February 6, 2024

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

RE: **Notice of Intent to Allow Shared Use of the Existing SBA Telecommunications Site**
Location: 71 Moxley Road, Uncasville, CT
Dish Wireless Site No: BOBOS01206A
SBA Site No: CT10016-A

Dear Ms. Bachman:

Please let the following serve as Evidence of Intent to allow Dish's shared use of the existing SBA telecommunications site at **71 Moxley Road, Uncasville, CT**.

SBA Properties, LLC ("Owner") and Dish Wireless ("Tenant") are entering into a Site Lease Agreement. Tenant will be provided ground space within the existing site compound for its base station equipment and space at the height of 180' for antennas and associated equipment.

Thank you,

Catherine Ware

Catherine Ware
Site Development Specialist
SBA COMMUNICATIONS CORPORATION
134 Flanders Road, Suite 125
Westboro, MA 01581

(917)868-8365 + C
CWare@sbasite.com

February 6, 2024

Melanie Bachman
Connecticut Siting Council Ten Franklin Square
New Britain, CT 06051

RE: Tower Share Application

71 Moxley Road, Uncasville, CT 06382
Latitude: Lat.: 41.435211
Longitude: 72.123319
Site#: CT10016-A_BOBOS01206A_SBA_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 **71 Moxley Road, Uncasville, CT 06382.**

Dish Wireless LLC proposes to install three (3)600/1900/2100 MHz antennas and six (6) RRUs, at the 180-foot level of the existing 190-foot Guyed tower, one (1) Fiber cables will also be installed. Dish Wireless LLC equipment cabinets will be placed in a 5'x7' leased area. Included are plans by Kimley Horn dated 9/28/2023, Exhibit 6. Also included is a structural analysis prepared by GPD Engineering dated 8/31/2023, confirming that the existing tower is structurally capable of supporting the proposed equipment, attached as Exhibit 7. Also included is a mount analysis prepared by Kimley Horn dated 9/07/2023 confirming that the mount is structurally capable of supporting the proposed equipment, attached as Exhibit 8. This facility was approved by the CT Siting Council on 1/31/1998. Please see attached Exhibit 5.

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 Leonard Bunnel, SR. – Mayor and Doug Colter – Building Official both from The Town of Montville. (Separate notice is being sent to the ground owner).

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 190feet and the Dish Wireless LLC antennas will be located at a center line height of 180-feet.

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

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

4. The operation of the proposed antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard. As indicated in the attached power density calculations, the combined site operations will result in a total power density of 14.47% as evidenced by Exhibit 9.

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 indicates that the shared use of this facility satisfies these criteria.

A. Technical Feasibility. The existing monopole has been deemed structurally capable of supporting Dish Wireless LLC proposed loading. The structural analysis is included as Exhibit 7.

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 support tower in Sterling. 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.

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 180-foot level of the existing 190-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 9, 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 guyed 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 Uncasville.

Sincerely,

Catherine Ware

Catherine Ware
Site Development Specialist
SBA Communications Corporation
134 Flanders Road, Suite 125
Westborough, MA 01581
(917)868-8365+ **T**
Cware@sbasite.com

Attachments:

cc:

Leonard Bunnel, Sr. – Mayor / Town of Montville
310 Norwich – New London Turnpike
Uncasville, CT 06382
860-848-6778

Doug Colter – Building Official (acting) / Town of Montville
310 Norwich – New London Turnpike
Uncasville, CT 06382
860-848-6782

Ernest C. and Walter N. Jr. Wainwright – Ground Owner
149 Great Neck Road
Waterford, CT 06385
(860)271-5580

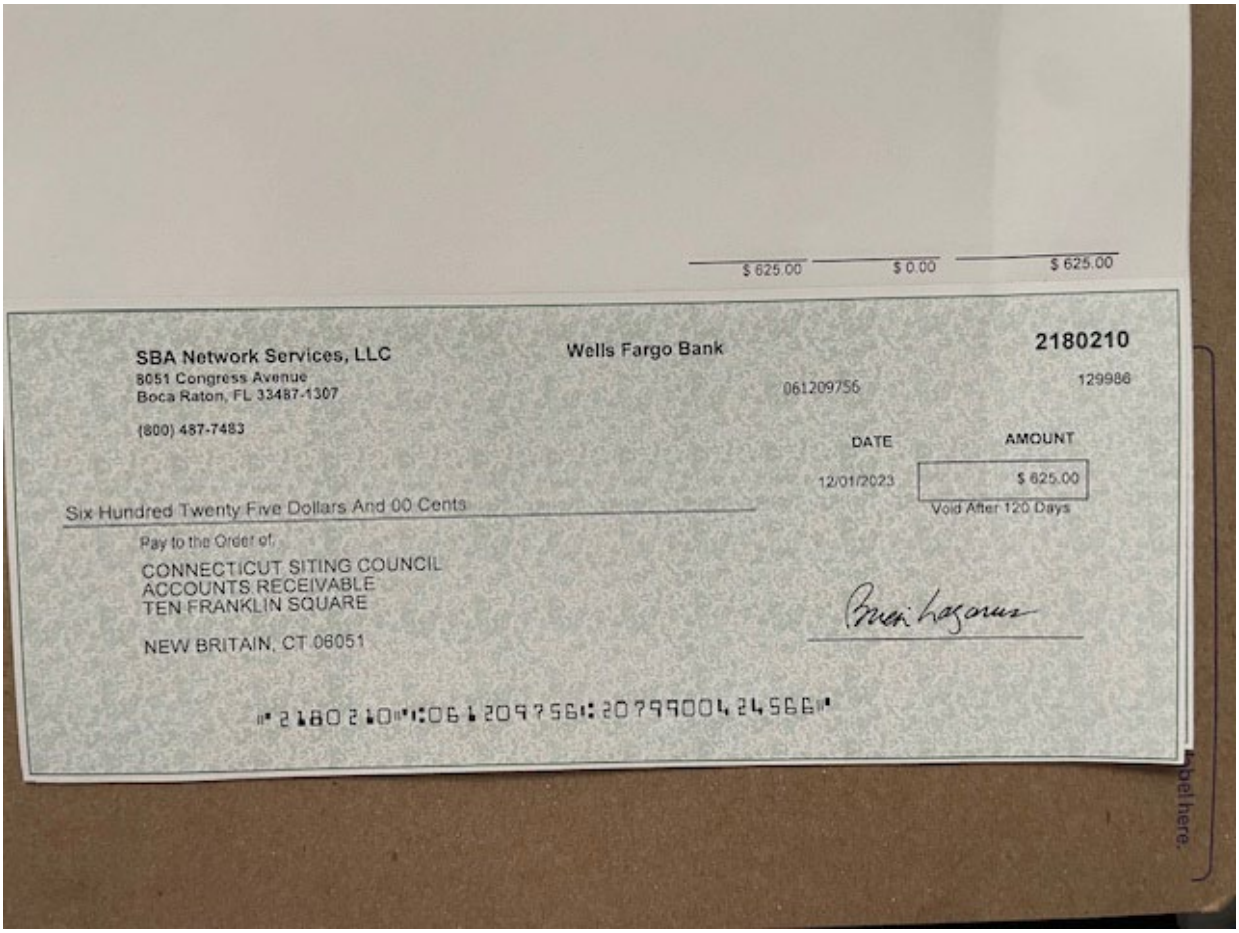
EXHIBIT LIST

Exhibit 1	Copy of Check	X
Exhibit 2	Notification Receipts	x
Exhibit 3	Property Card	x
Exhibit 4	Property Map	x
Exhibit 5	Original Zoning Approval	1/13/1998
Exhibit 6	Construction Drawings	Kimley Horn 9/28/2023
Exhibit 7	Structural Analysis	GPD Engineering 8/31/2023
Exhibit 8	Mount Analysis	Kimley Horn 9/07/2023
Exhibit 9	EME	Fox Hill Telecom –12/04/2023

EXHIBIT 1

Copy of check

From: Catherine Ware
To: Catherine Ware
Subject: [External] CSC zoning filing fee
Date: Thursday, December 7, 2023 2:22:10 PM



$ 625.00 $ 0.00 $ 625.00

SBA Network Services, LLC
8051 Congress Avenue
Boca Raton, FL 33487-1307
(800) 487-7483

Wells Fargo Bank
061209756

2180210
129986

DATE 12/01/2023
AMOUNT $ 625.00
Void After 120 Days

Six Hundred Twenty Five Dollars And 00 Cents

Pay to the Order of
CONNECTICUT SITING COUNCIL
ACCOUNTS RECEIVABLE
TEN FRANKLIN SQUARE

NEW BRITAIN, CT 06051

⑈2180210⑈ ⑆061209756⑆ 20799004 24566⑈

bel here.

Sent from my iPhone

EXHIBIT 2
Notification Receipts

ORIGIN ID:BBFA (917) 868-8365
CATHERINE WARE
SBA COMMUNICATIONS CORPORATION
134 FLANDERS ROAD
SUITE 125
WESTBOROUGH, MA 01581
UNITED STATES US

SHIP DATE: 07FEB24
ACTWGT: 2.00 LB
CAD: 255382542/INET4535

BILL SENDER

TO **DOUG COLTER**
BUILDING OFFICIAL - ACTING
MONTVILLE TOWN HALL
LOWER LEVEL - ROOM B-4
310 NORWICH - NEW LONDON TURNPIKE
UNCASVILLE CT 06382
(860) 848-6782 REF: 10-56-92009-6089
INV:
PO: DEPT:

583J5/EC2B/9AE3

FedEx Express

E

J241024011001uv

FRI - 09 FEB 5:00P
**** 2DAY ****

TRK# 0201 **7750 9464 5805**

06382

K7 SKKA CT-US **BDL**

After printing this label:
CONSIGNEE COPY - PLEASE PLACE IN FRONT OF POUCH
1. Fold the printed page along the horizontal line.
2. Place label in shipping pouch and affix it to your shipment.

Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on fedex.com. FedEx will not be responsible for any claim in excess of $100 per package, whether the result of loss, damage, delay, non-delivery, misdelivery, or misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim. Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental, consequential, or special is limited to the greater of $100 or the authorized declared value. Recovery cannot exceed actual documented loss. Maximum for items of extraordinary value is $1,000, e.g. jewelry, precious metals, negotiable instruments and other items listed in our Service Guide. Written claims must be filed within strict time limits, see current FedEx Service Guide.

After printing this label:
CONSIGNEE COPY - PLEASE PLACE IN FRONT OF POUCH
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ORIGIN ID:BBFA (917) 868-8365
CATHERINE WARE
SBA COMMUNICATIONS CORPORATION
134 FLANDERS ROAD
SUITE 125
WESTBOROUGH, MA 01581
UNITED STATES US

SHIP DATE: 07FEB24
ACTWGT: 2.00 LB
CAD: 255382542/INET4535

BILL SENDER

TO **ERNEST & WALTER WAINWRIGHT**
149 GREAT NECK ROAD
WATERFORD CT 06385
(860) 271-5580 REF: 10-56-92009-6089
INV:
PO: DEPT:

583J5/EC2B/9AE3

FedEx Express

E

J241024011001uv

FRI - 09 FEB 8:00P
**** 2DAY ****
RES
06385
CT-US PVD

TRK# 0201 **7750 9450 5030**

4Z PROVG

ORIGIN ID:BBFA (917) 868-8365
CATHERINE WARE
SBA COMMUNICATIONS CORPORATION
134 FLANDERS ROAD
SUITE 125
WESTBOROUGH, MA 01581
UNITED STATES US

SHIP DATE: 07FEB24
ACTWGT: 2.00 LB
CAD: 255382542/INET4535

BILL SENDER

TO **LEONARD BUNNEL, SR.**
OFFICE OF THE MAYOR
MONTVILLE TOWN HALL
2ND FLOOR
310 NORWICH - NEW LONDON TURNPIKE
UNCASVILLE CT 06382
(860) 848-6778 REF: 10-56-92009-6089
INV:
PO: DEPT:

583J5/EC2B/9AE3

FedEx Express

E

J241024011001uv

FRI - 09 FEB 5:00P
**** 2DAY ****

TRK# 0201 **7750 9457 7690**

06382
CT-US BDL

K7 SKKA

After printing this label:
CONSIGNEE COPY - PLEASE PLACE IN FRONT OF POUCH
1. Fold the printed page along the horizontal line.
2. Place label in shipping pouch and affix it to your shipment.

Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on fedex.com. FedEx will not be responsible for any claim in excess of $100 per package, whether the result of loss, damage, delay, non-delivery, misdelivery, or misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim. Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental, consequential, or special is limited to the greater of $100 or the authorized declared value. Recovery cannot exceed actual documented loss. Maximum for items of extraordinary value is $1,000, e.g. jewelry, precious metals, negotiable instruments and other items listed in our Service Guide. Written claims must be filed within strict time limits, see current FedEx Service Guide.

ORIGIN ID:BBFA (917) 868-8365
CATHERINE WARE
SBA COMMUNICATIONS CORPORATION
134 FLANDERS ROAD
SUITE 125
WESTBOROUGH, MA 01581
UNITED STATES US

SHIP DATE: 07FEB24
ACTWGT: 2.00 LB
CAD: 255382542/INET4535

BILL SENDER

TO **MELANIE BACHMAN**
CONNECTICUT SITING COUNCIL
TEN FRANKLIN SQUARE

NEW BRITAIN CT 06051
(860) 827-2935 REF: 10-56-92009-6089
INV:
PO: DEPT:

583J5/EC2B/9AE3

FedEx Express

E

J241024011001uv

FRI - 09 FEB 5:00P
** 2DAY **

TRK# 0201 **7750 9442 1618**

K7 BDLA

06051
CT-US BDL

After printing this label:
CONSIGNEE COPY - PLEASE PLACE IN FRONT OF POUCH
1. Fold the printed page along the horizontal line.
2. Place label in shipping pouch and affix it to your shipment.

Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on fedex.com. FedEx will not be responsible for any claim in excess of $100 per package, whether the result of loss, damage, delay, non-delivery, misdelivery, or misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim. Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental, consequential, or special is limited to the greater of $100 or the authorized declared value. Recovery cannot exceed actual documented loss. Maximum for items of extraordinary value is $1,000, e.g. jewelry, precious metals, negotiable instruments and other items listed in our Service Guide. Written claims must be filed within strict time limits, see current FedEx Service Guide.

Address: 1 OAK ST
WESTBOROUGH
MA 01581

Location: AYEK
Device ID: -BTC02

FedEx Express Package(s) - Dropped Off
Tracking Number:
775094577690

FedEx Express Package(s) - Dropped Off
Tracking Number:
775094645805

FedEx Express Package(s) - Dropped Off
Tracking Number:
775094505030

Total Pieces: 3

EXHIBIT 3

Property Card

Property Card: **71 MOXLEY RD Unit A**

Town of Montville, CT

Parcel Information

Location:	71 MOXLEY RD Unit A	Property Use:	Commercial	Primary Use:	Cell Tower
Unique ID:	17012CEL	Map Block Lot:	017-012-CEL	Acres:	0
		Zone:	LI	Volume / Page:	0001/0001
		Sale Date:	10/01/2011	Sale Price:	$0

Value Information

	Appraised Value	Assessed Value
Land	0	0
Buildings	0	0
Detached Outbuildings	1394500	976150
Total	1394500	976150

Owner's Information

Owner's Data
SBA TOWERS II LLC 8051 CONGRESS AVE BOCA RATON, FL 334871307

EXHIBIT 4

Property Map

71 Moxley Road

Montville, CT

1 inch = 282 Feet

0 282 564 847

December 29, 2023

CAI Technologies
Precision Mapping. Geospatial Solutions.

www.cai-tech.com

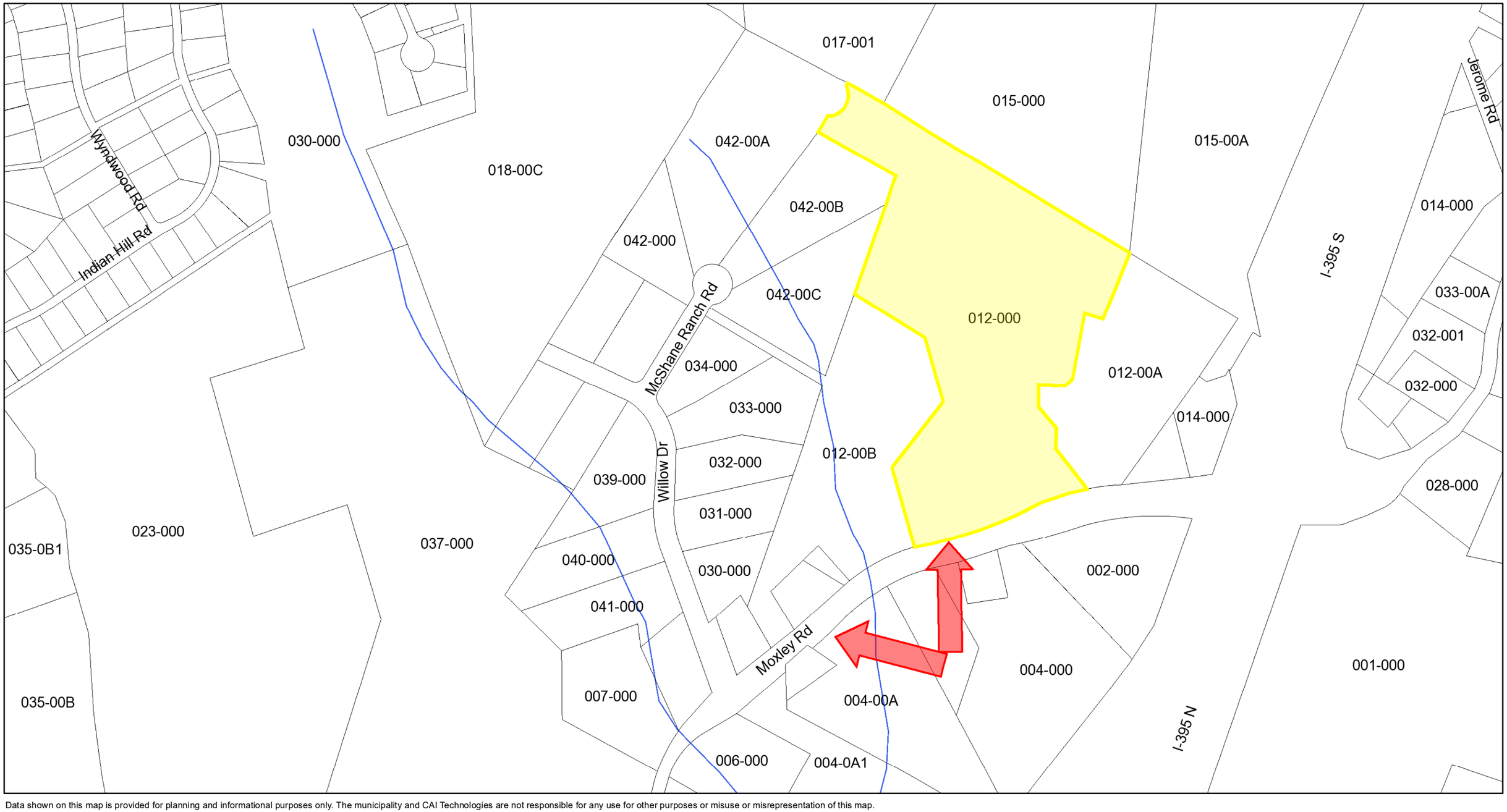


EXHIBIT 5

Zoning Approval

SITE NAME: Montville 3 SITE ID: CT10016-A

Transaction: Mariner Tower Jill

ZONING/PERMITTING COMPLETION FORM

Address: 71 Moxley Hill Road, Monteville, CT

Landlord/Parcel ID:

Jurisdiction: Connecticut Siting Council Zoning District: LI

Zoning Approval Type: Site Plan Approval Case #:

Approval Date: 1/13/98 Approved Height: 190 Tower Build Date:

Conditions of Approval:	Yes	No	N/A
Removal Bond	☐	☒	☐
Site Plan Submittal	☒	☐	☐
Fall Zone	☐	☒	☐
Periodic Inspections	☐	☒	☐
Periodic Reporting	☐	☒	☐
Approval Renewal	☐	☒	☐
Additional Conditions	☐	☒	☐

Cell towers currently fall under complete jurisdiction of Connecticut Siting Council (CSC). No CSC Review on this tower – tower build pre-dates CSC & has town zoning approvals. Any modifications/collocations must go through CSC Review.

Must notify CSC of transfer of ownership via letter & reference docket number if applicable.

JURISDICTION POC/DEPT.

Planning/Zoning: Carriann Mulcahy (CSC)

Phone: 860-827-2940 Fax:

Bldg./Code Enforcement:

Phone: Fax:

Submitted by: Patches Yates Date: 4/19/07

Zoning Compliance

TO BE COMPLETED BY CORPORATE

	Yes	No	N/A	
Zoning Approval Attached (required)	☒	☐	☐	PE
Ordinance Attached (required)	☐	☒	☐	
Building Permit Attached (required) 13835	☒	☐	☐	Date Recd 1/30/98
Certificate of Occupancy or Compliance (CO) attached (required)	☒	☐	☐	6/19/98

Zoning Manager Approval: Diane E. Borchardt Date 4/19/2007

Diane E. Borchardt, AICP

EXHIBIT 6
Construction Drawings

DISH Wireless L.L.C. SITE ID:

BOBOS01206A

DISH Wireless L.L.C. SITE ADDRESS:

71 MOXLEY ROAD
UNCASVILLE, CT 06382

SBA APPROVED

By Stephen Roth at 3:50:54 PM, 10/4/2023

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 (3) PROPOSED ANTENNA SECTOR FRAME MOUNTS
- INSTALL PROPOSED JUMPERS
- INSTALL (6) PROPOSED RRUs (2 PER SECTOR)
- INSTALL (1) PROPOSED OVER VOLTAGE PROTECTION DEVICE (OVP)
- INSTALL (1) PROPOSED HYBRID CABLE

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

SITE INFORMATION

PROPERTY OWNER:	WAINWRIGHT ERNEST C & WALTER N JR
ADDRESS:	149 GREAT NECK ROAD WATERFORD, CT 06385
TOWER TYPE:	GUYED TOWER
SBA SITE ID:	CT10016-A
SBA APP NUMBER:	234518
COUNTY:	NEW LONDON
LATITUDE (NAD 83):	41° 26' 6.76" N 41.435211° N
LONGITUDE (NAD 83):	72° 7' 23.95" W 72.123319° W
ZONING JURISDICTION:	CITY OF MONTVILLE
ZONING DISTRICT:	LI
PARCEL NUMBER:	86-017/012-000
OCCUPANCY GROUP:	U
CONSTRUCTION TYPE:	II-B
POWER COMPANY:	EVERSOURCE
FIBER PROVIDER:	TBD

PROJECT DIRECTORY

APPLICANT:	DISH Wireless L.L.C. 5701 SOUTH SANTA FE DRIVE LITTLETON, CO 80120 (303) 706-5008
TOWER OWNER:	SBA COMMUNICATIONS 470 DAVIDSON ROAD PITTSBURGH, PA 15239
SITE DESIGNER:	KIMLEY-HORN & ASSOCIATES COA: PEC.0000738 3875 EMBASSY PKWY, SUITE 280 AKRON, OH 44333 (216) 505-7771
SITE ACQUISITION:	JULIE CHAREST JULIE.CHAREST@DISH.COM
CONSTRUCTION MANAGER:	TBD
RF ENGINEER:	IRENE RANGEL IRENE.RANGEL@DISH.COM

CONNECTICUT CODE OF COMPLIANCE

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

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

SITE PHOTO

DIRECTIONS

DIRECTIONS FROM BRADLEY INTERNATIONAL AIRPORT:
- HEAD NORTH TOWARD BRADLEY INTERNATIONAL AIRPORT
- CONTINUE ONTO CT-20 E/BRADLEY INTERNATIONAL AIRPORT CON
- MERGE ONTO I-91 S TOWARD HARTFORD
- USE THE LEFT LANE TO TAKE EXIT 30 TO MERGE ONTO I-84 E TOWARD CT-2/E. HARTFORD/NEW LONDON
- TAKE EXIT 55 FOR CT-2 E TOWARD NORWICH/NEW LONDON/I-84 E
- CONTINUE ONTO CT-2 E
- FOLLOW SIGNS FOR 2 E
- TAKE EXIT 28S FOR I-395 S/CT-2A S TOWARD NEW HAVEN
- MERGE ONTO CT-2A E/I-395 S
- TAKE EXIT 6 FOR CT-163 TOWARD UNCASVILLE/MONTVILLE
- TURN RIGHT ONTO CT-163 N
- TURN LEFT ONTO PEQUOT RD
- SLIGHT LEFT ONTO MAPLE AVE
- TURN RIGHT ONTO JEROME RD
- TURN RIGHT ONTO MOXLEY RD

SHEET INDEX

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

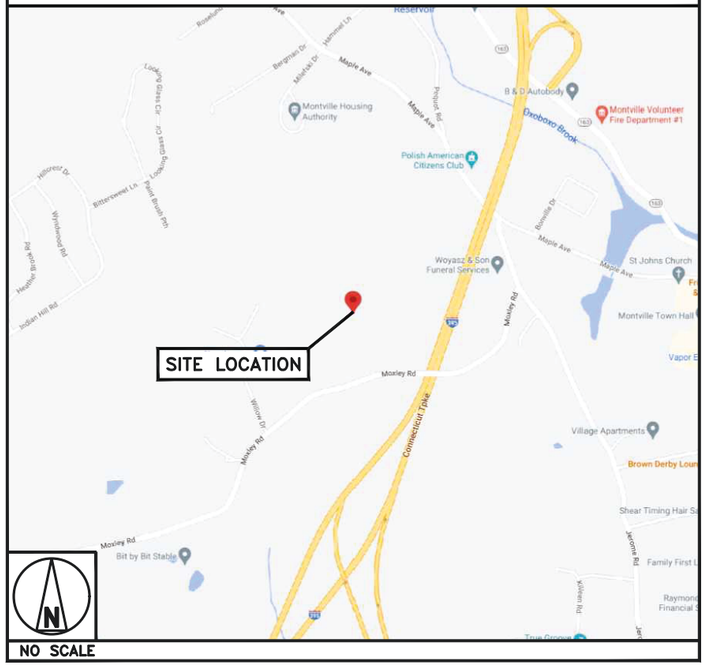
GENERAL NOTES

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.

VICINITY MAP



N

NO SCALE

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

Kimley»Horn

421 FAYETTEVILLE ST, SUITE 600
RALEIGH, NC 27601

SBA

470 DAVIDSON ROAD
PITTSBURGH, PA 15239
TEL: (740) 260-9710

STATE OF CONNECTICUT
WILLIAM C. EDMONDS
36630
LICENSED
PROFESSIONAL ENGINEER
9/28/23

DRAWN BY:	CHECKED BY:	APPROVED BY:
LMS	MCK	KJC

APPLICATION REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	09/20/2023	ISSUED FOR REVIEW
0	09/28/2023	ISSUED FOR PERMIT

A&E PROJECT NUMBER

KHCLE-47862

DISH Wireless L.L.C.
PROJECT INFORMATION

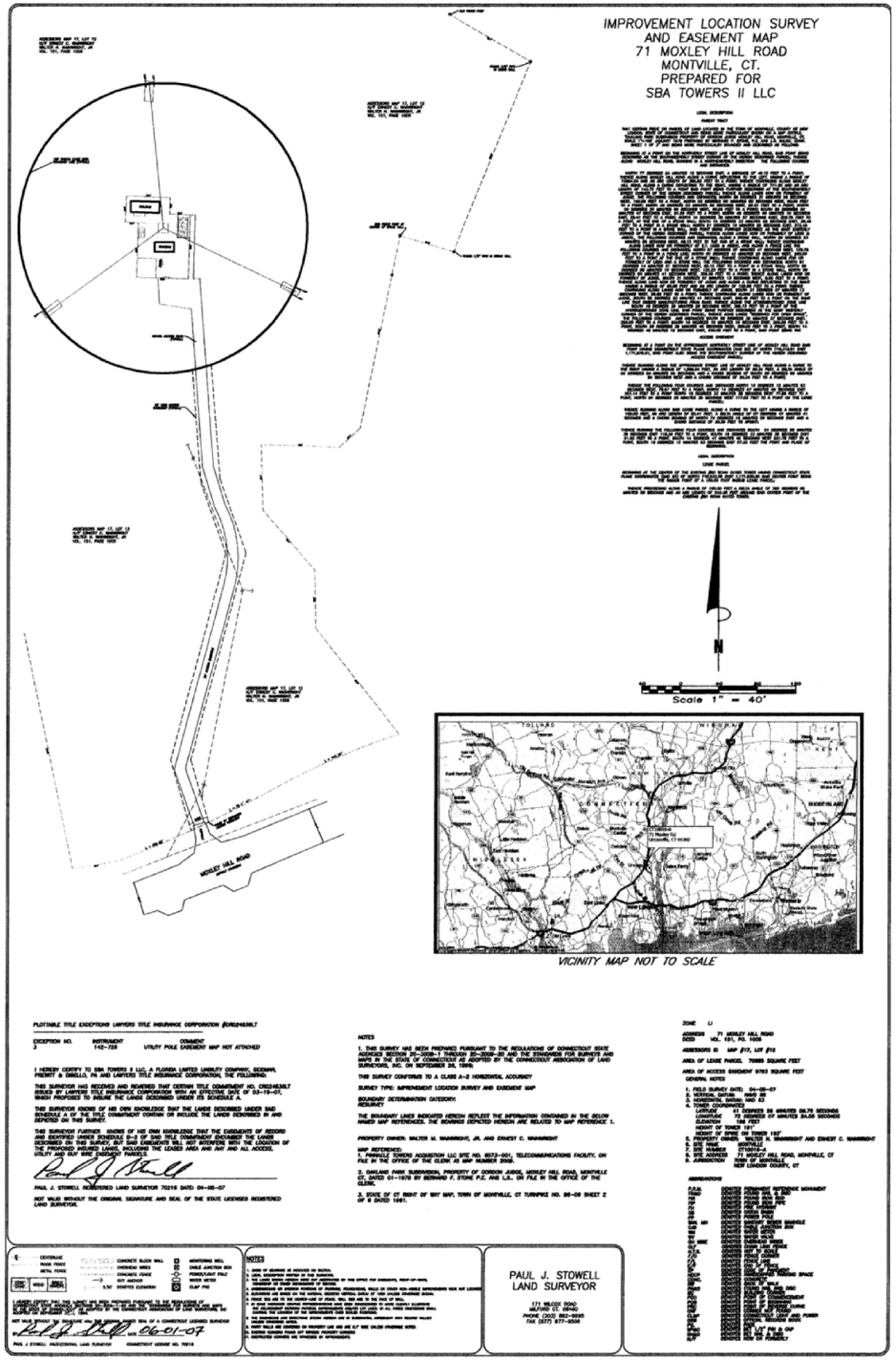
BOBOS01206A
71 MOXLEY ROAD
UNCASVILLE, CT 06382

SHEET TITLE

TITLE SHEET

SHEET NUMBER

T-1



*Final CT10016-A; Montville

SITE SURVEY | NO SCALE | 1

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

Kimley»Horn
421 FAYETTEVILLE ST, SUITE 600
RALEIGH, NC 27601

SBA
470 DAVIDSON ROAD
PITTSBURGH, PA 15239
TEL: (740) 260-9710

FOR REFERENCE PURPOSES ONLY

DRAWN BY:	CHECKED BY:	APPROVED BY:
LMS	MCK	KJC

APPLICATION REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	09/20/2023	ISSUED FOR REVIEW
0	09/28/2023	ISSUED FOR PERMIT

A&E PROJECT NUMBER

KHCLE-47862

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBOS01206A
71 MOXLEY ROAD
UNCASVILLE, CT 06382

SHEET TITLE

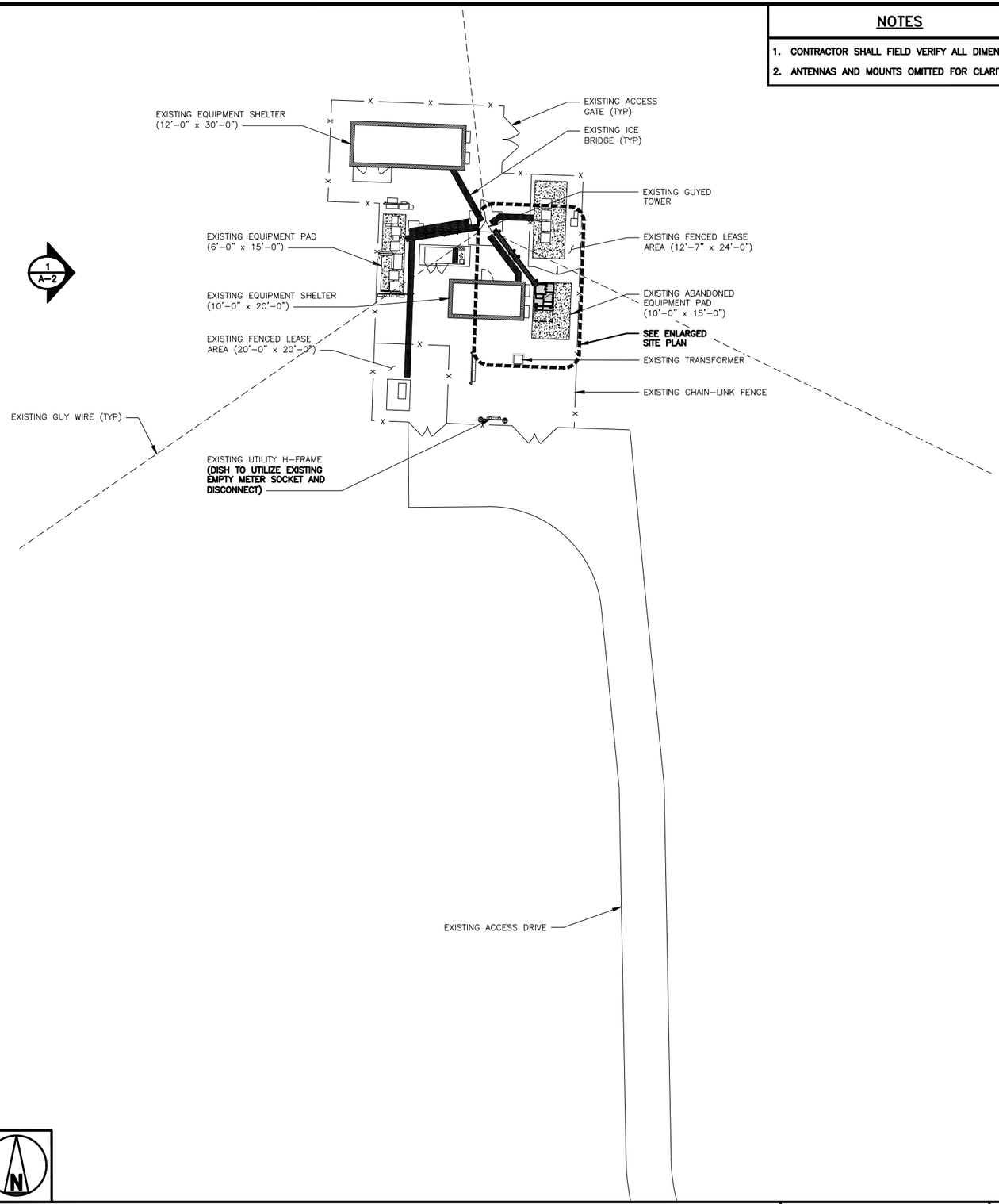
SITE SURVEY

SHEET NUMBER

LS-1

NOTES

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



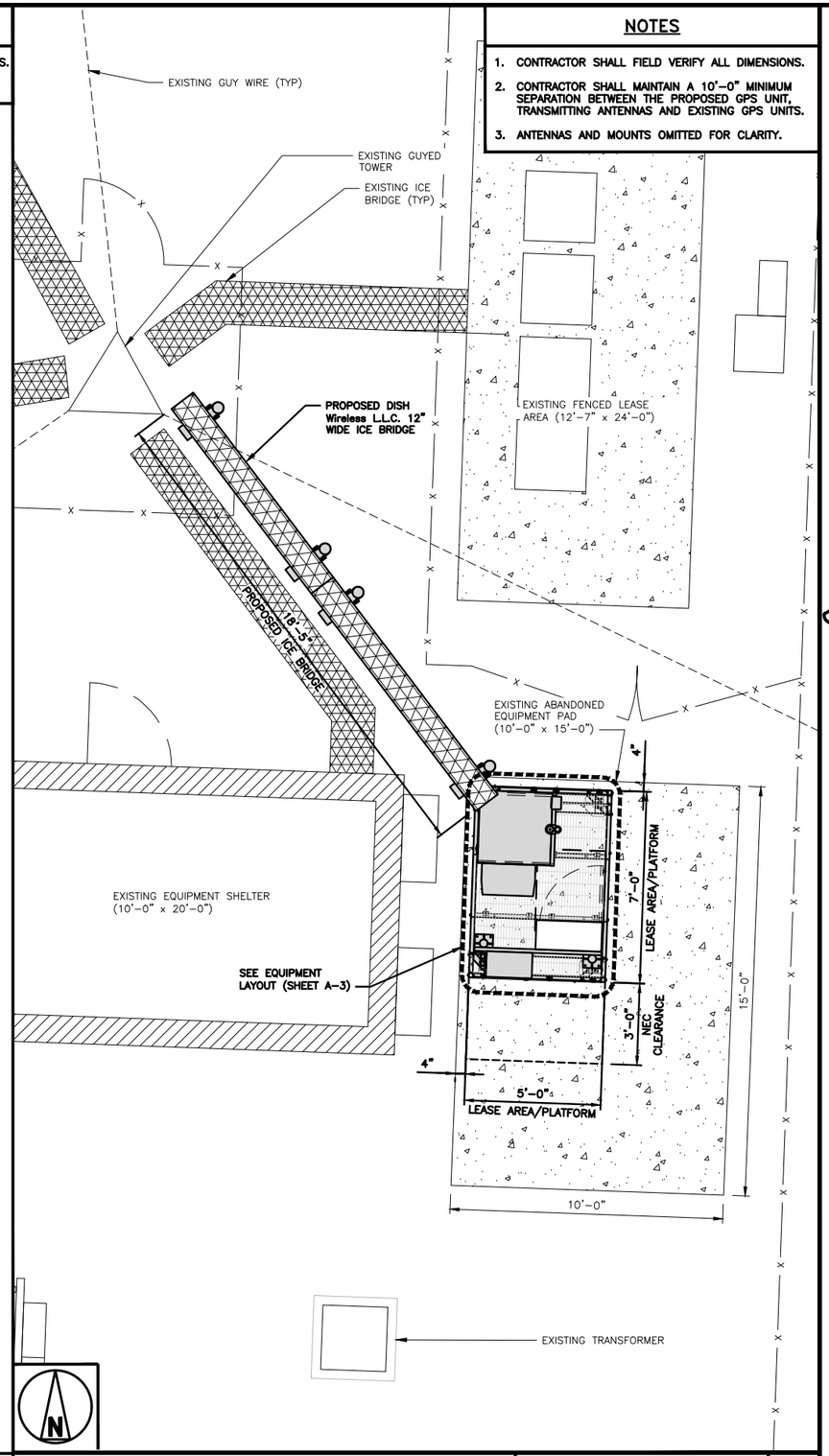
OVERALL SITE PLAN

16' 12' 8' 4' 0 16' 32'
1/16"=1'–0"

1

NOTES

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



ENLARGED SITE PLAN

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

2

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421 FAYETTEVILLE ST, SUITE 600
RALEIGH, NC 27601

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470 DAVIDSON ROAD
PITTSBURGH, PA 15239
TEL: (740) 260–9710

STATE OF CONNECTICUT
WILLIAM C. EDMONDS
36630
LICENSED PROFESSIONAL ENGINEER
9/28/23

DRAWN BY:	CHECKED BY:	APPROVED BY:
LMS	MCK	KJC

APPLICATION REV #: 1

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A&E PROJECT NUMBER

KHCLE–47862

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBOS01206A
71 MOXLEY ROAD
UNCASVILLE, CT 06382

SHEET TITLE

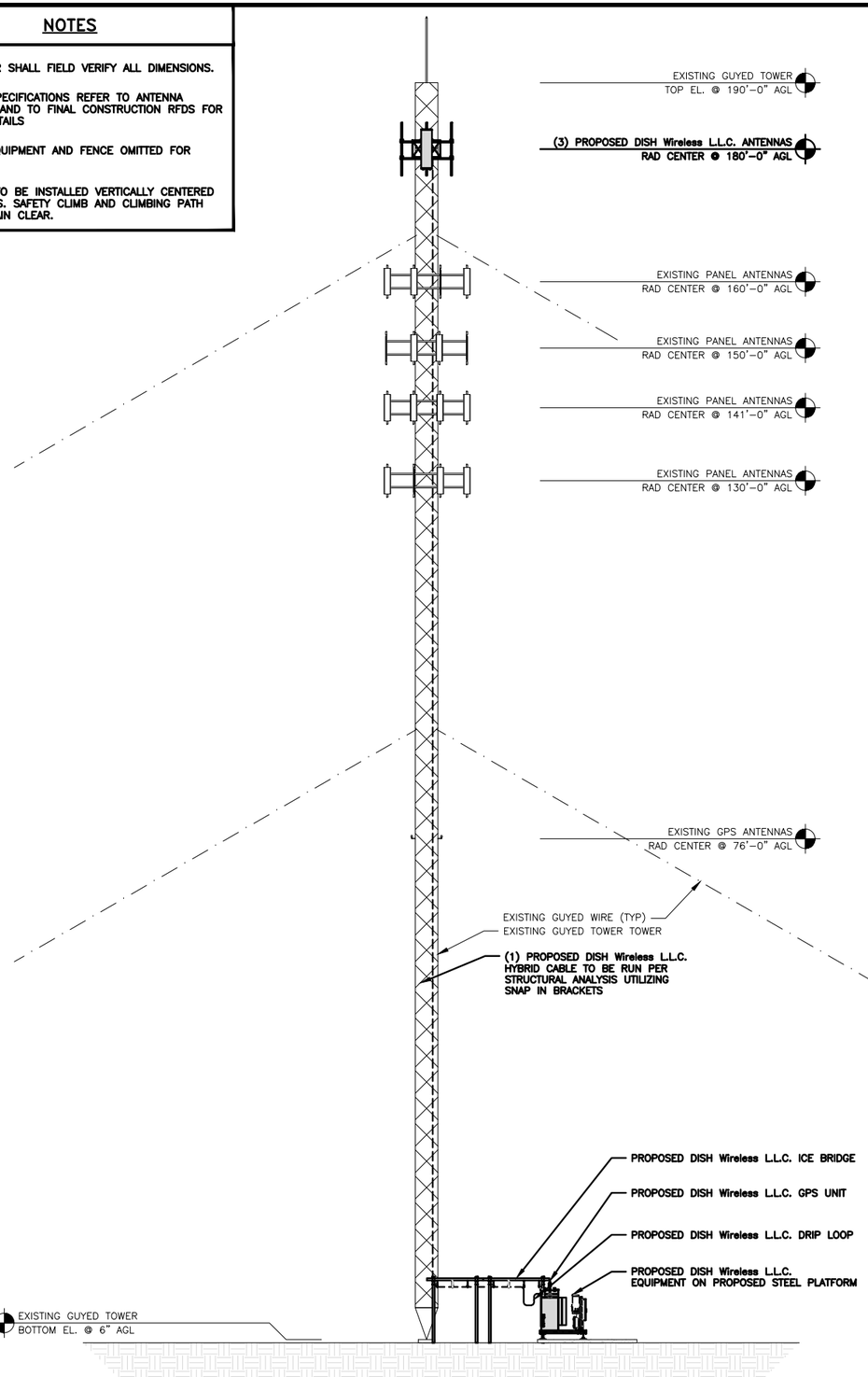
OVERALL AND ELARGED SITE PLAN

SHEET NUMBER

A-1

NOTES

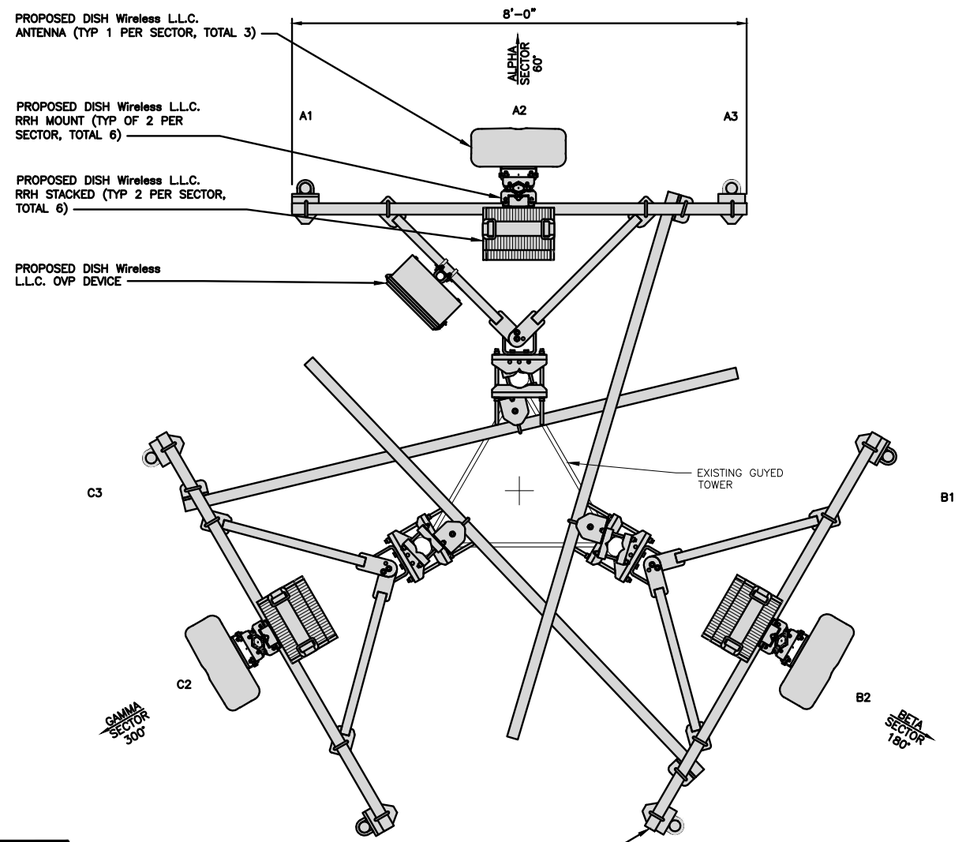
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNA SPECIFICATIONS REFER TO ANTENNA SCHEDULE AND TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS
3. EXISTING EQUIPMENT AND FENCE OMITTED FOR CLARITY.
4. ANTENNAS TO BE INSTALLED VERTICALLY CENTERED ON MOUNTS. SAFETY CLIMB AND CLIMBING PATH MUST REMAIN CLEAR.



