



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

August 11, 2021

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

RE: Exempt Modification Application
99 Day Hill Road, Windsor CT 06095
Latitude: 41.87113889
Longitude: -72.87111111
T-Mobile Site#: 842875_Crown_Dish

Dear Ms. Bachman:

Based on the 2020 merger between T-Mobile and Sprint, and as part of the agreement, the DOJ required T-Mobile to divest some sites to Dish in order to create an additional wireless provider. This site is part of the agreement.

Dish Wireless LLC is requesting to file an exempt modification for an existing tower located at 99 Day Hill Road, Windsor CT 06095. Dish Wireless LLC proposes to install three (3) antennas at the 120-foot level of the existing 168-foot tower. The property is owned by the Town of Windsor and the tower is owned by Crown Castle. This modification includes hardware that is 5G capable.

Dish Wireless LLC Planned Modifications:

Remove:
Antenna mount
(3) APL 199016-42T0 Antenna

Remove and Replace: NONE

Install New:
(1) Commscope MC-PK8-DSH platform mount
(3) LMA MX08FRO665-20 Antenna
(3) TA08025-B604 RRU
(3) TA08025-B605 RRU
(1) Raycap
(1) 1-1/2" Hybrid (Inside Pole)

Existing to Remain:
NONE



Ground Work: (within existing compound)

New H-Frame
Equipment Cabinet
Power/Telco Cabinet
Ice Bridge
7'x5' Steel Platform

The facility was approved by the Windsor Town Planning and Zoning Commission on November 30, 2000. Please see attached.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies § 16- SOj-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-SOj-73, a copy of this letter is being sent to Donald Trinks, Mayor, Elected Official and Robert Ruzzo, Building Official for the Town of Windsor, as well as the property owner and the tower owner.

The planned modifications to the facility fall squarely within those activities explicitly provided for in R.C.S.A. § 16-50j-72(b)(2).

1. The proposed modifications will not result in an increase in the height of the existing structure.
2. The proposed modifications will not require the extension of the site boundary.
3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.
4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The existing structure and its foundation can support the proposed loading.

For the foregoing reasons, Dish Wireless respectfully submits that the proposed modifications to the above referenced telecommunications facility constitute an exempt modification under R.C.S.A. § 16-50j-72(b)(2).

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



NSS

NORTHEAST
SITE SOLUTIONS

Turnkey Wireless Development

Attachments cc:

Donald Trinks, Mayor (towncouncil@townofwindsorct.com)
Town Hall Council Chambers
275 Broad Street Windsor, CT 06095
860- 285-1800

Robert Ruzzo, Building Official (RUZZO@townofwindsorct.com)
275 Broad Street Windsor, CT 06095
(860) 285-1961

Crown Castle, Tower Owner

Exhibit A

Original Facility Approval

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 #292A for a Wireless Telecommunications Tower with a monopole height of 170 feet plus 20-foot Town public service whip antennas for a total height of 190 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 height requirement for 15 feet; and
- 2) a waiver of the fall zone distance requirement for 151 feet in relation to the distance of the tower from Day Hill Road, 380 feet being required, 229 feet being proposed.

Said Special Use was granted for the property located at: 99 Day Hill Road

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

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

Anita M. Mips Chairperson

Public Act #75-317

Received for Record this _____ day of _____, 2000

Attest: Town Clerk

RECEIVED FOR RECORD
WINDSOR TOWN CLERK

00 NOV 30 PM 12: 58

VOL 1249 PG 156

BY Kathleen H. Quinn
TOWN CLERK

Exhibit B

Property Card

CURRENT OWNER		TOPO	UTILITIES	STRT / ROAD	LOCATION	CURRENT ASSESSMENT				
WINDSOR TOWN OF PUBLIC WORKS GARAGE 275 BROAD STREET WINDSOR CT 06095		1 Level	2 Public Water	1 Paved		Description	Code	Appraised	Assessed	6164 WINDSOR, CT VISION
			3 Public Sewer			EX COM LN	21	766,900	536,830	
			4 Gas			EX COM BL	22	1,633,800	1,143,660	
		SUPPLEMENTAL DATA				EX CM OTB	25	156,300	109,410	
Alt Prcl ID 9310		INC: GH		CTRACT 4735.01 CBLOCK 0 DIST HEART GL YEAR		Total		2,557,000	1,789,900	
2007 1376200		GIS ID 9310		Assoc Pid#						

RECORD OF OWNERSHIP		BK-VOL/PAGE	SALE DATE	Q/U	V/I	SALE PRICE	VC	PREVIOUS ASSESSMENTS (HISTORY)								
WINDSOR TOWN OF		0334 0257	11-04-1977			0		Year	Code	Assessed	Year	Code	Assessed	Year	Code	Assessed
								2019	21	536,830	2018	21	536,830	2017	21	536,830
									22	1,143,660		22	1,143,660		22	972,790
									25	109,410		25	109,410		25	103,460
								Total		1789900	Total		1789900	Total		1613080

EXEMPTIONS				OTHER ASSESSMENTS				This signature acknowledges a visit by a Data Collector or Assessor								
Year	Code	Description	Amount	Code	Description	Number	Amount	Comm Int								
2011	BAAX	MUNICIPAL	0.00													
Total			0.00													

ASSESSING NEIGHBORHOOD				APPROAISED VALUE SUMMARY			
Nbhd	Sub	Nbhd Name	B	Tracing	Batch		
300	A					Appraised Bldg. Value (Card)	1,595,900
						Appraised Xf (B) Value (Bldg)	37,900
						Appraised Ob (B) Value (Bldg)	156,300
						Appraised Land Value (Bldg)	766,900
						Special Land Value	0
						Total Appraised Parcel Value	2,557,000
						Valuation Method	C
						Total Appraised Parcel Value	2,557,000

NOTES							
9310.00 .04 AC REMOVED & ASSESSED							
0042-0108-0001 D TO AT&T WIRELESS FOR CELL							
BTR89-CLERICAL TOWER 10/01/2001							
CANOPY ADDED 10-92 ADDED STORAGE SHED 10/04							
REF:V1277 P506 7-18-01							
ELEC EASEMENT V1277 P511							

BUILDING PERMIT RECORD									VISIT / CHANGE HISTORY					
Permit Id	Issue Date	Type	Description	Amount	Insp Date	% Comp	Date Comp	Comments	Date	Id	Type	Is	Cd	Purpost/Result
E-190462	03-12-2019	FP	Fire Protect		08-16-2019	100	10-01-2019	UPGRADE FIRE ALARM SYS	01-18-1990	JM			43	Change - Reinspection Rer
B041271	08-24-2004	NC	New Construct					STORAGE SHED	04-13-1988	GH			00	Measur+Listed

LAND LINE VALUATION SECTION																
B	Use Code	Description	Zone	Land Type	Land Units	Unit Price	I. Factor	Site Index	Cond.	Nbhd.	Nhbd Adj	Notes	Location Adjustment	Adj Unit Pric	Land Value	
1	903W	Municipal MDL-9	NZ		5.000 AC	82,000	1.00000	1	1.00	300	1.600			0	656,000	
1	903W	Municipal MDL-9	NZ		6.760 AC	82,000	1.00000	0	0.20		1.000			0	110,900	
Total Card Land Units					11.760 AC	Parcel Total Land Area: 11.7600					Total Land Value					766,900

CONSTRUCTION DETAIL			CONSTRUCTION DETAIL (CONTINUED)		
Element	Cd	Description	Element	Cd	Description
Style:	95	Garage/Office			
Model	96	Ind/Comm			
Grade	03	Average			
Stories:	1				
Occupancy			MIXED USE		
Exterior Wall 1	27	Pre-finish Metl	Code	Description	Percentage
Exterior Wall 2			903W	Municipal MDL-96	100
Roof Structure	01	Flat			0
Roof Cover	09	Enam Mtl Shing			0
Interior Wall 1	01	Minim/Masonry	COST / MARKET VALUATION		
Interior Wall 2			RCN		2,020,095
Interior Floor 1	03	Concrete	Year Built		1982
Interior Floor 2			Effective Year Built		
Heating Fuel	03	Gas	Depreciation Code		A
Heating Type	03	Hot Air-no Duc	Remodel Rating		
AC Type	01	None	Year Remodeled		
Bldg Use	903W	Municipal MDL-96	Depreciation %		21
Total Rooms			Functional Obsol		0
Total Bedrms	00		External Obsol		0
Total Baths	2		Trend Factor		1
Heat/AC	00	None	Condition		
Frame Type	05	Steel	Condition %		79
Baths/Plumbing	02	Average	Percent Good		
Ceiling/Wall	04	Ceil & Min WI	Cns Sect Rcndd		1,595,900
Rooms/Prtns	02	Average	Dep % Ovr		
Wall Height	16.00		Dep Ovr Comment		
% Conn Wall	0.00		Misc Imp Ovr		
1st Floor Use:	903Z		Misc Imp Ovr Comment		
			Cost to Cure Ovr		
			Cost to Cure Ovr Comment		



OB - OUTBUILDING & YARD ITEMS(L) / XF - BUILDING EXTRA FEATURES(B)												
Code	Descripti	Sub	Sub Ty	L/B	Units	Unit Price	Yr Blt	Cond. Cd	% Gd	Grade	Grade Ad	Appr. V
PAV1	PAVING-			L	20,00	2.50	2003		50		0.00	25,000
FGR1	GARAG			L	3,800	18.00	2003		75		0.00	51,300
CNP2	GOOD			B	2,400	20.00	1997		79		0.00	37,900
SHD1	SHED F			L	10,00	8.00	2004		100		0.00	80,000

BAS
(36,300 sf)

BUILDING SUB-AREA SUMMARY SECTION							
Code	Description	Living Area	Floor Area	Eff Area	Unit Cost	Undeprec Value	
BAS	First Floor	36,300	36,300		55.65	2,020,095	
Ttl Gross Liv / Lease Area		36,300	36,300			2,020,095	



Exhibit C

Construction Drawings



DISH Wireless L.L.C. SITE ID:

BOBDL00068A

DISH Wireless L.L.C. SITE ADDRESS:

**99 DAY HILL ROAD
WINDSOR, CT 06095**

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: <ul style="list-style-type: none"> REMOVING EXISTING LEVEL AT 118'-7" INSTALL (3) PROPOSED PANEL ANTENNAS (1 PER SECTOR) INSTALL (1) PROPOSED TOWER PLATFORM MOUNT INSTALL PROPOSED JUMPERS INSTALL (6) PROPOSED RRUs (2 PER SECTOR) INSTALL (1) PROPOSED OVER VOLTAGE PROTECTION DEVICE (OVP) INSTALL (1) PROPOSED HYBRID CABLE
GROUND SCOPE OF WORK: <ul style="list-style-type: none"> INSTALL (1) PROPOSED METAL PLATFORM INSTALL (1) PROPOSED ICE BRIDGE INSTALL (1) PROPOSED PPC CABINET INSTALL (1) PROPOSED EQUIPMENT CABINET INSTALL (1) PROPOSED POWER CONDUIT INSTALL (1) PROPOSED TELCO CONDUIT INSTALL (1) PROPOSED TELCO-FIBER BOX INSTALL (1) PROPOSED GPS UNIT INSTALL (1) PROPOSED FIBER NID (IF REQUIRED)

SITE INFORMATION	PROJECT DIRECTORY
PROPERTY OWNER: WINDSOR TOWN OF ADDRESS: 275 BROAD STREET PUBLIC WORKS GARAGE WINDSOR, CT 06095 TOWER TYPE: MONOPOLE TOWER CO SITE ID: 842875 TOWER APP NUMBER: 556624 COUNTY: HARTFORD LATITUDE (NAD 83): 41° 52' 16.1" N 41.87113889 N LONGITUDE (NAD 83): 72° 40' 16" W 72.67111111 W ZONING JURISDICTION: CONNECTICUT SITING COUNCIL ZONING DISTRICT: NZ PARCEL NUMBER: WIND-000042-000108 -000001D OCCUPANCY GROUP: U CONSTRUCTION TYPE: V-B POWER COMPANY: EVERSOURCE TELEPHONE COMPANY: T.B.D.	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@CROWNCastle.COM (980) 430-8582 CONSTRUCTION MANAGER: JAVIER SOTO JAVIER.SOTO@DISH.COM RF ENGINEER: BOSSENER CHARLES BOSSENER.CHARLES@DISH.COM



5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120



2000 CORPORATE DRIVE
CANONSBURG, PA 15317



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



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

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

DRAWN BY: LHT
 CHECKED BY: RMC
 APPROVED BY: MDW

RFDS REV #: 0

CONSTRUCTION DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
A	5/25/21	ISSUED FOR REVIEW
0	6/30/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
92492.004.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00068A
 99 DAY HILL ROAD
 WINDSOR, CT 06095

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1



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

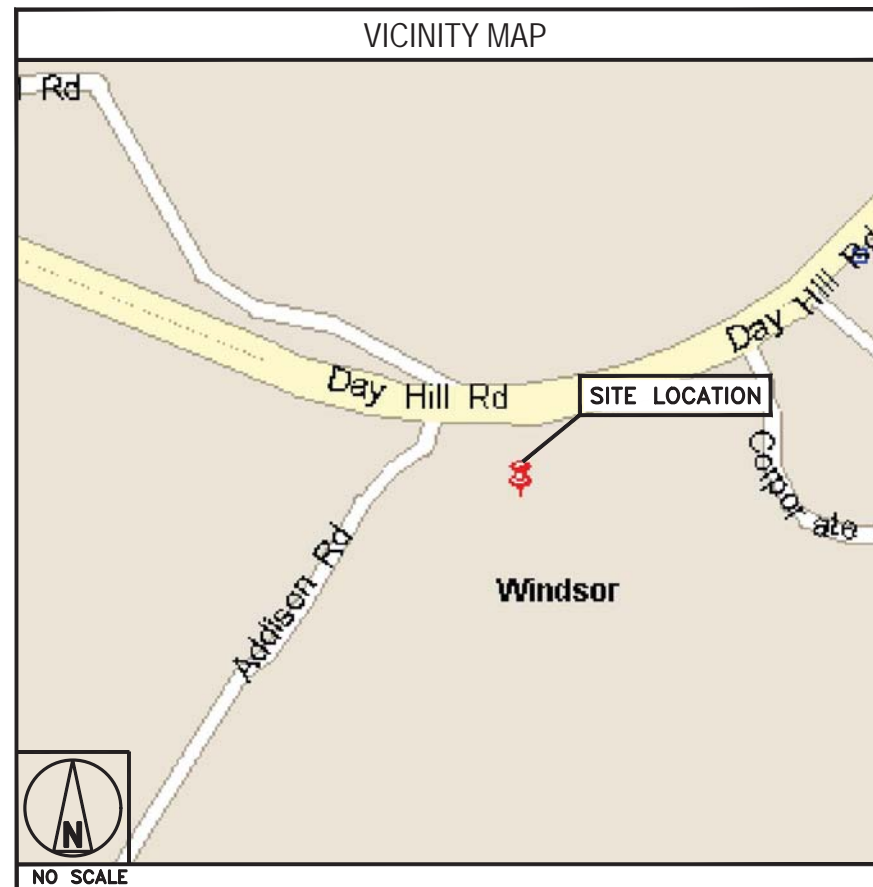
THE FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION. A TECHNICIAN WILL VISIT THE SITE AS REQUIRED FOR ROUTINE MAINTENANCE. THE PROJECT WILL NOT RESULT IN ANY SIGNIFICANT DISTURBANCE OR EFFECT ON DRAINAGE, NO SANITARY SEWER SERVICE, POTABLE WATER, OR TRASH DISPOSAL IS REQUIRED AND NO COMMERCIAL SIGNAGE 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.

DIRECTIONS

DIRECTIONS FROM BRADLEY INTERNATIONAL AIRPORT:
 CONTINUE TO BRADLEY INTERNATIONAL AIRPORT CON, HEAD NORTH TOWARD BRADLEY INTERNATIONAL AIRPORT, SLIGHT LEFT ONTO BRADLEY INTERNATIONAL AIRPORT, SLIGHT LEFT, CONTINUE ON BRADLEY INTERNATIONAL AIRPORT CON. TAKE CT-75 S/POQUONOCK AVE AND MARSHALL PHELPS RD TO DAY HILL RD IN WINDSOR, CONTINUE ONTO BRADLEY INTERNATIONAL AIRPORT CON, CONTINUE ONTO CT-20 E/BRADLEY INTERNATIONAL AIRPORT CON, TAKE THE CT-75 EXIT TOWARD POQUONOCK/SUFFIELD, TURN RIGHT ONTO CT-75 S/POQUONOCK AVE, TURN RIGHT ONTO MARSHALL PHELPS RD, USE THE LEFT 2 LANES TO TURN LEFT ONTO DAY HILL RD, DESTINATION WILL BE ON THE RIGHT.



CONNECTICUT CODE COMPLIANCE

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

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

SHEET INDEX

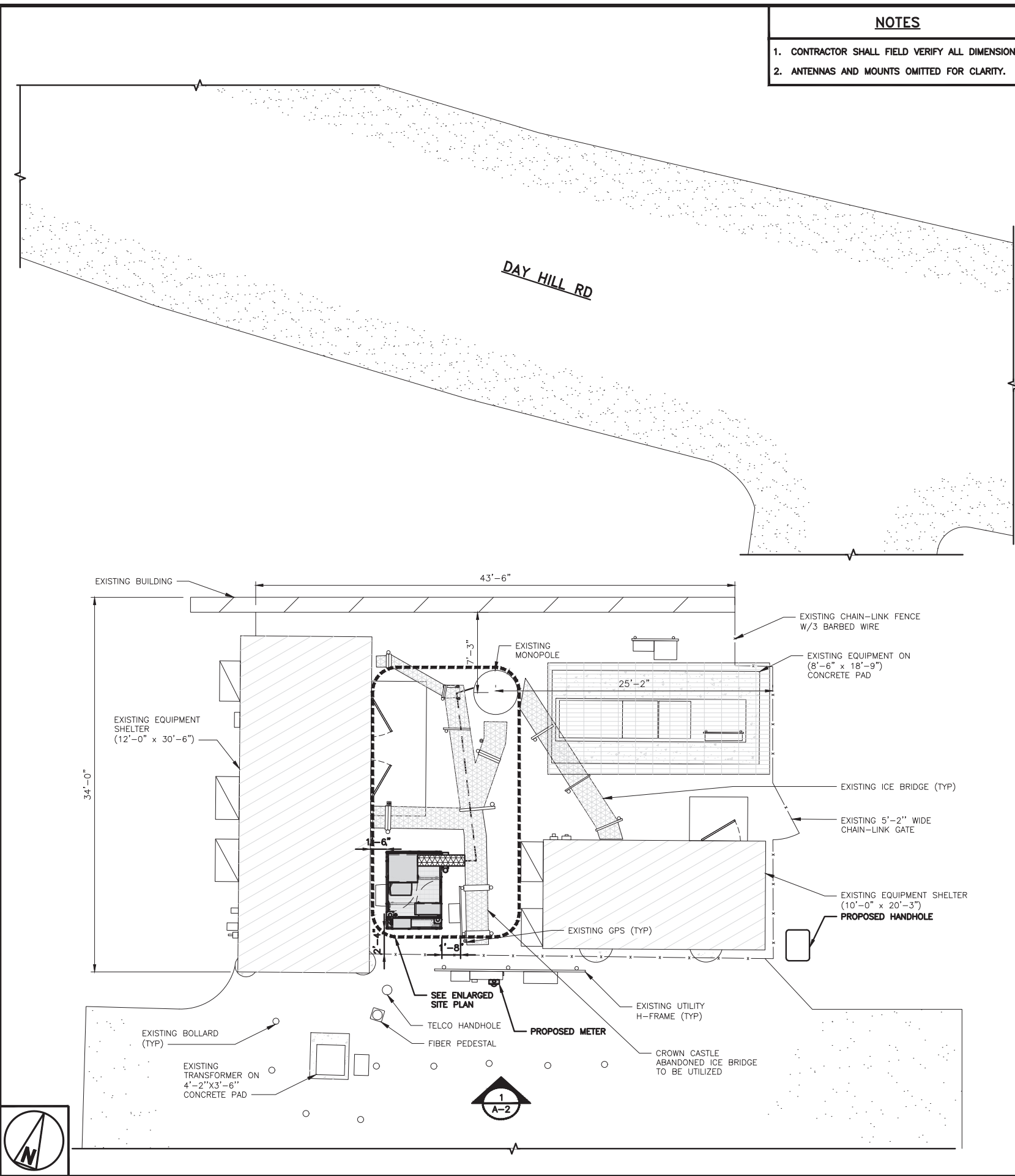
SHEET NO.	SHEET TITLE
T-1	TITLE SHEET
A-1	OVERALL AND ENLARGED SITE PLAN
A-2	ELEVATION, ANTENNA LAYOUT AND SCHEDULE
A-3	EQUIPMENT PLATFORM AND H-FRAME DETAILS
A-4	EQUIPMENT DETAILS
A-5	EQUIPMENT DETAILS
A-6	EQUIPMENT DETAILS
E-1	ELECTRICAL/FIBER ROUTE PLAN AND NOTES
E-2	ELECTRICAL DETAILS
E-3	ELECTRICAL 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
RF-2	RF PLUMBING DIAGRAM
GN-1	LEGEND AND ABBREVIATIONS
GN-2	GENERAL NOTES
GN-3	GENERAL NOTES
GN-4	GENERAL NOTES

NOTES

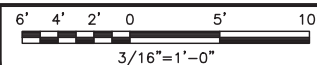
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.

NOTES

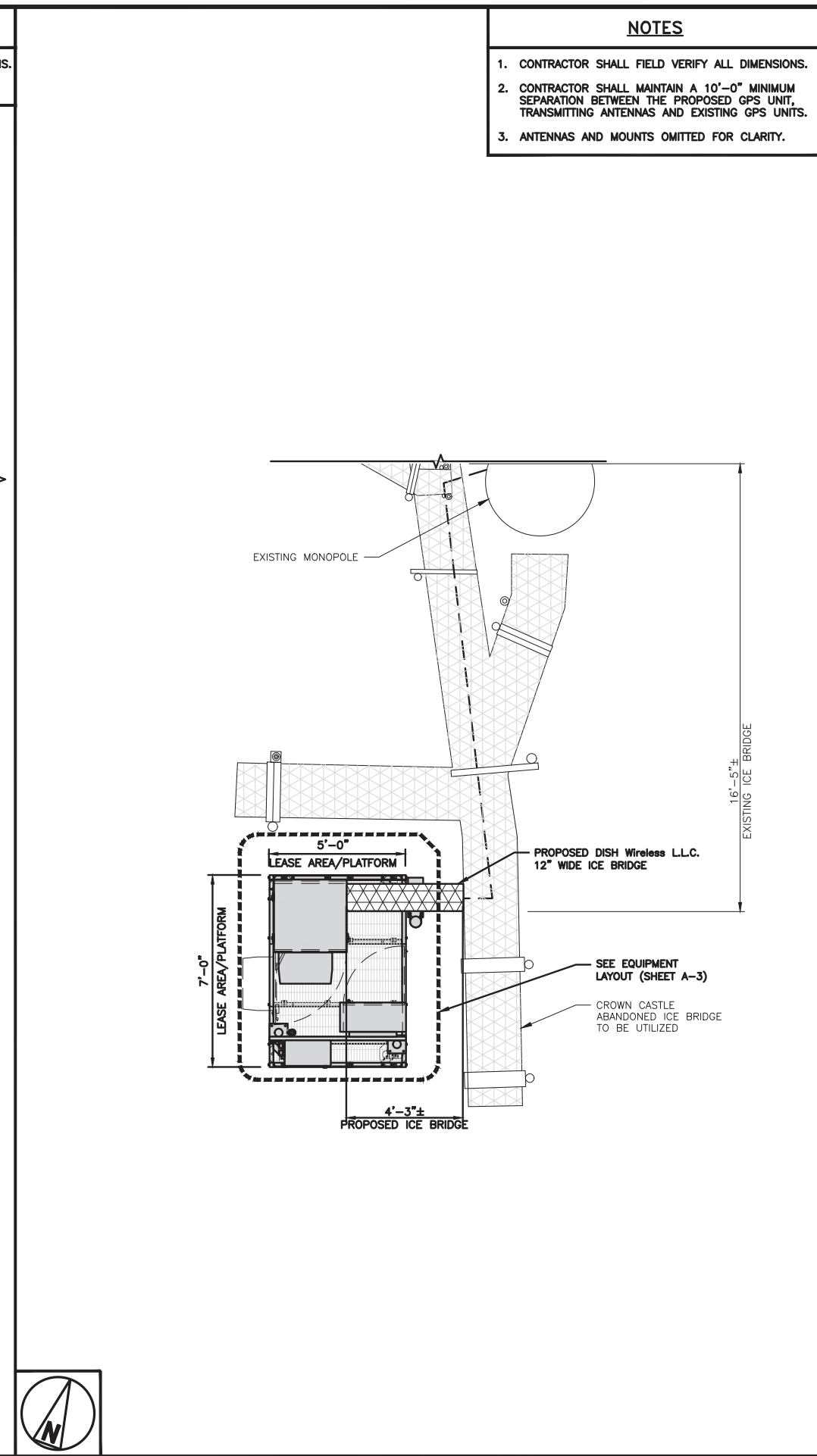
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. CONTRACTOR SHALL MAINTAIN A 10'-0" MINIMUM SEPARATION BETWEEN THE PROPOSED GPS UNIT, TRANSMITTING ANTENNAS AND EXISTING GPS UNITS.
3. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.



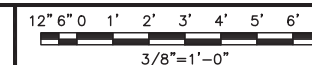
OVERALL SITE PLAN



1



ENLARGED SITE PLAN



2



5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120



2000 CORPORATE DRIVE
CANONSBURG, PA 15317



1717 S. BOULDER
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B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/22

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DRAWN BY:	CHECKED BY:	APPROVED BY:
LHT	RMC	MDW

RFDS REV #: 0

CONSTRUCTION DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
A	5/25/21	ISSUED FOR REVIEW
0	6/30/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
92492.004.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00068A
99 DAY HILL ROAD
WINDSOR, CT 06095

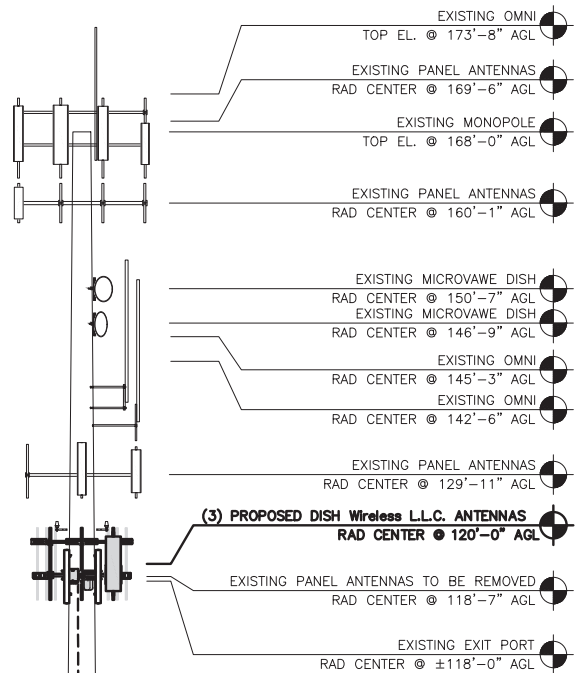
SHEET TITLE
**OVERALL AND ENLARGED
SITE PLAN**

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.

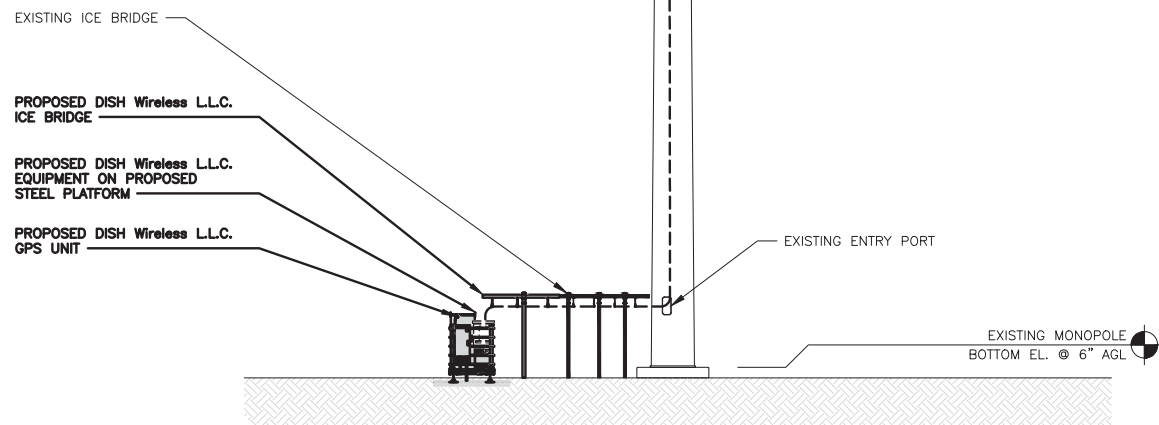


(1) PROPOSED DISH Wireless L.L.C. HYBRID CABLE ROUTED INSIDE POLE

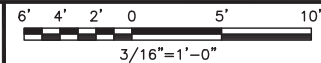
EXISTING SIDE LIGHTS
TOP EL. @ 77'-8" AGL

EXISTING MONOPOLE

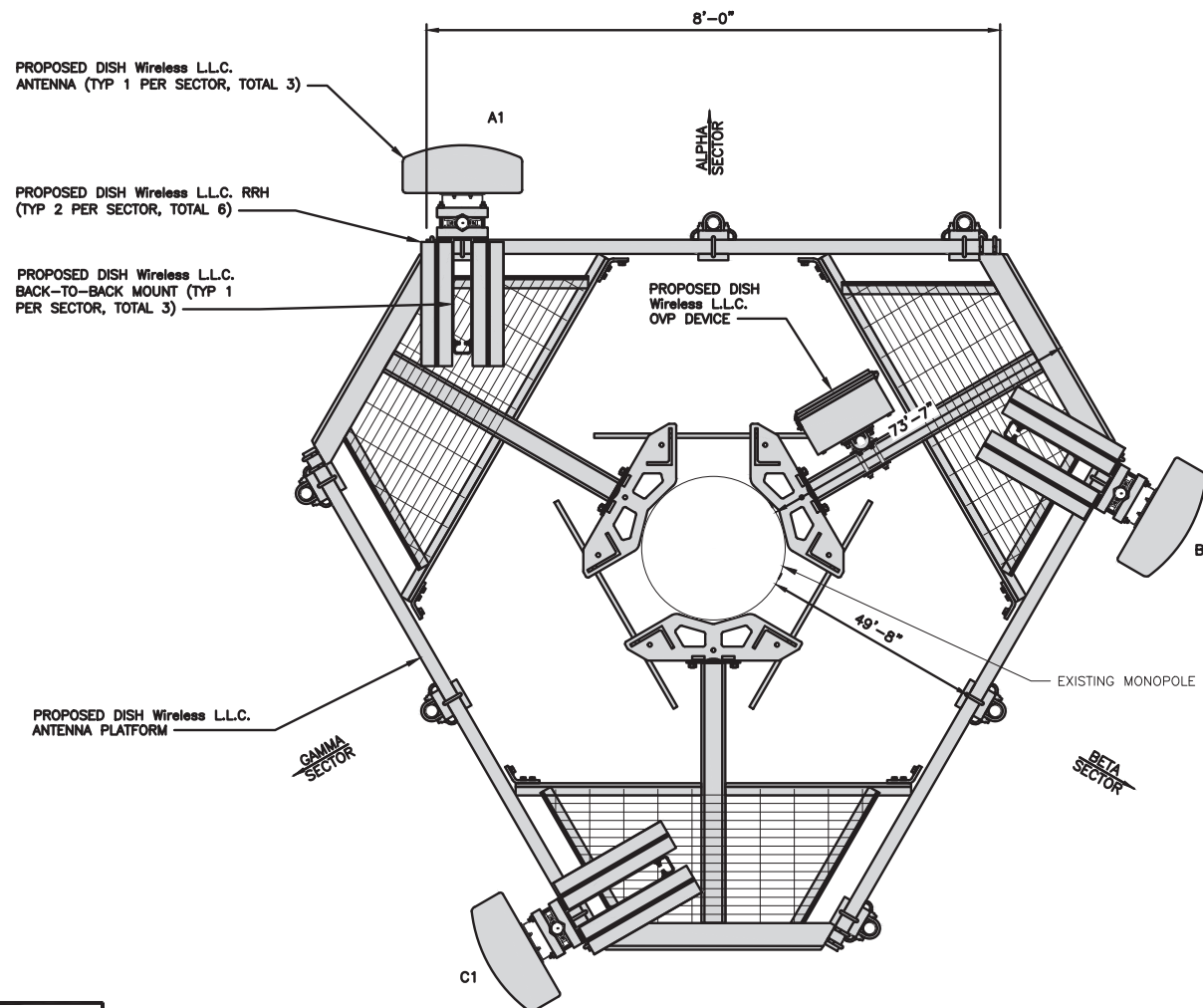
EXISTING GPS
TOP EL. @ 49'-6" AGL



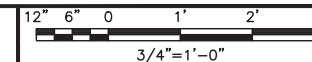
PROPOSED NORTH ELEVATION



1



ANTENNA LAYOUT



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" x 20"	0°	120'-0"	(1) HIGH-CAPACITY HYBRID CABLE (164' LONG)
BETA	B1	PROPOSED	JMA WIRELESS-MX08FRO665-21	5G	72" x 20"	120°	120'-0"	
GAMMA	C1	PROPOSED	JMA WIRELESS-MX08FRO665-21	5G	72" x 20"	240°	120'-0"	

SECTOR	POSITION	RRH		NOTES
		MANUFACTURER - MODEL NUMBER	TECHNOLOGY	
ALPHA	A1	FUJITSU - TA08025-B605	5G	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.
	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	

ANTENNA SCHEDULE

NO SCALE

3



5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120



2000 CORPORATE DRIVE
CANONSBURG, PA 15317



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LHT RMC MDW

RFDS REV #: 0

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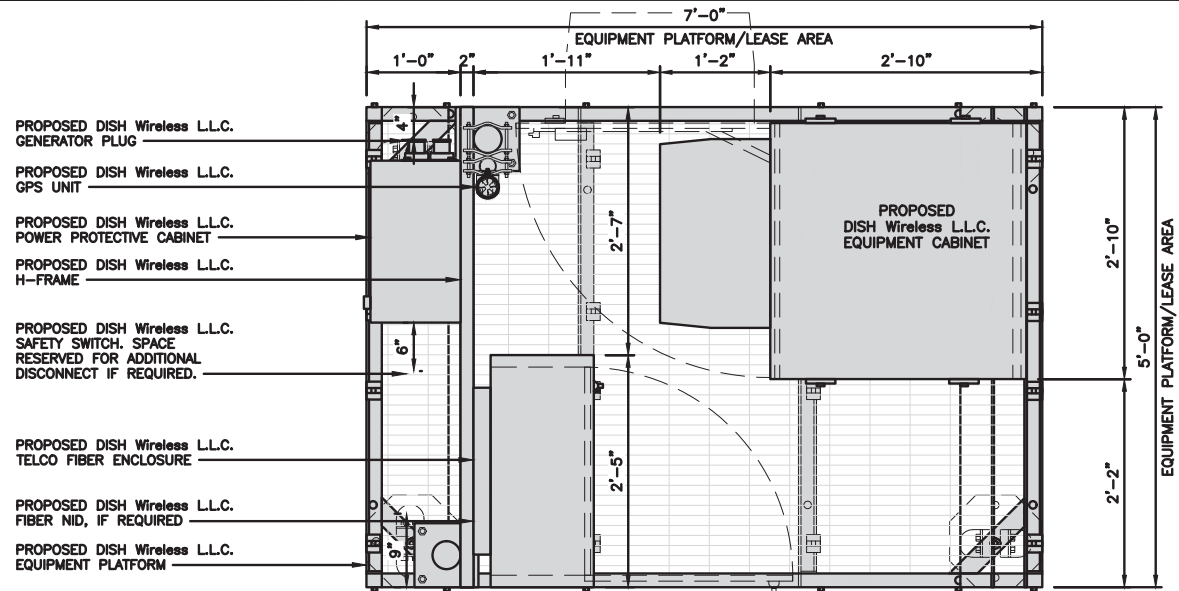
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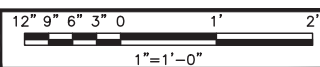
SHEET TITLE
ELEVATION, ANTENNA LAYOUT AND SCHEDULE

SHEET NUMBER

A-2



PLATFORM EQUIPMENT PLAN

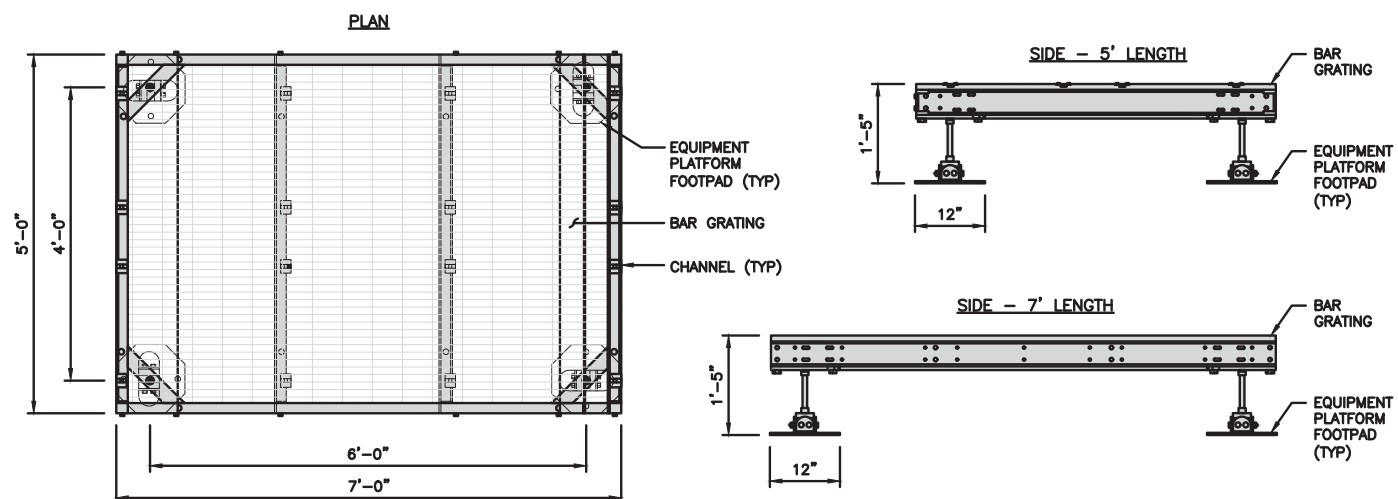


1

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"



