June 21, 2021

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**
1969 Saybrook Road, Middletown, CT 06457
Latitude: 41° 30′ 38.30" / Longitude: -72° 35′ 36.10″

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 1969 Saybrook Road in Middletown (the "Property"). The existing 150-foot monopole tower is owned by Crown Castle International Corp. ("Crown Castle"). The underlying property is owned by Regowset Ridge LLC. DISH requests that the Council find that the proposed shared use of the Crown Castle 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 both 4G(LTE) and 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 Mr. Ben Florsheim, Mayor for the City of Middletown, Mr. Ronald Baia, Zoning Enforcement Officer, and Regowset Ridge LLC as the property owner.

Background

The existing Crown Castle facility consists of a 150-foot monopole tower within a 5000 square foot leased area. Sprint/T-Mobile currently maintain antennas at the 153 and 111-foot levels, Verizon currently maintains antennas at the 142-foot level, AT&T currently maintains antennas at the 133-foot level, and the City of Middletown currently maintains antennas at the 95-foot level. Sprint/T-Mobile's equipment is located both north and southeast of the tower, Verizon's equipment is located west of the tower, AT&T's equipment is located southwest of the tower, and the City of Middletown's equipment is located northeast of the tower.

DISH is licensed by the Federal Communications Commission ("FCC") to provide wireless services throughout the State of Connecticut. DISH and Crown Castle have agreed to the proposed shared use of the 1969 Saybrook Road tower pursuant to mutually acceptable terms and conditions. Likewise, DISH and Crown Castle have agreed to the proposed installation of equipment cabinets on the ground on the southeast side of the tower within the existing compound. Crown Castle has authorized DISH to apply for all necessary permits and approvals that may be required to share the existing tower.

DISH proposes to install three (3) antennas, six (6) RRUs, three (3) antenna t-arm mounts, and one (1) hybrid cable. 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 ground work.

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 Crown Castle 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 Crown Castle 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 Crown Castle 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 Crown Castle facility other than periodic maintenance. The proposed shared use of the Crown Castle 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 Crown Castle 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 three (3) antennas, six (6) RRUs, three (3) antenna t-arm mounts, one (1) hybrid cable and all related equipment. DISH is not aware of any public safety concerns relative to the proposed sharing of the existing Crown Castle tower

Conclusion

For the reasons discussed above, the proposed shared use of the existing Crown Castle tower at 1969 Saybrook 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 prosed shared use.

Sincerely,

Richard Zajac
Site Acquisition Specialist
4545 East River Road, Suite 320
West Henrietta, NY 14586
(585) 445-5896
richard.zajac@crowncastle.com

CC:

City Mayor Ben Florsheim *(via email to mayor@MiddletownCT.gov)*
City of Middletown
245 DeKoven Drive
Middletown, CT 06457
860-638-4801

Mr. Ronald Baia, Zoning Enforcement Officer *(via email to ron.baia@middletownct.gov)*
City of Middletown
245 DeKoven Drive
Middletown, CT 06457
860-638-4870

Regowset Ridge LLC *(via email only to lwmarino17@gmail.com)*
88 High Street
Portland, CT 06480

Zajac, Richard

From: Zajac, Richard
Sent: Monday, June 21, 2021 2:20 PM
To: 'mayor@MiddletownCT.gov'
Subject: Connecticut Siting Council Shared Use application notification
Attachments: CSC Shared Use Application - 1969 Saybrook Rd.pdf

Good afternoon,
Please see the attached application to the Connecticut Siting Council regarding antenna work on the existing cell tower located at 1969 Saybrook Road in Middletown.

Should you have any questions/comments/concerns regarding this application, please do not hesitate to contact me.

Thank you,
RICH ZAJAC
Site Acquisition Specialist
T: (585) 445-5896 M: (607) 346-7212
F: (724) 416-4461
CROWN CASTLE
4545 East River Road, Suite 320
West Henrietta, NY 14586

Zajac, Richard

From: Zajac, Richard
Sent: Monday, June 21, 2021 2:21 PM
To: ron.baia@middletownct.gov
Subject: Connecticut Siting Council Shared Use application notification
Attachments: CSC Shared Use Application - 1969 Saybrook Rd.pdf

Good afternoon,
Please see the attached application to the Connecticut Siting Council regarding antenna work on the existing cell tower located at 1969 Saybrook Road in Middletown.

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Thank you,
RICH ZAJAC
Site Acquisition Specialist
T: (585) 445-5896 M: (607) 346-7212
F: (724) 416-4461
CROWN CASTLE
4545 East River Road, Suite 320
West Henrietta, NY 14586

Zajac, Richard

From: Zajac, Richard
Sent: Monday, June 21, 2021 2:21 PM
To: lwmarino17@gmail.com
Subject: Connecticut Siting Council Shared Use application notification
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Site Acquisition Specialist
T: (585) 445-5896 M: (607) 346-7212
F: (724) 416-4461
CROWN CASTLE
4545 East River Road, Suite 320
West Henrietta, NY 14586

3 Corporate Dr, Suite 101
Clifton Park, NY 12065

Phone: (201) 236-9224
Fax: (724) 416-6112
www.crowncastle.com

Crown Castle Letter of Authorization

CT - CONNECTICUT SITING COUNCIL

Re: Tower Share Application
Crown Castle telecommunications site at: 1969 Saybrook Rd, MIDDLETOWN, CT 06457

GLOBAL SIGNAL ACQUISITIONS II LLC ("Crown Castle") hereby authorizes DISH WIRELESS LLC, including their Agent, to act as our Agent in the processing of all zoning applications, building permits and approvals through the CT - CONNECTICUT SITING COUNCIL for the existing wireless communications site described below:

Crown Site ID/Name: 876341/MIDDLETOWN 2 - MARINO PROPERTY
Customer Site ID: BOBDL00091A/CT-CCI-T-876341
Site Address: 1969 Saybrook Rd, MIDDLETOWN, CT 06457

Crown Castle USA Inc.

By: _____ Date: 5/13/21

Anne Marie Zsamba
Project Manager – Site Acquisition

Exhibit A

Original Facility Approval

CT03XC169

BUILDING PERMIT

BUILDING DEPARTMENT • 344-3416 • MIDDLETOWN, CT 06457

DATE March 31 19 97 PERMIT # _____

APPLICANT Sprint Spectrum, L.P.

ADDRESS 9 Barnes Industrial Road, Wallingford, CT 06492
(NO.) (STREET) (CITY) (STATE) (ZIP)

PERMIT TO construct ( ) STORY Communication tower & antennas NUMBER OF DWELLING UNITS _____
(TYPE OF IMPROVEMENT) (NO.) (PROPOSED USE)

AT (LOCATION) 1969 Sayrbook Road, Middletown, CT ZONING DISTRICT _____
(NO.) (STREET)

CONTRACTORS LICENSE to be determined WORK PHONE # _____ MOBILE PHONE # _____

BUILDING IS TO BE _____ FT. WIDE BY _____ FT. LONG BY _____ FT. IN HEIGHT AND SHALL CONFORM IN CONSTRUCTION

TO TYPE _____ USE GROUP _____ BASEMENT WALLS OR FOUNDATION _____
(TYPE)

REMARKS: Install 150' monopole tower, 6 antennas & associated communications equipment.

PUBLIC UTILITIES AVAILABLE:
CITY WATER ( ) SEWER ( ) SEPTIC/WELL ( ) ESTIMATED COST $ 274,000 PERMIT FEE $ _____

OWNER Seabstian G. Marino

ADDRESS 1969 Sayrbook Road BUILDING DEPT. BY _____

Exhibit B

Property Card

1987 SAYBROOK RD

Location	1987 SAYBROOK RD	**Map-Lot**	49/ / 0015/ /
Acct#	R07180	**Owner**	REGOWSET RIDGE LLC
Municipality		**Assessment**	$382,230
Appraisal	$546,030	**PID**	8044
Building Count	1	**Assessing District**	

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2018	$167,630	$378,400	$546,030
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2018	$117,350	$264,880	$382,230

Parcel Addreses

Additional Addresses
No Additional Addresses available for this parcel

Owner of Record

Owner	REGOWSET RIDGE LLC	**Sale Price**	$0
Co-Owner		**Certificate**	
Address	88 HIGH ST PORTLAND, CT 06480	**Book & Page**	1753/0973
		Sale Date	04/17/2012
		Instrument	29

Ownership History

Ownership History					
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Instrument**	**Sale Date**
REGOWSET RIDGE LLC	$0		1753/0973	29	04/17/2012
MARINO SEBASTIAN G (EST) (ETALS)	$0		1753/0970	29	04/17/2012
MARINO SEBASTIAN G (EST) (ETALS)	$0		1753/0967	29	04/17/2012

MARINO SEBASTIAN G (EST) (2/4 INT)	$0		1753/0964	29	04/17/2012
MARINO SEBASTIAN G (EST) (3/4 INT) &	$0		1753/0961	29	04/17/2012

Building Information

Building 1 : Section 1

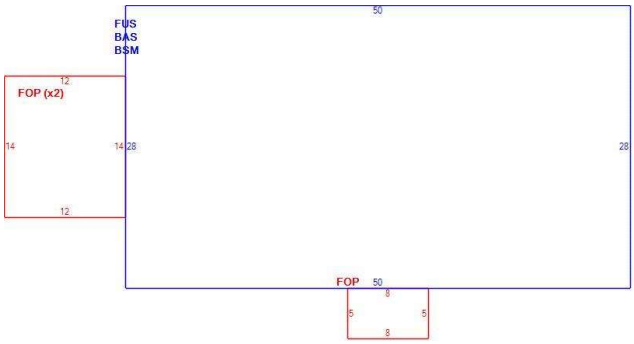
Year Built: 1965
Living Area: 2,800
Replacement Cost: $234,872
Building Percent Good: 65
Replacement Cost Less Depreciation: $152,670

Building Attributes	
Field	**Description**
Style	Two Family
Model	Multi-Family
Grade	C
Stories	2 Stories
Occupancy	2
Exterior Wall 1	Vinyl Siding
Exterior Wall 2	
Roof Structure	Gable
Roof Cover	Asphalt Shingl
Interior Wall 1	Plastered
Interior Wall 2	
Interior Floor 1	Hardwood
Interior Floor 2	
Heat Fuel	Oil
Heat Type	Hot Water
Ac Type	None
Bedrooms	6
Full Baths	2
Half Baths	0
Extra Fixtures	0
Total Rooms	10
Bath Remodel	Not Updated
Kitchen Remodel	Not Updated
Extra Kitchens	2
Fireplaces	1
Extra Openings	1
Gas Fireplace	0
Int vs Ext	Same

Building Photo

(http://images.vgsi.com/photos/MiddletownCTPhotos//\00\03\17\55.jpg)

Building Layout



(ParcelSketch.ashx?pid=8044&bid=8044)

Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
BAS	First Floor	1,400	1,400
FUS	Finished Upper Story	1,400	1,400
BSM	Basement	1,400	0
FOP	Framed Open Porch	376	0
		4,576	2,800

A/C Type	None
A/C %	0
Fireplaces 1	2900
Fin Bsmt Area	0.00
FBM grade	0
Bsmt Garage	0
Fndtn Cndtn	
In Law	0

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code 102
Description 2 Family
Zone R-60
Neighborhood 12
Alt Land Appr No
Category

Land Line Valuation

Size (Acres) 55.30
Assessed Value $264,880
Appraised Value $378,400

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
FGR1	Garage			520.00 UNITS	$7,280	1
FGR2	Garage W/ Loft			480.00 UNITS	$7,680	1

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2020	$167,630	$378,400	$546,030
2019	$167,630	$378,400	$546,030
2018	$167,630	$378,400	$546,030

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2020	$117,350	$264,880	$382,230
2019	$117,350	$264,880	$382,230
2018	$117,350	$264,880	$382,230

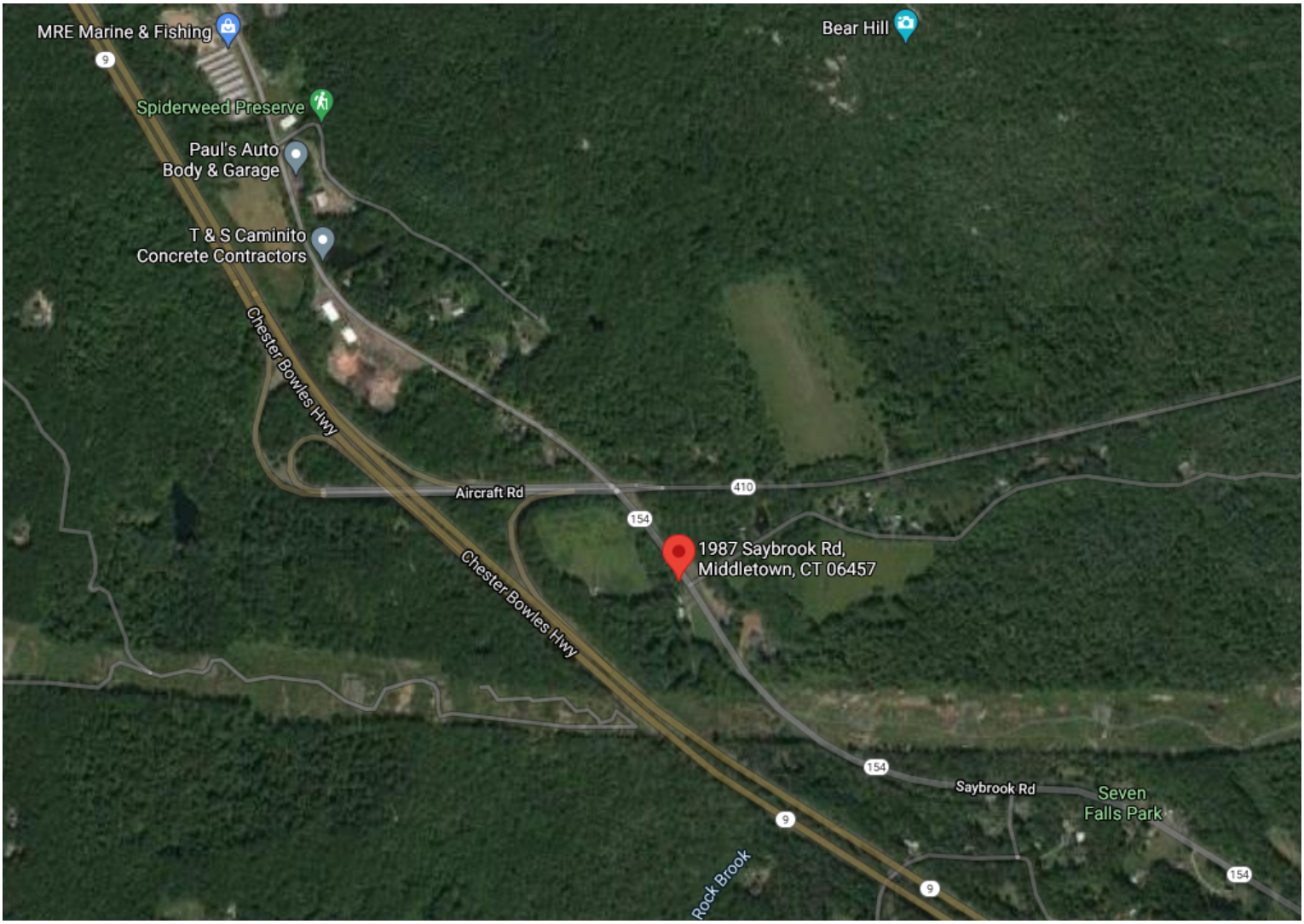


Exhibit C

Construction Drawings

DISH WIRELESS, LLC. SITE ID:

BOBDL00091A

DISH WIRELESS, LLC. SITE ADDRESS:

1969 SAYBROOK RD
MIDDLETOWN, CT 06457

CONNECTICUT CODE COMPLIANCE

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

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

SHEET INDEX

SCOPE OF WORK

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

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

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

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:	REGOWSET RIDGE LLC.
ADDRESS:	88 HIGH STREET C/O LAWRENCE W. MARINO PORTLAND, CT 06480
TOWER TYPE:	MONOPOLE
TOWER CO SITE ID:	876341
TOWER APP NUMBER:	553292
COUNTY:	MIDDLESEX
LATITUDE (NAD 83):	41° 30' 38.30" N 41.510639 N
LONGITUDE (NAD 83):	-72° 35' 36.10" W -72.593361 W
ZONING JURISDICTION:	CITY OF MIDDLETOWN
ZONING DISTRICT:	R-60
PARCEL NUMBER:	8044-49-0015
OCCUPANCY GROUP:	U
CONSTRUCTION TYPE:	V-B
POWER COMPANY:	CONNECTICUT LIGHT & POWER
TELEPHONE COMPANY:	AT&T

PROJECT DIRECTORY

APPLICANT:	DISH WIRELESS, LLC. 5701 SOUTH SANTA FE DRIVE LITTLETON, CO 80120
TOWER OWNER:	CROWN CASTLE 2000 CORPORATE DRIVE CANONSBURG, PA 15317 (877) 486-9377
SITE DESIGNER:	INFINIGY 2500 W. HIGGINS RD. STE. 500 HOFFMAN ESTATES, IL 60169 (847) 648-4068
SITE ACQUISITION:	NICHOLAS CURRY TBD
CONSTRUCTION MANAGER:	JAVIER SOTO TBD
RF ENGINEER:	CHARLES BOSSENER TBD

DIRECTIONS

DIRECTIONS FROM TWEED NEW HAVEN AIRPORT:

DEPART AND HEAD (NORTHEAST), TURN LEFT, AVIS RENT A CAR ON THE CORNER, TURN RIGHT, TURN RIGHT TOWARDS FORT HALE RD, BUDGET CAR RENTAL ON THE CORNER, KEEP STRAIGHT TO GET ONTO FORT HALE RD, TURN RIGHT ONTO CT-337 / TOWNSEND AVE, TURN LEFT ONTO MAIN STREET ANNEX, TAKE THE SLIP ROAD ON THE RIGHT FOR I-95 S / GOVERNOR JOHN DAVIS LODGE TPKE S, TAKE THE SLIP ROAD ON THE RIGHT FOR I-91 NORTH AND HEAD TOWARDS HARTFORD,AT JUNCTION 22S, HEAD RIGHT ON THE SLIP ROAD FOR CT-9 SOUTH TOWARDS MIDDLETOWN, CONSTRUCTION ON CONSTRUCTION ON CT-9 SB NEAR I-84, EXPECT DELAYS. MINOR CONGESTION, KEEP STRAIGHT TO GET ONTO CT-17 / CT-9 S, KEEP STRAIGHT TO GET ONTO CT-9 S, AT JUNCTION 10, HEAD RIGHT ON THE SLIP ROAD FOR CT-154 SOUTH TOWARDS HIGGANUM, KEEP RIGHT TO STAY ON CT-154 / SAYBROOK RD, ARRIVE AT 1969 SAYBROOK RD MIDDLETOWN, CT 06457

VICINITY MAP

NO SCALE

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

CROWN CASTLE
2000 CORPORATE DRIVE
CANONSBURG, PA 15317

INFINIGY
FROM ZERO TO INFINIGY
the solutions are endless
2500 W. HIGGINS RD. SUITE 500 |
HOFFMAN ESTATES, IL 60169
PHONE: 847-648-4068 | FAX: 518-690-0793
WWW.INFINIGY.COM

STATE OF CONNECTICUT
KUHEI SAKANO
34916
LICENSED PROFESSIONAL ENGINEER
5/18/21

DRAWN BY:	CHECKED BY:	APPROVED BY:
RCD	SS	CJW

RFDS REV #: N/A

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	04/16/2021	ISSUED FOR REVIEW
0	05/17/2021	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
2039-Z5555C

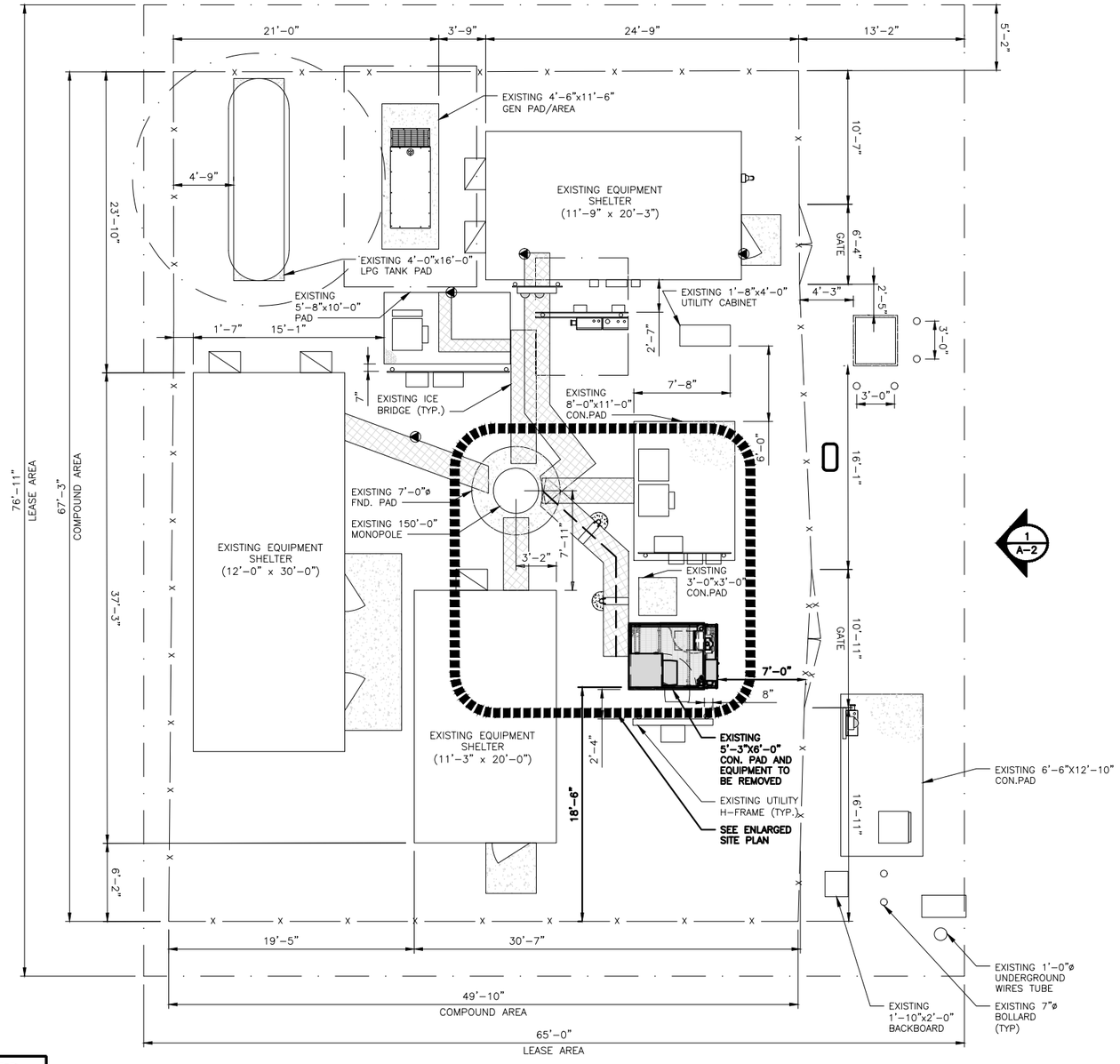
DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBDL00091A
1969 SAYBROOK RD
MIDDLETOWN, CT 06457

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1

NOTES

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



N

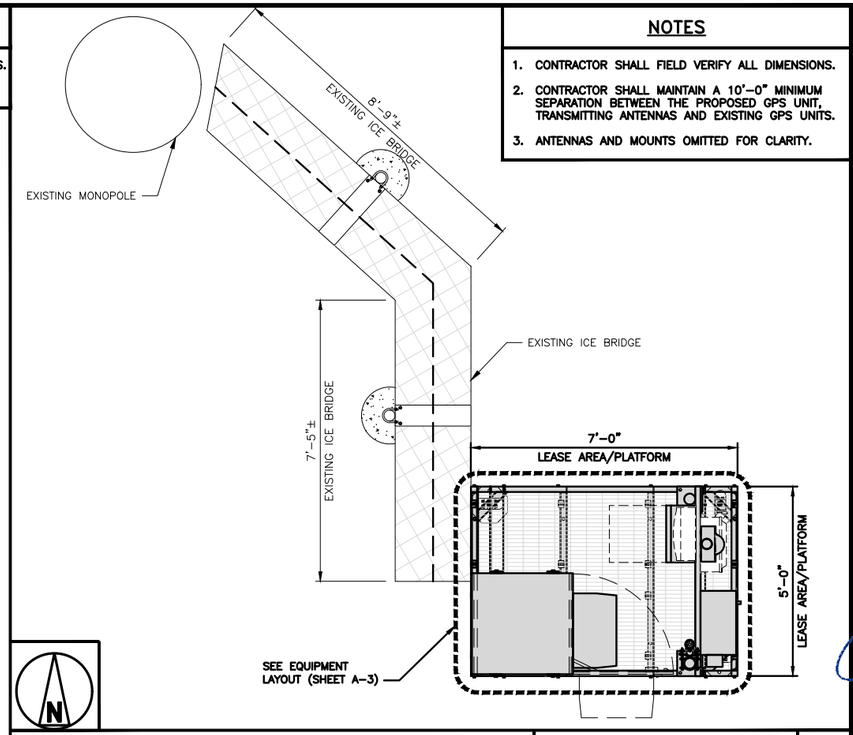
COMPOUND PLAN

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.

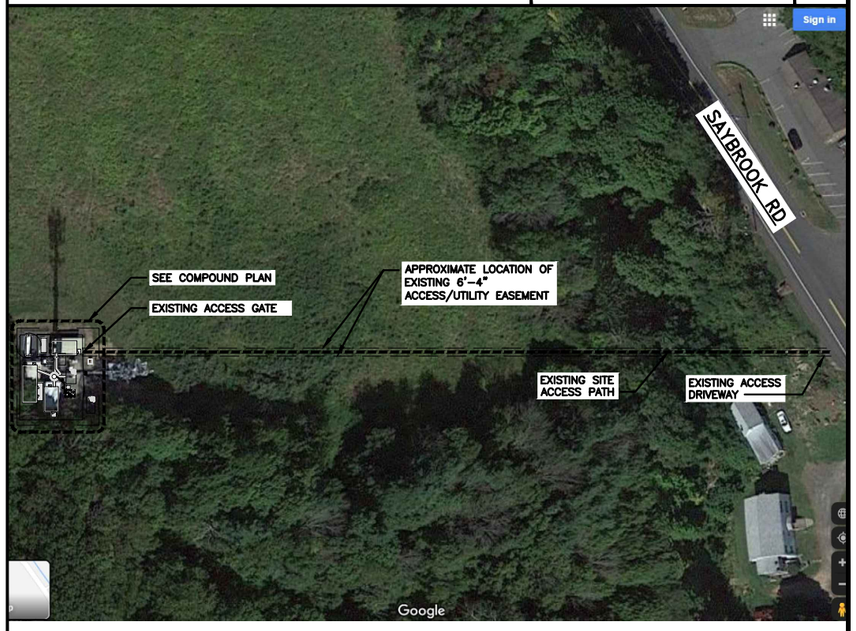


N

ENLARGED SITE PLAN

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

2



N

SITE PLAN

60' 30' 0 60' 120'
1"=60'

3

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

CROWN CASTLE

2000 CORPORATE DRIVE
CANONSBURG, PA 15317

INFINIGY

FROM ZERO TO INFINIGY
the solutions are endless
2500 W. HIGGINS RD. SUITE 500 | HOFFMAN ESTATES, IL 60169
PHONE: 847-648-4068 | FAX: 518-690-0793
WWW.INFINIGY.COM

STATE OF CONNECTICUT
MATTHEI SAKANO
34916
LICENSED PROFESSIONAL ENGINEER
5/18/21

DRAWN BY:	CHECKED BY:	APPROVED BY:
RCD	SS	CJW

RFDS REV #: N/A

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
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0	05/17/2021	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

2039-Z5555C

DISH WIRELESS, LLC.
PROJECT INFORMATION

BOBDL00091A
1969 SAYBROOK RD
MIDDLETOWN, CT 06457

SHEET TITLE

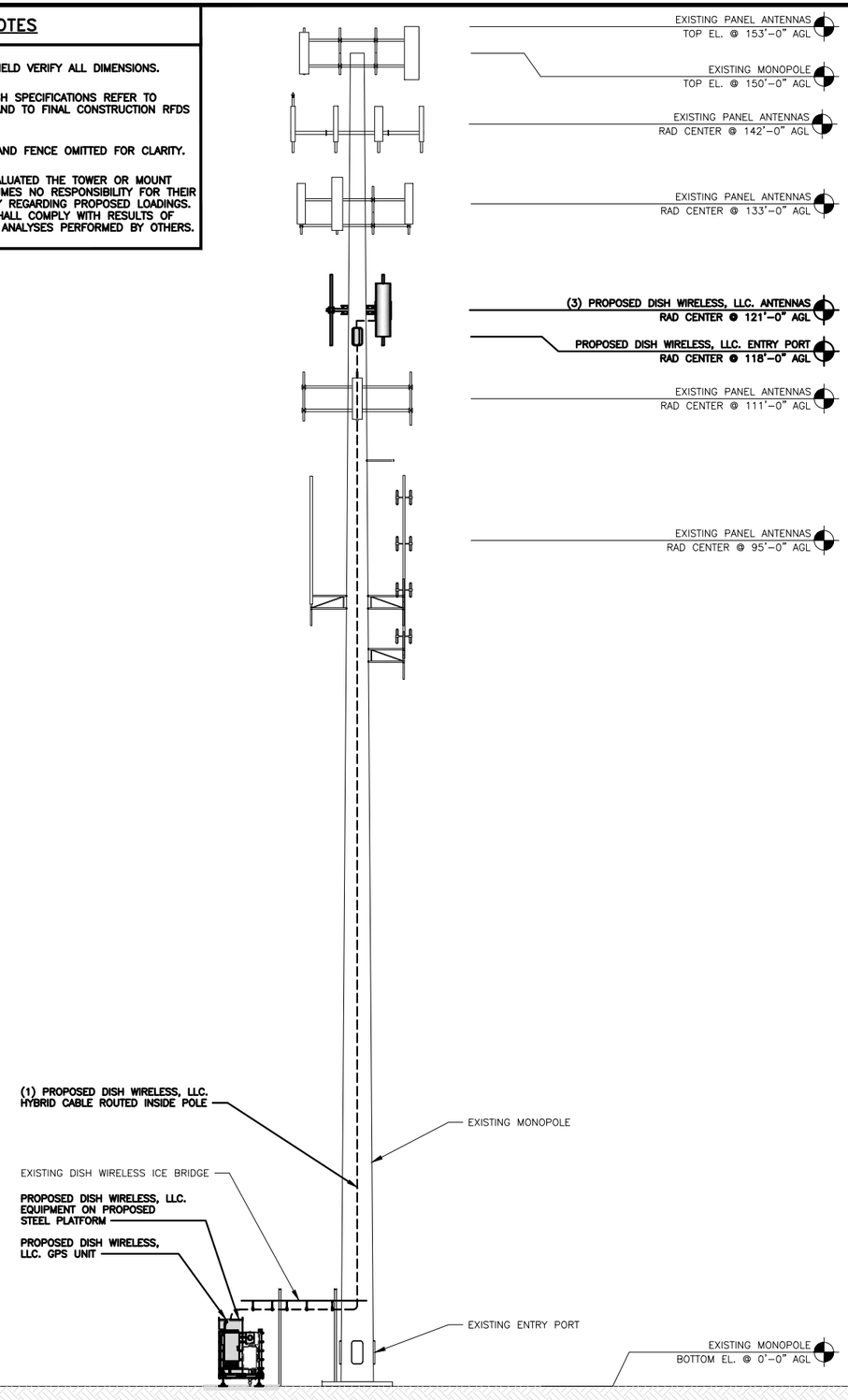
OVERALL AND ENLARGED SITE PLAN

SHEET NUMBER

A-1

NOTES

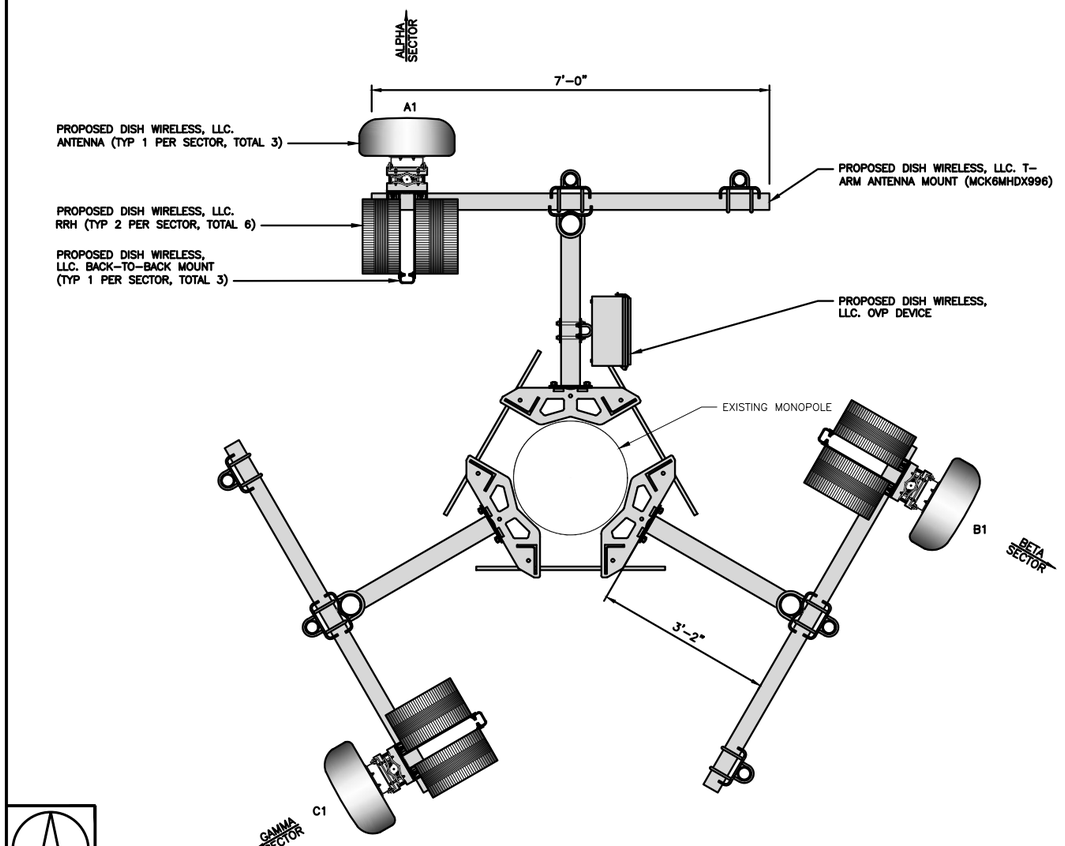
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNA AND MW DISH SPECIFICATIONS REFER TO ANTENNA SCHEDULE AND TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS
3. EXISTING EQUIPMENT AND FENCE OMITTED FOR CLARITY.
4. INFINIGY HAS NOT EVALUATED THE TOWER OR MOUNT STRUCTURE AND ASSUMES NO RESPONSIBILITY FOR THEIR STRUCTURAL INTEGRITY REGARDING PROPOSED LOADINGS. FINAL INSTALLATION SHALL COMPLY WITH RESULTS OF PASSING STRUCTURAL ANALYSES PERFORMED BY OTHERS.



PROPOSED EAST ELEVATION

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

1



ANTENNA LAYOUT

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

2

SECTOR	POSITION	ANTENNA						TRANSMISSION CABLE
		EXISTING OR PROPOSED	MANUFACTURER – MODEL NUMBER	TECHNOLOGY	SIZE (HxW)	AZMUITH	RAD CENTER	FEED LINE TYPE AND LENGTH
ALPHA	A1	PROPOSED	JMA WIRELESS – MX08FRO665-20	5G	72.0" x 20.0"	0°	121'-0"	(1) HIGH-CAPACITY HYBRID CABLE (166' LONG)
BETA	B1	PROPOSED	JMA WIRELESS – MX08FRO665-20	5G	72.0" x 20.0"	120°	121'-0"	
GAMMA	C1	PROPOSED	JMA WIRELESS – MX08FRO665-20	5G	72.0" x 20.0"	240°	121'-0"	

NOTES

1. CONTRACTOR TO REFER TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS.
2. ANTENNA OR 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.

SECTOR	POSITION	RRH	
		MANUFACTURER – MODEL NUMBER	TECHNOLOGY
ALPHA	A1	FUJITSU – TA08025-B604	5G
	A1	FUJITSU – TA08025-B605	5G
BETA	B1	FUJITSU – TA08025-B604	5G
	B1	FUJITSU – TA08025-B605	5G
GAMMA	C1	FUJITSU – TA08025-B604	5G
	C1	FUJITSU – TA08025-B605	5G

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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STATE OF CONNECTICUT
MICHAEL SAKANO
34916
LICENSED PROFESSIONAL ENGINEER
5/18/21

DRAWN BY:	CHECKED BY:	APPROVED BY:
RCD	SS	CJW

RFDS REV #: N/A

CONSTRUCTION DOCUMENTS

SUBMITTALS

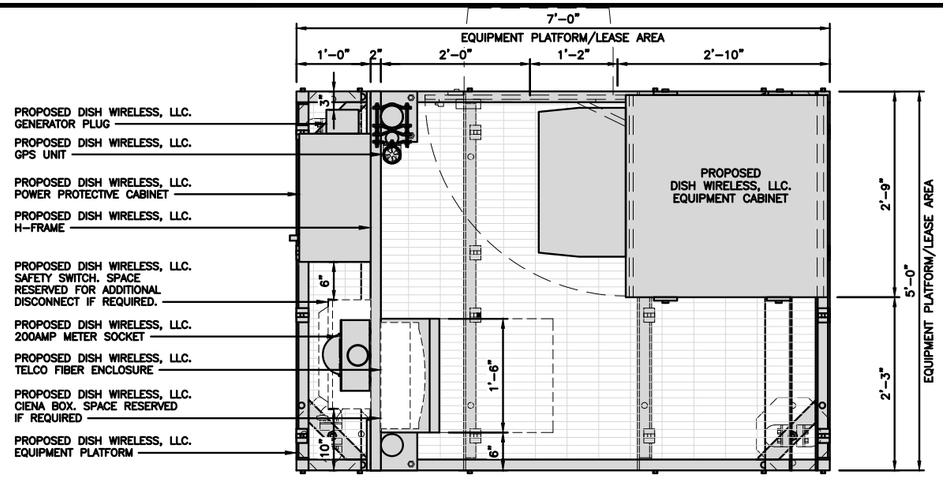
REV	DATE	DESCRIPTION
A	04/16/2021	ISSUED FOR REVIEW
0	05/17/2021	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
2039-Z5555C

DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBDL00091A
1969 SAYBROOK RD
MIDDLETOWN, CT 06457

SHEET TITLE
ELEVATION, ANTENNA LAYOUT AND SCHEDULE

SHEET NUMBER
A-2



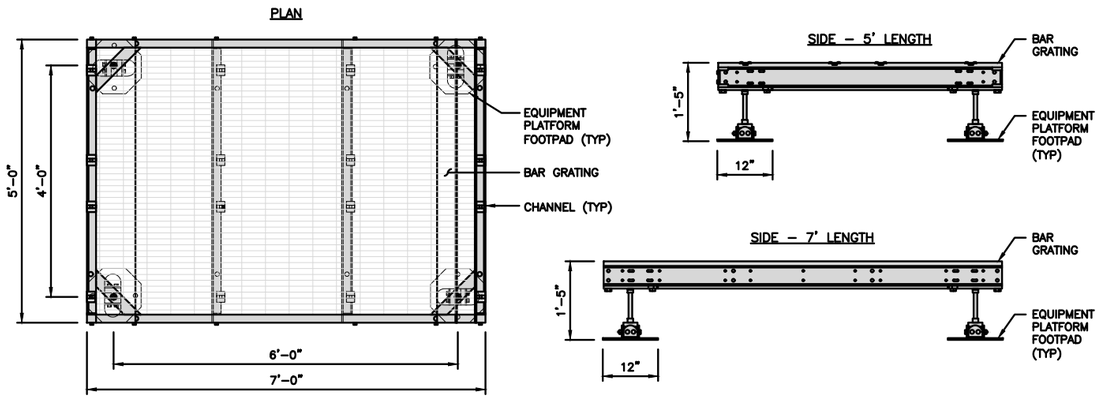
PLATFORM EQUIPMENT PLAN

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

1

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

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

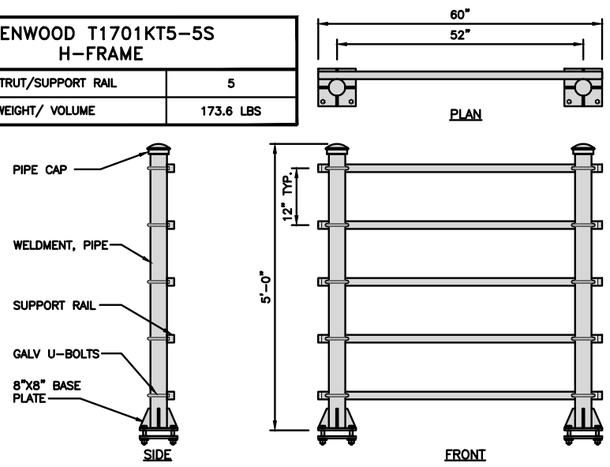


PLATFORM DETAIL

NO SCALE

2

KENWOOD T1701KT5-5S H-FRAME	
UNISTRUT/SUPPORT RAIL	5
WEIGHT/ VOLUME	173.6 LBS



H-FRAME DETAIL

NO SCALE

3

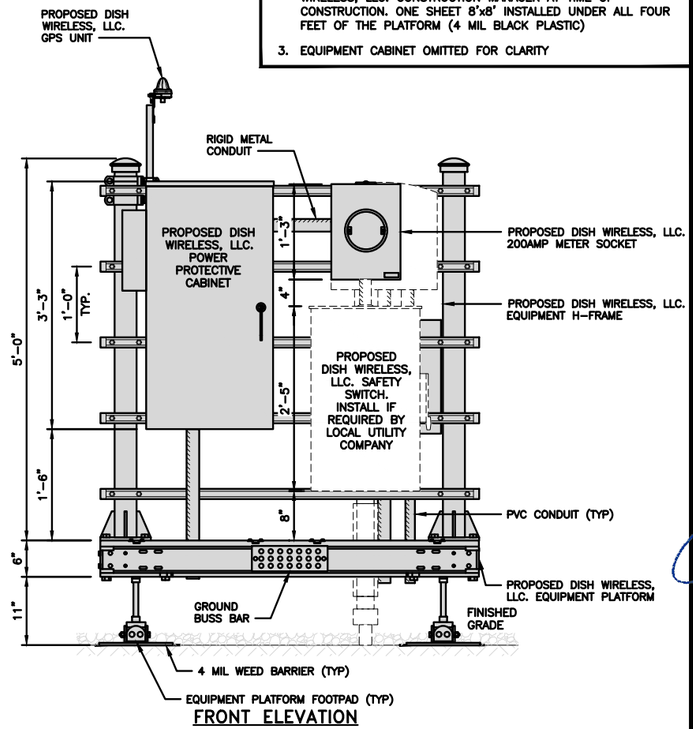
NOT USED

NO SCALE

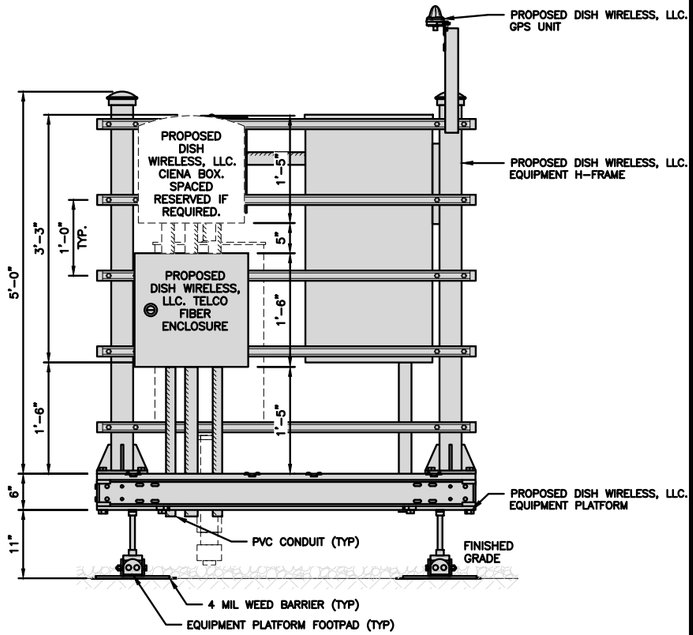
4

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, LLC. CONSTRUCTION MANAGER AT TIME OF CONSTRUCTION. ONE SHEET 8'x8' INSTALLED UNDER ALL FOUR FEET OF THE PLATFORM (4 MIL BLACK PLASTIC)
3. EQUIPMENT CABINET OMITTED FOR CLARITY



FRONT ELEVATION



BACK ELEVATION

H-FRAME EQUIPMENT ELEVATION

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

5

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SHUHEI SAKANOUE
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LICENSED PROFESSIONAL ENGINEER
5/18/21

DRAWN BY:	CHECKED BY:	APPROVED BY:
RCD	SS	CJW

RFDS REV #: N/A

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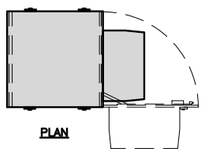
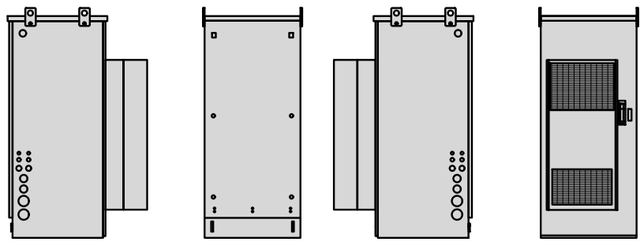
DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBDL00091A
1969 SAYBROOK RD
MIDDLETOWN, CT 06457

SHEET TITLE
EQUIPMENT PLATFORM AND H-FRAME DETAILS

SHEET NUMBER
A-3

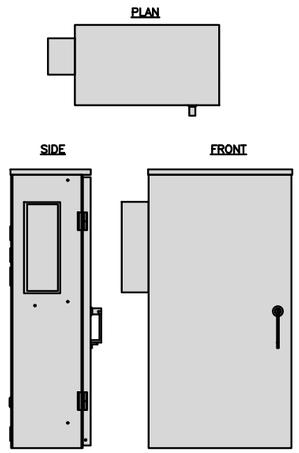
CHARLES INDUSTRY HEX CUBE–PM369155N4	
DIMENSIONS (HxWxD):	74"x32"x32"
POWER PLANT:	–48VDC ABB
TOTAL WEIGHT (EMPTY)	394 LBS





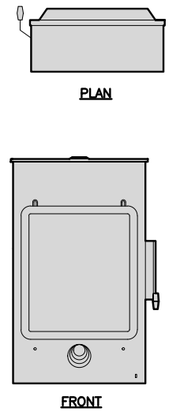
CABINET DETAIL | NO SCALE | 1

RAYCAP RDIAC–6512–P–240–MTS POWER & TELCO PROTECTION CABINET	
DIMENSIONS (HxWxD)	40"x20"x10"
WEIGHT/ VOLUME	124 LBS
MANUAL TRANSFER SWITCH	200A
LOAD CENTER	30 POSITION
MAIN BREAKER	200A, 65kA AIC
GENERATOR RECEPTACLE	CAMLOCK
NEMA RATING	3R POWDER COATED ALUMINUM
SURGE PROTECTION DEVICE	UL 1449 4TH EDITION LISTED



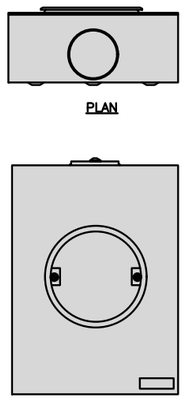
POWER PROTECTION CABINET (PPC) DETAIL | NO SCALE | 2

SQUARE D SAFETY SWITCH D324NRB	
ENCLOSURE DIM (HxWxD)	29.25"x17.25"x8.25"
TOTAL WEIGHT (EMPTY)	45.33 LBS
MAX VOLTAGE/AMPS/WATT	240V/200A/48000W
ENCLOSURE RATING	OUTDOOR NEMA 3R



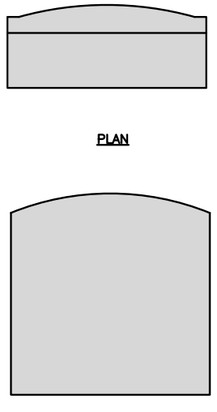
SAFETY SWITCH | NO SCALE | 3

EATON METER SOCKET UNRRS213BEUSE	
METER SOCKET TYPE	RING
ENCLOSURE DIM (HxWxD)	16"x12"x6"
MAIN AMPERE RATING	200A
WEIGHT	18 LBS



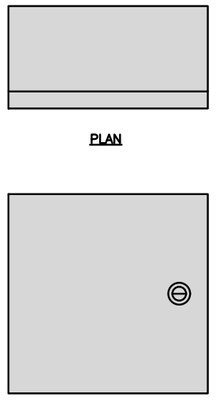
METER SOCKET DETAIL | NO SCALE | 4

CIENA 3931 SERVICE DELIVERY SWITCH	
DIMENSIONS (HxWxD)	17.0"x16.8"x7.0" 431x427x178mm
WEIGHT	28.6 LBS/13.0 KG
POWER INPUT	60W MAX



CIENA DETAIL | NO SCALE | 5

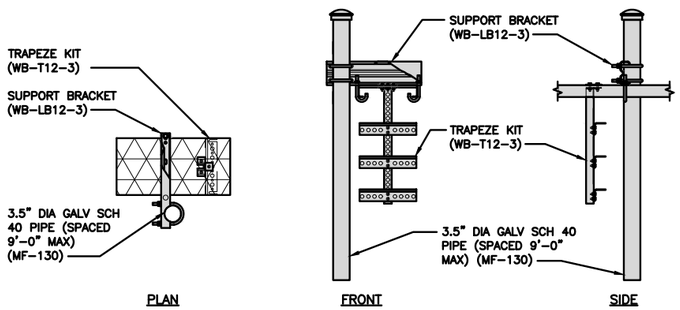
CHARLES FIBER TELCO ENCLOSURE CUBE–MP1818WB–A	
ENCLOSURE DIM (HxWxD)	18.0"x18.0"x9.25"
NEMA RATING	4X
THERMAL	SEALED
MOUNTING BACKBOARD	WOOD



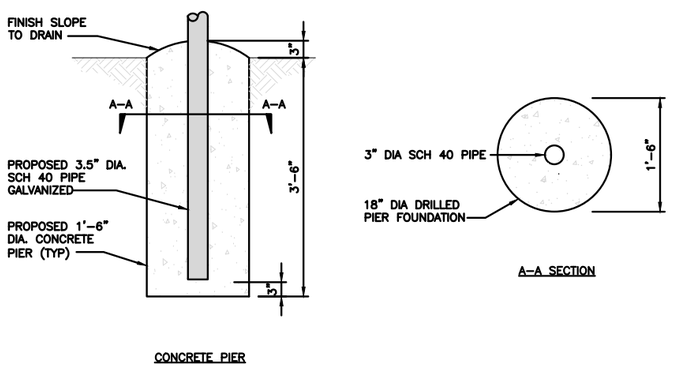
FIBER TELCO ENCLOSURE DETAIL | NO SCALE | 6

