STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL

IN RE:	:	
	:	
A PETITION FOR A DECLARATORY	:	PETITION NO. ____
RULING ON THE NEED TO OBTAIN A	:	
SITING COUNCIL CERTIFICATE FOR THE	:	
PROPOSED MODIFICATION OF AN	:	
EXISTING WIRELESS	:	
TELECOMMUNICATIONS FACILITY AT	:	
52 NEW BRITAIN AVENUE, ROCKY HILL, CONNECTICUT	:	MARCH 7, 2022

PETITION FOR A DECLARATORY RULING:
INSTALLATION HAVING NO
SUBSTANTIAL ADVERSE ENVIRONMENTAL EFFECT

I. Introduction

Pursuant to Sections 16-50j-38 and 16-50j-39 of the Regulations of Connecticut State Agencies ("R.C.S.A."), DISH Wireless, LLC ("DISH") hereby petitions the Connecticut Siting Council (the "Council") for a declaratory ruling ("Petition") that no Certificate of Environmental Compatibility and Public Need ("Certificate") is required under Section 16-50k(a) of the Connecticut General Statutes ("C.G.S.") for the modification of an existing wireless telecommunications facility at 52 New Britain Avenue, Rocky Hill, Connecticut (the "Existing Facility").

II. Existing Facility

The Existing Facility is located on an approximately ½ acre parcel owned by the Town of Rocky Hill, and is the site of the Rocky Hill Volunteer Fire Department - Station 2. The Facility consists of a 182-foot tall monopole and associated compound owned by Crown Castle. **Attachment 1** contains the owner's authorization permitting DISH to file this Petition. The Facility was originally approved by the Town of Rocky Hill on November 30, 1998 as documented in **Attachment 2**.

III. DISH Facility

DISH's proposed facility is illustrated on the plans submitted as **Attachment 3**. DISH proposes the shared use of the Existing Facility to provide FCC licensed services. DISH will install three (3) panel antennas and six (6) remote radiohead units (RRH) on a new platform mount installed at the centerline height of approximately 130' AGL.

DISH has confirmed that the Existing Facility is capable of supporting the addition of DISH's

antennas and tower mounted equipment, as documented in the tower Structural Analysis Report annexed hereto as **Attachment 4**, and once new mounts are installed as documented in the Mount Analysis Report annexed hereto as **Attachment 5**.

DISH's 5' x 7' lease area is located adjacent to the existing monopole. In order to accommodate its ground equipment, DISH will remove two (2) existing bollards and install four (4) new bollards around the lease area perimeter. Within its lease area, DISH will install a 5' x 7' steel platform for its ground equipment, supported by four (4) 12" x 12" footpads at grade.

IV. The Proposed Modification Will Not Have A Substantial Adverse Environmental Effect

1. Physical Environmental Effects

The attachment of DISH's antennas to the existing monopole, and the installation of radio and electrical equipment within the expanded equipment area will not involve a significant alteration to the physical and environmental characteristics of the Property. No native trees will need to be removed and no on-site or off-site wetlands or watercourses will be impacted by the proposed facility expansion.

2. Visual Effects

Given the height of the existing tower, 182' AGL, which has existing antennas at multiple levels, DISH's proposed antenna installation at a centerline height of approximately 130' AGL would have a minimal visual impact. The proposed equipment area will impact a small portion of the existing paved parking area and will also have a minimal visual impact.

3. FCC Compliance

Radio frequency ("RF") emissions resulting from AT&T's shared use of the Existing Facility will be well below the standards adopted by the Federal Communications Commission ("FCC"). Included in **Attachment 6** is a Radio Frequency Emissions Analysis Report prepared by EBI Consulting. This report confirms that the modified facility will operate well within the RF emission standards established by the FCC.

V. Notice to the City, Property Owner and Abutting Landowners

On March 7, 2022, a copy of this Petition was sent to The Honorable Lisa J. Marotta, Mayor, The Honorable Edward Charamut, Deputy Mayor, John Mehr, Town Manager, and Kim Ricci, Town Planner for the Town of Rocky Hill. A notice of DISH's intent to file this Petition was also sent to the owners of land that may be considered to abut the Property. Included in **Attachment 7** is a sample abutter's letter and the list of those abutting landowners who were sent notice.

VI. Conclusion

Based on the information provided above, the Petitioners respectfully requests that the Council issue a determination in the form of a declaratory ruling that the installation of a temporary tower at the Property will not have a substantial adverse environmental effect and does not require the issuance of a Certificate of Environmental Compatibility and Public Need pursuant to § 16-50k of the General Statutes.

Respectfully submitted,

Denise Sabo
Northeast Site Solutions
Agent for AT&T
(860) 209-4690
denise@northeastsitesolutions.com

Attachments

Cc: The Honorable Lisa J. Marotta, Mayor
Town of Rocky Hill
761 Old Main Street
Rocky Hill, CT 06067

The Honorable Edward Charamut, Deputy Mayor
Town of Rocky Hill
761 Old Main Street
Rocky Hill, CT 06067

John Mehr, Town Manager
Town of Rocky Hill
761 Old Main Street
Rocky Hill, CT 06067

Kim Ricci, Town Planner
Town of Rocky Hill
761 Old Main Street
Rocky Hill, CT 06067

Crown Castle - Tower Owner
3 Corporate Park Drive, Suite 101,
Clifton Park, NY 12065

ATTACHMENT 1

tyler clt division

COMMERCIAL PROPERTY RECORD CARD 2019

TOWN OF ROCKY HILL

Situs : 52 NEW BRITAIN AVENUE	PARCEL ID: 6855	Class: 907	Card: 1 of 1	Printed: March 5, 2020

CURRENT OWNER

ROCKY HILL TOWN OF
CO 2 FIREHOUSE
761 OLD MAIN STREET
ROCKY HILL CT 06067-1517
057/353 12/15/1957

GENERAL INFORMATION

Living Units	
Neighborhood	S
Alternate ID	007392
Vol / Pg	057/353
Map/Lot	08-354
Zoning	C
Class	EXEMPT

Property Notes

08-354-001 12/09/2012

Land Information

Type		Size	Influence Factors	Influence %	Value
Primary	AC	0.5700			314,000

Total Acres: .57
Spot: Location:

Assessment Information

	Assessed	Appraised	Cost	Income	Market
Land	219,800	314,000	314,000	0	0
Building	544,110	777,300	777,300	0	0
Total	763,910	1,091,300	1,091,300	0	0

Manual Override Reason
Base Date of Value
Value Flag
Effective Date of Value
Gross Building:

Entrance Information

Date	ID	Entry Code	Source
10/04/12	ST	Measured + 1visit	From Conversion

Permit Information

Date Issued	Number	Price	Purpose		% Complete
03/15/18	2018-352	25,000	CM	Remove And Replace (3) Antenna	0
10/31/17	2018-198	20,000	CM	Sprint To Add Three (3) Antennas	0
09/10/16	2017-104	20,000	MS	At&T To Add Three (3) Antennas A	0
10/28/15	2016-135	28,000	EL	Retrofit Lights In Fire Station	0
06/18/15	2015-457	44,000	SN	Replace Existing Message Boards	0

Sales/Ownership History

Transfer Date	Price	Type	Validity	Deed Reference	Deed Type	Grantee
12/15/57		Vacant - Land Only Sale	No Consideration	057/353	No Consideration	ROCKY HILL TOWN OF

Inspection Witnessed By _____

tyler clt division

COMMERCIAL PROPERTY RECORD CARD 2019

TOWN OF ROCKY HILL

Situs : 52 NEW BRITAIN AVENUE	Parcel Id: 6855	Class: 907	Card: 1 of 1	Printed: March 5, 2020

Building Information

Year Built/Eff Year	1958 /
Building #	1
Structure Type	Police/Fire Station
Identical Units	1
Total Units	1
Grade	B
# Covered Parking	
# Uncovered Parking	
DBA	CO 2 FIREHOUSE

Building Other Features

Line	Type	+/-	Meas1	Meas2	# Stops	Ident Units	Line	Type	+/-	Meas1	Meas2	# Stops	Ident Units

Interior/Exterior Information

Line	Level From	To	Int Fin	Area	Perim	Use Type	Wall Height	Ext Walls	Construction	Partitions	Heating	Cooling	Plumbing	Physical	Functional
1	01	01		4,199	260	Municipal	12	Brick & Con	Fire Resistant	Normal	Hot Air	Central	Normal	5	3
2	02	02		3,074	222	Municipal	12	Brick & Con	Fire Resistant	Normal	Hot Air	Central	Normal	5	3

Interior/Exterior Valuation Detail

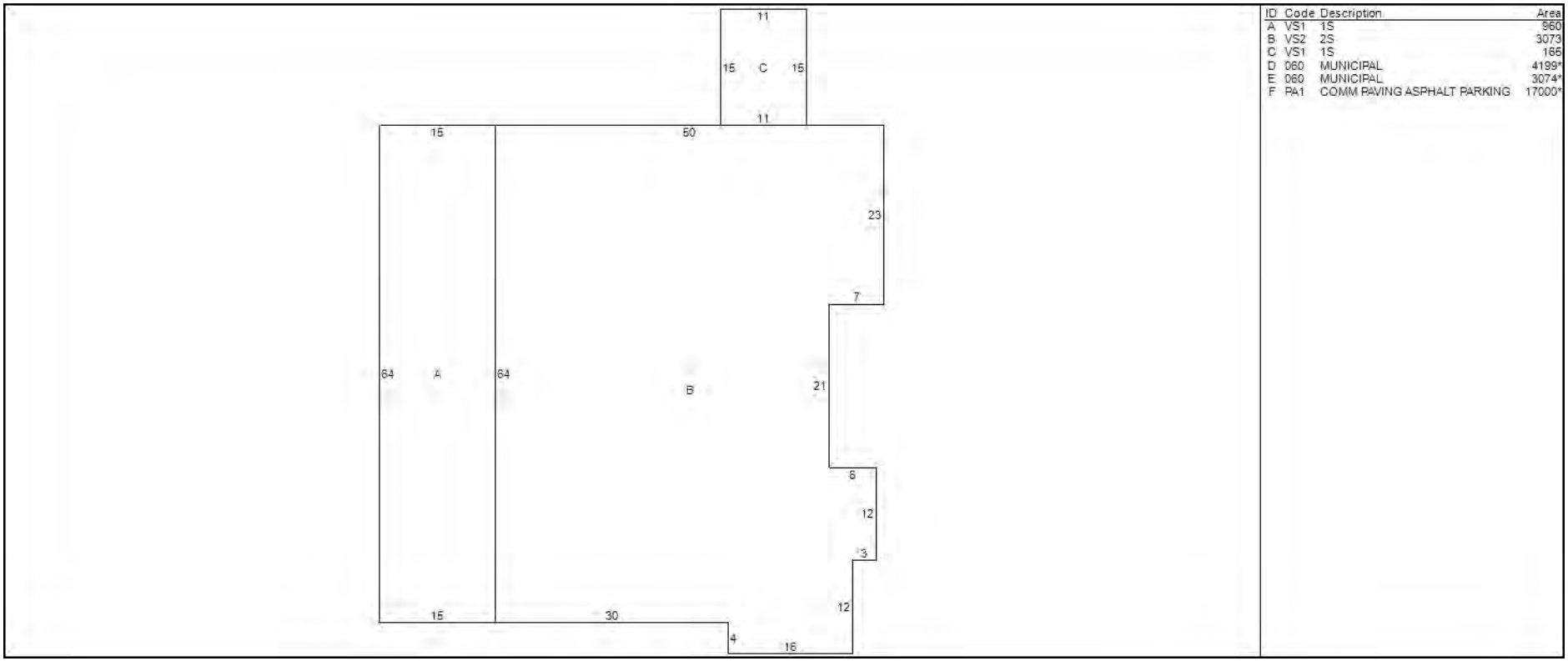
Line	Area	Use Type	% Good	% Complete	Use Value/RCNLD
1	4,199	Municipal	60		456,520
2	3,074	Municipal	60		299,700

Outbuilding Data

Line	Type	Yr Blt	Meas1	Meas2	Qty	Area	Grade	Phy Fun	Value
1	Asph Pav	1958			1	17,000	C	A	21,040

tyler clt division **COMMERCIAL PROPERTY RECORD CARD** 2019 **TOWN OF ROCKY HILL**

Situs : 52 NEW BRITAIN AVENUE	Parcel Id: 6855	Class: 907	Card: 1 of 1	Printed: March 5, 2020



ID	Code	Description	Area
A	VS1	1S	960
B	VS2	2S	3073
C	VS1	1S	165
D	060	MUNICIPAL	4199*
E	060	MUNICIPAL	3074*
F	PA1	COMM PAVING ASPHALT PARKING	17000*

Addtional Property Photos

tyler clt division

COMMERCIAL PROPERTY RECORD CARD 2019

TOWN OF ROCKY HILL

Situs : 52 NEW BRITAIN AVENUE	Parcel Id: 6855	Class: 907	Card: 1 of 1	Printed: March 5, 2020

Income Detail (Includes all Buildings on Parcel)

Use Grp	Mod Type	Inc Mod	Model Description	Units	Net Area	Income Rate	Econ Adjust	Potential Gross Income	Vac Model	Vac Adj	Additional Income	Effective Gross Income	Expense Model %	Expense Adj %	Expense Adj	Other Expenses	Total Expenses	Net Operating Income
00	S	1	Shell Income Use Grou	0	7,273						0							

Apartment Detail - Building 1 of 1

Line	Use Type	Per Bldg	Beds	Baths	Units	Rent	Income

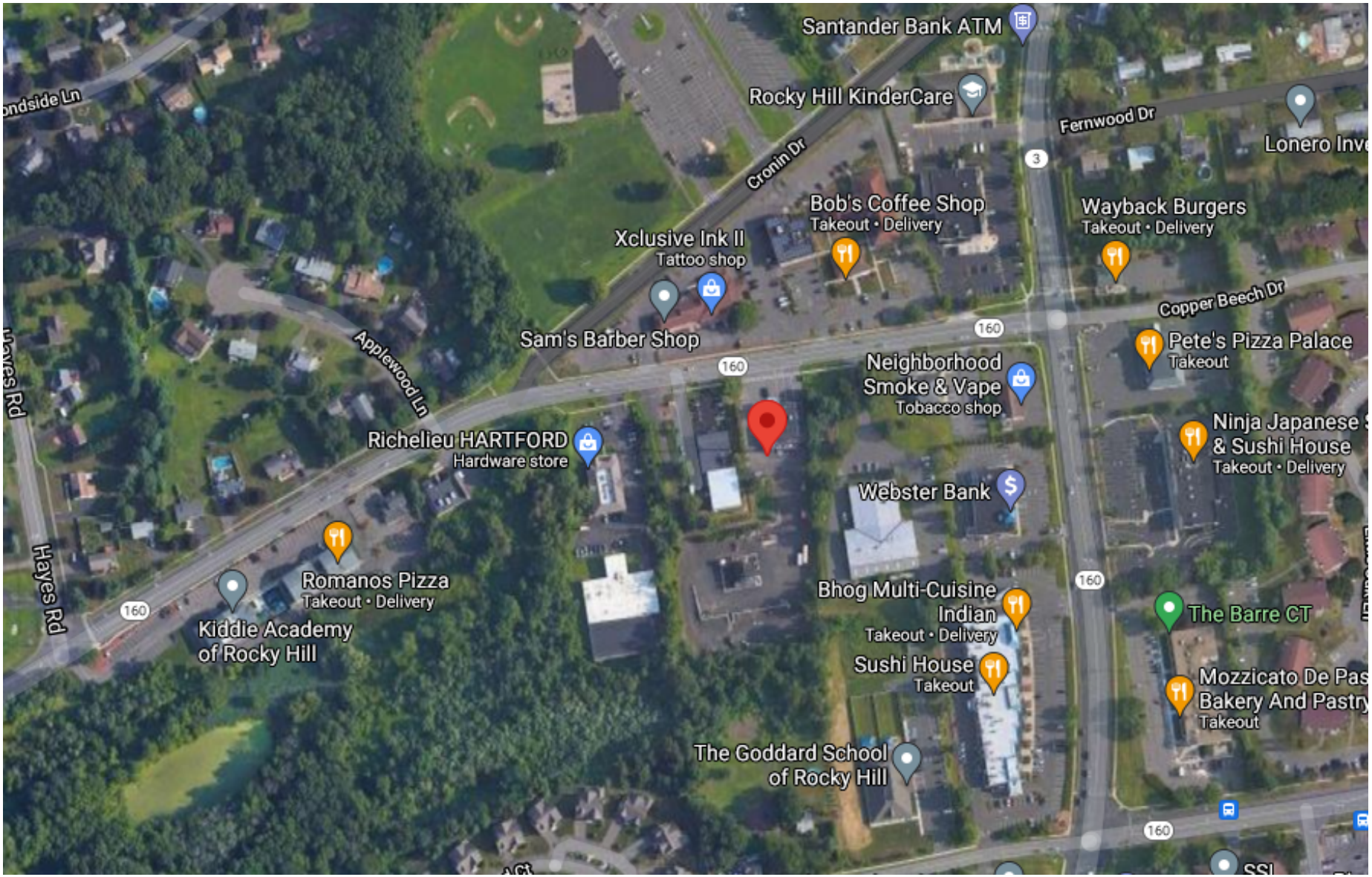
Building Cost Detail - Building 1 of 1

Total Gross Building Area	7,273
Replace, Cost New Less Depr	756,220
Percent Complete	100
Number of Identical Units	1
Economic Condition Factor	
Final Building Value	756,220
Value per SF	103.98

Notes - Building 1 of 1

Income Summary (Includes all Building on Parcel)

Total Net Income	
Capitalization Rate	0.090000
Sub total	
Residual Land Value	
Final Income Value	
Total Gross Rent Area	
Total Gross Building Area	7,273


Santander Bank ATM
Rocky Hill KinderCare
Fernwood Dr
Lonero Inve
Cronin Dr
3
Bob's Coffee Shop
Takeout • Delivery
Wayback Burgers
Takeout • Delivery
Xclusive Ink II
Tattoo shop
Copper Beech Dr
Sam's Barber Shop
160
Pete's Pizza Palace
Takeout
Applewood Ln
Neighborhood
Smoke & Vape
Tobacco shop
Hayes Rd
Richelieu HARTFORD
Hardware store
Ninja Japanese
& Sushi House
Takeout • Delivery
Webster Bank
Romanos Pizza
Takeout • Delivery
Bhog Multi-Cuisine
Indian
Takeout • Delivery
The Barre CT
Kiddie Academy
of Rocky Hill
Sushi House
Takeout
Mozzicato De Pas
Bakery And Pastry
Takeout
The Goddard School
of Rocky Hill

ATTACHMENT 2

TOWN OF ROCKY HILL, CONN.

BUILDING PERMIT

№ 13621

Estimated Cost (structural) $ 669,707.00

Fee $ waived

APPLICANTS PERMIT

November 30, 19 98.

PERMISSION IS HEREBY GRANTED TO Conn Strux, Inc. 860-677-9255

to erect a addition

Location R.H. Fire Station #2 N.Britain Ave No. of families or units

Zoned Lot Area Frontage

Front yard setback Right side yard Left side yard

Rear yard Dimensions of building No. stories

Type of Const Owner Town of Rocky Hill

NOTICE

The recipient of this permit accepts this permit on the condition that he, as owner or as representing the owner, agrees to comply with all Building, Zoning Ordinances of the Town of Rocky Hill and the State Statutes of the State of Connecticut, regarding the use occupancy and type of building to be constructed.

Building Official

License No. .....

.....

Permission must be obtained from the Office of the Town Engineer before Building Materials can be placed in the highway. Surface and roof water must not be connected with the Storm Sewer.

BD-20

Town of Rocky Hill

699 OLD MAIN STREET • PO BOX 657 • ROCKY HILL, CT 06067 • FAX (860) 258-7638

August 27, 2001

To: Jennifer Charland

From: J-P. Langlois, Building Official

Re: Communication Tower, 52 New Britain Avenue

Dear Jennifer;

This letter is in reference to a communication tower that was installed under building permit #13621 at 52 New Britain Avenue in Rocky Hill, Connecticut.

A final inspection was performed on January 25, 2001 and was approved.

Should you have any questions, please feel free to contact the Building Department At (860) 258-2745.

ATTACHMENT 3

dish wireless.

DISH Wireless L.L.C. SITE ID:

BOBDL00067A

DISH Wireless L.L.C. SITE ADDRESS:

52 NEW BRITAIN AVENUE
ROCKY HILL, CT 06067

CONNECTICUT CODE OF COMPLIANCE

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

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

SHEET INDEX

SCOPE OF WORK

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

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

GROUND SCOPE OF WORK:
- INSTALL (1) PROPOSED METAL PLATFORM
- INSTALL (1) PROPOSED ICE BRIDGE
- INSTALL (1) PROPOSED PPC CABINET
- INSTALL (1) PROPOSED EQUIPMENT CABINET
- INSTALL (1) PROPOSED POWER CONDUIT
- INSTALL (1) PROPOSED TELCO CONDUIT
- INSTALL (1) PROPOSED TELCO-FIBER BOX
- INSTALL (1) PROPOSED GPS UNIT
- INSTALL (1) PROPOSED SAFETY SWITCH (IF REQUIRED)
- INSTALL (1) PROPOSED FIBER NID (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:	TOWN OF ROCKY HILL
ADDRESS:	699 OLD MAIN STREET ROCKY HILL, CT 06067
TOWER TYPE:	MONOPOLE
TOWER CO SITE ID:	842872
TOWER APP NUMBER:	556625
COUNTY:	HARTFORD
LATITUDE (NAD 83):	41° 39' 36.89" N 41.660247 N
LONGITUDE (NAD 83):	72° 40' 50.58" W 72.680717 W
ZONING JURISDICTION:	CONNECICUT SITTING COUNCIL
ZONING DISTRICT:	C-COMMERCIAL
PARCEL NUMBER:	ROCK-000008-000000-000354
OCCUPANCY GROUP:	U
CONSTRUCTION TYPE:	II-B
POWER COMPANY:	NORTHEAST UTILITES
TELEPHONE COMPANY:	TBD

PROJECT DIRECTORY

APPLICANT:	DISH Wireless L.L.C. 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:	CORWIN DIXION CORWIN.DIXION@CROWNCASTLE.COM
CONSTRUCTION MANAGER:	JAVIER SOTO JAVIER.SOTO@DISH.COM (617) 839-6514
RF ENGINEER:	BOSSENER CHARLES BOSSENER.CHARLES@DISH.COM

DIRECTIONS

DIRECTIONS FROM HARTFORD-BRAINARD AIRPORT:

DEPART AND HEAD TOWARD MAXIM RD,TURN LEFT ONTO MAXIM RD,BEAR RIGHT ONTO BRAINARD RD,TURN RIGHT ONTO AIRPORT RD,TAKE THE RAMP ON THE LEFT FOR CT-15 SOUTH / I-91 SOUTH / US-5 SOUTH AND HEAD TOWARD NEW HAVEN / WETHERSFIELD,AT EXIT 25S, HEAD RIGHT ON THE RAMP FOR CT-3 SOUTH TOWARD WETHERSFIELD,TURN RIGHT ONTO CT-160 / NEW BRITAIN AVE,TURN LEFT,ARRIVE AT 52 NEW BRITAIN AVENUE,ROCKY HILL, CT 06067.

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
SHUHEI SAKANOUE
34916
LICENSED PROFESSIONAL ENGINEER
2/16/2022

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

RFDS REV #: ---

PRELIMINARY DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	09/03/2021	ISSUED FOR REVIEW
B	12/30/2021	ISSUED FOR REVIEW
0	02/08/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

2039-Z5555C

DISH Wireless L.L.C.
PROJECT INFORMATION

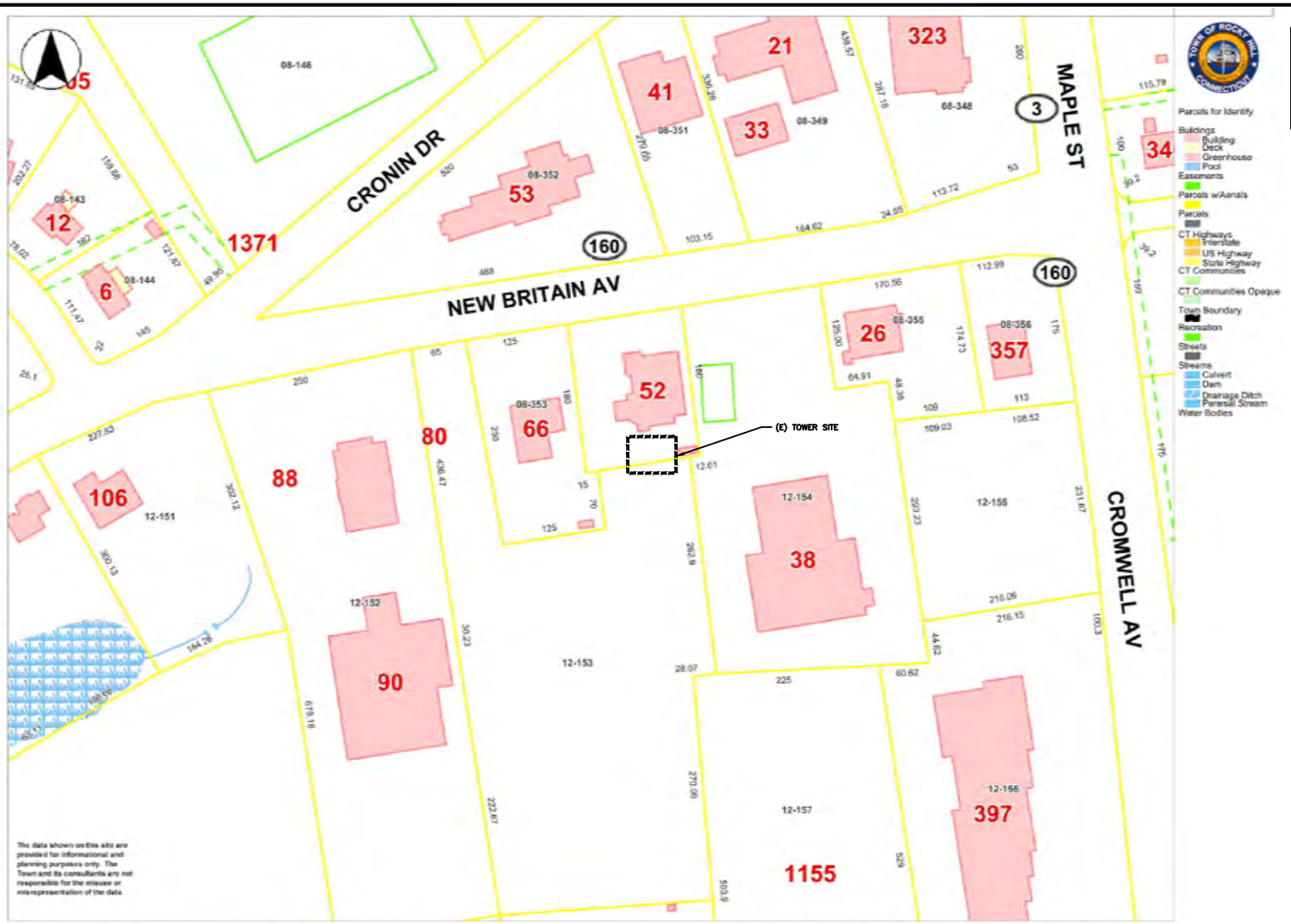
BOBDL00067A
52 NEW BRITAIN AVENUE
ROCKY HILL, CT 06067

SHEET TITLE

TITLE SHEET

SHEET NUMBER

T-1



ABUTTING PROPERTIES:

08–353
SIXTY SIX NBA LLC

12–153
TOWN OF ROCKY HILL

12–154
THIRTY EIGHT NEW BRITAIN AVENUE LLC

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

SHUHEI SAKANOUE
STATE OF CONNECTICUT
34916
LICENSED PROFESSIONAL ENGINEER
2/9/2022

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

RFDS REV #: ---

PRELIMINARY DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	09/03/2021	ISSUED FOR REVIEW
B	12/30/2021	ISSUED FOR REVIEW
0	02/08/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
2039–Z5555C

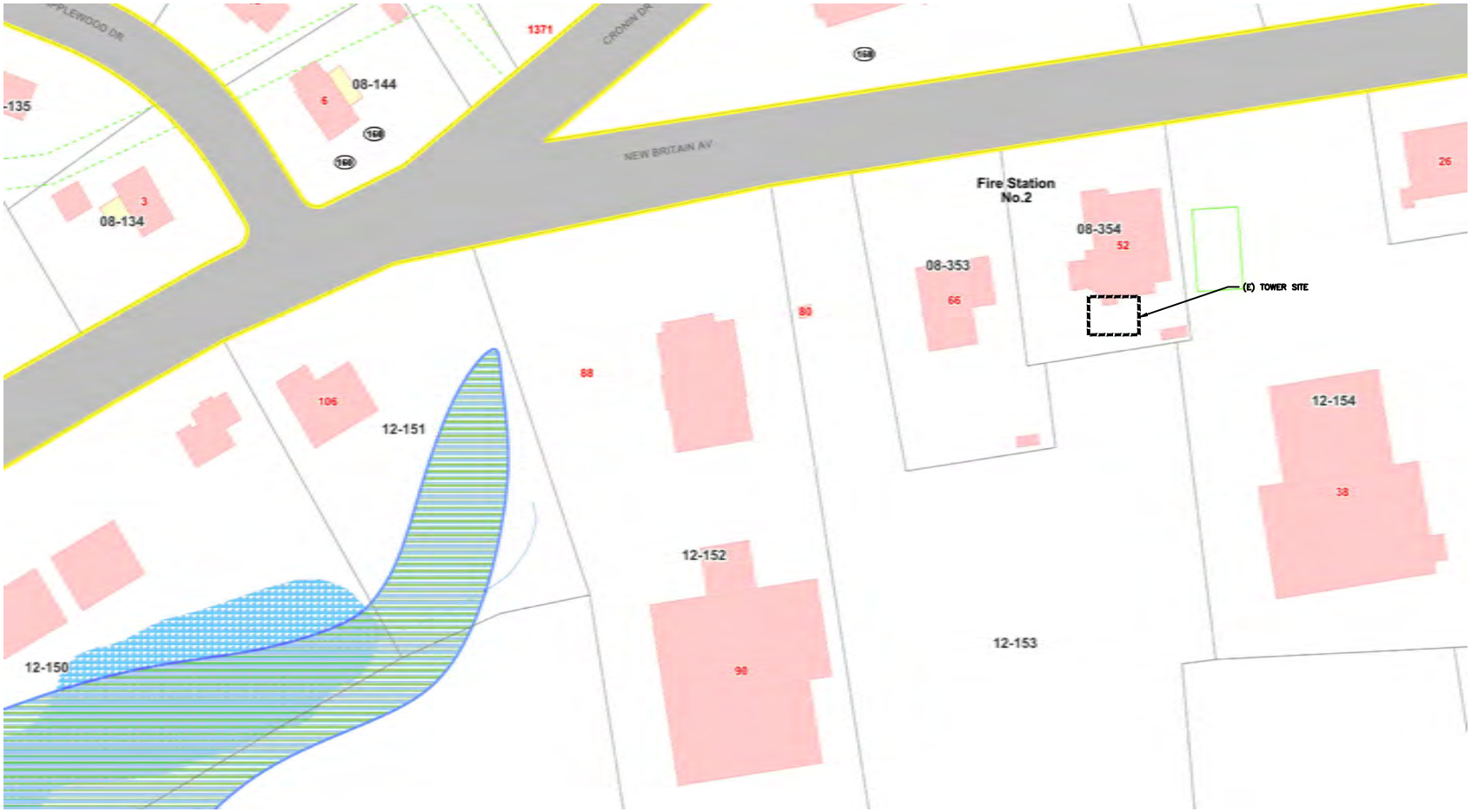
DISH Wireless L.L.C.
PROJECT INFORMATION
BOBDL00067A
52 NEW BRITAIN AVENUE
ROCKY HILL, CT 06067

SHEET TITLE
ABUTTER MAP
SITE PLAN

SHEET NUMBER
M-1

ABUTTER MAP

6' 4' 2' 0 5' 10'
3/16"=1'–0"



N

WETLAND MAP

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

1

DISH Wireless L.L.C. TEMPLATE VERSION 40 – 08/13/2021

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
SHUHEI SAKANOUE
34916
LICENSED PROFESSIONAL ENGINEER

2/9/2022

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

RFDS REV #: ---

PRELIMINARY DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	09/03/2021	ISSUED FOR REVIEW
B	12/30/2021	ISSUED FOR REVIEW
0	02/09/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

2039-Z5555C

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00067A
52 NEW BRITAIN AVENUE
ROCKY HILL, CT 06067

SHEET TITLE

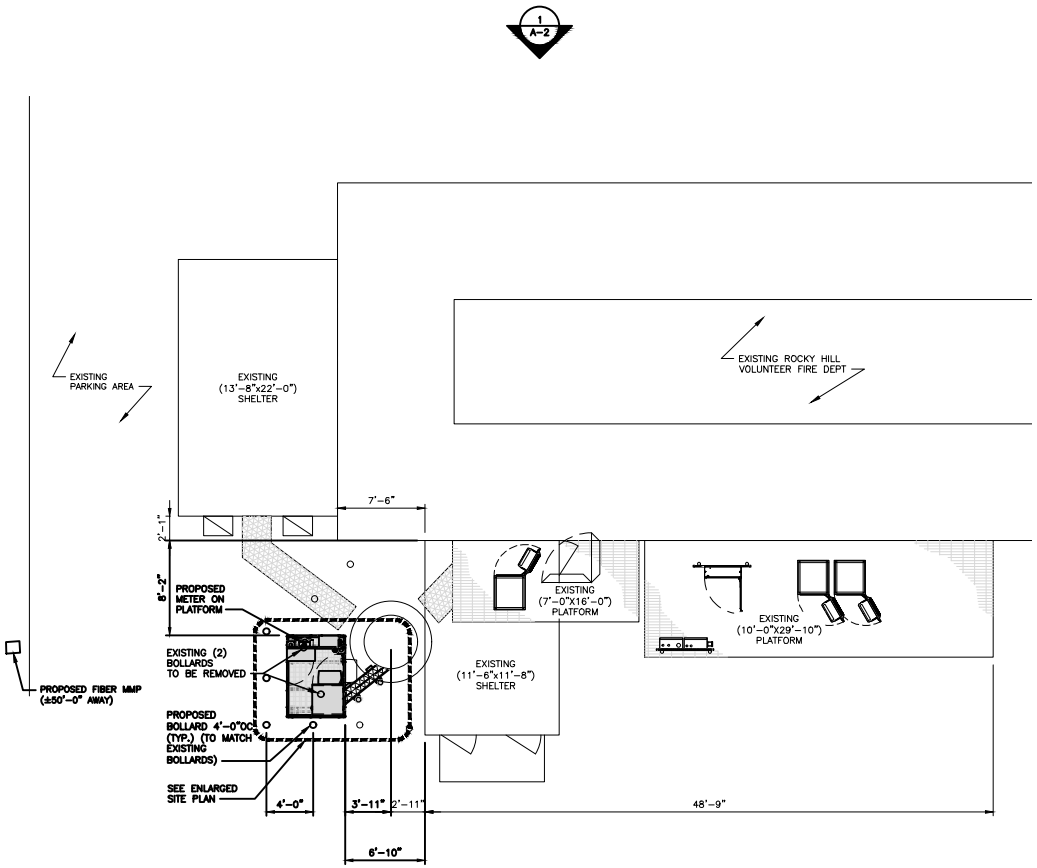
WETLAND MAP
SITE PLAN

SHEET NUMBER

M-2

NOTES

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



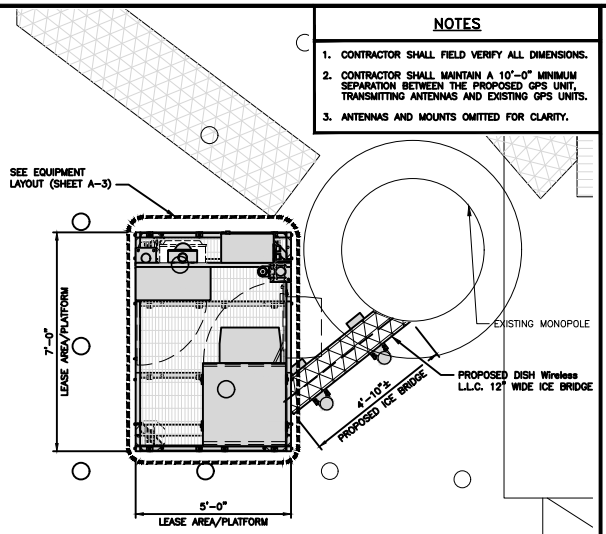
OVERALL SITE PLAN

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

1

NOTES

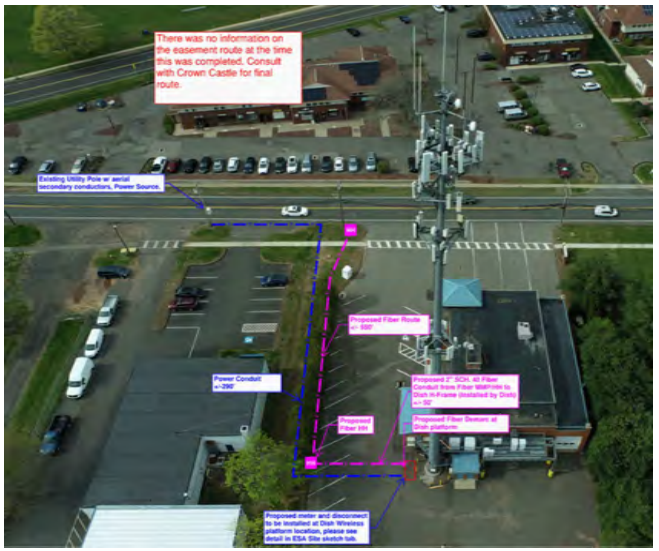
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. CONTRACTOR SHALL MAINTAIN A 10'-0" MINIMUM SEPARATION BETWEEN THE PROPOSED GPS UNIT, TRANSMITTING ANTENNAS AND EXISTING GPS UNITS.
3. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.



ENLARGED SITE PLAN

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

2



SITE PLAN

NO SCALE

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
SHUHEI SAKANOUE
34916
LICENSED PROFESSIONAL ENGINEER
2/9/2022

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

RFDS REV #: ---

PRELIMINARY DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	09/03/2021	ISSUED FOR REVIEW
B	12/30/2021	ISSUED FOR REVIEW
0	02/08/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

2039-Z5555C

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00067A
52 NEW BRITAIN AVENUE
ROCKY HILL, CT 06067

SHEET TITLE

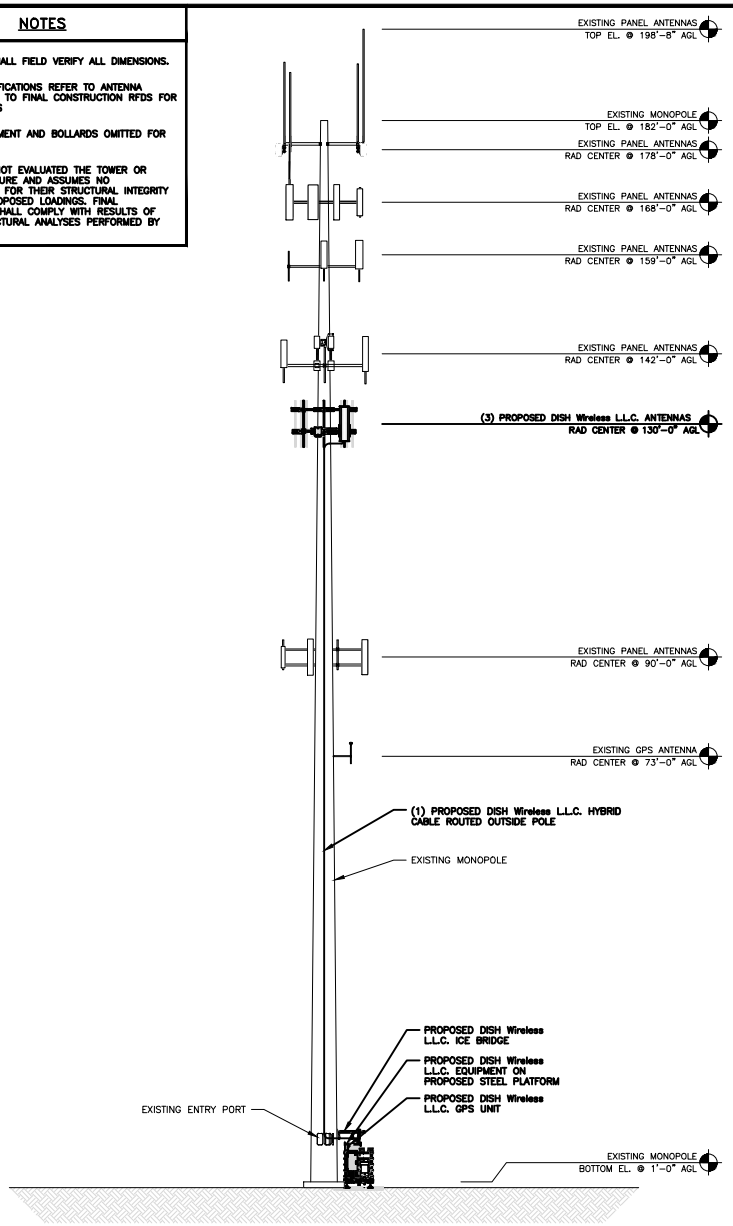
OVERALL AND ENLARGED SITE PLAN

SHEET NUMBER

A-1

NOTES

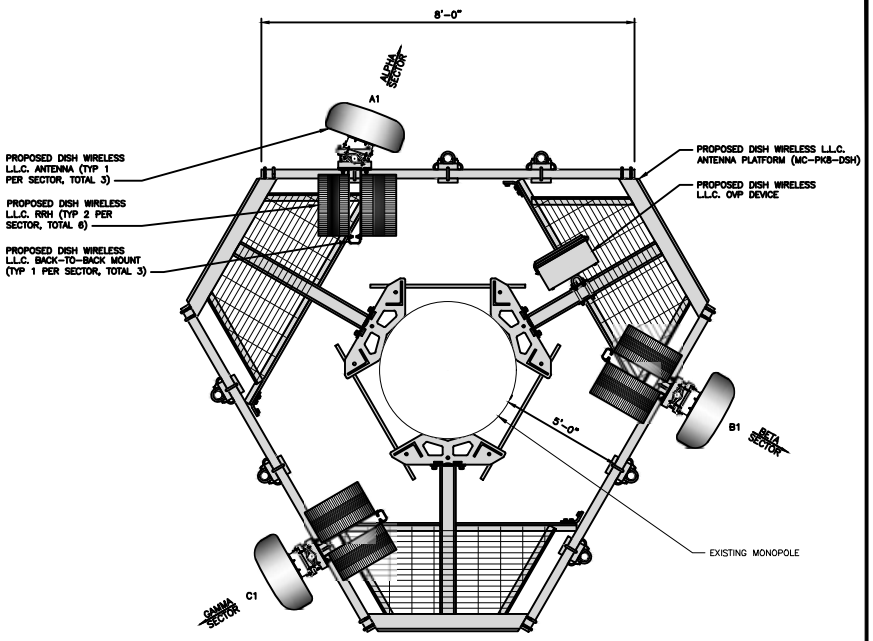
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNA SPECIFICATIONS REFER TO ANTENNA SCHEDULE AND TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS
3. EXISTING EQUIPMENT AND BOLLARDS OMITTED FOR CLARITY.
4. INFINIGY HAS NOT EVALUATED THE TOWER OR MOUNT STRUCTURE AND ASSUMES NO RESPONSIBILITY FOR THEIR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



PROPOSED SOUTH ELEVATION

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

1



ANTENNA LAYOUT

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

2

SECTOR	POSITION	ANTENNA						TRANSMISSION CABLE
		EXISTING OR PROPOSED	MANUFACTURER – MODEL NUMBER	TECHNOLOGY	SIZE (HxW)	AZIMUTH	RAD CENTER	FEED LINE TYPE AND LENGTH
ALPHA	A1	PROPOSED	JMA WIRELESS – MX08FRO665-21	5G	72.0" x 20.0"	20°	130'-0"	(1) HIGH-CAPACITY HYBRID CABLE (158' LONG)
BETA	B1	PROPOSED	JMA WIRELESS – MX08FRO665-21	5G	72.0" x 20.0"	120°	130'-0"	
GAMMA	C1	PROPOSED	JMA WIRELESS – MX08FRO665-21	5G	72.0" x 20.0"	240°	130'-0"	

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

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
SHUHEI SAKANOUE
34916
LICENSED PROFESSIONAL ENGINEER
2/9/2022

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

RFDS REV #: ---

PRELIMINARY DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	09/03/2021	ISSUED FOR REVIEW
B	12/30/2021	ISSUED FOR REVIEW
0	02/08/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

2039-Z5555C

DISH Wireless L.L.C.
PROJECT INFORMATION

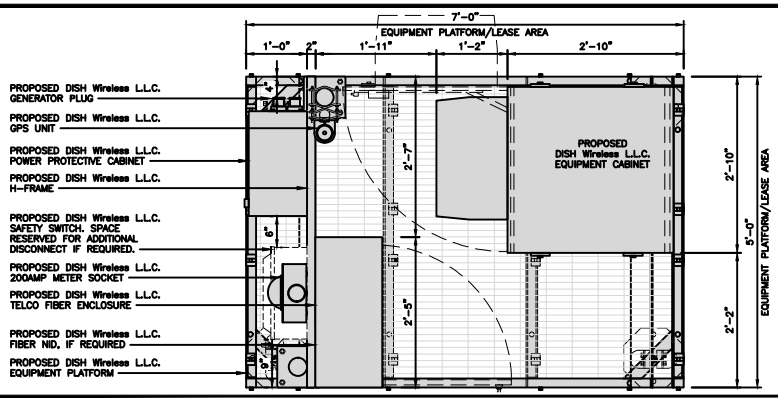
BOBDL00067A
52 NEW BRITAIN AVENUE
ROCKY HILL, CT 06067

SHEET TITLE

ELEVATION, ANTENNA LAYOUT AND SCHEDULE

SHEET NUMBER

A-2



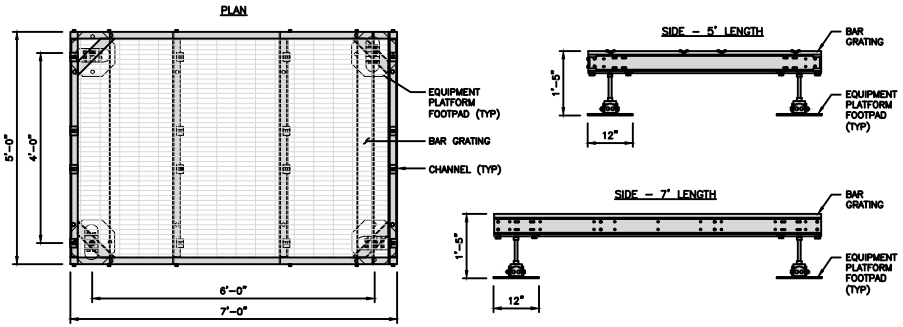
PLATFORM EQUIPMENT PLAN

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

1

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

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

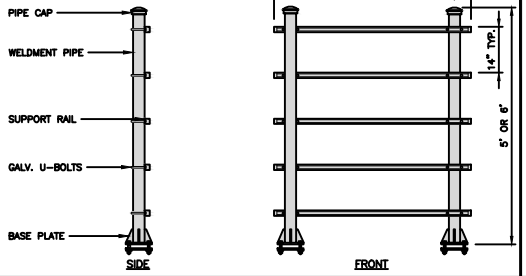


PLATFORM DETAIL

NO SCALE

2

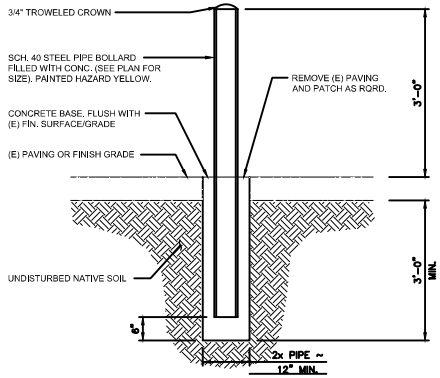
COMMSCOPE MTC4045HFLD H-FRAME	
UNISTRUT/SUPPORT RAILS QTY	5
WEIGHT	59.74 lbs



H-FRAME DETAIL

NO SCALE

3



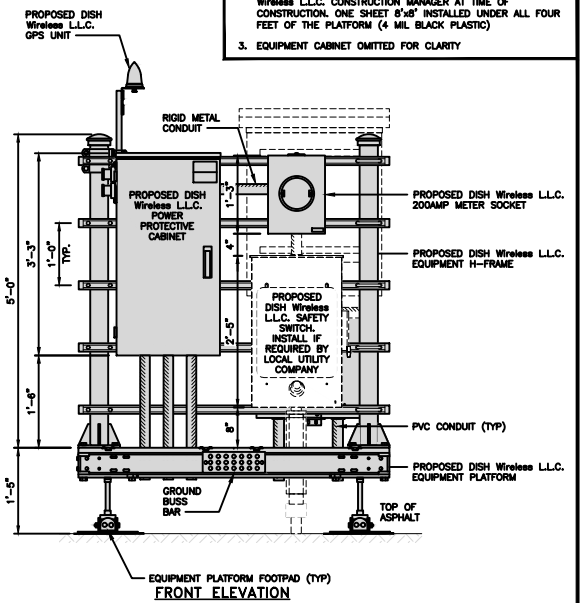
BOLLARD DETAIL

NO SCALE

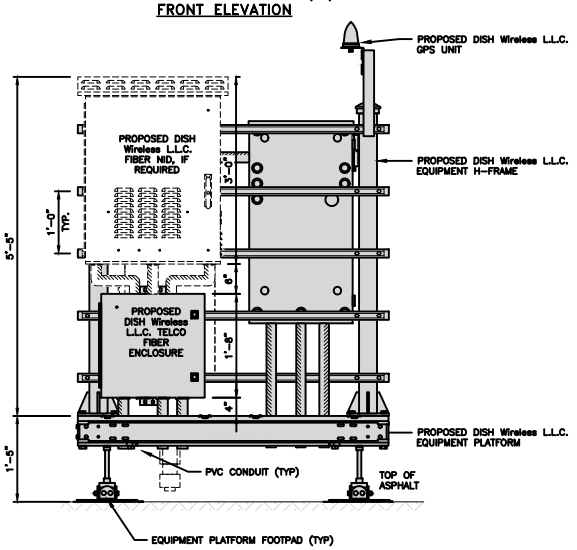
4

NOTES

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



FRONT ELEVATION



BACK ELEVATION

H-FRAME EQUIPMENT ELEVATION

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

5

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
SHUHEI SAKANOUE
34916
LICENSED PROFESSIONAL ENGINEER
2/9/2022

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

RFDS REV #: ---

PRELIMINARY DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	09/03/2021	ISSUED FOR REVIEW
B	12/30/2021	ISSUED FOR REVIEW
0	02/08/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

2039-Z5555C

DISH Wireless L.L.C. PROJECT INFORMATION

BOBDL00067A
52 NEW BRITAIN AVENUE
ROCKY HILL, CT 06067

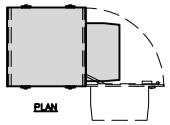
SHEET TITLE

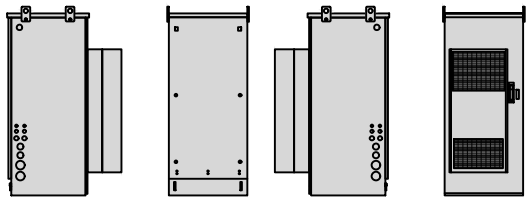
EQUIPMENT PLATFORM AND H-FRAME DETAILS

SHEET NUMBER

A-3

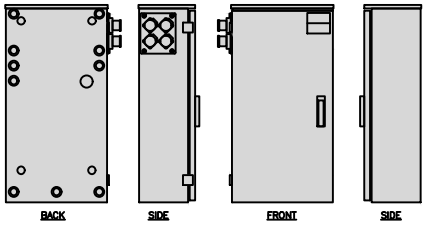
CHARLES INDUSTRY HEX CUBE–PM639155N4	
DIMENSIONS (HxWxD):	74"x32"x32"
POWER PLANT:	–48VDC ABB/800W
TOTAL WEIGHT (EMPTY)	408 LBS





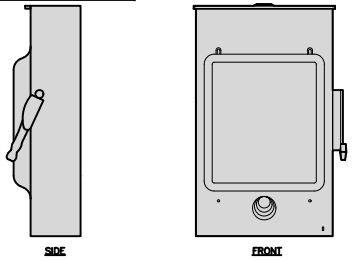
CABINET DETAIL | NO SCALE | 1

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



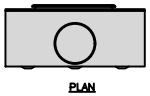
POWER PROTECTION CABINET (PPC) DETAIL | NO SCALE | 2

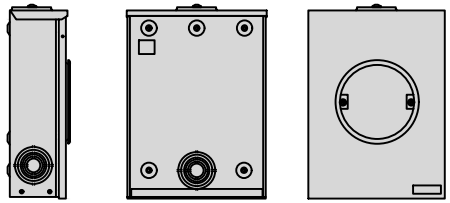
SQUARE D SAFETY SWITCHES D224NRB	
ENCLOSURE DIM (HxWxD)	29.25"x19.00"x8.50"
ENCLOSURE TYPE	NEMA 3R RAINPROOF
UL LISTED	FILE E–2875



SAFETY SWITCH DETAIL | NO SCALE | 3

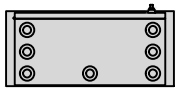
EATON METER SOCKET UNRRS213BEUSE	
METER SOCKET TYPE	RING
ENCLOSURE DIM (HxWxD)	16"x12"x6"
MAIN AMPERE RATING	200A
WEIGHT	18 LBS

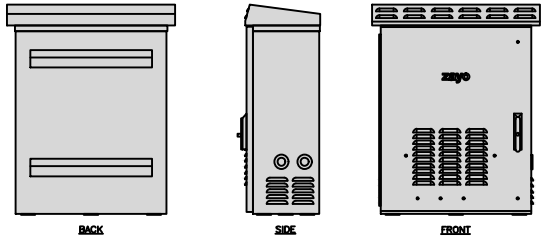




METER SOCKET DETAIL | NO SCALE | 4

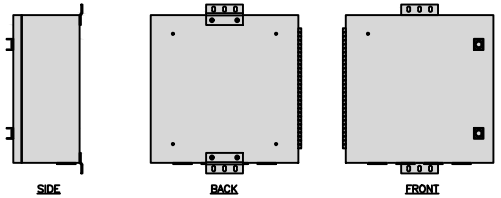
ZAYO 5RU (LEFT SWING DOOR) FIBER NID ENCLOSURE	
DIMENSIONS (HxWxD)	36.1"x29"x12.9"
WEIGHT	85 lbs





FIBER NID ENCLOSURE DETAIL | NO SCALE | 5

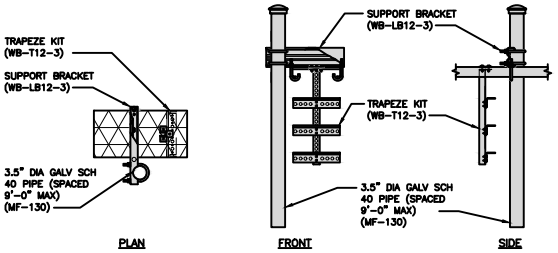
CHARLES CFIT–PF2020DSH1 FIBER TELCO ENCLOSURE	
ENCLOSURE DIMS (HxWxD)	20"x20"x9"
ENCLOSURE WEIGHT	20 lbs
MOUNTING	WALL
COMPLIANCE	TYPE 4