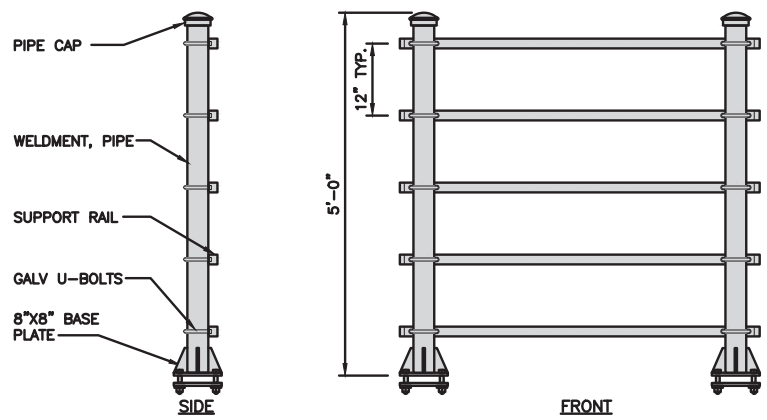
PLATFORM DETAIL

NO SCALE

2

KENWOOD T1701KT5-5S
H-FRAME

UNISTRUT/SUPPORT RAIL	5
WEIGHT/ VOLUME	173.6 LBS



H-FRAME DETAIL

NO SCALE

3

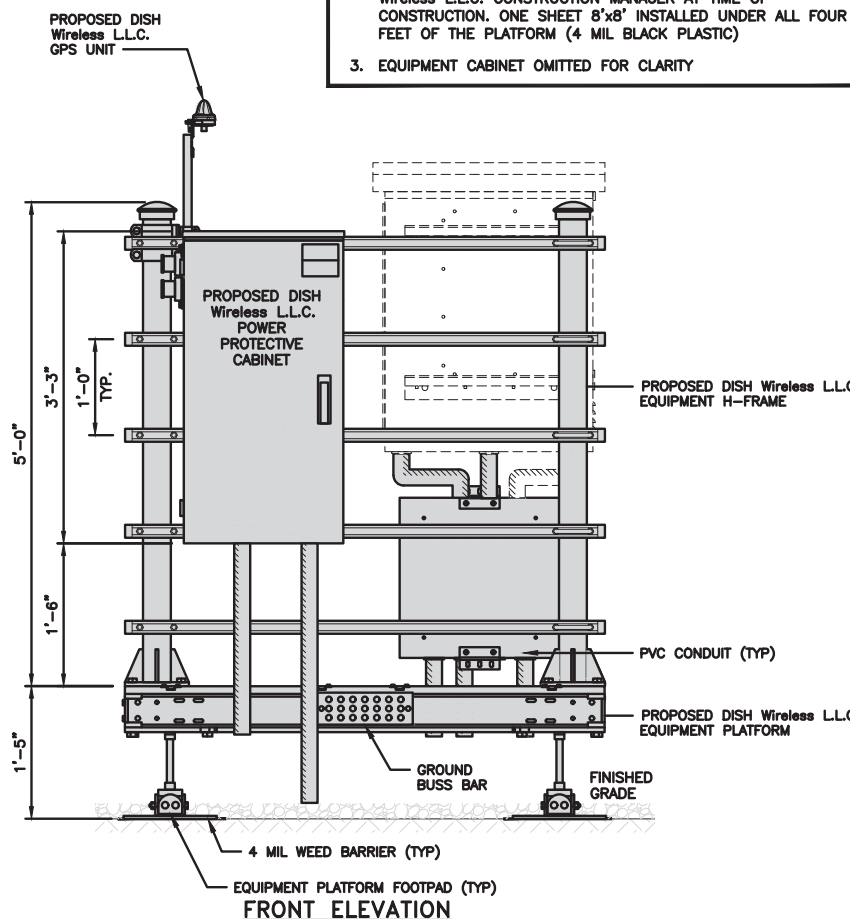
NOT USED

NO SCALE

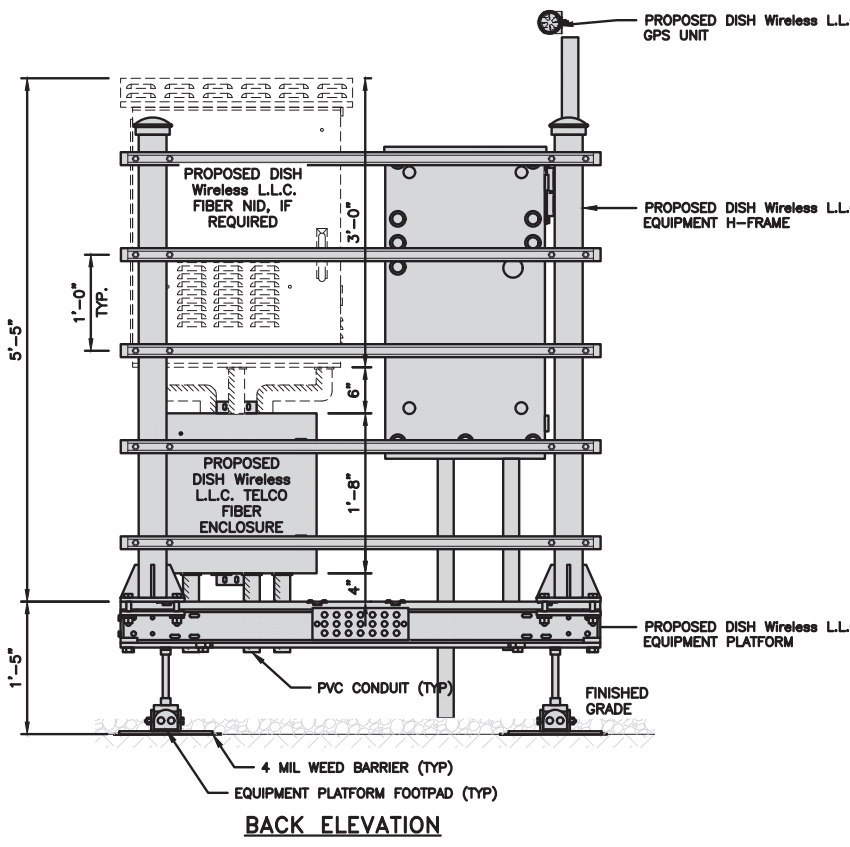
4

NOTES

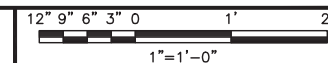
- CONTRACTOR TO BURY PLATFORM FEET WITH A MINIMUM OF 2" OF FILL PER EXISTING SITE SURFACE
- WEED BARRIER FABRIC TO BE ADDED AT DISCRETION OF DISH Wireless L.L.C. CONSTRUCTION MANAGER AT TIME OF CONSTRUCTION. ONE SHEET 8'x8' INSTALLED UNDER ALL FOUR FEET OF THE PLATFORM (4 MIL BLACK PLASTIC)
- EQUIPMENT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



FRONT ELEVATION



BACK ELEVATION



5



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CONSTRUCTION DOCUMENTS

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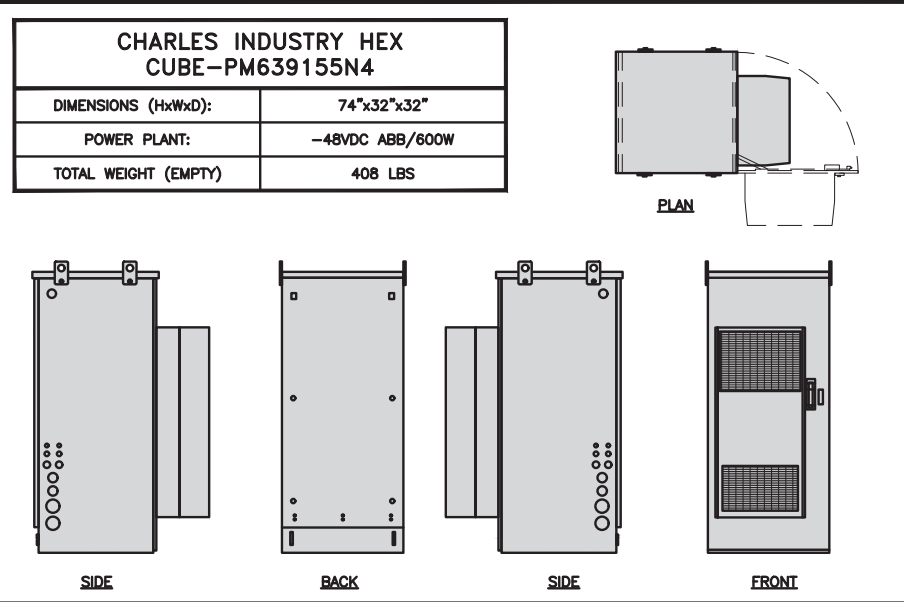
A&E PROJECT NUMBER
92492.004.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00068A
99 DAY HILL ROAD
WINDSOR, CT 06095

SHEET TITLE
EQUIPMENT PLATFORM AND
H-FRAME DETAILS

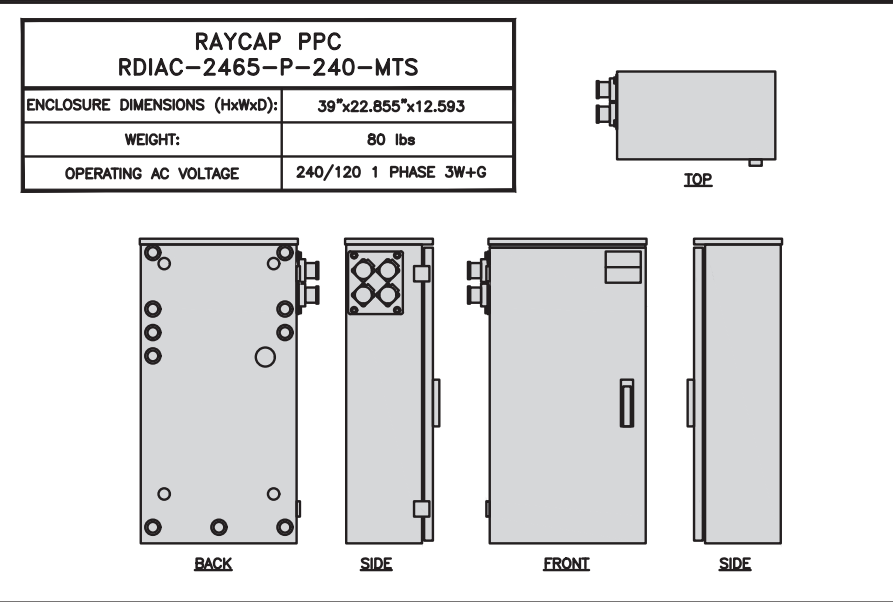
SHEET NUMBER
A-3



CABINET DETAIL

NO SCALE

1



POWER PROTECTION CABINET (PPC) DETAIL

NO SCALE

2



NOT USED

NO SCALE

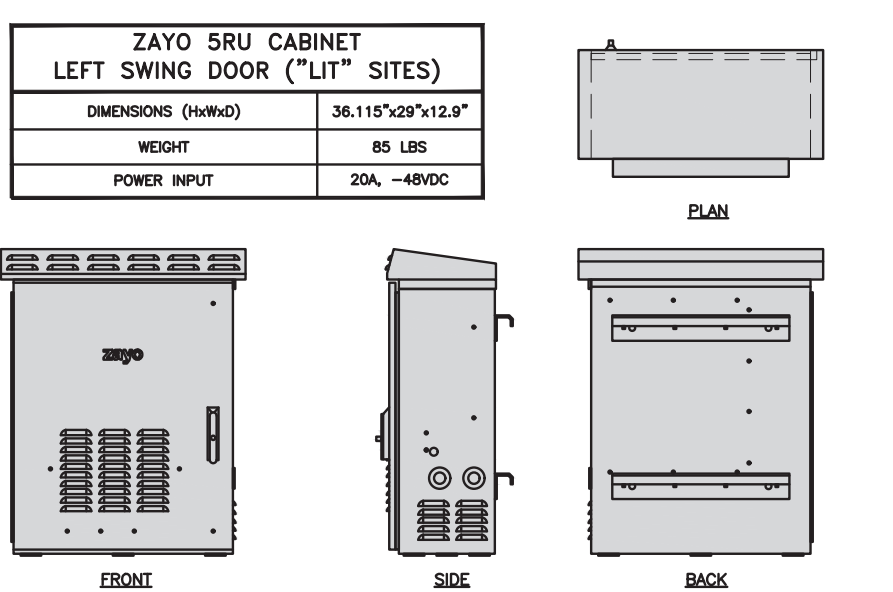
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NOT USED

NO SCALE

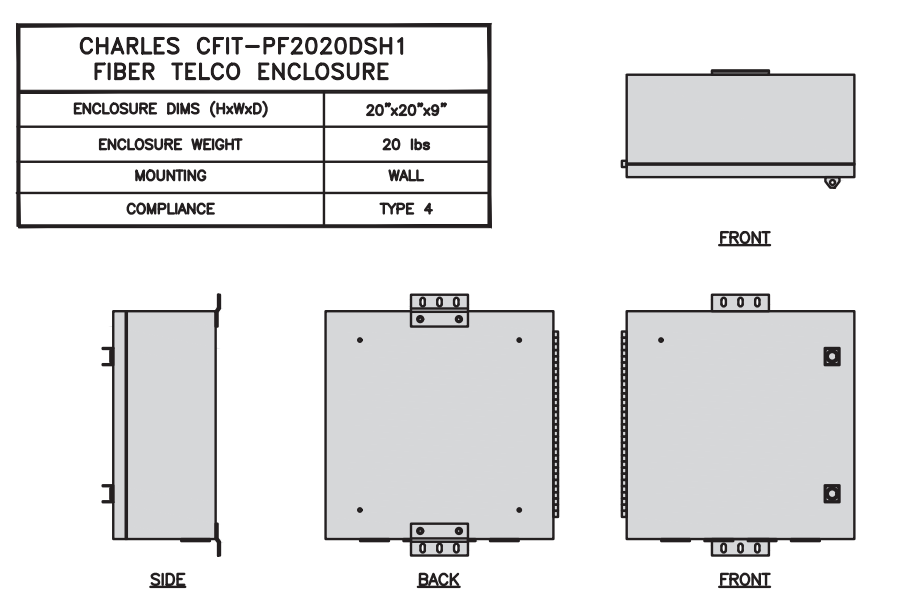
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NETWORK INTERFACE UNIT DETAIL

NO SCALE

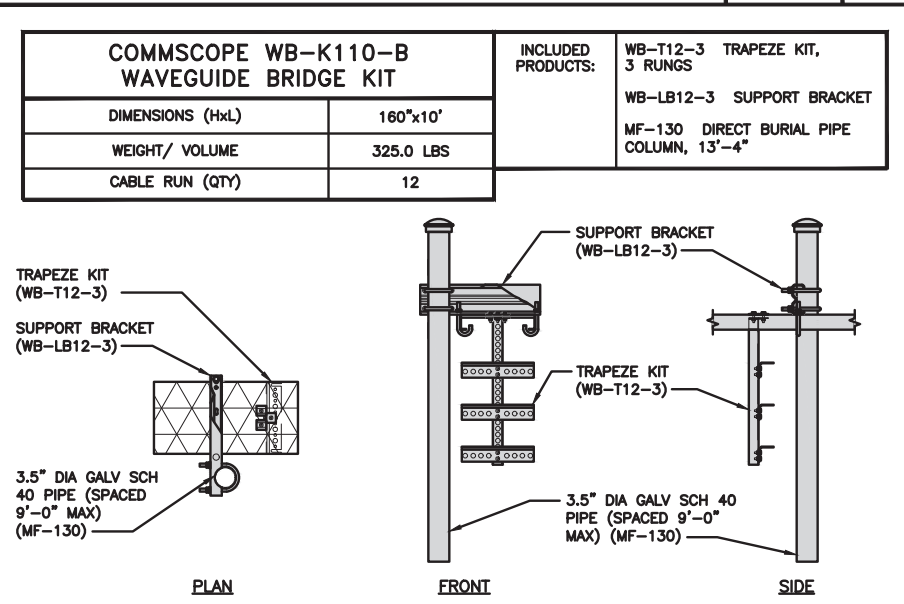
5



FIBER TELCO ENCLOSURE DETAIL

NO SCALE

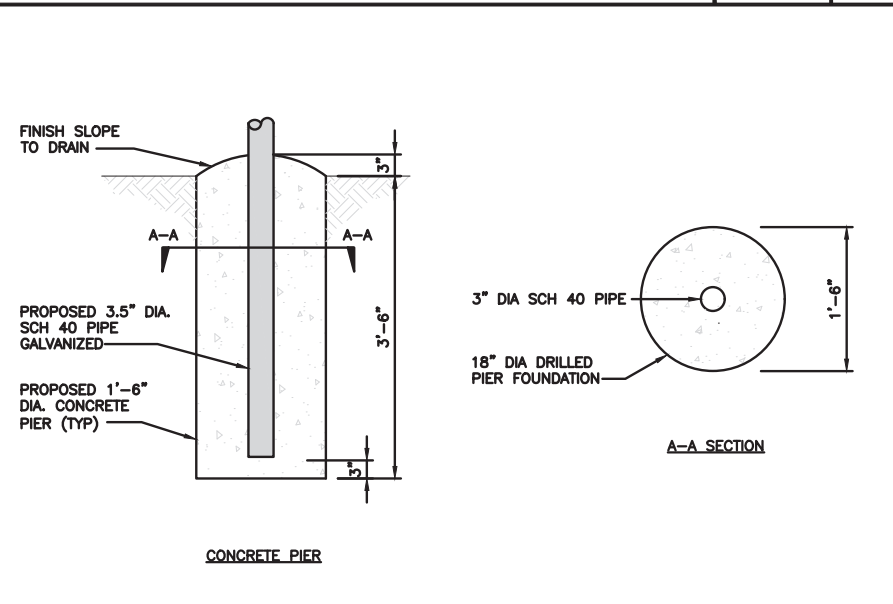
6



ICE BRIDGE DETAIL

NO SCALE

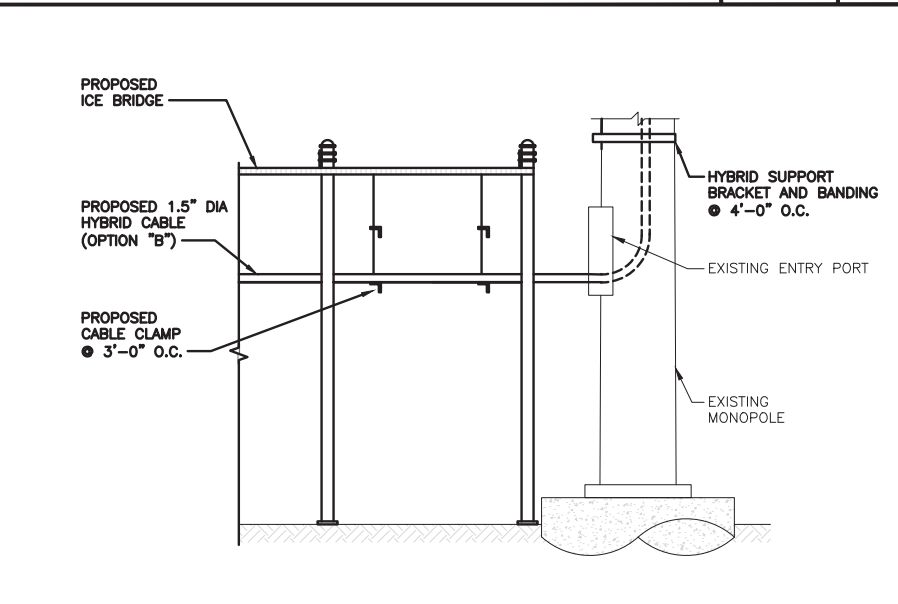
7



TYPICAL ICE BRIDGE CONCRETE PIER DETAIL

NO SCALE

8



HYBRID CABLE RUN

NO SCALE

9



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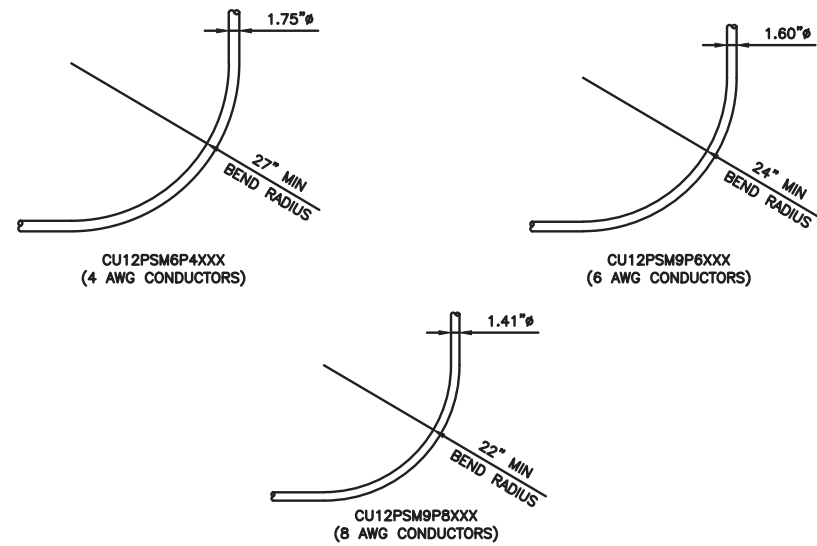
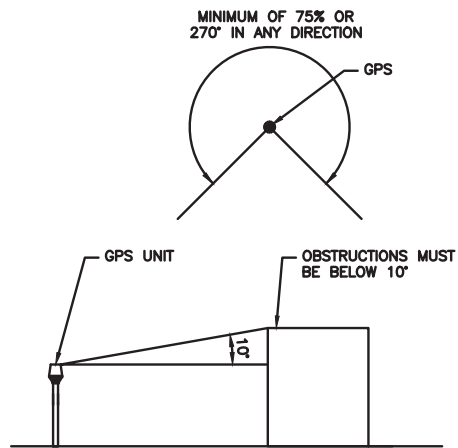
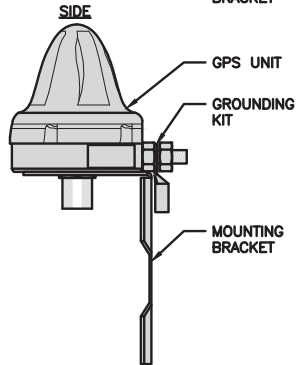
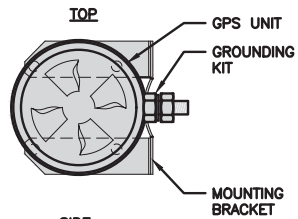
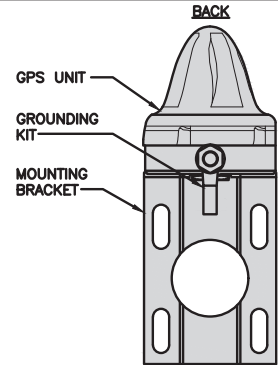
A&E PROJECT NUMBER
92492.004.01

DISH Wireless L.L.C.
PROJECT INFORMATION
BOBDL00068A
99 DAY HILL ROAD
WINDSOR, CT 06095

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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wireless.

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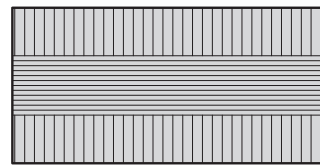
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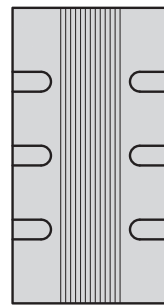
SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-5

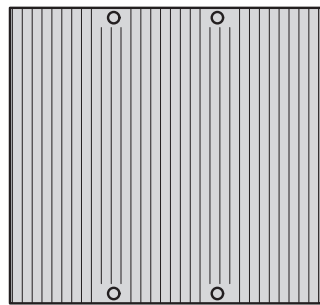
FUJITSU TA08025-B604 RRH	
DIMENSIONS (HxWxD) (KG/IN)	380x400x200/14.9"x15.7"x7.8"
WEIGHT(KG,LB)/ VOLUME	29kg,63.9lb/ 30L
POWER SUPPLY	DC-58~-36V



PLAN



SIDE



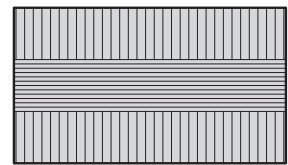
FRONT

REMOTE RADIO HEAD DETAIL

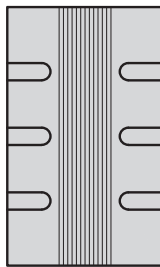
NO SCALE

1

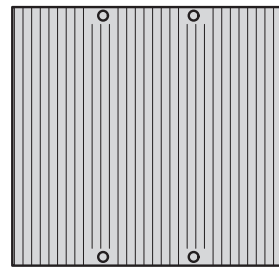
FUJITSU TA08025-B605 RRH	
DIMENSIONS (HxWxD) (KG/IN)	380x400x230/14.9"x15.7"x9.0"
WEIGHT(KG,LB)/ VOLUME	34kg,74.9lb/ 35L
POWER SUPPLY	DC-58~-36V



PLAN



SIDE



FRONT

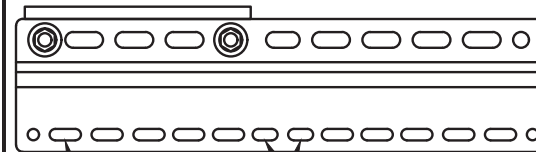
REMOTE RADIO HEAD DETAIL

NO SCALE

2

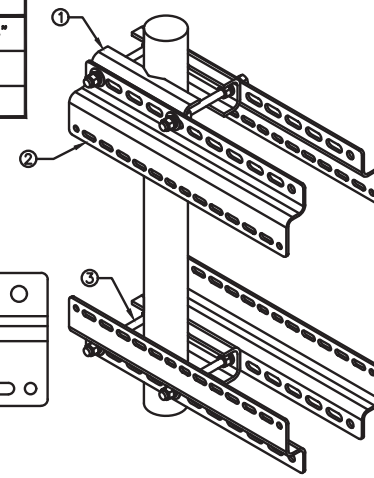
SABRE INDUSTRIES RRU BRACKET MOUNT C10123155	
DIMENSIONS (HxWxD) (1 BRACKET)	5"x20"x1-13/16"
WEIGHT (FULL ASSEMBLY)	35.79 lbs
PACKAGE QUANTITY	4

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



11MM x 30MM SLOTS
40MM ON CENTER

11MM x 24MM SLOTS



REMOTE RADIO MOUNT DETAIL

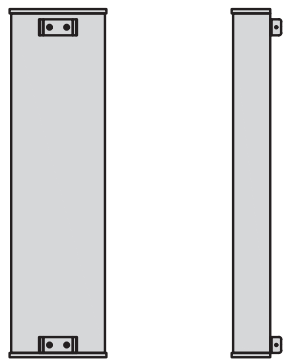
NO SCALE

3

JMA WIRELESS MX08FRO665-21 ANTENNA	
DIMENSIONS (HxWxD)	72.0"x20.0"x8.0"
TOTAL WEIGHT	64.5 LB
RF PORTS, CONNECTOR TYPE	8 x 4.3-10 FEMALE

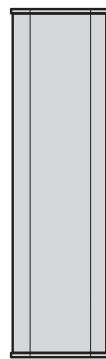


PLAN



BACK

SIDE



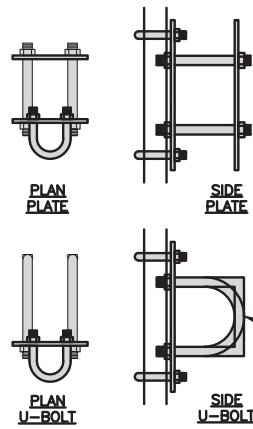
FRONT

ANTENNA DETAIL

NO SCALE

4

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

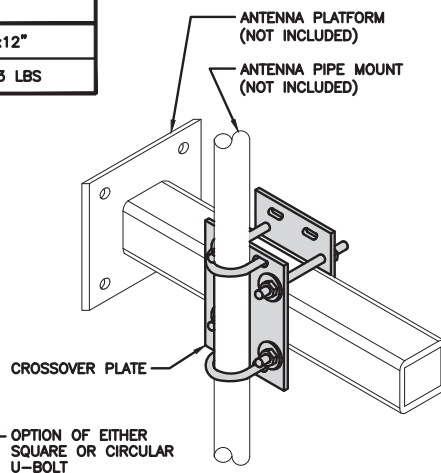


PLAN PLATE

SIDE PLATE

PLAN U-BOLT

SIDE U-BOLT



ANTENNA PLATFORM (NOT INCLUDED)

ANTENNA PIPE MOUNT (NOT INCLUDED)

CROSSOVER PLATE

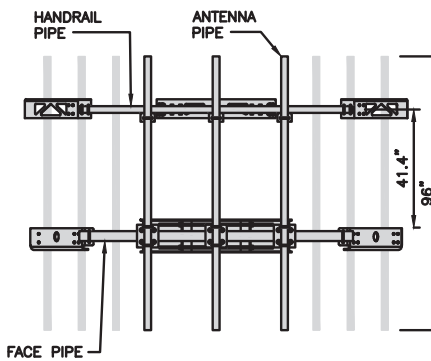
OPTION OF EITHER SQUARE OR CIRCULAR U-BOLT

RRH/OVP MOUNT DETAIL

NO SCALE

8

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



FACE PIPE

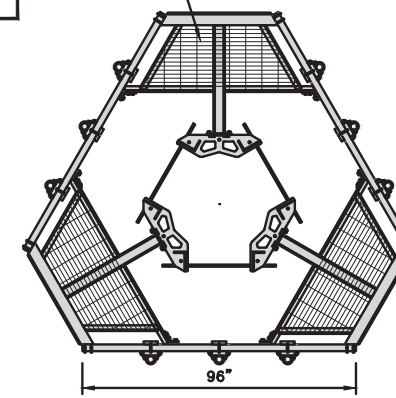
HANDRAIL PIPE

ANTENNA PIPE

41.4"

96"

PLATFORM



ANTENNA PLATFORM DETAIL

NO SCALE

9

dish
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CASTLE**

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DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00068A
99 DAY HILL ROAD
WINDSOR, CT 06095

SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER

A-6

SURGE SUPPRESSION DETAIL (OVP)

NO SCALE

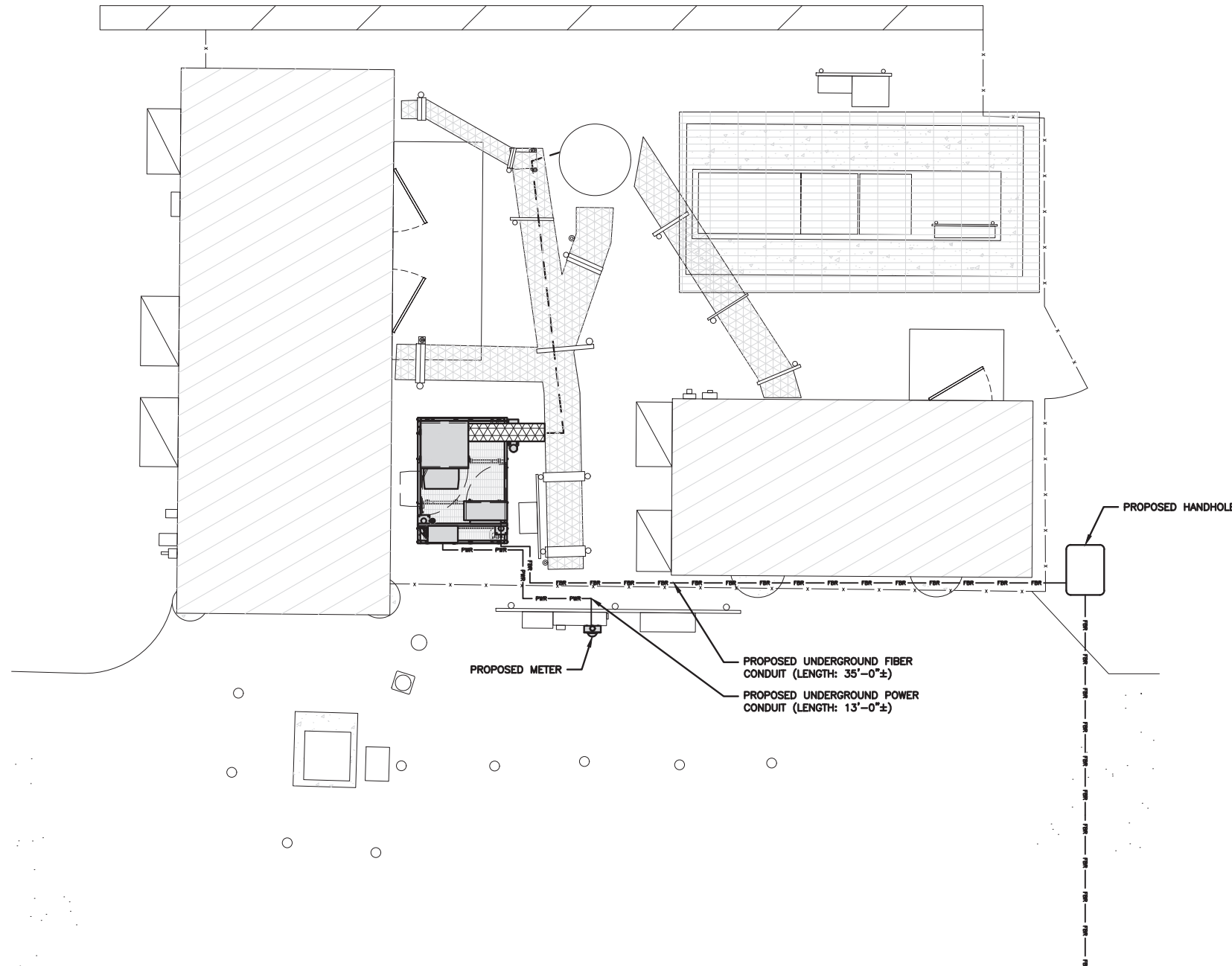
7

NOTES

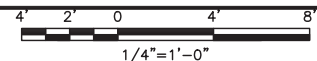
1. CONTRACTOR SHALL FIELD VERIFY ALL PROPOSED UNDERGROUND UTILITY CONDUIT ROUTE.
2. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.
3. THE GROUND LEASE PROVIDES BROAD/BLANKET UTILITY RIGHTS. PWR AND FBR PATH DEPICTED ON A-1 AND E-1 ARE BASED ON BEST AVAILABLE INFORMATION INCLUDING BUT NOT LIMITED TO FIELD VERIFICATION, PRIOR PROJECT DOCUMENTATION AND OTHER REAL PROPERTY RIGHTS DOCUMENTS. WHEN INSTALLING THE UTILITIES PLEASE LOCATE AND FOLLOW EXISTING PATH. IF EXISTING PATH IS NOT AN OPTION, PLEASE NOTIFY CROWN CASTLE REAL ESTATE AS FURTHER COORDINATION MAY BE NEEDED.

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

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



UTILITY ROUTE PLAN



1

ELECTRICAL NOTES

NO SCALE

2



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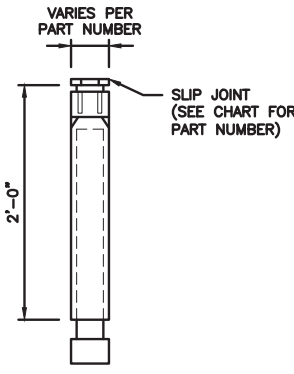
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WINDSOR, CT 06095

SHEET TITLE
**ELECTRICAL/FIBER ROUTE
PLAN AND NOTES**

SHEET NUMBER

E-1

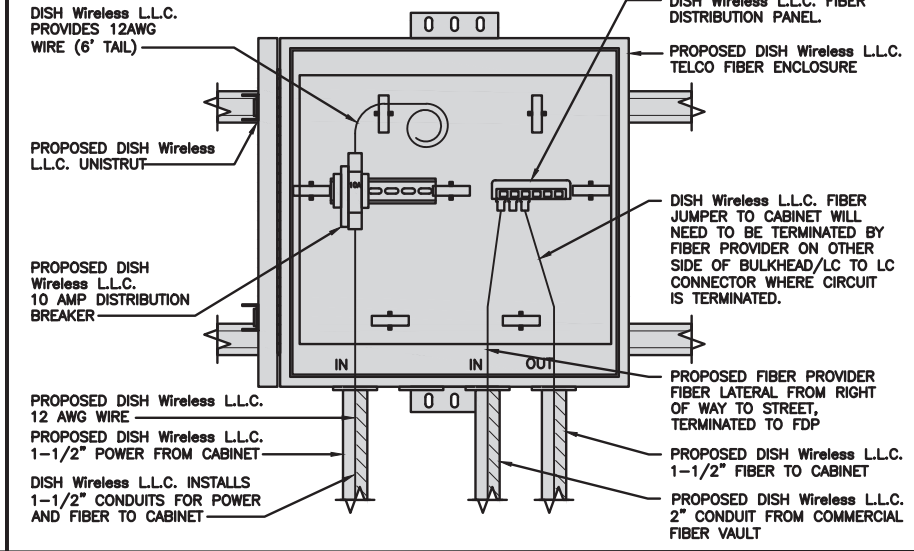
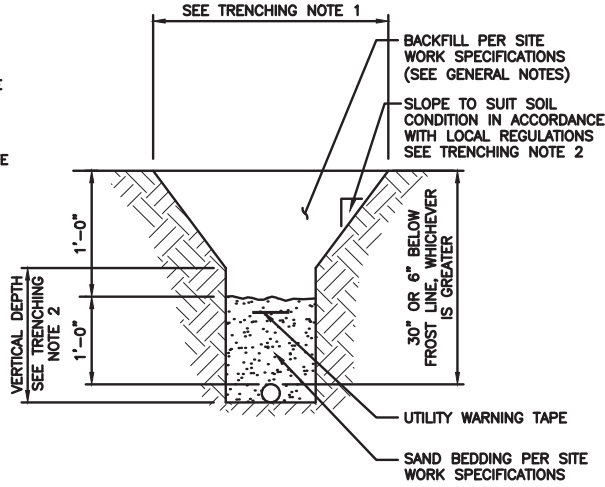
CARLON EXPANSION FITTINGS				
COUPLING END PART#	MALE TERMINAL ADAPTER END PART#	SIZE	STD CTN QTY.	TRAVEL LENGTH
E945D	E945DX	1/2"	20	4"
E945E	E945EX	3/4"	15	4"
E945F	E945FX	1"	10	4"
E945G	E945GX	1 1/4"	5	4"
E945H	E945HX	1 1/2"	5	4"
E945J	E945JX	2"	15	8"
E945K	E945KX	2 1/2"	10	8"
E945L	E945LX	3"	10	8"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



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

TRENCHING NOTES

- 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.
- TRENCHING SAFETY; INCLUDING, BUT NOT LIMITED TO SOIL CLASSIFICATION, SLOPING, AND SHORING, SHALL BE GOVERNED BY THE CURRENT OSHA TRENCHING AND EXCAVATION SAFETY STANDARDS.
- 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.