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

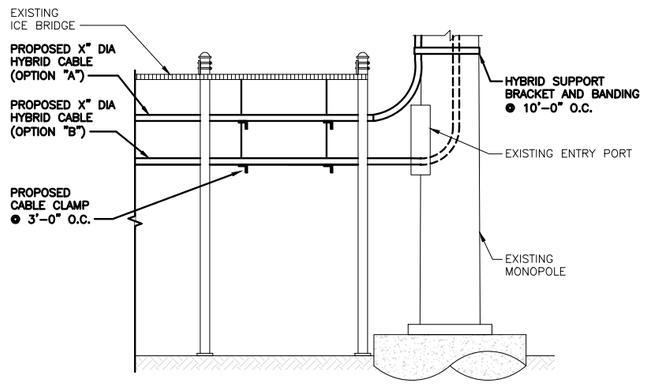
INCLUDED PRODUCTS:	
	WB–T12–3 TRAPEZE KIT, 3 RUNGS
	WB–LB12–3 SUPPORT BRACKET
	MF–130 DIRECT BURIAL PIPE COLUMN, 13'–4"



ICE BRIDGE DETAIL | NO SCALE | 7



TYPICAL ICE BRIDGE CONCRETE PIER DETAIL | NO SCALE | 8



HYBRID CABLE RUN | NO SCALE | 9

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ALIHEI SAKANO
34916
LICENSED PROFESSIONAL ENGINEER
5/18/21

DRAWN BY:	CHECKED BY:	APPROVED BY:
RCD	SS	CJW

RFDS REV #: N/A

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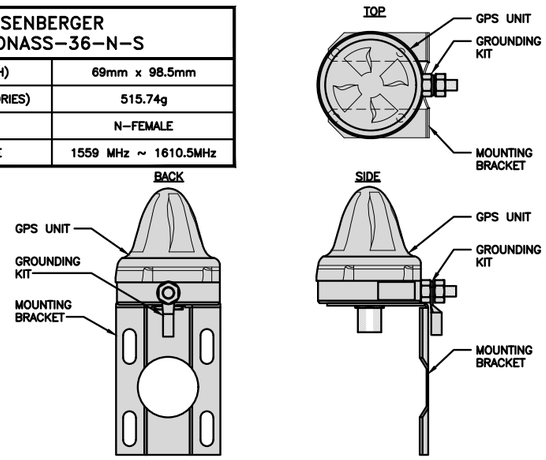
A&E PROJECT NUMBER
2039–Z5555C

DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBDL00091A
1969 SAYBROOK RD
MIDDLETOWN, CT 06457

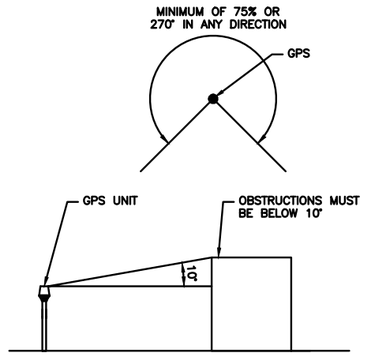
SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-4

ROSENBERGER GPSGLONASS-36-N-S	
DIMENSION (DIA x H)	69mm x 98.5mm
WEIGHT (WITH ACCESSORIES)	515.74g
CONNECTOR	N-FEMALE
FREQUENCY RANGE	1559 MHz ~ 1610.5MHz



GPS ANTENNA DETAIL | NO SCALE | 1



GPS MINIMUM SKY VIEW REQUIREMENTS | NO SCALE | 2

NOT USED | NO SCALE | 3

NOT USED | NO SCALE | 4

NOT USED | NO SCALE | 5

NOT USED | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

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STATE OF CONNECTICUT
KAZUHEI SAKANO
34916
LICENSED PROFESSIONAL ENGINEER
5/18/21

DRAWN BY:	CHECKED BY:	APPROVED BY:
RCD	SS	CJW

RFDS REV #: N/A

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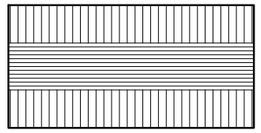
DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBDL00091A
1969 SAYBROOK RD
MIDDLETOWN, CT 06457

SHEET TITLE
EQUIPMENT DETAILS

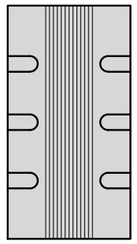
SHEET NUMBER
A-5

FUJITSU TA08025-B604 RRH

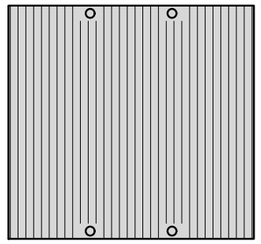
DIMENSIONS (HxWxD) (KG/IN)	380x400x200/14.9"x15.7"x7.8"
WEIGHT(KG,LB)/ VOLUME	29kg,63.9lb/ 30L
POWER SUPPLY	DC-58~-36V



PLAN



SIDE



FRONT

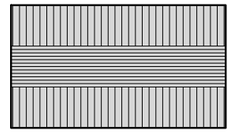
NOTES

FINAL RRH SPECIFICATIONS TO BE CONFIRMED BY GC

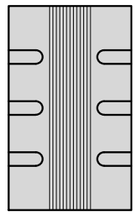
REMOTE RADIO HEAD DETAIL | NO SCALE | 1

FUJITSU TA08025-B605 RRH

DIMENSIONS (HxWxD) (KG/IN)	380x400x230/14.9"x15.7"x9.0"
WEIGHT(KG,LB)/ VOLUME	34kg,74.9lb/ 35L
POWER SUPPLY	DC-58~-36V



PLAN



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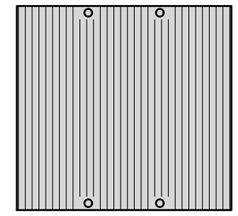


FRONT

NOTES

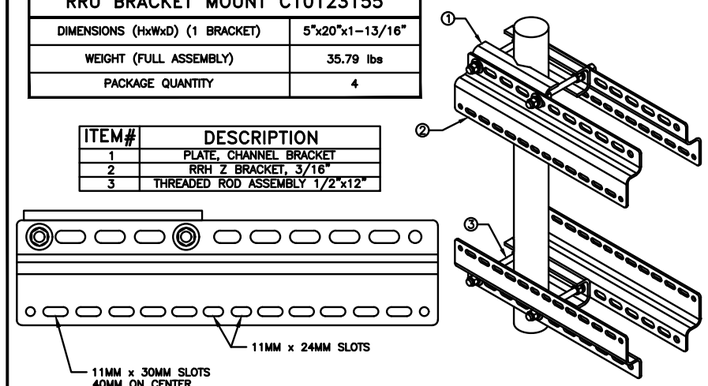
FINAL RRH SPECIFICATIONS TO BE CONFIRMED BY GC

REMOTE RADIO HEAD DETAIL | NO SCALE | 2

SABRE INDUSTRIES RRU BRACKET MOUNT C10123155

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

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

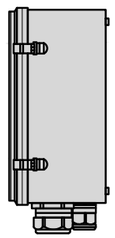


REMOTE RADIO MOUNT DETAIL | NO SCALE | 3

RAYCAP RDIDC-9181-PF-48 DC SURGE PROTECTION

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

PLAN



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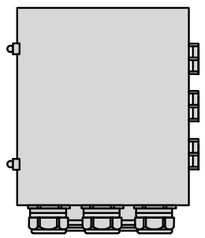
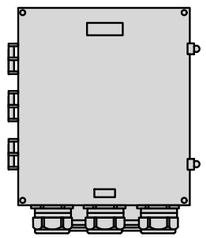


BACK



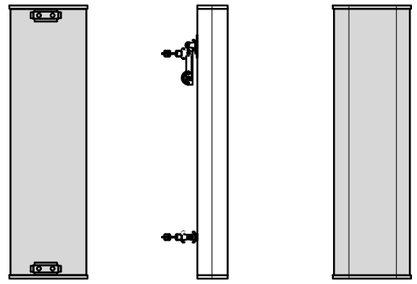
FRONT

SURGE SUPPRESSION DETAIL | NO SCALE | 4

JMA WIRELESS MX08FRO665-20 ANTENNA

DIMENSIONS (HxWxD)	72.0"x20.0"x8.0"
TOTAL WEIGHT	54 LB
RF PORTS, CONNECTOR TYPE	8 x 4.3-10 FEMALE

PLAN



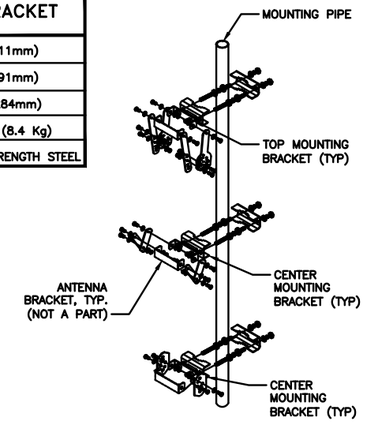
NOTES

FINAL ANTENNA SPECIFICATIONS TO BE CONFIRMED BY GC

ANTENNA DETAIL | NO SCALE | 5

JMA 91900318 MOUNTING BRACKET

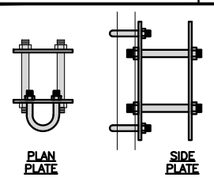
WIDTH	8.3" (211mm)
DEPTH	7.5" (191mm)
HEIGHT	11.2" (284mm)
TOTAL WEIGHT (WITH BRACKETS)	18.5 LBS (8.4 Kg)
HOUSING MATERIAL	GALV. HIGH STRENGTH STEEL



ANTENNA MOUNTING DETAIL | NO SCALE | 6

COMMSCOPE XP-2040 CROSSOVER PLATE

DIMENSIONS (HxW)	10"x12"
WEIGHT	11.023 LBS

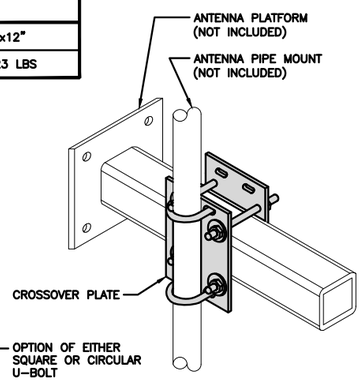


PLAN PLATE

SIDE PLATE

PLAN U-BOLT

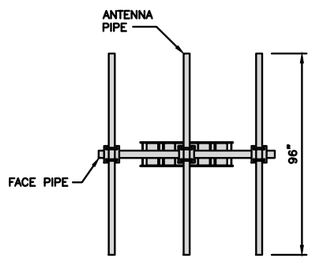
SIDE U-BOLT

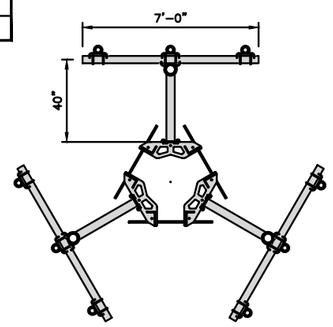


RRH/OVP MOUNT DETAIL | NO SCALE | 7

COMMSCOPE MC-K6MHDX-9-96

FACE WIDTH	7'-0"
WEIGHT	1203.31 lbs
NOTE: 15" TO 50" O.D.	





T-ARM MOUNT DETAIL | NO SCALE | 8

NOT USED | NO SCALE | 9

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DRAWN BY:	CHECKED BY:	APPROVED BY:
RCD	SS	CJW

RFDS REV #: N/A

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SUBMITTALS

REV	DATE	DESCRIPTION
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0	05/17/2021	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
2039-Z5555C

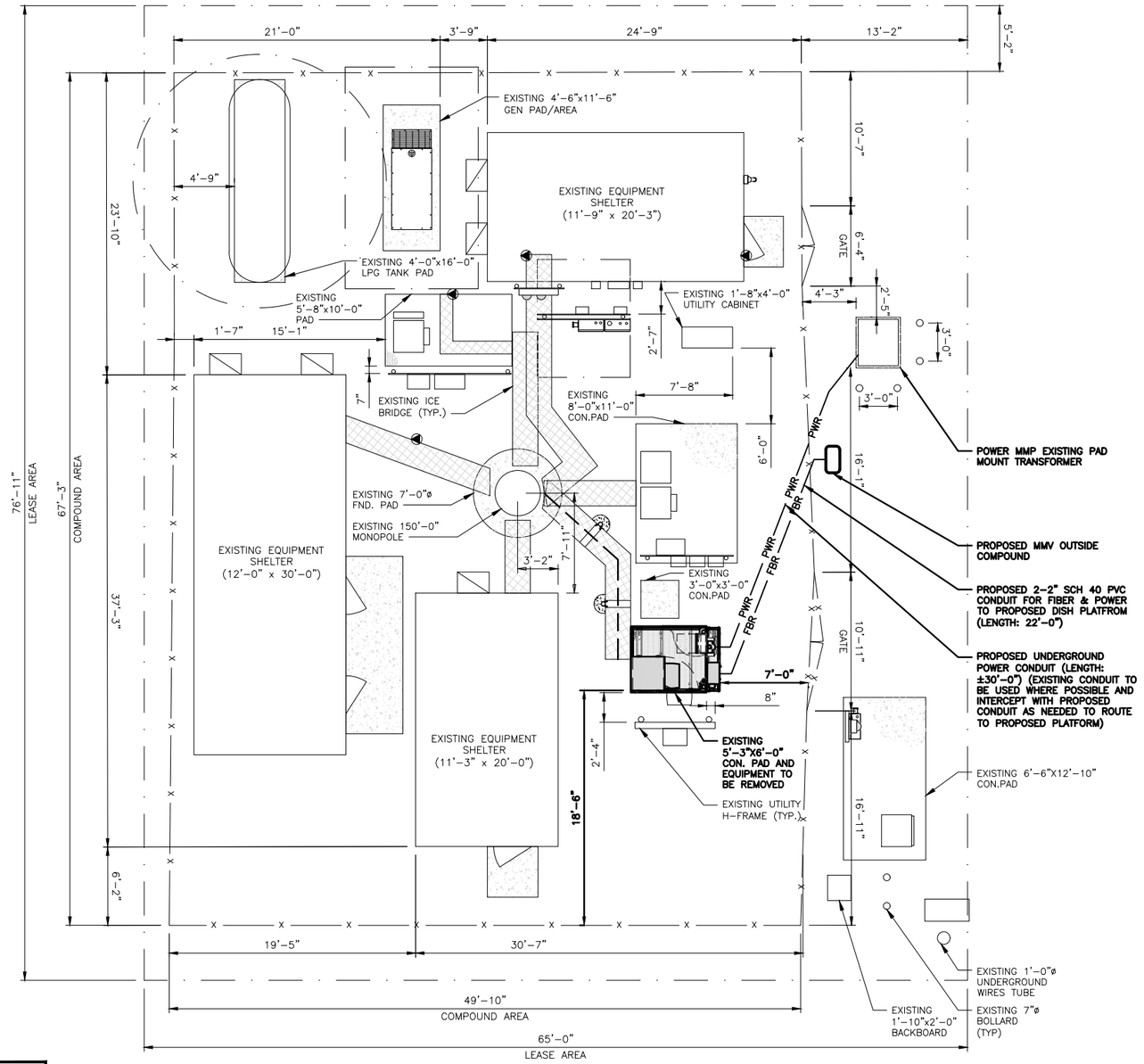
DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBDL00091A
1969 SAYBROOK RD
MIDDLETOWN, CT 06457

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.



N

UTILITY ROUTE PLAN

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

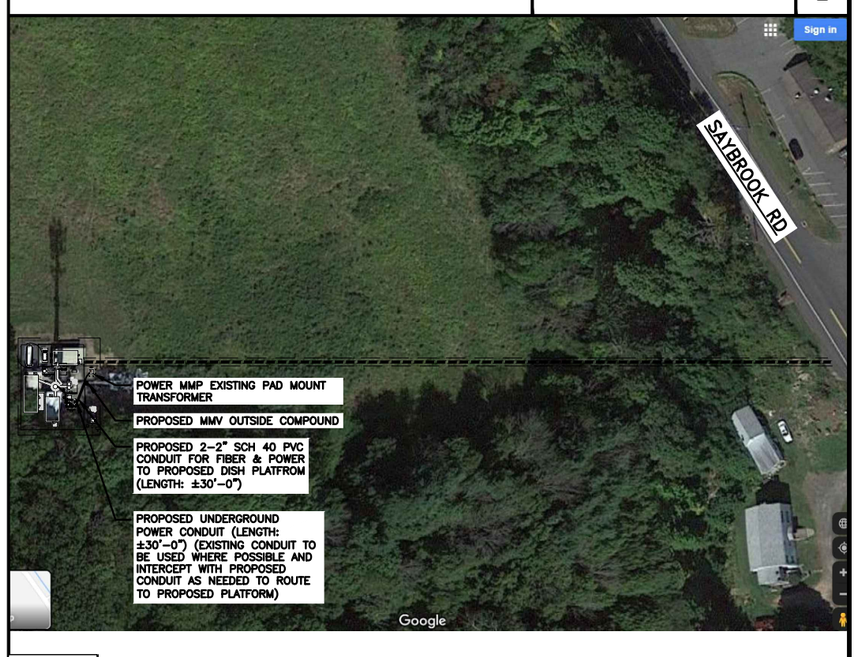
1

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

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

ELECTRICAL NOTES

2



N

OVERALL UTILITY ROUTE PLAN

60' 30' 0 60' 120'
1"=60'

3

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34916
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DISH WIRELESS, LLC.
PROJECT INFORMATION
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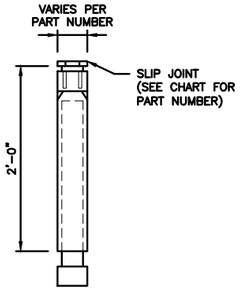
1969 SAYBROOK RD
MIDDLETOWN, CT 06457

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"

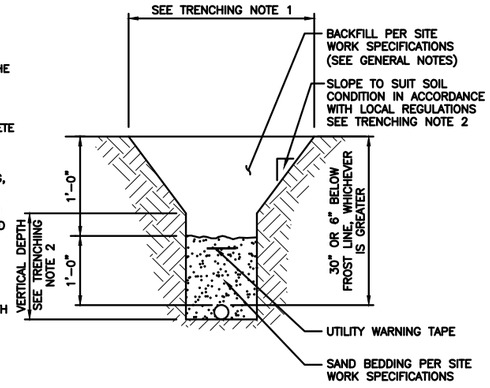


NOTE:
CONTRACTOR TO INSTALL EXPANSION FITTING SLIP JOINT AT METER CENTER CONDUIT TERMINATION, AS PER LOCAL UTILITY POLICY, ORDINANCE AND/OR SPECIFIED REQUIREMENT.

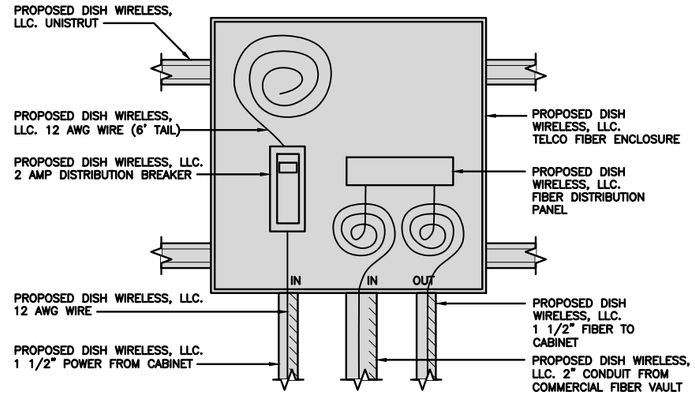
EXPANSION JOINT DETAIL | NO SCALE | 1

TRENCHING NOTES

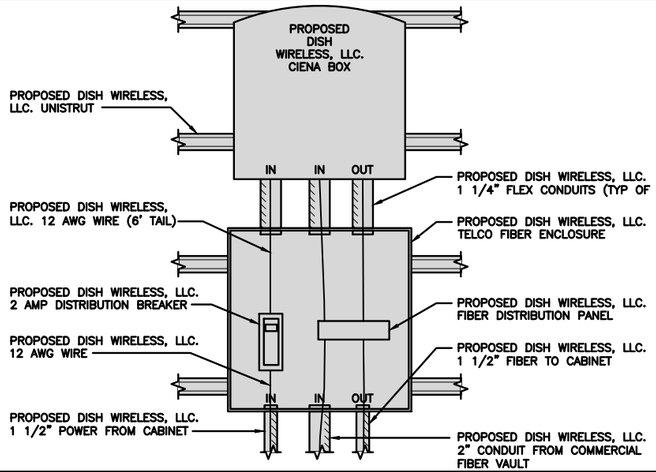
1. CONTRACTOR SHALL RESTORE THE TRENCH TO ITS ORIGINAL CONDITIONS BY EITHER SEEDING OR SODDING GRASS AREAS, OR REPLACING ASPHALT OR CONCRETE AREAS TO ITS ORIGINAL CROSS SECTION.
2. TRENCHING SAFETY; INCLUDING, BUT NOT LIMITED TO SOIL CLASSIFICATION, SLOPING, AND SHORING, SHALL BE GOVERNED BY THE CURRENT 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 | NO SCALE | 4

NOT USED | NO SCALE | 5

NOT USED | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

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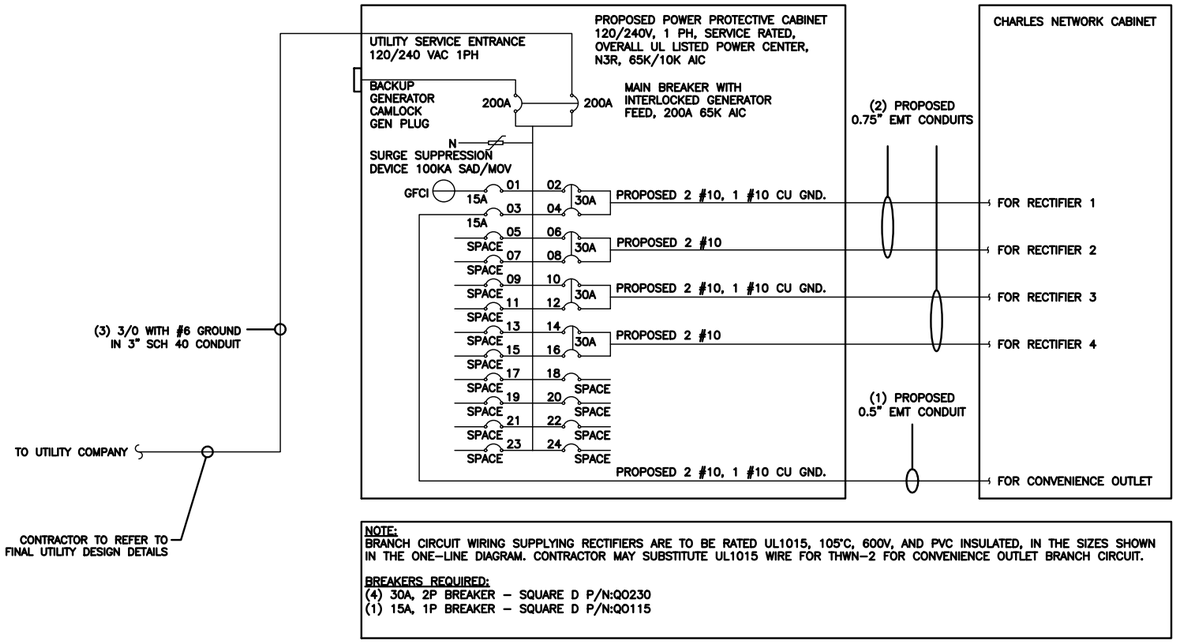
DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBDL00091A
1969 SAYBROOK RD
MIDDLETOWN, CT 06457

SHEET TITLE
ELECTRICAL DETAILS

SHEET NUMBER
E-2



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

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

PPC ONE-LINE DIAGRAM

NO SCALE | 1

NOTES

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

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

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

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

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

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

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

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

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

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

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

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

PROPOSED CHARLES PANEL SCHEDULE

LOAD SERVED	VOLT AMPS (WATTS) L1	VOLT AMPS (WATTS) L2	TRIP	CKT #	PHASE	CKT #	TRIP	VOLT AMPS (WATTS) L1	VOLT AMPS (WATTS) L2	LOAD SERVED
PPC GFCI OUTLET	180		15A	1	A	2	30A	2880		ABB/GE INFINITY RECTIFIER 1
CHARLES GFCI OUTLET		180	15A	3	B	4			2880	
–SPACE–				5	A	6	30A	2880		ABB/GE INFINITY RECTIFIER 2
–SPACE–				7	B	8			2880	
–SPACE–				9	A	10	30A	2880		ABB/GE INFINITY RECTIFIER 3
–SPACE–				11	B	12			2880	
–SPACE–				13	A	14	30A	2880		ABB/GE INFINITY RECTIFIER 4
–SPACE–				15	B	16			2880	
–SPACE–				17	A	18				–SPACE–
–SPACE–				19	B	20				–SPACE–
–SPACE–				21	A	22				–SPACE–
–SPACE–				23	B	24				–SPACE–
VOLTAGE AMPS	180	180						11520	11520	
200A MCB, 1ϕ, 24 SPACE, 120/240V			L1		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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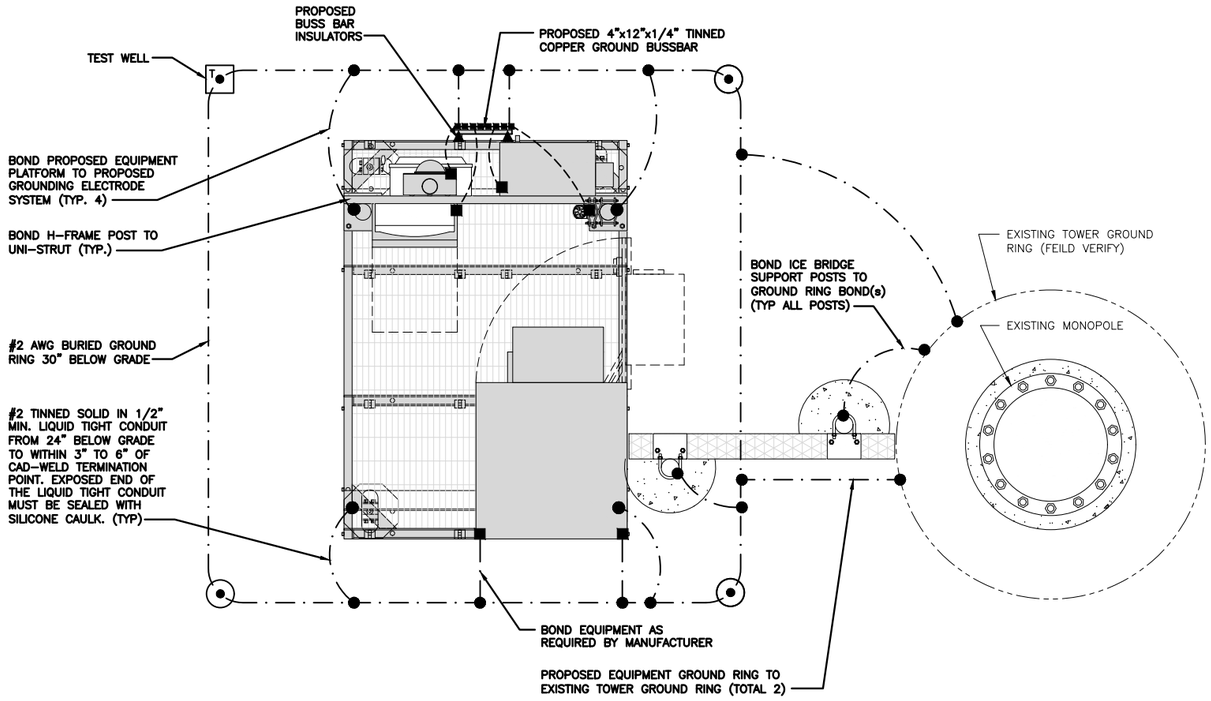
PROJECT INFORMATION
BOBDL00091A
1969 SAYBROOK RD
MIDDLETOWN, CT 06457

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

SHEET NUMBER
E-3

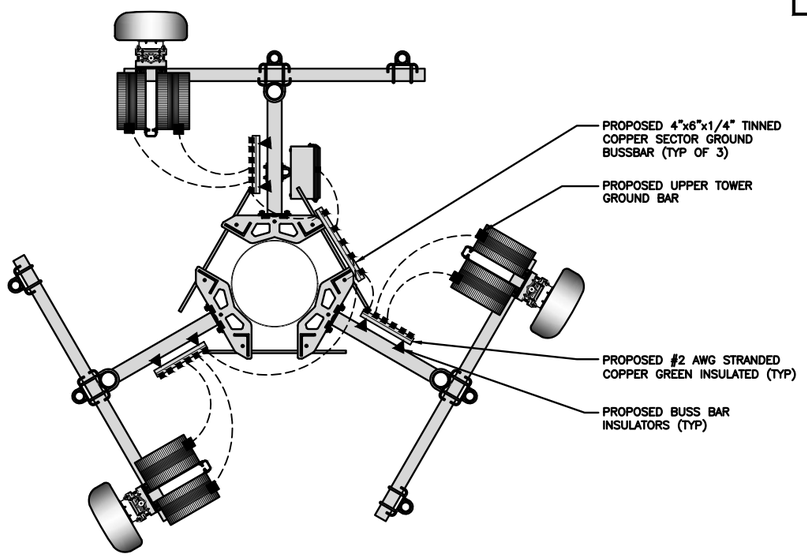


TYPICAL EQUIPMENT GROUNDING PLAN

NO SCALE | 1

NOTES

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



TYPICAL ANTENNA GROUNDING PLAN

NO SCALE | 2

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

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, LLC. 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.

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

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

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

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

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

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

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

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

REFER TO DISH WIRELESS, LLC. GROUNDING NOTES.

GROUNDING KEY NOTES

NO SCALE | 3

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RCD	SS	CJW

RFDS REV #: N/A

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	04/16/2021	ISSUED FOR REVIEW
0	05/17/2021	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
2039-Z5555C

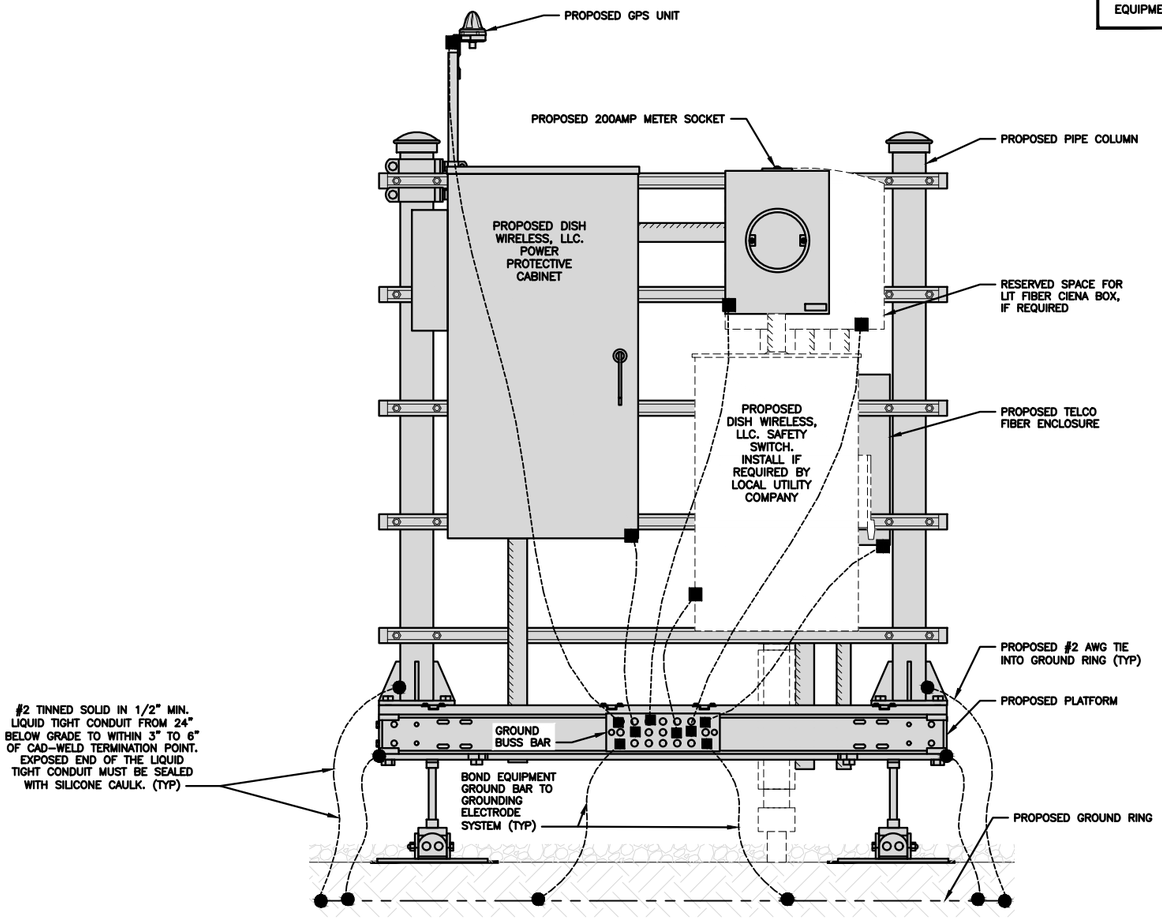
DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBDL00091A
1969 SAYBROOK RD
MIDDLETOWN, CT 06457

SHEET TITLE
GROUNDING PLANS AND NOTES

SHEET NUMBER
G-1

NOTES

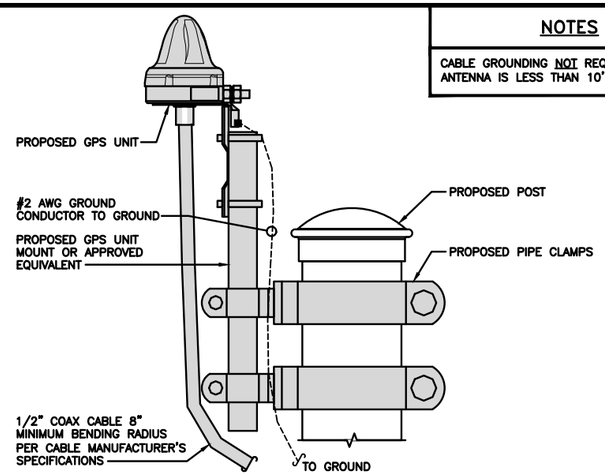
EQUIPMENT CABINET OMITTED FOR CLARITY



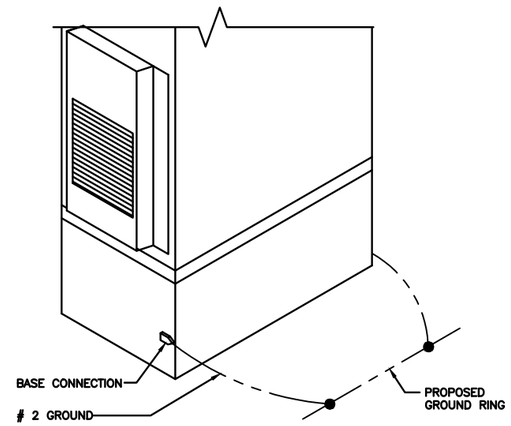
H-FRAME GROUNDING DETAIL | NO SCALE | 1

NOTES

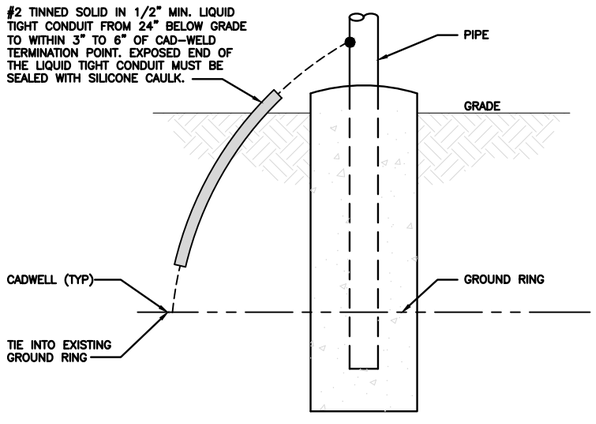
CABLE GROUNDING NOT REQUIRED WHEN ANTENNA IS LESS THAN 10' FROM CABINET



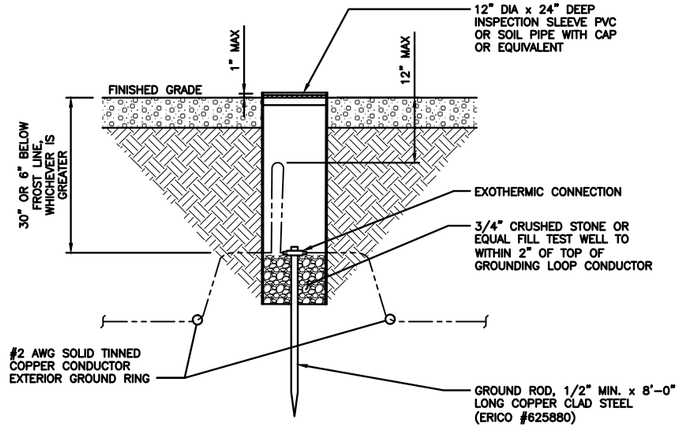
TYPICAL GPS UNIT GROUNDING | NO SCALE | 2



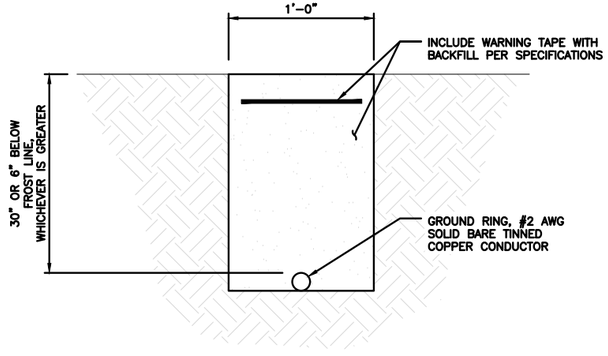
OUTDOOR CABINET GROUNDING | NO SCALE | 3



TRANSITIONING GROUND DETAIL | NO SCALE | 4



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



TYPICAL GROUND RING TRENCH | NO SCALE | 6

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BRUHEI SAKANO
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LICENSED PROFESSIONAL ENGINEER
5/18/21

DRAWN BY:	CHECKED BY:	APPROVED BY:
RCD	SS	CJW

RFDS REV #: N/A

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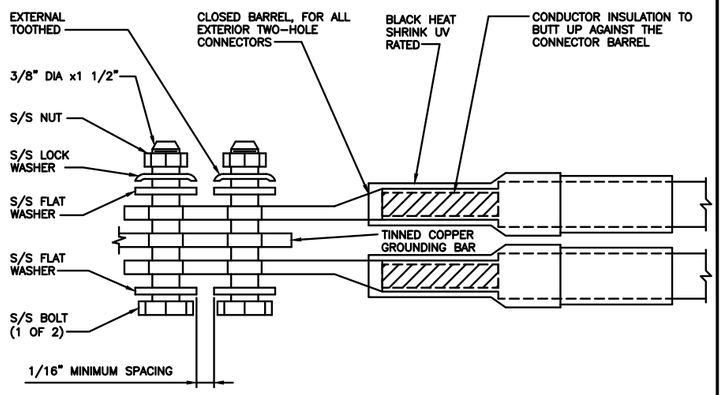
DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBDL00091A
1969 SAYBROOK RD
MIDDLETOWN, CT 06457

SHEET TITLE
GROUNDING DETAILS

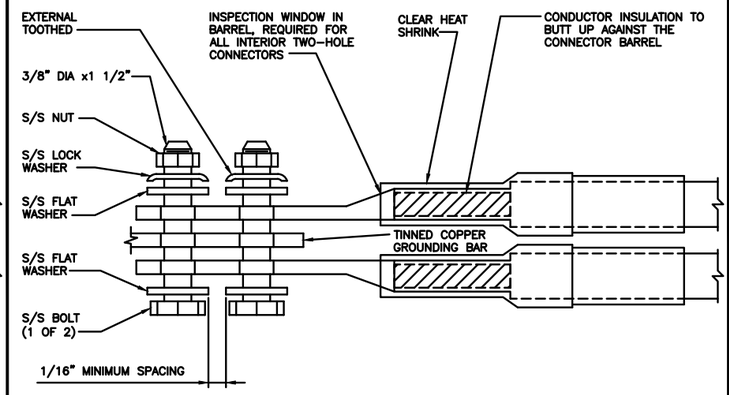
SHEET NUMBER
G-2

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.
9. ENSURE THE WIRE INSULATION TERMINATION IS WITHIN 1/8" OF THE BARREL (NO SHINERS).

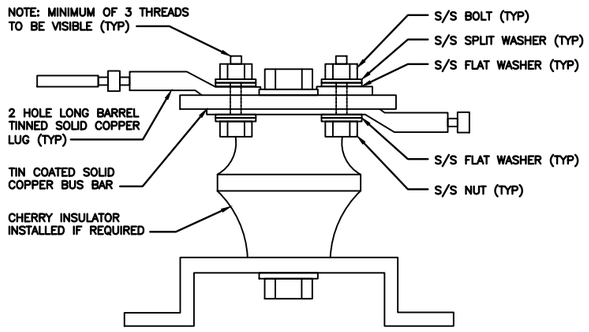
TYPICAL GROUNDING NOTES | NO SCALE | 1



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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PROJECT INFORMATION
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1969 SAYBROOK RD
MIDDLETOWN, CT 06457

SHEET TITLE
GROUNDING DETAILS

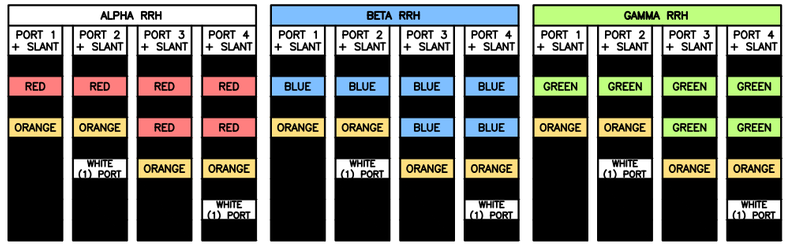
SHEET NUMBER
G-3

RF JUMPER COLOR CODING

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

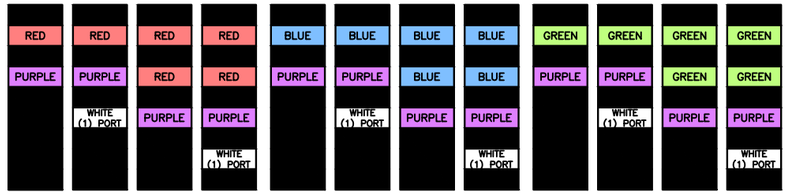
LOW-BAND RRH –
(600MHz N71 BASEBAND) +
(850MHz N26 BAND) +
(700MHz N29 BAND) – OPTIONAL PER MARKET

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



MID-BAND RRH –
(AWS BANDS N66+N70)

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

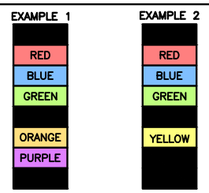


HYBRID/DISCREET CABLES

INCLUDE SECTOR BANDS BEING SUPPORTED AM LONG WITH FREQUENCY BANDS

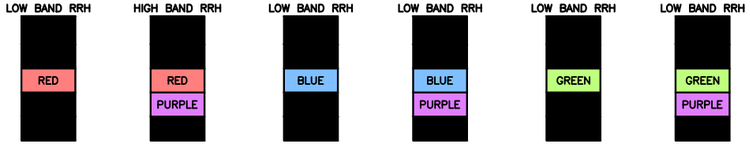
EXAMPLE 1 – HYBRID, OR DISCREET, SUPPORTS ALL SECTORS, BOTH LOW-BANDS AND MID-BANDS

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



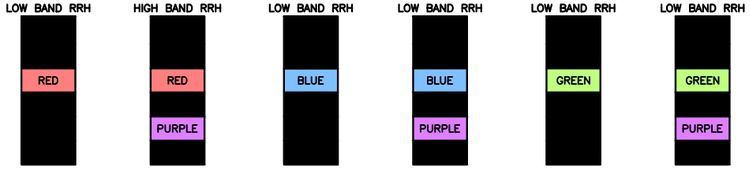
HYBRID/DISCREET CABLES

LOW-BAND RRH FIBER CABLES HAVE SECTOR STRIPE ONLY

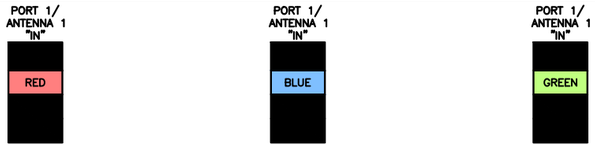


POWER CABLES TO RRHs

LOW-BAND RRH POWER CABLES HAVE SECTOR STRIPE ONLY



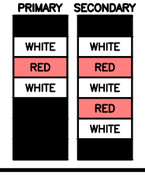
RET MOTORS AT ANTENNAS



MICROWAVE RADIO LINKS

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

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



RF CABLE COLOR CODES | NO SCALE | 1

LOW BANDS (N71–N28)
OPTIONAL – (N29)
ORANGE

AWS
(N65+N70+H-BLOCK)
PURPLE

CBRS TECH
(3 GHz)
YELLOW

NEGATIVE SLANT PORT
ON ANTRRH
WHITE

ALPHA SECTOR
RED

BETA SECTOR
BLUE

GAMMA SECTOR
GREEN

COLOR IDENTIFIER | NO SCALE | 2

NOT USED | NO SCALE | 3

NOT USED | NO SCALE | 4

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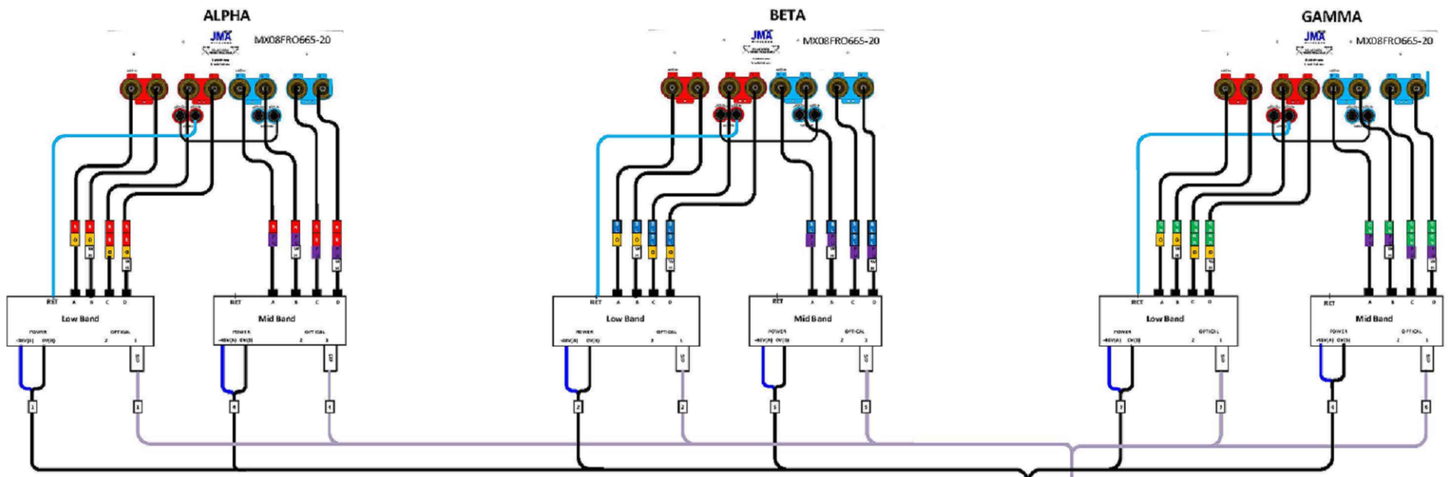
DISH WIRELESS, LLC.
PROJECT INFORMATION
BOBDL00091A
1969 SAYBROOK RD
MIDDLETOWN, CT 06457

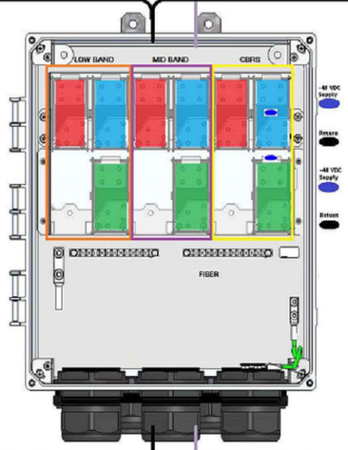
SHEET TITLE
RF
CABLE COLOR CODES

SHEET NUMBER
RF-1



Fiber Patch Panel

Bottom Row	Pair 1	Pair 2	Pair 3	Pair 10	Open	Open
Middle Row	Pair 4	Pair 5	Pair 6	Pair 11	Open	Open
Top Row	Pair 7	Pair 8	Pair 9	Pair 12	Open	Open



CSR NCS540

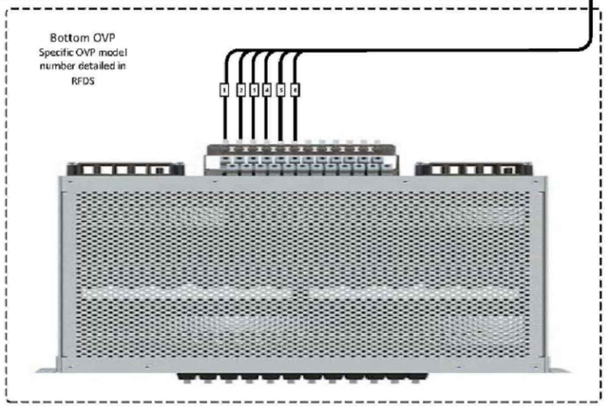
Port	Interface	Description
0	Gi0/0/0/0	SiteBoss
1	Gi0/0/0/1	CBRS - Alpha
2	Gi0/0/0/2	CBRS - Beta
3	Gi0/0/0/3	CBRS - Gamma
4	Te0/0/0/4	Fujitsu Low-Band RU - Alpha
5	Te0/0/0/5	Fujitsu Mid-Band RU - Alpha
6	Te0/0/0/6	Fujitsu Low-Band RU - Beta
7	Te0/0/0/7	Fujitsu Mid-Band RU - Beta
8	Te0/0/0/8	Fujitsu Low-Band RU - Gamma
9	Te0/0/0/9	Fujitsu Mid-Band RU - Gamma
10	Te0/0/0/10	Fixed WI6
11	Te0/0/0/11	Fixed WI6
12	Te0/0/0/12	Fixed WI6
13	Te0/0/0/13	Fixed WI6
14	Te0/0/0/14	CBRS1
15	Te0/0/0/15	CBRS2
16	Te0/0/0/16	CBRS3
17	Gi0/0/0/17	SM1 - BMC
18	Gi0/0/0/18	SM2 - BMC
19	Te0/0/0/19	SM1 - Data 1
20	Te0/0/0/20	SM1 - Data 2
21	Te0/0/0/21	SM2 - Data 1
22	Te0/0/0/22	SM2 - Data 2
23	Te0/0/0/23	Reserved Uplink (EDC, LDC)
24	Te0/0/0/24	Blank/Future
25	Te0/0/0/25	Blank/Future
26	Te0/0/0/26	Fiber NIU
27	Te0/0/0/27	Fiber NIU
28	Te0/0/0/28	Blank/Future
29	Te0/0/0/29	Blank/Future

top

bottom

Bottom OVP Layout

Circuit 1	Alpha Low Band
Circuit 2	Beta Low Band
Circuit 3	Gamma Low Band
Circuit 4	Alpha Mid Band
Circuit 5	Beta Mid Band
Circuit 6	Gamma Mid Band
Circuit 7	Alpha CBRS
Circuit 8	Beta CBRS
Circuit 9	Gamma CBRS
Circuit 10	Open
Circuit 11	Open
Circuit 12	Open



	5G plumbing diagram JMA MX08FRO665-20 2-2-2(LB+MB)
Quantity	
5-Jan-2021	None

PLUMBING DIAGRAM

NO SCALE

1

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1969 SAYBROOK RD
MIDDLETOWN, CT 06457

SHEET TITLE
RF
PLUMBING DIAGRAM

SHEET NUMBER
RF-2

LEGEND

EXOTHERMIC CONNECTION

MECHANICAL CONNECTION

CHEMICAL ELECTROLYTIC GROUNDING SYSTEM

TEST CHEMICAL ELECTROLYTIC GROUNDING SYSTEM

EXOTHERMIC WITH INSPECTION SLEEVE

GROUNDING BAR

GROUND ROD

TEST GROUND ROD WITH INSPECTION SLEEVE

SINGLE POLE SWITCH

DUPLEX RECEPTACLE

DUPLEX GFCI RECEPTACLE

FLUORESCENT LIGHTING FIXTURE
(2) TWO LAMPS 48–T8

SMOKE DETECTION (DC)

EMERGENCY LIGHTING (DC)

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

CHAIN LINK FENCE

WOOD/WROUGHT IRON FENCE

WALL STRUCTURE

LEASE AREA

PROPERTY LINE (PL)

SETBACKS

ICE BRIDGE

CABLE TRAY

WATER LINE

UNDERGROUND POWER

UNDERGROUND TELCO

OVERHEAD POWER

OVERHEAD TELCO

UNDERGROUND TELCO/POWER

ABOVE GROUND POWER

ABOVE GROUND TELCO

ABOVE GROUND TELCO/POWER

WORKPOINT

SECTION REFERENCE

DETAIL REFERENCE

ABBREVIATIONS

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

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5/18/21

DRAWN BY:	CHECKED BY:	APPROVED BY:
RCD	SS	CJW

RFDS REV #: N/A

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	04/16/2021	ISSUED FOR REVIEW
0	05/17/2021	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

2039–Z5555C

DISH WIRELESS, LLC.
PROJECT INFORMATION

BOBDL00091A
1969 SAYBROOK RD
MIDDLETOWN, CT 06457

SHEET TITLE

LEGEND AND ABBREVIATIONS

SHEET NUMBER

GN-1

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, LLC. AND TOWER OWNER NOC & THE DISH WIRELESS, LLC. AND TOWER OWNER CONSTRUCTION MANAGER.

