	max	0.042	5	0.019	23	0.089	24	2.268e-3	7	1.439e-3	25	5.991e-3	11
94		min	-0.042	30	-0.098	14	-0.089	15	-2.012e-3	32	-1.489e-3	16	-4.971e-3	20
95	N70A	max	0.046	17	0.018	33	0.089	7	2.196e-3	24	1.45e-3	6	6.33e-3	11
96		min	-0.045	26	-0.169	70	-0.089	15	-2.306e-3	15	-1.397e-3	31	-5.255e-3	20
97	N71A	max	0.277	20	0.017	24	0.252	7	2.476e-3	7	2.577e-3	20	5.914e-3	28
98		min	-0.29	11	-0.103	48	-0.249	32	-2.212e-3	32	-2.64e-3	11	-6.14e-3	3
99	N72A	max	0.285	20	0.017	33	0.252	7	2.296e-3	70	2.636e-3	11	5.715e-3	28
100		min	-0.296	11	-0.181	70	-0.249	32	-2.371e-3	16	-2.547e-3	20	-5.972e-3	3
101	N122A	max	0.098	21	-0.017	28	0.013	24	-9.54e-4	28	3.197e-3	12	8.736e-4	29
102		min	-0.098	12	-0.095	54	-0.013	15	-3.468e-3	54	-3.181e-3	21	-1.865e-3	4
103	N124B	max	0.099	35	-0.018	28	0.013	24	3.658e-3	70	3.297e-3	35	7.796e-4	27
104		min	-0.1	10	-0.115	70	-0.013	32	9.845e-4	28	-3.322e-3	10	-4.185e-3	70
105	N122B	max	0.039	6	-0.018	23	0.083	24	1.618e-3	70	2.981e-3	7	3.578e-3	49
106		min	-0.039	31	-0.097	65	-0.083	15	-7.801e-4	32	-2.978e-3	32	4.561e-4	24
107	N123A	max	0.056	21	-0.021	22	0.084	22	-3.098e-5	22	3.444e-3	13	-3.719e-4	29
108		min	-0.057	12	-0.113	70	-0.085	13	-5.329e-3	70	-3.421e-3	22	-2.655e-3	55
109	N125	max	0.056	35	-0.02	34	0.082	10	2.893e-3	43	3.304e-3	34	-3.856e-4	27
110		min	-0.056	10	-0.1	60	-0.082	35	-5.271e-5	34	-3.336e-3	9	-2.69e-3	69

Envelope Node Displacements (Continued)

	Node Label		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotation [rad]	LC	Z Rotation [rad]	LC
111	N126	max	0.041	16	-0.019	33	0.083	7	1.787e-3	70	2.993e-3	24	5.168e-3	70
112		min	-0.04	25	-0.113	70	-0.083	15	-1.169e-3	15	-3.002e-3	15	5.312e-4	33
113	N125A	max	0.045	16	-0.021	33	0.083	7	1.787e-3	70	2.993e-3	24	5.168e-3	70
114		min	-0.045	25	-0.11	70	-0.083	15	-1.169e-3	15	-3.002e-3	15	5.312e-4	33
115	N126A	max	0.045	16	-0.021	33	0.087	7	1.787e-3	70	1.523e-3	15	6.075e-3	11
116		min	-0.045	25	-0.119	70	-0.088	15	-1.169e-3	15	-1.518e-3	24	-4.947e-3	20
117	N128	max	0.102	35	-0.02	28	0.011	23	3.658e-3	70	3.297e-3	35	7.796e-4	27
118		min	-0.102	10	-0.112	70	-0.011	14	9.845e-4	28	-3.322e-3	10	-4.185e-3	70
119	N129	max	0.106	35	-0.021	28	0.012	24	4.087e-3	6	1.693e-3	10	2.934e-3	13
120		min	-0.107	10	-0.12	70	-0.012	15	-4.094e-3	14	-1.683e-3	35	-2.499e-3	22
121	N131	max	0.054	21	-0.022	22	0.088	22	-3.098e-5	22	3.444e-3	13	-3.719e-4	29
122		min	-0.054	12	-0.11	70	-0.089	13	-5.329e-3	70	-3.421e-3	22	-2.655e-3	55
123	N132	max	0.058	21	-0.023	22	0.091	22	4.346e-3	8	1.706e-3	22	2.476e-3	27
124		min	-0.059	12	-0.118	70	-0.092	13	-3.954e-3	33	-1.737e-3	13	-2.573e-3	18
125	N132A	max	0.043	6	-0.02	23	0.083	24	1.618e-3	70	2.981e-3	7	3.578e-3	49
126		min	-0.043	31	-0.099	65	-0.083	15	-7.801e-4	32	-2.978e-3	32	4.561e-4	24
127	N133	max	0.043	6	-0.021	23	0.087	7	1.618e-3	70	1.483e-3	32	5.941e-3	11
128		min	-0.043	31	-0.105	65	-0.088	15	-7.801e-4	32	-1.484e-3	7	-4.835e-3	20
129	N134	max	0.053	35	-0.022	34	0.087	10	2.893e-3	43	3.304e-3	34	-3.856e-4	27
130		min	-0.054	10	-0.101	60	-0.086	35	-5.271e-5	34	-3.336e-3	9	-2.69e-3	69
131	N135	max	0.058	35	-0.023	34	0.089	10	3.8e-3	23	1.704e-3	10	2.417e-3	29
132		min	-0.058	10	-0.107	60	-0.089	35	-4.272e-3	14	-1.664e-3	35	-2.686e-3	4
133	N137	max	0.1	21	-0.019	28	0.011	25	-1.149e-3	27	4.697e-3	12	7.521e-4	29
134		min	-0.101	12	-0.097	54	-0.011	33	-4.328e-3	69	-4.7e-3	21	-2.108e-3	4
135	N138	max	0.107	21	-0.02	28	0.013	24	3.972e-3	25	1.668e-3	21	2.921e-3	9
136		min	-0.107	12	-0.104	54	-0.013	32	-4.063e-3	16	-1.671e-3	12	-2.327e-3	34
137	N72B	max	0.016	3	-0.035	20	0.088	7	1.784e-3	70	2.782e-3	15	5.907e-3	11
138		min	-0.016	28	-0.116	62	-0.088	15	-1.044e-3	32	-2.78e-3	7	-4.746e-3	20
139	N73	max	0.348	20	-0.035	28	0.253	7	2.267e-3	7	2.881e-4	16	7.573e-3	28
140		min	-0.363	11	-0.133	54	-0.249	32	-2.178e-3	32	-2.794e-4	25	-7.639e-3	3
141	N74	max	0.089	11	-0.012	20	0.181	24	3.256e-3	15	3.979e-3	15	1.61e-3	62
142		min	-0.048	20	-0.12	62	-0.185	15	-3.166e-3	24	-3.977e-3	24	-5.804e-4	20
143	N75	max	0.425	20	-0.042	31	0.275	7	2.273e-3	7	2.881e-4	16	7.578e-3	28
144		min	-0.439	11	-0.136	56	-0.271	32	-2.183e-3	32	-2.794e-4	25	-7.645e-3	3
145	N76	max	0.016	3	-0.031	20	0.085	7	1.784e-3	70	2.782e-3	15	5.907e-3	11
146		min	-0.016	28	-0.118	62	-0.085	15	-1.044e-3	32	-2.78e-3	7	-4.746e-3	20
147	N77	max	0.348	20	-0.042	31	0.252	7	2.267e-3	7	2.881e-4	16	7.573e-3	28
148		min	-0.363	11	-0.131	57	-0.249	32	-2.178e-3	32	-2.794e-4	25	-7.639e-3	3
149	N81A	max	0.065	3	0.032	35	0.084	9	3.839e-3	23	1.318e-3	3	3.535e-3	11
150		min	-0.065	28	-0.112	10	-0.082	34	-4.163e-3	14	-1.292e-3	28	-3.464e-3	20
151	N82A	max	0.101	35	0.035	27	0.027	24	4.785e-3	7	1.07e-3	34	3.299e-3	12
152		min	-0.102	10	-0.175	70	-0.027	32	-4.786e-3	15	-1.073e-3	9	-2.92e-3	21
153	N83A	max	0.061	18	0.018	34	0.089	9	3.857e-3	23	1.285e-3	3	3.554e-3	11
154		min	-0.061	27	-0.098	9	-0.087	34	-4.179e-3	14	-1.259e-3	28	-3.472e-3	20
155	N84	max	0.104	35	0.021	27	0.023	24	4.787e-3	7	1.038e-3	34	3.326e-3	12
156		min	-0.105	10	-0.166	70	-0.023	15	-4.797e-3	15	-1.042e-3	9	-2.954e-3	21
157	N85	max	0.272	20	0.018	34	0.252	24	4.651e-3	23	2.312e-3	13	3.582e-3	29
158		min	-0.277	11	-0.099	43	-0.258	15	-4.864e-3	14	-2.314e-3	5	-3.805e-3	4
159	N86	max	0.267	20	0.022	27	0.258	24	5.178e-3	7	2.384e-3	6	3.748e-3	12
160		min	-0.27	11	-0.171	70	-0.26	15	-5.125e-3	32	-2.364e-3	14	-3.712e-3	21
161	N87	max	0.086	12	0.019	34	0.167	12	3.501e-3	23	1.285e-3	3	3.142e-3	11
162		min	-0.083	21	-0.099	9	-0.152	21	-3.822e-3	14	-1.259e-3	28	-3.06e-3	20
163	N88	max	0.112	15	0.019	28	0.165	15	4.374e-3	7	1.038e-3	34	2.969e-3	12
164		min	-0.096	24	-0.165	70	-0.165	7	-4.385e-3	15	-1.042e-3	9	-2.597e-3	21
165	N89	max	0.308	20	0.018	34	0.296	24	4.656e-3	23	2.312e-3	13	3.587e-3	29