EXPANSION JOINT DETAIL

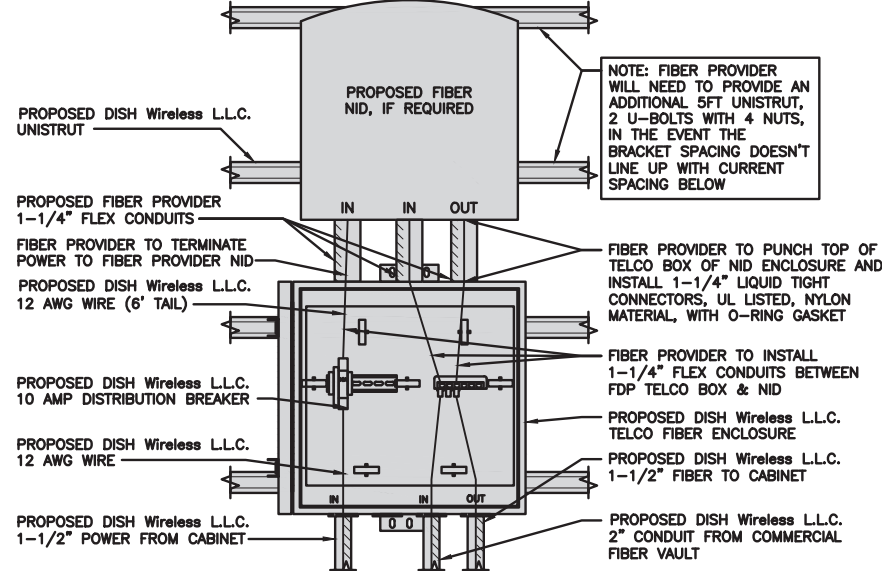
NO SCALE 1

TYPICAL UNDERGROUND TRENCH DETAIL

NO SCALE 2

DARK TELCO BOX – INTERIOR WIRING LAYOUT

NO SCALE 3



LIT TELCO BOX – INTERIOR WIRING LAYOUT (OPTIONAL)

NO SCALE 4

NOT USED

NO SCALE 5

NOT USED

NO SCALE 6

NOT USED

NO SCALE 7

NOT USED

NO SCALE 8

NOT USED

NO SCALE 9



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A&E PROJECT NUMBER
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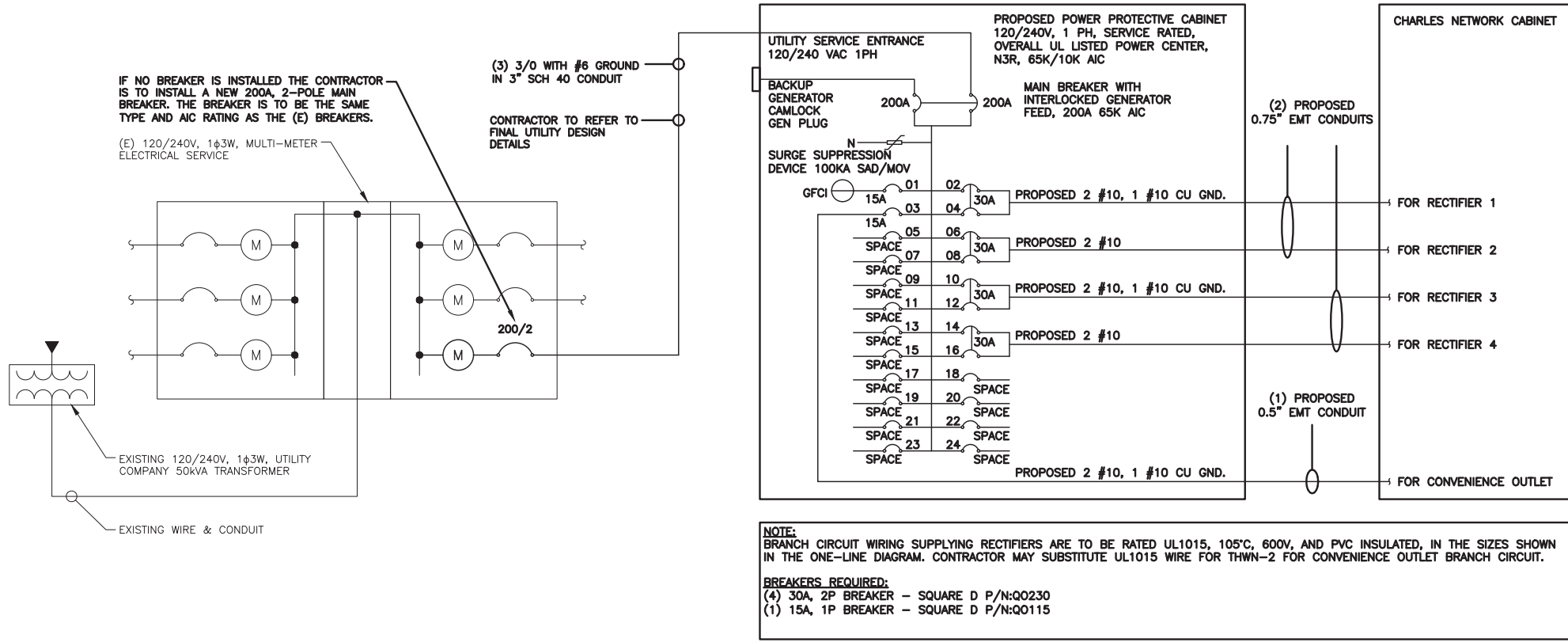
DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL0068A
99 DAY HILL ROAD
WINDSOR, CT 06095

SHEET TITLE
ELECTRICAL
DETAILS

SHEET NUMBER

E-2



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)(g) 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.



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WINDSOR, CT 06095

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

SHEET NUMBER

E-3

PPC ONE-LINE DIAGRAM

NO SCALE 1

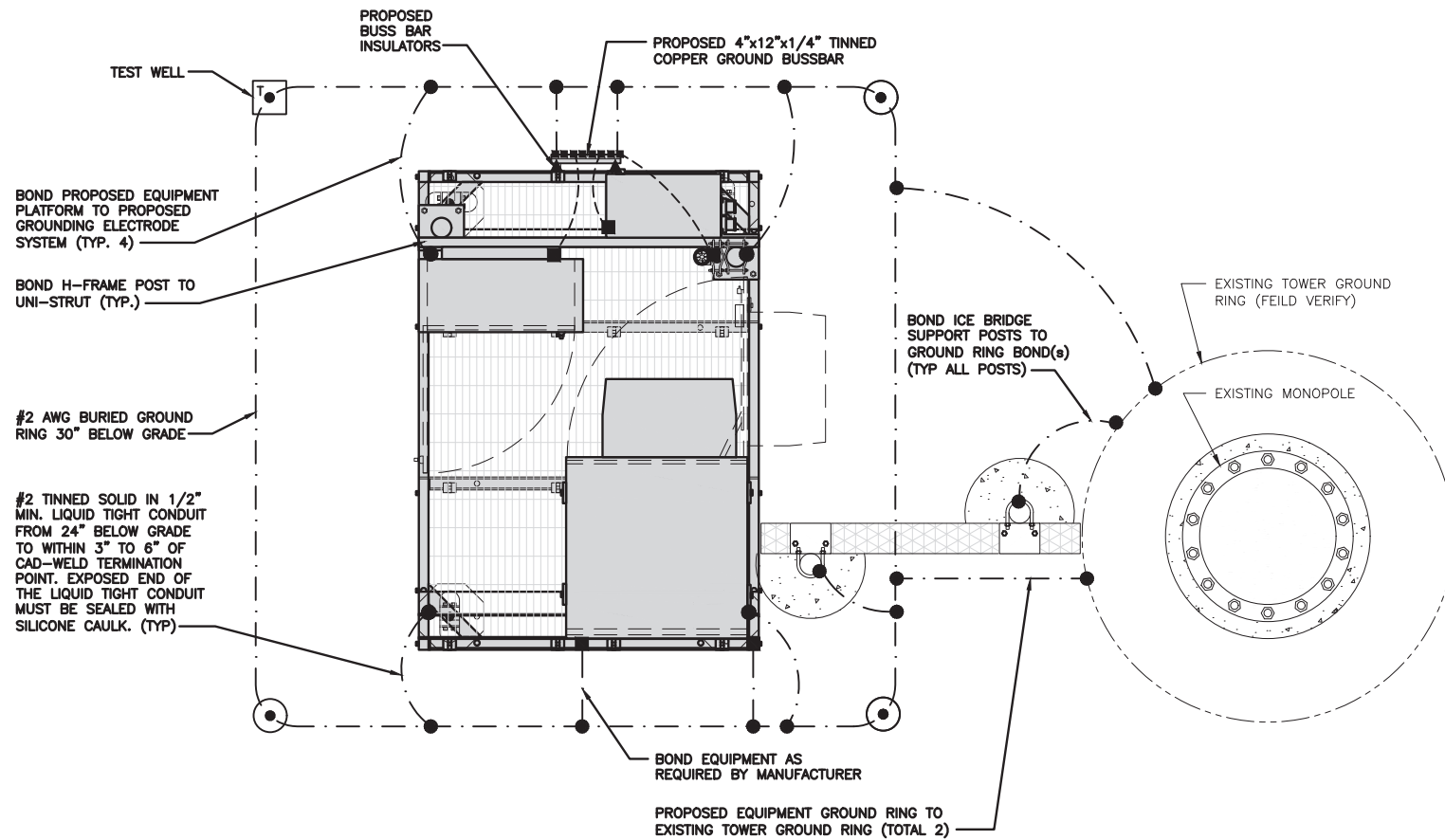
LOAD SERVED	VOLT AMPS (WATTS)		TRIP	CKT #	PHASE	CKT #	TRIP	VOLT AMPS (WATTS)		LOAD SERVED
	L1	L2						L1	L2	
PPC GFCI OUTLET	180	180	15A	1	A	2	30A	2880	2880	ABB/GE INFINITY RECTIFIER 1
CHARLES GFCI OUTLET			15A	3	B	4	30A	2880	2880	ABB/GE INFINITY RECTIFIER 1
-SPACE-				5	A	6	30A	2880	2880	ABB/GE INFINITY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

PANEL SCHEDULE

NO SCALE 2

NOT USED

NO SCALE 3

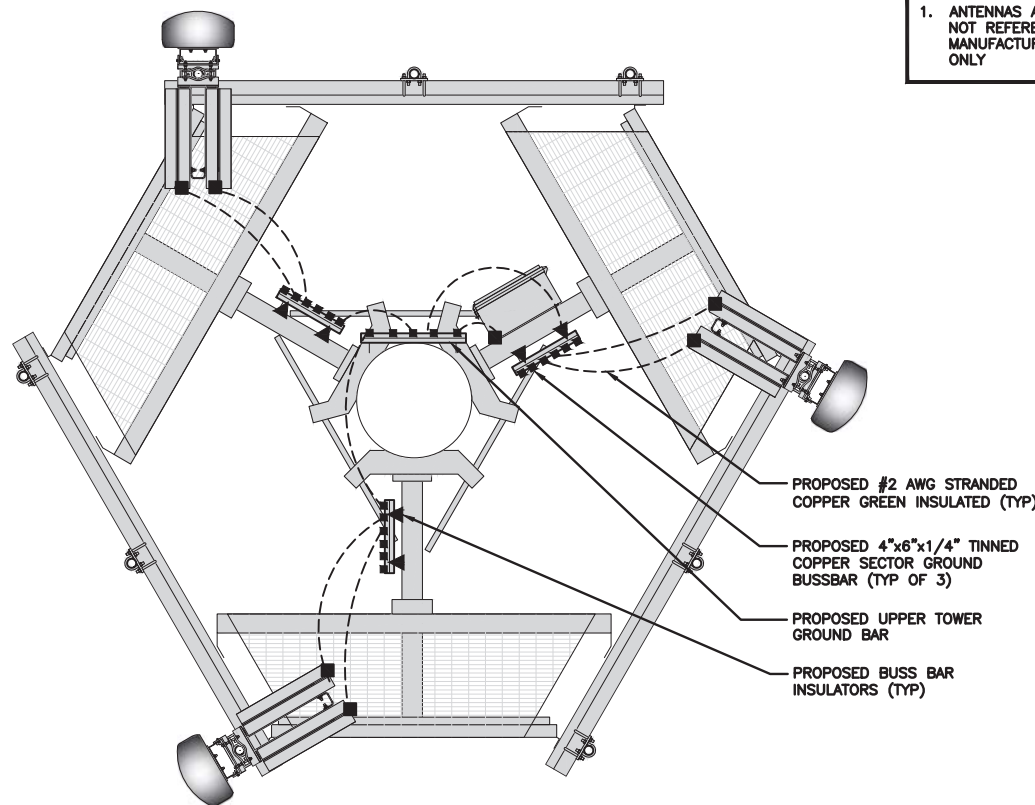


TYPICAL EQUIPMENT GROUNDING PLAN

NO SCALE 1

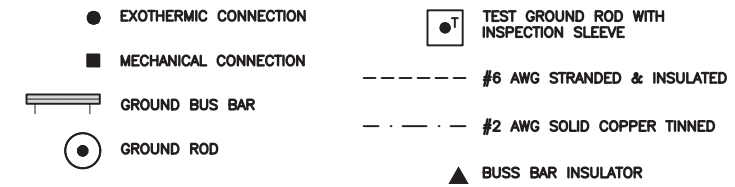
NOTES

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



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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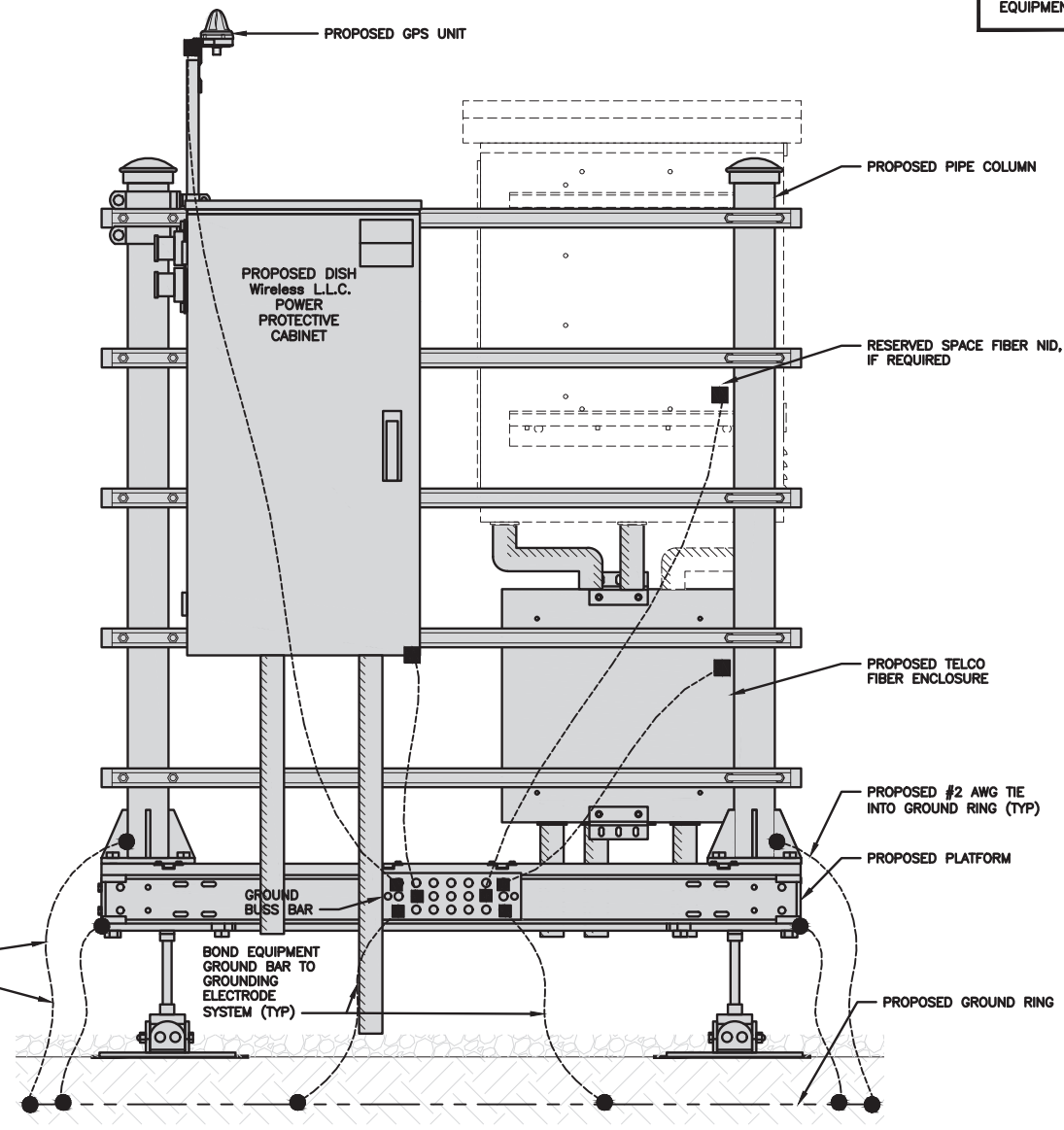
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SHEET TITLE
GROUNDING PLANS
AND NOTES

SHEET NUMBER

G-1

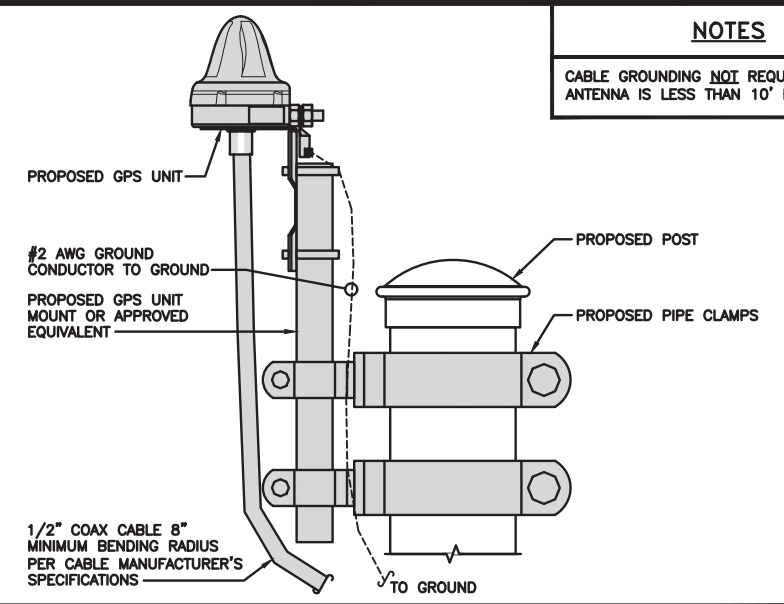
NOTES
EQUIPMENT CABINET OMITTED FOR CLARITY



H-FRAME GROUNDING DETAIL

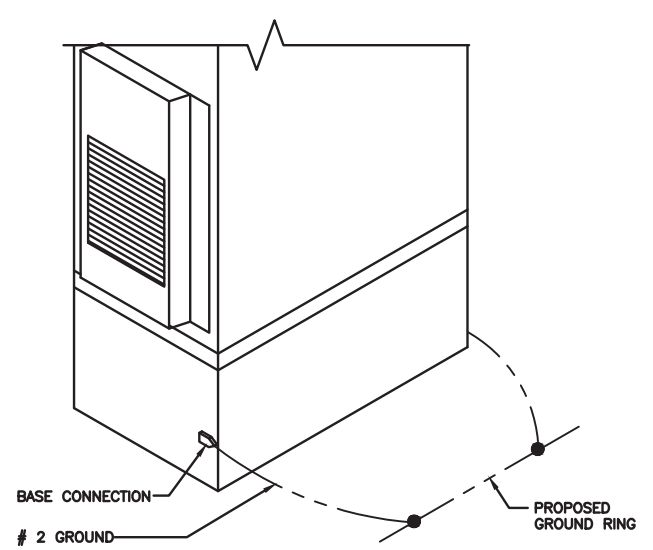
NO SCALE 1

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



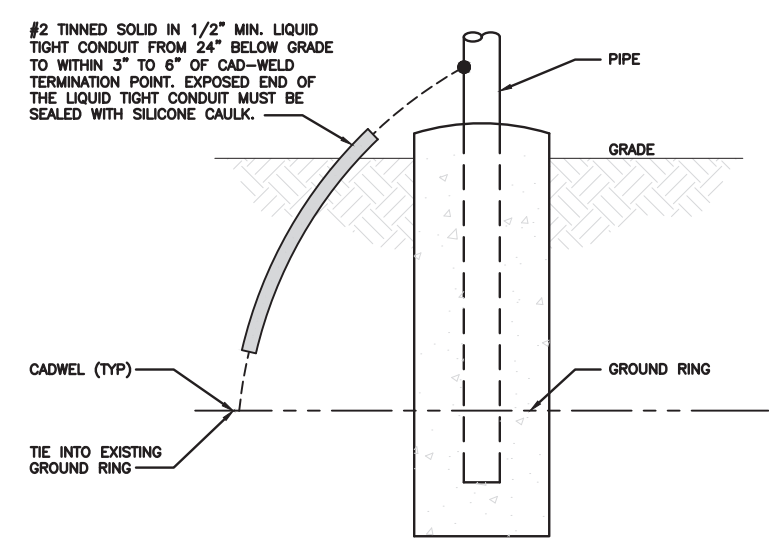
TYPICAL GPS UNIT GROUNDING

NO SCALE 2



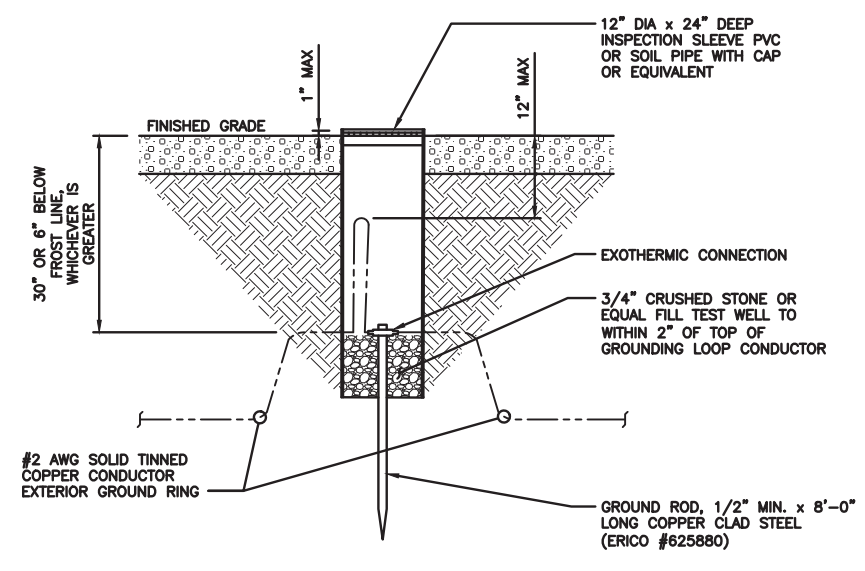
OUTDOOR CABINET GROUNDING

NO SCALE 3



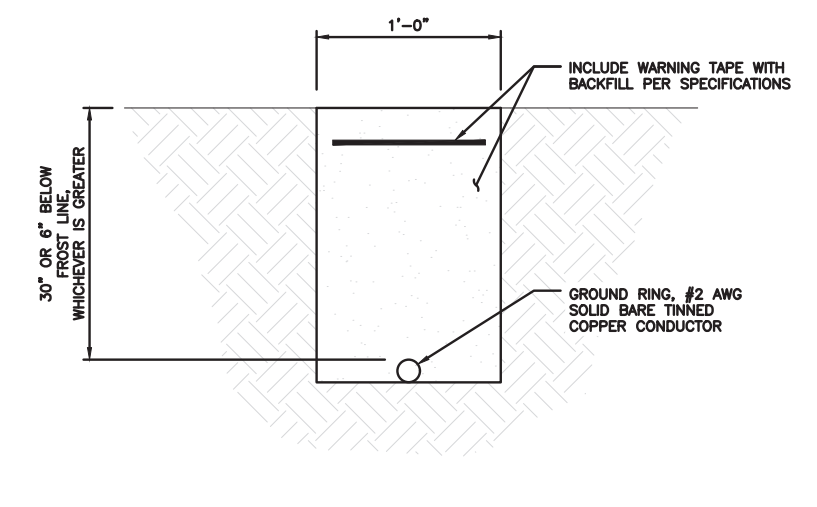
TRANSITIONING GROUND DETAIL

NO SCALE 4



TYPICAL TEST GROUND ROD WITH INSPECTION SLEEVE

NO SCALE 5



TYPICAL GROUND RING TRENCH

NO SCALE 6



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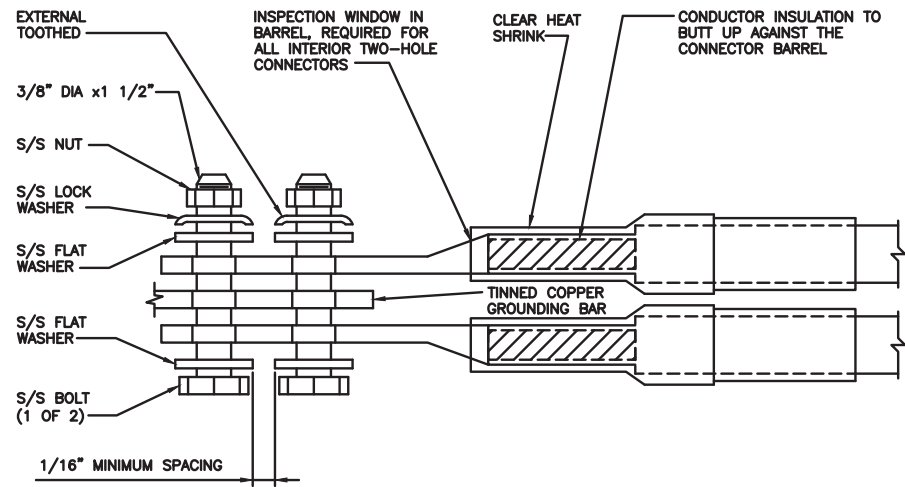
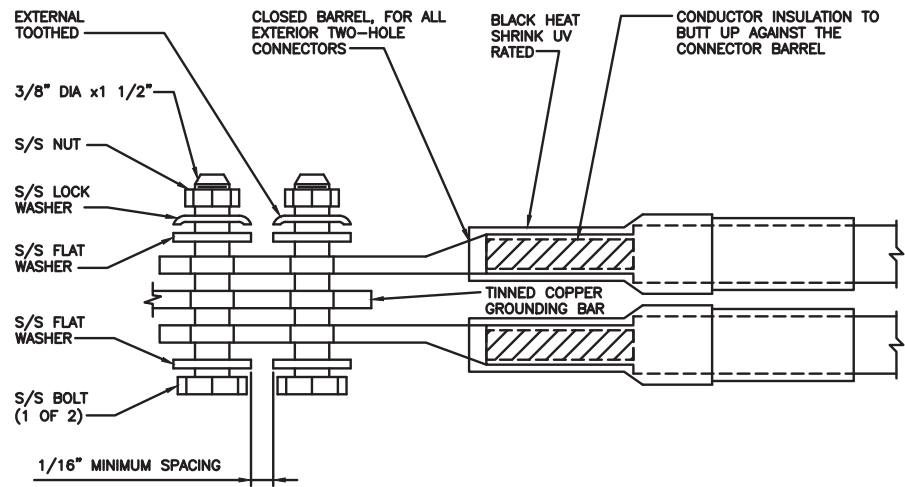
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WINDSOR, CT 06095

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

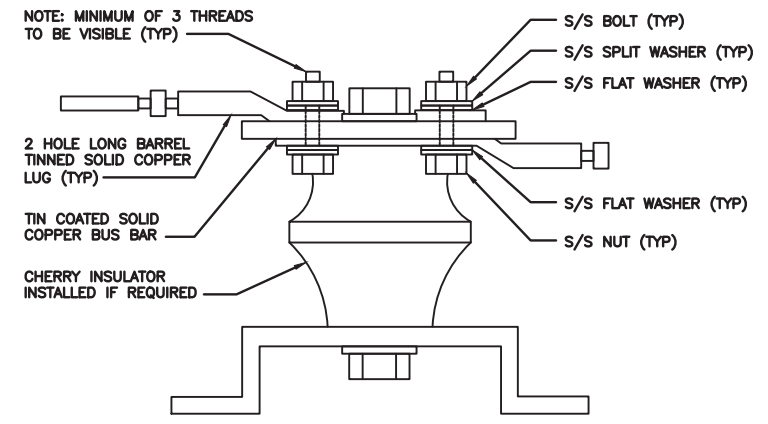
NO SCALE 1

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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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)

ALPHA RRH				BETA RRH				GAMMA RRH			
PORT 1 + SLANT	PORT 2 - SLANT	PORT 3 + SLANT	PORT 4 - SLANT	PORT 1 + SLANT	PORT 2 - SLANT	PORT 3 + SLANT	PORT 4 - SLANT	PORT 1 + SLANT	PORT 2 - SLANT	PORT 3 + SLANT	PORT 4 - SLANT
RED	RED	RED	RED	BLUE	BLUE	BLUE	BLUE	GREEN	GREEN	GREEN	GREEN
ORANGE	ORANGE	RED	RED	ORANGE	ORANGE	BLUE	BLUE	ORANGE	ORANGE	GREEN	GREEN
	WHITE (-) PORT	ORANGE	ORANGE		WHITE (-) PORT	ORANGE	ORANGE		WHITE (-) PORT	ORANGE	ORANGE
			WHITE (-) PORT				WHITE (-) PORT				WHITE (-) PORT

MID-BAND RRH -
(AWS BANDS N66+N70)

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

RED	RED	RED	RED	BLUE	BLUE	BLUE	BLUE	GREEN	GREEN	GREEN	GREEN
PURPLE	PURPLE	RED	RED	PURPLE	PURPLE	BLUE	BLUE	PURPLE	PURPLE	GREEN	GREEN
	WHITE (-) PORT	PURPLE	PURPLE		WHITE (-) PORT	PURPLE	PURPLE		WHITE (-) PORT	PURPLE	PURPLE
			WHITE (-) PORT				WHITE (-) PORT				WHITE (-) PORT

HYBRID/DISCREET CABLES

INCLUDE SECTOR BANDS BEING SUPPORTED
ALONG WITH FREQUENCY BANDS

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

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

EXAMPLE 1	EXAMPLE 2	EXAMPLE 3
RED	RED	RED
BLUE	BLUE	
GREEN	GREEN	ORANGE
ORANGE	YELLOW	PURPLE
PURPLE		

FIBER JUMPERS TO RRHs

LOW-BAND RRH FIBER CABLES HAVE SECTOR
STRIPE ONLY

LOW BAND RRH	HIGH BAND RRH	LOW BAND RRH	HIGH BAND RRH	LOW BAND RRH	HIGH BAND RRH
RED	RED	BLUE	BLUE	GREEN	GREEN
	PURPLE		PURPLE		PURPLE

POWER CABLES TO RRHs

LOW-BAND RRH POWER CABLES HAVE SECTOR
STRIPE ONLY

LOW BAND RRH	HIGH BAND RRH	LOW BAND RRH	HIGH BAND RRH	LOW BAND RRH	HIGH BAND RRH
RED	RED	BLUE	BLUE	GREEN	GREEN
	PURPLE		PURPLE		PURPLE

RET MOTORS AT ANTENNAS

ANTENNA 1 LOW BAND/ "IN"	ANTENNA 1 HIGH BAND/ "IN"	ANTENNA 1 LOW BAND/ "IN"	ANTENNA 1 HIGH BAND/ "IN"	ANTENNA 1 LOW BAND/ "IN"	ANTENNA 1 HIGH BAND/ "IN"
RED	RED	BLUE	BLUE	GREEN	GREEN
	PURPLE		PURPLE		PURPLE

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

FORWARD AZIMUTH OF 0-120 DEGREES		FORWARD AZIMUTH OF 120-240 DEGREES		FORWARD AZIMUTH OF 240-360 DEGREES	
PRIMARY	SECONDARY	PRIMARY	SECONDARY	PRIMARY	SECONDARY
WHITE	WHITE	WHITE	WHITE	WHITE	WHITE
RED	RED	BLUE	BLUE	GREEN	GREEN
WHITE	WHITE	WHITE	WHITE	WHITE	WHITE
	RED		BLUE		GREEN
	WHITE		WHITE		WHITE

RF CABLE COLOR CODES

NO SCALE

1

LOW BANDS (N71+N26)
OPTIONAL - (N29)



AWS
(N66+N70+H-BLOCK)



CBRS TECH
(3 GHz)



NEGATIVE SLANT PORT
ON ANT/RRH



ALPHA SECTOR



BETA SECTOR



GAMMA SECTOR



COLOR IDENTIFIER

NO SCALE

2

NOT USED

NO SCALE

3

NOT USED

NO SCALE

4



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SHEET TITLE
RF
CABLE COLOR CODES

SHEET NUMBER

RF-1



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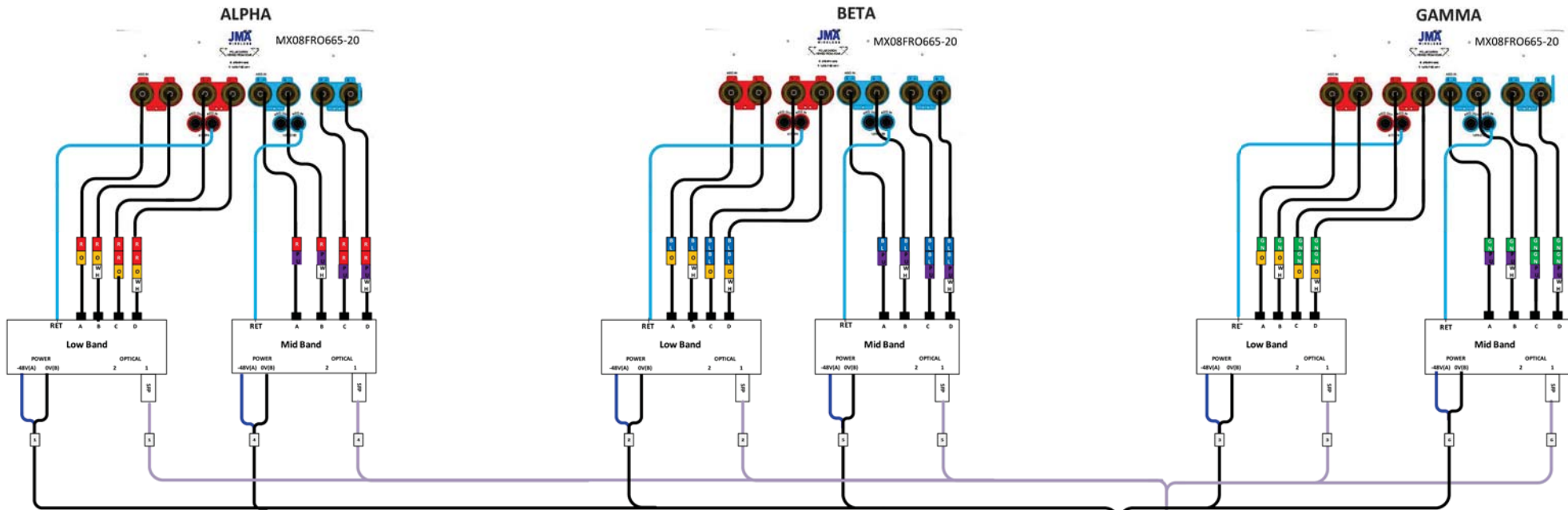
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99 DAY HILL ROAD
WINDSOR, CT 06095

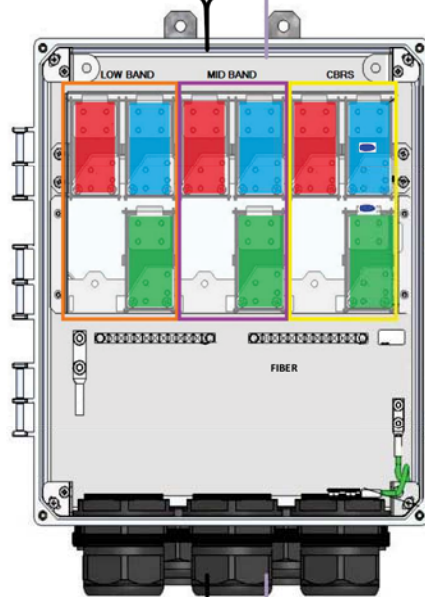
SHEET TITLE
RF
PLUMBING DIAGRAM

SHEET NUMBER

RF-2



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



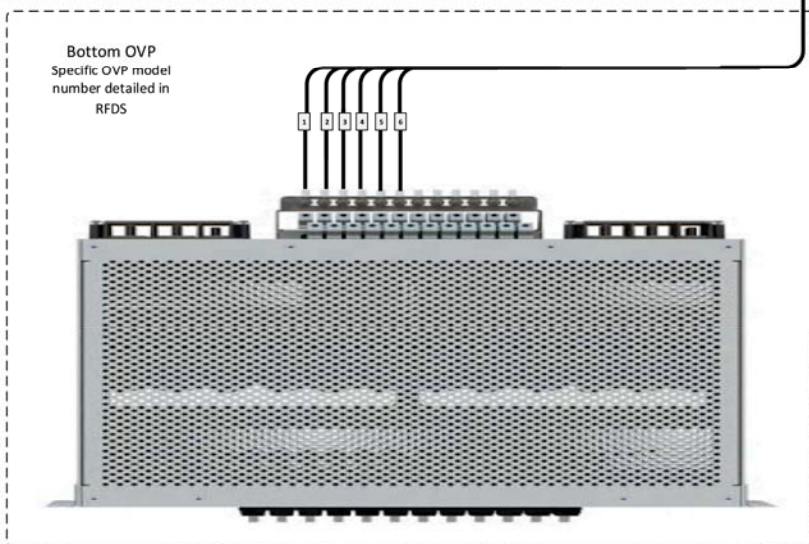
Port	Interface	Description
0	Gi0/0/0/0	SiteBoss
1	Gi0/0/0/1	CBRS - Alpha
2	Gi0/0/0/2	CBRS - Beta
3	Gi0/0/0/3	CBRS - Gamma
4	Te0/0/0/4	Fujitsu Low-Band RU - Alpha
5	Te0/0/0/5	Fujitsu Mid-Band RU - Alpha
6	Te0/0/0/6	Fujitsu Low-Band RU - Beta
7	Te0/0/0/7	Fujitsu Mid-Band RU - Beta
8	Te0/0/0/8	Fujitsu Low-Band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

top

bottom

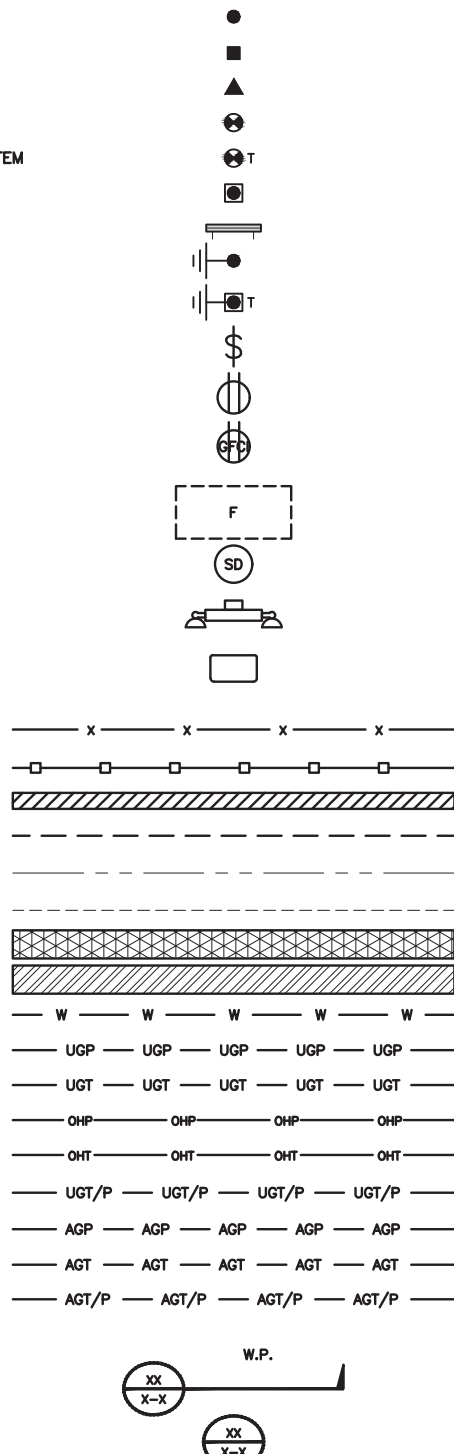
Circuit 1	Alpha Low Band
Circuit 2	Beta Low Band
Circuit 3	Gamma Low Band
Circuit 4	Alpha Mid Band
Circuit 5	Beta Mid Band
Circuit 6	Gamma Mid Band
Circuit 7	Alpha CBRS
Circuit 8	Beta CBRS
Circuit 9	Gamma CBRS
Circuit 10	Open
Circuit 11	Open
Circuit 12	Open

Bottom OVP
Specific OVP model
number detailed in
RFDS



	5G plumbing diagram JMA MX08FRO665-20 2-2-2(LB+MB)			
	Qian Liu	SID	FSCM NO	DWG NO
5-Jan-2021	SCALE	None		REV 3

EXOTHERMIC CONNECTION
 MECHANICAL CONNECTION
 BUSS BAR INSULATOR
 CHEMICAL ELECTROLYTIC GROUNDING SYSTEM
 TEST CHEMICAL ELECTROLYTIC GROUNDING SYSTEM
 EXOTHERMIC WITH INSPECTION SLEEVE
 GROUNDING BAR
 GROUND ROD
 TEST GROUND ROD WITH INSPECTION SLEEVE
 SINGLE POLE SWITCH
 DUPLEX RECEPTACLE
 DUPLEX GFCI RECEPTACLE
 FLUORESCENT LIGHTING FIXTURE
 (2) TWO LAMPS 48-T8
 SMOKE DETECTION (DC)
 EMERGENCY LIGHTING (DC)
 SECURITY LIGHT W/PHOTOCELL LITHONIA ALXW
 LED-1-25A400/51K-SR4-120-PE-DBTDX
 CHAIN LINK FENCE
 WOOD/WROUGHT IRON FENCE
 WALL STRUCTURE
 LEASE AREA
 PROPERTY LINE (PL)
 SETBACKS
 ICE BRIDGE
 CABLE TRAY
 WATER LINE
 UNDERGROUND POWER
 UNDERGROUND TELCO
 OVERHEAD POWER
 OVERHEAD TELCO
 UNDERGROUND TELCO/POWER
 ABOVE GROUND POWER
 ABOVE GROUND TELCO
 ABOVE GROUND TELCO/POWER
 WORKPOINT
 SECTION REFERENCE
 DETAIL REFERENCE



LEGEND

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

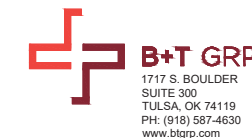
ABBREVIATIONS



5701 SOUTH SANTA FE DRIVE
 LITTLETON, CO 80120



2000 CORPORATE DRIVE
 CANONSBURG, PA 15317



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

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 UNLESS THEY ARE ACTING UNDER THE DIRECTION
 OF A LICENSED PROFESSIONAL ENGINEER,
 TO ALTER THIS DOCUMENT.