2. "LOOK UP" – DISH WIRELESS, LLC. 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, LLC. AND DISH WIRELESS, LLC. 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, LLC. 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, LLC. AND TOWER OWNER INSTALLATION STANDARDS FOR CONSTRUCTION ACTIVITIES ON DISH WIRELESS, LLC. 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, LLC. 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, LLC. 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, LLC.

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, LLC. AND TOWER OWNER

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

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

dish wireless.

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LICENSED PROFESSIONAL ENGINEER
5/18/21

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BOBDL00091A
1969 SAYBROOK RD
MIDDLETOWN, CT 06457

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-2

CONCRETE, FOUNDATIONS, AND REINFORCING STEEL:

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

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

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

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

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

#4 BARS AND SMALLER 40 ksi

#5 BARS AND LARGER 60 ksi

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

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

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

ELECTRICAL INSTALLATION NOTES:

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

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

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

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

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

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

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

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

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

8. TIE WRAPS ARE NOT ALLOWED.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

27. THE CONTRACTOR SHALL NOTIFY AND OBTAIN NECESSARY AUTHORIZATION FROM THE CARRIER AND/OR DISH WIRELESS, LLC. 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, LLC.".

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

dish wireless.

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STATE OF CONNECTICUT
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GENERAL NOTES

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GN-3

GROUNDING NOTES:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

dish wireless.

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LITTLETON, CO 80120

CROWN CASTLE

2000 CORPORATE DRIVE
CANONSBURG, PA 15317

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STATE OF CONNECTICUT
SHUHEI SAKAMOTO
34916
LICENSED
PROFESSIONAL ENGINEER
5/18/21

DRAWN BY:	CHECKED BY:	APPROVED BY:
RCD	SS	CJW

RFDS REV #: N/A

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	04/16/2021	ISSUED FOR REVIEW
0	05/17/2021	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

2039-Z5555C

DISH WIRELESS, LLC.
PROJECT INFORMATION

BOBDL00091A
1969 SAYBROOK RD
MIDDLETOWN, CT 06457

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-4

Exhibit D

Structural Analysis Report

Date: **April 20, 2021**

Crown Castle
2000 Corporate Drive
Canonsburg, PA, 15317
(724) 416-2000

Subject:	**Structural Analysis Report**	
Carrier Designation:	***DISH Network* Co-Locate**	
	Site Number:	BOBDL00091A
	Site Name:	CT-CCI-T-876341
Crown Castle Designation:	**BU Number:**	876341
	Site Name:	MIDDLETOWN 2 - MARINO PROPERTY
	JDE Job Number:	645182
	Work Order Number:	1945896
	Order Number:	553292 Rev. 0
Engineering Firm Designation:	**Crown Castle Project Number:**	1945896
Site Data:	**1969 Saybrook Rd, MIDDLETOWN, Middlesex County, CT**	
	Latitude *41° 30' 38.3"*, Longitude *-72° 35' 36.1"*	
	150 Foot - Monopole Tower	

Crown Castle is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above-mentioned tower.

The purpose of the analysis is to determine acceptability of the tower stress level. Based on our analysis we have determined the tower stress level for the structure and foundation, under the following load case, to be:

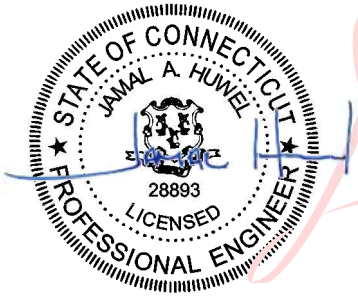
LC7: Proposed Equipment Configuration **Sufficient Capacity**

This analysis utilizes an ultimate 3-second gust wind speed of 130 mph as required by the 2018 Connecticut State Building Code. Applicable Standard references and design criteria are listed in Section 2 - ''Analysis Criteria''.

Structural analysis prepared by: Michael Lopienski

Respectfully submitted by:

Jamal A. Huwel, P.E.
Director Engineering



Digitally signed by Jamal A Huwel
Date: 2021.04.20 19:02:34 -04'00'

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 150 ft Monopole tower designed by SUMMIT. The tower has been modified multiple times to accommodate additional loading. The anchor rod medication has been considered ineffective and was not considered in this analysis.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	130 mph
Exposure Category:	B
Topographic Factor:	1
Ice Thickness:	1.5 in
Wind Speed with Ice:	50 mph
Service Wind Speed:	60 mph

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
121.0	121.0	3	fujitsu	TA08025-B605	1	1-1/2
		3	fujitsu	TA08025-B604		
		3	jma wireless	MX08FRO665-20 w/ Mount Pipe		
		1	raycap	RDIDC-9181-PF-48		
		1	tower mounts	Commscope MC-K6MHDX-9-96 (3)		

Table 2 - Other Considered Equipment

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
150.0	150.0	1	Site Pro	1 HRK14-HD Handrail Kit	1 3	7/8 1-1/4
		3	alcatel lucent	PCS 1900MHz 4x45W-65MHz		
		6	alcatel lucent	RRH2X50-800		
		3	alcatel lucent	TD-RRH8x20-25		
		3	commscope	NNVV-65B-R4 w/ Mount Pipe		
		1	crown mounts	Platform Mount [LP 1201-1]		
		3	rfs celwave	APXVTM14-ALU-I20 w/ Mount Pipe		
141.0	145.0	1	lucent	KS24019-L112A	1 12	1/2 1-5/8
	142.0	3	alcatel lucent	RRH2X60-AWS BAND 4		
		3	alcatel lucent	RRH2X60-PCS		
		6	andrew	HBXX-6517DS-A2M w/ Mount Pipe		
		3	antel	BXA-70063-6CF-EDIN-0 w/ Mount Pipe		
		6	rfs celwave	APL868013-42T0 w/ Mount Pipe		
		1	rfs celwave	DB-T1-6Z-8AB-0Z		
		6	rfs celwave	FD9R6004/2C-3L		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
	141.0	1	crown mounts	Platform Mount [LP 1201-1]		
132.0	134.0	1	raycap	DC6-48-60-18-8F	1 2 12	3/8 3/4 1-5/8
	133.0	3	cci antennas	OPA-65R-LCUU-H6 w/ Mount Pipe		
		3	ericsson	RRUS 11		
		6	powerwave technologies	7770.00 w/ Mount Pipe		
		3	powerwave technologies	LGP21401		
	132.0	1	crown mounts	Miscellaneous [NA 510-1]		
		1	crown mounts	Platform Mount [LP 1201-1]		
		3	ericsson	RRUS 12 B2		
	129.0	3	powerwave technologies	LGP21401		
	128.0	3	ericsson	RRUS A2 B2		
111.0	111.0	1		Site Pro 1 - (1) Handrail Kit [P/N:HRK12]	1 12	1-1/4 1-5/8
		1		Site Pro 1 - (1) Platform Mount [P/N:RMQP-396]		
	110.0	3	ericsson	KRY 112 144/1		
		3	ericsson	KRY 112 489/2		
		3	ericsson	RADIO 4449 B12/B71		
		3	rfs celwave	APXVAARR24_43-U-NA20 w/ Mount Pipe		
104.0	104.0	1	crown mounts	Side Arm Mount [SO 701-1]	1	1/2
		1	lucent	KS24019-L112A		
88.0	95.0	2	sinclair	SC479-HF1LDF	1 2	1/2 7/8
	88.0	1	bird technologies group	428E-83I-01-T		
		2	crown mounts	Side Arm Mount [SO 306-1]		
82.0	92.0	1	rfi antennas	BA80-41-DIN	1	7/8
	82.0	1	crown mounts	Side Arm Mount [SO 306-1]		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Reference	Source
4-GEOTECHNICAL REPORTS	1532967	CCISITES
4-POST-MODIFICATION INSPECTION	2504220	CCISITES
4-POST-MODIFICATION INSPECTION	5311239	CCISITES
4-POST-MODIFICATION INSPECTION	5810606	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	1613596	CCISITES
4-TOWER MANUFACTURER DRAWINGS	1614554	CCISITES

3.1) Analysis Method

tnxTower (version 8.0.9.0), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A. When applicable, Crown Castle has calculated and provided the effective area for panel antennas using approved methods following the intent of the TIA-222 standard.

tnxTower was used to determine the loads on the modified structure. Additional calculations were performed to determine the stresses in the pole and in the reinforcing elements. These calculations are included in Appendix C.

3.2) Assumptions

1) Tower and structures were maintained in accordance with the TIA-222 Standard.
2) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.

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

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
150 - 145	Pole	TP23x22x0.25	Pole	5.0%	Pass
145 - 140	Pole	TP24x23x0.25	Pole	10.6%	Pass
140 - 135	Pole	TP25x24x0.25	Pole	18.1%	Pass
135 - 130	Pole	TP26x25x0.25	Pole	26.7%	Pass
130 - 125	Pole	TP27.001x26x0.25	Pole	35.8%	Pass
125 - 120	Pole	TP28.001x27.001x0.25	Pole	44.6%	Pass
120 - 115	Pole	TP29.001x28.001x0.25	Pole	53.6%	Pass
115 - 111.75	Pole	TP30.401x29.001x0.25	Pole	59.1%	Pass
111.75 - 106.75	Pole	TP30.151x29.151x0.3125	Pole	51.7%	Pass
106.75 - 101.75	Pole	TP31.151x30.151x0.3125	Pole	58.0%	Pass
101.75 - 96.75	Pole	TP32.152x31.151x0.3125	Pole	63.8%	Pass
96.75 - 91.75	Pole	TP33.152x32.152x0.3125	Pole	69.2%	Pass
91.75 - 89.5	Pole	TP33.602x33.152x0.3125	Pole	71.5%	Pass
89.5 - 89.25	Pole + Reinf.	TP33.652x33.602x0.5	Reinf. 3 Tension Rupture	59.9%	Pass
89.25 - 84.25	Pole + Reinf.	TP34.652x33.652x0.4938	Reinf. 3 Tension Rupture	64.2%	Pass
84.25 - 79.25	Pole + Reinf.	TP35.653x34.652x0.4875	Reinf. 3 Tension Rupture	68.3%	Pass
79.25 - 74.5	Pole + Reinf.	TP37.553x35.653x0.4813	Reinf. 3 Tension Rupture	71.8%	Pass
74.5 - 68.75	Pole	TP37.128x35.978x0.375	Pole	68.3%	Pass
68.75 - 67.42	Pole	TP37.394x37.128x0.375	Pole	69.1%	Pass
67.42 - 67.17	Pole	TP37.444x37.394x0.375	Pole	69.3%	Pass
67.17 - 62.17	Pole	TP38.444x37.444x0.375	Pole	72.1%	Pass

62.17 - 57.58	Pole	TP39.362x38.444x0.375	Pole	74.6%	Pass
57.58 - 57.33	Pole + Reinf.	TP39.412x39.362x0.7	Reinf. 2 Tension Rupture	57.2%	Pass
57.33 - 56.42	Pole + Reinf.	TP39.594x39.412x0.7	Reinf. 2 Tension Rupture	57.6%	Pass
56.42 - 56.17	Pole + Reinf.	TP39.644x39.594x0.5875	Reinf. 2 Tension Rupture	69.0%	Pass
56.17 - 51.17	Pole + Reinf.	TP40.644x39.644x0.575	Reinf. 2 Tension Rupture	71.3%	Pass
51.17 - 46.17	Pole + Reinf.	TP41.645x40.644x0.575	Reinf. 2 Tension Rupture	73.4%	Pass
46.17 - 41.17	Pole + Reinf.	TP42.645x41.645x0.5625	Reinf. 2 Tension Rupture	75.3%	Pass
41.17 - 38	Pole + Reinf.	TP44.379x42.645x0.5625	Reinf. 2 Tension Rupture	76.5%	Pass
38 - 31.5	Pole	TP43.829x42.529x0.4375	Pole	72.1%	Pass
31.5 - 26.5	Pole	TP44.829x43.829x0.4375	Pole	73.7%	Pass
26.5 - 26.25	Pole + Reinf.	TP44.879x44.829x0.6875	Reinf. 1 Tension Rupture	66.6%	Pass
26.25 - 21.25	Pole + Reinf.	TP45.879x44.879x0.6875	Reinf. 1 Tension Rupture	67.9%	Pass
21.25 - 16.25	Pole + Reinf.	TP46.88x45.879x0.675	Reinf. 1 Tension Rupture	69.2%	Pass
16.25 - 11.25	Pole + Reinf.	TP47.88x46.88x0.675	Reinf. 1 Tension Rupture	70.4%	Pass
11.25 - 6.25	Pole + Reinf.	TP48.88x47.88x0.6625	Reinf. 1 Tension Rupture	71.5%	Pass
6.25 - 1.25	Pole + Reinf.	TP49.88x48.88x0.6625	Reinf. 1 Tension Rupture	72.6%	Pass
1.25 - 0	Pole + Reinf.	TP50.13x49.88x0.6625	Reinf. 1 Tension Rupture	72.8%	Pass
				Summary	
			Pole	74.6%	Pass
			Reinforcement	76.5%	Pass
			Overall	76.5%	Pass

Table 5 - Tower Component Stresses vs. Capacity - LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	77.1	Pass
1	Base Plate	0	78.3	Pass
1	Base Foundation (Structure)	0	92.1	Pass
1	Base Foundation (Soil Interaction)	0	46.2	Pass

Structure Rating (max from all components) =	92.1%

Notes:
1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.

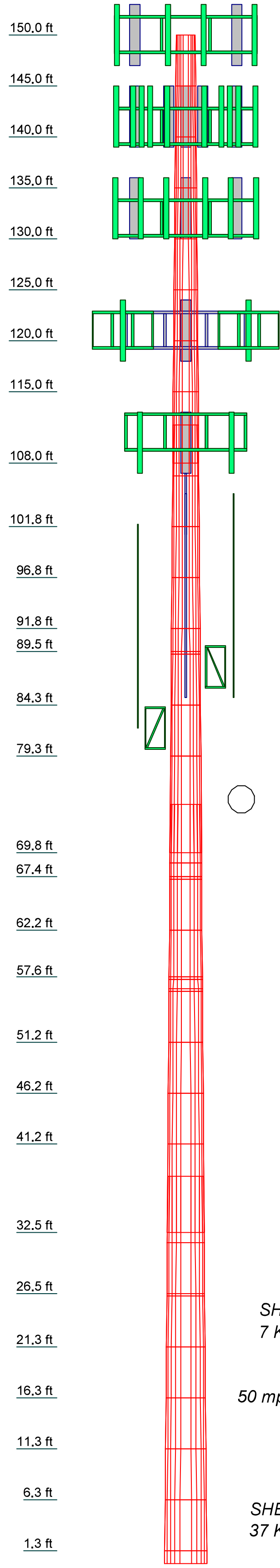
4.1) Recommendations

The tower and its foundation have sufficient capacity to carry the proposed load configuration. No modifications are required at this time.

APPENDIX A

TNXTOWER OUTPUT

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	5.00	12	0.2500		22.0000	23.0001		0.3
2	5.00	12	0.2500		23.0001	24.0002		0.3
3	5.00	12	0.2500		24.0002	25.0004		0.3
4	5.00	12	0.2500		25.0004	26.0005		0.3
5	5.00	12	0.2500		26.0005	27.0006		0.4
6	5.00	12	0.2500		27.0006	28.0007		0.4
7	5.00	12	0.2500		28.0007	29.0008		0.4
8	5.00 7.00	12	0.2500	3.75	29.0008	30.4010	A607-60	0.6
9		12	[illegible]		[illegible]	[illegible]		0.5
10	5.00	12	0.3125		[illegible]	[illegible]		0.5
11	5.00	12	0.3125		31.1514	32.1517		0.5
12	5.00	12	0.3125		32.1517	33.1519		0.6
13	[illegible]	12	[illegible]		[illegible]	[illegible]		0.3
14	[illegible]	12	[illegible]		[illegible]	[illegible]		[illegible]
15	5.00	12	[illegible]		[illegible]	[illegible]		0.9
16	5.00	12	0.4875		34.6523	35.6525		0.9
17	5.75 9.50	12	0.4813	4.75	35.6525	37.5530		1.8
18	[illegible]	12	[illegible]		[illegible]	[illegible]		[illegible]
19	[illegible]	12	[illegible]		[illegible]	[illegible]		[illegible]
20	[illegible]	12	[illegible]		[illegible]	[illegible]		[illegible]
21	5.00	12	0.3750		[illegible]	[illegible]		0.8
22	4.59	12	0.3750		[illegible]	[illegible]		0.7
23	[illegible]	12	[illegible]		[illegible]	[illegible]		[illegible]
24	[illegible]	12	[illegible]		[illegible]	[illegible]		[illegible]
25	[illegible]	12	[illegible]		[illegible]	[illegible]		[illegible]
26	5.00	12	0.5750		[illegible]	[illegible]		1.2
27	5.00	12	0.5750		40.6445	41.6446		1.2
28	5.00	12	0.5625		41.6446	42.6447		1.3
29	6.50 8.67	12	0.5625	5.50	42.6447	44.3790	A607-65	2.2
30		12	[illegible]		[illegible]	[illegible]		1.3
31	5.00	12	[illegible]		[illegible]	[illegible]		1.1
32	[illegible]	12	[illegible]		[illegible]	[illegible]		0.1
33	5.00	12	[illegible]		[illegible]	[illegible]		1.6
34	5.00	12	0.6750		45.8794	46.8795		1.6
35	5.00	12	0.6750		46.8795	47.8797		1.7
36	5.00	12	0.6625		47.8797	48.8798		1.7
37	5.00	12	0.6625		[illegible]	[illegible]		1.7
38	1.25	12	[illegible]		[illegible]	[illegible]		[illegible]
								29.2



MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A607-60	60 ksi	75 ksi	A607-65	65 ksi	80 ksi

TOWER DESIGN NOTES

1. Tower is located in Middlesex County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-H Standard.
3. Tower designed for a 130 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.50 in ice. Ice is considered to i ncrease in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TIA-222-H Annex S
9. TOWER RATING: 76.5%

ALL REACTIONS ARE FACTORED

AXIAL 97 K

SHEAR 7 K

MOMENT 855 kip-ft

TORQUE 1 kip-ft

50 mph WIND - 1.5000 in ICE

AXIAL 62 K

SHEAR 37 K

MOMENT 3894 kip-ft

TORQUE 3 kip-ft

REACTIONS - 130 mph WIND

Crown Castle 2000 Corporate Drive Canonsburg, PA, 15317 Phone: (724) 416-2000 FAX: The Pathway to Possible	Job: *876341*		
	Project:		
	Client: Crown Castle USA, Inc.	Drawn by: MLopienski	App'd:
	Code: TIA-222-H	Date: 04/20/21	Scale: NTS
	Path: C:\Users\mlopienski\Desktop\876341\WO 1945896 - SA\Prod\876341 R.eri		Dwg No. E-1

Tower Input Data

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

- Tower is located in Middlesex County, Connecticut.
- Tower base elevation above sea level: 370.00 ft.
- Basic wind speed of 130 mph.
- Risk Category II.
- Exposure Category B.
- Simplified Topographic Factor Procedure for wind speed-up calculations is used.
- Topographic Category: 1.
- Crest Height: 0.00 ft.
- Nominal ice thickness of 1.5000 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.
- TIA-222-H Annex S.
- A non-linear (P-delta) analysis was used.
- Pressures are calculated at each section.
- Stress ratio used in pole design is 1.05.
- Tower analysis based on target reliabilities in accordance with Annex S.
- Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.
- Maximum demand-capacity ratio is: 1.
- Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	150.00-145.00	5.00	0.00	12	22.0000	23.0001	0.2500	1.0000	A607-60 (60 ksi)
L2	145.00-140.00	5.00	0.00	12	23.0001	24.0002	0.2500	1.0000	A607-60 (60 ksi)
L3	140.00-135.00	5.00	0.00	12	24.0002	25.0004	0.2500	1.0000	A607-60 (60 ksi)
L4	135.00-130.00	5.00	0.00	12	25.0004	26.0005	0.2500	1.0000	A607-60 (60 ksi)
L5	130.00-125.00	5.00	0.00	12	26.0005	27.0006	0.2500	1.0000	A607-60 (60 ksi)
L6	125.00-120.00	5.00	0.00	12	27.0006	28.0007	0.2500	1.0000	A607-60 (60 ksi)
L7	120.00-115.00	5.00	0.00	12	28.0007	29.0008	0.2500	1.0000	A607-60 (60 ksi)
L8	115.00-108.00	7.00	3.75	12	29.0008	30.4010	0.2500	1.0000	A607-60 (60 ksi)
L9	108.00-106.75	5.00	0.00	12	29.1509	30.1512	0.3125	1.2500	A607-60 (60 ksi)
L10	106.75-101.75	5.00	0.00	12	30.1512	31.1514	0.3125	1.2500	A607-60 (60 ksi)
L11	101.75-96.75	5.00	0.00	12	31.1514	32.1517	0.3125	1.2500	A607-60 (60 ksi)
L12	96.75-91.75	5.00	0.00	12	32.1517	33.1519	0.3125	1.2500	A607-60 (60 ksi)
L13	91.75-89.50	2.25	0.00	12	33.1519	33.6020	0.3125	1.2500	A607-60 (60 ksi)
L14	89.50-89.25	0.25	0.00	12	33.6020	33.6520	0.5000	2.0000	A607-60 (60 ksi)
L15	89.25-84.25	5.00	0.00	12	33.6520	34.6523	0.4938	1.9750	A607-60 (60 ksi)
L16	84.25-79.25	5.00	0.00	12	34.6523	35.6525	0.4875	1.9500	A607-60 (60 ksi)
L17	79.25-69.75	9.50	4.75	12	35.6525	37.5530	0.4813	1.9250	A607-60 (60 ksi)
L18	69.75-68.75	5.75	0.00	12	35.9778	37.1279	0.3750	1.5000	A607-65 (65 ksi)
L19	68.75-67.42	1.33	0.00	12	37.1279	37.3940	0.3750	1.5000	A607-65 (65 ksi)
L20	67.42-67.17	0.25	0.00	12	37.3940	37.4440	0.3750	1.5000	A607-65 (65 ksi)
L21	67.17-62.17	5.00	0.00	12	37.4440	38.4441	0.3750	1.5000	A607-65 (65 ksi)
L22	62.17-57.58	4.59	0.00	12	38.4441	39.3623	0.3750	1.5000	A607-65 (65 ksi)
L23	57.58-57.33	0.25	0.00	12	39.3623	39.4123	0.7000	2.8000	A607-65 (65 ksi)
L24	57.33-56.42	0.91	0.00	12	39.4123	39.5943	0.7000	2.8000	A607-65 (65 ksi)
L25	56.42-56.17	0.25	0.00	12	39.5943	39.6443	0.5875	2.3500	A607-65 (65 ksi)
L26	56.17-51.17	5.00	0.00	12	39.6443	40.6445	0.5750	2.3000	A607-65 (65 ksi)
L27	51.17-46.17	5.00	0.00	12	40.6445	41.6446	0.5750	2.3000	A607-65 (65 ksi)
L28	46.17-41.17	5.00	0.00	12	41.6446	42.6447	0.5625	2.2500	A607-65 (65 ksi)
L29	41.17-32.50	8.67	5.50	12	42.6447	44.3790	0.5625	2.2500	A607-65 (65 ksi)
L30	32.50-31.50	6.50	0.00	12	42.5288	43.8290	0.4375	1.7500	A607-65 (65 ksi)
L31	31.50-26.50	5.00	0.00	12	43.8290	44.8292	0.4375	1.7500	A607-65 (65 ksi)
L32	26.50-26.25	0.25	0.00	12	44.8292	44.8792	0.6875	2.7500	A607-65 (65 ksi)
L33	26.25-21.25	5.00	0.00	12	44.8792	45.8794	0.6875	2.7500	A607-65 (65 ksi)
L34	21.25-16.25	5.00	0.00	12	45.8794	46.8795	0.6750	2.7000	A607-65 (65 ksi)
L35	16.25-11.25	5.00	0.00	12	46.8795	47.8797	0.6750	2.7000	A607-65

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
L36	11.25-6.25	5.00	0.00	12	47.8797	48.8798	0.6625	2.6500	(65 ksi) A607-65 (65 ksi)
L37	6.25-1.25	5.00	0.00	12	48.8798	49.8800	0.6625	2.6500	A607-65 (65 ksi)
L38	1.25-0.00	1.25		12	49.8800	50.1300	0.6625	2.6500	A607-65 (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	22.6879	17.5087	1057.2060	7.7865	11.3960	92.7699	2142.1860	8.6173	5.2260	20.904
	23.7233	18.3138	1209.8537	8.1445	11.9141	101.5484	2451.4916	9.0135	5.4940	21.976
L2	23.7233	18.3138	1209.8537	8.1445	11.9141	101.5484	2451.4916	9.0135	5.4940	21.976
	24.7587	19.1189	1376.5302	8.5026	12.4321	110.7237	2789.2233	9.4098	5.7621	23.048
L3	24.7587	19.1189	1376.5302	8.5026	12.4321	110.7237	2789.2233	9.4098	5.7621	23.048
	25.7941	19.9240	1557.8522	8.8606	12.9502	120.2957	3156.6308	9.8060	6.0301	24.12
L4	25.7941	19.9240	1557.8522	8.8606	12.9502	120.2957	3156.6308	9.8060	6.0301	24.12
	26.8295	20.7291	1754.4364	9.2187	13.4682	130.2646	3554.9638	10.2022	6.2981	25.193
L5	26.8295	20.7291	1754.4364	9.2187	13.4682	130.2646	3554.9638	10.2022	6.2981	25.193
	27.8649	21.5342	1966.8995	9.5767	13.9863	140.6304	3985.4717	10.5985	6.5662	26.265
L6	27.8649	21.5342	1966.8995	9.5767	13.9863	140.6304	3985.4717	10.5985	6.5662	26.265
	28.9003	22.3393	2195.8584	9.9348	14.5044	151.3929	4449.4044	10.9947	6.8342	27.337
L7	28.9003	22.3393	2195.8584	9.9348	14.5044	151.3929	4449.4044	10.9947	6.8342	27.337
	29.9357	23.1444	2441.9296	10.2928	15.0224	162.5522	4948.0114	11.3910	7.1022	28.409
L8	29.9357	23.1444	2441.9296	10.2928	15.0224	162.5522	4948.0114	11.3910	7.1022	28.409
	31.3852	24.2716	2816.3524	10.7941	15.7477	178.8419	5706.6935	11.9457	7.4775	29.91
L9	30.8457	29.0187	3080.3908	10.3242	15.1002	203.9971	6241.7068	14.2821	6.9749	22.32
	31.1045	30.0252	3412.1630	10.6822	15.6183	218.4721	6913.9673	14.7775	7.2430	23.178
L10	31.1045	30.0252	3412.1630	10.6822	15.6183	218.4721	6913.9673	14.7775	7.2430	23.178
	32.1401	31.0317	3766.9411	11.0403	16.1364	233.4433	7632.8438	15.2728	7.5111	24.035
L11	32.1401	31.0317	3766.9411	11.0403	16.1364	233.4433	7632.8438	15.2728	7.5111	24.035
	33.1756	32.0382	4145.4962	11.3984	16.6546	248.9106	8399.8992	15.7682	7.7791	24.893
L12	33.1756	32.0382	4145.4962	11.3984	16.6546	248.9106	8399.8992	15.7682	7.7791	24.893
	34.2111	33.0447	4548.5996	11.7565	17.1727	264.8741	9216.6959	16.2636	8.0472	25.751
L13	34.2111	33.0447	4548.5996	11.7565	17.1727	264.8741	9216.6959	16.2636	8.0472	25.751
	34.6771	33.4976	4738.2105	11.9176	17.4058	272.2195	9600.8990	16.4865	8.1678	26.137
L14	34.6110	53.2942	7453.7568	11.8505	17.4058	428.2330	15103.3321	26.2298	7.6653	15.331
	34.6628	53.3748	7487.5926	11.8684	17.4318	429.5376	15171.8926	26.2694	7.6787	15.357
L15	34.6650	52.7175	7398.1803	11.8707	17.4318	424.4083	14990.7191	25.9460	7.6955	15.586
	35.7005	54.3078	8088.0979	12.2288	17.9499	450.5934	16388.6791	26.7286	7.9636	16.129
L16	35.7027	53.6302	7990.1012	12.2310	17.9499	445.1340	16190.1112	26.3951	7.9803	16.37
	36.7382	55.2003	8712.6310	12.5891	18.4680	471.7688	17654.1526	27.1679	8.2484	16.92
L17	36.7404	54.5023	8605.5175	12.5913	18.4680	465.9689	17437.1115	26.8244	8.2651	17.174
	38.7080	57.4473	10077.2452	13.2717	19.4525	518.0449	20419.2309	28.2738	8.7745	18.233
L18	38.0983	42.9903	6955.4339	12.7458	18.6365	373.2160	14093.5947	21.1585	8.6370	23.032
	38.3054	44.3792	7651.5443	13.1576	19.2323	397.8493	15504.1032	21.8421	8.9453	23.854
L19	38.3054	44.3792	7651.5443	13.1576	19.2323	397.8493	15504.1032	21.8421	8.9453	23.854
	38.5808	44.7004	7818.9090	13.2528	19.3701	403.6591	15843.2294	22.0002	9.0166	24.044
L20	38.5808	44.7004	7818.9090	13.2528	19.3701	403.6591	15843.2294	22.0002	9.0166	24.044
	38.6326	44.7608	7850.6385	13.2707	19.3960	404.7559	15907.522	22.0299	9.0300	24.08

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
							0			
L21	38.6326	44.7608	7850.6385	13.2707	19.3960	404.7559	15907.522	22.0299	9.0300	24.08
							0			
	39.6680	45.9685	8503.3848	13.6287	19.9141	427.0041	17230.162	22.6243	9.2980	24.795
							9			
L22	39.6680	45.9685	8503.3848	13.6287	19.9141	427.0041	17230.162	22.6243	9.2980	24.795
							9			
	40.6185	47.0771	9133.5853	13.9574	20.3897	447.9520	18507.120	23.1699	9.5441	25.451
							2			
L23	40.5039	87.1447	16626.530	13.8411	20.3897	815.4397	33689.858	42.8900	8.6731	12.39
			5				4			
	40.5557	87.2575	16691.130	13.8590	20.4156	817.5692	33820.755	42.9455	8.6865	12.409
			3				1			
L24	40.5557	87.2575	16691.130	13.8590	20.4156	817.5692	33820.755	42.9455	8.6865	12.409
			3				1			
	40.7441	87.6677	16927.686	13.9242	20.5098	825.3444	34300.081	43.1474	8.7353	12.479
			4				9			
L25	40.7838	73.7911	14330.803	13.9644	20.5098	698.7280	29038.092	36.3177	9.0368	15.382
			0				2			
	40.8356	73.8857	14385.990	13.9823	20.5357	700.5340	29149.917	36.3643	9.0502	15.405
			7				4			
L26	40.8400	72.3368	14093.428	13.9868	20.5357	686.2875	28557.107	35.6020	9.0837	15.798
			8				7			
	41.8754	74.1886	15203.718	14.3449	21.0538	722.1357	30806.856	36.5134	9.3517	16.264
			7				0			
L27	41.8754	74.1886	15203.718	14.3449	21.0538	722.1357	30806.856	36.5134	9.3517	16.264
			7				0			
	42.9108	76.0404	16370.841	14.7029	21.5719	758.8966	33171.763	37.4248	9.6198	16.73
			7				7			
L28	42.9152	74.4099	16029.581	14.7074	21.5719	743.0769	32480.277	36.6223	9.6533	17.161
			3				6			
	43.9507	76.2215	17229.038	15.0654	22.0900	779.9482	34910.703	37.5139	9.9213	17.638
			6				2			
L29	43.9507	76.2215	17229.038	15.0654	22.0900	779.9482	34910.703	37.5139	9.9213	17.638
			6				2			
	45.7461	79.3626	19448.109	15.6863	22.9883	845.9995	39407.143	39.0599	10.3861	18.464
			9				3			
L30	45.0137	59.2962	13409.052	15.0687	22.0299	608.6741	27170.374	29.1838	10.2252	23.372
			0				8			
	45.2208	61.1278	14690.445	15.5342	22.7034	647.0581	29766.826	30.0853	10.5737	24.168
			8				0			
L31	45.2208	61.1278	14690.445	15.5342	22.7034	647.0581	29766.826	30.0853	10.5737	24.168
			8				0			
	46.2563	62.5368	15729.861	15.8922	23.2215	677.3829	31872.964	30.7787	10.8417	24.781
			9				7			
L32	46.1681	97.7187	24303.083	15.8027	23.2215	1046.5759	49244.636	48.0942	10.1717	14.795
			9				8			
	46.2198	97.8294	24385.775	15.8206	23.2474	1048.9668	49412.192	48.1486	10.1851	14.815
			6				7			
L33	46.2198	97.8294	24385.775	15.8206	23.2474	1048.9668	49412.192	48.1486	10.1851	14.815
			6				7			
	47.2553	100.0435	26079.237	16.1787	23.7655	1097.3568	52843.606	49.2383	10.4532	15.205
			7				0			
L34	47.2597	98.2517	25626.322	16.1832	23.7655	1078.2992	51925.877	48.3565	10.4867	15.536
			6				2			
	48.2951	100.4255	27365.192	16.5412	24.2836	1126.9010	55449.299	49.4264	10.7547	15.933
			5				1			
L35	48.2951	100.4255	27365.192	16.5412	24.2836	1126.9010	55449.299	49.4264	10.7547	15.933
			5				1			
	49.3306	102.5993	29180.995	16.8993	24.8017	1176.5742	59128.608	50.4963	11.0227	16.33
			7				6			
L36	49.3350	100.7260	28663.365	16.9037	24.8017	1155.7034	58079.749	49.5743	11.0562	16.689
			4				3			
	50.3704	102.8596	30523.660	17.2618	25.3197	1205.5281	61849.210	50.6244	11.3243	17.093
			1				7			
L37	50.3704	102.8596	30523.660	17.2618	25.3197	1205.5281	61849.210	50.6244	11.3243	17.093
			1				7			
	51.4058	104.9932	32462.752	17.6199	25.8378	1256.4045	65778.338	51.6744	11.5923	17.498
			6				0			
L38	51.4058	104.9932	32462.752	17.6199	25.8378	1256.4045	65778.338	51.6744	11.5923	17.498

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
	51.6647	105.5265	32960.0296	17.7094	25.9673	1269.2879	66785.9557	51.9370	11.6593	17.599

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 150.00-145.00				1	1	1			
L2 145.00-140.00				1	1	1			
L3 140.00-135.00				1	1	1			
L4 135.00-130.00				1	1	1			
L5 130.00-125.00				1	1	1			
L6 125.00-120.00				1	1	1			
L7 120.00-115.00				1	1	1			
L8 115.00-108.00				1	1	1			
L9 108.00-106.75				1	1	1			
L10 106.75-101.75				1	1	1			
L11 101.75-96.75				1	1	1			
L12 96.75-91.75				1	1	1			
L13 91.75-89.50				1	1	1			
L14 89.50-89.25				1	1	0.966256			
L15 89.25-84.25				1	1	0.968189			
L16 84.25-79.25				1	1	0.970768			
L17 79.25-69.75				1	1	0.974419			
L18 69.75-68.75				1	1	1			
L19 68.75-67.42				1	1	1			
L20 67.42-67.17				1	1	1			
L21 67.17-62.17				1	1	1			
L22 62.17-57.58				1	1	1			
L23 57.58-57.33				1	1	1.02224			
L24 57.33-56.42				1	1	1.01996			
L25 56.42-56.17				1	1	0.967062			
L26 56.17-51.17				1	1	0.979393			
L27 51.17-46.17				1	1	0.971424			
L28 46.17-41.17				1	1	0.98496			
L29 41.17-32.50				1	1	0.980236			
L30 32.50-31.50				1	1	1			

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
L31 31.50-26.50				1	1	1			
L32 26.50-26.25				1	1	0.972651			
L33 26.25-21.25				1	1	0.965209			
L34 21.25-16.25				1	1	0.975567			
L35 16.25-11.25				1	1	0.96863			
L36 11.25-6.25				1	1	0.979877			
L37 6.25-1.25				1	1	0.973384			
L38 1.25-0.00				1	1	0.971802			

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
**										
Safety Line 3/8	C	No	Surface Ar (CaAa)	149.00 - 0.00	1	1	0.000 0.000	0.3750		0.22
**										
AVA5-50(7/8")	C	No	Surface Ar (CaAa)	88.00 - 0.00	2	2	-0.500 -0.470	1.1020		0.30
LDF4-50A(1/2")	C	No	Surface Ar (CaAa)	88.00 - 0.00	1	1	-0.460 -0.460	0.6300		0.15
AVA5-50(7/8")	C	No	Surface Ar (CaAa)	82.00 - 0.00	1	1	-0.450 -0.450	1.1020		0.30
**										
Flat Plate										
**										
6.5" x 1.25" Flat Plate	C	No	Surface Af (CaAa)	30.00 - 0.00	1	1	-0.250 -0.250	6.5000	15.5000	0.00
6.5" x 1.25" Flat Plate	B	No	Surface Af (CaAa)	30.00 - 0.00	1	1	0.000 0.000	6.5000	15.5000	0.00
6.5" x 1.25" Flat Plate	A	No	Surface Af (CaAa)	30.00 - 0.00	1	1	0.250 0.250	6.5000	15.5000	0.00
6.5" x 1.25" Flat Plate	A	No	Surface Af (CaAa)	30.00 - 0.00	1	1	-0.500 -0.500	6.5000	15.5000	0.00
**										
6" x 1" Flat Plate	C	No	Surface Af (CaAa)	38.00 - 30.08	1	1	-0.250 -0.250	6.0000	14.0000	20.42
6" x 1" Flat Plate	B	No	Surface Af (CaAa)	38.00 - 30.08	1	1	0.000 0.000	6.0000	14.0000	20.42
6" x 1" Flat Plate	A	No	Surface Af (CaAa)	38.00 - 30.08	1	1	0.250 0.250	6.0000	14.0000	20.42
6" x 1" Flat Plate	A	No	Surface Af (CaAa)	38.00 - 30.08	1	1	-0.500 -0.500	6.0000	14.0000	20.42
**										
6" x 1" Flat Plate	C	No	Surface Af (CaAa)	60.08 - 38.00	1	1	-0.250 -0.250	6.0000	14.0000	0.00
6" x 1" Flat Plate	B	No	Surface Af (CaAa)	60.08 - 38.00	1	1	0.000 0.000	6.0000	14.0000	0.00
6" x 1" Flat Plate	A	No	Surface Af (CaAa)	60.08 - 38.00	1	1	0.250 0.250	6.0000	14.0000	0.00
6" x 1" Flat Plate	A	No	Surface Af (CaAa)	60.08 - 38.00	1	1	-0.500 -0.500	6.0000	14.0000	0.00
**										
6.5" x 1.25" Flat Plate	C	No	Surface Af (CaAa)	32.83 - 26.25	1	1	-0.250 -0.250	6.5000	15.5000	0.00

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
6.5" x 1.25" Flat Plate **	B	No	Surface Af (CaAa)	32.83 - 26.25	1	1	0.000 0.000	6.5000	15.5000	0.00
6.5" x 1.25" Flat Plate	A	No	Surface Af (CaAa)	32.83 - 26.25	1	1	0.250 0.250	6.5000	15.5000	0.00
6.5" x 1.25" Flat Plate **	A	No	Surface Af (CaAa)	32.83 - 26.25	1	1	-0.500 -0.500	6.5000	15.5000	0.00
6" x 1" Flat Plate	C	No	Surface Af (CaAa)	92.00 - 72.00	1	1	-0.500 -0.500	6.0000	14.0000	0.00
6" x 1" Flat Plate	B	No	Surface Af (CaAa)	92.00 - 72.00	1	1	-0.500 -0.500	6.0000	14.0000	0.00
6" x 1" Flat Plate **	A	No	Surface Af (CaAa)	92.00 - 72.00	1	1	-0.500 -0.500	6.0000	14.0000	0.00
6" x 1" Flat Plate	C	No	Surface Af (CaAa)	57.58 - 54.42	1	1	-0.500 -0.500	6.0000	14.0000	0.00
6" x 1" Flat Plate	B	No	Surface Af (CaAa)	57.58 - 54.42	1	1	-0.500 -0.500	6.0000	14.0000	0.00
6" x 1" Flat Plate	A	No	Surface Af (CaAa)	57.58 - 54.42	1	1	-0.250 -0.250	6.0000	14.0000	0.00
6" x 1" Flat Plate	C	No	Surface Af (CaAa)	69.42 - 57.58	1	1	-0.500 -0.500	6.0000	14.0000	20.42
6" x 1" Flat Plate	B	No	Surface Af (CaAa)	69.42 - 57.58	1	1	-0.500 -0.500	6.0000	14.0000	20.42
6" x 1" Flat Plate **	A	No	Surface Af (CaAa)	69.42 - 57.58	1	1	-0.250 -0.250	6.0000	14.0000	20.42
CU12PSM9P6XXX(1-1/2) *	B	No	Surface Ar (CaAa)	121.00 - 0.00	1	1	0.300 0.400	1.6000		2.35

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
HB114-08U3M12-XXXF(7/8) **	B	No	No	Inside Pole	150.00 - 0.00	1	No Ice	0.00	0.68
							1/2" Ice	0.00	0.68
							1" Ice	0.00	0.68
							2" Ice	0.00	0.68
HB114-1-0813U4-M5F(1-1/4)	B	No	No	Inside Pole	150.00 - 0.00	1	No Ice	0.00	1.20
							1/2" Ice	0.00	1.20
							1" Ice	0.00	1.20
							2" Ice	0.00	1.20
HB114-1-08U4-M5F(1-1/4)	B	No	No	Inside Pole	150.00 - 0.00	2	No Ice	0.00	1.30
							1/2" Ice	0.00	1.30
							1" Ice	0.00	1.30
							2" Ice	0.00	1.30
HB158-1-08U8-S8J18(1-5/8) **	A	No	No	Inside Pole	141.00 - 0.00	1	No Ice	0.00	1.30
							1/2" Ice	0.00	1.30
							1" Ice	0.00	1.30
							2" Ice	0.00	1.30
LDF4-50A(1/2)	A	No	No	Inside Pole	141.00 - 0.00	1	No Ice	0.00	0.15
							1/2" Ice	0.00	0.15
							1" Ice	0.00	0.15
							2" Ice	0.00	0.15
LDF7-50A(1-5/8)	A	No	No	Inside Pole	141.00 - 0.00	12	No Ice	0.00	0.82
							1/2" Ice	0.00	0.82
							1" Ice	0.00	0.82
							2" Ice	0.00	0.82
FB-L98B-002- **	C	No	No	Inside Pole	132.00 - 0.00	1	No Ice	0.00	0.06

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
50000(3/8)							1/2" Ice	0.00	0.06
							1" Ice	0.00	0.06
							2" Ice	0.00	0.06
WR-VG86ST-BRD(3/4)	C	No	No	Inside Pole	132.00 - 0.00	2	No Ice	0.00	0.58
							1/2" Ice	0.00	0.58
							1" Ice	0.00	0.58
							2" Ice	0.00	0.58
FXL 1873 PE(1-5/8)	C	No	No	Inside Pole	132.00 - 0.00	12	No Ice	0.00	0.67
							1/2" Ice	0.00	0.67
							1" Ice	0.00	0.67
							2" Ice	0.00	0.67
2" Conduit	C	No	No	Inside Pole	132.00 - 0.00	1	No Ice	0.00	1.15
							1/2" Ice	0.00	1.15
							1" Ice	0.00	1.15
							2" Ice	0.00	1.15
**									
LDF7-50A(1-5/8)	A	No	No	Inside Pole	111.00 - 0.00	12	No Ice	0.00	0.82
							1/2" Ice	0.00	0.82
							1" Ice	0.00	0.82
							2" Ice	0.00	0.82
HB114-U6S12-xxx-LI(1-1/4")	A	No	No	Inside Pole	111.00 - 0.00	1	No Ice	0.00	1.70
							1/2" Ice	0.00	1.70
							1" Ice	0.00	1.70
							2" Ice	0.00	1.70
**									
LDF4-50A(1/2)	B	No	No	Inside Pole	104.00 - 0.00	1	No Ice	0.00	0.15
							1/2" Ice	0.00	0.15
							1" Ice	0.00	0.15
							2" Ice	0.00	0.15
**									
Flat Plate									
*									

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 K
L1	150.00-145.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.02
		C	0.000	0.000	0.150	0.000	0.00
L2	145.00-140.00	A	0.000	0.000	0.000	0.000	0.01
		B	0.000	0.000	0.000	0.000	0.02
		C	0.000	0.000	0.188	0.000	0.00
L3	140.00-135.00	A	0.000	0.000	0.000	0.000	0.06
		B	0.000	0.000	0.000	0.000	0.02
		C	0.000	0.000	0.188	0.000	0.00
L4	135.00-130.00	A	0.000	0.000	0.000	0.000	0.06
		B	0.000	0.000	0.000	0.000	0.02
		C	0.000	0.000	0.188	0.000	0.02
L5	130.00-125.00	A	0.000	0.000	0.000	0.000	0.06
		B	0.000	0.000	0.000	0.000	0.02
		C	0.000	0.000	0.188	0.000	0.05
L6	125.00-120.00	A	0.000	0.000	0.000	0.000	0.06
		B	0.000	0.000	0.160	0.000	0.02
		C	0.000	0.000	0.188	0.000	0.05
L7	120.00-115.00	A	0.000	0.000	0.000	0.000	0.06
		B	0.000	0.000	0.800	0.000	0.03
		C	0.000	0.000	0.188	0.000	0.05
L8	115.00-108.00	A	0.000	0.000	0.000	0.000	0.11
		B	0.000	0.000	1.120	0.000	0.05
		C	0.000	0.000	0.263	0.000	0.07

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 K
L9	108.00-106.75	A	0.000	0.000	0.000	0.000	0.03
		B	0.000	0.000	0.200	0.000	0.01
		C	0.000	0.000	0.047	0.000	0.01
L10	106.75-101.75	A	0.000	0.000	0.000	0.000	0.11
		B	0.000	0.000	0.800	0.000	0.03
		C	0.000	0.000	0.188	0.000	0.05
L11	101.75-96.75	A	0.000	0.000	0.000	0.000	0.11
		B	0.000	0.000	0.800	0.000	0.03
		C	0.000	0.000	0.188	0.000	0.05
L12	96.75-91.75	A	0.000	0.000	0.250	0.000	0.11
		B	0.000	0.000	1.050	0.000	0.03
		C	0.000	0.000	0.438	0.000	0.05
L13	91.75-89.50	A	0.000	0.000	2.250	0.000	0.05
		B	0.000	0.000	2.610	0.000	0.02
		C	0.000	0.000	2.334	0.000	0.02
L14	89.50-89.25	A	0.000	0.000	0.250	0.000	0.01
		B	0.000	0.000	0.290	0.000	0.00
		C	0.000	0.000	0.259	0.000	0.00
L15	89.25-84.25	A	0.000	0.000	5.000	0.000	0.11
		B	0.000	0.000	5.800	0.000	0.03
		C	0.000	0.000	6.250	0.000	0.06
L16	84.25-79.25	A	0.000	0.000	5.000	0.000	0.11
		B	0.000	0.000	5.800	0.000	0.03
		C	0.000	0.000	6.908	0.000	0.06
L17	79.25-69.75	A	0.000	0.000	7.250	0.000	0.22
		B	0.000	0.000	8.770	0.000	0.07
		C	0.000	0.000	11.345	0.000	0.11
L18	69.75-68.75	A	0.000	0.000	0.652	0.000	0.04
		B	0.000	0.000	0.812	0.000	0.02
		C	0.000	0.000	1.083	0.000	0.03
L19	68.75-67.42	A	0.000	0.000	1.294	0.000	0.06
		B	0.000	0.000	1.506	0.000	0.04
		C	0.000	0.000	1.867	0.000	0.04
L20	67.42-67.17	A	0.000	0.000	0.243	0.000	0.01
		B	0.000	0.000	0.283	0.000	0.01
		C	0.000	0.000	0.351	0.000	0.01
L21	67.17-62.17	A	0.000	0.000	4.863	0.000	0.22
		B	0.000	0.000	5.663	0.000	0.14
		C	0.000	0.000	7.019	0.000	0.16
L22	62.17-57.58	A	0.000	0.000	9.464	0.000	0.20
		B	0.000	0.000	7.699	0.000	0.13
		C	0.000	0.000	8.943	0.000	0.15
L23	57.58-57.33	A	0.000	0.000	0.671	0.000	0.01
		B	0.000	0.000	0.461	0.000	0.00
		C	0.000	0.000	0.529	0.000	0.00
L24	57.33-56.42	A	0.000	0.000	2.442	0.000	0.02
		B	0.000	0.000	1.677	0.000	0.01
		C	0.000	0.000	1.924	0.000	0.01
L25	56.42-56.17	A	0.000	0.000	0.671	0.000	0.01
		B	0.000	0.000	0.461	0.000	0.00
		C	0.000	0.000	0.529	0.000	0.00
L26	56.17-51.17	A	0.000	0.000	11.195	0.000	0.11
		B	0.000	0.000	6.995	0.000	0.03
		C	0.000	0.000	8.351	0.000	0.06
L27	51.17-46.17	A	0.000	0.000	10.000	0.000	0.11
		B	0.000	0.000	5.800	0.000	0.03
		C	0.000	0.000	7.156	0.000	0.06
L28	46.17-41.17	A	0.000	0.000	10.000	0.000	0.11
		B	0.000	0.000	5.800	0.000	0.03
		C	0.000	0.000	7.156	0.000	0.06
L29	41.17-32.50	A	0.000	0.000	16.180	0.000	0.42
		B	0.000	0.000	9.477	0.000	0.17
		C	0.000	0.000	11.828	0.000	0.21
L30	32.50-31.50	A	0.000	0.000	3.382	0.000	0.06
		B	0.000	0.000	1.851	0.000	0.03
		C	0.000	0.000	2.122	0.000	0.03
L31	31.50-26.50	A	0.000	0.000	18.453	0.000	0.17
		B	0.000	0.000	10.026	0.000	0.06
		C	0.000	0.000	11.382	0.000	0.09

