NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

Northeast Site Solutions
Denise Sabo
4 Angela's Way, Burlington CT 06013
203-435-3640
denise@northeastsitesolutions.com

June 16, 2022

Members of the Siting Council
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051

RE: Tower Share Application
101 Pierce Road, Preston, CT 06365
Latitude: 41.538175
Longitude: -71.951630
Site #: 876366_Crown_Dish

Dear Ms. Bachman:

This letter and attachments are submitted on behalf of Dish Wireless LLC. Dish Wireless LLC plans to install antennas and related equipment to the tower site located at 101 Pierce Road, Preston, Connecticut.

Dish Wireless LLC proposes to install three (3) 600/1900 MHz 5G antennas and six (6) RRUs, at the 119-foot level of the existing 155-foot monopole tower, one (1) Fiber cable will also be installed. Dish Wireless LLC equipment cabinets will be placed within a 7' x 5' lease area within the existing fenced compound. Included are plans by Hudson Design Group, dated June 9, 2022, Exhibit C. Also included is a structural analysis prepared by Crown Castle, dated December 17, 2021, confirming that the existing tower is structurally capable of supporting the proposed equipment. Attached as Exhibit D. The facility was approved by the Town of Preston Planning Commission on August 3, 1999. Please see attached Exhibit A.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies 16-50aa, of Dish Wireless LLC intent to share a telecommunications facility pursuant to R.C.S.A. 16-50j-88. In accordance with R.C.S.A., a copy of this letter is being sent to Sandra Allyn-Gauthier, First Selectwoman and Kathy Warzecha, Town Planner for the Town of Preston, as well as the tower owner (Crown Castle) and property owner (Panus Farm LLC).

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

1. The proposed modification will not result in an increase in the height of the existing structure. The top of the existing tower is 155-feet and the Dish Wireless LLC antennas will be located at a centerline height of 119-feet.

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

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

4. The operation of the proposed antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard. The combined site operations will result in a total power density of 20.81% as evidenced by Exhibit F.

Connecticut General Statutes 16-50aa indicates that the Council must approve the shared use of a telecommunications facility provided it finds the shared use is technically, legally, environmentally, and economically feasible and meets public safety concerns. As demonstrated in this letter, Dish Wireless LLC respectfully submits that the shared use of this facility satisfies these criteria.

A. Technical Feasibility. The existing tower has been deemed structurally capable of supporting Dish Wireless LLC proposed loading. The structural analysis is included as Exhibit D.

B. Legal Feasibility. As referenced above, C.G.S. 16-50aa has been authorized to issue orders approving the shared use of an existing tower such as this tower in Preston. Under the authority granted to the Council, an order of the Council approving the requested shared use would permit Dish Wireless LLC to obtain a building permit for the proposed installation. Further, a Letter of Authorization is included as Exhibit G, authorizing Dish Wireless LLC to file this application for shared use.

C. Environmental Feasibility. The proposed shared use of this facility would have a minimal environmental impact. The installation of Dish Wireless LLC equipment at the 119-foot level of the existing 155-foot tower would have an insignificant visual impact on the area around the tower. Dish Wireless LLC ground equipment would be installed within the existing facility compound. Dish Wireless LLC shared use would therefore not cause any significant alteration in the physical or environmental characteristics of the existing site. Additionally, as evidenced by Exhibit F, the proposed antennas would not increase radio frequency emissions to a level at or above the Federal Communications Commission safety standard.

D. Economic Feasibility. Dish Wireless LLC will be entering into an agreement with the owner of this facility to mutually agreeable terms. As previously mentioned, the Letter of Authorization has been provided by the owner to assist Dish Wireless LLC with this tower sharing application.

E. Public Safety Concerns. As discussed above, the tower is structurally capable of supporting Dish Wireless LLC proposed loading. Dish Wireless LLC is not aware of any public safety concerns relative to the proposed sharing of the existing tower. Dish Wireless LLC intentions of providing new and improved wireless service through the shared use of this facility is expected to enhance the safety and welfare of local residents and individuals traveling through Preston.

Sincerely,

Denise Sabo

Denise Sabo
Mobile: 203-435-3640
Fax: 413-521-0558
Office: 4 Angela's Way, Burlington CT 06013
Email: denise@northeastsitesolutions.com

NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

Attachments

Cc: Sandra Allyn-Gauthier, First Selectwoman
Preston Town Hall
389 Route 2
Preston, CT 06365

Kathy Warzecha, Town Planner
Preston Town Hall
389 Route 2
Preston, CT 06365

Panus Farm LLC - Property Owner
60 Pierce Road
Preston, CT 06365

Crown Castle, Tower Owner

Exhibit A

Original Facility Approval

TOWN OF PRESTON
TOWN OFFICES
389 ROUTE 2
PRESTON, CONNECTICUT 06365-8830

To Dan for Signature 9/1/99

FILE COPY

Date: August 10, 1999

Certified Mail

Sprint Spectrum, L.P.
One International Blvd
Suite 800 Mahwah New, Jersey 07495

Dear Attorney Regan:

At the regular meeting of the Preston Planning and Zoning Commission held on August 3, 1999, the Commission reviewed application **Site Plan # 2-99 and Special Exception 4-99** for the installation of a monopole and other associated work at 101 Peirce Road The Commission voted unanimously to approve the subject application with the following modifications:

1. Note sight distance for the driveway on the plan.
2. Gravel drive shall have 6" of gravel rather than 4". The driveway shall have a paved apron. A driveway permit is required for its installation.
3. An As-built plan must be provided for the project after the construction is completed. The as-built must be provided prior to the release of the bond.
4. A bond for the site work in the amount of $28,000.00 must be submitted on forms as provided by the town with the final format to be approved by the town attorney.
5. A bond in the amount $29,500.00 must be posted for the tower dismantling. This bond is to be renewed every two years and must be renewed by August 3, 2001. In the event the bond is not renewed it will be a violation of this permit.
6. The Commission requested that a company representative contact the First Selectmen to afford the town due consideration to address the town's emergency communication needs.

Please provide one mylar copy of the plan revised in accordance with the above noted and produced or reproduced in compliance with section 7-31 of the Connecticut General Statues regarding requirements for the filing of a map. In addition, provide two (2) paper copies. After endorsement of the plan by the Chairman, the mylar copy of the plan must be filed with the Town Clerk's office.

BONDING: Prior to the endorsement of the plan the two bonds in the amount of **$28,000 and 29,500** must be filed with the Commission using the format as approved by the Commission (see attached forms). The Town will hold the bonds until such time the Commission approves their reduction or

release. Any plan filed without the appropriate bond will be considered to be in violation with the approved plan and zoning regulations. In order for the Commission to consider a bond release or reduction, a letter requesting a release or reduction must be submitted to the Planning and Zoning Office two (2) weeks prior to the regularly scheduled meeting. This will allow adequate time to conduct a site inspection of the completed work. Unauthorized work could result in delays with the bond release or reduction by the Commission.

OTHER PERMITS REQUIRED: Prior to the commencement of any work, a zoning permit and other subsequent town and state permits must be obtained.

SITE INSPECTIONS: During the construction of the project, inspections will be conducted of the progress by the town staff. A forty-eight hour notice is required for the inspections. In the event that there is concern with the location of the structure, parking etc, the Zoning Enforcement Officer may require that a land surveyor licensed in the State of Connecticut locate the structure prior to construction. Failure to provide notice to the town of the work and failure to construct the project as shown on the plan without prior approval of the changes could result in problems with the issuance of Certificate of Occupancy and the release or reduction of the bond. Please contact the Planning and Zoning Office at 889-2529 to schedule an appointment to inspect the project at the following times:

1. After the installation of the erosion and sediment control.
2. After the structure has been staked out and the footings are to be placed.
3. After the parking and sidewalks have been staked out.
4. Completion of the project.

If there are any questions regarding this application or if the staff can be of any assistance at any time during the project construction, please do not hesitate to contact the office.

Congratulations on the success completion of the application.

Very truly yours,

Daniel Kulesza

Daniel Kulesza
Town Planner

cc: ZEO
First Selectman
Inland Wetland Officer
Building Inspector
Walter and Ruth Panus

Exhibit B

Property Card

101 PIERCE RD

Location	101 PIERCE RD	**Mblu**	8-0/ PIE1/ 101/ /
Acct#	00059300	**Owner**	PANUS FARM LLC
Assessment	$257,750	**Appraisal**	$1,137,200
PID	602	**Building Count**	1

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2017	$92,400	$1,044,800	$1,137,200

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2017	$64,700	$193,050	$257,750

Owner of Record

Owner	PANUS FARM LLC	**Sale Price**	$0
Co-Owner		**Certificate**	
Address	60 PIERCE RD PRESTON, CT 06365	**Book & Page**	0196/0038
		Sale Date	12/03/2015
		Instrument	01

Ownership History

Ownership History					
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Instrument**	**Sale Date**
PANUS FARM LLC	$0		0196/0038	01	12/03/2015
SHEA JOAN	$0		0193/0185	01	11/19/2014
SHEA JOAN - TRUSTEE	$0		0193/0180	01	11/19/2014
PANUS RUTH L ESTATE OF	$0		0190/0842		11/26/2013
PANUS RUTH L TRUSTEE	$0		0188/0206		03/26/2013

Building Information

Building 1 : Section 1

Year Built: 1950

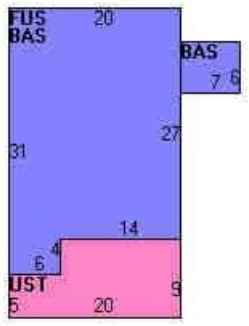
Building Photo

Living Area:	1,170
Replacement Cost:	$89,164
Building Percent Good:	65
Replacement Cost Less Depreciation:	$58,000

Building Attributes	
Field	**Description**
Style	Conventional
Model	Residential
Grade:	Below Average
Stories:	2 Stories
Occupancy	1
Exterior Wall 1	Wood Shingle
Exterior Wall 2	
Roof Structure:	Gable/Hip
Roof Cover	Asph/F Gls/Cmp
Interior Wall 1	Plastered
Interior Wall 2	Panel
Interior Flr 1	Carpet
Interior Flr 2	Vinyl/Asphalt
Heat Fuel	Gas
Heat Type:	Hot Water
AC Type:	None
Total Bedrooms:	4 Bedrooms
Total Bthrms:	1
Total Half Baths:	1
Total Xtra Fixtrs:	
Total Rooms:	6 Rooms
Bath Style:	Average
Kitchen Style:	Average
Num Kitchens	01
Cndtn	
Usrfld 103	
Usrfld 104	
Usrfld 105	
Usrfld 106	
Usrfld 107	
Num Park	
Fireplaces	
Usrfld 108	
Usrfld 101	
Usrfld 102	

(http://images.vgsi.com/photos/PrestonCTPhotos//\00\00\34\36.jpg)

Building Layout



(http://images.vgsi.com/photos/PrestonCTPhotos//Sketches/602_602.jpg)

Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
BAS	First Floor	606	606
FUS	Upper Story, Finished	564	564
UST	Utility, Storage, Unfinished	156	0
		1,326	1,170

Usrfld 100	
Usrfld 300	
Usrfld 301	

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code	1010
Description	Single Fam MDL-01
Zone	R-80
Neighborhood	0050
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	198.45
Frontage	0
Depth	0
Assessed Value	$193,050
Appraised Value	$1,044,800

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
FGR1	GARAGE-AVE			492.00 S.F.	$2,400	1
FGR1	GARAGE-AVE			2088.00 S.F.	$16,700	1
SLO1	SILO-WD OR CNC			3432.00 DIAxHT	$4,800	1
BRN3	1 STORY W/LOFT			1744.00 S.F.	$2,300	1
BRN8	POLE BARN			5124.00 S.F.	$3,600	1
SHD1	SHED FRAME			270.00 S.F.	$600	1
LNT	LEAN-TO			930.00 S.F.	$300	1
SHD2	W/LIGHTS ETC			4090.00 S.F.	$3,700	1

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2011	$119,800	$976,600	$1,096,400
2006	$101,600	$493,500	$595,100
2001	$102,200	$466,700	$568,900

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2011	$83,900	$91,600	$175,500
2006	$71,100	$58,900	$130,000

2001	$71,500	$46,900	$118,400

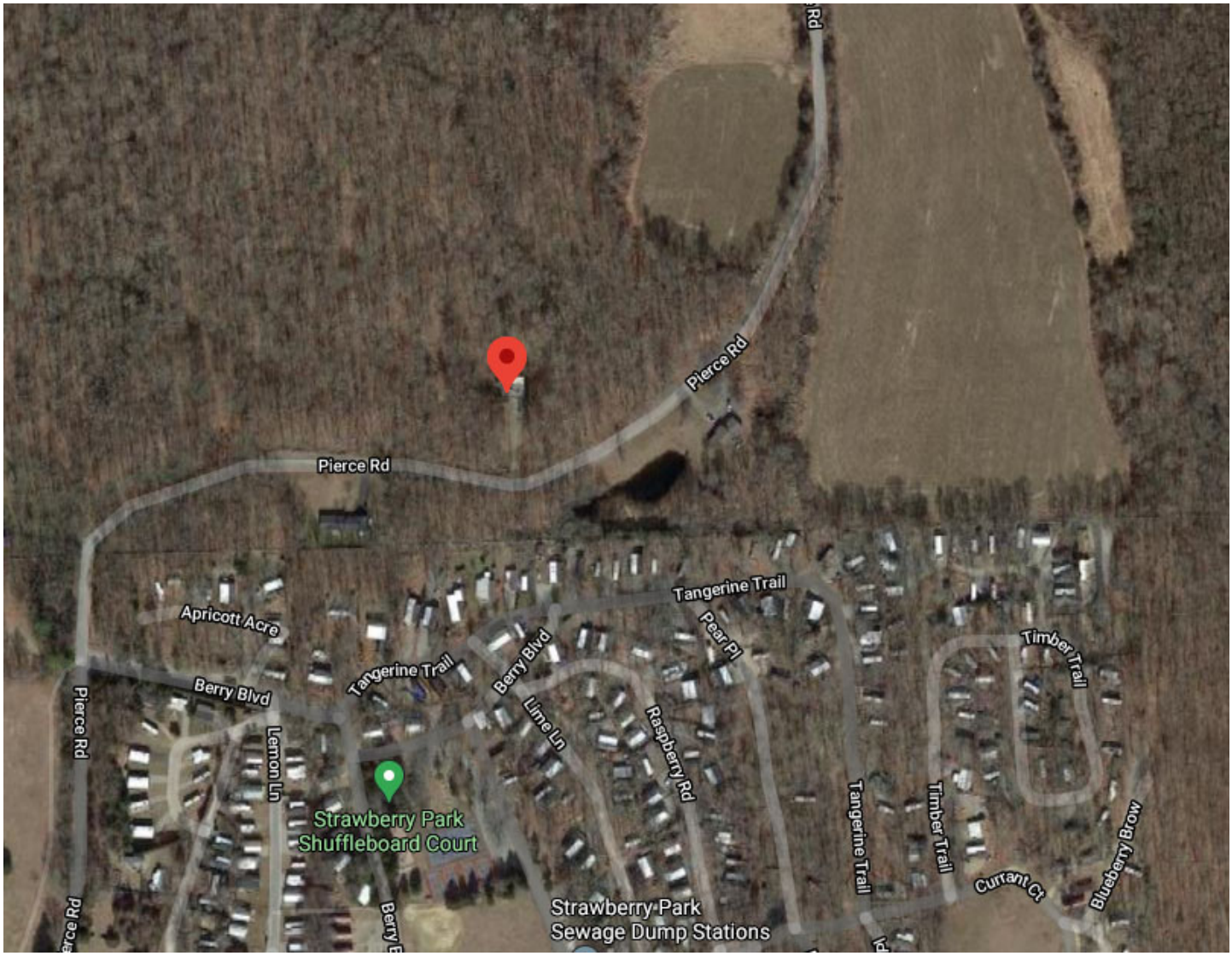


Exhibit C

Construction Drawings

DISH Wireless L.L.C. SITE ID:

BOBOS01004A

DISH Wireless L.L.C. SITE ADDRESS:

101 PIERCE ROAD
PRESTON, CT 06365

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
- INSTALL (1) PROPOSED CABLE ENTRY PORT

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 200A METER IN EXISTING 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:	PANUS FARM LLC
PROPERTY OWNER ADDRESS:	60 PIERCE RD PRESTON, CT 06365
TOWER TYPE:	MONOPOLE
TOWER CO SITE ID:	876366
TOWER APP NUMBER:	576664
COUNTY:	NEW LONDON
LATITUDE (NAD 83):	41° 32' 17.46" N 41.53818
LONGITUDE (NAD 83):	71° 57' 6.00" W -71.95167
ZONING JURISDICTION:	TOWN OF PRESTON-CT
ZONING DISTRICT:	RS
PARCEL NUMBER:	8-0/PIE1/101A
OCCUPANCY GROUP:	U
CONSTRUCTION TYPE:	II-B
POWER COMPANY:	NORTHEAST UTILITIES
TELEPHONE COMPANY:	TBD

PROJECT DIRECTORY

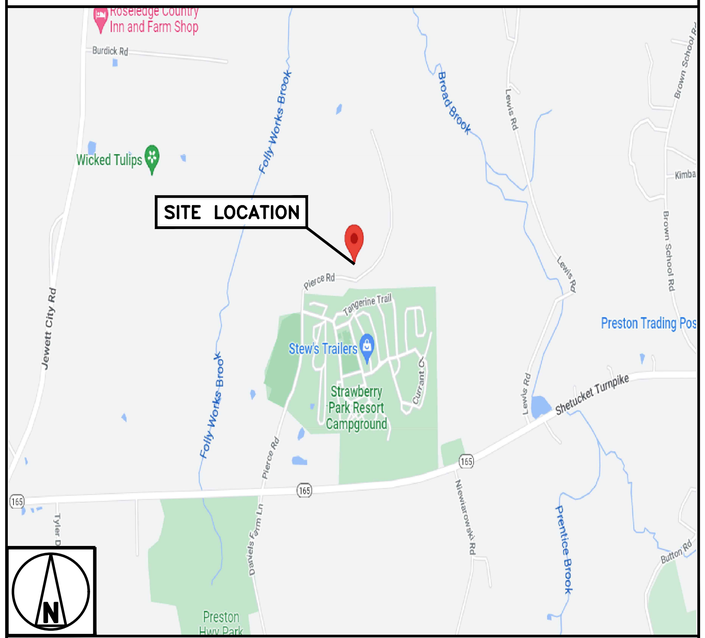
APPLICANT:	DISH Wireless L.L.C. 5701 SOUTH SANTA FE DRIVE LITTLETON, CO 80120
TOWER OWNER:	CROWN CASTLE 2000 CORPORATE DRIVE CANONSBURG, PA 15317 (877) 486-9377
SITE DESIGNER:	HUDSON DESIGN GROUP, LLC. 45 BEECHWOOD DRIVE NORTH ANDOVER, MA 01845 (978) 557-5553
SITE ACQUISITION:	COURTNEY PRESTON COURTNEY.PRESTON.CONTRACTOR@CROWNCASTLE.COM
CONSTRUCTION MANAGER:	JAVIER SOTO JAVIER.SOTO@DISH.COM
RF ENGINEER:	ARVIN SEBASTIAN ARVIN.SEBASTIAN@DISH.COM

DIRECTIONS

DIRECTIONS FROM BRADLEY INTERNATIONAL AIRPORT:

GET ON BRADLEY INTERNATIONAL AIRPORT CON IN EAST GRANBY FROM BRADLEY INTERNATIONAL AIRPORT. HEAD NORTH TOWARD BRADLEY INTERNATIONAL AIRPORT. SLIGHT LEFT ONTO BRADLEY INTERNATIONAL AIRPORT. CONTINUE STRAIGHT. KEEP RIGHT TO CONTINUE TOWARD BRADLEY INTERNATIONAL AIRPORT CON. TAKE I-91 S, CT-2 E AND I-395 N TO CT-164 S IN GRISWOLD. TAKE EXIT 22 FROM I-395 N. CONTINUE ONTO BRADLEY INTERNATIONAL AIRPORT CON. CONTINUE ONTO CT-20 E/BRADLEY INTERNATIONAL AIRPORT CON. TAKE THE EXIT ONTO I-91 S TOWARD HARTFORD. TAKE EXIT 30 ON THE LEFT TO MERGE ONTO I-84 E. TAKE EXIT 55 FOR CT-2 E TOWARD NORWICH/NEW LONDON/I-84 E. CONTINUE ONTO CT-2 E. KEEP LEFT AT THE FORK TO STAY ON CT-2 E, FOLLOW SIGNS FOR 2 E. TAKE EXIT 28N TO MERGE ONTO I-395 N TOWARD PROVIDENCE. TAKE EXIT 22 FOR CT-164 TOWARD CT-138/PRESTON CITY/PACHAUG. CONTINUE ON CT-164 S. DRIVE TO PIERCE RD IN PRESTON. TURN RIGHT ONTO CT-164 S. TURN LEFT ONTO CT-165 E. TURN LEFT ONTO PIERCE RD. 101 PIERCE RD. PRESTON, CT 06365.

VICINITY MAP



NO SCALE

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

HDG HUDSON Design Group LLC

45 BEECHWOOD DRIVE
N. ANDOVER, MA 01845

TEL: (978) 557-5553
FAX: (978) 336-5586

STATE OF CONNECTICUT
DANIEL P. HAMM
No. 24178
LICENSED PROFESSIONAL ENGINEER

DRAWN BY:	CHECKED BY:	APPROVED BY:
JJ	SMA	DPH

RFDS REV #: 2

PRELIMINARY DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	01/22/2022	ISSUED FOR REVIEW
B	04/05/2022	ISSUED FOR REVIEW
C	06/09/2022	ISSUED FOR REVIEW

A&E PROJECT NUMBER

BOBOS01004A

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBOS01004A
CROWN CASTLE BU#876366
101 PIERCE ROAD
PRESTON, CT 06365

SHEET TITLE

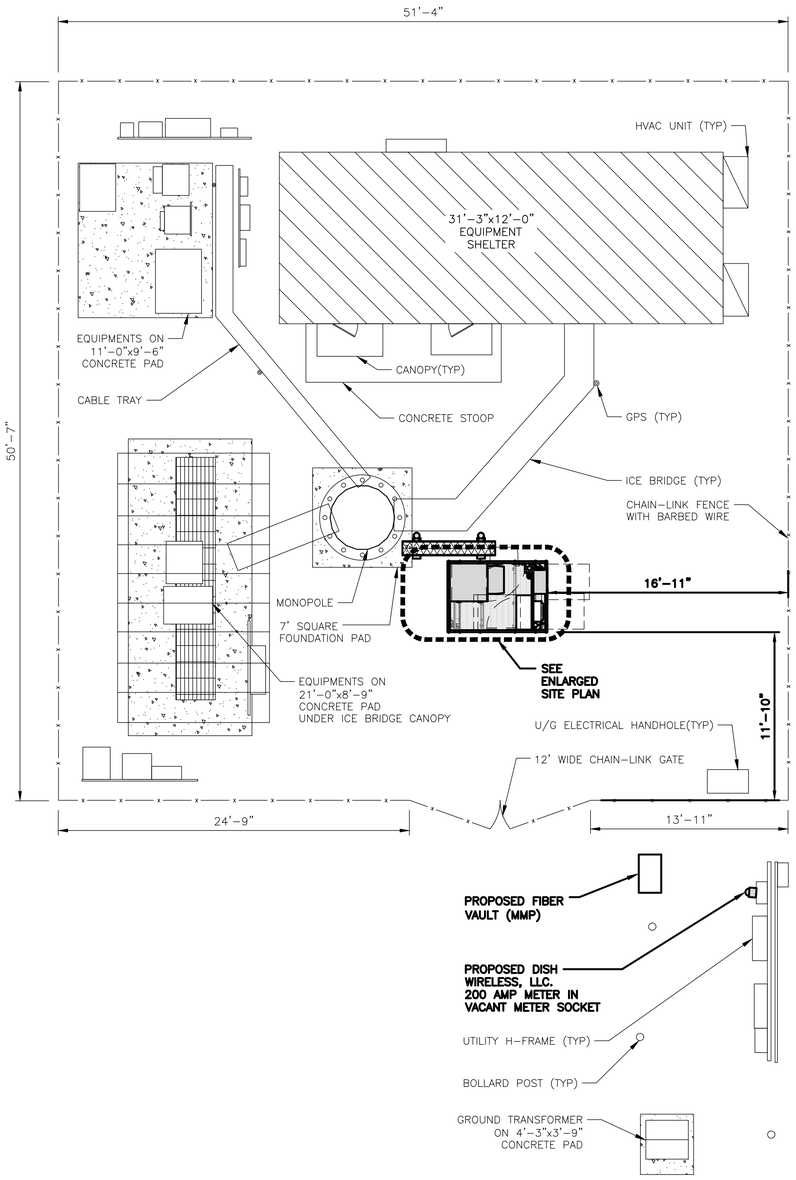
TITLE SHEET

SHEET NUMBER

T-1

NOTES

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



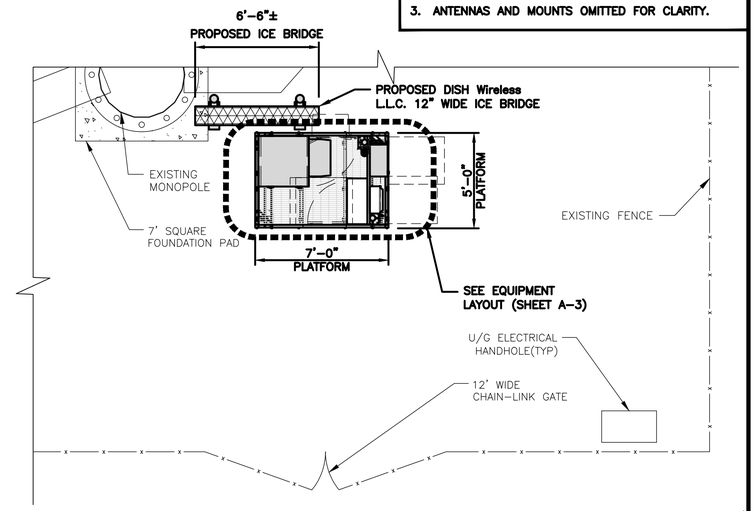
OVERALL SITE PLAN

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

1

NOTES

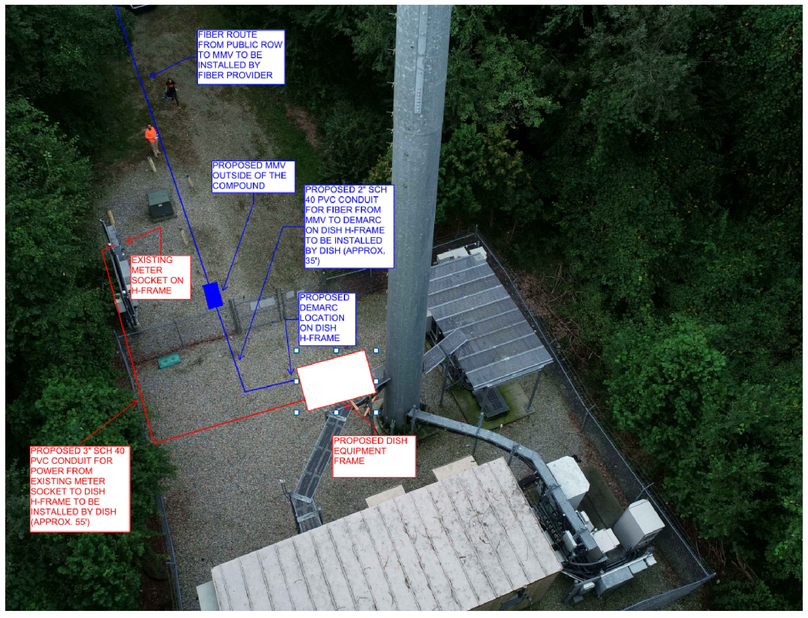
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. CONTRACTOR SHALL MAINTAIN A 10'-0" MINIMUM SEPARATION BETWEEN THE PROPOSED GPS UNIT, TRANSMITTING ANTENNAS AND EXISTING GPS UNITS.
3. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.



ENLARGED SITE PLAN

4' 2' 0 4' 8'
1/4"=1'-0"

2



OVERALL UTILITY ROUTE PLAN

NO SCALE

3

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

HDG HUDSON Design Group LLC

45 BEECHWOOD DRIVE
N. ANDOVER, MA 01845

TEL: (978) 557-5553
FAX: (978) 336-5586

STATE OF CONNECTICUT
DANIEL P. HAMM
No. 24178
LICENSED PROFESSIONAL ENGINEER

DRAWN BY:	CHECKED BY:	APPROVED BY:
JJ	SMA	DPH

RFDS REV #: 2

PRELIMINARY DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
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A&E PROJECT NUMBER

BOBOS01004A

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBOS01004A
CROWN CASTLE BU#876366
101 PIERCE ROAD
PRESTON, CT 06365

SHEET TITLE

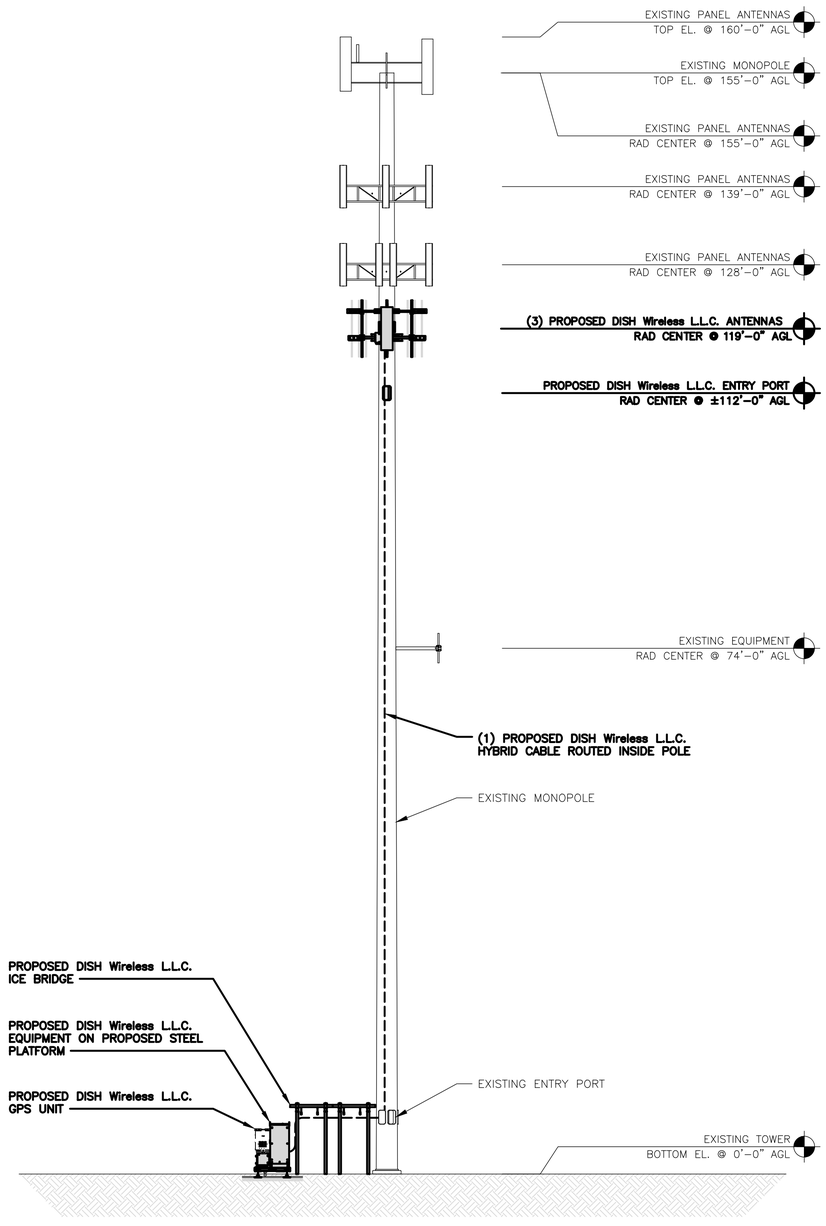
OVERALL AND ENLARGED SITE PLAN

SHEET NUMBER

A-1

NOTES

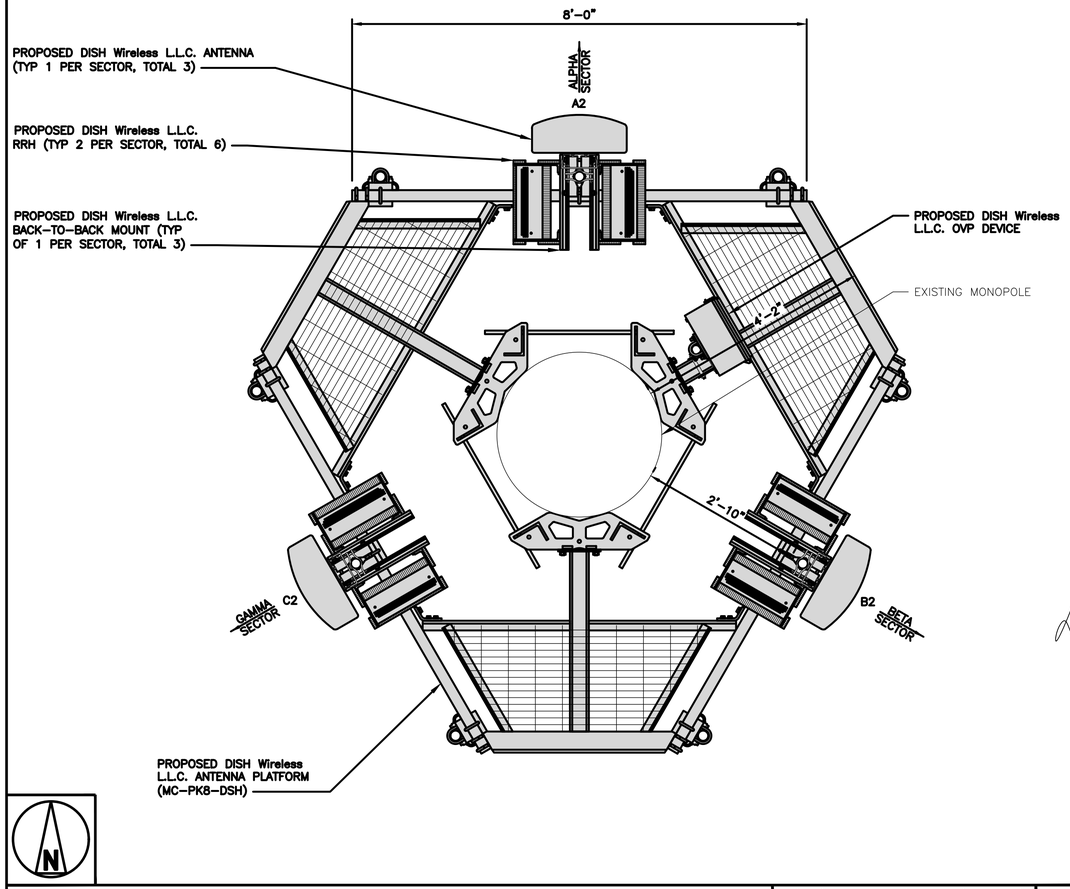
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNA AND MW DISH SPECIFICATIONS REFER TO ANTENNA SCHEDULE AND TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS
3. EXISTING EQUIPMENT AND FENCE OMITTED FOR CLARITY.