DRAWN BY:	CHECKED BY:	APPROVED BY:
LHT	RMC	MDW

RFDS REV #: 0

CONSTRUCTION DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
A	5/25/21	ISSUED FOR REVIEW
0	6/30/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
 92492.004.01

DISH Wireless L.L.C.
 PROJECT INFORMATION
 BOBDL00068A
 99 DAY HILL ROAD
 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.



5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120



2000 CORPORATE DRIVE
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SUITE 300
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B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/22

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DRAWN BY: CHECKED BY: APPROVED BY:

LHT RMC MDW

RFDS REV #: 0

CONSTRUCTION DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
A	5/25/21	ISSUED FOR REVIEW
0	6/30/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
92492.004.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00068A
99 DAY HILL ROAD
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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DRAWN BY: CHECKED BY: APPROVED BY:

LHT RMC MDW

RFDS REV #: 0

CONSTRUCTION DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
A	5/25/21	ISSUED FOR REVIEW
0	6/30/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
92492.004.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00068A
99 DAY HILL ROAD
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.



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DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00068A
99 DAY HILL ROAD
WINDSOR, CT 06095

SHEET TITLE
GENERAL NOTES

SHEET NUMBER
GN-4

Exhibit D

Structural Analysis Report

Date: **May 26, 2021**



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

Subject: **Structural Analysis Report**

Carrier Designation: **DISH Network Co-Locate**
Site Number: BOBDL00068A
Site Name: CT-CCI-T-842875

Crown Castle Designation: **BU Number:** 842875
Site Name: WINDSOR DAY HILL
JDE Job Number: 650059
Work Order Number: 1966751
Order Number: 556624 Rev. 0

Engineering Firm Designation: **Crown Castle Project Number:** 1966751

Site Data: **99 DAY HILL ROAD, WINDSOR, HARTFORD County, CT**
Latitude 41° 52' 16.1", Longitude -72° 40' 16"
168 Foot - Monopole Tower

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

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

LC7: Proposed Equipment Configuration ***Sufficient Capacity – 97.9%**

***The structure has sufficient capacity once the loading changes, described in the Recommendations section of this report, are completed.**

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: Dolly Hsu, E.I.T.

Respectfully submitted by:

Terry P. Styran, P.E.
Senior Project Engineer

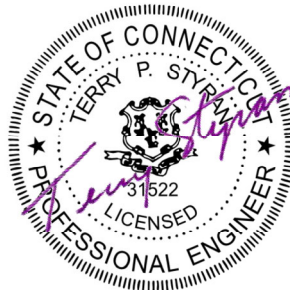


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1) INTRODUCTION

This tower is a 168 ft Monopole tower designed by SUMMIT MANUFACTURING.

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)
120.0	120.0	3	fujitsu	TA08025-B604	1	1-1/2
		3	fujitsu	TA08025-B605		
		3	jma wireless	MX08FRO665-21 w/ Mount Pipe		
		1	raycap	RDIDC-9181-PF-48		
		1	tower mounts	Commscope MC-PK8-DSH		

Table 2 - Non-Carrier Equipment To Be Conditionally Removed

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
120.0	120.0	3	rfs celwave	APL199016-42T0	-	-
		1	tower mounts	Pipe Mount [PM 602-3]		

Table 3 - 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)
168.0	168.0	1	rfi antennas	CC807-08	2 6 1 12	3/8 3/4 1-1/4 1-5/8
		2	cci antennas	DMP65R-BU6D w/ Mount Pipe		
		1	cci antennas	DMP65R-BU8D w/ Mount Pipe		
		3	cci antennas	DTMABP7819VG12A		
		1	cci antennas	TPA-65R-LCUUUU-H8 w/ Mount Pipe		
		3	ericsson	RRUS 32 B30		
		3	ericsson	RRUS 32 B66		
		3	ericsson	RRUS 4415 B25		
		3	ericsson	RRUS 4449 B5/B12		
		3	ericsson	RRUS 4478 B14		
		3	kathrein	800 10121 w/ Mount Pipe		
		2	kathrein	80010965 w/ Mount Pipe		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
		1	kathrein	80010966 w/ Mount Pipe		
		6	kathrein	860 10025		
		2	quintel technology	QS66512-2 w/ Mount Pipe		
		1	raycap	DC6-48-60-0-8F		
		2	raycap	DC6-48-60-18-8F		
		1	tower mounts	Platform Mount [LP 1201-1_KCKR-HR-1]		
160.0	165.0	3	andrew	VHLP2.5-11	3 3	5/16 1/2
	164.0	2	dragonwave	HORIZON COMPACT		
	160.0	3	argus technologies	LLPX310R-V1		
		3	samsung telecommunications	RRH-2WB		
		1	tower mounts	Platform Mount [LP 1201-1]		
	156.0	1	dragonwave	HORIZON COMPACT		
1		rosenberger leoni	FB-15-ABOX			
152.0	152.0	1	rfs celwave	SC3-W100ASTX	1	EU90-FR
		1	tower mounts	Pipe Mount [PM 601-1]		
147.0	148.0	1	kathrein	782 10876	1 1	1/2 EU90-FR
		1	rfi antennas	BPA7496-180-11 w/ Mount Pipe		
		1	rfs celwave	SC3-W100ASTX		
	147.0	1	tower mounts	Pipe Mount [PM 601-1]		
143.0	143.0	1		MPRD2449	1	1/4
		1	kathrein	782 10876		
		1	tower mounts	Pipe Mount [PM 602-1]		
140.0	148.0	1	bird technologies group	432E-83I-01-T	1 2	1/4 7/8
		2	rfi antennas	CC807-11		
		1	telewave	ANT450F6		
	140.0	1		PTP400 w/Mount Pipe		
		1	ericsson	RIU		
		2	tower mounts	Side Arm Mount [SO 306-1]		
135.0	144.0	2	telewave	ANT450F6	2	1/2
	135.0	2	tower mounts	Side Arm Mount [SO 702-1]		
130.0	131.0	3	ericsson	AIR6449 B41_T-MOBILE	4	1-5/8
		3	ericsson	RADIO 4415 B66A		
		3	ericsson	RADIO 4424 B25_TMO		
		3	ericsson	RADIO 4449 B71 B85A_T-MOBILE		
		3	rfs celwave	APX16DWV-16DWV-S-E-A20		
		3	rfs celwave	APXVAALL24_43-U-NA20_TMO		
	130.0	1		12' Platform Mount [#RMQP-496-HK]		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
120.0	120.0	-	-	-	6	1-5/8
100.0	100.0	1	rfs celwave	SC3-W100ASTX	1	EU90-FR
		1	tower mounts	Pipe Mount [PM 601-1]		
79.0	79.0	2	tower mounts	Side Arm Mount [SO 901-1]	-	-
52.0	52.0	1	pctel	GPS-TMG-HR-26NCM	1	1/2
		1	tower mounts	Side Arm Mount [SO 701-1]		

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Reference	Source
4-GEOTECHNICAL REPORTS	4529457	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	4529456	CCISITES
4-TOWER MANUFACTURER DRAWINGS	4589719	CCISITES

3.1) Analysis Method

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

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 5 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	168 - 119.25	Pole	TP34.288x24x0.25	1	-17.30	1615.32	61.4	Pass
L2	119.25 - 78.5	Pole	TP42.387x32.8911x0.2813	2	-28.50	2248.05	97.2	Pass
L3	78.5 - 38.75	Pole	TP50.213x40.7166x0.375	3	-40.72	3547.28	84.0	Pass
L4	38.75 - 0	Pole	TP57.64x48.1441x0.375	4	-56.93	4186.71	97.9	Pass
							Summary	
						Pole (L4)	97.9	Pass
						Rating =	97.9	Pass

Table 6 - Tower Component Stresses vs. Capacity - LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	91.8	Pass
1	Base Plate	0	65.9	Pass
1	Base Foundation (Structure)	0	79.4	Pass
1	Base Foundation (Soil Interaction)	0	33.0	Pass
Structure Rating (max from all components) =				97.9%

Notes:

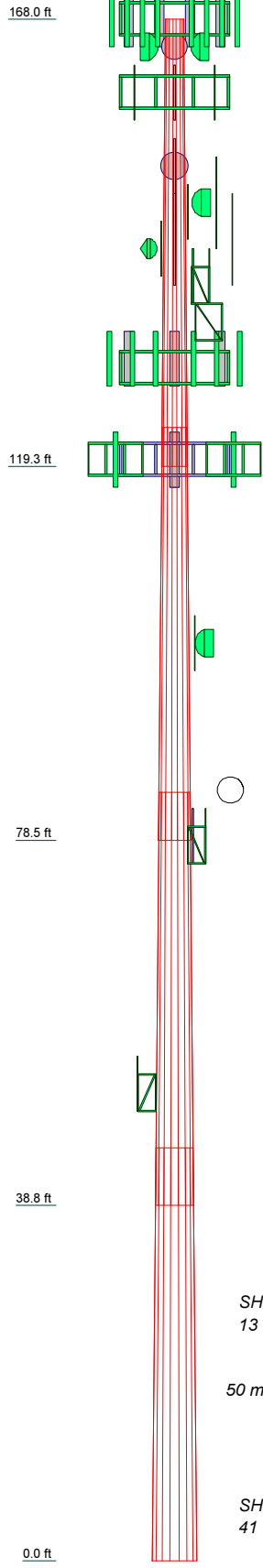
- 1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.

4.1) Recommendations

Once the equipment in Table 2 is removed, the tower and its foundation have sufficient capacity to carry the proposed load configuration. No modifications are required at this time.

APPENDIX A
TNXTOWER OUTPUT

Section	1	2	3	4	
Length (ft)	48.75	45.00	45.00	45.00	
Number of Sides	18	18	18	18	
Thickness (in)	0.2500	0.2813	0.3750	0.3750	
Socket Length (ft)	4.25	5.25	6.25		
Top Dia (in)	24.0000	32.8911	40.7166	48.1441	
Bot Dia (in)	34.2880	42.3870	50.2130	57.6400	
Grade		A607-65			
Weight (K)	3.8	5.1	8.2	9.6	26.7



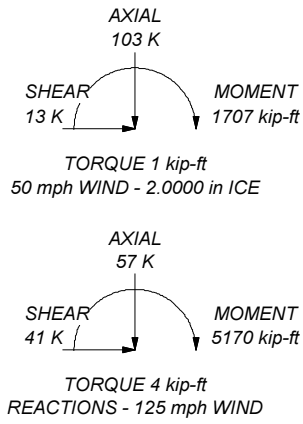
MATERIAL STRENGTH


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

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-H Standard.
3. Tower designed for a 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: 97.9%

ALL REACTIONS ARE FACTORED



 <p>CROWN CASTLE The Pathway to Possible</p>	<p>Crown Castle 2000 Corporate Drive Canonsburg, PA 15317 Phone: (724) 416-2000 FAX:</p>		<p>Job: BU# 842875</p>	
	Project:	Client: Crown Castle	Drawn by: Dolly Hsu	App'd:
	Code: TIA-222-H	Date: 05/25/21	Scale: NTS	Dwg No. E-1
	Path:	C:\Users\dhsu\Documents\Weekend WIP\842875\WO 1966751 - SAIProd\842875 RPA.er		

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: 166.00 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 Consider Moments - Horizontals Consider Moments - Diagonals Use Moment Magnification ✓ Use Code Stress Ratios ✓ Use Code Safety Factors - Guys Escalate Ice Always Use Max Kz Use Special Wind Profile Include Bolts In Member Capacity Leg Bolts Are At Top Of Section Secondary Horizontal Braces Leg Use Diamond Inner Bracing (4 Sided) SR Members Have Cut Ends SR Members Are Concentric	Distribute Leg Loads As Uniform Assume Legs Pinned ✓ Assume Rigid Index Plate ✓ Use Clear Spans For Wind Area Use Clear Spans For KL/r Retension Guys To Initial Tension ✓ Bypass Mast Stability Checks ✓ Use Azimuth Dish Coefficients ✓ Project Wind Area of Appurt. Autocalc Torque Arm Areas Add IBC .6D+W Combination ✓ Sort Capacity Reports By Component Triangulate Diamond Inner Bracing Treat Feed Line Bundles As Cylinder Ignore KL/ry For 60 Deg. Angle Legs	Use ASCE 10 X-Brace Ly Rules Calculate Redundant Bracing Forces Ignore Redundant Members in FEA SR Leg Bolts Resist Compression All Leg Panels Have Same Allowable Offset Girt At Foundation ✓ Consider Feed Line Torque Include Angle Block Shear Check Use TIA-222-H Bracing Resist. Exemption Use TIA-222-H Tension Splice Exemption <div style="text-align: center; background-color: #e0e0e0; padding: 2px;">Poles</div> ✓ Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets ✓ Pole Without Linear Attachments Pole With Shroud Or No Appurtenances Outside and Inside Corner Radii Are Known
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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	168.00-119.25	48.75	4.25	18	24.0000	34.2880	0.2500	1.0000	A607-65 (65 ksi)
L2	119.25-78.50	45.00	5.25	18	32.8911	42.3870	0.2813	1.1250	A607-65 (65 ksi)
L3	78.50-38.75	45.00	6.25	18	40.7166	50.2130	0.3750	1.5000	A607-65 (65 ksi)
L4	38.75-0.00	45.00		18	48.1441	57.6400	0.3750	1.5000	A607-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	It/Q in ²	w in	w/t
L1	24.3317	18.8456	1342.9976	8.4313	12.1920	110.1540	2687.7623	9.4246	3.7840	15.136
	34.7784	27.0092	3953.4521	12.0835	17.4183	226.9711	7912.1063	13.5071	5.5947	22.379
L2	34.2658	29.1104	3910.9585	11.5765	16.7087	234.0675	7827.0631	14.5580	5.2938	18.823
	42.9975	37.5873	8419.0120	14.9475	21.5326	390.9892	16849.1019	18.7972	6.9651	24.765
L3	42.4119	48.0166	9872.7114	14.3213	20.6841	477.3102	19758.4135	24.0129	6.5061	17.35
	50.9298	59.3197	18614.7607	17.6925	25.5082	729.7558	37254.0152	29.6655	8.1775	21.807
L4	50.1681	56.8571	16391.3897	16.9580	24.4572	670.2076	32804.3475	28.4340	7.8134	20.836
	58.4713	68.1597	28238.6178	20.3291	29.2811	964.3968	56514.3927	34.0863	9.4846	25.292

Tower Elevation ft	Gusset Area (per face) ft ²	Gusset Thickness in	Gusset Grade	Adjust. Factor A _r	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 168.00- 119.25				1	1	1			
L2 119.25- 78.50				1	1	1			
L3 78.50- 38.75				1	1	1			
L4 38.75-0.00				1	1	1			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Componen t Type	Placement ft	Total Number	Number Per Row	Clear Spacing in	Width or Diamete r in	Perimete r in	Weight plf

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Componen t Type	Placement ft	Total Number	C _A A _A ft ² /ft	Weight plf

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C _A A _A ft ² /ft	Weight plf
LDF6-50A(1-1/4)	A	No	No	Inside Pole	168.00 - 3.00	1	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

LDF7-50A(1-5/8)	C	No	No	Inside Pole	168.00 - 3.00	12	No Ice	0.00	0.82
							1/2" Ice	0.00	0.82
							1" Ice	0.00	0.82
							2" Ice	0.00	0.82
FB-L98B-034-XXXXXX(3/8)	C	No	No	Inside Pole	168.00 - 3.00	2	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
WR-VG86ST-BRD(3/4)	C	No	No	Inside Pole	168.00 - 3.00	6	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

LDF4-50A(1/2)	B	No	No	Inside Pole	160.00 - 7.00	3	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
ATCB-B01-003(5/16)	B	No	No	Inside Pole	160.00 - 7.00	3	No Ice	0.00	0.07
							1/2" Ice	0.00	0.07
							1" Ice	0.00	0.07
							2" Ice	0.00	0.07

EU 90-FR(ELLIPTICAL)	A	No	No	Inside Pole	152.00 - 3.00	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
LDF4-50A(1/2)	A	No	No	Inside Pole	147.00 - 3.00	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
EU 90-FR(ELLIPTICAL)	A	No	No	Inside Pole	147.00 - 3.00	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
LDF1-50A(1/4)	A	No	No	Inside Pole	143.00 - 3.00	1	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
CAT5E(1/4)	A	No	No	Inside Pole	140.00 - 3.00	1	No Ice	0.00	0.04
							1/2" Ice	0.00	0.04
							1" Ice	0.00	0.04
							2" Ice	0.00	0.04
LDF5-50A(7/8)	A	No	No	Inside Pole	140.00 - 3.00	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)	A	No	No	Inside Pole	135.00 - 3.00	2	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

HB158-21U6S24-xxM_TMO(1-5/8)	B	No	No	Inside Pole	130.00 - 3.00	4	No Ice	0.00	2.50
							1/2" Ice	0.00	2.50
							1" Ice	0.00	2.50
							2" Ice	0.00	2.50

LDF7-50A(1-5/8)	C	No	No	Inside Pole	120.00 - 3.00	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

EU 90-	A	No	No	Inside Pole	100.00 - 3.00	1	No Ice	0.00	0.34

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C _A A _A ft ² /ft	Weight plf
FR(ELLIPTICAL)							1/2" Ice	0.00	0.34
							1" Ice	0.00	0.34
							2" Ice	0.00	0.34

CU12PSM9P6XXX (1-1/2)	C	No	No	Inside Pole	120.00 - 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

5/8 rod/step	C	No	No	CaAa (Out Of Face)	168.00 - 0.00	1	No Ice	0.02	0.27
							1/2" Ice	0.12	0.70
							1" Ice	0.22	1.74
							2" Ice	0.42	5.65
LDF4-50A(1/2)	B	No	No	CaAa (Out Of Face)	52.00 - 3.00	1	No Ice	0.06	0.15
							1/2" Ice	0.16	0.84
							1" Ice	0.26	2.14
							2" Ice	0.46	6.58

Feed Line/Linear Appurtenances Section Areas

Tower Section n	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
L1	168.00-119.25	A	0.000	0.000	0.000	0.000	0.07
		B	0.000	0.000	0.000	0.000	0.14
		C	0.000	0.000	0.000	0.975	0.67
L2	119.25-78.50	A	0.000	0.000	0.000	0.000	0.11
		B	0.000	0.000	0.000	0.000	0.44
		C	0.000	0.000	0.000	0.815	0.86
L3	78.50-38.75	A	0.000	0.000	0.000	0.000	0.11
		B	0.000	0.000	0.000	0.835	0.43
		C	0.000	0.000	0.000	0.795	0.83
L4	38.75-0.00	A	0.000	0.000	0.000	0.000	0.10
		B	0.000	0.000	0.000	2.252	0.38
		C	0.000	0.000	0.000	0.775	0.76

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section n	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
L1	168.00-119.25	A	1.968	0.000	0.000	0.000	0.000	0.07
		B		0.000	0.000	0.000	0.000	0.14
		C		0.000	0.000	0.000	20.160	0.93
L2	119.25-78.50	A	1.896	0.000	0.000	0.000	0.000	0.11
		B		0.000	0.000	0.000	0.000	0.44
		C		0.000	0.000	0.000	16.851	1.07
L3	78.50-38.75	A	1.800	0.000	0.000	0.000	0.000	0.11
		B		0.000	0.000	0.000	5.859	0.51
		C		0.000	0.000	0.000	15.869	1.03
L4	38.75-0.00	A	1.613	0.000	0.000	0.000	0.000	0.10
		B		0.000	0.000	0.000	15.121	0.58
		C		0.000	0.000	0.000	14.723	0.94

Feed Line Center of Pressure

Section	Elevation	CP _x	CP _z	CP _x Ice	CP _z Ice
	ft	in	in	in	in
L1	168.00-119.25	-0.1606	0.0927	-1.4981	0.8649
L2	119.25-78.50	-0.1610	0.0930	-1.5852	0.9152
L3	78.50-38.75	0.0182	0.1952	-0.9388	1.2400
L4	38.75-0.00	0.2990	0.3554	0.0305	1.7005

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

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement
			Horz Lateral	Vert		
			ft	ft	°	ft
800 10121 w/ Mount Pipe	A	From Leg	4.00	0.00	0.0000	168.00
			0.00	0.00		
800 10121 w/ Mount Pipe	B	From Leg	4.00	0.00	0.0000	168.00
			0.00	0.00		
800 10121 w/ Mount Pipe	C	From Leg	4.00	0.00	0.0000	168.00
			0.00	0.00		
80010965 w/ Mount Pipe	A	From Leg	4.00	0.00	0.0000	168.00
			0.00	0.00		
80010965 w/ Mount Pipe	B	From Leg	4.00	0.00	0.0000	168.00
			0.00	0.00		
80010966 w/ Mount Pipe	C	From Leg	4.00	0.00	0.0000	168.00
			0.00	0.00		
QS66512-2 w/ Mount Pipe	A	From Leg	4.00	0.00	0.0000	168.00
			0.00	0.00		
QS66512-2 w/ Mount Pipe	B	From Leg	4.00	0.00	0.0000	168.00
			0.00	0.00		
TPA-65R-LCUUUU-H8 w/ Mount Pipe	C	From Leg	4.00	0.00	0.0000	168.00
			0.00	0.00		
CC807-08	C	From Leg	4.00	0.00	0.0000	168.00
			0.00	2.00		
RRUS 4478 B14	A	From Leg	4.00	0.00	0.0000	168.00
			0.00	0.00		
RRUS 4478 B14	B	From Leg	4.00	0.00	0.0000	168.00
			0.00	0.00		
RRUS 4478 B14	C	From Leg	4.00	0.00	0.0000	168.00
			0.00	0.00		
RRUS 32 B66	A	From Leg	4.00	0.00	0.0000	168.00
			0.00	0.00		
RRUS 32 B66	B	From Leg	4.00	0.00	0.0000	168.00
			0.00	0.00		
RRUS 32 B66	C	From Leg	4.00	0.00	0.0000	168.00

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement
			Horz Lateral	Vert ft ft		
				0.00		
				0.00		
RRUS 32 B30	A	From Leg	4.00	0.00	0.0000	168.00
			0.00	0.00		
RRUS 32 B30	B	From Leg	4.00	0.00	0.0000	168.00
			0.00	0.00		
RRUS 32 B30	C	From Leg	4.00	0.00	0.0000	168.00
			0.00	0.00		
(2) 860 10025	A	From Leg	4.00	0.00	0.0000	168.00
			0.00	0.00		
(2) 860 10025	B	From Leg	4.00	0.00	0.0000	168.00
			0.00	0.00		
(2) 860 10025	C	From Leg	4.00	0.00	0.0000	168.00
			0.00	0.00		
DTMABP7819VG12A	A	From Leg	4.00	0.00	0.0000	168.00
			0.00	0.00		
DTMABP7819VG12A	B	From Leg	4.00	0.00	0.0000	168.00
			0.00	0.00		
DTMABP7819VG12A	C	From Leg	4.00	0.00	0.0000	168.00
			0.00	0.00		
DC6-48-60-0-8F	A	From Leg	4.00	0.00	0.0000	168.00
			0.00	0.00		
(2) DC6-48-60-18-8F	A	From Leg	4.00	0.00	0.0000	168.00
			0.00	0.00		
6' x 2" Mount Pipe	A	From Leg	4.00	0.00	0.0000	168.00
			0.00	0.00		
6' x 2" Mount Pipe	B	From Leg	4.00	0.00	0.0000	168.00
			0.00	0.00		
6' x 2" Mount Pipe	C	From Leg	4.00	0.00	0.0000	168.00
			0.00	0.00		
Platform Mount [LP 1201-1_KCKR-HR-1] ***	C	None			0.0000	168.00
DMP65R-BU6D w/ Mount Pipe	A	From Leg	4.00	0.00	0.0000	168.00
			0.00	0.00		
DMP65R-BU6D w/ Mount Pipe	B	From Leg	4.00	0.00	0.0000	168.00
			0.00	0.00		
DMP65R-BU8D w/ Mount Pipe	C	From Leg	4.00	0.00	0.0000	168.00
			0.00	0.00		
RRUS 4449 B5/B12	A	From Leg	4.00	0.00	0.0000	168.00
			0.00	0.00		
RRUS 4449 B5/B12	B	From Leg	4.00	0.00	0.0000	168.00
			0.00	0.00		
RRUS 4449 B5/B12	C	From Leg	4.00	0.00	0.0000	168.00
			0.00	0.00		
RRUS 4415 B25	A	From Leg	4.00	0.00	0.0000	168.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft
			0.00		
			0.00		
RRUS 4415 B25	B	From Leg	4.00	0.0000	168.00
			0.00		
			0.00		
RRUS 4415 B25	C	From Leg	4.00	0.0000	168.00
			0.00		
			0.00		

LLPX310R-V1	A	From Leg	4.00	0.0000	160.00
			0.00		
			0.00		
LLPX310R-V1	B	From Leg	4.00	0.0000	160.00
			0.00		
			0.00		
LLPX310R-V1	C	From Leg	4.00	0.0000	160.00
			0.00		
			0.00		
HORIZON COMPACT	A	From Leg	4.00	0.0000	160.00
			0.00		
			4.00		
HORIZON COMPACT	B	From Leg	4.00	0.0000	160.00
			0.00		
			4.00		
HORIZON COMPACT	B	From Leg	4.00	0.0000	160.00
			0.00		
			-4.00		
RRH-2WB	A	From Leg	4.00	0.0000	160.00
			0.00		
			0.00		
RRH-2WB	B	From Leg	4.00	0.0000	160.00
			0.00		
			0.00		
RRH-2WB	B	From Leg	4.00	0.0000	160.00
			0.00		
			0.00		
FB-15-ABOX	C	From Leg	4.00	0.0000	160.00
			0.00		
			-4.00		
(4) 6' x 2" Mount Pipe	A	From Leg	4.00	0.0000	160.00
			0.00		
			0.00		
(4) 6' x 2" Mount Pipe	B	From Leg	4.00	0.0000	160.00
			0.00		
			0.00		
(4) 6' x 2" Mount Pipe	C	From Leg	4.00	0.0000	160.00
			0.00		
			0.00		
7'x2 1/2" Pipe Mount	A	From Leg	4.00	0.0000	160.00
			0.00		
			0.00		
7'x2 1/2" Pipe Mount	B	From Leg	4.00	0.0000	160.00
			0.00		
			0.00		
7'x2 1/2" Pipe Mount	C	From Leg	4.00	0.0000	160.00
			0.00		
			0.00		
Platform Mount [LP 1201-1]	C	None		0.0000	160.00

Pipe Mount [PM 601-1]	A	From Leg	0.50	0.0000	152.00
			0.00		
			0.00		

BPA7496-180-11 w/ Mount Pipe	A	From Leg	1.00	0.0000	147.00
			0.00		

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment °	Placement ft
			Horz Lateral ft	Vert ft		
782 10876	A	From Leg	1.00	1.00	0.0000	147.00
Pipe Mount [PM 601-1]	B	From Leg	0.50	0.00	0.0000	147.00
***			0.00	0.00		
782 10876	C	From Leg	1.00	0.00	0.0000	143.00
Pipe Mount [PM 602-1]	C	From Leg	0.50	0.00	0.0000	143.00
***			0.00	0.00		
(2) CC807-11	A	From Leg	4.00	0.00	0.0000	140.00
ANT450F6	B	From Leg	4.00	0.00	0.0000	140.00
PTP400 w/Mount Pipe	B	From Leg	4.00	0.00	0.0000	140.00
432E-83I-01-T	A	From Leg	4.00	0.00	0.0000	140.00
RIU	B	From Leg	4.00	0.00	0.0000	140.00
Side Arm Mount [SO 306-1]	A	From Leg	2.00	0.00	0.0000	140.00
Side Arm Mount [SO 306-1]	B	From Leg	2.00	0.00	0.0000	140.00
Pipe Mount [PM 601-3]	C	None	0.00	0.00	0.0000	140.00
***			0.00	0.00		
ANT450F6	A	From Leg	6.00	0.00	0.0000	135.00
ANT450F6	B	From Leg	6.00	0.00	0.0000	135.00
4' x 2" Pipe Mount	A	From Leg	6.00	0.00	0.0000	135.00
4' x 2" Pipe Mount	B	From Leg	6.00	0.00	0.0000	135.00
Side Arm Mount [SO 702-1]	A	From Leg	3.00	0.00	0.0000	135.00
Side Arm Mount [SO 702-1]	B	From Leg	3.00	0.00	0.0000	135.00
***			0.00	0.00		
***			0.00	0.00		
APX16DWV-16DWV-S-E-A20	A	From Leg	4.00	0.00	0.0000	130.00
APX16DWV-16DWV-S-E-A20	B	From Leg	4.00	0.00	0.0000	130.00
APX16DWV-16DWV-S-E-A20	C	From Leg	4.00	0.00	0.0000	130.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft
			0.00		
APXVAALL24_43-U-NA20_TMO	A	From Leg	1.00 4.00	0.0000	130.00
			0.00 1.00		
APXVAALL24_43-U-NA20_TMO	B	From Leg	4.00	0.0000	130.00
			0.00 1.00		
APXVAALL24_43-U-NA20_TMO	C	From Leg	4.00	0.0000	130.00
			0.00 1.00		
AIR6449 B41_T-MOBILE	A	From Leg	4.00	0.0000	130.00
			0.00 1.00		
AIR6449 B41_T-MOBILE	B	From Leg	4.00	0.0000	130.00
			0.00 1.00		
AIR6449 B41_T-MOBILE	C	From Leg	4.00	0.0000	130.00
			0.00 1.00		
RADIO 4415 B66A	A	From Leg	4.00	0.0000	130.00
			0.00 1.00		
RADIO 4415 B66A	B	From Leg	4.00	0.0000	130.00
			0.00 1.00		
RADIO 4415 B66A	C	From Leg	4.00	0.0000	130.00
			0.00 1.00		
RADIO 4449 B71 B85A_T-MOBILE	A	From Leg	4.00	0.0000	130.00
			0.00 1.00		
RADIO 4449 B71 B85A_T-MOBILE	B	From Leg	4.00	0.0000	130.00
			0.00 1.00		
RADIO 4449 B71 B85A_T-MOBILE	C	From Leg	4.00	0.0000	130.00
			0.00 1.00		
RADIO 4424 B25_TMO	A	From Leg	4.00	0.0000	130.00
			0.00 1.00		
RADIO 4424 B25_TMO	B	From Leg	4.00	0.0000	130.00
			0.00 1.00		
RADIO 4424 B25_TMO	C	From Leg	4.00	0.0000	130.00
			0.00 1.00		
12' Platform Mount [#RMQP-496-HK] ***	C	None		0.0000	130.00
MX08FRO665-21 w/ Mount Pipe	A	From Leg	4.00	0.0000	120.00
			0.00 0.00		
MX08FRO665-21 w/ Mount Pipe	B	From Leg	4.00	0.0000	120.00
			0.00 0.00		
MX08FRO665-21 w/ Mount Pipe	C	From Leg	4.00	0.0000	120.00
			0.00 0.00		
TA08025-B604	A	From Leg	4.00	0.0000	120.00
			0.00 0.00		
TA08025-B604	B	From Leg	4.00	0.0000	120.00
			0.00 0.00		
TA08025-B604	C	From Leg	4.00	0.0000	120.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft
			0.00		
TA08025-B605	A	From Leg	0.00 4.00	0.0000	120.00
			0.00		
TA08025-B605	B	From Leg	0.00 4.00	0.0000	120.00
			0.00		
TA08025-B605	C	From Leg	0.00 4.00	0.0000	120.00
			0.00		
RDIDC-9181-PF-48	A	From Leg	0.00 4.00	0.0000	120.00
			0.00		
Commscope MC-PK8-DSH (2) 8' x 2" Mount Pipe	C	None	0.00	0.0000	120.00
	A	From Leg	4.00	0.0000	120.00
			0.00		
(2) 8' x 2" Mount Pipe	B	From Leg	0.00 4.00	0.0000	120.00
			0.00		
(2) 8' x 2" Mount Pipe	C	From Leg	0.00 4.00	0.0000	120.00
			0.00		
***			0.00		

Pipe Mount [PM 601-1]	B	From Leg	1.00	0.0000	100.00
			0.00		
			0.00		

1' x 2-1/2"	A	From Leg	2.00	0.0000	79.00
			0.00		
			0.00		
1' x 2-1/2"	B	From Leg	2.00	0.0000	79.00
			0.00		
			0.00		
Side Arm Mount [SO 901-1]	A	From Leg	1.00	0.0000	79.00
			0.00		
			0.00		
Side Arm Mount [SO 901-1]	B	From Leg	1.00	0.0000	79.00
			0.00		
			0.00		

GPS-TMG-HR-26NCM	C	From Leg	3.00	0.0000	52.00
			0.00		
			0.00		
2' x 2" Pipe Mount	C	From Leg	3.00	0.0000	52.00
			0.00		
			0.00		
Side Arm Mount [SO 701-1]	C	From Leg	1.50	0.0000	52.00
			0.00		
			0.00		

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
VHLP2.5-11	A	Paraboloid w/Shroud (HP)	From Leg	1.00 0.00 5.00	38.0000		160.00	2.92
VHLP2.5-11	B	Paraboloid w/Shroud (HP)	From Leg	1.00 0.00 5.00	24.0000		160.00	2.92
VHLP2.5-11	C	Paraboloid w/Shroud (HP)	From Leg	1.00 0.00 5.00	90.0000		160.00	2.92