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 K
L32	26.50-26.25	A	0.000	0.000	0.965	0.000	0.01
		B	0.000	0.000	0.523	0.000	0.00
		C	0.000	0.000	0.590	0.000	0.00
L33	26.25-21.25	A	0.000	0.000	10.833	0.000	0.11
		B	0.000	0.000	6.217	0.000	0.03
		C	0.000	0.000	7.572	0.000	0.06
L34	21.25-16.25	A	0.000	0.000	10.833	0.000	0.11
		B	0.000	0.000	6.217	0.000	0.03
		C	0.000	0.000	7.572	0.000	0.06
L35	16.25-11.25	A	0.000	0.000	10.833	0.000	0.11
		B	0.000	0.000	6.217	0.000	0.03
		C	0.000	0.000	7.572	0.000	0.06
L36	11.25-6.25	A	0.000	0.000	10.833	0.000	0.11
		B	0.000	0.000	6.217	0.000	0.03
		C	0.000	0.000	7.572	0.000	0.06
L37	6.25-1.25	A	0.000	0.000	10.833	0.000	0.11
		B	0.000	0.000	6.217	0.000	0.03
		C	0.000	0.000	7.572	0.000	0.06
L38	1.25-0.00	A	0.000	0.000	2.708	0.000	0.03
		B	0.000	0.000	1.554	0.000	0.01
		C	0.000	0.000	1.893	0.000	0.01

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 K
L1	150.00-145.00	A	1.481	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.02
		C		0.000	0.000	1.335	0.000	0.01
L2	145.00-140.00	A	1.476	0.000	0.000	0.000	0.000	0.01
		B		0.000	0.000	0.000	0.000	0.02
		C		0.000	0.000	1.663	0.000	0.02
L3	140.00-135.00	A	1.471	0.000	0.000	0.000	0.000	0.06
		B		0.000	0.000	0.000	0.000	0.02
		C		0.000	0.000	1.658	0.000	0.02
L4	135.00-130.00	A	1.465	0.000	0.000	0.000	0.000	0.06
		B		0.000	0.000	0.000	0.000	0.02
		C		0.000	0.000	1.653	0.000	0.04
L5	130.00-125.00	A	1.460	0.000	0.000	0.000	0.000	0.06
		B		0.000	0.000	0.000	0.000	0.02
		C		0.000	0.000	1.647	0.000	0.07
L6	125.00-120.00	A	1.454	0.000	0.000	0.000	0.000	0.06
		B		0.000	0.000	0.451	0.000	0.03
		C		0.000	0.000	1.641	0.000	0.07
L7	120.00-115.00	A	1.448	0.000	0.000	0.000	0.000	0.06
		B		0.000	0.000	2.248	0.000	0.06
		C		0.000	0.000	1.635	0.000	0.07
L8	115.00-108.00	A	1.440	0.000	0.000	0.000	0.000	0.11
		B		0.000	0.000	3.136	0.000	0.09
		C		0.000	0.000	2.279	0.000	0.10
L9	108.00-106.75	A	1.435	0.000	0.000	0.000	0.000	0.03
		B		0.000	0.000	0.560	0.000	0.02
		C		0.000	0.000	0.407	0.000	0.02
L10	106.75-101.75	A	1.430	0.000	0.000	0.000	0.000	0.11
		B		0.000	0.000	2.230	0.000	0.06
		C		0.000	0.000	1.618	0.000	0.07
L11	101.75-96.75	A	1.423	0.000	0.000	0.000	0.000	0.11
		B		0.000	0.000	2.223	0.000	0.06
		C		0.000	0.000	1.611	0.000	0.07
L12	96.75-91.75	A	1.416	0.000	0.000	0.321	0.000	0.12
		B		0.000	0.000	2.537	0.000	0.06
		C		0.000	0.000	1.924	0.000	0.07
L13	91.75-89.50	A	1.411	0.000	0.000	2.885	0.000	0.08
		B		0.000	0.000	3.879	0.000	0.05
		C		0.000	0.000	3.604	0.000	0.05

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 K
L14	89.50-89.25	A	1.409	0.000	0.000	0.320	0.000	0.01
		B		0.000	0.000	0.431	0.000	0.01
		C		0.000	0.000	0.400	0.000	0.01
L15	89.25-84.25	A	1.404	0.000	0.000	6.404	0.000	0.17
		B		0.000	0.000	8.609	0.000	0.11
		C		0.000	0.000	11.635	0.000	0.16
L16	84.25-79.25	A	1.396	0.000	0.000	6.396	0.000	0.17
		B		0.000	0.000	8.592	0.000	0.11
		C		0.000	0.000	13.884	0.000	0.18
L17	79.25-69.75	A	1.383	0.000	0.000	9.255	0.000	0.29
		B		0.000	0.000	13.403	0.000	0.19
		C		0.000	0.000	25.043	0.000	0.34
L18	69.75-68.75	A	1.373	0.000	0.000	0.750	0.000	0.04
		B		0.000	0.000	1.186	0.000	0.03
		C		0.000	0.000	2.412	0.000	0.05
L19	68.75-67.42	A	1.371	0.000	0.000	1.486	0.000	0.07
		B		0.000	0.000	2.063	0.000	0.06
		C		0.000	0.000	3.682	0.000	0.08
L20	67.42-67.17	A	1.369	0.000	0.000	0.279	0.000	0.01
		B		0.000	0.000	0.388	0.000	0.01
		C		0.000	0.000	0.692	0.000	0.01
L21	67.17-62.17	A	1.364	0.000	0.000	5.582	0.000	0.27
		B		0.000	0.000	7.746	0.000	0.21
		C		0.000	0.000	13.809	0.000	0.29
L22	62.17-57.58	A	1.353	0.000	0.000	11.472	0.000	0.30
		B		0.000	0.000	10.273	0.000	0.22
		C		0.000	0.000	15.807	0.000	0.29
L23	57.58-57.33	A	1.348	0.000	0.000	0.841	0.000	0.01
		B		0.000	0.000	0.631	0.000	0.01
		C		0.000	0.000	0.931	0.000	0.01
L24	57.33-56.42	A	1.346	0.000	0.000	3.060	0.000	0.05
		B		0.000	0.000	2.296	0.000	0.03
		C		0.000	0.000	3.389	0.000	0.04
L25	56.42-56.17	A	1.345	0.000	0.000	0.840	0.000	0.01
		B		0.000	0.000	0.630	0.000	0.01
		C		0.000	0.000	0.931	0.000	0.01
L26	56.17-51.17	A	1.339	0.000	0.000	14.118	0.000	0.23
		B		0.000	0.000	9.918	0.000	0.13
		C		0.000	0.000	15.899	0.000	0.20
L27	51.17-46.17	A	1.325	0.000	0.000	12.651	0.000	0.21
		B		0.000	0.000	8.451	0.000	0.11
		C		0.000	0.000	14.390	0.000	0.18
L28	46.17-41.17	A	1.311	0.000	0.000	12.622	0.000	0.21
		B		0.000	0.000	8.422	0.000	0.11
		C		0.000	0.000	14.315	0.000	0.18
L29	41.17-32.50	A	1.289	0.000	0.000	19.431	0.000	0.59
		B		0.000	0.000	13.338	0.000	0.30
		C		0.000	0.000	23.430	0.000	0.42
L30	32.50-31.50	A	1.271	0.000	0.000	3.942	0.000	0.10
		B		0.000	0.000	2.389	0.000	0.05
		C		0.000	0.000	3.553	0.000	0.07
L31	31.50-26.50	A	1.259	0.000	0.000	21.968	0.000	0.37
		B		0.000	0.000	13.042	0.000	0.18
		C		0.000	0.000	18.764	0.000	0.25
L32	26.50-26.25	A	1.247	0.000	0.000	1.158	0.000	0.02
		B		0.000	0.000	0.681	0.000	0.01
		C		0.000	0.000	0.965	0.000	0.01
L33	26.25-21.25	A	1.234	0.000	0.000	13.301	0.000	0.21
		B		0.000	0.000	8.684	0.000	0.10
		C		0.000	0.000	14.325	0.000	0.17
L34	21.25-16.25	A	1.205	0.000	0.000	13.243	0.000	0.21
		B		0.000	0.000	8.626	0.000	0.10
		C		0.000	0.000	14.173	0.000	0.17
L35	16.25-11.25	A	1.168	0.000	0.000	13.169	0.000	0.20
		B		0.000	0.000	8.553	0.000	0.10
		C		0.000	0.000	13.980	0.000	0.17
L36	11.25-6.25	A	1.116	0.000	0.000	13.066	0.000	0.20
		B		0.000	0.000	8.449	0.000	0.10
		C		0.000	0.000	13.709	0.000	0.16

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 K
L37	6.25-1.25	A	1.026	0.000	0.000	12.884	0.000	0.19
		B		0.000	0.000	8.268	0.000	0.09
		C		0.000	0.000	13.232	0.000	0.15
L38	1.25-0.00	A	0.857	0.000	0.000	3.137	0.000	0.04
		B		0.000	0.000	1.983	0.000	0.02
		C		0.000	0.000	3.087	0.000	0.03

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	150.00-145.00	0.0000	0.1846	0.0000	1.0634
L2	145.00-140.00	0.0000	0.2288	0.0000	1.3012
L3	140.00-135.00	0.0000	0.2288	0.0000	1.3080
L4	135.00-130.00	0.0000	0.2288	0.0000	1.3139
L5	130.00-125.00	0.0000	0.2288	0.0000	1.3189
L6	125.00-120.00	0.1993	0.2680	0.3666	1.3676
L7	120.00-115.00	0.9323	0.4125	1.6512	1.5290
L8	115.00-108.00	0.9332	0.4132	1.6616	1.5391
L9	108.00-106.75	0.9340	0.4137	1.6666	1.5442
L10	106.75-101.75	0.9344	0.4140	1.6681	1.5447
L11	101.75-96.75	0.9350	0.4145	1.6750	1.5510
L12	96.75-91.75	0.8890	0.3944	1.6109	1.4915
L13	91.75-89.50	0.4105	0.1821	0.9043	0.8372
L14	89.50-89.25	0.4123	0.1830	0.9083	0.8408
L15	89.25-84.25	0.8575	0.4681	1.9404	1.4796
L16	84.25-79.25	1.1271	0.6513	2.5252	1.8725
L17	79.25-69.75	1.5620	0.9219	3.0567	2.2618
L18	69.75-68.75	0.2816	-0.9247	2.3162	1.0794
L19	68.75-67.42	-0.3402	-1.5922	1.6212	0.3531
L20	67.42-67.17	-0.3411	-1.5957	1.6235	0.3524
L21	67.17-62.17	-0.3441	-1.6074	1.6308	0.3501
L22	62.17-57.58	1.2546	-0.7180	2.7128	0.6522
L23	57.58-57.33	2.5939	0.1104	3.7456	1.2114
L24	57.33-56.42	2.5988	0.1106	3.7528	1.2132
L25	56.42-56.17	2.6028	0.1108	3.7589	1.2146
L26	56.17-51.17	3.6119	0.9535	4.8159	2.1135
L27	51.17-46.17	4.3283	1.5333	5.5645	2.7274
L28	46.17-41.17	4.3845	1.5531	5.6426	2.7609
L29	41.17-32.50	4.3631	1.5648	5.6575	2.8377
L30	32.50-31.50	5.0267	1.6347	5.9467	2.5990
L31	31.50-26.50	5.1851	1.6653	6.0705	2.5706
L32	26.50-26.25	5.2842	1.6868	6.1566	2.5691
L33	26.25-21.25	4.6560	1.6258	5.8935	2.8122
L34	21.25-16.25	4.7103	1.6447	5.9534	2.8302
L35	16.25-11.25	4.7637	1.6633	6.0043	2.8405
L36	11.25-6.25	4.8159	1.6814	6.0393	2.8369
L37	6.25-1.25	4.8672	1.6992	6.0353	2.7980
L38	1.25-0.00	4.8988	1.7102	5.9224	2.6724

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

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L1	2	Safety Line 3/8	145.00 - 149.00	1.0000	1.0000
L2	2	Safety Line 3/8	140.00 - 145.00	1.0000	1.0000
L3	2	Safety Line 3/8	135.00 - 140.00	1.0000	1.0000
L4	2	Safety Line 3/8	130.00 - 135.00	1.0000	1.0000
L5	2	Safety Line 3/8	125.00 - 130.00	1.0000	1.0000
L6	2	Safety Line 3/8	120.00 - 125.00	1.0000	1.0000
L6	60	CU12PSM9P6XXX(1-1/2)	120.00 - 121.00	1.0000	1.0000
L7	2	Safety Line 3/8	115.00 - 120.00	1.0000	1.0000
L7	60	CU12PSM9P6XXX(1-1/2)	115.00 - 120.00	1.0000	1.0000
L8	2	Safety Line 3/8	108.00 - 115.00	1.0000	1.0000
L8	60	CU12PSM9P6XXX(1-1/2)	108.00 - 115.00	1.0000	1.0000
L9	2	Safety Line 3/8	106.75 - 108.00	1.0000	1.0000
L9	60	CU12PSM9P6XXX(1-1/2)	106.75 - 108.00	1.0000	1.0000
L10	2	Safety Line 3/8	101.75 - 106.75	1.0000	1.0000
L10	60	CU12PSM9P6XXX(1-1/2)	101.75 - 106.75	1.0000	1.0000
L11	2	Safety Line 3/8	96.75 - 101.75	1.0000	1.0000
L11	60	CU12PSM9P6XXX(1-1/2)	96.75 - 101.75	1.0000	1.0000
L12	2	Safety Line 3/8	91.75 - 96.75	1.0000	1.0000
L12	49	6" x 1" Flat Plate	91.75 - 92.00	1.0000	1.0000
L12	50	6" x 1" Flat Plate	91.75 - 92.00	1.0000	1.0000
L12	51	6" x 1" Flat Plate	91.75 - 92.00	1.0000	1.0000
L12	60	CU12PSM9P6XXX(1-1/2)	91.75 - 96.75	1.0000	1.0000
L13	2	Safety Line 3/8	89.50 - 91.75	1.0000	1.0000
L13	49	6" x 1" Flat Plate	89.50 - 91.75	1.0000	1.0000
L13	50	6" x 1" Flat Plate	89.50 - 91.75	1.0000	1.0000
L13	51	6" x 1" Flat Plate	89.50 - 91.75	1.0000	1.0000
L13	60	CU12PSM9P6XXX(1-1/2)	89.50 - 91.75	1.0000	1.0000
L14	2	Safety Line 3/8	89.25 - 89.50	1.0000	1.0000
L14	49	6" x 1" Flat Plate	89.25 - 89.50	1.0000	1.0000
L14	50	6" x 1" Flat Plate	89.25 - 89.50	1.0000	1.0000
L14	51	6" x 1" Flat Plate	89.25 - 89.50	1.0000	1.0000
L14	60	CU12PSM9P6XXX(1-1/2)	89.25 - 89.50	1.0000	1.0000
L15	2	Safety Line 3/8	84.25 - 89.25	1.0000	1.0000
L15	23	AVA5-50(7/8")	84.25 - 88.00	1.0000	1.0000
L15	24	LDF4-50A(1/2")	84.25 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
			88.00		
L15	49	6" x 1" Flat Plate	84.25 - 89.25	1.0000	1.0000
L15	50	6" x 1" Flat Plate	84.25 - 89.25	1.0000	1.0000
L15	51	6" x 1" Flat Plate	84.25 - 89.25	1.0000	1.0000
L15	60	CU12PSM9P6XXX(1-1/2)	84.25 - 89.25	1.0000	1.0000
L16	2	Safety Line 3/8	79.25 - 84.25	1.0000	1.0000
L16	23	AVA5-50(7/8")	79.25 - 84.25	1.0000	1.0000
L16	24	LDF4-50A(1/2")	79.25 - 84.25	1.0000	1.0000
L16	25	AVA5-50(7/8")	79.25 - 82.00	1.0000	1.0000
L16	49	6" x 1" Flat Plate	79.25 - 84.25	1.0000	1.0000
L16	50	6" x 1" Flat Plate	79.25 - 84.25	1.0000	1.0000
L16	51	6" x 1" Flat Plate	79.25 - 84.25	1.0000	1.0000
L16	60	CU12PSM9P6XXX(1-1/2)	79.25 - 84.25	1.0000	1.0000
L17	2	Safety Line 3/8	69.75 - 79.25	1.0000	1.0000
L17	23	AVA5-50(7/8")	69.75 - 79.25	1.0000	1.0000
L17	24	LDF4-50A(1/2")	69.75 - 79.25	1.0000	1.0000
L17	25	AVA5-50(7/8")	69.75 - 79.25	1.0000	1.0000
L17	49	6" x 1" Flat Plate	72.00 - 79.25	1.0000	1.0000
L17	50	6" x 1" Flat Plate	72.00 - 79.25	1.0000	1.0000
L17	51	6" x 1" Flat Plate	72.00 - 79.25	1.0000	1.0000
L17	60	CU12PSM9P6XXX(1-1/2)	69.75 - 79.25	1.0000	1.0000
L18	2	Safety Line 3/8	68.75 - 69.75	1.0000	1.0000
L18	23	AVA5-50(7/8")	68.75 - 69.75	1.0000	1.0000
L18	24	LDF4-50A(1/2")	68.75 - 69.75	1.0000	1.0000
L18	25	AVA5-50(7/8")	68.75 - 69.75	1.0000	1.0000
L18	56	6" x 1" Flat Plate	68.75 - 69.42	1.0000	1.0000
L18	57	6" x 1" Flat Plate	68.75 - 69.42	1.0000	1.0000
L18	58	6" x 1" Flat Plate	68.75 - 69.42	1.0000	1.0000
L18	60	CU12PSM9P6XXX(1-1/2)	68.75 - 69.75	1.0000	1.0000
L19	2	Safety Line 3/8	67.42 - 68.75	1.0000	1.0000
L19	23	AVA5-50(7/8")	67.42 - 68.75	1.0000	1.0000
L19	24	LDF4-50A(1/2")	67.42 - 68.75	1.0000	1.0000
L19	25	AVA5-50(7/8")	67.42 - 68.75	1.0000	1.0000
L19	56	6" x 1" Flat Plate	67.42 - 68.75	1.0000	1.0000
L19	57	6" x 1" Flat Plate	67.42 - 68.75	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L19	58	6" x 1" Flat Plate	67.42 - 68.75	1.0000	1.0000
L19	60	CU12PSM9P6XXX(1-1/2)	67.42 - 68.75	1.0000	1.0000
L20	2	Safety Line 3/8	67.17 - 67.42	1.0000	1.0000
L20	23	AVA5-50(7/8")	67.17 - 67.42	1.0000	1.0000
L20	24	LDF4-50A(1/2")	67.17 - 67.42	1.0000	1.0000
L20	25	AVA5-50(7/8")	67.17 - 67.42	1.0000	1.0000
L20	56	6" x 1" Flat Plate	67.17 - 67.42	1.0000	1.0000
L20	57	6" x 1" Flat Plate	67.17 - 67.42	1.0000	1.0000
L20	58	6" x 1" Flat Plate	67.17 - 67.42	1.0000	1.0000
L20	60	CU12PSM9P6XXX(1-1/2)	67.17 - 67.42	1.0000	1.0000
L21	2	Safety Line 3/8	62.17 - 67.17	1.0000	1.0000
L21	23	AVA5-50(7/8")	62.17 - 67.17	1.0000	1.0000
L21	24	LDF4-50A(1/2")	62.17 - 67.17	1.0000	1.0000
L21	25	AVA5-50(7/8")	62.17 - 67.17	1.0000	1.0000
L21	56	6" x 1" Flat Plate	62.17 - 67.17	1.0000	1.0000
L21	57	6" x 1" Flat Plate	62.17 - 67.17	1.0000	1.0000
L21	58	6" x 1" Flat Plate	62.17 - 67.17	1.0000	1.0000
L21	60	CU12PSM9P6XXX(1-1/2)	62.17 - 67.17	1.0000	1.0000
L22	2	Safety Line 3/8	57.58 - 62.17	1.0000	1.0000
L22	23	AVA5-50(7/8")	57.58 - 62.17	1.0000	1.0000
L22	24	LDF4-50A(1/2")	57.58 - 62.17	1.0000	1.0000
L22	25	AVA5-50(7/8")	57.58 - 62.17	1.0000	1.0000
L22	39	6" x 1" Flat Plate	57.58 - 60.08	1.0000	1.0000
L22	40	6" x 1" Flat Plate	57.58 - 60.08	1.0000	1.0000
L22	41	6" x 1" Flat Plate	57.58 - 60.08	1.0000	1.0000
L22	42	6" x 1" Flat Plate	57.58 - 60.08	1.0000	1.0000
L22	56	6" x 1" Flat Plate	57.58 - 62.17	1.0000	1.0000
L22	57	6" x 1" Flat Plate	57.58 - 62.17	1.0000	1.0000
L22	58	6" x 1" Flat Plate	57.58 - 62.17	1.0000	1.0000
L22	60	CU12PSM9P6XXX(1-1/2)	57.58 - 62.17	1.0000	1.0000
L23	2	Safety Line 3/8	57.33 - 57.58	1.0000	1.0000
L23	23	AVA5-50(7/8")	57.33 - 57.58	1.0000	1.0000
L23	24	LDF4-50A(1/2")	57.33 - 57.58	1.0000	1.0000
L23	25	AVA5-50(7/8")	57.33 - 57.58	1.0000	1.0000
L23	39	6" x 1" Flat Plate	57.33 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
			57.58		
L23	40	6" x 1" Flat Plate	57.33 - 57.58	1.0000	1.0000
L23	41	6" x 1" Flat Plate	57.33 - 57.58	1.0000	1.0000
L23	42	6" x 1" Flat Plate	57.33 - 57.58	1.0000	1.0000
L23	53	6" x 1" Flat Plate	57.33 - 57.58	1.0000	1.0000
L23	54	6" x 1" Flat Plate	57.33 - 57.58	1.0000	1.0000
L23	55	6" x 1" Flat Plate	57.33 - 57.58	1.0000	1.0000
L23	60	CU12PSM9P6XXX(1-1/2)	57.33 - 57.58	1.0000	1.0000
L24	2	Safety Line 3/8	56.42 - 57.33	1.0000	1.0000
L24	23	AVA5-50(7/8")	56.42 - 57.33	1.0000	1.0000
L24	24	LDF4-50A(1/2")	56.42 - 57.33	1.0000	1.0000
L24	25	AVA5-50(7/8")	56.42 - 57.33	1.0000	1.0000
L24	39	6" x 1" Flat Plate	56.42 - 57.33	1.0000	1.0000
L24	40	6" x 1" Flat Plate	56.42 - 57.33	1.0000	1.0000
L24	41	6" x 1" Flat Plate	56.42 - 57.33	1.0000	1.0000
L24	42	6" x 1" Flat Plate	56.42 - 57.33	1.0000	1.0000
L24	53	6" x 1" Flat Plate	56.42 - 57.33	1.0000	1.0000
L24	54	6" x 1" Flat Plate	56.42 - 57.33	1.0000	1.0000
L24	55	6" x 1" Flat Plate	56.42 - 57.33	1.0000	1.0000
L24	60	CU12PSM9P6XXX(1-1/2)	56.42 - 57.33	1.0000	1.0000
L25	2	Safety Line 3/8	56.17 - 56.42	1.0000	1.0000
L25	23	AVA5-50(7/8")	56.17 - 56.42	1.0000	1.0000
L25	24	LDF4-50A(1/2")	56.17 - 56.42	1.0000	1.0000
L25	25	AVA5-50(7/8")	56.17 - 56.42	1.0000	1.0000
L25	39	6" x 1" Flat Plate	56.17 - 56.42	1.0000	1.0000
L25	40	6" x 1" Flat Plate	56.17 - 56.42	1.0000	1.0000
L25	41	6" x 1" Flat Plate	56.17 - 56.42	1.0000	1.0000
L25	42	6" x 1" Flat Plate	56.17 - 56.42	1.0000	1.0000
L25	53	6" x 1" Flat Plate	56.17 - 56.42	1.0000	1.0000
L25	54	6" x 1" Flat Plate	56.17 - 56.42	1.0000	1.0000
L25	55	6" x 1" Flat Plate	56.17 - 56.42	1.0000	1.0000
L25	60	CU12PSM9P6XXX(1-1/2)	56.17 - 56.42	1.0000	1.0000
L26	2	Safety Line 3/8	51.17 - 56.17	1.0000	1.0000
L26	23	AVA5-50(7/8")	51.17 - 56.17	1.0000	1.0000
L26	24	LDF4-50A(1/2")	51.17 - 56.17	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L26	25	AVA5-50(7/8")	51.17 - 56.17	1.0000	1.0000
L26	39	6" x 1" Flat Plate	51.17 - 56.17	1.0000	1.0000
L26	40	6" x 1" Flat Plate	51.17 - 56.17	1.0000	1.0000
L26	41	6" x 1" Flat Plate	51.17 - 56.17	1.0000	1.0000
L26	42	6" x 1" Flat Plate	51.17 - 56.17	1.0000	1.0000
L26	53	6" x 1" Flat Plate	54.42 - 56.17	1.0000	1.0000
L26	54	6" x 1" Flat Plate	54.42 - 56.17	1.0000	1.0000
L26	55	6" x 1" Flat Plate	54.42 - 56.17	1.0000	1.0000
L26	60	CU12PSM9P6XXX(1-1/2)	51.17 - 56.17	1.0000	1.0000
L27	2	Safety Line 3/8	46.17 - 51.17	1.0000	1.0000
L27	23	AVA5-50(7/8")	46.17 - 51.17	1.0000	1.0000
L27	24	LDF4-50A(1/2")	46.17 - 51.17	1.0000	1.0000
L27	25	AVA5-50(7/8")	46.17 - 51.17	1.0000	1.0000
L27	39	6" x 1" Flat Plate	46.17 - 51.17	1.0000	1.0000
L27	40	6" x 1" Flat Plate	46.17 - 51.17	1.0000	1.0000
L27	41	6" x 1" Flat Plate	46.17 - 51.17	1.0000	1.0000
L27	42	6" x 1" Flat Plate	46.17 - 51.17	1.0000	1.0000
L27	60	CU12PSM9P6XXX(1-1/2)	46.17 - 51.17	1.0000	1.0000
L28	2	Safety Line 3/8	41.17 - 46.17	1.0000	1.0000
L28	23	AVA5-50(7/8")	41.17 - 46.17	1.0000	1.0000
L28	24	LDF4-50A(1/2")	41.17 - 46.17	1.0000	1.0000
L28	25	AVA5-50(7/8")	41.17 - 46.17	1.0000	1.0000
L28	39	6" x 1" Flat Plate	41.17 - 46.17	1.0000	1.0000
L28	40	6" x 1" Flat Plate	41.17 - 46.17	1.0000	1.0000
L28	41	6" x 1" Flat Plate	41.17 - 46.17	1.0000	1.0000
L28	42	6" x 1" Flat Plate	41.17 - 46.17	1.0000	1.0000
L28	60	CU12PSM9P6XXX(1-1/2)	41.17 - 46.17	1.0000	1.0000
L29	2	Safety Line 3/8	32.50 - 41.17	1.0000	1.0000
L29	23	AVA5-50(7/8")	32.50 - 41.17	1.0000	1.0000
L29	24	LDF4-50A(1/2")	32.50 - 41.17	1.0000	1.0000
L29	25	AVA5-50(7/8")	32.50 - 41.17	1.0000	1.0000
L29	34	6" x 1" Flat Plate	32.50 - 38.00	1.0000	1.0000
L29	35	6" x 1" Flat Plate	32.50 - 38.00	1.0000	1.0000
L29	36	6" x 1" Flat Plate	32.50 - 38.00	1.0000	1.0000
L29	37	6" x 1" Flat Plate	32.50 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
			38.00		
L29	39	6" x 1" Flat Plate	38.00 - 41.17	1.0000	1.0000
L29	40	6" x 1" Flat Plate	38.00 - 41.17	1.0000	1.0000
L29	41	6" x 1" Flat Plate	38.00 - 41.17	1.0000	1.0000
L29	42	6" x 1" Flat Plate	38.00 - 41.17	1.0000	1.0000
L29	44	6.5" x 1.25" Flat Plate	32.50 - 32.83	1.0000	1.0000
L29	45	6.5" x 1.25" Flat Plate	32.50 - 32.83	1.0000	1.0000
L29	46	6.5" x 1.25" Flat Plate	32.50 - 32.83	1.0000	1.0000
L29	47	6.5" x 1.25" Flat Plate	32.50 - 32.83	1.0000	1.0000
L29	60	CU12PSM9P6XXX(1-1/2)	32.50 - 41.17	1.0000	1.0000
L30	2	Safety Line 3/8	31.50 - 32.50	1.0000	1.0000
L30	23	AVA5-50(7/8")	31.50 - 32.50	1.0000	1.0000
L30	24	LDF4-50A(1/2")	31.50 - 32.50	1.0000	1.0000
L30	25	AVA5-50(7/8")	31.50 - 32.50	1.0000	1.0000
L30	34	6" x 1" Flat Plate	31.50 - 32.50	1.0000	1.0000
L30	35	6" x 1" Flat Plate	31.50 - 32.50	1.0000	1.0000
L30	36	6" x 1" Flat Plate	31.50 - 32.50	1.0000	1.0000
L30	37	6" x 1" Flat Plate	31.50 - 32.50	1.0000	1.0000
L30	44	6.5" x 1.25" Flat Plate	31.50 - 32.50	1.0000	1.0000
L30	45	6.5" x 1.25" Flat Plate	31.50 - 32.50	1.0000	1.0000
L30	46	6.5" x 1.25" Flat Plate	31.50 - 32.50	1.0000	1.0000
L30	47	6.5" x 1.25" Flat Plate	31.50 - 32.50	1.0000	1.0000
L30	60	CU12PSM9P6XXX(1-1/2)	31.50 - 32.50	1.0000	1.0000
L31	2	Safety Line 3/8	26.50 - 31.50	1.0000	1.0000
L31	23	AVA5-50(7/8")	26.50 - 31.50	1.0000	1.0000
L31	24	LDF4-50A(1/2")	26.50 - 31.50	1.0000	1.0000
L31	25	AVA5-50(7/8")	26.50 - 31.50	1.0000	1.0000
L31	29	6.5" x 1.25" Flat Plate	26.50 - 30.00	1.0000	1.0000
L31	30	6.5" x 1.25" Flat Plate	26.50 - 30.00	1.0000	1.0000
L31	31	6.5" x 1.25" Flat Plate	26.50 - 30.00	1.0000	1.0000
L31	32	6.5" x 1.25" Flat Plate	26.50 - 30.00	1.0000	1.0000
L31	34	6" x 1" Flat Plate	30.08 - 31.50	1.0000	1.0000
L31	35	6" x 1" Flat Plate	30.08 - 31.50	1.0000	1.0000
L31	36	6" x 1" Flat Plate	30.08 - 31.50	1.0000	1.0000
L31	37	6" x 1" Flat Plate	30.08 - 31.50	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L31	44	6.5" x 1.25" Flat Plate	26.50 - 31.50	1.0000	1.0000
L31	45	6.5" x 1.25" Flat Plate	26.50 - 31.50	1.0000	1.0000
L31	46	6.5" x 1.25" Flat Plate	26.50 - 31.50	1.0000	1.0000
L31	47	6.5" x 1.25" Flat Plate	26.50 - 31.50	1.0000	1.0000
L31	60	CU12PSM9P6XXX(1-1/2)	26.50 - 31.50	1.0000	1.0000
L32	2	Safety Line 3/8	26.25 - 26.50	1.0000	1.0000
L32	23	AVA5-50(7/8")	26.25 - 26.50	1.0000	1.0000
L32	24	LDF4-50A(1/2")	26.25 - 26.50	1.0000	1.0000
L32	25	AVA5-50(7/8")	26.25 - 26.50	1.0000	1.0000
L32	29	6.5" x 1.25" Flat Plate	26.25 - 26.50	1.0000	1.0000
L32	30	6.5" x 1.25" Flat Plate	26.25 - 26.50	1.0000	1.0000
L32	31	6.5" x 1.25" Flat Plate	26.25 - 26.50	1.0000	1.0000
L32	32	6.5" x 1.25" Flat Plate	26.25 - 26.50	1.0000	1.0000
L32	44	6.5" x 1.25" Flat Plate	26.25 - 26.50	1.0000	1.0000
L32	45	6.5" x 1.25" Flat Plate	26.25 - 26.50	1.0000	1.0000
L32	46	6.5" x 1.25" Flat Plate	26.25 - 26.50	1.0000	1.0000
L32	47	6.5" x 1.25" Flat Plate	26.25 - 26.50	1.0000	1.0000
L32	60	CU12PSM9P6XXX(1-1/2)	26.25 - 26.50	1.0000	1.0000
L33	2	Safety Line 3/8	21.25 - 26.25	1.0000	1.0000
L33	23	AVA5-50(7/8")	21.25 - 26.25	1.0000	1.0000
L33	24	LDF4-50A(1/2")	21.25 - 26.25	1.0000	1.0000
L33	25	AVA5-50(7/8")	21.25 - 26.25	1.0000	1.0000
L33	29	6.5" x 1.25" Flat Plate	21.25 - 26.25	1.0000	1.0000
L33	30	6.5" x 1.25" Flat Plate	21.25 - 26.25	1.0000	1.0000
L33	31	6.5" x 1.25" Flat Plate	21.25 - 26.25	1.0000	1.0000
L33	32	6.5" x 1.25" Flat Plate	21.25 - 26.25	1.0000	1.0000
L33	60	CU12PSM9P6XXX(1-1/2)	21.25 - 26.25	1.0000	1.0000
L34	2	Safety Line 3/8	16.25 - 21.25	1.0000	1.0000
L34	23	AVA5-50(7/8")	16.25 - 21.25	1.0000	1.0000
L34	24	LDF4-50A(1/2")	16.25 - 21.25	1.0000	1.0000
L34	25	AVA5-50(7/8")	16.25 - 21.25	1.0000	1.0000
L34	29	6.5" x 1.25" Flat Plate	16.25 - 21.25	1.0000	1.0000
L34	30	6.5" x 1.25" Flat Plate	16.25 - 21.25	1.0000	1.0000
L34	31	6.5" x 1.25" Flat Plate	16.25 - 21.25	1.0000	1.0000
L34	32	6.5" x 1.25" Flat Plate	16.25 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L34	60	CU12PSM9P6XXX(1-1/2)	21.25 16.25 - 21.25	1.0000	1.0000
L35	2	Safety Line 3/8	11.25 - 16.25	1.0000	1.0000
L35	23	AVA5-50(7/8")	11.25 - 16.25	1.0000	1.0000
L35	24	LDF4-50A(1/2")	11.25 - 16.25	1.0000	1.0000
L35	25	AVA5-50(7/8")	11.25 - 16.25	1.0000	1.0000
L35	29	6.5" x 1.25" Flat Plate	11.25 - 16.25	1.0000	1.0000
L35	30	6.5" x 1.25" Flat Plate	11.25 - 16.25	1.0000	1.0000
L35	31	6.5" x 1.25" Flat Plate	11.25 - 16.25	1.0000	1.0000
L35	32	6.5" x 1.25" Flat Plate	11.25 - 16.25	1.0000	1.0000
L35	60	CU12PSM9P6XXX(1-1/2)	11.25 - 16.25	1.0000	1.0000
L36	2	Safety Line 3/8	6.25 - 11.25	1.0000	1.0000
L36	23	AVA5-50(7/8")	6.25 - 11.25	1.0000	1.0000
L36	24	LDF4-50A(1/2")	6.25 - 11.25	1.0000	1.0000
L36	25	AVA5-50(7/8")	6.25 - 11.25	1.0000	1.0000
L36	29	6.5" x 1.25" Flat Plate	6.25 - 11.25	1.0000	1.0000
L36	30	6.5" x 1.25" Flat Plate	6.25 - 11.25	1.0000	1.0000
L36	31	6.5" x 1.25" Flat Plate	6.25 - 11.25	1.0000	1.0000
L36	32	6.5" x 1.25" Flat Plate	6.25 - 11.25	1.0000	1.0000
L36	60	CU12PSM9P6XXX(1-1/2)	6.25 - 11.25	1.0000	1.0000
L37	2	Safety Line 3/8	1.25 - 6.25	1.0000	1.0000
L37	23	AVA5-50(7/8")	1.25 - 6.25	1.0000	1.0000
L37	24	LDF4-50A(1/2")	1.25 - 6.25	1.0000	1.0000
L37	25	AVA5-50(7/8")	1.25 - 6.25	1.0000	1.0000
L37	29	6.5" x 1.25" Flat Plate	1.25 - 6.25	1.0000	1.0000
L37	30	6.5" x 1.25" Flat Plate	1.25 - 6.25	1.0000	1.0000
L37	31	6.5" x 1.25" Flat Plate	1.25 - 6.25	1.0000	1.0000
L37	32	6.5" x 1.25" Flat Plate	1.25 - 6.25	1.0000	1.0000
L37	60	CU12PSM9P6XXX(1-1/2)	1.25 - 6.25	1.0000	1.0000
L38	2	Safety Line 3/8	0.00 - 1.25	1.0000	1.0000
L38	23	AVA5-50(7/8")	0.00 - 1.25	1.0000	1.0000
L38	24	LDF4-50A(1/2")	0.00 - 1.25	1.0000	1.0000
L38	25	AVA5-50(7/8")	0.00 - 1.25	1.0000	1.0000
L38	29	6.5" x 1.25" Flat Plate	0.00 - 1.25	1.0000	1.0000
L38	30	6.5" x 1.25" Flat Plate	0.00 - 1.25	1.0000	1.0000
L38	31	6.5" x 1.25" Flat Plate	0.00 - 1.25	1.0000	1.0000
L38	32	6.5" x 1.25" Flat Plate	0.00 - 1.25	1.0000	1.0000
L38	60	CU12PSM9P6XXX(1-1/2)	0.00 - 1.25	1.0000	1.0000

Effective Width of Flat Linear Attachments / Feed Lines

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L12	49	6" x 1" Flat Plate	91.75 - 92.00	Manual	1.0000
L12	50	6" x 1" Flat Plate	91.75 - 92.00	Manual	1.0000
L12	51	6" x 1" Flat Plate	91.75 - 92.00	Manual	1.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L13	49	6" x 1" Flat Plate	89.50 - 91.75	Manual	1.0000
L13	50	6" x 1" Flat Plate	89.50 - 91.75	Manual	1.0000
L13	51	6" x 1" Flat Plate	89.50 - 91.75	Manual	1.0000
L14	49	6" x 1" Flat Plate	89.25 - 89.50	Manual	1.0000
L14	50	6" x 1" Flat Plate	89.25 - 89.50	Manual	1.0000
L14	51	6" x 1" Flat Plate	89.25 - 89.50	Manual	1.0000
L15	49	6" x 1" Flat Plate	84.25 - 89.25	Manual	1.0000
L15	50	6" x 1" Flat Plate	84.25 - 89.25	Manual	1.0000
L15	51	6" x 1" Flat Plate	84.25 - 89.25	Manual	1.0000
L16	49	6" x 1" Flat Plate	79.25 - 84.25	Manual	1.0000
L16	50	6" x 1" Flat Plate	79.25 - 84.25	Manual	1.0000
L16	51	6" x 1" Flat Plate	79.25 - 84.25	Manual	1.0000
L17	49	6" x 1" Flat Plate	72.00 - 79.25	Manual	1.0000
L17	50	6" x 1" Flat Plate	72.00 - 79.25	Manual	1.0000
L17	51	6" x 1" Flat Plate	72.00 - 79.25	Manual	1.0000
L18	56	6" x 1" Flat Plate	68.75 - 69.42	Manual	1.0000
L18	57	6" x 1" Flat Plate	68.75 - 69.42	Manual	1.0000
L18	58	6" x 1" Flat Plate	68.75 - 69.42	Manual	1.0000
L19	56	6" x 1" Flat Plate	67.42 - 68.75	Manual	1.0000
L19	57	6" x 1" Flat Plate	67.42 - 68.75	Manual	1.0000
L19	58	6" x 1" Flat Plate	67.42 - 68.75	Manual	1.0000
L20	56	6" x 1" Flat Plate	67.17 - 67.42	Manual	1.0000
L20	57	6" x 1" Flat Plate	67.17 - 67.42	Manual	1.0000
L20	58	6" x 1" Flat Plate	67.17 - 67.42	Manual	1.0000
L21	56	6" x 1" Flat Plate	62.17 - 67.17	Manual	1.0000
L21	57	6" x 1" Flat Plate	62.17 - 67.17	Manual	1.0000
L21	58	6" x 1" Flat Plate	62.17 - 67.17	Manual	1.0000
L22	39	6" x 1" Flat Plate	57.58 - 60.08	Manual	1.0000
L22	40	6" x 1" Flat Plate	57.58 - 60.08	Manual	1.0000
L22	41	6" x 1" Flat Plate	57.58 - 60.08	Manual	1.0000
L22	42	6" x 1" Flat Plate	57.58 - 60.08	Manual	1.0000
L22	56	6" x 1" Flat Plate	57.58 - 62.17	Manual	1.0000
L22	57	6" x 1" Flat Plate	57.58 - 62.17	Manual	1.0000
L22	58	6" x 1" Flat Plate	57.58 - 62.17	Manual	1.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L23	39	6" x 1" Flat Plate	57.33 - 57.58	Manual	1.0000
L23	40	6" x 1" Flat Plate	57.33 - 57.58	Manual	1.0000
L23	41	6" x 1" Flat Plate	57.33 - 57.58	Manual	1.0000
L23	42	6" x 1" Flat Plate	57.33 - 57.58	Manual	1.0000
L23	53	6" x 1" Flat Plate	57.33 - 57.58	Manual	1.0000
L23	54	6" x 1" Flat Plate	57.33 - 57.58	Manual	1.0000
L23	55	6" x 1" Flat Plate	57.33 - 57.58	Manual	1.0000
L24	39	6" x 1" Flat Plate	56.42 - 57.33	Manual	1.0000
L24	40	6" x 1" Flat Plate	56.42 - 57.33	Manual	1.0000
L24	41	6" x 1" Flat Plate	56.42 - 57.33	Manual	1.0000
L24	42	6" x 1" Flat Plate	56.42 - 57.33	Manual	1.0000
L24	53	6" x 1" Flat Plate	56.42 - 57.33	Manual	1.0000
L24	54	6" x 1" Flat Plate	56.42 - 57.33	Manual	1.0000
L24	55	6" x 1" Flat Plate	56.42 - 57.33	Manual	1.0000
L25	39	6" x 1" Flat Plate	56.17 - 56.42	Manual	1.0000
L25	40	6" x 1" Flat Plate	56.17 - 56.42	Manual	1.0000
L25	41	6" x 1" Flat Plate	56.17 - 56.42	Manual	1.0000
L25	42	6" x 1" Flat Plate	56.17 - 56.42	Manual	1.0000
L25	53	6" x 1" Flat Plate	56.17 - 56.42	Manual	1.0000
L25	54	6" x 1" Flat Plate	56.17 - 56.42	Manual	1.0000
L25	55	6" x 1" Flat Plate	56.17 - 56.42	Manual	1.0000
L26	39	6" x 1" Flat Plate	51.17 - 56.17	Manual	1.0000
L26	40	6" x 1" Flat Plate	51.17 - 56.17	Manual	1.0000
L26	41	6" x 1" Flat Plate	51.17 - 56.17	Manual	1.0000
L26	42	6" x 1" Flat Plate	51.17 - 56.17	Manual	1.0000
L26	53	6" x 1" Flat Plate	54.42 - 56.17	Manual	1.0000
L26	54	6" x 1" Flat Plate	54.42 - 56.17	Manual	1.0000
L26	55	6" x 1" Flat Plate	54.42 - 56.17	Manual	1.0000
L27	39	6" x 1" Flat Plate	46.17 - 51.17	Manual	1.0000
L27	40	6" x 1" Flat Plate	46.17 - 51.17	Manual	1.0000
L27	41	6" x 1" Flat Plate	46.17 - 51.17	Manual	1.0000
L27	42	6" x 1" Flat Plate	46.17 - 51.17	Manual	1.0000
L28	39	6" x 1" Flat Plate	41.17 - 46.17	Manual	1.0000
L28	40	6" x 1" Flat Plate	41.17 - 46.17	Manual	1.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L28	41	6" x 1" Flat Plate	41.17 - 46.17	Manual	1.0000
L28	42	6" x 1" Flat Plate	41.17 - 46.17	Manual	1.0000
L29	34	6" x 1" Flat Plate	32.50 - 38.00	Manual	1.0000
L29	35	6" x 1" Flat Plate	32.50 - 38.00	Manual	1.0000
L29	36	6" x 1" Flat Plate	32.50 - 38.00	Manual	1.0000
L29	37	6" x 1" Flat Plate	32.50 - 38.00	Manual	1.0000
L29	39	6" x 1" Flat Plate	38.00 - 41.17	Manual	1.0000
L29	40	6" x 1" Flat Plate	38.00 - 41.17	Manual	1.0000
L29	41	6" x 1" Flat Plate	38.00 - 41.17	Manual	1.0000
L29	42	6" x 1" Flat Plate	38.00 - 41.17	Manual	1.0000
L29	44	6.5" x 1.25" Flat Plate	32.50 - 32.83	Manual	1.0000
L29	45	6.5" x 1.25" Flat Plate	32.50 - 32.83	Manual	1.0000
L29	46	6.5" x 1.25" Flat Plate	32.50 - 32.83	Manual	1.0000
L29	47	6.5" x 1.25" Flat Plate	32.50 - 32.83	Manual	1.0000
L30	34	6" x 1" Flat Plate	31.50 - 32.50	Manual	1.0000
L30	35	6" x 1" Flat Plate	31.50 - 32.50	Manual	1.0000
L30	36	6" x 1" Flat Plate	31.50 - 32.50	Manual	1.0000
L30	37	6" x 1" Flat Plate	31.50 - 32.50	Manual	1.0000
L30	44	6.5" x 1.25" Flat Plate	31.50 - 32.50	Manual	1.0000
L30	45	6.5" x 1.25" Flat Plate	31.50 - 32.50	Manual	1.0000
L30	46	6.5" x 1.25" Flat Plate	31.50 - 32.50	Manual	1.0000
L30	47	6.5" x 1.25" Flat Plate	31.50 - 32.50	Manual	1.0000
L31	29	6.5" x 1.25" Flat Plate	26.50 - 30.00	Manual	1.0000
L31	30	6.5" x 1.25" Flat Plate	26.50 - 30.00	Manual	1.0000
L31	31	6.5" x 1.25" Flat Plate	26.50 - 30.00	Manual	1.0000
L31	32	6.5" x 1.25" Flat Plate	26.50 - 30.00	Manual	1.0000
L31	34	6" x 1" Flat Plate	30.08 - 31.50	Manual	1.0000
L31	35	6" x 1" Flat Plate	30.08 - 31.50	Manual	1.0000
L31	36	6" x 1" Flat Plate	30.08 - 31.50	Manual	1.0000
L31	37	6" x 1" Flat Plate	30.08 - 31.50	Manual	1.0000
L31	44	6.5" x 1.25" Flat Plate	26.50 - 31.50	Manual	1.0000
L31	45	6.5" x 1.25" Flat Plate	26.50 - 31.50	Manual	1.0000
L31	46	6.5" x 1.25" Flat Plate	26.50 - 31.50	Manual	1.0000
L31	47	6.5" x 1.25" Flat Plate	26.50 - 31.50	Manual	1.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L32	29	6.5" x 1.25" Flat Plate	26.25 - 26.50	Manual	1.0000
L32	30	6.5" x 1.25" Flat Plate	26.25 - 26.50	Manual	1.0000
L32	31	6.5" x 1.25" Flat Plate	26.25 - 26.50	Manual	1.0000
L32	32	6.5" x 1.25" Flat Plate	26.25 - 26.50	Manual	1.0000
L32	44	6.5" x 1.25" Flat Plate	26.25 - 26.50	Manual	1.0000
L32	45	6.5" x 1.25" Flat Plate	26.25 - 26.50	Manual	1.0000
L32	46	6.5" x 1.25" Flat Plate	26.25 - 26.50	Manual	1.0000
L32	47	6.5" x 1.25" Flat Plate	26.25 - 26.50	Manual	1.0000
L33	29	6.5" x 1.25" Flat Plate	21.25 - 26.25	Manual	1.0000
L33	30	6.5" x 1.25" Flat Plate	21.25 - 26.25	Manual	1.0000
L33	31	6.5" x 1.25" Flat Plate	21.25 - 26.25	Manual	1.0000
L33	32	6.5" x 1.25" Flat Plate	21.25 - 26.25	Manual	1.0000
L34	29	6.5" x 1.25" Flat Plate	16.25 - 21.25	Manual	1.0000
L34	30	6.5" x 1.25" Flat Plate	16.25 - 21.25	Manual	1.0000
L34	31	6.5" x 1.25" Flat Plate	16.25 - 21.25	Manual	1.0000
L34	32	6.5" x 1.25" Flat Plate	16.25 - 21.25	Manual	1.0000
L35	29	6.5" x 1.25" Flat Plate	11.25 - 16.25	Manual	1.0000
L35	30	6.5" x 1.25" Flat Plate	11.25 - 16.25	Manual	1.0000
L35	31	6.5" x 1.25" Flat Plate	11.25 - 16.25	Manual	1.0000
L35	32	6.5" x 1.25" Flat Plate	11.25 - 16.25	Manual	1.0000
L36	29	6.5" x 1.25" Flat Plate	6.25 - 11.25	Manual	1.0000
L36	30	6.5" x 1.25" Flat Plate	6.25 - 11.25	Manual	1.0000
L36	31	6.5" x 1.25" Flat Plate	6.25 - 11.25	Manual	1.0000
L36	32	6.5" x 1.25" Flat Plate	6.25 - 11.25	Manual	1.0000
L37	29	6.5" x 1.25" Flat Plate	1.25 - 6.25	Manual	1.0000
L37	30	6.5" x 1.25" Flat Plate	1.25 - 6.25	Manual	1.0000
L37	31	6.5" x 1.25" Flat Plate	1.25 - 6.25	Manual	1.0000
L37	32	6.5" x 1.25" Flat Plate	1.25 - 6.25	Manual	1.0000
L38	29	6.5" x 1.25" Flat Plate	0.00 - 1.25	Manual	1.0000
L38	30	6.5" x 1.25" Flat Plate	0.00 - 1.25	Manual	1.0000
L38	31	6.5" x 1.25" Flat Plate	0.00 - 1.25	Manual	1.0000
L38	32	6.5" x 1.25" Flat Plate	0.00 - 1.25	Manual	1.0000