PROPOSED WEST 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
A-1	--	--	--	--	--	(1) HIGH-CAPACITY HYBRID CABLE (240' LONG)	SAMSUNG – RF4450T-71A/ SFG-ARR3J601DI	5G	A2	RAYCAP RDIDC – 9181-PF-48
A-2	PROPOSED	COMMSCOPE – FFVV-65B-R2	5G	60°	180'-0"		SAMSUNG – RF4451D-70A/ SFG-ARR3KM01DI	5G	A2	
A-3	--	--	--	--	--		--	--	--	
B-1	--	--	--	--	--	SHARED W/ALPHA	SAMSUNG – RF4450T-71A/ SFG-ARR3J601DI	5G	B2	SHARED W/ALPHA
B-2	PROPOSED	COMMSCOPE – FFVV-65B-R2	5G	180°	180'-0"		SAMSUNG – RF4451D-70A/ SFG-ARR3KM01DI	5G	B2	
B-3	--	--	--	--	--		--	--	--	
C-1	--	--	--	--	--	SHARED W/ALPHA	SAMSUNG – RF4450T-71A/ SFG-ARR3J601DI	5G	C2	SHARED W/ALPHA
C-2	PROPOSED	COMMSCOPE – FFVV-65B-R2	5G	300°	180'-0"		SAMSUNG – RF4451D-70A/ SFG-ARR3KM01DI	5G	C2	
C-3	--	--	--	--	--		--	--	--	

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

ANTENNA SCHEDULE

NO SCALE

3

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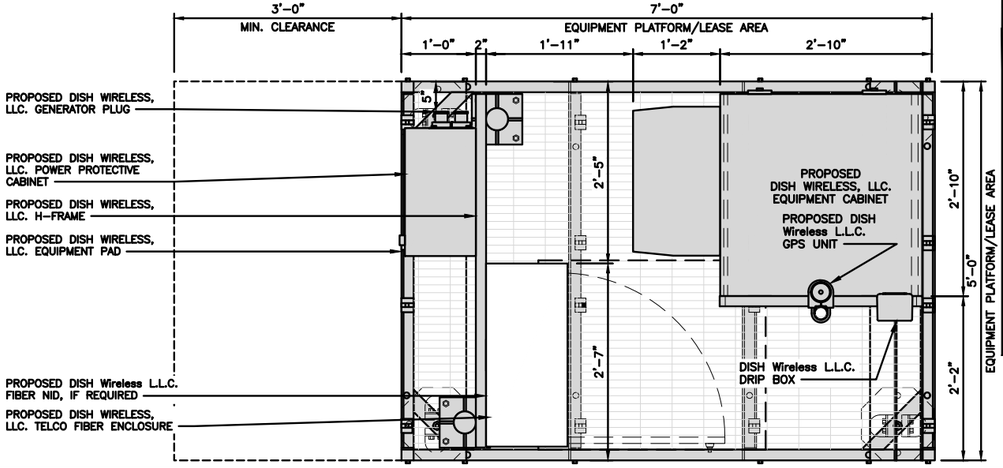
DISH Wireless L.L.C.
PROJECT INFORMATION
BOBOS01206A
71 MOXLEY ROAD
UNCASVILLE, CT 06382

SHEET TITLE
ELEVATION, ANTENNA LAYOUT AND SCHEDULE

SHEET NUMBER
A-2



PLATFORM EQUIPMENT PLAN

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

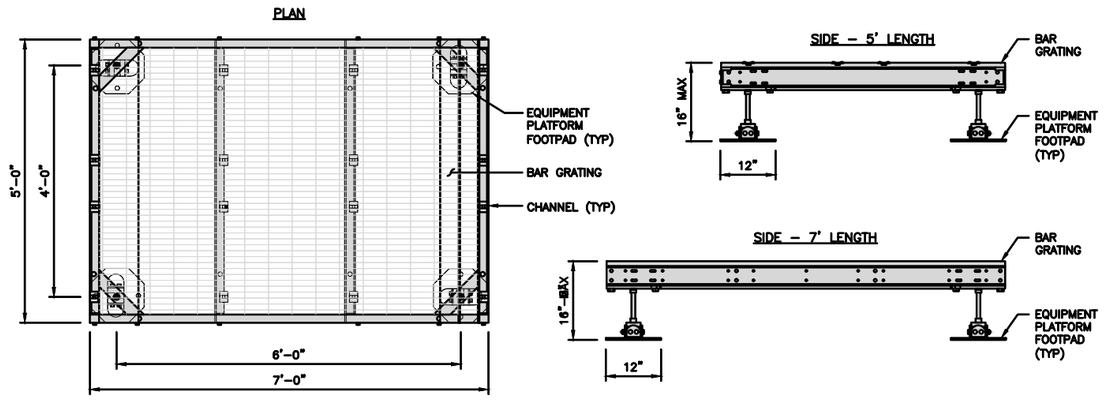
1

NOTES

1. INSTALL POSTS BASES TO GRATING JUST INSIDE PLATFORM FRAME. NO DRILLING REQUIRED.
2. GPS MAY BE MOVED TO ICE BRIDGE OR H-FRAME.
3. ALL CONDUIT TO BE ROUTED THROUGH PLATFORM GRATING USING LIQUIDTIGHT, EMT, RIGID OR PVC COUPLERS. CONDUIT QUANTITY AND SIZES ARE PER ONE-LINE DIAGRAM ON E-3 SHEET OF CDS. (DC PLANT DEPENDENT.)
4. CONTRACTOR MAY FIELD INSTALL CONDUIT HOLES IN BOTTOM OF PPC CABINET TO MATCH CONDUIT SIZES. (SEAL TO PPC MANUFACTURER SPECIFICATIONS).
5. H-FRAME POSTS ARE STAGGERED TO ALLOW FIBER NID BOXES TO BE INSTALLED CLOSE TO PERIMETER FRAME OF PLATFORM.
6. CONDUITS FROM PPC/FIBER DEMARK CABINETS TO EQUIPMENT CABINET (BBU) SHALL BE INSTALLED INSIDE PERIMETER OF PLATFORM AND UNDER GRATING.
7. KIMLEY-HORN DID NOT EVALUATE THE PLATFORM STRUCTURE TO SUPPORT THE PROPOSED EQUIPMENT CONFIGURATION. CONTRACTOR TO OBTAIN PASSING PLATFORM ANALYSIS REPORT PRIOR TO INSTALLING THE PROPOSED PLATFORM.

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

NOTE:
1. GC TO PROVIDE EXTENDED THREAD FOR PLATFORM IF REQUIRED HEIGHT EXCEEDS 16"
2. PLATFORM TO BE LEVEL WITHIN 1°

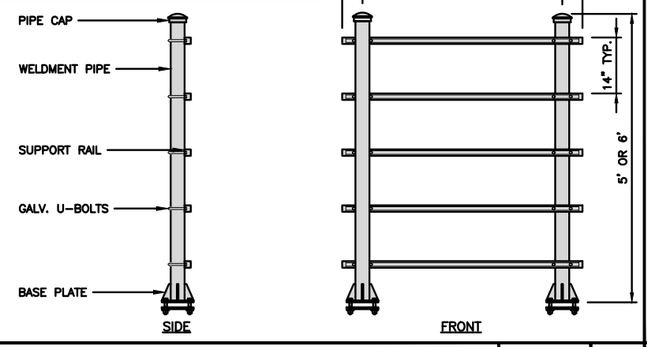


PLATFORM DETAIL

NO SCALE

2

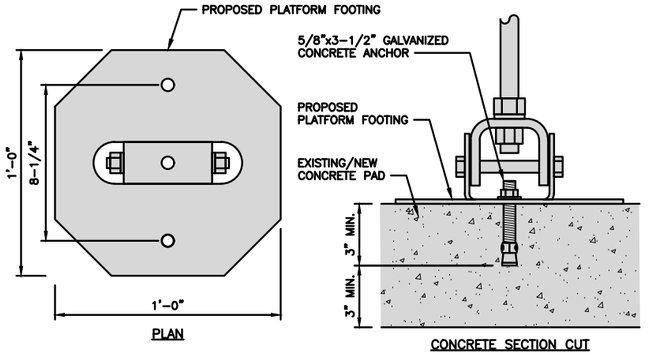
COMMSCOPE MTC4045HFLD H-FRAME	
UNISTRUT/SUPPORT RAILS QTY	5
WEIGHT	59.74 lbs



H-FRAME DETAIL

NO SCALE

3



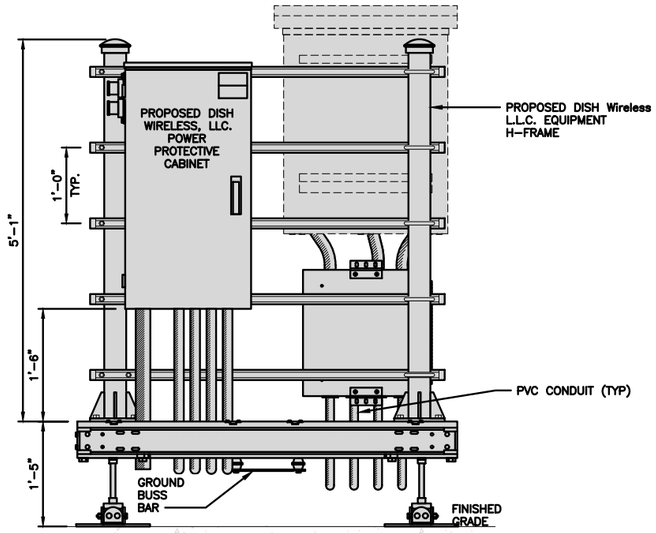
PLATFORM FOOTING ANCHORAGE DETAIL

NO SCALE

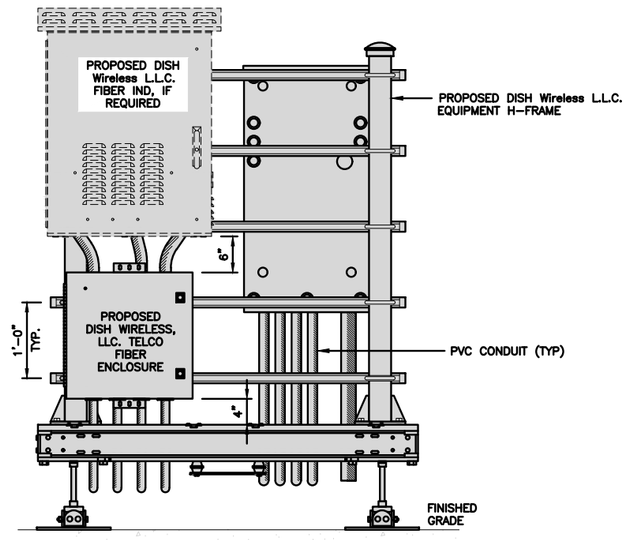
4

NOTES

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



FRONT ELEVATION



BACK ELEVATION

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

5

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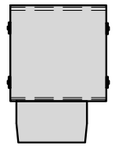
DISH Wireless L.L.C.
PROJECT INFORMATION
BOBOS01206A
71 MOXLEY ROAD
UNCASVILLE, CT 06382

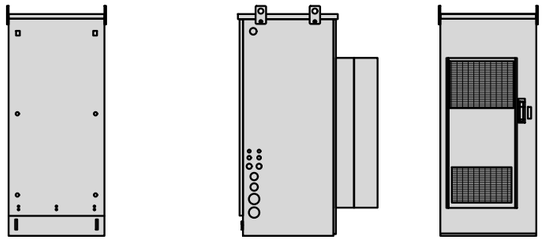
SHEET TITLE
EQUIPMENT PLATFORM AND H-FRAME DETAILS

SHEET NUMBER
A-3

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



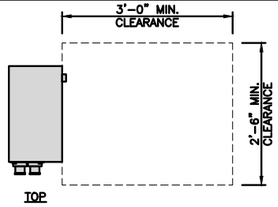
PLAN



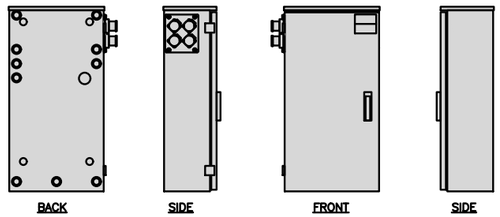
BACK SIDE FRONT

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

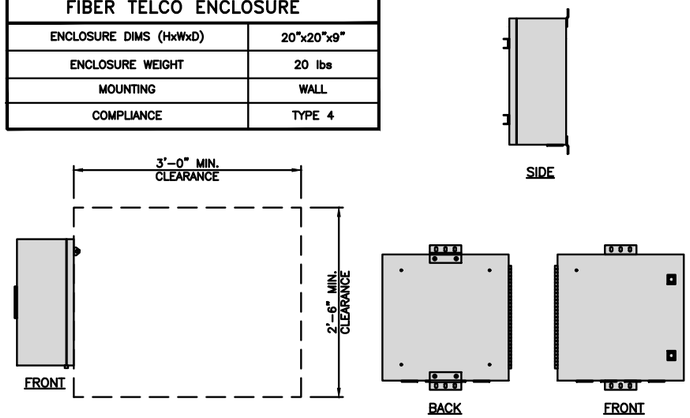


BACK SIDE FRONT SIDE

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

NOT USED | NO SCALE | 3

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



SIDE

FRONT BACK FRONT

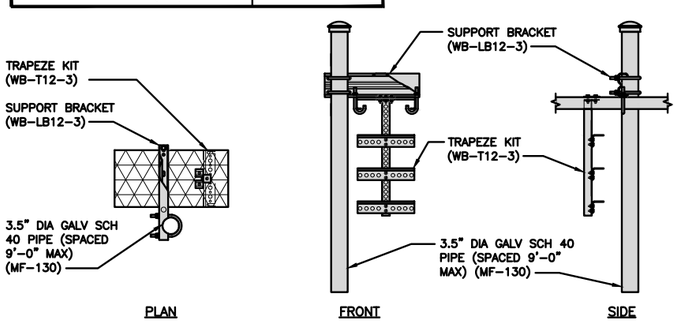
FIBER TELCO ENCLOSURE DETAIL | NO SCALE | 6

NOT USED | NO SCALE | 4

NOT USED | NO SCALE | 5

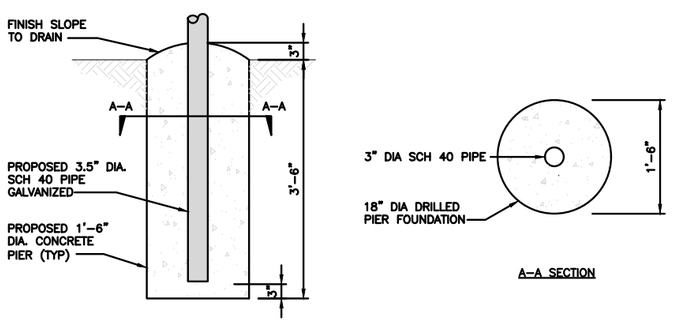
COMMSCOPE WB–K110–B WAVEGUIDE BRIDGE KIT	
DIMENSIONS (HxL)	160"x10'
WEIGHT/ VOLUME	325.0 LBS
CABLE RUN (QTY)	12

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



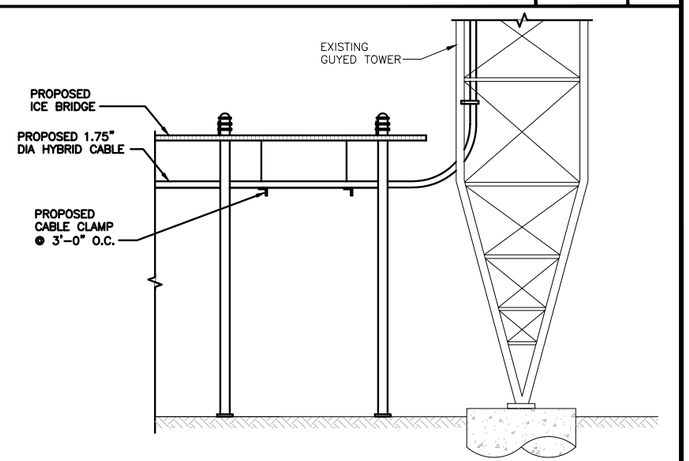
PLAN FRONT SIDE

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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71 MOXLEY ROAD
UNCASVILLE, CT 06382

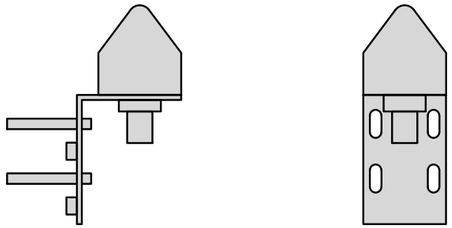
SHEET TITLE

EQUIPMENT DETAILS

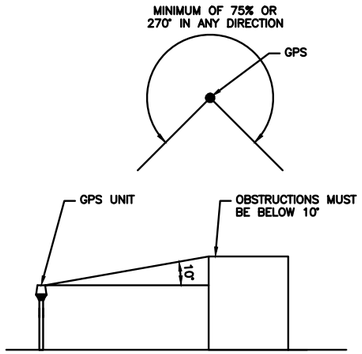
SHEET NUMBER

A-4

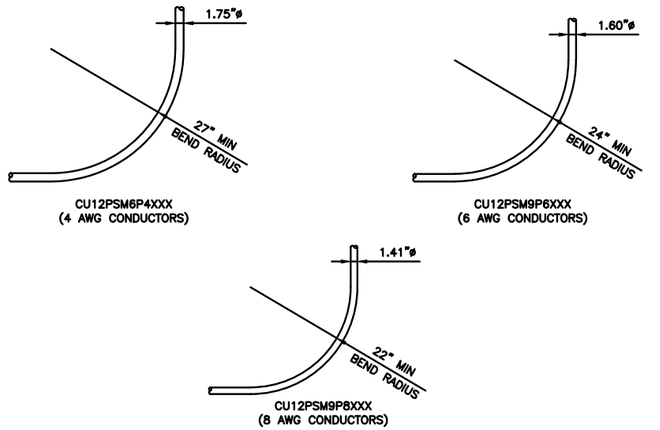
AMPHENOL GNS 2020–D	
DIMENSIONS (DIAxH)	1.97"x3.94"
WEIGHT W/ACCESSORIES	1 lb
CONNECTOR	N–FEMALE
FREQUENCY RANGE	1559–1610.5 MHz



GPS DETAIL | NO SCALE | 1



GPS MINIMUM SKY VIEW REQUIREMENTS | NO SCALE | 2

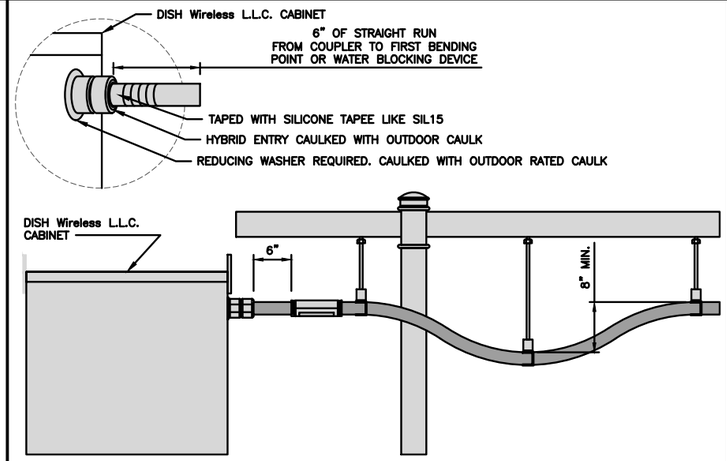


CABLES UNLIMITED HYBRID CABLE
MINIMUM BEND RADIUSES | NO SCALE | 3

NOTE:

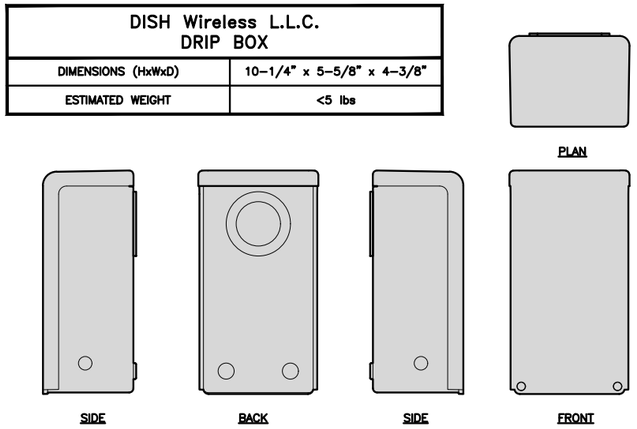
CONTRACTOR SHALL NOT LOOP EXCESS HYBRID OUTSIDE CABINET. EXCESS HYBRID LENGTH IS TO BE ADJUSTED BY STRIPPING JACKET AND SHIELDING AND TERMINATING DC CABLE TO LENGTH. FIBER EXCESS IS TO BE COILED IN FIBER SLACK TRAY INSIDE NETWORK CABINET.

HYBRID CABLE INSTALLATION NOTE | NO SCALE | 4

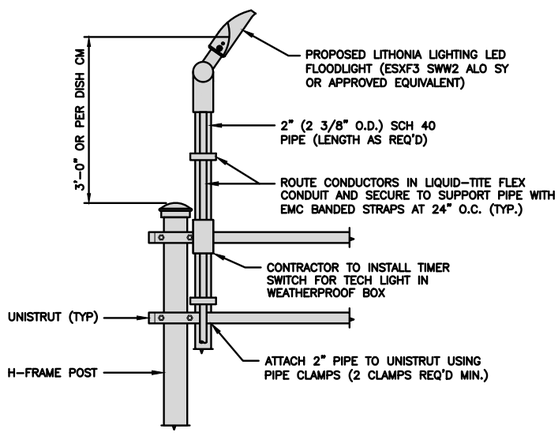


HYBRID CABLE INSTALLATION DETAIL | NO SCALE | 5

DISH Wireless L.L.C. DRIP BOX	
DIMENSIONS (HxWxD)	10–1/4" x 5–5/8" x 4–3/8"
ESTIMATED WEIGHT	<5 lbs



DISH Wireless L.L.C. DRIP BOX DETAIL | NO SCALE | 6



TECH LIGHT DETAIL | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

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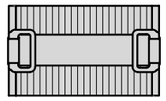
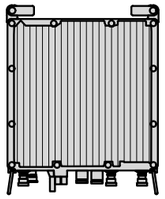
SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-5

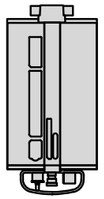
SAMSUNG – MID BAND RF4451D-70A / SFG-ARR3KM01DI	
DIMENSIONS (HxWxD)	15"x15"x8.9"
WEIGHT	61.3 lbs
CONNECTOR TYPE	4.3-10 RF CONNECTOR
INPUT VOLTAGE	-48VDC (-36 to 58 VDC)



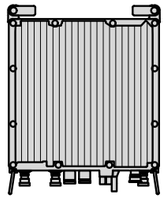
PLAN



BACK



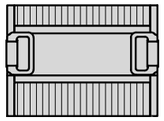
SIDE



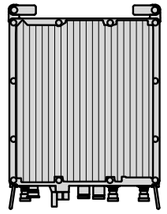
FRONT

RRH DETAIL | NO SCALE | 1

SAMSUNG – LOW BAND RF4450T-71A / SFG-ARR3J601DI	
DIMENSIONS (HxWxD)	15"x16.5"x11"
WEIGHT	94.6 lbs
CONNECTOR TYPE	4.3-10 RF CONNECTOR
INPUT VOLTAGE	-48VDC (-36 to 58 VDC)



PLAN



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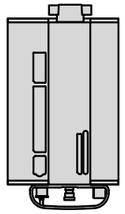

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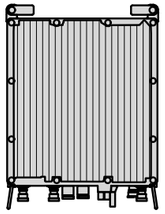
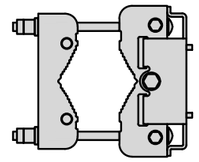


FRONT

RRH DETAIL | NO SCALE | 2

SAMSUNG FDD RRH POLE MOUNT	
DIMENSIONS (HxWxD)	9.8"x7"x10"
WEIGHT	TBD



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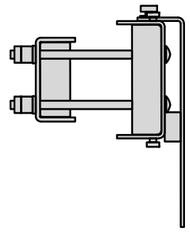

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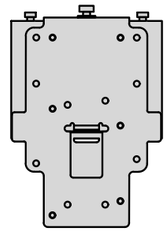
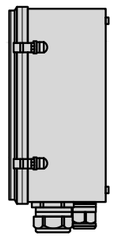


FRONT

RRH MOUNT DETAIL | NO SCALE | 3

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

PLAN



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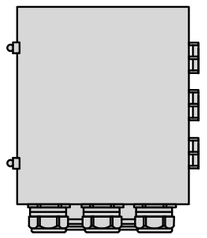

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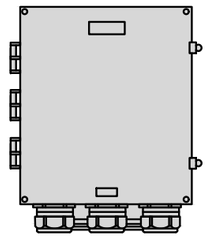
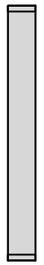


FRONT

SURGE SUPPRESSION DETAIL | NO SCALE | 4

COMMSCOPE FFVV-65B-R2	
DIMENSIONS (HxWxD)(MM/IN)	1828x498x197 72"x19.6"x7.8"
TOTAL WEIGHT	70.8 lbs
RF CONNECTOR INTERFACE	4.3-10 FEMALE

PLAN



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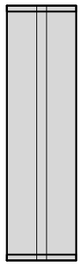
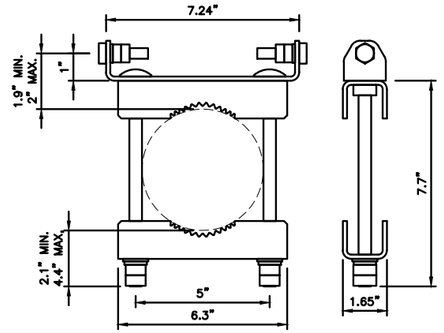


FRONT

ANTENNA DETAIL | NO SCALE | 5

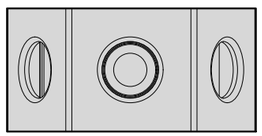
COMMSCOPE ANTENNA BRACKET BSAMNT-F	
DIAMETER COMPATIBILITY	2.402" – 4.5"
NET WEIGHT	7.937 lbs

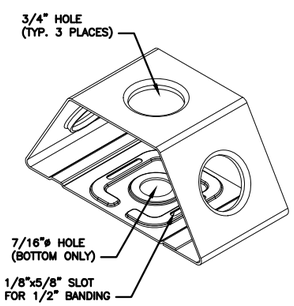
NOTE:
OR DISH Wireless L.L.C.
APPROVED EQUIVALENT

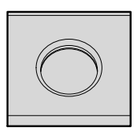


ANTENNA BRACKET DETAIL | NO SCALE | 6

TRAP3 STAINLESS STEEL TRAPEZOID SNAP-IN BOX	
DIMENSIONS (HxWxL)	1.5"x3-5/16"
WEIGHT	0.11 LBS



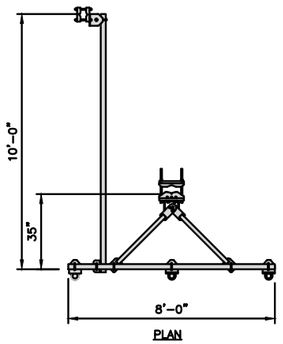




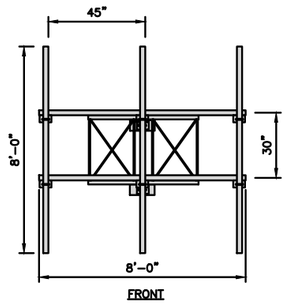
HYBRID CABLE BRACKET | NO SCALE | 7

COMMSCOPE V-FRAME MTC3975083	
FACE SIZE	8'-0"
WEIGHT	352.136 lbs

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



PLAN

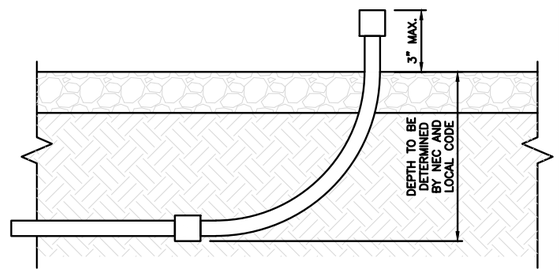


FRONT

ANTENNA FRAME DETAIL | NO SCALE | 8

NOTES

PVC COATED CONDUIT BENDS AND FITTINGS SHALL BE USED WHERE CONCEALED CONDUIT RUNS ARE STUBEED UP FROM THE SLAB. RISERS ON POLES SHALL BE PVC COATED RGS INCLUDING WEATHERHEADS.



STUB UP DETAIL | NO SCALE | 9

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STATE OF CONNECTICUT
WILLIAM C. EDMONDS
36630
LICENSED PROFESSIONAL ENGINEER
9/28/23

DRAWN BY:	CHECKED BY:	APPROVED BY:
LMS	MCK	KJC

APPLICATION REV #: 1

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KHCLE-47862

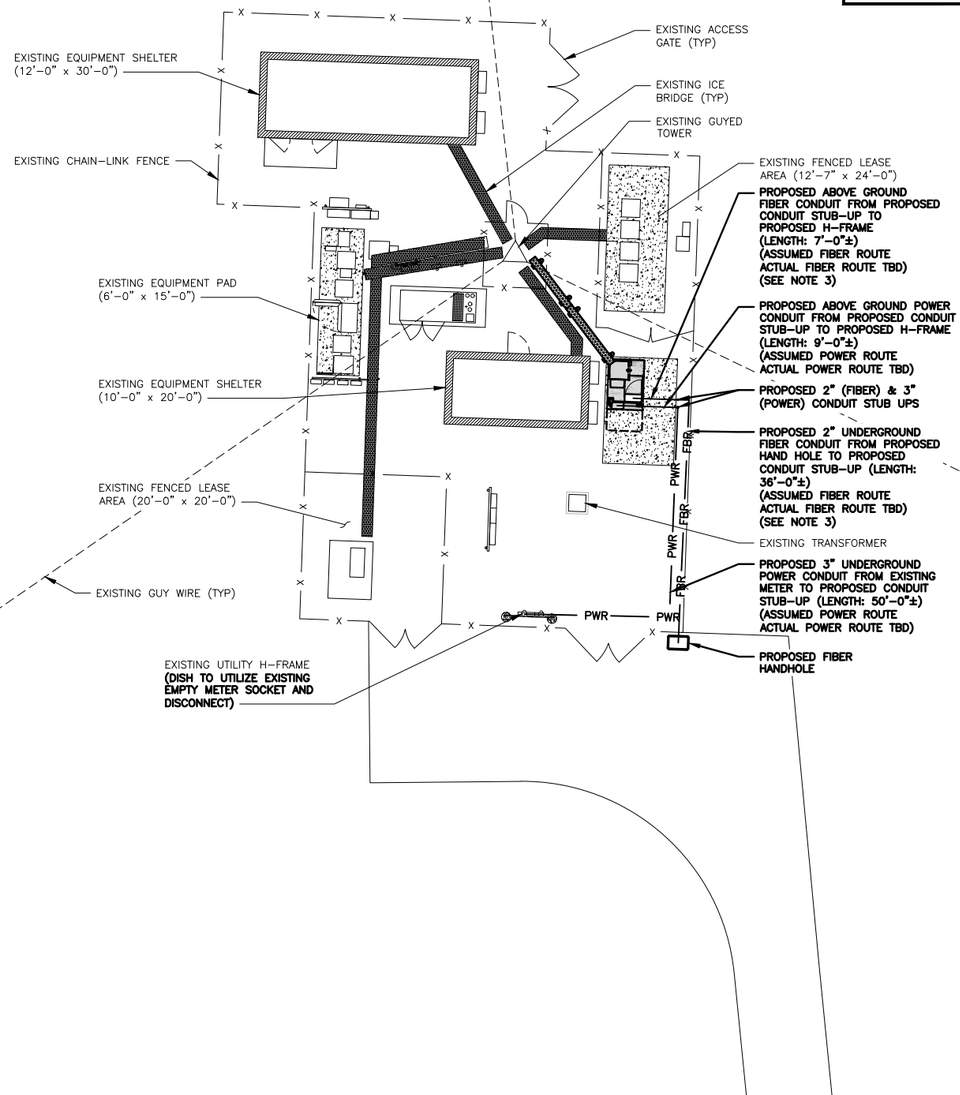
DISH Wireless L.L.C.
PROJECT INFORMATION
BOBOS01206A
71 MOXLEY ROAD
UNCASVILLE, CT 06382

SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-6

NOTES

1. CONTRACTOR SHALL FIELD VERIFY ALL PROPOSED UNDERGROUND UTILITY CONDUIT ROUTE.
2. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.
3. THE GROUND LEASE PROVIDES BROAD/BLANKET UTILITY RIGHTS. 'PWR' AND 'FBR' PATH DEPICTED ON A-1 AND E-1 ARE BASED ON BEST AVAILABLE INFORMATION INCLUDING BUT NOT LIMITED TO FIELD VERIFICATION, PRIOR PROJECT DOCUMENTATION AND OTHER REAL PROPERTY RIGHTS DOCUMENTS. WHEN INSTALLING THE UTILITIES PLEASE LOCATE AND FOLLOW EXISTING PATH. IF EXISTING PATH IS NOT AN OPTION, PLEASE NOTIFY SBA REAL ESTATE AS FURTHER COORDINATION MAY BE NEEDED.
4. PRIOR TO CONSTRUCTION, CONTRACTOR SHALL FIELD VERIFY SERVICE CONDUCTOR SIZE IS RATED FOR EXISTING + PROPOSED LOADS & UPGRADE AS REQUIRED. CONTACT EOR IN THE EVENT THE SERVICE CONDUCTORS ARE NOT SUFFICIENT
5. PRIOR TO CONSTRUCTION, CONTRACTOR SHALL FIELD VERIFY BUSS RATING AND VERIFY RATING MEETS OR EXCEEDS EXISTING + PROPOSED LOADS. CONTACT EOR IF RATING IS NOT SUFFICIENT PRIOR TO CONSTRUCTION.



UTILITY ROUTE PLAN

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

1

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

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

ELECTRICAL NOTES

NO SCALE

2

UTILITY ROUTING PLAN

NO SCALE

3

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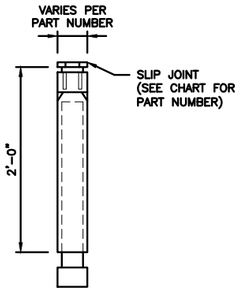
DISH Wireless L.L.C.
PROJECT INFORMATION
BOBOS01206A
71 MOXLEY ROAD
UNCASVILLE, CT 06382

SHEET TITLE
ELECTRICAL/FIBER ROUTE PLAN AND NOTES

SHEET NUMBER
E-1

CARLON EXPANSION FITTINGS

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

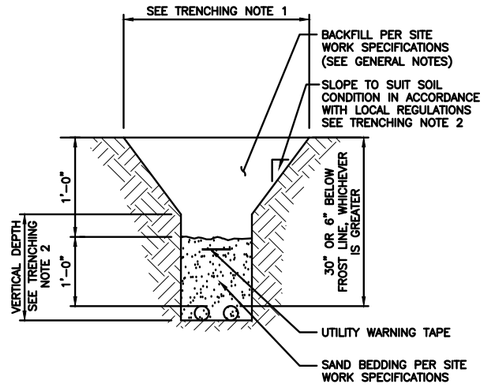


NOTE:
CONTRACTOR TO INSTALL EXPANSION FITTING SLIP JOINT AT METER CENTER CONDUIT TERMINATION, AS PER LOCAL UTILITY POLICY, ORDINANCE AND/OR SPECIFIED REQUIREMENT.

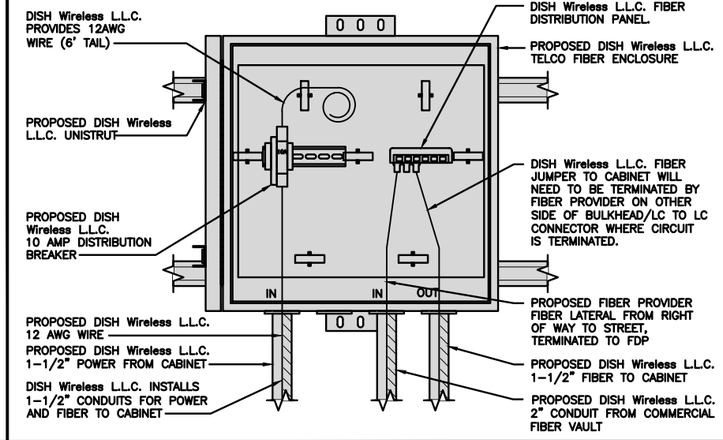
EXPANSION JOINT DETAIL | NO SCALE | 1

TRENCHING NOTES

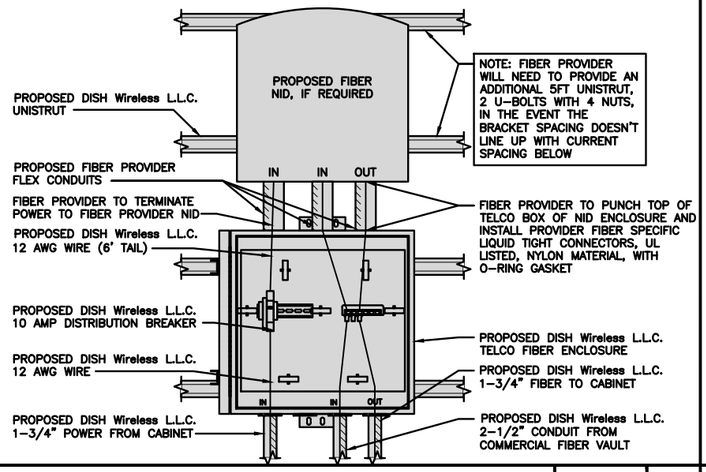
1. CONTRACTOR SHALL RESTORE THE TRENCH TO ITS ORIGINAL CONDITIONS BY EITHER SEEDING OR SODDING GRASS AREAS, OR REPLACING ASPHALT OR CONCRETE AREAS TO ITS ORIGINAL CROSS SECTION.
2. TRENCHING SAFETY; INCLUDING, BUT NOT LIMITED TO SOIL CLASSIFICATION, SLOPING, AND SHORING, SHALL BE GOVERNED BY THE CURRENT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



TYPICAL UNDERGROUND TRENCH DETAIL | NO SCALE | 2



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



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

NOT USED | NO SCALE | 5

NOT USED | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

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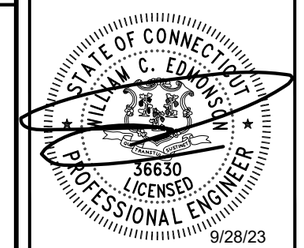

DRAWN BY:	CHECKED BY:	APPROVED BY:
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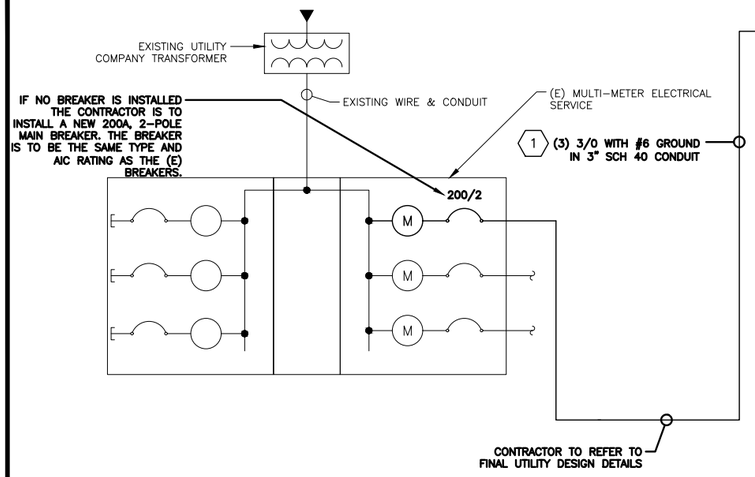
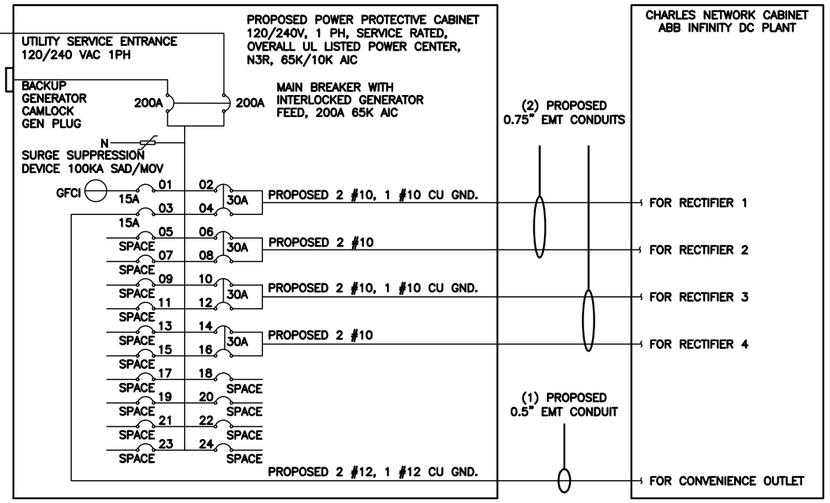
SHEET TITLE
ELECTRICAL DETAILS

SHEET NUMBER
E-2





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

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

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

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

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

NOTES

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

PPC ONE-LINE DIAGRAM — NO SCALE — 1

PROPOSED 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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STATE OF CONNECTICUT · WILLIAM C. EDMONDS · 36630 · LICENSED PROFESSIONAL ENGINEER
9/28/23

DRAWN BY:	CHECKED BY:	APPROVED BY:
LMS	MCK	KJC

APPLICATION REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

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0	09/28/2023	ISSUED FOR PERMIT

A&E PROJECT NUMBER
KHCLE-47862

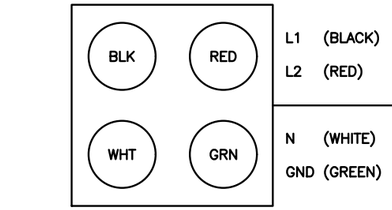
DISH Wireless L.L.C.
PROJECT INFORMATION
BOBOS01206A
71 MOXLEY ROAD
UNCASVILLE, CT 06382

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

SHEET NUMBER
E-3

NOTES:

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



CAM–LOCK GENERATOR RECEPTACLE

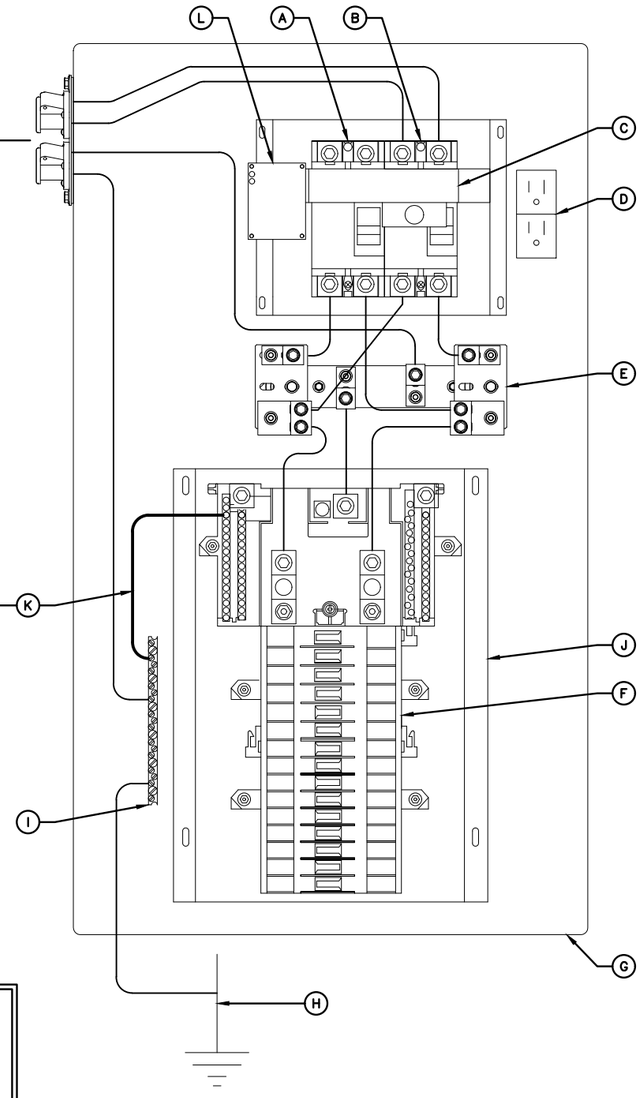
(AS VIEWED FROM OUTSIDE OF ENCLOSURE)
USE LINE UP PIN AS REFERENCE

REFER TO RECEPTACLE FOR MODEL NUMBER

DANGER:

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

RAYCAP CUSTOMER SERVICE
(800) 890–2569



SUITABLE FOR USE AS SERVICE EQUIPMENT

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

CAUTION:

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

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

200A UTILITY FEED

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

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

200A GENERATOR FEED

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

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

NEUTRAL–TO–GROUND NOTES:

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

NEUTRAL–TO–GROUND CONDING JUMPER

INSTALLTION INSTRUCTIONS:

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

LEGEND:

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

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

NO SCALE | 1

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KHCLE–47862

DISH Wireless L.L.C.
PROJECT INFORMATION

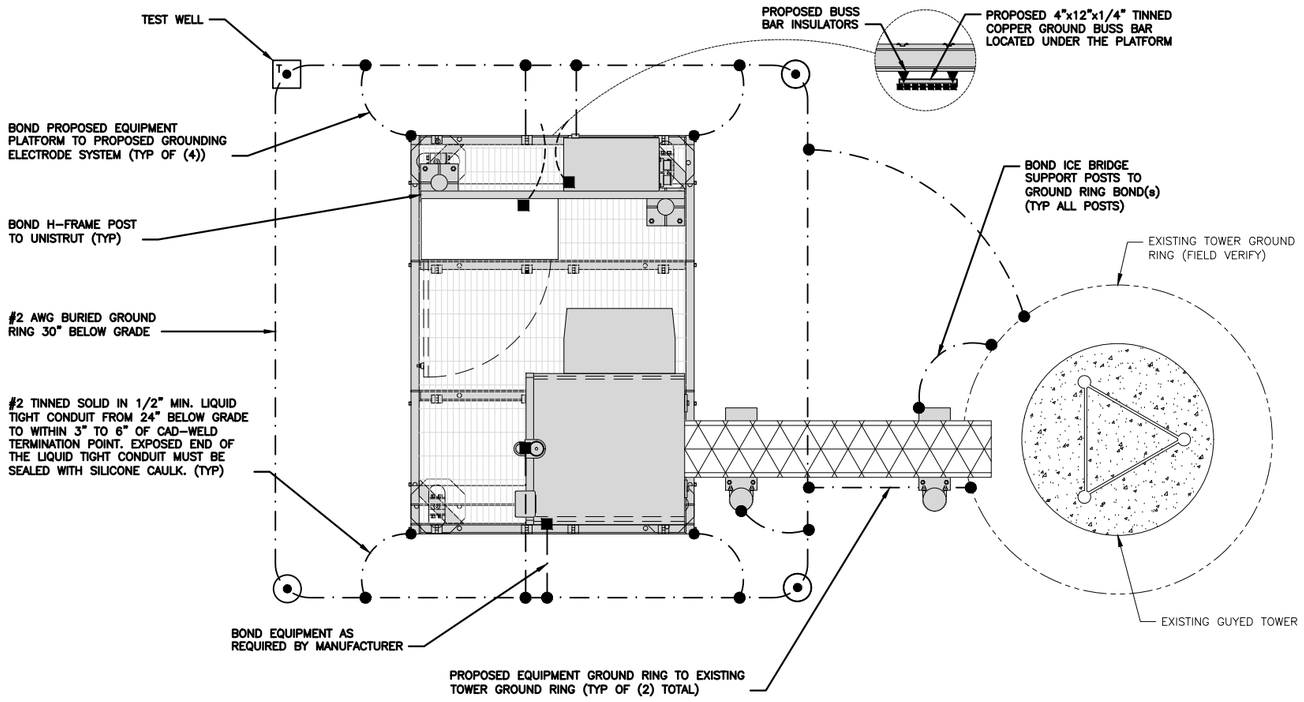
BOBOS01206A
71 MOXLEY ROAD
UNCASVILLE, CT 06382

