NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

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

October 8, 2021

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

RE: Tower Share Application
50 Pine Lane, Windsor CT 06095
Latitude: 41.819842
Longitude: -72.66718889
Site# 841793_Crown_Dish

Dear Ms. Bachman:

This letter and attachments are submitted on behalf of Dish Wireless LLC. Dish Wireless LLC plans to install antennas and related equipment to the tower site located at 50 Pine Lane in Windsor, Connecticut.

Dish Wireless LLC proposes to install three (3) 600/1900 5G MHz antenna and six (6) RRUs, at the 98-foot level of the existing 148-foot monopole tower, one (1) Fiber cables will also be installed. Dish Wireless LLC equipment cabinets will be placed within 7x5 lease area. Included are plans by B+T Group, dated July 27, 2021 Exhibit C. Also included is a structural analysis prepared by Crown Castle, dated June 14, 2021, confirming that the existing tower is structurally capable of supporting the proposed equipment. Attached as Exhibit D. The facility was approved by the Town of Windsor Planning and Zoning. Please see attached Exhibit A.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies 16-50aa, of Dish Wireless LLC intent to share a telecommunications facility pursuant to R.C.S.A. 16-50j-88. In accordance with R.C.S.A., a copy of this letter is being sent to The Honorable Donald S. Trinks, Mayor and Eric Barz, Planning & Zoning Official for the Town of Windsor, as well as the tower owner (Crown Castle) and property owner (Town of Windsor)

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

1. The proposed modification will not result in an increase in the height of the existing structure. The top of the tower is 148-feet; Dish Wireless LLC proposed antennas will be located at a center line height of 98-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.

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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 15.54% as evidenced by Exhibit F.

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

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

C. Environmental Feasibility. The proposed shared use of this facility would have a minimal environmental impact. The installation of Dish Wireless LLC equipment at the 98-foot level of the existing 148-foot tower would have an insignificant visual impact on the area around the tower. Dish Wireless LLC ground equipment would be installed within the existing facility compound. Dish Wireless LLC shared use would therefore not cause any significant alteration in the physical or environmental characteristics of the existing site. Additionally, as evidenced by Exhibit F, the proposed antennas would not increase radio frequency emissions to a level at or above the Federal Communications Commission safety standard.

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

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

Sincerely,

Denise Sabo

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

NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

Attachments cc:

The Honorable Donald S. Trinks, Mayor (Property Owner)
Windsor Town Hall
275 Broad Street, Windsor CT 06095

Eric Barz – Planning & Zoning
Windsor Town Hall
275 Broad Street, Windsor CT 06095

Crown Castle, Tower Owner

Exhibit A

Original Facility Approval

SUA547

TOWN OF WINDSOR
First in Connecticut. First for its citizens.

RECEIVED
SEP 08 2000
TOWN OF WINDSOR
PLANNING DEPT.

A.M.
TP+ZC
10.10.00

Application for a Special Use

Town Planning and Zoning Commission

Your Name Town of Windsor
AT&T Wireless PCS, LLC

Your Phone # 860-285-1877
203-831-4011

Your Address 275 Broad Street, Windsor, Connecticut 06095
149 Water Street, Norwalk, Connecticut 06854

Are You the..... (X) Owner ( ) Optionee ( ) Buyer ( ) Agent (X) Other

If Other please explain Lessee

Owner's Name (If other than applicant) Town of Windsor

Owner's Phone # 860-285-1877

Owner's Address 275 Broad Street, Windsor, Connecticut 06095

Address of Subject Parcel(s) 50 Pine Lane

Size of Subject Parcel(s) 258,311 Sq. Ft.

Zone of Subject Parcel(s) NZ

Please describe the Special Use

Wilson Firehouse Municipal Tower Facility/Wireless Facility Co-location

Applicable Section(s) of Zoning Regulations 12.2 & 2.2.19E(1)

Please describe how the Special Use will benefit the Town of Windsor (feel free to use the other side).

Additional material to be supplied.

Your Signature Christopher B. Fisher
Attorney for the Applicant

Date September 5, 2000

Owner's Signature Patrick J. McMahon

Date 9/6/00

Office Use Only **********

Fee Paid _____ **Application#** _____ **Application Received By** _____

Date of Action _____ **Approved** _____ **Disapproved** _____

Approved 5/98

I, Anita M. Mips, Chairperson of the Windsor Town Planning and Zoning Commission, hereby certify that on October 10, 2000 the Planning and Zoning Commission of the Town of Windsor granted approval of Special Use Application #547 for a Wireless Telecommunications Tower with a monopole height of 150 feet plus 13-foot Town public service whip antennas for a total height of 163 feet, under Zoning Regulations Sections 12.2 & 2.2.19E(1).

This approval also includes the following waivers in accordance with Zoning Regulations Section 12.1:

1) **a waiver of the fall zone distance requirement for 73 feet in relation to the distance of the tower from the easterly property line, 163 feet being required and 90 feet being proposed;**

2) **a waiver of the fall zone distance requirement for 236 feet in relation to the distance of the tower from I-91 to the east, 326 feet being required and 90 feet being proposed;**

3) **a waiver of the fall zone distance requirement for 245 feet in relation to the distance of the tower from the residential zone to the north, 576 feet being required and 331 feet being proposed; and**

4) **a waiver of the fall zone requirement for 52 feet in relation to the distance of the tower from Putnam Memorial Highway to the south, 326 feet being required and 274 feet being proposed.**

Said Special Use was granted for the property located at: **50 Pine Lane**

The owner of record of said parcel is: **Town of Windsor**

Dated at Windsor, Connecticut, this 30th **day of November, 2000**

_____ **Chairperson**

Public Act #75-317

Received for Record this _____ day of _____, 2000

_____ **Attest: Town Clerk**

LH 5-14-04

TOWN OF WINDSOR

BUILDING PERMIT APPLICATION

Town Hall • Windsor, CT 06095-2994

PERMIT #: B-041172

ADDRESS OF WORK LOCATION: 50 PINE LANE WINDSOR, CT

TYPE OF PERMIT (Check One)

☒ **BUILDING** (List size or sq. ft.)
Foundation 12' x 20'
Addition NA
Acc. Structure 12' x 20'
Deck NA
Roofing/Siding (# Squares) NA
Pool: Aboveground: NA Inground: NA
Other NA

☐ **ELECTRICAL**
☐ S. Change
☐ New Residential
☐ New Commercial
☐ Addition
☐ Pool Wiring
☐ Temporary Service
☐ Low Voltage
☐ Other

☐ **PLUMBING**
☐ New Residential
☐ New Commercial
☐ Addition
☐ Fire Suppression
☐ Water Heater
☐ Other

☐ **HVAC**
☐ New Residential
☐ New Commercial
☐ Addition
☐ Central Air
☐ Replace/Repair
☐ Other

New Residential (Total Gross Square Feet) NA
Residential Renovation NA
New Commercial (Total Gross Square Feet) 240 SQ FT
Commercial Renovation (Square Feet of Renovated Space) NA
Signs (size & type) NA

Copy to FMO

DESCRIPTION OF WORK (must fill out for all permits): Addition of Cingular Wireless antennas and pre-fab concrete equipment shelter to existing ATT Wireless monopole and Compound.

Retail Market Value $ 40,500 Fee: 550 Work Start Date: 5-24-04

Owner: ATT WIRELESS (land), Town of Windsor (land)
Address: (ATT) 15 East Midland Ave 5th Floor PARAMUS, NJ Zip 07652
Phone # (Days): 201-576-2416

Applicant: CINGULAR WIRELESS (TIM BURKS)
Address: 500 Enterprise Drive Suite 3A ROCKY HILL, CT Zip 06067
Phone # (Days): 860 513 7218
License #: MCO.900137 Type: MA Jour CONTRACTOR Exp.: 6-30-04
CFM CONSTRUCTION ✓OK

I understand that applying for this permit does not guarantee that it will be issued, and no work shall be done prior to the issuance of said permit or the approval of the **Building Official**. I agree to be in compliance with all applicable codes, standards, statutes, and ordinances which may pertain.

Applicant's Signature: Timothy M. Burks Print Name: TIMOTHY M. BURKS Date 5/12/04

STAFF MEMBER Check Pertinent Items and initial:

Zoning 3.90 on Addition OK - TP+Z Taxes Exempt/OK Worker's Comp. OK - CFM Wetlands N/A 6/8/04

Other: _____ Septic _____ Sewer _____ Letter of Authorization ✓ T.O.W.

Use Group: S-1 Construction Type: 2-C

Fee: ☒ Check ☐ Cash Transaction/Receipt #: 1172 Blanket Not Electrical

Special Conditions or Comments: All Work Per '99 CT State Bldg Code Reqmts Incl. Section 114 Threshold Structures & Section 1705 Spec. Insp. All Steel/Mech Work Req's Seper. Permits. Call For Inspections Noted - Allow 48 HR Notice. Completion Letters + Documentation Req'd. for C/O PRIOR TO USE. This Is Cingular Colocate.

Reviewed & Issued By: Stephen Dupre CBO Date: June 17, 2004

Exhibit B

Property Card

Property Location 50 PINE LN | Map ID 69/ 442/ 102/T / | Bldg Name | State Use 4340
Vision ID 100888 | Account # 00735.01 | Bldg # 1 | Sec # 1 of 1 | Card # 1 of 1 | Print Date 4/15/2020 11:21:24 A

CURRENT OWNER

WINDSOR TOWN OF
C/O AT&T MOBILITY
575 MOROSGO DR SUITE 13-F
WEST TOWER ATTN: NREA TAX DEP
ATLANTA GA 30324

TOPO	UTILITIES	STRT / ROAD	LOCATION

SUPPLEMENTAL DATA

Alt Prcl ID	735.01	CTRACT	4731.00
INC:		CBLOCK	
GH		DIST	
		HEART	
2007	254520	GL YEAR	
GIS ID	735.01	Assoc Pid#	

CURRENT ASSESSMENT

Description	Code	Appraised	Assessed
IND LAND	3-1	180,400	126,280
IND BLDG	3-2	43,230	30,261
IND IMPR	3-3	224,070	156,849
Total		447,700	313,390

6164

WINDSOR, CT

VISION

RECORD OF OWNERSHIP

RECORD OF OWNERSHIP	BK-VOL/PAGE		SALE DATE	Q/U	V/I	SALE PRICE	VC
WINDSOR TOWN OF	0941	0016	05-17-1993	U	V	0	

PREVIOUS ASSESSMENTS (HISTORY)

Year	Code	Assessed	Year	Code	Assessed V	Year	Code	Assessed
2019	3-1	126,280	2018	3-1	114,800	2017	3-1	114,800
	3-2	30,261		3-2	27,510		3-2	27,020
	3-3	156,849		3-3	142,590		3-3	142,590
	Total	313390		Total	284900		Total	284410

EXEMPTIONS

Year	Code	Description	Amount
		Total	0.00

OTHER ASSESSMENTS

Code	Description	Number	Amount	Comm Int

This signature acknowledges a visit by a Data Collector or Assessor

ASSESSING NEIGHBORHOOD

Nbhd	Sub	Nbhd Name	B	Tracing	Batch
0001	A				

NOTES

00735.01 LAND VALUE ADJUSTED
69-442-102-T PER INC APPR 10/2003
AT&T CELLULAR TOWER ADDED CINGULAR EQP BLDG
MARKET VALUE PER 10/01/2004
INCOME CAPITALIZATION
10/01/2001 SK

APPRAISED VALUE SUMMARY

Appraised Bldg. Value (Card)	43,230
Appraised Xf (B) Value (Bldg)	0
Appraised Ob (B) Value (Bldg)	224,070
Appraised Land Value (Bldg)	180,400
Special Land Value	0
Total Appraised Parcel Value	447,700
Valuation Method	I
Total Appraised Parcel Value	447,700

BUILDING PERMIT RECORD

Permit Id	Issue Date	Type	Description	Amount	Insp Date	% Comp	Date Comp	Comments
B-181148	05-16-2018	RE	Renovation	25,000	10-01-2018	100	10-01-2018	UPGRADE EQUIMENT FOR A
B-170180	01-24-2017	CM	Commercial	8,000	08-18-2017	100	10-01-2017	REMOVE & REPLACE 3 RRU'
B-161869	07-19-2016	RE	Renovation	35,000	08-23-2016	100	10-01-2016	EYE TOWER TO INTALL 5 NE
E-160383	02-23-2016	EL	Electric	20,000	08-23-2016	100	10-01-2016	ADD 3 ANTENNA & 3 RRU'S
B-041172	07-09-2004	CM	Commercial					CINGULAR CELL EQUIP BLD
B-010198	10-01-2001	CM	Commercial					CELL EQP BLDG

VISIT / CHANGE HISTORY

Date	Id	Type	Is	Cd	Purpost/Result
12-04-2019	LL			64	I & E PENALTY
10-01-2001	SK			00	Measur+Listed

LAND LINE VALUATION SECTION

B	Use Code	Description	Zone	Land Type	Land Units		Unit Price	Size Adj	Site Index	Cond.	Nbhd.	Nbhd. Adj	Notes	Location Adjustment		Adj Unit P	Land Value
1	4340	Cell Tower	NZ		0.050	AC	82,000	40.0000	0	1.00		1.000	CELL TOWER SITE		1.0000		164,000
				Total Card Land Units	0.050	AC	Parcel Total Land Area			0.0500					Total Land Value		164,000

Property Location 50 PINE LN | Map ID 69/ 442/ 102/T / | Bldg Name | State Use 4340
Vision ID 100888 | Account # 00735.01 | Bldg # 1 | Sec # 1 of 1 | Card # 1 of 1 | Print Date 4/15/2020 11:21:26 A

CONSTRUCTION DETAIL

Element	Cd	Description
Style:	94	Outbuildings
Model	00	Vacant
Grade:		
Stories:		
Occupancy		
Exterior Wall 1		
Exterior Wall 2		
Roof Structure:		
Roof Cover		
Interior Wall 1		
Interior Wall 2		
Interior Flr 1		
Interior Flr 2		
Heat Fuel		
Heat Type:		
AC Type:		
Total Bedrooms		
Total Bthrms:		
Total Half Baths		
Total Xtra Fixtrs		
Total Rooms:		
Bath Style:		
Kitchen Style:		

CONSTRUCTION DETAIL (CONTINUED)

Element	Cd	Description

CONDO DATA

Parcel Id		C		Owne	
		B		S	

Adjust Type	Code	Description	Factor%
Condo Flr			
Condo Unit			

COST / MARKET VALUATION

Building Value New	0
Year Built	0
Effective Year Built	
Depreciation Code	
Remodel Rating	
Year Remodeled	
Depreciation %	
Functional Obsol	0
External Obsol	0
Trend Factor	1
Condition	
Condition %	
Percent Good	
Cns Sect Rcnld	
Dep % Ovr	
Dep Ovr Comment	
Misc Imp Ovr	
Misc Imp Ovr Comment	
Cost to Cure Ovr	
Cost to Cure Ovr Comment	

OB - OUTBUILDING & YARD ITEMS(L) / XF - BUILDING EXTRA FEATURES(B)

Code	Descript	Sub	Sub Ty	L/B	Units	Unit Pric	Yr Blt	Cond. C	% Gd	Grade	Grade A	Appr. V
CB3	PerCast			L	360	350.00	2001		95		0.00	119,70
CB3	PerCast			L	240	350.00	2004		100		0.00	84,000

BUILDING SUB-AREA SUMMARY SECTION

Code	Description	Living Area	Floor Area	Eff Area	Unit Cost	Undeprec Value
	Ttl Gross Liv / Lease Area	0	0			0

No Sketch

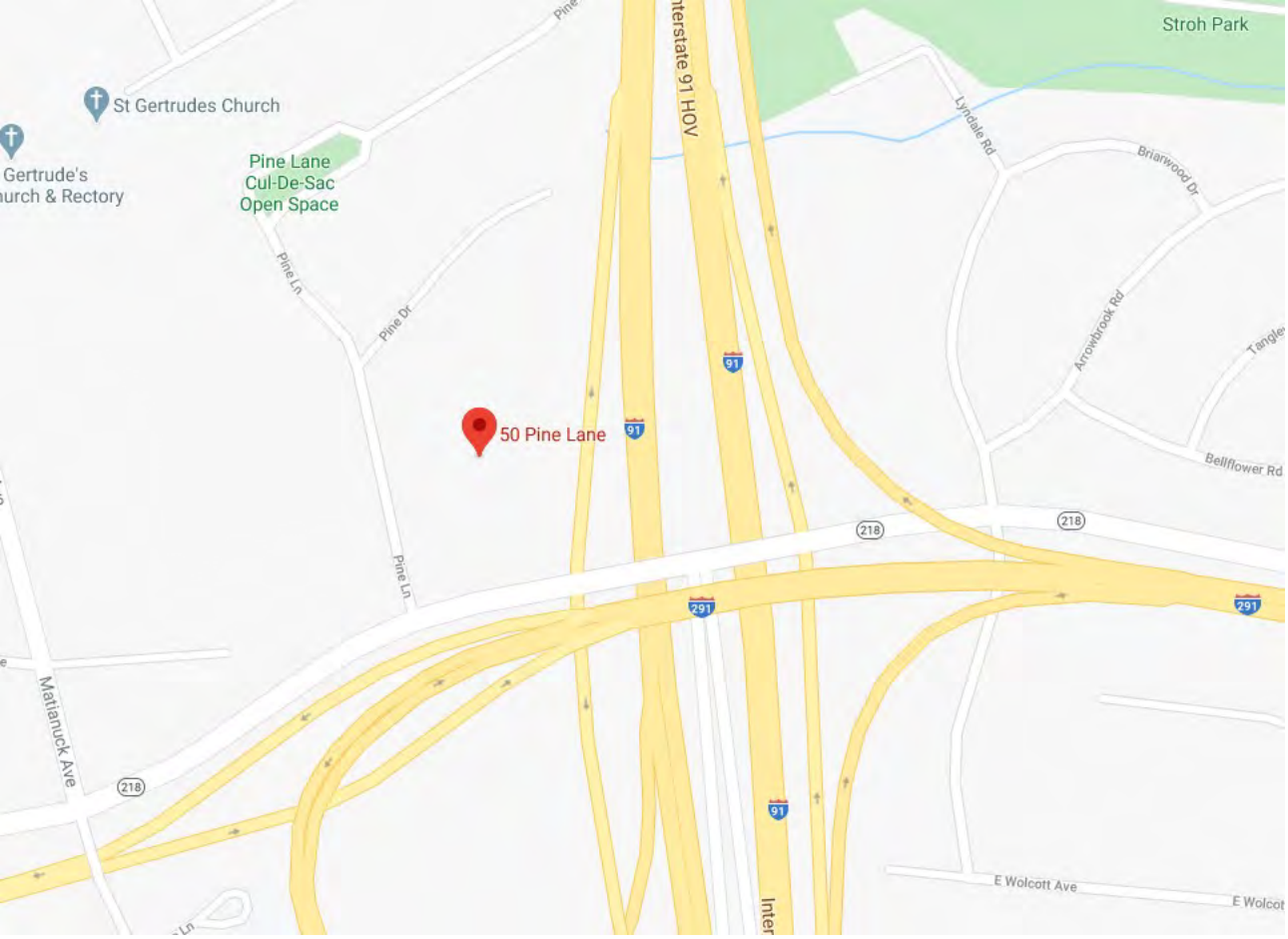

Stroh Park
St Gertrudes Church
Gertrude's
urch & Rectory
Pine Lane
Cul-De-Sac
Open Space
Interstate 91 HOV
Lyndale Rd
Briarwood Dr
Arrowbrook Rd
Bellflower Rd
Pine Ln
Pine Dr
50 Pine Lane
91
218
291
Matianuck Ave
E Wolcott Ave

Exhibit C

Construction Drawings

DISH Wireless L.L.C. SITE ID:

BOBDL00062A

DISH Wireless L.L.C. SITE ADDRESS:

50 PINE LANE
WINDSOR, CT 06095

SITE INFORMATION

PROPERTY OWNER:	WINDSOR TOWN OF
ADDRESS:	275 BROAD ST WINDSOR, CT 06095
TOWER TYPE:	MONOPOLE
TOWER CO SITE ID:	841793
TOWER APP NUMBER:	556630
COUNTY:	HARTFORD
LATITUDE (NAD 83):	41° 49' 11.43" N 41.819842 N
LONGITUDE (NAD 83):	72° 40' 1.88" W 72.66718889 W
ZONING JURISDICTION:	CONNECTICUT SITING COUNCIL
ZONING DISTRICT:	NZ – MUNICIPAL MDL-94
PARCEL NUMBER:	735
OCCUPANCY GROUP:	U
CONSTRUCTION TYPE:	II-B
POWER COMPANY:	EVERSOURCE
TELEPHONE COMPANY:	AT&T

PROJECT DIRECTORY

APPLICANT:	DISH Wireless L.L.C. 5701 SOUTH SANTA FE DRIVE LITTLETON, CO 80120
TOWER OWNER:	CROWN CASTLE 2000 CORPORATE DRIVE CANONSBURG, PA 15317 (877) 486-9377
SITE DESIGNER:	B+T GROUP 1717 S. BOULDER AVE, SUITE 300 TULSA, OK 74119 (918) 587-4630
SITE ACQUISITION:	NICHOLAS CURRY NICHOLAS.CURRY@DISH.COM
CONST. MANAGER:	JAVIER SOTO JAVIER.SOTO@DISH.COM
RF ENGINEER:	BOSSENER CHARLES BOSSENER.CHARLES@DISH.COM

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 T-ARM MOUNT
- INSTALL PROPOSED JUMPERS
- INSTALL (6) PROPOSED RRUs (2 PER SECTOR)
- INSTALL (1) PROPOSED OVER VOLTAGE PROTECTION DEVICE (OVP)
- INSTALL (1) PROPOSED HYBRID CABLE

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

CONNECTICUT CODE COMPLIANCE

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

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

SITE PHOTO

DIRECTIONS

DIRECTIONS FROM BRADLEY INTERNATIONAL AIRPORT:

CONTINUE TO BRADLEY INTERNATIONAL AIRPORT CON 4 MIN (0.9 MI) HEAD NORTH TOWARD BRADLEY INTERNATIONAL AIRPORT 351 FT SLIGHT LEFT ONTO BRADLEY INTERNATIONAL AIRPORT 0.4 MI SLIGHT LEFT 0.4 MI TAKE CT-20 E AND I-91 S TO EXIT 35B IN WINDSOR 9 MIN (9.8 MI) CONTINUE ONTO BRADLEY INTERNATIONAL AIRPORT CON 1.2 MI CONTINUE ONTO CT-20 E/BRADLEY INTERNATIONAL AIRPORT CON 2.6 MI USE THE RIGHT 2 LANES TO MERGE WITH I-91 S TOWARD HARTFORD 5.8 MI TAKE EXIT 35B FOR CT-218 TOWARD WINDSOR/BLOOMFIELD

SHEET INDEX

SHEET NO.	SHEET TITLE
T-1	TITLE SHEET
A-1	OVERALL AND ENLARGED SITE PLAN
A-2	ELEVATION, ANTENNA LAYOUT AND SCHEDULE
A-3	EQUIPMENT PLATFORM AND H-FRAME DETAILS
A-4	EQUIPMENT DETAILS
A-5	EQUIPMENT DETAILS
A-6	EQUIPMENT DETAILS
E-1	ELECTRICAL/FIBER ROUTE PLAN AND NOTES
E-2	ELECTRICAL DETAILS
E-3	ELECTRICAL ONE-LINE, FAULT CALCS & PANEL SCHEDULE
G-1	GROUNDING PLANS AND NOTES
G-2	GROUNDING DETAILS
G-3	GROUNDING DETAILS
RF-1	RF CABLE COLOR CODE
GN-1	LEGEND AND ABBREVIATIONS
GN-2	GENERAL NOTES
GN-3	GENERAL NOTES
GN-4	GENERAL NOTES

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

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

NO SCALE

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

2000 CORPORATE DRIVE
CANONSBURG, PA 15317

B+T GRP
1717 S. BOULDER
SUITE 300
TULSA, OK 74119
PH: (918) 587-4630
www.btgrp.com

7/27/21

B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/22

DRAWN BY:	CHECKED BY:	APPROVED BY:
JJR	JJR	MDW

RFDS REV #: 1.0

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	6/23/21	ISSUED FOR REVIEW
0	7/27/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

141992.007.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00062A
50 PINE LANE
WINDSOR, CT 06095

SHEET TITLE

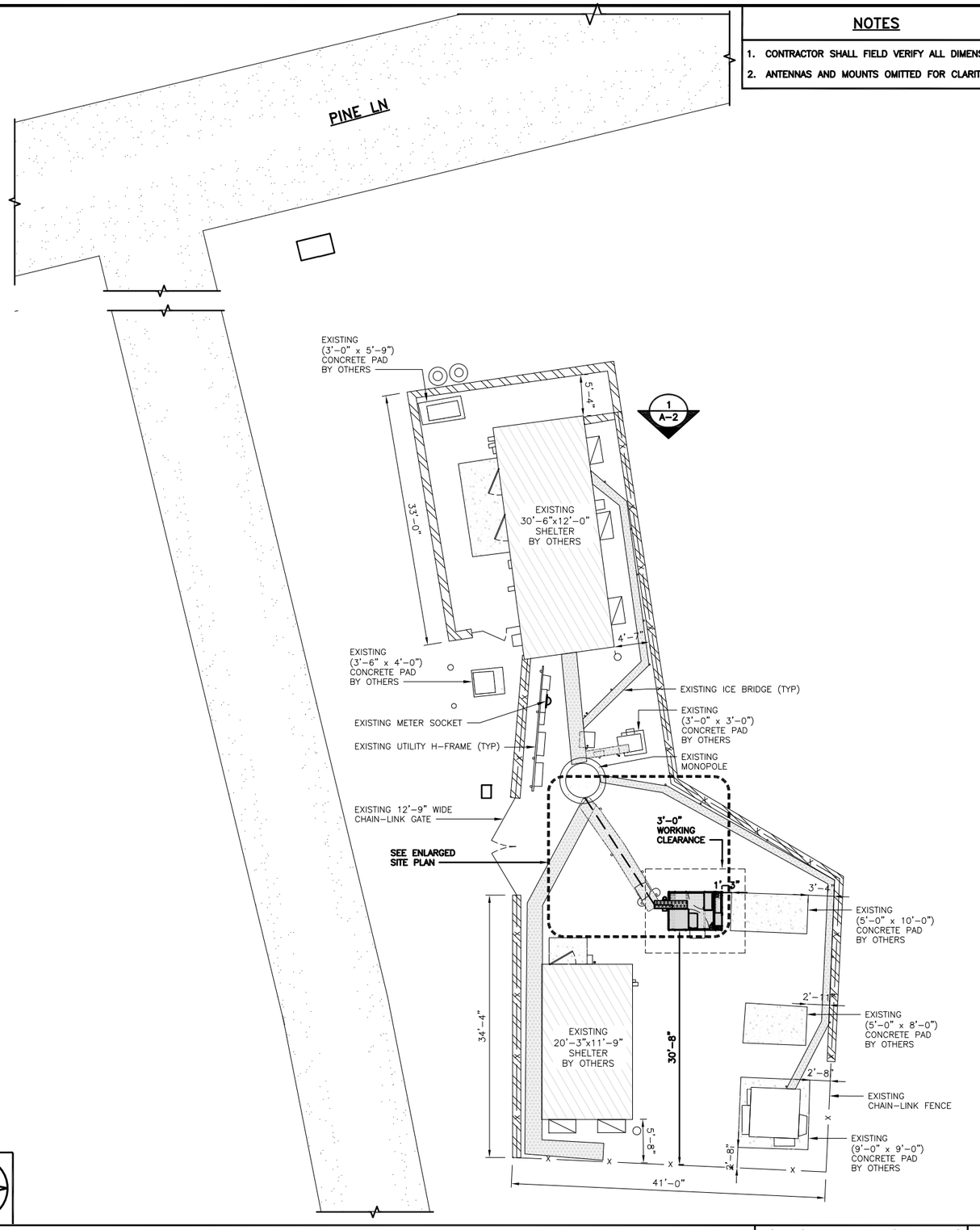
TITLE SHEET

SHEET NUMBER

T-1

NOTES

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



N

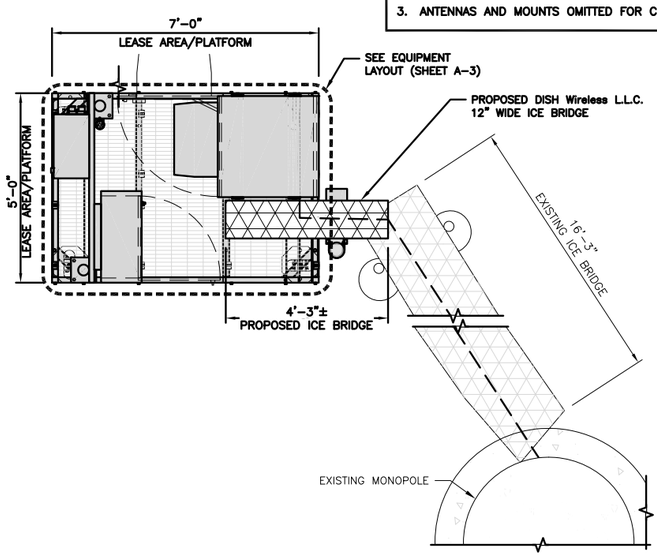
OVERALL SITE PLAN

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

1

NOTES

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

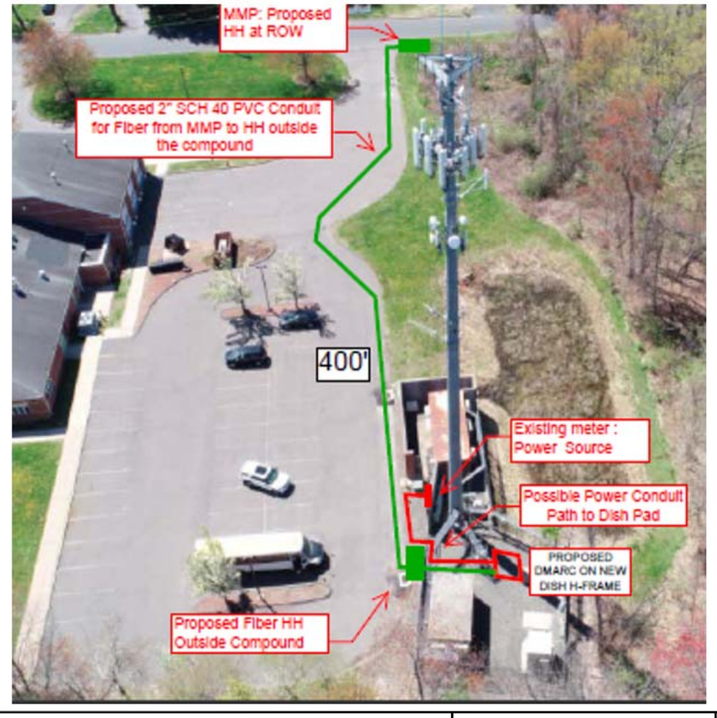


N

ENLARGED SITE PLAN

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

2



OVERALL UTILITY PLAN

NO SCALE

3

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

CROWN CASTLE

2000 CORPORATE DRIVE
CANONSBURG, PA 15317

B+T GRP

1717 S. BOULDER
SUITE 300
TULSA, OK 74119
PH: (918) 587-4630
www.btgrp.com

STATE OF CONNECTICUT — JOHN J. REAVEY — No. 23924 — LICENSED PROFESSIONAL ENGINEER

7/27/21

B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/22

DRAWN BY:	CHECKED BY:	APPROVED BY:
JJR	JJR	MDW

RFDS REV #: 1.0

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	6/23/21	ISSUED FOR REVIEW
0	7/27/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

141992.007.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00062A
50 PINE LANE
WINDSOR, CT 06095

SHEET TITLE

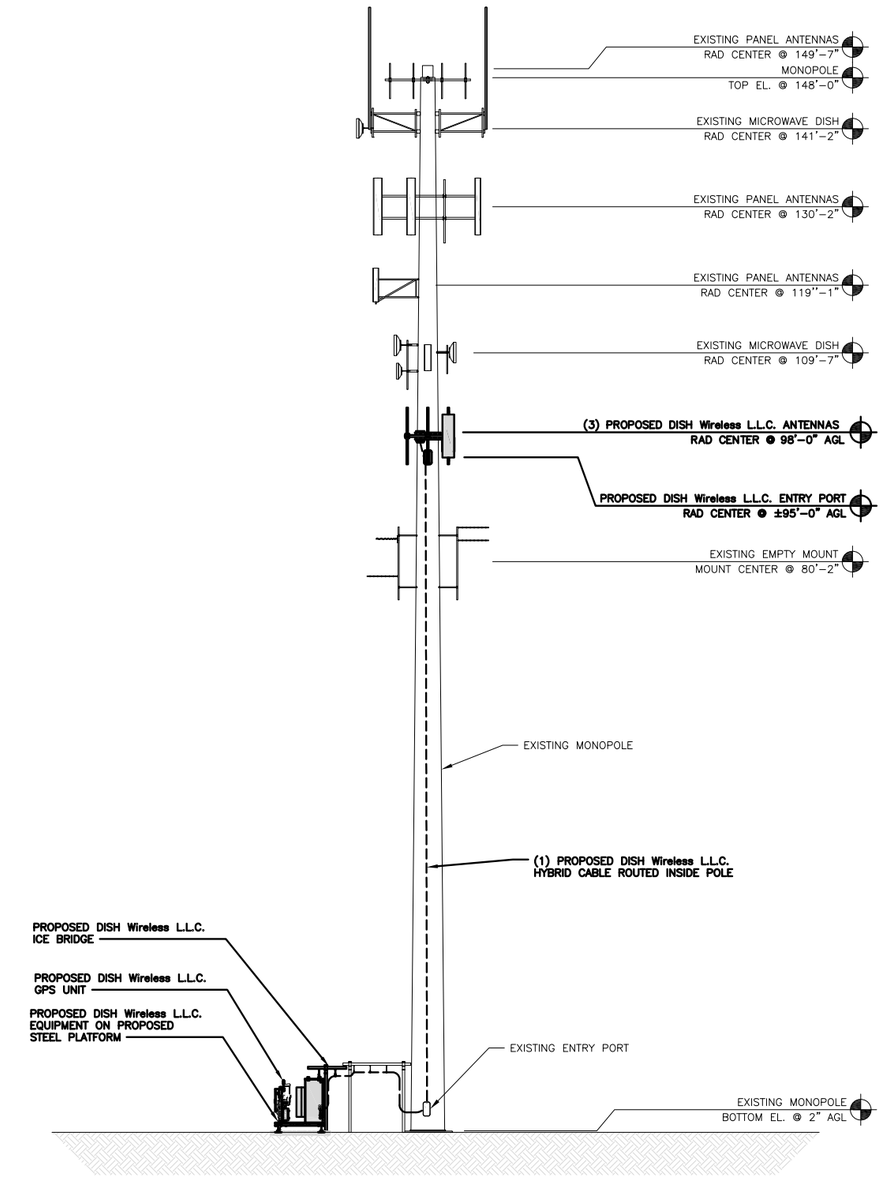
OVERALL AND ENLARGED SITE PLAN

SHEET NUMBER

A-1

NOTES

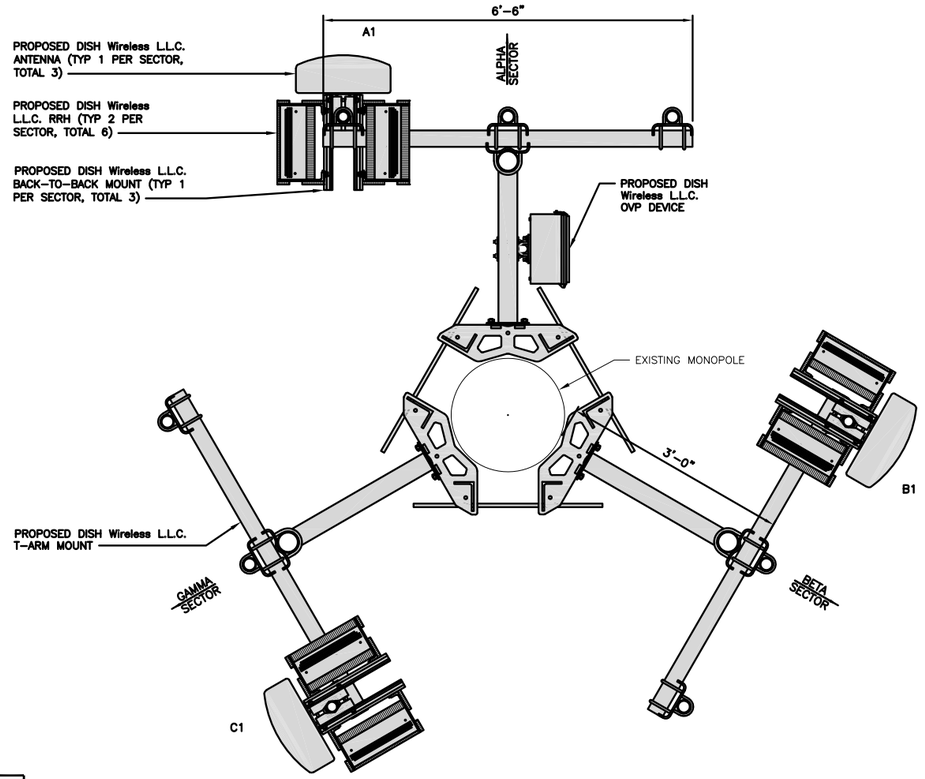
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNA AND MW DISH SPECIFICATIONS REFER TO ANTENNA SCHEDULE AND TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS
3. EXISTING EQUIPMENT AND FENCE OMITTED FOR CLARITY.