Envelope Node Displacements (Continued)

	Node Label		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotation [rad]	LC	Z Rotation [rad]	LC
166		min	-0.311	11	-0.1	9	-0.305	15	-4.869e-3	14	-2.314e-3	5	-3.81e-3	4
167	N90	max	0.301	20	0.023	28	0.308	24	5.183e-3	7	2.384e-3	6	3.753e-3	12
168		min	-0.304	11	-0.171	70	-0.31	15	-5.13e-3	32	-2.364e-3	14	-3.717e-3	21
169	N91	max	0.267	20	0.033	35	0.242	24	4.599e-3	23	2.606e-3	13	3.437e-3	29
170		min	-0.272	11	-0.113	10	-0.249	15	-4.803e-3	14	-2.578e-3	22	-3.668e-3	4
171	N92	max	0.264	20	0.038	27	0.246	24	5.055e-3	7	2.553e-3	6	3.746e-3	12
172		min	-0.266	11	-0.188	70	-0.248	15	-5.01e-3	32	-2.52e-3	31	-3.716e-3	21
173	N93	max	0.062	18	0.018	34	0.089	9	3.857e-3	23	1.285e-3	3	3.554e-3	11
174		min	-0.062	28	-0.098	9	-0.088	34	-4.179e-3	14	-1.259e-3	28	-3.472e-3	20
175	N94	max	0.105	35	0.021	28	0.023	24	4.787e-3	7	1.038e-3	34	3.326e-3	12
176		min	-0.106	10	-0.165	70	-0.023	15	-4.797e-3	15	-1.042e-3	9	-2.954e-3	21
177	N95	max	0.271	20	0.018	34	0.252	24	4.651e-3	23	2.312e-3	13	3.582e-3	29
178		min	-0.276	11	-0.1	9	-0.259	15	-4.864e-3	14	-2.314e-3	5	-3.805e-3	4
179	N96	max	0.268	20	0.023	28	0.256	24	5.178e-3	7	2.384e-3	6	3.748e-3	12
180		min	-0.27	11	-0.171	70	-0.259	15	-5.125e-3	32	-2.364e-3	14	-3.712e-3	21
181	N109	max	0.102	21	0.037	29	0.027	24	4.585e-3	24	1.072e-3	13	3.13e-3	10
182		min	-0.102	12	-0.108	4	-0.027	15	-4.661e-3	15	-1.063e-3	22	-2.649e-3	35
183	N110	max	0.064	4	0.03	21	0.087	23	4.396e-3	8	1.253e-3	28	3.713e-3	11
184		min	-0.064	29	-0.183	70	-0.088	13	-4.139e-3	33	-1.278e-3	3	-3.474e-3	20
185	N111	max	0.105	21	0.022	29	0.023	24	4.594e-3	24	1.039e-3	13	3.156e-3	10
186		min	-0.105	12	-0.096	4	-0.023	32	-4.663e-3	15	-1.03e-3	22	-2.68e-3	35
187	N112	max	0.061	4	0.016	22	0.091	22	4.413e-3	8	1.225e-3	28	3.734e-3	11
188		min	-0.061	29	-0.17	70	-0.092	13	-4.159e-3	33	-1.249e-3	3	-3.481e-3	20
189	N113	max	0.259	20	0.025	29	0.258	24	5.298e-3	24	2.426e-3	8	3.883e-3	10
190		min	-0.267	11	-0.1	4	-0.26	15	-5.453e-3	15	-2.404e-3	33	-3.7e-3	35
191	N114	max	0.267	20	0.017	22	0.268	7	4.704e-3	8	2.293e-3	16	3.517e-3	27
192		min	-0.279	11	-0.172	70	-0.264	32	-4.561e-3	33	-2.265e-3	25	-3.566e-3	18
193	N115	max	0.117	7	0.02	29	0.16	15	4.182e-3	24	1.039e-3	13	2.799e-3	10
194		min	-0.097	32	-0.094	4	-0.157	24	-4.25e-3	15	-1.03e-3	22	-2.324e-3	35
195	N116	max	0.097	10	0.018	22	0.156	35	4.056e-3	8	1.225e-3	28	3.322e-3	11
196		min	-0.087	35	-0.169	70	-0.169	10	-3.802e-3	33	-1.249e-3	3	-3.07e-3	20
197	N117	max	0.293	20	0.025	28	0.31	24	5.303e-3	24	2.426e-3	8	3.887e-3	10
198		min	-0.303	11	-0.1	3	-0.314	15	-5.458e-3	15	-2.404e-3	33	-3.705e-3	35
199	N118	max	0.301	20	0.017	22	0.313	7	4.708e-3	8	2.293e-3	16	3.522e-3	27
200		min	-0.312	11	-0.172	70	-0.307	32	-4.566e-3	33	-2.265e-3	25	-3.571e-3	18
201	N119	max	0.256	20	0.041	29	0.245	24	5.185e-3	24	2.558e-3	8	3.88e-3	10
202		min	-0.264	11	-0.115	4	-0.248	15	-5.334e-3	15	-2.542e-3	33	-3.703e-3	35
203	N120	max	0.262	20	0.031	22	0.258	7	4.638e-3	8	2.546e-3	17	3.371e-3	27
204		min	-0.274	11	-0.184	70	-0.254	32	-4.504e-3	33	-2.548e-3	9	-3.427e-3	18
205	N121	max	0.106	21	0.022	29	0.023	24	4.594e-3	24	1.039e-3	13	3.156e-3	10
206		min	-0.106	12	-0.095	4	-0.023	32	-4.663e-3	15	-1.03e-3	22	-2.68e-3	35
207	N122	max	0.062	4	0.016	22	0.092	22	4.413e-3	8	1.225e-3	28	3.734e-3	11
208		min	-0.062	29	-0.169	70	-0.093	13	-4.159e-3	33	-1.249e-3	3	-3.481e-3	20
209	N123	max	0.259	20	0.025	28	0.257	24	5.298e-3	24	2.426e-3	8	3.883e-3	10
210		min	-0.268	11	-0.1	3	-0.259	15	-5.453e-3	15	-2.404e-3	33	-3.7e-3	35
211	N124	max	0.266	20	0.017	22	0.269	7	4.704e-3	8	2.293e-3	16	3.517e-3	27
212		min	-0.277	11	-0.172	70	-0.265	32	-4.561e-3	33	-2.265e-3	25	-3.566e-3	18
213	N129B	max	0.082	35	-0.035	31	0.049	9	3.824e-3	23	3.329e-3	10	2.665e-3	12
214		min	-0.083	10	-0.117	57	-0.049	34	-4.017e-3	14	-3.301e-3	35	-2.495e-3	21
215	N130A	max	0.286	20	-0.031	29	0.302	24	6.22e-3	23	1.026e-4	70	4.175e-3	12
216		min	-0.289	11	-0.121	55	-0.306	15	-6.24e-3	14	-1.707e-4	7	-4.109e-3	21
217	N131A	max	0.153	35	-0.025	35	0.12	10	1.985e-3	35	2.868e-3	11	2.583e-3	35
218		min	-0.154	10	-0.118	61	-0.11	35	-2.197e-3	10	-2.831e-3	20	-2.696e-3	10
219	N132B	max	0.32	20	-0.025	30	0.359	24	6.224e-3	23	1.026e-4	70	4.18e-3	12
220		min	-0.325	11	-0.127	56	-0.363	15	-6.245e-3	14	-1.707e-4	7	-4.113e-3	21

Envelope Node Displacements (Continued)