SHEET TITLE

PPC NEUTRAL–TO–GROUND SCHEMATIC

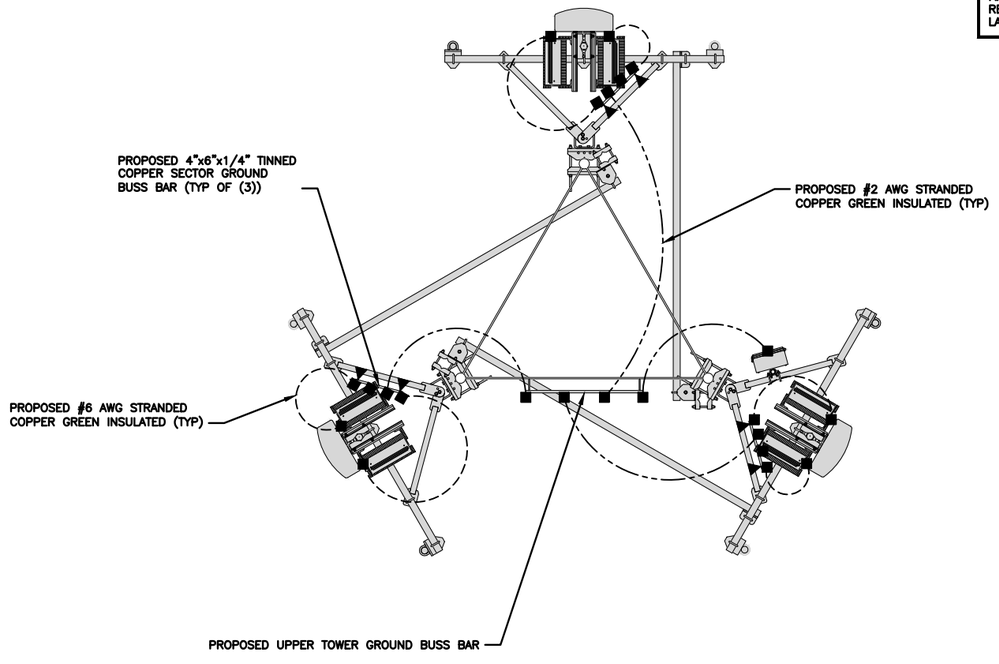
SHEET NUMBER

E-4



TYPICAL EQUIPMENT GROUNDING PLAN

NO SCALE | 1



TYPICAL ANTENNA GROUNDING PLAN

NO SCALE | 2

NOTES

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

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

GROUNDING LEGEND

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

GROUNDING KEY NOTES

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

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

(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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STATE OF CONNECTICUT
WILLIAM C. EDMONDS
36630
LICENSED
PROFESSIONAL ENGINEER
9/28/23

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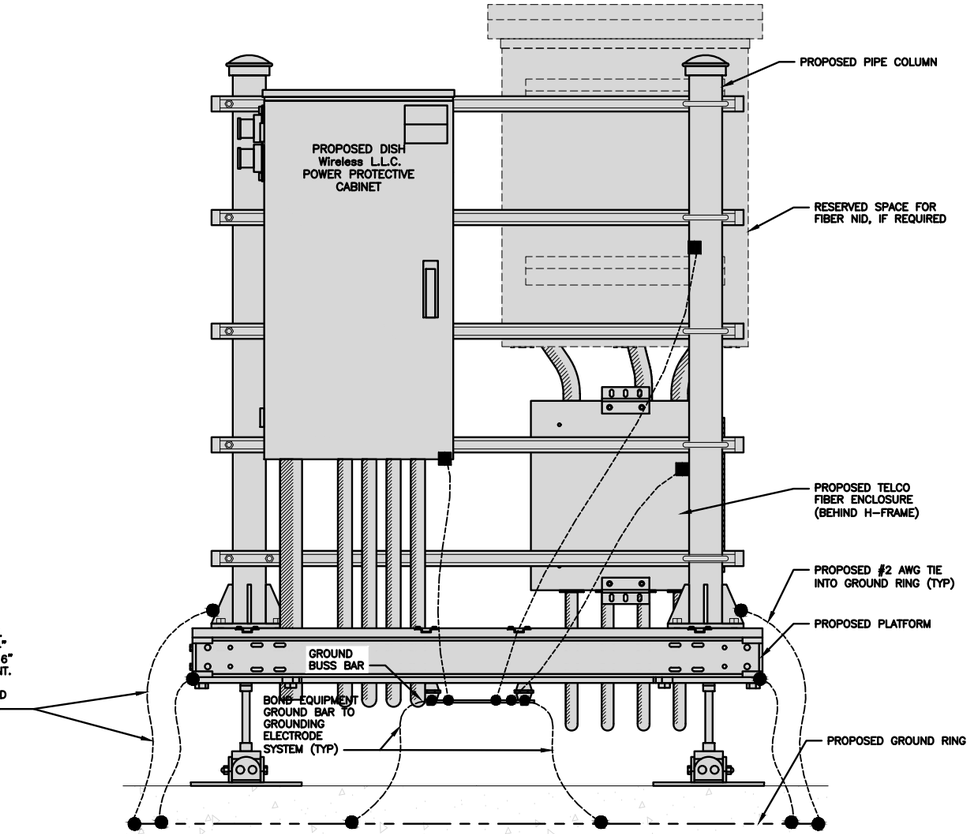
KHCLE-47862

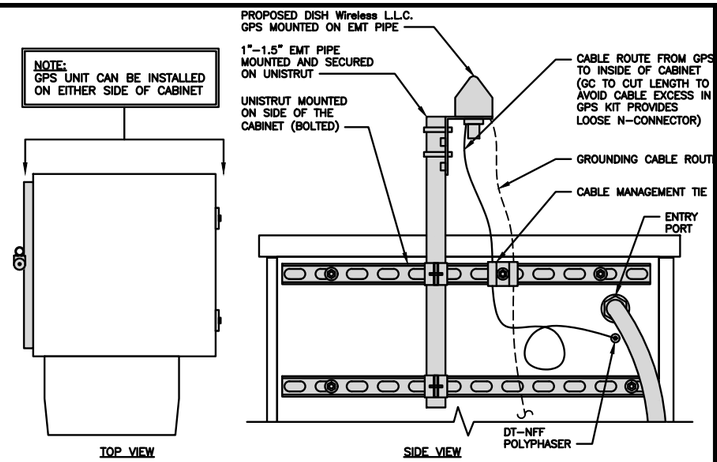
DISH Wireless L.L.C.
PROJECT INFORMATION
BOBOS01206A
71 MOXLEY ROAD
UNCASVILLE, CT 06382

SHEET TITLE
GROUNDING PLANS AND NOTES

SHEET NUMBER
G-1

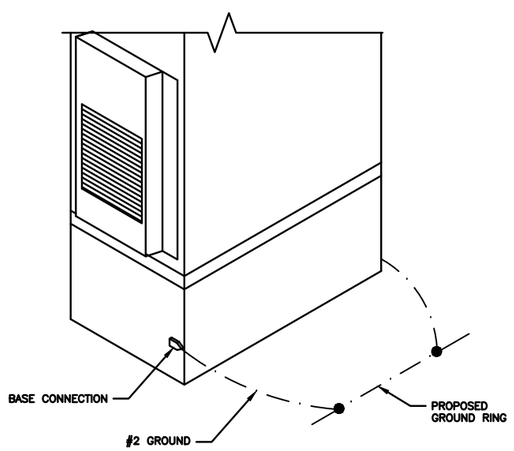


H-FRAME GROUNDING DETAIL | NO SCALE | 1

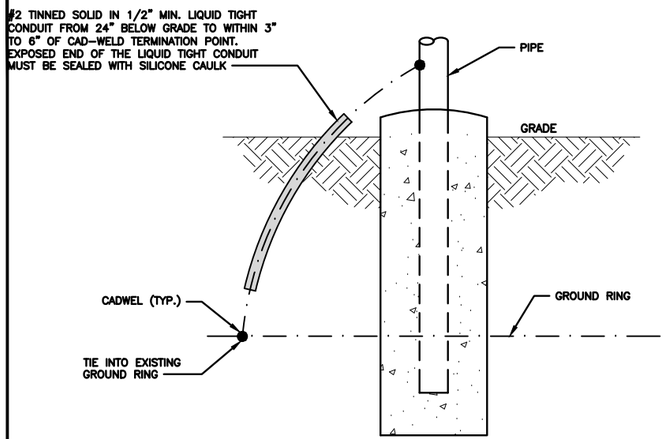


TYPICAL PCTEL GPS UNIT GROUNDING | NO SCALE | 2

NOT USED | NO SCALE | 3



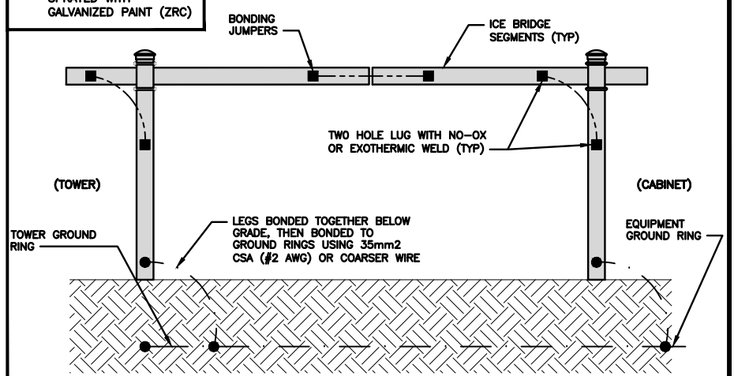
OUTDOOR CABINET GROUNDING | NO SCALE | 4



TRANSITIONING GROUND DETAIL | NO SCALE | 5

NOTES

- DRILLED HOLES TO BE SPRAYED WITH GALVANIZED PAINT (ZRC)



ICE BRIDGE GROUNDING DETAIL | NO SCALE | 6

NOTES

EQUIPMENT CABINET OMITTED FOR CLARITY

#2 TINNED SOLID IN 1/2" MIN. LIQUID TIGHT CONDUIT FROM 24" BELOW GRADE TO WITHIN 3" TO 6" OF CAD-WELD TERMINATION POINT. EXPOSED END OF THE LIQUID TIGHT CONDUIT MUST BE SEALED WITH SILICONE CAULK. (TYP)

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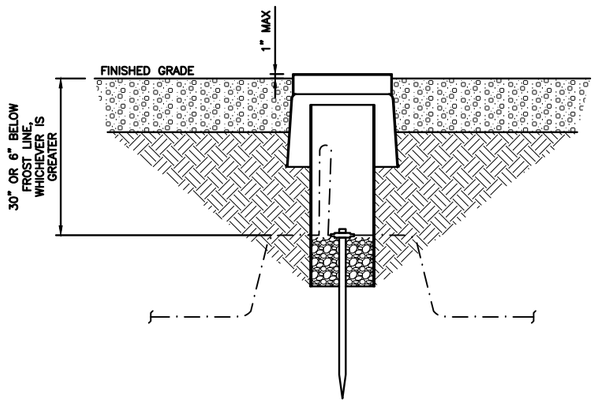
71 MOXLEY ROAD
UNCASVILLE, CT 06382

SHEET TITLE

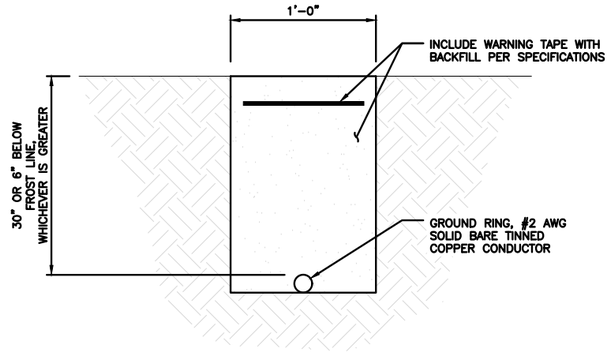
GROUNDING DETAILS

SHEET NUMBER

G-2



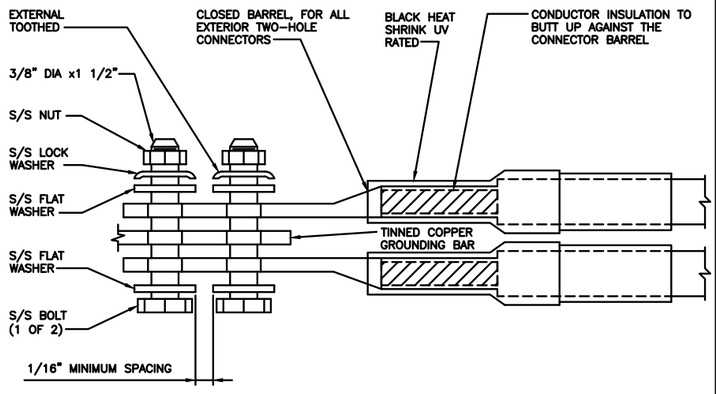
TYPICAL TEST GROUND ROD WITH INSPECTION SLEEVE | NO SCALE | 1



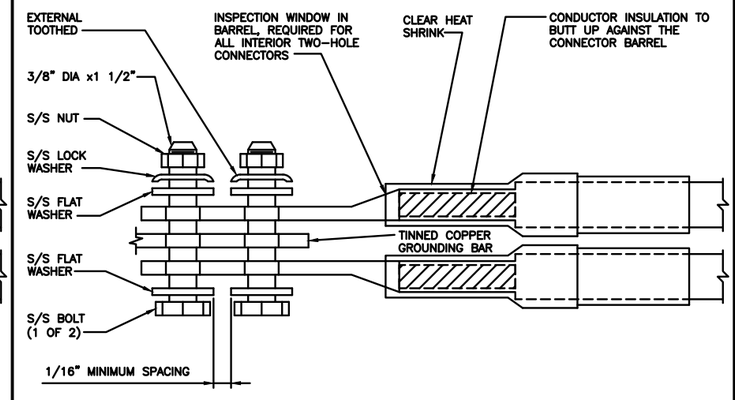
TYPICAL GROUND RING TRENCH | NO SCALE | 2

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).

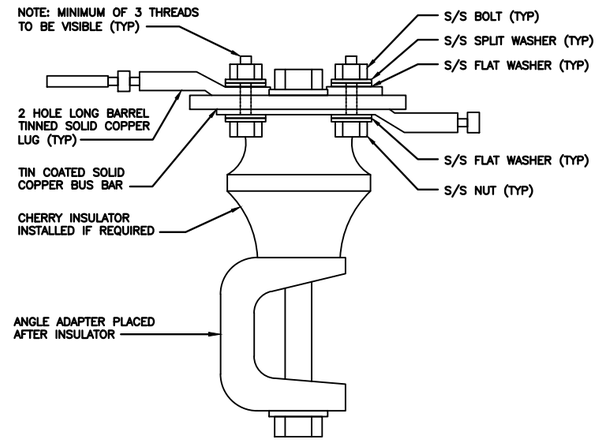
TYPICAL GROUNDING NOTES | NO SCALE | 3



TYPICAL EXTERIOR TWO HOLE LUG | NO SCALE | 4



TYPICAL INTERIOR TWO HOLE LUG | NO SCALE | 5



LUG DETAIL | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

dish wireless.
5701 SOUTH SANTA FE DRIVE
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STATE OF CONNECTICUT
WILLIAM C. EDMONDS
36630
LICENSED PROFESSIONAL ENGINEER
9/28/23

DRAWN BY:	CHECKED BY:	APPROVED BY:
LMS	MCK	KJC

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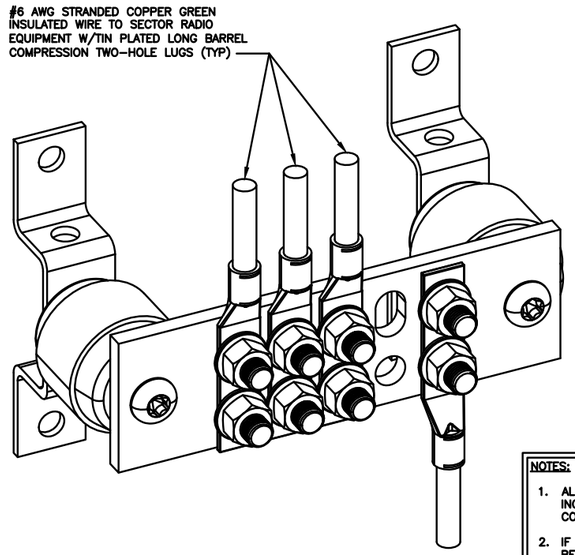
KHCLE-47862

DISH Wireless L.L.C.
PROJECT INFORMATION
BOBOS01206A
71 MOXLEY ROAD
UNCASVILLE, CT 06382

SHEET TITLE
GROUNDING DETAILS

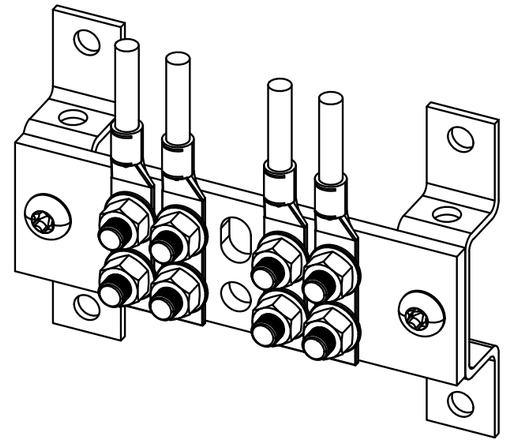
SHEET NUMBER
G-3



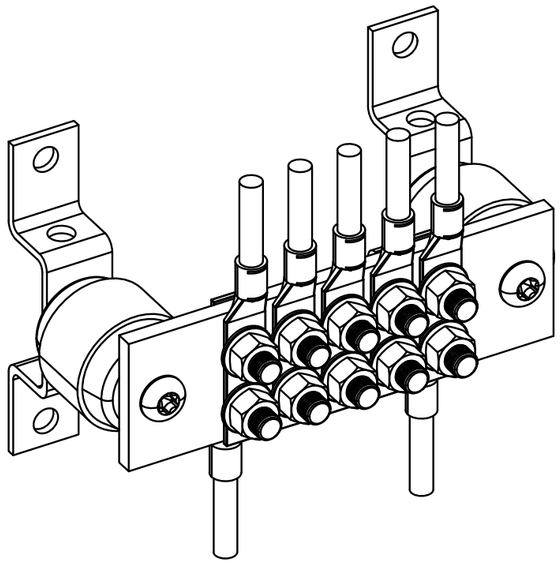
NOTES:

1. ALL HARDWARE SHALL BE BE 18-8 STAINLESS STEEL INCLUDING WASHERS. COAT ALL SURFACES WITH NO-OX COMPOUND BEFORE MATING.
2. IF BONDING TO STEEL, INSERT A TOOTH WASHER BETWEEN LUG AND STEEL AND COAT ALL SURFACE WITH NO-OX COMPOUND.
3. USE A THIN COAT OF NO-OX OR UL LISTED ANTIOXIDANT COMPOUND BETWEEN GROUNDING CONNECTIONS.

SECTOR GROUND BUSBAR DETAIL | NO SCALE | 1



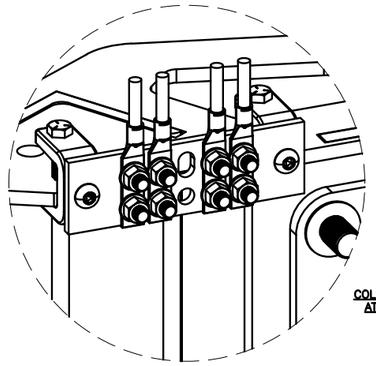
UPPER TOWER GROUND BUSBAR DETAIL | NO SCALE | 2



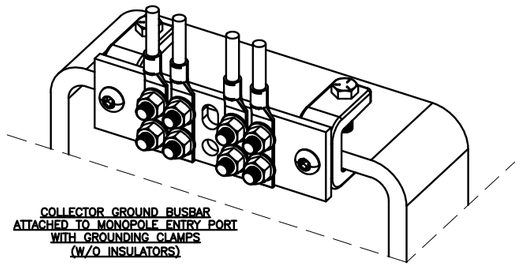
NOTES:

1. IN CASES OF SHEATHED STRANDED WIRES, CONNECTOR SHALL HAVE INSPECTION WINDOW AND NO MORE THAN 1/8" GAP BETWEEN CONNECTOR BODY AND SHEATH.

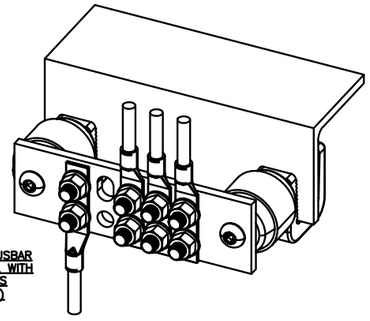
EQUIPMENT GROUND BUSBAR DETAIL | NO SCALE | 3



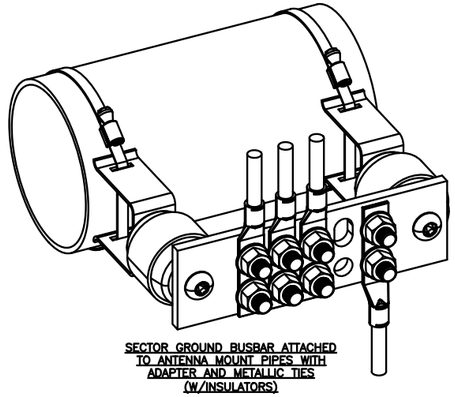
COLLECTOR GROUND BUSBAR ATTACHED TO COLLAR OR SECTOR MOUNT (W/O INSULATORS)



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



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



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

GROUND BUSBAR ATTACHMENT OPTIONS | NO SCALE | 4

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SHEET TITLE

GROUNDING DETAILS

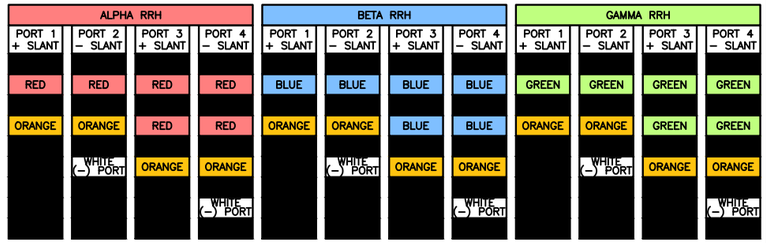
SHEET NUMBER

G-4

HYBRID/DISCREET CABLES — 3/4" TAPE WIDTHS WITH 3/4" SPACING

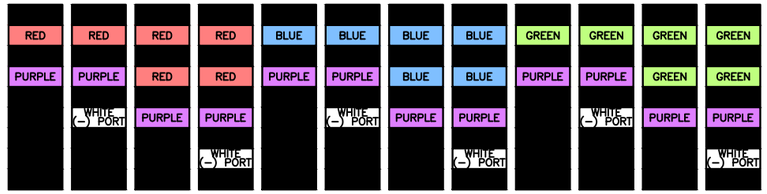
LOW-BAND RRH
(600 MHz N71 BASEBAND) +
(850 MHz N26 BAND) +
(700 MHz N29 BAND) – OPTIONAL PER MARKET

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



MID-BAND RRH
(AWS BANDS N66+N70)

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



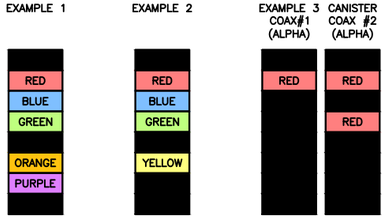
HYBRID/DISCREET CABLES

INCLUDE SECTOR BANDS BEING SUPPORTED ALONG WITH FREQUENCY BANDS.

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

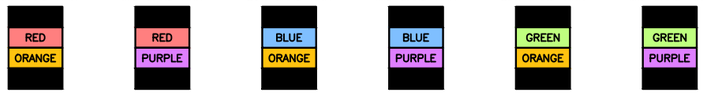
EXAMPLE 2 – HYBRID, OR DISCREET, SUPPORTS CBRS ONLY, ALL SECTORS.

EXAMPLE 3 – MAIN COAX WITH GROUND MOUNTED RRHs.



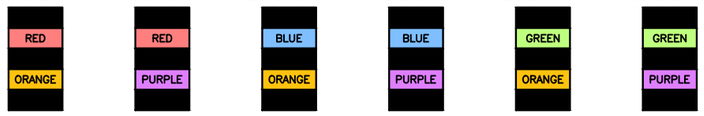
FIBER JUMPERS TO RRHs

LOW-BAND HHR FIBER CABLES HAVE SECTOR STRIPE ONLY.



POWER CABLES TO RRHs

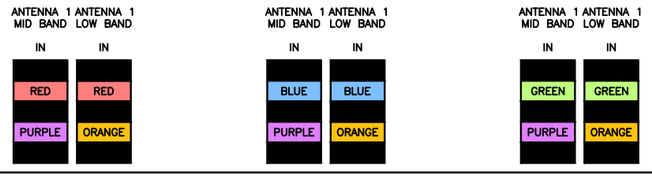
LOW-BAND RRH POWER CABLES HAVE SECTOR STRIPE ONLY



RET MOTORS AT ANTENNAS

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

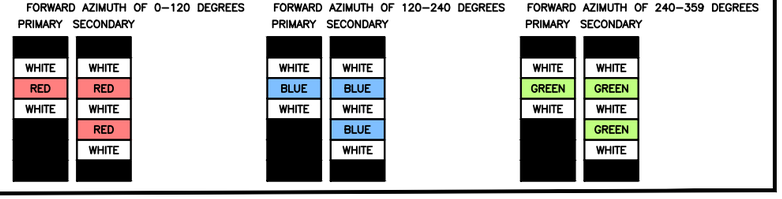
SEPARATE RET CABLES ARE USED WHEN ANTENNA PORTS PROVIDE INPUTS FOR BOTH LOW AND MID BANDS.



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.



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		2

NOT USED		3

RF CABLE COLOR CODES		1

NOT USED		4

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71 MOXLEY ROAD
UNCASVILLE, CT 06382

SHEET TITLE
RF
CABLE COLOR CODES

SHEET NUMBER
RF-1

LEGEND

EXOTHERMIC CONNECTION

MECHANICAL CONNECTION

BUSS BAR INSULATOR

CHEMICAL ELECTROLYTIC GROUNDING SYSTEM

TEST CHEMICAL ELECTROLYTIC GROUNDING SYSTEM

EXOTHERMIC WITH INSPECTION SLEEVE

GROUNDING BAR

GROUND ROD

TEST GROUND ROD WITH INSPECTION SLEEVE

SINGLE POLE SWITCH

DUPLEX RECEPTACLE

DUPLEX GFCI RECEPTACLE

FLUORESCENT LIGHTING FIXTURE
(2) TWO LAMPS 48–T8

SMOKE DETECTION (DC)

EMERGENCY LIGHTING (DC)

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

CHAIN LINK FENCE

WOOD/WROUGHT IRON FENCE

WALL STRUCTURE

LEASE AREA

PROPERTY LINE (PL)

SETBACKS

ICE BRIDGE

CABLE TRAY

WATER LINE

UNDERGROUND POWER

UNDERGROUND TELCO

OVERHEAD POWER

OVERHEAD TELCO

UNDERGROUND TELCO/POWER

ABOVE GROUND POWER

ABOVE GROUND TELCO

ABOVE GROUND TELCO/POWER

WORKPOINT

W.P.

SECTION REFERENCE

DETAIL REFERENCE

ABBREVIATIONS

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

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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: BOBOS01206A

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: BOBOS01206A

dish

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RF SIGNAGE

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RF SIGNAGE

SHEET NUMBER
GN-2

SITE ACTIVITY REQUIREMENTS:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

GENERAL NOTES:

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

CONTRACTOR:GENERAL CONTRACTOR RESPONSIBLE FOR CONSTRUCTION

CARRIER:DISH Wireless L.L.C.

TOWER OWNER:TOWER OWNER

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

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

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

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

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

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

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

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

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

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

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

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

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

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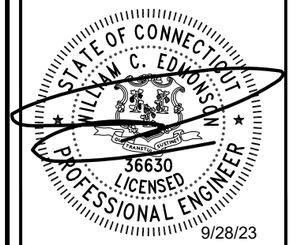

DRAWN BY:	CHECKED BY:	APPROVED BY:
LMS	MCK	KJC

APPLICATION REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	09/20/2023	ISSUED FOR REVIEW
0	09/28/2023	ISSUED FOR PERMIT

A&E PROJECT NUMBER

KHCLE–47862

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBOS01206A
71 MOXLEY ROAD
UNCASVILLE, CT 06382

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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WILLIAM C. EDMONDS
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LICENSED
PROFESSIONAL ENGINEER
9/28/23

DRAWN BY:	CHECKED BY:	APPROVED BY:
LMS	MCK	KJC

APPLICATION REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	09/20/2023	ISSUED FOR REVIEW
0	09/28/2023	ISSUED FOR PERMIT

A&E PROJECT NUMBER

KHCLE-47862

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBOS01206A
71 MOXLEY ROAD
UNCASVILLE, CT 06382

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

Kimley»Horn

421 FAYETTEVILLE ST, SUITE 600
RALEIGH, NC 27601

SBA

470 DAVIDSON ROAD
PITTSBURGH, PA 15239
TEL: (740) 260-9710

STATE OF CONNECTICUT
WILLIAM C. EDMONSON
36630
LICENSED
PROFESSIONAL ENGINEER
9/28/23

DRAWN BY:	CHECKED BY:	APPROVED BY:
LMS	MCK	KJC

APPLICATION REV #: 1

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	09/20/2023	ISSUED FOR REVIEW
0	09/28/2023	ISSUED FOR PERMIT

A&E PROJECT NUMBER

KHCLE-47862

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBOS01206A
71 MOXLEY ROAD
UNCASVILLE, CT 06382

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-5

EXHIBIT 7

Structural Analysis

GPD Engineering and Architecture Professional Corporation

STRUCTURAL ANALYSIS REPORT

190’ Modified Guyed Tower

71 Moxley Road
Ucansville, CT 6382
41.4352 N, 72.1233 W

SBA Site Name: Montville 3 CT
SBA Site ID: CT10016-A

Dish Wireless Site ID: BOBOS01206A
Application ID: 234518, v1

GPD Project Number: 2023778.10016.02

Analysis Results

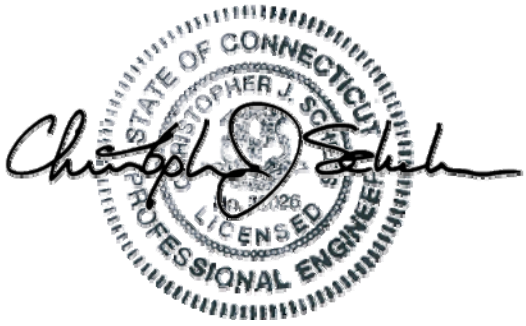
Tower Components	61.9%	Sufficient
Foundation	72.4%	Sufficient
Net Change in Tower Stress Ratio	- 6.9%	As compared to the Previous Structural Analysis detailed on Page 3

Dish Wireless Mount Replacement/Reinforcement

Net Change in Tower Stress Ratio due to Mount Replacement/Reinforcement	N/A	See Page 5 for Additional Details

August 31, 2023

Respectfully submitted by:



8/31/2023
Christopher J. Scheks, P.E.
Connecticut P.E. #: 0030026

Analysis Criteria

The purpose of this analysis is to verify the existing Modified Guyed tower is structurally capable of carrying the proposed antenna loads as specified by Dish Wireless to SBA. This report was commissioned by Doinitsa Psederschi of SBA.

The existing structure and its foundations have been analyzed per the following requirements:

Governing Code(s)	TIA-222-H & 2022 Connecticut State Building Code
Wind Speed	126 MPH 3-Second Gust
Wind Speed w/ Ice	50 MPH 3-Second Gust
Radial Ice Thickness	1.00”
Risk Category	II
Exposure Category	B
Topographic Category	1

Analysis Method

tnxTower (Version 8.1.1.0), a commercially available software program, was used to create a three-dimensional model of the tower and calculate member stresses for various dead, live, wind and ice load cases. Selected output from the analysis is included in the appendices of this report.

Tower Description

The existing 190' self-support tower is located in Uncasville, CT. The tower was originally designed for SBA Network Services, Inc. by ROHN in April 1998. The tower was originally designed in accordance with TIA-222-F for a 90-mph 3-second gust wind speed with 1/2" of radial ice (w/ a 25% wind load reduction) in accordance with EIA/TIA-222-F.

Documents Provided

Document Type	Remarks	Source
Geotechnical Report	FDH Project #: 1102193EG1, dated: 8/10/2011	SBA
Original Tower & Foundation Drawings	ROHN Eng. File #: 37183AE001, dated: 4/21/1998	SBA
Previous Structural Analysis	GPD Project #: 2023778.10016.01, dated: 6/8/2023	SBA
AT&T Carrier Mount Analysis	TEP Project #: 323466.754398 Rev.2, dated: 5/8/2023	SBA
Modification Drawings	FDH: Project #: 15BJIT1400 dated, 4/22/2015	SBA
Modification Drawings	FDH: Project #: 1465RU1400 dated, 5/29/2014	SBA
aaa		

Tower Modification Summary

Modification Type	Description	Designer
Diagonals	Replace existing pipe diagonals from 87.6' to 90' with L2x2x1/4 members.	FDH (5/29/2014)
Legs	Bolt on split P3 STD members to existing legs from 130' to 150'	FDH (5/29/2014)
Legs	Bolt on split P3 STD members to existing legs from 110' to 130'	FDH (4/22/2015)

Tower Materials

Structural Components	Material Strength
Legs	ASTM A572 (50 KSI Yield Strength)
Bracing Members	ASTM A500-42 (42 KSI Yield Strength)
Member Bolts	A325X
Guy Wires	EHS

Tower Loading

The following data shows the major loading that the tower supports. All existing, leased, and proposed loading information was provided by SBA or taken from the previous structural analysis.

Existing/Leased Loading

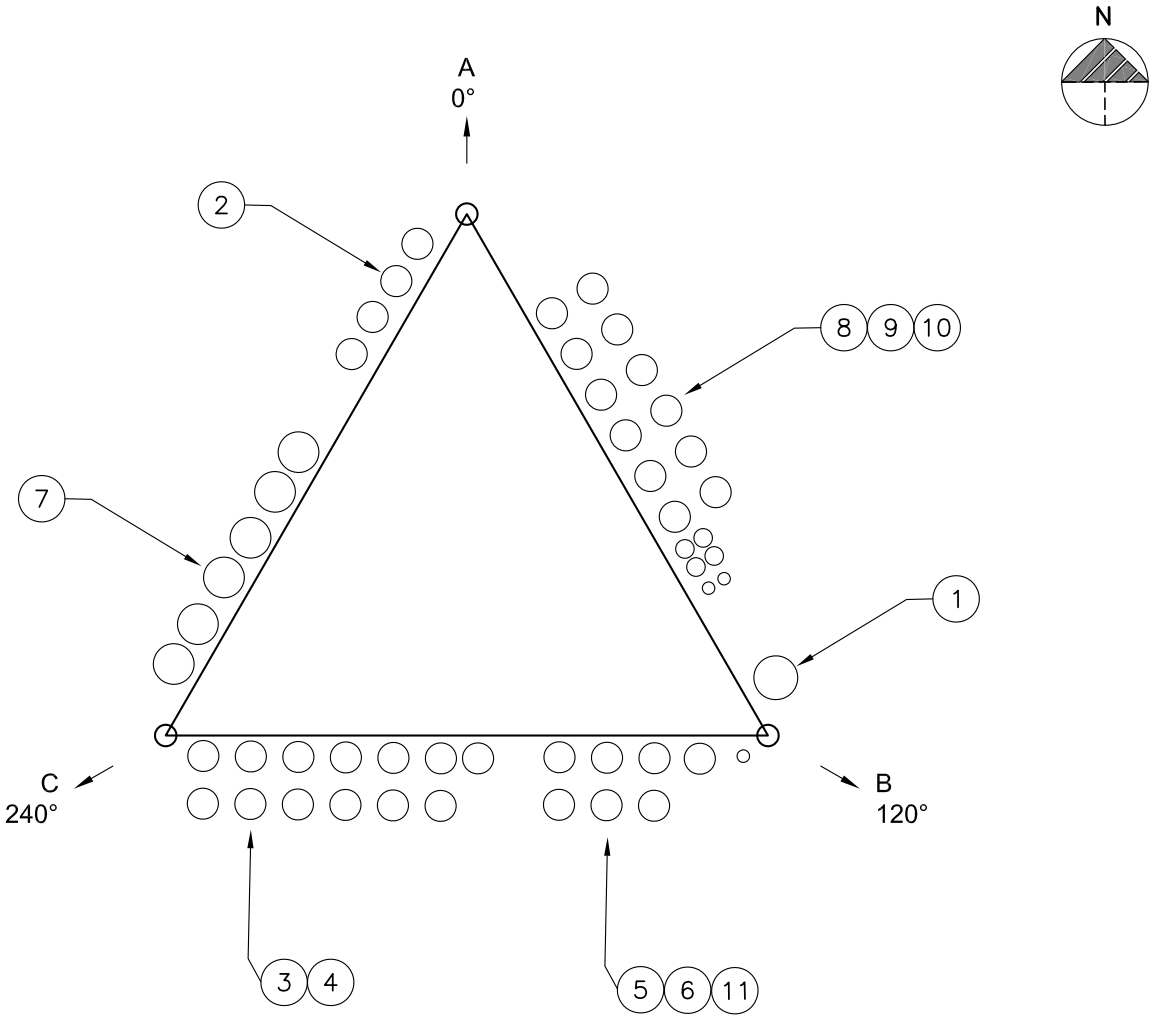
Carrier	Mounting Level (ft)	Center Line Elevation (ft)	# of Antennas	Antenna Manufact.	Antenna/Mount Model	# of Coax	Coax Size (in)	Note
Sprint Nextel	160	160	3	RFS	APXVSPP18-C-A20	4	1 1/4 Hybrid	
			3	RFS	APXVTM14-C-I20			
			4	RFS	ACU-A20-N RET			
			3	Alcatel Lucent	1900 MHz RRH			
			3	Alcatel Lucent	800 MHz RRH			
			3	Alcatel Lucent	TD-RRH8x20-25			
			3	Alcatel Lucent	800 MHz Filter			
			3		Sector Frames			
T-Mobile	150	150	3	Andrew	RR65-18-VDPL2	10 3	1 5/8 1 5/8 Hybrid	
			3	RFS	APXVAARR24_43-U-NA20			
			3	Ericsson	Air32 KRD901146-1_B66A_B2A			
			6	Ericsson	KRY 112 144/1			
			3	Ericsson	4449 B71+B12			
			3	Unknown	Sector Frames			
Verizon	141	141	3	Antel	BXA-70063-6CF-EDIN-0	11 2	1 5/8 1 5/8 Hybrid	
			3	Samsung	MT6407-77A			
			6	JMA Wireless	MX06FRO660-03			
			3	Samsung	B5/B13 RRH BR04C			
			3	Samsung	B2/B66A-RRH-B409			
			1	Raycap	DB-C1-12C-24AB-0Z			
			3		Sector Frames			
			3		VZWSMART VZWSMART-SFKI			
			9		VZWSMART-MSK1			
			3	JMA	919003314-02			
AT&T	130	132	3	Ericsson	Air 6419 B77G	12 2 4	1 1/4 1/2 3/4	
		130	1	CCI	TPA65R-BU8DA-K			
			1	CCI	DMP65R-BU8DA			
			1	CCI	TPA65R-BU6DA-K			
			1	CCI	OPA65R-BU8DA			
			1	CCI	TPA65R-BU4D			
			1	CCI	OPA65R-BU4DA			
			3	Ericsson	4449 B5/B12			
			3	Ericsson	8843 B2/B66A			
			1	Raycap	DC6-48-60-18-8F			
			1	Raycap	DC9-48-60-24-8C-EV			
			3		Sector Frames			
		128	3	Ericsson	Air 6449 B77D			
Verizon	76	76	1		GPS	1	1/2	
			1		Standoff			

Final Proposed Loading Configuration

Carrier	Mounting Level (ft)	Center Line Elevation (ft)	# of Antennas	Antenna Manufact.	Antenna/Mount Model	# of Coax	Coax Size (in)	Note
Dish Wireless	180	180	3	Commscope	FFVV-65B-R2	1	1 3/4	1
			3	Samsung	RF4450t-71A			
			3	Samsung	RF4451d-70A			
			1	Raycap	RDIDC-9181-PF-48			
			3	Commscope	MTC3975083 Sector Frames			

Notes: This loading represents Dish Wireless's final configuration on the tower. See the next page for the proposed feedline layout.

Proposed Feedline Configuration



#	CARRIER	SIZE	QTY.	ELEVATION	NOTES
1	Dish Wireless	1-3/4"	1	180'	Proposed Hybrid
2	Sprint	1-1/4"	4	160'	
3	T-Mobile	1-5/8"	10	150'	
4	T-Mobile	1-5/8"	3	150'	Hybrid
5	Verizon	1-5/8"	5	141'	
6	Verizon	1-5/8"	2	141'	Hybrid
7	Verizon	1-5/8"	6	141'	
8	AT&T	1-1/4"	12	130'	
9	AT&T	1/2"	2	130'	
10	AT&T	3/4"	4	130'	
11	Verizon	1/2"	1	76'	

Tower Section Results

Capacity Summary of Structural Components

Notes	Component	% Capacity	Pass / Fail
	Legs	61.9	Pass
	Diagonals	54.1	Pass
	Horizontals	1.5	Pass
	Member Bolts	54.1	Pass
	Guy Wires	54.2	Pass
	Torque Arms	36.1	Pass
	Tower Base Foundation	22.5	Pass
	Guy Anchor Foundation	72.4	Pass

Conclusions & Recommendations

The designs of the tower and its foundations are sufficient to support the proposed loading configuration and will not require modification.

Assumptions

This structural analysis is based on the theoretical capacity of the members and is not a condition assessment of the tower. This analysis is from information supplied, and therefore, its results are based on and are as accurate as that supplied data. GPD has made no independent determination, nor is it required to, of its accuracy. The following assumptions were made for this structural analysis.

1) Tower and structures were built in accordance with the manufacturer's specifications.
2) The tower and structures have been maintained in accordance with the manufacturer's specification.
3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in the Existing/Reserved Loading and Proposed Loading Tables, and the specified documents.
4) All mounts, if applicable, are considered adequate to support the loading. No actual analysis of the mount(s) is performed. This analysis is limited to analyzing the tower only.
5) Mount sizes, weights, and manufacturers are best estimates based on photos provided and determined without the benefit of a site visit by GPD.
6) All member connections and foundation steel reinforcing are assumed designed to meet or exceed the load carrying capacity of the connected member and surrounding soils respectively unless otherwise specified in this report.
7) Tower leg azimuths have been estimated based upon the use of satellite imagery software.
8) The existing feedline layout has been modeled based upon the previous structural analysis and site photos.
9) The proposed feedlines shall be installed as illustrated in order for the results of this analysis to be valid.

If any of these assumptions are not valid or have been made in error, this analysis may be affected, and GPD should be allowed to review any new information to determine its effect on the structural integrity of the tower.

Disclaimer of Warranties

GPD has not performed a site visit to the tower to verify the member sizes or antenna/coax loading. If the existing conditions are not as represented on the tower elevation contained in this report, we should be contacted immediately to evaluate the significance of the discrepancy. This is not a condition assessment of the tower or foundation. This report does not replace a full tower inspection. The tower and foundations are assumed to have been properly fabricated, erected, maintained, in good condition, twist free, and plumb.

The engineering services rendered by GPD in connection with this Structural Analysis are limited to a computer analysis of the tower structure and theoretical capacity of its main structural members. No allowance was made for any damaged, bent, missing, loose, or rusted members (above and below ground). No allowance was made for loose bolts or cracked welds.

This analysis is limited to the designated maximum wind and seismic conditions per the governing tower standards and code. Wind forces resulting in tower vibrations near the structure's resonant frequencies were not considered in this analysis and are outside the scope of this analysis. Lateral loading from any dynamic response was not evaluated under a time-domain based fatigue analysis.

GPD does not analyze the fabrication of the structure (including welding). It is not possible to have all the very detailed information needed to perform a thorough analysis of every structural sub-component and connection of an existing tower. GPD provides a limited scope of service in that we cannot verify the adequacy of every weld, plate connection detail, etc. The purpose of this report is to assess the capability of adding appurtenances usually accompanied by transmission lines to the structure.

It is the owner's responsibility to determine the amount of ice accumulation in excess of the code specified amount, if any, that should be considered in the structural analysis.

The attached sketches are a schematic representation of the analyzed tower. If any material is fabricated from these sketches, the contractor shall be responsible for field verifying the existing conditions, proper fit, and clearance in the field. Any mentions of structural modifications are reasonable estimates and should not be used as a precise construction document. Precise modification drawings are obtainable from GPD, but are beyond the scope of this report.

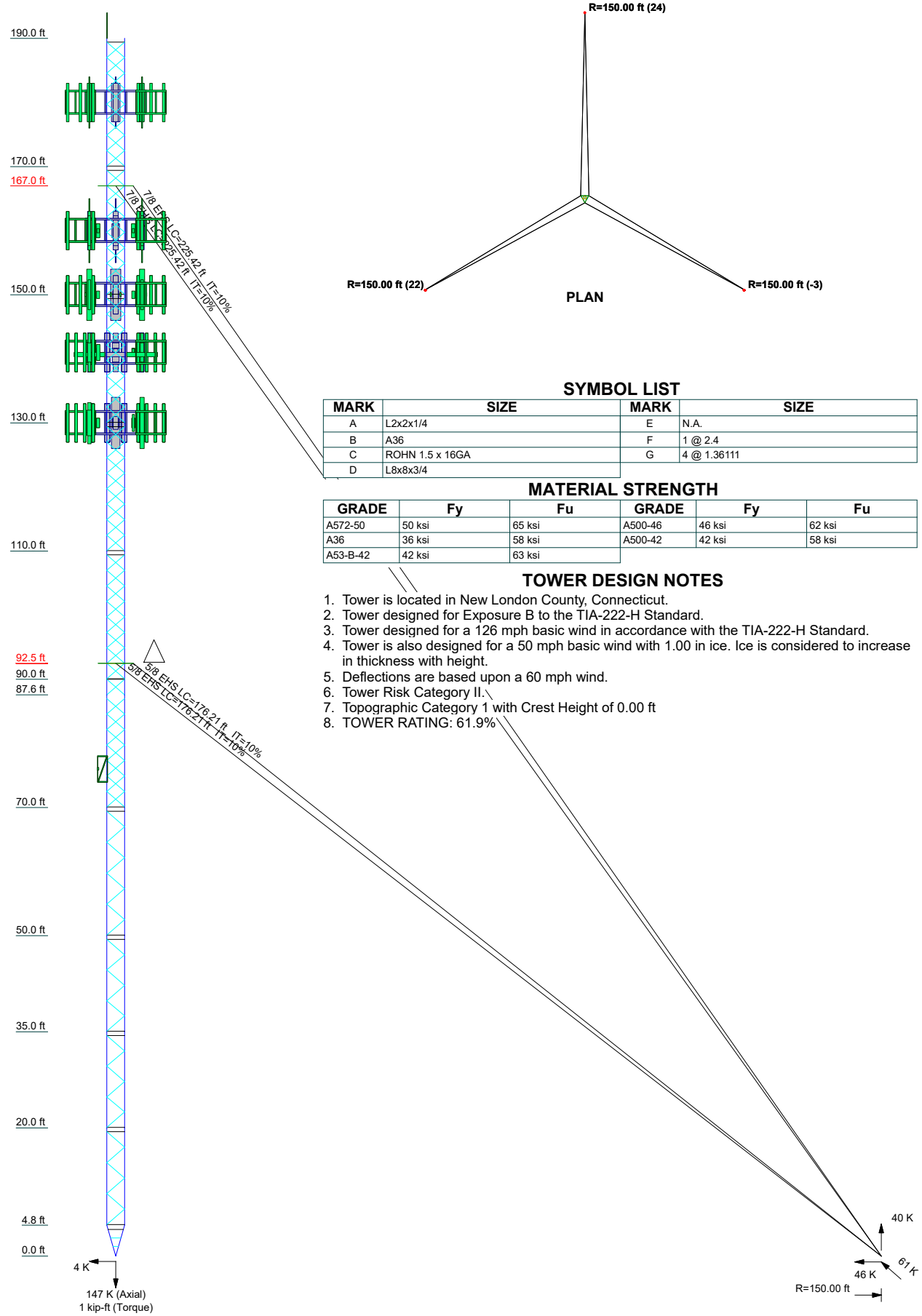
Miscellaneous items such as antenna mounts, etc., have not been designed or detailed as a part of our work. We recommend that material of adequate size and strength be purchased from a reputable tower manufacturer.