SC3-W100ASTX	A	Paraboloid w/Shroud (HP)	From Leg	1.00 0.00 0.00	-32.0000		152.00	3.00

SC3-W100ASTX	B	Paraboloid w/Shroud (HP)	From Leg	1.00 0.00 1.00	57.0000		147.00	3.00

MPRD2449	C	Paraboloid w/Radome	From Leg	1.00 0.00 0.00	10.0000		143.00	2.17

SC3-W100ASTX	B	Paraboloid w/Shroud (HP)	From Leg	1.00 0.00 0.00	37.0000		100.00	3.00

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

Comb. No.	Description
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	168 - 119.25	Pole	Max Tension	39	0.00	-0.00	-0.00
			Max. Compression	26	-47.38	-1.37	5.88
			Max. Mx	8	-17.37	-752.11	-11.96
			Max. My	14	-17.30	-4.87	-760.91
			Max. Vy	8	25.64	-752.11	-11.96
			Max. Vx	14	25.94	-4.87	-760.91
			Max. Torque	22			-3.64
L2	119.25 - 78.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-66.20	-2.00	6.52
			Max. Mx	8	-28.56	-1988.18	-29.74
			Max. My	14	-28.50	-11.86	-2012.13
			Max. Vy	8	33.39	-1988.18	-29.74
			Max. Vx	2	-33.88	9.55	2011.01
			Max. Torque	22			-4.33
L3	78.5 - 38.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-82.43	-1.91	6.48
			Max. Mx	8	-40.75	-3357.73	-49.50
			Max. My	2	-40.72	17.76	3399.14
			Max. Vy	8	37.15	-3357.73	-49.50
			Max. Vx	2	-37.64	17.76	3399.14
			Max. Torque	22			-4.39
L4	38.75 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-103.18	-1.91	6.00
			Max. Mx	8	-56.93	-5107.18	-72.43
			Max. My	2	-56.93	27.77	5170.30
			Max. Vy	8	40.30	-5107.18	-72.43
			Max. Vx	2	-40.77	27.77	5170.30
			Max. Torque	22			-4.07

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	27	103.18	0.03	12.72
	Max. H _x	20	56.97	40.23	0.32
	Max. H _z	3	42.73	0.22	40.72
	Max. M _x	2	5170.30	0.22	40.71
	Max. M _z	8	5107.18	-40.24	-0.49

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
	Max. Torsion	10	3.12	-34.81	-20.62
	Min. Vert	11	42.73	-34.81	-20.62
	Min. H _x	9	42.73	-40.24	-0.49
	Min. H _z	14	56.97	-0.21	-40.67
	Min. M _x	14	-5167.83	-0.21	-40.67
	Min. M _z	20	-5104.23	40.23	0.32
	Min. Torsion	22	-4.01	34.69	20.71

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	47.47	0.00	0.00	-1.21	-0.92	-0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	56.97	-0.22	-40.71	-5170.30	27.77	1.01
0.9 Dead+1.0 Wind 0 deg - No Ice	42.73	-0.22	-40.72	-5087.50	27.64	1.01
1.2 Dead+1.0 Wind 30 deg - No Ice	56.97	19.65	-35.47	-4511.84	-2485.29	-0.66
0.9 Dead+1.0 Wind 30 deg - No Ice	42.73	19.65	-35.47	-4439.49	-2445.40	-0.64
1.2 Dead+1.0 Wind 60 deg - No Ice	56.97	34.68	-20.43	-2602.12	-4397.79	-2.01
0.9 Dead+1.0 Wind 60 deg - No Ice	42.73	34.68	-20.43	-2560.19	-4327.37	-1.98
1.2 Dead+1.0 Wind 90 deg - No Ice	56.97	40.24	0.49	72.43	-5107.18	-2.87
0.9 Dead+1.0 Wind 90 deg - No Ice	42.73	40.24	0.49	71.60	-5025.43	-2.82
1.2 Dead+1.0 Wind 120 deg - No Ice	56.97	34.81	20.62	2621.44	-4416.91	-3.12
0.9 Dead+1.0 Wind 120 deg - No Ice	42.73	34.81	20.62	2580.04	-4346.19	-3.08
1.2 Dead+1.0 Wind 150 deg - No Ice	56.97	20.03	35.26	4479.13	-2535.31	-2.00
0.9 Dead+1.0 Wind 150 deg - No Ice	42.73	20.03	35.26	4408.10	-2494.66	-1.98
1.2 Dead+1.0 Wind 180 deg - No Ice	56.97	0.21	40.67	5167.83	-30.20	-0.68
0.9 Dead+1.0 Wind 180 deg - No Ice	42.73	0.21	40.67	5085.82	-29.43	-0.68
1.2 Dead+1.0 Wind 210 deg - No Ice	56.97	-19.62	35.41	4505.34	2477.29	0.60
0.9 Dead+1.0 Wind 210 deg - No Ice	42.73	-19.62	35.41	4433.83	2438.16	0.58
1.2 Dead+1.0 Wind 240 deg - No Ice	56.97	-34.78	20.35	2585.74	4413.73	1.92
0.9 Dead+1.0 Wind 240 deg - No Ice	42.73	-34.78	20.35	2544.89	4343.62	1.88
1.2 Dead+1.0 Wind 270 deg - No Ice	56.97	-40.23	-0.32	-42.60	5104.23	3.49
0.9 Dead+1.0 Wind 270 deg - No Ice	42.73	-40.23	-0.32	-41.57	5023.14	3.45
1.2 Dead+1.0 Wind 300 deg - No Ice	56.97	-34.69	-20.71	-2635.22	4392.67	4.01
0.9 Dead+1.0 Wind 300 deg - No Ice	42.73	-34.69	-20.71	-2592.84	4322.98	3.97
1.2 Dead+1.0 Wind 330 deg - No Ice	56.97	-20.05	-35.34	-4488.86	2535.45	2.78
0.9 Dead+1.0 Wind 330 deg - No Ice	42.73	-20.05	-35.34	-4416.93	2495.40	2.76
1.2 Dead+1.0 Ice+1.0 Temp	103.18	0.00	-0.00	-6.00	-1.91	-0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	103.18	-0.03	-12.72	-1706.84	1.92	-0.04

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 30 deg+1.0 Ice+1.0 Temp	103.18	6.25	-11.06	-1487.52	-835.22	-0.50
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	103.18	10.93	-6.38	-862.03	-1463.11	-0.79
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	103.18	12.65	0.08	7.44	-1694.12	-0.89
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	103.18	10.94	6.40	850.43	-1465.00	-0.78
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	103.18	6.30	11.01	1466.40	-841.97	-0.35
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	103.18	0.03	12.71	1694.60	-5.97	0.10
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	103.18	-6.24	11.05	1474.36	829.97	0.48
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	103.18	-10.95	6.37	846.69	1463.08	0.78
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	103.18	-12.65	-0.05	-12.71	1689.98	1.01
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	103.18	-10.92	-6.42	-865.07	1456.14	0.95
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	103.18	-6.30	-11.02	-1480.20	838.45	0.51
Dead+Wind 0 deg - Service	47.47	-0.05	-8.84	-1114.28	5.25	0.22
Dead+Wind 30 deg - Service	47.47	4.26	-7.70	-972.48	-535.88	-0.15
Dead+Wind 60 deg - Service	47.47	7.53	-4.43	-561.24	-947.64	-0.44
Dead+Wind 90 deg - Service	47.47	8.73	0.11	14.62	-1100.37	-0.63
Dead+Wind 120 deg - Service	47.47	7.55	4.47	563.49	-951.80	-0.68
Dead+Wind 150 deg - Service	47.47	4.35	7.65	963.51	-546.66	-0.44
Dead+Wind 180 deg - Service	47.47	0.05	8.83	1111.82	-7.23	-0.15
Dead+Wind 210 deg - Service	47.47	-4.26	7.68	969.15	532.70	0.13
Dead+Wind 240 deg - Service	47.47	-7.55	4.42	555.79	949.63	0.42
Dead+Wind 270 deg - Service	47.47	-8.73	-0.07	-10.15	1098.27	0.77
Dead+Wind 300 deg - Service	47.47	-7.53	-4.49	-568.38	945.09	0.89
Dead+Wind 330 deg - Service	47.47	-4.35	-7.67	-967.54	545.22	0.61

Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.00	-47.47	0.00	0.00	47.47	0.00	0.000%
2	-0.22	-56.97	-40.71	0.22	56.97	40.71	0.000%
3	-0.22	-42.73	-40.71	0.22	42.73	40.72	0.000%
4	19.65	-56.97	-35.47	-19.65	56.97	35.47	0.000%
5	19.65	-42.73	-35.47	-19.65	42.73	35.47	0.000%
6	34.68	-56.97	-20.43	-34.68	56.97	20.43	0.000%
7	34.68	-42.73	-20.43	-34.68	42.73	20.43	0.000%
8	40.24	-56.97	0.49	-40.24	56.97	-0.49	0.000%
9	40.24	-42.73	0.49	-40.24	42.73	-0.49	0.000%
10	34.81	-56.97	20.62	-34.81	56.97	-20.62	0.000%
11	34.81	-42.73	20.62	-34.81	42.73	-20.62	0.000%
12	20.03	-56.97	35.26	-20.03	56.97	-35.26	0.000%
13	20.03	-42.73	35.26	-20.03	42.73	-35.26	0.000%
14	0.21	-56.97	40.67	-0.21	56.97	-40.67	0.000%
15	0.21	-42.73	40.67	-0.21	42.73	-40.67	0.000%
16	-19.62	-56.97	35.41	19.62	56.97	-35.41	0.000%
17	-19.62	-42.73	35.41	19.62	42.73	-35.41	0.000%
18	-34.78	-56.97	20.35	34.78	56.97	-20.35	0.000%

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
19	-34.78	-42.73	20.35	34.78	42.73	-20.35	0.000%
20	-40.23	-56.97	-0.32	40.23	56.97	0.32	0.000%
21	-40.23	-42.73	-0.32	40.23	42.73	0.32	0.000%
22	-34.69	-56.97	-20.71	34.69	56.97	20.71	0.000%
23	-34.69	-42.73	-20.71	34.69	42.73	20.71	0.000%
24	-20.05	-56.97	-35.34	20.05	56.97	35.34	0.000%
25	-20.05	-42.73	-35.34	20.05	42.73	35.34	0.000%
26	0.00	-103.18	0.00	-0.00	103.18	0.00	0.000%
27	-0.03	-103.18	-12.72	0.03	103.18	12.72	0.000%
28	6.24	-103.18	-11.06	-6.25	103.18	11.06	0.000%
29	10.93	-103.18	-6.38	-10.93	103.18	6.38	0.000%
30	12.65	-103.18	0.08	-12.65	103.18	-0.08	0.000%
31	10.94	-103.18	6.40	-10.94	103.18	-6.40	0.000%
32	6.30	-103.18	11.01	-6.30	103.18	-11.01	0.000%
33	0.03	-103.18	12.71	-0.03	103.18	-12.71	0.000%
34	-6.24	-103.18	11.05	6.24	103.18	-11.05	0.000%
35	-10.95	-103.18	6.37	10.95	103.18	-6.37	0.000%
36	-12.65	-103.18	-0.05	12.65	103.18	0.05	0.000%
37	-10.92	-103.18	-6.42	10.92	103.18	6.42	0.000%
38	-6.30	-103.18	-11.02	6.30	103.18	11.02	0.000%
39	-0.05	-47.47	-8.84	0.05	47.47	8.84	0.000%
40	4.26	-47.47	-7.70	-4.26	47.47	7.70	0.000%
41	7.53	-47.47	-4.43	-7.53	47.47	4.43	0.000%
42	8.73	-47.47	0.11	-8.73	47.47	-0.11	0.000%
43	7.55	-47.47	4.47	-7.55	47.47	-4.47	0.000%
44	4.35	-47.47	7.65	-4.35	47.47	-7.65	0.000%
45	0.05	-47.47	8.83	-0.05	47.47	-8.83	0.000%
46	-4.26	-47.47	7.68	4.26	47.47	-7.68	0.000%
47	-7.55	-47.47	4.42	7.55	47.47	-4.42	0.000%
48	-8.73	-47.47	-0.07	8.73	47.47	0.07	0.000%
49	-7.53	-47.47	-4.49	7.53	47.47	4.49	0.000%
50	-4.35	-47.47	-7.67	4.35	47.47	7.67	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	0.00007311
3	Yes	4	0.00000001	0.00094264
4	Yes	6	0.00000001	0.00044588
5	Yes	6	0.00000001	0.00013119
6	Yes	6	0.00000001	0.00046494
7	Yes	6	0.00000001	0.00013721
8	Yes	5	0.00000001	0.00006212
9	Yes	4	0.00000001	0.00089326
10	Yes	6	0.00000001	0.00044677
11	Yes	6	0.00000001	0.00013035
12	Yes	6	0.00000001	0.00046043
13	Yes	6	0.00000001	0.00013594
14	Yes	5	0.00000001	0.00015116
15	Yes	5	0.00000001	0.00006488
16	Yes	6	0.00000001	0.00045309
17	Yes	6	0.00000001	0.00013400
18	Yes	6	0.00000001	0.00044545
19	Yes	6	0.00000001	0.00013058
20	Yes	5	0.00000001	0.00047774
21	Yes	5	0.00000001	0.00021139
22	Yes	6	0.00000001	0.00047336
23	Yes	6	0.00000001	0.00013986
24	Yes	6	0.00000001	0.00044357
25	Yes	6	0.00000001	0.00012992
26	Yes	4	0.00000001	0.00010490
27	Yes	6	0.00000001	0.00041907
28	Yes	6	0.00000001	0.00076995

29	Yes	6	0.00000001	0.00079910
30	Yes	6	0.00000001	0.00041790
31	Yes	6	0.00000001	0.00075310
32	Yes	6	0.00000001	0.00076726
33	Yes	6	0.00000001	0.00041236
34	Yes	6	0.00000001	0.00076137
35	Yes	6	0.00000001	0.00074814
36	Yes	6	0.00000001	0.00041901
37	Yes	6	0.00000001	0.00079690
38	Yes	6	0.00000001	0.00076355
39	Yes	4	0.00000001	0.00019408
40	Yes	5	0.00000001	0.00009285
41	Yes	5	0.00000001	0.00010318
42	Yes	4	0.00000001	0.00026607
43	Yes	5	0.00000001	0.00009139
44	Yes	5	0.00000001	0.00010051
45	Yes	4	0.00000001	0.00019595
46	Yes	5	0.00000001	0.00009643
47	Yes	5	0.00000001	0.00009050
48	Yes	4	0.00000001	0.00035770
49	Yes	5	0.00000001	0.00010792
50	Yes	5	0.00000001	0.00009044

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	168 - 119.25	34.806	39	1.8273	0.0040
L2	123.5 - 78.5	18.857	39	1.5024	0.0037
L3	83.75 - 38.75	8.443	39	0.9516	0.0016
L4	45 - 0	2.464	39	0.4992	0.0006

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
168.00	800 10121 w/ Mount Pipe	39	34.806	1.8273	0.0040	38174
165.00	VHLP2.5-11	39	33.669	1.8114	0.0040	38174
160.00	LLPX310R-V1	39	31.778	1.7844	0.0040	23859
152.00	SC3-W100ASTX	39	28.782	1.7384	0.0040	11929
148.00	SC3-W100ASTX	39	27.306	1.7132	0.0039	9543
147.00	BPA7496-180-11 w/ Mount Pipe	39	26.940	1.7067	0.0039	9088
143.00	MPRD2449	39	25.490	1.6790	0.0039	7634
140.00	(2) CC807-11	39	24.419	1.6567	0.0039	6816
135.00	ANT450F6	39	22.670	1.6161	0.0039	5783
130.00	APX16DWV-16DWV-S-E-A20	39	20.973	1.5704	0.0039	5021
120.00	MX08FRO665-21 w/ Mount Pipe	39	17.765	1.4612	0.0036	4306
100.00	SC3-W100ASTX	39	12.177	1.1852	0.0025	4399
79.00	1' x 2-1/2"	39	7.486	0.8887	0.0014	4426
52.00	GPS-TMG-HR-26NCM	39	3.229	0.5751	0.0007	4143

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	168 - 119.25	161.252	14	8.4780	0.0185
L2	123.5 - 78.5	87.466	2	6.9756	0.0170

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L3	83.75 - 38.75	39.190	2	4.4197	0.0072
L4	45 - 0	11.440	2	2.3183	0.0028

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
168.00	800 10121 w/ Mount Pipe	14	161.252	8.4780	0.0185	8564
165.00	VHLP2.5-11	14	155.992	8.4046	0.0185	8564
160.00	LLPX310R-V1	14	147.246	8.2802	0.0185	5351
152.00	SC3-W100ASTX	14	133.389	8.0679	0.0184	2673
148.00	SC3-W100ASTX	14	126.562	7.9518	0.0183	2137
147.00	BPA7496-180-11 w/ Mount Pipe	14	124.869	7.9214	0.0183	2035
143.00	MPRD2449	2	118.162	7.7937	0.0181	1708
140.00	(2) CC807-11	2	113.207	7.6906	0.0179	1523
135.00	ANT450F6	2	105.115	7.5025	0.0178	1291
130.00	APX16DWV-16DWV-S-E-A20	2	97.261	7.2911	0.0177	1119
120.00	MX08FRO665-21 w/ Mount Pipe	2	82.410	6.7848	0.0165	955
100.00	SC3-W100ASTX	2	56.516	5.5040	0.0115	965
79.00	1' x 2-1/2"	2	34.748	4.1278	0.0062	962
52.00	GPS-TMG-HR-26NCM	2	14.989	2.6711	0.0033	895

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	KI/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	168 - 119.25 (1)	TP34.288x24x0.25	48.75	0.00	0.0	26.297 5	-17.30	1538.40	0.011
L2	119.25 - 78.5 (2)	TP42.387x32.8911x0.281 3	45.00	0.00	0.0	36.598 3	-28.50	2141.00	0.013
L3	78.5 - 38.75 (3)	TP50.213x40.7166x0.375	45.00	0.00	0.0	57.749 8	-40.72	3378.36	0.012
L4	38.75 - 0 (4)	TP57.64x48.1441x0.375	45.00	0.00	0.0	68.159 7	-56.93	3987.34	0.014

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{rx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{rx}}$	M_{uy} kip-ft	ϕM_{ry} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ry}}$
L1	168 - 119.25 (1)	TP34.288x24x0.25	760.93	1206.64	0.631	0.00	1206.64	0.000
L2	119.25 - 78.5 (2)	TP42.387x32.8911x0.281 3	2012.17	2002.83	1.005	0.00	2002.83	0.000
L3	78.5 - 38.75 (3)	TP50.213x40.7166x0.375	3399.19	3912.78	0.869	0.00	3912.78	0.000
L4	38.75 - 0 (4)	TP57.64x48.1441x0.375	5170.38	5107.74	1.012	0.00	5107.74	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	168 - 119.25 (1)	TP34.288x24x0.25	25.94	461.52	0.056	0.05	1339.48	0.000
L2	119.25 - 78.5 (2)	TP42.387x32.8911x0.281 3	33.84	642.30	0.053	0.73	2306.11	0.000
L3	78.5 - 38.75 (3)	TP50.213x40.7166x0.375	37.64	1013.51	0.037	0.91	4306.46	0.000
L4	38.75 - 0 (4)	TP57.64x48.1441x0.375	40.77	1196.20	0.034	1.01	5998.93	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	168 - 119.25 (1)	0.011	0.631	0.000	0.056	0.000	0.645	1.050	4.8.2
L2	119.25 - 78.5 (2)	0.013	1.005	0.000	0.053	0.000	1.021	1.050	4.8.2
L3	78.5 - 38.75 (3)	0.012	0.869	0.000	0.037	0.000	0.882	1.050	4.8.2
L4	38.75 - 0 (4)	0.014	1.012	0.000	0.034	0.000	1.028	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	168 - 119.25	Pole	TP34.288x24x0.25	1	-17.30	1615.32	61.4	Pass	
L2	119.25 - 78.5	Pole	TP42.387x32.8911x0.2813	2	-28.50	2248.05	97.2	Pass	
L3	78.5 - 38.75	Pole	TP50.213x40.7166x0.375	3	-40.72	3547.28	84.0	Pass	
L4	38.75 - 0	Pole	TP57.64x48.1441x0.375	4	-56.93	4186.71	97.9	Pass	
							Summary		
							Pole (L4)	97.9	Pass
							RATING =	97.9	Pass

APPENDIX B
BASE LEVEL DRAWING



(OTHER CONSIDERED EQUIPMENT)
(1) 1-1/4" TO 168 FT LEVEL

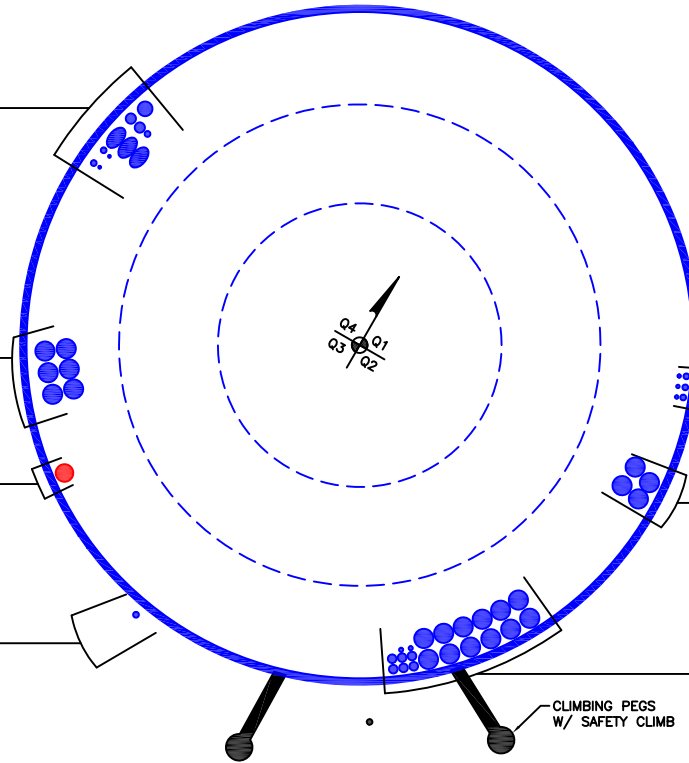
(OTHER CONSIDERED EQUIPMENT)
(1) 1/4" TO 140 FT LEVEL
(1) 1/4" TO 143 FT LEVEL

(OTHER CONSIDERED EQUIPMENT)
(1) EU 90-FR TO 100 FT LEVEL
(2) 1/2" TO 135 FT LEVEL
(2) 7/8" TO 140 FT LEVEL
(1) EU 90-FR TO 147 FT LEVEL
(1) 1/2" TO 147 FT LEVEL
(1) EU 90-FR TO 152 FT LEVEL

(OTHER CONSIDERED EQUIPMENT)
(6) 1-5/8" TO 120 FT LEVEL

(PROPOSED EQUIPMENT CONFIGURATION)
(1) 1-1/2" TO 120 FT LEVEL

(OTHER CONSIDERED EQUIPMENT)
(1) 1/2" TO 52 FT LEVEL



(OTHER CONSIDERED EQUIPMENT)
(3) 5/16" TO 160 FT LEVEL
(3) 1/2" TO 160 FT LEVEL

(OTHER CONSIDERED EQUIPMENT)
(4) 1-5/8" TO 130 FT LEVEL

(OTHER CONSIDERED EQUIPMENT)
(2) 3/8" TO 168 FT LEVEL
(6) 3/4" TO 168 FT LEVEL
(12) 1-5/8" TO 168 FT LEVEL

APPENDIX C
ADDITIONAL CALCULATIONS

Monopole Base Plate Connection

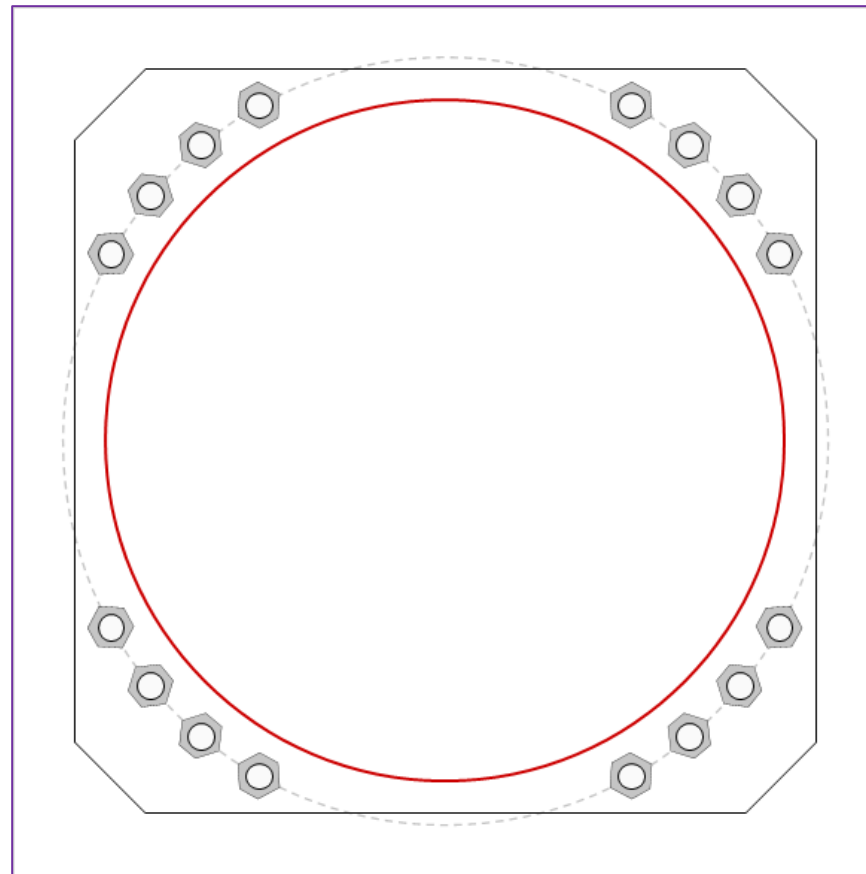


Site Info	
BU #	842875
Site Name	WINDSORDAY HILL
Order #	556624 Rev. 0

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	No
l_{ar} (in)	1.25

Applied Loads	
Moment (kip-ft)	5170.38
Axial Force (kips)	56.93
Shear Force (kips)	40.77

*TIA-222-H Section 15.5 Applied



Connection Properties	Analysis Results
-----------------------	------------------

Anchor Rod Data
(16) 2-1/4" ϕ bolts (A615-75 N; $F_y=75$ ksi, $F_u=100$ ksi) on 65" BC <i>Anchor Spacing: 6 in</i>
Base Plate Data
63" W x 3.25" Plate (A572-55; $F_y=55$ ksi, $F_u=70$ ksi); Clip: 6 in
Stiffener Data
N/A
Pole Data
57.64" x 0.375" 18-sided pole (A607-65; $F_y=65$ ksi, $F_u=80$ ksi)

Anchor Rod Summary <i>(units of kips, kip-in)</i>		
$P_{u,t} = 234.96$	$\phi P_{n,t} = 243.75$	Stress Rating
$V_u = 2.55$	$\phi V_n = 149.1$	91.8%
$M_u = n/a$	$\phi M_n = n/a$	Pass
Base Plate Summary		
Max Stress (ksi):	34.23	(Flexural)
Allowable Stress (ksi):	49.5	
Stress Rating:	65.9%	Pass

Drilled Pier Foundation

BU # :	842875
Site Name:	WINDSORDAY HILL
Order Number:	556624 Rev. 0
TIA-222 Revision:	H
Tower Type:	Monopole



Applied Loads		
	Comp.	Uplift
Moment (kip-ft)	5170.37	
Axial Force (kips)	56.97	
Shear Force (kips)	40.71	

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

Pier Design Data	
Depth	24 ft
Ext. Above Grade	0.5 ft
Pier Section 1	
<i>From 0.5' above grade to 24' below grade</i>	
Pier Diameter	8 ft
Rebar Quantity	24
Rebar Size	11
Clear Cover to Ties	4 in
Tie Size	5
Tie Spacing	18 in

Rebar 2, Fy Override (ksi)	
Rebar 3, Fy Override (ksi)	

[Rebar & Pier Options](#)
[Embedded Pole Inputs](#)
[Belled Pier Inputs](#)

Analysis Results

Soil Lateral Check	Compression	Uplift
D _{v=0} (ft from TOC)	8.73	-
Soil Safety Factor	3.84	-
Max Moment (kip-ft)	5492.45	-
Rating*	33.0%	-

Soil Vertical Check	Compression	Uplift
Skin Friction (kips)	1187.52	-
End Bearing (kips)	3015.93	-
Weight of Concrete (kips)	150.11	-
Total Capacity (kips)	4203.45	-
Axial (kips)	207.08	-
Rating*	4.7%	-

Reinforced Concrete Flexure	Compression	Uplift
Critical Depth (ft from TOC)	8.22	-
Critical Moment (kip-ft)	5490.35	-
Critical Moment Capacity	6993.91	-
Rating*	74.8%	-

Reinforced Concrete Shear	Compression	Uplift
Critical Depth (ft from TOC)	20.09	-
Critical Shear (kip)	677.39	-
Critical Shear Capacity	812.37	-
Rating*	79.4%	-

Structural Foundation Rating*	79.4%
Soil Interaction Rating*	33.0%

*Rating per TIA-222-H Section 15.5

Check Limitation	
Apply TIA-222-H Section 15.5:	<input checked="" type="checkbox"/>
N/A	<input type="checkbox"/>
Additional Longitudinal Rebar	
Input Effective Depths (else Actual):	<input checked="" type="checkbox"/>
Shear Design Options	
Check Shear along Depth of Pier:	<input checked="" type="checkbox"/>
Utilize Shear-Friction Methodology:	<input type="checkbox"/>
Override Critical Depth:	<input type="checkbox"/>

[Go to Soil Calculations](#)

Soil Profile				
Groundwater Depth	5	# of Layers	5	

Layer	Top (ft)	Bottom (ft)	Thickness (ft)	γ _{soil} (pcf)	γ _{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	5	5	100	150			0.000	0.000	0.00	0.00			Cohesionless
2	5	10	5	60	87.6		35	0.000	0.000	0.00	0.00			Cohesionless
3	10	15	5	55	87.6		33	0.000	0.000	0.00	0.00			Cohesionless
4	15	17	2	80	87.6		40	0.000	0.000	0.00	0.00			Cohesionless
5	17	24	7	95	87.6	20	0	9.000	9.000			80		Cohesive

=====
LPile for Windows, Version 2016-09.010

Analysis of Individual Piles and Drilled Shafts
Subjected to Lateral Loading Using the p-y Method
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Files Used for Analysis

Path to file locations:

\SA Models - Letters\Work Area\DHsu\WIP\LPile\842875\

Name of input data file:

842875_LPile (USCS units).lp9d

Name of output report file:

842875_LPile (USCS units).lp9o

Name of plot output file:

842875_LPile (USCS units).lp9p

Name of runtime message file:

842875_LPile (USCS units).lp9r

Date and Time of Analysis

Date: May 26, 2021

Time: 9:49:32

Problem Title

Project Name:

Job Number:

Client:

Engineer:

Description:

Program Options and Settings

Computational Options:

- Use unfactored loads in computations (conventional analysis)

Engineering Units Used for Data Input and Computations:

- US Customary System Units (pounds, feet, inches)

Analysis Control Options:

- Maximum number of iterations allowed = 500
- Deflection tolerance for convergence = 1.0000E-05 in
- Maximum allowable deflection = 100.0000 in
- Number of pile increments = 100

Loading Type and Number of Cycles of Loading:

- Static loading specified

- Use of p-y modification factors for p-y curves not selected
- No distributed lateral loads are entered
- Loading by lateral soil movements acting on pile not selected
- Input of shear resistance at the pile tip not selected
- Computation of pile-head foundation stiffness matrix not selected
- Push-over analysis of pile not selected
- Buckling analysis of pile not selected

Output Options:

- Output files use decimal points to denote decimal symbols.
- Values of pile-head deflection, bending moment, shear force, and soil reaction are printed for full length of pile.
- Printing Increment (nodal spacing of output points) = 1
- No p-y curves to be computed and reported for user-specified depths
- Print using wide report formats

Pile Structural Properties and Geometry

- Number of pile sections defined = 1
- Total length of pile = 24.500 ft
- Depth of ground surface below top of pile = 0.5000 ft

Pile diameters used for p-y curve computations are defined using 2 points.

p-y curves are computed using pile diameter values interpolated with depth over the length of the pile. A summary of values of pile diameter vs. depth follows.

Point No.	Depth Below Pile Head feet	Pile Diameter inches
1	0.000	96.0000
2	24.500	96.0000

Input Structural Properties for Pile Sections:

Pile Section No. 1:

Section 1 is a round drilled shaft, bored pile, or CIDH pile
 Length of section = 24.500000 ft
 Shaft Diameter = 96.000000 in
 Shear capacity of section = 0.0000 lbs

Ground Slope and Pile Batter Angles

Ground Slope Angle = 0.000 degrees
 = 0.000 radians
 Pile Batter Angle = 0.000 degrees
 = 0.000 radians

Soil and Rock Layering Information

The soil profile is modelled using 5 layers

Layer 1 is soft clay, p-y criteria by Matlock, 1970

Distance from top of pile to top of layer = 0.500000 ft
 Distance from top of pile to bottom of layer = 5.500000 ft

Effective unit weight at top of layer	=	100.000000 pcf
Effective unit weight at bottom of layer	=	100.000000 pcf
Undrained cohesion at top of layer	=	100.000000 psf
Undrained cohesion at bottom of layer	=	100.000000 psf
Epsilon-50 at top of layer	=	0.0000
Epsilon-50 at bottom of layer	=	0.0000

NOTE: Default values for Epsilon-50 will be computed for this layer.

Layer 2 is sand, p-y criteria by Reese et al., 1974

Distance from top of pile to top of layer	=	5.500000 ft
Distance from top of pile to bottom of layer	=	10.500000 ft
Effective unit weight at top of layer	=	60.000000 pcf
Effective unit weight at bottom of layer	=	60.000000 pcf
Friction angle at top of layer	=	35.000000 deg.
Friction angle at bottom of layer	=	35.000000 deg.
Subgrade k at top of layer	=	0.0000 pci
Subgrade k at bottom of layer	=	0.0000 pci

NOTE: Default values for subgrade k will be computed for this layer.

Layer 3 is sand, p-y criteria by Reese et al., 1974

Distance from top of pile to top of layer	=	10.500000 ft
Distance from top of pile to bottom of layer	=	15.500000 ft
Effective unit weight at top of layer	=	55.000000 pcf
Effective unit weight at bottom of layer	=	55.000000 pcf
Friction angle at top of layer	=	33.000000 deg.
Friction angle at bottom of layer	=	33.000000 deg.
Subgrade k at top of layer	=	0.0000 pci
Subgrade k at bottom of layer	=	0.0000 pci

NOTE: Default values for subgrade k will be computed for this layer.

Layer 4 is sand, p-y criteria by Reese et al., 1974

Distance from top of pile to top of layer	=	15.500000 ft
Distance from top of pile to bottom of layer	=	17.500000 ft
Effective unit weight at top of layer	=	80.000000 pcf
Effective unit weight at bottom of layer	=	80.000000 pcf

Friction angle at top of layer = 40.000000 deg.
 Friction angle at bottom of layer = 40.000000 deg.
 Subgrade k at top of layer = 0.0000 pci
 Subgrade k at bottom of layer = 0.0000 pci

NOTE: Default values for subgrade k will be computed for this layer.

Layer 5 is stiff clay with water-induced erosion

Distance from top of pile to top of layer = 17.500000 ft
 Distance from top of pile to bottom of layer = 24.500000 ft
 Effective unit weight at top of layer = 95.000000 pcf
 Effective unit weight at bottom of layer = 95.000000 pcf
 Undrained cohesion at top of layer = 8000. psf
 Undrained cohesion at bottom of layer = 8000. psf
 Epsilon-50 at top of layer = 0.0000
 Epsilon-50 at bottom of layer = 0.0000
 Subgrade k at top of layer = 0.0000 pci
 Subgrade k at bottom of layer = 0.0000 pci

NOTE: Default values for Epsilon-50 will be computed for this layer.

NOTE: Default values for subgrade k will be computed for this layer.

(Depth of the lowest soil layer extends 0.000 ft below the pile tip)

 Summary of Input Soil Properties

Layer Layer Num.	Soil Type Name (p-y Curve Type)	Layer Depth ft	Effective Unit Wt. pcf	Undrained Cohesion psf	Angle of Friction deg.	E50 or krm	kpy pci
1	Soft Clay	0.5000 5.5000	100.0000 100.0000	100.0000 100.0000	-- --	default default	-- --
2	Sand (Reese, et al.)	5.5000 10.5000	60.0000 60.0000	-- --	35.0000 35.0000	-- --	default default
3	Sand (Reese, et al.)	10.5000 15.5000	55.0000 55.0000	-- --	33.0000 33.0000	-- --	default default

4	Sand	15.5000	80.0000	--	40.0000	--	default
	(Reese, et al.)	17.5000	80.0000	--	40.0000	--	default
5	Stiff Clay	17.5000	95.0000	8000.	--	default	default
	with Free Water	24.5000	95.0000	8000.	--	default	default

 Static Loading Type

Static loading criteria were used when computing p-y curves for all analyses.

 Pile-head Loading and Pile-head Fixity Conditions

Number of loads specified = 1

Load No.	Load Type	Condition 1	Condition 2	Axial Thrust Force, lbs	Compute Top y vs. Pile Length
1	1	V = 40710. lbs	M = 62044440. in-lbs	56970.	No

V = shear force applied normal to pile axis

M = bending moment applied to pile head

y = lateral deflection normal to pile axis

S = pile slope relative to original pile batter angle

R = rotational stiffness applied to pile head

Values of top y vs. pile lengths can be computed only for load types with specified shear loading (Load Types 1, 2, and 3).

Thrust force is assumed to be acting axially for all pile batter angles.

 Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness

Axial thrust force values were determined from pile-head loading conditions

Number of Pile Sections Analyzed = 1

Pile Section No. 1:

Dimensions and Properties of Drilled Shaft (Bored Pile):

Length of Section	=	24.500000 ft
Shaft Diameter	=	96.000000 in
Concrete Cover Thickness	=	4.625000 in
Number of Reinforcing Bars	=	24 bars
Yield Stress of Reinforcing Bars	=	60000. psi
Modulus of Elasticity of Reinforcing Bars	=	29000000. psi
Gross Area of Shaft	=	7238. sq. in.
Total Area of Reinforcing Steel	=	37.440000 sq. in.
Area Ratio of Steel Reinforcement	=	0.52 percent
Edge-to-Edge Bar Spacing	=	9.729105 in
Maximum Concrete Aggregate Size	=	0.750000 in
Ratio of Bar Spacing to Aggregate Size	=	12.97
Offset of Center of Rebar Cage from Center of Pile	=	0.0000 in

Axial Structural Capacities:

Nom. Axial Structural Capacity = $0.85 F_c A_c + F_y A_s$	=	20608.413 kips
Tensile Load for Cracking of Concrete	=	-2732.748 kips
Nominal Axial Tensile Capacity	=	-2246.400 kips

Reinforcing Bar Dimensions and Positions Used in Computations:

Bar Number	Bar Diam. inches	Bar Area sq. in.	X inches	Y inches
1	1.410000	1.560000	42.670000	0.000000
2	1.410000	1.560000	41.216055	11.043809
3	1.410000	1.560000	36.953304	21.335000
4	1.410000	1.560000	30.172246	30.172246
5	1.410000	1.560000	21.335000	36.953304
6	1.410000	1.560000	11.043809	41.216055
7	1.410000	1.560000	0.000000	42.670000

8	1.410000	1.560000	-11.043809	41.216055
9	1.410000	1.560000	-21.335000	36.953304
10	1.410000	1.560000	-30.172246	30.172246
11	1.410000	1.560000	-36.953304	21.335000
12	1.410000	1.560000	-41.216055	11.043809
13	1.410000	1.560000	-42.670000	0.000000
14	1.410000	1.560000	-41.216055	-11.043809
15	1.410000	1.560000	-36.953304	-21.335000
16	1.410000	1.560000	-30.172246	-30.172246
17	1.410000	1.560000	-21.335000	-36.953304
18	1.410000	1.560000	-11.043809	-41.216055
19	1.410000	1.560000	0.000000	-42.670000
20	1.410000	1.560000	11.043809	-41.216055
21	1.410000	1.560000	21.335000	-36.953304
22	1.410000	1.560000	30.172246	-30.172246
23	1.410000	1.560000	36.953304	-21.335000
24	1.410000	1.560000	41.216055	-11.043809

NOTE: The positions of the above rebars were computed by LPILE

Minimum spacing between any two bars not equal to zero = 9.729 inches
between bars 9 and 10.

Ratio of bar spacing to maximum aggregate size = 12.97

Concrete Properties:

Compressive Strength of Concrete	=	3000. psi
Modulus of Elasticity of Concrete	=	3122019. psi
Modulus of Rupture of Concrete	=	-410.791918 psi
Compression Strain at Peak Stress	=	0.001634
Tensile Strain at Fracture of Concrete	=	-0.0001160
Maximum Coarse Aggregate Size	=	0.750000 in

Number of Axial Thrust Force Values Determined from Pile-head Loadings = 1

Number	Axial Thrust Force
	kips

 1 56.970

Definitions of Run Messages and Notes:

- C = concrete in section has cracked in tension.
- Y = stress in reinforcing steel has reached yield stress.
- T = ACI 318 criteria for tension-controlled section met, tensile strain in reinforcement exceeds 0.005 while simultaneously compressive strain in concrete more than 0.003. See ACI 318, Section 10.3.4.
- Z = depth of tensile zone in concrete section is less than 10 percent of section depth.

Bending Stiffness (EI) = Computed Bending Moment / Curvature.
 Position of neutral axis is measured from edge of compression side of pile.
 Compressive stresses and strains are positive in sign.
 Tensile stresses and strains are negative in sign.

Axial Thrust Force = 56.970 kips

Bending Curvature rad/in.	Bending Moment in-kip	Bending Stiffness kip-in ²	Depth to N Axis in	Max Comp Strain in/in	Max Tens Strain in/in	Max Conc Stress ksi	Max Steel Stress ksi	Run Msg
3.12500E-07	5040.	1.61287E+10	54.6461158	0.00001708	-0.00001292	0.0618498	0.4908804	
6.25000E-07	10052.	1.60825E+10	51.3355049	0.00003208	-0.00002792	0.1156082	0.9217560	
9.37500E-07	15033.	1.60356E+10	50.2320573	0.00004709	-0.00004291	0.1688706	1.3526341	
0.00000125	19986.	1.59884E+10	49.6803859	0.00006210	-0.00005790	0.2216368	1.7835140	
0.00000156	24908.	1.59412E+10	49.3494238	0.00007711	-0.00007289	0.2739070	2.2143958	
0.00000188	29801.	1.58940E+10	49.1288155	0.00009212	-0.00008788	0.3256809	2.6452793	
0.00000219	34665.	1.58467E+10	48.9712665	0.0001071	-0.0001029	0.3769587	3.0761647	
0.00000250	34665.	1.38659E+10	23.7950512	0.00005949	-0.0001805	0.2102688	-5.2000588	C
0.00000281	34665.	1.23252E+10	23.3883687	0.00006578	-0.0002042	0.2319814	-5.8832362	C
0.00000313	34665.	1.10927E+10	23.0533580	0.00007204	-0.0002280	0.2535029	-6.5672894	C
0.00000344	34665.	1.00843E+10	22.7803850	0.00007831	-0.0002517	0.2749541	-7.2512304	C
0.00000375	34665.	9243910851.	22.5536313	0.00008458	-0.0002754	0.2963306	-7.9350926	C
0.00000406	34665.	8532840786.	22.3531398	0.00009081	-0.0002992	0.3175012	-8.6199707	C
0.00000438	34665.	7923352158.	22.1822052	0.00009705	-0.0003230	0.3386026	-9.3047327	C
0.00000469	34665.	7395128681.	22.0349190	0.0001033	-0.0003467	0.3596344	-9.9893782	C

0.00000500	34665.	6932933138.	21.9068497	0.0001095	-0.0003705	0.3805966	-10.6739068	C
0.00000531	34665.	6525113542.	21.7946085	0.0001158	-0.0003942	0.4014891	-11.3583181	C
0.00000563	34665.	6162607234.	21.6955599	0.0001220	-0.0004180	0.4223118	-12.0426118	C
0.00000594	34665.	5838259485.	21.6076230	0.0001283	-0.0004417	0.4430645	-12.7267874	C
0.00000625	34665.	5546346511.	21.5253050	0.0001345	-0.0004655	0.4636663	-13.4115384	C
0.00000656	34665.	5282234772.	21.4511023	0.0001408	-0.0004892	0.4841909	-14.0962371	C
0.00000688	34665.	5042133192.	21.3842656	0.0001470	-0.0005130	0.5046463	-14.7808120	C
0.00000719	34665.	4822910009.	21.3238361	0.0001533	-0.0005367	0.5250326	-15.4652629	C
0.00000750	34665.	4621955426.	21.2690150	0.0001595	-0.0005605	0.5453495	-16.1495892	C
0.00000781	34665.	4437077209.	21.2191313	0.0001658	-0.0005842	0.5655969	-16.8337905	C
0.00000813	34665.	4266420393.	21.1736171	0.0001720	-0.0006080	0.5857747	-17.5178665	C
0.00000844	34665.	4108404823.	21.1319887	0.0001783	-0.0006317	0.6058828	-18.2018165	C
0.00000875	34665.	3961676079.	21.0938317	0.0001846	-0.0006554	0.6259210	-18.8856402	C
0.00000906	34665.	3825066559.	21.0587886	0.0001908	-0.0006792	0.6458893	-19.5693371	C
0.00000938	34665.	3697564340.	21.0265498	0.0001971	-0.0007029	0.6657874	-20.2529067	C
0.00000969	34665.	3578288071.	20.9968454	0.0002034	-0.0007266	0.6856153	-20.9363487	C
0.00001000	34665.	3466466569.	20.9694396	0.0002097	-0.0007503	0.7053728	-21.6196625	C
0.00001031	34665.	3361422128.	20.9441248	0.0002160	-0.0007740	0.7250598	-22.3028476	C
0.00001063	34665.	3262556771.	20.9207181	0.0002223	-0.0007977	0.7446762	-22.9859037	C
0.00001094	34665.	3169340863.	20.8990575	0.0002286	-0.0008214	0.7642218	-23.6688302	C
0.00001125	34665.	3081303617.	20.8789990	0.0002349	-0.0008451	0.7836964	-24.3516266	C
0.00001156	34665.	2998025141.	20.8604139	0.0002412	-0.0008688	0.8031001	-25.0342924	C
0.00001188	34665.	2919129742.	20.8431875	0.0002475	-0.0008925	0.8224325	-25.7168276	C
0.00001219	34665.	2844280262.	20.8272166	0.0002538	-0.0009162	0.8416937	-26.3992309	C
0.00001281	34665.	2705534883.	20.7986791	0.0002665	-0.0009635	0.8800016	-27.7636408	C
0.00001344	34665.	2579696052.	20.7741613	0.0002792	-0.0010108	0.9180225	-29.1275190	C
0.00001406	34665.	2465042894.	20.7531372	0.0002918	-0.0010582	0.9557555	-30.4908612	C
0.00001469	34665.	2360147451.	20.7351702	0.0003045	-0.0011055	0.9931993	-31.8536634	C
0.00001531	35116.	2293313501.	20.7198954	0.0003173	-0.0011527	1.0303529	-33.2159218	C
0.00001594	36468.	2288185511.	20.7070051	0.0003300	-0.0012000	1.0672150	-34.5776313	C
0.00001656	37818.	2283365038.	20.6962382	0.0003428	-0.0012472	1.1037847	-35.9387883	C
0.00001719	39167.	2278818022.	20.6873717	0.0003556	-0.0012944	1.1400606	-37.2993883	C
0.00001781	40515.	2274515177.	20.6802140	0.0003684	-0.0013416	1.1760415	-38.6594270	C
0.00001844	41861.	2270431178.	20.6745996	0.0003812	-0.0013888	1.2117264	-40.0189001	C
0.00001906	43206.	2266544019.	20.6703848	0.0003940	-0.0014360	1.2471139	-41.3778029	C
0.00001969	44550.	2262834480.	20.6674444	0.0004069	-0.0014831	1.2822029	-42.7361309	C
0.00002031	45892.	2259285701.	20.6656686	0.0004198	-0.0015302	1.3169921	-44.0938795	C
0.00002094	47233.	2255882828.	20.6649608	0.0004327	-0.0015773	1.3514802	-45.4510441	C
0.00002156	48572.	2252612724.	20.6652358	0.0004456	-0.0016244	1.3856660	-46.8076197	C
0.00002219	49910.	2249463727.	20.6664180	0.0004585	-0.0016715	1.4195482	-48.1636016	C
0.00002281	51247.	2246425446.	20.6684403	0.0004715	-0.0017185	1.4531255	-49.5189849	C
0.00002344	52582.	2243488593.	20.6712429	0.0004845	-0.0017655	1.4863966	-50.8737646	C

0.00002406	53916.	2240644838.	20.6747722	0.0004975	-0.0018125	1.5193601	-52.2279355	C
0.00002469	55248.	2237886689.	20.6789801	0.0005105	-0.0018595	1.5520147	-53.5814927	C
0.00002531	56579.	2235207391.	20.6838236	0.0005236	-0.0019064	1.5843591	-54.9344308	C
0.00002594	57908.	2232600829.	20.6892637	0.0005366	-0.0019534	1.6163919	-56.2867446	C
0.00002656	59236.	2230061463.	20.6952653	0.0005497	-0.0020003	1.6481116	-57.6384286	C
0.00002719	60562.	2227584253.	20.7017966	0.0005628	-0.0020472	1.6795169	-58.9894774	C
0.00002781	61887.	2225164608.	20.7088288	0.0005760	-0.0020940	1.7106062	-60.0000000	CY
0.00002844	63211.	2222798335.	20.7163358	0.0005891	-0.0021409	1.7413783	-60.0000000	CY
0.00002906	64533.	2220481594.	20.7242936	0.0006023	-0.0021877	1.7718316	-60.0000000	CY
0.00002969	65823.	2217180565.	20.7295679	0.0006154	-0.0022346	1.8017501	-60.0000000	CY
0.00003031	66946.	2208526205.	20.7187082	0.0006280	-0.0022820	1.8301934	-60.0000000	CY
0.00003094	67872.	2193840391.	20.6891337	0.0006401	-0.0023299	1.8569519	-60.0000000	CY
0.00003156	68778.	2179119533.	20.6594376	0.0006521	-0.0023779	1.8833094	-60.0000000	CY
0.00003219	69656.	2164081103.	20.6278648	0.0006640	-0.0024260	1.9091435	-60.0000000	CY
0.00003281	70329.	2143366773.	20.5747046	0.0006751	-0.0024749	1.9330378	-60.0000000	CY
0.00003344	70983.	2122843727.	20.5219328	0.0006862	-0.0025238	1.9565518	-60.0000000	CY
0.00003406	71635.	2103053030.	20.4715177	0.0006973	-0.0025727	1.9798344	-60.0000000	CY
0.00003469	72287.	2083954976.	20.4233344	0.0007084	-0.0026216	2.0028848	-60.0000000	CY
0.00003531	72936.	2065434139.	20.3769584	0.0007196	-0.0026704	2.0256793	-60.0000000	CY
0.00003594	73520.	2045772908.	20.3255523	0.0007304	-0.0027196	2.0477163	-60.0000000	CY
0.00003656	73978.	2023329077.	20.2624631	0.0007408	-0.0027692	2.0684957	-60.0000000	CY
0.00003719	74417.	2001133322.	20.1998059	0.0007512	-0.0028188	2.0889187	-60.0000000	CY
0.00003969	76169.	1919211113.	19.9718934	0.0007926	-0.0030174	2.1685761	-60.0000000	CY
0.00004219	77801.	1844170948.	19.7630526	0.0008338	-0.0032162	2.2439726	-60.0000000	CY
0.00004469	78898.	1765556735.	19.5141058	0.0008720	-0.0034180	2.3108017	-60.0000000	CY
0.00004719	79975.	1694840698.	19.2881912	0.0009102	-0.0036198	2.3742740	-60.0000000	CY
0.00004969	81047.	1631125341.	19.0883097	0.0009485	-0.0038215	2.4349420	-60.0000000	CY
0.00005219	81998.	1571221033.	18.8966716	0.0009862	-0.0040238	2.4916569	-60.0000000	CY
0.00005469	82624.	1510838118.	18.6846144	0.0010218	-0.0042282	2.5424015	-60.0000000	CY
0.00005719	83225.	1455292723.	18.4787889	0.0010568	-0.0044332	2.5895227	-60.0000000	CY
0.00005969	83821.	1404335950.	18.2925705	0.0010918	-0.0046382	2.6342652	-60.0000000	CY
0.00006219	84414.	1357413180.	18.1236323	0.0011271	-0.0048429	2.6765996	-60.0000000	CY
0.00006469	85003.	1314055495.	17.9700087	0.0011624	-0.0050476	2.7164958	-60.0000000	CY
0.00006719	85588.	1273863736.	17.8300279	0.0011980	-0.0052520	2.7539227	-60.0000000	CY
0.00006969	86027.	1234467979.	17.6764444	0.0012318	-0.0054582	2.7870919	-60.0000000	CY
0.00007219	86326.	1195851681.	17.5097974	0.0012640	-0.0056660	2.8163092	-60.0000000	CY
0.00007469	86621.	1159785538.	17.3560036	0.0012963	-0.0058737	2.8434775	-60.0000000	CY
0.00007719	86915.	1126021080.	17.2138385	0.0013287	-0.0060813	2.8685717	-60.0000000	CY
0.00007969	87205.	1094341003.	17.0822319	0.0013612	-0.0062888	2.8915659	-60.0000000	CY
0.00008219	87493.	1064554426.	16.9602450	0.0013939	-0.0064961	2.9124340	-60.0000000	CY
0.00008469	87778.	1036492991.	16.8470506	0.0014267	-0.0067033	2.9311489	-60.0000000	CY
0.00008719	88055.	1009948151.	16.7355674	0.0014591	-0.0069109	2.9474141	-60.0000000	CY

0.00008969	88325.	984808155.	16.6270056	0.0014912	-0.0071188	2.9613678	-60.0000000	CY
0.00009219	88592.	961002885.	16.5258378	0.0015235	-0.0073265	2.9732226	-60.0000000	CY
0.00009469	88857.	938426041.	16.4315061	0.0015559	-0.0075341	2.9829501	-60.0000000	CY
0.00009719	89113.	916917125.	16.3423690	0.0015883	-0.0077417	2.9904981	-60.0000000	CY
0.00009969	89358.	896381793.	16.2577971	0.0016207	-0.0079493	2.9958565	-60.0000000	CY
0.0001022	89504.	875875383.	16.1612011	0.0016515	-0.0081585	2.9989101	-60.0000000	CY
0.0001047	89634.	856201540.	16.0680937	0.0016821	-0.0083679	2.9999968	-60.0000000	CY
0.0001072	89751.	837331112.	15.9790992	0.0017128	-0.0085772	2.9942357	-60.0000000	CY
0.0001097	89867.	819303704.	15.8952896	0.0017435	-0.0087865	2.9974105	-60.0000000	CY
0.0001122	89979.	802039638.	15.8131424	0.0017740	-0.0089960	2.9995008	-60.0000000	CY
0.0001147	90082.	785459313.	15.7287203	0.0018039	-0.0092061	2.9989242	-60.0000000	CY
0.0001172	90183.	769565575.	15.6493019	0.0018339	-0.0094161	2.9934375	-60.0000000	CY
0.0001197	90283.	754324755.	15.5741024	0.0018640	-0.0096260	2.9963751	-60.0000000	CY
0.0001222	90382.	739696560.	15.5028772	0.0018943	-0.0098357	2.9988088	-60.0000000	CY
0.0001247	90479.	725643925.	15.4354021	0.0019246	-0.0100454	2.9999243	-60.0000000	CY
0.0001272	90574.	712125856.	15.3718563	0.0019551	-0.0102549	2.9966144	-60.0000000	CY
0.0001297	90667.	699116890.	15.3117094	0.0019857	-0.0104643	2.9921483	-60.0000000	CY
0.0001322	90759.	686591783.	15.2545663	0.0020165	-0.0106735	2.9957830	-60.0000000	CY
0.0001347	90850.	674523440.	15.2002712	0.0020473	-0.0108827	2.9983056	-60.0000000	CY
0.0001372	90940.	662886738.	15.1486798	0.0020782	-0.0110918	2.9997013	-60.0000000	CY
0.0001522	91452.	600913738.	14.8902145	0.0022661	-0.0123439	2.9993027	60.0000000	CY
0.0001672	91886.	549599102.	14.6605477	0.0024511	-0.0135989	2.9952138	60.0000000	CY
0.0001822	92128.	505679109.	14.4354531	0.0026300	-0.0148600	2.9928441	60.0000000	CY
0.0001972	92260.	467882042.	14.2293018	0.0028058	-0.0161242	2.9961962	60.0000000	CY
0.0002122	92384.	435387843.	14.0605907	0.0029835	-0.0173865	2.9946258	60.0000000	CY
0.0002272	92496.	407135844.	13.9229558	0.0031631	-0.0186469	2.9873236	60.0000000	CYT
0.0002422	92589.	382301355.	13.7787099	0.0033370	-0.0199130	2.9981762	60.0000000	CYT
0.0002572	92656.	360264686.	13.6694280	0.0035156	-0.0211744	2.9937068	60.0000000	CYT
0.0002722	92715.	340630679.	13.5789021	0.0036960	-0.0224340	2.9786680	60.0000000	CYT
0.0002872	92768.	323022775.	13.5042908	0.0038783	-0.0236917	2.9890382	60.0000000	CYT

Summary of Results for Nominal (Unfactored) Moment Capacity for Section 1

Moment values interpolated at maximum compressive strain = 0.003
or maximum developed moment if pile fails at smaller strains.

Load No.	Axial Thrust kips	Nominal Mom. Cap. in-kip	Max. Comp. Strain
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1 56.970 92394.186 0.00300000

Note that the values of moment capacity in the table above are not factored by a strength reduction factor (phi-factor).

In ACI 318, the value of the strength reduction factor depends on whether the transverse reinforcing steel bars are tied hoops (0.65) or spirals (0.70).

The above values should be multiplied by the appropriate strength reduction factor to compute ultimate moment capacity according to ACI 318, Section 9.3.2.2 or the value required by the design standard being followed.

The following table presents factored moment capacities and corresponding bending stiffnesses computed for common resistance factor values used for reinforced concrete sections.

Axial Load No.	Resist. Factor for Moment	Nominal Moment Cap in-kips	Ult. (Fac) Ax. Thrust kips	Ult. (Fac) Moment Cap in-kips	Bend. Stiff. at Ult Mom kip-in ²
1	0.65	92394.	37.030500	60056.	2.2285E+09
1	0.70	92394.	39.879000	64676.	2.2201E+09
1	0.75	92394.	42.727500	69296.	2.1703E+09

 Layering Correction Equivalent Depths of Soil & Rock Layers

Layer No.	Top of Layer Below Pile Head ft	Equivalent Top Depth Below Grnd Surf ft	Same Layer Type As Layer Above	Layer is Rock or is Below Rock Layer	F0 Integral for Layer lbs	F1 Integral for Layer lbs
1	0.5000	0.00	N.A.	No	0.00	22625.
2	5.5000	2.2931	No	No	22625.	320659.
3	10.5000	7.2931	Yes	No	343284.	442124.
4	15.5000	12.2931	Yes	No	785408.	366636.

3.9200	0.9306	6.39E+07	36804.	-0.00742	0.00	2.22E+12	-127.9792	404.3376	0.00
4.1650	0.9089	6.40E+07	36422.	-0.00733	0.00	2.22E+12	-131.9602	426.8600	0.00
4.4100	0.8874	6.41E+07	36028.	-0.00725	0.00	2.22E+12	-135.8580	450.0809	0.00
4.6550	0.8663	6.42E+07	35623.	-0.00716	0.00	2.22E+12	-139.6720	474.0301	0.00
4.9000	0.8453	6.43E+07	35207.	-0.00708	0.00	2.22E+12	-143.4016	498.7387	0.00
5.1450	0.8247	6.44E+07	34780.	-0.00699	0.00	2.22E+12	-147.0463	524.2398	0.00
5.3900	0.8042	6.45E+07	34343.	-0.00691	0.00	2.22E+12	-150.6054	550.5682	0.00
5.6350	0.7840	6.46E+07	30665.	-0.00682	0.00	2.22E+12	-2351.	8817.	0.00
5.8800	0.7641	6.47E+07	23641.	-0.00673	0.00	2.22E+12	-2426.	9335.	0.00
6.1250	0.7444	6.48E+07	16400.	-0.00665	0.00	2.22E+12	-2500.	9872.	0.00
6.3700	0.7250	6.48E+07	8946.	-0.00656	0.00	2.22E+12	-2572.	10428.	0.00
6.6150	0.7059	6.48E+07	1282.	-0.00648	0.00	2.22E+12	-2642.	11003.	0.00
6.8600	0.6869	6.48E+07	-6585.	-0.00639	0.00	2.22E+12	-2710.	11598.	0.00
7.1050	0.6683	6.48E+07	-14649.	-0.00631	0.00	2.22E+12	-2776.	12214.	0.00
7.3500	0.6499	6.48E+07	-22911.	-0.00622	0.00	2.22E+12	-2844.	12865.	0.00
7.5950	0.6317	6.47E+07	-31370.	-0.00613	0.00	2.22E+12	-2911.	13549.	0.00
7.8400	0.6138	6.46E+07	-40026.	-0.00605	0.00	2.22E+12	-2977.	14260.	0.00
8.0850	0.5961	6.44E+07	-48872.	-0.00596	0.00	2.22E+12	-3041.	14997.	0.00
8.3300	0.5787	6.43E+07	-57904.	-0.00588	0.00	2.22E+12	-3103.	15763.	0.00
8.5750	0.5616	6.41E+07	-67114.	-0.00579	0.00	2.22E+12	-3163.	16558.	0.00
8.8200	0.5447	6.39E+07	-76497.	-0.00571	0.00	2.22E+12	-3220.	17383.	0.00
9.0650	0.5280	6.37E+07	-86046.	-0.00562	0.00	2.22E+12	-3276.	18239.	0.00
9.3100	0.5116	6.34E+07	-95755.	-0.00554	0.00	2.22E+12	-3329.	19128.	0.00
9.5550	0.4954	6.31E+07	-105615.	-0.00546	0.00	2.22E+12	-3379.	20052.	0.00
9.8000	0.4795	6.28E+07	-115619.	-0.00537	0.00	2.22E+12	-3427.	21010.	0.00
10.0450	0.4638	6.24E+07	-125760.	-0.00529	0.00	2.22E+12	-3472.	22006.	0.00
10.2900	0.4484	6.20E+07	-136029.	-0.00521	0.00	2.22E+12	-3514.	23041.	0.00
10.5350	0.4332	6.16E+07	-145770.	-0.00513	0.00	2.23E+12	-3113.	21124.	0.00
10.7800	0.4183	6.12E+07	-154958.	-0.00505	0.00	2.23E+12	-3138.	22056.	0.00
11.0250	0.4035	6.07E+07	-164217.	-0.00496	0.00	2.23E+12	-3160.	23025.	0.00
11.2700	0.3891	6.02E+07	-173539.	-0.00489	0.00	2.23E+12	-3181.	24040.	0.00
11.5150	0.3748	5.97E+07	-182923.	-0.00481	0.00	2.23E+12	-3202.	25119.	0.00
11.7600	0.3608	5.91E+07	-192270.	-0.00473	0.00	2.23E+12	-3156.	25719.	0.00
12.0050	0.3470	5.86E+07	-201470.	-0.00465	0.00	2.23E+12	-3102.	26279.	0.00
12.2500	0.3335	5.80E+07	-210504.	-0.00457	0.00	2.23E+12	-3044.	26838.	0.00
12.4950	0.3201	5.73E+07	-219364.	-0.00450	0.00	2.23E+12	-2983.	27398.	0.00
12.7400	0.3070	5.67E+07	-228042.	-0.00442	0.00	2.24E+12	-2920.	27958.	0.00
12.9850	0.2941	5.60E+07	-236527.	-0.00435	0.00	2.24E+12	-2853.	28517.	0.00
13.2300	0.2814	5.53E+07	-244813.	-0.00428	0.00	2.24E+12	-2784.	29077.	0.00
13.4750	0.2690	5.45E+07	-252890.	-0.00420	0.00	2.24E+12	-2711.	29636.	0.00
13.7200	0.2567	5.38E+07	-260752.	-0.00413	0.00	2.24E+12	-2637.	30196.	0.00
13.9650	0.2447	5.30E+07	-268391.	-0.00406	0.00	2.24E+12	-2560.	30756.	0.00

14.2100	0.2328	5.22E+07	-275800.	-0.00399	0.00	2.24E+12	-2480.	31315.	0.00
14.4550	0.2212	5.14E+07	-282971.	-0.00393	0.00	2.25E+12	-2398.	31875.	0.00
14.7000	0.2098	5.06E+07	-289899.	-0.00386	0.00	2.25E+12	-2314.	32435.	0.00
14.9450	0.1985	4.97E+07	-296576.	-0.00379	0.00	2.25E+12	-2228.	32994.	0.00
15.1900	0.1875	4.88E+07	-302996.	-0.00373	0.00	2.25E+12	-2140.	33554.	0.00
15.4350	0.1766	4.79E+07	-309153.	-0.00367	0.00	2.25E+12	-2049.	34113.	0.00
15.6800	0.1659	4.70E+07	-318661.	-0.00360	0.00	2.26E+12	-4419.	78301.	0.00
15.9250	0.1554	4.60E+07	-331338.	-0.00354	0.00	2.26E+12	-4206.	79565.	0.00
16.1700	0.1451	4.50E+07	-343384.	-0.00348	0.00	2.26E+12	-3989.	80828.	0.00
16.4150	0.1349	4.40E+07	-354785.	-0.00343	0.00	2.26E+12	-3767.	82092.	0.00
16.6600	0.1249	4.30E+07	-365530.	-0.00337	0.00	2.27E+12	-3542.	83356.	0.00
16.9050	0.1151	4.19E+07	-375607.	-0.00331	0.00	2.27E+12	-3313.	84620.	0.00
17.1500	0.1054	4.08E+07	-385005.	-0.00326	0.00	2.27E+12	-3080.	85883.	0.00
17.3950	0.09593	3.96E+07	-393713.	-0.00321	0.00	2.28E+12	-2844.	87147.	0.00
17.6400	0.08657	3.84E+07	-418367.	-0.00316	0.00	2.28E+12	-13928.	472995.	0.00
17.8850	0.07736	3.72E+07	-458195.	-0.00311	0.00	2.29E+12	-13166.	500373.	0.00
18.1300	0.06828	3.57E+07	-495732.	-0.00306	0.00	2.29E+12	-12370.	532583.	0.00
18.3750	0.05934	3.42E+07	-530867.	-0.00304	0.00	1.59E+13	-11532.	571289.	0.00
18.6200	0.05042	3.26E+07	-563443.	-0.00303	0.00	1.59E+13	-10630.	619765.	0.00
18.8650	0.04152	3.09E+07	-593248.	-0.00303	0.00	1.59E+13	-9646.	682983.	0.00
19.1100	0.03264	2.91E+07	-619998.	-0.00302	0.00	1.59E+13	-8552.	770372.	0.00
19.3550	0.02377	2.73E+07	-643296.	-0.00301	0.00	1.59E+13	-7297.	902760.	0.00
19.6000	0.01491	2.54E+07	-662520.	-0.00301	0.00	1.59E+13	-5780.	1139732.	0.00
19.8450	0.00607	2.34E+07	-675159.	-0.00301	0.00	1.60E+13	-2818.	1364983.	0.00
20.0900	-0.00276	2.14E+07	-677394.	-0.00300	0.00	1.60E+13	1297.	1382270.	0.00
20.3350	-0.01158	1.94E+07	-668000.	-0.00300	0.00	1.60E+13	5093.	1293438.	0.00
20.5800	-0.02038	1.75E+07	-650578.	-0.00299	0.00	1.60E+13	6758.	974772.	0.00
20.8250	-0.02918	1.56E+07	-628757.	-0.00299	0.00	1.60E+13	8086.	814695.	0.00
21.0700	-0.03797	1.38E+07	-603311.	-0.00299	0.00	1.60E+13	9224.	714209.	0.00
21.3150	-0.04675	1.20E+07	-574707.	-0.00299	0.00	1.61E+13	10235.	643648.	0.00
21.5600	-0.05553	1.04E+07	-543264.	-0.00298	0.00	1.61E+13	11154.	590603.	0.00
21.8050	-0.06430	8839877.	-509223.	-0.00298	0.00	1.61E+13	12003.	548851.	0.00
22.0500	-0.07306	7395135.	-472771.	-0.00298	0.00	1.61E+13	12795.	514878.	0.00
22.2950	-0.08182	6060985.	-434058.	-0.00298	0.00	1.61E+13	13540.	486534.	0.00
22.5400	-0.09058	4843872.	-393212.	-0.00298	0.00	1.61E+13	14246.	462416.	0.00
22.7850	-0.09933	3749899.	-350338.	-0.00298	0.00	1.61E+13	14919.	441569.	0.00
23.0300	-0.1081	2784880.	-305530.	-0.00298	0.00	1.61E+13	15562.	423312.	0.00
23.2750	-0.1168	1954377.	-258869.	-0.00298	0.00	1.61E+13	16180.	407150.	0.00
23.5200	-0.1256	1263730.	-210424.	-0.00298	0.00	1.61E+13	16775.	392710.	0.00
23.7650	-0.1343	718081.	-160260.	-0.00298	0.00	1.61E+13	17350.	379706.	0.00
24.0100	-0.1431	322396.	-108435.	-0.00298	0.00	1.61E+13	17906.	367914.	0.00
24.2550	-0.1518	81482.	-54999.	-0.00298	0.00	1.61E+13	18445.	357157.	0.00

24.5000 -0.1606 0.00 0.00 -0.00298 0.00 1.61E+13 18969. 173646. 0.00

* This analysis computed pile response using nonlinear moment-curvature relationships. Values of total stress due to combined axial and bending stresses are computed only for elastic sections only and do not equal the actual stresses in concrete and steel. Stresses in concrete and steel may be interpolated from the output for nonlinear bending properties relative to the magnitude of bending moment developed in the pile.

Output Summary for Load Case No. 1:

Pile-head deflection = 1.31093471 inches
 Computed slope at pile head = -0.00874923 radians
 Maximum bending moment = 64844673. inch-lbs
 Maximum shear force = -677394. lbs
 Depth of maximum bending moment = 6.61500000 feet below pile head
 Depth of maximum shear force = 20.09000000 feet below pile head
 Number of iterations = 63
 Number of zero deflection points = 1

 Summary of Pile-head Responses for Conventional Analyses

Definitions of Pile-head Loading Conditions:

Load Type 1: Load 1 = Shear, V, lbs, and Load 2 = Moment, M, in-lbs
 Load Type 2: Load 1 = Shear, V, lbs, and Load 2 = Slope, S, radians
 Load Type 3: Load 1 = Shear, V, lbs, and Load 2 = Rot. Stiffness, R, in-lbs/rad.
 Load Type 4: Load 1 = Top Deflection, y, inches, and Load 2 = Moment, M, in-lbs
 Load Type 5: Load 1 = Top Deflection, y, inches, and Load 2 = Slope, S, radians

Load Case No.	Load Type 1	Pile-head Load 1	Load Type 2	Pile-head Load 2	Axial Loading lbs	Pile-head Deflection inches	Pile-head Rotation radians	Max Shear in Pile lbs	Max Moment in Pile in-lbs
1	V, lb	40710.	M, in-lb	6.20E+07	56970.	1.3109	-0.00875	-677394.	6.48E+07

Maximum pile-head deflection = 1.3109347081 inches

Maximum pile-head rotation = -0.0087492311 radians = -0.501294 deg.

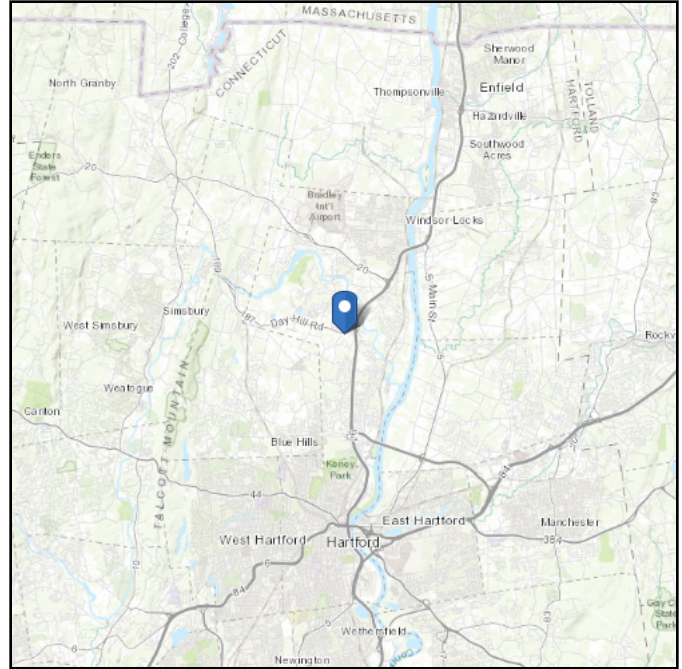
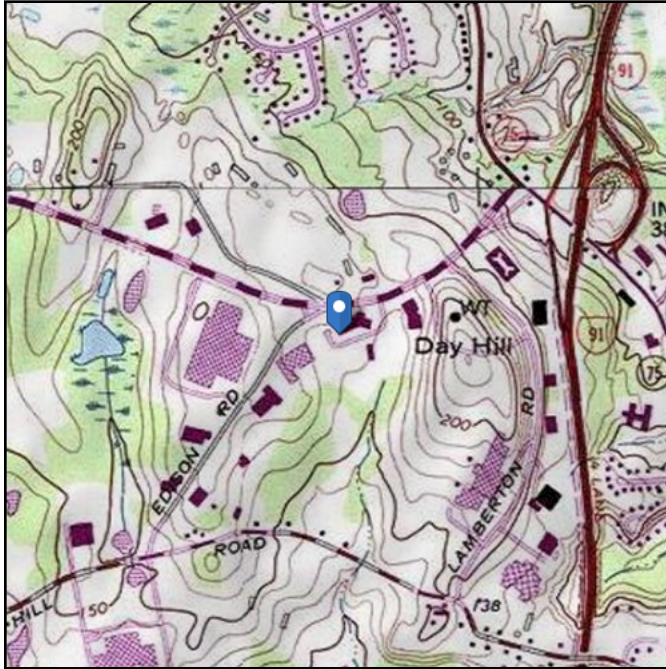
The analysis ended normally.

ASCE 7 Hazards Report

Address:
No Address at This
Location

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

Elevation: 166.35 ft (NAVD 88)
Latitude: 41.871139
Longitude: -72.671111

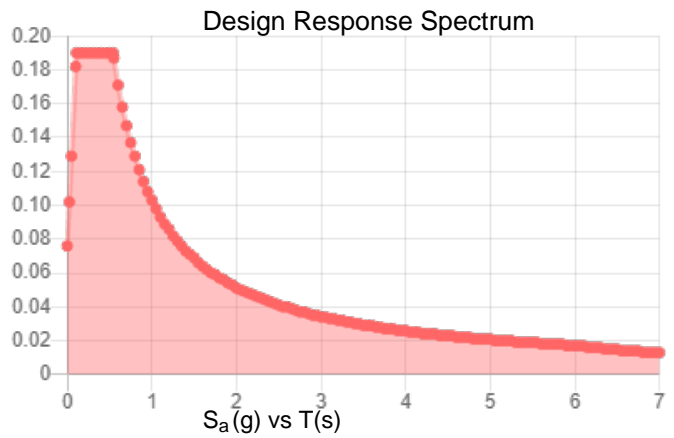
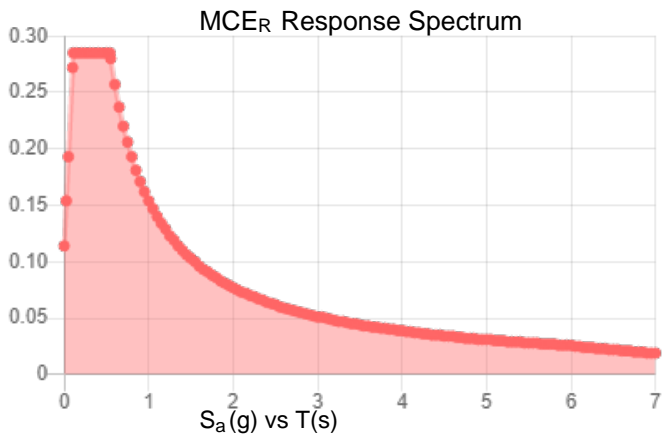


Site Soil Class: D - Stiff Soil

Results:

S_s :	0.179	S_{DS} :	0.19
S_1 :	0.064	S_{D1} :	0.103
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.089
S_{MS} :	0.285	PGA _M :	0.142
S_{M1} :	0.154	F _{PGA} :	1.6
		I_e :	1

Seismic Design Category B



Data Accessed:

Wed Nov 04 2020

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: Wed Nov 04 2020

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.