PROPOSED NORTH ELEVATION

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

1



ANTENNA LAYOUT

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

2

SECTOR	POSITION	ANTENNA						TRANSMISSION CABLE
		EXISTING OR PROPOSED	MANUFACTURER – MODEL NUMBER	TECHNOLOGY	SIZE (HxW)	AZIMUTH	RAD CENTER	FEED LINE TYPE AND LENGTH
ALPHA	A1	PROPOSED	JMA WIRELESS–MX08FRO665–21	5G	72.0" x 20.0"	0°	98'–0"	(1) HIGH–CAPACITY HYBRID CABLE (150' LONG)
BETA	B1	PROPOSED	JMA WIRELESS–MX08FRO665–21	5G	72.0" x 20.0"	120°	98'–0"	
GAMMA	C1	PROPOSED	JMA WIRELESS–MX08FRO665–21	5G	72.0" x 20.0"	240°	98'–0"	

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

NOTES

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

ANTENNA SCHEDULE

NO SCALE

3

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LITTLETON, CO 80120

CROWN CASTLE
2000 CORPORATE DRIVE
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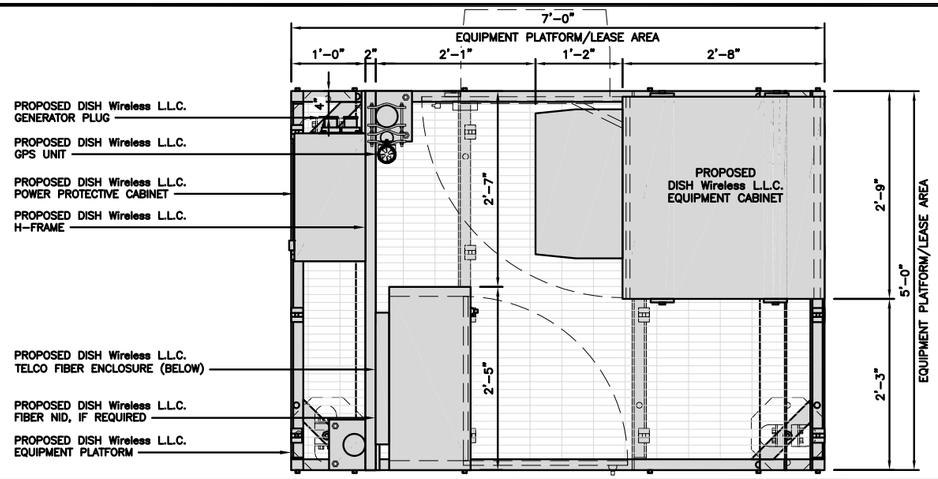
SHEET TITLE

ELEVATION, ANTENNA LAYOUT AND SCHEDULE

SHEET NUMBER

A-2



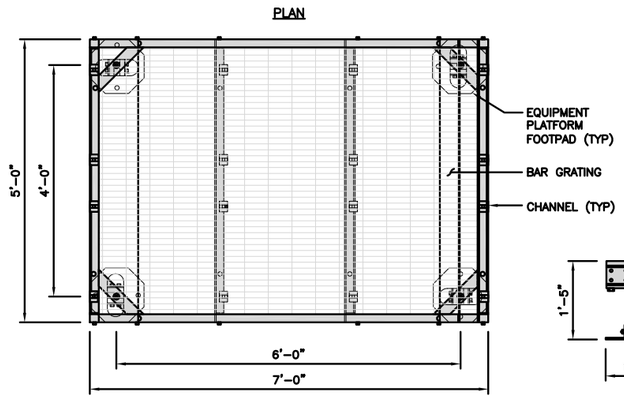
PLATFORM EQUIPMENT PLAN

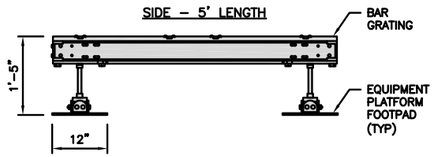
12" 9" 6" 3" 0 1' 2'
1"=1'-0"

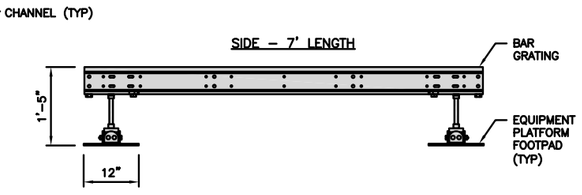
1

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

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

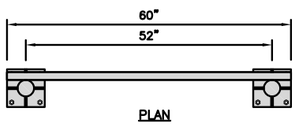


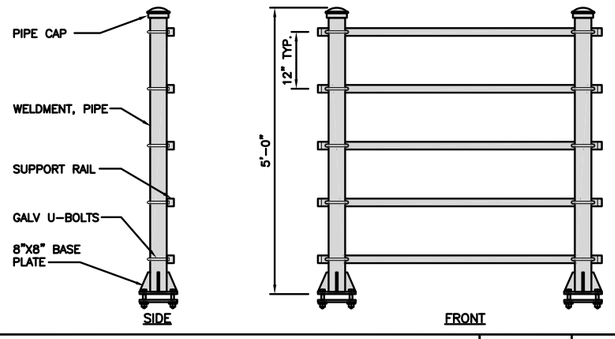




PLATFORM DETAIL | NO SCALE | 2

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



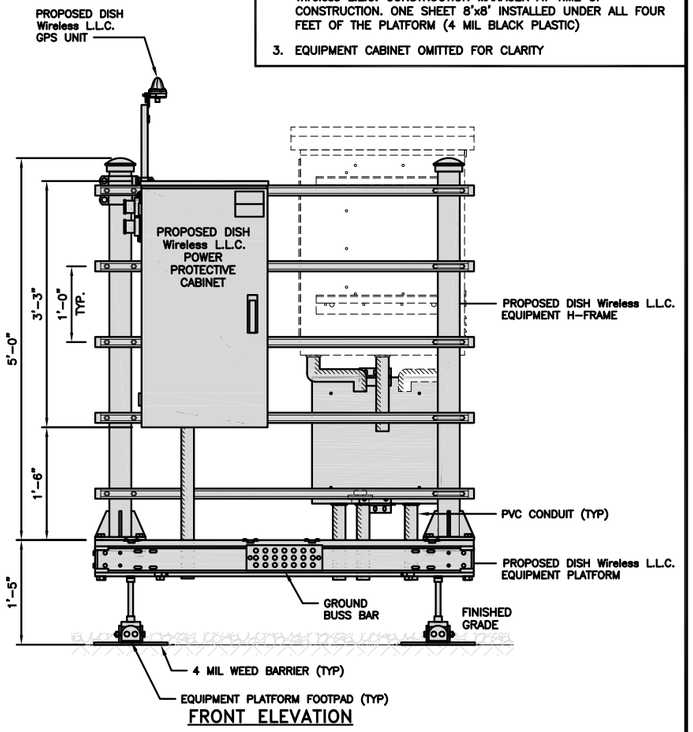


H-FRAME DETAIL | NO SCALE | 3

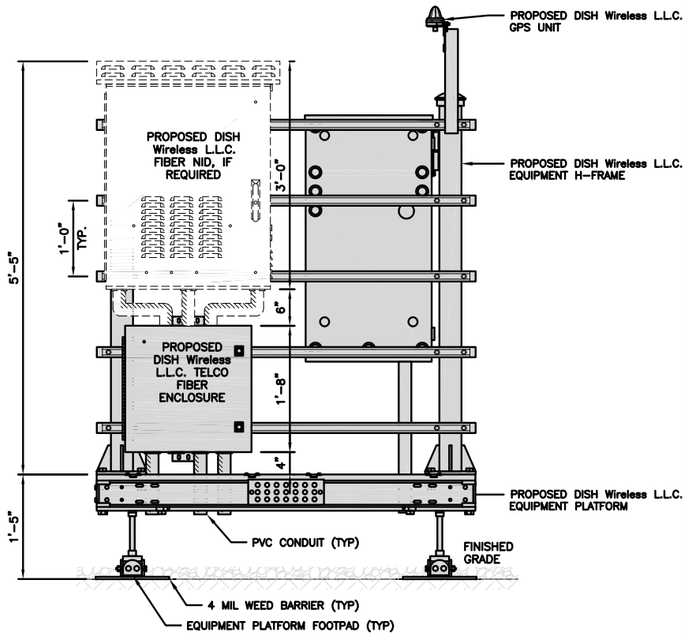
NOT USED | NO SCALE | 4

NOTES

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



FRONT ELEVATION



BACK ELEVATION

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

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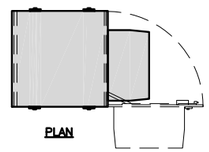
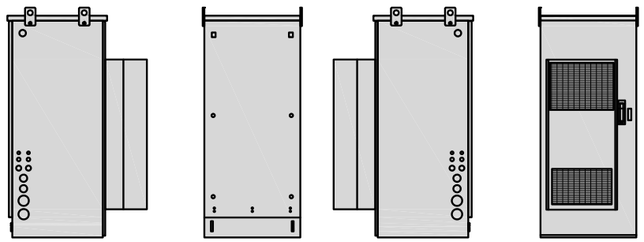
WINDSOR, CT 06095

SHEET TITLE
EQUIPMENT PLATFORM AND H-FRAME DETAILS

SHEET NUMBER
A-3

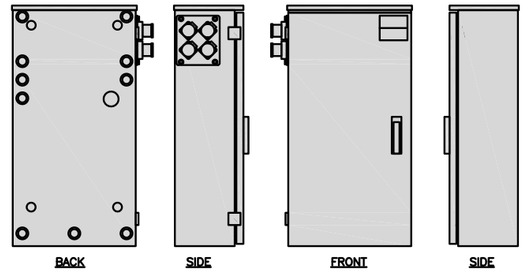
CHARLES INDUSTRY HEX CUBE–PM639155N4	
DIMENSIONS (HxWxD):	74"x32"x32"
POWER PLANT:	–48VDC ABB/600W
TOTAL WEIGHT (EMPTY)	408 LBS





CABINET DETAIL | NO SCALE | 1

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

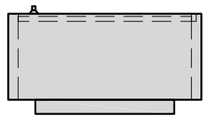


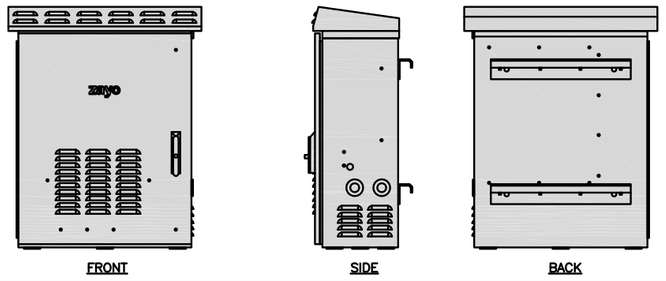
POWER PROTECTION CABINET (PPC) DETAIL | NO SCALE | 2

NOT USED | NO SCALE | 3

NOT USED | NO SCALE | 4

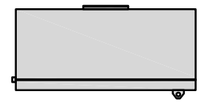
ZAYO 5RU CABINET LEFT SWING DOOR ("LIT" SITES)	
DIMENSIONS (HxWxD)	36.115"x29"x12.9"
WEIGHT	85 LBS
POWER INPUT	20A, –48VDC

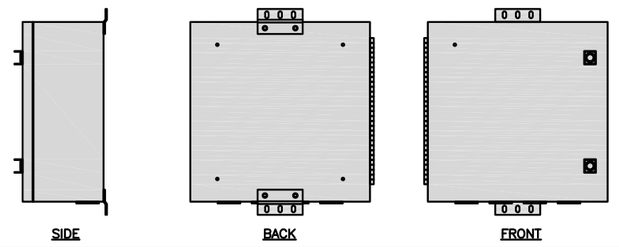




NETWORK INTERFACE UNIT DETAIL | NO SCALE | 5

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

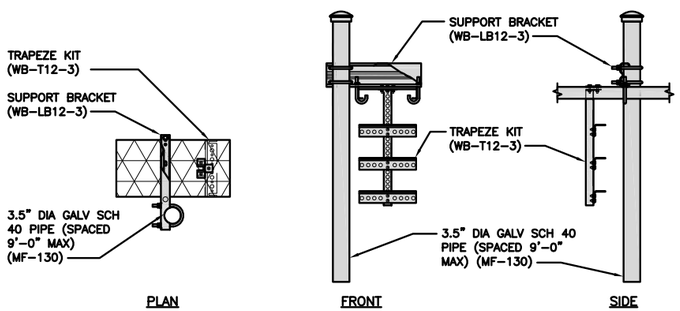




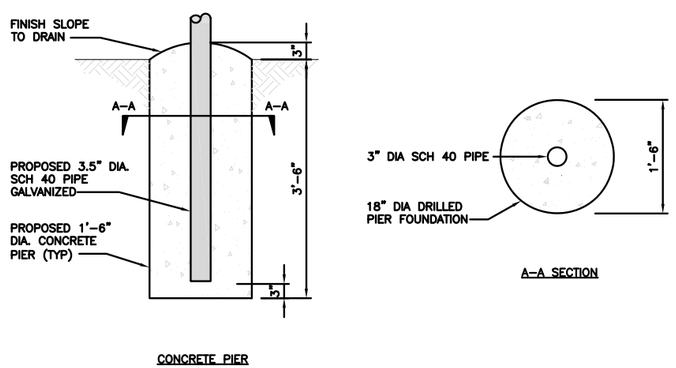
FIBER TELCO ENCLOSURE DETAIL | NO SCALE | 6

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

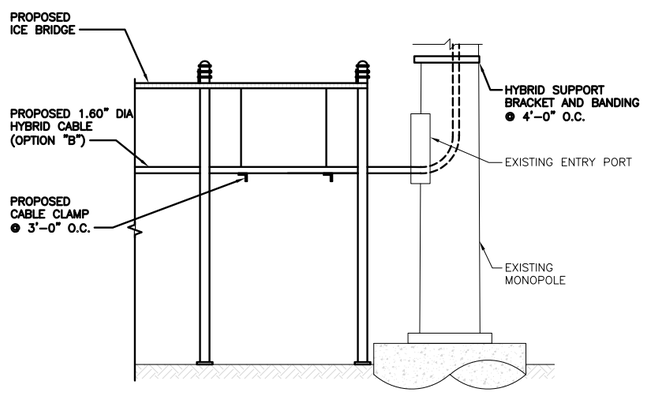
INCLUDED PRODUCTS:	
	WB–T12–3 TRAPEZE KIT, 3 RUNGS
	WB–LB12–3 SUPPORT BRACKET
	MF–130 DIRECT BURIAL PIPE COLUMN, 13'–4"



ICE BRIDGE DETAIL | NO SCALE | 7



TYPICAL ICE BRIDGE CONCRETE PIER DETAIL | NO SCALE | 8



HYBRID CABLE RUN | NO SCALE | 9

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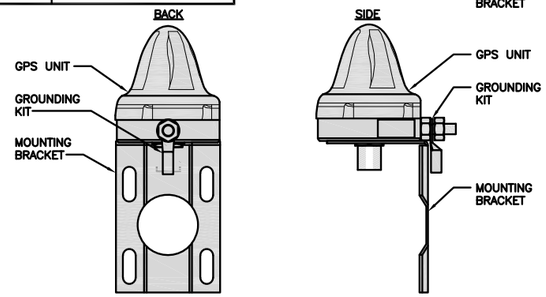
SHEET TITLE

EQUIPMENT DETAILS

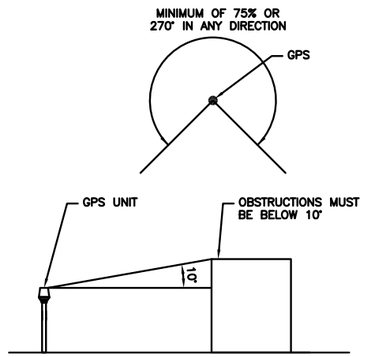
SHEET NUMBER

A-4

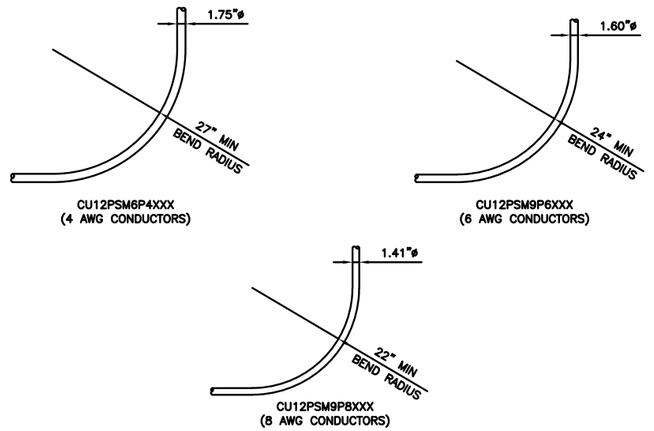
ROSENBERGER GPSGLONASS-36-N-S	
DIMENSION (DIA x H)	69mm x 98.5mm
WEIGHT (WITH ACCESSORIES)	515.74g
CONNECTOR	N-FEMALE
FREQUENCY RANGE	1559 MHz ~ 1610.5MHz



GPS ANTENNA DETAIL | NO SCALE | 1



GPS MINIMUM SKY VIEW REQUIREMENTS | NO SCALE | 2



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

NOT USED | NO SCALE | 4

NOT USED | NO SCALE | 5

NOT USED | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

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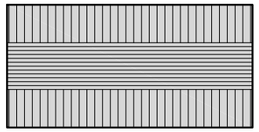
SHEET TITLE

EQUIPMENT DETAILS

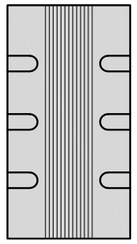
SHEET NUMBER

A-5

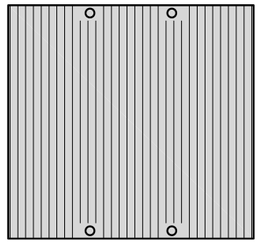
FUJITSU TA08025-B604 RRH	
DIMENSIONS (HxWxD) (KG/IN)	380x400x200/14.9"x15.7"x7.8"
WEIGHT(KG,LB)/ VOLUME	29kg,63.9lb/ 30L
POWER SUPPLY	DC-58~-36V



PLAN



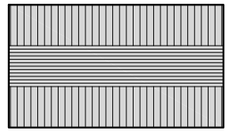
SIDE



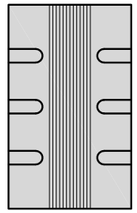
FRONT

REMOTE RADIO HEAD DETAIL | NO SCALE | 1

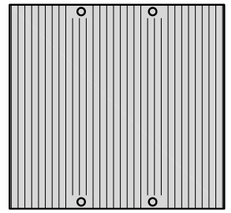
FUJITSU TA08025-B605 RRH	
DIMENSIONS (HxWxD) (KG/IN)	380x400x230/14.9"x15.7"x9.0"
WEIGHT(KG,LB)/ VOLUME	34kg,74.9lb/ 35L
POWER SUPPLY	DC-58~-36V



PLAN



SIDE

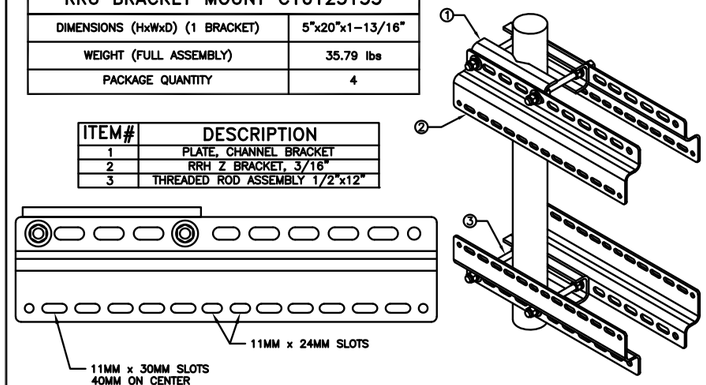


FRONT

REMOTE RADIO HEAD DETAIL | NO SCALE | 2

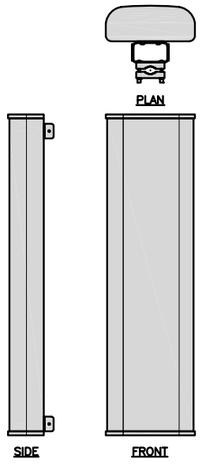
SABRE INDUSTRIES RRU BRACKET MOUNT C10123155	
DIMENSIONS (HxWxD) (1 BRACKET)	5"x20"x1-13/16"
WEIGHT (FULL ASSEMBLY)	35.79 lbs
PACKAGE QUANTITY	4

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



REMOTE RADIO MOUNT DETAIL | NO SCALE | 3

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



PLAN

SIDE

FRONT

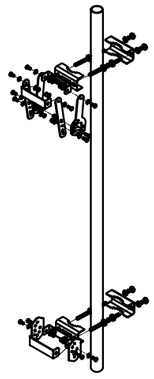
ANTENNA DETAIL | NO SCALE | 4

NOT USED | NO SCALE | 5

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

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

ANTENNA BRACKET NOT PART OF KIT

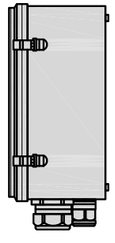


NOTE:
OR DISH Wireless L.L.C.
APPROVED EQUIVALENT

ANTENNA BRACKET DETAIL | NO SCALE | 6

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

PLAN



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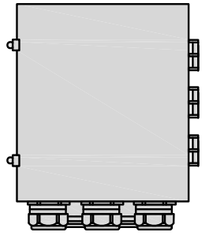

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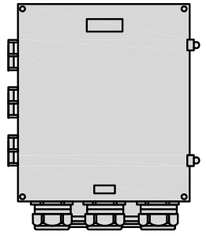
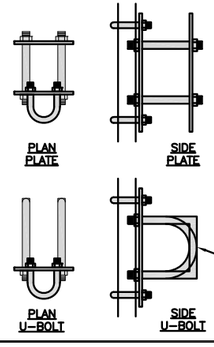


FRONT

SURGE SUPPRESSION DETAIL (OVP) | NO SCALE | 7

COMMSCOPE XP-2040 CROSSOVER PLATE	
DIMENSIONS (HxW)	10"x12"
WEIGHT	11.023 LBS

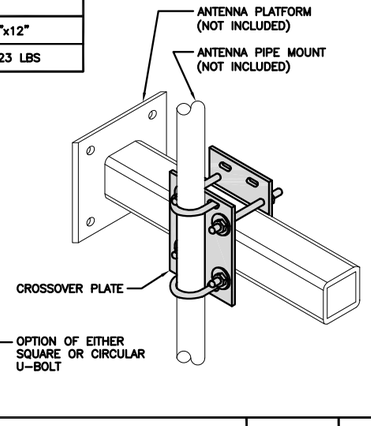


PLAN PLATE

SIDE PLATE

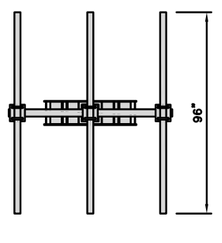
PLAN U-BOLT

SIDE U-BOLT

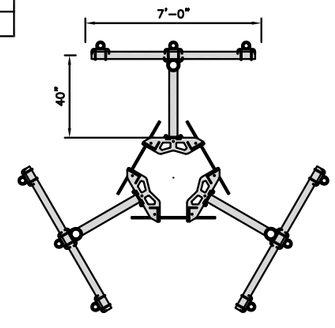


RRH/OVP MOUNT DETAIL | NO SCALE | 8

COMMSCOPE MC-K6MHDX-9-96	
FACE WIDTH	7'-0"
WEIGHT	1203.31 lbs
NOTE: 15" TO 50" O.D.	



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



T-ARM MOUNT DETAIL | NO SCALE | 9

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7/27/21

B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/22

DRAWN BY:	CHECKED BY:	APPROVED BY:
JJR	JJR	MDW

RFDS REV #: 1.0

CONSTRUCTION DOCUMENTS

SUBMITTALS

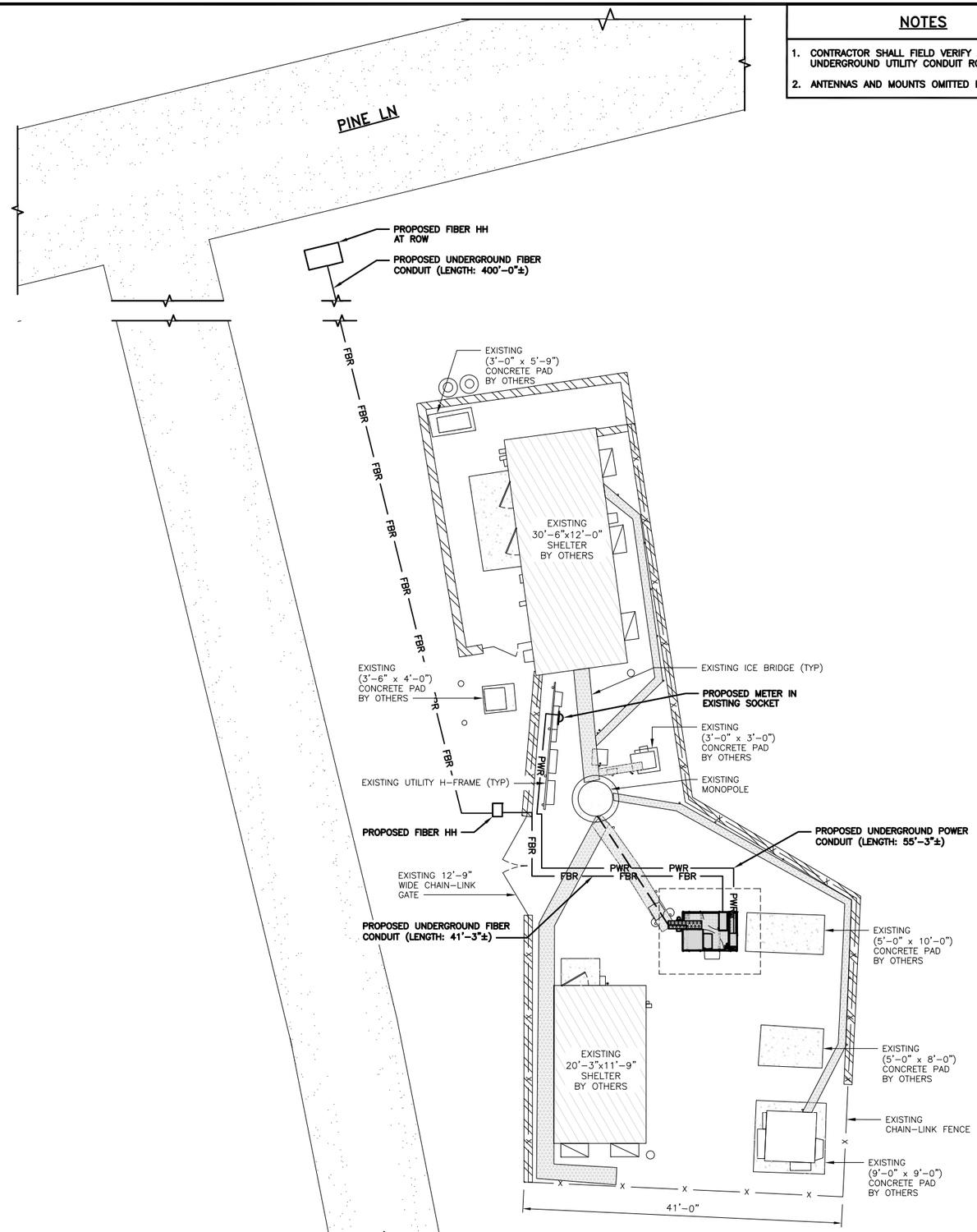
REV	DATE	DESCRIPTION
A	6/23/21	ISSUED FOR REVIEW
0	7/27/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
141992.007.01

DISH Wireless L.L.C.
PROJECT INFORMATION
BOBDL00062A
50 PINE LANE
WINDSOR, CT 06095

SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-6

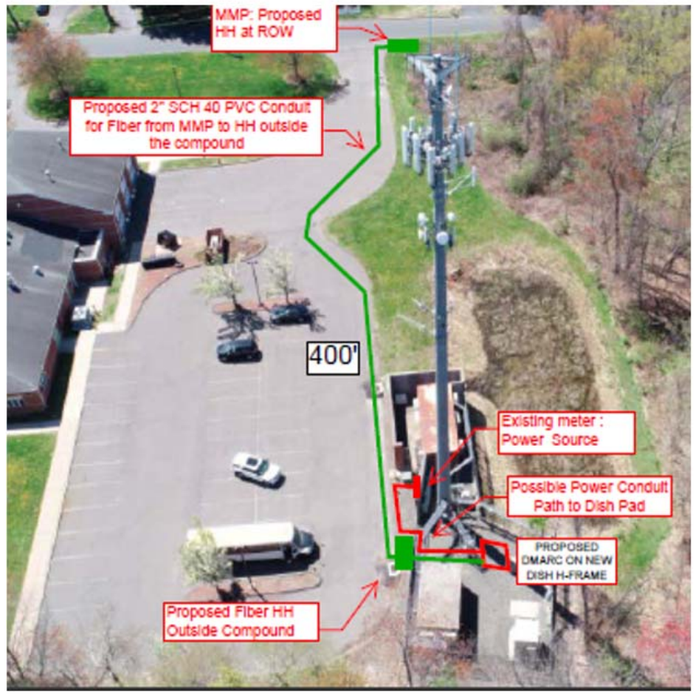


NOTES

1. CONTRACTOR SHALL FIELD VERIFY ALL PROPOSED UNDERGROUND UTILITY CONDUIT ROUTE.
2. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.

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



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STATE OF CONNECTICUT · No. 23924 · LICENSED PROFESSIONAL ENGINEER

7/27/21

B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/22

DRAWN BY:	CHECKED BY:	APPROVED BY:
JJR	JJR	MDW

RFDS REV #: 1.0

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DISH Wireless L.L.C.
PROJECT INFORMATION
BOBDL00062A
50 PINE LANE
WINDSOR, CT 06095

SHEET TITLE
ELECTRICAL/FIBER ROUTE PLAN AND NOTES

SHEET NUMBER
E-1

N

UTILITY ROUTE PLAN

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

1

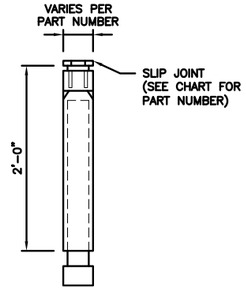
ELECTRICAL NOTES

NO SCALE

2

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"

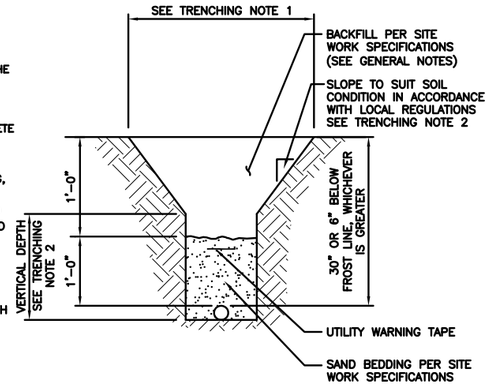


NOTE:
CONTRACTOR TO INSTALL EXPANSION FITTING SLIP JOINT AT METER CENTER CONDUIT TERMINATION, AS PER LOCAL UTILITY POLICY, ORDINANCE AND/OR SPECIFIED REQUIREMENT.