Towers are designed to carry gravity, wind, and ice loads. All members, legs, diagonals, struts, and redundant members provide structural stability to the tower with little redundancy. Absence or removal of a member can trigger catastrophic failure unless a substitute is provided before any removal. Legs carry axial loads and derive their strength from shorter unbraced lengths by the presence of redundant members and their connection to the diagonals with bolts or welds. If the bolts or welds are removed without providing any substitute to the frame, the leg is subjected to a higher unbraced length that immediately reduces its load carrying capacity. If a diagonal is also removed in addition to the connection, the unbraced length of the leg is greatly increased, jeopardizing its load carrying capacity. Failure of one leg can result in a tower collapse because there is no redundancy. Redundant members and diagonals are critical to the stability of the tower.

GPD makes no warranties, expressed and/or implied, in connection with this report and disclaims any liability arising from material, fabrication, and erection of this tower. GPD will not be responsible whatsoever for, or on account of, consequential or incidental damages sustained by any person, firm, or organization as a result of any data or conclusions contained in this report. The maximum liability of GPD pursuant to this report will be limited to the total fee received for preparation for this report.

TNX TOWER OUTPUT

Section	T12	T11	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1
Legs					ROHN 3 EH				P 2-1/2 X-STR w/ Split P 3 STD (GPD)		ROHN 3 EH	
Leg Grade					A572-50				A500-46		A572-50	
Diagonals	N.A.	ROHN 1.5 x 11GA	ROHN 1.5 x 16GA		ROHN 1.5 x 11GA	ROHN 1.5 x 16GA	A		ROHN 1.5 x 11GA	ROHN 1.5 x 16GA	L2x2x1/4	
Diagonal Grade	N.A.	A500-42	A53-B-42		A500-42	A53-B-42	B		A500-42	A53-B-42	A36	
Top Girts	D	ROHN 1.5 x 11GA	ROHN 1.5 x 16GA		ROHN 1.5 x 11GA	N.A.	C		ROHN 1.5 x 11GA	ROHN 1.5 x 16GA	L2x2x1/4	
Bottom Girts	N.A.	ROHN 1.5 x 11GA	ROHN 1.5 x 16GA		ROHN 1.5 x 11GA	ROHN 1.5 x 16GA	E		ROHN 1.5 x 11GA	ROHN 1.5 x 16GA	L2x2x1/4	
Horizontals	D							N.A.				
Top Guy Pull-Offs				N.A.				2L2x2x1/4	N.A.	2L2x2x1/4	N.A.	
Face Width (ft)												3.41667
# Panels @ (ft)	G	6 @ 2.40972	12 @ 2.37847		8 @ 2.40885	7 @ 2.41012	F			40 @ 2.40885		
Weight (K)	11.3	0.9	0.6	0.5	0.5	0.8	0.7	0.2	1.5	1.1	0.9	2.3	1.3



SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	L2x2x1/4	E	N.A.
B	A36	F	1 @ 2.4
C	ROHN 1.5 x 16GA	G	4 @ 1.36111
D	L8x8x3/4		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A500-46	46 ksi	62 ksi
A36	36 ksi	58 ksi	A500-42	42 ksi	58 ksi
A53-B-42	42 ksi	63 ksi			

TOWER DESIGN NOTES

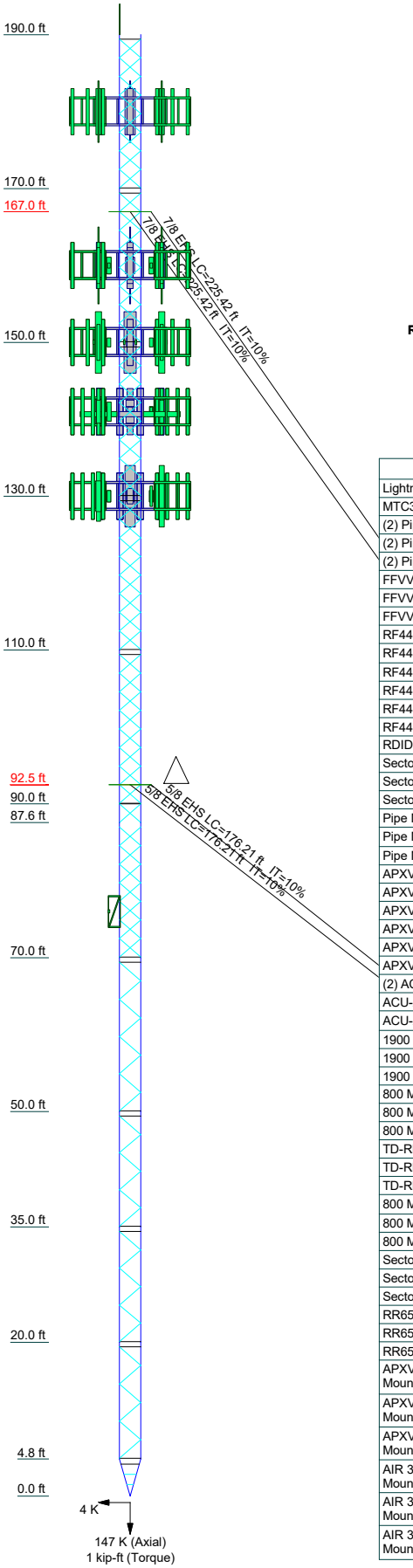
1. Tower is located in New London County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-H Standard.
3. Tower designed for a 126 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in 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 0.00 ft
8. TOWER RATING: 61.9%

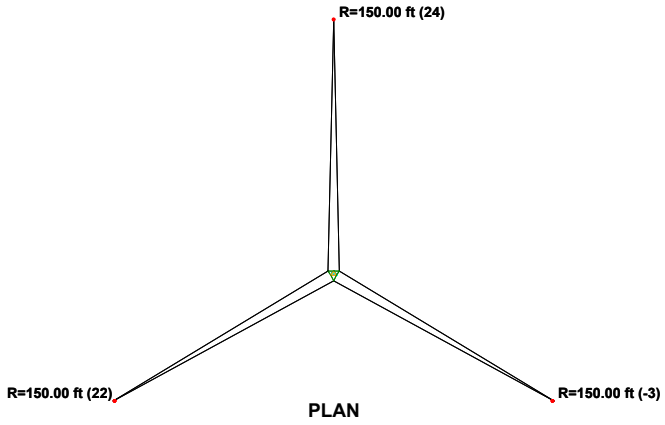
ALL REACTIONS ARE FACTORED

GPD
520 South Main Street, Suite 2531
Akron, Ohio 44311
Phone: (330) 572-2100
FAX: (330) 572-2101

Job: CT10016-A Montville 3 CT			
Project: 2023778.10016.02			
Client: SBA	Drawn by: GMang	App'd:	
Code: TIA-222-H	Date: 08/31/23	Scale: NTS	
Path: T:\SBA\1001602.SA Dish\5_Structural\00_Structure\00_Rev 0\03_Modeling\CT10016-A_Montville 3 CT_Dish Wireless_SA_08-28-2023.eri		Dwg No. E-1	

Section		T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11	T12
Legs		ROHN 3 EH		P 2-1/2 X-STR w/ Split P 3 STD (GPD)					ROHN 3 EH				
Leg Grade		A572-50			A500-46				A572-50				
Diagonals	N.A.	L2x2x1/4		ROHN 1.5 x 16GA	ROHN 1.5 x 11GA		A	ROHN 1.5 x 16GA	ROHN 1.5 x 11GA	ROHN 1.5 x 16GA	ROHN 1.5 x 16GA	ROHN 1.5 x 16GA	
Diagonal Grade	N.A.	A36		A53-B-42	A500-42		B	A53-B-42	A500-42	A53-B-42	A500-42	A500-42	
Top Girts	D	L2x2x1/4		ROHN 1.5 x 16GA	ROHN 1.5 x 11GA		C	N.A.	ROHN 1.5 x 11GA	ROHN 1.5 x 16GA	ROHN 1.5 x 11GA	ROHN 1.5 x 16GA	
Bottom Girts	N.A.	L2x2x1/4		ROHN 1.5 x 16GA	ROHN 1.5 x 11GA		E	ROHN 1.5 x 16GA	ROHN 1.5 x 11GA	ROHN 1.5 x 16GA	ROHN 1.5 x 11GA	ROHN 1.5 x 16GA	
Horizontals	D					N.A.							
Top Guy Pull-Offs		N.A.	2L2x2x1/4	N.A.		2L2x2x1/4				N.A.			
Face Width (ft)		3.41667											
# Panels @ (ft)	G	40 @ 2.40885					F	7 @ 2.41012	8 @ 2.40885	12 @ 2.37847		6 @ 2.40972	
Weight (K)	11.3	1.3	2.3	0.9	1.1	1.5	0.2	0.7	0.8	0.5	0.5	0.6	0.9





DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Lightning Rod 4'x5/8"	190	(2) KRY 112 144/1	150
MTC3975083 Sector Frames (3)	180	(2) KRY 112 144/1	150
(2) Pipe Mount 8'x2.875"	180	(2) KRY 112 144/1	150
(2) Pipe Mount 8'x2.875"	180	4449 B71 + B12	150
(2) Pipe Mount 8'x2.875"	180	4449 B71 + B12	150
FFVV-65B-R2 w/ Mount Pipe	180	4449 B71 + B12	150
FFVV-65B-R2 w/ Mount Pipe	180	Sector Mount w/ VZWSMART-SFK1	141
FFVV-65B-R2 w/ Mount Pipe	180	Sector Mount w/ VZWSMART-SFK1	141
RF4450t-71A	180	Sector Mount w/ VZWSMART-SFK1	141
RF4450t-71A	180	BXA-70063/6CF-EDIN w/ Mount Pipe	141
RF4450t-71A	180	BXA-70063/6CF-EDIN w/ Mount Pipe	141
RF4451d-70A	180	BXA-70063/6CF-EDIN w/ Mount Pipe	141
RF4451d-70A	180	MT6407-77A w/ Mount Pipe	141
RF4451d-70A	180	MT6407-77A w/ Mount Pipe	141
RDIDC-9181-PF-48	180	MT6407-77A w/ Mount Pipe	141
Sector Mount	160	MX06FRO660-03 w/ VZNSMART-MSK1	141
Sector Mount	160		
Sector Mount	160	MX06FRO660-03 w/ VZNSMART-MSK1	141
Pipe Mount 10'x2.375"	160		
Pipe Mount 10'x2.375"	160	MX06FRO660-03 w/ VZNSMART-MSK1	141
Pipe Mount 10'x2.375"	160		
APXVSPP18-C-A20 w/ Mount Pipe	160	MX06FRO660-03 w/ 919003314-02 Dual Mounting Bracket	141
APXVSPP18-C-A20 w/ Mount Pipe	160	MX06FRO660-03 w/ 919003314-02 Dual Mounting Bracket	141
APXVSPP18-C-A20 w/ Mount Pipe	160		
APXVTM14-C-120 w/ Mount Pipe	160	MX06FRO660-03 w/ 919003314-02 Dual Mounting Bracket	141
APXVTM14-C-120 w/ Mount Pipe	160		
APXVTM14-C-120 w/ Mount Pipe	160	B5/B13 RRH-BR04C	141
(2) ACU-A20-N RET	160	B5/B13 RRH-BR04C	141
ACU-A20-N RET	160	B5/B13 RRH-BR04C	141
ACU-A20-N RET	160	B2/B66A RRH-BR049 (RFV01U-D1A)	141
1900 MHz RRH	160	B2/B66A RRH-BR049 (RFV01U-D1A)	141
1900 MHz RRH	160	B2/B66A RRH-BR049 (RFV01U-D1A)	141
1900 MHz RRH	160	DB-C1-12C-24AB-0Z	141
800 MHz RRH	160	Sector Mount	130
800 MHz RRH	160	Sector Mount	130
800 MHz RRH	160	Sector Mount	130
TD-RRH8x20-25	160	AIR 6419 B77G w/ Mount Pipe	130
TD-RRH8x20-25	160	AIR 6419 B77G w/ Mount Pipe	130
TD-RRH8x20-25	160	AIR 6419 B77G w/ Mount Pipe	130
800 MHz External Notch Filters	160	AIR 6449 B77D	130
800 MHz External Notch Filters	160	AIR 6449 B77D	130
800 MHz External Notch Filters	160	AIR 6449 B77D	130
Sector Mount	150	TPA65R-BU8DA-K w/ Mount pipe	130
Sector Mount	150	DMP65R-BU8DA w/ Mount Pipe	130
Sector Mount	150	TPA65R-BU6DA-K w/ Mount Pipe	130
RR65-18-VDPL2 w/ mount pipe	150	OPA65R-BU8DA w/ Mount Pipe	130
RR65-18-VDPL2 w/ mount pipe	150	TPA65R-BU4D w/ Mount Pipe	130
RR65-18-VDPL2 w/ mount pipe	150	OPA65R-BU4DA w/ Mount Pipe	130
APXVAARR24_43-U-NA20 w/ 96" Mount Pipe	150	4449 B5/B12	130
		4449 B5/B12	130
APXVAARR24_43-U-NA20 w/ 96" Mount Pipe	150	4449 B5/B12	130
APXVAARR24_43-U-NA20 w/ 96" Mount Pipe	150	8843 B2/B66A	130
		8843 B2/B66A	130
AIR 32 KRD901146-1 B66A/B2A w/ Mount Pipe	150	8843 B2/B66A	130
AIR 32 KRD901146-1 B66A/B2A w/ Mount Pipe	150	DC6-48-60-18-8F	130
		DC9-48-60-24-8C-EV	130
AIR 32 KRD901146-1 B66A/B2A w/ Mount Pipe	150	Side Arm Mount [SO 701-1]	76
		GPS	76

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	L2x2x1/4	B	A36

GPD
520 South Main Street, Suite 2531
Akron, Ohio 44311
Phone: (330) 572-2100
FAX: (330) 572-2101

Job: CT10016-A Montville 3 CT			
Project: 2023778.10016.02			
Client: SBA	Drawn by: GMang	App'd:	
Code: TIA-222-H	Date: 08/31/23	Scale: NTS	
Path: T:\SBA\1001602.SA Dish\5_Structural\00_Structure\00_Rev 0\03_Modeling\CT10016-A_Montville 3 CT_Dish Wireless_SA_08-28-2023.eri		Dwg No. E-1	

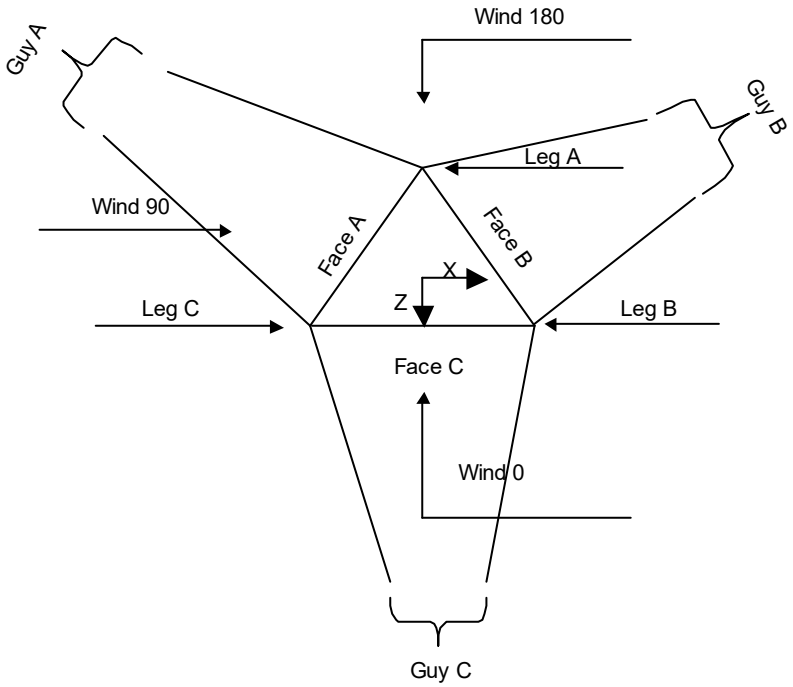
Tower Input Data

The main tower is a 3x guyed tower with an overall height of 190.00 ft above the ground line.
The base of the tower is set at an elevation of 0.00 ft above the ground line.
The face width of the tower is 3.42 ft at the top and tapered at the base.
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: 196.00 ft.
Basic wind speed of 126 mph.
Risk Category II.
Exposure Category B.
Simplified Topographic Factor Procedure for wind speed-up calculations is used.
Topographic Category: 1.
Crest Height: 0.00 ft.
Nominal ice thickness of 1.0000 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
Pressures are calculated at each section.
Stress ratio used in tower member design is 1.
Safety factor used in guy design is 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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



Face Guyed

Tower Section Geometry

Tower Section	Tower Elevation ft	Assembly Database	Description	Section Width ft	Number of Sections	Section Length ft
T1	190.00-170.00			3.42	1	20.00
T2	170.00-150.00			3.42	1	20.00
T3	150.00-130.00			3.42	1	20.00
T4	130.00-110.00			3.42	1	20.00
T5	110.00-90.00			3.42	1	20.00
T6	90.00-87.60			3.42	1	2.40
T7	87.60-70.00			3.42	1	17.60
T8	70.00-50.00			3.42	1	20.00
T9	50.00-35.00			3.42	1	15.00
T10	35.00-20.00			3.42	1	15.00
T11	20.00-4.81			3.42	1	15.19
T12	4.81-0.00			3.42	1	4.81

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T1	190.00-170.00	2.41	CX Brace	No	Yes	7.3750	1.3750
T2	170.00-150.00	2.41	CX Brace	No	Yes	7.3750	1.3750
T3	150.00-130.00	2.41	CX Brace	No	Yes	7.3750	1.3750
T4	130.00-110.00	2.41	CX Brace	No	Yes	7.3750	1.3750
T5	110.00-90.00	2.41	CX Brace	No	Yes	7.3750	1.3750
T6	90.00-87.60	2.40	CX Brace	No	Yes	0.0000	0.0000
T7	87.60-70.00	2.41	CX Brace	No	Yes	7.3750	1.3750
T8	70.00-50.00	2.41	K Brace Left	No	Yes	7.3750	1.3750
T9	50.00-35.00	2.38	K Brace Left	No	Yes	7.3750	1.3750
T10	35.00-20.00	2.38	K Brace Left	No	Yes	7.3750	1.3750
T11	20.00-4.81	2.41	K Brace Left	No	Yes	7.3750	1.3750
T12	4.81-0.00	1.36	K Brace Left	No	Yes	7.3750	1.3750

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 190.00-170.00	Pipe	ROHN 3 EH	A572-50 (50 ksi)	Equal Angle	L2x2x1/4	A36 (36 ksi)
T2 170.00-150.00	Pipe	ROHN 3 EH	A572-50 (50 ksi)	Equal Angle	L2x2x1/4	A36 (36 ksi)
T3 150.00-130.00	Arbitrary Shape	P 2-1/2 X-STR w/ Split P 3 STD (GPD)	A572-50 (50 ksi)	Pipe	ROHN 1.5 x 16GA	A53-B-42 (42 ksi)
T4 130.00-110.00	Arbitrary Shape	P 2-1/2 X-STR w/ Split P 3 STD (GPD)	A500-46 (46 ksi)	Pipe	ROHN 1.5 x 11GA	A500-42 (42 ksi)
T5 110.00-90.00	Pipe	ROHN 3 EH	A572-50 (50 ksi)	Pipe	ROHN 1.5 x 11GA	A500-42 (42 ksi)
T6 90.00-87.60	Pipe	ROHN 3 EH	A572-50 (50 ksi)	Equal Angle	L2x2x1/4	A36 (36 ksi)
T7 87.60-70.00	Pipe	ROHN 3 EH	A572-50 (50 ksi)	Pipe	ROHN 1.5 x 16GA	A53-B-42 (42 ksi)
T8 70.00-50.00	Pipe	ROHN 3 EH	A572-50 (50 ksi)	Pipe	ROHN 1.5 x 11GA	A500-42 (42 ksi)
T9 50.00-35.00	Pipe	ROHN 3 EH	A572-50 (50 ksi)	Pipe	ROHN 1.5 x 16GA	A53-B-42 (42 ksi)
T10 35.00-20.00	Pipe	ROHN 3 EH	A572-50 (50 ksi)	Pipe	ROHN 1.5 x 16GA	A53-B-42 (42 ksi)
T11 20.00-4.81	Pipe	ROHN 3 EH	A572-50 (50 ksi)	Pipe	ROHN 1.5 x 11GA	A500-42 (42 ksi)
T12 4.81-0.00	Pipe	ROHN 3 EH	A572-50 (50 ksi)	Equal Angle		A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 190.00-170.00	Equal Angle	L2x2x1/4	A36	Equal Angle	L2x2x1/4	A36

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T2 170.00-150.00	Single Angle	L2x2x1/4	(36 ksi) A36 (36 ksi)	Equal Angle	L2x2x1/4	(36 ksi) A53-B-42 (42 ksi)
T3 150.00-130.00	Pipe	ROHN 1.5 x 16GA	A53-B-42 (42 ksi)	Pipe	ROHN 1.5 x 16GA	A53-B-42 (42 ksi)
T4 130.00-110.00	Pipe	ROHN 1.5 x 11GA	A500-42 (42 ksi)	Pipe	ROHN 1.5 x 11GA	A500-42 (42 ksi)
T5 110.00-90.00	Pipe	ROHN 1.5 x 11GA	A500-42 (42 ksi)	Pipe	ROHN 1.5 x 11GA	A500-42 (42 ksi)
T6 90.00-87.60	Pipe	ROHN 1.5 x 16GA	A53-B-42 (42 ksi)	Pipe		A36 (36 ksi)
T7 87.60-70.00	Pipe		A36 (36 ksi)	Pipe	ROHN 1.5 x 16GA	A53-B-42 (42 ksi)
T8 70.00-50.00	Pipe	ROHN 1.5 x 11GA	A53-B-42 (42 ksi)	Pipe	ROHN 1.5 x 11GA	A53-B-42 (42 ksi)
T9 50.00-35.00	Pipe	ROHN 1.5 x 16GA	A53-B-42 (42 ksi)	Pipe	ROHN 1.5 x 16GA	A53-B-42 (42 ksi)
T10 35.00-20.00	Pipe	ROHN 1.5 x 16GA	A53-B-42 (42 ksi)	Pipe	ROHN 1.5 x 16GA	A53-B-42 (42 ksi)
T11 20.00-4.81	Pipe	ROHN 1.5 x 11GA	A500-42 (42 ksi)	Pipe	ROHN 1.5 x 11GA	A500-42 (42 ksi)
T12 4.81-0.00	Equal Angle	L8x8x3/4	A36 (36 ksi)	Equal Angle	L8x8x3/4	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T12 4.81-0.00	None	Flat Bar		A36 (36 ksi)	Equal Angle	L8x8x3/4	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

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
T1 190.00-170.00	0.00	0.3750	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T2 170.00-150.00	0.00	0.3750	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T3 150.00-130.00	0.00	0.3750	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T4 130.00-110.00	0.00	0.1757	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T5 110.00-90.00	0.00	0.3750	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T6 90.00-87.60	0.00	0.3750	A36	1	1	1	36.0000	36.0000	36.0000

Tower Elevation ft	Gusset Area (per face) ft²	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
T7 87.60-70.00	0.00	0.3750	(36 ksi) A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T8 70.00-50.00	0.00	0.3750	(36 ksi) A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T9 50.00-35.00	0.00	0.3750	(36 ksi) A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T10 35.00-20.00	0.00	0.3750	(36 ksi) A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T11 20.00-4.81	0.00	0.3750	(36 ksi) A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T12 4.81-0.00	0.00	0.3750	(36 ksi) A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T1 190.00-170.00	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T2 170.00-150.00	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T3 150.00-130.00	Yes	No	1.1819	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T4 130.00-110.00	Yes	No	1.1819	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T5 110.00-90.00	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T6 90.00-87.60	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T7 87.60-70.00	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T8 70.00-50.00	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T9 50.00-35.00	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T10 35.00-20.00	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T11 20.00-4.81	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T12 4.81-0.00	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1

[1]*Note: K factors are applied to member segment lengths. K-braces without inner supporting members will have the K factor in the out-of-plane direction applied to the overall length.*

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1 190.00-170.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T2 170.00-150.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T3 150.00-130.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75
T4 130.00-110.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75
T5 110.00-90.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75
T6 90.00-87.60	0.0000	1	0.0000	0.75	0.0000	1	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75
T7 87.60-70.00	0.0000	1	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T8 70.00-50.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75
T9 50.00-35.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75
T10 35.00-20.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75
T11 20.00-4.81	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75
T12 4.81-0.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	0.75

Tower Elevation ft	Redundant Horizontal		Redundant Diagonal		Redundant Sub-Diagonal		Redundant Sub-Horizontal		Redundant Vertical		Redundant Hip		Redundant Hip Diagonal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1 190.00-170.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T2 170.00-150.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T3 150.00-130.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T4 130.00-110.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T5 110.00-90.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T6 90.00-87.60	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T7 87.60-70.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T8 70.00-50.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T9 50.00-35.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T10 35.00-20.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T11 20.00-4.81	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T12 4.81-0.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1 190.00-170.00	Flange	0.7500 A325X	4	0.6250 A325X	1	0.6250 A325X	1	0.6250 A325X	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T2 170.00-150.00	Flange	0.7500 A325X	4	0.6250 A325X	1	0.6250 A325X	1	0.6250 A325X	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T3 150.00-130.00	Flange	0.7500 A325X	4	0.5000 A325X	1	0.5000 A325X	1	0.5000 A325X	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T4 130.00-110.00	Flange	0.7500 A325X	4	0.5000 A325X	1	0.5000 A325X	1	0.5000 A325X	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T5 110.00-90.00	Flange	0.7500 A325X	4	0.5000 A325X	1	0.5000 A325X	1	0.5000 A325X	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T6 90.00-87.60	Flange	0.7500 A325X	0	0.6250 A325X	1	0.5000 A325X	1	0.5000 A325X	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T7 87.60-70.00	Flange	0.7500 A325X	4	0.5000 A325X	1	0.5000 A325X	0	0.6250 A325X	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T8 70.00-50.00	Flange	0.7500 A325X	4	0.5000 A325X	1	0.5000 A325X	1	0.5000 A325X	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T9 50.00-35.00	Flange	0.7500 A325X	4	0.5000 A325X	1	0.5000 A325X	1	0.5000 A325X	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T10 35.00-20.00	Flange	0.7500 A325X	4	0.5000 A325X	1	0.5000 A325X	1	0.5000 A325X	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T11 20.00-4.81	Flange	0.7500 A325X	4	0.5000 A325X	1	0.5000 A325X	1	0.5000 A325X	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T12 4.81-0.00	Flange	0.7500 A325X	0	0.5000 A325X	1	0.6250 A325X	0	0.5000 A325X	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0

Guy Data

Guy Elevation ft	Guy Grade		Guy Size	Initial Tension K	%	Guy Modulus ksi	Guy Weight plf	L_u ft	Anchor Radius ft	Anchor Azimuth Adj. °	Anchor Elevation ft	End Fitting Efficiency %
166.977	EHS	A	7/8	7.97	10%	24000	1.581	205.69	150.00	0.0000	24.00	100%
		B	7/8	7.97	10%	24000	1.581	225.27	150.00	0.0000	-3.00	100%
		C	7/8	7.97	10%	24000	1.581	207.08	150.00	0.0000	22.00	100%
92.5234	EHS	A	5/8	4.24	10%	23000	0.813	163.03	150.00	0.0000	24.00	100%
		B	5/8	4.24	10%	23000	0.813	176.07	150.00	0.0000	-3.00	100%
		C	5/8	4.24	10%	23000	0.813	163.88	150.00	0.0000	22.00	100%

Guy Data*(cont'd)*

Guy Elevation ft	Mount Type	Torque-Arm Spread ft	Torque-Arm Leg Angle °	Torque-Arm Style	Torque-Arm Grade	Torque-Arm Type	Torque-Arm Size
166.977	Torque Arm	6.83	0.0000	Channel	A36 (36 ksi)	Channel	MC18x42.7
92.5234	Torque Arm	6.83	0.0000	Channel	A36 (36 ksi)	Channel	C12x20.7

Guy Data *(cont'd)*

Guy Elevation *ft*	*Diagonal Grade*	*Diagonal Type*	*Upper Diagonal Size*	*Lower Diagonal Size*	*Is Strap.*	*Pull-Off Grade*	*Pull-Off Type*	*Pull-Off Size*
166.98	A572-50 (50 ksi)	Solid Round			No	A36 (36 ksi)	Double Equal Angle	2L2x2x1/4
92.52	A572-50 (50 ksi)	Solid Round			No	A36 (36 ksi)	Double Equal Angle	2L2x2x1/4

Guy Data *(cont'd)*

Guy Elevation *ft*	*Cable Weight A* *K*	*Cable Weight B* *K*	*Cable Weight C* *K*	*Cable Weight D* *K*	*Tower Intercept A* *ft*	*Tower Intercept B* *ft*	*Tower Intercept C* *ft*	*Tower Intercept D* *ft*
166.977	0.33	0.36	0.33		4.14 3.5 sec/pulse	4.95 3.8 sec/pulse	4.20 3.5 sec/pulse	
92.5234	0.13	0.14	0.13		2.53 2.7 sec/pulse	2.95 3.0 sec/pulse	2.56 2.8 sec/pulse	

Guy Data *(cont'd)*

Guy Elevation *ft*	*Calc K Single Angles*	*Calc K Solid Rounds*	*Torque Arm* K_x	*Torque Arm* K_y	*Pull Off* K_x	*Pull Off* K_y	*Diagonal* K_x	*Diagonal* K_y
166.977	No	No	1	1	1	1	1	1
92.5234	No	No	1	1	1	1	1	1

Guy Data *(cont'd)*

Guy Elevation *ft*	*Torque-Arm* *Bolt Size* in	*Number*	*Net Width Deduct* in	*U*	*Pull Off* *Bolt Size* in	*Number*	*Net Width Deduct* in	*U*	*Diagonal* *Bolt Size* in	*Number*	*Net Width Deduct* in	*U*
166.977	0.8750 A325N	2	0.0000	0.75	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75
92.5234	0.8750 A325N	2	0.0000	0.75	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75

Guy Pressures

Guy Elevation ft	Guy Location	z ft	q_z psf	q_z Ice psf	Ice Thickness in
166.977	A	95.49	33	5	1.1121
	B	81.99	32	5	1.0953
	C	94.49	33	5	1.1109
92.5234	A	58.26	29	5	1.0585
	B	44.76	27	4	1.0310
	C	57.26	29	5	1.0567

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
Climbing Pegs	A	No	No	Ar (CaAa)	190.00 - 8.00	0.0000	0.5	1	1	0.2500	0.1500		0.31
Safety Line (3/8") ***	A	No	No	Ar (CaAa)	190.00 - 8.00	0.0000	0.5	1	1	0.3750	0.3750		0.22
Guyed Tower Coax Bracket	A	No	No	Af (CaAa)	190.00 - 8.00	0.0000	0	1	1	1.7599	1.7599		0.75
Guyed Tower Coax Bracket	B	No	No	Af (CaAa)	190.00 - 8.00	0.0000	0	1	1	1.7599	1.7599		0.75
Guyed Tower Coax Bracket ***	C	No	No	Af (CaAa)	190.00 - 8.00	0.0000	0	1	1	1.7599	1.7599		0.75
1-1/4" Fiber Cable ***	A	No	No	Ar (CaAa)	160.00 - 8.00	0.0000	0.35	4	4	0.5000	1.5500		0.66
LDF7-50A (1-5/8 FOAM)	C	No	No	Ar (CaAa)	150.00 - 8.00	0.0000	0.3	10	5	0.5000	1.9800		0.82
1-5/8" Hybrid ***	C	No	No	Ar (CaAa)	150.00 - 8.00	0.0000	0.1	3	2	0.5000	1.9800		0.82
LDF7-50A (1-5/8 FOAM)	C	No	No	Ar (CaAa)	141.00 - 8.00	0.0000	-0.2	5	3	0.5000	1.9800		0.82
1-5/8" Hybrid	C	No	No	Ar (CaAa)	141.00 - 8.00	0.0000	-0.32	2	2	0.5000	1.9800		0.82
LDF7-50A (1-5/8 FOAM) ***	A	No	No	Ar (CaAa)	141.00 - 8.00	0.0000	-0.25	6	6	0.5000	1.9800		0.82
LDF6-50A (1-1/4 FOAM)	B	No	No	Ar (CaAa)	130.00 - 8.00	0.0000	0	12	6	0.5000	1.5500		0.66
LDF4-50A (1/2 FOAM)	B	No	No	Ar (CaAa)	130.00 - 8.00	0.0000	0.25	2	1	0.5000	0.6300		0.15
3/4" DC Power Line ***	B	No	No	Ar (CaAa)	130.00 - 8.00	0.0000	0.2	4	2	0.5000	0.7500		0.33
LDF4-50A (1/2 FOAM) ***	C	No	No	Ar (CaAa)	76.00 - 8.00	0.0000	-0.4	1	1	0.5000	0.6300		0.15

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
T1	190.00-170.00	A	0.000	0.000	6.916	0.000	0.03
		B	0.000	0.000	5.866	0.000	0.01
		C	0.000	0.000	5.866	0.000	0.01
T2	170.00-150.00	A	0.000	0.000	13.116	0.000	0.05
		B	0.000	0.000	5.866	0.000	0.01
		C	0.000	0.000	5.866	0.000	0.01
T3	150.00-130.00	A	0.000	0.000	32.384	0.000	0.13
		B	0.000	0.000	5.866	0.000	0.01
		C	0.000	0.000	72.592	0.000	0.29
T4	130.00-110.00	A	0.000	0.000	43.076	0.000	0.18
		B	0.000	0.000	51.586	0.000	0.21
		C	0.000	0.000	85.066	0.000	0.34
T5	110.00-90.00	A	0.000	0.000	43.076	0.000	0.18
		B	0.000	0.000	51.586	0.000	0.21
		C	0.000	0.000	85.066	0.000	0.34
T6	90.00-87.60	A	0.000	0.000	5.169	0.000	0.02
		B	0.000	0.000	6.190	0.000	0.02
		C	0.000	0.000	10.208	0.000	0.04
T7	87.60-70.00	A	0.000	0.000	37.907	0.000	0.16
		B	0.000	0.000	45.396	0.000	0.18
		C	0.000	0.000	75.236	0.000	0.30
T8	70.00-50.00	A	0.000	0.000	43.076	0.000	0.18
		B	0.000	0.000	51.586	0.000	0.21
		C	0.000	0.000	86.326	0.000	0.35
T9	50.00-35.00	A	0.000	0.000	32.307	0.000	0.13
		B	0.000	0.000	38.690	0.000	0.15
		C	0.000	0.000	64.745	0.000	0.26
T10	35.00-20.00	A	0.000	0.000	32.307	0.000	0.13
		B	0.000	0.000	38.690	0.000	0.15
		C	0.000	0.000	64.745	0.000	0.26
T11	20.00-4.81	A	0.000	0.000	25.846	0.000	0.11
		B	0.000	0.000	30.952	0.000	0.12
		C	0.000	0.000	51.796	0.000	0.21
T12	4.81-0.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00

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
T1	190.00-170.00	A	1.185	0.000	0.000	21.135	0.000	0.19
		B		0.000	0.000	10.606	0.000	0.09
		C		0.000	0.000	10.606	0.000	0.09
T2	170.00-150.00	A	1.171	0.000	0.000	34.431	0.000	0.32
		B		0.000	0.000	10.550	0.000	0.09
		C		0.000	0.000	10.550	0.000	0.09
T3	150.00-130.00	A	1.155	0.000	0.000	71.303	0.000	0.72
		B		0.000	0.000	10.488	0.000	0.09
		C		0.000	0.000	100.566	0.000	1.28
T4	130.00-110.00	A	1.138	0.000	0.000	90.257	0.000	0.92
		B		0.000	0.000	76.098	0.000	0.93
		C		0.000	0.000	121.923	0.000	1.51
T5	110.00-90.00	A	1.117	0.000	0.000	89.752	0.000	0.91
		B		0.000	0.000	75.592	0.000	0.92
		C		0.000	0.000	121.273	0.000	1.49
T6	90.00-87.60	A	1.104	0.000	0.000	10.731	0.000	0.11

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		B		0.000	0.000	9.032	0.000	0.11
		C		0.000	0.000	14.503	0.000	0.18
T7	87.60-70.00	A	1.091	0.000	0.000	78.414	0.000	0.78
		B		0.000	0.000	65.952	0.000	0.80
		C		0.000	0.000	107.676	0.000	1.30
T8	70.00-50.00	A	1.062	0.000	0.000	88.389	0.000	0.87
		B		0.000	0.000	74.225	0.000	0.89
		C		0.000	0.000	125.021	0.000	1.49
T9	50.00-35.00	A	1.026	0.000	0.000	65.631	0.000	0.63
		B		0.000	0.000	55.006	0.000	0.65
		C		0.000	0.000	92.805	0.000	1.09
T10	35.00-20.00	A	0.982	0.000	0.000	64.829	0.000	0.61
		B		0.000	0.000	54.202	0.000	0.63
		C		0.000	0.000	91.640	0.000	1.06
T11	20.00-4.81	A	0.907	0.000	0.000	50.763	0.000	0.46
		B		0.000	0.000	42.256	0.000	0.48
		C		0.000	0.000	71.709	0.000	0.80
T12	4.81-0.00	A	0.770	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
T1	190.00-170.00	-0.0016	-0.3065	-0.0064	-1.3707
T2	170.00-150.00	-0.1567	-1.5871	-0.1308	-2.2342
T3	150.00-130.00	-3.1022	1.7186	-1.9557	0.3582
T4	130.00-110.00	-0.6743	1.0385	0.3246	0.3666
T5	110.00-90.00	-0.6667	1.0284	0.3141	0.3662
T6	90.00-87.60	-0.5889	0.9331	0.2457	0.2980
T7	87.60-70.00	-0.6341	1.0695	0.4205	0.4609
T8	70.00-50.00	-0.5747	1.1674	0.6730	0.6779
T9	50.00-35.00	-0.5730	1.1641	0.6513	0.6790
T10	35.00-20.00	-0.5730	1.1641	0.6276	0.6839
T11	20.00-4.81	-0.5392	1.0945	0.5499	0.6512
T12	4.81-0.00	0.0000	0.0000	0.0000	0.0000

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	1	Climbing Pegs	170.00 - 190.00	0.6000	0.4352
T1	2	Safety Line (3/8")	170.00 - 190.00	0.6000	0.4352
T1	4	Guyed Tower Coax Bracket	170.00 - 190.00	0.6000	0.4352
T1	5	Guyed Tower Coax Bracket	170.00 - 190.00	0.6000	0.4352

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	6	Guyed Tower Coax Bracket	170.00 - 190.00	0.6000	0.4352
T2	1	Climbing Pegs	150.00 - 170.00	0.6000	0.4236
T2	2	Safety Line (3/8")	150.00 - 170.00	0.6000	0.4236
T2	4	Guyed Tower Coax Bracket	150.00 - 170.00	0.6000	0.4236
T2	5	Guyed Tower Coax Bracket	150.00 - 170.00	0.6000	0.4236
T2	6	Guyed Tower Coax Bracket	150.00 - 170.00	0.6000	0.4236
T2	8	1-1/4" Fiber Cable	150.00 - 160.00	0.6000	0.4236
T3	1	Climbing Pegs	130.00 - 150.00	0.6000	0.4679
T3	2	Safety Line (3/8")	130.00 - 150.00	0.6000	0.4679
T3	4	Guyed Tower Coax Bracket	130.00 - 150.00	0.6000	0.4679
T3	5	Guyed Tower Coax Bracket	130.00 - 150.00	0.6000	0.4679
T3	6	Guyed Tower Coax Bracket	130.00 - 150.00	0.6000	0.4679
T3	8	1-1/4" Fiber Cable	130.00 - 150.00	0.6000	0.4679
T3	10	LDF7-50A (1-5/8 FOAM)	130.00 - 150.00	0.6000	0.4679
T3	11	1-5/8" Hybrid	130.00 - 150.00	0.6000	0.4679
T3	13	LDF7-50A (1-5/8 FOAM)	130.00 - 141.00	0.6000	0.4679
T3	14	1-5/8" Hybrid	130.00 - 141.00	0.6000	0.4679
T3	15	LDF7-50A (1-5/8 FOAM)	130.00 - 141.00	0.6000	0.4679
T4	1	Climbing Pegs	110.00 - 130.00	0.6000	0.4716
T4	2	Safety Line (3/8")	110.00 - 130.00	0.6000	0.4716
T4	4	Guyed Tower Coax Bracket	110.00 - 130.00	0.6000	0.4716
T4	5	Guyed Tower Coax Bracket	110.00 - 130.00	0.6000	0.4716
T4	6	Guyed Tower Coax Bracket	110.00 - 130.00	0.6000	0.4716
T4	8	1-1/4" Fiber Cable	110.00 - 130.00	0.6000	0.4716
T4	10	LDF7-50A (1-5/8 FOAM)	110.00 - 130.00	0.6000	0.4716
T4	11	1-5/8" Hybrid	110.00 - 130.00	0.6000	0.4716
T4	13	LDF7-50A (1-5/8 FOAM)	110.00 - 130.00	0.6000	0.4716
T4	14	1-5/8" Hybrid	110.00 - 130.00	0.6000	0.4716
T4	15	LDF7-50A (1-5/8 FOAM)	110.00 - 130.00	0.6000	0.4716
T4	17	LDF6-50A (1-1/4 FOAM)	110.00 - 130.00	0.6000	0.4716
T4	18	LDF4-50A (1/2 FOAM)	110.00 - 130.00	0.6000	0.4716

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T4	19	3/4" DC Power Line	110.00 - 130.00	0.6000	0.4716
T5	1	Climbing Pegs	90.00 - 110.00	0.6000	0.4710
T5	2	Safety Line (3/8")	90.00 - 110.00	0.6000	0.4710
T5	4	Guyed Tower Coax Bracket	90.00 - 110.00	0.6000	0.4710
T5	5	Guyed Tower Coax Bracket	90.00 - 110.00	0.6000	0.4710
T5	6	Guyed Tower Coax Bracket	90.00 - 110.00	0.6000	0.4710
T5	8	1-1/4" Fiber Cable	90.00 - 110.00	0.6000	0.4710
T5	10	LDF7-50A (1-5/8 FOAM)	90.00 - 110.00	0.6000	0.4710
T5	11	1-5/8" Hybrid	90.00 - 110.00	0.6000	0.4710
T5	13	LDF7-50A (1-5/8 FOAM)	90.00 - 110.00	0.6000	0.4710
T5	14	1-5/8" Hybrid	90.00 - 110.00	0.6000	0.4710
T5	15	LDF7-50A (1-5/8 FOAM)	90.00 - 110.00	0.6000	0.4710
T5	17	LDF6-50A (1-1/4 FOAM)	90.00 - 110.00	0.6000	0.4710
T5	18	LDF4-50A (1/2 FOAM)	90.00 - 110.00	0.6000	0.4710
T5	19	3/4" DC Power Line	90.00 - 110.00	0.6000	0.4710
T6	1	Climbing Pegs	87.60 - 90.00	0.6000	0.3655
T6	2	Safety Line (3/8")	87.60 - 90.00	0.6000	0.3655
T6	4	Guyed Tower Coax Bracket	87.60 - 90.00	0.6000	0.3655
T6	5	Guyed Tower Coax Bracket	87.60 - 90.00	0.6000	0.3655
T6	6	Guyed Tower Coax Bracket	87.60 - 90.00	0.6000	0.3655
T6	8	1-1/4" Fiber Cable	87.60 - 90.00	0.6000	0.3655
T6	10	LDF7-50A (1-5/8 FOAM)	87.60 - 90.00	0.6000	0.3655
T6	11	1-5/8" Hybrid	87.60 - 90.00	0.6000	0.3655
T6	13	LDF7-50A (1-5/8 FOAM)	87.60 - 90.00	0.6000	0.3655
T6	14	1-5/8" Hybrid	87.60 - 90.00	0.6000	0.3655
T6	15	LDF7-50A (1-5/8 FOAM)	87.60 - 90.00	0.6000	0.3655
T6	17	LDF6-50A (1-1/4 FOAM)	87.60 - 90.00	0.6000	0.3655
T6	18	LDF4-50A (1/2 FOAM)	87.60 - 90.00	0.6000	0.3655
T6	19	3/4" DC Power Line	87.60 - 90.00	0.6000	0.3655
T7	1	Climbing Pegs	70.00 - 87.60	0.6000	0.5026
T7	2	Safety Line (3/8")	70.00 - 87.60	0.6000	0.5026
T7	4	Guyed Tower Coax Bracket	70.00 - 87.60	0.6000	0.5026
T7	5	Guyed Tower Coax Bracket	70.00 - 87.60	0.6000	0.5026
T7	6	Guyed Tower Coax Bracket	70.00 - 87.60	0.6000	0.5026
T7	8	1-1/4" Fiber Cable	70.00 - 87.60	0.6000	0.5026
T7	10	LDF7-50A (1-5/8 FOAM)	70.00 - 87.60	0.6000	0.5026
T7	11	1-5/8" Hybrid	70.00 - 87.60	0.6000	0.5026
T7	13	LDF7-50A (1-5/8 FOAM)	70.00 - 87.60	0.6000	0.5026
T7	14	1-5/8" Hybrid	70.00 - 87.60	0.6000	0.5026
T7	15	LDF7-50A (1-5/8 FOAM)	70.00 - 87.60	0.6000	0.5026
T7	17	LDF6-50A (1-1/4 FOAM)	70.00 - 87.60	0.6000	0.5026
T7	18	LDF4-50A (1/2 FOAM)	70.00 - 87.60	0.6000	0.5026
T7	19	3/4" DC Power Line	70.00 - 87.60	0.6000	0.5026
T7	21	LDF4-50A (1/2 FOAM)	70.00 - 76.00	0.6000	0.5026
T8	1	Climbing Pegs	50.00 - 70.00	0.6000	0.6000
T8	2	Safety Line (3/8")	50.00 - 70.00	0.6000	0.6000
T8	4	Guyed Tower Coax Bracket	50.00 - 70.00	0.6000	0.6000
T8	5	Guyed Tower Coax Bracket	50.00 - 70.00	0.6000	0.6000
T8	6	Guyed Tower Coax Bracket	50.00 - 70.00	0.6000	0.6000
T8	8	1-1/4" Fiber Cable	50.00 - 70.00	0.6000	0.6000
T8	10	LDF7-50A (1-5/8 FOAM)	50.00 - 70.00	0.6000	0.6000
T8	11	1-5/8" Hybrid	50.00 - 70.00	0.6000	0.6000
T8	13	LDF7-50A (1-5/8 FOAM)	50.00 - 70.00	0.6000	0.6000
T8	14	1-5/8" Hybrid	50.00 - 70.00	0.6000	0.6000
T8	15	LDF7-50A (1-5/8 FOAM)	50.00 - 70.00	0.6000	0.6000
T8	17	LDF6-50A (1-1/4 FOAM)	50.00 - 70.00	0.6000	0.6000
T8	18	LDF4-50A (1/2 FOAM)	50.00 - 70.00	0.6000	0.6000
T8	19	3/4" DC Power Line	50.00 - 70.00	0.6000	0.6000
T8	21	LDF4-50A (1/2 FOAM)	50.00 - 70.00	0.6000	0.6000
T9	1	Climbing Pegs	35.00 - 50.00	0.6000	0.6000
T9	2	Safety Line (3/8")	35.00 - 50.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T9	4	Guyed Tower Coax Bracket	35.00 - 50.00	0.6000	0.6000
T9	5	Guyed Tower Coax Bracket	35.00 - 50.00	0.6000	0.6000
T9	6	Guyed Tower Coax Bracket	35.00 - 50.00	0.6000	0.6000
T9	8	1-1/4" Fiber Cable	35.00 - 50.00	0.6000	0.6000
T9	10	LDF7-50A (1-5/8 FOAM)	35.00 - 50.00	0.6000	0.6000
T9	11	1-5/8" Hybrid	35.00 - 50.00	0.6000	0.6000
T9	13	LDF7-50A (1-5/8 FOAM)	35.00 - 50.00	0.6000	0.6000
T9	14	1-5/8" Hybrid	35.00 - 50.00	0.6000	0.6000
T9	15	LDF7-50A (1-5/8 FOAM)	35.00 - 50.00	0.6000	0.6000
T9	17	LDF6-50A (1-1/4 FOAM)	35.00 - 50.00	0.6000	0.6000
T9	18	LDF4-50A (1/2 FOAM)	35.00 - 50.00	0.6000	0.6000
T9	19	3/4" DC Power Line	35.00 - 50.00	0.6000	0.6000
T9	21	LDF4-50A (1/2 FOAM)	35.00 - 50.00	0.6000	0.6000
T10	1	Climbing Pegs	20.00 - 35.00	0.6000	0.6000
T10	2	Safety Line (3/8")	20.00 - 35.00	0.6000	0.6000
T10	4	Guyed Tower Coax Bracket	20.00 - 35.00	0.6000	0.6000
T10	5	Guyed Tower Coax Bracket	20.00 - 35.00	0.6000	0.6000
T10	6	Guyed Tower Coax Bracket	20.00 - 35.00	0.6000	0.6000
T10	8	1-1/4" Fiber Cable	20.00 - 35.00	0.6000	0.6000
T10	10	LDF7-50A (1-5/8 FOAM)	20.00 - 35.00	0.6000	0.6000
T10	11	1-5/8" Hybrid	20.00 - 35.00	0.6000	0.6000
T10	13	LDF7-50A (1-5/8 FOAM)	20.00 - 35.00	0.6000	0.6000
T10	14	1-5/8" Hybrid	20.00 - 35.00	0.6000	0.6000
T10	15	LDF7-50A (1-5/8 FOAM)	20.00 - 35.00	0.6000	0.6000
T10	17	LDF6-50A (1-1/4 FOAM)	20.00 - 35.00	0.6000	0.6000
T10	18	LDF4-50A (1/2 FOAM)	20.00 - 35.00	0.6000	0.6000
T10	19	3/4" DC Power Line	20.00 - 35.00	0.6000	0.6000
T10	21	LDF4-50A (1/2 FOAM)	20.00 - 35.00	0.6000	0.6000
T11	1	Climbing Pegs	8.00 - 20.00	0.6000	0.6000
T11	2	Safety Line (3/8")	8.00 - 20.00	0.6000	0.6000
T11	4	Guyed Tower Coax Bracket	8.00 - 20.00	0.6000	0.6000
T11	5	Guyed Tower Coax Bracket	8.00 - 20.00	0.6000	0.6000
T11	6	Guyed Tower Coax Bracket	8.00 - 20.00	0.6000	0.6000
T11	8	1-1/4" Fiber Cable	8.00 - 20.00	0.6000	0.6000
T11	10	LDF7-50A (1-5/8 FOAM)	8.00 - 20.00	0.6000	0.6000
T11	11	1-5/8" Hybrid	8.00 - 20.00	0.6000	0.6000
T11	13	LDF7-50A (1-5/8 FOAM)	8.00 - 20.00	0.6000	0.6000
T11	14	1-5/8" Hybrid	8.00 - 20.00	0.6000	0.6000
T11	15	LDF7-50A (1-5/8 FOAM)	8.00 - 20.00	0.6000	0.6000
T11	17	LDF6-50A (1-1/4 FOAM)	8.00 - 20.00	0.6000	0.6000
T11	18	LDF4-50A (1/2 FOAM)	8.00 - 20.00	0.6000	0.6000
T11	19	3/4" DC Power Line	8.00 - 20.00	0.6000	0.6000
T11	21	LDF4-50A (1/2 FOAM)	8.00 - 20.00	0.6000	0.6000