	Node Label		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotation [rad]	LC	Z Rotation [rad]	LC
221	N133B	max	0.079	35	-0.031	31	0.047	9	3.824e-3	23	3.329e-3	10	2.665e-3	12
222		min	-0.08	10	-0.117	57	-0.047	34	-4.017e-3	14	-3.301e-3	35	-2.495e-3	21
223	N134A	max	0.286	20	-0.025	30	0.302	24	6.22e-3	23	1.026e-4	70	4.175e-3	12
224		min	-0.289	11	-0.122	56	-0.306	15	-6.24e-3	14	-1.707e-4	7	-4.109e-3	21
225	N135A	max	0.083	21	-0.035	25	0.051	22	3.993e-3	8	3.308e-3	21	2.691e-3	10
226		min	-0.083	12	-0.117	67	-0.051	13	-3.887e-3	33	-3.326e-3	12	-2.354e-3	35
227	N136	max	0.277	20	-0.032	27	0.311	7	6.217e-3	25	3.615e-4	70	4.205e-3	10
228		min	-0.287	11	-0.121	69	-0.311	15	-6.284e-3	16	-1.163e-4	35	-3.985e-3	35
229	N137A	max	0.161	5	-0.024	21	0.107	21	2.005e-3	12	2.743e-3	20	2.728e-3	4
230		min	-0.155	30	-0.118	63	-0.113	12	-1.88e-3	21	-2.771e-3	11	-2.681e-3	29
231	N138A	max	0.31	20	-0.025	26	0.368	7	6.221e-3	25	3.615e-4	70	4.21e-3	10
232		min	-0.323	11	-0.127	68	-0.369	15	-6.288e-3	16	-1.163e-4	35	-3.989e-3	35
233	N139	max	0.08	21	-0.031	25	0.049	22	3.993e-3	8	3.308e-3	21	2.691e-3	10
234		min	-0.08	12	-0.117	67	-0.049	13	-3.887e-3	33	-3.326e-3	12	-2.354e-3	35
235	N140	max	0.277	20	-0.025	26	0.311	7	6.217e-3	25	3.615e-4	70	4.205e-3	10
236		min	-0.287	11	-0.122	68	-0.311	15	-6.284e-3	16	-1.163e-4	35	-3.985e-3	35
237	N127	max	0.123	34	-0.025	35	0.094	11	1.981e-3	35	2.868e-3	11	2.574e-3	35
238		min	-0.122	26	-0.118	61	-0.087	20	-2.193e-3	10	-2.831e-3	20	-2.688e-3	10
239	N130	max	0.278	20	-0.024	29	0.29	24	6.333e-3	23	1.319e-4	30	4.456e-3	12
240		min	-0.282	11	-0.122	55	-0.294	15	-6.359e-3	14	-2.179e-4	5	-4.4e-3	21
241	N141	max	0.092	20	-0.026	29	0.064	25	4.975e-3	23	2.797e-3	10	4.006e-3	12
242		min	-0.093	11	-0.118	55	-0.065	16	-5.136e-3	14	-2.785e-3	35	-3.95e-3	21
243	N142	max	0.151	20	-0.019	29	0.131	24	6.316e-3	24	1.812e-3	27	5.616e-3	11
244		min	-0.153	11	-0.12	55	-0.134	15	-6.427e-3	15	-1.832e-3	18	-5.638e-3	3
245	N143	max	0.27	20	-0.024	26	0.3	7	6.338e-3	25	3.478e-4	70	4.479e-3	10
246		min	-0.279	11	-0.122	68	-0.299	15	-6.398e-3	16	-3.394e-5	32	-4.271e-3	35
247	N144	max	0.129	5	-0.024	21	0.085	21	2.e-3	12	2.743e-3	20	2.72e-3	4
248		min	-0.123	30	-0.118	63	-0.089	12	-1.875e-3	21	-2.771e-3	11	-2.672e-3	29
249	N145	max	0.091	21	-0.026	27	0.068	6	5.121e-3	8	2.792e-3	4	4.013e-3	10
250		min	-0.093	12	-0.118	69	-0.067	31	-5.041e-3	33	-2.793e-3	12	-3.799e-3	35
251	N146	max	0.146	20	-0.02	27	0.138	7	6.504e-3	7	1.84e-3	4	5.59e-3	11
252		min	-0.151	11	-0.12	69	-0.137	32	-6.469e-3	32	-1.808e-3	29	-5.459e-3	20
253	N147	max	0.333	20	-0.042	29	0.248	7	2.768e-3	7	4.694e-4	15	7.741e-3	28
254		min	-0.348	11	-0.131	55	-0.245	32	-2.681e-3	32	-4.579e-4	24	-7.805e-3	3
255	N149	max	0.072	11	-0.012	20	0.143	24	3.246e-3	15	3.979e-3	15	1.61e-3	62
256		min	-0.041	20	-0.12	62	-0.146	15	-3.156e-3	24	-3.977e-3	24	-5.899e-4	20
257	N150	max	0.05	20	-0.037	20	0.097	7	3.046e-3	7	2.559e-3	15	7.018e-3	11
258		min	-0.056	11	-0.12	62	-0.097	32	-2.957e-3	32	-2.555e-3	24	-6.222e-3	20
259	N151	max	0.137	20	-0.04	28	0.146	7	4.99e-3	7	1.964e-3	15	8.221e-3	11
260		min	-0.149	11	-0.124	54	-0.144	32	-4.908e-3	32	-1.957e-3	24	-7.916e-3	20
261	N148	max	0.132	20	0.018	33	0.156	7	4.135e-3	7	9.64e-4	10	6.186e-3	11
262		min	-0.143	11	-0.175	70	-0.155	32	-3.979e-3	32	-8.981e-4	35	-5.85e-3	20
263	N152	max	0.144	20	0.01	22	0.151	7	4.535e-3	8	9.067e-4	32	5.539e-3	11
264		min	-0.15	11	-0.172	70	-0.149	32	-4.437e-3	33	-9.134e-4	7	-5.191e-3	20
265	N153	max	0.164	20	0.027	28	0.118	24	5.861e-3	24	8.697e-4	4	4.206e-3	28
266		min	-0.167	11	-0.166	70	-0.119	15	-5.942e-3	15	-8.653e-4	12	-4.251e-3	3

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 [k-ft]	phi*Mn z-z [k-ft]	Cb	Eqn
1	M2	HSS4X4X6	0.235	40	5	0.093	40	y	70	188250.474	197892	22.046	22.046	1.891	H1-1b
2	M3	L2x2x4	0.246	0	3	0.022	27.295	y	10	29527.562	42480	0.96	2.19	1.5	H2-1
3	M4	L2x2x4	0.237	0	4	0.022	27.295	z	12	29527.562	42480	0.96	2.19	1.5	H2-1
4	M5	PL6.5x0.375	0.286	21	18	0.103	36.312	y	70	3658.14	78975	0.617	7.861	1.398	H1-1b
5	M7	HSS4X4X6	0.253	40	16	0.094	23.75	y	70	188250.475	197892	22.046	22.046	1.923	H1-1b
6	M8	L2x2x4	0.269	0	13	0.023	0	y	5	29527.563	42480	0.96	2.19	1.5	H2-1

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 [k-ft]	phi*Mn z-z [k-ft]	Cb	Eqn
7	M9	L2x2x4	0.209	0	14	0.02	27.295	y	70	29527.563	42480	0.96	2.19	1.5	H2-1
8	M10	PL6.5x0.375	0.301	21	13	0.098	36.312	y	70	3658.14	78975	0.617	7.697	1.369	H1-1b
9	M12	HSS4X4X6	0.251	40	11	0.092	40	y	70	188250.475	197892	22.046	22.046	1.909	H1-1b
10	M13	L2x2x4	0.221	0	8	0.02	0	y	16	29527.562	42480	0.96	2.19	1.5	H2-1
11	M14	L2x2x4	0.258	0	9	0.022	0	z	17	29527.563	42480	0.96	2.19	1.5	H2-1
12	M15	PL6.5x0.375	0.288	21	9	0.094	36.312	y	3	3658.14	78975	0.617	7.514	1.337	H1-1b
13	M18	Pipe3.5x0.165	0.157	31	16	0.057	64		6	45873.009	71580.6	6.338	6.338	1.422	H1-1b
14	MP9	PIPE_2.5	0.132	42	7	0.068	42		5	33487.322	66654	4.727	4.727	1.933	H1-1b
15	MP7	PIPE_2.5	0.122	42	15	0.064	42		17	33487.322	66654	4.727	4.727	1.962	H1-1b
16	M25	PIPE_2.5	0.104	48	16	0.043	90		10	33487.322	66654	4.727	4.727	1.722	H1-1b
17	M28	L6.6x4.46x0.25	0.138	41.562	8	0.019	42	z	17	51170.949	87561	2.465	7.125	1.136	H2-1
18	M29	L6.6x4.46x0.25	0.121	41.562	31	0.016	42	z	6	51170.949	87561	2.465	7.125	1.136	H2-1
19	M30	L6.6x4.46x0.25	0.131	0.437	14	0.019	0	z	12	51170.949	87561	2.465	7.125	1.136	H2-1
20	M61A	C3.38x2.06x0.25	0.334	0	3	0.042	28.187	z	11	47760.074	56700	2.203	5.752	1.631	H1-1b
21	M63A	C3.38x2.06x0.25	0.342	0	3	0.045	28.188	z	11	47760.074	56700	2.203	5.752	1.631	H1-1b
22	M60A	C3.38x2.06x0.25	0.313	0	14	0.041	28.188	y	70	47760.074	56700	2.203	5.752	1.629	H1-1b
23	M61B	C3.38x2.06x0.25	0.35	0	14	0.046	28.188	z	6	47760.074	56700	2.203	5.752	1.631	H1-1b
24	M62A	C3.38x2.06x0.25	0.343	0	9	0.044	28.188	z	17	47760.074	56700	2.203	5.752	1.636	H1-1b
25	M63B	C3.38x2.06x0.25	0.318	0	8	0.041	28.187	z	16	47760.074	56700	2.203	5.752	1.629	H1-1b
26	M75	PL 2.375x0.5	0.361	1.5	5	0.213	0	y	68	38256.871	38475	0.401	1.904	2.187	H1-1b
27	MP8	PIPE_2.5	0.228	42	15	0.087	84		7	33487.322	66654	4.727	4.727	1.711	H1-1b
28	M48	Pipe3.5x0.165	0.168	65	26	0.067	64		16	45873.009	71580.6	6.338	6.338	1.634	H1-1b
29	MP3	PIPE_2.5	0.141	42	18	0.058	60		15	33487.322	66654	4.727	4.727	2.022	H1-1b
30	MP1	PIPE_2.5	0.125	42	10	0.059	42		12	33487.322	66654	4.727	4.727	1.901	H1-1b
31	M51	PIPE_2.5	0.115	90	18	0.045	6		11	33487.322	66654	4.727	4.727	1.817	H1-1b
32	M62	Pipe3.5x0.165	0.169	31	30	0.065	32		13	45873.009	71580.6	6.338	6.338	1.703	H1-1b
33	MP6	PIPE_2.5	0.133	42	12	0.062	42		10	33487.322	66654	4.727	4.727	1.915	H1-1b
34	MP4	PIPE_2.5	0.132	42	4	0.055	42		7	33487.322	66654	4.727	4.727	1.994	H1-1b
35	M65A	PIPE_2.5	0.123	6	4	0.042	90		11	33487.322	66654	4.727	4.727	1.846	H1-1b
36	MP2	PIPE_2.5	0.217	42	18	0.089	42		9	33487.322	66654	4.727	4.727	1.802	H1-1b
37	MP5	PIPE_2.5	0.217	42	4	0.089	42		13	33487.322	66654	4.727	4.727	1.802	H1-1b