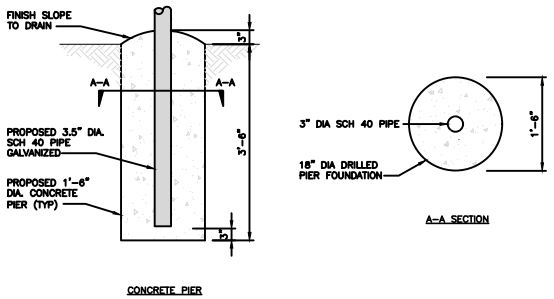
FIBER TELCO ENCLOSURE DETAIL | NO SCALE | 6

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

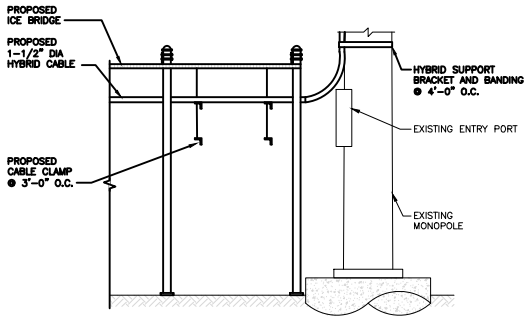
INCLUDED PRODUCTS:
- WB–T12–3 TRAPEZE KIT, 3 RUNGS
- WB–LB12–3 SUPPORT BRACKET
- MF–130 DIRECT BURIAL PIPE COLUMN, 13'–4"



ICE BRIDGE DETAIL | NO SCALE | 7



TYPICAL ICE BRIDGE CONCRETE PIER DETAIL | NO SCALE | 8



HYBRID CABLE RUN | NO SCALE | 9

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
SHUHEI SAKANOUE
34916
LICENSED PROFESSIONAL ENGINEER
2/9/2022

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

RFDS REV #: ---

PRELIMINARY DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	09/03/2021	ISSUED FOR REVIEW
B	12/30/2021	ISSUED FOR REVIEW
0	02/08/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

2039–Z5555C

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00067A
52 NEW BRITAIN AVENUE
ROCKY HILL, CT 06067

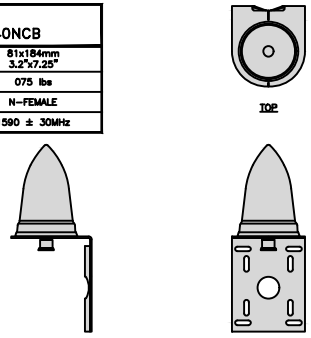
SHEET TITLE

EQUIPMENT DETAILS

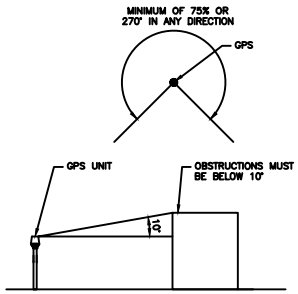
SHEET NUMBER

A-4

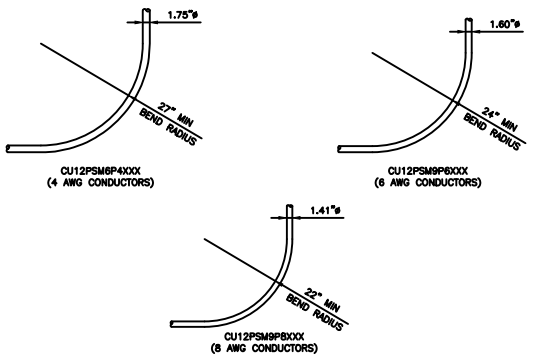
PCTEL GPSGL-TMG-SPI-40NCB	
DIMENSIONS (DIAxH) MM/INCH	81x184mm 3.2"x7.25"
WEIGHT W/ACCESSORIES	075 lbs
CONNECTOR	N-FEMALE
FREQUENCY RANGE	1590 ± 30MHz



GPS DETAIL | NO SCALE | 1



GPS MINIMUM SKY VIEW REQUIREMENTS | NO SCALE | 2



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

NOT USED | NO SCALE | 4

NOT USED | NO SCALE | 5

NOT USED | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

DISH Wireless L.L.C. TEMPLATE VERSION 40 – 08/13/2021

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 590 | HOFFMAN ESTATES, IL 60169
PHONE: 847-648-4068 | FAX: 518-690-0793
WWW.INFINIGY.COM

STATE OF CONNECTICUT
SHUHEI SAKANOUE
34916
LICENSED PROFESSIONAL ENGINEER
2/9/2022

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

RFDS REV #: ---

PRELIMINARY DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	09/03/2021	ISSUED FOR REVIEW
B	12/30/2021	ISSUED FOR REVIEW
0	02/09/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

2039-Z5555C

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00067A
52 NEW BRITAIN AVENUE
ROCKY HILL, CT 06067

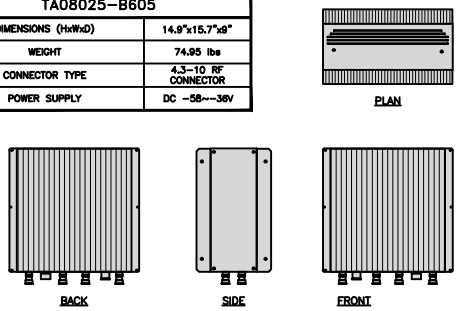
SHEET TITLE

EQUIPMENT DETAILS

SHEET NUMBER

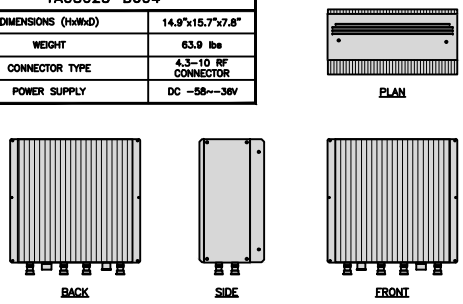
A-5

FUJITSU TRIPLE BAND TA08025-B605	
DIMENSIONS (HxWxD)	14.9"x15.7"x9"
WEIGHT	74.95 lbs
CONNECTOR TYPE	4.3-10 RF CONNECTOR
POWER SUPPLY	DC -58~-36V



RRH DETAIL | NO SCALE | 1

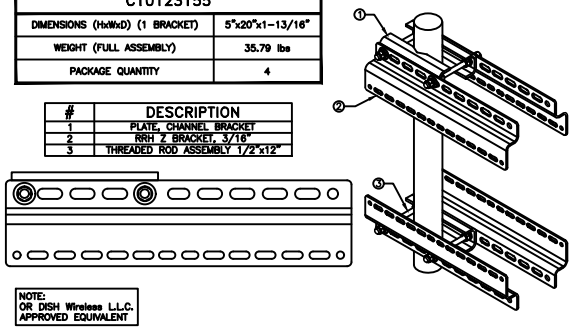
FUJITSU DUAL BAND TA08025-B604	
DIMENSIONS (HxWxD)	14.9"x15.7"x7.8"
WEIGHT	63.9 lbs
CONNECTOR TYPE	4.3-10 RF CONNECTOR
POWER SUPPLY	DC -58~-36V



RRH DETAIL | NO SCALE | 2

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

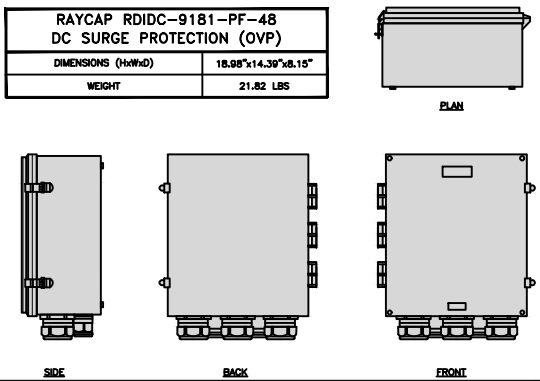
#	DESCRIPTION
1	PLATE, CHANNEL BRACKET
2	RRH Z BRACKET, 3/16"
3	THREADED ROD ASSEMBLY 1/2"x12"



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

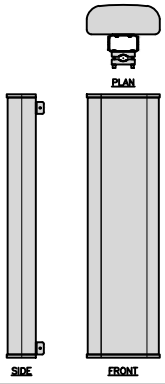
RRH MOUNT DETAIL | NO SCALE | 3

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



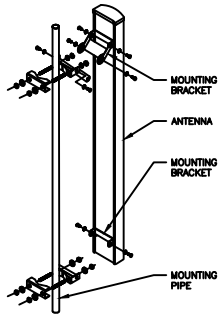
SURGE SUPPRESSION DETAIL (OVP) | NO SCALE | 4

JMA MX08FRO665-21	
DIMENSIONS (HxWxD)	72"x20.0"x8.0"
RF PORTS, CONNECTOR TYPE	8 x 4.3-10 FEMALE
WEIGHT	64.5 lbs
WEIGHT WITH BRACKETS	82.5 lbs



ANTENNA DETAIL | NO SCALE | 5

M04 MOUNTING BRACKET HPA-33R-BUU-H4-K	
WIDTH	5"
DEPTH	2"
HEIGHT	8"
TOTAL WEIGHT	1.5 lbs
HOUSING MATERIAL	ASA/ABS/ALUMINUM
RADOME COLOR	LIGHT GRAY
CONNECTOR	1x8-PIN DAISY CHAIN

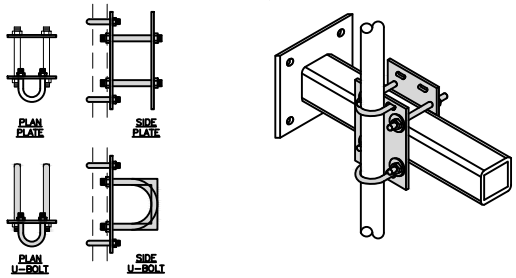


NOTE:
OR DISH Wireless L.L.C.
APPROVED EQUIVALENT

ANTENNA MOUNTING DETAIL | NO SCALE | 6

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

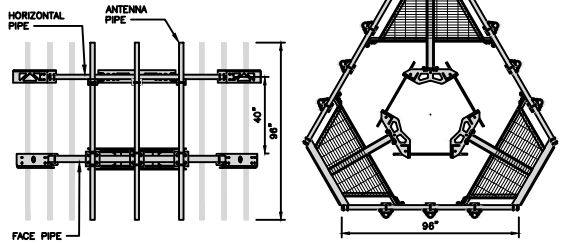
NOTE:
OR DISH Wireless L.L.C.
APPROVED EQUIVALENT



RRH/OVP MOUNT DETAIL | NO SCALE | 7

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

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



ANTENNA PLATFORM DETAIL | NO SCALE | 8

NOT USED | NO SCALE | 9

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

2/9/2022

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

RFDS REV #: ---

PRELIMINARY DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	09/03/2021	ISSUED FOR REVIEW
B	12/30/2021	ISSUED FOR REVIEW
0	02/09/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

2039-Z5555C

DISH Wireless L.L.C.
PROJECT INFORMATION

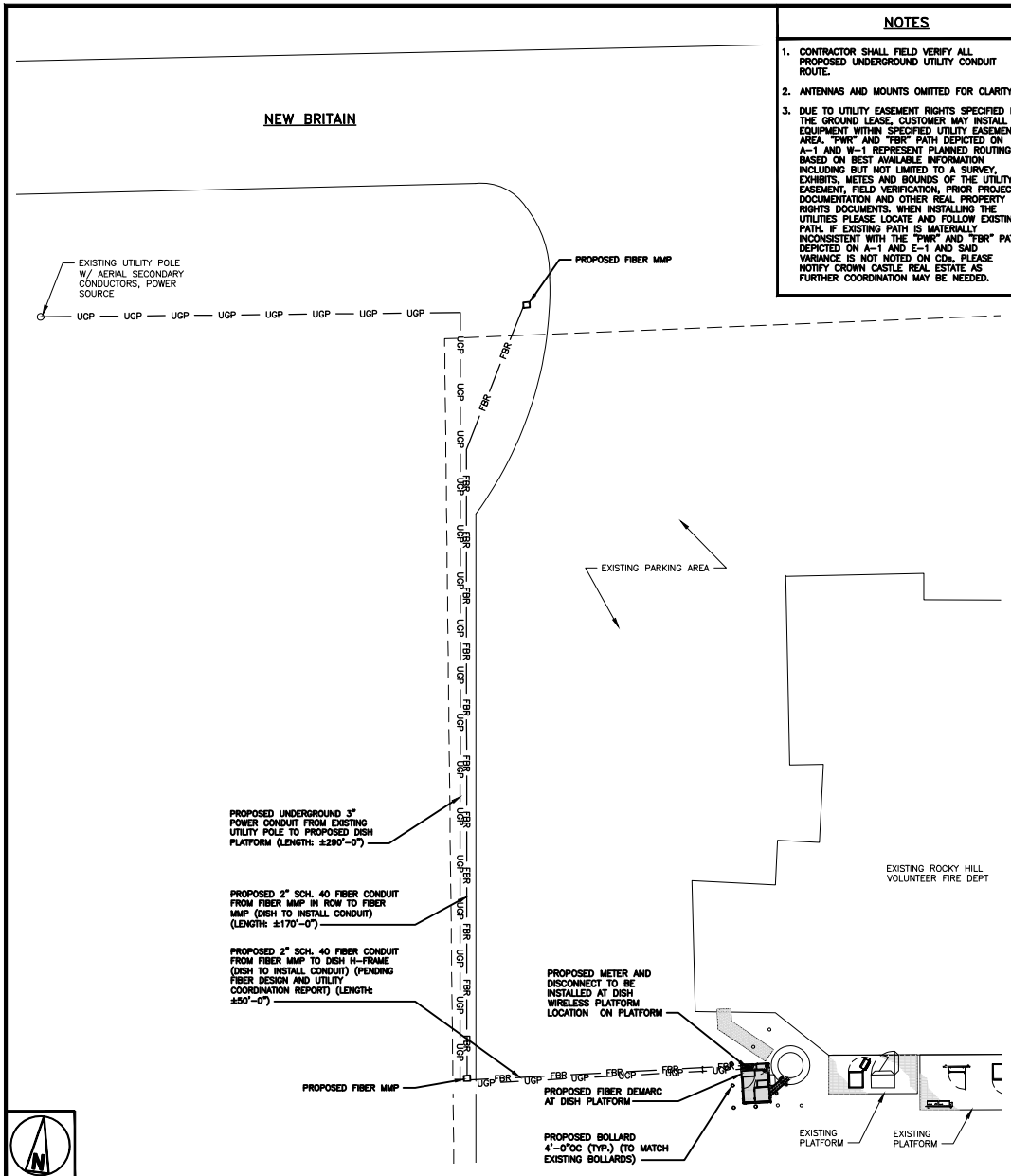
BOBDL00067A
52 NEW BRITAIN AVENUE
ROCKY HILL, CT 06067

SHEET TITLE

EQUIPMENT DETAILS

SHEET NUMBER

A-6



UTILITY ROUTE PLAN

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

1

NOTES

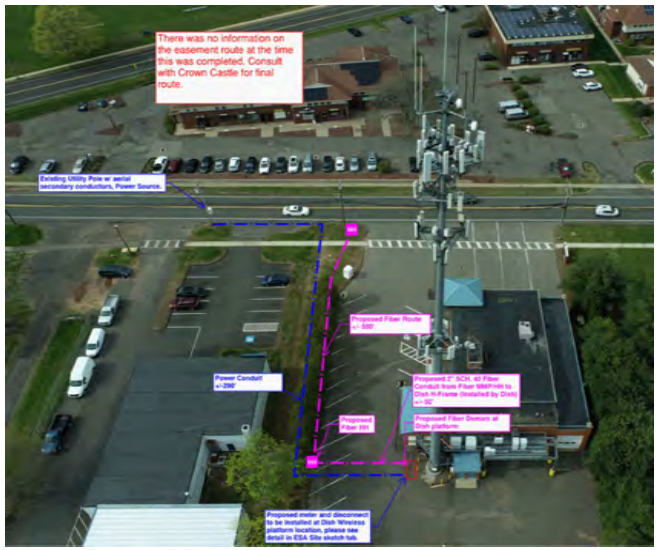
1. CONTRACTOR SHALL FIELD VERIFY ALL PROPOSED UNDERGROUND UTILITY CONDUIT ROUTE.
2. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.
3. DUE TO UTILITY EASEMENT RIGHTS SPECIFIED IN THE GROUND LEASE, CUSTOMER MAY INSTALL EQUIPMENT WITHIN SPECIFIED UTILITY EASEMENT AREA. "PWR" AND "FBR" PATH DEPICTED ON A-1 AND W-1 REPRESENT PLANNED ROUTING BASED ON BEST AVAILABLE INFORMATION INCLUDING BUT NOT LIMITED TO A SURVEY, EXHIBITS, METES AND BOUNDS OF THE UTILITY EASEMENT, FIELD VERIFICATION, PRIOR PROJECT DOCUMENTATION AND OTHER REAL PROPERTY RIGHTS DOCUMENTS. WHEN INSTALLING THE UTILITIES PLEASE LOCATE AND FOLLOW EXISTING PATH. IF EXISTING PATH IS MATERIALLY INCONSISTENT WITH THE "PWR" AND "FBR" PATH DEPICTED ON A-1 AND E-1 AND SAID VARIANCE IS NOT NOTED ON CDs, PLEASE NOTIFY CROWN CASTLE REAL ESTATE AS FURTHER COORDINATION MAY BE NEEDED.

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

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

ELECTRICAL NOTES

2



OVERALL UTILITY ROUTE PLAN

NO SCALE

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
SHUHEI SAKANOUE
34916
LICENSED PROFESSIONAL ENGINEER
2/9/2022

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

RFDS REV #: ---

PRELIMINARY DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	09/03/2021	ISSUED FOR REVIEW
B	12/30/2021	ISSUED FOR REVIEW
0	02/08/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
2039-Z5555C

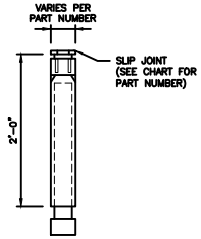
DISH Wireless L.L.C.
PROJECT INFORMATION
BOBDL00067A
52 NEW BRITAIN AVENUE
ROCKY HILL, CT 06067

SHEET TITLE
ELECTRICAL/FIBER ROUTE PLAN AND NOTES

SHEET NUMBER
E-1

CARLON EXPANSION FITTINGS

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

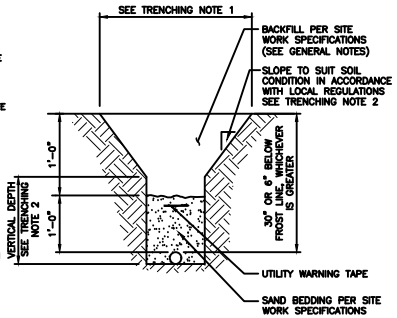


NOTE:
CONTRACTOR TO INSTALL EXPANSION FITTING SLIP JOINT AT METER CENTER CONDUIT TERMINATION, AS PER LOCAL UTILITY POLICY, ORDINANCE AND/OR SPECIFIED REQUIREMENT.

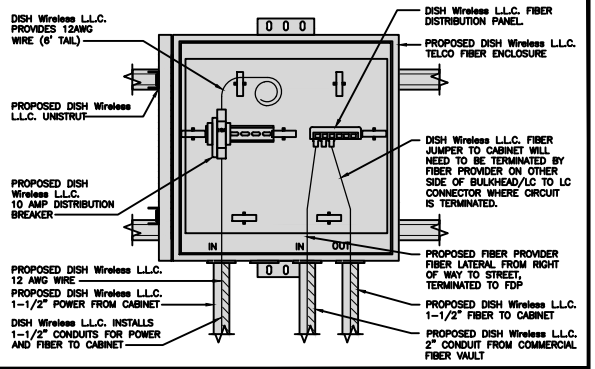
EXPANSION JOINT DETAIL | NO SCALE | 1

TRENCHING NOTES

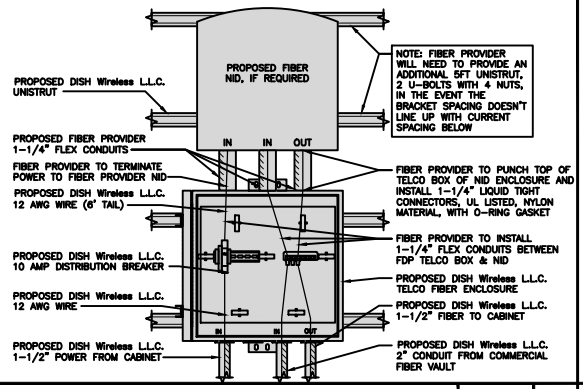
1. CONTRACTOR SHALL RESTORE THE TRENCH TO ITS ORIGINAL CONDITIONS BY EITHER SEEDING OR SODDING GRASS AREAS, OR REPLACING ASPHALT OR CONCRETE AREAS TO ITS ORIGINAL CROSS SECTION.
2. TRENCHING SAFETY; INCLUDING, BUT NOT LIMITED TO SOIL CLASSIFICATION, SLOPING, AND SHORING, SHALL BE GOVERNED BY THE CURRENT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



TYPICAL UNDERGROUND TRENCH DETAIL | NO SCALE | 2



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



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

NOT USED | NO SCALE | 5

NOT USED | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

DISH Wireless L.L.C. TEMPLATE VERSION 40 – 08/13/2021

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
SHUHEI SAKANOUE
34916
LICENSED PROFESSIONAL ENGINEER
2/9/2022

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

RFDS REV #: ---

PRELIMINARY DOCUMENTS

SUBMITTALS

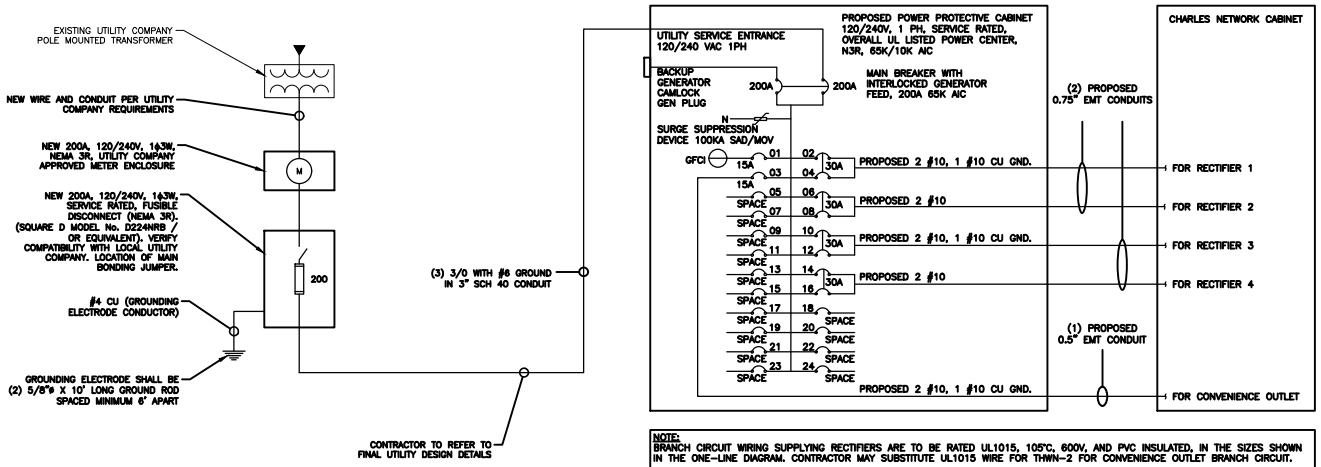
REV	DATE	DESCRIPTION
A	09/03/2021	ISSUED FOR REVIEW
B	12/30/2021	ISSUED FOR REVIEW
0	02/08/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
2039-Z5555C

DISH Wireless L.L.C.
PROJECT INFORMATION
BOBDL00067A
52 NEW BRITAIN AVENUE
ROCKY HILL, CT 06067

SHEET TITLE
ELECTRICAL DETAILS

SHEET NUMBER
E-2



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

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

NOTES

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

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

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

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

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

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

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

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

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

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

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

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

PPC ONE-LINE DIAGRAM

NO SCALE | 1

PROPOSED CHARLES PANEL SCHEDULE

LOAD SERVED	VOLT AMPS (WATTS) L1	VOLT AMPS (WATTS) L2	TRIP	CKT #	PHASE	CKT #	TRIP	VOLT AMPS (WATTS) L1	VOLT AMPS (WATTS) L2	LOAD SERVED
PPC GFCI OUTLET	180		15A	1	A	2	30A	2880		ABB/GE INFINITY
CHARLES GFCI OUTLET		180	15A	3	B	4			2880	RECTIFIER 1
–SPACE–				5	A	6	30A	2880		ABB/GE INFINITY
–SPACE–				7	B	8			2880	RECTIFIER 2
–SPACE–				9	A	10	30A	2880		ABB/GE INFINITY
–SPACE–				11	B	12			2880	RECTIFIER 3
–SPACE–				13	A	14	30A	2880		ABB/GE INFINITY
–SPACE–				15	B	16			2880	RECTIFIER 4
–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

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: 847-648-4048 | FAX: 518-690-0793
WWW.INFINIGY.COM

STATE OF CONNECTICUT
SHUHEI SAKANOUE
34916
LICENSED PROFESSIONAL ENGINEER
2/9/2022

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

RFDS REV #: ---

PRELIMINARY DOCUMENTS

SUBMITTALS

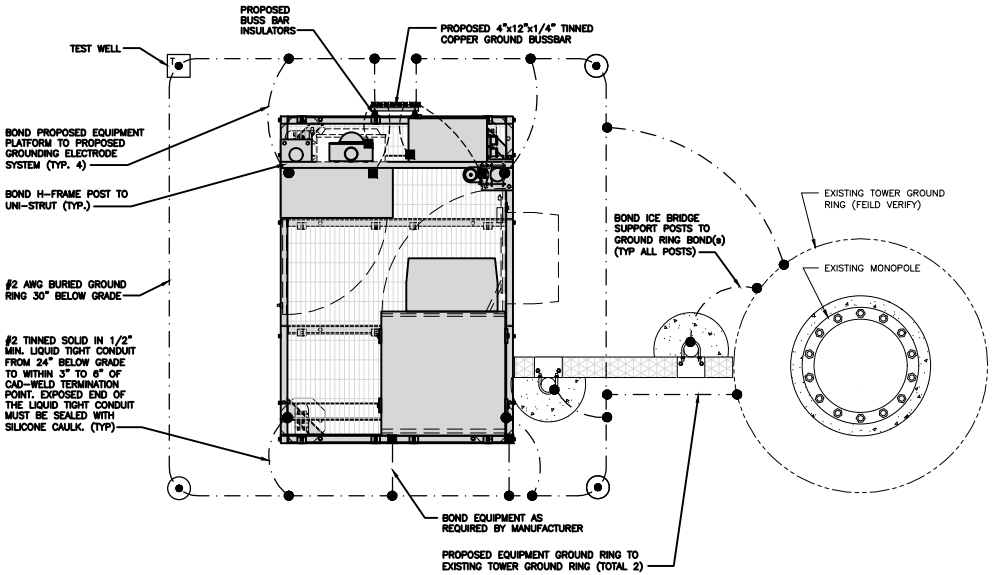
REV	DATE	DESCRIPTION
A	09/03/2021	ISSUED FOR REVIEW
B	12/30/2021	ISSUED FOR REVIEW
0	02/09/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
2039-Z5555C

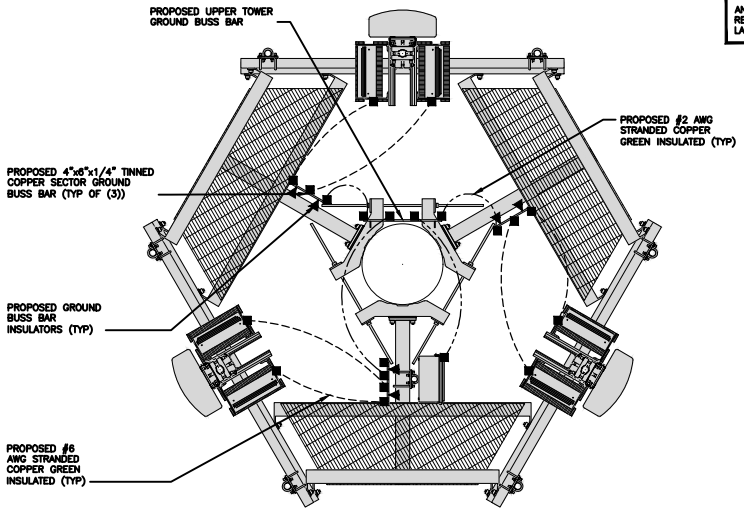
DISH Wireless L.L.C.
PROJECT INFORMATION
BOBDL00067A
52 NEW BRITAIN AVENUE
ROCKY HILL, CT 06067

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

SHEET NUMBER
E-3



TYPICAL EQUIPMENT GROUNDING PLAN | NO SCALE | 1



TYPICAL ANTENNA GROUNDING PLAN | NO SCALE | 2

NOTES

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

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

GROUNDING LEGEND

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

GROUNDING KEY NOTES

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

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

(C) 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.

(D) 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.
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.

(E) 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.

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

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

(H) 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.

(I) 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

(J) 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.

(K) 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

(L) TOWER TOP COLLECTOR BUSS BAR IS TO BE MECHANICALLY BONDED TO PROPOSED ANTENNA MOUNT COLLAR. REFER TO DISH Wireless L.L.C. GROUNDING NOTES.

(M)

(N)

(O)

(P)

GROUNDING KEY NOTES | NO SCALE | 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

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

RFDS REV #: ---

PRELIMINARY DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	09/03/2021	ISSUED FOR REVIEW
B	12/30/2021	ISSUED FOR REVIEW
0	02/08/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

2039-Z5555C

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00067A
52 NEW BRITAIN AVENUE
ROCKY HILL, CT 06067

SHEET TITLE

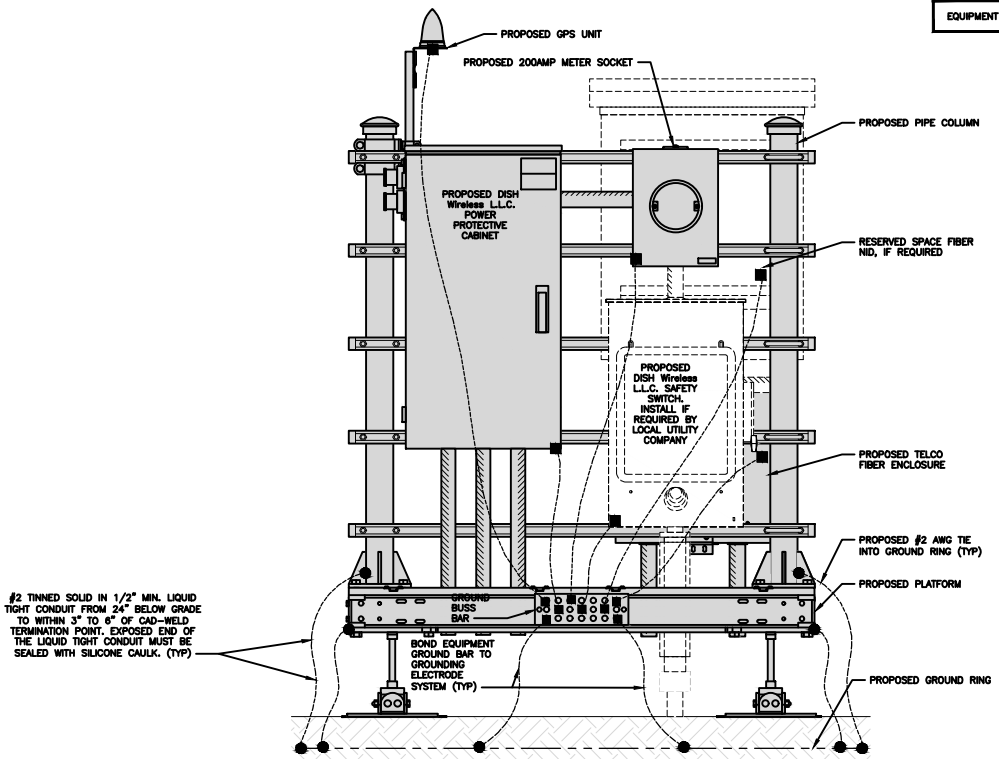
GROUNDING PLANS AND NOTES

SHEET NUMBER

G-1

NOTES

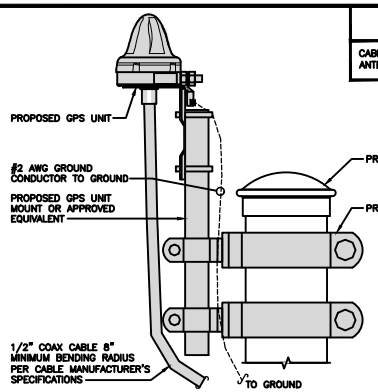
EQUIPMENT CABINET OMITTED FOR CLARITY



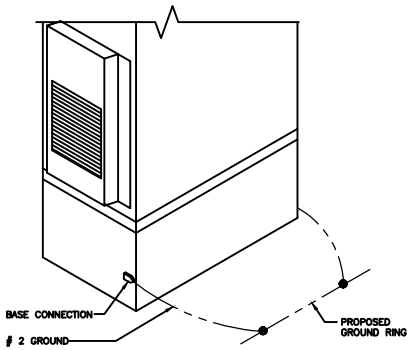
H-FRAME GROUNDING DETAIL | NO SCALE | 1

NOTES

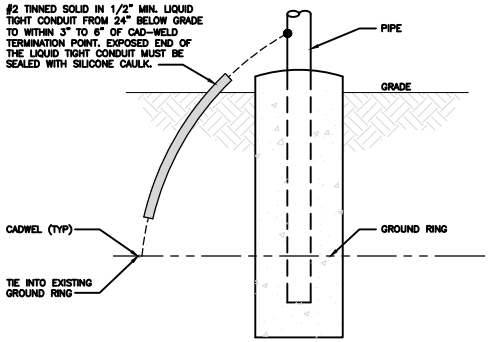
CABLE GROUNDING NOT REQUIRED WHEN ANTENNA IS LESS THAN 10' FROM CABINET



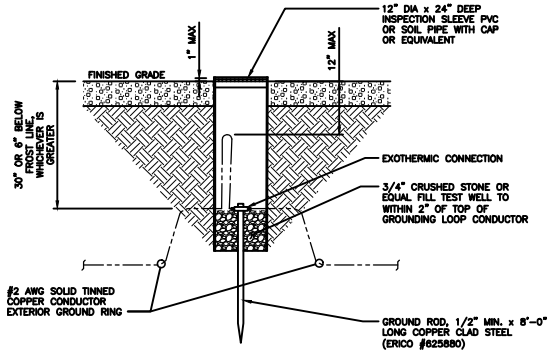
TYPICAL GPS UNIT GROUNDING | NO SCALE | 2



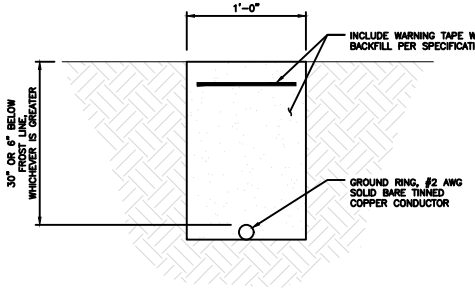
OUTDOOR CABINET GROUNDING | NO SCALE | 3



TRANSITIONING GROUND DETAIL | NO SCALE | 4



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



TYPICAL GROUND RING TRENCH | NO SCALE | 6

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
SHUHEI SAKANOUE
34916
LICENSED PROFESSIONAL ENGINEER
2/9/2022

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

RFDS REV #: ---

PRELIMINARY DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	08/03/2021	ISSUED FOR REVIEW
B	12/30/2021	ISSUED FOR REVIEW
0	02/08/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

2039-Z5555C

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00067A
52 NEW BRITAIN AVENUE
ROCKY HILL, CT 06067

SHEET TITLE

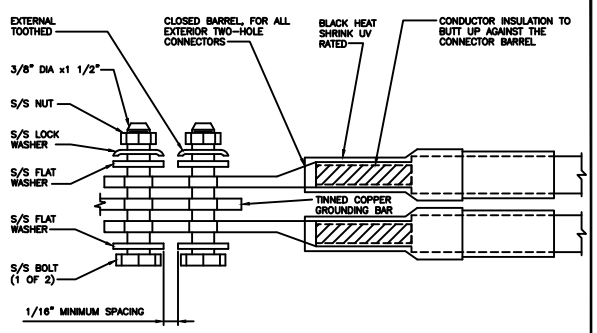
GROUNDING DETAILS

SHEET NUMBER

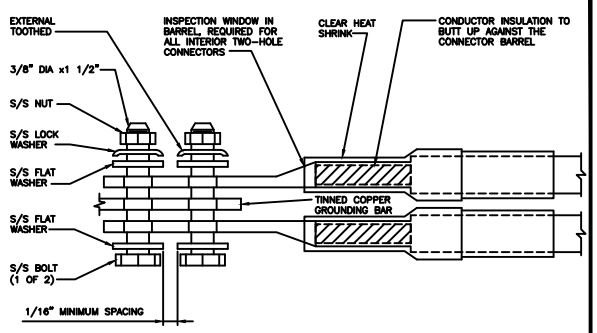
G-2

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

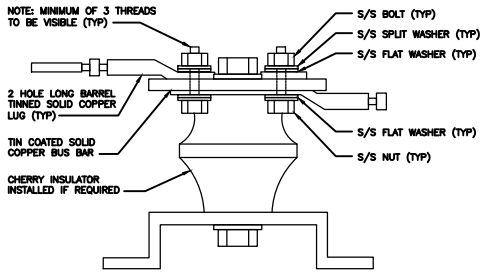
TYPICAL GROUNDING NOTES | NO SCALE | 1



TYPICAL EXTERIOR TWO HOLE LUG | NO SCALE | 2



TYPICAL INTERIOR TWO HOLE LUG | NO SCALE | 3



LUG DETAIL | NO SCALE | 4

NOT USED | NO SCALE | 5

NOT USED | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

DISH Wireless L.L.C. TEMPLATE VERSION 40 – 08/13/2021

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 590 | HOFFMAN ESTATES, IL 60169
PHONE: 847-648-4068 | FAX: 518-690-0793
WWW.INFINIGY.COM

STATE OF CONNECTICUT
SHUHEI SAKANOUE
34916
LICENSED PROFESSIONAL ENGINEER
2/9/2022

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

RFDS REV #: ---

PRELIMINARY DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	09/03/2021	ISSUED FOR REVIEW
B	12/30/2021	ISSUED FOR REVIEW
0	02/09/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

2039-Z5555C

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00067A
52 NEW BRITAIN AVENUE
ROCKY HILL, CT 06067

SHEET TITLE

GROUNDING DETAILS

SHEET NUMBER

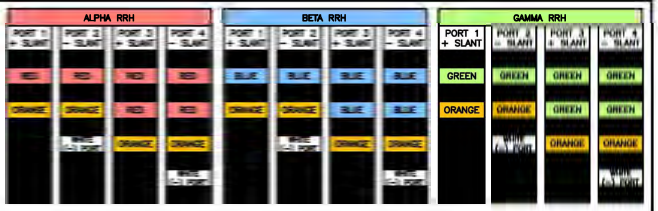
G-3

RF JUMPER COLOR CODING

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

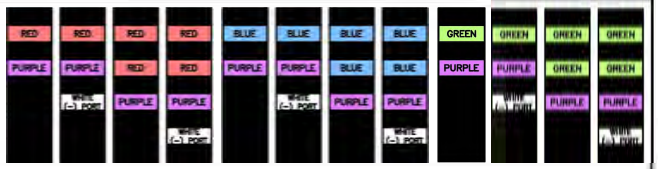
LOW-BAND RRH –
(600MHz N71 BASEBAND) +
(850MHz N26 BAND) +
(700MHz N29 BAND) – OPTIONAL PER MARKET

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)

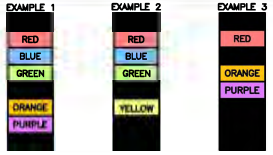


HYBRID/DISCREET CABLES

INCLUDE SECTOR BANDS BEING SUPPORTED ALONG WITH FREQUENCY BANDS

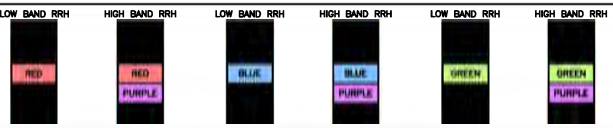
EXAMPLE 1 – HYBRID, OR DISCREET, SUPPORTS ALL SECTORS, BOTH LOW-BANDS AND MID-BANDS

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



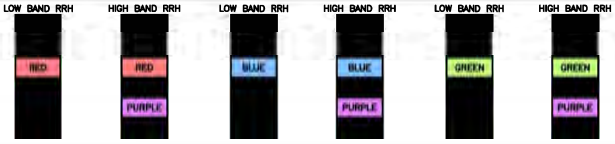
FIBER JUMPERS TO RRHs

LOW-BAND RRH FIBER CABLES HAVE SECTOR STRIPE ONLY

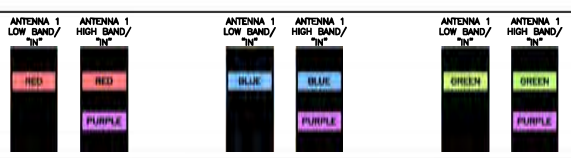


POWER CABLES TO RRHs

LOW-BAND RRH POWER CABLES HAVE SECTOR STRIPE ONLY



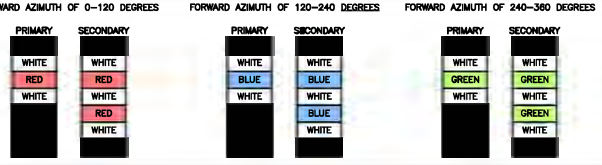
RET MOTORS AT ANTENNAS



MICROWAVE RADIO LINKS

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

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



RF CABLE COLOR CODES | NO SCALE | 1

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

AWS (N66+N70+H-BLOCK): PURPLE

CBRS TECH (3 GHz): YELLOW

NEGATIVE SLANT PORT ON ANT/RRH: WHITE

ALPHA SECTOR: RED

BETA SECTOR: BLUE

GAMMA SECTOR: GREEN

COLOR IDENTIFIER | NO SCALE | 2

NOT USED | NO SCALE | 3

NOT USED | NO SCALE | 4

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
SHUHEI SAKANOUE
34916
LICENSED PROFESSIONAL ENGINEER

2/9/2022

DRAWN BY:	CHECKED BY:	APPROVED BY:
—	—	—

RFDS REV #: —

PRELIMINARY DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	08/03/2021	ISSUED FOR REVIEW
B	12/30/2021	ISSUED FOR REVIEW
0	02/09/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
2039-Z5555C

DISH Wireless L.L.C.
PROJECT INFORMATION
BOBDL00067A
52 NEW BRITAIN AVENUE
ROCKY HILL, CT 06067

SHEET TITLE
RF
CABLE COLOR CODES

SHEET NUMBER
RF-1

LEGEND

EXOTHERMIC CONNECTION

MECHANICAL CONNECTION

BUSS BAR INSULATOR

CHEMICAL ELECTROLYTIC GROUNDING SYSTEM

TEST CHEMICAL ELECTROLYTIC GROUNDING SYSTEM

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

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
SHUHEI SAKANOUE
34916
LICENSED PROFESSIONAL ENGINEER

2/9/2022

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

RFDS REV #: ---

PRELIMINARY DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	09/03/2021	ISSUED FOR REVIEW
B	12/30/2021	ISSUED FOR REVIEW
0	02/09/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

2039-Z5555C

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00067A
52 NEW BRITAIN AVENUE
ROCKY HILL, CT 06067

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 L.L.C. AND TOWER OWNER NOC & THE DISH Wireless L.L.C. AND TOWER OWNER CONSTRUCTION MANAGER.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

GENERAL NOTES:

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

CONTRACTOR:GENERAL CONTRACTOR RESPONSIBLE FOR CONSTRUCTION

CARRIER:DISH Wireless L.L.C.

TOWER OWNER:TOWER OWNER

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

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

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

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

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

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

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

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

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

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

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

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

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

dish wireless.
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
SHUHEI SAKANOUE
34916
LICENSED
PROFESSIONAL ENGINEER
2/9/2022

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

RFDS REV #: ---

PRELIMINARY DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	09/03/2021	ISSUED FOR REVIEW
B	12/30/2021	ISSUED FOR REVIEW
0	02/09/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

2039–Z5555C

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00067A
52 NEW BRITAIN AVENUE
ROCKY HILL, CT 06067

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-2

CONCRETE, FOUNDATIONS, AND REINFORCING STEEL:

1. ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE ACI 301, ACI 318, ACI 336, ASTM A184, ASTM A185 AND THE DESIGN AND CONSTRUCTION SPECIFICATION FOR CAST-IN-PLACE CONCRETE.
2. UNLESS NOTED OTHERWISE, SOIL BEARING PRESSURE USED FOR DESIGN OF SLABS AND FOUNDATIONS IS ASSUMED TO BE 1000 psf.
3. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH (f'c) OF 3000 psi AT 28 DAYS, UNLESS NOTED OTHERWISE. NO MORE THAN 90 MINUTES SHALL ELAPSE FROM BATCH TIME TO TIME OF PLACEMENT UNLESS APPROVED BY THE ENGINEER OF RECORD. TEMPERATURE OF CONCRETE SHALL NOT EXCEED 90°f AT TIME OF PLACEMENT.
4. CONCRETE EXPOSED TO FREEZE-THAW CYCLES SHALL CONTAIN AIR ENTRAINING ADMIXTURES. AMOUNT OF AIR ENTRAINMENT TO BE BASED ON SIZE OF AGGREGATE AND F3 CLASS EXPOSURE (VERY SEVERE). CEMENT USED TO BE TYPE II PORTLAND CEMENT WITH A MAXIMUM WATER-TO-CEMENT RATIO (W/C) OF 0.45.
5. ALL STEEL REINFORCING SHALL CONFORM TO ASTM A615. ALL WELDED WIRE FABRIC (WWF) SHALL CONFORM TO ASTM A185. ALL SPLICES SHALL BE CLASS "B" TENSION SPLICES, UNLESS NOTED OTHERWISE. ALL HOOKS SHALL BE STANDARD 90 DEGREE HOOKS, UNLESS NOTED OTHERWISE. YIELD STRENGTH (Fy) OF STANDARD DEFORMED BARS ARE AS FOLLOWS:
#4 BARS AND SMALLER 40 ksi
#5 BARS AND LARGER 60 ksi
6. THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCING STEEL UNLESS SHOWN OTHERWISE ON DRAWINGS:
   - CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH 3"
   - CONCRETE EXPOSED TO EARTH OR WEATHER:
   - #6 BARS AND LARGER 2"
   - #5 BARS AND SMALLER 1-1/2"
   - CONCRETE NOT EXPOSED TO EARTH OR WEATHER:
   - SLAB AND WALLS 3/4"
   - BEAMS AND COLUMNS 1-1/2"
7. A TOOLED EDGE OR A 3/4" CHAMFER SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE, UNLESS NOTED OTHERWISE, IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.

ELECTRICAL INSTALLATION NOTES:

1. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC AND ALL APPLICABLE FEDERAL, STATE, AND LOCAL CODES/ORDINANCES.
2. CONDUIT ROUTINGS ARE SCHEMATIC. CONTRACTOR SHALL INSTALL CONDUITS SO THAT ACCESS TO EQUIPMENT IS NOT BLOCKED AND TRIP HAZARDS ARE ELIMINATED.
3. WIRING, RACEWAY AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC.
4. ALL CIRCUITS SHALL BE SEGREGATED AND MAINTAIN MINIMUM CABLE SEPARATION AS REQUIRED BY THE NEC.

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

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

5. EACH END OF EVERY POWER PHASE CONDUCTOR, GROUNDING CONDUCTOR, AND TELCO CONDUCTOR OR CABLE SHALL BE LABELED WITH COLOR-CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, 1/2" PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL). THE IDENTIFICATION METHOD SHALL CONFORM WITH NEC AND OSHA.
6. ALL ELECTRICAL COMPONENTS SHALL BE CLEARLY LABELED WITH LAMICOID TAGS SHOWING THEIR RATED VOLTAGE, PHASE CONFIGURATION, WIRE CONFIGURATION, POWER OR AMPACITY RATING AND BRANCH CIRCUIT ID NUMBERS (i.e. PANEL BOARD AND CIRCUIT ID'S).
7. PANEL BOARDS (ID NUMBERS) SHALL BE CLEARLY LABELED WITH PLASTIC LABELS.
8. TIE WRAPS ARE NOT ALLOWED.
9. ALL POWER AND EQUIPMENT GROUND WIRING IN TUBING OR CONDUIT SHALL BE SINGLE COPPER CONDUCTOR (#14 OR LARGER) WITH TYPE THHW, THWN, THWN-2, XHHW, XHHW-2, THW, THW-2, RHW, OR RHW-2 INSULATION UNLESS OTHERWISE SPECIFIED.
10. SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED INDOORS SHALL BE SINGLE COPPER CONDUCTOR (#6 OR LARGER) WITH TYPE THHW, THWN, THWN-2, XHHW, XHHW-2, THW, THW-2, RHW, OR RHW-2 INSULATION UNLESS OTHERWISE SPECIFIED.
11. POWER AND CONTROL WIRING IN FLEXIBLE CORD SHALL BE MULTI-CONDUCTOR, TYPE SOOW CORD (#14 OR LARGER) UNLESS OTHERWISE SPECIFIED.
12. POWER AND CONTROL WIRING FOR USE IN CABLE TRAY SHALL BE MULTI-CONDUCTOR, TYPE TC CABLE (#14 OR LARGER), WITH TYPE THHW, THWN, THWN-2, XHHW, XHHW-2, THW, THW-2, RHW, OR RHW-2 INSULATION UNLESS OTHERWISE SPECIFIED.
13. ALL POWER AND GROUNDING CONNECTIONS SHALL BE CRIMP-STYLE, COMPRESSION WIRE LUGS AND WIRE NUTS BY THOMAS AND BETTS (OR EQUAL). LUGS AND WIRE NUTS SHALL BE RATED FOR OPERATION NOT LESS THAN 75° C (90° C IF AVAILABLE).
14. RACEWAY AND CABLE TRAY SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND NEC.
15. ELECTRICAL METALLIC TUBING (EMT), INTERMEDIATE METAL CONDUIT (IMC), OR RIGID METAL CONDUIT (RMC) SHALL BE USED FOR EXPOSED INDOOR LOCATIONS.
16. ELECTRICAL METALLIC TUBING (EMT) OR METAL-CLAD CABLE (MC) SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.
17. SCHEDULE 40 PVC UNDERGROUND ON STRAIGHTS AND SCHEDULE 80 PVC FOR ALL ELBOWS/90s AND ALL APPROVED ABOVE GRADE PVC CONDUIT.
18. LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID-TITE FLEX) SHALL BE USED INDOORS AND OUTDOORS, WHERE VIBRATION OCCURS OR FLEXIBILITY IS NEEDED.
19. CONDUIT AND TUBING FITTINGS SHALL BE THREADED OR COMPRESSION-TYPE AND APPROVED FOR THE LOCATION USED. SET SCREW FITTINGS ARE NOT ACCEPTABLE.
20. CABINETS, BOXES AND WIRE WAYS SHALL BE LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND THE NEC.
21. WIREWAYS SHALL BE METAL WITH AN ENAMEL FINISH AND INCLUDE A HINGED COVER, DESIGNED TO SWING OPEN DOWNWARDS (WIREMOLD SPECMATE WIREWAY).
22. SLOTTED WIRING DUCT SHALL BE PVC AND INCLUDE COVER (PANDUIT TYPE E OR EQUAL).
23. CONDUITS SHALL BE FASTENED SECURELY IN PLACE WITH APPROVED NON-PERFORATED STRAPS AND HANGERS. EXPLOSIVE DEVICES (i.e. POWDER-ACTUATED) FOR ATTACHING HANGERS TO STRUCTURE WILL NOT BE PERMITTED. CLOSELY FOLLOW THE LINES OF THE STRUCTURE, MAINTAIN CLOSE PROXIMITY TO THE STRUCTURE AND KEEP CONDUITS IN TIGHT ENVELOPES. CHANGES IN DIRECTION TO ROUTE AROUND OBSTACLES SHALL BE MADE WITH CONDUIT OUTLET BODIES. CONDUIT SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER. PARALLEL AND PERPENDICULAR TO STRUCTURE WALL AND CEILING LINES. ALL CONDUIT SHALL BE FISHED TO CLEAR OBSTRUCTIONS. ENDS OF CONDUITS SHALL BE TEMPORARILY CAPPED FLUSH TO FINISH GRADE TO PREVENT CONCRETE, PLASTER OR DIRT FROM ENTERING. CONDUITS SHALL BE RIGIDLY CLAMPED TO BOXES BY GALVANIZED MALLEABLE IRON BUSHING ON INSIDE AND GALVANIZED MALLEABLE IRON LOCKNUT ON OUTSIDE AND INSIDE.
24. EQUIPMENT CABINETS, TERMINAL BOXES, JUNCTION BOXES AND PULL BOXES SHALL BE GALVANIZED OR EPOXY-COATED SHEET STEEL. SHALL MEET OR EXCEED UL 50 AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND NEMA 3 (OR BETTER) FOR EXTERIOR LOCATIONS.
25. METAL RECEPTACLE, SWITCH AND DEVICE BOXES SHALL BE GALVANIZED, EPOXY-COATED OR NON-CORRODING; SHALL MEET OR EXCEED UL 514A AND NEMA OS 1 AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND WEATHER PROTECTED (WP OR BETTER) FOR EXTERIOR LOCATIONS.
26. NONMETALLIC RECEPTACLE, SWITCH AND DEVICE BOXES SHALL MEET OR EXCEED NEMA OS 2 (NEWEST REVISION) AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND WEATHER PROTECTED (WP OR BETTER) FOR EXTERIOR LOCATIONS.
27. THE CONTRACTOR SHALL NOTIFY AND OBTAIN NECESSARY AUTHORIZATION FROM THE CARRIER AND/OR DISH Wireless L.L.C. AND TOWER OWNER BEFORE COMMENCING WORK ON THE AC POWER DISTRIBUTION PANELS.
28. THE CONTRACTOR SHALL PROVIDE NECESSARY TAGGING ON THE BREAKERS, CABLES AND DISTRIBUTION PANELS IN ACCORDANCE WITH THE APPLICABLE CODES AND STANDARDS TO SAFEGUARD LIFE AND PROPERTY.
29. INSTALL LAMICOID LABEL ON THE METER CENTER TO SHOW "DISH Wireless L.L.C.".
30. ALL EMPTY/SPARE CONDUITS THAT ARE INSTALLED ARE TO HAVE A METERED MULE TAPE PULL CORD INSTALLED.

