NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

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

October 7, 2021

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

RE: Tower Share Application
115 Birch Mountain Road, Glastonbury, CT 06033
Latitude: 41.708956
Longitude: -72.473447
Site# 871584_Crown_Dish

Dear Ms. Bachman:

This letter and attachments are submitted on behalf of Dish Wireless LLC. Dish Wireless LLC plans to install antennas and related equipment to the tower site located at 115 Birch Mountain Road in Glastonbury, Connecticut.

Dish Wireless LLC proposes to install three (3) 600/1900 5G MHz antenna and six (6) RRUs, at the 134-foot level of the existing 200-foot self-support tower, one (1) Fiber cables will also be installed. Dish Wireless LLC equipment cabinets will be placed within 7x5 lease area. Included are plans by Infinigy, dated October 8, 2021 Exhibit C. Also included is a structural analysis prepared by Crown Castle, dated June 4, 2021, confirming that the existing tower is structurally capable of supporting the proposed equipment. Attached as Exhibit D. The facility was approved by the Town of Glastonbury Planning and Zoning on April 25, 2001. Please see attached Exhibit A.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies 16-50aa, of Dish Wireless LLC intent to share a telecommunications facility pursuant to R.C.S.A. 16-50j-88. In accordance with R.C.S.A., a copy of this letter is being sent to Richard J. Johnson, Town Manager and Peter R Carey, Building Official for the Town of Glastonbury, as well as the tower owner (Crown Castle) and property owner (Scarrone Park LLC)

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

1. The proposed modification will not result in an increase in the height of the existing structure. The top of the tower is 200-feet; Dish Wireless LLC proposed antennas will be located at a center line height of 134-feet.

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

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

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4. The operation of the proposed antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard. As indicated in the attached power density calculations, the combined site operations will result in a total power density of 15.05% as evidenced by Exhibit F.

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

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

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

C. Environmental Feasibility. The proposed shared use of this facility would have a minimal environmental impact. The installation of Dish Wireless LLC equipment at the 134-foot level of the existing 200-foot tower would have an insignificant visual impact on the area around the tower. Dish Wireless LLC ground equipment would be installed within the existing facility compound. Dish Wireless LLC shared use would therefore not cause any significant alteration in the physical or environmental characteristics of the existing site. Additionally, as evidenced by Exhibit F, the proposed antennas would not increase radio frequency emissions to a level at or above the Federal Communications Commission safety standard.

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

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

Sincerely,

Denise Sabo

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

NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

Attachments cc:

Richard J. Johnson, Town Manager
Glastonbury Town Hall
2155 Main Street Glastonbury, CT 06033

Peter R Carey, Building Official
Glastonbury Town Hall
2155 Main Street Glastonbury, CT 06033

Scarrone Park LLC, Property Owner
C/O Maria A. Toczyska
3385 Hebron Avenue Glastonbury, CT 06033

Crown Castle, Tower Owner

Exhibit A

Original Facility Approval

0425-01

TOWN OF GLASTONBURY
APPLICATION FOR BUILDING PERMIT
CONNECTICUT STATE BUILDING CODE (SBC111.0)

DEPARTMENT DECISION

..... Approved ..... Disapproved

....
Date Inspector

ESTIMATED COSTS

Structural	180,870
Plumbing	
Electrical	10,000
Heating/AC	
Fire Protection	
Total	190,870

FEES

C.O. & Use	
Structural	
Plumbing	
Electrical	
Heating/AC	
Fire Protection	
Total	

ACTUAL COST AFFIDAVIT MAY BE REQUESTED

(Please Print or Type All Entries)

115 BIRCH MOUNTAIN ROAD — Job Location Street Address
N92 — Lot#

CAROLYN R. SCARRONE C/O DAVID SHERWOOD — Owner's Name
ALTEL, SHERWOOD & JANENDA, LLC

701 HEBRON AVE — Street Address
GLASTONBURY — Town
CT — State
06033 — Zip

Home Phone#
860-652-4070 — Work Phone#
860-652-4022 — Fax#
Mobile Phone#

NOTARAS NORTH AMERICAN ANTENNA SITES — PAUL BENNER PROJECT MANAGER — Applicant's Name (If other than Owner)

6349 FORGE TWSP — Street Address
BENSALEM — Town
PA — State
19020 — Zip

Home Phone#
215-757-4955 — Work Phone#
215-757-6152 — Fax#
Mobile Phone#

C.E.R. TOWERS, L.L.C. — Contractor/General Contractor
16-148-9449 — Registration #

7693 WEST STATE ST — Street Address
LOWVILLE — Town
NY — State
13367 — Zip
315-376-0056 — Telephone#

Home Phone#
Work Phone#
315-376-8139 — Fax#
Mobile Phone#

ZONING INFORMATION:

Distance From:

Zone..RURAL RESIDENCE..

Street Line.....73'..... Rear Line.....220'.....

Right Line.....750'..... Left Line.....175'.....

Zoning Board of Appeals Approval....VOL 205 PAGE 93.....TPZ Special Permit.....

Project Type:

a) ☒ New Construction
b) ☐ Addition
c) ☐ Alteration
d) ☒ Repair/Replacement
e) ☐ Demolition
f) ☐ Relocation
g) ☐ Change of Use
h) ☐ Article 32
i) ☐ Designated Historic Structure

Construction Type: ☐ 1A ☐ 1B ☐ 2A ☐ 2B ☐ 2C ☐ 3A ☐ 3B ☐ 4 ☐ 5A ☐ 5B

Use Group(s):

☐ A-1 ☐ A-2 ☐ A-3 ☐ A-4 ☐ A-5
☐ B ☐ F-1 ☐ F-2
☐ H-1 ☐ H-2 ☐ H-3 ☐ H-4
☐ I-1 ☐ I-2 ☐ I-3
☐ M ☐ R-1 ☐ R-2 ☐ R-3
☐ S-1 ☐ S-2 ☐ U

Mixed Use: ☐ Yes ☐ No ☐ Separated ☐ Nonseparated

(Over)

Exhibit B

Property Card

115 BIRCH MOUNTAIN RD

Location	115 BIRCH MOUNTAIN RD	**Mblu**	N6/ 2920/ E0001C/ /
Acct#	29203387	**Owner**	SCARRONE PARK LLC
Assessment	$566,600	**Appraisal**	$809,400
PID	13487	**Building Count**	1

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2019	$800	$808,600	$809,400
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2019	$600	$566,000	$566,600

Owner of Record

Owner	SCARRONE PARK LLC
Co-Owner	C/O TOCZYSKA MARIA A
Address	3385 HEBRON AVE GLASTONBURY, CT 06033-2806

Sale Price	$0
Certificate	
Book & Page	3525/0218
Sale Date	11/15/2018
Instrument	79

Ownership History

Ownership History					
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Instrument**	**Sale Date**
TOCZYSKA MARIA A	$0		3525/0216	81	11/15/2018
SCARRONE CAROLYN R REVOCABLE TRUST	$0		3468/0328	25	01/22/2018
SCARRONE CAROLYN R REVOCABLE TRUST	$0		1829/0101	79	06/03/2003
SCARRONE CAROLYN R	$0		1261/0312		07/29/1999

Building Information

Building 1 : Section 1

Year Built:
Living Area: 0
Replacement Cost: $0

Replacement Cost
Less Depreciation: $0

Building Attributes	
Field	**Description**
Style	Vacant Land
Model	
Occupancy	
Exterior Wall 1	
Roof Structure:	
Roof Cover	
Interior Wall 1	
Floor/Cover 1	
Floor/Cover 2	
Heat Fuel	
Heat Type:	
AC Type:	
Total Bedrooms:	
Total Bthrms:	
Total Half Baths:	
Total Rooms:	
Extra Kitchens	
Style Sub Class	
Bsmt Garages	
Fireplaces	

Building Photo

(http://images.vgsi.com/photos/GlastonburyCTPhotos//\02\02\02/02.jpg)

Building Layout

(http://images.vgsi.com/photos/GlastonburyCTPhotos//Sketches/13487_13

Building Sub-Areas (sq ft)
No Data for Building Sub-Areas

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code 350V
Description Cell Tower 00 MDL
Zone RR
Category

Land Line Valuation

Size (Acres) 11.54
Assessed Value $566,000
Appraised Value $808,600

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**

SHD2	Shed-Metal-Storage			168 S.F.	$800	1

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
4000	$800	$808,600	$809,400

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
4000	$600	$566,000	$566,600

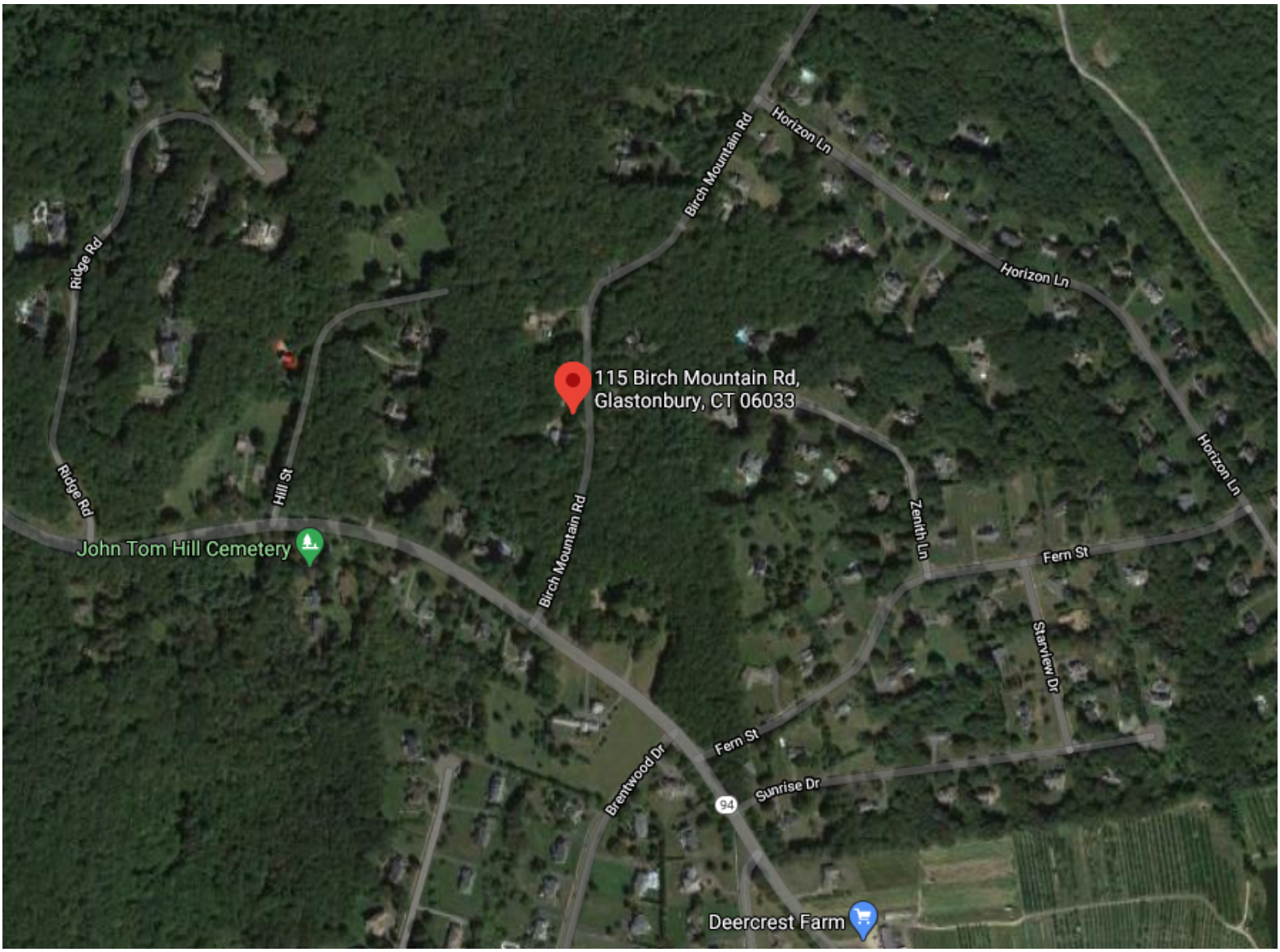

115 Birch Mountain Rd,
Glastonbury, CT 06033
Birch Mountain Rd
Horizon Ln
Horizon Ln
Horizon Ln
Ridge Rd
Ridge Rd
Hill St
Birch Mountain Rd
John Tom Hill Cemetery
Zenith Ln
Fern St
Starview Dr
Fern St
Brentwood Dr
Sunrise Dr
94
Deercrest Farm

Exhibit C

Construction Drawings

DISH Wireless L.L.C. SITE ID:

BOBDL00076A

DISH Wireless L.L.C. SITE ADDRESS:

115 BIRCH MTN. ROAD
GLASTONBURY, CT 06033

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

SCOPE OF WORK

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

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

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

SITE PHOTO

UNDERGROUND SERVICE ALERT CBYD 811
UTILITY NOTIFICATION CENTER OF CONNECTICUT
(800) 922-4455
WWW.CBYD.COM

CALL 2 WORKING DAYS UTILITY NOTIFICATION PRIOR TO CONSTRUCTION

GENERAL NOTES

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

11"x17" PLOT WILL BE HALF SCALE UNLESS OTHERWISE NOTED

CONTRACTOR SHALL VERIFY ALL PLANS, EXISTING DIMENSIONS, AND CONDITIONS ON THE JOB SITE, AND SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK.

SITE INFORMATION

PROPERTY OWNER:	SCARRONE PARK LLC
ADDRESS:	3385 HEBRON AVE. GLASTONBURY, CT 06033
TOWER TYPE:	SELF SUPPORT TOWER
TOWER CO SITE ID:	871584
TOWER APP NUMBER:	556617
COUNTY:	HARTFORD
LATITUDE (NAD 83):	41° 42' 32.24" N 41.708956 N
LONGITUDE (NAD 83):	72° 28' 24.41" W 72.473447 W
ZONING JURISDICTION:	CT – CONNECTICUT SITTING COUNCIL
ZONING DISTRICT:	TBD
PARCEL NUMBER:	GLAS-002920-003387
OCCUPANCY GROUP:	U
CONSTRUCTION TYPE:	II-B
POWER COMPANY:	CONNECTICUT LIGHT & POWER
TELEPHONE COMPANY:	AT&T

PROJECT DIRECTORY

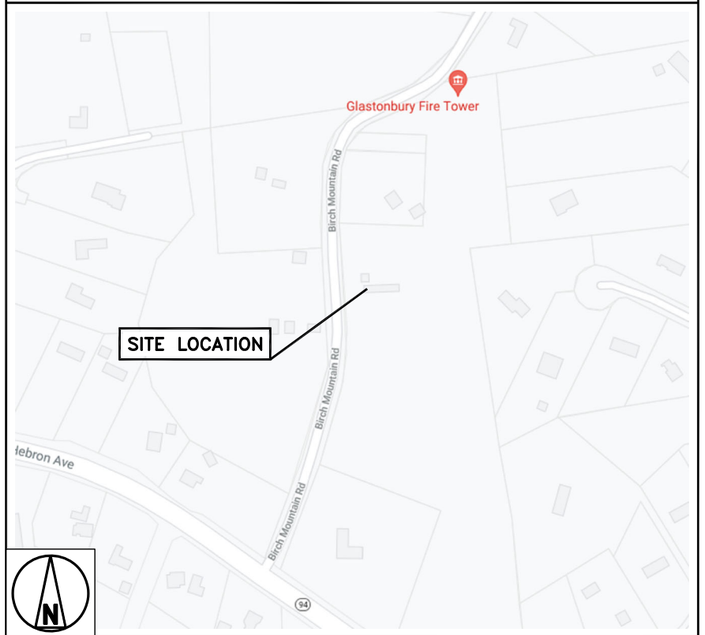
APPLICANT:	DISH Wireless L.L.C. 5701 SOUTH SANTA FE DRIVE LITTLETON, CO 80120
TOWER OWNER:	CROWN CASTLE 2000 CORPORATE DRIVE CANONSBURG, PA 15317 (877) 486-9377
SITE DESIGNER:	INFINIGY 2500 W. HIGGINS RD. STE. 500 HOFFMAN ESTATES, IL 60169 (847) 648-4068
SITE ACQUISITION:	JEANNE CONTTRELL (203) 927-4317
CONSTRUCTION MANAGER:	JAVIER SOTO JAVIER.SOTO@DISH.COM
RF ENGINEER:	BOSSENER CHARLES BOSSENER.CHARLES@DISH.COM

DIRECTIONS

DIRECTIONS FROM MANCHESTER BOSTON REGIONAL AIRPORT:

DEPART AND HEAD TOWARD MAXIM RD, TURN LEFT ONTO MAXIM RD, BEAR RIGHT ONTO BRAINARD RD, TAKE THE RAMP ON THE RIGHT FOR US-5 N / CT-15 N / WILBUR CROSS HWY N AND HEAD TOWARD BOSTON / SPRINGFIELD, HEAD RIGHT ON THE RAMP FOR US-5 NORTH TOWARD E. RIVER DR / NORWICH, HEAD RIGHT ON THE RAMP FOR HEBRON AVE TOWARD IRISH AMERICAN HOME SOCIETY, TURN LEFT ONTO CT-94 / HEBRON AVE TOWARD IRISH AMERICAN HOME SOCIETY / HEBRON AVE, TURN LEFT ONTO BIRCH MOUNTAIN RD, ARRIVE AT, 115 BIRCH MTN. ROAD, GLASTONBURY, CT 06033.

VICINITY MAP



NO SCALE

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

CROWN CASTLE
2000 CORPORATE DRIVE
CANONSBURG, PA 15317

INFINIGY
FROM ZERO TO INFINIGY
the solutions are endless
2500 W. HIGGINS RD. SUITE 500 | HOFFMAN ESTATES, IL 60169
PHONE: 847-648-4068 | FAX: 518-690-0793
WWW.INFINIGY.COM

STATE OF CONNECTICUT
SHUHEI SAKANOUE
34916
LICENSED PROFESSIONAL ENGINEER
10/8/2021

DRAWN BY:	CHECKED BY:	APPROVED BY:
RCD	SS	CJW

RFDS REV #: N/A

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	06/09/2021	ISSUED FOR REVIEW
0	10/08/2021	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
6039-Z0001C

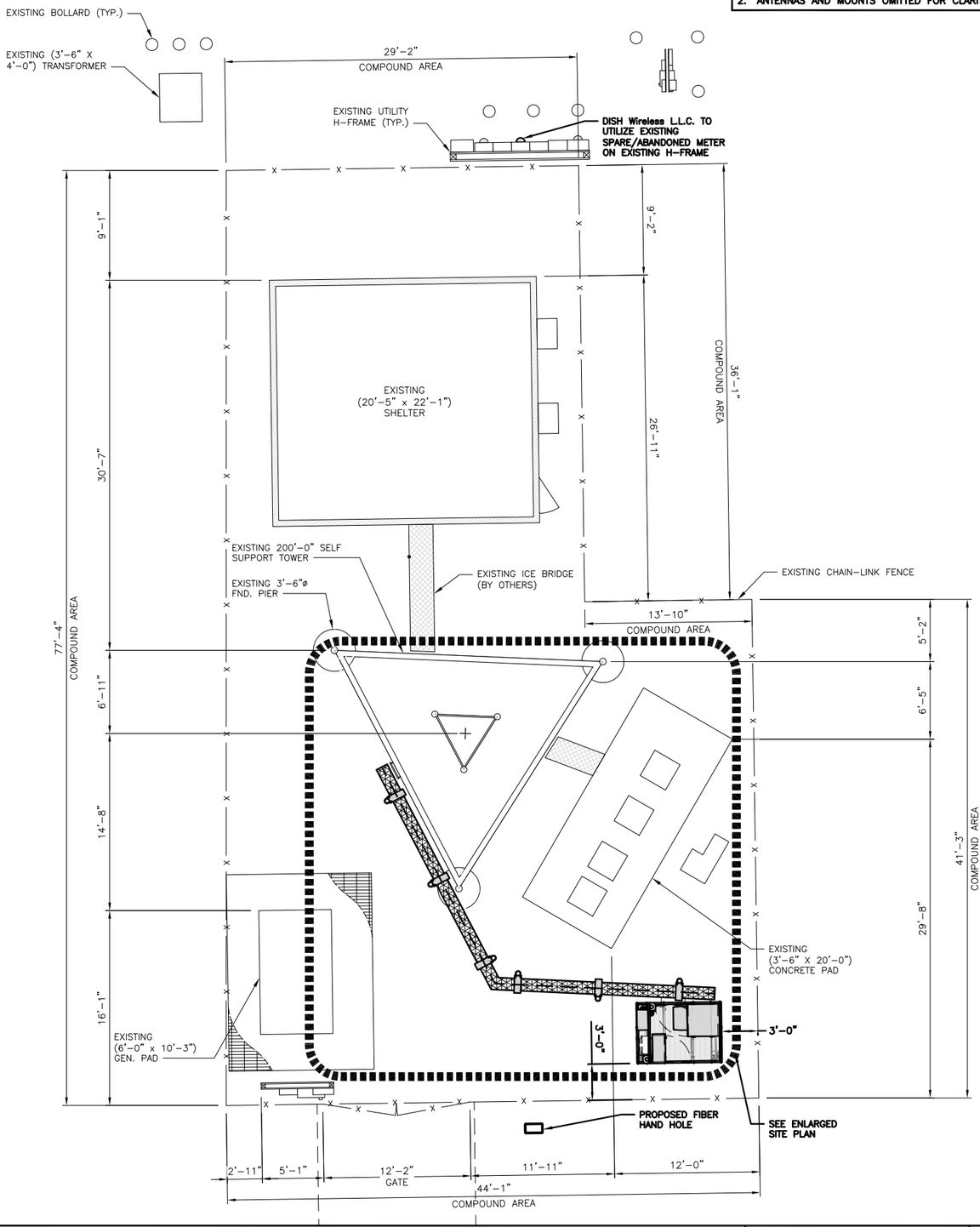
DISH Wireless L.L.C.
PROJECT INFORMATION
BOBDL00076A
115 BIRCH MTN. RD
GLASTONBURY, CT 06033

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1

NOTES

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



1 A-2

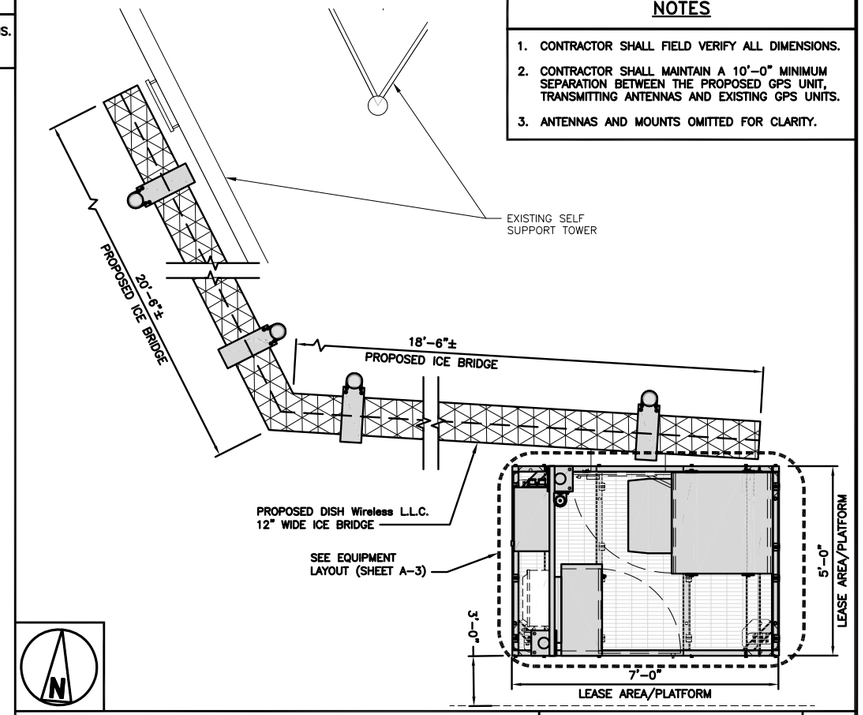
COMPOUND PLAN

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

1

NOTES

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



ENLARGED SITE PLAN

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

2

SITE PLAN

50' 25' 0 50' 100'
1"=50'

3

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10/8/2021

DRAWN BY:	CHECKED BY:	APPROVED BY:
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A&E PROJECT NUMBER
6039-Z0001C

DISH Wireless L.L.C.
PROJECT INFORMATION

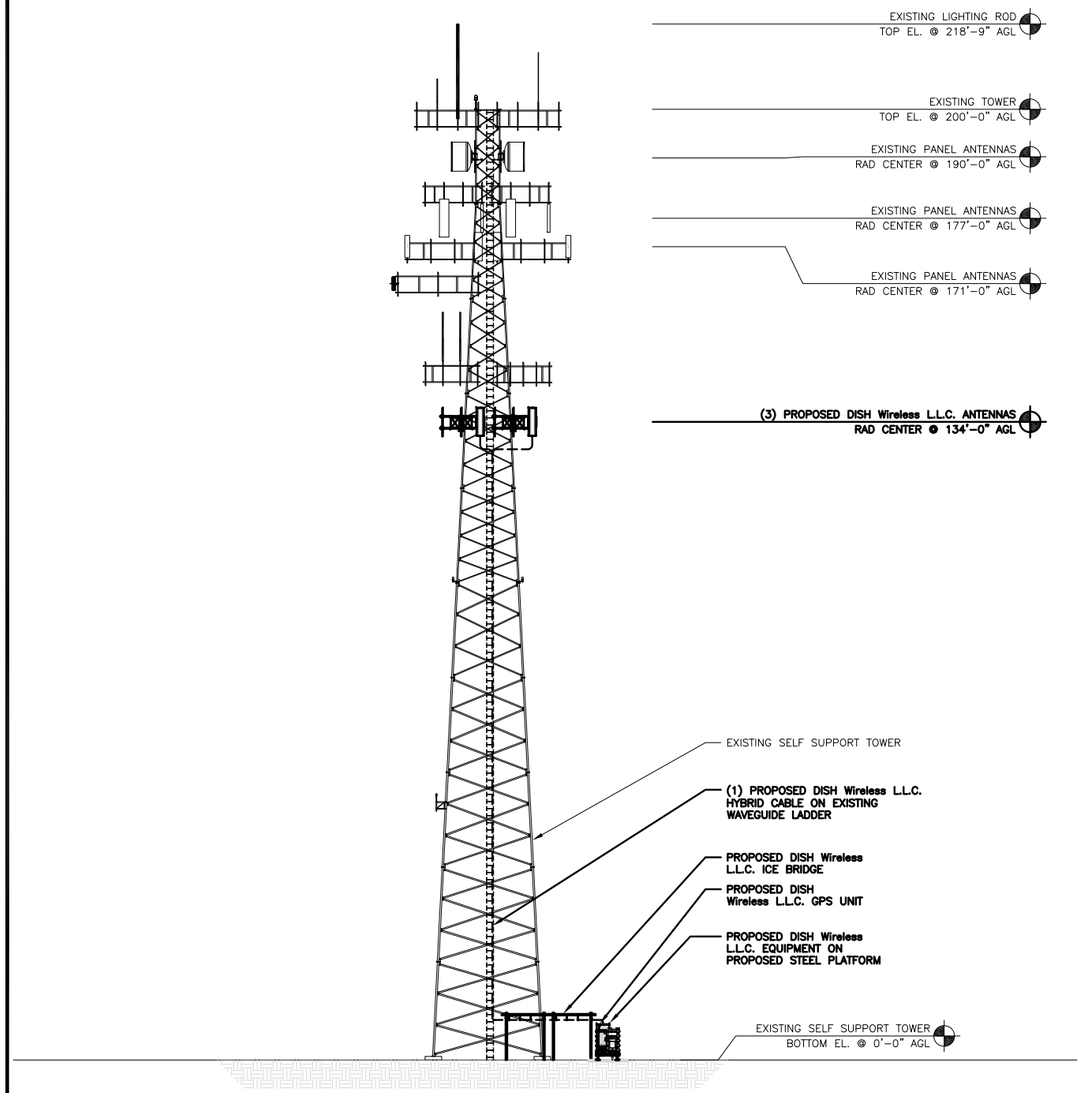
BOBDL00076A
115 BIRCH MTN. RD
GLASTONBURY, CT 06033

SHEET TITLE
OVERALL AND ENLARGED SITE PLAN

SHEET NUMBER
A-1

NOTES

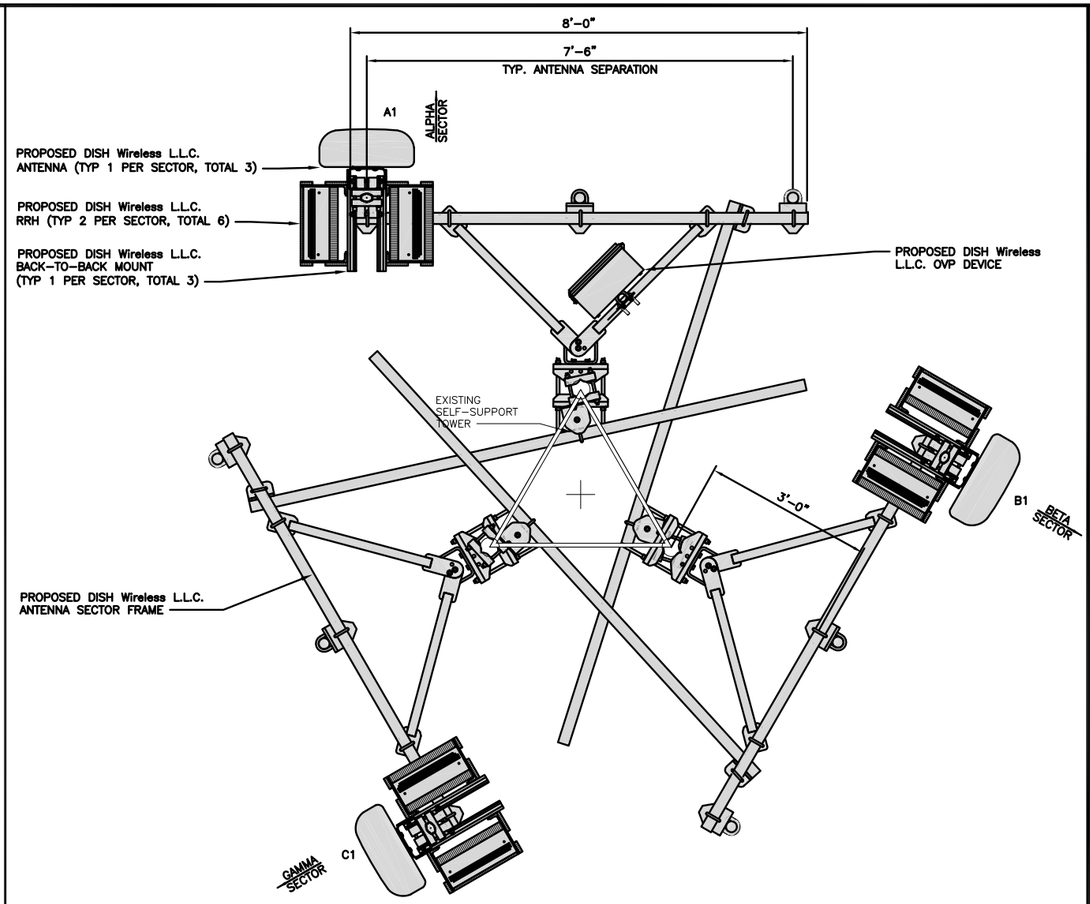
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNA SPECIFICATIONS REFER TO ANTENNA SCHEDULE AND TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS
3. EXISTING EQUIPMENT AND FENCE OMITTED FOR CLARITY.
4. INFINIGY HAS NOT EVALUATED THE TOWER OR MOUNT STRUCTURE AND ASSUMES NO RESPONSIBILITY FOR THEIR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



PROPOSED WEST ELEVATION

16' 12' 8' 4' 0 16' 32'
1/16"=1'-0"

1



ANTENNA LAYOUT

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

2

SECTOR	POSITION	ANTENNA						TRANSMISSION CABLE
		EXISTING OR PROPOSED	MANUFACTURER – MODEL NUMBER	TECHNOLOGY	SIZE (HxW)	AZMUITH	RAD CENTER	FEED LINE TYPE AND LENGTH
ALPHA	A1	PROPOSED	JMA WIRELESS – MX08FRO665-21	5G	72.0" x 20.0"	0°	134'-0"	(1) HIGH-CAPACITY HYBRID CABLE (196' LONG)
BETA	B1	PROPOSED	JMA WIRELESS – MX08FRO665-21	5G	72.0" x 20.0"	120°	134'-0"	
GAMMA	C1	PROPOSED	JMA WIRELESS – MX08FRO665-21	5G	72.0" x 20.0"	240°	134'-0"	

NOTES

1. CONTRACTOR TO REFER TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS.
2. ANTENNA OR 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.