Discrete Tower Loads

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 K
**									
Top Hat 18" Diameter x 2' 6" Tall	C	None		0.0000	150.00	No Ice	1.88	1.88	0.10
						1/2" Ice	2.86	2.86	0.14
						1" Ice	3.11	3.11	0.18
						2" Ice	3.64	3.64	0.27
150									
NNVV-65B-R4 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	150.00	No Ice	7.55	4.23	0.11
						1/2" Ice	8.04	4.67	0.20
						1" Ice	8.53	5.12	0.30
						2" Ice	9.56	6.05	0.53
NNVV-65B-R4 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	150.00	No Ice	7.55	4.23	0.11
						1/2" Ice	8.04	4.67	0.20
						1" Ice	8.53	5.12	0.30
						2" Ice	9.56	6.05	0.53
NNVV-65B-R4 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	150.00	No Ice	7.55	4.23	0.11
						1/2" Ice	8.04	4.67	0.20
						1" Ice	8.53	5.12	0.30
						2" Ice	9.56	6.05	0.53
APXVTM14-ALU-I20 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	150.00	No Ice	4.09	2.86	0.08
						1/2" Ice	4.48	3.23	0.13
						1" Ice	4.88	3.61	0.19
						2" Ice	5.71	4.40	0.33
APXVTM14-ALU-I20 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	150.00	No Ice	4.09	2.86	0.08
						1/2" Ice	4.48	3.23	0.13
						1" Ice	4.88	3.61	0.19
						2" Ice	5.71	4.40	0.33
APXVTM14-ALU-I20 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	150.00	No Ice	4.09	2.86	0.08
						1/2" Ice	4.48	3.23	0.13
						1" Ice	4.88	3.61	0.19
						2" Ice	5.71	4.40	0.33
(2) TD-RRH8x20-25	A	From Leg	4.00 0.00 0.00	0.0000	150.00	No Ice	4.05	1.53	0.07
						1/2" Ice	4.30	1.71	0.10
						1" Ice	4.56	1.90	0.13
						2" Ice	5.10	2.30	0.20
TD-RRH8x20-25	B	From Leg	4.00 0.00 0.00	0.0000	150.00	No Ice	4.05	1.53	0.07
						1/2" Ice	4.30	1.71	0.10
						1" Ice	4.56	1.90	0.13
						2" Ice	5.10	2.30	0.20
(4) RRH2X50-800	A	From Leg	4.00 0.00 0.00	0.0000	150.00	No Ice	1.70	1.28	0.05
						1/2" Ice	1.86	1.43	0.07
						1" Ice	2.03	1.58	0.09
						2" Ice	2.40	1.91	0.14
(2) RRH2X50-800	B	From Leg	4.00 0.00 0.00	0.0000	150.00	No Ice	1.70	1.28	0.05
						1/2" Ice	1.86	1.43	0.07
						1" Ice	2.03	1.58	0.09
						2" Ice	2.40	1.91	0.14
(2) PCS 1900MHz 4x45W-65MHz	A	From Leg	4.00 0.00 0.00	0.0000	150.00	No Ice	2.32	2.24	0.06
						1/2" Ice	2.53	2.44	0.08
						1" Ice	2.74	2.65	0.11
						2" Ice	3.19	3.09	0.17
PCS 1900MHz 4x45W-65MHz	B	From Leg	4.00 0.00 0.00	0.0000	150.00	No Ice	2.32	2.24	0.06
						1/2" Ice	2.53	2.44	0.08
						Ice	2.74	2.65	0.11

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						1" Ice	3.19	3.09	0.17
						2" Ice			
(3) Pipe Mount	A	From Leg	4.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.20 1.50 1.81 2.47	1.20 1.50 1.81 2.47	0.02 0.03 0.04 0.08
(3) Pipe Mount	B	From Leg	4.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.20 1.50 1.81 2.47	1.20 1.50 1.81 2.47	0.02 0.03 0.04 0.08
(3) Pipe Mount	C	From Leg	4.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.20 1.50 1.81 2.47	1.20 1.50 1.81 2.47	0.02 0.03 0.04 0.08
Site Pro 1 HRK14-HD Handrail Kit	C	None		0.0000	150.00	No Ice 1/2" Ice 1" Ice 2" Ice	6.00 8.50 11.00 16.00	6.00 8.50 11.00 16.00	0.26 0.34 0.42 0.59
Platform Mount [LP 1201-1]	C	None		0.0000	150.00	No Ice 1/2" Ice 1" Ice 2" Ice	23.10 26.80 30.50 37.90	23.10 26.80 30.50 37.90	2.10 2.50 2.90 3.70
141 ***Verizon*** *P*									
(2) HBXX-6517DS-A2M w/ Mount Pipe	A	From Leg	4.00 0.00 1.00	0.0000	141.00	No Ice 1/2" Ice 1" Ice 2" Ice	7.97 8.73 9.51 11.11	5.99 6.72 7.47 9.02	0.08 0.14 0.21 0.40
(2) HBXX-6517DS-A2M w/ Mount Pipe	B	From Leg	4.00 0.00 1.00	0.0000	141.00	No Ice 1/2" Ice 1" Ice 2" Ice	7.97 8.73 9.51 11.11	5.99 6.72 7.47 9.02	0.08 0.14 0.21 0.40
(2) HBXX-6517DS-A2M w/ Mount Pipe	C	From Leg	4.00 0.00 1.00	0.0000	141.00	No Ice 1/2" Ice 1" Ice 2" Ice	7.97 8.73 9.51 11.11	5.99 6.72 7.47 9.02	0.08 0.14 0.21 0.40
BXA-70063-6CF-EDIN-0 w/ Mount Pipe	A	From Leg	4.00 0.00 1.00	0.0000	141.00	No Ice 1/2" Ice 1" Ice 2" Ice	7.40 8.14 8.90 10.46	5.39 6.10 6.83 8.34	0.04 0.10 0.16 0.33
BXA-70063-6CF-EDIN-0 w/ Mount Pipe	B	From Leg	4.00 0.00 1.00	0.0000	141.00	No Ice 1/2" Ice 1" Ice 2" Ice	7.40 8.14 8.90 10.46	5.39 6.10 6.83 8.34	0.04 0.10 0.16 0.33
BXA-70063-6CF-EDIN-0 w/ Mount Pipe	C	From Leg	4.00 0.00 1.00	0.0000	141.00	No Ice 1/2" Ice 1" Ice 2" Ice	7.40 8.14 8.90 10.46	5.39 6.10 6.83 8.34	0.04 0.10 0.16 0.33
RRH2X60-PCS	A	From Leg	4.00 0.00 1.00	0.0000	141.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.20 2.39 2.59 3.01	1.72 1.90 2.09 2.48	0.06 0.08 0.10 0.16

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
RRH2X60-PCS	B	From Leg	4.00 0.00 1.00	0.0000	141.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.20 2.39 2.59 3.01	1.72 1.90 2.09 2.48	0.06 0.08 0.10 0.16
RRH2X60-PCS	C	From Leg	4.00 0.00 1.00	0.0000	141.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.20 2.39 2.59 3.01	1.72 1.90 2.09 2.48	0.06 0.08 0.10 0.16
RRH2X60-AWS BAND 4	A	From Leg	4.00 0.00 1.00	0.0000	141.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.36 3.61 3.88 4.42	2.00 2.24 2.48 2.97	0.06 0.08 0.11 0.17
RRH2X60-AWS BAND 4	B	From Leg	4.00 0.00 1.00	0.0000	141.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.36 3.61 3.88 4.42	2.00 2.24 2.48 2.97	0.06 0.08 0.11 0.17
RRH2X60-AWS BAND 4	C	From Leg	4.00 0.00 1.00	0.0000	141.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.36 3.61 3.88 4.42	2.00 2.24 2.48 2.97	0.06 0.08 0.11 0.17
DB-T1-6Z-8AB-0Z *E*	B	From Leg	4.00 0.00 1.00	0.0000	141.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.80 5.07 5.35 5.93	2.00 2.19 2.39 2.81	0.04 0.08 0.12 0.21
(2) APL868013-42T0 w/ Mount Pipe	A	From Leg	4.00 0.00 1.00	0.0000	141.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.63 3.07 3.53 4.49	4.13 4.60 5.09 6.11	0.03 0.06 0.11 0.21
(2) APL868013-42T0 w/ Mount Pipe	B	From Leg	4.00 0.00 1.00	0.0000	141.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.63 3.07 3.53 4.49	4.13 4.60 5.09 6.11	0.03 0.06 0.11 0.21
(2) APL868013-42T0 w/ Mount Pipe	C	From Leg	4.00 0.00 1.00	0.0000	141.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.63 3.07 3.53 4.49	4.13 4.60 5.09 6.11	0.03 0.06 0.11 0.21
KS24019-L112A	A	From Leg	4.00 0.00 4.00	0.0000	141.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.10 0.18 0.26 0.42	0.10 0.18 0.26 0.42	0.01 0.01 0.01 0.01
(2) FD9R6004/2C-3L	A	From Leg	4.00 0.00 1.00	0.0000	141.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.31 0.39 0.47 0.65	0.08 0.12 0.17 0.29	0.00 0.01 0.01 0.02
(2) FD9R6004/2C-3L	B	From Leg	4.00 0.00 1.00	0.0000	141.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.31 0.39 0.47 0.65	0.08 0.12 0.17 0.29	0.00 0.01 0.01 0.02
(2) FD9R6004/2C-3L	C	From Leg	4.00 0.00 1.00	0.0000	141.00	No Ice 1/2" Ice 1" Ice	0.31 0.39 0.47 0.65	0.08 0.12 0.17 0.29	0.00 0.01 0.01 0.02

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
							2" Ice			
Platform Mount [LP 1201-1]	C	None			0.0000	141.00	No Ice	23.10	23.10	2.10
							1/2" Ice	26.80	26.80	2.50
							1" Ice	30.50	30.50	2.90
							2" Ice	37.90	37.90	3.70
132										
(2) 7770.00 w/ Mount Pipe	A	From Leg	4.00		0.0000	132.00	No Ice	5.75	4.25	0.06
			0.00				1/2" Ice	6.18	5.01	0.10
			1.00				1" Ice	6.61	5.71	0.16
							2" Ice	7.49	7.16	0.29
(2) 7770.00 w/ Mount Pipe	B	From Leg	4.00		0.0000	132.00	No Ice	5.75	4.25	0.06
			0.00				1/2" Ice	6.18	5.01	0.10
			1.00				1" Ice	6.61	5.71	0.16
							2" Ice	7.49	7.16	0.29
(2) 7770.00 w/ Mount Pipe	C	From Leg	4.00		0.0000	132.00	No Ice	5.75	4.25	0.06
			0.00				1/2" Ice	6.18	5.01	0.10
			1.00				1" Ice	6.61	5.71	0.16
							2" Ice	7.49	7.16	0.29
OPA-65R-LCUU-H6 w/ Mount Pipe	A	From Leg	4.00		0.0000	132.00	No Ice	9.19	6.21	0.11
			0.00				1/2" Ice	9.94	6.93	0.18
			1.00				1" Ice	10.71	7.66	0.26
							2" Ice	12.30	9.17	0.45
OPA-65R-LCUU-H6 w/ Mount Pipe	B	From Leg	4.00		0.0000	132.00	No Ice	9.19	6.21	0.11
			0.00				1/2" Ice	9.94	6.93	0.18
			1.00				1" Ice	10.71	7.66	0.26
							2" Ice	12.30	9.17	0.45
OPA-65R-LCUU-H6 w/ Mount Pipe	C	From Leg	4.00		0.0000	132.00	No Ice	9.19	6.21	0.11
			0.00				1/2" Ice	9.94	6.93	0.18
			1.00				1" Ice	10.71	7.66	0.26
							2" Ice	12.30	9.17	0.45
DC6-48-60-18-8F	A	From Leg	4.00		0.0000	132.00	No Ice	1.21	1.21	0.02
			0.00				1/2" Ice	1.89	1.89	0.04
			2.00				1" Ice	2.11	2.11	0.07
							2" Ice	2.57	2.57	0.13
LGP21401	A	From Leg	4.00		0.0000	132.00	No Ice	1.10	0.21	0.01
			0.00				1/2" Ice	1.24	0.27	0.02
			1.00				1" Ice	1.38	0.35	0.03
							2" Ice	1.69	0.52	0.05
LGP21401	B	From Leg	4.00		0.0000	132.00	No Ice	1.10	0.21	0.01
			0.00				1/2" Ice	1.24	0.27	0.02
			1.00				1" Ice	1.38	0.35	0.03
							2" Ice	1.69	0.52	0.05
LGP21401	C	From Leg	4.00		0.0000	132.00	No Ice	1.10	0.21	0.01
			0.00				1/2" Ice	1.24	0.27	0.02
			1.00				1" Ice	1.38	0.35	0.03
							2" Ice	1.69	0.52	0.05
LGP21401	A	From Leg	4.00		0.0000	132.00	No Ice	1.10	0.21	0.01
			0.00				1/2" Ice	1.24	0.27	0.02
			-3.00				1" Ice	1.38	0.35	0.03
							2" Ice	1.69	0.52	0.05
LGP21401	B	From Leg	4.00		0.0000	132.00	No Ice	1.10	0.21	0.01
			0.00				1/2" Ice	1.24	0.27	0.02
			-3.00				Ice	1.38	0.35	0.03

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						1" Ice	1.69	0.52	0.05
						2" Ice			
LGP21401	C	From Leg	4.00 0.00 -3.00	0.0000	132.00	No Ice	1.10	0.21	0.01
						1/2" Ice	1.24	0.27	0.02
						1" Ice	1.38	0.35	0.03
						2" Ice	1.69	0.52	0.05
RRUS 11	A	From Leg	4.00 0.00 1.00	0.0000	132.00	No Ice	2.78	1.19	0.05
						1/2" Ice	2.99	1.33	0.07
						1" Ice	3.21	1.49	0.09
						2" Ice	3.66	1.83	0.15
RRUS 11	B	From Leg	4.00 0.00 1.00	0.0000	132.00	No Ice	2.78	1.19	0.05
						1/2" Ice	2.99	1.33	0.07
						1" Ice	3.21	1.49	0.09
						2" Ice	3.66	1.83	0.15
RRUS 11	C	From Leg	4.00 0.00 1.00	0.0000	132.00	No Ice	2.78	1.19	0.05
						1/2" Ice	2.99	1.33	0.07
						1" Ice	3.21	1.49	0.09
						2" Ice	3.66	1.83	0.15
RRUS 12 B2	A	From Leg	4.00 0.00 0.00	0.0000	132.00	No Ice	3.14	1.28	0.05
						1/2" Ice	3.36	1.43	0.07
						1" Ice	3.59	1.60	0.10
						2" Ice	4.07	1.95	0.16
RRUS 12 B2	B	From Leg	4.00 0.00 0.00	0.0000	132.00	No Ice	3.14	1.28	0.05
						1/2" Ice	3.36	1.43	0.07
						1" Ice	3.59	1.60	0.10
						2" Ice	4.07	1.95	0.16
RRUS 12 B2	C	From Leg	4.00 0.00 0.00	0.0000	132.00	No Ice	3.14	1.28	0.05
						1/2" Ice	3.36	1.43	0.07
						1" Ice	3.59	1.60	0.10
						2" Ice	4.07	1.95	0.16
RRUS A2 B2	A	From Leg	4.00 0.00 -4.00	0.0000	132.00	No Ice	2.20	0.54	0.02
						1/2" Ice	2.38	0.65	0.04
						1" Ice	2.57	0.77	0.05
						2" Ice	2.98	1.04	0.09
RRUS A2 B2	B	From Leg	4.00 0.00 -4.00	0.0000	132.00	No Ice	2.20	0.54	0.02
						1/2" Ice	2.38	0.65	0.04
						1" Ice	2.57	0.77	0.05
						2" Ice	2.98	1.04	0.09
RRUS A2 B2	C	From Leg	4.00 0.00 -4.00	0.0000	132.00	No Ice	2.20	0.54	0.02
						1/2" Ice	2.38	0.65	0.04
						1" Ice	2.57	0.77	0.05
						2" Ice	2.98	1.04	0.09
Miscellaneous [NA 510-1]	C	None		0.0000	132.00	No Ice	6.00	6.00	0.26
						1/2" Ice	8.50	8.50	0.34
						1" Ice	11.00	11.00	0.42
						2" Ice	16.00	16.00	0.59
Platform Mount [LP 1201-1]	C	None		0.0000	132.00	No Ice	23.10	23.10	2.10
						1/2" Ice	26.80	26.80	2.50
						1" Ice	30.50	30.50	2.90
						2" Ice	37.90	37.90	3.70
111 ***T-Mobile*** *P*									

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment ° °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
APXVAARR24_43-U-NA20 w/ Mount Pipe	A	From Leg	4.00 0.00 -1.00	0.0000	111.00	No Ice 1/2" Ice 1" Ice 2" Ice	14.69 15.46 16.23 17.82	6.87 7.55 8.25 9.67	0.19 0.31 0.46 0.79
APXVAARR24_43-U-NA20 w/ Mount Pipe	B	From Leg	4.00 0.00 -1.00	0.0000	111.00	No Ice 1/2" Ice 1" Ice 2" Ice	14.69 15.46 16.23 17.82	6.87 7.55 8.25 9.67	0.19 0.31 0.46 0.79
APXVAARR24_43-U-NA20 w/ Mount Pipe	C	From Leg	4.00 0.00 -1.00	0.0000	111.00	No Ice 1/2" Ice 1" Ice 2" Ice	14.69 15.46 16.23 17.82	6.87 7.55 8.25 9.67	0.19 0.31 0.46 0.79
(2) RADIO 4449 B12/B71	A	From Leg	4.00 0.00 -1.00	0.0000	111.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.65 1.81 1.98 2.34	1.16 1.30 1.45 1.76	0.07 0.09 0.11 0.16
RADIO 4449 B12/B71	B	From Leg	4.00 0.00 -1.00	0.0000	111.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.65 1.81 1.98 2.34	1.16 1.30 1.45 1.76	0.07 0.09 0.11 0.16
(2) KRY 112 144/1	A	From Leg	4.00 0.00 -1.00	0.0000	111.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.35 0.43 0.51 0.70	0.17 0.23 0.30 0.46	0.01 0.01 0.02 0.03
KRY 112 144/1	B	From Leg	4.00 0.00 -1.00	0.0000	111.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.35 0.43 0.51 0.70	0.17 0.23 0.30 0.46	0.01 0.01 0.02 0.03
KRY 112 489/2	B	From Leg	4.00 0.00 -1.00	0.0000	111.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.56 0.66 0.76 1.00	0.37 0.45 0.54 0.75	0.02 0.02 0.03 0.05
(2) KRY 112 489/2	C	From Leg	4.00 0.00 -1.00	0.0000	111.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.56 0.66 0.76 1.00	0.37 0.45 0.54 0.75	0.02 0.02 0.03 0.05
(2) Pipe Mount	A	From Leg	4.00 0.00 -1.00	0.0000	111.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.20 1.50 1.81 2.47	1.20 1.50 1.81 2.47	0.02 0.03 0.04 0.08
(2) Pipe Mount	B	From Leg	4.00 0.00 -1.00	0.0000	111.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.20 1.50 1.81 2.47	1.20 1.50 1.81 2.47	0.02 0.03 0.04 0.08
(2) Pipe Mount	C	From Leg	4.00 0.00 -1.00	0.0000	111.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.20 1.50 1.81 2.47	1.20 1.50 1.81 2.47	0.02 0.03 0.04 0.08
Site Pro 1 - (1) Platform Mount [P/N:RMQP-396]	C	None		0.0000	111.00	No Ice 1/2" Ice 1" Ice 2" Ice	14.66 18.87 23.08 31.50	14.66 18.87 23.08 31.50	1.59 1.88 2.18 2.76

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Site Pro 1 - (1) Handrail Kit [P/N:HRK12]	C	None		0.0000	111.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.80 6.70 8.60 12.40	4.80 6.70 8.60 12.40	0.25 0.29 0.34 0.44
E *TBR* ***									
104									
KS24019-L112A	A	From Leg	3.00 0.00 0.00	0.0000	104.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.10 0.18 0.26 0.42	0.10 0.18 0.26 0.42	0.01 0.01 0.01 0.01
Side Arm Mount [SO 701-1]	A	From Leg	1.50 0.00 0.00	0.0000	104.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.85 1.14 1.43 2.01	1.67 2.34 3.01 4.35	0.07 0.08 0.09 0.12
88									
SC479-HF1LDF	A	From Leg	4.00 0.00 7.00	0.0000	88.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.03 6.51 8.00 10.73	5.03 6.51 8.00 10.73	0.03 0.07 0.11 0.23
SC479-HF1LDF	B	From Leg	4.00 0.00 7.00	0.0000	88.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.03 6.51 8.00 10.73	5.03 6.51 8.00 10.73	0.03 0.07 0.11 0.23
428E-83I-01-T	B	From Leg	4.00 0.00 0.00	0.0000	88.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.40 0.48 0.57 0.77	0.46 0.55 0.65 0.86	0.01 0.01 0.02 0.04
Side Arm Mount [SO 306-1]	A	From Leg	2.00 0.00 0.00	0.0000	88.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.98 1.70 2.42 3.86	2.18 3.80 5.42 8.66	0.04 0.06 0.08 0.12
Side Arm Mount [SO 306-1]	B	From Leg	2.00 0.00 0.00	0.0000	88.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.98 1.70 2.42 3.86	2.18 3.80 5.42 8.66	0.04 0.06 0.08 0.12
82									
BA80-41-DIN	C	From Leg	4.00 0.00 10.00	0.0000	82.00	No Ice 1/2" Ice 1" Ice 2" Ice	8.16 11.00 13.13 17.43	8.16 11.00 13.13 17.43	0.07 0.13 0.20 0.39
Side Arm Mount [SO 306-1]	C	From Leg	2.00 0.00 0.00	0.0000	82.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.98 1.70 2.42 3.86	2.18 3.80 5.42 8.66	0.04 0.06 0.08 0.12
***									
Commscope MC-K6MHDX-9-96 (3)	C	None		0.0000	121.00	No Ice 1/2" Ice 1" Ice 2" Ice	15.30 20.48 25.66 36.02	15.30 20.48 25.66 36.02	1.19 1.71 2.22 3.25
MX08FRO665-20 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	121.00	No Ice 1/2" Ice	8.01 8.52 9.04	4.23 4.69 5.16	0.10 0.18 0.28

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 K
						1" Ice	10.11	6.12	0.51
						2" Ice			
MX08FRO665-20 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	121.00	No Ice 1/2" Ice 1" Ice 2" Ice	8.01 8.52 9.04 10.11	4.23 4.69 5.16 6.12	0.10 0.18 0.28 0.51
MX08FRO665-20 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	121.00	No Ice 1/2" Ice 1" Ice 2" Ice	8.01 8.52 9.04 10.11	4.23 4.69 5.16 6.12	0.10 0.18 0.28 0.51
RDIDC-9181-PF-48	A	From Leg	4.00 0.00 0.00	0.0000	121.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.31 2.50 2.70 3.12	1.29 1.45 1.61 1.96	0.02 0.04 0.06 0.12
TA08025-B604	A	From Leg	4.00 0.00 0.00	0.0000	121.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.96 2.14 2.32 2.71	0.98 1.11 1.25 1.55	0.06 0.08 0.10 0.15
TA08025-B604	B	From Leg	4.00 0.00 0.00	0.0000	121.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.96 2.14 2.32 2.71	0.98 1.11 1.25 1.55	0.06 0.08 0.10 0.15
TA08025-B604	C	From Leg	4.00 0.00 0.00	0.0000	121.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.96 2.14 2.32 2.71	0.98 1.11 1.25 1.55	0.06 0.08 0.10 0.15
TA08025-B605	A	From Leg	4.00 0.00 0.00	0.0000	121.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.00 2.14 2.32 2.71	1.13 1.27 1.41 1.72	0.08 0.09 0.11 0.16
TA08025-B605	B	From Leg	4.00 0.00 0.00	0.0000	121.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.00 2.14 2.32 2.71	1.13 1.27 1.41 1.72	0.08 0.09 0.11 0.16
TA08025-B605	C	From Leg	4.00 0.00 0.00	0.0000	121.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.00 2.14 2.32 2.71	1.13 1.27 1.41 1.72	0.08 0.09 0.11 0.16
(2) 8' x 2" Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	121.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.90 2.73 3.40 4.40	1.90 2.73 3.40 4.40	0.03 0.04 0.06 0.12
(2) 8' x 2" Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	121.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.90 2.73 3.40 4.40	1.90 2.73 3.40 4.40	0.03 0.04 0.06 0.12
(2) 8' x 2" Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	121.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.90 2.73 3.40 4.40	1.90 2.73 3.40 4.40	0.03 0.04 0.06 0.12

Tower Pressures - No Ice

G_H = 1.100

Section Elevation	z	K_Z	q_z	A_G	Face	A_F	A_R	A_{leg}	Leg %	C_AA_A In Face	C_AA_A Out Face
ft	ft		psf	ft^2		ft^2	ft^2	ft^2		ft^2	ft^2
L1 150.00-145.00	147.48	1.104	43	9.669	A	0.000	9.669	9.669	100.00	0.000	0.000
					B	0.000	9.669		100.00	0.000	0.000
					C	0.000	9.669		100.00	0.150	0.000
L2 145.00-140.00	142.48	1.093	42	10.100	A	0.000	10.100	10.100	100.00	0.000	0.000
					B	0.000	10.100		100.00	0.000	0.000
					C	0.000	10.100		100.00	0.188	0.000
L3 140.00-135.00	137.48	1.082	42	10.532	A	0.000	10.532	10.532	100.00	0.000	0.000
					B	0.000	10.532		100.00	0.000	0.000
					C	0.000	10.532		100.00	0.188	0.000
L4 135.00-130.00	132.48	1.071	41	10.963	A	0.000	10.963	10.963	100.00	0.000	0.000
					B	0.000	10.963		100.00	0.000	0.000
					C	0.000	10.963		100.00	0.188	0.000
L5 130.00-125.00	127.48	1.059	41	11.395	A	0.000	11.395	11.395	100.00	0.000	0.000
					B	0.000	11.395		100.00	0.000	0.000
					C	0.000	11.395		100.00	0.188	0.000
L6 125.00-120.00	122.48	1.047	40	11.826	A	0.000	11.826	11.826	100.00	0.000	0.000
					B	0.000	11.826		100.00	0.160	0.000
					C	0.000	11.826		100.00	0.188	0.000
L7 120.00-115.00	117.49	1.035	40	12.257	A	0.000	12.257	12.257	100.00	0.000	0.000
					B	0.000	12.257		100.00	0.800	0.000
					C	0.000	12.257		100.00	0.188	0.000
L8 115.00-108.00	111.47	1.019	39	17.885	A	0.000	17.885	17.885	100.00	0.000	0.000
					B	0.000	17.885		100.00	1.120	0.000
					C	0.000	17.885		100.00	0.263	0.000
L9 108.00-106.75	107.37	1.009	39	3.227	A	0.000	3.227	3.227	100.00	0.000	0.000
					B	0.000	3.227		100.00	0.200	0.000
					C	0.000	3.227		100.00	0.047	0.000
L10 106.75-101.75	104.24	1	39	13.176	A	0.000	13.176	13.176	100.00	0.000	0.000
					B	0.000	13.176		100.00	0.800	0.000
					C	0.000	13.176		100.00	0.188	0.000
L11 101.75-96.75	99.24	0.986	38	13.607	A	0.000	13.607	13.607	100.00	0.000	0.000
					B	0.000	13.607		100.00	0.800	0.000
					C	0.000	13.607		100.00	0.188	0.000
L12 96.75-91.75	94.24	0.972	37	14.039	A	0.000	14.039	14.039	100.00	0.250	0.000
					B	0.000	14.039		100.00	1.050	0.000
					C	0.000	14.039		100.00	0.438	0.000
L13 91.75-89.50	90.62	0.961	37	6.458	A	0.000	6.458	6.458	100.00	2.250	0.000
					B	0.000	6.458		100.00	2.610	0.000
					C	0.000	6.458		100.00	2.334	0.000
L14 89.50-89.25	89.37	0.957	37	0.722	A	0.000	0.722	0.722	100.00	0.250	0.000
					B	0.000	0.722		100.00	0.290	0.000
					C	0.000	0.722		100.00	0.259	0.000
L15 89.25-84.25	86.74	0.949	37	14.659	A	0.000	14.659	14.659	100.00	5.000	0.000
					B	0.000	14.659		100.00	5.800	0.000
					C	0.000	14.659		100.00	6.250	0.000
L16 84.25-79.25	81.74	0.933	36	15.092	A	0.000	15.092	15.092	100.00	5.000	0.000
					B	0.000	15.092		100.00	5.800	0.000
					C	0.000	15.092		100.00	6.908	0.000
L17 79.25-69.75	74.46	0.908	35	29.865	A	0.000	29.865	29.865	100.00	7.250	0.000
					B	0.000	29.865		100.00	8.770	0.000
					C	0.000	29.865		100.00	11.345	0.000
L18 69.75-68.75	69.25	0.89	34	3.183	A	0.000	3.183	3.183	100.00	0.652	0.000
					B	0.000	3.183		100.00	0.812	0.000
					C	0.000	3.183		100.00	1.083	0.000
L19 68.75-67.42	68.08	0.885	34	4.261	A	0.000	4.261	4.261	100.00	1.294	0.000
					B	0.000	4.261		100.00	1.506	0.000
					C	0.000	4.261		100.00	1.867	0.000
L20 67.42-67.17	67.29	0.882	34	0.804	A	0.000	0.804	0.804	100.00	0.243	0.000
					B	0.000	0.804		100.00	0.283	0.000
					C	0.000	0.804		100.00	0.351	0.000

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
L21 67.17-62.17	64.66	0.872	34	16.313	A	0.000	16.313	16.313	100.00	4.863	0.000
					B	0.000	16.313		100.00	5.663	0.000
					C	0.000	16.313		100.00	7.019	0.000
L22 62.17-57.58	59.87	0.853	33	15.355	A	0.000	15.355	15.355	100.00	9.464	0.000
					B	0.000	15.355		100.00	7.699	0.000
					C	0.000	15.355		100.00	8.943	0.000
L23 57.58-57.33	57.45	0.844	32	0.844	A	0.000	0.844	0.844	100.00	0.671	0.000
					B	0.000	0.844		100.00	0.461	0.000
					C	0.000	0.844		100.00	0.529	0.000
L24 57.33-56.42	56.87	0.841	32	3.083	A	0.000	3.083	3.083	100.00	2.442	0.000
					B	0.000	3.083		100.00	1.677	0.000
					C	0.000	3.083		100.00	1.924	0.000
L25 56.42-56.17	56.29	0.839	32	0.850	A	0.000	0.850	0.850	100.00	0.671	0.000
					B	0.000	0.850		100.00	0.461	0.000
					C	0.000	0.850		100.00	0.529	0.000
L26 56.17-51.17	53.66	0.827	32	17.232	A	0.000	17.232	17.232	100.00	11.195	0.000
					B	0.000	17.232		100.00	6.995	0.000
					C	0.000	17.232		100.00	8.351	0.000
L27 51.17-46.17	48.66	0.804	31	17.664	A	0.000	17.664	17.664	100.00	10.000	0.000
					B	0.000	17.664		100.00	5.800	0.000
					C	0.000	17.664		100.00	7.156	0.000
L28 46.17-41.17	43.66	0.78	30	18.097	A	0.000	18.097	18.097	100.00	10.000	0.000
					B	0.000	18.097		100.00	5.800	0.000
					C	0.000	18.097		100.00	7.156	0.000
L29 41.17-32.50	36.81	0.743	29	32.403	A	0.000	32.403	32.403	100.00	16.180	0.000
					B	0.000	32.403		100.00	9.477	0.000
					C	0.000	32.403		100.00	11.828	0.000
L30 32.50-31.50	32.00	0.714	27	3.760	A	0.000	3.760	3.760	100.00	3.382	0.000
					B	0.000	3.760		100.00	1.851	0.000
					C	0.000	3.760		100.00	2.122	0.000
L31 31.50-26.50	28.99	0.7	27	19.058	A	0.000	19.058	19.058	100.00	18.453	0.000
					B	0.000	19.058		100.00	10.026	0.000
					C	0.000	19.058		100.00	11.382	0.000
L32 26.50-26.25	26.37	0.7	27	0.962	A	0.000	0.962	0.962	100.00	0.965	0.000
					B	0.000	0.962		100.00	0.523	0.000
					C	0.000	0.962		100.00	0.590	0.000
L33 26.25-21.25	23.74	0.7	27	19.474	A	0.000	19.474	19.474	100.00	10.833	0.000
					B	0.000	19.474		100.00	6.217	0.000
					C	0.000	19.474		100.00	7.572	0.000
L34 21.25-16.25	18.74	0.7	27	19.907	A	0.000	19.907	19.907	100.00	10.833	0.000
					B	0.000	19.907		100.00	6.217	0.000
					C	0.000	19.907		100.00	7.572	0.000
L35 16.25-11.25	13.74	0.7	27	20.339	A	0.000	20.339	20.339	100.00	10.833	0.000
					B	0.000	20.339		100.00	6.217	0.000
					C	0.000	20.339		100.00	7.572	0.000
L36 11.25-6.25	8.74	0.7	27	20.772	A	0.000	20.772	20.772	100.00	10.833	0.000
					B	0.000	20.772		100.00	6.217	0.000
					C	0.000	20.772		100.00	7.572	0.000
L37 6.25-1.25	3.74	0.7	27	21.203	A	0.000	21.203	21.203	100.00	10.833	0.000
					B	0.000	21.203		100.00	6.217	0.000
					C	0.000	21.203		100.00	7.572	0.000
L38 1.25-0.00	0.62	0.7	27	5.368	A	0.000	5.368	5.368	100.00	2.708	0.000
					B	0.000	5.368		100.00	1.554	0.000
					C	0.000	5.368		100.00	1.893	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 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 150.00-145.00	147.48	1.104	6	1.4809	10.903	A	0.000	10.903	10.903	100.00	0.000	0.000
						B	0.000	10.903		100.00	0.000	0.000

Section Elevation	z	K_Z	q_z	t_Z	A_G	Face	A_F	A_R	A_{leg}	Leg %	C_AA_A In Face	C_AA_A Out Face
ft	ft		psf	in	ft^2		ft^2	ft^2	ft^2		ft^2	ft^2
						C	0.000	10.903		100.00	1.335	0.000
L2 145.00-140.00	142.48	1.093	6	1.4758	11.330	A	0.000	11.330	11.330	100.00	0.000	0.000
						B	0.000	11.330		100.00	0.000	0.000
						C	0.000	11.330		100.00	1.663	0.000
L3 140.00-135.00	137.48	1.082	6	1.4706	11.757	A	0.000	11.757	11.757	100.00	0.000	0.000
						B	0.000	11.757		100.00	0.000	0.000
						C	0.000	11.757		100.00	1.658	0.000
L4 135.00-130.00	132.48	1.071	6	1.4651	12.184	A	0.000	12.184	12.184	100.00	0.000	0.000
						B	0.000	12.184		100.00	0.000	0.000
						C	0.000	12.184		100.00	1.653	0.000
L5 130.00-125.00	127.48	1.059	6	1.4595	12.611	A	0.000	12.611	12.611	100.00	0.000	0.000
						B	0.000	12.611		100.00	0.000	0.000
						C	0.000	12.611		100.00	1.647	0.000
L6 125.00-120.00	122.48	1.047	6	1.4537	13.037	A	0.000	13.037	13.037	100.00	0.000	0.000
						B	0.000	13.037		100.00	0.451	0.000
						C	0.000	13.037		100.00	1.641	0.000
L7 120.00-115.00	117.49	1.035	6	1.4476	13.464	A	0.000	13.464	13.464	100.00	0.000	0.000
						B	0.000	13.464		100.00	2.248	0.000
						C	0.000	13.464		100.00	1.635	0.000
L8 115.00-108.00	111.47	1.019	6	1.4400	19.565	A	0.000	19.565	19.565	100.00	0.000	0.000
						B	0.000	19.565		100.00	3.136	0.000
						C	0.000	19.565		100.00	2.279	0.000
L9 108.00-106.75	107.37	1.009	6	1.4347	3.527	A	0.000	3.527	3.527	100.00	0.000	0.000
						B	0.000	3.527		100.00	0.560	0.000
						C	0.000	3.527		100.00	0.407	0.000
L10 106.75-101.75	104.24	1	6	1.4304	14.368	A	0.000	14.368	14.368	100.00	0.000	0.000
						B	0.000	14.368		100.00	2.230	0.000
						C	0.000	14.368		100.00	1.618	0.000
L11 101.75-96.75	99.24	0.986	6	1.4234	14.794	A	0.000	14.794	14.794	100.00	0.000	0.000
						B	0.000	14.794		100.00	2.223	0.000
						C	0.000	14.794		100.00	1.611	0.000
L12 96.75-91.75	94.24	0.972	6	1.4161	15.219	A	0.000	15.219	15.219	100.00	0.321	0.000
						B	0.000	15.219		100.00	2.537	0.000
						C	0.000	15.219		100.00	1.924	0.000
L13 91.75-89.50	90.62	0.961	5	1.4105	6.987	A	0.000	6.987	6.987	100.00	2.885	0.000
						B	0.000	6.987		100.00	3.879	0.000
						C	0.000	6.987		100.00	3.604	0.000
L14 89.50-89.25	89.37	0.957	5	1.4086	0.780	A	0.000	0.780	0.780	100.00	0.320	0.000
						B	0.000	0.780		100.00	0.431	0.000
						C	0.000	0.780		100.00	0.400	0.000
L15 89.25-84.25	86.74	0.949	5	1.4044	15.830	A	0.000	15.830	15.830	100.00	6.404	0.000
						B	0.000	15.830		100.00	8.609	0.000
						C	0.000	15.830		100.00	11.635	0.000
L16 84.25-79.25	81.74	0.933	5	1.3961	16.255	A	0.000	16.255	16.255	100.00	6.396	0.000
						B	0.000	16.255		100.00	8.592	0.000
						C	0.000	16.255		100.00	13.884	0.000
L17 79.25-69.75	74.46	0.908	5	1.3831	32.055	A	0.000	32.055	32.055	100.00	9.255	0.000
						B	0.000	32.055		100.00	13.403	0.000
						C	0.000	32.055		100.00	25.043	0.000
L18 69.75-68.75	69.25	0.89	5	1.3731	3.414	A	0.000	3.414	3.414	100.00	0.750	0.000
						B	0.000	3.414		100.00	1.186	0.000
						C	0.000	3.414		100.00	2.412	0.000
L19 68.75-67.42	68.08	0.885	5	1.3708	4.565	A	0.000	4.565	4.565	100.00	1.486	0.000
						B	0.000	4.565		100.00	2.063	0.000
						C	0.000	4.565		100.00	3.682	0.000
L20 67.42-67.17	67.29	0.882	5	1.3692	0.861	A	0.000	0.861	0.861	100.00	0.279	0.000
						B	0.000	0.861		100.00	0.388	0.000
						C	0.000	0.861		100.00	0.692	0.000
L21 67.17-62.17	64.66	0.872	5	1.3637	17.449	A	0.000	17.449	17.449	100.00	5.582	0.000
						B	0.000	17.449		100.00	7.746	0.000
						C	0.000	17.449		100.00	13.809	0.000
L22 62.17-57.58	59.87	0.853	5	1.3532	16.390	A	0.000	16.390	16.390	100.00	11.472	0.000
						B	0.000	16.390		100.00	10.273	0.000
						C	0.000	16.390		100.00	15.807	0.000
L23 57.58-57.33	57.45	0.844	5	1.3477	0.901	A	0.000	0.901	0.901	100.00	0.841	0.000
						B	0.000	0.901		100.00	0.631	0.000
						C	0.000	0.901		100.00	0.931	0.000
L24 57.33-	56.87	0.841	5	1.3463	3.287	A	0.000	3.287	3.287	100.00	3.060	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
56.42						B	0.000	3.287		100.00	2.296	0.000
						C	0.000	3.287		100.00	3.389	0.000
L25 56.42-56.17	56.29	0.839	5	1.3449	0.906	A	0.000	0.906	0.906	100.00	0.840	0.000
						B	0.000	0.906		100.00	0.630	0.000
						C	0.000	0.906		100.00	0.931	0.000
L26 56.17-51.17	53.66	0.827	5	1.3385	18.348	A	0.000	18.348	18.348	100.00	14.118	0.000
						B	0.000	18.348		100.00	9.918	0.000
						C	0.000	18.348		100.00	15.899	0.000
L27 51.17-46.17	48.66	0.804	5	1.3255	18.768	A	0.000	18.768	18.768	100.00	12.651	0.000
						B	0.000	18.768		100.00	8.451	0.000
						C	0.000	18.768		100.00	14.390	0.000
L28 46.17-41.17	43.66	0.78	4	1.3112	19.190	A	0.000	19.190	19.190	100.00	12.622	0.000
						B	0.000	19.190		100.00	8.422	0.000
						C	0.000	19.190		100.00	14.315	0.000
L29 41.17-32.50	36.81	0.743	4	1.2890	34.266	A	0.000	34.266	34.266	100.00	19.431	0.000
						B	0.000	34.266		100.00	13.338	0.000
						C	0.000	34.266		100.00	23.430	0.000
L30 32.50-31.50	32.00	0.714	4	1.2711	3.975	A	0.000	3.975	3.975	100.00	3.942	0.000
						B	0.000	3.975		100.00	2.389	0.000
						C	0.000	3.975		100.00	3.553	0.000
L31 31.50-26.50	28.99	0.7	4	1.2586	20.107	A	0.000	20.107	20.107	100.00	21.968	0.000
						B	0.000	20.107		100.00	13.042	0.000
						C	0.000	20.107		100.00	18.764	0.000
L32 26.50-26.25	26.37	0.7	4	1.2467	1.014	A	0.000	1.014	1.014	100.00	1.158	0.000
						B	0.000	1.014		100.00	0.681	0.000
						C	0.000	1.014		100.00	0.965	0.000
L33 26.25-21.25	23.74	0.7	4	1.2337	20.502	A	0.000	20.502	20.502	100.00	13.301	0.000
						B	0.000	20.502		100.00	8.684	0.000
						C	0.000	20.502		100.00	14.325	0.000
L34 21.25-16.25	18.74	0.7	4	1.2049	20.911	A	0.000	20.911	20.911	100.00	13.243	0.000
						B	0.000	20.911		100.00	8.626	0.000
						C	0.000	20.911		100.00	14.173	0.000
L35 16.25-11.25	13.74	0.7	4	1.1680	21.312	A	0.000	21.312	21.312	100.00	13.169	0.000
						B	0.000	21.312		100.00	8.553	0.000
						C	0.000	21.312		100.00	13.980	0.000
L36 11.25-6.25	8.74	0.7	4	1.1164	21.702	A	0.000	21.702	21.702	100.00	13.066	0.000
						B	0.000	21.702		100.00	8.449	0.000
						C	0.000	21.702		100.00	13.709	0.000
L37 6.25-1.25	3.74	0.7	4	1.0256	22.058	A	0.000	22.058	22.058	100.00	12.884	0.000
						B	0.000	22.058		100.00	8.268	0.000
						C	0.000	22.058		100.00	13.232	0.000
L38 1.25-0.00	0.62	0.7	4	0.8575	5.547	A	0.000	5.547	5.547	100.00	3.137	0.000
						B	0.000	5.547		100.00	1.983	0.000
						C	0.000	5.547		100.00	3.087	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 150.00-145.00	147.48	1.104	9	9.669	A	0.000	9.669	9.669	100.00	0.000	0.000
					B	0.000	9.669		100.00	0.000	0.000
					C	0.000	9.669		100.00	0.150	0.000
L2 145.00-140.00	142.48	1.093	8	10.100	A	0.000	10.100	10.100	100.00	0.000	0.000
					B	0.000	10.100		100.00	0.000	0.000
					C	0.000	10.100		100.00	0.188	0.000
L3 140.00-135.00	137.48	1.082	8	10.532	A	0.000	10.532	10.532	100.00	0.000	0.000
					B	0.000	10.532		100.00	0.000	0.000
					C	0.000	10.532		100.00	0.188	0.000
L4 135.00-	132.48	1.071	8	10.963	A	0.000	10.963	10.963	100.00	0.000	0.000

Section Elevation	z	K_Z	q_z	A_G	Face	A_F	A_R	A_{leg}	Leg %	C_AA_A In Face	C_AA_A Out Face
ft	ft		psf	ft^2		ft^2	ft^2	ft^2		ft^2	ft^2
130.00					B	0.000	10.963		100.00	0.000	0.000
					C	0.000	10.963		100.00	0.188	0.000
L5 130.00-125.00	127.48	1.059	8	11.395	A	0.000	11.395	11.395	100.00	0.000	0.000
					B	0.000	11.395		100.00	0.000	0.000
					C	0.000	11.395		100.00	0.188	0.000
L6 125.00-120.00	122.48	1.047	8	11.826	A	0.000	11.826	11.826	100.00	0.000	0.000
					B	0.000	11.826		100.00	0.160	0.000
					C	0.000	11.826		100.00	0.188	0.000
L7 120.00-115.00	117.49	1.035	8	12.257	A	0.000	12.257	12.257	100.00	0.000	0.000
					B	0.000	12.257		100.00	0.800	0.000
					C	0.000	12.257		100.00	0.188	0.000
L8 115.00-108.00	111.47	1.019	8	17.885	A	0.000	17.885	17.885	100.00	0.000	0.000
					B	0.000	17.885		100.00	1.120	0.000
					C	0.000	17.885		100.00	0.263	0.000
L9 108.00-106.75	107.37	1.009	8	3.227	A	0.000	3.227	3.227	100.00	0.000	0.000
					B	0.000	3.227		100.00	0.200	0.000
					C	0.000	3.227		100.00	0.047	0.000
L10 106.75-101.75	104.24	1	8	13.176	A	0.000	13.176	13.176	100.00	0.000	0.000
					B	0.000	13.176		100.00	0.800	0.000
					C	0.000	13.176		100.00	0.188	0.000
L11 101.75-96.75	99.24	0.986	8	13.607	A	0.000	13.607	13.607	100.00	0.000	0.000
					B	0.000	13.607		100.00	0.800	0.000
					C	0.000	13.607		100.00	0.188	0.000
L12 96.75-91.75	94.24	0.972	8	14.039	A	0.000	14.039	14.039	100.00	0.250	0.000
					B	0.000	14.039		100.00	1.050	0.000
					C	0.000	14.039		100.00	0.438	0.000
L13 91.75-89.50	90.62	0.961	7	6.458	A	0.000	6.458	6.458	100.00	2.250	0.000
					B	0.000	6.458		100.00	2.610	0.000
					C	0.000	6.458		100.00	2.334	0.000
L14 89.50-89.25	89.37	0.957	7	0.722	A	0.000	0.722	0.722	100.00	0.250	0.000
					B	0.000	0.722		100.00	0.290	0.000
					C	0.000	0.722		100.00	0.259	0.000
L15 89.25-84.25	86.74	0.949	7	14.659	A	0.000	14.659	14.659	100.00	5.000	0.000
					B	0.000	14.659		100.00	5.800	0.000
					C	0.000	14.659		100.00	6.250	0.000
L16 84.25-79.25	81.74	0.933	7	15.092	A	0.000	15.092	15.092	100.00	5.000	0.000
					B	0.000	15.092		100.00	5.800	0.000
					C	0.000	15.092		100.00	6.908	0.000
L17 79.25-69.75	74.46	0.908	7	29.865	A	0.000	29.865	29.865	100.00	7.250	0.000
					B	0.000	29.865		100.00	8.770	0.000
					C	0.000	29.865		100.00	11.345	0.000
L18 69.75-68.75	69.25	0.89	7	3.183	A	0.000	3.183	3.183	100.00	0.652	0.000
					B	0.000	3.183		100.00	0.812	0.000
					C	0.000	3.183		100.00	1.083	0.000
L19 68.75-67.42	68.08	0.885	7	4.261	A	0.000	4.261	4.261	100.00	1.294	0.000
					B	0.000	4.261		100.00	1.506	0.000
					C	0.000	4.261		100.00	1.867	0.000
L20 67.42-67.17	67.29	0.882	7	0.804	A	0.000	0.804	0.804	100.00	0.243	0.000
					B	0.000	0.804		100.00	0.283	0.000
					C	0.000	0.804		100.00	0.351	0.000
L21 67.17-62.17	64.66	0.872	7	16.313	A	0.000	16.313	16.313	100.00	4.863	0.000
					B	0.000	16.313		100.00	5.663	0.000
					C	0.000	16.313		100.00	7.019	0.000
L22 62.17-57.58	59.87	0.853	7	15.355	A	0.000	15.355	15.355	100.00	9.464	0.000
					B	0.000	15.355		100.00	7.699	0.000
					C	0.000	15.355		100.00	8.943	0.000
L23 57.58-57.33	57.45	0.844	7	0.844	A	0.000	0.844	0.844	100.00	0.671	0.000
					B	0.000	0.844		100.00	0.461	0.000
					C	0.000	0.844		100.00	0.529	0.000
L24 57.33-56.42	56.87	0.841	7	3.083	A	0.000	3.083	3.083	100.00	2.442	0.000
					B	0.000	3.083		100.00	1.677	0.000
					C	0.000	3.083		100.00	1.924	0.000
L25 56.42-56.17	56.29	0.839	6	0.850	A	0.000	0.850	0.850	100.00	0.671	0.000
					B	0.000	0.850		100.00	0.461	0.000
					C	0.000	0.850		100.00	0.529	0.000
L26 56.17-51.17	53.66	0.827	6	17.232	A	0.000	17.232	17.232	100.00	11.195	0.000
					B	0.000	17.232		100.00	6.995	0.000
					C	0.000	17.232		100.00	8.351	0.000