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
SHUHEI SAKANOUE
34916
LICENSED PROFESSIONAL ENGINEER
2/9/2022

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

RFDS REV #: ---

PRELIMINARY DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	09/03/2021	ISSUED FOR REVIEW
B	12/30/2021	ISSUED FOR REVIEW
0	02/09/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

2039-Z5555C

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00067A
52 NEW BRITAIN AVENUE
ROCKY HILL, CT 06067

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-3

GROUNDING NOTES:

1. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION AND AC POWER GES'S) SHALL BE BONDED TOGETHER AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.
2. THE CONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR GROUND ELECTRODE SYSTEMS, THE CONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.
3. THE CONTRACTOR IS RESPONSIBLE FOR PROPERLY SEQUENCING GROUNDING AND UNDERGROUND CONDUIT INSTALLATION AS TO PREVENT ANY LOSS OF CONTINUITY IN THE GROUNDING SYSTEM OR DAMAGE TO THE CONDUIT AND PROVIDE TESTING RESULTS.
4. METAL CONDUIT AND TRAY SHALL BE GROUNDED AND MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH #6 COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
5. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.
6. EACH CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, #6 STRANDED COPPER OR LARGER FOR INDOOR BTS; #2 BARE SOLID TINNED COPPER FOR OUTDOOR BTS.
7. CONNECTIONS TO THE GROUND BUS SHALL NOT BE DOUBLED UP OR STACKED BACK TO BACK CONNECTIONS ON OPPOSITE SIDE OF THE GROUND BUS ARE PERMITTED.
8. ALL EXTERIOR GROUND CONDUCTORS BETWEEN EQUIPMENT/GROUND BARS AND THE GROUND RING SHALL BE #2 SOLID TINNED COPPER UNLESS OTHERWISE INDICATED.
9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
10. USE OF 90° BENDS IN THE PROTECTION GROUNDING CONDUCTORS SHALL BE AVOIDED WHEN 45° BENDS CAN BE ADEQUATELY SUPPORTED.
11. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
12. ALL GROUND CONNECTIONS ABOVE GRADE (INTERIOR AND EXTERIOR) SHALL BE FORMED USING HIGH PRESS CRIMPS.
13. COMPRESSION GROUND CONNECTIONS MAY BE REPLACED BY EXOTHERMIC WELD CONNECTIONS.
14. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO THE BRIDGE AND THE TOWER GROUND BAR.
15. APPROVED ANTIOXIDANT COATINGS (i.e. CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
16. ALL EXTERIOR GROUND CONNECTIONS SHALL BE COATED WITH A CORROSION RESISTANT MATERIAL.
17. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
18. BOND ALL METALLIC OBJECTS WITHIN 6 ft OF MAIN GROUND RING WITH (1) #2 BARE SOLID TINNED COPPER GROUND CONDUCTOR.
19. GROUND CONDUCTORS USED FOR THE FACILITY GROUNDING AND LIGHTNING PROTECTION SYSTEMS SHALL NOT BE ROUTED THROUGH METALLIC OBJECTS THAT FORM A RING AROUND THE CONDUCTOR, SUCH AS METALLIC CONDUITS, METAL SUPPORT CLIPS OR SLEEVES THROUGH WALLS OR FLOORS. WHEN IT IS REQUIRED TO BE HOUSED IN CONDUIT TO MEET CODE REQUIREMENTS OR LOCAL CONDITIONS, NON-METALLIC MATERIAL SUCH AS PVC CONDUIT SHALL BE USED. WHERE USE OF METAL CONDUIT IS UNAVOIDABLE (i.e., NONMETALLIC CONDUIT PROHIBITED BY LOCAL CODE) THE GROUND CONDUCTOR SHALL BE BONDED TO EACH END OF THE METAL CONDUIT.
20. ALL GROUNDS THAT TRANSITION FROM BELOW GRADE TO ABOVE GRADE MUST BE #2 BARE SOLID TINNED COPPER IN 3/4" NON-METALLIC, FLEXIBLE CONDUIT FROM 24" BELOW GRADE TO WITHIN 3" TO 6" OF CAD-WELD TERMINATION POINT. THE EXPOSED END OF THE CONDUIT MUST BE SEALED WITH SILICONE CAULK. (ADD TRANSITIONING GROUND STANDARD DETAIL AS WELL).
21. BUILDINGS WHERE THE MAIN GROUNDING CONDUCTORS ARE REQUIRED TO BE ROUTED TO GRADE, THE CONTRACTOR SHALL ROUTE TWO GROUNDING CONDUCTORS FROM THE ROOFTOP, TOWERS, AND WATER TOWERS GROUNDING RING, TO THE EXISTING GROUNDING SYSTEM, THE GROUNDING CONDUCTORS SHALL NOT BE SMALLER THAN 2/0 COPPER. ROOFTOP GROUNDING RING SHALL BE BONDED TO THE EXISTING GROUNDING SYSTEM, THE BUILDING STEEL COLUMNS, LIGHTNING PROTECTION SYSTEM, AND BUILDING MAIN WATER LINE (FERROUS OR NONFERROUS METAL PIPING ONLY). DO NOT ATTACH GROUNDING TO FIRE SPRINKLER SYSTEM PIPES.

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

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
SHUHEI SAKANOUE
34916
LICENSED
PROFESSIONAL ENGINEER

2/9/2022

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

RFDS REV #: ---

PRELIMINARY DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	09/03/2021	ISSUED FOR REVIEW
B	12/30/2021	ISSUED FOR REVIEW
0	02/09/2022	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

2039-Z5555C

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00067A
52 NEW BRITAIN AVENUE
ROCKY HILL, CT 06067

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-4

ATTACHMENT 4

Date: **September 03, 2021**

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

Subject:	**Structural Analysis Report**	
Carrier Designation:	***DISH Network* Co-Locate**	
	Site Number:	BOBDL00067A
	Site Name:	CT-CCI-T-842872
Crown Castle Designation:	**BU Number:**	842872
	Site Name:	ROCKY HILL
	JDE Job Number:	650057
	Work Order Number:	1987177
	Order Number:	556625 Rev. 1
Engineering Firm Designation:	**Crown Castle Project Number:**	1987177
Site Data:	**52 NEW BRITAIN AVENUE, ROCKY HILL, HARTFORD County, CT** **Latitude *41° 39' 36.89"*, Longitude *-72° 40' 50.58"*** **182 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-94.4%**

This analysis utilizes an ultimate 3-second gust wind speed of 118 mph as required by the 2015 International Building Code. Applicable Standard references and design criteria are listed in Section 2 - "Analysis Criteria".

Structural analysis prepared by: Subhash Mandal

Respectfully submitted by:

Maribel Dentinger
Maribel Dentinger, P.E.
Senior Project Engineer

Maribel Dentinger
Digitally signed by Maribel Dentinger
Date: 2021.09.07 09:52:51 -04'00'

STATE OF CONNECTICUT
MARIBEL DENTINGER
23524
LICENSED
PROFESSIONAL ENGINEER

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 182 ft Monopole tower designed by ENGINEERED ENDEAVORS, INC. The tower has been modified multiple times to accommodate additional loading.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	118 mph
Exposure Category:	C
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)
130.0	130.0	3	fujitsu	TA08025-B604	1	1-1/2
		3	fujitsu	TA08025-B605		
		3	jma wireless	MX08FRO665-21 w/ Mount Pipe		
		1	raycap	RDIDC-9181-PF-48		
		1	tower mounts	Commscope MC-PK8-DSH		

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)
178.0	188.0	2	dbspectra	DS4C06F36D-D	12	7/8
	185.0	1	austin antenna company	APC-1362		
		1	austin antenna company	APC-2163		
	184.0	1	austin antenna company	APC-301		
		1	austin antenna company	APC-4065		
	178.0	1	tower mounts	Miscellaneous [NA 502-3]		
	177.0	2	radiowaves	HPD2-4.7		
168.0	175.0	1	telewave	ANT450D6-9	6 2 4 3 4	1-5/8 RC 7/8 3/8 3/4
	168.0	3	cci antennas	DMP65R-BU6D w/ Mount Pipe		
		3	cci antennas	HPA-65R-BUU-H6 w/ Mount Pipe		
		4	cci antennas	TPX-070821		
		3	ericsson	RRUS 32 B2		
		3	ericsson	RRUS 32 B2_CCIV2		
		3	ericsson	RRUS 32 B66		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
		3	ericsson	RRUS 4449 B5/B12		
		3	ericsson	RRUS 4478 B14_CCIV2		
		3	ericsson	RRUS E2 B29		
		3	ericsson	RRUS-32 B30		
		3	powerwave technologies	7770.00 w/ Mount Pipe		
		6	powerwave technologies	LGP21401		
		3	quintel technology	QS66512-2 w/ Mount Pipe		
		1	raycap	DC6-48-60-18-8C		
		2	raycap	DC6-48-60-18-8C-EV		
		1	raycap	DC6-48-60-18-8F		
		1	tower mounts	Platform Mount [LP 304-1_KCKR-HR-1]		
157.0	159.0	3	ericsson	AIR 32 B2A B66AA_T-MOBILE w/ Mount Pipe	3	1-5/8
		3	ericsson	AIR6449 B41_T-MOBILE		
		3	ericsson	RADIO 4415 B25_TMO		
		3	ericsson	RADIO 4449 B71 B85A_T-MOBILE		
		3	rfs celwave	APXVAALL24_43-U-NA20_TMO w/ Mount Pipe		
	157.0	3	tower mounts	8' x 2" Mount Pipe		
		1	tower mounts	Platform Mount [LP 305-1_KCKR-HR-1]		
142.0	144.0	3	alcatel lucent	1900MHZ RRH (65MHZ)	-	-
	142.0	1	tower mounts	Pipe Mount [PM 601-3]		
	140.0	3	alcatel lucent	800 EXTERNAL NOTCH FILTER		
		3	alcatel lucent	800MHZ RRH		
140.0	142.0	3	powerwave technologies	TD-RRH8X20-25	1 3	7/8 1-1/4
		3	rfs celwave	APXVSPP18-C-A20 w/ Mount Pipe		
		3	rfs celwave	APXVTM14-C-120 w/ Mount Pipe		
	140.0	1	tower mounts	Platform Mount [LP 1201-1]		
90.0	93.0	1	tower mounts	Miscellaneous [NA 507-1]	1 7	1/2 1-5/8
	92.0	6	samsung telecommunications	MT6407-77A w/ Mount Pipe		
	90.0	3	antel	BXA-70080-4BF-EDIN-0 w/ Mount Pipe		
		6	commscope	NHH-65B-R2B w/ Mount Pipe		
		1	gps	GPS_A		
		1	rfs celwave	DB-T1-6Z-8AB-0Z		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
		3	samsung telecommunications	RFV01U-D1A		
		3	samsung telecommunications	RFV01U-D2A		
		1	tower mounts	Platform Mount [LP 1201-1]		
	88.0	3	samsung telecommunications	CBRS		
73.0	75.0	1	gps	GPS_A	1	1/2
	73.0	1	tower mounts	Side Arm Mount [SO 701-1]		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Reference	Source
4-GEOTECHNICAL REPORTS	4713251	CCISITES
4-POST-MODIFICATION INSPECTION	4904967	CCISITES
4-POST-MODIFICATION INSPECTION	6040534	CCISITES
4-POST-MODIFICATION INSPECTION	6647989	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	4713252	CCISITES
4-TOWER MANUFACTURER DRAWINGS	4844402	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	4740398	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	4904956	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	6525881	CCISITES

3.1) Analysis Method

tnxTower (version 8.1.1.0), 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	P (K)	Pass / Fail
182 - 177	Pole	TP15.678x14.5x0.25	Pole	4.5%	Pass
177 - 172	Pole	TP16.856x15.678x0.25	Pole	7.8%	Pass
172 - 167	Pole	TP18.033x16.856x0.25	Pole	13.6%	Pass
167 - 162	Pole	TP19.211x18.033x0.25	Pole	24.7%	Pass
162 - 157	Pole	TP20.389x19.211x0.25	Pole	33.5%	Pass
157 - 152	Pole	TP21.567x20.389x0.25	Pole	46.2%	Pass
152 - 147	Pole	TP22.744x21.567x0.25	Pole	55.2%	Pass
147 - 142	Pole	TP23.922x22.744x0.25	Pole	62.4%	Pass
142 - 137	Pole	TP25.1x23.922x0.25	Pole	71.3%	Pass
137 - 136.83	Pole	TP26.023x25.1x0.25	Pole	71.6%	Pass
136.83 - 131.83	Pole	TP25.805x24.639x0.375	Pole	54.3%	Pass
131.83 - 126.83	Pole	TP26.972x25.805x0.375	Pole	59.1%	Pass
126.83 - 121.83	Pole	TP28.138x26.972x0.375	Pole	63.3%	Pass
121.83 - 116.83	Pole	TP29.305x28.138x0.375	Pole	66.8%	Pass
116.83 - 111.83	Pole	TP30.471x29.305x0.375	Pole	69.6%	Pass
111.83 - 106.83	Pole	TP31.638x30.471x0.375	Pole	71.9%	Pass
106.83 - 101.83	Pole	TP32.804x31.638x0.375	Pole	73.9%	Pass
101.83 - 96.83	Pole	TP33.971x32.804x0.375	Pole	75.5%	Pass
96.83 - 92.47	Pole	TP36.16x33.971x0.375	Pole	76.6%	Pass
92.47 - 86.45	Pole	TP35.642x34.239x0.375	Pole	82.4%	Pass
86.45 - 85	Pole	TP35.98x35.642x0.375	Pole	82.9%	Pass
85 - 84.75	Pole	TP36.038x35.98x0.375	Pole	83.0%	Pass
84.75 - 79.75	Pole	TP37.203x36.038x0.375	Pole	85.2%	Pass
79.75 - 75	Pole	TP38.31x37.203x0.375	Pole	87.0%	Pass
75 - 74.75	Pole + Reinf.	TP38.369x38.31x0.7	Reinf. 2 Tension Rupture	75.0%	Pass
74.75 - 74	Pole + Reinf.	TP38.543x38.369x0.7	Reinf. 2 Tension Rupture	75.3%	Pass
74 - 73.75	Pole	TP38.602x38.543x0.375	Pole	87.5%	Pass
73.75 - 68.75	Pole	TP39.767x38.602x0.375	Pole	89.2%	Pass
68.75 - 63.75	Pole	TP40.932x39.767x0.375	Pole	90.7%	Pass
63.75 - 58.75	Pole	TP42.098x40.932x0.375	Pole	92.1%	Pass
58.75 - 53.75	Pole	TP43.263x42.098x0.375	Pole	93.3%	Pass
53.75 - 49.08	Pole	TP45.804x43.263x0.375	Pole	94.4%	Pass
49.08 - 41.85	Pole	TP45.281x43.602x0.4375	Pole	81.2%	Pass
41.85 - 36.85	Pole	TP46.442x45.281x0.4375	Pole	81.8%	Pass
36.85 - 31.85	Pole	TP47.604x46.442x0.4375	Pole	82.3%	Pass
31.85 - 26.85	Pole	TP48.765x47.604x0.4375	Pole	82.8%	Pass
26.85 - 21.85	Pole	TP49.926x48.765x0.4375	Pole	83.2%	Pass
21.85 - 16.85	Pole	TP51.087x49.926x0.4375	Pole	83.6%	Pass
16.85 - 11.85	Pole	TP52.248x51.087x0.4375	Pole	83.9%	Pass
11.85 - 6.85	Pole	TP53.41x52.248x0.4375	Pole	84.2%	Pass
6.85 - 1.85	Pole	TP54.571x53.41x0.4375	Pole	84.5%	Pass
1.85 - 0	Pole	TP55x54.571x0.4375	Pole	84.6%	Pass

Elevation (ft)	Component Type	Size	Critical Element	P (K)	Pass / Fail
				Summary	
			Pole	94.4%	Pass
			Reinforcement	75.3%	Pass
			Overall	94.4%	Pass

Table 5 - Tower Component Stresses vs. Capacity - LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	91.8	Pass
1	Base Plate	0	86.7	Pass
1	Base Foundation (Structure)	0	89.1	Pass
1	Base Foundation (Soil Interaction)	0	62.8	Pass

Structure Rating (max from all components) =	94.4%

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

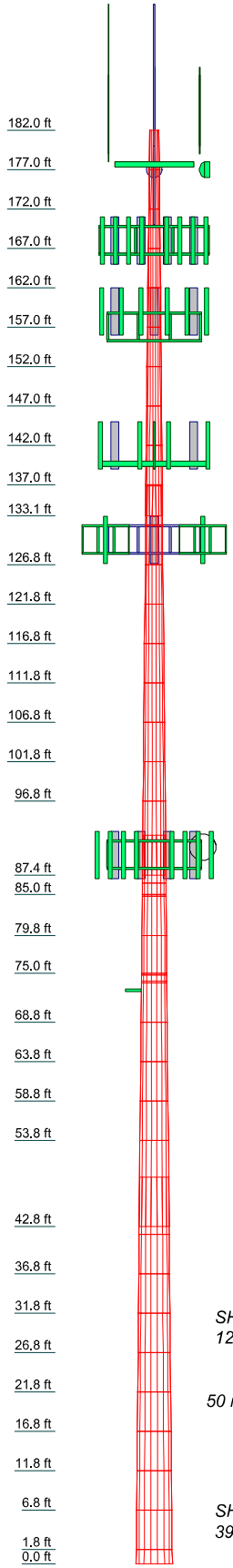
4.1) Recommendations

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	5.000	18	0.250		14.500	15.678		0.2
2	5.000	18	0.250		15.678	16.856		0.2
3	5.000	18	0.250		16.856	18.033		0.2
4	5.000	18	0.250		18.033	19.211		0.2
5	5.000	18	0.250		19.211	20.389		0.3
6	5.000	18	0.250		20.389	21.567		0.3
7	5.000	18	0.250		21.567	22.744		0.3
8	5.000	18	0.250		22.744	23.922		0.3
9	5.000	18	0.250		23.922	25.100		0.3
10	5.000	18	0.250		25.100	26.278		0.3
11	5.000	18	0.375	3.753	26.278	26.972		0.5
12	5.000	18	0.375		25.806	26.972		0.5
13	5.000	18	0.375		26.972	28.138		0.6
14	5.000	18	0.375		28.138	29.305		0.6
15	5.000	18	0.375		29.305	30.471		0.6
16	5.000	18	0.375		30.471	31.638		0.6
17	5.000	18	0.375		31.638	32.804		0.6
18	5.000	18	0.375		32.804	33.971		0.7
19	5.000	18	0.375	5.021	33.971	35.160	A572-65	1.3
20	5.000	18	0.375		35.160	36.336		0.7
21	5.000	18	0.375		36.336	37.513		0.7
22	5.000	18	0.375		37.513	38.689		0.7
23	5.000	18	0.375		38.689	39.866		0.7
24	5.000	18	0.375		39.866	40.932		0.7
25	5.000	18	0.375		40.932	42.098		0.8
26	5.000	18	0.375		42.098	43.263		0.8
27	5.000	18	0.375		43.263	44.429		0.8
28	5.000	18	0.375		44.429	45.596		0.8
29	5.000	18	0.375		45.596	46.762		0.8
30	5.000	18	0.375		46.762	47.929		0.8
31	5.000	18	0.375		47.929	49.095		0.9
32	7.292	18	0.375	6.232	49.095	51.902		1.9
33	7.292	18	0.438		51.902	54.708		1.5
34	5.000	18	0.438		54.708	56.281		1.1
35	5.000	18	0.438		56.281	57.854		1.1
36	5.000	18	0.438		57.854	59.427		1.1
37	5.000	18	0.438		59.427	61.000		1.2
38	5.000	18	0.438		61.000	62.573		1.2
39	5.000	18	0.438		62.573	64.146		1.2
40	5.000	18	0.438		64.146	65.719		1.2
41	5.000	18	0.438		65.719	67.292		1.3
42	1.845	18	0.438		67.292	68.178		0.5



ALL REACTIONS ARE FACTORED

AXIAL 107 K

SHEAR 12 K *MOMENT 1695 kip-ft*

TORQUE 1 kip-ft
50 mph WIND - 1.500 in ICE

AXIAL 65 K

SHEAR 39 K *MOMENT 5102 kip-ft*

TORQUE 2 kip-ft
REACTIONS - 118 mph WIND

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-H Standard.
3. Tower designed for a 118 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 increase 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 0.000 ft
8. TOWER RATING: 94.4%

CROWN CASTLE
The Pathway to Possible

Crown Castle
2000 Corporate Drive
Canonsburg, PA 15317
Phone: 724-416-2000
FAX: -

Job: **BU# 842872**			
Project:			
Client: Crown Castle	Drawn by: SMandal	App'd:	
Code: TIA-222-H	Date: 09/03/21	Scale: NTS	
Path: C:\Users\smandal\Desktop\WIP\842872\WO 1987177 - SA\Prod\842872.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 Hartford County, Connecticut.
- Tower base elevation above sea level: 199.000 ft.
- Basic wind speed of 118 mph.
- Risk Category II.
- Exposure Category C.
- Simplified Topographic Factor Procedure for wind speed-up calculations is used.
- Topographic Category: 1.
- Crest Height: 0.000 ft.
- Nominal ice thickness of 1.500 in.
- Ice thickness is considered to increase with height.
- Ice density of 56.000 pcf.
- A wind speed of 50 mph is used in combination with ice.
- Temperature drop of 50.000 °F.
- Deflections calculated using a wind speed of 60 mph.
- A non-linear (P-delta) analysis was used.
- Pressures are calculated at each section.
- Stress ratio used in pole design is 1.
- 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: 1.05.
- 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	182.000-177.000	5.000	0.000	18	14.500	15.678	0.250	1.000	A572-65 (65 ksi)
L2	177.000-172.000	5.000	0.000	18	15.678	16.856	0.250	1.000	A572-65 (65 ksi)
L3	172.000-167.000	5.000	0.000	18	16.856	18.033	0.250	1.000	A572-65 (65 ksi)
L4	167.000-162.000	5.000	0.000	18	18.033	19.211	0.250	1.000	A572-65 (65 ksi)
L5	162.000-157.000	5.000	0.000	18	19.211	20.389	0.250	1.000	A572-65 (65 ksi)
L6	157.000-152.000	5.000	0.000	18	20.389	21.567	0.250	1.000	A572-65 (65 ksi)
L7	152.000-147.000	5.000	0.000	18	21.567	22.744	0.250	1.000	A572-65 (65 ksi)
L8	147.000-142.000	5.000	0.000	18	22.744	23.922	0.250	1.000	A572-65 (65 ksi)
L9	142.000-137.000	5.000	0.000	18	23.922	25.100	0.250	1.000	A572-65 (65 ksi)
L10	137.000-133.081	3.919	3.753	18	25.100	26.023	0.250	1.000	A572-65 (65 ksi)
L11	133.081-131.834	5.000	0.000	18	24.639	25.805	0.375	1.500	A572-65 (65 ksi)
L12	131.834-126.834	5.000	0.000	18	25.805	26.972	0.375	1.500	A572-65 (65 ksi)
L13	126.834-121.834	5.000	0.000	18	26.972	28.138	0.375	1.500	A572-65 (65 ksi)
L14	121.834-116.834	5.000	0.000	18	28.138	29.305	0.375	1.500	A572-65 (65 ksi)
L15	116.834-111.834	5.000	0.000	18	29.305	30.471	0.375	1.500	A572-65 (65 ksi)
L16	111.834-106.834	5.000	0.000	18	30.471	31.638	0.375	1.500	A572-65 (65 ksi)
L17	106.834-101.834	5.000	0.000	18	31.638	32.804	0.375	1.500	A572-65 (65 ksi)
L18	101.834-96.834	5.000	0.000	18	32.804	33.971	0.375	1.500	A572-65 (65 ksi)
L19	96.834-87.449	9.385	5.021	18	33.971	36.160	0.375	1.500	A572-65 (65 ksi)
L20	87.449-86.449	6.021	0.000	18	34.239	35.642	0.375	1.500	A572-65 (65 ksi)
L21	86.449-85.000	1.449	0.000	18	35.642	35.980	0.375	1.500	A572-65 (65 ksi)
L22	85.000-84.750	0.250	0.000	18	35.980	36.038	0.375	1.500	A572-65 (65 ksi)
L23	84.750-79.750	5.000	0.000	18	36.038	37.203	0.375	1.500	A572-65 (65 ksi)
L24	79.750-75.000	4.750	0.000	18	37.203	38.310	0.375	1.500	A572-65 (65 ksi)
L25	75.000-74.750	0.250	0.000	18	38.310	38.369	0.700	2.800	A572-65 (65 ksi)
L26	74.750-74.000	0.750	0.000	18	38.369	38.543	0.700	2.800	A572-65 (65 ksi)
L27	74.000-73.750	0.250	0.000	18	38.543	38.602	0.375	1.500	A572-65 (65 ksi)
L28	73.750-68.750	5.000	0.000	18	38.602	39.767	0.375	1.500	A572-65 (65 ksi)
L29	68.750-63.750	5.000	0.000	18	39.767	40.932	0.375	1.500	A572-65 (65 ksi)
L30	63.750-58.750	5.000	0.000	18	40.932	42.098	0.375	1.500	A572-65 (65 ksi)
L31	58.750-53.750	5.000	0.000	18	42.098	43.263	0.375	1.500	A572-65 (65 ksi)
L32	53.750-42.848	10.902	6.232	18	43.263	45.804	0.375	1.500	A572-65 (65 ksi)
L33	42.848-41.848	7.232	0.000	18	43.602	45.281	0.438	1.750	A572-65 (65 ksi)
L34	41.848-36.848	5.000	0.000	18	45.281	46.442	0.438	1.750	A572-65 (65 ksi)
L35	36.848-31.848	5.000	0.000	18	46.442	47.604	0.438	1.750	A572-65

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	31.848-26.848	5.000	0.000	18	47.604	48.765	0.438	1.750	(65 ksi) A572-65 (65 ksi)
L37	26.848-21.848	5.000	0.000	18	48.765	49.926	0.438	1.750	A572-65 (65 ksi)
L38	21.848-16.848	5.000	0.000	18	49.926	51.087	0.438	1.750	A572-65 (65 ksi)
L39	16.848-11.848	5.000	0.000	18	51.087	52.248	0.438	1.750	A572-65 (65 ksi)
L40	11.848-6.848	5.000	0.000	18	52.248	53.410	0.438	1.750	A572-65 (65 ksi)
L41	6.848-1.848	5.000	0.000	18	53.410	54.571	0.438	1.750	A572-65 (65 ksi)
L42	1.848-0.000	1.848		18	54.571	55.000	0.438	1.750	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	14.685	11.307	290.087	5.059	7.366	39.382	580.557	5.655	2.112	8.448
	15.881	12.242	368.123	5.477	7.964	46.222	736.731	6.122	2.319	9.277
L2	15.881	12.242	368.123	5.477	7.964	46.222	736.731	6.122	2.319	9.277
	17.077	13.176	459.031	5.895	8.563	53.609	918.667	6.589	2.527	10.106
L3	17.077	13.176	459.031	5.895	8.563	53.609	918.667	6.589	2.527	10.106
	18.273	14.111	563.794	6.313	9.161	61.543	1128.331	7.057	2.734	10.935
L4	18.273	14.111	563.794	6.313	9.161	61.543	1128.331	7.057	2.734	10.935
	19.469	15.046	683.395	6.731	9.759	70.026	1367.689	7.524	2.941	11.765
L5	19.469	15.046	683.395	6.731	9.759	70.026	1367.689	7.524	2.941	11.765
	20.665	15.980	818.816	7.149	10.358	79.055	1638.709	7.992	3.148	12.594
L6	20.665	15.980	818.816	7.149	10.358	79.055	1638.709	7.992	3.148	12.594
	21.861	16.915	971.040	7.567	10.956	88.632	1943.357	8.459	3.356	13.423
L7	21.861	16.915	971.040	7.567	10.956	88.632	1943.357	8.459	3.356	13.423
	23.057	17.849	1141.049	7.985	11.554	98.757	2283.600	8.926	3.563	14.252
L8	23.057	17.849	1141.049	7.985	11.554	98.757	2283.600	8.926	3.563	14.252
	24.253	18.784	1329.827	8.404	12.152	109.429	2661.403	9.394	3.770	15.081
L9	24.253	18.784	1329.827	8.404	12.152	109.429	2661.403	9.394	3.770	15.081
	25.449	19.718	1538.355	8.822	12.751	120.648	3078.735	9.861	3.978	15.91
L10	25.449	19.718	1538.355	8.822	12.751	120.648	3078.735	9.861	3.978	15.91
	26.386	20.451	1716.245	9.149	13.220	129.825	3434.748	10.227	4.140	16.56
L11	25.850	28.880	2148.134	8.614	12.517	171.623	4299.094	14.443	3.676	9.804
	26.146	30.269	2473.069	9.028	13.109	188.652	4949.393	15.137	3.882	10.351
L12	26.146	30.269	2473.069	9.028	13.109	188.652	4949.393	15.137	3.882	10.351
	27.330	31.657	2829.224	9.442	13.702	206.487	5662.170	15.831	4.087	10.899
L13	27.330	31.657	2829.224	9.442	13.702	206.487	5662.170	15.831	4.087	10.899
	28.515	33.045	3218.029	9.856	14.294	225.127	6440.292	16.526	4.292	11.446
L14	28.515	33.045	3218.029	9.856	14.294	225.127	6440.292	16.526	4.292	11.446
	29.699	34.434	3640.916	10.270	14.887	244.573	7286.623	17.220	4.498	11.994
L15	29.699	34.434	3640.916	10.270	14.887	244.573	7286.623	17.220	4.498	11.994
	30.883	35.822	4099.318	10.684	15.479	264.824	8204.030	17.914	4.703	12.541
L16	30.883	35.822	4099.318	10.684	15.479	264.824	8204.030	17.914	4.703	12.541
	32.068	37.210	4594.666	11.098	16.072	285.881	9195.377	18.609	4.908	13.089
L17	32.068	37.210	4594.666	11.098	16.072	285.881	9195.377	18.609	4.908	13.089
	33.252	38.599	5128.392	11.512	16.664	307.744	10263.533	19.303	5.114	13.636
L18	33.252	38.599	5128.392	11.512	16.664	307.744	10263.533	19.303	5.114	13.636
	34.437	39.987	5701.929	11.926	17.257	330.412	11411.361	19.997	5.319	14.184
L19	34.437	39.987	5701.929	11.926	17.257	330.412	11411.361	19.997	5.319	14.184
	36.660	42.593	6890.944	12.704	18.369	375.134	13790.955	21.301	5.704	15.211
L20	35.897	40.306	5839.518	12.022	17.393	335.735	11686.719	20.157	5.366	14.309
	36.134	41.976	6595.985	12.520	18.106	364.296	13200.650	20.992	5.613	14.968
L21	36.134	41.976	6595.985	12.520	18.106	364.296	13200.650	20.992	5.613	14.968
	36.477	42.378	6787.295	12.640	18.278	371.343	13583.522	21.193	5.672	15.126
L22	36.477	42.378	6787.295	12.640	18.278	371.343	13583.522	21.193	5.672	15.126
	36.536	42.448	6820.672	12.660	18.307	372.566	13650.319	21.228	5.683	15.154
L23	36.536	42.448	6820.672	12.660	18.307	372.566	13650.319	21.228	5.683	15.154

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
	37.719	43.835	7511.389	13.074	18.899	397.443	15032.661	21.922	5.888	15.701
L24	37.719	43.835	7511.389	13.074	18.899	397.443	15032.661	21.922	5.888	15.701
	38.844	45.153	8209.344	13.467	19.462	421.821	16429.491	22.581	6.083	16.22
L25	38.793	83.563	14933.620	13.352	19.462	767.335	29886.890	41.789	5.511	7.872
	38.853	83.692	15003.134	13.372	19.491	769.736	30026.010	41.854	5.521	7.887
L26	38.853	83.692	15003.134	13.372	19.491	769.736	30026.010	41.854	5.521	7.887
	39.030	84.081	15212.972	13.434	19.580	776.962	30445.961	42.048	5.552	7.931
L27	39.080	45.430	8361.587	13.550	19.580	427.046	16734.176	22.719	6.124	16.33
	39.139	45.499	8399.939	13.570	19.610	428.357	16810.931	22.754	6.134	16.357
L28	39.139	45.499	8399.939	13.570	19.610	428.357	16810.931	22.754	6.134	16.357
	40.323	46.886	9191.815	13.984	20.202	455.003	18395.725	23.448	6.339	16.904
L29	40.323	46.886	9191.815	13.984	20.202	455.003	18395.725	23.448	6.339	16.904
	41.506	48.273	10031.958	14.398	20.794	482.453	20077.116	24.141	6.544	17.451
L30	41.506	48.273	10031.958	14.398	20.794	482.453	20077.116	24.141	6.544	17.451
	42.689	49.660	10921.795	14.812	21.386	510.707	21857.961	24.835	6.749	17.998
L31	42.689	49.660	10921.795	14.812	21.386	510.707	21857.961	24.835	6.749	17.998
	43.873	51.048	11862.754	15.225	21.978	539.765	23741.117	25.529	6.954	18.545
L32	43.873	51.048	11862.754	15.225	21.978	539.765	23741.117	25.529	6.954	18.545
	46.453	54.072	14098.573	16.127	23.268	605.910	28215.698	27.041	7.402	19.737
L33	45.676	59.939	14108.729	15.323	22.150	636.975	28236.023	29.975	6.904	15.78
	45.912	62.271	15820.627	15.919	23.003	687.770	31662.071	31.141	7.199	16.456
L34	45.912	62.271	15820.627	15.919	23.003	687.770	31662.071	31.141	7.199	16.456
	47.091	63.883	17081.742	16.332	23.593	724.027	34185.960	31.948	7.404	16.923
L35	47.091	63.883	17081.742	16.332	23.593	724.027	34185.960	31.948	7.404	16.923
	48.270	65.496	18408.155	16.744	24.183	761.215	36840.532	32.754	7.608	17.39
L36	48.270	65.496	18408.155	16.744	24.183	761.215	36840.532	32.754	7.608	17.39
	49.450	67.108	19801.515	17.156	24.772	799.335	39629.084	33.561	7.813	17.857
L37	49.450	67.108	19801.515	17.156	24.772	799.335	39629.084	33.561	7.813	17.857
	50.629	68.721	21263.469	17.568	25.362	838.386	42554.917	34.367	8.017	18.324
L38	50.629	68.721	21263.469	17.568	25.362	838.386	42554.917	34.367	8.017	18.324
	51.808	70.333	22795.666	17.981	25.952	878.368	45621.328	35.173	8.221	18.792
L39	51.808	70.333	22795.666	17.981	25.952	878.368	45621.328	35.173	8.221	18.792
	52.987	71.946	24399.755	18.393	26.542	919.282	48831.615	35.980	8.426	19.259
L40	52.987	71.946	24399.755	18.393	26.542	919.282	48831.615	35.980	8.426	19.259
	54.166	73.558	26077.383	18.805	27.132	961.127	52189.079	36.786	8.630	19.726
L41	54.166	73.558	26077.383	18.805	27.132	961.127	52189.079	36.786	8.630	19.726
	55.345	75.171	27830.198	19.217	27.722	1003.904	55697.016	37.593	8.834	20.193
L42	55.345	75.171	27830.198	19.217	27.722	1003.904	55697.016	37.593	8.834	20.193
	55.781	75.767	28497.398	19.370	27.940	1019.950	57032.294	37.891	8.910	20.366

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 182.000-177.000				1	1	1			
L2 177.000-172.000				1	1	1			
L3 172.000-167.000				1	1	1			
L4 167.000-162.000				1	1	1			
L5 162.000-157.000				1	1	1			
L6 157.000-152.000				1	1	1			
L7 152.000-147.000				1	1	1			
L8 147.000-142.000				1	1	1			
L9 142.000-137.000				1	1	1			
L10 137.000-133.081				1	1	1			
L11 133.081-131.834				1	1	1			
L12 131.834-126.834				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
L13 126.834-121.834				1	1	1			
L14 121.834-116.834				1	1	1			
L15 116.834-111.834				1	1	1			
L16 111.834-106.834				1	1	1			
L17 106.834-101.834				1	1	1			
L18 101.834-96.834				1	1	1			
L19 96.834-87.449				1	1	1			
L20 87.449-86.449				1	1	1			
L21 86.449-85.000				1	1	1			
L22 85.000-84.750				1	1	1			
L23 84.750-79.750				1	1	1			
L24 79.750-75.000				1	1	1			
L25 75.000-74.750				1	1	0.952576			
L26 74.750-74.000				1	1	0.950651			
L27 74.000-73.750				1	1	1			
L28 73.750-68.750				1	1	1			
L29 68.750-63.750				1	1	1			
L30 63.750-58.750				1	1	1			
L31 58.750-53.750				1	1	1			
L32 53.750-42.848				1	1	1			
L33 42.848-41.848				1	1	1			
L34 41.848-36.848				1	1	1			
L35 36.848-31.848				1	1	1			
L36 31.848-26.848				1	1	1			
L37 26.848-21.848				1	1	1			
L38 21.848-16.848				1	1	1			
L39 16.848-11.848				1	1	1			
L40 11.848-6.848				1	1	1			
L41 6.848-1.848				1	1	1			
L42 1.848-0.000				1	1	1			

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 klf
*										
LDF5-50A(7/8)	B	No	Surface Ar (CaAa)	140.000 - 0.000	1	1	-0.130 -0.130	1.090		0.000
HB114-1-0813U4-M5F(1-1/4)	B	No	Surface Ar (CaAa)	140.000 - 0.000	3	3	-0.120 -0.080	1.540		0.001
*										
LDF4-50A(1/2)	B	No	Surface Ar (CaAa)	73.000 - 0.000	1	1	-0.150 -0.150	0.630		0.000
*										
Safety Line 3/8	B	No	Surface Ar (CaAa)	182.000 - 0.000	1	1	0.250 0.250	0.375		0.000
*										
PL 5.75"x1"	A	No	Surface Af (CaAa)	77.000 - 47.000	1	1	0.150 0.200	5.750	13.500	0.000
PL 5.75"x1"	B	No	Surface Af (CaAa)	77.000 - 47.000	1	1	0.150 0.200	5.750	13.500	0.000
PL 5.75"x1"	C	No	Surface Af (CaAa)	77.000 - 47.000	1	1	0.150 0.200	5.750	13.500	0.000
*										
PL 5.75"x1"	A	No	Surface Af (CaAa)	87.000 - 72.000	1	1	0.000 0.050	5.750	13.500	0.000
PL 5.75"x1"	B	No	Surface Af (CaAa)	87.000 - 72.000	1	1	0.000 0.050	5.750	13.500	0.000
PL 5.75"x1"	C	No	Surface Af (CaAa)	87.000 - 72.000	1	1	0.000 0.050	5.750	13.500	0.000
*										
CU12PSM9P6XXX(1-1/2)	C	No	Surface Ar (CaAa)	130.000 - 0.000	1	1	0.100 0.100	1.600		0.002

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 klf
LDF5-50A(7/8)	C	No	No	Inside Pole	178.000 - 0.000	12	No Ice	0.000	0.000
							1/2" Ice	0.000	0.000
							1" Ice	0.000	0.000
							2" Ice	0.000	0.000
*									
LDF7-50A(1-5/8)	B	No	No	Inside Pole	168.000 - 0.000	6	No Ice	0.000	0.001
							1/2" Ice	0.000	0.001
							1" Ice	0.000	0.001
							2" Ice	0.000	0.001
WR-VG66ST-BRD_CCIV2(7/8)	B	No	No	Inside Pole	168.000 - 0.000	4	No Ice	0.000	0.001
							1/2" Ice	0.000	0.001
							1" Ice	0.000	0.001
							2" Ice	0.000	0.001
FB-L98B-034-XXX(3/8)	B	No	No	Inside Pole	168.000 - 0.000	1	No Ice	0.000	0.000
							1/2" Ice	0.000	0.000
							1" Ice	0.000	0.000
							2" Ice	0.000	0.000
2-1/2" Rigid Conduit	B	No	No	Inside Pole	168.000 - 0.000	2	No Ice	0.000	0.003
							1/2" Ice	0.000	0.003
							1" Ice	0.000	0.003
							2" Ice	0.000	0.003
FB-L98B-034-XXX(3/8)	B	No	No	Inside Pole	168.000 - 0.000	2	No Ice	0.000	0.000
							1/2" Ice	0.000	0.000
							1" Ice	0.000	0.000
							2" Ice	0.000	0.000
WR-VG86ST-BRD(3/4)	B	No	No	Inside Pole	168.000 - 0.000	4	No Ice	0.000	0.001
							1/2" Ice	0.000	0.001
							1" Ice	0.000	0.001
							2" Ice	0.000	0.001
*									

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight klf
HB158-21U6S24-xxM_TMO(1-5/8) *	B	No	No	Inside Pole	157.000 - 0.000	3	No Ice	0.000	0.003
							1/2" Ice	0.000	0.003
							1" Ice	0.000	0.003
							2" Ice	0.000	0.003
LDF4-50A(1/2)	A	No	No	Inside Pole	90.000 - 0.000	1	No Ice	0.000	0.000
							1/2" Ice	0.000	0.000
							1" Ice	0.000	0.000
							2" Ice	0.000	0.000
LDF7-50A(1-5/8)	A	No	No	Inside Pole	90.000 - 0.000	7	No Ice	0.000	0.001
							1/2" Ice	0.000	0.001
							1" Ice	0.000	0.001
							2" Ice	0.000	0.001

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	182.000-177.000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.188	0.000	0.001
		C	0.000	0.000	0.000	0.000	0.004
L2	177.000-172.000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.188	0.000	0.001
		C	0.000	0.000	0.000	0.000	0.020
L3	172.000-167.000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.188	0.000	0.018
		C	0.000	0.000	0.000	0.000	0.020
L4	167.000-162.000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.188	0.000	0.086
		C	0.000	0.000	0.000	0.000	0.020
L5	162.000-157.000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.188	0.000	0.086
		C	0.000	0.000	0.000	0.000	0.020
L6	157.000-152.000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.188	0.000	0.123
		C	0.000	0.000	0.000	0.000	0.020
L7	152.000-147.000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.188	0.000	0.123
		C	0.000	0.000	0.000	0.000	0.020
L8	147.000-142.000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.188	0.000	0.123
		C	0.000	0.000	0.000	0.000	0.020
L9	142.000-137.000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	1.900	0.000	0.135
		C	0.000	0.000	0.000	0.000	0.020
L10	137.000-133.081	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	2.385	0.000	0.112
		C	0.000	0.000	0.000	0.000	0.016
L11	133.081-131.834	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.759	0.000	0.036
		C	0.000	0.000	0.000	0.000	0.005
L12	131.834-126.834	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	3.043	0.000	0.143
		C	0.000	0.000	0.507	0.000	0.027
L13	126.834-121.834	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	3.043	0.000	0.143
		C	0.000	0.000	0.800	0.000	0.032
L14	121.834-116.834	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	3.043	0.000	0.143
		C	0.000	0.000	0.800	0.000	0.032
L15	116.834-111.834	A	0.000	0.000	0.000	0.000	0.000

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
		B	0.000	0.000	3.043	0.000	0.143
		C	0.000	0.000	0.800	0.000	0.032
L16	111.834-106.834	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	3.043	0.000	0.143
		C	0.000	0.000	0.800	0.000	0.032
L17	106.834-101.834	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	3.043	0.000	0.143
		C	0.000	0.000	0.800	0.000	0.032
L18	101.834-96.834	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	3.043	0.000	0.143
		C	0.000	0.000	0.800	0.000	0.032
L19	96.834-87.449	A	0.000	0.000	0.000	0.000	0.015
		B	0.000	0.000	5.711	0.000	0.268
		C	0.000	0.000	1.502	0.000	0.059
L20	87.449-86.449	A	0.000	0.000	0.528	0.000	0.006
		B	0.000	0.000	1.137	0.000	0.029
		C	0.000	0.000	0.688	0.000	0.006
L21	86.449-85.000	A	0.000	0.000	1.389	0.000	0.009
		B	0.000	0.000	2.270	0.000	0.041
		C	0.000	0.000	1.620	0.000	0.009
L22	85.000-84.750	A	0.000	0.000	0.240	0.000	0.001
		B	0.000	0.000	0.392	0.000	0.007
		C	0.000	0.000	0.280	0.000	0.002
L23	84.750-79.750	A	0.000	0.000	4.792	0.000	0.029
		B	0.000	0.000	7.834	0.000	0.143
		C	0.000	0.000	5.592	0.000	0.032
L24	79.750-75.000	A	0.000	0.000	6.469	0.000	0.028
		B	0.000	0.000	9.359	0.000	0.136
		C	0.000	0.000	7.229	0.000	0.030
L25	75.000-74.750	A	0.000	0.000	0.479	0.000	0.001
		B	0.000	0.000	0.631	0.000	0.007
		C	0.000	0.000	0.519	0.000	0.002
L26	74.750-74.000	A	0.000	0.000	1.438	0.000	0.004
		B	0.000	0.000	1.894	0.000	0.021
		C	0.000	0.000	1.558	0.000	0.005
L27	74.000-73.750	A	0.000	0.000	0.479	0.000	0.001
		B	0.000	0.000	0.631	0.000	0.007
		C	0.000	0.000	0.519	0.000	0.002
L28	73.750-68.750	A	0.000	0.000	6.469	0.000	0.029
		B	0.000	0.000	9.779	0.000	0.144
		C	0.000	0.000	7.269	0.000	0.032
L29	68.750-63.750	A	0.000	0.000	4.792	0.000	0.029
		B	0.000	0.000	8.149	0.000	0.144
		C	0.000	0.000	5.592	0.000	0.032
L30	63.750-58.750	A	0.000	0.000	4.792	0.000	0.029
		B	0.000	0.000	8.149	0.000	0.144
		C	0.000	0.000	5.592	0.000	0.032
L31	58.750-53.750	A	0.000	0.000	4.792	0.000	0.029
		B	0.000	0.000	8.149	0.000	0.144
		C	0.000	0.000	5.592	0.000	0.032
L32	53.750-42.848	A	0.000	0.000	6.469	0.000	0.064
		B	0.000	0.000	13.789	0.000	0.313
		C	0.000	0.000	8.213	0.000	0.069
L33	42.848-41.848	A	0.000	0.000	0.000	0.000	0.006
		B	0.000	0.000	0.671	0.000	0.029
		C	0.000	0.000	0.160	0.000	0.006
L34	41.848-36.848	A	0.000	0.000	0.000	0.000	0.029
		B	0.000	0.000	3.357	0.000	0.144
		C	0.000	0.000	0.800	0.000	0.032
L35	36.848-31.848	A	0.000	0.000	0.000	0.000	0.029
		B	0.000	0.000	3.357	0.000	0.144
		C	0.000	0.000	0.800	0.000	0.032
L36	31.848-26.848	A	0.000	0.000	0.000	0.000	0.029
		B	0.000	0.000	3.357	0.000	0.144
		C	0.000	0.000	0.800	0.000	0.032
L37	26.848-21.848	A	0.000	0.000	0.000	0.000	0.029
		B	0.000	0.000	3.357	0.000	0.144
		C	0.000	0.000	0.800	0.000	0.032
L38	21.848-16.848	A	0.000	0.000	0.000	0.000	0.029

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
		B	0.000	0.000	3.357	0.000	0.144
		C	0.000	0.000	0.800	0.000	0.032
L39	16.848-11.848	A	0.000	0.000	0.000	0.000	0.029
		B	0.000	0.000	3.357	0.000	0.144
		C	0.000	0.000	0.800	0.000	0.032
L40	11.848-6.848	A	0.000	0.000	0.000	0.000	0.029
		B	0.000	0.000	3.357	0.000	0.144
		C	0.000	0.000	0.800	0.000	0.032
L41	6.848-1.848	A	0.000	0.000	0.000	0.000	0.029
		B	0.000	0.000	3.357	0.000	0.144
		C	0.000	0.000	0.800	0.000	0.032
L42	1.848-0.000	A	0.000	0.000	0.000	0.000	0.011
		B	0.000	0.000	1.241	0.000	0.053
		C	0.000	0.000	0.296	0.000	0.012

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	182.000-177.000	A	1.510	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	1.698	0.000	0.018
		C		0.000	0.000	0.000	0.000	0.004
L2	177.000-172.000	A	1.506	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	1.694	0.000	0.018
		C		0.000	0.000	0.000	0.000	0.020
L3	172.000-167.000	A	1.502	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	1.689	0.000	0.035
		C		0.000	0.000	0.000	0.000	0.020
L4	167.000-162.000	A	1.497	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	1.685	0.000	0.103
		C		0.000	0.000	0.000	0.000	0.020
L5	162.000-157.000	A	1.493	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	1.680	0.000	0.103
		C		0.000	0.000	0.000	0.000	0.020
L6	157.000-152.000	A	1.488	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	1.675	0.000	0.140
		C		0.000	0.000	0.000	0.000	0.020
L7	152.000-147.000	A	1.483	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	1.670	0.000	0.140
		C		0.000	0.000	0.000	0.000	0.020
L8	147.000-142.000	A	1.478	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	1.665	0.000	0.140
		C		0.000	0.000	0.000	0.000	0.020
L9	142.000-137.000	A	1.473	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	5.708	0.000	0.194
		C		0.000	0.000	0.000	0.000	0.020
L10	137.000-133.081	A	1.468	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	6.577	0.000	0.179
		C		0.000	0.000	0.000	0.000	0.016
L11	133.081-131.834	A	1.465	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	2.093	0.000	0.057
		C		0.000	0.000	0.000	0.000	0.005
L12	131.834-126.834	A	1.462	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	8.370	0.000	0.228
		C		0.000	0.000	1.432	0.000	0.045
L13	126.834-121.834	A	1.456	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	8.351	0.000	0.228
		C		0.000	0.000	2.256	0.000	0.059
L14	121.834-116.834	A	1.450	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	8.332	0.000	0.227
		C		0.000	0.000	2.250	0.000	0.059
L15	116.834-111.834	A	1.444	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	8.312	0.000	0.227
		C		0.000	0.000	2.244	0.000	0.058
L16	111.834-106.834	A	1.437	0.000	0.000	0.000	0.000	0.000

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
		B		0.000	0.000	8.291	0.000	0.226
		C		0.000	0.000	2.237	0.000	0.058
L17	106.834-101.834	A	1.431	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	8.269	0.000	0.226
		C		0.000	0.000	2.231	0.000	0.058
L18	101.834-96.834	A	1.424	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	8.246	0.000	0.225
		C		0.000	0.000	2.224	0.000	0.058
L19	96.834-87.449	A	1.413	0.000	0.000	0.000	0.000	0.015
		B		0.000	0.000	15.413	0.000	0.421
		C		0.000	0.000	4.153	0.000	0.108
L20	87.449-86.449	A	1.405	0.000	0.000	0.660	0.000	0.012
		B		0.000	0.000	2.303	0.000	0.051
		C		0.000	0.000	1.103	0.000	0.017
L21	86.449-85.000	A	1.403	0.000	0.000	1.734	0.000	0.023
		B		0.000	0.000	4.104	0.000	0.080
		C		0.000	0.000	2.372	0.000	0.031
L22	85.000-84.750	A	1.401	0.000	0.000	0.299	0.000	0.004
		B		0.000	0.000	0.708	0.000	0.014
		C		0.000	0.000	0.409	0.000	0.005
L23	84.750-79.750	A	1.397	0.000	0.000	5.980	0.000	0.080
		B		0.000	0.000	14.140	0.000	0.274
		C		0.000	0.000	8.177	0.000	0.108
L24	79.750-75.000	A	1.388	0.000	0.000	8.149	0.000	0.096
		B		0.000	0.000	15.874	0.000	0.280
		C		0.000	0.000	10.228	0.000	0.122
L25	75.000-74.750	A	1.384	0.000	0.000	0.607	0.000	0.007
		B		0.000	0.000	1.013	0.000	0.016
		C		0.000	0.000	0.717	0.000	0.008
L26	74.750-74.000	A	1.383	0.000	0.000	1.822	0.000	0.020
		B		0.000	0.000	3.039	0.000	0.048
		C		0.000	0.000	2.150	0.000	0.024
L27	74.000-73.750	A	1.382	0.000	0.000	0.607	0.000	0.007
		B		0.000	0.000	1.013	0.000	0.016
		C		0.000	0.000	0.716	0.000	0.008
L28	73.750-68.750	A	1.377	0.000	0.000	8.258	0.000	0.097
		B		0.000	0.000	17.792	0.000	0.304
		C		0.000	0.000	10.435	0.000	0.124
L29	68.750-63.750	A	1.367	0.000	0.000	6.159	0.000	0.079
		B		0.000	0.000	15.903	0.000	0.288
		C		0.000	0.000	8.326	0.000	0.106
L30	63.750-58.750	A	1.356	0.000	0.000	6.148	0.000	0.079
		B		0.000	0.000	15.847	0.000	0.286
		C		0.000	0.000	8.304	0.000	0.105
L31	58.750-53.750	A	1.345	0.000	0.000	6.136	0.000	0.078
		B		0.000	0.000	15.787	0.000	0.284
		C		0.000	0.000	8.281	0.000	0.104
L32	53.750-42.848	A	1.324	0.000	0.000	8.257	0.000	0.129
		B		0.000	0.000	29.109	0.000	0.574
		C		0.000	0.000	12.889	0.000	0.185
L33	42.848-41.848	A	1.307	0.000	0.000	0.000	0.000	0.006
		B		0.000	0.000	1.913	0.000	0.047
		C		0.000	0.000	0.425	0.000	0.011
L34	41.848-36.848	A	1.298	0.000	0.000	0.000	0.000	0.029
		B		0.000	0.000	9.450	0.000	0.231
		C		0.000	0.000	2.098	0.000	0.055
L35	36.848-31.848	A	1.280	0.000	0.000	0.000	0.000	0.029
		B		0.000	0.000	9.375	0.000	0.230
		C		0.000	0.000	2.080	0.000	0.054
L36	31.848-26.848	A	1.260	0.000	0.000	0.000	0.000	0.029
		B		0.000	0.000	9.290	0.000	0.228
		C		0.000	0.000	2.060	0.000	0.054
L37	26.848-21.848	A	1.237	0.000	0.000	0.000	0.000	0.029
		B		0.000	0.000	9.191	0.000	0.225
		C		0.000	0.000	2.037	0.000	0.053
L38	21.848-16.848	A	1.209	0.000	0.000	0.000	0.000	0.029
		B		0.000	0.000	9.072	0.000	0.223
		C		0.000	0.000	2.009	0.000	0.052
L39	16.848-11.848	A	1.173	0.000	0.000	0.000	0.000	0.029

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
		B		0.000	0.000	8.920	0.000	0.219
		C		0.000	0.000	1.973	0.000	0.051
L40	11.848-6.848	A	1.124	0.000	0.000	0.000	0.000	0.029
		B		0.000	0.000	8.711	0.000	0.215
		C		0.000	0.000	1.924	0.000	0.050
L41	6.848-1.848	A	1.041	0.000	0.000	0.000	0.000	0.029
		B		0.000	0.000	8.359	0.000	0.208
		C		0.000	0.000	1.841	0.000	0.048
L42	1.848-0.000	A	0.892	0.000	0.000	0.000	0.000	0.011
		B		0.000	0.000	2.855	0.000	0.072
		C		0.000	0.000	0.625	0.000	0.017