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
Lightning Rod 4'x5/8"	C	From Leg	0.00 0.00	0.0000	190.00	No Ice 1/2" Ice	0.25 0.66	0.25 0.66	0.00 0.01

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			2.00			1" Ice	0.97	0.97	0.01
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MTC3975083 Sector Frames (3)	A	From Leg	2.00	0.0000	180.00	No Ice	20.14	20.14	1.59
			0.00			1/2" Ice	30.60	30.60	1.87
			0.00			1" Ice	41.06	41.06	2.15
(2) Pipe Mount 8'x2.875"	A	From Leg	4.00	0.0000	180.00	No Ice	2.30	2.30	0.05
			0.00			1/2" Ice	3.13	3.13	0.06
			0.00			1" Ice	3.62	3.62	0.09
(2) Pipe Mount 8'x2.875"	B	From Leg	4.00	0.0000	180.00	No Ice	2.30	2.30	0.05
			0.00			1/2" Ice	3.13	3.13	0.06
			0.00			1" Ice	3.62	3.62	0.09
(2) Pipe Mount 8'x2.875"	C	From Leg	4.00	0.0000	180.00	No Ice	2.30	2.30	0.05
			0.00			1/2" Ice	3.13	3.13	0.06
			0.00			1" Ice	3.62	3.62	0.09
FFVV-65B-R2 w/ Mount Pipe	C	From Leg	4.00	0.0000	180.00	No Ice	12.51	7.41	0.10
			0.00			1/2" Ice	13.11	8.60	0.19
			0.00			1" Ice	13.67	9.50	0.29
FFVV-65B-R2 w/ Mount Pipe	B	From Leg	4.00	0.0000	180.00	No Ice	12.51	7.41	0.10
			0.00			1/2" Ice	13.11	8.60	0.19
			0.00			1" Ice	13.67	9.50	0.29
FFVV-65B-R2 w/ Mount Pipe	A	From Leg	4.00	0.0000	180.00	No Ice	12.51	7.41	0.10
			0.00			1/2" Ice	13.11	8.60	0.19
			0.00			1" Ice	13.67	9.50	0.29
RF4450t-71A	C	From Leg	2.00	0.0000	180.00	No Ice	2.06	1.38	0.09
			0.00			1/2" Ice	2.24	1.53	0.12
			0.00			1" Ice	2.43	1.68	0.14
RF4450t-71A	B	From Leg	2.00	0.0000	180.00	No Ice	2.06	1.38	0.09
			0.00			1/2" Ice	2.24	1.53	0.12
			0.00			1" Ice	2.43	1.68	0.14
RF4450t-71A	A	From Leg	2.00	0.0000	180.00	No Ice	2.06	1.38	0.09
			0.00			1/2" Ice	2.24	1.53	0.12
			0.00			1" Ice	2.43	1.68	0.14
RF4451d-70A	C	From Leg	2.00	0.0000	180.00	No Ice	1.88	1.11	0.06
			0.00			1/2" Ice	2.05	1.25	0.08
			0.00			1" Ice	2.22	1.39	0.10
RF4451d-70A	B	From Leg	2.00	0.0000	180.00	No Ice	1.88	1.11	0.06
			0.00			1/2" Ice	2.05	1.25	0.08
			0.00			1" Ice	2.22	1.39	0.10
RF4451d-70A	A	From Leg	2.00	0.0000	180.00	No Ice	1.88	1.11	0.06
			0.00			1/2" Ice	2.05	1.25	0.08
			0.00			1" Ice	2.22	1.39	0.10
RDIDC-9181-PF-48	A	From Leg	2.00	0.0000	180.00	No Ice	2.56	1.34	0.02
			0.00			1/2" Ice	2.76	1.49	0.04
			0.00			1" Ice	2.97	1.66	0.07
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Sector Mount	A	From Leg	2.00	0.0000	160.00	No Ice	12.50	7.00	0.58
			0.00			1/2" Ice	18.50	11.30	0.69
			0.00			1" Ice	24.60	15.30	0.85
Sector Mount	B	From Leg	2.00	0.0000	160.00	No Ice	12.50	7.00	0.58
			0.00			1/2" Ice	18.50	11.30	0.69
			0.00			1" Ice	24.60	15.30	0.85
Sector Mount	C	From Leg	2.00	0.0000	160.00	No Ice	12.50	7.00	0.58
			0.00			1/2" Ice	18.50	11.30	0.69
			0.00			1" Ice	24.60	15.30	0.85
Pipe Mount 10'x2.375"	A	From Leg	4.00	0.0000	160.00	No Ice	2.38	2.38	0.04
			0.00			1/2" Ice	3.40	3.40	0.06
			0.00			1" Ice	4.45	4.45	0.08

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Pipe Mount 10'x2.375"	B	From Leg	4.00	0.0000	160.00	No Ice	2.38	2.38	0.04
			0.00			1/2" Ice	3.40	3.40	0.06
			0.00			1" Ice	4.45	4.45	0.08
Pipe Mount 10'x2.375"	C	From Leg	4.00	0.0000	160.00	No Ice	2.38	2.38	0.04
			0.00			1/2" Ice	3.40	3.40	0.06
			0.00			1" Ice	4.45	4.45	0.08
APXVSPP18-C-A20 w/ Mount Pipe	A	From Leg	4.00	0.0000	160.00	No Ice	8.02	6.71	0.08
			0.00			1/2" Ice	8.48	7.66	0.14
			0.00			1" Ice	8.94	8.49	0.22
APXVSPP18-C-A20 w/ Mount Pipe	B	From Leg	4.00	0.0000	160.00	No Ice	8.02	6.71	0.08
			0.00			1/2" Ice	8.48	7.66	0.14
			0.00			1" Ice	8.94	8.49	0.22
APXVSPP18-C-A20 w/ Mount Pipe	C	From Leg	4.00	0.0000	160.00	No Ice	8.02	6.71	0.08
			0.00			1/2" Ice	8.48	7.66	0.14
			0.00			1" Ice	8.94	8.49	0.22
APXVTM14-C-120 w/ Mount Pipe	A	From Leg	4.00	0.0000	160.00	No Ice	6.58	4.96	0.08
			0.00			1/2" Ice	7.03	5.75	0.13
			0.00			1" Ice	7.47	6.47	0.19
APXVTM14-C-120 w/ Mount Pipe	B	From Leg	4.00	0.0000	160.00	No Ice	6.58	4.96	0.08
			0.00			1/2" Ice	7.03	5.75	0.13
			0.00			1" Ice	7.47	6.47	0.19
APXVTM14-C-120 w/ Mount Pipe	C	From Leg	4.00	0.0000	160.00	No Ice	6.58	4.96	0.08
			0.00			1/2" Ice	7.03	5.75	0.13
			0.00			1" Ice	7.47	6.47	0.19
(2) ACU-A20-N RET	A	From Leg	2.00	0.0000	160.00	No Ice	0.07	0.12	0.00
			0.00			1/2" Ice	0.10	0.16	0.00
			0.00			1" Ice	0.15	0.21	0.00
ACU-A20-N RET	B	From Leg	2.00	0.0000	160.00	No Ice	0.07	0.12	0.00
			0.00			1/2" Ice	0.10	0.16	0.00
			0.00			1" Ice	0.15	0.21	0.00
ACU-A20-N RET	C	From Leg	2.00	0.0000	160.00	No Ice	0.07	0.12	0.00
			0.00			1/2" Ice	0.10	0.16	0.00
			0.00			1" Ice	0.15	0.21	0.00
1900 MHz RRH	A	From Leg	2.00	0.0000	160.00	No Ice	2.59	2.55	0.06
			0.00			1/2" Ice	2.81	2.76	0.09
			0.00			1" Ice	3.03	2.98	0.12
1900 MHz RRH	B	From Leg	2.00	0.0000	160.00	No Ice	2.59	2.55	0.06
			0.00			1/2" Ice	2.81	2.76	0.09
			0.00			1" Ice	3.03	2.98	0.12
1900 MHz RRH	C	From Leg	2.00	0.0000	160.00	No Ice	2.59	2.55	0.06
			0.00			1/2" Ice	2.81	2.76	0.09
			0.00			1" Ice	3.03	2.98	0.12
800 MHz RRH	A	From Leg	2.00	0.0000	160.00	No Ice	1.70	1.28	0.05
			0.00			1/2" Ice	1.86	1.43	0.07
			0.00			1" Ice	2.03	1.58	0.09
800 MHz RRH	B	From Leg	2.00	0.0000	160.00	No Ice	1.70	1.28	0.05
			0.00			1/2" Ice	1.86	1.43	0.07
			0.00			1" Ice	2.03	1.58	0.09
800 MHz RRH	C	From Leg	2.00	0.0000	160.00	No Ice	1.70	1.28	0.05
			0.00			1/2" Ice	1.86	1.43	0.07
			0.00			1" Ice	2.03	1.58	0.09
TD-RRH8x20-25	A	From Leg	2.00	0.0000	160.00	No Ice	3.70	1.29	0.07
			0.00			1/2" Ice	3.95	1.46	0.09
			0.00			1" Ice	4.20	1.64	0.12
TD-RRH8x20-25	B	From Leg	2.00	0.0000	160.00	No Ice	3.70	1.29	0.07
			0.00			1/2" Ice	3.95	1.46	0.09
			0.00			1" Ice	4.20	1.64	0.12

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
TD-RRH8x20-25	C	From Leg	2.00	0.0000	160.00	No Ice	3.70	1.29	0.07
			0.00			1/2" Ice	3.95	1.46	0.09
			0.00			1" Ice	4.20	1.64	0.12
800 MHz External Notch Filters	A	From Leg	2.00	0.0000	160.00	No Ice	0.66	0.29	0.01
			0.00			1/2" Ice	0.76	0.36	0.02
			0.00			1" Ice	0.87	0.45	0.02
800 MHz External Notch Filters	B	From Leg	2.00	0.0000	160.00	No Ice	0.66	0.29	0.01
			0.00			1/2" Ice	0.76	0.36	0.02
			0.00			1" Ice	0.87	0.45	0.02
800 MHz External Notch Filters	C	From Leg	2.00	0.0000	160.00	No Ice	0.66	0.29	0.01
			0.00			1/2" Ice	0.76	0.36	0.02
			0.00			1" Ice	0.87	0.45	0.02
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Sector Mount	A	From Leg	2.00	0.0000	150.00	No Ice	12.50	7.00	0.58
			0.00			1/2" Ice	18.50	11.30	0.69
			0.00			1" Ice	24.60	15.30	0.85
Sector Mount	B	From Leg	2.00	0.0000	150.00	No Ice	12.50	7.00	0.58
			0.00			1/2" Ice	18.50	11.30	0.69
			0.00			1" Ice	24.60	15.30	0.85
Sector Mount	C	From Leg	2.00	0.0000	150.00	No Ice	12.50	7.00	0.58
			0.00			1/2" Ice	18.50	11.30	0.69
			0.00			1" Ice	24.60	15.30	0.85
RR65-18-VDPL2 w/ mount pipe	A	From Leg	4.00	0.0000	150.00	No Ice	4.91	3.66	0.04
			0.00			1/2" Ice	5.50	4.73	0.08
			0.00			1" Ice	6.00	5.51	0.13
RR65-18-VDPL2 w/ mount pipe	B	From Leg	4.00	0.0000	150.00	No Ice	4.91	3.66	0.04
			0.00			1/2" Ice	5.50	4.73	0.08
			0.00			1" Ice	6.00	5.51	0.13
RR65-18-VDPL2 w/ mount pipe	C	From Leg	4.00	0.0000	150.00	No Ice	4.91	3.66	0.04
			0.00			1/2" Ice	5.50	4.73	0.08
			0.00			1" Ice	6.00	5.51	0.13
APXVAARR24_43-U-NA20 w/ 96" Mount Pipe	A	From Leg	4.00	0.0000	150.00	No Ice	20.24	10.79	0.16
			0.00			1/2" Ice	20.89	12.21	0.29
			0.00			1" Ice	21.55	13.49	0.44
APXVAARR24_43-U-NA20 w/ 96" Mount Pipe	B	From Leg	4.00	0.0000	150.00	No Ice	20.24	10.79	0.16
			0.00			1/2" Ice	20.89	12.21	0.29
			0.00			1" Ice	21.55	13.49	0.44
APXVAARR24_43-U-NA20 w/ 96" Mount Pipe	C	From Leg	4.00	0.0000	150.00	No Ice	20.24	10.79	0.16
			0.00			1/2" Ice	20.89	12.21	0.29
			0.00			1" Ice	21.55	13.49	0.44
AIR 32 KRD901146-1 B66A/B2A w/ Mount Pipe	A	From Leg	4.00	0.0000	150.00	No Ice	6.58	5.90	0.15
			0.00			1/2" Ice	6.97	6.56	0.21
			0.00			1" Ice	7.37	7.24	0.28
AIR 32 KRD901146-1 B66A/B2A w/ Mount Pipe	B	From Leg	4.00	0.0000	150.00	No Ice	6.58	5.90	0.15
			0.00			1/2" Ice	6.97	6.56	0.21
			0.00			1" Ice	7.37	7.24	0.28
AIR 32 KRD901146-1 B66A/B2A w/ Mount Pipe	C	From Leg	4.00	0.0000	150.00	No Ice	6.58	5.90	0.15
			0.00			1/2" Ice	6.97	6.56	0.21
			0.00			1" Ice	7.37	7.24	0.28
(2) KRY 112 144/1	A	From Leg	2.00	0.0000	150.00	No Ice	0.35	0.17	0.01
			0.00			1/2" Ice	0.43	0.23	0.01
			0.00			1" Ice	0.51	0.30	0.02
(2) KRY 112 144/1	B	From Leg	2.00	0.0000	150.00	No Ice	0.35	0.17	0.01
			0.00			1/2" Ice	0.43	0.23	0.01
			0.00			1" Ice	0.51	0.30	0.02
(2) KRY 112 144/1	C	From Leg	2.00	0.0000	150.00	No Ice	0.35	0.17	0.01
			0.00			1/2" Ice	0.43	0.23	0.01

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00			1" Ice	0.51	0.30	0.02
4449 B71 + B12	A	From Leg	2.00	0.0000	150.00	No Ice	1.63	1.00	0.07
			0.00			1/2" Ice	1.79	1.13	0.09
			0.00			1" Ice	1.95	1.27	0.11
4449 B71 + B12	B	From Leg	2.00	0.0000	150.00	No Ice	1.63	1.00	0.07
			0.00			1/2" Ice	1.79	1.13	0.09
			0.00			1" Ice	1.95	1.27	0.11
4449 B71 + B12	C	From Leg	2.00	0.0000	150.00	No Ice	1.63	1.00	0.07
			0.00			1/2" Ice	1.79	1.13	0.09
			0.00			1" Ice	1.95	1.27	0.11
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Sector Mount w/ VZWSMART-SFK1	A	From Leg	2.00	0.0000	141.00	No Ice	12.50	7.00	0.58
			0.00			1/2" Ice	18.50	11.30	0.69
			0.00			1" Ice	24.60	15.30	0.85
Sector Mount w/ VZWSMART-SFK1	B	From Leg	2.00	0.0000	141.00	No Ice	12.50	7.00	0.58
			0.00			1/2" Ice	18.50	11.30	0.69
			0.00			1" Ice	24.60	15.30	0.85
Sector Mount w/ VZWSMART-SFK1	C	From Leg	2.00	0.0000	141.00	No Ice	12.50	7.00	0.58
			0.00			1/2" Ice	18.50	11.30	0.69
			0.00			1" Ice	24.60	15.30	0.85
BXA-70063/6CF-EDIN w/ Mount Pipe	A	From Leg	4.00	0.0000	141.00	No Ice	8.07	5.66	0.05
			0.00			1/2" Ice	8.74	6.92	0.11
			0.00			1" Ice	9.37	8.04	0.18
BXA-70063/6CF-EDIN w/ Mount Pipe	B	From Leg	4.00	0.0000	141.00	No Ice	8.07	5.66	0.05
			0.00			1/2" Ice	8.74	6.92	0.11
			0.00			1" Ice	9.37	8.04	0.18
BXA-70063/6CF-EDIN w/ Mount Pipe	C	From Leg	4.00	0.0000	141.00	No Ice	8.07	5.66	0.05
			0.00			1/2" Ice	8.74	6.92	0.11
			0.00			1" Ice	9.37	8.04	0.18
MT6407-77A w/ Mount Pipe	A	From Leg	4.00	0.0000	141.00	No Ice	4.91	2.68	0.10
			0.00			1/2" Ice	5.26	3.14	0.14
			0.00			1" Ice	5.61	3.62	0.18
MT6407-77A w/ Mount Pipe	B	From Leg	4.00	0.0000	141.00	No Ice	4.91	2.68	0.10
			0.00			1/2" Ice	5.26	3.14	0.14
			0.00			1" Ice	5.61	3.62	0.18
MT6407-77A w/ Mount Pipe	C	From Leg	4.00	0.0000	141.00	No Ice	4.91	2.68	0.10
			0.00			1/2" Ice	5.26	3.14	0.14
			0.00			1" Ice	5.61	3.62	0.18
MX06FRO660-03 w/ VZNSMART-MSK1	A	From Leg	4.00	0.0000	141.00	No Ice	10.11	8.99	0.09
			0.00			1/2" Ice	10.68	10.15	0.17
			0.00			1" Ice	11.22	11.03	0.27
MX06FRO660-03 w/ VZNSMART-MSK1	B	From Leg	4.00	0.0000	141.00	No Ice	10.11	8.99	0.09
			0.00			1/2" Ice	10.68	10.15	0.17
			0.00			1" Ice	11.22	11.03	0.27
MX06FRO660-03 w/ VZNSMART-MSK1	C	From Leg	4.00	0.0000	141.00	No Ice	10.11	8.99	0.09
			0.00			1/2" Ice	10.68	10.15	0.17
			0.00			1" Ice	11.22	11.03	0.27
MX06FRO660-03 w/ 919003314-02 Dual Mounting Bracket	A	From Leg	4.00	0.0000	141.00	No Ice	9.87	7.34	0.06
			0.00			1/2" Ice	10.34	7.78	0.13
			0.00			1" Ice	10.82	8.24	0.20
MX06FRO660-03 w/ 919003314-02 Dual Mounting Bracket	B	From Leg	4.00	0.0000	141.00	No Ice	9.87	7.34	0.06
			0.00			1/2" Ice	10.34	7.78	0.13
			0.00			1" Ice	10.82	8.24	0.20
MX06FRO660-03 w/ 919003314-02 Dual Mounting Bracket	C	From Leg	4.00	0.0000	141.00	No Ice	9.87	7.34	0.06
			0.00			1/2" Ice	10.34	7.78	0.13
			0.00			1" Ice	10.82	8.24	0.20
B5/B13 RRH-BR04C	A	From Leg	2.00	0.0000	141.00	No Ice	1.88	1.01	0.07

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00			1/2" Ice	2.05	1.14	0.09
			0.00			1" Ice	2.22	1.28	0.11
B5/B13 RRH-BR04C	B	From Leg	2.00	0.0000	141.00	No Ice	1.88	1.01	0.07
			0.00			1/2" Ice	2.05	1.14	0.09
			0.00			1" Ice	2.22	1.28	0.11
B5/B13 RRH-BR04C	C	From Leg	2.00	0.0000	141.00	No Ice	1.88	1.01	0.07
			0.00			1/2" Ice	2.05	1.14	0.09
			0.00			1" Ice	2.22	1.28	0.11
B2/B66A RRH-BR049 (RFV01U-D1A)	A	From Leg	2.00	0.0000	141.00	No Ice	1.25	1.87	0.08
			0.00			1/2" Ice	1.39	2.03	0.10
			0.00			1" Ice	1.54	2.21	0.12
B2/B66A RRH-BR049 (RFV01U-D1A)	B	From Leg	2.00	0.0000	141.00	No Ice	1.25	1.87	0.08
			0.00			1/2" Ice	1.39	2.03	0.10
			0.00			1" Ice	1.54	2.21	0.12
B2/B66A RRH-BR049 (RFV01U-D1A)	C	From Leg	2.00	0.0000	141.00	No Ice	1.25	1.87	0.08
			0.00			1/2" Ice	1.39	2.03	0.10
			0.00			1" Ice	1.54	2.21	0.12
DB-C1-12C-24AB-0Z	C	From Leg	2.00	0.0000	141.00	No Ice	4.06	3.10	0.03
			0.00			1/2" Ice	4.32	3.34	0.07
			0.00			1" Ice	4.58	3.58	0.11
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Sector Mount	A	From Leg	2.00	0.0000	130.00	No Ice	12.50	7.00	0.58
			0.00			1/2" Ice	18.50	11.30	0.69
			0.00			1" Ice	24.60	15.30	0.85
Sector Mount	B	From Leg	2.00	0.0000	130.00	No Ice	12.50	7.00	0.58
			0.00			1/2" Ice	18.50	11.30	0.69
			0.00			1" Ice	24.60	15.30	0.85
Sector Mount	C	From Leg	2.00	0.0000	130.00	No Ice	12.50	7.00	0.58
			0.00			1/2" Ice	18.50	11.30	0.69
			0.00			1" Ice	24.60	15.30	0.85
AIR 6419 B77G w/ Mount Pipe	A	From Leg	4.00	0.0000	130.00	No Ice	3.87	2.32	0.08
			0.00			1/2" Ice	4.18	2.72	0.11
			2.00			1" Ice	4.50	3.13	0.15
AIR 6419 B77G w/ Mount Pipe	B	From Leg	4.00	0.0000	130.00	No Ice	3.87	2.32	0.08
			0.00			1/2" Ice	4.18	2.72	0.11
			2.00			1" Ice	4.50	3.13	0.15
AIR 6419 B77G w/ Mount Pipe	C	From Leg	4.00	0.0000	130.00	No Ice	3.87	2.32	0.08
			0.00			1/2" Ice	4.18	2.72	0.11
			2.00			1" Ice	4.50	3.13	0.15
AIR 6449 B77D	A	From Leg	4.00	0.0000	130.00	No Ice	4.02	2.14	0.08
			0.00			1/2" Ice	4.28	2.35	0.11
			-2.00			1" Ice	4.55	2.57	0.14
AIR 6449 B77D	B	From Leg	4.00	0.0000	130.00	No Ice	4.02	2.14	0.08
			0.00			1/2" Ice	4.28	2.35	0.11
			-2.00			1" Ice	4.55	2.57	0.14
AIR 6449 B77D	C	From Leg	4.00	0.0000	130.00	No Ice	4.02	2.14	0.08
			0.00			1/2" Ice	4.28	2.35	0.11
			-2.00			1" Ice	4.55	2.57	0.14
TPA65R-BU8DA-K w/ Mount pipe	A	From Leg	4.00	0.0000	130.00	No Ice	17.87	10.42	0.13
			0.00			1/2" Ice	18.50	11.85	0.26
			0.00			1" Ice	19.14	12.94	0.39
DMP65R-BU8DA w/ Mount Pipe	A	From Leg	4.00	0.0000	130.00	No Ice	17.87	10.02	0.03
			0.00			1/2" Ice	18.50	11.44	0.15
			0.00			1" Ice	19.14	12.72	0.28
TPA65R-BU6DA-K w/ Mount Pipe	B	From Leg	4.00	0.0000	130.00	No Ice	12.95	7.26	0.09
			0.00			1/2" Ice	13.55	8.43	0.19
			0.00			1" Ice	14.11	9.31	0.29

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
OPA65R-BU8DA w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	18.09 18.72 19.36	10.10 11.52 12.80	0.03 0.15 0.28
TPA65R-BU4D w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	8.76 9.31 9.82	4.93 5.73 6.41	0.07 0.14 0.22
OPA65R-BU4DA w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	8.91 9.46 9.98	4.98 5.79 6.47	0.07 0.14 0.22
4449 B5/B12	A	From Leg	2.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	1.97 2.14 2.33	1.41 1.56 1.73	0.07 0.09 0.11
4449 B5/B12	B	From Leg	2.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	1.97 2.14 2.33	1.41 1.56 1.73	0.07 0.09 0.11
4449 B5/B12	C	From Leg	2.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	1.97 2.14 2.33	1.41 1.56 1.73	0.07 0.09 0.11
8843 B2/B66A	A	From Leg	2.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	1.98 2.16 2.34	1.70 1.86 2.04	0.08 0.10 0.12
8843 B2/B66A	B	From Leg	2.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	1.98 2.16 2.34	1.70 1.86 2.04	0.08 0.10 0.12
8843 B2/B66A	C	From Leg	2.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	1.98 2.16 2.34	1.70 1.86 2.04	0.08 0.10 0.12
DC6-48-60-18-8F	A	From Leg	2.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	2.20 2.40 2.60	2.20 2.40 2.60	0.02 0.04 0.07
DC9-48-60-24-8C-EV	B	From Leg	2.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	2.74 2.96 3.20	4.78 5.06 5.35	0.03 0.06 0.10
***									
Side Arm Mount [SO 701-1]	C	From Leg	1.00 0.00 0.00	0.0000	76.00	No Ice 1/2" Ice 1" Ice	0.85 1.14 1.43	1.67 2.34 3.01	0.07 0.08 0.09
GPS	C	From Leg	2.00 0.00 0.00	0.0000	76.00	No Ice 1/2" Ice 1" Ice	0.12 0.21 0.28	0.12 0.21 0.28	0.00 0.00 0.01
***									

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice+1.0 Guy
3	1.2D+1.0W (pattern 1) 0 deg - No Ice+1.0 Guy
4	1.2D+1.0W (pattern 2) 0 deg - No Ice+1.0 Guy
5	1.2D+1.0W (pattern 3) 0 deg - No Ice+1.0 Guy

Comb. No.	Description
6	1.2 Dead+1.0 Wind 30 deg - No Ice+1.0 Guy
7	1.2D+1.0W (pattern 1) 30 deg - No Ice+1.0 Guy
8	1.2D+1.0W (pattern 2) 30 deg - No Ice+1.0 Guy
9	1.2D+1.0W (pattern 3) 30 deg - No Ice+1.0 Guy
10	1.2 Dead+1.0 Wind 60 deg - No Ice+1.0 Guy
11	1.2D+1.0W (pattern 1) 60 deg - No Ice+1.0 Guy
12	1.2D+1.0W (pattern 2) 60 deg - No Ice+1.0 Guy
13	1.2D+1.0W (pattern 3) 60 deg - No Ice+1.0 Guy
14	1.2 Dead+1.0 Wind 90 deg - No Ice+1.0 Guy
15	1.2D+1.0W (pattern 1) 90 deg - No Ice+1.0 Guy
16	1.2D+1.0W (pattern 2) 90 deg - No Ice+1.0 Guy
17	1.2D+1.0W (pattern 3) 90 deg - No Ice+1.0 Guy
18	1.2 Dead+1.0 Wind 120 deg - No Ice+1.0 Guy
19	1.2D+1.0W (pattern 1) 120 deg - No Ice+1.0 Guy
20	1.2D+1.0W (pattern 2) 120 deg - No Ice+1.0 Guy
21	1.2D+1.0W (pattern 3) 120 deg - No Ice+1.0 Guy
22	1.2 Dead+1.0 Wind 150 deg - No Ice+1.0 Guy
23	1.2D+1.0W (pattern 1) 150 deg - No Ice+1.0 Guy
24	1.2D+1.0W (pattern 2) 150 deg - No Ice+1.0 Guy
25	1.2D+1.0W (pattern 3) 150 deg - No Ice+1.0 Guy
26	1.2 Dead+1.0 Wind 180 deg - No Ice+1.0 Guy
27	1.2D+1.0W (pattern 1) 180 deg - No Ice+1.0 Guy
28	1.2D+1.0W (pattern 2) 180 deg - No Ice+1.0 Guy
29	1.2D+1.0W (pattern 3) 180 deg - No Ice+1.0 Guy
30	1.2 Dead+1.0 Wind 210 deg - No Ice+1.0 Guy
31	1.2D+1.0W (pattern 1) 210 deg - No Ice+1.0 Guy
32	1.2D+1.0W (pattern 2) 210 deg - No Ice+1.0 Guy
33	1.2D+1.0W (pattern 3) 210 deg - No Ice+1.0 Guy
34	1.2 Dead+1.0 Wind 240 deg - No Ice+1.0 Guy
35	1.2D+1.0W (pattern 1) 240 deg - No Ice+1.0 Guy
36	1.2D+1.0W (pattern 2) 240 deg - No Ice+1.0 Guy
37	1.2D+1.0W (pattern 3) 240 deg - No Ice+1.0 Guy
38	1.2 Dead+1.0 Wind 270 deg - No Ice+1.0 Guy
39	1.2D+1.0W (pattern 1) 270 deg - No Ice+1.0 Guy
40	1.2D+1.0W (pattern 2) 270 deg - No Ice+1.0 Guy
41	1.2D+1.0W (pattern 3) 270 deg - No Ice+1.0 Guy
42	1.2 Dead+1.0 Wind 300 deg - No Ice+1.0 Guy
43	1.2D+1.0W (pattern 1) 300 deg - No Ice+1.0 Guy
44	1.2D+1.0W (pattern 2) 300 deg - No Ice+1.0 Guy
45	1.2D+1.0W (pattern 3) 300 deg - No Ice+1.0 Guy
46	1.2 Dead+1.0 Wind 330 deg - No Ice+1.0 Guy
47	1.2D+1.0W (pattern 1) 330 deg - No Ice+1.0 Guy
48	1.2D+1.0W (pattern 2) 330 deg - No Ice+1.0 Guy
49	1.2D+1.0W (pattern 3) 330 deg - No Ice+1.0 Guy
50	1.2 Dead+1.0 Ice+1.0 Temp+Guy
51	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp+1.0 Guy
52	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp+1.0 Guy
53	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp+1.0 Guy
54	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp+1.0 Guy
55	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp+1.0 Guy
56	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp+1.0 Guy
57	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp+1.0 Guy
58	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp+1.0 Guy
59	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp+1.0 Guy
60	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp+1.0 Guy
61	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp+1.0 Guy
62	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp+1.0 Guy
63	Dead+Wind 0 deg - Service+Guy
64	Dead+Wind 30 deg - Service+Guy
65	Dead+Wind 60 deg - Service+Guy
66	Dead+Wind 90 deg - Service+Guy
67	Dead+Wind 120 deg - Service+Guy

Comb. No.	Description
68	Dead+Wind 150 deg - Service+Guy
69	Dead+Wind 180 deg - Service+Guy
70	Dead+Wind 210 deg - Service+Guy
71	Dead+Wind 240 deg - Service+Guy
72	Dead+Wind 270 deg - Service+Guy
73	Dead+Wind 300 deg - Service+Guy
74	Dead+Wind 330 deg - Service+Guy

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	190 - 170	0.538	73	0.1065	0.0325
T2	170 - 150	0.826	73	0.1048	0.0260
T3	150 - 130	1.157	73	0.0747	0.0233
T4	130 - 110	1.257	73	0.0140	0.0260
T5	110 - 90	1.067	73	0.0559	0.0244
T6	90 - 87.6	0.847	74	0.0238	0.0219
T7	87.6 - 70	0.840	74	0.0187	0.0228
T8	70 - 50	0.851	74	0.0061	0.0362
T9	50 - 35	0.816	74	0.0294	0.0448
T10	35 - 20	0.684	74	0.0596	0.0478
T11	20 - 4.8125	0.436	74	0.0883	0.0378
T12	4.8125 - 0	0.108	74	0.1048	0.0126

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
190.00	Lightning Rod 4'x5/8"	73	0.538	0.1065	0.0325	80081
180.00	MTC3975083 Sector Frames (3)	73	0.673	0.1068	0.0292	40041
166.98	Guy	73	0.878	0.1037	0.0252	29949
160.00	Sector Mount	73	1.001	0.0982	0.0237	41161
150.00	Sector Mount	73	1.157	0.0747	0.0233	15505
141.00	Sector Mount w/ VZWSMART-SFK1	73	1.242	0.0351	0.0252	13804
130.00	Sector Mount	73	1.257	0.0140	0.0260	13109
92.52	Guy	73	0.862	0.0304	0.0213	13908
76.00	Side Arm Mount [SO 701-1]	74	0.842	0.0059	0.0314	92630

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	190 - 170	2.486	47	0.6617	0.1739
T2	170 - 150	4.099	47	0.6724	0.1452
T3	150 - 130	6.016	46	0.5384	0.1276
T4	130 - 110	6.950	46	0.1713	0.1437

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T5	110 - 90	6.563	2	0.3232	0.1477
T6	90 - 87.6	5.905	5	0.2388	0.1345
T7	87.6 - 70	5.887	5	0.2201	0.1379
T8	70 - 50	5.884	5	0.1507	0.1893
T9	50 - 35	5.374	5	0.2405	0.2180
T10	35 - 20	4.349	5	0.4149	0.2030
T11	20 - 4.8125	2.711	5	0.5665	0.1341
T12	4.8125 - 0	0.670	5	0.6507	0.0573

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
190.00	Lightning Rod 4'x5/8"	47	2.486	0.6617	0.1739	6983
180.00	MTC3975083 Sector Frames (3)	47	3.262	0.6746	0.1587	3491
166.98	Guy	47	4.372	0.6682	0.1416	2401
160.00	Sector Mount	46	5.064	0.6417	0.1339	7842
150.00	Sector Mount	46	6.016	0.5384	0.1276	2578
141.00	Sector Mount w/ VZWSMART-SFK1	46	6.622	0.3691	0.1328	2567
130.00	Sector Mount	46	6.950	0.1713	0.1437	2744
92.52	Guy	5	5.942	0.2616	0.1327	3190
76.00	Side Arm Mount [SO 701-1]	5	5.893	0.1623	0.1709	12467

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load per Bolt K	Ratio Load / Allowable	Allowable Ratio	Criteria
T1	190	Leg	A325X	0.7500	4	3.20	30.10	0.106 ✔	1	Bolt Tension
		Diagonal	A325X	0.6250	1	2.28	9.11	0.250 ✔	1	Member Block Shear
		Top Girt	A325X	0.6250	1	0.01	9.11	0.001 ✔	1	Member Block Shear
		Bottom Girt	A325X	0.6250	1	0.60	9.11	0.066 ✔	1	Member Block Shear
T2	170	Leg	A325X	0.7500	4	9.16	30.10	0.304 ✔	1	Bolt Tension
		Diagonal	A325X	0.6250	1	4.92	9.11	0.541 ✔	1	Member Block Shear
		Top Girt	A325X	0.6250	1	1.20	9.11	0.131 ✔	1	Member Block Shear
		Bottom Girt	A325X	0.6250	1	1.98	9.89	0.200 ✔	1	Member Block Shear
		Torque Arm Top@166.977	A325N	0.8750	2	6.57	27.06	0.243 ✔	1	Bolt Shear
T3	150	Leg	A325X	0.7500	4	11.15	30.10	0.370 ✔	1	Bolt Tension
		Diagonal	A325X	0.5000	1	2.03	5.92	0.343 ✔	1	Member Bearing
		Top Girt	A325X	0.5000	1	1.43	5.92	0.241 ✔	1	Member Bearing

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load per Bolt K	Ratio Load / Allowable	Allowable Ratio	Criteria
		Bottom Girt	A325X	0.5000	1	1.43	5.92	0.241 ✔	1	Member Bearing
T4	130	Leg	A325X	0.7500	4	3.22	30.10	0.107 ✔	1	Bolt Tension
		Diagonal	A325X	0.5000	1	4.44	9.78	0.454 ✔	1	Gusset Bearing
		Top Girt	A325X	0.5000	1	1.41	9.78	0.144 ✔	1	Gusset Bearing
		Bottom Girt	A325X	0.5000	1	1.41	9.78	0.144 ✔	1	Gusset Bearing
T5	110	Leg	A325X	0.7500	4	4.62	30.10	0.154 ✔	1	Bolt Tension
		Diagonal	A325X	0.5000	1	4.75	11.04	0.430 ✔	1	Bolt Shear
		Top Girt	A325X	0.5000	1	1.17	11.04	0.106 ✔	1	Bolt Shear
		Bottom Girt	A325X	0.5000	1	1.22	11.04	0.111 ✔	1	Bolt Shear
		Torque Arm Top@92.5234	A325N	0.8750	2	6.59	22.08	0.299 ✔	1	Member Bearing
T6	90	Diagonal	A325X	0.6250	1	3.41	9.11	0.374 ✔	1	Member Block Shear
		Top Girt	A325X	0.5000	1	0.89	5.92	0.151 ✔	1	Member Bearing
T7	87.6	Leg	A325X	0.7500	4	3.85	30.10	0.128 ✔	1	Bolt Tension
		Diagonal	A325X	0.5000	1	3.04	5.92	0.513 ✔	1	Member Bearing
		Bottom Girt	A325X	0.6250	1	0.86	5.26	0.164 ✔	1	Member Bearing
T8	70	Leg	A325X	0.7500	4	4.97	30.10	0.165 ✔	1	Bolt Tension
		Diagonal	A325X	0.5000	1	3.76	11.04	0.341 ✔	1	Bolt Shear
		Top Girt	A325X	0.5000	1	1.51	11.04	0.137 ✔	1	Bolt Shear
		Bottom Girt	A325X	0.5000	1	1.03	11.04	0.094 ✔	1	Bolt Shear
T9	50	Leg	A325X	0.7500	4	5.08	30.10	0.169 ✔	1	Bolt Tension
		Diagonal	A325X	0.5000	1	1.25	7.02	0.178 ✔	1	Member Bearing
		Top Girt	A325X	0.5000	1	1.07	5.92	0.180 ✔	1	Member Bearing
		Bottom Girt	A325X	0.5000	1	1.07	5.92	0.180 ✔	1	Member Bearing
T10	35	Leg	A325X	0.7500	4	4.46	30.10	0.148 ✔	1	Bolt Tension
		Diagonal	A325X	0.5000	1	2.04	5.92	0.345 ✔	1	Member Bearing
		Top Girt	A325X	0.5000	1	1.06	5.92	0.179 ✔	1	Member Bearing
		Bottom Girt	A325X	0.5000	1	1.06	5.92	0.179 ✔	1	Member Bearing
T11	20	Leg	A325X	0.7500	4	4.18	30.10	0.139 ✔	1	Bolt Tension
		Diagonal	A325X	0.5000	1	3.31	11.04	0.300 ✔	1	Bolt Shear
		Top Girt	A325X	0.5000	1	0.93	11.04	0.084 ✔	1	Bolt Shear
		Bottom Girt	A325X	0.5000	1	5.72	11.04	0.518 ✔	1	Bolt Shear

Guy Design Data

Section No.	Elevation ft	Size	Initial Tension K	Breaking Load K	Actual T_u K	Allowable ϕT_n K	Required S.F.	Actual S.F.