PROPOSED ELEVATION

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

1



ANTENNA LAYOUT

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

2

SECTOR POS.	ANTENNA					TRANSMISSION CABLE	RRH			OVP
	EXISTING OR PROPOSED	MANUFACTURER – MODEL NUMBER	TECH	AZIMUTH	RAD CENTER	FEED LINE TYPE AND LENGTH	MANUFACTURER – MODEL NUMBER	TECH	POS.	MANUFACTURER MODEL
A1	--	--	--	--	--	(1) HIGH-CAPACITY HYBRID CABLE (150' LONG)	FUJITSU / TA08025-B604	5G	A2	RAYCAP / RDIDC-9181 -PF-48
A2	PROPOSED	JMA WIRELESS/MX08FRO665-21	5G	0°	119'-0"		FUJITSU / TA08025-B605	5G	A2	
A3	--	--	--	--	--		--	--	--	
B1	--	--	--	--	--	SHARED W/ALPHA	FUJITSU / TA08025-B604	5G	B2	SHARED W/ALPHA
B2	PROPOSED	JMA WIRELESS/MX08FRO665-21	5G	120°	119'-0"		FUJITSU / TA08025-B605	5G	B2	
B3	--	--	--	--	--		--	--	--	
C1	--	--	--	--	--	SHARED W/ALPHA	FUJITSU / TA08025-B604	5G	C2	SHARED W/ALPHA
C2	PROPOSED	JMA WIRELESS/MX08FRO665-21	5G	240°	119'-0"		FUJITSU / TA08025-B605	5G	C2	
C3	--	--	--	--	--		--	--	--	

NOTES

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

ANTENNA SCHEDULE

NO SCALE

3

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

HDG HUDSON Design Group LLC

45 BEECHWOOD DRIVE
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STATE OF CONNECTICUT
DANIEL P. HAMM
No. 24178
LICENSED PROFESSIONAL ENGINEER

DRAWN BY:	CHECKED BY:	APPROVED BY:
JJ	SMA	DPH

RFDS REV #: 2

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BOBOS01004A

DISH Wireless L.L.C.
PROJECT INFORMATION

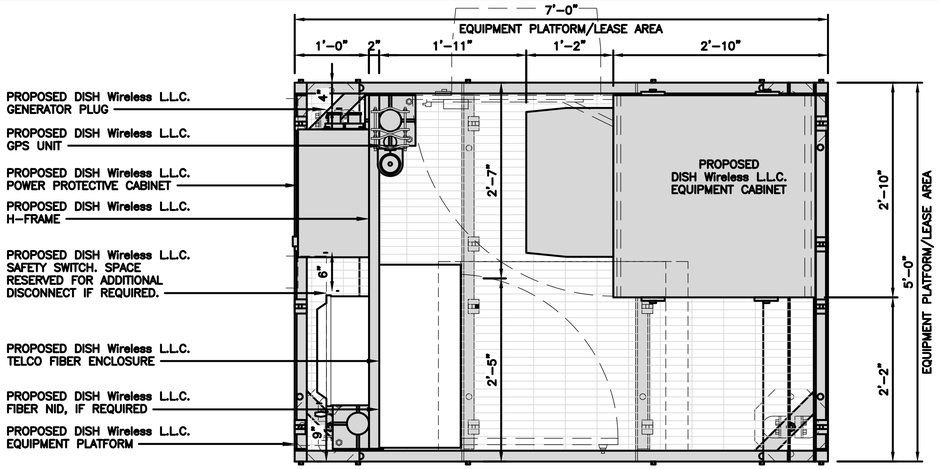
BOBOS01004A
CROWN CASTLE BU#876366
101 PIERCE ROAD
PRESTON, CT 06365

SHEET TITLE

ELEVATION, ANTENNA LAYOUT AND SCHEDULE

SHEET NUMBER

A-2



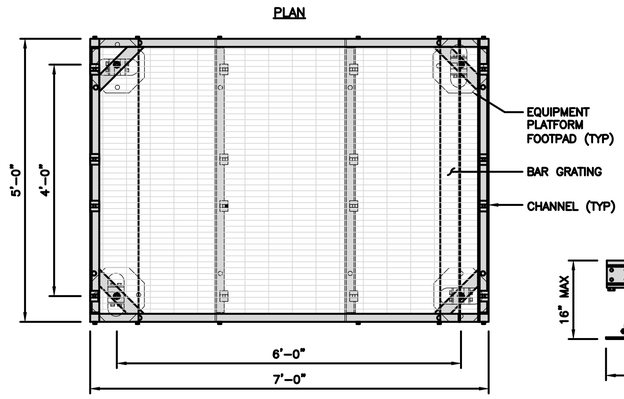
PLATFORM EQUIPMENT PLAN

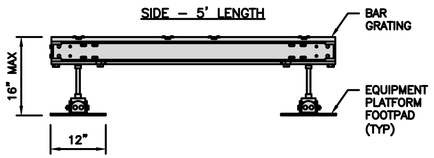
12" 9" 6" 3" 0 1' 2'
1"=1'-0"

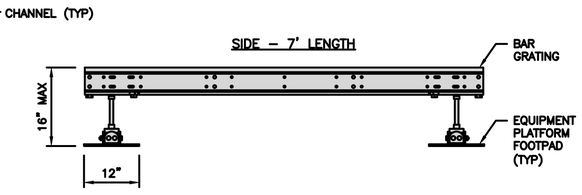
1

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"

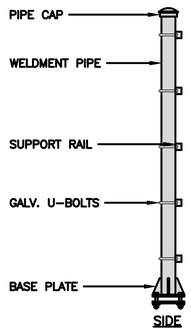




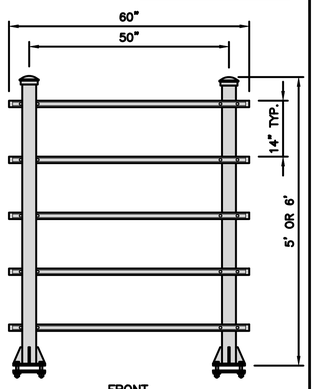


PLATFORM DETAIL | NO SCALE | 2

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



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

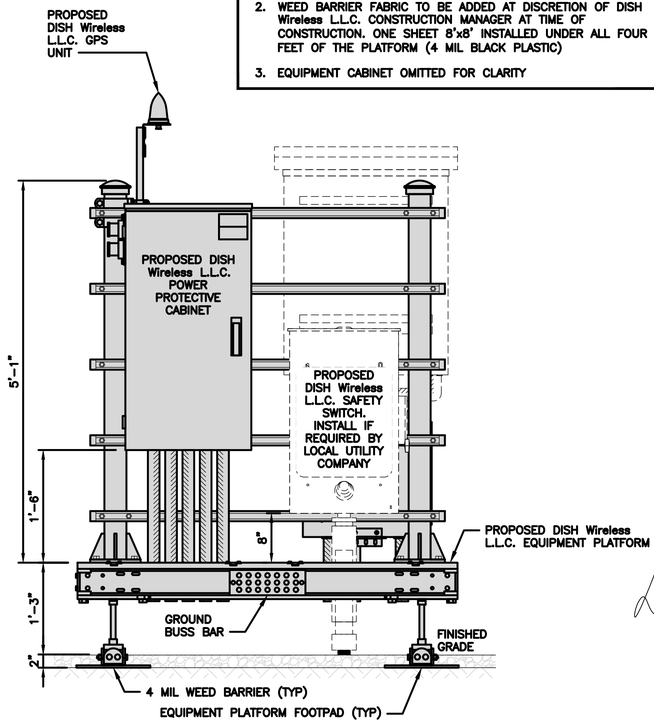


H-FRAME DETAIL | NO SCALE | 3

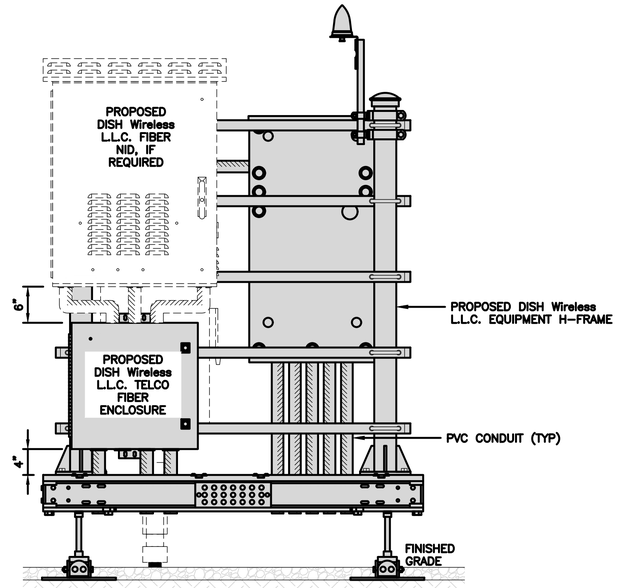
NOT USED | NO SCALE | 4

NOTES

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



FRONT ELEVATION



BACK ELEVATION

H-FRAME EQUIPMENT ELEVATION | 12" 9" 6" 3" 0 1' 2' 1"=1'-0" | 5

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RFDS REV #: 2

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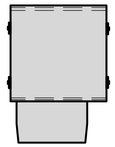
DISH Wireless L.L.C.
PROJECT INFORMATION
BOBOS01004A
CROWN CASTLE BU#876366
101 PIERCE ROAD
PRESTON, CT 06365

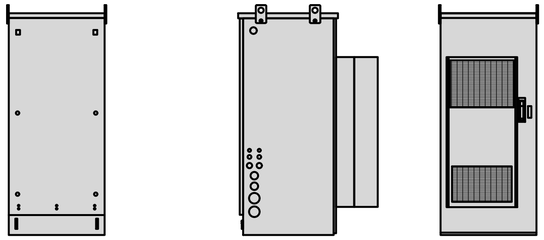
SHEET TITLE
EQUIPMENT PLATFORM AND H-FRAME DETAILS

SHEET NUMBER
A-3

CHARLES INDUSTRY HEX CUBE–PM639155N4	
DIMENSIONS (HxWxD)	74"x32"x32"
POWER PLANT	–48VDC ABB/600W
TOTAL WEIGHT (EMPTY)	408 lbs



PLAN

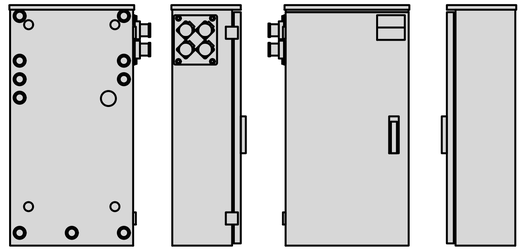


BACK SIDE FRONT

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

TOP

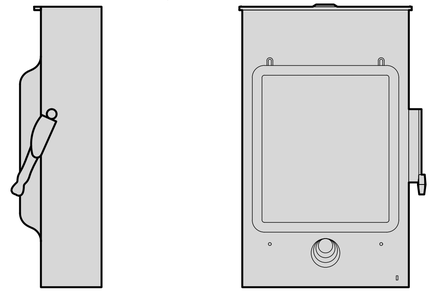


BACK SIDE FRONT SIDE

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

TOP

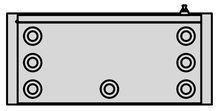


SIDE FRONT

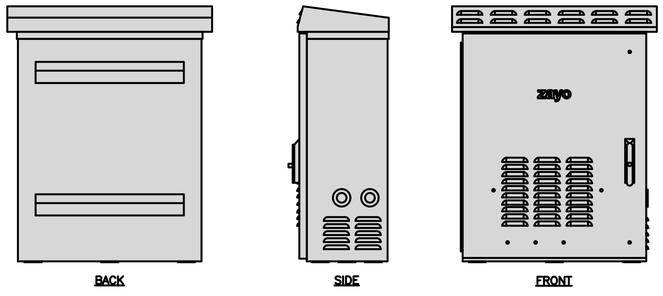
SAFETY SWITCH DETAIL | NO SCALE | 3

NOT USED | NO SCALE | 4

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



BOTTOM

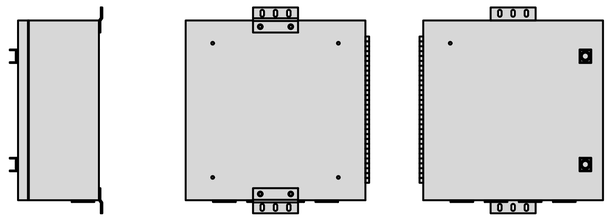


BACK SIDE FRONT

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

FRONT

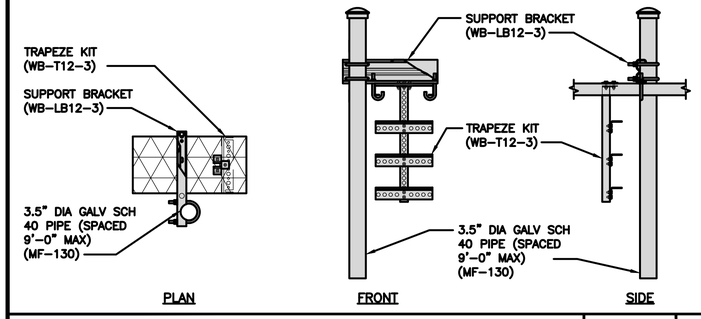


SIDE BACK FRONT

FIBER TELCO ENCLOSURE DETAIL | NO SCALE | 6

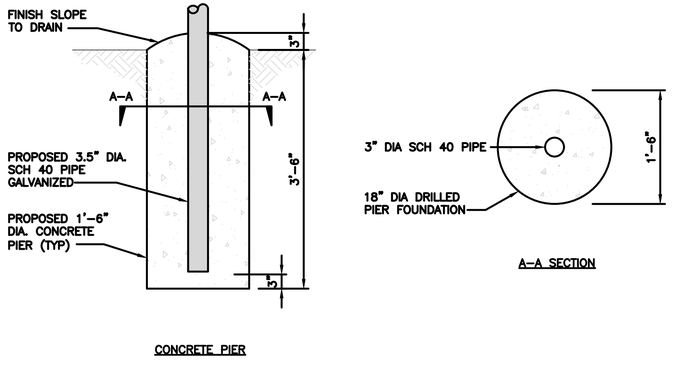
COMMSCOPE WB–K110–B WAVEGUIDE BRIDGE KIT	
DIMENSIONS (HxL)	160"x10'
WEIGHT/ VOLUME	325.0 LBS
CABLE RUN (QTY)	12

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



PLAN FRONT SIDE

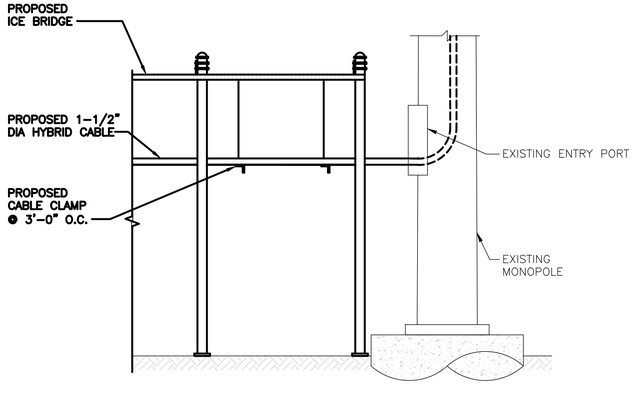
ICE BRIDGE DETAIL | NO SCALE | 7



CONCRETE PIER

A–A SECTION

TYPICAL ICE BRIDGE CONCRETE PIER DETAIL | NO SCALE | 8



HYBRID CABLE RUN | NO SCALE | 9

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DISH Wireless L.L.C.
PROJECT INFORMATION

BOBOS01004A
CROWN CASTLE BU#876366
101 PIERCE ROAD
PRESTON, CT 06365

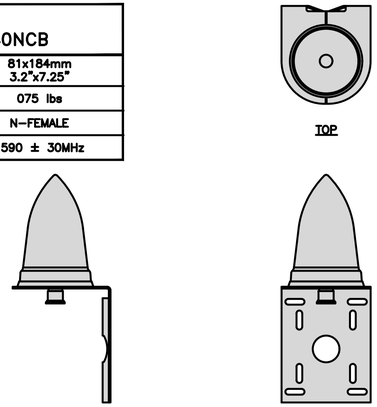
SHEET TITLE

EQUIPMENT DETAILS

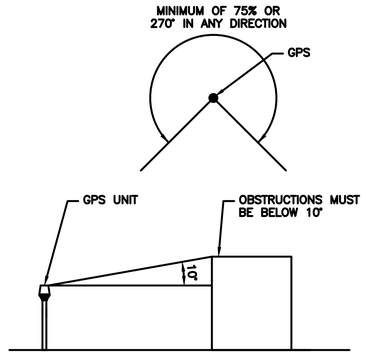
SHEET NUMBER

A-4

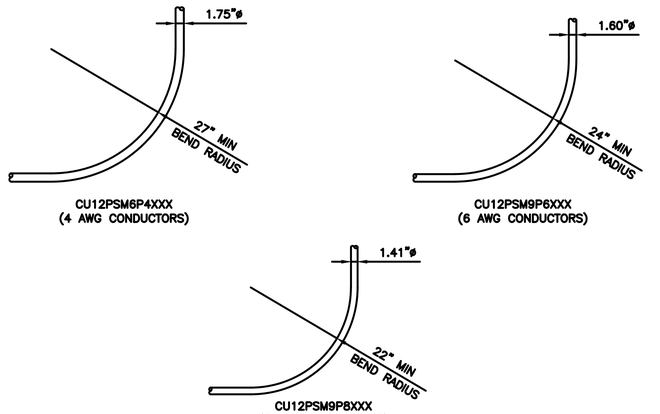
PCTEL GPSGL-TMG-SPI-40NCB	
DIMENSIONS (DIAxH) MM/INCH	81x184mm 3.2"x7.25"
WEIGHT W/ACCESSORIES	075 lbs
CONNECTOR	N-FEMALE
FREQUENCY RANGE	1590 ± 30MHz



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

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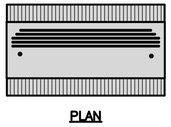
SHEET TITLE

EQUIPMENT DETAILS

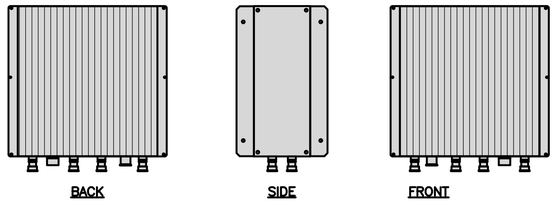
SHEET NUMBER

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



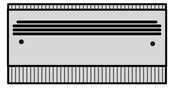
PLAN



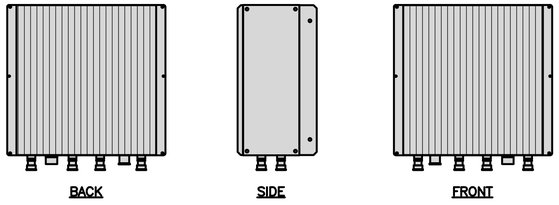
BACK SIDE FRONT

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



PLAN

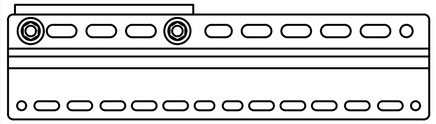


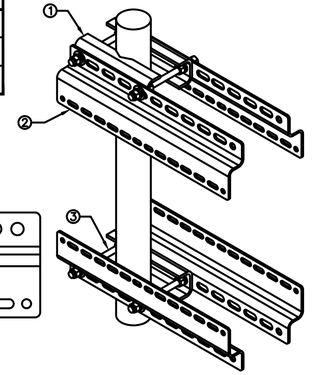
BACK SIDE FRONT

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:
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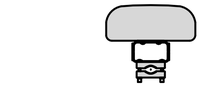
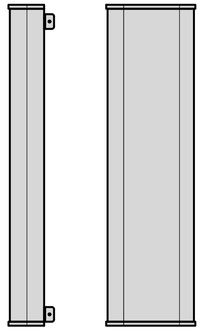
APPROVED EQUIVALENT

RRH MOUNT DETAIL | NO SCALE | 3

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



PLAN



SIDE FRONT

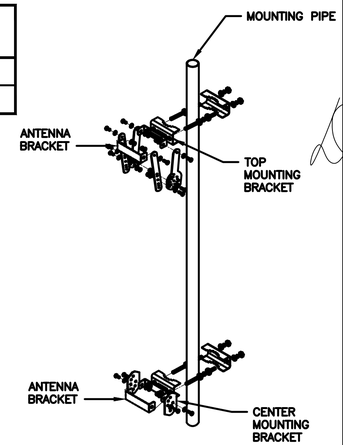
ANTENNA DETAIL | NO SCALE | 4

NOT USED | NO SCALE | 5

JMA ANTENNA MOUNT BRACKET #91900318	
TOTAL WEIGHT (WITH BRACKETS)	18 lbs (8.18 Kg)
POLE DIAMETER RANGE	2.5" TO 4.5"

NOTE:
KIT #91900318: TOP AND BOTTOM BRACKETS FOR 4-,6-, AND 8-FOOT ANTENNAS

ANTENNA BRACKET NOT PART OF KIT

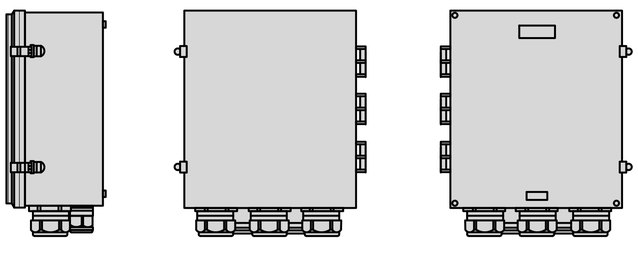


NOTE:
OR DISH Wireless L.L.C.
APPROVED EQUIVALENT

ANTENNA BRACKET DETAIL | NO SCALE | 6

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

PLAN

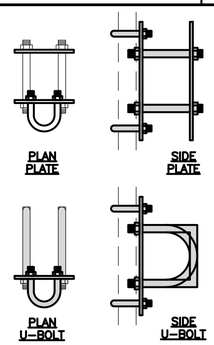


SIDE BACK FRONT

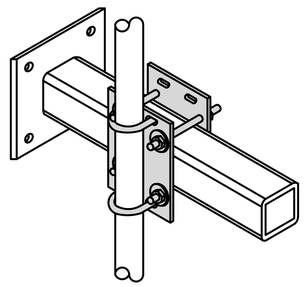
SURGE SUPPRESSION DETAIL (OVP) | NO SCALE | 7

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

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



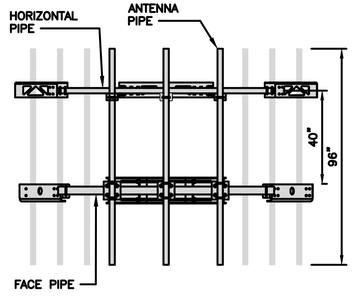
PLAN PLATE SIDE PLATE PLAN U-BOLT SIDE U-BOLT

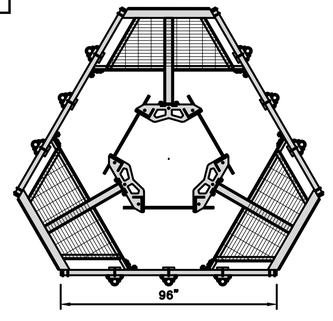


RRH/OVP MOUNT DETAIL | NO SCALE | 8

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

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





ANTENNA PLATFORM DETAIL | NO SCALE | 9

dish wireless.

5701 SOUTH SANTA FE DRIVE
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DANIEL P. HAMM
No. 24178
LICENSED PROFESSIONAL ENGINEER

DRAWN BY:	CHECKED BY:	APPROVED BY:
JJ	SMA	DPH

RFDS REV #: 2

PRELIMINARY DOCUMENTS

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A&E PROJECT NUMBER

BOBOS01004A

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBOS01004A
CROWN CASTLE BU#876366
101 PIERCE ROAD
PRESTON, CT 06365

SHEET TITLE

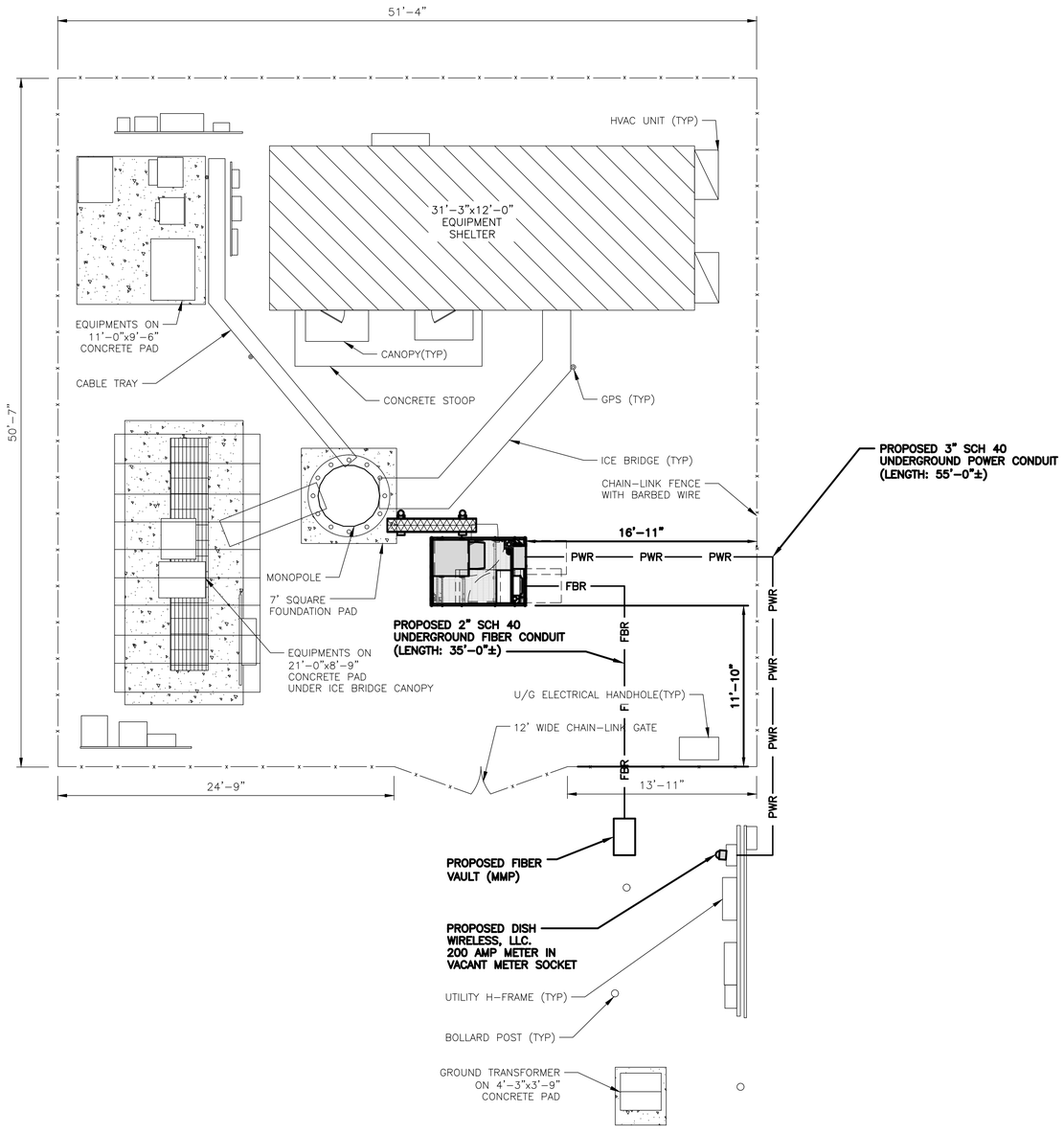
EQUIPMENT DETAILS

SHEET NUMBER

A-6

NOTES

1. CONTRACTOR SHALL FIELD VERIFY ALL PROPOSED UNDERGROUND UTILITY CONDUIT ROUTE.
2. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.
3. 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 E–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 PROPETY RIGHTS DOCUMENTS. WHEN INSTALLING THE UTILITIES PLEASE LOCATE AND FOLLOW EXISTING PATH. IF EXISTING PATH IS MATERIALLY INCONSISTENT WITH "PWR" AND "FBR" PATH DEPICTED ON A–1 AND E–1 AND SAID VARIANCE IS NOT NOTED ON CDs, PLEASE NOTIFY TOWER OWNER AS FURTHER COORDINATION MAY BE NEEDED.



UTILITY ROUTE PLAN

6' 4' 2' 0 5' 10'
3/16"=1'–0"

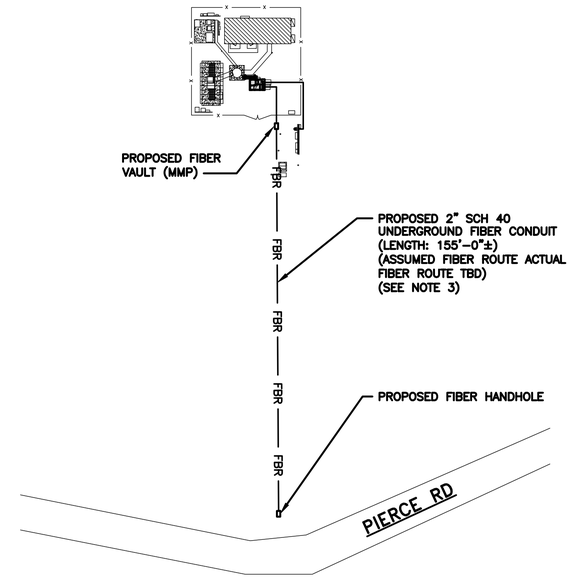
1

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

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

ELECTRICAL NOTES

2



OVERALL UTILITY ROUTE PLAN

NO SCALE

3

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SHEET TITLE

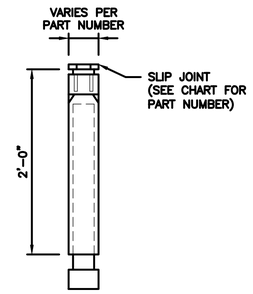
ELECTRICAL/FIBER ROUTE PLAN AND NOTES

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"

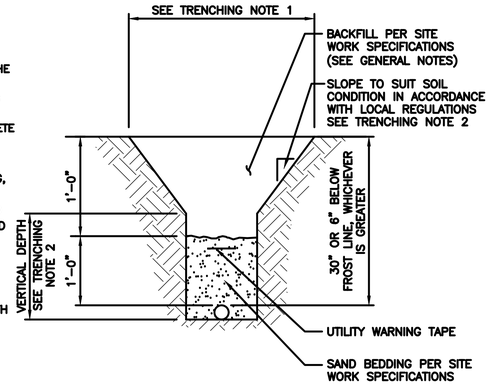


NOTE:
CONTRACTOR TO INSTALL EXPANSION FITTING SLIP JOINT AT METER CENTER CONDUIT TERMINATION, AS PER LOCAL UTILITY POLICY, ORDINANCE AND/OR SPECIFIED REQUIREMENT.