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	182.000-177.000	0.300	0.000	1.210	0.000
L2	177.000-172.000	0.300	0.000	1.232	0.000
L3	172.000-167.000	0.300	0.000	1.251	0.000
L4	167.000-162.000	0.300	0.000	1.268	0.000
L5	162.000-157.000	0.301	0.000	1.283	0.000
L6	157.000-152.000	0.301	0.000	1.297	0.000
L7	152.000-147.000	0.301	0.000	1.308	0.000
L8	147.000-142.000	0.301	0.000	1.319	0.000
L9	142.000-137.000	1.990	-1.608	2.786	-1.697
L10	137.000-133.081	2.817	-2.392	3.427	-2.420
L11	133.081-131.834	2.821	-2.395	3.435	-2.425
L12	131.834-126.834	2.588	-1.708	3.139	-1.604
L13	126.834-121.834	2.483	-1.350	3.022	-1.185
L14	121.834-116.834	2.510	-1.365	3.078	-1.208
L15	116.834-111.834	2.535	-1.379	3.132	-1.230
L16	111.834-106.834	2.559	-1.392	3.183	-1.251
L17	106.834-101.834	2.582	-1.404	3.231	-1.271
L18	101.834-96.834	2.604	-1.416	3.277	-1.291
L19	96.834-87.449	2.633	-1.432	3.339	-1.317
L20	87.449-86.449	1.720	-0.935	2.575	-1.016
L21	86.449-85.000	1.346	-0.732	2.169	-0.857
L22	85.000-84.750	1.350	-0.734	2.176	-0.860
L23	84.750-79.750	1.363	-0.741	2.196	-0.868
L24	79.750-75.000	1.154	-0.627	1.938	-0.767
L25	75.000-74.750	0.947	-0.515	1.657	-0.657
L26	74.750-74.000	0.949	-0.516	1.660	-0.658
L27	74.000-73.750	0.951	-0.517	1.663	-0.659
L28	73.750-68.750	1.307	-0.768	2.280	-1.131
L29	68.750-63.750	1.566	-0.931	2.633	-1.346
L30	63.750-58.750	1.591	-0.946	2.671	-1.367
L31	58.750-53.750	1.616	-0.960	2.707	-1.386
L32	53.750-42.848	1.992	-1.184	3.150	-1.615
L33	42.848-41.848	2.992	-1.778	4.111	-2.108
L34	41.848-36.848	3.001	-1.784	4.104	-2.109
L35	36.848-31.848	3.016	-1.793	4.124	-2.122
L36	31.848-26.848	3.030	-1.801	4.138	-2.133
L37	26.848-21.848	3.044	-1.809	4.146	-2.142
L38	21.848-16.848	3.057	-1.817	4.147	-2.147
L39	16.848-11.848	3.070	-1.825	4.136	-2.148
L40	11.848-6.848	3.082	-1.832	4.104	-2.141
L41	6.848-1.848	3.094	-1.839	4.024	-2.116
L42	1.848-0.000	3.102	-1.844	3.835	-2.049

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

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L1	25	Safety Line 3/8	177.00 - 182.00	1.0000	1.0000
L2	25	Safety Line 3/8	172.00 - 177.00	1.0000	1.0000
L3	25	Safety Line 3/8	167.00 - 172.00	1.0000	1.0000
L4	25	Safety Line 3/8	162.00 - 167.00	1.0000	1.0000
L5	25	Safety Line 3/8	157.00 - 162.00	1.0000	1.0000
L6	25	Safety Line 3/8	152.00 - 157.00	1.0000	1.0000
L7	25	Safety Line 3/8	147.00 - 152.00	1.0000	1.0000
L8	25	Safety Line 3/8	142.00 - 147.00	1.0000	1.0000
L9	17	LDF5-50A(7/8)	137.00 - 140.00	1.0000	1.0000
L9	18	HB114-1-0813U4-M5F(1-1/4)	137.00 - 140.00	1.0000	1.0000
L9	25	Safety Line 3/8	137.00 - 142.00	1.0000	1.0000
L10	17	LDF5-50A(7/8)	133.08 - 137.00	1.0000	1.0000
L10	18	HB114-1-0813U4-M5F(1-1/4)	133.08 - 137.00	1.0000	1.0000
L10	25	Safety Line 3/8	133.08 - 137.00	1.0000	1.0000
L11	17	LDF5-50A(7/8)	131.83 - 133.08	1.0000	1.0000
L11	18	HB114-1-0813U4-M5F(1-1/4)	131.83 - 133.08	1.0000	1.0000
L11	25	Safety Line 3/8	131.83 - 133.08	1.0000	1.0000
L12	17	LDF5-50A(7/8)	126.83 - 131.83	1.0000	1.0000
L12	18	HB114-1-0813U4-M5F(1-1/4)	126.83 - 131.83	1.0000	1.0000
L12	25	Safety Line 3/8	126.83 - 131.83	1.0000	1.0000
L12	35	CU12PSM9P6XXX(1-1/2)	126.83 - 130.00	1.0000	1.0000
L13	17	LDF5-50A(7/8)	121.83 - 126.83	1.0000	1.0000
L13	18	HB114-1-0813U4-M5F(1-1/4)	121.83 - 126.83	1.0000	1.0000
L13	25	Safety Line 3/8	121.83 - 126.83	1.0000	1.0000
L13	35	CU12PSM9P6XXX(1-1/2)	121.83 - 126.83	1.0000	1.0000
L14	17	LDF5-50A(7/8)	116.83 - 121.83	1.0000	1.0000
L14	18	HB114-1-0813U4-M5F(1-1/4)	116.83 - 121.83	1.0000	1.0000
L14	25	Safety Line 3/8	116.83 - 121.83	1.0000	1.0000
L14	35	CU12PSM9P6XXX(1-1/2)	116.83 - 121.83	1.0000	1.0000
L15	17	LDF5-50A(7/8)	111.83 - 116.83	1.0000	1.0000
L15	18	HB114-1-0813U4-M5F(1-1/4)	111.83 - 116.83	1.0000	1.0000
L15	25	Safety Line 3/8	111.83 - 116.83	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L15	35	CU12PSM9P6XXX(1-1/2)	111.83 - 116.83	1.0000	1.0000
L16	17	LDF5-50A(7/8)	106.83 - 111.83	1.0000	1.0000
L16	18	HB114-1-0813U4-M5F(1-1/4)	106.83 - 111.83	1.0000	1.0000
L16	25	Safety Line 3/8	106.83 - 111.83	1.0000	1.0000
L16	35	CU12PSM9P6XXX(1-1/2)	106.83 - 111.83	1.0000	1.0000
L17	17	LDF5-50A(7/8)	101.83 - 106.83	1.0000	1.0000
L17	18	HB114-1-0813U4-M5F(1-1/4)	101.83 - 106.83	1.0000	1.0000
L17	25	Safety Line 3/8	101.83 - 106.83	1.0000	1.0000
L17	35	CU12PSM9P6XXX(1-1/2)	101.83 - 106.83	1.0000	1.0000
L18	17	LDF5-50A(7/8)	96.83 - 101.83	1.0000	1.0000
L18	18	HB114-1-0813U4-M5F(1-1/4)	96.83 - 101.83	1.0000	1.0000
L18	25	Safety Line 3/8	96.83 - 101.83	1.0000	1.0000
L18	35	CU12PSM9P6XXX(1-1/2)	96.83 - 101.83	1.0000	1.0000
L19	17	LDF5-50A(7/8)	87.45 - 96.83	1.0000	1.0000
L19	18	HB114-1-0813U4-M5F(1-1/4)	87.45 - 96.83	1.0000	1.0000
L19	25	Safety Line 3/8	87.45 - 96.83	1.0000	1.0000
L19	35	CU12PSM9P6XXX(1-1/2)	87.45 - 96.83	1.0000	1.0000
L20	17	LDF5-50A(7/8)	86.45 - 87.45	1.0000	1.0000
L20	18	HB114-1-0813U4-M5F(1-1/4)	86.45 - 87.45	1.0000	1.0000
L20	25	Safety Line 3/8	86.45 - 87.45	1.0000	1.0000
L20	31	PL 5.75"x1"	86.45 - 87.00	1.0000	1.0000
L20	32	PL 5.75"x1"	86.45 - 87.00	1.0000	1.0000
L20	33	PL 5.75"x1"	86.45 - 87.00	1.0000	1.0000
L20	35	CU12PSM9P6XXX(1-1/2)	86.45 - 87.45	1.0000	1.0000
L21	17	LDF5-50A(7/8)	85.00 - 86.45	1.0000	1.0000
L21	18	HB114-1-0813U4-M5F(1-1/4)	85.00 - 86.45	1.0000	1.0000
L21	25	Safety Line 3/8	85.00 - 86.45	1.0000	1.0000
L21	31	PL 5.75"x1"	85.00 - 86.45	1.0000	1.0000
L21	32	PL 5.75"x1"	85.00 - 86.45	1.0000	1.0000
L21	33	PL 5.75"x1"	85.00 - 86.45	1.0000	1.0000
L21	35	CU12PSM9P6XXX(1-1/2)	85.00 - 86.45	1.0000	1.0000
L22	17	LDF5-50A(7/8)	84.75 - 85.00	1.0000	1.0000
L22	18	HB114-1-0813U4-M5F(1-1/4)	84.75 - 85.00	1.0000	1.0000
L22	25	Safety Line 3/8	84.75 - 85.00	1.0000	1.0000
L22	31	PL 5.75"x1"	84.75 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L22	32	PL 5.75"x1"	85.00 84.75 - 85.00	1.0000	1.0000
L22	33	PL 5.75"x1"	84.75 - 85.00	1.0000	1.0000
L22	35	CU12PSM9P6XXX(1-1/2)	84.75 - 85.00	1.0000	1.0000
L23	17	LDF5-50A(7/8)	79.75 - 84.75	1.0000	1.0000
L23	18	HB114-1-0813U4-M5F(1-1/4)	79.75 - 84.75	1.0000	1.0000
L23	25	Safety Line 3/8	79.75 - 84.75	1.0000	1.0000
L23	31	PL 5.75"x1"	79.75 - 84.75	1.0000	1.0000
L23	32	PL 5.75"x1"	79.75 - 84.75	1.0000	1.0000
L23	33	PL 5.75"x1"	79.75 - 84.75	1.0000	1.0000
L23	35	CU12PSM9P6XXX(1-1/2)	79.75 - 84.75	1.0000	1.0000
L24	17	LDF5-50A(7/8)	75.00 - 79.75	1.0000	1.0000
L24	18	HB114-1-0813U4-M5F(1-1/4)	75.00 - 79.75	1.0000	1.0000
L24	25	Safety Line 3/8	75.00 - 79.75	1.0000	1.0000
L24	27	PL 5.75"x1"	75.00 - 77.00	1.0000	1.0000
L24	28	PL 5.75"x1"	75.00 - 77.00	1.0000	1.0000
L24	29	PL 5.75"x1"	75.00 - 77.00	1.0000	1.0000
L24	31	PL 5.75"x1"	75.00 - 79.75	1.0000	1.0000
L24	32	PL 5.75"x1"	75.00 - 79.75	1.0000	1.0000
L24	33	PL 5.75"x1"	75.00 - 79.75	1.0000	1.0000
L24	35	CU12PSM9P6XXX(1-1/2)	75.00 - 79.75	1.0000	1.0000
L25	17	LDF5-50A(7/8)	74.75 - 75.00	1.0000	1.0000
L25	18	HB114-1-0813U4-M5F(1-1/4)	74.75 - 75.00	1.0000	1.0000
L25	25	Safety Line 3/8	74.75 - 75.00	1.0000	1.0000
L25	27	PL 5.75"x1"	74.75 - 75.00	1.0000	1.0000
L25	28	PL 5.75"x1"	74.75 - 75.00	1.0000	1.0000
L25	29	PL 5.75"x1"	74.75 - 75.00	1.0000	1.0000
L25	31	PL 5.75"x1"	74.75 - 75.00	1.0000	1.0000
L25	32	PL 5.75"x1"	74.75 - 75.00	1.0000	1.0000
L25	33	PL 5.75"x1"	74.75 - 75.00	1.0000	1.0000
L25	35	CU12PSM9P6XXX(1-1/2)	74.75 - 75.00	1.0000	1.0000
L26	17	LDF5-50A(7/8)	74.00 - 74.75	1.0000	1.0000
L26	18	HB114-1-0813U4-M5F(1-1/4)	74.00 - 74.75	1.0000	1.0000
L26	25	Safety Line 3/8	74.00 - 74.75	1.0000	1.0000
L26	27	PL 5.75"x1"	74.00 - 74.75	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L26	28	PL 5.75"x1"	74.00 - 74.75	1.0000	1.0000
L26	29	PL 5.75"x1"	74.00 - 74.75	1.0000	1.0000
L26	31	PL 5.75"x1"	74.00 - 74.75	1.0000	1.0000
L26	32	PL 5.75"x1"	74.00 - 74.75	1.0000	1.0000
L26	33	PL 5.75"x1"	74.00 - 74.75	1.0000	1.0000
L26	35	CU12PSM9P6XXX(1-1/2)	74.00 - 74.75	1.0000	1.0000
L27	17	LDF5-50A(7/8)	73.75 - 74.00	1.0000	1.0000
L27	18	HB114-1-0813U4-M5F(1-1/4)	73.75 - 74.00	1.0000	1.0000
L27	25	Safety Line 3/8	73.75 - 74.00	1.0000	1.0000
L27	27	PL 5.75"x1"	73.75 - 74.00	1.0000	1.0000
L27	28	PL 5.75"x1"	73.75 - 74.00	1.0000	1.0000
L27	29	PL 5.75"x1"	73.75 - 74.00	1.0000	1.0000
L27	31	PL 5.75"x1"	73.75 - 74.00	1.0000	1.0000
L27	32	PL 5.75"x1"	73.75 - 74.00	1.0000	1.0000
L27	33	PL 5.75"x1"	73.75 - 74.00	1.0000	1.0000
L27	35	CU12PSM9P6XXX(1-1/2)	73.75 - 74.00	1.0000	1.0000
L28	17	LDF5-50A(7/8)	68.75 - 73.75	1.0000	1.0000
L28	18	HB114-1-0813U4-M5F(1-1/4)	68.75 - 73.75	1.0000	1.0000
L28	23	LDF4-50A(1/2)	68.75 - 73.00	1.0000	1.0000
L28	25	Safety Line 3/8	68.75 - 73.75	1.0000	1.0000
L28	27	PL 5.75"x1"	68.75 - 73.75	1.0000	1.0000
L28	28	PL 5.75"x1"	68.75 - 73.75	1.0000	1.0000
L28	29	PL 5.75"x1"	68.75 - 73.75	1.0000	1.0000
L28	31	PL 5.75"x1"	72.00 - 73.75	1.0000	1.0000
L28	32	PL 5.75"x1"	72.00 - 73.75	1.0000	1.0000
L28	33	PL 5.75"x1"	72.00 - 73.75	1.0000	1.0000
L28	35	CU12PSM9P6XXX(1-1/2)	68.75 - 73.75	1.0000	1.0000
L29	17	LDF5-50A(7/8)	63.75 - 68.75	1.0000	1.0000
L29	18	HB114-1-0813U4-M5F(1-1/4)	63.75 - 68.75	1.0000	1.0000
L29	23	LDF4-50A(1/2)	63.75 - 68.75	1.0000	1.0000
L29	25	Safety Line 3/8	63.75 - 68.75	1.0000	1.0000
L29	27	PL 5.75"x1"	63.75 - 68.75	1.0000	1.0000
L29	28	PL 5.75"x1"	63.75 - 68.75	1.0000	1.0000
L29	29	PL 5.75"x1"	63.75 - 68.75	1.0000	1.0000
L29	35	CU12PSM9P6XXX(1-1/2)	63.75 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
			68.75		
L30	17	LDF5-50A(7/8)	58.75 - 63.75	1.0000	1.0000
L30	18	HB114-1-0813U4-M5F(1-1/4)	58.75 - 63.75	1.0000	1.0000
L30	23	LDF4-50A(1/2)	58.75 - 63.75	1.0000	1.0000
L30	25	Safety Line 3/8	58.75 - 63.75	1.0000	1.0000
L30	27	PL 5.75"x1"	58.75 - 63.75	1.0000	1.0000
L30	28	PL 5.75"x1"	58.75 - 63.75	1.0000	1.0000
L30	29	PL 5.75"x1"	58.75 - 63.75	1.0000	1.0000
L30	35	CU12PSM9P6XXX(1-1/2)	58.75 - 63.75	1.0000	1.0000
L31	17	LDF5-50A(7/8)	53.75 - 58.75	1.0000	1.0000
L31	18	HB114-1-0813U4-M5F(1-1/4)	53.75 - 58.75	1.0000	1.0000
L31	23	LDF4-50A(1/2)	53.75 - 58.75	1.0000	1.0000
L31	25	Safety Line 3/8	53.75 - 58.75	1.0000	1.0000
L31	27	PL 5.75"x1"	53.75 - 58.75	1.0000	1.0000
L31	28	PL 5.75"x1"	53.75 - 58.75	1.0000	1.0000
L31	29	PL 5.75"x1"	53.75 - 58.75	1.0000	1.0000
L31	35	CU12PSM9P6XXX(1-1/2)	53.75 - 58.75	1.0000	1.0000
L32	17	LDF5-50A(7/8)	42.85 - 53.75	1.0000	1.0000
L32	18	HB114-1-0813U4-M5F(1-1/4)	42.85 - 53.75	1.0000	1.0000
L32	23	LDF4-50A(1/2)	42.85 - 53.75	1.0000	1.0000
L32	25	Safety Line 3/8	42.85 - 53.75	1.0000	1.0000
L32	27	PL 5.75"x1"	47.00 - 53.75	1.0000	1.0000
L32	28	PL 5.75"x1"	47.00 - 53.75	1.0000	1.0000
L32	29	PL 5.75"x1"	47.00 - 53.75	1.0000	1.0000
L32	35	CU12PSM9P6XXX(1-1/2)	42.85 - 53.75	1.0000	1.0000
L33	17	LDF5-50A(7/8)	41.85 - 42.85	1.0000	1.0000
L33	18	HB114-1-0813U4-M5F(1-1/4)	41.85 - 42.85	1.0000	1.0000
L33	23	LDF4-50A(1/2)	41.85 - 42.85	1.0000	1.0000
L33	25	Safety Line 3/8	41.85 - 42.85	1.0000	1.0000
L33	35	CU12PSM9P6XXX(1-1/2)	41.85 - 42.85	1.0000	1.0000
L34	17	LDF5-50A(7/8)	36.85 - 41.85	1.0000	1.0000
L34	18	HB114-1-0813U4-M5F(1-1/4)	36.85 - 41.85	1.0000	1.0000
L34	23	LDF4-50A(1/2)	36.85 - 41.85	1.0000	1.0000
L34	25	Safety Line 3/8	36.85 - 41.85	1.0000	1.0000
L34	35	CU12PSM9P6XXX(1-1/2)	36.85 - 41.85	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L35	17	LDF5-50A(7/8)	31.85 - 36.85	1.0000	1.0000
L35	18	HB114-1-0813U4-M5F(1-1/4)	31.85 - 36.85	1.0000	1.0000
L35	23	LDF4-50A(1/2)	31.85 - 36.85	1.0000	1.0000
L35	25	Safety Line 3/8	31.85 - 36.85	1.0000	1.0000
L35	35	CU12PSM9P6XXX(1-1/2)	31.85 - 36.85	1.0000	1.0000
L36	17	LDF5-50A(7/8)	26.85 - 31.85	1.0000	1.0000
L36	18	HB114-1-0813U4-M5F(1-1/4)	26.85 - 31.85	1.0000	1.0000
L36	23	LDF4-50A(1/2)	26.85 - 31.85	1.0000	1.0000
L36	25	Safety Line 3/8	26.85 - 31.85	1.0000	1.0000
L36	35	CU12PSM9P6XXX(1-1/2)	26.85 - 31.85	1.0000	1.0000
L37	17	LDF5-50A(7/8)	21.85 - 26.85	1.0000	1.0000
L37	18	HB114-1-0813U4-M5F(1-1/4)	21.85 - 26.85	1.0000	1.0000
L37	23	LDF4-50A(1/2)	21.85 - 26.85	1.0000	1.0000
L37	25	Safety Line 3/8	21.85 - 26.85	1.0000	1.0000
L37	35	CU12PSM9P6XXX(1-1/2)	21.85 - 26.85	1.0000	1.0000
L38	17	LDF5-50A(7/8)	16.85 - 21.85	1.0000	1.0000
L38	18	HB114-1-0813U4-M5F(1-1/4)	16.85 - 21.85	1.0000	1.0000
L38	23	LDF4-50A(1/2)	16.85 - 21.85	1.0000	1.0000
L38	25	Safety Line 3/8	16.85 - 21.85	1.0000	1.0000
L38	35	CU12PSM9P6XXX(1-1/2)	16.85 - 21.85	1.0000	1.0000
L39	17	LDF5-50A(7/8)	11.85 - 16.85	1.0000	1.0000
L39	18	HB114-1-0813U4-M5F(1-1/4)	11.85 - 16.85	1.0000	1.0000
L39	23	LDF4-50A(1/2)	11.85 - 16.85	1.0000	1.0000
L39	25	Safety Line 3/8	11.85 - 16.85	1.0000	1.0000
L39	35	CU12PSM9P6XXX(1-1/2)	11.85 - 16.85	1.0000	1.0000
L40	17	LDF5-50A(7/8)	6.85 - 11.85	1.0000	1.0000
L40	18	HB114-1-0813U4-M5F(1-1/4)	6.85 - 11.85	1.0000	1.0000
L40	23	LDF4-50A(1/2)	6.85 - 11.85	1.0000	1.0000
L40	25	Safety Line 3/8	6.85 - 11.85	1.0000	1.0000
L40	35	CU12PSM9P6XXX(1-1/2)	6.85 - 11.85	1.0000	1.0000
L41	17	LDF5-50A(7/8)	1.85 - 6.85	1.0000	1.0000
L41	18	HB114-1-0813U4-M5F(1-1/4)	1.85 - 6.85	1.0000	1.0000
L41	23	LDF4-50A(1/2)	1.85 - 6.85	1.0000	1.0000
L41	25	Safety Line 3/8	1.85 - 6.85	1.0000	1.0000
L41	35	CU12PSM9P6XXX(1-1/2)	1.85 - 6.85	1.0000	1.0000
L42	17	LDF5-50A(7/8)	0.00 - 1.85	1.0000	1.0000
L42	18	HB114-1-0813U4-M5F(1-1/4)	0.00 - 1.85	1.0000	1.0000
L42	23	LDF4-50A(1/2)	0.00 - 1.85	1.0000	1.0000
L42	25	Safety Line 3/8	0.00 - 1.85	1.0000	1.0000
L42	35	CU12PSM9P6XXX(1-1/2)	0.00 - 1.85	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
L20	31	PL 5.75"x1"	86.45 - 87.00	Auto	0.0258
L20	32	PL 5.75"x1"	86.45 - 87.00	Auto	0.0258
L20	33	PL 5.75"x1"	86.45 - 87.00	Auto	0.0258
L21	31	PL 5.75"x1"	85.00 - 86.45	Auto	0.0187
L21	32	PL 5.75"x1"	85.00 - 86.45	Auto	0.0187
L21	33	PL 5.75"x1"	85.00 - 86.45	Auto	0.0187
L22	31	PL 5.75"x1"	84.75 - 85.00	Auto	0.0126
L22	32	PL 5.75"x1"	84.75 - 85.00	Auto	0.0126
L22	33	PL 5.75"x1"	84.75 - 85.00	Auto	0.0126
L23	31	PL 5.75"x1"	79.75 - 84.75	Auto	0.0019
L23	32	PL 5.75"x1"	79.75 - 84.75	Auto	0.0019
L23	33	PL 5.75"x1"	79.75 - 84.75	Auto	0.0019
L24	27	PL 5.75"x1"	75.00 - 77.00	Auto	0.0000
L24	28	PL 5.75"x1"	75.00 - 77.00	Auto	0.0000
L24	29	PL 5.75"x1"	75.00 - 77.00	Auto	0.0000
L24	31	PL 5.75"x1"	75.00 - 79.75	Auto	0.0000
L24	32	PL 5.75"x1"	75.00 - 79.75	Auto	0.0000
L24	33	PL 5.75"x1"	75.00 - 79.75	Auto	0.0000
L25	27	PL 5.75"x1"	74.75 - 75.00	Auto	0.0407
L25	28	PL 5.75"x1"	74.75 - 75.00	Auto	0.0407
L25	29	PL 5.75"x1"	74.75 - 75.00	Auto	0.0407
L25	31	PL 5.75"x1"	74.75 - 75.00	Auto	0.0407
L25	32	PL 5.75"x1"	74.75 - 75.00	Auto	0.0407
L25	33	PL 5.75"x1"	74.75 - 75.00	Auto	0.0407
L26	27	PL 5.75"x1"	74.00 - 74.75	Auto	0.0372
L26	28	PL 5.75"x1"	74.00 - 74.75	Auto	0.0372
L26	29	PL 5.75"x1"	74.00 - 74.75	Auto	0.0372
L26	31	PL 5.75"x1"	74.00 - 74.75	Auto	0.0372
L26	32	PL 5.75"x1"	74.00 - 74.75	Auto	0.0372
L26	33	PL 5.75"x1"	74.00 -	Auto	0.0372

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L27	27	PL 5.75"x1"	74.75 73.75 - 74.00	Auto	0.0000
L27	28	PL 5.75"x1"	73.75 - 74.00	Auto	0.0000
L27	29	PL 5.75"x1"	73.75 - 74.00	Auto	0.0000
L27	31	PL 5.75"x1"	73.75 - 74.00	Auto	0.0000
L27	32	PL 5.75"x1"	73.75 - 74.00	Auto	0.0000
L27	33	PL 5.75"x1"	73.75 - 74.00	Auto	0.0000
L28	27	PL 5.75"x1"	68.75 - 73.75	Auto	0.0000
L28	28	PL 5.75"x1"	68.75 - 73.75	Auto	0.0000
L28	29	PL 5.75"x1"	68.75 - 73.75	Auto	0.0000
L28	31	PL 5.75"x1"	72.00 - 73.75	Auto	0.0000
L28	32	PL 5.75"x1"	72.00 - 73.75	Auto	0.0000
L28	33	PL 5.75"x1"	72.00 - 73.75	Auto	0.0000
L29	27	PL 5.75"x1"	63.75 - 68.75	Auto	0.0000
L29	28	PL 5.75"x1"	63.75 - 68.75	Auto	0.0000
L29	29	PL 5.75"x1"	63.75 - 68.75	Auto	0.0000
L30	27	PL 5.75"x1"	58.75 - 63.75	Auto	0.0000
L30	28	PL 5.75"x1"	58.75 - 63.75	Auto	0.0000
L30	29	PL 5.75"x1"	58.75 - 63.75	Auto	0.0000
L31	27	PL 5.75"x1"	53.75 - 58.75	Auto	0.0000
L31	28	PL 5.75"x1"	53.75 - 58.75	Auto	0.0000
L31	29	PL 5.75"x1"	53.75 - 58.75	Auto	0.0000
L32	27	PL 5.75"x1"	47.00 - 53.75	Auto	0.0000
L32	28	PL 5.75"x1"	47.00 - 53.75	Auto	0.0000
L32	29	PL 5.75"x1"	47.00 - 53.75	Auto	0.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft
DS4C06F36D-D	A	From Leg	6.000 0.000	0.000	178.000

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft
APC-2163	A	From Leg	10.000 6.000 0.000	0.000	178.000
APC-1362	B	From Leg	7.000 6.000 0.000	0.000	178.000
APC-4065	B	From Leg	7.000 6.000 0.000	0.000	178.000
APC-301	C	From Leg	6.000 6.000 0.000	0.000	178.000
DS4C06F36D-D	C	From Leg	6.000 6.000 0.000	0.000	178.000
Miscellaneous [NA 502-3]	C	None	10.000	0.000	178.000
*					
ANT450D6-9	A	From Leg	4.000 0.000 7.000	0.000	168.000
*					
DMP65R-BU6D w/ Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	168.000
DMP65R-BU6D w/ Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	168.000
DMP65R-BU6D w/ Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	168.000
HPA-65R-BUU-H6 w/ Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	168.000
HPA-65R-BUU-H6 w/ Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	168.000
HPA-65R-BUU-H6 w/ Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	168.000
7770.00 w/ Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	168.000
7770.00 w/ Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	168.000
7770.00 w/ Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	168.000
QS66512-2 w/ Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	168.000
QS66512-2 w/ Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	168.000
QS66512-2 w/ Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	168.000
(2) TPX-070821	B	From Leg	4.000 0.000 0.000	0.000	168.000
(2) TPX-070821	C	From Leg	4.000 0.000 0.000	0.000	168.000
RRUS 32 B2	A	From Leg	4.000	0.000	168.000

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft
			0.000 0.000		
RRUS 32 B2	B	From Leg	4.000 0.000 0.000	0.000	168.000
RRUS 32 B2	C	From Leg	4.000 0.000 0.000	0.000	168.000
RRUS 32 B2_CCIV2	A	From Leg	4.000 0.000 0.000	0.000	168.000
RRUS 32 B2_CCIV2	B	From Leg	4.000 0.000 0.000	0.000	168.000
RRUS 32 B2_CCIV2	C	From Leg	4.000 0.000 0.000	0.000	168.000
RRUS 32 B66	A	From Leg	4.000 0.000 0.000	0.000	168.000
RRUS 32 B66	B	From Leg	4.000 0.000 0.000	0.000	168.000
RRUS 32 B66	C	From Leg	4.000 0.000 0.000	0.000	168.000
RRUS 4449 B5/B12	A	From Leg	4.000 0.000 0.000	0.000	168.000
RRUS 4449 B5/B12	B	From Leg	4.000 0.000 0.000	0.000	168.000
RRUS 4449 B5/B12	C	From Leg	4.000 0.000 0.000	0.000	168.000
RRUS 4478 B14_CCIV2	A	From Leg	4.000 0.000 0.000	0.000	168.000
RRUS 4478 B14_CCIV2	B	From Leg	4.000 0.000 0.000	0.000	168.000
RRUS 4478 B14_CCIV2	C	From Leg	4.000 0.000 0.000	0.000	168.000
RRUS E2 B29	A	From Leg	4.000 0.000 0.000	0.000	168.000
RRUS E2 B29	B	From Leg	4.000 0.000 0.000	0.000	168.000
RRUS E2 B29	C	From Leg	4.000 0.000 0.000	0.000	168.000
RRUS-32 B30	A	From Leg	4.000 0.000 0.000	0.000	168.000
RRUS-32 B30	B	From Leg	4.000 0.000 0.000	0.000	168.000
RRUS-32 B30	C	From Leg	4.000 0.000 0.000	0.000	168.000
(2) LGP21401	A	From Leg	4.000 0.000 0.000	0.000	168.000

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft
(2) LGP21401	B	From Leg	4.000 0.000 0.000	0.000	168.000
(2) LGP21401	C	From Leg	4.000 0.000 0.000	0.000	168.000
DC6-48-60-18-8C	B	From Leg	4.000 0.000 0.000	0.000	168.000
DC6-48-60-18-8C-EV	A	From Leg	4.000 0.000 0.000	0.000	168.000
DC6-48-60-18-8C-EV	C	From Leg	4.000 0.000 0.000	0.000	168.000
DC6-48-60-18-8F	A	From Leg	4.000 0.000 0.000	0.000	168.000
4' x 2" Pipe Mount	A	From Leg	4.000 0.000 0.000	0.000	168.000
4' x 2" Pipe Mount	B	From Leg	4.000 0.000 0.000	0.000	168.000
4' x 2" Pipe Mount	C	From Leg	4.000 0.000 0.000	0.000	168.000
Platform Mount [LP 304-1_KCKR-HR-1] *	C	None		0.000	168.000
AIR 32 B2A B66AA_T-MOBILE w/ Mount Pipe	A	From Leg	4.000 0.000 2.000	0.000	157.000
AIR 32 B2A B66AA_T-MOBILE w/ Mount Pipe	B	From Leg	4.000 0.000 2.000	0.000	157.000
AIR 32 B2A B66AA_T-MOBILE w/ Mount Pipe	C	From Leg	4.000 0.000 2.000	0.000	157.000
APXVAALL24_43-U-NA20_TMO w/ Mount Pipe	A	From Leg	4.000 0.000 2.000	0.000	157.000
APXVAALL24_43-U-NA20_TMO w/ Mount Pipe	B	From Leg	4.000 0.000 2.000	0.000	157.000
APXVAALL24_43-U-NA20_TMO w/ Mount Pipe	C	From Leg	4.000 0.000 2.000	0.000	157.000
AIR6449 B41_T-MOBILE	A	From Leg	4.000 0.000 2.000	0.000	157.000
AIR6449 B41_T-MOBILE	B	From Leg	4.000 0.000 2.000	0.000	157.000
AIR6449 B41_T-MOBILE	C	From Leg	4.000 0.000 2.000	0.000	157.000
RADIO 4449 B71 B85A_T-MOBILE	A	From Leg	4.000 0.000 2.000	0.000	157.000
RADIO 4449 B71 B85A_T-MOBILE	B	From Leg	4.000 0.000 2.000	0.000	157.000
RADIO 4449 B71 B85A_T-MOBILE	C	From Leg	4.000 0.000 2.000	0.000	157.000

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft
RADIO 4415 B25_TMO	A	From Leg	4.000 0.000 2.000	0.000	157.000
RADIO 4415 B25_TMO	B	From Leg	4.000 0.000 2.000	0.000	157.000
RADIO 4415 B25_TMO	C	From Leg	4.000 0.000 2.000	0.000	157.000
8' x 2" Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	157.000
8' x 2" Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	157.000
8' x 2" Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	157.000
Platform Mount [LP 305-1_KCKR-HR-1] *	C	None		0.000	157.000
800MHZ RRH	A	From Leg	1.000 0.000 -2.000	0.000	142.000
800MHZ RRH	B	From Leg	1.000 0.000 -2.000	0.000	142.000
800MHZ RRH	C	From Leg	1.000 0.000 -2.000	0.000	142.000
800 EXTERNAL NOTCH FILTER	A	From Leg	1.000 0.000 -2.000	0.000	142.000
800 EXTERNAL NOTCH FILTER	B	From Leg	1.000 0.000 -2.000	0.000	142.000
800 EXTERNAL NOTCH FILTER	C	From Leg	1.000 0.000 -2.000	0.000	142.000
1900MHZ RRH (65MHZ)	A	From Leg	1.000 0.000 2.000	0.000	142.000
1900MHZ RRH (65MHZ)	B	From Leg	1.000 0.000 2.000	0.000	142.000
1900MHZ RRH (65MHZ)	C	From Leg	1.000 0.000 2.000	0.000	142.000
Pipe Mount [PM 601-3] *	C	None		0.000	142.000
APXVSPP18-C-A20 w/ Mount Pipe	A	From Leg	4.000 0.000 2.000	0.000	140.000
APXVSPP18-C-A20 w/ Mount Pipe	B	From Leg	4.000 0.000 2.000	0.000	140.000
APXVSPP18-C-A20 w/ Mount Pipe	C	From Leg	4.000 0.000 2.000	0.000	140.000
APXVTM14-C-120 w/ Mount Pipe	A	From Leg	4.000 0.000 2.000	0.000	140.000
APXVTM14-C-120 w/ Mount Pipe	B	From Leg	4.000 0.000 2.000	0.000	140.000
APXVTM14-C-120 w/ Mount Pipe	C	From Leg	4.000	0.000	140.000

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft
TD-RRH8X20-25	A	From Leg	0.000 2.000 4.000	0.000	140.000
TD-RRH8X20-25	B	From Leg	0.000 2.000 4.000	0.000	140.000
TD-RRH8X20-25	C	From Leg	0.000 2.000 4.000	0.000	140.000
Platform Mount [LP 1201-1]	C	None	0.000 2.000	0.000	140.000
(2) NHH-65B-R2B w/ Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	90.000
(2) NHH-65B-R2B w/ Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	90.000
(2) NHH-65B-R2B w/ Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	90.000
BXA-70080-4BF-EDIN-0 w/ Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	90.000
BXA-70080-4BF-EDIN-0 w/ Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	90.000
BXA-70080-4BF-EDIN-0 w/ Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	90.000
CBRS	A	From Leg	4.000 0.000 -2.000	0.000	90.000
CBRS	B	From Leg	4.000 0.000 -2.000	0.000	90.000
CBRS	C	From Leg	4.000 0.000 -2.000	0.000	90.000
(2) MT6407-77A w/ Mount Pipe	A	From Leg	4.000 0.000 2.000	0.000	90.000
(2) MT6407-77A w/ Mount Pipe	B	From Leg	4.000 0.000 2.000	0.000	90.000
(2) MT6407-77A w/ Mount Pipe	C	From Leg	4.000 0.000 2.000	0.000	90.000
GPS_A	A	From Leg	4.000 0.000 0.000	0.000	90.000
RFV01U-D1A	A	From Leg	4.000 0.000 0.000	0.000	90.000
RFV01U-D1A	B	From Leg	4.000 0.000 0.000	0.000	90.000
RFV01U-D1A	C	From Leg	4.000 0.000 0.000	0.000	90.000
RFV01U-D2A	A	From Leg	4.000 0.000 0.000	0.000	90.000
RFV01U-D2A	B	From Leg	4.000	0.000	90.000

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft
			0.000 0.000		
RFV01U-D2A	C	From Leg	4.000 0.000 0.000	0.000	90.000
DB-T1-6Z-8AB-0Z	B	From Leg	4.000 0.000 0.000	0.000	90.000
6' x 2" Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	90.000
6' x 2" Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	90.000
6' x 2" Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	90.000
(2) L 2.5x2.5x3/16x6'	A	From Leg	4.000 0.000 5.000	0.000	90.000
(2) L 2.5x2.5x3/16x6'	B	From Leg	4.000 0.000 5.000	0.000	90.000
(2) L 2.5x2.5x3/16x6'	C	From Leg	4.000 0.000 5.000	0.000	90.000
Side Arm Mount [SO 102-3]	A	None		0.000	95.000
Platform Mount [LP 1201-1]	C	None		0.000	90.000
Miscellaneous [NA 507-1]	C	None		0.000	93.000
Side Arm Mount [SO 102-3]	A	None		0.000	90.000
*					
GPS_A	C	From Leg	3.000 0.000 2.000	0.000	73.000
Side Arm Mount [SO 701-1]	C	From Leg	1.500 0.000 0.000	0.000	73.000
*					
MX08FRO665-21 w/ Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	130.000
MX08FRO665-21 w/ Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	130.000
MX08FRO665-21 w/ Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	130.000
TA08025-B604	A	From Leg	4.000 0.000 0.000	0.000	130.000
TA08025-B604	B	From Leg	4.000 0.000 0.000	0.000	130.000
TA08025-B604	C	From Leg	4.000 0.000 0.000	0.000	130.000
TA08025-B605	A	From Leg	4.000 0.000 0.000	0.000	130.000
TA08025-B605	B	From Leg	4.000 0.000 0.000	0.000	130.000
TA08025-B605	C	From Leg	4.000 0.000 0.000	0.000	130.000

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft
RDIDC-9181-PF-48	A	From Leg	4.000 0.000 0.000	0.000	130.000
(2) 8' x 2" Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	130.000
(2) 8' x 2" Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	130.000
(2) 8' x 2" Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	130.000
Commscope MC-PK8-DSH	C	None		0.000	130.000

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft
Radiowaves HPD2-4.7	A	Paraboloid w/Shroud (HP)	From Leg	6.000 0.000 -1.000	75.000		178.000	2.042
Radiowaves HPD2-4.7	B	Paraboloid w/Shroud (HP)	From Leg	6.000 0.000 -1.000	-24.000		178.000	2.042
*								
*								

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

Comb. No.	Description
23	0.9 Dead+1.0 Wind 300 deg - No Ice
24	1.2 Dead+1.0 Wind 330 deg - No Ice
25	0.9 Dead+1.0 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	182 - 177	Pole	Max Tension	3	0.000	-0.000	-0.000
			Max. Compression	26	-2.774	0.557	0.422
			Max. Mx	20	-0.801	13.069	0.057
			Max. My	2	-0.806	0.110	12.974
			Max. Vy	20	-2.215	13.069	0.057
			Max. Vx	2	-2.213	0.110	12.974
			Max. Torque	4			0.866
L2	177 - 172	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-3.413	0.049	0.727
			Max. Mx	20	-1.014	26.782	-0.071
			Max. My	2	-1.061	-0.197	25.975
			Max. Vy	20	-2.932	26.782	-0.071
			Max. Vx	2	-2.731	-0.197	25.975
			Max. Torque	18			-1.292
L3	172 - 167	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-17.082	0.031	2.345
			Max. Mx	20	-5.510	51.136	0.709
			Max. My	2	-5.581	-0.383	50.307
			Max. Vy	20	-11.347	51.136	0.709
			Max. Vx	2	-11.106	-0.383	50.307
			Max. Torque	20			-2.183
L4	167 - 162	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-17.709	0.003	2.413
			Max. Mx	20	-5.905	108.717	0.647
			Max. My	2	-5.976	-0.574	106.685
			Max. Vy	20	-11.691	108.717	0.647
			Max. Vx	2	-11.450	-0.574	106.685
			Max. Torque	20			-2.183
L5	162 - 157	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-18.366	-0.026	2.476
			Max. Mx	20	-6.336	168.032	0.579
			Max. My	2	-6.405	-0.767	164.793
			Max. Vy	20	-12.043	168.032	0.579

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vx	2	-11.801	-0.767	164.793
			Max. Torque	20			-2.182
L6	157 - 152	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-28.340	-0.065	2.558
			Max. Mx	20	-10.275	258.714	0.520
			Max. My	2	-10.352	-0.966	254.231
			Max. Vy	20	-17.326	258.714	0.520
			Max. Vx	2	-17.077	-0.966	254.231
			Max. Torque	20			-2.180
L7	152 - 147	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-29.100	-0.105	2.634
			Max. Mx	20	-10.856	346.170	0.452
			Max. My	2	-10.930	-1.165	340.441
			Max. Vy	20	-17.672	346.170	0.452
			Max. Vx	2	-17.423	-1.165	340.441
			Max. Torque	20			-2.178
L8	147 - 142	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-29.889	-0.146	2.703
			Max. Mx	20	-11.472	435.354	0.380
			Max. My	2	-11.543	-1.365	428.379
			Max. Vy	20	-18.020	435.354	0.380
			Max. Vx	2	-17.771	-1.365	428.379
			Max. Torque	20			-2.175
L9	142 - 137	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-38.827	-0.245	2.807
			Max. Mx	20	-15.714	540.260	0.314
			Max. My	2	-15.787	-1.582	532.039
			Max. Vy	20	-21.728	540.260	0.314
			Max. Vx	2	-21.473	-1.582	532.039
			Max. Torque	20			-2.171
L10	137 - 133.081	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-38.858	-0.251	2.814
			Max. Mx	20	-15.754	543.865	0.312
			Max. My	2	-15.826	-1.590	535.603
			Max. Vy	20	-21.728	543.865	0.312
			Max. Vx	2	-21.477	-1.590	535.603
			Max. Torque	20			-2.168
L11	133.081 - 131.834	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-40.480	-0.390	2.938
			Max. Mx	20	-16.871	653.698	0.253
			Max. My	2	-16.942	-1.817	644.194
			Max. Vy	20	-22.210	653.698	0.253
			Max. Vx	2	-21.954	-1.817	644.194
			Max. Torque	20			-2.166
L12	131.834 - 126.834	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-47.577	-0.537	3.509
			Max. Mx	20	-20.512	776.924	0.278
			Max. My	2	-20.580	-2.048	766.409
			Max. Vy	20	-26.161	776.924	0.278
			Max. Vx	2	-25.939	-2.048	766.409
			Max. Torque	20			-2.413
L13	126.834 - 121.834	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-48.820	-0.689	3.590
			Max. Mx	20	-21.497	908.564	0.199
			Max. My	2	-21.562	-2.280	896.960
			Max. Vy	20	-26.534	908.564	0.199
			Max. Vx	2	-26.312	-2.280	896.960
			Max. Torque	20			-2.411
L14	121.834 - 116.834	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-50.100	-0.845	3.665
			Max. Mx	20	-22.518	1042.066	0.117
			Max. My	2	-22.579	-2.513	1029.378
			Max. Vy	20	-26.909	1042.066	0.117
			Max. Vx	2	-26.687	-2.513	1029.378

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Torque	20			-2.407
L15	116.834 - 111.834	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-51.416	-1.005	3.737
			Max. Mx	20	-23.574	1177.439	0.034
			Max. My	2	-23.632	-2.746	1163.669
			Max. Vy	20	-27.285	1177.439	0.034
			Max. Vx	2	-27.064	-2.746	1163.669
			Max. Torque	20			-2.404
L16	111.834 - 106.834	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-52.769	-1.168	3.805
			Max. Mx	20	-24.663	1314.692	-0.052
			Max. My	2	-24.718	-2.980	1299.844
			Max. Vy	20	-27.663	1314.692	-0.052
			Max. Vx	2	-27.443	-2.980	1299.844
			Max. Torque	20			-2.400
L17	106.834 - 101.834	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-54.159	-1.334	3.869
			Max. Mx	20	-25.784	1453.837	-0.140
			Max. My	2	-25.836	-3.214	1437.915
			Max. Vy	20	-28.043	1453.837	-0.140
			Max. Vx	2	-27.823	-3.214	1437.915
			Max. Torque	20			-2.397
L18	101.834 - 96.834	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-55.585	-1.504	3.929
			Max. Mx	20	-26.936	1594.883	-0.229
			Max. My	2	-26.985	-3.448	1577.891
			Max. Vy	20	-28.426	1594.883	-0.229
			Max. Vx	2	-28.206	-3.448	1577.891
			Max. Torque	20			-2.394
L19	96.834 - 87.449	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-57.603	-1.655	3.980
			Max. Mx	20	-28.319	1720.090	-0.307
			Max. My	2	-28.366	-3.652	1702.168
			Max. Vy	20	-29.156	1720.090	-0.307
			Max. Vx	2	-28.937	-3.652	1702.168
			Max. Torque	20			-2.391
L20	87.449 - 86.449	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-70.655	-2.663	3.682
			Max. Mx	20	-35.005	1914.569	-0.388
			Max. My	2	-35.058	-4.005	1895.286
			Max. Vy	20	-34.059	1914.569	-0.388
			Max. Vx	2	-33.788	-4.005	1895.286
			Max. Torque	20			-2.252
L21	86.449 - 85	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-71.144	-2.715	3.700
			Max. Mx	20	-35.371	1963.944	-0.352
			Max. My	2	-35.423	-4.012	1944.276
			Max. Vy	20	-34.166	1963.944	-0.352
			Max. Vx	2	-33.894	-4.012	1944.276
			Max. Torque	20			-2.251
L22	85 - 84.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-71.229	-2.727	3.707
			Max. Mx	20	-35.465	1972.476	-0.347
			Max. My	2	-35.516	-4.013	1952.743
			Max. Vy	20	-34.152	1972.476	-0.347
			Max. Vx	2	-33.886	-4.013	1952.743
			Max. Torque	20			-2.251
L23	84.75 - 79.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-72.941	-2.905	3.762
			Max. Mx	20	-36.769	2143.978	-0.225
			Max. My	2	-36.817	-4.038	2122.921
			Max. Vy	20	-34.495	2143.978	-0.225

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vx	2	-34.225	-4.038	2122.921
			Max. Torque	20			-2.251
L24	79.75 - 75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-74.660	-3.078	3.815
			Max. Mx	20	-38.049	2308.397	-0.111
			Max. My	2	-38.093	-4.060	2286.091
			Max. Vy	20	-34.806	2308.397	-0.111
			Max. Vx	2	-34.537	-4.060	2286.091
			Max. Torque	20			-2.248
L25	75 - 74.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-74.790	-3.093	3.825
			Max. Mx	20	-38.172	2317.092	-0.105
			Max. My	2	-38.216	-4.061	2294.721
			Max. Vy	20	-34.804	2317.092	-0.105
			Max. Vx	2	-34.540	-4.061	2294.721
			Max. Torque	20			-2.246
L26	74.75 - 74	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-75.183	-3.116	3.828
			Max. Mx	20	-38.460	2343.214	-0.087
			Max. My	2	-38.503	-4.065	2320.646
			Max. Vy	20	-34.885	2343.214	-0.087
			Max. Vx	2	-34.616	-4.065	2320.646
			Max. Torque	20			-2.246
L27	74 - 73.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-75.279	-3.127	3.833
			Max. Mx	20	-38.532	2351.933	-0.081
			Max. My	2	-38.576	-4.066	2329.300
			Max. Vy	20	-34.897	2351.933	-0.081
			Max. Vx	2	-34.634	-4.066	2329.300
			Max. Torque	20			-2.246
L28	73.75 - 68.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-77.266	-2.952	3.676
			Max. Mx	20	-39.978	2527.630	-0.012
			Max. My	2	-40.017	-3.831	2503.426
			Max. Vy	20	-35.295	2527.630	-0.012
			Max. Vx	2	-35.045	-3.831	2503.426
			Max. Torque	20			-2.245
L29	68.75 - 63.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-79.103	-3.163	3.741
			Max. Mx	20	-41.397	2704.716	0.181
			Max. My	2	-41.432	-3.781	2679.302
			Max. Vy	20	-35.610	2704.716	0.181
			Max. Vx	2	-35.362	-3.781	2679.302
			Max. Torque	20			-2.112
L30	63.75 - 58.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-80.972	-3.352	3.783
			Max. Mx	20	-42.846	2883.363	0.373
			Max. My	2	-42.877	-3.731	2856.748
			Max. Vy	20	-35.921	2883.363	0.373
			Max. Vx	2	-35.674	-3.731	2856.748
			Max. Torque	20			-2.110
L31	58.75 - 53.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-82.874	-3.538	3.820
			Max. Mx	20	-44.323	3063.548	0.565
			Max. My	2	-44.351	-3.681	3035.743
			Max. Vy	20	-36.227	3063.548	0.565
			Max. Vx	2	-35.982	-3.681	3035.743
			Max. Torque	20			-2.108
L32	53.75 - 42.848	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-84.628	-3.717	3.855
			Max. Mx	20	-45.725	3233.193	0.742
			Max. My	2	-45.750	-3.634	3204.285
			Max. Vy	20	-36.506	3233.193	0.742
			Max. Vx	2	-36.262	-3.634	3204.285

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Torque	20			-2.106
L33	42.848 - 41.848	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-89.426	-3.994	3.910
			Max. Mx	20	-49.384	3499.528	1.019
			Max. My	2	-49.406	-3.561	3468.920
			Max. Vy	20	-37.190	3499.528	1.019
			Max. Vx	2	-36.948	-3.561	3468.920
			Max. Torque	20			-2.104
L34	41.848 - 36.848	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-91.448	-4.186	3.948
			Max. Mx	20	-51.099	3686.055	1.209
			Max. My	2	-51.118	-3.510	3654.280
			Max. Vy	20	-37.493	3686.055	1.209
			Max. Vx	2	-37.253	-3.510	3654.280
			Max. Torque	20			-2.104
L35	36.848 - 31.848	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-93.504	-4.380	3.985
			Max. Mx	20	-52.846	3874.068	1.397
			Max. My	2	-52.863	-3.460	3841.136
			Max. Vy	20	-37.785	3874.068	1.397
			Max. Vx	2	-37.547	-3.460	3841.136
			Max. Torque	20			-2.103
L36	31.848 - 26.848	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-95.594	-4.575	4.023
			Max. Mx	20	-54.627	4063.504	1.585
			Max. My	2	-54.641	-3.410	4029.426
			Max. Vy	20	-38.064	4063.504	1.585
			Max. Vx	2	-37.826	-3.410	4029.426
			Max. Torque	20			-2.102
L37	26.848 - 21.848	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-97.715	-4.771	4.061
			Max. Mx	20	-56.439	4254.286	1.772
			Max. My	2	-56.450	-3.359	4219.072
			Max. Vy	20	-38.324	4254.286	1.772
			Max. Vx	2	-38.089	-3.359	4219.072
			Max. Torque	20			-2.102
L38	21.848 - 16.848	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-99.866	-4.966	4.098
			Max. Mx	20	-58.284	4446.315	1.957
			Max. My	2	-58.293	-3.309	4409.976
			Max. Vy	20	-38.563	4446.315	1.957
			Max. Vx	2	-38.330	-3.309	4409.976
			Max. Torque	20			-2.101
L39	16.848 - 11.848	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-102.042	-5.160	4.134
			Max. Mx	20	-60.161	4639.478	2.142
			Max. My	2	-60.167	-3.259	4602.026
			Max. Vy	20	-38.779	4639.478	2.142
			Max. Vx	2	-38.547	-3.259	4602.026
			Max. Torque	20			-2.101
L40	11.848 - 6.848	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-104.237	-5.349	4.169
			Max. Mx	20	-62.069	4833.719	2.325
			Max. My	2	-62.073	-3.210	4795.165
			Max. Vy	20	-38.995	4833.719	2.325
			Max. Vx	2	-38.766	-3.210	4795.165
			Max. Torque	20			-2.100
L41	6.848 - 1.848	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-106.436	-5.528	4.200
			Max. Mx	20	-64.009	5029.043	2.507

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. My	2	-64.010	-3.160	4989.399
			Max. Vy	20	-39.213	5029.043	2.507
			Max. Vx	2	-38.986	-3.160	4989.399
			Max. Torque	20			-2.100
L42	1.848 - 0	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-107.233	-5.586	4.210
			Max. Mx	20	-64.719	5101.513	2.575
			Max. My	2	-64.719	-3.142	5061.469
			Max. Vy	20	-39.319	5101.513	2.575
			Max. Vx	2	-39.093	-3.142	5061.469
			Max. Torque	20			-2.100

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	30	107.233	-11.933	-0.011
	Max. H_x	21	48.563	39.266	0.037
	Max. H_z	3	48.563	0.020	39.040
	Max. M_x	2	5061.469	0.020	39.040
	Max. M_z	8	5087.225	-39.181	-0.042
	Max. Torsion	8	1.944	-39.181	-0.042
	Min. Vert	17	48.563	19.678	-33.752
	Min. H_x	8	64.751	-39.181	-0.042
	Min. H_z	14	64.751	-0.035	-39.040
	Min. M_x	14	-5058.718	-0.035	-39.040
	Min. M_z	20	-5101.513	39.266	0.037
	Min. Torsion	20	-2.100	39.266	0.037

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	53.959	0.000	-0.000	-1.001	-0.877	-0.000
1.2 Dead+1.0 Wind 0 deg - No Ice	64.751	-0.020	-39.040	-5061.469	-3.142	-0.254
0.9 Dead+1.0 Wind 0 deg - No Ice	48.563	-0.020	-39.040	-4950.792	-2.719	-0.249
1.2 Dead+1.0 Wind 30 deg - No Ice	64.751	19.616	-33.752	-4375.170	-2554.571	-1.227
0.9 Dead+1.0 Wind 30 deg - No Ice	48.563	19.616	-33.752	-4279.478	-2498.440	-1.191
1.2 Dead+1.0 Wind 60 deg - No Ice	64.751	33.929	-19.446	-2521.902	-4408.402	-1.821
0.9 Dead+1.0 Wind 60 deg - No Ice	48.563	33.929	-19.446	-2466.594	-4311.905	-1.764
1.2 Dead+1.0 Wind 90 deg - No Ice	64.751	39.181	0.042	0.984	-5087.225	-1.944
0.9 Dead+1.0 Wind 90 deg - No Ice	48.563	39.181	0.042	1.360	-4975.984	-1.881
1.2 Dead+1.0 Wind 120 deg - No Ice	64.751	33.986	19.513	2522.019	-4413.544	-1.682
0.9 Dead+1.0 Wind 120 deg - No Ice	48.563	33.986	19.513	2467.500	-4316.991	-1.629
1.2 Dead+1.0 Wind 150 deg - No Ice	64.751	19.695	33.802	4376.223	-2559.517	-0.880
0.9 Dead+1.0 Wind 150 deg - No Ice	48.563	19.695	33.802	4281.258	-2503.388	-0.853
1.2 Dead+1.0 Wind 180 deg	64.751	0.035	39.040	5058.718	-1.941	0.347