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

NOTES

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

ANTENNA SCHEDULE

NO SCALE

3

dish wireless.
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LITTLETON, CO 80120

CROWN CASTLE
2000 CORPORATE DRIVE
CANONSBURG, PA 15317

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DRAWN BY:	CHECKED BY:	APPROVED BY:
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RFDS REV #: N/A

CONSTRUCTION DOCUMENTS

SUBMITTALS

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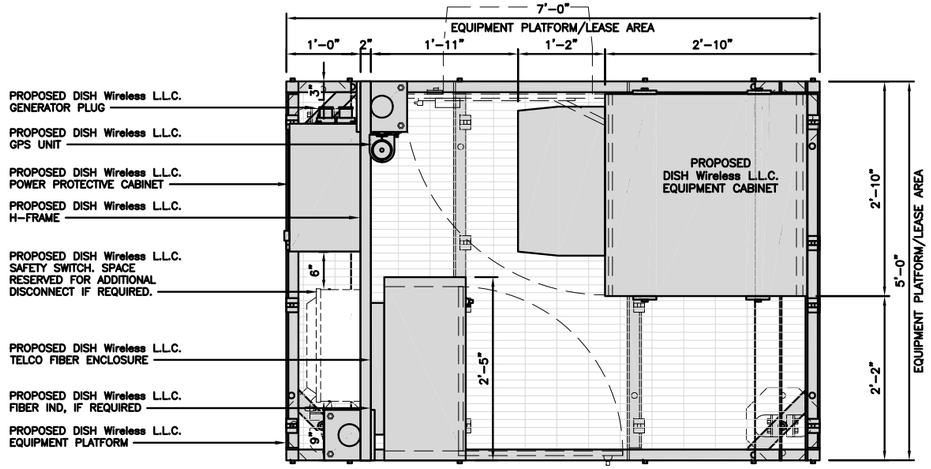
DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00076A
115 BIRCH MTN. RD
GLASTONBURY, CT 06033

SHEET TITLE
ELEVATION, ANTENNA LAYOUT AND SCHEDULE

SHEET NUMBER
A-2



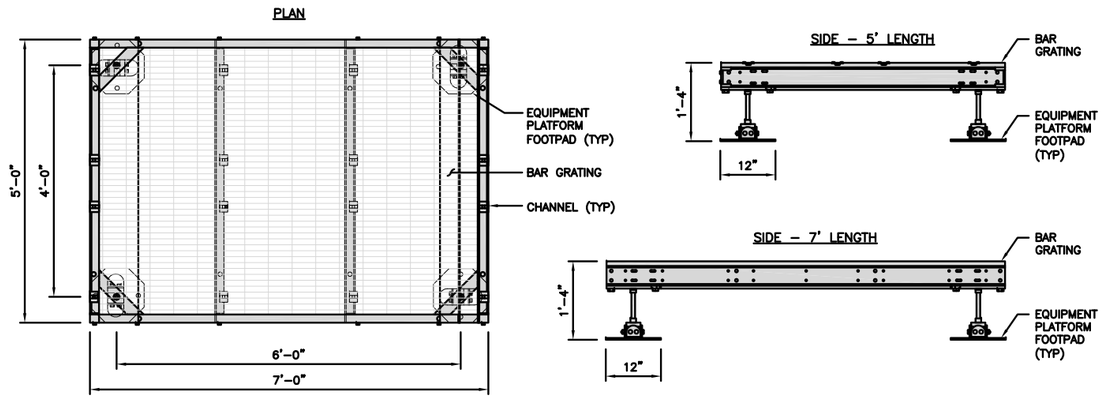
PLATFORM EQUIPMENT PLAN

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

1

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

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

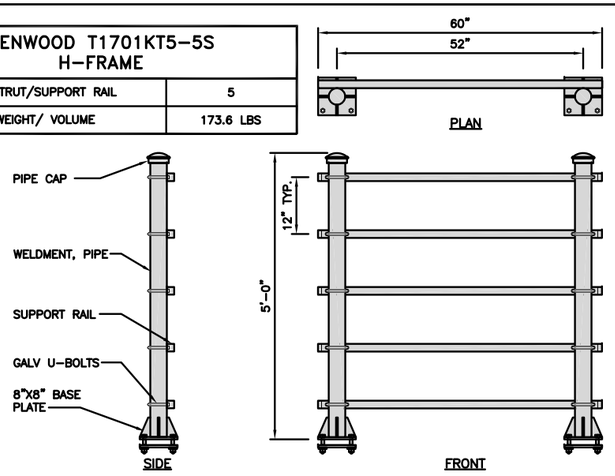


PLATFORM DETAIL

NO SCALE

2

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



H-FRAME DETAIL

NO SCALE

3

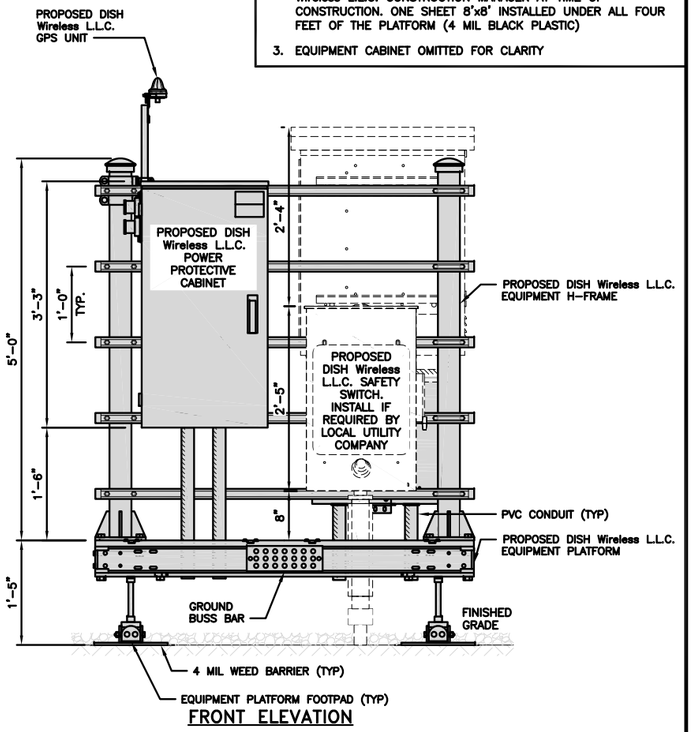
NOT USED

NO SCALE

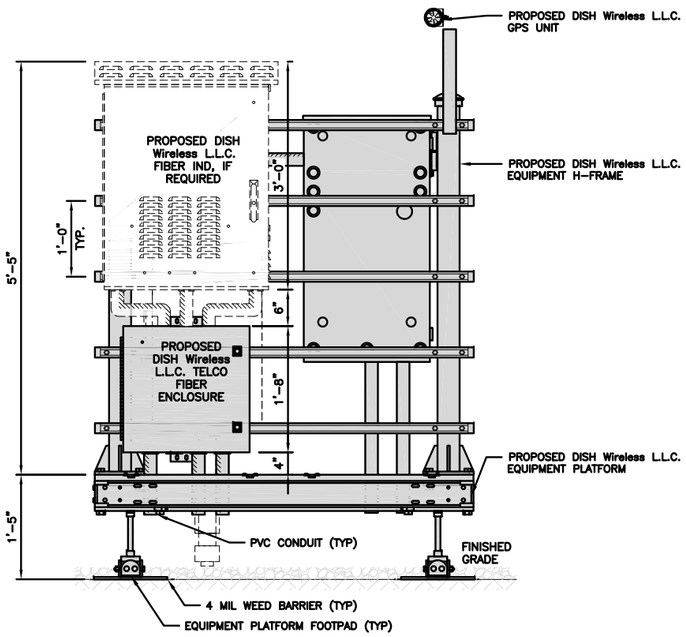
4

NOTES

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



FRONT ELEVATION



BACK ELEVATION

H-FRAME EQUIPMENT ELEVATION

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

5

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STATE OF CONNECTICUT
SHUHEI SAKAMOTO
34916
LICENSED PROFESSIONAL ENGINEER
10/8/2021

DRAWN BY:	CHECKED BY:	APPROVED BY:
RCD	SS	CJW

RFDS REV #: N/A

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	06/09/2021	ISSUED FOR REVIEW
0	10/06/2021	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
6039-Z0001C

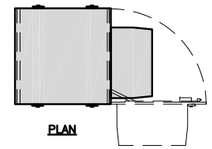
DISH Wireless L.L.C.
PROJECT INFORMATION

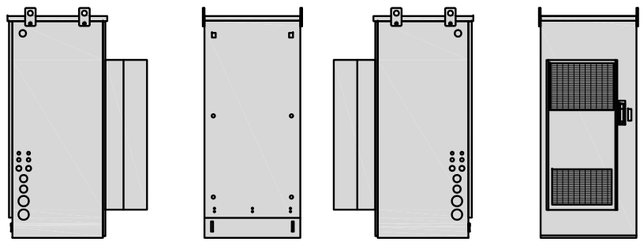
BOBDL00076A
115 BIRCH MTN. RD
GLASTONBURY, CT 06033

SHEET TITLE
EQUIPMENT PLATFORM AND H-FRAME DETAILS

SHEET NUMBER
A-3

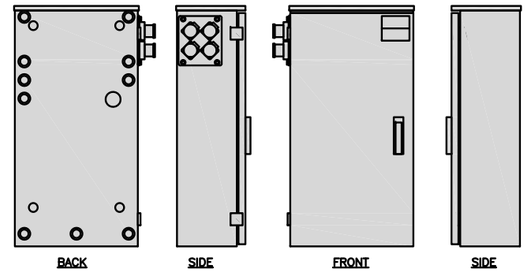
CHARLES INDUSTRY HEX CUBE–PM639155N4	
DIMENSIONS (HxWxD):	74"x32"x32"
POWER PLANT:	–48VDC ABB/600W
TOTAL WEIGHT (EMPTY)	408 LBS





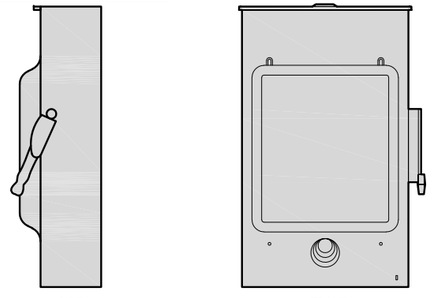
CABINET DETAIL | NO SCALE | 1

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



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

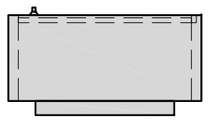
SQUARE D SAFETY SWITCHES D224NRB	
ENCLOSURE DIM (HxWxD)	29.25"x19.00"x8.50"
ENCLOSURE TYPE	NEMA 3R RAINPROOF
UL LISTED	FILE E–2875

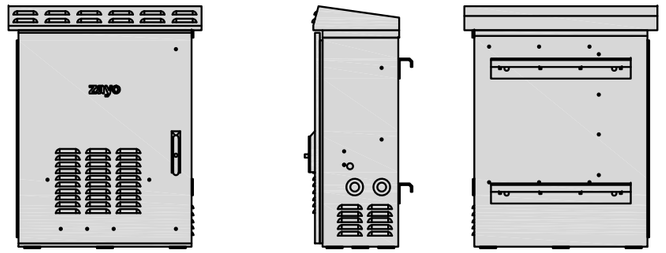


SAFETY SWITCH DETAIL | NO SCALE | 3

NOT USED | NO SCALE | 4

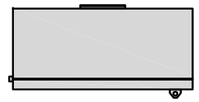
ZAYO 5RU CABINET LEFT SWING DOOR ("LIT" SITES)	
DIMENSIONS (HxWxD)	36.115"x29"x12.9"
WEIGHT	85 LBS
POWER INPUT	20A, –48VDC





NETWORK INTERFACE UNIT DETAIL | NO SCALE | 5

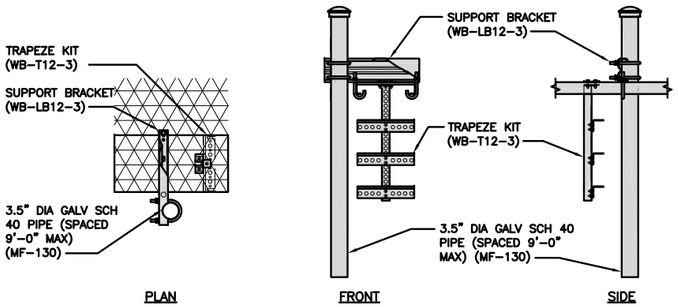
CHARLES CFIT–PF2020DSH1 FIBER TELCO ENCLOSURE	
ENCLOSURE DIMS (HxWxD)	20"x20"x9"
ENCLOSURE WEIGHT	20 lbs
MOUNTING	WALL
COMPLIANCE	TYPE 4



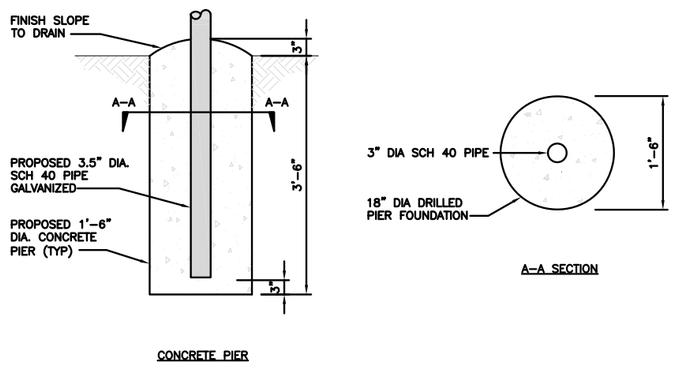
FIBER TELCO ENCLOSURE DETAIL | NO SCALE | 6

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

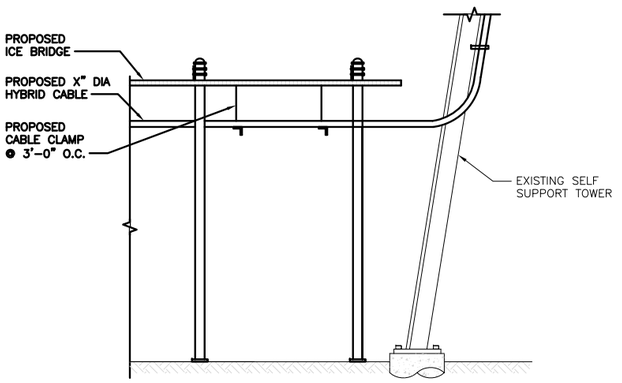
INCLUDED PRODUCTS:	
	WB–T12–3 TRAPEZE KIT, 3 RUNGS
	WB–LB12–3 SUPPORT BRACKET
	MF–130 DIRECT BURIAL PIPE COLUMN, 13'–4"



ICE BRIDGE DETAIL | NO SCALE | 7



TYPICAL ICE BRIDGE CONCRETE PIER DETAIL | NO SCALE | 8



HYBRID CABLE RUN | NO SCALE | 9

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10/8/2021

DRAWN BY:	CHECKED BY:	APPROVED BY:
RCD	SS	CJW

RFDS REV #: N/A

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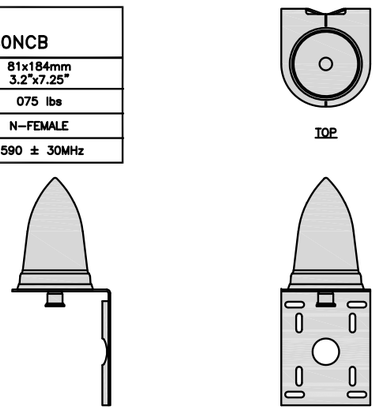
6039–Z0001C

DISH Wireless L.L.C.
PROJECT INFORMATION
BOBDL00076A
115 BIRCH MTN. RD
GLASTONBURY, CT 06033

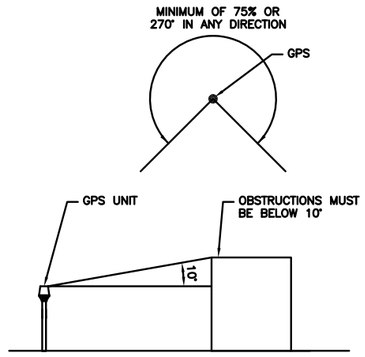
SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-4

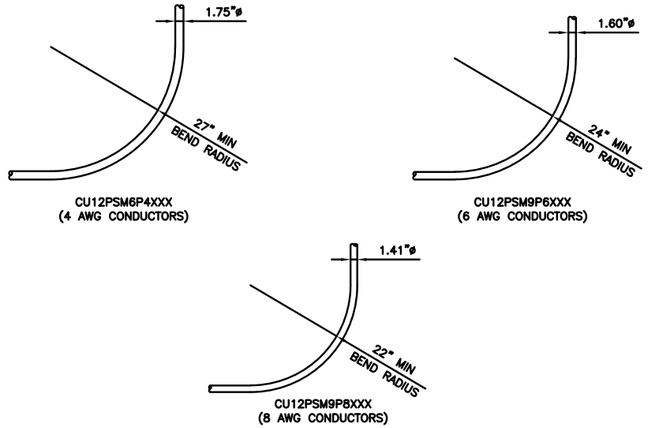
PCTEL GPSGL-TMG-SPI-40NCB	
DIMENSIONS (DIAxH) MM/INCH	81x184mm 3.2"x7.25"
WEIGHT W/ACCESSORIES	075 lbs
CONNECTOR	N-FEMALE
FREQUENCY RANGE	1590 ± 30MHz



GPS DETAIL | NO SCALE | 1



GPS MINIMUM SKY VIEW REQUIREMENTS | NO SCALE | 2



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

NOT USED | NO SCALE | 4

NOT USED | NO SCALE | 5

NOT USED | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

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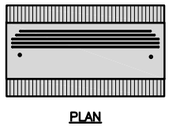
GLASTONBURY, CT 06033

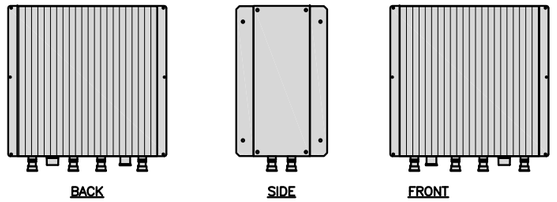
SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-5

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



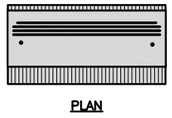
PLAN



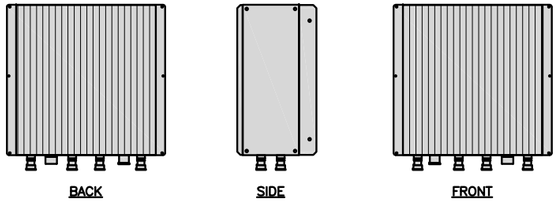
BACK SIDE FRONT

RRH DETAIL | NO SCALE | 1

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



PLAN

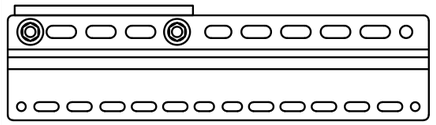


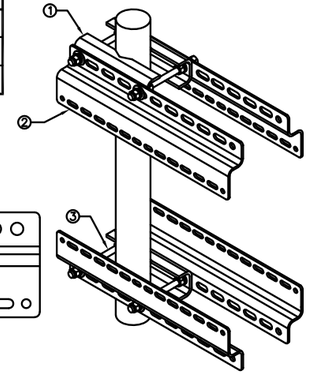
BACK SIDE FRONT

RRH DETAIL | NO SCALE | 2

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

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



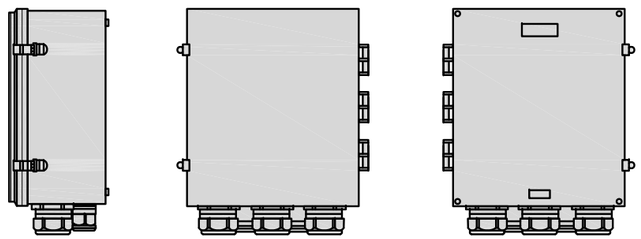


NOTE:
OR DISH Wireless L.L.C.
APPROVED EQUIVALENT

RRH MOUNT DETAIL | NO SCALE | 3

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

PLAN

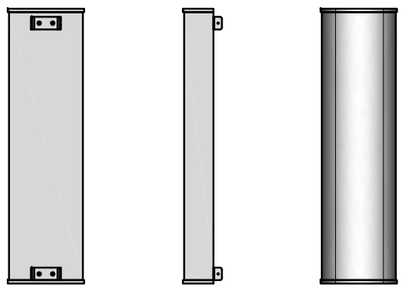


SIDE BACK FRONT

SURGE SUPPRESSION DETAIL (OVP) | NO SCALE | 4

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



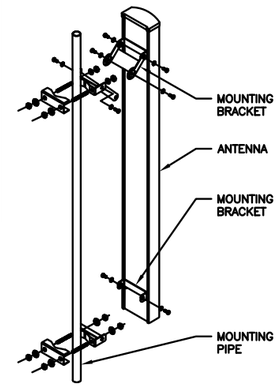
BACK SIDE FRONT

NOTES

FINAL ANTENNA SPECIFICATIONS TO BE CONFIRMED BY GC

ANTENNA DETAIL | NO SCALE | 5

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

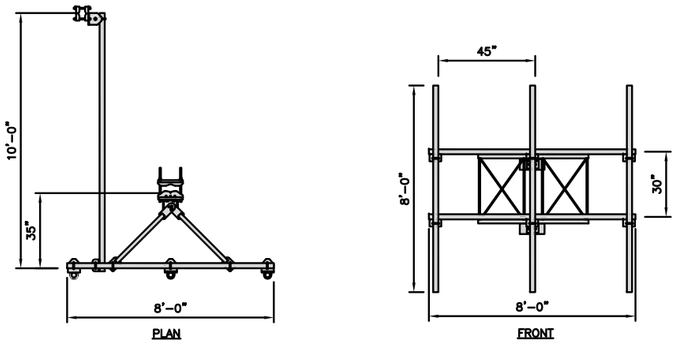


NOTE:
OR DISH Wireless L.L.C.
APPROVED EQUIVALENT

ANTENNA MOUNTING DETAIL | NO SCALE | 6

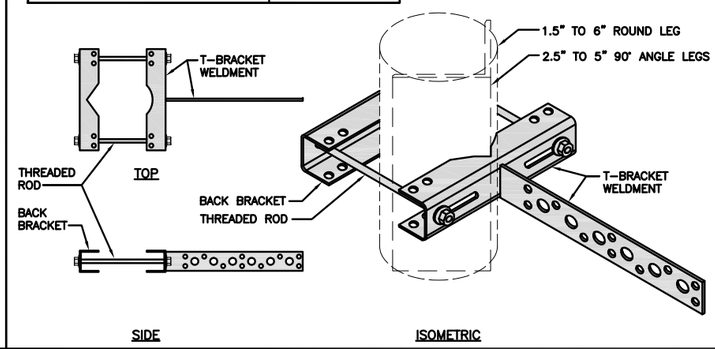
COMMSCOPE V-FRAME MTC3975083	
FACE SIZE	8'-0"
WEIGHT	352.136 lbs

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



ANTENNA FRAME DETAIL | NO SCALE | 7

SITEPRO1 T600 UNIVERSAL T-BRACKET	
DIMENSIONS (HxWxL)	2.25"x10.0"x15.25"
WEIGHT/ VOLUME	5.60 LBS



VERTICAL CABLE SUPPORT DETAIL | NO SCALE | 8

NOT USED | NO SCALE | 9

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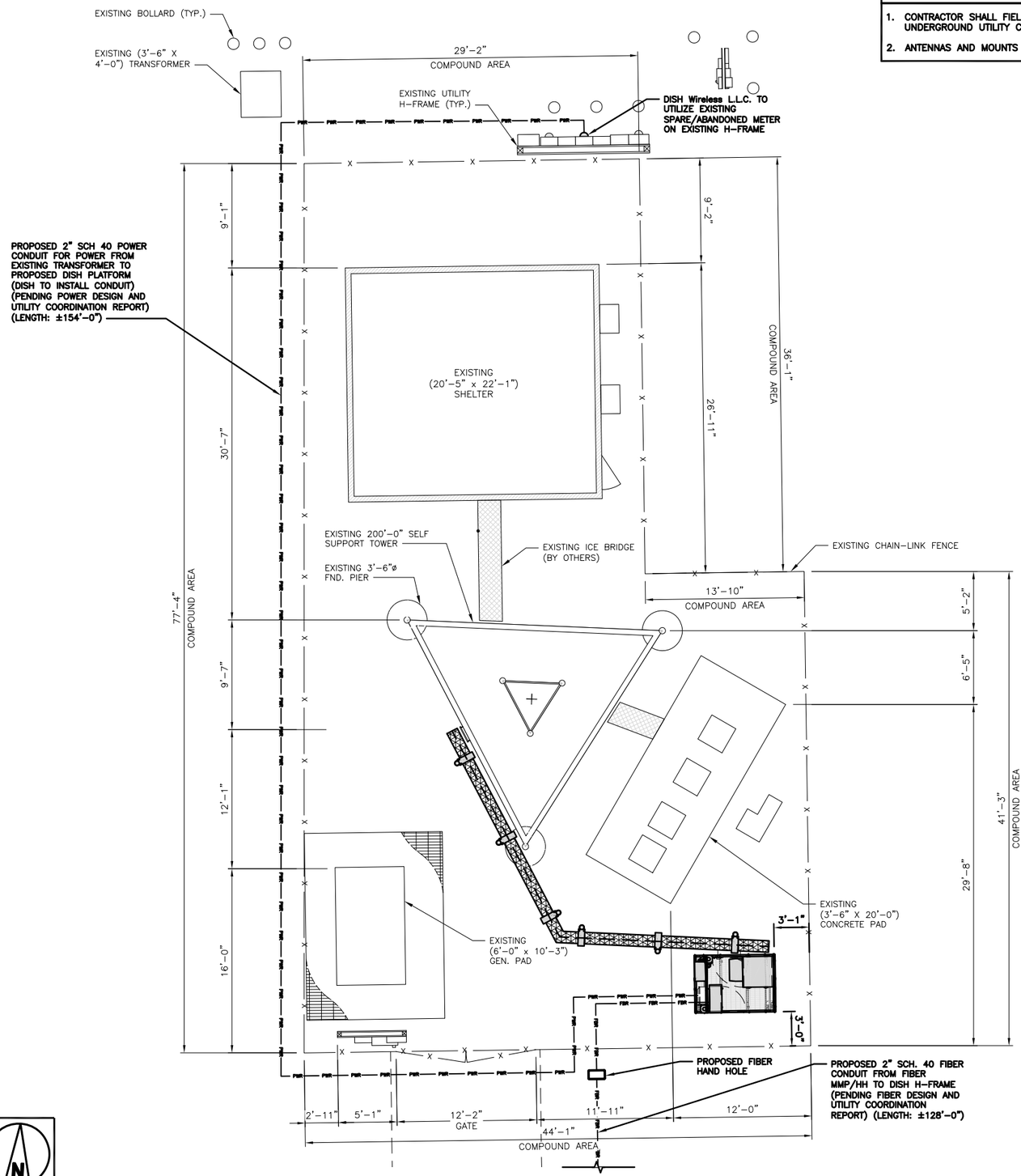
GLASTONBURY, CT 06033

SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-6

NOTES

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



UTILITY ROUTE PLAN

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

1

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

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

ELECTRICAL NOTES

2

OVERALL UTILITY ROUTE PLAN

50' 25' 0 50' 100'
1"=50'

3

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STATE OF CONNECTICUT
SHUHEI SAKANOUE
34916
LICENSED PROFESSIONAL ENGINEER
10/8/2021

DRAWN BY:	CHECKED BY:	APPROVED BY:
RCD	SS	CJW

RFDS REV #: N/A

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
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0	10/06/2021	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
6039-Z0001C

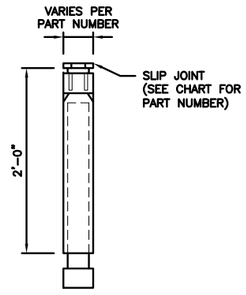
DISH Wireless L.L.C.
PROJECT INFORMATION
BOBDL00076A
115 BIRCH MTN. RD
GLASTONBURY, CT 06033

SHEET TITLE
ELECTRICAL/FIBER ROUTE PLAN AND NOTES

SHEET NUMBER
E-1

CARLON EXPANSION FITTINGS

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

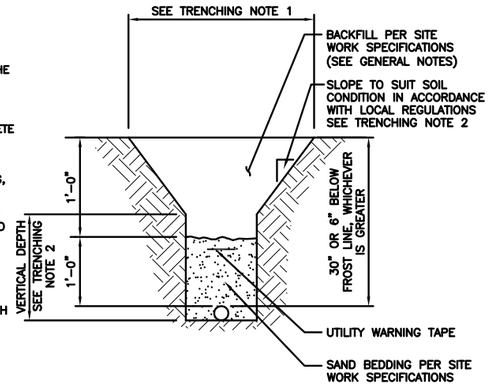


NOTE:
CONTRACTOR TO INSTALL EXPANSION FITTING SLIP JOINT AT METER CENTER CONDUIT TERMINATION, AS PER LOCAL UTILITY POLICY, ORDINANCE AND/OR SPECIFIED REQUIREMENT.

EXPANSION JOINT DETAIL | NO SCALE | 1

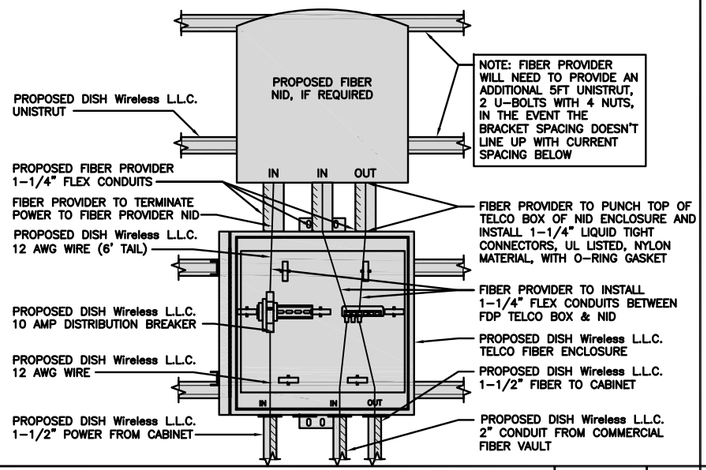
TRENCHING NOTES

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



TYPICAL UNDERGROUND TRENCH DETAIL | NO SCALE | 2

NOT USED | NO SCALE | 3



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

NOT USED | NO SCALE | 5

NOT USED | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

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DISH Wireless L.L.C.
PROJECT INFORMATION

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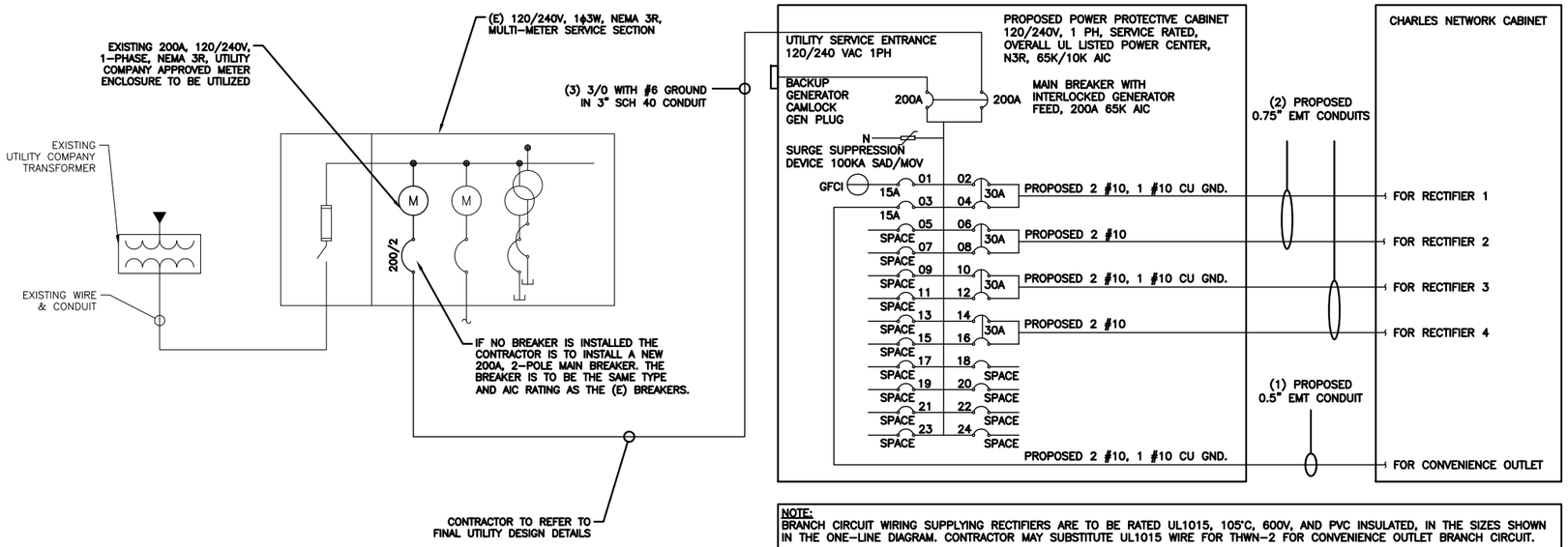
115 BIRCH MTN. RD
GLASTONBURY, CT 06033

SHEET TITLE
ELECTRICAL DETAILS

SHEET NUMBER
E-2



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

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

NOTES

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

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

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

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

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

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

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

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

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

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

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

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

PPC ONE-LINE DIAGRAM

NO SCALE | 1

PROPOSED CHARLES PANEL SCHEDULE

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

PANEL SCHEDULE

NO SCALE | 2

NOT USED

NO SCALE | 3

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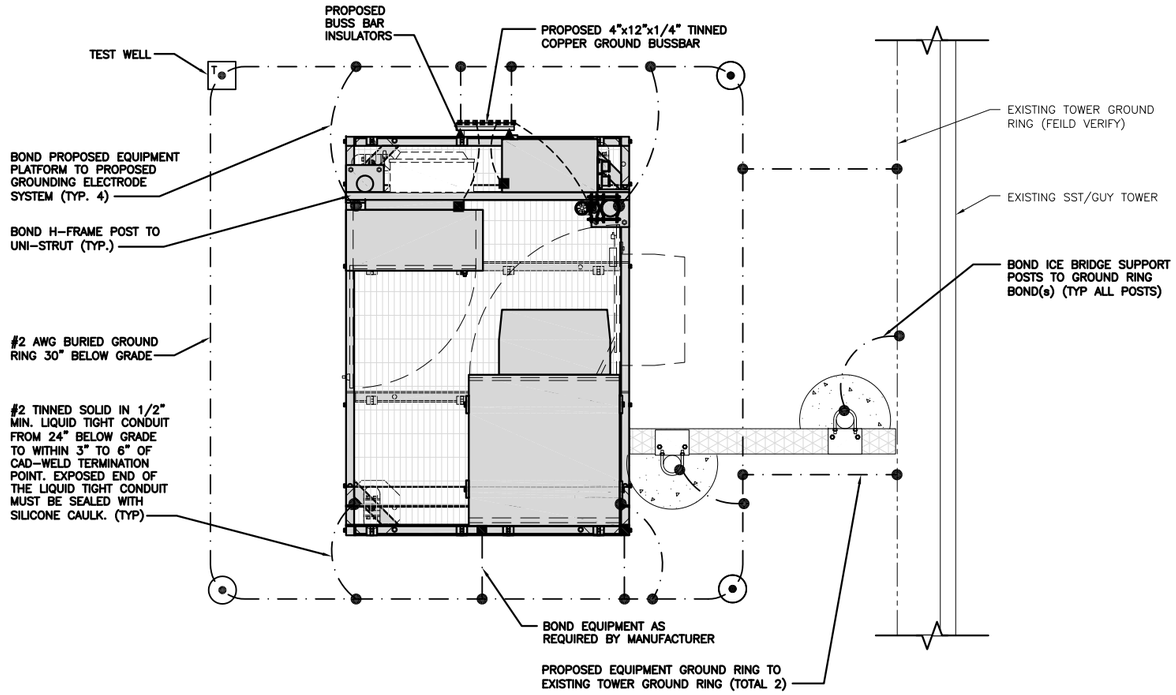
115 BIRCH MTN. RD
GLASTONBURY, CT 06033

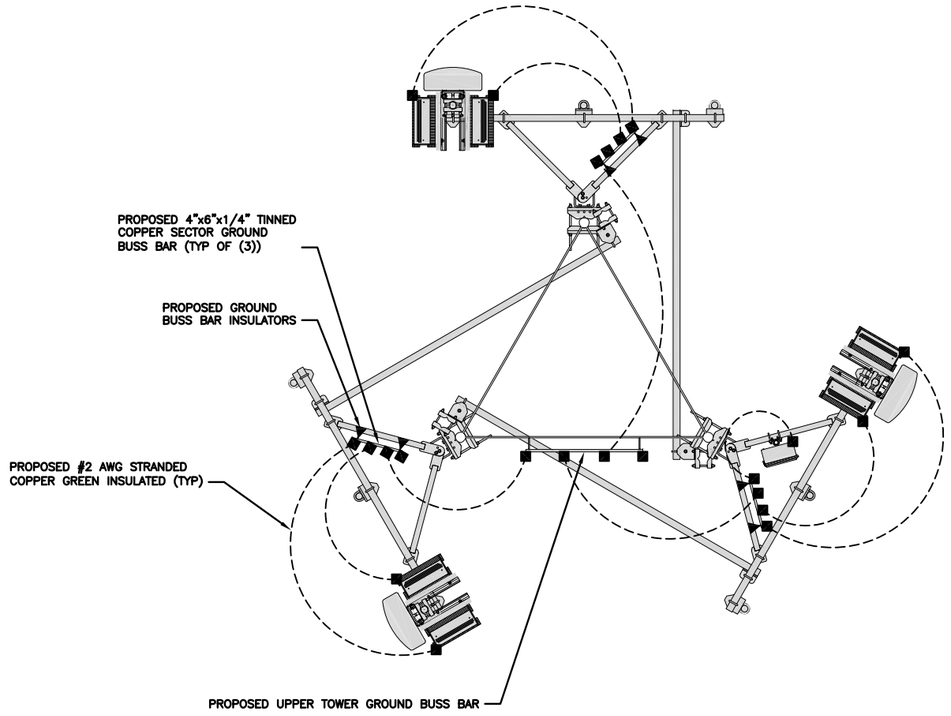
SHEET TITLE
ELECTRICAL ONE-LINE, FAULT CALCS & PANEL SCHEDULE

SHEET NUMBER
E-3



TYPICAL EQUIPMENT GROUNDING PLAN

NO SCALE | 1



TYPICAL ANTENNA GROUNDING PLAN

NO SCALE | 2

NOTES

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

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

GROUNDING LEGEND

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

GROUNDING KEY NOTES

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

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

(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 TOWER STEEL.