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
L27 51.17-46.17	48.66	0.804	6	17.664	A	0.000	17.664	17.664	100.00	10.000	0.000
					B	0.000	17.664		100.00	5.800	0.000
					C	0.000	17.664		100.00	7.156	0.000
L28 46.17-41.17	43.66	0.78	6	18.097	A	0.000	18.097	18.097	100.00	10.000	0.000
					B	0.000	18.097		100.00	5.800	0.000
					C	0.000	18.097		100.00	7.156	0.000
L29 41.17-32.50	36.81	0.743	6	32.403	A	0.000	32.403	32.403	100.00	16.180	0.000
					B	0.000	32.403		100.00	9.477	0.000
					C	0.000	32.403		100.00	11.828	0.000
L30 32.50-31.50	32.00	0.714	6	3.760	A	0.000	3.760	3.760	100.00	3.382	0.000
					B	0.000	3.760		100.00	1.851	0.000
					C	0.000	3.760		100.00	2.122	0.000
L31 31.50-26.50	28.99	0.7	5	19.058	A	0.000	19.058	19.058	100.00	18.453	0.000
					B	0.000	19.058		100.00	10.026	0.000
					C	0.000	19.058		100.00	11.382	0.000
L32 26.50-26.25	26.37	0.7	5	0.962	A	0.000	0.962	0.962	100.00	0.965	0.000
					B	0.000	0.962		100.00	0.523	0.000
					C	0.000	0.962		100.00	0.590	0.000
L33 26.25-21.25	23.74	0.7	5	19.474	A	0.000	19.474	19.474	100.00	10.833	0.000
					B	0.000	19.474		100.00	6.217	0.000
					C	0.000	19.474		100.00	7.572	0.000
L34 21.25-16.25	18.74	0.7	5	19.907	A	0.000	19.907	19.907	100.00	10.833	0.000
					B	0.000	19.907		100.00	6.217	0.000
					C	0.000	19.907		100.00	7.572	0.000
L35 16.25-11.25	13.74	0.7	5	20.339	A	0.000	20.339	20.339	100.00	10.833	0.000
					B	0.000	20.339		100.00	6.217	0.000
					C	0.000	20.339		100.00	7.572	0.000
L36 11.25-6.25	8.74	0.7	5	20.772	A	0.000	20.772	20.772	100.00	10.833	0.000
					B	0.000	20.772		100.00	6.217	0.000
					C	0.000	20.772		100.00	7.572	0.000
L37 6.25-1.25	3.74	0.7	5	21.203	A	0.000	21.203	21.203	100.00	10.833	0.000
					B	0.000	21.203		100.00	6.217	0.000
					C	0.000	21.203		100.00	7.572	0.000
L38 1.25-0.00	0.62	0.7	5	5.368	A	0.000	5.368	5.368	100.00	2.708	0.000
					B	0.000	5.368		100.00	1.554	0.000
					C	0.000	5.368		100.00	1.893	0.000

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

Comb. No.	Description
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 K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	150 - 145	Pole	Max Tension	1	0.00	0.0	-0.0
			Max. Compression	26	-9.53	-2.5	4.3
			Max. Mx	8	-4.58	-24.7	1.5
			Max. My	2	-4.55	-0.7	26.7
			Max. Vy	8	4.93	-24.7	1.5
			Max. Vx	2	-5.16	-0.7	26.7
			Max. Torque	10			2.5
L2	145 - 140	Pole	Max Tension	1	0.00	0.0	0.0
			Max. Compression	26	-18.66	-3.3	3.9
			Max. Mx	8	-8.41	-59.6	1.0
			Max. My	2	-8.37	-0.5	62.4
			Max. Vy	8	10.58	-59.6	1.0
			Max. Vx	2	-10.76	-0.5	62.4
			Max. Torque	10			2.5
L3	140 - 135	Pole	Max Tension	1	0.00	0.0	0.0
			Max. Compression	26	-19.41	-3.3	4.0
			Max. Mx	8	-8.87	-113.8	0.5
			Max. My	2	-8.83	0.0	117.4
			Max. Vy	8	11.07	-113.8	0.5
			Max. Vx	2	-11.25	0.0	117.4
			Max. Torque	10			2.5
L4	135 - 130	Pole	Max Tension	1	0.00	0.0	0.0
			Max. Compression	26	-28.31	-3.3	4.5
			Max. Mx	8	-13.13	-180.7	0.1
			Max. My	2	-13.09	0.6	185.4
			Max. Vy	8	16.00	-180.7	0.1
			Max. Vx	2	-16.19	0.6	185.4
			Max. Torque	10			2.7
L5	130 - 125	Pole	Max Tension	1	0.00	0.0	0.0
			Max. Compression	26	-29.17	-3.4	4.6
			Max. Mx	8	-13.72	-262.0	-0.5
			Max. My	2	-13.68	1.2	267.6
			Max. Vy	8	16.50	-262.0	-0.5
			Max. Vx	2	-16.69	1.2	267.6
			Max. Torque	10			2.7

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L6	125 - 120	Pole	Max Tension	1	0.00	0.0	0.0
			Max. Compression	26	-35.72	-3.5	5.1
			Max. Mx	8	-16.68	-348.0	-0.9
			Max. My	2	-16.63	1.7	354.6
			Max. Vy	8	19.22	-348.0	-0.9
			Max. Vx	2	-19.44	1.7	354.6
			Max. Torque	10			2.9
L7	120 - 115	Pole	Max Tension	1	0.00	0.0	0.0
			Max. Compression	26	-36.67	-3.6	5.2
			Max. Mx	8	-17.35	-445.3	-1.5
			Max. My	2	-17.30	2.3	453.0
			Max. Vy	8	19.71	-445.3	-1.5
			Max. Vx	2	-19.94	2.3	453.0
			Max. Torque	10			2.9
L8	115 - 108	Pole	Max Tension	1	0.00	0.0	0.0
			Max. Compression	26	-37.33	-3.6	5.2
			Max. Mx	8	-17.82	-509.8	-1.8
			Max. My	2	-17.78	2.6	518.3
			Max. Vy	8	20.03	-509.8	-1.8
			Max. Vx	2	-20.26	2.6	518.3
			Max. Torque	10			2.9
L9	108 - 106.75	Pole	Max Tension	1	0.00	0.0	0.0
			Max. Compression	26	-45.15	-4.3	6.3
			Max. Mx	8	-22.18	-621.6	-1.8
			Max. My	2	-22.13	2.9	631.5
			Max. Vy	8	23.28	-621.6	-1.8
			Max. Vx	2	-23.53	2.9	631.5
			Max. Torque	10			3.2
L10	106.75 - 101.75	Pole	Max Tension	1	0.00	0.0	0.0
			Max. Compression	26	-46.47	-4.4	6.8
			Max. Mx	8	-23.19	-739.3	-2.2
			Max. My	2	-23.15	3.5	750.7
			Max. Vy	8	23.85	-739.3	-2.2
			Max. Vx	2	-24.07	3.5	750.7
			Max. Torque	10			3.4
L11	101.75 - 96.75	Pole	Max Tension	1	0.00	0.0	0.0
			Max. Compression	26	-47.69	-4.5	6.9
			Max. Mx	8	-24.16	-859.7	-2.8
			Max. My	2	-24.12	4.1	872.2
			Max. Vy	8	24.33	-859.7	-2.8
			Max. Vx	2	-24.55	4.1	872.2
			Max. Torque	10			3.4
L12	96.75 - 91.75	Pole	Max Tension	1	0.00	0.0	0.0
			Max. Compression	26	-48.95	-4.6	6.9
			Max. Mx	8	-25.16	-982.5	-3.4
			Max. My	2	-25.12	4.6	996.1
			Max. Vy	8	24.81	-982.5	-3.4
			Max. Vx	2	-25.03	4.6	996.1
			Max. Torque	10			3.4
L13	91.75 - 89.5	Pole	Max Tension	1	0.00	0.0	0.0
			Max. Compression	26	-49.59	-4.7	6.9
			Max. Mx	8	-25.61	-1038.6	-3.6
			Max. My	2	-25.57	4.9	1052.7
			Max. Vy	8	25.03	-1038.6	-3.6
			Max. Vx	2	-25.31	4.9	1052.7
			Max. Torque	10			3.4
L14	89.5 - 89.25	Pole	Max Tension	1	0.00	0.0	0.0
			Max. Compression	26	-49.68	-4.7	7.0
			Max. Mx	8	-25.69	-1044.8	-3.7
			Max. My	2	-25.65	4.9	1059.0
			Max. Vy	8	25.04	-1044.8	-3.7
			Max. Vx	2	-25.34	4.9	1059.0
			Max. Torque	10			3.4
L15	89.25 - 84.25	Pole	Max Tension	1	0.00	0.0	0.0
			Max. Compression	26	-52.12	-6.0	7.5

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	8	-27.20	-1176.4	-4.1
			Max. My	2	-27.15	5.1	1192.1
			Max. Vy	8	26.13	-1176.4	-4.1
			Max. Vx	2	-26.55	5.1	1192.1
			Max. Torque	10			4.6
L16	84.25 - 79.25	Pole	Max Tension	1	0.00	0.0	0.0
			Max. Compression	26	-54.42	-4.4	6.5
			Max. Mx	8	-28.70	-1311.8	-4.9
			Max. My	2	-28.64	6.1	1330.3
			Max. Vy	8	27.03	-1311.8	-4.9
			Max. Vx	2	-27.63	6.1	1330.3
			Max. Torque	10			4.6
L17	79.25 - 69.75	Pole	Max Tension	1	0.00	0.0	0.0
			Max. Compression	26	-56.23	-4.4	6.4
			Max. Mx	8	-30.05	-1441.4	-5.4
			Max. My	2	-29.99	6.7	1462.6
			Max. Vy	8	27.53	-1441.4	-5.4
			Max. Vx	2	-28.13	6.7	1462.6
			Max. Torque	10			2.9
L18	69.75 - 68.75	Pole	Max Tension	1	0.00	0.0	0.0
			Max. Compression	26	-59.61	-4.5	6.3
			Max. Mx	8	-32.53	-1601.7	-6.1
			Max. My	2	-32.48	7.3	1626.4
			Max. Vy	8	28.23	-1601.7	-6.1
			Max. Vx	2	-28.82	7.3	1626.4
			Max. Torque	10			2.9
L19	68.75 - 67.42	Pole	Max Tension	1	0.00	0.0	0.0
			Max. Compression	26	-60.17	-4.6	6.4
			Max. Mx	8	-32.96	-1639.3	-6.2
			Max. My	2	-32.91	7.5	1664.8
			Max. Vy	8	28.36	-1639.3	-6.2
			Max. Vx	2	-28.95	7.5	1664.8
			Max. Torque	10			2.9
L20	67.42 - 67.17	Pole	Max Tension	1	0.00	0.0	0.0
			Max. Compression	26	-60.28	-4.6	6.4
			Max. Mx	8	-33.06	-1646.4	-6.3
			Max. My	2	-33.01	7.5	1672.0
			Max. Vy	8	28.36	-1646.4	-6.3
			Max. Vx	2	-28.96	7.5	1672.0
			Max. Torque	10			2.9
L21	67.17 - 62.17	Pole	Max Tension	1	0.00	0.0	0.0
			Max. Compression	26	-62.41	-4.7	6.4
			Max. Mx	8	-34.71	-1789.4	-6.8
			Max. My	2	-34.67	8.0	1818.0
			Max. Vy	8	28.84	-1789.4	-6.8
			Max. Vx	2	-29.44	8.0	1818.0
			Max. Torque	10			2.9
L22	62.17 - 57.58	Pole	Max Tension	1	0.00	0.0	0.0
			Max. Compression	26	-64.50	-4.9	6.4
			Max. Mx	8	-36.26	-1923.1	-7.2
			Max. My	2	-36.22	8.5	1954.4
			Max. Vy	8	29.41	-1923.1	-7.2
			Max. Vx	2	-30.00	8.5	1954.4
			Max. Torque	10			2.9
L23	57.58 - 57.33	Pole	Max Tension	1	0.00	0.0	0.0
			Max. Compression	26	-64.64	-4.9	6.4
			Max. Mx	8	-36.38	-1930.4	-7.3
			Max. My	2	-36.34	8.5	1961.9
			Max. Vy	8	29.43	-1930.4	-7.3
			Max. Vx	2	-30.02	8.5	1961.9
			Max. Torque	10			2.9

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L24	57.33 - 56.42	Pole	Max Tension	1	0.00	0.0	0.0
			Max. Compression	26	-65.16	-4.9	6.4
			Max. Mx	8	-36.76	-1957.3	-7.4
			Max. My	2	-36.72	8.7	1989.3
			Max. Vy	8	29.57	-1957.3	-7.4
			Max. Vx	2	-30.15	8.7	1989.3
			Max. Torque	10			2.9
L25	56.42 - 56.17	Pole	Max Tension	1	0.00	0.0	0.0
			Max. Compression	26	-65.29	-4.9	6.4
			Max. Mx	8	-36.86	-1964.7	-7.4
			Max. My	2	-36.82	8.7	1996.8
			Max. Vy	8	29.60	-1964.7	-7.4
			Max. Vx	2	-30.18	8.7	1996.8
			Max. Torque	10			2.9
L26	56.17 - 51.17	Pole	Max Tension	1	0.00	0.0	0.0
			Max. Compression	26	-67.70	-4.9	6.3
			Max. Mx	8	-38.64	-2114.3	-8.0
			Max. My	2	-38.60	9.2	2149.4
			Max. Vy	8	30.28	-2114.3	-8.0
			Max. Vx	2	-30.85	9.2	2149.4
			Max. Torque	10			2.9
L27	51.17 - 46.17	Pole	Max Tension	1	0.00	0.0	0.0
			Max. Compression	26	-70.08	-4.9	6.2
			Max. Mx	8	-40.46	-2267.3	-8.6
			Max. My	2	-40.43	9.8	2305.2
			Max. Vy	8	30.93	-2267.3	-8.6
			Max. Vx	2	-31.50	9.8	2305.2
			Max. Torque	10			2.9
L28	46.17 - 41.17	Pole	Max Tension	1	0.00	0.0	0.0
			Max. Compression	26	-72.50	-4.9	6.1
			Max. Mx	8	-42.31	-2423.5	-9.2
			Max. My	2	-42.28	10.4	2464.1
			Max. Vy	8	31.55	-2423.5	-9.2
			Max. Vx	2	-32.12	10.4	2464.1
			Max. Torque	10			2.9
L29	41.17 - 32.5	Pole	Max Tension	1	0.00	0.0	0.0
			Max. Compression	26	-74.24	-4.8	6.1
			Max. Mx	8	-43.70	-2524.0	-9.5
			Max. My	2	-43.67	10.8	2566.5
			Max. Vy	8	31.94	-2524.0	-9.5
			Max. Vx	2	-32.51	10.8	2566.5
			Max. Torque	10			2.9
L30	32.5 - 31.5	Pole	Max Tension	1	0.00	0.0	0.0
			Max. Compression	26	-79.61	-4.7	6.0
			Max. Mx	8	-47.86	-2734.3	-10.3
			Max. My	2	-47.84	11.7	2780.7
			Max. Vy	8	32.82	-2734.3	-10.3
			Max. Vx	2	-33.39	11.7	2780.7
			Max. Torque	10			2.9
L31	31.5 - 26.5	Pole	Max Tension	1	0.00	0.0	0.0
			Max. Compression	26	-82.10	-4.6	5.9
			Max. Mx	8	-49.65	-2899.6	-10.8
			Max. My	2	-49.63	12.3	2948.9
			Max. Vy	8	33.36	-2899.6	-10.8
			Max. Vx	2	-33.93	12.3	2948.9
			Max. Torque	10			2.9
L32	26.5 - 26.25	Pole	Max Tension	1	0.00	0.0	0.0
			Max. Compression	26	-82.25	-4.6	5.9
			Max. Mx	8	-49.78	-2908.0	-10.9
			Max. My	2	-49.76	12.3	2957.3
			Max. Vy	8	33.37	-2908.0	-10.9
			Max. Vx	2	-33.94	12.3	2957.3
			Max. Torque	10			2.9
L33	26.25 -	Pole	Max Tension	1	0.00	0.0	0.0

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
	21.25						
			Max. Compression	26	-85.09	-4.6	5.8
			Max. Mx	8	-52.06	-3076.3	-11.4
			Max. My	2	-52.04	12.8	3128.5
			Max. Vy	8	33.96	-3076.3	-11.4
			Max. Vx	2	-34.53	12.8	3128.5
			Max. Torque	10			2.9
L34	21.25 - 16.25	Pole	Max Tension	1	0.00	0.0	0.0
			Max. Compression	26	-87.95	-4.6	5.7
			Max. Mx	8	-54.38	-3247.5	-12.0
			Max. My	2	-54.37	13.4	3302.5
			Max. Vy	8	34.54	-3247.5	-12.0
			Max. Vx	2	-35.11	13.4	3302.5
			Max. Torque	10			2.9
L35	16.25 - 11.25	Pole	Max Tension	1	0.00	0.0	0.0
			Max. Compression	26	-90.82	-4.6	5.6
			Max. Mx	8	-56.73	-3421.6	-12.6
			Max. My	2	-56.72	14.0	3479.4
			Max. Vy	8	35.13	-3421.6	-12.6
			Max. Vx	2	-35.69	14.0	3479.4
			Max. Torque	10			2.9
L36	11.25 - 6.25	Pole	Max Tension	1	0.00	0.0	0.0
			Max. Compression	26	-93.70	-4.6	5.5
			Max. Mx	8	-59.12	-3598.7	-13.2
			Max. My	2	-59.11	14.5	3659.2
			Max. Vy	8	35.71	-3598.7	-13.2
			Max. Vx	2	-36.27	14.5	3659.2
			Max. Torque	10			2.9
L37	6.25 - 1.25	Pole	Max Tension	1	0.00	0.0	0.0
			Max. Compression	26	-96.56	-4.6	5.4
			Max. Mx	8	-61.54	-3778.6	-13.7
			Max. My	2	-61.53	15.0	3841.9
			Max. Vy	8	36.30	-3778.6	-13.7
			Max. Vx	2	-36.85	15.0	3841.9
			Max. Torque	10			2.9
L38	1.25 - 0	Pole	Max Tension	1	0.00	0.0	0.0
			Max. Compression	26	-97.26	-4.6	5.4
			Max. Mx	8	-62.14	-3824.1	-13.9
			Max. My	2	-62.14	15.2	3888.0
			Max. Vy	8	36.45	-3824.1	-13.9
			Max. Vx	2	-37.00	15.2	3888.0
			Max. Torque	10			2.9

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	26	97.26	0.00	-0.00
	Max. H_x	21	46.62	36.43	0.11
	Max. H_z	3	46.62	0.11	36.98
	Max. M_x	2	3888.0	0.11	36.98
	Max. M_z	8	3824.1	-36.43	-0.11
	Max. Torsion	10	2.9	-32.14	-18.72
	Min. Vert	3	46.62	0.11	36.98
	Min. H_x	8	62.16	-36.43	-0.11
	Min. H_z	14	62.16	-0.11	-36.62
	Min. M_x	14	-3848.8	-0.11	-36.62
	Min. M_z	20	-3819.7	36.43	0.11
	Min. Torsion	22	-2.9	31.60	18.41

Tower Mast Reaction Summary

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
Dead Only	51.80	-0.00	0.00	-2.6	-1.6	0.0
1.2 Dead+1.0 Wind 0 deg - No Ice	62.16	-0.11	-36.98	-3888.0	15.2	1.3
0.9 Dead+1.0 Wind 0 deg - No Ice	46.62	-0.11	-36.98	-3838.7	15.5	1.2
1.2 Dead+1.0 Wind 30 deg - No Ice	62.16	18.18	-31.78	-3340.2	-1903.4	-0.2
0.9 Dead+1.0 Wind 30 deg - No Ice	46.62	18.18	-31.78	-3297.7	-1879.2	-0.2
1.2 Dead+1.0 Wind 60 deg - No Ice	62.16	30.09	-17.40	-1891.2	-3262.9	-1.6
0.9 Dead+1.0 Wind 60 deg - No Ice	46.62	30.09	-17.40	-1866.6	-3221.4	-1.6
1.2 Dead+1.0 Wind 90 deg - No Ice	62.16	36.43	0.11	13.9	-3824.1	-2.6
0.9 Dead+1.0 Wind 90 deg - No Ice	46.62	36.43	0.11	14.5	-3775.9	-2.5
1.2 Dead+1.0 Wind 120 deg - No Ice	62.16	32.14	18.72	1962.5	-3363.5	-2.9
0.9 Dead+1.0 Wind 120 deg - No Ice	46.62	32.14	18.72	1938.9	-3321.2	-2.8
1.2 Dead+1.0 Wind 150 deg - No Ice	62.16	17.70	30.71	3322.0	-1916.8	-2.4
0.9 Dead+1.0 Wind 150 deg - No Ice	46.62	17.70	30.71	3281.1	-1892.2	-2.3
1.2 Dead+1.0 Wind 180 deg - No Ice	62.16	0.11	36.62	3848.8	-19.4	-1.3
0.9 Dead+1.0 Wind 180 deg - No Ice	46.62	0.11	36.62	3801.6	-18.6	-1.2
1.2 Dead+1.0 Wind 210 deg - No Ice	62.16	-18.19	31.79	3334.2	1899.7	0.2
0.9 Dead+1.0 Wind 210 deg - No Ice	46.62	-18.19	31.79	3293.5	1876.6	0.2
1.2 Dead+1.0 Wind 240 deg - No Ice	62.16	-30.60	17.70	1907.5	3298.6	1.6
0.9 Dead+1.0 Wind 240 deg - No Ice	46.62	-30.60	17.70	1884.5	3257.9	1.6
1.2 Dead+1.0 Wind 270 deg - No Ice	62.16	-36.43	-0.11	-20.7	3819.7	2.6
0.9 Dead+1.0 Wind 270 deg - No Ice	46.62	-36.43	-0.11	-19.5	3772.6	2.5
1.2 Dead+1.0 Wind 300 deg - No Ice	62.16	-31.60	-18.41	-1944.5	3316.4	2.9
0.9 Dead+1.0 Wind 300 deg - No Ice	46.62	-31.60	-18.41	-1919.3	3275.6	2.8
1.2 Dead+1.0 Wind 330 deg - No Ice	62.16	-17.50	-30.37	-3307.7	1900.4	2.4
0.9 Dead+1.0 Wind 330 deg - No Ice	46.62	-17.50	-30.37	-3265.1	1877.0	2.3
1.2 Dead+1.0 Ice+1.0 Temp	97.26	-0.00	0.00	-5.4	-4.6	-0.0
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	97.26	-0.02	-7.35	-854.5	-1.8	0.3
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	97.26	3.65	-6.36	-739.2	-424.4	-0.1
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	97.26	6.32	-3.65	-427.2	-734.1	-0.4
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	97.26	7.33	0.02	-2.6	-849.3	-0.6
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	97.26	6.37	3.70	421.8	-738.1	-0.7
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	97.26	3.68	6.37	731.0	-429.4	-0.5
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	97.26	0.02	7.36	843.5	-7.6	-0.3
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	97.26	-3.65	6.36	728.3	415.0	0.1

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	97.26	-6.33	3.65	416.3	724.9	0.4
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	97.26	-7.33	-0.02	-8.4	839.8	0.6
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	97.26	-6.36	-3.69	-432.5	728.1	0.7
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	97.26	-3.67	-6.36	-741.6	419.7	0.5
Dead+Wind 0 deg - Service	51.80	-0.02	-7.42	-776.9	1.7	0.3
Dead+Wind 30 deg - Service	51.80	3.65	-6.38	-667.7	-380.6	-0.0
Dead+Wind 60 deg - Service	51.80	6.04	-3.49	-379.0	-651.4	-0.3
Dead+Wind 90 deg - Service	51.80	7.31	0.02	0.6	-763.3	-0.5
Dead+Wind 120 deg - Service	51.80	6.45	3.76	388.9	-671.6	-0.6
Dead+Wind 150 deg - Service	51.80	3.55	6.16	659.8	-383.3	-0.5
Dead+Wind 180 deg - Service	51.80	0.02	7.35	764.8	-5.2	-0.3
Dead+Wind 210 deg - Service	51.80	-3.65	6.38	662.2	377.2	0.0
Dead+Wind 240 deg - Service	51.80	-6.14	3.55	377.9	655.9	0.3
Dead+Wind 270 deg - Service	51.80	-7.31	-0.02	-6.2	759.8	0.5
Dead+Wind 300 deg - Service	51.80	-6.34	-3.69	-389.6	659.5	0.6
Dead+Wind 330 deg - Service	51.80	-3.51	-6.09	-661.2	377.3	0.5

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	K	K	K	K	K	K	
1	0.00	-51.80	0.00	0.00	51.80	-0.00	0.003%
2	-0.11	-62.16	-36.98	0.11	62.16	36.98	0.000%
3	-0.11	-46.62	-36.98	0.11	46.62	36.98	0.000%
4	18.18	-62.16	-31.78	-18.18	62.16	31.78	0.000%
5	18.18	-46.62	-31.78	-18.18	46.62	31.78	0.000%
6	30.09	-62.16	-17.40	-30.09	62.16	17.40	0.000%
7	30.09	-46.62	-17.40	-30.09	46.62	17.40	0.000%
8	36.43	-62.16	0.11	-36.43	62.16	-0.11	0.000%
9	36.43	-46.62	0.11	-36.43	46.62	-0.11	0.000%
10	32.14	-62.16	18.72	-32.14	62.16	-18.72	0.000%
11	32.14	-46.62	18.72	-32.14	46.62	-18.72	0.000%
12	17.70	-62.16	30.71	-17.70	62.16	-30.71	0.000%
13	17.70	-46.62	30.71	-17.70	46.62	-30.71	0.000%
14	0.11	-62.16	36.62	-0.11	62.16	-36.62	0.000%
15	0.11	-46.62	36.62	-0.11	46.62	-36.62	0.000%
16	-18.19	-62.16	31.79	18.19	62.16	-31.79	0.000%
17	-18.19	-46.62	31.79	18.19	46.62	-31.79	0.000%
18	-30.60	-62.16	17.70	30.60	62.16	-17.70	0.000%
19	-30.60	-46.62	17.70	30.60	46.62	-17.70	0.000%
20	-36.43	-62.16	-0.11	36.43	62.16	0.11	0.000%
21	-36.43	-46.62	-0.11	36.43	46.62	0.11	0.000%
22	-31.60	-62.16	-18.41	31.60	62.16	18.41	0.000%
23	-31.60	-46.62	-18.41	31.60	46.62	18.41	0.000%
24	-17.50	-62.16	-30.37	17.50	62.16	30.37	0.000%
25	-17.50	-46.62	-30.37	17.50	46.62	30.37	0.000%
26	0.00	-97.26	0.00	0.00	97.26	-0.00	0.000%
27	-0.02	-97.26	-7.35	0.02	97.26	7.35	0.000%
28	3.65	-97.26	-6.36	-3.65	97.26	6.36	0.000%
29	6.32	-97.26	-3.65	-6.32	97.26	3.65	0.000%
30	7.33	-97.26	0.02	-7.33	97.26	-0.02	0.000%
31	6.37	-97.26	3.70	-6.37	97.26	-3.70	0.000%
32	3.68	-97.26	6.37	-3.68	97.26	-6.37	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
33	0.02	-97.26	7.36	-0.02	97.26	-7.36	0.000%
34	-3.65	-97.26	6.36	3.65	97.26	-6.36	0.000%
35	-6.33	-97.26	3.65	6.33	97.26	-3.65	0.000%
36	-7.33	-97.26	-0.02	7.33	97.26	0.02	0.000%
37	-6.36	-97.26	-3.69	6.36	97.26	3.69	0.000%
38	-3.67	-97.26	-6.36	3.67	97.26	6.36	0.000%
39	-0.02	-51.80	-7.42	0.02	51.80	7.42	0.000%
40	3.65	-51.80	-6.38	-3.65	51.80	6.38	0.000%
41	6.04	-51.80	-3.49	-6.04	51.80	3.49	0.000%
42	7.31	-51.80	0.02	-7.31	51.80	-0.02	0.000%
43	6.45	-51.80	3.76	-6.45	51.80	-3.76	0.000%
44	3.55	-51.80	6.16	-3.55	51.80	-6.16	0.000%
45	0.02	-51.80	7.35	-0.02	51.80	-7.35	0.000%
46	-3.65	-51.80	6.38	3.65	51.80	-6.38	0.000%
47	-6.14	-51.80	3.55	6.14	51.80	-3.55	0.000%
48	-7.31	-51.80	-0.02	7.31	51.80	0.02	0.000%
49	-6.34	-51.80	-3.69	6.34	51.80	3.69	0.000%
50	-3.51	-51.80	-6.09	3.51	51.80	6.09	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	6	0.00000001	0.00002131
2	Yes	15	0.00000001	0.00009303
3	Yes	15	0.00000001	0.00006050
4	Yes	17	0.00000001	0.00011529
5	Yes	17	0.00000001	0.00006865
6	Yes	17	0.00000001	0.00011674
7	Yes	17	0.00000001	0.00006977
8	Yes	16	0.00000001	0.00003894
9	Yes	15	0.00000001	0.00012327
10	Yes	17	0.00000001	0.00011474
11	Yes	17	0.00000001	0.00006823
12	Yes	17	0.00000001	0.00012181
13	Yes	17	0.00000001	0.00007275
14	Yes	16	0.00000001	0.00003336
15	Yes	15	0.00000001	0.00010420
16	Yes	17	0.00000001	0.00011434
17	Yes	17	0.00000001	0.00006828
18	Yes	17	0.00000001	0.00011241
19	Yes	17	0.00000001	0.00006717
20	Yes	16	0.00000001	0.00005278
21	Yes	16	0.00000001	0.00003420
22	Yes	17	0.00000001	0.00012214
23	Yes	17	0.00000001	0.00007288
24	Yes	17	0.00000001	0.00011346
25	Yes	17	0.00000001	0.00006768
26	Yes	13	0.00000001	0.00012576
27	Yes	17	0.00000001	0.00004084
28	Yes	17	0.00000001	0.00004524
29	Yes	17	0.00000001	0.00004516
30	Yes	17	0.00000001	0.00004040
31	Yes	17	0.00000001	0.00004426
32	Yes	17	0.00000001	0.00004434
33	Yes	17	0.00000001	0.00003938
34	Yes	17	0.00000001	0.00004296
35	Yes	17	0.00000001	0.00004281
36	Yes	17	0.00000001	0.00003935
37	Yes	17	0.00000001	0.00004460
38	Yes	17	0.00000001	0.00004471
39	Yes	13	0.00000001	0.00014356
40	Yes	14	0.00000001	0.00013527
41	Yes	14	0.00000001	0.00014343
42	Yes	14	0.00000001	0.00005319

43	Yes	14	0.00000001	0.00012726
44	Yes	15	0.00000001	0.00003824
45	Yes	13	0.00000001	0.00014408
46	Yes	14	0.00000001	0.00013075
47	Yes	14	0.00000001	0.00012369
48	Yes	14	0.00000001	0.00005429
49	Yes	15	0.00000001	0.00003927
50	Yes	14	0.00000001	0.00012593

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	150 - 145	19.370	39	1.1884	0.0069
L2	145 - 140	18.127	39	1.1833	0.0061
L3	140 - 135	16.893	39	1.1730	0.0055
L4	135 - 130	15.674	39	1.1546	0.0049
L5	130 - 125	14.478	39	1.1283	0.0044
L6	125 - 120	13.314	39	1.0930	0.0038
L7	120 - 115	12.192	39	1.0500	0.0034
L8	115 - 108	11.118	39	1.0000	0.0029
L9	111.75 - 106.75	10.449	39	0.9643	0.0027
L10	106.75 - 101.75	9.454	39	0.9308	0.0024
L11	101.75 - 96.75	8.508	39	0.8757	0.0021
L12	96.75 - 91.75	7.621	39	0.8171	0.0018
L13	91.75 - 89.5	6.798	39	0.7558	0.0015
L14	89.5 - 89.25	6.448	39	0.7275	0.0014
L15	89.25 - 84.25	6.410	39	0.7255	0.0014
L16	84.25 - 79.25	5.672	39	0.6840	0.0012
L17	79.25 - 69.75	4.978	39	0.6410	0.0010
L18	74.5 - 68.75	4.361	39	0.5989	0.0009
L19	68.75 - 67.42	3.658	39	0.5625	0.0009
L20	67.42 - 67.17	3.504	39	0.5466	0.0008
L21	67.17 - 62.17	3.475	39	0.5435	0.0008
L22	62.17 - 57.58	2.938	39	0.4829	0.0007
L23	57.58 - 57.33	2.500	39	0.4271	0.0006
L24	57.33 - 56.42	2.478	39	0.4254	0.0006
L25	56.42 - 56.17	2.397	39	0.4194	0.0006
L26	56.17 - 51.17	2.376	39	0.4174	0.0006
L27	51.17 - 46.17	1.960	39	0.3772	0.0005
L28	46.17 - 41.17	1.586	39	0.3371	0.0004
L29	41.17 - 32.5	1.254	39	0.2964	0.0004
L30	38 - 31.5	1.066	39	0.2707	0.0003
L31	31.5 - 26.5	0.718	39	0.2345	0.0003
L32	26.5 - 26.25	0.501	39	0.1810	0.0002
L33	26.25 - 21.25	0.491	39	0.1793	0.0002
L34	21.25 - 16.25	0.321	39	0.1450	0.0002
L35	16.25 - 11.25	0.187	39	0.1105	0.0001
L36	11.25 - 6.25	0.090	39	0.0765	0.0001
L37	6.25 - 1.25	0.028	39	0.0422	0.0000
L38	1.25 - 0	0.001	39	0.0083	0.0000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
150.00	Top Hat 18" Diameter x 2' 6" Tall	39	19.370	1.1884	0.0070	36464
141.00	(2) HBXX-6517DS-A2M w/ Mount Pipe	39	17.139	1.1757	0.0057	22224
132.00	(2) 7770.00 w/ Mount Pipe	39	14.953	1.1398	0.0046	10467
121.00	Commscope MC-K6MHDX-9-96 (3)	39	12.413	1.0591	0.0035	6402

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
111.00	APXVAARR24_43-U-NA20 w/ Mount Pipe	39	10.297	0.9581	0.0026	7099
104.00	KS24019-L112A	39	8.927	0.9030	0.0023	5402
88.00	SC479-HF1LDF	39	6.221	0.7155	0.0014	6172
82.00	BA80-41-DIN	39	5.354	0.6653	0.0011	6517

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	150 - 145	96.678	2	5.9050	0.0334
L2	145 - 140	90.512	2	5.8876	0.0297
L3	140 - 135	84.379	2	5.8426	0.0265
L4	135 - 130	78.312	2	5.7560	0.0236
L5	130 - 125	72.357	2	5.6289	0.0210
L6	125 - 120	66.559	2	5.4562	0.0186
L7	120 - 115	60.961	2	5.2445	0.0164
L8	115 - 108	55.603	2	4.9970	0.0142
L9	111.75 - 106.75	52.265	2	4.8194	0.0129
L10	106.75 - 101.75	47.298	2	4.6534	0.0118
L11	101.75 - 96.75	42.571	2	4.3797	0.0103
L12	96.75 - 91.75	38.140	2	4.0880	0.0088
L13	91.75 - 89.5	34.021	2	3.7823	0.0074
L14	89.5 - 89.25	32.273	2	3.6411	0.0069
L15	89.25 - 84.25	32.083	2	3.6310	0.0068
L16	84.25 - 79.25	28.391	2	3.4242	0.0059
L17	79.25 - 69.75	24.919	2	3.2094	0.0051
L18	74.5 - 68.75	21.832	2	2.9988	0.0046
L19	68.75 - 67.42	18.314	2	2.8164	0.0042
L20	67.42 - 67.17	17.541	2	2.7367	0.0040
L21	67.17 - 62.17	17.398	2	2.7216	0.0040
L22	62.17 - 57.58	14.710	10	2.4180	0.0033
L23	57.58 - 57.33	12.522	10	2.1386	0.0028
L24	57.33 - 56.42	12.410	10	2.1303	0.0028
L25	56.42 - 56.17	12.007	10	2.1000	0.0027
L26	56.17 - 51.17	11.898	10	2.0902	0.0027
L27	51.17 - 46.17	9.816	10	1.8888	0.0024
L28	46.17 - 41.17	7.943	10	1.6884	0.0021
L29	41.17 - 32.5	6.282	10	1.4846	0.0017
L30	38 - 31.5	5.339	10	1.3560	0.0016
L31	31.5 - 26.5	3.598	10	1.1750	0.0013
L32	26.5 - 26.25	2.508	10	0.9071	0.0010
L33	26.25 - 21.25	2.461	10	0.8985	0.0010
L34	21.25 - 16.25	1.610	10	0.7268	0.0008
L35	16.25 - 11.25	0.940	10	0.5541	0.0006
L36	11.25 - 6.25	0.449	10	0.3833	0.0004
L37	6.25 - 1.25	0.138	10	0.2114	0.0002
L38	1.25 - 0	0.005	10	0.0418	0.0000

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
150.00	Top Hat 18" Diameter x 2' 6" Tall	2	96.678	5.9050	0.0352	9414
141.00	(2) HBXX-6517DS-A2M w/ Mount Pipe	2	85.601	5.8547	0.0287	5096
132.00	(2) 7770.00 w/ Mount Pipe	2	74.723	5.6849	0.0233	2205
121.00	Commscope MC-K6MHDX-9-96 (3)	2	62.063	5.2891	0.0177	1318

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
111.00	APXVAARR24_43-U-NA20 w/ Mount Pipe	2	51.507	4.7891	0.0133	1450
104.00	KS24019-L112A	2	44.664	4.5153	0.0115	1100
88.00	SC479-HF1LDF	2	31.140	3.5811	0.0068	1246
82.00	BA80-41-DIN	2	26.800	3.3305	0.0056	1313

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	150 - 149	TP23.0001x22x0.25	5.00	0.00	0.0	17.6698	-9.00	954.17	0.009
	149 - 148					17.8308	-4.36	962.86	0.005
	148 - 147					17.9918	-4.41	971.56	0.005
	147 - 146					18.1528	-4.48	980.25	0.005
	146 - 145					18.3138	-4.55	988.95	0.005
L2	145 - 144	TP24.0002x23.0001x0.25	5.00	0.00	0.0	18.4749	-4.63	997.64	0.005
	144 - 143					18.6359	-4.70	1006.34	0.005
	143 - 142					18.7969	-4.78	1015.03	0.005
	142 - 141					18.9579	-4.86	1023.73	0.005
	141 - 140					19.1189	-8.37	1032.42	0.008
L3	140 - 139	TP25.0004x24.0002x0.25	5.00	0.00	0.0	19.2800	-8.46	1041.12	0.008
	139 - 138					19.4410	-8.55	1049.81	0.008
	138 - 137					19.6020	-8.64	1058.51	0.008
	137 - 136					19.7630	-8.74	1067.20	0.008
	136 - 135					19.9240	-8.83	1075.90	0.008
L4	135 - 134	TP26.0005x25.0004x0.25	5.00	0.00	0.0	20.0851	-8.93	1084.59	0.008
	134 - 133					20.2461	-9.03	1093.29	0.008
	133 - 132					20.4071	-9.14	1101.98	0.008
	132 - 131					20.5681	-12.99	1110.68	0.012
	131 - 130					20.7291	-13.09	1119.37	0.012
L5	130 - 129	TP27.0006x26.0005x0.25	5.00	0.00	0.0	20.8902	-13.21	1128.07	0.012
	129 - 128					21.0512	-13.32	1136.76	0.012
	128 - 127					21.2122	-13.44	1145.46	0.012
	127 - 126					21.3732	-13.56	1154.15	0.012
	126 - 125					21.534	-13.68	1162.85	0.012

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
						2			
L6	125 - 124	TP28.0007x27.0006x0.25	5.00	0.00	0.0	21.695 2	-13.80	1171.54	0.012
	124 - 123					21.856 3	-13.93	1180.24	0.012
	123 - 122					22.017 3	-14.05	1188.93	0.012
	122 - 121					22.178 3	-14.18	1197.63	0.012
	121 - 120					22.339 3	-16.64	1206.32	0.014
L7	120 - 119	TP29.0008x28.0007x0.25	5.00	0.00	0.0	22.500 3	-16.77	1215.02	0.014
	119 - 118					22.661 4	-16.90	1223.71	0.014
	118 - 117					22.822 4	-17.04	1232.41	0.014
	117 - 116					22.983 4	-17.17	1241.10	0.014
	116 - 115					23.144 4	-17.31	1249.80	0.014
L8	115 - 113.917	TP30.401x29.0008x0.25	7.00	0.00	0.0	23.318 9	-17.46	1259.22	0.014
	113.917 - 112.833					23.493 3	-17.62	1268.64	0.014
	112.833 - 111.75					23.667 7	-17.78	1278.06	0.014
	111.75 - 108					24.271 6	-10.22	1310.66	0.008
L9	111.75 - 108	TP30.1512x29.1509x0.3125	5.00	0.00	0.0	29.773 5	-11.69	1607.77	0.007
	108 - 106.75					30.025 2	-22.14	1621.36	0.014
L10	106.75 - 105.75	TP31.1514x30.1512x0.3125	5.00	0.00	0.0	30.226 5	-22.33	1632.23	0.014
	105.75 - 104.75					30.427 8	-22.51	1643.10	0.014
	104.75 - 103.75					30.629 1	-22.78	1653.97	0.014
	103.75 - 102.75					30.830 4	-22.97	1664.84	0.014
	102.75 - 101.75					31.031 7	-23.16	1675.71	0.014
L11	101.75 - 100.75	TP32.1517x31.1514x0.3125	5.00	0.00	0.0	31.233 0	-23.35	1686.58	0.014
	100.75 - 99.75					31.434 3	-23.54	1697.45	0.014
	99.75 - 98.75					31.635 6	-23.73	1708.32	0.014
	98.75 - 97.75					31.836 9	-23.93	1719.19	0.014
	97.75 - 96.75					32.038 2	-24.13	1730.06	0.014
L12	96.75 - 95.75	TP33.1519x32.1517x0.3125	5.00	0.00	0.0	32.239 5	-24.32	1740.93	0.014
	95.75 - 94.75					32.440 8	-24.52	1751.80	0.014
	94.75 - 93.75					32.642 1	-24.72	1762.67	0.014
	93.75 - 92.75					32.843 4	-24.92	1773.54	0.014
	92.75 - 91.75					33.044 7	-25.12	1784.41	0.014
L13	91.75 - 90.625	TP33.602x33.1519x0.3125	2.25	0.00	0.0	33.271 1	-25.35	1796.64	0.014
	90.625 - 89.5					33.497 6	-25.58	1808.87	0.014
L14	89.5 - 89.25 (14)	TP33.652x33.602x0.5	0.25	0.00	0.0	53.374 8	-25.66	2882.24	0.009

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L15	89.25 - 88.25	TP34.6523x33.652x0.4938	5.00	0.00	0.0	53.0356	-25.93	2863.92	0.009
	88.25 - 87.25					53.3536	-26.35	2881.10	0.009
	87.25 - 86.25					53.6717	-26.62	2898.27	0.009
	86.25 - 85.25					53.9897	-26.89	2915.45	0.009
	85.25 - 84.25					54.3078	-27.15	2932.62	0.009
L16	84.25 - 83.25	TP35.6525x34.6523x0.4875	5.00	0.00	0.0	53.9442	-27.42	2912.99	0.009
	83.25 - 82.25					54.2582	-27.69	2929.94	0.009
	82.25 - 81.25					54.5722	-28.08	2946.90	0.010
	81.25 - 80.25					54.8863	-28.36	2963.86	0.010
	80.25 - 79.25					55.2003	-28.64	2980.82	0.010
L17	79.25 - 78.0625	TP37.553x35.6525x0.4813	9.50	0.00	0.0	54.8704	-28.98	2963.00	0.010
	78.0625 - 76.875					55.2385	-29.31	2982.88	0.010
	76.875 - 75.6875					55.6067	-29.65	3002.76	0.010
	75.6875 - 74.5					55.9748	-29.99	3022.64	0.010
	74.5 - 69.75					57.4473	-18.23	3102.15	0.006
L18	74.5 - 69.75	TP37.1279x35.9778x0.375	5.75	0.00	0.0	44.1376	-13.93	2582.05	0.005
	69.75 - 68.75					44.3792	-32.48	2596.18	0.013
L19	68.75 - 67.42 (19)	TP37.394x37.1279x0.375	1.33	0.00	0.0	44.7004	-32.91	2614.97	0.013
L20	67.42 - 67.17 (20)	TP37.444x37.394x0.375	0.25	0.00	0.0	44.7608	-33.01	2618.51	0.013
L21	67.17 - 66.17	TP38.4441x37.444x0.375	5.00	0.00	0.0	45.0023	-33.33	2632.64	0.013
	66.17 - 65.17					45.2439	-33.66	2646.77	0.013
	65.17 - 64.17					45.4854	-34.00	2660.90	0.013
	64.17 - 63.17					45.7269	-34.33	2675.03	0.013
	63.17 - 62.17					45.9685	-34.67	2689.16	0.013
L22	62.17 - 61.0225	TP39.3623x38.4441x0.375	4.59	0.00	0.0	46.2456	-35.05	2705.37	0.013
	61.0225 - 59.875					46.5228	-35.44	2721.58	0.013
	59.875 - 58.7275					46.8000	-35.83	2737.80	0.013
	58.7275 - 57.58					47.0771	-36.22	2754.01	0.013
L23	57.58 - 57.33 (23)	TP39.4123x39.3623x0.7	0.25	0.00	0.0	87.2575	-36.34	5104.56	0.007
L24	57.33 - 56.42 (24)	TP39.5943x39.4123x0.7	0.91	0.00	0.0	87.6677	-36.72	5128.56	0.007
L25	56.42 - 56.17 (25)	TP39.6443x39.5943x0.5875	0.25	0.00	0.0	73.8857	-36.82	4322.31	0.009
L26	56.17 - 55.17	TP40.6445x39.6443x0.575	5.00	0.00	0.0	72.7072	-37.17	4253.37	0.009
	55.17 - 54.17					73.0775	-37.52	4275.04	0.009
	54.17 - 53.17					73.4479	-37.88	4296.70	0.009
	53.17 - 52.17					73.818	-38.24	4318.37	0.009

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
	52.17 - 51.17					74.1882	-38.60	4340.03	0.009
L27	51.17 - 50.17	TP41.6446x40.6445x0.575	5.00	0.00	0.0	74.5589	-38.97	4361.70	0.009
	50.17 - 49.17					74.9293	-39.33	4383.36	0.009
	49.17 - 48.17					75.2997	-39.69	4405.03	0.009
	48.17 - 47.17					75.6700	-40.06	4426.70	0.009
	47.17 - 46.17					76.0404	-40.43	4448.36	0.009
L28	46.17 - 45.17	TP42.6447x41.6446x0.5625	5.00	0.00	0.0	74.7723	-40.80	4374.18	0.009
	45.17 - 44.17					75.1346	-41.17	4395.37	0.009
	44.17 - 43.17					75.4969	-41.54	4416.57	0.009
	43.17 - 42.17					75.8592	-41.91	4437.76	0.009
	42.17 - 41.17					76.2215	-42.28	4458.96	0.009
L29	41.17 - 40.1133	TP44.379x42.6447x0.5625	8.67	0.00	0.0	76.6043	-42.74	4481.35	0.010
	40.1133 - 39.0567					76.9871	-43.21	4503.75	0.010
	39.0567 - 38					77.3700	-43.67	4526.14	0.010
	38 - 32.5					79.3626	-26.95	4642.71	0.006
L30	38 - 32.5	TP43.829x42.5288x0.4375	6.50	0.00	0.0	60.8460	-20.44	3559.49	0.006
	32.5 - 31.5					61.1278	-47.84	3575.98	0.013
L31	31.5 - 30.5	TP44.8292x43.829x0.4375	5.00	0.00	0.0	61.4096	-48.20	3592.46	0.013
	30.5 - 29.5					61.6914	-48.55	3608.95	0.013
	29.5 - 28.5					61.9732	-48.91	3625.43	0.013
	28.5 - 27.5					62.2550	-49.27	3641.92	0.014
	27.5 - 26.5					62.5368	-49.63	3658.40	0.014
L32	26.5 - 26.25 (32)	TP44.8792x44.8292x0.6875	0.25	0.00	0.0	97.8294	-49.76	5723.02	0.009
L33	26.25 - 25.25	TP45.8794x44.8792x0.6875	5.00	0.00	0.0	98.2722	-50.20	5748.92	0.009
	25.25 - 24.25					98.7150	-50.66	5774.83	0.009
	24.25 - 23.25					99.1578	-51.12	5800.73	0.009
	23.25 - 22.25					99.6006	-51.58	5826.64	0.009
	22.25 - 21.25					100.0430	-52.04	5852.54	0.009
L34	21.25 - 20.25	TP46.8795x45.8794x0.675	5.00	0.00	0.0	98.6864	-52.50	5773.16	0.009
	20.25 - 19.25					99.1212	-52.97	5798.59	0.009
	19.25 - 18.25					99.5560	-53.43	5824.02	0.009
	18.25 - 17.25					99.9907	-53.90	5849.46	0.009
	17.25 - 16.25					100.4250	-54.37	5874.89	0.009
L35	16.25 - 15.25	TP47.8797x46.8795x0.675	5.00	0.00	0.0	100.8600	-54.83	5900.33	0.009

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
	15.25 - 14.25					101.2950	-55.30	5925.76	0.009
	14.25 - 13.25					101.7300	-55.77	5951.19	0.009
	13.25 - 12.25					102.1650	-56.25	5976.63	0.009
	12.25 - 11.25					102.5990	-56.72	6002.06	0.009
L36	11.25 - 10.25	TP48.8798x47.8797x0.6625	5.00	0.00	0.0	101.1530	-57.20	5917.43	0.010
	10.25 - 9.25					101.5790	-57.67	5942.40	0.010
	9.25 - 8.25					102.0060	-58.15	5967.36	0.010
	8.25 - 7.25					102.4330	-58.63	5992.32	0.010
	7.25 - 6.25					102.8600	-59.11	6017.29	0.010
L37	6.25 - 5.25	TP49.88x48.8798x0.6625	5.00	0.00	0.0	103.2860	-59.59	6042.25	0.010
	5.25 - 4.25					103.7130	-60.08	6067.21	0.010
	4.25 - 3.25					104.1400	-60.56	6092.17	0.010
	3.25 - 2.25					104.5660	-61.05	6117.14	0.010
	2.25 - 1.25					104.9930	-61.53	6142.10	0.010
L38	1.25 - 0 (38)	TP50.13x49.88x0.6625	1.25	0.00	0.0	105.5270	-62.14	6173.30	0.010

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	150 - 149	TP23.0001x22x0.25	6.0	531.1	0.011	0.0	531.1	0.000
	149 - 148		11.7	539.4	0.022	0.0	539.4	0.000
	148 - 147		16.5	547.7	0.030	0.0	547.7	0.000
	147 - 146		21.6	556.0	0.039	0.0	556.0	0.000
	146 - 145		26.7	564.4	0.047	0.0	564.4	0.000
L2	145 - 144	TP24.0002x23.0001x0.25	31.9	572.8	0.056	0.0	572.8	0.000
	144 - 143		37.2	581.3	0.064	0.0	581.3	0.000
	143 - 142		42.6	589.7	0.072	0.0	589.7	0.000
	142 - 141		48.0	598.3	0.080	0.0	598.3	0.000
	141 - 140		62.4	606.8	0.103	0.0	606.8	0.000
L3	140 - 139	TP25.0004x24.0002x0.25	73.2	615.4	0.119	0.0	615.4	0.000
	139 - 138		84.1	624.0	0.135	0.0	624.0	0.000
	138 - 137		95.1	632.6	0.150	0.0	632.6	0.000
	137 - 136		106.2	641.2	0.166	0.0	641.2	0.000
	136 - 135		117.4	649.9	0.181	0.0	649.9	0.000
L4	135 - 134	TP26.0005x25.0004x0.25	128.7	658.6	0.195	0.0	658.6	0.000
	134 - 133		140.1	667.3	0.210	0.0	667.3	0.000
	133 - 132		151.6	676.1	0.224	0.0	676.1	0.000
	132 - 131		169.2	684.8	0.247	0.0	684.8	0.000
	131 - 130		185.4	693.6	0.267	0.0	693.6	0.000
L5	130 - 129	TP27.0006x26.0005x0.25	201.6	702.4	0.287	0.0	702.4	0.000
	129 - 128		218.0	711.3	0.306	0.0	711.3	0.000
	128 - 127		234.4	720.1	0.325	0.0	720.1	0.000
	127 - 126		250.9	729.0	0.344	0.0	729.0	0.000
	126 - 125		267.6	737.9	0.363	0.0	737.9	0.000
L6	125 - 124	TP28.0007x27.0006x0.25	284.3	746.8	0.381	0.0	746.8	0.000
	124 - 123		301.1	755.7	0.398	0.0	755.7	0.000
	123 - 122		318.0	764.6	0.416	0.0	764.6	0.000
	122 - 121		335.1	773.6	0.433	0.0	773.6	0.000