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
- No Ice 0.9 Dead+1.0 Wind 180 deg - No Ice	48.563	0.035	39.040	4948.817	-1.689	0.342
1.2 Dead+1.0 Wind 210 deg - No Ice	64.751	-19.678	33.752	4372.488	2564.315	1.452
0.9 Dead+1.0 Wind 210 deg - No Ice	48.563	-19.678	33.752	4277.555	2508.476	1.416
1.2 Dead+1.0 Wind 240 deg - No Ice	64.751	-34.010	19.464	2522.839	4421.901	1.963
0.9 Dead+1.0 Wind 240 deg - No Ice	48.563	-34.010	19.464	2468.181	4325.597	1.906
1.2 Dead+1.0 Wind 270 deg - No Ice	64.751	-39.266	-0.037	-2.574	5101.513	2.100
0.9 Dead+1.0 Wind 270 deg - No Ice	48.563	-39.266	-0.037	-2.244	4990.427	2.037
1.2 Dead+1.0 Wind 300 deg - No Ice	64.751	-34.066	-19.518	-2525.488	4426.739	1.810
0.9 Dead+1.0 Wind 300 deg - No Ice	48.563	-34.066	-19.518	-2470.209	4330.357	1.758
1.2 Dead+1.0 Wind 330 deg - No Ice	64.751	-19.736	-33.793	-4377.168	2565.387	0.765
0.9 Dead+1.0 Wind 330 deg - No Ice	48.563	-19.736	-33.793	-4281.488	2509.622	0.737
1.2 Dead+1.0 Ice+1.0 Temp	107.233	0.000	-0.000	-4.210	-5.586	-0.000
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	107.233	-0.006	-11.904	-1687.572	-6.304	-0.151
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	107.233	5.971	-10.296	-1459.964	-853.249	-0.517
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	107.233	10.333	-5.934	-843.592	-1469.753	-0.734
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	107.233	11.933	0.011	-3.784	-1695.485	-0.759
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	107.233	10.347	5.952	835.552	-1471.057	-0.614
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	107.233	5.991	10.308	1452.156	-854.505	-0.282
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	107.233	0.009	11.904	1678.796	-6.006	0.172
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	107.233	-5.985	10.296	1451.228	844.705	0.575
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	107.233	-10.351	5.938	835.782	1462.197	0.771
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	107.233	-11.952	-0.010	-4.693	1688.142	0.796
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	107.233	-10.365	-5.953	-844.532	1463.423	0.638
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	107.233	-6.000	-10.306	-1460.485	844.978	0.248
Dead+Wind 0 deg - Service	53.959	-0.005	-9.512	-1221.441	-1.402	-0.063
Dead+Wind 30 deg - Service	53.959	4.779	-8.224	-1055.959	-616.722	-0.305
Dead+Wind 60 deg - Service	53.959	8.266	-4.738	-609.024	-1063.850	-0.455
Dead+Wind 90 deg - Service	53.959	9.546	0.010	-0.553	-1227.590	-0.489
Dead+Wind 120 deg - Service	53.959	8.280	4.754	607.476	-1065.103	-0.427
Dead+Wind 150 deg - Service	53.959	4.798	8.236	1054.642	-617.931	-0.226
Dead+Wind 180 deg - Service	53.959	0.008	9.512	1219.210	-1.124	0.088
Dead+Wind 210 deg - Service	53.959	-4.794	8.224	1053.750	617.781	0.371
Dead+Wind 240 deg - Service	53.959	-8.286	4.742	607.684	1065.840	0.498
Dead+Wind 270 deg - Service	53.959	-9.567	-0.009	-1.421	1229.766	0.529
Dead+Wind 300 deg - Service	53.959	-8.300	-4.755	-609.916	1066.994	0.452
Dead+Wind 330 deg - Service	53.959	-4.809	-8.233	-1056.447	618.032	0.187

Solution Summary

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
1	0.000	-53.959	0.000	0.000	53.959	0.000	0.000%
2	-0.020	-64.751	-39.040	0.020	64.751	39.040	0.000%
3	-0.020	-48.563	-39.040	0.020	48.563	39.040	0.000%
4	19.616	-64.751	-33.752	-19.616	64.751	33.752	0.000%
5	19.616	-48.563	-33.752	-19.616	48.563	33.752	0.000%
6	33.929	-64.751	-19.446	-33.929	64.751	19.446	0.000%
7	33.929	-48.563	-19.446	-33.929	48.563	19.446	0.000%
8	39.181	-64.751	0.042	-39.181	64.751	-0.042	0.000%
9	39.181	-48.563	0.042	-39.181	48.563	-0.042	0.000%
10	33.986	-64.751	19.513	-33.986	64.751	-19.513	0.000%
11	33.986	-48.563	19.513	-33.986	48.563	-19.513	0.000%
12	19.695	-64.751	33.802	-19.695	64.751	-33.802	0.000%
13	19.695	-48.563	33.802	-19.695	48.563	-33.802	0.000%
14	0.035	-64.751	39.040	-0.035	64.751	-39.040	0.000%
15	0.035	-48.563	39.040	-0.035	48.563	-39.040	0.000%
16	-19.678	-64.751	33.752	19.678	64.751	-33.752	0.000%
17	-19.678	-48.563	33.752	19.678	48.563	-33.752	0.000%
18	-34.010	-64.751	19.464	34.010	64.751	-19.464	0.000%
19	-34.010	-48.563	19.464	34.010	48.563	-19.464	0.000%
20	-39.266	-64.751	-0.037	39.266	64.751	0.037	0.000%
21	-39.266	-48.563	-0.037	39.266	48.563	0.037	0.000%
22	-34.066	-64.751	-19.518	34.066	64.751	19.518	0.000%
23	-34.066	-48.563	-19.518	34.066	48.563	19.518	0.000%
24	-19.736	-64.751	-33.793	19.736	64.751	33.793	0.000%
25	-19.736	-48.563	-33.793	19.736	48.563	33.793	0.000%
26	0.000	-107.233	0.000	-0.000	107.233	0.000	0.000%
27	-0.006	-107.233	-11.904	0.006	107.233	11.904	0.000%
28	5.971	-107.233	-10.296	-5.971	107.233	10.296	0.000%
29	10.333	-107.233	-5.934	-10.333	107.233	5.934	0.000%
30	11.933	-107.233	0.011	-11.933	107.233	-0.011	0.000%
31	10.347	-107.233	5.952	-10.347	107.233	-5.952	0.000%
32	5.991	-107.233	10.308	-5.991	107.233	-10.308	0.000%
33	0.009	-107.233	11.904	-0.009	107.233	-11.904	0.000%
34	-5.985	-107.233	10.296	5.985	107.233	-10.296	0.000%
35	-10.351	-107.233	5.938	10.351	107.233	-5.938	0.000%
36	-11.952	-107.233	-0.010	11.952	107.233	0.010	0.000%
37	-10.365	-107.233	-5.953	10.365	107.233	5.953	0.000%
38	-6.000	-107.233	-10.306	6.000	107.233	10.306	0.000%
39	-0.005	-53.959	-9.512	0.005	53.959	9.512	0.000%
40	4.779	-53.959	-8.224	-4.779	53.959	8.224	0.000%
41	8.266	-53.959	-4.738	-8.266	53.959	4.738	0.000%
42	9.546	-53.959	0.010	-9.546	53.959	-0.010	0.000%
43	8.280	-53.959	4.754	-8.280	53.959	-4.754	0.000%
44	4.798	-53.959	8.236	-4.798	53.959	-8.236	0.000%
45	0.008	-53.959	9.512	-0.008	53.959	-9.512	0.000%
46	-4.794	-53.959	8.224	4.794	53.959	-8.224	0.000%
47	-8.286	-53.959	4.742	8.286	53.959	-4.742	0.000%
48	-9.567	-53.959	-0.009	9.567	53.959	0.009	0.000%
49	-8.300	-53.959	-4.755	8.300	53.959	4.755	0.000%
50	-4.809	-53.959	-8.233	4.809	53.959	8.233	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000766
2	Yes	6	0.00000001	0.00018206
3	Yes	5	0.00000001	0.00065282
4	Yes	8	0.00000001	0.00027462
5	Yes	7	0.00000001	0.00062596

6	Yes	8	0.00000001	0.00028477
7	Yes	7	0.00000001	0.00065188
8	Yes	6	0.00000001	0.00095672
9	Yes	6	0.00000001	0.00030207
10	Yes	8	0.00000001	0.00027343
11	Yes	7	0.00000001	0.00062355
12	Yes	8	0.00000001	0.00028109
13	Yes	7	0.00000001	0.00064256
14	Yes	6	0.00000001	0.00024886
15	Yes	6	0.00000001	0.00007268
16	Yes	8	0.00000001	0.00028255
17	Yes	7	0.00000001	0.00064608
18	Yes	8	0.00000001	0.00027238
19	Yes	7	0.00000001	0.00062043
20	Yes	7	0.00000001	0.00009639
21	Yes	6	0.00000001	0.00031799
22	Yes	8	0.00000001	0.00028520
23	Yes	7	0.00000001	0.00065247
24	Yes	8	0.00000001	0.00027630
25	Yes	7	0.00000001	0.00062999
26	Yes	5	0.00000001	0.00037765
27	Yes	8	0.00000001	0.00060081
28	Yes	9	0.00000001	0.00032878
29	Yes	9	0.00000001	0.00033674
30	Yes	8	0.00000001	0.00060779
31	Yes	9	0.00000001	0.00032040
32	Yes	9	0.00000001	0.00032889
33	Yes	8	0.00000001	0.00059426
34	Yes	9	0.00000001	0.00032810
35	Yes	9	0.00000001	0.00031864
36	Yes	8	0.00000001	0.00060642
37	Yes	9	0.00000001	0.00033462
38	Yes	9	0.00000001	0.00032704
39	Yes	5	0.00000001	0.00047111
40	Yes	6	0.00000001	0.00064030
41	Yes	6	0.00000001	0.00068453
42	Yes	5	0.00000001	0.00082823
43	Yes	6	0.00000001	0.00062354
44	Yes	6	0.00000001	0.00066369
45	Yes	5	0.00000001	0.00047773
46	Yes	6	0.00000001	0.00067513
47	Yes	6	0.00000001	0.00062495
48	Yes	5	0.00000001	0.00087012
49	Yes	6	0.00000001	0.00068790
50	Yes	6	0.00000001	0.00064733

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	182 - 177	54.189	48	2.776	0.013
L2	177 - 172	51.283	48	2.774	0.012
L3	172 - 167	48.388	48	2.757	0.011
L4	167 - 162	45.514	48	2.733	0.010
L5	162 - 157	42.675	48	2.689	0.008
L6	157 - 152	39.892	48	2.625	0.007
L7	152 - 147	37.185	48	2.542	0.006
L8	147 - 142	34.574	48	2.444	0.005
L9	142 - 137	32.072	48	2.335	0.004
L10	137 - 133.081	29.688	48	2.218	0.004
L11	136.834 - 131.834	29.611	48	2.214	0.004
L12	131.834 - 126.834	27.321	48	2.153	0.004
L13	126.834 - 121.834	25.115	48	2.061	0.003
L14	121.834 -	23.007	48	1.965	0.003

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L15	116.834 - 111.834	21.000	48	1.868	0.002
L16	111.834 - 106.834	19.096	48	1.769	0.002
L17	106.834 - 101.834	17.295	48	1.671	0.002
L18	101.834 - 96.834	15.597	48	1.574	0.002
L19	96.834 - 87.449	14.000	48	1.477	0.002
L20	92.47 - 86.449	12.688	48	1.394	0.001
L21	86.449 - 85	10.967	48	1.326	0.001
L22	85 - 84.75	10.569	48	1.298	0.001
L23	84.75 - 79.75	10.501	48	1.293	0.001
L24	79.75 - 75	9.199	48	1.194	0.001
L25	75 - 74.75	8.057	48	1.102	0.001
L26	74.75 - 74	7.999	48	1.100	0.001
L27	74 - 73.75	7.827	48	1.092	0.001
L28	73.75 - 68.75	7.770	48	1.087	0.001
L29	68.75 - 63.75	6.681	48	0.992	0.001
L30	63.75 - 58.75	5.691	48	0.899	0.001
L31	58.75 - 53.75	4.798	48	0.808	0.001
L32	53.75 - 42.848	3.999	48	0.719	0.001
L33	49.08 - 41.848	3.336	48	0.637	0.000
L34	41.848 - 36.848	2.416	48	0.571	0.000
L35	36.848 - 31.848	1.856	48	0.497	0.000
L36	31.848 - 26.848	1.375	48	0.424	0.000
L37	26.848 - 21.848	0.968	48	0.353	0.000
L38	21.848 - 16.848	0.636	48	0.283	0.000
L39	16.848 - 11.848	0.375	48	0.216	0.000
L40	11.848 - 6.848	0.184	48	0.150	0.000
L41	6.848 - 1.848	0.061	48	0.085	0.000
L42	1.848 - 0	0.004	48	0.023	0.000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
178.000	DS4C06F36D-D	48	51.864	2.775	0.013	28777
177.000	Radiowaves HPD2-4.7	48	51.283	2.774	0.012	28777
168.000	ANT450D6-9	48	46.087	2.739	0.010	9588
157.000	AIR 32 B2A B66AA_T-MOBILE w/ Mount Pipe	48	39.892	2.625	0.007	3920
142.000	800MHZ RRH	48	32.072	2.335	0.004	2550
140.000	APXVSPP18-C-A20 w/ Mount Pipe	48	31.104	2.289	0.004	2599
130.000	MX08FRO665-21 w/ Mount Pipe	48	26.501	2.125	0.003	3252
95.000	Side Arm Mount [SO 102-3]	48	13.440	1.439	0.001	3400
93.000	Miscellaneous [NA 507-1]	48	12.844	1.402	0.001	3960
90.000	(2) NHH-65B-R2B w/ Mount Pipe	48	11.970	1.368	0.001	4315
73.000	GPS_A	48	7.600	1.072	0.001	3205

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	182 - 177	224.307	20	11.518	0.052
L2	177 - 172	212.328	20	11.508	0.051
L3	172 - 167	200.389	20	11.441	0.046
L4	167 - 162	188.535	20	11.343	0.040

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L5	162 - 157	176.819	20	11.162	0.034
L6	157 - 152	165.333	20	10.901	0.029
L7	152 - 147	154.156	20	10.558	0.025
L8	147 - 142	143.367	20	10.151	0.021
L9	142 - 137	133.021	20	9.701	0.018
L10	137 - 133.081	123.156	20	9.219	0.016
L11	136.834 - 131.834	122.837	20	9.202	0.015
L12	131.834 - 126.834	113.356	20	8.949	0.014
L13	126.834 - 121.834	104.220	20	8.566	0.013
L14	121.834 - 116.834	95.488	20	8.169	0.011
L15	116.834 - 111.834	87.172	20	7.764	0.010
L16	111.834 - 106.834	79.277	20	7.356	0.009
L17	106.834 - 101.834	71.807	20	6.948	0.008
L18	101.834 - 96.834	64.760	20	6.543	0.007
L19	96.834 - 87.449	58.132	20	6.142	0.006
L20	92.47 - 86.449	52.686	20	5.797	0.005
L21	86.449 - 85	45.542	20	5.513	0.005
L22	85 - 84.75	43.890	20	5.395	0.005
L23	84.75 - 79.75	43.608	20	5.374	0.005
L24	79.75 - 75	38.202	20	4.966	0.004
L25	75 - 74.75	33.458	20	4.583	0.004
L26	74.75 - 74	33.219	20	4.572	0.004
L27	74 - 73.75	32.504	20	4.539	0.004
L28	73.75 - 68.75	32.267	20	4.519	0.004
L29	68.75 - 63.75	27.746	20	4.124	0.003
L30	63.75 - 58.75	23.634	20	3.737	0.003
L31	58.75 - 53.75	19.922	20	3.358	0.002
L32	53.75 - 42.848	16.603	20	2.986	0.002
L33	49.08 - 41.848	13.850	20	2.647	0.002
L34	41.848 - 36.848	10.029	20	2.374	0.002
L35	36.848 - 31.848	7.707	20	2.063	0.001
L36	31.848 - 26.848	5.707	20	1.760	0.001
L37	26.848 - 21.848	4.020	20	1.464	0.001
L38	21.848 - 16.848	2.638	20	1.176	0.001
L39	16.848 - 11.848	1.555	20	0.895	0.001
L40	11.848 - 6.848	0.762	20	0.621	0.000
L41	6.848 - 1.848	0.252	20	0.354	0.000
L42	1.848 - 0	0.018	20	0.093	0.000

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
178.000	DS4C06F36D-D	20	214.722	11.514	0.052	7798
177.000	Radiowaves HPD2-4.7	20	212.328	11.508	0.051	7798
168.000	ANT450D6-9	20	190.897	11.367	0.041	2558
157.000	AIR 32 B2A B66AA_T-MOBILE w/ Mount Pipe	20	165.333	10.901	0.029	1022
142.000	800MHZ RRH	20	133.021	9.701	0.018	650
140.000	APXVSPP18-C-A20 w/ Mount Pipe	20	129.015	9.513	0.017	661
130.000	MX08FRO665-21 w/ Mount Pipe	20	109.960	8.831	0.014	820
95.000	Side Arm Mount [SO 102-3]	20	55.810	5.984	0.006	835
93.000	Miscellaneous [NA 507-1]	20	53.334	5.831	0.006	971
90.000	(2) NHH-65B-R2B w/ Mount Pipe	20	49.706	5.686	0.005	1057
73.000	GPS_A	20	31.563	4.457	0.004	779

Compression Checks

Pole Design Data

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
L1	182 - 181	TP15.678x14.5x0.25	5.000	0.000	0.0	11.494	-0.081	672.416	0.000 [1]
	181 - 180					11.681	-0.076	683.350	0.000
	180 - 179					11.868	-0.115	694.284	0.000
	179 - 178					12.055	-0.155	705.219	0.000
	178 - 177					12.242	-0.802	716.153	0.001
L2	177 - 176	TP16.856x15.678x0.25	5.000	0.000	0.0	12.429	-0.838	727.087	0.001
	176 - 175					12.616	-0.884	738.022	0.001
	175 - 174					12.803	-0.919	748.956	0.001
	174 - 173					12.990	-0.967	759.890	0.001
	173 - 172					13.177	-1.014	770.824	0.001
L3	172 - 171	TP18.033x16.856x0.25	5.000	0.000	0.0	13.363	-1.067	781.759	0.001
	171 - 170					13.550	-1.120	792.693	0.001
	170 - 169					13.737	-1.174	803.627	0.001
	169 - 168					13.924	-1.229	814.562	0.002
	168 - 167					14.111	-5.526	825.496	0.007
L4	167 - 166	TP19.211x18.033x0.25	5.000	0.000	0.0	14.298	-5.602	836.430	0.007
	166 - 165					14.485	-5.664	847.364	0.007
	165 - 164					14.672	-5.743	858.299	0.007
	164 - 163					14.859	-5.823	869.233	0.007
	163 - 162					15.046	-5.905	880.167	0.007
L5	162 - 161	TP20.389x19.211x0.25	5.000	0.000	0.0	15.233	-5.989	891.102	0.007
	161 - 160					15.419	-6.074	902.036	0.007
	160 - 159					15.606	-6.160	912.970	0.007
	159 - 158					15.793	-6.247	923.905	0.007
	158 - 157					15.980	-6.336	934.839	0.007
L6	157 - 156	TP21.567x20.389x0.25	5.000	0.000	0.0	16.167	-9.839	945.773	0.010
	156 - 155					16.354	-9.945	956.707	0.010
	155 - 154					16.541	-10.053	967.642	0.010
	154 - 153					16.728	-10.163	978.576	0.010
	153 - 152					16.915	-10.275	989.510	0.010
L7	152 - 151	TP22.744x21.567x0.25	5.000	0.000	0.0	17.102	-10.388	1000.440	0.010
	151 - 150					17.288	-10.503	1011.380	0.010
	150 - 149					17.475	-10.619	1022.310	0.010
	149 - 148					17.662	-10.736	1033.250	0.010
	148 - 147					17.849	-10.856	1044.180	0.010
L8	147 - 146	TP23.922x22.744x0.25	5.000	0.000	0.0	18.036	-10.976	1055.120	0.010
	146 - 145					18.223	-11.098	1066.050	0.010
	145 - 144					18.410	-11.222	1076.980	0.010
	144 - 143					18.597	-11.346	1087.920	0.010
	143 - 142					18.784	-11.472	1098.850	0.010
L9	142 - 141	TP25.1x23.922x0.25	5.000	0.000	0.0	18.971	-12.156	1109.790	0.011
	141 - 140					19.158	-12.288	1120.720	0.011
	140 - 139					19.344	-15.433	1131.660	0.014
	139 - 138					19.531	-15.573	1142.590	0.014
	138 - 137					19.718	-15.714	1153.520	0.014
L10	137 - 136.834	TP26.023x25.1x0.25	3.919	0.000	0.0	19.749	-15.754	1155.340	0.014
	136.834 - 133.081					20.451	-6.784	1196.380	0.006
L11	136.834 - 133.081	TP25.805x24.639x0.375	5.000	0.000	0.0	29.922	-9.852	1750.450	0.006
	133.081 - 131.834					30.269	-16.871	1770.710	0.010
L12	131.834 - 130.834	TP26.972x25.805x0.375	5.000	0.000	0.0	30.546	-17.055	1786.950	0.010
	130.834 - 129.834					30.824	-19.943	1803.200	0.011
	129.834 - 128.834					31.102	-20.131	1819.440	0.011
	128.834 -					31.379	-20.321	1835.690	0.011

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
	127.834								
	127.834 - 126.834					31.657	-20.512	1851.930	0.011
L13	126.834 - 125.834	TP28.138x26.972x0.375	5.000	0.000	0.0	31.935	-20.706	1868.170	0.011
	125.834 - 124.834					32.212	-20.902	1884.420	0.011
	124.834 - 123.834					32.490	-21.099	1900.660	0.011
	123.834 - 122.834					32.768	-21.297	1916.910	0.011
	122.834 - 121.834					33.045	-21.497	1933.150	0.011
L14	121.834 - 120.834	TP29.305x28.138x0.375	5.000	0.000	0.0	33.323	-21.698	1949.390	0.011
	120.834 - 119.834					33.601	-21.901	1965.640	0.011
	119.834 - 118.834					33.878	-22.106	1981.880	0.011
	118.834 - 117.834					34.156	-22.311	1998.130	0.011
	117.834 - 116.834					34.434	-22.518	2014.370	0.011
L15	116.834 - 115.834	TP30.471x29.305x0.375	5.000	0.000	0.0	34.711	-22.727	2030.610	0.011
	115.834 - 114.834					34.989	-22.936	2046.860	0.011
	114.834 - 113.834					35.267	-23.148	2063.100	0.011
	113.834 - 112.834					35.544	-23.360	2079.340	0.011
	112.834 - 111.834					35.822	-23.574	2095.590	0.011
L16	111.834 - 110.834	TP31.638x30.471x0.375	5.000	0.000	0.0	36.100	-23.789	2111.830	0.011
	110.834 - 109.834					36.377	-24.006	2128.080	0.011
	109.834 - 108.834					36.655	-24.223	2144.320	0.011
	108.834 - 107.834					36.933	-24.442	2160.560	0.011
	107.834 - 106.834					37.210	-24.663	2176.810	0.011
L17	106.834 - 105.834	TP32.804x31.638x0.375	5.000	0.000	0.0	37.488	-24.884	2193.050	0.011
	105.834 - 104.834					37.766	-25.108	2209.300	0.011
	104.834 - 103.834					38.043	-25.332	2225.540	0.011
	103.834 - 102.834					38.321	-25.557	2241.780	0.011
	102.834 - 101.834					38.599	-25.784	2258.030	0.011
L18	101.834 - 100.834	TP33.971x32.804x0.375	5.000	0.000	0.0	38.876	-26.012	2274.270	0.011
	100.834 - 99.834					39.154	-26.241	2290.520	0.011
	99.834 - 98.834					39.432	-26.471	2306.760	0.011
	98.834 - 97.834					39.709	-26.703	2323.000	0.011
	97.834 - 96.834					39.987	-26.936	2339.250	0.012
L19	96.834 - 95.743	TP36.16x33.971x0.375	9.385	0.000	0.0	40.290	-27.192	2356.970	0.012
	95.743 - 94.652					40.593	-27.524	2374.690	0.012
	94.652 - 93.561					40.896	-27.785	2392.410	0.012

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
	93.561 - 92.47					41.199	-28.319	2410.140	0.012
	92.47 - 87.449					42.593	-18.697	2491.700	0.008
L20	92.47 - 87.449	TP35.642x34.239x0.375	6.021	0.000	0.0	41.699	-16.013	2439.400	0.007
	87.449 - 86.449					41.977	-35.005	2455.630	0.014
L21	86.449 - 85	TP35.98x35.642x0.375	1.449	0.000	0.0	42.379	-35.371	2479.140	0.014
L22	(21) 85 - 84.75	TP36.038x35.98x0.375	0.250	0.000	0.0	42.448	-35.465	2483.200	0.014
L23	(22) 84.75 - 83.75	TP37.203x36.038x0.375	5.000	0.000	0.0	42.725	-35.709	2499.430	0.014
	83.75 - 82.75					43.003	-35.972	2515.650	0.014
	82.75 - 81.75					43.280	-36.236	2531.880	0.014
	81.75 - 80.75					43.557	-36.502	2548.110	0.014
	80.75 - 79.75					43.835	-36.769	2564.340	0.014
L24	79.75 - 78.5625	TP38.31x37.203x0.375	4.750	0.000	0.0	44.164	-37.083	2583.610	0.014
	78.5625 - 77.375					44.494	-37.403	2602.880	0.014
	77.375 - 76.1875					44.823	-37.725	2622.150	0.014
	76.1875 - 75					45.153	-38.049	2641.430	0.014
L25	75 - 74.75	TP38.369x38.31x0.7	0.250	0.000	0.0	83.692	-38.172	4895.990	0.008
L26	(25) 74.75 - 74	TP38.543x38.369x0.7	0.750	0.000	0.0	84.080	-38.460	4918.710	0.008
L27	(26) 74 - 73.75	TP38.602x38.543x0.375	0.250	0.000	0.0	45.499	-38.532	2661.710	0.014
L28	(27) 73.75 - 72.75	TP39.767x38.602x0.375	5.000	0.000	0.0	45.777	-38.864	2677.940	0.015
	72.75 - 71.75					46.054	-39.141	2694.170	0.015
	71.75 - 70.75					46.332	-39.419	2710.400	0.015
	70.75 - 69.75					46.609	-39.698	2726.630	0.015
	69.75 - 68.75					46.886	-39.978	2742.850	0.015
L29	68.75 - 67.75	TP40.932x39.767x0.375	5.000	0.000	0.0	47.164	-40.260	2759.080	0.015
	67.75 - 66.75					47.441	-40.542	2775.310	0.015
	66.75 - 65.75					47.719	-40.826	2791.540	0.015
	65.75 - 64.75					47.996	-41.111	2807.770	0.015
	64.75 - 63.75					48.273	-41.398	2824.000	0.015
L30	63.75 - 62.75	TP42.098x40.932x0.375	5.000	0.000	0.0	48.551	-41.685	2840.220	0.015
	62.75 - 61.75					48.828	-41.973	2856.450	0.015
	61.75 - 60.75					49.106	-42.263	2872.680	0.015
	60.75 - 59.75					49.383	-42.554	2888.910	0.015
	59.75 - 58.75					49.660	-42.846	2905.140	0.015
L31	58.75 - 57.75	TP43.263x42.098x0.375	5.000	0.000	0.0	49.938	-43.139	2921.370	0.015
	57.75 - 56.75					50.215	-43.433	2937.600	0.015
	56.75 - 55.75					50.493	-43.729	2953.820	0.015
	55.75 - 54.75					50.770	-44.025	2970.050	0.015
	54.75 - 53.75					51.048	-44.323	2986.280	0.015
L32	53.75 - 52.5825	TP45.804x43.263x0.375	10.902	0.000	0.0	51.371	-44.668	3005.230	0.015
	52.5825 - 51.415					51.695	-45.019	3024.170	0.015
	51.415 - 50.2475					52.019	-45.371	3043.120	0.015
	50.2475 - 49.08					52.343	-45.725	3062.070	0.015
	49.08 - 42.848					54.072	-22.911	3163.200	0.007
L33	49.08 - 42.848	TP45.281x43.602x0.438	7.232	0.000	0.0	61.948	-26.085	3623.980	0.007
	42.848 - 41.848					62.271	-49.383	3642.850	0.014
L34	41.848 - 40.848	TP46.442x45.281x0.438	5.000	0.000	0.0	62.593	-49.724	3661.720	0.014
	40.848 - 39.848					62.916	-50.066	3680.580	0.014
	39.848 -					63.238	-50.409	3699.450	0.014

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
	38.848								
	38.848 - 37.848					63.561	-50.753	3718.310	0.014
	37.848 - 36.848					63.883	-51.099	3737.180	0.014
L35	36.848 - 35.848	TP47.604x46.442x0.438	5.000	0.000	0.0	64.206	-51.446	3756.050	0.014
	35.848 - 34.848					64.528	-51.794	3774.910	0.014
	34.848 - 33.848					64.851	-52.143	3793.780	0.014
	33.848 - 32.848					65.173	-52.494	3812.650	0.014
	32.848 - 31.848					65.496	-52.846	3831.510	0.014
L36	31.848 - 30.848	TP48.765x47.604x0.438	5.000	0.000	0.0	65.818	-53.200	3850.380	0.014
	30.848 - 29.848					66.141	-53.555	3869.240	0.014
	29.848 - 28.848					66.463	-53.911	3888.110	0.014
	28.848 - 27.848					66.786	-54.268	3906.980	0.014
	27.848 - 26.848					67.108	-54.627	3925.840	0.014
L37	26.848 - 25.848	TP49.926x48.765x0.438	5.000	0.000	0.0	67.431	-54.987	3944.710	0.014
	25.848 - 24.848					67.753	-55.348	3963.570	0.014
	24.848 - 23.848					68.076	-55.710	3982.440	0.014
	23.848 - 22.848					68.398	-56.074	4001.310	0.014
	22.848 - 21.848					68.721	-56.439	4020.170	0.014
L38	21.848 - 20.848	TP51.087x49.926x0.438	5.000	0.000	0.0	69.043	-56.806	4039.040	0.014
	20.848 - 19.848					69.366	-57.173	4057.910	0.014
	19.848 - 18.848					69.688	-57.542	4076.770	0.014
	18.848 - 17.848					70.011	-57.913	4095.640	0.014
	17.848 - 16.848					70.333	-58.284	4114.500	0.014
L39	16.848 - 15.848	TP52.248x51.087x0.438	5.000	0.000	0.0	70.656	-58.657	4133.370	0.014
	15.848 - 14.848					70.978	-59.031	4152.240	0.014
	14.848 - 13.848					71.301	-59.406	4171.100	0.014
	13.848 - 12.848					71.623	-59.783	4189.970	0.014
	12.848 - 11.848					71.946	-60.161	4208.830	0.014
L40	11.848 - 10.848	TP53.41x52.248x0.438	5.000	0.000	0.0	72.268	-60.540	4227.700	0.014
	10.848 - 9.848					72.591	-60.920	4246.570	0.014
	9.848 - 8.848					72.913	-61.302	4265.430	0.014
	8.848 - 7.848					73.236	-61.685	4284.300	0.014
	7.848 - 6.848					73.558	-62.069	4303.170	0.014
L41	6.848 - 5.848	TP54.571x53.41x0.438	5.000	0.000	0.0	73.881	-62.455	4322.030	0.014
	5.848 - 4.848					74.203	-62.841	4340.900	0.014
	4.848 - 3.848					74.526	-63.229	4359.760	0.015
	3.848 - 2.848					74.848	-63.619	4378.630	0.015
	2.848 - 1.848					75.171	-64.009	4397.500	0.015
L42	1.848 - 0 (42)	TP55x54.571x0.438	1.848	0.000	0.0	75.767	-64.719	4432.360	0.015

[1] P_u / ϕP_n controls

Pole Bending Design Data

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	
L1	182 - 181	TP15.678x14.5x0.25	0.014	252.022	0.000	0.000	252.022	0.000
	181 - 180		0.108	260.355	0.000	0.000	260.355	0.000
	180 - 179		0.245	268.824	0.001	0.000	268.824	0.000
	179 - 178		0.438	277.429	0.002	0.000	277.429	0.000
	178 - 177		13.111	286.170	0.046	0.000	286.170	0.000
L2	177 - 176	TP16.856x15.678x0.25	15.614	295.046	0.053	0.000	295.046	0.000
	176 - 175		18.286	304.058	0.060	0.000	304.058	0.000
	175 - 174		21.041	313.204	0.067	0.000	313.204	0.000
	174 - 173		23.881	322.488	0.074	0.000	322.488	0.000
	173 - 172		26.782	331.906	0.081	0.000	331.906	0.000
L3	172 - 171	TP18.033x16.856x0.25	29.746	341.460	0.087	0.000	341.460	0.000
	171 - 170		32.773	351.149	0.093	0.000	351.149	0.000
	170 - 169		35.865	360.974	0.099	0.000	360.974	0.000
	169 - 168		39.022	370.935	0.105	0.000	370.935	0.000
	168 - 167		51.276	381.031	0.135	0.000	381.031	0.000
L4	167 - 166	TP19.211x18.033x0.25	62.599	391.262	0.160	0.000	391.262	0.000
	166 - 165		73.966	401.630	0.184	0.000	401.630	0.000
	165 - 164		85.482	412.133	0.207	0.000	412.133	0.000
	164 - 163		97.066	422.772	0.230	0.000	422.772	0.000
	163 - 162		108.719	433.546	0.251	0.000	433.546	0.000
L5	162 - 161	TP20.389x19.211x0.25	120.442	444.456	0.271	0.000	444.456	0.000
	161 - 160		132.234	455.501	0.290	0.000	455.501	0.000
	160 - 159		144.097	466.682	0.309	0.000	466.682	0.000
	159 - 158		156.029	477.998	0.326	0.000	477.998	0.000
	158 - 157		168.033	489.451	0.343	0.000	489.451	0.000
L6	157 - 156	TP21.567x20.389x0.25	189.990	501.038	0.379	0.000	501.038	0.000
	156 - 155		207.068	512.762	0.404	0.000	512.762	0.000
	155 - 154		224.214	524.620	0.427	0.000	524.620	0.000
	154 - 153		241.430	536.615	0.450	0.000	536.615	0.000
	153 - 152		258.715	548.745	0.471	0.000	548.745	0.000
L7	152 - 151	TP22.744x21.567x0.25	276.068	561.010	0.492	0.000	561.010	0.000
	151 - 150		293.490	573.412	0.512	0.000	573.412	0.000
	150 - 149		310.982	585.948	0.531	0.000	585.948	0.000
	149 - 148		328.542	598.621	0.549	0.000	598.621	0.000
	148 - 147		346.171	611.428	0.566	0.000	611.428	0.000
L8	147 - 146	TP23.922x22.744x0.25	363.869	624.372	0.583	0.000	624.372	0.000
	146 - 145		381.636	637.451	0.599	0.000	637.451	0.000
	145 - 144		399.473	650.666	0.614	0.000	650.666	0.000
	144 - 143		417.378	664.016	0.629	0.000	664.016	0.000
	143 - 142		435.354	677.502	0.643	0.000	677.502	0.000
L9	142 - 141	TP25.1x23.922x0.25	454.183	690.138	0.658	0.000	690.138	0.000
	141 - 140		473.102	702.209	0.674	0.000	702.209	0.000
	140 - 139		496.965	714.351	0.696	0.000	714.351	0.000
	139 - 138		518.581	726.562	0.714	0.000	726.562	0.000
	138 - 137		540.260	738.840	0.731	0.000	738.840	0.000
L10	137 - 136.834	TP26.023x25.1x0.25	543.865	740.884	0.734	0.000	740.884	0.000
	136.834 - 133.081		261.901	787.594	0.333	0.000	787.594	0.000
L11	136.834 - 133.081	TP25.805x24.639x0.375	364.184	1141.233	0.319	0.000	1141.233	0.000
	133.081 - 131.834		653.697	1167.992	0.560	0.000	1167.992	0.000
L12	131.834 - 130.834	TP26.972x25.805x0.375	675.928	1189.675	0.568	0.000	1189.675	0.000
	130.834 - 129.834		698.832	1211.558	0.577	0.000	1211.558	0.000
	129.834 - 128.834		724.788	1233.642	0.588	0.000	1233.642	0.000
	128.834 - 127.834		750.819	1255.925	0.598	0.000	1255.925	0.000
	127.834 -		776.924	1278.408	0.608	0.000	1278.408	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 $\frac{M_{uy}}{\phi M_{ny}}$
	126.834							
L13	126.834 - 125.834	TP28.138x26.972x0.375	803.103	1301.092	0.617	0.000	1301.092	0.000
	125.834 - 124.834		829.357	1323.975	0.626	0.000	1323.975	0.000
	124.834 - 123.834		855.683	1347.058	0.635	0.000	1347.058	0.000
	123.834 - 122.834		882.083	1370.342	0.644	0.000	1370.342	0.000
	122.834 - 121.834		908.567	1393.817	0.652	0.000	1393.817	0.000
L14	121.834 - 120.834	TP29.305x28.138x0.375	935.117	1417.500	0.660	0.000	1417.500	0.000
	120.834 - 119.834		961.742	1441.375	0.667	0.000	1441.375	0.000
	119.834 - 118.834		988.442	1465.458	0.674	0.000	1465.458	0.000
	118.834 - 117.834		1015.217	1489.733	0.681	0.000	1489.733	0.000
	117.834 - 116.834		1042.067	1514.217	0.688	0.000	1514.217	0.000
L15	116.834 - 115.834	TP30.471x29.305x0.375	1068.992	1538.892	0.695	0.000	1538.892	0.000
	115.834 - 114.834		1095.992	1563.767	0.701	0.000	1563.767	0.000
	114.834 - 113.834		1123.067	1588.842	0.707	0.000	1588.842	0.000
	113.834 - 112.834		1150.217	1614.117	0.713	0.000	1614.117	0.000
	112.834 - 111.834		1177.442	1639.592	0.718	0.000	1639.592	0.000
L16	111.834 - 110.834	TP31.638x30.471x0.375	1204.742	1665.267	0.723	0.000	1665.267	0.000
	110.834 - 109.834		1232.117	1691.142	0.729	0.000	1691.142	0.000
	109.834 - 108.834		1259.567	1717.217	0.733	0.000	1717.217	0.000
	108.834 - 107.834		1287.092	1743.492	0.738	0.000	1743.492	0.000
	107.834 - 106.834		1314.692	1769.958	0.743	0.000	1769.958	0.000
L17	106.834 - 105.834	TP32.804x31.638x0.375	1342.367	1796.633	0.747	0.000	1796.633	0.000
	105.834 - 104.834		1370.125	1823.508	0.751	0.000	1823.508	0.000
	104.834 - 103.834		1397.950	1850.575	0.755	0.000	1850.575	0.000
	103.834 - 102.834		1425.858	1877.850	0.759	0.000	1877.850	0.000
	102.834 - 101.834		1453.833	1905.317	0.763	0.000	1905.317	0.000
L18	101.834 - 100.834	TP33.971x32.804x0.375	1481.892	1932.992	0.767	0.000	1932.992	0.000
	100.834 - 99.834		1510.025	1960.858	0.770	0.000	1960.858	0.000
	99.834 - 98.834		1538.233	1988.925	0.773	0.000	1988.925	0.000
	98.834 - 97.834		1566.525	2017.192	0.777	0.000	2017.192	0.000
	97.834 - 96.834		1594.883	2045.658	0.780	0.000	2045.658	0.000
L19	96.834 - 95.743	TP36.16x33.971x0.375	1625.917	2076.950	0.783	0.000	2076.950	0.000
	95.743 - 94.652		1657.092	2108.467	0.786	0.000	2108.467	0.000
	94.652 - 93.561		1688.483	2140.233	0.789	0.000	2140.233	0.000
	93.561 - 92.47		1720.092	2172.225	0.792	0.000	2172.225	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 $\frac{M_{uy}}{\phi M_{ny}}$
	92.47 - 87.449		971.658	2320.425	0.419	0.000	2320.425	0.000
L20	92.47 - 87.449	TP35.642x34.239x0.375	908.917	2225.583	0.408	0.000	2225.583	0.000
	87.449 - 86.449		1914.567	2255.450	0.849	0.000	2255.450	0.000
L21	86.449 - 85 (21)	TP35.98x35.642x0.375	1963.942	2299.083	0.854	0.000	2299.083	0.000
L22	85 - 84.75 (22)	TP36.038x35.98x0.375	1972.475	2306.425	0.855	0.000	2306.425	0.000
L23	84.75 - 83.75	TP37.203x36.038x0.375	2006.650	2333.183	0.860	0.000	2333.183	0.000
	83.75 - 82.75		2040.883	2360.050	0.865	0.000	2360.050	0.000
	82.75 - 81.75		2075.183	2387.017	0.869	0.000	2387.017	0.000
	81.75 - 80.75		2109.550	2414.083	0.874	0.000	2414.083	0.000
	80.75 - 79.75		2143.975	2441.250	0.878	0.000	2441.250	0.000
L24	79.75 - 78.5625	TP38.31x37.203x0.375	2184.950	2473.650	0.883	0.000	2473.650	0.000
	78.5625 - 77.375		2226.008	2506.183	0.888	0.000	2506.183	0.000
	77.375 - 76.1875		2267.158	2538.850	0.893	0.000	2538.850	0.000
	76.1875 - 75		2308.400	2571.658	0.898	0.000	2571.658	0.000
L25	75 - 74.75 (25)	TP38.369x38.31x0.7	2317.092	4765.633	0.486	0.000	4765.633	0.000
L26	74.75 - 74 (26)	TP38.543x38.369x0.7	2343.217	4810.367	0.487	0.000	4810.367	0.000
L27	74 - 73.75 (27)	TP38.602x38.543x0.375	2351.933	2606.342	0.902	0.000	2606.342	0.000
L28	73.75 - 72.75	TP39.767x38.602x0.375	2387.100	2634.192	0.906	0.000	2634.192	0.000
	72.75 - 71.75		2422.133	2662.133	0.910	0.000	2662.133	0.000
	71.75 - 70.75		2457.233	2690.167	0.913	0.000	2690.167	0.000
	70.75 - 69.75		2492.400	2718.292	0.917	0.000	2718.292	0.000
	69.75 - 68.75		2527.633	2746.517	0.920	0.000	2746.517	0.000
L29	68.75 - 67.75	TP40.932x39.767x0.375	2562.925	2774.825	0.924	0.000	2774.825	0.000
	67.75 - 66.75		2598.275	2803.217	0.927	0.000	2803.217	0.000
	66.75 - 65.75		2633.692	2831.700	0.930	0.000	2831.700	0.000
	65.75 - 64.75		2669.175	2860.275	0.933	0.000	2860.275	0.000
	64.75 - 63.75		2704.717	2888.933	0.936	0.000	2888.933	0.000
L30	63.75 - 62.75	TP42.098x40.932x0.375	2740.325	2917.675	0.939	0.000	2917.675	0.000
	62.75 - 61.75		2775.992	2946.500	0.942	0.000	2946.500	0.000
	61.75 - 60.75		2811.717	2975.408	0.945	0.000	2975.408	0.000
	60.75 - 59.75		2847.508	3004.400	0.948	0.000	3004.400	0.000
	59.75 - 58.75		2883.367	3033.475	0.951	0.000	3033.475	0.000
L31	58.75 - 57.75	TP43.263x42.098x0.375	2919.275	3062.633	0.953	0.000	3062.633	0.000
	57.75 - 56.75		2955.250	3091.867	0.956	0.000	3091.867	0.000
	56.75 - 55.75		2991.292	3121.175	0.958	0.000	3121.175	0.000
	55.75 - 54.75		3027.392	3150.567	0.961	0.000	3150.567	0.000
	54.75 - 53.75		3063.550	3180.033	0.963	0.000	3180.033	0.000
L32	53.75 - 52.5825	TP45.804x43.263x0.375	3105.842	3214.533	0.966	0.000	3214.533	0.000
	52.5825 - 51.415		3148.208	3249.133	0.969	0.000	3249.133	0.000
	51.415 - 50.2475		3190.658	3283.833	0.972	0.000	3283.833	0.000
	50.2475 - 49.08		3233.192	3318.625	0.974	0.000	3318.625	0.000
	49.08 - 42.848		1645.783	3505.992	0.469	0.000	3505.992	0.000
L33	49.08 - 42.848	TP45.281x43.602x0.438	1816.617	4140.967	0.439	0.000	4140.967	0.000
	42.848 - 41.848		3499.525	4178.733	0.837	0.000	4178.733	0.000
L34	41.848 - 40.848	TP46.442x45.281x0.438	3536.708	4216.617	0.839	0.000	4216.617	0.000
	40.848 - 39.848		3573.958	4254.600	0.840	0.000	4254.600	0.000
	39.848 - 38.848		3611.258	4292.692	0.841	0.000	4292.692	0.000
	38.848 -		3648.625	4330.892	0.842	0.000	4330.892	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 $\frac{M_{uy}}{\phi M_{ny}}$
	37.848							
	37.848 - 36.848		3686.058	4369.192	0.844	0.000	4369.192	0.000
L35	36.848 - 35.848	TP47.604x46.442x0.438	3723.542	4407.600	0.845	0.000	4407.600	0.000
	35.848 - 34.848		3761.083	4446.108	0.846	0.000	4446.108	0.000
	34.848 - 33.848		3798.692	4484.717	0.847	0.000	4484.717	0.000
	33.848 - 32.848		3836.350	4523.425	0.848	0.000	4523.425	0.000
	32.848 - 31.848		3874.067	4562.242	0.849	0.000	4562.242	0.000
L36	31.848 - 30.848	TP48.765x47.604x0.438	3911.842	4601.150	0.850	0.000	4601.150	0.000
	30.848 - 29.848		3949.675	4640.158	0.851	0.000	4640.158	0.000
	29.848 - 28.848		3987.567	4679.267	0.852	0.000	4679.267	0.000
	28.848 - 27.848		4025.508	4718.467	0.853	0.000	4718.467	0.000
	27.848 - 26.848		4063.508	4757.767	0.854	0.000	4757.767	0.000
L37	26.848 - 25.848	TP49.926x48.765x0.438	4101.558	4797.158	0.855	0.000	4797.158	0.000
	25.848 - 24.848		4139.658	4836.650	0.856	0.000	4836.650	0.000
	24.848 - 23.848		4177.817	4876.225	0.857	0.000	4876.225	0.000
	23.848 - 22.848		4216.025	4915.900	0.858	0.000	4915.900	0.000
	22.848 - 21.848		4254.283	4955.658	0.858	0.000	4955.658	0.000
L38	21.848 - 20.848	TP51.087x49.926x0.438	4292.600	4995.508	0.859	0.000	4995.508	0.000
	20.848 - 19.848		4330.958	5035.450	0.860	0.000	5035.450	0.000
	19.848 - 18.848		4369.358	5075.483	0.861	0.000	5075.483	0.000
	18.848 - 17.848		4407.817	5115.600	0.862	0.000	5115.600	0.000
	17.848 - 16.848		4446.317	5155.800	0.862	0.000	5155.800	0.000
L39	16.848 - 15.848	TP52.248x51.087x0.438	4484.858	5196.083	0.863	0.000	5196.083	0.000
	15.848 - 14.848		4523.450	5236.458	0.864	0.000	5236.458	0.000
	14.848 - 13.848		4562.083	5276.917	0.865	0.000	5276.917	0.000
	13.848 - 12.848		4600.758	5317.450	0.865	0.000	5317.450	0.000
	12.848 - 11.848		4639.475	5358.075	0.866	0.000	5358.075	0.000
L40	11.848 - 10.848	TP53.41x52.248x0.438	4678.242	5398.775	0.867	0.000	5398.775	0.000
	10.848 - 9.848		4717.042	5439.550	0.867	0.000	5439.550	0.000
	9.848 - 8.848		4755.892	5480.408	0.868	0.000	5480.408	0.000
	8.848 - 7.848		4794.783	5521.350	0.868	0.000	5521.350	0.000
	7.848 - 6.848		4833.717	5562.358	0.869	0.000	5562.358	0.000
L41	6.848 - 5.848	TP54.571x53.41x0.438	4872.700	5603.450	0.870	0.000	5603.450	0.000
	5.848 - 4.848		4911.717	5644.617	0.870	0.000	5644.617	0.000
	4.848 - 3.848		4950.783	5685.858	0.871	0.000	5685.858	0.000
	3.848 - 2.848		4989.892	5727.167	0.871	0.000	5727.167	0.000
	2.848 - 1.848		5029.042	5768.558	0.872	0.000	5768.558	0.000
L42	1.848 - 0 (42)	TP55x54.571x0.438	5101.517	5845.225	0.873	0.000	5845.225	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	182 - 181	TP15.678x14.5x0.25	0.022	201.725	0.000	0.000	255.903	0.000
	181 - 180		0.109	205.005	0.001	0.000	264.293	0.000
	180 - 179		0.164	208.285	0.001	0.000	272.818	0.000
	179 - 178		0.221	211.566	0.001	0.000	281.479	0.000
	178 - 177		2.215	214.846	0.010	0.128	290.275	0.000
L2	177 - 176	TP16.856x15.678x0.25	2.646	218.126	0.012	1.033	299.207	0.003
	176 - 175		2.705	221.406	0.012	1.033	308.273	0.003
	175 - 174		2.810	224.687	0.013	1.263	317.476	0.004
	174 - 173		2.871	227.967	0.013	1.263	326.813	0.004
	173 - 172		2.933	231.247	0.013	1.263	336.287	0.004
L3	172 - 171	TP18.033x16.856x0.25	2.996	234.528	0.013	1.263	345.895	0.004
	171 - 170		3.060	237.808	0.013	1.263	355.638	0.004
	170 - 169		3.125	241.088	0.013	1.263	365.517	0.003
	169 - 168		3.190	244.368	0.013	1.263	375.532	0.003
	168 - 167		11.291	247.649	0.046	1.832	385.681	0.005
L4	167 - 166	TP19.211x18.033x0.25	11.359	250.929	0.045	1.832	395.966	0.005
	166 - 165		11.483	254.209	0.045	2.183	406.386	0.005
	165 - 164		11.552	257.490	0.045	2.183	416.942	0.005
	164 - 163		11.621	260.770	0.045	2.183	427.632	0.005
	163 - 162		11.691	264.050	0.044	2.182	438.459	0.005
L5	162 - 161	TP20.389x19.211x0.25	11.760	267.331	0.044	2.182	449.421	0.005
	161 - 160		11.830	270.611	0.044	2.182	460.517	0.005
	160 - 159		11.901	273.891	0.043	2.181	471.750	0.005
	159 - 158		11.971	277.171	0.043	2.181	483.118	0.005
	158 - 157		12.043	280.452	0.043	2.181	494.620	0.004
L6	157 - 156	TP21.567x20.389x0.25	17.049	283.732	0.060	2.180	506.258	0.004
	156 - 155		17.118	287.012	0.060	2.180	518.033	0.004
	155 - 154		17.188	290.293	0.059	2.180	529.941	0.004
	154 - 153		17.257	293.573	0.059	2.179	541.985	0.004
	153 - 152		17.326	296.853	0.058	2.179	554.165	0.004
L7	152 - 151	TP22.744x21.567x0.25	17.395	300.133	0.058	2.178	566.480	0.004
	151 - 150		17.464	303.414	0.058	2.177	578.930	0.004
	150 - 149		17.533	306.694	0.057	2.177	591.516	0.004
	149 - 148		17.603	309.974	0.057	2.176	604.237	0.004
	148 - 147		17.672	313.255	0.056	2.176	617.093	0.004
L8	147 - 146	TP23.922x22.744x0.25	17.741	316.535	0.056	2.175	630.085	0.003
	146 - 145		17.811	319.815	0.056	2.174	643.212	0.003
	145 - 144		17.880	323.095	0.055	2.174	656.474	0.003
	144 - 143		17.950	326.376	0.055	2.173	669.872	0.003
	143 - 142		18.020	329.656	0.055	2.172	683.404	0.003
L9	142 - 141	TP25.1x23.922x0.25	18.896	332.936	0.057	2.171	697.072	0.003
	141 - 140		18.966	336.217	0.056	2.171	710.877	0.003
	140 - 139		21.599	339.497	0.064	2.170	724.816	0.003
	139 - 138		21.664	342.777	0.063	2.169	738.890	0.003
	138 - 137		21.728	346.057	0.063	2.169	753.099	0.003
L10	137 - 136.834	TP26.023x25.1x0.25	21.728	346.602	0.063	2.168	755.472	0.003
	136.834 - 133.081		9.343	358.913	0.026	0.906	810.092	0.001
L11	136.834 - 133.081	TP25.805x24.639x0.375	12.781	525.136	0.024	1.261	1156.133	0.001
	133.081 - 131.834		22.210	531.213	0.042	2.166	1183.050	0.002
L12	131.834 - 130.834	TP26.972x25.805x0.375	22.285	536.086	0.042	2.166	1204.850	0.002
	130.834 - 129.834		25.938	540.960	0.048	2.413	1226.858	0.002
	129.834 - 128.834		26.012	545.833	0.048	2.413	1249.058	0.002
	128.834 - 127.834		26.087	550.706	0.047	2.412	1271.467	0.002
	127.834 - 126.834		26.161	555.579	0.047	2.411	1294.067	0.002
L13	126.834 - 125.834	TP28.138x26.972x0.375	26.235	560.452	0.047	2.411	1316.867	0.002
	125.834 -		26.310	565.325	0.047	2.410	1339.867	0.002