EXPANSION JOINT DETAIL | NO SCALE | 1

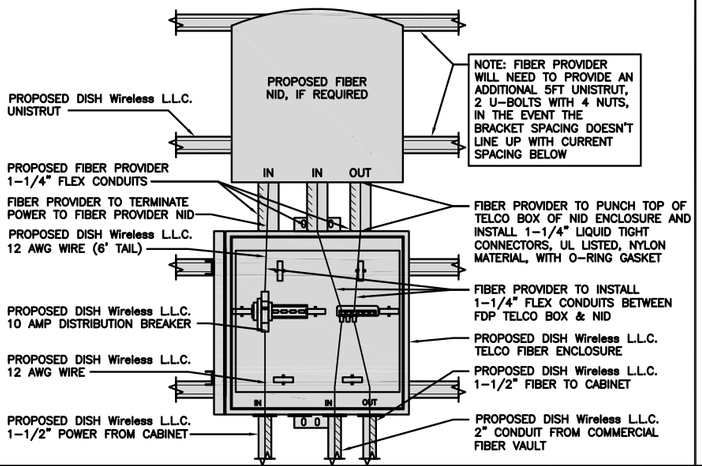
TRENCHING NOTES

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

NOT USED | 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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DISH Wireless L.L.C.
PROJECT INFORMATION

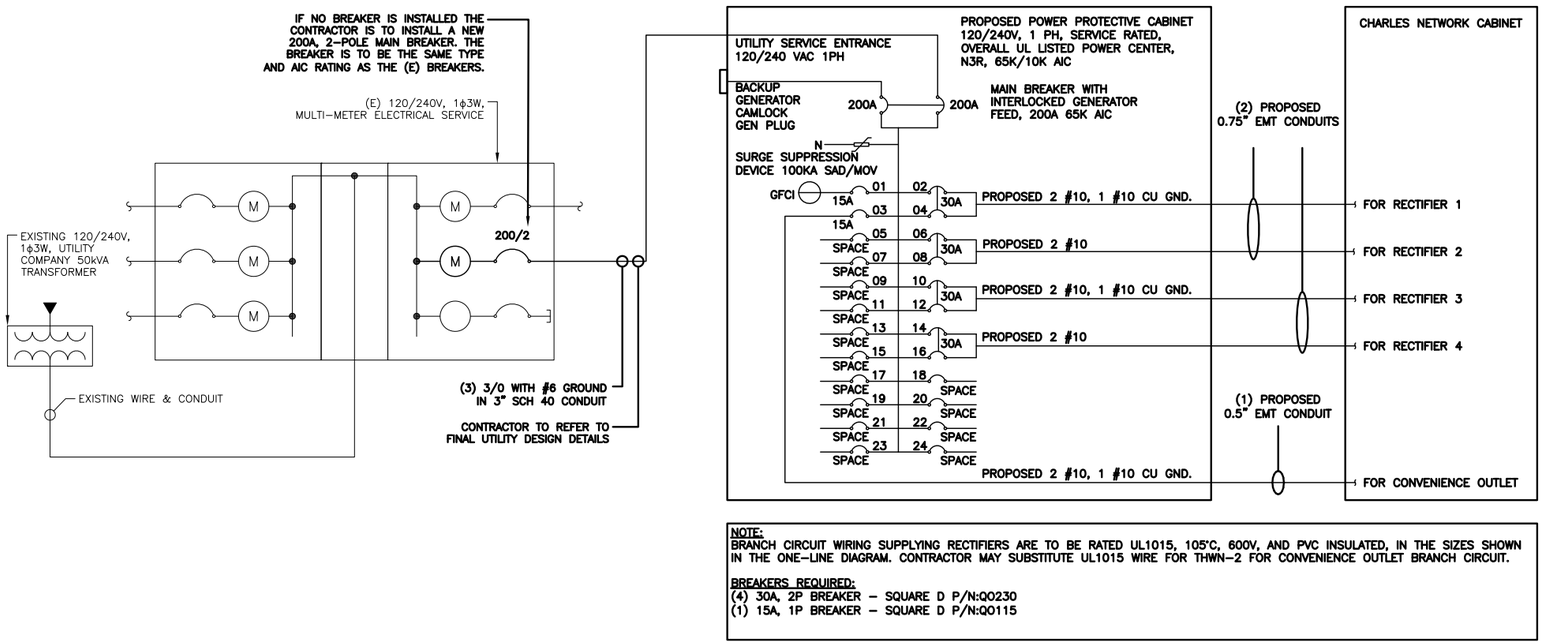
BOBDL00062A
50 PINE LANE
WINDSOR, CT 06095

SHEET TITLE

ELECTRICAL DETAILS

SHEET NUMBER

E-2



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

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

NOTES

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

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

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

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

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

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

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

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

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

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

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

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

PPC ONE-LINE DIAGRAM

NO SCALE | 1

PROPOSED CHARLES PANEL SCHEDULE

LOAD SERVED	VOLT AMPS (WATTS) L1	VOLT AMPS (WATTS) L2	TRIP	CKT #	PHASE	CKT #	TRIP	VOLT AMPS (WATTS) L1	VOLT AMPS (WATTS) L2	LOAD SERVED
PPC GFCI OUTLET	180		15A	1	A	2	30A	2880		ABB/GE INFINITY 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 — JEFFREY J. RUSSELL — No. 23924 — LICENSED PROFESSIONAL ENGINEER
7/27/21

B&T ENGINEERING, INC.
PEC.0001564
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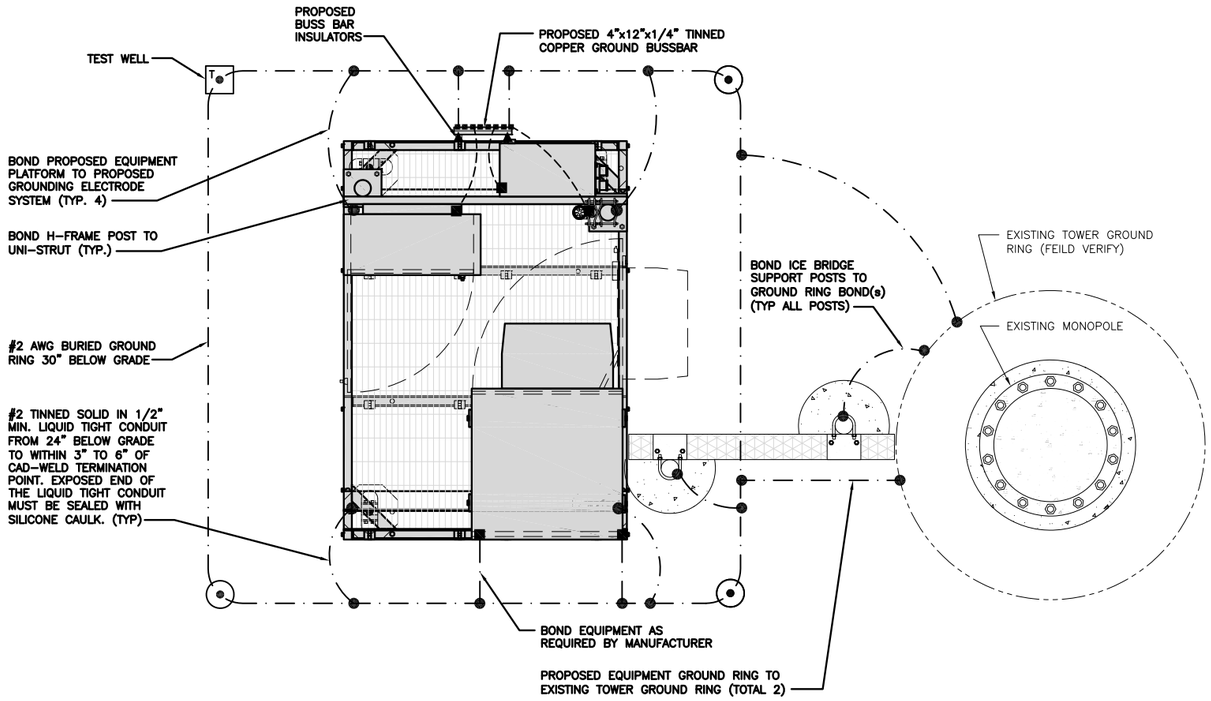
DISH Wireless L.L.C.
PROJECT INFORMATION
BOBDL00062A
50 PINE LANE
WINDSOR, CT 06095

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

SHEET NUMBER
E-3

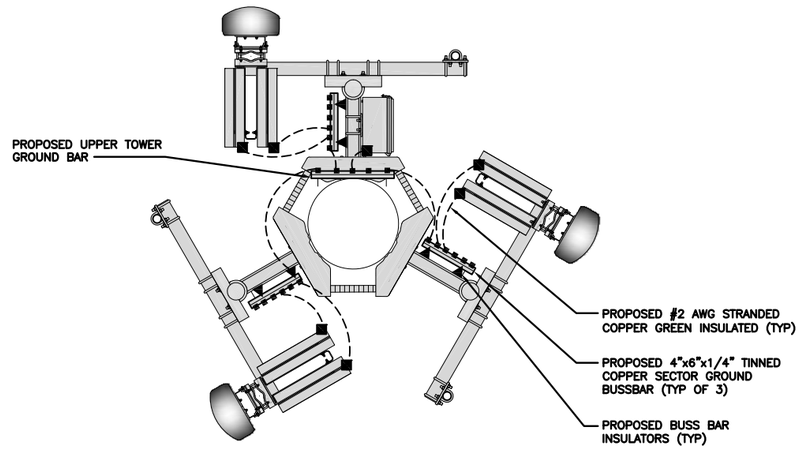


TYPICAL EQUIPMENT GROUNDING PLAN

NO SCALE | 1

NOTES

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



TYPICAL ANTENNA GROUNDING PLAN

NO SCALE | 2

EXOTHERMIC CONNECTION
MECHANICAL CONNECTION
GROUND BUS BAR
GROUND ROD
TEST GROUND ROD WITH INSPECTION SLEEVE
#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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SUITE 300
TULSA, OK 74119
PH: (918) 587-4630
www.btgrp.com

STATE OF CONNECTICUT
No. 23924
LICENSED PROFESSIONAL ENGINEER
7/27/21

B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/22

DRAWN BY:	CHECKED BY:	APPROVED BY:
JJR	JJR	MDW

RFDS REV #: 1.0

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
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0	7/27/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
141992.007.01

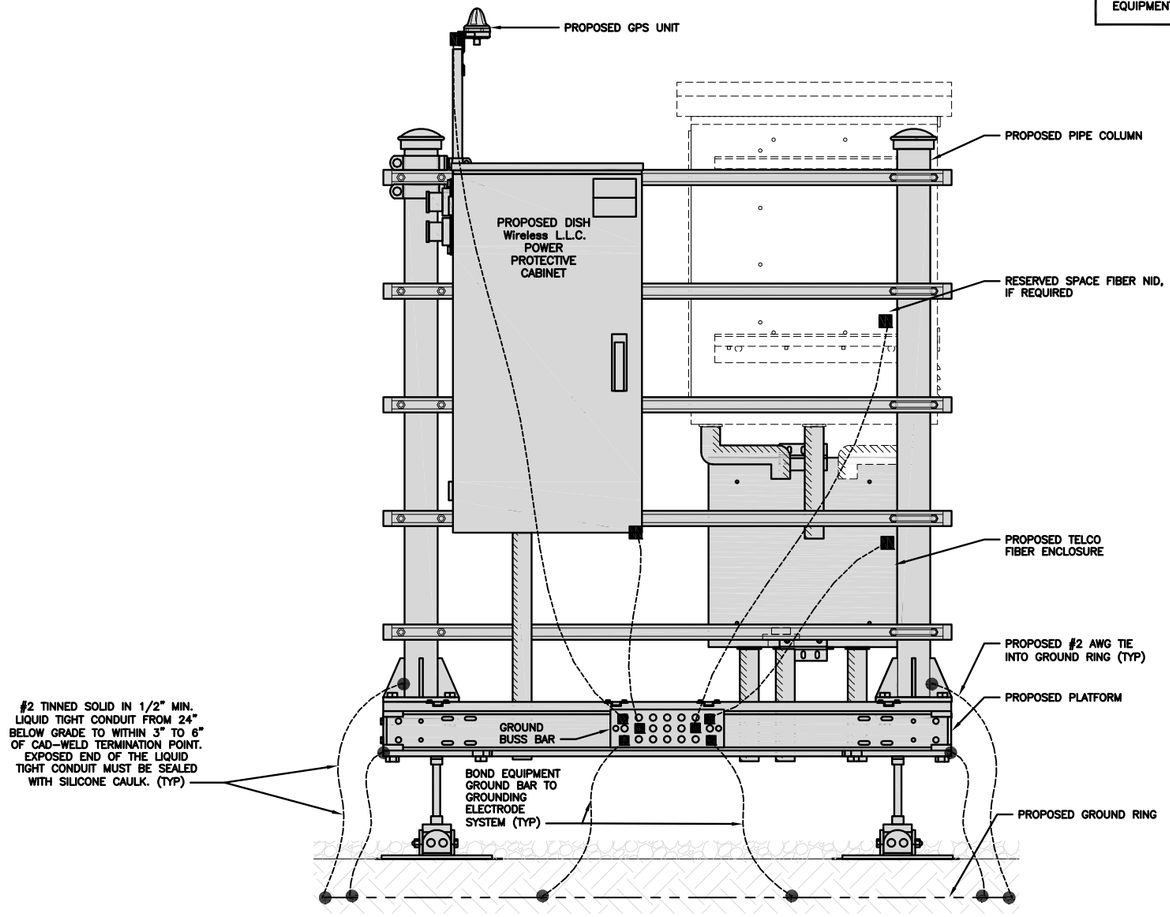
DISH Wireless L.L.C.
PROJECT INFORMATION
BOBDL00062A
50 PINE LANE
WINDSOR, CT 06095

SHEET TITLE
GROUNDING PLANS AND NOTES

SHEET NUMBER
G-1

NOTES

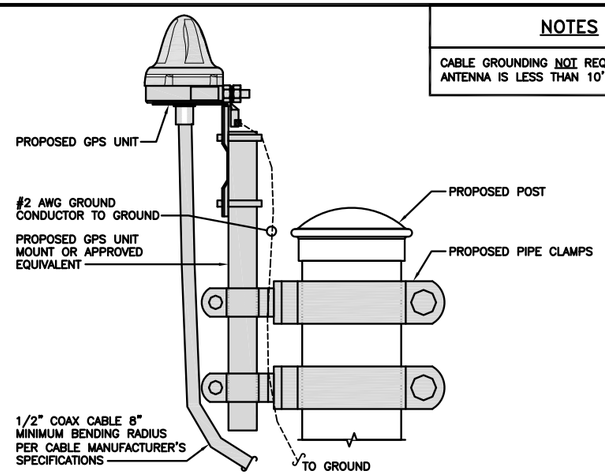
EQUIPMENT CABINET OMITTED FOR CLARITY



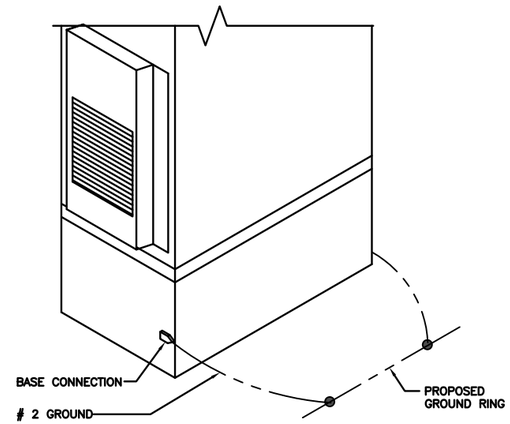
H-FRAME GROUNDING DETAIL | NO SCALE | 1

NOTES

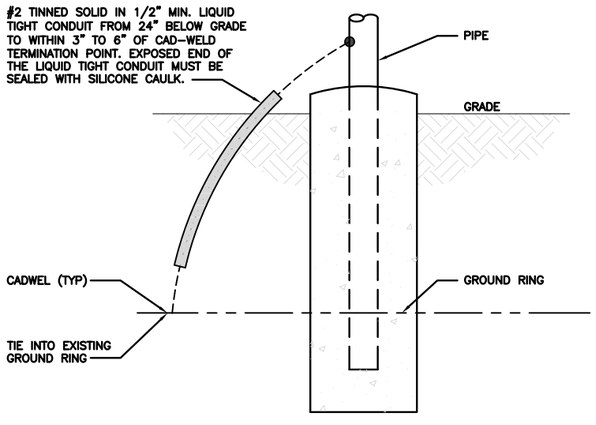
CABLE GROUNDING NOT REQUIRED WHEN ANTENNA IS LESS THAN 10' FROM CABINET



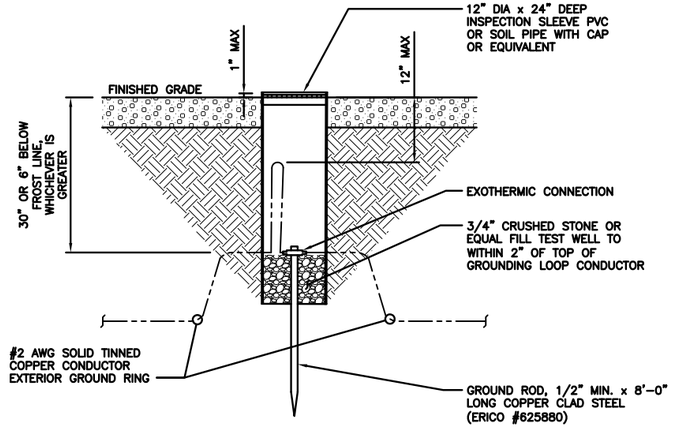
TYPICAL GPS UNIT GROUNDING | NO SCALE | 2



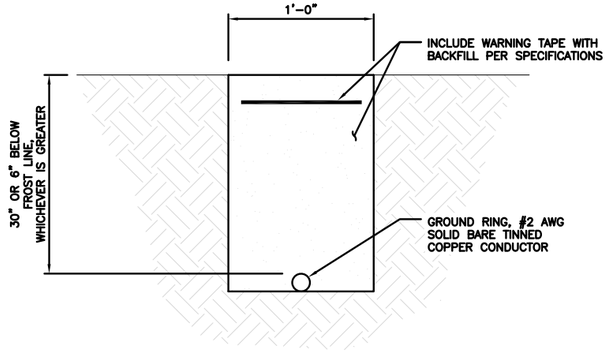
OUTDOOR CABINET GROUNDING | NO SCALE | 3



TRANSITIONING GROUND DETAIL | NO SCALE | 4



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



TYPICAL GROUND RING TRENCH | NO SCALE | 6

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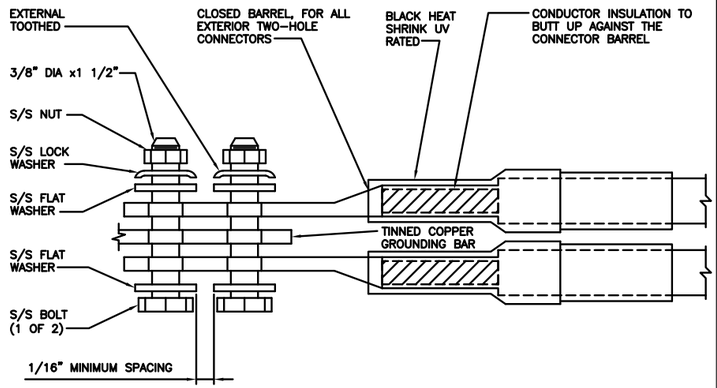
50 PINE LANE
WINDSOR, CT 06095

SHEET TITLE
GROUNDING DETAILS

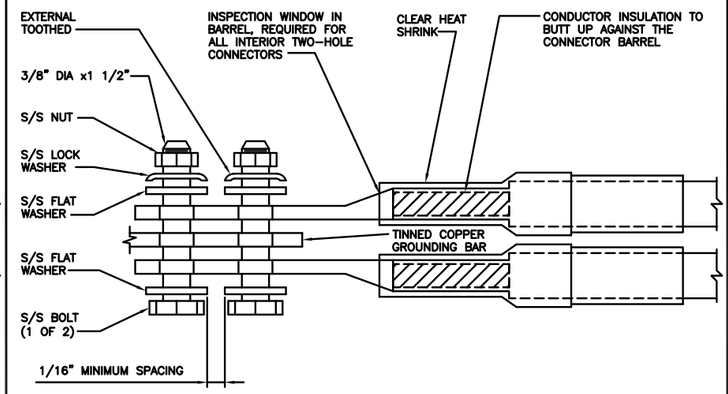
SHEET NUMBER
G-2

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

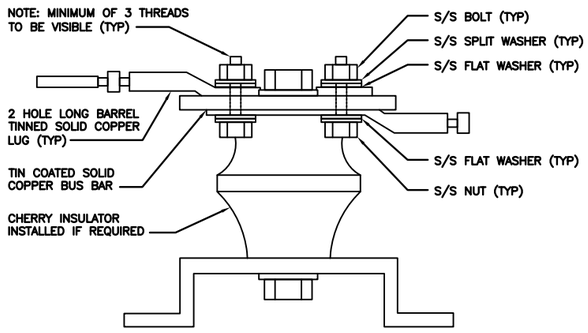
TYPICAL GROUNDING NOTES | NO SCALE | 1



TYPICAL EXTERIOR TWO HOLE LUG | NO SCALE | 2



TYPICAL INTERIOR TWO HOLE LUG | NO SCALE | 3



LUG DETAIL | NO SCALE | 4

NOT USED | NO SCALE | 5

NOT USED | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

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PROJECT INFORMATION
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50 PINE LANE
WINDSOR, CT 06095

SHEET TITLE
GROUNDING DETAILS

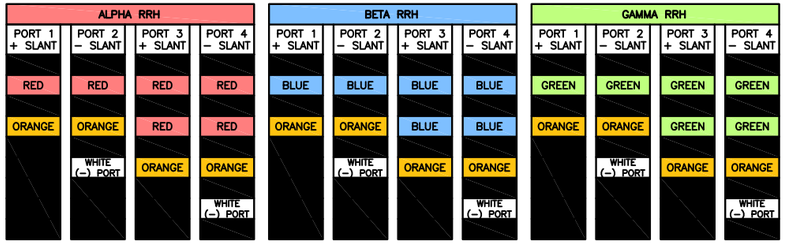
SHEET NUMBER
G-3

RF JUMPER COLOR CODING

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

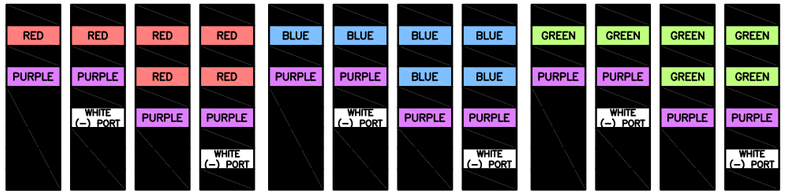
LOW-BAND RRH –
(600MHz N71 BASEBAND) +
(850MHz N26 BAND) +
(700MHz N29 BAND) – OPTIONAL PER MARKET

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



MID-BAND RRH –
(AWS BANDS N66+N70)

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

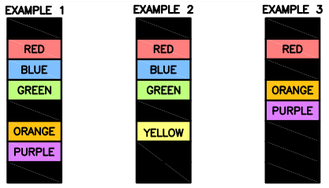


HYBRID/DISCREET CABLES

INCLUDE SECTOR BANDS BEING SUPPORTED
ALONG WITH FREQUENCY BANDS

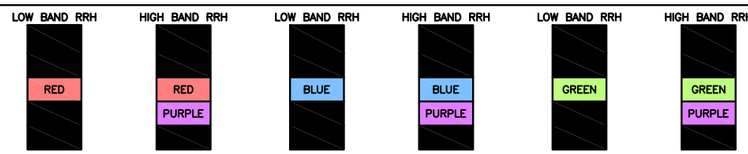
EXAMPLE 1 – HYBRID, OR DISCREET, SUPPORTS
ALL SECTORS, BOTH LOW-BANDS AND MID-BANDS

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



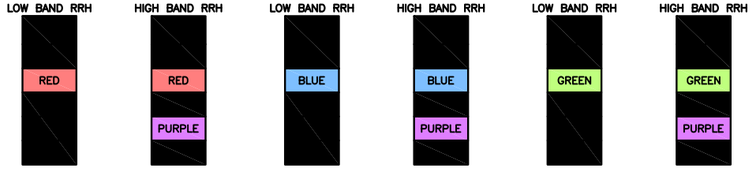
FIBER JUMPERS TO RRHs

LOW-BAND RRH FIBER CABLES HAVE SECTOR
STRIPE ONLY

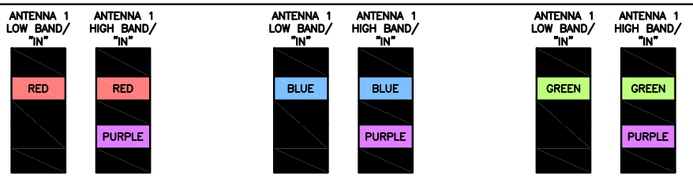


POWER CABLES TO RRHs

LOW-BAND RRH POWER CABLES HAVE SECTOR
STRIPE ONLY



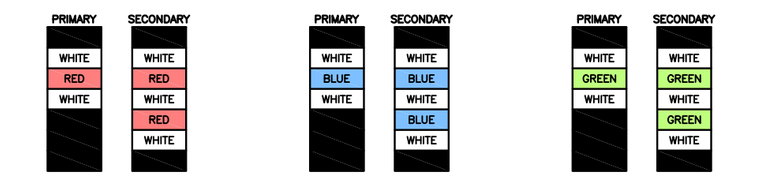
RET MOTORS AT ANTENNAS



MICROWAVE RADIO LINKS

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

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



RF CABLE COLOR CODES | NO SCALE | 1

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

AWS
(N66+N70+H-BLOCK)
PURPLE

CBRS TECH
(3 GHz)
YELLOW

NEGATIVE SLANT PORT
ON ANT/RRH
WHITE

ALPHA SECTOR
RED

BETA SECTOR
BLUE

GAMMA SECTOR
GREEN

COLOR IDENTIFIER | NO SCALE | 2

NOT USED | NO SCALE | 3

NOT USED | NO SCALE | 4

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DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00062A
50 PINE LANE
WINDSOR, CT 06095

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 — T

EXOTHERMIC WITH INSPECTION SLEEVE

GROUNDING BAR

GROUND ROD

TEST GROUND ROD WITH INSPECTION SLEEVE — T

SINGLE POLE SWITCH — $

DUPLEX RECEPTACLE

DUPLEX GFCI RECEPTACLE — GFCI

FLUORESCENT LIGHTING FIXTURE (2) TWO LAMPS 48–T8 — F

SMOKE DETECTION (DC) — SD

EMERGENCY LIGHTING (DC)

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

CHAIN LINK FENCE — x — x — x — x

WOOD/WROUGHT IRON FENCE

WALL STRUCTURE

LEASE AREA

PROPERTY LINE (PL)

SETBACKS

ICE BRIDGE

CABLE TRAY

WATER LINE — W — W — W — W — W

UNDERGROUND POWER — UGP — UGP — UGP — UGP — UGP

UNDERGROUND TELCO — UGT — UGT — UGT — UGT — UGT

OVERHEAD POWER — OHP — OHP — OHP — OHP

OVERHEAD TELCO — OHT — OHT — OHT — OHT

UNDERGROUND TELCO/POWER — UGT/P — UGT/P — UGT/P — UGT/P

ABOVE GROUND POWER — AGP — AGP — AGP — AGP — AGP

ABOVE GROUND TELCO — AGT — AGT — AGT — AGT — AGT

ABOVE GROUND TELCO/POWER — AGT/P — AGT/P — AGT/P — AGT/P

WORKPOINT — W.P.

SECTION REFERENCE — XX / X–X

DETAIL REFERENCE — XX / X–X

ABBREVIATIONS

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

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STATE OF CONNECTICUT — No. 23924 — LICENSED PROFESSIONAL ENGINEER

7/27/21

B&T ENGINEERING, INC.
PEC.0001564
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50 PINE LANE
WINDSOR, CT 06095

SHEET TITLE

LEGEND AND ABBREVIATIONS

SHEET NUMBER

GN-1

SITE ACTIVITY REQUIREMENTS:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

GENERAL NOTES:

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

CONTRACTOR:GENERAL CONTRACTOR RESPONSIBLE FOR CONSTRUCTION

CARRIER:DISH Wireless L.L.C.

TOWER OWNER:TOWER OWNER

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

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

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

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

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

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

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

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

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

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

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

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

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

dish wireless.

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7/27/21

B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/22

DRAWN BY:	CHECKED BY:	APPROVED BY:
JJR	JJR	MDW

RFDS REV #: 1.0

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	6/23/21	ISSUED FOR REVIEW
0	7/27/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

141992.007.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00062A
50 PINE LANE
WINDSOR, CT 06095

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-2

CONCRETE, FOUNDATIONS, AND REINFORCING STEEL:

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

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

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

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

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

#4 BARS AND SMALLER 40 ksi

#5 BARS AND LARGER 60 ksi

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

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

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

ELECTRICAL INSTALLATION NOTES:

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

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

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

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

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

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

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

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

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

8. TIE WRAPS ARE NOT ALLOWED.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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7/27/21

B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/22

DRAWN BY:	CHECKED BY:	APPROVED BY:
JJR	JJR	MDW

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CONSTRUCTION DOCUMENTS

SUBMITTALS

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141992.007.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00062A
50 PINE LANE
WINDSOR, CT 06095

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-3

GROUNDING NOTES:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

CROWN CASTLE

2000 CORPORATE DRIVE
CANONSBURG, PA 15317

B+T GRP

1717 S. BOULDER
SUITE 300
TULSA, OK 74119
PH: (918) 587-4630
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7/27/21

B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/22

DRAWN BY:	CHECKED BY:	APPROVED BY:
JJR	JJR	MDW

RFDS REV #: 1.0

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	6/23/21	ISSUED FOR REVIEW
0	7/27/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

141992.007.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00062A
50 PINE LANE
WINDSOR, CT 06095

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-4

Exhibit D

Structural Analysis Report

Date: **June 14, 2021**

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

Subject:	**Structural Analysis Report**	
Carrier Designation:	***DISH Network* Co-Locate**	
	Site Number:	BOBDL00062A
	Site Name:	CT-CCI-T-841793
Crown Castle Designation:	**BU Number:**	841793
	Site Name:	WINDSOR PINE LANE
	JDE Job Number:	650051
	Work Order Number:	1963264
	Order Number:	556630 Rev. 1
Engineering Firm Designation:	**Crown Castle Project Number:**	1963264
Site Data:	**50 PINE LANE, WINDSOR, Hartford County, CT** **Latitude *41° 49' 11.43"*, Longitude *-72° 40' 1.88"*** **147.458 Foot - Monopole Tower**	

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

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

LC5: Proposed Equipment Configuration **Sufficient Capacity** - 94.2%

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

Structural analysis prepared by: Ryan T. Conway

Respectfully submitted by:

Jamal A. Huwel, P.E.
Director Engineering

STATE OF CONNECTICUT
JAMAL A. HUWEL
28893
LICENSED
PROFESSIONAL ENGINEER

Digitally signed by Jamal A Huwel
Date: 2021.06.15 07:50:26 -04'00'

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 147.458 ft Monopole tower designed by Summit.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	125 mph
Exposure Category:	C
Topographic Factor:	1
Ice Thickness:	2 in
Wind Speed with Ice:	50 mph
Service Wind Speed:	60 mph

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
98.0	98.0	3	fujitsu	TA08025-B604	1	1-1/2
		3	fujitsu	TA08025-B605		
		3	jma wireless	MX08FRO665-21 w/ Mount Pipe		
		1	raycap	RDIDC-9181-PF-48		
		1	tower mounts	Commscope MC-K6MHDX-9-96 (3)		

Table 2 - Other Considered Equipment

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
149.0	153.0	1	decibel	DB225-C	1	7/8
	149.0	1	tower mounts	Platform Mount [LP 1201-1]		
141.0	147.0	1	bird technologies group	432E-83I-01-T	1 2	1/2 7/8
		2	rfi antennas	CC807-11		
	141.0	2	tower mounts	Side Arm Mount [SO 901-1]		
140.0	140.0	1	rfs celwave	SC3-W100ASTX	1	elliptical
		1	tower mounts	Pipe Mount [PM 601-1]		
130.0	130.0	3	ericsson	RRUS 32 B30	2 8 6	3/8 3/4 1-5/8
		3	ericsson	RRUS 32 B66A		
		3	ericsson	RRUS 4449 B5/B12		
		3	ericsson	RRUS 4478 B14_CCIV2		
		3	ericsson	RRUS E2 B29		
		2	cci antennas	DMP65R-BU6D		
		1	cci antennas	DMP65R-BU8D		
		2	cci antennas	OPA65R-BU6D		
		1	cci antennas	OPA65R-BU8D		
		1	cci antennas	TPA-65R-LCUUUU-H8		
		6	ericsson	RRUS 32 B2		
		2	quintel technology	QS66512-2		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
		4	raycap	DC6-48-60-18-8F		
		1	tower mounts	Platform Mount [LP 301-1_KCKR]		
118.0	118.0	1	rfi antennas	BPA7496-180-11 w/ Mount Pipe	1	7/8
		1	tower mounts	Side Arm Mount [SO 308-1]		
108.0	109.0	2	andrew	VHLP800-11	6 3 4	5/16 1-5/8 1/2
		3	ericsson	AIR6449 B41_T-MOBILE w/ Mount Pipe		
		2	ericsson	RADIO 4460 B2/B25 B66_TMO		
		3	ericsson	RADIO 4480 B71_TMO		
		3	rfs celwave	APX16DWV-16DWV-S-E-A20 w/ Mount Pipe		
		3	rfs celwave	APXVAALL24_43-U-NA20_TMO w/ Mount Pipe		
	108.0	3	andrew	VFA10-SD		
	107.0	2	andrew	VHLP2-18		
85.0	85.0	2	tower mounts	Side Arm Mount [SO 102-3]	5	13/32
		4	tower mounts	Side Arm Mount [SO 901-1]		
		1	wade antenna	WH 14-69/S		
		1	wade antenna	WL 14-69/S		
	83.0	2	wade antenna	WL 14-69/S		
	78.0	1	wade antenna	J105-HI		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Reference	Source
4-GEOTECHNICAL REPORTS	4469790	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	4469791	CCISITES
4-TOWER MANUFACTURER DRAWINGS	6064532	CCISITES

3.1) Analysis Method

tnxTower (version 8.1.1.0), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A. When applicable, Crown Castle has calculated and provided the effective area for panel antennas using approved methods following the intent of the TIA-222 standard.

3.2) Assumptions

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

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

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	147.458 - 115.418	Pole	TP31.25x24x0.2188	1	-9.34	1187.33	25.6	Pass
L2	115.418 - 74.2933	Pole	TP37.75x29.9413x0.2188	2	-22.00	1445.66	94.2	Pass
L3	74.2933 - 39.21	Pole	TP44.625x36.5034x0.3125	3	-29.76	2428.89	84.1	Pass
L4	39.21 - 0	Pole	TP51.25x42.8761x0.375	4	-43.40	3433.41	85.5	Pass
							Summary	
						Pole (L2)	94.2	Pass
						Rating =	94.2	Pass

Table 5 - Tower Component Stresses vs. Capacity - LC5

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	69.6	Pass
1	Base Plate	0	99.1	Pass
1	Base Foundation (Structure)	0	50.8	Pass
1	Base Foundation (Soil Interaction)	0	81.9	Pass

Structure Rating (max from all components) =	94.2%

Notes:
1) See additional documentation in “Appendix C – Additional Calculations” for calculations supporting the % capacity. Rating per TIA-222-H Section 15.5.

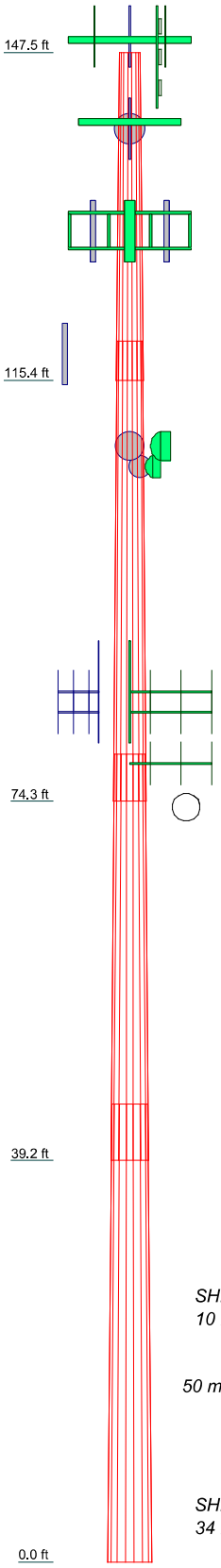
4.1) Recommendations

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

APPENDIX A

TNXTOWER OUTPUT

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	32.04	18	0.2188	3.85	24.0000	31.2500		2.1
2	44.98	18	0.2188	4.66	29.9413	37.7500		3.6
3	39.74	18	0.3125	5.50	36.5034	44.6250		5.4
4	44.71	18	0.3750		42.8761	51.2500		8.5
							A607-60	19.5



ALL REACTIONS ARE FACTORED

AXIAL 83 K

SHEAR 10 K *MOMENT 1117 kip-ft*

TORQUE 1 kip-ft
50 mph WIND - 2.0000 in ICE

AXIAL 43 K

SHEAR 34 K *MOMENT 3500 kip-ft*

TORQUE 4 kip-ft
REACTIONS - 125 mph WIND

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-H Standard.
3. Tower designed for a 125 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 2.00 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: 94.2%

Crown Castle
2000 Corporate Drive
Cannonsburg, PA 15317
The Pathway to Possible
Phone: (724) 416-2000
FAX:

Job: ***841793***			
Project:			
Client: Crown Castle	Drawn by: rconway	App'd:	
Code: TIA-222-H	Date: 06/14/21	Scale: NTS	
Path: C:\Users\rconway\Desktop\Production WO\841793\WO 1963264 - SA\Prod\841793_RPA.eri		Dwg No. E-1	

Tower Input Data

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

- Tower is located in Hartford County, Connecticut.
- Tower base elevation above sea level: 94.00 ft.
- Basic wind speed of 125 mph.
- Risk Category II.
- Exposure Category C.
- Simplified Topographic Factor Procedure for wind speed-up calculations is used.
- Topographic Category: 1.
- Crest Height: 0.00 ft.
- Nominal ice thickness of 2.0000 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.
- A non-linear (P-delta) analysis was used.
- Pressures are calculated at each section.
- Stress ratio used in pole design is 1.
- Tower analysis based on target reliabilities in accordance with Annex S.
- Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.
- Maximum demand-capacity ratio is: 1.05.
- Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	147.46-115.42	32.04	3.85	18	24.0000	31.2500	0.2188	0.8750	A607-60 (60 ksi)
L2	115.42-74.29	44.98	4.66	18	29.9413	37.7500	0.2188	0.8750	A607-60 (60 ksi)
L3	74.29-39.21	39.74	5.50	18	36.5034	44.6250	0.3125	1.2500	A607-60 (60 ksi)
L4	39.21-0.00	44.71		18	42.8761	51.2500	0.3750	1.5000	A607-60 (60 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	24.3365	16.5116	1179.7676	8.4423	12.1920	96.7657	2361.0876	8.2574	3.8390	17.55
	31.6983	21.5454	2621.1402	11.0161	15.8750	165.1112	5245.7293	10.7747	5.1150	23.383
L2	31.0482	20.6368	2303.3061	10.5515	15.2102	151.4318	4609.6429	10.3203	4.8847	22.33
	38.2986	26.0584	4637.3676	13.3236	19.1770	241.8192	9280.8371	13.0317	6.2590	28.613
L3	37.9853	35.8969	5940.0926	12.8478	18.5437	320.3288	11888.0014	17.9518	5.8746	18.799
	45.2652	43.9525	10903.6814	15.7309	22.6695	480.9846	21821.7101	21.9804	7.3040	23.373
L4	44.5257	50.5869	11544.5026	15.0879	21.7810	530.0252	23104.1957	25.2983	6.8862	18.363
	51.9828	60.5540	19801.0813	18.0606	26.0350	760.5562	39628.2174	30.2827	8.3600	22.293

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 147.46-115.42				1	1	1			
L2 115.42-74.29				1	1	1			
L3 74.29-39.21				1	1	1			
L4 39.21-0.00				1	1	1			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
Safety Line 3/8	A	No	Surface Ar (CaAa)	147.46 - 8.00	1	1	0.490 0.500	0.3750		0.22
****										
***										

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	C_AA_A ft^2/ft	Weight plf
*****149*****								