Section No.	Elevation ft	Size	Initial Tension K	Breaking Load K	Actual T_u K	Allowable ϕT_n K	Required S.F.	Actual S.F.
T2	166.98 (A) (483)	7/8 EHS	7.97	79.70	17.55	47.82	1.000	2.724 ✔
	166.98 (A) (484)	7/8 EHS	7.97	79.70	17.48	47.82	1.000	2.736 ✔
	166.98 (B) (479)	7/8 EHS	7.97	79.70	18.13	47.82	1.000	2.637 ✔
	166.98 (B) (480)	7/8 EHS	7.97	79.70	18.57	47.82	1.000	2.575 ✔
	166.98 (C) (472)	7/8 EHS	7.97	79.70	17.64	47.82	1.000	2.710 ✔
	166.98 (C) (473)	7/8 EHS	7.97	79.70	17.31	47.82	1.000	2.762 ✔
T5	92.52 (A) (498)	5/8 EHS	4.24	42.40	12.94	25.44	1.000	1.965 ✔
	92.52 (A) (499)	5/8 EHS	4.24	42.40	12.91	25.44	1.000	1.970 ✔
	92.52 (B) (494)	5/8 EHS	4.24	42.40	13.67	25.44	1.000	1.861 ✔
	92.52 (B) (495)	5/8 EHS	4.24	42.40	13.78	25.44	1.000	1.846 ✔
	92.52 (C) (487)	5/8 EHS	4.24	42.40	12.35	25.44	1.000	2.060 ✔
	92.52 (C) (488)	5/8 EHS	4.24	42.40	12.54	25.44	1.000	2.029 ✔

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	190 - 170	ROHN 3 EH	20.00	0.11	1.2 K=1.00	3.0159	-18.00	135.70	0.133 [1] ✔
T2	170 - 150	ROHN 3 EH	20.00	0.11	1.2 K=1.00	3.0159	-69.06	135.70	0.509 [1] ✔
T3	150 - 130	P 2-1/2 X-STR w/ Split P 3 STD (GPD)	20.00	2.41	36.9 K=1.18	3.3678	-82.29	137.18	0.600 [1] ✔
T4	130 - 110	P 2-1/2 X-STR w/ Split P 3 STD (GPD)	20.00	2.41	36.9 K=1.18	3.3678	-78.76	127.22	0.619 [1] ✔
T5	110 - 90	ROHN 3 EH	20.00	2.41	25.4 K=1.00	3.0159	-56.64	129.44	0.438 [1] ✔
T6	90 - 87.6	ROHN 3 EH	2.40	2.40	25.3 K=1.00	3.0159	-51.60	129.49	0.398 [1] ✔
T7	87.6 - 70	ROHN 3 EH	17.60	2.41	25.5 K=1.00	3.0159	-48.37	129.44	0.374 [1] ✔
T8	70 - 50	ROHN 3 EH	20.00	2.41	50.9 K=2.00	3.0159	-58.98	112.32	0.525 [1] ✔
T9	50 - 35	ROHN 3 EH	15.00	2.38	50.2 K=2.00	3.0159	-61.68	112.85	0.547 [1] ✔
T10	35 - 20	ROHN 3 EH	15.00	2.38	50.2 K=2.00	3.0159	-60.62	112.85	0.537 [1] ✔

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T11	20 - 4.8125	ROHN 3 EH	15.19	2.41	50.9 K=2.00	3.0159	-53.21	112.30	0.474 [1] ✔
T12	4.8125 - 0	ROHN 3 EH	5.20	1.47	15.5 K=1.00	3.0159	-54.27	133.34	0.407 [1] ✔

[1] P_u / ϕP_n controls

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	190 - 170	L2x2x1/4	4.18	3.58	115.0 K=1.05	0.9375	-2.42	19.72	0.123 [1] ✔
T2	170 - 150	L2x2x1/4	4.18	3.58	115.0 K=1.05	0.9375	-4.88	19.72	0.247 [1] ✔
T3	150 - 130	ROHN 1.5 x 16GA	4.18	3.82	89.9 K=1.00	0.2627	-2.23	6.04	0.369 [1] ✔
T4	130 - 110	ROHN 1.5 x 11GA	4.18	3.82	93.7 K=1.00	0.5202	-4.44	11.47	0.387 [1] ✔
T5	110 - 90	ROHN 1.5 x 11GA	4.18	3.82	93.7 K=1.00	0.5202	-4.75	11.47	0.414 [1] ✔
T6	90 - 87.6	L2x2x1/4	4.18	3.58	114.9 K=1.05	0.9375	-3.84	19.74	0.194 [1] ✔
T7	87.6 - 70	ROHN 1.5 x 16GA	4.18	3.82	89.9 K=1.00	0.2627	-2.84	6.04	0.470 [1] ✔
T8	70 - 50	ROHN 1.5 x 11GA	4.18	3.82	93.7 K=1.00	0.5202	-3.76	11.47	0.328 [1] ✔
T9	50 - 35	ROHN 1.5 x 16GA	4.16	3.81	89.6 K=1.00	0.2627	-1.25	6.07	0.206 [1] ✔
T10	35 - 20	ROHN 1.5 x 16GA	4.16	3.81	89.6 K=1.00	0.2627	-2.39	6.07	0.394 [1] ✔
T11	20 - 4.8125	ROHN 1.5 x 11GA	4.18	3.82	93.7 K=1.00	0.5202	-3.06	11.47	0.266 [1] ✔

[1] P_u / ϕP_n controls

Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T12	4.8125 - 0	L8x8x3/4	1.05	0.76	62.9 K=10.92	11.4375	-1.65	360.56	0.005 [1] ✔

[1] P_u / ϕP_n controls

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	190 - 170	L2x2x1/4	3.42	2.89	104.3 K=1.18	0.9375	-0.00	22.21	0.000 [1] ✔
T2	170 - 150	L2x2x1/4	3.42	2.89	104.3 K=1.18	0.9375	-1.20	22.21	0.054 [1] ✔
T3	150 - 130	ROHN 1.5 x 16GA	3.42	3.13	73.5 K=1.00	0.2627	-1.43	7.13	0.200 [1] ✔
T4	130 - 110	ROHN 1.5 x 11GA	3.42	3.13	76.6 K=1.00	0.5202	-1.41	13.72	0.103 [1] ✔
T5	110 - 90	ROHN 1.5 x 11GA	3.42	3.13	76.6 K=1.00	0.5202	-0.98	13.72	0.072 [1] ✔
T6	90 - 87.6	ROHN 1.5 x 16GA	3.42	3.13	73.5 K=1.00	0.2627	-0.89	7.13	0.125 [1] ✔
T8	70 - 50	ROHN 1.5 x 11GA	3.42	3.13	76.6 K=1.00	0.5202	-1.28	13.72	0.094 [1] ✔
T9	50 - 35	ROHN 1.5 x 16GA	3.42	3.13	73.5 K=1.00	0.2627	-1.07	7.13	0.150 [1] ✔
T10	35 - 20	ROHN 1.5 x 16GA	3.42	3.13	73.5 K=1.00	0.2627	-1.06	7.13	0.148 [1] ✔
T11	20 - 4.8125	ROHN 1.5 x 11GA	3.42	3.13	76.6 K=1.00	0.5202	-0.93	13.72	0.068 [1] ✔
T12	4.8125 - 0	L8x8x3/4	2.98	2.69	70.2 K=3.43	11.4375	-1.00	347.87	0.003 [1] ✔

[1] P_u / ϕP_n controls

Bottom Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	190 - 170	L2x2x1/4	3.42	2.89	104.3 K=1.18	0.9375	-0.53	22.21	0.024 [1] ✔
T2	170 - 150	L2x2x1/4	3.42	2.89	104.3 K=1.18	0.9375	-1.25	23.67	0.053 [1] ✔
T3	150 - 130	ROHN 1.5 x 16GA	3.42	3.13	73.5 K=1.00	0.2627	-1.43	7.13	0.200 [1] ✔
T4	130 - 110	ROHN 1.5 x 11GA	3.42	3.13	76.6 K=1.00	0.5202	-1.41	13.72	0.103 [1] ✔
T5	110 - 90	ROHN 1.5 x 11GA	3.42	3.13	76.6 K=1.00	0.5202	-0.98	13.72	0.072 [1] ✔
T7	87.6 - 70	ROHN 1.5 x 16GA	3.42	3.13	73.5 K=1.00	0.2627	-0.86	7.13	0.121 [1] ✔
T8	70 - 50	ROHN 1.5 x 11GA	3.42	3.13	76.6 K=1.00	0.5202	-1.03	13.72	0.075 [1] ✔

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T9	50 - 35	ROHN 1.5 x 16GA	3.42	3.13	73.5 K=1.00	0.2627	-1.07	7.13	0.150 [1] ✔
T10	35 - 20	ROHN 1.5 x 16GA	3.42	3.13	73.5 K=1.00	0.2627	-1.06	7.13	0.148 [1] ✔
T11	20 - 4.8125	ROHN 1.5 x 11GA	3.42	3.13	76.6 K=1.00	0.5202	-0.93	13.72	0.068 [1] ✔

[1] P_u / ϕP_n controls

Top Guy Pull-Off Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T2	170 - 150	2L2x2x1/4	3.42	3.13	61.6 K=1.00	1.8800	-7.92	59.61	0.133 [1]
T5	110 - 90	2L2x2x1/4	3.42	3.13	61.6 K=1.00	1.8800	-7.92	59.61	0.133 [1]

[1] P_u / ϕP_n controls

Top Guy Pull-Off 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 $\frac{M_{uy}}{\phi M_{ny}}$
T2	170 - 150	2L2x2x1/4	0.00	2.00	0.000	0.00	2.73	0.000
T5	110 - 90	2L2x2x1/4	0.00	2.00	0.000	0.00	2.73	0.000

Top Guy Pull-Off Interaction Design Data

Section No.	Elevation ft	Size	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T2	170 - 150	2L2x2x1/4	0.133	0.000	0.000	0.133 [1] ✔	1.000	4.8.1 ✔
T5	110 - 90	2L2x2x1/4	0.133	0.000	0.000	0.133 [1] ✔	1.000	4.8.1 ✔

[1] P_u / ϕP_n controls

Torque-Arm Top Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T2	170 - 150 (474)	MC18x42.7	3.42	3.27	36.7 K=1.00	12.6000	-3.47	380.32	0.009
T2	170 - 150 (475)	MC18x42.7	3.42	3.27	36.7 K=1.00	12.6000	-3.30	380.32	0.009
T2	170 - 150 (481)	MC18x42.7	3.42	3.27	36.7 K=1.00	12.6000	-3.26	380.32	0.009
T2	170 - 150 (482)	MC18x42.7	3.42	3.27	36.7 K=1.00	12.6000	-3.07	380.32	0.008
T2	170 - 150 (485)	MC18x42.7	3.42	3.27	36.7 K=1.00	12.6000	-3.76	380.32	0.010
T2	170 - 150 (486)	MC18x42.7	3.42	3.27	36.7 K=1.00	12.6000	-3.37	380.32	0.009
T5	110 - 90 (489)	C12x20.7	3.42	3.27	49.1 K=1.00	6.0900	-4.44	173.78	0.026
T5	110 - 90 (490)	C12x20.7	3.42	3.27	49.1 K=1.00	6.0900	-4.81	173.78	0.028
T5	110 - 90 (496)	C12x20.7	3.42	3.27	49.1 K=1.00	6.0900	-0.59	173.78	0.003
T5	110 - 90 (497)	C12x20.7	3.42	3.27	49.1 K=1.00	6.0900	-6.16	173.78	0.035
T5	110 - 90 (500)	C12x20.7	3.42	3.27	49.1 K=1.00	6.0900	-6.38	173.78	0.037
T5	110 - 90 (501)	C12x20.7	3.42	3.27	49.1 K=1.00	6.0900	-6.42	173.78	0.037

Torque-Arm Top 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 $\frac{M_{uy}}{\phi M_{ny}}$
T2	170 - 150 (474)	MC18x42.7	-39.55	200.88	0.197	-0.00	18.99	0.000
T2	170 - 150 (475)	MC18x42.7	-39.18	200.88	0.195	0.00	18.99	0.000
T2	170 - 150 (481)	MC18x42.7	-45.33	200.88	0.226	0.00	18.99	0.000
T2	170 - 150 (482)	MC18x42.7	-39.65	200.88	0.197	-0.00	18.99	0.000
T2	170 - 150 (485)	MC18x42.7	-45.29	200.88	0.225	0.00	18.99	0.000
T2	170 - 150 (486)	MC18x42.7	-39.22	200.88	0.195	0.00	18.99	0.000
T5	110 - 90 (489)	C12x20.7	-17.25	68.58	0.252	0.00	7.01	0.000
T5	110 - 90 (490)	C12x20.7	-17.46	68.58	0.255	0.00	7.01	0.000
T5	110 - 90 (496)	C12x20.7	-24.26	68.58	0.354	0.00	7.01	0.000
T5	110 - 90 (497)	C12x20.7	-17.20	68.58	0.251	-0.00	7.01	0.000
T5	110 - 90 (500)	C12x20.7	-23.52	68.58	0.343	-0.00	7.01	0.000
T5	110 - 90 (501)	C12x20.7	-17.23	68.58	0.251	0.00	7.01	0.000

Torque-Arm Top Interaction Design Data

Section No.	Elevation ft	Size	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T2	170 - 150 (474)	MC18x42.7	0.009	0.197	0.000	0.201	1.000	4.8.1 ✔

Section No.	Elevation ft	Size	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T2	170 - 150 (475)	MC18x42.7	0.009	0.195	0.000	0.199	1.000	4.8.1
T2	170 - 150 (481)	MC18x42.7	0.009	0.226	0.000	0.230	1.000	4.8.1
T2	170 - 150 (482)	MC18x42.7	0.008	0.197	0.000	0.201	1.000	4.8.1
T2	170 - 150 (485)	MC18x42.7	0.010	0.225	0.000	0.230	1.000	4.8.1
T2	170 - 150 (486)	MC18x42.7	0.009	0.195	0.000	0.200	1.000	4.8.1
T5	110 - 90 (489)	C12x20.7	0.026	0.252	0.000	0.264	1.000	4.8.1
T5	110 - 90 (490)	C12x20.7	0.028	0.255	0.000	0.269	1.000	4.8.1
T5	110 - 90 (496)	C12x20.7	0.003	0.354	0.000	0.355	1.000	4.8.1
T5	110 - 90 (497)	C12x20.7	0.035	0.251	0.000	0.268	1.000	4.8.1
T5	110 - 90 (500)	C12x20.7	0.037	0.343	0.000	0.361	1.000	4.8.1
T5	110 - 90 (501)	C12x20.7	0.037	0.251	0.000	0.270	1.000	4.8.1

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	190 - 170	ROHN 3 EH	20.00	0.11	1.2	3.0159	12.82	135.72	0.094 [1]
T2	170 - 150	ROHN 3 EH	20.00	0.11	1.2	3.0159	36.65	135.72	0.270 [1]
T3	150 - 130	P 2-1/2 X-STR w/ Split P 3 STD (GPD)	20.00	2.41	31.2	3.3678	47.12	151.55	0.311 [1]
T4	130 - 110	P 2-1/2 X-STR w/ Split P 3 STD (GPD)	20.00	0.61	8.0	3.3678	44.60	139.43	0.320 [1]
T5	110 - 90	ROHN 3 EH	20.00	2.41	25.4	3.0159	20.08	135.72	0.148 [1]
T6	90 - 87.6	ROHN 3 EH	2.40	2.40	25.3	3.0159	4.01	135.72	0.030 [1]
T7	87.6 - 70	ROHN 3 EH	17.60	0.61	6.5	3.0159	0.52	135.72	0.004 [1]
T8	70 - 50	ROHN 3 EH	20.00	0.11	1.2	3.0159	6.05	135.72	0.045 [1]
T9	50 - 35	ROHN 3 EH	15.00	2.38	25.1	3.0159	7.11	135.72	0.052 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T10	35 - 20	ROHN 3 EH	15.00	0.61	6.5	3.0159	5.59	135.72	0.041 [1]

[1] P_u / ϕP_n controls

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	190 - 170	L2x2x1/4	4.18	3.58	75.4	0.5625	2.28	24.47	0.093 [1]
T2	170 - 150	L2x2x1/4	4.18	3.58	75.4	0.5625	4.92	24.47	0.201 [1]
T3	150 - 130	ROHN 1.5 x 16GA	4.18	3.82	89.9	0.2627	2.03	9.93	0.204 [1]
T4	130 - 110	ROHN 1.5 x 11GA	4.18	3.82	93.7	0.5202	3.99	19.67	0.203 [1]
T5	110 - 90	ROHN 1.5 x 11GA	4.18	3.82	93.7	0.5202	4.64	19.67	0.236 [1]
T6	90 - 87.6	L2x2x1/4	4.18	3.58	75.3	0.5625	3.41	24.47	0.139 [1]
T7	87.6 - 70	ROHN 1.5 x 16GA	4.18	3.82	89.9	0.2627	3.04	9.93	0.306 [1]
T8	70 - 50	ROHN 1.5 x 11GA	4.18	3.82	93.7	0.5202	3.55	19.67	0.180 [1]
T9	50 - 35	ROHN 1.5 x 16GA	4.16	3.81	89.6	0.2627	0.92	9.93	0.093 [1]
T10	35 - 20	ROHN 1.5 x 16GA	4.16	3.81	89.6	0.2627	2.04	9.93	0.206 [1]
T11	20 - 4.8125	ROHN 1.5 x 11GA	4.18	3.82	93.7	0.5202	3.31	19.67	0.168 [1]

[1] P_u / ϕP_n controls

Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T12	4.8125 - 0	L8x8x3/4	1.05	0.76	3.7	11.4375	1.81	370.57	0.005 [1]

[1] P_u / ϕP_n controls

Top Girt Design Data (Tension)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
T1	190 - 170	L2x2x1/4	3.42	2.89	61.6	0.5625	0.01	24.47	0.000 [1] ✔
T2	170 - 150	L2x2x1/4	3.42	2.89	61.6	0.5625	1.20	24.47	0.049 [1] ✔
T3	150 - 130	ROHN 1.5 x 16GA	3.42	3.13	73.5	0.2627	1.43	9.93	0.144 [1] ✔
T4	130 - 110	ROHN 1.5 x 11GA	3.42	3.13	76.6	0.5202	1.41	19.67	0.072 [1] ✔
T5	110 - 90	ROHN 1.5 x 11GA	3.42	3.13	76.6	0.5202	1.17	19.67	0.060 [1] ✔
T6	90 - 87.6	ROHN 1.5 x 16GA	3.42	3.13	73.5	0.2627	0.89	9.93	0.090 [1] ✔
T8	70 - 50	ROHN 1.5 x 11GA	3.42	3.13	76.6	0.5202	1.51	19.67	0.077 [1] ✔
T9	50 - 35	ROHN 1.5 x 16GA	3.42	3.13	73.5	0.2627	1.07	9.93	0.108 [1] ✔
T10	35 - 20	ROHN 1.5 x 16GA	3.42	3.13	73.5	0.2627	1.06	9.93	0.106 [1] ✔
T11	20 - 4.8125	ROHN 1.5 x 11GA	3.42	3.13	76.6	0.5202	0.93	19.67	0.047 [1] ✔
T12	4.8125 - 0	L8x8x3/4	2.98	2.69	13.1	11.4375	5.64	370.57	0.015 [1] ✔

[1] P_u / ϕP_n controls

Bottom Girt Design Data (Tension)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
T1	190 - 170	L2x2x1/4	3.42	2.89	61.6	0.5625	0.60	24.47	0.024 [1] ✔
T2	170 - 150	L2x2x1/4	3.42	2.89	61.6	0.5625	1.98	26.58	0.075 [1] ✔
T3	150 - 130	ROHN 1.5 x 16GA	3.42	3.13	73.5	0.2627	1.43	9.93	0.144 [1] ✔
T4	130 - 110	ROHN 1.5 x 11GA	3.42	3.13	76.6	0.5202	1.41	19.67	0.072 [1] ✔
T5	110 - 90	ROHN 1.5 x 11GA	3.42	3.13	76.6	0.5202	1.22	19.67	0.062 [1] ✔
T7	87.6 - 70	ROHN 1.5 x 16GA	3.42	3.13	73.5	0.2627	0.86	9.93	0.087 [1] ✔
T8	70 - 50	ROHN 1.5 x 11GA	3.42	3.13	76.6	0.5202	1.03	19.67	0.053 [1] ✔
T9	50 - 35	ROHN 1.5 x 16GA	3.42	3.13	73.5	0.2627	1.07	9.93	0.108 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T10	35 - 20	ROHN 1.5 x 16GA	3.42	3.13	73.5	0.2627	1.06	9.93	0.106 [1]
T11	20 - 4.8125	ROHN 1.5 x 11GA	3.42	3.13	76.6	0.5202	5.72	19.67	0.291 [1]

[1] P_u / ϕP_n controls

Top Guy Pull-Off Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T2	170 - 150	2L2x2x1/4	3.42	3.13	61.6	1.8800	8.17	60.91	0.134 [1]
T5	110 - 90	2L2x2x1/4	3.42	3.13	61.6	1.8800	11.17	60.91	0.183 [1]

[1] P_u / ϕP_n controls

Top Guy Pull-Off 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 $\frac{M_{uy}}{\phi M_{ny}}$
T2	170 - 150	2L2x2x1/4	0.00	2.00	0.000	0.00	2.73	0.000
T5	110 - 90	2L2x2x1/4	0.00	2.00	0.000	0.00	2.73	0.000

Top Guy Pull-Off Interaction Design Data

Section No.	Elevation ft	Size	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T2	170 - 150	2L2x2x1/4	0.134	0.000	0.000	0.134 [1]	1.000	4.8.1
T5	110 - 90	2L2x2x1/4	0.183	0.000	0.000	0.183 [1]	1.000	4.8.1

[1] P_u / ϕP_n controls

Torque-Arm Top Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T2	170 - 150 (474)	MC18x42.7	3.42	3.27	36.7	9.1125	0.03	396.39	0.000
T2	170 - 150 (475)	MC18x42.7	3.42	3.27	36.7	9.1125	0.41	396.39	0.001
T2	170 - 150 (481)	MC18x42.7	3.42	3.27	36.7	9.1125	0.26	396.39	0.001
T2	170 - 150 (482)	MC18x42.7	3.42	3.27	36.7	9.1125	0.27	396.39	0.001
T2	170 - 150 (485)	MC18x42.7	3.42	3.27	36.7	9.1125	0.11	396.39	0.000
T2	170 - 150 (486)	MC18x42.7	3.42	3.27	36.7	9.1125	0.22	396.39	0.001
T5	110 - 90 (489)	C12x20.7	3.42	3.27	49.1	4.3560	5.21	189.49	0.027
T5	110 - 90 (490)	C12x20.7	3.42	3.27	49.1	4.3560	4.85	189.49	0.026
T5	110 - 90 (496)	C12x20.7	3.42	3.27	49.1	4.3560	5.03	189.49	0.027
T5	110 - 90 (497)	C12x20.7	3.42	3.27	49.1	4.3560	5.11	189.49	0.027
T5	110 - 90 (500)	C12x20.7	3.42	3.27	49.1	4.3560	5.13	189.49	0.027
T5	110 - 90 (501)	C12x20.7	3.42	3.27	49.1	4.3560	4.76	189.49	0.025

Torque-Arm Top 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 $\frac{M_{uy}}{\phi M_{ny}}$
T2	170 - 150 (474)	MC18x42.7	-36.56	200.88	0.182	-0.00	18.99	0.000
T2	170 - 150 (475)	MC18x42.7	-37.30	200.88	0.186	-0.00	18.99	0.000
T2	170 - 150 (481)	MC18x42.7	-43.12	200.88	0.215	0.00	18.99	0.000
T2	170 - 150 (482)	MC18x42.7	-36.66	200.88	0.183	-0.00	18.99	0.000
T2	170 - 150 (485)	MC18x42.7	-37.33	200.88	0.186	0.00	18.99	0.000
T2	170 - 150 (486)	MC18x42.7	-35.97	200.88	0.179	0.00	18.99	0.000
T5	110 - 90 (489)	C12x20.7	-15.32	68.58	0.223	0.00	7.01	0.000
T5	110 - 90 (490)	C12x20.7	-15.13	68.58	0.221	0.00	7.01	0.000
T5	110 - 90 (496)	C12x20.7	-20.70	68.58	0.302	0.00	7.01	0.000
T5	110 - 90 (497)	C12x20.7	-15.77	68.58	0.230	0.00	7.01	0.000
T5	110 - 90 (500)	C12x20.7	-20.10	68.58	0.293	0.00	7.01	0.000
T5	110 - 90 (501)	C12x20.7	-15.06	68.58	0.220	0.00	7.01	0.000

Torque-Arm Top Interaction Design Data

Section No.	Elevation ft	Size	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T2	170 - 150 (474)	MC18x42.7	0.000	0.182	0.000	0.182 ✔	1.000	4.8.1 ✔
T2	170 - 150 (475)	MC18x42.7	0.001	0.186	0.000	0.186 ✔	1.000	4.8.1 ✔
T2	170 - 150 (481)	MC18x42.7	0.001	0.215	0.000	0.215 ✔	1.000	4.8.1 ✔
T2	170 - 150 (482)	MC18x42.7	0.001	0.183	0.000	0.183 ✔	1.000	4.8.1 ✔
T2	170 - 150 (485)	MC18x42.7	0.000	0.186	0.000	0.186 ✔	1.000	4.8.1 ✔
T2	170 - 150 (486)	MC18x42.7	0.001	0.179	0.000	0.179 ✔	1.000	4.8.1 ✔
T5	110 - 90 (489)	C12x20.7	0.027	0.223	0.000	0.237 ✔	1.000	4.8.1 ✔

Section No.	Elevation ft	Size	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T5	110 - 90 (490)	C12x20.7	0.026	0.221	0.000	0.233 ✔	1.000	4.8.1 ✔
T5	110 - 90 (496)	C12x20.7	0.027	0.302	0.000	0.315 ✔	1.000	4.8.1 ✔
T5	110 - 90 (497)	C12x20.7	0.027	0.230	0.000	0.243 ✔	1.000	4.8.1 ✔
T5	110 - 90 (500)	C12x20.7	0.027	0.293	0.000	0.307 ✔	1.000	4.8.1 ✔
T5	110 - 90 (501)	C12x20.7	0.025	0.220	0.000	0.232 ✔	1.000	4.8.1 ✔

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T1	190 - 170	Leg	ROHN 3 EH	3	-18.00	135.70	13.3	Pass
T2	170 - 150	Leg	ROHN 3 EH	60	-69.06	135.70	50.9	Pass
T3	150 - 130	Leg	P 2-1/2 X-STR w/ Split P 3 STD (GPD)	117	-82.29	137.18	60.0	Pass
T4	130 - 110	Leg	P 2-1/2 X-STR w/ Split P 3 STD (GPD)	174	-78.76	127.22	61.9	Pass
T5	110 - 90	Leg	ROHN 3 EH	230	-56.64	129.44	43.8	Pass
T6	90 - 87.6	Leg	ROHN 3 EH	287	-51.60	129.49	39.8	Pass
T7	87.6 - 70	Leg	ROHN 3 EH	299	-48.37	129.44	37.4	Pass
T8	70 - 50	Leg	ROHN 3 EH	347	-58.98	112.32	52.5	Pass
T9	50 - 35	Leg	ROHN 3 EH	380	-61.68	112.85	54.7	Pass
T10	35 - 20	Leg	ROHN 3 EH	407	-60.62	112.85	53.7	Pass
T11	20 - 4.8125	Leg	ROHN 3 EH	434	-53.21	112.30	47.4	Pass
T12	4.8125 - 0	Leg	ROHN 3 EH	461	-54.27	133.34	40.7	Pass
T1	190 - 170	Diagonal	L2x2x1/4	15	-2.42	19.72	12.3 25.0 (b)	Pass
T2	170 - 150	Diagonal	L2x2x1/4	105	-4.88	19.72	24.7 54.1 (b)	Pass
T3	150 - 130	Diagonal	ROHN 1.5 x 16GA	166	-2.23	6.04	36.9	Pass
T4	130 - 110	Diagonal	ROHN 1.5 x 11GA	183	-4.44	11.47	38.7 45.4 (b)	Pass
T5	110 - 90	Diagonal	ROHN 1.5 x 11GA	282	-4.75	11.47	41.4 43.0 (b)	Pass
T6	90 - 87.6	Diagonal	L2x2x1/4	292	-3.84	19.74	19.4 37.4 (b)	Pass
T7	87.6 - 70	Diagonal	ROHN 1.5 x 16GA	340	-2.84	6.04	47.0 51.3 (b)	Pass
T8	70 - 50	Diagonal	ROHN 1.5 x 11GA	376	-3.76	11.47	32.8 34.1 (b)	Pass
T9	50 - 35	Diagonal	ROHN 1.5 x 16GA	404	-1.25	6.07	20.6	Pass
T10	35 - 20	Diagonal	ROHN 1.5 x 16GA	415	-2.39	6.07	39.4	Pass
T11	20 - 4.8125	Diagonal	ROHN 1.5 x 11GA	445	-3.06	11.47	26.6 30.0 (b)	Pass
T12	4.8125 - 0	Horizontal	L8x8x3/4	468	1.33	370.57	1.5	Pass
T1	190 - 170	Top Girt	L2x2x1/4	4	0.01	24.47	0.2	Pass
T2	170 - 150	Top Girt	L2x2x1/4	62	-1.20	22.21	5.4 13.1 (b)	Pass
T3	150 - 130	Top Girt	ROHN 1.5 x 16GA	119	-1.43	7.13	20.0 24.1 (b)	Pass
T4	130 - 110	Top Girt	ROHN 1.5 x 11GA	176	-1.41	13.72	10.3	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	øP$_{allow}$ K	% Capacity	Pass Fail
							14.4 (b)	
T5	110 - 90	Top Girt	ROHN 1.5 x 11GA	232	-0.98	13.72	7.2	Pass
							10.6 (b)	
T6	90 - 87.6	Top Girt	ROHN 1.5 x 16GA	289	-0.89	7.13	12.5	Pass
							15.1 (b)	
T8	70 - 50	Top Girt	ROHN 1.5 x 11GA	349	-1.28	13.72	9.4	Pass
							13.7 (b)	
T9	50 - 35	Top Girt	ROHN 1.5 x 16GA	382	-1.07	7.13	15.0	Pass
							18.0 (b)	
T10	35 - 20	Top Girt	ROHN 1.5 x 16GA	409	-1.06	7.13	14.8	Pass
							17.9 (b)	
T11	20 - 4.8125	Top Girt	ROHN 1.5 x 11GA	436	-0.93	13.72	6.8	Pass
							8.4 (b)	
T12	4.8125 - 0	Top Girt	L8x8x3/4	463	5.64	370.57	1.5	Pass
T1	190 - 170	Bottom Girt	L2x2x1/4	8	0.60	24.47	2.4	Pass
							6.6 (b)	
T2	170 - 150	Bottom Girt	L2x2x1/4	64	1.98	26.58	7.5	Pass
							20.0 (b)	
T3	150 - 130	Bottom Girt	ROHN 1.5 x 16GA	122	-1.43	7.13	20.0	Pass
							24.1 (b)	
T4	130 - 110	Bottom Girt	ROHN 1.5 x 11GA	179	-1.41	13.72	10.3	Pass
							14.4 (b)	
T5	110 - 90	Bottom Girt	ROHN 1.5 x 11GA	235	-0.98	13.72	7.2	Pass
							11.1 (b)	
T7	87.6 - 70	Bottom Girt	ROHN 1.5 x 16GA	301	-0.86	7.13	12.1	Pass
							16.4 (b)	
T8	70 - 50	Bottom Girt	ROHN 1.5 x 11GA	352	-1.03	13.72	7.5	Pass
							9.4 (b)	
T9	50 - 35	Bottom Girt	ROHN 1.5 x 16GA	385	-1.07	7.13	15.0	Pass
							18.0 (b)	
T10	35 - 20	Bottom Girt	ROHN 1.5 x 16GA	412	-1.06	7.13	14.8	Pass
							17.9 (b)	
T11	20 - 4.8125	Bottom Girt	ROHN 1.5 x 11GA	439	5.72	19.67	29.1	Pass
							51.8 (b)	
T2	170 - 150	Guy A@166.977	7/8	483	17.55	47.82	36.7	Pass
T5	110 - 90	Guy A@92.5234	5/8	498	12.94	25.44	50.9	Pass
T2	170 - 150	Guy B@166.977	7/8	480	18.57	47.82	38.8	Pass
T5	110 - 90	Guy B@92.5234	5/8	495	13.78	25.44	54.2	Pass
T2	170 - 150	Guy C@166.977	7/8	472	17.64	47.82	36.9	Pass
T5	110 - 90	Guy C@92.5234	5/8	488	12.54	25.44	49.3	Pass
T2	170 - 150	Top Guy Pull-Off@166.977	2L2x2x1/4	477	8.17	60.91	13.4	Pass
T5	110 - 90	Top Guy Pull-Off@92.5234	2L2x2x1/4	491	11.17	60.91	18.3	Pass
T2	170 - 150	Torque Arm Top@166.977	MC18x42.7	485	-3.76	380.32	23.0	Pass
							24.3 (b)	
T5	110 - 90	Torque Arm Top@92.5234	C12x20.7	500	-6.38	173.78	36.1	Pass

Summary		
Leg (T4)	61.9	Pass
Diagonal (T2)	54.1	Pass
Horizontal (T12)	1.5	Pass
Top Girt (T3)	24.1	Pass
Bottom Girt (T11)	51.8	Pass
Guy A (T5)	50.9	Pass
Guy B (T5)	54.2	Pass
Guy C (T5)	49.3	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
						Top Guy Pull-Off (T5)	18.3	Pass
						Torque Arm Top (T5)	36.1	Pass
						Bolt Checks	54.1	Pass
						RATING =	**61.9**	**Pass**

ADDITIONAL CALCULATIONS

BUILT-UP MEMBER ANALYSIS

CT10016-A Montville 3 CT

2023778.10016.02

Steel Specification	AISC 15th (Teal Book)
Analysis Method	LRFD
ASIF	1
Max Capacity	105%
Number of Sections	2

X-X Axis

Existing Member							Modification Member						Built-Up Member												Member Analysis				TNX Input	
Elevation	Pipe	F_y (ksi)	Area (in^2)	I_x (in^4)	r_x (in)	a/r_x	Split Pipe	F_y (ksi)	Area (in^2)	I_x (in^4)	r_x (in)	a/r_x	Connectors	K	L_x (in)	a (in)	h (in)	r'_x (in)	$(KL/r)_{max}$	t'_c (in)	t_p (in)	α	$(KL/r)_m$	K_m	$r_{x(c)}$ (in)	$0.75(KL/r)_{max}$	$(a/r)_{max}$	KL/r_{act}	Design met?	$(KL/r)_t$	K Multiplier	F_y (ksi)
130'-150'	P 2-1/2 X-STR	50	2.25	1.92	0.924	10.82	P 3 STD	50	1.11	0.29	0.508	19.69	Bolts	1	28.92	10	0.95	0.926	31.25	0.508	0.508	0.94	36.93	1.18	1.131	23.43	19.69	25.56	Yes	36.93	1.1819	50
110'-130'	P 2-1/2 X-STR	50	2.25	1.92	0.924	10.82	P 3 STD	46	1.11	0.29	0.508	19.69	Bolts	1	28.92	10	0.95	0.926	31.25	0.508	0.508	0.94	36.93	1.18	1.131	23.43	19.69	25.56	Yes	36.93	1.1819	46

Y-Y Axis

Existing Member							Modification Member						Built-Up Member												Member Analysis				TNX Input	
Elevation	Pipe	F_y (ksi)	Area (in^2)	I_y (in^4)	r_y (in)	a/r_y	Split Pipe	F_y (ksi)	Area (in^2)	I_y (in^4)	r_y (in)	a/r_y	Connectors	K	L_y (in)	a (in)	h (in)	r'_y (in)	$(KL/r)_{max}$	t'_c (in)	t_p (in)	α	$(KL/r)_m$	K_m	$r_{y(c)}$ (in)	$0.75(KL/r)_{max}$	$(a/r)_{max}$	KL/r_{act}	Design met?	$(KL/r)_t$	K Multiplier	F_y (ksi)
130'-150'	P 2-1/2 X-STR	50	2.25	1.92	0.924	10.82	P 3 STD	50	1.11	1.51	1.164	8.59	Bolts	1	28.92	10	0	1.010	28.64	0.508	0.924	0.00	31.30	1.00	1.234	21.48	19.69	23.43	Yes	31.30	1.0016	50
110'-130'	P 2-1/2 X-STR	50	2.25	1.92	0.924	10.82	P 3 STD	46	1.11	1.51	1.164	8.59	Bolts	1	28.92	10	0	1.010	28.64	0.508	0.924	0.00	31.30	1.00	1.234	21.48	19.69	23.43	Yes	31.30	1.0016	46

Summary

Elevation	Modified Member	Stiffness Only	K	F_y (ksi)	Gap (in)
130'-150'	P 2-1/2 X-STR w/ Split P 3 STD	No	1.1819	50	0.0997
110'-130'	P 2-1/2 X-STR w/ Split P 3 STD	No	1.1819	46	0.0997

Reinforcement Termination

Design Force (k)	Weld Type	Weld Size (1/16 in)	$D_{u(Weld)}$ (1/16 in)	Weld L_{min} (in)	Unmodified Span (in)
48.74	Fillet	3	1.40	13	0
44.94	Fillet	3	1.40	12	0

Capacity Summary

Compression (k)	Tension (k)	ϕPn (k) - Buckling	ϕPn (k) - Crushing	ϕPn (k) - Tension	Controlling	Rating
82.29	47.12	137.17	N/A	N/A	Buckling	60.0%
78.76	44.6	127.20	N/A	N/A	Buckling	61.9%
Apply TIA-222-H Section 15.57				**No**		

Version 1.5

Guyed Tower Anchor Foundation
CT10016-A Montville 3 CT
2023778.10016.02

Guy Anchor Location	
Azimuth/Leg	A
Radius (ft)	150
Tower Height (ft)	190

Tower Reactions		
Vertical	34	k
Horizontal	48	k

Capacity Summary		
Soil Capacity=	72.5%	**OK**
Reinforcing Capacity=	25.2%	**OK**
Controlling Capacity=	**72.5%**	**OK**

#N/A

Anchor Block Geometry		
Width	3	ft
Height	3	ft
Length	10	ft
Depth	12	ft

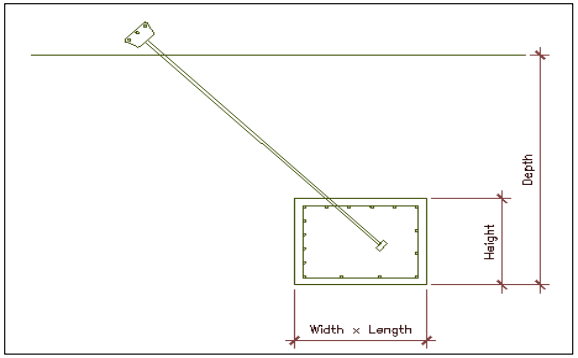
General Info	
Foundation Criteria	GPD
TIA Code	TIA-222-H
Soil	105%
Reinforcement/Steel	105%
Apply TIA-222-H Section 15.5?	No

Soil Properties

Layer	C_u, psf	ϕ, degrees	γ_{soil}, pcf	$\gamma_{concrete}$, pcf	Thickness, ft	$P_{p,top}$, psf	$P_{p,bot}$, psf	f_s,psf
1			110	150	2			
2		40	120	150	2	1000	2200	
3		40	120	150	2	2200	2650	
4		34	115	150	5.5	2100	2750	
5		43	125	150	0.5			
6								

Ignored Depth	4	ft	Consider soil for uplift	User Input Angle (°)	
Water Table	4	ft	Granular	Angle for Uplift (°)	29.11111

Soil Capacity Calculations		
W_s	109.71	k
W_c	7.88	k
Uplift Resistance	92.68	k
Horizontal Resistance	66.25	k
Uplift Capacity=	36.7%	**OK**
Horizontal Capacity=	72.5%	**OK**



Anchor Block Reinforcement		
Is Reinforcement Known?	yes	
fc'	3	ksi
Fy	60	ksi
ϕ (shear)	0.75	
Clear Cover	3	in
Top Bar Size	# 7	
Top Bar Quantity	4	
Front Bar Size	# 7	
Front Bar Quantity	3	
Back & Bottom Bar Size		
Back & Bottom Bar Quantity		
Tie Size	# 3	

Block Moment and Shear Calculations

Moment Check					
M_{ux}=	42.50	k-ft	M_{uy}=	60.00	k-ft
ϕM_{nx}=	339.15	k-ft	ϕM_{ny}=	255.95	k-ft
Capacity	12.5%	**OK**	Capacity	23.4%	**OK**
Shear Check					
V_{ux}=	17.00	k	V_{uy}=	24.00	k
ϕV_{nx}=	95.20	k	ϕV_{ny}=	95.20	k
Capacity	17.9%	**OK**	Capacity	25.2%	**OK**

Guy Anchor Shaft Calculations	
Shape of Anchor Shaft	Unknown

Guyed Tower Anchor Foundation
CT10016-A Montville 3 CT
2023778.10016.02

Guy Anchor Location	
Azimuth/Leg	B
Radius (ft)	150
Tower Height (ft)	190

Tower Reactions		
Vertical	40	k
Horizontal	46	k

Capacity Summary		
Soil Capacity=	50.8%	**OK**
Reinforcing Capacity=	24.2%	**OK**
Controlling Capacity=	**50.8%**	**OK**

#N/A

Anchor Block Geometry		
Width	3	ft
Height	3	ft
Length	10	ft
Depth	12	ft

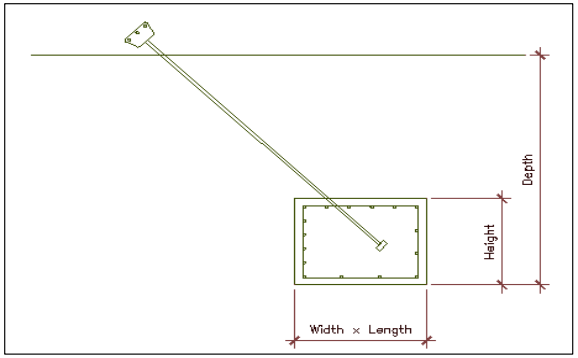
General Info	
Foundation Criteria	GPD
TIA Code	TIA-222-H
Soil	105%
Reinforcement/Steel	105%
Apply TIA-222-H Section 15.5?	No

Soil Properties

Layer	C_u, psf	ϕ, degrees	γ_{soil}, pcf	$\gamma_{concrete}$, pcf	Thickness, ft	$P_{p,top}$, psf	$P_{p,bot}$, psf	f_s,psf
1			110	150	2			
2		31	115	150	2	600	1400	
3		43	125	150	8	2400	4400	
4								
5								
6								

Ignored Depth	4	ft	Consider soil for uplift	User Input Angle (°)	
Water Table	4	ft	Granular	Angle for Uplift (°)	30.77778

Soil Capacity Calculations		
W_s	119.27	k
W_c	7.88	k
Uplift Resistance	99.98	k
Horizontal Resistance	90.56	k
Uplift Capacity=	40.0%	**OK**
Horizontal Capacity=	50.8%	**OK**



Anchor Block Reinforcement		
Is Reinforcement Known?	yes	
fc'	3	ksi
Fy	60	ksi
ϕ (shear)	0.75	
Clear Cover	3	in
Top Bar Size	# 7	
Top Bar Quantity	4	
Front Bar Size	# 7	
Front Bar Quantity	3	
Back & Bottom Bar Size		
Back & Bottom Bar Quantity		
Tie Size	# 3	

Block Moment and Shear Calculations

Moment Check					
M_{ux}=	50.00	k-ft	M_{uy}=	57.50	k-ft
ϕM_{nx}=	339.15	k-ft	ϕM_{ny}=	255.95	k-ft
Capacity	14.7%	**OK**	Capacity	22.5%	**OK**
Shear Check					
V_{ux}=	20.00	k	V_{uy}=	23.00	k
ϕV_{nx}=	95.20	k	ϕV_{ny}=	95.20	k
Capacity	21.0%	**OK**	Capacity	24.2%	**OK**

Guy Anchor Shaft Calculations	
Shape of Anchor Shaft	Unknown

Guyed Tower Anchor Foundation
CT10016-A Montville 3 CT
2023778.10016.02

Guy Anchor Location	
Azimuth/Leg	C
Radius (ft)	150
Tower Height (ft)	190

Tower Reactions		
Vertical	34	k
Horizontal	47	k

Capacity Summary		
Soil Capacity=	66.7%	OK
Reinforcing Capacity=	24.7%	OK
Controlling Capacity=	**66.7%**	**OK**

#N/A

Anchor Block Geometry		
Width	3	ft
Height	3	ft
Length	10	ft
Depth	12	ft

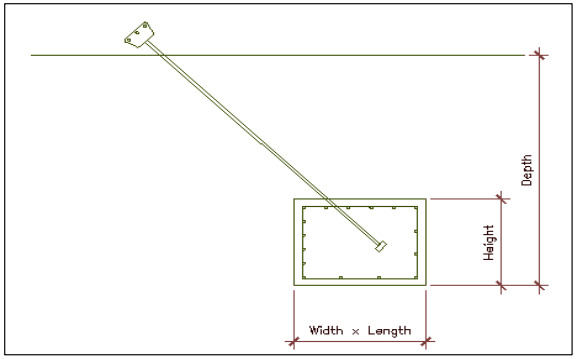
General Info	
Foundation Criteria	GPD
TIA Code	TIA-222-H
Soil	105%
Reinforcement/Steel	105%
Apply TIA-222-H Section 15.5?	No

Soil Properties

Layer	C_u, psf	ϕ, degrees	γ_{soil}, pcf	$\gamma_{concrete}$, pcf	Thickness, ft	$P_{p,top}$, psf	$P_{p,bot}$, psf	f_s,psf
1			110	150	2			
2		35	115	150	1.5	700	1250	
3		41	120	150	0.5	1250	2250	
4		41	120	150	2	2250	2750	
5		34	115	150	2	2000	2850	
6		38	120	150	4	2850	3300	

Ignored Depth	4	ft	Consider soil for uplift	User Input Angle (°)	
Water Table	4	ft	Granular	Angle for Uplift (°)	29

Soil Capacity Calculations		
W_s	108.09	k
W_c	7.88	k
Uplift Resistance	91.45	k
Horizontal Resistance	70.45	k
Uplift Capacity=	37.2%	OK
Horizontal Capacity=	66.7%	OK



Anchor Block Reinforcement		
Is Reinforcement Known?	yes	
fc'	3	ksi
Fy	60	ksi
ϕ (shear)	0.75	
Clear Cover	3	in
Top Bar Size	# 7	
Top Bar Quantity	4	
Front Bar Size	# 7	
Front Bar Quantity	3	
Back & Bottom Bar Size		
Back & Bottom Bar Quantity		
Tie Size	# 3	

Block Moment and Shear Calculations

Moment Check					
M_{ux}=	42.50	k-ft	M_{uy}=	58.75	k-ft
ϕM_{nx}=	339.15	k-ft	ϕM_{ny}=	255.95	k-ft
Capacity	12.5%	OK	Capacity	23.0%	OK
Shear Check					
V_{ux}=	17.00	k	V_{uy}=	23.50	k
ϕV_{nx}=	95.20	k	ϕV_{ny}=	95.20	k
Capacity	17.9%	OK	Capacity	24.7%	OK

Guy Anchor Shaft Calculations	
Shape of Anchor Shaft	Unknown

Mat Foundation Analysis
CT10016-A Montville 3 CT
2023778.10016.02

General Info	
Foundation Criteria	GPD
TIA Code	TIA-222-H
Apply TIA-222-H Section 15.5?	No
Soil Code	AASHTO 2012
Concrete Code	ACI 318-14
Seismic Design Category	B
Tower Height	190 ft
Bearing On	Soil
Foundation Type	Guyed Pad
Pier Type	Square
Reinforcing Known	Yes
Max Bearing Capacity	105%
Max Overturning Capacity	105%

Tower Reactions	
Moment, M	
Axial, P	147 k
Shear, V	4 k

Pad & Pier Geometry	
Pier Width, ø	2.5 ft
Pad Length, L [y]	7 ft
Pad Width, W [x]	7 ft
Pad Thickness, t	1.75 ft
Depth, D	5 ft
Height Above Grade, HG	0.5 ft
Tower Centroid, X	3.5 ft
Tower Centroid, Y	3.5 ft
Tower Eccentricity	0.0000 ft

Pad & Pier Reinforcing	
Rebar Fy	60 ksi
Concrete F'c	3 ksi
Pier Reinforcing Clear Cover	3 in
Shear Rebar Type	Tie
Shear Rebar Size	# 3
Pad Reinforcing Clear Cover	3 in
Reinforced Top & Bottom?	No
Pad Reinforcing Size	# 6
Pad Quantity Per Layer	8
Pier Rebar Size	# 7
Pier Quantity of Rebar	8

Soil Properties	
Soil Type	Granular
Soil Unit Weight	125 pcf
Angle of Friction, ø	43
Base Friction Coeff. Provided in Geo?	Yes
Base Friction Coefficient, µ	0.4
Bearing Type	Net
Ultimate Bearing	30 ksf
Water Table Depth	4 ft
Neglected Depth	4 ft

GPD Mat Foundation Analysis - V4.4

Bearing Summary

Case	*Demand/Limits*	*Capacity/Availability*	*Check*	*Eccentricity*	*Load Case*
Qxmax	3.99 ksf	18.34 ksf	OK, <= 105%	L/64.2	1.2D+1.0W
Qymax	3.99 ksf	18.34 ksf	OK, <= 105%	W/64.2	1.2D+1.0W
Qmax @ 45°	3.75 ksf	18.34 ksf	OK, <= 105%	W/23333.3	1.2D+1.0W
Controlling Capacity		**21.7%**	**Pass**		

Overturning Summary

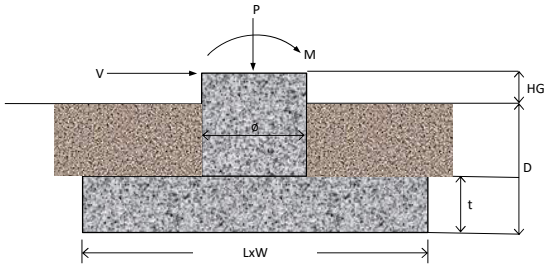
Case	*Demand/Limits*	*Capacity/Availability*	*Check*		*Load Case*
Ovtx	20.0 k-ft	643.4 k-ft	4.2%	OK	0.9D+1.0W
Ovty	20.0 k-ft	643.4 k-ft	4.2%	OK	0.9D+1.0W
Ovtxy	0.1 k-ft	482.5 k-ft	0.0%	OK	0.9D+1.0W
Controlling Capacity		**4.2%**	**Pass**		

Sliding Summary

Case	*Demand/Limits*	*Capacity/Availability*	*Check*		*Load Case*
Slidingx	4.0 k	56.1 k	7.1%	OK	0.9D+1.0W
Slidingy	4.0 k	56.1 k	7.1%	OK	0.9D+1.0W
Controlling Capacity		**7.1%**	**Pass**		

Reinforcement Summary

Component	*Demand/Limits*	*Capacity/Availability*	*Check*		*Load Case*
Pad Flexural Bending	58.5 k-ft	259.5 k-ft	22.5%	OK	1.2D+1.0W
One-Way Shear in Pad	19.7 k	116.5 k	16.9%	OK	1.2D+1.0W
Two-Way Shear in Pad	116.4 k	519.9 k	22.4%	OK	0.9D+1.0W
Compression on Pier	151.2 k	2983.5 k	5.1%	OK	1.2D+1.0W
Moment on Pier	15.0 k-ft	339.7 k-ft	4.4%	OK	1.2D+1.0W
Pad Flexural 2-Way	9.0 k-ft	247.3 k-ft	3.6%	OK	1.2D+1.0W
As Min Pad Met?	0.50 sq. in.	0.23 sq. in.	Yes		
As Min Pier Met?	4.80 sq. in.	4.50 sq. in.	Yes		
Controlling Capacity		**22.5%**	**Pass**		



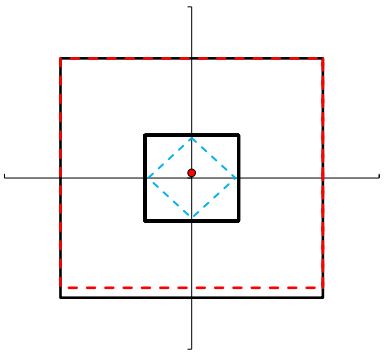


EXHIBIT 8

Mount Analysis

Kimley»Horn

Mount Analysis for

Proposed Sector Frames
Commscope Part #: MTC3975083

September 7, 2023

Site Name:	**Montville 3 CT**
SBA Site Number:	**CT10016-A**
Dish Site Number:	**BOBOS01206A**
Site Address:	**71 Moxley Road** **Ucansville, CT 06382** **Montville County**
Site Coordinates:	**41.4352°, -72.1233°**

Kimley-Horn Job Number: 180000025.1.202
Kimley-Horn JIRA Ticket: KHCLE-47865

Analysis Results

Proposed Sector Frames	**41.3%**	**Sufficient**
Mount Connections	**31.8%**	**Sufficient**

See additional details in the Conclusions and Recommendation section.

Prepared By:
Kevin Fraleigh, P.E.

Reviewed and Signed By:
Cole Edmonson, P.E.
Lic. #PEN.0036630, Exp. 01/31/2024
Kimley-Horn and Associates, Inc. COA #PEC.0000738

▪ SUPPORTING DOCUMENTATION

Information on existing and proposed antennas as well as mount geometry was provided to Kimley-Horn and Associates in the documents listed below. It is assumed that all information provided to Kimley-Horn & Associates, Inc. is accurate. In the absence of information to the contrary, we assume the structure has been properly erected and maintained per the original design drawings and the capacity has not significantly changed from the "as new" condition.