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

GROUNDING KEY NOTES

NO SCALE | 3

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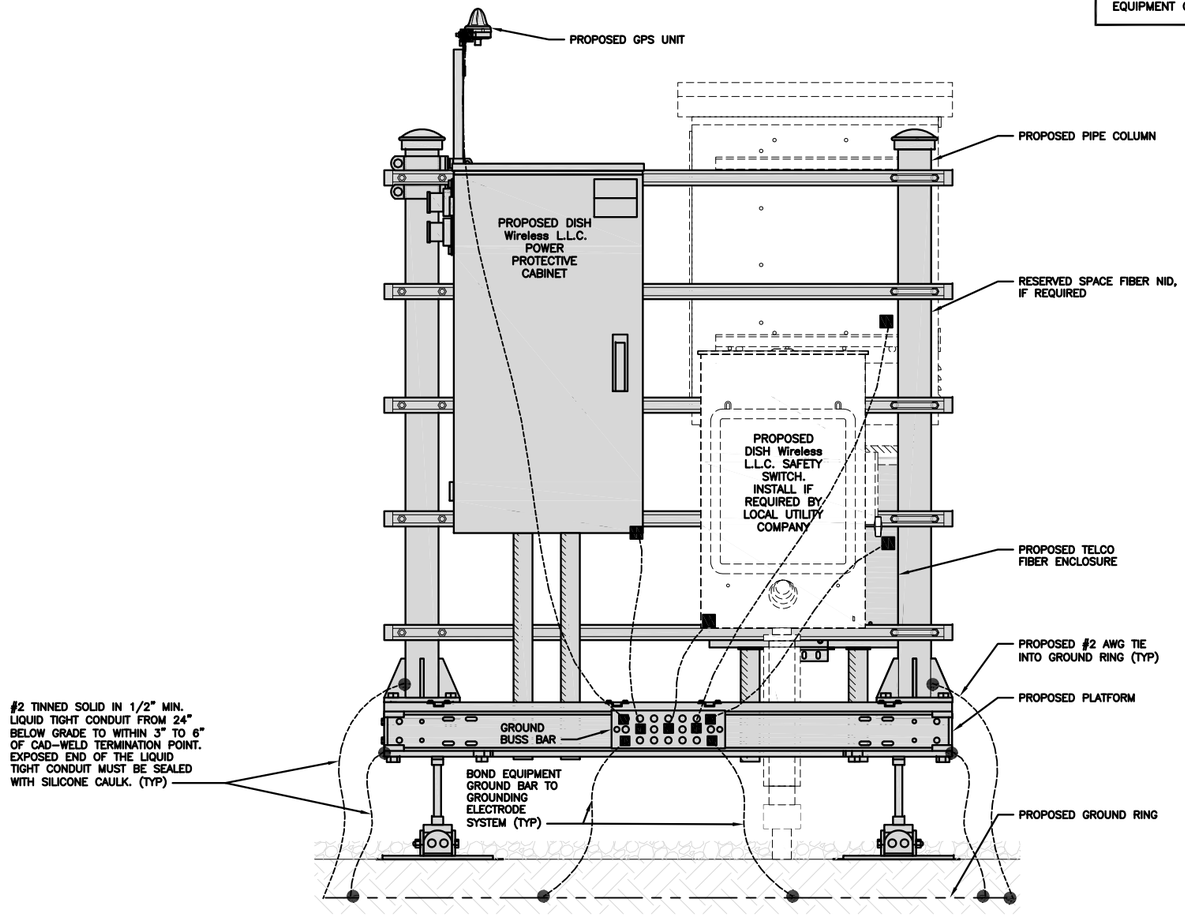
SHEET TITLE
GROUNDING PLANS AND NOTES

SHEET NUMBER
G-1

NOTES

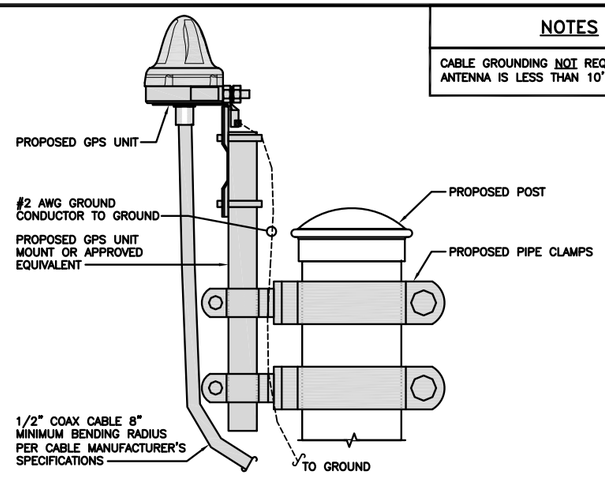
EQUIPMENT CABINET OMITTED FOR CLARITY



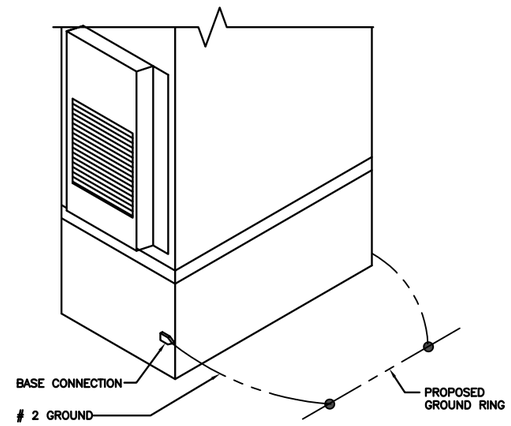
H-FRAME GROUNDING DETAIL | NO SCALE | 1

NOTES

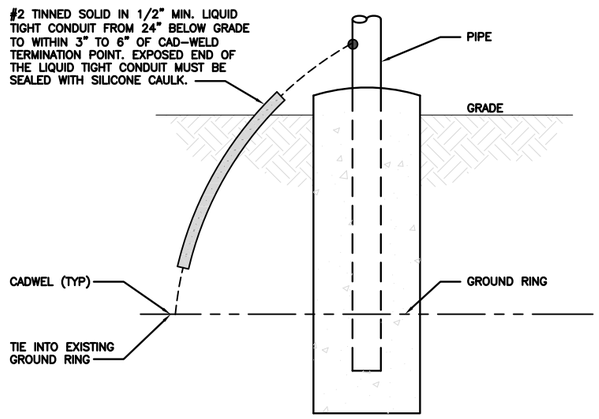
CABLE GROUNDING NOT REQUIRED WHEN ANTENNA IS LESS THAN 10' FROM CABINET



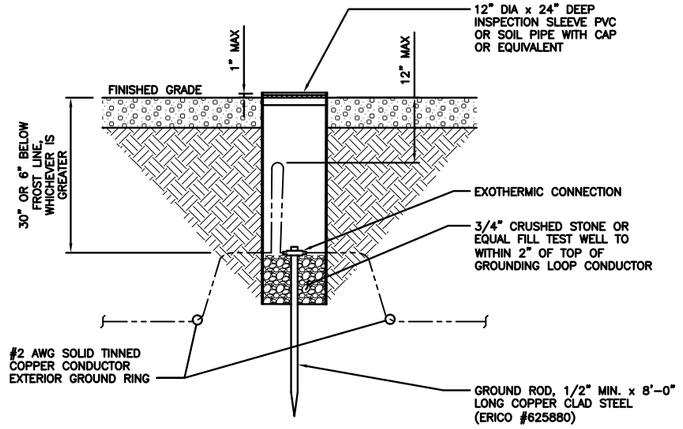
TYPICAL GPS UNIT GROUNDING | NO SCALE | 2



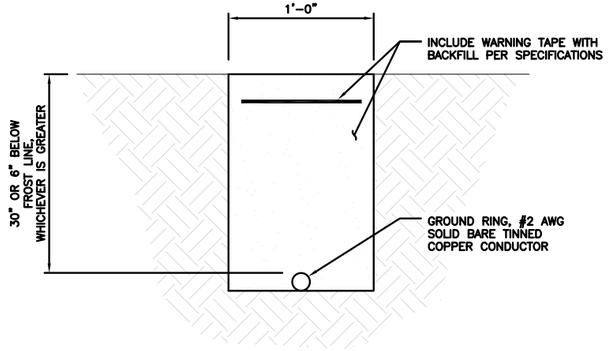
OUTDOOR CABINET GROUNDING | NO SCALE | 3



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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SHEET TITLE

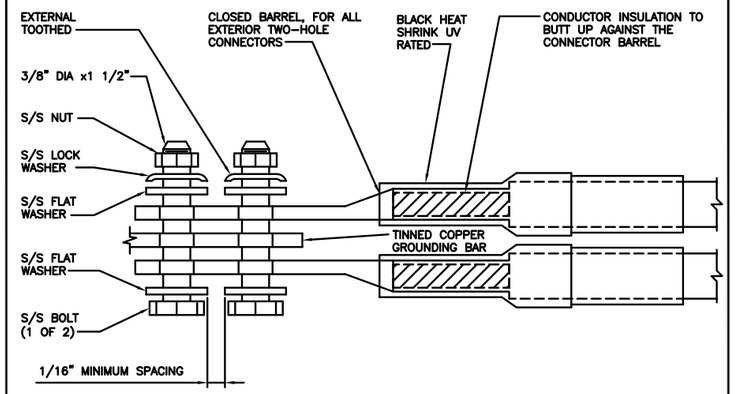
GROUNDING DETAILS

SHEET NUMBER

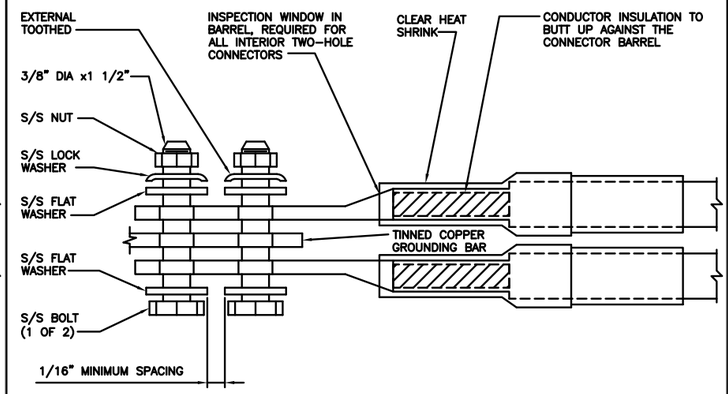
G-2

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).

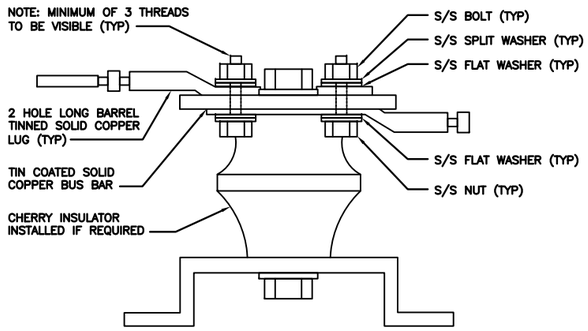
TYPICAL GROUNDING NOTES | NO SCALE | 1



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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STATE OF CONNECTICUT
SHUHEI SAKANOUE
34916
LICENSED PROFESSIONAL ENGINEER
10/8/2021

DRAWN BY:	CHECKED BY:	APPROVED BY:
RCD	SS	CJW

RFDS REV #: N/A

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	06/09/2021	ISSUED FOR REVIEW
0	10/08/2021	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
6039-Z0001C

DISH Wireless L.L.C.
PROJECT INFORMATION
BOBDL00076A
115 BIRCH MTN. RD
GLASTONBURY, CT 06033

SHEET TITLE
GROUNDING DETAILS

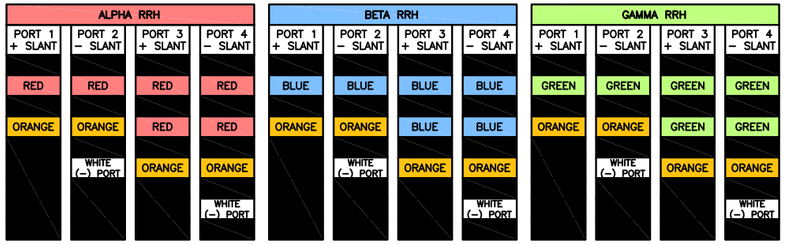
SHEET NUMBER
G-3

RF JUMPER COLOR CODING

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

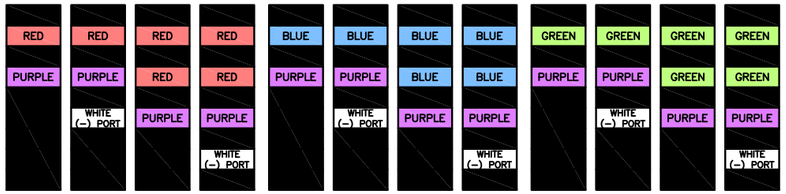
LOW-BAND RRH –
(600MHz N71 BASEBAND) +
(850MHz N26 BAND) +
(700MHz N29 BAND) – OPTIONAL PER MARKET

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



MID-BAND RRH –
(AWS BANDS N66+N70)

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

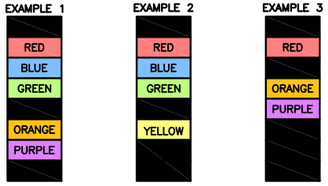


HYBRID/DISCREET CABLES

INCLUDE SECTOR BANDS BEING SUPPORTED
ALONG WITH FREQUENCY BANDS

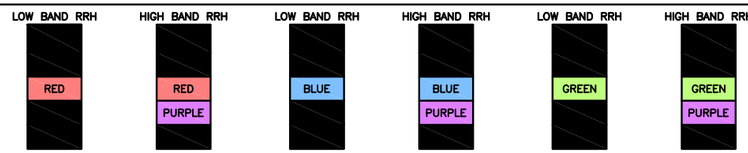
EXAMPLE 1 – HYBRID, OR DISCREET, SUPPORTS
ALL SECTORS, BOTH LOW-BANDS AND MID-BANDS

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



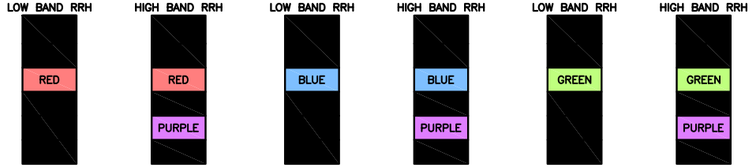
FIBER JUMPERS TO RRHs

LOW-BAND RRH FIBER CABLES HAVE SECTOR
STRIPE ONLY

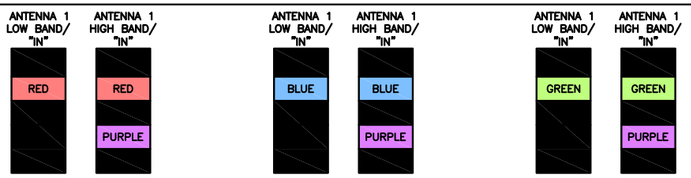


POWER CABLES TO RRHs

LOW-BAND RRH POWER CABLES HAVE SECTOR
STRIPE ONLY



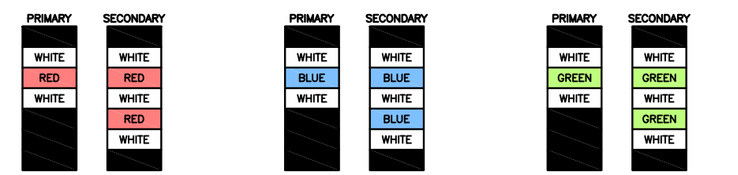
RET MOTORS AT ANTENNAS



MICROWAVE RADIO LINKS

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

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



RF CABLE COLOR CODES | NO SCALE | 1

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

AWS
(N66+N70+H-BLOCK)
PURPLE

CBRS TECH
(3 GHz)
YELLOW

NEGATIVE SLANT PORT
ON ANT/RRH
WHITE

ALPHA SECTOR
RED

BETA SECTOR
BLUE

GAMMA SECTOR
GREEN

COLOR IDENTIFIER | NO SCALE | 2

NOT USED | NO SCALE | 3

NOT USED | NO SCALE | 4

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PROJECT INFORMATION
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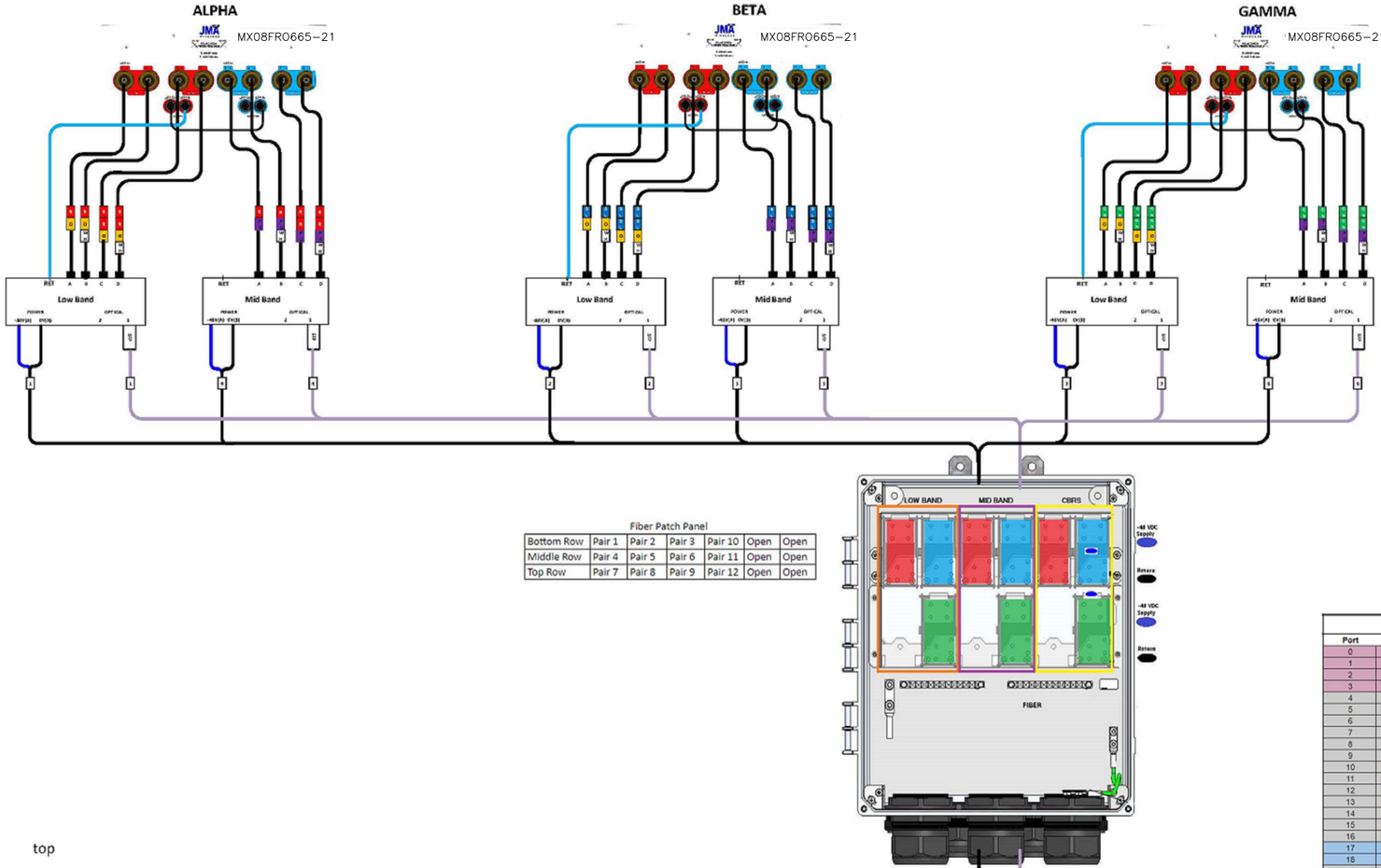
SHEET TITLE
RF
CABLE COLOR CODE

SHEET NUMBER
RF-1



Fiber Patch Panel

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

CSR NCS540		
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 NIU
27	Te0/0/0/27	Fiber NIU
28	Te0/0/0/28	Blank/Future
29	Te0/0/0/29	Blank/Future

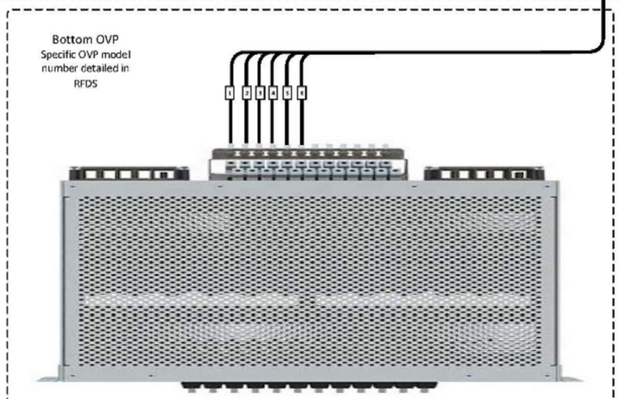
top

bottom

Bottom OVP Layout

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



Quan Liu	SIZE	JOB NO	DWG NO
9-Jan-2021	SCALE None		SHEET

5G plumbing diagram JMA MX08FRO665-20 2-2-2(LB+MB)

PLUMBING DIAGRAM

NO SCALE

1

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SHEET TITLE

RF
PLUMBING DIAGRAM

SHEET NUMBER

RF-2

EXOTHERMIC CONNECTION

MECHANICAL CONNECTION

BUSS BAR INSULATOR

CHEMICAL ELECTROLYTIC GROUNDING SYSTEM

TEST CHEMICAL ELECTROLYTIC GROUNDING SYSTEM

EXOTHERMIC WITH INSPECTION SLEEVE

GROUNDING BAR

GROUND ROD

TEST GROUND ROD WITH INSPECTION SLEEVE

SINGLE POLE SWITCH

DUPLEX RECEPTACLE

DUPLEX GFCI RECEPTACLE

FLUORESCENT LIGHTING FIXTURE (2) TWO LAMPS 48–T8

SMOKE DETECTION (DC)

EMERGENCY LIGHTING (DC)

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

CHAIN LINK FENCE

WOOD/WROUGHT IRON FENCE

WALL STRUCTURE

LEASE AREA

PROPERTY LINE (PL)

SETBACKS

ICE BRIDGE

CABLE TRAY

WATER LINE

UNDERGROUND POWER

UNDERGROUND TELCO

OVERHEAD POWER

OVERHEAD TELCO

UNDERGROUND TELCO/POWER

ABOVE GROUND POWER

ABOVE GROUND TELCO

ABOVE GROUND TELCO/POWER

WORKPOINT

SECTION REFERENCE

DETAIL REFERENCE

LEGEND

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

ABBREVIATIONS

dish wireless.

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GLASTONBURY, CT 06033

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.

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SHUHEI SAKAMOTO
34916
LICENSED PROFESSIONAL ENGINEER
10/8/2021

DRAWN BY:	CHECKED BY:	APPROVED BY:
RCD	SS	CJW

RFDS REV #: N/A

CONSTRUCTION DOCUMENTS

SUBMITTALS

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A&E PROJECT NUMBER

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DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00076A
115 BIRCH MTN. RD
GLASTONBURY, CT 06033

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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SHUHEI SAKANOUE
34916
LICENSED PROFESSIONAL ENGINEER
10/8/2021

DRAWN BY:	CHECKED BY:	APPROVED BY:
RCD	SS	CJW

RFDS REV #: N/A

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	06/09/2021	ISSUED FOR REVIEW
0	10/06/2021	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

6039-Z0001C

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00076A
115 BIRCH MTN. RD
GLASTONBURY, CT 06033

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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GLASTONBURY, CT 06033

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-4

Exhibit D

Structural Analysis Report

Date: **June 04, 2021**

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

Subject:	**Structural Analysis Report**	
Carrier Designation:	***DISH Network* Co-Locate**	
	Site Number:	BOBDL00076A
	Site Name:	CT-CCI-T-871584
Crown Castle Designation:	**BU Number:**	871584
	Site Name:	John Tom Hill
	JDE Job Number:	650066
	Work Order Number:	1968782
	Order Number:	556617 Rev. 1
Engineering Firm Designation:	**Crown Castle Project Number:**	1968782
Site Data:	**115 Birch Mtn. Road, GLASTONBURY, HARTFORD County, CT** **Latitude *41° 42' 32.24"*, Longitude *-72° 28' 24.41"*** **200 Foot - Self Support 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-95.9%**

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

Structural analysis prepared by: Subhash Mandal

Respectfully submitted by:

Digitally signed by Maham Barimani
Date: 2021.06.04 17:43:38 -04'00'

STATE OF CONNECTICUT
MAHAM BARIMANI
30501
LICENSED
PROFESSIONAL ENGINEER

Maham Barimani, P.E.
Senior Project Engineer

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 200 ft Self Support tower designed by SABRE COMMUNICATIONS. The tower has been modified in the past to accommodate additional loading.

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)
134.0	134.0	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 MTC3975083 (3)		

Table 2 - Other Considered Equipment

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
198.0	208.0	1	rfs celwave	ALR10-O	2 3	1/2 7/8
	205.0	1	decibel	DB225-A		
		1	rfs celwave	PD1107-1		
		1	rfs celwave	PD201-7		
	204.0	1	scala	OGB6-928N		
	198.0	1	tower mounts	Sector Mount [SM 702-3]		
190.0	190.0	3	commscope	USX6-6W-6GR	18 9	1/4 1/2
		6	saf	MXM REPEATER MK2		
		3	tower mounts	Pipe Mount [PM 601-1]		
182.0	183.0	3	ericsson	AIR6449 B41_T-MOBILE w/ Mount Pipe	6	1-5/8
		3	ericsson	RADIO 4415 B66A_CCIV3		
		3	ericsson	RADIO 4424 B25_TMO		
		3	ericsson	RADIO 4449 B12/B71		
		3	rfs celwave	APX16DWV-16DWV-S-E-A20 w/ Mount Pipe		
		3	rfs celwave	APXVAARR24_43-U-NA20 w/ Mount Pipe		
	182.0	3	-	SitePro STK-U Stiff Arm Kit		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
		1	tower mounts	Sector Mount [SM 702-3]		
170.0	171.0	3	alcatel lucent	PCS 1900MHZ 4X45W-65MHZ	4	1-1/4
		6	alcatel lucent	RRH2X50-800		
		3	alcatel lucent	TD-RRH8X20-25		
		3	commscope	NNVV-65B-R4 w/ Mount Pipe		
		3	rfs celwave	APXVTM14-ALU-I20 w/ Mount Pipe		
	170.0	1	tower mounts	Sector Mount [SM 506-3]		
163.0	163.0	1	kathrein	PR-850	1	1/2
		1	tower mounts	Pipe Mount [PM 601-1]		
144.0	155.0	1	sinclair	SRL480N1DT4	3	1/2
	152.0	2	rfs celwave	PD1109-1	2	7/8
	144.0	1	tower mounts	Sector Mount [SM 702-3]		
53.0	55.0	1	lucent	KS24019-L112A	1	1/2
	53.0	1	tower mounts	Side Arm Mount [SO 202-1]		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Reference	Source
4-GEOTECHNICAL REPORTS	1404208	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	2068370	CCISITES
4-TOWER MANUFACTURER DRAWINGS	1403674	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	9122283	CCISITES
4-POST-MODIFICATION INSPECTION	9366487	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 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
T1	200 - 180	Leg	Sabre 2.875x.375	3	-28.43	100.37	28.3	Pass
T2	180 - 160	Leg	Sabre 3.5 x .3	33	-79.49	116.34	68.3	Pass
T3	160 - 140	Leg	Sabre 4 x .318	60	-122.80	149.09	82.4	Pass
T4	140 - 120	Leg	Sabre 4.5 x .438	87	-164.75	211.28	78.0	Pass
T5	120 - 100	Leg	Sabre 5.5625 x .375	108	-204.37	251.62	81.2	Pass
T6	100 - 80	Leg	Sabre 5.5625 x .375	129	-241.22	251.62	95.9	Pass
T7	80 - 60	Leg	Sabre 6.625 x .432	150	-273.59	319.52	85.6	Pass
T8	60 - 40	Leg	Sabre 8.625 x .322	165	-307.43	351.50	87.5	Pass
T9	40 - 20	Leg	Sabre 8.625 x .5	180	-340.99	531.40	64.2	Pass
T10	20 - 0	Leg	Sabre 8.625 x .5	195	-373.44	531.40	70.3	Pass
T1	200 - 180	Diagonal	L1 3/4x1 3/4x3/16	10	-5.37	13.85	38.8	Pass
T2	180 - 160	Diagonal	L1 3/4x1 3/4x3/16	37	-5.78	9.47	61.0	Pass
T3	160 - 140	Diagonal	L1 3/4x1 3/4x3/16	64	-5.95	6.54	91.0	Pass
T4	140 - 120	Diagonal	L2 1/2x2 1/2x3/16	91	-7.23	12.36	58.5	Pass
T5	120 - 100	Diagonal	L2 1/2x2 1/2x3/16	113	-7.32	9.61	76.2	Pass
T6	100 - 80	Diagonal	L3x3x3/16	134	-7.66	13.18	58.1	Pass
T7	80 - 60	Diagonal	L3 1/2x3 1/2x1/4	155	-8.88	18.99	46.7	Pass
T8	60 - 40	Diagonal	L3 1/2x3 1/2x1/4	170	-9.50	16.23	58.5	Pass
T9	40 - 20	Diagonal	L3 1/2x3 1/2x1/4	185	-9.94	13.73	72.4	Pass
T10	20 - 0	Diagonal	L4x4x1/4	199	-10.76	17.67	60.9	Pass
T1	200 - 180	Top Girt	L1 3/4x1 3/4x3/16	4	-0.40	7.66	5.3	Pass
							Summary	
						Leg (T6)	95.9	Pass
						Diagonal (T3)	91.0	Pass
						Top Girt (T1)	5.3	Pass
						Bolt Checks	71.7	Pass
						Rating =	95.9	Pass

Table 5 - Tower Component Stresses vs. Capacity - LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	58.8	Pass
1	Base Foundation (Structure)	0	73.5	Pass
1	Base Foundation (Soil Interaction)	0	69.2	Pass

Structure Rating (max from all components) =	95.9%

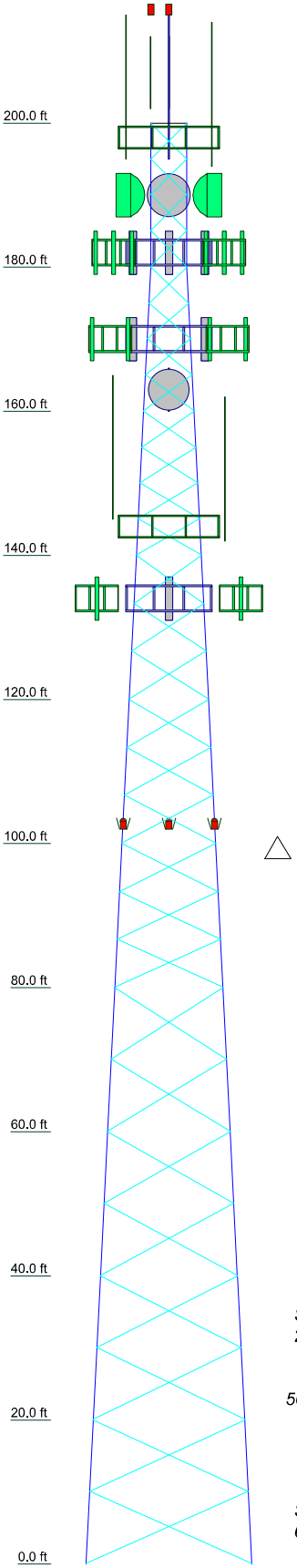
Notes:
1) See additional documentation in “Appendix C – Additional Calculations” for calculations supporting the % capacity consumed.