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
LDF5-50A(7/8)	C	No	No	Inside Pole	147.46 - 0.00	1	No Ice	0.00	0.33
							1/2" Ice	0.00	0.33
							1" Ice	0.00	0.33
							2" Ice	0.00	0.33
*****140*****									
EU 90-FR(ELLIPTICAL)	C	No	No	Inside Pole	140.00 - 0.00	1	No Ice	0.00	0.34
							1/2" Ice	0.00	0.34
							1" Ice	0.00	0.34
							2" Ice	0.00	0.34
*****139*****									
LDF5-50A(7/8)	C	No	No	Inside Pole	141.00 - 0.00	2	No Ice	0.00	0.33
							1/2" Ice	0.00	0.33
							1" Ice	0.00	0.33
							2" Ice	0.00	0.33
LDF4-50A(1/2)	C	No	No	Inside Pole	141.00 - 0.00	1	No Ice	0.00	0.15
							1/2" Ice	0.00	0.15
							1" Ice	0.00	0.15
							2" Ice	0.00	0.15
*****130*****									
LDF7-50A(1-5/8)	C	No	No	Inside Pole	130.00 - 0.00	6	No Ice	0.00	0.82
							1/2" Ice	0.00	0.82
							1" Ice	0.00	0.82
							2" Ice	0.00	0.82
FB-L98B-034-XXX(3/8)	C	No	No	Inside Pole	130.00 - 0.00	2	No Ice	0.00	0.06
							1/2" Ice	0.00	0.06
							1" Ice	0.00	0.06
							2" Ice	0.00	0.06
WR-VG86ST-BRD(3/4)	C	No	No	Inside Pole	130.00 - 0.00	4	No Ice	0.00	0.58
							1/2" Ice	0.00	0.58
							1" Ice	0.00	0.58
							2" Ice	0.00	0.58
WR-VG86ST-BRD(3/4)	C	No	No	Inside Pole	130.00 - 0.00	4	No Ice	0.00	0.58
							1/2" Ice	0.00	0.58
							1" Ice	0.00	0.58
							2" Ice	0.00	0.58
2" innerduct conduit	C	No	No	Inside Pole	130.00 - 0.00	2	No Ice	0.00	0.20
							1/2" Ice	0.00	0.20
							1" Ice	0.00	0.20
							2" Ice	0.00	0.20
*****118*****									
LDF5-50A(7/8)	C	No	No	Inside Pole	118.00 - 0.00	1	No Ice	0.00	0.33
							1/2" Ice	0.00	0.33
							1" Ice	0.00	0.33
							2" Ice	0.00	0.33
*****108*****									
HB158-21U6M48-30F(1-5/8)	C	No	No	Inside Pole	108.00 - 0.00	3	No Ice	0.00	2.39
							1/2" Ice	0.00	2.39
							1" Ice	0.00	2.39
							2" Ice	0.00	2.39
9207(5/16)	C	No	No	Inside Pole	108.00 - 0.00	6	No Ice	0.00	0.60
							1/2" Ice	0.00	0.60
							1" Ice	0.00	0.60
							2" Ice	0.00	0.60
LDF4-50A(1/2)	C	No	No	Inside Pole	108.00 - 0.00	4	No Ice	0.00	0.15
							1/2" Ice	0.00	0.15
							1" Ice	0.00	0.15
							2" Ice	0.00	0.15
2" innerduct conduit	C	No	No	Inside Pole	108.00 - 0.00	1	No Ice	0.00	0.20
							1/2" Ice	0.00	0.20
							1" Ice	0.00	0.20
							2" Ice	0.00	0.20
*****85*****									
1110(13/32)	C	No	No	Inside Pole	85.00 - 0.00	5	No Ice	0.00	0.05
							1/2" Ice	0.00	0.05
							1" Ice	0.00	0.05
							2" Ice	0.00	0.05
****									
***									

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
***									
CU12PSM9P6XXX (1-1/2)	B	No	No	Inside Pole	98.00 - 0.00	1	No Ice	0.00	2.35
							1/2" Ice	0.00	2.35
							1" Ice	0.00	2.35
							2" Ice	0.00	2.35

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	147.46-115.42	A	0.000	0.000	1.202	0.000	0.01
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.19
L2	115.42-74.29	A	0.000	0.000	1.542	0.000	0.01
		B	0.000	0.000	0.000	0.000	0.06
		C	0.000	0.000	0.000	0.000	0.88
L3	74.29-39.21	A	0.000	0.000	1.316	0.000	0.01
		B	0.000	0.000	0.000	0.000	0.08
		C	0.000	0.000	0.000	0.000	0.83
L4	39.21-0.00	A	0.000	0.000	1.170	0.000	0.01
		B	0.000	0.000	0.000	0.000	0.09
		C	0.000	0.000	0.000	0.000	0.93

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	147.46-115.42	A	1.951	0.000	0.000	13.704	0.000	0.18
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.19
L2	115.42-74.29	A	1.888	0.000	0.000	17.590	0.000	0.24
		B		0.000	0.000	0.000	0.000	0.06
		C		0.000	0.000	0.000	0.000	0.88
L3	74.29-39.21	A	1.794	0.000	0.000	14.566	0.000	0.19
		B		0.000	0.000	0.000	0.000	0.08
		C		0.000	0.000	0.000	0.000	0.83
L4	39.21-0.00	A	1.615	0.000	0.000	12.369	0.000	0.16
		B		0.000	0.000	0.000	0.000	0.09
		C		0.000	0.000	0.000	0.000	0.93

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	147.46-115.42	-0.0032	-0.3014	-0.0173	-1.6542
L2	115.42-74.29	-0.0032	-0.3018	-0.0181	-1.7294
L3	74.29-39.21	-0.0032	-0.3022	-0.0182	-1.7415
L4	39.21-0.00	-0.0025	-0.2376	-0.0143	-1.3625

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

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L1	1	Safety Line 3/8	115.42 - 147.46	1.0000	1.0000
L2	1	Safety Line 3/8	74.29 - 115.42	1.0000	1.0000
L3	1	Safety Line 3/8	39.21 - 74.29	1.0000	1.0000
L4	1	Safety Line 3/8	8.00 - 39.21	1.0000	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
14" x 2' Top Hat	C	None		0.0000	147.46	No Ice	1.17	1.17	0.11
						1/2" Ice	1.82	1.82	0.13
						1" Ice	2.02	2.02	0.16
						2" Ice	2.45	2.45	0.22
149									
DB225-C	A	From Leg	3.00 6.00 4.00	0.0000	149.00	No Ice	2.32	2.32	0.03
						1/2" Ice	4.18	4.18	0.04
						1" Ice	6.03	6.03	0.04
						2" Ice	9.74	9.74	0.06
Platform Mount [LP 1201-1]	C	None		0.0000	149.00	No Ice	18.38	18.38	2.10
						1/2" Ice	22.11	22.11	2.65
						1" Ice	25.87	25.87	3.26
						2" Ice	33.47	33.47	4.66
(4) 6' x 2" Mount Pipe	A	From Leg	3.00 0.00 0.00	0.0000	149.00	No Ice	1.43	1.43	0.02
						1/2" Ice	1.92	1.92	0.03
						1" Ice	2.29	2.29	0.05
						2" Ice	3.06	3.06	0.09
(4) 6' x 2" Mount Pipe	B	From Leg	3.00 0.00 0.00	0.0000	149.00	No Ice	1.43	1.43	0.02
						1/2" Ice	1.92	1.92	0.03
						1" Ice	2.29	2.29	0.05
						2" Ice	3.06	3.06	0.09
(4) 6' x 2" Mount Pipe	C	From Leg	3.00 0.00 0.00	0.0000	149.00	No Ice	1.43	1.43	0.02
						1/2" Ice	1.92	1.92	0.03
						1" Ice	2.29	2.29	0.05
						2" Ice	3.06	3.06	0.09
141									
CC807-11	A	From Leg	2.00 0.00 6.00	0.0000	141.00	No Ice	5.27	5.27	0.05
						1/2" Ice	7.04	7.04	0.09
						1" Ice	8.83	8.83	0.14
						2" Ice	12.45	12.45	0.27

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment ° °	Placement ft ft		C_AA_A Front ft^2 ft^2	C_AA_A Side ft^2 ft^2	Weight K K
CC807-11	B	From Leg	2.00 0.00 6.00	0.0000	141.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.27 7.04 8.83 12.45	5.27 7.04 8.83 12.45	0.05 0.09 0.14 0.27
432E-83I-01-T	A	From Leg	2.00 0.00 6.00	0.0000	141.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.20 1.34 1.48 1.79	0.75 0.86 0.98 1.24	0.03 0.04 0.05 0.09
Side Arm Mount [SO 901-1]	A	None		0.0000	141.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.33 0.46 0.62 1.01	0.62 0.78 0.97 1.43	0.11 0.11 0.12 0.15
Side Arm Mount [SO 901-1]	B	None		0.0000	141.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.33 0.46 0.62 1.01	0.62 0.78 0.97 1.43	0.11 0.11 0.12 0.15
140									
Pipe Mount [PM 601-1]	A	From Leg	0.50 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.32 1.58 1.84 2.40	1.32 1.58 1.84 2.40	0.07 0.08 0.09 0.13
130									
QS66512-2	A	From Face	3.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.01 4.41 4.81 5.65	3.37 3.76 4.15 4.97	0.11 0.17 0.23 0.38
QS66512-2	C	From Face	3.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.01 4.41 4.81 5.65	3.37 3.76 4.15 4.97	0.11 0.17 0.23 0.38
OPA65R-BU6D	A	From Face	3.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice 2" Ice	12.22 12.98 13.75 15.35	4.54 5.19 5.86 7.24	0.06 0.14 0.22 0.40
OPA65R-BU8D	B	From Face	3.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice 2" Ice	17.42 18.44 19.47 21.59	6.48 7.38 8.30 10.19	0.08 0.18 0.28 0.52
OPA65R-BU6D	C	From Face	3.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice 2" Ice	12.22 12.98 13.75 15.35	4.54 5.19 5.86 7.24	0.06 0.14 0.22 0.40
DMP65R-BU6D	A	From Face	3.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice 2" Ice	11.93 12.68 13.45 15.03	4.48 5.12 5.78 7.16	0.09 0.16 0.24 0.43
DMP65R-BU8D	B	From Face	3.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice 2" Ice	15.86 16.80 17.75 19.71	5.95 6.78 7.64 9.39	0.11 0.20 0.31 0.55
DMP65R-BU6D	C	From Face	3.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice Ice	11.93 12.68 13.45	4.48 5.12 5.78	0.09 0.16 0.24

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						1" Ice	15.03	7.16	0.43
						2" Ice			
TPA-65R-LCUUUU-H8	B	From Face	3.00	0.0000	130.00	No Ice	11.87	7.02	0.08
			0.00			1/2"	12.82	7.91	0.16
			0.00			Ice	13.77	8.82	0.25
						1" Ice	15.74	10.68	0.45
						2" Ice			
(2) DC6-48-60-18-8F	A	From Face	1.00	0.0000	130.00	No Ice	1.21	1.21	0.02
			0.00			1/2"	1.89	1.89	0.04
			0.00			Ice	2.11	2.11	0.07
						1" Ice	2.57	2.57	0.13
						2" Ice			
DC6-48-60-18-8F	B	From Face	3.00	0.0000	130.00	No Ice	1.21	1.21	0.02
			0.00			1/2"	1.89	1.89	0.04
			0.00			Ice	2.11	2.11	0.07
						1" Ice	2.57	2.57	0.13
						2" Ice			
DC6-48-60-18-8F	C	From Face	3.00	0.0000	130.00	No Ice	1.21	1.21	0.02
			0.00			1/2"	1.89	1.89	0.04
			0.00			Ice	2.11	2.11	0.07
						1" Ice	2.57	2.57	0.13
						2" Ice			
RRUS E2 B29	A	From Face	3.00	0.0000	130.00	No Ice	0.00	1.29	0.06
			0.00			1/2"	3.36	1.44	0.08
			0.00			Ice	3.59	1.60	0.11
						1" Ice	4.07	1.95	0.17
						2" Ice			
RRUS E2 B29	B	From Face	3.00	0.0000	130.00	No Ice	0.00	1.29	0.06
			0.00			1/2"	3.36	1.44	0.08
			0.00			Ice	3.59	1.60	0.11
						1" Ice	4.07	1.95	0.17
						2" Ice			
RRUS E2 B29	C	From Face	3.00	0.0000	130.00	No Ice	0.00	1.29	0.06
			0.00			1/2"	3.36	1.44	0.08
			0.00			Ice	3.59	1.60	0.11
						1" Ice	4.07	1.95	0.17
						2" Ice			
(2) RRUS 32 B2	A	From Face	3.00	0.0000	130.00	No Ice	2.73	1.67	0.05
			0.00			1/2"	2.95	1.86	0.07
			0.00			Ice	3.18	2.05	0.10
						1" Ice	3.66	2.46	0.16
						2" Ice			
(2) RRUS 32 B2	B	From Face	3.00	0.0000	130.00	No Ice	2.73	1.67	0.05
			0.00			1/2"	2.95	1.86	0.07
			0.00			Ice	3.18	2.05	0.10
						1" Ice	3.66	2.46	0.16
						2" Ice			
(2) RRUS 32 B2	C	From Face	3.00	0.0000	130.00	No Ice	2.73	1.67	0.05
			0.00			1/2"	2.95	1.86	0.07
			0.00			Ice	3.18	2.05	0.10
						1" Ice	3.66	2.46	0.16
						2" Ice			
RRUS 32 B66A	A	From Face	3.00	0.0000	130.00	No Ice	0.00	1.78	0.06
			0.00			1/2"	3.09	1.97	0.08
			0.00			Ice	3.32	2.17	0.10
						1" Ice	3.81	2.59	0.16
						2" Ice			
RRUS 32 B66A	B	From Face	3.00	0.0000	130.00	No Ice	0.00	1.78	0.06
			0.00			1/2"	3.09	1.97	0.08
			0.00			Ice	3.32	2.17	0.10
						1" Ice	3.81	2.59	0.16
						2" Ice			
RRUS 32 B66A	C	From Face	3.00	0.0000	130.00	No Ice	0.00	1.78	0.06
			0.00			1/2"	3.09	1.97	0.08
			0.00			Ice	3.32	2.17	0.10

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						1" Ice	3.81	2.59	0.16
						2" Ice			
RRUS 4478 B14_CCIV2	A	From Face	3.00	0.0000	130.00	No Ice	0.00	1.25	0.06
			0.00			1/2"	2.20	1.40	0.08
			0.00			Ice	2.39	1.55	0.10
						1" Ice	2.78	1.89	0.15
						2" Ice			
RRUS 4478 B14_CCIV2	B	From Face	3.00	0.0000	130.00	No Ice	0.00	1.25	0.06
			0.00			1/2"	2.20	1.40	0.08
			0.00			Ice	2.39	1.55	0.10
						1" Ice	2.78	1.89	0.15
						2" Ice			
RRUS 4478 B14_CCIV2	C	From Face	3.00	0.0000	130.00	No Ice	0.00	1.25	0.06
			0.00			1/2"	2.20	1.40	0.08
			0.00			Ice	2.39	1.55	0.10
						1" Ice	2.78	1.89	0.15
						2" Ice			
RRUS 32 B30	A	From Face	3.00	0.0000	130.00	No Ice	0.00	1.57	0.06
			0.00			1/2"	2.91	1.76	0.08
			0.00			Ice	3.14	1.95	0.10
						1" Ice	3.61	2.35	0.16
						2" Ice			
RRUS 32 B30	B	From Face	3.00	0.0000	130.00	No Ice	0.00	1.57	0.06
			0.00			1/2"	2.91	1.76	0.08
			0.00			Ice	3.14	1.95	0.10
						1" Ice	3.61	2.35	0.16
						2" Ice			
RRUS 32 B30	C	From Face	3.00	0.0000	130.00	No Ice	0.00	1.57	0.06
			0.00			1/2"	2.91	1.76	0.08
			0.00			Ice	3.14	1.95	0.10
						1" Ice	3.61	2.35	0.16
						2" Ice			
RRUS 4449 B5/B12	A	From Face	3.00	0.0000	130.00	No Ice	0.00	1.41	0.07
			0.00			1/2"	2.14	1.56	0.09
			0.00			Ice	2.33	1.73	0.11
						1" Ice	2.72	2.07	0.16
						2" Ice			
RRUS 4449 B5/B12	B	From Face	3.00	0.0000	130.00	No Ice	0.00	1.41	0.07
			0.00			1/2"	2.14	1.56	0.09
			0.00			Ice	2.33	1.73	0.11
						1" Ice	2.72	2.07	0.16
						2" Ice			
RRUS 4449 B5/B12	C	From Face	3.00	0.0000	130.00	No Ice	0.00	1.41	0.07
			0.00			1/2"	2.14	1.56	0.09
			0.00			Ice	2.33	1.73	0.11
						1" Ice	2.72	2.07	0.16
						2" Ice			
Platform Mount [LP 301-1_KCKR]	C	None		0.0000	130.00	No Ice	35.03	35.03	1.86
						1/2"	44.46	44.46	2.52
						Ice	53.72	53.72	3.33
						1" Ice	72.29	72.29	5.42
						2" Ice			
118									
BPA7496-180-11 w/ Mount Pipe	A	From Face	6.00	0.0000	118.00	No Ice	6.07	5.17	0.04
			0.00			1/2"	6.53	6.05	0.09
			0.00			Ice	6.99	6.81	0.15
						1" Ice	7.91	8.37	0.29
						2" Ice			
Side Arm Mount [SO 308-1]	A	None		0.0000	118.00	No Ice	0.41	3.06	0.05
						1/2"	0.81	5.10	0.08
						Ice	1.23	7.20	0.12
						1" Ice	2.09	11.96	0.25
						2" Ice			
6' x 2" Horizontal Mount Pipe	A	From Leg	3.00	0.0000	118.00	No Ice	1.14	0.01	0.02
			0.00			1/2"	1.76	0.04	0.03

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00			Ice	2.14	0.09	0.04
						1" Ice	2.90	0.21	0.08
						2" Ice			
108									
AIR6449 B41_T-MOBILE w/ Mount Pipe	A	From Leg	4.00 0.00 1.00	0.0000	108.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.19 5.59 6.02 6.90	2.71 3.04 3.38 4.12	0.13 0.17 0.23 0.35
AIR6449 B41_T-MOBILE w/ Mount Pipe	B	From Leg	4.00 0.00 1.00	0.0000	108.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.19 5.59 6.02 6.90	2.71 3.04 3.38 4.12	0.13 0.17 0.23 0.35
AIR6449 B41_T-MOBILE w/ Mount Pipe	C	From Leg	4.00 0.00 1.00	0.0000	108.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.19 5.59 6.02 6.90	2.71 3.04 3.38 4.12	0.13 0.17 0.23 0.35
APXVAALL24_43-U-NA20_TMO w/ Mount Pipe	A	From Leg	4.00 0.00 1.00	0.0000	108.00	No Ice 1/2" Ice 1" Ice 2" Ice	14.69 15.46 16.23 17.82	6.87 7.55 8.25 9.67	0.18 0.31 0.45 0.78
APXVAALL24_43-U-NA20_TMO w/ Mount Pipe	B	From Leg	4.00 0.00 1.00	0.0000	108.00	No Ice 1/2" Ice 1" Ice 2" Ice	14.69 15.46 16.23 17.82	6.87 7.55 8.25 9.67	0.18 0.31 0.45 0.78
APXVAALL24_43-U-NA20_TMO w/ Mount Pipe	C	From Leg	4.00 0.00 1.00	0.0000	108.00	No Ice 1/2" Ice 1" Ice 2" Ice	14.69 15.46 16.23 17.82	6.87 7.55 8.25 9.67	0.18 0.31 0.45 0.78
APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	A	From Leg	4.00 0.00 1.00	0.0000	108.00	No Ice 1/2" Ice 1" Ice 2" Ice	6.29 6.86 7.45 8.68	2.76 3.27 3.79 4.90	0.06 0.11 0.16 0.29
APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	B	From Leg	4.00 0.00 1.00	0.0000	108.00	No Ice 1/2" Ice 1" Ice 2" Ice	6.29 6.86 7.45 8.68	2.76 3.27 3.79 4.90	0.06 0.11 0.16 0.29
APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	C	From Leg	4.00 0.00 1.00	0.0000	108.00	No Ice 1/2" Ice 1" Ice 2" Ice	6.29 6.86 7.45 8.68	2.76 3.27 3.79 4.90	0.06 0.11 0.16 0.29
RADIO 4480 B71_TMO	A	From Leg	4.00 0.00 1.00	0.0000	108.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.85 3.06 3.28 3.74	1.38 1.54 1.71 2.07	0.09 0.11 0.14 0.20
RADIO 4480 B71_TMO	B	From Leg	4.00 0.00 1.00	0.0000	108.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.85 3.06 3.28 3.74	1.38 1.54 1.71 2.07	0.09 0.11 0.14 0.20
RADIO 4480 B71_TMO	C	From Leg	4.00 0.00 1.00	0.0000	108.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.85 3.06 3.28 3.74	1.38 1.54 1.71 2.07	0.09 0.11 0.14 0.20
RADIO 4460 B2/B25	B	From Leg	4.00	0.0000	108.00	No Ice	2.14	1.69	0.11

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
B66_TMO			0.00 1.00			1/2" Ice 1" Ice 2" Ice	2.32 2.51 2.91	1.85 2.02 2.39	0.13 0.16 0.22
RADIO 4460 B2/B25 B66_TMO	C	From Leg	4.00 0.00 1.00	0.0000	108.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.14 2.32 2.51 2.91	1.69 1.85 2.02 2.39	0.11 0.13 0.16 0.22
VFA10-SD	A	None		0.0000	108.00	No Ice 1/2" Ice 1" Ice 2" Ice	12.10 18.30 24.50 36.90	9.20 14.60 20.00 30.80	0.63 0.77 0.91 1.18
VFA10-SD	B	None		0.0000	108.00	No Ice 1/2" Ice 1" Ice 2" Ice	12.10 18.30 24.50 36.90	9.20 14.60 20.00 30.80	0.63 0.77 0.91 1.18
VFA10-SD	C	None		0.0000	108.00	No Ice 1/2" Ice 1" Ice 2" Ice	12.10 18.30 24.50 36.90	9.20 14.60 20.00 30.80	0.63 0.77 0.91 1.18
(2) 8' x 2" Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	108.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.90 2.73 3.40 4.40	1.90 2.73 3.40 4.40	0.03 0.04 0.06 0.12
(2) 8' x 2" Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	108.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.90 2.73 3.40 4.40	1.90 2.73 3.40 4.40	0.03 0.04 0.06 0.12
(2) 8' x 2" Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	108.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.90 2.73 3.40 4.40	1.90 2.73 3.40 4.40	0.03 0.04 0.06 0.12
*****									
MX08FRO665-21 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	98.00	No Ice 1/2" Ice 1" Ice 2" Ice	8.01 8.52 9.04 10.11	4.23 4.69 5.16 6.12	0.11 0.19 0.29 0.52
MX08FRO665-21 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	98.00	No Ice 1/2" Ice 1" Ice 2" Ice	8.01 8.52 9.04 10.11	4.23 4.69 5.16 6.12	0.11 0.19 0.29 0.52
MX08FRO665-21 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	98.00	No Ice 1/2" Ice 1" Ice 2" Ice	8.01 8.52 9.04 10.11	4.23 4.69 5.16 6.12	0.11 0.19 0.29 0.52
TA08025-B604	A	From Leg	4.00 0.00 0.00	0.0000	98.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.00 2.14 2.32 2.71	0.98 1.11 1.25 1.55	0.06 0.08 0.10 0.15
TA08025-B604	B	From Leg	4.00 0.00 0.00	0.0000	98.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.00 2.14 2.32 2.71	0.98 1.11 1.25 1.55	0.06 0.08 0.10 0.15

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
TA08025-B604	C	From Leg	4.00 0.00 0.00	0.0000	98.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.00 2.14 2.32 2.71	0.98 1.11 1.25 1.55	0.06 0.08 0.10 0.15
TA08025-B605	A	From Leg	4.00 0.00 0.00	0.0000	98.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.00 2.14 2.32 2.71	1.13 1.27 1.41 1.72	0.08 0.09 0.11 0.16
TA08025-B605	B	From Leg	4.00 0.00 0.00	0.0000	98.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.00 2.14 2.32 2.71	1.13 1.27 1.41 1.72	0.08 0.09 0.11 0.16
TA08025-B605	C	From Leg	4.00 0.00 0.00	0.0000	98.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.00 2.14 2.32 2.71	1.13 1.27 1.41 1.72	0.08 0.09 0.11 0.16
RDIDC-9181-PF-48	A	From Leg	4.00 0.00 0.00	0.0000	98.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.31 2.50 2.70 3.12	1.29 1.45 1.61 1.96	0.02 0.04 0.06 0.12
Commscope MC-K6MHDX-9-96 (3)	C	None		0.0000	98.00	No Ice 1/2" Ice 1" Ice 2" Ice	15.30 20.48 25.66 36.02	15.30 20.48 25.66 36.02	1.19 1.71 2.22 3.25
(2) 8' x 2" Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	98.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.90 2.73 3.40 4.40	1.90 2.73 3.40 4.40	0.03 0.04 0.06 0.12
(2) 8' x 2" Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	98.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.90 2.73 3.40 4.40	1.90 2.73 3.40 4.40	0.03 0.04 0.06 0.12
(2) 8' x 2" Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	98.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.90 2.73 3.40 4.40	1.90 2.73 3.40 4.40	0.03 0.04 0.06 0.12
85									
WH 14-69/S	C	From Face	2.00 0.00 0.00	0.0000	85.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.32 3.37 4.42 6.52	2.32 3.37 4.42 6.52	0.00 0.00 0.00 0.01
WL 14-69/S	A	From Face	2.00 0.00 0.00	0.0000	85.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.63 1.02 1.42 2.21	0.63 1.02 1.42 2.21	0.01 0.02 0.04 0.06
WL 14-69/S	A	From Face	2.00 0.00 -2.00	0.0000	85.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.63 1.02 1.42 2.21	0.63 1.02 1.42 2.21	0.01 0.02 0.04 0.06
WL 14-69/S	C	From Face	2.00 0.00 -2.00	0.0000	85.00	No Ice 1/2" Ice 1" Ice	0.63 1.02 1.42 2.21	0.63 1.02 1.42 2.21	0.01 0.02 0.04 0.06

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						2" Ice			
J105-HI	C	From Face	2.00 0.00 -7.00	0.0000	85.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.92 3.39 4.85 7.79	0.10 0.24 0.37 0.64	0.01 0.02 0.04 0.07
(2) Side Arm Mount [SO 102-3]	C	None		0.0000	85.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.60 4.18 4.75 5.90	3.60 4.18 4.75 5.90	0.07 0.11 0.14 0.20
(2) Side Arm Mount [SO 901-1]	A	From Face	0.00 0.00 0.00	0.0000	85.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.33 0.46 0.62 1.01	0.62 0.78 0.97 1.43	0.11 0.11 0.12 0.15
(2) Side Arm Mount [SO 901-1]	C	From Face	0.00 0.00 0.00	0.0000	85.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.33 0.46 0.62 1.01	0.62 0.78 0.97 1.43	0.11 0.11 0.12 0.15
10' x 2" Mount Pipe	A	From Face	2.00 0.00 0.00	0.0000	85.00	No Ice 1/2" Ice Ice 1" Ice 2" Ice	2.38 3.40 4.45 5.91	2.38 3.40 4.45 5.91	0.04 0.05 0.08 0.15
10' x 2" Mount Pipe	C	From Face	2.00 0.00 0.00	0.0000	85.00	No Ice 1/2" Ice Ice 1" Ice 2" Ice	2.38 3.40 4.45 5.91	2.38 3.40 4.45 5.91	0.04 0.05 0.08 0.15
***** ***** *****									

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight K
*****140*****											
SC3-W100ASTX	A	Paraboloid w/Shroud (HP)	From Leg	1.00 0.00 0.00	-4.0000		140.00	3.00	No Ice 1/2" Ice 1" Ice 2" Ice	7.07 7.47 7.87 8.66	0.04 0.08 0.12 0.19
108											
VHLP800-11	A	Paraboloid w/Shroud (HP)	From Leg	1.00 0.00 1.00	74.0000		108.00	2.92	No Ice 1/2" Ice 1" Ice 2" Ice	6.68 7.07 7.46 8.23	0.02 0.03 0.03 0.07
VHLP800-11	B	Paraboloid w/Shroud (HP)	From Leg	1.00 0.00 1.00	74.0000		108.00	2.92	No Ice 1/2" Ice 1" Ice 2" Ice	6.68 7.07 7.46 8.23	0.02 0.03 0.03 0.07
VHLP2-18	A	Paraboloid w/Shroud (HP)	From Leg	1.00 1.00 -1.00	39.0000		108.00	2.17	No Ice 1/2" Ice 1" Ice	3.72 4.01 4.30	0.03 0.05 0.07

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight K
									2" Ice	4.88	0.11
VHLP2-18	B	Paraboloid w/Shroud (HP)	From Leg	1.00 1.00 -1.00	39.0000		108.00	2.17	No Ice	3.72	0.03
									1/2" Ice	4.01	0.05
									1" Ice	4.30	0.07
									2" Ice	4.88	0.11
****											

Load Combinations

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

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	147.458 - 115.418	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-26.09	-2.03	2.48
			Max. Mx	8	-9.39	-204.77	2.57
			Max. My	14	-9.37	1.69	-207.58
			Max. Vy	20	-12.81	204.28	-0.47
			Max. Vx	14	12.88	1.69	-207.58
			Max. Torque	24			-3.39
L2	115.418 - 74.2933	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-54.54	0.99	3.10
			Max. Mx	20	-22.06	1050.58	-11.48
			Max. My	14	-22.04	15.37	-1057.21
			Max. Vy	20	-26.60	1050.58	-11.48
			Max. Vx	2	-26.79	-13.98	1054.50
			Max. Torque	22			-4.74
L3	74.2933 - 39.21	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-65.42	1.29	3.32
			Max. Mx	20	-29.79	2020.22	-22.38
			Max. My	14	-29.78	28.90	-2033.02
			Max. Vy	20	-29.97	2020.22	-22.38
			Max. Vx	2	-30.16	-26.52	2030.75
			Max. Torque	22			-3.81
L4	39.21 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-83.03	1.60	3.50
			Max. Mx	20	-43.40	3448.39	-36.32
			Max. My	14	-43.40	46.12	-3469.05
			Max. Vy	20	-33.65	3448.39	-36.32
			Max. Vx	2	-33.84	-42.43	3467.39
			Max. Torque	22			-3.79

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	27	83.03	-0.07	10.04
	Max. H_x	20	43.43	33.61	-0.30
	Max. H_z	2	43.43	-0.35	33.80
	Max. M_x	2	3467.39	-0.35	33.80
	Max. M_z	8	3432.31	-33.48	0.35
	Max. Torsion	10	3.49	-28.84	-16.78
	Min. Vert	11	32.57	-28.84	-16.78
	Min. H_x	8	43.43	-33.48	0.35
	Min. H_z	15	32.57	0.38	-33.79
	Min. M_x	14	-3469.05	0.38	-33.79
	Min. M_z	20	-3448.39	33.61	-0.30
	Min. Torsion	22	-3.79	28.92	16.74

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	36.19	0.00	0.00	-0.01	0.31	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	43.43	0.35	-33.80	-3467.39	-42.43	1.36

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
0.9 Dead+1.0 Wind 0 deg - No Ice	32.57	0.35	-33.80	-3425.26	-41.99	1.36
1.2 Dead+1.0 Wind 30 deg - No Ice	43.43	16.92	-29.42	-3023.06	-1737.73	-0.35
0.9 Dead+1.0 Wind 30 deg - No Ice	32.57	16.92	-29.42	-2986.30	-1716.70	-0.34
1.2 Dead+1.0 Wind 60 deg - No Ice	43.43	29.06	-17.27	-1781.42	-2979.88	-1.75
0.9 Dead+1.0 Wind 60 deg - No Ice	32.57	29.06	-17.27	-1759.73	-2943.75	-1.75
1.2 Dead+1.0 Wind 90 deg - No Ice	43.43	33.48	-0.35	-42.93	-3432.31	-2.99
0.9 Dead+1.0 Wind 90 deg - No Ice	32.57	33.48	-0.35	-42.38	-3390.69	-2.99
1.2 Dead+1.0 Wind 120 deg - No Ice	43.43	28.84	16.78	1723.63	-2951.77	-3.49
0.9 Dead+1.0 Wind 120 deg - No Ice	32.57	28.84	16.78	1702.65	-2916.03	-3.49
1.2 Dead+1.0 Wind 150 deg - No Ice	43.43	16.45	29.20	2997.36	-1679.25	-2.75
0.9 Dead+1.0 Wind 150 deg - No Ice	32.57	16.45	29.20	2960.91	-1658.97	-2.75
1.2 Dead+1.0 Wind 180 deg - No Ice	43.43	-0.38	33.79	3469.05	46.12	-0.95
0.9 Dead+1.0 Wind 180 deg - No Ice	32.57	-0.38	33.79	3426.87	45.44	-0.95
1.2 Dead+1.0 Wind 210 deg - No Ice	43.43	-17.03	29.46	3029.98	1751.04	0.74
0.9 Dead+1.0 Wind 210 deg - No Ice	32.57	-17.03	29.46	2993.12	1729.66	0.73
1.2 Dead+1.0 Wind 240 deg - No Ice	43.43	-29.13	17.35	1792.91	2987.38	1.93
0.9 Dead+1.0 Wind 240 deg - No Ice	32.57	-29.13	17.35	1771.06	2950.99	1.92
1.2 Dead+1.0 Wind 270 deg - No Ice	43.43	-33.61	0.30	36.32	3448.39	3.16
0.9 Dead+1.0 Wind 270 deg - No Ice	32.57	-33.61	0.30	35.87	3406.38	3.16
1.2 Dead+1.0 Wind 300 deg - No Ice	43.43	-28.92	-16.74	-1715.40	2962.09	3.79
0.9 Dead+1.0 Wind 300 deg - No Ice	32.57	-28.92	-16.74	-1694.55	2926.01	3.79
1.2 Dead+1.0 Wind 330 deg - No Ice	43.43	-16.46	-29.20	-2993.73	1680.30	3.13
0.9 Dead+1.0 Wind 330 deg - No Ice	32.57	-16.46	-29.20	-2957.36	1659.80	3.13
1.2 Dead+1.0 Ice+1.0 Temp	83.03	-0.00	-0.00	-3.50	1.60	-0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	83.03	0.07	-10.04	-1115.98	-7.22	0.58
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	83.03	5.00	-8.73	-971.21	-552.12	0.06
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	83.03	8.61	-5.09	-569.78	-951.42	-0.43
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	83.03	9.92	-0.07	-12.61	-1097.13	-0.87
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	83.03	8.56	5.00	550.46	-945.60	-1.08
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	83.03	4.90	8.68	958.51	-540.02	-0.95
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	83.03	-0.07	10.04	1109.00	11.23	-0.49
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	83.03	-5.02	8.74	965.34	558.18	0.02
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	83.03	-8.62	5.11	564.92	956.23	0.46
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	83.03	-9.95	0.06	3.84	1103.73	0.90
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	83.03	-8.58	-4.99	-556.13	950.97	1.14

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	83.03	-4.91	-8.68	-965.11	543.49	1.02
Dead+Wind 0 deg - Service	36.19	0.08	-7.34	-748.17	-8.91	0.30
Dead+Wind 30 deg - Service	36.19	3.67	-6.39	-652.30	-374.71	-0.08
Dead+Wind 60 deg - Service	36.19	6.31	-3.75	-384.38	-642.73	-0.39
Dead+Wind 90 deg - Service	36.19	7.27	-0.07	-9.27	-740.33	-0.66
Dead+Wind 120 deg - Service	36.19	6.26	3.64	371.87	-636.65	-0.76
Dead+Wind 150 deg - Service	36.19	3.57	6.34	646.70	-362.10	-0.60
Dead+Wind 180 deg - Service	36.19	-0.08	7.34	748.50	10.18	-0.21
Dead+Wind 210 deg - Service	36.19	-3.70	6.40	653.78	378.07	0.16
Dead+Wind 240 deg - Service	36.19	-6.32	3.77	386.83	644.84	0.42
Dead+Wind 270 deg - Service	36.19	-7.30	0.07	7.81	744.28	0.69
Dead+Wind 300 deg - Service	36.19	-6.28	-3.63	-370.14	639.34	0.84
Dead+Wind 330 deg - Service	36.19	-3.57	-6.34	-645.95	362.79	0.69