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 $\frac{T_u}{\phi T_n}$
	124.834							
	124.834 - 123.834		26.385	570.199	0.046	2.409	1363.067	0.002
	123.834 - 122.834		26.459	575.072	0.046	2.409	1386.467	0.002
	122.834 - 121.834		26.535	579.945	0.046	2.408	1410.058	0.002
L14	121.834 - 120.834	TP29.305x28.138x0.375	26.609	584.818	0.045	2.407	1433.858	0.002
	120.834 - 119.834		26.684	589.691	0.045	2.407	1457.858	0.002
	119.834 - 118.834		26.759	594.564	0.045	2.406	1482.050	0.002
	118.834 - 117.834		26.834	599.438	0.045	2.405	1506.442	0.002
	117.834 - 116.834		26.909	604.311	0.045	2.404	1531.033	0.002
L15	116.834 - 115.834	TP30.471x29.305x0.375	26.984	609.184	0.044	2.404	1555.825	0.002
	115.834 - 114.834		27.059	614.057	0.044	2.403	1580.817	0.002
	114.834 - 113.834		27.134	618.930	0.044	2.402	1606.008	0.001
	113.834 - 112.834		27.209	623.803	0.044	2.402	1631.400	0.001
	112.834 - 111.834		27.285	628.677	0.043	2.401	1656.992	0.001
L16	111.834 - 110.834	TP31.638x30.471x0.375	27.360	633.550	0.043	2.400	1682.775	0.001
	110.834 - 109.834		27.436	638.423	0.043	2.400	1708.758	0.001
	109.834 - 108.834		27.511	643.296	0.043	2.399	1734.950	0.001
	108.834 - 107.834		27.587	648.169	0.043	2.398	1761.333	0.001
	107.834 - 106.834		27.663	653.042	0.042	2.398	1787.917	0.001
L17	106.834 - 105.834	TP32.804x31.638x0.375	27.739	657.916	0.042	2.397	1814.700	0.001
	105.834 - 104.834		27.815	662.789	0.042	2.396	1841.683	0.001
	104.834 - 103.834		27.891	667.662	0.042	2.396	1868.867	0.001
	103.834 - 102.834		27.967	672.535	0.042	2.395	1896.250	0.001
	102.834 - 101.834		28.043	677.408	0.041	2.394	1923.825	0.001
L18	101.834 - 100.834	TP33.971x32.804x0.375	28.119	682.282	0.041	2.394	1951.608	0.001
	100.834 - 99.834		28.195	687.155	0.041	2.393	1979.583	0.001
	99.834 - 98.834		28.272	692.028	0.041	2.393	2007.758	0.001
	98.834 - 97.834		28.349	696.901	0.041	2.392	2036.133	0.001
	97.834 - 96.834		28.426	701.774	0.041	2.391	2064.708	0.001
L19	96.834 - 95.743	TP36.16x33.971x0.375	28.510	707.091	0.040	2.391	2096.117	0.001
	95.743 - 94.652		28.760	712.407	0.040	2.390	2127.758	0.001
	94.652 - 93.561		28.844	717.724	0.040	2.389	2159.633	0.001
	93.561 - 92.47		29.156	723.041	0.040	2.389	2191.742	0.001
	92.47 - 87.449		18.425	747.509	0.025	1.267	2342.600	0.001
L20	92.47 - 87.449	TP35.642x34.239x0.375	15.606	731.819	0.021	1.121	2245.292	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 $\frac{T_u}{\phi T_n}$
	87.449 - 86.449		34.060	736.688	0.046	2.252	2275.258	0.001
L21	86.449 - 85 (21)	TP35.98x35.642x0.375	34.166	743.742	0.046	2.252	2319.050	0.001
L22	85 - 84.75 (22)	TP36.038x35.98x0.375	34.153	744.959	0.046	2.251	2326.642	0.001
L23	84.75 - 83.75	TP37.203x36.038x0.375	34.236	749.828	0.046	2.251	2357.150	0.001
	83.75 - 82.75		34.300	754.696	0.045	2.250	2387.858	0.001
	82.75 - 81.75		34.365	759.565	0.045	2.250	2418.767	0.001
	81.75 - 80.75		34.430	764.433	0.045	2.249	2449.875	0.001
	80.75 - 79.75		34.495	769.302	0.045	2.248	2481.183	0.001
L24	79.75 - 78.5625	TP38.31x37.203x0.375	34.576	775.083	0.045	2.248	2518.617	0.001
	78.5625 - 77.375		34.653	780.865	0.044	2.247	2556.325	0.001
	77.375 - 76.1875		34.729	786.646	0.044	2.247	2594.317	0.001
	76.1875 - 75		34.806	792.428	0.044	2.246	2632.592	0.001
L25	75 - 74.75 (25)	TP38.369x38.31x0.7	34.804	1468.800	0.024	2.246	4845.317	0.000
L26	74.75 - 74 (26)	TP38.543x38.369x0.7	34.885	1475.610	0.024	2.246	4890.383	0.000
L27	74 - 73.75 (27)	TP38.602x38.543x0.375	34.897	798.513	0.044	2.246	2673.183	0.001
L28	73.75 - 72.75	TP39.767x38.602x0.375	35.041	803.382	0.044	2.245	2705.883	0.001
	72.75 - 71.75		35.104	808.250	0.043	2.114	2738.775	0.001
	71.75 - 70.75		35.168	813.119	0.043	2.113	2771.867	0.001
	70.75 - 69.75		35.231	817.988	0.043	2.113	2805.158	0.001
	69.75 - 68.75		35.295	822.856	0.043	2.112	2838.650	0.001
L29	68.75 - 67.75	TP40.932x39.767x0.375	35.358	827.725	0.043	2.112	2872.342	0.001
	67.75 - 66.75		35.421	832.593	0.043	2.111	2906.233	0.001
	66.75 - 65.75		35.484	837.462	0.042	2.111	2940.317	0.001
	65.75 - 64.75		35.547	842.330	0.042	2.111	2974.608	0.001
	64.75 - 63.75		35.610	847.199	0.042	2.110	3009.092	0.001
L30	63.75 - 62.75	TP42.098x40.932x0.375	35.672	852.067	0.042	2.110	3043.775	0.001
	62.75 - 61.75		35.734	856.936	0.042	2.110	3078.658	0.001
	61.75 - 60.75		35.796	861.804	0.042	2.109	3113.742	0.001
	60.75 - 59.75		35.859	866.673	0.041	2.109	3149.017	0.001
	59.75 - 58.75		35.921	871.542	0.041	2.108	3184.500	0.001
L31	58.75 - 57.75	TP43.263x42.098x0.375	35.982	876.410	0.041	2.108	3220.175	0.001
	57.75 - 56.75		36.043	881.279	0.041	2.108	3256.050	0.001
	56.75 - 55.75		36.104	886.147	0.041	2.107	3292.125	0.001
	55.75 - 54.75		36.165	891.016	0.041	2.107	3328.400	0.001
	54.75 - 53.75		36.227	895.884	0.040	2.107	3364.875	0.001
L32	53.75 - 52.5825	TP45.804x43.263x0.375	36.300	901.568	0.040	2.106	3407.708	0.001
	52.5825 - 51.415		36.368	907.252	0.040	2.106	3450.808	0.001
	51.415 - 50.2475		36.437	912.936	0.040	2.106	3494.183	0.001
	50.2475 - 49.08		36.506	918.620	0.040	2.105	3537.833	0.001
	49.08 - 42.848		17.858	948.961	0.019	1.000	3775.392	0.000
L33	49.08 - 42.848	TP45.281x43.602x0.438	19.334	1087.200	0.018	1.105	4247.492	0.000
	42.848 - 41.848		37.190	1092.860	0.034	2.104	4291.833	0.000
L34	41.848 - 40.848	TP46.442x45.281x0.438	37.251	1098.510	0.034	2.104	4336.400	0.000
	40.848 - 39.848		37.311	1104.170	0.034	2.104	4381.200	0.000
	39.848 - 38.848		37.372	1109.830	0.034	2.104	4426.233	0.000
	38.848 - 37.848		37.432	1115.490	0.034	2.104	4471.492	0.000
	37.848 - 36.848		37.493	1121.150	0.033	2.103	4516.983	0.000
L35	36.848 -	TP47.604x46.442x0.438	37.552	1126.810	0.033	2.103	4562.708	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 $\frac{T_u}{\phi T_n}$
	35.848							
	35.848 - 34.848		37.610	1132.470	0.033	2.103	4608.658	0.000
	34.848 - 33.848		37.668	1138.130	0.033	2.103	4654.833	0.000
	33.848 - 32.848		37.727	1143.790	0.033	2.103	4701.250	0.000
	32.848 - 31.848		37.785	1149.450	0.033	2.103	4747.892	0.000
L36	31.848 - 30.848	TP48.765x47.604x0.438	37.841	1155.110	0.033	2.102	4794.758	0.000
	30.848 - 29.848		37.896	1160.770	0.033	2.102	4841.867	0.000
	29.848 - 28.848		37.952	1166.430	0.033	2.102	4889.200	0.000
	28.848 - 27.848		38.008	1172.090	0.032	2.102	4936.758	0.000
	27.848 - 26.848		38.064	1177.750	0.032	2.102	4984.550	0.000
L37	26.848 - 25.848	TP49.926x48.765x0.438	38.116	1183.410	0.032	2.102	5032.575	0.000
	25.848 - 24.848		38.168	1189.070	0.032	2.102	5080.825	0.000
	24.848 - 23.848		38.220	1194.730	0.032	2.101	5129.308	0.000
	23.848 - 22.848		38.272	1200.390	0.032	2.101	5178.025	0.000
	22.848 - 21.848		38.324	1206.050	0.032	2.101	5226.967	0.000
L38	21.848 - 20.848	TP51.087x49.926x0.438	38.372	1211.710	0.032	2.101	5276.142	0.000
	20.848 - 19.848		38.420	1217.370	0.032	2.101	5325.550	0.000
	19.848 - 18.848		38.468	1223.030	0.031	2.101	5375.183	0.000
	18.848 - 17.848		38.515	1228.690	0.031	2.101	5425.050	0.000
	17.848 - 16.848		38.563	1234.350	0.031	2.101	5475.142	0.000
L39	16.848 - 15.848	TP52.248x51.087x0.438	38.606	1240.010	0.031	2.101	5525.467	0.000
	15.848 - 14.848		38.649	1245.670	0.031	2.101	5576.025	0.000
	14.848 - 13.848		38.692	1251.330	0.031	2.100	5626.808	0.000
	13.848 - 12.848		38.735	1256.990	0.031	2.100	5677.825	0.000
	12.848 - 11.848		38.779	1262.650	0.031	2.100	5729.067	0.000
L40	11.848 - 10.848	TP53.41x52.248x0.438	38.822	1268.310	0.031	2.100	5780.550	0.000
	10.848 - 9.848		38.865	1273.970	0.031	2.100	5832.250	0.000
	9.848 - 8.848		38.908	1279.630	0.030	2.100	5884.191	0.000
	8.848 - 7.848		38.952	1285.290	0.030	2.100	5936.358	0.000
	7.848 - 6.848		38.995	1290.950	0.030	2.100	5988.750	0.000
L41	6.848 - 5.848	TP54.571x53.41x0.438	39.039	1296.610	0.030	2.100	6041.383	0.000
	5.848 - 4.848		39.082	1302.270	0.030	2.100	6094.241	0.000
	4.848 - 3.848		39.126	1307.930	0.030	2.100	6147.325	0.000
	3.848 - 2.848		39.169	1313.590	0.030	2.100	6200.650	0.000
	2.848 - 1.848		39.213	1319.250	0.030	2.100	6254.191	0.000
L42	1.848 - 0 (42)	TP55x54.571x0.438	39.319	1329.710	0.030	2.100	6353.758	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio P_u / ϕP_n	Ratio M_{ux} / ϕM_{nx}	Ratio M_{uy} / ϕM_{ny}	Ratio V_u / ϕV_n	Ratio T_u / ϕT_n	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	182 - 181	0.000	0.000	0.000	0.000	0.000	0.000 [1]	1.050	4.8.2
	181 - 180	0.000	0.000	0.000	0.001	0.000	0.001	1.050	4.8.2
	180 - 179	0.000	0.001	0.000	0.001	0.000	0.001	1.050	4.8.2
	179 - 178	0.000	0.002	0.000	0.001	0.000	0.002	1.050	4.8.2
	178 - 177	0.001	0.046	0.000	0.010	0.000	0.047	1.050	4.8.2
L2	177 - 176	0.001	0.053	0.000	0.012	0.003	0.054	1.050	4.8.2
	176 - 175	0.001	0.060	0.000	0.012	0.003	0.062	1.050	4.8.2
	175 - 174	0.001	0.067	0.000	0.013	0.004	0.069	1.050	4.8.2
	174 - 173	0.001	0.074	0.000	0.013	0.004	0.076	1.050	4.8.2
	173 - 172	0.001	0.081	0.000	0.013	0.004	0.082	1.050	4.8.2
L3	172 - 171	0.001	0.087	0.000	0.013	0.004	0.089	1.050	4.8.2
	171 - 170	0.001	0.093	0.000	0.013	0.004	0.095	1.050	4.8.2
	170 - 169	0.001	0.099	0.000	0.013	0.003	0.101	1.050	4.8.2
	169 - 168	0.002	0.105	0.000	0.013	0.003	0.107	1.050	4.8.2
	168 - 167	0.007	0.135	0.000	0.046	0.005	0.144	1.050	4.8.2
L4	167 - 166	0.007	0.160	0.000	0.045	0.005	0.169	1.050	4.8.2
	166 - 165	0.007	0.184	0.000	0.045	0.005	0.193	1.050	4.8.2
	165 - 164	0.007	0.207	0.000	0.045	0.005	0.217	1.050	4.8.2
	164 - 163	0.007	0.230	0.000	0.045	0.005	0.239	1.050	4.8.2
	163 - 162	0.007	0.251	0.000	0.044	0.005	0.260	1.050	4.8.2
L5	162 - 161	0.007	0.271	0.000	0.044	0.005	0.280	1.050	4.8.2
	161 - 160	0.007	0.290	0.000	0.044	0.005	0.299	1.050	4.8.2
	160 - 159	0.007	0.309	0.000	0.043	0.005	0.318	1.050	4.8.2
	159 - 158	0.007	0.326	0.000	0.043	0.005	0.335	1.050	4.8.2
	158 - 157	0.007	0.343	0.000	0.043	0.004	0.352	1.050	4.8.2
L6	157 - 156	0.010	0.379	0.000	0.060	0.004	0.394	1.050	4.8.2
	156 - 155	0.010	0.404	0.000	0.060	0.004	0.418	1.050	4.8.2
	155 - 154	0.010	0.427	0.000	0.059	0.004	0.442	1.050	4.8.2
	154 - 153	0.010	0.450	0.000	0.059	0.004	0.464	1.050	4.8.2
	153 - 152	0.010	0.471	0.000	0.058	0.004	0.486	1.050	4.8.2
L7	152 - 151	0.010	0.492	0.000	0.058	0.004	0.506	1.050	4.8.2
	151 - 150	0.010	0.512	0.000	0.058	0.004	0.526	1.050	4.8.2
	150 - 149	0.010	0.531	0.000	0.057	0.004	0.545	1.050	4.8.2
	149 - 148	0.010	0.549	0.000	0.057	0.004	0.563	1.050	4.8.2
	148 - 147	0.010	0.566	0.000	0.056	0.004	0.580	1.050	4.8.2
L8	147 - 146	0.010	0.583	0.000	0.056	0.003	0.597	1.050	4.8.2
	146 - 145	0.010	0.599	0.000	0.056	0.003	0.613	1.050	4.8.2
	145 - 144	0.010	0.614	0.000	0.055	0.003	0.628	1.050	4.8.2
	144 - 143	0.010	0.629	0.000	0.055	0.003	0.642	1.050	4.8.2
	143 - 142	0.010	0.643	0.000	0.055	0.003	0.656	1.050	4.8.2
L9	142 - 141	0.011	0.658	0.000	0.057	0.003	0.673	1.050	4.8.2
	141 - 140	0.011	0.674	0.000	0.056	0.003	0.688	1.050	4.8.2
	140 - 139	0.014	0.696	0.000	0.064	0.003	0.714	1.050	4.8.2
	139 - 138	0.014	0.714	0.000	0.063	0.003	0.732	1.050	4.8.2
	138 - 137	0.014	0.731	0.000	0.063	0.003	0.749	1.050	4.8.2
L10	137 - 136.834	0.014	0.734	0.000	0.063	0.003	0.752	1.050	4.8.2
	136.834 - 133.081	0.006	0.333	0.000	0.026	0.001	0.339	1.050	4.8.2
L11	136.834 - 133.081	0.006	0.319	0.000	0.024	0.001	0.325	1.050	4.8.2
	133.081 - 131.834	0.010	0.560	0.000	0.042	0.002	0.571	1.050	4.8.2
L12	131.834 - 130.834	0.010	0.568	0.000	0.042	0.002	0.580	1.050	4.8.2
	130.834 - 129.834	0.011	0.577	0.000	0.048	0.002	0.590	1.050	4.8.2
	129.834 - 128.834	0.011	0.588	0.000	0.048	0.002	0.601	1.050	4.8.2
	128.834 - 127.834	0.011	0.598	0.000	0.047	0.002	0.611	1.050	4.8.2
	127.834 - 126.834	0.011	0.608	0.000	0.047	0.002	0.621	1.050	4.8.2
L13	126.834 - 125.834	0.011	0.617	0.000	0.047	0.002	0.631	1.050	4.8.2
	125.834 - 124.834	0.011	0.626	0.000	0.047	0.002	0.640	1.050	4.8.2
	124.834 - 123.834	0.011	0.635	0.000	0.046	0.002	0.649	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
	123.834 - 122.834	0.011	0.644	0.000	0.046	0.002	0.657	1.050	4.8.2
	122.834 - 121.834	0.011	0.652	0.000	0.046	0.002	0.665	1.050	4.8.2
L14	121.834 - 120.834	0.011	0.660	0.000	0.045	0.002	0.673	1.050	4.8.2
	120.834 - 119.834	0.011	0.667	0.000	0.045	0.002	0.681	1.050	4.8.2
	119.834 - 118.834	0.011	0.674	0.000	0.045	0.002	0.688	1.050	4.8.2
	118.834 - 117.834	0.011	0.681	0.000	0.045	0.002	0.695	1.050	4.8.2
	117.834 - 116.834	0.011	0.688	0.000	0.045	0.002	0.701	1.050	4.8.2
L15	116.834 - 115.834	0.011	0.695	0.000	0.044	0.002	0.708	1.050	4.8.2
	115.834 - 114.834	0.011	0.701	0.000	0.044	0.002	0.714	1.050	4.8.2
	114.834 - 113.834	0.011	0.707	0.000	0.044	0.001	0.720	1.050	4.8.2
	113.834 - 112.834	0.011	0.713	0.000	0.044	0.001	0.726	1.050	4.8.2
	112.834 - 111.834	0.011	0.718	0.000	0.043	0.001	0.731	1.050	4.8.2
L16	111.834 - 110.834	0.011	0.723	0.000	0.043	0.001	0.737	1.050	4.8.2
	110.834 - 109.834	0.011	0.729	0.000	0.043	0.001	0.742	1.050	4.8.2
	109.834 - 108.834	0.011	0.733	0.000	0.043	0.001	0.747	1.050	4.8.2
	108.834 - 107.834	0.011	0.738	0.000	0.043	0.001	0.751	1.050	4.8.2
	107.834 - 106.834	0.011	0.743	0.000	0.042	0.001	0.756	1.050	4.8.2
L17	106.834 - 105.834	0.011	0.747	0.000	0.042	0.001	0.760	1.050	4.8.2
	105.834 - 104.834	0.011	0.751	0.000	0.042	0.001	0.765	1.050	4.8.2
	104.834 - 103.834	0.011	0.755	0.000	0.042	0.001	0.769	1.050	4.8.2
	103.834 - 102.834	0.011	0.759	0.000	0.042	0.001	0.773	1.050	4.8.2
	102.834 - 101.834	0.011	0.763	0.000	0.041	0.001	0.776	1.050	4.8.2
L18	101.834 - 100.834	0.011	0.767	0.000	0.041	0.001	0.780	1.050	4.8.2
	100.834 - 99.834	0.011	0.770	0.000	0.041	0.001	0.783	1.050	4.8.2
	99.834 - 98.834	0.011	0.773	0.000	0.041	0.001	0.787	1.050	4.8.2
	98.834 - 97.834	0.011	0.777	0.000	0.041	0.001	0.790	1.050	4.8.2
	97.834 - 96.834	0.012	0.780	0.000	0.041	0.001	0.793	1.050	4.8.2
L19	96.834 - 95.743	0.012	0.783	0.000	0.040	0.001	0.796	1.050	4.8.2
	95.743 - 94.652	0.012	0.786	0.000	0.040	0.001	0.799	1.050	4.8.2
	94.652 - 93.561	0.012	0.789	0.000	0.040	0.001	0.802	1.050	4.8.2
	93.561 - 92.47	0.012	0.792	0.000	0.040	0.001	0.805	1.050	4.8.2
	92.47 - 87.449	0.008	0.419	0.000	0.025	0.001	0.427	1.050	4.8.2
L20	92.47 - 87.449	0.007	0.408	0.000	0.021	0.000	0.415	1.050	4.8.2
	87.449 - 86.449	0.014	0.849	0.000	0.046	0.001	0.865	1.050	4.8.2
L21	86.449 - 85	0.014	0.854	0.000	0.046	0.001	0.871	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
	(21)								
L22	85 - 84.75	0.014	0.855	0.000	0.046	0.001	0.872	1.050	4.8.2
	(22)								
L23	84.75 - 83.75	0.014	0.860	0.000	0.046	0.001	0.877	1.050	4.8.2
	83.75 - 82.75	0.014	0.865	0.000	0.045	0.001	0.881	1.050	4.8.2
	82.75 - 81.75	0.014	0.869	0.000	0.045	0.001	0.886	1.050	4.8.2
	81.75 - 80.75	0.014	0.874	0.000	0.045	0.001	0.890	1.050	4.8.2
	80.75 - 79.75	0.014	0.878	0.000	0.045	0.001	0.895	1.050	4.8.2
L24	79.75 - 78.5625	0.014	0.883	0.000	0.045	0.001	0.900	1.050	4.8.2
	78.5625 - 77.375	0.014	0.888	0.000	0.044	0.001	0.905	1.050	4.8.2
	77.375 - 76.1875	0.014	0.893	0.000	0.044	0.001	0.909	1.050	4.8.2
	76.1875 - 75	0.014	0.898	0.000	0.044	0.001	0.914	1.050	4.8.2
L25	75 - 74.75	0.008	0.486	0.000	0.024	0.000	0.495	1.050	4.8.2
	(25)								
L26	74.75 - 74	0.008	0.487	0.000	0.024	0.000	0.496	1.050	4.8.2
	(26)								
L27	74 - 73.75	0.014	0.902	0.000	0.044	0.001	0.919	1.050	4.8.2
	(27)								
L28	73.75 - 72.75	0.015	0.906	0.000	0.044	0.001	0.923	1.050	4.8.2
	72.75 - 71.75	0.015	0.910	0.000	0.043	0.001	0.926	1.050	4.8.2
	71.75 - 70.75	0.015	0.913	0.000	0.043	0.001	0.930	1.050	4.8.2
	70.75 - 69.75	0.015	0.917	0.000	0.043	0.001	0.933	1.050	4.8.2
	69.75 - 68.75	0.015	0.920	0.000	0.043	0.001	0.937	1.050	4.8.2
L29	68.75 - 67.75	0.015	0.924	0.000	0.043	0.001	0.940	1.050	4.8.2
	67.75 - 66.75	0.015	0.927	0.000	0.043	0.001	0.943	1.050	4.8.2
	66.75 - 65.75	0.015	0.930	0.000	0.042	0.001	0.947	1.050	4.8.2
	65.75 - 64.75	0.015	0.933	0.000	0.042	0.001	0.950	1.050	4.8.2
	64.75 - 63.75	0.015	0.936	0.000	0.042	0.001	0.953	1.050	4.8.2
L30	63.75 - 62.75	0.015	0.939	0.000	0.042	0.001	0.956	1.050	4.8.2
	62.75 - 61.75	0.015	0.942	0.000	0.042	0.001	0.959	1.050	4.8.2
	61.75 - 60.75	0.015	0.945	0.000	0.042	0.001	0.961	1.050	4.8.2
	60.75 - 59.75	0.015	0.948	0.000	0.041	0.001	0.964	1.050	4.8.2
	59.75 - 58.75	0.015	0.951	0.000	0.041	0.001	0.967	1.050	4.8.2
L31	58.75 - 57.75	0.015	0.953	0.000	0.041	0.001	0.970	1.050	4.8.2
	57.75 - 56.75	0.015	0.956	0.000	0.041	0.001	0.972	1.050	4.8.2
	56.75 - 55.75	0.015	0.958	0.000	0.041	0.001	0.975	1.050	4.8.2
	55.75 - 54.75	0.015	0.961	0.000	0.041	0.001	0.977	1.050	4.8.2
	54.75 - 53.75	0.015	0.963	0.000	0.040	0.001	0.980	1.050	4.8.2
L32	53.75 - 52.5825	0.015	0.966	0.000	0.040	0.001	0.983	1.050	4.8.2
	52.5825 - 51.415	0.015	0.969	0.000	0.040	0.001	0.985	1.050	4.8.2
	51.415 - 50.2475	0.015	0.972	0.000	0.040	0.001	0.988	1.050	4.8.2
	50.2475 - 49.08	0.015	0.974	0.000	0.040	0.001	0.991	1.050	4.8.2
	49.08 - 42.848	0.007	0.469	0.000	0.019	0.000	0.477	1.050	4.8.2
L33	49.08 - 42.848	0.007	0.439	0.000	0.018	0.000	0.446	1.050	4.8.2
	42.848 - 41.848	0.014	0.837	0.000	0.034	0.000	0.852	1.050	4.8.2
L34	41.848 - 40.848	0.014	0.839	0.000	0.034	0.000	0.854	1.050	4.8.2
	40.848 - 39.848	0.014	0.840	0.000	0.034	0.000	0.855	1.050	4.8.2
	39.848 - 38.848	0.014	0.841	0.000	0.034	0.000	0.856	1.050	4.8.2
	38.848 - 37.848	0.014	0.842	0.000	0.034	0.000	0.857	1.050	4.8.2
	37.848 - 36.848	0.014	0.844	0.000	0.033	0.000	0.858	1.050	4.8.2
L35	36.848 - 35.848	0.014	0.845	0.000	0.033	0.000	0.860	1.050	4.8.2
	35.848 - 34.848	0.014	0.846	0.000	0.033	0.000	0.861	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
	34.848 - 33.848	0.014	0.847	0.000	0.033	0.000	0.862	1.050	4.8.2
	33.848 - 32.848	0.014	0.848	0.000	0.033	0.000	0.863	1.050	4.8.2
	32.848 - 31.848	0.014	0.849	0.000	0.033	0.000	0.864	1.050	4.8.2
L36	31.848 - 30.848	0.014	0.850	0.000	0.033	0.000	0.865	1.050	4.8.2
	30.848 - 29.848	0.014	0.851	0.000	0.033	0.000	0.866	1.050	4.8.2
	29.848 - 28.848	0.014	0.852	0.000	0.033	0.000	0.867	1.050	4.8.2
	28.848 - 27.848	0.014	0.853	0.000	0.032	0.000	0.868	1.050	4.8.2
	27.848 - 26.848	0.014	0.854	0.000	0.032	0.000	0.869	1.050	4.8.2
L37	26.848 - 25.848	0.014	0.855	0.000	0.032	0.000	0.870	1.050	4.8.2
	25.848 - 24.848	0.014	0.856	0.000	0.032	0.000	0.871	1.050	4.8.2
	24.848 - 23.848	0.014	0.857	0.000	0.032	0.000	0.872	1.050	4.8.2
	23.848 - 22.848	0.014	0.858	0.000	0.032	0.000	0.873	1.050	4.8.2
	22.848 - 21.848	0.014	0.858	0.000	0.032	0.000	0.874	1.050	4.8.2
L38	21.848 - 20.848	0.014	0.859	0.000	0.032	0.000	0.874	1.050	4.8.2
	20.848 - 19.848	0.014	0.860	0.000	0.032	0.000	0.875	1.050	4.8.2
	19.848 - 18.848	0.014	0.861	0.000	0.031	0.000	0.876	1.050	4.8.2
	18.848 - 17.848	0.014	0.862	0.000	0.031	0.000	0.877	1.050	4.8.2
	17.848 - 16.848	0.014	0.862	0.000	0.031	0.000	0.878	1.050	4.8.2
L39	16.848 - 15.848	0.014	0.863	0.000	0.031	0.000	0.878	1.050	4.8.2
	15.848 - 14.848	0.014	0.864	0.000	0.031	0.000	0.879	1.050	4.8.2
	14.848 - 13.848	0.014	0.865	0.000	0.031	0.000	0.880	1.050	4.8.2
	13.848 - 12.848	0.014	0.865	0.000	0.031	0.000	0.880	1.050	4.8.2
	12.848 - 11.848	0.014	0.866	0.000	0.031	0.000	0.881	1.050	4.8.2
L40	11.848 - 10.848	0.014	0.867	0.000	0.031	0.000	0.882	1.050	4.8.2
	10.848 - 9.848	0.014	0.867	0.000	0.031	0.000	0.882	1.050	4.8.2
	9.848 - 8.848	0.014	0.868	0.000	0.030	0.000	0.883	1.050	4.8.2
	8.848 - 7.848	0.014	0.868	0.000	0.030	0.000	0.884	1.050	4.8.2
	7.848 - 6.848	0.014	0.869	0.000	0.030	0.000	0.884	1.050	4.8.2
L41	6.848 - 5.848	0.014	0.870	0.000	0.030	0.000	0.885	1.050	4.8.2
	5.848 - 4.848	0.014	0.870	0.000	0.030	0.000	0.886	1.050	4.8.2
	4.848 - 3.848	0.015	0.871	0.000	0.030	0.000	0.886	1.050	4.8.2
	3.848 - 2.848	0.015	0.871	0.000	0.030	0.000	0.887	1.050	4.8.2
	2.848 - 1.848	0.015	0.872	0.000	0.030	0.000	0.887	1.050	4.8.2
L42	1.848 - 0 (42)	0.015	0.873	0.000	0.030	0.000	0.888	1.050	4.8.2

[1] P_u / ϕP_n controls

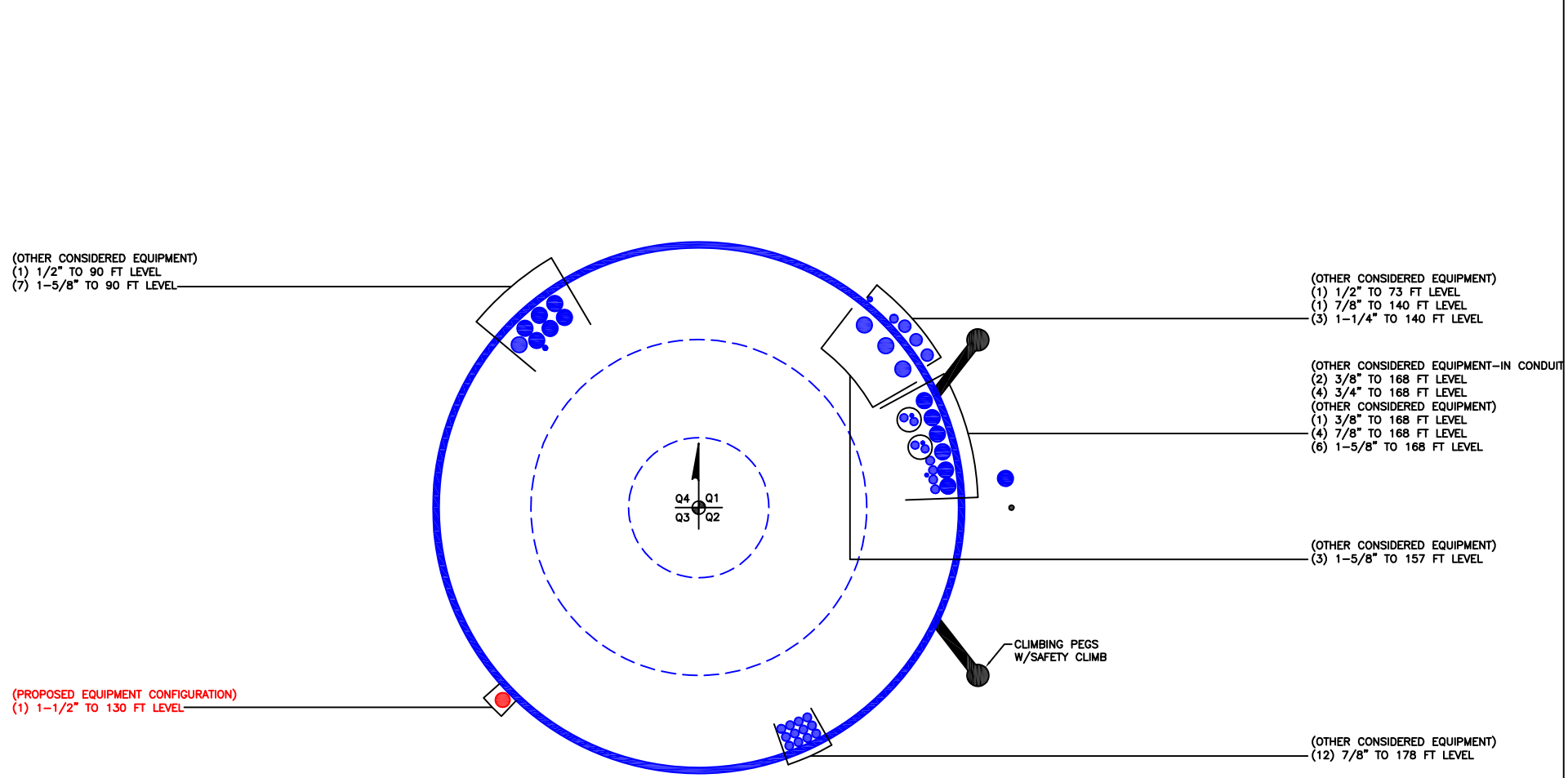
Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	182 - 177	Pole	TP15.678x14.5x0.25	1	-0.802	751.961	4.5	Pass
L2	177 - 172	Pole	TP16.856x15.678x0.25	2	-1.014	809.365	7.8	Pass
L3	172 - 167	Pole	TP18.033x16.856x0.25	3	-5.526	866.771	13.7	Pass
L4	167 - 162	Pole	TP19.211x18.033x0.25	4	-5.905	924.175	24.8	Pass
L5	162 - 157	Pole	TP20.389x19.211x0.25	5	-6.336	981.581	33.6	Pass
L6	157 - 152	Pole	TP21.567x20.389x0.25	6	-10.275	1038.985	46.3	Pass
L7	152 - 147	Pole	TP22.744x21.567x0.25	7	-10.856	1096.389	55.3	Pass
L8	147 - 142	Pole	TP23.922x22.744x0.25	8	-11.472	1153.792	62.5	Pass
L9	142 - 137	Pole	TP25.1x23.922x0.25	9	-15.714	1211.196	71.3	Pass
L10	137 - 133.081	Pole	TP26.023x25.1x0.25	10	-15.754	1213.107	71.6	Pass
L11	133.081 - 131.834	Pole	TP25.805x24.639x0.375	11	-16.871	1859.245	54.4	Pass
L12	131.834 - 126.834	Pole	TP26.972x25.805x0.375	12	-20.512	1944.526	59.2	Pass
L13	126.834 - 121.834	Pole	TP28.138x26.972x0.375	13	-21.497	2029.807	63.4	Pass
L14	121.834 - 116.834	Pole	TP29.305x28.138x0.375	14	-22.518	2115.088	66.8	Pass
L15	116.834 - 111.834	Pole	TP30.471x29.305x0.375	15	-23.574	2200.369	69.7	Pass
L16	111.834 - 106.834	Pole	TP31.638x30.471x0.375	16	-24.663	2285.650	72.0	Pass
L17	106.834 - 101.834	Pole	TP32.804x31.638x0.375	17	-25.784	2370.931	73.9	Pass
L18	101.834 - 96.834	Pole	TP33.971x32.804x0.375	18	-26.936	2456.212	75.5	Pass
L19	96.834 - 87.449	Pole	TP36.16x33.971x0.375	19	-28.319	2530.647	76.7	Pass
L20	87.449 - 86.449	Pole	TP35.642x34.239x0.375	20	-35.005	2578.411	82.4	Pass
L21	86.449 - 85	Pole	TP35.98x35.642x0.375	21	-35.371	2603.097	82.9	Pass
L22	85 - 84.75	Pole	TP36.038x35.98x0.375	22	-35.465	2607.360	83.0	Pass
L23	84.75 - 79.75	Pole	TP37.203x36.038x0.375	23	-36.769	2692.557	85.2	Pass
L24	79.75 - 75	Pole	TP38.31x37.203x0.375	24	-38.049	2773.501	87.1	Pass
L25	75 - 74.75	Pole	TP38.369x38.31x0.7	25	-38.172	5140.789	47.1	Pass
L26	74.75 - 74	Pole	TP38.543x38.369x0.7	26	-38.460	5164.645	47.2	Pass
L27	74 - 73.75	Pole	TP38.602x38.543x0.375	27	-38.532	2794.795	87.5	Pass
L28	73.75 - 68.75	Pole	TP39.767x38.602x0.375	28	-39.978	2879.992	89.2	Pass
L29	68.75 - 63.75	Pole	TP40.932x39.767x0.375	29	-41.398	2965.200	90.7	Pass
L30	63.75 - 58.75	Pole	TP42.098x40.932x0.375	30	-42.846	3050.397	92.1	Pass
L31	58.75 - 53.75	Pole	TP43.263x42.098x0.375	31	-44.323	3135.594	93.3	Pass
L32	53.75 - 42.848	Pole	TP45.804x43.263x0.375	32	-45.725	3215.173	94.4	Pass
L33	42.848 - 41.848	Pole	TP45.281x43.602x0.438	33	-49.383	3824.992	81.2	Pass
L34	41.848 - 36.848	Pole	TP46.442x45.281x0.438	34	-51.099	3924.039	81.8	Pass
L35	36.848 - 31.848	Pole	TP47.604x46.442x0.438	35	-52.846	4023.085	82.3	Pass
L36	31.848 - 26.848	Pole	TP48.765x47.604x0.438	36	-54.627	4122.132	82.8	Pass
L37	26.848 - 21.848	Pole	TP49.926x48.765x0.438	37	-56.439	4221.178	83.2	Pass
L38	21.848 - 16.848	Pole	TP51.087x49.926x0.438	38	-58.284	4320.225	83.6	Pass
L39	16.848 - 11.848	Pole	TP52.248x51.087x0.438	39	-60.161	4419.271	83.9	Pass
L40	11.848 - 6.848	Pole	TP53.41x52.248x0.438	40	-62.069	4518.328	84.2	Pass
L41	6.848 - 1.848	Pole	TP54.571x53.41x0.438	41	-64.009	4617.375	84.5	Pass
L42	1.848 - 0	Pole	TP55x54.571x0.438	42	-64.719	4653.978	84.6	Pass
							Summary	
						Pole (L32)	94.4	Pass
						RATING =	**94.4**	**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 90 FT LEVEL
(7) 1-5/8" TO 90 FT LEVEL
(PROPOSED EQUIPMENT CONFIGURATION)
(1) 1-1/2" TO 130 FT LEVEL
Q4
Q1
Q3
Q2
(OTHER CONSIDERED EQUIPMENT)
(1) 1/2" TO 73 FT LEVEL
(1) 7/8" TO 140 FT LEVEL
(3) 1-1/4" TO 140 FT LEVEL
(OTHER CONSIDERED EQUIPMENT-IN CONDUIT
(2) 3/8" TO 168 FT LEVEL
(4) 3/4" TO 168 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 3/8" TO 168 FT LEVEL
(4) 7/8" TO 168 FT LEVEL
(6) 1-5/8" TO 168 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(3) 1-5/8" TO 157 FT LEVEL
CLIMBING PEGS
W/SAFETY CLIMB
(OTHER CONSIDERED EQUIPMENT)
(12) 7/8" TO 178 FT LEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

CCIpole

per TIA-222- H

Site BU: 842872

Work Order: 1987177

CROWN CASTLE

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	182	48.919	3.753	18	14.5	26.023	0.25	Auto	A572-65
2	136.834	49.385	5.021	18	24.64	36.16	0.375	Auto	A572-65
3	92.47	49.622	6.232	18	34.24	45.804	0.375	Auto	A572-65
4	49.08	49.08	0	18	43.60	55	0.4375	Auto	A572-65

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	13	14	15	16	17	18
1	49	75	plate	PL 5.75" x 1"	3			E2						E2						E2			
2	74	85	plate	PL 5.75" x 1"	3				E2						E2						E2		
3																							
4																							
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	5.75	1	5.75	0.5	PC 8.8 - M20 (100)	24	PC 8.8 - M20 (100)	24.000	14.000	4.500	1.1875	A572-65
2	5.75	1	5.75	0.5	PC 8.8 - M20 (100)	24	PC 8.8 - M20 (100)	24.000	14.000	4.500	1.1875	A572-65

Connection Details for Custom Reinforcements

Reinforcement	End	# Bolts	N or X	Bolt Spacing (in)	Edge Dist (in)	Weld Grade (ksi)	Transverse (Horiz.) Weld Type	Horiz. Weld Length (in)	Horiz. Groove Depth (in)	Horiz. Groove Angle (deg)	Horiz. Fillet Size (in)	Vertical Weld Length (in)	Vertical Fillet Size (in)	Rev H Connection Capacity (kip)
PL 5.75" x 1"	Top	8	N	3	3	-	-	-	-	-	-	-	-	-
	Bottom	8	N	3	3	-	-	-	-	-	-	-	-	-

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	182 - 177	5		18	14.500	15.678	0.25	A572-65	1.000
2	177 - 172	5		18	15.678	16.856	0.25	A572-65	1.000
3	172 - 167	5		18	16.856	18.033	0.25	A572-65	1.000
4	167 - 162	5		18	18.033	19.211	0.25	A572-65	1.000
5	162 - 157	5		18	19.211	20.389	0.25	A572-65	1.000
6	157 - 152	5		18	20.389	21.567	0.25	A572-65	1.000
7	152 - 147	5		18	21.567	22.744	0.25	A572-65	1.000
8	147 - 142	5		18	22.744	23.922	0.25	A572-65	1.000
9	142 - 137	5		18	23.922	25.100	0.25	A572-65	1.000
10	137 - 136.834	3.919	3.753	18	25.100	26.023	0.25	A572-65	1.000
11	136.834 - 131.834	5		18	24.639	25.805	0.375	A572-65	1.000
12	131.834 - 126.834	5		18	25.805	26.972	0.375	A572-65	1.000
13	126.834 - 121.834	5		18	26.972	28.138	0.375	A572-65	1.000
14	121.834 - 116.834	5		18	28.138	29.305	0.375	A572-65	1.000
15	116.834 - 111.834	5		18	29.305	30.471	0.375	A572-65	1.000
16	111.834 - 106.834	5		18	30.471	31.638	0.375	A572-65	1.000
17	106.834 - 101.834	5		18	31.638	32.804	0.375	A572-65	1.000
18	101.834 - 96.834	5		18	32.804	33.971	0.375	A572-65	1.000
19	96.834 - 92.47	9.385	5.021	18	33.971	36.160	0.375	A572-65	1.000
20	92.47 - 86.449	6.021		18	34.239	35.642	0.375	A572-65	1.000
21	86.449 - 85	1.449		18	35.642	35.980	0.375	A572-65	1.000
22	85 - 84.75	0.25		18	35.980	36.038	0.375	A572-65	1.000
23	84.75 - 79.75	5		18	36.038	37.203	0.375	A572-65	1.000
24	79.75 - 75	4.75		18	37.203	38.310	0.375	A572-65	1.000
25	75 - 74.75	0.25		18	38.310	38.369	0.7	A572-65	0.953
26	74.75 - 74	0.75		18	38.369	38.543	0.7	A572-65	0.951
27	74 - 73.75	0.25		18	38.543	38.602	0.375	A572-65	1.000
28	73.75 - 68.75	5		18	38.602	39.767	0.375	A572-65	1.000
29	68.75 - 63.75	5		18	39.767	40.932	0.375	A572-65	1.000
30	63.75 - 58.75	5		18	40.932	42.098	0.375	A572-65	1.000
31	58.75 - 53.75	5		18	42.098	43.263	0.375	A572-65	1.000
32	53.75 - 49.08	10.902	6.232	18	43.263	45.804	0.375	A572-65	1.000
33	49.08 - 41.848	7.232		18	43.602	45.281	0.4375	A572-65	1.000
34	41.848 - 36.848	5		18	45.281	46.442	0.4375	A572-65	1.000
35	36.848 - 31.848	5		18	46.442	47.604	0.4375	A572-65	1.000
36	31.848 - 26.848	5		18	47.604	48.765	0.4375	A572-65	1.000
37	26.848 - 21.848	5		18	48.765	49.926	0.4375	A572-65	1.000
38	21.848 - 16.848	5		18	49.926	51.087	0.4375	A572-65	1.000
39	16.848 - 11.848	5		18	51.087	52.248	0.4375	A572-65	1.000
40	11.848 - 6.848	5		18	52.248	53.410	0.4375	A572-65	1.000
41	6.848 - 1.848	5		18	53.410	54.571	0.4375	A572-65	1.000
42	1.848 - 0	1.848		18	54.571	55.000	0.4375	A572-65	1.000

TNX Section Forces

Increment (ft): 5

	Section Height (ft)	TNX Output P_u (K)	M_{ux} (kip-ft)	V_u (K)
1	182 - 177	0.80	13.11	2.21
2	177 - 172	1.02	26.78	2.93
3	172 - 167	5.53	51.28	11.29
4	167 - 162	5.91	108.72	11.69
5	162 - 157	6.34	168.03	12.04
6	157 - 152	10.27	258.71	17.33
7	152 - 147	10.86	346.17	17.67
8	147 - 142	11.47	435.35	18.02
9	142 - 137	15.71	540.26	21.73
10	137 - 136.834	15.75	543.86	21.73
11	136.834 - 131.834	16.87	653.70	22.21
12	131.834 - 126.834	20.51	776.92	26.16
13	126.834 - 121.834	21.50	908.56	26.53
14	121.834 - 116.834	22.52	1042.07	26.91
15	116.834 - 111.834	23.57	1177.44	27.29
16	111.834 - 106.834	24.66	1314.69	27.66
17	106.834 - 101.834	25.78	1453.84	28.04
18	101.834 - 96.834	26.94	1594.88	28.43
19	96.834 - 92.47	28.32	1720.09	29.16
20	92.47 - 86.449	35.01	1914.57	34.06
21	86.449 - 85	35.37	1963.94	34.17
22	85 - 84.75	35.47	1972.48	34.15
23	84.75 - 79.75	36.77	2143.98	34.50
24	79.75 - 75	38.05	2308.40	34.81
25	75 - 74.75	38.17	2317.09	34.80
26	74.75 - 74	38.46	2343.21	34.88
27	74 - 73.75	38.53	2351.93	34.90
28	73.75 - 68.75	39.98	2527.63	35.30
29	68.75 - 63.75	41.40	2704.72	35.61
30	63.75 - 58.75	42.85	2883.36	35.92
31	58.75 - 53.75	44.32	3063.55	36.23
32	53.75 - 49.08	45.72	3233.19	36.51
33	49.08 - 41.848	49.38	3499.53	37.19
34	41.848 - 36.848	51.10	3686.05	37.49
35	36.848 - 31.848	52.85	3874.07	37.79
36	31.848 - 26.848	54.63	4063.50	38.06
37	26.848 - 21.848	56.44	4254.29	38.32
38	21.848 - 16.848	58.28	4446.32	38.56
39	16.848 - 11.848	60.16	4639.48	38.78
40	11.848 - 6.848	62.07	4833.72	39.00
41	6.848 - 1.848	64.01	5029.04	39.21
42	1.848 - 0	64.72	5101.51	39.32

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
182 - 177	Pole	TP15.678x14.5x0.25	Pole	4.5%	Pass
177 - 172	Pole	TP16.856x15.678x0.25	Pole	7.8%	Pass
172 - 167	Pole	TP18.033x16.856x0.25	Pole	13.6%	Pass
167 - 162	Pole	TP19.211x18.033x0.25	Pole	24.7%	Pass
162 - 157	Pole	TP20.389x19.211x0.25	Pole	33.5%	Pass
157 - 152	Pole	TP21.567x20.389x0.25	Pole	46.2%	Pass
152 - 147	Pole	TP22.744x21.567x0.25	Pole	55.2%	Pass
147 - 142	Pole	TP23.922x22.744x0.25	Pole	62.4%	Pass
142 - 137	Pole	TP25.1x23.922x0.25	Pole	71.3%	Pass
137 - 136.83	Pole	TP26.023x25.1x0.25	Pole	71.6%	Pass
136.83 - 131.83	Pole	TP25.805x24.639x0.375	Pole	54.3%	Pass
131.83 - 126.83	Pole	TP26.972x25.805x0.375	Pole	59.1%	Pass
126.83 - 121.83	Pole	TP28.138x26.972x0.375	Pole	63.3%	Pass
121.83 - 116.83	Pole	TP29.305x28.138x0.375	Pole	66.8%	Pass
116.83 - 111.83	Pole	TP30.471x29.305x0.375	Pole	69.6%	Pass
111.83 - 106.83	Pole	TP31.638x30.471x0.375	Pole	71.9%	Pass
106.83 - 101.83	Pole	TP32.804x31.638x0.375	Pole	73.9%	Pass
101.83 - 96.83	Pole	TP33.971x32.804x0.375	Pole	75.5%	Pass
96.83 - 92.47	Pole	TP36.16x33.971x0.375	Pole	76.6%	Pass
92.47 - 86.45	Pole	TP35.642x34.239x0.375	Pole	82.4%	Pass
86.45 - 85	Pole	TP35.98x35.642x0.375	Pole	82.9%	Pass
85 - 84.75	Pole	TP36.038x35.98x0.375	Pole	83.0%	Pass
84.75 - 79.75	Pole	TP37.203x36.038x0.375	Pole	85.2%	Pass
79.75 - 75	Pole	TP38.31x37.203x0.375	Pole	87.0%	Pass
75 - 74.75	Pole + Reinf.	TP38.369x38.31x0.7	Reinf. 2 Tension Rupture	75.0%	Pass
74.75 - 74	Pole + Reinf.	TP38.543x38.369x0.7	Reinf. 2 Tension Rupture	75.3%	Pass
74 - 73.75	Pole	TP38.602x38.543x0.375	Pole	87.5%	Pass
73.75 - 68.75	Pole	TP39.767x38.602x0.375	Pole	89.2%	Pass
68.75 - 63.75	Pole	TP40.932x39.767x0.375	Pole	90.7%	Pass
63.75 - 58.75	Pole	TP42.098x40.932x0.375	Pole	92.1%	Pass
58.75 - 53.75	Pole	TP43.263x42.098x0.375	Pole	93.3%	Pass
53.75 - 49.08	Pole	TP45.804x43.263x0.375	Pole	94.4%	Pass
49.08 - 41.85	Pole	TP45.281x43.602x0.4375	Pole	81.2%	Pass
41.85 - 36.85	Pole	TP46.442x45.281x0.4375	Pole	81.8%	Pass
36.85 - 31.85	Pole	TP47.604x46.442x0.4375	Pole	82.3%	Pass
31.85 - 26.85	Pole	TP48.765x47.604x0.4375	Pole	82.8%	Pass
26.85 - 21.85	Pole	TP49.926x48.765x0.4375	Pole	83.2%	Pass
21.85 - 16.85	Pole	TP51.087x49.926x0.4375	Pole	83.6%	Pass
16.85 - 11.85	Pole	TP52.248x51.087x0.4375	Pole	83.9%	Pass
11.85 - 6.85	Pole	TP53.41x52.248x0.4375	Pole	84.2%	Pass
6.85 - 1.85	Pole	TP54.571x53.41x0.4375	Pole	84.5%	Pass
1.85 - 0	Pole	TP55x54.571x0.4375	Pole	84.6%	Pass
				Summary	
			Pole	94.4%	Pass
			Reinforcement	75.3%	Pass
			Overall	94.4%	Pass

Additional Calculations

Section Elevation (ft)	Moment of Inertia (in^4)			Area (in^2)			% Capacity*		
	Pole	Reinf.	Total	Pole	Reinf.	Total	Pole	R1	R2
182 - 177	368	n/a	368	12.24	n/a	12.24	4.5%		
177 - 172	459	n/a	459	13.18	n/a	13.18	7.8%		
172 - 167	564	n/a	564	14.11	n/a	14.11	13.6%		
167 - 162	683	n/a	683	15.05	n/a	15.05	24.7%		
162 - 157	819	n/a	819	15.98	n/a	15.98	33.5%		
157 - 152	971	n/a	971	16.91	n/a	16.91	46.2%		
152 - 147	1141	n/a	1141	17.85	n/a	17.85	55.2%		
147 - 142	1329	n/a	1329	18.78	n/a	18.78	62.4%		
142 - 137	1538	n/a	1538	19.72	n/a	19.72	71.3%		
137 - 136.83	1545	n/a	1545	19.75	n/a	19.75	71.6%		
136.83 - 131.83	2472	n/a	2472	30.27	n/a	30.27	54.3%		
131.83 - 126.83	2828	n/a	2828	31.66	n/a	31.66	59.1%		
126.83 - 121.83	3217	n/a	3217	33.04	n/a	33.04	63.3%		
121.83 - 116.83	3640	n/a	3640	34.43	n/a	34.43	66.8%		
116.83 - 111.83	4098	n/a	4098	35.82	n/a	35.82	69.6%		
111.83 - 106.83	4593	n/a	4593	37.21	n/a	37.21	71.9%		
106.83 - 101.83	5127	n/a	5127	38.60	n/a	38.60	73.9%		
101.83 - 96.83	5700	n/a	5700	39.99	n/a	39.99	75.5%		
96.83 - 92.47	6234	n/a	6234	41.20	n/a	41.20	76.6%		
92.47 - 86.45	6594	n/a	6594	41.97	n/a	41.97	82.4%		
86.45 - 85	6785	n/a	6785	42.38	n/a	42.38	82.9%		
85 - 84.75	6818	n/a	6818	42.45	n/a	42.45	83.0%		
84.75 - 79.75	7509	n/a	7509	43.83	n/a	43.83	85.2%		
79.75 - 75	8206	n/a	8206	45.15	n/a	45.15	87.0%		
75 - 74.75	8244	6733	14977	45.22	34.50	79.72	47.3%	75.0%	75.0%
74.75 - 74	8359	6792	15151	45.43	34.50	79.93	47.5%	75.3%	75.3%
74 - 73.75	8397	n/a	8397	45.50	n/a	45.50	87.5%		
73.75 - 68.75	9189	n/a	9189	46.88	n/a	46.88	89.2%		
68.75 - 63.75	10028	n/a	10028	48.27	n/a	48.27	90.7%		
63.75 - 58.75	10918	n/a	10918	49.66	n/a	49.66	92.1%		
58.75 - 53.75	11859	n/a	11859	51.05	n/a	51.05	93.3%		
53.75 - 49.08	12784	n/a	12784	52.34	n/a	52.34	94.4%		
49.08 - 41.85	15815	n/a	15815	62.27	n/a	62.27	81.2%		
41.85 - 36.85	17076	n/a	17076	63.88	n/a	63.88	81.8%		
36.85 - 31.85	18402	n/a	18402	65.49	n/a	65.49	82.3%		
31.85 - 26.85	19795	n/a	19795	67.11	n/a	67.11	82.8%		
26.85 - 21.85	21256	n/a	21256	68.72	n/a	68.72	83.2%		
21.85 - 16.85	22788	n/a	22788	70.33	n/a	70.33	83.6%		
16.85 - 11.85	24391	n/a	24391	71.94	n/a	71.94	83.9%		
11.85 - 6.85	26068	n/a	26068	73.56	n/a	73.56	84.2%		
6.85 - 1.85	27820	n/a	27820	75.17	n/a	75.17	84.5%		
1.85 - 0	28487	n/a	28487	75.76	n/a	75.76	84.6%		

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

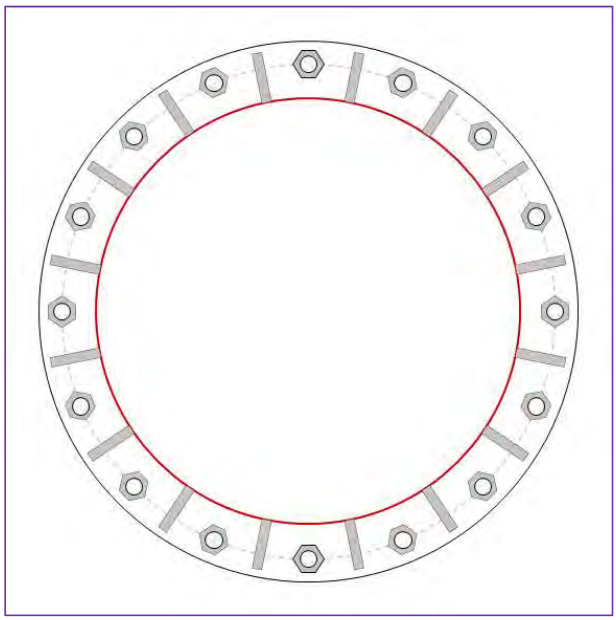
Monopole Base Plate Connection

Site Info	
BU #	842872
Site Name	Rocky Hill, CT
Order #	556625 Rev.1

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	No
l_{ar} (in)	3.125

Applied Loads	
Moment (kip-ft)	5101.51
Axial Force (kips)	64.72
Shear Force (kips)	39.32