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
	121 - 120		354.6	782.6	0.453	0.0	782.6	0.000
L7	120 - 119	TP29.0008x28.0007x0.25	374.2	791.6	0.473	0.0	791.6	0.000
	119 - 118		393.8	800.6	0.492	0.0	800.6	0.000
	118 - 117		413.5	809.6	0.511	0.0	809.6	0.000
	117 - 116		433.3	818.6	0.529	0.0	818.6	0.000
	116 - 115		453.2	827.6	0.548	0.0	827.6	0.000
L8	115 - 113.917	TP30.401x29.0008x0.25	474.9	837.4	0.567	0.0	837.4	0.000
	113.917 - 112.833		496.7	847.2	0.586	0.0	847.2	0.000
	112.833 - 111.75		518.6	857.0	0.605	0.0	857.0	0.000
	111.75 - 108		276.7	891.1	0.310	0.0	891.1	0.000
L9	111.75 - 108	TP30.1512x29.1509x0.3125	325.7	1178.5	0.276	0.0	1178.5	0.000
	108 - 106.75		631.7	1195.2	0.529	0.0	1195.2	0.000
L10	106.75 - 105.75	TP31.1514x30.1512x0.3125	655.3	1208.6	0.542	0.0	1208.6	0.000
	105.75 - 104.75		679.0	1222.1	0.556	0.0	1222.1	0.000
	104.75 - 103.75		703.1	1235.6	0.569	0.0	1235.6	0.000
	103.75 - 102.75		727.0	1249.1	0.582	0.0	1249.1	0.000
	102.75 - 101.75		751.1	1262.6	0.595	0.0	1262.6	0.000
L11	101.75 - 100.75	TP32.1517x31.1514x0.3125	775.2	1276.2	0.607	0.0	1276.2	0.000
	100.75 - 99.75		799.4	1289.8	0.620	0.0	1289.8	0.000
	99.75 - 98.75		823.8	1303.4	0.632	0.0	1303.4	0.000
	98.75 - 97.75		848.2	1317.1	0.644	0.0	1317.1	0.000
	97.75 - 96.75		872.7	1330.8	0.656	0.0	1330.8	0.000
L12	96.75 - 95.75	TP33.1519x32.1517x0.3125	897.4	1344.5	0.667	0.0	1344.5	0.000
	95.75 - 94.75		922.1	1358.2	0.679	0.0	1358.2	0.000
	94.75 - 93.75		946.9	1372.0	0.690	0.0	1372.0	0.000
	93.75 - 92.75		971.8	1385.8	0.701	0.0	1385.8	0.000
	92.75 - 91.75		996.8	1399.6	0.712	0.0	1399.6	0.000
L13	91.75 - 90.625	TP33.602x33.1519x0.3125	1025.1	1415.2	0.724	0.0	1415.2	0.000
	90.625 - 89.5		1053.4	1430.8	0.736	0.0	1430.8	0.000
L14	89.5 - 89.25 (14)	TP33.652x33.602x0.5	1059.8	2435.5	0.435	0.0	2435.5	0.000
L15	89.25 - 88.25	TP34.6523x33.652x0.4938	1085.1	2435.7	0.445	0.0	2435.7	0.000
	88.25 - 87.25		1113.5	2465.3	0.452	0.0	2465.3	0.000
	87.25 - 86.25		1139.6	2494.9	0.457	0.0	2494.9	0.000
	86.25 - 85.25		1165.7	2524.8	0.462	0.0	2524.8	0.000
	85.25 - 84.25		1192.1	2554.9	0.467	0.0	2554.9	0.000
L16	84.25 - 83.25	TP35.6525x34.6523x0.4875	1218.7	2553.8	0.477	0.0	2553.8	0.000
	83.25 - 82.25		1245.5	2583.8	0.482	0.0	2583.8	0.000
	82.25 - 81.25		1275.3	2614.0	0.488	0.0	2614.0	0.000
	81.25 - 80.25		1302.7	2644.4	0.493	0.0	2644.4	0.000
	80.25 - 79.25		1330.3	2674.9	0.497	0.0	2674.9	0.000
L17	79.25 - 78.0625	TP37.553x35.6525x0.4813	1363.2	2678.1	0.509	0.0	2678.1	0.000
	78.0625 - 76.875		1396.2	2714.4	0.514	0.0	2714.4	0.000
	76.875 - 75.6875		1429.3	2750.9	0.520	0.0	2750.9	0.000
	75.6875 - 74.5		1462.6	2787.7	0.525	0.0	2787.7	0.000
	74.5 - 69.75		914.8	2937.3	0.311	0.0	2937.3	0.000
L18	74.5 - 69.75	TP37.1279x35.9778x0.375	682.8	2284.1	0.299	0.0	2284.1	0.000
	69.75 - 68.75		1626.4	2304.7	0.706	0.0	2304.7	0.000
L19	68.75 - 67.42 (19)	TP37.394x37.1279x0.375	1664.8	2332.0	0.714	0.0	2332.0	0.000

Section No.	Elevation	Size	M_{ux}	ϕM_{nx}	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy}	ϕM_{ny}	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
	ft		kip-ft	kip-ft		kip-ft	kip-ft	
L20	67.42 - 67.17 (20)	TP37.444x37.394x0.375	1672.0	2337.2	0.715	0.0	2337.2	0.000
L21	67.17 - 66.17	TP38.4441x37.444x0.375	1701.1	2357.8	0.721	0.0	2357.8	0.000
	66.17 - 65.17		1730.2	2378.5	0.727	0.0	2378.5	0.000
	65.17 - 64.17		1759.4	2399.2	0.733	0.0	2399.2	0.000
	64.17 - 63.17		1788.7	2419.9	0.739	0.0	2419.9	0.000
	63.17 - 62.17		1818.1	2440.7	0.745	0.0	2440.7	0.000
L22	62.17 - 61.0225	TP39.3623x38.4441x0.375	1851.9	2464.5	0.751	0.0	2464.5	0.000
	61.0225 - 59.875		1885.9	2488.4	0.758	0.0	2488.4	0.000
	59.875 - 58.7275		1920.1	2512.4	0.764	0.0	2512.4	0.000
	58.7275 - 57.58		1954.4	2536.4	0.771	0.0	2536.4	0.000
L23	57.58 - 57.33 (23)	TP39.4123x39.3623x0.7	1961.9	5021.9	0.391	0.0	5021.9	0.000
L24	57.33 - 56.42 (24)	TP39.5943x39.4123x0.7	1989.3	5069.7	0.392	0.0	5069.7	0.000
L25	56.42 - 56.17 (25)	TP39.6443x39.5943x0.5875	1996.8	4303.0	0.464	0.0	4303.0	0.000
L26	56.17 - 55.17	TP40.6445x39.6443x0.575	2027.1	4259.1	0.476	0.0	4259.1	0.000
	55.17 - 54.17		2057.4	4302.9	0.478	0.0	4302.9	0.000
	54.17 - 53.17		2088.0	4347.0	0.480	0.0	4347.0	0.000
	53.17 - 52.17		2118.6	4391.2	0.482	0.0	4391.2	0.000
	52.17 - 51.17		2149.4	4435.7	0.485	0.0	4435.7	0.000
L27	51.17 - 50.17	TP41.6446x40.6445x0.575	2180.3	4480.4	0.487	0.0	4480.4	0.000
	50.17 - 49.17		2211.3	4525.4	0.489	0.0	4525.4	0.000
	49.17 - 48.17		2242.5	4570.5	0.491	0.0	4570.5	0.000
	48.17 - 47.17		2273.8	4615.9	0.493	0.0	4615.9	0.000
	47.17 - 46.17		2305.2	4661.5	0.495	0.0	4661.5	0.000
L28	46.17 - 45.17	TP42.6447x41.6446x0.5625	2336.7	4609.2	0.507	0.0	4609.2	0.000
	45.17 - 44.17		2368.4	4654.3	0.509	0.0	4654.3	0.000
	44.17 - 43.17		2400.2	4699.6	0.511	0.0	4699.6	0.000
	43.17 - 42.17		2432.1	4745.1	0.513	0.0	4745.1	0.000
	42.17 - 41.17		2464.2	4790.8	0.514	0.0	4790.8	0.000
L29	41.17 - 40.1133	TP44.379x42.6447x0.5625	2498.2	4839.4	0.516	0.0	4839.4	0.000
	40.1133 - 39.0567		2532.3	4888.2	0.518	0.0	4888.2	0.000
	39.0567 - 38		2566.6	4937.3	0.520	0.0	4937.3	0.000
	38 - 32.5		1575.0	5196.6	0.303	0.0	5196.6	0.000
L30	38 - 32.5	TP43.829x42.5288x0.4375	1172.4	3703.5	0.317	0.0	3703.5	0.000
	32.5 - 31.5		2780.7	3731.6	0.745	0.0	3731.6	0.000
L31	31.5 - 30.5	TP44.8292x43.829x0.4375	2814.1	3759.7	0.748	0.0	3759.7	0.000
	30.5 - 29.5		2847.7	3787.9	0.752	0.0	3787.9	0.000
	29.5 - 28.5		2881.3	3816.1	0.755	0.0	3816.1	0.000
	28.5 - 27.5		2915.1	3844.3	0.758	0.0	3844.3	0.000
	27.5 - 26.5		2949.1	3872.6	0.762	0.0	3872.6	0.000
L32	26.5 - 26.25 (32)	TP44.8792x44.8292x0.6875	2957.7	6443.3	0.459	0.0	6443.3	0.000
L33	26.25 - 25.25	TP45.8794x44.8792x0.6875	2991.9	6502.2	0.460	0.0	6502.2	0.000
	25.25 - 24.25		3026.2	6561.4	0.461	0.0	6561.4	0.000
	24.25 - 23.25		3060.7	6620.8	0.462	0.0	6620.8	0.000
	23.25 - 22.25		3095.2	6680.5	0.463	0.0	6680.5	0.000
	22.25 - 21.25		3129.9	6740.5	0.464	0.0	6740.5	0.000
L34	21.25 - 20.25	TP46.8795x45.8794x0.675	3164.7	6682.6	0.474	0.0	6682.6	0.000
	20.25 - 19.25		3199.6	6742.1	0.475	0.0	6742.1	0.000
	19.25 - 18.25		3234.6	6801.8	0.476	0.0	6801.8	0.000
	18.25 - 17.25		3269.7	6861.8	0.477	0.0	6861.8	0.000
	17.25 - 16.25		3305.0	6922.0	0.477	0.0	6922.0	0.000
L35	16.25 - 15.25	TP47.8797x46.8795x0.67	3340.4	6982.5	0.478	0.0	6982.5	0.000

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
		5						
	15.25 - 14.25		3375.8	7043.3	0.479	0.0	7043.3	0.000
	14.25 - 13.25		3411.4	7104.3	0.480	0.0	7104.3	0.000
	13.25 - 12.25		3447.2	7165.6	0.481	0.0	7165.6	0.000
	12.25 - 11.25		3483.0	7227.1	0.482	0.0	7227.1	0.000
L36	11.25 - 10.25	TP48.8798x47.8797x0.6625	3518.9	7159.6	0.492	0.0	7159.6	0.000
	10.25 - 9.25		3555.0	7220.6	0.492	0.0	7220.6	0.000
	9.25 - 8.25		3591.2	7281.8	0.493	0.0	7281.8	0.000
	8.25 - 7.25		3627.5	7343.2	0.494	0.0	7343.2	0.000
	7.25 - 6.25		3663.9	7405.0	0.495	0.0	7405.0	0.000
L37	6.25 - 5.25	TP49.88x48.8798x0.6625	3700.4	7466.9	0.496	0.0	7466.9	0.000
	5.25 - 4.25		3737.1	7529.2	0.496	0.0	7529.2	0.000
	4.25 - 3.25		3773.8	7591.7	0.497	0.0	7591.7	0.000
	3.25 - 2.25		3810.7	7654.4	0.498	0.0	7654.4	0.000
	2.25 - 1.25		3847.7	7717.5	0.499	0.0	7717.5	0.000
L38	1.25 - 0 (38)	TP50.13x49.88x0.6625	3894.1	7796.6	0.499	0.0	7796.6	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	150 - 149	TP23.0001x22x0.25	1.13	286.25	0.004	0.0	552.7	0.000
	149 - 148		4.77	288.86	0.016	0.0	562.8	0.000
	148 - 147		4.97	291.47	0.017	1.3	573.0	0.002
	147 - 146		5.06	294.08	0.017	1.3	583.3	0.002
	146 - 145		5.16	296.68	0.017	1.3	593.7	0.002
L2	145 - 144	TP24.0002x23.0001x0.25	5.25	299.29	0.018	1.3	604.2	0.002
	144 - 143		5.35	301.90	0.018	1.3	614.8	0.002
	143 - 142		5.45	304.51	0.018	1.3	625.4	0.002
	142 - 141		5.54	307.12	0.018	1.3	636.2	0.002
	141 - 140		10.76	309.73	0.035	1.6	647.1	0.002
L3	140 - 139	TP25.0004x24.0002x0.25	10.86	312.33	0.035	1.6	658.0	0.002
	139 - 138		10.96	314.94	0.035	1.6	669.0	0.002
	138 - 137		11.06	317.55	0.035	1.6	680.2	0.002
	137 - 136		11.16	320.16	0.035	1.6	691.4	0.002
	136 - 135		11.26	322.77	0.035	1.6	702.7	0.002
L4	135 - 134	TP26.0005x25.0004x0.25	11.35	325.38	0.035	1.6	714.1	0.002
	134 - 133		11.46	327.99	0.035	1.6	725.6	0.002
	133 - 132		11.56	330.60	0.035	1.6	737.2	0.002
	132 - 131		16.09	333.20	0.048	1.6	748.9	0.002
	131 - 130		16.19	335.81	0.048	1.6	760.6	0.002
L5	130 - 129	TP27.0006x26.0005x0.25	16.29	338.42	0.048	1.6	772.5	0.002
	129 - 128		16.39	341.03	0.048	1.6	784.5	0.002
	128 - 127		16.49	343.64	0.048	1.6	796.5	0.002
	127 - 126		16.59	346.25	0.048	1.6	808.6	0.002
	126 - 125		16.69	348.86	0.048	1.6	820.9	0.002
L6	125 - 124	TP28.0007x27.0006x0.25	16.79	351.46	0.048	1.6	833.2	0.002
	124 - 123		16.94	354.07	0.048	2.5	845.6	0.003
	123 - 122		17.04	356.68	0.048	2.5	858.1	0.003
	122 - 121		17.14	359.29	0.048	2.5	870.7	0.003
	121 - 120		19.48	361.90	0.054	2.6	883.4	0.003
L7	120 - 119	TP29.0008x28.0007x0.25	19.58	364.51	0.054	2.6	896.2	0.003
	119 - 118		19.68	367.11	0.054	2.6	909.1	0.003
	118 - 117		19.78	369.72	0.053	2.6	922.0	0.003
	117 - 116		19.87	372.33	0.053	2.6	935.1	0.003
	116 - 115		19.97	374.94	0.053	2.6	948.2	0.003
L8	115 - 113.917	TP30.401x29.0008x0.25	20.08	377.77	0.053	2.6	962.6	0.003
	113.917 - 112.833		20.19	380.59	0.053	2.6	977.0	0.003
	112.833 - 111.75		20.29	383.42	0.053	2.6	991.6	0.003
	111.75 - 108		11.21	393.20	0.029	1.3	1042.8	0.001
L9	111.75 - 108	TP30.1512x29.1509x0.31	12.24	482.33	0.025	1.5	1255.4	0.001

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
		25						
	108 - 106.75		23.56	486.41	0.048	2.9	1276.7	0.002
L10	106.75 - 105.75	TP31.1514x30.1512x0.3125	23.66	489.67	0.048	2.9	1293.8	0.002
	105.75 - 104.75		23.76	492.93	0.048	2.9	1311.1	0.002
	104.75 - 103.75		23.91	496.19	0.048	3.0	1328.5	0.002
	103.75 - 102.75		24.01	499.45	0.048	3.0	1346.1	0.002
	102.75 - 101.75		24.11	502.71	0.048	3.0	1363.7	0.002
L11	101.75 - 100.75	TP32.1517x31.1514x0.3125	24.20	505.97	0.048	3.0	1381.5	0.002
	100.75 - 99.75		24.30	509.24	0.048	3.0	1399.3	0.002
	99.75 - 98.75		24.40	512.50	0.048	3.0	1417.3	0.002
	98.75 - 97.75		24.49	515.76	0.047	3.0	1435.4	0.002
	97.75 - 96.75		24.59	519.02	0.047	3.0	1453.6	0.002
L12	96.75 - 95.75	TP33.1519x32.1517x0.3125	24.69	522.28	0.047	3.0	1471.9	0.002
	95.75 - 94.75		24.78	525.54	0.047	3.0	1490.4	0.002
	94.75 - 93.75		24.88	528.80	0.047	3.0	1508.9	0.002
	93.75 - 92.75		24.97	532.06	0.047	3.0	1527.6	0.002
	92.75 - 91.75		25.07	535.32	0.047	3.0	1546.4	0.002
L13	91.75 - 90.625	TP33.602x33.1519x0.3125	25.18	538.99	0.047	3.0	1567.6	0.002
	90.625 - 89.5		25.29	542.66	0.047	3.0	1589.0	0.002
L14	89.5 - 89.25 (14)	TP33.652x33.602x0.5	25.31	864.67	0.029	3.0	2521.5	0.001
L15	89.25 - 88.25	TP34.6523x33.652x0.4938	25.41	859.18	0.030	3.0	2521.1	0.001
	88.25 - 87.25		26.03	864.33	0.030	4.3	2551.4	0.002
	87.25 - 86.25		26.13	869.48	0.030	4.3	2581.9	0.002
	86.25 - 85.25		26.24	874.63	0.030	4.3	2612.6	0.002
	85.25 - 84.25		26.55	879.79	0.030	2.9	2643.5	0.001
L16	84.25 - 83.25	TP35.6525x34.6523x0.4875	26.69	873.90	0.031	2.9	2641.6	0.001
	83.25 - 82.25		26.83	878.98	0.031	2.9	2672.5	0.001
	82.25 - 81.25		27.35	884.07	0.031	2.9	2703.5	0.001
	81.25 - 80.25		27.49	889.16	0.031	1.3	2734.7	0.000
	80.25 - 79.25		27.63	894.25	0.031	1.3	2766.1	0.000
L17	79.25 - 78.0625	TP37.553x35.6525x0.4813	27.75	888.90	0.031	1.3	2768.6	0.000
	78.0625 - 76.875		27.88	894.86	0.031	1.3	2805.9	0.000
	76.875 - 75.6875		28.00	900.83	0.031	1.3	2843.4	0.000
	75.6875 - 74.5		28.13	906.79	0.031	1.3	2881.2	0.000
	74.5 - 69.75		16.58	930.65	0.018	0.7	3034.8	0.000
L18	74.5 - 69.75	TP37.1279x35.9778x0.375	12.17	774.62	0.016	0.5	2490.6	0.000
	69.75 - 68.75		28.82	778.85	0.037	1.3	2518.0	0.001
L19	68.75 - 67.42 (19)	TP37.394x37.1279x0.375	28.95	784.49	0.037	1.3	2554.5	0.000
L20	67.42 - 67.17 (20)	TP37.444x37.394x0.375	28.96	785.55	0.037	1.3	2561.4	0.000
L21	67.17 - 66.17	TP38.4441x37.444x0.375	29.07	789.79	0.037	1.3	2589.2	0.000
	66.17 - 65.17		29.16	794.03	0.037	1.3	2617.0	0.000
	65.17 - 64.17		29.25	798.27	0.037	1.3	2645.1	0.000
	64.17 - 63.17		29.34	802.51	0.037	1.3	2673.2	0.000
	63.17 - 62.17		29.44	806.75	0.036	1.3	2701.5	0.000
L22	62.17 - 61.0225	TP39.3623x38.4441x0.375	29.58	811.61	0.036	1.3	2734.2	0.000
	61.0225 - 59.875		29.72	816.48	0.036	1.3	2767.1	0.000
	59.875 - 58.7275		29.86	821.34	0.036	1.3	2800.2	0.000

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
	58.7275 - 57.58		30.00	826.20	0.036	1.3	2833.4	0.000
L23	57.58 - 57.33 (23)	TP39.4123x39.3623x0.7	30.02	1531.37	0.020	1.3	5214.7	0.000
L24	57.33 - 56.42 (24)	TP39.5943x39.4123x0.7	30.15	1538.57	0.020	1.3	5263.8	0.000
L25	56.42 - 56.17 (25)	TP39.6443x39.5943x0.5875	30.18	1296.69	0.023	1.3	4454.9	0.000
L26	56.17 - 55.17	TP40.6445x39.6443x0.575	30.32	1276.01	0.024	1.3	4407.7	0.000
	55.17 - 54.17		30.45	1282.51	0.024	1.3	4452.7	0.000
	54.17 - 53.17		30.59	1289.01	0.024	1.3	4497.9	0.000
	53.17 - 52.17		30.72	1295.51	0.024	1.3	4543.4	0.000
	52.17 - 51.17		30.86	1302.01	0.024	1.3	4589.1	0.000
L27	51.17 - 50.17	TP41.6446x40.6445x0.575	30.98	1308.51	0.024	1.3	4635.0	0.000
	50.17 - 49.17		31.11	1315.01	0.024	1.3	4681.2	0.000
	49.17 - 48.17		31.24	1321.51	0.024	1.3	4727.6	0.000
	48.17 - 47.17		31.37	1328.01	0.024	1.3	4774.2	0.000
	47.17 - 46.17		31.50	1334.51	0.024	1.3	4821.1	0.000
L28	46.17 - 45.17	TP42.6447x41.6446x0.5625	31.62	1312.25	0.024	1.3	4765.2	0.000
	45.17 - 44.17		31.75	1318.61	0.024	1.3	4811.5	0.000
	44.17 - 43.17		31.87	1324.97	0.024	1.3	4858.0	0.000
	43.17 - 42.17		32.00	1331.33	0.024	1.3	4904.7	0.000
	42.17 - 41.17		32.12	1337.69	0.024	1.3	4951.7	0.000
L29	41.17 - 40.1133	TP44.379x42.6447x0.5625	32.25	1344.41	0.024	1.3	5001.6	0.000
	40.1133 - 39.0567		32.38	1351.12	0.024	1.3	5051.7	0.000
	39.0567 - 38		32.51	1357.84	0.024	1.3	5102.0	0.000
	38 - 32.5		19.27	1392.81	0.014	0.7	5368.2	0.000
L30	38 - 32.5	TP43.829x42.5288x0.4375	14.05	1067.85	0.013	0.5	4057.0	0.000
	32.5 - 31.5		33.39	1072.79	0.031	1.3	4094.7	0.000
L31	31.5 - 30.5	TP44.8292x43.829x0.4375	33.50	1077.74	0.031	1.3	4132.5	0.000
	30.5 - 29.5		33.61	1082.68	0.031	1.3	4170.5	0.000
	29.5 - 28.5		33.71	1087.63	0.031	1.3	4208.7	0.000
	28.5 - 27.5		34.04	1092.58	0.031	2.9	4247.1	0.001
	27.5 - 26.5		34.14	1097.52	0.031	2.9	4285.6	0.001
L32	26.5 - 26.25 (32)	TP44.8792x44.8292x0.6875	34.15	1716.91	0.020	2.9	6674.0	0.000
L33	26.25 - 25.25	TP45.8794x44.8792x0.6875	34.28	1724.68	0.020	2.9	6734.6	0.000
	25.25 - 24.25		34.40	1732.45	0.020	2.9	6795.4	0.000
	24.25 - 23.25		34.51	1740.22	0.020	2.9	6856.5	0.000
	23.25 - 22.25		34.63	1747.99	0.020	2.9	6917.9	0.000
	22.25 - 21.25		34.74	1755.76	0.020	2.9	6979.5	0.000
L34	21.25 - 20.25	TP46.8795x45.8794x0.675	34.86	1731.95	0.020	2.9	6917.2	0.000
	20.25 - 19.25		34.97	1739.58	0.020	2.9	6978.3	0.000
	19.25 - 18.25		35.09	1747.21	0.020	2.9	7039.7	0.000
	18.25 - 17.25		35.21	1754.84	0.020	2.9	7101.3	0.000
	17.25 - 16.25		35.32	1762.47	0.020	2.9	7163.2	0.000
L35	16.25 - 15.25	TP47.8797x46.8795x0.675	35.44	1770.10	0.020	2.9	7225.3	0.000
	15.25 - 14.25		35.55	1777.73	0.020	2.9	7287.8	0.000
	14.25 - 13.25		35.67	1785.36	0.020	2.9	7350.4	0.000
	13.25 - 12.25		35.79	1792.99	0.020	2.9	7413.4	0.000
	12.25 - 11.25		35.90	1800.62	0.020	2.9	7476.6	0.000
L36	11.25 - 10.25	TP48.8798x47.8797x0.6625	36.02	1775.23	0.020	2.9	7404.4	0.000
	10.25 - 9.25		36.14	1782.72	0.020	2.9	7467.0	0.000
	9.25 - 8.25		36.25	1790.21	0.020	2.9	7529.9	0.000
	8.25 - 7.25		36.37	1797.70	0.020	2.9	7593.0	0.000
	7.25 - 6.25		36.48	1805.19	0.020	2.9	7656.4	0.000
L37	6.25 - 5.25	TP49.88x48.8798x0.6625	36.60	1812.67	0.020	2.9	7720.1	0.000
	5.25 - 4.25		36.72	1820.16	0.020	2.9	7784.0	0.000

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
	4.25 - 3.25		36.83	1827.65	0.020	2.9	7848.2	0.000
	3.25 - 2.25		36.95	1835.14	0.020	2.9	7912.6	0.000
	2.25 - 1.25		37.07	1842.63	0.020	2.9	7977.3	0.000
L38	1.25 - 0 (38)	TP50.13x49.88x0.6625	37.22	1851.99	0.020	2.9	8058.6	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	150 - 149	0.009	0.011	0.000	0.004	0.000	0.021	1.050	4.8.2
	149 - 148	0.005	0.022	0.000	0.016	0.000	0.026	1.050	4.8.2
	148 - 147	0.005	0.030	0.000	0.017	0.002	0.035	1.050	4.8.2
	147 - 146	0.005	0.039	0.000	0.017	0.002	0.044	1.050	4.8.2
	146 - 145	0.005	0.047	0.000	0.017	0.002	0.052	1.050	4.8.2
L2	145 - 144	0.005	0.056	0.000	0.018	0.002	0.061	1.050	4.8.2
	144 - 143	0.005	0.064	0.000	0.018	0.002	0.069	1.050	4.8.2
	143 - 142	0.005	0.072	0.000	0.018	0.002	0.077	1.050	4.8.2
	142 - 141	0.005	0.080	0.000	0.018	0.002	0.085	1.050	4.8.2
	141 - 140	0.008	0.103	0.000	0.035	0.002	0.112	1.050	4.8.2
L3	140 - 139	0.008	0.119	0.000	0.035	0.002	0.128	1.050	4.8.2
	139 - 138	0.008	0.135	0.000	0.035	0.002	0.144	1.050	4.8.2
	138 - 137	0.008	0.150	0.000	0.035	0.002	0.160	1.050	4.8.2
	137 - 136	0.008	0.166	0.000	0.035	0.002	0.175	1.050	4.8.2
	136 - 135	0.008	0.181	0.000	0.035	0.002	0.190	1.050	4.8.2
L4	135 - 134	0.008	0.195	0.000	0.035	0.002	0.205	1.050	4.8.2
	134 - 133	0.008	0.210	0.000	0.035	0.002	0.220	1.050	4.8.2
	133 - 132	0.008	0.224	0.000	0.035	0.002	0.234	1.050	4.8.2
	132 - 131	0.012	0.247	0.000	0.048	0.002	0.261	1.050	4.8.2
	131 - 130	0.012	0.267	0.000	0.048	0.002	0.281	1.050	4.8.2
L5	130 - 129	0.012	0.287	0.000	0.048	0.002	0.301	1.050	4.8.2
	129 - 128	0.012	0.306	0.000	0.048	0.002	0.321	1.050	4.8.2
	128 - 127	0.012	0.325	0.000	0.048	0.002	0.340	1.050	4.8.2
	127 - 126	0.012	0.344	0.000	0.048	0.002	0.358	1.050	4.8.2
	126 - 125	0.012	0.363	0.000	0.048	0.002	0.377	1.050	4.8.2
L6	125 - 124	0.012	0.381	0.000	0.048	0.002	0.395	1.050	4.8.2
	124 - 123	0.012	0.398	0.000	0.048	0.003	0.413	1.050	4.8.2
	123 - 122	0.012	0.416	0.000	0.048	0.003	0.430	1.050	4.8.2
	122 - 121	0.012	0.433	0.000	0.048	0.003	0.448	1.050	4.8.2
	121 - 120	0.014	0.453	0.000	0.054	0.003	0.470	1.050	4.8.2
L7	120 - 119	0.014	0.473	0.000	0.054	0.003	0.490	1.050	4.8.2
	119 - 118	0.014	0.492	0.000	0.054	0.003	0.509	1.050	4.8.2
	118 - 117	0.014	0.511	0.000	0.053	0.003	0.528	1.050	4.8.2
	117 - 116	0.014	0.529	0.000	0.053	0.003	0.546	1.050	4.8.2
	116 - 115	0.014	0.548	0.000	0.053	0.003	0.565	1.050	4.8.2
L8	115 - 113.917	0.014	0.567	0.000	0.053	0.003	0.584	1.050	4.8.2
	113.917 - 112.833	0.014	0.586	0.000	0.053	0.003	0.603	1.050	4.8.2
	112.833 - 111.75	0.014	0.605	0.000	0.053	0.003	0.622	1.050	4.8.2
	111.75 - 108	0.008	0.310	0.000	0.029	0.001	0.319	1.050	4.8.2
L9	111.75 - 108	0.007	0.276	0.000	0.025	0.001	0.284	1.050	4.8.2
	108 - 106.75	0.014	0.529	0.000	0.048	0.002	0.545	1.050	4.8.2
L10	106.75 - 105.75	0.014	0.542	0.000	0.048	0.002	0.558	1.050	4.8.2
	105.75 - 104.75	0.014	0.556	0.000	0.048	0.002	0.572	1.050	4.8.2
	104.75 - 103.75	0.014	0.569	0.000	0.048	0.002	0.585	1.050	4.8.2
	103.75 - 102.75	0.014	0.582	0.000	0.048	0.002	0.598	1.050	4.8.2
	102.75 - 101.75	0.014	0.595	0.000	0.048	0.002	0.611	1.050	4.8.2

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
L11	101.75 - 100.75	0.014	0.607	0.000	0.048	0.002	0.624	1.050	4.8.2
	100.75 - 99.75	0.014	0.620	0.000	0.048	0.002	0.636	1.050	4.8.2
	99.75 - 98.75	0.014	0.632	0.000	0.048	0.002	0.648	1.050	4.8.2
	98.75 - 97.75	0.014	0.644	0.000	0.047	0.002	0.660	1.050	4.8.2
	97.75 - 96.75	0.014	0.656	0.000	0.047	0.002	0.672	1.050	4.8.2
L12	96.75 - 95.75	0.014	0.667	0.000	0.047	0.002	0.684	1.050	4.8.2
	95.75 - 94.75	0.014	0.679	0.000	0.047	0.002	0.695	1.050	4.8.2
	94.75 - 93.75	0.014	0.690	0.000	0.047	0.002	0.707	1.050	4.8.2
	93.75 - 92.75	0.014	0.701	0.000	0.047	0.002	0.718	1.050	4.8.2
	92.75 - 91.75	0.014	0.712	0.000	0.047	0.002	0.729	1.050	4.8.2
L13	91.75 - 90.625	0.014	0.724	0.000	0.047	0.002	0.741	1.050	4.8.2
	90.625 - 89.5	0.014	0.736	0.000	0.047	0.002	0.753	1.050	4.8.2
L14	89.5 - 89.25 (14)	0.009	0.435	0.000	0.029	0.001	0.445	1.050	4.8.2
L15	89.25 - 88.25	0.009	0.445	0.000	0.030	0.001	0.455	1.050	4.8.2
	88.25 - 87.25	0.009	0.452	0.000	0.030	0.002	0.462	1.050	4.8.2
	87.25 - 86.25	0.009	0.457	0.000	0.030	0.002	0.467	1.050	4.8.2
	86.25 - 85.25	0.009	0.462	0.000	0.030	0.002	0.472	1.050	4.8.2
	85.25 - 84.25	0.009	0.467	0.000	0.030	0.001	0.477	1.050	4.8.2
L16	84.25 - 83.25	0.009	0.477	0.000	0.031	0.001	0.488	1.050	4.8.2
	83.25 - 82.25	0.009	0.482	0.000	0.031	0.001	0.492	1.050	4.8.2
	82.25 - 81.25	0.010	0.488	0.000	0.031	0.001	0.498	1.050	4.8.2
	81.25 - 80.25	0.010	0.493	0.000	0.031	0.000	0.503	1.050	4.8.2
	80.25 - 79.25	0.010	0.497	0.000	0.031	0.000	0.508	1.050	4.8.2
L17	79.25 - 78.0625	0.010	0.509	0.000	0.031	0.000	0.520	1.050	4.8.2
	78.0625 - 76.875	0.010	0.514	0.000	0.031	0.000	0.525	1.050	4.8.2
	76.875 - 75.6875	0.010	0.520	0.000	0.031	0.000	0.530	1.050	4.8.2
	75.6875 - 74.5	0.010	0.525	0.000	0.031	0.000	0.536	1.050	4.8.2
	74.5 - 69.75	0.006	0.311	0.000	0.018	0.000	0.318	1.050	4.8.2
L18	74.5 - 69.75	0.005	0.299	0.000	0.016	0.000	0.305	1.050	4.8.2
	69.75 - 68.75	0.013	0.706	0.000	0.037	0.001	0.720	1.050	4.8.2
L19	68.75 - 67.42 (19)	0.013	0.714	0.000	0.037	0.000	0.728	1.050	4.8.2
L20	67.42 - 67.17 (20)	0.013	0.715	0.000	0.037	0.000	0.729	1.050	4.8.2
L21	67.17 - 66.17	0.013	0.721	0.000	0.037	0.000	0.736	1.050	4.8.2
	66.17 - 65.17	0.013	0.727	0.000	0.037	0.000	0.742	1.050	4.8.2
	65.17 - 64.17	0.013	0.733	0.000	0.037	0.000	0.747	1.050	4.8.2
	64.17 - 63.17	0.013	0.739	0.000	0.037	0.000	0.753	1.050	4.8.2
	63.17 - 62.17	0.013	0.745	0.000	0.036	0.000	0.759	1.050	4.8.2
L22	62.17 - 61.0225	0.013	0.751	0.000	0.036	0.000	0.766	1.050	4.8.2
	61.0225 - 59.875	0.013	0.758	0.000	0.036	0.000	0.772	1.050	4.8.2
	59.875 - 58.7275	0.013	0.764	0.000	0.036	0.000	0.779	1.050	4.8.2
	58.7275 - 57.58	0.013	0.771	0.000	0.036	0.000	0.785	1.050	4.8.2
L23	57.58 - 57.33 (23)	0.007	0.391	0.000	0.020	0.000	0.398	1.050	4.8.2
L24	57.33 - 56.42 (24)	0.007	0.392	0.000	0.020	0.000	0.400	1.050	4.8.2
L25	56.42 - 56.17 (25)	0.009	0.464	0.000	0.023	0.000	0.473	1.050	4.8.2
L26	56.17 - 55.17	0.009	0.476	0.000	0.024	0.000	0.485	1.050	4.8.2
	55.17 - 54.17	0.009	0.478	0.000	0.024	0.000	0.488	1.050	4.8.2
	54.17 - 53.17	0.009	0.480	0.000	0.024	0.000	0.490	1.050	4.8.2
	53.17 - 52.17	0.009	0.482	0.000	0.024	0.000	0.492	1.050	4.8.2
	52.17 - 51.17	0.009	0.485	0.000	0.024	0.000	0.494	1.050	4.8.2
L27	51.17 - 50.17	0.009	0.487	0.000	0.024	0.000	0.496	1.050	4.8.2
	50.17 - 49.17	0.009	0.489	0.000	0.024	0.000	0.498	1.050	4.8.2
	49.17 - 48.17	0.009	0.491	0.000	0.024	0.000	0.500	1.050	4.8.2

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
	48.17 - 47.17	0.009	0.493	0.000	0.024	0.000	0.502	1.050	4.8.2
	47.17 - 46.17	0.009	0.495	0.000	0.024	0.000	0.504	1.050	4.8.2
L28	46.17 - 45.17	0.009	0.507	0.000	0.024	0.000	0.517	1.050	4.8.2
	45.17 - 44.17	0.009	0.509	0.000	0.024	0.000	0.519	1.050	4.8.2
	44.17 - 43.17	0.009	0.511	0.000	0.024	0.000	0.521	1.050	4.8.2
	43.17 - 42.17	0.009	0.513	0.000	0.024	0.000	0.523	1.050	4.8.2
	42.17 - 41.17	0.009	0.514	0.000	0.024	0.000	0.524	1.050	4.8.2
L29	41.17 - 40.1133	0.010	0.516	0.000	0.024	0.000	0.526	1.050	4.8.2
	40.1133 - 39.0567	0.010	0.518	0.000	0.024	0.000	0.528	1.050	4.8.2
	39.0567 - 38	0.010	0.520	0.000	0.024	0.000	0.530	1.050	4.8.2
	38 - 32.5	0.006	0.303	0.000	0.014	0.000	0.309	1.050	4.8.2
L30	38 - 32.5	0.006	0.317	0.000	0.013	0.000	0.322	1.050	4.8.2
	32.5 - 31.5	0.013	0.745	0.000	0.031	0.000	0.760	1.050	4.8.2
L31	31.5 - 30.5	0.013	0.748	0.000	0.031	0.000	0.763	1.050	4.8.2
	30.5 - 29.5	0.013	0.752	0.000	0.031	0.000	0.766	1.050	4.8.2
	29.5 - 28.5	0.013	0.755	0.000	0.031	0.000	0.770	1.050	4.8.2
	28.5 - 27.5	0.014	0.758	0.000	0.031	0.001	0.773	1.050	4.8.2
	27.5 - 26.5	0.014	0.762	0.000	0.031	0.001	0.776	1.050	4.8.2
L32	26.5 - 26.25 (32)	0.009	0.459	0.000	0.020	0.000	0.468	1.050	4.8.2
L33	26.25 - 25.25	0.009	0.460	0.000	0.020	0.000	0.469	1.050	4.8.2
	25.25 - 24.25	0.009	0.461	0.000	0.020	0.000	0.470	1.050	4.8.2
	24.25 - 23.25	0.009	0.462	0.000	0.020	0.000	0.472	1.050	4.8.2
	23.25 - 22.25	0.009	0.463	0.000	0.020	0.000	0.473	1.050	4.8.2
	22.25 - 21.25	0.009	0.464	0.000	0.020	0.000	0.474	1.050	4.8.2
L34	21.25 - 20.25	0.009	0.474	0.000	0.020	0.000	0.483	1.050	4.8.2
	20.25 - 19.25	0.009	0.475	0.000	0.020	0.000	0.484	1.050	4.8.2
	19.25 - 18.25	0.009	0.476	0.000	0.020	0.000	0.485	1.050	4.8.2
	18.25 - 17.25	0.009	0.477	0.000	0.020	0.000	0.486	1.050	4.8.2
	17.25 - 16.25	0.009	0.477	0.000	0.020	0.000	0.487	1.050	4.8.2
L35	16.25 - 15.25	0.009	0.478	0.000	0.020	0.000	0.488	1.050	4.8.2
	15.25 - 14.25	0.009	0.479	0.000	0.020	0.000	0.489	1.050	4.8.2
	14.25 - 13.25	0.009	0.480	0.000	0.020	0.000	0.490	1.050	4.8.2
	13.25 - 12.25	0.009	0.481	0.000	0.020	0.000	0.491	1.050	4.8.2
	12.25 - 11.25	0.009	0.482	0.000	0.020	0.000	0.492	1.050	4.8.2
L36	11.25 - 10.25	0.010	0.492	0.000	0.020	0.000	0.502	1.050	4.8.2
	10.25 - 9.25	0.010	0.492	0.000	0.020	0.000	0.502	1.050	4.8.2
	9.25 - 8.25	0.010	0.493	0.000	0.020	0.000	0.503	1.050	4.8.2
	8.25 - 7.25	0.010	0.494	0.000	0.020	0.000	0.504	1.050	4.8.2
	7.25 - 6.25	0.010	0.495	0.000	0.020	0.000	0.505	1.050	4.8.2
L37	6.25 - 5.25	0.010	0.496	0.000	0.020	0.000	0.506	1.050	4.8.2
	5.25 - 4.25	0.010	0.496	0.000	0.020	0.000	0.507	1.050	4.8.2
	4.25 - 3.25	0.010	0.497	0.000	0.020	0.000	0.507	1.050	4.8.2
	3.25 - 2.25	0.010	0.498	0.000	0.020	0.000	0.508	1.050	4.8.2
	2.25 - 1.25	0.010	0.499	0.000	0.020	0.000	0.509	1.050	4.8.2
L38	1.25 - 0 (38)	0.010	0.499	0.000	0.020	0.000	0.510	1.050	4.8.2

Section Capacity Table

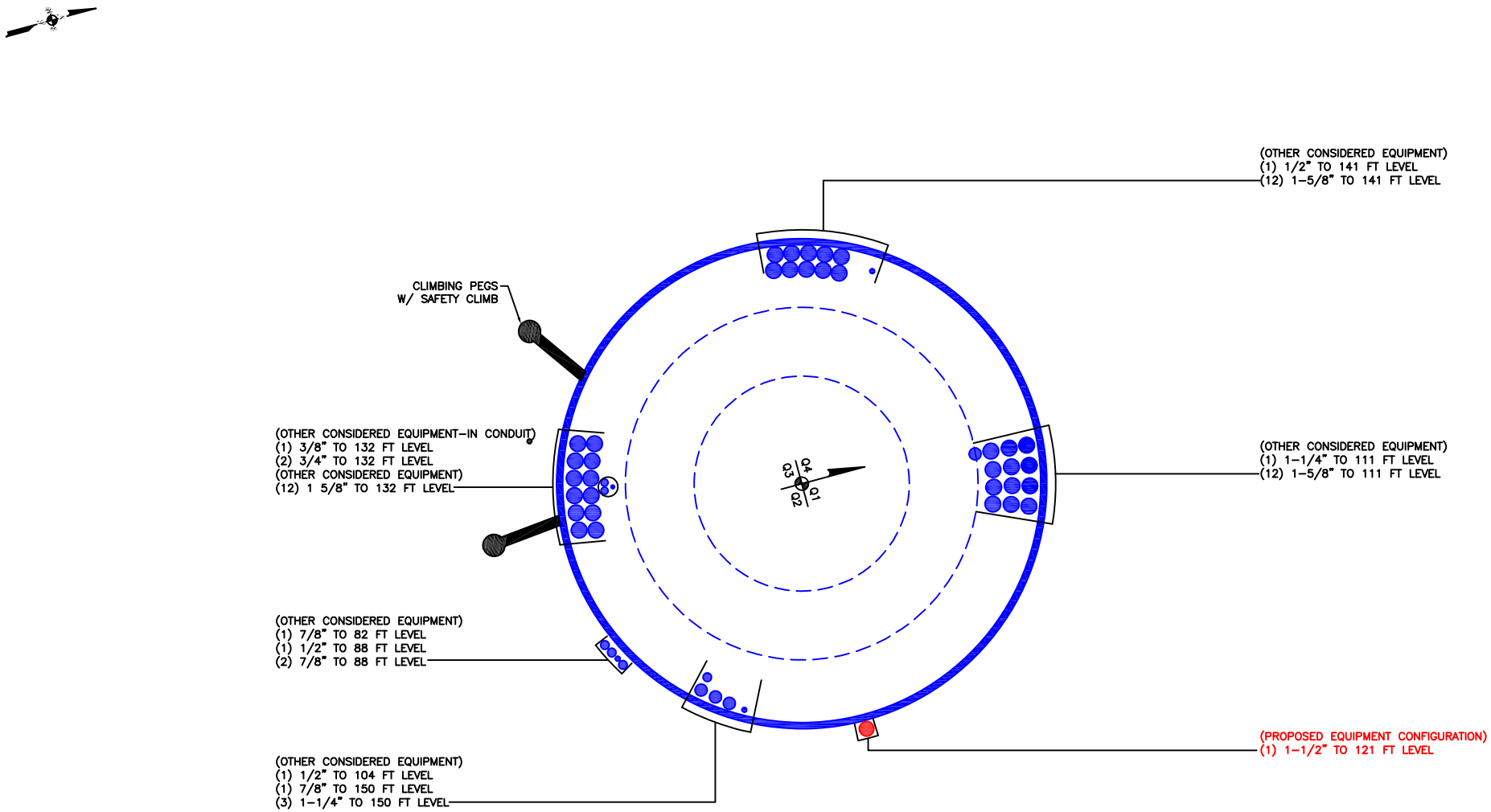
Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	150 - 145	Pole	TP23.0001x22x0.25	1	-4.55	1038.40	5.0	Pass
L2	145 - 140	Pole	TP24.0002x23.0001x0.25	2	-8.37	1084.04	10.7	Pass
L3	140 - 135	Pole	TP25.0004x24.0002x0.25	3	-8.83	1129.69	18.1	Pass
L4	135 - 130	Pole	TP26.0005x25.0004x0.25	4	-13.09	1175.34	26.8	Pass
L5	130 - 125	Pole	TP27.0006x26.0005x0.25	5	-13.68	1220.99	35.9	Pass
L6	125 - 120	Pole	TP28.0007x27.0006x0.25	6	-16.64	1266.64	44.8	Pass
L7	120 - 115	Pole	TP29.0008x28.0007x0.25	7	-17.31	1312.29	53.8	Pass
L8	115 - 108	Pole	TP30.401x29.0008x0.25	8	-17.78	1341.96	59.3	Pass
L9	108 - 106.75	Pole	TP30.1512x29.1509x0.3125	9	-22.14	1702.43	51.9	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L10	106.75 - 101.75	Pole	TP31.1514x30.1512x0.3125	10	-23.16	1759.50	58.2	Pass
L11	101.75 - 96.75	Pole	TP32.1517x31.1514x0.3125	11	-24.13	1816.56	64.0	Pass
L12	96.75 - 91.75	Pole	TP33.1519x32.1517x0.3125	12	-25.12	1873.63	69.4	Pass
L13	91.75 - 89.5	Pole	TP33.602x33.1519x0.3125	13	-25.58	1899.31	71.7	Pass
L14	89.5 - 89.25	Pole	TP33.652x33.602x0.5	14	-25.66	3026.35	42.4	Pass
L15	89.25 - 84.25	Pole	TP34.6523x33.652x0.4938	15	-27.15	3079.25	45.4	Pass
L16	84.25 - 79.25	Pole	TP35.6525x34.6523x0.4875	16	-28.64	3129.86	48.4	Pass
L17	79.25 - 69.75	Pole	TP37.553x35.6525x0.4813	17	-29.99	3173.77	51.0	Pass
L18	69.75 - 68.75	Pole	TP37.1279x35.9778x0.375	18	-32.48	2725.99	68.5	Pass
L19	68.75 - 67.42	Pole	TP37.394x37.1279x0.375	19	-32.91	2745.72	69.3	Pass
L20	67.42 - 67.17	Pole	TP37.444x37.394x0.375	20	-33.01	2749.44	69.5	Pass
L21	67.17 - 62.17	Pole	TP38.4441x37.444x0.375	21	-34.67	2823.62	72.3	Pass
L22	62.17 - 57.58	Pole	TP39.3623x38.4441x0.375	22	-36.22	2891.71	74.8	Pass
L23	57.58 - 57.33	Pole	TP39.4123x39.3623x0.7	23	-36.34	5359.79	37.9	Pass
L24	57.33 - 56.42	Pole	TP39.5943x39.4123x0.7	24	-36.72	5384.99	38.1	Pass
L25	56.42 - 56.17	Pole	TP39.6443x39.5943x0.5875	25	-36.82	4538.43	45.1	Pass
L26	56.17 - 51.17	Pole	TP40.6445x39.6443x0.575	26	-38.60	4557.03	47.1	Pass
L27	51.17 - 46.17	Pole	TP41.6446x40.6445x0.575	27	-40.43	4670.78	48.0	Pass
L28	46.17 - 41.17	Pole	TP42.6447x41.6446x0.5625	28	-42.28	4681.91	49.9	Pass
L29	41.17 - 32.5	Pole	TP44.379x42.6447x0.5625	29	-43.67	4752.45	50.5	Pass
L30	32.5 - 31.5	Pole	TP43.829x42.5288x0.4375	30	-47.84	3754.78	72.3	Pass
L31	31.5 - 26.5	Pole	TP44.8292x43.829x0.4375	31	-49.63	3841.32	73.9	Pass
L32	26.5 - 26.25	Pole	TP44.8792x44.8292x0.6875	32	-49.76	6009.17	44.6	Pass
L33	26.25 - 21.25	Pole	TP45.8794x44.8792x0.6875	33	-52.04	6145.17	45.1	Pass
L34	21.25 - 16.25	Pole	TP46.8795x45.8794x0.675	34	-54.37	6168.63	46.4	Pass
L35	16.25 - 11.25	Pole	TP47.8797x46.8795x0.675	35	-56.72	6302.16	46.8	Pass
L36	11.25 - 6.25	Pole	TP48.8798x47.8797x0.6625	36	-59.11	6318.15	48.1	Pass
L37	6.25 - 1.25	Pole	TP49.88x48.8798x0.6625	37	-61.53	6449.20	48.5	Pass
L38	1.25 - 0	Pole	TP50.13x49.88x0.6625	38	-62.14	6481.96	48.6	Pass
							Summary	
						Pole (L22)	74.8	Pass
						RATING =	**74.8**	**Pass**

***NOTE: Above stress ratios for reinforced sections are approximate. More exact calculations are presented in Appendix C.**

APPENDIX B

BASE LEVEL DRAWING


(OTHER CONSIDERED EQUIPMENT)
(1) 1/2" TO 141 FT LEVEL
(12) 1-5/8" TO 141 FT LEVEL
CLIMBING PEGS
W/ SAFETY CLIMB
(OTHER CONSIDERED EQUIPMENT-IN CONDUIT)
(1) 3/8" TO 132 FT LEVEL
(2) 3/4" TO 132 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(12) 1 5/8" TO 132 FT LEVEL
Q4
Q3
Q1
Q2
(OTHER CONSIDERED EQUIPMENT)
(1) 1-1/4" TO 111 FT LEVEL
(12) 1-5/8" TO 111 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 7/8" TO 82 FT LEVEL
(1) 1/2" TO 88 FT LEVEL
(2) 7/8" TO 88 FT LEVEL
(PROPOSED EQUIPMENT CONFIGURATION)
(1) 1-1/2" TO 121 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 1/2" TO 104 FT LEVEL
(1) 7/8" TO 150 FT LEVEL
(3) 1-1/4" TO 150 FT LEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