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	K	K	K	K	K	K	
1	0.00	-36.19	0.00	0.00	36.19	0.00	0.000%
2	0.35	-43.43	-33.80	-0.35	43.43	33.80	0.000%
3	0.35	-32.57	-33.80	-0.35	32.57	33.80	0.000%
4	16.92	-43.43	-29.42	-16.92	43.43	29.42	0.000%
5	16.92	-32.57	-29.42	-16.92	32.57	29.42	0.000%
6	29.06	-43.43	-17.27	-29.06	43.43	17.27	0.000%
7	29.06	-32.57	-17.27	-29.06	32.57	17.27	0.000%
8	33.48	-43.43	-0.35	-33.48	43.43	0.35	0.000%
9	33.48	-32.57	-0.35	-33.48	32.57	0.35	0.000%
10	28.84	-43.43	16.78	-28.84	43.43	-16.78	0.000%
11	28.84	-32.57	16.78	-28.84	32.57	-16.78	0.000%
12	16.45	-43.43	29.20	-16.45	43.43	-29.20	0.000%
13	16.45	-32.57	29.20	-16.45	32.57	-29.20	0.000%
14	-0.38	-43.43	33.79	0.38	43.43	-33.79	0.000%
15	-0.38	-32.57	33.79	0.38	32.57	-33.79	0.000%
16	-17.03	-43.43	29.46	17.03	43.43	-29.46	0.000%
17	-17.03	-32.57	29.46	17.03	32.57	-29.46	0.000%
18	-29.13	-43.43	17.35	29.13	43.43	-17.35	0.000%
19	-29.13	-32.57	17.35	29.13	32.57	-17.35	0.000%
20	-33.61	-43.43	0.30	33.61	43.43	-0.30	0.000%
21	-33.61	-32.57	0.30	33.61	32.57	-0.30	0.000%
22	-28.92	-43.43	-16.74	28.92	43.43	16.74	0.000%
23	-28.92	-32.57	-16.74	28.92	32.57	16.74	0.000%
24	-16.46	-43.43	-29.20	16.46	43.43	29.20	0.000%
25	-16.46	-32.57	-29.20	16.46	32.57	29.20	0.000%
26	0.00	-83.03	0.00	0.00	83.03	0.00	0.000%
27	0.07	-83.03	-10.04	-0.07	83.03	10.04	0.000%
28	5.00	-83.03	-8.73	-5.00	83.03	8.73	0.000%
29	8.61	-83.03	-5.09	-8.61	83.03	5.09	0.000%
30	9.92	-83.03	-0.07	-9.92	83.03	0.07	0.000%
31	8.56	-83.03	5.00	-8.56	83.03	-5.00	0.000%
32	4.90	-83.03	8.68	-4.90	83.03	-8.68	0.000%
33	-0.07	-83.03	10.04	0.07	83.03	-10.04	0.000%
34	-5.02	-83.03	8.74	5.02	83.03	-8.74	0.000%
35	-8.62	-83.03	5.11	8.62	83.03	-5.11	0.000%
36	-9.95	-83.03	0.06	9.95	83.03	-0.06	0.000%
37	-8.58	-83.03	-4.99	8.58	83.03	4.99	0.000%
38	-4.91	-83.03	-8.68	4.91	83.03	8.68	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
39	0.08	-36.19	-7.34	-0.08	36.19	7.34	0.000%
40	3.67	-36.19	-6.39	-3.67	36.19	6.39	0.000%
41	6.31	-36.19	-3.75	-6.31	36.19	3.75	0.000%
42	7.27	-36.19	-0.07	-7.27	36.19	0.07	0.000%
43	6.26	-36.19	3.64	-6.26	36.19	-3.64	0.000%
44	3.57	-36.19	6.34	-3.57	36.19	-6.34	0.000%
45	-0.08	-36.19	7.34	0.08	36.19	-7.34	0.000%
46	-3.70	-36.19	6.40	3.70	36.19	-6.40	0.000%
47	-6.32	-36.19	3.77	6.32	36.19	-3.77	0.000%
48	-7.30	-36.19	0.07	7.30	36.19	-0.07	0.000%
49	-6.28	-36.19	-3.63	6.28	36.19	3.63	0.000%
50	-3.57	-36.19	-6.34	3.57	36.19	6.34	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	5	0.00000001	0.00028268
3	Yes	5	0.00000001	0.00012837
4	Yes	6	0.00000001	0.00017836
5	Yes	6	0.00000001	0.00005482
6	Yes	6	0.00000001	0.00018591
7	Yes	6	0.00000001	0.00005739
8	Yes	5	0.00000001	0.00042807
9	Yes	5	0.00000001	0.00019558
10	Yes	6	0.00000001	0.00016242
11	Yes	6	0.00000001	0.00004981
12	Yes	6	0.00000001	0.00018474
13	Yes	6	0.00000001	0.00005783
14	Yes	5	0.00000001	0.00006250
15	Yes	4	0.00000001	0.00072307
16	Yes	6	0.00000001	0.00018152
17	Yes	6	0.00000001	0.00005576
18	Yes	6	0.00000001	0.00017521
19	Yes	6	0.00000001	0.00005342
20	Yes	5	0.00000001	0.00025499
21	Yes	5	0.00000001	0.00011846
22	Yes	6	0.00000001	0.00018838
23	Yes	6	0.00000001	0.00005909
24	Yes	6	0.00000001	0.00016102
25	Yes	6	0.00000001	0.00004946
26	Yes	4	0.00000001	0.00005668
27	Yes	6	0.00000001	0.00017399
28	Yes	6	0.00000001	0.00029876
29	Yes	6	0.00000001	0.00030315
30	Yes	6	0.00000001	0.00017334
31	Yes	6	0.00000001	0.00027618
32	Yes	6	0.00000001	0.00029902
33	Yes	6	0.00000001	0.00017044
34	Yes	6	0.00000001	0.00029234
35	Yes	6	0.00000001	0.00028927
36	Yes	6	0.00000001	0.00017308
37	Yes	6	0.00000001	0.00030830
38	Yes	6	0.00000001	0.00028146
39	Yes	4	0.00000001	0.00021843
40	Yes	4	0.00000001	0.00078376
41	Yes	4	0.00000001	0.00088883
42	Yes	4	0.00000001	0.00035196
43	Yes	4	0.00000001	0.00066934
44	Yes	4	0.00000001	0.00093649
45	Yes	4	0.00000001	0.00015588
46	Yes	4	0.00000001	0.00081518
47	Yes	4	0.00000001	0.00074071
48	Yes	4	0.00000001	0.00032863

49	Yes	4	0.00000001	0.00099958
50	Yes	4	0.00000001	0.00065104

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	147.458 - 115.418	24.053	46	1.3262	0.0089
L2	119.268 - 74.2933	16.342	46	1.2624	0.0061
L3	78.9533 - 39.21	7.092	46	0.8511	0.0021
L4	44.71 - 0	2.282	46	0.4632	0.0008

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
149.00	DB225-C	46	24.053	1.3262	0.0089	57098
147.46	14" x 2' Top Hat	46	24.053	1.3262	0.0089	57098
141.00	CC807-11	46	22.253	1.3220	0.0083	44205
140.00	SC3-W100ASTX	46	21.975	1.3211	0.0082	38278
130.00	QS66512-2	46	19.218	1.3050	0.0072	16352
118.00	BPA7496-180-11 w/ Mount Pipe	46	16.009	1.2549	0.0060	9780
109.00	VHLP800-11	46	13.713	1.1871	0.0050	7770
108.00	AIR6449 B41_T-MOBILE w/ Mount Pipe	46	13.465	1.1781	0.0049	7598
107.00	VHLP2-18	46	13.218	1.1689	0.0048	7434
98.00	MX08FRO665-21 w/ Mount Pipe	46	11.077	1.0766	0.0038	6220
85.00	WH 14-69/S	46	8.266	0.9242	0.0026	5006

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	147.458 - 115.418	111.478	16	6.1705	0.0402
L2	119.268 - 74.2933	75.735	16	5.8657	0.0275
L3	78.9533 - 39.21	32.878	16	3.9502	0.0096
L4	44.71 - 0	10.580	16	2.1484	0.0038

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
149.00	DB225-C	16	111.478	6.1705	0.0402	12708
147.46	14" x 2' Top Hat	16	111.478	6.1705	0.0402	12708
141.00	CC807-11	16	103.134	6.1487	0.0374	9838
140.00	SC3-W100ASTX	16	101.845	6.1443	0.0370	8518
130.00	QS66512-2	16	89.068	6.0662	0.0325	3637
118.00	BPA7496-180-11 w/ Mount Pipe	16	74.195	5.8307	0.0269	2169

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
109.00	VHLP800-11	16	63.553	5.5138	0.0225	1710
108.00	AIR6449 B41_T-MOBILE w/ Mount Pipe	16	62.404	5.4720	0.0220	1670
107.00	VHLP2-18	16	61.262	5.4290	0.0215	1633
98.00	MX08FRO665-21 w/ Mount Pipe	16	51.340	4.9989	0.0172	1358
85.00	WH 14-69/S	16	38.318	4.2900	0.0117	1092

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	147.458 - 115.418 (1)	TP31.25x24x0.2188	32.04	0.00	0.0	20.9405	-9.34	1130.79	0.008
L2	115.418 - 74.2933 (2)	TP37.75x29.9413x0.2188	44.98	0.00	0.0	25.4967	-22.00	1376.82	0.016
L3	74.2933 - 39.21 (3)	TP44.625x36.5034x0.3125	39.74	0.00	0.0	42.8377	-29.76	2313.23	0.013
L4	39.21 - 0 (4)	TP51.25x42.8761x0.375	44.71	0.00	0.0	60.5540	-43.40	3269.91	0.013

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	147.458 - 115.418 (1)	TP31.25x24x0.2188	208.67	807.25	0.258	0.00	807.25	0.000
L2	115.418 - 74.2933 (2)	TP37.75x29.9413x0.2188	1068.05	1102.68	0.969	0.00	1102.68	0.000
L3	74.2933 - 39.21 (3)	TP44.625x36.5034x0.3125	2052.52	2362.72	0.869	0.00	2362.72	0.000
L4	39.21 - 0 (4)	TP51.25x42.8761x0.375	3499.57	3960.31	0.884	0.00	3960.31	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	147.458 - 115.418 (1)	TP31.25x24x0.2188	13.04	339.24	0.038	1.25	896.02	0.001
L2	115.418 - 74.2933 (2)	TP37.75x29.9413x0.2188	27.04	413.05	0.065	0.74	1328.33	0.001
L3	74.2933 - 39.21 (3)	TP44.625x36.5034x0.3125	30.40	693.97	0.044	0.74	2624.76	0.000
L4	39.21 - 0 (4)	TP51.25x42.8761x0.375	34.07	980.97	0.035	0.74	4370.61	0.000

Pole Interaction Design Data

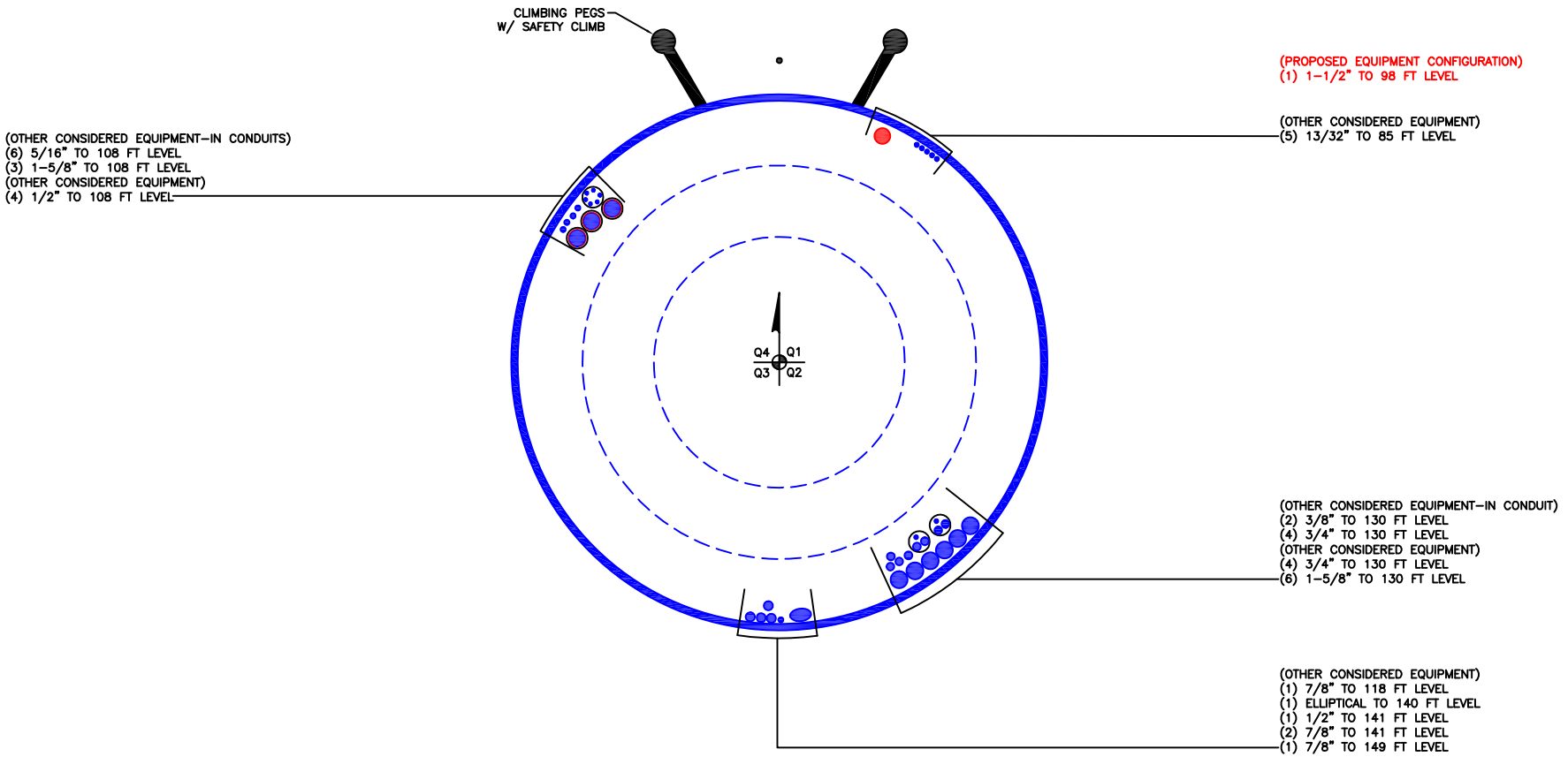
Section No.	Elevation ft	Ratio P_u / ϕP_n	Ratio M_{ux} / ϕM_{nx}	Ratio M_{uy} / ϕM_{ny}	Ratio V_u / ϕV_n	Ratio T_u / ϕT_n	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	147.458 - 115.418 (1)	0.008	0.258	0.000	0.038	0.001	0.268	1.050	4.8.2
L2	115.418 - 74.2933 (2)	0.016	0.969	0.000	0.065	0.001	0.989	1.050	4.8.2
L3	74.2933 - 39.21 (3)	0.013	0.869	0.000	0.044	0.000	0.884	1.050	4.8.2
L4	39.21 - 0 (4)	0.013	0.884	0.000	0.035	0.000	0.898	1.050	4.8.2

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	147.458 - 115.418	Pole	TP31.25x24x0.2188	1	-9.34	1187.33	25.6	Pass
L2	115.418 - 74.2933	Pole	TP37.75x29.9413x0.2188	2	-22.00	1445.66	94.2	Pass
L3	74.2933 - 39.21	Pole	TP44.625x36.5034x0.3125	3	-29.76	2428.89	84.1	Pass
L4	39.21 - 0	Pole	TP51.25x42.8761x0.375	4	-43.40	3433.41	85.5	Pass
							Summary	
						Pole (L2)	94.2	Pass
						RATING =	**94.2**	**Pass**

APPENDIX B

BASE LEVEL DRAWING


CLIMBING PEGS
W/ SAFETY CLIMB
(PROPOSED EQUIPMENT CONFIGURATION)
(1) 1-1/2" TO 98 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(5) 13/32" TO 85 FT LEVEL
(OTHER CONSIDERED EQUIPMENT-IN CONDUITS)
(6) 5/16" TO 108 FT LEVEL
(3) 1-5/8" TO 108 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(4) 1/2" TO 108 FT LEVEL
Q4
Q1
Q3
Q2
(OTHER CONSIDERED EQUIPMENT-IN CONDUIT)
(2) 3/8" TO 130 FT LEVEL
(4) 3/4" TO 130 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(4) 3/4" TO 130 FT LEVEL
(6) 1-5/8" TO 130 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 7/8" TO 118 FT LEVEL
(1) ELLIPTICAL TO 140 FT LEVEL
(1) 1/2" TO 141 FT LEVEL
(2) 7/8" TO 141 FT LEVEL
(1) 7/8" TO 149 FT LEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

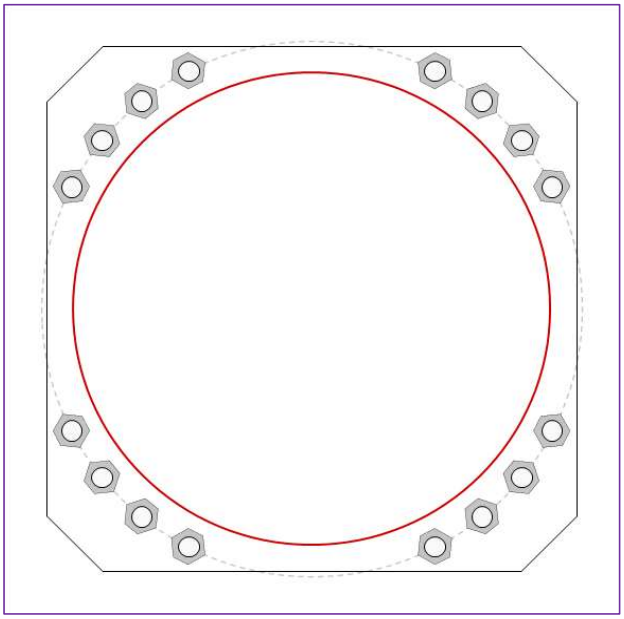
Monopole Base Plate Connection

Site Info	
BU #	841793
Site Name	WINDSOR PINE LANE
Order #	556630 REV. 1

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	No
l_{ar} (in)	1.8125

Applied Loads	
Moment (kip-ft)	3499.56
Axial Force (kips)	43.40
Shear Force (kips)	34.07

**TIA-222-H Section 15.5 Applied*



Connection Properties

Anchor Rod Data

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

Anchor Spacing: 6 in

Base Plate Data

57" W x 2.75" Plate (A36; Fy=36 ksi, Fu=58 ksi); Clip: 6 in

Stiffener Data

N/A

Pole Data

51.25" x 0.375" 18-sided pole (A607-60; Fy=60 ksi, Fu=75 ksi)

Analysis Results

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

Pu_t = 178.19	ϕPn_t = 243.75	**Stress Rating**
Vu = 2.13	ϕVn = 149.1	**69.6%**
Mu = n/a	ϕMn = n/a	**Pass**

Base Plate Summary

Max Stress (ksi):	33.7	(Flexural)
Allowable Stress (ksi):	32.4	
Stress Rating:	**99.1%**	**Pass**

Drilled Pier Foundation

BU # :	841793
Site Name:	WINDSOE PINE LANE
Order Number:	556630 REV. 1
TIA-222 Revison:	H
Tower Type:	Monopole

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

Go to Soil Calculations

Applied Loads	Comp.	Uplift
Moment (kip-ft)	3499.56	
Axial Force (kips)	43.43	
Shear Force (kips)	34.03	

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

Pier Design Data		
Depth	32	ft
Ext. Above Grade	0	ft
Pier Section 1		
From 0' below grade to 32' below grade		
Pier Diameter	7	ft
Rebar Quantity	30	
Rebar Size	11	
Clear Cover to Ties	3	in
Tie Size	4	
Tie Spacing		in

Rebar & Pier Options
Embedded Pole Inputs
Belled Pier Inputs

Analysis Results		
Soil Lateral Check	*Compression*	*Uplift*
$D_{v=0}$ (ft from TOC)	4.78	-
Soil Safety Factor	1.55	-
Max Moment (kip-ft)	3635.71	-
Rating*	*81.9%*	-
Soil Vertical Check	*Compression*	*Uplift*
Skin Friction (kips)	145.01	-
End Bearing (kips)	259.77	-
Weight of Concrete (kips)	149.60	-
Total Capacity (kips)	404.78	-
Axial (kips)	193.03	-
Rating*	*45.4%*	-
Reinforced Concrete Flexure	*Compression*	*Uplift*
Critical Depth (ft from TOC)	4.72	-
Critical Moment (kip-ft)	3635.66	-
Critical Moment Capacity	7192.49	-
Rating*	*48.1%*	-
Reinforced Concrete Shear	*Compression*	*Uplift*
Critical Depth (ft from TOC)	17.74	-
Critical Shear (kip)	258.22	-
Critical Shear Capacity	484.40	-
Rating*	*50.8%*	-

Structural Foundation Rating*	**50.8%**
Soil Interaction Rating*	**81.9%**

*Rating per TIA-222-H Section 15.5

Soil Profile

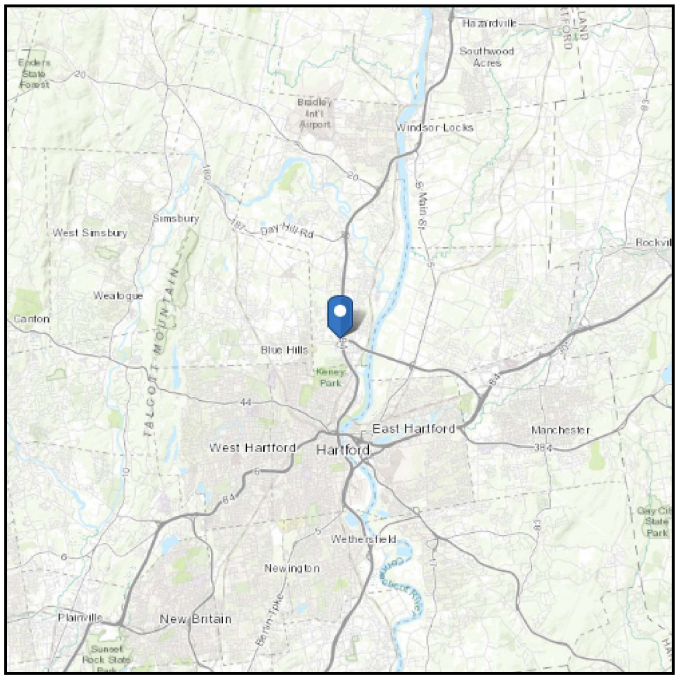
Groundwater Depth	7	# of Layers	3

Layer	Top (ft)	Bottom (ft)	Thickness (ft)	γ_{soil} (pcf)	$\gamma_{concrete}$ (pcf)	Cohesion (ksf)	Angle of Friction (degrees)	Calculated Ultimate Skin Friction Comp (ksf)	Calculated Ultimate Skin Friction Uplift (ksf)	Ultimate Skin Friction Comp Override (ksf)	Ultimate Skin Friction Uplift Override (ksf)	Ult. Gross Bearing Capacity (ksf)	SPT Blow Count	Soil Type
1	0	3	3	120	150	0	0	0.000	0.000	0.00	0.00			Cohesionless
2	3	7	4	120	150	0	30	0.479	0.479				10	Cohesionless
3	7	32	25	50	87.6	0.5	0	0.275	0.275			9		Cohesive

ASCE 7 Hazards Report

Address:
No Address at This Location

Standard:	ASCE/SEI 7-10	**Elevation:**	93.75 ft (NAVD 88)
Risk Category:	II	**Latitude:**	41.819842
Soil Class:	D - Stiff Soil	**Longitude:**	-72.667189



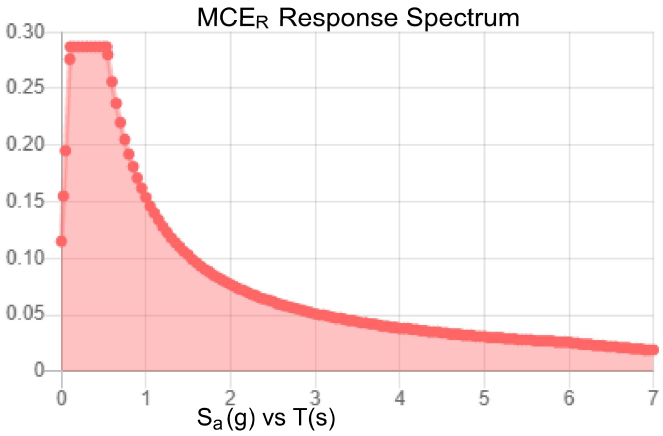
Seismic

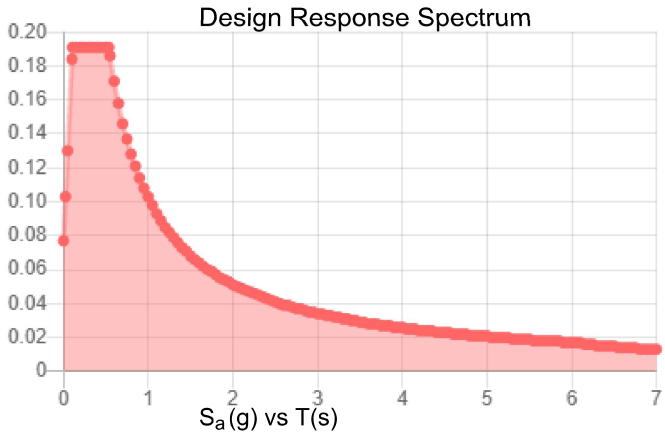
Site Soil Class: D - Stiff Soil

Results:

S_S :	0.179	S_{DS} :	0.191
S_1 :	0.064	S_{D1} :	0.103
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.09
S_{MS} :	0.287	PGA_M :	0.144
S_{M1} :	0.154	F_{PGA} :	1.6
		I_e :	1

Seismic Design Category B





Data Accessed: Fri May 14 2021

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

Ice

Results:

Ice Thickness:	1.00 in.
Concurrent Temperature:	5 F
Gust Speed:	50 mph
Data Source:	Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8
Date Accessed:	Fri May 14 2021

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

Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 50-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from local meteorological studies. Ice thicknesses in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

Exhibit E

Mount Analysis

Date: **October 8, 2021**

P. Marshall & Associates, LLC
1000 Holcomb Woods Pkwy, Suite 210
Roswell, GA 30076
(678) 280-2325

Crown Castle
2000 Corporate Drive
Canonsburg, PA 15317

Subject:	**Mount Analysis Report**	
Carrier Designation:	**Dish Wireless Equipment Change-Out**	
	Carrier Site Number:	**BOBDL00062A**
	Carrier Site Name:	**CT-CCI-T-841793**
Crown Castle Designation:	**Crown Castle BU Number:**	**841793**
	Crown Castle Site Name:	**Windsor Pine Lane**
	Crown Castle JDE Job Number:	**650051**
	Crown Castle Order Number:	**556630 Rev.1**
Engineering Firm Designation:	***PM&A* Report Designation:**	**21CCDS-0017**
Site Data:	**50 Pine Lane** **Windsor, Hartford County, CT 6095** **Latitude 41°49'11.43", Longitude -72°40'1.88"**	
Structure Information:	**Tower Height & Type:**	**147.5 ft Monopole**
	Mount Elevation:	**98.0 ft**
	Mount Type:	**7.0 ft T-Arm Mount**

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

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

T-Arm Mount (typical) **Sufficient***

***The mount has sufficient capacity once the loading changes, as described in Section 4.1 Recommendations of this report, are completed.**

This analysis has been performed in accordance with the 2018 International Building Code based upon an ultimate 3-second gust wind speed of 117 mph. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Mount analysis prepared by: Jeff Lytle, EIT
Respectfully Submitted by:

Preston Humphries, P.E.
Connecticut Professional Engineer
License Number: 34370

10/08/2021

TABLE OF CONTENTS

1) INTRODUCTION

This is a proposed 3-sector 7 ft T-Arm Mount, designed by CommScope Part #: MC-K6MHDX-9-96.

2) ANALYSIS CRITERIA

Building Code:	2018 IBC
TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	117 mph
Exposure Category:	C
Topographic Factor at Base:	1.000
Topographic Factor at Mount:	1.000
Ice Thickness:	1.5 in
Wind Speed with Ice:	50 mph
Seismic Ss:	0.184
Seismic S1:	0.055
Live Loading Wind Speed:	30 mph
Man Live Load at Mid/End-Points:	250 lbs
Man Live Load at Mount Pipes:	500 lbs

Table 1 - Proposed Final Equipment Configuration

Mount Centerline (ft)	Antenna Centerline (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Mount Details
98	98	3	JMA WIRELESS	MX08FRO665-21	Commscope MC-K6MHDX-9-96 T-Arm Mount
		3	FUJITSU	TA08025-B604	
		3	FUJITSU	TA08025-B605	
		1	RAYCAP	RDIDC-9181-PF-48	

3) ANALYSIS PROCEDURE

Table 2 - Documents Provided

Document	Remarks	Reference	Source
Mount Specification	Commscope MC-K6MHDX-9-96	-	PM&A
Crown Castle Application	CCI App #: 556630 Rev.1	-	Crown Castle
Level Drawings	Crown BU #: 841793 98 ft Proposed Level	05/12/2021	Crown Castle

3.1) Analysis Method

RISA-3D (Version 17.0.4), a commercially available analysis software package, was used to create a three-dimensional model of the antenna mounting system and calculate member stresses for various loading cases.

This analysis was performed in accordance with Crown Castle's ENG-SOW-10208 *Tower Mount Analysis* (Revision D) and Crown Castle's supplied effective projected areas for antennas with applied force coefficients.

3.2) Assumptions

1) The antenna mounting system was properly fabricated, installed and maintained in good condition in accordance with its original design and manufacturer's specifications.
2) The configuration of antennas, mounts, and other appurtenances are as specified in Table 1 and the referenced documents.
3) All member connections are assumed to have been designed to meet or exceed the load carrying capacity of the connected member unless otherwise specified in this report.
4) Serviceability with respect to antenna twist, tilt, roll, or lateral translation, is not checked as a part of this analysis.
5) The use of this report shall be limited to the purpose of which it was commissioned and may not be used for any other purposes without the written consent of PM&A.
6) The analysis of this report does not include climbing facility or construction lift loading or structural evaluations.
7) Steel grades have been assumed as follows, unless noted otherwise:

Channel, Solid Round, Angle, Plate	ASTM A36 (GR 36)
HSS (Rectangular)	ASTM 500 (GR B-46)
Pipe	ASTM A53 (GR 35)
Connection Bolts	ASTM A325

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

4) ANALYSIS RESULTS

Table 3 - Mount Component Stresses vs. Capacity (T-Arm, Typical)

Notes	Component	Critical Member	Centerline (ft)	% Capacity	Pass / Fail
2, 3	Mount-to-Collar Connection	-	98	1.5	Pass
1, 3	Mount Pipes	M2	98	13.6	Pass
1, 3	Face Horizontal	M5	98	43.6	Pass
1, 3	Standoff Members	M1	98	32.5	Pass

Structure Rating (max from all components) =	43.6%

Notes:

1) See additional documentation in "Appendix C - Software Analysis Output" for calculations supporting the % capacity consumed.
2) See additional documentation in “Appendix D – Additional Calculations” for detailed mount connection calculations.
3) All sectors are typical

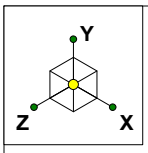
4.1) Recommendations

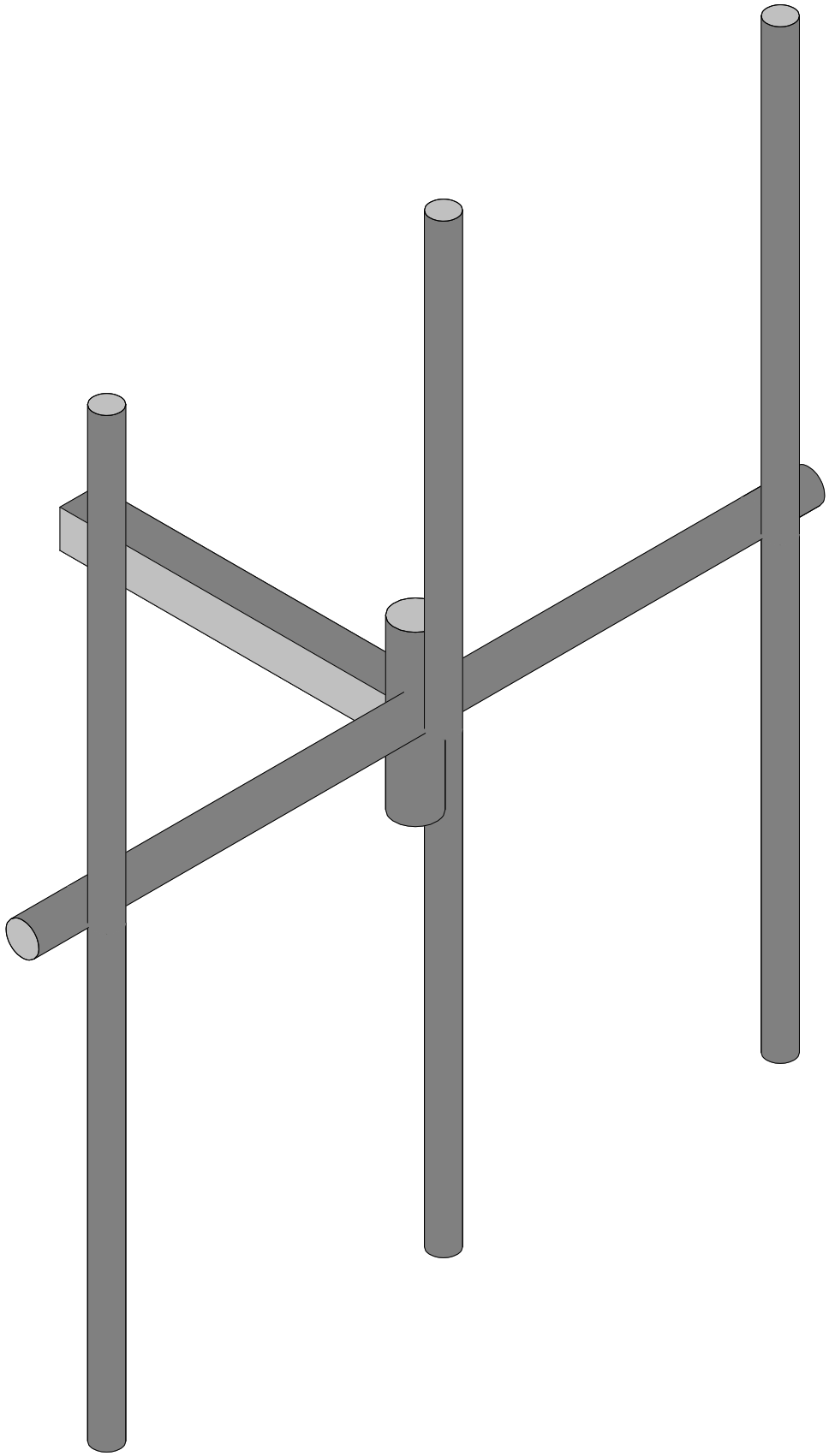
This report reflects the analysis of the specified proposed mount along with the pertinent specification sheets. The mount shall be installed according to manufacturer specifications. Once the proposed mount has been placed as detailed in this report, the proposed mount has sufficient spatial requirements and structural capacity for the proposed loading configuration. See below for the specified proposed mount summary and the following renderings (refer to Appendix A):

a) Commscope MC-K6MHDX-9-96

APPENDIX A

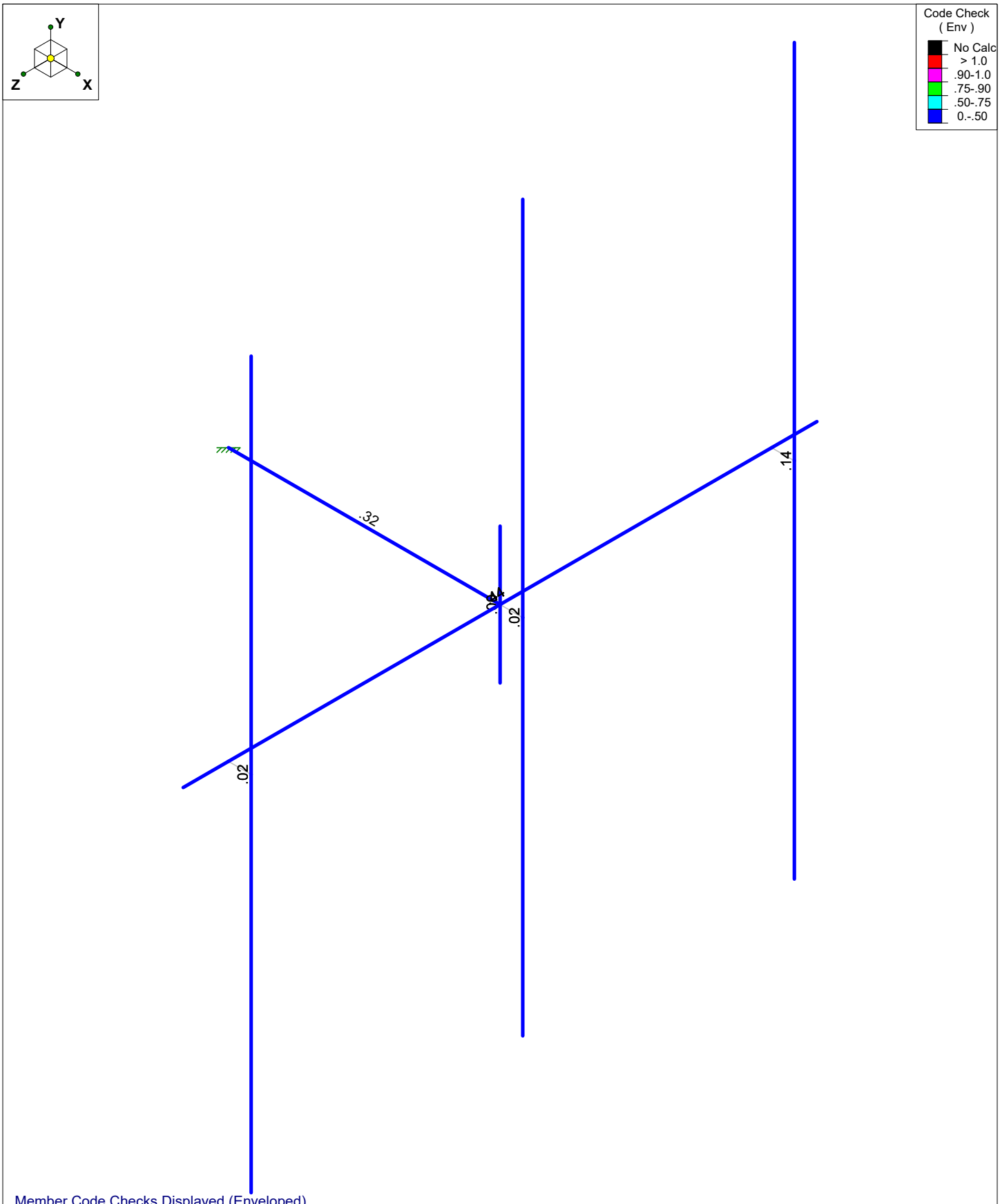
WIRE FRAME AND RENDERED MODELS





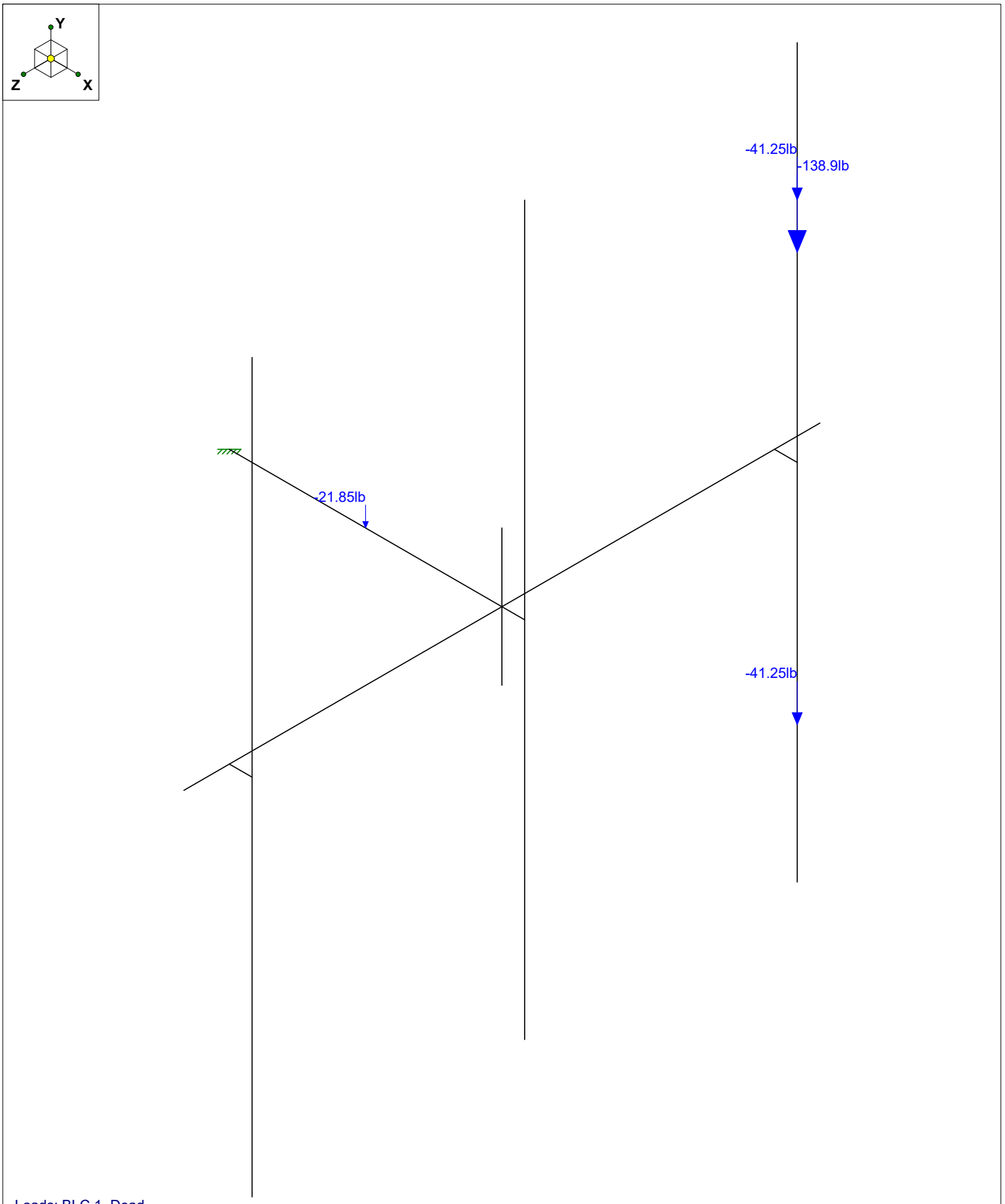
Envelope Only Solution

PM&A	841793	SK - 1
JLL		Oct 8, 2021 at 9:53 AM
21CCDS-0017		21CCDS-0017 841793.r3d