4.1) Recommendations

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

APPENDIX A

TNXTOWER OUTPUT



Section		T1	T2	T3	T4	T5	T6	T7	T8	T9	T10										
Legs		Sabre 2.875x.375	Sabre 3.5 x .3	Sabre 4 x .318	Sabre 4.5 x .438	Sabre 5.5625 x .375		Sabre 6.625 x .432	Sabre 8.625 x .322	Sabre 8.625 x .5											
Leg Grade		A572-50																			
Diagonals		L1 3/4x1 3/4x3/16			L2 1/2x2 1/2x3/16		L3x3x3/16		L3 1/2x3 1/2x1/4		L4x4x1/4										
Diagonal Grade		A36																			
Top Girts		L1 3/4x1 3/4x3/16																			
Face Width (ft)	23	21	19	17	15	13	11	9	7	5											
# Panels @ (ft)		8 @ 9.95833				9 @ 6.63889				12 @ 4.97917											
Weight (K)	25.4	4.7	4.4	3.3	3.2	2.4	2.1	1.9	1.3	1.1	1.0										

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A36	36 ksi	58 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: 95.9%

ALL REACTIONS ARE FACTORED

MAX. CORNER REACTIONS AT BASE:
DOWN: 381 K
SHEAR: 38 K

UPLIFT: -328 K
SHEAR: 34 K

AXIAL 184 K
SHEAR 21 K
MOMENT 2452 kip-ft

TORQUE 9 kip-ft
50 mph WIND - 2.000 in ICE

AXIAL 64 K
SHEAR 61 K
MOMENT 7190 kip-ft

TORQUE 19 kip-ft
REACTIONS - 125 mph WIND

CROWN CASTLE
The Pathway to Possible

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

Job: **BU 871584**			
Project:			
Client: Crown Castle	Drawn by: SMandal	App'd:	
Code: TIA-222-H	Date: 06/04/21	Scale: NTS	
Path: C:\Users\smandal\Desktop\WIP\871584\WO 1968782 - SA\Prod\871584_RPA.er		Dwg No. E-1	

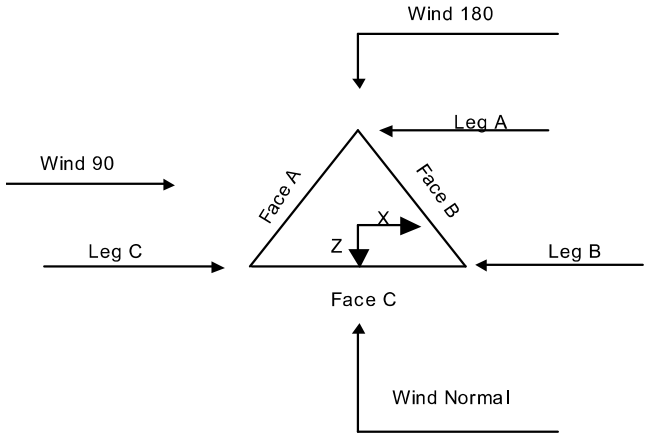
Tower Input Data

The main tower is a 3x free standing tower with an overall height of 200.00 ft above the ground line.
The base of the tower is set at an elevation of 0.00 ft above the ground line.
The face width of the tower is 5.000 ft at the top and 23.000 ft at the base.
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: 878.00 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 2.000 in.
- Ice thickness is considered to increase with height.
- Ice density of 56 pcf.
- A wind speed of 50 mph is used in combination with ice.
- Temperature drop of 50 °F.
- Deflections calculated using a wind speed of 60 mph.
- Pressures are calculated at each section.
- Stress ratio used in tower member design is 1.
- Tower analysis based on target reliabilities in accordance with Annex S.
- Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.
- Maximum demand-capacity ratio is: 1.05.
- Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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



Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	ft			ft		ft
T1	200.00-180.00			5.000	1	20.00
T2	180.00-160.00			5.000	1	20.00
T3	160.00-140.00			7.000	1	20.00
T4	140.00-120.00			9.000	1	20.00
T5	120.00-100.00			11.000	1	20.00
T6	100.00-80.00			13.000	1	20.00
T7	80.00-60.00			15.000	1	20.00
T8	60.00-40.00			17.000	1	20.00
T9	40.00-20.00			19.000	1	20.00
T10	20.00-0.00			21.000	1	20.00

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation	Diagonal Spacing	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset	Bottom Girt Offset
	ft	ft				in	in
T1	200.00-180.00	4.979	X Brace	No	No	0.000	1.000
T2	180.00-160.00	4.979	X Brace	No	No	0.000	1.000
T3	160.00-140.00	4.979	X Brace	No	No	0.000	1.000
T4	140.00-120.00	6.639	X Brace	No	No	0.000	1.000
T5	120.00-100.00	6.639	X Brace	No	No	0.000	1.000
T6	100.00-80.00	6.639	X Brace	No	No	0.000	1.000
T7	80.00-60.00	9.958	X Brace	No	No	0.000	1.000
T8	60.00-40.00	9.958	X Brace	No	No	0.000	1.000
T9	40.00-20.00	9.958	X Brace	No	No	0.000	1.000
T10	20.00-0.00	9.958	X Brace	No	No	0.000	1.000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 200.00-180.00	Pipe	Sabre 2.875x.375	A572-50 (50 ksi)	Equal Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)
T2 180.00-160.00	Pipe	Sabre 3.5 x .3	A572-50 (50 ksi)	Equal Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)
T3 160.00-140.00	Pipe	Sabre 4 x .318	A572-50 (50 ksi)	Equal Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)
T4 140.00-120.00	Pipe	Sabre 4.5 x .438	A572-50 (50 ksi)	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T5 120.00-100.00	Pipe	Sabre 5.5625 x .375	A572-50 (50 ksi)	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T6 100.00-80.00	Pipe	Sabre 5.5625 x .375	A572-50 (50 ksi)	Equal Angle	L3x3x3/16	A36 (36 ksi)
T7 80.00-60.00	Pipe	Sabre 6.625 x .432	A572-50 (50 ksi)	Equal Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)
T8 60.00-40.00	Pipe	Sabre 8.625 x .322	A572-50 (50 ksi)	Equal Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)
T9 40.00-20.00	Pipe	Sabre 8.625 x .5	A572-50 (50 ksi)	Equal Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)
T10 20.00-0.00	Pipe	Sabre 8.625 x .5	A572-50 (50 ksi)	Equal Angle	L4x4x1/4	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 200.00-180.00	Equal Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)	Solid Round		A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
T1 200.00-180.00	0.00	0.375	A36 (36 ksi)	1.03	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T2 180.00-160.00	0.00	0.375	A36 (36 ksi)	1.03	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T3 160.00-140.00	0.00	0.375	A36 (36 ksi)	1.03	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T4 140.00-120.00	0.00	0.375	A36 (36 ksi)	1.03	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T5 120.00-100.00	0.00	0.375	A36 (36 ksi)	1.03	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T6 100.00-80.00	0.00	0.375	A36 (36 ksi)	1.03	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T7 80.00-60.00	0.00	0.375	A36 (36 ksi)	1.03	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T8 60.00-40.00	0.00	0.375	A36 (36 ksi)	1.03	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T9 40.00-20.00	0.00	0.375	A36 (36 ksi)	1.03	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T10 20.00-0.00	0.00	0.375	A36 (36 ksi)	1.03	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T1 200.00-180.00	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T2 180.00-160.00	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T3 160.00-140.00	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T4 140.00-120.00	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T5 120.00-100.00	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T6 100.00-80.00	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T7 80.00-60.00	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T8 60.00-40.00	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T9 40.00-20.00	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T10 20.00-0.00	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1

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

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Net Width Deduct in	U	Diagonal Net Width Deduct in	U	Top Girt Net Width Deduct in	U	Bottom Girt Net Width Deduct in	U	Mid Girt Net Width Deduct in	U	Long Horizontal Net Width Deduct in	U	Short Horizontal Net Width Deduct in	U
T1 200.00-180.00	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T2 180.00-160.00	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T3 160.00-140.00	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T4 140.00-120.00	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T5 120.00-100.00	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T6 100.00-80.00	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T7 80.00-60.00	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T8 60.00-40.00	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T9 40.00-20.00	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T10 20.00-0.00	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75

Tower Elevation ft	Redundant Horizontal		Redundant Diagonal		Redundant Sub-Diagonal		Redundant Sub-Horizontal		Redundant Vertical		Redundant Hip		Redundant Hip Diagonal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1 200.00-180.00	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T2 180.00-160.00	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T3 160.00-140.00	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T4 140.00-120.00	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T5 120.00-100.00	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T6 100.00-80.00	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T7 80.00-60.00	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T8 60.00-40.00	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T9 40.00-20.00	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T10 20.00-0.00	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1 200.00-180.00	Flange	0.750 A325X	4	0.625 A325X	1	0.625 A325X	1	0.000 A325N	0	0.625 A325N	0	0.000 A325N	0	0.625 A325N	0
T2 180.00-160.00	Flange	1.000 A325X	4	0.625 A325X	1	0.000 A325N	0	0.000 A325N	0	0.625 A325N	0	0.000 A325N	0	0.625 A325N	0
T3 160.00-140.00	Flange	1.000 A325X	4	0.625 A325X	1	0.000 A325N	0	0.000 A325N	0	0.625 A325N	0	0.000 A325N	0	0.625 A325N	0
T4 140.00-120.00	Flange	1.250 A325X	4	0.625 A325X	1	0.000 A325N	0	0.000 A325N	0	0.625 A325N	0	0.000 A325N	0	0.625 A325N	0
T5 120.00-100.00	Flange	1.250 A325X	4	0.625 A325X	1	0.000 A325N	0	0.000 A325N	0	0.625 A325N	0	0.000 A325N	0	0.625 A325N	0
T6 100.00-80.00	Flange	1.250 A325X	6	0.750 A325X	1	0.000 A325N	0	0.000 A325N	0	0.625 A325N	0	0.000 A325N	0	0.625 A325N	0
T7 80.00-60.00	Flange	1.250 A325X	6	0.750 A325X	1	0.000 A325N	0	0.000 A325N	0	0.625 A325N	0	0.000 A325N	0	0.625 A325N	0
T8 60.00-40.00	Flange	1.375 A325X	6	0.750 A325X	1	0.000 A325N	0	0.000 A325N	0	0.625 A325N	0	0.000 A325N	0	0.625 A325N	0
T9 40.00-20.00	Flange	1.375 A325X	6	0.750 A325X	1	0.000 A325N	0	0.000 A325N	0	0.625 A325N	0	0.000 A325N	0	0.625 A325N	0
T10 20.00-0.00	Flange	0.000 A572-50	0	0.750 A325X	1	0.000 A325N	0	0.000 A325N	0	0.625 A325N	0	0.000 A325N	0	0.625 A325N	0

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
***													
LDF4-	B	No	No	Ar (CaAa)	198.00 -	0.000	0.18	1	1	0.500	0.630		0.150

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
50A(1/2)					163.00								
LDF4-50A(1/2)	C	No	No	Ar (CaAa)	198.00 - 0.00	-2.000	0.03	1	1	0.500	0.630		0.150
LDF5-50A(7/8) ***	B	No	No	Ar (CaAa)	198.00 - 144.00	0.000	0.16	3	2	0.500	1.090		0.330
760178129(1/4)	B	No	No	Ar (CaAa)	190.00 - 182.00	1.000	-0.08	18	9	0.330	0.330		0.044
LDF4-50A(1/2)	B	No	No	Ar (CaAa)	190.00 - 182.00	0.000	-0.08	9	9	0.625	0.625		0.150
760178129(1/4)	B	No	No	Ar (CaAa)	182.00 - 0.00	3.000	-0.08	18	9	0.330	0.001		0.040
LDF4-50A(1/2) ***	B	No	No	Ar (CaAa)	182.00 - 0.00	2.000	-0.08	9	9	0.625	0.001		0.150
AVA7-50(1-5/8)	B	No	No	Ar (CaAa)	182.00 - 0.00	0.000	-0.1	6	6	0.500	2.010		0.700
Feedline Ladder (Af) ***	B	No	No	Af (CaAa)	168.00 - 0.00	0.000	-0.1	1	1	1.500	1.500		8.400
HB114-1-0813U4-M5J(1-1/4)	C	No	No	Ar (CaAa)	170.00 - 0.00	-2.000	0.02	4	4	0.500	1.540		1.200
Feedline Ladder (Af) ***	C	No	No	Af (CaAa)	170.00 - 0.00	-1.000	0.005	1	1	3.000	3.000		8.400
FLC 12-50J(1/2) ***	B	No	No	Ar (CaAa)	163.00 - 144.00	0.000	0.14	2	2	0.500	0.640		0.170
LDF5-50A(7/8)	B	No	No	Ar (CaAa)	144.00 - 0.00	0.000	0.15	5	5	0.500	1.090		0.330
LDF4-50A(1/2) ***	B	No	No	Ar (CaAa)	144.00 - 56.00	0.000	0.12	5	5	0.625	0.630		0.150
LDF4-50A(1/2) ***	C	No	No	Ar (CaAa)	53.00 - 0.00	-1.500	0.03	1	1	0.630	0.630		0.150
LDF4-50A(1/2)	B	No	No	Ar (CaAa)	56.00 - 0.00	1.000	0.15	6	6	0.630	0.630		0.150
LDF2-50(3/8")	B	No	No	Ar (CaAa)	100.00 - 0.00	0.000	0.04	1	1	0.500	0.440		0.080
50-AC-208-8SM(3/4")	B	No	No	Ar (CaAa)	200.00 - 0.00	0.000	0.05	1	1	0.740	0.740		0.290
Feedline Ladder (Af) ***	B	No	No	Af (CaAa)	200.00 - 0.00	0.000	0.05	1	1	3.000	3.000		8.400
Feedline Ladder (Af)	B	No	No	Af (CaAa)	200.00 - 0.00	0.000	0.15	1	1	3.000	3.000		8.400
Thin Flat Bar Climbing Ladder	C	No	No	Af (CaAa)	200.00 - 0.00	0.000	0	1	1	2.000	2.000		4.000
Safety Line 3/8 ***	C	No	No	Ar (CaAa)	200.00 - 0.00	0.000	0	1	1	0.375	0.375		0.220
1 1/2" Rigid Conduit **	B	No	No	Ar (CaAa)	200.00 - 0.00	0.000	0.06	1	1	1.500	1.500		1.000
Feedline Ladder (Af)	A	No	No	Af (CaAa)	180.00 - 0.00	0.000	-0.13	1	1	3.000	3.000		8.400
Feedline Ladder (Af) ***	A	No	No	Af (CaAa)	140.00 - 0.00	0.000	-0.03	1	1	3.000	3.000		8.400
CU12PSM9P6XXX(1-1/2)	A	No	No	Ar (CaAa)	134.00 - 0.00	0.000	0	1	1	1.600	1.600		2.350
Feedline Ladder (Af)	A	No	No	Af (CaAa)	134.00 - 0.00	0.000	0	1	1	3.000	3.000		8.400

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
T1	200.00-180.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	43.169	0.000	0.41
		C	0.000	0.000	8.551	0.000	0.09
T2	180.00-160.00	A	0.000	0.000	10.000	0.000	0.17
		B	0.000	0.000	58.649	0.000	0.58
		C	0.000	0.000	19.837	0.000	0.22
T3	160.00-140.00	A	0.000	0.000	10.000	0.000	0.17
		B	0.000	0.000	64.374	0.000	0.69
		C	0.000	0.000	30.997	0.000	0.35
T4	140.00-120.00	A	0.000	0.000	29.240	0.000	0.49
		B	0.000	0.000	70.854	0.000	0.70
		C	0.000	0.000	30.997	0.000	0.35
T5	120.00-100.00	A	0.000	0.000	33.200	0.000	0.55
		B	0.000	0.000	70.854	0.000	0.70
		C	0.000	0.000	30.997	0.000	0.35
T6	100.00-80.00	A	0.000	0.000	33.200	0.000	0.55
		B	0.000	0.000	71.734	0.000	0.70
		C	0.000	0.000	30.997	0.000	0.35
T7	80.00-60.00	A	0.000	0.000	33.200	0.000	0.55
		B	0.000	0.000	71.734	0.000	0.70
		C	0.000	0.000	30.997	0.000	0.35
T8	60.00-40.00	A	0.000	0.000	33.200	0.000	0.55
		B	0.000	0.000	72.742	0.000	0.71
		C	0.000	0.000	31.816	0.000	0.35
T9	40.00-20.00	A	0.000	0.000	33.200	0.000	0.55
		B	0.000	0.000	72.994	0.000	0.71
		C	0.000	0.000	32.257	0.000	0.35
T10	20.00-0.00	A	0.000	0.000	33.200	0.000	0.55
		B	0.000	0.000	72.994	0.000	0.71
		C	0.000	0.000	32.257	0.000	0.35

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
T1	200.00-180.00	A	2.025	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	122.399	0.000	2.13
		C		0.000	0.000	32.043	0.000	0.57
T2	180.00-160.00	A	2.003	0.000	0.000	18.011	0.000	0.47
		B		0.000	0.000	189.341	0.000	3.08
		C		0.000	0.000	57.862	0.000	1.06
T3	160.00-140.00	A	1.978	0.000	0.000	17.912	0.000	0.47
		B		0.000	0.000	206.883	0.000	3.35
		C		0.000	0.000	82.449	0.000	1.52
T4	140.00-120.00	A	1.950	0.000	0.000	55.757	0.000	1.40
		B		0.000	0.000	218.156	0.000	3.52
		C		0.000	0.000	81.812	0.000	1.49
T5	120.00-100.00	A	1.918	0.000	0.000	63.880	0.000	1.58
		B		0.000	0.000	216.443	0.000	3.46
		C		0.000	0.000	81.081	0.000	1.47
T6	100.00-80.00	A	1.879	0.000	0.000	63.271	0.000	1.55
		B		0.000	0.000	222.823	0.000	3.49
		C		0.000	0.000	80.218	0.000	1.44
T7	80.00-60.00	A	1.833	0.000	0.000	62.524	0.000	1.51
		B		0.000	0.000	220.167	0.000	3.40
		C		0.000	0.000	79.162	0.000	1.40
T8	60.00-40.00	A	1.772	0.000	0.000	61.554	0.000	1.47
		B		0.000	0.000	219.074	0.000	3.32
		C		0.000	0.000	83.217	0.000	1.42
T9	40.00-20.00	A	1.684	0.000	0.000	60.142	0.000	1.41

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		B		0.000	0.000	214.662	0.000	3.16
		C		0.000	0.000	83.790	0.000	1.38
T10	20.00-0.00	A	1.509	0.000	0.000	57.339	0.000	1.29
		B		0.000	0.000	204.766	0.000	2.84
		C		0.000	0.000	79.134	0.000	1.24

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
T1	200.00-180.00	5.772	-1.242	6.623	-0.410
T2	180.00-160.00	4.863	-2.309	6.752	-2.095
T3	160.00-140.00	5.765	-2.107	8.067	-1.956
T4	140.00-120.00	3.698	-3.421	6.058	-3.478
T5	120.00-100.00	3.562	-4.025	6.098	-4.158
T6	100.00-80.00	3.813	-4.215	7.235	-4.743
T7	80.00-60.00	4.362	-4.769	8.198	-5.375
T8	60.00-40.00	4.744	-4.652	8.656	-4.899
T9	40.00-20.00	5.086	-4.810	9.143	-4.906
T10	20.00-0.00	5.069	-4.825	9.232	-5.258

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	2	LDF4-50A(1/2)	180.00 - 198.00	0.6000	0.5372
T1	3	LDF4-50A(1/2)	180.00 - 198.00	0.6000	0.5372
T1	4	LDF5-50A(7/8)	180.00 - 198.00	0.6000	0.5372
T1	6	760178129(1/4)	182.00 - 190.00	0.6000	0.5372
T1	7	LDF4-50A(1/2)	182.00 - 190.00	0.6000	0.5372
T1	8	760178129(1/4)	180.00 - 182.00	0.6000	0.5372
T1	9	LDF4-50A(1/2)	180.00 - 182.00	0.6000	0.5372
T1	11	AVA7-50(1-5/8)	180.00 - 182.00	0.6000	0.5372
T1	26	50-AC-208-8SM(3/4")	180.00 - 200.00	0.6000	0.5372
T1	27	Feedline Ladder (Af)	180.00 - 200.00	0.6000	0.5372
T1	29	Feedline Ladder (Af)	180.00 - 200.00	0.6000	0.5372
T1	30	Thin Flat Bar Climbing Ladder	180.00 - 200.00	0.6000	0.5372
T1	31	Safety Line 3/8	180.00 - 200.00	0.6000	0.5372
T1	33	1 1/2" Rigid Conduit	180.00 - 200.00	0.6000	0.5372
T2	2	LDF4-50A(1/2)	163.00 - 180.00	0.6000	0.5940
T2	3	LDF4-50A(1/2)	160.00 - 180.00	0.6000	0.5940

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T2	4	LDF5-50A(7/8)	160.00 - 180.00	0.6000	0.5940
T2	8	760178129(1/4)	160.00 - 180.00	0.6000	0.5940
T2	9	LDF4-50A(1/2)	160.00 - 180.00	0.6000	0.5940
T2	11	AVA7-50(1-5/8)	160.00 - 180.00	0.6000	0.5940
T2	12	Feedline Ladder (Af)	160.00 - 168.00	0.6000	0.5940
T2	14	HB114-1-0813U4-M5J(1-1/4)	160.00 - 170.00	0.6000	0.5940
T2	15	Feedline Ladder (Af)	160.00 - 170.00	0.6000	0.5940
T2	17	FLC 12-50J(1/2)	160.00 - 163.00	0.6000	0.5940
T2	26	50-AC-208-8SM(3/4")	160.00 - 180.00	0.6000	0.5940
T2	27	Feedline Ladder (Af)	160.00 - 180.00	0.6000	0.5940
T2	29	Feedline Ladder (Af)	160.00 - 180.00	0.6000	0.5940
T2	30	Thin Flat Bar Climbing Ladder	160.00 - 180.00	0.6000	0.5940
T2	31	Safety Line 3/8	160.00 - 180.00	0.6000	0.5940
T2	33	1 1/2" Rigid Conduit	160.00 - 180.00	0.6000	0.5940
T2	35	Feedline Ladder (Af)	160.00 - 180.00	0.6000	0.5940
T3	3	LDF4-50A(1/2)	140.00 - 160.00	0.6000	0.6000
T3	4	LDF5-50A(7/8)	144.00 - 160.00	0.6000	0.6000
T3	8	760178129(1/4)	140.00 - 160.00	0.6000	0.6000
T3	9	LDF4-50A(1/2)	140.00 - 160.00	0.6000	0.6000
T3	11	AVA7-50(1-5/8)	140.00 - 160.00	0.6000	0.6000
T3	12	Feedline Ladder (Af)	140.00 - 160.00	0.6000	0.6000
T3	14	HB114-1-0813U4-M5J(1-1/4)	140.00 - 160.00	0.6000	0.6000
T3	15	Feedline Ladder (Af)	140.00 - 160.00	0.6000	0.6000
T3	17	FLC 12-50J(1/2)	144.00 - 160.00	0.6000	0.6000
T3	19	LDF5-50A(7/8)	140.00 - 144.00	0.6000	0.6000
T3	20	LDF4-50A(1/2)	140.00 - 144.00	0.6000	0.6000
T3	26	50-AC-208-8SM(3/4")	140.00 - 160.00	0.6000	0.6000
T3	27	Feedline Ladder (Af)	140.00 - 160.00	0.6000	0.6000
T3	29	Feedline Ladder (Af)	140.00 - 160.00	0.6000	0.6000
T3	30	Thin Flat Bar Climbing Ladder	140.00 - 160.00	0.6000	0.6000
T3	31	Safety Line 3/8	140.00 - 160.00	0.6000	0.6000
T3	33	1 1/2" Rigid Conduit	140.00 - 160.00	0.6000	0.6000
T3	35	Feedline Ladder (Af)	140.00 - 160.00	0.6000	0.6000
T4	3	LDF4-50A(1/2)	120.00 - 140.00	0.6000	0.6000
T4	8	760178129(1/4)	120.00 -	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T4	9	LDF4-50A(1/2)	140.00 120.00 - 140.00	0.6000	0.6000
T4	11	AVA7-50(1-5/8)	120.00 - 140.00	0.6000	0.6000
T4	12	Feedline Ladder (Af)	120.00 - 140.00	0.6000	0.6000
T4	14	HB114-1-0813U4-M5J(1-1/4)	120.00 - 140.00	0.6000	0.6000
T4	15	Feedline Ladder (Af)	120.00 - 140.00	0.6000	0.6000
T4	19	LDF5-50A(7/8)	120.00 - 140.00	0.6000	0.6000
T4	20	LDF4-50A(1/2)	120.00 - 140.00	0.6000	0.6000
T4	26	50-AC-208-8SM(3/4")	120.00 - 140.00	0.6000	0.6000
T4	27	Feedline Ladder (Af)	120.00 - 140.00	0.6000	0.6000
T4	29	Feedline Ladder (Af)	120.00 - 140.00	0.6000	0.6000
T4	30	Thin Flat Bar Climbing Ladder	120.00 - 140.00	0.6000	0.6000
T4	31	Safety Line 3/8	120.00 - 140.00	0.6000	0.6000
T4	33	1 1/2" Rigid Conduit	120.00 - 140.00	0.6000	0.6000
T4	35	Feedline Ladder (Af)	120.00 - 140.00	0.6000	0.6000
T4	36	Feedline Ladder (Af)	120.00 - 140.00	0.6000	0.6000
T4	38	CU12PSM9P6XXX(1-1/2)	120.00 - 134.00	0.6000	0.6000
T4	39	Feedline Ladder (Af)	120.00 - 134.00	0.6000	0.6000
T5	3	LDF4-50A(1/2)	100.00 - 120.00	0.6000	0.6000
T5	8	760178129(1/4)	100.00 - 120.00	0.6000	0.6000
T5	9	LDF4-50A(1/2)	100.00 - 120.00	0.6000	0.6000
T5	11	AVA7-50(1-5/8)	100.00 - 120.00	0.6000	0.6000
T5	12	Feedline Ladder (Af)	100.00 - 120.00	0.6000	0.6000
T5	14	HB114-1-0813U4-M5J(1-1/4)	100.00 - 120.00	0.6000	0.6000
T5	15	Feedline Ladder (Af)	100.00 - 120.00	0.6000	0.6000
T5	19	LDF5-50A(7/8)	100.00 - 120.00	0.6000	0.6000
T5	20	LDF4-50A(1/2)	100.00 - 120.00	0.6000	0.6000
T5	26	50-AC-208-8SM(3/4")	100.00 - 120.00	0.6000	0.6000
T5	27	Feedline Ladder (Af)	100.00 - 120.00	0.6000	0.6000
T5	29	Feedline Ladder (Af)	100.00 - 120.00	0.6000	0.6000
T5	30	Thin Flat Bar Climbing Ladder	100.00 - 120.00	0.6000	0.6000
T5	31	Safety Line 3/8	100.00 - 120.00	0.6000	0.6000
T5	33	1 1/2" Rigid Conduit	100.00 - 120.00	0.6000	0.6000
T5	35	Feedline Ladder (Af)	100.00 - 120.00	0.6000	0.6000
T5	36	Feedline Ladder (Af)	100.00 - 120.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T5	38	CU12PSM9P6XXX(1-1/2)	100.00 - 120.00	0.6000	0.6000
T5	39	Feedline Ladder (Af)	100.00 - 120.00	0.6000	0.6000
T6	3	LDF4-50A(1/2)	80.00 - 100.00	0.6000	0.6000
T6	8	760178129(1/4)	80.00 - 100.00	0.6000	0.6000
T6	9	LDF4-50A(1/2)	80.00 - 100.00	0.6000	0.6000
T6	11	AVA7-50(1-5/8)	80.00 - 100.00	0.6000	0.6000
T6	12	Feedline Ladder (Af)	80.00 - 100.00	0.6000	0.6000
T6	14	HB114-1-0813U4-M5J(1-1/4)	80.00 - 100.00	0.6000	0.6000
T6	15	Feedline Ladder (Af)	80.00 - 100.00	0.6000	0.6000
T6	19	LDF5-50A(7/8)	80.00 - 100.00	0.6000	0.6000
T6	20	LDF4-50A(1/2)	80.00 - 100.00	0.6000	0.6000
T6	25	LDF2-50(3/8")	80.00 - 100.00	0.6000	0.6000
T6	26	50-AC-208-8SM(3/4")	80.00 - 100.00	0.6000	0.6000
T6	27	Feedline Ladder (Af)	80.00 - 100.00	0.6000	0.6000
T6	29	Feedline Ladder (Af)	80.00 - 100.00	0.6000	0.6000
T6	30	Thin Flat Bar Climbing Ladder	80.00 - 100.00	0.6000	0.6000
T6	31	Safety Line 3/8	80.00 - 100.00	0.6000	0.6000
T6	33	1 1/2" Rigid Conduit	80.00 - 100.00	0.6000	0.6000
T6	35	Feedline Ladder (Af)	80.00 - 100.00	0.6000	0.6000
T6	36	Feedline Ladder (Af)	80.00 - 100.00	0.6000	0.6000
T6	38	CU12PSM9P6XXX(1-1/2)	80.00 - 100.00	0.6000	0.6000
T6	39	Feedline Ladder (Af)	80.00 - 100.00	0.6000	0.6000
T7	3	LDF4-50A(1/2)	60.00 - 80.00	0.6000	0.6000
T7	8	760178129(1/4)	60.00 - 80.00	0.6000	0.6000
T7	9	LDF4-50A(1/2)	60.00 - 80.00	0.6000	0.6000
T7	11	AVA7-50(1-5/8)	60.00 - 80.00	0.6000	0.6000
T7	12	Feedline Ladder (Af)	60.00 - 80.00	0.6000	0.6000
T7	14	HB114-1-0813U4-M5J(1-1/4)	60.00 - 80.00	0.6000	0.6000
T7	15	Feedline Ladder (Af)	60.00 - 80.00	0.6000	0.6000
T7	19	LDF5-50A(7/8)	60.00 - 80.00	0.6000	0.6000
T7	20	LDF4-50A(1/2)	60.00 - 80.00	0.6000	0.6000
T7	25	LDF2-50(3/8")	60.00 - 80.00	0.6000	0.6000
T7	26	50-AC-208-8SM(3/4")	60.00 - 80.00	0.6000	0.6000
T7	27	Feedline Ladder (Af)	60.00 - 80.00	0.6000	0.6000
T7	29	Feedline Ladder (Af)	60.00 -	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T7	30	Thin Flat Bar Climbing Ladder	80.00 60.00 - 80.00	0.6000	0.6000
T7	31	Safety Line 3/8	60.00 - 80.00	0.6000	0.6000
T7	33	1 1/2" Rigid Conduit	60.00 - 80.00	0.6000	0.6000
T7	35	Feedline Ladder (Af)	60.00 - 80.00	0.6000	0.6000
T7	36	Feedline Ladder (Af)	60.00 - 80.00	0.6000	0.6000
T7	38	CU12PSM9P6XXX(1-1/2)	60.00 - 80.00	0.6000	0.6000
T7	39	Feedline Ladder (Af)	60.00 - 80.00	0.6000	0.6000
T8	3	LDF4-50A(1/2)	40.00 - 60.00	0.6000	0.6000
T8	8	760178129(1/4)	40.00 - 60.00	0.6000	0.6000
T8	9	LDF4-50A(1/2)	40.00 - 60.00	0.6000	0.6000
T8	11	AVA7-50(1-5/8)	40.00 - 60.00	0.6000	0.6000
T8	12	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.6000
T8	14	HB114-1-0813U4-M5J(1-1/4)	40.00 - 60.00	0.6000	0.6000
T8	15	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.6000
T8	19	LDF5-50A(7/8)	40.00 - 60.00	0.6000	0.6000
T8	20	LDF4-50A(1/2)	56.00 - 60.00	0.6000	0.6000
T8	22	LDF4-50A(1/2)	40.00 - 53.00	0.6000	0.6000
T8	24	LDF4-50A(1/2)	40.00 - 56.00	0.6000	0.6000
T8	25	LDF2-50(3/8")	40.00 - 60.00	0.6000	0.6000
T8	26	50-AC-208-8SM(3/4")	40.00 - 60.00	0.6000	0.6000
T8	27	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.6000
T8	29	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.6000
T8	30	Thin Flat Bar Climbing Ladder	40.00 - 60.00	0.6000	0.6000
T8	31	Safety Line 3/8	40.00 - 60.00	0.6000	0.6000
T8	33	1 1/2" Rigid Conduit	40.00 - 60.00	0.6000	0.6000
T8	35	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.6000
T8	36	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.6000
T8	38	CU12PSM9P6XXX(1-1/2)	40.00 - 60.00	0.6000	0.6000
T8	39	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.6000
T9	3	LDF4-50A(1/2)	20.00 - 40.00	0.6000	0.6000
T9	8	760178129(1/4)	20.00 - 40.00	0.6000	0.6000
T9	9	LDF4-50A(1/2)	20.00 - 40.00	0.6000	0.6000
T9	11	AVA7-50(1-5/8)	20.00 - 40.00	0.6000	0.6000
T9	12	Feedline Ladder (Af)	20.00 - 40.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T9	14	HB114-1-0813U4-M5J(1-1/4)	20.00 - 40.00	0.6000	0.6000
T9	15	Feedline Ladder (Af)	20.00 - 40.00	0.6000	0.6000
T9	19	LDF5-50A(7/8)	20.00 - 40.00	0.6000	0.6000
T9	22	LDF4-50A(1/2)	20.00 - 40.00	0.6000	0.6000
T9	24	LDF4-50A(1/2)	20.00 - 40.00	0.6000	0.6000
T9	25	LDF2-50(3/8")	20.00 - 40.00	0.6000	0.6000
T9	26	50-AC-208-8SM(3/4")	20.00 - 40.00	0.6000	0.6000
T9	27	Feedline Ladder (Af)	20.00 - 40.00	0.6000	0.6000
T9	29	Feedline Ladder (Af)	20.00 - 40.00	0.6000	0.6000
T9	30	Thin Flat Bar Climbing Ladder	20.00 - 40.00	0.6000	0.6000
T9	31	Safety Line 3/8	20.00 - 40.00	0.6000	0.6000
T9	33	1 1/2" Rigid Conduit	20.00 - 40.00	0.6000	0.6000
T9	35	Feedline Ladder (Af)	20.00 - 40.00	0.6000	0.6000
T9	36	Feedline Ladder (Af)	20.00 - 40.00	0.6000	0.6000
T9	38	CU12PSM9P6XXX(1-1/2)	20.00 - 40.00	0.6000	0.6000
T9	39	Feedline Ladder (Af)	20.00 - 40.00	0.6000	0.6000
T10	3	LDF4-50A(1/2)	0.00 - 20.00	0.6000	0.6000
T10	8	760178129(1/4)	0.00 - 20.00	0.6000	0.6000
T10	9	LDF4-50A(1/2)	0.00 - 20.00	0.6000	0.6000
T10	11	AVA7-50(1-5/8)	0.00 - 20.00	0.6000	0.6000
T10	12	Feedline Ladder (Af)	0.00 - 20.00	0.6000	0.6000
T10	14	HB114-1-0813U4-M5J(1-1/4)	0.00 - 20.00	0.6000	0.6000
T10	15	Feedline Ladder (Af)	0.00 - 20.00	0.6000	0.6000
T10	19	LDF5-50A(7/8)	0.00 - 20.00	0.6000	0.6000
T10	22	LDF4-50A(1/2)	0.00 - 20.00	0.6000	0.6000
T10	24	LDF4-50A(1/2)	0.00 - 20.00	0.6000	0.6000
T10	25	LDF2-50(3/8")	0.00 - 20.00	0.6000	0.6000
T10	26	50-AC-208-8SM(3/4")	0.00 - 20.00	0.6000	0.6000
T10	27	Feedline Ladder (Af)	0.00 - 20.00	0.6000	0.6000
T10	29	Feedline Ladder (Af)	0.00 - 20.00	0.6000	0.6000
T10	30	Thin Flat Bar Climbing Ladder	0.00 - 20.00	0.6000	0.6000
T10	31	Safety Line 3/8	0.00 - 20.00	0.6000	0.6000
T10	33	1 1/2" Rigid Conduit	0.00 - 20.00	0.6000	0.6000
T10	35	Feedline Ladder (Af)	0.00 - 20.00	0.6000	0.6000
T10	36	Feedline Ladder (Af)	0.00 - 20.00	0.6000	0.6000
T10	38	CU12PSM9P6XXX(1-1/2)	0.00 - 20.00	0.6000	0.6000
T10	39	Feedline Ladder (Af)	0.00 - 20.00	0.6000	0.6000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft
15" Dia. x 15" Beacon	A	From Leg	0.00 0.000 15.000	0.000	200.00
2.4" x 16' Mount Pipe	A	From Leg	0.00 0.000 7.000	0.000	200.00
15" Dia. x 15" Beacon	C	From Leg	0.00 0.000 15.000	0.000	200.00
2.4" x 16' Mount Pipe	C	From Leg	0.00 0.000 7.000	0.000	200.00
3" x 6" SideLight	A	From Leg	0.00 0.000 0.000	0.000	102.00
3" x 6" SideLight	B	From Leg	0.00 0.000 0.000	0.000	102.00
3" x 6" SideLight	C	From Leg	0.00 0.000 0.000	0.000	102.00
**					
DB225-A	A	From Leg	4.00 0.000 7.000	0.000	198.00
ALR10-O	B	From Leg	4.00 0.000 10.000	0.000	198.00
OGB6-928N	B	From Leg	4.00 0.000 6.000	0.000	198.00
PD1107-1	C	From Leg	4.00 0.000 7.000	0.000	198.00
PD201-7	C	From Leg	4.00 0.000 7.000	0.000	198.00
(4) 6' x 2" Mount Pipe	A	From Leg	4.00 0.000 0.000	0.000	198.00
(4) 6' x 2" Mount Pipe	B	From Leg	4.00 0.000 0.000	0.000	198.00
(4) 6' x 2" Mount Pipe	C	From Leg	4.00 0.000 0.000	0.000	198.00
(2) 4' x 2" Pipe Mount	A	From Leg	4.00 0.000 0.000	0.000	198.00
(2) 4' x 2" Pipe Mount	B	From Leg	4.00 0.000 0.000	0.000	198.00
(2) 4' x 2" Pipe Mount	C	From Leg	4.00 0.000 0.000	0.000	198.00
Sector Mount [SM 702-3]	C	None		0.000	198.00
***					
(2) MXM REPEATER MK2	A	From Leg	1.00 0.000 0.000	0.000	190.00
(2) MXM REPEATER MK2	B	From Leg	1.00 0.000 0.000	0.000	190.00
(2) MXM REPEATER MK2	C	From Leg	1.00 0.000	0.000	190.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft
Pipe Mount [PM 601-1]	A	From Leg	0.000 0.50 0.000	0.000	190.00
Pipe Mount [PM 601-1]	B	From Leg	0.000 0.50 0.000	0.000	190.00
Pipe Mount [PM 601-1]	C	From Leg	0.000 0.50 0.000	0.000	190.00
***					
APXVAARR24_43-U-NA20 w/ Mount Pipe	A	From Leg	0.000 4.00 0.000	0.000	182.00
APXVAARR24_43-U-NA20 w/ Mount Pipe	B	From Leg	1.000 4.00 0.000	0.000	182.00
APXVAARR24_43-U-NA20 w/ Mount Pipe	C	From Leg	1.000 4.00 0.000	0.000	182.00
AIR6449 B41_T-MOBILE w/ Mount Pipe	A	From Leg	1.000 4.00 0.000	0.000	182.00
AIR6449 B41_T-MOBILE w/ Mount Pipe	B	From Leg	1.000 4.00 0.000	0.000	182.00
AIR6449 B41_T-MOBILE w/ Mount Pipe	C	From Leg	1.000 4.00 0.000	0.000	182.00
APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	A	From Leg	1.000 4.00 0.000	0.000	182.00
APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	B	From Leg	1.000 4.00 0.000	0.000	182.00
APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	C	From Leg	1.000 4.00 0.000	0.000	182.00
RADIO 4449 B12/B71	A	From Leg	1.000 4.00 0.000	0.000	182.00
RADIO 4449 B12/B71	B	From Leg	1.000 4.00 0.000	0.000	182.00
RADIO 4449 B12/B71	C	From Leg	1.000 4.00 0.000	0.000	182.00
RADIO 4415 B66A_CCIV3	A	From Leg	1.000 4.00 0.000	0.000	182.00
RADIO 4415 B66A_CCIV3	B	From Leg	1.000 4.00 0.000	0.000	182.00
RADIO 4415 B66A_CCIV3	C	From Leg	1.000 4.00 0.000	0.000	182.00
RADIO 4424 B25_TMO	A	From Leg	1.000 4.00 0.000	0.000	182.00
RADIO 4424 B25_TMO	B	From Leg	1.000 4.00 0.000	0.000	182.00
RADIO 4424 B25_TMO	C	From Leg	1.000 4.00 0.000	0.000	182.00
			1.000		