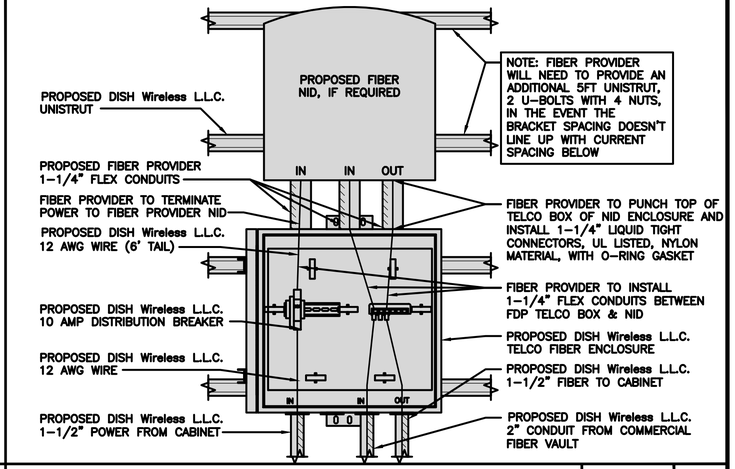
EXPANSION JOINT DETAIL | NO SCALE | 1

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



LIT TELCO BOX – INTERIOR WIRING LAYOUT (OPTIONAL) | NO SCALE | 3

NOT USED | NO SCALE | 4

NOT USED | NO SCALE | 5

NOT USED | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

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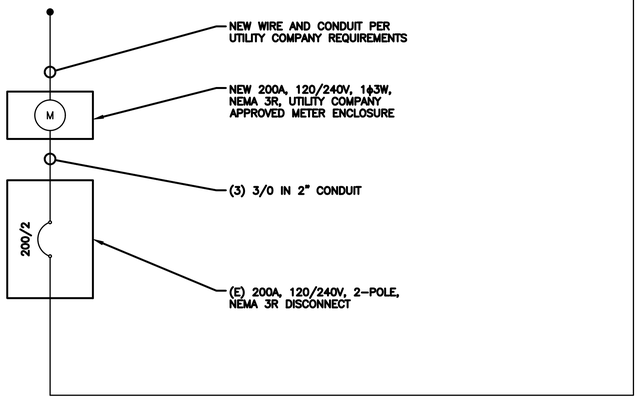
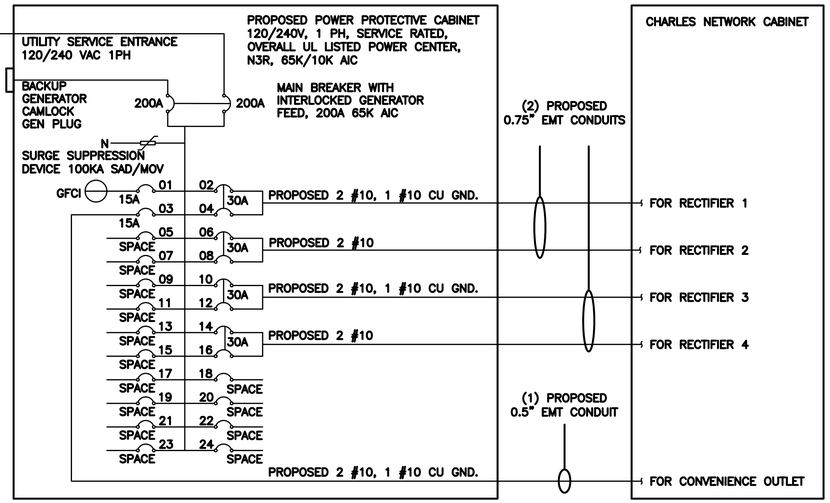
CROWN CASTLE BU#876366
101 PIERCE ROAD
PRESTON, CT 06365

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

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

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

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

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

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

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

PANEL SCHEDULE | NO SCALE | 2

NOT USED | NO SCALE | 3

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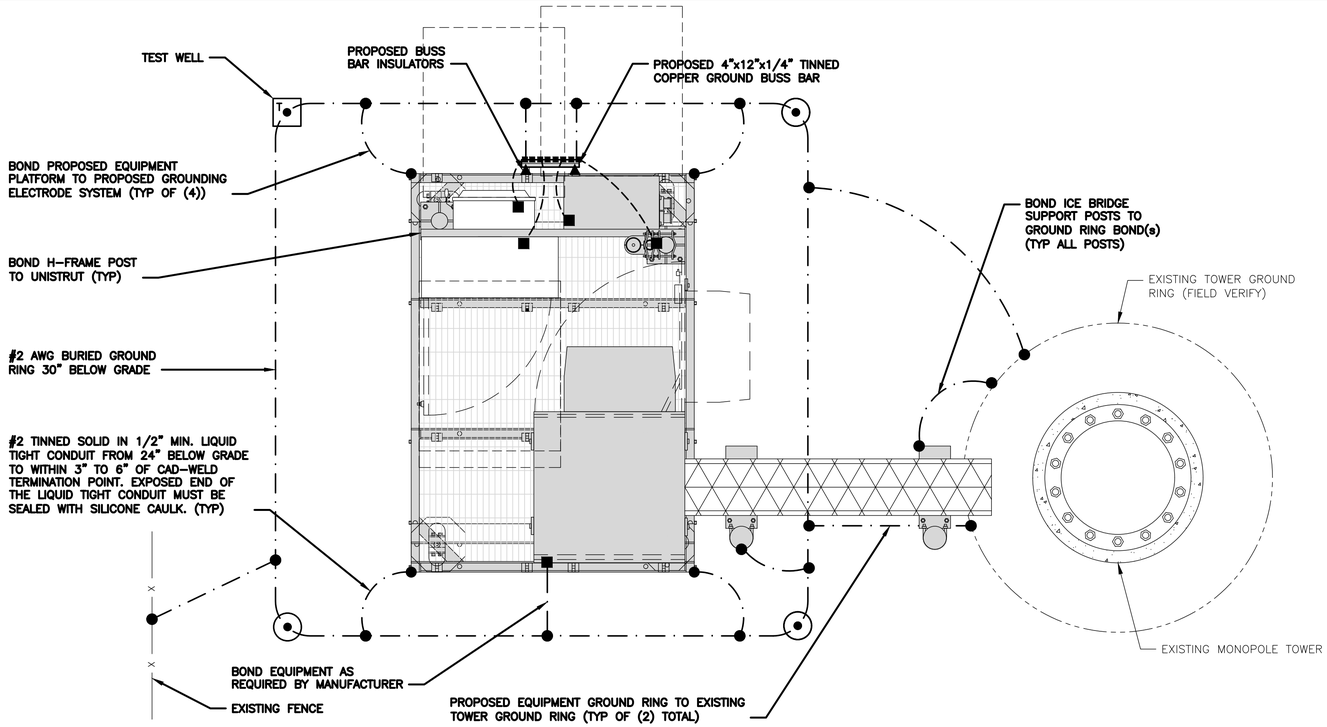
CROWN CASTLE BU#876366
101 PIERCE ROAD
PRESTON, CT 06365

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

SHEET NUMBER
E-3

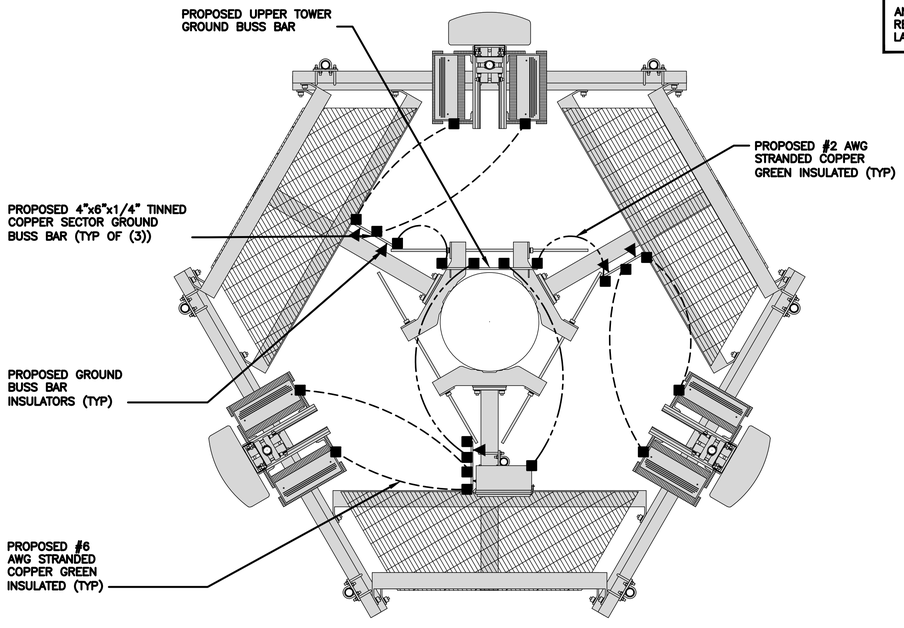


TYPICAL EQUIPMENT GROUNDING PLAN

NO SCALE | 1

NOTES

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



TYPICAL ANTENNA GROUNDING PLAN

NO SCALE | 2

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

GROUNDING LEGEND

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

GROUNDING KEY NOTES

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

GROUNDING KEY NOTES

NO SCALE | 3

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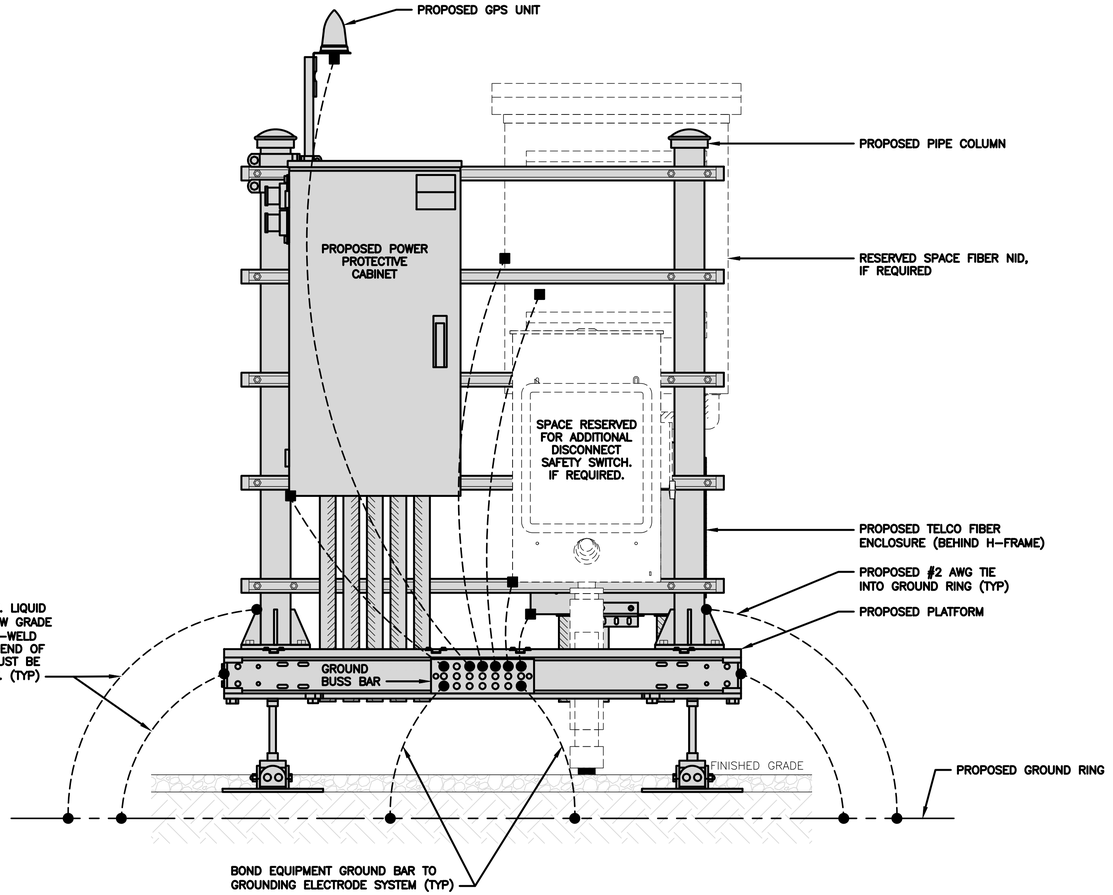
GROUNDING PLANS AND NOTES

SHEET NUMBER

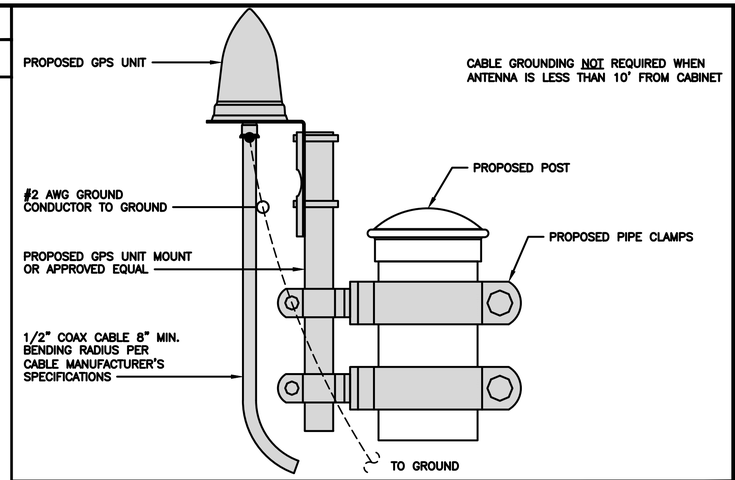
G-1

NOTES

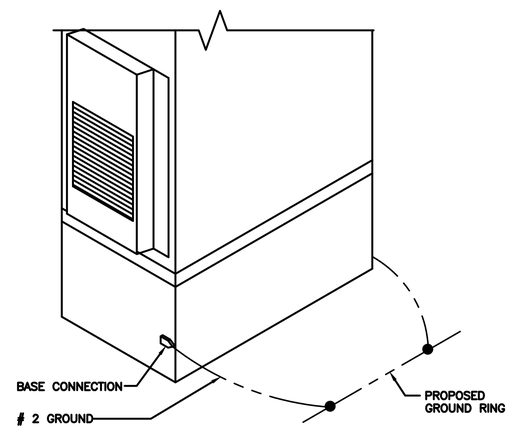
EQUIPMENT CABINET OMITTED FOR CLARITY



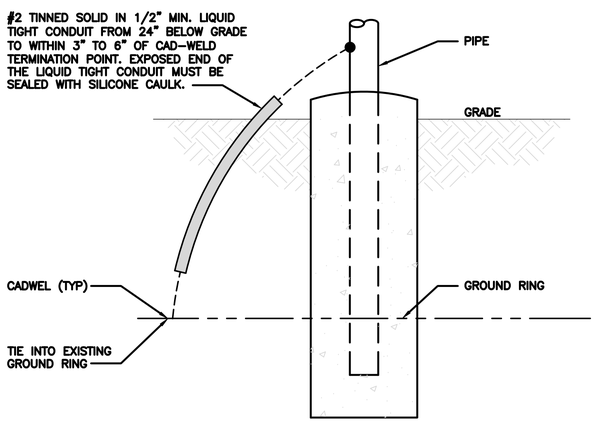
H-FRAME GROUNDING DETAIL | NO SCALE | 1



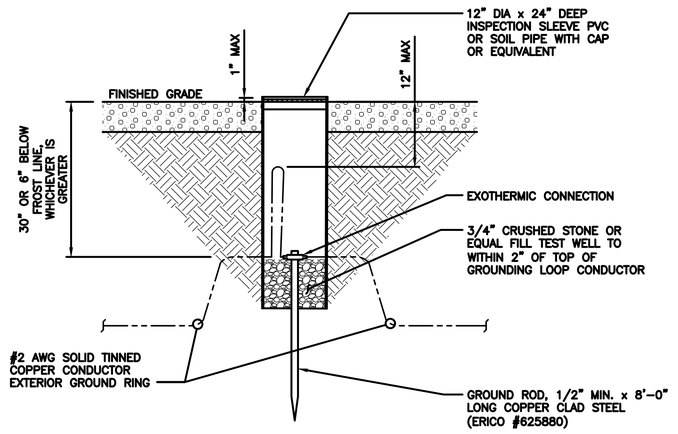
TYPICAL GPS UNIT GROUNDING | NO SCALE | 2



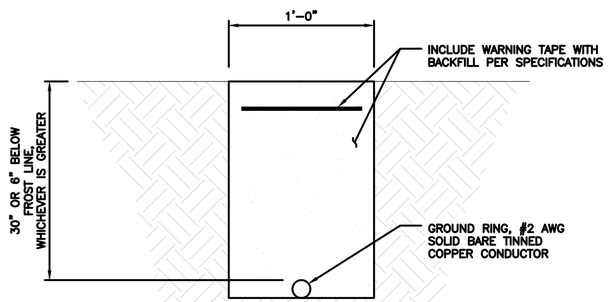
OUTDOOR CABINET GROUNDING | NO SCALE | 3



TRANSITIONING GROUND DETAIL | NO SCALE | 4



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



TYPICAL GROUND RING TRENCH | NO SCALE | 6

dish wireless.

5701 SOUTH SANTA FE DRIVE
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HDG HUDSON Design Group LLC

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STATE OF CONNECTICUT
DANIEL P. HAMM
No. 24178
LICENSED PROFESSIONAL ENGINEER

DRAWN BY:	CHECKED BY:	APPROVED BY:
JJ	SMA	DPH

RFDS REV #: 2

PRELIMINARY DOCUMENTS

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A&E PROJECT NUMBER

BOBOS01004A

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBOS01004A
CROWN CASTLE BU#876366
101 PIERCE ROAD
PRESTON, CT 06365

SHEET TITLE

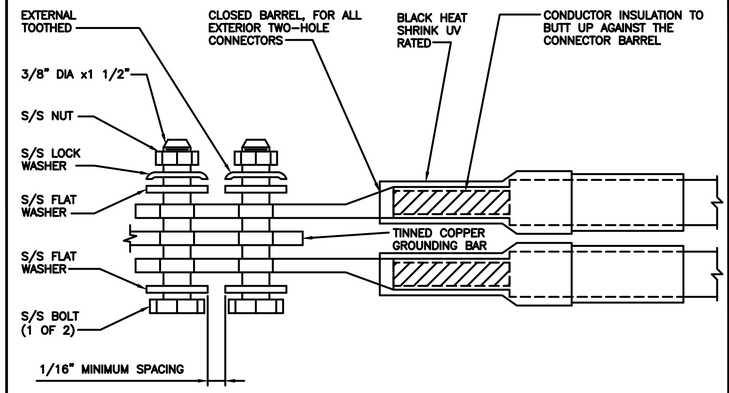
GROUNDING DETAILS

SHEET NUMBER

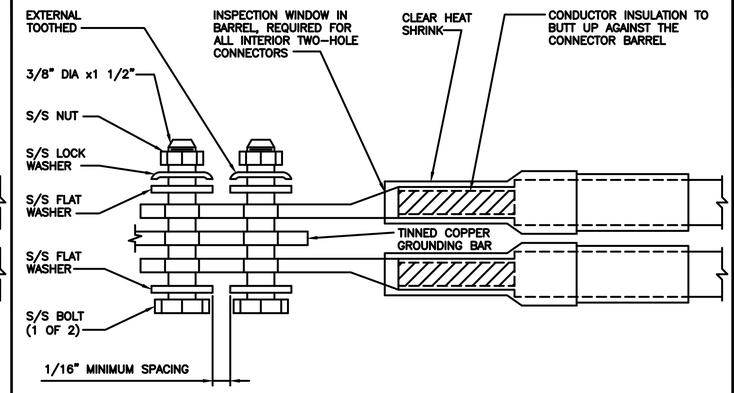
G-2

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

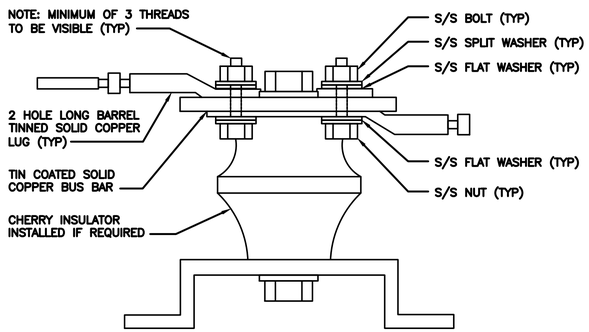
TYPICAL GROUNDING NOTES | NO SCALE | 1



TYPICAL EXTERIOR TWO HOLE LUG | NO SCALE | 2



TYPICAL INTERIOR TWO HOLE LUG | NO SCALE | 3



LUG DETAIL | NO SCALE | 4

NOT USED | NO SCALE | 5

NOT USED | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

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SHEET TITLE

GROUNDING DETAILS

SHEET NUMBER

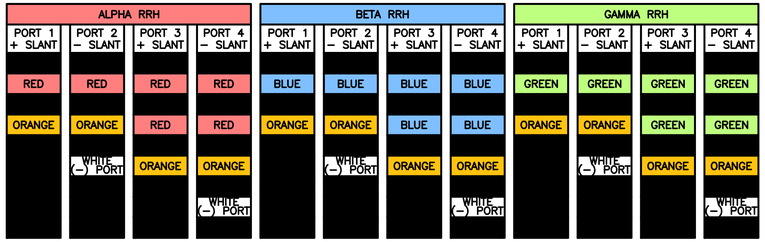
G-3

HYBRID/DISCREET CABLES

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

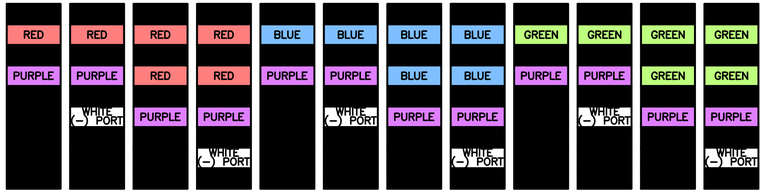
LOW-BAND RRH
(600 MHz N71 BASEBAND) +
(850 MHz N26 BAND) +
(700 MHz N29 BAND) – OPTIONAL PER MARKET

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



MID-BAND RRH
(AWS BANDS N66+N70)

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



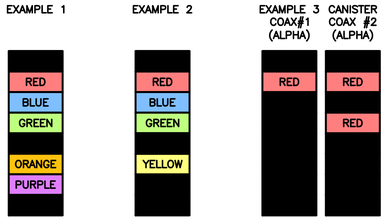
HYBRID/DISCREET CABLES

INCLUDE SECTOR BANDS BEING SUPPORTED ALONG WITH FREQUENCY BANDS.

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

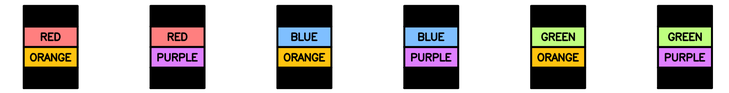
EXAMPLE 2 – HYBRID, OR DISCREET, SUPPORTS CBRS ONLY, ALL SECTORS.

EXAMPLE 3 – MAIN COAX WITH GROUND MOUNTED RRHs.



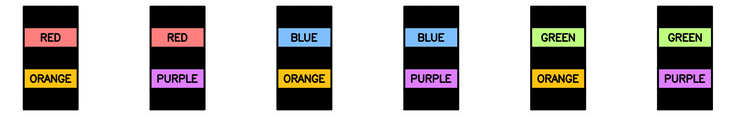
FIBER JUMPERS TO RRHs

LOW-BAND HHR FIBER CABLES HAVE SECTOR STRIPE ONLY.



POWER CABLES TO RRHs

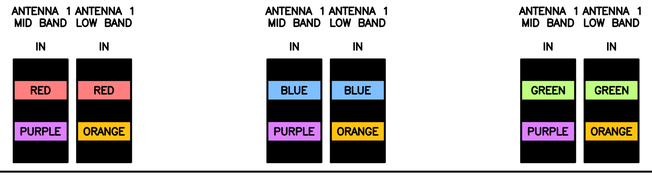
LOW-BAND RRH POWER CABLES HAVE SECTOR STRIPE ONLY



RET MOTORS AT ANTENNAS

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

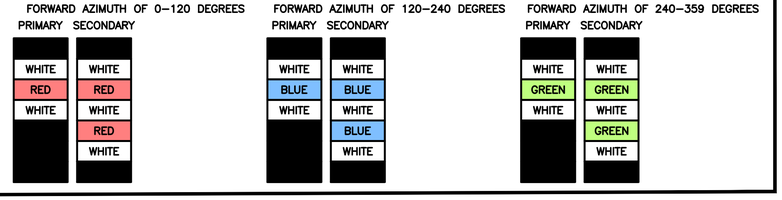
SEPARATE RET CABLES ARE USED WHEN ANTENNA PORTS PROVIDE INPUTS FOR BOTH LOW AND MID BANDS.



MICROWAVE RADIO LINKS

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

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



RF CABLE COLOR CODES | NO SCALE | 1

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

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

CBRS TECH (3 GHz): YELLOW

NEGATIVE SLANT PORT ON ANT/RRH: WHITE

ALPHA SECTOR: RED

BETA SECTOR: BLUE

GAMMA SECTOR: GREEN

COLOR IDENTIFIER | NO SCALE | 2

NOT USED | NO SCALE | 3

NOT USED | NO SCALE | 4

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101 PIERCE ROAD
PRESTON, CT 06365

SHEET TITLE
RF
CABLE COLOR CODES

SHEET NUMBER
RF-1

EXOTHERMIC CONNECTION

MECHANICAL CONNECTION

BUSS BAR INSULATOR

CHEMICAL ELECTROLYTIC GROUNDING SYSTEM

TEST CHEMICAL ELECTROLYTIC GROUNDING SYSTEM

EXOTHERMIC WITH INSPECTION SLEEVE

GROUNDING BAR

GROUND ROD

TEST GROUND ROD WITH INSPECTION SLEEVE

SINGLE POLE SWITCH

DUPLEX RECEPTACLE

DUPLEX GFCI RECEPTACLE

FLUORESCENT LIGHTING FIXTURE (2) TWO LAMPS 48–T8

SMOKE DETECTION (DC)

EMERGENCY LIGHTING (DC)

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

CHAIN LINK FENCE

WOOD/WROUGHT IRON FENCE

WALL STRUCTURE

LEASE AREA

PROPERTY LINE (PL)

SETBACKS

ICE BRIDGE

CABLE TRAY

WATER LINE

UNDERGROUND POWER

UNDERGROUND TELCO

OVERHEAD POWER

OVERHEAD TELCO

UNDERGROUND TELCO/POWER

ABOVE GROUND POWER

ABOVE GROUND TELCO

ABOVE GROUND TELCO/POWER

WORKPOINT

SECTION REFERENCE

DETAIL REFERENCE

LEGEND

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

ABBREVIATIONS

dish wireless.

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PRESTON, CT 06365

SHEET TITLE

LEGEND AND ABBREVIATIONS

SHEET NUMBER

GN-1

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

SIGN PLACEMENT:

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

NOTES:

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

INFORMATION

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

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

Site ID: _____

THIS SIGN IS FOR REFERENCE PURPOSES ONLY

NOTICE

Transmitting Antenna(s)

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

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

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

Site ID: _____

dish

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⚠ CAUTION

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⚠ WARNING

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RF SIGNAGE

DISH Wireless L.L.C. TEMPLATE VERSION 47 – 12/17/2021

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RF SIGNAGE

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GN-2

SITE ACTIVITY REQUIREMENTS:

1. NOTICE TO PROCEED – NO WORK SHALL COMMENCE PRIOR TO CONTRACTOR RECEIVING A WRITTEN NOTICE TO PROCEED (NTP) AND THE ISSUANCE OF A PURCHASE ORDER. PRIOR TO ACCESSING/ENTERING THE SITE YOU MUST CONTACT THE DISH Wireless L.L.C. AND TOWER OWNER NOC & THE DISH Wireless L.L.C. AND TOWER OWNER CONSTRUCTION MANAGER.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

GENERAL NOTES:

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

CONTRACTOR:GENERAL CONTRACTOR RESPONSIBLE FOR CONSTRUCTION

CARRIER:DISH Wireless L.L.C.

TOWER OWNER:TOWER OWNER

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

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

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

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

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

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

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

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

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

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

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

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

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

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DRAWN BY:	CHECKED BY:	APPROVED BY:
JJ	SMA	DPH

RFDS REV #: 2

PRELIMINARY DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	01/22/2022	ISSUED FOR REVIEW
B	04/05/2022	ISSUED FOR REVIEW
C	06/09/2022	ISSUED FOR REVIEW

A&E PROJECT NUMBER

BOBOS01004A

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBOS01004A
CROWN CASTLE BU#876366
101 PIERCE ROAD
PRESTON, CT 06365

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-3

CONCRETE, FOUNDATIONS, AND REINFORCING STEEL:

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

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

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

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

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

#4 BARS AND SMALLER 40 ksi

#5 BARS AND LARGER 60 ksi

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

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

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

ELECTRICAL INSTALLATION NOTES:

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

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

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

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

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

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

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

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

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

8. TIE WRAPS ARE NOT ALLOWED.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

dish wireless.