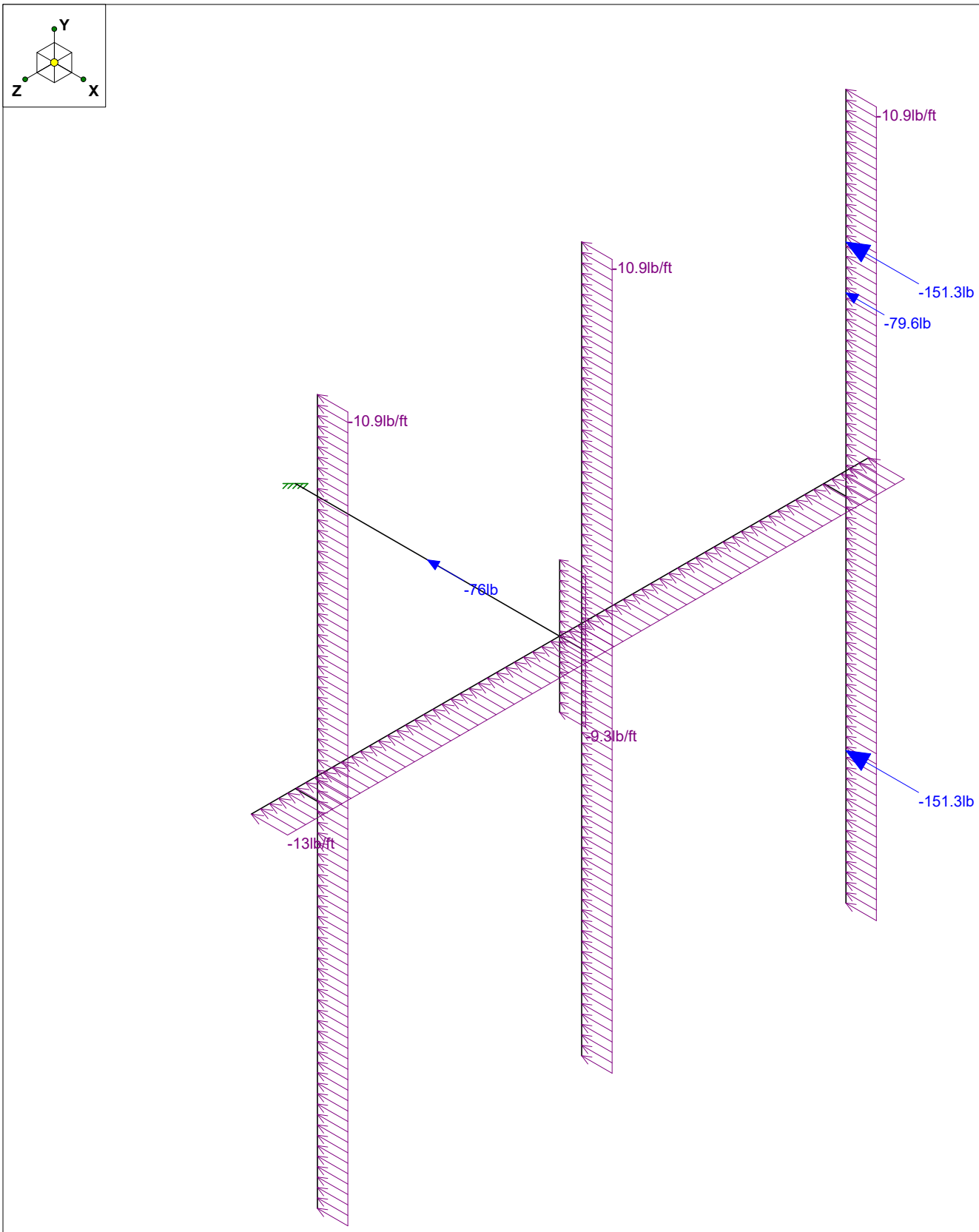
Member Code Checks Displayed (Enveloped)
Envelope Only Solution

PM&A	841793	SK - 2
JLL		Oct 8, 2021 at 9:54 AM
21CCDS-0017		21CCDS-0017 841793.r3d



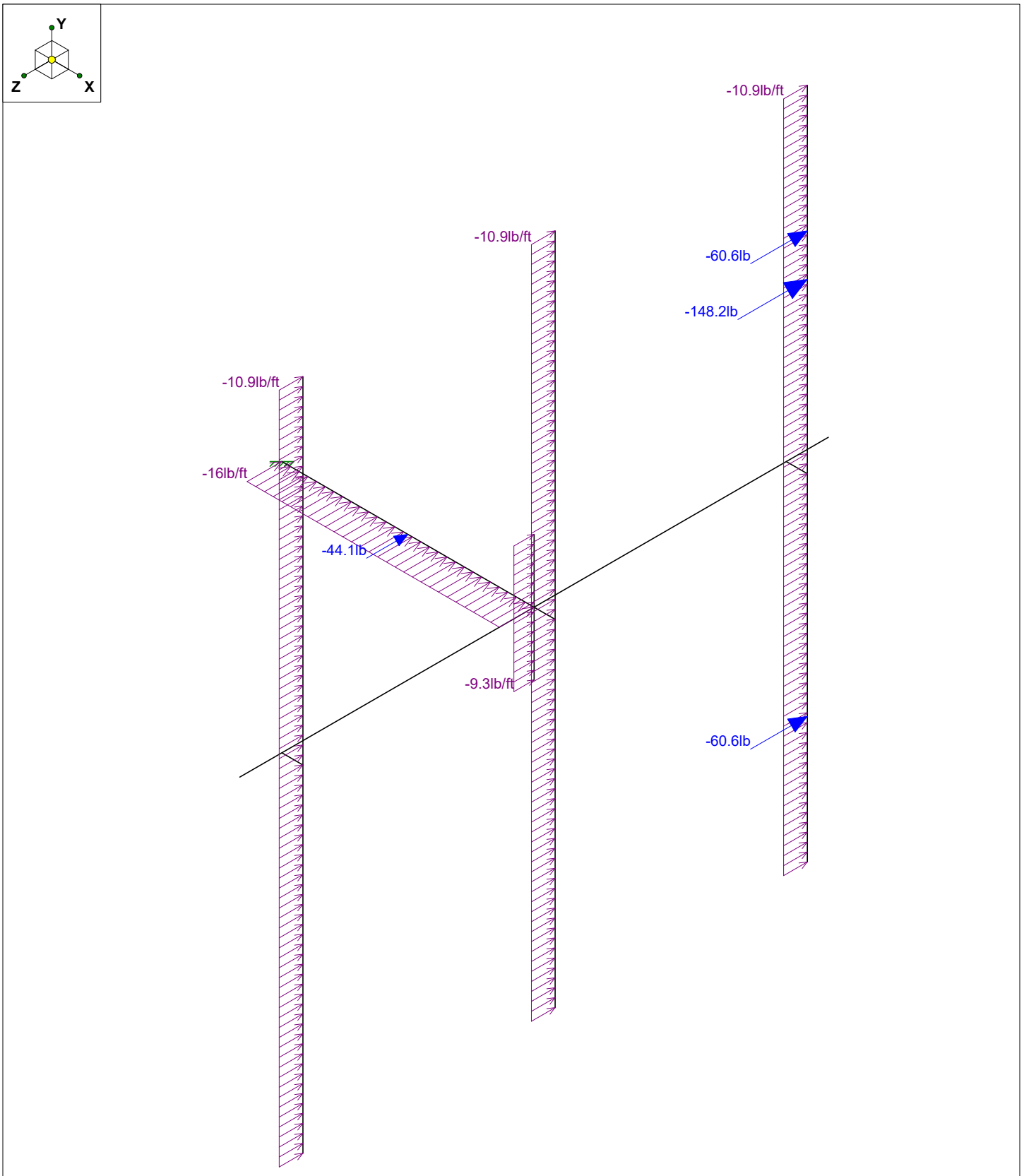
Loads: BLC 1, Dead
Envelope Only Solution

PM&A	841793	SK - 3
JLL		Oct 8, 2021 at 9:54 AM
21CCDS-0017		21CCDS-0017 841793.r3d



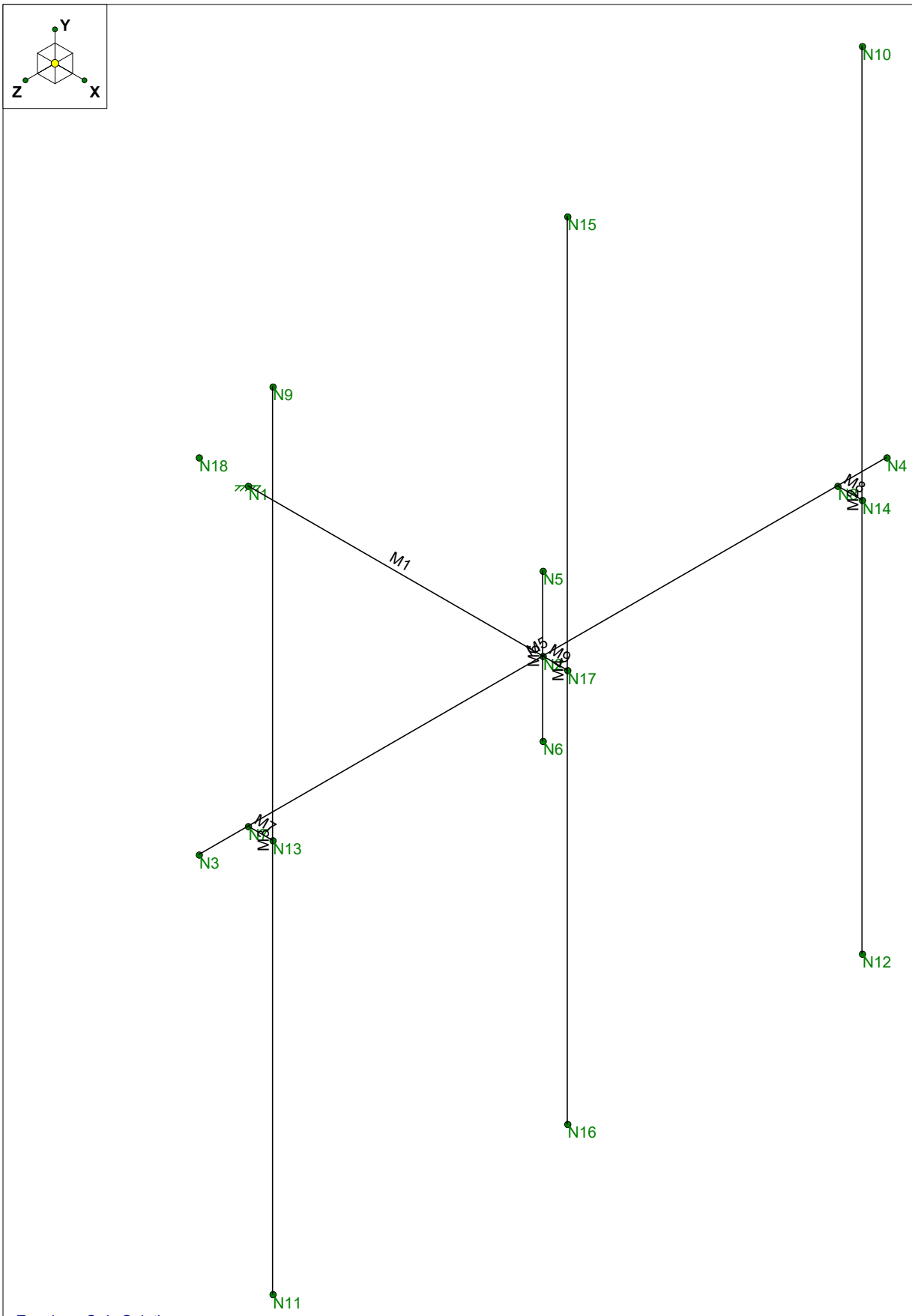
Loads: BLC 3, Wind 0
Envelope Only Solution

PM&A	841793	SK - 4
JLL		Oct 8, 2021 at 9:55 AM
21CCDS-0017		21CCDS-0017 841793.r3d



Loads: BLC 6, Wind 90
Envelope Only Solution

PM&A	841793	SK - 5
JLL		Oct 8, 2021 at 9:55 AM
21CCDS-0017		21CCDS-0017 841793.r3d



Envelope Only Solution

PM&A	841793	SK - 6
JLL		Oct 8, 2021 at 9:56 AM
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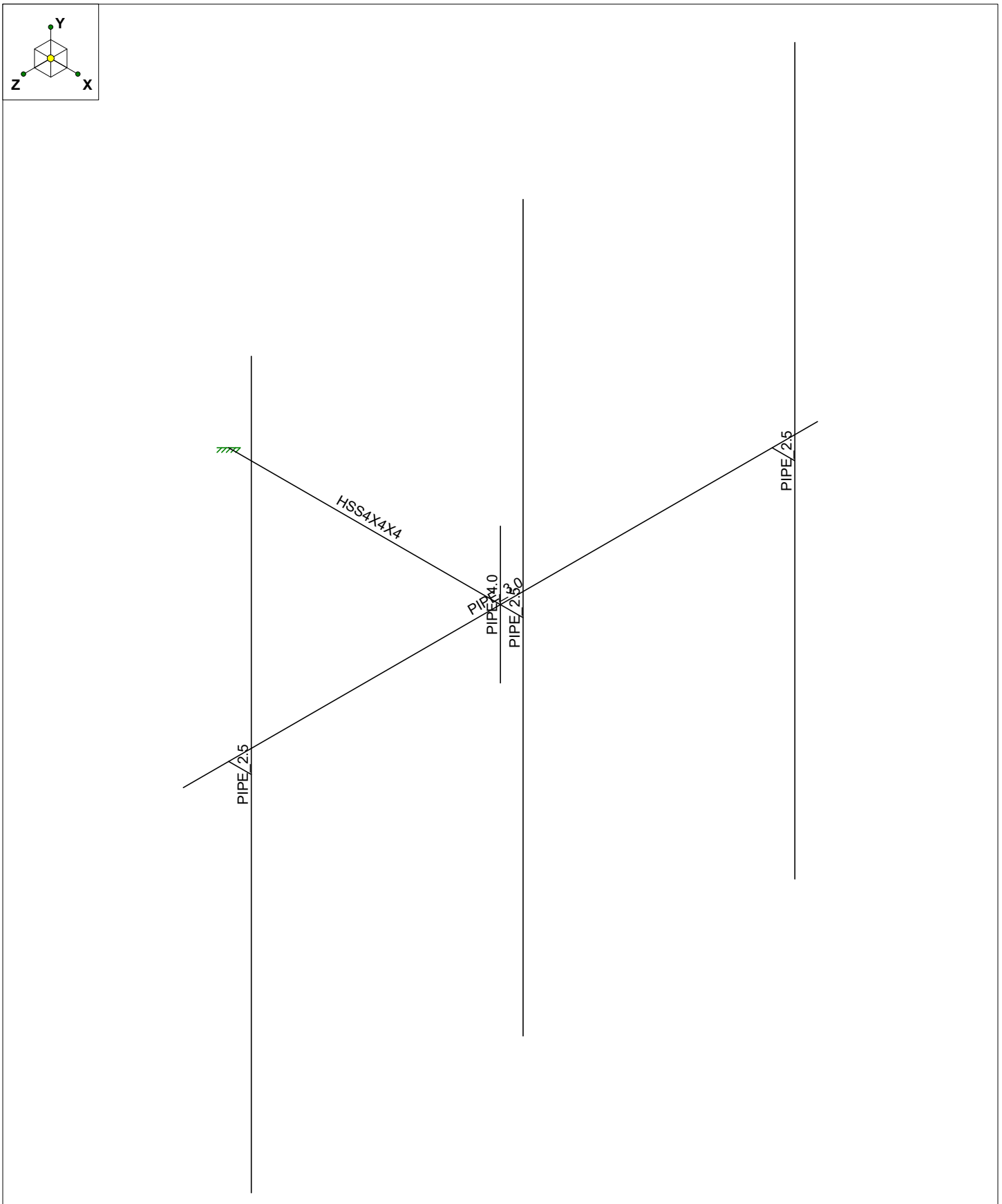


Envelope Only Solution

PM&A	841793	SK - 7
JLL		Oct 8, 2021 at 9:56 AM
21CCDS-0017		21CCDS-0017 841793.r3d

APPENDIX B

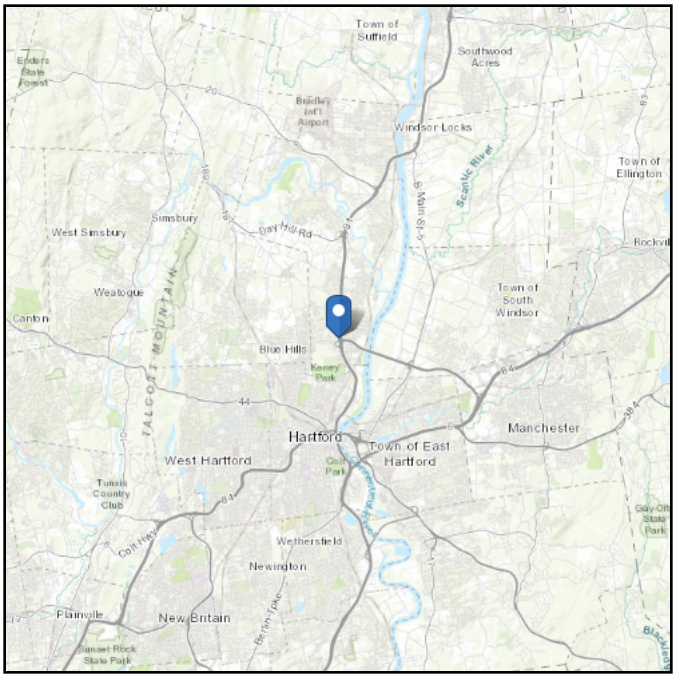
SOFTWARE INPUT CALCULATIONS

ASCE 7 Hazards Report

Address:
No Address at This Location

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

Elevation: 93.75 ft (NAVD 88)
Latitude: 41.819842
Longitude: -72.667189



Wind

Results:

Wind Speed:	117 Vmph
10-year MRI	75 Vmph
25-year MRI	84 Vmph
50-year MRI	90 Vmph
100-year MRI	97 Vmph

Data Source:	ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2
Date Accessed:	Fri Oct 08 2021

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

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

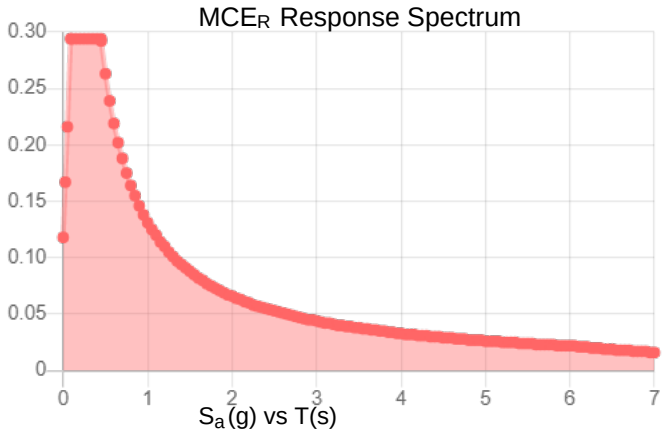
Seismic

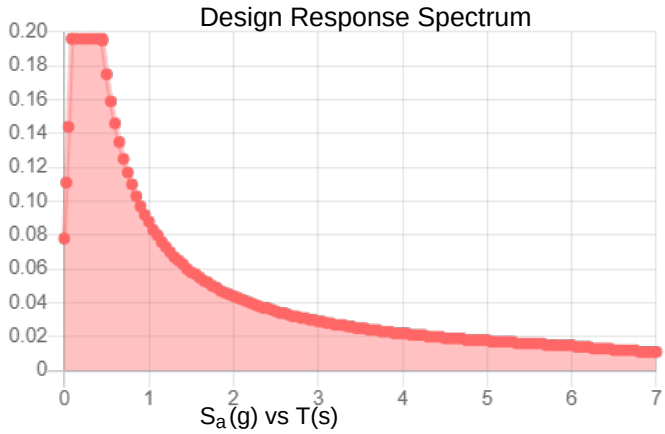
Site Soil Class: D - Default (see Section 11.4.3)

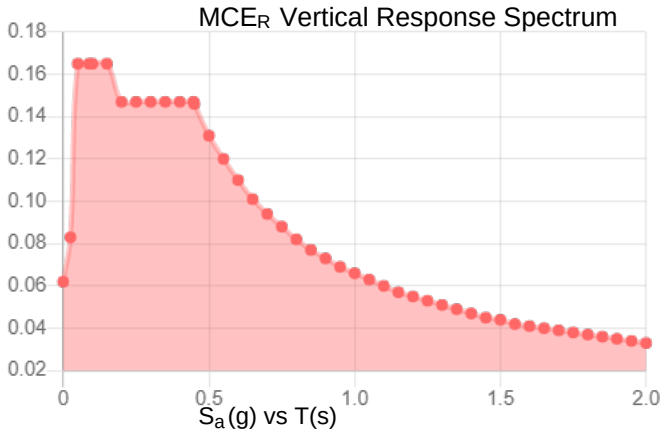
Results:

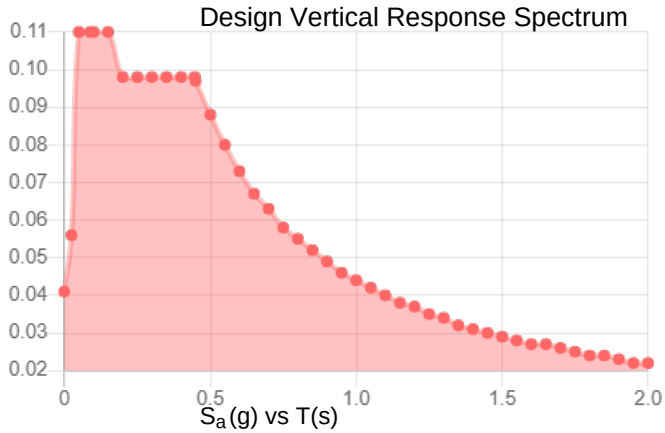
S_S :	0.184	S_{D1} :	0.088
S_1 :	0.055	T_L :	6
F_a :	1.6	PGA :	0.098
F_v :	2.4	PGA_M :	0.157
S_{MS} :	0.294	F_{PGA} :	1.6
S_{M1} :	0.131	I_e :	1
S_{DS} :	0.196	C_v :	0.7

Seismic Design Category B









Data Accessed: Fri Oct 08 2021

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

Ice

Results:

Ice Thickness:	1.50 in.
Concurrent Temperature:	5 F
Gust Speed:	50 mph
Data Source:	Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8
Date Accessed:	Fri Oct 08 2021

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

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

APPURTENANCE FORCE SUMMARY

P. Marshall Associates, LLC
1000 Holcomb Woods Pkwy, Suite 210
Roswell, GA 30076
(678) 280-2325

Wind Analys Criteria	
Ultimate Wind Speed, Vult	117 mph
Antenna Rad Center, z	98.0 ft
Risk Category	II
Exposure Category	C
Mean Elevation Above Sea Level, zs	93.8 ft
Topographic Category	1

Seismic Analysis Criteria	
Seismic, S_s	0.184
Seismic, S_1	0.055
Soil Type	D (Default)
Amplification Factor, A_s	2.34
Response Coefficient, R	2.00

Ice Criteria & Summary	
Basic Wind Speed with Ice, Vi	50 mph
Design Radial Ice Thickness, ti	1.50 in
Wind Pressure (Ice), q_{zi}	7.66 psf
Factored Radial Ice Thickness, t_{iz}	1.67 in
Importance Factor Wind on Ice, I_{wi}	1.00
Importance Factor Ice, I_i	1.00

Live Load Criteria	
Structure Live Load	250 lbs
Maintenance Live Load	500 lbs
Maintenance Wind Speed	30 mph

Wind Force Summary	
Importance Factor Wind, I_w	1.00
Topographic Factor at Base, K_{zt}	1.00
Topographic Factor at z, K_{zt}	1.00
Velocity Pressure Coefficient, K_z	1.26
Wind Direction Factor, K_d	0.95
Gust Effect Factor, G	1.00
Shielding Factor, K_a	0.90
Wind Pressure, q_z	41.95 psf
Ground Elevation Factor, K_e	1.00

Seismic Force Summary	
Importance Factor Seismic, I_e	1.000
Site Coefficient, F_a	1.600
Site Coefficient, F_v	2.400
Design Spectra Response, S_{ds}	0.196
Design Spectra Response, S_{d1}	0.088
Seismic Response Coefficient, C_s	0.098
Total Seismic Shear Force, V_s	48 lbs
Appurtenance Total Weight	243 lbs
Structure Total Weight	245 lbs
Total Weight	488 lbs
Vertical Load Effect, E_v	45 lbs
Horizontal Load Effect, E_h	112 lbs

Appurtenance Information						Wind Force - No Ice				Escalated Ice Load				Wind Force - With Ice			
Dimensions & Shape						Front		Side		Appurtenance Ice Information				Front		Side	
Appurtenance Name	*Height (in)*	*Width (in)*	*Depth (in)*	*Weight (lb)*	*Flat or Round (F/R)*	*EPA (ft^2)*	*Design Wind Force (lb), F_A*	*EPA (ft^2)*	*Design Wind Force (lb), F_A*	*Height w/ Ice (in)*	*Width w/ Ice (in)*	*Depth w/ Ice (in)*	*Ice Weight, (lb)*	*EPA (ft^2)*	*Design Wind Force (lb), F_A*	*EPA (ft^2)*	*Design Wind Force (lb), F_A*
JMA WIRELESS MX08FRO665-21	72	20	8	82.5	F	8.01	302.50	3.21	121.20	75.34	23.34	11.34	273.36	9.78	67.40	4.76	32.80
FUJITSU TA08025-B604	14.96	15.75	7.87	63.9	F	1.96	74.10	0.98	37.00	18.30	19.09	11.21	66.94	2.52	17.40	1.41	9.70
FUJITSU TA08025-B605	14.96	15.75	9.06	75	F	1.96	74.10	1.13	42.60	18.30	19.09	12.40	71.34	2.52	17.40	1.57	10.80
RAYCAP RDIDC-9181-PF-48	16.57	14.57	8.46	21.85	F	2.01	76.00	1.17	44.10	19.91	17.91	11.80	70.30	2.57	17.70	1.63	11.20

***Appurtenance Wind and Ice forces were calculated based on EPA's provided and as required by the tower owner (highlighted in green).**
Values highlighted in white are per applicable TIA-222.

Member Information[1]					Wind Force - No Ice		Member Ice	Wind Force - With Ice	
Member Set	*Flat / Round*	*Weight (lb/ft)*	*Depth / Diameter (in)*	*Width (in)*	*Ca*	*Design Wind Force (lb/ft), F_A*	*Ice Weight (lb/ft)*	*Ca*	*Design Wind Force (lb/ft), F_A*
HSS4X4X4	HSS	12.21	4	4	1.27	15.97	15.00	0.75	4.36
PIPE_2.5	R	5.8	2.88	–	1.20	10.87	9.30	0.99	3.88
PIPE_3.0	R	7.58	3.5	–	1.18	12.97	10.60	0.92	4.13
PIPE_4.0	R	10.8	4.5	–	0.66	9.33	12.60	0.70	3.05

1. Values shown in this table are the maximum forces applied to similar member types. This is not an exhaustive list. Wind load on members can fluctuate due to force coefficients being a function of length.