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft
Sector Mount [SM 702-3]	C	None		0.000	182.00
(3) 6' x 2" Mount Pipe	A	From Leg	4.00 0.000 0.000	0.000	182.00
(3) 6' x 2" Mount Pipe	B	From Leg	4.00 0.000 0.000	0.000	182.00
(3) 6' x 2" Mount Pipe	C	From Leg	4.00 0.000 0.000	0.000	182.00
SitePro STK-U Stiff Arm Kit	A	From Leg	2.00 0.000 0.000	0.000	182.00
SitePro STK-U Stiff Arm Kit	B	From Leg	2.00 0.000 0.000	0.000	182.00
SitePro STK-U Stiff Arm Kit	C	From Leg	2.00 0.000 0.000	0.000	182.00
**					
APXVTM14-ALU-I20 w/ Mount Pipe	A	From Leg	4.00 0.000 1.000	0.000	170.00
APXVTM14-ALU-I20 w/ Mount Pipe	B	From Leg	4.00 0.000 1.000	0.000	170.00
APXVTM14-ALU-I20 w/ Mount Pipe	C	From Leg	4.00 0.000 1.000	0.000	170.00
NNVV-65B-R4 w/ Mount Pipe	A	From Leg	4.00 0.000 1.000	0.000	170.00
NNVV-65B-R4 w/ Mount Pipe	B	From Leg	4.00 0.000 1.000	0.000	170.00
NNVV-65B-R4 w/ Mount Pipe	C	From Leg	4.00 0.000 1.000	0.000	170.00
PCS 1900MHZ 4X45W-65MHZ	A	From Leg	4.00 0.000 1.000	0.000	170.00
PCS 1900MHZ 4X45W-65MHZ	B	From Leg	4.00 0.000 1.000	0.000	170.00
PCS 1900MHZ 4X45W-65MHZ	C	From Leg	4.00 0.000 1.000	0.000	170.00
TD-RRH8X20-25	A	From Leg	4.00 0.000 1.000	0.000	170.00
TD-RRH8X20-25	B	From Leg	4.00 0.000 1.000	0.000	170.00
TD-RRH8X20-25	C	From Leg	4.00 0.000 1.000	0.000	170.00
(2) RRH2X50-800	A	From Leg	4.00 0.000 1.000	0.000	170.00
(2) RRH2X50-800	B	From Leg	4.00 0.000 1.000	0.000	170.00
(2) RRH2X50-800	C	From Leg	4.00 0.000 1.000	0.000	170.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft
10' horizontal x 2" Pipe Mount	A	From Leg	2.00 0.000 0.000	0.000	170.00
10' horizontal x 2" Pipe Mount	B	From Leg	2.00 0.000 0.000	0.000	170.00
10' horizontal x 2" Pipe Mount	C	From Leg	2.00 0.000 0.000	0.000	170.00
6' x 2" Mount Pipe	A	From Leg	4.00 0.000 0.000	0.000	170.00
6' x 2" Mount Pipe	B	From Leg	4.00 0.000 0.000	0.000	170.00
6' x 2" Mount Pipe	C	From Leg	4.00 0.000 0.000	0.000	170.00
Sector Mount [SM 506-3]	C	None		0.000	170.00
***					
Pipe Mount [PM 601-1]	A	From Leg	0.50 0.000 0.000	0.000	163.00
***					
(2) PD1109-1	B	From Leg	4.00 0.000 8.000	0.000	144.00
SRL480N1DT4	C	From Leg	4.00 0.000 11.000	0.000	144.00
(4) 6' x 2" Mount Pipe	A	From Leg	4.00 0.000 0.000	0.000	144.00
(4) 6' x 2" Mount Pipe	B	From Leg	4.00 0.000 0.000	0.000	144.00
(4) 6' x 2" Mount Pipe	C	From Leg	4.00 0.000 0.000	0.000	144.00
(2) 4' x 2" Pipe Mount	A	From Leg	4.00 0.000 0.000	0.000	144.00
(2) 4' x 2" Pipe Mount	B	From Leg	4.00 0.000 0.000	0.000	144.00
(2) 4' x 2" Pipe Mount	C	From Leg	4.00 0.000 0.000	0.000	144.00
Sector Mount [SM 702-3]	C	None		0.000	144.00
***					
KS24019-L112A	C	From Leg	2.00 0.000 2.000	-30.000	53.00
Side Arm Mount [SO 202-1]	C	From Leg	1.00 0.000 0.000	-30.000	53.00
**********					
MX08FRO665-21 w/ Mount Pipe	A	From Leg	4.00 0.000 0.000	0.000	134.00
MX08FRO665-21 w/ Mount Pipe	B	From Leg	4.00 0.000 0.000	0.000	134.00
MX08FRO665-21 w/ Mount Pipe	C	From Leg	4.00 0.000	0.000	134.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft
TA08025-B604	A	From Leg	0.000 4.00 0.000	0.000	134.00
TA08025-B604	B	From Leg	0.000 4.00 0.000	0.000	134.00
TA08025-B604	C	From Leg	0.000 4.00 0.000	0.000	134.00
TA08025-B605	A	From Leg	0.000 4.00 0.000	0.000	134.00
TA08025-B605	B	From Leg	0.000 4.00 0.000	0.000	134.00
TA08025-B605	C	From Leg	0.000 4.00 0.000	0.000	134.00
RDIDC-9181-PF-48	B	From Leg	0.000 4.00 0.000	0.000	134.00
(2) 8' x 2" Mount Pipe	A	From Leg	0.000 4.00 0.000	0.000	134.00
(2) 8' x 2" Mount Pipe	B	From Leg	0.000 4.00 0.000	0.000	134.00
(2) 8' x 2" Mount Pipe	C	From Leg	0.000 4.00 0.000	0.000	134.00
Commscope MTC3975083 (3)	C	None	0.000	0.000	134.00

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
USX6-6W-6GR	A	Paraboloid w/Shroud (HP)	From Leg	1.00 0.000 0.000	-6.000		190.00	6.00
USX6-6W-6GR	B	Paraboloid w/Shroud (HP)	From Leg	1.00 0.000 0.000	53.000		190.00	6.00
USX6-6W-6GR	C	Paraboloid w/Shroud (HP)	From Leg	1.00 0.000 0.000	-49.000		190.00	6.00
**								
PR-850	A	Grid	From Leg	1.00 0.000 0.000	30.000		163.00	5.67
***								

Load Combinations

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

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T1	200 - 180	Leg	Max Tension	15	28.63	-0.02	-0.65
			Max. Compression	2	-35.52	0.04	1.29
			Max. Mx	20	-1.77	-1.12	-0.02
			Max. My	2	-35.52	0.04	1.29
			Max. Vy	18	-5.61	1.09	-0.58
			Max. Vx	2	-7.12	0.04	1.29
		Diagonal	Max Tension	25	5.38	0.00	0.00
			Max. Compression	24	-5.37	0.00	0.00
			Max. Mx	31	0.83	0.03	0.00
			Max. My	17	-4.52	-0.01	0.01

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vy	31	-0.02	0.03	0.00
			Max. Vx	17	-0.00	0.01	0.01
		Top Girt	Max Tension	3	0.38	0.00	0.00
			Max. Compression	14	-0.40	0.00	0.00
			Max. Mx	26	-0.09	-0.04	0.00
			Max. Vy	26	-0.03	0.00	0.00
T2	180 - 160	Leg	Max Tension	15	73.31	-0.10	0.00
			Max. Compression	2	-85.66	0.68	-0.01
			Max. Mx	2	-41.38	1.29	-0.04
			Max. My	16	-6.57	0.08	0.62
			Max. Vy	3	-6.64	0.68	-0.01
			Max. Vx	16	-2.60	0.05	0.26
		Diagonal	Max Tension	24	5.83	0.00	0.00
			Max. Compression	24	-5.88	0.00	0.00
			Max. Mx	31	1.45	0.03	0.00
			Max. My	24	-5.62	-0.01	-0.01
			Max. Vy	31	-0.03	0.03	0.00
			Max. Vx	24	0.00	0.00	0.00
T3	160 - 140	Leg	Max Tension	15	111.78	-0.35	0.02
			Max. Compression	2	-128.57	0.97	-0.04
			Max. Mx	14	109.95	-1.00	0.04
			Max. My	17	-13.09	0.01	1.01
			Max. Vy	2	-7.95	0.97	-0.04
			Max. Vx	16	-3.08	0.00	1.01
		Diagonal	Max Tension	24	5.93	0.00	0.00
			Max. Compression	24	-5.95	0.00	0.00
			Max. Mx	27	1.46	0.04	-0.01
			Max. My	27	-2.04	0.03	-0.01
			Max. Vy	29	0.04	0.04	-0.00
			Max. Vx	27	0.00	0.00	0.00
T4	140 - 120	Leg	Max Tension	15	150.02	-0.22	0.00
			Max. Compression	2	-172.26	1.01	-0.03
			Max. Mx	2	-172.26	1.01	-0.03
			Max. My	17	-13.36	0.01	1.01
			Max. Vy	18	-9.39	0.99	-0.03
			Max. Vx	16	-3.57	0.04	0.63
		Diagonal	Max Tension	24	7.25	0.00	0.00
			Max. Compression	24	-7.30	0.00	0.00
			Max. Mx	27	1.96	0.08	-0.01
			Max. My	27	1.78	0.08	-0.01
			Max. Vy	29	0.06	0.08	0.01
			Max. Vx	27	0.00	0.00	0.00
T5	120 - 100	Leg	Max Tension	15	184.78	-0.38	0.01
			Max. Compression	2	-211.27	1.24	-0.03
			Max. Mx	2	-211.27	1.24	-0.03
			Max. My	4	-1.44	-0.03	-0.88
			Max. Vy	18	-10.24	1.22	-0.03
			Max. Vx	16	-3.77	0.05	0.87
		Diagonal	Max Tension	4	7.28	0.00	0.00
			Max. Compression	4	-7.32	0.00	0.00
			Max. Mx	29	2.05	0.10	-0.01
			Max. My	27	-2.66	0.09	-0.01
			Max. Vy	29	0.07	0.10	-0.01
			Max. Vx	27	0.00	0.00	0.00
T6	100 - 80	Leg	Max Tension	15	216.57	-0.74	0.03
			Max. Compression	2	-247.66	1.67	-0.06
			Max. Mx	3	-244.46	1.67	-0.06
			Max. My	4	-2.43	-0.05	-1.39
			Max. Vy	18	-11.06	1.66	-0.03
			Max. Vx	16	-4.35	0.04	1.39
		Diagonal	Max Tension	4	7.68	0.00	0.00
			Max. Compression	4	-7.66	0.00	0.00
			Max. Mx	27	2.29	0.15	-0.02
			Max. My	27	-2.30	0.13	-0.02
			Max. Vy	29	0.09	0.15	0.02
			Max. Vx	27	0.00	0.00	0.00
T7	80 - 60	Leg	Max Tension	15	246.42	-1.06	0.01
			Max. Compression	2	-282.81	2.15	-0.04
			Max. Mx	2	-282.81	2.15	-0.04

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. My	4	-2.56	-0.05	-1.39
			Max. Vy	18	-12.24	2.14	-0.03
			Max. Vx	16	-4.53	0.10	1.19
		Diagonal	Max Tension	4	8.85	0.00	0.00
			Max. Compression	4	-8.88	0.00	0.00
			Max. Mx	27	3.12	0.25	0.03
			Max. My	27	2.17	0.24	-0.03
			Max. Vy	29	0.12	0.25	-0.03
			Max. Vx	27	0.01	0.00	0.00
T8	60 - 40	Leg	Max Tension	15	274.90	-1.19	0.01
			Max. Compression	2	-316.75	2.42	-0.04
			Max. Mx	2	-316.75	2.42	-0.04
			Max. My	4	-4.42	-0.15	-2.36
			Max. Vy	18	-13.71	2.41	-0.05
			Max. Vx	16	-4.55	0.11	1.68
		Diagonal	Max Tension	4	9.38	0.00	0.00
			Max. Compression	4	-9.50	0.00	0.00
			Max. Mx	29	2.81	0.29	-0.04
			Max. My	28	2.97	0.28	-0.04
			Max. Vy	29	0.13	0.29	-0.04
			Max. Vx	28	0.01	0.00	0.00
T9	40 - 20	Leg	Max Tension	7	302.22	-1.28	0.04
			Max. Compression	2	-350.15	2.69	-0.05
			Max. Mx	29	57.17	-4.28	0.00
			Max. My	4	-5.71	-0.02	-1.70
			Max. Vy	18	-14.83	2.69	-0.03
			Max. Vx	16	-4.75	0.16	1.36
		Diagonal	Max Tension	4	9.75	0.00	0.00
			Max. Compression	4	-9.94	0.00	0.00
			Max. Mx	29	2.07	0.31	-0.04
			Max. My	27	-2.64	0.28	-0.04
			Max. Vy	29	0.14	0.31	-0.04
			Max. Vx	27	0.01	0.00	0.00
T10	20 - 0	Leg	Max Tension	7	329.54	1.23	0.00
			Max. Compression	2	-382.99	0.00	0.00
			Max. Mx	35	-167.13	4.49	-0.04
			Max. My	4	-8.42	-0.21	-3.26
			Max. Vy	18	-16.45	0.00	-0.00
			Max. Vx	16	-4.36	0.00	-0.00
		Diagonal	Max Tension	16	10.45	0.00	0.00
			Max. Compression	2	-10.76	0.00	0.00
			Max. Mx	29	0.79	0.42	0.04
			Max. My	28	5.94	0.30	-0.05
			Max. Vy	29	0.15	0.42	0.04
			Max. Vx	28	0.01	0.00	0.00

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Leg C	Max. Vert	18	377.18	33.19	-19.03
	Max. H_x	18	377.18	33.19	-19.03
	Max. H_z	7	-328.14	-29.18	16.79
	Min. Vert	7	-328.14	-29.18	16.79
	Min. H_x	7	-328.14	-29.18	16.79
	Min. H_z	18	377.18	33.19	-19.03
Leg B	Max. Vert	10	363.39	-31.54	-18.49
	Max. H_x	23	-311.90	27.43	16.19
	Max. H_z	23	-311.90	27.43	16.19
	Min. Vert	23	-311.90	27.43	16.19
	Min. H_x	10	363.39	-31.54	-18.49
	Min. H_z	10	363.39	-31.54	-18.49
Leg A	Max. Vert	2	381.43	0.40	38.00
	Max. H_x	20	21.68	4.08	1.64

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
	Max. H_z	2	381.43	0.40	38.00
	Min. Vert	15	-326.87	-0.40	-33.10
	Min. H_x	9	16.32	-4.07	1.23
	Min. H_z	15	-326.87	-0.40	-33.10

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	53.59	0.00	-0.00	-5.32	-5.20	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	64.31	0.04	-60.32	-7170.52	-14.23	15.78
0.9 Dead+1.0 Wind 0 deg - No Ice	48.23	0.04	-60.32	-7168.92	-12.67	15.78
1.2 Dead+1.0 Wind 30 deg - No Ice	64.31	29.18	-52.99	-6338.93	-3393.17	17.17
0.9 Dead+1.0 Wind 30 deg - No Ice	48.23	29.18	-52.99	-6337.33	-3391.61	17.17
1.2 Dead+1.0 Wind 60 deg - No Ice	64.31	49.34	-30.41	-3706.61	-5779.59	1.91
0.9 Dead+1.0 Wind 60 deg - No Ice	48.23	49.34	-30.41	-3705.02	-5778.02	1.91
1.2 Dead+1.0 Wind 90 deg - No Ice	64.31	57.49	0.00	-6.35	-6748.48	-13.01
0.9 Dead+1.0 Wind 90 deg - No Ice	48.23	57.49	0.00	-4.76	-6746.92	-13.01
1.2 Dead+1.0 Wind 120 deg - No Ice	64.31	49.54	30.30	3641.43	-5762.44	-9.62
0.9 Dead+1.0 Wind 120 deg - No Ice	48.23	49.54	30.30	3643.02	-5760.88	-9.62
1.2 Dead+1.0 Wind 150 deg - No Ice	64.31	26.46	48.02	5819.58	-3127.13	-3.41
0.9 Dead+1.0 Wind 150 deg - No Ice	48.23	26.46	48.02	5821.17	-3125.57	-3.41
1.2 Dead+1.0 Wind 180 deg - No Ice	64.31	0.04	56.83	6829.52	-12.10	-16.10
0.9 Dead+1.0 Wind 180 deg - No Ice	48.23	0.04	56.83	6831.12	-10.54	-16.10
1.2 Dead+1.0 Wind 210 deg - No Ice	64.31	-29.07	52.66	6263.82	3361.23	-19.23
0.9 Dead+1.0 Wind 210 deg - No Ice	48.23	-29.07	52.66	6265.41	3362.79	-19.23
1.2 Dead+1.0 Wind 240 deg - No Ice	64.31	-52.08	31.75	3782.82	5998.01	-4.60
0.9 Dead+1.0 Wind 240 deg - No Ice	48.23	-52.08	31.75	3784.42	5999.57	-4.60
1.2 Dead+1.0 Wind 270 deg - No Ice	64.31	-57.51	0.00	-4.80	6740.28	12.86
0.9 Dead+1.0 Wind 270 deg - No Ice	48.23	-57.51	0.00	-3.21	6741.85	12.86
1.2 Dead+1.0 Wind 300 deg - No Ice	64.31	-46.66	-28.89	-3551.38	5492.43	12.19
0.9 Dead+1.0 Wind 300 deg - No Ice	48.23	-46.66	-28.89	-3549.79	5493.99	12.19
1.2 Dead+1.0 Wind 330 deg - No Ice	64.31	-26.44	-48.30	-5883.58	3112.40	5.12
0.9 Dead+1.0 Wind 330 deg - No Ice	48.23	-26.44	-48.30	-5881.99	3113.96	5.12
1.2 Dead+1.0 Ice+1.0 Temp	184.06	0.00	-0.00	-22.10	-64.20	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	184.06	0.00	-19.65	-2367.75	-65.21	9.00
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	184.06	9.92	-17.62	-2121.90	-1228.56	8.87
1.2 Dead+1.0 Wind 60	184.06	17.38	-10.37	-1263.27	-2101.55	2.13

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
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	184.06	19.60	-0.01	-24.15	-2376.77	-4.66
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	184.06	16.36	9.75	1152.50	-1996.40	-5.80
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	184.06	8.97	16.35	1960.34	-1126.13	-5.24
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	184.06	-0.12	19.24	2290.91	-44.05	-8.27
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	184.06	-9.95	17.65	2079.77	1104.30	-9.01
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	184.06	-17.75	10.70	1253.49	2003.24	-2.75
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	184.06	-19.68	0.21	12.29	2260.70	4.76
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	184.06	-15.97	-9.56	-1183.06	1834.49	6.29
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	184.06	-9.11	-16.24	-1987.62	1019.30	6.42
Dead+Wind 0 deg - Service	53.59	0.01	-15.09	-1780.31	-7.14	4.19
Dead+Wind 30 deg - Service	53.59	7.31	-13.25	-1573.60	-845.37	4.59
Dead+Wind 60 deg - Service	53.59	12.37	-7.61	-921.47	-1437.87	0.83
Dead+Wind 90 deg - Service	53.59	14.41	0.00	-5.31	-1677.88	-2.94
Dead+Wind 120 deg - Service	53.59	12.42	7.58	898.13	-1433.71	-2.33
Dead+Wind 150 deg - Service	53.59	6.65	12.05	1440.11	-780.85	-1.04
Dead+Wind 180 deg - Service	53.59	0.01	14.25	1690.07	-6.62	-4.27
Dead+Wind 210 deg - Service	53.59	-7.28	13.17	1547.85	830.25	-5.09
Dead+Wind 240 deg - Service	53.59	-13.03	7.93	932.42	1483.46	-1.48
Dead+Wind 270 deg - Service	53.59	-14.41	0.00	-4.93	1668.51	2.91
Dead+Wind 300 deg - Service	53.59	-11.72	-7.24	-883.82	1360.85	2.96
Dead+Wind 330 deg - Service	53.59	-6.65	-12.12	-1463.17	769.90	1.45

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
1	0.00	-53.59	0.00	-0.00	53.59	0.00	0.000%
2	0.04	-64.31	-60.32	-0.04	64.31	60.32	0.000%
3	0.04	-48.23	-60.32	-0.04	48.23	60.32	0.000%
4	29.18	-64.31	-52.99	-29.18	64.31	52.99	0.000%
5	29.18	-48.23	-52.99	-29.18	48.23	52.99	0.000%
6	49.34	-64.31	-30.41	-49.34	64.31	30.41	0.000%
7	49.34	-48.23	-30.41	-49.34	48.23	30.41	0.000%
8	57.49	-64.31	0.00	-57.49	64.31	-0.00	0.000%
9	57.49	-48.23	0.00	-57.49	48.23	-0.00	0.000%
10	49.54	-64.31	30.30	-49.54	64.31	-30.30	0.000%
11	49.54	-48.23	30.30	-49.54	48.23	-30.30	0.000%
12	26.46	-64.31	48.02	-26.46	64.31	-48.02	0.000%
13	26.46	-48.23	48.02	-26.46	48.23	-48.02	0.000%
14	0.04	-64.31	56.83	-0.04	64.31	-56.83	0.000%
15	0.04	-48.23	56.83	-0.04	48.23	-56.83	0.000%
16	-29.07	-64.31	52.65	29.07	64.31	-52.66	0.000%
17	-29.07	-48.23	52.65	29.07	48.23	-52.66	0.000%
18	-52.08	-64.31	31.75	52.08	64.31	-31.75	0.000%
19	-52.08	-48.23	31.75	52.08	48.23	-31.75	0.000%
20	-57.51	-64.31	0.00	57.51	64.31	-0.00	0.000%
21	-57.51	-48.23	0.00	57.51	48.23	-0.00	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
22	-46.66	-64.31	-28.89	46.66	64.31	28.89	0.000%
23	-46.66	-48.23	-28.89	46.66	48.23	28.89	0.000%
24	-26.44	-64.31	-48.30	26.44	64.31	48.30	0.000%
25	-26.44	-48.23	-48.30	26.44	48.23	48.30	0.000%
26	0.00	-184.06	0.00	-0.00	184.06	0.00	0.000%
27	0.00	-184.06	-19.65	-0.00	184.06	19.65	0.000%
28	9.92	-184.06	-17.62	-9.92	184.06	17.62	0.000%
29	17.38	-184.06	-10.37	-17.38	184.06	10.37	0.000%
30	19.60	-184.06	-0.01	-19.60	184.06	0.01	0.000%
31	16.36	-184.06	9.75	-16.36	184.06	-9.75	0.000%
32	8.97	-184.06	16.35	-8.97	184.06	-16.35	0.000%
33	-0.12	-184.06	19.24	0.12	184.06	-19.24	0.000%
34	-9.95	-184.06	17.65	9.95	184.06	-17.65	0.000%
35	-17.75	-184.06	10.70	17.75	184.06	-10.70	0.000%
36	-19.68	-184.06	0.21	19.68	184.06	-0.21	0.000%
37	-15.97	-184.06	-9.56	15.97	184.06	9.56	0.000%
38	-9.11	-184.06	-16.24	9.11	184.06	16.24	0.000%
39	0.01	-53.59	-15.09	-0.01	53.59	15.09	0.000%
40	7.31	-53.59	-13.25	-7.31	53.59	13.25	0.000%
41	12.37	-53.59	-7.61	-12.37	53.59	7.61	0.000%
42	14.41	-53.59	0.00	-14.41	53.59	-0.00	0.000%
43	12.42	-53.59	7.58	-12.42	53.59	-7.58	0.000%
44	6.65	-53.59	12.05	-6.65	53.59	-12.05	0.000%
45	0.01	-53.59	14.25	-0.01	53.59	-14.25	0.000%
46	-7.28	-53.59	13.17	7.28	53.59	-13.17	0.000%
47	-13.03	-53.59	7.93	13.03	53.59	-7.93	0.000%
48	-14.41	-53.59	0.00	14.41	53.59	-0.00	0.000%
49	-11.72	-53.59	-7.24	11.72	53.59	7.24	0.000%
50	-6.65	-53.59	-12.12	6.65	53.59	12.12	0.000%

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	200 - 180	6.946	39	0.346	0.048
T2	180 - 160	5.497	40	0.332	0.037
T3	160 - 140	4.170	40	0.282	0.024
T4	140 - 120	3.064	40	0.226	0.017
T5	120 - 100	2.168	40	0.185	0.013
T6	100 - 80	1.438	40	0.145	0.009
T7	80 - 60	0.881	40	0.103	0.006
T8	60 - 40	0.491	40	0.072	0.004
T9	40 - 20	0.229	40	0.041	0.003
T10	20 - 0	0.071	47	0.020	0.001