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STATE OF CONNECTICUT
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DRAWN BY:	CHECKED BY:	APPROVED BY:
JJ	SMA	DPH

RFDS REV #: 2

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A&E PROJECT NUMBER

BOBOS01004A

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBOS01004A
CROWN CASTLE BU#876366
101 PIERCE ROAD
PRESTON, CT 06365

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-4

GROUNDING NOTES:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

HDG HUDSON Design Group LLC

45 BEECHWOOD DRIVE
N. ANDOVER, MA 01845

TEL: (978) 557-5553
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DRAWN BY:	CHECKED BY:	APPROVED BY:
JJ	SMA	DPH

RFDS REV #: 2

PRELIMINARY DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	01/22/2022	ISSUED FOR REVIEW
B	04/05/2022	ISSUED FOR REVIEW
C	06/09/2022	ISSUED FOR REVIEW

A&E PROJECT NUMBER

BOBOS01004A

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBOS01004A
CROWN CASTLE BU#876366
101 PIERCE ROAD
PRESTON, CT 06365

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-5

Exhibit D

Structural Analysis Report

Date: **December 16, 2021**

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

Subject:	**Structural Analysis Report**	
Carrier Designation:	***DISH Network* Co-Locate**	
	Site Number:	BOBOS01004A
Crown Castle Designation:	**BU Number:**	876366
	Site Name:	WAPPINGERS FALLS / PRESTON CIT
	JDE Job Number:	675285
	Work Order Number:	2013159
	Order Number:	576664 Rev. 2
Engineering Firm Designation:	**Crown Castle Project Number:**	2013159
Site Data:	**101 Pierce Road, PRESTON, NEW LONDON County, CT** **Latitude *41° 32' 17.46"*, Longitude *-71° 57' 6"*** **155 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**

his analysis utilizes an ultimate 3-second gust wind speed of 125 mph as required by the 2018 Connecticut State Building Code. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Structural analysis prepared by: Matthew Schmitt

Respectfully submitted by:

Digitally signed by Maham Barimani
Date: 2021.12.17 14:11:19 -05'00'

STATE OF CONNECTICUT
MAHAM BARIMANI
30501
LICENSED
PROFESSIONAL ENGINEER

Maham Barimani, P.E.
Senior Project Engineer

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 155 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:	125 mph
Exposure Category:	B
Topographic Factor:	1
Ice Thickness:	1 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)
119.0	119.0	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)
159.0	159.0	1	tower mounts	Miscellaneous [NA 507-1]	4	1-5/8
155.0	157.0	3	ericsson	AIR6449 B41_T-MOBILE w/ Mount Pipe		
		3	ericsson	RADIO 4415 B66A		
		3	ericsson	RADIO 4424 B25_TMO		
		3	ericsson	RADIO 4449 B71 B85A_T-MOBILE		
		3	rfs celwave	APX16DWV-16DWV-S-E-A20 w/ Mount Pipe		
		3	rfs celwave	APXVAALL24_43-U-NA20_TMO w/ Mount Pipe		
	155.0	1	tower mounts	Platform Mount [LP 712-1]		
139.0	141.0	3	cci antennas	HPA-65R-BUU-H8 w/ Mount Pipe	12 4 2 2	1-1/4 3/4 3/8 Conduit
		3	kathrein	80010966 w/ Mount Pipe		
	140.0	3	ericsson	RRUS 11		
		3	ericsson	RRUS 32 B2		
		3	ericsson	RRUS 4478 B14		
		3	powerwave technologies	7770.00 w/ Mount Pipe		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
		6	powerwave technologies	LGP21401		
		2	raycap	DC6-48-60-18-8F		
	139.0	1	tower mounts	Platform Mount [LP 303-1]		
128.0	134.0	1	raycap	RVZDC-6627-PF-48	14	1-5/8
	131.0	6	antel	LPA-80063/6CF w/ Mount Pipe		
		3	commscope	CBC78T-DS-43-2X		
		6	commscope	JAHH-65B-R3B w/ Mount Pipe		
		3	samsung telecommunications	MT6407-77A w/ Mount Pipe		
		3	samsung telecommunications	RF4439D-25A		
		3	samsung telecommunications	RF4440D-13A		
	128.0	1	tower mounts	Side Arm Mount [SO 102-3]		
		1	tower mounts	T-Arm Mount [TA 602-3]		
74.0	74.0	1	lucent	KS24019-L112A	1	1/2
		1	tower mounts	Side Arm Mount [SO 701-1]		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Reference	Source
4-GEOTECHNICAL REPORTS	2194336	CCISITES
4-POST-MODIFICATION INSPECTION	6133027	CCISITES
4-POST-MODIFICATION INSPECTION	2391519	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	2208798	CCISITES
4-TOWER MANUFACTURER DRAWINGS	2174297	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	5971889	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	2271037	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)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
L1	155 - 150	Pole	TP19.036x18x0.1875	Pole	11.9%	Pass
L2	150 - 145	Pole	TP20.073x19.036x0.1875	Pole	19.1%	Pass
L3	145 - 140	Pole	TP21.109x20.073x0.1875	Pole	25.5%	Pass
L4	140 - 135	Pole	TP22.146x21.109x0.1875	Pole	37.1%	Pass
L5	135 - 130	Pole	TP23.182x22.146x0.1875	Pole	46.7%	Pass
L6	130 - 126.79	Pole	TP24.59x23.182x0.1875	Pole	57.1%	Pass
L7	126.79 - 121.79	Pole	TP24.671x23.473x0.25	Pole	49.9%	Pass
L8	121.79 - 116.79	Pole	TP25.87x24.671x0.25	Pole	58.8%	Pass
L9	116.79 - 111.79	Pole	TP27.068x25.87x0.25	Pole	67.2%	Pass
L10	111.79 - 106.79	Pole	TP28.267x27.068x0.25	Pole	74.3%	Pass
L11	106.79 - 101.79	Pole	TP29.465x28.267x0.25	Pole	80.6%	Pass
L12	101.79 - 97.5	Pole	TP30.494x29.465x0.25	Pole	85.3%	Pass
L13	97.5 - 97.25	Pole	TP30.554x30.494x0.25	Pole	85.5%	Pass
L14	97.25 - 92.25	Pole	TP31.752x30.554x0.25	Pole	90.4%	Pass
L15	92.25 - 87.41	Pole	TP34.07x31.752x0.25	Pole	94.6%	Pass
L16	87.41 - 81.58	Pole	TP33.825x32.412x0.3125	Pole	76.0%	Pass
L17	81.58 - 76.58	Pole	TP35.037x33.825x0.3125	Pole	78.2%	Pass
L18	76.58 - 71.58	Pole	TP36.249x35.037x0.3125	Pole	80.2%	Pass
L19	71.58 - 68	Pole	TP37.117x36.249x0.3125	Pole	81.6%	Pass
L20	68 - 67.75	Pole + Reinf.	TP37.178x37.117x0.4875	Reinf. 1 Tension Rupture	79.3%	Pass
L21	67.75 - 62.75	Pole + Reinf.	TP38.39x37.178x0.475	Reinf. 1 Tension Rupture	81.0%	Pass
L22	62.75 - 57.75	Pole + Reinf.	TP39.602x38.39x0.475	Reinf. 1 Tension Rupture	82.5%	Pass
L23	57.75 - 52.75	Pole + Reinf.	TP40.814x39.602x0.4625	Reinf. 1 Tension Rupture	83.9%	Pass
L24	52.75 - 48.96	Pole + Reinf.	TP43.17x40.814x0.4625	Reinf. 1 Tension Rupture	84.8%	Pass
L25	48.96 - 42.03	Pole	TP42.791x41.108x0.375	Pole	71.8%	Pass
L26	42.03 - 37.03	Pole	TP44.005x42.791x0.375	Pole	72.5%	Pass
L27	37.03 - 32.03	Pole	TP45.22x44.005x0.375	Pole	73.1%	Pass
L28	32.03 - 27.03	Pole	TP46.434x45.22x0.375	Pole	73.7%	Pass
L29	27.03 - 22.03	Pole	TP47.649x46.434x0.375	Pole	74.2%	Pass
L30	22.03 - 17.03	Pole	TP48.863x47.649x0.375	Pole	74.7%	Pass
L31	17.03 - 12.03	Pole	TP50.078x48.863x0.375	Pole	75.1%	Pass
L32	12.03 - 7.03	Pole	TP51.292x50.078x0.375	Pole	75.5%	Pass
L33	7.03 - 2.03	Pole	TP52.507x51.292x0.375	Pole	75.9%	Pass
L34	2.03 - 0	Pole	TP53x52.507x0.375	Pole	76.1%	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
					Summary	
				Pole	94.6%	Pass
				Reinforcement	84.8%	Pass

Table 5 - Tower Component Stresses vs. Capacity - LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	75.5	Pass
1	Base Plate	0	95.5	Pass
1	Base Foundation (Structure)	0	88.5	Pass
1	Base Foundation (Soil Interaction)	0	87.1	Pass

Structure Rating (max from all components) =	95.5%

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

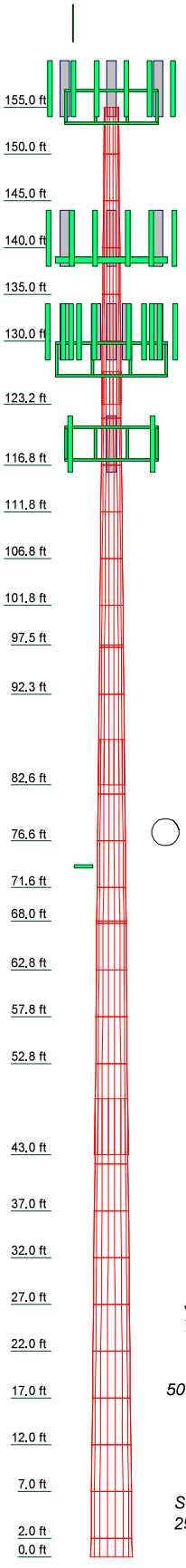
4.1) Recommendations

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

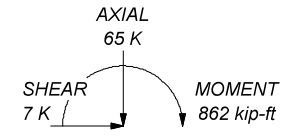
APPENDIX A

TNXTOWER OUTPUT

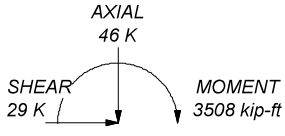
Section	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34
Length (ft)	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	2.030
Number of Sides	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
Thickness (in)	0.188	0.188	0.188	0.188	0.188	0.188	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.313	0.313	0.313	0.313	0.375	0.475	0.475	0.463	0.463	0.375	0.375	0.375	0.375	0.375	0.375	0.375	0.375	0.375	0.375
Socket Length (ft)						3.580									4.830									5.930											
Top Dia (in)	18.000	19.036	20.073	21.109	22.146	23.182	24.673	25.870	27.068	28.267	29.465	30.534	31.752	33.822	35.037	36.249	37.138	38.390	39.602	40.814	42.794	44.005	45.220	46.434	47.649	48.863	50.078	51.292	52.507					
Bot Dia (in)	19.036	20.073	21.109	22.146	23.182	24.590	25.870	27.068	28.267	29.465	30.534	31.752	33.822	35.037	36.249	37.138	38.390	39.602	40.814	42.794	44.005	45.220	46.434	47.649	48.863	50.078	51.292	52.507	53.000					
Grade															A572-65																			
Weight (K)	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.4	0.4	0.4	0.3	0.0	0.4	0.9	0.6	0.6	0.6	0.4	0.0	0.9	1.0	1.0	2.0	1.2	0.9	0.9	0.9	0.9	1.0	1.0	1.0	1.0	0.4



ALL REACTIONS ARE FACTORED



TORQUE 0 kip-ft
50 mph WIND - 1.000 in ICE



TORQUE 1 kip-ft
REACTIONS - 125 mph WIND

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in New London County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-H Standard.
3. Tower designed for a 125 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.00 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: 94.6%

CROWN CASTLE
The Foundation for a Wireless World

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Job: ***BU# 876366***			
Project:			
Client: Crown Castle	Drawn by: Matthew Schmitt		App'd:
Code: TIA-222-H	Date: 12/16/21		Scale: NTS
Path: C:\Work Area\876366\WO 2013159 - SA\Prod\876366_R.eri			Dwg No. E-1

Tower Input Data

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

- Tower is located in New London County, Connecticut.
- Tower base elevation above sea level: 290.000 ft.
- Basic wind speed of 125 mph.
- Risk Category II.
- Exposure Category B.
- Simplified Topographic Factor Procedure for wind speed-up calculations is used.
- Topographic Category: 1.
- Crest Height: 0.000 ft.
- Nominal ice thickness of 1.000 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	155.000-150.000	5.000	0.000	18	18.000	19.036	0.188	0.750	A572-65 (65 ksi)
L2	150.000-145.000	5.000	0.000	18	19.036	20.073	0.188	0.750	A572-65 (65 ksi)
L3	145.000-140.000	5.000	0.000	18	20.073	21.109	0.188	0.750	A572-65 (65 ksi)
L4	140.000-135.000	5.000	0.000	18	21.109	22.146	0.188	0.750	A572-65 (65 ksi)
L5	135.000-130.000	5.000	0.000	18	22.146	23.182	0.188	0.750	A572-65 (65 ksi)
L6	130.000-123.210	6.790	3.580	18	23.182	24.590	0.188	0.750	A572-65 (65 ksi)
L7	123.210-121.790	5.000	0.000	18	23.473	24.671	0.250	1.000	A572-65 (65 ksi)
L8	121.790-116.790	5.000	0.000	18	24.671	25.870	0.250	1.000	A572-65 (65 ksi)
L9	116.790-111.790	5.000	0.000	18	25.870	27.068	0.250	1.000	A572-65 (65 ksi)
L10	111.790-106.790	5.000	0.000	18	27.068	28.267	0.250	1.000	A572-65 (65 ksi)
L11	106.790-101.790	5.000	0.000	18	28.267	29.465	0.250	1.000	A572-65 (65 ksi)
L12	101.790-97.500	4.290	0.000	18	29.465	30.494	0.250	1.000	A572-65 (65 ksi)
L13	97.500-97.250	0.250	0.000	18	30.494	30.554	0.250	1.000	A572-65 (65 ksi)
L14	97.250-92.250	5.000	0.000	18	30.554	31.752	0.250	1.000	A572-65 (65 ksi)
L15	92.250-82.580	9.670	4.830	18	31.752	34.070	0.250	1.000	A572-65 (65 ksi)
L16	82.580-81.580	5.830	0.000	18	32.412	33.825	0.313	1.250	A572-65 (65 ksi)
L17	81.580-76.580	5.000	0.000	18	33.825	35.037	0.313	1.250	A572-65 (65 ksi)
L18	76.580-71.580	5.000	0.000	18	35.037	36.249	0.313	1.250	A572-65 (65 ksi)
L19	71.580-68.000	3.580	0.000	18	36.249	37.117	0.313	1.250	A572-65 (65 ksi)
L20	68.000-67.750	0.250	0.000	18	37.117	37.178	0.487	1.950	A572-65 (65 ksi)
L21	67.750-62.750	5.000	0.000	18	37.178	38.390	0.475	1.900	A572-65 (65 ksi)
L22	62.750-57.750	5.000	0.000	18	38.390	39.602	0.475	1.900	A572-65 (65 ksi)
L23	57.750-52.750	5.000	0.000	18	39.602	40.814	0.463	1.850	A572-65 (65 ksi)
L24	52.750-43.030	9.720	5.930	18	40.814	43.170	0.463	1.850	A572-65 (65 ksi)
L25	43.030-42.030	6.930	0.000	18	41.108	42.791	0.375	1.500	A572-65 (65 ksi)
L26	42.030-37.030	5.000	0.000	18	42.791	44.005	0.375	1.500	A572-65 (65 ksi)
L27	37.030-32.030	5.000	0.000	18	44.005	45.220	0.375	1.500	A572-65 (65 ksi)
L28	32.030-27.030	5.000	0.000	18	45.220	46.434	0.375	1.500	A572-65 (65 ksi)
L29	27.030-22.030	5.000	0.000	18	46.434	47.649	0.375	1.500	A572-65 (65 ksi)
L30	22.030-17.030	5.000	0.000	18	47.649	48.863	0.375	1.500	A572-65 (65 ksi)
L31	17.030-12.030	5.000	0.000	18	48.863	50.078	0.375	1.500	A572-65 (65 ksi)
L32	12.030-7.030	5.000	0.000	18	50.078	51.292	0.375	1.500	A572-65 (65 ksi)
L33	7.030-2.030	5.000	0.000	18	51.292	52.507	0.375	1.500	A572-65 (65 ksi)
L34	2.030-0.000	2.030		18	52.507	53.000	0.375	1.500	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	18.249	10.601	424.933	6.323	9.144	46.471	850.425	5.301	2.838	15.136
	19.301	11.218	503.512	6.691	9.671	52.067	1007.687	5.610	3.020	16.109
L2	19.301	11.218	503.512	6.691	9.671	52.067	1007.687	5.610	3.020	16.109
	20.354	11.834	591.226	7.059	10.197	57.980	1183.231	5.918	3.203	17.082
L3	20.354	11.834	591.226	7.059	10.197	57.980	1183.231	5.918	3.203	17.082
	21.406	12.451	688.578	7.427	10.724	64.211	1378.062	6.227	3.385	18.055
L4	21.406	12.451	688.578	7.427	10.724	64.211	1378.062	6.227	3.385	18.055
	22.459	13.068	796.070	7.795	11.250	70.761	1593.187	6.535	3.568	19.028
L5	22.459	13.068	796.070	7.795	11.250	70.761	1593.187	6.535	3.568	19.028
	23.511	13.685	914.204	8.163	11.777	77.628	1829.610	6.844	3.750	20.001
L6	23.511	13.685	914.204	8.163	11.777	77.628	1829.610	6.844	3.750	20.001
	24.940	14.523	1092.568	8.663	12.492	87.463	2186.574	7.263	3.998	21.322
L7	24.668	18.427	1255.545	8.244	11.924	105.294	2512.742	9.215	3.691	14.765
	25.013	19.378	1460.140	8.670	12.533	116.503	2922.202	9.691	3.902	15.609
L8	25.013	19.378	1460.140	8.670	12.533	116.503	2922.202	9.691	3.902	15.609
	26.230	20.329	1685.836	9.095	13.142	128.279	3373.889	10.167	4.113	16.452
L9	26.230	20.329	1685.836	9.095	13.142	128.279	3373.889	10.167	4.113	16.452
	27.447	21.280	1933.666	9.521	13.751	140.623	3869.877	10.642	4.324	17.296
L10	27.447	21.280	1933.666	9.521	13.751	140.623	3869.877	10.642	4.324	17.296
	28.664	22.231	2204.668	9.946	14.360	153.533	4412.237	11.118	4.535	18.14
L11	28.664	22.231	2204.668	9.946	14.360	153.533	4412.237	11.118	4.535	18.14
	29.881	23.182	2499.876	10.371	14.968	167.010	5003.041	11.593	4.746	18.984
L12	29.881	23.182	2499.876	10.371	14.968	167.010	5003.041	11.593	4.746	18.984
	30.926	23.998	2773.245	10.737	15.491	179.025	5550.139	12.001	4.927	19.708
L13	30.926	23.998	2773.245	10.737	15.491	179.025	5550.139	12.001	4.927	19.708
	30.986	24.046	2789.763	10.758	15.521	179.738	5583.196	12.025	4.937	19.75
L14	30.986	24.046	2789.763	10.758	15.521	179.738	5583.196	12.025	4.937	19.75
	32.203	24.997	3134.029	11.183	16.130	194.297	6272.182	12.501	5.148	20.593
L15	32.203	24.997	3134.029	11.183	16.130	194.297	6272.182	12.501	5.148	20.593
	34.557	26.836	3877.977	12.006	17.308	224.063	7761.056	13.421	5.556	22.225
L16	34.053	31.839	4144.760	11.395	16.465	251.725	8294.973	15.922	5.155	16.495
	34.299	33.241	4716.635	11.897	17.183	274.489	9439.476	16.623	5.403	17.29
L17	34.299	33.241	4716.635	11.897	17.183	274.489	9439.476	16.623	5.403	17.29
	35.530	34.443	5247.100	12.327	17.799	294.797	10501.104	17.225	5.617	17.973
L18	35.530	34.443	5247.100	12.327	17.799	294.797	10501.104	17.225	5.617	17.973
	36.760	35.645	5815.918	12.758	18.415	315.830	11639.488	17.826	5.830	18.656
L19	36.760	35.645	5815.918	12.758	18.415	315.830	11639.488	17.826	5.830	18.656
	37.642	36.506	6247.497	13.066	18.856	331.334	12503.214	18.256	5.983	19.144
L20	37.615	56.678	9607.732	13.004	18.856	509.544	19228.106	28.344	5.675	11.64
	37.676	56.772	9655.496	13.025	18.886	511.242	19323.697	28.391	5.685	11.662
L21	37.678	55.335	9417.538	13.030	18.886	498.643	18847.468	27.673	5.707	12.015
	38.909	57.162	10381.645	13.460	19.502	532.336	20776.951	28.587	5.921	12.464
L22	38.909	57.162	10381.645	13.460	19.502	532.336	20776.951	28.587	5.921	12.464
	40.140	58.990	11409.404	13.890	20.118	567.131	22833.820	29.500	6.134	12.914
L23	40.141	57.456	11119.807	13.894	20.118	552.736	22254.246	28.733	6.156	13.31
	41.372	59.235	12185.147	14.325	20.733	587.705	24386.327	29.623	6.369	13.771
L24	41.372	59.235	12185.147	14.325	20.733	587.705	24386.327	29.623	6.369	13.771
	43.765	62.694	14446.697	15.161	21.930	658.753	28912.403	31.353	6.784	14.668
L25	43.146	48.482	10162.507	14.460	20.883	486.649	20338.386	24.246	6.575	17.533
	43.393	50.485	11475.212	15.058	21.738	527.893	22965.522	25.248	6.871	18.323
L26	43.393	50.485	11475.212	15.058	21.738	527.893	22965.522	25.248	6.871	18.323
	44.626	51.931	12489.424	15.489	22.355	558.693	24995.282	25.970	7.085	18.893
L27	44.626	51.931	12489.424	15.489	22.355	558.693	24995.282	25.970	7.085	18.893
	45.860	53.377	13561.702	15.920	22.972	590.366	27141.248	26.693	7.299	19.463
L28	45.860	53.377	13561.702	15.920	22.972	590.366	27141.248	26.693	7.299	19.463
	47.093	54.822	14693.661	16.351	23.589	622.912	29406.656	27.416	7.512	20.033
L29	47.093	54.822	14693.661	16.351	23.589	622.912	29406.656	27.416	7.512	20.033
	48.326	56.268	15886.917	16.782	24.206	656.331	31794.739	28.139	7.726	20.603
L30	48.326	56.268	15886.917	16.782	24.206	656.331	31794.739	28.139	7.726	20.603
	49.559	57.713	17143.088	17.213	24.823	690.624	34308.733	28.862	7.940	21.173
L31	49.559	57.713	17143.088	17.213	24.823	690.624	34308.733	28.862	7.940	21.173
	50.793	59.159	18463.789	17.645	25.440	725.790	36951.873	29.585	8.154	21.743
L32	50.793	59.159	18463.789	17.645	25.440	725.790	36951.873	29.585	8.154	21.743

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
	52.026	60.604	19850.636	18.076	26.057	761.829	39727.393	30.308	8.367	22.313
L33	52.026	60.604	19850.636	18.076	26.057	761.829	39727.393	30.308	8.367	22.313
	53.259	62.050	21305.247	18.507	26.674	798.742	42638.528	31.031	8.581	22.883
L34	53.259	62.050	21305.247	18.507	26.674	798.742	42638.528	31.031	8.581	22.883
	53.760	62.637	21915.529	18.682	26.924	813.977	43859.896	31.324	8.668	23.115

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 155.000-150.000				1	1	1			
L2 150.000-145.000				1	1	1			
L3 145.000-140.000				1	1	1			
L4 140.000-135.000				1	1	1			
L5 135.000-130.000				1	1	1			
L6 130.000-123.210				1	1	1			
L7 123.210-121.790				1	1	1			
L8 121.790-116.790				1	1	1			
L9 116.790-111.790				1	1	1			
L10 111.790-106.790				1	1	1			
L11 106.790-101.790				1	1	1			
L12 101.790-97.500				1	1	1			
L13 97.500-97.250				1	1	1			
L14 97.250-92.250				1	1	1			
L15 92.250-82.580				1	1	1			
L16 82.580-81.580				1	1	1			
L17 81.580-76.580				1	1	1			
L18 76.580-71.580				1	1	1			
L19 71.580-68.000				1	1	1			
L20 68.000-67.750				1	1	0.961153			
L21 67.750-62.750				1	1	0.975618			
L22 62.750-57.750				1	1	0.965777			
L23 57.750-52.750				1	1	0.982074			
L24 52.750-43.030				1	1	0.975253			
L25 43.030-42.030				1	1	1			
L26 42.030-37.030				1	1	1			
L27 37.030-32.030				1	1	1			
L28 32.030-27.030				1	1	1			
L29 27.030-22.030				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
L30 22.030-17.030				1	1	1			
L31 17.030-12.030				1	1	1			
L32 12.030-7.030				1	1	1			
L33 7.030-2.030				1	1	1			
L34 2.030-0.000				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
CCI-65FP-060100	A	No	Surface Af (CaAa)	70.000 - 45.000	1	1	-0.100 0.000	6.000	14.000	0.000
CCI-65FP-060100	B	No	Surface Af (CaAa)	70.000 - 45.000	1	1	-0.100 0.000	6.000	14.000	0.000
CCI-65FP-060100	C	No	Surface Af (CaAa)	70.000 - 45.000	1	1	-0.100 0.000	6.000	14.000	0.000
CCI-65FP-045100	A	No	Surface Af (CaAa)	99.000 - 84.000	1	1	-0.100 0.000	4.500	11.000	0.000
CCI-65FP-045100	B	No	Surface Af (CaAa)	99.000 - 84.000	1	1	-0.100 0.000	4.500	11.000	0.000
CCI-65FP-045100	C	No	Surface Af (CaAa)	99.000 - 84.000	1	1	-0.100 0.000	4.500	11.000	0.000
*										
CU12PSM9P6XXX(1-1/2)	A	No	Surface Ar (CaAa)	119.000 - 0.000	1	1	0.500 0.500	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
***									
HB158-21U6S24-xxM_TMO(1-5/8)	C	No	No	Inside Pole	155.000 - 0.000	4	No Ice 1/2" Ice 1" Ice	0.000 0.000 0.000	0.003 0.003 0.003
*									
LDF6-50A(1-1/4)	C	No	No	Inside Pole	139.000 - 0.000	12	No Ice 1/2" Ice 1" Ice	0.000 0.000 0.000	0.001 0.001 0.001
FB-L98B-002-75000(3/8)	C	No	No	Inside Pole	139.000 - 0.000	2	No Ice 1/2" Ice 1" Ice	0.000 0.000 0.000	0.000 0.000 0.000
WR-VG86ST-BRD(3/4)	C	No	No	Inside Pole	139.000 - 0.000	4	No Ice 1/2" Ice 1" Ice	0.000 0.000 0.000	0.001 0.001 0.001
2" Flex Conduit	C	No	No	Inside Pole	139.000 - 0.000	2	No Ice 1/2" Ice 1" Ice	0.000 0.000 0.000	0.000 0.000 0.000
*									
AVA7-50(1-5/8)	C	No	No	Inside Pole	128.000 - 0.000	12	No Ice 1/2" Ice 1" Ice	0.000 0.000 0.000	0.001 0.001 0.001
HB158-1-08U8-	C	No	No	Inside Pole	128.000 -	2	No 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
S8J18(1-5/8) *					0.000		1/2" Ice	0.000	0.001
							1" Ice	0.000	0.001
LDF4-50A(1/2)	C	No	No	Inside Pole	74.000 - 0.000	1	No Ice	0.000	0.000
							1/2" Ice	0.000	0.000
							1" Ice	0.000	0.000

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	155.000-150.000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000	0.050
L2	150.000-145.000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000	0.050
L3	145.000-140.000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000	0.050
L4	140.000-135.000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000	0.091
L5	135.000-130.000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000	0.102
L6	130.000-123.210	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000	0.191
L7	123.210-121.790	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000	0.045
L8	121.790-116.790	A	0.000	0.000	0.354	0.000	0.005
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000	0.157
L9	116.790-111.790	A	0.000	0.000	0.800	0.000	0.012
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000	0.157
L10	111.790-106.790	A	0.000	0.000	0.800	0.000	0.012
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000	0.157
L11	106.790-101.790	A	0.000	0.000	0.800	0.000	0.012
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000	0.157
L12	101.790-97.500	A	0.000	0.000	1.811	0.000	0.010
		B	0.000	0.000	1.125	0.000	0.000
		C	0.000	0.000	1.125	0.000	0.135
L13	97.500-97.250	A	0.000	0.000	0.227	0.000	0.001
		B	0.000	0.000	0.188	0.000	0.000
		C	0.000	0.000	0.188	0.000	0.008
L14	97.250-92.250	A	0.000	0.000	4.550	0.000	0.012
		B	0.000	0.000	3.750	0.000	0.000
		C	0.000	0.000	3.750	0.000	0.157
L15	92.250-82.580	A	0.000	0.000	7.735	0.000	0.023
		B	0.000	0.000	6.188	0.000	0.000
		C	0.000	0.000	6.188	0.000	0.303
L16	82.580-81.580	A	0.000	0.000	0.160	0.000	0.002
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000	0.031
L17	81.580-76.580	A	0.000	0.000	0.800	0.000	0.012
		B	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
		C	0.000	0.000	0.000	0.000	0.157
L18	76.580-71.580	A	0.000	0.000	0.800	0.000	0.012
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000	0.157
L19	71.580-68.000	A	0.000	0.000	2.573	0.000	0.008
		B	0.000	0.000	2.000	0.000	0.000
		C	0.000	0.000	2.000	0.000	0.113
L20	68.000-67.750	A	0.000	0.000	0.290	0.000	0.001
		B	0.000	0.000	0.250	0.000	0.000
		C	0.000	0.000	0.250	0.000	0.008
L21	67.750-62.750	A	0.000	0.000	5.800	0.000	0.012
		B	0.000	0.000	5.000	0.000	0.000
		C	0.000	0.000	5.000	0.000	0.158
L22	62.750-57.750	A	0.000	0.000	5.800	0.000	0.012
		B	0.000	0.000	5.000	0.000	0.000
		C	0.000	0.000	5.000	0.000	0.158
L23	57.750-52.750	A	0.000	0.000	5.800	0.000	0.012
		B	0.000	0.000	5.000	0.000	0.000
		C	0.000	0.000	5.000	0.000	0.158
L24	52.750-43.030	A	0.000	0.000	9.305	0.000	0.023
		B	0.000	0.000	7.750	0.000	0.000
		C	0.000	0.000	7.750	0.000	0.306
L25	43.030-42.030	A	0.000	0.000	0.160	0.000	0.002
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000	0.032
L26	42.030-37.030	A	0.000	0.000	0.800	0.000	0.012
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000	0.158
L27	37.030-32.030	A	0.000	0.000	0.800	0.000	0.012
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000	0.158
L28	32.030-27.030	A	0.000	0.000	0.800	0.000	0.012
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000	0.158
L29	27.030-22.030	A	0.000	0.000	0.800	0.000	0.012
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000	0.158
L30	22.030-17.030	A	0.000	0.000	0.800	0.000	0.012
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000	0.158
L31	17.030-12.030	A	0.000	0.000	0.800	0.000	0.012
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000	0.158
L32	12.030-7.030	A	0.000	0.000	0.800	0.000	0.012
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000	0.158
L33	7.030-2.030	A	0.000	0.000	0.800	0.000	0.012
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000	0.158
L34	2.030-0.000	A	0.000	0.000	0.325	0.000	0.005
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000	0.064

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	155.000-150.000	A	0.991	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.000	0.050
L2	150.000-145.000	A	0.987	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.000	0.050
L3	145.000-140.000	A	0.984	0.000	0.000	0.000	0.000	0.000
		B		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
		C		0.000	0.000	0.000	0.000	0.050
L4	140.000-135.000	A	0.980	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.000	0.091
L5	135.000-130.000	A	0.977	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.000	0.102
L6	130.000-123.210	A	0.972	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.000	0.191
L7	123.210-121.790	A	0.969	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.000	0.045
L8	121.790-116.790	A	0.967	0.000	0.000	0.781	0.000	0.012
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.000	0.157
L9	116.790-111.790	A	0.962	0.000	0.000	1.762	0.000	0.027
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.000	0.157
L10	111.790-106.790	A	0.958	0.000	0.000	1.758	0.000	0.027
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.000	0.157
L11	106.790-101.790	A	0.954	0.000	0.000	1.754	0.000	0.027
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.000	0.157
L12	101.790-97.500	A	0.949	0.000	0.000	2.911	0.000	0.031
		B		0.000	0.000	1.410	0.000	0.008
		C		0.000	0.000	1.410	0.000	0.143
L13	97.500-97.250	A	0.947	0.000	0.000	0.322	0.000	0.003
		B		0.000	0.000	0.235	0.000	0.001
		C		0.000	0.000	0.235	0.000	0.009
L14	97.250-92.250	A	0.945	0.000	0.000	6.439	0.000	0.053
		B		0.000	0.000	4.695	0.000	0.027
		C		0.000	0.000	4.695	0.000	0.184
L15	92.250-82.580	A	0.937	0.000	0.000	11.093	0.000	0.095
		B		0.000	0.000	7.733	0.000	0.044
		C		0.000	0.000	7.733	0.000	0.347
L16	82.580-81.580	A	0.931	0.000	0.000	0.347	0.000	0.005
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.000	0.031
L17	81.580-76.580	A	0.928	0.000	0.000	1.728	0.000	0.026
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.000	0.157
L18	76.580-71.580	A	0.922	0.000	0.000	1.722	0.000	0.026
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.000	0.157
L19	71.580-68.000	A	0.916	0.000	0.000	3.595	0.000	0.031
		B		0.000	0.000	2.366	0.000	0.012
		C		0.000	0.000	2.366	0.000	0.125
L20	68.000-67.750	A	0.914	0.000	0.000	0.381	0.000	0.003
		B		0.000	0.000	0.296	0.000	0.002
		C		0.000	0.000	0.296	0.000	0.009
L21	67.750-62.750	A	0.910	0.000	0.000	7.620	0.000	0.057
		B		0.000	0.000	5.910	0.000	0.031
		C		0.000	0.000	5.910	0.000	0.188
L22	62.750-57.750	A	0.903	0.000	0.000	7.605	0.000	0.056
		B		0.000	0.000	5.903	0.000	0.031
		C		0.000	0.000	5.903	0.000	0.188
L23	57.750-52.750	A	0.895	0.000	0.000	7.590	0.000	0.056
		B		0.000	0.000	5.895	0.000	0.030
		C		0.000	0.000	5.895	0.000	0.188
L24	52.750-43.030	A	0.882	0.000	0.000	12.387	0.000	0.095
		B		0.000	0.000	9.117	0.000	0.046
		C		0.000	0.000	9.117	0.000	0.353
L25	43.030-42.030	A	0.872	0.000	0.000	0.336	0.000	0.005
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.000	0.032
L26	42.030-37.030	A	0.865	0.000	0.000	1.665	0.000	0.025
		B		0.000	0.000	0.000	0.000	0.000

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft²	A_F ft²	C_AA_A In Face ft²	C_AA_A Out Face ft²	Weight K
		C		0.000	0.000	0.000	0.000	0.158
L27	37.030-32.030	A	0.854	0.000	0.000	1.654	0.000	0.025
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.000	0.158
L28	32.030-27.030	A	0.841	0.000	0.000	1.641	0.000	0.024
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.000	0.158
L29	27.030-22.030	A	0.825	0.000	0.000	1.625	0.000	0.024
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.000	0.158
L30	22.030-17.030	A	0.807	0.000	0.000	1.607	0.000	0.024
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.000	0.158
L31	17.030-12.030	A	0.783	0.000	0.000	1.583	0.000	0.023
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.000	0.158
L32	12.030-7.030	A	0.751	0.000	0.000	1.551	0.000	0.023
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.000	0.158
L33	7.030-2.030	A	0.697	0.000	0.000	1.497	0.000	0.022
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.000	0.158
L34	2.030-0.000	A	0.600	0.000	0.000	0.568	0.000	0.008
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.000	0.064