Material Take-Off

	Material	Size	Pieces	Length[in]	Weight[K]
1	General Members				
2	RIGID		29	35.1	0
3	Total General		29	35.1	0
4					
5	Hot Rolled Steel				
6	A1011 36 Ksi	C3.38x2.06x0.25	6	198	0.098
7	A1011 36 Ksi	PL6.5x0.375	3	126	0.087
8	A1011 36 Ksi	L6.6x4.46x0.25	3	126	0.097
9	A36 Gr.36	PL 2.375x0.5	1	1.5	0.001
10	A500 GR.C	HSS4X4X6	3	120	0.163
11	A500 GR.C	Pipe3.5x0.165	3	288	0.141
12	A500 GR.C	PIPE_2.5	12	1152	0.526
13	A529 Gr. 50	L2x2x4	6	163.8	0.044
14	Total HR Steel		37	2175.3	1.156

Warning Log

	Message
1	There are members defined as member type: "Beam" that are vertical (or nearly vertical). For proper deflection optimization, change member type to "Column".

MK DEVELOPMENT

EXHIBIT F

NIERS Study

Pinnacle Telecom Group

Professional and Technical Services

Antenna Site FCC RF Compliance Assessment and Report for Municipal Submission

Prepared for:	DISH Wireless, LLC
Site ID:	NJJER02021B
Site Address:	5 Perryridge Road Greenwich, CT
Latitude:	N 41.034206
Longitude:	W 73.630848
Structure type:	Monopole
Report date:	June 20, 2024
Compliance Conclusion:	DISH Wireless, LLC will be in compliance with the rules and regulations as described in OET Bulletin 65, following the implementation of the proposed mitigation as detailed in the report.

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Contents

Introduction and Summary

At the request of DISH Wireless, LLC ("DISH"), Pinnacle Telecom Group has performed an independent expert assessment of radiofrequency (RF) levels and related FCC compliance for proposed wireless base station antenna operations on an existing monopole located at 5 Perryridge Road in Greenwich, CT. DISH refers to the antenna site by the code "NJJER02021B", and its proposed operation involves directional panel antennas and transmission in the 600 MHz, 2000 MHz and 2100 MHz frequency bands licensed to it by the FCC.

The FCC requires all wireless antenna operators to perform an assessment of potential human exposure to radiofrequency (RF) fields emanating from all the transmitting antennas at a site whenever antenna operations are added or modified, and to ensure compliance with the Maximum Permissible Exposure (MPE) limit in the FCC's regulations. In this case, the compliance assessment needs to take into account the RF effects of other existing antenna operations at the site by AT&T, T-Mobile, Verizon Wireless, the Town of Greenwich Police Department, the Town of Greenwich and Greenwich Hospital. Note FCC regulations require any future antenna collocators to assess and assure continuing compliance based on the cumulative effects of all then-proposed and then-existing antennas at the site.

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

The results of a compliance assessment can be described in layman's terms by expressing the calculated RF levels as simple percentages of the FCC MPE limit. If the normalized reference for that limit is 100 percent, then calculated RF levels higher than 100 percent indicate the MPE limit is exceeded and there is a need to mitigate the potential exposure. On the other hand, calculated RF levels consistently below 100 percent serve as a clear and sufficient demonstration of

compliance with the MPE limit. We can (and will) also describe the overall worst-case result via the “plain-English” equivalent “times-below-the-limit” factor.

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

- At street level, the conservatively calculated maximum RF level from the combination of proposed and existing antenna operations at the site is 10.9976 percent of the FCC general population MPE limit – well below the 100-percent reference for compliance. In other words, the worst-case calculated RF level – intentionally and significantly overstated by the calculations – is still more than nine times below the FCC limit for safe, continuous exposure of the general public.
- The results of the analysis provide a clear demonstration that the RF levels from the combination of proposed and existing antenna operations will satisfy the criteria for controlling potential human exposure to RF fields, and the antenna operations will be in full compliance with the FCC regulations and limits concerning RF safety. Moreover, because of the conservative methodology and operational assumptions applied in the analysis, RF levels actually caused by the antennas will be even less significant than the calculation results here indicate.

The remainder of this report provides the following:

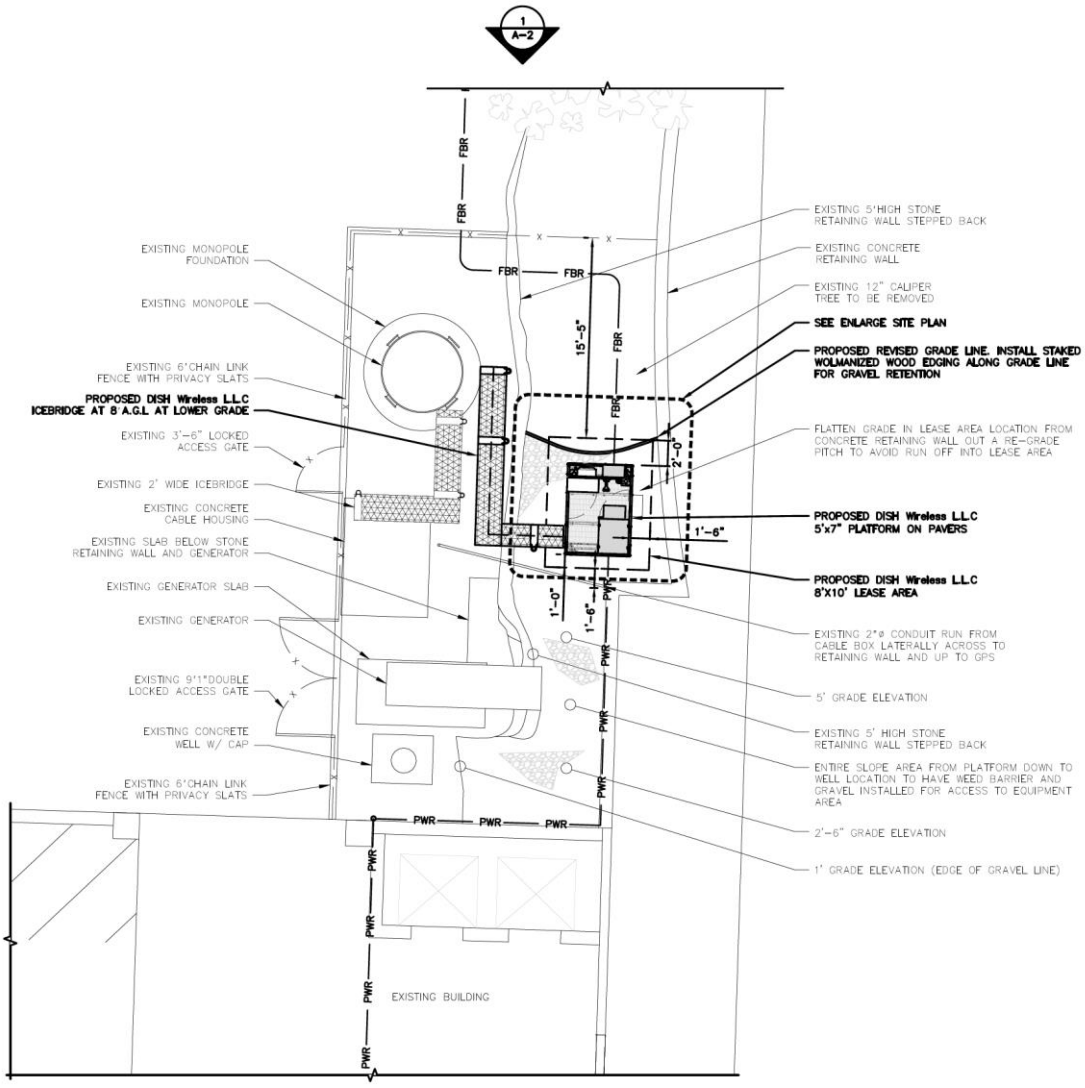
- relevant technical data on the proposed DISH antenna operations at the site, as well as on the other existing antenna operations;
- a description of the applicable FCC mathematical model for calculating RF levels, and application of the relevant technical data to that model;
- analysis of the results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