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
200.00	15" Dia. x 15" Beacon	39	6.946	0.346	0.048	158913
198.00	DB225-A	39	6.799	0.346	0.047	158913
190.00	USX6-6W-6GR	40	6.214	0.342	0.043	79457
182.00	APXVAARR24_43-U-NA20 w/ Mount Pipe	40	5.638	0.335	0.038	44105
170.00	APXVTM14-ALU-I20 w/ Mount Pipe	40	4.811	0.310	0.030	25761
163.00	PR-850	40	4.356	0.291	0.026	20713
144.00	(2) PD1109-1	40	3.267	0.236	0.018	21571
134.00	MX08FRO665-21 w/ Mount Pipe	40	2.776	0.212	0.016	24466

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
102.00	3" x 6" SideLight	40	1.503	0.149	0.009	27286
53.00	KS24019-L112A	40	0.386	0.061	0.004	41686

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	200 - 180	28.057	2	1.393	0.139
T2	180 - 160	22.210	2	1.338	0.114
T3	160 - 140	16.843	4	1.138	0.080
T4	140 - 120	12.377	4	0.914	0.059
T5	120 - 100	8.754	4	0.747	0.044
T6	100 - 80	5.802	4	0.584	0.031
T7	80 - 60	3.552	4	0.415	0.021
T8	60 - 40	1.976	4	0.290	0.015
T9	40 - 20	0.919	4	0.164	0.010
T10	20 - 0	0.285	19	0.082	0.005

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
200.00	15" Dia. x 15" Beacon	2	28.057	1.393	0.139	41669
198.00	DB225-A	2	27.465	1.391	0.137	41669
190.00	USX6-6W-6GR	2	25.104	1.379	0.128	20834
182.00	APXVAARR24_43-U-NA20 w/ Mount Pipe	2	22.781	1.349	0.117	11552
170.00	APXVTM14-ALU-I20 w/ Mount Pipe	2	19.432	1.252	0.096	6528
163.00	PR-850	4	17.595	1.174	0.084	5185
144.00	(2) PD1109-1	4	13.197	0.955	0.062	5350
134.00	MX08FRO665-21 w/ Mount Pipe	4	11.211	0.859	0.055	6053
102.00	3" x 6" SideLight	4	6.066	0.602	0.032	6728
53.00	KS24019-L112A	4	1.554	0.244	0.013	10297

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load per Bolt K	Ratio Load / Allowable	Allowable Ratio	Criteria
T1	200	Leg	A325X	0.750	4	7.16	30.10	0.238	1.05	Bolt Tension
		Diagonal	A325X	0.625	1	5.38	7.88	0.684	1.05	Member Block Shear
		Top Girt	A325X	0.625	1	0.38	7.88	0.049	1.05	Member Block Shear
T2	180	Leg	A325X	1.000	4	18.33	54.52	0.336	1.05	Bolt Tension
		Diagonal	A325X	0.625	1	5.83	7.88	0.740	1.05	Member Block Shear
T3	160	Leg	A325X	1.000	4	27.94	54.52	0.513	1.05	Bolt Tension
		Diagonal	A325X	0.625	1	5.93	7.88	0.753	1.05	Member Block Shear
T4	140	Leg	A325X	1.250	4	37.50	87.22	0.430	1.05	Bolt Tension
		Diagonal	A325X	0.625	1	7.25	9.91	0.731	1.05	Member Block

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load per Bolt K	Ratio Load / Allowable	Allowable Ratio	Criteria
T5	120	Leg	A325X	1.250	4	46.20	87.22	0.530	1.05	Shear Bolt Tension
		Diagonal	A325X	0.625	1	7.28	9.91	0.734	1.05	Member Block Shear
T6	100	Leg	A325X	1.250	6	36.09	87.22	0.414	1.05	Bolt Tension
		Diagonal	A325X	0.750	1	7.68	10.42	0.736	1.05	Member Block Shear
T7	80	Leg	A325X	1.250	6	41.07	87.22	0.471	1.05	Bolt Tension
		Diagonal	A325X	0.750	1	8.85	14.36	0.617	1.05	Member Bearing
T8	60	Leg	A325X	1.375	6	45.82	103.94	0.441	1.05	Bolt Tension
		Diagonal	A325X	0.750	1	9.38	14.36	0.653	1.05	Member Bearing
T9	40	Leg	A325X	1.375	6	50.37	103.94	0.485	1.05	Bolt Tension
		Diagonal	A325X	0.750	1	9.75	14.36	0.679	1.05	Member Bearing
T10	20	Diagonal	A325X	0.750	1	10.45	14.36	0.728	1.05	Member Bearing

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	200 - 180	Sabre 2.875x.375	20.00	4.98	66.9 K=1.00	2.945	-28.43	95.59	0.297 [1]
T2	180 - 160	Sabre 3.5 x .3	20.03	4.99	52.7 K=1.00	3.016	-79.49	110.80	0.717 [1]
T3	160 - 140	Sabre 4 x .318	20.03	4.99	45.8 K=1.00	3.678	-122.80	141.99	0.865 [1]
T4	140 - 120	Sabre 4.5 x .438	20.03	6.65	55.2 K=1.00	5.589	-164.75	201.22	0.819 [1]
T5	120 - 100	Sabre 5.5625 x .375	20.03	6.65	43.4 K=1.00	6.111	-204.37	239.63	0.853 [1]
T6	100 - 80	Sabre 5.5625 x .375	20.03	6.65	43.4 K=1.00	6.111	-241.22	239.63	1.007 [1]
T7	80 - 60	Sabre 6.625 x .432	20.03	9.97	54.5 K=1.00	8.405	-273.59	304.30	0.899 [1]
T8	60 - 40	Sabre 8.625 x .322	20.03	9.97	40.7 K=1.00	8.399	-307.43	334.76	0.918 [1]
T9	40 - 20	Sabre 8.625 x .5	20.03	9.97	41.6 K=1.00	12.763	-340.99	506.09	0.674 [1]
T10	20 - 0	Sabre 8.625 x .5	20.03	9.97	41.6 K=1.00	12.763	-373.44	506.09	0.738 [1]

[1] P_u / ϕP_n controls

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	200 - 180	L1 3/4x1 3/4x3/16	7.06	3.21	114.2 K=1.02	0.621	-5.37	13.19	0.407 [1]

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
T2	180 - 160	L1 3/4x1 3/4x3/16	8.38	4.02	140.4 K=1.00	0.621	-5.78	9.01	0.641 [1]
T3	160 - 140	L1 3/4x1 3/4x3/16	10.06	4.84	169.0 K=1.00	0.621	-5.95	6.22	0.956 [1]
T4	140 - 120	L2 1/2x2 1/2x3/16	12.56	6.11	148.1 K=1.00	0.902	-7.23	11.77	0.614 [1]
T5	120 - 100	L2 1/2x2 1/2x3/16	14.30	6.93	168.0 K=1.00	0.902	-7.32	9.15	0.800 [1]
T6	100 - 80	L3x3x3/16	16.09	7.83	157.6 K=1.00	1.090	-7.66	12.56	0.610 [1]
T7	80 - 60	L3 1/2x3 1/2x1/4	19.27	9.46	163.5 K=1.00	1.690	-8.88	18.09	0.491 [1]
T8	60 - 40	L3 1/2x3 1/2x1/4	21.01	10.23	176.9 K=1.00	1.690	-9.50	15.45	0.615 [1]
T9	40 - 20	L3 1/2x3 1/2x1/4	22.79	11.12	192.4 K=1.00	1.690	-9.94	13.07	0.761 [1]
T10	20 - 0	L4x4x1/4	24.60	12.03	181.6 K=1.00	1.940	-10.76	16.83	0.639 [1]

[1] P_u / ϕP_n controls

Top Girt Design Data (Compression)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
T1	200 - 180	L1 3/4x1 3/4x3/16	5.00	4.47	156.1 K=1.00	0.621	-0.40	7.29	0.055 [1]

[1] P_u / ϕP_n controls

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
T1	200 - 180	Sabre 2.875x.375	20.00	0.08	1.1	2.945	28.63	132.54	0.216 [1]
T2	180 - 160	Sabre 3.5 x .3	20.03	0.08	0.9	3.016	73.31	135.72	0.540 [1]
T3	160 - 140	Sabre 4 x .318	20.03	0.08	0.8	3.678	111.78	165.53	0.675 [1]
T4	140 - 120	Sabre 4.5 x .438	20.03	0.08	0.7	5.589	150.02	251.52	0.596 [1]
T5	120 - 100	Sabre 5.5625 x .375	20.03	0.08	0.5	6.111	184.78	275.01	0.672 [1]
T6	100 - 80	Sabre 5.5625 x .375	20.03	0.08	0.5	6.111	216.57	275.01	0.787 [1]
T7	80 - 60	Sabre 6.625 x .432	20.03	0.08	0.5	8.405	246.42	378.22	0.652 [1]
T8	60 - 40	Sabre 8.625 x .322	20.03	0.08	0.3	8.399	274.90	377.97	0.727 [1]
T9	40 - 20	Sabre 8.625 x .5	20.03	0.08	0.3	12.763	302.23	574.32	0.526 [1]
T10	20 - 0	Sabre 8.625 x .5	20.03	0.08	0.3	12.763	329.54	574.32	0.574 [1]

[1] P_u / ϕP_n controls

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	200 - 180	L1 3/4x1 3/4x3/16	7.06	3.21	75.1	0.360	5.38	15.68	0.343 [1]
T2	180 - 160	L1 3/4x1 3/4x3/16	8.38	4.02	93.1	0.360	5.83	15.68	0.372 [1]
T3	160 - 140	L1 3/4x1 3/4x3/16	10.06	4.84	111.4	0.360	5.93	15.68	0.378 [1]
T4	140 - 120	L2 1/2x2 1/2x3/16	12.00	5.83	92.2	0.571	7.25	24.84	0.292 [1]
T5	120 - 100	L2 1/2x2 1/2x3/16	14.30	6.93	109.1	0.571	7.28	24.84	0.293 [1]
T6	100 - 80	L3x3x3/16	16.09	7.83	101.9	0.694	7.68	30.21	0.254 [1]
T7	80 - 60	L3 1/2x3 1/2x1/4	19.27	9.46	105.7	1.103	8.85	48.00	0.184 [1]
T8	60 - 40	L3 1/2x3 1/2x1/4	21.01	10.23	114.3	1.103	9.38	48.00	0.195 [1]
T9	40 - 20	L3 1/2x3 1/2x1/4	22.79	11.12	124.1	1.103	9.75	48.00	0.203 [1]
T10	20 - 0	L4x4x1/4	24.60	12.03	116.9	1.291	10.45	56.16	0.186 [1]

[1] P_u / ϕP_n controls

Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	200 - 180	L1 3/4x1 3/4x3/16	5.00	4.47	106.4	0.360	0.38	15.68	0.024 [1]

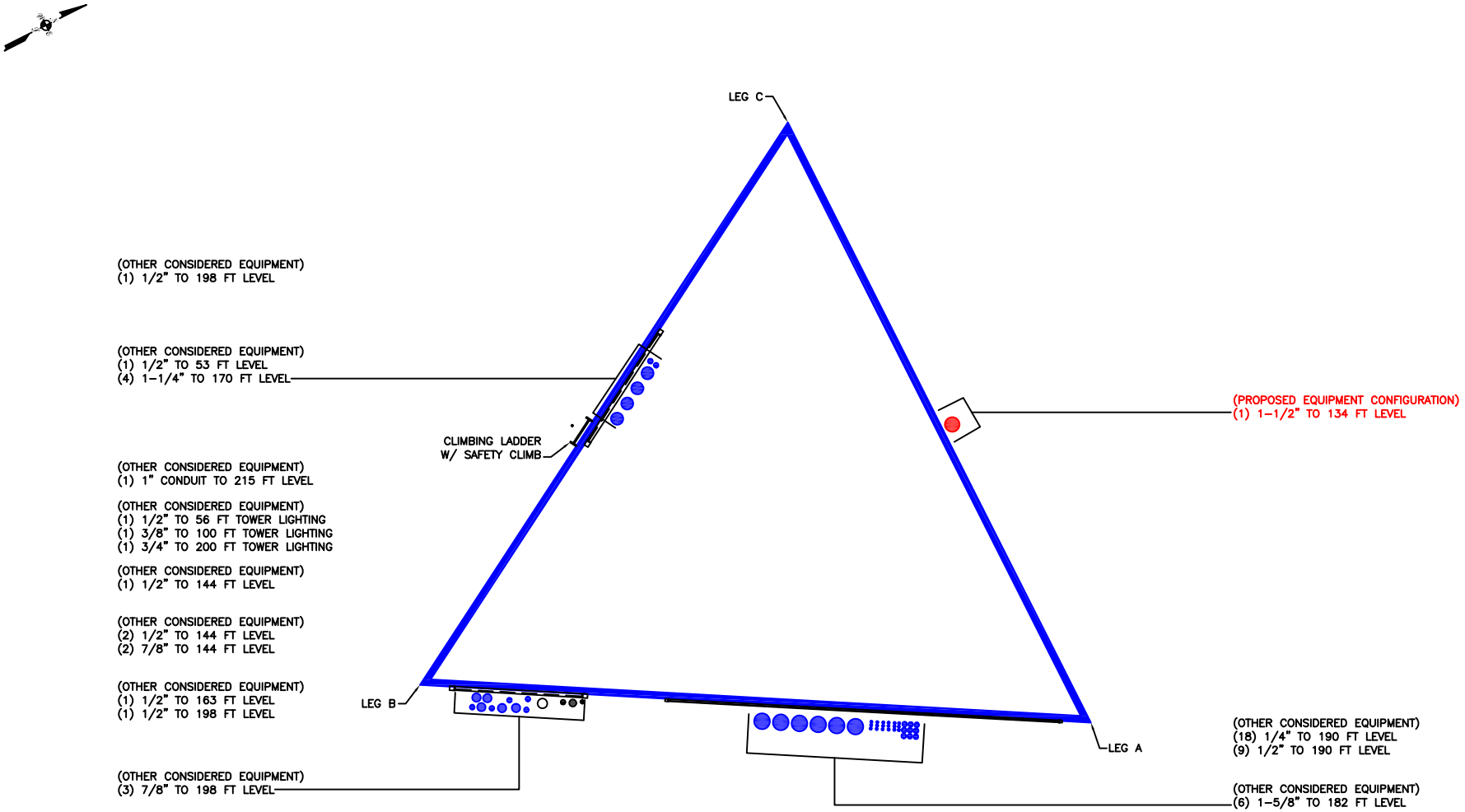
[1] P_u / ϕP_n controls

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T1	200 - 180	Leg	Sabre 2.875x.375	3	-28.43	100.37	28.3	Pass
T2	180 - 160	Leg	Sabre 3.5 x .3	33	-79.49	116.34	68.3	Pass
T3	160 - 140	Leg	Sabre 4 x .318	60	-122.80	149.09	82.4	Pass
T4	140 - 120	Leg	Sabre 4.5 x .438	87	-164.75	211.28	78.0	Pass
T5	120 - 100	Leg	Sabre 5.5625 x .375	108	-204.37	251.62	81.2	Pass
T6	100 - 80	Leg	Sabre 5.5625 x .375	129	-241.22	251.62	95.9	Pass
T7	80 - 60	Leg	Sabre 6.625 x .432	150	-273.59	319.52	85.6	Pass
T8	60 - 40	Leg	Sabre 8.625 x .322	165	-307.43	351.50	87.5	Pass
T9	40 - 20	Leg	Sabre 8.625 x .5	180	-340.99	531.40	64.2	Pass
T10	20 - 0	Leg	Sabre 8.625 x .5	195	-373.44	531.40	70.3	Pass
T1	200 - 180	Diagonal	L1 3/4x1 3/4x3/16	10	-5.37	13.85	38.8	Pass
T2	180 - 160	Diagonal	L1 3/4x1 3/4x3/16	37	-5.78	9.47	61.0	Pass
T3	160 - 140	Diagonal	L1 3/4x1 3/4x3/16	64	-5.95	6.54	91.0	Pass
T4	140 - 120	Diagonal	L2 1/2x2 1/2x3/16	91	-7.23	12.36	58.5	Pass
T5	120 - 100	Diagonal	L2 1/2x2 1/2x3/16	113	-7.32	9.61	76.2	Pass
T6	100 - 80	Diagonal	L3x3x3/16	134	-7.66	13.18	58.1	Pass
T7	80 - 60	Diagonal	L3 1/2x3 1/2x1/4	155	-8.88	18.99	46.7	Pass
T8	60 - 40	Diagonal	L3 1/2x3 1/2x1/4	170	-9.50	16.23	58.5	Pass
T9	40 - 20	Diagonal	L3 1/2x3 1/2x1/4	185	-9.94	13.73	72.4	Pass
T10	20 - 0	Diagonal	L4x4x1/4	199	-10.76	17.67	60.9	Pass
T1	200 - 180	Top Girt	L1 3/4x1 3/4x3/16	4	-0.40	7.66	5.3	Pass
							Summary	
						Leg (T6)	95.9	Pass
						Diagonal (T3)	91.0	Pass
						Top Girt (T1)	5.3	Pass
						Bolt Checks	71.7	Pass
						RATING =	**95.9**	**Pass**

APPENDIX B

BASE LEVEL DRAWING


LEG C
(OTHER CONSIDERED EQUIPMENT)
(1) 1/2" TO 198 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 1/2" TO 53 FT LEVEL
(4) 1-1/4" TO 170 FT LEVEL
CLIMBING LADDER
W/ SAFETY CLIMB
(PROPOSED EQUIPMENT CONFIGURATION)
(1) 1-1/2" TO 134 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 1" CONDUIT TO 215 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 1/2" TO 56 FT TOWER LIGHTING
(1) 3/8" TO 100 FT TOWER LIGHTING
(1) 3/4" TO 200 FT TOWER LIGHTING
(OTHER CONSIDERED EQUIPMENT)
(1) 1/2" TO 144 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(2) 1/2" TO 144 FT LEVEL
(2) 7/8" TO 144 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 1/2" TO 163 FT LEVEL
(1) 1/2" TO 198 FT LEVEL
LEG B
LEG A
(OTHER CONSIDERED EQUIPMENT)
(18) 1/4" TO 190 FT LEVEL
(9) 1/2" TO 190 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(3) 7/8" TO 198 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(6) 1-5/8" TO 182 FT LEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

Self Support Anchor Rod Capacity

Site Info	
BU #	871584
Site Name	John Tom Hill
Order #	556617 Rev.1

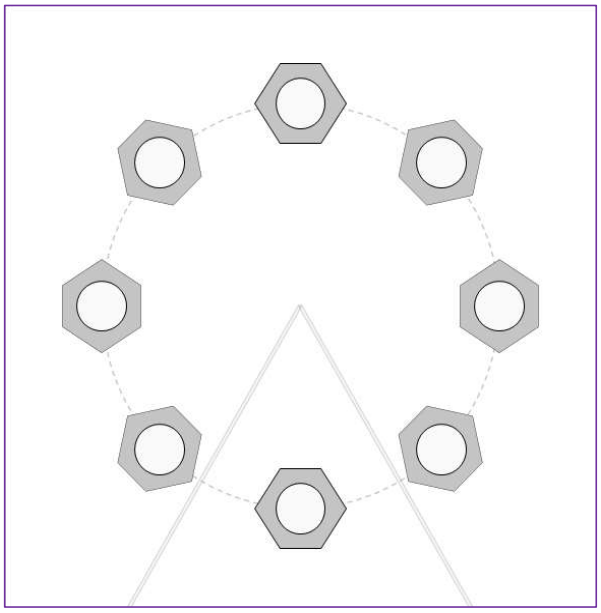
Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	No
l_{ar} (in)	1.125

Applied Loads		
	Comp.	Uplift
Axial Force (kips)	381.43	328.14
Shear Force (kips)	38.00	33.67

**TIA-222-H Section 15.5 Applied*

Considered Eccentricity	
Leg Mod Eccentricity (in)	0.000
Anchor Rod N.A Shift (in)	0.000
Total Eccentricity (in)	0.000

**Anchor Rod Eccentricity Applied*



Connection Properties

Anchor Rod Data

(8) 1-1/2" ø bolts (A572-50 N; Fy=50 ksi, Fu=65 ksi)

l_{ar} (in): 1.125

Analysis Results

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

Pu_c = 47.68	ϕPn_c = 79.52	**Stress Rating**
Vu = 4.75	ϕVn = 35.78	**58.8%**
Mu = n/a	ϕMn = n/a	**Pass**

Pier and Pad Foundation

BU # :	871584
Site Name:	John Tom Hill
App. Number:	556617 Rev.1

TIA-222 Revision:	H
Tower Type:	Self Support

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

Superstructure Analysis Reactions

Compression, P_{comp}:	381.43	kips
Compression Shear, Vu_comp:	38	kips
Uplift, P_{uplift}:	328.14	kips
Uplift Shear, V_{u_uplift}:	20.3333333	kips
Tower Height, **H**:	200	ft
Base Face Width, **BW**:	23	ft
BP Dist. Above Fdn, bp_{dist}:	2.625	in

Pier Properties

Pier Shape:	Circular	
Pier Diameter, **dpier**:	3.5	ft
Ext. Above Grade, **E**:	0.4167	ft
Pier Rebar Size, **Sc**:	7	
Pier Rebar Quantity, **mc**:	14	
Pier Tie/Spiral Size, **St**:	3	
Pier Tie/Spiral Quantity, **mt**:	10	
Pier Reinforcement Type:	Tie	
Pier Clear Cover, cc_{pier}:	3	in

Pad Properties

Depth, **D**:	10.5	ft
Pad Width, W_1:	15	ft
Pad Thickness, **T**:	1.75	ft
Pad Rebar Size (Bottom dir. 2), Sp_2:	7	
Pad Rebar Quantity (Bottom dir. 2), mp_2:	20	
Pad Clear Cover, cc_{pad}:	3	in

Material Properties

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

Soil Properties

Total Soil Unit Weight, γ:	125	pcf
Ultimate Gross Bearing, Qult:	16.000	ksf
Cohesion, **Cu**:	0.000	ksf
Friction Angle, φ:	36	degrees
SPT Blow Count, N_{blows}:	28	
Base Friction, μ:	0.6	
Neglected Depth, **N**:	3.33	ft
Foundation Bearing on Rock?	No	
Groundwater Depth, **gw**:	8	ft

<--Toggle between Gross and Net

Foundation Analysis Checks

	Capacity	Demand	Rating*	Check
Uplift (kips)	451.48	328.14	**69.2%**	**Pass**
Lateral (Sliding) (kips)	124.75	20.33	**15.5%**	**Pass**
Bearing Pressure (ksf)	12.00	3.15	**25.0%**	**Pass**
*Pier Flexure (Comp.) (kip*ft)*	990.29	348.33	**33.5%**	**Pass**
*Pier Flexure (Tension) (kip*ft)*	241.44	186.39	**73.5%**	**Pass**
Pier Compression (kip)	4592.74	396.76	**8.2%**	**Pass**
*Pad Flexure (kip*ft)*	858.77	423.95	**47.0%**	**Pass**
Pad Shear - 1-way (kips)	246.78	111.80	**43.1%**	**Pass**
Pad Shear - 2-way (Comp) (ksi)	0.164	0.119	**68.7%**	**Pass**
*Flexural 2-way (Comp) (kip*ft)*	990.20	209.00	**20.1%**	**Pass**
Pad Shear - 2-way (Uplift) (ksi)	0.164	0.114	**66.0%**	**Pass**
*Flexural 2-way (Tension) (kip*ft)*	990.20	111.83	**10.8%**	**Pass**

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

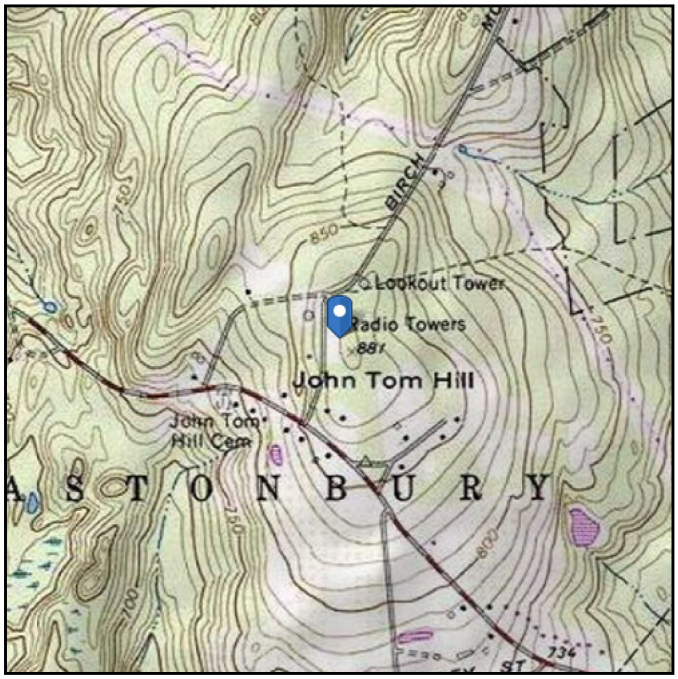
Structural Rating*:	**73.5%**
Soil Rating*:	**69.2%**

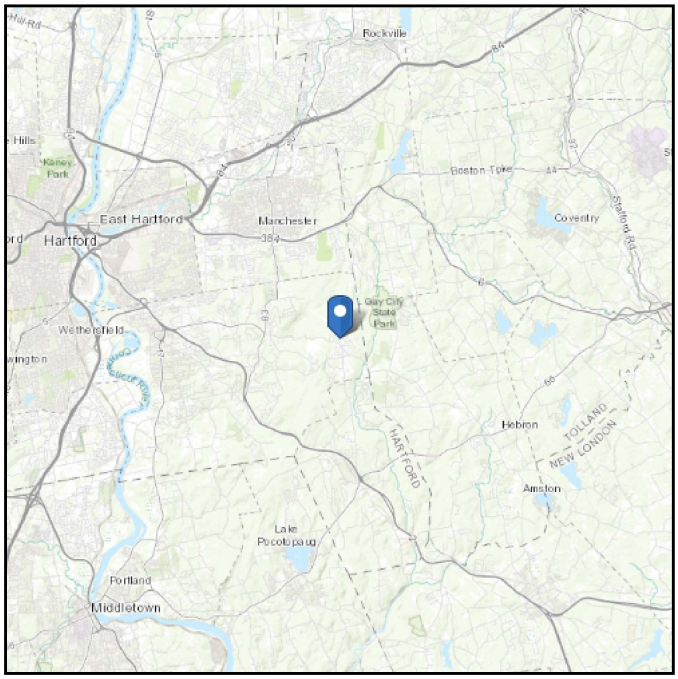
ASCE 7 Hazards Report

Address:
No Address at This Location

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

Elevation: 877.95 ft (NAVD 88)
Latitude: 41.708956
Longitude: -72.473447





Wind

Results:

Wind Speed:	125 Vmph
10-year MRI	77 Vmph
25-year MRI	87 Vmph
50-year MRI	94 Vmph
100-year MRI	102 Vmph

Data Source: ASCE/SEI 7-10, Fig. 26.5-1A and Figs. CC-1–CC-4, and Section 26.5.2, incorporating errata of March 12, 2014

Date Accessed: Fri Jun 04 2021

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-10 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).

Site is in a hurricane-prone region as defined in ASCE/SEI 7-10 Section 26.2. Glazed openings need not be protected against wind-borne debris.

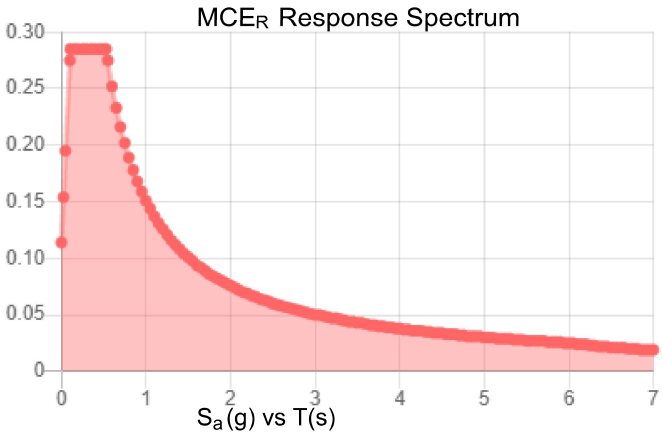
Seismic

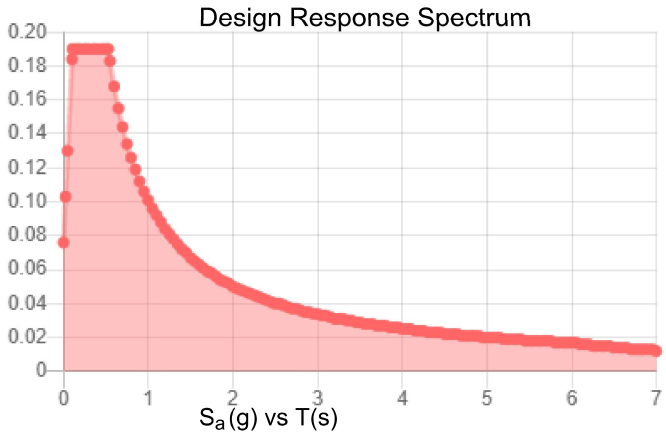
Site Soil Class: D - Stiff Soil

Results:

S_S :	0.178	S_{DS} :	0.19
S_1 :	0.063	S_{D1} :	0.101
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.09
S_{MS} :	0.285	PGA_M :	0.143
S_{M1} :	0.151	F_{PGA} :	1.6
		I_e :	1

Seismic Design Category B





Data Accessed: Fri Jun 04 2021

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

Ice

Results:

Ice Thickness:	1.00 in.
Concurrent Temperature:	5 F
Gust Speed:	50 mph
Data Source:	Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8
Date Accessed:	Fri Jun 04 2021

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

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

Exhibit E

Mount Analysis

Date: **August 3, 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:	BOBDL00076A
	Carrier Site Name:	CT-CCI-T-871584
Crown Castle Designation:	**Crown Castle BU Number:**	871584
	Crown Castle Site Name:	John Tom Hill
	Crown Castle JDE Job Number:	650066
	Crown Castle Order Number:	556617 Rev. *1*
Engineering Firm Designation:	**Trylon Report Designation:**	189057
Site Data:	**115 Birch Mtn. Road, Glastonbury, Hartford County, CT, 06033**	
	Latitude 41°42'32.24" Longitude -72°28'24.41"	
Structure Information:	**Tower Height & Type:**	**200.0 ft Self-Support**
	Mount Elevation:	**134.0 ft**
	Mount Type:	**8.0 ft Sector Frame**

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:

Sector Frame **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: Trevor Leahy, E.I.T.

Respectfully Submitted by:
Jinshan Wang, P.E.

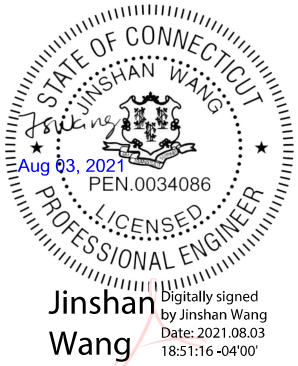


TABLE OF CONTENTS

1) INTRODUCTION

This is a proposed 3 sector 8.0 ft Sector Frame Mount, designed by Commscope.