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	155.000-150.000	0.000	0.000	0.000	0.000
L2	150.000-145.000	0.000	0.000	0.000	0.000
L3	145.000-140.000	0.000	0.000	0.000	0.000
L4	140.000-135.000	0.000	0.000	0.000	0.000
L5	135.000-130.000	0.000	0.000	0.000	0.000
L6	130.000-123.210	0.000	0.000	0.000	0.000
L7	123.210-121.790	0.000	0.000	0.000	0.000
L8	121.790-116.790	0.000	-0.590	0.000	-0.730
L9	116.790-111.790	0.000	-1.253	0.000	-1.532
L10	111.790-106.790	0.000	-1.254	0.000	-1.537
L11	106.790-101.790	0.000	-1.256	0.000	-1.540
L12	101.790-97.500	0.000	-0.903	0.000	-1.210
L13	97.500-97.250	0.000	-0.599	0.000	-0.870
L14	97.250-92.250	0.000	-0.605	0.000	-0.877
L15	92.250-82.580	0.000	-0.672	0.000	-0.956
L16	82.580-81.580	0.000	-1.261	0.000	-1.552
L17	81.580-76.580	0.000	-1.262	0.000	-1.548
L18	76.580-71.580	0.000	-1.263	0.000	-1.548
L19	71.580-68.000	0.000	-0.747	0.000	-1.055
L20	68.000-67.750	0.000	-0.569	0.000	-0.847
L21	67.750-62.750	0.000	-0.574	0.000	-0.853
L22	62.750-57.750	0.000	-0.584	0.000	-0.862
L23	57.750-52.750	0.000	-0.593	0.000	-0.872
L24	52.750-43.030	0.000	-0.678	0.000	-0.967
L25	43.030-42.030	0.000	-1.268	0.000	-1.539
L26	42.030-37.030	0.000	-1.269	0.000	-1.527
L27	37.030-32.030	0.000	-1.269	0.000	-1.521
L28	32.030-27.030	0.000	-1.270	0.000	-1.513
L29	27.030-22.030	0.000	-1.271	0.000	-1.503
L30	22.030-17.030	0.000	-1.271	0.000	-1.490
L31	17.030-12.030	0.000	-1.272	0.000	-1.472
L32	12.030-7.030	0.000	-1.272	0.000	-1.447
L33	7.030-2.030	0.000	-1.273	0.000	-1.404
L34	2.030-0.000	0.000	-1.273	0.000	-1.323

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
L8	22	CU12PSM9P6XXX(1-1/2)	116.79 - 119.00	1.0000	1.0000
L9	22	CU12PSM9P6XXX(1-1/2)	111.79 - 116.79	1.0000	1.0000
L10	22	CU12PSM9P6XXX(1-1/2)	106.79 - 111.79	1.0000	1.0000
L11	22	CU12PSM9P6XXX(1-1/2)	101.79 - 106.79	1.0000	1.0000
L12	4	CCI-65FP-045100	97.50 - 99.00	1.0000	1.0000
L12	5	CCI-65FP-045100	97.50 - 99.00	1.0000	1.0000
L12	6	CCI-65FP-045100	97.50 - 99.00	1.0000	1.0000
L12	22	CU12PSM9P6XXX(1-1/2)	97.50 - 101.79	1.0000	1.0000
L13	4	CCI-65FP-045100	97.25 - 97.50	1.0000	1.0000
L13	5	CCI-65FP-045100	97.25 - 97.50	1.0000	1.0000
L13	6	CCI-65FP-045100	97.25 - 97.50	1.0000	1.0000
L13	22	CU12PSM9P6XXX(1-1/2)	97.25 - 97.50	1.0000	1.0000
L14	4	CCI-65FP-045100	92.25 - 97.25	1.0000	1.0000
L14	5	CCI-65FP-045100	92.25 - 97.25	1.0000	1.0000
L14	6	CCI-65FP-045100	92.25 - 97.25	1.0000	1.0000
L14	22	CU12PSM9P6XXX(1-1/2)	92.25 - 97.25	1.0000	1.0000
L15	4	CCI-65FP-045100	84.00 - 92.25	1.0000	1.0000
L15	5	CCI-65FP-045100	84.00 - 92.25	1.0000	1.0000
L15	6	CCI-65FP-045100	84.00 - 92.25	1.0000	1.0000
L15	22	CU12PSM9P6XXX(1-1/2)	82.58 - 92.25	1.0000	1.0000
L16	22	CU12PSM9P6XXX(1-1/2)	81.58 - 82.58	1.0000	1.0000
L17	22	CU12PSM9P6XXX(1-1/2)	76.58 - 81.58	1.0000	1.0000
L18	22	CU12PSM9P6XXX(1-1/2)	71.58 - 76.58	1.0000	1.0000
L19	1	CCI-65FP-060100	68.00 - 70.00	1.0000	1.0000
L19	2	CCI-65FP-060100	68.00 - 70.00	1.0000	1.0000
L19	3	CCI-65FP-060100	68.00 - 70.00	1.0000	1.0000
L19	22	CU12PSM9P6XXX(1-1/2)	68.00 - 71.58	1.0000	1.0000
L20	1	CCI-65FP-060100	67.75 - 68.00	1.0000	1.0000
L20	2	CCI-65FP-060100	67.75 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
			68.00		
L20	3	CCI-65FP-060100	67.75 - 68.00	1.0000	1.0000
L20	22	CU12PSM9P6XXX(1-1/2)	67.75 - 68.00	1.0000	1.0000
L21	1	CCI-65FP-060100	62.75 - 67.75	1.0000	1.0000
L21	2	CCI-65FP-060100	62.75 - 67.75	1.0000	1.0000
L21	3	CCI-65FP-060100	62.75 - 67.75	1.0000	1.0000
L21	22	CU12PSM9P6XXX(1-1/2)	62.75 - 67.75	1.0000	1.0000
L22	1	CCI-65FP-060100	57.75 - 62.75	1.0000	1.0000
L22	2	CCI-65FP-060100	57.75 - 62.75	1.0000	1.0000
L22	3	CCI-65FP-060100	57.75 - 62.75	1.0000	1.0000
L22	22	CU12PSM9P6XXX(1-1/2)	57.75 - 62.75	1.0000	1.0000
L23	1	CCI-65FP-060100	52.75 - 57.75	1.0000	1.0000
L23	2	CCI-65FP-060100	52.75 - 57.75	1.0000	1.0000
L23	3	CCI-65FP-060100	52.75 - 57.75	1.0000	1.0000
L23	22	CU12PSM9P6XXX(1-1/2)	52.75 - 57.75	1.0000	1.0000
L24	1	CCI-65FP-060100	45.00 - 52.75	1.0000	1.0000
L24	2	CCI-65FP-060100	45.00 - 52.75	1.0000	1.0000
L24	3	CCI-65FP-060100	45.00 - 52.75	1.0000	1.0000
L24	22	CU12PSM9P6XXX(1-1/2)	43.03 - 52.75	1.0000	1.0000
L25	22	CU12PSM9P6XXX(1-1/2)	42.03 - 43.03	1.0000	1.0000
L26	22	CU12PSM9P6XXX(1-1/2)	37.03 - 42.03	1.0000	1.0000
L27	22	CU12PSM9P6XXX(1-1/2)	32.03 - 37.03	1.0000	1.0000
L28	22	CU12PSM9P6XXX(1-1/2)	27.03 - 32.03	1.0000	1.0000
L29	22	CU12PSM9P6XXX(1-1/2)	22.03 - 27.03	1.0000	1.0000
L30	22	CU12PSM9P6XXX(1-1/2)	17.03 - 22.03	1.0000	1.0000
L31	22	CU12PSM9P6XXX(1-1/2)	12.03 - 17.03	1.0000	1.0000
L32	22	CU12PSM9P6XXX(1-1/2)	7.03 - 12.03	1.0000	1.0000
L33	22	CU12PSM9P6XXX(1-1/2)	2.03 - 7.03	1.0000	1.0000
L34	22	CU12PSM9P6XXX(1-1/2)	0.00 - 2.03	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

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L12	4	CCI-65FP-045100	97.50 - 99.00	Auto	0.0000
L12	5	CCI-65FP-045100	97.50 - 99.00	Auto	0.0000
L12	6	CCI-65FP-045100	97.50 - 99.00	Auto	0.0000
L13	4	CCI-65FP-045100	97.25 - 97.50	Auto	0.0000
L13	5	CCI-65FP-045100	97.25 - 97.50	Auto	0.0000
L13	6	CCI-65FP-045100	97.25 - 97.50	Auto	0.0000
L14	4	CCI-65FP-045100	92.25 - 97.25	Auto	0.0000
L14	5	CCI-65FP-045100	92.25 - 97.25	Auto	0.0000
L14	6	CCI-65FP-045100	92.25 - 97.25	Auto	0.0000
L15	4	CCI-65FP-045100	84.00 - 92.25	Auto	0.0000
L15	5	CCI-65FP-045100	84.00 - 92.25	Auto	0.0000
L15	6	CCI-65FP-045100	84.00 - 92.25	Auto	0.0000
L19	1	CCI-65FP-060100	68.00 - 70.00	Auto	0.0100
L19	2	CCI-65FP-060100	68.00 - 70.00	Auto	0.0100
L19	3	CCI-65FP-060100	68.00 - 70.00	Auto	0.0100
L20	1	CCI-65FP-060100	67.75 - 68.00	Auto	0.0533
L20	2	CCI-65FP-060100	67.75 - 68.00	Auto	0.0533
L20	3	CCI-65FP-060100	67.75 - 68.00	Auto	0.0533
L21	1	CCI-65FP-060100	62.75 - 67.75	Auto	0.0310
L21	2	CCI-65FP-060100	62.75 - 67.75	Auto	0.0310
L21	3	CCI-65FP-060100	62.75 - 67.75	Auto	0.0310
L22	1	CCI-65FP-060100	57.75 - 62.75	Auto	0.0025
L22	2	CCI-65FP-060100	57.75 - 62.75	Auto	0.0025
L22	3	CCI-65FP-060100	57.75 - 62.75	Auto	0.0025
L23	1	CCI-65FP-060100	52.75 - 57.75	Auto	0.0000
L23	2	CCI-65FP-060100	52.75 - 57.75	Auto	0.0000
L23	3	CCI-65FP-060100	52.75 - 57.75	Auto	0.0000
L24	1	CCI-65FP-060100	45.00 - 52.75	Auto	0.0000
L24	2	CCI-65FP-060100	45.00 - 52.75	Auto	0.0000
L24	3	CCI-65FP-060100	45.00 - 52.75	Auto	0.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Lighting Rod 1/2" x 2' *	C	From Leg	4.000 0.000 0.000	0.000	164.000	No Ice 1/2" Ice 1" Ice	0.100 0.264 0.395	0.100 0.264 0.395	0.020 0.021 0.024
AIR6449 B41_T-MOBILE w/ Mount Pipe	A	From Leg	4.000 0.000 2.000	0.000	155.000	No Ice 1/2" Ice 1" Ice	5.190 5.590 6.020	2.710 3.040 3.380	0.128 0.174 0.227
AIR6449 B41_T-MOBILE w/ Mount Pipe	B	From Leg	4.000 0.000 2.000	0.000	155.000	No Ice 1/2" Ice 1" Ice	5.190 5.590 6.020	2.710 3.040 3.380	0.128 0.174 0.227
AIR6449 B41_T-MOBILE w/ Mount Pipe	C	From Leg	4.000 0.000 2.000	0.000	155.000	No Ice 1/2" Ice 1" Ice	5.190 5.590 6.020	2.710 3.040 3.380	0.128 0.174 0.227
APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	A	From Leg	4.000 0.000 2.000	0.000	155.000	No Ice 1/2" Ice 1" Ice	6.290 6.860 7.450	2.760 3.270 3.790	0.061 0.105 0.157
APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	B	From Leg	4.000 0.000 2.000	0.000	155.000	No Ice 1/2" Ice 1" Ice	6.290 6.860 7.450	2.760 3.270 3.790	0.061 0.105 0.157
APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	C	From Leg	4.000 0.000 2.000	0.000	155.000	No Ice 1/2" Ice 1" Ice	6.290 6.860 7.450	2.760 3.270 3.790	0.061 0.105 0.157
APXVAALL24_43-U-NA20_TMO w/ Mount Pipe	A	From Leg	4.000 0.000 2.000	0.000	155.000	No Ice 1/2" Ice 1" Ice	14.690 15.460 16.230	6.870 7.550 8.250	0.183 0.311 0.453
APXVAALL24_43-U-NA20_TMO w/ Mount Pipe	B	From Leg	4.000 0.000 2.000	0.000	155.000	No Ice 1/2" Ice 1" Ice	14.690 15.460 16.230	6.870 7.550 8.250	0.183 0.311 0.453
APXVAALL24_43-U-NA20_TMO w/ Mount Pipe	C	From Leg	4.000 0.000 2.000	0.000	155.000	No Ice 1/2" Ice 1" Ice	14.690 15.460 16.230	6.870 7.550 8.250	0.183 0.311 0.453
RADIO 4415 B66A	A	From Leg	4.000 0.000 2.000	0.000	155.000	No Ice 1/2" Ice 1" Ice	1.856 2.027 2.204	0.870 0.997 1.134	0.050 0.064 0.081
RADIO 4415 B66A	B	From Leg	4.000 0.000 2.000	0.000	155.000	No Ice 1/2" Ice 1" Ice	1.856 2.027 2.204	0.870 0.997 1.134	0.050 0.064 0.081
RADIO 4415 B66A	C	From Leg	4.000 0.000 2.000	0.000	155.000	No Ice 1/2" Ice 1" Ice	1.856 2.027 2.204	0.870 0.997 1.134	0.050 0.064 0.081
RADIO 4424 B25_TMO	A	From Leg	4.000 0.000 2.000	0.000	155.000	No Ice 1/2" Ice 1" Ice	2.052 2.231 2.417	1.610 1.772 1.941	0.086 0.107 0.131
RADIO 4424 B25_TMO	B	From Leg	4.000 0.000 2.000	0.000	155.000	No Ice 1/2" Ice 1" Ice	2.052 2.231 2.417	1.610 1.772 1.941	0.086 0.107 0.131
RADIO 4424 B25_TMO	C	From Leg	4.000 0.000 2.000	0.000	155.000	No Ice 1/2" Ice Ice	2.052 2.231 2.417	1.610 1.772 1.941	0.086 0.107 0.131

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						1" Ice			
RADIO 4449 B71 B85A_T-MOBILE	A	From Leg	4.000 0.000 2.000	0.000	155.000	No Ice 1/2" Ice 1" Ice	1.970 2.147 2.331	1.587 1.749 1.918	0.073 0.093 0.116
RADIO 4449 B71 B85A_T-MOBILE	B	From Leg	4.000 0.000 2.000	0.000	155.000	No Ice 1/2" Ice 1" Ice	1.970 2.147 2.331	1.587 1.749 1.918	0.073 0.093 0.116
RADIO 4449 B71 B85A_T-MOBILE	C	From Leg	4.000 0.000 2.000	0.000	155.000	No Ice 1/2" Ice 1" Ice	1.970 2.147 2.331	1.587 1.749 1.918	0.073 0.093 0.116
Platform Mount [LP 712-1]	C	None		0.000	155.000	No Ice 1/2" Ice 1" Ice	19.640 22.330 25.020	19.640 22.330 25.020	1.068 1.532 1.996
Miscellaneous [NA 507-1]	C	None		0.000	159.000	No Ice 1/2" Ice 1" Ice	4.560 6.390 8.180	4.560 6.390 8.180	0.245 0.311 0.402
9' x 2" Pipe Mount	C	From Leg	4.000 0.000 4.000	0.000	155.000	No Ice 1/2" Ice 1" Ice	2.138 3.066 4.010	2.138 3.066 4.010	0.065 0.081 0.103
8' x 2.375" Mount Pipe	A	From Leg	4.000 0.000 2.000	0.000	155.000	No Ice 1/2" Ice 1" Ice	1.900 2.728 3.401	1.900 2.728 3.401	0.061 0.075 0.095
8' x 2.375" Mount Pipe	B	From Leg	4.000 0.000 2.000	0.000	155.000	No Ice 1/2" Ice 1" Ice	1.900 2.728 3.401	1.900 2.728 3.401	0.061 0.075 0.095
8' x 2.375" Mount Pipe	C	From Leg	4.000 0.000 2.000	0.000	155.000	No Ice 1/2" Ice 1" Ice	1.900 2.728 3.401	1.900 2.728 3.401	0.061 0.075 0.095
4' x 2" Pipe Mount	A	From Leg	4.000 0.000 2.000	0.000	155.000	No Ice 1/2" Ice 1" Ice	0.785 1.028 1.281	0.785 1.028 1.281	0.029 0.035 0.044
4' x 2" Pipe Mount	B	From Leg	4.000 0.000 2.000	0.000	155.000	No Ice 1/2" Ice 1" Ice	0.785 1.028 1.281	0.785 1.028 1.281	0.029 0.035 0.044
4' x 2" Pipe Mount	C	From Leg	4.000 0.000 2.000	0.000	155.000	No Ice 1/2" Ice 1" Ice	0.785 1.028 1.281	0.785 1.028 1.281	0.029 0.035 0.044
Transition Ladder	C	From Leg	2.000 0.000 -2.000	0.000	155.000	No Ice 1/2" Ice 1" Ice	6.000 8.000 10.000	6.000 8.000 10.000	0.160 0.240 0.320
*									
HPA-65R-BUU-H8 w/ Mount Pipe	A	From Leg	4.000 0.000 2.000	0.000	139.000	No Ice 1/2" Ice 1" Ice	12.250 13.190 14.160	8.330 9.230 10.150	0.105 0.194 0.297
HPA-65R-BUU-H8 w/ Mount Pipe	B	From Leg	4.000 0.000 2.000	0.000	139.000	No Ice 1/2" Ice 1" Ice	12.250 13.190 14.160	8.330 9.230 10.150	0.105 0.194 0.297
HPA-65R-BUU-H8 w/ Mount Pipe	C	From Leg	4.000 0.000 2.000	0.000	139.000	No Ice 1/2" Ice	12.250 13.190 14.160	8.330 9.230 10.150	0.105 0.194 0.297

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
80010966 w/ Mount Pipe	A	From Leg	4.000 0.000 2.000	0.000	139.000	1" Ice No Ice 1/2" Ice 1" Ice	14.610 15.470 16.350	6.840 7.630 8.420	0.159 0.267 0.389
80010966 w/ Mount Pipe	B	From Leg	4.000 0.000 2.000	0.000	139.000	1" Ice No Ice 1/2" Ice 1" Ice	14.610 15.470 16.350	6.840 7.630 8.420	0.159 0.267 0.389
80010966 w/ Mount Pipe	C	From Leg	4.000 0.000 2.000	0.000	139.000	1" Ice No Ice 1/2" Ice 1" Ice	14.610 15.470 16.350	6.840 7.630 8.420	0.159 0.267 0.389
7770.00 w/ Mount Pipe	A	From Leg	4.000 0.000 1.000	0.000	139.000	1" Ice No Ice 1/2" Ice 1" Ice	5.746 6.179 6.607	4.254 5.014 5.711	0.055 0.103 0.157
7770.00 w/ Mount Pipe	B	From Leg	4.000 0.000 1.000	0.000	139.000	1" Ice No Ice 1/2" Ice 1" Ice	5.746 6.179 6.607	4.254 5.014 5.711	0.055 0.103 0.157
7770.00 w/ Mount Pipe	C	From Leg	4.000 0.000 1.000	0.000	139.000	1" Ice No Ice 1/2" Ice 1" Ice	5.746 6.179 6.607	4.254 5.014 5.711	0.055 0.103 0.157
RRUS 11	A	From Leg	4.000 0.000 1.000	0.000	139.000	1" Ice No Ice 1/2" Ice 1" Ice	2.784 2.992 3.207	1.187 1.334 1.490	0.048 0.068 0.092
RRUS 11	B	From Leg	4.000 0.000 1.000	0.000	139.000	1" Ice No Ice 1/2" Ice 1" Ice	2.784 2.992 3.207	1.187 1.334 1.490	0.048 0.068 0.092
RRUS 11	C	From Leg	4.000 0.000 1.000	0.000	139.000	1" Ice No Ice 1/2" Ice 1" Ice	2.784 2.992 3.207	1.187 1.334 1.490	0.048 0.068 0.092
RRUS 32 B2	A	From Leg	4.000 0.000 1.000	0.000	139.000	1" Ice No Ice 1/2" Ice 1" Ice	2.731 2.953 3.182	1.668 1.855 2.049	0.053 0.074 0.098
RRUS 32 B2	B	From Leg	4.000 0.000 1.000	0.000	139.000	1" Ice No Ice 1/2" Ice 1" Ice	2.731 2.953 3.182	1.668 1.855 2.049	0.053 0.074 0.098
RRUS 32 B2	C	From Leg	4.000 0.000 1.000	0.000	139.000	1" Ice No Ice 1/2" Ice 1" Ice	2.731 2.953 3.182	1.668 1.855 2.049	0.053 0.074 0.098
RRUS 4478 B14	A	From Leg	4.000 0.000 1.000	0.000	139.000	1" Ice No Ice 1/2" Ice 1" Ice	1.843 2.012 2.190	1.059 1.197 1.342	0.060 0.076 0.094
RRUS 4478 B14	B	From Leg	4.000 0.000 1.000	0.000	139.000	1" Ice No Ice 1/2" Ice 1" Ice	1.843 2.012 2.190	1.059 1.197 1.342	0.060 0.076 0.094
RRUS 4478 B14	C	From Leg	4.000 0.000 1.000	0.000	139.000	1" Ice No Ice 1/2" Ice 1" Ice	1.843 2.012 2.190	1.059 1.197 1.342	0.060 0.076 0.094
(2) LGP21401	A	From Leg	4.000 0.000 1.000	0.000	139.000	1" Ice No Ice 1/2" Ice 1" Ice	1.104 1.239 1.381	0.207 0.274 0.348	0.014 0.021 0.030

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
(2) LGP21401	B	From Leg	4.000 0.000 1.000	0.000	139.000	No Ice 1/2" Ice 1" Ice	1.104 1.239 1.381	0.207 0.274 0.348	0.014 0.021 0.030
(2) LGP21401	C	From Leg	4.000 0.000 1.000	0.000	139.000	No Ice 1/2" Ice 1" Ice	1.104 1.239 1.381	0.207 0.274 0.348	0.014 0.021 0.030
DC6-48-60-18-8F	A	From Leg	4.000 0.000 1.000	0.000	139.000	No Ice 1/2" Ice 1" Ice	1.212 1.892 2.105	1.212 1.892 2.105	0.020 0.042 0.067
DC6-48-60-18-8F	B	From Leg	4.000 0.000 1.000	0.000	139.000	No Ice 1/2" Ice 1" Ice	1.212 1.892 2.105	1.212 1.892 2.105	0.020 0.042 0.067
Platform Mount [LP 303-1]	C	None		0.000	139.000	No Ice 1/2" Ice 1" Ice	14.690 18.010 21.340	14.690 18.010 21.340	1.250 1.569 1.942
*									
(2) LPA-80063/6CF w/ Mount Pipe	A	From Leg	4.000 0.000 3.000	0.000	128.000	No Ice 1/2" Ice 1" Ice	9.831 10.400 10.933	10.215 11.384 12.269	0.052 0.145 0.246
(2) LPA-80063/6CF w/ Mount Pipe	B	From Leg	4.000 0.000 3.000	0.000	128.000	No Ice 1/2" Ice 1" Ice	9.831 10.400 10.933	10.215 11.384 12.269	0.052 0.145 0.246
(2) LPA-80063/6CF w/ Mount Pipe	C	From Leg	4.000 0.000 3.000	0.000	128.000	No Ice 1/2" Ice 1" Ice	9.831 10.400 10.933	10.215 11.384 12.269	0.052 0.145 0.246
(2) JAHH-65B-R3B w/ Mount Pipe	A	From Leg	4.000 0.000 3.000	0.000	128.000	No Ice 1/2" Ice 1" Ice	5.500 5.970 6.450	4.380 4.840 5.300	0.096 0.169 0.254
(2) JAHH-65B-R3B w/ Mount Pipe	B	From Leg	4.000 0.000 3.000	0.000	128.000	No Ice 1/2" Ice 1" Ice	5.500 5.970 6.450	4.380 4.840 5.300	0.096 0.169 0.254
(2) JAHH-65B-R3B w/ Mount Pipe	C	From Leg	4.000 0.000 3.000	0.000	128.000	No Ice 1/2" Ice 1" Ice	5.500 5.970 6.450	4.380 4.840 5.300	0.096 0.169 0.254
RVZDC-6627-PF-48	A	From Leg	4.000 0.000 6.000	0.000	128.000	No Ice 1/2" Ice 1" Ice	3.792 4.044 4.303	2.514 2.727 2.947	0.032 0.063 0.099
MT6407-77A w/ Mount Pipe	A	From Leg	4.000 0.000 3.000	0.000	128.000	No Ice 1/2" Ice 1" Ice	4.907 5.256 5.615	2.682 3.145 3.624	0.096 0.136 0.180
MT6407-77A w/ Mount Pipe	B	From Leg	4.000 0.000 3.000	0.000	128.000	No Ice 1/2" Ice 1" Ice	4.907 5.256 5.615	2.682 3.145 3.624	0.096 0.136 0.180
MT6407-77A w/ Mount Pipe	C	From Leg	4.000 0.000 3.000	0.000	128.000	No Ice 1/2" Ice 1" Ice	4.907 5.256 5.615	2.682 3.145 3.624	0.096 0.136 0.180
RF4439D-25A	A	From Leg	4.000 0.000 3.000	0.000	128.000	No Ice 1/2" Ice 1" Ice	1.865 2.035 2.212	1.252 1.394 1.544	0.075 0.093 0.114

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
RF4439D-25A	B	From Leg	4.000 0.000 3.000	0.000	128.000	No Ice 1/2" Ice 1" Ice	1.865 2.035 2.212	1.252 1.394 1.544	0.075 0.093 0.114
RF4439D-25A	C	From Leg	4.000 0.000 3.000	0.000	128.000	No Ice 1/2" Ice 1" Ice	1.865 2.035 2.212	1.252 1.394 1.544	0.075 0.093 0.114
RF4440D-13A	A	From Leg	4.000 0.000 3.000	0.000	128.000	No Ice 1/2" Ice 1" Ice	1.865 2.035 2.212	1.129 1.267 1.411	0.073 0.090 0.110
RF4440D-13A	B	From Leg	4.000 0.000 3.000	0.000	128.000	No Ice 1/2" Ice 1" Ice	1.865 2.035 2.212	1.129 1.267 1.411	0.073 0.090 0.110
RF4440D-13A	C	From Leg	4.000 0.000 3.000	0.000	128.000	No Ice 1/2" Ice 1" Ice	1.865 2.035 2.212	1.129 1.267 1.411	0.073 0.090 0.110
CBC78T-DS-43-2X	A	From Leg	4.000 0.000 3.000	0.000	128.000	No Ice 1/2" Ice 1" Ice	0.368 0.446 0.531	0.512 0.605 0.705	0.021 0.027 0.035
CBC78T-DS-43-2X	B	From Leg	4.000 0.000 3.000	0.000	128.000	No Ice 1/2" Ice 1" Ice	0.368 0.446 0.531	0.512 0.605 0.705	0.021 0.027 0.035
CBC78T-DS-43-2X	C	From Leg	4.000 0.000 3.000	0.000	128.000	No Ice 1/2" Ice 1" Ice	0.368 0.446 0.531	0.512 0.605 0.705	0.021 0.027 0.035
T-Arm Mount [TA 602-3]	C	None		0.000	128.000	No Ice 1/2" Ice 1" Ice	13.400 16.440 19.700	13.400 16.440 19.700	0.774 1.004 1.292
Side Arm Mount [SO 102-3]	C	None		0.000	128.000	No Ice 1/2" Ice 1" Ice	3.600 4.180 4.750	3.600 4.180 4.750	0.075 0.105 0.135
Mount Reinforcement Specifications	C	None		0.000	128.000	No Ice 1/2" Ice 1" Ice	28.630 37.310 45.800	28.630 37.310 45.800	0.280 0.670 0.940
12' Horizontal Handrail	A	From Leg	4.000 0.000 2.500	0.000	128.000	No Ice 1/2" Ice 1" Ice	4.000 5.230 6.470	0.020 0.060 0.120	0.065 0.089 0.122
12' Horizontal Handrail	B	From Leg	4.000 0.000 2.500	0.000	128.000	No Ice 1/2" Ice 1" Ice	2.280 3.500 4.750	0.010 0.040 0.090	0.033 0.050 0.076
12' Horizontal Handrail	C	From Leg	4.000 0.000 2.500	0.000	128.000	No Ice 1/2" Ice 1" Ice	2.280 3.500 4.750	0.010 0.040 0.090	0.033 0.050 0.076
(2) 6' x 2.5" Schedule 40 Pipe	A	From Leg	2.000 0.000 2.500	0.000	128.000	No Ice 1/2" Ice 1" Ice	1.728 2.090 2.461	1.728 2.090 2.461	0.035 0.048 0.065
(2) 6' x 2.5" Schedule 40 Pipe	B	From Leg	2.000 0.000 2.500	0.000	128.000	No Ice 1/2" Ice 1" Ice	1.728 2.090 2.461	1.728 2.090 2.461	0.035 0.048 0.065
(2) 6' x 2.5" Schedule 40	C	From Leg	2.000	0.000	128.000	No Ice	1.728	1.728	0.035

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Pipe			0.000 2.500			1/2" Ice 1" Ice	2.090 2.461	2.090 2.461	0.048 0.065
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MX08FRO665-21 w/ Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	119.000	No Ice 1/2" Ice 1" Ice	8.010 8.520 9.040	4.230 4.690 5.160	0.108 0.194 0.292
MX08FRO665-21 w/ Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	119.000	No Ice 1/2" Ice 1" Ice	8.010 8.520 9.040	4.230 4.690 5.160	0.108 0.194 0.292
MX08FRO665-21 w/ Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	119.000	No Ice 1/2" Ice 1" Ice	8.010 8.520 9.040	4.230 4.690 5.160	0.108 0.194 0.292
TA08025-B604	A	From Leg	4.000 0.000 0.000	0.000	119.000	No Ice 1/2" Ice 1" Ice	1.964 2.138 2.320	0.981 1.112 1.250	0.064 0.081 0.100
TA08025-B604	B	From Leg	4.000 0.000 0.000	0.000	119.000	No Ice 1/2" Ice 1" Ice	1.964 2.138 2.320	0.981 1.112 1.250	0.064 0.081 0.100
TA08025-B604	C	From Leg	4.000 0.000 0.000	0.000	119.000	No Ice 1/2" Ice 1" Ice	1.964 2.138 2.320	0.981 1.112 1.250	0.064 0.081 0.100
TA08025-B605	A	From Leg	4.000 0.000 0.000	0.000	119.000	No Ice 1/2" Ice 1" Ice	1.964 2.138 2.320	1.129 1.267 1.411	0.075 0.093 0.114
TA08025-B605	B	From Leg	4.000 0.000 0.000	0.000	119.000	No Ice 1/2" Ice 1" Ice	1.964 2.138 2.320	1.129 1.267 1.411	0.075 0.093 0.114
TA08025-B605	C	From Leg	4.000 0.000 0.000	0.000	119.000	No Ice 1/2" Ice 1" Ice	1.964 2.138 2.320	1.129 1.267 1.411	0.075 0.093 0.114
RDIDC-9181-PF-48	A	From Leg	4.000 0.000 0.000	0.000	119.000	No Ice 1/2" Ice 1" Ice	2.312 2.502 2.700	1.293 1.448 1.610	0.022 0.041 0.063
Commscope MC-PK8-DSH	C	None		0.000	119.000	No Ice 1/2" Ice 1" Ice	34.240 62.950 91.660	34.240 62.950 91.660	1.749 2.099 2.450
(2) 8' x 2" Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	119.000	No Ice 1/2" Ice 1" Ice	1.900 2.728 3.401	1.900 2.728 3.401	0.029 0.044 0.063
(2) 8' x 2" Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	119.000	No Ice 1/2" Ice 1" Ice	1.900 2.728 3.401	1.900 2.728 3.401	0.029 0.044 0.063
(2) 8' x 2" Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	119.000	No Ice 1/2" Ice 1" Ice	1.900 2.728 3.401	1.900 2.728 3.401	0.029 0.044 0.063
*									
KS24019-L112A	C	From Leg	3.000 0.000 0.000	0.000	74.000	No Ice 1/2" Ice 1" Ice	0.100 0.180 0.260	0.100 0.180 0.260	0.005 0.006 0.008

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Side Arm Mount [SO 701-1] ***	C	From Leg	2.000 0.000 0.000	0.000	74.000	No Ice 1/2" Ice 1" Ice	0.850 1.140 1.430	1.670 2.340 3.010	0.065 0.079 0.093