In addition, three Appendices are included. Appendix A provides information on the documents used to prepare the analysis. Appendix B provides background on the FCC MPE limit. Appendix C provides a summary of the qualifications of the expert certifying FCC compliance for this site.

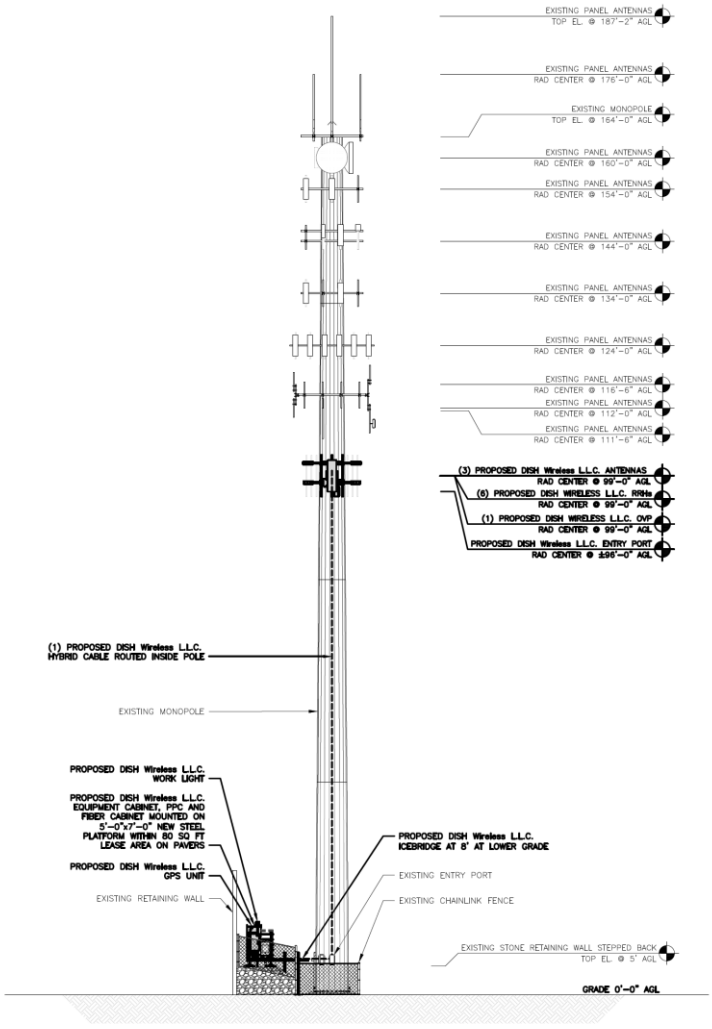
Antenna and Transmission Data

The plan and elevation views that follow, extracted from the site drawings, illustrate the mounting positions of the DISH antennas at the site.

Plan View:



Elevation View:



The table that follows summarizes the relevant data for the proposed DISH antenna operations. Note that the "Z" height references the centerline of the antenna.

Ant. ID	Carrier	Antenna Manufacturer	Antenna Model	Type	Freq (MHz)	Ant. Dim. (ft.)	Total Input Power (watts)	Total ERP (watts)	Z AGL (ft)	Ant. Gain (dBd)	B/W	Azimuth	EDT	MDT
❶	DISH	Commscope	FFVV-65B-R2	Panel	600	6	120	2110	99.0	12.46	64	80	2	0
❶	DISH	Commscope	FFVV-65B-R2	Panel	2000	6	160	7396	99.0	16.66	67	80	2	0
❶	DISH	Commscope	FFVV-65B-R2	Panel	2100	6	160	7396	99.0	16.66	67	80	2	0
❷	DISH	Commscope	FFVV-65B-R2	Panel	600	6	120	2110	99.0	12.46	64	200	2	0
❷	DISH	Commscope	FFVV-65B-R2	Panel	2000	6	160	7396	99.0	16.66	67	200	2	0
❷	DISH	Commscope	FFVV-65B-R2	Panel	2100	6	160	7396	99.0	16.66	67	200	2	0
❸	DISH	Commscope	FFVV-65B-R2	Panel	600	6	120	2110	99.0	12.46	64	320	2	0
❸	DISH	Commscope	FFVV-65B-R2	Panel	2000	6	160	7396	99.0	16.66	67	320	2	0
❸	DISH	Commscope	FFVV-65B-R2	Panel	2100	6	160	7396	99.0	16.66	67	320	2	0

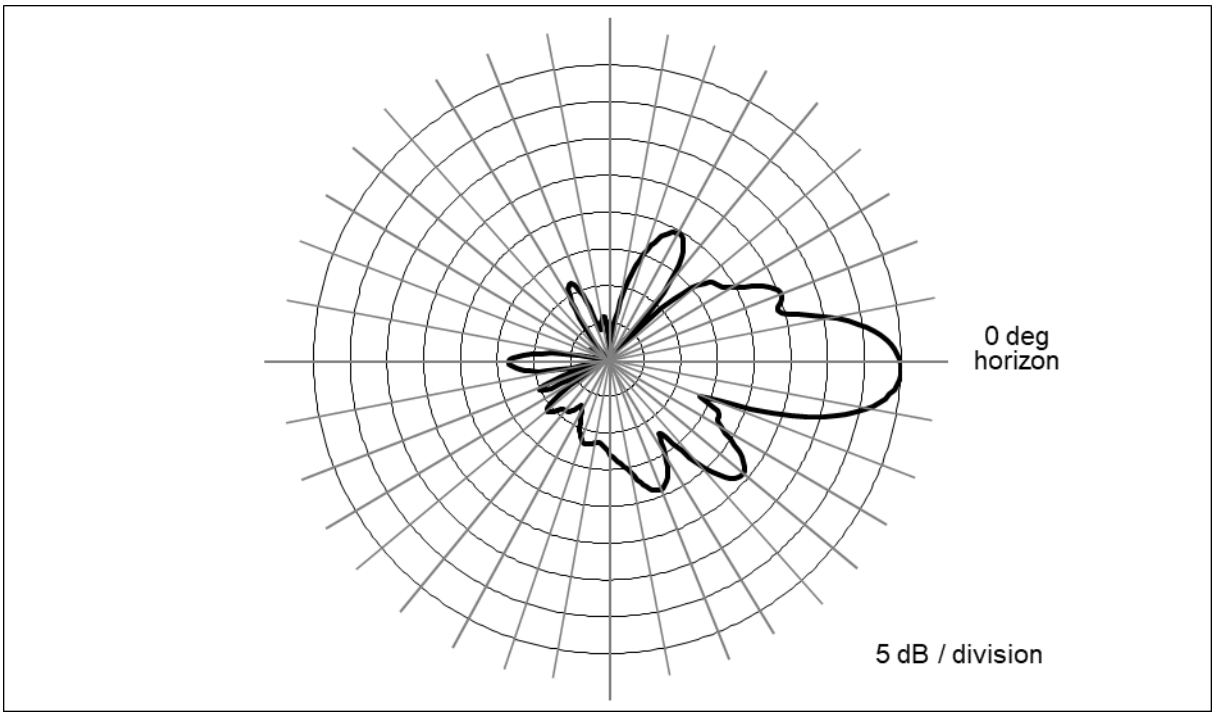
The area below the antennas, at street level, is of interest in terms of potential "uncontrolled" exposure of the general public, so the antenna's vertical-plane emission characteristic is used in the calculations, as it is a key determinant of the relative amount of RF emissions in the "downward" direction.

By way of illustration, Figure 1 that follows shows the vertical-plane radiation pattern of the proposed antenna model in the 600 MHz frequency band. In this type of antenna radiation pattern diagram, the antenna is effectively pointed at the three o'clock position (the horizon) and the relative strength of the pattern at different angles is described using decibel units.