2) ANALYSIS CRITERIA

Building Code:	2015 IBC / 2018 CTSBC
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:	2.00 in
Wind Speed with Ice:	50 mph
Seismic S_s:	0.180
Seismic S_1:	0.063
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 / Modification Details
134.0	134.0	3	JMA Wireless	MX08FRO665-21	8.0 ft Sector Frame [Commscope MTC3975083]
		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	556617 Rev. 1	CCI Sites
Mount Manufacturer Drawings	Commscope	MTC3975083	Trylon
Tower Analysis	Crown Castle	9810957	CCI Sites

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. Trylon 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 (Sector Frame, All Sectors)

Notes	Component	Critical Member	Centerline (ft)	% Capacity	Pass / Fail
1, 2	Mount Pipe(s)	MP2	134.0	32.5	Pass
	Horizontal(s)	M5		14.4	Pass
	Standoff(s)	M1		16.1	Pass
	Bracing(s)	M23		31.8	Pass
	Tieback(s)	M31A		10.2	Pass
	Mount Connection(s)	-		15.2	Pass

Structure Rating (max from all components) =	32.5%

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

Table 4 - Tieback Connection Data Table

Tower Connection Node No.	Existing / Proposed	Resultant End Reaction (lb)	Connected Member Type	Connected Member Size	Member Compressive Capacity (lb)[3]	Notes
N52A	Proposed	651.0	Leg	Pipe 4.5” x 0.438”	10,061.0	1

Notes:
1) Tieback connection point is within 25% of either end of the connected tower member
2) Tieback connection point is NOT within 25% of either end of the connected tower member
3) Reduced member compressive capacity according to CED-STD-10294 *Standard for Installation of Mounts and Appurtenances*

4.1) Recommendations

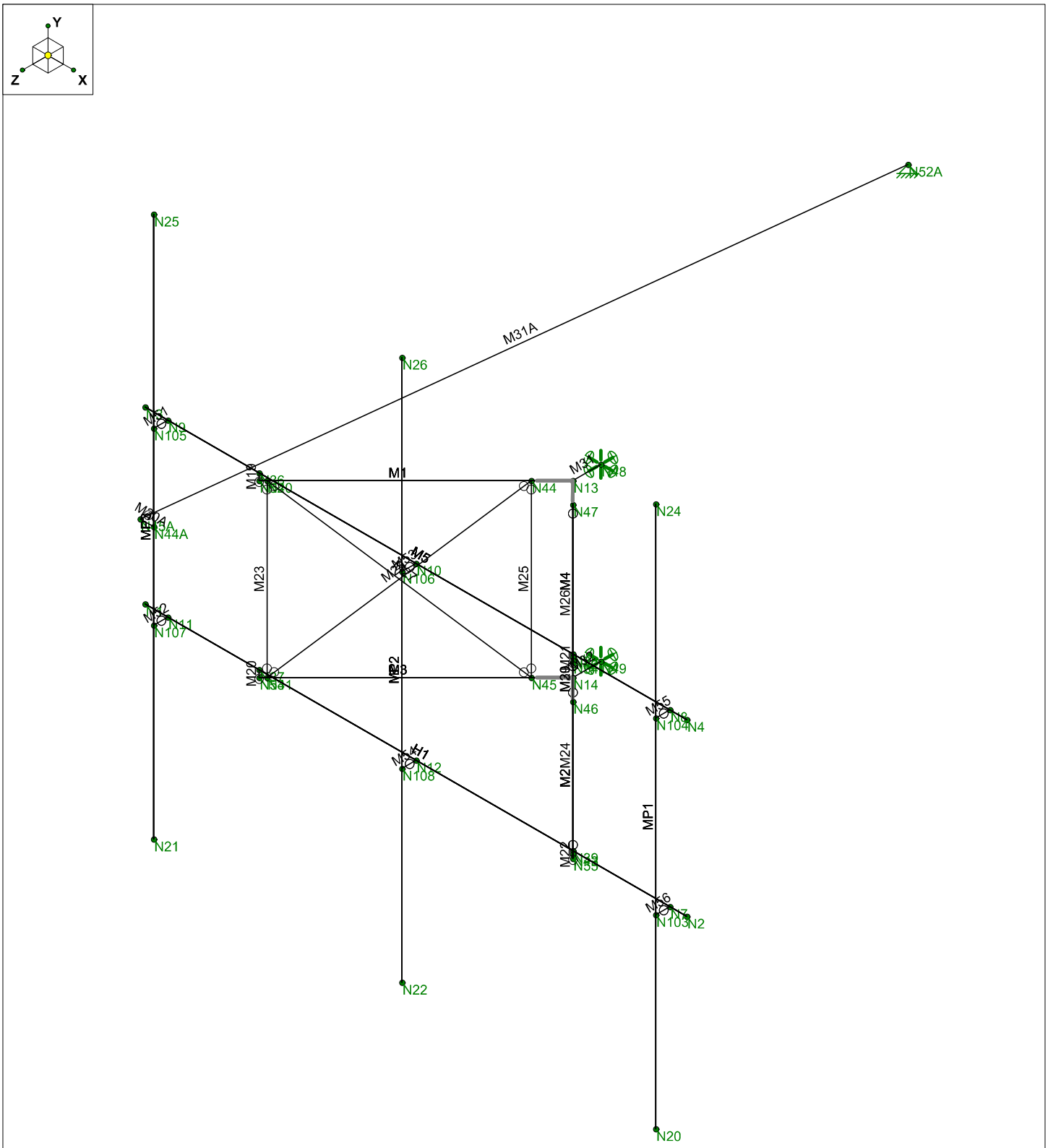
The mount has sufficient capacity to carry the proposed loading configuration. In order for the results of the analysis to be considered valid, the proposed mount listed below must be installed.

1. Commscope MTC3975083. Install tieback connection point within 25% of either end of tower leg.

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

APPENDIX A

WIRE FRAME AND RENDERED MODELS



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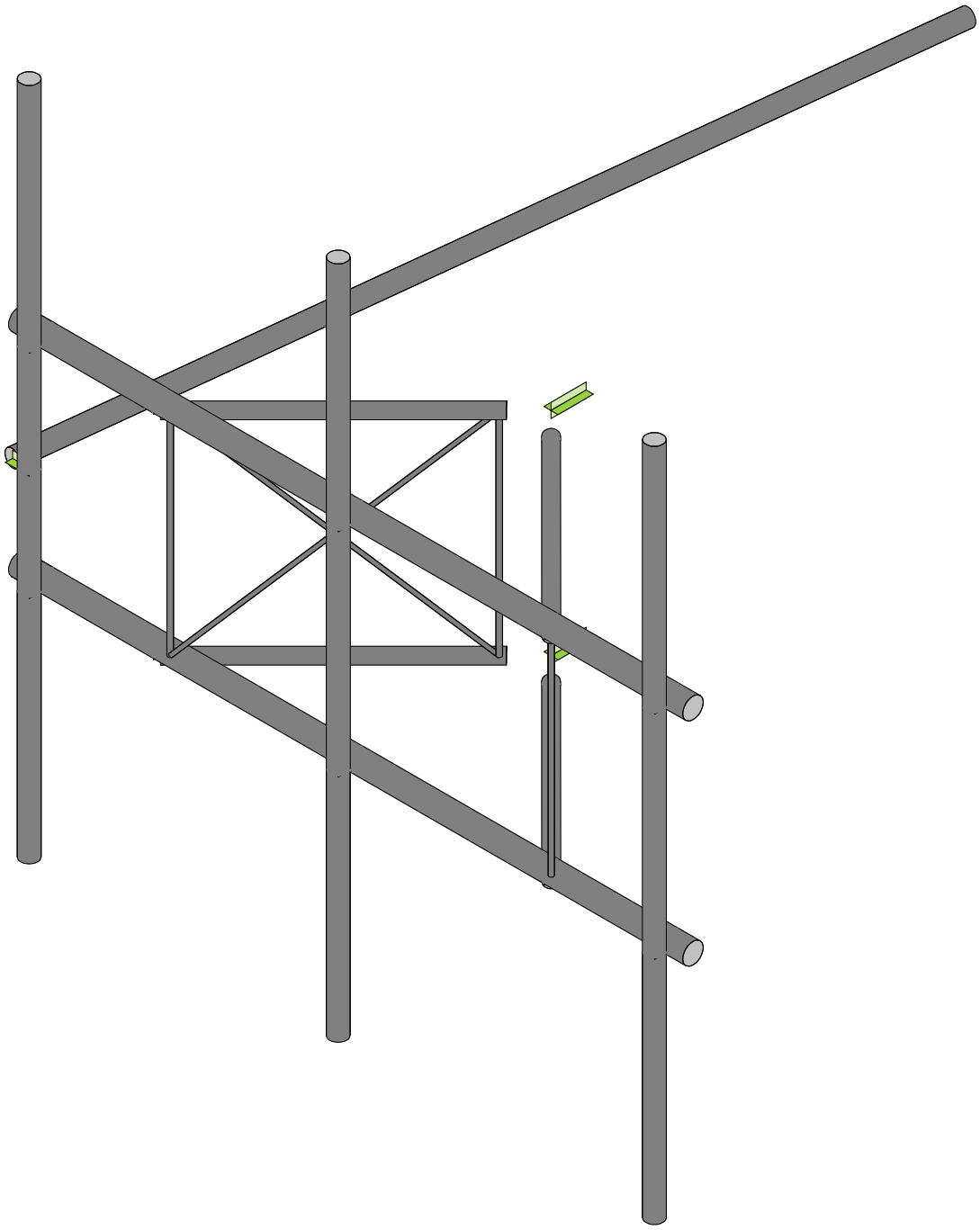

Trylon	John Tom Hill (BU 871584 Order 556617)	SK - 2
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APPENDIX B

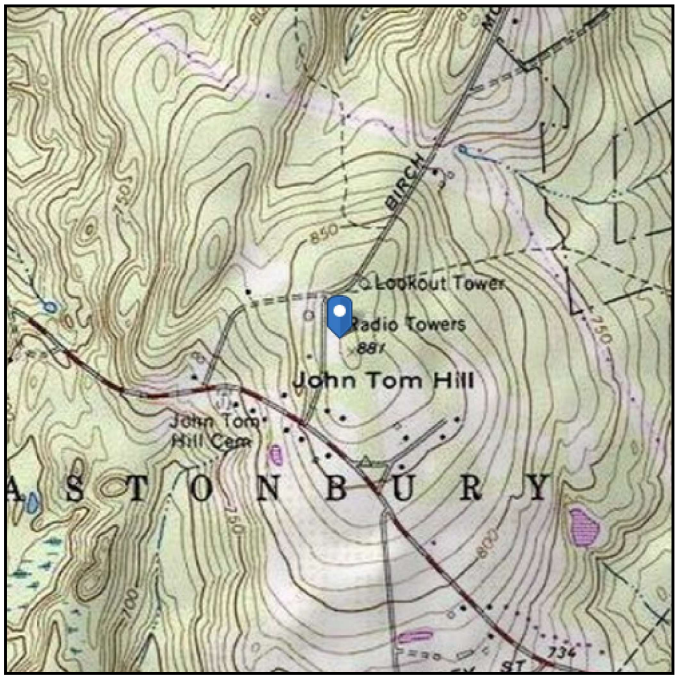
SOFTWARE INPUT CALCULATIONS

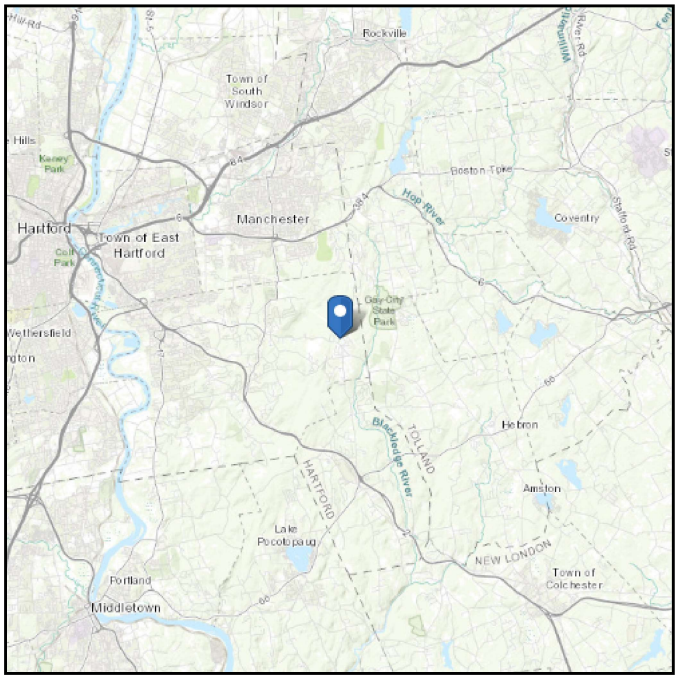
ASCE 7 Hazards Report

Address:
No Address at This Location

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

Elevation: 877.95 ft (NAVD 88)
Latitude: 41.708956
Longitude: -72.473447





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: Tue Aug 03 2021

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

Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 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.

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

TIA LOAD CALCULATOR 2.0

PROJECT DATA	
Job Code:	189057
Carrier Site ID:	BOBDL00076A
Carrier Site Name:	CT-CCI-T-871584

CODES AND STANDARDS	
Building Code:	2015 IBC
Local Building Code:	2018 CTSBC
Design Standard:	TIA-222-H

STRUCTURE DETAILS		
Mount Type:	Sector Frame	--
Mount Elevation:	134.0	ft.
Number of Sectors:	3	--
Structure Type:	Self Support Tower	--
Structure Height:	200.0	ft.

ANALYSIS CRITERIA		
Structure Risk Category:	II	--
Exposure Category:	C	--
Site Class:	D - Stiff Soil	--
Ground Elevation:	877.95	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):	1.35	--
Directionality Factor (K_d):	0.95	--
Gust Effect Factor (Gh):	1.00	--
Shielding Factor (K_a):	0.90	--
Velocity Pressure (q_z):	49.55	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}):	49.55	psf
Mount Ice Thickness (t_{iz}):	2.30	in

WIND STRUCTURE CALCULATIONS		
Flat Member Pressure:	89.19	psf
Round Member Pressure:	53.51	psf
Ice Wind Pressure:	7.32	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 (Cs):	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

EQUIPMENT LOADING

Appurtenance Name/Location	Qty.	Elevation [ft]	--	EPA $_N$ (ft2)	EPA $_T$ (ft2)	Weight (lbs)
MX08FRO665-21	1	134	No Ice	12.49	5.87	82.50
MP2/5/8, 0/140	--	--	w/ Ice	14.14	7.37	396.29
TA08025-B604	1	134	No Ice	1.96	0.98	63.90
MP2/5/8, 0/140	--	--	w/ Ice	2.55	1.44	100.81
TA08025-B605	1	134	No Ice	1.96	1.13	75.00
MP2/5/8, 0/140	--	--	w/ Ice	2.55	1.61	107.08
RDIDC-9181-PF-48	1	134	No Ice	2.01	1.17	21.85
MP2, 0	--	--	w/ Ice	2.60	1.66	105.62
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
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			No Ice			
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			No Ice			
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			No Ice			
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			No Ice			
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			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			

EQUIPMENT LOADING [CONT.]

Appurtenance Name/Location	Qty.	Elevation [ft]	--	EPA_N (ft2)	EPA_T (ft2)	Weight (lbs)
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			

EQUIPMENT WIND CALCULATIONS

Appurtenance Name	Qty.	Elevation [ft]	K_{zt}	K_z	K_d	t_d	q_z [psf]	q_{zi} [psf]
MX08FRO665-21	1	134	1.00	1.35	0.95	2.30	49.55	7.93
TA08025-B604	1	134	1.00	1.35	0.95	2.30	49.55	7.93
TA08025-B605	1	134	1.00	1.35	0.95	2.30	49.55	7.93
RDIDC-9181-PF-48	1	134	1.00	1.35	0.95	2.30	49.55	7.93

EQUIPMENT LATERAL WIND FORCE CALCULATIONS

Appurtenance Name	Qty.	--	0° 180°	30° 210°	60° 240°	90° 270°	120° 300°	150° 330°
MX08FRO665-21	1	No Ice	556.94	335.45	483.11	261.62	483.11	335.45
MP2/5/8, 0/140	--	w/ Ice	100.86	64.67	88.80	52.60	88.80	64.67
TA08025-B604	1	No Ice	87.56	54.71	76.61	43.75	76.61	54.71
MP2/5/8, 0/140	--	w/ Ice	18.17	12.24	16.19	10.26	16.19	12.24
TA08025-B605	1	No Ice	87.56	59.67	78.26	50.37	78.26	59.67
MP2/5/8, 0/140	--	w/ Ice	18.17	13.13	16.49	11.45	16.49	13.13
RDIDC-9181-PF-48	1	No Ice	89.72	61.50	80.31	52.10	80.31	61.50
MP2, 0	--	w/ Ice	18.57	13.54	16.89	11.86	16.89	13.54
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						

EQUIPMENT LATERAL WIND FORCE CALCULATIONS [CONT.]

Appurtenance Name	Qty.	--	0° 180°	30° 210°	60° 240°	90° 270°	120° 300°	150° 330°
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						

EQUIPMENT SEISMIC FORCE CALCULATIONS

Appurtenance Name	Qty.	Elevation [ft]	Weight [lbs]	F_p [lbs]
MX08FRO665-21	1	134	82.5	9.50
TA08025-B604	1	134	63.9	7.36
TA08025-B605	1	134	75	8.64
RDIDC-9181-PF-48	1	134	21.85	2.52

APPENDIX C

SOFTWARE ANALYSIS OUTPUT

(Global) Model Settings

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

Hot Rolled Steel Code	AISC 15th(360-16): LRFD
Adjust Stiffness?	Yes(Iterative)
RISAConnection Code	AISC 15th(360-16): LRFD
Cold Formed Steel Code	AISI S100-16: LRFD
Wood Code	AWC NDS-18: ASD
Wood Temperature	< 100F
Concrete Code	ACI 318-14
Masonry Code	TMS 402-16: Strength
Aluminum Code	AA ADM1-15: 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
Parme 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[ksi]	Ry	Fu[ksi]	Rt
1	A992	29000	11154	.3	.65	.49	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	.3	.65	.49	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	.3	.65	.527	42	1.4	58	1.3
5	A500 Gr.B Rect	29000	11154	.3	.65	.527	46	1.4	58	1.3
6	A53 Gr.B	29000	11154	.3	.65	.49	35	1.6	60	1.2
7	A1085	29000	11154	.3	.65	.49	50	1.4	65	1.3
8	A500 Gr. C - 46	29000	11154	.3	.65	.49	46	1.3	62	1.4
9	A529 Gr. 50	29000	11154	.3	.65	.49	50	1.3	65	1.4

Cold Formed Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (/1E5 F)	Density[k/ft^3]	Yield[ksi]	Fu[ksi]
1	A653 SS Gr33	29500	11346	.3	.65	.49	33	45
2	A653 SS Gr50/1	29500	11346	.3	.65	.49	50	65

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design ...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Horizontals	PIPE_2.5	Beam	None	A500 Gr. C - 46	Typical	1.61	1.45	1.45	2.89
2	Standoffs	PIPE_1.5	Beam	None	A500 Gr. C - 46	Typical	.749	.293	.293	.586
3	Tie Backs	PIPE_2.0	Beam	None	A500 Gr. C - 46	Typical	1.02	.627	.627	1.25
4	Mount Pipes	PIPE_2.0	Beam	None	A500 Gr. C - 46	Typical	1.02	.627	.627	1.25
5	Standoff Bracing (V...	SR 5/8_HRA_...	Beam	None	A529 Gr. 50	Typical	.307	.007	.007	.015
6	Vertical pipes	PIPE_3.0	Beam	None	A500 Gr. C - 46	Typical	2.07	2.85	2.85	5.69
7	Standoff Bracing (D...	SR 1/2"	Beam	None	A529 Gr. 50	Typical	.196	.003	.003	.006

Cold Formed Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rul...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	CF1A	8CU1.25X057	Beam	None	A653 SS Gr33	Typical	.581	.057	4.41	.00063

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	N13						
2	N14						
3	N48	Reaction	Reaction	Reaction	Reaction		Reaction
4	N49	Reaction	Reaction	Reaction	Reaction		Reaction
5	N52A	Reaction	Reaction	Reaction			

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(...
1	Self Weight	DL		-1			7			
2	Structure Wind Z	WLZ						31		
3	Structure Wind X	WLX						31		
4	Wind Load 0 AZI	WLZ					14			
5	Wind Load 30 AZI	None					14			
6	Wind Load 45 AZI	None					14			
7	Wind Load 60 AZI	None					14			
8	Wind Load 90 AZI	WLX					14			
9	Wind Load 120 AZI	None					14			
10	Wind Load 135 AZI	None					14			
11	Wind Load 150 AZI	None					14			
12	Ice Weight	OL1					7	31		
13	Ice Structure Wind Z	OL2						31		
14	Ice Structure Wind X	OL3						31		
15	Ice Wind Load 0 AZI	OL2					14			
16	Ice Wind Load 30 AZI	None					14			
17	Ice Wind Load 45 AZI	None					14			
18	Ice Wind Load 60 AZI	None					14			
19	Ice Wind Load 90 AZI	OL3					14			
20	Ice Wind Load 120 AZI	None					14			
21	Ice Wind Load 135 AZI	None					14			
22	Ice Wind Load 150 AZI	None					14			
23	Seismic Load Z	ELZ			-.115		7			
24	Seismic Load X	ELX	-.115				7			
25	Live Load 1 (Lv)	None					1			
26	Live Load 2 (Lv)	None					1			
27	Live Load 3 (Lv)	None					1			
28	Maintenance Load 1 (Lm)	None					1			
29	Maintenance Load 2 (Lm)	None					1			
30	Maintenance Load 3 (Lm)	None					1			

Load Combinations

	Description	S...	P...	S...	B...	Fa...	B...	Fa...	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												

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...
7	1.2DL + 1WL 120 AZI	Yes	Y		DL	1.2	2	-.5	3	.866	9	1												
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	O...	1	13	1	14		15	1										
35	1.2DL + 1DLi + 1WLi 30 AZI	Yes	Y		DL	1.2	O...	1	13	.866	14	.5	16	1										
36	1.2DL + 1DLi + 1WLi 45 AZI	Yes	Y		DL	1.2	O...	1	13	.707	14	.707	17	1										
37	1.2DL + 1DLi + 1WLi 60 AZI	Yes	Y		DL	1.2	O...	1	13	.5	14	.866	18	1										
38	1.2DL + 1DLi + 1WLi 90 AZI	Yes	Y		DL	1.2	O...	1	13		14	1	19	1										
39	1.2DL + 1DLi + 1WLi 120 AZI	Yes	Y		DL	1.2	O...	1	13	-.5	14	.866	20	1										
40	1.2DL + 1DLi + 1WLi 135 AZI	Yes	Y		DL	1.2	O...	1	13	-.7...	14	.707	21	1										
41	1.2DL + 1DLi + 1WLi 150 AZI	Yes	Y		DL	1.2	O...	1	13	-.8...	14	.5	22	1										
42	1.2DL + 1DLi + 1WLi 180 AZI	Yes	Y		DL	1.2	O...	1	13	-1	14		15	-1										
43	1.2DL + 1DLi + 1WLi 210 AZI	Yes	Y		DL	1.2	O...	1	13	-.8...	14	-.5	16	-1										
44	1.2DL + 1DLi + 1WLi 225 AZI	Yes	Y		DL	1.2	O...	1	13	-.7...	14	-.7...	17	-1										
45	1.2DL + 1DLi + 1WLi 240 AZI	Yes	Y		DL	1.2	O...	1	13	-.5	14	-.8...	18	-1										
46	1.2DL + 1DLi + 1WLi 270 AZI	Yes	Y		DL	1.2	O...	1	13		14	-1	19	-1										
47	1.2DL + 1DLi + 1WLi 300 AZI	Yes	Y		DL	1.2	O...	1	13	.5	14	-.8...	20	-1										
48	1.2DL + 1DLi + 1WLi 315 AZI	Yes	Y		DL	1.2	O...	1	13	.707	14	-.7...	21	-1										
49	1.2DL + 1DLi + 1WLi 330 AZI	Yes	Y		DL	1.2	O...	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...														

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...
64	(1.2+0.2Sds)DL + 1E 315 AZI	Yes	Y		DL	1.2...	23	.707	24	-.7...																
65	(1.2+0.2Sds)DL + 1E 330 AZI	Yes	Y		DL	1.2...	23	.866	24	-.5																
66	(0.9-0.2Sds)DL + 1E 0 AZI	Yes	Y		DL	.862	23	1	24																	
67	(0.9-0.2Sds)DL + 1E 30 AZI	Yes	Y		DL	.862	23	.866	24	.5																
68	(0.9-0.2Sds)DL + 1E 45 AZI	Yes	Y		DL	.862	23	.707	24	.707																
69	(0.9-0.2Sds)DL + 1E 60 AZI	Yes	Y		DL	.862	23	.5	24	.866																
70	(0.9-0.2Sds)DL + 1E 90 AZI	Yes	Y		DL	.862	23		24	1																
71	(0.9-0.2Sds)DL + 1E 120 AZI	Yes	Y		DL	.862	23	-.5	24	.866																
72	(0.9-0.2Sds)DL + 1E 135 AZI	Yes	Y		DL	.862	23	-.7...	24	.707																
73	(0.9-0.2Sds)DL + 1E 150 AZI	Yes	Y		DL	.862	23	-.8...	24	.5																
74	(0.9-0.2Sds)DL + 1E 180 AZI	Yes	Y		DL	.862	23	-1	24																	
75	(0.9-0.2Sds)DL + 1E 210 AZI	Yes	Y		DL	.862	23	-.8...	24	-.5																
76	(0.9-0.2Sds)DL + 1E 225 AZI	Yes	Y		DL	.862	23	-.7...	24	-.7...																
77	(0.9-0.2Sds)DL + 1E 240 AZI	Yes	Y		DL	.862	23	-.5	24	-.8...																
78	(0.9-0.2Sds)DL + 1E 270 AZI	Yes	Y		DL	.862	23		24	-1																
79	(0.9-0.2Sds)DL + 1E 300 AZI	Yes	Y		DL	.862	23	.5	24	-.8...																
80	(0.9-0.2Sds)DL + 1E 315 AZI	Yes	Y		DL	.862	23	.707	24	-.7...																
81	(0.9-0.2Sds)DL + 1E 330 AZI	Yes	Y		DL	.862	23	.866	24	-.5																
82	1.2DL + 1Lv1	Yes	Y		DL	1.2	25	1.5																		
83	1.2DL + 1Lv2	Yes	Y		DL	1.2	26	1.5																		
84	1.2DL + 1Lv3	Yes	Y		DL	1.2	27	1.5																		
85	1.2DL + 1.5Lm + 1Wm 0 AZI -...	Yes	Y		DL	1.2	28	1.5	2	.058	3		4	.058												
86	1.2DL + 1.5Lm + 1Wm 30 AZI...	Yes	Y		DL	1.2	28	1.5	2	.05	3	.029	5	.058												
87	1.2DL + 1.5Lm + 1Wm 45 AZI...	Yes	Y		DL	1.2	28	1.5	2	.041	3	.041	6	.058												
88	1.2DL + 1.5Lm + 1Wm 60 AZI...	Yes	Y		DL	1.2	28	1.5	2	.029	3	.05	7	.058												
89	1.2DL + 1.5Lm + 1Wm 90 AZI...	Yes	Y		DL	1.2	28	1.5	2		3	.058	8	.058												
90	1.2DL + 1.5Lm + 1Wm 120 A...	Yes	Y		DL	1.2	28	1.5	2	-.0...	3	.05	9	.058												
91	1.2DL + 1.5Lm + 1Wm 135 A...	Yes	Y		DL	1.2	28	1.5	2	-.0...	3	.041	10	.058												
92	1.2DL + 1.5Lm + 1Wm 150 A...	Yes	Y		DL	1.2	28	1.5	2	-.05	3	.029	11	.058												
93	1.2DL + 1.5Lm + 1Wm 180 A...	Yes	Y		DL	1.2	28	1.5	2	-.0...	3		4	-.0...												
94	1.2DL + 1.5Lm + 1Wm 210 A...	Yes	Y		DL	1.2	28	1.5	2	-.05	3	-.0...	5	-.0...												
95	1.2DL + 1.5Lm + 1Wm 225 A...	Yes	Y		DL	1.2	28	1.5	2	-.0...	3	-.0...	6	-.0...												
96	1.2DL + 1.5Lm + 1Wm 240 A...	Yes	Y		DL	1.2	28	1.5	2	-.0...	3	-.05	7	-.0...												
97	1.2DL + 1.5Lm + 1Wm 270 A...	Yes	Y		DL	1.2	28	1.5	2		3	-.0...	8	-.0...												
98	1.2DL + 1.5Lm + 1Wm 300 A...	Yes	Y		DL	1.2	28	1.5	2	.029	3	-.05	9	-.0...												
99	1.2DL + 1.5Lm + 1Wm 315 A...	Yes	Y		DL	1.2	28	1.5	2	.041	3	-.0...	10	-.0...												
100	1.2DL + 1.5Lm + 1Wm 330 A...	Yes	Y		DL	1.2	28	1.5	2	.05	3	-.0...	11	-.0...												
101	1.2DL + 1.5Lm + 1Wm 0 AZI -...	Yes	Y		DL	1.2	29	1.5	2	.058	3		4	.058												
102	1.2DL + 1.5Lm + 1Wm 30 AZI...	Yes	Y		DL	1.2	29	1.5	2	.05	3	.029	5	.058												
103	1.2DL + 1.5Lm + 1Wm 45 AZI...	Yes	Y		DL	1.2	29	1.5	2	.041	3	.041	6	.058												
104	1.2DL + 1.5Lm + 1Wm 60 AZI...	Yes	Y		DL	1.2	29	1.5	2	.029	3	.05	7	.058												
105	1.2DL + 1.5Lm + 1Wm 90 AZI...	Yes	Y		DL	1.2	29	1.5	2		3	.058	8	.058												
106	1.2DL + 1.5Lm + 1Wm 120 A...	Yes	Y		DL	1.2	29	1.5	2	-.0...	3	.05	9	.058												
107	1.2DL + 1.5Lm + 1Wm 135 A...	Yes	Y		DL	1.2	29	1.5	2	-.0...	3	.041	10	.058												
108	1.2DL + 1.5Lm + 1Wm 150 A...	Yes	Y		DL	1.2	29	1.5	2	-.05	3	.029	11	.058												
109	1.2DL + 1.5Lm + 1Wm 180 A...	Yes	Y		DL	1.2	29	1.5	2	-.0...	3		4	-.0...												
110	1.2DL + 1.5Lm + 1Wm 210 A...	Yes	Y		DL	1.2	29	1.5	2	-.05	3	-.0...	5	-.0...												
111	1.2DL + 1.5Lm + 1Wm 225 A...	Yes	Y		DL	1.2	29	1.5	2	-.0...	3	-.0...	6	-.0...												
112	1.2DL + 1.5Lm + 1Wm 240 A...	Yes	Y		DL	1.2	29	1.5	2	-.0...	3	-.05	7	-.0...												
113	1.2DL + 1.5Lm + 1Wm 270 A...	Yes	Y		DL	1.2	29	1.5	2		3	-.0...	8	-.0...												
114	1.2DL + 1.5Lm + 1Wm 300 A...	Yes	Y		DL	1.2	29	1.5	2	.029	3	-.05	9	-.0...												
115	1.2DL + 1.5Lm + 1Wm 315 A...	Yes	Y		DL	1.2	29	1.5	2	.041	3	-.0...	10	-.0...												
116	1.2DL + 1.5Lm + 1Wm 330 A...	Yes	Y		DL	1.2	29	1.5	2	.05	3	-.0...	11	-.0...												
117	1.2DL + 1.5Lm + 1Wm 0 AZI -...	Yes	Y		DL	1.2	30	1.5	2	.058	3		4	.058												
118	1.2DL + 1.5Lm + 1Wm 30 AZI...	Yes	Y		DL	1.2	30	1.5	2	.05	3	.029	5	.058												
119	1.2DL + 1.5Lm + 1Wm 45 AZI...	Yes	Y		DL	1.2	30	1.5	2	.041	3	.041	6	.058												
120	1.2DL + 1.5Lm + 1Wm 60 AZI...	Yes	Y		DL	1.2	30	1.5	2	.029	3	.05	7	.058												

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...
121	1.2DL + 1.5Lm + 1Wm 90 AZI...	Yes	Y		DL	1.2	30	1.5	2		3	.058	8	.058										
122	1.2DL + 1.5Lm + 1Wm 120 A...	Yes	Y		DL	1.2	30	1.5	2	-.0...	3	.05	9	.058										
123	1.2DL + 1.5Lm + 1Wm 135 A...	Yes	Y		DL	1.2	30	1.5	2	-.0...	3	.041	10	.058										
124	1.2DL + 1.5Lm + 1Wm 150 A...	Yes	Y		DL	1.2	30	1.5	2	-.05	3	.029	11	.058										
125	1.2DL + 1.5Lm + 1Wm 180 A...	Yes	Y		DL	1.2	30	1.5	2	-.0...	3		4	-.0...										
126	1.2DL + 1.5Lm + 1Wm 210 A...	Yes	Y		DL	1.2	30	1.5	2	-.05	3	-.0...	5	-.0...										
127	1.2DL + 1.5Lm + 1Wm 225 A...	Yes	Y		DL	1.2	30	1.5	2	-.0...	3	-.0...	6	-.0...										
128	1.2DL + 1.5Lm + 1Wm 240 A...	Yes	Y		DL	1.2	30	1.5	2	-.0...	3	-.05	7	-.0...										
129	1.2DL + 1.5Lm + 1Wm 270 A...	Yes	Y		DL	1.2	30	1.5	2		3	-.0...	8	-.0...										
130	1.2DL + 1.5Lm + 1Wm 300 A...	Yes	Y		DL	1.2	30	1.5	2	.029	3	-.05	9	-.0...										
131	1.2DL + 1.5Lm + 1Wm 315 A...	Yes	Y		DL	1.2	30	1.5	2	.041	3	-.0...	10	-.0...										
132	1.2DL + 1.5Lm + 1Wm 330 A...	Yes	Y		DL	1.2	30	1.5	2	.05	3	-.0...	11	-.0...										

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	N48	max	895.402	89	1273.018	93	650.736	33	-135.063	33	0	132	496.931	131
2		min	-865.475	129	139.431	33	-1960.176	41	-914.211	41	0	1	-509.869	87
3	N49	max	855.992	121	1142.384	49	1875.455	49	-18.738	124	0	132	166.041	84
4		min	-885.693	97	55.527	93	-249.567	25	-920.603	49	0	1	-184.257	82
5	N52A	max	25.21	12	88.903	46	638.723	22	0	132	0	132	0	132
6		min	-26.314	4	15.356	70	-641.222	30	0	1	0	1	0	1
7	Totals:	max	863.246	6	2330.655	44	1414.315	2						
8		min	-863.245	30	430.751	70	-1414.314	26						

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

	Member	Shape	Code ...	Loc[in]	LC	Shear ...	Loc[in]	Dir	LC	phi*Pnc ...	phi*Pnt ...	phi*Mn ...	phi*Mn ...	Cb	Eqn
1	MP2	PIPE_2.0	.341	33	2	.076	33		87	15369.6...	42228	2459.85	2459.85	1.368	H1-1b
2	M23	SR 5/8_HRA_H...	.334	24.5...	92	.012	30.25		4	1849.145	13805.82	143.808	143.808	1	H1-1a
3	M24	SR 5/8_HRA_H...	.332	24.5...	124	.012	30.25		8	1849.145	13805.82	143.808	143.808	1	H1-1a
4	M28	SR 1/2"	.233	22.4...	48	.013	44.8...		37	1432.022	8835.75	73.632	73.632	1	H1-1b
5	M29	SR 1/2"	.229	22.4...	120	.011	0		47	1432.022	8835.75	73.632	73.632	1	H1-1a
6	M1	PIPE_1.5	.169	34.81	90	.146	34.81		86	23485.28	31008.6	1452.45	1452.45	1	H1-1b
7	MP3	PIPE_2.0	.169	48	5	.092	33		7	15369.6...	42228	2459.85	2459.85	1.427	H1-1b
8	M4	PIPE_1.5	.164	34.81	128	.146	34.81		1...	23485.28	31008.6	1452.45	1452.45	1	H1-1b
9	M5	PIPE_2.5	.151	48	3	.039	20		1...	45255.2...	66654	4726.5	4726.5	1	H1-1b
10	M3	PIPE_1.5	.151	34.81	98	.117	34.81		44	23485.28	31008.6	1452.45	1452.45	1.326	H1-1b
11	M2	PIPE_1.5	.145	34.81	120	.115	34.81		39	23485.28	31008.6	1452.45	1452.45	1.367	H1-1b
12	H1	PIPE_2.5	.126	76	130	.043	20		92	45255.2...	66654	4726.5	4726.5	2.424	H1-1b
13	M31A	PIPE_2.0	.107	61.6...	38	.007	123....		46	9324.69	42228	2459.85	2459.85	1.136	H1-1b
14	M25	SR 5/8_HRA_H...	.028	30.25	91	.042	0		87	1849.145	13805.82	143.808	143.808	1	H1-1b*
15	M26	SR 5/8_HRA_H...	.028	30.25	124	.042	0		87	1849.145	13805.82	143.808	143.808	1	H1-1b*
16	MP1	PIPE_2.0	.026	63	125	.049	33		87	15369.6...	42228	2459.85	2459.85	1.149	H1-1b*
17	M27	SR 1/2"	.000	0	132	.012	44.8...		42	1432.022	8835.75	73.632	73.632	1	H1-1a
18	M30	SR 1/2"	.000	0	132	.010	0		42	1432.022	8835.75	73.632	73.632	1	H1-1a

Envelope AISI S100-16: LRFD Cold Formed Steel Code Checks

Member	Shape	Code Check	Loc[in]	LC	Shea...	Loc[i...	Dir	LC	phi*Pn[...	phi*Tn[...	phi*Mn...	phi*Mn...	phi*...	phi*...	Cb	Eqn
No Data to Print ...																