Load Combinations

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

Comb. No.	Description
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	155 - 150	Pole	Max Tension	26	0.000	-0.000	-0.000
			Max. Compression	26	-7.848	1.444	-0.826
			Max. Mx	20	-3.700	37.445	-0.413
			Max. My	14	-3.697	0.723	-37.083
			Max. Vy	20	-5.892	37.445	-0.413
			Max. Vx	14	5.893	0.723	-37.083
			Max. Torque	24			1.339
L2	150 - 145	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-8.269	1.460	-0.828
			Max. Mx	20	-3.965	67.633	-0.416
			Max. My	14	-3.962	0.736	-67.280
			Max. Vy	20	-6.187	67.633	-0.416
			Max. Vx	14	6.189	0.736	-67.280
			Max. Torque	24			1.339
L3	145 - 140	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-8.708	1.474	-0.828
			Max. Mx	20	-4.248	99.316	-0.417
			Max. My	14	-4.245	0.747	-98.974
			Max. Vy	20	-6.491	99.316	-0.417
			Max. Vx	14	6.493	0.747	-98.974
			Max. Torque	24			1.339
L4	140 - 135	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-15.362	1.198	-0.655
			Max. Mx	20	-7.341	156.269	-0.376
			Max. My	14	-7.335	0.690	-155.988
			Max. Vy	20	-11.352	156.269	-0.376
			Max. Vx	14	11.356	0.690	-155.988
			Max. Torque	24			1.338
L5	135 - 130	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-15.900	1.217	-0.651
			Max. Mx	20	-7.751	213.778	-0.375
			Max. My	14	-7.745	0.704	-213.516
			Max. Vy	20	-11.660	213.778	-0.375
			Max. Vx	2	-11.664	0.708	212.613
			Max. Torque	24			1.121
L6	130 - 123.21	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-24.254	1.230	0.129
			Max. Mx	20	-10.999	272.295	-0.049
			Max. My	14	-10.976	0.716	-272.174
			Max. Vy	20	-18.494	272.295	-0.049
			Max. Vx	2	-18.596	0.721	272.035
			Max. Torque	24			1.120
L7	123.21 - 121.79	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-25.283	1.255	0.137
			Max. Mx	20	-11.792	365.673	-0.047
			Max. My	14	-11.768	0.735	-366.062
			Max. Vy	20	-18.861	365.673	-0.047
			Max. Vx	2	-18.964	0.741	365.924
			Max. Torque	14			-0.965
L8	121.79 - 116.79	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-30.932	1.292	0.488
			Max. Mx	20	-15.329	467.557	0.065
			Max. My	2	-15.300	0.767	468.529
			Max. Vy	20	-22.265	467.557	0.065
			Max. Vx	2	-22.403	0.767	468.529
			Max. Torque	14			-0.965
L9	116.79 - 111.79	Pole	Max Tension	1	0.000	0.000	0.000

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	26	-31.737	1.347	0.514
			Max. Mx	20	-16.071	579.570	0.076
			Max. My	2	-16.043	0.801	581.225
			Max. Vy	20	-22.557	579.570	0.076
			Max. Vx	2	-22.695	0.801	581.225
			Max. Torque	14			-0.964
L10	111.79 - 106.79	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-32.568	1.401	0.539
			Max. Mx	20	-16.846	693.025	0.087
			Max. My	2	-16.820	0.834	695.363
			Max. Vy	20	-22.845	693.025	0.087
			Max. Vx	2	-22.982	0.834	695.363
			Max. Torque	14			-0.962
L11	106.79 - 101.79	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-33.424	1.454	0.565
			Max. Mx	20	-17.652	807.902	0.097
			Max. My	2	-17.627	0.865	810.922
			Max. Vy	20	-23.128	807.902	0.097
			Max. Vx	2	-23.266	0.865	810.922
			Max. Torque	14			-0.961
L12	101.79 - 97.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-34.203	1.499	0.587
			Max. Mx	20	-18.365	907.585	0.107
			Max. My	2	-18.341	0.891	911.191
			Max. Vy	20	-23.370	907.585	0.107
			Max. Vx	2	-23.507	0.891	911.191
			Max. Torque	14			-0.960
L13	97.5 - 97.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-34.252	1.503	0.588
			Max. Mx	20	-18.422	913.427	0.108
			Max. My	2	-18.399	0.892	917.066
			Max. Vy	20	-23.378	913.427	0.108
			Max. Vx	2	-23.509	0.892	917.066
			Max. Torque	14			-0.959
L14	97.25 - 92.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-35.237	1.553	0.613
			Max. Mx	20	-19.266	1030.969	0.119
			Max. My	2	-19.244	0.921	1035.291
			Max. Vy	20	-23.660	1030.969	0.119
			Max. Vx	2	-23.797	0.921	1035.291
			Max. Torque	14			-0.959
L15	92.25 - 82.58	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-36.205	1.587	0.633
			Max. Mx	20	-20.116	1146.055	0.130
			Max. My	2	-20.096	0.949	1151.035
			Max. Vy	20	-23.926	1146.055	0.130
			Max. Vx	2	-24.063	0.949	1151.035
			Max. Torque	14			-0.957
L16	82.58 - 81.58	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-38.239	1.629	0.657
			Max. Mx	20	-21.733	1286.855	0.144
			Max. My	2	-21.715	0.983	1292.628
			Max. Vy	20	-24.384	1286.855	0.144
			Max. Vx	2	-24.521	0.983	1292.628
			Max. Torque	14			-0.956
L17	81.58 - 76.58	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-39.349	1.666	0.678
			Max. Mx	20	-22.762	1409.461	0.156
			Max. My	2	-22.745	1.011	1415.915
			Max. Vy	20	-24.683	1409.461	0.156
			Max. Vx	2	-24.820	1.011	1415.915
			Max. Torque	14			-0.955

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L18	76.58 - 71.58	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-40.602	2.051	0.500
			Max. Mx	20	-23.898	1533.928	0.057
			Max. My	2	-23.881	1.317	1540.687
			Max. Vy	20	-25.026	1533.928	0.057
			Max. Vx	2	-25.178	1.317	1540.687
			Max. Torque	14			-1.139
L19	71.58 - 68	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-41.475	2.079	0.516
			Max. Mx	20	-24.667	1623.854	0.111
			Max. My	2	-24.651	1.382	1631.150
			Max. Vy	20	-25.240	1623.854	0.111
			Max. Vx	2	-25.391	1.382	1631.150
			Max. Torque	14			-1.139
L20	68 - 67.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-41.557	2.084	0.518
			Max. Mx	20	-24.754	1630.163	0.115
			Max. My	2	-24.738	1.386	1637.496
			Max. Vy	20	-25.249	1630.163	0.115
			Max. Vx	2	-25.393	1.386	1637.496
			Max. Torque	14			-1.138
L21	67.75 - 62.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-43.204	2.121	0.540
			Max. Mx	20	-26.153	1757.283	0.192
			Max. My	2	-26.139	1.477	1765.365
			Max. Vy	20	-25.614	1757.283	0.192
			Max. Vx	2	-25.765	1.477	1765.365
			Max. Torque	14			-1.138
L22	62.75 - 57.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-44.881	2.162	0.564
			Max. Mx	20	-27.587	1886.213	0.269
			Max. My	2	-27.573	1.569	1895.043
			Max. Vy	20	-25.974	1886.213	0.269
			Max. Vx	2	-26.125	1.569	1895.043
			Max. Torque	14			-1.138
L23	57.75 - 52.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-46.585	2.204	0.588
			Max. Mx	20	-29.048	2016.922	0.346
			Max. My	2	-29.036	1.660	2026.498
			Max. Vy	20	-26.326	2016.922	0.346
			Max. Vx	2	-26.477	1.660	2026.498
			Max. Torque	14			-1.137
L24	52.75 - 43.03	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-47.884	2.237	0.607
			Max. Mx	20	-30.171	2117.153	0.405
			Max. My	2	-30.160	1.730	2127.294
			Max. Vy	20	-26.586	2117.153	0.405
			Max. Vx	2	-26.737	1.730	2127.294
			Max. Torque	14			-1.137
L25	43.03 - 42.03	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-51.726	2.297	0.641
			Max. Mx	20	-33.382	2303.408	0.513
			Max. My	2	-33.372	1.858	2314.581
			Max. Vy	20	-27.163	2303.408	0.513
			Max. Vx	2	-27.313	1.858	2314.581
			Max. Torque	14			-1.136
L26	42.03 - 37.03	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-53.225	2.341	0.667
			Max. Mx	20	-34.751	2439.844	0.591
			Max. My	2	-34.741	1.949	2451.760
			Max. Vy	20	-27.438	2439.844	0.591
			Max. Vx	2	-27.588	1.949	2451.760

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Torque	14			-1.136
L27	37.03 - 32.03	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-54.755	2.385	0.693
			Max. Mx	20	-36.148	2577.624	0.669
			Max. My	2	-36.140	2.041	2590.281
			Max. Vy	20	-27.701	2577.624	0.669
			Max. Vx	2	-27.850	2.041	2590.281
			Max. Torque	14			-1.136
L28	32.03 - 27.03	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-56.318	2.431	0.719
			Max. Mx	20	-37.576	2716.689	0.748
			Max. My	2	-37.569	2.132	2730.082
			Max. Vy	20	-27.951	2716.689	0.748
			Max. Vx	2	-28.100	2.132	2730.082
			Max. Torque	14			-1.135
L29	27.03 - 22.03	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-57.911	2.477	0.746
			Max. Mx	20	-39.032	2857.013	0.827
			Max. My	2	-39.026	2.223	2871.140
			Max. Vy	20	-28.205	2857.013	0.827
			Max. Vx	2	-28.353	2.223	2871.140
			Max. Torque	14			-1.135
L30	22.03 - 17.03	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-59.534	2.524	0.773
			Max. Mx	20	-40.516	2998.613	0.906
			Max. My	2	-40.512	2.313	3013.469
			Max. Vy	20	-28.461	2998.613	0.906
			Max. Vx	2	-28.609	2.313	3013.469
			Max. Torque	14			-1.135
L31	17.03 - 12.03	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-61.184	2.571	0.800
			Max. Mx	20	-42.030	3141.504	0.985
			Max. My	2	-42.027	2.404	3157.085
			Max. Vy	20	-28.721	3141.504	0.985
			Max. Vx	2	-28.868	2.404	3157.085
			Max. Torque	14			-1.135
L32	12.03 - 7.03	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-62.859	2.618	0.827
			Max. Mx	20	-43.573	3285.702	1.064
			Max. My	2	-43.571	2.494	3302.004
			Max. Vy	20	-28.984	3285.702	1.064
			Max. Vx	2	-29.130	2.494	3302.004
			Max. Torque	14			-1.134
L33	7.03 - 2.03	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-64.550	2.664	0.853
			Max. Mx	20	-45.145	3431.221	1.143
			Max. My	2	-45.144	2.584	3448.240
			Max. Vy	20	-29.250	3431.221	1.143
			Max. Vx	2	-29.395	2.584	3448.240
			Max. Torque	14			-1.134
L34	2.03 - 0	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-65.233	2.681	0.864
			Max. Mx	20	-45.791	3490.684	1.176
			Max. My	2	-45.791	2.620	3507.992
			Max. Vy	20	-29.359	3490.684	1.176
			Max. Vx	2	-29.504	2.620	3507.992
			Max. Torque	14			-1.134

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	26	65.233	0.000	0.000
	Max. H_x	20	45.803	29.341	0.013
	Max. H_z	3	34.352	0.013	29.485
	Max. M_x	2	3507.992	0.013	29.485
	Max. M_z	8	3487.360	-29.341	-0.013
	Max. Torsion	2	1.134	0.013	29.485
	Min. Vert	19	34.352	25.403	-14.732
	Min. H_x	8	45.803	-29.341	-0.013
	Min. H_z	15	34.352	-0.013	-29.485
	Min. M_x	14	-3507.578	-0.013	-29.485
	Min. M_z	20	-3490.684	29.341	0.013
	Min. Torsion	14	-1.134	-0.013	-29.485

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	38.169	-0.000	0.000	-0.169	1.301	-0.000
1.2 Dead+1.0 Wind 0 deg - No Ice	45.803	-0.013	-29.485	-3507.992	2.620	-1.134
0.9 Dead+1.0 Wind 0 deg - No Ice	34.352	-0.013	-29.485	-3453.887	2.169	-1.106
1.2 Dead+1.0 Wind 30 deg - No Ice	45.803	14.659	-25.529	-3037.576	-1741.981	-0.976
0.9 Dead+1.0 Wind 30 deg - No Ice	34.352	14.659	-25.529	-2990.717	-1715.546	-0.958
1.2 Dead+1.0 Wind 60 deg - No Ice	45.803	25.403	-14.732	-1753.301	-3019.421	-0.555
0.9 Dead+1.0 Wind 60 deg - No Ice	34.352	25.403	-14.732	-1726.227	-2973.299	-0.552
1.2 Dead+1.0 Wind 90 deg - No Ice	45.803	29.341	0.013	0.759	-3487.360	0.017
0.9 Dead+1.0 Wind 90 deg - No Ice	34.352	29.341	0.013	0.804	-3434.033	0.004
1.2 Dead+1.0 Wind 120 deg - No Ice	45.803	25.416	14.754	1754.558	-3020.386	0.584
0.9 Dead+1.0 Wind 120 deg - No Ice	34.352	25.416	14.754	1727.576	-2974.255	0.559
1.2 Dead+1.0 Wind 150 deg - No Ice	45.803	14.681	25.541	3038.125	-1743.655	0.993
0.9 Dead+1.0 Wind 150 deg - No Ice	34.352	14.681	25.541	2991.363	-1717.206	0.963
1.2 Dead+1.0 Wind 180 deg - No Ice	45.803	0.013	29.485	3507.578	0.686	1.134
0.9 Dead+1.0 Wind 180 deg - No Ice	34.352	0.013	29.485	3453.578	0.251	1.107
1.2 Dead+1.0 Wind 210 deg - No Ice	45.803	-14.659	25.529	3037.169	1745.292	0.971
0.9 Dead+1.0 Wind 210 deg - No Ice	34.352	-14.659	25.529	2990.412	1717.970	0.954
1.2 Dead+1.0 Wind 240 deg - No Ice	45.803	-25.403	14.732	1752.892	3022.741	0.550
0.9 Dead+1.0 Wind 240 deg - No Ice	34.352	-25.403	14.732	1725.922	2975.729	0.547
1.2 Dead+1.0 Wind 270 deg - No Ice	45.803	-29.341	-0.013	-1.176	3490.684	-0.017
0.9 Dead+1.0 Wind 270 deg - No Ice	34.352	-29.341	-0.013	-1.114	3436.465	-0.005
1.2 Dead+1.0 Wind 300 deg - No Ice	45.803	-25.416	-14.754	-1754.981	3023.703	-0.580
0.9 Dead+1.0 Wind 300 deg - No Ice	34.352	-25.416	-14.754	-1727.891	2976.684	-0.555
1.2 Dead+1.0 Wind 330 deg - No Ice	45.803	-14.681	-25.541	-3038.547	1746.964	-0.988

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
0.9 Dead+1.0 Wind 330 deg - No Ice	34.352	-14.681	-25.541	-2991.677	1719.628	-0.958
1.2 Dead+1.0 Ice+1.0 Temp	65.233	-0.000	-0.000	-0.864	2.681	-0.000
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	65.233	-0.004	-7.188	-861.371	3.140	-0.341
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	65.233	3.578	-6.223	-745.945	-425.426	-0.262
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	65.233	6.201	-3.591	-430.889	-739.237	-0.112
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	65.233	7.162	0.004	-0.621	-854.208	0.067
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	65.233	6.204	3.597	429.569	-739.532	0.229
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	65.233	3.584	6.227	744.411	-425.935	0.329
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	65.233	0.004	7.188	859.545	2.553	0.341
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	65.233	-3.578	6.223	744.120	431.122	0.261
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	65.233	-6.201	3.591	429.062	744.935	0.112
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	65.233	-7.162	-0.004	-1.208	859.905	-0.068
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	65.233	-6.204	-3.597	-431.398	745.227	-0.229
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	65.233	-3.584	-6.227	-746.240	431.629	-0.329
Dead+Wind 0 deg - Service	38.169	-0.003	-6.401	-756.043	1.587	-0.242
Dead+Wind 30 deg - Service	38.169	3.182	-5.542	-654.672	-374.344	-0.210
Dead+Wind 60 deg - Service	38.169	5.515	-3.198	-377.928	-649.600	-0.122
Dead+Wind 90 deg - Service	38.169	6.370	0.003	0.034	-750.428	-0.002
Dead+Wind 120 deg - Service	38.169	5.518	3.203	377.940	-649.809	0.120
Dead+Wind 150 deg - Service	38.169	3.187	5.545	654.530	-374.706	0.209
Dead+Wind 180 deg - Service	38.169	0.003	6.401	755.693	1.169	0.242
Dead+Wind 210 deg - Service	38.169	-3.182	5.542	654.322	377.100	0.210
Dead+Wind 240 deg - Service	38.169	-5.515	3.198	377.579	652.357	0.122
Dead+Wind 270 deg - Service	38.169	-6.370	-0.003	-0.384	753.184	0.001
Dead+Wind 300 deg - Service	38.169	-5.518	-3.203	-378.290	652.565	-0.120
Dead+Wind 330 deg - Service	38.169	-3.187	-5.545	-654.881	377.461	-0.209

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	K	K	K	K	K	K	
1	0.000	-38.169	0.000	0.000	38.169	0.000	0.000%
2	-0.013	-45.803	-29.485	0.013	45.803	29.485	0.000%
3	-0.013	-34.352	-29.485	0.013	34.352	29.485	0.000%
4	14.659	-45.803	-25.529	-14.659	45.803	25.529	0.000%
5	14.659	-34.352	-25.529	-14.659	34.352	25.529	0.000%
6	25.403	-45.803	-14.732	-25.403	45.803	14.732	0.000%
7	25.403	-34.352	-14.732	-25.403	34.352	14.732	0.000%
8	29.341	-45.803	0.013	-29.341	45.803	-0.013	0.000%
9	29.341	-34.352	0.013	-29.341	34.352	-0.013	0.000%
10	25.416	-45.803	14.754	-25.416	45.803	-14.754	0.000%
11	25.416	-34.352	14.754	-25.416	34.352	-14.754	0.000%
12	14.681	-45.803	25.541	-14.681	45.803	-25.541	0.000%
13	14.681	-34.352	25.541	-14.681	34.352	-25.541	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
14	0.013	-45.803	29.485	-0.013	45.803	-29.485	0.000%
15	0.013	-34.352	29.485	-0.013	34.352	-29.485	0.000%
16	-14.659	-45.803	25.529	14.659	45.803	-25.529	0.000%
17	-14.659	-34.352	25.529	14.659	34.352	-25.529	0.000%
18	-25.403	-45.803	14.732	25.403	45.803	-14.732	0.000%
19	-25.403	-34.352	14.732	25.403	34.352	-14.732	0.000%
20	-29.341	-45.803	-0.013	29.341	45.803	0.013	0.000%
21	-29.341	-34.352	-0.013	29.341	34.352	0.013	0.000%
22	-25.416	-45.803	-14.754	25.416	45.803	14.754	0.000%
23	-25.416	-34.352	-14.754	25.416	34.352	14.754	0.000%
24	-14.681	-45.803	-25.541	14.681	45.803	25.541	0.000%
25	-14.681	-34.352	-25.541	14.681	34.352	25.541	0.000%
26	0.000	-65.233	0.000	0.000	65.233	0.000	0.000%
27	-0.004	-65.233	-7.188	0.004	65.233	7.188	0.000%
28	3.578	-65.233	-6.223	-3.578	65.233	6.223	0.000%
29	6.201	-65.233	-3.591	-6.201	65.233	3.591	0.000%
30	7.162	-65.233	0.004	-7.162	65.233	-0.004	0.000%
31	6.204	-65.233	3.597	-6.204	65.233	-3.597	0.000%
32	3.584	-65.233	6.227	-3.584	65.233	-6.227	0.000%
33	0.004	-65.233	7.188	-0.004	65.233	-7.188	0.000%
34	-3.578	-65.233	6.223	3.578	65.233	-6.223	0.000%
35	-6.201	-65.233	3.591	6.201	65.233	-3.591	0.000%
36	-7.162	-65.233	-0.004	7.162	65.233	0.004	0.000%
37	-6.204	-65.233	-3.597	6.204	65.233	3.597	0.000%
38	-3.584	-65.233	-6.227	3.584	65.233	6.227	0.000%
39	-0.003	-38.169	-6.401	0.003	38.169	6.401	0.000%
40	3.182	-38.169	-5.542	-3.182	38.169	5.542	0.000%
41	5.515	-38.169	-3.198	-5.515	38.169	3.198	0.000%
42	6.370	-38.169	0.003	-6.370	38.169	-0.003	0.000%
43	5.518	-38.169	3.203	-5.518	38.169	-3.203	0.000%
44	3.187	-38.169	5.545	-3.187	38.169	-5.545	0.000%
45	0.003	-38.169	6.401	-0.003	38.169	-6.401	0.000%
46	-3.182	-38.169	5.542	3.182	38.169	-5.542	0.000%
47	-5.515	-38.169	3.198	5.515	38.169	-3.198	0.000%
48	-6.370	-38.169	-0.003	6.370	38.169	0.003	0.000%
49	-5.518	-38.169	-3.203	5.518	38.169	3.203	0.000%
50	-3.187	-38.169	-5.545	3.187	38.169	5.545	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000344
2	Yes	6	0.00000001	0.00007856
3	Yes	5	0.00000001	0.00047284
4	Yes	7	0.00000001	0.00018584
5	Yes	6	0.00000001	0.00081925
6	Yes	7	0.00000001	0.00019010
7	Yes	6	0.00000001	0.00083917
8	Yes	5	0.00000001	0.00035810
9	Yes	5	0.00000001	0.00012321
10	Yes	7	0.00000001	0.00019023
11	Yes	6	0.00000001	0.00083935
12	Yes	7	0.00000001	0.00018599
13	Yes	6	0.00000001	0.00081996
14	Yes	6	0.00000001	0.00007596
15	Yes	5	0.00000001	0.00045627
16	Yes	7	0.00000001	0.00019174
17	Yes	6	0.00000001	0.00084570
18	Yes	7	0.00000001	0.00018737
19	Yes	6	0.00000001	0.00082599
20	Yes	5	0.00000001	0.00035950
21	Yes	5	0.00000001	0.00012456
22	Yes	7	0.00000001	0.00018741
23	Yes	6	0.00000001	0.00082643

24	Yes	7	0.00000001	0.00019176
25	Yes	6	0.00000001	0.00084561
26	Yes	4	0.00000001	0.00025613
27	Yes	7	0.00000001	0.00014117
28	Yes	7	0.00000001	0.00018505
29	Yes	7	0.00000001	0.00018590
30	Yes	7	0.00000001	0.00013951
31	Yes	7	0.00000001	0.00018575
32	Yes	7	0.00000001	0.00018452
33	Yes	7	0.00000001	0.00014082
34	Yes	7	0.00000001	0.00018830
35	Yes	7	0.00000001	0.00018693
36	Yes	7	0.00000001	0.00014115
37	Yes	7	0.00000001	0.00018735
38	Yes	7	0.00000001	0.00018911
39	Yes	5	0.00000001	0.00009461
40	Yes	5	0.00000001	0.00056395
41	Yes	5	0.00000001	0.00059404
42	Yes	5	0.00000001	0.00007714
43	Yes	5	0.00000001	0.00059318
44	Yes	5	0.00000001	0.00056478
45	Yes	5	0.00000001	0.00009435
46	Yes	5	0.00000001	0.00061106
47	Yes	5	0.00000001	0.00057722
48	Yes	5	0.00000001	0.00007766
49	Yes	5	0.00000001	0.00057896
50	Yes	5	0.00000001	0.00061113

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	155 - 150	30.814	46	1.948	0.006
L2	150 - 145	28.787	50	1.931	0.005
L3	145 - 140	26.785	50	1.901	0.004
L4	140 - 135	24.819	50	1.860	0.003
L5	135 - 130	22.900	50	1.806	0.003
L6	130 - 123.21	21.043	50	1.740	0.002
L7	126.79 - 121.79	19.889	50	1.691	0.002
L8	121.79 - 116.79	18.141	50	1.641	0.002
L9	116.79 - 111.79	16.465	39	1.560	0.002
L10	111.79 - 106.79	14.878	39	1.471	0.001
L11	106.79 - 101.79	13.387	39	1.376	0.001
L12	101.79 - 97.5	11.997	39	1.278	0.001
L13	97.5 - 97.25	10.888	39	1.192	0.001
L14	97.25 - 92.25	10.825	39	1.187	0.001
L15	92.25 - 82.58	9.635	39	1.087	0.001
L16	87.41 - 81.58	8.583	39	0.989	0.001
L17	81.58 - 76.58	7.409	39	0.928	0.001
L18	76.58 - 71.58	6.481	39	0.844	0.001
L19	71.58 - 68	5.640	39	0.763	0.000
L20	68 - 67.75	5.090	39	0.705	0.000
L21	67.75 - 62.75	5.053	39	0.702	0.000
L22	62.75 - 57.75	4.345	39	0.650	0.000
L23	57.75 - 52.75	3.691	39	0.598	0.000
L24	52.75 - 43.03	3.092	39	0.547	0.000
L25	48.96 - 42.03	2.673	39	0.509	0.000
L26	42.03 - 37.03	1.963	39	0.464	0.000
L27	37.03 - 32.03	1.509	39	0.403	0.000
L28	32.03 - 27.03	1.118	39	0.343	0.000
L29	27.03 - 22.03	0.789	39	0.286	0.000
L30	22.03 - 17.03	0.519	39	0.230	0.000
L31	17.03 - 12.03	0.307	39	0.175	0.000
L32	12.03 - 7.03	0.152	39	0.122	0.000
L33	7.03 - 2.03	0.051	39	0.070	0.000
L34	2.03 - 0	0.004	39	0.020	0.000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
164.000	Lighting Rod 1/2" x 2'	46	30.814	1.948	0.006	11826
159.000	Miscellaneous [NA 507-1]	46	30.814	1.948	0.006	11826
155.000	AIR6449 B41_T-MOBILE w/ Mount Pipe	46	30.814	1.948	0.006	11826
139.000	HPA-65R-BUU-H8 w/ Mount Pipe	50	24.431	1.850	0.003	5836
128.000	(2) LPA-80063/6CF w/ Mount Pipe	50	20.321	1.708	0.002	4588
119.000	MX08FRO665-21 w/ Mount Pipe	50	17.196	1.599	0.002	3630
74.000	KS24019-L112A	39	6.036	0.803	0.001	3456

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	155 - 150	142.864	14	9.019	0.027
L2	150 - 145	133.487	14	8.951	0.022
L3	145 - 140	124.222	2	8.816	0.018
L4	140 - 135	115.122	2	8.632	0.015
L5	135 - 130	106.238	2	8.388	0.012
L6	130 - 123.21	97.640	2	8.082	0.010
L7	126.79 - 121.79	92.298	2	7.855	0.009
L8	121.79 - 116.79	84.199	2	7.624	0.008
L9	116.79 - 111.79	76.430	2	7.248	0.007
L10	111.79 - 106.79	69.071	2	6.836	0.006
L11	106.79 - 101.79	62.156	2	6.397	0.006
L12	101.79 - 97.5	55.707	2	5.941	0.005
L13	97.5 - 97.25	50.557	2	5.543	0.004
L14	97.25 - 92.25	50.267	2	5.519	0.004
L15	92.25 - 82.58	44.741	2	5.050	0.004
L16	87.41 - 81.58	39.858	2	4.596	0.003
L17	81.58 - 76.58	34.406	2	4.311	0.003
L18	76.58 - 71.58	30.098	2	3.925	0.003
L19	71.58 - 68	26.190	2	3.544	0.002
L20	68 - 67.75	23.635	2	3.276	0.002
L21	67.75 - 62.75	23.464	2	3.264	0.002
L22	62.75 - 57.75	20.176	2	3.020	0.002
L23	57.75 - 52.75	17.141	2	2.781	0.002
L24	52.75 - 43.03	14.356	2	2.541	0.001
L25	48.96 - 42.03	12.410	2	2.363	0.001
L26	42.03 - 37.03	9.112	2	2.154	0.001
L27	37.03 - 32.03	7.006	2	1.871	0.001
L28	32.03 - 27.03	5.192	2	1.595	0.001
L29	27.03 - 22.03	3.663	2	1.327	0.001
L30	22.03 - 17.03	2.411	2	1.066	0.000
L31	17.03 - 12.03	1.427	2	0.813	0.000
L32	12.03 - 7.03	0.706	2	0.566	0.000
L33	7.03 - 2.03	0.239	2	0.326	0.000
L34	2.03 - 0	0.020	2	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
164.000	Lighting Rod 1/2" x 2'	14	142.864	9.019	0.027	2885
159.000	Miscellaneous [NA 507-1]	14	142.864	9.019	0.027	2885
155.000	AIR6449 B41_T-MOBILE w/ Mount Pipe	14	142.864	9.019	0.027	2885
139.000	HPA-65R-BUU-H8 w/ Mount Pipe	2	113.326	8.588	0.014	1343
128.000	(2) LPA-80063/6CF w/ Mount Pipe	2	94.297	7.934	0.010	1034
119.000	MX08FRO665-21 w/ Mount Pipe	2	79.817	7.431	0.008	809
74.000	KS24019-L112A	2	28.031	3.730	0.002	749

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	155 - 150 (1)	TP19.036x18x0.188	5.000	0.000	0.0	11.217	-3.699	656.224	0.006
L2	150 - 145 (2)	TP20.073x19.036x0.188	5.000	0.000	0.0	11.834	-3.964	692.309	0.006
L3	145 - 140 (3)	TP21.109x20.073x0.188	5.000	0.000	0.0	12.451	-4.247	728.394	0.006
L4	140 - 135 (4)	TP22.146x21.109x0.188	5.000	0.000	0.0	13.068	-7.339	764.480	0.010
L5	135 - 130 (5)	TP23.182x22.146x0.188	5.000	0.000	0.0	13.685	-7.749	800.565	0.010
L6	130 - 123.21 (6)	TP24.59x23.182x0.188	6.790	0.000	0.0	14.081	-10.981	823.732	0.013
L7	123.21 - 121.79 (7)	TP24.671x23.473x0.25	5.000	0.000	0.0	19.378	-11.774	1133.630	0.010
L8	121.79 - 116.79 (8)	TP25.87x24.671x0.25	5.000	0.000	0.0	20.329	-15.300	1189.270	0.013
L9	116.79 - 111.79 (9)	TP27.068x25.87x0.25	5.000	0.000	0.0	21.280	-16.043	1244.900	0.013
L10	111.79 - 106.79 (10)	TP28.267x27.068x0.25	5.000	0.000	0.0	22.231	-16.820	1300.540	0.013
L11	106.79 - 101.79 (11)	TP29.465x28.267x0.25	5.000	0.000	0.0	23.182	-17.627	1356.170	0.013
L12	101.79 - 97.5 (12)	TP30.494x29.465x0.25	4.290	0.000	0.0	23.998	-18.341	1403.900	0.013
L13	97.5 - 97.25 (13)	TP30.554x30.494x0.25	0.250	0.000	0.0	24.046	-18.399	1406.690	0.013
L14	97.25 - 92.25 (14)	TP31.752x30.554x0.25	5.000	0.000	0.0	24.997	-19.244	1462.320	0.013
L15	92.25 - 82.58 (15)	TP34.07x31.752x0.25	9.670	0.000	0.0	25.917	-20.096	1516.170	0.013
L16	82.58 - 81.58 (16)	TP33.825x32.412x0.313	5.830	0.000	0.0	33.241	-21.715	1944.580	0.011
L17	81.58 - 76.58 (17)	TP35.037x33.825x0.313	5.000	0.000	0.0	34.443	-22.744	2014.900	0.011
L18	76.58 - 71.58 (18)	TP36.249x35.037x0.313	5.000	0.000	0.0	35.645	-23.882	2085.230	0.011
L19	71.58 - 68 (19)	TP37.117x36.249x0.313	3.580	0.000	0.0	36.506	-24.651	2135.580	0.012
L20	68 - 67.75 (20)	TP37.178x37.117x0.488	0.250	0.000	0.0	56.772	-24.738	3321.160	0.007
L21	67.75 - 62.75 (21)	TP38.39x37.178x0.475	5.000	0.000	0.0	57.162	-26.139	3344.000	0.008
L22	62.75 - 57.75 (22)	TP39.602x38.39x0.475	5.000	0.000	0.0	58.990	-27.573	3450.890	0.008
L23	57.75 - 52.75 (23)	TP40.814x39.602x0.463	5.000	0.000	0.0	59.235	-29.036	3465.240	0.008
L24	52.75 - 43.03 (24)	TP43.17x40.814x0.463	9.720	0.000	0.0	60.583	-30.160	3544.130	0.009
L25	43.03 - 42.03	TP42.791x41.108x0.375	6.930	0.000	0.0	50.486	-33.372	2953.400	0.011

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
	(25)								
L26	42.03 - 37.03 (26)	TP44.005x42.791x0.375	5.000	0.000	0.0	51.931	-34.741	3037.970	0.011
L27	37.03 - 32.03 (27)	TP45.22x44.005x0.375	5.000	0.000	0.0	53.377	-36.141	3122.530	0.012
L28	32.03 - 27.03 (28)	TP46.434x45.22x0.375	5.000	0.000	0.0	54.822	-37.569	3207.100	0.012
L29	27.03 - 22.03 (29)	TP47.649x46.434x0.375	5.000	0.000	0.0	56.268	-39.026	3291.660	0.012
L30	22.03 - 17.03 (30)	TP48.863x47.649x0.375	5.000	0.000	0.0	57.713	-40.512	3376.230	0.012
L31	17.03 - 12.03 (31)	TP50.078x48.863x0.375	5.000	0.000	0.0	59.159	-42.027	3460.790	0.012
L32	12.03 - 7.03 (32)	TP51.292x50.078x0.375	5.000	0.000	0.0	60.604	-43.571	3545.360	0.012
L33	7.03 - 2.03 (33)	TP52.507x51.292x0.375	5.000	0.000	0.0	62.050	-45.144	3629.930	0.012
L34	2.03 - 0 (34)	TP53x52.507x0.375	2.030	0.000	0.0	62.637	-45.791	3664.260	0.012