Note that the use of a decibel scale to describe the relative pattern at different angles actually serves to significantly understate the actual focusing effects of the antenna. Where the antenna pattern reads 20 dB the relative RF energy emitted at the corresponding downward angle is 1/100th of the maximum that occurs in the main beam (at 0 degrees); at 30 dB, the energy is only 1/1000th of the maximum.

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

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



As noted at the outset, there are existing antenna operations to include in the compliance assessment. For each of the wireless operators, we will conservatively assume operation with maximum channel capacity and at maximum transmitter power per channel to be used by each wireless operator in each of their respective FCC-licensed frequency bands. For each of the other operators, we will rely on the transmission parameters in their respective FCC licenses.

The table that follows summarizes the relevant data for the collocated antenna operations.

Carrier	*Antenna Manufacturer*	*Antenna Model*	*Type*	*Freq (MHz)*	*Total ERP (watts)*	*Ant. Gain (dBd)*	*Azimuth*
AT&T	Generic	Generic	Panel	700	4945	11.26	N/A
AT&T	Generic	Generic	Panel	850	2400	11.76	N/A
AT&T	Generic	Generic	Panel	1900	5756	15.56	N/A
AT&T	Generic	Generic	Panel	2100	5890	15.66	N/A
AT&T	Generic	Generic	Panel	2300	4131	16.16	N/A
T-Mobile	Generic	Generic	Panel	600	3163	12.96	N/A
T-Mobile	Generic	Generic	Panel	700	867	13.36	N/A
T-Mobile	Generic	Generic	Panel	1900	4123	15.36	N/A
T-Mobile	Generic	Generic	Panel	1900	1452	15.60	N/A
T-Mobile	Generic	Generic	Panel	2100	4626	15.86	N/A
T-Mobile	Generic	Generic	Panel	1900	1419	15.50	N/A
T-Mobile	Generic	Generic	Panel	2500	12804	22.35	N/A
Verizon Wireless	Generic	Generic	Panel	746	2400	11.76	N/A
Verizon Wireless	Generic	Generic	Panel	869	5166	12.36	N/A
Verizon Wireless	Generic	Generic	Panel	1900	5372	15.26	N/A
Verizon Wireless	Generic	Generic	Panel	2100	5625	15.46	N/A
Town of Greenwich PD	Generic	Generic	Omnidirectional	851	60	6.86	N/A
Town of Greenwich	Generic	Generic	Omnidirectional	158	25	0.00	N/A
Greenwich Hospital	Generic	Generic	Omnidirectional	461	140	3.0	N/A

Compliance Analysis

FCC Office of Engineering and Technology Bulletin 65 ("OET Bulletin 65") provides guidelines for mathematical models to calculate the RF levels at various points around transmitting antennas. Different models apply in different areas around antennas, with one model applying to street level around a site, and another applying to the same height as the antennas. We will address each area of interest in turn in the subsections that follow.

Street Level Analysis

At street-level around an antenna site (in what is called the "far field" of the antennas), the RF levels are directly proportional to the total antenna input power and the relative antenna gain in the downward direction of interest – and the levels are otherwise inversely proportional to the square of the straight-line distance to the antenna.

Conservative calculations also assume the potential RF exposure is enhanced by reflection of the RF energy from the intervening ground. Our calculations will assume a 100% "perfect", mirror-like reflection, which is the absolute worst-case scenario.

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

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

where

MPE%	=	RF level, expressed as a percentage of the MPE limit applicable to continuous exposure of the general public
100	=	factor to convert the raw result to a percentage
Chans	=	maximum number of RF channels per sector
TxPower	=	maximum transmitter power per channel, in milliwatts

$10^{(Gmax-Vdisc/10)}$	=	numeric equivalent of the relative antenna gain in the downward direction of interest; data on the antenna vertical-plane pattern is taken from manufacturer specifications
4	=	factor to account for a 100-percent-efficient energy reflection from the ground, and the squared relationship between RF field strength and power density ($2^2 = 4$)
MPE	=	FCC general population MPE limit
R	=	straight-line distance from the RF source to the point of interest, centimeters

The MPE% calculations are performed out to a distance of 500 feet from the facility to points 6.5 feet (approximately two meters, the FCC-recommended standing height) off the ground, as illustrated in Figure 2, below.

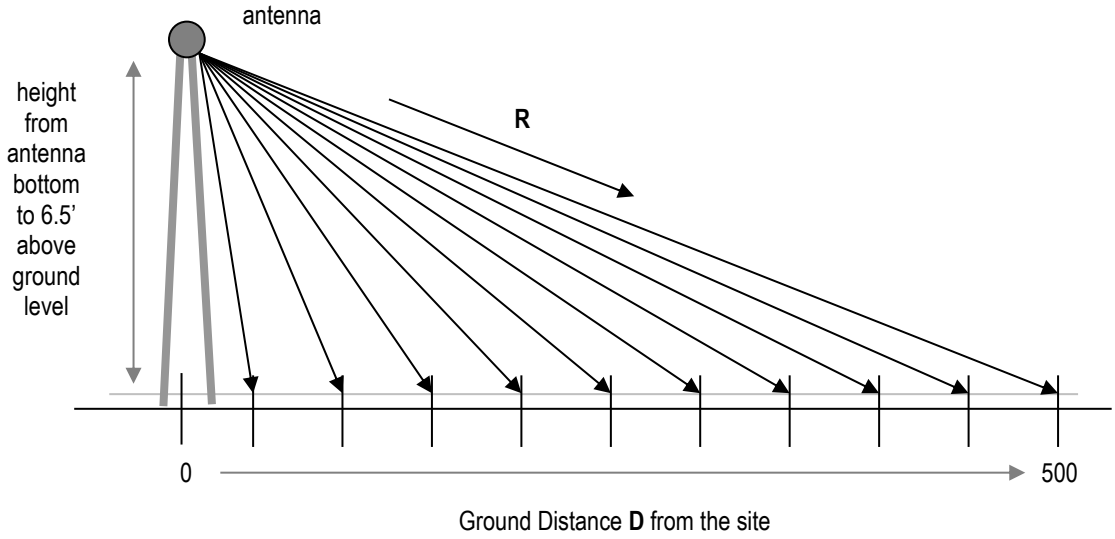


Figure 2. Street-level MPE% Calculation Geometry

It is popularly understood that the farther away one is from an antenna, the lower the RF level – which is generally but not universally correct. The results of MPE% calculations fairly close to the site will reflect the variations in the vertical-plane antenna pattern as well as the variation in straight-line distance to the antenna.

Therefore, RF levels may actually increase slightly with increasing distance within the range of zero to 500 feet from the site. As the distance approaches 500 feet and beyond, though, the antenna pattern factor becomes less significant, the RF levels become primarily distance-controlled and, as a result, the RF levels generally decrease with increasing distance. In any case, the RF levels more than 500 feet from a wireless antenna site are well understood to be sufficiently low to be comfortably in compliance.

According to the FCC, when directional antennas (such as panels) are used, compliance assessments are based on the RF effect of a single (facing) antenna sector, as the effects of directional antennas pointed away from the point(s) of interest are considered insignificant. If the different parameters apply in the different sectors, compliance is based on the worst-case parameters.

Street level FCC compliance for a collocated antenna site is assessed in the following manner. At each distance point along the ground, an MPE% calculation is made for each antenna operation (including each frequency band), and the sum of the individual MPE% contributions at each point is compared to 100 percent, the normalized reference for compliance with the MPE limit. We refer to the sum of the individual MPE% contributions as “total MPE%”, and any calculated total MPE% result exceeding 100 percent is, by definition, higher than the FCC limit and represents non-compliance and a need to mitigate the potential exposure. If all results are consistently below 100 percent, on the other hand, that set of results serves as a clear and sufficient demonstration of compliance with the MPE limit.

Note that the following conservative methodology and assumptions are incorporated into the MPE% calculations on a general basis:

1. The antennas are assumed to be operating continuously at maximum power and maximum channel capacity.
2. The power-attenuation effects of shadowing or other obstructions to the line-of-sight path from the antenna to the point of interest are ignored.
3. The calculations intentionally minimize the distance factor (R) by assuming a 6’6” human and performing the calculations from the bottom (rather than

the centerline) of each operator's lowest-mounted antenna, as applicable.

4. The calculations also conservatively take into account, when applicable, the different technical characteristics and related RF effects of the use of multiple antennas for transmission in the same frequency band.
5. The RF exposure at ground level is assumed to be 100-percent enhanced (increased) via a "perfect" field reflection from the intervening ground.