APPENDIX D

ADDITIONAL CALCULATIONS

Trylon

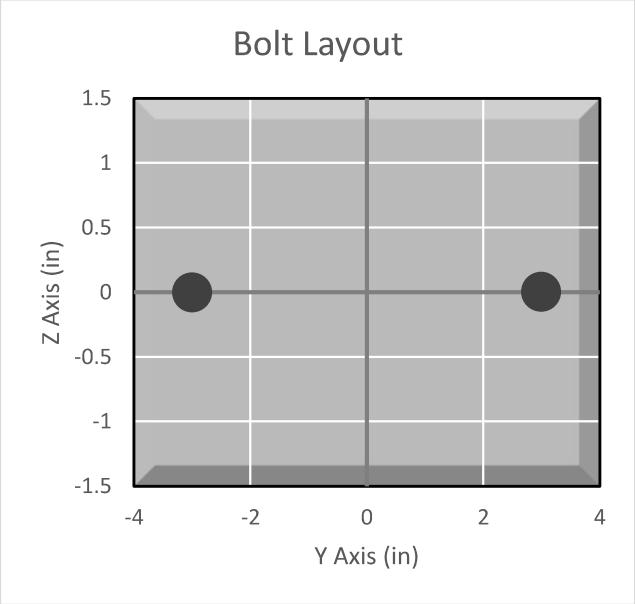
Analysis date: 8/3/2021

BOLT TOOL 1.5.2

Project Data	
Job Code:	189057
Carrier Site ID:	BOBDL00076A
Carrier Site Name:	CT-CCI-T-871584

Code	
Design Standard:	TIA-222-H
Slip Check:	Yes
Pretension Standard:	TIA-222-H

Bolt Properties		
Connection Type:	Threaded Rod	
Diameter:	0.75	in
Grade:	A529	--
Yield Strength (Fy):	50	ksi
Ultimate Strength (Fu):	65	ksi
Number of Bolts:	2	--
Threads Included:	Yes	--
Double Shear:	No	--
Distance Between Rods:	6	in



Connection Description
Mount Standoff to Tower Leg

Bolt Check*		
Tensile Capacity (ϕT_n):	16304.9	lbs
Shear Capacity (ϕV_n):	10768.5	lbs
Tension Force (T_u):	592.5	lbs
Shear Force (V_u):	1713.3	lbs
Tension Usage:	3.5%	--
Shear Usage:	15.2%	--
Interaction:	15.2%	Pass
Controlling Member:	M31	--
Controlling LC:	90	--

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

Slip Check*		
Sliding Capacity (ϕR_{ns}):	9883.2	lbs
Torsion Capacity (ϕR_{nr}):	2470.8	lb-ft
Sliding Force (V_{us}):	1273.0	lbs
Torsional Force (T_{ur}):	0.0	lb-ft
Sliding Usage:	12.3%	--
Torsion Usage:	0.0%	--
Interaction:	12.3%	Pass
Controlling Member:	M31	--
Controlling LC:	93	--

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

APPENDIX E

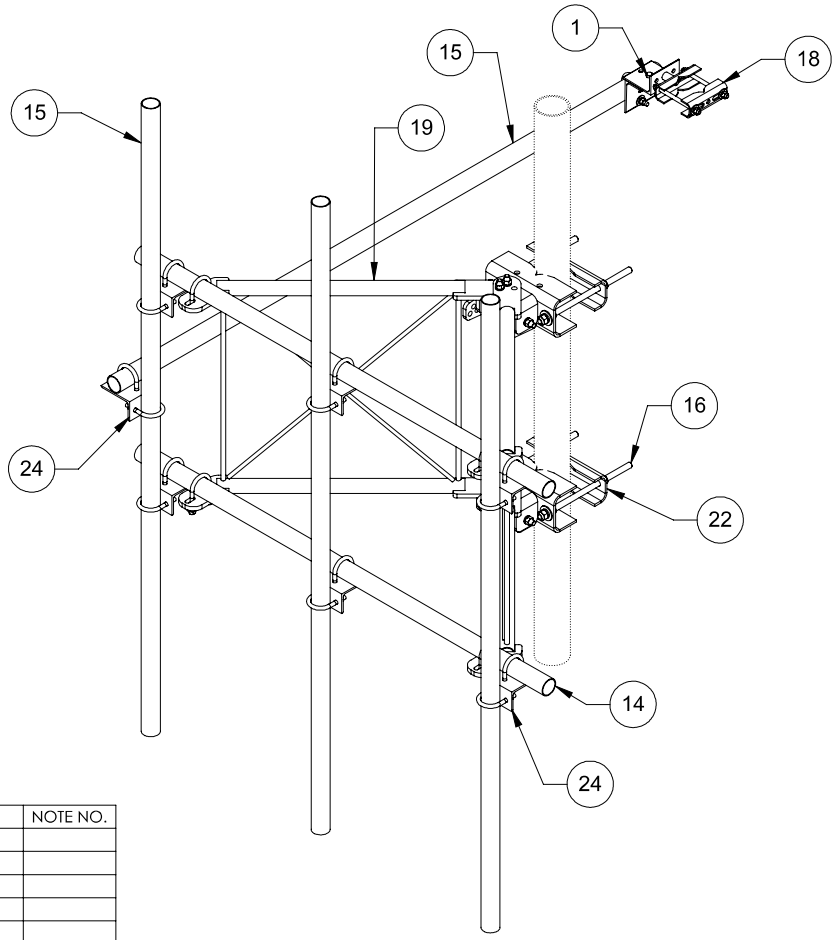
SUPPLEMENTAL DRAWINGS

NOTES:
1.0 ALL METRIC DIMENSIONS ARE IN BRACKETS.

REVISIONS				
REV.	ECN	DESCRIPTION	BY	DATE
PRE		REVIEW	DRH	01/28/21

www.Talleycom.com | Sales@Talleycom.com | 800.949.7079

TALLEY®



ITEM	PART NO.	DESCRIPTION	QTY.	WEIGHT	NOTE NO.
1	GB-04125	1/2" X 1-1/4" GALV BOLT KIT	1	0.12 LBS	
2	GB-04265	1/2" X 2-3/4" GALV BOLT KIT	1	0.20 LBS	
3	GB-05225	5/8" X 2-1/4" GALV BOLT KIT	8	0.28 LBS	
4	GB-05305	5/8" X 3" GALV BOLT KIT	4	0.35 LBS	
5	GN-04	1/2" GALV HEX NUT	4	0.04 LBS	
6	GN-06	3/4" GALV HEX NUT	12	0.15 LBS	
7	GUB-4240	1/2" X 2-1/2" X 4" GALV U-BOLT	19	0.56 LBS	
8	GWF-04	1/2" GALV FLAT WASHER	4	0.03 LBS	
9	GWF-05	5/8" GALV FLAT WASHER	4	0.06 LBS	
10	GWF-06	3/4" GALV FLAT WASHER	8	0.10 LBS	
11	GWL-04	1/2" GALV LOCK WASHER	4	0.01 LBS	
12	GWL-06	3/4" GALV LOCK WASHER	8	0.04 LBS	
13	MT-379-8	1/2" X 8" GALV THREADED ROD	2	0.44 LBS	
14	MT-651-96	2.375" OD x 96" PIPE	2	17.29 LBS	
15	MT-651-96	Ø2.375" OD X 96" PIPE	4	23.05 LBS	
16	MT38416	Threaded Rod Galv 3/4" x 16"	4	1.99 LBS	
17	OS15034	3/4" X 1-1/2" OFFSET COLLAR	1	0.14 LBS	
18	SAB01	FORMED CLAMP	2	1.35 LBS	
19	SFV01	WELDMENT, SF-V STANDOFF ARM	2	36.81 LBS	
20	SFV02	SFV AZIMUTH BRACKET	3	6.70 LBS	
21	SFV03	SFV TAPER BRACKET	1	7.49 LBS	
22	SMU2080.06	CLAMP PLATE	2	6.96 LBS	
23	SMU208004	MOUNT	2	12.15 LBS	
24	XA2020.01	ANTENNA MOUNT ANGLE	9	2.65 LBS	

DENSITY	0.28	lbs/in³
MASS	400.61	lbs
VOLUME	1421.66	in³
SURFACE AREA		in²
HEIGHT		
LENGTH		
WIDTH		

COMMSCOPE, INC. OF NORTH CAROLINA

TOLERANCES
0 PLACE X ± .25 | 2 PLACE .XX ± .06
1 PLACE .X ± .12 | ANGLES ± 2°

SAP MATERIAL MASTER: MTC3975083

FINISH: GALV A123

MATERIAL: A1011/A1018, A500, A529

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS INTERPRET PER ASME Y14.5M-1994, HANDBOOK/TECHNICAL DRAWINGS, VOLUMES 1 & 2, THIRD EDITION (2002)

	NAME	DATE
CE	RDLS	7/14/17
RW		
RV		
AD		
RE	TP	7/14/17
ECN		

TITLE: SECTOR FRAME, 8' FACE, (3) 96" PIPES

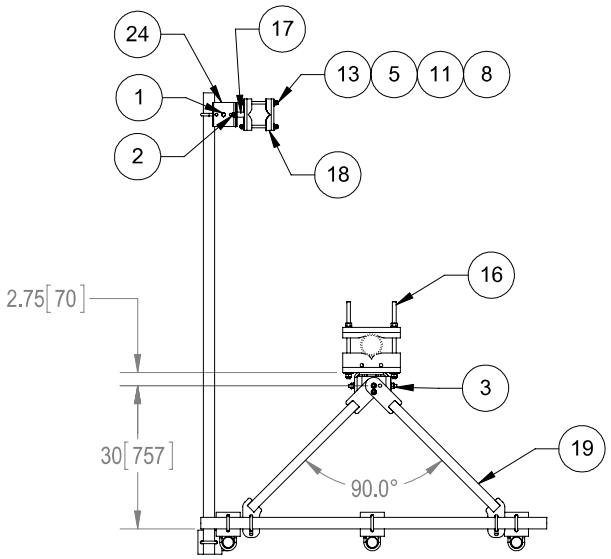
SCALE: 1:12

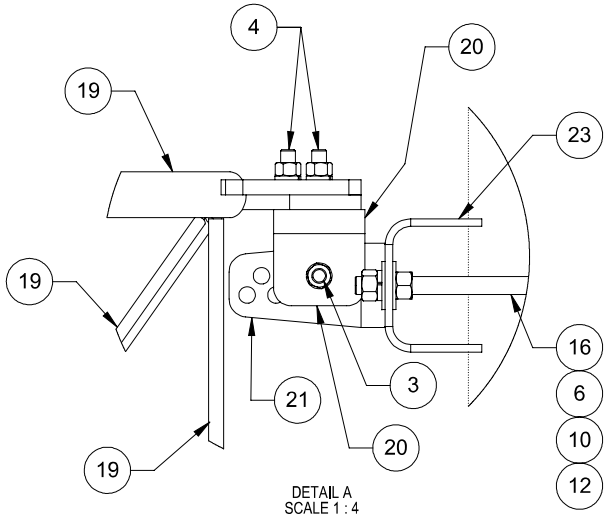
DOCUMENT NO.: MTC3975083

SIZE	WORK AREA	MODEL			DRAWING			SHEET
		VERSION	STATUS	REVISION	VERSION	STATUS	REVISION	
C							PRE	1 OF 2

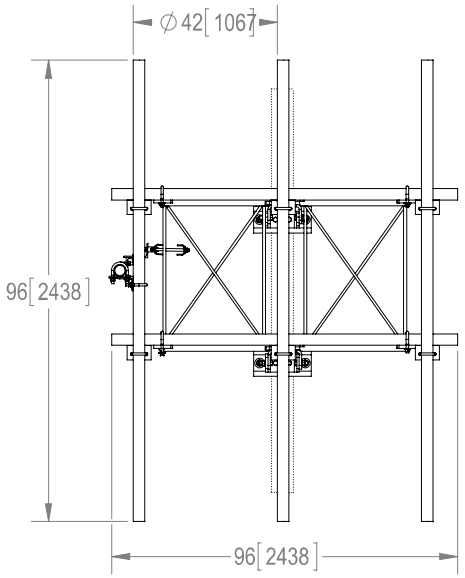
NOTES:

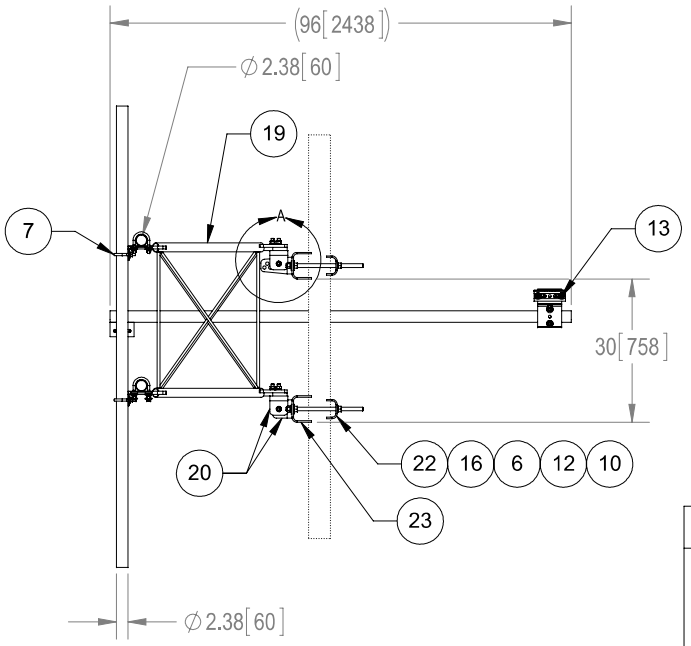
1.0 ALL METRIC DIMENSIONS ARE IN BRACKETS.





DETAIL A
SCALE 1 : 4





COMMSCOPE, INC. OF NORTH CAROLINA			
TITLE: **SECTOR FRAME, 8' FACE, (3) 96" PIPES**			
SIZE: C	SCALE: 1:20	DOCUMENT NO.: **MTC3975083**	
		DRAWING VERSION / STATUS / REVISION: PRE	SHEET: 2 OF 2

Exhibit F

Power Density/RF Emissions Report

EBI Consulting

environmental | engineering | due diligence

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

Dish Wireless Existing Facility

Site ID: BOBDL00076A

871584
115 Birch Mtn. Road
Glastonbury, Connecticut 06033

September 28, 2021

EBI Project Number: 6221005700

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**15.05%**

September 28, 2021

Dish Wireless

Emissions Analysis for Site: BOBDL00076A - 871584

EBI Consulting was directed to analyze the proposed Dish Wireless facility located at **115 Birch Mtn. Road** in **Glastonbury, Connecticut** for the purpose of determining whether the emissions from the Proposed Dish Wireless Antenna Installation located on this property are within specified federal limits.

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

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

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

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

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

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed Dish Wireless Wireless antenna facility located at 115 Birch Mtn. Road in Glastonbury, Connecticut using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since Dish Wireless is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 20 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was focused at the base of the tower. For this report, the sample point is the top of a 6-foot person standing at the base of the tower.

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

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

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

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

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

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

6) The antenna mounting height centerline of the proposed antennas is 134 feet above ground level (AGL).

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

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

Dish Wireless Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	JMA MX08FRO665-21	Make / Model:	JMA MX08FRO665-21	Make / Model:	JMA MX08FRO665-21
Frequency Bands:	600 MHz / 1900 MHz	Frequency Bands:	600 MHz / 1900 MHz	Frequency Bands:	600 MHz / 1900 MHz
Gain:	17.45 dBd / 22.65 dBd	Gain:	17.45 dBd / 22.65 dBd	Gain:	17.45 dBd / 22.65 dBd
Height (AGL):	134 feet	Height (AGL):	134 feet	Height (AGL):	134 feet
Channel Count:	8	Channel Count:	8	Channel Count:	8
Total TX Power (W):	280 Watts	Total TX Power (W):	280 Watts	Total TX Power (W):	280 Watts
ERP (W):	3,065.51	ERP (W):	3,065.51	ERP (W):	3,065.51
Antenna A1 MPE %:	**0.97%**	Antenna B1 MPE %:	**0.97%**	Antenna C1 MPE %:	**0.97%**

Site Composite MPE %	
Carrier	**MPE %**
Dish Wireless (Max at Sector A):	0.97%
DRW NX	1.38%
Various Others	1.41%
Unknown	2.16%
T-Mobile	7.08%
Sprint	2.05%
Site Total MPE % :	15.05%

Dish Wireless MPE % Per Sector	
Dish Wireless Sector A Total:	0.97%
Dish Wireless Sector B Total:	0.97%
Dish Wireless Sector C Total:	0.97%
Site Total MPE % :	15.05%

Dish Wireless Maximum MPE Power Values (Sector A)

Dish Wireless Frequency Band / Technology (Sector A)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density (μW/cm²)	Frequency (MHz)	Allowable MPE (μW/cm²)	Calculated % MPE
Dish Wireless 600 MHz n71	4	223.68	134.0	1.96	600 MHz n71	400	0.49%
Dish Wireless 1900 MHz n70	4	542.70	134.0	4.76	1900 MHz n70	1000	0.48%
						Total:	**0.97%**

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

Summary

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

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

Dish Wireless Sector	Power Density Value (%)
Sector A:	0.97%
Sector B:	0.97%
Sector C:	0.97%
Dish Wireless Maximum MPE % (Sector A):	0.97%
Site Total:	15.05%
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **15.05%** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

Exhibit G

Letter of Authorization

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

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

Crown Castle Letter of Authorization

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

Re: Tower Share Application
Crown Castle telecommunications site at:
115 BIRCH MTN. ROAD, GLASTONBURY, CT 06033

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

Crown Site ID/Name: 871584/John Tom Hill
Customer Site ID: BOBDL00076A/CT-CCI-T-871584
Site Address: 115 Birch Mtn. Road, GLASTONBURY, CT 06033

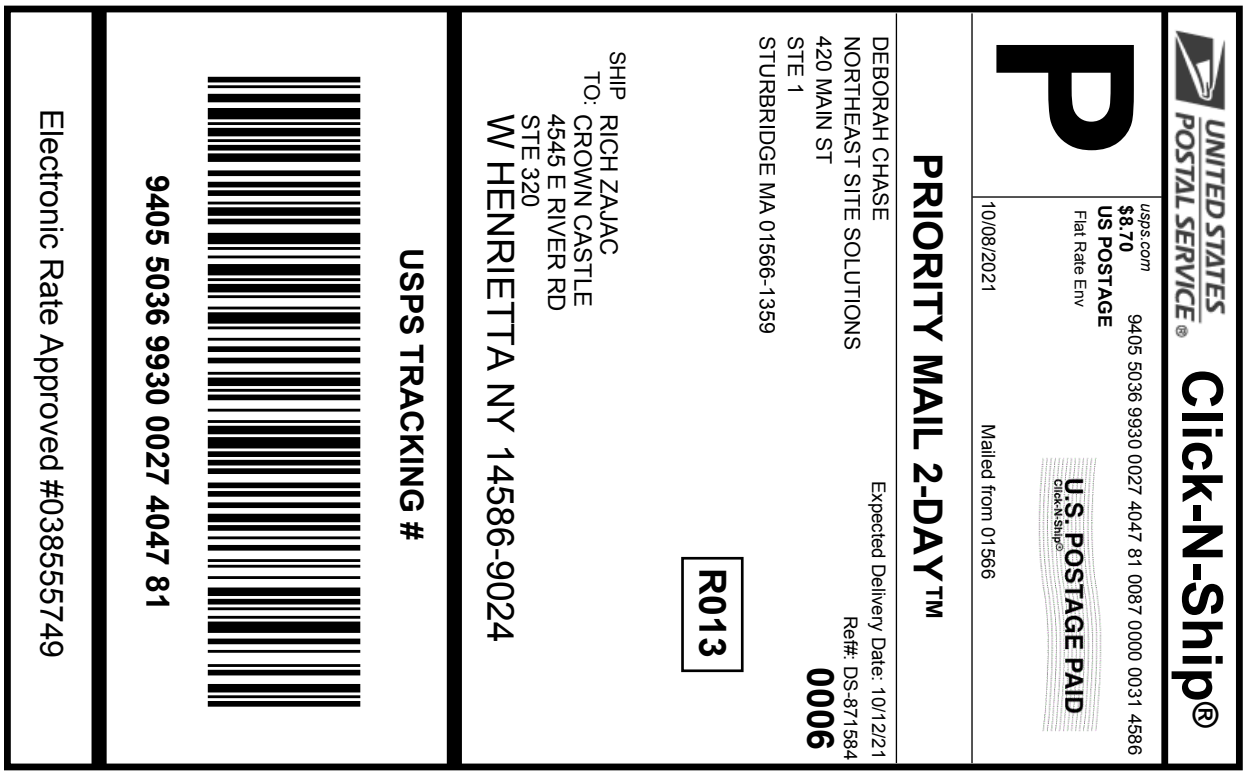
Crown Castle

By: _____ Date: 10/4/2021

Richard Zajac
Site Acquisition Specialist

Exhibit H

Recipient Mailings



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2. **Place your label so it does not wrap around the edge of the package.**
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USPS TRACKING # :
9405 5036 9930 0027 4047 81

Trans. #:	545526779
Print Date:	10/08/2021
Ship Date:	10/08/2021
Expected Delivery Date:	10/12/2021

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

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

Ref#: DS-871584

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

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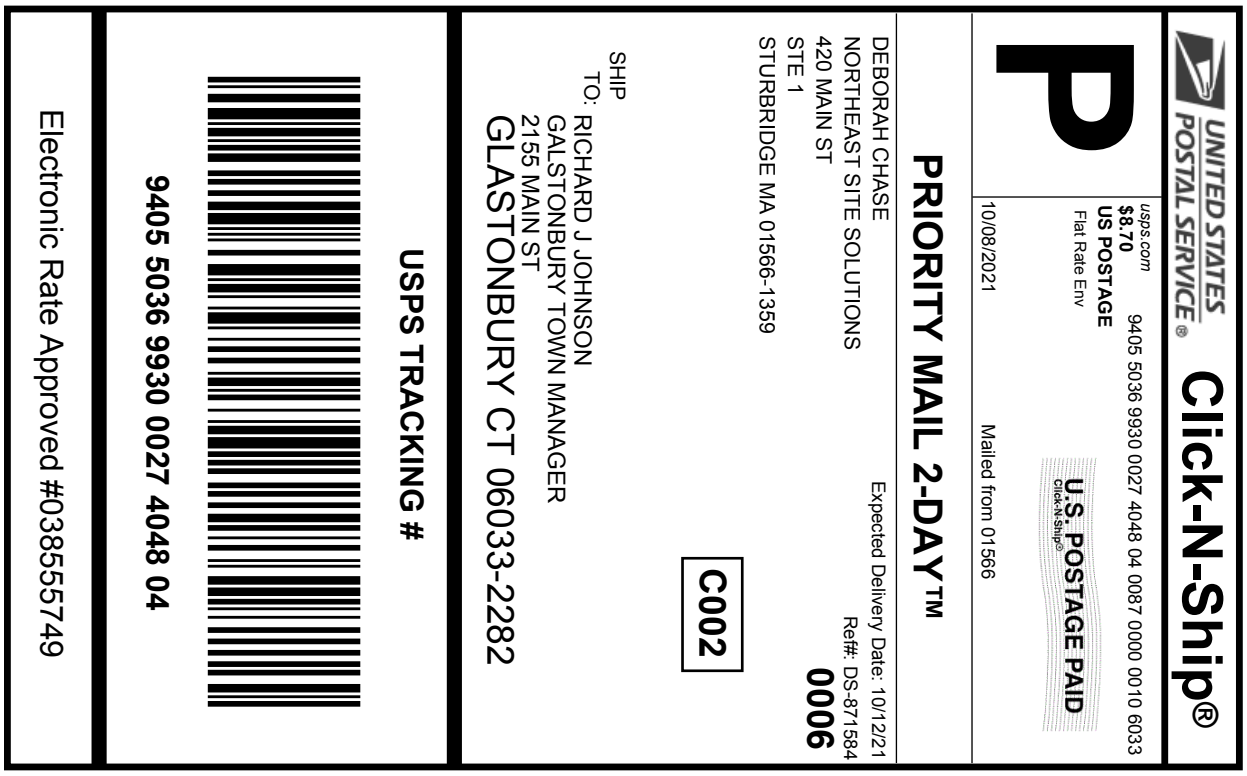

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Print Date:	10/08/2021
Ship Date:	10/08/2021
Expected Delivery Date:	10/12/2021

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

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

Ref#: DS-871584

To: RICHARD J JOHNSON
GALSTONBURY TOWN MANAGER
2155 MAIN ST
GLASTONBURY CT 06033-2282

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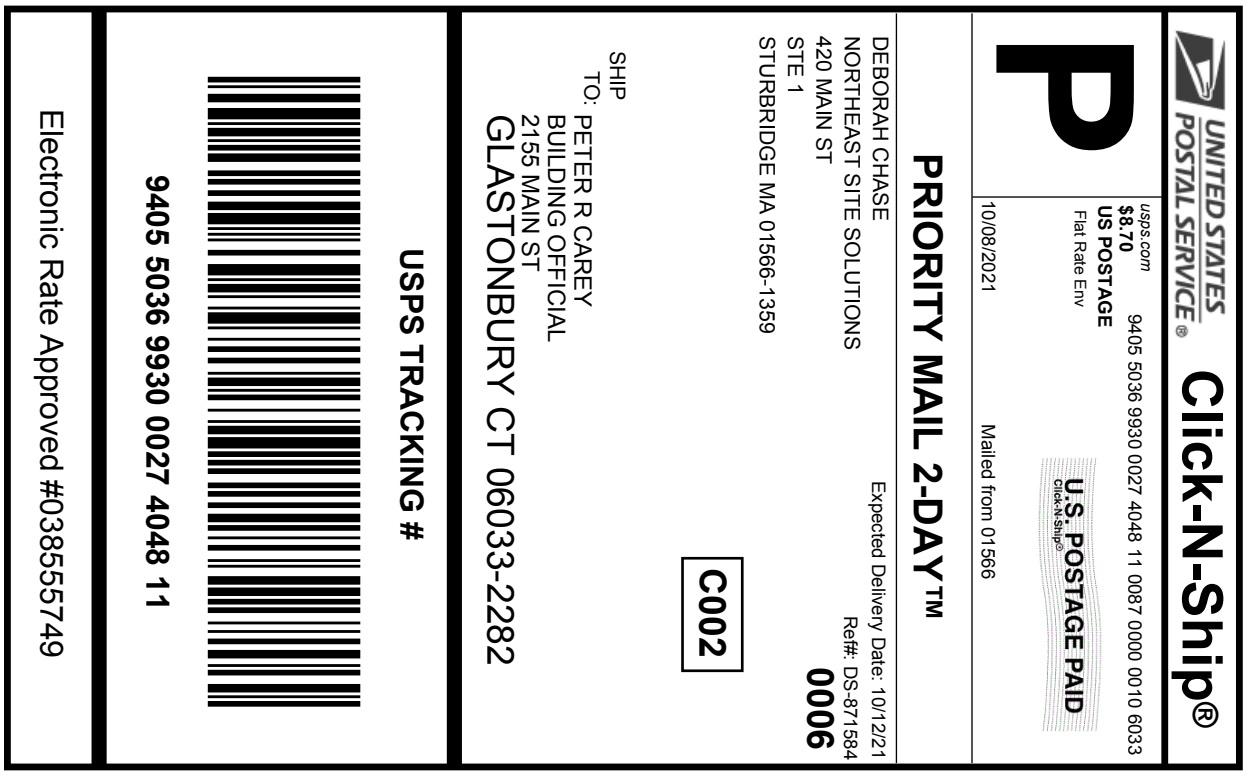

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9405 5036 9930 0027 4048 11

Trans. #:	545526779
Print Date:	10/08/2021
Ship Date:	10/08/2021
Expected Delivery Date:	10/12/2021

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

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

Ref#: DS-871584

To: PETER R CAREY
BUILDING OFFICIAL
2155 MAIN ST
GLASTONBURY CT 06033-2282

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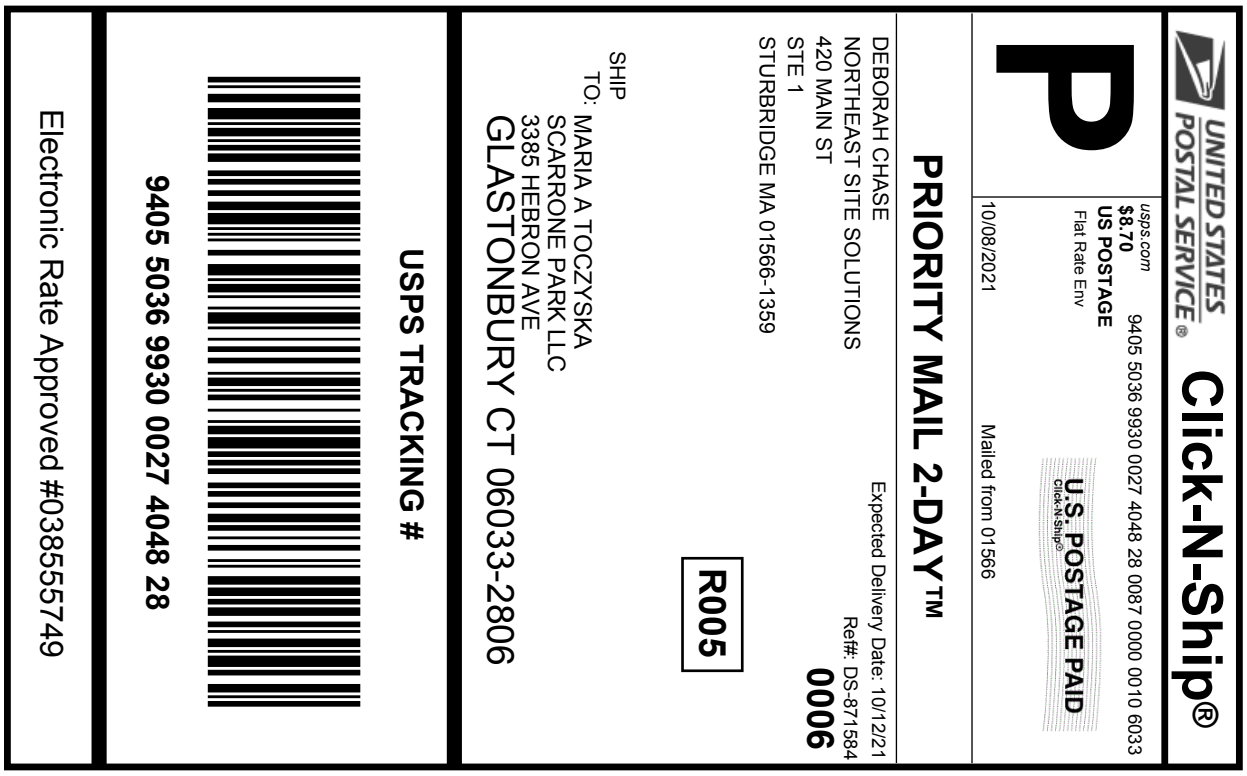

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Trans. #:	545526779
Print Date:	10/08/2021
Ship Date:	10/08/2021
Expected Delivery Date:	10/12/2021

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

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

Ref#: DS-871584

To: MARIA A TOCZYSKA
SCARRONE PARK LLC
3385 HEBRON AVE
GLASTONBURY CT 06033-2806

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871584

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

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Product	Qty	Unit Price	Price
Prepaid Mail Glastonbury, CT 06033 Weight: 0 lb 11.70 oz Acceptance Date: Tue 10/12/2021 Tracking #: 9405 5036 9930 0027 4048 11	1		$0.00
Prepaid Mail Glastonbury, CT 06033 Weight: 0 lb 11.60 oz Acceptance Date: Tue 10/12/2021 Tracking #: 9405 5036 9930 0027 4048 28	1		$0.00
Prepaid Mail Glastonbury, CT 06033 Weight: 0 lb 11.70 oz Acceptance Date: Tue 10/12/2021 Tracking #: 9405 5036 9930 0027 4048 04	1		$0.00
Prepaid Mail West Henrietta, NY 14586 Weight: 0 lb 2.00 oz Acceptance Date: Tue 10/12/2021 Tracking #: 9405 5036 9930 0027 4047 81	1		$0.00

Grand Total: $0.00