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	155 - 150 (1)	TP19.036x18x0.188	37.584	317.939	0.118	0.000	317.939	0.000
L2	150 - 145 (2)	TP20.073x19.036x0.188	67.775	349.072	0.194	0.000	349.072	0.000
L3	145 - 140 (3)	TP21.109x20.073x0.188	99.461	381.078	0.261	0.000	381.078	0.000
L4	140 - 135 (4)	TP22.146x21.109x0.188	156.403	413.875	0.378	0.000	413.875	0.000
L5	135 - 130 (5)	TP23.182x22.146x0.188	213.917	447.380	0.478	0.000	447.380	0.000
L6	130 - 123.21 (6)	TP24.59x23.182x0.188	272.412	469.225	0.581	0.000	469.225	0.000
L7	123.21 - 121.79 (7)	TP24.671x23.473x0.25	366.173	716.555	0.511	0.000	716.555	0.000
L8	121.79 - 116.79 (8)	TP25.87x24.671x0.25	468.529	779.438	0.601	0.000	779.438	0.000
L9	116.79 - 111.79 (9)	TP27.068x25.87x0.25	581.225	843.967	0.689	0.000	843.967	0.000
L10	111.79 - 106.79 (10)	TP28.267x27.068x0.25	695.363	910.025	0.764	0.000	910.025	0.000
L11	106.79 - 101.79 (11)	TP29.465x28.267x0.25	810.923	977.475	0.830	0.000	977.475	0.000
L12	101.79 - 97.5 (12)	TP30.494x29.465x0.25	911.192	1036.367	0.879	0.000	1036.367	0.000
L13	97.5 - 97.25 (13)	TP30.554x30.494x0.25	917.067	1039.825	0.882	0.000	1039.825	0.000
L14	97.25 - 92.25 (14)	TP31.752x30.554x0.25	1035.292	1109.592	0.933	0.000	1109.592	0.000
L15	92.25 - 82.58 (15)	TP34.07x31.752x0.25	1151.033	1178.108	0.977	0.000	1178.108	0.000
L16	82.58 - 81.58 (16)	TP33.825x32.412x0.313	1292.625	1647.525	0.785	0.000	1647.525	0.000
L17	81.58 - 76.58 (17)	TP35.037x33.825x0.313	1415.917	1751.667	0.808	0.000	1751.667	0.000
L18	76.58 - 71.58 (18)	TP36.249x35.037x0.313	1540.667	1857.625	0.829	0.000	1857.625	0.000
L19	71.58 - 68 (19)	TP37.117x36.249x0.313	1631.117	1934.533	0.843	0.000	1934.533	0.000
L20	68 - 67.75 (20)	TP37.178x37.117x0.488	1637.500	3165.225	0.517	0.000	3165.225	0.000
L21	67.75 - 62.75 (21)	TP38.39x37.178x0.475	1765.367	3295.825	0.536	0.000	3295.825	0.000
L22	62.75 - 57.75 (22)	TP39.602x38.39x0.475	1895.042	3511.250	0.540	0.000	3511.250	0.000
L23	57.75 - 52.75 (23)	TP40.814x39.602x0.463	2026.500	3638.625	0.557	0.000	3638.625	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 $\frac{M_{uy}}{\phi M_{ny}}$
L24	52.75 - 43.03 (24)	TP43.17x40.814x0.463	2127.292	3807.158	0.559	0.000	3807.158	0.000
L25	43.03 - 42.03 (25)	TP42.791x41.108x0.375	2314.583	3120.408	0.742	0.000	3120.408	0.000
L26	42.03 - 37.03 (26)	TP44.005x42.791x0.375	2451.758	3274.375	0.749	0.000	3274.375	0.000
L27	37.03 - 32.03 (27)	TP45.22x44.005x0.375	2590.283	3430.325	0.755	0.000	3430.325	0.000
L28	32.03 - 27.03 (28)	TP46.434x45.22x0.375	2730.083	3588.108	0.761	0.000	3588.108	0.000
L29	27.03 - 22.03 (29)	TP47.649x46.434x0.375	2871.142	3747.617	0.766	0.000	3747.617	0.000
L30	22.03 - 17.03 (30)	TP48.863x47.649x0.375	3013.467	3908.700	0.771	0.000	3908.700	0.000
L31	17.03 - 12.03 (31)	TP50.078x48.863x0.375	3157.083	4071.233	0.775	0.000	4071.233	0.000
L32	12.03 - 7.03 (32)	TP51.292x50.078x0.375	3302.008	4235.083	0.780	0.000	4235.083	0.000
L33	7.03 - 2.03 (33)	TP52.507x51.292x0.375	3448.242	4400.125	0.784	0.000	4400.125	0.000
L34	2.03 - 0 (34)	TP53x52.507x0.375	3507.992	4467.442	0.785	0.000	4467.442	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	155 - 150 (1)	TP19.036x18x0.188	5.892	196.867	0.030	0.002	324.968	0.000
L2	150 - 145 (2)	TP20.073x19.036x0.188	6.188	207.693	0.030	0.002	361.691	0.000
L3	145 - 140 (3)	TP21.109x20.073x0.188	6.491	218.518	0.030	0.002	400.378	0.000
L4	140 - 135 (4)	TP22.146x21.109x0.188	11.353	229.344	0.050	0.003	441.031	0.000
L5	135 - 130 (5)	TP23.182x22.146x0.188	11.661	240.169	0.049	0.003	483.649	0.000
L6	130 - 123.21 (6)	TP24.59x23.182x0.188	18.570	247.119	0.075	0.773	512.046	0.002
L7	123.21 - 121.79 (7)	TP24.671x23.473x0.25	18.938	340.090	0.056	0.772	727.352	0.001
L8	121.79 - 116.79 (8)	TP25.87x24.671x0.25	22.403	356.780	0.063	0.963	800.494	0.001
L9	116.79 - 111.79 (9)	TP27.068x25.87x0.25	22.695	373.471	0.061	0.962	877.142	0.001
L10	111.79 - 106.79 (10)	TP28.267x27.068x0.25	22.982	390.161	0.059	0.961	957.292	0.001
L11	106.79 - 101.79 (11)	TP29.465x28.267x0.25	23.265	406.851	0.057	0.960	1040.942	0.001
L12	101.79 - 97.5 (12)	TP30.494x29.465x0.25	23.507	421.171	0.056	0.958	1115.508	0.001
L13	97.5 - 97.25 (13)	TP30.554x30.494x0.25	23.509	422.006	0.056	0.958	1119.933	0.001
L14	97.25 - 92.25 (14)	TP31.752x30.554x0.25	23.797	438.696	0.054	0.957	1210.275	0.001
L15	92.25 - 82.58 (15)	TP34.07x31.752x0.25	24.063	454.852	0.053	0.956	1301.058	0.001
L16	82.58 - 81.58 (16)	TP33.825x32.412x0.313	24.521	583.374	0.042	0.955	1712.142	0.001
L17	81.58 - 76.58 (17)	TP35.037x33.825x0.313	24.820	604.471	0.041	0.954	1838.217	0.001
L18	76.58 - 71.58 (18)	TP36.249x35.037x0.313	25.178	621.350	0.041	1.139	1968.775	0.001
L19	71.58 - 68 (19)	TP37.117x36.249x0.313	25.391	635.640	0.040	1.138	2065.008	0.001
L20	68 - 67.75 (20)	TP37.178x37.117x0.488	25.393	996.347	0.025	1.138	3201.417	0.000
L21	67.75 - 62.75 (21)	TP38.39x37.178x0.475	25.765	1003.200	0.026	1.137	3331.017	0.000
L22	62.75 - 57.75	TP39.602x38.39x0.475	26.125	1035.270	0.025	1.137	3547.383	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 $\frac{T_u}{\phi T_n}$
L23	57.75 - 52.75 (22)	TP40.814x39.602x0.463	26.477	1039.570	0.025	1.136	3673.600	0.000
L24	52.75 - 43.03 (23)	TP43.17x40.814x0.463	26.737	1063.240	0.025	1.136	3842.783	0.000
L25	43.03 - 42.03 (24)	TP42.791x41.108x0.375	27.313	886.020	0.031	1.136	3291.183	0.000
L26	42.03 - 37.03 (25)	TP44.005x42.791x0.375	27.587	911.390	0.030	1.135	3482.358	0.000
L27	37.03 - 32.03 (26)	TP45.22x44.005x0.375	27.850	936.760	0.030	1.135	3678.925	0.000
L28	32.03 - 27.03 (27)	TP46.434x45.22x0.375	28.100	962.129	0.029	1.135	3880.892	0.000
L29	27.03 - 22.03 (28)	TP47.649x46.434x0.375	28.353	987.499	0.029	1.134	4088.258	0.000
L30	22.03 - 17.03 (29)	TP48.863x47.649x0.375	28.609	1012.870	0.028	1.134	4301.017	0.000
L31	17.03 - 12.03 (30)	TP50.078x48.863x0.375	28.868	1038.240	0.028	1.134	4519.175	0.000
L32	12.03 - 7.03 (31)	TP51.292x50.078x0.375	29.130	1063.610	0.027	1.134	4742.725	0.000
L33	7.03 - 2.03 (32)	TP52.507x51.292x0.375	29.395	1088.980	0.027	1.134	4971.675	0.000
L34	2.03 - 0 (33)	TP53x52.507x0.375	29.504	1099.280	0.027	1.134	5066.167	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	155 - 150 (1)	0.006	0.118	0.000	0.030	0.000	0.125	1.050	4.8.2
L2	150 - 145 (2)	0.006	0.194	0.000	0.030	0.000	0.201	1.050	4.8.2
L3	145 - 140 (3)	0.006	0.261	0.000	0.030	0.000	0.268	1.050	4.8.2
L4	140 - 135 (4)	0.010	0.378	0.000	0.050	0.000	0.390	1.050	4.8.2
L5	135 - 130 (5)	0.010	0.478	0.000	0.049	0.000	0.490	1.050	4.8.2
L6	130 - 123.21 (6)	0.013	0.581	0.000	0.075	0.002	0.600	1.050	4.8.2
L7	123.21 - 121.79 (7)	0.010	0.511	0.000	0.056	0.001	0.525	1.050	4.8.2
L8	121.79 - 116.79 (8)	0.013	0.601	0.000	0.063	0.001	0.618	1.050	4.8.2
L9	116.79 - 111.79 (9)	0.013	0.689	0.000	0.061	0.001	0.705	1.050	4.8.2
L10	111.79 - 106.79 (10)	0.013	0.764	0.000	0.059	0.001	0.781	1.050	4.8.2
L11	106.79 - 101.79 (11)	0.013	0.830	0.000	0.057	0.001	0.846	1.050	4.8.2
L12	101.79 - 97.5 (12)	0.013	0.879	0.000	0.056	0.001	0.895	1.050	4.8.2
L13	97.5 - 97.25 (13)	0.013	0.882	0.000	0.056	0.001	0.898	1.050	4.8.2
L14	97.25 - 92.25 (14)	0.013	0.933	0.000	0.054	0.001	0.949	1.050	4.8.2
L15	92.25 - 82.58 (15)	0.013	0.977	0.000	0.053	0.001	0.993	1.050	4.8.2
L16	82.58 - 81.58 (16)	0.011	0.785	0.000	0.042	0.001	0.798	1.050	4.8.2
L17	81.58 - 76.58 (17)	0.011	0.808	0.000	0.041	0.001	0.821	1.050	4.8.2
L18	76.58 - 71.58 (18)	0.011	0.829	0.000	0.041	0.001	0.843	1.050	4.8.2
L19	71.58 - 68 (19)	0.012	0.843	0.000	0.040	0.001	0.856	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
L20	68 - 67.75 (20)	0.007	0.517	0.000	0.025	0.000	0.525	1.050	4.8.2
L21	67.75 - 62.75 (21)	0.008	0.536	0.000	0.026	0.000	0.544	1.050	4.8.2
L22	62.75 - 57.75 (22)	0.008	0.540	0.000	0.025	0.000	0.548	1.050	4.8.2
L23	57.75 - 52.75 (23)	0.008	0.557	0.000	0.025	0.000	0.566	1.050	4.8.2
L24	52.75 - 43.03 (24)	0.009	0.559	0.000	0.025	0.000	0.568	1.050	4.8.2
L25	43.03 - 42.03 (25)	0.011	0.742	0.000	0.031	0.000	0.754	1.050	4.8.2
L26	42.03 - 37.03 (26)	0.011	0.749	0.000	0.030	0.000	0.761	1.050	4.8.2
L27	37.03 - 32.03 (27)	0.012	0.755	0.000	0.030	0.000	0.768	1.050	4.8.2
L28	32.03 - 27.03 (28)	0.012	0.761	0.000	0.029	0.000	0.773	1.050	4.8.2
L29	27.03 - 22.03 (29)	0.012	0.766	0.000	0.029	0.000	0.779	1.050	4.8.2
L30	22.03 - 17.03 (30)	0.012	0.771	0.000	0.028	0.000	0.784	1.050	4.8.2
L31	17.03 - 12.03 (31)	0.012	0.775	0.000	0.028	0.000	0.788	1.050	4.8.2
L32	12.03 - 7.03 (32)	0.012	0.780	0.000	0.027	0.000	0.793	1.050	4.8.2
L33	7.03 - 2.03 (33)	0.012	0.784	0.000	0.027	0.000	0.797	1.050	4.8.2
L34	2.03 - 0 (34)	0.012	0.785	0.000	0.027	0.000	0.798	1.050	4.8.2

Section Capacity Table

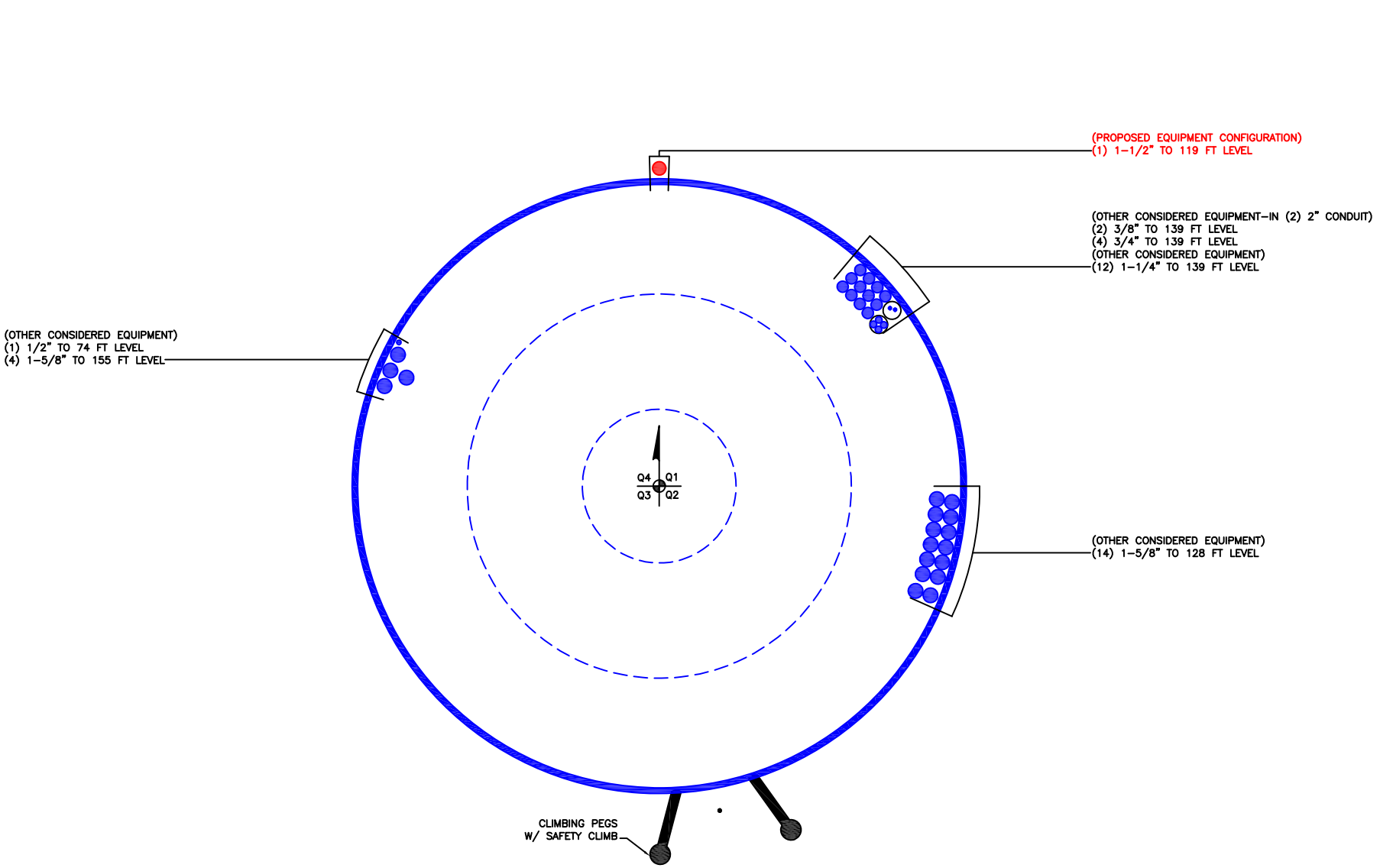
Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	155 - 150	Pole	TP19.036x18x0.188	1	-3.699	689.035	11.9	Pass
L2	150 - 145	Pole	TP20.073x19.036x0.188	2	-3.964	726.924	19.1	Pass
L3	145 - 140	Pole	TP21.109x20.073x0.188	3	-4.247	764.814	25.5	Pass
L4	140 - 135	Pole	TP22.146x21.109x0.188	4	-7.339	802.704	37.1	Pass
L5	135 - 130	Pole	TP23.182x22.146x0.188	5	-7.749	840.593	46.7	Pass
L6	130 - 123.21	Pole	TP24.59x23.182x0.188	6	-10.981	864.919	57.1	Pass
L7	123.21 - 121.79	Pole	TP24.671x23.473x0.25	7	-11.774	1190.311	50.0	Pass
L8	121.79 - 116.79	Pole	TP25.87x24.671x0.25	8	-15.300	1248.733	58.9	Pass
L9	116.79 - 111.79	Pole	TP27.068x25.87x0.25	9	-16.043	1307.145	67.2	Pass
L10	111.79 - 106.79	Pole	TP28.267x27.068x0.25	10	-16.820	1365.567	74.3	Pass
L11	106.79 - 101.79	Pole	TP29.465x28.267x0.25	11	-17.627	1423.978	80.6	Pass
L12	101.79 - 97.5	Pole	TP30.494x29.465x0.25	12	-18.341	1474.095	85.3	Pass
L13	97.5 - 97.25	Pole	TP30.554x30.494x0.25	13	-18.399	1477.024	85.5	Pass
L14	97.25 - 92.25	Pole	TP31.752x30.554x0.25	14	-19.244	1535.436	90.4	Pass
L15	92.25 - 82.58	Pole	TP34.07x31.752x0.25	15	-20.096	1591.978	94.6	Pass
L16	82.58 - 81.58	Pole	TP33.825x32.412x0.313	16	-21.715	2041.809	76.0	Pass
L17	81.58 - 76.58	Pole	TP35.037x33.825x0.313	17	-22.744	2115.645	78.2	Pass
L18	76.58 - 71.58	Pole	TP36.249x35.037x0.313	18	-23.882	2189.491	80.2	Pass
L19	71.58 - 68	Pole	TP37.117x36.249x0.313	19	-24.651	2242.359	81.6	Pass
L20	68 - 67.75	Pole	TP37.178x37.117x0.488	20	-24.738	3487.218	50.0	Pass
L21	67.75 - 62.75	Pole	TP38.39x37.178x0.475	21	-26.139	3511.200	51.8	Pass
L22	62.75 - 57.75	Pole	TP39.602x38.39x0.475	22	-27.573	3623.434	52.2	Pass
L23	57.75 - 52.75	Pole	TP40.814x39.602x0.463	23	-29.036	3638.502	53.9	Pass
L24	52.75 - 43.03	Pole	TP43.17x40.814x0.463	24	-30.160	3721.336	54.1	Pass
L25	43.03 - 42.03	Pole	TP42.791x41.108x0.375	25	-33.372	3101.070	71.8	Pass
L26	42.03 - 37.03	Pole	TP44.005x42.791x0.375	26	-34.741	3189.868	72.5	Pass
L27	37.03 - 32.03	Pole	TP45.22x44.005x0.375	27	-36.141	3278.656	73.1	Pass
L28	32.03 - 27.03	Pole	TP46.434x45.22x0.375	28	-37.569	3367.455	73.7	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L29	27.03 - 22.03	Pole	TP47.649x46.434x0.375	29	-39.026	3456.243	74.2	Pass
L30	22.03 - 17.03	Pole	TP48.863x47.649x0.375	30	-40.512	3545.041	74.6	Pass
L31	17.03 - 12.03	Pole	TP50.078x48.863x0.375	31	-42.027	3633.829	75.1	Pass
L32	12.03 - 7.03	Pole	TP51.292x50.078x0.375	32	-43.571	3722.628	75.5	Pass
L33	7.03 - 2.03	Pole	TP52.507x51.292x0.375	33	-45.144	3811.426	75.9	Pass
L34	2.03 - 0	Pole	TP53x52.507x0.375	34	-45.791	3847.473	76.0	Pass
							Summary	
						Pole (L15)	94.6	Pass
						RATING =	**94.6**	**Pass**

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

APPENDIX B

BASE LEVEL DRAWING


(PROPOSED EQUIPMENT CONFIGURATION)
(1) 1-1/2" TO 119 FT LEVEL
(OTHER CONSIDERED EQUIPMENT-IN (2) 2" CONDUIT)
(2) 3/8" TO 139 FT LEVEL
(4) 3/4" TO 139 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(12) 1-1/4" TO 139 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 1/2" TO 74 FT LEVEL
(4) 1-5/8" TO 155 FT LEVEL
Q4 Q1
Q3 Q2
(OTHER CONSIDERED EQUIPMENT)
(14) 1-5/8" TO 128 FT LEVEL
CLIMBING PEGS
W/ SAFETY CLIMB

APPENDIX C

ADDITIONAL CALCULATIONS

CCIpole

per TIA-222- H

Site BU: 876366

Work Order: 2013159

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	155	31.79	3.58	18	18	24.59	0.1875	Auto	A572-65
2	126.79	44.21	4.83	18	23.47	34.07	0.25	Auto	A572-65
3	87.41	44.38	5.93	18	32.41	43.17	0.3125	Auto	A572-65
4	48.96	48.96	0	18	41.11	53	0.375	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	47	68	plate	CCI-SFP-060100	3	x						x						x					
2	85.5	97.5	plate	CCI-SFP-045100	3	x						x						x					
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	6	1	6	0.5	PC 8.8 - M20 (100)	24	PC 8.8 - M20 (100)	24.000	16.000	4.750	1.1875	A572-65
2	4.5	1	4.5	0.5	PC 8.8 - M20 (100)	18	PC 8.8 - M20 (100)	18.000	20.000	3.250	1.1875	A572-65

TNX Geometry Input

Increment (ft): 5 Export to TNX

	Section Height (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Tapered Pole Grade	Weight Multiplier
1	155 - 150	5		18	18.000	19.036	0.1875	A572-65	1.000
2	150 - 145	5		18	19.036	20.073	0.1875	A572-65	1.000
3	145 - 140	5		18	20.073	21.109	0.1875	A572-65	1.000
4	140 - 135	5		18	21.109	22.146	0.1875	A572-65	1.000
5	135 - 130	5		18	22.146	23.182	0.1875	A572-65	1.000
6	130 - 126.79	6.79	3.58	18	23.182	24.590	0.1875	A572-65	1.000
7	126.79 - 121.79	5		18	23.473	24.671	0.25	A572-65	1.000
8	121.79 - 116.79	5		18	24.671	25.870	0.25	A572-65	1.000
9	116.79 - 111.79	5		18	25.870	27.068	0.25	A572-65	1.000
10	111.79 - 106.79	5		18	27.068	28.267	0.25	A572-65	1.000
11	106.79 - 101.79	5		18	28.267	29.465	0.25	A572-65	1.000
12	101.79 - 97.5	4.29		18	29.465	30.494	0.25	A572-65	1.000
13	97.5 - 97.25	0.25		18	30.494	30.554	0.25	A572-65	1.000
14	97.25 - 92.25	5		18	30.554	31.752	0.25	A572-65	1.000
15	92.25 - 87.41	9.67	4.83	18	31.752	34.070	0.25	A572-65	1.000
16	87.41 - 81.58	5.83		18	32.412	33.825	0.3125	A572-65	1.000
17	81.58 - 76.58	5		18	33.825	35.037	0.3125	A572-65	1.000
18	76.58 - 71.58	5		18	35.037	36.249	0.3125	A572-65	1.000
19	71.58 - 68	3.58		18	36.249	37.117	0.3125	A572-65	1.000
20	68 - 67.75	0.25		18	37.117	37.178	0.4875	A572-65	0.961
21	67.75 - 62.75	5		18	37.178	38.390	0.475	A572-65	0.976
22	62.75 - 57.75	5		18	38.390	39.602	0.475	A572-65	0.966
23	57.75 - 52.75	5		18	39.602	40.814	0.4625	A572-65	0.982
24	52.75 - 48.96	9.72	5.93	18	40.814	43.170	0.4625	A572-65	0.975
25	48.96 - 42.03	6.93		18	41.108	42.791	0.375	A572-65	1.000
26	42.03 - 37.03	5		18	42.791	44.005	0.375	A572-65	1.000
27	37.03 - 32.03	5		18	44.005	45.220	0.375	A572-65	1.000
28	32.03 - 27.03	5		18	45.220	46.434	0.375	A572-65	1.000
29	27.03 - 22.03	5		18	46.434	47.649	0.375	A572-65	1.000
30	22.03 - 17.03	5		18	47.649	48.863	0.375	A572-65	1.000
31	17.03 - 12.03	5		18	48.863	50.078	0.375	A572-65	1.000
32	12.03 - 7.03	5		18	50.078	51.292	0.375	A572-65	1.000
33	7.03 - 2.03	5		18	51.292	52.507	0.375	A572-65	1.000
34	2.03 - 0	2.03		18	52.507	53.000	0.375	A572-65	1.000

TNX Section Forces

Increment (ft):	5	TNX Output		
	Section Height (ft)	P_u (K)	M_{ux} (kip-ft)	V_u (K)
1	155 - 150	3.70	37.58	5.89
2	150 - 145	3.96	67.77	6.19
3	145 - 140	4.25	99.46	6.49
4	140 - 135	7.34	156.40	11.35
5	135 - 130	7.75	213.92	11.66
6	130 - 126.79	10.98	272.41	18.57
7	126.79 - 121.79	11.77	366.17	18.94
8	121.79 - 116.79	15.30	468.53	22.40
9	116.79 - 111.79	16.04	581.23	22.69
10	111.79 - 106.79	16.82	695.36	22.98
11	106.79 - 101.79	17.63	810.92	23.27
12	101.79 - 97.5	18.34	911.19	23.51
13	97.5 - 97.25	18.40	917.07	23.51
14	97.25 - 92.25	19.24	1035.29	23.80
15	92.25 - 87.41	20.10	1151.04	24.06
16	87.41 - 81.58	21.71	1292.63	24.52
17	81.58 - 76.58	22.74	1415.92	24.82
18	76.58 - 71.58	23.88	1540.69	25.18
19	71.58 - 68	24.65	1631.15	25.39
20	68 - 67.75	24.74	1637.50	25.39
21	67.75 - 62.75	26.14	1765.37	25.76
22	62.75 - 57.75	27.57	1895.04	26.12
23	57.75 - 52.75	29.04	2026.50	26.48
24	52.75 - 48.96	30.16	2127.29	26.74
25	48.96 - 42.03	33.37	2314.58	27.31
26	42.03 - 37.03	34.74	2451.76	27.59
27	37.03 - 32.03	36.14	2590.28	27.85
28	32.03 - 27.03	37.57	2730.08	28.10
29	27.03 - 22.03	39.03	2871.14	28.35
30	22.03 - 17.03	40.51	3013.47	28.61
31	17.03 - 12.03	42.03	3157.09	28.87
32	12.03 - 7.03	43.57	3302.00	29.13
33	7.03 - 2.03	45.14	3448.24	29.40
34	2.03 - 0	45.79	3507.99	29.50

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
155 - 150	Pole	TP19.036x18x0.1875	Pole	11.9%	Pass
150 - 145	Pole	TP20.073x19.036x0.1875	Pole	19.1%	Pass
145 - 140	Pole	TP21.109x20.073x0.1875	Pole	25.5%	Pass
140 - 135	Pole	TP22.146x21.109x0.1875	Pole	37.1%	Pass
135 - 130	Pole	TP23.182x22.146x0.1875	Pole	46.7%	Pass
130 - 126.79	Pole	TP24.59x23.182x0.1875	Pole	57.1%	Pass
126.79 - 121.79	Pole	TP24.671x23.473x0.25	Pole	49.9%	Pass
121.79 - 116.79	Pole	TP25.87x24.671x0.25	Pole	58.8%	Pass
116.79 - 111.79	Pole	TP27.068x25.87x0.25	Pole	67.2%	Pass
111.79 - 106.79	Pole	TP28.267x27.068x0.25	Pole	74.3%	Pass
106.79 - 101.79	Pole	TP29.465x28.267x0.25	Pole	80.6%	Pass
101.79 - 97.5	Pole	TP30.494x29.465x0.25	Pole	85.3%	Pass
97.5 - 97.25	Pole	TP30.554x30.494x0.25	Pole	85.5%	Pass
97.25 - 92.25	Pole	TP31.752x30.554x0.25	Pole	90.4%	Pass
92.25 - 87.41	Pole	TP34.07x31.752x0.25	Pole	94.6%	Pass
87.41 - 81.58	Pole	TP33.825x32.412x0.3125	Pole	76.0%	Pass
81.58 - 76.58	Pole	TP35.037x33.825x0.3125	Pole	78.2%	Pass
76.58 - 71.58	Pole	TP36.249x35.037x0.3125	Pole	80.2%	Pass
71.58 - 68	Pole	TP37.117x36.249x0.3125	Pole	81.6%	Pass
68 - 67.75	Pole + Reinf.	TP37.178x37.117x0.4875	Reinf. 1 Tension Rupture	79.3%	Pass
67.75 - 62.75	Pole + Reinf.	TP38.39x37.178x0.475	Reinf. 1 Tension Rupture	81.0%	Pass
62.75 - 57.75	Pole + Reinf.	TP39.602x38.39x0.475	Reinf. 1 Tension Rupture	82.5%	Pass
57.75 - 52.75	Pole + Reinf.	TP40.814x39.602x0.4625	Reinf. 1 Tension Rupture	83.9%	Pass
52.75 - 48.96	Pole + Reinf.	TP43.17x40.814x0.4625	Reinf. 1 Tension Rupture	84.8%	Pass
48.96 - 42.03	Pole	TP42.791x41.108x0.375	Pole	71.8%	Pass
42.03 - 37.03	Pole	TP44.005x42.791x0.375	Pole	72.5%	Pass
37.03 - 32.03	Pole	TP45.22x44.005x0.375	Pole	73.1%	Pass
32.03 - 27.03	Pole	TP46.434x45.22x0.375	Pole	73.7%	Pass
27.03 - 22.03	Pole	TP47.649x46.434x0.375	Pole	74.2%	Pass
22.03 - 17.03	Pole	TP48.863x47.649x0.375	Pole	74.7%	Pass
17.03 - 12.03	Pole	TP50.078x48.863x0.375	Pole	75.1%	Pass
12.03 - 7.03	Pole	TP51.292x50.078x0.375	Pole	75.5%	Pass
7.03 - 2.03	Pole	TP52.507x51.292x0.375	Pole	75.9%	Pass
2.03 - 0	Pole	TP53x52.507x0.375	Pole	76.1%	Pass
				Summary	
			Pole	94.6%	Pass
			Reinforcement	84.8%	Pass
			Overall	94.6%	Pass