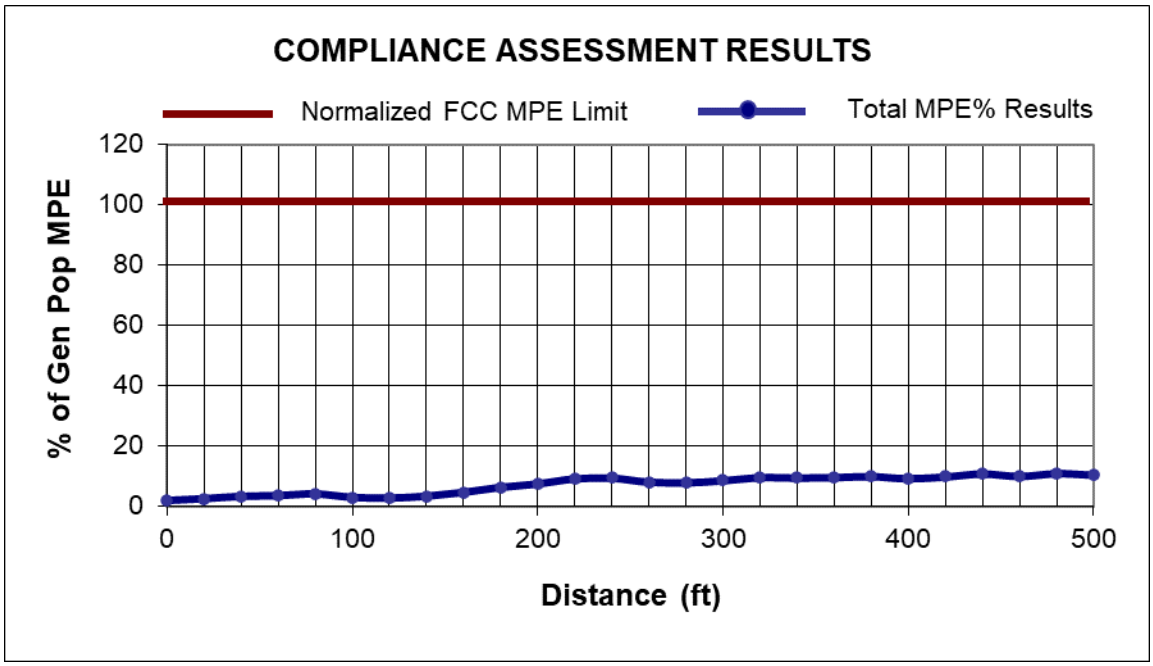
The net result of these assumptions is to intentionally and significantly overstate the calculated RF levels relative to the levels that will actually result from the antenna operations – and the purpose of this conservatism is to allow very "safe-side" conclusions about compliance.

The table that follows provides the results of the MPE% calculations for each antenna operation, with the overall worst-case calculated result highlighted in bold in the last column. Note that the transmission parameters for each DISH antenna sector are identical, and the calculations reflect the worst-case result for any/all sectors.

Ground Distance (ft)	DISH 600 MHz MPE%	DISH 2000 MHz MPE%	DISH 2100 MHz MPE%	AT&T MPE%	T-Mobile MPE%	Verizon Wireless MPE%	Town of Greenwich PD MPE%	Town of Greenwich MPE%	Greenwich Hospital MPE%	Total MPE%
0	0.0608	0.0029	0.0005	0.0803	0.7616	1.0509	0.0007	0.0001	0.0007	1.9585
20	0.1424	0.0098	0.0161	0.0903	1.1083	1.1527	0.0063	0.0086	0.0368	2.5713
40	0.2156	0.0804	0.0161	0.2015	2.1081	0.6112	0.0082	0.0266	0.0878	3.3555
60	0.0446	0.0239	0.0875	0.3302	2.4061	0.5709	0.0028	0.0460	0.0832	3.5952
80	0.1900	0.2966	0.4733	0.4791	1.6674	0.9746	0.0055	0.0649	0.0350	4.1864
100	0.4026	0.3454	0.4152	0.3645	0.7629	0.6400	0.0008	0.0803	0.0067	3.0184
120	0.2270	0.0782	0.2537	0.1923	0.9053	1.0083	0.0046	0.0898	0.0025	2.7617
140	0.0786	0.0469	0.0338	0.3565	1.3706	1.4215	0.0012	0.0889	0.0138	3.4118
160	0.0430	0.0048	0.0555	0.6896	2.5253	1.2354	0.0003	0.0879	0.0311	4.6729
180	0.0340	0.1319	0.1105	0.8657	4.1523	0.9730	0.0006	0.0830	0.0478	6.3988
200	0.0216	0.0416	0.1612	0.8143	5.1941	1.1595	0.0017	0.0767	0.0675	7.5382
220	0.0113	0.0456	0.0313	0.6866	6.7425	1.5605	0.0014	0.0711	0.0782	9.2285
240	0.0234	0.1499	0.0903	0.5796	6.7358	1.7406	0.0003	0.0647	0.0914	9.4760
260	0.0851	0.0769	0.1575	0.4443	5.6701	1.5559	0.0006	0.0590	0.0895	8.1389
280	0.1339	0.0238	0.1019	0.3292	5.9181	1.2438	0.0012	0.0541	0.1014	7.9074
300	0.1950	0.0062	0.0440	0.2168	7.1170	0.8901	0.0008	0.0497	0.1008	8.6204
320	0.2682	0.0058	0.0135	0.1111	8.5915	0.5083	0.0004	0.0449	0.1007	9.6444
340	0.3502	0.0045	0.0044	0.1577	8.3788	0.4646	0.0000	0.0416	0.0989	9.5007
360	0.4383	0.0090	0.0027	0.2654	8.1854	0.6247	0.0000	0.0378	0.0977	9.6610
380	0.3957	0.0081	0.0025	0.4180	7.9963	1.0633	0.0001	0.0345	0.0969	10.0154
400	0.4798	0.0311	0.0120	0.3804	7.2719	0.9771	0.0002	0.0316	0.0944	9.2785
420	0.4371	0.0284	0.0109	0.5348	7.1605	1.5942	0.0002	0.0290	0.0861	9.8812
440	0.5151	0.0654	0.0383	0.6828	7.0520	2.4455	0.0001	0.0274	0.0845	10.9111
460	0.4729	0.0600	0.0352	0.6282	6.4942	2.2498	0.0001	0.0253	0.0852	10.0509
480	**0.5421**	**0.0823**	**0.0660**	**0.7640**	**6.4120**	**3.0291**	**0.0001**	**0.0234**	**0.0786**	**10.9976**
500	0.5009	0.0761	0.0610	0.9190	6.0125	2.7867	0.0000	0.0218	0.0761	10.4541

As indicated, the maximum calculated overall RF level is 10.9976 percent of the FCC MPE limit – well below the 100-percent reference for compliance.

A graph of the overall calculation results, shown below, perhaps provides a clearer *visual* illustration of the relative compliance of the calculated RF levels. The line representing the overall calculation results shows an obviously clear, consistent margin to the FCC MPE limit.



Compliance Conclusion

According to the FCC, the MPE limit has been constructed in such a manner that continuous human exposure to RF fields up to and including 100 percent of the MPE limit is acceptable and safe.

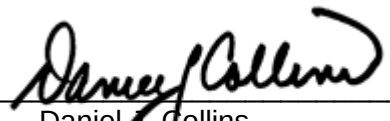
The conservative analysis in this case shows that the maximum calculated RF level from the combination of proposed and existing antenna operations at street level around the site is 10.9976 percent of the FCC general population MPE limit.

The results of the calculations indicate clear compliance with the FCC MPE limit. Moreover, because of the extremely conservative calculation methodology and operational assumptions we applied in the analysis, RF levels actually caused by the antennas will be significantly lower than the calculation results here indicate.

Certification

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

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



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

6/20/24
Date

Appendix A. Documents Used to Prepare the Analysis

RFDS: RFDS-NJJER02021B-Final-20230321-v.2_20230321102414

CD: NJJER02021B_FinalStampedCDs_20240620085741

Appendix B. Background on the FCC MPE Limit

As directed by the Telecommunications Act of 1996, the FCC has established limits for maximum continuous human exposure to RF fields.

The FCC maximum permissible exposure (MPE) limits represent the consensus of federal agencies and independent experts responsible for RF safety matters. Those agencies include the National Council on Radiation Protection and Measurements (NCRP), the Occupational Safety and Health Administration (OSHA), the National Institute for Occupational Safety and Health (NIOSH), the American National Standards Institute (ANSI), the Environmental Protection Agency (EPA), and the Food and Drug Administration (FDA). In formulating its guidelines, the FCC also considered input from the public and technical community – notably the Institute of Electrical and Electronics Engineers (IEEE).

The FCC's RF exposure guidelines are incorporated in Section 1.301 *et seq* of its Rules and Regulations (47 CFR 1.1301-1.1310). Those guidelines specify MPE limits for both occupational and general population exposure.