APPENDIX C

SOFTWARE ANALYSIS OUTPUT

(Global) Model Settings

Display Sections for Member Calcs	5
Max Internal Sections for Member Calcs	97
Include Shear Deformation?	Yes
Increase Nailing Capacity for Wind?	Yes
Include Warping?	Yes
Trans Load Btwn Intersecting Wood Wall?	Yes
Area Load Mesh (in^2)	144
Merge Tolerance (in)	.12
P-Delta Analysis Tolerance	0.50%
Include P-Delta for Walls?	Yes
Automatically Iterate Stiffness for Walls?	Yes
Max Iterations for Wall Stiffness	3
Gravity Acceleration (in/sec^2)	386.4
Wall Mesh Size (in)	24
Eigensolution Convergence Tol. (1.E-)	4
Vertical Axis	Y
Global Member Orientation Plane	XZ
Static Solver	Sparse Accelerated
Dynamic Solver	Accelerated Solver

Hot Rolled Steel Code	AISC 15th(360-16): LRFD
Adjust Stiffness?	Yes(Iterative)
RISAConnection Code	AISC 15th(360-16): LRFD
Cold Formed Steel Code	AISI S100-16: ASD
Wood Code	AWC NDS-18: ASD
Wood Temperature	< 100F
Concrete Code	ACI 318-14
Masonry Code	TMS 402-16: ASD
Aluminum Code	AA ADM1-15: ASD - Building
Stainless Steel Code	AISC 14th(360-10): ASD
Adjust Stiffness?	Yes(Iterative)

Number of Shear Regions	4
Region Spacing Increment (in)	4
Biaxial Column Method	Exact Integration
Parme Beta Factor (PCA)	.65
Concrete Stress Block	Rectangular
Use Cracked Sections?	Yes
Use Cracked Sections Slab?	No
Bad Framing Warnings?	No
Unused Force Warnings?	Yes
Min 1 Bar Diam. Spacing?	No
Concrete Rebar Set	REBAR_SET_ASTMA615
Min % Steel for Column	1
Max % Steel for Column	8

(Global) Model Settings, Continued

Seismic Code	ASCE 7-16
Seismic Base Elevation (in)	Not Entered
Add Base Weight?	Yes
Ct X	.02
Ct Z	.02
T X (sec)	Not Entered
T Z (sec)	Not Entered
R X	3
R Z	3
Ct Exp. X	.75
Ct Exp. Z	.75
SD1	1
SDS	1
S1	1
TL (sec)	5
Risk Cat	I or II
Drift Cat	Other
Om Z	1
Om X	1
Cd Z	4
Cd X	4
Rho Z	1
Rho X	1

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (/1E...	Density[k/ft^3]	Yield[ksi]	Ry	Fu[ksi]	Rt
1	A992	29000	11154	.3	.65	.49	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	.3	.65	.49	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	.3	.65	.527	42	1.4	58	1.3
5	A500 Gr.B Rect	29000	11154	.3	.65	.527	46	1.4	58	1.3
6	A53 Gr.B	29000	11154	.3	.65	.49	35	1.6	60	1.2
7	A1085	29000	11154	.3	.65	.49	50	1.4	65	1.3
8	A913 Gr.65	29000	11154	.3	.65	.49	65	1.1	80	1.1
9	a500 gr.c	29000	11154	.3	.65	.49	46	1.5	58	1.2

Joint Boundary Conditions

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
1	N1	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
2	N18						

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(d...	Section/Shape	Type	Design List	Material	Design Rul...
1	M1	N1	N2			HSS4X4X4	None	None	A500 Gr....	Typical
2	M2	N10	N12			PIPE_2.5	None	None	a500 gr.c	Typical
3	M3	N9	N11			PIPE_2.5	None	None	a500 gr.c	Typical
4	M4	N15	N16			PIPE_2.5	None	None	a500 gr.c	Typical
5	M5	N3	N4			PIPE_3.0 A500	None	None	a500 gr.c	Typical
6	M6	N6	N5			PIPE_4.0	None	None	A53 Gr.B	Typical
7	M7	N13	N7			RIGID	None	None	RIGID	Typical
8	M8	N14	N8			RIGID	None	None	RIGID	Typical
9	M9	N17	N2			RIGID	None	None	RIGID	Typical

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Desi...	A [in2]	Iyy [i...	Izz [i...	J [in4]
1	HSS4X4X8	HSS4X4X8	None	None	A53 Gr.B	Typical	6.02	11.9	11.9	21
2	PIPE_3.0	PIPE_3.0	None	None	A53 Gr.B	Typical	2.07	2.85	2.85	5.69
3	PIPE_4.0	PIPE_4.0	None	None	A53 Gr.B	Typical	2.96	6.82	6.82	13.6
4	PIPE_2.0	PIPE_2.0	None	None	A53 Gr.B	Typical	1.02	.627	.627	1.25
5	PIPE_3.0 A500	PIPE_3.0	None	None	a500 gr.c	Typical	2.07	2.85	2.85	5.69
6	PIPE_2.5	PIPE_2.5	None	None	a500 gr.c	Typical	1.61	1.45	1.45	2.89
7	HSS4X4X4	HSS4X4X4	None	None	A500 Gr.B Rect	Typical	3.37	7.8	7.8	12.8

Member Advanced Data

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Defl Rat...	Analysis ...	Inactive	Seismic...
1	M1						Yes	** NA **			None
2	M2						Yes	** NA **			None
3	M3						Yes	** NA **			None
4	M4						Yes	** NA **			None
5	M5						Yes	** NA **			None
6	M6						Yes	** NA **			None
7	M7						Yes	** NA **			None
8	M8						Yes	** NA **			None
9	M9						Yes	** NA **			None

Hot Rolled Steel Design Parameters

	Label	Shape	Length[...	Lbyy[in]	Lbzz[in]	Lcomp top...	Lcomp bot...	L-torq...	Kyy	Kzz	Cb	Funct...
1	M1	HSS4X4X4	36			Lbyy						Lateral
2	M2	PIPE_2.5	96			Lbyy						Lateral
3	M3	PIPE_2.5	96			Lbyy						Lateral
4	M4	PIPE_2.5	96			Lbyy						Lateral
5	M5	PIPE_3.0 A500	84			Lbyy						Lateral
6	M6	PIPE_4.0	18			Lbyy						Lateral

Joint Loads and Enforced Displacements (BLC 45 : Maintenance Load (1))

	Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in,rad), ...
1	N8	L	Y	-500

Member Point Loads (BLC 1 : Dead)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[in,%]
1	M2	Y	-41.25	18
2	M2	Y	-63.9	24
3	M2	Y	-75	24
4	M1	Y	-21.85	18
5	M2	Y	-41.25	78
6	M2	Y	0	0
7	M2	Y	0	0
8	M1	Y	0	0

Member Point Loads (BLC 2 : Ice)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[in,%]
1	M2	Y	-136.68	18
2	M2	Y	-66.94	24
3	M2	Y	-71.34	24

Member Point Loads (BLC 2 : Ice) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[in,%]
4	M1	Y	-70.3	18
5	M2	Y	-136.68	78
6	M2	Y	0	0
7	M2	Y	0	0
8	M1	Y	0	0

Member Point Loads (BLC 3 : Wind 0)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[in,%]
1	M2	X	-151.3	18
2	M2	X	-37	24
3	M2	X	-42.6	24
4	M1	X	-76	18
5	M2	X	-151.3	78
6	M2	X	0	0
7	M2	X	0	0
8	M1	X	0	0
9	M2	Z	0	18
10	M2	Z	0	24
11	M2	Z	0	24
12	M1	Z	0	18
13	M2	Z	0	78
14	M2	Z	0	0
15	M2	Z	0	0
16	M1	Z	0	0

Member Point Loads (BLC 4 : Wind 30)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[in,%]
1	M2	X	-111.4	18
2	M2	X	-40.1	24
3	M2	X	-43.7	24
4	M1	X	-58.9	18
5	M2	X	-111.4	78
6	M2	X	0	0
7	M2	X	0	0
8	M1	X	0	0
9	M2	Z	-64.3	18
10	M2	Z	-23.1	24
11	M2	Z	-25.2	24
12	M1	Z	-34	18
13	M2	Z	-64.3	78
14	M2	Z	0	0
15	M2	Z	0	0
16	M1	Z	0	0

Member Point Loads (BLC 5 : Wind 60)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[in,%]
1	M2	X	-41.6	18
2	M2	X	-32.4	24
3	M2	X	-33.1	24
4	M1	X	-26	18
5	M2	X	-41.6	78
6	M2	X	0	0
7	M2	X	0	0
8	M1	X	0	0
9	M2	Z	-72.1	18

Member Point Loads (BLC 5 : Wind 60) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[in,%]
10	M2	Z	-56.1	24
11	M2	Z	-57.4	24
12	M1	Z	-45.1	18
13	M2	Z	-72.1	78
14	M2	Z	0	0
15	M2	Z	0	0
16	M1	Z	0	0

Member Point Loads (BLC 6 : Wind 90)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[in,%]
1	M2	X	0	18
2	M2	X	0	24
3	M2	X	0	24
4	M1	X	0	18
5	M2	X	0	78
6	M2	X	0	0
7	M2	X	0	0
8	M1	X	0	0
9	M2	Z	-60.6	18
10	M2	Z	-74.1	24
11	M2	Z	-74.1	24
12	M1	Z	-44.1	18
13	M2	Z	-60.6	78
14	M2	Z	0	0
15	M2	Z	0	0
16	M1	Z	0	0

Member Point Loads (BLC 7 : Wind 120)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[in,%]
1	M2	X	41.6	18
2	M2	X	32.4	24
3	M2	X	33.1	24
4	M1	X	26	18
5	M2	X	41.6	78
6	M2	X	0	0
7	M2	X	0	0
8	M1	X	0	0
9	M2	Z	-72.1	18
10	M2	Z	-56.1	24
11	M2	Z	-57.4	24
12	M1	Z	-45.1	18
13	M2	Z	-72.1	78
14	M2	Z	0	0
15	M2	Z	0	0
16	M1	Z	0	0

Member Point Loads (BLC 8 : Wind 150)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[in,%]
1	M2	X	111.4	18
2	M2	X	40.1	24
3	M2	X	43.7	24
4	M1	X	58.9	18
5	M2	X	111.4	78
6	M2	X	0	0
7	M2	X	0	0

Member Point Loads (BLC 8 : Wind 150) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[in,%]
8	M1	X	0	0
9	M2	Z	-64.3	18
10	M2	Z	-23.1	24
11	M2	Z	-25.2	24
12	M1	Z	-34	18
13	M2	Z	-64.3	78
14	M2	Z	0	0
15	M2	Z	0	0
16	M1	Z	0	0

Member Point Loads (BLC 9 : Wind Ice 0)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[in,%]
1	M2	X	-33.7	18
2	M2	X	-9.7	24
3	M2	X	-10.8	24
4	M1	X	-17.7	18
5	M2	X	-33.7	78
6	M2	X	0	0
7	M2	X	0	0
8	M1	X	0	0
9	M2	Z	0	18
10	M2	Z	0	24
11	M2	Z	0	24
12	M1	Z	0	18
13	M2	Z	0	78
14	M2	Z	0	0
15	M2	Z	0	0
16	M1	Z	0	0

Member Point Loads (BLC 10 : Wind Ice 30)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[in,%]
1	M2	X	-25.4	18
2	M2	X	-10.1	24
3	M2	X	-10.8	24
4	M1	X	-13.9	18
5	M2	X	-25.4	78
6	M2	X	0	0
7	M2	X	0	0
8	M1	X	0	0
9	M2	Z	-14.7	18
10	M2	Z	-5.8	24
11	M2	Z	-6.2	24
12	M1	Z	-8	18
13	M2	Z	-14.7	78
14	M2	Z	0	0
15	M2	Z	0	0
16	M1	Z	0	0

Member Point Loads (BLC 11 : Wind Ice 60)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[in,%]
1	M2	X	-10.4	18
2	M2	X	-7.7	24
3	M2	X	-7.9	24
4	M1	X	-6.4	18
5	M2	X	-10.4	78

Member Point Loads (BLC 11 : Wind Ice 60) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[in,%]
6	M2	X	0	0
7	M2	X	0	0
8	M1	X	0	0
9	M2	Z	-17.9	18
10	M2	Z	-13.4	24
11	M2	Z	-13.6	24
12	M1	Z	-11.1	18
13	M2	Z	-17.9	78
14	M2	Z	0	0
15	M2	Z	0	0
16	M1	Z	0	0

Member Point Loads (BLC 12 : Wind Ice 90)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[in,%]
1	M2	X	0	18
2	M2	X	0	24
3	M2	X	0	24
4	M1	X	0	18
5	M2	X	0	78
6	M2	X	0	0
7	M2	X	0	0
8	M1	X	0	0
9	M2	Z	-16.4	18
10	M2	Z	-17.4	24
11	M2	Z	-17.4	24
12	M1	Z	-11.2	18
13	M2	Z	-16.4	78
14	M2	Z	0	0
15	M2	Z	0	0
16	M1	Z	0	0

Member Point Loads (BLC 13 : Wind Ice 120)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[in,%]
1	M2	X	10.4	18
2	M2	X	7.7	24
3	M2	X	7.9	24
4	M1	X	6.4	18
5	M2	X	10.4	78
6	M2	X	0	0
7	M2	X	0	0
8	M1	X	0	0
9	M2	Z	-17.9	18
10	M2	Z	-13.4	24
11	M2	Z	-13.6	24
12	M1	Z	-11.1	18
13	M2	Z	-17.9	78
14	M2	Z	0	0
15	M2	Z	0	0
16	M1	Z	0	0

Member Point Loads (BLC 14 : Wind Ice 150)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[in,%]
1	M2	X	25.4	18
2	M2	X	10.1	24
3	M2	X	10.8	24

Member Point Loads (BLC 14 : Wind Ice 150) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[in,%]
4	M1	X	13.9	18
5	M2	X	25.4	78
6	M2	X	0	0
7	M2	X	0	0
8	M1	X	0	0
9	M2	Z	-14.7	18
10	M2	Z	-5.8	24
11	M2	Z	-6.2	24
12	M1	Z	-8	18
13	M2	Z	-14.7	78
14	M2	Z	0	0
15	M2	Z	0	0
16	M1	Z	0	0

Member Point Loads (BLC 15 : Live Load Point (1))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[in,%]
1	M1	Y	-250	36

Member Point Loads (BLC 16 : Live Load Point (2))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[in,%]
1	M5	Y	-250	84

Member Point Loads (BLC 51 : Horizontal Seismic Load Effect,)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[in,%]
1	M2	X	-41.3	18
2	M2	X	-63.9	24
3	M2	X	-75	24
4	M1	X	-21.9	18
5	M2	X	-41.3	78
6	M2	X	0	0
7	M2	X	0	0
8	M1	X	0	0

Member Point Loads (BLC 52 : Horizontal Seismic Load Effect,)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[in,%]
1	M2	Z	-41.3	18
2	M2	Z	-63.9	24
3	M2	Z	-75	24
4	M1	Z	-21.9	18
5	M2	Z	-41.3	78
6	M2	Z	0	0
7	M2	Z	0	0
8	M1	Z	0	0

Member Distributed Loads (BLC 2 : Ice)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,...	Start Location[in,%]	End Location[in,%]
1	M1	Y	-15	-15	0	0
2	M2	Y	-9.3	-9.3	0	0
3	M3	Y	-9.3	-9.3	0	0
4	M4	Y	-9.3	-9.3	0	0
5	M5	Y	-10.6	-10.6	0	0
6	M6	Y	-12.6	-12.6	0	0

Member Distributed Loads (BLC 3 : Wind 0)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,...	Start Location[in,%]	End Location[in,%]
1	M1	X	0	0	0	0
2	M2	X	-10.9	-10.9	0	0
3	M3	X	-10.9	-10.9	0	0
4	M4	X	-10.9	-10.9	0	0
5	M5	X	-13	-13	0	0
6	M6	X	-9.3	-9.3	0	0
7	M1	Z	0	0	0	0
8	M2	Z	0	0	0	0
9	M3	Z	0	0	0	0
10	M4	Z	0	0	0	0
11	M5	Z	0	0	0	0
12	M6	Z	0	0	0	0

Member Distributed Loads (BLC 4 : Wind 30)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,...	Start Location[in,%]	End Location[in,%]
1	M1	X	0	0	0	0
2	M2	X	-9.4	-9.4	0	0
3	M3	X	-9.4	-9.4	0	0
4	M4	X	-9.4	-9.4	0	0
5	M5	X	-11.2	-11.2	0	0
6	M6	X	-8.1	-8.1	0	0
7	M1	Z	-8	-8	0	0
8	M2	Z	-5.4	-5.4	0	0
9	M3	Z	-5.4	-5.4	0	0
10	M4	Z	-5.4	-5.4	0	0
11	M5	Z	0	0	0	0
12	M6	Z	-4.7	-4.7	0	0

Member Distributed Loads (BLC 5 : Wind 60)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,...	Start Location[in,%]	End Location[in,%]
1	M1	X	0	0	0	0
2	M2	X	-5.4	-5.4	0	0
3	M3	X	-5.4	-5.4	0	0
4	M4	X	-5.4	-5.4	0	0
5	M5	X	-6.5	-6.5	0	0
6	M6	X	-4.7	-4.7	0	0
7	M1	Z	-13.8	-13.8	0	0
8	M2	Z	-9.4	-9.4	0	0
9	M3	Z	-9.4	-9.4	0	0
10	M4	Z	-9.4	-9.4	0	0
11	M5	Z	0	0	0	0
12	M6	Z	-8.1	-8.1	0	0

Member Distributed Loads (BLC 6 : Wind 90)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,...	Start Location[in,%]	End Location[in,%]
1	M1	X	0	0	0	0
2	M2	X	0	0	0	0
3	M3	X	0	0	0	0
4	M4	X	0	0	0	0
5	M5	X	0	0	0	0
6	M6	X	0	0	0	0
7	M1	Z	-16	-16	0	0
8	M2	Z	-10.9	-10.9	0	0
9	M3	Z	-10.9	-10.9	0	0
10	M4	Z	-10.9	-10.9	0	0

Member Distributed Loads (BLC 6 : Wind 90) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,...	Start Location[in,%]	End Location[in,%]
11	M5	Z	0	0	0	0
12	M6	Z	-9.3	-9.3	0	0

Member Distributed Loads (BLC 7 : Wind 120)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,...	Start Location[in,%]	End Location[in,%]
1	M1	X	0	0	0	0
2	M2	X	5.4	5.4	0	0
3	M3	X	5.4	5.4	0	0
4	M4	X	5.4	5.4	0	0
5	M5	X	6.5	6.5	0	0
6	M6	X	4.7	4.7	0	0
7	M1	Z	-13.8	-13.8	0	0
8	M2	Z	-9.4	-9.4	0	0
9	M3	Z	-9.4	-9.4	0	0
10	M4	Z	-9.4	-9.4	0	0
11	M5	Z	0	0	0	0
12	M6	Z	-8.1	-8.1	0	0

Member Distributed Loads (BLC 8 : Wind 150)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,...	Start Location[in,%]	End Location[in,%]
1	M1	X	0	0	0	0
2	M2	X	9.4	9.4	0	0
3	M3	X	9.4	9.4	0	0
4	M4	X	9.4	9.4	0	0
5	M5	X	11.2	11.2	0	0
6	M6	X	8.1	8.1	0	0
7	M1	Z	-8	-8	0	0
8	M2	Z	-5.4	-5.4	0	0
9	M3	Z	-5.4	-5.4	0	0
10	M4	Z	-5.4	-5.4	0	0
11	M5	Z	0	0	0	0
12	M6	Z	-4.7	-4.7	0	0

Member Distributed Loads (BLC 9 : Wind Ice 0)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,...	Start Location[in,%]	End Location[in,%]
1	M1	X	0	0	0	0
2	M2	X	-3.9	-3.9	0	0
3	M3	X	-3.9	-3.9	0	0
4	M4	X	-3.9	-3.9	0	0
5	M5	X	-4.1	-4.1	0	0
6	M6	X	-3.1	-3.1	0	0
7	M1	Z	0	0	0	0
8	M2	Z	0	0	0	0
9	M3	Z	0	0	0	0
10	M4	Z	0	0	0	0
11	M5	Z	0	0	0	0
12	M6	Z	0	0	0	0

Member Distributed Loads (BLC 10 : Wind Ice 30)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,...	Start Location[in,%]	End Location[in,%]
1	M1	X	0	0	0	0
2	M2	X	-3.4	-3.4	0	0
3	M3	X	-3.4	-3.4	0	0
4	M4	X	-3.4	-3.4	0	0
5	M5	X	-3.6	-3.6	0	0

Member Distributed Loads (BLC 10 : Wind Ice 30) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,...	Start Location[in,%]	End Location[in,%]
6	M6	X	-2.6	-2.6	0	0
7	M1	Z	-2.2	-2.2	0	0
8	M2	Z	-1.9	-1.9	0	0
9	M3	Z	-1.9	-1.9	0	0
10	M4	Z	-1.9	-1.9	0	0
11	M5	Z	0	0	0	0
12	M6	Z	-1.5	-1.5	0	0

Member Distributed Loads (BLC 11 : Wind Ice 60)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,...	Start Location[in,%]	End Location[in,%]
1	M1	X	0	0	0	0
2	M2	X	-1.9	-1.9	0	0
3	M3	X	-1.9	-1.9	0	0
4	M4	X	-1.9	-1.9	0	0
5	M5	X	-2.1	-2.1	0	0
6	M6	X	-1.5	-1.5	0	0
7	M1	Z	-3.8	-3.8	0	0
8	M2	Z	-3.4	-3.4	0	0
9	M3	Z	-3.4	-3.4	0	0
10	M4	Z	-3.4	-3.4	0	0
11	M5	Z	0	0	0	0
12	M6	Z	-2.6	-2.6	0	0

Member Distributed Loads (BLC 12 : Wind Ice 90)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,...	Start Location[in,%]	End Location[in,%]
1	M1	X	0	0	0	0
2	M2	X	0	0	0	0
3	M3	X	0	0	0	0
4	M4	X	0	0	0	0
5	M5	X	0	0	0	0
6	M6	X	0	0	0	0
7	M1	Z	-4.4	-4.4	0	0
8	M2	Z	-3.9	-3.9	0	0
9	M3	Z	-3.9	-3.9	0	0
10	M4	Z	-3.9	-3.9	0	0
11	M5	Z	0	0	0	0
12	M6	Z	-3.1	-3.1	0	0

Member Distributed Loads (BLC 13 : Wind Ice 120)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,...	Start Location[in,%]	End Location[in,%]
1	M1	X	0	0	0	0
2	M2	X	1.9	1.9	0	0
3	M3	X	1.9	1.9	0	0
4	M4	X	1.9	1.9	0	0
5	M5	X	2.1	2.1	0	0
6	M6	X	1.5	1.5	0	0
7	M1	Z	-3.8	-3.8	0	0
8	M2	Z	-3.4	-3.4	0	0
9	M3	Z	-3.4	-3.4	0	0
10	M4	Z	-3.4	-3.4	0	0
11	M5	Z	0	0	0	0
12	M6	Z	-2.6	-2.6	0	0

Member Distributed Loads (BLC 14 : Wind Ice 150)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,...	Start Location[in,%]	End Location[in,%]

Member Distributed Loads (BLC 14 : Wind Ice 150) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,...	Start Location[in,%]	End Location[in,%]
1	M1	X	0	0	0	0
2	M2	X	3.4	3.4	0	0
3	M3	X	3.4	3.4	0	0
4	M4	X	3.4	3.4	0	0
5	M5	X	3.6	3.6	0	0
6	M6	X	2.6	2.6	0	0
7	M1	Z	-2.2	-2.2	0	0
8	M2	Z	-1.9	-1.9	0	0
9	M3	Z	-1.9	-1.9	0	0
10	M4	Z	-1.9	-1.9	0	0
11	M5	Z	0	0	0	0
12	M6	Z	-1.5	-1.5	0	0

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(P...
1	Dead	None		-1.05			8			
2	Ice	None					8	6		
3	Wind 0	None					16	12		
4	Wind 30	None					16	12		
5	Wind 60	None					16	12		
6	Wind 90	None					16	12		
7	Wind 120	None					16	12		
8	Wind 150	None					16	12		
9	Wind Ice 0	None					16	12		
10	Wind Ice 30	None					16	12		
11	Wind Ice 60	None					16	12		
12	Wind Ice 90	None					16	12		
13	Wind Ice 120	None					16	12		
14	Wind Ice 150	None					16	12		
15	Live Load Point (1)	None					1			
16	Live Load Point (2)	None					1			
17	Live Load Point (3)	None								
18	Live Load Point (4)	None								
19	Live Load Point (5)	None								
20	Live Load Point (6)	None								
21	Live Load Point (7)	None								
22	Live Load Point (8)	None								
23	Live Load Point (9)	None								
24	Live Load Point (10)	None								
25	Live Load Point (11)	None								
26	Live Load Point (12)	None								
27	Live Load Point (13)	None								
28	Live Load Point (14)	None								
29	Live Load Point (15)	None								
30	Live Load Point (16)	None								
31	Live Load Point (17)	None								
32	Live Load Point (18)	None								
33	Live Load Point (19)	None								
34	Live Load Point (20)	None								
35	Live Load Point (21)	None								
36	Live Load Point (22)	None								
37	Live Load Point (23)	None								
38	Live Load Point (24)	None								
39	Live Load Point (25)	None								
40	Live Load Point (26)	None								

Basic Load Cases (Continued)

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(P...
41	Live Load Point (27)	None								
42	Live Load Point (28)	None								
43	Live Load Point (29)	None								
44	Live Load Point (30)	None								
45	Maintenance Load (1)	None				1				
46	Maintenance Load (2)	None								
47	Maintenance Load (3)	None								
48	Maintenance Load (4)	None								
49	Maintenance Load (5)	None								
50	Maintenance Load (6)	None								
51	Horizontal Seismic Lo...	None	-1				8			
52	Horizontal Seismic Lo...	None			-1		8			

Load Combinations

	Description	S...	PDelta	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
1	1.4 D	Yes	Y		1	1.4																		
2	1.2 D + 1.0 W 0	Yes	Y		1	1.2	3	1																
3	1.2 D + 1.0 W 30	Yes	Y		1	1.2	4	1																
4	1.2 D + 1.0 W 60	Yes	Y		1	1.2	5	1																
5	1.2 D + 1.0 W 90	Yes	Y		1	1.2	6	1																
6	1.2 D + 1.0 W 120	Yes	Y		1	1.2	7	1																
7	1.2 D + 1.0 W 150	Yes	Y		1	1.2	8	1																
8	1.2 D + 1.0 W 180	Yes	Y		1	1.2	3	-1																
9	1.2 D + 1.0 W 210	Yes	Y		1	1.2	4	-1																
10	1.2 D + 1.0 W 240	Yes	Y		1	1.2	5	-1																
11	1.2 D + 1.0 W 270	Yes	Y		1	1.2	6	-1																
12	1.2 D + 1.0 W 300	Yes	Y		1	1.2	7	-1																
13	1.2 D + 1.0 W 330	Yes	Y		1	1.2	8	-1																
14	1.2 D + 1.0 I + 1.0 W/I 0	Yes	Y		1	1.2	2	1	9	1														
15	1.2 D + 1.0 I + 1.0 W/I 30	Yes	Y		1	1.2	2	1	10	1														
16	1.2 D + 1.0 I + 1.0 W/I 60	Yes	Y		1	1.2	2	1	11	1														
17	1.2 D + 1.0 I + 1.0 W/I 90	Yes	Y		1	1.2	2	1	12	1														
18	1.2 D + 1.0 I + 1.0 W/I 120	Yes	Y		1	1.2	2	1	13	1														
19	1.2 D + 1.0 I + 1.0 W/I 150	Yes	Y		1	1.2	2	1	14	1														
20	1.2 D + 1.0 I + 1.0 W/I 180	Yes	Y		1	1.2	2	1	9	-1														
21	1.2 D + 1.0 I + 1.0 W/I 210	Yes	Y		1	1.2	2	1	10	-1														
22	1.2 D + 1.0 I + 1.0 W/I 240	Yes	Y		1	1.2	2	1	11	-1														
23	1.2 D + 1.0 I + 1.0 W/I 270	Yes	Y		1	1.2	2	1	12	-1														
24	1.2 D + 1.0 I + 1.0 W/I 300	Yes	Y		1	1.2	2	1	13	-1														
25	1.2 D + 1.0 I + 1.0 W/I 330	Yes	Y		1	1.2	2	1	14	-1														
26	1.2 D + 1.5 LV1	Yes	Y		1	1.2	15	1.5																
27	1.2 D + 1.5 LV2	Yes	Y		1	1.2	16	1.5																
28	1.2 D + 1.5 LV3	Yes	Y		1	1.2	17	1.5																
29	1.2 D + 1.5 LV4	Yes	Y		1	1.2	18	1.5																
30	1.2 D + 1.5 LV5	Yes	Y		1	1.2	19	1.5																
31	1.2 D + 1.5 LV6	Yes	Y		1	1.2	20	1.5																
32	1.2 D + 1.5 LV7	Yes	Y		1	1.2	21	1.5																
33	1.2 D + 1.5 LV8	Yes	Y		1	1.2	22	1.5																
34	1.2 D + 1.5 LV9	Yes	Y		1	1.2	23	1.5																
35	1.2 D + 1.5 LV10	Yes	Y		1	1.2	24	1.5																
36	1.2 D + 1.5 LV11	Yes	Y		1	1.2	25	1.5																
37	1.2 D + 1.5 LV12	Yes	Y		1	1.2	26	1.5																
38	1.2 D + 1.5 LV13	Yes	Y		1	1.2	27	1.5																
39	1.2 D + 1.5 LV14	Yes	Y		1	1.2	28	1.5																
40	1.2 D + 1.5 LV15	Yes	Y		1	1.2	29	1.5																

Load Combinations (Continued)

	Description	S...	PDelta	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
41	1.2 D + 1.5 LV16	Yes	Y		1	1.2	30	1.5																		
42	1.2 D + 1.5 LV17	Yes	Y		1	1.2	31	1.5																		
43	1.2 D + 1.5 LV18	Yes	Y		1	1.2	32	1.5																		
44	1.2 D + 1.5 LV19	Yes	Y		1	1.2	33	1.5																		
45	1.2 D + 1.5 LV20	Yes	Y		1	1.2	34	1.5																		
46	1.2 D + 1.5 LV21	Yes	Y		1	1.2	35	1.5																		
47	1.2 D + 1.5 LV22	Yes	Y		1	1.2	36	1.5																		
48	1.2 D + 1.5 LV23	Yes	Y		1	1.2	37	1.5																		
49	1.2 D + 1.5 LV24	Yes	Y		1	1.2	38	1.5																		
50	1.2 D + 1.5 LV25	Yes	Y		1	1.2	39	1.5																		
51	1.2 D + 1.5 LV26	Yes	Y		1	1.2	40	1.5																		
52	1.2 D + 1.5 LV27	Yes	Y		1	1.2	41	1.5																		
53	1.2 D + 1.5 LV28	Yes	Y		1	1.2	42	1.5																		
54	1.2 D + 1.5 LV29	Yes	Y		1	1.2	43	1.5																		
55	1.2 D + 1.5 LV30	Yes	Y		1	1.2	44	1.5																		
56	1.2 D + 1.5 LM1 + 1.0 W 0 (M...	Yes	Y		1	1.2	45	1.5	3	.066																
57	1.2 D + 1.5 LM1 + 1.0 W 30 (...	Yes	Y		1	1.2	45	1.5	4	.066																
58	1.2 D + 1.5 LM1 + 1.0 W 60 (...	Yes	Y		1	1.2	45	1.5	5	.066																
59	1.2 D + 1.5 LM1 + 1.0 W 90 (...	Yes	Y		1	1.2	45	1.5	6	.066																
60	1.2 D + 1.5 LM1 + 1.0 W 120 (...	Yes	Y		1	1.2	45	1.5	7	.066																
61	1.2 D + 1.5 LM1 + 1.0 W 150 (...	Yes	Y		1	1.2	45	1.5	8	.066																
62	1.2 D + 1.5 LM1 + 1.0 W 180 (...	Yes	Y		1	1.2	45	1.5	3	-.0...																
63	1.2 D + 1.5 LM1 + 1.0 W 210 (...	Yes	Y		1	1.2	45	1.5	4	-.0...																
64	1.2 D + 1.5 LM1 + 1.0 W 240 (...	Yes	Y		1	1.2	45	1.5	5	-.0...																
65	1.2 D + 1.5 LM1 + 1.0 W 270 (...	Yes	Y		1	1.2	45	1.5	6	-.0...																
66	1.2 D + 1.5 LM1 + 1.0 W 300 (...	Yes	Y		1	1.2	45	1.5	7	-.0...																
67	1.2 D + 1.5 LM1 + 1.0 W 330 (...	Yes	Y		1	1.2	45	1.5	8	-.0...																
68	1.2 D + 1.5 LM2 + 1.0 W 0 (M...	Yes	Y		1	1.2	46	1.5	3	.066																
69	1.2 D + 1.5 LM2 + 1.0 W 30 (...	Yes	Y		1	1.2	46	1.5	4	.066																
70	1.2 D + 1.5 LM2 + 1.0 W 60 (...	Yes	Y		1	1.2	46	1.5	5	.066																
71	1.2 D + 1.5 LM2 + 1.0 W 90 (...	Yes	Y		1	1.2	46	1.5	6	.066																
72	1.2 D + 1.5 LM2 + 1.0 W 120 (...	Yes	Y		1	1.2	46	1.5	7	.066																
73	1.2 D + 1.5 LM2 + 1.0 W 150 (...	Yes	Y		1	1.2	46	1.5	8	.066																
74	1.2 D + 1.5 LM2 + 1.0 W 180 (...	Yes	Y		1	1.2	46	1.5	3	-.0...																
75	1.2 D + 1.5 LM2 + 1.0 W 210 (...	Yes	Y		1	1.2	46	1.5	4	-.0...																
76	1.2 D + 1.5 LM2 + 1.0 W 240 (...	Yes	Y		1	1.2	46	1.5	5	-.0...																
77	1.2 D + 1.5 LM2 + 1.0 W 270 (...	Yes	Y		1	1.2	46	1.5	6	-.0...																
78	1.2 D + 1.5 LM2 + 1.0 W 300 (...	Yes	Y		1	1.2	46	1.5	7	-.0...																
79	1.2 D + 1.5 LM2 + 1.0 W 330 (...	Yes	Y		1	1.2	46	1.5	8	-.0...																
80	1.2 D + 1.5 LM3 + 1.0 W 0 (M...	Yes	Y		1	1.2	47	1.5	3	.066																
81	1.2 D + 1.5 LM3 + 1.0 W 30 (...	Yes	Y		1	1.2	47	1.5	4	.066																
82	1.2 D + 1.5 LM3 + 1.0 W 60 (...	Yes	Y		1	1.2	47	1.5	5	.066																
83	1.2 D + 1.5 LM3 + 1.0 W 90 (...	Yes	Y		1	1.2	47	1.5	6	.066																
84	1.2 D + 1.5 LM3 + 1.0 W 120 (...	Yes	Y		1	1.2	47	1.5	7	.066																
85	1.2 D + 1.5 LM3 + 1.0 W 150 (...	Yes	Y		1	1.2	47	1.5	8	.066																
86	1.2 D + 1.5 LM3 + 1.0 W 180 (...	Yes	Y		1	1.2	47	1.5	3	-.0...																
87	1.2 D + 1.5 LM3 + 1.0 W 210 (...	Yes	Y		1	1.2	47	1.5	4	-.0...																
88	1.2 D + 1.5 LM3 + 1.0 W 240 (...	Yes	Y		1	1.2	47	1.5	5	-.0...																
89	1.2 D + 1.5 LM3 + 1.0 W 270 (...	Yes	Y		1	1.2	47	1.5	6	-.0...																
90	1.2 D + 1.5 LM3 + 1.0 W 300 (...	Yes	Y		1	1.2	47	1.5	7	-.0...																
91	1.2 D + 1.5 LM3 + 1.0 W 330 (...	Yes	Y		1	1.2	47	1.5	8	-.0...																
92	1.2 D + 1.5 LM4 + 1.0 W 0 (M...	Yes	Y		1	1.2	48	1.5	3	.066																
93	1.2 D + 1.5 LM4 + 1.0 W 30 (...	Yes	Y		1	1.2	48	1.5	4	.066																
94	1.2 D + 1.5 LM4 + 1.0 W 60 (...	Yes	Y		1	1.2	48	1.5	5	.066																
95	1.2 D + 1.5 LM4 + 1.0 W 90 (...	Yes	Y		1	1.2	48	1.5	6	.066																
96	1.2 D + 1.5 LM4 + 1.0 W 120 (...	Yes	Y		1	1.2	48	1.5	7	.066																
97	1.2 D + 1.5 LM4 + 1.0 W 150 (...	Yes	Y		1	1.2	48	1.5	8	.066																

Load Combinations (Continued)

	Description	S...	PDelta	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
98	1.2 D + 1.5 LM4 + 1.0 W 180 (...	Yes	Y		1	1.2	48	1.5	3	-.0...																
99	1.2 D + 1.5 LM4 + 1.0 W 210 (...	Yes	Y		1	1.2	48	1.5	4	-.0...																
100	1.2 D + 1.5 LM4 + 1.0 W 240 (...	Yes	Y		1	1.2	48	1.5	5	-.0...																
101	1.2 D + 1.5 LM4 + 1.0 W 270 (...	Yes	Y		1	1.2	48	1.5	6	-.0...																
102	1.2 D + 1.5 LM4 + 1.0 W 300 (...	Yes	Y		1	1.2	48	1.5	7	-.0...																
103	1.2 D + 1.5 LM4 + 1.0 W 330 (...	Yes	Y		1	1.2	48	1.5	8	-.0...																
104	1.2 D + 1.5 LM5 + 1.0 W 0 (M...	Yes	Y		1	1.2	49	1.5	3	.066																
105	1.2 D + 1.5 LM5 + 1.0 W 30 (...	Yes	Y		1	1.2	49	1.5	4	.066																
106	1.2 D + 1.5 LM5 + 1.0 W 60 (...	Yes	Y		1	1.2	49	1.5	5	.066																
107	1.2 D + 1.5 LM5 + 1.0 W 90 (...	Yes	Y		1	1.2	49	1.5	6	.066																
108	1.2 D + 1.5 LM5 + 1.0 W 120 (...	Yes	Y		1	1.2	49	1.5	7	.066																
109	1.2 D + 1.5 LM5 + 1.0 W 150 (...	Yes	Y		1	1.2	49	1.5	8	.066																
110	1.2 D + 1.5 LM5 + 1.0 W 180 (...	Yes	Y		1	1.2	49	1.5	3	-.0...																
111	1.2 D + 1.5 LM5 + 1.0 W 210 (...	Yes	Y		1	1.2	49	1.5	4	-.0...																
112	1.2 D + 1.5 LM5 + 1.0 W 240 (...	Yes	Y		1	1.2	49	1.5	5	-.0...																
113	1.2 D + 1.5 LM5 + 1.0 W 270 (...	Yes	Y		1	1.2	49	1.5	6	-.0...																
114	1.2 D + 1.5 LM5 + 1.0 W 300 (...	Yes	Y		1	1.2	49	1.5	7	-.0...																
115	1.2 D + 1.5 LM5 + 1.0 W 330 (...	Yes	Y		1	1.2	49	1.5	8	-.0...																
116	1.2 D + 1.5 LM6 + 1.0 W 0 (M...	Yes	Y		1	1.2	50	1.5	3	.066																
117	1.2 D + 1.5 LM6 + 1.0 W 30 (...	Yes	Y		1	1.2	50	1.5	4	.066																
118	1.2 D + 1.5 LM6 + 1.0 W 60 (...	Yes	Y		1	1.2	50	1.5	5	.066																
119	1.2 D + 1.5 LM6 + 1.0 W 90 (...	Yes	Y		1	1.2	50	1.5	6	.066																
120	1.2 D + 1.5 LM6 + 1.0 W 120 (...	Yes	Y		1	1.2	50	1.5	7	.066																
121	1.2 D + 1.5 LM6 + 1.0 W 150 (...	Yes	Y		1	1.2	50	1.5	8	.066																
122	1.2 D + 1.5 LM6 + 1.0 W 180 (...	Yes	Y		1	1.2	50	1.5	3	-.0...																
123	1.2 D + 1.5 LM6 + 1.0 W 210 (...	Yes	Y		1	1.2	50	1.5	4	-.0...																
124	1.2 D + 1.5 LM6 + 1.0 W 240 (...	Yes	Y		1	1.2	50	1.5	5	-.0...																
125	1.2 D + 1.5 LM6 + 1.0 W 270 (...	Yes	Y		1	1.2	50	1.5	6	-.0...																
126	1.2 D + 1.5 LM6 + 1.0 W 300 (...	Yes	Y		1	1.2	50	1.5	7	-.0...																
127	1.2 D + 1.5 LM6 + 1.0 W 330 (...	Yes	Y		1	1.2	50	1.5	8	-.0...																
128	1.2 D + 1.0 Ev + 1.0 Eh 0	Yes	Y		1	1.2	1	.092	51	.23	52															
129	1.2 D + 1.0 Ev + 1.0 Eh 30	Yes	Y		1	1.2	1	.092	51	.199	52	.115														
130	1.2 D + 1.0 Ev + 1.0 Eh 60	Yes	Y		1	1.2	1	.092	51	.115	52	.199														
131	1.2 D + 1.0 Ev + 1.0 Eh 90	Yes	Y		1	1.2	1	.092	51		52	.23														
132	1.2 D + 1.0 Ev + 1.0 Eh 120	Yes	Y		1	1.2	1	.092	51	-.1...	52	.199														
133	1.2 D + 1.0 Ev + 1.0 Eh 150	Yes	Y		1	1.2	1	.092	51	-.1...	52	.115														
134	1.2 D + 1.0 Ev + 1.0 Eh 180	Yes	Y		1	1.2	1	.092	51	-.23	52															
135	1.2 D + 1.0 Ev + 1.0 Eh 210	Yes	Y		1	1.2	1	.092	51	-.1...	52	-.1...														
136	1.2 D + 1.0 Ev + 1.0 Eh 240	Yes	Y		1	1.2	1	.092	51	-.1...	52	-.1...														
137	1.2 D + 1.0 Ev + 1.0 Eh 270	Yes	Y		1	1.2	1	.092	51		52	-.23														
138	1.2 D + 1.0 Ev + 1.0 Eh 300	Yes	Y		1	1.2	1	.092	51	.115	52	-.1...														
139	1.2 D + 1.0 Ev + 1.0 Eh 330	Yes	Y		1	1.2	1	.092	51	.199	52	-.1...														
140	0.9 D - 1.0 Ev + 1.0 Eh 0	Yes	Y		1	.9	1	-.0...	51	.23	52															
141	0.9 D - 1.0 Ev + 1.0 Eh 30	Yes	Y		1	.9	1	-.0...	51	.199	52	.115														
142	0.9 D - 1.0 Ev + 1.0 Eh 60	Yes	Y		1	.9	1	-.0...	51	.115	52	.199														
143	0.9 D - 1.0 Ev + 1.0 Eh 90	Yes	Y		1	.9	1	-.0...	51		52	.23														
144	0.9 D - 1.0 Ev + 1.0 Eh 120	Yes	Y		1	.9	1	-.0...	51	-.1...	52	.199														
145	0.9 D - 1.0 Ev + 1.0 Eh 150	Yes	Y		1	.9	1	-.0...	51	-.1...	52	.115														
146	0.9 D - 1.0 Ev + 1.0 Eh 180	Yes	Y		1	.9	1	-.0...	51	-.23	52															
147	0.9 D - 1.0 Ev + 1.0 Eh 210	Yes	Y		1	.9	1	-.0...	51	-.1...	52	-.1...														
148	0.9 D - 1.0 Ev + 1.0 Eh 240	Yes	Y		1	.9	1	-.0...	51	-.1...	52	-.1...														
149	0.9 D - 1.0 Ev + 1.0 Eh 270	Yes	Y		1	.9	1	-.0...	51		52	-.23														
150	0.9 D - 1.0 Ev + 1.0 Eh 300	Yes	Y		1	.9	1	-.0...	51	.115	52	-.1...														
151	0.9 D - 1.0 Ev + 1.0 Eh 330	Yes	Y		1	.9	1	-.0...	51	.199	52	-.1...														