Tenant Loading	Dish Wireless Collo App, dated 9/6/2023
Mount Design	Commscope Part #: MTC3975083, dated 3/17/2021

▪ ANALYSIS CRITERIA

Code	ANSI/TIA-222-H / 2021 IBC / 2022 CSBC / ASCE 7
Basic Wind Speed	126 mph (3-Second Gust, Vult)
Basic Wind Speed w/ Ice	50 mph (3-sec Gust) with 1.0" radial ice (escalating)
Risk Category	II
Exposure Category	B
Topographic Factor	K_{zt} = 1.0

This analysis utilizes an ultimate 3-second gust windspeed of 126 mph as required by the Connecticut State Building Code. Applicable Standard references and design criteria are listed in Section 2-Analysis Criteria.

▪ APPURTENANCE LISTING

The tables below will show the final equipment configuration considered in the analysis. If the final equipment observed in the field deviates from the information shown below, Kimley-Horn & Associates, Inc. should be contacted to perform an analysis revision immediately.

Final Equipment Configuration:

Antenna RAD (ft)	Description	Feedlines	Mount Type	Mount Elevation (ft)	Carrier
180	(3) Commscope FFVV-65B-R2 Panels (3) Samsung RF4451d-70A RRUs (3) Samsung RF4450t-71A RRUs (1) Raycap RDIDC-9181-PF-48 OVP	(1) 1.75" Hybrid	Sector Frames	180	Dish

▪ CONCLUSIONS AND RECOMMENDATIONS

Per our rigorous structural analysis, the proposed Sector Frames have been found to be **SUFFICIENT**. The mount can support the referenced loading in accordance with the structural strength requirements of ANSI/TIA-222-H and 2021 IBC with local amendments.

▪ ASSUMPTIONS AND LIMITATIONS

This report is not a condition assessment of the mount; It is an engineering analysis based upon the theoretical capacity of the structure. Unless told otherwise, we assume the mount components and connections to be in "like new" condition. If these assumptions are not accurate, Kimley-Horn & Associates, Inc. should be notified immediately to perform a revised analysis.

All services are performed, results obtained, and recommendation made in accordance with generally accepted engineering principles and practices. Kimley-Horn & Associates, Inc. is not responsible for the conclusions, opinions and recommendations made by others based on the information in this report.

Kimley-Horn makes no warranties, expressed or implied in connection with this report and disclaims any liability arising from original design, material, fabrication, section deficiencies, corrosion, or insufficient maintenance of the structure.

APPENDIX

General Criteria	
TIA Standard	H
IBC Edition	2021
Structure Class	-
Risk Category	II

Site-Specific Criteria	
Exposure Category	B
Topographic Factor, K_{zt}	1.00
Structure Base Elev. (AMSL), z_s (ft)	196.00
Ground Effect Factor, K_e	0.99

Mount & Structure Criteria	
Mount Elevation (AGL) (ft)	180.00
Structure Height (ft)	190.00
Structure Type	Self-Supporting Tower

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

Wind Summary	
Basic Wind Speed w/o Ice, **V** (mph)	126.00
Velocity Pressure Coeff., K_z	1.17
Velocity Pressure, q_z **(w/o Ice)** (psf)	44.81

Ice Load Summary	
Basic Wind Speed w/ Ice, V_i (mph)	50.00
Design Ice Thick. (ASCE 7-16) , t_i (in)	1
Velocity Pressure, q_z **(w/ Ice)** (psf)	7.06
Escalated Ice Thick. @ Mount, t_{iz} (in)	1.18

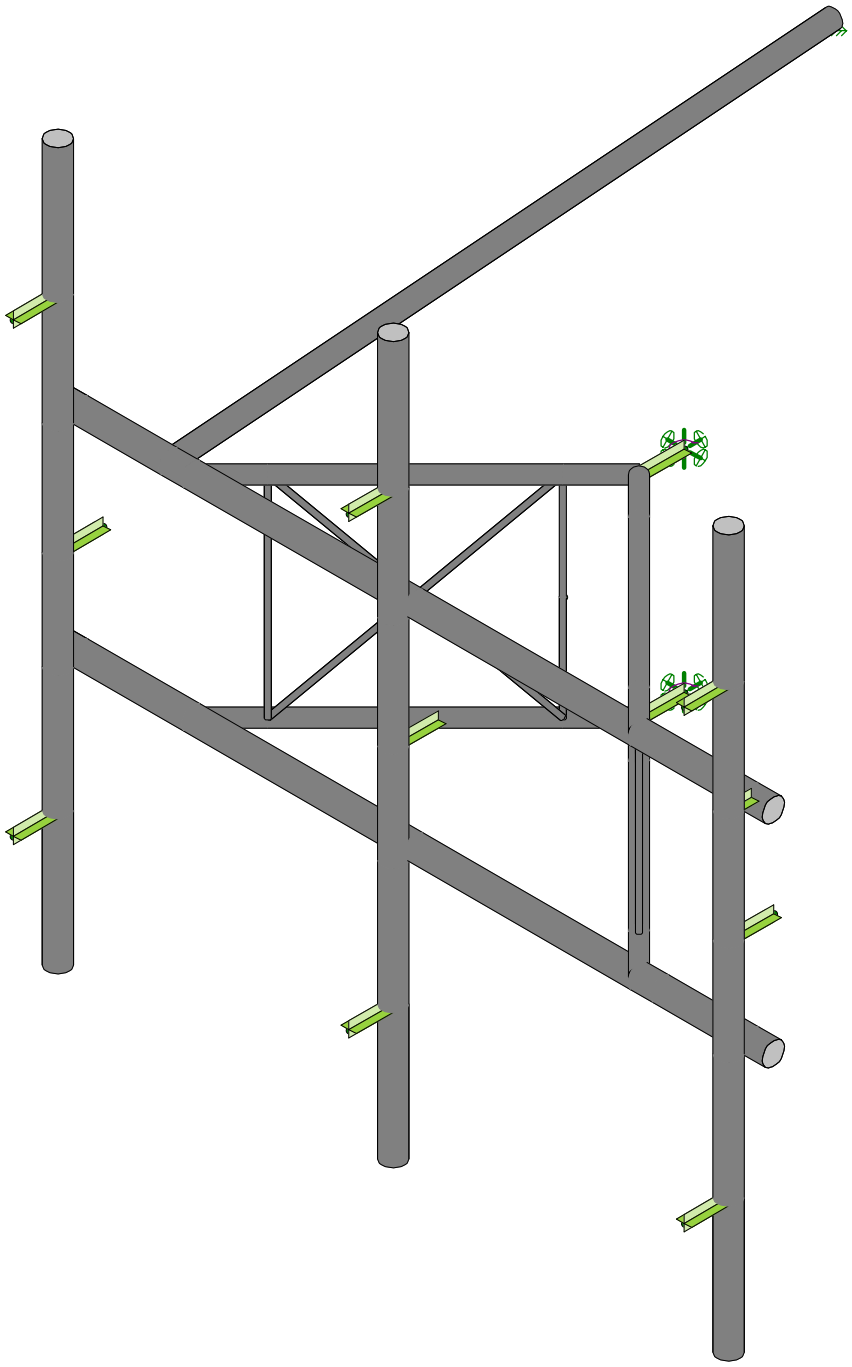
Seismic Load Summary	
Spectral Response (Short Periods), S_s	0.195
Spectral Response (1-Sec. Period), S_1	0.053
Site Class	D
Seismic Design Category	B
Seismic Risk Category	II

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

Kimley»Horn

Date	September 07, 2023
Client	SBA
Site #	CT10016-A
Site Name	Montville 3 CT
Project #	KHCLE-47865

Antenna Name	Qty	Shape	Dimensions (in)			Weight (lb)	Joint Labels								EPA (ft²)		Wind Force, F_A (lb)			
																	No Ice		With Ice	
			H	W	D		Alpha		Beta		Gamma		Delta		Front	Side	Front	Side	Front	Side
FFVV-65B-R2	1	Flat	72	19.6	7.8	84.5	A2T	A2B							12.27	5.75	494.93	231.91	89.31	47.05
RF4450t-71A	1	Flat	16.5	15	11	94.6	A2R								0.76	2.06	30.5	83.19	6.68	17.35
RF4451d-70A	1	Flat	15	15	8.9	61.3	A2R								0.56	1.88	22.44	75.62	5.18	15.97
RDIDC-9181-PF-48	1	Flat	16.6	14.6	8.5	21.9	DC1								2.01	1.17	81.14	47.12	16.98	10.86



Envelope Only Solution

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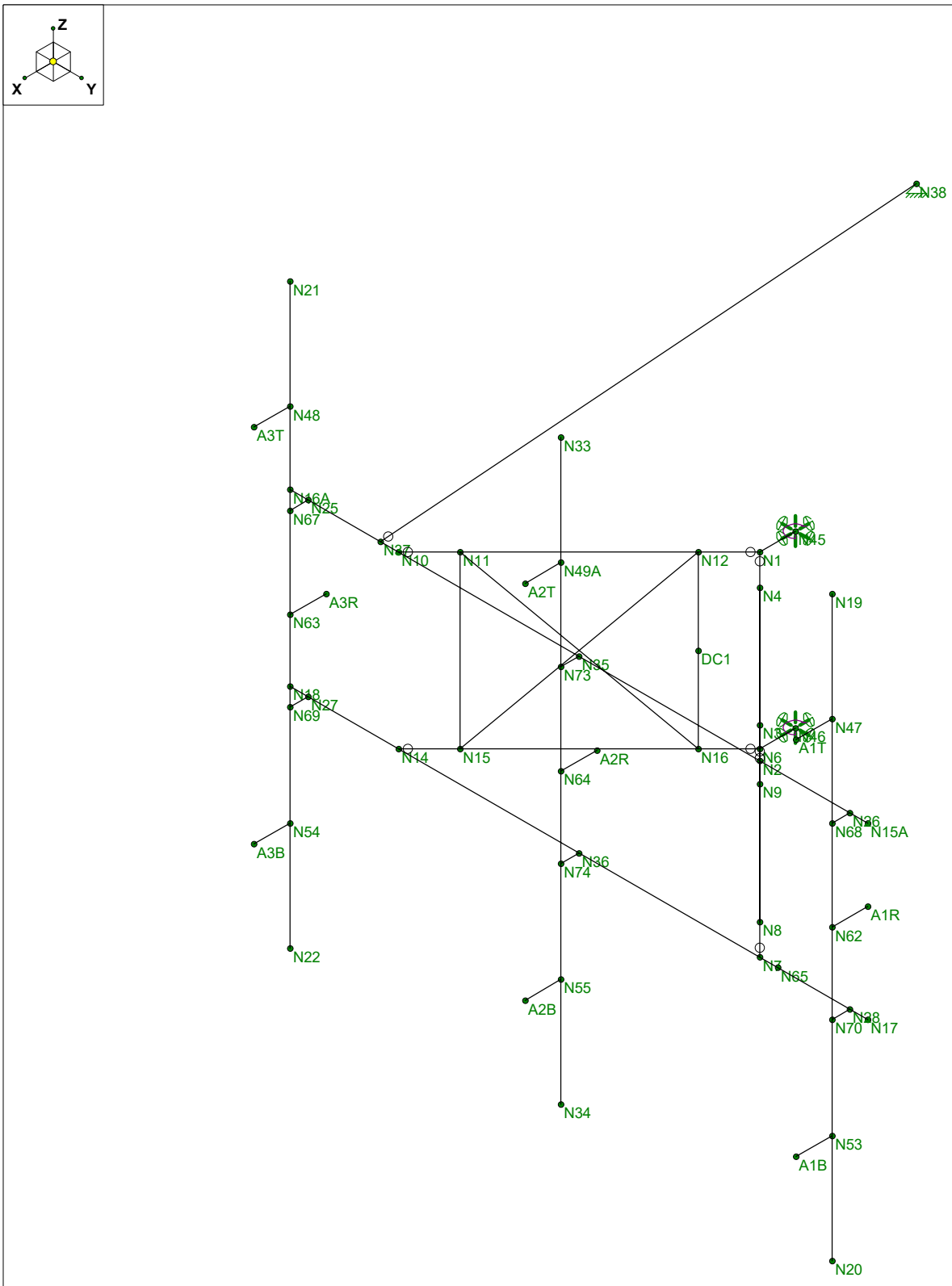

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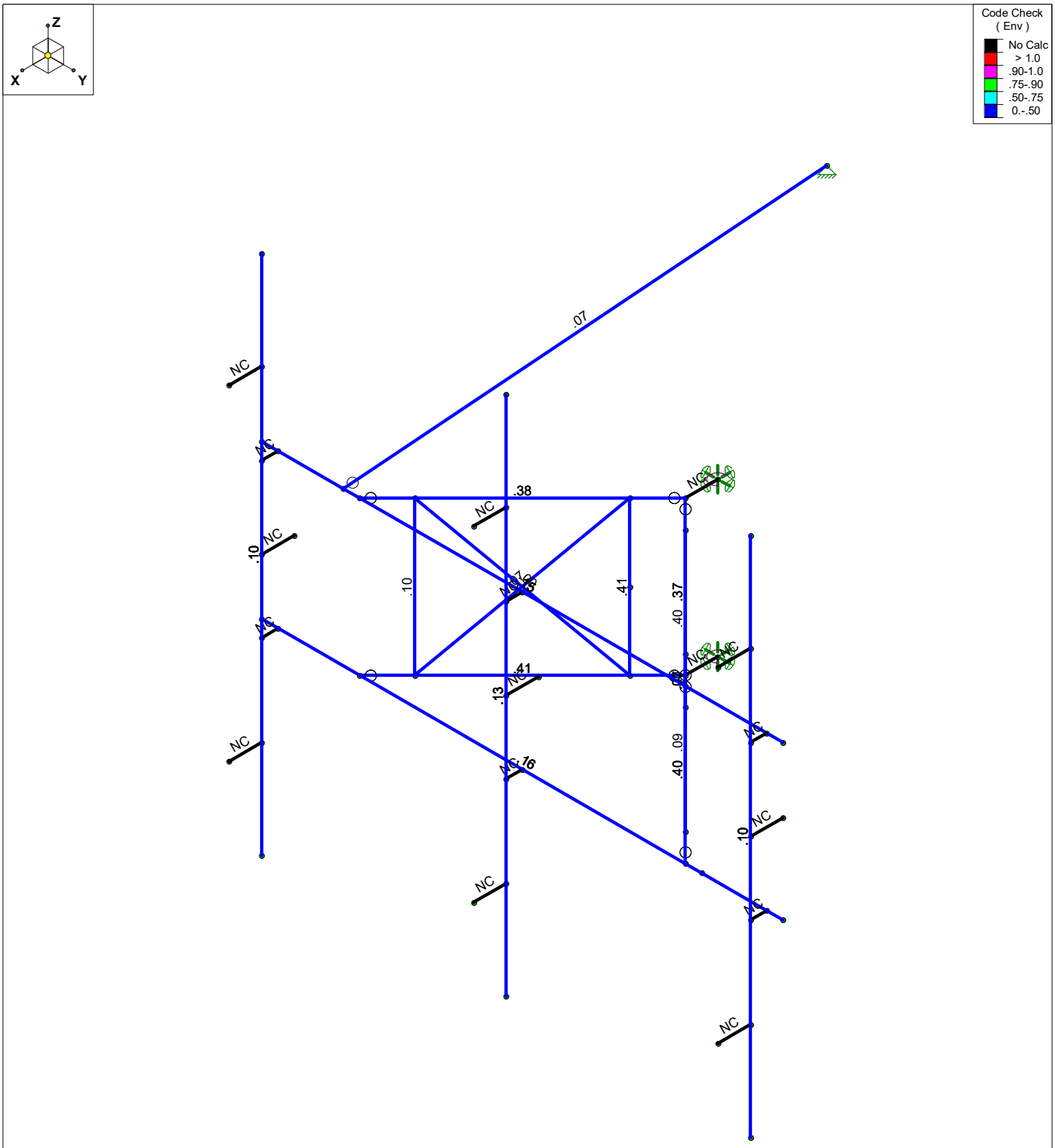

Member Code Checks Displayed (Enveloped)
Envelope Only Solution

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Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (\1E...	Density[k/ft...	Yield[ksi]	Ry	Fu[ksi]	Rt
1	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
2	A529 Gr.50	29000	11154	.3	.65	.49	50	1.1	65	1.1
3	A992	29000	11154	.3	.65	.49	50	1.1	65	1.1
4	A500 Gr.42	29000	11154	.3	.65	.49	42	1.4	58	1.3
5	A500 Gr.46	29000	11154	.3	.65	.49	46	1.4	58	1.3
6	A53 Gr B	29000	11154	.3	.65	.49	35	1.5	58	1.2

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Ru...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Face Horizontal	2.88"x0.120"	None	None	A500 Gr.46	Typical	1.04	.993	.993	1.985
2	Standoff Arms	1.9" ODx0.12"	None	None	A500 Gr.46	Typical	.671	.267	.267	.534
3	Diagonal	SR5/8	None	None	A529 Gr.50	Typical	.307	.007	.007	.015
4	Mount Pipe	2.88"x0.120"	Column	None	A500 Gr.46	Typical	1.04	.993	.993	1.985
5	Tie Back	Pipe2.38X0.12	None	None	A500 Gr.46	Typical	.852	.545	.545	1.091
6	End Support Pipe	3.5"x0.120	None	None	A500 Gr.46	Typical	1.274	1.822	1.822	3.644
7	Standoff Vertical	SR5/8	None	None	A529 Gr.50	Typical	.307	.007	.007	.015

Joint Coordinates and Temperatures

	Label	X [in]	Y [in]	Z [in]	Temp [F]	Detach From Diap...
1	N1	70.318672	0.	-13.718672	0	
2	N2	100.3	29.981328	-13.718672	0	
3	N3	95.208831	24.890159	-13.718672	0	
4	N4	75.409841	5.091169	-13.718672	0	
5	N6	70.318672	0.	-42.018672	0	
6	N7	100.3	29.981328	-42.018672	0	
7	N8	95.208831	24.890159	-42.018672	0	
8	N9	75.409841	5.091169	-42.018672	0	
9	N10	100.3	-29.981328	-13.718672	0	
10	N11	95.208831	-24.890159	-13.718672	0	
11	N12	75.409841	-5.091169	-13.718672	0	
12	N14	100.3	-29.981328	-42.018672	0	
13	N15	95.208831	-24.890159	-42.018672	0	
14	N16	75.409841	-5.091169	-42.018672	0	
15	N15A	100.3	48	-13.718672	0	
16	N16A	100.3	-48	-13.718672	0	
17	N17	100.3	48	-42.018672	0	
18	N18	100.3	-48	-42.018672	0	
19	N19	103.3	45	19.281328	0	
20	N20	103.3	45	-76.718672	0	
21	N21	103.3	-45	19.281328	0	
22	N22	103.3	-45	-76.718672	0	
23	N25	100.3	-45	-13.718672	0	
24	N26	100.3	45	-13.718672	0	
25	N27	100.3	-45	-42.018672	0	
26	N28	100.3	45	-42.018672	0	
27	N33	103.3	0.	19.281328	0	
28	N34	103.3	0.	-76.718672	0	
29	N35	100.3	0.	-13.718672	0	

Joint Coordinates and Temperatures (Continued)

	Label	X [in]	Y [in]	Z [in]	Temp [F]	Detach From Diap...
30	N36	100.3	0.	-42.018672	0	
31	N37	100.3	-33	-13.718672	0	
32	N38	4.3	-40	-13.718672	0	
33	N65	100.3	33	-42.018672	0	
34	N67	103.3	-45	-13.718672	0	
35	N68	103.3	45	-13.718672	0	
36	N69	103.3	-45	-42.018672	0	
37	N70	103.3	45	-42.018672	0	
38	N73	103.3	0.	-13.718672	0	
39	N74	103.3	0.	-42.018672	0	
40	N45	64.318672	0.	-13.718672	0	
41	N46	64.318672	0.	-42.018672	0	
42	N47	103.3	45	1.281328	0	
43	N48	103.3	-45	1.281328	0	
44	N49A	103.3	0.	1.281328	0	
45	A1T	109.3	45	1.281328	0	
46	A3T	109.3	-45	1.281328	0	
47	A2T	109.3	0.	1.281328	0	
48	N53	103.3	45	-58.718672	0	
49	N54	103.3	-45	-58.718672	0	
50	N55	103.3	0.	-58.718672	0	
51	A1B	109.3	45	-58.718672	0	
52	A3B	109.3	-45	-58.718672	0	
53	A2B	109.3	0.	-58.718672	0	
54	A1R	97.3	45	-28.718672	0	
55	A3R	97.3	-45	-28.718672	0	
56	A2R	97.3	0.	-28.718672	0	
57	N62	103.3	45	-28.718672	0	
58	N63	103.3	-45	-28.718672	0	
59	N64	103.3	0.	-28.718672	0	
60	DC1	75.409841	-5.091169	-27.868672	0	

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
1	M1	N2	N1			Standoff Arms	None	None	A500 Gr.46	Typical
2	M2	N7	N6			Standoff Arms	None	None	A500 Gr.46	Typical
3	M3	N3	N8			Standoff Verti...	None	None	A529 Gr.50	Typical
4	M4	N4	N9			Standoff Verti...	None	None	A529 Gr.50	Typical
5	M5	N4	N8			Diagonal	None	None	A529 Gr.50	Typical
6	M6	N3	N9			Diagonal	None	None	A529 Gr.50	Typical
7	M7	N10	N1			Standoff Arms	None	None	A500 Gr.46	Typical
8	M8	N14	N6			Standoff Arms	None	None	A500 Gr.46	Typical
9	M9	N11	N15			Standoff Verti...	None	None	A529 Gr.50	Typical
10	M10	N12	N16			Standoff Verti...	None	None	A529 Gr.50	Typical
11	M11	N12	N15			Diagonal	None	None	A529 Gr.50	Typical
12	M12	N11	N16			Diagonal	None	None	A529 Gr.50	Typical
13	M13	N16A	N15A			Face Horizontal	None	None	A500 Gr.46	Typical
14	M14	N18	N17			Face Horizontal	None	None	A500 Gr.46	Typical
15	MP1	N22	N21			Mount Pipe	Column	None	A500 Gr.46	Typical
16	MP3	N20	N19			Mount Pipe	Column	None	A500 Gr.46	Typical

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
17	MP2	N34	N33			Mount Pipe	Column	None	A500 Gr.46	Typical
18	M27A	N37	N38			Tie Back	None	None	A500 Gr.46	Typical
19	M29	N25	N67			RIGID	None	None	RIGID	Typical
20	M30	N27	N69			RIGID	None	None	RIGID	Typical
21	M33	N35	N73			RIGID	None	None	RIGID	Typical
22	M34	N36	N74			RIGID	None	None	RIGID	Typical
23	M35	N26	N68			RIGID	None	None	RIGID	Typical
24	M36	N28	N70			RIGID	None	None	RIGID	Typical
25	M26	N1	N45			RIGID	None	None	RIGID	Typical
26	M27	N6	N46			RIGID	None	None	RIGID	Typical
27	M28	A3T	N48			RIGID	None	None	RIGID	Typical
28	M29A	A2T	N49A			RIGID	None	None	RIGID	Typical
29	M30A	A1T	N47			RIGID	None	None	RIGID	Typical
30	M31	A3B	N54			RIGID	None	None	RIGID	Typical
31	M32	A2B	N55			RIGID	None	None	RIGID	Typical
32	M33A	A1B	N53			RIGID	None	None	RIGID	Typical
33	M34A	N63	A3R			RIGID	None	None	RIGID	Typical
34	M35A	N64	A2R			RIGID	None	None	RIGID	Typical
35	M36A	N62	A1R			RIGID	None	None	RIGID	Typical

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(P...
1	Dead	DL			-1	5				
2	Dead of Ice	RL				5		18		
4	Structure Wind (0)	None						36		
5	Structure Wind (30)	None						36		
6	Structure Wind (45)	None						36		
7	Structure Wind (60)	None						36		
8	Structure Wind (90)	None						36		
9	Structure Wind (120)	None						36		
10	Structure Wind (135)	None						36		
11	Structure Wind (150)	None						36		
12	Structure Wind w/ Ice...	None						36		
13	Structure Wind w/ Ice...	None						36		
14	Structure Wind w/ Ice...	None						36		
15	Structure Wind w/ Ice...	None						36		
16	Structure Wind w/ Ice...	None						36		
17	Structure Wind w/ Ice...	None						36		
18	Structure Wind w/ Ice...	None						36		
19	Structure Wind w/ Ice...	None						36		
20	Antenna Wind (0)	None				10				
21	Antenna Wind (30)	None				10				
22	Antenna Wind (45)	None				10				
23	Antenna Wind (60)	None				10				
24	Antenna Wind (90)	None				10				
25	Antenna Wind (120)	None				10				
26	Antenna Wind (135)	None				10				
27	Antenna Wind (150)	None				10				
28	Antenna Wind w/ Ice ...	None				10				
29	Antenna Wind w/ Ice ...	None				10				

Basic Load Cases (Continued)

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(P...
30	Antenna Wind w/ Ice ...	None				10				
31	Antenna Wind w/ Ice ...	None				10				
32	Antenna Wind w/ Ice ...	None				10				
33	Antenna Wind w/ Ice ...	None				10				
34	Antenna Wind w/ Ice ...	None				10				
35	Antenna Wind w/ Ice ...	None				10				
36	Seismic X	ELX				5		18		
37	Seismic Y	ELY				5		18		
38	Maintenance Live Lm ...	OL1				1				
39	Maintenance Live Lm ...	OL2				1				
40	Maintenance Live Lm ...	OL3				1				
43	Maintenance Live Lv (...	OL6					1			

Load Combinations

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

Load Combinations (Continued)

	Description	So...	P...	S...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...
36	1.2D + 1.0E(30)	Yes	Y		DL	1.2	ELX	-.866	ELY	.5														
37	1.2D + 1.0E(45)	Yes	Y		DL	1.2	ELX	-.707	ELY	.707														
38	1.2D + 1.0E(60)	Yes	Y		DL	1.2	ELX	-.5	ELY	.866														
39	1.2D + 1.0E(90)	Yes	Y		DL	1.2	ELX	-2.2...	ELY	1														
40	1.2D + 1.0E(120)	Yes	Y		DL	1.2	ELX	.5	ELY	.866														
41	1.2D + 1.0E(135)	Yes	Y		DL	1.2	ELX	.707	ELY	.707														
42	1.2D + 1.0E(150)	Yes	Y		DL	1.2	ELX	.866	ELY	.5														
43	1.2D + 1.0E(180)	Yes	Y		DL	1.2	ELX	1	ELY	4.5...														
44	1.2D + 1.0E(210)	Yes	Y		DL	1.2	ELX	.866	ELY	-.5														
45	1.2D + 1.0E(225)	Yes	Y		DL	1.2	ELX	.707	ELY	-.707														
46	1.2D + 1.0E(240)	Yes	Y		DL	1.2	ELX	.5	ELY	-.866														
47	1.2D + 1.0E(270)	Yes	Y		DL	1.2	ELX	6.8...	ELY	-1														
48	1.2D + 1.0E(300)	Yes	Y		DL	1.2	ELX	-.5	ELY	-.866														
49	1.2D + 1.0E(315)	Yes	Y		DL	1.2	ELX	-.707	ELY	-.707														
50	1.2D + 1.0E(330)	Yes	Y		DL	1.2	ELX	-.866	ELY	-.5														
51	0.9D + 1.0E(0)	Yes	Y		DL	.9	ELX	-1	ELY															
52	0.9D + 1.0E(30)	Yes	Y		DL	.9	ELX	-.866	ELY	.5														
53	0.9D + 1.0E(45)	Yes	Y		DL	.9	ELX	-.707	ELY	.707														
54	0.9D + 1.0E(60)	Yes	Y		DL	.9	ELX	-.5	ELY	.866														
55	0.9D + 1.0E(90)	Yes	Y		DL	.9	ELX	-2.2...	ELY	1														
56	0.9D + 1.0E(120)	Yes	Y		DL	.9	ELX	.5	ELY	.866														
57	0.9D + 1.0E(135)	Yes	Y		DL	.9	ELX	.707	ELY	.707														
58	0.9D + 1.0E(150)	Yes	Y		DL	.9	ELX	.866	ELY	.5														
59	0.9D + 1.0E(180)	Yes	Y		DL	.9	ELX	1	ELY	4.5...														
60	0.9D + 1.0E(210)	Yes	Y		DL	.9	ELX	.866	ELY	-.5														
61	0.9D + 1.0E(225)	Yes	Y		DL	.9	ELX	.707	ELY	-.707														
62	0.9D + 1.0E(240)	Yes	Y		DL	.9	ELX	.5	ELY	-.866														
63	0.9D + 1.0E(270)	Yes	Y		DL	.9	ELX	6.8...	ELY	-1														
64	0.9D + 1.0E(300)	Yes	Y		DL	.9	ELX	-.5	ELY	-.866														
65	0.9D + 1.0E(315)	Yes	Y		DL	.9	ELX	-.707	ELY	-.707														
66	0.9D + 1.0E(330)	Yes	Y		DL	.9	ELX	-.866	ELY	-.5														
67	1.2D + 1.5Lm(1) +...	Yes	Y		DL	1.2	4	.057	20	.057	OL1	1.5												
68	1.2D + 1.5Lm(1) +...	Yes	Y		DL	1.2	5	.057	21	.057	OL1	1.5												
69	1.2D + 1.5Lm(1) +...	Yes	Y		DL	1.2	6	.057	22	.057	OL1	1.5												
70	1.2D + 1.5Lm(1) +...	Yes	Y		DL	1.2	7	.057	23	.057	OL1	1.5												
71	1.2D + 1.5Lm(1) +...	Yes	Y		DL	1.2	8	.057	24	.057	OL1	1.5												
72	1.2D + 1.5Lm(1) +...	Yes	Y		DL	1.2	9	.057	25	.057	OL1	1.5												
73	1.2D + 1.5Lm(1) +...	Yes	Y		DL	1.2	10	.057	26	.057	OL1	1.5												
74	1.2D + 1.5Lm(1) +...	Yes	Y		DL	1.2	11	.057	27	.057	OL1	1.5												
75	1.2D + 1.5Lm(1) +...	Yes	Y		DL	1.2	4	-.057	20	-.057	OL1	1.5												
76	1.2D + 1.5Lm(1) +...	Yes	Y		DL	1.2	5	-.057	21	-.057	OL1	1.5												
77	1.2D + 1.5Lm(1) +...	Yes	Y		DL	1.2	6	-.057	22	-.057	OL1	1.5												
78	1.2D + 1.5Lm(1) +...	Yes	Y		DL	1.2	7	-.057	23	-.057	OL1	1.5												
79	1.2D + 1.5Lm(1) +...	Yes	Y		DL	1.2	8	-.057	24	-.057	OL1	1.5												
80	1.2D + 1.5Lm(1) +...	Yes	Y		DL	1.2	9	-.057	25	-.057	OL1	1.5												
81	1.2D + 1.5Lm(1) +...	Yes	Y		DL	1.2	10	-.057	26	-.057	OL1	1.5												
82	1.2D + 1.5Lm(1) +...	Yes	Y		DL	1.2	11	-.057	27	-.057	OL1	1.5												
83	1.2D + 1.5Lm(2) +...	Yes	Y		DL	1.2	4	.057	20	.057	OL2	1.5												
84	1.2D + 1.5Lm(2) +...	Yes	Y		DL	1.2	5	.057	21	.057	OL2	1.5												
85	1.2D + 1.5Lm(2) +...	Yes	Y		DL	1.2	6	.057	22	.057	OL2	1.5												
86	1.2D + 1.5Lm(2) +...	Yes	Y		DL	1.2	7	.057	23	.057	OL2	1.5												
87	1.2D + 1.5Lm(2) +...	Yes	Y		DL	1.2	8	.057	24	.057	OL2	1.5												

Load Combinations (Continued)

	Description	So...	P...	S...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...
88	1.2D + 1.5Lm(2) +...	Yes	Y		DL	1.2	9	.057	25	.057	OL2	1.5														
89	1.2D + 1.5Lm(2) +...	Yes	Y		DL	1.2	10	.057	26	.057	OL2	1.5														
90	1.2D + 1.5Lm(2) +...	Yes	Y		DL	1.2	11	.057	27	.057	OL2	1.5														
91	1.2D + 1.5Lm(2) +...	Yes	Y		DL	1.2	4	-.057	20	-.057	OL2	1.5														
92	1.2D + 1.5Lm(2) +...	Yes	Y		DL	1.2	5	-.057	21	-.057	OL2	1.5														
93	1.2D + 1.5Lm(2) +...	Yes	Y		DL	1.2	6	-.057	22	-.057	OL2	1.5														
94	1.2D + 1.5Lm(2) +...	Yes	Y		DL	1.2	7	-.057	23	-.057	OL2	1.5														
95	1.2D + 1.5Lm(2) +...	Yes	Y		DL	1.2	8	-.057	24	-.057	OL2	1.5														
96	1.2D + 1.5Lm(2) +...	Yes	Y		DL	1.2	9	-.057	25	-.057	OL2	1.5														
97	1.2D + 1.5Lm(2) +...	Yes	Y		DL	1.2	10	-.057	26	-.057	OL2	1.5														
98	1.2D + 1.5Lm(2) +...	Yes	Y		DL	1.2	11	-.057	27	-.057	OL2	1.5														
99	1.2D + 1.5Lm(3) +...	Yes	Y		DL	1.2	4	.057	20	.057	OL3	1.5														
100	1.2D + 1.5Lm(3) +...	Yes	Y		DL	1.2	5	.057	21	.057	OL3	1.5														
101	1.2D + 1.5Lm(3) +...	Yes	Y		DL	1.2	6	.057	22	.057	OL3	1.5														
102	1.2D + 1.5Lm(3) +...	Yes	Y		DL	1.2	7	.057	23	.057	OL3	1.5														
103	1.2D + 1.5Lm(3) +...	Yes	Y		DL	1.2	8	.057	24	.057	OL3	1.5														
104	1.2D + 1.5Lm(3) +...	Yes	Y		DL	1.2	9	.057	25	.057	OL3	1.5														
105	1.2D + 1.5Lm(3) +...	Yes	Y		DL	1.2	10	.057	26	.057	OL3	1.5														
106	1.2D + 1.5Lm(3) +...	Yes	Y		DL	1.2	11	.057	27	.057	OL3	1.5														
107	1.2D + 1.5Lm(3) +...	Yes	Y		DL	1.2	4	-.057	20	-.057	OL3	1.5														
108	1.2D + 1.5Lm(3) +...	Yes	Y		DL	1.2	5	-.057	21	-.057	OL3	1.5														
109	1.2D + 1.5Lm(3) +...	Yes	Y		DL	1.2	6	-.057	22	-.057	OL3	1.5														
110	1.2D + 1.5Lm(3) +...	Yes	Y		DL	1.2	7	-.057	23	-.057	OL3	1.5														
111	1.2D + 1.5Lm(3) +...	Yes	Y		DL	1.2	8	-.057	24	-.057	OL3	1.5														
112	1.2D + 1.5Lm(3) +...	Yes	Y		DL	1.2	9	-.057	25	-.057	OL3	1.5														
113	1.2D + 1.5Lm(3) +...	Yes	Y		DL	1.2	10	-.057	26	-.057	OL3	1.5														
114	1.2D + 1.5Lm(3) +...	Yes	Y		DL	1.2	11	-.057	27	-.057	OL3	1.5														
115	1.2D + 1.5Lv(1) + ...	Yes	Y		DL	1.2	4	.057	20	.057	OL6	1.5														
116	1.2D + 1.5Lv(1) + ...	Yes	Y		DL	1.2	5	.057	21	.057	OL6	1.5														
117	1.2D + 1.5Lv(1) + ...	Yes	Y		DL	1.2	6	.057	22	.057	OL6	1.5														
118	1.2D + 1.5Lv(1) + ...	Yes	Y		DL	1.2	7	.057	23	.057	OL6	1.5														
119	1.2D + 1.5Lv(1) + ...	Yes	Y		DL	1.2	8	.057	24	.057	OL6	1.5														
120	1.2D + 1.5Lv(1) + ...	Yes	Y		DL	1.2	9	.057	25	.057	OL6	1.5														
121	1.2D + 1.5Lv(1) + ...	Yes	Y		DL	1.2	10	.057	26	.057	OL6	1.5														
122	1.2D + 1.5Lv(1) + ...	Yes	Y		DL	1.2	11	.057	27	.057	OL6	1.5														
123	1.2D + 1.5Lv(1) + ...	Yes	Y		DL	1.2	4	-.057	20	-.057	OL6	1.5														
124	1.2D + 1.5Lv(1) + ...	Yes	Y		DL	1.2	5	-.057	21	-.057	OL6	1.5														
125	1.2D + 1.5Lv(1) + ...	Yes	Y		DL	1.2	6	-.057	22	-.057	OL6	1.5														
126	1.2D + 1.5Lv(1) + ...	Yes	Y		DL	1.2	7	-.057	23	-.057	OL6	1.5														
127	1.2D + 1.5Lv(1) + ...	Yes	Y		DL	1.2	8	-.057	24	-.057	OL6	1.5														
128	1.2D + 1.5Lv(1) + ...	Yes	Y		DL	1.2	9	-.057	25	-.057	OL6	1.5														
129	1.2D + 1.5Lv(1) + ...	Yes	Y		DL	1.2	10	-.057	26	-.057	OL6	1.5														
130	1.2D + 1.5Lv(1) + ...	Yes	Y		DL	1.2	11	-.057	27	-.057	OL6	1.5														

Joint Loads and Enforced Displacements (BLC 1 : Dead)

	Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in,rad), (lb*s^2...
1	A2T	L	Z	-42.25
2	A2B	L	Z	-42.25
3	A2R	L	Z	-94.6
4	A2R	L	Z	-61.3

Joint Loads and Enforced Displacements (BLC 1 : Dead) (Continued)

	Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in,rad), (lb*s^2...
5	DC1	L	Z	-21.9

Joint Loads and Enforced Displacements (BLC 2 : Dead of Ice)

	Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in,rad), (lb*s^2...
1	A2T	L	Z	-88.728
2	A2B	L	Z	-88.728
3	A2R	L	Z	-51.693
4	A2R	L	Z	-43.345
5	DC1	L	Z	-44.433

Joint Loads and Enforced Displacements (BLC 20 : Antenna Wind (0))

	Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in,rad), (lb*s^2...
1	A2T	L	X	-247.465
2	A2T	L	Y	0
3	A2B	L	X	-247.465
4	A2B	L	Y	0
5	A2R	L	X	-30.502
6	A2R	L	Y	0
7	A2R	L	X	-22.435
8	A2R	L	Y	0
9	DC1	L	X	-81.145
10	DC1	L	Y	0

Joint Loads and Enforced Displacements (BLC 21 : Antenna Wind (30))

	Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in,rad), (lb*s^2...
1	A2T	L	X	-185.838
2	A2T	L	Y	107.294
3	A2B	L	X	-185.838
4	A2B	L	Y	107.294
5	A2R	L	X	-37.822
6	A2R	L	Y	21.836
7	A2R	L	X	-30.945
8	A2R	L	Y	17.866
9	DC1	L	X	-62.906
10	DC1	L	Y	36.319

Joint Loads and Enforced Displacements (BLC 22 : Antenna Wind (45))

	Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in,rad), (lb*s^2...
1	A2T	L	X	-128.489
2	A2T	L	Y	128.489
3	A2B	L	X	-128.489
4	A2B	L	Y	128.489
5	A2R	L	X	-40.195
6	A2R	L	Y	40.195
7	A2R	L	X	-34.669
8	A2R	L	Y	34.669
9	DC1	L	X	-45.347
10	DC1	L	Y	45.347

Joint Loads and Enforced Displacements (BLC 23 : Antenna Wind (60))

	Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in,rad), (lb*s^2...
1	A2T	L	X	-74.417
2	A2T	L	Y	128.894
3	A2B	L	X	-74.417
4	A2B	L	Y	128.894
5	A2R	L	X	-35.008
6	A2R	L	Y	60.635
7	A2R	L	X	-31.163
8	A2R	L	Y	53.977
9	DC1	L	X	-27.812
10	DC1	L	Y	48.171

Joint Loads and Enforced Displacements (BLC 24 : Antenna Wind (90))

	Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in,rad), (lb*s^2...
1	A2T	L	X	-2.63e-5
2	A2T	L	Y	115.957
3	A2B	L	X	-2.63e-5
4	A2B	L	Y	115.957
5	A2R	L	X	-1.887e-5
6	A2R	L	Y	83.187
7	A2R	L	X	-1.715e-5
8	A2R	L	Y	75.624
9	DC1	L	X	-1.069e-5
10	DC1	L	Y	47.116

Joint Loads and Enforced Displacements (BLC 25 : Antenna Wind (120))

	Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in,rad), (lb*s^2...
1	A2T	L	X	74.417
2	A2T	L	Y	128.894
3	A2B	L	X	74.417
4	A2B	L	Y	128.894
5	A2R	L	X	35.008
6	A2R	L	Y	60.635
7	A2R	L	X	31.163
8	A2R	L	Y	53.977
9	DC1	L	X	27.812
10	DC1	L	Y	48.171

Joint Loads and Enforced Displacements (BLC 26 : Antenna Wind (135))

	Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in,rad), (lb*s^2...
1	A2T	L	X	128.489
2	A2T	L	Y	128.489
3	A2B	L	X	128.489
4	A2B	L	Y	128.489
5	A2R	L	X	40.195
6	A2R	L	Y	40.195
7	A2R	L	X	34.669
8	A2R	L	Y	34.669
9	DC1	L	X	45.347
10	DC1	L	Y	45.347

Joint Loads and Enforced Displacements (BLC 27 : Antenna Wind (150))

	Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in,rad), (lb*s^2...
1	A2T	L	X	185.838
2	A2T	L	Y	107.294
3	A2B	L	X	185.838
4	A2B	L	Y	107.294
5	A2R	L	X	37.822
6	A2R	L	Y	21.837
7	A2R	L	X	30.945
8	A2R	L	Y	17.866
9	DC1	L	X	62.906
10	DC1	L	Y	36.319

Joint Loads and Enforced Displacements (BLC 28 : Antenna Wind w/ Ice (0))

	Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in,rad), (lb*s^2...
1	A2T	L	X	-44.656
2	A2T	L	Y	0
3	A2B	L	X	-44.656
4	A2B	L	Y	0
5	A2R	L	X	-6.676
6	A2R	L	Y	0
7	A2R	L	X	-5.18
8	A2R	L	Y	0
9	DC1	L	X	-16.981
10	DC1	L	Y	0

Joint Loads and Enforced Displacements (BLC 29 : Antenna Wind w/ Ice (30))

	Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in,rad), (lb*s^2...
1	A2T	L	X	-34.098
2	A2T	L	Y	19.686
3	A2B	L	X	-34.098
4	A2B	L	Y	19.686
5	A2R	L	X	-8.092
6	A2R	L	Y	4.672
7	A2R	L	X	-6.822
8	A2R	L	Y	3.939
9	DC1	L	X	-13.38
10	DC1	L	Y	7.725

Joint Loads and Enforced Displacements (BLC 30 : Antenna Wind w/ Ice (45))

	Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in,rad), (lb*s^2...
1	A2T	L	X	-24.105
2	A2T	L	Y	24.105
3	A2B	L	X	-24.105
4	A2B	L	Y	24.105
5	A2R	L	X	-8.494
6	A2R	L	Y	8.494
7	A2R	L	X	-7.477
8	A2R	L	Y	7.477
9	DC1	L	X	-9.842
10	DC1	L	Y	9.842

Joint Loads and Enforced Displacements (BLC 31 : Antenna Wind w/ Ice (60))

	Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in,rad), (lb*s^2...
1	A2T	L	X	-14.404
2	A2T	L	Y	24.948
3	A2B	L	X	-14.404
4	A2B	L	Y	24.948
5	A2R	L	X	-7.34
6	A2R	L	Y	12.713
7	A2R	L	X	-6.636
8	A2R	L	Y	11.493
9	DC1	L	X	-6.194
10	DC1	L	Y	10.728

Joint Loads and Enforced Displacements (BLC 32 : Antenna Wind w/ Ice (90))

	Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in,rad), (lb*s^2...
1	A2T	L	X	-5.335e-6
2	A2T	L	Y	23.525
3	A2B	L	X	-5.335e-6
4	A2B	L	Y	23.525
5	A2R	L	X	-3.934e-6
6	A2R	L	Y	17.348
7	A2R	L	X	-3.622e-6
8	A2R	L	Y	15.969
9	DC1	L	X	-2.462e-6
10	DC1	L	Y	10.856

Joint Loads and Enforced Displacements (BLC 33 : Antenna Wind w/ Ice (120))

	Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in,rad), (lb*s^2...
1	A2T	L	X	14.404
2	A2T	L	Y	24.948
3	A2B	L	X	14.404
4	A2B	L	Y	24.948
5	A2R	L	X	7.34
6	A2R	L	Y	12.713
7	A2R	L	X	6.636
8	A2R	L	Y	11.493
9	DC1	L	X	6.194
10	DC1	L	Y	10.728

Joint Loads and Enforced Displacements (BLC 34 : Antenna Wind w/ Ice (135))

	Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in,rad), (lb*s^2...
1	A2T	L	X	24.105
2	A2T	L	Y	24.105
3	A2B	L	X	24.105
4	A2B	L	Y	24.105
5	A2R	L	X	8.494
6	A2R	L	Y	8.494
7	A2R	L	X	7.477
8	A2R	L	Y	7.477
9	DC1	L	X	9.842
10	DC1	L	Y	9.842

Joint Loads and Enforced Displacements (BLC 35 : Antenna Wind w/ Ice (150))

	Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in,rad), (lb*s^2...
1	A2T	L	X	34.098
2	A2T	L	Y	19.686
3	A2B	L	X	34.098
4	A2B	L	Y	19.686
5	A2R	L	X	8.092
6	A2R	L	Y	4.672
7	A2R	L	X	6.822
8	A2R	L	Y	3.939
9	DC1	L	X	13.38
10	DC1	L	Y	7.725

Joint Loads and Enforced Displacements (BLC 36 : Seismic X)

	Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in,rad), (lb*s^2...
1	A2T	L	X	4.394
2	A2B	L	X	4.394
3	A2R	L	X	9.838
4	A2R	L	X	6.375
5	DC1	L	X	2.278

Joint Loads and Enforced Displacements (BLC 37 : Seismic Y)

	Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in,rad), (lb*s^2...
1	A2T	L	Y	4.394
2	A2B	L	Y	4.394
3	A2R	L	Y	9.838
4	A2R	L	Y	6.375
5	DC1	L	Y	2.278

Joint Loads and Enforced Displacements (BLC 38 : Maintenance Live Lm (1))

	Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in,rad), (lb*s^2...
1	N27	L	Z	-500

Joint Loads and Enforced Displacements (BLC 39 : Maintenance Live Lm (2))

	Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in,rad), (lb*s^2...
1	N28	L	Z	-500

Joint Loads and Enforced Displacements (BLC 40 : Maintenance Live Lm (3))

	Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in,rad), (lb*s^2...
1	N36	L	Z	-500

Member Point Loads (BLC 43 : Maintenance Live Lv (1))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[in,%]
1	M14	Z	-250	%50

Member Distributed Loads (BLC 2 : Dead of Ice)

	Member Label	Direction	Start Magnitude[lb/ft,F,p...	End Magnitude[lb/ft,...	Start Location[in,%]	End Location[in,%]
1	M1	Z	-4.466	-4.466	0	0

Member Distributed Loads (BLC 2 : Dead of Ice) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,F,p..	End Magnitude[lb/ft,...	Start Location[in,%]	End Location[in,%]
2	M2	Z	-4.466	-4.466	0	0
3	M3	Z	-2.62	-2.62	0	0
4	M4	Z	-2.62	-2.62	0	0
5	M5	Z	-2.62	-2.62	0	0
6	M6	Z	-2.62	-2.62	0	0
7	M7	Z	-4.466	-4.466	0	0
8	M8	Z	-4.466	-4.466	0	0
9	M9	Z	-2.62	-2.62	0	0
10	M10	Z	-2.62	-2.62	0	0
11	M11	Z	-2.62	-2.62	0	0
12	M12	Z	-2.62	-2.62	0	0
13	M13	Z	-5.884	-5.884	0	0
14	M14	Z	-5.884	-5.884	0	0
15	MP1	Z	-5.884	-5.884	0	0
16	MP3	Z	-5.884	-5.884	0	0
17	MP2	Z	-5.884	-5.884	0	0
18	M27A	Z	-5.161	-5.161	0	0