**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 64" BC

Base Plate Data

70" OD x 2" Plate (A871-60; Fy=60 ksi, Fu=80 ksi)

Stiffener Data

(16) 36"H x 6.5"W x 1.25"T, Notch: 0.75"
plate: Fy= 65 ksi ; weld: Fy= 80 ksi
horiz. weld: 0.625" fillet
vert. weld: 0.375" fillet

Pole Data

55" x 0.4375" 18-sided pole (A572-65; Fy=65 ksi, Fu=80 ksi)

Analysis Results

Anchor Rod Summary		*(units of kips, kip-in)*
Pu_t = 234.97	ϕPn_t = 243.75	**Stress Rating**
Vu = 2.46	ϕVn = 149.1	**91.8%**
Mu = n/a	ϕMn = n/a	Pass

Base Plate Summary		
Max Stress (ksi):	40.37	(Roark's Flexural)
Allowable Stress (ksi):	54	
Stress Rating:	**71.2%**	Pass

Stiffener Summary		
Horizontal Weld:	**86.7%**	Pass
Vertical Weld:	**24.3%**	Pass
Plate Flexure+Shear:	**2.7%**	Pass
Plate Tension+Shear:	**38.1%**	Pass
Plate Compression:	**32.0%**	Pass
Pole Summary		
Punching Shear:	**3.9%**	Pass

Drilled Pier Foundation

BU # :	842872
Site Name:	Rocky Hill, CT
Order Number:	556625 Rev.1
TIA-222 Revison:	H
Tower Type:	Monopole

Check Limitation	
Apply TIA-222-H Section 15.5:	☑
N/A	☐
Additional Longitudinal Rebar	
Input Effective Depths (else Actual):	☐
Shear Design Options	
Check Shear along Depth of Pier:	☑
Utilize Shear-Friction Methodology:	☑
Override Critical Depth:	☐

Go to Soil Calculations

Applied Loads	Comp.	Uplift
Moment (kip-ft)	5101.51	
Axial Force (kips)	64.75	
Shear Force (kips)	39.27	

Material Properties			Rebar 2, Fy Override (ksi)	Rebar 3, Fy Override (ksi)
Concrete Strength, f'c:	3	ksi		
Rebar Strength, Fy:	60	ksi		
Tie Yield Strength, Fyt:	40	ksi		

Pier Design Data		
Depth	17.667	ft
Ext. Above Grade	0.833	ft
Pier Section 1		
From 0.833' above grade to 15.167' below grade		
Pier Diameter	7	ft
Rebar Quantity	20	
Rebar Size	11	
Clear Cover to Ties	3	in
Tie Size	3	
Tie Spacing		in
Rebar Quantity	4	
Rebar Size	11	
Rebar Cage Diameter	71	in
Pier Section 2		
From 15.167' below grade to 17.617' below grade		
Pier Diameter	7	ft
Rebar Quantity	20	
Rebar Size	11	
Clear Cover to Ties	3	in
Tie Size	3	
Tie Spacing		in

Rebar & Pier Options

Embedded Pole Inputs

Belled Pier Inputs

Analysis Results		
Soil Lateral Check	*Compression*	*Uplift*
$D_{y=0}$ (ft from TOC)	4.65	-
Soil Safety Factor	2.02	-
Max Moment (kip-ft)	5280.36	-
Rating*	*62.8%*	-
Soil Vertical Check	*Compression*	*Uplift*
Skin Friction (kips)	439.84	-
End Bearing (kips)	659.53	-
Weight of Concrete (kips)	101.71	-
Total Capacity (kips)	1099.36	-
Axial (kips)	166.46	-
Rating*	*14.4%*	-
Reinforced Concrete Flexure	*Compression*	*Uplift*
Critical Depth (ft from TOC)	4.53	-
Critical Moment (kip-ft)	5279.79	-
Critical Moment Capacity	5869.41	-
Rating*	*85.7%*	-
Reinforced Concrete Shear	*Compression*	*Uplift*
Critical Depth (ft from TOC)	14.39	-
Critical Shear (kip)	551.77	-
Critical Shear Capacity	589.76	-
Rating*	*89.1%*	-

Shear-Friction Methodology is Applied

Structural Foundation Rating*	**89.1%**
Soil Interaction Rating*	**62.8%**

*Rating per TIA-222-H Section 15.5

Soil Profile

Groundwater Depth	8.5

# of Layers	6

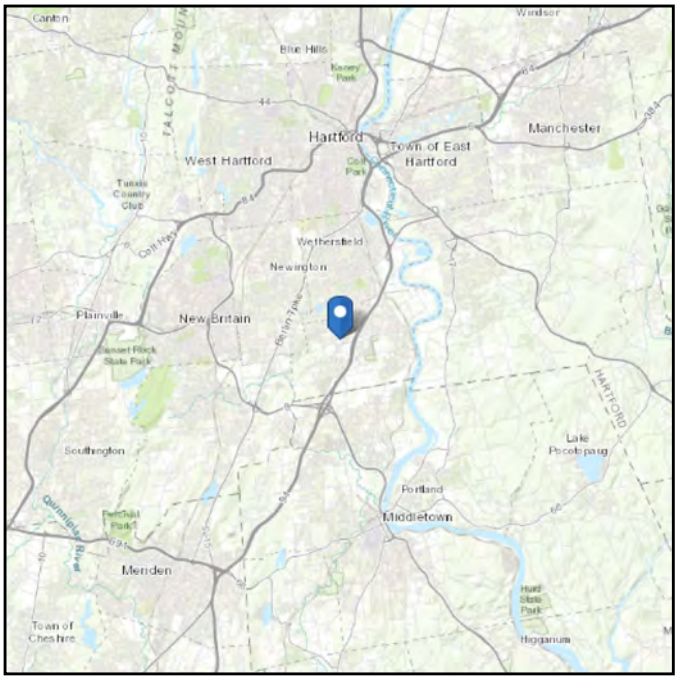
Layer	Top (ft)	Bottom (ft)	Thickness (ft)	γ_{soil} (pcf)	$\gamma_{concrete}$ (pcf)	Cohesion (ksf)	Angle of Friction (degrees)	Calculated Ultimate Skin Friction Comp (ksf)	Calculated Ultimate Skin Friction Uplift (ksf)	Ultimate Skin Friction Comp Override (ksf)	Ultimate Skin Friction Uplift Override (ksf)	Ult. Gross Bearing Capacity (ksf)	SPT Blow Count	Soil Type
1	0	3.33	3.33	110	150	0	0	0.000	0.000	0.00	0.00			Cohesionless
2	3.33	5	1.67	120	150	3	0	1.650	1.650	0.00	0.00			Cohesive
3	5	7	2	110	150	1.75	0	0.963	0.963	0.96	0.96			Cohesive
4	7	8.5	1.5	135	150	5	0	2.321	2.321	2.32	2.32			Cohesive
5	8.5	12	3.5	73	87.6	5	0	2.321	2.321	2.32	2.32			Cohesive
6	12	17.667	5.667	73	87.6	5	0	2.321	2.321	2.32	2.32	22.85		Cohesive

ASCE 7 Hazards Report

Address:
No Address at This Location

Standard: ASCE/SEI 7-16
Risk Category: II
Soil Class: D - Default (see Section 11.4.3)

Elevation: 198.53 ft (NAVD 88)
Latitude: 41.660247
Longitude: -72.680717



Wind

Results:

Wind Speed:	118 Vmph
10-year MRI	75 Vmph
25-year MRI	84 Vmph
50-year MRI	90 Vmph
100-year MRI	98 Vmph

Data Source:	ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2
Date Accessed:	Fri Sep 03 2021

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

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

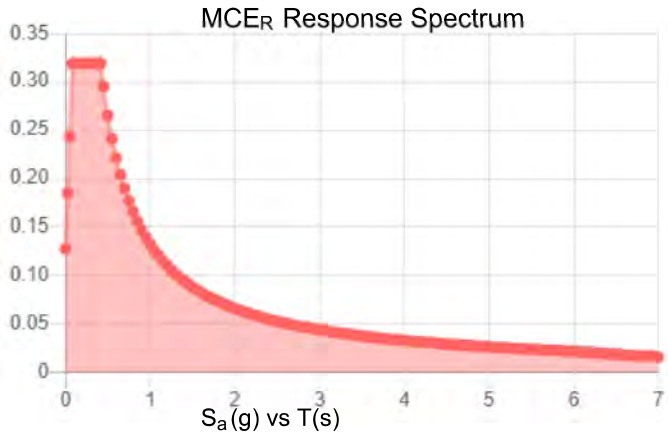
Seismic

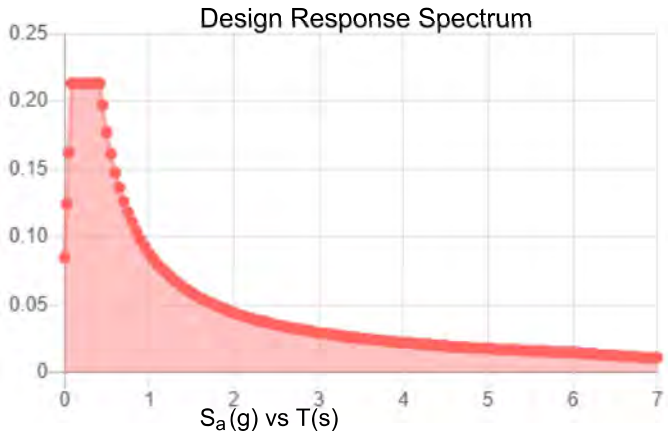
Site Soil Class: D - Default (see Section 11.4.3)

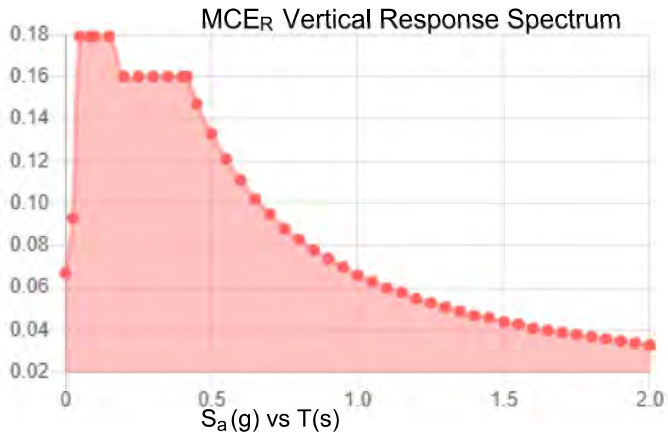
Results:

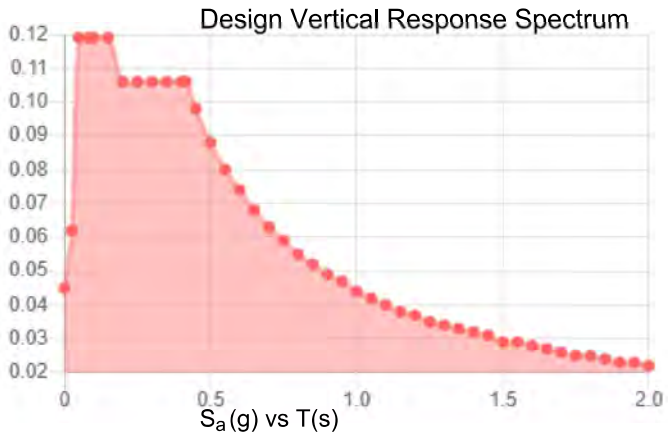
S_S :	0.2	S_{D1} :	0.088
S_1 :	0.055	T_L :	6
F_a :	1.6	PGA :	0.109
F_v :	2.4	PGA_M :	0.173
S_{MS} :	0.319	F_{PGA} :	1.581
S_{M1} :	0.133	I_e :	1
S_{DS} :	0.213	C_v :	0.7

Seismic Design Category B









Data Accessed: Fri Sep 03 2021

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

Ice

Results:

Ice Thickness:	1.50 in.
Concurrent Temperature:	15 F
Gust Speed:	50 mph
Data Source:	Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8
Date Accessed:	Fri Sep 03 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 500-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from local meteorological studies. Ice thicknesses in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

ATTACHMENT 5

Date: **September 15, 2021**

Kimley-Horn and Associates, Inc.
421 Fayetteville Street, Suite 600
Raleigh, NC 27601
(919) 677-2000
CrownMounts@kimley-horn.com

Subject:	**Mount Analysis - Conditional Passing Report**	
Carrier Designation:	**DISH Network Equipment Change-Out**	
	Carrier Site Number:	BOBDL00067A
	Carrier Site Name:	CT-CCI-T-842872
Crown Castle Designation:	**BU Number:**	842872
	Site Name:	ROCKY HILL
	JDE Job Number:	650057
	Order Number:	556625, Rev. 1
Engineering Firm Designation:	**Kimley-Horn Project Number:**	019558056
Site Data:	**52 New Britain Avenue, Rocky Hill, Hartford County, CT 06067** **Latitude 41° 39′ 36.89″ Longitude -72° 40′ 50.58″**	
Structure Information:	**Tower Height & Type:**	**182 ft Monopole**
	Mount Elevation:	**130 ft**
	Mount Type:	**8 ft Platform w/ Support Rails**

Kimley-Horn is pleased to submit this **"Mount Analysis - Conditional Passing Report"** to determine the structural integrity of DISH Network's antenna mounting system with the proposed appurtenance and equipment addition on the abovementioned supporting tower structure. Analysis of the existing supporting tower structure is to be completed by others and therefore is not part of this analysis. Analysis of the antenna mounting system as a tie-off point for fall protection or rigging is not part of this document.

The purpose of the analysis is to determine acceptability of the mount stress level. Based on our analysis we have determined the mount stress level to be:

Platform w/ Support Rails — **Sufficient**

*** See Section 4.1 for loading and structural modifications required for the mount to support the loading listed in Table 1.**

This analysis utilizes an ultimate 3-second gust wind speed of 124 mph as required by the 2018 Connecticut State Building Code. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Mount analysis prepared by: Saja Alkhafaji, E.I.

Respectfully Submitted by:

Kyle Freehart, P.E.

Lic. #PEN.0034906, Exp. 01/31/2022
Kimley-Horn and Associates, Inc. COA #PEC.0000738

STATE OF CONNECTICUT
KYLE JENSEN FREEHART
34906
LICENSED PROFESSIONAL ENGINEER

DocuSigned by:
Kyle Freehart
D8BEE252A3804C1...

TABLE OF CONTENTS

1) INTRODUCTION

The mounting configuration consists of a proposed 8 ft Platform w/ Support Rails designed by CommScope.

2) ANALYSIS CRITERIA

Building Code:	2018 Connecticut State Building Code
TIA-222 Revision:	TIA-222-H
Risk Category:	II
Ultimate Wind Speed:	124 mph
Exposure Category:	C
Topographic Factor at Base:	1.0
Topographic Factor at Mount:	1.0
Ice Thickness:	2 in
Wind Speed with Ice:	50 mph
Live Loading Wind Speed:	30 mph
Man Live Load at Mid/End-Points:	250 lb
Man Live Load at Mount Pipes:	500 lb

Table 1 – Proposed Equipment Configuration

Elevation (ft)		Antennas			Mount / Modification Details
Mount	Centerline	#	Manufacturer	Model	
130	130	3	Fujitsu	TA08025-B604	Proposed 8 ft Platform w/ Support Rails designed by CommScope
		3	Fujitsu	TA08025-B605	
		3	Jma wireless	MX08FRO665-21	
		1	Raycap	RDIDC-9181-PF-48	

3) ANALYSIS PROCEDURE

Table 2 – Documents Provided

Document	Remarks	Reference	Source
Photos	-	10/07/2020	CCISites
Mount Design Drawings	Commscope	MC-PK8-DSH	On File

3.1) Analysis Method

RISA-3D (version 17.02.00), a commercially available analysis software package, was used to create a three-dimensional model of the antenna mounting system and calculate member stresses for various loading cases.

A proprietary tool internally developed by Kimley-Horn was used to calculate wind loading on all appurtenances, dishes and mount members for various load cases. Selected output from the analysis is included in Appendix B.

This analysis was performed in accordance with Crown Castle's ENG-SOW-10208 *Mount Analysis* (Revision D).

3.2) Assumptions

1) The antenna mounting system (including any considered modifications) was properly fabricated, installed and maintained in good condition in accordance with its original design, TIA standards, and/or manufacturer specifications.
2) The configuration of antennas, mounts, and other appurtenances are as specified in Table 1 and the provided reference information.
3) All member connections are assumed to have been designed to meet or exceed the load carrying capacity of the connected member unless otherwise specified in this report.
4) The analysis will be required to be revised if the existing conditions in the field differ from those shown in the above-referenced documents or assumed in this analysis. No allowance was made for any damaged, missing, or rusted members that could not be verified at this time.
5) Any referenced prior structural modifications to the tower mounting system are assumed to be installed as shown per available data unless noted otherwise.
6) Steel grades have been assumed as follows, unless noted otherwise:

Channel, Solid Round, Angle, Plate	ASTM A36 (Gr. 36)
HSS (Rectangular)	ASTM A36 (Gr. 36)
Pipe	ASTM A53 (Gr. B-35)
Connection Bolts	ASTM A325
Threaded Rods	ASTM A36 (Gr. 36)

This analysis may be affected if any assumptions are not valid or have been made in error. Kimley-Horn should be notified to determine the effect on the structural integrity of the antenna mounting system.

4) ANALYSIS RESULTS

Table 3 – Mount Component Stresses vs. Capacity

Notes	Component	Critical Member	Centerline (ft)	% Capacity	Pass / Fail
1, 2	Connections	-	130	39%	Pass
1, 2	Stand Off Horizontals	M12		27%	Pass
1, 2	Mount Pipes	MP8		23%	Pass
1, 2	Support Rails	M51		17%	Pass
1, 2	Platform Base	M48		11%	Pass

Structure Rating (max from all components) =	39%

Notes:
1) See additional documentation in Appendix C and Appendix D for calculations supporting the % capacity consumed.
2) Rating per TIA-222-H, Section 15.5.

4.1) Recommendations

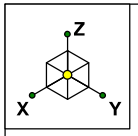
The mounting configuration will have sufficient capacity to carry the referenced loading once the following modifications are completed:

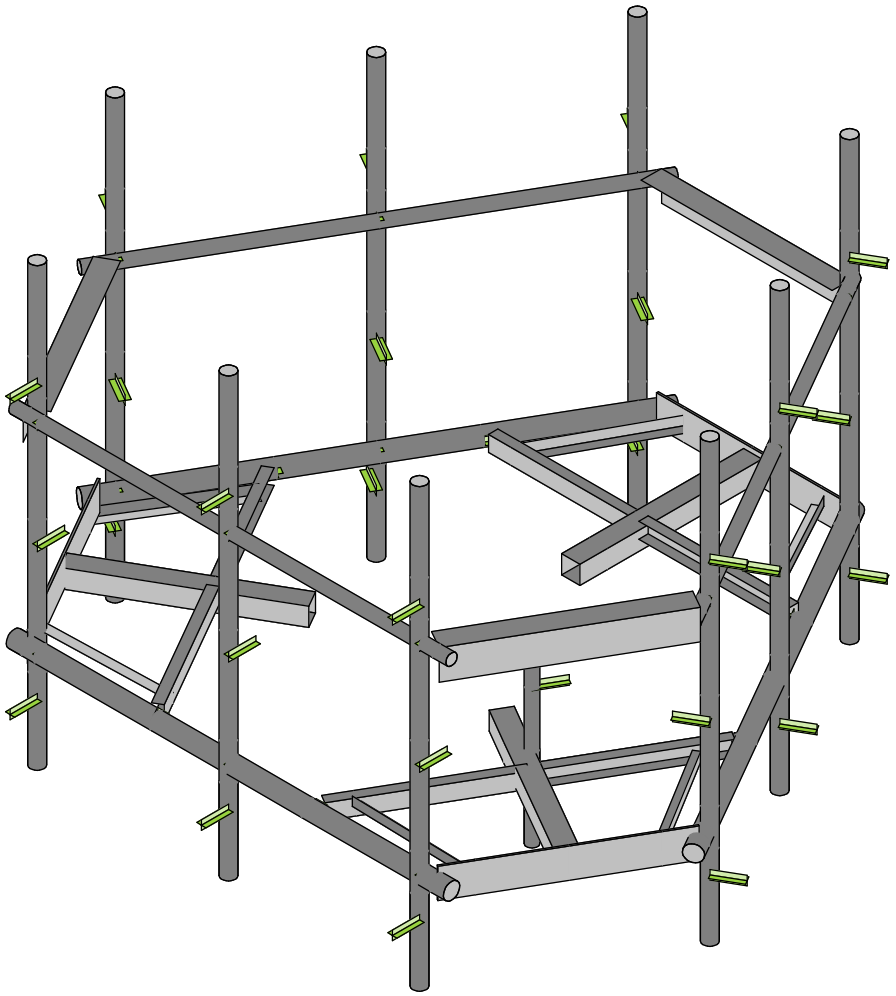
- **Install a new Commscope MC-PK8-DSH platform with support rails. Vertically center all mount pipes and antennas between the face horizontals.**

No additional modifications are required at this time provided that the above-listed changes are completed.

APPENDIX A

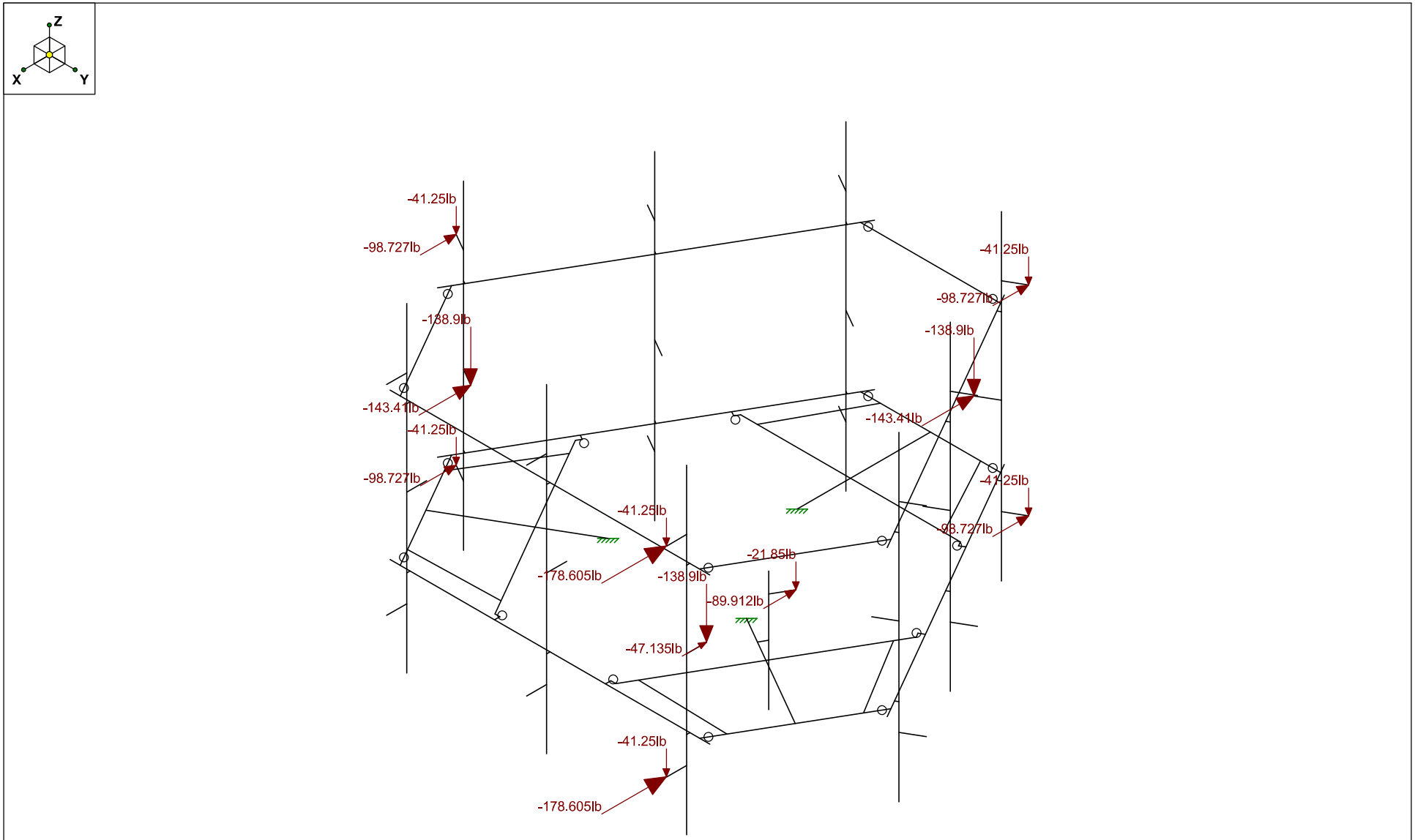
WIRE FRAME AND RENDERED MODELS





Envelope Only Solution

Kimley-Horn and Associates, Inc.	842872	SK - 2
SSA		Sept 15, 2021 at 11:02 AM
019558056		842872.r3d



Loads: LC 1, Summary: 1.0D + 1.0W
Envelope Only Solution

Kimley-Horn and Associates, Inc.	842872	SK - 1
SSA		Sept 15, 2021 at 11:01 AM
019558056		842872.r3d

APPENDIX B

SOFTWARE INPUT CALCULATIONS

General Criteria	
TIA Standard	H
IBC Edition	2015
Structure Class	-
Risk Category	II

Site-Specific Criteria	
Exposure Category	C
Topographic Factor, K_{zt}	1.00
Structure Base Elev. (AMSL), z_s (ft)	198.53
Ground Effect Factor, K_e	0.99

Mount & Structure Criteria	
Mount Elevation (AGL) (ft)	130.00
Structure Height (ft)	182.00
Structure Type	Monopole

Constants	
Wind Direction Probability Factor, K_d	0.95
Gust Effect Factor, G_h	1
Shielding Factor, K_a (antenna)	0.9
Shielding Factor, K_a (mount)	0.9

Wind Summary	
Basic Wind Speed w/o Ice, V (mph)	124.00
Velocity Pressure Coeff., K_z	1.34
Velocity Pressure, q_z (w/o Ice) (psf)	49.66

Ice Load Summary	
Basic Wind Speed w/ Ice, V_i (mph)	50.00
Design Ice Thick. (ASCE 7-10) , t_i (in)	1
Velocity Pressure, q_z (w/ Ice) (psf)	8.07
Escalated Ice Thick. @ Mount, t_{iz} (in)	2.29

Seismic Load Summary	
Spectral Response (Short Periods), S_s	-
Spectral Response (1-Sec. Period), S_1	-
Site Class	-
Seismic Design Category	-
Seismic Risk Category	-

Snow Load Summary	
Ground Snow Load, p_g (psf)	-
Snow Load on Flat Roofs, p_f (psf)	-

Kimley»Horn

Date	September 15, 2021
Client	Crown Castle
Site #	842872
Site Name	ROCKY HILL
Project #	19558056

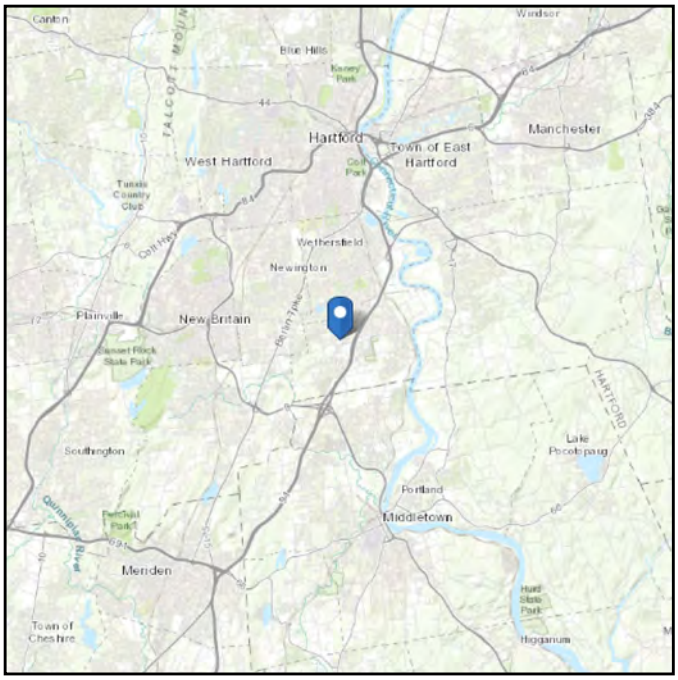
Antenna Name	Qty	Shape	Dimensions (in)			Weight (lb)	Joint Labels								EPA (ft²)		Wind Force, F_A (lb)			
																	No Ice		With Ice	
			H	W	D		Alpha		Beta		Gamma		Delta		Front	Side	Front	Side	Front	Side
MX08FRO665-21	3	Flat	72	20	8	82.5	A1B	A1T	B1B	B1T	G1B	G1T			7.99	3.23	357.21	144.2	74.64	36.37
TA08025-B604	3	Flat	15	15.8	7.9	63.9	A1R		B1R		G1R				0.49	1.96	21.92	87.75	7.37	24.07
TA08025-B605	3	Flat	15	15.8	9.1	75	A1R		B1R		G1R				0.56	1.96	25.21	87.75	8.07	24.07
RDIDC-9181-PF-48	1	Flat	16.6	14.6	8.5	21.9	RA1								2.01	1.17	89.91	52.21	24.54	16.72

ASCE 7 Hazards Report

Address:
No Address at This Location

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

Elevation: 198.53 ft (NAVD 88)
Latitude: 41.660247
Longitude: -72.680717



Wind

Results:

Wind Speed:	124 Vmph
10-year MRI	77 Vmph
25-year MRI	87 Vmph
50-year MRI	93 Vmph
100-year MRI	101 Vmph

Data Accessed: Mon Sep 13 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.

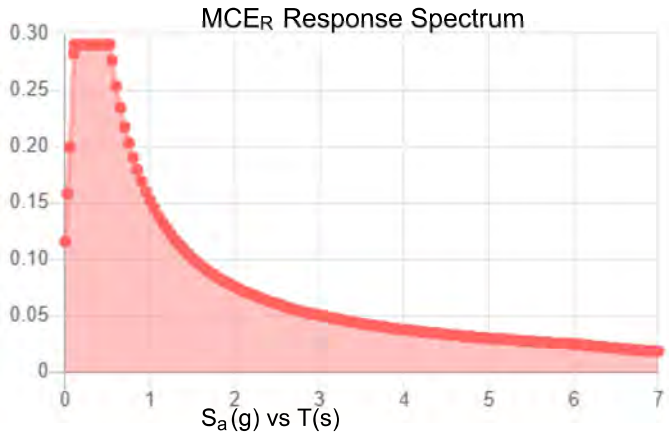
Seismic

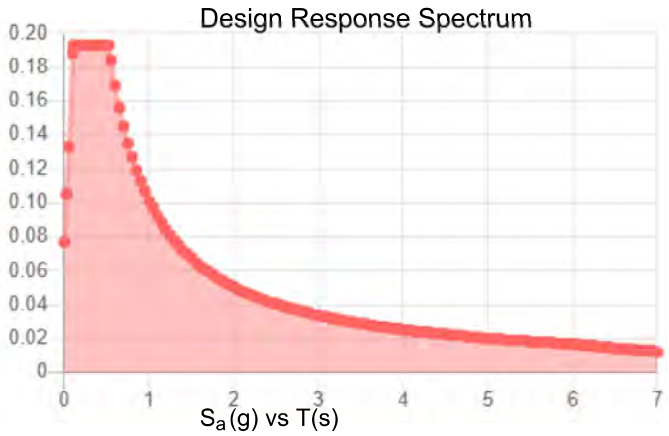
Site Soil Class: D - Stiff Soil

Results:

S_S :	0.181	S_{DS} :	0.193
S_1 :	0.063	S_{D1} :	0.101
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.092
S_{MS} :	0.29	PGA_M :	0.147
S_{M1} :	0.152	F_{PGA} :	1.6
		I_e :	1

Seismic Design Category B





Data Accessed: Mon Sep 13 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:	1.00 in.
Concurrent Temperature:	5 F
Gust Speed:	50 mph
Data Source:	Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8
Date Accessed:	Mon Sep 13 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.

APPENDIX C

SOFTWARE ANALYSIS OUTPUT

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (\1E..	Density[lb/f...	Yield[ksi]	Ry	Fu[ksi]	Rt
1	A992	29000	11154	.3	.65	490	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	.3	.65	490	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	.3	.65	490	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	.3	.65	527	42	1.4	58	1.3
5	A500 Gr.B Rect	29000	11154	.3	.65	527	46	1.4	58	1.3
6	A53 Gr.B	29000	11154	.3	.65	490	35	1.6	60	1.2
7	A1085	29000	11154	.3	.65	490	50	1.4	65	1.3
8	A913 Gr.65	29000	11154	.3	.65	490	65	1.1	80	1.1
9	A500 GR.C	29000	11154	.3	.65	490	46	1.6	60	1.2
10	A529 Gr. 50	29000	11154	.3	.65	490	50	1.1	65	1.1
11	A1011-33Ksi	29000	11154	.3	.65	490	33	1.5	58	1.2
12	A1011 36 Ksi	29000	11154	.3	.65	490	36	1.5	58	1.2
13	A1018 50 Ksi	29000	11154	.3	.65	490	50	1.5	65	1.2

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Ru...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	6.5"x0.37" Plate	PL6.5x0.375	Beam	None	A1011 36 Ksi	Typical	2.438	.029	8.582	.11
2	6"x0.37" Plate	Plate 6x.37	Beam	None	A1011 36 Ksi	Typical	2.22	.025	6.66	.097
3	L 2"x2"x1/4"	L2x2x4	Beam	None	A529 Gr. 50	Typical	.944	.346	.346	.021
4	Face Pipes(3.5x.16)	Pipe3.5x0.165	Beam	None	A500 GR.C	Typical	1.729	2.409	2.409	4.819
5	Antenna Pipes	Pipe 2.875x0.12	Beam	None	A500 GR.C	Typical	1.039	.987	.987	1.975
6	Channel(3.38x2.06)	C3.38x2.06x0....	Beam	None	A1011 36 Ksi	Typical	1.75	.715	3.026	.034
7	Square Tubing	HSS4X4X6	Beam	None	A500 GR.C	Typical	4.78	10.3	10.3	17.5
8	Handrail Connector	L6.6x4.46x0.25	Beam	None	A1011 36 Ksi	Typical	2.703	4.759	12.473	.055
9	Handrail	PIPE_2.0	Beam	None	A500 GR.C	Typical	1.02	.627	.627	1.25
10	Mount Pipe	PIPE_2.0	Beam	None	A53 Gr.B	Typical	1.02	.627	.627	1.25

Hot Rolled Steel Design Parameters

	Label	Shape	Length[in]	Lbyy[in]	Lbzz[in]	Lcomp top[in]	Lcomp bot[in]	L-torqu...	Kyy	Kzz	Cb	Function
1	M2	Square Tubi...	40			Lbyy						Lateral
2	M3	L 2"x2"x1/4"	27.295			Lbyy						Lateral
3	M4	L 2"x2"x1/4"	27.295			Lbyy						Lateral
4	M5	6.5"x0.37" P...	42			Lbyy						Lateral
5	M7	Square Tubi...	40			Lbyy						Lateral
6	M8	L 2"x2"x1/4"	27.295			Lbyy						Lateral
7	M9	L 2"x2"x1/4"	27.295			Lbyy						Lateral
8	M10	6.5"x0.37" P...	42			Lbyy						Lateral
9	M12	Square Tubi...	40			Lbyy						Lateral
10	M13	L 2"x2"x1/4"	27.295			Lbyy						Lateral
11	M14	L 2"x2"x1/4"	27.295			Lbyy						Lateral
12	M15	6.5"x0.37" P...	42			Lbyy						Lateral
13	M18	Face Pipes(...	96			Lbyy						Lateral
14	MP9	Antenna Pip...	96			Lbyy						Lateral
15	MP7	Antenna Pip...	96			Lbyy						Lateral
16	M25	Handrail	96			Lbyy						Lateral
17	M28	Handrail Co...	42			Lbyy						Lateral
18	M29	Handrail Co...	42			Lbyy						Lateral
19	M30	Handrail Co...	42			Lbyy						Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length[in]	Lbyy[in]	Lbzz[in]	Lcomp top[in]	Lcomp bot[in]	L-torqu...	Kyy	Kzz	Cb	Function
20	M61A	Channel(3.3...	33			Lbyy						Lateral
21	M63A	Channel(3.3...	33			Lbyy						Lateral
22	M60A	Channel(3.3...	33			Lbyy						Lateral
23	M61B	Channel(3.3...	33			Lbyy						Lateral
24	M62A	Channel(3.3...	33			Lbyy						Lateral
25	M63B	Channel(3.3...	33			Lbyy						Lateral
26	M75	PL 2.375x0.5	1.5									Lateral
27	MP8	Antenna Pip...	96			Lbyy						Lateral
28	M48	Face Pipes(...	96			Lbyy						Lateral
29	MP3	Antenna Pip...	96			Lbyy						Lateral
30	MP1	Antenna Pip...	96			Lbyy						Lateral
31	M51	Handrail	96			Lbyy						Lateral
32	M62	Face Pipes(...	96			Lbyy						Lateral
33	MP6	Antenna Pip...	96			Lbyy						Lateral
34	MP4	Antenna Pip...	96			Lbyy						Lateral
35	M65A	Handrail	96			Lbyy						Lateral
36	MP2	Antenna Pip...	96			Lbyy						Lateral
37	MP5	Antenna Pip...	96			Lbyy						Lateral
38	M98	Mount Pipe	36			Lbyy						Lateral

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(...
1	Dead	DL			-1	13				
2	Dead of Ice	RL				13		38		
4	Structure Wind (0)	None						76		
5	Structure Wind (30)	None						76		
6	Structure Wind (45)	None						76		
7	Structure Wind (60)	None						76		
8	Structure Wind (90)	None						76		
9	Structure Wind (120)	None						76		
10	Structure Wind (135)	None						76		
11	Structure Wind (150)	None						76		
12	Structure Wind w/ Ice (0)	None						76		
13	Structure Wind w/ Ice (30)	None						76		
14	Structure Wind w/ Ice (45)	None						76		
15	Structure Wind w/ Ice (60)	None						76		
16	Structure Wind w/ Ice (90)	None						76		
17	Structure Wind w/ Ice (120)	None						76		
18	Structure Wind w/ Ice (135)	None						76		
19	Structure Wind w/ Ice (150)	None						76		
20	Antenna Wind (0)	None				26				
21	Antenna Wind (30)	None				26				
22	Antenna Wind (45)	None				26				
23	Antenna Wind (60)	None				26				
24	Antenna Wind (90)	None				26				
25	Antenna Wind (120)	None				26				
26	Antenna Wind (135)	None				26				
27	Antenna Wind (150)	None				26				
28	Antenna Wind w/ Ice (0)	None				26				
29	Antenna Wind w/ Ice (30)	None				26				

Basic Load Cases (Continued)

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area (Me...	Surface(...
30	Antenna Wind w/ Ice (45)	None				26				
31	Antenna Wind w/ Ice (60)	None				26				
32	Antenna Wind w/ Ice (90)	None				26				
33	Antenna Wind w/ Ice (120)	None				26				
34	Antenna Wind w/ Ice (135)	None				26				
35	Antenna Wind w/ Ice (150)	None				26				
36	Maintenance Live Lm (1)	OL1				1				
39	Maintenance Live Lm (4)	OL4				1				
41	Maintenance Live Lv (1)	OL6					1			

Load Combinations

	Description	So..	P...	SRSS	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac...
1	Summary: 1.0D + 1...	Yes	Y		DL	1	20	1																
2	1.4D	Yes	Y		DL	1.4																		
3	1.2D + 1.0W(0)	Yes	Y		DL	1.2	4	1	20	1														
4	1.2D + 1.0W(30)	Yes	Y		DL	1.2	5	1	21	1														
5	1.2D + 1.0W(45)	Yes	Y		DL	1.2	6	1	22	1														
6	1.2D + 1.0W(60)	Yes	Y		DL	1.2	7	1	23	1														
7	1.2D + 1.0W(90)	Yes	Y		DL	1.2	8	1	24	1														
8	1.2D + 1.0W(120)	Yes	Y		DL	1.2	9	1	25	1														
9	1.2D + 1.0W(135)	Yes	Y		DL	1.2	10	1	26	1														
10	1.2D + 1.0W(150)	Yes	Y		DL	1.2	11	1	27	1														
11	1.2D + 1.0W(180)	Yes	Y		DL	1.2	4	-1	20	-1														
12	1.2D + 1.0W(210)	Yes	Y		DL	1.2	5	-1	21	-1														
13	1.2D + 1.0W(225)	Yes	Y		DL	1.2	6	-1	22	-1														
14	1.2D + 1.0W(240)	Yes	Y		DL	1.2	7	-1	23	-1														
15	1.2D + 1.0W(270)	Yes	Y		DL	1.2	8	-1	24	-1														
16	1.2D + 1.0W(300)	Yes	Y		DL	1.2	9	-1	25	-1														
17	1.2D + 1.0W(315)	Yes	Y		DL	1.2	10	-1	26	-1														
18	1.2D + 1.0W(330)	Yes	Y		DL	1.2	11	-1	27	-1														
19	1.2D + 1.0Di + 1.0...	Yes	Y		DL	1.2	RL	1	12	1	28	1												
20	1.2D + 1.0Di + 1.0...	Yes	Y		DL	1.2	RL	1	13	1	29	1												
21	1.2D + 1.0Di + 1.0...	Yes	Y		DL	1.2	RL	1	14	1	30	1												
22	1.2D + 1.0Di + 1.0...	Yes	Y		DL	1.2	RL	1	15	1	31	1												
23	1.2D + 1.0Di + 1.0...	Yes	Y		DL	1.2	RL	1	16	1	32	1												
24	1.2D + 1.0Di + 1.0...	Yes	Y		DL	1.2	RL	1	17	1	33	1												
25	1.2D + 1.0Di + 1.0...	Yes	Y		DL	1.2	RL	1	18	1	34	1												
26	1.2D + 1.0Di + 1.0...	Yes	Y		DL	1.2	RL	1	19	1	35	1												
27	1.2D + 1.0Di + 1.0...	Yes	Y		DL	1.2	RL	1	12	-1	28	-1												
28	1.2D + 1.0Di + 1.0...	Yes	Y		DL	1.2	RL	1	13	-1	39	-1												
29	1.2D + 1.0Di + 1.0...	Yes	Y		DL	1.2	RL	1	14	-1	30	-1												
30	1.2D + 1.0Di + 1.0...	Yes	Y		DL	1.2	RL	1	15	-1	31	-1												
31	1.2D + 1.0Di + 1.0...	Yes	Y		DL	1.2	RL	1	16	-1	32	-1												
32	1.2D + 1.0Di + 1.0...	Yes	Y		DL	1.2	RL	1	17	-1	33	-1												
33	1.2D + 1.0Di + 1.0...	Yes	Y		DL	1.2	RL	1	18	-1	34	-1												
34	1.2D + 1.0Di + 1.0...	Yes	Y		DL	1.2	RL	1	19	-1	35	-1												
35	1.2D + 1.5Lm(1) + ...	Yes	Y		DL	1.2	4	.059	20	.059	OL1	1.5												
36	1.2D + 1.5Lm(1) + ...	Yes	Y		DL	1.2	5	.059	21	.059	OL1	1.5												
37	1.2D + 1.5Lm(1) + ...	Yes	Y		DL	1.2	6	.059	22	.059	OL1	1.5												
38	1.2D + 1.5Lm(1) + ...	Yes	Y		DL	1.2	7	.059	23	.059	OL1	1.5												

Load Combinations (Continued)

	Description	So..	P...	SRSS	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac...
39	1.2D + 1.5Lm(1) +..	Yes	Y		DL	1.2	8	.059	24	.059	OL1	1.5														
40	1.2D + 1.5Lm(1) +..	Yes	Y		DL	1.2	9	.059	25	.059	OL1	1.5														
41	1.2D + 1.5Lm(1) +..	Yes	Y		DL	1.2	10	.059	26	.059	OL1	1.5														
42	1.2D + 1.5Lm(1) +..	Yes	Y		DL	1.2	11	.059	27	.059	OL1	1.5														
43	1.2D + 1.5Lm(1) +..	Yes	Y		DL	1.2	4	-.059	20	-.059	OL1	1.5														
44	1.2D + 1.5Lm(1) +..	Yes	Y		DL	1.2	5	-.059	21	-.059	OL1	1.5														
45	1.2D + 1.5Lm(1) +..	Yes	Y		DL	1.2	6	-.059	22	-.059	OL1	1.5														
46	1.2D + 1.5Lm(1) +..	Yes	Y		DL	1.2	7	-.059	23	-.059	OL1	1.5														
47	1.2D + 1.5Lm(1) +..	Yes	Y		DL	1.2	8	-.059	24	-.059	OL1	1.5														
48	1.2D + 1.5Lm(1) +..	Yes	Y		DL	1.2	9	-.059	25	-.059	OL1	1.5														
49	1.2D + 1.5Lm(1) +..	Yes	Y		DL	1.2	10	-.059	26	-.059	OL1	1.5														
50	1.2D + 1.5Lm(1) +..	Yes	Y		DL	1.2	11	-.059	27	-.059	OL1	1.5														
51	1.2D + 1.5Lm(4) +..	Yes	Y		DL	1.2	4	.059	20	.059	OL4	1.5														
52	1.2D + 1.5Lm(4) +..	Yes	Y		DL	1.2	5	.059	21	.059	OL4	1.5														
53	1.2D + 1.5Lm(4) +..	Yes	Y		DL	1.2	6	.059	22	.059	OL4	1.5														
54	1.2D + 1.5Lm(4) +..	Yes	Y		DL	1.2	7	.059	23	.059	OL4	1.5														
55	1.2D + 1.5Lm(4) +..	Yes	Y		DL	1.2	8	.059	24	.059	OL4	1.5														
56	1.2D + 1.5Lm(4) +..	Yes	Y		DL	1.2	9	.059	25	.059	OL4	1.5														
57	1.2D + 1.5Lm(4) +..	Yes	Y		DL	1.2	10	.059	26	.059	OL4	1.5														
58	1.2D + 1.5Lm(4) +..	Yes	Y		DL	1.2	11	.059	27	.059	OL4	1.5														
59	1.2D + 1.5Lm(4) +..	Yes	Y		DL	1.2	4	-.059	20	-.059	OL4	1.5														
60	1.2D + 1.5Lm(4) +..	Yes	Y		DL	1.2	5	-.059	21	-.059	OL4	1.5														
61	1.2D + 1.5Lm(4) +..	Yes	Y		DL	1.2	6	-.059	22	-.059	OL4	1.5														
62	1.2D + 1.5Lm(4) +..	Yes	Y		DL	1.2	7	-.059	23	-.059	OL4	1.5														
63	1.2D + 1.5Lm(4) +..	Yes	Y		DL	1.2	8	-.059	24	-.059	OL4	1.5														
64	1.2D + 1.5Lm(4) +..	Yes	Y		DL	1.2	9	-.059	25	-.059	OL4	1.5														
65	1.2D + 1.5Lm(4) +..	Yes	Y		DL	1.2	10	-.059	26	-.059	OL4	1.5														
66	1.2D + 1.5Lm(4) +..	Yes	Y		DL	1.2	11	-.059	27	-.059	OL4	1.5														
67	1.2D + 1.5Lv(1) + 1..	Yes	Y		DL	1.2	4	.059	20	.059	OL6	1.5														
68	1.2D + 1.5Lv(1) + 1..	Yes	Y		DL	1.2	5	.059	21	.059	OL6	1.5														
69	1.2D + 1.5Lv(1) + 1..	Yes	Y		DL	1.2	6	.059	22	.059	OL6	1.5														
70	1.2D + 1.5Lv(1) + 1..	Yes	Y		DL	1.2	7	.059	23	.059	OL6	1.5														
71	1.2D + 1.5Lv(1) + 1..	Yes	Y		DL	1.2	8	.059	24	.059	OL6	1.5														
72	1.2D + 1.5Lv(1) + 1..	Yes	Y		DL	1.2	9	.059	25	.059	OL6	1.5														
73	1.2D + 1.5Lv(1) + 1..	Yes	Y		DL	1.2	10	.059	26	.059	OL6	1.5														
74	1.2D + 1.5Lv(1) + 1..	Yes	Y		DL	1.2	11	.059	27	.059	OL6	1.5														
75	1.2D + 1.5Lv(1) + 1..	Yes	Y		DL	1.2	4	-.059	20	-.059	OL6	1.5														
76	1.2D + 1.5Lv(1) + 1..	Yes	Y		DL	1.2	5	-.059	21	-.059	OL6	1.5														
77	1.2D + 1.5Lv(1) + 1..	Yes	Y		DL	1.2	6	-.059	22	-.059	OL6	1.5														
78	1.2D + 1.5Lv(1) + 1..	Yes	Y		DL	1.2	7	-.059	23	-.059	OL6	1.5														
79	1.2D + 1.5Lv(1) + 1..	Yes	Y		DL	1.2	8	-.059	24	-.059	OL6	1.5														
80	1.2D + 1.5Lv(1) + 1..	Yes	Y		DL	1.2	9	-.059	25	-.059	OL6	1.5														
81	1.2D + 1.5Lv(1) + 1..	Yes	Y		DL	1.2	10	-.059	26	-.059	OL6	1.5														
82	1.2D + 1.5Lv(1) + 1..	Yes	Y		DL	1.2	11	-.059	27	-.059	OL6	1.5														

Envelope Joint Reactions

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
1	P24	max	1261.759	18	1017.722	16	2458.435	30	518.803	6	593.124	7	1838.741	18
2		min	-1260.184	10	-1016.869	8	-73.68	6	-5730.785	30	-2035.381	30	-1830.964	10
3	P13	max	721.311	3	1474.591	15	2406.816	19	1261.821	31	5832.505	19	1809.434	7

Envelope Joint Reactions (Continued)

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
4		min	-731.451	11	-1479.105	7	-81.373	11	23.424	7	-726.286	11	-1802.858	15
5	P1	max	1463.668	3	944.651	15	2519.609	24	4408.228	24	192.923	16	1829.949	12
6		min	-1456.801	11	-939.293	7	-51.633	16	-807.657	16	-3800.098	24	-1839.858	4
7	Totals:	max	3419.197	3	3382.673	15	6738.485	30						
8		min	-3419.202	11	-3382.644	7	1664.329	1						

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

	Member	Shape	Code Check	Loc[in]	LC	Shear Che..	Lo...	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y...	phi*Mn z-...	Cb	Eqn
1	M62A	C3.38x2.0...	.300	0	30	.053	28...	y	21	47760.074	56700	2202.821	5751.945	1.643	H1-1b
2	M61A	C3.38x2.0...	.288	0	24	.050	28...	y	32	47760.074	56700	2202.821	5751.945	1.647	H1-1b
3	M60A	C3.38x2.0...	.287	0	19	.050	28...	y	27	47760.074	56700	2202.821	5751.945	1.642	H1-1b
4	M12	HSS4X4X6	.279	40	31	.121	24	y	27	188250.475	197892	22045.5	22045.5	1.917	H1-1b
5	M10	PL6.5x0.375	.278	21	3	.163	36...	y	30	3658.14	78975	616.993	8011.936	1.425	H1-1b
6	M7	HSS4X4X6	.275	40	21	.123	24	y	32	188250.475	197892	22045.5	22045.5	1.927	H1-1b
7	M15	PL6.5x0.375	.271	21	14	.133	36...	y	8	3658.14	78975	616.993	8005.49	1.424	H1-1b
8	M2	HSS4X4X6	.267	40	26	.116	24	y	22	188250.475	197892	22045.5	22045.5	1.976	H1-1b
9	M5	PL6.5x0.375	.263	21	8	.138	36...	y	3	3658.14	78975	616.993	8007.142	1.424	H1-1b
10	M63A	C3.38x2.0...	.262	0	24	.044	0	y	19	47760.074	56700	2202.821	5751.945	1.661	H1-1b
11	M61B	C3.38x2.0...	.259	0	3	.044	0	y	29	47760.074	56700	2202.821	5751.945	1.628	H1-1b
12	M63B	C3.38x2.0...	.250	0	30	.043	0	y	24	47760.074	56700	2202.821	5751.945	1.662	H1-1b
13	MP8	Pipe 2.875...	.242	26.274	4	.073	26...		12	22398.073	42998.495	3144.258	3144.258	3.97	H1-1b
14	M75	PL 2.375x...	.239	1.5	3	.240	0	y	23	38256.871	38475	400.783	1903.711	1.563	H1-1b
15	MP2	Pipe 2.875...	.232	26.274	15	.078	26...		7	22398.073	42998.495	3144.258	3144.258	4.178	H1-1b
16	MP5	Pipe 2.875...	.220	26.274	10	.086	26...		18	22398.073	42998.495	3144.258	3144.258	3.971	H1-1b
17	MP3	Pipe 2.875...	.218	26.274	7	.074	26...		12	22398.073	42998.495	3144.258	3144.258	3.906	H1-1b
18	MP6	Pipe 2.875...	.214	26.274	10	.074	26...		7	22398.073	42998.495	3144.258	3144.258	4.078	H1-1b
19	MP9	Pipe 2.875...	.204	26.274	12	.093	26...		3	22398.073	42998.495	3144.258	3144.258	2.851	H1-1b
20	MP4	Pipe 2.875...	.197	26.274	18	.078	26...		12	22398.073	42998.495	3144.258	3144.258	3.003	H1-1b
21	M8	L2x2x4	.187	0	3	.013	0	y	11	29527.563	42480	959.63	2190.068	2.206	H2-1
22	MP1	Pipe 2.875...	.185	26.274	7	.082	26...		9	22398.073	42998.495	3144.258	3144.258	4.015	H1-1b
23	M25	PIPE_2.0	.180	6.063	12	.083	92...		9	15369.683	42228	2459.85	2459.85	1.697	H1-1b
24	M29	L6.6x4.46x...	.179	41.779	18	.024	42	z	11	51170.949	87561	2464.809	7125.374	1.136	H2-1
25	MP7	Pipe 2.875...	.178	26.274	12	.083	26...		14	22398.073	42998.495	3144.258	3144.258	4.236	H1-1b
26	M51	PIPE_2.0	.175	6.063	7	.084	3....		16	15369.683	42228	2459.85	2459.85	1.763	H1-1b
27	M65A	PIPE_2.0	.175	3.537	3	.084	5....		3	15369.683	42228	2459.85	2459.85	1.739	H1-1b
28	M3	L2x2x4	.170	0	8	.013	0	y	16	29527.563	42480	959.63	2190.068	2.215	H2-1
29	M13	L2x2x4	.169	0	14	.012	0	y	6	29527.562	42480	959.63	2190.068	2.228	H2-1
30	M30	L6.6x4.46x...	.165	41.779	7	.024	42	z	16	51170.949	87561	2464.809	7125.374	1.136	H2-1
31	M28	L6.6x4.46x...	.158	41.779	12	.024	42	z	6	51170.949	87561	2464.809	7125.374	1.136	H2-1
32	M4	L2x2x4	.143	0	17	.022	27...	y	20	29527.562	42480	959.63	2190.068	2.232	H2-1
33	M14	L2x2x4	.142	0	6	.023	27...	y	26	29527.563	42480	959.63	2190.068	2.255	H2-1
34	M9	L2x2x4	.133	0	12	.023	27...	y	31	29527.563	42480	959.63	2190.068	2.193	H2-1
35	M62	Pipe3.5x0....	.122	31.326	3	.059	48		17	45873.009	71580.6	6337.65	6337.65	1.898	H1-1b
36	M48	Pipe3.5x0....	.120	31.326	8	.057	48		15	45873.009	71580.6	6337.65	6337.65	2.053	H1-1b
37	M18	Pipe3.5x0....	.120	31.326	13	.049	48		5	45873.009	71580.6	6337.65	6337.65	1.718	H1-1b
38	M98	PIPE_2.0	.061	18	3	.031	18		10	28843.414	32130	1871.625	1871.625	1.645	H1-1b