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	N1	max	824.746	2	1428.603	18	637.05	5	3.072	59	2.185	10	4.315	19
2		min	-824.746	8	394.139	151	-637.05	11	.474	149	-2.181	4	1.118	140
3	Totals:	max	824.746	2	1428.603	18	637.05	5						
4		min	-824.746	8	394.139	151	-637.05	11						

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

	Mem...	Shape	Code Check	Loc[in]	LC	Shea...	Loc[in]	Dir	LC	phi*Pnc...	phi*Pnt [...	phi*M...	phi*M...	Cb	Eqn
1	M5	PIPE_3.0	.436	42	59	.071	42		21	60708....	85698	7.555	7.555	1...	H1...
2	M1	HSS4X4X4	.325	0	58	.259	0	y	59	134360...	139518	16.181	16.181	1...	H3...
3	M2	PIPE_2.5	.136	48	8	.014	48		8	33487....	66654	4.727	4.727	1...	H1...
4	M4	PIPE_2.5	.019	48	5	.002	48		5	33487....	66654	4.727	4.727	1...	H1...
5	M3	PIPE_2.5	.019	48	8	.002	48		8	33487....	66654	4.727	4.727	1...	H1...
6	M6	PIPE_4.0	.000	9	6	.000	9		6	92571....	93240	10.631	10.631	1...	H1...

APPENDIX D

ADDITIONAL CALCULATIONS

P. Marshall Associates, LLC
1000 Holcomb Woods Pkwy, Suite 210
Roswell, GA 30076
(678) 280-2325

Outrigger Connection Check

Location: **Outrigger Arm Connection at 98 ft**
Code: **ANSI/TIA-222-H**
Bolt Info: **(4) 0.625 in. dia. bolts, grade A325N**
Plate Info: **9 in. x 9 in. x 0.625 in., 50/65 ksi steel plate**

Maximum Connection Reactions

Tension	825	lbs
Vertical Shear	1429	lbs
Horizontal Shear	637	lbs
Torsion	3	lb-ft
Vertical Moment	4	lb-ft
Horizontal Moment	2	lb-ft

Combined Tension & Shear

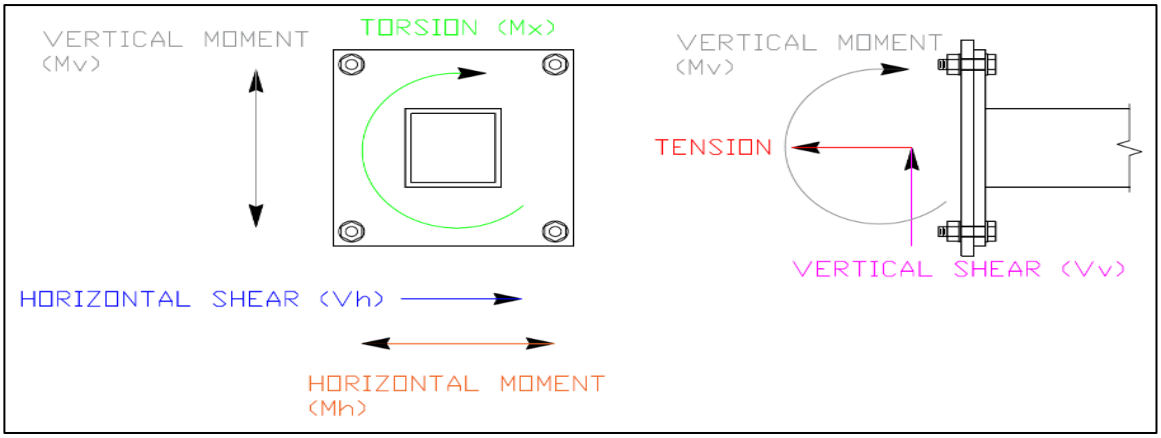
φR_{nt}	21.18	kips/bolt
φR_{nv}	27.63	kips/bolt
Capacity	0.0%	

Block Shear Strength

φ Rn (Vertical)	127.97	kips
φ Rn (Horizontal)	127.97	kips
Capacity	1.1%	

Bearing Strength

φ Rn	95.98	kips
Lc	0.66	in
Capacity	1.5%	



Overall Capacity Usage: 1.5% PASS

APPENDIX E

MOUNT DESIGN DRAWINGS (MDD)

NOTES:

1.0 GENERAL NOTES
- 1.1 ALL METRIC DIMENSIONS ARE IN BRACKETS.

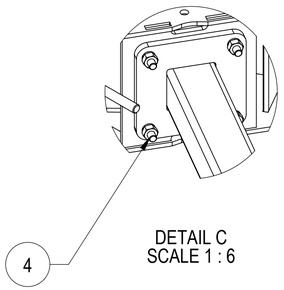
2.0 DESIGN NOTES
- 2.1 FOR PATENT INFORMATION: HTTPS://WWW.CS-PAT.COM
- 2.2 USE STANDARD TORQUE VALUES FOR 5/8" BOLTS
- 2.3 TORQUE U-BOLTS TO 44 FT-LBS

3.0 MANUFACTURING/SPECIAL REQUIREMENTS

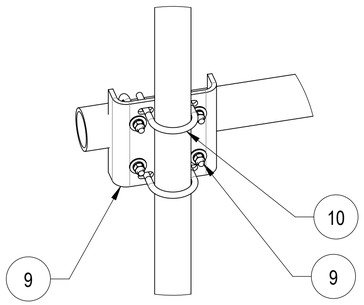
4.0 TEST

5.0 PACKAGING
- 5.1 PACKAGING SHALL MEET COMMSCOPE REQUIREMENTS PER DOCUMENT IS-PL-3005

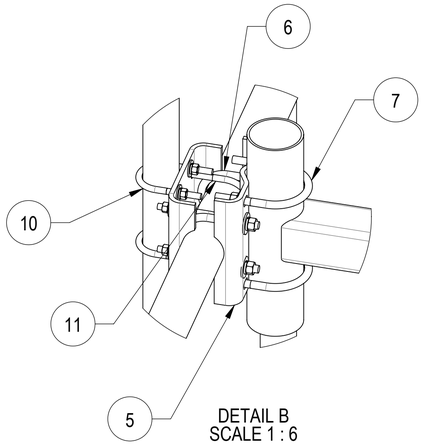
REVISIONS				
REV.	IPS	DESCRIPTION	BY	DATE
A	10539PC	NEW RELEASED.	XZ1054	3/11/2021



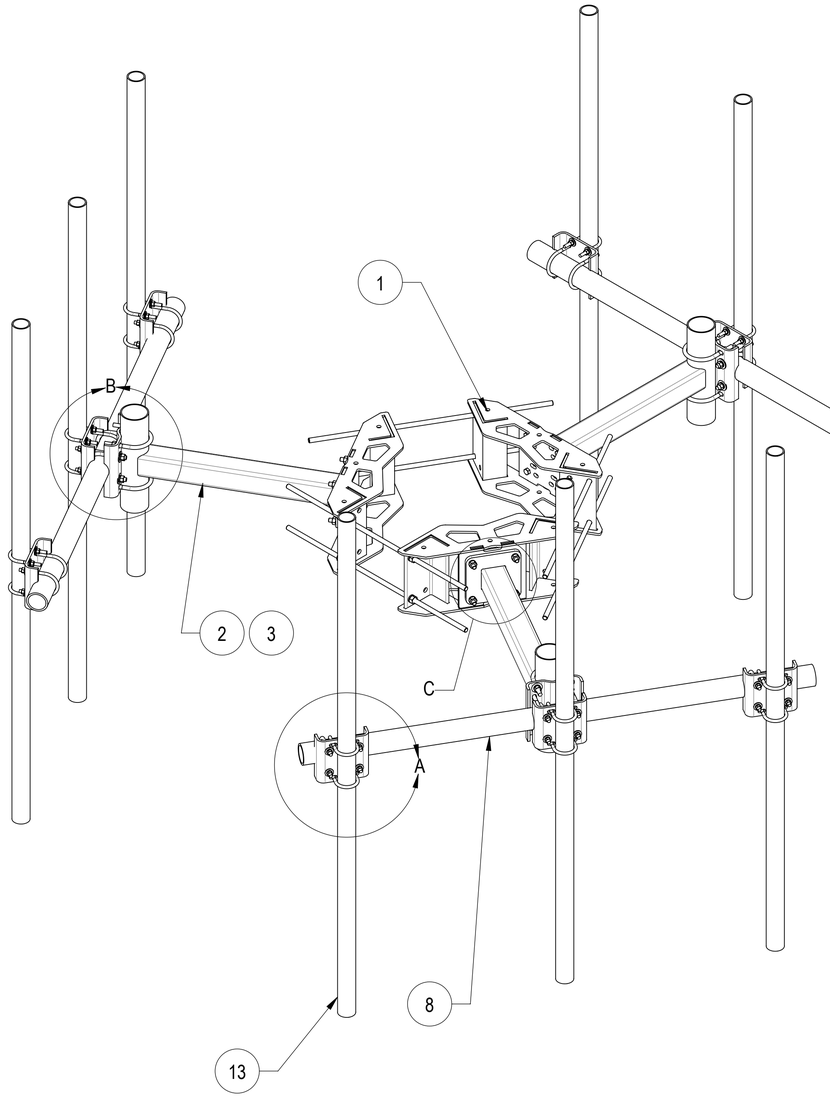
DETAIL C
SCALE 1 : 6



DETAIL A
SCALE 1 : 6



DETAIL B
SCALE 1 : 6



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	MC-RM1550-3	12" - 50" OD RINGMOUNT	1
2	MT197.01	36" SINGLE SUPPORT ARM	3
3	MT197H	HARDWARE KIT (NEXT ITEM)	3
4	GB-0524A	5/8" X 2-1/2" GALV BOLT KIT (A325)	12
5	MT216.13	CENTER BRACKET	3
6	GUB-53560	5/8" X 3-5/8" X 6" GALV U-BOLT	6
7	GUB-5456	5/8" X 4-5/8" X 6½" GALV U-BOLT	6
8	MTC333912	84" X 3-1/2" OD PIPE	3
9	MT219H3501	3.5"OD Clamp Bracket	9
10	GUB-4352	1/2" X 3" X 5-1/4" GALV U-BOLT	18
11	GUB-4356	1/2" X 3-5/8" X 6" GALV U-BOLT	18
13	MT54696	∅2.875" O.D. X 96 PIPE	9

COMMSCOPE, INC. OF NORTH CAROLINA

TOLERANCES
1 PLACE .X ± .12 | 3 PLACE .XXX ± .03
2 PLACE .XX ± .06 | ANGLES ± 2° | FRACTIONS ± 1/32

SAP MATERIAL MASTER: MC-K6MHDX-9-96

FINISH: N/A

MATERIAL: A36, A53

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

	NAME	DATE
CE	XZ1054	03/08/2021
RW	ROGHANSON	03/16/2021
AD	BCAMPBELLCON	03/19/2021
RE		

ECN 10539PC

TITLE: T-ARM, MCK6, 3, 4" x 84" , 9, 2-7/8"x96

SCALE: 1:32

DOCUMENT NO.: MC-K6MHDX-9-96

DENSITY	0.28	lbs/in³
MASS	1203.02	lbs
VOLUME	4265.23	in³
SURFACE AREA	35860.22	in²
HEIGHT	96"	
LENGTH	131.5"	
WIDTH	151.9"	

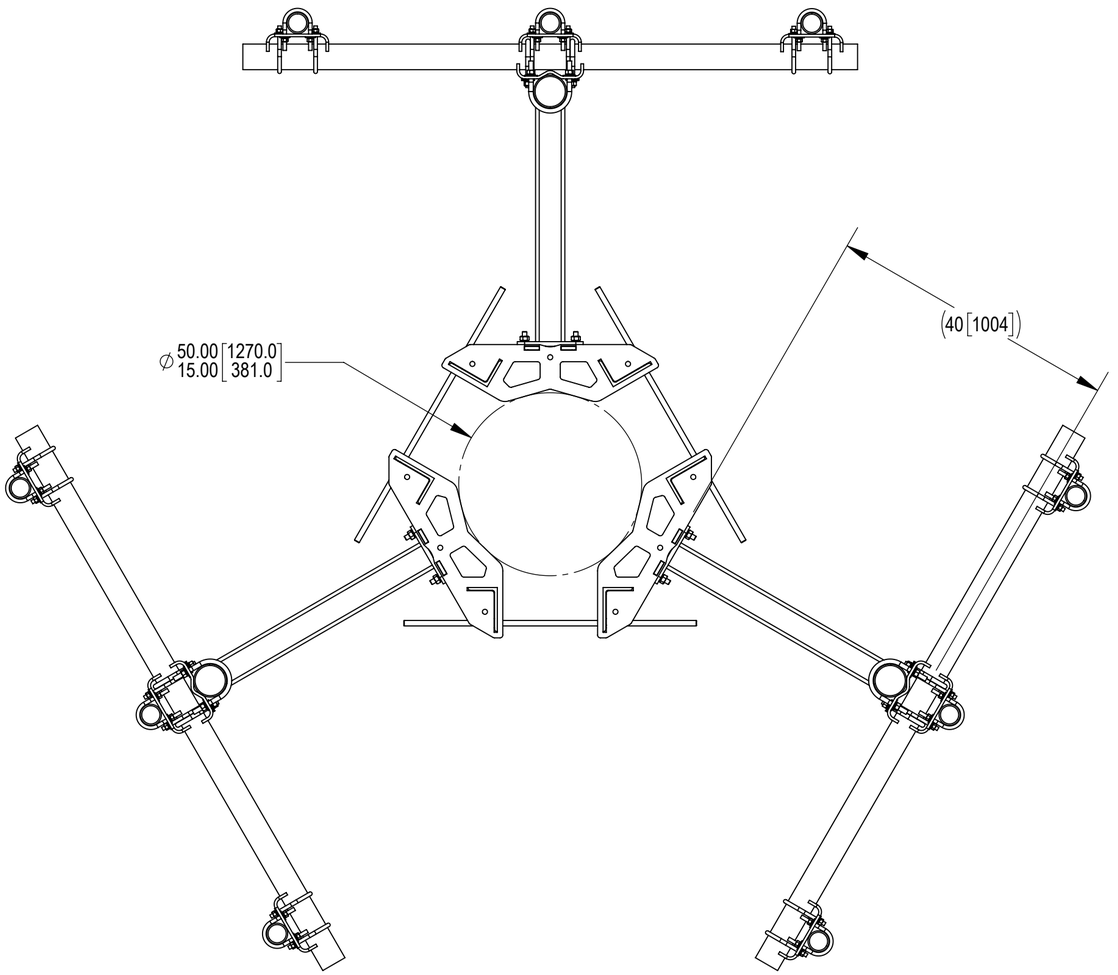
SIZE: D

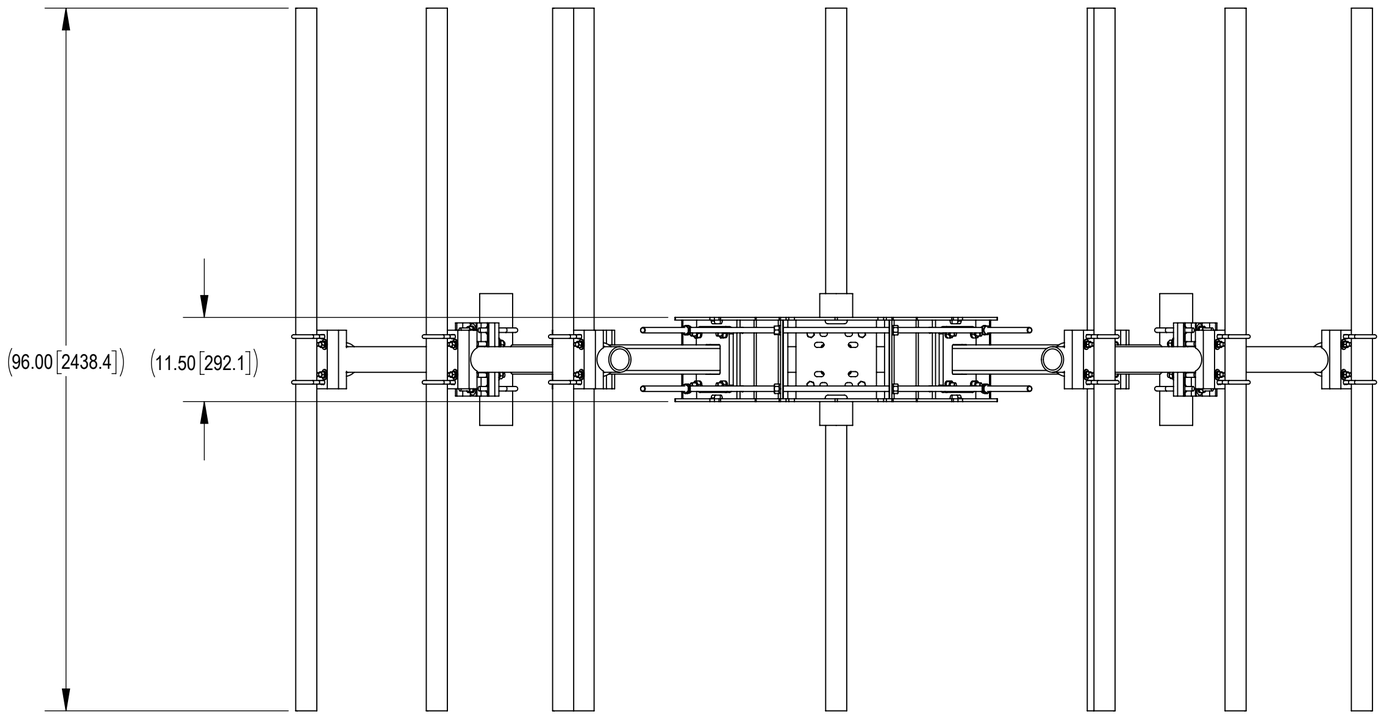
Auth Group: INSL

	MODEL			DRAWING		
	VERSION	STATUS	REVISION	VERSION	STATUS	REVISION
	00	AD	A	00	AD	A

SHEET 1 OF 2

NOTES:





COMMSCOPE, INC. OF NORTH CAROLINA			
TITLE: T-ARM, MCK6, 3, 4” x 84” , 9, 2-7/8"x96			
SIZE: C	SCALE: 1:32	DOCUMENT NO.: MC-K6MHDX-9-96	
		DRAWING	SHEET
		VERSION: 00 / STATUS: AD / REVISION: A	2 OF 2

Exhibit F

Power Density/RF Emissions Report

EBI Consulting

environmental | engineering | due diligence

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

Dish Wireless Existing Facility

Site ID: BOBDL00062A

841793
50 Pine Lane
Windsor, Connecticut 06095

September 28, 2021

EBI Project Number: 6221005709

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**15.54%**

21 B Street, Burlington, MA 01803 · Tel: (781) 273.2500 · Fax: (781) 273.3311

September 28, 2021

Dish Wireless

Emissions Analysis for Site: BOBDL00062A - 841793

EBI Consulting was directed to analyze the proposed Dish Wireless facility located at **50 Pine Lane** in **Windsor, Connecticut** for the purpose of determining whether the emissions from the Proposed Dish Wireless Antenna Installation located on this property are within specified federal limits.

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

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

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

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

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

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed Dish Wireless Wireless antenna facility located at 50 Pine Lane in Windsor, Connecticut using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since Dish Wireless is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 20 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was focused at the base of the tower. For this report, the sample point is the top of a 6-foot person standing at the base of the tower.

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

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

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

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

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

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

6) The antenna mounting height centerline of the proposed antennas is 98 feet above ground level (AGL).

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

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

Dish Wireless Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	JMA MX08FRO665-21	Make / Model:	JMA MX08FRO665-21	Make / Model:	JMA MX08FRO665-21
Frequency Bands:	600 MHz / 1900 MHz	Frequency Bands:	600 MHz / 1900 MHz	Frequency Bands:	600 MHz / 1900 MHz
Gain:	17.45 dBd / 22.65 dBd	Gain:	17.45 dBd / 22.65 dBd	Gain:	17.45 dBd / 22.65 dBd
Height (AGL):	98 feet	Height (AGL):	98 feet	Height (AGL):	98 feet
Channel Count:	8	Channel Count:	8	Channel Count:	8
Total TX Power (W):	280 Watts	Total TX Power (W):	280 Watts	Total TX Power (W):	280 Watts
ERP (W):	3,065.51	ERP (W):	3,065.51	ERP (W):	3,065.51
Antenna A1 MPE %:	**1.87%**	Antenna B1 MPE %:	**1.87%**	Antenna C1 MPE %:	**1.87%**

Site Composite MPE %	
Carrier	**MPE %**
Dish Wireless (Max at Sector A):	1.87%
EYE Tower	0.24%
Cingular	0.44%
Town	0.27%
Metro PCS	0.94%
AT&T	9.03%
Clearwire	0.17%
Nextel	1.65%
Various Others	0.93%
Site Total MPE % :	15.54%

Dish Wireless MPE % Per Sector	
Dish Wireless Sector A Total:	1.87%
Dish Wireless Sector B Total:	1.87%
Dish Wireless Sector C Total:	1.87%
Site Total MPE % :	15.54%

Dish Wireless Maximum MPE Power Values (Sector A)

Dish Wireless Frequency Band / Technology (Sector A)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density (μW/cm²)	Frequency (MHz)	Allowable MPE (μW/cm²)	Calculated % MPE
Dish Wireless 600 MHz n71	4	223.68	98.0	3.80	600 MHz n71	400	0.95%
Dish Wireless 1900 MHz n70	4	542.70	98.0	9.22	1900 MHz n70	1000	0.92%
						Total:	**1.87%**

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

Summary

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

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

Dish Wireless Sector	Power Density Value (%)
Sector A:	1.87%
Sector B:	1.87%
Sector C:	1.87%
Dish Wireless Maximum MPE % (Sector A):	1.87%
Site Total:	15.54%
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **15.54%** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

Exhibit G

Letter of Authorization

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

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

Crown Castle Letter of Authorization

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

Re: Tower Share Application
Crown Castle telecommunications site at:
50 PINE LANE, WINDSOR, CT 06095

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

Crown Site ID/Name: 841793/WINDSOR PINE LANE
Customer Site ID: BOBDL00062A/CT-CCI-T-841793
Site Address: 50 PINE LANE, WINDSOR, CT 06095

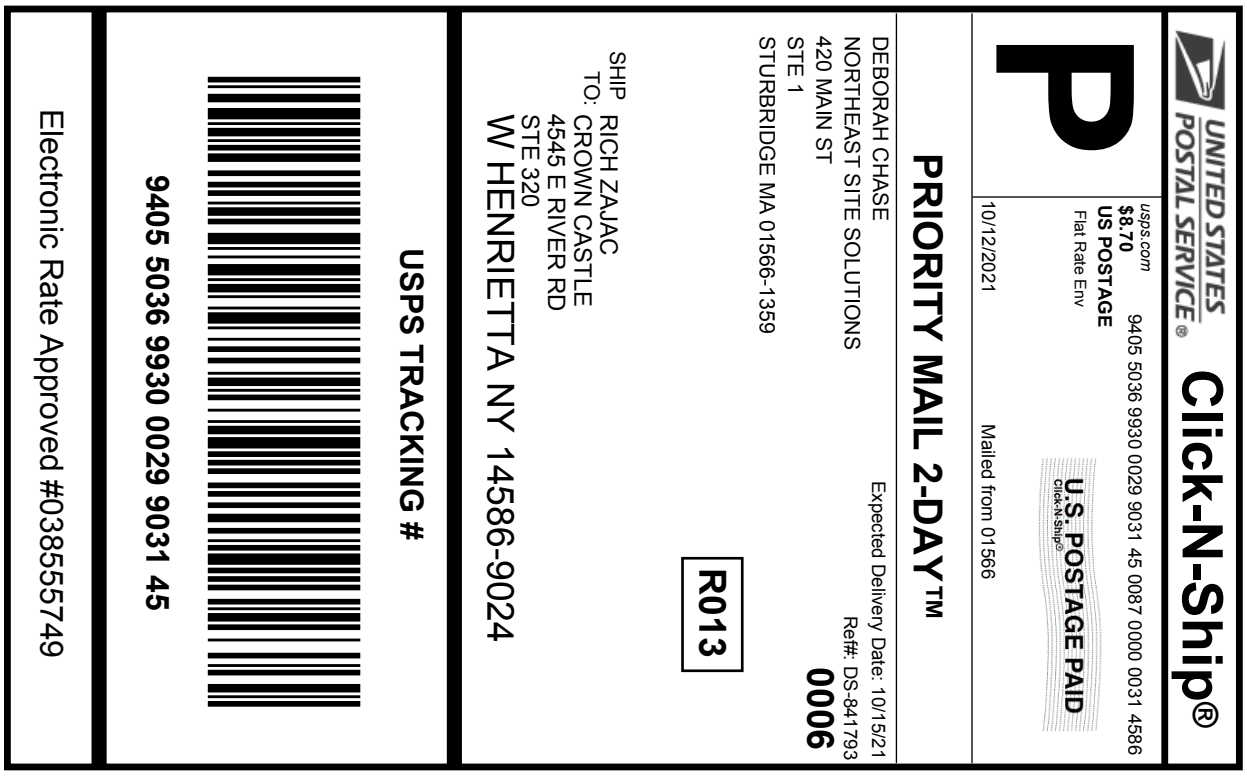
Crown Castle

By: _____ Date: 10/4/2021

Richard Zajac
Site Acquisition Specialist

Exhibit H

Recipient Mailings



Cut on dotted line.

Instructions

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

Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0029 9031 45

Trans. #:	545731949
Print Date:	10/12/2021
Ship Date:	10/12/2021
Expected Delivery Date:	10/15/2021

Priority Mail® Postage:	**$8.70**
Total:	**$8.70**

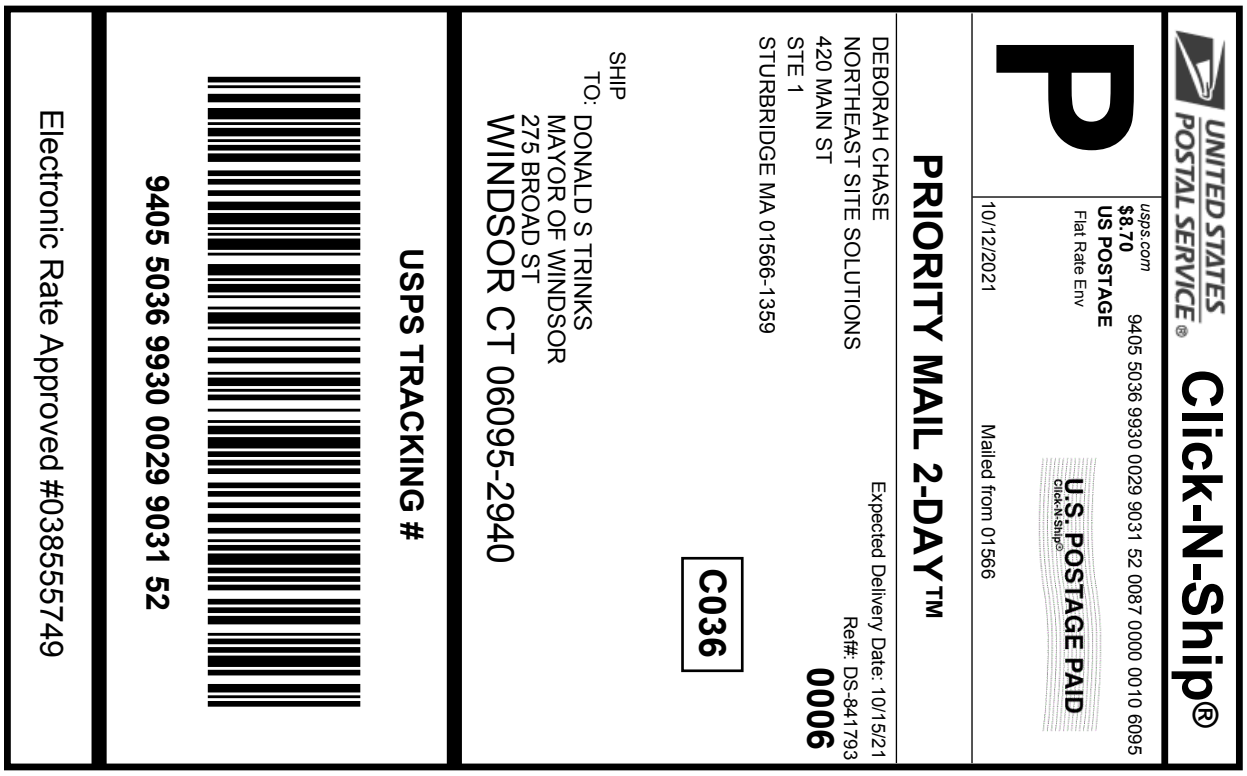
From: DEBORAH CHASE
NORTHEAST SITE SOLUTIONS
420 MAIN ST
STE 1
STURBRIDGE MA 01566-1359

Ref#: DS-841793

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

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

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



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4. **To mail your package with PC Postage®, you may schedule a Package Pickup online, hand to your letter carrier, take to a Post Office™, or drop in a USPS collection box.**
5. **Mail your package on the "Ship Date" you selected when creating this label.**

Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0029 9031 52

Trans. #:	545731949
Print Date:	10/12/2021
Ship Date:	10/12/2021
Expected Delivery Date:	10/15/2021

Priority Mail® Postage:	**$8.70**
Total:	**$8.70**

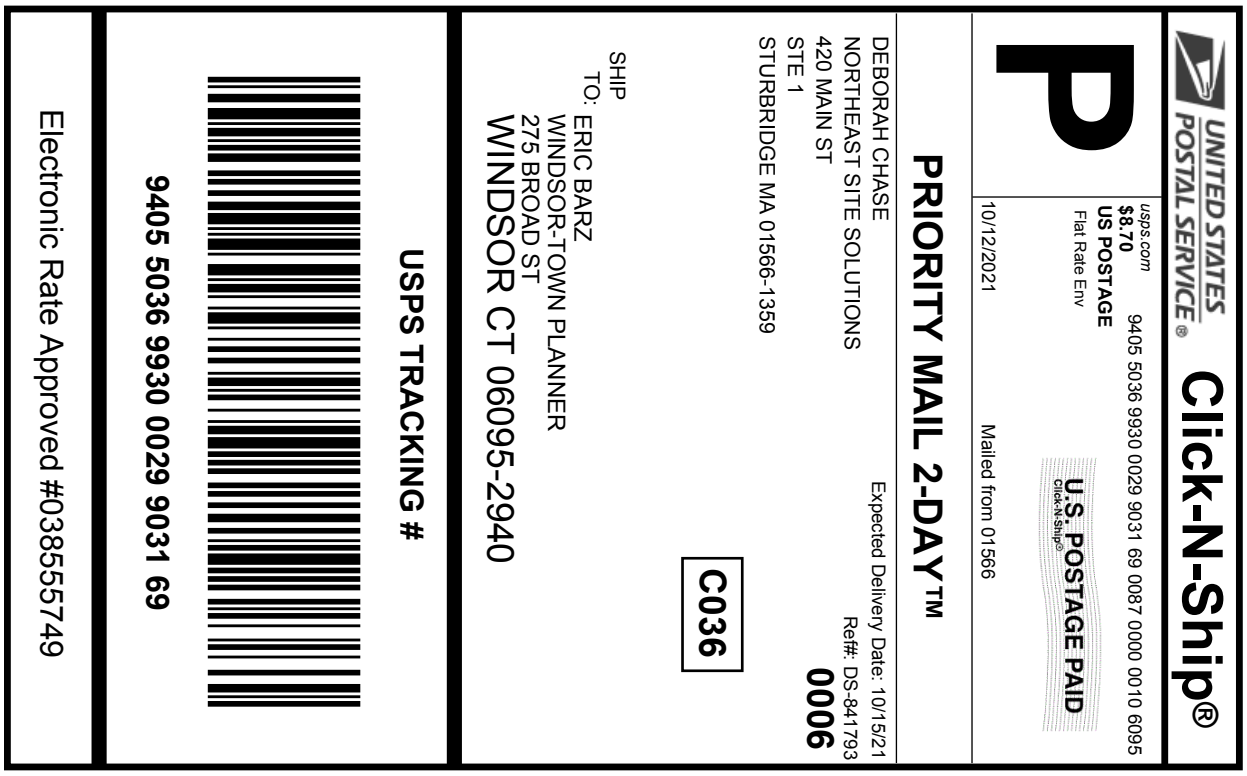
From: DEBORAH CHASE
NORTHEAST SITE SOLUTIONS
420 MAIN ST
STE 1
STURBRIDGE MA 01566-1359

Ref#: DS-841793

To: DONALD S TRINKS
MAYOR OF WINDSOR
275 BROAD ST
WINDSOR CT 06095-2940

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

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



Cut on dotted line.

Instructions

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

Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0029 9031 69

Trans. #:	545731949
Print Date:	10/12/2021
Ship Date:	10/12/2021
Expected Delivery Date:	10/15/2021

Priority Mail® Postage:	**$8.70**
Total:	**$8.70**

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

Ref#: DS-841793

To: ERIC BARZ
WINDSOR-TOWN PLANNER
275 BROAD ST
WINDSOR CT 06095-2940

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

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

841793

UNITED STATES POSTAL SERVICE.

UNIONVILLE
24 MILL ST
UNIONVILLE, CT 06085-9998
(800)275-8777

10/13/2021 02:21 PM

Product	Qty	Unit Price	Price
Prepaid Mail West Henrietta, NY 14586 Weight: 0 lb 2.00 oz Acceptance Date: Wed 10/13/2021 Tracking #: 9405 5036 9930 0029 9031 45	1		$0.00
Prepaid Mail Windsor, CT 06095 Weight: 0 lb 11.50 oz Acceptance Date: Wed 10/13/2021 Tracking #: 9405 5036 9930 0029 9031 52	1		$0.00
Prepaid Mail Windsor, CT 06095 Weight: 0 lb 11.50 oz Acceptance Date: Wed 10/13/2021 Tracking #: 9405 5036 9930 0029 9031 69	1		$0.00
Grand Total:			$0.00

****
USPS is experiencing unprecedented volume
increases and limited employee