Member Distributed Loads (BLC 4 : Structure Wind (0))

	Member Label	Direction	Start Magnitude[lb/ft,F,p..	End Magnitude[lb/ft,...	Start Location[in,%]	End Location[in,%]
1	M1	X	-3.832	-3.832	0	0
2	M1	Y	0	0	0	0
3	M2	X	-3.832	-3.832	0	0
4	M2	Y	0	0	0	0
5	M3	X	-2.521	-2.521	0	0
6	M3	Y	0	0	0	0
7	M4	X	-2.521	-2.521	0	0
8	M4	Y	0	0	0	0
9	M5	X	-1.897	-1.897	0	0
10	M5	Y	0	0	0	0
11	M6	X	-1.897	-1.897	0	0
12	M6	Y	0	0	0	0
13	M7	X	-3.832	-3.832	0	0
14	M7	Y	0	0	0	0
15	M8	X	-3.832	-3.832	0	0
16	M8	Y	0	0	0	0
17	M9	X	-2.521	-2.521	0	0
18	M9	Y	0	0	0	0
19	M10	X	-2.521	-2.521	0	0
20	M10	Y	0	0	0	0
21	M11	X	-1.897	-1.897	0	0
22	M11	Y	0	0	0	0
23	M12	X	-1.897	-1.897	0	0
24	M12	Y	0	0	0	0
25	M13	X	-11.616	-11.616	0	0
26	M13	Y	0	0	0	0
27	M14	X	-11.616	-11.616	0	0
28	M14	Y	0	0	0	0
29	MP1	X	-11.616	-11.616	0	0
30	MP1	Y	0	0	0	0
31	MP3	X	-11.616	-11.616	0	0

Member Distributed Loads (BLC 4 : Structure Wind (0)) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,F,p..	End Magnitude[lb/ft,...	Start Location[in,%]	End Location[in,%]
32	MP3	Y	0	0	0	0
33	MP2	X	-11.616	-11.616	0	0
34	MP2	Y	0	0	0	0
35	M27A	X	-.051	-.051	0	0
36	M27A	Y	0	0	0	0

Member Distributed Loads (BLC 5 : Structure Wind (30))

	Member Label	Direction	Start Magnitude[lb/ft,F,p..	End Magnitude[lb/ft,...	Start Location[in,%]	End Location[in,%]
1	M1	X	-6.192	-6.192	0	0
2	M1	Y	3.575	3.575	0	0
3	M2	X	-6.192	-6.192	0	0
4	M2	Y	3.575	3.575	0	0
5	M3	X	-2.183	-2.183	0	0
6	M3	Y	1.26	1.26	0	0
7	M4	X	-2.183	-2.183	0	0
8	M4	Y	1.26	1.26	0	0
9	M5	X	-2.111	-2.111	0	0
10	M5	Y	1.219	1.219	0	0
11	M6	X	-2.111	-2.111	0	0
12	M6	Y	1.219	1.219	0	0
13	M7	X	-.445	-.445	0	0
14	M7	Y	.257	.257	0	0
15	M8	X	-.445	-.445	0	0
16	M8	Y	.257	.257	0	0
17	M9	X	-2.183	-2.183	0	0
18	M9	Y	1.26	1.26	0	0
19	M10	X	-2.183	-2.183	0	0
20	M10	Y	1.26	1.26	0	0
21	M11	X	-1.176	-1.176	0	0
22	M11	Y	.679	.679	0	0
23	M12	X	-1.176	-1.176	0	0
24	M12	Y	.679	.679	0	0
25	M13	X	-7.545	-7.545	0	0
26	M13	Y	4.356	4.356	0	0
27	M14	X	-7.545	-7.545	0	0
28	M14	Y	4.356	4.356	0	0
29	MP1	X	-10.06	-10.06	0	0
30	MP1	Y	5.808	5.808	0	0
31	MP3	X	-10.06	-10.06	0	0
32	MP3	Y	5.808	5.808	0	0
33	MP2	X	-10.06	-10.06	0	0
34	MP2	Y	5.808	5.808	0	0
35	M27A	X	-2.622	-2.622	0	0
36	M27A	Y	1.514	1.514	0	0

Member Distributed Loads (BLC 6 : Structure Wind (45))

	Member Label	Direction	Start Magnitude[lb/ft,F,p..	End Magnitude[lb/ft,...	Start Location[in,%]	End Location[in,%]
1	M1	X	-5.419	-5.419	0	0
2	M1	Y	5.419	5.419	0	0
3	M2	X	-5.419	-5.419	0	0
4	M2	Y	5.419	5.419	0	0

Member Distributed Loads (BLC 6 : Structure Wind (45)) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,F,p..	End Magnitude[lb/ft,...	Start Location[in,%]	End Location[in,%]
5	M3	X	-1.782	-1.782	0	0
6	M3	Y	1.782	1.782	0	0
7	M4	X	-1.782	-1.782	0	0
8	M4	Y	1.782	1.782	0	0
9	M5	X	-1.782	-1.782	0	0
10	M5	Y	1.782	1.782	0	0
11	M6	X	-1.782	-1.782	0	0
12	M6	Y	1.782	1.782	0	0
13	M7	X	-6.968e-14	-6.968e-14	0	0
14	M7	Y	6.968e-14	6.968e-14	0	0
15	M8	X	-6.968e-14	-6.968e-14	0	0
16	M8	Y	6.968e-14	6.968e-14	0	0
17	M9	X	-1.782	-1.782	0	0
18	M9	Y	1.782	1.782	0	0
19	M10	X	-1.782	-1.782	0	0
20	M10	Y	1.782	1.782	0	0
21	M11	X	-.901	-.901	0	0
22	M11	Y	.901	.901	0	0
23	M12	X	-.901	-.901	0	0
24	M12	Y	.901	.901	0	0
25	M13	X	-4.107	-4.107	0	0
26	M13	Y	4.107	4.107	0	0
27	M14	X	-4.107	-4.107	0	0
28	M14	Y	4.107	4.107	0	0
29	MP1	X	-8.214	-8.214	0	0
30	MP1	Y	8.214	8.214	0	0
31	MP3	X	-8.214	-8.214	0	0
32	MP3	Y	8.214	8.214	0	0
33	MP2	X	-8.214	-8.214	0	0
34	MP2	Y	8.214	8.214	0	0
35	M27A	X	-3.886	-3.886	0	0
36	M27A	Y	3.886	3.886	0	0

Member Distributed Loads (BLC 7 : Structure Wind (60))

	Member Label	Direction	Start Magnitude[lb/ft,F,p..	End Magnitude[lb/ft,...	Start Location[in,%]	End Location[in,%]
1	M1	X	-3.575	-3.575	0	0
2	M1	Y	6.192	6.192	0	0
3	M2	X	-3.575	-3.575	0	0
4	M2	Y	6.192	6.192	0	0
5	M3	X	-1.26	-1.26	0	0
6	M3	Y	2.183	2.183	0	0
7	M4	X	-1.26	-1.26	0	0
8	M4	Y	2.183	2.183	0	0
9	M5	X	-1.219	-1.219	0	0
10	M5	Y	2.111	2.111	0	0
11	M6	X	-1.219	-1.219	0	0
12	M6	Y	2.111	2.111	0	0
13	M7	X	-.257	-.257	0	0
14	M7	Y	.445	.445	0	0
15	M8	X	-.257	-.257	0	0
16	M8	Y	.445	.445	0	0

Member Distributed Loads (BLC 7 : Structure Wind (60)) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,F,p..	End Magnitude[lb/ft,...	Start Location[in,%]	End Location[in,%]
17	M9	X	-1.26	-1.26	0	0
18	M9	Y	2.183	2.183	0	0
19	M10	X	-1.26	-1.26	0	0
20	M10	Y	2.183	2.183	0	0
21	M11	X	-.679	-.679	0	0
22	M11	Y	1.176	1.176	0	0
23	M12	X	-.679	-.679	0	0
24	M12	Y	1.176	1.176	0	0
25	M13	X	-1.452	-1.452	0	0
26	M13	Y	2.515	2.515	0	0
27	M14	X	-1.452	-1.452	0	0
28	M14	Y	2.515	2.515	0	0
29	MP1	X	-5.808	-5.808	0	0
30	MP1	Y	10.06	10.06	0	0
31	MP3	X	-5.808	-5.808	0	0
32	MP3	Y	10.06	10.06	0	0
33	MP2	X	-5.808	-5.808	0	0
34	MP2	Y	10.06	10.06	0	0
35	M27A	X	-3.889	-3.889	0	0
36	M27A	Y	6.735	6.735	0	0

Member Distributed Loads (BLC 8 : Structure Wind (90))

	Member Label	Direction	Start Magnitude[lb/ft,F,p..	End Magnitude[lb/ft,...	Start Location[in,%]	End Location[in,%]
1	M1	X	-8.69e-7	-8.69e-7	0	0
2	M1	Y	3.832	3.832	0	0
3	M2	X	-8.69e-7	-8.69e-7	0	0
4	M2	Y	3.832	3.832	0	0
5	M3	X	-5.717e-7	-5.717e-7	0	0
6	M3	Y	2.521	2.521	0	0
7	M4	X	-5.717e-7	-5.717e-7	0	0
8	M4	Y	2.521	2.521	0	0
9	M5	X	-4.303e-7	-4.303e-7	0	0
10	M5	Y	1.897	1.897	0	0
11	M6	X	-4.303e-7	-4.303e-7	0	0
12	M6	Y	1.897	1.897	0	0
13	M7	X	-8.69e-7	-8.69e-7	0	0
14	M7	Y	3.832	3.832	0	0
15	M8	X	-8.69e-7	-8.69e-7	0	0
16	M8	Y	3.832	3.832	0	0
17	M9	X	-5.717e-7	-5.717e-7	0	0
18	M9	Y	2.521	2.521	0	0
19	M10	X	-5.717e-7	-5.717e-7	0	0
20	M10	Y	2.521	2.521	0	0
21	M11	X	-4.303e-7	-4.303e-7	0	0
22	M11	Y	1.897	1.897	0	0
23	M12	X	-4.303e-7	-4.303e-7	0	0
24	M12	Y	1.897	1.897	0	0
25	M13	X	-1.355e-19	-1.355e-19	0	0
26	M13	Y	5.975e-13	5.975e-13	0	0
27	M14	X	-1.355e-19	-1.355e-19	0	0
28	M14	Y	5.975e-13	5.975e-13	0	0

Member Distributed Loads (BLC 8 : Structure Wind (90)) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,F,p..	End Magnitude[lb/ft,...	Start Location[in,%]	End Location[in,%]
29	MP1	X	-2.634e-6	-2.634e-6	0	0
30	MP1	Y	11.616	11.616	0	0
31	MP3	X	-2.634e-6	-2.634e-6	0	0
32	MP3	Y	11.616	11.616	0	0
33	MP2	X	-2.634e-6	-2.634e-6	0	0
34	MP2	Y	11.616	11.616	0	0
35	M27A	X	-2.166e-6	-2.166e-6	0	0
36	M27A	Y	9.548	9.548	0	0

Member Distributed Loads (BLC 9 : Structure Wind (120))

	Member Label	Direction	Start Magnitude[lb/ft,F,p..	End Magnitude[lb/ft,...	Start Location[in,%]	End Location[in,%]
1	M1	X	.257	.257	0	0
2	M1	Y	.445	.445	0	0
3	M2	X	.257	.257	0	0
4	M2	Y	.445	.445	0	0
5	M3	X	1.26	1.26	0	0
6	M3	Y	2.183	2.183	0	0
7	M4	X	1.26	1.26	0	0
8	M4	Y	2.183	2.183	0	0
9	M5	X	.679	.679	0	0
10	M5	Y	1.176	1.176	0	0
11	M6	X	.679	.679	0	0
12	M6	Y	1.176	1.176	0	0
13	M7	X	3.575	3.575	0	0
14	M7	Y	6.192	6.192	0	0
15	M8	X	3.575	3.575	0	0
16	M8	Y	6.192	6.192	0	0
17	M9	X	1.26	1.26	0	0
18	M9	Y	2.183	2.183	0	0
19	M10	X	1.26	1.26	0	0
20	M10	Y	2.183	2.183	0	0
21	M11	X	1.219	1.219	0	0
22	M11	Y	2.111	2.111	0	0
23	M12	X	1.219	1.219	0	0
24	M12	Y	2.111	2.111	0	0
25	M13	X	1.452	1.452	0	0
26	M13	Y	2.515	2.515	0	0
27	M14	X	1.452	1.452	0	0
28	M14	Y	2.515	2.515	0	0
29	MP1	X	5.808	5.808	0	0
30	MP1	Y	10.06	10.06	0	0
31	MP3	X	5.808	5.808	0	0
32	MP3	Y	10.06	10.06	0	0
33	MP2	X	5.808	5.808	0	0
34	MP2	Y	10.06	10.06	0	0
35	M27A	X	3.286	3.286	0	0
36	M27A	Y	5.691	5.691	0	0

Member Distributed Loads (BLC 10 : Structure Wind (135))

	Member Label	Direction	Start Magnitude[lb/ft,F,p..	End Magnitude[lb/ft,...	Start Location[in,%]	End Location[in,%]
1	M1	X	6.271e-13	6.271e-13	0	0

Member Distributed Loads (BLC 10 : Structure Wind (135)) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,F,p..	End Magnitude[lb/ft,...	Start Location[in,%]	End Location[in,%]
2	M1	Y	6.271e-13	6.271e-13	0	0
3	M2	X	6.271e-13	6.271e-13	0	0
4	M2	Y	6.271e-13	6.271e-13	0	0
5	M3	X	1.782	1.782	0	0
6	M3	Y	1.782	1.782	0	0
7	M4	X	1.782	1.782	0	0
8	M4	Y	1.782	1.782	0	0
9	M5	X	.901	.901	0	0
10	M5	Y	.901	.901	0	0
11	M6	X	.901	.901	0	0
12	M6	Y	.901	.901	0	0
13	M7	X	5.419	5.419	0	0
14	M7	Y	5.419	5.419	0	0
15	M8	X	5.419	5.419	0	0
16	M8	Y	5.419	5.419	0	0
17	M9	X	1.782	1.782	0	0
18	M9	Y	1.782	1.782	0	0
19	M10	X	1.782	1.782	0	0
20	M10	Y	1.782	1.782	0	0
21	M11	X	1.782	1.782	0	0
22	M11	Y	1.782	1.782	0	0
23	M12	X	1.782	1.782	0	0
24	M12	Y	1.782	1.782	0	0
25	M13	X	4.107	4.107	0	0
26	M13	Y	4.107	4.107	0	0
27	M14	X	4.107	4.107	0	0
28	M14	Y	4.107	4.107	0	0
29	MP1	X	8.214	8.214	0	0
30	MP1	Y	8.214	8.214	0	0
31	MP3	X	8.214	8.214	0	0
32	MP3	Y	8.214	8.214	0	0
33	MP2	X	8.214	8.214	0	0
34	MP2	Y	8.214	8.214	0	0
35	M27A	X	2.902	2.902	0	0
36	M27A	Y	2.902	2.902	0	0

Member Distributed Loads (BLC 11 : Structure Wind (150))

	Member Label	Direction	Start Magnitude[lb/ft,F,p..	End Magnitude[lb/ft,...	Start Location[in,%]	End Location[in,%]
1	M1	X	.445	.445	0	0
2	M1	Y	.257	.257	0	0
3	M2	X	.445	.445	0	0
4	M2	Y	.257	.257	0	0
5	M3	X	2.183	2.183	0	0
6	M3	Y	1.26	1.26	0	0
7	M4	X	2.183	2.183	0	0
8	M4	Y	1.26	1.26	0	0
9	M5	X	1.176	1.176	0	0
10	M5	Y	.679	.679	0	0
11	M6	X	1.176	1.176	0	0
12	M6	Y	.679	.679	0	0
13	M7	X	6.192	6.192	0	0

Member Distributed Loads (BLC 11 : Structure Wind (150)) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,F,p..	End Magnitude[lb/ft,...	Start Location[in,%]	End Location[in,%]
14	M7	Y	3.575	3.575	0	0
15	M8	X	6.192	6.192	0	0
16	M8	Y	3.575	3.575	0	0
17	M9	X	2.183	2.183	0	0
18	M9	Y	1.26	1.26	0	0
19	M10	X	2.183	2.183	0	0
20	M10	Y	1.26	1.26	0	0
21	M11	X	2.111	2.111	0	0
22	M11	Y	1.219	1.219	0	0
23	M12	X	2.111	2.111	0	0
24	M12	Y	1.219	1.219	0	0
25	M13	X	7.545	7.545	0	0
26	M13	Y	4.356	4.356	0	0
27	M14	X	7.545	7.545	0	0
28	M14	Y	4.356	4.356	0	0
29	MP1	X	10.06	10.06	0	0
30	MP1	Y	5.808	5.808	0	0
31	MP3	X	10.06	10.06	0	0
32	MP3	Y	5.808	5.808	0	0
33	MP2	X	10.06	10.06	0	0
34	MP2	Y	5.808	5.808	0	0
35	M27A	X	1.578	1.578	0	0
36	M27A	Y	.911	.911	0	0

Member Distributed Loads (BLC 12 : Structure Wind w/ Ice (0))

	Member Label	Direction	Start Magnitude[lb/ft,F,p..	End Magnitude[lb/ft,...	Start Location[in,%]	End Location[in,%]
1	M1	X	-1.356	-1.356	0	0
2	M1	Y	0	0	0	0
3	M2	X	-1.356	-1.356	0	0
4	M2	Y	0	0	0	0
5	M3	X	-1.902	-1.902	0	0
6	M3	Y	0	0	0	0
7	M4	X	-1.902	-1.902	0	0
8	M4	Y	0	0	0	0
9	M5	X	-1.432	-1.432	0	0
10	M5	Y	0	0	0	0
11	M6	X	-1.432	-1.432	0	0
12	M6	Y	0	0	0	0
13	M7	X	-1.356	-1.356	0	0
14	M7	Y	0	0	0	0
15	M8	X	-1.356	-1.356	0	0
16	M8	Y	0	0	0	0
17	M9	X	-1.902	-1.902	0	0
18	M9	Y	0	0	0	0
19	M10	X	-1.902	-1.902	0	0
20	M10	Y	0	0	0	0
21	M11	X	-1.432	-1.432	0	0
22	M11	Y	0	0	0	0
23	M12	X	-1.432	-1.432	0	0
24	M12	Y	0	0	0	0
25	M13	X	-3.334	-3.334	0	0

Member Distributed Loads (BLC 12 : Structure Wind w/ Ice (0)) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,F,p..	End Magnitude[lb/ft,...	Start Location[in,%]	End Location[in,%]
26	M13	Y	0	0	0	0
27	M14	X	-3.334	-3.334	0	0
28	M14	Y	0	0	0	0
29	MP1	X	-3.334	-3.334	0	0
30	MP1	Y	0	0	0	0
31	MP3	X	-3.334	-3.334	0	0
32	MP3	Y	0	0	0	0
33	MP2	X	-3.334	-3.334	0	0
34	MP2	Y	0	0	0	0
35	M27A	X	-.016	-.016	0	0
36	M27A	Y	0	0	0	0

Member Distributed Loads (BLC 13 : Structure Wind w/ Ice (30))

	Member Label	Direction	Start Magnitude[lb/ft,F,p..	End Magnitude[lb/ft,...	Start Location[in,%]	End Location[in,%]
1	M1	X	-2.191	-2.191	0	0
2	M1	Y	1.265	1.265	0	0
3	M2	X	-2.191	-2.191	0	0
4	M2	Y	1.265	1.265	0	0
5	M3	X	-1.647	-1.647	0	0
6	M3	Y	.951	.951	0	0
7	M4	X	-1.647	-1.647	0	0
8	M4	Y	.951	.951	0	0
9	M5	X	-1.593	-1.593	0	0
10	M5	Y	.92	.92	0	0
11	M6	X	-1.593	-1.593	0	0
12	M6	Y	.92	.92	0	0
13	M7	X	-.157	-.157	0	0
14	M7	Y	.091	.091	0	0
15	M8	X	-.157	-.157	0	0
16	M8	Y	.091	.091	0	0
17	M9	X	-1.647	-1.647	0	0
18	M9	Y	.951	.951	0	0
19	M10	X	-1.647	-1.647	0	0
20	M10	Y	.951	.951	0	0
21	M11	X	-.887	-.887	0	0
22	M11	Y	.512	.512	0	0
23	M12	X	-.887	-.887	0	0
24	M12	Y	.512	.512	0	0
25	M13	X	-2.166	-2.166	0	0
26	M13	Y	1.25	1.25	0	0
27	M14	X	-2.166	-2.166	0	0
28	M14	Y	1.25	1.25	0	0
29	MP1	X	-2.888	-2.888	0	0
30	MP1	Y	1.667	1.667	0	0
31	MP3	X	-2.888	-2.888	0	0
32	MP3	Y	1.667	1.667	0	0
33	MP2	X	-2.888	-2.888	0	0
34	MP2	Y	1.667	1.667	0	0
35	M27A	X	-.824	-.824	0	0
36	M27A	Y	.476	.476	0	0

Member Distributed Loads (BLC 14 : Structure Wind w/ Ice (45))

	Member Label	Direction	Start Magnitude[lb/ft,F,p..	End Magnitude[lb/ft,...	Start Location[in,%]	End Location[in,%]
1	M1	X	-1.918	-1.918	0	0
2	M1	Y	1.918	1.918	0	0
3	M2	X	-1.918	-1.918	0	0
4	M2	Y	1.918	1.918	0	0
5	M3	X	-1.345	-1.345	0	0
6	M3	Y	1.345	1.345	0	0
7	M4	X	-1.345	-1.345	0	0
8	M4	Y	1.345	1.345	0	0
9	M5	X	-1.345	-1.345	0	0
10	M5	Y	1.345	1.345	0	0
11	M6	X	-1.345	-1.345	0	0
12	M6	Y	1.345	1.345	0	0
13	M7	X	-2.466e-14	-2.466e-14	0	0
14	M7	Y	2.466e-14	2.466e-14	0	0
15	M8	X	-2.466e-14	-2.466e-14	0	0
16	M8	Y	2.466e-14	2.466e-14	0	0
17	M9	X	-1.345	-1.345	0	0
18	M9	Y	1.345	1.345	0	0
19	M10	X	-1.345	-1.345	0	0
20	M10	Y	1.345	1.345	0	0
21	M11	X	-.68	-.68	0	0
22	M11	Y	.68	.68	0	0
23	M12	X	-.68	-.68	0	0
24	M12	Y	.68	.68	0	0
25	M13	X	-1.179	-1.179	0	0
26	M13	Y	1.179	1.179	0	0
27	M14	X	-1.179	-1.179	0	0
28	M14	Y	1.179	1.179	0	0
29	MP1	X	-2.358	-2.358	0	0
30	MP1	Y	2.358	2.358	0	0
31	MP3	X	-2.358	-2.358	0	0
32	MP3	Y	2.358	2.358	0	0
33	MP2	X	-2.358	-2.358	0	0
34	MP2	Y	2.358	2.358	0	0
35	M27A	X	-1.221	-1.221	0	0
36	M27A	Y	1.221	1.221	0	0

Member Distributed Loads (BLC 15 : Structure Wind w/ Ice (60))

	Member Label	Direction	Start Magnitude[lb/ft,F,p..	End Magnitude[lb/ft,...	Start Location[in,%]	End Location[in,%]
1	M1	X	-1.265	-1.265	0	0
2	M1	Y	2.191	2.191	0	0
3	M2	X	-1.265	-1.265	0	0
4	M2	Y	2.191	2.191	0	0
5	M3	X	-.951	-.951	0	0
6	M3	Y	1.647	1.647	0	0
7	M4	X	-.951	-.951	0	0
8	M4	Y	1.647	1.647	0	0
9	M5	X	-.92	-.92	0	0
10	M5	Y	1.593	1.593	0	0
11	M6	X	-.92	-.92	0	0
12	M6	Y	1.593	1.593	0	0

Member Distributed Loads (BLC 15 : Structure Wind w/ Ice (60)) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,F,p..	End Magnitude[lb/ft,...	Start Location[in,%]	End Location[in,%]
13	M7	X	-.091	-.091	0	0
14	M7	Y	.157	.157	0	0
15	M8	X	-.091	-.091	0	0
16	M8	Y	.157	.157	0	0
17	M9	X	-.951	-.951	0	0
18	M9	Y	1.647	1.647	0	0
19	M10	X	-.951	-.951	0	0
20	M10	Y	1.647	1.647	0	0
21	M11	X	-.512	-.512	0	0
22	M11	Y	.887	.887	0	0
23	M12	X	-.512	-.512	0	0
24	M12	Y	.887	.887	0	0
25	M13	X	-.417	-.417	0	0
26	M13	Y	.722	.722	0	0
27	M14	X	-.417	-.417	0	0
28	M14	Y	.722	.722	0	0
29	MP1	X	-1.667	-1.667	0	0
30	MP1	Y	2.888	2.888	0	0
31	MP3	X	-1.667	-1.667	0	0
32	MP3	Y	2.888	2.888	0	0
33	MP2	X	-1.667	-1.667	0	0
34	MP2	Y	2.888	2.888	0	0
35	M27A	X	-1.222	-1.222	0	0
36	M27A	Y	2.117	2.117	0	0

Member Distributed Loads (BLC 16 : Structure Wind w/ Ice (90))

	Member Label	Direction	Start Magnitude[lb/ft,F,p..	End Magnitude[lb/ft,...	Start Location[in,%]	End Location[in,%]
1	M1	X	-3.075e-7	-3.075e-7	0	0
2	M1	Y	1.356	1.356	0	0
3	M2	X	-3.075e-7	-3.075e-7	0	0
4	M2	Y	1.356	1.356	0	0
5	M3	X	-4.314e-7	-4.314e-7	0	0
6	M3	Y	1.902	1.902	0	0
7	M4	X	-4.314e-7	-4.314e-7	0	0
8	M4	Y	1.902	1.902	0	0
9	M5	X	-3.247e-7	-3.247e-7	0	0
10	M5	Y	1.432	1.432	0	0
11	M6	X	-3.247e-7	-3.247e-7	0	0
12	M6	Y	1.432	1.432	0	0
13	M7	X	-3.075e-7	-3.075e-7	0	0
14	M7	Y	1.356	1.356	0	0
15	M8	X	-3.075e-7	-3.075e-7	0	0
16	M8	Y	1.356	1.356	0	0
17	M9	X	-4.314e-7	-4.314e-7	0	0
18	M9	Y	1.902	1.902	0	0
19	M10	X	-4.314e-7	-4.314e-7	0	0
20	M10	Y	1.902	1.902	0	0
21	M11	X	-3.247e-7	-3.247e-7	0	0
22	M11	Y	1.432	1.432	0	0
23	M12	X	-3.247e-7	-3.247e-7	0	0
24	M12	Y	1.432	1.432	0	0

Member Distributed Loads (BLC 16 : Structure Wind w/ Ice (90)) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,F,p..	End Magnitude[lb/ft,...	Start Location[in,%]	End Location[in,%]
25	M13	X	-3.89e-20	-3.89e-20	0	0
26	M13	Y	1.715e-13	1.715e-13	0	0
27	M14	X	-3.89e-20	-3.89e-20	0	0
28	M14	Y	1.715e-13	1.715e-13	0	0
29	MP1	X	-7.562e-7	-7.562e-7	0	0
30	MP1	Y	3.334	3.334	0	0
31	MP3	X	-7.562e-7	-7.562e-7	0	0
32	MP3	Y	3.334	3.334	0	0
33	MP2	X	-7.562e-7	-7.562e-7	0	0
34	MP2	Y	3.334	3.334	0	0
35	M27A	X	-6.806e-7	-6.806e-7	0	0
36	M27A	Y	3.001	3.001	0	0

Member Distributed Loads (BLC 17 : Structure Wind w/ Ice (120))

	Member Label	Direction	Start Magnitude[lb/ft,F,p..	End Magnitude[lb/ft,...	Start Location[in,%]	End Location[in,%]
1	M1	X	.091	.091	0	0
2	M1	Y	.157	.157	0	0
3	M2	X	.091	.091	0	0
4	M2	Y	.157	.157	0	0
5	M3	X	.951	.951	0	0
6	M3	Y	1.647	1.647	0	0
7	M4	X	.951	.951	0	0
8	M4	Y	1.647	1.647	0	0
9	M5	X	.512	.512	0	0
10	M5	Y	.887	.887	0	0
11	M6	X	.512	.512	0	0
12	M6	Y	.887	.887	0	0
13	M7	X	1.265	1.265	0	0
14	M7	Y	2.191	2.191	0	0
15	M8	X	1.265	1.265	0	0
16	M8	Y	2.191	2.191	0	0
17	M9	X	.951	.951	0	0
18	M9	Y	1.647	1.647	0	0
19	M10	X	.951	.951	0	0
20	M10	Y	1.647	1.647	0	0
21	M11	X	.92	.92	0	0
22	M11	Y	1.593	1.593	0	0
23	M12	X	.92	.92	0	0
24	M12	Y	1.593	1.593	0	0
25	M13	X	.417	.417	0	0
26	M13	Y	.722	.722	0	0
27	M14	X	.417	.417	0	0
28	M14	Y	.722	.722	0	0
29	MP1	X	1.667	1.667	0	0
30	MP1	Y	2.888	2.888	0	0
31	MP3	X	1.667	1.667	0	0
32	MP3	Y	2.888	2.888	0	0
33	MP2	X	1.667	1.667	0	0
34	MP2	Y	2.888	2.888	0	0
35	M27A	X	1.033	1.033	0	0
36	M27A	Y	1.788	1.788	0	0

Member Distributed Loads (BLC 18 : Structure Wind w/ Ice (135))

	Member Label	Direction	Start Magnitude[lb/ft,F,p..	End Magnitude[lb/ft,...	Start Location[in,%]	End Location[in,%]
1	M1	X	2.219e-13	2.219e-13	0	0
2	M1	Y	2.219e-13	2.219e-13	0	0
3	M2	X	2.219e-13	2.219e-13	0	0
4	M2	Y	2.219e-13	2.219e-13	0	0
5	M3	X	1.345	1.345	0	0
6	M3	Y	1.345	1.345	0	0
7	M4	X	1.345	1.345	0	0
8	M4	Y	1.345	1.345	0	0
9	M5	X	.68	.68	0	0
10	M5	Y	.68	.68	0	0
11	M6	X	.68	.68	0	0
12	M6	Y	.68	.68	0	0
13	M7	X	1.918	1.918	0	0
14	M7	Y	1.918	1.918	0	0
15	M8	X	1.918	1.918	0	0
16	M8	Y	1.918	1.918	0	0
17	M9	X	1.345	1.345	0	0
18	M9	Y	1.345	1.345	0	0
19	M10	X	1.345	1.345	0	0
20	M10	Y	1.345	1.345	0	0
21	M11	X	1.345	1.345	0	0
22	M11	Y	1.345	1.345	0	0
23	M12	X	1.345	1.345	0	0
24	M12	Y	1.345	1.345	0	0
25	M13	X	1.179	1.179	0	0
26	M13	Y	1.179	1.179	0	0
27	M14	X	1.179	1.179	0	0
28	M14	Y	1.179	1.179	0	0
29	MP1	X	2.358	2.358	0	0
30	MP1	Y	2.358	2.358	0	0
31	MP3	X	2.358	2.358	0	0
32	MP3	Y	2.358	2.358	0	0
33	MP2	X	2.358	2.358	0	0
34	MP2	Y	2.358	2.358	0	0
35	M27A	X	.912	.912	0	0
36	M27A	Y	.912	.912	0	0

Member Distributed Loads (BLC 19 : Structure Wind w/ Ice (150))

	Member Label	Direction	Start Magnitude[lb/ft,F,p..	End Magnitude[lb/ft,...	Start Location[in,%]	End Location[in,%]
1	M1	X	.157	.157	0	0
2	M1	Y	.091	.091	0	0
3	M2	X	.157	.157	0	0
4	M2	Y	.091	.091	0	0
5	M3	X	1.647	1.647	0	0
6	M3	Y	.951	.951	0	0
7	M4	X	1.647	1.647	0	0
8	M4	Y	.951	.951	0	0
9	M5	X	.887	.887	0	0
10	M5	Y	.512	.512	0	0
11	M6	X	.887	.887	0	0
12	M6	Y	.512	.512	0	0

Member Distributed Loads (BLC 19 : Structure Wind w/ Ice (150)) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,F,p..	End Magnitude[lb/ft,...	Start Location[in,%]	End Location[in,%]
13	M7	X	2.191	2.191	0	0
14	M7	Y	1.265	1.265	0	0
15	M8	X	2.191	2.191	0	0
16	M8	Y	1.265	1.265	0	0
17	M9	X	1.647	1.647	0	0
18	M9	Y	.951	.951	0	0
19	M10	X	1.647	1.647	0	0
20	M10	Y	.951	.951	0	0
21	M11	X	1.593	1.593	0	0
22	M11	Y	.92	.92	0	0
23	M12	X	1.593	1.593	0	0
24	M12	Y	.92	.92	0	0
25	M13	X	2.166	2.166	0	0
26	M13	Y	1.25	1.25	0	0
27	M14	X	2.166	2.166	0	0
28	M14	Y	1.25	1.25	0	0
29	MP1	X	2.888	2.888	0	0
30	MP1	Y	1.667	1.667	0	0
31	MP3	X	2.888	2.888	0	0
32	MP3	Y	1.667	1.667	0	0
33	MP2	X	2.888	2.888	0	0
34	MP2	Y	1.667	1.667	0	0
35	M27A	X	.496	.496	0	0
36	M27A	Y	.286	.286	0	0

Member Distributed Loads (BLC 36 : Seismic X)

	Member Label	Direction	Start Magnitude[lb/ft,F,p..	End Magnitude[lb/ft,...	Start Location[in,%]	End Location[in,%]
1	M1	X	.237	.237	0	0
2	M2	X	.237	.237	0	0
3	M3	X	.109	.109	0	0
4	M4	X	.109	.109	0	0
5	M5	X	.109	.109	0	0
6	M6	X	.109	.109	0	0
7	M7	X	.237	.237	0	0
8	M8	X	.237	.237	0	0
9	M9	X	.109	.109	0	0
10	M10	X	.109	.109	0	0
11	M11	X	.109	.109	0	0
12	M12	X	.109	.109	0	0
13	M13	X	.368	.368	0	0
14	M14	X	.368	.368	0	0
15	MP1	X	.368	.368	0	0
16	MP3	X	.368	.368	0	0
17	MP2	X	.368	.368	0	0
18	M27A	X	.302	.302	0	0

Member Distributed Loads (BLC 37 : Seismic Y)

	Member Label	Direction	Start Magnitude[lb/ft,F,p..	End Magnitude[lb/ft,...	Start Location[in,%]	End Location[in,%]
1	M1	Y	.237	.237	0	0
2	M2	Y	.237	.237	0	0
3	M3	Y	.109	.109	0	0

Member Distributed Loads (BLC 37 : Seismic Y) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,F,p...	End Magnitude[lb/ft,...	Start Location[in,%]	End Location[in,%]
4	M4	Y	.109	.109	0	0
5	M5	Y	.109	.109	0	0
6	M6	Y	.109	.109	0	0
7	M7	Y	.237	.237	0	0
8	M8	Y	.237	.237	0	0
9	M9	Y	.109	.109	0	0
10	M10	Y	.109	.109	0	0
11	M11	Y	.109	.109	0	0
12	M12	Y	.109	.109	0	0
13	M13	Y	.368	.368	0	0
14	M14	Y	.368	.368	0	0
15	MP1	Y	.368	.368	0	0
16	MP3	Y	.368	.368	0	0
17	MP2	Y	.368	.368	0	0
18	M27A	Y	.302	.302	0	0

Member Area Loads

Joint A	Joint B	Joint C	Joint D	Direction	Distribution	Magnitude[psf]
No Data to Print ...						

Envelope Joint Reactions

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N38	max	740.434	16	89.464	15	34.863	23	0	130	0	130	0	130
2		min	-737.663	8	-92.589	7	10.454	63	0	1	0	1	0	1
3	N45	max	425.442	5	812.312	79	692.885	78	.466	97	-.111	55	.355	79
4		min	-1544.603	13	-781.505	87	212.207	53	-.483	70	-.356	112	-.346	87
5	N46	max	1404.682	19	784.892	95	657.241	101	.469	97	-.111	63	.454	95
6		min	-65.81	11	-812.189	71	210.339	61	-.487	69	-.35	104	-.47	71
7	Totals:	max	1197.167	3	896.336	15	1329.731	69						
8		min	-1197.167	11	-896.337	7	434.775	63						

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

	Member	Shape	Code...	Loc[in]	LC	Shear Check	Loc[...	Dir	LC	phi*Pn...	phi*Pnt...	phi*Mn...	phi*Mn...	Cb	Eqn
1	M10	SR5/8	.413	28.3	67	.017	28.3		82	5000.6	13805....	.144	.144	2...	H1-1b
2	M8	1.9" ODx0.12"	.412	35.259	69	.356	42.4		69	20499....	27779.4	1.314	1.314	1...	H3-6
3	M4	SR5/8	.401	0	69	.016	28.3		80	5000.6	13805....	.144	.144	2...	H1-1b
4	M2	1.9" ODx0.12"	.395	35.259	96	.344	42.4		96	20499....	27779.4	1.314	1.314	1...	H3-6
5	M7	1.9" ODx0.12"	.384	35.259	74	.350	42.4		72	20499....	27779.4	1.314	1.314	1...	H3-6
6	M1	1.9" ODx0.12"	.367	35.259	94	.338	42.4		97	20499....	27779.4	1.314	1.314	1...	H3-6
7	M14	2.88"x0.120"	.155	48	110	.079	17.6...		68	22493....	43056	3.157	3.157	1...	H1-1b
8	M13	2.88"x0.120"	.150	48	111	.073	15.1...		8	22493....	43056	3.157	3.157	1...	H1-1b
9	MP2	2.88"x0.120"	.131	34.358	3	.045	48		7	22493....	43056	3.157	3.157	4...	H1-1b
10	MP1	2.88"x0.120"	.100	62.653	75	.026	62.6...		28	22493....	43056	3.157	3.157	4...	H1-1b
11	MP3	2.88"x0.120"	.100	62.653	90	.024	62.6...		87	22493....	43056	3.157	3.157	4...	H1-1b
12	M9	SR5/8	.096	0	72	.011	0		96	5000.6	13805....	.144	.144	2...	H1-1b
13	M3	SR5/8	.094	0	94	.011	0		70	5000.6	13805....	.144	.144	2...	H1-1b
14	M11	SR5/8	.070	0	74	.037	39.8...		73	2526.9...	13805....	.144	.144	2...	H1-1b*

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

	Member	Shape	Code...	Loc[in]	LC	Shear Check	Loc[...	Dir	LC	phi*Pn...	phi*Pnt...	phi*Mn...	phi*Mn...	Cb	Eqn
15	M5	SR5/8	.070	0	93	.036	0		68	2526.9...	13805....	.144	.144	2..	H1-1b*
16	M27A	Pipe2.38X0.12	.066	48.127	15	.004	0		15	13288....	35272.8	2.115	2.115	1..	H1-1b
17	M6	SR5/8	.000	0	130	.036	0		72	2526.9...	13805....	.144	.144	2..	H1-1a
18	M12	SR5/8	.000	0	130	.036	0		67	2526.9...	13805....	.144	.144	2..	H1-1a

CONNECTION SLIP RESISTANCE

Kimley»Horn

DESIGN LOADS	
Factored Axial, P_u (lb)	1544
Factored Moment, M_u (lb-ft)	483

BOLT PROPERTIES	
Bolt Type	Thru Bolts
# of Bolts	2
Hole Type	Standard
Bolt Grade	A36
Bolt Diameter, d (in)	0.625
Leg Width, W_{leg} (in)	2.875
Bolt Torque Override, T (lb-ft)	
Bolt Pretension Stress Override (ksi)	
Bolt Ultimate Strength, F_u (ksi)	58
Specified Torque, T (lb-ft)	97.31
Clamping Force per Bolt, P_u (lb)	9341.94
Bolt Pretension Stress (ksi)	30.45
Tensile Strength per Bolt, φP_n (lb)	10009.22
Axial Slip Resistance per Bolt, φP_n (lb)	3166.92
Total Axial Slip Resistance, φP_n (lb)	6333.84
Rotational Slip Resistance per Bolt, φM_n (lb-ft)	758.74
Total Rotational Slip Resistance, φM_n (lb-ft)	1517.48
Axial Slip Usage, P_u / φPn	**24.4%**
Rotational Slip Usage, M_u / φMn	**31.8%**

Using Turn-of-Nut!

FACTORS		
Nut Factor, K	0.20	**Rule-of-thumb estimate**
$\varphi_{(BOLT\ TENSION)}$	0.75	**AISC 15th, J3.6**
$\varphi_{(SLIP\text{-}CRITICAL)}$	1.00	**AISC 15th, J3.8**
Mean Slip Coefficient, μ	0.30	**AISC 15th, J3.8**
Installed Pretension Ratio, D_u	1.13	**AISC 15th, J3.8**
Turn-of-Nut Pretension Factor	0.70	**AISC 15th, Table J3.1[a]**

EXHIBIT 9

EME Report

FOX HILL TELECOM

Radio Frequency Emissions Analysis Report

Site ID: BOBOS01206A

71 Moxley Road
Uncasville, CT 06382

December 4, 2023

Fox Hill Telecom Project Number: 231065

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**14.47 %**

FOX HILL TELECOM

December 4, 2023

Dish Wireless
5701 South Santa Fe Drive
Littleton, CO 80120

Emissions Analysis for Site: **BOBOS01206A**

Fox Hill Telecom, Inc ("Fox Hill") was directed to analyze the proposed radio installation for Dish Wireless, LLC (Dish) facility located at **71 Moxley Road, Uncasville, CT**, for the purpose of determining whether the emissions from the Proposed Dish radio and 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 (µW/cm2). 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.

Population exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limit for the 600 MHz band is approximately 400 $\mu W/cm^2$. The general population exposure limit for the 1900 MHz (PCS) and 2100 MHz (AWS / AWS-4) 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 the percentage 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 performed for the proposed upgrades to the Dish Wireless antenna facility located at **71 Moxley Road, Uncasville, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65 for far field modeling calculations.

In OET-65, plane wave power densities in the Far Field of an antenna are calculated by considering antenna gain and reflective waves that would contribute to exposure.

Since the radiation pattern of an antenna has developed in the **Far Field** region the power gain in specific directions needs to be considered in exposure predictions to yield an Effective Radiated Power (ERP) in each specific direction from the antenna. Also, since the vertical radiation pattern of the antenna is considered, the exposure calculations would most likely be reduced significantly at ground level, resulting in a more realistic estimate of the actual exposure levels. To determine a worst-case scenario at each point along the calculation radials, each point was calculated using the antenna gain value at each angle of incident and compared against the result using an isotropic radiator at the antenna height with the greater of the two used to yield the more pessimistic far field value for each point along the calculation radial.

Additionally, to model a truly "worst case" prediction of exposure levels at or near a surface, such as at ground-level or on a rooftop, reflection off the surface of antenna radiation power can be assumed, resulting in a potential 1.6 times increase in power density in calculating far field power density values.

With these factors Considered, the worst case **Far Field prediction model** utilized in this analysis is determined by the following equation:

Equation 9 per FCC OET65 for Far Field Modeling

$$S = \frac{33.4\ ERP}{R^2}$$

S = Power Density (in μw/cm^2)
ERP = Effective Radiated Power from antenna (watts)
R = Distance from the antenna (meters)

Predicted far field power density values for all carriers identified in this report were calculated 6 feet above the ground level and are displayed as a percentage of the applicable FCC standards. All emissions values for other carriers were calculated using the same Far Field model outlined above, using industry standard radio configurations and frequency band selection based upon available licenses in this geographic area for emissions contribution estimates.

For each Dish sector the following channel counts, frequency bands and power levels were utilized as shown in *Table 1*:

Technology	Frequency Band	Channel Count	Transmit Power per Channel (W)
5G	n71 (600 MHz)	4	61.5
5G	n70 (AWS-4 / 1995-2020)	4	40
5G	n66 (AWS-4 / 2180-2200)	4	40

Table 1: Channel Data Table

The following **Dish** antennas listed in *Table 2* were used in the modeling for transmission in the 600 MHz (n71) frequency band and the 2100 MHz (AWS 4) frequency bands at 1995-2020 MHz (n70) and 2180-2200 MHz (n66). This is based on feedback from Dish regarding anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below.

Sector	Antenna Number	Antenna Make / Model	Antenna Centerline (ft)
A	1	Commscope FFVV-65B-R2	180
B	1	Commscope FFVV-65B-R2	180
C	1	Commscope FFVV-65B-R2	180

Table 2: Antenna Data

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

RESULTS

Per the calculations completed for the proposed **Dish** configurations *Table 3* shows resulting emissions power levels and percentages of the FCC's allowable general population limit.

Antenna ID	Antenna Make / Model	Frequency Bands	Antenna Gain (dBd)	Channel Count	Total TX Power (W)	ERP (W)	MPE %
Antenna A1	Commscope FFVV-65B-R2	n71 (600 MHz) / n70 (AWS-4 / 1995-2020) / n66 (AWS-4 / 2180-2200)	12.15 / 15.95 / 16.25	12	566	17,079.80	1.12
						Sector A Composite MPE%	**1.12**
Antenna B1	Commscope FFVV-65B-R2	n71 (600 MHz) / n70 (AWS-4 / 1995-2020) / n66 (AWS-4 / 2180-2200)	12.15 / 15.95 / 16.25	12	566	17,079.80	1.12
						Sector B Composite MPE%	**1.12**
Antenna C1	Commscope FFVV-65B-R2	n71 (600 MHz) / n70 (AWS-4 / 1995-2020) / n66 (AWS-4 / 2180-2200)	12.15 / 15.95 / 16.25	12	566	17,079.80	1.12
						Sector C Composite MPE%	**1.12**

Table 3: Dish Emissions Levels

The Following table (*Table 4*) shows all additional carriers on site and their emissions contribution estimates, along with the newly calculated **Dish** far field emissions contributions per this report. FCC OET 65 specifies that for carriers utilizing directional antennas, the highest recorded sector value be used for composite site emissions values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. For this site, all three sectors have the same configuration yielding the same results for all three sectors. *Table 5* below shows a summary for each **Dish** Sector as well as the composite emissions value for the site.

Site Composite MPE%	
Carrier	**MPE%**
Dish – Max Per Sector Value	**1.12 %**
Sprint	0.71 %
T-Mobile	3.08 %
Verizon Wireless	3.75 %
AT&T	5.81 %
Site Total MPE %:	**14.47 %**

Table 4: All Carrier MPE Contributions

Dish Sector A Total:	1.12 %
Dish Sector B Total:	1.12 %
Dish Sector C Total:	1.12 %
Site Total:	14.47 %

Table 5: Site MPE Summary

Table 6 below details a breakdown by frequency band and technology for the MPE power values for the maximum calculated **Dish** sector(s). For this site, all three sectors have the same configuration yielding the same results for all three sectors.

Dish _ Frequency Band / Technology Max Power Values (Per Sector)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
Dish n71 (600 MHz) 5G	4	1,008.96	180	2.96	n71 (600 MHz)	400	0.74%
Dish n70 (AWS-4 / 1995-2020) 5G	4	1,574.20	180	1.90	n70 (AWS-4 / 1995-2020)	1000	0.19%
Dish n66 (AWS-4 / 2180-2200) 5G	4	1,686.79	180	1.90	n66 (AWS-4 / 2180-2200)	1000	0.19%
						Total:	**1.12 %**

Table 6: Dish Maximum Sector MPE Power Values

Summary

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

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

Dish Sector	Power Density Value (%)
Sector A:	1.12 %
Sector B:	1.12 %
Sector C:	1.12 %
Dish Maximum Total (per sector):	1.12 %
Site Total:	14.47 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite emissions value for this site, assuming all carriers present, is **14.47 %** of the allowable FCC established general population limit sampled at the ground level. This is based upon the far field calculations performed for all carriers identified in this report.

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.

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