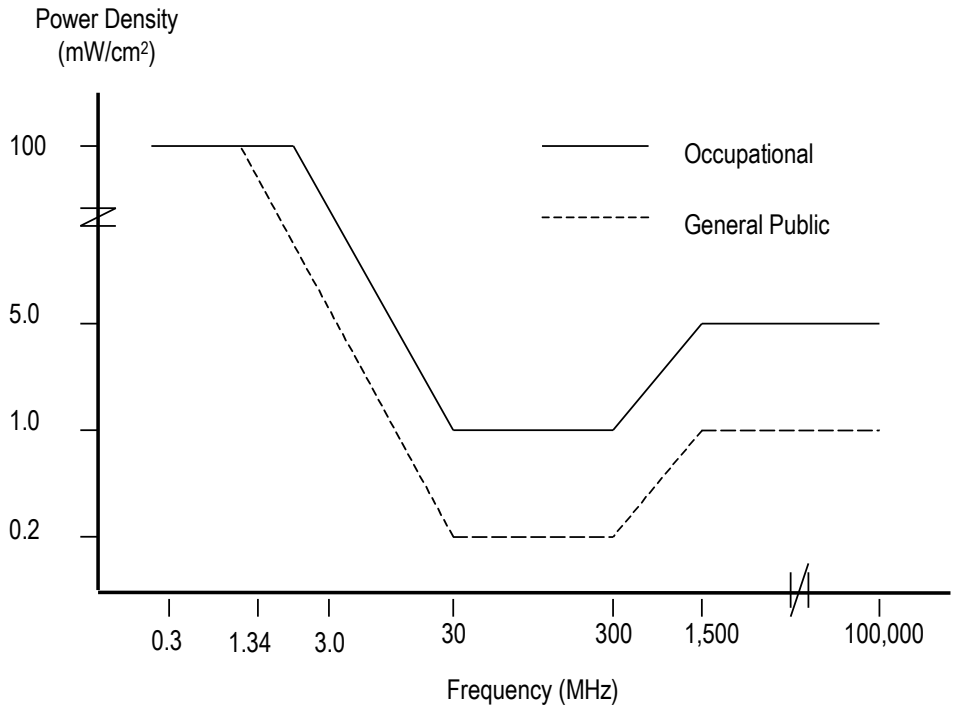
The specified continuous exposure MPE limits are based on known variation of human body susceptibility in different frequency ranges, and a Specific Absorption Rate (SAR) of 4 watts per kilogram, which is universally considered to accurately represent human capacity to dissipate incident RF energy (in the form of heat). The occupational MPE guidelines incorporate a safety factor of 10 or greater with respect to RF levels known to represent a health hazard, and an additional safety factor of five is applied to the MPE limits for general population exposure. Thus, the general population MPE limit has a built-in safety factor of more than 50. The limits were constructed to appropriately protect humans of both sexes and all ages and sizes and under all conditions – and continuous exposure at levels equal to or below the applicable MPE limits is considered to result in no adverse health effects or even health risk.

The reason for *two* tiers of MPE limits is based on an understanding and assumption that members of the general public are unlikely to have had appropriate RF safety training and may not be aware of the exposures they receive; occupational exposure in controlled environments, on the other hand, is assumed to involve individuals who have had such training, are aware of the exposures, and know how to maintain a safe personal work environment.

The FCC's RF exposure limits are expressed in two equivalent forms, using alternative units of field strength (expressed in volts per meter, or V/m), and power density (expressed in milliwatts per square centimeter, or mW/cm^2). The table on the next page lists the FCC limits for both occupational and general population exposures, using the mW/cm^2 reference, for the different radio frequency ranges.

Frequency Range (F) (MHz)	Occupational Exposure (mW/cm^2)	General Public Exposure (mW/cm^2)
0.3 - 1.34	100	100
1.34 - 3.0	100	$180 / F^2$
3.0 - 30	$900 / F^2$	$180 / F^2$
30 - 300	1.0	0.2
300 - 1,500	F / 300	F / 1500
1,500 - 100,000	5.0	1.0

The diagram below provides a graphical illustration of both the FCC's occupational and general population MPE limits.



Because the FCC's RF exposure limits are frequency-shaped, the exact MPE limits applicable to the instant situation depend on the frequency range used by the systems of interest.

The most appropriate method of determining RF compliance is to calculate the RF power density attributable to a particular system and compare that to the MPE limit applicable to the operating frequency in question. The result is usually expressed as a percentage of the MPE limit.

For potential exposure from multiple systems, the respective percentages of the MPE limits are added, and the total percentage compared to 100 (percent of the limit). If the result is less than 100, the total exposure is in compliance; if it is more than 100, exposure mitigation measures are necessary to achieve compliance.

Note that the FCC "categorically excludes" all "non-building-mounted" wireless antenna operations whose mounting heights are more than 10 meters (32.8 feet) from the routine requirement to demonstrate compliance with the MPE limit, because such operations "are deemed, individually and cumulatively, to have no significant effect on the human environment". The categorical exclusion also applies to *all* point-to-point antenna operations, regardless of the type of structure they're mounted on. Note that the FCC considers any facility qualifying for the categorical exclusion to be automatically in compliance.

In addition, FCC Rules and Regulations Section 1.1307(b)(3) describes a provision known in the industry as "the 5% rule". It describes that when a specific location – like a spot on a rooftop – is subject to an overall exposure level exceeding the applicable MPE limit, operators with antennas whose MPE% contributions at the point of interest are less than 5% are exempted from the obligation otherwise shared by all operators to bring the site into compliance, and those antennas are automatically deemed by the FCC to satisfy the rooftop compliance requirement.

FCC References on RF Compliance

47 CFR, FCC Rules and Regulations, Part 1 (Practice and Procedure), Section 1.1310 (Radiofrequency radiation exposure limits).

FCC Second Memorandum Opinion and Order and Notice of Proposed Rulemaking (FCC 97-303), *In the Matter of Procedures for Reviewing Requests for Relief From State and Local Regulations Pursuant to Section 332(c)(7)(B)(v) of the Communications Act of 1934 (WT Docket 97-192), Guidelines for Evaluating the Environmental Effects of Radiofrequency Radiation (ET Docket 93-62), and Petition for Rulemaking of the Cellular Telecommunications Industry Association Concerning Amendment of the Commission's Rules to Preempt State and Local Regulation of Commercial Mobile Radio Service Transmitting Facilities*, released August 25, 1997.

FCC First Memorandum Opinion and Order, ET Docket 93-62, *In the Matter of Guidelines for Evaluating the Environmental Effects of Radiofrequency Radiation*, released December 24, 1996.

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

FCC Report and Order, Notice of Proposed Rulemaking, Memorandum Opinion and Order (FCC 19-126), *Proposed Changes in the Commission's Rules Regarding Human Exposure to Radiofrequency Electromagnetic Fields; Reassessment of Federal Communications Commission Radiofrequency Exposure Limits and Policies,* released December 4, 2019.

FCC Office of Engineering and Technology (OET) Bulletin 65, “Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields”, Edition 97-01, August 1997.

FCC Office of Engineering and Technology (OET) Bulletin 56, “Questions and Answers About Biological Effects and Potential Hazards of RF Radiation”, edition 4, August 1999.

Appendix C. Summary of Expert Qualifications

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

Synopsis:	• 40+ years of experience in all aspects of wireless system engineering, related regulation, and RF exposure • Has performed or led RF exposure compliance assessments on more than 20,000 antenna sites since the latest FCC regulations went into effect in 1997 • Has provided testimony as an RF compliance expert more than 1,500 times since 1997 • Have been accepted as an FCC compliance expert in New York, New Jersey, Connecticut, Pennsylvania and more than 40 other states, as well as by the FCC
Education:	• B.E.E., City College of New York (Sch. Of Eng.), 1971 • M.B.A., 1982, Fairleigh Dickinson University, 1982 • Bronx High School of Science, 1966
Current Responsibilities:	• Leads all PTG staff work involving RF safety and FCC compliance, microwave and satellite system engineering, and consulting on wireless technology and regulation
Prior Experience:	• Edwards & Kelcey, VP – RF Engineering and Chief Information Technology Officer, 1996-99 • Bellcore (a Bell Labs offshoot after AT&T's 1984 divestiture), Executive Director – Regulation and Public Policy, 1983-96 • AT&T (Corp. HQ), Division Manager – RF Engineering, and Director – Radio Spectrum Management, 1977-83 • AT&T Long Lines, Group Supervisor – Microwave Radio System Design, 1972-77
Specific RF Safety / Compliance Experience:	• Involved in RF exposure matters since 1972 • Have had lead corporate responsibility for RF safety and compliance at AT&T, Bellcore, Edwards & Kelcey, and PTG • While at AT&T, helped develop the mathematical models for calculating RF exposure levels • Have been relied on for compliance by all major wireless carriers, as well as by the federal government, several state and local governments, equipment manufacturers, system integrators, and other consulting / engineering firms
Other Background:	• Author, *Microwave System Engineering* (AT&T, 1974) • Co-author and executive editor, *A Guide to New Technologies and Services* (Bellcore, 1993) • National Spectrum Management Association (NSMA) – former three-term President and Chairman of the Board of Directors; was founding member, twice-elected Vice President, long-time member of the Board, and was named an NSMA Fellow in 1991 • Have published more than 35 articles in industry magazines

EXHIBIT G

Proof of Notification