The ASCE 7 Hazard Tool is provided for your convenience, for informational purposes only, and is provided "as is" and without warranties of any kind. The location data included herein has been obtained from information developed, produced, and maintained by third party providers; or has been extrapolated from maps incorporated in the ASCE 7 standard. While ASCE has made every effort to use data obtained from reliable sources or methodologies, ASCE does not make any representations or warranties as to the accuracy, completeness, reliability, currency, or quality of any data provided herein. Any third-party links provided by this Tool should not be construed as an endorsement, affiliation, relationship, or sponsorship of such third-party content by or from ASCE.

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Exhibit E

Mount Analysis

Date: July 31, 2021

Darcy Tarr
Crown Castle
3530 Toringdon Way, Suite 300
Charlotte, NC 28277
704-405-6589



Trylon
1825 W. Walnut Hill Lane,
Suite 302
Irving, TX 75038
214-930-1730

Subject: Mount Replacement Analysis Report

Carrier Designation: DISH Network Equipment Change-Out
Carrier Site Number: BOBDL00068A
Carrier Site Name: CT-CCI-T-842875

Crown Castle Designation: **Crown Castle BU Number:** 842875
Crown Castle Site Name: WINDSORDAY HILL
Crown Castle JDE Job Number: 650059
Crown Castle Order Number: 556624 Rev. 0

Engineering Firm Designation: **Trylon Report Designation:** 189199

Site Data: 99 Day Hill Road, Windsor, Hartford County, CT, 06095
Latitude 41°52'16.10" Longitude -72°40'16.00"

Structure Information: **Tower Height & Type:** 168.0 ft Monopole
Mount Elevation: 120.0 ft
Mount Type: 8.0 ft Platform

Dear Darcy Tarr,

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

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

Platform **Sufficient**
***Sufficient upon completion of the changes listed in the 'Recommendations' section of this report.**

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.

Mount analysis prepared by: Jordan Everson, E.I.T.

Respectfully Submitted by:
Cliff Abernathy, P.E.



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Supplemental Drawings

1) INTRODUCTION

This is a proposed 3 sector 8.0 ft Platform designed by Commscope.

2) ANALYSIS CRITERIA

Building Code:	2015 IBC / 2018 Connecticut State Building Code
TIA-222 Revision:	TIA-222-H
Risk Category:	II
Ultimate Wind Speed:	125 mph
Exposure Category:	C
Topographic Factor at Base:	1.0
Topographic Factor at Mount:	1.0
Ice Thickness:	2.0 in
Wind Speed with Ice:	50 mph
Seismic S_s:	0.179
Seismic S_1:	0.064
Live Loading Wind Speed:	30 mph
Man Live Load at Mid/End-Points:	250 lb
Man Live Load at Mount Pipes:	500 lb

Table 1 - Proposed Equipment Configuration

Mount Centerline (ft)	Antenna Centerline (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Mount Details
120.0	120.0	3	JMA WIRELESS	MX08FRO665-21	8.0 ft Platform [CommScope MC- PK8-DSH]
		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
Crown Application	DISH Network Application	556624 Rev. 0	CCI Sites
Mount Manufacturer Drawings	CommScope	MC-PK8-DSH	Trylon

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.

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

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

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 drawings.
- 3) All member connections are assumed to have been designed to meet or exceed the load carrying capacity of the connected member unless otherwise specified in this report.
- 4) The analysis will be required to be revised if the existing conditions in the field differ from those shown in the above-referenced documents or assumed in this analysis. No allowance was made for any damaged, missing, or rusted members.
- 5) Prior structural modifications to the tower mounting system are assumed to be installed as shown per available data.
- 6) Steel grades have been assumed as follows, unless noted otherwise:

Channel, Solid Round, Angle, Plate	ASTM A36 (GR 36)
HSS (Rectangular)	ASTM A500 (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. Tylon 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 (Platform, All Sectors)

Notes	Component	Critical Member	Centerline (ft)	% Capacity	Pass / Fail
1,2	Mount Pipe(s)	MP2	120.0	36.2	Pass
	Horizontal(s)	H1		11.4	Pass
	Standoff(s)	M12		60.3	Pass
	Bracing(s)	M11		49.3	Pass
	Handrail(s)	M19		14.3	Pass
	Mount Connection(s)	-		24.9	Pass

Structure Rating (max from all components) =	60.3%
---	--------------

Notes:

- 1) See additional documentation in "Appendix C - Software Analysis Output" for calculations supporting the % capacity consumed.
- 2) Rating per TIA-222-H, Section 15.5

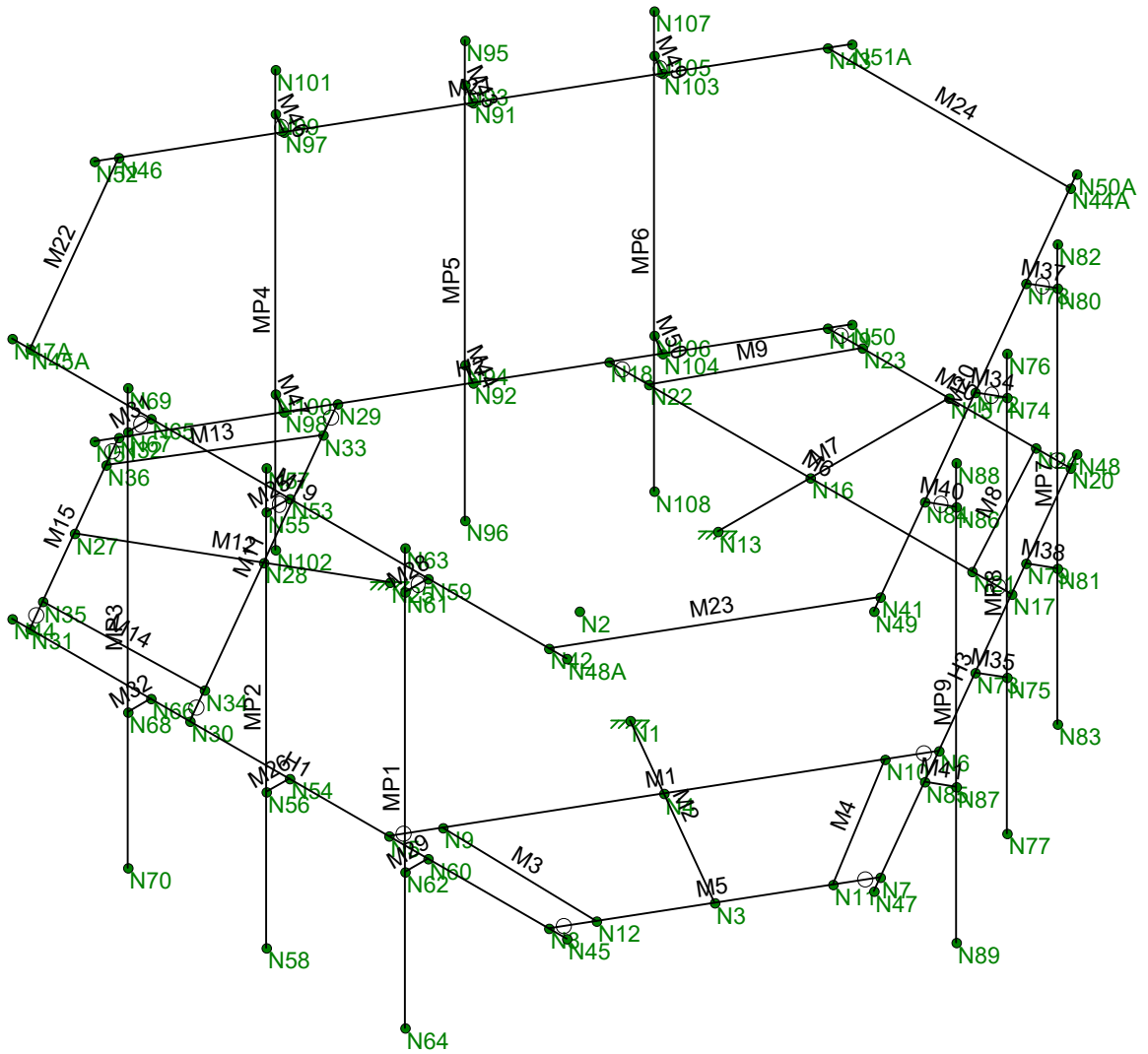
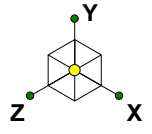
4.1) Recommendations

The mount has sufficient capacity to carry the proposed loading configuration. In order for the results of the analysis to be considered valid, the proposed mount listed below must be installed.

1. CommScope MC-PK8-DSH

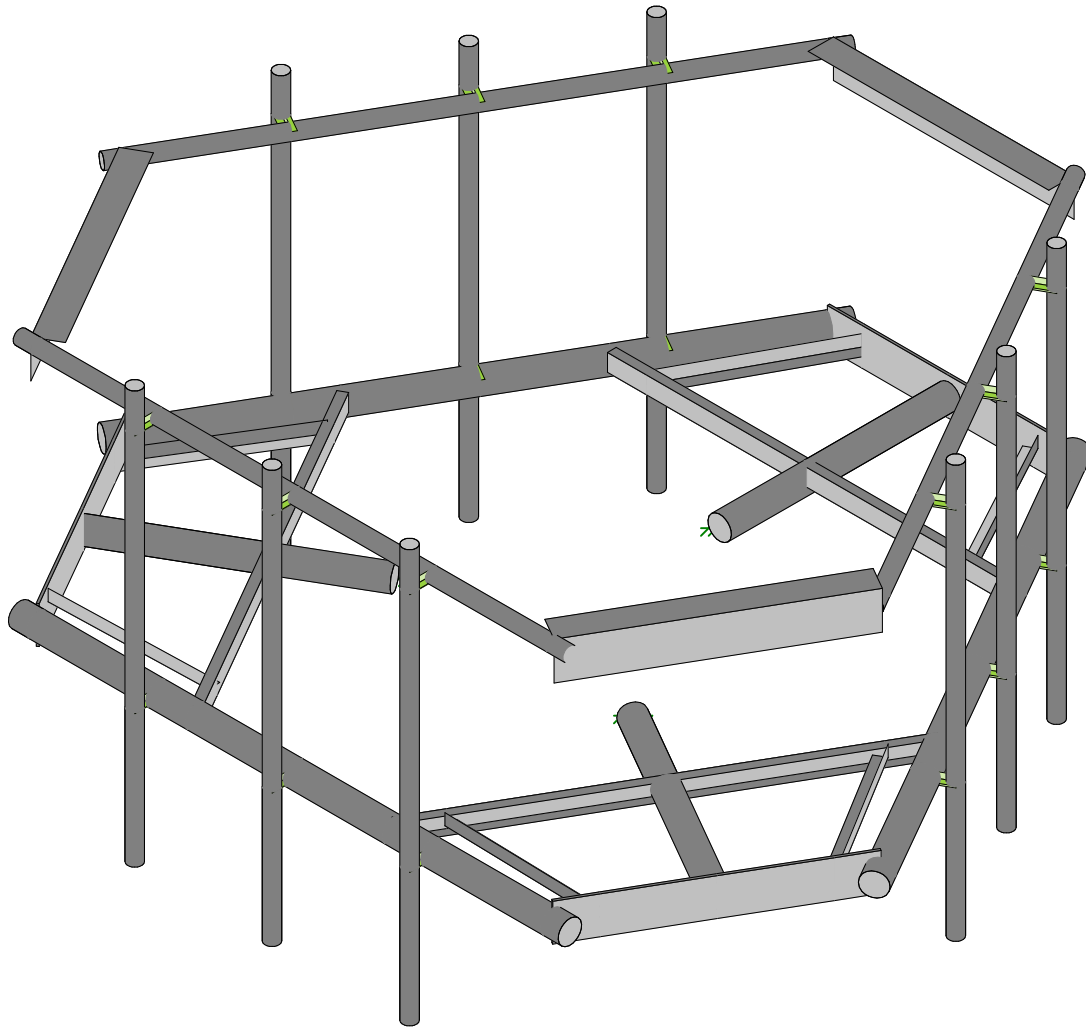
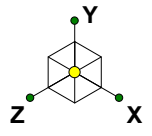
No structural modifications are required at this time, provided that the above-listed changes are implemented.

APPENDIX A
WIRE FRAME AND RENDERED MODELS



Envelope Only Solution

Trylon	842875	Wireframe
JE		July 31, 2021 at 6:34 PM
		842875_loaded.r3d



Envelope Only Solution

Trylon

JE

842875

Render

July 31, 2021 at 5:18 PM

842875_loaded.r3d

APPENDIX B
SOFTWARE INPUT CALCULATIONS

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: Sat Jul 31 2021

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

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

The ASCE 7 Hazard Tool is provided for your convenience, for informational purposes only, and is provided “as is” and without warranties of any kind. The location data included herein has been obtained from information developed, produced, and maintained by third party providers; or has been extrapolated from maps incorporated in the ASCE 7 standard. While ASCE has made every effort to use data obtained from reliable sources or methodologies, ASCE does not make any representations or warranties as to the accuracy, completeness, reliability, currency, or quality of any data provided herein. Any third-party links provided by this Tool should not be construed as an endorsement, affiliation, relationship, or sponsorship of such third-party content by or from ASCE.

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Trylon

1825 W. Walnut Hill Lane Suite 120
Irving, TX 75038

TIA LOAD CALCULATOR 2.0

PROJECT DATA		
Job Code:	189199	
Carrier Site ID:	BOBDL00068A	
Carrier Site Name:	CT-CCI-T-876329	

CODES AND STANDARDS		
Building Code:	2015 IBC	
Local Building Code:	N/A	
Design Standard:	TIA-222-H	

STRUCTURE DETAILS		
Mount Type:	Platform	--
Mount Elevation:	120.0	ft.
Number of Sectors:	3	--
Structure Type:	Monopole	--
Structure Height:	120.0	ft.

ANALYSIS CRITERIA		
Structure Risk Category:	II	--
Exposure Category:	C	--
Site Class:	D - Default	--
Ground Elevation:	166.35	ft.

TOPOGRAPHIC DATA		
Topographic Category:	1.00	--
Topographic Feature:	N/A	--
Crest Point Elevation:	0.00	ft.
Base Point Elevation:	0.00	ft.
Crest to Mid-Height (L/2):	0.00	ft.
Distance from Crest (x):	0.00	ft.
Base Topo Factor (K_{zt}):	1.00	--
Mount Topo Factor (K_{zt}):	1.00	--

WIND PARAMETERS		
Design Wind Speed:	125	mph
Wind Escalation Factor (K_s):	1.00	--
Velocity Coefficient (K_z):	1.32	--
Directionality Factor (K_d):	0.95	--
Gust Effect Factor (G_h):	1.00	--
Shielding Factor (K_a):	0.90	--
Velocity Pressure (q_z):	49.68	psf

ICE PARAMETERS		
Design Ice Wind Speed:	50	mph
Design Ice Thickness (t_i):	2.00	in
Importance Factor (I_i):	1.00	--
Ice Velocity Pressure (q_{zi}):	49.68	psf
Mount Ice Thickness (t_z):	2.28	in

WIND STRUCTURE CALCULATIONS		
Flat Member Pressure:	89.42	psf
Round Member Pressure:	53.65	psf
Ice Wind Pressure:	7.43	psf

SEISMIC PARAMETERS		
Importance Factor (I_e):	1.00	--
Short Period Accel. (S_s):	0.18	g
1 Second Accel. (S_1):	0.06	g
Short Period Des. (S_{DS}):	0.19	g
1 Second Des. (S_{D1}):	0.10	g
Short Period Coeff. (F_a):	1.60	--
1 Second Coeff. (F_v):	2.40	--
Response Coefficient (C_s):	0.10	--
Amplification Factor (A_S):	1.20	--

LOAD COMBINATIONS [LRFD]

#	Description
1	1.4DL
2	1.2DL + 1WL 0 AZI
3	1.2DL + 1WL 30 AZI
4	1.2DL + 1WL 45 AZI
5	1.2DL + 1WL 60 AZI
6	1.2DL + 1WL 90 AZI
7	1.2DL + 1WL 120 AZI
8	1.2DL + 1WL 135 AZI
9	1.2DL + 1WL 150 AZI
10	1.2DL + 1WL 180 AZI
11	1.2DL + 1WL 210 AZI
12	1.2DL + 1WL 225 AZI
13	1.2DL + 1WL 240 AZI
14	1.2DL + 1WL 270 AZI
15	1.2DL + 1WL 300 AZI
16	1.2DL + 1WL 315 AZI
17	1.2DL + 1WL 330 AZI
18	0.9DL + 1WL 0 AZI
19	0.9DL + 1WL 30 AZI
20	0.9DL + 1WL 45 AZI
21	0.9DL + 1WL 60 AZI
22	0.9DL + 1WL 90 AZI
23	0.9DL + 1WL 120 AZI
24	0.9DL + 1WL 135 AZI
25	0.9DL + 1WL 150 AZI
26	0.9DL + 1WL 180 AZI
27	0.9DL + 1WL 210 AZI
28	0.9DL + 1WL 225 AZI
29	0.9DL + 1WL 240 AZI
30	0.9DL + 1WL 270 AZI
31	0.9DL + 1WL 300 AZI
32	0.9DL + 1WL 315 AZI
33	0.9DL + 1WL 330 AZI
34	1.2DL + 1DLi + 1WLi 0 AZI
35	1.2DL + 1DLi + 1WLi 30 AZI
36	1.2DL + 1DLi + 1WLi 45 AZI
37	1.2DL + 1DLi + 1WLi 60 AZI
38	1.2DL + 1DLi + 1WLi 90 AZI
39	1.2DL + 1DLi + 1WLi 120 AZI
40	1.2DL + 1DLi + 1WLi 135 AZI
41	1.2DL + 1DLi + 1WLi 150 AZI

#	Description
42	1.2DL + 1DLi + 1WLi 180 AZI
43	1.2DL + 1DLi + 1WLi 210 AZI
44	1.2DL + 1DLi + 1WLi 225 AZI
45	1.2DL + 1DLi + 1WLi 240 AZI
46	1.2DL + 1DLi + 1WLi 270 AZI
47	1.2DL + 1DLi + 1WLi 300 AZI
48	1.2DL + 1DLi + 1WLi 315 AZI
49	1.2DL + 1DLi + 1WLi 330 AZI
50	(1.2+0.2Sds) + 1.0E 0 AZI
51	(1.2+0.2Sds) + 1.0E 30 AZI
52	(1.2+0.2Sds) + 1.0E 45 AZI
53	(1.2+0.2Sds) + 1.0E 60 AZI
54	(1.2+0.2Sds) + 1.0E 90 AZI
55	(1.2+0.2Sds) + 1.0E 120 AZI
56	(1.2+0.2Sds) + 1.0E 135 AZI
57	(1.2+0.2Sds) + 1.0E 150 AZI
58	(1.2+0.2Sds) + 1.0E 180 AZI
59	(1.2+0.2Sds) + 1.0E 210 AZI
60	(1.2+0.2Sds) + 1.0E 225 AZI
61	(1.2+0.2Sds) + 1.0E 240 AZI
62	(1.2+0.2Sds) + 1.0E 270 AZI
63	(1.2+0.2Sds) + 1.0E 300 AZI
64	(1.2+0.2Sds) + 1.0E 315 AZI
65	(1.2+0.2Sds) + 1.0E 330 AZI
66	(0.9-0.2Sds) + 1.0E 0 AZI
67	(0.9-0.2Sds) + 1.0E 30 AZI
68	(0.9-0.2Sds) + 1.0E 45 AZI
69	(0.9-0.2Sds) + 1.0E 60 AZI
70	(0.9-0.2Sds) + 1.0E 90 AZI
71	(0.9-0.2Sds) + 1.0E 120 AZI
72	(0.9-0.2Sds) + 1.0E 135 AZI
73	(0.9-0.2Sds) + 1.0E 150 AZI
74	(0.9-0.2Sds) + 1.0E 180 AZI
75	(0.9-0.2Sds) + 1.0E 210 AZI
76	(0.9-0.2Sds) + 1.0E 225 AZI
77	(0.9-0.2Sds) + 1.0E 240 AZI
78	(0.9-0.2Sds) + 1.0E 270 AZI
79	(0.9-0.2Sds) + 1.0E 300 AZI
80	(0.9-0.2Sds) + 1.0E 315 AZI
81	(0.9-0.2Sds) + 1.0E 330 AZI
82-88	1.2D + 1.5 Lv1

#	Description
89	1.2D + 1.5Lm + 1.0Wm 0 AZI - MP1
90	1.2D + 1.5Lm + 1.0Wm 30 AZI - MP1
91	1.2D + 1.5Lm + 1.0Wm 45 AZI - MP1
92	1.2D + 1.5Lm + 1.0Wm 60 AZI - MP1
93	1.2D + 1.5Lm + 1.0Wm 90 AZI - MP1
94	1.2D + 1.5Lm + 1.0Wm 120 AZI - MP1
95	1.2D + 1.5Lm + 1.0Wm 135 AZI - MP1
96	1.2D + 1.5Lm + 1.0Wm 150 AZI - MP1
97	1.2D + 1.5Lm + 1.0Wm 180 AZI - MP1
98	1.2D + 1.5Lm + 1.0Wm 210 AZI - MP1
99	1.2D + 1.5Lm + 1.0Wm 225 AZI - MP1
100	1.2D + 1.5Lm + 1.0Wm 240 AZI - MP1
101	1.2D + 1.5Lm + 1.0Wm 270 AZI - MP1
102	1.2D + 1.5Lm + 1.0Wm 300 AZI - MP1
103	1.2D + 1.5Lm + 1.0Wm 315 AZI - MP1
104	1.2D + 1.5Lm + 1.0Wm 330 AZI - MP1
105	1.2D + 1.5Lm + 1.0Wm 0 AZI - MP2
106	1.2D + 1.5Lm + 1.0Wm 30 AZI - MP2
107	1.2D + 1.5Lm + 1.0Wm 45 AZI - MP2
108	1.2D + 1.5Lm + 1.0Wm 60 AZI - MP2
109	1.2D + 1.5Lm + 1.0Wm 90 AZI - MP2
110	1.2D + 1.5Lm + 1.0Wm 120 AZI - MP2
111	1.2D + 1.5Lm + 1.0Wm 135 AZI - MP2
112	1.2D + 1.5Lm + 1.0Wm 150 AZI - MP2
113	1.2D + 1.5Lm + 1.0Wm 180 AZI - MP2
114	1.2D + 1.5Lm + 1.0Wm 210 AZI - MP2
115	1.2D + 1.5Lm + 1.0Wm 225 AZI - MP2
116	1.2D + 1.5Lm + 1.0Wm 240 AZI - MP2
117	1.2D + 1.5Lm + 1.0Wm 270 AZI - MP2
118	1.2D + 1.5Lm + 1.0Wm 300 AZI - MP2
119	1.2D + 1.5Lm + 1.0Wm 315 AZI - MP2
120	1.2D + 1.5Lm + 1.0Wm 330 AZI - MP2

#	Description
121	1.2D + 1.5Lm + 1.0Wm 0 AZI - MP3
122	1.2D + 1.5Lm + 1.0Wm 30 AZI - MP3
123	1.2D + 1.5Lm + 1.0Wm 45 AZI - MP3
124	1.2D + 1.5Lm + 1.0Wm 60 AZI - MP3
125	1.2D + 1.5Lm + 1.0Wm 90 AZI - MP3
126	1.2D + 1.5Lm + 1.0Wm 120 AZI - MP3
127	1.2D + 1.5Lm + 1.0Wm 135 AZI - MP3
128	1.2D + 1.5Lm + 1.0Wm 150 AZI - MP3
129	1.2D + 1.5Lm + 1.0Wm 180 AZI - MP3
130	1.2D + 1.5Lm + 1.0Wm 210 AZI - MP3
131	1.2D + 1.5Lm + 1.0Wm 225 AZI - MP3
132	1.2D + 1.5Lm + 1.0Wm 240 AZI - MP3
133	1.2D + 1.5Lm + 1.0Wm 270 AZI - MP3
134	1.2D + 1.5Lm + 1.0Wm 300 AZI - MP3
135	1.2D + 1.5Lm + 1.0Wm 315 AZI - MP3
136	1.2D + 1.5Lm + 1.0Wm 330 AZI - MP3
137	1.2D + 1.5Lm + 1.0Wm 0 AZI - MP4
138	1.2D + 1.5Lm + 1.0Wm 30 AZI - MP4
139	1.2D + 1.5Lm + 1.0Wm 45 AZI - MP4
140	1.2D + 1.5Lm + 1.0Wm 60 AZI - MP4
141	1.2D + 1.5Lm + 1.0Wm 90 AZI - MP4
142	1.2D + 1.5Lm + 1.0Wm 120 AZI - MP4
143	1.2D + 1.5Lm + 1.0Wm 135 AZI - MP4
144	1.2D + 1.5Lm + 1.0Wm 150 AZI - MP4
145	1.2D + 1.5Lm + 1.0Wm 180 AZI - MP4
146	1.2D + 1.5Lm + 1.0Wm 210 AZI - MP4
147	1.2D + 1.5Lm + 1.0Wm 225 AZI - MP4
148	1.2D + 1.5Lm + 1.0Wm 240 AZI - MP4
149	1.2D + 1.5Lm + 1.0Wm 270 AZI - MP4
150	1.2D + 1.5Lm + 1.0Wm 300 AZI - MP4
151	1.2D + 1.5Lm + 1.0Wm 315 AZI - MP4
152	1.2D + 1.5Lm + 1.0Wm 330 AZI - MP4

*This page shows an example of maintenance loads for (4) pipes, the number of mount pipe LCs may vary per site

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 S100-12: LRFD
Wood Code	AWC NDS-15: ASD
Wood Temperature	< 100F
Concrete Code	ACI 318-14
Masonry Code	ACI 530-13: Strength
Aluminum Code	AA ADM1-10: LRFD - Building
Stainless Steel Code	AISC 14th(360-10): LRFD
Adjust Stiffness?	Yes(Iterative)

Number of Shear Regions	4
Region Spacing Increment (in)	4
Biaxial Column Method	Exact Integration
Parame Beta Factor (PCA)	.65
Concrete Stress Block	Rectangular
Use Cracked Sections?	Yes
Use Cracked Sections Slab?	Yes
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 7-10
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	1
Cd X	1
Rho Z	1
Rho X	1

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (/1E...	Density[k/ft...	Yield[psi]	Ry	Fu[psi]	Rt
1	A992	29000	11154	.3	.65	.49	50000	1.1	65000	1.1
2	A36 Gr.36	29000	11154	.3	.65	.49	36000	1.5	58000	1.2
3	A572 Gr.50	29000	11154	.3	.65	.49	50000	1.1	65000	1.1
4	A500 Gr.B RND	29000	11154	.3	.65	.527	42000	1.4	58000	1.3
5	A500 Gr.B Rect	29000	11154	.3	.65	.527	46000	1.4	58000	1.3
6	A53 Gr.B	29000	11154	.3	.65	.49	35000	1.6	60000	1.2
7	A1085	29000	11154	.3	.65	.49	50000	1.4	65000	1.3

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design R...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Plates	6.5"x0.37" Plate	Beam	RECT	A53 Gr.B	Typical	2.405	.027	8.468	.106
2	Grating Bracing	L2x2x3	Beam	Single An...	A36 Gr.36	Typical	.722	.271	.271	.009
3	Standoffs	PIPE 3.5	Beam	Pipe	A53 Gr.B	Typical	2.5	4.52	4.52	9.04
4	Standoff Bracing	C3X5	Beam	Channel	A36 Gr.36	Typical	1.47	.241	1.85	.043
5	Handrails	PIPE 2.0	Beam	Pipe	A53 Gr.B	Typical	1.02	.627	.627	1.25
6	Handrail Corners	L6 5/8x4 7/16x3/16	Beam	Single An...	A36 Gr.36	Typical	2.039	3.593	9.575	.023
7	Horizontals	PIPE 3.5	Beam	Pipe	A53 Gr.B	Typical	2.5	4.52	4.52	9.04
8	Mount Pipes	PIPE 2.0	Beam	Pipe	A53 Gr.B	Typical	1.02	.627	.627	1.25

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	N25	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
2	N1	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
3	N13	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction



Company : Trylon
 Designer : JE
 Job Number :
 Model Name : 842875

July 31, 2021
 6:17 PM
 Checked By: _____

Basic Load Cases

	BLC Description	Category	X Gra...	Y Gra...	Z Gra...	Joint	Point	Distributed	Area(Member)	Surface(Plate/Wall)
1	Self Weight	DL		-1			20		3	
2	Structure Wind Z	WLZ						51		
3	Structure Wind X	WLX						51		
4	Wind Load 0 AZI	WLZ					40			
5	Wind Load 30 AZI	None					40			
6	Wind Load 45 AZI	None					40			
7	Wind Load 60 AZI	None					40			
8	Wind Load 90 AZI	WLX					40			
9	Wind Load 120 AZI	None					40			
10	Wind Load 135 AZI	None					40			
11	Wind Load 150 AZI	None					40			
12	Ice Weight	OL1					20	51	3	
13	Ice Structure Wind Z	OL2						51		
14	Ice Structure Wind X	OL3						51		
15	Ice Wind Load 0 AZI	OL2					40			
16	Ice Wind Load 30 AZI	None					40			
17	Ice Wind Load 45 AZI	None					40			
18	Ice Wind Load 60 AZI	None					40			
19	Ice Wind Load 90 AZI	OL3					40			
20	Ice Wind Load 120 ...	None					40			
21	Ice Wind Load 135 ...	None					40			
22	Ice Wind Load 150 ...	None					40			
23	Seismic Load Z	ELZ			-115		20			
24	Seismic Load X	ELX	-115				20			
25	Live Load 1 (Lv)	None					1			
26	Live Load 2 (Lv)	None					1			
27	Live Load 3 (Lv)	None					1			
28	Live Load 4 (Lv)	None					1			
29	Live Load 5 (Lv)	None					1			
30	Live Load 6 (Lv)	None					1			
31	Live Load 7 (Lv)	None					1			
32	Live Load 8 (Lv)	None					1			
33	Live Load 9 (Lv)	None					1			
34	Maintenance Load 1...	None					1			
35	Maintenance Load 2...	None					1			
36	Maintenance Load 3...	None					1			
37	Maintenance Load 4...	None					1			
38	Maintenance Load 5...	None					1			
39	Maintenance Load 6...	None					1			
40	Maintenance Load 7...	None					1			
41	Maintenance Load 8...	None					1			
42	Maintenance Load 9...	None					1			
43	BLC 1 Transient Are...	None						9		
44	BLC 12 Transient Ar...	None						9		

Load Combinations

Description	S...	P...	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
1	1.4DL	Yes	Y		DL	1.4													
2	1.2DL + 1WL 0 AZI	Yes	Y		DL	1.2	2	1	3	4	1								
3	1.2DL + 1WL 30 AZI	Yes	Y		DL	1.2	2	.866	3	.5	5	1							
4	1.2DL + 1WL 45 AZI	Yes	Y		DL	1.2	2	.707	3	.707	6	1							
5	1.2DL + 1WL 60 AZI	Yes	Y		DL	1.2	2	.5	3	.866	7	1							
6	1.2DL + 1WL 90 AZI	Yes	Y		DL	1.2	2		3	1	8	1							
7	1.2DL + 1WL 120 AZI	Yes	Y		DL	1.2	2	-.5	3	.866	9	1							



Company : Trylon
 Designer : JE
 Job Number :
 Model Name : 842875

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Load Combinations (Continued)

	Description	S...	P...	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
8	1.2DL + 1WL 135 AZI	Yes	Y		DL	1.2	2	-7...	3	.707	10	1										
9	1.2DL + 1WL 150 AZI	Yes	Y		DL	1.2	2	-8...	3	.5	11	1										
10	1.2DL + 1WL 180 AZI	Yes	Y		DL	1.2	2	-1	3		4	-1										
11	1.2DL + 1WL 210 AZI	Yes	Y		DL	1.2	2	-8...	3	-.5	5	-1										
12	1.2DL + 1WL 225 AZI	Yes	Y		DL	1.2	2	-7...	3	-.7...	6	-1										
13	1.2DL + 1WL 240 AZI	Yes	Y		DL	1.2	2	-.5	3	-.8...	7	-1										
14	1.2DL + 1WL 270 AZI	Yes	Y		DL	1.2	2		3	-1	8	-1										
15	1.2DL + 1WL 300 AZI	Yes	Y		DL	1.2	2	.5	3	-.8...	9	-1										
16	1.2DL + 1WL 315 AZI	Yes	Y		DL	1.2	2	.707	3	-.7...	10	-1										
17	1.2DL + 1WL 330 AZI	Yes	Y		DL	1.2	2	.866	3	-.5	11	-1										
18	0.9DL + 1WL 0 AZI	Yes	Y		DL	.9	2	1	3		4	1										
19	0.9DL + 1WL 30 AZI	Yes	Y		DL	.9	2	.866	3	.5	5	1										
20	0.9DL + 1WL 45 AZI	Yes	Y		DL	.9	2	.707	3	.707	6	1										
21	0.9DL + 1WL 60 AZI	Yes	Y		DL	.9	2	.5	3	.866	7	1										
22	0.9DL + 1WL 90 AZI	Yes	Y		DL	.9	2		3	1	8	1										
23	0.9DL + 1WL 120 AZI	Yes	Y		DL	.9	2	-.5	3	.866	9	1										
24	0.9DL + 1WL 135 AZI	Yes	Y		DL	.9	2	-.7...	3	.707	10	1										
25	0.9DL + 1WL 150 AZI	Yes	Y		DL	.9	2	-.8...	3	.5	11	1										
26	0.9DL + 1WL 180 AZI	Yes	Y		DL	.9	2	-1	3		4	-1										
27	0.9DL + 1WL 210 AZI	Yes	Y		DL	.9	2	-.8...	3	-.5	5	-1										
28	0.9DL + 1WL 225 AZI	Yes	Y		DL	.9	2	-.7...	3	-.7...	6	-1										
29	0.9DL + 1WL 240 AZI	Yes	Y		DL	.9	2	-.5	3	-.8...	7	-1										
30	0.9DL + 1WL 270 AZI	Yes	Y		DL	.9	2		3	-1	8	-1										
31	0.9DL + 1WL 300 AZI	Yes	Y		DL	.9	2	.5	3	-.8...	9	-1										
32	0.9DL + 1WL 315 AZI	Yes	Y		DL	.9	2	.707	3	-.7...	10	-1										
33	0.9DL + 1WL 330 AZI	Yes	Y		DL	.9	2	.866	3	-.5	11	-1										
34	1.2DL + 1DLi + 1WLi 0 AZI	Yes	Y		DL	1.2	0...	1	13	1	14		15	1								
35	1.2DL + 1DLi + 1WLi 30 AZI	Yes	Y		DL	1.2	0...	1	13	.866	14	.5	16	1								
36	1.2DL + 1DLi + 1WLi 45 AZI	Yes	Y		DL	1.2	0...	1	13	.707	14	.707	17	1								
37	1.2DL + 1DLi + 1WLi 60 AZI	Yes	Y		DL	1.2	0...	1	13	.5	14	.866	18	1								
38	1.2DL + 1DLi + 1WLi 90 AZI	Yes	Y		DL	1.2	0...	1	13		14	1	19	1								
39	1.2DL + 1DLi + 1WLi 120 AZI	Yes	Y		DL	1.2	0...	1	13	-.5	14	.866	20	1								
40	1.2DL + 1DLi + 1WLi 135 AZI	Yes	Y		DL	1.2	0...	1	13	-.7...	14	.707	21	1								
41	1.2DL + 1DLi + 1WLi 150 AZI	Yes	Y		DL	1.2	0...	1	13	-.8...	14	.5	22	1								
42	1.2DL + 1DLi + 1WLi 180 AZI	Yes	Y		DL	1.2	0...	1	13	-1	14		15	-1								
43	1.2DL + 1DLi + 1WLi 210 AZI	Yes	Y		DL	1.2	0...	1	13	-.8...	14	-.5	16	-1								
44	1.2DL + 1DLi + 1WLi 225 AZI	Yes	Y		DL	1.2	0...	1	13	-.7...	14	-.7...	17	-1								
45	1.2DL + 1DLi + 1WLi 240 AZI	Yes	Y		DL	1.2	0...	1	13	-.5	14	-.8...	18	-1								
46	1.2DL + 1DLi + 1WLi 270 AZI	Yes	Y		DL	1.2	0...	1	13		14	-1	19	-1								
47	1.2DL + 1DLi + 1WLi 300 AZI	Yes	Y		DL	1.2	0...	1	13	.5	14	-.8...	20	-1								
48	1.2DL + 1DLi + 1WLi 315 AZI	Yes	Y		DL	1.2	0...	1	13	.707	14	-.7...	21	-1								
49	1.2DL + 1DLi + 1WLi 330 AZI	Yes	Y		DL	1.2	0...	1	13	.866	14	-.5	22	-1								
50	(1.2+0.2Sds)DL + 1E 0 AZI	Yes	Y		DL	1.2...	23	1	24													
51	(1.2+0.2Sds)DL + 1E 30 AZI	Yes	Y		DL	1.2...	23	.866	24	.5												
52	(1.2+0.2Sds)DL + 1E 45 AZI	Yes	Y		DL	1.2...	23	.707	24	.707												
53	(1.2+0.2Sds)DL + 1E 60 AZI	Yes	Y		DL	1.2...	23	.5	24	.866												
54	(1.2+0.2Sds)DL + 1E 90 AZI	Yes	Y		DL	1.2...	23		24	1												
55	(1.2+0.2Sds)DL + 1E 120 AZI	Yes	Y		DL	1.2...	23	-.5	24	.866												
56	(1.2+0.2Sds)DL + 1E 135 AZI	Yes	Y		DL	1.2...	23	-.7...	24	.707												
57	(1.2+0.2Sds)DL + 1E 150 AZI	Yes	Y		DL	1.2...	23	-.8...	24	.5												
58	(1.2+0.2Sds)DL + 1E 180 AZI	Yes	Y		DL	1.2...	23	-1	24													
59	(1.2+0.2Sds)DL + 1E 210 AZI	Yes	Y		DL	1.2...	23	-.8...	24	-.5												
60	(1.2+0.2Sds)DL + 1E 225 AZI	Yes	Y		DL	1.2...	23	-.7...	24	-.7...												
61	(1.2+0.2Sds)DL + 1E 240 AZI	Yes	Y		DL	1.2...	23	-.5	24	-.8...												
62	(1.2+0.2Sds)DL + 1E 270 AZI	Yes	Y		DL	1.2...	23		24	-1												
63	(1.2+0.2Sds)DL + 1E 300 AZI	Yes	Y		DL	1.2...	23	.5	24	-.8...												
64	(1.2+0.2Sds)DL + 1E 315 AZI	Yes	Y		DL	1.2...	23	.707	24	-.7...												