Additional Calculations

Section Elevation (ft)	Moment of Inertia (in^4)			Area (in^2)			% Capacity*		
	Pole	Reinf.	Total	Pole	Reinf.	Total	Pole	R1	R2
155 - 150	503	n/a	503	11.22	n/a	11.22	11.9%		
150 - 145	591	n/a	591	11.83	n/a	11.83	19.1%		
145 - 140	688	n/a	688	12.45	n/a	12.45	25.5%		
140 - 135	796	n/a	796	13.07	n/a	13.07	37.1%		
135 - 130	914	n/a	914	13.68	n/a	13.68	46.7%		
130 - 126.79	996	n/a	996	14.08	n/a	14.08	57.1%		
126.79 - 121.79	1460	n/a	1460	19.38	n/a	19.38	49.9%		
121.79 - 116.79	1685	n/a	1685	20.33	n/a	20.33	58.8%		
116.79 - 111.79	1933	n/a	1933	21.28	n/a	21.28	67.2%		
111.79 - 106.79	2204	n/a	2204	22.23	n/a	22.23	74.3%		
106.79 - 101.79	2499	n/a	2499	23.18	n/a	23.18	80.6%		
101.79 - 97.5	2772	n/a	2772	24.00	n/a	24.00	85.3%		
97.5 - 97.25	2789	n/a	2789	24.05	n/a	24.05	85.5%		
97.25 - 92.25	3133	n/a	3133	25.00	n/a	25.00	90.4%		
92.25 - 87.41	3492	n/a	3492	25.92	n/a	25.92	94.6%		
87.41 - 81.58	4715	n/a	4715	33.24	n/a	33.24	76.0%		
81.58 - 76.58	5245	n/a	5245	34.44	n/a	34.44	78.2%		
76.58 - 71.58	5814	n/a	5814	35.64	n/a	35.64	80.2%		
71.58 - 68	6245	n/a	6245	36.50	n/a	36.50	81.6%		
68 - 67.75	6276	3307	9583	36.56	18.00	54.56	52.7%	79.3%	
67.75 - 62.75	6916	3519	10435	37.77	18.00	55.77	54.4%	81.0%	
62.75 - 57.75	7597	3737	11334	38.97	18.00	56.97	56.1%	82.5%	
57.75 - 52.75	8322	3962	12284	40.17	18.00	58.17	57.6%	83.9%	
52.75 - 48.96	8902	4136	13038	41.08	18.00	59.08	58.8%	84.8%	
48.96 - 42.03	11471	n/a	11471	50.48	n/a	50.48	71.8%		
42.03 - 37.03	12485	n/a	12485	51.93	n/a	51.93	72.5%		
37.03 - 32.03	13557	n/a	13557	53.37	n/a	53.37	73.1%		
32.03 - 27.03	14688	n/a	14688	54.82	n/a	54.82	73.7%		
27.03 - 22.03	15881	n/a	15881	56.27	n/a	56.27	74.2%		
22.03 - 17.03	17137	n/a	17137	57.71	n/a	57.71	74.7%		
17.03 - 12.03	18457	n/a	18457	59.16	n/a	59.16	75.1%		
12.03 - 7.03	19843	n/a	19843	60.60	n/a	60.60	75.5%		
7.03 - 2.03	21298	n/a	21298	62.05	n/a	62.05	75.9%		
2.03 - 0	21908	n/a	21908	62.63	n/a	62.63	76.1%		

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

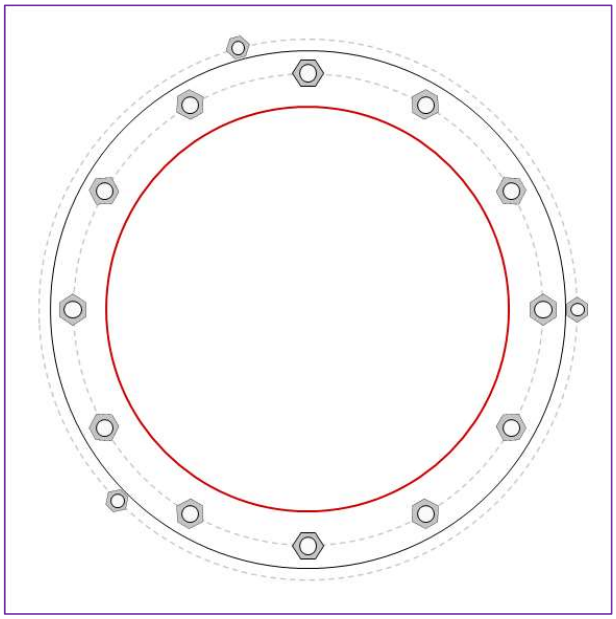
Monopole Base Plate Connection

Site Info	
BU #	876366
Site Name	NGERS FALLS / PRESTC
Order #	576664 Rev 2

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	See Custom Sheet
l_{ar} (in)	See Custom Sheet

Applied Loads	
Moment (kip-ft)	3507.99
Axial Force (kips)	45.79
Shear Force (kips)	29.50

**TIA-222-H Section 15.5 Applied*



Connection Properties

Anchor Rod Data

GROUP 1: (12) 2-1/4" ø bolts (A615-75 N; Fy=75 ksi, Fu=100 ksi) on 62" BC

GROUP 2: (3) 1-3/4" ø bolts (A193 Gr. B7 N; Fy=105 ksi, Fu=125 ksi) on 71.09" BC

pos. (deg): 0, 105, 225

Base Plate Data

68" OD x 1.75" Plate (A871-60; Fy=60 ksi, Fu=75 ksi)

Stiffener Data

N/A

Pole Data

53" x 0.375" 18-sided pole (A572-65; Fy=65 ksi, Fu=80 ksi)

Analysis Results

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

GROUP 1:		
Pu_t = 193.18	ϕPn_t = 243.75	**Stress Rating**
Vu = 2.46	ϕVn = 149.1	**75.5%**
Mu = n/a	ϕMn = n/a	**Pass**
GROUP 2:		
Pu_t = 128.45	ϕPn_t = 178.13	**Stress Rating**
Vu = 0	ϕVn = 112.75	**68.7%**
Mu = n/a	ϕMn = n/a	**Pass**

Base Plate Summary

Max Stress (ksi):	54.16	(Flexural)
Allowable Stress (ksi):	54	
Stress Rating:	**95.5%**	**Pass**

CCIplate

Elevation (ft)	0	*(Base)*

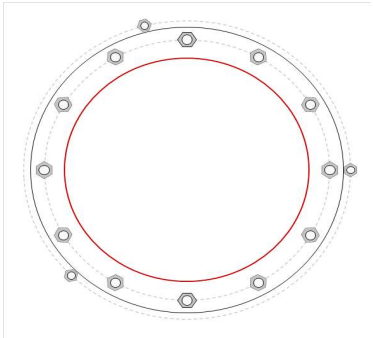
note: Bending interaction not considered when Grout Considered = "Yes"

Bolt Group	Resist Axial	Resist Shear	Induce Plate Bending	Grout Considered	Apply at BARB Elevation	BARB CL Elevation (ft)
1	Yes	Yes	Yes	No	No	
2	No	No	No	No	No	

Custom Bolt Connection

Bolt	Bolt Group ID	Location (deg.)	Diameter (in)	Material	Bolt Circle (in)	Eta Factor, n:	l_{er} (in):	Thread Type	Area Override, in^2	Tension Only
1	1	0	2.25	A615-75	62	0.5	1	N-Included		No
2	1	30	2.25	A615-75	62	0.5	1	N-Included		No
3	1	60	2.25	A615-75	62	0.5	1	N-Included		No
4	1	90	2.25	A615-75	62	0.5	1	N-Included		No
5	1	120	2.25	A615-75	62	0.5	1	N-Included		No
6	1	150	2.25	A615-75	62	0.5	1	N-Included		No
7	1	180	2.25	A615-75	62	0.5	1	N-Included		No
8	1	210	2.25	A615-75	62	0.5	1	N-Included		No
9	1	240	2.25	A615-75	62	0.5	1	N-Included		No
10	1	270	2.25	A615-75	62	0.5	1	N-Included		No
11	1	300	2.25	A615-75	62	0.5	1	N-Included		No
12	1	330	2.25	A615-75	62	0.5	1	N-Included		No
13	2	0	1.75	A193 Gr. B7	71.09	0.5	0	N-Included		No
14	2	105	1.75	A193 Gr. B7	71.09	0.5	0	N-Included		No
15	2	225	1.75	A193 Gr. B7	71.09	0.5	0	N-Included		No

Plot Graphic



Pier and Pad Foundation

BU # :	
Site Name:	
App. Number:	

TIA-222 Revision:	H
Tower Type:	Monopole

Top & Bot. Pad Rein. Different?:	☑
Block Foundation?:	☐
Rectangular Pad?:	☐

Superstructure Analysis Reactions		
Compression, P_{comp}:	45.8	kips
Base Shear, Vu_comp:	29.49	kips
Moment, M_u:	3507.99	ft-kips
Tower Height, **H**:	155	ft
BP Dist. Above Fdn, bp_{dist}:	3.25	in

Pier Properties		
Pier Shape:	Square	
Pier Diameter, **dpier**:	7	ft
Ext. Above Grade, **E**:	1	ft
Pier Rebar Size, **Sc**:	8	
Pier Rebar Quantity, **mc**:	30	
Pier Tie/Spiral Size, **St**:	4	
Pier Tie/Spiral Quantity, **mt**:	5	
Pier Reinforcement Type:	Tie	
Pier Clear Cover, cc_{pier}:	3	in

Pad Properties		
Depth, **D**:	6	ft
Pad Width, W_1:	23	ft
Pad Thickness, **T**:	2.5	ft
Pad Rebar Size (Top dir.2), Sp_{top2}:	8	
Pad Rebar Quantity (Top dir. 2), mp_{top2}:	20	
Pad Rebar Size (Bottom dir. 2), Sp_2:	8	
Pad Rebar Quantity (Bottom dir. 2), mp_2:	43	
Pad Clear Cover, cc_{pad}:	3	in

Material Properties		
Rebar Grade, **Fy**:	60	ksi
Concrete Compressive Strength, **F'c**:	3	ksi
Dry Concrete Density, δc:	150	pcf

Soil Properties		
Total Soil Unit Weight, γ:	125	pcf
Ultimate Net Bearing, Qnet:	5.000	ksf
Cohesion, **Cu**:	0.000	ksf
Friction Angle, φ:	34	degrees
SPT Blow Count, N_{blows}:		
Base Friction, μ:	0.6	
Neglected Depth, **N**:	3.50	ft
Foundation Bearing on Rock?	No	
Groundwater Depth, **gw**:	6	ft

<--Toggle between Gross and Net

Foundation Analysis Checks	Capacity	Demand	Rating*	Check
Lateral (Sliding) (kips)	284.81	29.49	**9.9%**	**Pass**
Bearing Pressure (ksf)	4.31	3.18	**73.8%**	**Pass**
*Overturning (kip*ft)*	4271.95	3722.41	**87.1%**	**Pass**
*Pier Flexure (Comp.) (kip*ft)*	3919.45	3640.70	**88.5%**	**Pass**
Pier Compression (kip)	23390.64	85.49	**0.3%**	**Pass**
*Pad Flexure (kip*ft)*	3676.71	1673.90	**43.4%**	**Pass**
Pad Shear - 1-way (kips)	578.23	288.87	**47.6%**	**Pass**
Pad Shear - 2-way (Comp) (ksi)	0.164	0.000	**0.0%**	**Pass**
*Flexural 2-way (Comp) (kip*ft)*	3408.07	2184.42	**61.0%**	**Pass**

**Rating per TIA-222-H Section 15.5*

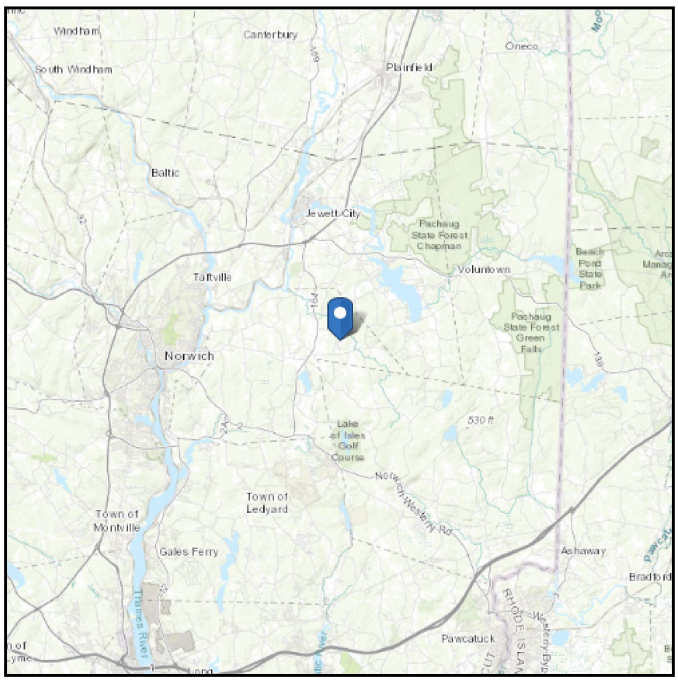
Structural Rating*:	**88.5%**
Soil Rating*:	**87.1%**

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: 290.25 ft (NAVD 88)
Latitude: 41.538183
Longitude: -71.951667



Wind

Results:

Wind Speed	125 Vmph
10-year MRI	75 Vmph
25-year MRI	86 Vmph
50-year MRI	97 Vmph
100-year MRI	103 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: Thu Dec 16 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.

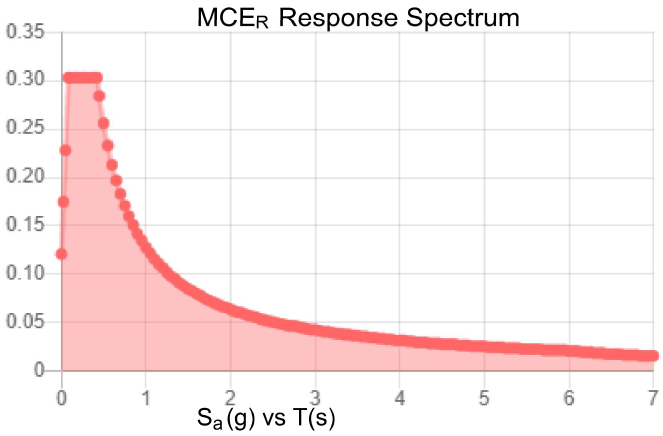
Seismic

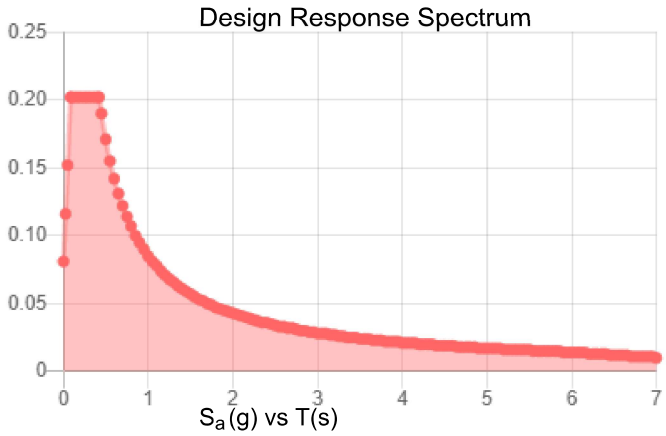
Site Soil Class: D - Default (see Section 11.4.3)

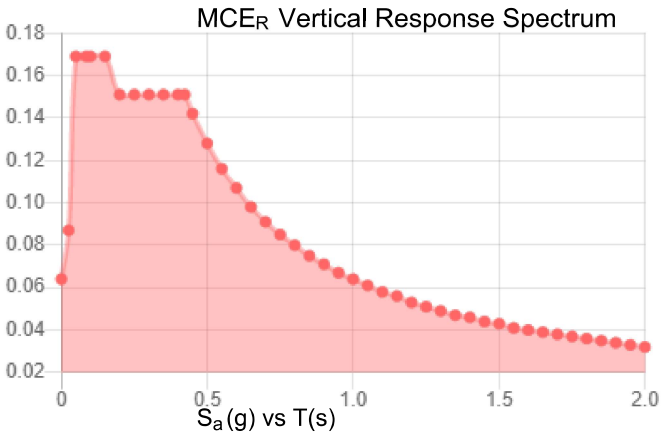
Results:

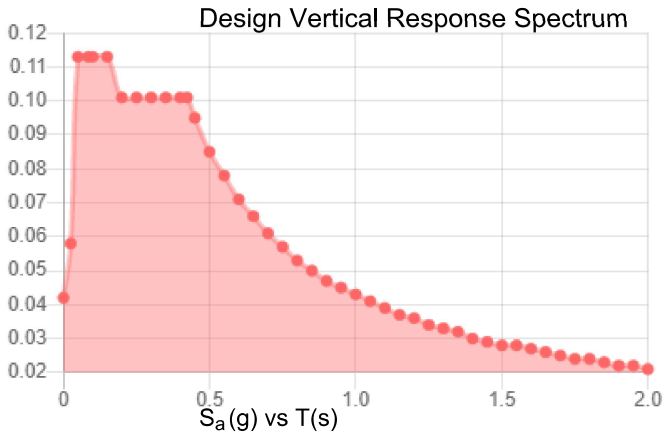
S_S :	0.189	S_{D1} :	0.085
S_1 :	0.053	T_L :	6
F_a :	1.6	PGA :	0.104
F_v :	2.4	PGA_M :	0.165
S_{MS} :	0.303	F_{PGA} :	1.593
S_{M1} :	0.128	I_e :	1
S_{DS} :	0.202	C_v :	0.7

Seismic Design Category B









Data Accessed: **Thu Dec 16 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:	1.00 in.
Concurrent Temperature:	15 F
Gust Speed	50 mph
Data Source:	Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8
Date Accessed:	Thu Dec 16 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.

Exhibit E

Mount Analysis

Exhibit F

Power Density/RF Emissions Report

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: 876366

BOBOS01004A
101 Pierce Road
Preston, Connecticut 06365

May 25, 2022

EBI Project Number: 6222003246

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**20.81%**

May 25, 2022

Attn: Dish Wireless

Emissions Analysis for Site: 876366 - BOBOS01004A

EBI Consulting was directed to analyze the proposed Dish Wireless facility located at **101 Pierce Road** in **Preston, 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 101 Pierce Road in Preston, 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 119 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:	11.35 dBd / 15.75 dBd	Gain:	11.35 dBd / 15.75 dBd	Gain:	11.35 dBd / 15.75 dBd
Height (AGL):	119 feet	Height (AGL):	119 feet	Height (AGL):	119 feet
Channel Count:	8	Channel Count:	8	Channel Count:	8
Total TX Power (W):	280.00 Watts	Total TX Power (W):	280.00 Watts	Total TX Power (W):	280.00 Watts
ERP (W):	1,424.17	ERP (W):	1,424.17	ERP (W):	1,424.17
Antenna A1 MPE %:	**0.59%**	Antenna B1 MPE %:	**0.59%**	Antenna C1 MPE %:	**0.59%**

Site Composite MPE %	
Carrier	**MPE %**
Dish Wireless (Max at Sector A):	0.59%
AT&T	3.54%
Verizon	11.02%
T-Mobile	5.66%
Site Total MPE % :	20.81%

Dish Wireless MPE % Per Sector	
Dish Wireless Sector A Total:	0.59%
Dish Wireless Sector B Total:	0.59%
Dish Wireless Sector C Total:	0.59%
Site Total MPE % :	20.81%

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	110.82	119.0	1.25	600 MHz n71	400	0.31%
Dish Wireless 1900 MHz n70	4	245.22	119.0	2.76	1900 MHz n70	1000	0.28%
						Total:	**0.59%**

• 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:	0.59%
Sector B:	0.59%
Sector C:	0.59%
Dish Wireless Maximum MPE % (Sector A):	0.59%
Site Total:	20.81%
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **20.81%** 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.

Exhibit G

Letter of Authorization

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:
101 PIERCE ROAD, PRESTON, CT 06365

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

Crown Site ID/Name:	**876366/WAPPINGERS FALLS / PRESTON CIT**
Customer Site ID:	**BOBOS01004A/**
Site Address:	**101 Pierce Road, PRESTON, CT 06365**

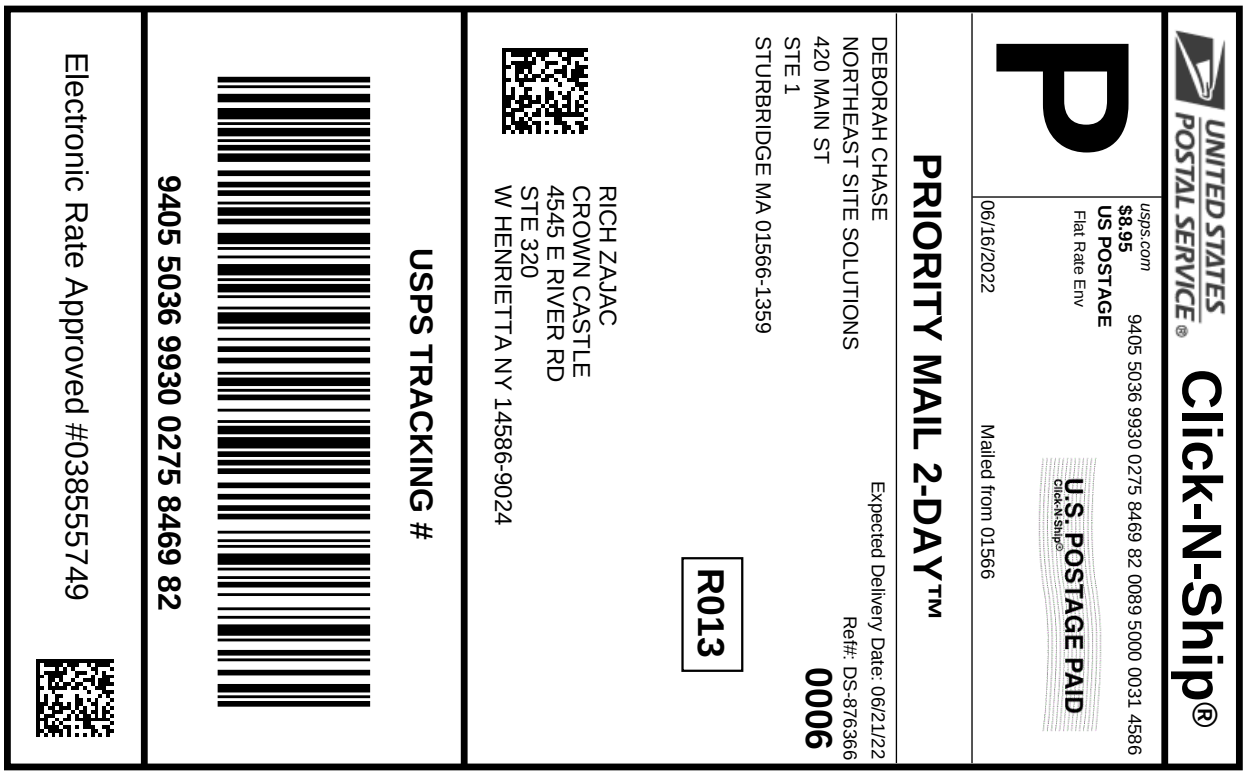
Crown Castle

By: _____ Date: 6/13/2022

Richard Zajac
Site Acquisition Specialist

Exhibit H

Recipient Mailings



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Print Date:	06/16/2022
Ship Date:	06/16/2022
Expected Delivery Date:	06/21/2022

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

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

Ref#: DS-876366

To: RICH ZAJAC
CROWN CASTLE
4545 E RIVER RD
STE 320
W HENRIETTA NY 14586-9024

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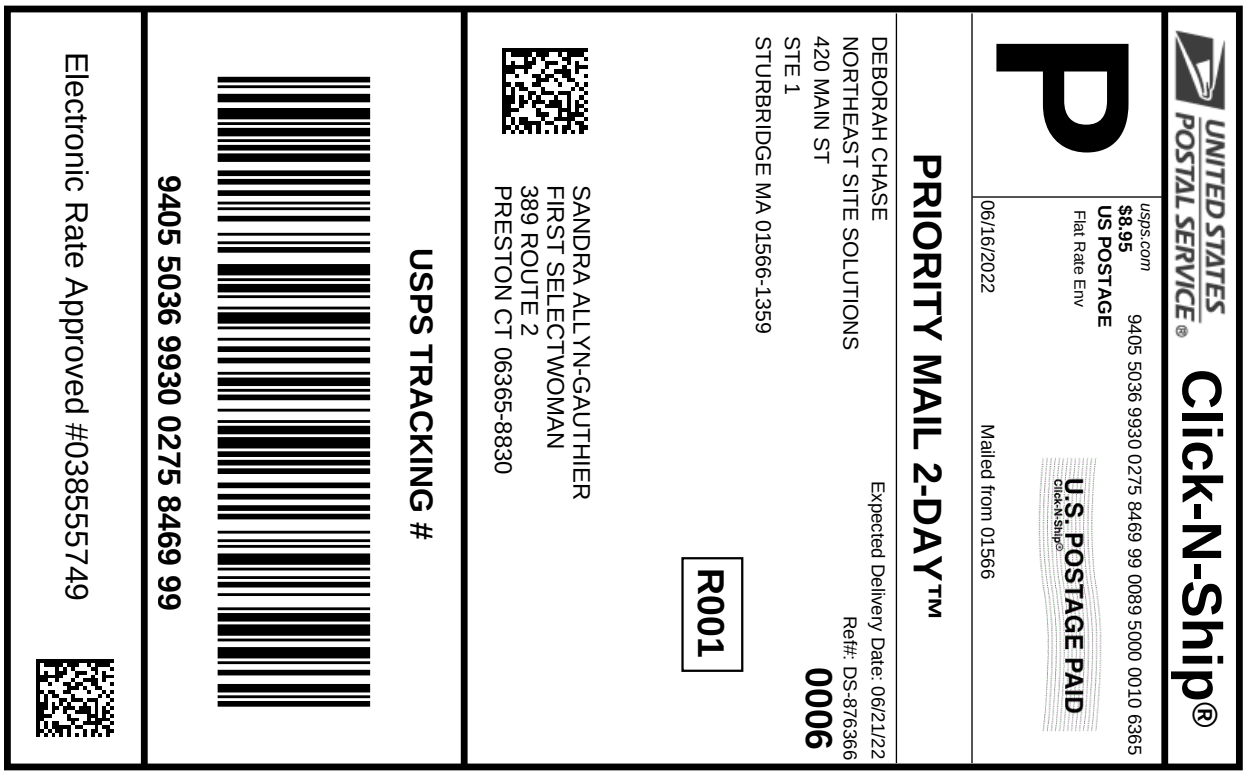

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Ship Date:	06/16/2022
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Total:	**$8.95**

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

Ref#: DS-876366

To: SANDRA ALLYN-GAUTHIER
FIRST SELECTWOMAN
389 ROUTE 2
PRESTON CT 06365-8830

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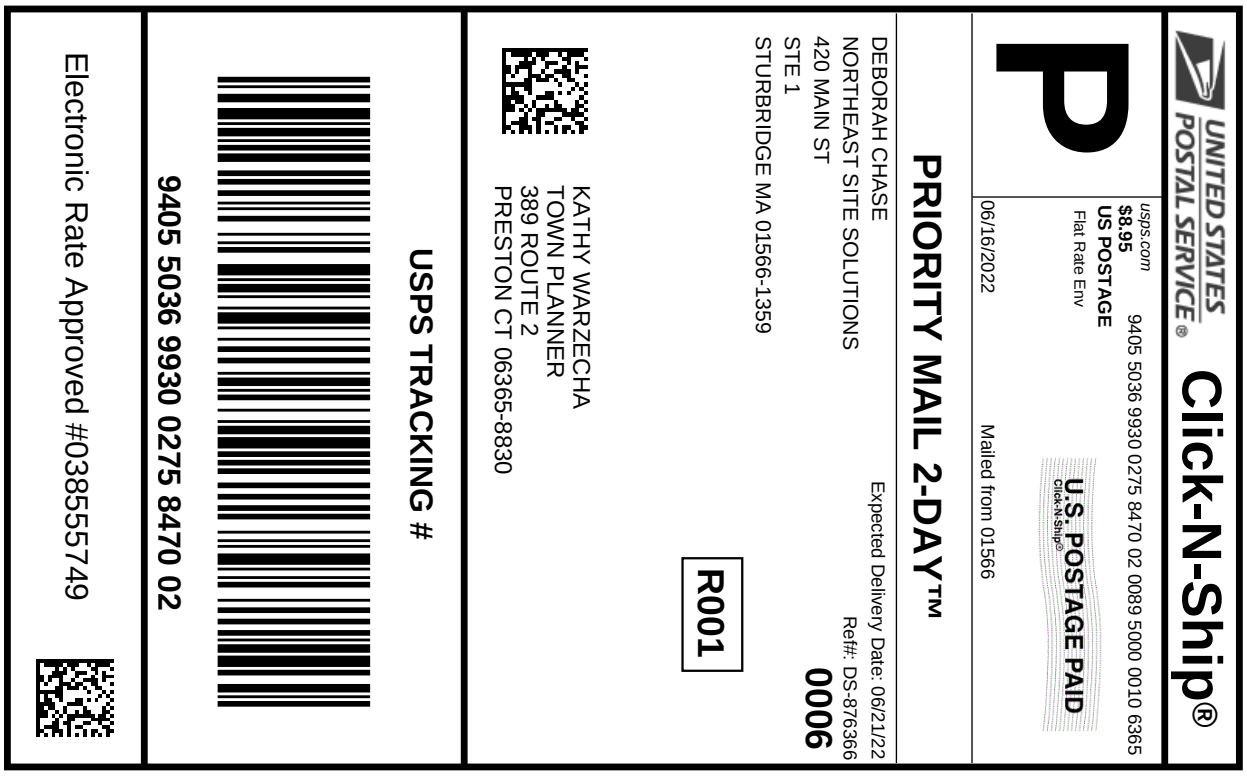

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Trans. #:	565819418
Print Date:	06/16/2022
Ship Date:	06/16/2022
Expected Delivery Date:	06/21/2022

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

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

Ref#: DS-876366

To: KATHY WARZECHA
TOWN PLANNER
389 ROUTE 2
PRESTON CT 06365-8830

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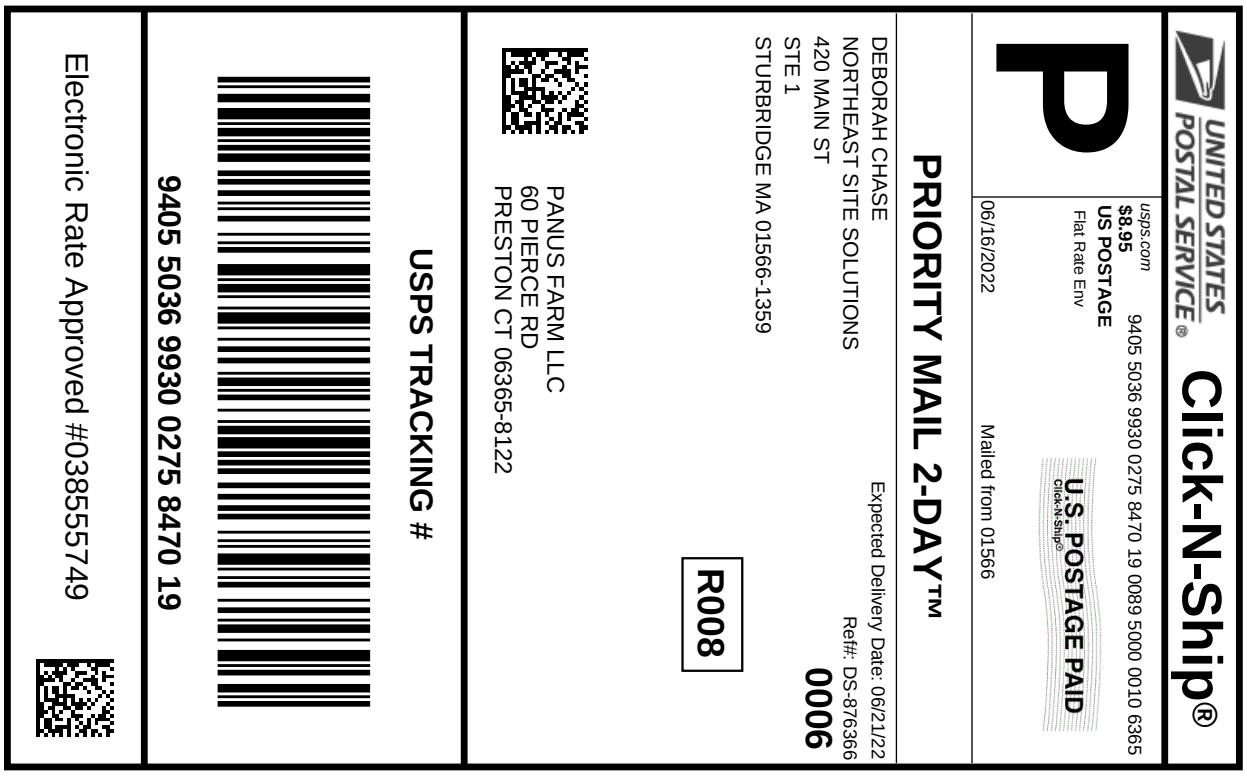

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Priority Mail® Postage:	**$8.95**
Total:	**$8.95**

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

Ref#: DS-876366

To: PANUS FARM LLC
60 PIERCE RD
PRESTON CT 06365-8122

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876366 Crown Dist

UNITED STATES POSTAL SERVICE.

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

06/21/2022 09:31 AM

Product	Qty	Unit Price	Price
Prepaid Mail Preston, CT 06365 Weight: 0 lb 9.90 oz Acceptance Date: Tue 06/21/2022 Tracking #: 9405 5036 9930 0275 8469 99	1		$0.00
Prepaid Mail West Henrietta, NY 14586 Weight: 0 lb 2.00 oz Acceptance Date: Tue 06/21/2022 Tracking #: 9405 5036 9930 0275 8469 82	1		$0.00
Prepaid Mail Preston, CT 06365 Weight: 0 lb 10.00 oz Acceptance Date: Tue 06/21/2022 Tracking #: 9405 5036 9930 0275 8470 19	1		$0.00
Prepaid Mail Preston, CT 06365 Weight: 0 lb 11.90 oz Acceptance Date: Tue 06/21/2022 Tracking #: 9405 5036 9930 0275 8470 02	1		$0.00
Grand Total:			$0.00

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