CCIpole

per TIA-222- H

Site BU: 876341

Work Order: 1945896

Pole Geometry

	Pole Height Above Base (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Bend Radius (in)	Pole Material
1	150	42	3.75	12	22	30.401	0.25	Auto	A607-60
2	111.75	42	4.75	12	29.15	37.553	0.3125	Auto	A607-60
3	74.5	42	5.5	12	35.98	44.379	0.375	Auto	A607-65
4	38	38	0	12	42.53	50.13	0.4375	Auto	A607-65

Reinforcement Configuration

	Bottom Effective Elevation (ft)	Top Effective Elevation (ft)	Type	Model	Number	1	2	3	4	5	6	7	8	9	10	11	12
1	0	26.5	plate	CCI-WAFP-065125	4												
2	26.5	57.58	plate	CCI-AFP-060100	4												
3	74.5	89.5	plate	CCI-AFP-060100	3												
4	56.42	67.42	plate	CCI-AFP-060100	3												
5																	
6																	
7																	
8																	
9																	
10																	

Reinforcement Details

	B (in)	H (in)	Gross Area (in^2)	Pole Face to Centroid (in)	Bottom Termination Type	Bottom Termination Length (in)	Top Termination Type	Top Termination Length (in)	Lu (in)	Net Area (in2)	Bolt Hole Size (in)	Reinforcement Material
1	6.5	1.25	8.125	0.625	Welded	n/a	PC 8.8 - M20 (100)	42.000	19.000	6.563	1.1875	A572-65
2	6	1	6	0.5	PC 8.8 - M20 (100)	30	PC 8.8 - M20 (100)	30.000	16.000	4.750	1.1875	A572-65
3	6	1	6	0.5	PC 8.8 - M20 (100)	30	PC 8.8 - M20 (100)	30.000	16.000	4.750	1.1875	A572-65
4	6	1	6	0.5	PC 8.8 - M20 (100)	30	PC 8.8 - M20 (100)	30.000	16.000	4.750	1.1875	A572-65

TNX Geometry Input

Increment (ft): 5 Export to TNX

	Section Height (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Tapered Pole Grade	Weight Multiplier
1	150 - 145	5		12	22.000	23.000	0.25	A607-60	1.000
2	145 - 140	5		12	23.000	24.000	0.25	A607-60	1.000
3	140 - 135	5		12	24.000	25.000	0.25	A607-60	1.000
4	135 - 130	5		12	25.000	26.000	0.25	A607-60	1.000
5	130 - 125	5		12	26.000	27.001	0.25	A607-60	1.000
6	125 - 120	5		12	27.001	28.001	0.25	A607-60	1.000
7	120 - 115	5		12	28.001	29.001	0.25	A607-60	1.000
8	115 - 111.75	7	3.75	12	29.001	30.401	0.25	A607-60	1.000
9	111.75 - 106.75	5		12	29.151	30.151	0.3125	A607-60	1.000
10	106.75 - 101.75	5		12	30.151	31.151	0.3125	A607-60	1.000
11	101.75 - 96.75	5		12	31.151	32.152	0.3125	A607-60	1.000
12	96.75 - 91.75	5		12	32.152	33.152	0.3125	A607-60	1.000
13	91.75 - 89.5	2.25		12	33.152	33.602	0.3125	A607-60	1.000
14	89.5 - 89.25	0.25		12	33.602	33.652	0.5	A607-60	0.966
15	89.25 - 84.25	5		12	33.652	34.652	0.49375	A607-60	0.968
16	84.25 - 79.25	5		12	34.652	35.653	0.4875	A607-60	0.971
17	79.25 - 74.5	9.5	4.75	12	35.653	37.553	0.48125	A607-60	0.974
18	74.5 - 68.75	5.75		12	35.978	37.128	0.375	A607-65	1.000
19	68.75 - 67.42	1.33		12	37.128	37.394	0.375	A607-65	1.000
20	67.42 - 67.17	0.25		12	37.394	37.444	0.375	A607-65	1.000
21	67.17 - 62.17	5		12	37.444	38.444	0.375	A607-65	1.000
22	62.17 - 57.58	4.59		12	38.444	39.362	0.375	A607-65	1.000
23	57.58 - 57.33	0.25		12	39.362	39.412	0.7	A607-65	1.022
24	57.33 - 56.42	0.91		12	39.412	39.594	0.7	A607-65	1.020
25	56.42 - 56.17	0.25		12	39.594	39.644	0.5875	A607-65	0.967
26	56.17 - 51.17	5		12	39.644	40.644	0.575	A607-65	0.979
27	51.17 - 46.17	5		12	40.644	41.645	0.575	A607-65	0.971
28	46.17 - 41.17	5		12	41.645	42.645	0.5625	A607-65	0.985
29	41.17 - 38	8.67	5.5	12	42.645	44.379	0.5625	A607-65	0.980
30	38 - 31.5	6.5		12	42.529	43.829	0.4375	A607-65	1.000
31	31.5 - 26.5	5		12	43.829	44.829	0.4375	A607-65	1.000
32	26.5 - 26.25	0.25		12	44.829	44.879	0.6875	A607-65	0.973
33	26.25 - 21.25	5		12	44.879	45.879	0.6875	A607-65	0.965
34	21.25 - 16.25	5		12	45.879	46.880	0.675	A607-65	0.976
35	16.25 - 11.25	5		12	46.880	47.880	0.675	A607-65	0.969
36	11.25 - 6.25	5		12	47.880	48.880	0.6625	A607-65	0.980
37	6.25 - 1.25	5		12	48.880	49.880	0.6625	A607-65	0.973
38	1.25 - 0	1.25		12	49.880	50.130	0.6625	A607-65	0.972

TNX Section Forces

Increment (ft):	5	TNX Output		
	Section Height (ft)	P_u (K)	M_{ux} (kip-ft)	V_u (K)
1	150 - 145	4.55	26.66	5.16
2	145 - 140	8.37	62.36	10.76
3	140 - 135	8.83	117.38	11.26
4	135 - 130	13.09	185.38	16.19
5	130 - 125	13.68	267.56	16.69
6	125 - 120	16.64	354.65	19.48
7	120 - 115	17.31	453.24	19.97
8	115 - 111.75	17.78	518.64	20.29
9	111.75 - 106.75	22.14	631.74	23.56
10	106.75 - 101.75	23.16	751.05	24.11
11	101.75 - 96.75	24.13	872.73	24.59
12	96.75 - 91.75	25.12	996.81	25.07
13	91.75 - 89.5	25.58	1053.43	25.29
14	89.5 - 89.25	25.66	1059.75	25.31
15	89.25 - 84.25	27.15	1192.11	26.55
16	84.25 - 79.25	28.64	1330.29	27.63
17	79.25 - 74.5	29.99	1462.65	28.13
18	74.5 - 68.75	32.48	1626.38	28.82
19	68.75 - 67.42	32.91	1664.80	28.95
20	67.42 - 67.17	33.01	1672.04	28.96
21	67.17 - 62.17	34.67	1818.05	29.44
22	62.17 - 57.58	36.22	1954.43	30.00
23	57.58 - 57.33	36.34	1961.93	30.02
24	57.33 - 56.42	36.72	1989.30	30.15
25	56.42 - 56.17	36.82	1996.84	30.18
26	56.17 - 51.17	38.60	2149.38	30.86
27	51.17 - 46.17	40.43	2305.19	31.50
28	46.17 - 41.17	42.28	2464.17	32.12
29	41.17 - 38	43.67	2566.56	32.51
30	38 - 31.5	47.84	2780.71	33.39
31	31.5 - 26.5	49.63	2949.14	34.14
32	26.5 - 26.25	49.76	2957.67	34.15
33	26.25 - 21.25	52.04	3129.89	34.74
34	21.25 - 16.25	54.37	3305.00	35.32
35	16.25 - 11.25	56.72	3483.00	35.90
36	11.25 - 6.25	59.11	3663.90	36.48
37	6.25 - 1.25	61.53	3847.72	37.07
38	1.25 - 0	62.14	3894.13	37.22

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
150 - 145	Pole	TP23x22x0.25	Pole	5.0%	Pass
145 - 140	Pole	TP24x23x0.25	Pole	10.6%	Pass
140 - 135	Pole	TP25x24x0.25	Pole	18.1%	Pass
135 - 130	Pole	TP26x25x0.25	Pole	26.7%	Pass
130 - 125	Pole	TP27.001x26x0.25	Pole	35.8%	Pass
125 - 120	Pole	TP28.001x27.001x0.25	Pole	44.6%	Pass
120 - 115	Pole	TP29.001x28.001x0.25	Pole	53.6%	Pass
115 - 111.75	Pole	TP30.401x29.001x0.25	Pole	59.1%	Pass
111.75 - 106.75	Pole	TP30.151x29.151x0.3125	Pole	51.7%	Pass
106.75 - 101.75	Pole	TP31.151x30.151x0.3125	Pole	58.0%	Pass
101.75 - 96.75	Pole	TP32.152x31.151x0.3125	Pole	63.8%	Pass
96.75 - 91.75	Pole	TP33.152x32.152x0.3125	Pole	69.2%	Pass
91.75 - 89.5	Pole	TP33.602x33.152x0.3125	Pole	71.5%	Pass
89.5 - 89.25	Pole + Reinf.	TP33.652x33.602x0.5	Reinf. 3 Tension Rupture	59.9%	Pass
89.25 - 84.25	Pole + Reinf.	TP34.652x33.652x0.4938	Reinf. 3 Tension Rupture	64.2%	Pass
84.25 - 79.25	Pole + Reinf.	TP35.653x34.652x0.4875	Reinf. 3 Tension Rupture	68.3%	Pass
79.25 - 74.5	Pole + Reinf.	TP37.553x35.653x0.4813	Reinf. 3 Tension Rupture	71.8%	Pass
74.5 - 68.75	Pole	TP37.128x35.978x0.375	Pole	68.3%	Pass
68.75 - 67.42	Pole	TP37.394x37.128x0.375	Pole	69.1%	Pass
67.42 - 67.17	Pole	TP37.444x37.394x0.375	Pole	69.3%	Pass
67.17 - 62.17	Pole	TP38.444x37.444x0.375	Pole	72.1%	Pass
62.17 - 57.58	Pole	TP39.362x38.444x0.375	Pole	74.6%	Pass
57.58 - 57.33	Pole + Reinf.	TP39.412x39.362x0.7	Reinf. 2 Tension Rupture	57.2%	Pass
57.33 - 56.42	Pole + Reinf.	TP39.594x39.412x0.7	Reinf. 2 Tension Rupture	57.6%	Pass
56.42 - 56.17	Pole + Reinf.	TP39.644x39.594x0.5875	Reinf. 2 Tension Rupture	69.0%	Pass
56.17 - 51.17	Pole + Reinf.	TP40.644x39.644x0.575	Reinf. 2 Tension Rupture	71.3%	Pass
51.17 - 46.17	Pole + Reinf.	TP41.645x40.644x0.575	Reinf. 2 Tension Rupture	73.4%	Pass
46.17 - 41.17	Pole + Reinf.	TP42.645x41.645x0.5625	Reinf. 2 Tension Rupture	75.3%	Pass
41.17 - 38	Pole + Reinf.	TP44.379x42.645x0.5625	Reinf. 2 Tension Rupture	76.5%	Pass
38 - 31.5	Pole	TP43.829x42.529x0.4375	Pole	72.1%	Pass
31.5 - 26.5	Pole	TP44.829x43.829x0.4375	Pole	73.7%	Pass
26.5 - 26.25	Pole + Reinf.	TP44.879x44.829x0.6875	Reinf. 1 Tension Rupture	66.6%	Pass
26.25 - 21.25	Pole + Reinf.	TP45.879x44.879x0.6875	Reinf. 1 Tension Rupture	67.9%	Pass
21.25 - 16.25	Pole + Reinf.	TP46.88x45.879x0.675	Reinf. 1 Tension Rupture	69.2%	Pass
16.25 - 11.25	Pole + Reinf.	TP47.88x46.88x0.675	Reinf. 1 Tension Rupture	70.4%	Pass
11.25 - 6.25	Pole + Reinf.	TP48.88x47.88x0.6625	Reinf. 1 Tension Rupture	71.5%	Pass
6.25 - 1.25	Pole + Reinf.	TP49.88x48.88x0.6625	Reinf. 1 Tension Rupture	72.6%	Pass
1.25 - 0	Pole + Reinf.	TP50.13x49.88x0.6625	Reinf. 1 Tension Rupture	72.8%	Pass
				Summary	
			Pole	74.6%	Pass
			Reinforcement	76.5%	Pass
			Overall	76.5%	Pass

Additional Calculations

Section Elevation (ft)	Moment of Inertia (in^4)			Area (in^2)			% Capacity*				
	Pole	Reinf.	Total	Pole	Reinf.	Total	Pole	R1	R2	R3	R4
150 - 145	1211	n/a	1211	18.29	n/a	18.29	5.0%				
145 - 140	1378	n/a	1378	19.09	n/a	19.09	10.6%				
140 - 135	1560	n/a	1560	19.90	n/a	19.90	18.1%				
135 - 130	1757	n/a	1757	20.70	n/a	20.70	26.7%				
130 - 125	1970	n/a	1970	21.50	n/a	21.50	35.8%				
125 - 120	2199	n/a	2199	22.31	n/a	22.31	44.6%				
120 - 115	2445	n/a	2445	23.11	n/a	23.11	53.6%				
115 - 111.75	2615	n/a	2615	23.63	n/a	23.63	59.1%				
111.75 - 106.75	3417	n/a	3417	29.98	n/a	29.98	51.7%				
106.75 - 101.75	3772	n/a	3772	30.99	n/a	30.99	58.0%				
101.75 - 96.75	4151	n/a	4151	31.99	n/a	31.99	63.8%				
96.75 - 91.75	4555	n/a	4555	33.00	n/a	33.00	69.2%				
91.75 - 89.5	4745	n/a	4745	33.45	n/a	33.45	71.5%				
89.5 - 89.25	4766	2729	7495	33.50	18.00	51.50	44.1%			59.9%	
89.25 - 84.25	5208	2888	8096	34.50	18.00	52.50	47.8%			64.2%	
84.25 - 79.25	5676	3050	8727	35.51	18.00	53.51	51.5%			68.3%	
79.25 - 74.5	6147	3209	9356	36.46	18.00	54.46	54.8%			71.8%	
74.5 - 68.75	7662	n/a	7662	44.32	n/a	44.32	68.3%				
68.75 - 67.42	7829	n/a	7829	44.64	n/a	44.64	69.1%				
67.42 - 67.17	7861	n/a	7861	44.70	n/a	44.70	69.3%				
67.17 - 62.17	8515	n/a	8515	45.90	n/a	45.90	72.1%				
62.17 - 57.58	9146	n/a	9146	47.01	n/a	47.01	74.6%				
57.58 - 57.33	9185	7695	16880	47.07	42.00	89.07	41.1%		57.2%		54.8%
57.33 - 56.42	9314	7764	17078	47.29	42.00	89.29	41.4%		57.6%		55.2%
56.42 - 56.17	9346	4993	14339	47.35	24.00	71.35	47.5%		69.0%		
56.17 - 51.17	10078	5240	15318	48.56	24.00	72.56	49.6%		71.3%		
51.17 - 46.17	10848	5493	16341	49.76	24.00	73.76	51.6%		73.4%		
46.17 - 41.17	11656	5752	17408	50.97	24.00	74.97	53.6%		75.3%		
41.17 - 38	12188	5919	18107	51.73	24.00	75.73	54.8%		76.5%		
38 - 31.5	14710	n/a	14710	61.04	n/a	61.04	72.1%				
31.5 - 26.5	15751	n/a	15751	62.45	n/a	62.45	73.7%				
26.5 - 26.25	15804	8704	24508	62.52	32.50	95.02	46.1%	66.6%			
26.25 - 21.25	16896	9083	25978	63.92	32.50	96.42	47.4%	67.9%			
21.25 - 16.25	18036	9470	27506	65.33	32.50	97.83	48.8%	69.2%			
16.25 - 11.25	19226	9865	29091	66.74	32.50	99.24	50.1%	70.4%			
11.25 - 6.25	20468	10268	30737	68.15	32.50	100.65	51.3%	71.5%			
6.25 - 1.25	21762	10680	32442	69.55	32.50	102.05	52.6%	72.6%			
1.25 - 0	22094	10784	32878	69.90	32.50	102.40	52.9%	72.8%			

Note: Section capacity checked using 5 degree increments.
Rating per TIA-222-H Section 15.5.

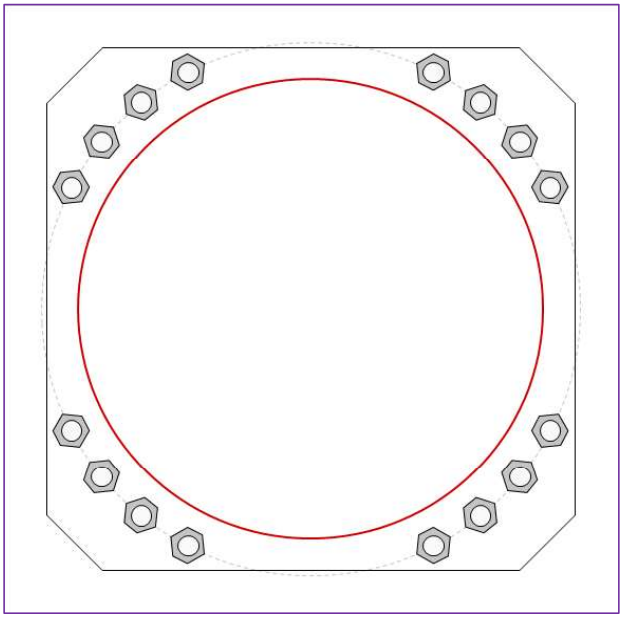
Monopole Base Plate Connection

Site Info	
BU #	876341
Site Name	ETOWN 2 - MARINO PR
Order #	553292 Rev. 0

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	Yes
l_{ar} (in)	0

Applied Loads	
Moment (kip-ft)	3894.13
Axial Force (kips)	62.14
Shear Force (kips)	37.22

**TIA-222-H Section 15.5 Applied*



Connection Properties

Anchor Rod Data

(16) 2-1/4" ø bolts (A615-75 N; Fy=75 ksi, Fu=100 ksi) on 58" BC

Anchor Spacing: 6 in

Base Plate Data

57" W x 3" Plate (A572-50; Fy=50 ksi, Fu=65 ksi); Clip: 6 in

Stiffener Data

N/A

Pole Data

50.13" x 0.6625" 12-sided pole (A607-65; Fy=65 ksi, Fu=80 ksi)

Analysis Results

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

Pu_t = 197.41	ϕPn_t = 243.75	**Stress Rating**
Vu = 2.33	ϕVn = 149.1	**77.1%**
Mu = n/a	ϕMn = n/a	**Pass**

Base Plate Summary

Max Stress (ksi):	37.01	(Flexural)
Allowable Stress (ksi):	45	
Stress Rating:	**78.3%**	**Pass**

Drilled Pier Foundation

BU # :	876341
Site Name:	MIDDLETOWN 2 - MA
Order Number:	553292 Rev. 0

TIA-222 Revison:	H
Tower Type:	Monopole

Applied Loads	Comp.	Uplift
Moment (kip-ft)	3894.17	
Axial Force (kips)	62.16	
Shear Force (kips)	37.19	

Material Properties		
Concrete Strength, f'c:	3	ksi
Rebar Strength, Fy:	60	ksi
Tie Yield Strength, Fyt:	40	ksi

Pier Design Data		
Depth	18.5	ft
Ext. Above Grade	0.5	ft
Pier Section 1		
From 0.5' above grade to 18.5' below grade		
Pier Diameter	7	ft
Rebar Quantity	32	
Rebar Size	11	
Clear Cover to Ties	4	in
Tie Size	5	
Tie Spacing		in

Rebar & Pier Options

Embedded Pole Inputs

Belled Pier Inputs

Analysis Results		
Soil Lateral Check	*Compression*	*Uplift*
$D_{v=0}$ (ft from TOC)	4.88	-
Soil Safety Factor	2.74	-
Max Moment (kip-ft)	4066.75	-
Rating*	*46.2%*	-
Soil Vertical Check	*Compression*	*Uplift*
Skin Friction (kips)	493.73	-
End Bearing (kips)	758.82	-
Weight of Concrete (kips)	131.62	-
Total Capacity (kips)	1252.55	-
Axial (kips)	193.78	-
Rating*	*14.7%*	-
Reinforced Concrete Flexure	*Compression*	*Uplift*
Critical Depth (ft from TOC)	4.88	-
Critical Moment (kip-ft)	4066.75	-
Critical Moment Capacity	7533.55	-
Rating*	*51.4%*	-
Reinforced Concrete Shear	*Compression*	*Uplift*
Critical Depth (ft from TOC)	11.94	-
Critical Shear (kip)	574.05	-
Critical Shear Capacity	593.87	-
Rating*	*92.1%*	-

Soil Interaction Rating*	**46.2%**
Structural Foundation Rating*	**92.1%**

*Rating per TIA-222-H Section 15.5

Check Limitation	
Apply TIA-222-H Section 15.5:	☑
N/A	☐
Shear Design Options	
Check Shear along Depth of Pier:	☑
Utilize Shear-Friction Methodology:	☐
Override Critical Depth:	☐

Go to Soil Calculations

Soil Profile

Groundwater Depth	N/A	# of Layers	3

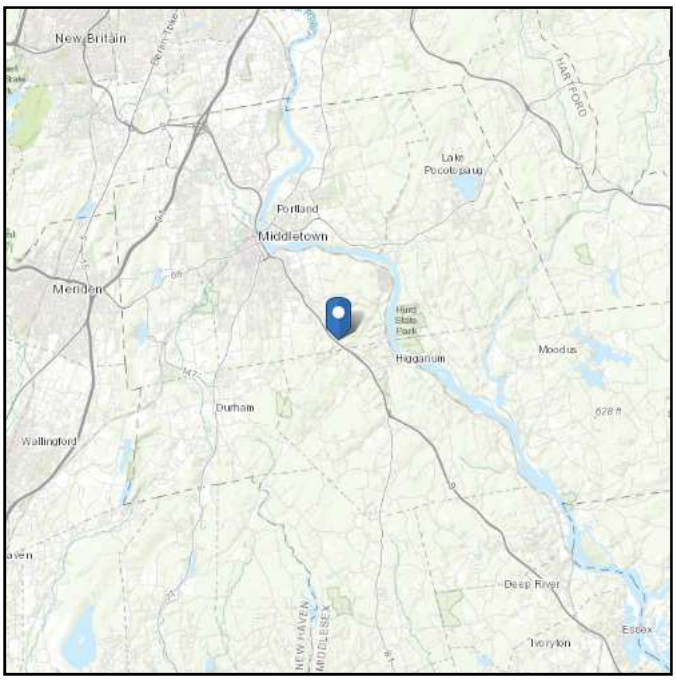
Layer	Top (ft)	Bottom (ft)	Thickness (ft)	γ_{soil} (pcf)	$\gamma_{concrete}$ (pcf)	Cohesion (ksf)	Angle of Friction (degrees)	Calculated Ultimate Skin Friction Comp (ksf)	Calculated Ultimate Skin Friction Uplift (ksf)	Ultimate Skin Friction Comp Override (ksf)	Ultimate Skin Friction Uplift Override (ksf)	Ult. Gross Bearing Capacity (ksf)	SPT Blow Count	Soil Type
1	0	3.5	3.5	120	150	0	0	0.000	0.000	0.00	0.00			Cohesionless
2	3.5	4	0.5	120	150	0	32	0.557	0.557				36	Cohesionless
3	4	18.5	14.5	125	150	4	0	2.045	2.045			26.29		Cohesive

ASCE 7 Hazards Report

Address:
No Address at This Location

Standard: ASCE/SEI 7-10
Risk Category: II
Soil Class: D - Stiff Soil

Elevation: 369.73 ft (NAVD 88)
Latitude: 41.510639
Longitude: -72.593361



Wind

Results:

Wind Speed:	126 Vmph ← 130 mph required by CT Code
10-year MRI	78 Vmph
25-year MRI	87 Vmph
50-year MRI	95 Vmph
100-year MRI	103 Vmph

Data Accessed: Wed Mar 31 2021

Date Source: ASCE/SEI 7-10, Fig. 26.5-1A and Figs. CC-1–CC-4, and Section 26.5.2, incorporating errata of March 12, 2014

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-10 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).

Site is in a hurricane-prone region as defined in ASCE/SEI 7-10 Section 26.2. Glazed openings need not be protected against wind-borne debris.

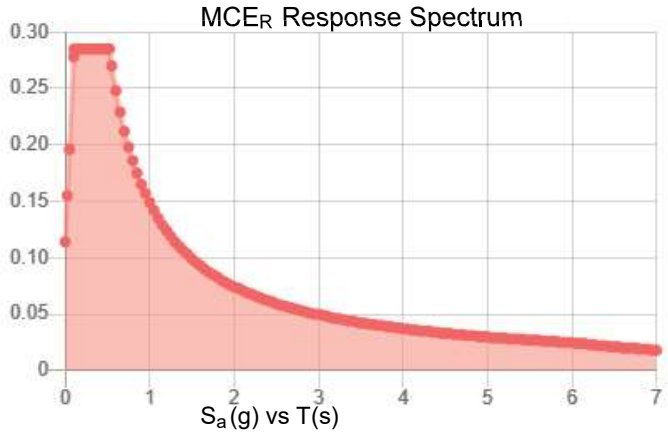
Seismic

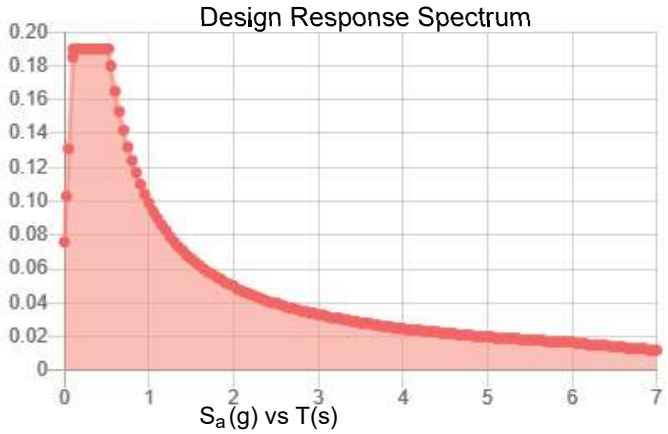
Site Soil Class: D - Stiff Soil

Results:

S_S :	0.178	S_{DS} :	0.19
S_1 :	0.062	S_{D1} :	0.099
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.091
S_{MS} :	0.285	PGA_M :	0.145
S_{M1} :	0.149	F_{PGA} :	1.6
		I_e :	1

Seismic Design Category B





Data Accessed: Wed Mar 31 2021

Date Source: USGS Seismic Design Maps based on ASCE/SEI 7-10, incorporating Supplement 1 and errata of March 31, 2013, and ASCE/SEI 7-10 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-10 Ch. 21 are available from USGS.

Ice

Results:

Ice Thickness:	0.75 in.
Concurrent Temperature:	15 F
Gust Speed:	50 mph
Data Source:	Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8
Date Accessed:	Wed Mar 31 2021

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

Exhibit E

Power Density/RF Emissions Report

RF EMISSIONS COMPLIANCE REPORT

Crown Castle on behalf of Dish Wireless

Crown Castle Site Name: MIDDLETOWN 2 - MARINO PROPERTY
Crown Castle Site BU Number: 876341
Dish Wireless Site Name: CT-CCI-T-876341
Dish Wireless Site ID: BOBDL00091A
Application ID: 553292
1969 Saybrook Road
Middletown, CT
6/10/2021

Report Status:

Dish Wireless is Complaint

Michael Fischer, P.E.
Registered Professional Engineer (Electrical)
Connecticut License Number 33928
Expires January 31, 2022

Signed 10 June 2021

Prepared By:

Site Safe, LLC

8618 Westwood Center Drive
Suite 315

Vienna, VA 22182

Voice: 703-276-1100
Fax: 703-276-1169

Engineering Statement in Re:
Electromagnetic Energy Analysis
Crown Castle
Middletown, CT

My signature on the cover of this document indicates:

That I am registered as a Professional Engineer in the jurisdiction indicated; and

That I have extensive professional experience in the wireless communications engineering industry; and

That I am an employee of Site Safe, LLC in Vienna, Virginia; and

That I am thoroughly familiar with the Rules and Regulations of the Federal Communications Commission ("the FCC" and "the FCC Rules") both in general and specifically as they apply to the FCC's Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields; and

That the technical information serving as the basis for this report was supplied by Crown Castle on behalf of Dish Wireless (see attached Site Summary and Carrier documents) and that Dish Wireless' installation involves communications equipment, antennas and associated technical equipment at a location referred to as "MIDDLETOWN 2 - MARINO PROPERTY" ("the site"); and

That Dish Wireless proposes to operate at the site with transmit antennas listed in the carrier summary and with a maximum effective radiated power as specified by Dish Wireless and shown on the worksheet and that worst-case 100% duty cycle has been assumed; and

That this analysis has been performed with the assumption that the ground immediately surrounding the tower is primarily flat or falling; and

That at this time, the FCC requires that certain licensees address specific levels of radio frequency energy to which workers or members of the public might possibly be exposed (at §1.1307(b) of the FCC Rules); and

That such consideration of possible exposure of humans to radio frequency energy must utilize the standards set by the FCC, which is the federal agency having jurisdiction over communications facilities; and

That the FCC rules define two tiers of permissible exposure guidelines: 1) "uncontrolled environments," which defines situations in which persons may not be aware of (the "general public"), or may not be able to control their exposure to a transmission facility; and 2) "controlled environments," which defines situations in which persons are aware of their potential for exposure (industry personnel); and

That this statement specifically addresses the uncontrolled environment (which is more conservative than the controlled environment) and the limit set forth in the FCC rules for licensees of Dish Wireless' operating frequencies as shown on the attached antenna worksheet; and

That when applying the uncontrolled environment standards, the predicted Maximum Power Density at two meters above ground level from the proposed T-Mobile operation is no more than 2.149% of the maximum permissible exposure limits in any accessible area on the ground; and

That it is understood per FCC Guidelines and OET 65 Appendix A, that regardless of the existent radio frequency environment, only those licensees whose contributions exceed 5% of the exposure limit pertinent to their operation(s) bear any responsibility for bringing any non-compliant area(s) into compliance; and

That when applying the uncontrolled environment standards, the cumulative predicted energy density from the proposed operation is no more than 10.507% of the maximum in any accessible area up to two meters above the ground per OET 65; and

That the calculations provided in this report are based on data provided by the client and antenna pattern data supplied by the antenna manufacturer, in accordance with FCC guidelines listed in OET 65. Horizontal and vertical antenna patterns are combined for modeling purposes to accurately reflect the energy two meters above ground level where on-axis energy refers to maximum energy two meters above the ground along the azimuth of the antenna and where area energy refers to the maximum energy anywhere two meters above the ground regardless of the antenna azimuth, accounting for cumulative energy from multiple antennas for the carrier(s) and frequency range(s) indicated; and

That the Occupational Safety and Health Administration has policies in place which address worker safety in and around communications sites, thus individual companies will be responsible for their employees' training regarding radio frequency safety; and

In summary, it is stated here that the proposed operation at the site will not result in exposure of the public to excessive levels of radio frequency energy as defined in the FCC Rules and Regulations, specifically 47 CFR 1.1307(b), and that Dish Wireless' proposed operation is completely compliant.

Finally, it is stated that access to the tower should be restricted to communication industry professionals and approved contractor personnel trained in radio frequency safety and that this instant analysis addresses exposure levels at two meters above ground level and does not address exposure levels on the tower or in the immediate proximity of the antennas.

Crown Castle
MIDDLETOWN 2 - MARINO PROPERTY
Site Summary

Carrier	Area Maximum Percentage MPE
AT&T Mobility, LLC	0.490 %
AT&T Mobility, LLC	0.110 %
AT&T Mobility, LLC	0.112 %
AT&T Mobility, LLC (Not in service)	0.000 %
City of Middletown	0.040 %
City of Middletown	0.140 %
Dish Wireless (Proposed)	0.964 %
Dish Wireless (Proposed)	0.911 %
Dish Wireless (Proposed)	0.274 %
Sprint (T-Mobile)	0.336 %
Sprint (T-Mobile)	0.222 %
Sprint (T-Mobile)	0.222 %
Sprint (T-Mobile)	0.227 %
T-Mobile	0.730 %
T-Mobile	0.757 %
T-Mobile	0.851 %
T-Mobile	0.562 %
Verizon Wireless	1.992 %
Verizon Wireless	0.406 %
Verizon Wireless	0.421 %
Verizon Wireless	0.290 %
Verizon Wireless	0.450 %
Composite Site MPE:	10.507 %

AT&T Mobility, LLC
MIDDLETOWN 2 - MARINO PROPERTY
Carrier Summary

Frequency:	1900	MHz
Maximum Permissible Exposure (MPE):	1000	$\mu W/cm^2$
Maximum power density at ground level:	4.89712	$\mu W/cm^2$
Highest percentage of Maximum Permissible Exposure:	0.48971	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density ($\mu W/cm^2$)**	**Percent of MPE**	**Max Power Density ($\mu W/cm^2$)**	**Percent of MPE**
CCI Antennas	OPA-65R-LCUU-H6	133	30	3509	3.851388	0.385139	4.834544	0.483454
CCI Antennas	OPA-65R-LCUU-H6	133	140	3509	3.851388	0.385139	4.834544	0.483454
CCI Antennas	OPA-65R-LCUU-H6	133	260	3509	3.851388	0.385139	4.834544	0.483454

AT&T Mobility, LLC
MIDDLETOWN 2 - MARINO PROPERTY
Carrier Summary

Frequency:	737	MHz
Maximum Permissible Exposure (MPE):	491.33	$\mu W/cm^2$
Maximum power density at ground level:	0.54289	$\mu W/cm^2$
Highest percentage of Maximum Permissible Exposure:	0.11049	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density ($\mu W/cm^2$)**	**Percent of MPE**	**Max Power Density ($\mu W/cm^2$)**	**Percent of MPE**
CCI Antennas	OPA-65R-LCUU-H6	133	30	942	0.383327	0.078018	0.454326	0.092468
CCI Antennas	OPA-65R-LCUU-H6	133	140	942	0.383327	0.078018	0.454326	0.092468
CCI Antennas	OPA-65R-LCUU-H6	133	260	942	0.383327	0.078018	0.454326	0.092468

AT&T Mobility, LLC
MIDDLETOWN 2 - MARINO PROPERTY
Carrier Summary

Frequency:	850	MHz
Maximum Permissible Exposure (MPE):	566.67	$\mu W/cm^2$
Maximum power density at ground level:	0.63555	$\mu W/cm^2$
Highest percentage of Maximum Permissible Exposure:	0.11216	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density ($\mu W/cm^2$)**	**Percent of MPE**	**Max Power Density ($\mu W/cm^2$)**	**Percent of MPE**
Powerwave	7770	133	30	547	0.297529	0.052505	0.464230	0.081923
Powerwave	7770	133	140	547	0.297529	0.052505	0.464230	0.081923
Powerwave	7770	133	260	547	0.297529	0.052505	0.464230	0.081923

AT&T Mobility, LLC (Not in service)
MIDDLETOWN 2 - MARINO PROPERTY
Carrier Summary

Frequency:	850	MHz
Maximum Permissible Exposure (MPE):	566.67	$\mu W/cm^2$
Maximum power density at ground level:	0.00000	$\mu W/cm^2$
Highest percentage of Maximum Permissible Exposure:	0.00000	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density ($\mu W/cm^2$)**	**Percent of MPE**	**Max Power Density ($\mu W/cm^2$)**	**Percent of MPE**
Powerwave	7770	133	30	0	0.000000	0.000000	0.000000	0.000000
Powerwave	7770	133	140	0	0.000000	0.000000	0.000000	0.000000
Powerwave	7770	133	260	0	0.000000	0.000000	0.000000	0.000000

City of Middletown
MIDDLETOWN 2 - MARINO PROPERTY
Carrier Summary

Frequency:	850	MHz
Maximum Permissible Exposure (MPE):	566.67	$\mu W/cm^2$
Maximum power density at ground level:	0.22579	$\mu W/cm^2$
Highest percentage of Maximum Permissible Exposure:	0.03984	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density ($\mu W/cm^2$)**	**Percent of MPE**	**Max Power Density ($\mu W/cm^2$)**	**Percent of MPE**
SINCLAIR	SC479-HF1LDF	95	0	100	0.112893	0.019922	0.112893	0.019922
SINCLAIR	SC479-HF1LDF	95	120	100	0.112893	0.019922	0.112893	0.019922

City of Middletown
MIDDLETOWN 2 - MARINO PROPERTY
Carrier Summary

Frequency:	150	MHz
Maximum Permissible Exposure (MPE):	200	$\mu W/cm^2$
Maximum power density at ground level:	0.28032	$\mu W/cm^2$
Highest percentage of Maximum Permissible Exposure:	0.14016	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density ($\mu W/cm^2$)**	**Percent of MPE**	**Max Power Density ($\mu W/cm^2$)**	**Percent of MPE**
RFI	BA80-41-DIN	92	240	100	0.280317	0.140159	0.280317	0.140159

Dish Wireless (Proposed)
MIDDLETOWN 2 - MARINO PROPERTY
Carrier Summary

Frequency:	2100	MHz
Maximum Permissible Exposure (MPE):	1000	$\mu W/cm^2$
Maximum power density at ground level:	9.63736	$\mu W/cm^2$
Highest percentage of Maximum Permissible Exposure:	0.96374	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density ($\mu W/cm^2$)**	**Percent of MPE**	**Max Power Density ($\mu W/cm^2$)**	**Percent of MPE**
JMA Wireless	MX08FRO665-20	121	0	11861	4.950579	0.495058	9.560486	0.956049
JMA Wireless	MX08FRO665-20	121	120	11861	4.950579	0.495058	9.560486	0.956049
JMA Wireless	MX08FRO665-20	121	240	11861	4.950579	0.495058	9.560486	0.956049

Dish Wireless (Proposed)
MIDDLETOWN 2 - MARINO PROPERTY
Carrier Summary

Frequency:	1900	MHz
Maximum Permissible Exposure (MPE):	1000	$\mu W/cm^2$
Maximum power density at ground level:	9.10845	$\mu W/cm^2$
Highest percentage of Maximum Permissible Exposure:	0.91084	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density ($\mu W/cm^2$)**	**Percent of MPE**	**Max Power Density ($\mu W/cm^2$)**	**Percent of MPE**
JMA Wireless	MX08FRO665-20	121	0	9866	4.378487	0.437849	8.989066	0.898907
JMA Wireless	MX08FRO665-20	121	120	9866	4.378487	0.437849	8.989066	0.898907
JMA Wireless	MX08FRO665-20	121	240	9866	4.378487	0.437849	8.989066	0.898907

Dish Wireless (Proposed)
MIDDLETOWN 2 - MARINO PROPERTY
Carrier Summary

Frequency:	600	MHz
Maximum Permissible Exposure (MPE):	400	$\mu W/cm^2$
Maximum power density at ground level:	1.09430	$\mu W/cm^2$
Highest percentage of Maximum Permissible Exposure:	0.27358	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density ($\mu W/cm^2$)**	**Percent of MPE**	**Max Power Density ($\mu W/cm^2$)**	**Percent of MPE**
JMA Wireless	MX08FRO665-20	121	0	1304	0.826076	0.206519	1.034997	0.258749
JMA Wireless	MX08FRO665-20	121	120	1304	0.826076	0.206519	1.034997	0.258749
JMA Wireless	MX08FRO665-20	121	240	1304	0.826076	0.206519	1.034997	0.258749

Sprint (T-Mobile)
MIDDLETOWN 2 - MARINO PROPERTY
Carrier Summary

Frequency:	2500	MHz
Maximum Permissible Exposure (MPE):	1000	$\mu W/cm^2$
Maximum power density at ground level:	3.36281	$\mu W/cm^2$
Highest percentage of Maximum Permissible Exposure:	0.33628	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density ($\mu W/cm^2$)**	**Percent of MPE**	**Max Power Density ($\mu W/cm^2$)**	**Percent of MPE**
RFS	APXVTM14-C-I20	150	320	6168	1.003242	0.100324	1.877372	0.187737
RFS	APXVTM14-C-I20	150	90	6168	1.003242	0.100324	1.877372	0.187737
RFS	APXVTM14-C-I20	150	140	6168	1.003242	0.100324	1.877372	0.187737

Sprint (T-Mobile)
MIDDLETOWN 2 - MARINO PROPERTY
Carrier Summary

Frequency:	1990	MHz
Maximum Permissible Exposure (MPE):	1000	$\mu W/cm^2$
Maximum power density at ground level:	2.22174	$\mu W/cm^2$
Highest percentage of Maximum Permissible Exposure:	0.22217	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density ($\mu W/cm^2$)**	**Percent of MPE**	**Max Power Density ($\mu W/cm^2$)**	**Percent of MPE**
Commscope	NNVV-65B-R4	150	320	2781	1.030848	0.103085	1.321738	0.132174
Commscope	NNVV-65B-R4	150	90	2781	1.030848	0.103085	1.321738	0.132174
Commscope	NNVV-65B-R4	150	140	2781	1.030848	0.103085	1.321738	0.132174

Sprint (T-Mobile)
MIDDLETOWN 2 - MARINO PROPERTY
Carrier Summary

Frequency:	1900	MHz
Maximum Permissible Exposure (MPE):	1000	$\mu W/cm^2$
Maximum power density at ground level:	2.22174	$\mu W/cm^2$
Highest percentage of Maximum Permissible Exposure:	0.22217	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density ($\mu W/cm^2$)**	**Percent of MPE**	**Max Power Density ($\mu W/cm^2$)**	**Percent of MPE**
Commscope	NNVV-65B-R4	150	320	2781	1.030848	0.103085	1.321738	0.132174
Commscope	NNVV-65B-R4	150	90	2781	1.030848	0.103085	1.321738	0.132174
Commscope	NNVV-65B-R4	150	140	2781	1.030848	0.103085	1.321738	0.132174

Sprint (T-Mobile)
MIDDLETOWN 2 - MARINO PROPERTY
Carrier Summary

Frequency:	862	MHz
Maximum Permissible Exposure (MPE):	574.67	$\mu W/cm^2$
Maximum power density at ground level:	1.30172	$\mu W/cm^2$
Highest percentage of Maximum Permissible Exposure:	0.22652	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density ($\mu W/cm^2$)**	**Percent of MPE**	**Max Power Density ($\mu W/cm^2$)**	**Percent of MPE**
Commscope	NNVV-65B-R4	150	320	1901	0.798276	0.138911	0.805207	0.140117
Commscope	NNVV-65B-R4	150	90	1901	0.798276	0.138911	0.805207	0.140117
Commscope	NNVV-65B-R4	150	140	1901	0.798276	0.138911	0.805207	0.140117

T-Mobile
MIDDLETOWN 2 - MARINO PROPERTY
Carrier Summary

Frequency:	2100	MHz
Maximum Permissible Exposure (MPE):	1000	$\mu W/cm^2$
Maximum power density at ground level:	7.30245	$\mu W/cm^2$
Highest percentage of Maximum Permissible Exposure:	0.73024	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density ($\mu W/cm^2$)**	**Percent of MPE**	**Max Power Density ($\mu W/cm^2$)**	**Percent of MPE**
RFS	APXVAARR24_43-U-NA20	110	50	8632	2.974090	0.297409	5.657115	0.565712
RFS	APXVAARR24_43-U-NA20	110	130	8632	2.974090	0.297409	5.657115	0.565712
RFS	APXVAARR24_43-U-NA20	110	310	8632	2.974090	0.297409	5.657115	0.565712

T-Mobile
MIDDLETOWN 2 - MARINO PROPERTY
Carrier Summary

Frequency:	1900	MHz
Maximum Permissible Exposure (MPE):	1000	$\mu W/cm^2$
Maximum power density at ground level:	7.56976	$\mu W/cm^2$
Highest percentage of Maximum Permissible Exposure:	0.75698	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density ($\mu W/cm^2$)**	**Percent of MPE**	**Max Power Density ($\mu W/cm^2$)**	**Percent of MPE**
RFS	APXVAARR24_43-U-NA20	110	50	4945	3.004329	0.300433	5.446349	0.544635
RFS	APXVAARR24_43-U-NA20	110	130	4945	3.004329	0.300433	5.446349	0.544635
RFS	APXVAARR24_43-U-NA20	110	310	4945	3.004329	0.300433	5.446349	0.544635

T-Mobile
MIDDLETOWN 2 - MARINO PROPERTY
Carrier Summary

Frequency:	700	MHz
Maximum Permissible Exposure (MPE):	466.67	$\mu W/cm^2$
Maximum power density at ground level:	3.97228	$\mu W/cm^2$
Highest percentage of Maximum Permissible Exposure:	0.85120	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density ($\mu W/cm^2$)**	**Percent of MPE**	**Max Power Density ($\mu W/cm^2$)**	**Percent of MPE**
RFS	APXVAARR24_43-U-NA20	110	50	3484	1.893046	0.405653	2.002285	0.429061
RFS	APXVAARR24_43-U-NA20	110	130	3484	1.893046	0.405653	2.002285	0.429061
RFS	APXVAARR24_43-U-NA20	110	310	3484	1.893046	0.405653	2.002285	0.429061

T-Mobile
MIDDLETOWN 2 - MARINO PROPERTY
Carrier Summary

Frequency:	600	MHz
Maximum Permissible Exposure (MPE):	400	$\mu W/cm^2$
Maximum power density at ground level:	2.24727	$\mu W/cm^2$
Highest percentage of Maximum Permissible Exposure:	0.56182	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density ($\mu W/cm^2$)**	**Percent of MPE**	**Max Power Density ($\mu W/cm^2$)**	**Percent of MPE**
RFS	APXVAARR24_43-U-NA20	110	50	1251	0.728362	0.182091	0.751829	0.187957
RFS	APXVAARR24_43-U-NA20	110	50	1251	0.728362	0.182091	0.751829	0.187957
RFS	APXVAARR24_43-U-NA20	110	130	1251	0.728362	0.182091	0.751829	0.187957
RFS	APXVAARR24_43-U-NA20	110	130	1251	0.728362	0.182091	0.751829	0.187957
RFS	APXVAARR24_43-U-NA20	110	310	1251	0.728362	0.182091	0.751829	0.187957
RFS	APXVAARR24_43-U-NA20	110	310	1251	0.728362	0.182091	0.751829	0.187957

Verizon Wireless
MIDDLETOWN 2 - MARINO PROPERTY
Carrier Summary

Frequency:	3700	MHz
Maximum Permissible Exposure (MPE):	1000	$\mu W/cm^2$
Maximum power density at ground level:	19.91614	$\mu W/cm^2$
Highest percentage of Maximum Permissible Exposure:	1.99161	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density ($\mu W/cm^2$)**	**Percent of MPE**	**Max Power Density ($\mu W/cm^2$)**	**Percent of MPE**
Samsung	MT6407-77A	142	30	43155	8.109850	0.810985	17.672808	1.767281
Samsung	MT6407-77A	142	150	43155	8.109850	0.810985	17.672808	1.767281
Samsung	MT6407-77A	142	270	43155	8.109850	0.810985	17.672808	1.767281

Verizon Wireless
MIDDLETOWN 2 - MARINO PROPERTY
Carrier Summary

Frequency:	2100	MHz
Maximum Permissible Exposure (MPE):	1000	$\mu W/cm^2$
Maximum power density at ground level:	4.05711	$\mu W/cm^2$
Highest percentage of Maximum Permissible Exposure:	0.40571	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density ($\mu W/cm^2$)**	**Percent of MPE**	**Max Power Density ($\mu W/cm^2$)**	**Percent of MPE**
Commscope	JAHH-65B-R3B	142	30	6069	2.214475	0.221447	3.912122	0.391212
Commscope	JAHH-65B-R3B	142	150	6069	2.214475	0.221447	3.912122	0.391212
Commscope	JAHH-65B-R3B	142	270	6069	2.214475	0.221447	3.912122	0.391212

Verizon Wireless
MIDDLETOWN 2 - MARINO PROPERTY
Carrier Summary

Frequency:	1900	MHz
Maximum Permissible Exposure (MPE):	1000	$\mu W/cm^2$
Maximum power density at ground level:	4.21122	$\mu W/cm^2$
Highest percentage of Maximum Permissible Exposure:	0.42112	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density ($\mu W/cm^2$)**	**Percent of MPE**	**Max Power Density ($\mu W/cm^2$)**	**Percent of MPE**
Commscope	JAHH-65B-R3B	142	30	5890	2.537778	0.253778	4.048773	0.404877
Commscope	JAHH-65B-R3B	142	150	5890	2.537778	0.253778	4.048773	0.404877
Commscope	JAHH-65B-R3B	142	270	5890	2.537778	0.253778	4.048773	0.404877

Verizon Wireless
MIDDLETOWN 2 - MARINO PROPERTY
Carrier Summary

Frequency:	751	MHz
Maximum Permissible Exposure (MPE):	500.67	$\mu W/cm^2$
Maximum power density at ground level:	1.45300	$\mu W/cm^2$
Highest percentage of Maximum Permissible Exposure:	0.29021	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density ($\mu W/cm^2$)**	**Percent of MPE**	**Max Power Density ($\mu W/cm^2$)**	**Percent of MPE**
Commscope	JAHH-65B-R3B	142	30	2661	0.919903	0.183736	1.327553	0.265157
Commscope	JAHH-65B-R3B	142	150	2661	0.919903	0.183736	1.327553	0.265157
Commscope	JAHH-65B-R3B	142	270	2661	0.919903	0.183736	1.327553	0.265157

Verizon Wireless
MIDDLETOWN 2 - MARINO PROPERTY
Carrier Summary

Frequency:	850	MHz
Maximum Permissible Exposure (MPE):	566.67	$\mu W/cm^2$
Maximum power density at ground level:	2.54839	$\mu W/cm^2$
Highest percentage of Maximum Permissible Exposure:	0.44972	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density ($\mu W/cm^2$)**	**Percent of MPE**	**Max Power Density ($\mu W/cm^2$)**	**Percent of MPE**
RFS	APL868013-42T0	142	30	780	0.417863	0.073741	0.524750	0.092603
RFS	APL868013-42T0	142	30	780	0.417863	0.073741	0.524750	0.092603
Commscope	JAHH-65B-R3B	142	30	3120	0.921873	0.162683	1.506700	0.265888
RFS	APL868013-42T0	142	150	780	0.417863	0.073741	0.524750	0.092603
RFS	APL868013-42T0	142	150	780	0.417863	0.073741	0.524750	0.092603
Commscope	JAHH-65B-R3B	142	150	3120	0.921873	0.162683	1.506700	0.265888
RFS	APL868013-42T0	142	270	780	0.417863	0.073741	0.524750	0.092603
RFS	APL868013-42T0	142	270	780	0.417863	0.073741	0.524750	0.092603
Commscope	JAHH-65B-R3B	142	270	3120	0.921873	0.162683	1.506700	0.265888