Company : Trylon
 Designer : JE
 Job Number :
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Load Combinations (Continued)

	Description	S...	P...	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...		
179	1.2DL + 1.5Lm + 1Wm 180 AZI...	Yes	Y		DL	1.2	39	1.5	2	-0...	3		4	-0...																							
180	1.2DL + 1.5Lm + 1Wm 210 AZI...	Yes	Y		DL	1.2	39	1.5	2	-05	3		5	-0...																							
181	1.2DL + 1.5Lm + 1Wm 225 AZI...	Yes	Y		DL	1.2	39	1.5	2	-0...	3		6	-0...																							
182	1.2DL + 1.5Lm + 1Wm 240 AZI...	Yes	Y		DL	1.2	39	1.5	2	-0...	3		7	-0...																							
183	1.2DL + 1.5Lm + 1Wm 270 AZI...	Yes	Y		DL	1.2	39	1.5	2		3		8	-0...																							
184	1.2DL + 1.5Lm + 1Wm 300 AZI...	Yes	Y		DL	1.2	39	1.5	2	.029	3		9	-0...																							
185	1.2DL + 1.5Lm + 1Wm 315 AZI...	Yes	Y		DL	1.2	39	1.5	2	.041	3		10	-0...																							
186	1.2DL + 1.5Lm + 1Wm 330 AZI...	Yes	Y		DL	1.2	39	1.5	2	.05	3		11	-0...																							
187	1.2DL + 1.5Lm + 1Wm 0 AZI - ...	Yes	Y		DL	1.2	40	1.5	2	.058	3		4	.058																							
188	1.2DL + 1.5Lm + 1Wm 30 AZI ...	Yes	Y		DL	1.2	40	1.5	2	.05	3		5	.058																							
189	1.2DL + 1.5Lm + 1Wm 45 AZI ...	Yes	Y		DL	1.2	40	1.5	2	.041	3		6	.058																							
190	1.2DL + 1.5Lm + 1Wm 60 AZI ...	Yes	Y		DL	1.2	40	1.5	2	.029	3		7	.058																							
191	1.2DL + 1.5Lm + 1Wm 90 AZI ...	Yes	Y		DL	1.2	40	1.5	2		3		8	.058																							
192	1.2DL + 1.5Lm + 1Wm 120 AZI...	Yes	Y		DL	1.2	40	1.5	2	-0...	3		9	.058																							
193	1.2DL + 1.5Lm + 1Wm 135 AZI...	Yes	Y		DL	1.2	40	1.5	2	-0...	3		10	.058																							
194	1.2DL + 1.5Lm + 1Wm 150 AZI...	Yes	Y		DL	1.2	40	1.5	2	-05	3		11	.058																							
195	1.2DL + 1.5Lm + 1Wm 180 AZI...	Yes	Y		DL	1.2	40	1.5	2	-0...	3		4	-0...																							
196	1.2DL + 1.5Lm + 1Wm 210 AZI...	Yes	Y		DL	1.2	40	1.5	2	-05	3		5	-0...																							
197	1.2DL + 1.5Lm + 1Wm 225 AZI...	Yes	Y		DL	1.2	40	1.5	2	-0...	3		6	-0...																							
198	1.2DL + 1.5Lm + 1Wm 240 AZI...	Yes	Y		DL	1.2	40	1.5	2	-0...	3		7	-0...																							
199	1.2DL + 1.5Lm + 1Wm 270 AZI...	Yes	Y		DL	1.2	40	1.5	2		3		8	-0...																							
200	1.2DL + 1.5Lm + 1Wm 300 AZI...	Yes	Y		DL	1.2	40	1.5	2	.029	3		9	-0...																							
201	1.2DL + 1.5Lm + 1Wm 315 AZI...	Yes	Y		DL	1.2	40	1.5	2	.041	3		10	-0...																							
202	1.2DL + 1.5Lm + 1Wm 330 AZI...	Yes	Y		DL	1.2	40	1.5	2	.05	3		11	-0...																							
203	1.2DL + 1.5Lm + 1Wm 0 AZI - ...	Yes	Y		DL	1.2	41	1.5	2	.058	3		4	.058																							
204	1.2DL + 1.5Lm + 1Wm 30 AZI ...	Yes	Y		DL	1.2	41	1.5	2	.05	3		5	.058																							
205	1.2DL + 1.5Lm + 1Wm 45 AZI ...	Yes	Y		DL	1.2	41	1.5	2	.041	3		6	.058																							
206	1.2DL + 1.5Lm + 1Wm 60 AZI ...	Yes	Y		DL	1.2	41	1.5	2	.029	3		7	.058																							
207	1.2DL + 1.5Lm + 1Wm 90 AZI ...	Yes	Y		DL	1.2	41	1.5	2		3		8	.058																							
208	1.2DL + 1.5Lm + 1Wm 120 AZI...	Yes	Y		DL	1.2	41	1.5	2	-0...	3		9	.058																							
209	1.2DL + 1.5Lm + 1Wm 135 AZI...	Yes	Y		DL	1.2	41	1.5	2	-0...	3		10	.058																							
210	1.2DL + 1.5Lm + 1Wm 150 AZI...	Yes	Y		DL	1.2	41	1.5	2	-05	3		11	.058																							
211	1.2DL + 1.5Lm + 1Wm 180 AZI...	Yes	Y		DL	1.2	41	1.5	2	-0...	3		4	-0...																							
212	1.2DL + 1.5Lm + 1Wm 210 AZI...	Yes	Y		DL	1.2	41	1.5	2	-05	3		5	-0...																							
213	1.2DL + 1.5Lm + 1Wm 225 AZI...	Yes	Y		DL	1.2	41	1.5	2	-0...	3		6	-0...																							
214	1.2DL + 1.5Lm + 1Wm 240 AZI...	Yes	Y		DL	1.2	41	1.5	2	-0...	3		7	-0...																							
215	1.2DL + 1.5Lm + 1Wm 270 AZI...	Yes	Y		DL	1.2	41	1.5	2		3		8	-0...																							
216	1.2DL + 1.5Lm + 1Wm 300 AZI...	Yes	Y		DL	1.2	41	1.5	2	.029	3		9	-0...																							
217	1.2DL + 1.5Lm + 1Wm 315 AZI...	Yes	Y		DL	1.2	41	1.5	2	.041	3		10	-0...																							
218	1.2DL + 1.5Lm + 1Wm 330 AZI...	Yes	Y		DL	1.2	41	1.5	2	.05	3		11	-0...																							
219	1.2DL + 1.5Lm + 1Wm 0 AZI - ...	Yes	Y		DL	1.2	42	1.5	2	.058	3		4	.058																							
220	1.2DL + 1.5Lm + 1Wm 30 AZI ...	Yes	Y		DL	1.2	42	1.5	2	.05	3		5	.058																							
221	1.2DL + 1.5Lm + 1Wm 45 AZI ...	Yes	Y		DL	1.2	42	1.5	2	.041	3		6	.058																							
222	1.2DL + 1.5Lm + 1Wm 60 AZI ...	Yes	Y		DL	1.2	42	1.5	2	.029	3		7	.058																							
223	1.2DL + 1.5Lm + 1Wm 90 AZI ...	Yes	Y		DL	1.2	42	1.5	2		3		8	.058																							
224	1.2DL + 1.5Lm + 1Wm 120 AZI...	Yes	Y		DL	1.2	42	1.5	2	-0...	3		9	.058																							
225	1.2DL + 1.5Lm + 1Wm 135 AZI...	Yes	Y		DL	1.2	42	1.5	2	-0...	3		10	.058																							
226	1.2DL + 1.5Lm + 1Wm 150 AZI...	Yes	Y		DL	1.2	42	1.5	2	-05	3		11	.058																							
227	1.2DL + 1.5Lm + 1Wm 180 AZI...	Yes	Y		DL	1.2	42	1.5	2	-0...	3		4	-0...																							
228	1.2DL + 1.5Lm + 1Wm 210 AZI...	Yes	Y		DL	1.2	42	1.5	2	-05	3		5	-0...																							
229	1.2DL + 1.5Lm + 1Wm 225 AZI...	Yes	Y		DL	1.2	42	1.5	2	-0...	3		6	-0...																							
230	1.2DL + 1.5Lm + 1Wm 240 AZI...	Yes	Y		DL	1.2	42	1.5	2	-0...	3		7	-0...																							
231	1.2DL + 1.5Lm + 1Wm 270 AZI...	Yes	Y		DL	1.2	42	1.5	2		3		8	-0...																							
232	1.2DL + 1.5Lm + 1Wm 300 AZI...	Yes	Y		DL	1.2	42	1.5	2	.029	3		9	-0...																							
233	1.2DL + 1.5Lm + 1Wm 315 AZI...	Yes	Y		DL	1.2	42	1.5	2	.041	3		10	-0...																							
234	1.2DL + 1.5Lm + 1Wm 330 AZI...	Yes	Y		DL	1.2	42	1.5	2	.05	3		11	-0...																							



Company : Trylon
 Designer : JE
 Job Number :
 Model Name : 842875

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Envelope Joint Reactions

Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC	
1	N25	max	1209.968	20	2470.224	39	1997.75	3	403.519	33	2260.494	3	304.33	30
2		min	-1216.735	12	-6.184	31	-1993.46	27	-2661.112	41	-2259.884	27	-4302.88	38
3	N1	max	1216.737	8	2470.213	45	1997.752	17	403.514	19	2259.885	25	4302.857	46
4		min	-1209.97	32	-6.181	21	-1993.462	25	-2661.102	43	-2260.495	17	-304.331	22
5	N13	max	2031.307	22	2376.039	34	480.249	18	4830.057	34	1927.617	30	694.535	167
6		min	-2031.307	30	-42.494	26	-488.952	10	-435.272	26	-1927.617	22	-694.539	223
7	Totals:	max	3712.607	22	6958.083	42	3938.388	18						
8		min	-3712.607	30	1425.876	66	-3938.389	10						

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

Member	Shape	Code Check	Loc[in]	LC	Shear Che...	Loc[.]	Dir	LC	phi*Pn...	phi*Pnt...	phi*Mn...	phi*Mn...	Cb	Eqn
1	M12	PIPE 3.5	.633	40	.204	40		11	75262....	78750	7953.75	7953.75	2...	H1-1b
2	M2	PIPE 3.5	.633	40	.204	40		9	75262....	78750	7953.75	7953.75	2...	H1-1b
3	M7	PIPE 3.5	.608	40	.185	40		6	75262....	78750	7953.75	7953.75	2...	H1-1b
4	M11	C3X5	.518	34.856	.180	63.1...	y	34	11202....	47628	981.263	4104	1...	H1-1b
5	M1	C3X5	.518	34.856	.180	6.536	y	34	11202....	47628	981.263	4104	1...	H1-1b
6	M6	C3X5	.493	34.856	.172	6.536	y	39	37027....	47628	981.263	4020.2...	1	H1-1b
7	MP1	PIPE 2.0	.383	48	.052	48		10	20866....	32130	1871.6...	1871.6...	2...	H1-1b
8	MP3	PIPE 2.0	.383	48	.052	48		10	20866....	32130	1871.6...	1871.6...	2...	H1-1b
9	MP2	PIPE 2.0	.380	48	.062	48		5	20866....	32130	1871.6...	1871.6...	1...	H1-1b
10	MP4	PIPE 2.0	.378	48	.045	48		5	20866....	32130	1871.6...	1871.6...	1...	H1-1b
11	MP9	PIPE 2.0	.378	48	.045	48		15	20866....	32130	1871.6...	1871.6...	1...	H1-1b
12	MP5	PIPE 2.0	.369	48	.054	48		10	20866....	32130	1871.6...	1871.6...	1...	H1-1b
13	MP8	PIPE 2.0	.369	48	.054	48		10	20866....	32130	1871.6...	1871.6...	1...	H1-1b
14	MP6	PIPE 2.0	.350	48	.052	48		4	20866....	32130	1871.6...	1871.6...	2...	H1-1b
15	MP7	PIPE 2.0	.350	48	.052	48		16	20866....	32130	1871.6...	1871.6...	2...	H1-1b
16	M15	6.5"x0.37"...	.278	21	.115	21	y	42	3513.8...	75757.5	583.963	6383.4...	1...	H1-1b
17	M5	6.5"x0.37"...	.278	21	.115	21	y	42	3513.8...	75757.5	583.963	6383.4...	1...	H1-1b
18	M10	6.5"x0.37"...	.275	21	.110	21	y	47	3513.8...	75757.5	583.963	6151.6...	1...	H1-1b
19	M4	L2x2x3	.187	0	.038	0	y	41	18051....	23392.8	557.717	1239.29	2...	H2-1
20	M13	L2x2x3	.187	0	.038	0	z	43	18051....	23392.8	557.717	1239.29	2...	H2-1
21	M8	L2x2x3	.170	0	.037	0	z	38	18051....	23392.8	557.717	1239.29	2...	H2-1
22	M9	L2x2x3	.170	0	.037	0	y	46	18051....	23392.8	557.717	1239.29	2...	H2-1
23	M14	L2x2x3	.168	0	.039	0	y	35	18051....	23392.8	557.717	1239.29	2...	H2-1
24	M3	L2x2x3	.168	0	.039	0	z	49	18051....	23392.8	557.717	1239.29	2...	H2-1
25	M19	PIPE 2.0	.150	72	.143	24		2	14916....	32130	1871.6...	1871.6...	1...	H1-1b
26	M20	PIPE 2.0	.148	24	.138	72		8	14916....	32130	1871.6...	1871.6...	1...	H1-1b
27	M21	PIPE 2.0	.148	72	.138	24		12	14916....	32130	1871.6...	1871.6...	1...	H1-1b
28	M24	L6 5/8x4 7...	.129	21	.037	0	y	14	15453....	66065....	1040.5...	3031.0...	1...	H2-1
29	M23	L6 5/8x4 7...	.123	40.25	.039	42	y	17	15453....	66065....	1040.5...	3031.0...	1...	H2-1
30	M22	L6 5/8x4 7...	.123	1.75	.039	0	y	3	15453....	66065....	1040.5...	3031.0...	1...	H2-1
31	H1	PIPE 3.5	.120	48	.099	24		10	60666....	78750	7953.75	7953.75	1...	H1-1b
32	H2	PIPE 3.5	.116	48	.094	72		5	60666....	78750	7953.75	7953.75	1...	H1-1b
33	H3	PIPE 3.5	.116	48	.094	24		15	60666....	78750	7953.75	7953.75	1...	H1-1b

APPENDIX D
ADDITIONAL CALCUATIONS

BOLT TOOL 1.5.2

Project Data	
Job Code:	189199
Carrier Site ID:	BOBDL00068A
Carrier Site Name:	CT-CCI-T-876329

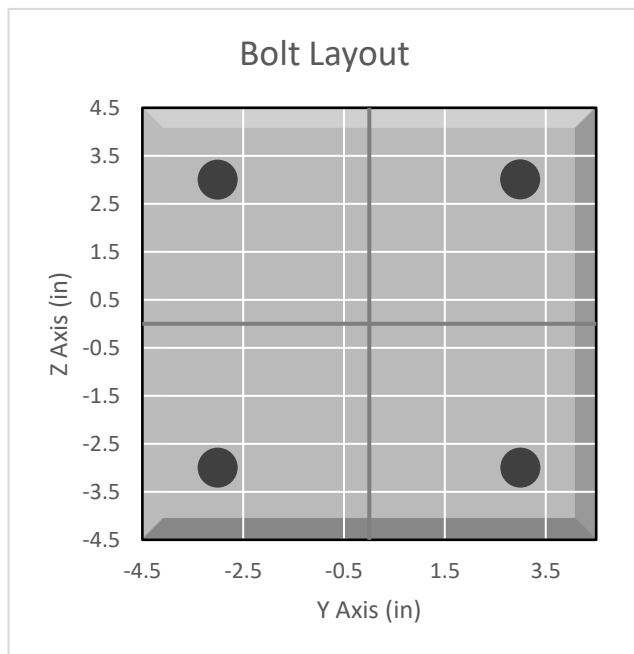
Code	
Design Standard:	TIA-222-H
Slip Check:	No
Pretension Standard:	TIA-222-H

Bolt Properties		
Connection Type:	Bolt	
Diameter:	0.625	in
Grade:	A325	--
Yield Strength (Fy):	92	ksi
Ultimate Strength (Fu):	120	ksi
Number of Bolts:	4	--
Threads Included:	Yes	--
Double Shear:	No	--
Connection Pipe Size:	-	in

Connection Description
Mount to Tower

Bolt Check*		
Tensile Capacity (ϕT_n):	20340.1	lbs
Shear Capacity (ϕV_n):	13805.8	lbs
Tension Force (T_u):	5315.0	lbs
Shear Force (V_u):	767.1	lbs
Tension Usage:	24.9%	--
Shear Usage:	5.3%	--
Interaction:	24.9%	Pass
Controlling Member:	M12	--
Controlling LC:	42	--

*Rating per TIA-222-H Section 15.5



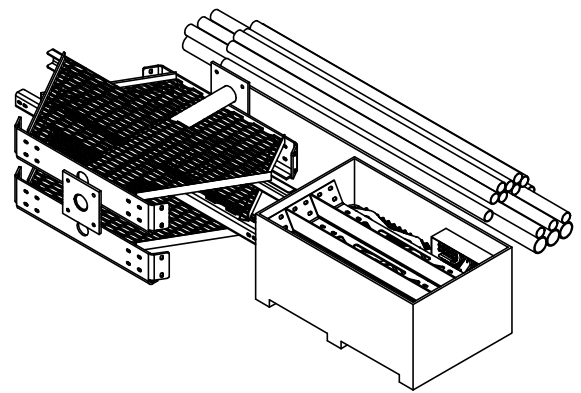
APPENDIX E
SUPPLEMENTAL DRAWINGS

ITEM	PART NO.	DESCRIPTION	QTY.	WEIGHT	NOTE NO.
1	MTC3006SB	STEEL BUNDLE FOR SNUB NOSE PLATFORM	1	402.64 LBS	
2	MCPK8CSB	PIPE STEEL BUNDLE FOR MC-PK8-C	1	464.27 LBS	
3	MCPK8CHWK	HARDWARE KIT FOR MC-PK8-C	1	543.22 LBS	




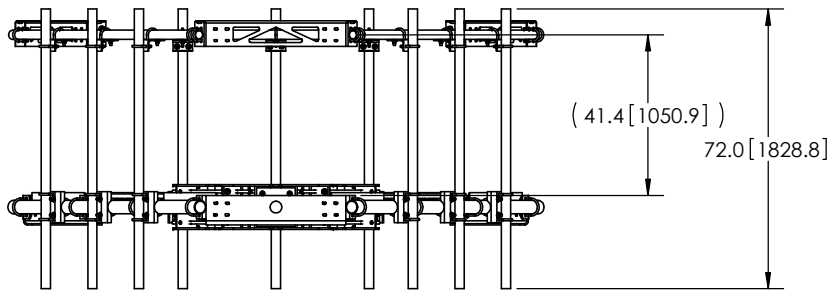
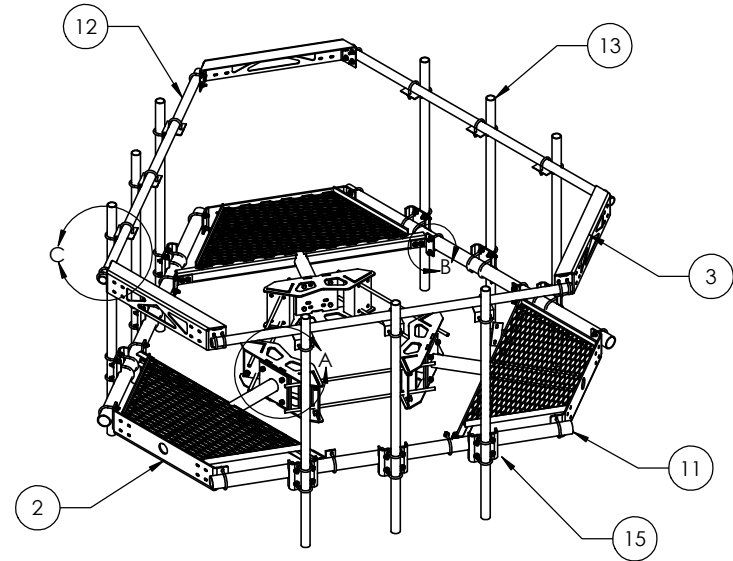
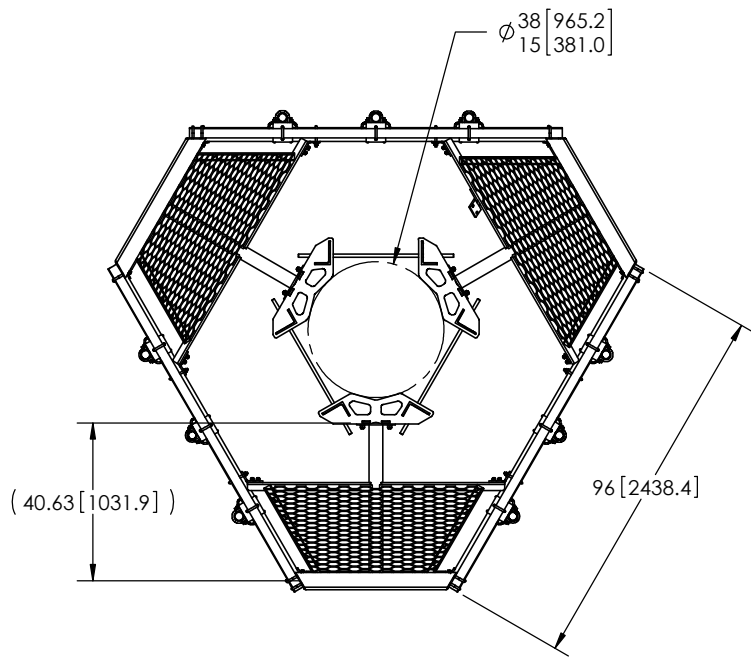
REVISIONS				
REV.	ECN	DESCRIPTION	BY	DATE
A		INITIAL RELEASE	DRR	12/27/11
B	8000005979	CHANGE NOSE CORNER BRKT, ADD GUB-4240	MSM	11/25/14
C	8000007579	NEW RINGMOUNT WELDMENT DESIGN	RJC	04/07/15

FOR BOM ENTRY ONLY




NOTES:
1. CUSTOMER ASSEMBLY SHEETS 2-3.

<small>These drawings and specifications are the proprietary property of ANDREW CORPORATION and may be used only for the specific purpose authorized in writing by Andrew Corporation.</small>			<small>DRAWN BY:</small> MSM	<small>SHEET:</small> 1 of 3	<small>PART NUMBER:</small> MC-PK8-C
<small>ALL DIMENSIONS ARE IN INCHES U.O.S. TOLERANCES UNLESS OTHERWISE SPECIFIED:</small>			<small>CHECKED BY:</small> TP	<small>SCALE:</small> NTS	<small>DESCRIPTION:</small> LOW PROFILE PLATFORM KIT 8' FACE
<small>.X = ± .12 ANGLES ±2° .XX = ± .06 FRACTIONS ±1/32 .XXX = ± .03</small>			<small>DATE:</small> 10/18/11	<small>MATERIAL:</small> A36, A500	<small>DRAWING TYPE:</small> ASSEMBLY DRAWING
<small>REMOVE BURRS AND BREAK EDGES .005</small>			<small>REVISION:</small> C	<small>FINISH:</small> GALV A123	 WESTCHESTER, IL. 60154 U.S.A.
<small>DO NOT SCALE THIS PRINT</small>				<small>WEIGHT:</small> 1410.14 LBS	

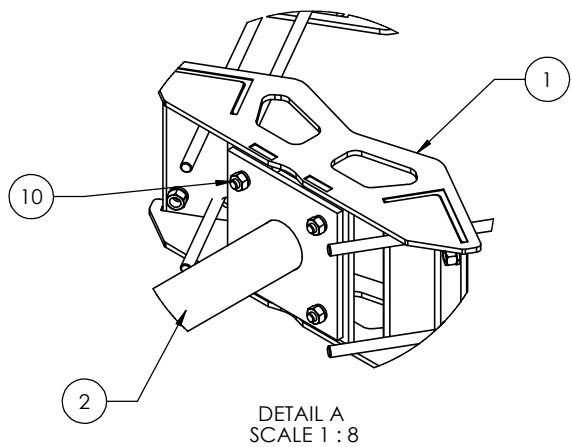


ITEM	PART NO.	DESCRIPTION	QTY.	WEIGHT
1	MC-RM1550-3	12" - 50" OD RINGMOUNT	1	230.42 LBS
2	MTC300601	Low Profile Co-Location Platform Snub Nose	3	134.21 LBS
3	MT195801	Corner Weldment Snub Nose Handrail	3	27.10 LBS
4	XA2020.01	CROSS OVER ANGLE	9	2.65 LBS
5	GUB-4356	1/2" X 3-5/8" X 6" GALV U-BOLT	18	0.82 LBS
6	GUB-4355	1/2" X 3-5/8" X 5" GALV U-BOLT	12	0.71 LBS
7	GUB-4240	1/2" X 2-1/2" X 4" GALV U-BOLT	48	0.56 LBS
8	GB-04145	1/2" X 1-1/2" GALV BOLT KIT	12	0.13 LBS
9	GWF-04	1/2" GALV FLAT WASHER	24	0.03 LBS
10	GB-0520A	5/8" X 2" GALV BOLT KIT (A325)	12	0.27 LBS
11	MT54796	3.50" OD X 96" GALV PIPE	3	60.28 LBS
12	MT-651-96	Ø2.375" OD X 96" PIPE	3	29.07 LBS
13	MT-651	2.375" OD x 72" PIPE	9	21.80 LBS
14	MT19617	MT196 Pipe Mount Plate	6	2.49 LBS
15	MT21701	PIPE MOUNT PLATE	9	7.93 LBS

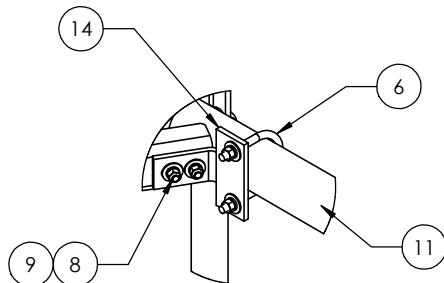
<small>These drawings and specifications are the proprietary property of ANDREW CORPORATION and may be used only for the specific purpose authorized in writing by Andrew Corporation.</small>			
DESIGNED BY: MSM	DATE: 10/18/11	SHEET: 2 of 3	PART NUMBER: MC-PK8-C
CHECKED BY: TP	DATE: 10/18/11	SCALE: NTS	DESCRIPTION: 25" OD Snub Nose MT-196
REVISION: C	DATE: 10/18/11	MATERIAL: A36, A53	DRAWING TYPE: ASSEMBLY DRAWING
REVISION: C	DATE: 10/18/11	FINISH: GALV A123	WEIGHT: 1361.27 LBS
DO NOT SCALE THIS PRINT		 WESTCHESTER, IL. 60154 U.S.A.	

- NOTES:
1. ALL METRIC DIMENSIONS ARE IN BRACKETS.
 2. WILL FIT MONOPOLES 15"-38" OD.

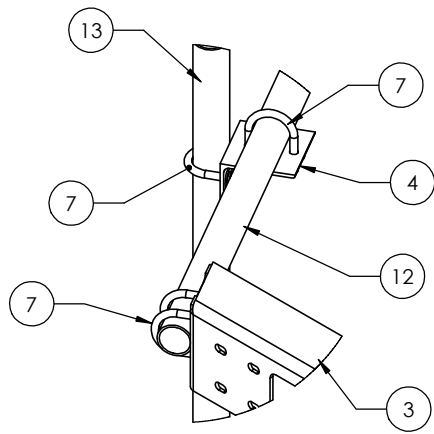
8 7 6 5 4 3 2 1



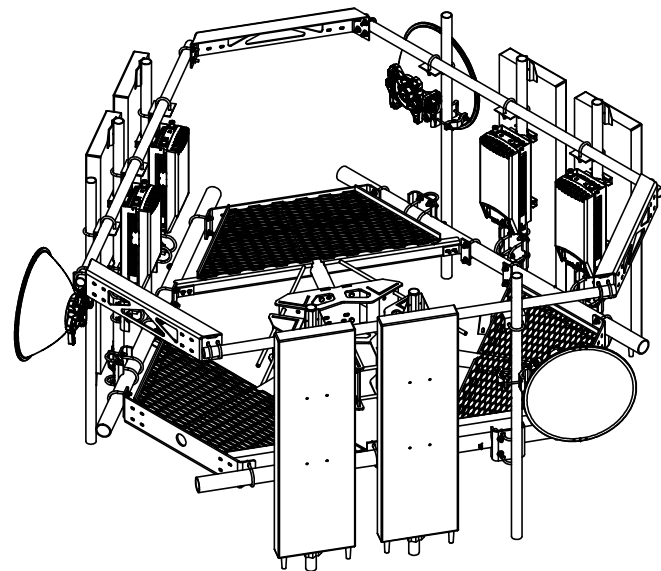
DETAIL A
SCALE 1 : 8



DETAIL B
SCALE 1 : 8




DETAIL C
SCALE 1 : 8



WITH ANTENNAS

NOTES:
1. ALL METRIC DIMENSIONS ARE IN BRACKETS.

<small>These drawings and specifications are the proprietary property of ANDREW CORPORATION and may be used only for the specific purpose authorized in writing by Andrew Corporation.</small>		<small>DRAWN BY:</small> MSM <small>CHECKED BY:</small> TP <small>DATE:</small> 10/18/11 <small>REVISION:</small> C	<small>SHEET:</small> 3 of 3 <small>SCALE:</small> NTS <small>MATERIAL:</small> A36, A53 <small>FINISH:</small> GALV A123 <small>WEIGHT:</small> 1361.27 LBS	<small>PART NUMBER:</small> MC-PK8-C <small>DESCRIPTION:</small> 25" OD Snub Nose MT-196 <small>DRAWING TYPE:</small> ASSEMBLY DRAWING 	<small>WESTCHESTER, IL. 60154 U.S.A.</small>
<small>ALL DIMENSIONS ARE IN INCHES U.O.S. TOLERANCES UNLESS OTHERWISE SPECIFIED:</small> .X = ± .12 ANGLES ±2° .XX = ± .06 FRACTIONS ±1/32 .XXX = ± .03 <small>REMOVE BURRS AND BREAK EDGES .005</small> DO NOT SCALE THIS PRINT					

8 7 6 5 4 3 2 1

Exhibit F

Power Density/RF Emissions Report

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

Dish Wireless Existing Facility

Site ID: 842875

BOBDL00068A
99 Day Hill Road
Windsor, Connecticut 06095

June 24, 2021

EBI Project Number: 6221003209

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	20.96%

June 24, 2021

Dish Wireless

Emissions Analysis for Site: 842875 - BOBDL00068A

EBI Consulting was directed to analyze the proposed Dish Wireless facility located at **99 Day Hill Road 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 97-01 and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$). The number of $\mu\text{W}/\text{cm}^2$ 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 ($\mu\text{W}/\text{cm}^2$). The general population exposure limits for the 600 MHz and 700 MHz frequency bands are approximately $400 \mu\text{W}/\text{cm}^2$ and $467 \mu\text{W}/\text{cm}^2$, respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 11 GHz frequency bands is $1000 \mu\text{W}/\text{cm}^2$. 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 99 Day Hill Road 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 10 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 5G 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 5G 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 10 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 10 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 120 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 #:	I	Antenna #:	I	Antenna #:	I
Make / Model:	JMA MX08FRO665-2I	Make / Model:	JMA MX08FRO665-2I	Make / Model:	JMA MX08FRO665-2I
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):	120 feet	Height (AGL):	120 feet	Height (AGL):	120 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):	36,123.20	ERP (W):	36,123.20	ERP (W):	36,123.20
Antenna AI MPE %:	12.76%	Antenna BI MPE %:	12.76%	Antenna CI MPE %:	12.76%

Site Composite MPE %	
Carrier	MPE %
Dish Wireless (Max at Sector A):	12.76%
Nextel	0.24%
Sprint	1.46%
Clearwire	0.08%
Metro PCS	0.94%
Bloomfield PD	0.01%
Municipal Antennas	0.35%
AT&T	5.12%
Site Total MPE % :	20.96%

Dish Wireless MPE % Per Sector	
Dish Wireless Sector A Total:	12.76%
Dish Wireless Sector B Total:	12.76%
Dish Wireless Sector C Total:	12.76%
Site Total MPE % :	20.96%

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 ($\mu\text{W}/\text{cm}^2$)	Frequency (MHz)	Allowable MPE ($\mu\text{W}/\text{cm}^2$)	Calculated % MPE
Dish Wireless 600 MHz 5G	4	1667.71	120.0	18.45	600 MHz 5G	400	4.61%
Dish Wireless 1900 MHz 5G	4	7363.09	120.0	81.48	1900 MHz 5G	1000	8.15%
						Total:	12.76%

• 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:

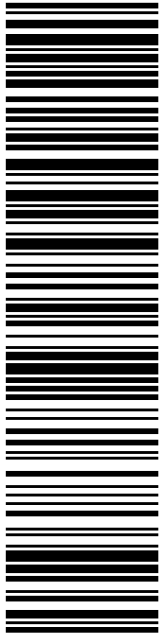
Dish Wireless Sector	Power Density Value (%)
Sector A:	12.76%
Sector B:	12.76%
Sector C:	12.76%
Dish Wireless Maximum MPE % (Sector A):	12.76%
Site Total:	20.96%
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **20.96%** 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

Recipient Mailings



USPS TRACKING #

9405 5036 9930 0476 1172 94

Electronic Rate Approved #038555749

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

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

P

usps.com 9405 5036 9930 0476 1172 94 0079 5000 0031 4586
US POSTAGE
 Flat Rate Env
 U.S. POSTAGE PAID
 Click-N-Ship®

08/17/2021 Mailed from 01566

PRIORITY MAIL 2-DAY™

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

Expected Delivery Date: 08/20/21
 Re#: DS-842875
0006

R013

✂ ————— 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 0476 1172 94

Trans. #: 540984582	Priority Mail® Postage: \$7.95
Print Date: 08/17/2021	Total: \$7.95
Ship Date: 08/17/2021	
Expected Delivery Date: 08/20/2021	

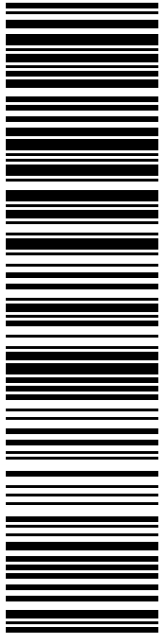
From: DEBORAH CHASE Re#: DS-842875
 NORTHEAST SITE SOLUTIONS
 420 MAIN ST
 STE 1
 STURBRIDGE MA 01566-1359

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



USPS TRACKING #

9405 5036 9930 0476 1173 17

Electronic Rate Approved #038555749

SHIP

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

Expected Delivery Date: 08/20/21

Re#: DS-842875

0006

C036

P

PRIORITY MAIL 2-DAY™

usps.com 9405 5036 9930 0476 1173 17 0079 5000 0010 6095

US POSTAGE \$7.95


Flat Rate Env

08/17/2021

Mailed from 01566

U.S. POSTAGE PAID

Click-N-Ship®



Click-N-Ship®



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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.
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Click-N-Ship® Label Record

USPS TRACKING # :

9405 5036 9930 0476 1173 17

<p>Trans. #: 540984582</p> <p>Print Date: 08/17/2021</p> <p>Ship Date: 08/17/2021</p> <p>Expected Delivery Date: 08/20/2021</p>	<p>Priority Mail® Postage: \$7.95</p> <p>Total: \$7.95</p>
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From: DEBORAH CHASE
NORTHEAST SITE SOLUTIONS
420 MAIN ST
STE 1
STURBRIDGE MA 01566-1359

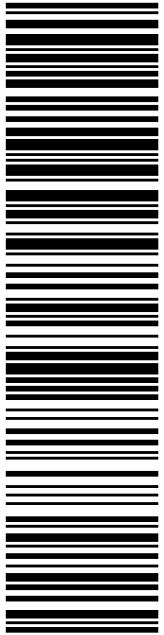
Re#: DS-842875

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.



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USPS TRACKING #

9405 5036 9930 0476 1173 24

Electronic Rate Approved #038555749

SHIP

TO: ROBERT RUZZO
 BUILDING OFFICIAL
 275 BROAD ST
 WINDSOR CT 06095-2940

P

US POSTAGE
 Flat Rate Env
 \$7.95
usps.com

U.S. POSTAGE PAID
click-n-ship®

Mailed from 01566

PRIORITY MAIL 2-DAY™

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

Expected Delivery Date: 08/20/21
 Re#: DS-842875
0006

C036

UNITED STATES POSTAL SERVICE®

Click-N-Ship®

usps.com 9405 5036 9930 0476 1173 24 0079 5000 0010 6095

08/17/2021



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 0476 1173 24

Trans. #: 540984582	Priority Mail® Postage: \$7.95
Print Date: 08/17/2021	Total: \$7.95
Ship Date: 08/17/2021	
Expected Delivery Date: 08/20/2021	

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

Re#: DS-842875

To: ROBERT RUZZO
 BUILDING OFFICIAL
 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.



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842875



**UNITED STATES
POSTAL SERVICE**

FISKDALE
458 MAIN ST
FISKDALE, MA 01518-9998
(800)275-8777

08/18/2021

04:14 PM

Product	Qty	Unit Price	Price
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Prepaid Mail	1		\$0.00
Windsor, CT 06095			
Weight: 1 lb 9.50 oz			
Acceptance Date:			
Wed 08/18/2021			
Tracking #:			
9405 5036 9930 0476 1173 24			

Prepaid Mail	1		\$0.00
Windsor, CT 06095			
Weight: 1 lb 9.50 oz			
Acceptance Date:			
Wed 08/18/2021			
Tracking #:			
9405 5036 9930 0476 1173 17			

Prepaid Mail	1		\$0.00
West Henrietta, NY 14586			
Weight: 0 lb 2.00 oz			
Acceptance Date:			
Wed 08/18/2021			
Tracking #:			
9405 5036 9930 0476 1172 94			

Grand Total:			\$0.00
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