APPENDIX D

ADDITIONAL CALCULATIONS

Square/Rectangular Flange Connection

TIA-222-H

Kimley»Horn

Site Number	842872
Job number	19558056
Code	TIA-222-H

Member/Node Under Consideration	P24
Controlling Load Combination	30

Normalize usages per TIA-222-H, Sec. 15.5 ☐

REACTIONS		
Moment, Mu (kip-ft)	5.981	*About X*
Axial, Pu (kips) - *Negative for tension*	-0.203	
Shear, Vu (kips)	2.458	

BOLT CONFIGURATION	
Bolt Quantity, n_b	4
Bolt Diameter, d_b (in)	0.625
Bolt Grade	A325
Width between bolts, s (in)	7.00

BOLT USAGE	
Maximum Tension in Bolt, Tub (kip)	7.301
Nominal Tensile Strength, ϕRnt (kip)	20.340
Tensile Usage (Section 4.9.6.1)	**36%**

PLATE CONFIGURATION	
Plate Grade	A572-50
Thickness of plate, t (in)	0.750
Width of plate, w (in)	9.00

PLATE USAGE	
Ultimate flexural load in plate, Mu (kip-in)	11.630
Factored flexural capacity, ϕMn (kip-in)	28.430
Flexural Usage	**41%**

SUPPORT ARM CONFIGURATION	
Member Shape	Square
Member Grade	A500-46
Thickness of Member, t (in)	0.375
Width of member, w (in)	4.000

SUPPORT ARM USAGE	
Ultimate flexural load in member, Mu (kip-ft)	5.981
Factored flexural capacity, ϕMn (kip-ft)	25.592
Flexural Usage	**23%**

Stiffeners present? ☐

APPENDIX E

SUPPLEMENTAL DRAWINGS

NOTES:

1.0 GENERAL
- 1.1 ALL METRIC DIMENSIONS ARE IN BRACKETS
- 1.2 FOR PATENTS, SEE WWW.CS-PAT.COM

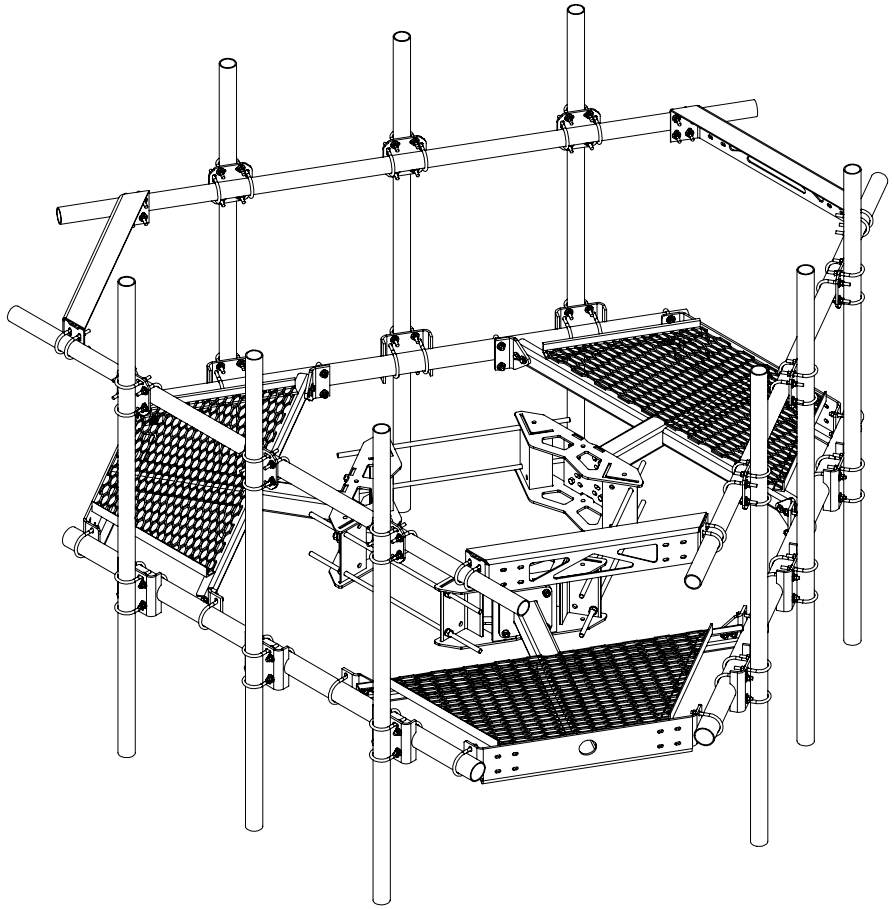
2.0 DESIGN NOTES
- 2.1 TORQUE U-BOLTS TO 44 FT-LBS

3.0 MANUFACTURING/SPECIAL REQUIREMENTS

4.0 TEST

5.0 PACKAGING

REVISIONS				
REV.	ECN	DESCRIPTION	BY	DATE
A	10272PC	INITIAL RELEASE	HDAI	03/08/2021



PATENT PENDING

DENSITY	lbs/in³
MASS	lbs
VOLUME	in³
SURFACE AREA	in²
HEIGHT	96"
LENGTH	46"
WIDTH	29'

COMMSCOPE, INC. OF NORTH CAROLINA

TOLERANCES
1 PLACE .X ± .25
2 PLACE .XX ± 0.12
3 PLACE .XXX ± 0.06
ANGLES ± 2°

SAP MATERIAL MASTER: MC-PK8-DSH

FINISH: GALV A123

MATERIAL: A500, A1011/A1018

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES INTERPRET PER ANSI Y-14.5M-1994

	NAME	DATE
CE	MRC	02/17/20
RW	ROGHANSON	03/16/2021
AD	BCROSS	03/17/2021
RE	FA1024	02/27/2020

ECN 10272PC

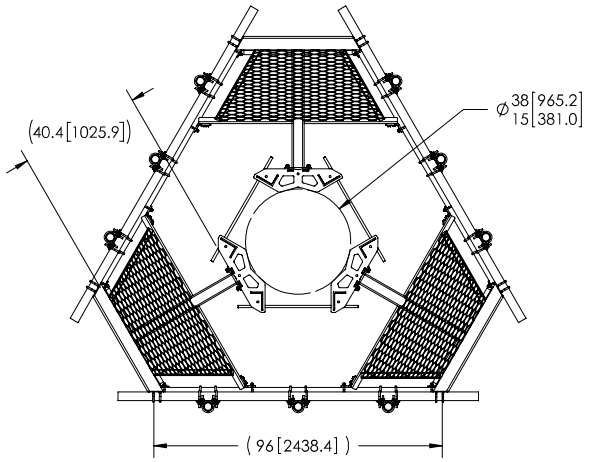
TITLE: **LOW PROFILE PLATFORM FACE**

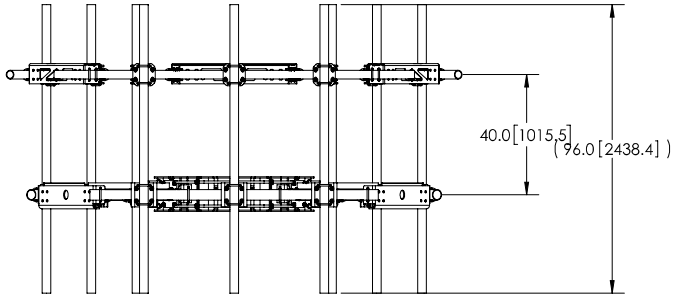
SCALE: 1:32

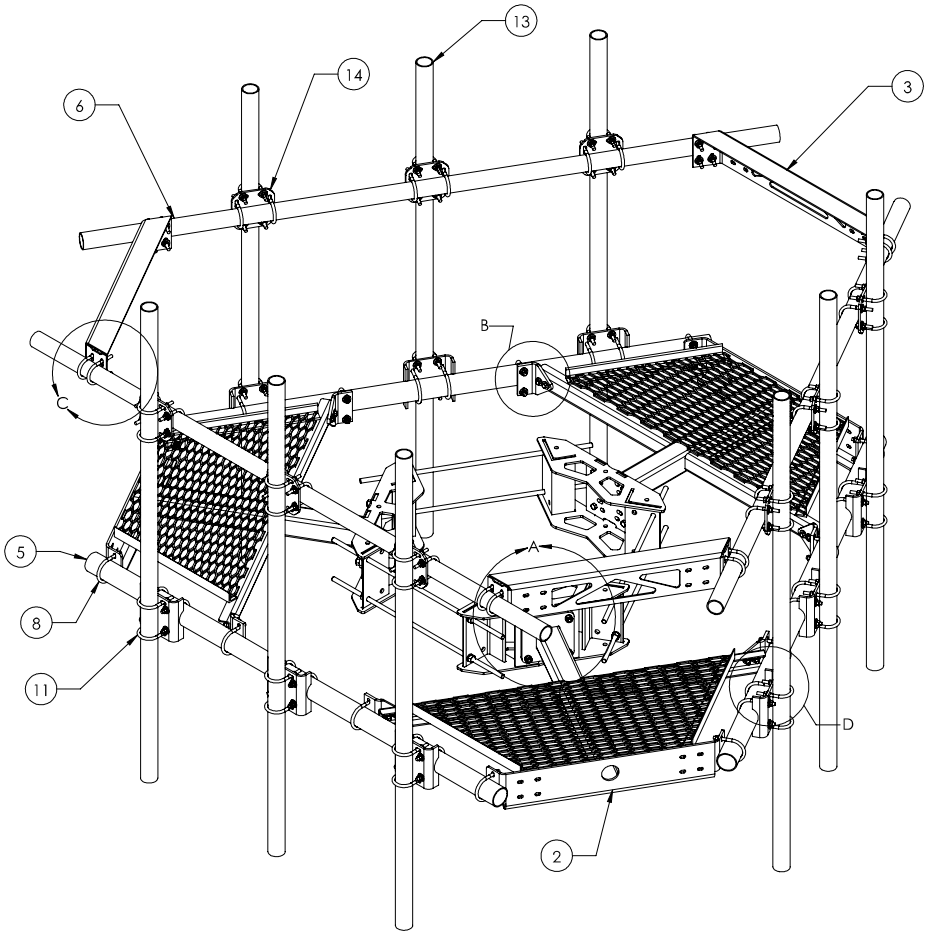
DOCUMENT NO.: MC-PK8-DSH

SIZE	Auth Group	MODEL			DRAWING			SHEET
	INSL	VERSION	STATUS	REVISION	VERSION	STATUS	REVISION	
C		01	AD		00	AD	A	1 OF 3

NOTES:







ITEM	PART NO.	DESCRIPTION	QTY.
1	MC-RM1550-3	12" - 50" OD RINGMOUNT	1
2	MTC300602	SECTOR WELDMENT FOR SNUB NOSE PLATFORM	3
3	MT195801	Corner Weldment Snub Nose Handrail	3
4	GB-0520A	5/8" X 2" GALV BOLT KIT (A325)	12
5	MT54796	3.50" OD X 96" GALV PIPE	3
6	MT546120	2.875" O.D. X 120" PIPE	3
7	GWF-04	1/2" GALV FLAT WASHER	12
8	GUB-4355	1/2" X 3-5/8" X 5" GALV U-BOLT	12
9	MTC300618	MOUNTING PLATE FOR MT-196	6
10	GB-04205	1/2" X 2" GALV BOLT KIT	12
11	MT-219M-H	3.5" OD X 2-7/8" OD Clamp Bracket Assembly	9
12	GUB-4352	1/2" X 3" X 5-1/4" GALV U-BOLT	12
13	MT54696	Ø2.875" O.D. X 96 PIPE	9
14	XP-2525	CROSSOVER PLATE KIT, 2-7/8 OD X 2-7/8 OD	9

COMMSCOPE, INC. OF NORTH CAROLINA

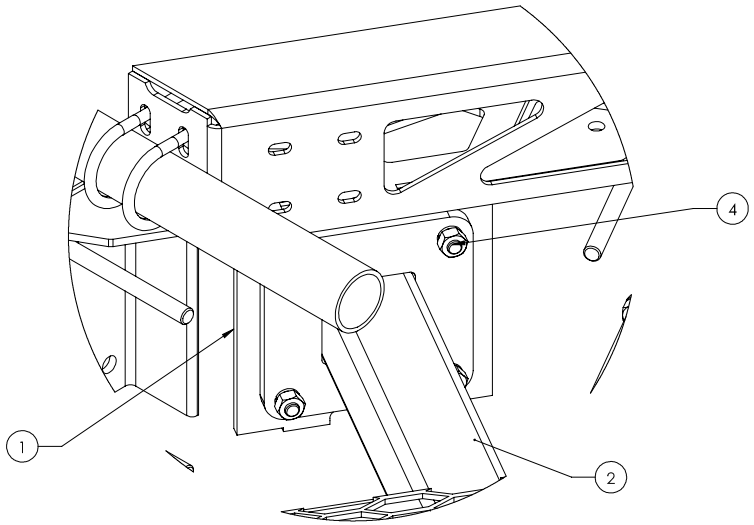
TITLE

LOW PROFILE PLATFORM FACE

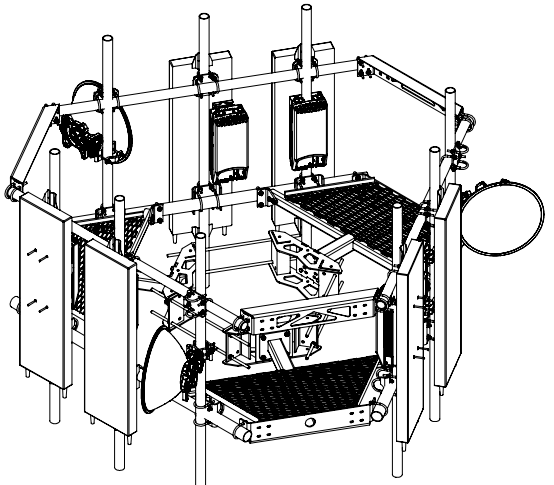
SIZE	SCALE	DOCUMENT NO.
C	1:32	MC-PK8-DSH

DRAWING			SHEET
VERSION	STATUS	REVISION	
00	AD	A	

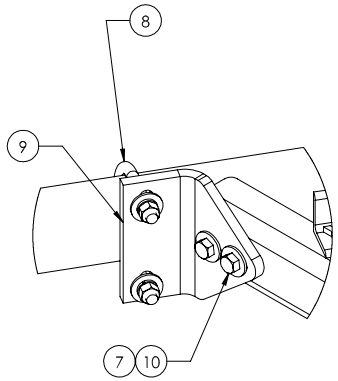
NOTES:



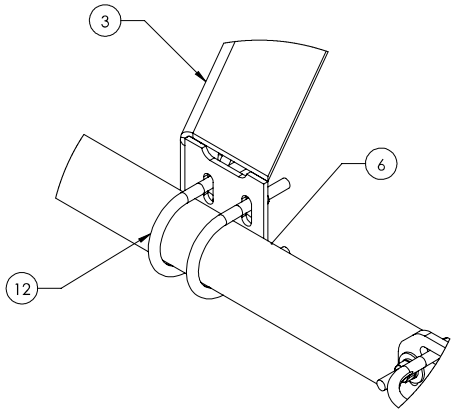
DETAIL A
SCALE 1 : 4



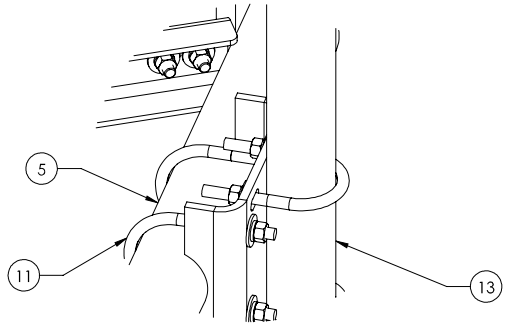
WITH ANTENNAS



DETAIL B
SCALE 1 : 4



DETAIL C
SCALE 1 : 4



DETAIL D
SCALE 1 : 4

COMMSCOPE, INC. OF NORTH CAROLINA			
TITLE: LOW PROFILE PLATFORM FACE			
SIZE: C	SCALE: 1:24	DOCUMENT NO.: MC-PK8-DSH	
		DRAWING: VERSION 00 / STATUS AD / REVISION A	SHEET: 3 OF 3

DocuSign

Certificate Of Completion

Envelope Id: A036E931A5C64F4295FC8F02068C7B0F
Status: Completed
Subject: Please DocuSign: 842872_556625_Rev.1_Conditional_DISH Network_130ft_MM.DD.2021_signed.pdf
Source Envelope:
Document Pages: 25
Signatures: 1
Certificate Pages: 1
Initials: 0
AutoNav: Enabled
EnvelopeId Stamping: Enabled
Time Zone: (UTC-05:00) Eastern Time (US & Canada)

Envelope Originator:
Manuel JaraPerez
401 Fayetteville St.
Suite 600
Raleigh, NC 27601
Manuel.JaraPerez@kimley-horn.com
IP Address: 208.127.231.172

Record Tracking

Status: Original
9/15/2021 5:21:12 PM
Holder: Manuel JaraPerez
Manuel.JaraPerez@kimley-horn.com
Location: DocuSign

Signer Events	Signature	Timestamp
Kyle Freehart kyle.freehart@kimley-horn.com Kimley-Horn Security Level: Email, Account Authentication (None)	 Signature Adoption: Pre-selected Style Using IP Address: 208.127.231.172	Sent: 9/15/2021 5:21:55 PM Viewed: 9/15/2021 5:41:13 PM Signed: 9/15/2021 5:41:21 PM

Electronic Record and Signature Disclosure:
Not Offered via DocuSign

In Person Signer Events	Signature	Timestamp

Editor Delivery Events	Status	Timestamp

Agent Delivery Events	Status	Timestamp

Intermediary Delivery Events	Status	Timestamp

Certified Delivery Events	Status	Timestamp

Carbon Copy Events	Status	Timestamp

Witness Events	Signature	Timestamp

Notary Events	Signature	Timestamp

Envelope Summary Events	Status	Timestamps
Envelope Sent	Hashed/Encrypted	9/15/2021 5:21:55 PM
Certified Delivered	Security Checked	9/15/2021 5:41:13 PM
Signing Complete	Security Checked	9/15/2021 5:41:21 PM
Completed	Security Checked	9/15/2021 5:41:21 PM

Payment Events	Status	Timestamps

ATTACHMENT 6

4545 E River Rd, Suite 320
West Henrietta, NY 14586

Phone: (585) 445-5896
Fax: (724) 416-4461
www.crowncastle.com

Crown Castle Letter of Authorization

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

Re: Tower Share Application
Crown Castle telecommunications site at:
52 NEW BRITAIN AVENUE, ROCKY HILL, CT 06067

CCATT 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: **842872/ROCKY HILL**
Customer Site ID: **BOBDL00067A/CT-CCI-T-842872**
Site Address: **52 NEW BRITAIN AVENUE, ROCKY HILL, CT 06067**

Crown Castle

By: _____ Date: _____
Richard Zajac
Site Acquisition Specialist

EBI Consulting

environmental | engineering | due diligence

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

Dish Wireless Existing Facility

Site ID: BOBDL00067A

842872
52 New Britain Avenue
Rocky Hill, Connecticut 06067

November 18, 2021

EBI Project Number: 6221007183

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**23.25%**

November 18, 2021

Dish Wireless

Emissions Analysis for Site: BOBDL00067A - 842872

EBI Consulting was directed to analyze the proposed Dish Wireless facility located at **52 New Britain Avenue** in **Rocky Hill, Connecticut** for the purpose of determining whether the emissions from the Proposed Dish Wireless Antenna Installation located on this property are within specified federal limits.

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

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

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

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limits for the 600 MHz and 700 MHz frequency bands are approximately 400 $\mu W/cm^2$ and 467 $\mu W/cm^2$, respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 11 GHz frequency bands is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

Occupational/controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully aware of the potential for exposure and can exercise control over their exposure.

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed Dish Wireless Wireless antenna facility located at 52 New Britain Avenue in Rocky Hill, Connecticut using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since Dish Wireless is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 20 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was focused at the base of the tower. For this report, the sample point is the top of a 6-foot person standing at the base of the tower.

For all calculations, all equipment was calculated using the following assumptions:

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

2) 4 n70 channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.

3) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.

4) For the following calculations, the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 20 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

5) The antennas used in this modeling are the JMA MX08FRO665-21 for the 600 MHz / 1900 MHz channel(s) in Sector A, the JMA MX08FRO665-21 for the 600 MHz / 1900 MHz channel(s) in Sector B, the JMA MX08FRO665-21 for the 600 MHz / 1900 MHz channel(s) in Sector C. This is based on feedback from the carrier with regard to anticipated antenna selection. All Antenna gain values and associated transmit power levels are shown in the Site Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 20 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

6) The antenna mounting height centerline of the proposed antennas is 130 feet above ground level (AGL).

7) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

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

Dish Wireless Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	JMA MX08FRO665-21	Make / Model:	JMA MX08FRO665-21	Make / Model:	JMA MX08FRO665-21
Frequency Bands:	600 MHz / 1900 MHz	Frequency Bands:	600 MHz / 1900 MHz	Frequency Bands:	600 MHz / 1900 MHz
Gain:	17.45 dBd / 22.65 dBd	Gain:	17.45 dBd / 22.65 dBd	Gain:	17.45 dBd / 22.65 dBd
Height (AGL):	130 feet	Height (AGL):	130 feet	Height (AGL):	130 feet
Channel Count:	8	Channel Count:	8	Channel Count:	8
Total TX Power (W):	280 Watts	Total TX Power (W):	280 Watts	Total TX Power (W):	280 Watts
ERP (W):	3,065.51	ERP (W):	3,065.51	ERP (W):	3,065.51
Antenna A1 MPE %:	**1.03%**	Antenna B1 MPE %:	**1.03%**	Antenna C1 MPE %:	**1.03%**

Site Composite MPE %	
Carrier	**MPE %**
Dish Wireless (Max at Sector A):	1.03%
T-Mobile	0.72%
Verizon	12%
AT&T	4.44%
Police	1%
Fire	1%
Sprint	2.96%
Clearwire	0.1%
Site Total MPE % :	23.25%

Dish Wireless MPE % Per Sector	
Dish Wireless Sector A Total:	1.03%
Dish Wireless Sector B Total:	1.03%
Dish Wireless Sector C Total:	1.03%
Site Total MPE % :	23.25%

Dish Wireless Maximum MPE Power Values (Sector A)

Dish Wireless Frequency Band / Technology (Sector A)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density (μW/cm²)	Frequency (MHz)	Allowable MPE (μW/cm²)	Calculated % MPE
Dish Wireless 600 MHz n71	4	223.68	130.0	2.09	600 MHz n71	400	0.52%
Dish Wireless 1900 MHz n70	4	542.70	130.0	5.08	1900 MHz n70	1000	0.51%
						Total:	**1.03%**

• NOTE: Totals may vary by approximately 0.01% due to summation of remainders in calculations.

Summary

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

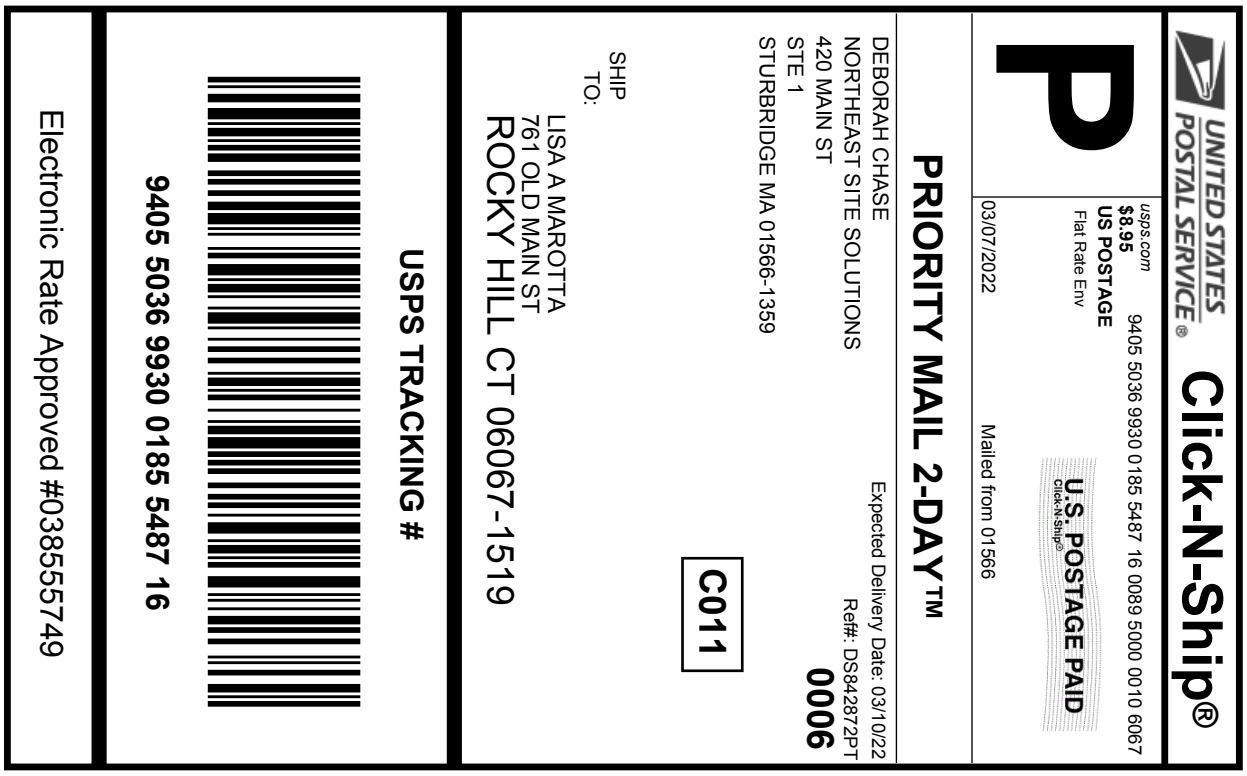
The anticipated maximum composite contributions from the Dish Wireless facility as well as the site composite emissions value with regards to compliance with FCC's allowable limits for general population exposure to RF Emissions are shown here:

Dish Wireless Sector	Power Density Value (%)
Sector A:	1.03%
Sector B:	1.03%
Sector C:	1.03%
Dish Wireless Maximum MPE % (Sector A):	1.03%
Site Total:	23.25%
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **23.25%** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

ATTACHMENT 7



Cut on dotted line.

Instructions

1. **Each Click-N-Ship® label is unique. Labels are to be used as printed and used only once. DO NOT PHOTO COPY OR ALTER LABEL.**
2. **Place your label so it does not wrap around the edge of the package.**
3. **Adhere your label to the package. A self-adhesive label is recommended. If tape or glue is used, DO NOT TAPE OVER BARCODE. Be sure all edges are secure.**
4. **To mail your package with PC Postage®, you may schedule a Package Pickup online, hand to your letter carrier, take to a Post Office™, or drop in a USPS collection box.**
5. **Mail your package on the "Ship Date" you selected when creating this label.**

Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0185 5487 16

Trans. #:	558209878
Print Date:	03/07/2022
Ship Date:	03/07/2022
Expected Delivery Date:	03/10/2022

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

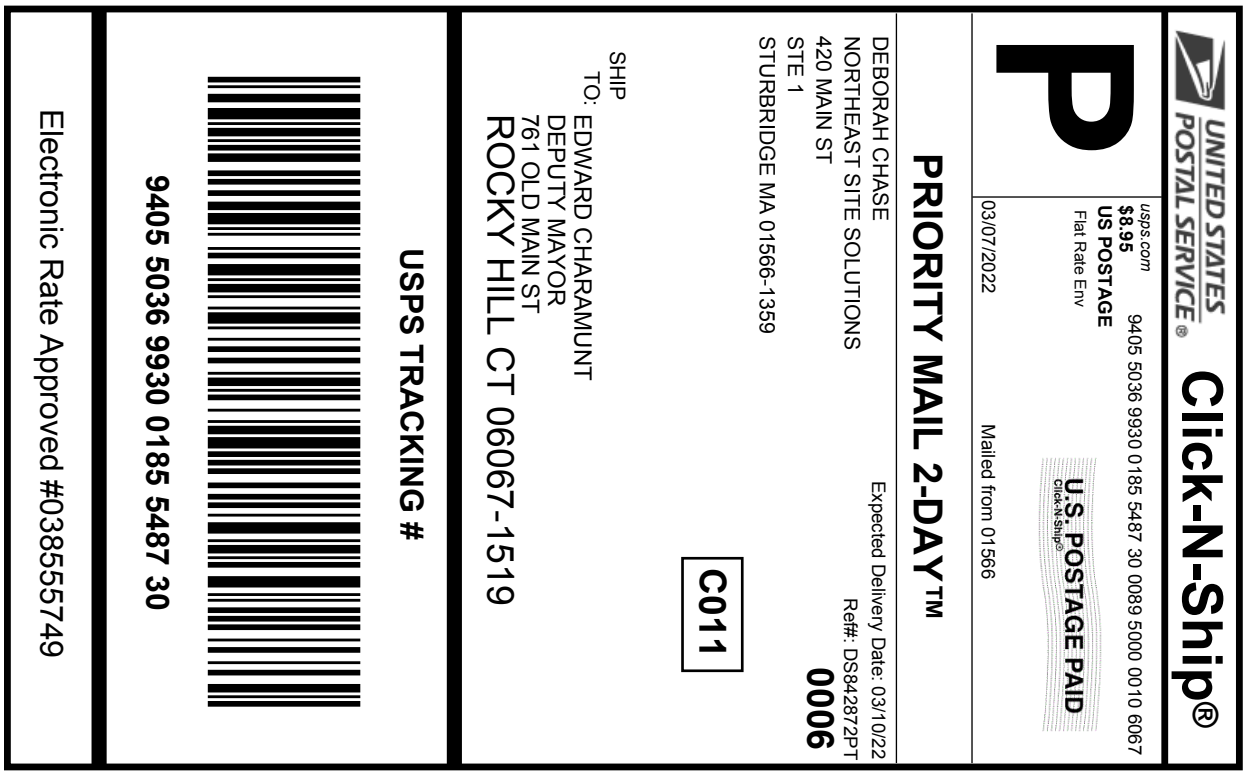
From: DEBORAH CHASE
NORTHEAST SITE SOLUTIONS
420 MAIN ST
STE 1
STURBRIDGE MA 01566-1359

Ref#: DS842872PT

To: LISA A MAROTTA
761 OLD MAIN ST
ROCKY HILL CT 06067-1519

* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.

Thank you for shipping with the United States Postal Service!
Check the status of your shipment on the USPS Tracking® page at usps.com



Cut on dotted line.

Instructions

1. **Each Click-N-Ship® label is unique. Labels are to be used as printed and used only once. DO NOT PHOTO COPY OR ALTER LABEL.**
2. **Place your label so it does not wrap around the edge of the package.**
3. **Adhere your label to the package. A self-adhesive label is recommended. If tape or glue is used, DO NOT TAPE OVER BARCODE. Be sure all edges are secure.**
4. **To mail your package with PC Postage®, you may schedule a Package Pickup online, hand to your letter carrier, take to a Post Office™, or drop in a USPS collection box.**
5. **Mail your package on the "Ship Date" you selected when creating this label.**

Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0185 5487 30

Trans. #:	558209878
Print Date:	03/07/2022
Ship Date:	03/07/2022
Expected Delivery Date:	03/10/2022

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

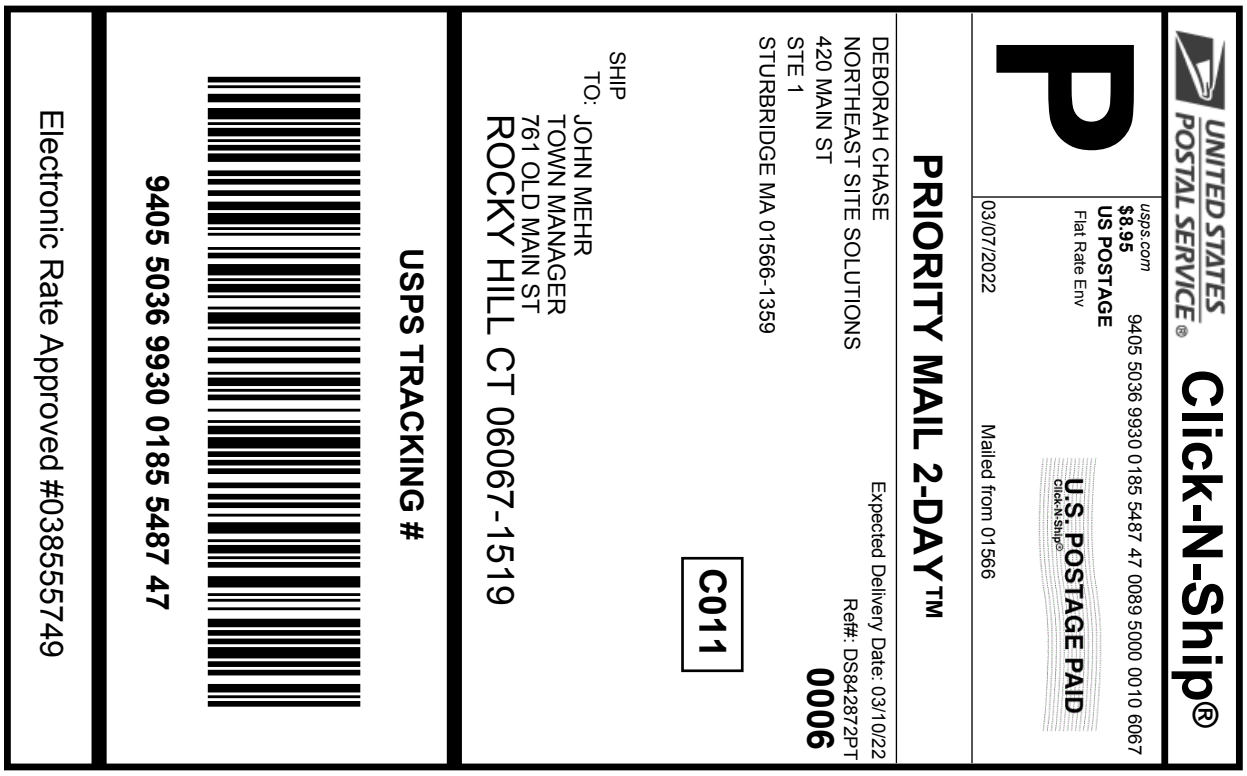
From: DEBORAH CHASE
NORTHEAST SITE SOLUTIONS
420 MAIN ST
STE 1
STURBRIDGE MA 01566-1359

Ref#: DS842872PT

To: EDWARD CHARAMUNT
DEPUTY MAYOR
761 OLD MAIN ST
ROCKY HILL CT 06067-1519

* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.

Thank you for shipping with the United States Postal Service!
Check the status of your shipment on the USPS Tracking® page at usps.com



Cut on dotted line.

Instructions

1. **Each Click-N-Ship® label is unique. Labels are to be used as printed and used only once. DO NOT PHOTO COPY OR ALTER LABEL.**
2. **Place your label so it does not wrap around the edge of the package.**
3. **Adhere your label to the package. A self-adhesive label is recommended. If tape or glue is used, DO NOT TAPE OVER BARCODE. Be sure all edges are secure.**
4. **To mail your package with PC Postage®, you may schedule a Package Pickup online, hand to your letter carrier, take to a Post Office™, or drop in a USPS collection box.**
5. **Mail your package on the "Ship Date" you selected when creating this label.**

Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0185 5487 47

Trans. #:	558209878
Print Date:	03/07/2022
Ship Date:	03/07/2022
Expected Delivery Date:	03/10/2022

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

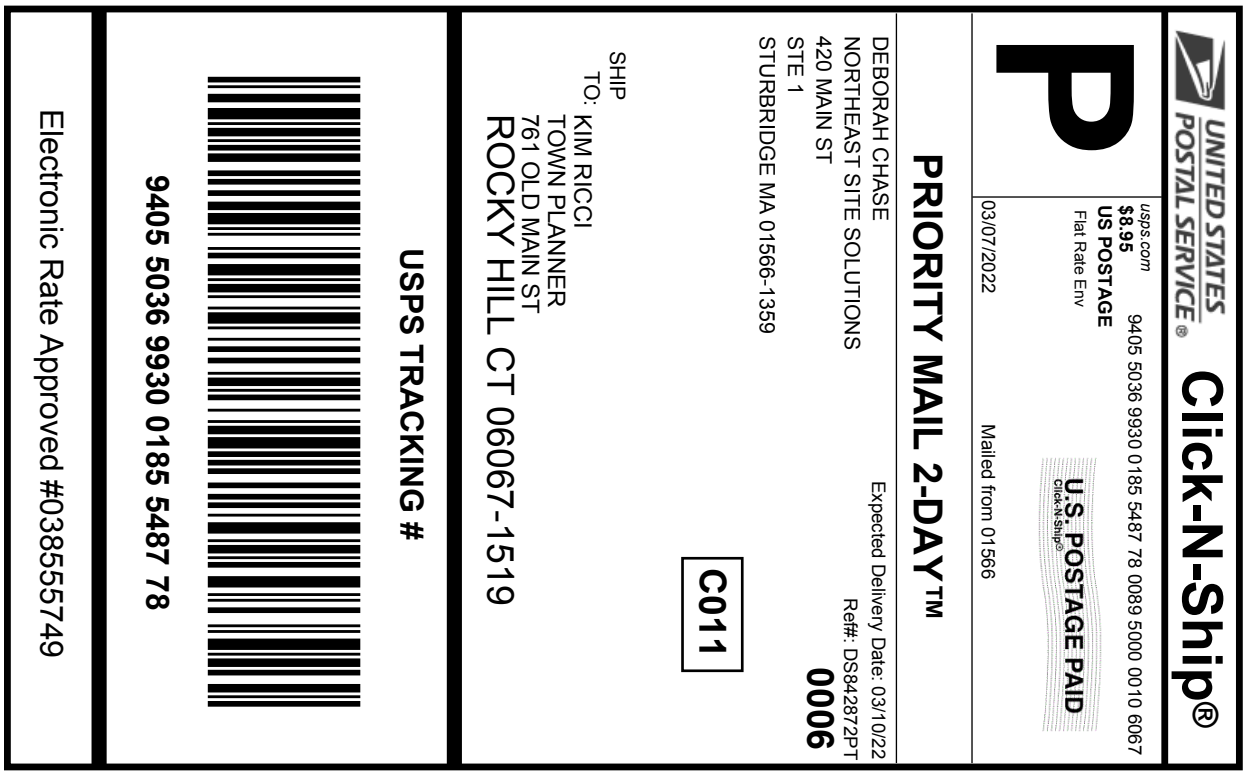
From: DEBORAH CHASE
NORTHEAST SITE SOLUTIONS
420 MAIN ST
STE 1
STURBRIDGE MA 01566-1359

Ref#: DS842872PT

To: JOHN MEHR
TOWN MANAGER
761 OLD MAIN ST
ROCKY HILL CT 06067-1519

* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.

Thank you for shipping with the United States Postal Service!
Check the status of your shipment on the USPS Tracking® page at usps.com



Cut on dotted line.

Instructions

1. **Each Click-N-Ship® label is unique. Labels are to be used as printed and used only once. DO NOT PHOTO COPY OR ALTER LABEL.**
2. **Place your label so it does not wrap around the edge of the package.**
3. **Adhere your label to the package. A self-adhesive label is recommended. If tape or glue is used, DO NOT TAPE OVER BARCODE. Be sure all edges are secure.**
4. **To mail your package with PC Postage®, you may schedule a Package Pickup online, hand to your letter carrier, take to a Post Office™, or drop in a USPS collection box.**
5. **Mail your package on the "Ship Date" you selected when creating this label.**

Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0185 5487 78

Trans. #:	558209878
Print Date:	03/07/2022
Ship Date:	03/07/2022
Expected Delivery Date:	03/10/2022

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

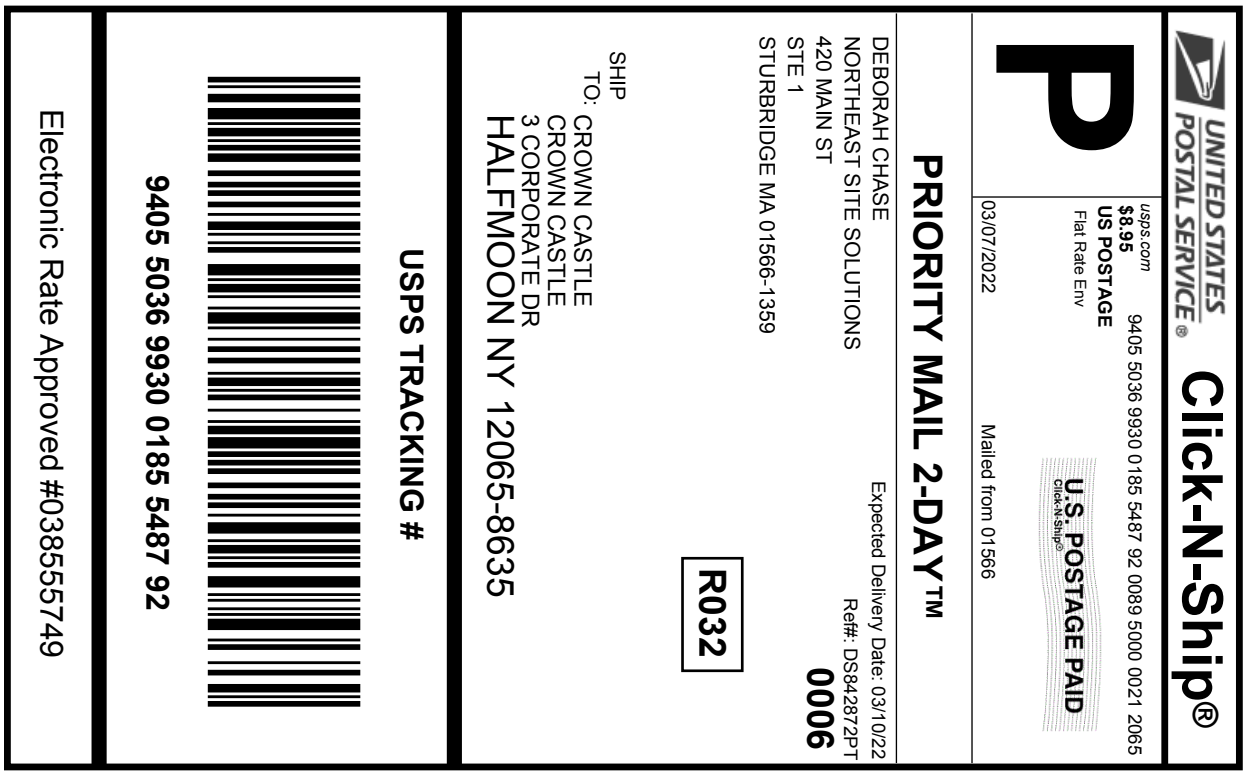
From: DEBORAH CHASE
NORTHEAST SITE SOLUTIONS
420 MAIN ST
STE 1
STURBRIDGE MA 01566-1359

Ref#: DS842872PT

To: KIM RICCI
TOWN PLANNER
761 OLD MAIN ST
ROCKY HILL CT 06067-1519

* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.

Thank you for shipping with the United States Postal Service!
Check the status of your shipment on the USPS Tracking® page at usps.com



Cut on dotted line.

Instructions

1. **Each Click-N-Ship® label is unique. Labels are to be used as printed and used only once. DO NOT PHOTO COPY OR ALTER LABEL.**
2. **Place your label so it does not wrap around the edge of the package.**
3. **Adhere your label to the package. A self-adhesive label is recommended. If tape or glue is used, DO NOT TAPE OVER BARCODE. Be sure all edges are secure.**
4. **To mail your package with PC Postage®, you may schedule a Package Pickup online, hand to your letter carrier, take to a Post Office™, or drop in a USPS collection box.**
5. **Mail your package on the "Ship Date" you selected when creating this label.**

Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0185 5487 92

Trans. #:	558209878
Print Date:	03/07/2022
Ship Date:	03/07/2022
Expected Delivery Date:	03/10/2022

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

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

Ref#: DS842872PT

To: CROWN CASTLE
CROWN CASTLE
3 CORPORATE DR
HALFMOON NY 12065-8635

* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.

Thank you for shipping with the United States Postal Service!
Check the status of your shipment on the USPS Tracking® page at usps.com

CERTIFICATION OF SERVICE

I hereby certify that on the 7th day of March 2022, DISH Wireless, LLC provided notice of its intent to file a Petition for a declaratory ruling that a Certificate of Environmental Compatibility and Public Need is not required for the modification of a wireless telecommunications facility at 52 New Britain Avenue in Rocky Hill, Connecticut, to the following:

Abutters

SIXTY SIX NBA LLC
PO BOX 189
ROCKY HILL, CT 06067

THIRTY EIGHT NEW BRITAIN AVENUE LLC
38 NEW BRITAIN AVENUE
ROCKY HILL, CT 06067

TOWN OF ROCKY HILL
761 OLD MAIN STREET
ROCKY HILL, CT 06067

TWO HUNDRED FIFTY SIX MIDDLE LLC
C/O JCORP REALTY LLC
2 CORPORATE DRIVE STE 441
SHELTON, CT 06484

Owner

TOWN OF ROCKY HILL
761 OLD MAIN STREET
ROCKY HILL, CT 06067

Respectfully Submitted,

Victoria Masse
Northeast Site Solutions
420 Main Street #2
Sturbridge, MA 01566

842872 Crown Dish

UNITED STATES POSTAL SERVICE.

FARMINGTON
210 MAIN ST
FARMINGTON, CT 06032-9998
(800)275-8777

03/09/2022 01:18 PM

Product	Qty	Unit Price	Price
Prepaid Mail Rocky Hill, CT 06067 Weight: 0 lb 14.00 oz Acceptance Date: Wed 03/09/2022 Tracking #: 9405 5036 9930 0185 5487 16	1		$0.00
Prepaid Mail Rocky Hill, CT 06067 Weight: 0 lb 14.00 oz Acceptance Date: Wed 03/09/2022 Tracking #: 9405 5036 9930 0185 5487 30	1		$0.00
Prepaid Mail Rocky Hill, CT 06067 Weight: 0 lb 13.90 oz Acceptance Date: Wed 03/09/2022 Tracking #: 9405 5036 9930 0185 5487 47	1		$0.00
Prepaid Mail Rocky Hill, CT 06067 Weight: 0 lb 13.90 oz Acceptance Date: Wed 03/09/2022 Tracking #: 9405 5036 9930 0185 5487 78	1		$0.00
Prepaid Mail Clifton Park, NY 12065 Weight: 0 lb 14.00 oz Acceptance Date: Wed 03/09/2022 Tracking #: 9405 5036 9930 0185 5487 92	1		$0.00
Grand Total:			$0.00

****

March 7, 2022

VIA USPS CERTIFIED MAIL/
RETURN RECEIPT REQUESTED

TOWN OF ROCKY HILL
761 OLD MAIN STREET
ROCKY HILL, CT 06067

RE: Proposed Modification to Existing Wireless Telecommunications Facility at 52 New Britain Avenue, Rocky Hill, Connecticut

To Whom It May Concern:

I am writing to you on behalf of DISH Wireless, LLC ("DISH"). DISH intends to file with the Connecticut Siting Council ("Council") a petition for declaratory ruling ("Petition") that a Certificate of Environmental Compatibility and Public Need is not required.

The Petition will provide details of the Existing Facility modification and explain why it will have no significant adverse environmental effect.

This letter serves as notice to you as an abutting property owner pursuant to § 16-50j-40 of the Regulations of Connecticut State Agencies. DISH will file the Petition on or about March 7, 2022 and will request that the Council place the Petition on some future agenda.

You may review the Petition at the office of the Council, which is located at Ten Franklin Square, New Britain, Connecticut, 06051, or at the Office of the Town Clerk at the Windsor Town Hall. All inquiries should be addressed to Council or to the undersigned.

Sincerely,

Victoria Masse
Northeast Site Solutions
420 Main Street #2
Sturbridge, MA 01566

U.S. Postal Service™
CERTIFIED MAIL® RECEIPT
Domestic Mail Only

For delivery information, visit our website at *www.usps.com®*.

Rocky Hill, CT 06067

OFFICIAL USE

Certified Mail Fee	$3.75
Extra Services & Fees (check box, add fee as appropriate)	
☐ Return Receipt (hardcopy)	$0.00
☐ Return Receipt (electronic)	$0.00
☐ Certified Mail Restricted Delivery	$0.00
☐ Adult Signature Required	$0.00
☐ Adult Signature Restricted Delivery	$
Postage	$0.58
Total Postage and Fees	$7.38

1106 17

Postmark Here

MAR - 5 2022

LINCOLN STREET STATION WORCESTER MA. 01605 USPS

03/07/2022

Sent To: Sixty Six NBA LLC

Street and Apt. No., or PO Box No.: PO BOX 189

City, State, ZIP+4®: ROCKY HILL CT 06067

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

7021 1970 0001 2284 0439

U.S. Postal Service™
CERTIFIED MAIL® RECEIPT
Domestic Mail Only

For delivery information, visit our website at *www.usps.com®*.

Rocky Hill, CT 06067

OFFICIAL USE

Certified Mail Fee	$3.75
Extra Services & Fees (check box, add fee as appropriate)	
☐ Return Receipt (hardcopy)	$0.00
☐ Return Receipt (electronic)	$0.00
☐ Certified Mail Restricted Delivery	$0.00
☐ Adult Signature Required	$0.00
☐ Adult Signature Restricted Delivery	$
Postage	$0.58
Total Postage and Fees	$7.38

1106 17

Postmark Here

MAR - 5 2022

LINCOLN STREET STATION WORCESTER MA. 01605 USPS

03/07/2022

Sent To: Thirty Eight New Britain Ave LLC

Street and Apt. No., or PO Box No.: 38 New Britain Ave

City, State, ZIP+4®: ROCKY HILL CT 06067

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

7021 1970 0001 2284 0422

U.S. Postal Service™
CERTIFIED MAIL® RECEIPT
Domestic Mail Only

For delivery information, visit our website at *www.usps.com®*.

Shelton, CT 06484

OFFICIAL USE

Certified Mail Fee	$3.75
Extra Services & Fees (check box, add fee as appropriate)	
☐ Return Receipt (hardcopy)	$0.00
☐ Return Receipt (electronic)	$0.00
☐ Certified Mail Restricted Delivery	$0.00
☐ Adult Signature Required	$0.00
☐ Adult Signature Restricted Delivery	$
Postage	$0.58
Total Postage and Fees	$7.38

1106 17

Postmark Here

MAR - 5 2022

LINCOLN STREET STATION WORCESTER MA. 01605 USPS

03/07/2022

Sent To: Two Hundred Fifty Six Middle LLC

Street and Apt. No., or PO Box No.: 2 Corporate Drive - Suite 441

City, State, ZIP+4®: Shelton, CT 06484

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

7020 3160 0000 5719 3002

U.S. Postal Service™
CERTIFIED MAIL® RECEIPT
Domestic Mail Only

For delivery information, visit our website at *www.usps.com®*.

Rocky Hill, CT 06067

OFFICIAL USE

Certified Mail Fee	$3.75
Extra Services & Fees (check box, add fee as appropriate)	
☐ Return Receipt (hardcopy)	$0.00
☐ Return Receipt (electronic)	$0.00
☐ Certified Mail Restricted Delivery	$0.00
☐ Adult Signature Required	$0.00
☐ Adult Signature Restricted Delivery	$
Postage	$0.58
Total Postage and Fees	$7.38

1106 17

Postmark Here

MAR - 5 2022

LINCOLN STREET STATION WORCESTER MA. 01605 USPS

03/07/2022

Sent To: Town of ROCKY HILL

Street and Apt. No., or PO Box No.: 761 OLD MAIN ST

City, State, ZIP+4®: ROCKY HILL, CT 06067

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

7020 3160 0000 5719 2999

842872 - DS PT

U.S. Postal Service™
CERTIFIED MAIL® RECEIPT
Domestic Mail Only

For delivery information, visit our website at *www.usps.com®*.
Rocky Hill, CT 06067
OFFICIAL USE

Certified Mail Fee	$3.75
Extra Services & Fees (check box, add fee as appropriate)	
☐ Return Receipt (hardcopy)	$0.00
☐ Return Receipt (electronic)	$0.00
☐ Certified Mail Restricted Delivery	$0.00
☐ Adult Signature Required	$0.00
☐ Adult Signature Restricted Delivery	$
Postage	$0.58
Total Postage and Fees	$7.38

1106
WORCESTER STATION WORCESTER MA 01605
Postmark Here
MAR - 3 2022
03/07/2022

Sent To: TOWN OF ROCKY HILL
Street and Apt. No., or PO Box No.: 761 OLD MAIN ST
City, State, ZIP+4®: ROCKY HILL

PS Form 3800, April 2015 PSN 7530-02-000-9047 — See Reverse for Instructions

7021 1970 0001 2284 0446

UNITED STATES POSTAL SERVICE.

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

03/07/2022 03:11 PM

Product	Qty	Unit Price	Price
First-Class Mail® Letter Rocky Hill, CT 06067 Weight: 0 lb 0.40 oz Estimated Delivery Date Wed 03/09/2022	1		$0.58
Certified Mail® Tracking #: 70211970000122840439			$3.75
Return Receipt Tracking #: 9590 9402 7092 1251 8087 19			$3.05
Total			$7.38
First-Class Mail® Letter Rocky Hill, CT 06067 Weight: 0 lb 0.40 oz Estimated Delivery Date Wed 03/09/2022	1		$0.58
Certified Mail® Tracking #: 70211970000122840422			$3.75
Return Receipt Tracking #: 9590 9402 7092 1251 8086 96			$3.05
Total			$7.38
First-Class Mail® Letter Shelton, CT 06484 Weight: 0 lb 0.40 oz Estimated Delivery Date Wed 03/09/2022	1		$0.58
Certified Mail® Tracking #: 70203160000057193002			$3.75
Return Receipt Tracking #: 9590 9402 7092 1251 8086 65			$3.05
Total			$7.38
First-Class Mail® Letter Rocky Hill, CT 06067 Weight: 0 lb 0.40 oz Estimated Delivery Date Wed 03/09/2022	1		$0.58
Certified Mail® Tracking #: 70203160000057192999			$3.75
Return Receipt			$3.05
Total			$7.38
First-Class Mail® Letter Rocky Hill, CT 06067 Weight: 0 lb 0.40 oz Estimated Delivery Date Wed 03/09/2022	1		$0.58
Certified Mail® Tracking #: 70211970000122840446			$3.75
Return Receipt Tracking #: 9590 9402 6930 1104 6444 68			$3.05
Total			$7.38